State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

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Governor
Dianne R. Nielson, Ph.D.
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October 18, 1994

DAQE-915-94

James R. Van Orman
Director, Environmental Management Office
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Re: Change of Jet Fuel from JP-4 to JP-8

Dear Mr. Van Orman:

The Division has received your letter dated August 8, 1994, requesting approval for the use of JP-8 instead of JP-4 as currently specified in your Approval Order (DAQE-167-92 dated October 13, 1992). It is our understanding that the true vapor pressure of JP-8 is significantly lower than that of JP-4 and that emissions associated with handling and storage of this fuel will result in lower emissions than previously reviewed in your present AO. It is also our understanding that no physical changes will occur such as tank sizes or the addition of new tanks emission control equipment etc..

Since no new equipment will be added and because there will be no change (or a decrease) in emissions, no change is necessary to your existing Approval Order. However, if this is a permanent change and you wish to receive emission credit for the emission reductions that may have occurred, you will need to submit a Notice of intent for a modification to your AO. In addition, if there are other conditions that need to be changed such as condition #4 (fuel use limitations etc.) a NOI should be submitted and the AO will be modified.

Thank you for keeping us informed of the changes that are being made to operations at your facility. If you have further questions regarding requirements for an AO modification please don't hesitate to call me at 536-4096.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section
Utah Division of Air Quality

LRM:DC:aj

4.2.4-415

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

08 August 1994

OO-ALC/EM
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City Ut 84114-4820

Re: Approval Order DAQE-167-92 for JP-4 Tank Throughput Limitations

Dear Mr. Roberts

Hill AFB will change from JP-4 to JP-8 in October 1995. The storage tank approval order allows a JP-4 throughput of 1,260,000 barrels per 12-month period. Since the vapor pressure of JP-8 (0.0085 psia) is much lower than JP-4 (1.3 psia), HC-emissions are less than 2% of JP-4 emissions. Calculations of the HC-emissions based on 1993 throughput are included at Attachment 1. AP-42 emission factors for the floating and fixed roof tanks and a simplified distribution schematic were used to compare JP-4 and JP-8 emissions.

Edwards AFB, located in California, has changed to JP-8, but California does not regulate JP-8 vapor emissions. How will Utah

handle JP-8 vapor emissions and should the Approval Order be modified because of the change?

If you have any questions. please call Mr. Andreas Zekorn at 777-0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

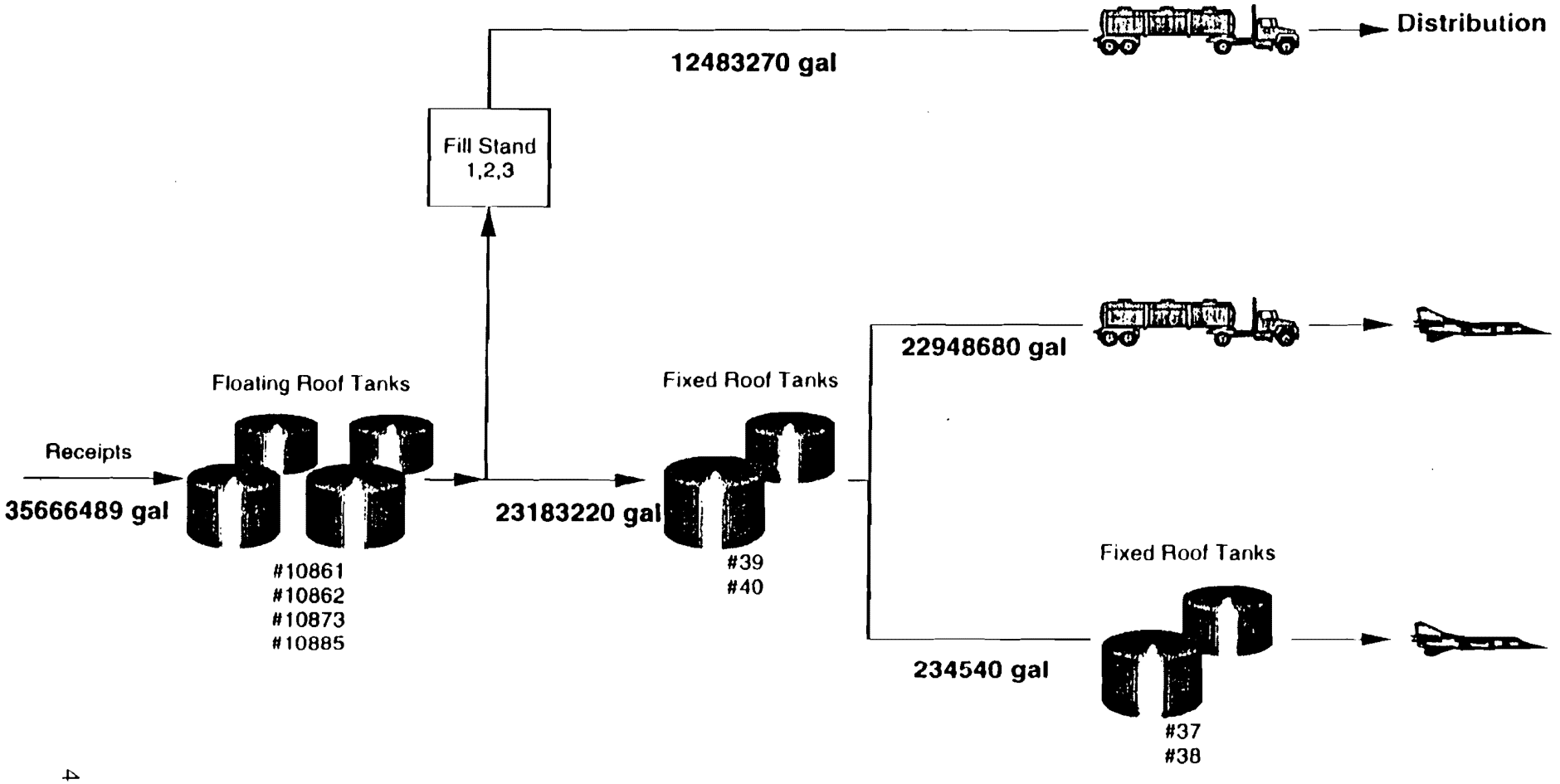
Attachment
HC-Emissions calculations

Storage Tanks HC-Emissions

	JP-4	JP-8
Tank #10885 Floating Roof :	2373.5 lb/yr	69.2 lb/yr
Tank #10873 Floating Roof	800.6 lb/yr	65.0 lb/yr
Tank #10861 Floating Roof	152.4 lb/yr	3.0 lb/yr
Tank #10862 Floating Roof	193.5 lb/yr	10.9 lb/yr
Tank #37 Fixed Roof	972.6 lb/yr	44.8 lb/yr
Tank #38 Fixed Roof	972.6 lb/yr	44.8 lb/yr
Tank #39 Fixed Roof	8991.8 lb/yr	130.0 lb/yr
Tank #40 Fixed Roof	8991.8 lb/yr	130.0 lb/yr
Total	23448.7 lb/yr	497.7 lb/yr
	11.7 tons/yr	0.2 tons/yr

Difference 22951.0 lb/yr
11.5 tons/yr

Simplified JP-4 Distribution Schematic



4.2.4-419

Storage Tanks & Fuel Transfer Losses

External Floating Roof Tanks

Tank #10885-Emissions with Dual Seal System

LT=LR+LW+LF+LD

LT = total loss(lb/yr)
LR = rim seal loss
LW = withdrawal loss
LF= deck fittings loss
LD = deck seam loss

LR=KS VN P* D MV KC

LR=	rim seal loss (lbs/yr)
KS=	table 4.3-4.AP-42. for welded tank with liquid mounted resilient seal and rim mounted secondary seal)
n=	table 4.3-2
D=	tank diameter in ft
MV=	molecular weight (Table 4.3-2)
KC=	product factor
V=	average wind speed
P=	true vapor pressure
PA=	average atmospheric pressure at tank location
P*=	vapor pressure function

	JP-4	JP-8
KS=	1.6	
n=	0	
MV=	80 lb/lbmole	130 lb/lbmole
KC=	1	
V=	8 mph	
D=	93 ft	
P*=(P/PA)/(1+(1-P/PA)^0.5)^2		
PA=	12.4 PSIA	12.4 PSIA
P=	1.3 PSIA	0.0085 PSIA
P*=	0.027680768	P*= 0.00017143
LR=	**329.5 lb/yr**	**LR= 3.3 lb/yr**

4.2.4-420

LW= 0.943 Q C WL (1 + (NC FC/D)) / D

LW=	withdrawal loss (lb/yr)
Q=	througput (bbl/yr)
C=	shell clingage factor (bbl/1000 ft^2)
WL=	average organic liquid density (lb/gal)
D=	tank diameter (ft)
NC=	number of columns
FC=	effective column diameter (ft)

Q=	18029375	gal		
	429279.42	bbl		
C=	0.0015	bbl/1000 ft^2		
WL=	6.4	lbs/gal	WL=	7 lbs/gal
D=	93	ft		
NC=	0			
FC=	1			
LW=	**41.8**	**lbs/yr**	**LW=**	**45.7 lbs/yr**

LF=FF P* MV KC

LF=	fitting loss (lb/yr)
FF=	total deck fitting loss factor (lb-mole/yr)
P*.MV.KC=	see above

P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
FF=	316	lbs Mole/yr		
LF=	**699.8**	**lbs/yr**	**LF=**	**7.0 lbs/yr**

4.2.4-421

LD= KD SD D^2 P* MV KC

LD=	deck seam losses (lb/yr)
KD=	deck seam loss per unit seam length factor (lb-mole/ft yr)
SD=	deck seam length factor (ft/ft^2)
D.P*.MV.KC=	see above

KD=	0.34 lb mole / ft yr		
D=	93 ft		
P*=	0.027680768	P*=	0.00017143
MV=	80 lb/lbmole	MV=	130 lb/lbmole
KC=	1		
SD=	0.2 ft/ft^2		
LD=	**1302.4 lb/yr**	**LD=**	**13.1 lb/yr**

Total HC Emissions Tank #10335 with Double Seal

	JP-4		JP-8
LT=	2373.5 lb/yr	LT=	69.2 lb/yr

Difference: 2304.3 lb/yr

Tank #10873-Emissions with Dual Seal System

LR=KS VN P* D MV KC

	JP-4	JP-8
KS=	1.6	
n=	0	
MV=	80 lb/lbmole	130 lb/lbmole
KC=	1	
V=	8 mph	
D=	63 ft	

P*=(P/PA)/(1+(1-P/PA)^0.5)^2

PA=	12.4 PSIA	12.4 PSIA	
P=	1.3 PSIA	0.0085 PSIA	
P*=	0.027680768	P*=	0.00017143
LR=	**223.2 lb/yr**	**LR=**	**2.2 lb/yr**

LW= 0.943 Q C WL (1 + (NC FC/D)) / D

Q=	15368388 gal		
	365921 bbl		
C=	0.0015 bbl/1000 ft^2		
WL=	6.4 lbs/gal	WL=	7 lbs/gal
D=	63 ft		
NC=	0		
FC=	1		
LW=	**52.6 lbs/yr**	**LW=**	**57.5 lbs/yr**

LF=FF P* MV KC

P*=	0.027680768	P*=	0.00017143
MV=	80 lb/lbmole	MV=	130 lb/lbmole
KC=	1		
FF=	237 lbs Mole/yr		
LF=	**524.8 lbs/yr**	**LF=**	**5.3 lbs/yr**

4.2.4-423

LD= KD SD D^2 P* MV KC

KD=	0	lb mole / ft yr		
D=	63	ft		
P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
SD=	0.2	ft/ft^2		
LD=	**0.0**	**lb/yr**	**LD=**	**0.0 lb/yr**

Total HC Emissions Tank#10873 with Double Seal

	JP-4		JP-8	
LT=	800.6	lb/yr	LT=	65.0 lb/yr

Difference: 735.6 lb/yr

4.2.4-424

Tank #10861-Emissions with Dual Seal System

LR=KS VN P* D MV KC

	JP-4		JP-8	
KS=	0.7			
n=	0.4			
MV=	80	lb/lbmole	130	lb/lbmole
KC=	1			
V=	8	mph		
D=	42.417	ft		

P*=(P/PA)/(1+(1-P/PA)^0.5)^2

PA=	12.4	PSIA	12.4	PSIA
P=	1.3	PSIA	0.0085	PSIA
P*=	0.027680768		P*=	0.00017143
LR=	**151.1**	**lb/yr**	**LR=**	**1.5 lb/yr**

LW= 0.943 Q C WL (1 + (NC FC/D)) / D

Q=	273527	gal		
	6513	bbl		
C=	0.0015	bbl/1000 ft^2		
WL=	6.4	lbs/gal	WL=	7 lbs/gal
D=	42.417	ft		
NC=	0			
FC=	1			
LW=	**1.4**	**lbs/yr**	**LW=**	**1.5 lbs/yr**

LF=FF P* MV KC

P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
FF=	0	lbs Mole/yr		
LF=	**0.0**	**lbs/yr**	**LF=**	**0.0 lbs/yr**

LD= KD SD D^2 P* MV KC

KD=	0	lb mole / ft yr		
D=	42.417	ft		
P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
SD=	0.2	ft/ft^2		
LD=	**0.0**	**lb/yr**	**LD=**	**0.0 lb/yr**

Total HC Emissions Tank #1[illegible]61 with Double Seal

	JP-4		JP-8	
LT=	152.4	lb/yr	LT=	3.0 lb/yr

Difference: 149.4 lb/yr

4.2.4-426

Tank #10862-Emissions with Dual Seal System

LR=KS VN P* D MV KC

	JP-4		JP-8	
KS=	0.7			
n=	0.4			
MV=	80	lb/lbmole	130	lb/lbmole
KC=	1			
V=	8	mph		
D=	52	ft		

P*=(P/PA)/(1+(1-P/PA)^0.5)^2

PA=	12.4	PSIA	12.4	PSIA
P=	1.3	PSIA	0.0085	PSIA
P*=	0.027680768		P*=	0.00017143
LR=	**185.2**	**lb/yr**	**LR=**	**1.9 lb/yr**

LW= 0.943 Q C WL (1 + (NC FC/D)) / D

Q=	1995239	gal		
	47507	bbl		
C=	0.0015	bbl/1000 ft^2		
WL=	6.4	lbs/gal	WL=	7 lbs/gal
D=	52	ft		
NC=	0			
FC=	1			
LW=	**8.3**	**lbs/yr**	**LW=**	**9.0 lbs/yr**

LF=FF P* MV KC

P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
FF=	0	lbs Mole/yr		
LF=	**0.0**	**lbs/yr**	**LF=**	**0.0 lbs/yr**

LD= KD SD D^2 P* MV KC

KD=	0	lb mole / ft yr		
D=	52	ft		
P*=	0.027680768		P*=	0.00017143
MV=	80	lb/lbmole	MV=	130 lb/lbmole
KC=	1			
SD=	0.2	ft/ft^2		
LD=	**0.0**	**lb/yr**	**LD=**	**0.0 lb/yr**

Total HC Emissions Tank #10362 with Double Seals

	JP-4		JP-8	
LT=	193.5	lb/yr	LT=	10.9 lb/yr

Difference: 182.5 lb/yr

Fixed Roof Tanks

Tank #37-Emissions with Fixed Roof

LB=2.26E-2 MV (P/(PA-P))^0.68 D^1.73 H^0.51 dT^0.50 FP C KC

LB=	breathing loss
MV=	molecular Weight (Table 4.3-2)
PA=	average atmospheric pressure at tank location
P=	true vapor pressure
D=	tank diameter
H=	average vapor space height, including roof volume correction
dT=	average ambient diurnal temperature chnage
FP=	paint factor
C=	adjustment factor for small diameter tanks
KC=	product factor

	JP-4		JP-8	
MV=	80	lb/lbmole	MV=	130 lb/lbmole
PA=	12.4	psia	PA=	12.4 psia
P=	1.3	psia	P=	0.0085 psia
D=	16	ft		
H=	20	ft		
dT=	10			
FP=	1.2			
C=	1			
KC=	1			
LB=	**890.6**	**lb/yr**	**LB=**	**43.9 lb/yr**

4.2.4-429

LW=2.40E-5 MV P V N KN KC

LW=	working loss
MV=	molecular weight
P=	true vapor pressure
V=	tank capacity
N=	number of turnovers per year
KN=	turnover factor
KC=	product factor

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
P=	1.3	psia	0.0085	psia
V=	50000	gal		
Throughput:	117270	gal		
N=	2.3454			
KN=	0.28			
KC=	1			
LW=	**82.0**	**lb/yr**	**0.9**	**lb/yr**

Total HC Emissions Tank #37

	JP-4		JP-8	
LE=	890.6	lb/yr	43.9	lb/yr
LW=	82.0	lb/yr	0.9	lb/yr
	972.6	lb/yr	44.8	lb/yr

Difference: 927.8 lb/yr

Tank #38-Emissions with Fixed Roof

LB=2.26E-2 MV (P/(PA-P))^0.68 D^1.73 H^0.51 dT^0.50 FP C KC

LB=Breathing loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
PA=	12.4	psia	12.4	psia
P=	1.3	psia	0.0085	psia
D=	16	ft		
H=	20	ft		
dT=	10			
FP=	1.2			
C=	1			
KC=	1			
LB=	**890.6**	**lb/yr**	**43.9**	**lb/yr**

LW=2.40E-5 MV P V N KN KC

LW=Working loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
P=	1.3	psia	0.0085	psia
V=	50000	gal		
Throughput:	117270	gal		
N=	2.3454			
KN=	0.28			
KC=	1			
LW=	**82.0**	**lb/yr**	**0.9**	**lb/yr**

Total HC Emissions Tank #38

	JP-4		JP-8	
LB=	890.6	lb/yr	43.9	lb/yr
LW=	82.0	lb/yr	0.9	lb/yr
	972.6	lb/yr	44.8	lb/yr

Difference: 927.8 lb/yr

4.2.4-431

Tank #39-Emissions with Fixed Roof

LB=2.26E-2 MV (P/(PA-P))^0.68 D^1.73 H^0.51 dT^0.50 FP C KC

LB=Breathing loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
PA=	12.4	psia	12.4	psia
P=	1.3	psia	0.0085	psia
D=	16	ft		
H=	20	ft		
dT=	10			
FP=	1.2			
C=	1			
KC=	1			
LB=	**890.6**	**lb/yr**	**43.9**	**lb/yr**

LW=2.40E-5 MV P V N KN KC

LW=Working loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
P=	1.3	psia	0.0085	psia
V=	50000	gal		
Throughput:	11591610	gal		
N=	231.8322			
KN=	0.28			
KC=	1			
LW=	**8101.1**	**lb/yr**	**86.1**	**lb/yr**

Total HC Emissions Tank #39

	JP-4		JP-8	
LB=	890.6	lb/yr	43.9	lb/yr
LW=	8101.1	lb/yr	86.1	lb/yr
	8991.8	lb/yr	130.0	lb/yr

Difference: 8861.8 lb/yr

4.2.4-432

Tank #40-Emissions with Fixed Roof

LB=2.26E-2 MV (P/(PA-P))^0.68 D^1.73 H^0.51 dT^0.50 FP C KC

LB=Breathing loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
PA=	12.4	psia	12.4	psia
P=	1.3	psia	0.0085	psia
D=	16	ft		
H=	20	ft		
dT=	10			
FP=	1.2			
C=	1			
KC=	1			
LB=	**890.6**	**lb/yr**	**LB=**	**43.9 lb/yr**

LW=2.40E-5 MV P V N KN KC

LW=Working loss

	JP-4		JP-8	
MV=	80	lb/lbmole	130	lb/lbmole
P=	1.3	psia	0.0085	psia
V=	50000	gal		
Throughput:	11591610	gal		
N=	231.8322			
KN=	0.28			
KC=	1			
LW=	**8101.1**	**lb/yr**	**LW=**	**86.1 lb/yr**

Total HC Emissions Tank #40

	JP-4		JP-8	
LB=	890.6	lb/yr	LB=	43.9 lb/yr
LW=	8101.1	lb/yr	LW=	86.1 lb/yr
	8991.8	lb/yr		130.0 lb/yr

Difference: 8861.8 lb/yr

4.2.4-433

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

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DAQE-403-95

May 8, 1995

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Re: Approval Order for Construction of Two Boilers Each in Buildings 1590 and 1703
Davis County CDS B NA NSPS

Dear Mr. James:

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:AR:dn

cc: Davis County Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER FOR CONSTRUCTION OF TWO BOILERS EACH IN BUILDINGS 1590 & 1703

PREPARED BY: Arjun Ram, Engineer

APPROVAL ORDER NUMBER
DAQE-403-95

Date: May 8, 1995

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_x, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_x, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_x burners. This project does not result in an increase in actual emissions from the boilers; therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_x, 18.98 tons per year NO_x, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_x technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology (BACT) for this project.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. However, air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

Unless you have comments which would require changes, the AO for this project will be based upon the following conditions:

General Conditions:

1. This AO applies to the following company:

   Department Of The Air Force
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone Number: (801) 777-0359
   Fax Number: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   LOCATION

   UTM COORDINATES:
   Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
   Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590

   B. Two boilers (rated at 11.25 MMBTU/HR) and associated equipment in Building 1703

   Hill Air Force Base shall submit to the Division of Air Quality (DAQ), the Manufacturer's name, Boiler's Model and Serial Number (or equivalent information that will enable proper identification of the boilers), for each of the boilers approved by this condition before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (the lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	1.33	40
CO	1.21	60

Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A.	Emission Point	Pollutant	Testing Status	Test Frequency
	Boiler Stack	NO_x	*	@
		CO	*	@

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the AO for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen Oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon Monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)

B. 141,000 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period

B. 57,500 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calendar months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this AO or in an applicable new source performance standard (NSPS), which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

Examples of records to be kept at this source shall include the following as applicable:

A. Fuel consumption
B. Test results

16. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_x	18.98
D.	CO	20.05
E.	VOC	1.86

These calculations are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	Tons/yr
A.	Particulate	4.48
B.	SO_2	15.96
C.	NO_x	18.98
D.	VOC	1.86

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

DAQE-104-95

February 8, 1995

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Re: Intent to Approve Construction of Two Boilers Each in Buildings 1590 and 1703
Davis County CDS B NA NSPS

Dear Mr. James:

The attached document is an Intent to Approve with Fee Statement for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

LRM:AR:dn

cc: Davis County Health Department

4.2.4-183

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE CONSTRUCTION OF TWO BOILERS IN BUILDING 1590 AND TWO BOILERS IN BUILDING 1703

PREPARED BY: Arjun Ram

INTENT TO APPROVE NUMBER
DAQE-104-95

Date: February 8, 1995

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_x, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_x, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_x burners. This project does not result in an increase in actual emissions from the boilers: therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_x, 18.98 tons per year NO_x, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_x technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology (BACT) for this project.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. However, air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

Unless you have comments which would require changes, the AO for this project will be based upon the following conditions:

RECOMMENDED APPROVAL ORDER CONDITIONS

General Conditions:

1. This AO applies to the following company:

   Department Of The Air Force
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone Number: (801) 777-0359
   Fax Number: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   LOCATION

   UTM COORDINATES:
   Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
   Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of

Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590

   B. Two boilers (rated at 11.25 MMBTU/HR) and associated equipment in Building 1703

   Hill Air Force Base shall submit to the Division of Air Quality (DAQ), the Manufacturer's name, Boiler's Model and Serial Number (or equivalent information that will enable proper identification of the boilers), for each of the boilers approved by this Condition, before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (the lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	1.33	40
CO	1.21	60
Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A.

Emission Point	Pollutant	Testing Status	Test Frequency
Boiler Stack	NO_x	*	@
	CO	*	@

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the AO for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen Oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon Monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent

sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)

B. 141,000 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period

B. 57,500 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calendar months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this AO or in an applicable new source performance standard (NSPS), which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Examples of records to be kept at this source shall include the following as applicable:

A. Fuel consumption
B. Test results

16. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_x	18.98
D.	CO	20.05
E.	VOC	1.86

These calculations are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	Tons/yr
A.	Particulate	4.48
B.	SO_2	15.96
C.	NO_x	18.98
D.	VOC	1.86

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

Hill Air Force Base
Construction of Two Boilers In Bldg 1590 an Two Boilers in Bldg. 1703)

Filing Fee	$	1000.00
Review Engineers @ $50.00/hr	$	0.00*
Modeler hours @ $50.00/hr	$	0.00*
Computer Fee	$	0.00*
Notice To Paper	$	0.00*
Travel . miles @ $0.23/mile	$	0.00
Total Charges	$	1000.00
Amount Paid to Date	$	0.00
Balance Due	$	1000.00

* **These costs are included in the Filing Fee.**

Please remit a copy of this invoice with your payment.

Please send payment to:

Utah Division of Air Quality
150 North 1950 West
Salt Lake City, Utah 84114-8420
(801) 536-4000

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

RE: Notice of Intent to Construct Two Boilers in Building 1590 and Two Boilers in Building 1703
Davis County, CDS B; NA; NSPS

ENGINEER: Arjun Ram

DATE: January 19, 1995

NOTICE OF INTENT DATED: December 22, 1994

PLANT CONTACT: Mr. Andreas Zekorn

PHONE NUMBER: (801) 777-0359
FAX NUMBER (801) 777-4306

PLANT LOCATION: Building 1590 (2 boilers) and Building 1703 (2 boilers), Hill Air Force Base

UTM COORDINATES: Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

FEES:

Basic Approval Order Fee	$1000.00
Review Engineer - XXXX total hours at $50.00/hour	$000.00
Modeler - XXXX hours at $50.00/hour	$000.00
Notice To Paper	$000.00
Travel - 00 miles at $0.23/mile	$000.00
TOTAL	**$1000.00**

APPROVALS:
Review Engineer _____ 2/2/95
(Signature & Date)

F:\AQ\ENGINEER\ARAM\WP\AO\HAFB_BOI.AO

TYPE OF IMPACT AREA

Attainment or Non-Attainment . . . . . Non-Attainment
Non-Attainment Pollutants . . . . . PM10 SOx Ozone CO

NSPS Applies . . . . . yes
NSPS Subparts A and Dc apply to this source
NESHAP Applies . . . . . no

Toxic Pollutants . . . . . no
Toxic Major Source . . . . . no
[> 10 tpy of any one Hazardous Air Pollutant(HAP) of > 25 tpy of any combination of HAPs]

New Major Source . . . . . no
Major Modification . . . . . no
PSD Permit . . . . . no
PSD Increment . . . . . no
(modeling)

Send to EPA . . . . . no

Operating Permits Program . . . . . yes (NSPS applies)
Title V Major Source . . . . . no
Process Path . . . . . Regular AO Processing

EMISSIONS SUMMARY

Total Emissions for 2 Boilers to be Installed in Building 1590, Each Rated at 27.6 MMBTU/HR

Pollutant	rate(tpy)
PM_{10}	3.18
SO_2	11.34
NO_x	13.49
CO	14.24
VOC	1.32

Total Emissions for 2 Boilers to be Installed in Building 1590. Each Rated at 11.25 MMBTU/HR

Pollutant	rate(tpy)
PM_{10}	1.30
SO_2	4.62
NO_X	5.50
CO	5.80
VOC	0.54

Total Emissions from this Project for the 4 Boilers Summarized in the Above Tables to be Installed in Buildings 1590 and 1703

Pollutant	rate(tpy)
PM_{10}	4.48
SO_2	15.96
NO_X	18.98
CO	20.05
VOC	1.86

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. This project does not result in an increase in actual emissions from the boilers and therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_X, 18.98 tons per year NO_X, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_X technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology for this project.

I. DESCRIPTION

A. This Review/Approval Order is for the installation of two natural gas-fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas-fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. Provisions are included for the use of fuel oil as a backup fuel. This will be limited in the Approval Order (AO) to less than 200 hours per year.

B. The primary pollutants of concern are nitrogen oxides (NO_X) and carbon monoxide (CO). Nitrogen oxides are formed at high temperatures when atmospheric nitrogen combines with atmospheric oxygen. CO is a product of incomplete combustion due to a lack oxygen, low residence time, or poor mixing.

II. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT for the boilers covered under this review (from previously established BACT guidelines, stated in the generic permit review for boilers) is determined to be:

1. An opacity limitation of 10% shall apply to the boiler stack.

2. The NOI states that the boilers can meet NO_x emission limit (concentration) of less than 40 ppm. which is as stringent as is required of a 100 MMBTU/HR boiler according to the following equation:

$$NO_x\ ppm \leq (82.105 - 0.4211 \times (Boiler\ \ Rating))$$

where:

NO_x ppm = NO_x limitation corrected to 3% Oxygen
Boiler Rating = Rating in 10^6 BTU/HR

3. Natural gas or Liquid Petroleum Gas (LPG) shall be used as the primary fuel. Number 2 fuel oil or cleaner fuel shall be used as a backup fuel.

III. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC)

This review is for a new minor source or minor modification. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this source category:

1. R307-1-3.1, UAC - Notice of Intent required for a new source, modified source, or a new piece of control equipment. This rule applies.

2. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for natural gas fuel burning equipment with a rated capacity of less than 5 x 10^6 BTU per hour. This rule does not apply because the boilers are rated at more than 5 MMBTU/HR.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications that would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. Offsets are not required because the four new boilers are going to replace four existing boilers which have actually been emitting pollutants to the airshed. The new boilers would have low-NO_x technology, and therefore, they would emit less pollutants than the existing boilers.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year but less than 50 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. Offsets are not required because the four new boilers are going to replace four existing boilers which have actually been emitting pollutants to the airshed. The new boilers would have low-NO_x technology, and therefore, they would emit less pollutants than the existing boilers.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990.

   If a Notice of Intent is received for a replacement, the definition of Low-NO_X is:

   $$limit[ppm] = 82.1 - (boiler\ rating[MMBTU/HR] * 0.421)$$

   where the limit is given in ppm corrected to 3% O_2 and applies to natural gas fired external combustion equipment rated at or below 100 MMBTU/HR heat input.
   This NOI meets the requirements of this rule. The boilers would emit less 40 ppm NO_x.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. This source is not in a non-attainment area for PM_{10} and PM_{10} is not a pollutant of concern for emissions from natural gas fired boilers.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary.

This rule applies to Hill Air Force Base as a part of their annual emission inventory reporting requirements for major sources. The emissions from these boilers will be included as a part of the base-wide emissions inventory.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP			
	Three Hour	24 Hour	Annual
Class I Area		**10 $\mu g/m^3$**	**5 $\mu g/m^3$**
Class II Area		**37 $\mu g/m^3$**	**19 $\mu g/m^3$**
SO_2			
Class I Area	**25 $\mu g/m^3$**	**5 $\mu g/m^3$**	**2 $\mu g/m^3$**
Class II Area	**512 $\mu g/m^3$**	**91 $\mu g/m^3$**	**20 $\mu g/m^3$**
NO_X			
Class I Area			**2.5 $\mu g/m^3$**
Class II Area			**25 $\mu g/m^3$**

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling (Tons per Year)		
	Nonattainment Areas	Attainment Areas
TSP	10	10
PM_{10}	5	5
SO_2	10	20
NO_X	20	20
CO	25	50
VOC	10	20
O_3	5	5

Generic scenarios were modelled for the largest size (100 MMBTU/HR) using worst case assumptions for stack gas temperature, stack dimensions, and meteorology. No increment violations were shown to occur as a result of the addition of a boiler using Low NO_x technology.

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations that occur in the state. No known violation has yet occurred. A typical 100 MMBTU/HR boiler was modelled for increment consumption. Any boiler rated at or less than 100 MMBTU/HR would not consume more than the following increment at the points of maximum impact:

A. TSP annual . . . . . 0.09 $\mu g/m^3$
B. TSP 24 hr . . . . . 0.37 $\mu g/m^3$
C. SO_2 3 hr . . . . . 0.04 $\mu g/m^3$
D. SO_2 24 hr . . . . . 0.02 $\mu g/m^3$
E. SO_2 annual . . . . . 0.00 $\mu g/m^3$
F. NO_x annual . . . . . 0.54 $\mu g/m^3$

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This review does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, an opacity limitation of 10% is recommended as BACT.

18. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This source will be permitted to burn #2 fuel oil or lighter better as a backup fuel. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input.

20. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule, two or more emission points that may interfere with VEO's, shall install an opacity monitor on each stack.

    This source is not required to install CEMs.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the Executive Secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written

report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule covers specific processes. Boilers are not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule requires the Executive Secretary to determine the stage and extent of an air pollution episode based on pollution levels and meteorological conditions. Under section 40 of the Code of Federal Regulations, part 51, subparts 150 and 151, it is required that sources plan emergency measures based upon the severity of the Non-Attainment area in which they operate. In Utah, these rules require that CO sources in CO Non-Attainment areas and sources of Ozone precursors in Ozone Non-Attainment ares, who emit 25 tons per year or more, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. (Some sources are required to submit an emergency episode plan in the PM_{10} SIP).

HAFB is not located in a CO non-attainment area. For Ozone precursors, a basewide plan should be available/submitted.

24. New Source Performance Standards (NSPS) - 40 CFR 60.40c to 60.48c, NSPS, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units - The effective date is June 9, 1989. An affected facility is each steam generating unit for which construction, modification, or reconstruction commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 million BTU/hr or less, but greater than 10 million BTU/hr. The standards are as follows:

Sulfur Dioxide

If coal is the only fuel, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain SO_2 in excess of 10% of the potential SO_2 emission rate (90% reduction)

B. Contain SO_2 in excess of 1.20 lb per million BTU heat input

If oil is the only fuel, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain SO_2 in excess of 0.50 lb per million BTU heat input

B. As an alternative - No owner/operator shall combust oil that contains greater than 0.50% sulfur by weight. Percent reduction requirements are not applicable. This requirement applies.

The SO_2 emission limits, fuel oil sulfur limits, and percent reduction requirements apply at all times, including periods of start-up, shutdown, and malfunction.

There is no limit for natural gas fired boilers.

Particulate

If coal is the only fuel (or coal with other fuels) and the heat input is 30 million BTU/hr or greater, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain TSP in excess of 0.05 lb per million BTU heat input (coal only or coal with other fuels) and has an annual capacity factor for the other fuels of 10% or less

B. Contain TSP in excess of 0.10 lb per million BTU heat input (coal only or coal with other fuels) and has an annual capacity factor for the other fuels of greater than 10% and is subject to a federally enforceable requirement limiting operation to an annual capacity factor greater than 10% for fuels other than coal

If wood is the only fuel (or wood with other fuels except coal) and the heat input is 30 million BTU/hr or greater, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain TSP in excess of 0.10 lb per million BTU heat input (wood only or wood with other fuels except coal) and has an annual capacity factor for wood greater than 30%

B. Contain TSP in excess of 0.30 lb per million BTU heat input (wood only or wood with other fuels except coal) and has an annual capacity factor for wood of 30% or less and is subject to a federally enforceable requirement limiting operation to an annual capacity factor for wood of 30% or less

There is no limitation for natural gas fired equipment.

Opacity

No owner/operator that combusts coal, wood, or oil and has a heat input capacity of 30 million BTU/hr or greater shall cause to be discharged into the atmosphere any gases that exhibit 20% opacity or greater, except for one six minute period per hour of not more than 27% opacity.

The TSP and opacity standards apply at all times, except during periods of start-up, shutdown, and malfunction.

There is no limitation for natural gas fired equipment.

Testing (Methods are found in 40 CFR, Part 60, Appendix A)

If only coal, only oil, or a mixture of coal and oil is combusted, the procedures in Method 19 are used to determine the hourly SO_2 emission rate.

For TSP, the following methods shall be used:

Method 1 shall be used to select the sampling site and the number of sampling points. The sampling time for each run shall be at least 120 minutes and the minimum sampling volume shall be 60 dscf.

Method 3 shall be used for gas analysis when applying Method 5, 5B, or 17.

Method 5, 5B, or 17 shall be used as follows:

A. Method 5 may be used only at facilities without wet scrubber systems.

B. Method 17 may be used at facilities with or without wet scrubbers, provided the stack gas temperature does not exceed 320°F.

C. Method 5B may be used in conjunction with a wet scrubber system.

D. Method 9 shall be used for determining opacities.

Monitoring

The owner/operator of an affected facility subject to the SO_2 limits in 60.42c shall install and operate a CEM for measuring SO_2 concentrations and either O_2 or CO_2 at the outlet of the SO_2 control device or at the stack outlet. The owner/operator of an affected facility subject to the percent reduction requirements shall install and operate a CEM for measuring SO_2 concentrations and either O_2 or CO_2 at both the inlet and outlet of the SO_2 control device.

The owner/operator of an affected facility combusting coal, residual oil, or wood that is subject to the opacity standards shall install and operate a CEM for measuring the opacity.

Record keeping requirements

Natural gas-fired boilers rated at or less than 100 MMBTU/HR but more than 10 MMBTU/HR have only one requirement under this NSPS. Subsection 60.48c contains the reporting and record keeping requirements for affected facilities. Paragraph g of this Subsection requires:

> "(g) The owner or operator of each affected facility shall record and maintain records of the amount of fuel combusted during each day".

Under this requirement "each boiler" must have an individual "fuel use meter" to determine how much fuel that boiler used each day to be in compliance with Paragraph (g). This requirement applies.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This permit can be used throughout the state of Utah. Within the state, we have the following non-attainment areas:

Salt Lake County, which is a nonattainment area for PM_{10}, SO_2, ozone, and CO (Salt Lake City only).
Utah County, which is a nonattainment area for PM_{10} and CO (Provo City only).
Davis County, which is a nonattainment area for PM_{10} and ozone.
Tooele County, which is a nonattainment area for SO_2 in the eastern mountains above 5600 feet.
Weber County, which is a nonattainment area for CO (Ogden only).

All other areas are in attainment for all pollutants.

This source has been modeled as a 100 MMBTU/HR source for TSP, PM_{10}, SO_2, NO_X, ozone, CO. The scenario included 200 hours per year of #2 fuel oil combustion. The increases are listed below. Backgrounds are in addition to these values. The results are as follows:

Pollutant	Flow Rate (g/s)	Averaging Time	Maximum Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	0.288	24-HR	0.37	150	0.24
		ANNUAL	0.09	50	0.18
NO_2	1.701	ANNUAL	0.54	100	0.54
SO_2	0.0126	3-HR	0.04	1300	0.00
		24-HR	0.02	365	0.00
		ANNUAL	0.00	80	0.01
CO	1.281	1-HR	4.07	40000	0.01
		8-HR	2.85	10000	0.03
VOC as O_3	0.0585	1-HR	0.19	235	0.08

For VOC emissions, there is no model that can predict an ozone impact directly from VOC emissions. However, since VOC are precursors to ozone formation, this new source will contribute to the existing exceedances of the ozone standard in Davis County. The amount of that contribution has not been decided. The ozone nonattainment area of Davis and Salt Lake Counties must show reasonable further progress toward attainment of the standard. This source, along with all other VOC sources having emissions above ten tons per year, may have to apply more controls to lower the VOC emissions. This would be a SIP change action.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

1) Maintenance, repair, and replacement

2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternate fuel or raw material if. before the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This review might be used for modifications.

The NOI does not represent a modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

2) It is technologically and economically feasible to meet the applicable standards set forth in this part

This review will generally not be used for a reconstruction, however, R307-1-3.1.12, UAC, requires the installation of Low NO_x burners whenever burners are replaced. The NOI does not represent a reconstruction. However, the boilers will have Low NO_x burners installed.

29. R307-1-1, Definition of Major Modification - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This rule does not apply.

RECOMMENDED APPROVAL ORDER CONDITIONS

General Conditions:

1. This Approval Order (AO) applies to the following company:

Department Of The Air Force
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137
Phone Number: (801) 777-0359
Fax Number: (801) 777-4306

The equipment listed below in this AO shall be operated at the following location:

LOCATION
UTM COORDINATES:
Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this Approval Order (AO) shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590;
   B. Two boilers (rated at 11.25 MMBTU/HR) and associated equipment in Building 1703.

Hill Air Force Base shall submit to DAQ, the Manufacturer's Name, Boiler's Model and Serial Number (or equivalent information that will enable proper

identification of the boilers), for each of the boilers approved by this Condition, before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Limitations and tests procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (The lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	1.33	40
CO	1.21	60

Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A.

Emission Point	Pollutant	Testing Status	Test Frequency
Boiler Stack	NO_x	*	@
	CO	*	@

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the Approval Order for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric flow rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)
B. 141,000 gallons of fuel oil to be burned per 12-month period
C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period
B. 57,500 gallons of fuel oil to be burned per 12-month period
C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calender months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an Approval Order shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this Approval Order, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

    The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this Approval Order or in an applicable NSPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Examples of records to be kept at this source shall include the following as applicable:

    A. Fuel consumption

B. Test results

16. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as; pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, CEMs, etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/ operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this Approval Order. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approv . in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	CO	20.05
E.	VOC	1.86

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	tons/yr
F.	Particulate	4.48
G.	SO_2	15.96
H.	NO_x	18.98
I.	VOC	1.86

FAX COVER SHEET

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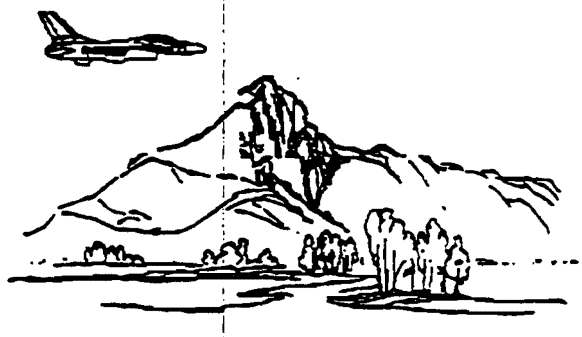


From: Air Quality

Andreas Zekorn
Environmental Management Directorate
OO-ALC/EME
7274 Wardleigh Road
Hill AFB,UT 84056-5137

Tel: Commercial 801-777-0359
DSN 458-0359
Fax:Commercial 801-777-4306

Date:31 Jan 95

To:
Name: **Arjun Ram**
Organization:
Division of Air Quality
Fax No.: **(801) 536-4099**

Message:

Hi Arjun

Here are the calculation for the boilers in Building 1590 and Building 1703. We have an decrease in emissions for the boilers in Building 1703 and almost the same emissions in Building 1590 so that we have over all a decrease in emissions for this NOI.

ANDREAS ZEKORN

Total number of pages including cover sheet: 5

Boilers Building 1590

Heatinput 27,600,000.00 BTU/hr
Operating Hours 8760 hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	81.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr 27600 SCF/hr
Consumption/yr 241,776,000 SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	3312.3	145.1	19583.9	14748.3	673.1
tons/yr	1.66	0.07	9.79	7.37	0.34

NOx Emissions

Limit 40 ppm Operation 8760 hr

Conversion ppm-lb/MMBTU 0.048 lb/MMBTU
Calculation lb/hr 1.065 lb/hr
Calculation lb/yr 9332.7 lb/yr
Calculation tons/yr 4.67 tons/yr

Total emissions from both boilers

PM	6624.7 lb/yr	3.31 tons/yr +1.34
SOx	290.1 lb/yr	0.15 tons/yr
NOx	18665.5 lb/yr	9.33 tons/yr -3.77
CO	29496.7 lb/yr	14.75 tons/yr +5.96
HC	1346.2 lb/yr	0.67 tons/yr

+3.53 + SOx emissions increase due to natural #2 fuel oil combustion

Boilers Building 1590(Old Boilers)

Heatinput	16,450,000.00	BTU/hr
Operating Hours	8760	hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	140.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	16450	SCF/hr
Consumption/yr	144,102.000	SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1974.2	86.5	20174.3	8790.2	401.2
tons/yr	0.99	0.04	10.09	4.40	0.20

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048	lb/MMBTU
Calculation lb/hr	0.635	lb/hr
Calculation lb/yr	5562.4	lb/yr
Calculation tons/yr	2.78	tons/yr

Total emissions from both boilers

PM	3948.4 lb/yr	1.97 tons/yr
SOx	172.9 lb/yr	0.09 tons/yr
NOx	11124.9 lb/yr	5.56 tons/yr
CO	17580.4 lb/yr	8.79 tons/yr
HC	802.4 lb/yr	0.40 tons/yr

Boilers Building 1703

Heatinput 11,250,500.00 BTU/hr
Operating Hours 8760 hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	81.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr 11250.5 SCF/hr
Consumption/yr 98,554,380 SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1350.2	59.1	7982.9	6011.8	274.4
tons/yr	0.68	0.03	3.99	3.01	0.14

NOx Emissions

Limit 40 ppm Operation 8760 hr

Conversion ppm-lb/MMBTU 0.048 lb/MMBTU
Calculation lb/hr 0.434 lb/hr
Calculation lb/yr 3804.3 lb/yr
Calculation tons/yr 1.90 tons/yr

Total emissions from both boilers

PM	2700.4 lb/yr	1.35 tons/yr
SOx	118.3 lb/yr	0.06 tons/yr
NOx	7608.5 lb/yr	3.80 tons/yr
CO	12023.6 lb/yr	6.01 tons/yr
HC	548.8 lb/yr	0.27 tons/yr

Boilers Building 1703(Old Boilers)

Heatinput	10,257,000	BTU/hr
Operating Hours	8760	hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	140.0	6[illegible]	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	10257	SCF/hr
Consumption/yr	89,851,320	SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1231.0	53.9	12579.2	5480.9	250.1
tons/yr	0.62	0.03	6.29	[illegible]	0.13

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048	lb/MMBTU
Calculation lb/hr	0.396	lb/hr
Calculation lb/yr	3468.3	lb/yr
Calculation tons/yr	1.73	tons/yr

Total emissions from both boilers

PM	2461.9 lb/yr	1.23 tons/yr
SOx	107.8 lb/yr	0.05 tons/yr
NOx	6936.7 lb/yr	3.47 tons/yr
CO	10961.9 lb/yr	5.48 tons/yr
HC	500.3 lb/yr	0.25 tons/yr

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

22 Dec 1994

OO-ALC/EM
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City Ut 84114-4820

Re: Notice of Intent to construct two replacement boilers in Building 1590 and two replacement boilers in Building1703

Dear Mr. Roberts

We submit this Notice of Intent to receive approval to begin construction of two replacement boilers in Building 1590 and two replacement boilers in Building 1703.

Description

Building 1590
Two of the four existing boilers in Building 1590 with AQUIS numbers 3524 and 3525 are to be replaced by two Low NOx Watertube Steam Boilers with a maximum steam capacity of 23,000 lbs/hr each. This converts to 27.6 MMBTU boiler heat input.

Conversion lb steam/hr to BTU/hr
23000 lb/hr x 1.2 x 10^3 = 27,600,000 BTU/hr *
* conversion factor according to AP 42 Appendix A

Both boilers run primarily with natural gas with #2 fuel oil as a backup fuel. Each boiler is connected to a stack as shown in Atch. 1.

Building 1703
Two existing boilers in Building 1703 are to be replaced with two Low NOx Wetback Fire Tube Boilers with a steam capacity of 8625 lbs/hr or a capacity of 250 hp.

Conversion hp to BTU/hr
250 hp x 45000 BTU/ hp hr = 11,250,500 BTU/hr *
* conversion factor according to AP 42 Appendix A

Both boilers run primarily with natural gas with #2 fuel oil as a backup fuel. Each boiler is connected to a stack as shown in Atch. 2.

Emissions

AP 42 Emission factors for natural gas combustion (Table 1.4-1 to 1.4-3)
(TTN Bulletinboard AP 42)

Emission factors (Low NOx Burner)

Filterable PM	6.2 lb/10^6 ft^3
Condensible PM	7.5 lb/10^6 ft^3
Sulfur dioxide	0.6 lb/10^6 ft^3
Nitrogen oxides	81 lb/10^6 ft^3
Carbon monoxide	61 lb/10^6 ft^3
Total Organic Compounds	5.8 lb/10^6 ft^3

Total Particulate is the sum of the filterable PM and condensible PM. All PM emissions can be assumed to be less than 10 microns. Methane comprises 52 percent of organic compounds. The Non Methane VOC emission factor is: 2.784

Emissions for the boilers are calculated as follows:

Heat input		HHV natural gas		thermal effiency	operating hours		emission factors		emissions
BTU/hr	x	1/1000 SCF/BTU	x	0.80 x	8760 hrs/yr	x	lb/SCF	=	lb/yr

Air emissions from two replacement boilers in Building 1590 are each:

Particulate	3312.3 lb/yr
Sulfur dioxide	145.1 lb/yr
Carbon monoxide	14748.3 lb/yr
VOC Nonmethane	673.1 lb/yr

As a Low NOx Burner is to be installed, the emission limit is 40 ppm NOx (corrected to 3% Oxygen). The calculations for NOx are as follows:

Conversion ppm to lb/MMBTU
40 ppm / 829 = 0.048 lb/MMBTU

Calculation of hourly emissions:
0.048 lb/MMBTU * 27.6 MMBTU/hr * 0.80 [a)] = 1.065 lb/hr
[a)]Thermal effiency is 80 %

Potential to emit for NOx is:
1.065 lb/hr * 8760 hr/yr = 9332.7 lb/yr
= 4.67 tons/yr

Total emissions from both boilers in Building 1590 are:

Particulate	6624.7 lb/yr	3.31 tons/yr
Sulfur dioxide	290.1 lb/yr	0.15 tons/yr
Carbon monoxide	29496.7 lb/yr	14.75 tons/yr
VOC Nonmethane	1346.2 lb/yr	0.67 tons/yr
NOx	~~18665.4~~ lb/yr	~~9.33~~ tons/yr

With installation of two Low NOx burners in Building 1590 we will reduce NOx emissions by 53%.

Building 1703

Emission factors and calculation methods are the same as for Building 1590.

0.048 lb/MMBTU * 11.3 MMBTU/hr * 0.80 = 0.434 lb/hr

Both boilers in Building 1703 will run 8760 hr/yr.

0.434 lb/hr * 8760 hr/yr = 3801.1 lb/yr
= 1.90 tons/yr

Total emissions from both boilers in Building 1703 are:

Particulate	2700.4 lb/yr	1.35 tons/yr
Sulfur dioxide	118.3 lb/yr	0.06 tons/yr
Carbon monoxide	12023.6 lb/yr	6.01 tons/yr
VOC Nonmethane	548.8 lb/yr	0.27 tons/yr
NOx	~~7608.5~~ lb/yr	~~3.80~~ tons/yr

With installation of two Low NOx burners in Building 1703 we will reduce NOx emissions by 70%.

Air cleaning devices
No additional air cleaning devices will be installed.

Location
UTM coordinates are not available for Building 1590 and 1703.
Longitude and latitude for the Buildings are:

	Building 1590	Building 1703
Longitude	112:00:32.38	112:01:19.66
Latitude	41:07:55.70	41:08:31.87

Operating Schedule
Both boilers in Building 1703 will run 8760 hours per year. The two boilers in Building 1590 will be shut down in summer.

Construction Schedule
The construction is scheduled for all boilers as follows:

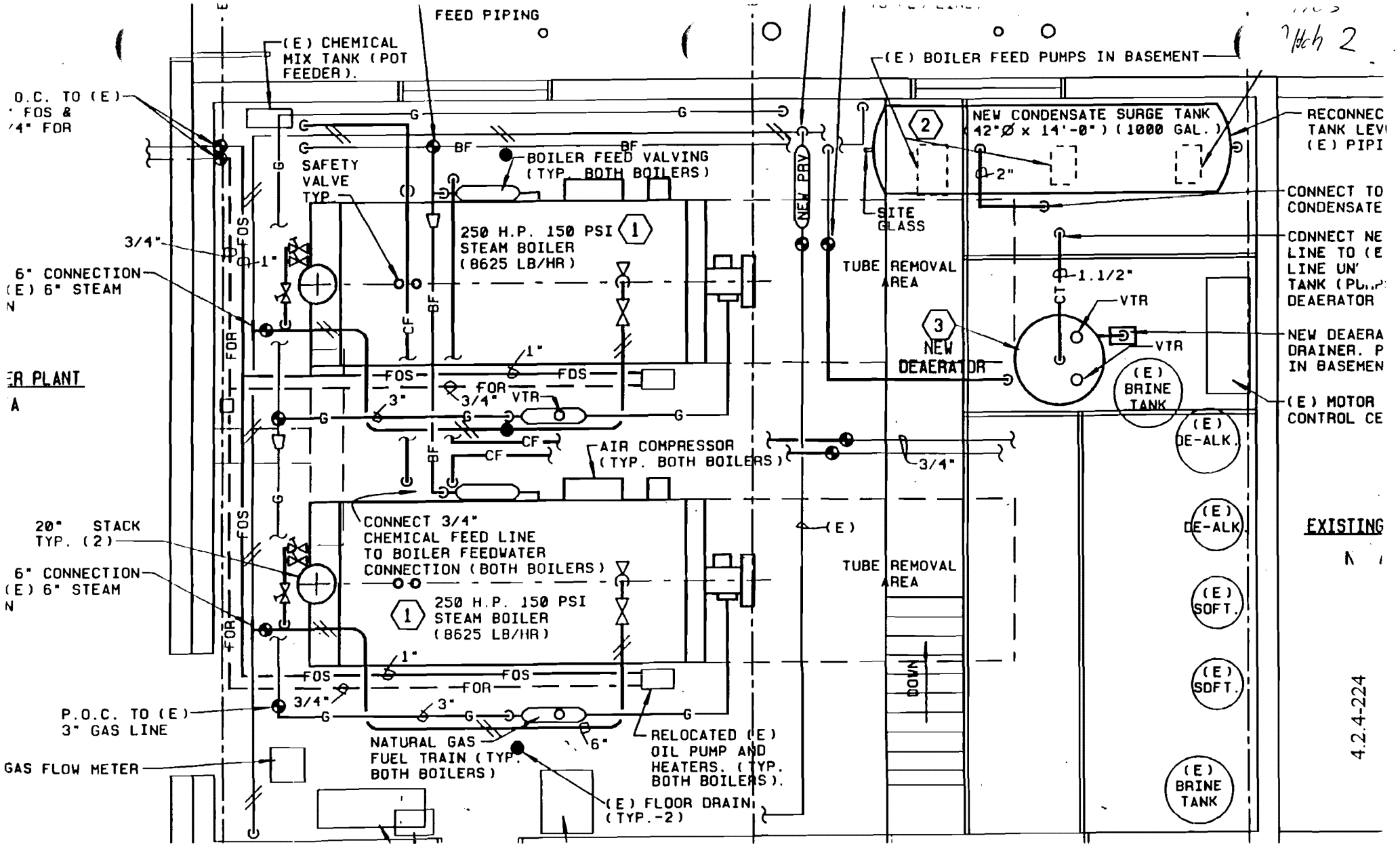
Start construction:	February 1995
End construction:	October 1995
Start up boiler:	October 1995

If you have any questions, please call Mr. Andreas Zekorn at 777-0359.

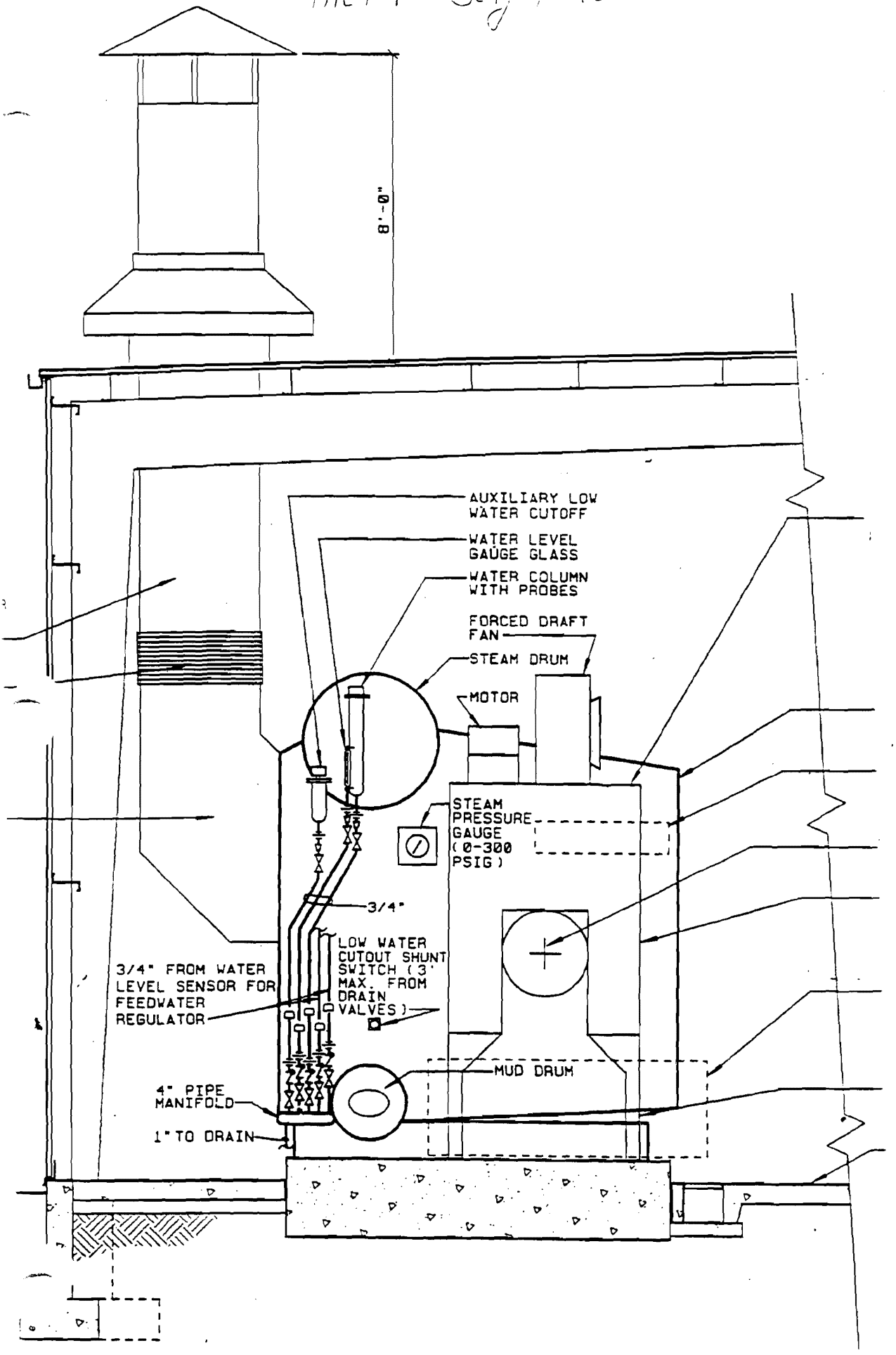
Sincerely

W. ROBERT JAMES
Acting Director of Environmental Management

Attachments:
1. Plan of boiler in Bldg 1590
2. Plan of boilers in Bldg 1703


FEED PIPING
(E) CHEMICAL MIX TANK (POT FEEDER).
(E) BOILER FEED PUMPS IN BASEMENT
O.C. TO (E) FOS & 4" FOR
SAFETY VALVE TYP
BOILER FEED VALVING (TYP. BOTH BOILERS)
NEW PRV
NEW CONDENSATE SURGE TANK 42"Ø x 14'-0" (1000 GAL.)
2"
SITE GLASS
RECONNEC TANK LEV (E) PIPI
CONNECT TO CONDENSATE
CONNECT NE LINE TO (E LINE UN' TANK (PU... DEAERATOR
250 H.P. 150 PSI STEAM BOILER (8625 LB/HR)
1
3/4"
1"
6" CONNECTION (E) 6" STEAM
TUBE REMOVAL AREA
1.1/2"
VTR
3
NEW DEAERATOR
NEW DEAERA DRAINER. P IN BASEMEN
(E) BRINE TANK
(E) MOTOR CONTROL CE
ER PLANT
A
FOS
FOR
CF
BF
3"
AIR COMPRESSOR (TYP. BOTH BOILERS)
CONNECT 3/4" CHEMICAL FEED LINE TO BOILER FEEDWATER CONNECTION (BOTH BOILERS)
(E)
DE-ALK.
EXISTING
20" STACK TYP. (2)
6" CONNECTION (E) 6" STEAM
TUBE REMOVAL AREA
(E) SOFT.
DOWN
P.O.C. TO (E) 3" GAS LINE
NATURAL GAS FUEL TRAIN (TYP. BOTH BOILERS)
RELOCATED (E) OIL PUMP AND HEATERS. (TYP. BOTH BOILERS).
GAS FLOW METER
(E) FLOOR DRAIN (TYP.-2)
4.2.4-224

Htch 1 Sldg 1-90



BOILER ELEVATION

6

4.2.4-225

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
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Russell A. Roberts
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Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

August 27, 1993

DAQE-0752-93

James R. Van Orman
Director of Environmental Management
DOO-ALC/EM
7276 Wardlegih Road
Hill Air Force Base, Utah 84056-5127

Re: Modified Approval Order for:
A. Replacement Boilers in Buildings 1624, 1904, 2104, 2203
B. Paint Spray Booth in Building 751
C. Carbon Brake Coating Process in Building 507
Davis County CDS A1 NA

Dear Mr. Van Orman:

The Division of Air Quality received a letter dated June 1, 1993, requesting that condition 4E of the Approval Order (AO) DAQE-492-92 be modified. Condition 4E required that the boiler stack be tested at 90%, 70%, and 50% of the boilers capacity. This condition was changed to required testing at 90% of the boilers capacity. The new condition is now numbered 6E. Also, the generators listed in DAQE-492-92 are now consolidated in a separate AO (DAQE 719-93). Therefore, they have been deleted from this AO. This air quality AO authorizes the project with the following conditions. Failure to comply with any of the conditions may constitute a violation of this order.

1. Hill Air Force Base shall install and operate the following:

A. The boilers located in Buildings 1624, 1904, 2104, and 2203

B. The paint spray booth located in Building 751

C. The carbon brake coating process located in Building 507

These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991, and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; January 8, 1992, and June 1, 1993.

A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. This AO shall replace the AO dated May 22, 1992 (DAQE-492-92).

4. The approved installations shall consist of the following equipment:

   A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

   B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel.

   C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

   D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

5. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

   A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

      1) NO_x - 40 ppm at 7% oxygen; 0.24 lb/hr
      2) CO - 100 ppm at 7% oxygen

   B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

   C. Exhaust stack for carbon brake coating in Building 507 - Phosphorous Oxides - 1.33 lb/hr

6. Stack testing to show compliance with the emission limitations of condition #5 shall be performed as specified below:

A. Emission Point	Pollutant	Testing	Retest Status
1. Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
	CO	*/**	**

2.	Carbon brake coating exhaust in Bldg 507	PO_x	*/**	**

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #6.A.1. The steam production or operating rate during testing shall be set at 90% ± 10% of the boilers capacity.

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The gas sample shall be drawn according to the instructions of the test instrument being used.

2. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #5, at any one of the operating rates specified in condition 6E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #5.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated, it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" shall be determined to be a violation of this AO.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for two years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

7. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%	
B.	400 hp Boiler	Building	1904	10%	
C.	250 hp Boiler	Building	2104	10%	4.2.4-492

D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth	Building	751	10%
F.	Carbon brake furnace	Building	507	0%

Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply.

8. The emissions of VOC from paint spray booth in Building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month, a new 12-month total shall be calculated using the previous 12 months. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

9. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

10. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

11. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

13. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this AO, the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time, the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC
6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. Except for VOC, they are not to be used for purposes of determining compliance.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:JR:sbq

cc: EPA Region VIII, Mike Owens

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

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Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

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(801) 536-4000
(801) 536-4099 Fax
(801) 538-6621 T.D.D.

Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

Memorandum To: Lynn Menlove, New Source Review Manager

From: Julie A. Rose, Engineering Technician

Subject: Modify Approval Order for HAFB (DAQE-492-92)

Date: August 16, 1993

==========

On June 1, 1993, James Van Orman of HAFB wrote a letter to DAQ requesting that AO DAQE-492-92 be modified. Condition 4E of this AO reads as follows:

4. Stack testing to show compliance with the emission limitations of condition #3 shall be performed as specified below:

   E. Operating Rate

   Each boiler stack shall be tested in accordance with the schedule in Condition #4.A.1. The steam production or operating rate during testing shall be set at the following rates for testing:

   1) 90% ± 10% of the boiler's capacity
   2) 70% ± 10%
   3) 50% ± 10%

In order to ramp the boilers to specified load levels and stabilize them for 5 minutes before commencing a test, HAFB has to add the by-pass exhaust ports and exhaust from 1,000 to 9,000 lbs of steam per hour. It takes approximately 3-4 hours per boiler to complete a test at the specified loads, during which time, the steam and energy is wasted and venting steam creates a very noisy atmosphere. This also does not constitute economical operation.

These boilers may run close to 90% load during the winter months; however, during the summer months, they may run at 40%-50% load or totally shut down.

HAFB is requesting that the operating rates in condition 4E be deleted to allow testing at the existing load conditions and firing rates.

I recommend that the condition 4E be changed to require testing at at least 90% of the boilers capacity. This will allow HAFB to operate at the boilers maximum capacity. The attached letter should be sent.

James R. Van Orman
Director of Environmental Management
OOALC/EM
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

Re: Modified Approval Order for:
A. Replacement Boilers in Buildings 1624, 1904, 2104, 2203
B. Paint Spray Booth in Building 751
C. Carbon Brake Coating Process in Building 507
Davis County CDS A1 NA

Dear Mr. Van Orman:

The Division of Air Quality received a letter dated June 1, 1993, requesting that condition 4E of the Approval Order (AO) DAQE-492-92 be modified. Condition 4E required that the boiler stack be tested at 90%, 70%, and 50% of the boilers capacity. This condition was changed to required testing at 90% of the boilers capacity. THe new condition is now numbered 6E. Also, the generators listed in DAQE-492-92 are now consolidated in a separate AO (DAQE 719-93). Therefore, they have been deleted from this AO. This air quality AO authorizes the project with the following conditions. Failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install and operate the following:

   A. The boilers located in Buildings 1624, 1904, 2104, and 2203

   B. The paint spray booth located in Building 751

   C. The carbon brake coating process located in Building 507

   These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991, and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; January 8, 1992, and June 1, 1993.

   A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. This Approval Order shall replace the Approval Order dated May 22, 1992 (DAQE-492-92).

4. The approved installations shall consist of the following equipment:

   A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

   B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel

   C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

   D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

5. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

   A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

      1) NO_x - 40 ppm at 7% oxygen; 0.24 lb/hr
      2) CO - 100 ppm at 7% oxygen

   B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

   C. Exhaust stack for carbon brake coating in Building 507 - Phosphorous Oxides - 1.33 lb/hr

6. Stack testing to show compliance with the emission limitations of condition #5 shall be performed as specified below:

A.	Emission Point	Pollutant	Testing	Retest Status
1.	Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
		CO	*/**	**
2.	Carbon brake coating			

exhaust in Bldg 507	PO_x	*/**	**

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #6.A.1. The steam production or operating rate during testing shall be set at 90% ± 10% of the boilers capacity.

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The gas sample shall be drawn according to the instructions of the test instrument being used.

2. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #5, at any one of the operating rates specified in condition 6E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #5.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair, shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" shall be determined to be a violation of this AO.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for two years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

7. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%

B.	400 hp Boiler	Building	1904	10%
C.	250 hp Boiler	Building	2104	10%
D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth	Building	751	10%
F.	Carbon brake furnace	Building	507	0%

Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15 second intervals over a six minute period shall not apply.

8. The emissions of VOC from paint spray booth in Building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

9. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

10. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

11. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmospnere. Equivalency shall be determined by the Executive Secretary.

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

13. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC

6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. Except for VOC, they are not to be used for purposes of determining compliance.

Sincerely,

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

01 JUN 1993

Mr F. Burnell Cordner
Director, Division of Air Quality
1950 West North Temple
P O Box 144820
Salt Lake City, UT 84114-4820

Re: Request for Minor Modification of Approval Order DAQE-492-92, 22 May 92, Replacement Boilers Bldgs 1624,1904, 2104, and 2203

Dear Mr Cordner

Condition 4. E. of the referenced Approval Order specifies testing each boiler stack at 90 percent, 70 percent and 50 percent of the boiler load. In order to ramp the boilers to the specified load levels and stabilize them for 5 minutes before commencing a test, we will have to add the by-pass exhaust ports and exhaust from 1,000 to 9,000 lbs of steam per hour. It takes us approximately 3-4 hours per boiler to complete a test at the specified loads, during which time, the steam and energy is wasted and venting steam creates a very noisy atmosphere. This also does not constitute economical operation.

These boilers may run close to 90 percent load during the winter months; however, during the summer months, they may run at 40-50 percent load or totally shutdown.

We request the operating rates in condition 4. E. be deleted to allow testing at the existing load conditions and the firing rates. If you have any questions, please feel free to contact Jay Gupta at 777-0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

4.2.4-505

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-127-92

February 7, 1992

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and the Deseret News on February 14, 1992.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84114-4820.

Sincerely,

Cheery Love

Cheery Love
Office Technician
Division of Air Quality

MK:cl

Enclosure

4.2.4-506

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, have been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. Kim Heimsath
   Mountain Fuel
   180 East 100 South
   Salt Lake City, Utah 84139

   Twelve Natural Gas Fired IC Engines at Six Stations; One Natural Gas Fired Emergency Generator
   Six Locations, all new minor sources in attainment areas

The emissions from these sources can be summarized as follows:

A) There are no existing emissions at any of the proposed locations.

B) Controlled and uncontrolled emissions are equal at all locations.

C) The emissions of NO_x and CO are the only pollutants of concern. Emissions of NO_x and CO are less than 20 TPY each at all of the proposed locations. Emissions of all other pollutants are negligible.

2. James R. Van Orman
   Headquarters Ogden Air Logistics Center
   Hill Air Force Base, Utah 84056-5990

   Replacement Boilers in Buildings 1624, 1904, 2104, 2203
   Paint Spray Booth in Building 751
   Carbon Brake Coating in Building 507
   Emergency Generators in Buildings 1212 and 1213
   Davis County CDS A1 NA

The emissions from the sources listed in this NOI will be as follows:

Total emissions from the boilers in Buildings 1624, 1904, 2104, and 2203:

Current Emissions

Particulate	0.16 ton/12-month period
PM_{10}	0.14
SO_2	0.04
NO_x	5.00
CO	1.00
VOC	0.24

New Total Emissions

Particulate	0.25 ton/12-month period
PM_{10}	0.22
SO_2	0.05
NO_x	5.09
CO	1.68
VOC	0.51

Total emissions from the paint spray booth in Building 751:

VOC	0.04 ton/12-month period

Total emissions from the Carbon Brake Coating Process:

PO_x	1.32 ton/12-month period

Total emissions from the Emergency Generators in buildings 1212, and 1213:

New Total Emissions for 2 Generators

Particulate	0.08 ton/12-month period
PM_{10}	0.07
SO_2	0.08
NO_x	1.34
CO	0.28
VOC	0.10
Aldehydes	0.02

The generators will each be run a maximum of 100 hours per 12-month period (for maintenance). The above inventory is relevant to the proposed facilities only in this NOI and not to all of HAFB.

3. John Cuthbertson

LDS Hospital

325 8th Avenue

Salt Lake City, Utah 84143

Boiler Replacement

Salt Lake County CDS B NA

The emissions from this source will be as follows:

Existing Emissions (including coal burning)

Particulate	6.18 ton/yr
PM_{10}	6.18
SO_2	156.90
NO_x	74.20
CO	31.40
VOC non meth	0.37

Increased (Decreased) Emissions

Particulate	(5.05) ton/yr
PM_{10}	(5.05)
SO_2	(154.40)
NO_x	(53.70)
CO	(24.00)
VOC non meth	0.82

Total Emissions

Particulate	1.13 ton/yr
PM_{10}	1.13
SO_2	2.48
NO_x	20.50
CO	7.39
VOC non meth	1.19

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84116-0690. Written comments received by the Division, at the same address on or before March 14, 1992 will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the projects.

Date of Notice: February 14, 1992

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Nando Meli Jr.
RE:	Replacement Boilers in Buildings 1624, 1904, 2104, 2203 Paint Spray Booth in Building 751 Carbon Brake Coating in Building 507 Emergency Generators in Buildings 1212 and 1213 Davis County CDS A1 NA
DATE:	January 21, 1992
NOTICE OF INTENT DATED:	July 30, 1991
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-6742
PLANT LOCATION:	Hill Air Force Base, Davis County

FEES:

Filing Fee	$1500.00
Computer Usage Fee	$000.00
Notice to Paper	$00.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$1500.00

APPROVALS:

Engineering Unit Manager _____ 1-21-92

Applicant Contact Made _____ 1-22-92

I. DESCRIPTION OF PROPOSAL

A. Replacement Boilers

Buildings 1624, 1904, 2104, and 2203 each have two existing boilers. One is 200 HP and the other one is 150 HP. An energy study has shown that if the larger boiler (200 HP) was to fail, then the mission essential load could not be entirely supplied by the smaller (150 HP) boiler. There will be no change to the 200 HP boilers.

HAFB proposes to replace the 150 HP boilers with new 250 HP boilers in Buildings 1624, 2104, and 2203. In Building 1904, the 150 HP boiler will be replaced with an existing 400 HP boiler which is presently idle. The new boilers will be Kewanee Classic III, 150 PSI, packaged scotch design firetube boilers or approved equal, capable of firing gas or oil.

Gas will be used as the primary fuel with #2 oil being used as the back-up fuel. Boiler data and dimensions are shown in Attachment #1 of the NOI. Design criteria for the boilers are as follows:

Data for each 250 hp Boiler

Boiler rating (each)	250 HP, three boilers required
Primary fuel	Natural Gas
Bask-up Fuel	#2 Oil
Steam Rate	8,625 lbs/hr
Total heat input	10.45 MM BTU/hr
Total heat output	8.37 MM BTU/hr
Thermal efficiency	80%
Fuel firing rate	Gas (1000 BTU/SCF) 174.16 SCFM 10,450 SCFH
	#2 Fuel Oil 140,000 BTU/Gal 74.4 GPH
Estimated stack gas volume	gas firing 4270 ACFM oil firing 4345
Flue gas temperature	465° F

Data for 400 hp Boiler

Boiler rating	400 HP
Primary fuel	Natural Gas
Bask-up Fuel	#2 Oil
Total heat input	16.74 MM BTU/hr
Thermal efficiency	80%
Fuel firing rate	Gas (1000 BTU/SCF) 18,414 SCFH
	#2 Fuel Oil 140,000 BTU/Gal 131.5 GPH

B. Paint Spray Booth

A small bench type paint spray booth measuring approximately 5'W x 7'H x 6'D, complete with paint arrestor filters, exhaust plenum, and a fan will be used to paint small aircraft instruments.

Paint usage in very small quantities (20-25 gallons per year) and very low VOC content will be used (less than 3.5 lbs VOC/gallon). At a face velocity of 150 feet per minute, exhaust volumetric flow rate in estimated to be 3500 SCFM. Vendor data on paint spray booth is Attachment 2 of the NOI.

C. Carbon Brake Coating

An existing electric furnace, not being used at the present time, will be used for baking Bendix P-11 coating on aircraft carbon discs in Building 507. The furnace measures approximately 3' x 3' x 6' deep. Six SCFM continuous nitrogen purge will be used. A small vent pipe will exhaust vapors to the atmosphere. P-11 coating decomposes on heating to form phosphorous oxides.

D. Emergency Generators

Two emergency generators (with a capacities of 200 KW and 125 KW) will be installed in Buildings 1212 and 1213. They will serve as a back-up power source to equipment in these buildings. A 1900 gallon above ground diesel fuel tank will be used as a fuel source.

II. EMISSION SUMMARY

The emissions from the sources listed in this NOI will be as follows:

Total emissions from the boilers in Buildings 1624, 1904, 2104, and 2203:

Current Emissions

Particulate	0.16 ton/12-month period
PM_{10}	0.14
SO_2	0.04
NO_x	5.00
CO	1.00
VOC	0.24

New Total Emissions

Particulate	0.25 ton/12-month period
PM_{10}	0.22
SO_2	0.05
NO_x	5.09
CO	1.68
VOC	0.51

Total emissions from the paint spray booth in Building 751:

VOC	0.04 ton/12-month period

Total emissions from the Carbon Brake Coating Process:

PO_x	1.32 ton/12-month period

Total emissions from the Emergency Generators in buildings 1212, and 1213:

New Total Emissions for 2 Generators

Particulate	0.08 ton/12-month period
PM_{10}	0.07
SO_2	0.08
NO_x	1.34
CO	0.28
VOC	0.10
Aldehydes	0.02

The generators will each be run a maximum of 100 hours per 12-month period. The above inventory is relevant to the proposed facilities only in this NOI and not to the entire HAFB. The total inventory for HAFB is not currently available.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required at all emission points. The following is a description of the pollution control equipment proposed and the recommendation of the Engineering Section:

Boiler Replacements

The emission points under review in this area are the boiler stacks. The Engineering Section recommends the following limitations as BACT for the new boilers:

A. NO_x - 40 ppm at 7% oxygen (measured as NO_2)

B. CO - 100 ppm at 7% oxygen

C. 10% opacity

The proposed Low-NOx natural gas fired boilers in buildings 1624, 2104, and 2203 are designed to meet these limitations. No other options were considered.

A cost analysis was done on retrofitting the proposed 400 hp boiler in building 1904 with a low NO_x burner. After reveiwing the cost analysis it was determined that it would not be cost effective to equip the boiler with a low NO_x burner.

Paint Spray Booth

The emissions from the paint spray booth will be controlled by using a paint arrestor filters with an opacity limit of 10%. A low VOC compliant paint, 3.5 lbs VOC/gallon or less, and a limit on the total VOCs is being recommended as BACT at this facility. The Engineering Section recommends the following limits as BACT:

A. 10% opacity

B. VOC emissions from booth limited to 0.04 ton/yr

Carbon Brake Coating

Hill AFB has indicated in their NOI that there will be no controls on the emissions to the atmosphere from the carbon brake coating process in Building 507.

Screening type modeling was submitted by HAFB that indicated the emission concentration would be 0.011 mg PO_x/m^3 at the property line, located 150 meters from Building 507. The Threshold Limit Value for phosphoric acid is 1 mg/m^3. This value was divided by 100 to give an acceptable limit value for a unhealthy person of 0.010 mg/m^3. Due to the conservative nature of modeling, the Engineering Section recommends that this process be accepted with no controls on the emissions with 0% opacity as BACT.

Emergency Generators

The NOI indicated that there would be no controls on the emissions from the emergency generators. The Engineering Section knows of no controls at this time for small diesel engines. A limitation on the number of hours of operation and fuel quality is the best current control for this type of source.

The Engineering Section recommends that BACT for the generators be the following:

A. 20% opacity

B. Sulfur content of diesel fuel that is equal to or less than the sulfur content of on-highway diesel fuel

C. Annual hours of operation for maintenance not to exceed to 100 per generator

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to an existing major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R446-1-3.1, UAC - Notice of intent required for a modified source. This rule applies.

2. R446-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R-446-1-3.1.7 (A), UAC - Notice of Intent not required for fuel burning equipment with a rated capacity of less than 5×10^6 BTU per hour using no other fuel than natural gas. A Notice of Intent is required because the boilers have a capacity greater than 5×10^6 BTU per hour, and they will use #2 fuel oil as a back-up fuel.

4. R-446-1-3.1.7 (F), UAC - Notice of Intent not required for the use of certain compounds which are not photochemically reactive. This list includes 1,1,1-trichloroethane. However, if the source is emitting more than 10 tons/yr of any compound, a Notice of Intent must be filed. This rule applies.

5. R-446-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

6. R-446-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. The sources listed in this NOI produce a combined emission rate that is less than 25.00 tons per year. No offset is required.

7. R-446-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R-446-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule does not apply as there are no replacement burners. However, BACT requires the low-NOx burners on the new boilers that have been proposed.

9. R-446-1-3.2.1, UAC - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. The sources listed in Weber

County are as follows:

A. Farmers Grain Coop
B. Fife Rock Products
C. Interpace Corporation
D. Parsons Asphalt Plant
E. Pillsbury Company
F. Teledyne Incinerator
G. Gibbons and Reed Asphalt

This source is not listed in the SIP. Therefore, this rule does not apply.

10. R-446-1-3.3.2, UAC - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent represents a minor modification to an existing major source. Therefore, this rule does not apply.

11. R-446-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. HAFB must comply with this rule.

12. R-446-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP
A. Class I areas
1) 5 ug/m^3 (annual)
2) 10 ug/m^3 (24 hour)
B. Class II areas
1) 19 ug/m^3 (annual)
2) 37 ug/m^3 (24 hour)

SO_2
A. Class I areas
1) 2 ug/m^3 (annual)
2) 5 ug/m^3 (24 hour)
3) 25 ug/m^3 (3 hour)
B. Class II areas
1) 20 ug/m^3 (annual)
2) 91 ug/m^3 (24 hour)
3) 512 ug/m^3 (3 hour)

NO_x
A. Class I areas - 2.5 ug/m^3 (annual)
B. Class II areas - 25 ug/m^3 (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. This source is located in a nonattainment area.

13. R-446-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R446-1-3.6.6 UAC - Increment violations. This rule requires the UACB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred.

15. R-446-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. The sources listed in this NOI have no stacks which exceed 65 meters in height. It is in compliance with this rule.

16. R-446-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R-446-1-4.1.2, UAC - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, some points, which are subject to NSPS or BACT, will have to meet more stringent opacity limitations as follows:

    A. Boilers, Building 1624 - 10% opacity

    B. Boilers, Building 1904 - 10% opacity

    C. Boilers, Building 2104 - 10% opacity

    D. Boilers, Building 2203 - 10% opacity

    E. Paint spray booth, Building 751 - 10% opacity

    F. Carbon brake furnace, Building 507 - 0% opacity

    G. Emergency generator, Building 1212 - 20% opacity

    H. Emergency generator, Building 1213 - 20% opacity

    An opacity of 0% is recommended for the carbon brake coating exhaust stack located in Building 507 due to the toxicity of the PO_x emissions.

18. R-446-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

19. R-446-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This source burns natural gas as a primary fuel source, and uses #2 fuel oil as a back up fuel source for its boilers. The emergency generators will use diesel fuel. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input. The proposed fuel oil will be limited to 0.50% by weight sulfur and the engine fuel will be recommended as "on-highway" grade fuel.

20. R-446-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

21. R-446-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule does not apply to the paint spray booth at Hill AFB in building 751 because the booth is new. However, the rule may have been used as a guidance document in determining BACT for the spray booth.

22. R-446-1-5, UAC - Emergency episode requirements. This rule applies.

23. R-446-1-7, UAC - Air Pollution Episode Plan - This plan provides the basis for taking action to prevent air pollutant concentrations from reaching levels which could endanger the public health, or to abate such concentrations should they occur. All sources in a nonattainment area or impacting a nonattainment area must submit a plan outlining what they will do in an emergency episode. This regulation applies to Salt Lake, Davis, and Utah Counties. This rule applies.

24. New Source Performance Standards (NSPS) - There are no NSPS for any of the proposed industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone. The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. However, modeling was done for PO_x. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS or make a significant contribution to the existing violation for ozone.

Screening type modeling was submitted, on the carbon brake coating process in bldg. 507, by HAFB that indicated the emission concentration would be 0.011 mg PO_x/m^3 at the property line, located 150 meters from the building. The Threshold Limit Value for phosphoric acid is 1 mg/m^3. This value was divided by 100 to give an acceptable limit value for a unhealthy person of 0.010 mg/m^3. Due to the conservative nature of modeling, the Engineering Section recommends that this process be accepted with no controls on the emissions with 0% opacity as BACT.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

1) Maintenance, repair, and replacement

2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a minor modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

2) It is technologically and economically feasible to meet the applicable standards set forth in this part

This Notice of Intent is not a reconstruction.

29. R-446-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the following:

A. The boilers located in Buildings 1624, 1904, 2104, and 2203

B. The paint spray booth located in Building 751

C. The carbon brake coating process located in Building 507

D. The emergency generators located in Buildings 1212 and 1213

These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991 and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; and January 8, 1992.

A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of the following equipment:

A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel

C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

E. Two emergency generators located in:

a) Building 1212 - generator rated at 200 KW

b) Building 1213 - generator rated at 125 KW

3. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

1) NO_x - 40 ppmdv at 7% oxygen; 0.24 lb/hr

2) CO - 100 ppmdv at 7% oxygen

B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

C. Exhaust stack for carbon brake coating in Building 507 - PO_x - 1.33 lb/hr

4. Stack testing to show compliance with the emission limitations of condition #3 shall be performed as specified below:

A. Emission Point	Pollutant	Testing Status	Retest
1. Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
	CO	*	*
2. Carbon brake coating exhaust in Bldg 507	PO_x	*/**	**

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R446-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust

stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #4.A.1. The steam production or operating rate during testing shall be performed under the following three operating rates:

1) 90% ±10% of the boiler's capacity

2) 70% ±10%

3) 50% ±10%

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The boiler shall be:

   a) ramped to the designated production rate in Condition 4.E,

   b) allowed to stabilize for a minimum of 5 minutes.

2. The gas sample shall be drawn according to the instructions of the test instrument being used.

3. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #3, at any one of the operating rates specified in condition 4E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #3.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair, shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" may be determined to be a violation of this Approval Order.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for 2 years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

5. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%
B.	400 hp Boiler	Building	1904	10%
C.	250 hp Boiler	Building	2104	10%
D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth,	Building	751	10%
F.	Carbon brake furnace,	Building	507	0%
G.	200 kw Emergency generator	Building	1212	20%
H.	150 kw Emergency generator	Building	1213	20%

Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15 second intervals over a six minute period shall not apply.

6. The emissions of VOC from building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R446-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

7. The emergency generators in Buildings 1212 and 1213 shall be limited to 100 hours of maintenance operation per engine per 12-month period. If excess hours of operation are used because of emergency conditions, the Executive Secretary shall be notified.

Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of hours of operation shall be kept for all periods when the plant is in operation. Records of hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

8. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an Approval Order shall be required in accordance with R446-1-3.1, UAC.

9. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

10. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

11. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

12. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the

operation and may revoke the Approval Order in accordance with R446-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC
6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

NANDO\WP\HAFB-GB.EN1

MEMORANDUM

To: Hill Air Force file, Engineering Section, DAQ

FROM: Nando Meli Jr., Environmental Health Engineer

SUBJECT: Justification for the use of an existing 400 hp boiler in building 1904.

DATE: January 15, 1992

Hill Air Force Base submitted some information dated January 8, 1992 to substantiate their claim for using an existing 400 hp boiler. In building 1904 they are replacing a 150 hp boiler with an existing boiler and burner. The letter provides some information as to the cost effectiveness of using the existing burner and not a low NO_x burner. Carl Broadhead talked to a manufacturer representative and came up with the following information:

Cost of low NO_x burner	$45,000.00
Cost for installation and chamber modificataion	25,000.00
Total cost	70,000.00

Using Hill A.F. Base information to get a cost analysis for the amount per year for NO_x reduction:

Annualized capital cost assuming 20 year life at 8% rate =

$70,000.00 x capital recovery factor =

70,000.00 x 0.1019 =

$ 7,133.00/year for 20 years

NO_x emissions with existing burner = 3.68 tons/yr

NO_x emissions with low NO_x burner = 1.67 tons/yr

NO_x reduction = 2.01 tons/yr

$$\$/\text{ton of } NO_x \text{ reduction} = \frac{\$\ 7,133.00/\text{year}}{2.01 \text{ tons/year}}$$

= $3556.00/ton

It would not be cost effective to require the use of a low NO_x burner in building 1904. Therefore, the Engineering section recomends that the existing boiler be used without a low NO_x burner.

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Calculations of Total Emissions for boilers in Bldgs 1624, 1404, 2104, and 2203

Emission data submitted in NOI for 250 HP Boilers

TSP	0.03 lb/Hr	0.06 Ton/yr
SO_x	0.005	0.01
VOC	0.07	0.13
CO	0.23	0.46

Emission data Calculated

40 ppm = 0.24 lb/hr or 0.47 ton/yr at 4000 hr/yr

PM_{10} = 90% of TSP $0.9\left(0.06 \frac{tn}{yr}\right) = 0.056$ tn/yr

$0.9\,(0.03\ lb/hr) = 0.027$ lb/hr

Emissions for 3 - 250 Hp and 1 - 400 Hp boilers

TSP = $3\,(0.06) + 1(0.11) = 0.29$ ton/yr

PM_{10} = $0.9\,(0.29) = 0.26$ tn/yr

SO_x $3\,(0.01) + 1\,(0.02) = 0.05$ tn/yr

NO_x $3\,(0.47) + 1\,(3.68) = 5.09$ tn/yr

CO $3\,(0.46) + 1\,(0.73) = 2.11$ tn/yr

VOC $3\,(0.13) + 1\,(0.22) = 0.61$ tn/yr

Emissions for Carbon brake coating process in Bldg 507

data sent after NOI received

$0.167 \frac{gm}{sec} \quad \frac{lb}{453.59\ gm} \quad \frac{3600\ sec}{hr} = 1.33$ lb/hr

Conversion of ppm to tons/yr NO_x

$$40\ ppm\ \frac{1}{10^6}\ \frac{1\ gm\ mole\ wt}{22.414\ liters}\ \frac{1000\ liters}{m^3}\ \frac{10^6\ \mu g}{g} = 1784.6$$

$$1784.6\ \frac{gm\ mole\ wt}{gm}\ \frac{\mu g}{m^3}\ \frac{40\ gm\ NO_2}{gm\ mole\ wt} = 82{,}092\ \frac{\mu g}{m^3}\quad 760^{mm}\ 0^{\circ}C$$

$$82{,}092\ \frac{\mu g}{m^3}\left(\frac{460^{\circ}F}{460+465}\right)\left(\frac{25.5"\ Hg}{29.4"\ Hg}\right) = 34{,}816.6\ \frac{\mu g}{m^3}$$

$$34{,}816.6 \times 10^{-6}\ \frac{g}{m^3}\ \frac{2.21\ lb}{1000\ g}\ \frac{ton}{2000\ lb}\ \frac{m^3}{35.314\ ft^3}$$

$$= 1.089435 \times 10^{-4}\ \frac{ton}{ft^3}$$

$$1.089435 \times 10^{-4}\ \frac{ton}{ft^3}\ 1810.48\ scfm = 1.9729 \times 10^{-1}\ ton/min$$

$$4270\ Acfm\left(\frac{460^{\circ}R}{460+465}\right)\left(\frac{25.5"\ Hg}{29.4"\ Hg}\right) = 1810.48\ scfm$$

$$1.9729 \times 10^{-1}\ \frac{ton}{min}\ \frac{60\ min}{hr}\ \frac{4000\ hr}{yr} = 0.47\ \frac{ton}{yr}\ NO_x$$

$$1.9729 \times 10^{-1}\ \frac{ton}{min}\ \frac{60\ min}{hr}\ \frac{2000\ lb}{ton} = 0.24\ \frac{lb}{hr}$$

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
◂Phenol [108-95-2] — Skin (1987)	5	19	—	—
Phenothiazine [92-84-2] — Skin (1986)	—	5	—	—
•N-Phenyl-beta-naphthylamine [135-88-6] (1979)	A2	A2	—	—
‡p-Phenylenediamine [106-50-3] (— Skin)	—	0.1	—	—
Phenyl ether [101-84-8], vapor (1976)	1	7.0	2	14
Phenylethylene, *see* Styrene, monomer				
••Phenyl glycidyl ether (PGE) [122-60-1] (1982)	1	6.1	—	—
‡••Phenylhydrazine [100-63-0] — Skin	(5,A2)	(22,A2)	(10,A2)	(44,A2)
•Phenyl mercaptan [108-98-5] (1978)	0.5	2.3	—	—
Phenylphosphine [638-21-1] (1977)	C 0.05	C 0.23	—	—
Phorate [298-02-2] — Skin (1976)	—	0.05	—	0.2
Phosdrin, *see* Mevinphos				
Phosgene [75-44-5] (1978)	0.1	0.40	—	—
Phosphine [7803-51-2] (1976)	0.3	0.42	1	1.4
Phosphoric acid [7664-38-2] (1976)	—	1	—	3
Phosphorus (yellow) [7723-14-0] (1986)	—	0.1	—	—
‡Phosphorus oxychloride [10025-87-3]	0.1	0.63	(0.5)	(3.1)
Phosphorus pentachloride [10026-13-8] (1980)	0.1	0.85	—	—
Phosphorus pentasulfide [1314-80-3] (1976)	—	1	—	3
Phosphorus trichloride [7719-12-2] (1982)	0.2	1.1	0.5	2.8
Phthalic anhydride [85-44-9] (1987)	1	6.1	—	—
m-Phthalodinitrile [626-17-5] (1977)	—	5	—	—
‡Picloram [1918-02-1]	—	10	—	(20)
‡Picric acid [88-89-1] — Skin	—	0.1	—	(0.3)
Pindone [83-26-1] (1987)	—	0.1	—	—
Piperazine dihydrochloride [142-64-3] (1982)	—	5	—	—
2-Pivalyl-1,3-indandione, *see* Pindone				

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Plaster of Paris, *see* Calcium sulfate				
Platinum [7440-06-4] Metal (1981)	—	1	—	—
Soluble salts, as Pt (1981)	—	0.002	—	—
Polychlorobiphenyls, *see* Chlorodiphenyls				
Polytetrafluoroethylene decomposition products (1972)	—	81	—	—
Portland cement (1986)	—	10[c]	—	—
Potassium hydroxide [1310-58-3] (1977)	—	C 2	—	—
•Propane [74-98-6] (1981)	—[d]	—	—	—
•Propane sultone [1120-71-4] (1977)	A2	A2	—	—
Propargyl alcohol [107-19-7] — Skin (1987)	1	2.3	—	—
•β-Propiolactone [57-57-8] (1987)	0.5,A2	1.5,A2	—	—
‡Propionic acid [79-09-4]	10	30	(15)	(45)
Propoxur [114-26-1] (1987)	—	0.5	—	—
n-Propyl acetate [109-60-4] (1976)	200	835	250	1040
n-Propyl alcohol [71-23-8] — Skin (1976)	200	492	250	615
Propylene [115-07-1] (1976)	—[d]	—	—	—
Propylene dichloride [78-87-5] (1976)	75	347	110	509
◂Propylene glycol dinitrate [6423-43-4] — Skin (1985)	0.05	0.34	—	—
Propylene glycol monomethyl ether [107-98-2] (1976)	100	369	150	553

(d) Simple asphyxiant; see definition in the "Introduction to the Chemical Substances."
(c) The value is for total dust containing no asbestos and < 1% crystalline silica. Capital letters A & B refer to Appendices; C denotes ceiling limit.
( ) Adopted values enclosed are on the Notice of Intended Changes list. Consult it for current proposal for change.
◂ Identifies substances for which there are also BEIs (*see* BEI section). Substances identified in the BEI documentations for methemoglobin inducers (for which methemoglobin is the principle toxicity) and organophosphorus cholinesterase inhibitors are part of this notation.
■ Substance identified by other sources as a suspected or confirmed human carcinogen. See the compliation in the Appendix to the Documentation of TLVs, pp. A-5(86)–A-9(86).
• Substance for which OSHA and/or NIOSH has a Permissible Exposure Limit (PEL) or a Recommended Exposure Limit (REL) lower than the TLV.
‡ See Notice of Intended Changes.

HAFB

1904 age 1974

5-6 yrs Bldg 1132

storage 8-10 yrs Bldg 2025

$70,000 no mod

100,000 ~~$~~ 110,000 w/ mod

cost Benefit

NO_x 74,00 lb/yr 4000 hrs

LO NO_x 30 ppm ~~25,44 lb~~

4800 lb/yr

$11,200/yr cost $1667 / ton

Jay Gupta Called

2:00 pm 20 Dec 91

MEMORANDUM

To: Hill Air Force file, Engineering Section, DAQ

FROM: Nando Meli Jr., Environmental Health Engineer

SUBJECT: Justification for the use of an existing 400 hp boiler in building 1904.

DATE: January 15, 1992

Hill Air Force Base submitted some information dated January 8, 1992 to substantiate their claim for using an existing 400 hp boiler. In building 1904 they are replacing a 150 hp boiler with an existing boiler and burner. The letter provides some information as to the cost effectiveness of using the existing burner and not a low NO_x burner. Carl Broadhead talked to a manufacturer representative and came up with the following information:

Cost of low NO_x burner	$45,000.00
Cost for installation and chamber modificataion	25,000.00
Total cost	70,000.00

Using Hill A.F. Base information to get a cost analysis for the amount per year for NO_x reduction:

Annualized capital cost assuming 20 year life at 8% rate =

$70,000.00 x capital recovery factor =

70,000.00 x 0.1019 =

$ 7,133.00/year for 20 years

NO_x emissions with existing burner = 3.68 tons/yr

NO_x emissions with low NO_x burner = 1.67 tons/yr

NO_x reduction = 2.01 tons/yr

$$\$/\text{ton of } NO_x \text{ reduction} = \frac{\$\ 7,133.00/\text{year}}{2.01\ \text{tons/year}}$$

$$= \$3556.00/\text{ton}$$

It would not be cost effective to require the use of a low NO_x burner in building 1904. Therefore, the Engineering section recomends that the existing boiler be used without a low NO_x burner.

==========

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

RECEIVED
JAN 09 1992

8 January 1992

Mr F. Burnell Cordner, Executive Secretary
Department of Environmental Quality
Division of Air Quality
1950 West North Temple
Salt Lake City UT 84114-4820

Re: Our NOI, 24 Apr 91, with Supplement, 30 Jul 91
Boilers-Bldgs 2203, 1624, 2104, 1904; Paint Booth-Bldg 752; Carbon Brake-Bldg 507; Emergency Generators-Bldgs 1212, 1213; Additional Info: BACT Boiler-Bldg 1904

Dear Mr Cordner

Per telephone request from your staff member Mr Nando Meli, we have provided the BACT and cost/benefit analysis for retrofitting the proposed old boiler in Bldg 1904 with a new low NOX burner as follows:

Bldg 1904 currently has two boilers which are grandfathered. These are 250 and 400 HP respectively. In the event that the 400 HP boiler goes down, it will be necessary for us to fire the proposed 400 HP boiler to meet the area's steam demand.

This existing boiler has a 1974 manufacturing date. This boiler was operated in Bldg 1132 for a period of 6-8 years and, since then, has been in storage near Bldg 2025 for the last 8-10 years. Since the boiler is so very old, we do not know the combustion chamber modifications that may be required before the boiler can be retrofitted with a new low NOX burner technology.

Based on a quotation from Burner & Energy Systems, Placentia, CA, approximate cost of a new low-NOX combination burner = $45,000
installation costs = $20,000
Estimated cost of combustion chamber modifications = $50,000
Total capital cost = $115,000

Annualized capital cost assuming 20-year life at 8% rate =
= $115,000 x capital recovery factor
= $115,000 x 0.1019
= $ 11,718

Estimated annual maintenance cost for the new burner and controls, say $ 5,000/yr
Total annual cost = $ 16,718

NOX emissions with the existing burner
(our supplement, 30 Jul 91) = 3.68 tons/yr gas firing
= 5.26 tons/yr oil firing

NOX emissions with new low-NOX burner = 30 ppm - new boiler
40 ppm - retrofit boiler

From Burner and Energy systems graph,
using 40 ppm @ 3% O_2 or
15% excess = 0.5 lb NOX/10^6 BTU

Total heat input = 16.74 mm BTU/hr

Hours of operation = 4,000 hrs.yr

$$\text{NOX emissions} = 0.05 \frac{\text{lb NOX}}{\text{MM BTU}} \times 16.74 \frac{\text{MM BTU}}{\text{hr}} \times 4{,}000 \frac{\text{hrs}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lbs}}$$

$$= 1.674 \text{ ton NOX/yr}$$

NOX reduction = 3.68 - 1.674 = 2.0 tons/yr

$$\$/\text{ton pollutant} = \frac{\$16{,}718}{2} = \$8{,}359/\text{ton pollutant}$$

Based on the above analysis, it will cost approximately $8,300 to abate a ton of NOX. The proposed boiler is almost 18 years old. Based on this analysis, and bearing in mind the age of the boiler, we request a determination whether or not we need to retrofit this boiler with a new low-NOX burner. Please note that if the current burner becomes inoperable, we will replace it with a new low-NOX burner. We request expeditious review of this NOI.

If you need additional information, please feel free to contact Jay Gupta at 777-4618.

Sincerely

LYNN S. HILL
Ch, Environmental Compliance Div
Environmental Management Directorate

FAX FOR — ✓
NANDO MELI

ADVANCE COPY —
SIGNED COPY TO FOLLOW
NEXT WK.

JAY GUPTA 12/26/91
HILL AFB.

Mr F. Burnell Cordner, Executive Secretary
Dept. of Environmental Quality
Division of Air Quality
1950 W. North Temple
SLC, UT 84114-4820

Re: Our NOI 24 Apr 91 with Supplement 30 Jul 91
Boilers Bldgs. 2203,1624,2104,1904, Paint Booth Bldg751, Carbon Brake Bldg 507, Emergency Generators Bldgs 1212,1213
Additional Information: BACT Boiler, Bldg 1904

Dear Mr Cordner:

Per telephone request from your staff member Mr Nando Meli, we provide the BACT and cost/benefit analysis for retrofitting the proposed old boiler in Bldg 1904 with a new low NOx burner, as follows:

Bldg 1904 currently has two boilers which are grandfathered. These are 250 and 400HP respectively. In the event that 400HP boiler goes down, it will be necessary for us to fire the proposed 400HP boiler to meet the area's steam demand.

This existing boiler has 1974 manufacturing date. This boiler was operated in Bldg 1132 for a period of 6-8 years and, since then, has been in storage near Bldg 2025 for the last 8-10 years. Since the boiler is so very old, we do not know the combustion chamber modifications that may be required before the boiler can be retrofitted with a new low NOx burner technology.

Based on a quotation from Burner & Energy Systems, Placentia, Ca,
Approx cost of a new low NOx combination burner =$45,000.
Installation cost =$20,000.
Estimated cost of combustion chamber modifications=$50,000.
Total capital cost =$115,000.
Annualized capital cost assuming 20 year life & 8% rate,
=$115,000.XCapital Recovery Factor
=$115,000.X0.1019
=$11,718.

4.2.4-534

Estimated annual maintenance cost for the new burner and controls, say $5,000./Yr
Total annual cost =$16,718.
NOx emissions with the existing burner (our supplement 30 Jul 91)
=3.68 Tons/yr Gas firing
=5.26 Tons/yr Oil firing
Note: Oil firing serves only as a back-up.
NOx emissions with new low NOx burner 30PPM-New boiler
40PPM-Retrofit boiler
From Burner & Energy Systems graph,
40PPM at 3% O2 or 15% excess air =0.05 Lb NOx/MM Btu
Total heat input =16.74 MM Btu
Hours of operation =4,000 Hrs/yr
NOx emissions = .05 Lb NOx/MM Btu X 16.74 MM Btu/Hr X 4,000 Hrs/yr X Ton/2,000 Lbs
= 1.674 Ton/yr
NOx reduction = 3.68-1.674=2.0 Ton/yr
$/Ton pollutant = $16,718./2=$8,359./Ton pollutant

Based on the above analysis, it will cost approximately $8300. to abate a ton of NOx. The proposed boiler is almost 18 years old. Based on this analysis and bearing in mind the age of the boiler, we request a determination whether or not we need to retrofit this boiler with a new low NOx burner. Please note that if the existing burner becomes inoperational, we will replace it with a new low NOx burner. We request an expeditious review of this NOI.
If you have any questions, please feel free to contact Jay Gupta at 777-4618.

Sincerely

Bob Van Orman
Director, Environmental Management

FAX TO: NANDO MELI

10-15-91

FROM: JAY GUPTA, HILL AIR FORCE BASE, UT.

REF: NOI 24 APR 91

THERE IS NO INVERSION
ATMOSPHERIC STABILITY PARAMETER IS .5
SPILL SITE ROUGHNESS LENGTH IS 50 CM

THIS IS A GAS RELEASE
HEIGHT OF LEAK ABOVE GROUND IS 6 M
EMISSION RATE IS .01 KG/MIN
CHEMICAL IS STILL LEAKING
CONCENTRATION AVERAGING TIME IS 15 MIN
ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT ABOVE GROUND IS 0 M
DOWNWIND DISTANCE IS 150 M
CROSSWIND DISTANCE IS 0 M

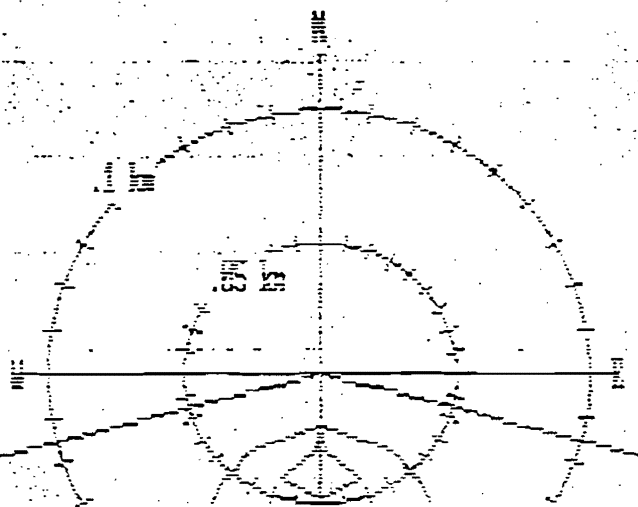
THE CONCENTRATION IS .002 PPM(.006 MG M-3)

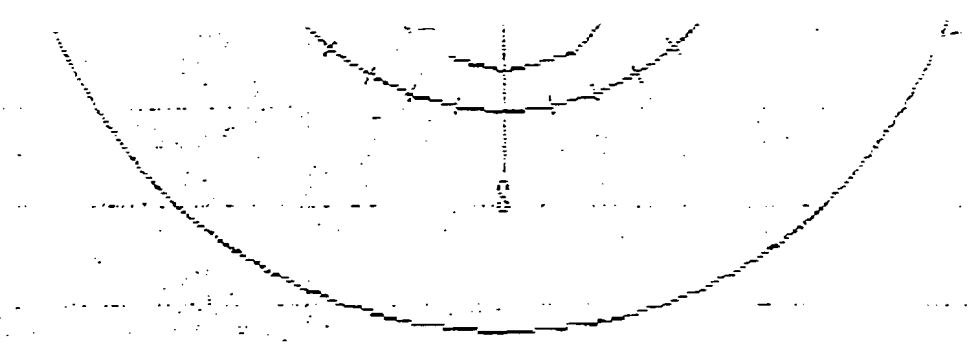
ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 182 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 87 M
THE MAXIMUM DISTANCE FOR .02 PPM IS 62 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 48 M

ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 182 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 87 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 48 M
.05 PPM IS TOO HIGH





USAF TOXIC CHEMICAL DISPERSION MODEL

AFTOX

Hill AFB

DATE: 10-11-1991
TIME: 12:00 LST

CONTINUOUS RELEASE
CHEMICAL = Phosphoric Oxides
MOLECULAR WEIGHT = 63

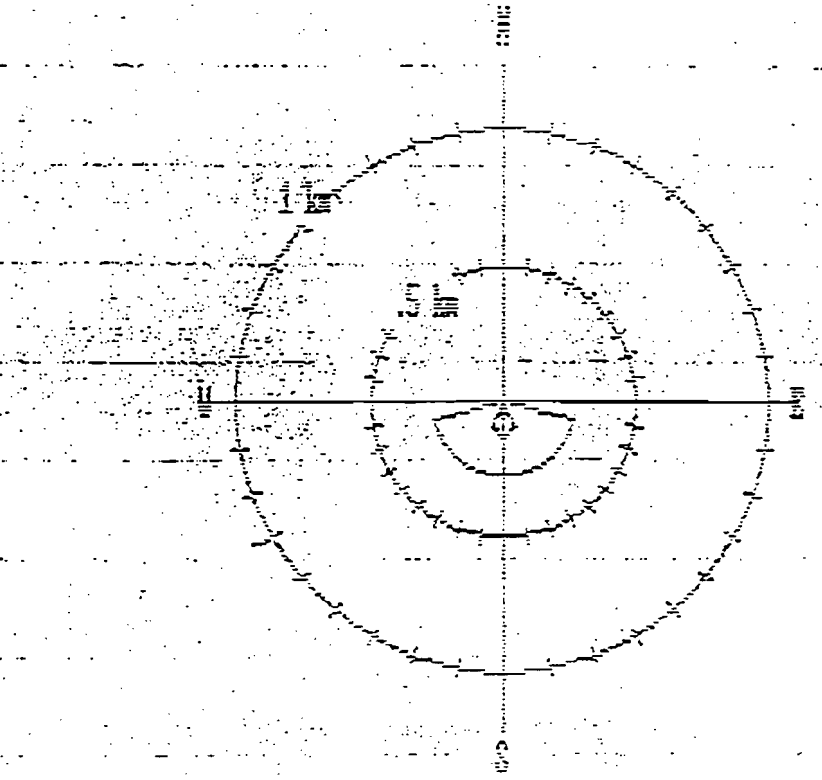
TEMPERATURE = 22 C
WIND DIRECTION = 0
WIND SPEED = 3 M/S
SUN ELEVATION ANGLE IS 42 DEGREES
CLOUD COVER IS 2 EIGHTHS
CLOUD TYPE IS MIDDLE (Ac, As, Sc, Cu)
GROUND IS DRY
THERE IS NO INVERSION
ATMOSPHERIC STABILITY PARAMETER IS .5
SPILL SITE ROUGHNESS LENGTH IS 10 CM

THIS IS A GAS RELEASE
HEIGHT OF LEAK ABOVE GROUND IS 6 M
EMISSION RATE IS .01 KG/MIN
CHEMICAL IS STILL LEAKING
CONCENTRATION AVERAGING TIME IS 15 MIN
ELAPSED TIME SINCE START OF SPILL IS 240 MIN
HEIGHT ABOVE GROUND IS 0 M
DOWNWIND DISTANCE IS 150 M
CROSSWIND DISTANCE IS 0 M

THE CONCENTRATION IS .005 PPM(.011 MG M-3)

ELAPSED TIME SINCE START OF SPILL IS 250 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 275 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 131 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 65 M
.05 PPM IS TOO HIGH



MAX CONC WITHIN 30 M (100') OF SOURCE

AT 30 M CONC IS .01 PPM.

DON'T KNOW TLV FOR POx i.e OXIDES OF PHOSPHORUS

TYPICAL O_3P_2 NO TOX DATA

DETAILED DOCUMENTATION

FIRST COUPLE OF PAGES DESCRIBING THE MODEL USED. PL. ADVISE IF YOU NEED COMPLETE PACKAGE

A. PROGRAM DESCRIPTION

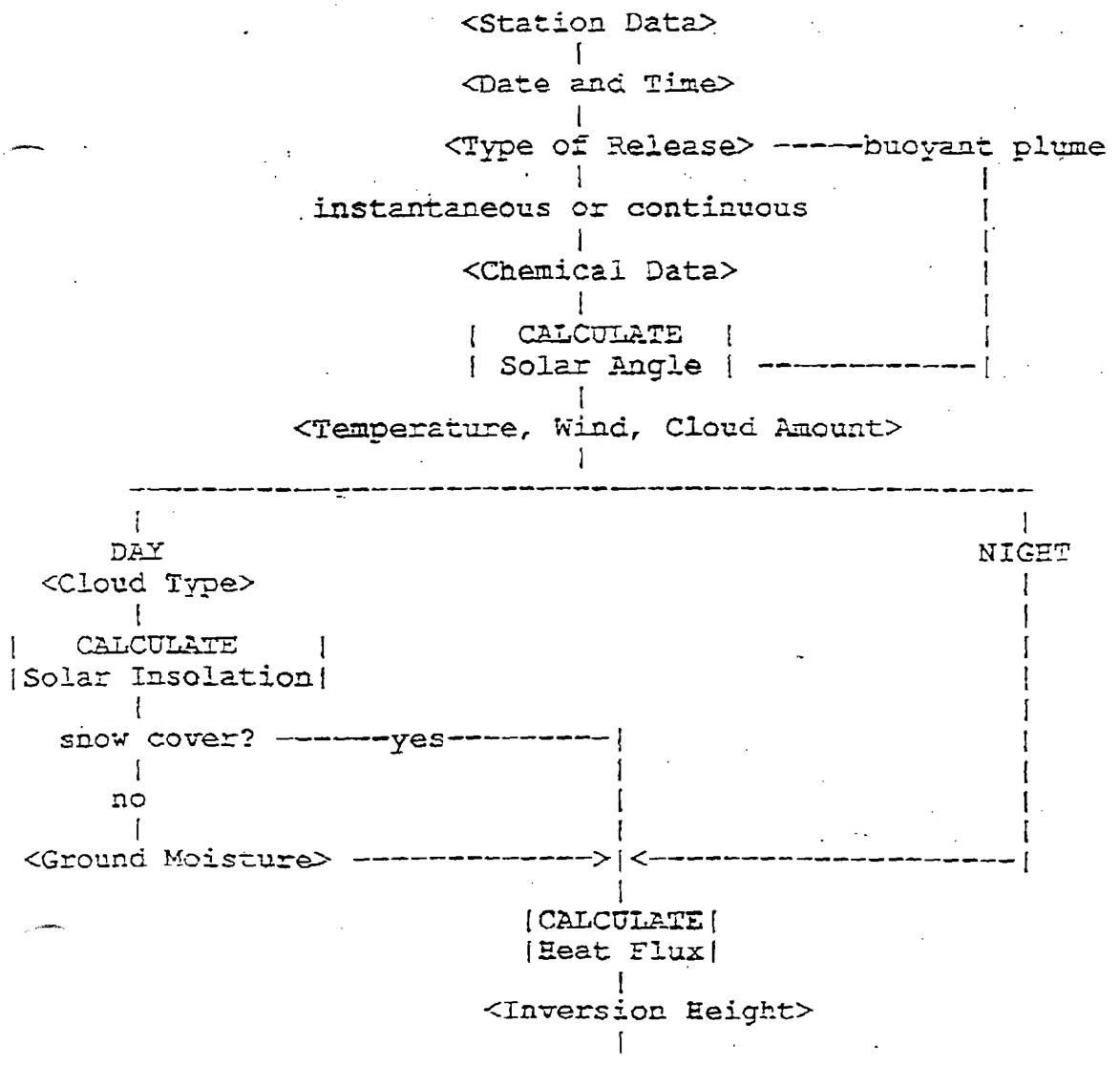
1. Purpose: AFTOX will determine toxic chemical concentrations and give the user the option of calculating a toxic corridor, the concentration at a specific location, or the maximum concentration and its location.

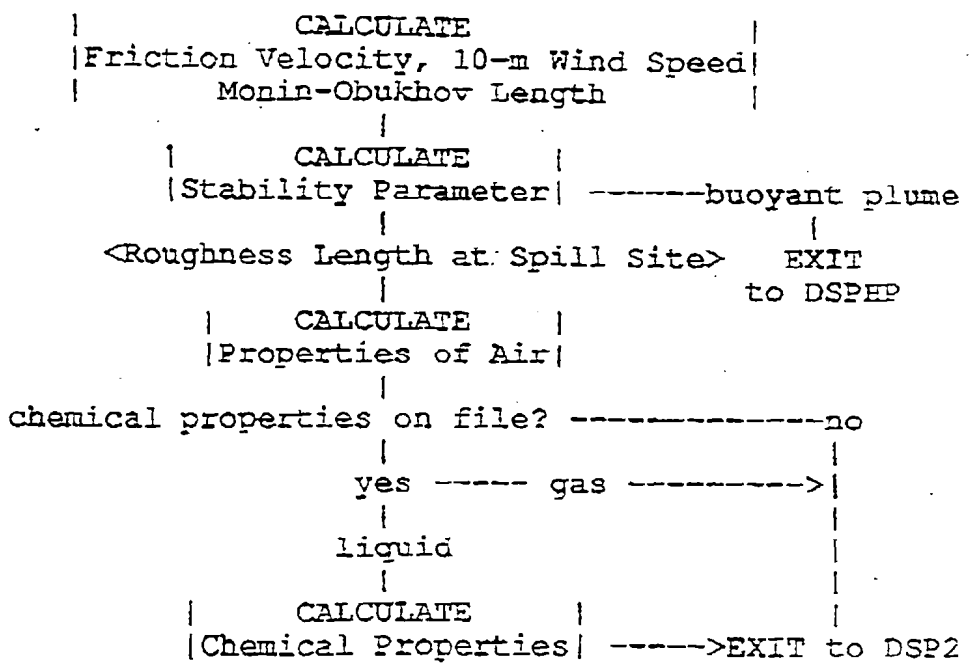
2. Application: AFTOX was developed for real time analysis of toxic chemical releases. Usage of AFTOX is governed by AFR 355-1, AWS Supplement 1. It is written so that AWS base weather stations can apply AFTOX to continuous or instantaneous, gas or liquid releases from either ground or elevated sources. It can also be applied to heated plumes from smokestacks. AFTOX contains seventy-six chemicals on file and has the capability to add other chemicals.

3. Structure: A detailed explanation of AFTOX is contained in AFGL-TR-88-0009. AFTOX is composed of several files which are linked together. The program files are DSP1.EXE, DSP2.EXE, DSPHP.EXE, and DSP3.EXE. The file structure is as follows:

a. DSP1: This file determines the chemical properties and meteorological conditions. Schematic representation is shown in Figure 1.

Figure 1. DSP1 Flow Diagram





Major computations of DSP1 are described as follows:

(1). Solar elevation angle: Determined using date, time, latitude and longitude.

(2). Sensible heat flux: Determined by one of two methods, dependent on daytime or nighttime conditions.

(a). Day: Cloud amount, temperature, ground state, and solar insolation (from solar angle, cloud amount and cloud type) used.

(b). Night: Cloud amount only is used.

(3). Turbulence parameters: Friction velocity, 10-meter wind speed, and Monin-Obukhov length are interrelated and are determined iteratively from initial estimates based on the wind speed, heat flux, surface pressure, and surface roughness.

(4). Stability parameter: One of two methods of computation are used.

(a). Method 1: Turbulence parameters described in (3) above are used.

(b). Method 2: Standard deviation of the wind direction and wind speed at 10 m are used.

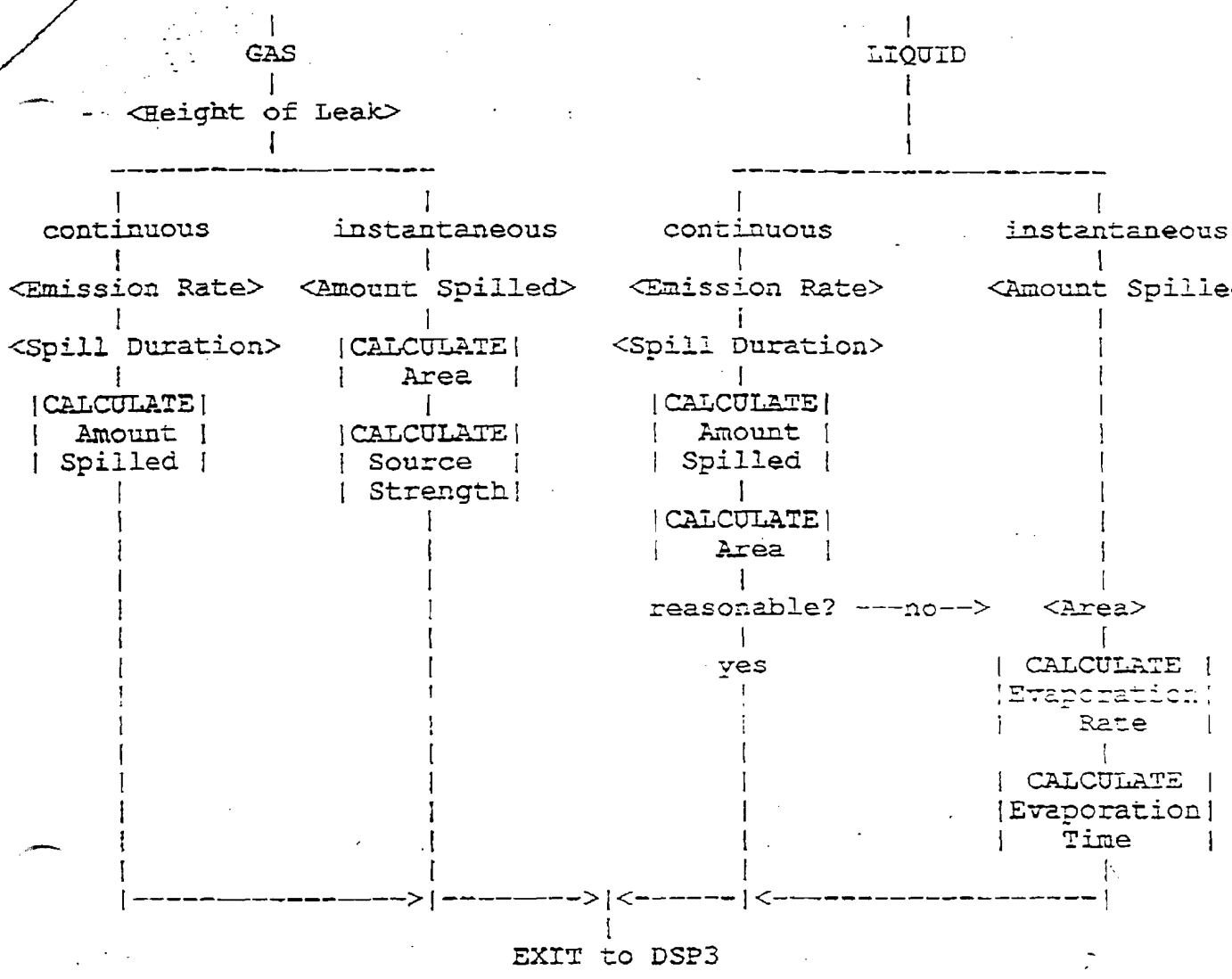
(5). Air properties: Density and viscosity are computed from temperature and pressure.

(6). Chemical properties: For a liquid chemical which is in the data file, the vapor pressure, liquid density, and vapor density are computed from the chemical data, the air temperature, and pressure.

b. DSP2: This file determines the source conditions (e.g., emission rate duration of spill, area of spill, and source strength). Processing through DSP2 is dependent on type of release. The air temperature is compared to the chemical's boiling point to determine if it is a gaseous or liquid spill. If the chemical of interest is not on file, default settings may be used or user may input molecular weight, vapor pressure, and whether release is a liquid or gas to determine source strength. Schematic representation of DSP2 is shown in Figure 2.

Figure 2. DSP2 Flow Diagram

DSP1



(1). Continuous gas release: Uses the emission rate and the total time of the spill to compute the total amount spilled. The emission rate is the source strength.

(2). Instantaneous gas release: Uses the amount spilled and air density to determine the initial volume of the spill.

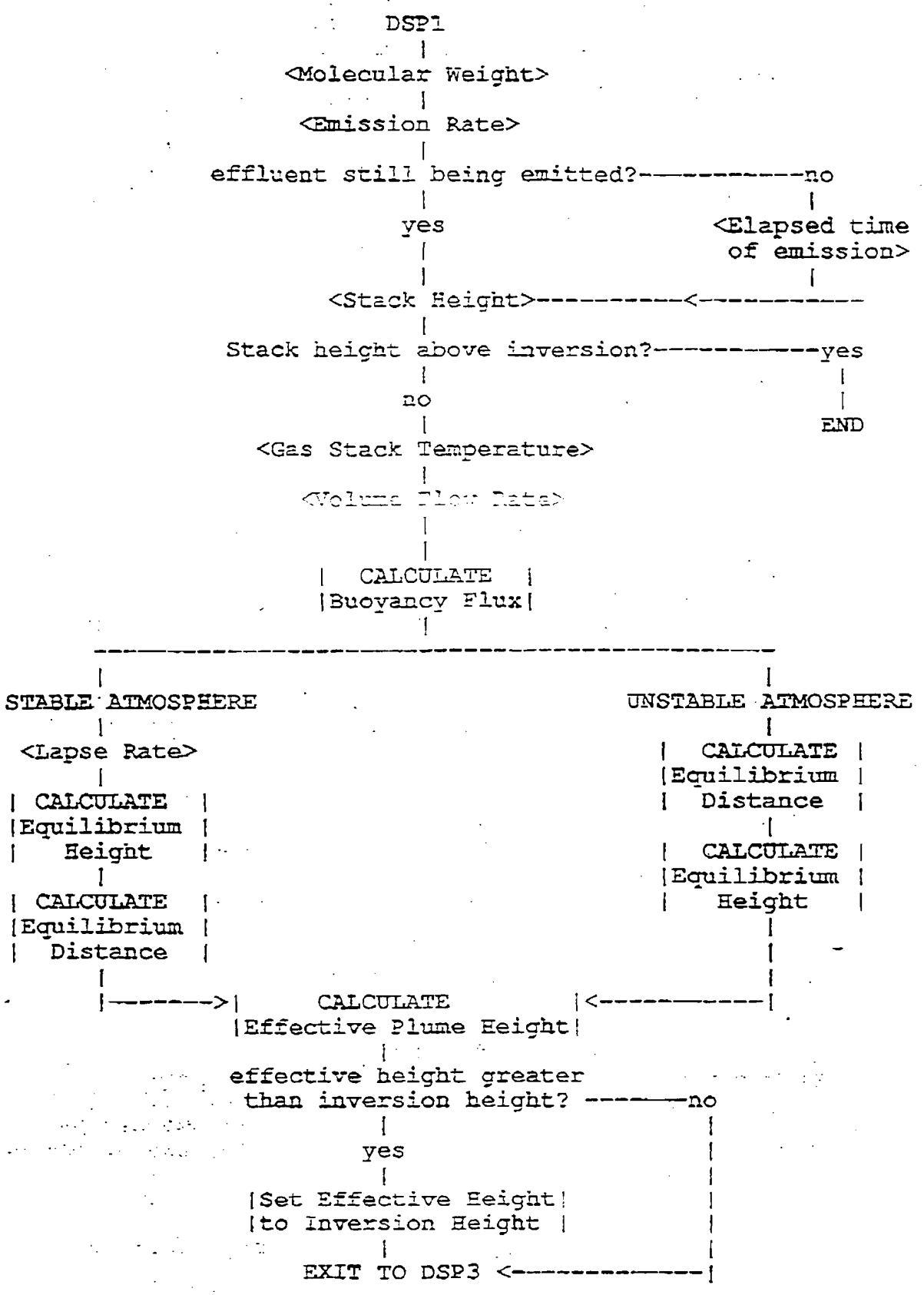
(3). Continuous liquid release: The evaporation rate into the atmosphere is the source strength. If the area of the spill is known, it is used to determine the evaporation rate. If the area is unknown, then the evaporation rate is set equal to the emission rate and an area is calculated. If this calculated area appears unreasonably large, then user may input a smaller area which will give a new evaporation rate. An alternate method exist for chemicals without full data information. Evaporation rate is determined using spill area, pool temperature, chemical molecular weight and vapor pressure. If variables are unknown, the model assumes the worst case and the evaporation rate is set equal to the emission rate.

(4). Instantaneous liquid release: Uses the amount spilled, area covered, chemical and air properties to compute the evaporation rate. The evaporation rate is set equal to the source strength. The amount spilled and the evaporation rate determine the total evaporation time. The alternate method listed in (3) above is used if chemical data is not available.

c. DSPHP: This file determines the source conditions for a buoyant plume from a stack (e.g., emission rate, duration of spill, height of spill). Source strength is set equal to the emission rate. As

shown in Figure 3, atmospheric conditions determine processing through the module.

Figure 3. DSPHP Flow Diagram



(1). If stack height is above the inversion, then program terminates since surface input meteorological conditions most likely do not apply above the inversion.

(2). Buoyancy flux: It is determined using the air temperature, gas stack temperature, volume flow rate, and gravitational acceleration.

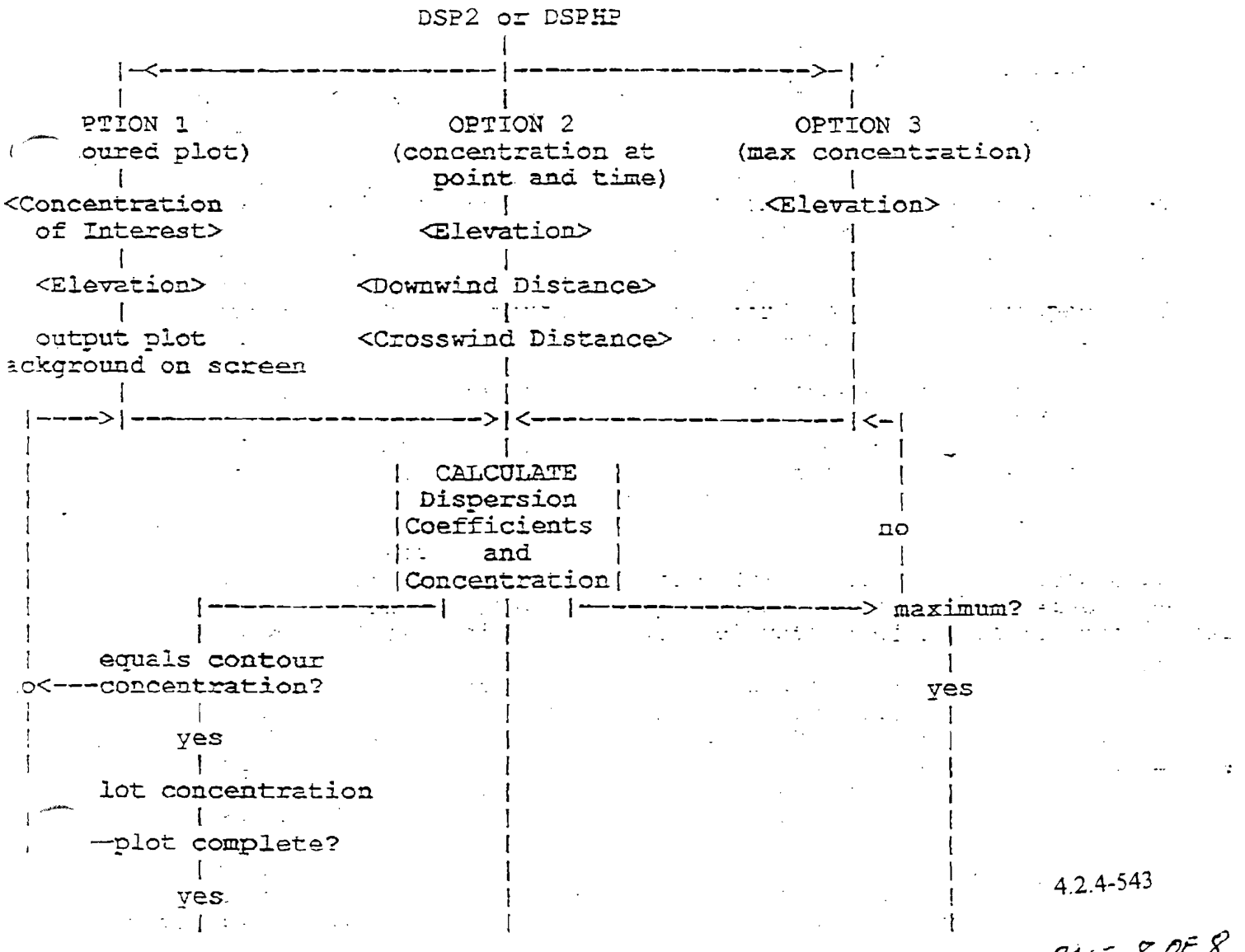
(3). Unstable or neutral conditions: The buoyancy flux is used to compute the distance downstream where the equilibrium height is reached. This distance, the buoyancy flux, and wind speed determine the equilibrium height.

(4). Stable conditions: The buoyancy flux, wind speed, and potential temperature lapse rate (based on the degree of stability) are used to compute the equilibrium height. Downwind distance where equilibrium height occurs is not needed.

(5). Effective plume height: This is equal to the sum of the equilibrium height and stack height above ground. Model assumes gas is released at the effective height for dispersion calculations. If the effective height is above the inversion height, it is set equal to the inversion height. This is a conservative approach for calculating ground concentrations.

d. DSP3: This file computes the hazard area (determined by concentration), concentration at a given location and time, or maximum concentration and location, and outputs the results. The type of output determines the processing through the file, as shown in the flow diagram of Figure 4.

igure 4. DSP3 Flow Diagram



FAX FOR : NANDO MELI

FROM : JAY GUPTA, HAFB

4 Oct. 91

Hill Air Force Base-Utah

RECEIVED
OCT 04 1991
AIR QUALITY

Nando Meli
Div of Air Quality
1950 W North Temple
SLC UT 84114

Ref: Additional Information on our NOI dated 24 Apr 91 and supplement transmitted 30 Jul 91, Boilers Bldgs 2203,1624,2104,1904 and Carbon Brake Coating Bldg 507.

Per our telecon of 27 Sept, we provide additional information as follows:

We will revise boilers purchase requisitions to require low NOx burners with NOx rating of 40 ppm or less. Exception to this is an old existing boiler for bldg 1904. We are not replacing the burner for this boiler.

MSDS for the Bendix P-11 coating is enclosed. This coating contains phosphoric acid and mono-aluminum phosphate as oxidants. the exact composition is not available due to proprietary reasons.

The coating oven temperature is 900 degrees C, the exhaust pipe is 1 inch in diameter and point of discharge will be approximately 20 feet above grade. At 900 degrees C, the discharge volume will be about 20 acfm.

The hours of operation for the coating process will be 2000 hrs/yr nominal and 4000 hrs/yr maximum. Based on this, maximum POx emission rate will be as follows:

250(gal)x8.33x1.5(S Gr)x.85(Evap)x454x1/2000x1/3600=0.167 Gm/Sec

Nominal POx emission rate will be 0.0835 Gm/Sec.

Jay Gupta
Environ Engr

4.2.4-544

(1)

ALLIED-SIGNAL AEROSPACE COMPANY
A UNIT OF ALLIED-SIGNAL INC.
BENDIX WHEELS AND BRAKES DIVISION

MATERIAL SAFETY DATA SHEET

The following data may be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. The Standard must, however, be consulted for specific requirements.

All of the particulate ingredients in Carbon Disk Brake friction material products are sintered together to form a solid material. Hazards normally associated with exposure to or contact with pure dusts of the listed ingredients are not expected to be significant. Allied-Signal has listed all of the essential ingredients present in a series of products of this general description. The recommended exposure limits are those for the most hazardous substance in a class of substances. Exact formulations are proprietary and therefore confidential. Precise product information will not be disclosed, other than in accordance with applicable laws and regulations, or without a written Secrecy Agreement.

Allied-Signal shall in no event be responsible for any damages of any nature or kind directly or indirectly resulting from or arising out of the publication or use of or reliance upon data contained herein. No express or implied warranty of any kind, including warranties of merchantability or fitness for use, with respect to the Friction Material products or to the data herein is made hereunder.

SECTION I

Manufacturer's Name:

Allied-Signal Aerospace Company
a unit of Allied-Signal Inc.
Bendix Wheels and Brakes Division
Address: P.O. Box 10
South Bend, Indiana 46624

Emergency Phone NO.219-237-280

Date Prepared: January 4, 1989
Prepared By: J. L. Wood

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity): Oxidation Penetrant P/N 2610503 (P-11)

Common Name(s)	ACGIH TLV	OSHA PEL
Phosphoric Acid	1mg/m³	1mg/m³
Mono-aluminum-Phosphate	2mg(AL)/m³	NA
-ic Acid	NA	NA

4.2.4-545

(2)

SECTION III – Physical / Chemical Characteristics

Boiling Point: 100°C Specific Gravity: (H_2O = 1) (g/cc.) 1.30

Vapor Pressure: (mm Hg.) @20°C –0.0285 Melting Point: NA

Vapor Density: (Air = 1) @25°C – 1.864 Evaporation Rate: (Butyl Acetate = 1) NA

Solubility in Water: – (>100g/100ml)

Appearance and Odor: Transparent (Odorless) liquid

SECTION IV – Fire and Explosion Hazard Data

Flash Point (Method Used): Not flammable Flammable Limits: NA LEL: NA UEL: NA

Extinguishing Media: Not flammable

Special Fire Fighting Procedures: Use self-contained breathing apparatus. Use dry chemical, Carbon Dioxide, or foam for fighting fires.

Unusual Fire and Explosion Hazards: Dangerous; when heated to decomposition, emits toxic fumes of PO_x.

SECTION V – Reactivity Data

Stability: Unstable: Conditions to Avoid: None currently know.

Stable: X

Incompatibility (Materials to Avoid): Strong bases (Caustics)

Hazardous Decomposition or ByProducts: Decomposes upon heating to form toxic and/or corrosive gases or fumes of PO_x

Hazardous Polymerization: May Occur: Conditions to Avoid: None currently know

Will Not Occur: X

SECTION VI - Health Hazard Data

Route(s) of Exposure: Inhalation? Yes Skin? Yes Ingestion? Yes

Toxic when heated to above 100°C.

Health Hazards (Acute and Chronic):

Corrosive to skin and eyes.

Carcinogenicity Listing:	NTP?	IARC Monographs?	OSHA Regulated?
	NA	NA	NA

Signs and Symptoms of Exposure:

Redness, irritation, and burning of eyes or skin.

Medical Conditions Generally Aggravated by Exposure: None currently known

Emergency and First Aid Procedures:
If penetrant contacts eyes, skin, clothes (remove), flush immediately with large amounts of cold water. Wash eyes fora minimum of 15 minutes. Call a physician. If ingested, immediately call a physician.

SECTION VII - Precautions for Safe Handling and Use

Steps To Be Taken in Case Material is Released or Spilled:

Neutralize spill with sodium bicarbonate (soda). Mop up neutralized material.

Waste Disposal Method:

Cautiously add to an excess of water. Adjust pH to neutral. Separate any insoluble solids and package for waste disposal.

Precautions to be Taken in Handling and Storing:

Store at room temperature away from strong bases.

Other Precautions:

Do not wear contact lenses; see control measures.

SECTION VIII - Control Measures

Provide adequate general or local ventilations to keep vapors below P.E.L. for phosphoric acid (1 mg/m^3) and aluminum (2 mg/m^3).

Protective Gloves: Acid - resistant rubber gloves.

Eye Protection: Safety Glasses: Chemical goggles or face shield.

Other Protective Clothing or Equipment: Acid - resistant apron.

k/Hygiene Practices: Wash work clothes separately from other clothes.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

Mr F. Burnell Cordner, Executive Secretary
Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City UT 84116-0690

RE: Request to Supplement our NOI, 24 Apr 91, Replacement Boilers Bldgs 2104 and 1904

Dear Mr Cordner

On 24 Apr 91, we submitted a Notice of Intent to construct two replacement boilers in Bldgs 2203 and 1624. In addition to these, we also propose to install similar boilers in Bldgs 2104 and 1904. We request our referenced NOI be supplemented to include these boilers. Design data and emissions from these boilers is provided.

If you have any questions, please feel free to contact Jay Gupta, EME, 777-6917.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

2 Atch
1. Design Data/Emissions
2. Vendor Brochure

REPLACEMENT BOILERS
BLDGS 2104 & 1904

Bldg 2104:

Bldg 2104 has two boilers; one is 200HP and the other 150HP. An energy study has shown that if the larger boiler (200HP) was to fail, then the mission essential load could not be met by the smaller (150HP) boiler. There will be no change to the 200HP boiler. We propose to replace the 150HP boiler with a new 250HP boiler. Vendor brochure on the new boiler is attached. Design data is as follows:

Boiler rating	250HP
Primary fuel	Natural Gas
Back-up fuel	#2 Oil
Steam Rate	8,625 Lbs/hr
Total heat input	10.45MM BTU/hr
Total heat output	8.37MM BTU/hr
Thermal efficiency	80%
Gas heating value	1,000 BTU/SCF
Gas firing rate	10,450 SCFH, Add 10% = 11,500 SCFH
Oil heating value	140,000 BTU/gal
Oil firing rate	1.24 GPM, Add 10% = 1.4 GPM
Estimated Stack Gas Volume;	gas firing 4,270 ACFM
	oil firing 4,345 ACFM
Flu Gas Temperature	465 °F

EMISSIONS:

Existing (150HP) Boiler:

Boiler HP	= 150
Theoretical heat input	= 150 HP X 33,472 BTU/HP
	= 5.02 MM BTU
Fuel to Steam efficiency	= 80%
Total heat input	= $\frac{5.02}{0.8}$ = 6.275 MM BTU/hr

Boiler probably averages out at 70 - 75% load

Fuel firing rate: Gas (1,000 BTU/SCF) = 6,275 SCFH
Oil (140,000 BTU/gal) = 44.82 GPH

Operating hours: Only one boiler runs at a time and they alternate. These boilers operate from 15 Oct to 15 May and are generally shut-down during the summer. Estimate 5 months, 24 hours operation each boiler = 3,600 hours. Use 4,000 hours.

Emission factors AP-42, Tables 1.4-1 and 1.3-1

Gas Firing:

Pollutant	Fuel 1X10^{6}CFH	E.F. LB/10^{6}Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.00627	3	.02	.04 PM_{10} = .02
SOX	.00627	.6	Neg	Neg
NOX	.00627	100	.627	1.25
HC	.00627	6	.125	.08
CO	.00627	20	20	.25

Oil Firing

Pollutant	Fuel 1X10^{3}GPH	E.F. LB/10^{3}Gal	EMISSIONS LB/Hr	TPY
Particulate	.045	2	.09	.18 PM_{10} = .09
SOX	.045	142 S	1.28	2.55
NOX	.045	20	.90	1.80
HC	.045	.34	.01	.03
CO	.045	5	.22	.45

S = 0.2 wt % Sulfur, typical

New (250) Boiler:

Gas Firing

Pollutant	Fuel 1X10^{6}CFH	E.F. LB/10^{6}Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.0115	3	.03	.07 PM_{10} = .03
SOX	.0115	.6	Neg	.01
NOX	.0115	100	1.15	2.3
HC	.0115	6	.07	.13
CO	.0115	20	.23	.46

Oil Firing

Pollutant	Fuel $1X10^3$GPH	E.F. LB/10^3Gal	EMISSIONS LB/Hr	TPY
Particulate	.084	2	.17	.33 PM_{10} = .17
SOX	.084	142 S	2.38	4.77
NOX	.084	20	1.68	3.36
HC	.084	.34	.03	.06
CO	.084	5	.42	.84

Net increase in emissions:

Gas Firing NOX = 1.05 TPY
Oil Firing NOX = 1.56 TPY
SOX = 2.22 TPY

BLDG 1904

An existing boiler (a grandfathered source) had been removed from service in Bldg 1132 and was in storage near Bldg 2025. We propose to put this boiler back in service in Bldg 1904. Design data and estimated emissions are as follows:

Boiler HP = 400
Theoratical heat input = 400 HP X 33,472 BTU/HP
= 13.39 MM BTU
Thermal efficiency = 80%
Total heat input = $\frac{13.39}{0.8}$ = 16.74 MM BTU/Hr

Fuel firing rate; Gas (1,000 BTU/SCF) = 16,740 SCFH,
Add 10% = 18,414 SCFH

Oil (140,000 BTU/Gal) = 119.6 GPH,
Add 10% = 131.5 GPH

Operating Hours = 4,000/Yr

Emission Factors AP-42, Tables 1.4-1 and 1.3-1

EMISSIONS

Gas Firing

Pollutant	Fuel 1X10^{6}CFH	E.F. LB/10^{6}Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.0184	3	.05	.11 PM_{10} = .05
SOX	.0184	.6	.01	.02
NOX	.0184	100	1.84	3.68
HC	.0184	6		
	.11	.22		
CO	.0184	20	.37	.73

Oil Firing

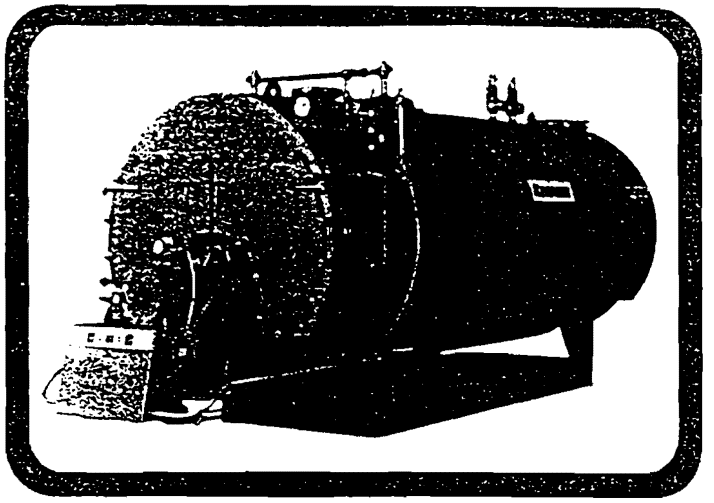
Pollutant	Fuel 1X10^{3}GPH	E.F. LB/10^{3}Gal	EMISSIONS LB/Hr	TPY
Particulate	.1315	2	.26	.52 PM_{10} = .26
SOX	.1315	142 S	3.73	7.46
NOX	.1315	20	2.63	5.26
HC	.1315	.34	.04	.08
CO	.1315	5	.65	1.31

KEWANEE

CLASSIC III (60 H.P. thru 800 H.P.) — 150 PSI STEAM

Packaged Scotch Design Firetube Boiler
Oil, Gas, Combination Oil/Gas Fired

- Boiler, Burner package is U/L listed.
- These units, rated at 5.0 square feet of fireside heating surface per boiler horsepower, maximize efficiency and service life.
- CLASSIC III Packages are offered in 14 sizes ranging from 2,009,000 to 26,780,000 Btu/Hr (60 to 800 Bhp) fired by a Kewanee gas, oil, or combination gas-oil burner.
- Meets the requirements of ASME Code for 150 psi Steam Working Pressure. (Higher working pressures available.)
- Three Pass Design features a rear combustion chamber that's totally surrounded by water. This eliminates the need for refractory baffles, reduces costly maintenance, eliminating refractory replacement. Heat loss is minimized and overheating of the rear tube sheet is prevented. The wetback surface becomes additional primary heating surface, improving boiler performance.
- All heating surfaces are accessible without disturbing burner equipment, reducing inspection and maintenance costs. By using separate tube sheets the development of excessive stresses caused by temperature differentials between the passes are eliminated. All tubes are roller expanded and beaded. 2" boiler tubes are used on 60-250 hp and 2½" tubes on 300-800 hp.
- Factory installed 22 gauge enameled steel jacket with glass or mineral fiber insulation. Extra density insulation is used at selected locations for additional protection at potential pressure points.
- Hinged steel front flue doors lined with refractory insulation contained by welded steel liner and guaranteed for a period of 10 years. Gasket gives gas-tight construction for pressurized firing.



- Units furnished with complete line of controls consisting of combination water column, pump control, low water cut-off, safety valve(s), steam pressure gauge, operating and limit pressure controls and 3" flue gas thermometer.
- All CLASSIC III Units are factory firetested, firing the unit with the specified fuel, adjusting fuel & air ratios plus checking all controls and operating sequence. A detailed report of this test is delivered to the purchaser with each unit.
- Guaranteed fuel to steam efficiencies at 25 percent to 100 percent of full rating.

RATINGS & DATA — 150 PSI STEAM

UNIT NUMBER	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
Rating —															
Horsepower	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
MBh	2,009	2,343	2,676	3,346	4,184	5,021	6,695	8,369	10,043	11,716	13,390	16,738	20,085	25,106	26,780
Steam per Hour — 212°F lbs	2,070	2,415	2,760	3,450	4,313	5,175	6,900	8,625	10,350	12,075	13,800	17,250	20,700	25,875	27,608
Steam Gross Output sq. ft	8,370	9,765	11,160	13,950	17,438	20,925	27,895	34,875	41,845	48,820	55,795	69,750	83,690	104,610	111,600
Firing Rate															
Gas (1,000 BTU/cu. ft.) MBh	2,511	2,930	3,346	4,185	5,231	6,278	8,370	10,463	12,554	14,646	16,740	20,925	25,110	31,383	33,475
Oil (140,000 BTU) gph	17.9	20.9	23.9	29.9	37.4	44.8	59.8	74.7	89.7	104.6	119.6	149.5	179.4	224.2	239.1
Oil (150,000 BTU) gph	16.7	19.5	22.3	27.9	34.9	41.9	55.8	69.8	83.7	97.6	111.6	139.5	167.4	209.2	223.2
Heating Surface — ASME sq. ft	300	350	400	500	625	750	1,000	1,250	1,500	1,750	2,000	2,500	3,000	3,750	3,750*
Safety Valve Capacity lbs	2,400	2,800	3,200	4,000	5,000	6,000	8,000	10,000	12,000	14,000	16,000	20,000	24,000	30,000	30,000
Insulation Thickness in.	1½"	1½"	1½"	1½"	1½"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"
Minimum Stack Diameter in.	12"	12"	12"	12"	14"	14"	16"	20"	20"	20"	24"	24"	27"	30"	30"
Steam Space cu ft.	6.5	7.5	8.4	9.6	11.8	15.4	21.5	34.8	43.1	49.9	69.7	77.1	87.0	107.6	107.6
Disengaging Area sq. ft.	17.6	20.1	22.8	23.9	29.5	33.5	43.9	53.7	60.1	69.5	75.3	83.0	91.1	112.7	112.7
Water Content (full) gals	378	437	499	591	736	875	1,161	1,474	1,987	2,302	2,729	3,004	3,526	4,394	4,394
(to normal waterline) gals.	330	381	436	519	647	752	1,000	1,214	1,664	1,929	2,208	2,427	2,875	3,589	3,589
Approx Weight (full) lbs	8,855	9,844	11,064	13,131	15,834	18,398	23,783	28,991	36,771	42,798	50,855	56,952	67,507	83,546	83,546
Dry Weight lbs.	5,700	6,200	6,900	8,200	9,700	11,100	14,100	16,700	20,200	23,600	28,100	31,900	38,100	46,900	46,900

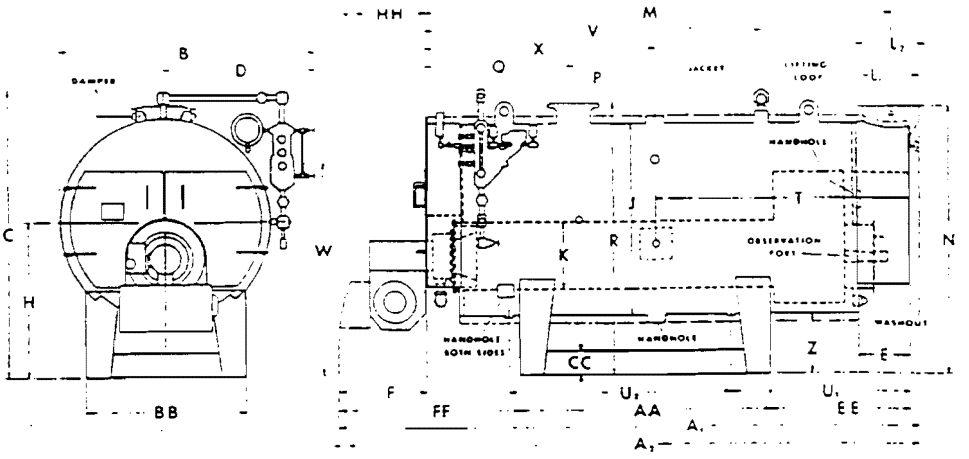
Supersedes Bulletin 20A-3
January, 1988

*Except 800 HP = 4.7 Sq. Ft/Bhp
DIMENSIONS, DATA SUBJECT TO CHANGE WITHOUT NOTICE

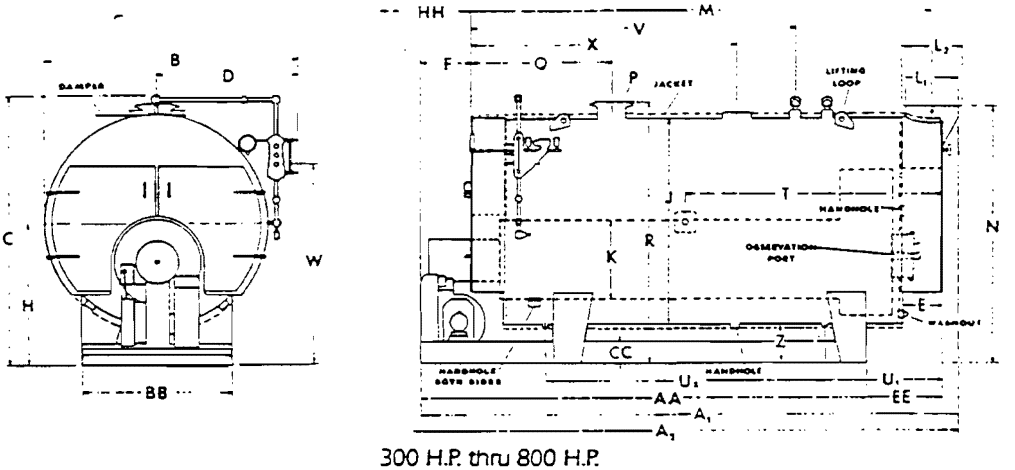
Bulletin 20/
April, 19

4.2.4-554

Look ahead with KEWANEE.



60 H.P thru 250 H.P.



300 H.P. thru 800 H.P.

DIMENSIONS (feet-inches)

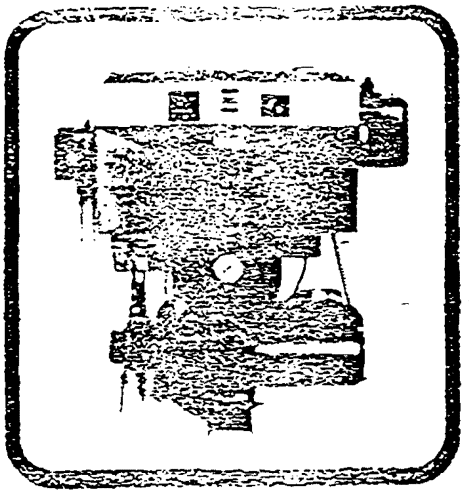
UNIT NUMBER	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
A[1] — Overall length	10'7½"	11'7"	12'6½"	12'7½"	14'5½"	14'9"	17'8½"	18'5½"	17'6"	19'5½"	19'5½"	20'9"	21'10½"	25'2½"	25'2½"
A[2] — Overall length including tube removal	14'4"	16'2½"	18'1½"	17'8".	21'4"	21'1½"	27'0½"	28'2"	27'4½"	31'4"	28'8¾"	31'6"	33'0½"	40'5½"	40'5½"
B — Overall width	5'5"	5'5"	5'5"	5'11½"	5'11½"	6'5½"	6'5½"	7'0"	8'0½"	8'0½"	9'0½"	9'0½"	9'6"	9'6"	9'6"
C — Overall height	6'0"	6'0"	6'0"	6'10"	6'9"	7'3"	7'4"	7'11"	9'2½"	9'2½"	9'11½"	9'11½"	11'1½"	11'1½"	11'1½"
D — Boiler centerline to greatest width	3'1½"	3'1½"	3'1½"	3'4½"	3'4½"	3'8"	3'8"	3'11"	4'5"	4'5"	4'11"	4'11"	5'2"	5'2"	5'2"
E — Rear fluebox to shell	1'0"	1'0"	1'0"	1'0"	1'0"	1'0"	1'0"	1'2"	1'2"	1'2"	1'4"	1'4"	1'4"	1'4"	1'4"
F — Burner to front of boiler	2'2½"	2'2½"	2'2½"	2'4½"	2'4½"	2'9"	2'9"	2'9"	1'10"	1'10"	2'10"	2'10"	2'10"	2'4"	2'4"
H — Boiler centerline height	3'0½"	3'0½"	3'0½"	3'6½"	3'6½"	3'9½"	3'9½"	4'0½"	4'6½"	4'6½"	5'0½"	5'0½"	5'8½"	5'8½"	5'8½"
J — Shell diameter	4'0"	4'0"	4'0"	4'6"	4'6"	5'0"	5'0"	5'6"	6'6"	6'6"	7'6"	7'6"	8'0"	8'0"	8'0"
K — Furnace diameter	1'5"	1'5"	1'5"	1'8"	1'8"	1'11"	1'11"	2'1"	2'6"	2'6"	2'10"	2'10"	3'1"	3'1"	3'1"
L[1] — Flue outlet diameter	1'0"	1'0"	1'0"	1'2"	1'2"	1'4"	1'4"	1'8"	1'8"	1'8"	2'0"	2'0"	2'3"	2'6"	2'6"
L[2] — Flue outlet flange diameter	1'3"	1'3"	1'3"	1'5"	1'5"	1'7"	1'7"	1'11"	1'11"	1'11"	2'3"	2'3"	2'6"	2'9"	2'9"
M — Flue outlet centerline	7'10½"	8'10"	9'9½"	9'6"	11'4"	11'3½"	14'3"	14'10"	14'9½"	16'9"	15'5¾"	16'10½"	17'10½"	21'7"	21'7"
N — Flue outlet height	5'5"	5'5"	5'5"	6'2"	6'2"	6'8"	6'8"	7'2"	8'2"	8'2"	9'2½"	9'2"	10'1"	10'1"	10'1"
P — Supply size 300 lb. ANSI flange	4"	4"	4"	4"	4"	4"	6"	6"	6"	8"	8"	8"	10"	10"	10"
Q — Supply centerline	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	4'6½"	4'6½"	4'6½"	4'6½"	6'9½"	6'9½"	6'9½"
R — Supply height	5'6"	5'6"	5'6"	6'3"	6'3"	6'9"	6'9"	7'3"	8'3½"	8'4"	9'4"	9'4"	10'4"	10'4"	10'4"
T — Feedwater centerline — each side	4'2"	4'9½"	5'3½"	3'3"	4'9"	5'0½"	7'11"	8'6"	8'2½"	9'2"	7'2"	9'9½"	9'5"	11'11"	11'11"
— Feedwater size — NPT	1"	1"	1¼"	1¼"	1¼"	1¼"	1½"	1½"	1½"	2"	2½"	2½"	2½"	2½"	2½"
U[1] — Rear blowoff — centerline to rear of boiler	3'6"	3'6"	3'6"	3'6"	3'6"	3'5"	3'6"	4'1"	3'8"	4'1"	4'8"	4'8"	5'6"	5'1"	5'1"
U[2] — Blowoff centerline to centerline	2'9"	3'8½"	4'8"	4'3½"	6'1½"	6'0"	8'11½"	8'11½"	9'0"	10'6½"	8'9"	10'1"	9'10½"	13'10½"	13'10½"
— Blowoff size — both — NPT	1¼"	1½"	1½"	1½"	1½"	1½"	2"	2"	2"	2"	2"	2"	2"	2"	2"
V — Safety valve centerline	5'4"	6'3½"	7'3"	6'10½"	7'6½"	7'7"	10'6½"	10'11½"	11'2"	13'1½"	12'0"	10'0½"	11'6½"	10'10½"	10'10½"
W — Normal waterline	4'6"	4'6"	4'6"	5'2½"	5'2½"	5'7"	5'7"	5'10"	6'9"	6'9"	7'5½"	7'5½"	8'4"	8'4"	8'4"
X — Handhole centerline	4'2"	4'6"	4'11½"	—	—	—	—	—	—	—	—	—	—	—	—
— Manhole centerline	—	—	—	5'7"	5'8½"	5'5½"	5'8½"	5'11½"	8'6½"	9'4½"	8'8½"	7'3½"	9'10½"	9'8½"	9'8½"
Z — Base height — floor to boiler	1'0"	1'0"	1'0"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'8"	1'8"	1'8"
AA — Base length	4'2"	5'0"	5'10"	5'0"	6'8"	6'8"	10'0"	10'0"	14'7"	16'3"	15'11"	17'3"	17'6"	21'2"	21'2"
BB — Base width	3'4"	3'4"	3'4"	3'6"	3'6"	3'10"	3'10"	4'2"	4'10"	4'10"	5'4"	5'4"	5'9"	5'9"	5'9"
CC — Base height	6"	6"	6"	6"	6"	8"	8"	8"	8"	8"	10"	10"	10"	10"	10"
EE — Base to rear of boiler	1'9½"	1'11"	2'0½"	2'5½"	2'7½"	2'6"	2'1½"	2'8½"	2'4"	2'7½"	2'9"	2'9"	3'4½"	2'9½"	2'9½"
— Base to front of burner	4'7"	4'7"	4'7"	4'11"	4'11"	5'2"	5'2"	5'2"	—	—	—	—	—	—	—
Tube removal space	5'11"	6'10"	7'9½"	7'5"	9'3"	9'1½"	12'1"	12'5½"	11'8½"	13'8½"	12'2¾"	13'7"	14'0"	17'7"	17'7"

KEWANEE®
KEWANEE BOILER COMPANY, INC.
A subsidiary of Coppus Engineering Corporation
101 Franklin Street, Kewanee, Illinois 61443
(309) 853-3541 • Fax: (309) 852-0424

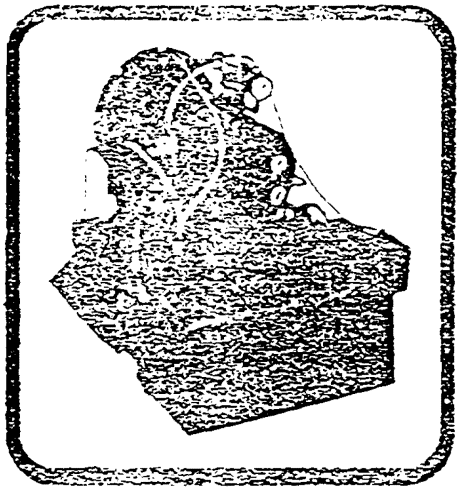
KEWANEE

BURNERS

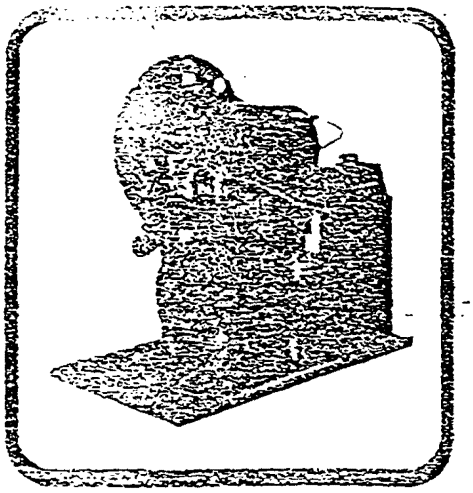
For CLASSIC III Packaged Scotch Design Firetube Oil, Gas, Combination Oil/Gas Fired



20-50 HP



60-250 HP



300-800 HP

* I/L Listed.

Kewanee Burners are designed for oil, natural gas or propane gas, or combination gas-oil firing. Each Kewanee Forced Draft Burner is custom engineered for the package it fires, assuring long, dependable and economical service.

- NEMA 1A Control Cabinet features electronic Flame Safeguard and programming controls, air flow safety switch, coded wiring, numbered terminal strip and console.
- CLASSIC III units are equipped with Kewanee Pressure or Air Atomizing Burners. Pressure Atomizing units fire light oil, and combination gas-light oil. Air Atomizing units fire No. 6 (100 hp to 800 hp) or lighter oil, and combination gas-oil. Both pressure and air atomized units are of flame retention design.
- Second oil solenoid valve furnished as standard on 60 HP-800 HP Boilers.

RATINGS & DATA

UNIT NUMBER	25	30	40	50	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
Gas Control —																			
Size (STD U.L.)	1"	1¼"	1½"	1½"	1½"	2"	2"	2"	2½"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"
Req'd. Inlet Pressure ..... In. W.C.	6.0	6.0	5.7	7.0	7.5	5.3	6.6	7.0	9.3	9.3	12.5	16.0	15.5	13.1	16.3	21.2	22.4	35.8	40.7
Identification No.	1	9	13	13	30	34	34	34	62	66	71	70	80	81	81	83	83	83	83
Motors —																			
F.D. Fan — Gas ..... HP	½	½	½	¾	1½	1½	1½	3	3	5	5	7½	10	15	15	20	25	30	45
Gas & P/A Oil ..... HP	½	½	½	¾	1½	1½	1½	3	3	5	5	7½	10	15	15	—	—	—	—
Gas & A/A Oil ..... HP	-	-	-	-	1½	1½	1½	3	3	5	5	7½	10	15	15	20	25	30	45
Press. Atom. Oil Pump Set ..... HP	← Direct Drive From Blower Motor →				← Belt Driven From Double Shaft Blower Motor →						1	1	1	1	1	—	—	—	—
Air Atom. Comp. ..... HP	—	—	—	—	2	2	2	2	3	3	3	3	3	3	5	5	5	5	7.5
Air Atom. Oil Pump Set #2 ..... HP	—	—	—	—	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Air Atom. Oil Pump Set #4 ..... HP	—	—	—	—	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Air Atom. Oil Pump Set #5 #6 HP	—	—	—	—	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Standard Voltage	← 115-60-1 →				← 230-60-3 →														
Oil Heater —																			
No. 4, 5 Oil	—	—	—	—	3000	3000	3200	4000	5000	6000	6000	10000	12000	15000	15000	20000	24000	30000	39000
No. 6 Oil	—	—	—	—	—	—	—	2000	3000	3000	4000	5000	6000	8000	8000	10000	12000	15000	15000
Control Circuit Voltage	← 115-60-1 →																		
Fuel Air Control —																			
Gas	← On-Off →				← Two Position →						← Modulating →								
P/A Oil	On-Off	On-Off W/Low Fire Start			← Two Position →						← Modulating →								
* Combo	—	—	—	—	← Modulating →														
Safeguard	← UVM3R →				← UVM-5 →						← 0-20 →								

SUPERSEDES BULLETIN 20A-6 January, 1988

DIMENSIONS, DATA SUBJECT TO CHANGE WITHOUT NOTICE

BULLETIN 20A-6 April, 1989

4.2.4-556

Look ahead with **KEWANEE.**

KEWANEE BOILER COMPANY, INC.

A subsidiary of Cyclops Engineering Corporation

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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BAQE-688-88

November 9, 1988

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on November 18, 1988.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84116-0690.

Sincerely,

David Kopta

David Kopta, Manager
Engineering Unit
Bureau of Air Quality

Enclosure

DK/cc

4.2.4-557

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Indian Oil Company, Used Oil Recycling Plant, Utah County
2. FCI Chemical Engineers, Gypsum Excavation and Handling, Salt Lake County
3. Amoco Oil Company, Backup Flare System on Loading Racks, SAlt Lake County
4. Department of the Air Force, Carbon Brake Repair Facility, Bldg. 267, Davis County
5. Brackenbury, Conn and Associates, Portable Tank Leaching Operation, Duchesne County
6. Advance Foam Plastics, Expanded Polystyrene Plant, Salt Lake County
7. Golden Eagle Environmental and Recycling Services, API Separator and 14 Storage Tanks, Davis County
8. Morton Thiokol, Inc., Changes to X-17 Automotive Products Facility, Weber County

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. No Prevention of Significant Deterioration (PSD) increment will be consumed by these proposals. It is the intent to the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0690. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before December 16, 1988 will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: November 18, 1988

State	Utah
State Agency	Department of Environmental Quality
Affected Area	Hill AFB
Regulation	Source-specific requirements
Rule Number	Ozone NAAQS Approval Orders
Rule Title	BAQE-039-91, Approval Order for Building 1701 - Dip Tank, Bake Oven, Paint Booths, Davis County (2/7/1991)
State Effective Date	03/04/1997
State Adoption Date	02/05/1997
EPA Effective Date	08/18/1997
Notice of Final Rule Date	07/17/1997
Notice of Final Rule Citation	62 FR 38213
Comments	

Rule:

Hill AFB - -039-91.pdf

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

BAQE-039-91

February 7, 1991

James R. Van Orman
Director, Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

Re: Approval Order for Building 1701 - Dip Tank, Bake Oven, Paint Booths
Davis County CDS A1

Dear Mr. Van Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base, located in Davis County, shall make the following changes according to the information submitted in the notice of intent dated April 27, 1990, and a letter from Hill Air Force Base dated December 21, 1990:

   A. The owner/operator shall install a dip tank, 370 gallon capacity cylindrical tank, with dimensions of 4 feet in diameter and 4 feet high. The tank shall be equipped with a sealed clam-type lid, an outside pump for agitation, an electric heater, and a cover with a vent.

   B. The owner/operator shall remove paint booth #1 and replace it with a Devilbiss Model ASEY-914-34 paint spray booth or equivalent. Equivalency shall be determined by the Executive Secretary. The booth shall be equipped with dry paint arrestor filters.

C. The owner/operator shall remove paint booth #3 and replace it with two end-to-end paint spray booths. The booths shall be equipped with dry paint arrestor filters and High Volume Low Pressure (HVLP) type spray guns.

D. The owner/operator shall remove the electric powered bake oven and replace it with an oven fired by natural gas with a total heat input rate not to exceed two million BTU/hr.

2. Visible emissions from any point or fugitive emission source associated with the above emission points shall not exceed 10% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

3. The following operation limits for the bake oven shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

A. 2.2 million scf of natural gas per 12 month period
B. 2.0 million BTU/hr heat input
C. 8 hours per day
D. 1000 hours of operation per 12 month period

Compliance with the annual limitations shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Records of production shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Fuel consumption for the bake oven shall be determined by the use of records from a fuel meter. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

4. The total VOC emissions from sources listed in this approval order shall not exceed 4.70 tons per 12-month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined using a material balance procedure on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. The total VOC emissions shall be determined by maintaining a record of paints, varnishes, thinners, and solvents used, and of operation parameters from other affected VOC emissions sources. The record shall include the following data for each item used:

A. Name of paint, varnish, thinner, or solvent
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. The VOC emissions from paints/thinners shall not exceed 4.69 tons per 12 month period. The VOC emissions from other processes shall not exceed 0.01 tons per 12 month period.

Voc emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 4.69 tons per 12 month period as specified.

5. All paint spray booths shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting any booth shall pass through a paint arrestor control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

6. The owner/operator shall operate the dip tank in following manner:

A. The cover shall remain closed at all times except during actual loading, unloading, or transfer operations.

B. Parts shall be completely drained in the internal draining rack until all dripping ceases.

C. Waste or used varnish shall be stored in covered containers and disposed by a method which prevents VOC emissions to the atmosphere.

D. Tanks, containers, and all associated equipment shall be maintained in good operating condition, and leaks shall be repaired immediately.

E. Written procedures for the operation and maintenance of the dip tank shall be posted in an accessible and apparent location near the equipment.

7. Eighteen months from the date of this approval order the Executive Secretary shall be notified in writing of the status of construction of this project unless the construction is complete and operation has commenced.

8. A copy of this approval order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with the appropriate and relevant conditions.

9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance wit Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air conservation Regulations.

Annual emissions for sources listed in this approval order are calculated at 0.01 tons/yr for particulates, 0.01 tons/yr for PM_{10}, 0.0006 tons/yr for SO_2, 0.10 tons/yr for NO_x, 0.02 tons/yr for CO, and 4.70 tons/yr for VOC. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. Except for VOC, they are not to be used for purposes of determining compliance.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee

FBC:TB:jiw

cc: EPA Region VIII, Mike Owens
Davis County Health Department

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

RECEIVED
DEC 27 1990
AIR QUALITY

Mr F Burnell Cordner, Executive Secretary
Bureau of Air Quality
1950 West North Temple
PO Box 16690
Salt Lake City, UT 84116-0690

RE: Public comments on Intent to Approve building 1701. Dip Tank, Bake Oven & Paint Booths.

Dear Mr Cordner

Referenced ~~Intent to Approve~~ dated 7 Dec 90, we offer the following public comments for your consideration

Condition 1.A. - Per our 18 Oct 90 letter, dual wall dip tank shall be 370 gallon capacity measuring approximately 4 feet inside diameter and 4 feet high. The tank will be located above ground, therefore, cathodic protection will not be provided. The tank will be provided with a sealed clam type lid, outside pump liquid circulating type agitation, electric heater and a vent system.

Condition 4 - Our estimation of VOC emissions from sources listed in this Intent to Approve is 3.28 tons per year. Revised VOC evaporative emissions from the dip tank are as follows:

Uncontrolled AP-42 Emission Factor	= 0.15 Lb VOC/Hr, Ft^2
Evaporative area (revised)	= $\frac{3.14}{4}$ X $(4)^2$ = 12.56 Ft^2
Operating hours	about 1,000 hrs/Yr
Uncontrolled evaporative loss	$\frac{.15 \text{ Lb}}{\text{hr, } Ft^2}$ X 12.56 Ft^2 X 1,000 hrs X $\frac{\text{Ton}}{2{,}000 \text{ Lbs}}$
	= 0.94 Ton/Yr
Emission Reduction Factor	30-60% use 40%
Evaporative VOC emissions	= 0.94 X .6 = .56 Ton/Yr
Dip tank usage Loss (NOI)	= .06 Ton/Yr
Paint booth #1 VOC emissions (NOI)	= .12 + .34 = .46 Ton/Yr
Baking Oven VOC emissions (NOI)	= .12 Ton/Yr
Paint booth #3 VOC emissions (NOI)	= 2.08 Tons/Yr
Total VOC emissions	= 0.56 + .06 + .46 + .12 + 2.08
	= 3.28 Tons/Yr

If you have any questions, please feel free to contact Jay Gupta at 777-6917.

Sincerely,

James N. Vining

JAMES N. VINING
Deputy

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

BAQE-745-90

December 3, 1990

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on December 7, 1990.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84110-0690.

Sincerely,

Joyce I. Wiswell
Office Technician
Bureau of Air Quality

MK:jiw

Enclosure

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, has been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

Department of the Air Force

Building 1701, Dip Tank, Bake Oven, Paint Booths

Davis County CDS A1

Net emissions from this source (building 1701 only) are calculated at the following values:

Particulate	0.01	tons/yr
PM_{10}	0.01	tons/yr
NO_x	0.10	tons/yr
CO	0.02	tons/yr
VOC	4.70	tons/yr

The engineering evaluation and air quality impact analysis has been completed and no adverse air quality impacts are expected. It is the intent to the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 1950 West North Temple, Salt Lake City, Utah 84116-0690. Written comments received by the Bureau, 1950 West North Temple, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before January 6, 1991, will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: December 7, 1990

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director, Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER: L. Carl Broadhead

RE: Building 1701, Dip Tank, Bake Oven, Paint Booths
Davis County, CDS A1

DATE: November 29, 1990

NOTICE OF INTENT DATED: April 27, 1990

PLANT CONTACT: Jay Gupta

PHONE NUMBER: (801) 777-7651

PLANT LOCATION: HAFB, Building 1701

FEES:

Filing Fee	$100.00
Review Engineer - 26 hours at $50.00/hour	$1300.00
Modeler - 00 hours at $23.22/hour	$000.00
Computer Usage Fee	$000.00
Notice to Paper	$24.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$1424.00

APPROVALS:

Engineering Unit Manager JR 11-29-90

Applicant Contact Made JR agreed

Technical Evaluation Section Manager M. Keller 11/30/90

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base has filed a notice of intent dated April 27, 1990. They are proposing to install and operate a dip tank, new paint spray booths (#1 and #3), and a bake oven. The location of these facilities will be in Building 1701. The description of each facility is as follows:

Dip Tank

The dip tank, an industrial heavy duty double wall tank, will contain thermelic insulating varnish for dip coating of locomotive electrical components including generators and their components. These components are currently hand coated using a brush, resulting in nonuniform electrical insulation. The cylindrical dip tank will have inner dimensions of 7 feet in diameter and 7 feet high with a capacity of 2,000 gallons. The tank will be installed vertically with 5 feet underground and 2 feet of tank above ground. The tank will be equipped with cathodic protection, a dip drain or catch system, a leak detection system, and a ventilation system installed on the upper side portion of the tank. A sealed clam-type lid will be also provided to cover the top of the tank. The lid will be kept closed except when loading or unloading components.

The tank will be agitated and fitted with an electric heater capable of heating varnish to a temperature of 90-100°F. The dip coated components will be air-dried in paint spray booth #1 and then baked in the bake oven. The following numbers describe the operation:

A. Annual operating hours - 1000 hours per year.
B. Annual usage rate - 144 gallons of varnish per 12 month period.
C. Stack diameter - 12 inches.
D. Stack height - 60 feet above ground.

Paint Spray Booth #1

This booth is a waterfall type paint spray booth and will be replaced with a Devilbiss Model ASEY-914-34 dry filters paint spray booth. The dimensions of the proposed paint spray booth are 15 feet long, 12 feet wide, and 10 feet high. The paint spray booth will be equipped with paint arrestor filters, exhaust plenum, a fan, and a 34 inch diameter vent. The following numbers describe the operation:

A. Annual operating hours - 1000 hours per 12 month period

B. Annual usage rate - 120 gallons of paint per 12 month period (current limitation).

C. Exhaust face velocity - 100 feet per minute.

D. Exhaust flow rate - 18,000 cubic feet per minute.

E. Stack diameter - 34 inches.

F. Stack height - 50 feet above ground

Paint Spray Booth #3

This booth will be replaced with two (2) end-to-end rail car drive-through, down draft air paint booths including material handling equipment, make-up air units and paint handling and spray equipment. The dimensions of the each segment, north and south, are 76 feet long, 20 feet wide, and 21 feet high and 22 feet long, 20 feet wide, and 21 feet high, respectively. The two segments will be

constructed as a single booth divided by bifolding doors. Each paint spray booth segment will be self supporting with its own balanced exhaust, make-up air units and controls. Each segment will also be equipped with an audible alarm to warn the painters when and if the air filters are functioning improperly.

This notice of intent also proposed to replace the existing conventional spray gun with High Volume Low Pressure (HVLP) spray guns which will result in high transfer efficiency. This should lower paint consumption for the same amount of work load resulting in lower VOC emissions to the atmosphere. The following numbers describe the operation:

A. Annual operating hours - 1000 hours per year

B. Annual usage rate - 800 gallons of paint per 12 month period (current limitation).

C. Exhaust face velocity - 100 feet per minute.

D. Exhaust flow rate - 18,000 cubic feet per minute.

E. Stack diameter - 34 inches.

F. Stack height - 50 feet above ground

Bake Oven

The electric bake oven will be replaced with a natural gas fired oven. The heat input for the proposed natural gas fired oven is 2 million BTU per hour. Its operating temperature range will be 0-450°F. The dimensions of the oven are 10 feet long, 10 feet wide, and 10 feet high. The following numbers describe the operation:

A. Annual operating hours - 1000 hours per year.
B. Total oven capacity - 2 million Btu per hour.
C. Fuel - natural gas.
C. Exhaust flow rate - 1,000 cubic feet per minute.
D. Stack diameter - 10 inches.
E. Stack height - 50 feet above ground

II. EMISSION SUMMARY

The emissions from this source (Building 1701) will be as follows:

Particulate	0.01	tons/year
PM_{10}	0.01	tons/year
SO_2	0.00	tons/year
NO_x	0.10	tons/year
CO	0.02	tons/year
VOC	~~2.03~~	tons/year

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required at all emission points. This includes the following points:

A. Dip tank
B. Paint spray booths
C. Bake oven

Dip Tank

Several types of control techniques are available to reduce VOC emissions from a dip coating operation. These methods can be broadly categorized as either control equipment or new coating and application systems. Possible best available control technology equipment includes carbon adsorption and incineration. Installation of either of these options is not economical or practical, especially with modest VOC emissions. The capital cost of adsorption units is assumed to be $10/CFM. New coatings with relatively low VOC contents can be used in place of high VOC content coatings. This method of control may not be available for HAFB due to the coating requisition for the electronic component insulation.

The engineering section recommends that BACT for the dip tank be the minimization of VOC emissions through good operating practice. The cover should be kept closed at all times except for loading and unloading of components. Waste or used coating shall be stored in covered containers and disposed by a method which prevents its emission into the atmosphere.

Paint Spray Booths

Several types of control techniques are available to reduce VOC emissions from surface coating operations. These methods can be broadly categorized as either control equipment or new coating and application systems. Best available control technology equipment includes carbon adsorption and incineration. Installation of these control devices is not economical or practical, especially with modest VOC emissions. New coatings with relatively low VOC coatings can be used in place of high VOC content coatings. This method of control may not be available for HAFB due to the requisition of coating materials.

The engineering section recommends that BACT for the paint spray booths be the minimization of emissions through good operating practice. Improvements in transfer efficiency decrease the amount of coating used which will result in reducing VOC emissions into the atmosphere. The distance between spray gun and substrate to be painted must be minimized to increase the transfer efficiency. Waste or used coating shall be stored in covered containers and disposed of by a method which prevents its emission into the atmosphere. Paint particulate emissions from the spray booth will be controlled by dry filters. All air exiting the booth shall pass through this control system before being vented into the atmosphere. The dry filter must be properly maintained and kept in good condition at all times.

Bake Oven

The engineering section recommends that BACT for the bake oven be 10% opacity and the minimization of emissions through good operating practices. The bake oven must be properly maintained and operated in good working condition. Natural gas is the cleanest fuel available. The properly maintained and operated oven will also be beneficial in that it will minimize VOC and CO emissions.

IV. APPLICABILITY OF FEDERAL AND UTAH AIR CONSERVATION REGULATIONS (UACR)

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification of existing sources. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required a modified source. This regulation applies.

2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. HAFB is a permanent source. Therefore, this regulation does not apply.

4. Section 3.1.10, UACR - Additional information requirements for a new major source or a major modification which emits precursors of ozone and impact an area of nonattainment for ozone. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation does not apply.

5. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation. However, these new emission points at the base are not included in that listing. Therefore, this regulation does not apply.

6. Section 3.3.1, UACR - Emission limitation for new major sources which are located in a nonattainment area or which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation will not apply.

7. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation will not apply.

8. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation since its entire source emissions are greater than 25 tons per year. Therefore, HAFB shall include emissions from sources listed in this approval order in its annual emission inventory.

9. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This notice of intent does not represent a new major source or a major modification under PSD rules. Therefore, this regulation does not apply.

10. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.1. A de minimus height of 65 meters (213.2 feet) is allowed. This notice of intent does not have stacks which exceed 65 meters in height. HAFB is in compliance with this regulation.

11. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This notice of intent does not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

12. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, BACT will require a lower opacity limitation of 10%.

13. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

14. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This notice of intent does not contain oil or coal burning sources. Therefore, this regulation does not apply.

15. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

16. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. This regulation covers the following processes:

    A. Petroleum liquid storage
    B. Petroleum liquid transfer/storage
    C. Control of hydrocarbon emissions in refineries
        1) vacuum producing systems
        2) wastewater separators
        3) process unit turnaround
        4) catalytic cracking units
        5) safety pressure relief valves
        6) leaks from petroleum refinery equipment
    D. Degreasing and solvent cleaning operations
        1) cold cleaning facilities
        2) open top vapor degreasers
        3) conveyorized degreasers
    E. Cutback asphalt
    F. VOC used for various processes
        1) paper coating
        2) fabric and vinyl coating
        3) metal furniture coating
        4) large appliance surface coating
        5) magnet wire coating
        6) flat wood coating
        7) misc. metal parts and products
        8) graphic arts
    G. Synthesized pharmaceutical manufacturing
    H. Perchlorethylene dry cleaning plants.

    This regulation would apply if these emission points were existing sources at the time of promulgation of this regulation. However, in this case, this regulation has been superceded by BACT requirements.

17. Section 5, UACR - Emergency episode requirements. This regulation applies.

18. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There are no NESHAPS for this industrial process.

19. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone. The Bureau of Air Quality guidelines does not call for this notice of intent to be modeled for any pollutant. The Bureau has found through experience that, because of the small increase in the quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size or increase is very unlikely to cause a new violation of the NAAQS.

20. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

21. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

    1) Maintenance, repair, and replacement

    2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

    3) An increase in the hours of operation

    4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

    5) The addition or use of any system or device whose primary function is the reduction of air pollutants

    6) Relocation or change in ownership

    This notice of intent represents a modification under this rule.

22. Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

    A. Routine maintenance, repair, or replacement

    B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

    C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

    D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

    E. Use of an alternative fuel or raw material by a source:

        1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

        2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This notice of intent does not represent a major modification under this rule.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base, located in Davis County, shall make the following changes according to the information submitted in the notice of intent dated April 27, 1990:

   A. Install a dip tank, 2000 gallon capacity cylindrical tank with dimensions of 7 feet diameter and 7 feet high, equipped with cathodic protection, a dip drain or catch system, a leak detection system, an electric heater, and a cover.

   B. Remove paint booth #1 and replace it with a Devilbiss Model ASEY-914-34 paint spray booth or equivalent - Equivalency shall be determined by the Executive Secretary. The booth shall be equipped with dry paint arrestor filters.

   C. Remove paint booth #3 and replace it with two end to end paint spray booths - The booths shall be equipped with dry paint arrestor filters and High Volume Low Pressure (HVLP) type spray guns.

   D. Remove the electric powered bake oven and replace it with one fired by natural gas at a total heat input rate of 2 million Btu/hr.

2. Visible emissions from any point or fugitive emission source associated with the above emission points shall not exceed 10% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

3. The following operation limits shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

   A. Dip tank

      1. 144 gallons of varnish per 12 month period
      2. 8 hours per day
      3. 1000 hours of operation per 12 month period

   B. Paint spray booth #1

      1. 120 gallons of paint per 12 month period
      2. 8 hours per day
      3. 1000 hours of operation per 12 month period

   C. Paint spray booth #3

      1. 800 gallons of paint per 12 month period
      2. 8 hours per day
      3. 1000 hours of operation per 12 month period

D. Bake oven

1. 2.2 million SCF of natural gas per 12 month period
2. 2.0 million BTU/hr heat input
3. 8 hours per day
4. 1000 hours of operation per 12 month period

Compliance with the annual limitations shall be determined on a rolling monthly total. On the first day of each month a new 12 month total shall be calculated using the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Records of production shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. Fuel consumption for the bake oven shall be determined by the use of records from a fuel meter. VOC emissions shall be determined by maintaining a record of paints, solvents, and varnish used. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

4. The total VOC emissions from sources listed in this approval order shall not exceed 4.70 tons per 12-month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined using a material balance procedure on a rolling monthly total. On first day of each month a new 12 month total shall be calculated using the previous 12 months. The total VOC emissions shall be determined by maintaining a record of paints, varnish, thinners, and solvents used, and of operation parameters from other affected VOC emissions sources. The record shall include the following data for each item used:

A. Name of paint, varnish, thinner, or solvent
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. The VOC emissions from paints/varnish/thinners/solvents shall not exceed 4.69 tons per 12 month period. The VOC emissions from other processes shall not exceed 0.01 tons per 12 month period.

5. Paint spray booths #1 and #3 shall be equipped with a set of paint arrestor particulate filters to control particulate emissions. All air exiting either booth shall pass through a paint arrestor control system before being vented to the atmosphere.

6. The owner/operator shall operate the dip tank in following manner:

A. The cover shall remain closed at all times except during actual loading, unloading, or transfer operations.

B. Parts shall be completely drained in the internal draining rack until all dripping ceases.

C. Waste or used varnish shall be stored in covered containers and disposed by a method which prevents VOC emissions to the atmosphere.

D. Tanks, containers, and all associated equipment shall be maintained in good operating condition, and leaks shall be repaired immediately.

E. Written procedures for the operation and maintenance of the dip tank shall be posted in an accessible and apparent location near the equipment.

7. Eighteen months from the date of this approval order the Executive Secretary shall be notified in writing of the status of construction of this project unless the construction is complete and operation has commenced.

8. A copy of this approval order shall be maintained on-site and available to the operators.

9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance wit Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air conservation Regulations.

"Allowable emissions" as defined in Section 1.12, UACR, for sources listed in this approval order are calculated at 0.01 tons/yr for particulates, 0.01 tons/yr for PM_{10}, 0.0006 tons/yr for SO_2, 0.10 tons/yr for NO_x, 0.02 tons/yr for CO, and 4.70 tons/yr for VOCs. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

CARL
HILL.ENG

MEMORANDUM TO : Donald E. Robinson, Manager, Engineering Section, BAQ

FROM: Tim Blanchard, Environmental Health Engineer

SUBJECT: Modify an Intent to Approve for Hill AFB Building 1701, Dip Tank, Bake Oven, and Paint Booth

DATE: January 2, 1991

==========

On October 19, 1990 a change to the dip tank specifications was received by the BAQ. The change was not incorporated into the subject Intent to Approve sent to James R. Van Orman at Hill AFB on December 7, 1990. The modified NOI indicated that the new dip tank would be installed above ground rather than underground. Because the tank is being installed above ground the cathodic protection and leak detection system will not be installed. The dimensions of the tank were reduced from 7 feet inside diameter to 4 feet inside diameter, and from 7 feet high to 4 feet high. The tank will now be a double wall construction. The capacity is reduced from 2000 gallons to 370 gallons. The emissions from the tank will less because the surface area has been reduced. December 21, 1990 a letter reflecting the above information was sent in as part of the public comment process.

It looks like the emissions will not increase as a result of the proposed change. Make the proposed changes in the AO.

DR
1-3-91

Coordination		
Org	Name	Date
EME	Jay	12-21-90
[illegible]	[illegible]	12-21-90
EME	[illegible]	12-21-90

21 DEC 1990

Mr F Burnell Cordner, Executive Secretary
Bureau of Air Quality
1950 West North Temple
PO Box 16690
Salt Lake City, UT 84116-0690

RE: Public comments on Intent to Approve building 1701, Dip Tank, Bake Oven & Paint Booths.

Dear Mr Cordner

Referenced Intent to Approve dated 7 Dec 90, we offer the following public comments for your consideration

Condition 1.A. - Per our 18 Oct 90 letter, dual wall dip tank shall be 370 gallon capacity measuring approximately 4 feet inside diameter and 4 feet high. The tank will be located above ground, therefore, cathodic protection will not be provided. The tank will be provided with a sealed clam type lid, outside pump liquid circulating type agitation, electric heater and a vent system.

Condition 4 - Our estimation of VOC emissions from sources listed in this Intent to Approve is 3.28 tons per year. Revised VOC evaporative emissions from the dip tank are as follows:

Uncontrolled AP-42 Emission Factor = 0.15 Lb VOC/Hr, Ft^2
Evaporative area (revised) = $\frac{3.14}{4}$ X $(4)^2$ = 12.56 Ft^2
Operating hours = about 1,000 hrs/yr
Uncontrolled evaporative loss = $\frac{.15 \text{ Lb}}{\text{hr, } Ft^2}$ X 12.56 Ft^2 X 1,000 hrs X $\frac{\text{Ton}}{2{,}000 \text{ Lbs}}$
= 0.94 Ton/Yr

Emission Reduction Factor = 30-60% use 40%
Evaporative VOC emissions = 0.94 X .6 = .56 Ton/Yr
Dip tank usage Loss (NOI) = .06 Ton/Yr
Paint booth #1 VOC emissions (NOI) = .12 + .34 = .46 Ton/Yr
Baking Oven VOC emissions (NOI) = .12 Ton/Yr
Paint booth #3 VOC emissions (NOI) = 2.08 Tons/Yr
Total VOC emissions = 0.56 + .06 + .46 + .12 + 2.08
= 3.28 Tons/Yr

If you have any questions, please feel free to contact Jay Gupta at 777-6917.

Sincerely,

4.2.4-866

JAMES N. [illegible]
Deputy
[illegible] Mgt Dir

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

SEP 10 1990

Mr F. Burnell Cordner, Executive Secretary
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City, UT 84116-0690

RE: Notice of Intent to Construct a Dip Tank, Bake Oven and Paint Booth Modification - Bldg 1701

Dear Mr Cordner

On 27 April 90 we submitted the reference NOI. We have made several calls to your consultant, Tetra Tech, Inc in California. According to Tetra Tech, this NOI was processed by them and sent to UBAQ on 9 Sep 90. We wish to commence construction on this project during Nov 90. We, therefore, request an expeditious review and issue of an approval order.

Also, due to a design change, please note that the double wall dip tank will be located above ground and not underground as stated in our original NOI. New dip tank shall be 4' inside diameter, 6' outside diameter and 4' in height. A sealed clam type lid will be provided as before. Dip tank will be equipped with a ventilation system, as stated before, installed on the upper side portion of the tank. Exhaust vent will be 6" diameter approximately 55'-60' above ground. Exhaust volume is estimated to be 100 cubic feet per minutes.

If you have any questions, please feel free to contact Jay Gupta at 777-6917.

Sincerely,

JAMES N. VINING
Deputy
Environmental Mgt Dir

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: NET EMISSION INCREASES
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.0012	0.00	0.0006	0.00	0.00	0.0012	0.0006
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	4.06	0.51	2.03	0.06	36.23	6.37	3.19
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

SOURCE:
TOTAL POST-MODIFICATION EMISSION ESTIMATE
TOTAL PRE-MODIFICATION EMISSION ESTIMATE

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PM-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VOC, NON-METHANE.....	5.34	0.67	2.67	0.08	0.00	5.34	2.67
VOC, METHANE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE:
PAINT SPRAY BOOTH #1 - PAINT SPRAYING OPERATION
PAINT SPRAY BOOTH #3 - PAINT SPRAYING OPERATION

ITROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.70	0.09	0.35	0.01	0.00	0.70	0.35

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: PAINT

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	120.00	GAL/YR	FROM NOI
	0.12	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 3 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	4.64	0.58	2.32	0.07	0.00	4.64	2.32

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VOC CONTENT OF PAINT RANGED 3.2 TO 5.8 LBS/GAL

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI, ASSUMED HIGHEST VALUE
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	800.00	GAL/YR	FROM NOI
	0.80	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

...S OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

TROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	9.40	1.18	4.70	0.14	19.71	11.71	5.85
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

SOURCE:
DIP TANK - USAGE LOSS
DIP TANK - EVAPORATION LOSS
PAINT SPRAY BOOTH #1 - USAGE LOSS FROM DIP TANK
PAINT SPRAY BOOTH #1 - PAINT SPRAYING OPERATION
PAINT SPRAY BOOTH #3 - PAINT SPRAYING OPERATION
BAKE OVEN - USAGE LOSS FROM DIP TANK
BAKE OVEN - NATURAL GAS FIRED

fROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: DIP TANK - USAGE LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.12	0.01	0.06	0.00	0.00	0.12	0.06

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
USAGE LOSS AT DIP TANK.....	20.00	%	FROM NOI, ASSUMED REMAIN 80% OF USAGE LOSS OCCURRED AT PAINT SPRAY BOOTH AND BAKE OVEN

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

POLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: DIP TANK - EVAPORATION LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	3.46	0.44	1.73	0.05	40	5.77	2.88

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.6 SOLVENT DEGREASING
TABLE 4.6-2 SOLVENT LOSS EMISSION FACTORS FOR DEGREASING OPERATIONS
TYPE: OPEN TOP VAPOR WITH A COVER

			COMMENTS
VOC non METHANE	0.15	LB/HR/FT2	TABLE 4.6-2
EVAPORATIVE AREAS.....	38.47	FT2	FROM NOI, BASED ON 7 FEET DIAMETER

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
PER WEEK	5	DAYS/WEEK	FROM NOI
PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

'OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - USAGE LOSS FROM DIP TANK
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.24	0.03	0.12	0.00	0.00	0.24	0.12

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
LOSS FROM DIP TANK....	40.00	%	FROM NOI,

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

(ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.70	0.09	0.35	0.01	0.00	0.70	0.35

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: PAINT

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	120.00	GAL/YR	FROM NOI
	0.12	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

TROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 3 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	4.64	0.58	2.32	0.07	0.00	4.64	2.32

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VOC CONTENT OF PAINT RANGED 3.2 TO 5.8 LBS/GAL

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI, ASSUMED HIGHEST VALUE
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	800.00	GAL/YR	FROM NOI
	0.80	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

"ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: BAKE OVEN - USAGE LOSS FROM DIP TANK
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.24	0.03	0.12	0.00	0.00	0.24	0.12

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
..E LOSS AT DIP TANK.....	40.00	%	FROM NOI,

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: BAKE OVEN - NATURAL GAS FIRED
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

: FOURTH EDITION SEPT. 1985 VOLUME 1
CTION 1 EXTERNAL COMBUSTION SOURCES
1.4 NATURAL GAS COMBUSTION
TABLE 1.4-1 UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION
FUEL TYPE: NATURAL GAS

EMISSION FACTOR IN LB PER MILLION CUBIC FEET

TOTAL PARTICULATE.....	5.00	LB/MM FT3	TABLE 1.4-1
PM-10	5.00	LB/MM FT3	TABLE 1.4-1
SOx.....	0.60	LB/MM FT3	TABLE 1.4-1
NOx.....	100.00	LB/MM FT3	TABLE 1.4-1
CO.....	20.00	LB/MM FT3	TABLE 1.4-1
VOC, NON-METHANE.....	5.30	LB/MM FT3	TABLE 1.4-1
VOC, METHANE.....	2.70	LB/MM FT3	TABLE 1.4-1
TOTAL POWER RATING.....	2000.00	K BTU/HR	FROM NOI
FUEL CONSUMPTION RATES....	0.00	MM FT3/HR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)
	2.00	MM FT3/YR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)* (ANNUAL OPERATING HOUR)

HOURS OF OPERATION

IRS PER DAY.....	8.00	HRS/DAY	
S PER WEEK.....	5.00	DAYS/WEEK	
EKS PER YEAR.....	52.00	WEEKS/YR	
HOURS PER YEAR.....	1000.00	HRS/YR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: NET EMISSION INCREASES
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.0012	0.00	0.0006	0.00	0.00	0.0012	0.0006
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	4.06	0.51	2.03	0.06	36.23	6.37	3.19
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

SOURCE:
TOTAL POST-MODIFICATION EMISSION ESTIMATE
TOTAL PRE-MODIFICATION EMISSION ESTIMATE

"NTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PM-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VOC, NON-METHANE.....	5.34	0.67	2.67	0.08	0.00	5.34	2.67
VOC, METHANE.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE:
PAINT SPRAY BOOTH #1 - PAINT SPRAYING OPERATION
PAINT SPRAY BOOTH #3 - PAINT SPRAYING OPERATION

NTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.70	0.09	0.35	0.01	0.00	0.70	0.35

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: PAINT

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	120.00	GAL/YR	FROM NOI
	0.12	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

E: PAINT SPRAY BOOTH 3 - PAINT SPRAYING OPERATION
NY NAME: DEPT. OF THE AIR FORCE
ION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
UTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
non METHANE	4.64	0.58	2.32	0.07	0.00	4.64	2.32

42 FOURTH EDITION SEPT. 1985 VOLUME 1
TION 4 EVAPORATION LOSS SOURCES
SURFACE COATING
ILE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
INT TYPE: VOC CONTENT OF PAINT RANGED 3.2 TO 5.8 LBS/GAL

			COMMENTS
C non METHANE	5.80	LBS/GAL	FROM NOI, ASSUMED HIGHEST VALUE
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
SAGE RATES.....	800.00	GAL/YR	FROM NOI
	0.80	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOU... OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	9.40	1.18	4.70	0.14	19.71	11.71	5.85
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

SOURCE:
DIP TANK - USAGE LOSS
DIP TANK - EVAPORATION LOSS
PAINT SPRAY BOOTH #1 - USAGE LOSS FROM DIP TANK
PAINT SPRAY BOOTH #1 - PAINT SPRAYING OPERATION
PAINT SPRAY BOOTH #3 - PAINT SPRAYING OPERATION
BAKE OVEN - USAGE LOSS FROM DIP TANK
BAKE OVEN - NATURAL GAS FIRED

NTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: DIP TANK - USAGE LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.12	0.01	0.06	0.00	0.00	0.12	0.06

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
USAGE LOSS AT DIP TANK.....	20.00	%	FROM NOI, ASSUMED REMAIN 80% OF USAGE LOSS OCCURRED AT PAINT SPRAY BOOTH AND BAKE OVEN

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: DIP TANK - EVAPORATION LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	3.46	0.44	1.73	0.05	40	5.77	2.88

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.6 SOLVENT DEGREASING
TABLE 4.6-2 SOLVENT LOSS EMISSION FACTORS FOR DEGREASING OPERATIONS
TYPE: OPEN TOP VAPOR WITH A COVER

			COMMENTS
VOC non METHANE	0.15	LB/HR/FT2	TABLE 4.6-2
EVAPORATIVE AREAS.....	38.47	FT2	FROM NOI, BASED ON 7 FEET DIAMETER

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
'S PER YEAR	52	WEEKS/YEAR	FROM NOI
; PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

TROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - USAGE LOSS FROM DIP TANK
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.24	0.03	0.12	0.00	0.00	0.24	0.12

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
LOSS FROM DIP TANK....	40.00	%	FROM NOI,

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 1 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.70	0.09	0.35	0.01	0.00	0.70	0.35

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: PAINT

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	120.00	GAL/YR	FROM NOI
	0.12	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

'LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: PAINT SPRAY BOOTH 3 - PAINT SPRAYING OPERATION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	4.64	0.58	2.32	0.07	0.00	4.64	2.32

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VOC CONTENT OF PAINT RANGED 3.2 TO 5.8 LBS/GAL

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI, ASSUMED HIGHEST VALUE
V(%) (VOC CONTENT).....	78.80	%	(VOC DENISTY OF COATINGS)/(COATING DENSITY)*100
COATING DENSITY	7.36	LBS/GAL	DEFAULT VALUE FROM TALBE 4.2.2.1-1
USAGE RATES.....	800.00	GAL/YR	FROM NOI
	0.80	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

'ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: BAKE OVEN - USAGE LOSS FROM DIP TANK
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.24	0.03	0.12	0.00	0.00	0.24	0.12

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: VARNISH

			COMMENTS
VOC non METHANE	4.10	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	50.00	%	FROM NOI
COATING DENSITY	8.20	LBS/GAL	FROM NOI
USAGE RATES.....	144.00	GAL/YR	FROM NOI
	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
.GE LOSS AT DIP TANK.....	40.00	%	FROM NOI,

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	1000	HOURS/YEAR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 1701
DATE: AUG-28-90
TIME: 9:00 AM

SOURCE: BAKE OVEN - NATURAL GAS FIRED
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 1701

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
PM-10	0.01	0.00	0.01	0.00	0.00	0.01	0.01
SOx.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx.....	0.20	0.03	0.10	0.00	0.00	0.20	0.10
CO.....	0.04	0.01	0.02	0.00	0.00	0.04	0.02
VOC, NON-METHANE.....	0.01	0.00	0.01	0.00	0.00	0.01	0.01
VOC, METHANE.....	0.01	0.00	0.00	0.00	0.00	0.01	0.00

-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.4 NATURAL GAS COMBUSTION
TABLE 1.4-1 UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION
FUEL TYPE: NATURAL GAS

EMISSION FACTOR IN LB PER MILLION CUBIC FEET

TOTAL PARTICULATE.....	5.00	LB/MM FT3	TABLE 1.4-1
PM-10	5.00	LB/MM FT3	TABLE 1.4-1
SOx.....	0.60	LB/MM FT3	TABLE 1.4-1
NOx.....	100.00	LB/MM FT3	TABLE 1.4-1
CO.....	20.00	LB/MM FT3	TABLE 1.4-1
VOC, NON-METHANE.....	5.30	LB/MM FT3	TABLE 1.4-1
VOC, METHANE.....	2.70	LB/MM FT3	TABLE 1.4-1
TOTAL POWER RATING.....	2000.00	K BTU/HR	FROM NOI
FUEL CONSUMPTION RATES....	0.00	MM FT3/HR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)
	2.00	MM FT3/YR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)* (ANNUAL OPERATING HOUR)

HOURS OF OPERATION

HOURS PER DAY.....	8.00	HRS/DAY	
DAYS PER WEEK.....	5.00	DAYS/WEEK	
WEEKS PER YEAR.....	52.00	WEEKS/YR	
HOURS PER YEAR.....	1000.00	HRS/YR	FROM NOI, INTERMITTENT OPERATION- FEW HOURS A DAY DURING DAY SHIFT ONLY

Social Services

533-6108

Scott M. Matheson, Governor, State of Utah
Anthony W. Mitchell, Ph.D., Executive Director

June 27, 1978

Phillip E. Lammi
Department of The Air Force
Regional Civil Engineer
Western Region (HQUSAF)
630 Sansome Street
Room 1316
San Francisco, California 94111

Re: Construction Approval Order

Dear Mr. Lammi:

On May 14, 1978 notice of intent to approve the construction of a landing gear overhaul facility at Hill Air Force Base, Utah was published in the Salt Lake Tribune. The thirty-day comment period has expired and no comments were received.

This order authorizes the construction of the plant. Conditions of the order are that the plant will conform to the plans and specifications on file and the pollution control devices be kept in proper operating conditions.

Please notify this office when the plant becomes operational as a final inspection is required.

Sincerely,

Alvin E. Rickers
Executive Secretary
Utah Air Conservation Committee

REB: lr

Division of Health
Environmental Health Services Branch
Lynn M. Thatcher
Deputy Director of Health

150 West North Temple, Suite 426
P.O. Box 2500, Salt Lake City, Utah 84110
801-533-6121

AIRCRAFT LANDING GEAR OVERHAUL FACILITY
NOTICE OF INTENT TO CONSTRUCT - ADDITIONAL INFORMATION

The information is provided in the same order as requested in Mr. Ricker's letter of 1 March 1978.

1. Fume scrubber and mist eliminator in the chemical cleaning area, also quantity of cleaning fluids used:

a. The fume scrubber system is a water wash, impingement ball type pack 12 inches thick with 1,200 square feet of surface area. Water is sprayed through a pressure nozzle system across the entire face of the scrubber pack at a rate of 1 1/3 gallons per minute per square foot of pack. The tank ventilation discharge air is distributed across the face of the pack. The maximum velocity through the scrubber system shall not exceed 400 FPM. Downstream from the scrubber pack system will be 800 square feet of Z-frame moisture eliminators. This system shall be certified to remove at least 99 percent of the soluble contaminates from the ventilation effluent air stream.

b. The total volume of paint stripping and cleaning agents used in this process is 116,300 gallons.

2. Paint booths with scrubber, also quantity and type of paints and paint thinner:

a. All paint spray operations in building 507 will be accomplished in seven water wash type paint booths. These booths will be four DeVilbiss Model XXW-6848, size 8' X 9' X 10' working area with 14,000 CFM exhaust fans, and three Model XSW, size 10' X 12' X 14' working area and 27,175 CFM fans. Attached is a copy of the manufacturer's specifications for these paint booths. The booth dimensions listed in the attachment do not correspond exactly with those given, because the booths were custom built for previous use in another facility, but the booth operation is the same.

b. The types of paint, thinners and anticipated weekly volumes of sprayed finished are:

(1) Acrylic lacquer, MIL-L-1953-7, 15 gallons

(2) Lacquer primer, MIL-C-8514, 5 gallons

(3) Polyurethane paint, MIL-C-8328-6B, 10 gallons

(4) Epoxy base paint, MIL-C-23377C, 10 gallons

(5) Polyurethane thinner, MIL-T-81772, 12 gallons

(6) Cellulose nitrate thinner, MIL-TT-T2660, 50 gallons

(7) Denatured alcohol, 15 gallons

c. According to EPA publication AP-42 (Compilation of Air Pollutant Emission Factors) water curtains have little or no effect on escaping solvent vapors but are used to stop paint particulate emissions. Water curtain and sprays have paint particulate removal efficiencies of up to 95 percent. Using emission factors provided in AP-42 (assuming paint weighs 12.5 pounds per gallon, and all of the alcohol and thinners are evaporated) the estimated hydrocarbons emitted from the painting operation are:

	Used/Yr (Gal)	Weight Factors	Weight (Lbs)	Percent Emissions	Emissions Year (Lbs)
Lacquer	1040	12.5	13,000	77	10,010
Paint	1040	12.5	13,000	56	7,280
Thinner	3224	8	25,792	100	25,792
Alcohol	780	7	5,460	100	5,460
				Total:	48,542
				=	24.3 Tons

3. Type of emissions from process ovens: There will be five process ovens installed in the landing gear overhaul facility.

a. Three each expansion ovens with thru-belt conveyors to be used to thermally expand aircraft wheels so the bearing cups can be removed. These ovens are electrically heated with a maximum temperature of 400°F. No product or combustion emissions will be generated.

b. One each paint drying oven that is heated by infrared lamps to a maximum temperature of 250°F. Emissions will be small quantities of volatil. paint thinners, which are included in the emissions estimated in part 2c.

c. One each steel bake oven to be used to release entrapped hydrogen in steel aircraft components that was introduced during chemical cleaning. This oven is heated by natural gas firing with an electrically heated backup system and has a capacity of 6 million BTU per hour. The maximum temperature will be 375°F and no product emissions will be generated. The only emission to the atmosphere will be the combustion by-products of the natural gas firing system. The average heating rate of this unit is estimated to be 2 million BTU per hour and the oven will be used 16 hours per day, 5 days a week. Using the heating value of natural gas provided in AP-42 (1050 BTU/cu ft), the furnace will require 152,400 cubic feet per week or 7.924 million cubic feet per year. Using factors provided by Table 1.4-1 of AP-42 (commercial heating) the following emissions are estimated from this oven:

Pollutant	Factor ($LB/10^6 Ft^3$)	Emissions (Lb/Year)
Particulates	10	79.2
Sulfur Oxides	0.6	4.8
Carbon Monoxide	20	158.5
Hydrocarbons	8	63.4
Nitrogen Oxides	120	950.9

4. Baghouse in the mechanical cleaning area along with efficiencies, types and flow rates:

There will be five bag house type dust collectors installed outside the building to support all mechanical (air blast) cleaning of aircraft parts. The parts air blasted are steel and aluminum. The blast media will be 80-180 grit alum oxide or agasite (walnut shell or cracked hard wheat). Three of these units will be 10,000 CFM cloth screen collectors with 2,800 square feet of filtering fabric, one 6,500 CFM unit and one 6,000 CFM unit. One 10,000 CFM unit is a Pangborn CH-3 type and four are American Air Filter Corporation Fabric Pulse machines (size 12-168-2694). Both units have automatic reverse-air cleaning and are designed to comply with current OSHA requirements. According to "Air Pollution Engineering Manual", published by the U. S. Department of Health, Education and Welfare (Public Health Service, Cincinnati, Ohio, 1967), baghouses are the most widely used type of collector for blasting operations and "the positive collection mechanism of the baghouse ensures virtually 100 percent collection efficiency for an adequately sized unit in good condition."

5. Melt furnaces, type of firing and control:

a. There will be four melt furnaces installed in the foundry area. Two of these furnaces are 1,000 pound capacity tilt type units and will be used to pour lead and Kirksite (lead zinc copper alloy) drop hammer dies, with a maximum temperature of 1,000°F. Two furnaces of 250 pound capacity will be used for aluminum and brass casting. The furnaces are used to melt virgin materials (no contaminants) and fit into the category of "crucibles or pots" as defined by AP-42.

b. There are no cleaning devices planned for the emissions from these furnaces. However, as indicated in our earlier submittal, the fumes from these furnaces are exhausted through a 30 foot stack which will allow some particulates to drop out. Using emission factors from AP-42 and assuming no removal in the stack, the estimated particulate emissions from the metal melting is:

	Yearly Melt (Tons)	Emission Factor (Lb/Tons)	Particulate Emissic (Lbs/Year)
Lead	19.5	0.8	15.6
Kirksite	24.0	12.0*	288.0
Aluminum	1.9	1.9	3.6
Brass	0.25	12.0*	3.0
		Total:	310.2

*AP-42 gives no factors for Kitksite so the factor for brass was utilized (both are zinc copper alloys).

c. The four melt furnaces are all fired by natural gas and forced air draft. The two 1,000 pound capacity units have maximum ratings of 2.5 million BTU per hour to melt 3,000 pounds per hour. No rating could be found on the 250 pound capacity units, but it is assumed they are similar (i.e. 0.63 million BTU per hour to melt 750 pounds per hour). Using these maximum capacity rates, the yearly natural gas consumption to melt the identified quantities is estimated as follows:

	Yearly Melt (Tons)	BTU Req'd (10^6)	Nat Gas (Cu Ft)
Lead	19.5	32.5	30,480
Kirksite	24.0	40.0	38,100
Aluminum	1.9	3.2	3,050
Brass	0.25	0.42	400
		Total:	72,030

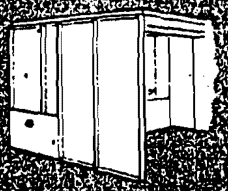
The pollutants from this natural gas combustion are then calculated at:

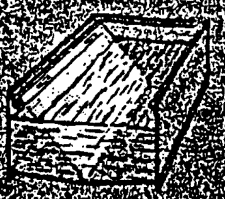
Pollutant	Factor (Lb/10^6 Cu Ft)	Emissions (Lb/Year)
Particulates	10	0.7
Sulfur Oxides	0.6	—
Carbon Monoxide	20	1.4
Hydrocarbons	8	0.6
Nitrogen Oxides	120	8.6

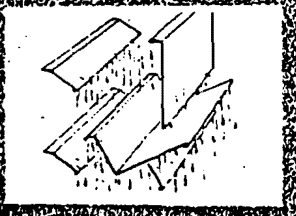
1 Atch
Paint Booth Specifications

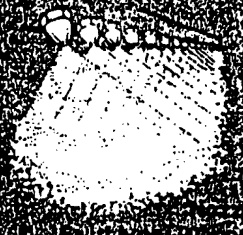
DEVILBISS

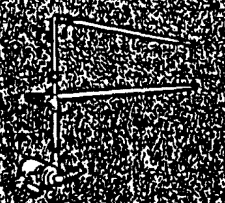
construction features

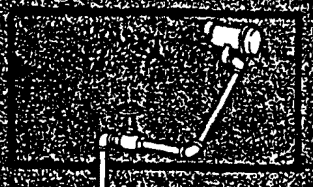


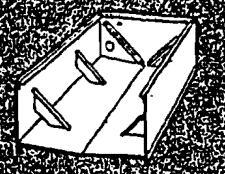












water wash spray booths

for all production spraying requirements (the most widely used and most versatile type of booth) to trap paint particles in water

- **offers maximum capacity for cleaning exhaust air**
- **full compliance with safety and insurance codes**
- **wide range of sizes and capacities**
- **special features available for specific jobs**

Powerful scrubbing action with a deluge of water—as only a multiple-nozzle-type spray produces—removes paint particles from the exhaust air. The design of the swirl-type nozzles and their spacing provide a thick, dense curtain of coarse drops that trap paint and carry it into the tank for easy removal. Baffles between the washing area and the fan are so positioned as to throw out and catch any free water before it reaches the stack. When the air reaches the exhaust system, it is free of paint and water particles. This simple principle of operation is highly efficient and easily maintained; it has been proved in thousands of installations.

Water wash booths with either the elevated or low level chamber are available in a variety of capacities to efficiently remove the air-borne paint particles resulting from spraying operations.

Elevated chambers are preferred whenever sufficient building ceiling height is available. Low type chambers are employed where building ceiling heights restrict the use of the elevated type.

Standard duty chambers provide sufficient washing capacity for applications involving a moderate amount of painting, such as maintenance painting, or moderate speed conveyorized jobs.

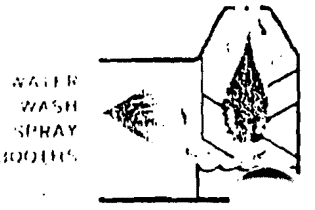
Heavy duty chambers provide extra air washing capability for high production applications involving high painting rates.

Two standard air velocities of 125 and 150 FPM are offered to meet industry and code standards. Generally 125 FPM meets most requirements and 150 FPM is available for heavy duty application and where preferred or specified by industry and codes.

DeVilbiss water wash spray booths have outstanding design and construction features that are responsible for their high paint-trapping efficiency, their ease of installation, operation and cleaning.

4.2.4-1048

elevated and low type chambers

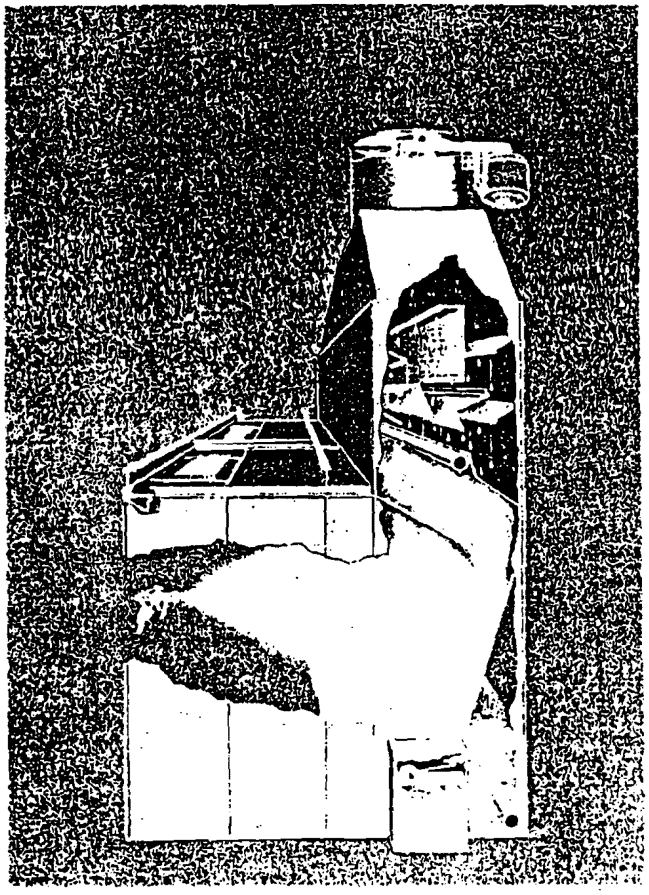


ceiling height required: 14 feet, or more

- air washed twice—passing through sheet of water from spill baffle—scrubbed and agitated in dense, overlapping spray from nozzles.
- simple piping—single, large-diameter header pipe with flush-out line.
- water flow 21, 42 and 56 gallons per minute per foot of booth width.
- entire volume of water on wash-down sheet.
- wash-down sheet extends into water—accumulated paint and scum stays in front for easy removal.
- very low resistance to flow of air.
- convenient inspection and clean-out doors.

ceiling height required: 10 feet, 6 inches

- air washed twice—passing through curtain of water from wash-down sheet—scrubbed and agitated in dense, overlapping spray from the closely spaced nozzles.
- simple piping—single, large-diameter header pipe with flush-out line—separate line with adjustment to supply correct amount of water to wash-down sheet.
- water flow on wash-down sheet ample to catch paint, keep surface clean and provide first stage washing.
- water flow 21, 42 and 56 gallons per minute per foot of booth width, plus 5 gallons per minute per foot for wash-down sheet.
- ample clearance over entire tank for removing scum from front of chamber.
- convenient inspection and clean-out doors.

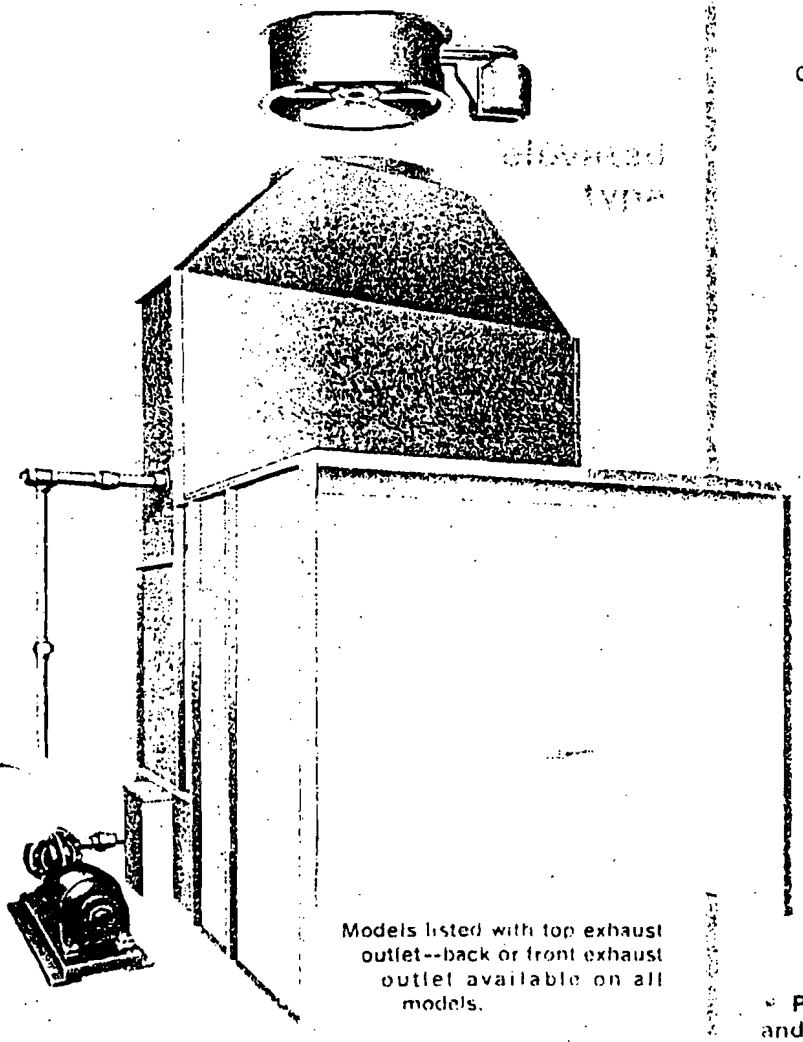


elevated type

low type

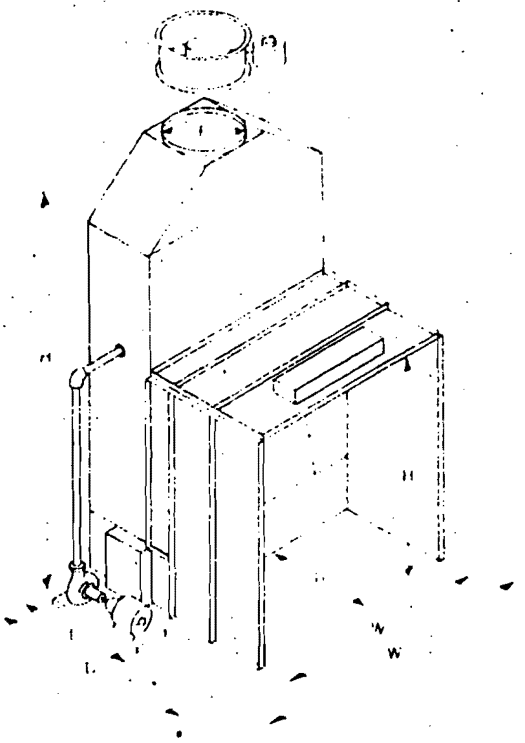
4.2.4-1049

DEVILBISS water wash spray booths



Models listed with top exhaust outlet--back or front exhaust outlet available on all models.

ceiling height required: 14 feet, or more



Complete spray booth features

• **Lights**—4 tube, panel type, rapid-start fluorescent fixtures provide broad source illumination for maximum reduction fo shadows in work area. Sealed type fluorescent and incandescent also available.

• **Exhaust Fan**—Correct size and capacity to produce required air velocity for booths with or without conveyor openings. Open type motor is standard; explosion-proof or totally enclosed available.

• **Fan Rings**—Provide reinforced flange type mounting to exhaust stack.

• **Pump**—Capacity to furnish all water required at most efficient operating pressure; with standard open type motor; explosion-proof and totally enclosed available. Furnished with sturdy sheet metal safety guard over mounting coupler shaft.

• **Piping**—All piping (except water supply line to booth and drain line to sewer) is included as standard equipment.

• **Hardware**—All nuts, bolts, fittings, seals, caulking, floor clips and tie angles furnished.

exhaust chambers

Ideal for special enclosures constructed from standard panels, beams, etc. (see pages 36 and 37)—or for installation in a "spray finishing room." Consists of the complete exhaust chamber section (without the painting area enclosure), water piping and pump with open type motor. Order exhaust fan and motor separately.

optional feature

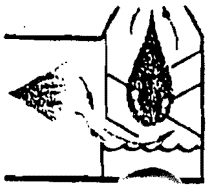
extension tank: water tank extended out into or beneath working area so work hangs over surface of water.

important: Specify electric current from which both fan and pump motors are to operate. Order required exhaust stack (pages 40 and 41).

4.2.4-1050

elevated type chamber

125 feet per minute air velocity
without conveyor openings

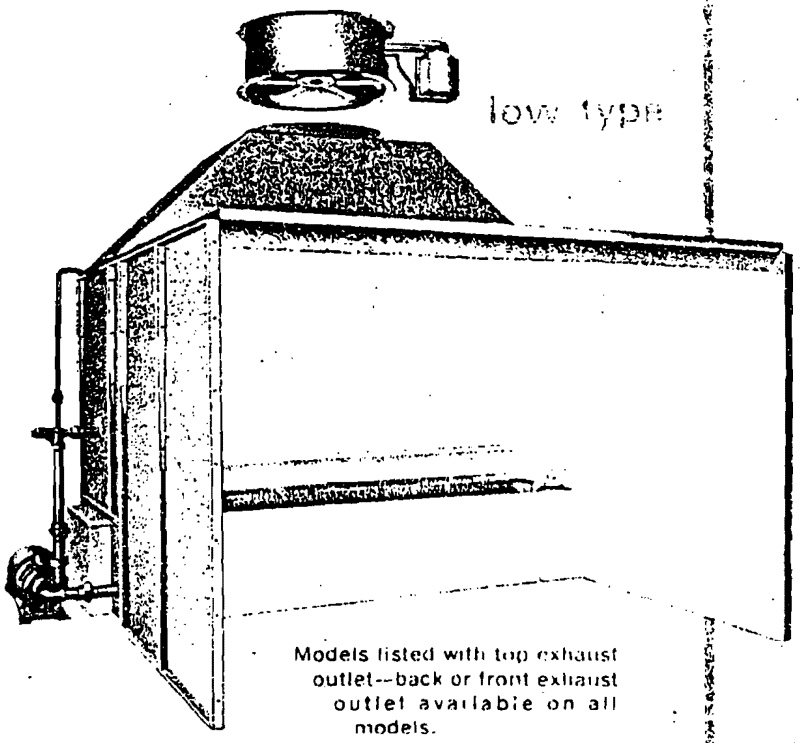


WORKING COMPARTMENT DIMENSIONS			BOOTH OVER ALL DIMENSIONS				No. of Lights	STANDARD WASH				HEAVY WASH				Fan	
W	H	D	W'	H'	D'	E		Booths with Lights and Fan	Booths with Fan Without Light Openings or Fixtures	Exhaust Chamber Only Without Fan	Pump H.P.	Booths with Lights and Fan	Booths with Fan Without Light Openings or Fixtures	Exhaust Chamber Only – Without Fan	Pump H.P.	Dia.	H.P.
4	7	6	6'11"	13'6"	10'0"	4'3"		--	XSW-6001	XNE-5184	2		XHW-6001	XNE-544	3	24	1
6	7	6	9'1"	13'6"	10'0"	4'7"	1	XSW-6002	XSW-6003	XNE-5186	3	XHW-6002	XHW-6003	XNE-546	5	24	1½
6	7	9	9'1"	13'6"	13'0"	4'7"	1	XSW-6004	XSW-6005	XNE-5186	3	XHW-6004	XHW-6005	XNE-546	5	24	1½
6	8	6	9'1"	14'6"	10'0"	4'7"	1	XSW-6006	XSW-6007	XNE-5293	3	XHW-6006	XHW-6007	XNE-545	5	24	2
6	8	9	9'1"	14'6"	13'0"	4'7"	1	XSW-6008	XSW-6009	XNE-5293	3	XHW-6008	XHW-6009	XNE-545	5	24	2
8	7	6	11'1"	13'6"	10'0"	4'7"	1	XSW-6010	XSW-6011	XNE-5188	3	XHW-6010	XHW-6011	XNE-548	5	24	2
8	7	9	11'1"	13'6"	13'0"	4'7"	1	XSW-6012	XSW-6013	XNE-5188	3	XHW-6012	XHW-6013	XNE-548	5	24	2
8	8	6	11'1"	14'6"	10'0"	4'7"	1	XSW-6014	XSW-6015	XNE-5228	3	XHW-6014	XHW-6015	XNE-568	5	34	2
8	8	9	11'1"	14'6"	13'0"	4'7"	1	XSW-6016	XSW-6017	XNE-5228	3	XHW-6016	XHW-6017	XNE-568	5	34	2
10	7	6	13'2"	13'6"	10'0"	5'2"	2	XSW-6020	XSW-6021	XNE-5190	5	XHW-6020	XHW-6021	XNE-550	7½	34	1½
10	7	9	13'2"	13'6"	13'0"	5'2"	2	XSW-6022	XSW-6023	XNE-5190	5	XHW-6022	XHW-6023	XNE-550	7½	34	1½
10	8	6	13'2"	14'6"	10'0"	5'2"	2	XSW-6024	XSW-6025	XNE-5230	5	XHW-6024	XHW-6025	XNE-570	7½	34	3
10	8	9	13'2"	14'6"	13'0"	5'2"	2	XSW-6026	XSW-6027	XNE-5230	5	XHW-6026	XHW-6027	XNE-570	7½	34	3
10	8	12	13'2"	14'6"	16'0"	5'2"	4	XSW-6028		XNE-5230	5	XHW-6028		XNE-570	7½	34	3
10	10	9	13'2"	16'6"	13'0"	5'2"	2	XSW-6034	XSW-6035	XNE-5259	5	XHW-6034	XHW-6035	XNE-593	7½	42	5
10	10	12	13'2"	16'6"	16'0"	5'2"	4	XSW-6036	--	XNE-5259	5	XHW-6036		XNE-593	7½	42	5
12	7	6	15'3"	13'6"	10'0"	5'2"	2	XSW-6038	XSW-6039	XNE-5192	5	XHW-6038	XHW-6039	XNE-552	10	34	2
12	7	9	15'3"	13'6"	13'0"	5'2"	2	XSW-6040	XSW-6041	XNE-5192	5	XHW-6040	XHW-6041	XNE-552	10	34	2
12	8	6	15'3"	15'6"	10'0"	5'2"	2	XSW-6042	XSW-6043	XNE-5232	5	XHW-6042	XHW-6043	XNE-572	10	34	3
12	8	9	15'3"	15'6"	13'0"	5'2"	2	XSW-6044	XSW-6045	XNE-5232	5	XHW-6044	XHW-6045	XNE-572	10	34	3
12	8	12	15'3"	15'6"	16'0"	5'2"	4	XSW-6046	--	XNE-5232	5	XHW-6046		XNE-572	10	34	3
12	8	15	15'3"	15'6"	19'0"	5'2"	4	XSW-6048	--	XNE-5232	5	XHW-6048		XNE-572	10	34	3
12	10	9	15'3"	17'6"	13'0"	5'2"	2	XSW-6056	XSW-6057	XNE-5233	5	XHW-6056	XHW-6057	XNE-595	10	42	5
12	10	12	15'3"	17'6"	16'0"	5'2"	4	XSW-6058		XNE-5233	5	XHW-6058		XNE-595	10	42	5
12	10	15	15'3"	17'6"	19'0"	5'2"	4	XSW-6060	--	XNE-5233	5	XHW-6060		XNE-595	10	42	5
14	7	6	17'3"	14'6"	10'0"	5'2"	2	XSW-6062	XSW-6063	XNE-5194	5	XHW-6062	XHW-6063	XNE-554	10	34	3
14	7	9	17'3"	14'6"	13'0"	5'2"	2	XSW-6064	XSW-6065	XNE-5194	5	XHW-6064	XHW-6065	XNE-554	10	34	3
14	8	6	17'3"	15'6"	10'0"	5'2"	2	XSW-6066	XSW-6067	XNE-5234	5	XHW-6066	XHW-6067	XNE-574	10	42	
14	8	9	17'3"	15'6"	13'0"	5'2"	2	XSW-6068	XSW-6069	XNE-5234	5	XHW-6068	XHW-6069	XNE-574	10	42	
14	8	12	17'3"	15'6"	16'0"	5'2"	4	XSW-6070		XNE-5234	5	XHW-6070		XNE-574	10	42	
14	8	15	17'3"	15'6"	19'0"	5'2"	4	XSW-6072		XNE-5234	5	XHW-6072		XNE-574	10	42	5
14	10	9	17'3"	17'6"	13'0"	5'2"	2	XSW-6080	XSW-6081	XNE-5243	5	XHW-6080	XHW-6081	XNE-547	10	42	5
14	10	12	17'3"	17'6"	16'0"	5'2"	4	XSW-6082		XNE-5243	5	XHW-6082		XNE-547	10	42	5
14	10	15	17'3"	17'6"	19'0"	5'2"	4	XSW-6084	--	XNE-5243	5	XHW-6084		XNE-547	10	42	5
16	7	6	19'6"	14'6"	10'0"	5'8"	2	XSW-6086	XSW-6087	XNE-5196	7½	XHW-6086	XHW-6087	XNE-556	10	42	3
16	7	9	19'6"	14'6"	13'0"	5'8"	2	XSW-6088	XSW-6089	XNE-5196	7½	XHW-6088	XHW-6089	XNE-556	10	42	3
16	8	6	19'6"	15'6"	10'0"	5'8"	2	XSW-6090	XSW-6091	XNE-5295	7½	XHW-6090	XHW-6091	XNE-565	10	42	5
16	8	9	19'6"	15'6"	13'0"	5'8"	2	XSW-6092	XSW-6093	XNE-5295	7½	XHW-6092	XHW-6093	XNE-565	10	42	5
16	8	12	19'6"	15'6"	16'0"	5'8"	4	XSW-6094	--	XNE-5295	7½	XHW-6094		XNE-565	10	42	5
16	8	15	19'6"	15'6"	19'0"	5'8"	4	XSW-6096		XNE-5295	7½	XHW-6096	--	XNE-565	10	47	5
16	10	9	19'6"	17'6"	13'0"	5'8"	2	XSW-6104	XSW-6105	XNE-5298	7½	XHW-6104	XHW-6105	XNE-567	15	48	7½
16	10	12	19'6"	17'6"	16'0"	5'8"	4	XSW-6106	--	XNE-5298	7½	XHW-6106	--	XNE-567	15	48	7½
16	10	15	19'6"	17'6"	19'0"	5'8"	4	XSW-6108	--	XNE-5298	7½	XHW-6108		XNE-567	15	48	7½
18	7	6	21'6"	14'6"	10'0"	5'8"	3	XSW-6110	XSW-6111	XNE-5271	7½	XHW-6110	XHW-6111	XNE-573	10	42	3
18	7	9	21'6"	14'6"	13'0"	5'8"	3	XSW-6112	XSW-6113	XNE-5271	7½	XHW-6112	XHW-6113	XNE-573	10	42	3
18	8	6	21'6"	15'6"	10'0"	5'8"	3	XSW-6114	XSW-6115	XNE-5273	7½	XHW-6114	XHW-6115	XNE-577	10	42	5
18	8	9	21'6"	15'6"	13'0"	5'8"	3	XSW-6116	XSW-6117	XNE-5273	7½	XHW-6116	XHW-6117	XNE-577	10	42	5
18	8	12	21'6"	15'6"	16'0"	5'8"	6	XSW-6118		XNE-5273	7½	XHW-6118	--	XNE-577	10	42	5
18	8	15	21'6"	15'6"	19'0"	5'8"	6	XSW-6120	--	XNE-5273	7½	XHW-6120	--	XNE-577	10	42	5
18	10	9	21'6"	17'6"	13'0"	5'8"	3	XSW-6128	XSW-6129	XNE-5276	7½	XHW-6128	XHW-6129	XNE-525	15	48	7½
18	10	12	21'6"	17'6"	16'0"	5'8"	6	XSW-6130	--	XNE-5276	7½	XHW-6130	--	XNE-525	15	48	7½
18	10	15	21'6"	17'6"	19'0"	5'8"	6	XSW-6132	--	XNE-5276	7½	XHW-6132		XNE-525	15	48	7½
20	7	6	23'6"	14'6"	10'0"	5'8"	4	XSW-6134	XSW-6135	XNE-5200	7½	XHW-6134	XHW-6135	XNE-560	15	42	5
20	7	9	23'6"	14'6"	13'0"	5'8"	4	XSW-6136	XSW-6137	XNE-5200	7½	XHW-6136	XHW-6137	XNE-560	15	42	5
20	8	6	23'6"	15'6"	10'0"	5'8"	4	XSW-6138	XSW-6139	XNE-5300	7½	XHW-6138	XHW-6139	XNE-587	15	42	5
20	8	9	23'6"	15'6"	13'0"	5'8"	4	XSW-6140	XSW-6141	XNE-5300	7½	XHW-6140	XHW-6141	XNE-507	15	42	5
20	8	12	23'6"	15'6"	16'0"	5'8"	8	XSW-6142	--	XNE-5300	7½	XHW-6142		XNE-507	15	42	5
20	8	15	23'6"	15'6"	19'0"	5'8"	8	XSW-6144	--	XNE-5300	7½	XHW-6144		XNE-507	15	47	5
20	10	9	23'6"	17'6"	13'0"	5'8"	4	XSW-6152	XSW-6153	XNE-5301	7½	XHW-6152	XHW-6153	XNE-535	15	48	7½
20	10	12	23'6"	17'6"	16'0"	5'8"	6	XSW-6154		XNE-5301	7½	XHW-6154		XNE-535	15	48	7½
20	10	15	23'6"	17'6"	19'0"	5'8"	8	XSW-6156		XNE-5301	7½	XHW-6156		XNE-535	15	48	7½

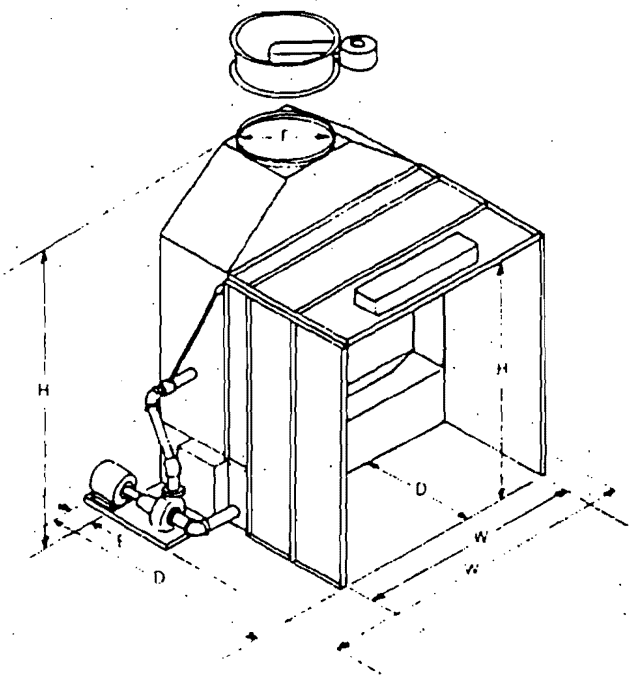
[illegible] on Page 19

DeVILBISS water wash spray booths

ceiling height required: 10 feet, 6 inches



Models listed with top exhaust outlet--back or front exhaust outlet available on all models.



Complete spray booth features

- **Lights**—4 tube, panel type, rapid-start fluorescent fixtures provide broad source illumination for maximum reduction to shadows in work area. Sealed type fluorescent and incandescent also available.
- **Exhaust Fan**—Correct size and capacity to produce required air velocity for booths with or without conveyor openings. Open type motor is standard; explosion-proof or totally enclosed available.
- **Fan Rings**—Provide reinforced flange type mounting to exhaust stack.
- **Pump**—Capacity to furnish all water required at most efficient operating pressure; with standard open type motor; explosion-proof and totally enclosed available. Furnished with sturdy sheet metal safety guard over rotating coupler shaft.
- **Piping**—All piping (except water supply line to booth and drain line to sewer) is included as standard equipment.
- **Hardware**—All nuts, bolts, fittings, seals, caulking, floor clips and tie angles furnished.

exhaust chambers

Ideal for special enclosures constructed from standard panels, beams, etc. (see pages 36 and 37)—or for installation in a "spray finishing room." Consists of the complete exhaust chamber section (without the painting area enclosure), water piping and pump with open type motor. Order exhaust fan and motor separately.

optional feature

extension tank: water tank extended out into or beneath working area so work hangs over surface of water.

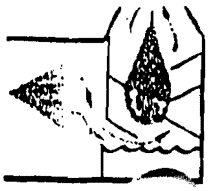
important: Specify electric current from which both fan and pump motors are to operate. Order required exhaust stack (pages 40 and 41).

4.2.4-1052

low-type chamber

150 feet per minute air velocity
with conveyor openings
up to 20% of frontal area

WATER WASH SPRAY BOOTHS



WORKING COMPARTMENT DIMENSIONS			BOOTH OVER-ALL DIMENSIONS				No. of Lights	STANDARD WASH				HEAVY WASH				F.	
W	H	D	W'	H'	D'	E		Booths with Lights and Fan	Booths with Fan—Without Light Openings or Fixtures	Exhaust Chamber Only—Without Fan	Pump H.P.	Booths with Lights and Fan	Booths with Fan Without Light Openings or Fixtures	Exhaust Chamber Only—Without Fan	Pump H.P.	Dia.	H.P.
4'	7'	6'	—	—	—	—	—	—	—	—		—	—	—		—	—
6'	7'	6'	9'-1"	9'-6"	10'-7"	7"	1	XSW-6832	XSW-6833	XNE-5146	3	XHW-6832	XHW-6833	XNE-526	5	34"	5
6'	7'	9'	9'-1"	9'-6"	13'-7"	7"	1	XSW-6834	XSW-6835	XNE-5146	3	XHW-6834	XHW-6835	XNE-526	5	34"	5
6'	8'	6'	9'-1"	10'-6"	11'-6"	5"	1	—	—	—		XXW-6800	XXW-6801	XNE-50402	5	34"	2
6'	8'	9'	9'-1"	10'-6"	14'-6"	5"	1	—	—	—		XXW-6802	XXW-6803	XNE-50402	5	34"	2
8'	7'	6'	11'-1"	9'-6"	10'-7"	7"	1	XSW-6836	XSW-6837	XNE-5178	3	XHW-6836	XHW-6837	XNE-538	5	42"	5
8'	7'	9'	11'-1"	9'-6"	13'-7"	7"	1	XSW-6838	XSW-6839	XNE-5178	3	XHW-6838	XHW-6839	XNE-538	5	42"	5
8'	8'	6'	11'-1"	10'-6"	12'-1"	12"	1	—	—	—		XXW-6804	XXW-6805	XNE-50404	7½	34"	5
8'	8'	9'	11'-1"	10'-6"	15'-1"	12"	1	—	—	—		XXW-6806	XXW-6807	XNE-50404	7½	34"	5
10'	7'	6'	13'-2"	9'-6"	11'-2"	14"	2	XSW-6842	XSW-6843	XNE-5180	5	XHW-6842	XHW-6843	XNE-540	7½	42"	7½
10'	7'	9'	13'-2"	9'-6"	14'-2"	14"	2	XSW-6844	XSW-6845	XNE-5180	5	XHW-6844	XHW-6845	XNE-540	7½	42"	7½
10'	8'	6'	13'-2"	10'-6"	12'-0"	12"	2	—	—	—		XXW-6808	XXW-6809	XNE-50409	10	42"	5
10'	8'	9'	13'-2"	10'-6"	15'-0"	12"	2	—	—	—		XXW-6810	XXW-6811	XNE-50409	10	42"	5
10'	8'	12'	13'-2"	10'-6"	18'-0"	12"	4	—	—	—		XXW-6812	—	XNE-50409	10	42"	5
10'	10'	9'	13'-2"	12'-6"	15'-0"	12"	2	—	—	—		XXW-6816	XXW-6817	XNE-50410	10	42"	7½
10'	10'	12'	13'-2"	12'-6"	18'-0"	12"	4	—	—	—		XXW-6818	—	XNE-50410	10	42"	7½
12'	7'	6'	15'-3"	10'-6"	11'-2"	14"	2	XSW-6848	XSW-6849	XNE-5142	5	XHW-6848	XHW-6849	XNE-522	10	48"	7½
12'	7'	9'	15'-3"	10'-6"	14'-2"	14"	2	XSW-6850	XSW-6851	XNE-5142	5	XHW-6850	XHW-6851	XNE-522	10	48"	7½
12'	8'	6'	15'-3"	11'-6"	12'-5"	17"	2	—	—	—		XXW-6820	XXW-6821	XNE-50422	10	42"	5
12'	8'	9'	15'-3"	11'-6"	15'-5"	17"	2					XXW-6822	XXW-6823	XNE-50422	10	42"	5
12'	8'	9'	15'-3"	11'-6"	15'-5"	17"	2					XXW-6000*	XXW-6001*	XNE-50422	10	42"	5
12'	8'	12'	15'-3"	11'-6"	18'-5"	17"	4	—	—	—		XXW-6824	—	XNE-50422	10	42"	5
12'	8'	15'	15'-3"	11'-6"	21'-5"	17"	4	—	—	—		XXW-6826	—	XNE-50422	10	42"	5
12'	10'	9'	15'-3"	13'-6"	15'-5"	17"	2	—	—	—		XXW-6830	XXW-6831	XNE-50414	10	48"	7½
12'	10'	9'	15'-3"	13'-6"	15'-5"	17"	2	—	—	—		XXW-6902*	XXW-6903*	XNE-50414	10	48"	7½
12'	10'	12'	15'-3"	13'-6"	18'-5"	17"	4	—	—	—		XXW-6832	—	XNE-50414	10	48"	7½
12'	10'	15'	15'-3"	13'-6"	21'-5"	17"	4	—	—	—		XXW-6834	—	XNE-50414	10	48"	7½
14'	7'	6'	17'-3"	10'-6"	11'-2"	14"	2	XSW-6854	XSW-6855	XNE-5225	5	XHW-6854	XHW-6855	XNE-564	10	48"	7½
14'	7'	9'	17'-3"	10'-6"	14'-2"	14"	2	XSW-6856	XSW-6857	XNE-5225	5	XHW-6856	XHW-6857	XNE-564	10	48"	
14'	8'	6'	17'-3"	11'-6"	12'-5"	17"	2	—	—	—		XXW-6836	XXW-6837	XNE-50423	15	42"	
14'	8'	9'	17'-3"	11'-6"	15'-5"	17"	2	—	—	—		XXW-6838	XXW-6839	XNE-50423	15	42"	
14'	8'	12'	17'-3"	11'-6"	18'-5"	17"	4	—	—	—		XXW-6840	—	XNE-50423	15	42"	7½
14'	8'	15'	17'-3"	11'-6"	21'-5"	17"	4	—	—	—		XXW-6842	—	XNE-50423	15	42"	7½
14'	10'	9'	17'-3"	13'-6"	15'-5"	17"	2	—	—	—		XXW-6846	XXW-6847	XNE-50415	15	48"	7½
14'	10'	12'	17'-3"	13'-6"	18'-5"	17"	4	—	—	—		XXW-6848	—	XNE-50415	15	48"	7½
14'	10'	15'	17'-3"	13'-6"	21'-5"	17"	4	—	—	—		XXW-6850	—	XNE-50415	15	48"	7½
16'	7'	6'	19'-6"	10'-6"	11'-9"	21"	2	XSW-6860	XSW-6861	XNE-5176	7½	XHW-6860	XHW-6861	XNE-536	10	48"	10
16'	7'	9'	19'-6"	10'-6"	14'-9"	21"	2	XSW-6862	XSW-6863	XNE-5176	7½	XHW-6862	XHW-6863	XNE-536	10	48"	10
16'	8'	6'	19'-6"	11'-6"	12'-5"	17"	2	—	—	—		XXW-6852	XXW-6853	XNE-50424	15	48"	7½
16'	8'	9'	19'-6"	11'-6"	15'-5"	17"	2	—	—	—		XXW-6854	XXW-6855	XNE-50424	15	48"	7½
16'	8'	9'	19'-6"	11'-6"	15'-5"	17"	2	—	—	—		XXW-6904*	XXW-6906*	XNE-50424	15	48"	7½
16'	8'	12'	19'-6"	11'-6"	18'-5"	17"	4	—	—	—		XXW-6856	—	XNE-50424	15	48"	7½
16'	8'	15'	19'-6"	11'-6"	21'-5"	17"	4	—	—	—		XXW-6858	—	XNE-50424	15	48"	7½
16'	10'	9'	19'-6"	13'-6"	15'-5"	17"	2	—	—	—		XXW-6862	XXW-6863	XNE-50416	15	48"	10
16'	10'	9'	19'-6"	13'-6"	15'-5"	17"	2	—	—	—		XXW-6906*	XXW-6907*	XNE-50416	15	48"	10
16'	10'	12'	19'-6"	13'-6"	18'-5"	17"	4	—	—	—		XXW-6864	—	XNE-50416	15	48"	10
16'	10'	15'	19'-6"	13'-6"	21'-5"	17"	4	—	—	—		XXW-6866	—	XNE-50416	15	48"	10
18'	7'	6'	21'-6"	10'-6"	11'-9"	21"	3	XSW-6866	XSW-6867	XNE-5182	7½	XHW-6866	XHW-6867	XNE-557	10	48"	10
18'	7'	9'	21'-6"	10'-6"	14'-9"	21"	3	XSW-6868	XSW-6869	XNE-5182	7½	XHW-6868	XHW-6869	XNE-557	10	48"	10
18'	8'	6'	21'-6"	11'-6"	12'-5"	17"	3	—	—	—		XXW-6868	XXW-6869	XNE-50425	20	48"	7½
18'	8'	9'	21'-6"	11'-6"	15'-5"	17"	3	—	—	—		XXW-6870	XXW-6871	XNE-50425	20	48"	7½
18'	8'	12'	21'-6"	11'-6"	18'-5"	17"	6	—	—	—		XXW-6872	—	XNE-50425	20	48"	7½
18'	8'	15'	21'-6"	11'-6"	21'-5"	17"	6	—	—	—		XXW-6874	—	XNE-50425	20	48"	7½
18'	10'	9'	21'-6"	12'-6"	15'-5"	17"	3	—	—	—		XXW-6878	XXW-6879	XNE-50417	20	(2) 42"	5
18'	10'	12'	21'-6"	12'-6"	18'-5"	17"	6	—	—	—		XXW-6880	—	XNE-50417	20	(2) 42"	5
18'	10'	15'	21'-6"	12'-6"	21'-5"	17"	6	—	—	—		XXW-6882	—	XNE-50417	20	(2) 42"	5
20'	7'	6'	23'-6"	9'-6"	11'-9"	21"	4	XSW-6872	XSW-6873	XNE-5240	7½	XHW-6872	XHW-6873	XNE-580	15	(2) 42"	7½
20'	7'	9'	23'-6"	9'-6"	14'-9"	21"	4	XSW-6874	XSW-6875	XNE-5240	7½	XHW-6874	XHW-6875	XNE-580	15	(2) 42"	7½
20'	8'	6'	23'-6"	11'-6"	12'-5"	17"	4	—	—	—		XXW-6884	XXW-6885	XNE-50426	25	48"	10
20'	8'	9'	23'-6"	11'-6"	15'-5"	17"	4	—	—	—		XXW-6886	XXW-6887	XNE-50426	25	48"	10
20'	8'	9'	23'-6"	11'-6"	15'-5"	17"	4	—	—	—		XXW-6908*	XXW-6909*	XNE-50426	25	48"	10
20'	8'	12'	23'-6"	11'-6"	18'-5"	17"	8	—	—	—		XXW-6888	—	XNE-50426	25	48"	10
20'	8'	15'	23'-6"	11'-6"	21'-5"	17"	8	—	—	—		XXW-6890	—	XNE-50426	25	48"	10
20'	10'	9'	23'-6"	12'-6"	15'-5"	17"	4	—	—	—		XXW-6894	XXW-6895	XNE-50427	25	(2) 42"	
20'	10'	9'	23'-6"	12'-6"	15'-5"	17"	4	—	—	—		XXW-6910*	XXW-6911*	XNE-50427	25	(2) 42"	
20'	10'	12'	23'-6"	12'-6"	18'-5"	17"	8	—	—	—		XXW-6896	—	XNE-50427	25	(2) 42"	
20'	10'	15'	23'-6"	12'-6"	21'-5"	17"	8	—	—	—		XXW-6898	—	XNE-50427	25	(2) 42"	

[illegible] "Asterisk Indicates [illegible] ... [illegible] ... Models Shown ... [illegible] ... Heavy Wash ... [illegible]

Social Services

Scott M. Matheson, Governor, State of Utah
Anthony W. Mitchell, Ph.D., Executive Director

March 1, 1978

Phillip E. Lammi
Dept. of the Air Force
Regional Civil Engineer
Western Region (HQ USAF)
630 Sansome Street
Room 1316
San Francisco, Calif. 94111

RE: Hill AFB Landing Gear
Overhaul Facility

Dear Mr. Lammi:

Thank you for your response to our request for omitted data. The proposal has been reviewed and it has been determined that more detailed information is required for our evaluation as follows:

1. Fume scrubber and mist eliminator in the chemical cleaning area, also quantity of cleaning fluids used.

2. Paint booths with scrubber, also quantity and type of paints, and paint thinner.

3. Type of emissions from the process ovens.

4. Baghouse in the mechanical cleaning area along with efficiencies, type, and flow rate.

5. Melt furnaces, type of firing, and control you are reminded that the state is requiring best control technology for both particulate and hydrocarbons on new facilities.

Sincerely,

Alvin E. Rickers
Executive Secretary
Utah Air Conservation Committee

JTB:jw

cc: L/C Harry Russell, Hill AFB

Division of Health
Environmental Health Services Branch
Lynn M. Thatcher
Deputy Director of Health

150 West North Temple, Suite 426
P.O. Box 2500, Salt Lake City, Utah 84110
801-533-6121

DE
DE ET
AHS 27

FROM: MA

21 MAR 1978

SUBJECT: Landing Gear Overhaul Facility - Notice of Intent to Construct (Your Ltr, 6 Mar 1978)

TO: DE

The questions asked by the attached Social Services letter of 1 March 1978 are as follows:

a. Fume scrubber and mist eliminator in the chemical cleaning area, also quantity of cleaning fluids used:

(1) The fume scrubber system is a water wash, impingement ball type pack 12 inches thick with 1,200 square feet of surface area. Water is sprayed through a pressure nozzle system across the entire face of the scrubber pack at a rate of 1 1/3 gallons per minute per square foot of pack. The tank ventilation discharge air is distributed across the face of the pack. The maximum velocity through the scrubber system shall not exceed 400 FPM. Downstream from the scrubber pack system will be 800 square feet of Z-frame moisture eliminators. This system shall be certified to remove at least 99 percent of the soluble contaminates from the ventilation effluent air stream.

(2) The total volume of paint stripping and cleaning agents used in this process is 116,300 gallons.

b. Paint booths with scrubber, also quantity and type of paints, and paint thinners:

(1) All paint spray operations in building 507 will be accomplished in seven water wash type paint booths. These booths will be four DeVilbiss Model XXW-6848, size 8' X 9' X 10' working area with 14,000 CFM exhaust fans, and three Model XSW, size 10' X 12' X 14' working area and 27,175 CFM fans. Exhaust air from these booths will be to the atmosphere.

(2) The types of paint, thinners and anticipated weekly volumes of sprayed finished are:

(a) Acrylic lacquer, MIL-L-1953-7, 15 gallons

(b) Lacquer primer, MIL-C-8514, 5 gallons

(c) Polyurethane paint, MIL-C-8328-6B, 10 gallons

(d) Epoxy base paint, MIL-C-23377C, 10 gallons

(e) Polyurethane thinner, MIL-T-81772, 12 gallons

(f) Cellulose nitrate thinner, MIL-TT-T2660, 50 gallons

(g) Denatured alcohol, 15 gallons

c. Type of emissions from process ovens: There will be five process ovens installed in the landing gear overhaul facility.

(1) Three each expansion ovens with thru-belt conveyors to be used to thermally expand aircraft wheels so the bearing cups can be removed. These ovens are electrically heated with a maximum temperature of 400°F. No product or combustion emissions will be generated.

(2) One each paint drying oven that is heated by infrared lamps to a maximum temperature of 250°F. Emissions will be small quantities of volatile paint thinners.

(3) One each steel bake oven to be used to release entrapped hydrogen in steel aircraft components that was introduced during chemical cleaning. This oven is heated by natural gas firing with an electrically heated backup system. The maximum temperature will be 375°F and no product emissions will be generated. The only emission to the atmosphere will be the combustion by-products of the natural gas firing system.

d. Bag house in the mechanical cleaning area along with efficiencies, types and flow rate: There will be five bag house type dust collectors installed outside the building to support all mechanical (air blast) cleaning of aircraft parts. The parts air blasted are steel and aluminum. The blast media will be 80-180 grit alum oxide or agasite (walnut shell or cracked hard wheat). Three of these units will be 10,000 CFM cloth screen collectors with 2,800 square feet of filtering fabric, one 6,500 CFM unit and one 6,000 CFM unit. One 10,000 CFM unit is a Pangborn CH-3 type and four are American Air Filter Corporation Fabric Pulse machines. Units are designed to comply with current OSHA requirements.

e. Melt furnaces, type of firing and control: There will be four each melt furnaces installed in the foundry area. Two of these furnaces are 1,000 pound capacity tilt type units and will be used to pour lead and Kirksite (lead zinc copper alloy) drop hammer dies, with a maximum temperature of 1,000°F. Two furnaces of 250 pound capacity will be used for aluminum and brass casting. These units are fired by natural gas and forced air draft. All controls are automatic. The only emissions from these units will be the products of combustion from natural gas and forced air draft.

LEWIS G. CURTIS, COL, USAF
Director of Maintenance

[illegible] MAR 1978

FROM: DE

SUBJECT: Landing Gear Overhaul Facility - Notice of Intent to Construct

TO: MA

The Air Force is now obligated to apply for state air quality permits for the construction of any facility whose operation involves the production of air pollutants. Utah's terminology for this application is "Notice of Intent to Construct" and AFRCE is responsible for its submittal for all MCP projects. The Western Region of AFRCE has submitted the "Notice" on the equipment installation for the subject project and the State Division of Health has requested additional information in the attached letter. Base Civil Engineering has been tasked to assemble this information and is requesting assistance from MA as the using agency. Please furnish as much information as possible on those items in the attached letter no later than 17 March 1978. The point of contact from Civil Engineering on this request is Keith Davis (Extension 2145).

SIGNED

1 Atch
State Letter

[illegible]
[illegible]
Civil Engineering Flight

DEEX-E

DEEX

DEE

[illegible]

[illegible] 8 MAR 78 14 00

MAILED

4.2.4-1057

Social Services

Scott M. Matheson, Governor, State of Utah
Anthony W. Mitchell, Ph.D., Executive Director

March 1, 1978

Phillip E. Lammi
Dept. of the Air Force
Regional Civil Engineer
Western Region (HQ USAF)
630 Sansome Street
Room 1316
San Francisco, Calif. 94111

RE: Hill AFB Landing Gear
Overhaul Facility

Dear Mr. Lammi:

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2. Paint booths with scrubber, also quantity and type of paints, and paint thinner.

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5. Melt furnaces, type of firing, and control you are reminded that the state is requiring best control technology for both particulate and hydrocarbons on new facilities.

Sincerely,

Alvin E. Rickers
Executive Secretary
Utah Air Conservation Committee

JTB:jw

cc: L/C Harry Russell, Hill AFB

Division of Health
Environmental Health Services Branch
Bureau of Air Quality
Utah State Department of Health

150 West North Temple, Suite 4, 6
P.O. Box [illegible], Salt Lake City, Utah 84110
(801) 533-6121

DEPARTMENT OF THE AIR FORCE
REGIONAL CIVIL ENGINEER, WESTERN REGION (AFESA)
630 SANSOME STREET – ROOM 1316
SAN FRANCISCO, CALIFORNIA 94111

4 January 1978

Al Rickers, Executive Secretary
Utah Air Conservation Committee,
Bureau of Air Quality
P.O. Box 2500
Salt Lake City, Utah 84110

RE: Aircraft Landing Gear Overhaul Facility, Hill AFB - Notice of Intent to Construct

Dear Mr. Rickers

Pursuant to the Clean Air Act Amendments of 1977 and in compliance with Section 1.6 of the State Air Conservation Regulations, we are submitting a "Notice of Intent to Construct" for installation of Air Force operating equipment in the recently completed Aircraft Landing Gear Overhaul Facility. The information required by your regulations is inclosed as Atch 1. Additional information may be found on inclosed drawings as Atch 2. Because there are several hundred drawings involved in this project, we are forwarding only those drawings that we believe are applicable for your review. If you determine that these drawings are not sufficient, please advise us and we will furnish additional information.

The subject building structure is 100 percent complete and only the Air Force operating equipment remains to be installed. Please note in the pertinent information data (Atch 1) that the best available technology is proposed for reduction of air pollutants for each function.

Sincerely

Phillip E. Lammi

PHILLIP E. LAMMI
Chief, Environmental Planning Division

2 Atch
1. Notice of Intent (Pert Info)
2. Drawings

Copy to: 2849ABG/DE w/o Atch
AFLC/DE (T. Dunn) w/o Atch
AFRCE/CR (LTC Bohinc) w/o Atch

4.2.4-1059

AFRCE (MR LAMMI)

29 DECEMBER 1977

ION - Depot Aircraft Landing Gear Overhaul Facility

escription:

(1) Facility Function:

(a) The new Landing Gear Overhaul Facility will be a composite facility capable of supporting the depot-level overhaul of aircraft landing gear and selected Minuteman Missile components. The building is now constructed at a location immediately south of the Metal Process Building. The building is now being equiped and should be fully operational about January 1979. It will contain the overhaul capabilities now present in the Strut Shop, Wheels and Brakes Shop, Machine Shop and Welding Shop.

(b) Landing gear and missile components generated by IRAN programs, OOAMA aircraft production lines, and other supply sources will be processed through a central receiving and shipping area. All reparable item storage will be indoors.

(c) Each item will be completely disassembled, chemically and mechanically cleaned, and thoroughly inspected. A determination will then be made as to the feasibility of repair and the type and amount of work required before the item can be returned to supply channels as serviceable.

(d) A complete machining facility will perform any and all of the machine work required. A comprehensive tool and die capability is contained within the repair function. There are numerically controlled machine tools included where justified.

(e) A landing gear production area will provide the capability to rebuild struts, wheels and brakes. This includes painting and anticorrosion operations, item assembly, functional tests, and quality checks throughout the entire rebuilding operation.

(f) The majority of the work will follow a set process sequence and will be handled by a system of powered and nonpowered overhead conveyors, powered and nonpowered roller conveyors, forklifts, and standardized pallets. There will be minimum material handling by personnel.

(g) Machine work, other than that directly related to landing gear, will be deliverable directly to the Machine Shop by forklift truck.

(h) The welding and foundry operation located at the south end of the building will be capable of supporting the entire Directorate of Maintenance work load. It will range in capability from basic welding and foundry work to electron beam welding techniques.

(i) Additional support functions contained will be management and engineering offices, rest rooms, lunch rooms, tool cribs, raw material storage areas, and utility rooms for power and air distribution. A cafeteria will be added for the convenience of all personnel in the adjacent area.

(2) Sequence of Operations:

(a) Wheels, brakes, and strut repair operations are combined in this complex for the sequence of receiving, uncrating, disassembling, cleaning, inspecting, and routing.

(b) Normally wheels are routed to the Machine Shop for modification and/or repair, then, if required, to the metals process function for anodizing. A final machine operation is possible in many instances. Associate wheel parts (nuts, bolts, etc.) may go directly to any functional area, depending upon their initial condition. Finally, all parts are painted, assembled, tested, inspected, and shipped as serviceable assets.

(c) Brakes and brake parts follow the same general pattern as do the wheels.

(d) After the initial common operations, strut parts are normally routed to the metal processes function for plating and grinding, and then to the Machine Shop for final work. A significant number of struts receive machine work before going to metal processes. After plating, grinding, and machining all parts are combined with new hardware, assembled, painted, tested, inspected, and returned to supply channels as serviceable assets.

(e) The majority of the work input to the Welding Shop will be through the east door provided in that shop. It will be possible to input work from the landing gear function to the Welding Shop without moving the items outside.

b. Air Pollutants: Air pollutant emissions generated by the facility's operation will come from the chemical cleaning area, the mechanical cleaning rooms, the paint booths, the process ovens and the welding and foundry operation area. The facility will be heated by the existing base heating system. The areas producing pollutants are further described as follows:

(1) Chemical Cleaning Area: This area consists of some 58 tanks of various solutions at several different temperatures. The tanks are ventilated by a push-pull system and exhausted to a large collection system which is divided into inorganic and organic sections. A description of the tanks and their contents are provided in Table 1.

(2) Mechanical Cleaning: The mechanical cleaning consists of four walk-in blast rooms and one Roto-blast machine.

TABLE 1

CHEMICAL CLEANING AREA

Tank Solution	No. of Tanks	Total Solution Surface Area (Sq. Ft.)	Temp. (°F)	Exhaust Rate (CFM)
Degreasers (Product by TURCO undecided)	4	150	200	18,750
Paint Strippers				
El Dorado	2	270	180	33,750
B & B	2	162	180	20,250
Rust Stripper	2	216	180	27,000
Carbon Removers	2	180	180	22,500
B & B	2	360	180	45,000
Paint and Varnish Removers	2	167	180	25,000
Hot and Warm Water Rinses				
Warm	2	99		7,425
Hot	2	82.5		7,425
Hot	2	91.5		8,235
Hot	6	270		24,300
Warm	4	180		13,500
Warm	4	64		4,800
Hot	2	32		2,880
Bright Dip (12% CrO_3)	2	90	ambient	18,000
Ammonium Biflouride	2	90	ambient	18,000
Alkaline Etch	2	90	140-180	18,000
Annodize Strip	2	270	190-200	47,250
CrO_3 (higher %)	2	90	180	18,000
Corrosion Remover	1	96	190	9,600
CrO_3	1	16	180	3,200
Bright Dip	1	16	ambient	3,200
Dow 7	1	60	180	12,000
Solution Make Up Tanks	6	270	ambient	27,000

(a) Blast Rooms: These four walk-in rooms will utilize aluminum oxide or agasite (walnut shells or crushed hard wheat) as the blast media. Each room will exhaust 10,000 CFM while in use which is estimated to be four hours per day, five days per week. The pollutants created will be particulates made up primarily of the blasting media with additional small amounts of aluminum and steel particles originating from the surface being cleaned.

(b) Roto-blast: This machine utilizes steel or cast iron shots for the blast media and will produce iron oxide and steel particulates going to the 6,000 CFM exhaust system. The exhaust system will operate only when the machine is operating; approximately 4 hours per day, 5 days per week.

(3) Paint Booths: The facility will have seven paint booths when completely operational. The booths comply with OSHA standards and each will exhaust 150 CFM per square foot of booth floor space. Four of the booths will exhaust 12,000 CFM each and the remaining three will exhaust 21,000 CFM each. Each booth will be used to apply about five gallons of paint per day, five days a week. Roughly equal amounts of acrylic laquer, urethane and epoxy base paints will be used in the booths.

(4) Process Ovens: The facility will have five miscellaneous process ovens, each exhausting 225 CFM and having a maximum temperture of 325 °F. The ovens will be used to dry work items and will emit basically hydrocarbon and paint fumes.

(5) Welding and Foundry Operations:

(a) Heli-arc Welding: This operation will have an enclosed bench area which will exhaust 18,000 CFM when in use. Inert gas welding fumes will be emitted from the bench.

(b) Bench Welding: There will be two benches where stick or straight arc welding will be accomplished. Each will exhaust 1,200 CFM.

(c) General Welding: There will be three additional 3,600 CFM fams in the general welding area which will be utilized when the area gets smokey. It is estimated the welding facilities will be operated at an average of about 20% of their capacity and the general area fans at about 10% of their capacity.

(d) Metal Melt Furnaces: The foundry will have two small metal melting furnaces for brass or aluminum. The furnaces will have a maximum temperature of about 1400 °F, a 1680 CFM fan and will be utlized approximately 40 hours per month.

(e) Tilt Melt Furnaces: The foundry will also have two tilt melt furnaces, one for lead and one for Kirksite. The furnaces will have a maximum temperature of about 800 °F, a 3,600 CFM exhaust fan each and will be utilized approximately 120 hours per month.

(f) Pour Area: The general foundry pour area will have a 3,600 CFM exhaust fan to pull out flux smoke during its usage which is estimated at 100 hours per month.

c. Cleaning Devices:

(1) Chemical Cleaning Area: As previously mentioned, fumes and vapors from the tanks are divided into an organic and an inorganic section of the exhaust system. Each section of exhaust goes through a wet fume scrubbe and a mist eliminator before being emitted to the atmosphere. The contractor is bound by contract to install a system which will remove 99 percent of the soluable contaminants from the ventilation effluents and the mist eliminator is to remove 99 percent of the entrained liquids.

(2) Mechanical Cleaning: Exhaust from each of the four blast rooms will go through a baghouse type dust collector before being emitted to the atmosphere. Each of these baghouses will have 2,800 square feet of cloth screen media. The Roto-blast machine will also be exhausted through a dust collector baghouse with cloth screen media before being emitted to the atmosphere.

(3) Paint Booths: Each of the seven paint booths will have a water curtain type scrubber on the exhaust system to reduce particulate emission.

(4) Process Ovens: Exhausted directly to atmosphere.

(5) Welding and Foundry Operation: All operations in this area are exhausted directly to the atmosphere. However, fumes from the two metal melt furnaces and the two tilt melt furnaces are exhausted through a stack which has a height of 30 feet between the furnace and the fan, allowing much of the particulate matter to drop out.

d. Location: The new facility is in the "Industrial Area" of Hill AFB, approximately 1600 feet northeast of the base's south gate. With the exception of the Chemical Cleaning Area all exhausts are vented to the atmosphere from the roof which is about 25 to 30 feet above ground level. The Chemical Cleaning Area is vented, after cleaning to the atmosphere by way of the concrete stacks immediately west of the facility. These stacks reach to about 40 feet above ground level.

e. Sampling Points: Exhausts from the facility will be regularly checked for opacity by Base Bioenvironmental Engineering.

ADDITIONAL INFORMATION

a. ADAL/Drone Engineering Research Test Facility:

(1) Phase I: This project consists of the construction of a 22,814 square foot gross area hangar capable of housing a C-130 aircraft and performing the functions of fuel cell repair and corrosion control. An office/locker/toilet element and a mechanical room will be located within the hangar to form a nose dock type configuration. No painting will be accomplished in this hangar and it will be heated by the existing base heating system.

(2) Phase II: This project consists of the construction of an 83,429 square foot gross area new shop and administrative support space facility. The 57,121 square foot ground floor will be utilized for preparation of drones/remotely piloted vehicles for flight, following buildup and modifications as well as for providing space for a computer room. The 26,308 square foot second floor will provide space for command, administrative and engineering support. This facility will also be heated by the existing base heating system. There will be no fire-up or ignition of drone motors in either this facility or that to be constructed under Phase I.

b. Alter Industrial Waste Treatment Facility:

Sludges from the treatment facility are dried in asphalt bottomed sludge beds adjacent to the facility. These sludges are disposed of by burial at the base's Toxic and Hazardous Wastes Disposal Site at Hill AF Range (west of the Great Salt Lake).

HILL AIR FORCE BASE

Only those conditions in Approval Order DAQE-1171-92 dated January 4, 1993, affecting the five diesel fuel storage tanks listed in condition 3(G) are valid. The rest of the equipment has been covered by other AOs.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

DAQE-1171-92

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

January 4, 1993

James R. Van Orman, Director
OOALC-EM
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

Re: Approval Order for Emergency Generators and Media Blast Booth
Davis County CDS A1 NA

Dear Mr. Van Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the media blast booth in Building 48 and the emergency generators in Buildings 14, 565 and 575 according to the information submitted in the Notices of Intent dated March 16, 1992, and March 24, 1992.

   A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. This AO shall replace the AO dated September 18, 1980.

3. The approved installation shall consist of the following equipment or equivalent equipment:

   A. Pram Media Blast Booth, Model No.101020, equipped with a filter cartridge dust collector unit in Building 48

   B. Caterpillar 225 KW generator, Serial No. 2AJ00536 in Building 565

   C. Existing Onan 15 KW generator, Model No. 15-ORDJC-3CR in Building 1151

   D. Caterpillar 500 KW generator, Model No. 3412 DITA in Building 14

   E. Cummins 350 KW, Model No. NTA855 generator (relocated from Building 221 to Building 14)

   F. Caterpillar 600 KW generator, Model No. 3412 DITA in Building 575

G. Five diesel fuel storage tanks - 250, 400, 1000, 2000, and 5000 gallons

Equivalency shall be determined by the Executive Secretary.

4. Visible emissions from the following emission points shall not exceed the following values:

A. All emergency generators - 20% opacity after warm-up
B. Media Blast Booth - 10% opacity

Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. The hours of operation for the following emission points shall not exceed the following values without prior approval in accordance with R307-1-3.1, UACR.

A. Each generator in Buildings 14, 565 and 575 - 100 hours of maintenance operation per 12-month period

B. Media blast booth - 2080 hours per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the plant is in operation. Records of the hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. The records shall be kept on a daily basis.

The hours of operation for the generators shall be determined by an engine hour totalizer installed on the engines. The hours of maintenance operation for the generators shall not include actual emergency use. However, the hours of actual emergency use shall also be recorded.

The hours of operation for the media blast booth shall be determined by examination of operation records.

6. The sulfur content of any fuel oil burned shall not exceed 0.40 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

7. PM_{10} emissions to the atmosphere from the media blast booth shall not exceed:

A. 0.93 lbs/hr
B. 0.016 grains/dscf (68°F, 29.92 in Hg)

8. Stack testing to show compliance with the emission limitations of condition #7 shall be performed as specified below:

Test Frequency

No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UACR. The source shall be tested if directed by the Executive Secretary.

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

PM_{10}

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using Method 202.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM_{10}.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Sample Location

40 CFR 60. Appendix A, Method 1

Volumetric flow rate

40 CFR 60, Appendix A, Method 2

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

The exhaust flow rate during all compliance testing shall be no less than 6300 acfm (90% of the design rate listed in this AO). The production rate shall be established at a pretest conference.

9. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UACR. R307-1-3.5, UACR addresses emission inventory reporting requirements. R307-1-4.7, UACR addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal emissions shall be reported to the Executive Secretary as directed for each calendar year.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of

construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UACR.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UACR.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for these emission points (media blast booth in Bldg 48, 500 KW and 350 KW emergency generators in Bldg 14, 225 KW emergency generator in Bldg 565, 15 KW generator in Bldg 1151, 600 KW emergency generator in Bldg 575) are currently calculated at the following values:

A. 1.33 ton/yr for Particulate
B. 1.08 ton/yr for PM_{10}
C. 0.12 ton/yr SO_2
D. 1.90 ton/yr NO_x
E. 0.15 ton/yr VOC
F. 0.40 ton/yr CO
G. 0.03 ton/yr Aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:DC:dn

cc: EPA Region VIII, Mike Owens
Davis County Health Department

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-0787-92

August 17, 1992

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, UT 84111

This letter will confirm the authorization to publish the attached NOTICE in the Deseret News and the Salt Lake Tribune on August 25, 1992.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84114-4820.

Sincerely,

Cheery Love
Office Technician
Division of Air Quality

MK:cl

Enclosure

NOTICE

The following Notices of Intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, have been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. Department of the Air Force
   Headquarters Ogden AFLC
   Hill Air Force Base, UT 84056-5990

Emergency Generators and Media Blast Booth
Davis County - CDS NA

Existing Emissions (from existing emergency generator in Building 575)

Particulate	0.04 ton/yr
PM_{10}	0.02
SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

Proposed Emissions (from new generator)

Particulate	0.09 ton/yr
PM_{10}	0.05
SO_2	0.08
NO_x	1.24
CO	0.26
VOC	0.10
Aldehydes	0.02

Net Increase in Emissions

Particulate	0.05 ton/yr
PM_{10}	0.03

SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

2. Southwest Soil Remediation, Inc.
   6262 N. Swan, Suite 200A
   Tucson, AZ 85718

Mobile - Soil Decontaminator

Mobile County - CDS B NA

Emissions were calculated using a maximum concentration of 5000 milligrams of VOC per kilogram contaminated soil and maximum contaminated soil throughput of 12.5 tons/hr.

Proposed Emissions

Particulate	4.08	tons/year
PM_{10}	2.94	
SO_x	1.38	
NO_x	24.50	
CO	6.02	
VOC	7.38	

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84114-4820. Written comments received by the Division, at the

same address on or before September 24, 1992 will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: August 25, 1992

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

agree DR

MEMORANDUM TO: Donald E. Robinson, P. E., Engineering Manager

FROM: Dorothy Rogers, Environmental Health Engineer

Subject: Consolidation of Recommended Approval Order Conditions for Emergency Generators and Media Blast Booth at Hill Air Force Base

Date: August 10, 1992

==========

The recommended Approval Order Conditions for four similar reviews of modifications at Hill Air Force Base have been consolidated. This will result in the issuance of one Intent to Approve and one Approval Order. The fee for this Approval Order will be $2000.

Recommended Approval Order Conditions

1. Hill Air Force Base shall install and operate the media blast booth in Building 48 and the emergency generators in Buildings 14, 565 and 575 according to the information submitted in the Notices of Intent dated March 16, 1992 and March 24, 1992.

   A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. This Approval Order shall replace the Approval Order dated September 18, 1980.

3. The approved installation shall consist of the following equipment or equivalent equipment:

   A. Pram Media Blast Booth, Model No.101020, equipped with a filter cartridge dust collector unit in Building 48

   B. Caterpillar 225 KW generator, Serial No. 2AJ00536 in Building 565

   C. Existing Onan 15 KW generator, Model No. 15-ORDJC-3CR in Building 1151

   D. Caterpillar 500 KW generator, Model No. 3412 DITA in Building 14

   E. Cummins 350 KW, Model No. NTA855 generator (relocated from Building 221 to Building 14)

   F. Caterpillar 600 KW generator, Model No. 3412 DITA in Building 575

G. Five diesel fuel storage tanks - 250, 400, 1000, 2000, and 5000 gallons

Equivalency shall be determined by the Executive Secretary.

4. Visible emissions from the following emission points shall not exceed the following values:

A. All emergency generators - 20% opacity after warm-up

B. Media Blast Booth - 10% opacity

Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. The hours of operation for the following emission points shall not exceed the following values without prior approval in accordance with R307-1-3.1, UAC.

A. Each generator in Buildings 14, 565 and 575 - 100 hours of maintenance operation per 12-month period

B. Media blast booth - 2080 hours per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the plant is in operation. Records of the hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. The records shall be kept on a daily basis.

The hours of operation for the generators shall be determined by an engine hour totalizer installed on the engines. The hours of maintenance operation for the generators shall not include actual emergency use. However, the hours of actual emergency use shall also be recorded.

The hours of operation for the media blast booth shall be determined by examination of operation records.

6. The sulfur content of any fuel oil burned shall not exceed 0.40 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

7. PM_{10} emissions to the atmosphere from the media blast booth shall not exceed:

A. 0.93 lbs/hr

B. 0.016 grains/dscf (68°F, 29.92 in Hg)

8. Stack testing to show compliance with the emission limitations of condition #7 shall be performed as specified below:

Test Frequency

No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1,

UAC. The source shall be tested if directed by the Executive Secretary.

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

PM_{10}

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using Method 202.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM_{10}.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Sample Location

40 CFR 60. Appendix A, Method 1

Volumetric flow rate

40 CFR 60, Appendix A, Method 2

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

The exhaust flow rate during all compliance testing shall be no less than 6300 acfm (90% of the design rate listed in this Approval Order). The production rate shall be established at a pretest conference.

9. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal

emissions shall be reported to the Executive Secretary as directed for each calendar year.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for these emission points (media blast booth in Bldg 48, 500 KW and 350 KW emergency generators in Bldg 14, 225 KW emergency generator in Bldg 565, 15 KW generator in Bldg 1151, 600 KW emergency generator in Bldg 575) are currently calculated at the following values:

A. 1.33 ton/yr for particulate
B. 1.08 ton/yr for PM_{10}
C. 0.12 ton/yr SO_2
D. 1.90 ton/yr NO_x
E. 0.15 ton/yr VOC
F. 0.40 ton/yr CO
G. 0.03 ton/yr aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

DOROTHY\WP\MEMOS\HAFB.MEM

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Dorothy L. Rogers
RE:	Installation of Media Blast Booth in Building 48 UTM: 4,161,000 N 455,450 E Davis County CDS A1 NA
DATE:	August 3, 1992
NOTICE OF INTENT DATED:	March 24, 1992
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-4618
PLANT LOCATION:	Building 48, Hill Air Force Base

FEES:

Filing Fee	$ 750.00
Review Engineer - XX hours at $50.00/hour	$ 000.00
Modeler - XX hours at $50.00/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 00.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$ 750.00

APPROVALS:

Engineering Unit Manager DR 8-3-92

Applicant Contact Made LK 8-5-92

Type of Source

Attainment Area	Yes	No
Nonattainment Area		
PM_{10}	Yes	No
SO_2	Yes	No
NO_X	Yes	No
CO	Yes	No
Ozone	Yes	No
NSPS	Yes	No
Subparts A and _____		
NESHAP	Yes	No
Subparts A and _____		
Toxic Pollutants	Yes	No
_____		
Toxic Major Source	Yes	No
(> 10 tpy or > 25 tpy combination)		
New Major Source	Yes	No
Major Modification	Yes	No
PSD Permit	Yes	No
Send to EPA	Yes	No

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base is planning to install a 10' X 10' X 20' blast media booth complete with the blast/reclaimer assembly comprising of a cyclone separator, a storage hopper, a low profile hopper, and a blast machine.

The cyclone blower vacuums blasting residue from the low profile hopper in the enclosure floor. As the residue enters the cyclone, the cyclone separates undamaged blast media from the other debris and dust. The undamaged, reusable media drops through the cyclone's vibrating screen into the storage hopper. The reclaimed media from the storage hopper feeds into the blast machine. The debris and dust from the cyclone are drawn into the dust collector.

The blast media will use Poly V plastic media. The components to be blasted include aircraft wheels, panels, ladders, engine run screens, tool boxes, carts, and ground support equipment.

This booth will be installed at Building 48 and will be operated a maximum of 2080 hours per year.

II. EMISSION SUMMARY

Proposed Emissions (from Media Blast Booth)

Particulate	1.2 ton/yr
PM_{10}	1.0

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The media blast booth is equipped with a 24 cartridge dust collector assembly with a 99.9% collection efficiency for particulate matter larger than 1 micron. The Engineering Section recommends that BACT for the media blast booth be the following:

A. Proper operation and maintenance of the cartridge dust collector

B. 10% opacity

C. PM_{10} emission concentration of 0.016 grain/dscf (68°F, 29.92" Hg)

D. PM_{10} emission rate of 0.93 lbs/hr

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to a major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 which consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications which would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 50.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 25.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. The sources listed in Weber County are as follows:

   A. Farmers Grain Coop
   B. Fife Rock Products
   C. Interpace Corporation
   D. Parsons Asphalt Plant
   E. Pillsbury Company
   F. Teledyne Incinerator
   G. Gibbons and Reed Asphalt

   This source is not listed in the SIP. Therefore, this rule does not apply.

9. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

10. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. Hill Air Force Base must comply with this rule.

11. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP

A. Class I areas

1) 5 ug/m^3 (annual)

2) 10 ug/m^3 (24 hour)

B. Class II areas

1) 19 ug/m^3 (annual)

2) 37 ug/m^3 (24 hour)

SO_2

A. Class I areas

1) 2 ug/m^3 (annual)

2) 5 ug/m^3 (24 hour)

3) 25 ug/m^3 (3 hour)

B. Class II areas

1) 20 ug/m^3 (annual)

2) 91 ug/m^3 (24 hour)

3) 512 ug/m^3 (3 hour)

NO_x

A. Class I areas - 2.5 ug/m^3 (annual)

B. Class II areas - 25 ug/m^3 (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(Tons per Year)

	Non-Attainment Areas	Attainment Areas
SO_x	10	20
NO_x	20	20
PM_{10}	5	5
TSP	10	10
O_3	5	5

CO	25	50
VOC	10	20

12. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

13. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred. This proposed Notice of Intent will consume negligible amounts of increment.

14. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Hill Air Force Base has no stacks which exceed 65 meters in height. It is in compliance with this rule.

15. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

16. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, a 10% opacity limitation is considered BACT.

17. R307-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

18. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This emission point does not use oil or coal for combustion. This rule does not apply.

19. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with

VEO's, shall install an opacity monitor on each stack.

This emission point does not require a CEMS.

20. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

21. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This process is not covered in this rule.

22. R307-1-4.10, UAC - Abrasive Blasting Requirements - Opacity limitations and performance standards for abrasive blasting - This regulation applies to this source. The performance standards require the use of one of the following:

    A. Confined blasting
    B. Wet abrasive blasting
    C. Hydroblasting
    D. Unconfined blasting using certified grit

    If the source complies with one of the above and is located in an attainment area, the opacity limitation is 40%. If the source complies with one of the above and is located in a nonattainment area, the opacity limitation is 20%. Unconfined blasting with abrasives must be done using certified grit. Certified grit is defined as follows:

    A. Before blasting, the abrasive shall not contain more than 1% by weight material passing a #70 standard sieve.

    B. After blasting, the abrasive shall not contain more than 1.8% by weight material 5 microns or smaller.

    This emission point is using confined blasting.

23. R307-1-5, UAC - Emergency episode requirements. This rule applies.

24. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone. The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

1) Maintenance, repair, and replacement

2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

2) It is technologically and economically feasible to meet the applicable standards set forth in this part

This Notice of Intent is not a reconstruction.

29. R307-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the media blast booth in Building 48 according to the information submitted in the Notice of Intent dated March 16, 1992.

   A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installation shall consist of a Pram Media Blast Booth, Model No.101020, equipped with a filter cartridge dust collector unit or equivalent. Equivalency shall be determined by the Executive Secretary.

3. Visible emissions from the media blast booth shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The hours of operation for the media blast booth shall not exceed 2080 hours per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the blast booth is in operation. Records of the hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. The hours of operation shall be determined by examination of operation records. The records shall be kept on a daily basis.

5. PM_{10} emissions to the atmosphere from the media blast booth shall not exceed:

   A. 0.93 lbs/hr

   B. 0.16 grains/dscf (68°F, 29.92 in Hg)

6. Stack testing to show compliance with the emission limitations of condition #5 shall be performed as specified below:

   Test Frequency

No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

PM_{10}

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using Method 202.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM_{10}.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Sample Location

40 CFR 60. Appendix A, Method 1

Volumetric flow rate

40 CFR 60, Appendix A, Method 2

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

The exhaust flow rate during all compliance testing shall be no less than 6300 acfm (90% of the design rate listed in this Approval Order). The production rate shall be established at a pretest conference.

7. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The

owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal emissions shall be reported to the Executive Secretary as directed for each calendar year.

8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this emission point (media blast booth in Bldg 48) are currently calculated at the following values:

A. 1.2 ton/yr for particulate
B. 1.0 ton/yr for PM_{10}

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

DOROTHY\WP\REVIEWS\BLAST.REV

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Dorothy L. Rogers
RE:	Replacement of Emergency Generator in Bldg 575 UTM: 4,161,000 N 455,450 E
	Davis County CDS A1 NA
DATE:	August 4, 1992
NOTICE OF INTENT DATED:	March 24, 1992
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-4618
PLANT LOCATION:	Building 575, Hill Air Force Base

FEES:

Filing Fee	$ 1500.00
Review Engineer - XX hours at $50.00/hour	$ 000.00
Modeler - XX hours at $50.00/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 00.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$ 1500.00

APPROVALS:

Engineering Unit Manager DRP 8-11-92

Applicant Contact Made JL 8-5-92

Type of Source A1

Attainment Area	Yes	No
Nonattainment Area		
PM_{10}	Yes	No
SO_2	Yes	No
NO_X	Yes	No
CO	Yes	No
Ozone	Yes	No
NSPS	Yes	No
Subparts A and _____		
NESHAP	Yes	No
Subparts A and _____		
Toxic Pollutants	Yes	No
_____		
Toxic Major Source	Yes	No
(> 10 tpy or > 25 tpy combination)		
New Major Source	Yes	No
Major Modification	Yes	No
PSD Permit	Yes	No
Send to EPA	Yes	No

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base is planning to replace a 300 KW diesel generator with a 600 KW diesel generator in Building 575. The generator being replaced was grandfathered.

The new generator is a Caterpillar Model No. 3412 DITA emergency diesel generator. This generator will serve as a backup for emergency power to Industrial Waste Water Treatment Plant equipment. This generator will be used a maximum of 100 hours per year.

This generator will use an existing 2,000 gallon above ground diesel storage tank and a 250 gallon day tank for fuel supply.

II. EMISSION SUMMARY

Existing Emissions (from existing emergency generator in Building 575)

Particulate	0.04 ton/yr
PM_{10}	0.02
SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

Proposed Emissions (from new generator)

Particulate	0.09 ton/yr
PM_{10}	0.05
SO_2	0.08
NO_x	1.24
CO	0.26
VOC	0.10
Aldehydes	0.02

Net Increase in Emissions

Particulate	0.05 ton/yr
PM_{10}	0.03
SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT for the generator set would be the use of a catalytic converter to control emissions of CO, NO_x and VOC. Also, a natural gas fueled generator would be considered BACT rather than a diesel fueled generator.

In this case, the generator is proposed to be a stand-by generator that will only operate in emergency situations and will only be operated for approximately 100 hours per year. The addition of a control device to the generator to reduce emissions would be a large economic burden.

The Engineering Section is recommending that BACT for the generator be proper operation and maintenance and 20% opacity.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to a major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 which consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications which would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 50.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 25.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule does not apply to IC engines.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. The sources listed in Weber County are as follows:

   A. Farmers Grain Coop
   B. Fife Rock Products

C. Interpace Corporation
D. Parsons Asphalt Plant
E. Pillsbury Company
F. Teledyne Incinerator
G. Gibbons and Reed Asphalt

This source is not listed in the SIP. Therefore, this rule does not apply.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. Hill Air Force Base must comply with this rule if any specific source emits 25 tons or more per year of any pollutant.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP

A. Class I areas

1) 5 ug/m^3 (annual)

2) 10 ug/m^3 (24 hour)

B. Class II areas

1) 19 ug/m^3 (annual)

2) 37 ug/m^3 (24 hour)

SO_2

A. Class I areas

1) 2 ug/m^3 (annual)

2) 5 ug/m^3 (24 hour)

3) 25 ug/m^3 (3 hour)

B. Class II areas

1) 20 ug/m^3 (annual)

2) 91 ug/m^3 (24 hour)

3) 512 ug/m^3 (3 hour)

NO_x

A. Class I areas - 2.5 ug/m^3 (annual)

B. Class II areas - 25 ug/m^3 (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(Tons per Year)

	Non-Attainment Areas	Attainment Areas
SO_x	10	20
NO_x	20	20
PM_{10}	5	5
TSP	10	10
O_3	5	5
CO	25	50
VOC	10	20

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred. This proposed Notice of Intent will consume negligible amounts of increment.

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Hill Air Force Base has no stacks which exceed 65 meters in height. It is in compliance with this rule.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, the 20% opacity limitation applies.

18. R307-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This generator burns diesel fuel oil. The limitation is 0.85 pounds of sulfur per 10^6 BTU heat input. In this case, the limitation is 0.40 pounds of sulfur per 10^6 BTU heat input based on the AP-42 emission factor.

20. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack.

    This emission point does not require a CEMS.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This process is not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule applies.

24. R307-1-7, UAC - Air Pollution Episode Plan - This plan provides the basis for taking action to prevent air pollutant concentrations from reaching levels which could endanger the public health, or to abate such concentrations should they occur. All sources in a nonattainment area or impacting a nonattainment area must submit a plan outlining what they will do in an emergency episode. This regulation applies to Salt Lake, Davis, and Utah Counties.

25. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

26. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

27. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone. The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. However, it will make a small contribution to the existing violation for ozone of the NAAQS.

28. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

    1) Maintenance, repair, and replacement

    2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

    3) An increase in the hours of operation

    4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

    5) The addition or use of any system or device whose primary function is the reduction of air pollutants

    6) Relocation or change in ownership

    Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a modification.

29. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

    1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

    2) It is technologically and economically feasible to meet the applicable standards set forth in this part

    This Notice of Intent is not a reconstruction.

30. R307-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

    A. Routine maintenance, repair, or replacement

    B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the

Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the emergency generator in Building 575 according to the information submitted in the Notice of Intent dated March 16, 1992.

   A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installation shall consist of a Caterpillar 600 KW generator, Model No. 3412 DITA or equivalent. Equivalency shall be determined by the Executive Secretary.

3. Visible emissions from the emergency generator shall not exceed 20% opacity after warm-up. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The hours of maintenance operation for the emergency diesel generator shall not exceed 100 hours per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the plant is in operation. Records of the hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. The hours of operation shall be determined by an engine hour totalizer installed the engine. The records shall be kept on a daily basis.

   The 100 hours of operation shall not include actual emergency use. However, the hours of actual emergency use shall also be recorded.

5. The sulfur content of any fuel oil burned shall not exceed 0.40 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

6. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

7. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this emission point are currently calculated at the following values:

A. 0.09 ton/yr for particulate
B. 0.05 ton/yr for PM_{10}
C. 0.08 ton/yr for SO_2
D. 1.24 ton/yr for NO_x
E. 0.10 ton/yr for VOC
F. 0.26 ton/yr for CO
G. 0.02 ton/yr for aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

DOROTHY\WP\REVIEWS\EG575.REV

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Dorothy L. Rogers
RE:	Replacement of Emergency Generator in Bldg 565 UTM: 4,161,000 N 455,450 E Davis County CDS A1 NA
DATE:	August 3, 1992
NOTICE OF INTENT DATED:	March 24, 1992
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-4618
PLANT LOCATION:	Building 565, Hill Air Force Base

FEES:

Filing Fee	$ 1500.00
Review Engineer - XX hours at $50.00/hour	$ 000.00
Modeler - XX hours at $50.00/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 00.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$ 1500.00

APPROVALS:

Engineering Unit Manager GR 8-11-92

Applicant Contact Made JC 8-5-92

Type of Source A1

Attainment Area	Yes	No
Nonattainment Area		
PM_{10}	Yes	No
SO_2	Yes	No
NO_x	Yes	No
CO	Yes	No
Ozone	Yes	No
NSPS	Yes	No
Subparts A and _____		
NESHAP	Yes	No
Subparts A and _____		
Toxic Pollutants	Yes	No
_____		
Toxic Major Source	Yes	No
(> 10 tpy or > 25 tpy combination)		
New Major Source	Yes	No
Major Modification	Yes	No
PSD Permit	Yes	No
Send to EPA	Yes	No

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base is planning to replace an 80 KW diesel generator with a 225 KW diesel generator in Building 565. The new generator is a Caterpillar Serial No. 2AJ00536 emergency diesel generator. This generator will serve as a backup for emergency power to Weber and Davis County water pumps. This generator will be used a maximum of 60 hours per year.

This generator will use an existing 1,000 gallon above ground diesel storage tank for fuel supply.

This Approval Order will replace an Aproval Order dated September 18, 1980, which also included a 15 KW diesel generator in Building 1151 and a 110 gallon underground fuel storage tank.

II. EMISSION SUMMARY

Existing Emissions (from existing emergency generator in Building 565)

Particulate	0.01 ton/yr
PM_{10}	0.00
SO_2	0.01
NO_x	0.10
CO	0.02
VOC	0.01
Aldehydes	0.00

Proposed Emissions (from new generator)

Particulate	0.03 ton/yr
PM_{10}	0.02
SO_2	0.03
NO_x	0.47
CO	0.10
VOC	0.04
Aldehydes	0.01

Net Increase in Emissions

Particulate	0.02 ton/yr
PM_{10}	0.02
SO_2	0.02
NO_x	0.37
CO	0.08
VOC	0.03
Aldehydes	0.01

An entry of 0.00 does not mean the emissions are zero; it is intended to mean negligible emissions.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT for the generator set would be the use of a catalytic converter to control emissions of CO, NO_x and VOC. Also, a natural gas fueled generator would be considered BACT rather than diesel fueled generator.

In this case, the generator is proposed to be a stand-by generator that will only operate in emergency situations and will only be operated for approximately 100 hours per year. The addition of a control device to the generator to reduce emissions is not justified.

The Engineering Section is recommending that BACT for the generator be proper operation and maintenance and 20% opacity.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to a major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 which consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications which would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 50.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 25.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule does not apply to IC engines.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. The sources listed in Weber County are as follows:

A. Farmers Grain Coop
B. Fife Rock Products
C. Interpace Corporation
D. Parsons Asphalt Plant
E. Pillsbury Company
F. Teledyne Incinerator
G. Gibbons and Reed Asphalt

This source is not listed in the SIP. Therefore, this rule does not apply.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. Hill Air Force Base must comply with this rule.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP

A. Class I areas

1) 5 ug/m^3 (annual)

2) 10 ug/m^3 (24 hour)

B. Class II areas

1) 19 ug/m^3 (annual)

2) 37 ug/m^3 (24 hour)

SO_2

A. Class I areas

1) 2 ug/m^3 (annual)

2) 5 ug/m^3 (24 hour)

3) 25 ug/m^3 (3 hour)

B. Class II areas

1) 20 ug/m^3 (annual)

2) 91 ug/m^3 (24 hour)

3) 512 ug/m^3 (3 hour)

NO_x

A. Class I areas - 2.5 ug/m^3 (annual)

B. Class II areas - 25 ug/m^3 (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(Tons per Year)

	Non-Attainment Areas	Attainment Areas
SO_x	10	20
NO_x	20	20
PM_{10}	5	5
TSP	10	10
O_3	5	5
CO	25	50
VOC	10	20

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred. This proposed Notice of Intent will consume negligible amounts of increment.

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Hill Air Force Base has no stacks which exceed 65 meters in height. It is in compliance with this rule.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission

Standards for Hazardous Air Pollutants (NESHAPS). In this case, the 20% opacity limitation applies.

18. R307-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This generator burns diesel fuel oil. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input. BACT is 0.40 based on the AP-42 emission factor.

20. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack.

    This emission point does not require a CEMS.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This process is not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule applies.

24. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone.

    The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that, because of the small quantity of emissions

involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. However, it will make a small contribution to the existing violation for ozone of the NAAQS.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

    1) Maintenance, repair, and replacement

    2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

    3) An increase in the hours of operation

    4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

    5) The addition or use of any system or device whose primary function is the reduction of air pollutants

    6) Relocation or change in ownership

    Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

    1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

    2) It is technologically and economically feasible to meet the applicable standards set forth in this part

    This Notice of Intent is not a reconstruction.

29. R307-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

    A. Routine maintenance, repair, or replacement

    B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

    C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the emergency generator in Building 565 according to the information submitted in the Notice of Intent dated March 24, 1992.

A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. This Approval Order shall replace the Approval Order dated September 18, 1980.

3 The approved installation shall consist of:

A. Caterpillar 225 KW generator, Serial No. 2AJ00536 or equivalent in Building 565

B. Existing Onan 15 KW generator, Model No. 15-ORDJC-3CR or equivalent in Building 1151

Equivalency shall be determined by the Executive Secretary.

4. Visible emissions from the emergency generators shall not exceed 20% opacity after warm-up. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. The hours of maintenance operation for the emergency diesel generator in Building 565 shall not exceed 100 hours per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the plant is in operation. Records of the hours of operation shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. The hours of operation shall be determined by an engine hour totalizer installed the

engine. The records shall be kept on a daily basis.

The 100 hours of operation shall not include actual emergency use. However, the hours of actual emergency use shall also be recorded.

6. The sulfur content of any fuel oil burned shall not exceed 0.40 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

7. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this emission point (225 KW diesel generator in Bldg 565 and 15 KW diesel generator in Bldg 1151) are currently calculated at the following values:

A. 0.03 ton/yr for particulate
B. 0.02 ton/yr for PM_{10}
C. 0.03 ton/yr for SO_2
D. 0.48 ton/yr for NO_x
E. 0.04 ton/yr for VOC
F. 0.10 ton/yr for CO
G. 0.01 ton/yr for aldehydes

An entry of 0.00 does not mean the emissions are actually zero; it is intended to mean negligible emissions.

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

DOROTHY\WP\REVIEWS\EG565.REV

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Dorothy L. Rogers
RE:	Installation of 500 KW Emergency Generator in Building 14 and Relocation of 350 KW Emergency Generator from Building 221 to Building 14 Davis County CDS A1 NA UTM: 4,161,000 N 455,450 E
DATE:	August 3, 1992
NOTICE OF INTENT DATED:	March 24, 1992
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-4618
PLANT LOCATION:	Building 14, Hill Air Force Base

FEES:

Filing Fee	$ 1500.00
Review Engineer - XX hours at $50.00/hour	$ 000.00
Modeler - XX hours at $50.00/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 00.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$ 1500.00

APPROVALS:

Engineering Unit Manager DKP 8-3-92

Applicant Contact Made [illegible] 8-5-92

Type of Source A1

Attainment Area	**Yes**	No
Nonattainment Area		
PM_{10}	Yes	**No**
SO_2	Yes	**No**
NO_X	Yes	**No**
CO	Yes	**No**
Ozone	**Yes**	No
NSPS	Yes	**No**
Subparts A and _____		
NESHAP	Yes	**No**
Subparts A and _____		
Toxic Pollutants	Yes	**No**
_____		
Toxic Major Source	Yes	**No**
(> 10 tpy or > 25 tpy combination)		
New Major Source	Yes	**No**
Major Modification	Yes	**No**
PSD Permit	Yes	**No**
Send to EPA	Yes	**No**

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base is planning to install a 500 KW diesel generator in Building 14.

The new generator is a Caterpillar Model No. 3412 DITA emergency diesel generator. This generator will serve as a backup for emergency power to airfield runway and beacon lights. This generator will be used a maximum of 100 hours per year for maintenance.

A 5,000 gallon above ground diesel storage tank and a 400 gallon day tank will also be installed to store fuel for the emergency generator. The emissions from the storage tanks are negligible.

Hill Air Force Base also is planning to relocate a 350 KW generator Cummins Model No. NTA855 from Building 221 to Building 14. This generator will also be used a maximum of 100 hours per year. This existing generator does not have an Approval Order.

II. EMISSION SUMMARY

Existing Emissions (from relocated emergency generator)

Particulate	0.00 ton/yr
PM_{10}	0.00
SO_2	0.00
NO_x	0.08
CO	0.02
VOC	0.00
Aldehydes	0.00

Proposed Emissions (from new generator)

Particulate	0.01 ton/yr
PM_{10}	0.01
SO_2	0.01
NO_x	0.18
CO	0.04
VOC	0.01
Aldehydes	0.00

Net Increase in Emissions

Particulate	0.01 ton/yr
PM_{10}	0.01
SO_2	0.01
NO_x	0.10
CO	0.02
VOC	0.01
Aldehydes	0.00

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT for the generator set would be the use of a catalytic converter to control emissions of CO, NO_x, and VOC. Also, a natural gas fueled generator would be considered BACT rather than a diesel fueled generator.

In this case, the emergency generators are proposed to be stand-by generators that will only operate in emergency situations and will only be operated for approximately 100 hours per year for maintenance. The addition of control

devices to the generators is not justified.

The Engineering Section is recommending that BACT for the generators be proper operation and maintenance and 20% opacity.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to a major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 which consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications which would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 50.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This emission point emits less than 25.00 tons per year of combined PM_{10}, SO_2, and NO_x. Therefore, this rule does not apply.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule does not apply to IC engines.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. The sources listed in Weber

County are as follows:

A. Farmers Grain Coop
B. Fife Rock Products
C. Interpace Corporation
D. Parsons Asphalt Plant
E. Pillsbury Company
F. Teledyne Incinerator
G. Gibbons and Reed Asphalt

This source is not listed in the SIP. Therefore, this rule does not apply.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. Hill Air Force Base must comply with this rule.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP

A. Class I areas

1) 5 ug/m^3 (annual)

2) 10 ug/m^3 (24 hour)

B. Class II areas

1) 19 ug/m^3 (annual)

2) 37 ug/m^3 (24 hour)

SO_2

A. Class I areas

1) 2 ug/m^3 (annual)

2) 5 ug/m^3 (24 hour)

3) 25 ug/m^3 (3 hour)

B. Class II areas

1) 20 ug/m^3 (annual)

2) 91 ug/m^3 (24 hour)

3) 512 ug/m^3 (3 hour)

NO_x

A. Class I areas - 2.5 ug/m^3 (annual)

B. Class II areas - 25 ug/m^3 (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(Tons per Year)

	Non-Attainment Areas	Attainment Areas
SO_x	10	20
NO_x	20	20
PM_{10}	5	5
TSP	10	10
O_3	5	5
CO	25	50
VOC	10	20

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred. This proposed Notice of Intent will consume negligible amounts of increment.

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Hill Air Force Base has no stacks which exceed 65 meters in height. It is in compliance with this rule.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, the 20% opacity limitation applies.

18. R307-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. These generators burn diesel fuel oil. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input. The fuel oil in this case is limited to 0.40 pounds of sulfur per 10^6 BTU heat input based on the AP-42 emission factor.

20. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack.

    This emission point does not require a CEMS.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This process is not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule applies.

24. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone.

The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. However, it will make a small contribution to the existing violation for ozone of the NAAQS.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

    1) Maintenance, repair, and replacement

    2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

    3) An increase in the hours of operation

    4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

    5) The addition or use of any system or device whose primary function is the reduction of air pollutants

    6) Relocation or change in ownership

    Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

    1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

    2) It is technologically and economically feasible to meet the applicable standards set forth in this part

    This Notice of Intent is not a reconstruction.

29. R307-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

    A. Routine maintenance, repair, or replacement

    B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the emergency generators in Building 14 according to the information submitted in the Notice of Intent dated March 16, 1992.

A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installation shall consist of the following:

A. Caterpillar 500 KW generator, Model No. 3412 DITA or equivalent located in Building 14

B. Cummins 350 KW, Model No. NTA855 generator or equivalent (relocated from Building 221 to Building 14)

C. Four diesel fuel storage tanks - 250, 400, 2000, and 5000 gallons

Equivalency shall be determined by the Executive Secretary.

3. Visible emissions from the emergency generators shall not exceed 20% opacity after warm-up. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The hours of maintenance operation for the emergency diesel generators shall not exceed 100 hours each per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of the hours of operation shall be kept for all periods when the plant is in operation. Records of the hours of operation shall be made available to the Executive Secretary or

his representative upon request and shall include a period of two years ending with the date of the request. The hours of operation shall be determined by an engine hour totalizer installed on each engine. The records shall be kept on a daily basis.

The 100 hours of operation shall not include actual emergency use. However, the hours of actual emergency use shall also be recorded.

5. The sulfur content of any fuel oil burned shall not exceed 0.40 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

6. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal emissions shall be reported to the Executive Secretary as directed for each calendar year.

7. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this emission point (500 KW and 350 KW emergency Generators in Building 14) are currently calculated at the following values:

A. 0.01 ton/yr for Particulate
B. 0.01 ton/yr for PM_{10}
C. 0.01 ton/yr for SO_2
D. 0.18 ton/yr for NO_x
E. 0.01 ton/yr for VOC
F. 0.04 ton/yr for CO
G. 0.00 ton/yr for aldehydes

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

DOROTHY\WP\REVIEWS\EG14.REV

DLR
WF

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-617-92

June 26, 1992

Jay Gupta
Department of the Air Force
Headquarters Ogden Logistics Center (AFLC)
Hill Air Force Base, Utah 84056-5990

Re: Additional Information Required for Construction of Emergency Generators and Media Blast Booth

Dear Mr. Gupta:

The following information is needed to complete the engineering review for the Notice of Intent to install emergency generators in Buildings 575 and 14; and a media blast booth in Building 48:

1. The date of the Approval Order for the existing 300 KW generator in Building 575 (if it has an Approval Order);

2. The date of the Approval Order for the existing 350 KW generator that is being relocated from Building 221 to Building 14 (if it has an Approval Order);

3. The manufacturer and model number for the existing 350 KW generator that is being relocated from Building 221 to Building 14; and,

4. The manufacturer and model number for the media blast booth proposed for building 48.

Questions regarding this letter or other air quality matters may be addressed by contacting me at (801) 536-4000. Your earliest attention to this matter will allow the Division to complete the engineering review in a timely manner.

Sincerely,

Dorothy L. Rogers

Dorothy L. Rogers
Environmental Health Engineer
Utah Division of Air Quality

DLR:cl

cc: Davis County Health Department

4.2.4-698

June 11, 1992 tz

Emissions from Paint Media Blast Booth in Bldg 48

Emissions are controlled by a fabric filter 99% + control

Assume TSP = 0.02 gr/dscf
PM_{10} = 0.016 gr/dscf

Exhaust rate = 7,000 cfm Elevation 4500'

$$DSCFM = 7000\ cfm \times \frac{25.35}{29.92} \times \frac{528}{528} \times \frac{97}{100} = 5754\ dscfm$$

Emissions:

TSP	0.[illegible] lb/hr	1.04 TPY
PM_{10}	0.8 lb/hr	0.83 TPY.

$$\text{Operation hrs} = 8\ \frac{hr}{day} \quad 5\ \frac{day}{wk} \quad 52\ \frac{wk}{yr} = 2080\ \frac{hr}{yr}$$

Exhaust rate ACFM = 7000 at 68°F and 29.92" Hg

Assume conservative 3% moisture content

6790 DSCFM

TSP	1.16 lb/hr	1.21 TPY
PM_{10}	0.93 lb/hr	1.0 TPY

Emergency Generator Bldg 575 - 100 hr/yr max operation
Existing emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	30000	88.55	0.04
pm10	0.74		48.90	0.02
so2	1.25		82.60	0.04
nox	18.8		1242.29	0.62
co	4.06		268.28	0.13
voc	1.5		99.12	0.05
ald	0.28		18.50	0.01

Proposed emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	60000	177.09	0.09
pm10	0.74		97.80	0.05
so2	1.25		165.20	0.08
nox	18.8		2484.58	1.24
co	4.06		536.56	0.27
voc	1.5		198.24	0.10
ald	0.28		37.00	0.02

Increase emissions

	lb/yr	ton/yr
tsp	88.55	0.04
pm10	48.90	0.02
so2	82.60	0.04
nox	1242.29	0.62
co	268.28	0.13
voc	99.12	0.05
ald	18.50	0.01

Emission Factors are from AP-42 Table 3.3-1

Storage Tank is a 2000 gallon above ground diesel tank and 250 gallon day tank
Emissions from the storage tanks are negligible

Emergency Generator Bldg14 - 100 hr/yr max operation
Existing emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	3500	10.33	0.01
pm10	0.74		5.70	0.00
so2	1.25		9.64	0.00
nox	18.8		144.93	0.07
co	4.06		31.30	0.02
voc	1.5		11.56	0.01
ald	0.28		2.16	0.00

Proposed emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	8500	25.09	0.01
pm10	0.74		13.85	0.01
so2	1.25		23.40	0.01
nox	18.8		351.98	0.18
co	4.06		76.01	0.04
voc	1.5		28.08	0.01
ald	0.28		5.24	0.00

Increase emissions

	lb/yr	ton/yr
tsp	14.76	0.01
pm10	8.15	0.00
so2	13.77	0.01
nox	207.05	0.10
co	44.71	0.02
voc	16.52	0.01
ald	3.08	0.00

Emission Factors are from AP-42 Table 3.3-1

Storage Tank is a 5000 gallon above ground diesel tank and 400 gallon day tank
Emissions from the storage tanks are negligible

July 31/92 DLR

Emergency Generator Bldg 565 - 60 hr/yr max operation
Existing emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	4800	14.17	0.01
pm10	0.74		7.82	0.00
so2	1.25		13.22	0.01
nox	18.8		198.77	0.10
co	4.06		42.93	0.02
voc	1.5		15.86	0.01
ald	0.28		2.96	0.00

Calculation for lb of S/MW

Emission Factor

1.25 g SO_2/kw-hr

$$1.25\ \frac{g\ SO_2}{kw\text{-}hr} \times \frac{mole}{64.07\ g\ SO_2} \times \frac{32.07\ g\ S}{mol} \times \frac{1\ lb}{454\ g} \times$$

$$\frac{1\ kw\text{-}hr}{3410\ BTU} \times \frac{1\times10^6\ BTU}{mmBTU} = 3.40\ \frac{lb\ S}{mmBTU}$$

Proposed emissions

	g/kw-hr	kw-hr/yr	lb/yr	ton/yr
tsp	1.34	13500	39.85	0.02
pk10	0.74		22.00	0.01
so2	1.25		37.17	0.02
nox	18.8		559.03	0.28
co	4.06		120.73	0.06
voc	1.5		44.60	0.02
ald	0.28		8.33	0.00

Aug 10, 1992

Proposed Emissions based on 100 hr/yr DLR
22500 kw-hr/yr

TSP	0.03 TPY
PM10	0.02
SO_2	0.03
NOx	0.47
CO	0.10
VOC	~~0.10~~ 0.04
Ald	0.01

Increase emissions

	lb/yr	ton/yr
tsp	25.68	0.01
pk10	14.18	0.01
so2	23.95	0.01
nox	360.26	0.18
co	77.80	0.04
voc	28.74	0.01
ald	5.37	0.00

Emission Factors are from AP-42 Table 3.3-1

Storage Tank is a 1000 gallon above ground diesel tank
Emissions from the storage tank are negligible

Emissions for 15 kW generator in Bldg 1151 taken from AQ dated Sept 10/90

	lb/yr
TSP	~~10.2~~ 1.5
PM_{10}	0.83
SO_2	1.4
NOx	21.06
CO	4.55
VOC	1.68
ald	0.31

Total for Bldg 565 & 1151 based on 60 hr/yr

	TON/yr	based on 100 hr/yr
TSP	0.02	0.03
PM_{10}	0.01	0.02
SO_2	0.02	0.03
NOx	0.29	0.48
CO	0.06	0.10
VOC	0.02	0.04
ald	0.00	0.01

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

16 MAR 1992

Mr F. Burnell Cordner, Executive Secretary
Department of Environmental Quality
Division of Air Quality
1950 W. North Temple
Salt Lake City UT 84114-4820

Re: Notice of Intent to Construct Emergency Generators Bldgs 575, 14, and Media Blast Booth Bldg 48

Dear Mr Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations, we submit the attached Notice of Intent to Construct. If this office can provide additional information, please feel free to contact Jay Gupta at 777-4618.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Notice of Intent to Construct

Emergency Diesel Generators Bldgs 575 & 14

1. Project Description:
Three emergency generators are planned. An existing 300 KW generator in Bldg 575 will be replaced with a Catterpillar's Model 3412 DITA or equal 600 KW generator using the existing 2,000 gallons diesel above ground storage tank and a 250 gallon day tank. This generator will serve as a back-up to Industrial Waste Water Treatment Plant equipment in the event of power outage.
A 500 KW Caterpillar Model 3412 DIT or approved equal together with a 5,000 gallons above ground diesel storage tank and a 400 gallon day tank at Bldg 14 will serve as a back-up for the Airfield Runway and Beacon Lights. In addition an existing 350 KW generator will be relocated from Bldg 221 to Bldg 14.

2. Pollutant Emissions:
The source of air pollution from these projects involve exhaust emissions from diesel engines. Evaporative emissions from diesel tanks are negligible. Since these generators serve only as back-up power units, they will be in operation only during power outage and for periodic maintenance start-ups. Based on operating history of emergency generators on base, we estimate approximately an average of 40 hours and a maximum of 80-100 hours run time for each generator per year. Emissions are calculated using the EPA publication, AP-42, Compilation of Air Pollutant Emission Factors.
Total KW = 1,450
Existing KW = 650
Incremental KW = 800
Emissions (gms/yr)= Emission Factor (gm/KW-hr) X 40 hrs/yr X 1,450 KW

		Emissions		
Pollutant	E.F.(gm/KW-hr)	Lbs/yr	Ton/yr	Max. Ton/yr
CO	4.06	518.7	.26	0.52
HC	1.5	191.6	.1	0.2
NOX	18.8	2401	1.2	2.4
Aldehydes	0.28	35.7	0.02	0.04
SOX	1.25	159.7	0.08	0.16
Particulate	1.34	171.1	0.08	0.16

3. Air Cleaning Devices: No controls are proposed because these emergency power units will be operational only during emergencies and power outages.

4. Emission Points: Each diesel generator will have exhaust approximately 10 feet above the surrounding ground elevation.

5. Sample Points: No sampling points are provided

6. Operating Schedule: Diesel generators will be run only during power outage or scheduled maintenance start-ups.

Media Blast Booth Bldg 48

1. Project Description:
The media blast booth is a 10'X10'X20' metal enclosure complete with the blast/reclaimer assembly comprising of a cyclone seperator, a storage hopper, a low profile hopper, and a blast machine. The cyclone blower vacuums blasting residue from the low profile hopper on the enclosure floor. As the residue enters the cyclone, the cyclone separates undamaged blast media from the other debris and dust. The undamaged, reusable media drops through the cyclone's vibrating screen into the storage hopper. The reclaimed media from the storage hopper gravity feeds into the blast machine. The debris and dust from the cyclone are drawn into the dust collector. A schematic of the media blast unit is Atch 1. Atch 2 shows blast/reclaimer assembly. The blast media shall be Poly V plastic media. The components to be blasted include aircraft wheels, panels, ladders, engine run screens, tool boxes, carts and ground support equipment.

2. Air Emissions:
Particulate emissions will be controlled using high efficiency 24 cartridge dust collector assembly. The dust collector is 99.9 % efficient to particulate size one micron and above and virtually 100 % efficiency for particulate two micron and above.

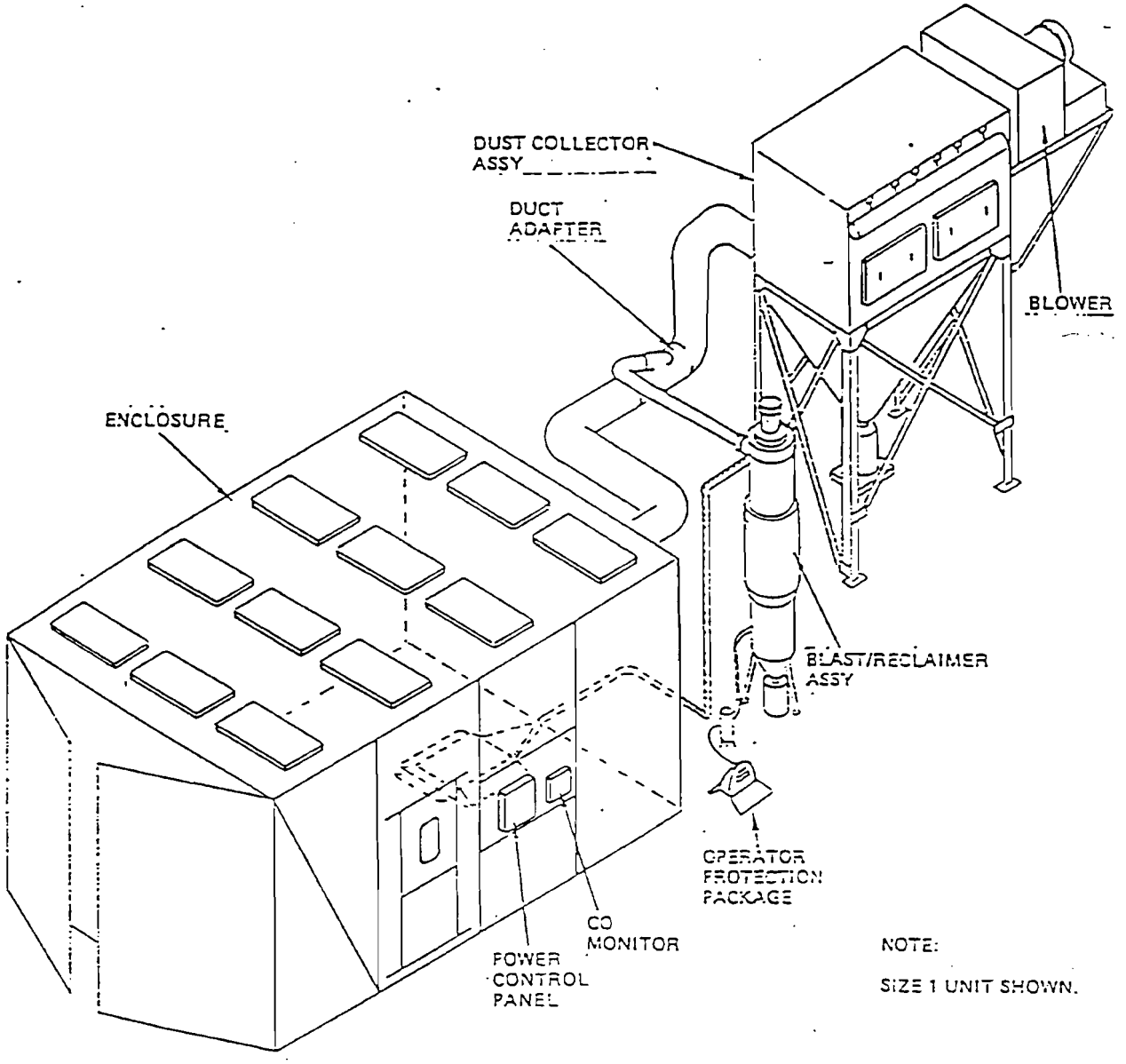
Exhaust flow rate = 7,000 CFM
Initial plastic media charge = 1,000 Lbs
Plastic media carryover or breakdown, per vendor assume @ 5% = 50 Lbs
Debris and dust carryover, assume @ 1% = 10 Lbs
At 99.9% efficiency, dust emission rate = 0.01 Lb/min = 0.01 gr/SCF
Assuming 3-4 hr. per shift operation, 5 days/wk, 52 wks/yr,
Total emissions = 0.01X60X1,040/2,000 = 0.31 Ton/yr

3. Air Cleaning Devices: Particulate emissions will be controlled using high efficiency 24 cartridge dust collector assembly.

4. Emission Points: Emission will be from discharge side of the ID fan. Discharge volume will be 7,000 CFM.

5. Sample Points: No sampling points are provided

6. Operating Schedule: This facility will normally be operated about 3-4 hours an eight-hour shift, 5 days/wk, 52 wks/yr. Depending upon work load two shift operation may be necessary.



4.2.4-708

Figure 1-1. Grit Blast Unit

ATCH-1

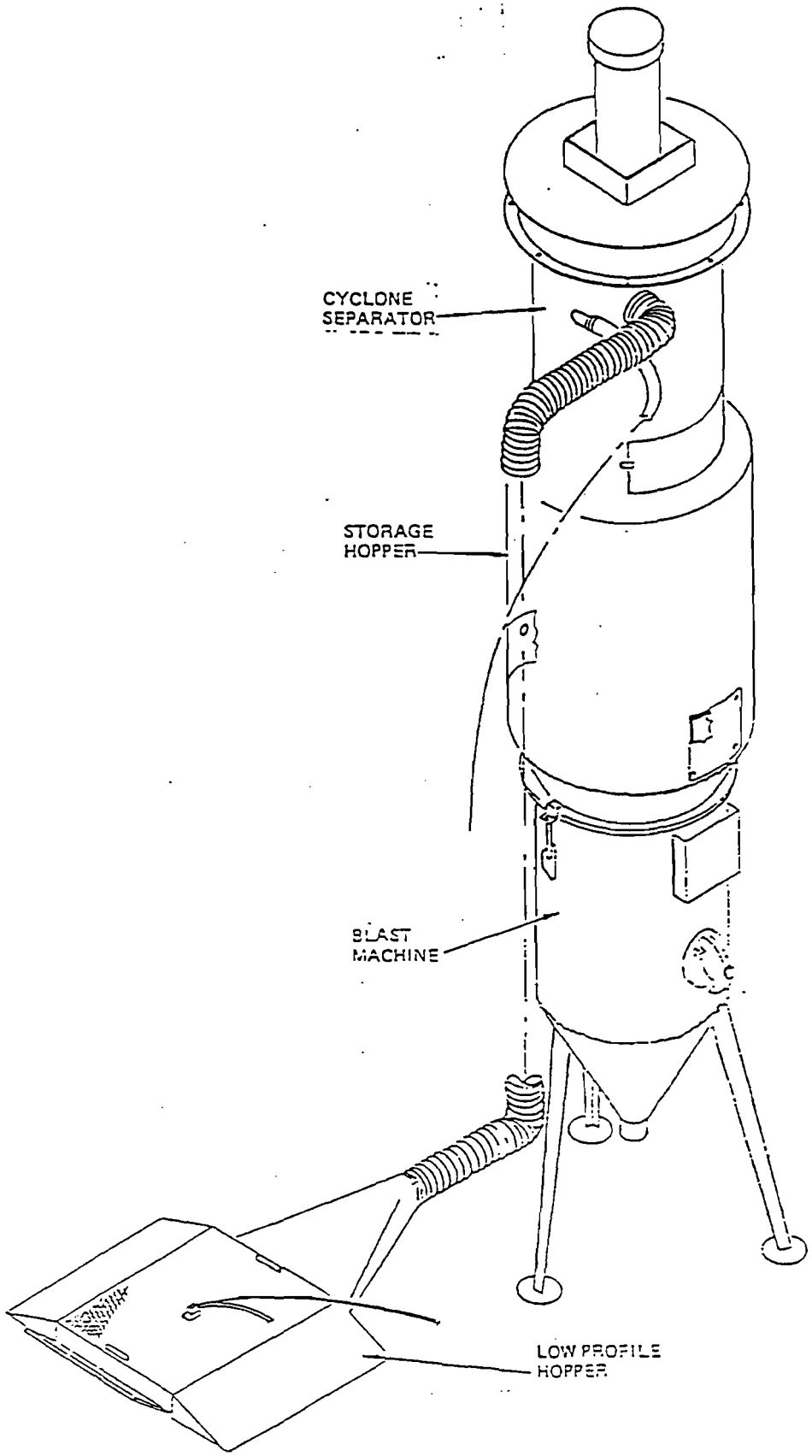


Figure 1-2. Blast/Reclaimer Assembly

4.2.4-709

ATCH-2

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

24 MAR 1992

RECEIVED
MAR 25 1992
Air Quality

Mr F. Burnell Cordner, Executive Secretary
Department of Environmental Quality
Division of Air Quality
1950 West North Temple
Salt Lake City, UT 84114-4820

Re: Notice of Intent to Construct Emergency Diesel Generator, Bldg 565

Dear Mr Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations, we submit the attached Notice of Intent to Construct. This 225 KW diesel generator replaced an existing 80 KW generator approved under an Approval Order issued 18 Sep 80.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-4618.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Notice of Intent to Construct

Emergency Diesel Generator Bldg 565

1. Project Description:
An existing 80 KW generator approved under an Approval Order dated 18 Sept. 1980 is replaced with a Caterpillar Serial No. 2AJ00536, 225 KW emergency diesel generator using an existing 1,000 gallon above ground diesel tank. This generator serves as a back-up emergency power to Weber and Davis water pumps.

2. Pollutant Emissions:
The source of air pollution from this project involve exhaust emissions from diesel engine. Evaporative emissions from diesel tank are negligible. Since, this generator serves only as a back-up power unit, this will be in operation only during power outage and for periodic maintenance start-ups. For units under 250 KW, we run them only for an hour per month to ensure their availability in the event of power failure. Based on this, we estimate approximately less than 30 hours and a maximum of 60 hours run time per year.
Emissions are estimated using the EPA publication, AP-42, Compilation of Air Pollutant Emission Factors.
Total KW = 225
Existing KW = 80
Incremental KW = 145
Emissions (gms/yr) = Emission Factor (gm/KW-hr) X 30 hrs/yr X 145 KW

Pollutant	E.F.(gm/KW-hr)	Lbs/yr	Ton/yr	Max. Ton/yr
CO	4.06	38.9	0.02	0.04
HC	1.5	14.4	neg	neg
NOX	18.8	180.1	0.09	0.18
Aldehydes	0.28	2.7	neg	neg
SOX	1.25	12.0	neg	neg
Part	1.34	12.8	neg	neg

The emissions from this source are negligible.

3. Air Cleaning Devices: No controls are proposed because this power unit will be operational only during emergency and power outage.

4. Emission Point: Exhaust is approximately 7 feet above the surrounding ground elevation.

5. Sample Points: No sampling points are provided.

6. Operating Schedule: This unit will be run only during power outage and scheduled maintenance start-ups.

STATE OF UTAH
DEPARTMENT OF HEALTH

SCOTT M. MATHESON, GOVERN

MICHAEL J STAPLEY, M P A , ACTING EXECUTIVE DIRECTOR

FEB 05 1985

533-6108

Frank L. McFarland
Department of the Air Force
Hill Air Force Base Headquarters
2849 Air Group
Hill Air Force Base, Utah 84056

Sugar Shakeland
forced air
propane fired

RE: Approval Order for Hydrazine Exhaust Incinerator - Davis County CDS Al
adjacent to Bldg. 2015

Dear Mr. McFarland:

On December 24, 1984, the Executive Secretary published a notice of intent to approve a hydrazine exhaust incinerator. The 30 day public comment period has expired, and no comments were received.

This air quality approval order authorizes the incinerator as proposed in your notice of intent dated November 21, 1984, with the following operating conditions:

1. All emission control equipment shall be properly installed, maintained, and operated as proposed in the notice of intent dated Nov. 21, 1984. combustion temp maintained at 1800°F with a residence time of 0.6s

2. No visible emissions from the incinerator stack shall exceed 20% opacity as measured by EPA Reference Method 9.

3. If a stack test is performed, the results of the test shall be submitted to the Executive Secretary. RTP

4. The Executive Secretary shall be notified when startup occurs as an initial compliance inspection is required.

The fee for issuing this approval order is $138.34. The amount (see enclosures for breakdown of costs) is payable to the Utah Department of Health, sent to the Executive Secretary, Utah Air Conservation Committee, and is due within 30 days after receipt of the approval order.

Sincerely,

Brent C. Bradford
Executive Secretary
Utah Air Conservation Committee

DK
DK:wml
Enclosures
cc: EPA Region VIII (N. Huey)
Davis County Health Department
6709

4.2.4-980

Hill AFB

12-24-84

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Hill Air Force Base, hydrazine incinerator, Davis Co.

2. Deseret Medical, catheter heparin coating, Sandy

3. Intermountain Products, vermiculite plant, Salt Lake City

4. Salt Lake Airport, parking lot, Salt Lake City

5. Geneva Rock Products, cement batch plant, Snowbird Salt Lake Co.

The engineering evaluations and air quality impacts have been completed, and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve these construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, Room 426, 150 West North Temple, Salt Lake City, Utah. Written comments received by the Bureau, P.O. Box 45500, Salt Lake City, Utah 84145, on or before January 23, 1985, will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests, within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: December 24, 1984

12/5/84 Minor (New)
Major
ID#

BUREAU OF AIR QUALITY
ENGINEERING REVIEW - SUMMARY (NOI Dated 11/21/84)
ENGINEER/DATE - Don Robinson 12/4/84 DR

Owner/Operator: Hill Air Force Base

Source: Emergency Power Unit Firings on F-16s

Applicant/Official: Frank L. McFarland

Applicant/Official Address: Dept. of Air Force, HDQRS 2849 Air Base Group (AFLC), Hill AFB, UT 84056

Telephone Number of Contact: 801-777-2065 (Bill Taylor)

Plant/Activity Location and Address: Hill AFB (Weber Co.)

Type of Operation: Hydrazine Exhaust Incinerator

I. Background

The F-16 is a new single-engine tactical aircraft. Since the F-16 is an electronically controlled configuration aircraft, an emergency power unit is used to provide short-term electric and hydraulic power for aircraft control. The emergency power unit (EPU) is fueled with a monopropellant hydrazine mixture, H-70, which contains 70% hydrazine and 30% water.

During EPU testing, the hydrazine fuel will be passed through the normally used catalyst, which is actually part of the EPU. The emissions of concern are the exhausts that will leave the EPU after the hydrazine passes through the catalyst.

Under no-load conditions, the EPU operates in a pulsed manner at approximately two pulses/second. Because water in the fuel does not enter into the decomposition reactions, the exhaust gas has a very high water vapor content and hence a high dew point. The exhaust gas is discharged from the F-16 aircraft through a three inch duct opening, flush with the aircraft skin near the wing root and directed vertically downward.

II. Proposal

Hill Air Force Base is proposing to install a hydrazine exhaust incinerator to control the emissions from planned EPU test firings. The incinerator is single-chambered, forced air, and propane-fired. The combustion chamber is cylindrical with a three foot inside diameter and is ten feet tall. The specified performance characteristic is that it emits hydrazine at levels which do not exceed 1 ppm. It accomplishes this by creating a combustion chamber with a temperature of 1800 degrees F. and a residence time of 0.6 seconds.

The following numbers describe the operation:

1. Two test firings per day.
2. 260 days per year.
3. One minute per test firing.
4. Hydrazine - N_2H_4.
5. One ppm N_2H_4 emitted to atmosphere.
6. Propane fired, 1.1 X 10^6 BTU/hr.
7. 45 minutes per EPU firing.
8. 4630 ft MSL.
9. Stack height 15 ft.
10. Stack Temp. 1800 degrees F.
11. Residence time - 0.6 seconds.

The incinerator will be installed adjacent to Building 2005 at HAFB. This is in Weber County.

A contract has been let to AeroVironment to devise a sampling train. Samples will be taken before and after incineration in order to calculate efficiencies. Construction is already underway and startup is planned for March 1985.

III. Regulation Applicability

This source is subject to the following regulations:

1. Section 3.1, UACR - NOI requirement.
2. Section 4.1, UACR - 20% opacity.
3. Section 4.7, UACR - Unavoidable breakdown.

This source is not subject to PSD, NSPS, or NESHAPS. The area is ~~a~~attainment for particulate. Ogden is nonattainment for CO.

IV. BACT Analysis

The incinerator constitutes BACT for this source. A temperature of 1800 degrees F. and a residence time of 0.6 seconds will oxidize any VOC or hydrazine.

V. Modeling - None. Small source.

VI. Emission Summary

N_2H_4 - .48 lb/yr
NOx - 2.125 ton/yr

VII. Recommendations

Recommend approval with the following conditions:

1. All emission control equipment shall be properly installed, maintained, and operated as proposed in the notice of intent dated Nov. 21, 1984.

2. No visible emissions from the incinerator stack shall exceed 20% opacity as measured by EPA Reference Method 9.

3. If a stack test is performed, the results of the test shall be submitted to the Executive Secretary.

4. The Executive Secretary shall be notified when startup occurs as an initial compliance inspection is required.

DR/ads
6235

VIII. Emission Calculations

given (1) 520 test firings/yr
(2) 45 minutes each
(3) propane fueled
(4) STP latm
$68^{\circ}F = 293.16^{\circ}K$
(5) 100% excess air
(6) 1.1×10^6 BTU/HR

products entering incinerator

POLLUTANT	LB/FIRING	LB/YR	GRAM-MOLES/YR
N_2H_4	.053	27.56	390.09
NH_3	2.956	1537.12	40,940.82
H_2	.522	271.44	61,072.65
N_2	4.869	2531.88	81,949.65
H_2O	3.6	1872	47,131.46

propane C_3H_8 2590 BTU/SCF

$$\text{Total BTU/YR} = 1.1 \times 10^6 \times 520 \times \frac{45}{60} = 4.29 \times 10^8$$

$$\therefore \#\text{SCF}_{\text{propane}} = \frac{4.29 \times 10^8 \text{ BTU/YR}}{2590 \text{ BTU/SCF}}$$

$$= 165,637.06 \text{ SCF/YR}$$

$$n = \frac{PV}{RT} = \frac{1 \times 165,637.06 \times 28.316}{.0821 \times 293.16} = 194,868.46 \text{ gram moles}$$

$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

$N_2H_4 + 3O_2 \rightarrow 2NO_2 + 2H_2O$

$NH_3 + \frac{7}{4}O_2 \rightarrow NO_2 + \frac{3}{2}H_2O$

$H_2 + \frac{1}{2}O_2 \rightarrow H_2O$

194,868.46 C_3H_8 + 974,342.30 O_2

→ ① 584,605.38 CO_2

② 779,473.84 H_2O

380.09 N_2H_4 + 1170.27 O_2 →

③ 780.18 NO_2

④ 780.18 H_2O

40,940.82 NH_3 + 71,646.44 O_2 →

⑤ 40,940.82 NO_2

⑥ 61,411.23 H_2O

61,072.65 H_2 + 30,536.32 O_2 →

⑦ 61,072.65 H_2O

N_2 → ⑧ 81,949.15 N_2

H_2O → ⑨ 47,131.46 H_2O

100% excess air → ⑩ 1,077,685.33 O_2

⑪ 4,054,187.19 N_2

TOTAL GRAM-MOLES

EXHAUST = 6,790,027.41 gram moles

YAR

$VOL = \frac{nRT}{P} = \frac{6,790,022.41 \times .082 \times 1255.28}{.8453}$

1600°F = 1255.28°K

P = .8453 atm = 8.27836×10^8 l/YR

$= \frac{8.27836 \times 10^8}{28.316 \times 520 \times 45}$ ACFM

= **1949.38 ACFM**

N_2Hy emissions at 1ppm

6.79 gram moles/YR = **.48 lb/YR N_2Hy**

NO_2

41,721 gram moles/YR = **2.115 tons/yr**

TSP

$10 lb/10^6 SCF \times 165,637.06 / 2000 =$ **NEG**

SO_2

$.60 lb/10^6 SCF$ **NEG**

NOx

$120 lb/10^6 SCF$ = **.01 tons/yr**

HC

$8 lb/10^6 SCF$ **NEG**

CO

$20 lb/10^6 SCF$ **NEG**

Summary

TSP	—	NEG
SO_2	—	NEG
NO_X	—	2.125 tons/yr
HC	—	NEG
CO	—	NEG
N_2H_4	—	.48 lb/yr

STATE OF UTAH
DEPARTMENT OF HEALTH

SCOTT M. MATHESON, GOVERNOR

MICHAEL J STAPLEY, M.P.A., ACTING EXECUTIVE DIREC

November 28, 1984
533-6108

Frank L. McFarland
Dept. of the Air Force
Hill Air Force Base, Utah 84056

RE: Receipt of Notice of Intent

Dear Mr. McFarland:

This letter acknowledges receipt of your application for an air quality approval order dated November 21, 1984. We have begun our evaluation and if any additional information is necessary, you can expect to hear from us within 30 days.

Sincerely,

David Kopta
Manager, Engineering Section
Bureau of Air Quality

DK/ads
6190(c)

D 'ARTMENT OF THE AIR FORCE
HEADQUARTERS 2849TH AIR BASE GROUP (AFLC)
HILL AIR FORCE BASE, UTAH 84056

REPLY TO ATTN OF: DE

21 NOV 1984

SUBJECT: Notice of Intent to Construct - Hydrazine Exhaust Incinerator, Hill Air Force Base

TO: Utah Air Conservation Committee
Bureau of Air Quality
PO Box 2500
Salt Lake City UT 84110-2500

1. Attached is a Notice of Intent to construct for a new Hydrazine Exhaust incinerator submitted in compliance with section 3.1 of the State Air Conservation Regulations. This is the same submittal we mailed on 12 September which has not been received by your office. We would appreciate your timely review of this submittal because the original was lost.

2. If you have any questions, please feel free to call Bill Taylor at 777-2065.

Frank L McFarland

FRANK L McFARLAND
Deputy Base Civil Engineer
Civil Engineering Division

1 Atch
Notice of Intent

Additional Plans Filed in the Engineering Sections Plans File.

NOTICE OF INTENT TO CONSTRUCT

HYDRAZINE EXHAUST INCINERATOR

HILL AIR FORCE BASE, UTAH

1. The following information is provided in accordance with the outline in section 3.1.6 of the State Air Conservation Regulations:

a. Project Description:

(1) The proposed incinerator will be installed to burn unreacted hydrazine (N_2H_4) emitted during Emergency Power Unit (EPU) test firing. The EPU is utilized in the F-16 to provide emergency electrical power in the event of generator failure. Basically, it works on the principle of passing the hydrazine fuel through an oxidizing catalyst, generating gas (ammonia and decomposition products) and turning a turbine wheel with the resulting gas.

(2) Each EPU test firing will last one minute during which time a maximum of 12 pounds of the 70% hydrazine solution are burned. This is according to an Air Force study "Exhaust Gas Composition for the F-16 Emergency Power Unit" (Report SAM-TR-79-2), which is provided as an attachment. Under a maximum loading condition, as many as two EPUs may be test fired each day, 260 days per year. This accounts for a total of 520 test firings during a year, consuming a total of 6,240 pounds of the H-70 hydrazine fuel which is 30 percent water, 70 percent hydrazine.

(3) During the EPU testing, the hydrazine fuel will be passed through the normally used catalyst which is actually part of the EPU. The finished product will only be the verification that the EPU is operating correctly. The emissions of concern are the exhausts that will leave the EPU after the hydrazine passes through the catalyst.

b. Expected Emissions:

(1) Prior to Treatment: The decomposition of hydrazine in the EPU is basically as shown in the following reaction:

$$3\ N_2H_4 \rightarrow 2\ NH_3 + 3\ H_2 + 2\ N_2$$

This shows a 50 percent dissociation of ammonia (NH_3) which corresponds to what was seen in tests. Tests have also shown that a maximum of 0.053 pounds of unreacted hydrazine may pass through the catalyst. Thus, of the 8.4 pounds of hydrazine (70% of 12 pounds) consumed in each test firing, 8.347 is reacted according to the above reaction. This gives:

$$\underset{(8.347)}{3\ N_2H_4} \rightarrow \underset{(2.956)}{2\ NH_3} + \underset{(.522)}{3\ H_2} + \underset{(4.869)}{2\ N_2}$$

The anticipated emissions before treatment can then be listed as follows:

Pollutant	Lbs/1 Min Test Fire	Lbs/Year
Hydrazine (N_2H_4) – 32.046	0.053	27.56
Ammonia (NH_3) – 17.03	2.956	1,537.12
Hydrogen (H_2) – 2.016	0.522	271.44
Nitrogen (N_2) – 14.014	4.869	2,531.88
Water & Dissociation Products – 18.016	3.6	1,872.00
	12 Lbs Fuel	

(2) After Treatment: The Air Force is requiring the exhaust treatment supplier to meet the specification of no more than one part per million of unreacted hydrazine in the treated exhaust. At a flow rate of 1333 SCFM, one ppm equates to approximately 0.0001 pounds per minute or pounds per test firing (since they are for one minute).

Pollutant	Lbs/1 Min Test Fire	Lbs/Year
Hydrazine (N_2H_4)	0.0001	0.052
Combustion Products of Hydrazine	0.0529	27.51
Combustion Products of Ammonia	2.956	1,537.12
Hydrogen (H_2)	0.522	271.44
Nitrogen (N_2)	4.869	2,531.88
Water & Dissociation Products	3.6	1,872.00
	12 Lbs Fuel	

(3) The incinerator treatment will also involve the production of emissions from the burning of propane fuel. It is estimated that 1.1 MBTU will be used per hour of operation and that the incinerator will be fired a maximum of 45 minutes per test firing. Assuming a heating value of 90,500 BTU per gallon of propane, consumption of propane per test firing can be obtained from the following:

$$\frac{(0.75 \text{ hrs/test})(1{,}100{,}000 \text{ BTU/hr})}{90{,}500 \text{ BTU/gallon}} = 9.12 \text{ gallons/test}$$

Using AP-42, "Compilation of Air Pollutant Emission Factors," and anticipating 520 test firings per year, the emissions from the propane burning is as follows:

Pollutant	Lbs/Year
Particulates	1.28
Sulfur Oxides	0.07
Nitrogen Oxides	58.81
Carbon Monoxide	14.70
Volatile Organics	
Nonmethane	1.19
Methane	1.28

(4) The volume of air/combustion products emitted from the incinerator will be approximately 1333 SCFM and they will be emitted at a temperature of 1800° F.

c. Characteristics: The proposed air cleaning device is a single chambered, forced air, propane-fired incinerator. The combustion chamber is cylindrical with a three-foot inside diameter and is ten feet tall. The specified performance characteristic is that it emits hydrazine at levels no greater than one part per million. It accomplishes this by creating a combustion chamber with a temperature of 1800° F and residence time of 0.6 seconds.

d. Location: The incinerator is to be installed adjacent to Building 2005 at Hill Air Force Base shown in Figure 1.0, which is in Weber County. The incinerator, located on a concrete pad on the east side of the building, will have its stack terminate at about 15 feet above ground level (ground level is about 4630 MSL at this location). The facility is located in a fairly remote area of the base. Building 2004 is immediately adjacent, but like 2005, will only be manned on occasions. The closest building routinely occupied is approximately 500 feet to the northeast. However, at one part per million hydrazine, the stack effluent will meet the OSHA standard for eight-hour time weighted exposure; even with no dispersion, no hazards exist.

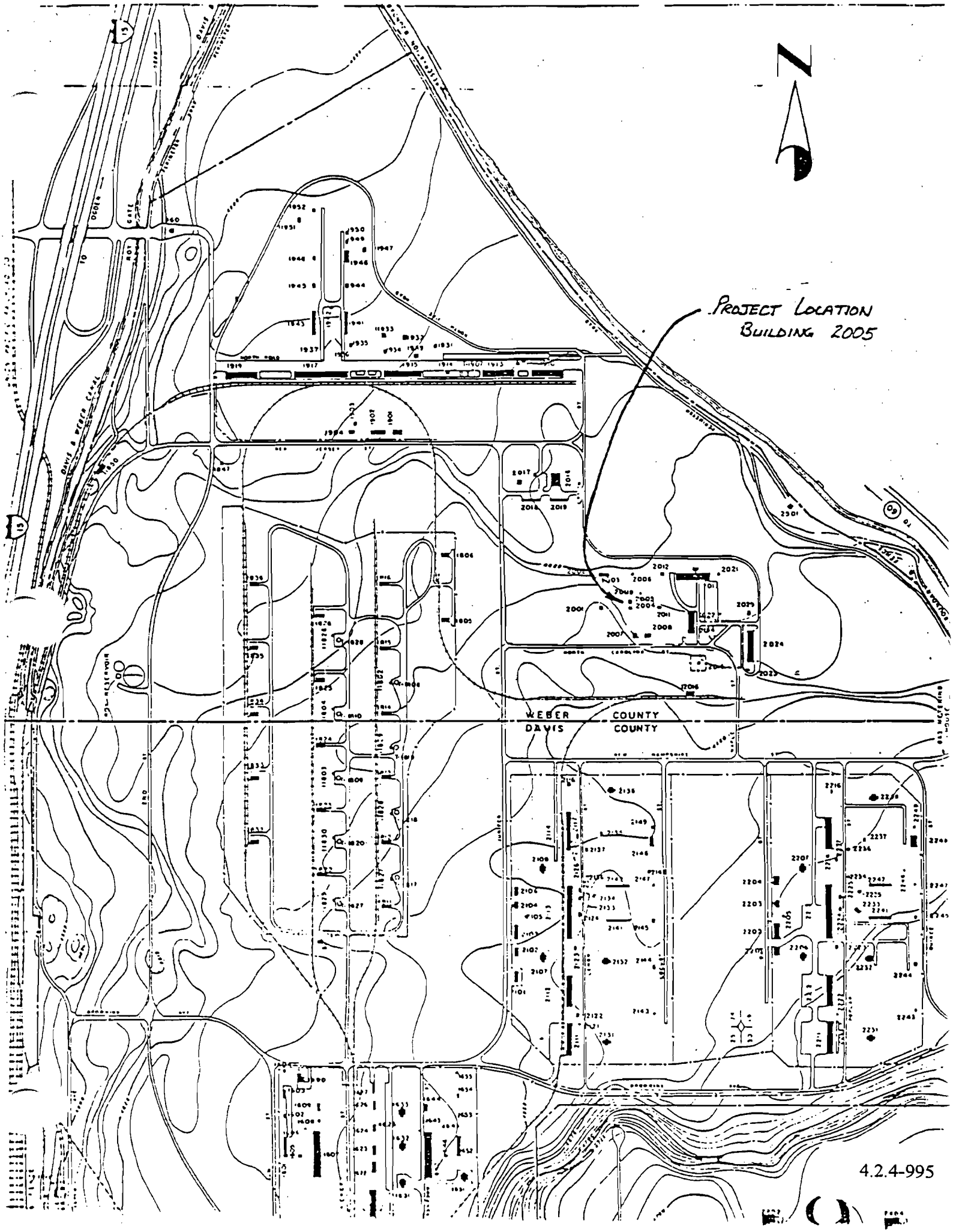
e. Sampling: The Air Force proposes to sample the incinerator both at Airesearch Los Angeles, where the incinerator will be constructed, and at Hill Air Force Base after delivery. A contract has been let to AeroVironment to devise a sampling train. It has not yet been determined whether Airesearch or AeroVironment will actually conduct the sampling. Samples will be taken before and after incineration so that efficiencies can be calculated. The exhaust sampling port is shown in the incinerator drawings. Also during sampling, a worst-case situation will be simulated where two seconds (at 0.2 Lbs/sec) of hydrazine by-passes the catalyst and goes straight to the incinerator. In actual operation, the EPU will automatically shut down after two seconds if the catalyst is not working.

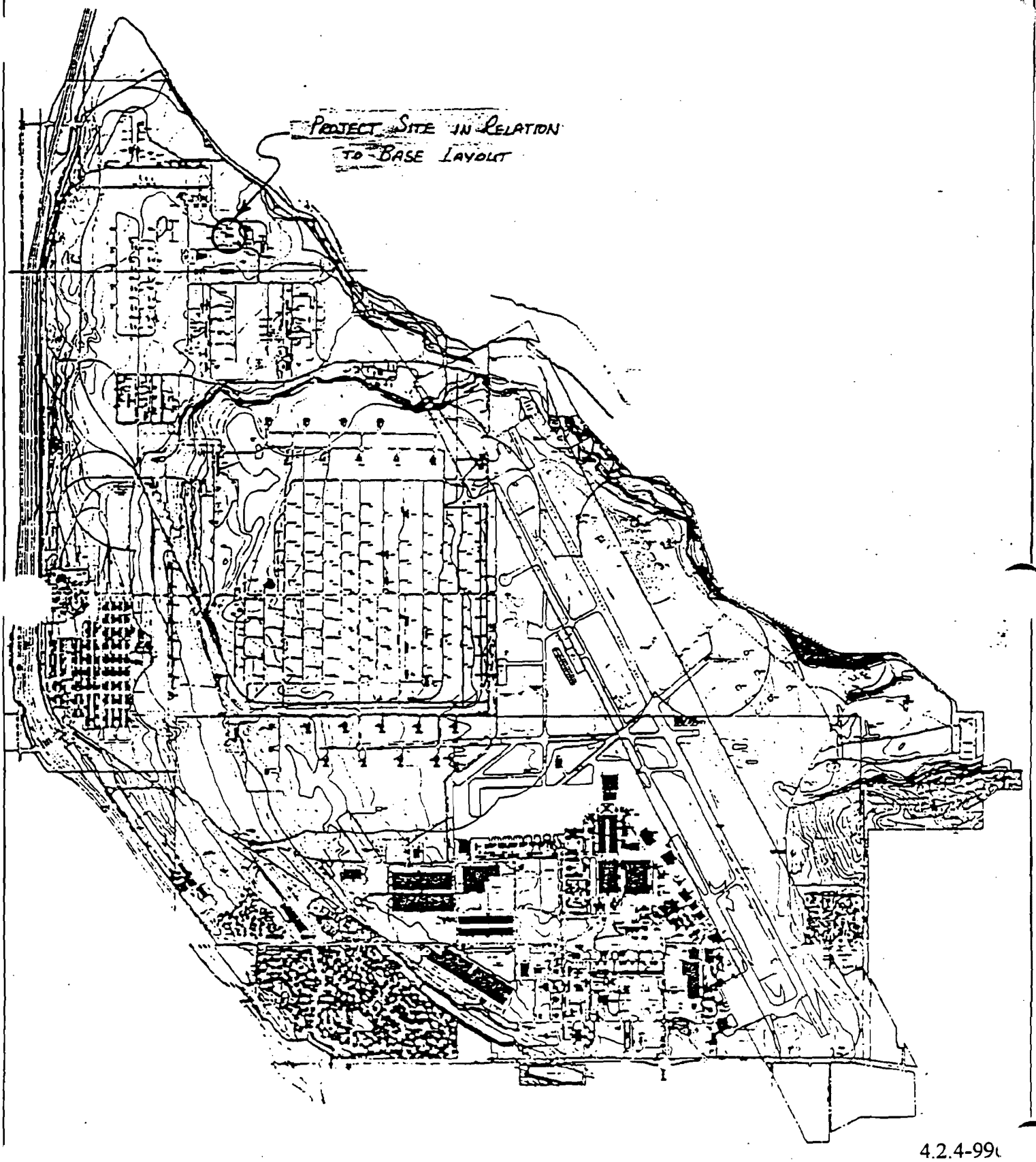
f. Operating Schedule: The heaviest usage now anticipated calls for two EPU test firings per day, 260 days per year.

g. Construction Schedule: Facility modifications are already underway to accommodate the test stand and incinerator. It is currently proposed to have the incinerator in place for sampling in March 1985.

h. Plans and Specifications: Incinerator drawings and Air Force Report SAM-TR-79-2 are attached.

3 Atch
1. Map
2. Air Force Report SAM-TR-79-2
3. Incinerator Drawings


PROJECT LOCATION
BUILDING 2005
WEBER COUNTY
DAVIS COUNTY



4.2.4-99(

HILL AIR FORCE BASE
BASIC LAYOUT PLAN
TAB C-2

Report SAM-TR-79-2

EXHAUST GAS COMPOSITION OF THE F-16 EMERGENCY POWER UNIT

Harry J. Suggs, Lieutenant Colonel, USAF, BSC
Leonard J. Luskus, Ph.D.
Herman J. Kilian, B.S.
Joseph W. Mokry, Staff Sergeant, USAF

February 1979

Interim Report for Period 1 October 1977 - 31 March 1978

USAF SCHOOL OF AEROSPACE MEDICINE
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas 78235

4.2.4-997

EXHAUST GAS COMPOSITION OF THE F-16 EMERGENCY POWER UNIT

INTRODUCTION

The F-16 is a new single-engine tactical aircraft scheduled to become Air Force operational in early 1979. Since the F-16 is an electronically controlled configuration (fly-by-wire) aircraft, an emergency power unit (EPU) is used to provide short-term electric and hydraulic power for aircraft control. The EPU is fueled with a monopropellant hydrazine mixture, H-70, which contains 70% hydrazine (N_2H_4), 30% water, by weight.

The introduction of hydrazine to the aircraft flight line scenario has raised numerous questions on environmental and occupational health support requirements. Early discussions with the F-16 Systems Program Office (ASD/YP), Wright-Patterson Air Force Base, Ohio, identified a need to determine the chemical composition of the EPU exhaust gas, to verify theoretical analyses. Specific questions were raised on the quantity of unreacted hydrazine and ammonia in the EPU exhaust gases. Answers to these questions were necessary to develop controls and protective actions to prevent excessive exposure to either of these toxic constituents.

During the week of 23 to 27 January 1978, an analytical team from the Crew Environments Branch, USAF School of Aerospace Medicine, collected a series of exhaust samples during ground-test firings of an installed F-16 EPU. This report describes the test procedures and details the EPU exhaust hydrazine and ammonia emissions.

DESIGN OF THE STUDY

Planned test firings or inadvertent ground firings were known to be largely cold-start runs of short duration under no-load conditions. Inadvertent firings typically have resulted in engine shut-down when the EPU mode selector switch was in the automatic position. The study therefore was designed to collect the exhaust samples following cold-start firings under no-load conditions.

Theoretical reactions of the catalytic decomposition of hydrazine are shown in Table 1. Theoretical gas composition for H-70 is shown in Figure 1 as a function of X, the fraction of ammonia dissociated in reaction 2. The value of X for the F-16 EPU was unknown at the start of the investigation, but was determined to be approximately 0.5 (50% ammonia dissociation).

TABLE 1. REACTIONS OF THE CATALYTIC DECOMPOSITION OF HYDRAZINE

$$3\ N_2H_4 \longrightarrow 4\ NH_3 + N_2 \qquad (1)$$

$$4\ NH_3 \longrightarrow 2\ N_2 + 6\ H_2 \qquad (2)$$

$$3\ N_2H_4 \longrightarrow 4(1-X)\ NH_3 + 6X\ H_2 + (2X + 1)\ N_2 \qquad (3)$$

Where X = fraction of NH_3 dissociated.

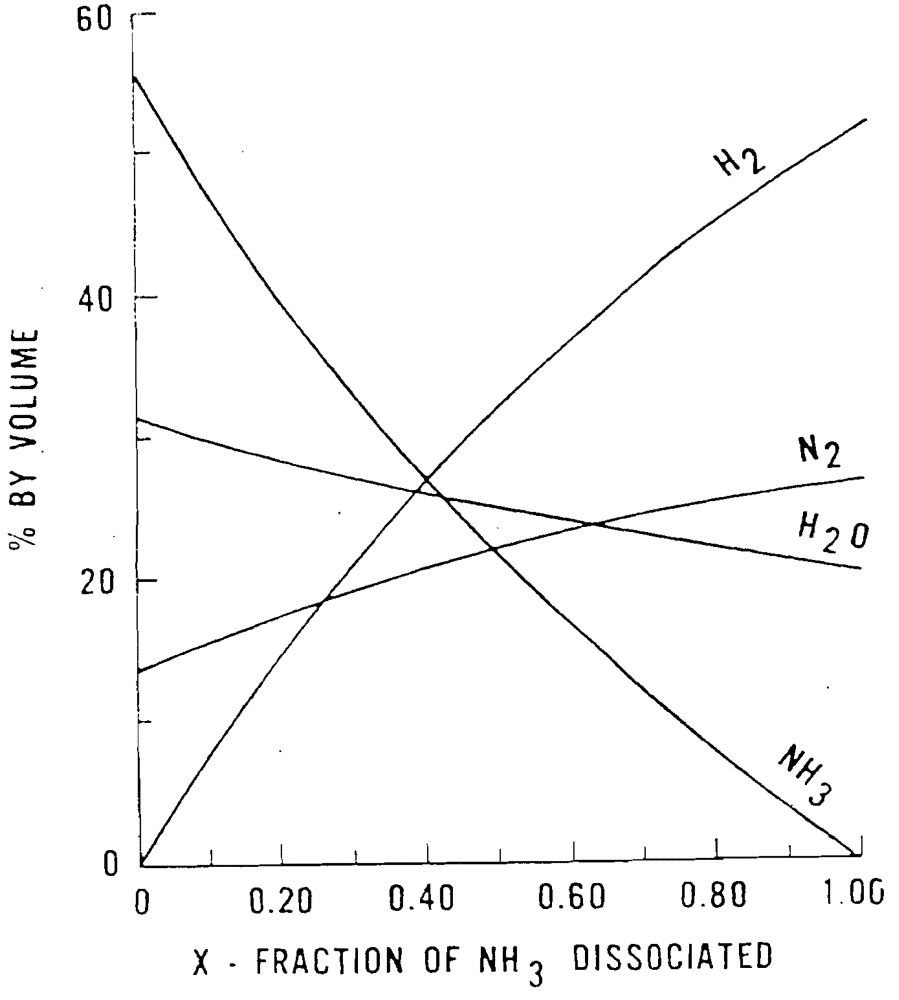


Figure 1. Theoretical exhaust products from catalytic decomposition of H-70.

Under no-load conditions, the EPU operates in a pulsed manner at approximately two pulses per second. Because water in the fuel does not enter into the decomposition reactions, the exhaust gas has a very high water vapor content and hence a high dew point. The exhaust gas is discharged from the F-16 aircraft through a 3-in (7.62 cm) duct opening, flush with the aircraft skin near the wing root and directed vertically downward. Maximum gas temperature was expected to be about 800°F (430°C). These combined factors created somewhat adverse conditions for extractive sampling. However, since in situ measurement techniques were not available within the required time frame, an extractive sampling method was devised and briefly laboratory tested before the study was undertaken.

The extractive sampling train, shown schematically in Figure 2, employed an evacuated tank (approximately 7½ liters) to draw sample through the train, to collect noncondensible gases in the sample, and to contain that gas sample for subsequent analysis. The tanks were alternatively replaced with a vacuum pump, in which case the noncondensible gases were not collected. A limiting orifice was used to maintain a known sampling rate of approximately 1 l/min. Two impingers, in series, each containing 100 ml of 2N sulfuric acid were placed in an ice bath and used to trap ammonia, hydrazine, and water. Solenoid valves before and after the impingers were remotely actuated to start and stop sample flow at predetermined times. An electrically heated sample line and nozzle, preheated to 100°C, was used to deliver the sample to the impingers. The sample line led to a manifold that allowed independent operation of five identical sampling trains, in parallel. Samples were collected from each of the five trains concurrently or sequentially as desired. Exhaust gas temperature was measured with a type J, iron-constantan thermocouple located alongside and flush with the sample nozzle.

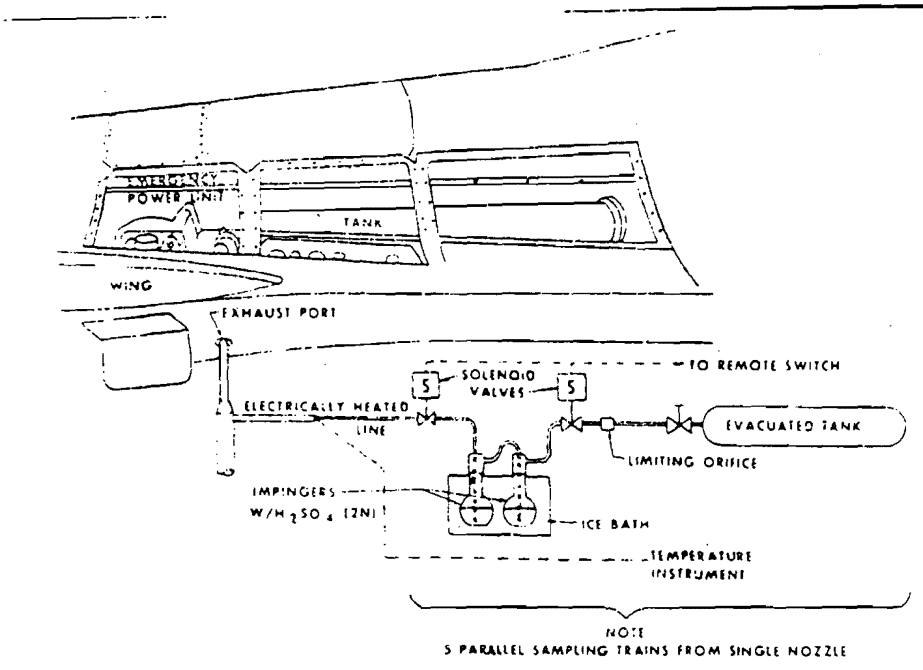


Figure 2. Schematic diagram of exhaust gas sampling train.

The sampling time interval for each sampling train for the six EPU tests is shown in Figure 3. Lines, in the figure, indicate the time of on-stream sample collection for each of the five samples in each test. Only four samples were collected in test 1. Sets A and B indicate tests with two different emergency power units installed in the aircraft. Set A was run on 24 Jan 1978 with EPU S/N 76-103, and Set B on 26 Jan 1978 with EPU S/N 76-107. The first test in each set was run after the EPU had stood overnight at ambient temperature (about 5°C). Between the two subsequent tests in each set, the catalyst bed was purged with gaseous nitrogen and cooled to touch. However, neither EPU was instrumented to measure catalyst temperature, making actual bed temperature unknown at the beginning of subsequent restarts.

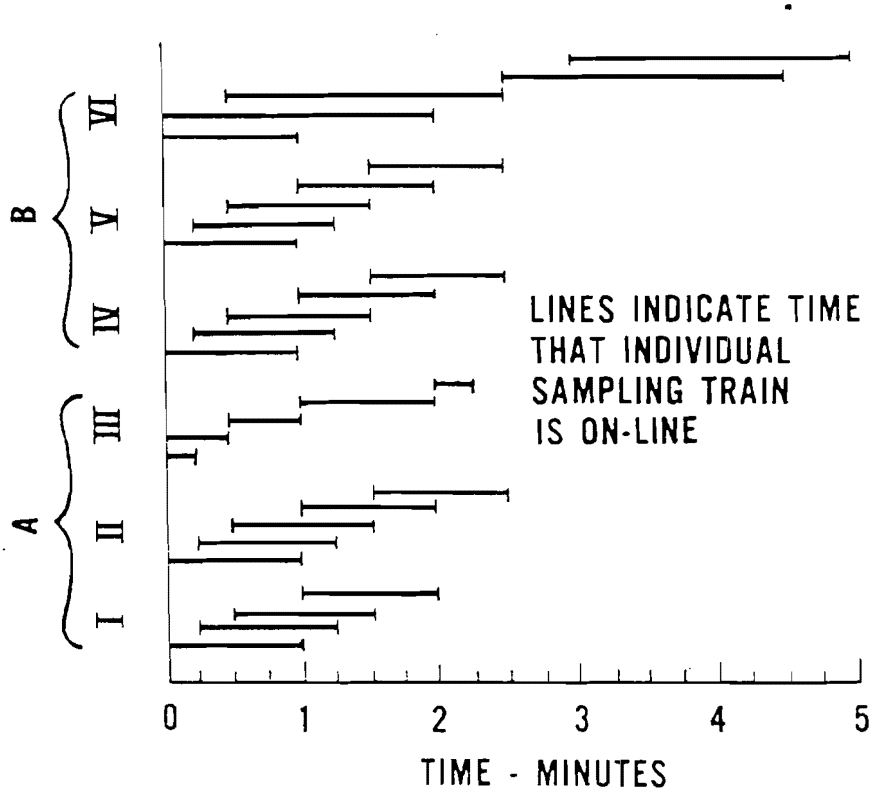


Figure 3. Sampling sequence.

Impingers were weighed before and after each test to determine total condensibles collected. Impinger samples were spot analyzed in the field to verify sample collection, but all samples were returned to the laboratory at Brooks AFB for final analysis. The p-dimethylaminobenzaldehyde (PDAB) colorimetric method (1) was used for hydrazine. Preliminary testing showed that ammonia did not interfere in the hydrazine method. Assay for ammonia was done with Nessler's reagent (2).

RESULTS

Exhaust Gas Temperature

The temperature profiles for two typical EPU tests are shown in Figure 4, as a function of time. Before the completion of the first run, it was apparent that EPU operation was not as had been expected. During run I the exhaust temperature rose rather gradually to around 500°F (260°C) then, at about 1-3/4 min into the run, the temperature increased rapidly to approximately 1200°F (650°C) just as the planned 2-min run was terminated. Run II resulted in the same phenomenon (Fig. 4) except that the rapid temperature rise started 1-1/2 min into the run and leveled off at around 1300-1400°F (700-760°C), the upper range of the type J thermocouple. Prior to run III, contractor engineers installed a 0-2000°F (-20-1100°C) thermocouple on the sample probe, taping the bare wire junction at the exhaust exit plane. During run III the contractor-installed thermocouple indicated a maximum temperature of nearly 1600°F (870°C). Run III was terminated before the planned 2-1/2 min time when flame (afterburning) was seen in the exhaust gas.

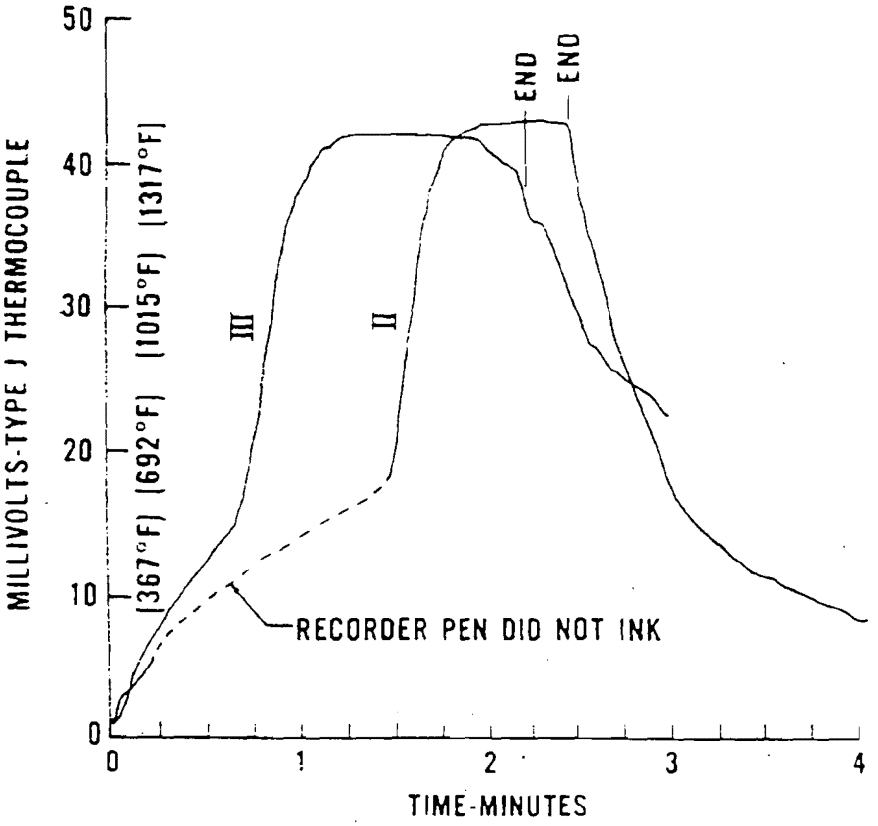


Figure 4. Exhaust gas temperature profile.

After considerable discussion of the findings from the first three tests, the contractor made the decision to exchange EPU S/N 76-103 with one taken from another aircraft. However, runs IV-VI with EPU S/N 76-107 gave essentially the same exhaust gas temperature characteristics. Afterburning was again observed, but usually only after more than 2 min operation.

Hydrazine

Results of hydrazine sampling are shown in Table 2. These results indicated some variability, but there was a clear indication that the hydrazine decreased rapidly with time into the run. Impinger collection efficiency was determined from the ratio of hydrazine in the first and second impingers. All hydrazine samples had a collection efficiency of 95.2% with a standard deviation (σ) of 8.7%.

Significantly greater amounts of unreacted hydrazine were found in runs I and IV. In both cases, these were the first runs made with each of the two different EPU's. Since there had been prolonged cold weather at the time of the test, the catalyst bed temperature was initially between 0°C and 10°C. Between runs, the catalyst bed was purged with gaseous nitrogen; however, in the absence of instrumentation to measure catalyst bed temperature, it is probable that the bed was not cooled to initial run temperatures. This could account for the variability of the hydrazine values and suggests greater hydrazine hazard potential at colder catalyst temperatures.

Ammonia

Results of ammonia sampling are shown in Table 2. These results show little suggestion of either increases or decreases of ammonia with time into the run. Impinger collection efficiency for ammonia was calculated and found to be 88.67% with σ = 15.9%.

Gravimetric Determination of Condensibles

The 15-s to 2-min samples gave only a small mass of condensibles, which was a result of measuring a small weight difference (less than 0.5 g) between two rather large weights (about 450 g). This inherently high error determination, coupled with the extremely adverse environmental conditions under which weighings were made, rendered these results of marginal usefulness. They are not included in this report.

Noncondensible Gases

The noncondensible sample gases were collected in evacuated tanks for later laboratory gas chromatographic analysis. The tanks were initially evacuated to 1 Torr. After sampling, pressures were determined with a low volume absolute pressure gauge. Analysis of the tank

TABLE 2. HYDRAZINE AND AMMONIA IN EPU EXHAUST GAS

Run No.	Impinger set No.	Sample time (min)	Hydrazine (µg)	Ammonia (mg)
I	1	1	10,778	199
	2	1	9,100	23[illegible]
	3	1	572	180
	4	1	35	164
II	1	1	1,725	152
	2	1	1,350	194
	3	1	690	19[illegible]
	4	1	51	182
	5	1	14	249
III	1	0.25	1,560	58
	2	0.50	2,650	14[illegible]
	3	0.50	358	8[illegible]
	4	1	0	249
	5	0.28	0	58
IV	1	1	3,670	79
	2	1	2,380	232
	3	1	374	135
	4	1	0	94
	5	1	0	68
V	1	1	630	170
	2	1	430	145
	3	1	0	11[illegible]
	4	1	0	247
	5	1	0	160
VI	1	1	0	177
	2	2	255	244
	3	2	0	28[illegible]
	4	2	0	283
	5	2	0	372

samples was delayed for several weeks due to laboratory equipment failure. At that time remeasurement of tank pressures suggested some leakage had occurred. Analysis confirmed the presence of oxygen and also suggested hydrogen had been lost. Accordingly, these results are considered suspect and are not reported herein.

Noncondensible Gas Flow Rates

Based on the initial post-sampling pressure measurements of the tanks and the sampling times, flow rates for each sample in runs V and VI were calculated. The average for the ten samples was 0.890 l/min with a σ of 0.218. The limiting orifices had initially been calibrated with air at 1.1 l/min. This value was corrected for molecular weight and temperature, according to:

$$q_2 = q_1 \sqrt{\frac{M_2 T_1}{M_1 T_2}}$$

where q_2 = Actual flow rate, l/min

q_1 = Calibration flow rate (air at 1.1 l/min)

M_2 = Molecular weight of actual gas

M_1 = Molecular weight of calibration gas (air = 29)

T_2 = Actual temperature ^{o}K

T_1 = Calibration temperature ($293^{o}K$)

By assuming that 50% of the ammonia was dissociated, the average molecular weight of the product gas was calculated to be 12. Substitution of this value for M_2 and the average sampling temperature of $278^{o}K$ for T_2, the corrected sample gas flow rate was calculated to be 0.726 l/min, in reasonable agreement with the measured value (based on average post-sampling pressure measurements).

Fuel Consumption

The EPU was not instrumented to determine fuel consumption rate. This value was approximated by determining the weight of fuel consumed during each set of runs and assuming a uniform fuel flow rate over the total lapsed run time. Fuel consumption for the first EPU (Set A) was 4.1 lb/min and for the second EPU (Set B) was 3.5 lb/min.

Determining Emissions and Emission Rates

Since both the weights of condensibles and analyses of noncondensible gases were unreliable, it is impossible to make an overall material balance. Manipulation of real data and theoretically expected values

was necessary to arrive at emission figures. The following procedure was employed.

First, the theoretical ratio of ammonia to noncondensible gas formed (mg/liter) was calculated using equation 3 (Table 1) and plotted against X, the fraction of ammonia dissociated (Fig. 5). The non-condensible gas was assumed to consist only of hydrogen and nitrogen.

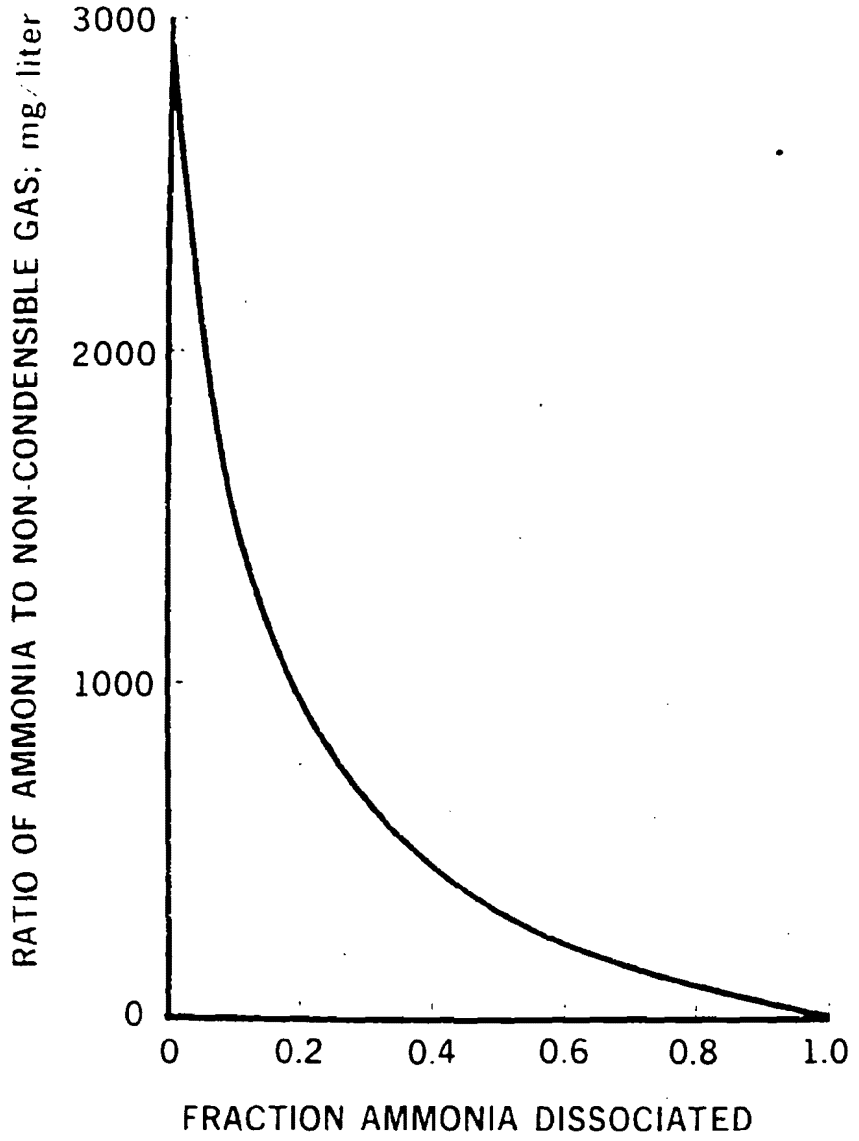


Figure 5. Theoretical ratio of ammonia to noncondensible gas ($N_2 + H_2$) as a function of fraction ammonia dissociated. (Based on equation 3, Table 1:

$$3\ N_2H_4 \rightarrow 4(1-X)\ NH_3 + 6X\ H_2 + (2X+1)\ N_2)$$

For each sample, the amount of ammonia trapped (mg) per liter of noncondensible gas sampled (0.726 l/min) was determined. These values were averaged for sample sets A and B, and the results are shown in Table 3. Using Figure 5, the corresponding value of X was determined as indicated in Table 4.

TABLE 3. TOTAL HYDRAZINE AND AMMONIA IN EPU EXHAUST

Set	Run No.	Hydrazine sampling time interval (g) 0-30 s	30-60 s	60-120 s	Total	Ammonia Average (l/min)[a]
A	I	22.55	1.50	0.08	24.13	603
	II	2.38	1.43	0.11	3.92	604
	III	5.83	0.84	0	6.67	706
B	IV	8.00	0.44	0.37	8.81	376
	V	1.37	0	0	1.37	515
	VI	0	0	0.56	0.56	475

[a]Measured at 21°C, 1 ATA

TABLE 4. RATIO OF AMMONIA TO NONCONDENSIBLE GASES AND ESTIMATED FRACTION OF AMMONIA DISSOCIATED

Set	mg NH_3/liter noncondensible	X, (Fraction NH_3 dissociated)
A	274, σ = 44	0.52
B	192, σ = 60	0.62

Once a value of X was determined, the theoretical flow rate of noncondensible gas could be determined from the fuel consumption rate and reaction 3 of Table 1, as follows:

Sample Set A: X = 0.52

Fuel flow rate = 4.1 lb/min (70% hydrazine)

Hydrazine flow rate = (4.1)(0.7)(454)/32

= 40.7 g-moles/min

From Equation 3:

$$3\ N_2H_4 = 4(0.48)\ NH_3 + 6(0.52)H_2 + (1.04+1)N_2$$

Noncondensible gas ratio = (3.12 + 2.04)/3

= 1.72 g-moles/g-mole hydrazine

Noncondensible gas flow rate = (1.72)(40.7)

= 70.0 g-moles/min

= 1596 l/min at 5°C

Sample ratio = 1596/0.726

= 2198 or 2200

A similar calculation for sample Set B gave a sample ratio of 2180. By means of these ratios, the hydrazine and ammonia found in the samples could be extrapolated to the total gas stream, as indicated in Table 3.

DISCUSSION OF RESULTS

The higher-than-expected exhaust gas temperatures experienced in the A set of runs led to speculation that the EPU was not operating properly. When the same temperature patterns were observed in the B set with a different EPU, it became more likely that the operation was in fact normal even if unexpected. The temperature and exhaust composition data indicated only minor difference between the two EPU units.

The variability in the results was not altogether unexpected for a field extractive sampling method, considering the adverse sampling parameters. Additional sampling by this method is considered unlikely to refine the results to any great extent. If additional refinement is needed, in situ optical methods should be explored. Laser Raman spectroscopy would appear to be a promising technique, but our laboratory is not equipped to do such work.

EVALUATION OF POTENTIAL EXPOSURES

The EPU exhaust gas presents potential exposure to both ammonia and hydrazine. By all realistic scenarios, there is little likelihood of multiple firings at any one location and on a given day, except in test programs such as the one described in this report. For either planned or inadvertent outdoor ground firings, the duration would probably be of no more than 30 s. Under normal meteorological conditions, one might expect elevated concentrations of ammonia and hydrazine to persist for a matter of 3 to 5 min. For this condition, consideration of 8-hour time-weighted average (TWA) standards are inappropriate since relatively massive exposures during this short period of time--assuming no exposure for the remainder of the day--would result in average exposure well below standards. For this reason short-term or excursion limits must be used to evaluate exposures.

Table 5 shows appropriate standards currently applicable in the Air Force. Note that the last column of Table 5 shows odor threshold values, which for both materials, are higher than even the short-term limits. Hence, odor cannot be used to give warning of overexposure.

The ratio of ammonia to hydrazine short-term limits is approximately 70:1, whereas the ratio of ammonia to hydrazine in the actual exhaust varied from 20:1 to 49:1 at 30-s duration. Hydrazine therefore appears to be the controlling material. This is unfortunate since ammonia can be measured in air easier than hydrazine, and at the higher ratio would be an indicator of potentially unsafe hydrazine concentrations.

Concentrations of ammonia in the immediate vicinity of the exhaust, while not measured directly, were probably greater than 1000 ppm. Concentrations this high are so irritating to man that he will not remain in the area of exposure unless he is physically restrained. Hence, massive worker exposures to ammonia are unlikely. Of concern, however, are those areas where the ammonia is present but cannot be detected by odor, or those areas where the ammonia is not in high enough concentration to cause great discomfort. Meteorological conditions are extremely important in determining the extent of these potential exposure zones. For unfavorable conditions, the exposure zone can extend to beyond 50-100 m downwind.

TABLE 5. AMMONIA AND HYDRAZINE EXPOSURE LIMITS

Contaminant	8-h TWA	Short-term or excursion limit	Odor threshold
Ammonia	25 ppm (18 mg/l)	35 ppm (27 mg/l)	50 ppm
Hydrazine	0.1 ppm (0.13 mg/l)	0.3 ppm (0.39 mg/l)	3-4 ppm

If the EPU were accidentally fired in a closed hangar, even of moderate size, the concentration of ammonia and/or hydrazine could quickly build up to unacceptable levels throughout the structure. In this case, high concentrations could persist for much more than 3 to 5 min, depending on the ventilation rate for the hangar. The experience to be gained in the climatic test at Eglin (April-May 1978), where the EPU exhaust will be ducted outside the hangar, will be valuable in determining if venting is a permissible procedure for indoor firings.

RECOMMENDATIONS

To arrive at realistic recommendations, we must consider both deliberate planned firings and inadvertent firings. Planned firings may be defined as routinely occurring events (tests) which require planned actions to preclude excessive exposure. Inadvertent firings, by contrast, may be defined as accidents which require general cognizance of their probability as well as preplanned actions both to prevent the accident and to minimize injury if the accident should occur.

For routine, planned ground hot firings:

1. Minimize or eliminate requirements for such firings.

2. Do not conduct planned ground firings inside closed hangars unless ducting the exhaust gas outside the building is feasible and effective.

3. Develop outdoor siting/meteorological criteria to govern outdoor firings.

4. For area monitoring, use ammonia detection techniques as an indicator of hydrazine. With the hydrazine-ammonia ratios formed, a concentration of over 10 ppm (7.2 µg/l) ammonia would indicate excessive hydrazine exposures. MSA (Mine Safety Appliance Co.) sampling tubes (FSN 6665-00-406-9450) would be appropriate for ammonia detection.

5. Use respiratory protective equipment for any tasks occurring immediately around the aircraft during firing and exclude all other personnel from the potential exposure zone.

For inadvertent ground firings:

1. Develop actions to reduce probability of inadvertent firings--safety devices, checklists, etc.

2. Conduct training for those individuals potentially exposed, to recognize sound of EPU, odor of ammonia, need to avoid the area, etc.

REFERENCES

1. Reynold, B. A., and A. A. Thomas. Determination of hydrazine and monomethylhydrazine in blood serum. AMRL-TRD-64-24, Apr 1964.

2. Standard Methods of Test for Ammonia. ASTM Designation: D1426-58 (1965), Manual on Industrial Water and Industrial Waste Water, 2d ed. American Society for Testing and Materials, Philadelphia, Pa., 1966.

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burneil Cordner
Director

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Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-416-92

April 28, 1992

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Hill A.F.B., Utah 84056-5990

Re: Approval Order for Industrial Wastewater Treatment Plant Sludge Dryers, Building 577
Davis County CDS A1 NA

Dear Mr. Van Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base, shall install and operate the Industrial Wastewater Treatment Plant Sludge Dryers in Building 577 according to the information submitted in the Notice of Intent dated September 4, 1991.

   A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of the following equipment:

A. Two JWI Metal Hydroxide Sludge Volume Reducers

Model:	J360G
Heat source:	Natural gas
Burner rating:	400,000 BTU/hr
Gas consumption:	400 CFH

B. Two JWI single speed wet venturi scrubbers

Scrubber water usage:	3 GPM
Dry gas:	79.93 SCFM
Humidity:	51%
Saturation Temp:	184°F
Discharge Volume:	293 ACFM

3. Emissions to the atmosphere of NO_x from the sludge dryer exhaust stacks shall not exceed the following rates and concentrations:

A. 200 ppmdv (7% oxygen, dry)
B. 0.47 lb/hr (per stack)

4. Stack testing to show compliance with the emission limitations in condition #3 shall be performed as specified below:

Emission Point	Pollutant	Testing Status	Retest
Dryer exhaust stacks	NO_x	§	***

Testing Status (To be applied above)

§ The stacks shall be tested for NO_x emissions compliance within 30 days of start-up using a portable testing instrument approved by the Executive Secretary

*** The dryer stacks shall be retested every 30 dryer operating days ± 10 days. The maximum time between tests shall be 35 dryer operating days.

5. Test Procedure

Dryer stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

A. - Sample Port

A sampling port shall be installed in each dryer exhaust stack in accordance with 40 CFR 60, Appendix B, Performance Specification #2 or as approved by the Executive Secretary. The sample ports shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

B. - Operating Rate

The steam production or operating rate during testing shall be performed under three operating rates; 90%, 70% and 50% (all ±10%) of the dryers' rated capacities.

C. - Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

D. - Test Procedure

The test shall be conducted in the following manner:

(1) The dryers shall be:

a) operated at the designated production rate in Condition #5B

b) allowed to stabilize for a minimum of 5 minutes.

(2) The gas sample shall be drawn according to the instructions of the test instrument being used.

(3) The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

E. - Failed Dryer Status

(1) If a dryer is unable to attain the emission limitation in Condition #3, at any one of the operating rates specified in condition #5B, the dryer shall be taken out of service until the unit has been repaired or maintenance performed and a successful retest completed.

(2) Maintenance and repairs of any dryer that fails the periodical test shall be performed within 15 days, or the dryer shall be idled.

a) If a dryer that has failed a test is repaired and a successful retest completed according to the limitations of Condition #3 within 15 days, the dryer shall be determined to not have been in violation.

b) A dryer that fails the retest after repair shall be idled until further repairs are made and a successful retest completed. If the dryer demand requires the dryer to be operated, it shall be base loaded at the rate that will result in the lowest emissions rate possible until the dryer can be repaired and shown in compliance by the above test.

c) Operation of a dryer that has failed the above "retest after repair" may be determined to be a violation of this AO.

F. - Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for two years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

6. Visible emissions from any point or fugitive emission source associated with the installation or control facilities in this NOI shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The owner/operator shall use only natural gas as a primary fuel in the two sludge dryers located in Building 577. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

8. All records referenced in this AO or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

9. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of installation if installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this source (the wastewater treatment plant sludge dryers in building 577) are currently calculated at the following values:

A. 1.026 tons/yr for Particulate
B. 0.453 tons/yr for PM_{10}
C. 0.002 tons/yr for SO_2
D. 2.050 tons/yr for NO_x
E. 1.328 tons/yr for VOC
F. 0.149 tons/yr for CO

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

Sincerely,

F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:HGN:cl

cc: EPA Region VIII, Mike Owens
Davis County Health Department

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Hill A.F.B., Utah 84056-5990

RE:	Industrial Wastewater Treatment Plant Sludge Dryers, Building 577 Davis County CDS A1 NA
ENGINEER:	Herman G. Nellestein
DATE:	February 12, 1992
NOTICE OF INTENT DATED:	September 4, 1991
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-6917
PLANT LOCATION:	Building 577, Hill Air Force Base, Utah

FEES:

Filing Fee	$ 1500.00
Review Engineer - XX hours at $50.00/hour	$ 0.00
Modeler - 00 hours at $50.00/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 00.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$ 1500.00

APPROVALS:

Engineering Unit Manager DR 2-12-92

Applicant Contact Made DR

I. NSPS - NO PSD - NO NESHAPS - NO
TOXICS - NO TITLE V - NO TOXIC MAJOR - NO
NONATT MAJOR - NO

DESCRIPTION OF PROPOSAL

Hill AFB has submitted a Notice of Intent dated September 4, 1991 to replace two electric batch sludge dryers in Building 577. These dryers were not permitted. The replacement dryers are continuous natural gas fired sludge dryers. The purpose of the sludge dryers is to process the wastewater produced throughout the base, remove the water, and compact the sludge.

Sludge from the Industrial Wastewater Treatment Plant Clarifier is pumped to sludge holding tanks in sludge drying Building 577. Raw sludge is treated with lime and pumped to a filter press for dewatering to 70 percent solids. Dewatered sludge is then fed to a sludge dryer feed hopper via a dump trolley. Sludge is dried to 5 - 10% moisture in two JWI Model J360G continuous moving belt gas fired sludge dryers at a temperature of about 550°F.

Dried granular sludge is emptied into a dumpster via a screw conveyor for disposal. The dried sludge is disposed by an outside vendor at a proper disposal site. Off gas from the dryers is treated in venturi scrubbers before being exhausted to the atmosphere. The scrubbers are 95 - 98% effective in removing emissions. Manufacturers' bulletins on dryers are contained in the NOI.

II. EMISSION SUMMARY

The emissions from this source (sludge dryers) will be as follows:

Total Emissions

Particulate	1.026 ton/yr
PM_{10}	0.453
SO_2	0.002
NO_x	2.050
CO	0.149
VOC non meth	1.328
VOC meth	0.001
Metals	0.131

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

HAFB has chosen to use natural gas to supply heat in the dryers. The dryers are to be equipped with high efficiency venturi impactor scrubbers and cyclonic separators. Removal efficiency of 95 - 98% is achieved with 6 - 8 inches water column pressure drop across the scrubber.

Specifications of the scrubbers are as follows:

Dry gas:	79.93 SCFM
Humidity:	51%

Saturation Temp.: 184°F
Discharge Volume: 293 ACFM

Two stacks each eight inches in diameter will exhaust approximately 300 acfm. The point of discharge is approximately 30 feet above grade. There are no sampling points provided. Normally, dryers are operated during the day shift. However, in the event of sludge back-up, they may be operated in other shifts. All emission calculations were based on 24 hour-per-day operations.

No other systems were investigated. The selected system, operating on natural gas and the use of venturi scrubbers is considered BACT by HAFB. The Engineering Section recommends the following limits as BACT:

A. 10% opacity

B. NO_x - 200 ppm (7% oxygen dry)

IV. APPLICABILITY OF FEDERAL AND UTAH AIR CONSERVATION RULES (UACR)

This Notice of Intent is for a minor modification of a major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R-446-1-3.1 - Notice of Intent required for a modified source. This rule applies.

2. R-446-1-3.1.7 (a) - Notice of Intent not required for fuel burning equipment with a rated capacity of less than 5×10^6 BTU per hour using no other fuel than natural gas. This rule does not apply to sludge dryers even if fired by natural gas.

3. R-446-1-3.1.8(A) - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R-446-1-3.1.8(D) - Enforceable offset of 1.2:1 required for new sources or modifications which would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This rule will not apply to this NOI.

5. R-446-1-3.1.8(D) - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that impacts these three counties as defined in the rule. The effective date is November 15, 1990. This rule will not apply to this NOI.

6. R-446-1-3.1.9 - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

7. R-446-1-3.1.12 - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule applies. However, installation may not be cost effective.

8. R-446-1-3.2.1 - Particulate emission limitations for existing sources which are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is August 14, 1991. The sources listed in Weber County are as follows:

   A. Farmers Grain Coop
   B. Fife Rock Products
   C. Interpace Corporation
   D. Parsons Asphalt Plant
   E. Pillsbury Company
   F. Teledyne Incinerator
   G. Gibbons and Reed Asphalt

   HAFB is not listed in the SIP. This rule does not apply.

9. R-446-1-3.3.2 - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

10. R-446-1-3.5 - Emission inventory reporting requirements. This rule requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. This source does not emit 25 tons per year of any pollutant. Therefore, HAFB must comply with this rule.

11. R-446-1-3.6.3 - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

   <u>TSP</u>

   A. Class I areas

      1) 5 $\mu g/m^3$ (annual)
      2) 10 $\mu g/m^3$ (24 hour)

B. Class II areas

1) 19 $\mu g/m^3$ (annual)
2) 37 $\mu g/m^3$ (24 hour)

SO_2

A. Class I areas

1) 2 $\mu g/m^3$ (annual)
2) 5 $\mu g/m^3$ (24 hour)
3) 25 $\mu g/m^3$ (3 hour)

B. Class II areas

1) 20 $\mu g/m^3$ (annual)
2) 91 $\mu g/m^3$ (24 hour)
3) 512 $\mu g/m^3$ (3 hour)

NO_x

A. Class I areas - 2.5 $\mu g/m^3$ (annual)

B. Class II areas - 25 $\mu g/m^3$ (annual)

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment.

12. R-446-1-3.6.5(b) - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

13. R-446-1-3.6.6 - Increment violations. This rule requires the UACC to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred. These sludge dryers will consume no increment. They are existing (they are being replaced) but were never approved.

14. R-446-1-3.8 - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Building 577, Hill AFB, has no stacks which exceed 65 meters in height. It is in compliance with this rule.

15. R-446-1-3.11 - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

16. R-446-1-4.1.2 - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case an opacity limitation of 15% is recommended as BACT.

17. R-446-1-4.1.9 - EPA Method 9 to be used for visible emission observations. This rule applies.

18. R-446-1-4.2.1 - Sulfur content limitations in oil and coal used for combustion. This emission point does not use oil or coal for combustion. This rule does not apply.

19. R-446-1-4.6 - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack.

20. R-446-1-4.7 - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

21. R-446-1-4.9 - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This process is not covered in

this rule.

22. R-446-1-5 - Emergency episode requirements. This rule applies.

23. R-446-1-7 - Air Pollution Episode Plan - This plan provides the basis for taking action to prevent air pollutant concentrations from reaching levels which could endanger the public health, or to abate such concentrations should they occur. All sources in a nonattainment area or impacting a nonattainment area must submit a plan outlining what they will do in an emergency episode. This regulation applies to Salt Lake, Davis, and Utah Counties.

24. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone. The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

    1) Maintenance, repair, and replacement

    2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

    3) An increase in the hours of operation

    4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

    5) The addition or use of any system or device whose primary function is the reduction of air pollutants

    6) Relocation or change in ownership

    Also see Section 1.92, which is the State's definition. It is a

planned increase in emissions.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

    1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

    2) It is technologically and economically feasible to meet the applicable standards set forth in this part

    This Notice of Intent is not a reconstruction.

29. R-446-1-1.89, Definition of Major Modification - It means any physical change in or change in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

    A. Routine maintenance, repair, or replacement

    B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

    C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

    D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

    E. Use of an alternative fuel or raw material by a source:

        1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

        2) which the source is otherwise approved to use

    F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

    G. Any change in ownership at a source

    This Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base, shall install and operate the Industrial Wastewater Treatment Plant Sludge Dryers in Building 577 according to the information submitted in the Notice of Intent dated September 4, 1991.

   A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of the following equipment:

   A. Two JWI Metal Hydroxide Sludge Volume Reducers

Model:	J360G
Heat source:	Natural gas
Burner rating:	400,000 BTU
Gas consumption:	400 CFH

   B. Two JWI single speed wet venturi scrubbers

Scrubber water usage:	3 GPM
Dry gas:	79.93 SCFM
Humidity:	51%
Saturation Temp:	184°F
Discharge Volume:	293 ACFM

3. Emissions to the atmosphere of NO_x from the sludge dryer exhaust stacks shall not exceed the following rates and concentrations:

   A. 200 ppmdv (7% oxygen, dry)

   B. 0.47 lb/hr

4. Stack testing to show compliance with the emission limitations of condition #3 shall be performed as specified below:

Emission Point	Pollutant	Testing Status	Retest
Dryer exhaust stacks	NO_x	§	***

   Testing Status (To be applied above)

   § The stack shall be tested for NO_x emissions compliance within 30 days of start-up using a portable testing instrument approved by the

Executive Secretary

*** The dryer stack shall be retested every 30 dryer operating days ± 10 days. The maximum time between tests shall be 35 dryer operation days.

5. Test Procedure

Dryer stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

A. - Sample Port

A sampling port shall be installed in each dryer exhaust stack in accordance with 40 CFR 60, Appendix B, Performance Specification #2 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator or inspector in accordance with OSHA standards.

B. - Operating Rate

The steam production or operating rate during testing shall be performed under three operating rates; 90%, 70% and 50% (all ±10%) of the dryer's rated capacity.

C. - Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

D. - Test Procedure

The test shall be conducted in the following manner:

(1) The dryer shall be:

a) operated at the designated production rate in Condition 5.B

b) allowed to stabilize for a minimum of 5 minutes.

(2) The gas sample shall be drawn according to the instructions of the test instrument being used.

(3) The sample value shall be determined from the test instrument, appropriate calculations made,

and the data recorded.

E. - Failed Dryer Status

(1) If the dryer is unable to attain the emission limitation in Condition #3, at any one of the operating rates specified in condition 5B, the dryer shall be taken out of service until the unit has been repaired or maintenance performed and a successful retest completed.

(2) Maintenance and repairs of any dryer that fails the periodical test shall be performed within 15 days, or the dryer shall be idled.

a) If a dryer that has failed a test is repaired and a successful retest completed according to the limitations of Condition #3 within 15 days, the dryer shall be determined to not have been in violation.

b) A dryer that fails the retest after repair shall be idled until further repairs are made and a successful retest completed. If the dryer demand requires the dryer to be operated, it shall be base loaded at the rate that will result in the lowest emissions rate possible until the dryer can be repaired and shown in compliance by the above test.

c) Operation of a dryer that has failed the above "retest after repair" may be determined to be a violation of this Approval Order.

F. - Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for 2 years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

6. Visible emissions from any point or fugitive emission source associated with the installation or control facilities in this NOI shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in

accordance with 40 CFR 60, Appendix A, Method 9.

7. The owner/operator shall use only natural gas as a primary fuel in the two sludge dryers located in Building 577. If any other fuel is to be used, an Approval Order shall be required in accordance with R446-1-3.1, UAC.

8. All records referenced in this Approval Order or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

9. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained.

10. The owner/operator shall comply with R446-1-3.5, UAC. Section 3.5 addresses emission inventory reporting requirements.

11. The owner/operator shall comply with R446-1-4.7, UAC. Section 4.7 addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

12. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of installation if installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the Approval Order in accordance with R-446-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R-446-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this source (the wastewater treatment plant sludge dryers in building 577) are currently calculated at the following values:

A. 1.026 tons/yr for Particulate
B. 0.453 tons/yr for PM_{10}
C. 0.002 tons/yr for SO_2
D. 2.050 tons/yr for NO_x

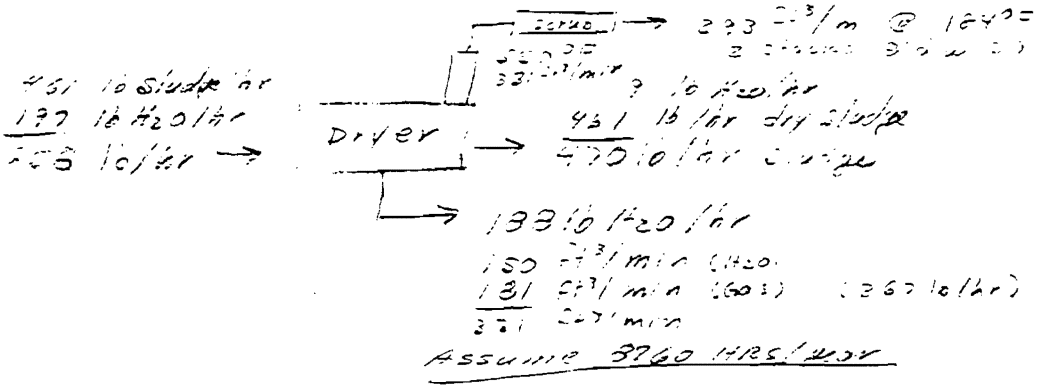
E. 1.328 tons/yr for VOC
F. 0.149 tons/yr for CO

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

K:\...\DUTCH\WP\HILL577A.RVW

Steve Rasmussen
777-2259

Hill AFB Sludge Dryers



TSP 0.23 lb/hr = 2015 lb/year = 1.007 Tons/year

metals 0.03 lb/hr = 226.8 lb/year = 0.131 Tons/year

VOC 500 ppmw = 0.131.6 lb/hr - 1536 lb/year = 0.795 TPY.

PM_{10} 0.1 lb/hr = 876.6 lb/yr = 0.438 TPY.

What is in sludge - existing from dryer

Sludge disposal - contractor disposal -

water - work water

What kind of metals - coal etc

when installed - 1991

Where does it come from - effluent - to sanitation treatment

Total emissions

	Dryers	Sludge	Total
TSP	0.019 TPY	1.007 TPY	1.026 TPY
PM_{10}	0.015	0.438	0.453
SO_2	0.002		0.002
NO_2	2.050		2.050
CO	0.149		0.149
VOC	0.005	0.793	1.828
Pb	0.001		
metals		0.131	0.131

Pg 5 of 6
FAX 777-1666

Hill AFB Sludge Dryers

Gas: 400,000 BTU/hr

940 BTU/ft³

400,000 BTU/hr × ft³/940 BTU = 425.5 ft³/hr

Assume 24 hr operation = 8760 hr/yr.

Emissions from Natural Gas from AP 42 Table 1.4-1

For each dryer:

TSP $\frac{5.6}{10^6 ft^3}$ × 425.5 ft³/hr × 8760 hr/yr × 1 ton/2000 lb = $\frac{5 \times 1863.67 \text{ ton}}{10^3 \text{ yr}}$

= 0.0073 TPY (0.0186 TPY Total)

SO_2 $\frac{0.6}{10^6}$ × 1863.67 = 0.0011 TPY (0.0022 TPY Total)

NO_2 $\frac{550}{10^6}$ × 1863.67 = 1.025 TPY (2.05 TPY Total)

CO $\frac{84}{10^6}$ × 1863.67 = 0.074 TPY (0.148 TPY Total)

VOC_{NM} $\frac{1.4}{10^6}$ × 1863.67 = 0.0026 TPY (0.0052 TPY Total)

VOC_m $\frac{2.8}{10^6}$ × 1863.67 = [illegible] TPY [illegible]

Stack exhaust rate = 331 ft^3/min

NO_x emissions = 2.05 tons/year = 0.468 lb/hr

$$\frac{0.468 lb}{hr} \times \frac{min}{331 ft^3} \times \frac{hr}{60 min} \times \frac{453.59 g}{lb} \times \frac{ft^3}{0.0283 m^3} \times \frac{16^{\circ} lb}{2}$$

$= 377,697 \mu g/m^3$

$= 201 ppm$

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

4 SEP 1991

Mr F. Burnell Cordner, Executive Secretary
Department of Environmental Quality
Division of Air Quality
1950 W North Temple
Salt Lake City UT 84114-4820

Re: Notice of Intent to Construct Industrial Wastewater Treatment Plant Sludge Dryers, Bldg 577

Dear Mr Cordner

Building 577 had two electric batch sludge dryers. These sources were not permitted. We replaced these electric dryers with continuous gas fired sludge dryers. Technical information and emission rates from these dryers is attached.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-~~6917~~ 0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Notice of Intent to Construct

NOTICE OF INTENT TO CONSTRUCT

1. **PROJECT DESCRIPTION:**

Sludge from the Industrial Wastewater Treatment Plant Clarifier is pumped to sludge holding tanks in sludge drying building 577. Raw sludge is treated with lime and pumped to filter press for dewatering to 70 percent solids. Dewatered sludge is then fed to sludge dryers feed hoppers via a dump trolley. Sludge is dried to 5-10 percent moisture in JWI Model J360G continuous moving belt gas fired sludge dryers at a temperature of about 550°F. Dried granular sludge is emptied into a dumpster via a screw conveyor for disposal. There are two continuous gas fired sludge dryers. Off gas from the dryers is treated in venturi scrubbers before being exhausted to the atmosphere. Manufacturers' bulletin on dryers is Atch 1. Equipment schematic is Atch 2. Design data and exhaust gas flow rate calculations are as follows:

Data Each Dryer (Two Required):

Working capacity - water removal rate	- 188 Lbs/hr
Heat source	- Gas
Heat rate	- 400,000 BTU/hr
Natural gas heating value	- 1,000 BTU/SCF
Gas consumption	- 400 SCFH
Operating temperature	- 550-600°F
Water rate to Venturi Scrubber	- 2-4 GPM
Water pressure	- 40-50 PSIG
Venturi Scrubber pressure drop	- 5-8" W.C.

Exhaust Gas Flow Rate and Moisture Balance:

Water evaporation rate	- 188 Lbs/hr
Moisture content of sludge Filter Press	- 30%
Moisture content of sludge exiting dryer	- 5%
Water in wet sludge entering dryer	- 188 X 1.05 = 197.4 Lbs/hr
Bone dry sludge	- 70/30 X 197.4 = 460.6 Lbs/hr
Wet sludge entering dryer	- 460.6 + 197.4 = 658 Lbs/hr
Water in sludge leaving dryer	- 197.4 - 188 = 9.4 Lbs/hr
Sludge leaving dryer	- 460.6 + 9.4 = 470 Lbs/hr

Gas Volume Leaving Dryer:

P, atmosphere	- 12.42 PSiA
Products of combustion from Natural Gas (15% excess air):	
Standard Volume	- Factor S X MM BTU/hr input X 1/60
Factor S for Natural Gas	- 11,990
Standard volume	- 11,990 X 0.4 X 1/60 = 79.93 SCFM
Temperature correction	- (460 + 550)/(460 + 60) = 1.942
Pressure correction	- 1 + (Altitude/1,000 X .0375) - 1 + (4,500/1,000 X .0375) = 1.169
Actual volume	- 79.93 X 1.942 X 1.169 - 181.4 ACFM @ 550°F, 12.42 PSiA
Evaporation	- 188 Lbs/hr - 188 Lbs/hr X Lb Mole/18.02 Lb X 379 SCF/Lb Mole X Hr/60 Min - 65.9 SCFM
Actual Volume	- 65.9 X 1.942 X 1.169 = 149.6 ACFM
Total gas leaving dryer	- 181.4 + 149.6 = 331 ACFM @ 550°F, 12.42 PSiA

Gas volume leaving Venturi Scrubber:

Dry Gas	- 79.93 SCFM - 79.93 SCF/Min X Lb Mole/ 379 SCF X 29 Lb/Lb Mole X 60 Min/hr - 366.9 Lb/hr
Inlet gas humidity (H)	- 188/366.9 = 0.51 Lb Water Vapor/Lb Dry Air
From Pschyrometeric Chart @ Dry bulb temp	- 550°F H = 0.51
Adiabatic Saturation temp (Tsat)	- 184°F
Saturated Volume	- 48 cu ft/Lb dry air - 48 X 366.9/60 = 293.5 ACFM

Discharge Volume, each dryer: 293 ACFM @ 184°F

2. AIR EMISSIONS:

The plume comprises mostly of water vapor evaporated from wet sludge. Some particulate and hydrocarbon emissions may also be present. Emissions from natural gas combustion are negligible. Base upon vendor testing of the smaller dryer on metal hydroxide sludge, a total particulate discharge of 0.012 pounds per hour was observed.

Assuming carryover to be 1% of bone dry solids,

particulate in air stream entering venturi	- 4.6 Lbs/hr
Per vendor, venturi impactor scrubber efficiency	- 95-98%
Particulate emission rate	- 4.6 X .05 = 0.23 Lb/hr
PM-10 emission rate	- 0.1 Lb/hr
From sludge composition, metals content	- 13%
Metals emission rate	- .23 X .13 = 0.03 Lb/hr

Hydrocarbon emissions: Some hydrocarbon emissions may be present depending on oil and grease content of wet sludge. A preliminary test of stack gas showed hydrocarbon concentration of approximately 500 PPMV.

Exhaust gas from each dryer	- 79.93 + 65.9 = 145.83 SCFM
Hydrocarbon emission rate	- $500/10^6$ X 145.83 = .0729 SCFM
Hydrocarbon emissions (as methane)	- .0729 X 16/379 X 60
	- 0.18 Lb/hr

These emission rates are estimates only.

3. AIR CLEANING DEVICES:

Particulate emissions will be controlled by venturi impactor scrubber and cyclonic separator. Removal efficiency of 95-98% is achieved with 6-8" W.C. pressure drop across the scrubber.

4. EMISSION POINTS:

Two stacks each 8" diameter will exhaust approximately 300 cubic feet per minute. Point of discharge is approximately 30 feet above grade.

5. SAMPLING POINTS:

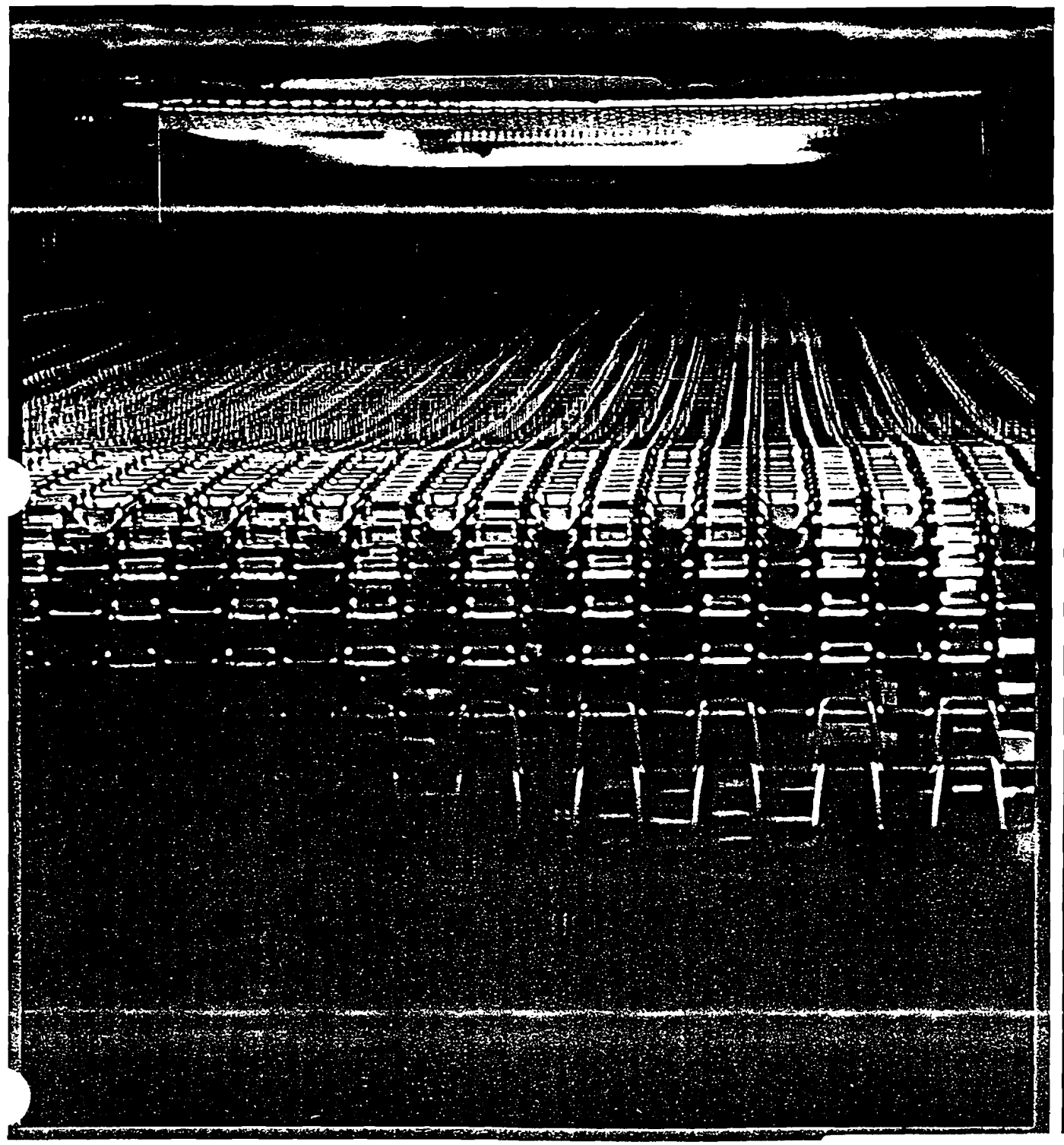
No sampling points are provided.

6. OPERATING SCHEDULE:

Normally, dryers are operated during the day shift. However, in the event of sludge back-up, they may be operated in other shifts.

JWI

Metal Hydroxide Sludge Volume Reducers

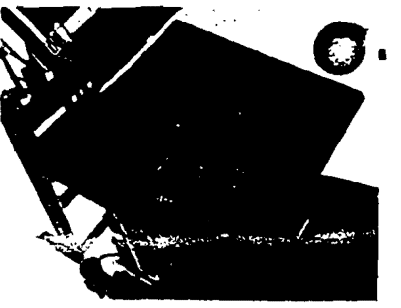


4.2.4-738

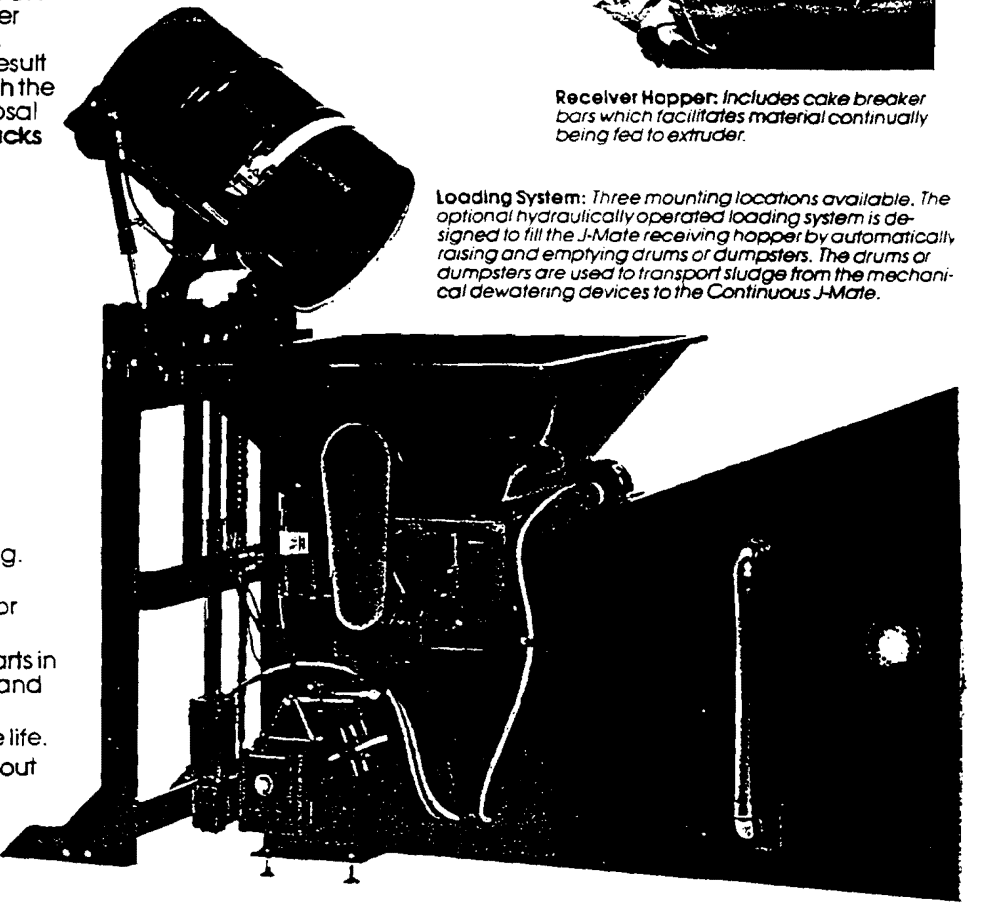
ATCH-1

Continuous J-Mates™ ... The Final Step in Metal Hydroxide Sludge Volume Reduction

The J-Mate, by JWI, has been designed to take over where filter presses, vacuum filters and centrifuges leave off. While these mechanical dewatering units can reduce sludge volume by up to 20:1, a substantial amount of water still remains in the material. The J-Mate units use gas or electric infrared heat for rapid, effective water removal which results in reduced sludge volume . . . changing the material to a dry, granular form. The result is a further volume reduction of about 4:1. One fourth the waste volume . . . one fourth the handling and disposal costs. So effective is the J-Mate, that **6 month paybacks are possible** (depending on local disposal costs).



Receiver Hopper: *Includes cake breaker bars which facilitates material continually being fed to extruder.*

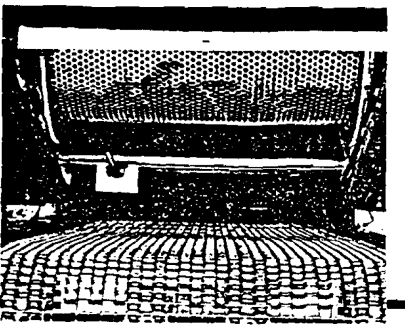


Loading System: *Three mounting locations available. The optional hydraulically operated loading system is designed to fill the J-Mate receiving hopper by automatically raising and emptying drums or dumpsters. The drums or dumpsters are used to transport sludge from the mechanical dewatering devices to the Continuous J-Mate.*

Features and Benefits:

- Payback within 6 months possible.*
- Designed specifically for metal hydroxide sludge.
- Installation flexibility. Simple loading and unloading. No additional labor required.
- Fully automatic processing cycle. Minimal operator tion required.
- ,ess steel construction of all internal wetted parts in ing chamber. All other parts are carbon steel-sand olasted, and polyurethane primed and painted.
- Ruggedly built for continuous use and long service life.
- Sludge volume reduction ranges by a factor of about 2:1 to 5:1
- Highly efficient infrared heaters keep energy cost at a minimum.
- Available in either LP or natural gas. Smaller models available in electric.
- Extruded filter cake for maximum weight and volume reduction with a minimum of BTU's.
- No direct flame torching material.
- No material build up or clogging problems.
- Electronic ignition used . . . no pilot light.
- All models include a stainless steel venturi-type wet scrubber to maintain high air quality.

*Actual performance is a function of local energy and disposal costs and initial sludge solids concentration

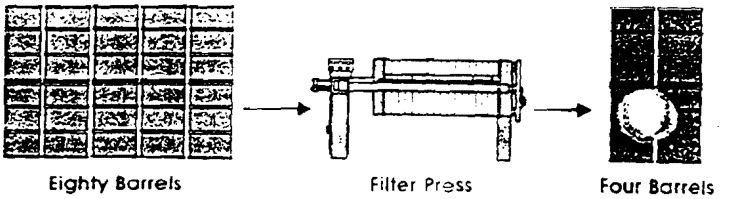


Extruder System: *Receives filter cake which has been broken down by the bridge breaker in the receiver hopper. The wiper blades force the sludge through holes in the stainless steel drum. This produces pellet-like particles with maximum surface area for drying. The extruded material falls onto a continuous stainless steel mesh conveyor for passage under a series of highly efficient infrared heat drying elements*

The J-Press® / Continuous J-Mate™ Combination

The J-Mate, used in conjunction with JWI's filter press (or other brand of filter presses) provides a capability to reduce a metal hydroxide slurry by a ratio of 80:1. Eighty barrels of slurry, filtered and dewatered in a filter press is reduced to four barrels of filter cake. While this represents a substantial reduction in waste volume, even greater savings can be realized with a J-Mate since 60 to 80% of remain material is still water. These four barrels of dewatered sludge, when pro- ce rough the Continuous J-Mate can be further reduced to only one barrel o, nular, moisture free material for handling and disposal. The dumpster eceiving the filter cake from the J-Press can also be used to transfer and the cake into the J-Mate. If desired, drums can be handled in a similar m r. Thus, no additional labor is needed for waste disposal. Labor may even be reduced due to the smaller volumes of end product.

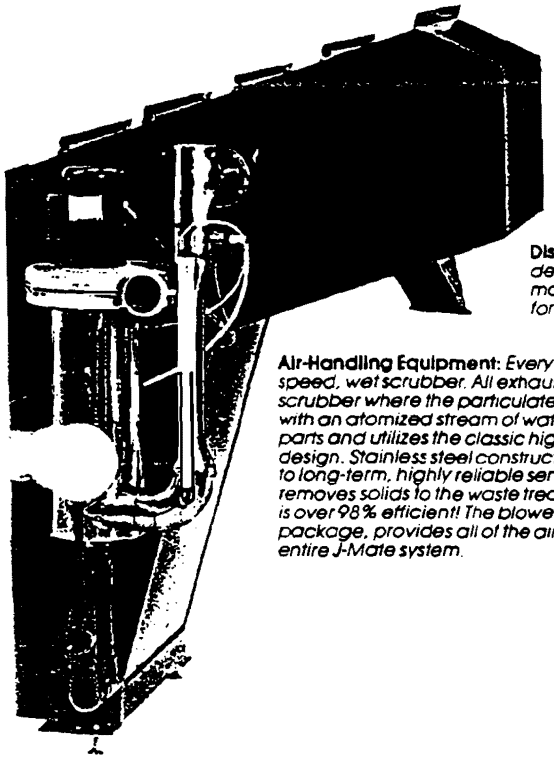
The JWI Dewatering combination . . . an 80:1 reduction in your waste disposal problem.



Unit Includes: ■ Hopper ■ Cake Breaker ■ Extruder ■ Drive Gearmotor ■ Wet Scrubber (exhaust ducting not included) ■ Control Panel, Prewired with all Operational Controls ■ Infrared Heat Chamber Mounted on Rugged Frame ■ Dried Sludge Unloading Chute ■ One (1) Copy of an Installation/Operation/Maintenance Manual. ■ Moving Stainless Steel Grating Type Belt

Optional Equipment: ■ Dumpsters ■ Barrel Loader ■ Dumpster Loader ■ One Way Disposable Bags ■ Optional Hydraulic Dumping Mechanism for Dumpster ■ Special Hopper Designs and Sizes ■ Custom Support Structures Available to Elevate Filter Press for Direct Disposal into J-Mate.

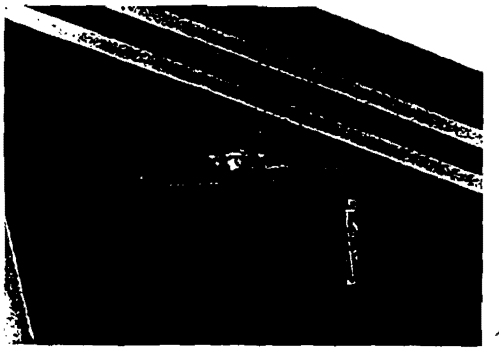
Heater Options: *All energy for drying in the J-Mate comes from infrared heating elements. Heating energy options are natural or LP gas on all models with electric available on Models J-120E, J-180E and J-360E. Ambient air is drawn through the heat chamber by the fan mounted on the outlet of the wet scrubber. The J-Mate heat chamber and scrubber are protected from high temperature levels by an exhaust air temperature monitor. Infrared heat is known to be the most efficient source of heat available for drying applications.*



Stainless Steel Construction: *All internal parts in drying chamber exposed to wet sludge are stainless steel for corrosion resistance and long service life.*

Discharge System: *As the material reaches the desired reduction (dryness), the dry granular material is emptied into a bag, barrel or dumpster for disposal.*

Air-Handling Equipment: *Every J-Mate unit is supplied with a single speed, wet scrubber. All exhaust air from the J-Mate enters the scrubber where the particulate matter is combined for removal with an atomized stream of water. The scrubber uses no moving parts and utilizes the classic high-energy venturi type scrubber design. Stainless steel construction and simple design contributes to long-term, highly reliable service. A 1-2 GPM blowdown stream removes solids to the waste treatment system. The scrubber is over 98% efficient! The blower, mounted on top of the scrubber package, provides all of the air movement through the entire J-Mate system.*



Control Console: *Provides finger-tip control of all J-Mate functions; including extruder feed rate, drying chamber belt rate, system on-off and main disconnect.*

eavy Duty, Long Life Motor: *TEFC Industrial motor rovides years of maintenance free operation.*

Specifications

	J120G	J120E	J180G	J180E	J360G
Heat Source	Gas	Electric	Gas	Electric	Gas
Working Capacity – Water Removal Rate ≠	47# H₂O/HR	47# H₂O/HR	94# H₂O/HR	94# H₂O/HR	188# H₂O/HR
Power Requirements – Including Dump Lift*					
230V 3Ø 60CY	20A	–	20A	–	30A
480V 3Ø 60CY	10A	50A	10A	65A	15A
Electric Heat Kilowatts	–	31.5 KW	–	45 KW	–
Gas Burner Rating	125,000 BTU	–	200,000 BTU	–	350/465,000 BTU
Gas Consumption					
Nat	100 CFH	–	200 CFH	–	400 CFH
LP	1.4 GPH	–	2.2 GPH	–	3.8-5 GPH
Scrubber Water Usage	1 GPM	1 GPM	1 GPM	1 GPM	3 GPM
Scrubber Drain			GRAVITY DRAIN		
Length	170"	170"	170"	170"	170"
Width	46"	46"	52"	52"	70"
Height	78"	78"	78"	78"	78"
Weight (Shipping) (Without Lift)	3400 lbs.	3400 lbs.	3600 lbs.	3600 lbs.	4200 lbs.
Std. Hopper Capacity	10.7 cu. ft.	10.7 cu. ft.	13 cu. ft.	13 cu. ft.	20 cu. ft.
Exhaust Air CFM	275	275	275	275	300

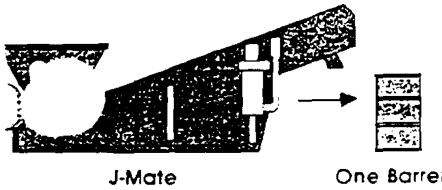
Materials of Construction: 304 SS, Carbon Steel, Polyurethane Finish

*Service to be determined by local electrical code requirements
≠Based on using 2125 BTU to remove 1 lb. of H₂O. BTU requirement may vary with materials

NOTE: Machine gas components comply with FM and IRI requirements

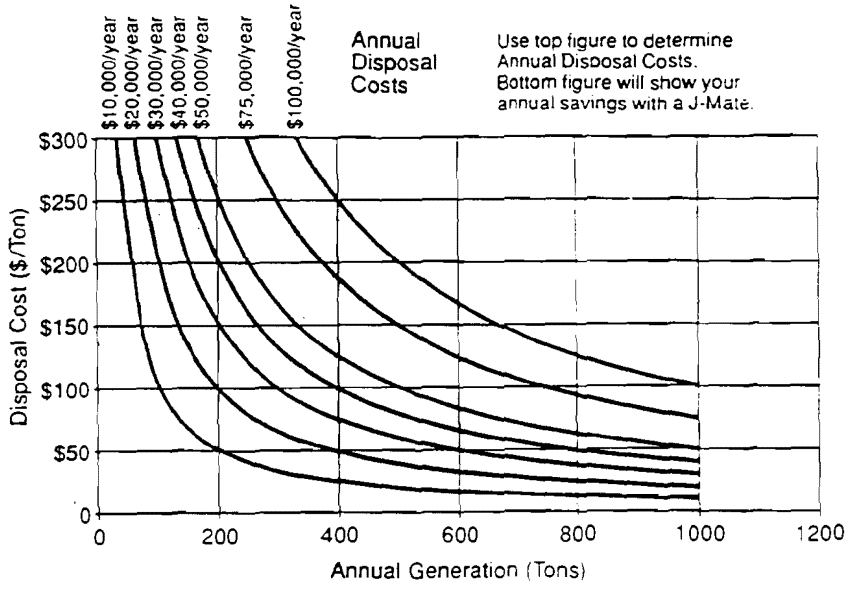
Specifications subject to change without notice

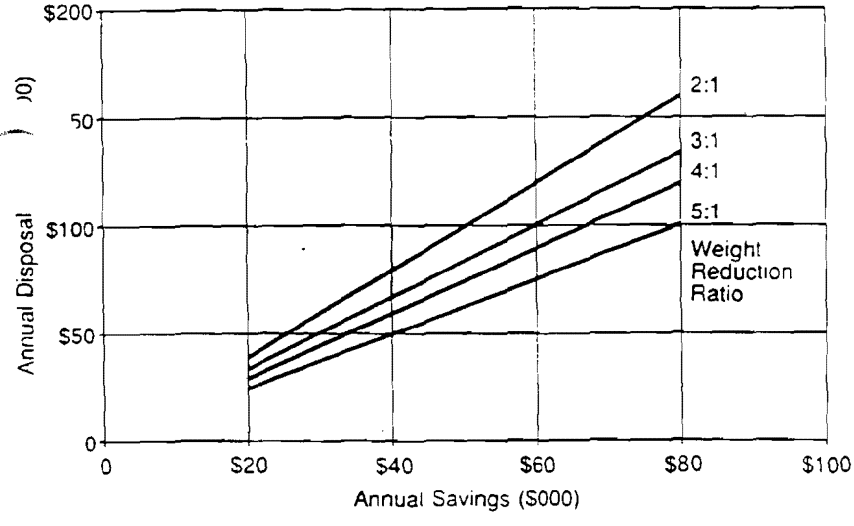
4.2.4-740



J-Mate One Barrel

Figure your disposal costs and savings with these charts.



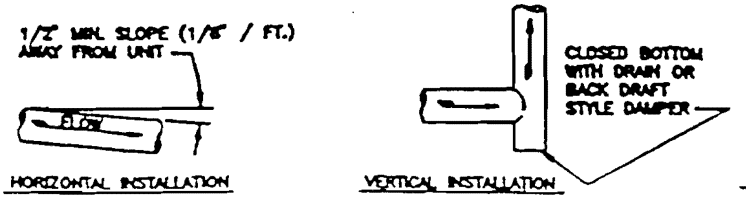


Patents have been applied for and are pending on products described herein

4.2.4-741

JWI, Inc. / 2155 112th Ave.
Holland, Michigan 49424 U.S.A.
616-772-9011 / FAX 616-772-4516
1-800-245-3006

Printed in U.S.A.
JWI D1 5/90 5M

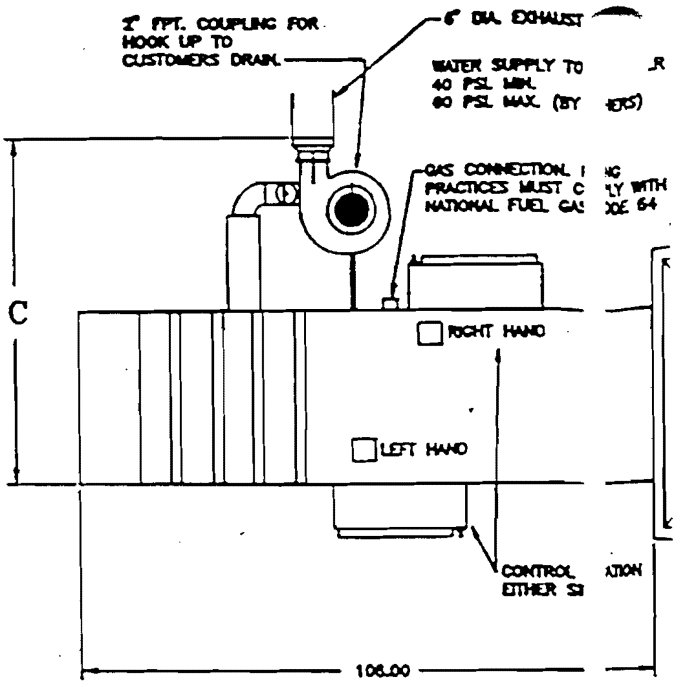


NOTE: DISCHARGE MUST GRAVITY DRAIN. IF GRAVITY DRAIN NOT AVAILABLE A LIFT PUMP WILL BE REQUIRED.

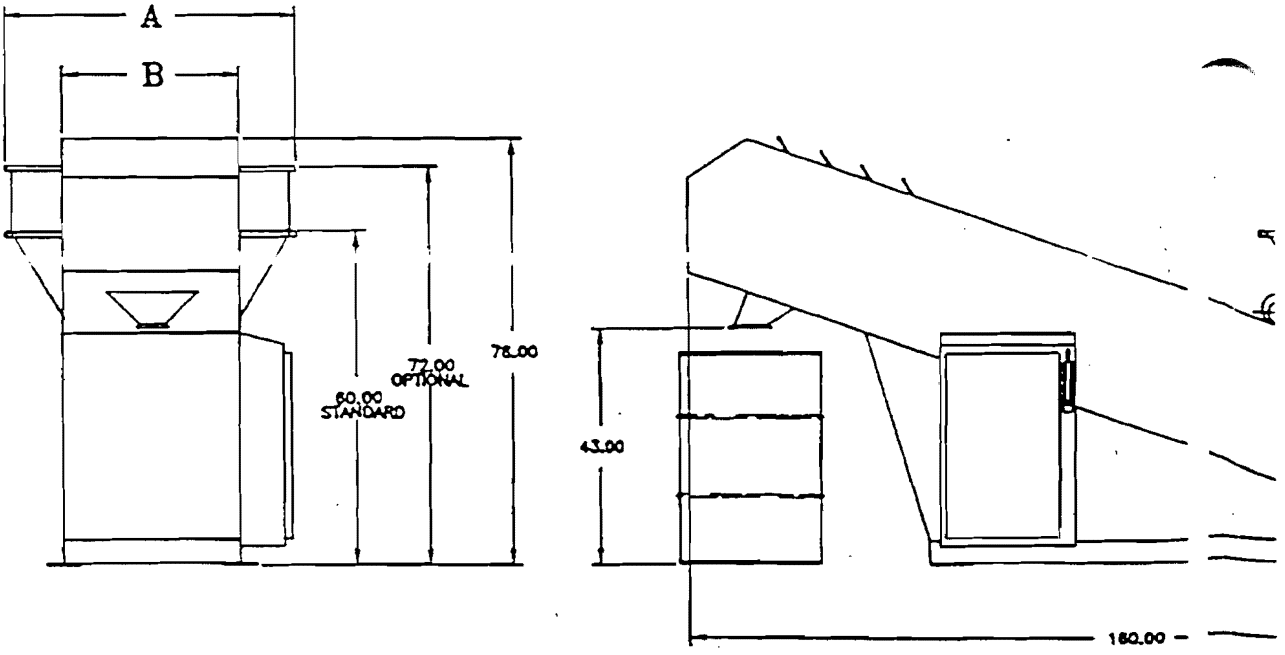
NOTE: SCRUBBER FOR MOD 360 J-MATE IS NOT MOUN TO MACHINE.

RECOMMENDED EXAUST VENT PIPING INSTALLATION

USE 6" DIA. PIPE WITH 100' MAX. RECOMMENDED LENGTH OF RUN, WITH SCRUBBER OPTION ONLY. (PIPE BY OTHERS)



CUSTOMER TO FURNISH ELECTRICAL SERVICE IN ACCORDANCE WITH APPLICABLE LOCAL AND NATIONAL CODES.



MODEL	A	B	C	D	E	F	WORKING CAPACITY FT.3/HR	HOPPER VOLUME (CUBIC FEET)	OPTIONAL HOPPER VOLUME	WEIGHT (LBS.)
120	46.00	25.00	41.00	31.00	99.00	30.00	1 – 1.5	10.7	24.7	3000
180	52.00	31.00	47.00	37.00	99.00	36.00	1.5 – 3	13	29	3700
360	52.00	49.00	102.00	55.00	99.00	54.00	3 – 6	17	33	4400

MODELS J-120, J-180, & J-360
ELECTRICAL CONSUMTION (GAS FIRED)

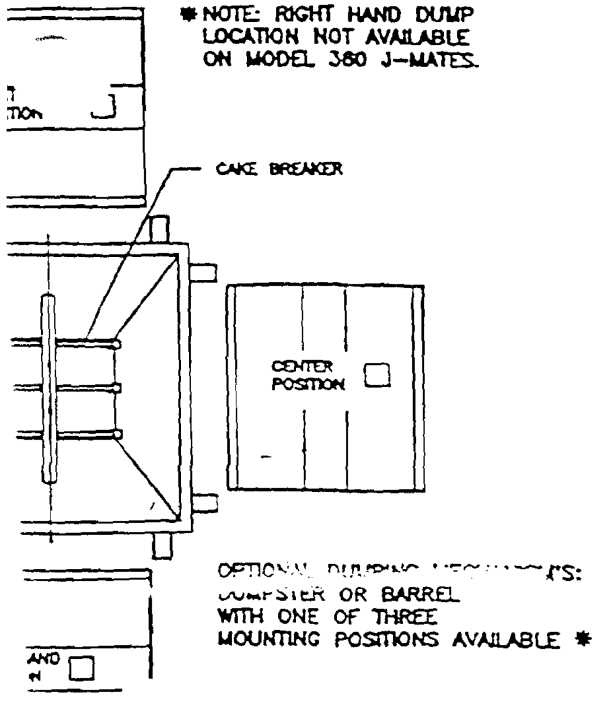
DRIVE MOTORS		240V.3PH.	480V. 3PH.
MODEL:	120	20AMPS	10AMPS
	180	20AMPS	10AMPS
	360	30AMPS	15AMPS

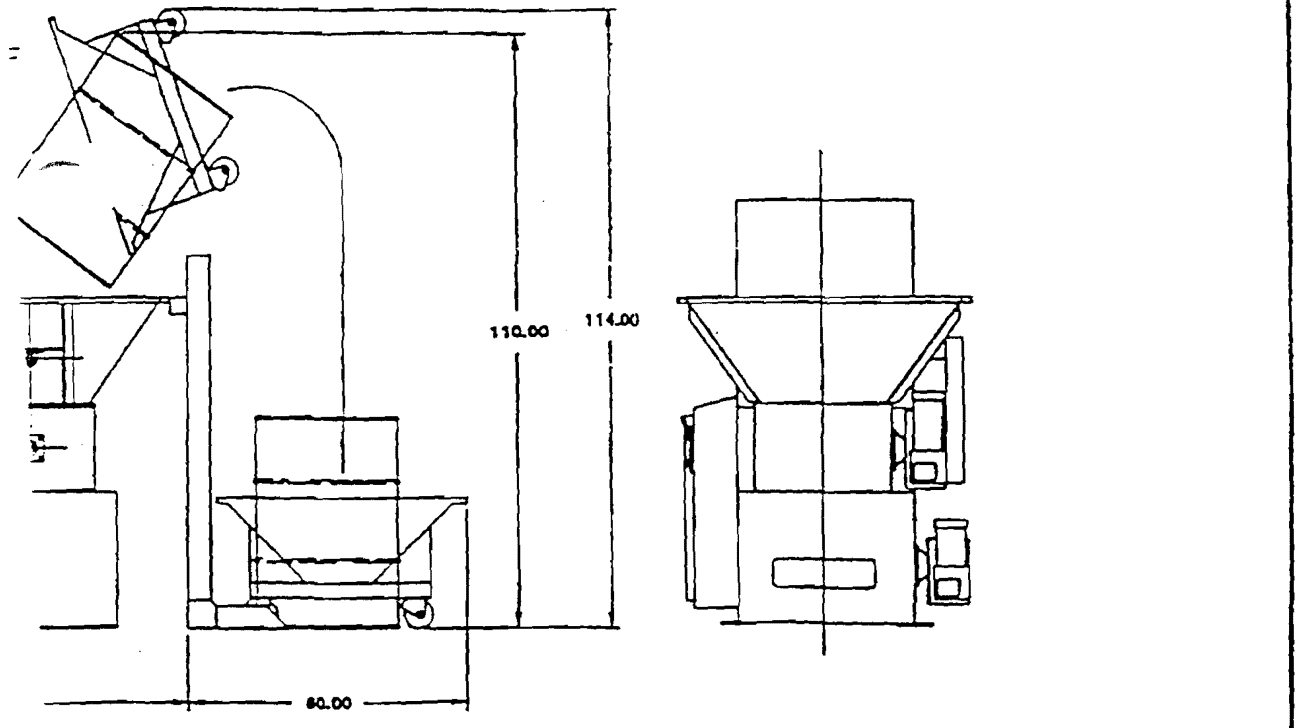
ELECTRIC HEAT MODELS (480V. 3PH.)
MODEL: 120: 50AMPS
180: 65AMPS

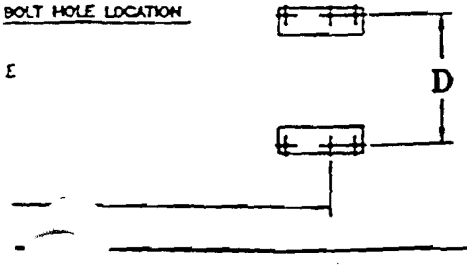
MINIMUM GAS REQUIREMENTS (GAS FIRED ONLY)
NATURAL GAS SUPPLY @ 7"-28" W.C.
MODEL: 120: 125 CFH (125,000 BTU)
180: 200 CFH (200,000 BTU)
360: 400 CFH (400,000 BTU)

PROPANE GAS SUPPLY:
MODEL: 120: 42 CFH, 1.1 GPH
180: 68 CFH, 1.9 GPH
360: 155 CFH, 3.7 GPH

* NOTE: RIGHT HAND DUMP LOCATION NOT AVAILABLE ON MODEL 360 J-MATES.







MED	N	REVISED SPECS		2/89	

JWI
CONTINUOUS J-MATE
G.A.

4.2.4-743

ATCH-2

STATE OF UTAH
DEPARTMENT OF HEALTH

NORMAN H. BANGERTER, GOVEI

SUZANNE DANDOY, M.D., M.P.H., EXECUTIVE DIREC

FEB 20 1986

533-6108

Phil Lammi
United States Air Force
Air Force Regional Civil Engineer
630 Sansom Street, Room 1316
San Francisco, California 94111-2278

RE: Approval Order for Industrial
Wastewater Treatment Facility
Davis County CDS A-1

Dear Mr. Lammi:

The above referenced project has been reviewed by the Executive Secretary, Utah Air Conservation Committee and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30 day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the Executive Secretary's original determination which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions:

1. Hill Air Force Base shall install the proposed industrial wastewater treatment plant according to the information submitted to the Executive Secretary in the notice of intent dated October 1, 1985.

2. Total emissions of reactive and non-reactive volatile organic compounds shall be reported to the Executive Secretary annually.

3. All installations and facilities authorized by this approval order shall be maintained and operated in proper condition.

4. The Executive Secretary shall be notified upon start-up of the installation, as an initial compliance inspection is required.

5. Plant through-put of reactive VOC shall not exceed 12 tons/year without prior approval of the Executive Secretary in accordance with Section 3.1, UACR.

4.2.4-969

The fee for issuing this approval order is $245.14. The amount (see enclosure for breakdown of costs) is payable to the Utah Department of Health, sent to the Executive Secretary, Utah Air Conservation Committee, 2870 Connor Street, Salt Lake City, Utah 84109 and is due within 30 days after receipt of this approval order.

Sincerely,

Brent C. Bradford
Executive Secretary
Utah Air Conservation Committee

LRM/jg
0233A

CC: EPA Region VIII (Norm Huey)
Davis County Health Department

Enclosure

APPROVAL ORDER FEE

Review Engineer - total hours 8 ($22.08/hr) = $ 176.64

Modeler - total hours _____ ($17.94/hr) = $ _____

Computer Time - total hours _____ ($ 5.00/hr) = $ _____

Notice To Paper - _____ = $ 18.50

Travel - total miles _____ ($ 0.23/mile) = $ _____

Filing Fee - _____ = $ 50.00

Total = $ 245.14

LRM/jg
0401Q

Phil Lammi
United States Air Force
Approval Order for Industrial Wastewater Treatment Facility

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW FOR:

Phil Lammi
United States Air Force
Air Force Regional Civil Engineer
630 Sansom Street, Room 1316
San Francisco, California 94111-2278

RE: Industrial Wastewater Treatment Facility
Davis County CDS A-1

Engineer: Lynn Menlove

Date: December 2, 1985

Notice of Intent dated: 10-2-85; Info. 10-15-85

Plant contact: Darrell Hunt, Radian Corp.

Phone number: (916) 362-5332

Plant location: Hill Air Force Base

Filing Fee: _____ = $50.00

Review Engineer total hours 8 ($22.08/hr) = $176.64

Modeler total hours _____ ($17.94/hr) = _____

Computer time total hours _____ ($5.00) = _____

Notice to paper _____ $18.50

Travel total miles _____ ($0.21/mile) = _____

Total $245.14

Approved by Section Manager DR 12/13/85

Approved by Executive Secretary RDD 12/27/85

I. Description of Proposal

A. History

Hill Force Base is planning to construct an industrial wastewater treatment facility for their existing and future effluent from the Base.

B. Process

The facility will be stripping the reactive and non-reacative hydrocarbons from the wastewater. The waste HC stripped currently enters the atmosphere so this is not a change of HC emissions for existing rates of effluent. The increased effluent for Building 220 expansion will be included in this review.

75% of the HC stripped from the water is non-reactive as defined by UACR Section 3.1.7.f.

The wastewater facility follows an existing secondary clarifier.

The system is closed to the atmosphere except the air stripping tower where the HC is removed by a counter current flow of air contacting water in a packed tower. See Figure 1.

The air stripper is expected to remove 99.9% of the VOC from the water.

C. Rates of flow

Water through-put 461 gal/min average

VOC

Reactive = 5.6 ton/yr
Non-reactive = 18.4 ton/yr

Air Exhaust 7500 acfm

Time of Operation

24 hrs/day
365 days/year

Construction scheduled

Late 1986 Completion

II. BACT

Application of VOC control equipment for this source with an emission of 5.6 tons of reactive VOC per year is not reasonable.

I recommend no control equipment with the following limitations:

1. Annual reporting of reactive and non-reactive VOC emissions.

2. Reactive VOC shall not exceed 12 ton/yr.

III. Applicable Regulations

UACR 3.1.1 Engineering review
UACR 3.1.7.f Annual emission report of non-reactive VOC.

IV. Recommended Approval Order Conditions

1. Hill Air Force Base shall install the proposed industrial wastewater treatment plant according to the information submitted to the Executive Secretary in the notice of intent dated October 1, 1985.

2. Total emissions of reactive and non-reactive volatile organic compounds shall be reported to the Executive Secretary annually.

3. All installations and facilities authorized by this approval order shall be maintained and operated in proper condition.

4. The Executive Secretary shall be notified upon start-up of the installation, as an initial compliance inspection is required.

5. Plant through-put of reactive VOC shall not exceed 12 tons/year without prior approval of the Executive Secretary in accordance with Section 3.1, UACR.

LRM/jg
0234A

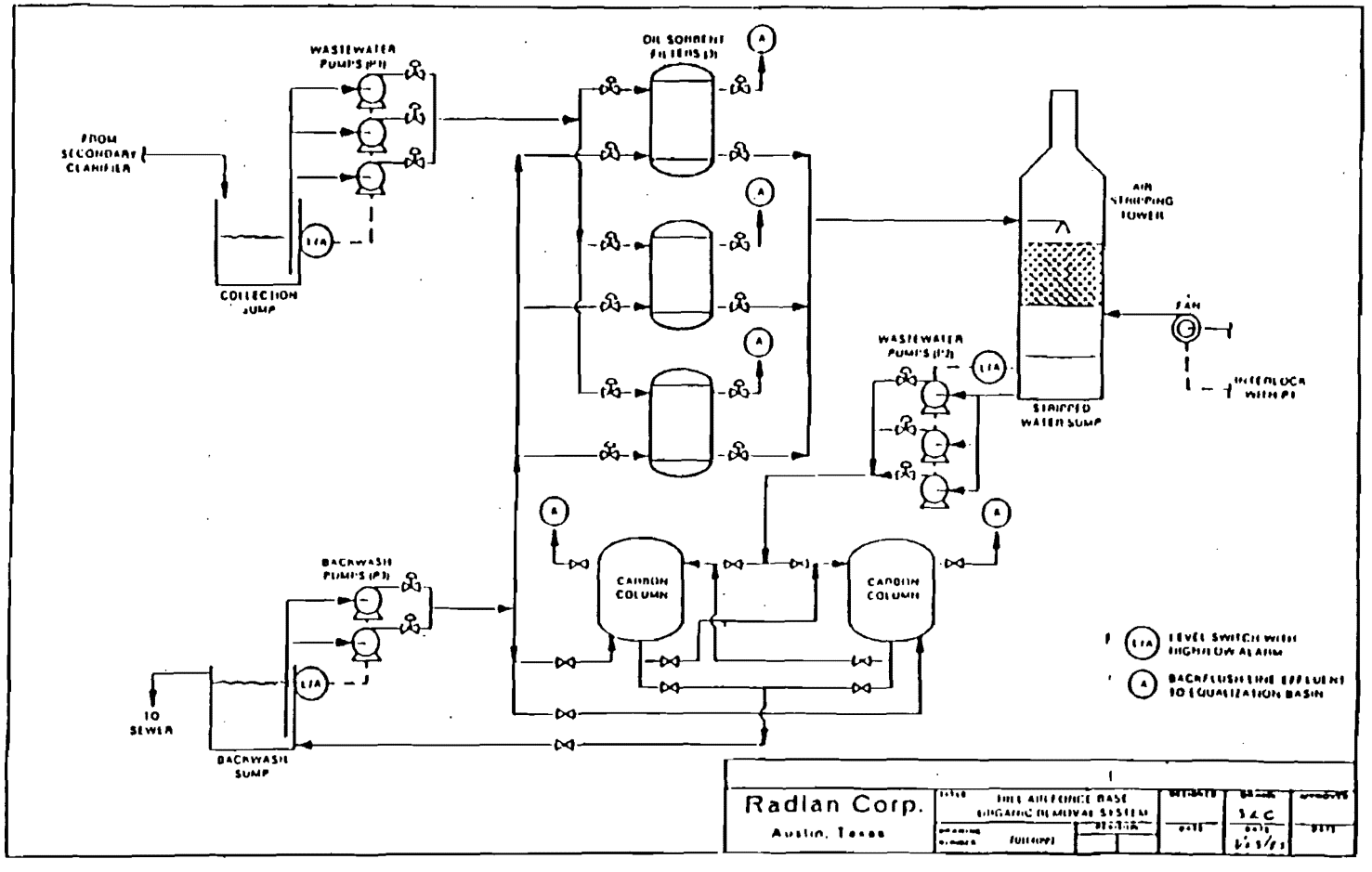


Figure 1. End of Pipe Air Stripping/Carbon Adsorption Treatment Process.

1. Annual reporting of reactive and non-reactive VOC emissions.

2. Reactive VOC shall not exceed 12 ton/yr.

III. Applicable Regulations

UACR 3.1.1 Engineering review
UACR 3.1.7.f Annual emission report of non-reactive ~~x~~ VOC

IV. Recommended Approval Order Conditions

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2. Total emissions of reactive and non-reactive volatile organic compounds shall be reported to the Excecutive Secretary annually.

3. All installations and facilities authorized by this approval order shall be maintained and operated in proper condition.

4. The Executive Secretary shall be notified upon start-up of the installation, as an initial compliance inspection is required.

5. Plant through-put of reactive VOC shall not exceed 12 tons/year without prior approval of the Executive Secretary in accordance with Section 3.1, UACR.

~~6. For purposes of Section 3.1.5 UACR a "continuous program of construction" shall be defined as normal operation achieved by June 15, 1987.~~

0062Q

II. EMISSION SUMMARY

Source	Pollutant	Uncontrolled tons/year	Controlled ton/year	Controlled lbs/hr	Controlled g/sec	% Cont:
active VOC	Particulate	0				
	SO_2	0				
	NO_X	0				
	CO	0				
	VOC	5.6	5.6	1.3	0.16	0
	Other ____	0				
Non-Reactive VOC	Particulate	0				
	SO_2	0				
	NO_X	0				
	CO	0				
	VOC	18.4	18.4	4.2	0.53	0
	Other ____	0				
Total VOC	Particulate	0				
	SO_2	0				
	NO_X	0				
	CO	0				
	VOC	24.0	24.0	5.5	0.69	0
	Other ____	0				
____	Particulate					
	SO_2					
	NO_X					
	CO					
	VOC					
	Other ____					

DK:wml

Calculations

Given

Liquid Flow rate = 461 gal./min

24 hr/day 7 days/wk 52 wk./yr
= 8760 hr/yr

VOC = 6 mg/l of water (0.36 gr/gal)

Non-VOC = 18 mg/l of water (1.07 gr/gal.)

Soln

$$VOC = \frac{461\ gal/min\ 0.36\ gr/gal\ 60\ min/hr\ 8760\ hr/yr}{7000\ gr/lb\ \ 2000\ lb/Ton}$$

= 6.2 ton/yr

This agrees with the submitted numbers.

Air Force

STATE OF UTAH
DEPARTMENT OF HEALTH

NORMAN H. BANGERTER, GOV

SUZANNE DANDOY, M.D., M.P.H., EXECUTIVE DIRECTOR

OCT 7 1985

533-6108

Phil Lammi
United States Air Force
Air Force Regional Civil Engineer
630 Sansom Street, Room 1316
San Francisco, California 94111-2278

RE: Receipt of Notice of Intent

Dear Mr. Lammi:

This letter acknowledges receipt of your application for an air quality approval order for a Industrial Wastewater Treatment Facility. Your notice of intent dated October 1, 1985, was received October 2, 1985. Evaluation of the application has begun. If any additional information is necessary, a detailed request will be sent within 30 days. Please note the Utah Air Conservation Regulations (UACR) Section 3.1.1, requires an approval order be issued by the Executive Secretary prior to initiation of construction or modification.

Sincerely,

Lynn R. Menlove

Lynn R. Menlove
Environmental Health Engineer
Bureau of Air Quality

LRM/jg
9430Q

4.2.4-979

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-167-92

February 19, 1992

James R. Van Orman
Director, Environmental Management Office
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Re: Approval Order for JP-4 Tank Throughput Limitations

Dear Mr. Van Orman:

This amended AO is being issued to update and combine the AOs dated January 3, 1989 and July 29, 1991. The JP-4 tank throughput limitations are combined to give one throughput limit for all four tanks. The re-worded throughput limitations give more flexibility and do not allow an increase in total throughput.

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. This AO shall replace the AO's issued to Hill Air Force Base on July 29, 1991 and January 3, 1989.

2. The approved facilities shall consist of the following equipment:

   A. Two steam generators, a total heat input rate of 120.3 MMBTU/hr with natural gas as primary fuel with a standby diesel fuel (116.5 MMBTU/hr) at building 260;

   B. Dual seals for JP-4 storage tanks 10873, 10885, 10861 and 10862;

   C. Two mobile waste hydraulic fluid reclamation units based at Building 514;

   D. Paint spray booth and two lab hoods at the Building 5N;

   E. Lab Hoods

F. Nine Turboclean chambers, or equivalent, for the paint spray hangar at Building 220 - In addition, water reducible primer or low VOC primer shall be substituted for solvent base primer, and a high volume low pressure (HVLP) type spray gun shall replace the conventional paint spray gun.

Equivalency shall be determined by the Executive Secretary.

3. Visible emissions from any point or fugitive emission source associated with the emission points listed in this AO shall not exceed 10% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The following operating limits shall not be exceeded without prior approval in accordance with R446-1-3.1, UAC:

A. Steam generators, Building 260

1) 465.7×10^9 BTU from natural gas per 12-month period
2) 108.3×10^6 BTU from natural gas per hour
3) 50.1×10^9 BTU from diesel fuel per 12-month period
4) 116.5×10^6 BTU from diesel fuel per hour
5) 4,300 hours per 12-month period

B. Storage tanks 10873, 10885, 10861 and 10862 - total combined JP-4 throughput for all four tanks shall not exceed 1,260,000 barrels per 12-month period and shall be determined by summing individual tank throughputs

F. Hydraulic fluid waste reclamation units, Building 514

1) 30,000 gallons of total fluid per 12-month period
2) 8 hours per day
3) 2,080 hours per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of usage, operation, and production shall be kept for all periods when the plant/equipment is in operation. Records of usage, operation, and production shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request.

Fuel consumption for steam generators shall be determined by examination of fuel meter records. Storage tank throughputs shall be determined by examination of tank throughput records, which shall be kept on a daily basis. Hydraulic fluid waste reclamation unit throughput shall be determined by examination of usage records, which shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

5. The owner/operator shall comply with R446-1-4.9.1(c), UAC for controlling emissions form storage tanks 10861, 10862, 10873 and 10885.

6. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Ka apply to storage tanks.

7. The condenser at the final point of each of the hydraulic fluid waste reclamation units shall operate during the operation of hydraulic fluid waste reclamation units. If the condenser is out of service, the hydraulic fluid waste reclamation units shall not be used until the condenser has been returned to service. The hydraulic waste reclamation equipment shall be operated for maximum solvent recovery at all times.

   The condenser shall be capable of recovering no less than 75% of solvents from the fluid. Records of solvent recovery shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation.

   Demonstration of the 75% recovery shall be made by monitoring the solvent input and solvent recovery over a specified period of time acceptable to the Executive Secretary and calculating the percent recovery. A compliance demonstration shall be performed if directed by the Executive Secretary. Records of the amount of solvent recovered shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation. The record shall include the following items:

   A. Date;
   B. Unit usage (start and end times);
   C. Total hydraulic fluid waste processed;
   D. Amount solvent recovered.

8. The owner/operator shall use only natural gas as a primary fuel and #2 diesel fuel as a backup fuel in the steam generators. If any other fuel is to be used, an AO shall be required in accordance with R446-1-3.1, UAC.

   Natural gas consumption shall not exceed 465.7×10^6 scf per 12-month period, and diesel fuel consumption shall not exceed 5% of the annual fuel used in the boilers without prior approval in accordance with R446-1-3.1, UAC. Compliance with the limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of fuel consumption shall be kept for all periods when the plant is in operation. Records of fuel consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. Fuel consumption shall be determined by examination of fuel meter records and fuel bills.

9. The sulfur content of any diesel fuel burned shall not exceed 0.50% by weight as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

10. The paint spray booth at Building 5N shall be equipped with a set of paint arrestor particulate filters (or equivalent) to control particulate emissions. All air exiting the booth shall pass through this control system before being vented into the atmosphere. Equivalency shall be determined by the Executive Secretary.

11. The paint spray hangar at Building 220 shall be equipped with a water wall (or equivalent) to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

12. Emissions of VOC from the paint spray booth and the two lab hoods in Building 5N shall not exceed a total of 2.37 tons per 12-month period without prior approval in accordance with R446-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. The building emissions of VOC shall be determined by maintaining a record of paints, thinners and cleaning agents used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 2.37 tons per 12-month period as specified.

13. Emissions of VOC from the paint spray hangar in Building 220 shall not exceed 17.2 tons per 12-month period without prior approval in accordance with R446-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. The building emissions of VOC shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 17.2 tons per 12-month period as specified.

14. The owner/operator shall operate a solvent cleaning operation under the lab hoods according to the following:

    A. Covers shall remain closed at all times except during actual loading, unloading, or transfer operations. The covers shall be designed so that they can easily be operated with one hand;

    B. Parts shall be completely drained in the internal drainage rack until all dripping ceases;

    C. Waste or used solvent shall be stored in covered containers and disposed by a method which prevents its emission into the atmosphere in accordance with R446-1-4.9.4.A(3);

    D. Tanks, containers, and all associated equipment shall be maintained in good operating condition and leaks shall be repaired immediately;

    E. Written procedures for the operation and maintenance of the solvent cleaning equipment shall be posted in an accessible and apparent location near the equipment;

    F. The requirements of R446-1-4.9.4.A, UAC shall apply to this operation as applicable.

15. A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

16. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:DC:cl

cc: EPA Region VIII, Mike Owens
Davis County Health Department

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

Montie
RECEIVED
FEB 0 5 1992
Air Quality

3 FEB 1992

F. Burnell Cordner
Department of Environmental Quality
Division of Air Quality
1950 West North Temple
Salt Lake City UT 84114-4820

Re: Approval Orders # DAQE-540-91, 29 Jul 91, and # BAQE-757-88, 3 Jan 89, Vapor Seals for JP-4 Storage Tanks

Dear Mr Cordner

In reference to the above approval orders, we request the following changes:

a. Combine the above two approval orders and delete any reference to a refrigeration unit on the vapor degreaser (BAQE-757-88) in Bldg 507 since this process has been discontinued since spring 90. Please delete this source.

(b.) Combine throughputs of JP-4 storage tanks 10861, 10862, 10873, and 10885 to give an annual throughput of 1.26 x 10^6 barrels. Currently, these tanks have individual throughput limits. With the outage of Chevron's JP-4 storage tanks, it's extremely difficult to receive a large inventory without transferring fuel between the tanks. This leads to throughput exceedence on an individual tank basis. However, the combined throughput for the overall tank farm is under the combined throughput limits. Our records (Atch 1) show that due to the above, throughput for the JP-4 tank 10885 was exceeded by 25,788 barrels on 1 Dec 91. For the tank farm as a whole, we were under the limits by 286,610 barrels. Similarly, on 1 Jan 92, the throughput for tank 10885 was exceeded by 6,717 barrels and overall we were under the limits by 267,387 barrels. Allowing us to combine the throughput will give us more freedom in fuel management while staying under the overall limit.

We request your concurrence or comments in this matter. If you have any questions, please feel free to contact Jay Gupta at 777-4618.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Throughput Volumes for
1 Dec 90 - 30 Nov 91 &
1 Jan 91 - 31 Dec 91

4.2.4-749

JULIAN DATE — BEGINNING QUANTITY — ENDING QUANTITY

[illegible] VOLUMES BY TANK FOR 1 DEC 80 - 31 NOV 81

TANKNUMBER	SOURCE	STARTDATE	STOPDATE	[illegible] QTY...	... QTY...	[illegible] (GALLONS)
861	885	0355	20 DEC	[illegible]	[illegible]	[illegible]
861	862	1127	08 MAY		377574	377574
861	873	1128	09 MAY	377574	347510	[illegible]
861	885	1143	24 MAY	349590	351018	1428
861	885	1161	11 JUN	[illegible]	219299	[illegible]
861	885	1164	14 JUN	219299	352346	133047
861	885	1165	17 JUN	352346	355654	3318
861	FPL	1255	12 SEP	329558	358761	[illegible]
861						[illegible]25,983
862	861	0352	19 DEC	[illegible]	176763	[illegible]
862	885	0353	20 DEC	[illegible]	240346	[illegible]
862	885	0354	21 DEC	[illegible]	337971	[illegible]
862	885	1060	04 MAR	[illegible]	539357	274646
862	861	1068	11 MAR	444125	455731	11597
862	885	1102	15 APR	455731	533468	81683
862	885	1116	29 APR	310517	438220	127703
862	885	1123	06 MAY	331215	534656	203441
862	885	1144	28 MAY	0	355710	355710
862	885	1150	31 MAY	355710	371617	115907
862	885	1151	03 JUN	372588	1047433	174535
862	885	1151	03 JUN	371617	533165	161548
862	885	1162	12 JUN	427617	469679	42082
862	885	1164	14 JUN	469699	524875	55179
862	885	1165	17 JUN	524878	533496	8618
862	885	1179	01 JUL	138037	536479	398442
862	885	1198	18 JUL	371440	501345	129905
862	885	1199	19 JUL	[illegible]	[illegible]	[illegible]
862	FPL	1254	12 SEP	52074	438552	386178
862	FPL	1255	12 SEP	438551	538107	99557
862						3,067,533
873	FPL	0349	16 DEC	126290	966214	839924
873	885	0355	26 DEC	945310	1051070	105760
873	885	1003	04 JAN	649033	968403	319377
873	885	1004	07 JAN	968403	1000497	32094
873	885	1015	16 JAN	634202	749429	115227
873	885	1016	17 JAN	749429	996850	247421
873	885	1024	25 JAN	589958	1033807	443849
873	885	1032	01 FEB	536730	815776	279046
873	885	1035	04 FEB	815776	997579	181803
873	885	1043	12 MAR	437829	712965	275136
873	885	1044	13 MAR	712965	1051313	338348
873	FPL	1046	16 FEB	117553	963540	845987
873	885	1051	20 FEB	952115	1051070	98955
873	885	1051	20 MAR	759636	931944	172308

TK 10861

TANK 1006?

TANK 10873

4.2.4-750

ATCH-1.

PUT VOLUMES BY TANK FOR 1 DEC 90 - 30 NOV 91

TANKNUMBER	SOURCE	STARTDATE	STOPDATE	BOTV...	EOTV...	THRUPUT.
871	885	1052	22 MAR	931944	1051556	119612
871	PPL	1098	08 APR	881017	736369	205162
871	885	1102	15 APR	737327	1054230	266403
871	885	1122	03 MAY	990560	1055203	74643
871	885	1124	15 MAY	793119	1049611	254493
871	885	1136	17 MAY	1049611	1055203	5592
871	885	1142	23 MAY	576487	800951	224464
871	885	1150	24 MAY	800951	990285	189334
871	885	1144	28 MAY	990285	1038399	48114
871	885	1168	18 JUN	972293	1021164	48871
871	885	1172	24 JUN	1026756	1051799	25043
871	885	1179	01 JUL	937047	1045964	108917
871	885	1189	09 JUL	885071	1046693	161622
871	PPL	1052	09 SEP	93022	943066	850044
871	PPL	1059	17 SEP	69075	943127	844712
871	PPL	1078	02 OCT	31794	414454	382660
871	PPL	1076	04 OCT		0	0
871	PPL	1088	20 NOV	331616	317954	32338
871	PPL	1094	21 NOV	313954	457269	143315
TOT						8261936

885	PPL	0340	07 DEC	1225579	2124035	-798496	
883	PPL	0357	24 DEC	1197154	1997342	.840188	27.6
885	PPL	1006	07 JAN	1342489	1762575	420087	
885	PPL	1025	26 JAN	1618882	2240149	623296	
885	PPL	1036	06 FEB	1246919	2045568	798949	
885	PPL	1057	27 FEB	887126	1845247	1258121	
885	PPL	1062	04 MAR	281377	2159558	877981	
885	PPL	1077	14 MAR	1227711	2097735	870024	
883	PPL	1087	29 MAR	1158742	2178115	1019373	
885	PPL	1107	18 APR	1371116	2173874	802758	
885	PPL	1117	28 APR	1075106	2177055	1101949	
885	PPL	1126	06 MAY	1375127	2172813	797686	
883	PPL	1137	18 MAY	1337572	2237498	899925	
883	PPL	1146	27 MAY	966590	2019070	1052480	
885	PPL	1157	07 JUN	773242	2254464	1520222	
885	PPL	1166	16 JUN	1114761	2133431	1118670	
885	PPL	1176	26 JUN	977472	2006216	1028744	
885	PPL	1185	04 JUL	1010704	1959552	948848	
885	PPL	1196	16 JUL	915244	2179464	1264220	
885	PPL	1207	27 JUL	1147087	2210988	1063901	
885	PPL	1221	10 AUG	860192	1718050	857858	
885	PPL	1229	18 AUG	910582	1581716	1067707	
885	PPL	1236	27 AUG	693509	1728479	1034971	
885	PPL	1250	27 SEP	743308	1758038	1488070	
885	PPL	1278	06 OCT	827470	1834048	1010578	
885	PPL	1288	17 OCT	108577	947497	938934	

TANK 1088

UT VOLUMES BY TANK FOR 1 DEC 90 - 30 NOV 91

BER	SOURCE	STARTDATE	STOPDATE	SQTY...	EQTY...	THRUPUT.
885	PPL	1312	09 NOV	105175	942639	837464
885	PPL	1320	16 NOV	282405	1121688	839283
885	PPL	1327	24 NOV	343870	1311920	1467050
885						28803100

LIMIT 27,720,000 GALLONS.

ALL FOUR TANKS. Σ 40,803,573

" " " Σ .97 x 10^6 BARRELS

1.8 1.6

660.00

27,720.00

PUT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

UMBER	SOURCE	STARTDATE	STOPDATE	BBTY...	BDTY ..	THRUPUT
861	862	1127	08 MAY	0	277574	277574
861	873	1129	09 MAY	277574	278211	637
861	885	1143	24 MAY	309380	310818	1438
861	885	1161	11 JUN	67334	219299	151965
861	885	1164	14 JUN	219299	352346	133047
861	885	1165	17 JUN	352346	355684	3338
861	PPL	1255	12 SEP	329556	358762	29206
861	885	1349	1349	82472	317613	235141
861						901,9039
861						BT
862	885	1060	04 MAR	264651	539297	274646
862	861	1062	10 MAR	144135	459788	11577
862	885	1102	15 APR	459788	532468	32681
862	885	1116	29 APR	710617	4382200	1077707
862	885	1127	06 MAY	331313	534654	203441
862	885	1144	28 MAY	0	255710	255711
862	885	1150	31 MAY	255710	371617	115907
862	885	1151	03 JUN	372855	1047422	174555
862	885	1151	03 JUN	371617	533165	161548
862	885	1162	12 JUN	427617	469699	42082
862	885	1164	14 JUN	469699	524878	55179
862	885	1165	17 JUN	524878	533496	8618
862	885	1179	01 JUL	138037	536479	398442
862	885	1198	18 JUL	271440	501345	229905
862	885	1199	19 JUL	501345	539297	37952
862	PPL	1254	12 SEP	82274	438552	356278
862	PPL	1255	12 SEP	438552	538137	99585
862	885	1349	1349	31494	299092	267486
862	861	1358	001358	84102	505488	421386
862						3324538
862						19T
873	885	1003	04 JAN	649030	968407	319377
873	885	1004	07 JAN	968407	1000497	32094
873	885	1015	16 JAN	634200	749429	115227
873	885	1016	17 JAN	749429	996850	247421
873	885	1024	25 JAN	589953	1033807	443849
873	885	1032	01 FEB	536730	815776	279046
873	885	1035	04 FEB	815776	997579	181803
873	885	1043	12 MAR	437829	713965	276136
873	885	1044	13 MAR	713965	1051343	337378
873	PPL	1046	16 FEB	117353	963540	846187
873	885	1051	20 FEB	952115	1051070	98955
873	885	1051	20 MAR	759636	931944	172308
873	885	1052	22 MAR	931944	1051556	119612

PLT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

TANKNUMBER	SOURCE	STARTDATE	STOPDATE	BQTY...	EQTY...	THRUPUT.
877	PPL	1098	08 APR	581207	786719	205162
877	885	1102	16 APR	737827	1054277	266450
877	885	1122	03 MAY	930560	1005240	74647
877	885	1134	15 MAY	795119	1049611	254492
877	885	1136	17 MAY	1049611	1055203	5592
877	885	1142	23 MAY	536487	800951	264464
877	885	1143	24 MAY	800951	990285	189334
877	885	1144	28 MAY	990285	1039399	49114
877	885	1168	18 JUN	972293	1021164	48871
877	885	1172	24 JUN	1026756	1051799	25043
877	885	1179	01 JUL	937047	1045964	108917
877	885	1189	09 JUL	995391	1046693	51302
877	PPL	1252	09 SEP	93038	943385	850338
877	PPL	1259	17 SEP	98379	943133	844744
877	PPL	1275	02 OCT	31394	414484	383090
877	PPL	1276	04 OCT	0	1	0
877	PPL	1320	20 NOV	231646	313954	82308
877	PPL	1324	21 NOV	313954	457269	143315
877	ppl	1334	001300	127260	620711	493451
877	ppl	1349	001350	75559	904774	829165
877	ppl	1358	001359	152016	974238	822222
877						9461090
878						347
885	PPL	1006	07 JAN	1342488	1762575	420087
885	PPL	1025	26 JAN	1616853	2240149	623296
885	PPL	1036	06 FEB	1046619	2045568	798949
885	PPL	1057	27 FEB	587126	1845247	1258121
885	PPL	1062	04 MAR	1281877	2159558	877681
885	PPL	1070	14 MAR	1257812	2097938	840126
885	PPL	1087	29 MAR	1159742	2178115	1018373
885	PPL	1107	18 APR	1271619	2173874	802255
885	PPL	1117	28 APR	1075106	2177055	1101949
885	PPL	1126	06 MAY	1275327	2172813	797486
885	PPL	1137	18 MAY	1297573	2237498	939925
885	PPL	1146	27 MAY	966590	2019070	1052480
885	PPL	1157	07 JUN	734243	2254464	1520221
885	PPL	1166	16 JUN	1014761	2133431	1118670
885	PPL	1176	26 JUN	973472	2206216	1232744
885	PPL	1185	04 JUL	1010526	1859556	849030
885	PPL	1196	16 JUL	915244	2175464	1260220
885	PPL	1207	27 JUL	1147097	2210988	1063891
885	PPL	1220	12 AUG	860192	1718059	857867
885	PPL	1229	18 AUG	513569	1581366	1067797
885	PPL	1238	27 AUG	445308	1725479	1280171
885	PPL	1259	27 SEP	262308	1750386	1488078
885	PPL	1278	06 OCT	823670	1834648	1010978

JPUT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

JMBER	SOURCE	STARTDATE	STOPDATE	IQTY...	EQTY...	THRUPUT.
885	PPL	1288	17 OCT	108577	947497	838924
885	PPL	1312	09 NOV	105175	942639	837464
885	PPL	1320	16 NOV	282405	1121688	839283
885	PPL	1327	24 NOV	345870	1812920	1467050
885	PPL	1340	1341	845370	1683083	837713
885						28002128
885						BST
						4168[illegible]22
						BST

BAQE-235-91

MEMORANDUM

To: Don Robensen

Through:

From: Dale Chapman, Environmental Engineer
Date: February 13, 1992

Subject: Hill Air Force Base request for Approval Order changes

On February 5, 1992 the Division received a letter from Hill Air Force Base requesting changes to two of their existing approval orders. These changes include:

a. Remove the perchloroethylene vapor degreaser and associated vapor chiller (this equipment has been removed) from approval order dated January 3, 1989

b. Combine the approval orders dated July 29, 1991 and January 3, 1989.

c. Combine the JP-4 tank throughput limitations to give an annual throughput for all four tanks combined. Present approval order conditions limit throughput by individual tank.

There will not be an emission increase as a result of these changes. Therefore a Notice of Intent for these changes is not necessary. The revised approval and the current approval orders are attached for your review.

By combining the two listed Approval Orders all of the four JP-4 storage tanks will be included on one permit. This is the most logical grouping and is consistent with other approval order groupings issued by the Division.

Existing approval orders for the four JP-4 tanks limit throughput for each tank (condition 10 and 5D existing AO). The total permitted throughput for all four tanks is presently 1,260,000 barrels per year.

Working losses from organic storage tanks are dependent upon the total number of turnovers (total throughput), not the specific tank that is used. Therefore combined throughput limitations can be made for the four JP-4 tanks without changing the potential emissions from working losses.

There should be no confusion about the meaning of "total combined throughput" for these tanks. The total combined tank throughput is the sum of individual tank throughputs. Calculation of the throughput in this manner accounts for the transfer of fuel between tanks (ie: not just the flow into or out of the tank farm).

I have included condition 4b on the attached "revised" approval order which is intended to clarify the meaning of total combined throughput for these four tanks. Individual tank throughput is measured and recorded daily (condition 4F), but throughput limits are for the sum of all four tanks. All other conditions were taken from the current approval orders.

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Air Quality
288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-324-90

May 23, 1990

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on May 26, 1990.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84110-0690.

Sincerely,

Carol Holmes
Office Technician
Bureau of Air Quality

Enclosure

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, has been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Utah Fuel Company, modification to coal storage facility at Skyline Coal Mine, Carbon County CDS A2

   Increased emissions for this modification are calculated at the following values:

PM_{10}	0.02 ton/yr
Particulate	0.05 ton/yr

2. Department of the Air Force, installation of steam boilers, vapor seals for JP-4 storage tanks, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar at Hill AFB, Davis County, CDS A

   Increased emissions for these modifications are currently calculated at the following values:

Particulate	1.34 tons/yr
PM_{10}	1.34 tons/yr
SO_2	10.79 tons/yr
NO_x	8.31 tons/yr
CO	8.60 tons/yr
VOC	21.47 tons/yr

The engineering evaluations and air quality impact analyses has been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City,

Utah 84116-0690. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before June 18, 1990 will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: May 26, 1990

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Nathan
~~Nathan O. Currier~~
Director, Environmental Mgt Office
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

RE:	5 Projects - Installation of Steam Boilers, Vapor Seals for JP-4 Storage Tanks, Waste Hydraulic Fluid Reclamation Units, a Paint Spray Booth, Lab Hoods, and a Paint Spray Hangar at the Hill AFB, Davis County, CDS A
DATE:	April 23, 1990
NOTICES OF INTENT DATED:	November 7, 1989, January 19, 1989, August 9, 1989 July 18, 1898, 1989, and November 22, 1989 respectively
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	777-7651
PLANT LOCATION:	Hill Air Force Base, Davis County

FEES:

Filing Fee	$ 100.00
Review Engineer - Consultant	$6,660.50
Consultant	$ 000.00
Modeler - 00 hours at $18.07/hour	$ 000.00
Computer Usage Fee	$ 000.00
Notice to Paper	$ 24.00
Travel - 00 miles at $0.23/mile	$ 000.00
Total	$6,784.50

Review Completed By Tetra Tech/L.Carl Broadhead CB

APPROVALS:

Engineering Unit Manager OK 5/3/90

Technical Evaluation Section Manager M. Keller 5/10/90

BACT and Approval Order Coordination with Source

(Date/Contact and Agree or Disagree) 5-1-90 / Bill / by Carl B"

I. DESCRIPTION OF PROPOSAL

The Department of the Air Force has filed notices of intent dated November 7, 1988, January 19, 1989, June 16, 1989, August 11, 1989, August 30, 1989, and November 22, 1989. They are proposing to install, modify, and operate steam boilers, vapor seals for JP-4 storage tanks, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar, respective to those dates. The description of each notice of intent is as follows:

1. Steam boilers, consisting of two (2) 100,000 pounds per hour, 120 psig packaged steam boilers in total heat input rate of 120.328 million Btu per hour for natural gas combustion (primary fuel) with a standby diesel fuel (116.542 million Btu per hour), to expand the existing steam plant. The location of this expansion will be in Building 260 at Hill Air Force Base. The steam generators are equipped with a flue gas recirculation system which is designed to recirculate 20 percent of exhaust gas resulting in 60 percent reduction in NOx emissions. The flue gas recirculation system is designed to operate only for natural gas combustion, not for the standby diesel fuel combustion. The steam generators are also equipped with an economizer system for an exhaust gas heat recovery. In addition, this expansion replaces an existing 180 gallons per minute boiler feedwater pump with a new 600 gallons per minute pump. To account for emissions from standby diesel fuel combustion in total boiler emissions, the diesel fuel utilization is assumed to be 10 percent (%) of annual boiler operation. The use of diesel fuel is dependent upon the availability of natural gas. The following numbers describe the operation:

   A. Annual operating hours - 4300 hours per year;
   B. Total boiler capacity - 120.328 million Btu per hour for natural gas combustion;
      116.542 million Btu per hour for diesel fuel combustion;
   C. Diesel fuel utilization - 10 percent of annual boiler operation;
   D. Flue gas recirculation - 20 percent;
   E. Nox emissions - 18 ppm at 100 percent boiler capacity for natural gas combustion;
      - 25 ppm at 25 percent boiler capacity for natural gas combustion;
   F. Volume of each boiler - 1900 cubic feet.

2. Vapor seals for JP-4 storage tanks, consisting of dual seals for tank number 10873 and 10885, to reduce fugitive VOC emissions from the tank. The location of these tanks is the tank farm at Hill Air Force Base. The installation of dual seals results in hydrocarbon emission reduction at a rate of 0.17 pound per hour or 0.73 ton per year which are requested to be banked for future offset credits.

   The tank 10885 is currently operating under an approval order issued on February 15, 1978. Tank capacity is 55,000 barrels with a dimension of 93 feet diameter and 52 feet height. The proposed modification for this tank is to replace the existing aluminum pan with a new steel pan and the existing single rolled rubber sectional seal with a dual seal mounted one above the other.

   Tank 10873 capacity is 25,000 barrels with a dimension of 63 feet diameter and 50 feet 3 inches height. The proposed modification for this tank is to replace the existing foam log seal with a dual seal mounted one above the other.

   For both tanks, the new primary seal will be a resilient foam log with impregnated fabric. The secondary seal will be rim mounted, weather guard, continuous tip, complete with

compression channel, compression plate, plate gasketing and ground shunt. Seals extend continuously from the floating roof to the tank wall.

The following numbers describe the operation:

A. Annual operating hours - 8760 hours per year
B. Annual throughput - 660,000 barrels for tank 10885
300,000 barrels for tank 10873
C. Reid vapor pressure - 3 psia

3. Bldg 514, Waste hydraulic fluid reclamation units, consisting of two portable hydraulic fluid reclamation units manufactured by Pall Corporation or equivalent complete with vacuum process chamber, controls, and condensers, to reclaim solvent from the fluid and hence reduce hazardous wastes. This project is part of the Air Force Base Hazardous Waste Minimization Program's intent to reduce its hazardous waste disposal. These units will be initially installed in Building 514. At later time, these units will be deported to and utilized in the other locations in effort to reclaim and reduce hazardous wastes from the other locations in the base. This project will reduce 95 percent of contaminants in the hydraulic fluid waste. The contaminants of hydraulic fluid waste consist of 1,1,1 trichlorethane, freon 113, and JP-4 jet fuel. The reclamation process involves a vaporization of contaminants and then vapor condensation at the water cooled condenser. The hydraulic fluid waste contains 15 percent contamination. The condenser in the unit will recover 95 percent of the vapor solvents. The recovered solvents will be recycled for reuse. Total process rate is 30,000 gallons of waste per year or 4,500 gallons of contaminants per year. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year
B. Annual throughput - 30,000 gallons
C. Exhaust VOC concentration - 2.5 ppmv
D. Exhaust flow rate - 20,000 cubic feet per minute
E. Stack height - 25 feet.

4. Bldg 5N, Paint spray booth and lab hoods, consisting of a 4 feet by 4 feet spray booth with the open face and two (2) 9 square feet lab hoods with the open face, to use circuit board repair and the application of conformal coating on circuit cards and to clean printed circuit boards using organic solvents. The location of this installation will be in Building 5 Bay N. The paint spray booth is relocated from Building 214. Workload for the spray booth from Building 214 has been transferred to Building 100. The booth is equipped with dry paint arrestor filters, an exhaust fan and an 18-inch diameter vent. The hood is equipped with exhaust plenum, fan and vent. The exhaust vents from lab hoods are combined into one (1) exhaust stream. 85 percent of the solvent will be recovered and recycled. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year

B. Annual usage rate - 50 gallons per year of urethane compound
- 5 gallons per year of miscellaneous paint
- 300 gallons per year of xylene cleaning solvents
- 100 gallons per year of an aliphatic cleaning solvents
- 300 gallons per year of Isopropyl alcohol cleaning solvents

C. Exhaust face velocity - 100 feet per minute

D. Exhaust flow rate - 1,600 cubic feet per minute for the spray booth
- 1,850 cubic feet per minute for the lab hoods (in total)

E. Stack height - 30 feet for the spray booth
- 25 feet for the lab hoods.

5. Bldg 220 Paint spray hangar, consisting of modular turboclean chambers complete with pumps; nozzles, associated piping, controls and sludge disposal, to modify the existing paint spray hangar. This modification is required for a replacement of corroded existing paint hangar waterfall troughs and pipings. The location of this modification will be in Building 220. The aircraft paint hangar in Building 220 is in existence since the 50's which does not have an air quality permit nor does it require one. In conjunction with this modification, Department of the Air Force also proposes to substitute solvent base primer with water reducible primer and to replace the conventional type spray gun with a high volume low pressure (HVLP) type spray gun. The primer substitution and spray gun replacement will result in reductions for VOC emissions due to less solvent contained in the water reducible primer and an increase in paint transfer efficiency. The solvent content for the water reducible primer is 2.8 pounds per gallon versus 5.8 pounds per gallon for the solvent based primer. In addition, HVLP spray gun transfers efficiency is 60 to 70 percent whereas 30 to 40 percent for the conventional spray gun. The modified paint spray hangar can accommodate up to three aircrafts for painting at one time by splitting the painting areas into three using movable partitions. There will be a total of 9 units including 2 exhaust fans per unit. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year

B. Annual usage rate - 4600 gallons per year of polyurethane compound
- 1600 gallons per year of water reducible primer
- 625 gallons per year of nitrocellulose lacquer
- 650 gallons per year of miscellaneous

C. Exhaust face velocity - 100 feet per minute

D. Exhaust flow rate - 18,500 cubic feet per minute per fan
- 333,000 cubic feet per minute in total

E. Stack height - 52 feet.

II. EMISSION SUMMARY

The total emissions from sources listed in this Approval Order will be as follows:
This is not a total for all sources at Hill Air Force Base. The current allowable permited emissions are not totaled at this time.

Particulate	1.34	tons/year
PM_{10}	1.34	tons/year
SO_2	10.79	tons/year
NO_x	8.31	tons/year
CO	8.60	tons/year
VOC	21.47	tons/year

Hill requested banking of the emissions from the JP-4 tanks but the overal emissions from this group of sources consumed those emissions and so the banking of emissions is denied.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required at all emission points. This includes the following points:

A. Boiler plant
B. JP-4 storage tanks
C. Waste hydraulic fluid reclamation
D. Paint spray booth and lab hoods
E Paint spray hangar.

Boiler plant

Sox and Nox emissions from the boiler plant expansion are of the highest concern.

In the event natural gas is not available to Hill AFB, Department of the Air Force proposed to use the diesel fuel as standby fuel. The diesel fuel combustion contributes the majority of boiler's Sox emissions due to the high sulfur content. 10 percent of annual operating hours using diesel fuel is assumed for accounting diesel fuel combustion emissions in total boiler emissions. These Sox emissions can be eliminated or significantly reduced by utilizing as much natural gas as possible.

Various control technologies can be utilized in effort to minimize the Nox emissions from the combustion process. Control technologies are Low-Nox designed burner, flue gas recirculations, selective catalytic reduction, and selective non-catalytic reduction. Implementation of these control technologies are often not economically practical. For example, initial capital cost for selective catalytic reduction is $6,525 per million Btu-hr in 1981 dollars. In addition, operating cost for selective catalytic reduction is $870 per million Btu-hr in 1981 dollars.

The Department of the Air Force has proposed 20 percent flue gas recirculation in part of the proposed boiler plant expansion which result in 60 percent NOx emission reductions for natural gas combustion. Based on manufacture guarantee, NOx emission is 0.028 lb/million Btu, 18 ppm.

The proposed flue gas recirculation is considered as BACT. Boiler and flue gas recirculation must be properly maintained and operated in good working condition, ensuring the proposed reductions. Properly maintained and operated boiler will also be beneficial to VOC and CO emissions. For diesel fuel combustion, use of fuel which meets the sulfur standards established in the UACR is required. For fuel oils the standard is 0.5 % by wt. Natural gas must be utilized in maximum; natural gas must be used as fuel whenever natural gas is made available at the Hill AFB.

The proposed firing of natural gas with restricted use of diesel fuel is recommended as having applied Bact for minimum emissions.

JP-4 storage tanks

JP-4 storage tanks, 10873 and 10885, are currently equipped with a single seal. In efforts to reduce VOC emissions from JP-4 storage tanks for the future offset credits, the Department of the Air Force voluntarily proposed an installation of dual seals. This modification is similar to a modification already made on JP-4 storage tank 10861 and 10862. The VOC reduction from the storage tanks and the hanger 220 paint booth is less than the total emissions from all sources so there are no emissions reductions of VOCs to bank.

BACT for the JP-4 storage tanks is proper installation, maintenance, and operation of dual seals on the JP-4 storage tanks. Dual seals must be properly maintained and kept in good condition at all times to prevent excess emissions from the JP-4 storage tanks.

These seals are recommended to be approved as having applied BACT.

Waste hydraulic fluid reclamation

A condenser for recovering 95 percent of the solvents removed from the fluid is proposed in a part of this project. This is considered as BACT for the waste hydraulic fluid reclamation. No other options were reviewed.

This process is recommended as having applied BACT.

Paint spray booth and lab hoods

VOC emissions from the paint spray booth and parts cleaning under the lab hoods can be further controlled through a carbon adsorption unit. Installation of the carbon adsorption unit is not economically practical, especially with modest VOC emissions; 0.18 lb per hour for paint spray booth and 0.29 lb per hour for the lab hoods. Cost effectiveness was calculated by Hill AFB to be $48,900 per ton of VOC emissions. Recommended BACT for paint spray booth and lab hoods is the minimization of emissions through good operating practice. As proposed, 85 percent of solvent use in the lab should be recovered and recycled. The dip tank covers shall remain closed at all times except during actual loading, unloading or transfer operations. Parts shall be completely drained in the internal draining rack until all dripping ceases. Waste or used solvent shall be stored in covered containers and disposed of by a method which prevents its emission into the atmosphere. Tanks, containers and all associated equipment shall be maintained in good operating condition and leaks shall be repaired promptly. Written procedures for the operation and maintenance of the solvent cleaning equipment are posted in an accessible and apparent location near the equipment. Paint particulate emissions from the spray booth is controlled by dry filters. All air exiting the booth shall pass through this control system before being vented into the atmosphere. The dry filter must be properly maintained and kept in good condition at all times.

The installation of filters and a limitation on the amount of paint used is recommended as having applied BACT.

Paint spray hangar

VOC emissions from the paint spray hangar can be further reduced through a carbon adsorption unit. Installation of a carbon adsorption unit is not economically practical. Cost effectiveness was calculated by Hill AFB to be $52,480 per ton of VOC emissions and is considered an excessive cost.

As BACT for this project, the Department of the Air Force proposed a substitution of high solvent content epoxy polyamide primer with low solvent content water reducible primer. In addition, the conventional paint spray gun is replaced with high transfer efficiency "High Volume Low Pressure" paint spray gun. The paint substitution will result in 2.4 tons VOC emissions reduction per year.

The recommended BACT for a paint spray hangar is the use of low-VOC solvent paints and high transfer efficiency paint spray gun; this BACT control measure is already included in the proposed modification. No other options for VOC emissions were reviewed. Paint particulate emissions from the spray hangar is controlled by water falls. All air exiting the booth shall pass through this control

system before being vented into the atmosphere.

IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

These notices of intent are for modifications to an existing installation. It is not a major modification. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for modifications. This regulation applies.

2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.

4. Section 3.1.10, UACR - Additional information requirements for a major new source or major modification which emits precursors of ozone and impact an area of non-attainment for ozone. Notices of intent do not represent a major new source or a major modification. Therefore, this regulation does not apply.

5. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a non-attainment area. The existing installation is listed in this regulation for 36 boilers with a limitation of 20% opacity. Therefore, this regulation does apply.

6. Section 3.3.1, UACR - Emission limitation for a new source which is located in a non-attainment area or which impact a non-attainment area. These notices of intent do not represent a new major source, but additional new sources at an existing installation and minor modifications. Therefore, this regulation will apply.

7. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a non-attainment area or which impact a non-attainment area. Notices of intent do not represent a new major source or a major modification. Therefore, this regulation will not apply.

8. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation.

9. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. Notices of intent do not represent a major source or a major modification under PSD rules. Therefore, this regulation does not apply.

10. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas

used to determine good engineering practice are found in 40 CFR 51.1. A de minimus height of 65 meters (213.2 feet) is allowed. These notices of intent do not have stacks which exceed 65 meters in height. It is in compliance with this regulation.

11. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. Notices of intent do not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

12. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). BACT will require a lower limitation than 20%, therefore, this regulation does not apply.

13. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

14. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This source burns fuel oil. The limitation is 0.85 pounds of sulfur per 10^6 BTU heat input. This regulation applies, however, BACT for diesel oil limits sulfur to a lower value.

15. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

16. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a non-attainment area for ozone. This regulation covers the following processes:

    A. Petroleum liquid storage
    B. Petroleum liquid transfer/storage
    C. Control of hydrocarbon emissions in refineries
        1) vacuum producing systems
        2) wastewater separators
        3) process unit turnaround
        4) catalytic cracking units
        5) safety pressure relief valves
        6) leaks from petroleum refinery equipment
    D. Degreasing and solvent cleaning operations
        1) cold cleaning facilities
        2) open top vapor degreasers
        3) conveyorized degreasers
    E. Cutback asphalt
    F. VOC used for various processes
        1) paper coating
        2) fabric and vinyl coating
        3) metal furniture coating
        4) large appliance surface coating
        5) magnet wire coating
        6) flat wood coating

7) misc. metal parts and products
8) graphic arts

G. Synthesized pharmaceutical manufacturing

H. Perchlorethylene dry cleaning plants.

This source is located in a non-attainment area for ozone as defined in the State Implementation Plan. The proposed modification includes petroleum liquid storage and cold solvent cleaning which are subject to this regulation. The provisions pertaining to petroleum liquid storage applies to Subpart Kb to the proposed modification due to the true vapor pressure of stored liquid 1.3 psia. This regulation applies for the cold solvent cleaning operation. This source must comply with this regulation.

17. Section 5, UACR - Emergency episode requirements. This regulation applies.

18. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for these notices of intent.

19. National Ambient Air Quality Standards (NAAQS) - This source is located in a non-attainment area for ozone. The Bureau of Air Quality guidelines do not call for this source to be modeled for any pollutants. The Bureau has found through experience that, because of the small increase in quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small increase is very unlikely to cause a new violation of the NAAQS.

20. New Source Performance Standards (NSPS) - The NSPS which apply to these notices of intent is the NSPS Kb for petroleum liquids storage vessels. The vapors pressure and capacity parts of Kb make it applicable to the storage tanks.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Department of the Air Force, located at Hill Air Force Base, shall install, modify, and operate the steam generators, dual vapor seals on JP-4 storage tank 10873 and 10885, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar according to the information submitted in the notices of intent dated November 7, 1988, January 19, 1989, June 16, 1989, August 11, 1989, August 30, 1989, and November 22, 1989, respectively, and the additional information submitted to the Executive Secretary dated February 2, 1989, January 10, 1990.

2. The approved installation shall consist of the following equipment:

A. Two (2) steam generators, a total heat input rate of 120.328 million Btu/hr with natural gas as primary fuel with a standby diesel fuel (116.542 million Btu/hr) at the Building 260;

B. Dual seals for JP-4 storage tank 10873 and 10885;

C. Two (2) waste hydraulic fluid reclamation units at the Building 514;

D. Paint spray booth and two (2) lab hoods at the Building 5 N;

E. Nine (9) Turboclean chambers for the paint spray hangar at Building 220. In addition, solvent base primer shall be substituted for water reducible primer and a high volume low pressure (HVLP) type spray gun shall replace the conventional paint spray gun.

3. Visible emissions from any point or fugitive emission source associated with the installation shall not exceed 10% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The following operation limits shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

A. Steam generators

1. 465.7 billion Btu of natural gas per 12 month period
2. 108.3 million Btu of natural gas per hour
3. 50.1 billion Btu of diesel fuel per 12 month period
4. 116.5 million Btu of diesel fuel per hour
5. 4,300 hours per 12 month period

B. JP-4 storage tank 10873

1. 300,000 barrels per 12 month period
2. 24 hours per day
3. 8,760 hours per 12 month period

C. JP-4 storage tank 10885

1. 660,000 barrels per 12 month period
2. 24 hours per day
3. 8,760 hours per 12 month period

D. Hydraulic fluid waste reclamation units

1. 30,000 gallons of total fluid per 12 month period
2. 8 hours per day
3. 2,080 hours per 12 month period

E. Paint spray booth

1. 50 gallons of urethane per 12 month period
2. 5 gallons of miscellaneous per 12 month period
3. 8 hours per day
4. 2,080 hours per 12 month period

F. Lab hoods

1. 200 gallons of xylene per 12 month period
2. 100 gallons of naphtha aliphatic per 12 month period
3. 300 gallons of isopropyl alcohol per 12 month period
4. 8 hours per day
5. 2,080 hours per 12 month period

G. Paint spray hangar

1. 4600 gallons of polyurethane per 12 month period
2. 1600 gallons of water reducible primer per 12 month period
3. 625 gallons of nitrocellulose lacquer per 12 month period
4. 650 gallons of miscellaneous per 12 month period
5. 8 hours per day
6. 2,080 hours per 12 month period.

Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Records of production shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. Fuel consumption for steam generators shall be determined by the use of records from a fuel meter. VOC emissions shall be determined by maintaining a record of paints, solvents, and JP-4 fuel used. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

5. The condenser at the final point of hydraulic fluid waste reclamation units shall be in operation during the operation of hydraulic fluid waste reclamation units. If the condenser is out of service, the hydraulic fluid waste reclamation units shall not be used until the condenser has been returned to service. The condenser shall be capable of recovering 95 percent of solvents from the fluid. Records of solvent recovery shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation. The record shall include the following items:

A. Date
B. Unit usage (start and end times)
C. Total hydraulic fluid waste processed
D. Amount solvent recovered.

Records of treatment shall be made available to the Executive Secretary upon request and shall include a period of time equal to the entire duration of the project.

6. The owner/operator shall use only natural gas as a primary fuel and #2 diesel fuel as a backup fuel in the steam generators. If any other fuel is to be used, an approval order shall be required in accordance with Section 3.1, UACR. Natural gas consumption shall not exceed 465.7 million ft^3 of natural gas per 12 month period and diesel fuel consumption shall not exceed 5% of the annual fuel used in the boilers without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of fuel consumption shall be kept for all periods when the plant is in operation. Records of fuel consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. Fuel consumption shall be determined by the use of records from the fuel meter.

7. The sulfur content of any diesel fuel burned shall not exceed 0.5 % by weight of sulfur determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

8. The paint spray booth at Building 5N shall be equipped with a set of paint arrestor particulate

filters to control particulate emissions. All air exiting the booth shall pass through this control system before being vented into the atmosphere.

9. The paint spray hangar at Building 220 shall be equipped with a water wall to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere.

10. The following density and volatile organic content of paint shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

A. Paint spray booth

Paint	Density (lbs/gallon)	VOC (% by Vol)
Urethane	8.5	80
Miscellaneous	6.0	100

B. Paint spray hangar

Paint	Density (lbs/gallon)	VOC (lbs/gallon)
Polyurethane	9.2	4.7
Epoxy Polyamide Primer	10.5	5.8
Water Reducible Primer	8.9	2.8
Nitrocellulose	8.0	4.8
Miscellaneous	9.0	6.0

These parameters shall be tested if directed by the Executive Secretary using the appropriate ASTM method or another method approved by the Executive Secretary.

11. The owner/operator shall operate a solvent cleaning operation under the lab hoods in the following manners:

A. Cover shall remain closed at all times except during actual loading, unloading or transfer operations;

B. Parts shall be completely drained in the internal draining rack until all dripping ceases;

C. Waste or used solvent shall be stored in covered containers and disposed of by a method which prevents its emission into the atmosphere;

D. Tanks, containers and all associated equipment are maintained in good operating condition and leaks are repaired immediately; and

E. Written procedures for the operation and maintenance of the solvent cleaning equipment are posted in an accessible and apparent location near the equipment.

12. Eighteen months from the date of this approval order the Executive Secretary shall be notified in writing of the status of construction of these projects unless the construction is complete and operation has commenced.

13. A copy of this approval order shall be maintained on-site and available to the operators of the equipment.

14. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

15. The Executive Secretary shall be notified in writing upon start-up of the installations, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

"Allowable emissions" as defined in Section 1.12, UACR, for point sources listed in this Approval Order are calculated at 1.34 tons/yr for particulates, 1.34 tons/yr for PM_{10}, 10.79 tons/yr for SO_2, 8.31 tons/yr for NO_x, 8.60 tons/yr for CO, and 21.47 tons/yr for VOC. These calculations are for the purposes of determining the applicability of PSD and non-attainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

LCB/Hill-ALL.ENG

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: NET EMISSION INCREASE ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

SOURCE	VOC	NOX	SOX	CO	PM10	TSP	UNIT
PRE-MODIFICATION	22.52	2.64	3.43	2.73	0.43	0.43	TONS/YR
POST-MODIFICATION	21.47	8.31	10.79	8.60	1.34	1.34	TONS/YR
NET EMISSION INCREASE	-1.05	5.67	7.36	5.87	0.91	0.91	TONS/YR

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

SOURCE	VOC	NOX	SOX	CO	PM10	TSP	UNIT
REPLACEMENT BOILERS - 260.....	0.21	2.64	3.43	2.73	0.43	0.43	TONS/YR
SEALS ON JP-4 TANKS.....	2.32	---	---	---	---	---	TONS/YR
WASTE HYD FLUID RECLAIM -514...	0.00	---	---	---	---	---	TONS/YR
CLEANING HOODS/PAINT BOOTH - 5N	0.00	---	---	---	---	---	TONS/YR
PAINT HANGER MODIFICATION - 220	19.99	---	---	---	---	---	TONS/YR
TOTAL	22.52	2.64	3.43	2.73	0.43	0.43	TONS/YR

SOUCE INCLUDED:
'.ACEMENT BOILERS - 260
_S ON JP-4 TANKS
WASTE HYD FLUID RECLAIM -514
CLEANING HOODS/PAINT BOOTH - 5N
PAINT HANGER MODIFICATION - 220

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

SOURCE	VOC	NOX	SOX	CO	PM10	TSP	UNIT
REPLACEMENT BOILERS - 260.....	0.67	8.31	10.79	8.60	1.34	1.34	TONS/YR
SEALS ON JP-4 TANKS.....	1.59	---	---	---	---	---	TONS/YR
WASTE HYD FLUID RECLAIM -514...	1.13	---	---	---	---	---	TONS/YR
CLEANING HOODS/PAINT BOOTH - 5N	0.49	---	---	---	---	---	TONS/YR
PAINT HANGER MODIFICATION - 220	17.59	---	---	---	---	---	TONS/YR
TOTAL	21.47	8.31	10.79	8.60	1.34	1.34	TONS/YR

SOUCE INCLUDED:
REPLACEMENT BOILERS - 260
S ON JP-4 TANKS
E HYD FLUID RECLAIM -514
CLEANING HOODS/PAINT BOOTH - 5N
PAINT HANGER MODIFICATION - 220

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: TOTAL EMISSION ESTIMATE (90% NATURAL GAS WITH 10% DIESEL FUEL FIRED)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	2.27	0.29	1.34	0.04	0.00	2.27	1.34
PM-10	2.27	0.29	1.34	0.04	0.00	2.27	1.34
SOx.....	99.13	12.49	10.79	0.31	0.00	99.13	10.79
NOx.....	20.02	2.52	8.31	0.24	60 OR 0	20.02	8.31
CO.....	8.37	1.06	8.60	0.25	0.00	8.37	8.60
VOC, NON-METHANE.....	0.50	0.06	0.67	0.02	0.00	0.50	0.67
VOC, METHANE.....	0.40	0.05	0.70	0.02	0.00	0.40	0.70

SOURCE:
NATURAL GAS FIRED BOILER (90%)
DIESEL FUEL FIRED BOILER (10%)

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: NATURAL GAS FIRED BOILER (90%)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	0.60	0.08	1.16	0.03	0.00	0.60	1.16
PM-10	0.60	0.08	1.16	0.03	0.00	0.60	1.16
SOx.....	0.07	0.01	0.14	0.00	0.00	0.07	0.14
NOx.....	3.37	0.42	6.52	0.19	0.00	3.37	6.52
CO.....	4.21	0.53	8.15	0.23	0.00	4.21	8.15
VOC, NON-METHANE.....	0.34	0.04	0.65	0.02	0.00	0.34	0.65
VOC, METHANE.....	0.36	0.05	0.70	0.02	0.00	0.36	0.70

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
ATURAL GAS COMBUSTION
1.4-1 UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION
FUEL TYPE: NATURAL GAS

EMISSION FACTOR IN LB PER MILLION CUBIC FEET

TOTAL PARTICULATE.....	5.00	LB/MM FT3	TABLE 1.4-1
PM-10	5.00	LB/MM FT3	TABLE 1.4-1
SOx.....	0.60	LB/MM FT3	TABLE 1.4-1
NOx.....	0.03	LB/MM BTU	BOILER MANUF.
CO.....	35.00	LB/MM FT3	TABLE 1.4-1
VOC, NON-METHANE.....	2.80	LB/MM FT3	TABLE 1.4-1
VOC, METHANE.....	3.00	LB/MM FT3	TABLE 1.4-1
TOTAL POWER RATING.....	120328.00	K BTU/HR	FROM NOI
HOURLY FUEL CONSUMPTION...	0.12	MM FT3/HR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)
ANNUAL FUEL CONSUMPTION...	465.67	MM FT3/YR	(TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)* (ANNUAL OPERATING HOUR)*(OPERATING FACTOR)
OPERATING FACTOR.....	90	%	FROM NOI, DEPENDING ON THE AVAILABILITY OF NATURAL GAS

HOURS OF OPERATION

HOURS PER DAY.....		HRS/DAY	
DAYS PER WEEK.....		DAYS/WEEK	
WEEKS PER YEAR.....		WEEKS/YR	
HOURS PER YEAR.....	4300.00	HRS/YR	FROM NOI

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: DIESEL FUEL FIRED BOILER (10%)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE.....	1.66	0.21	0.18	0.01	0.00	1.66	0.18
PM-10	1.66	0.21	0.18	0.01	0.00	1.66	0.18
SOx.....	99.06	12.48	10.65	0.31	0.00	99.06	10.65
NOx.....	16.65	2.10	1.79	0.05	0.00	16.65	1.79
CO.....	4.16	0.52	0.45	0.01	0.00	4.16	0.45
VOC, NON-METHANE.....	0.17	0.02	0.02	0.00	0.00	0.17	0.02
VOC, METHANE.....	0.04	0.01	0.00	0.00	0.00	0.04	0.00

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
'UEL OIL COMBUSTION
1.3-1 UNCONTROLLED EMISSION FACTORS FOR FUEL OIL COMBUSTION
.L TYPE: DIESEL FUEL #2

EMISSION FACTOR IN LB PER THOUSAND GAL

TOTAL PARTICULATE.....	2.00	LB/K GAL	TABLE 1.3-1
PM-10	2.00	LB/K GAL	TABLE 1.3-1
SOx.....	0.85	LB/MM BTU	SECTION 4.2 OF UACR
NOx.....	20.00	LB/K GAL	TABLE 1.3-1
CO.....	5.00	LB/K GAL	TABLE 1.3-1
VOC, NON-METHANE.....	0.20	LB/K GAL	TABLE 1.3-1
VOC, METHANE.....	0.05	LB/K GAL	TABLE 1.3-1
TOTAL POWER RATING.....	116542.00	K BTU/HR	FROM NOI
HOURLY FUEL CONSUMPTION...	0.83	K GAL/HR	(TOTAL POWER RATING)/(0.14 MM BTU/GAL)/(1000)
ANNUAL FUEL CONSUMPTION...	178.98	K GAL/YR	(TOTAL POWER RATING)/(0.14 MM BTU/GAL)/(1000)* (ANNUAL OPERATING HOUR)*(OPERATING FACTOR)
OPERATING FACTOR.....	5	%	FROM NOI, DEPENDING ON THE AVAILABILITY OF NATURAL GAS

HOURS OF OPERATION

HOURS PER DAY.....		HRS/DAY	
DAYS PER WEEK.....		DAYS/WEEK	
WEEKS PER YEAR.....		WEEKS/YR	
HOURS PER YEAR.....	4300.00	HRS/YR	FROM NOI

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NET EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE (PRE-MOD) ..	0.53	0.07	2.32	0.07	0.00	0.53	2.32
VOC non MATHANE (POST-MOD) .	0.36	0.05	1.59	0.05	0.00	0.36	1.59
NET EMISSION	-0.17	-0.02	-0.73	-0.02	0.00	-0.17	-0.73

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.53	0.07	2.32	0.07	0.00	0.53	2.32

SOUCE INCLUDED:

TANK 10873 - SINGLE SEAL
TANK 10885 - SINGLE SEAL

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10873 - SINGLE SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.12	0.02	0.55	0.02	0.00	0.12	0.55

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

LOSS	1090.55	LBS/YR	LR+LW+LF+LD

LR (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16

LR	418.53	LBS/YR	KS*V^n*P*D*MV*KC
KS	3.00		SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL
V	8.00	MPH	AVERAGE WIND SPEED AT TANK SITE, FROM NOI
n	0.00		SEAL RELATED WIND SPEED EXPONENT
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
D	63.00	FEET	TANK DIAMETER, FRMO NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LW	43.11	LBS/YR	((0.943)*Q*C*WL/D)*(1+(NC*FC/D))
Q	300000.00	BBL/YR	THROUGHPUT (bbl/year), FROM NOI
C	0.0015	bbl/ft 2	SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5
WL	6.40	LBS/GAL	AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2
D	63.00	FEET	TANK DIAMETER, FRMO NOI
NC	0.00		NUMBER OF COLUMN, NOTE 3 PG. 4.3-19
FC	1.00		EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19
LF	628.91	LBS/YR	FF*D*P*MV*KC
FF	284.00	LB-M/FT YR	TOTAL DECK FITTING LOSS FACTOR

			(LB-MOLE/FEET YEAR), FROM NOI
			(NF1*KF1)+(NF2*KF2) .... + (NFN*KFN)
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LD	0.00	LBS/YR	KD*SD*D^2*P*MV*KC
KD	0.00	LB-M/FT YR	DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR
			WELDED DECK
			(LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25
SD	0.20	FT/FT2	DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25
D	93.00	FEET	TANK DIAMETER, FRMO NOI
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16

HOURS OF OPERATION

HOURS PER DAY	24	HOURS/DAY	FROM NOI
DAYS PER WEEK	7	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
S PER YEAR	8736	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

,LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10885 - SINGLE SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.41	0.05	1.78	0.05	0.00	0.41	1.78

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

LOSS	3550.32	LBS/YR	LR+LW+LF+LD

LR (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16

LR	1379.83	LBS/YR	KS*V^n*P*D*MV*KC
KS	6.70		SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL
V	8.00	MPH	AVERAGE WIND SPEED AT TANK SITE, FROM NOI
n	0.00		SEAL RELATED WIND SPEED EXPONENT
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2) PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
D	93.00	FEET	TANK DIAMETER, FRMO NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LW	64.25	LBS/YR	((0.943)*Q*C*WL/D)*(1+(NC*FC/D))
Q	660000.00	BBL/YR	THROUGHPUT (bbl/year), FROM NOI
C	0.0015	bbl/ft 2	SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5
WL	6.40	LBS/GAL	AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2
D	93.00	FEET	TANK DIAMETER, FRMO NOI
NC	0.00		NUMBER OF COLUMN, NOTE 3 PG. 4.3-19
FC	1.00		EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19
LF	803.85	LBS/YR	FF*D*P*MV*KC
FF	363.00	LB-M/FT YR	TOTAL DECK FITTING LOSS FACTOR

			(LB-MOLE/FEET YEAR), FROM NOI
			(NF1*KF1)+(NF2*KF2) .... + (NFN*KFN)
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LD	1302.40	LBS/YR	KD*SD*D^2*P*MV*KC
KD	0.34	LB-M/FT YR	DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR
			(LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25
SD	0.20	FT/FT2	DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25
D	93.00	FEET	TANK DIAMETER, FRMO NOI
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16

HOURS OF OPERATION

HOURS PER DAY	24	HOURS/DAY	FROM NOI
DAYS PER WEEK	7	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	8736	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 0
DATE: 0
TIME: 0

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.36	0.05	1.59	0.05	0.00	0.36	1.59

SOUCE INCLUDED:

TANK 10873 - DUAL SEAL
TANK 10885 - DUAL SEAL

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10873 - DUAL SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.09	0.01	0.40	0.01	0.00	0.09	0.40

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

LOSS	791.15	LBS/YR	LR+LW+LF+LD
(RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16			
LR	223.22	LBS/YR	KS*V^n*P*D*MV*KC
KS	1.60		SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL
V	8.00	MPH	AVERAGE WIND SPEED AT TANK SITE, FROM NOI
n	0.00		SEAL RELATED WIND SPEED EXPONENT
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
D	63.00	FEET	TANK DIAMETER, FRMO NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LW	43.11	LBS/YR	((0.943)*Q*C*WL/D)*(1+(NC*FC/D))
Q	300000.00	BBL/YR	THROUGHPUT (bbl/year), FROM NOI
C	0.0015	bbl/ft 2	SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5
WL	6.40	LBS/GAL	AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2
D	63.00	FEET	TANK DIAMETER, FRMO NOI
NC	0.00		NUMBER OF COLUMN, NOTE 3 PG. 4.3-19
FC	1.00		EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19
LF	524.83	LBS/YR	FF*D*P*MV*KC
FF	237.00	LB-M/FT YR	TOTAL DECK FITTING LOSS FACTOR

			(LB-MOLE/FEET YEAR), FROM NOI
			(NF1*KF1)+(NF2*KF2) .... + (NFN*KFN)
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LD	0.00	LBS/YR	KD*SD*D^2*P*MV*KC
KD	0.00	LB-M/FT YR	DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR
			WELDED SEAM
			(LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25
SD	0.20	FT/FT2	DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25
D	63.00	FEET	TANK DIAMETER, FRMO NOI
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16

HOURS OF OPERATION

HOURS PER DAY	24	HOURS/DAY	FROM NOI
DAYS PER WEEK	7	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
S PER YEAR	8736	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10885 - DUAL SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.27	0.03	1.20	0.03	0.00	0.27	1.20

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

LOSS	2395.92	LBS/YR	LR+LW+LF+LD
(RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16			
LR	329.51	LBS/YR	KS*V^n*P*D*MV*KC
KS	1.60		SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL
V	8.00	MPH	AVERAGE WIND SPEED AT TANK SITE, FROM NOI
n	0.00		SEAL RELATED WIND SPEED EXPONENT
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
D	93.00	FEET	TANK DIAMETER, FRMO NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LW	64.25	LBS/YR	((0.943)*Q*C*WL/D)*(1+(NC*FC/D))
Q	660000.00	BBL/YR	THROUGHPUT (bbl/year), FROM NOI
C	0.0015	bbl/ft 2	SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5
WL	6.40	LBS/GAL	AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2
D	93.00	FEET	TANK DIAMETER, FRMO NOI
NC	0.00		NUMBER OF COLUMN, NOTE 3 PG. 4.3-19
FC	1.00		EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19
LF	699.77	LBS/YR	FF*D*P*MV*KC
FF	316.00	LB-M/FT YR	TOTAL DECK FITTING LOSS FACTOR

			(LB-MOLE/FEET YEAR), FROM NOI
			(NF1*KF1)+(NF2*KF2) .... + (NFN*KFN)
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16
LD	1302.40	LBS/YR	KD*SD*D^2*P*MV*KC
KD	0.34	LB-M/FT YR	DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR
			(LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25
SD	0.20	FT/FT2	DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25
D	93.00	FEET	TANK DIAMETER, FRMO NOI
P	0.03		(PT/PA)/((1+(1-PT/PA)^0.5)^2)
			PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6
			PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI
MV	80.00	LB/LB-MOLE	AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1
KC	1.00		PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16

HOURS OF OPERATION

HOURS PER DAY	24	HOURS/DAY	FROM NOI
DAYS PER WEEK	7	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
' PER YEAR	8736	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 514
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: HYDRAULIC FLUID WASTE RECLAMATION UNITS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 514

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	1.08	0.14	1.13	0.03	95.00	21.63	22.50

ION FACTORS (IN LBS/GAL)			COMMENTS
VOC non METHANE	10.00	LBS/GAL	FROM NOI
TOTAL WASTE FLUID PROCESSED IN YEAR ..	30000.00	GAL/YR	FROM NOI, TOTAL WASTE FLUID INCLUDED CONTAMINATION AND OTHER FLUIDS
PERCENTAGE OF CONTAMINATION	15.00	%	FROM NOI
CONTAMINATION PROCESSED IN HOUR	2.16	GAL/HR	(CONTAMINATION PROCESSED IN YEAR)/(ANNUAL OPERATING HOURS)
CONTAMINATION PROCESSED IN YEAR	4500.00	GAL/YR	(TOTAL WASTE FLUID PROCESSSED IN YEAR)* (PERCENTAGE OF CONTAMINANTS)

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
S PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 514

DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: VOC PPM CALC. FOR HYDRALIC FLUID WASTE RECLAMATION UNITS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 514

POLLUTANT	VOC	
LB/HR	1.08	FROM CALCS ABOVE
LBS/LB MOLE	139.00	LBS/LB MOLE
CONSTANT	60.00	MIN/HR
FLOW RATE	20000.00	DSCF/MIN
CONSTANT	0.00259	LB MOL/DSCF

LB/MIN = (LB/HR)/(60 MIN.HR)

= 0.02

PPM = (LB/MIN)/((DSCF/MIN)(LB MOLE/DSCF)(LB/LB MOLE)(1/1X10^6))

= ..... 2.50 PPMV

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PAINT SPRAY BOOTH EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.18	0.02	0.18	0.01	85.00	0.18	0.18

SOUCE INCLUDED:

URETHANE
MISCELLANEOUS

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: URETHANE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.16	0.02	0.17	0.00	0.00	0.16	0.17

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

AL OF VOC = VOC, vol % FROM PG. 4.2.2.1-3

			COMMENTS
VOC non METHANE	6.80	LBS/GAL	V(%)*(COATING DENSITY)/100
V(%)	80.00	%	FROM NOI
COATING DENSITY	8.50	LBS/GAL	FROM NOI
GAL/HR	0.02	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	50.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: MISCELLANEOUS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.01	0.00	0.01	0.00	0.00	0.01	0.01

LBS/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	6.00	LBS/GAL	FROM NOI
VOC CONTENT.....	6.00	LBS/GAL	FROM NOI

GAL/HR	0.00	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	5.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL LAB HOODS EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.29	0.04	0.31	0.01	85.00	1.97	2.04

SOUCE INCLUDED:

XYLENE
NAPTHA ALIPHATIC
ISOPROPHYL ALCOHOL

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: XYLENE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.11	0.01	0.11	0.00	85.00	0.71	0.73

LBS/GAL OF VOC = SOLVENT DENSITY,

			COMMENTS
VOC non METHANE	7.34	LBS/GAL	SOLVENT DENSITY
SOLVENT DENSITY.....	7.34	LBS/GAL	FROM CHEMICAL ENGINEERING HANDBOOK

R	0.10	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	200.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NAPTHA ALIPHATIC
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.05	0.01	0.05	0.00	85.00	0.31	0.32

LBS/GAL OF VOC = SOLVENT DENSITY

			COMMENTS
VOC non METHANE	6.40	LBS/GAL	SOLVENT DENSITY
SOLVENT DENSITY.....	6.40	LBS/GAL	FROM AP-42 TABLE 4.3-2, JET NAPTHA

.....	0.05	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	100.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: ISOPROPHYL ALCOHOL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	0.14	0.02	0.15	0.00	85.00	0.95	0.99

LBS/GAL OF VOC = SOLVENT DENSITY

			COMMENTS
VOC non METHANE	6.60	LBS/GAL	SOLVENT DENSITY
SOLVENT DENSITY.....	6.60	LBS/GAL	FROM CHEMICAL ENGINEERING HANDBOOK

:	0.14	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
_/YR	300.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NET EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE (PRE-MOD) ..	19.22	2.42	19.99	0.57	0.00	19.22	19.99
VOC non MATHANE (POST-MOD) .	16.91	2.13	17.59	0.51	0.00	16.91	17.59
NET EMISSION	-2.31	-0.29	-2.40	-0.07	0.00	-2.31	-2.40

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	19.22	2.42	19.99	0.57	0.00	19.22	19.99

SOUCE INCLUDED:

POLYURETHANE
EPOXY POLYAMIDE PRIMER (1600 AND 375 GALLONS/YEAR)
NITROCELLULOSE LACQUER
MISCELLANEOUS

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: EPOXY POLYAMIDE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	4.46	0.56	4.64	0.13	0.00	4.46	4.64

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SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	10.50	LBS/GAL	FROM NOI
GAL/HR	0.77	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	1600.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	16.91	2.13	17.59	0.51	0.00	16.91	17.59

SOUCE INCLUDED:

POLYURETHANE
EPOXY POLYAMIDE PRIMER (375 GALLONS/YEAR)
WATER REDUCIBLE PRIMER
NITROCELLULOSE LACQUER
MISCELLANEOUS

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: POLYURETHANE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	10.39	1.31	10.81	0.31	0.00	10.39	10.81

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SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

AL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	4.70	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	9.20	LBS/GAL	FROM NOI
GAL/HR	2.21	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	4600.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: EPOXY POLYAMIDE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	1.05	0.13	1.09	0.03	0.00	1.05	1.09

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SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	5.80	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	10.50	LBS/GAL	FROM NOI
GAL/HR	0.18	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	375.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: WATER REDUCIBLE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	2.15	0.27	2.24	0.06	0.00	2.15	2.24

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SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

Lbs/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	2.80	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	8.90	LBS/GAL	FROM NOI
GAL/HR	0.77	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	1600.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

ILLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NITROCELLULOSE LACQUER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
POLLUTANT	LBS/HR	HOURLY GRAMS/SEC	TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	1.44	0.18	1.50	0.04	0.00	1.44	1.50

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SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	4.80	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	8.00	LBS/GAL	FROM NOI
GAL/HR	0.30	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	625.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: MISCELLANEOUS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
POLLUTANT	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC non METHANE	1.88	0.24	1.95	0.06	0.00	1.88	1.95

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

			COMMENTS
VOC non METHANE	6.00	LBS/GAL	FROM NOI
V(%)		%	
COATING DENSITY	9.00	LBS/GAL	FROM NOI
GAL/HR	0.31	GAL/HR	(GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR)
GAL/YR	650.00	GAL/YR	FROM NOI

HOURS OF OPERATION

HOURS PER DAY	8	HOURS/DAY	FROM NOI
DAYS PER WEEK	5	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52	WEEKS/YEAR	FROM NOI
HOURS PER YEAR	2080	HOURS/YEAR	(HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

JUN 22 1990

Ref: 8AT-AP

Mr. David Kopta
Engineering Unit Manager
Bureau of Air Quality
Utah Department of Health
P.O. Box 16690
Salt Lake City, Utah 84116-0690

Dear Dave:

Upon review of the May 22, 1990, Notice of Intent to approve five projects at Hill Air Force Base (Installation of Steam Boilers, Vapor Seals for JP-4 STorage Tanks, Waste Hydraulic Fluid Reclamation Units, a Paint Spray Booth, Lab Hoods, and a Paint Spray Hanger), EPA has the following comments:

1. The proposed approval order Condition 4.G, for the paint spray hanger at building 220, should include the usage of 375 gallons/year of epoxy polyamide primer.

2. Although the proposed approval order Condition 5, for the hydraulic fluid waste reclamation unit, states that the condenser must be 95% effective, there is no requirement to demonstrate this efficiency, such as through performance testing. The efficiency of the condenser may be determined by monitoring solvent input to the condenser, and solvent recovery. Condition 5 only requires monitoring the amount of hydraulic fluid processed, and the amount of solvent recovered from the condenser. In addition to these parameters, HAFB should be required to periodically measure and record the solvent content of the hydraulic fluid being processed. The State should add this requirement to Condition 5, and also require the calculation of solvent emissions to the air, on a 12-month rolling monthly basis.

3. The requirements for solvent degreasing, in Condition 11, should be updated to reflect the revised UACR 4.9.4.A.

Please contact Mindy Mohr at (303) 294-7539 with any questions regarding our comments.

Sincerely,

John T. Dale for

Marius J. Gedgaudas, Chief
Compliance Section

4.2.4-809

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

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John T. Dale for

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Compliance Section

4.2.4-810

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

22 NOV 1989

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
P.O. Box 16690
Salt Lake City, UT 84116-0690

RE: Notice of Intent to Construct, Paint Spray Hangar Modification, Bldg 220

Dear Mr. Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations, we submit the attached Notice of Intent to Construct.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-7651.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director
Envrntl Mgt Dir

1 Atch
Notice of Intent to Construct

4.2.4-811

Notice of Intent to Construct
Modification of Aircraft Paint Hangar, Bldg 220
Hill Air Force Base, Utah

1. PROJECT DESCRIPTION:

We propose to modify our existing aircraft paint hangar in building 220. The existing paint hangar is a grand-fathered source that was built in the 50's and therefore, we currently do not have an air quality permit for this source. Please refer to your Approval Order dated Dec 28, 1987 for corrosion control building 220, where three new paint booths were permitted. Those paint booths were as a result of conversion of aircraft chemical stripping areas into paint booths. Existing paint hangar waterfall troughs and piping is corroded out. These troughs and piping will be replaced by Devilbiss modular turboclean chambers complete with pumps, nozzles, associated piping, controls and sludge disposal. A manufacturer's bulletin on these turboclean chamber units is attached (Atch 1). There will be a total of 9 units including 2 exhaust fans per unit. Based on a volumetric flow rate of 18,500 cubic feet per minute (CFM) per fan, total exhaust volume will be approximately 333,000 CFM. The points of discharge will be approximately 52 feet above ground. A face velocity of at least 100 feet per minute (FPM) shall be maintained across the crossectional area of each unit. The paint hangar can accomodate up to three aircrafts for painting at one time and hangar can be split into three painting areas using movable partitions.

2. AIR EMISSIONS:

Air emissions from painting operations include hydrocarbons and particulates. 80-90% of painting in the hangar involves painting exterior of aircraft and related components. Only a limited number of miscellaneous items will be painted. According to Utah Air Conservation Regulation 4.9.6.g.(1)(g) painting exterior of airplanes is 'exempt' from VOC regulation under miscellaneous metal parts and products VOC emissions. Also, as stated above, these emissions have existed over the years since these sources were grand-fathered. We are not adding any new emissions as a result of this modification. In fact, the overall emissions will be reduced due to (a) substitution of solvent base primer with water reducible primer and (b) using high volume low pressure (HVLP) paint guns to increase the transfer efficiency of paint guns. Particulate emissions are controlled using waterfalls, reduction in hydrocarbon emissions is estimated as follows:

Approximate Paint Usage:

Polyurethane	4600	gals/year
Epoxy Polyamide Primer	375	gals/year
Water Reducible Primer	1600	gals/year
Nitrocellulose Lacquer	625	gals/year
Miscellaneous	650	gals/year

Average VOC content of paints

Paint	VOC (lbs/gal)	Density (lbs/gals)
Polyurethane	4.7	9.2
Epoxy Polyamide Primer	5.8	10.5

Water Reducible Primer	2.8	8.9
Nitrocellulose Lacquer	4.8	8.0
Miscellaneous	6.0	9.0

Hydrocarbon emission before modification:

4600x4.7 + 1600x5.8 + 375x5.8 + 625x4.8 + 650x6/2000 = 20 tons/year

Hydrocarbon emissions after modification:

4600x4.7 + 1600x2.8 + 375x5.8 + 625x4.8 + 650x6/2000 = 17.6 tons/year

Hydrocarbon reduction due to this modification:

20-17.6 = 2.4 tons/year

Reduction in hydrocarbon emissions due to increase in transfer efficiency is not shown above. It is estimated that the transfer efficiency of HVLP system could be 60-70% as compared with 30-40% for the conventional type spray gun. This increase in transfer efficiency will reduce overall paint consumption thereby reducing emissions to the atmosphere. A manufacturer's bulletin on HVLP system is attached (Atch 2). Manufacturer claims transfer efficiency as high as 90% on certain workpieces.

3. AIR CLEANING DEVICES:

Paint particulate emissions will be controlled by waterfalls. Hydrocarbon emissions are controlled by substituting solvent base primer by water reducible primer and by using HVLP system spray gun. No other control devices are proposed due to high cost of controlling diluted hydrocarbon air stream from the paint hangar. This is illustrated by the cost analysis for carbon adsorption units as follows:

Total volume of gas flow to be treated = 330,000 CFM. According to EPA article 'Recovery of Volatile Organics for Industrial Sources' by James T. Spivey, Typical capital costs for conventional steam-generated systems are $15-20/CFM. For large volumes, use $10/CFM. Capital cost of carbon adsorption units = $3,300,000. Annualized cost assuming 20 years life at 8% rate:

= $3,300,000 x Capitol Recovery Factor
= $3,300,000 x 0.1019
= $ 336,270

Annual operating costs including labor, utilities, and carbon regeneration:

Assume at 15% = $ 495,000

Assuming 90% efficiency, pollutant reduction = 17.6x.9 = 15.84 tons/year

Cost $/ton pollutant = $ $\frac{831,270}{15.84}$

= $ 52,480 $/ton pollutant

4. EMISSION POINTS:

There will be eighteen exhaust stacks discharging approximately 330,000 CFM into the atmosphere. Point of discharge will be about 52 feet above grade.

5. SAMPLE POINTS:

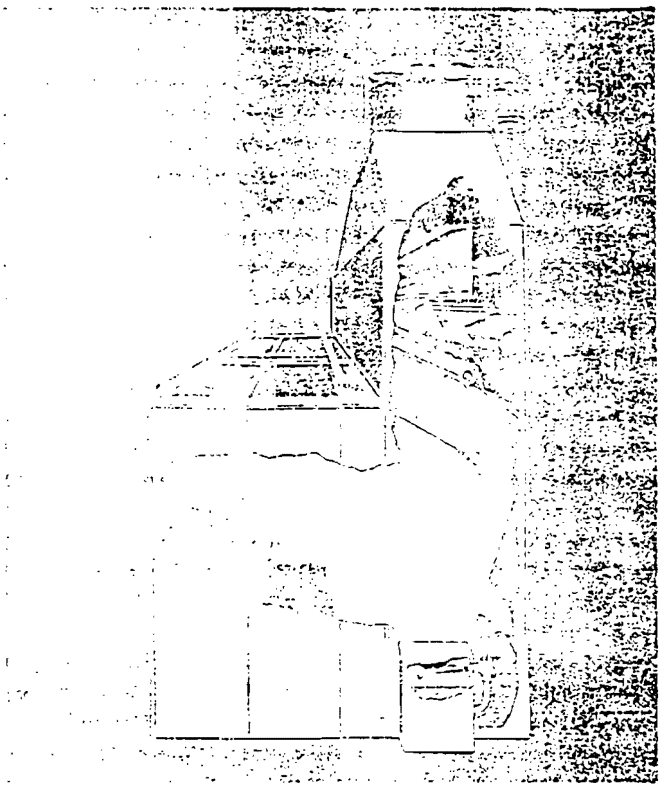
No sampling points are provided.

6. OPERATING SCHEDULE:

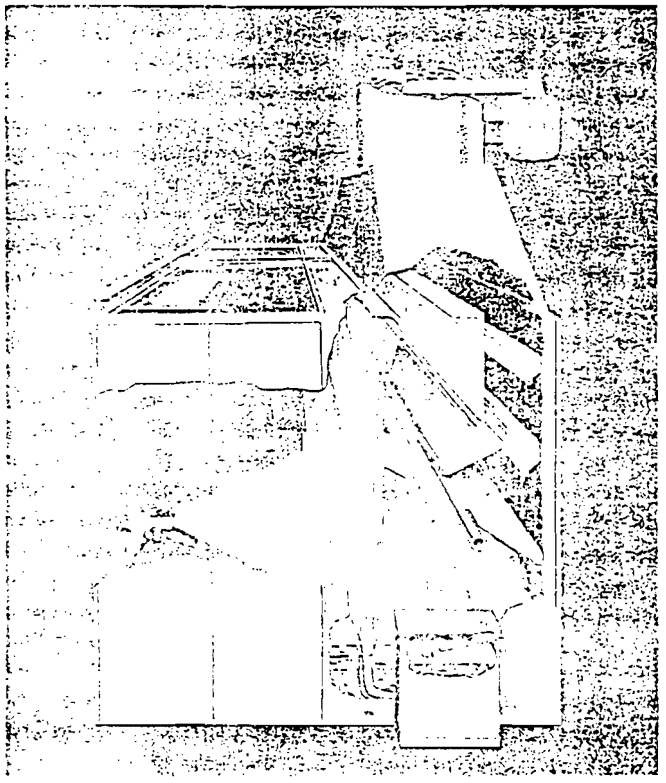
This facility will normally be operated three 8-hour shifts a day, 5 days a week, 52 weeks a year.

model
TEX 1410-150-M

DEVILBISS



Elevated Chamber



Low Chamber

Elevated and Low Type TURBOCLEAN Chambers

Both types are available in 24", 36" and 48" air washers. The chambers provide the following sufficient washing capacity:

24" chamber—Up to 1000 cfm per foot of width 28 GPM.
36" chamber—Up to 1400 cfm per foot of width 28 GPM.
48" chamber—Up to 2000 cfm per foot of width 56 GPM.

Elevated Type

- Elevated chambers are preferred whenever sufficient ceiling height is available (minimum of 14 ft).
- It is designed for applications where overspray is directed horizontally at waist level or higher and allows for effective pickup of the excess overspray and elimination of the rebound from a flat floodsheet.
- Recommended for work hung from monorail conveyors.
- Air is washed twice—passing through a flooded sheet of water and then scrubbed and agitated in a dense, overlapping spray pattern from the nozzles.
- Three air velocities: 100, 125 and 150 fpm.
- Entire volume of water on wash down sheet.
- Very low resistance to air flow.
- Convenient inspection and clean-out doors.

Low Type

- Low type chambers are employed where building ceiling heights restrict the use of elevated type—minimum of 10 ft. 6 in. ceiling height required.
- Air is washed twice—passing through the curtain of water from wash down sheet—scrubbed and agitated in dense, overlapping spray from nozzles.
- Three air velocities—100, 125 and 150 fpm.
- Water flow on wash down sheet traps paint, keeps surface clean and provides first stage washing.
- Convenient inspection and clean-out doors.

(9 units, 6 exhaust fans/unit. 18,500 CFM/fan
770 gpm
desludging unit for Sump.

ATCH-1

Atch 1

TURBOCLEAN Water Wash Spray Booths

TURBOCLEAN Spray Booth

The *TURBOCLEAN* spray booth is a unique, patented water wash spray booth technology available only from DeVilbiss.

What A *TURBOCLEAN* Spray Booth Does

It works to continually breakup paint accumulating on the surface of the tanks into minute, easier to handle solid particles of paint. As a result of this reduction, the need for skimming the water decreases as well as maintenance and the need for sludge containers.

How A *TURBOCLEAN* Spray Booth Can Save You Money

The DeVilbiss *TURBOCLEAN* spray booth can greatly reduce:

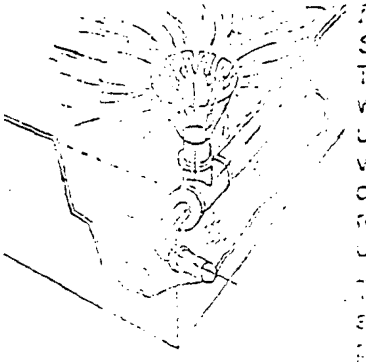
Sludge Disposal.
The *TURBOCLEAN* action removes the liquid from paints and reduces it to the smallest solid particles. When this occurs, it creates a waste "carpet" on the bottom of the tank representing only 1/8 th to 1/10 th of the original volume of the paint sprayed into the booth.

Obnoxious Odors Around Booth—Improving Working Conditions.
The continuous aeration in the *TURBOCLEAN* booth maintains a high level of dissolved oxygen in the water. This eliminates stagnation and prevents the growth of odor-causing anaerobic bacteria.

Pump and Nozzle Clogging.
The patented venturi cone is located adjacent to the pump intake and provides protection for the pumps and nozzles against clogging. This greatly reduces booth downtime — and more booth "uptime" means more productivity for you.

Compound Usage.
Its unique water washing action causes a more complete breakdown of paint particles. By decreasing the need for chemical compound breakdown, total booth operating costs are reduced.

Booth Maintenance Costs.
It decreases the need for frequent skimming. Regular cleanup of the booth can be extended for weeks or even months. Add to this reduced waste disposal and you'll see how a *TURBOCLEAN* spray booth can pay for itself in a very short time.



How A *TURBOCLEAN* Spray Booth Works

The *TURBOCLEAN* water wash booth uses the unique, patented Dehon venturi cone to provide a continual mixing action, reducing the surface build-up of paint.

This circulating and mixing action is created by water pumped from the booth pump into the venturi cone. Water and paint are pulled from the surface of the tank down through the cone, into a safe, separation tank. Water and paint are recirculated and passed through the surface separating the cones from the safe. As the water and paint particles pass through the cone, they are driven down repeatedly until only microscopic paint particles are left. These solids, in many cases, eventually sink to the bottom where they form a cohesive, easily removed "carpet".

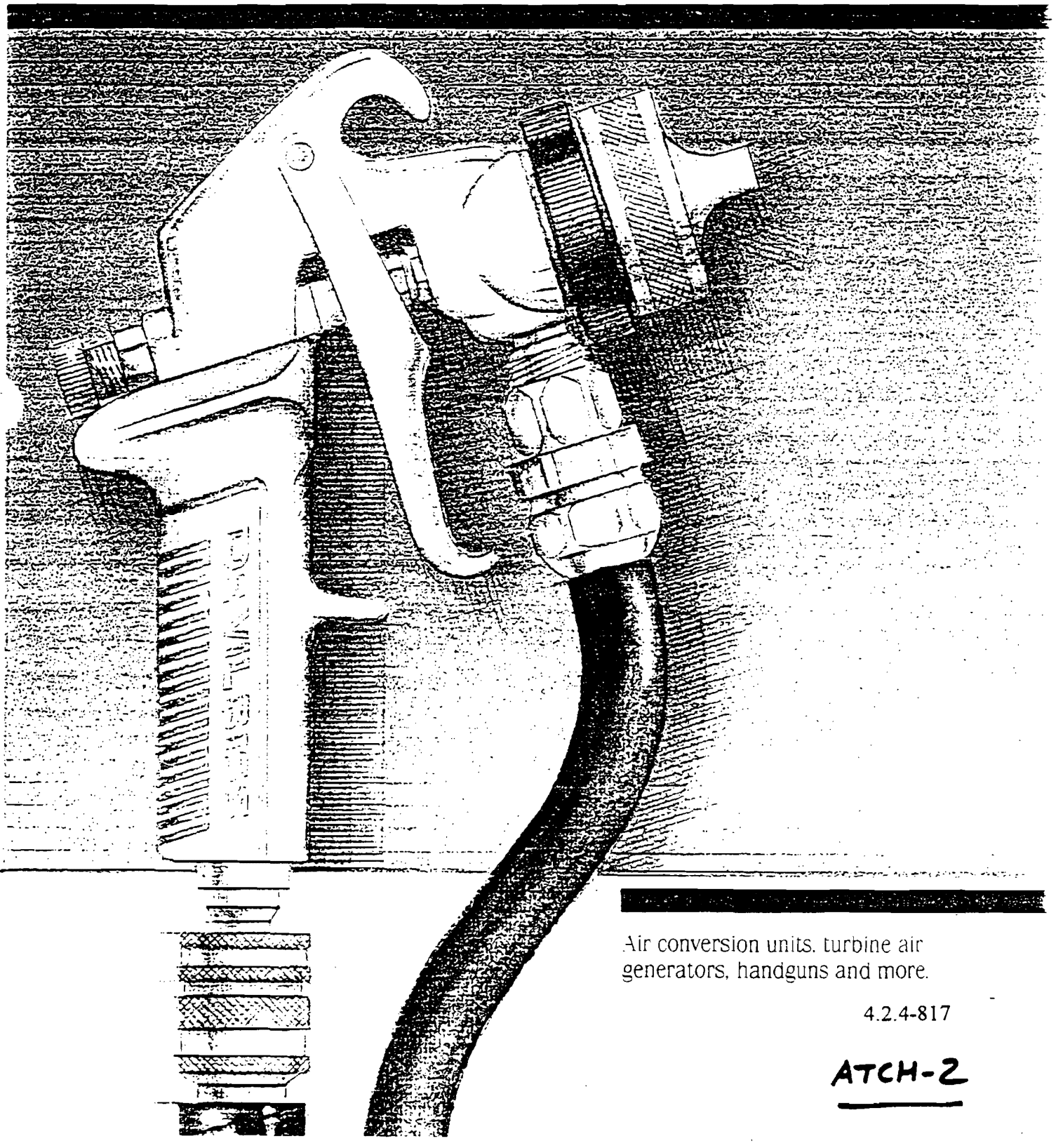
The *TURBOCLEAN* "carpet" is made up entirely of the solid non-volatile part of the paint. It is a nonflammable, non-sticky waste—a great environmental improvement in the booth area as compared with the sticky, hazardous, difficult to clean paint which accumulates in most water tanks. The action of the *TURBOCLEAN* cone mixes air in water, thus maintaining a high level of oxygen. This flow of oxygenated water around the tank at all levels reduces stagnation and helps prevent the growth of anaerobic bacteria. It is this bacteria that causes the typical foul odor associated with old style water wash booths.

Not all paints can be made to sink. Some of them float on water. To isolate and handle these particles, a controlled flotation zone is provided in the tank, trapping any particles that won't sink and permitting their removal when necessary. Thus, the *TURBOCLEAN* booth greatly improves the treatment of all types of paints including primers, top coats, enamels, epoxys, urethanes and water reducibles.

DeVILBISS

HVLP System 89™

Complete systems for industrial High Volume. Low Pressure applications.



Air conversion units, turbine air generators, handguns and more.

4.2.4-817

ATCH-2

What's the best HVLP system for you? Here are some guidelines for choosing an HLVP system.

High-production, continuous-duty. For high-volume industrial use, you need the system that's productive hour after hour and day after day. You need a DeVilbiss wall-mounted Air Conversion Unit with pressure tank or piston pump fluid supply.

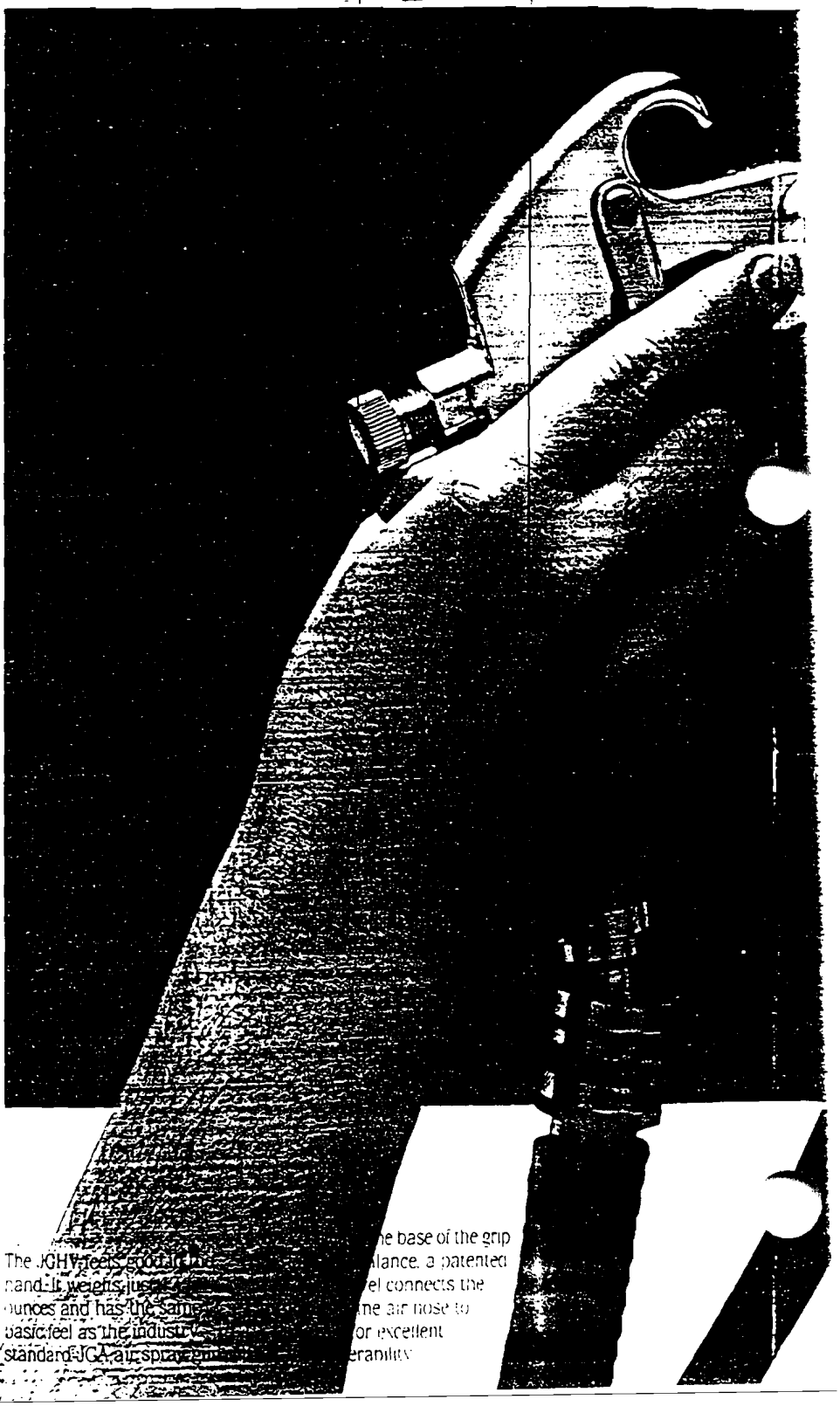
These systems can handle one or two guns per air source, continuously providing up to 10 psi. They can be ordered with heavy-duty air heaters. (Air Conversion Units without heat can be mounted inside the spray booth.) At maximum pressure, they handle higher solids levels than other HVLP systems. And no turbine unit is required.

Medium-low production, portability. Air Turbine Units need no compressed air supply. They need no air heater because the turbine heats the air. They simply plug into standard 110 volt power supplies. When used with cup-fed guns or with a two-gallon pressure tank, they go anywhere: just plug them in and you're ready to go.

When properly installed, used, and maintained, all DeVilbiss HVLP systems are designed to meet or exceed insurance industry safety standards.

Convenient adjustment for fan pattern size.

An insulated Nylon II plastic grip keeps the operator's hand comfortable when spraying with high temperature air.



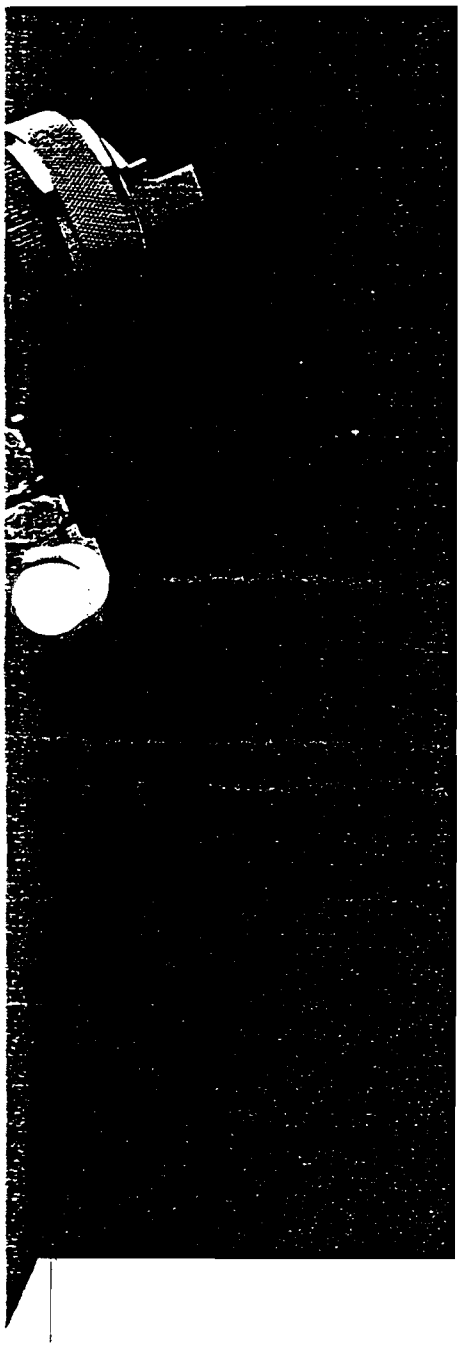
The JGHV feels good in the hand. It weighs just ounces and has the same basic feel as the industry-standard JGA air spray gun.

...e base of the grip ...lance, a patented ...el connects the ...ne air hose to ...or excellent ...erability.

JGHV: A DeVilbiss spray gun designed specifically for HVLP atomization.

...features forged ...m construction to ...V industrial use. ...s steel fluid tip and ...oned needle extend ...

The JGHV gun provides excellent atomization. Pattern is infinitely adjustable from full fan to round.



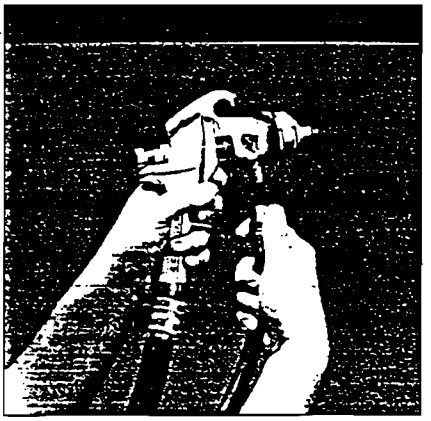
At low pressure it's far more difficult to break-up paint into small particles. Most spray guns would do a marginal job. The JGHV is the exception.

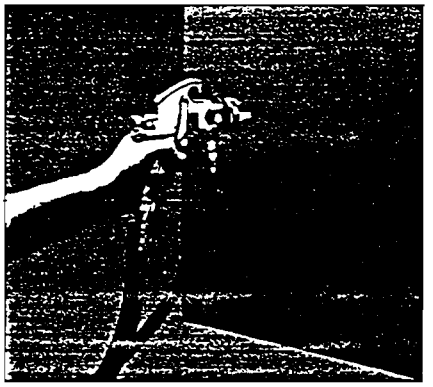
DeVilbiss is not simply a hardware supplier. We're famous for atomization. We know how to design air caps, and we know how to apply paint.

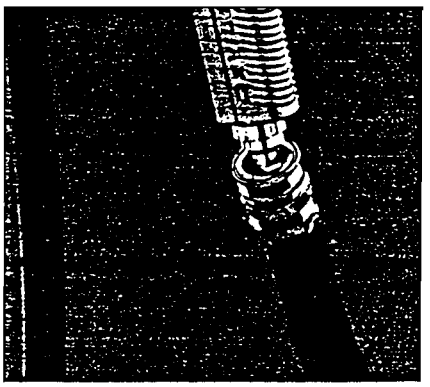
At 2 to 10 psi, the JGHV provides consistent paint break-up. It generates a soft, even pattern that produces a uniform build. The JGHV has produced high quality finishes with solids levels as high as 55%, that's far higher than most low pressure systems can handle.

And yet, the JGHV doesn't compromise operator comfort. Its forged aluminum body and tough engineered plastic grip make it comfortable and light, with good balance, like the industry-standard JGA.

Because you can choose from a wide variety of tips and fluid caps, you can be sure there's one that's ideal for you. JGHV handles solvent-based and waterborne materials. It can be ordered with a 2-gallon pressure tank or with a Teflon-lined cup.







Top right: One gun handles solvent or waterborne materials. It can be used with either pressure feed or suction feed with a simple air cap change.

Middle right: The JGHV produces high quality finishes with as little as 2 psi. At 10 psi, it handles medium-high solids.

Bottom right: A patented, flexible, ball-type swivel connector provides complete maneuverability for getting into tight areas.

The JGHV can use a DeVilbiss Teflon-lined cup or a pressure tank as shown here.

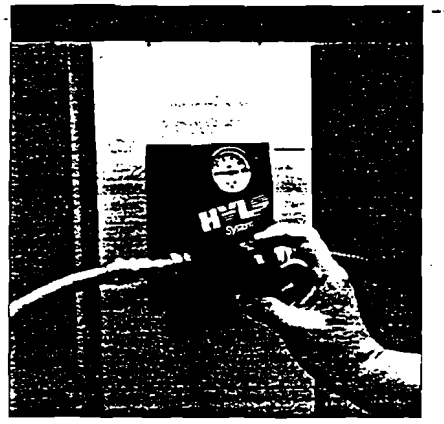
With more air source options than any other supplier, DeVilbiss has an answer for every HVLP need.

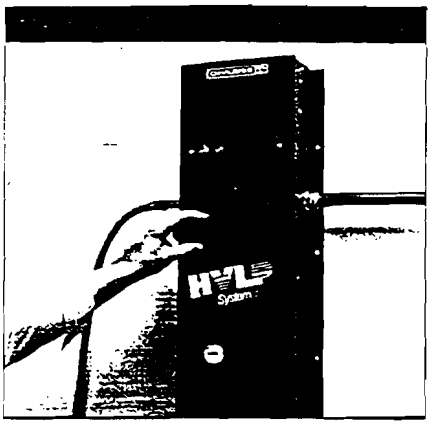
More than any other part of your HVLP system, the air source will limit your options and determine how you can use the equipment. DeVilbiss offers two basic systems and lots of options.

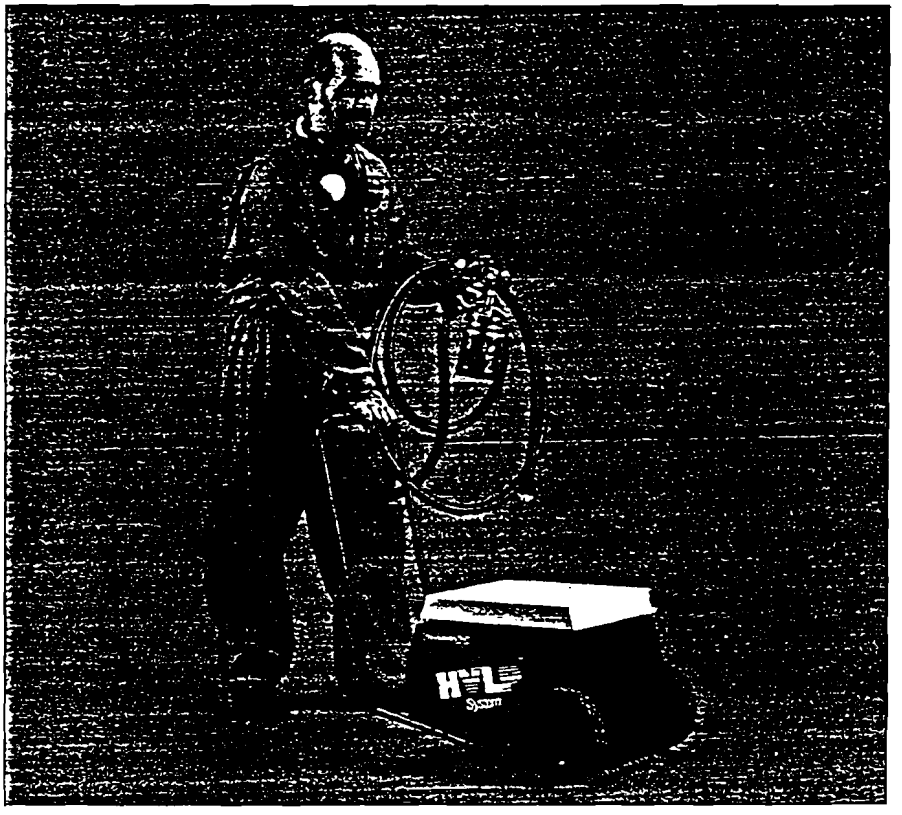
The first configuration is the Air Conversion Unit. This wall-mounted unit accepts high pressure air from any normal compressed air source and produces low pressure air for HVLP application.

It's designed for continuous-duty industrial applications where the utmost control is needed. Pressure is adjustable from 2 to 10 psi. To improve flash and tack time, it can be supplied with either a fixed- or adjustable-temperature heavy-duty air heater that offers fast warm-up and consistent air temperature. It can be used with one or two guns.

The most portable unit in the DeVilbiss line is the Air Turbine Unit (ATU). This system uses a heavy-duty three-stage turbine-air generator which requires no compressed air source, only a 110 volt AC power supply. Turbine units are placed outside the spray booth, spray room or designated hazardous locations.







Top left: The model ACU-500 offers adjustable output pressure.

Top right: Two ACU models include heaters, the ACU-550 (shown) and the ACU-560 with adjustable heat.

Right: The portable ATU models are completely self-contained. Plug them into a standard 110 VAC power source and you're ready to paint.

High Volume Low Pressure: High transfer efficiency, and a lot more.

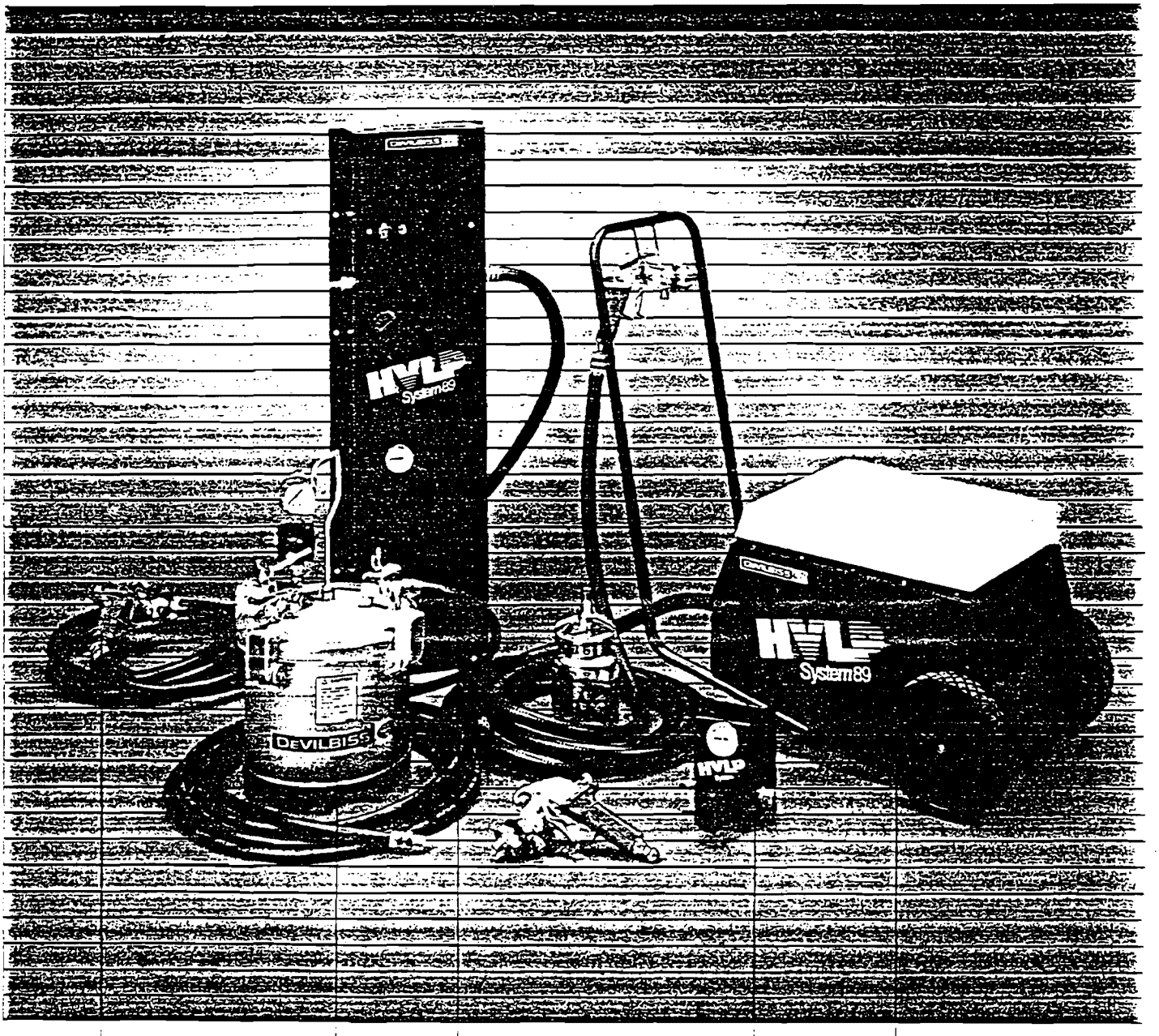
HVLP spray systems use a high volume of air delivered at low pressure to atomize material and apply it in a velocity pattern.

Overspray, bounce-back and particle bounce are virtually eliminated so transfer efficiency can be as high as 90% on certain workpieces.

Such high transfer efficiency improves painting performance as less material is wasted. The booth needs less maintenance. The environment and workplace are better off.

DeVilbiss is the first major [illegible] spray finishing supplier to address this high-performance spray technology.

The systems shown here are [illegible] part of the commitment the company has made to HVLP. For information about these and specially engineered systems, contact your DeVilbiss representative today.



DeVilbiss HVLP guns are specially designed to provide excellent atomization at low pressures. Even with medium-high solids.

Air conversion units handle continuous-duty operation. They can be ordered with or without air heaters.

Portable DeVilbiss air turbine units use a [illegible] two-stage turbine.

Systems are provided with either Teflon-lined material hoses or pressure tanks, or may be used with common material supply systems such as those pumps.

Air conversion units provide continuous 2 to 30 psi HVLP from conventional compressed air sources.

4.2.4-821

SPECIFICATIONS:

AIR CONVERSION UNITS									
AIR UNIT								SPRAY GUN	
Model	Dimensions (Inches)	Input		Output			Weight (Pounds)	Model	Tip Size
		Voltage	PSI	PSI	CFM	Discharge Temp.			
ACU-500-16FF	6 x 3 x 5	n/a	100	10	30	Ambient	3.5	JGHV-503-16FF	.055 (1.4mm)
ACU-500-14FY								JGHV-503-14FY	.039 (.98mm)
ACU-500-16DE								JGHV-503-16DE	.070 (1.8mm)
ACU-550-16FF	36 x 9 x 4	110V x 15A	100	10	30	180° F	50	JGVH-503-16FF	.055 (1.4mm)
ACU-550-14FY								JGHV-503-14FY	.039 (.98mm)
ACU-550-16DE								JGHV-503-16DE	.070 (1.8mm)
ACU-560-16FF	36 x 9 x 4	110V x 15A	100	10	30	to 210° F	50	JGHV-503-16FF	.055 (1.4mm)
ACU-560-14FY								JGHV-503-14FY	.039 (.98mm)
ACU-560-16DE								JGHV-503-16DE	.070 (1.8mm)

Note: All ACU models allow the optional use of Teflon-lined paint cups (Model TLC-565) and 2½ gallon paint tanks (Model PT-530). All systems include a 30' air hose assembly.

AIR TURBINES									
AIR UNIT								SPRAY GUN	
Model	Dimensions (Inches)	Input		Output			Weight (Pounds)	Model	Tip Size
		Voltage	PSI	PSI	CFM	Discharge Temp.			
ATU-520-16FF	20 x 14 x 12	110V x 15A	n/a	4.5	16	180° F	45	JGHV-503-16FF	.055 (1.4mm)
ATU-520-14FY								JGVH-503-14FY	.039 (.98mm)
ATU-530-16FF	32 x 14 x 12	110V x 15A	n/a	4.5	16	180° F	55	JGVH-503-16FF	.055 (1.4mm)
ATU-530-14FY								JGVH-503-14FY	.039 (.98mm)

Note: Each ATU-520 system includes Teflon-lined paint cup (Model TLC-565) and paint tanks are optional. Each ATU-530 system includes a 2½ gallon paint tank (Model PT-530) and paint cups are optional. All systems include a 30' air hose assembly.

CAPS, TIPS AND NEEDLES:

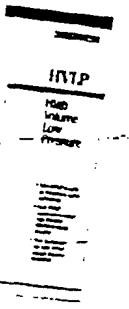
Tip Size	Fluid Tip	Air Cap	Needle
.028 (.70mm)	JGHV-60[illegible]	JGHV-16-12	JGHV-404-G
.034 (.85mm)	JGHV-601-GX	JGHV-16-12	JGHV-404-GX
.039 (.98mm)	JGHV-601-FY	JGHV-16-14	JGHV-404-FY
.055 (1.4mm)	JGHV-601-FF	JGHV-16-14	JGHV-404-FF
.070 (1.8mm)	JGHV-601-DE	JGHV-16-16	JGHV-404-DE

When ordering, specify air supply model, JGHV gun model and paint cup, supply tank and cap/tip options.

HVLP INFORMATION:

DeVilbiss has made a major commitment to HVLP technology including research, application engineering, nationwide spare parts and service. As a result, DeVilbiss HVLP systems reflect our 100-year reputation as spray finishing and atomization experts.

Our free pamphlet (Form no. F-817) describes this new technology. Ask your DeVilbiss distributor for a copy, or call 1-800-DEV-4448.



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DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
anne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.

DAQE-163-96

February 9, 1996

James R. Van Orman
Hill Air Force Base
Headquarters
Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah 84056

Dear Mr. Van Orman:

Re: Approval Order for Medium Pressure Water & Chemical Paint Stripping of Aircraft
Davis County, CDS-A1, Non-Attainment, Title V

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Nando Meli. He may be reached at (801) 536-4052.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:NM:aj

cc: Davis County Health Department
28 East State Street
POB 618
Farmington, UT 84025-618

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER FOR MEDIUM PRESSURE WATER & CHEMICAL PAINT STRIPPING OF AIRCRAFT

Prepared By: Nando Meli, Engineer
801-536-4052

APPROVAL NUMBER

DAQE-163-96

Date: February 9, 1996

Source

Hill Air Force Base
James R. Van Orman
801-777-2050

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Hill Air Force Base (HAFB) is requesting approval to use a Medium Pressure Water (MPW) stripping system to strip paint off of aircraft. In the past a chemical paint stripping method using methylene chloride was used to strip paint off an aircraft. The VOC and Hazardous Air Pollutants will be less when the MPW system is utilized. The VOC emissions in building 206 from the Medium Pressure Water and Chemical Paint Stripping operations shall be 5.41 tons per 12-month period.

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this AO reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

General Conditions:

1. This AO applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:
   4,551 kilometers Northing; 418 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (AFB) shall install and operate the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 according to the terms and conditions of this AO as requested in the Notice of Intent dated November 27, 1995, and additional information submitted to the Executive Secretary dated December 7, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Aqua Miser Medium Pressure Water Paint Strippers

   B. Air Operated Drum Pumps and Spray Wands with non-atomizing tips

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. 3300 gallons of Paint Stripper per rolling 12-month period

   B. 150,000 lbs of Sodium Bicarbonate per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. This total shall be calculated by the tenth day of the following month. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Fugitive Dust

8. The moisture content of the material used containing sodium bicarbonate shall be maintained at a minimum of 80.0% by weight as the material is blasted from the Aqua Miser. All of the sodium bicarbonate shall be periodically swept or sprayed clean from all surface areas as dry conditions warrant or as determined necessary by the Executive Secretary. The moisture content shall be tested if directed by the Executive Secretary using the appropriate American Society of Testing and Methods (ASTM) method.

Volatile Organic Compound (VOC) Limitations

9. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

> "14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

10. The emissions of VOCs in building 206 from the Medium Pressure Water and Chemical Paint Stripping operations, etc. and associated operations shall not exceed:

5.41 tons per rolling 12-month period for VOCs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

The emissions of VOCs emitted to the atmosphere from Building 206 shall be determined by maintaining a record of volatile organic compound potential contained in materials used each month. The record shall include the following data for each item used:

A. Name of the VOC emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$VOC = \frac{(\%\ \text{Volatile by Weight})}{(100)} \times \frac{(\text{Density lb})}{(\text{gal})} \times \frac{(\text{Gal Consumed})}{(2{,}000\ \text{lb})} \times (1\ \text{ton})$$

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified, and can be subtracted from the quantities calculated above. This is done to allow quantification by the source of the total VOCs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up, or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the Executive Secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC consumption records	(Condition number 10)
C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions from the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 are currently calculated at the following values:

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

Full copy

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.

DAQE-014-96

January 5, 1996

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, UT 84111

This letter will confirm the authorization to publish the attached NOTICE in the Newspaper Agency on January 9, 1996.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 144820, Salt Lake City, Utah 84114-4820.

Sincerely,

Amelia Jaramillo
Office Technician
Utah Division of Air Quality

Enclosure

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, has been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. John Vidik

   Hill Air Force Base

   00-ALC/EM

   7274 Wardleigh Road

   Hill Air Force Base, UT 84056-5137

   Medium Pressure Water & Chemical Paint Stripping of Aircraft

   The Net Increase in Approved Emissions will be (A negative sign indicates a decrease in emission rates.):

TSP	0.65 tons/year
PM_{10}	0.65 tons/year
VOC	5.41 tons/year

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84114-4820. Written comments received by the Division, at the same

address on or before February 8, 1996, will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: January 9, 1996

MIXING:
Use care to avoid splashing. Use appropriate protective equipment.
REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT:
Relieve any pressure. Cover openings to avoid spurting. Clean exterior and interior by flushing with water. Collect flushings for disposal. Use protective equipment for eyes, skin and inhalation.

****

CHECKED BY: John F. Grainger, Director Tech. Serv.
APPROVED BY: John F. Grainger, Director Tech. Serv.
DATE PREPARED: 06/14/95 DATE PRINTED: 06/16/95 FILE NO: 6813\.005/

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition may produce carbon monoxide, dioxide and other toxic volatile organic compounds

****

SECTION VII - SPILL, LEAK AND DISPOSAL PROCEDURE:

SPILL OR RELEASE PROCEDURE: CONCENTRATE
Contain spillage. Stop leak at source if this can be done safely. Ventilate area. Nonessential personnel should leave the area until cleanup is completed. Pump liquid into DOT-approved drums for disposal. Absorb ramaining liquid onto inert absorbent and place in DOT-approved drums for disposal. Wash area with water. Collect washings and place in DOT-approved drums for disposal. Keep concentrate and wash water from entering sewers or waterways.
USE SOLUTION:
As for concentrate, if applicable.
DISPOSAL INFORMATION: CONCENTRATE:
(1) Transfer to reclaiming center for recycling or reuse, if possible.
(2) Transfer to licensed waste treatment or disposal site for disposition under applicable local, state and regional regulations.
SPENT SOLUTION AND RINSES:
Dispose per (1) or (2) above, or spent solution and rinses can be neutralized, and floatable soil and separated solvent skimmed off. Residual organic matter may be removed by oxidation and/or carbon treatment. Clarified water may be released to sewer if local regulations permit.

****

SECTION VIII - SPECIAL PROTECTION INFORMATION:

RESPIRATORY PROTECTION:
If TLV is exceeded, a NIOSH-approved self-contained breathing apparatus, positive pressure hose mask or an air line mask is advised. These should have a full face piece and be operated in a positive pressure mode. For limited exposure time, in areas of good ventilation, a full face mask with cartridge or canister rated for ammonia or amines may be used. These must not be used in any areas where a danger of oxygen deficiency exists, such as partly enclosed or low lying areas, including sumps or tanks. If respirators are used, a formal training and screening program must be initiated. See 29 CFR 1910-134.
VENTILATION:
Maintain sufficiant mechanical ventilation to keep concentration below TLV.
PROTECTIVE EQUIPMENT:
Protective equipment: Face shield or goggles, gloves, boots and apron made of solvent resistant material (e.g. neoprene, viton, etc.). Protective suit not normally required.
RECOMMENDED PERSONAL HYGIENE
Wash hands and face with soap and water before smoking or eating. Immediately remove all contaminated clothing. Launder separately before reuse. Discard shoes that become contaminated on the interior.

****

SECTION IX - OTHER INFORMATION:

SPECIAL PRECAUTIONS - STORAGE AND HANDLING:
Store in dry protected area away from strong oxidizing agents.

SECTION IV - FIRE AND EXPLOSION HAZARDS:

FLASH POINT AND METHOD USED: None to boil (TCC)
EXTINGUISHING MEDIA:
Foam, carbon dioxide, dry chemical
SPECIAL FIRE FIGHTING PROCEDURE AND PRECAUTIONS:
Use self-contained respiratory protection.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
None

SECTION V - HEALTH AND EMERGENCY INFORMATION:

EFFECTS OF OVER-EXPOSURE: EYES:
Contact with eyes may cause moderate to severe irritation.
SKIN:
Contact with skin may cause moderate to severe irritation, drying, defatting.
INHALATION:
Vapors: Moderate irritation, dizziness, headache. Mists: Severe respiratory irritation, nausea.

INGESTION:
Moderate to severe irritation of gastrointestinal tract, nausea.
MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED:
No known chronic effects that differ from acute effects.

SECTION VA - FIRST AID INFORMATION:

FIRST AID: EYES:
Flush eyes with large volumes of water for at least 15 minutes. If irritation persists, obtain medical attention.
SKIN:
Flush affected area with large volumes of water. Wash with soap and water. Rinse thoroughly. If irritation is evident or blistering occurs, obtain medical attention.
INHALATION:
Remove to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, apply artificial respiration. Obtain medical attention.
INGESTION:
Do not induce vomiting except on advice of competent medical personnel. If vomiting occurs spontaneously, keep head below hip level to reduce possibility of aspiration pneumonitis. If victim is conscious, dilute by giving large volumes of milk or water. Obtain immediate medical attention. Never attempt to induce vomiting or give anything by mouth to an unconscious person.
PRIMARY ROUTES OF ENTRY ARE INHALATION AND SKIN CONTACT.

SECTION VI - REACTIVITY DATA:

STABILITY: STABLE
CONDITIONS TO AVOID:
Contact with strong oxidizing materials

TURCO MATERIAL SAFETY DATA SHEET

TURCO 6813 (US PATENT #5387363) CS No.: 03580
Date: 06/16/95 Page 1 of 4

SECTION I MANUFACTURER'S NAME AND ADDRESS

Manufacturer's Name: TURCO PRODUCTS, INC.
DIVISION OF ELF ATOCHEM NORTH AMERICA
Address: 7320 BOLSA AVENUE
WESTMINSTER, CA 92684
Emergency telephone: (202) 483-7616 (800) 424-9300
For information: (714) 890-3600

VOC
393 g/L
3.28 lbs/gal

SECTION II HAZARD INFORMATION

THE FOLLOWING INGREDIENTS ARE DEFINED TO BE HAZARDOUS PER 29CFR 1910-1200:

NAME (CAS)	CERCLA RQ	RCRA NO	SARA REPORTABLE	%
BENZYL ALCOHOL (100-51-6)	NOT LISTED	NOT LISTED	NO	40
ACGIH TLV: NOT ESTABLISHED OSHA PEL: NOT ESTABLISHED				
LINEAR ALKYLATED ARYL HYDROCARBON (68648-87-3)	NOT LISTED	NOT LISTED	NO	<5
ACGIH TLV: NOT ESTABLISHED OSHA PEL: NOT ESTABLISHED				

THE FOLLOWING INGREDIENTS ARE NOT REQUIRED TO BE LISTED BY 29CFR 1910-1200, BUT ARE LISTED IN CONFORMANCE WITH THE 'RIGHT-TO-KNOW' LAWS OF CERTAIN STATES, INCLUDING PENNSYLVANIA AND NEW JERSEY:

WATER (7732-18-5), AMMONIUM HYDROXIDE (AMMONIA) (1336-21-6), HEXYNOL (105-31-7)

CARCINOGENS: NONE (AS DEFINED IN 29CFR 1910-1200, APPENDIX A(1)

DOT INFORMATION
PROPER SHIPPING NAME: NOT REGULATED BY DOT IN NORMAL GROUND TRANSPORTATION IN CONTAINERS OF 110 GALLONS OR LESS

SECTION III PHYSICAL PROPERTIES (TYPICAL)

Boiling point: Approx. 212 deg. F. Specific gravity: 1.01
SCAQMD VOC composite vapor pressure: <0.1mm Hg (calc. by Raoult's Law)
SCAQMD VOC: 393 g/l.(calculated from nominal composition)
Vapor density: >1 (air=1) Evaporation rate: <1 (BuAc=1)
Total vapor pressure (including water): Approx. 15mmHg
Total volatile (including water), % by volume: Approx. 97%
Solubility in water: Appreciable pH: As is 12.0
Appearance and odor:
Light blue emulsion, ammoniacal odor

Historically, HAFB has processed approximately 50 aircraft per year, however, not all aircraft were fully stripped and painted. The projected chemical usage is worst case and assumes that all aircraft will require paint removal.

A formal test report will be forwarded as soon as it is available. Please contact David Budak, at (801) 777-1449, for additional information.

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

Attachment:
MSDS

cc:
EMP
LAOPE (ATTN: John Vidic)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

Mr. James R. Van Orman
OO-ALC/EM
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
Executive Secretary
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

RE: Notice of Intent for Medium Pressure Water and Chemical Paint Stripping of C-130 Aircraft at Hill Air Force Base (DAQE-1000-95 , 2 Nov 95)

Dear Mr. Roberts

The Experimental Approval Order (DAQE-1000-95 , 2 Nov 95) authorized Hill Air Force Base (HAFB) to determine if a lower VOC emission paint removal process could be developed. Experimental testing for paint stripping of C-130 aircraft has proceeded in accordance with the referenced approval order and actual test data supports this request for a permit.

HAFB requests approval to strip paint from a maximum of 50 C-130 aircraft per year utilizing the Medium Pressure Water (MPW) paint strip process augmented by chemical stripping. The following are the estimated operating parameters:

a. Process description: Selected aircraft parts are masked, chemical stripper is applied to soft skinned areas of the aircraft, medium pressure water at 15,000 psi (3.2 gallon/minute) with sodium bicarbonate (2.5 ounce/gallon) is blasted at the paint surface, paint solids entrained in the blast water are captured in the industrial drain system.

b. Chemical paint stripper usage: 105,000 pounds/year of Benzyl Alcohol (see attached MSDS)

c. Sodium Bicarbonate usage: 750,000 pounds/year.

d. Projected air emissions: 105,000 lbs of VOC's

e. Proposed method to track air emissions: Log chemical use, hours of operation, and number of aircraft stripped.

f. Tentative schedule to start operations: 30 January 1996.

$\frac{60 \text{ Drums}}{\text{year}} \quad \frac{55 \text{ gallons}}{\text{drum}} = 3300 \text{ gallons/yr}$

$3300 \text{ gallons} \quad 3.28 \frac{\text{lb VOC}}{\text{gal}} = 10,824 \text{ lb VOC}$

$= 5.41 \frac{\text{tons VOC}}{\text{year}}$

Sodium Bicarbonate

$2.5 \frac{\text{oz}}{\text{gal}} \quad \frac{\text{lb}}{16 \text{ oz}} \quad 3300 \text{ gallons} = 515.63 \text{ lb Sodium Bicarb}$

Water

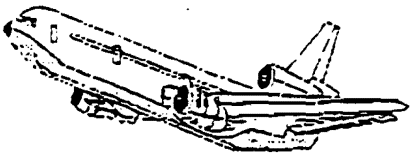
$8.3 \frac{\text{lb}}{\text{gal}} \quad \frac{16 \text{ oz}}{\text{lb}} = 132.8 \frac{\text{oz}}{\text{gal}}$

$2.5 \frac{\text{oz}}{\text{gal}}$

16

$\frac{2.5}{132.8} = 0.019 = 1.9\%$

The paint softener shall be applied with a stainless steel application gun (car wash type) with a non-atomizing tip, and / or hand applied with a brush.



AIRCRAFT OPERATIONS

HILL AIR FORCE BASE
OOALC/
BLDG. 225
HILL AFB, UT 84056
PHONE:
FAX:

TELEFAX COVER SHEET

FAX: DATE: / /

DELIVER TO: Nando Meli

FROM: John Vidrine NUMBER/PAGES 1 OF (2)

MESSAGE:

Nando,

The description of our application method follows

If you have any questions please give me a call

Thxs John Vidrine 777-2050

f. Tentative schedule to start operations: 30 January 1996.

Historically, HAFB has processed approximately 50 aircraft per year, however, not all aircraft were fully stripped and painted. For our request of 27 November, the process engineers assumed worse case conditions. However they now believe this revision is closer to the actual requirements.

A formal test report will be forwarded prior to 4 February, 1996. Please contact David Budak, at (801) 777-1449, for additional information.

for JAMES R. VAN ORMAN
Director of Environmental Management

cc:
EMP
LAOPE (ATTN: John Vidic)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

December 7, 1995

Mr. James R. Van Orman
OO-ALC/EM
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
Executive Secretary
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

RE: Notice of Intent for Medium Pressure Water and Chemical Paint Stripping of C-130 Aircraft at Hill Air Force Base

Dear Mr. Roberts

The Experimental Approval Order (DAQE-1000-95 , 2 Nov 95) authorized Hill Air Force Base (HAFB) to determine if a lower VOC emission paint removal process could be developed. Experimental testing for paint stripping of C-130 aircraft proceeded in accordance with the referenced approval order and actual test data supports this request for a permit. On 27 November 1995, HAFB requested approval to strip up to fifty aircraft per year for a total maximum annual release of 105,000 pounds VOC's. However, further analysis of the test data indicate only 10,800 lbs of VOC will be required per year.

Based upon the results of the test, HAFB requests approval to strip paint from aircraft utilizing the Medium Pressure Water (MPW) paint strip process augmented by chemical stripping. The following are the estimated operating parameters:

a. Process description: Selected aircraft parts are masked, chemical stripper is applied to soft skinned areas of the aircraft, medium pressure water at 15,000 psi (3.2 gallon/minute) with sodium bicarbonate (2.5 ounce/gallon) is blasted at the paint surface, paint solids entrained in the blast water are captured in the industrial drain system.

b. Chemical paint stripper usage: 10,800 pounds/year of Benzyl Alcohol

c. Sodium Bicarbonate usage: 150,000 pounds/year.

d. Projected air emissions: 10,800 lbs of VOC's

e. Proposed method to track air emissions: Log chemical use and hours of operation.

143 SOUTH MAIN ST.
P.O. BOX 45838
SALT LAKE CITY, UTAH 84145
FED. TAX I.D. # 87-0217663

Newspaper Agency Corporation
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PROOF OF PUBLICATION

CUSTOMER NAME AND ADDRESS	ACCOUNT NUMBER	
UT ST DEPT OF ENVR QULTY DIV OF AIR QUALITY P.O. BOX 144820 SALT LAKE CITY, UT 84114	U5364000L-07	01/09/96

COPY

ACCOUNT NAME	
UT ST DEPT OF ENVR QULTY	
TELEPHONE	INVOICE NUMBER
801-536-4000	TL158201261
SCHEDULE	
START 01/09/96 END 01/09/96	
CUST. REF. NO.	
HILL AIR	
CAPTION	
NOTICETHE FOLLOWING NOTICE OF	
SIZE	
70 LINES 1.00 COLUMN	
TIMES	RATE
1	1.64
MISC. CHARGES	AD CHARGES
.00	114.80
	TOTAL COST
	114.80

NOTICE
The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, has been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. John Vidik
Hill Air Force Base, 00-ALC/EM, 7274 Wardleigh Road, Hill Air Force Base, UT 84056-5137.
Medium Pressure Water and Chemical Paint Stripping of Aircraft.

The Net increase in Approval Emissions will be (A negative sign indicates a decrease in emission rates):

TSP	0.65 tons/year
PM10	0.65 tons/year
VOC	5.41 tons/year

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 150 North 1950 West, Salt Lake City, Utah 84114-4820. Written comments received by the Division at the same address on or before February 8, 1996, will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for the proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: Jan. 9, 1996
35820120

RECEIVED
JAN 16 1996
Air Quality

AFFIDAVIT OF PUBLICATION

APER AGENCY CORPORATION LEGAL BOOKKEEPER, I CERTIFY THAT THE ATTACHED
EMENT OF NOTICETHE FOLLOWING NOTICE OF FOR
T ST DEPT OF ENVR QULTY WAS PUBLISHED BY THE NEWSPAPER AGENCY
ION, AGENT FOR THE SALT LAKE TRIBUNE AND DESERET NEWS, DAILY NEWSPAPERS
N THE ENGLISH LANGUAGE WITH GENERAL CIRCULATION IN UTAH, AND PUBLISHED
AKE CITY, SALT LAKE COUNTY IN THE STATE OF UTAH.

ON START 01/09/96 END 01/09/96

Joanne Mooney

DATE 01/09/96

DSK 1/19/96

2320 6/31 2XXX 2NSRP 20C

NOTARY PUBLIC
JOANNE MOONEY
2625 Hartford St.
Salt Lake City, UT 84106
My Commission Expires
March 31, 1996
STATE OF UTAH

THIS IS NOT A STATEMENT BUT A "PROOF OF PUBLICATION"
PLEASE PAY FROM BILLING STATEMENT.

These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the executive secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC consumption records	(Condition number 10)
C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions from the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 are currently calculated at the following values:

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

F:\AQ\ENGINEER\NMeli\WP\Hl-Strip.Rev

A. Name of the VOC emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$VOC = \frac{(\%\ \text{Volatile by Weight})}{(100)} \times \frac{(\text{Density lb})}{(\text{gal})} \times \frac{(\text{Gal Consumed})}{} \times \frac{(1\ \text{ton})}{(2{,}000\ \text{lb})}$$

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified and subtracted from the quantities calculated above. This is done to allow quantification by the source of the total VOCs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the executive secretary upon request, and shall include a period of two years ending with the date of the request.

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up, or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1. UAC:

A. 3300 gallons of Paint Stripper per rolling 12-month period

B. 150,000 lbs of Sodium Bicarbonate per rolling 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the executive secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Fugitive Dust

8. The moisture content of the material used containing sodium bicarbonate shall be maintained at a minimum of 80.0% by weight. All of the sodium bicarbonate shall be periodically swept or sprayed clean from all surface areas as dry conditions warrant or as determined necessary by the Executive Secretary. The moisture content shall be tested if directed by the Executive Secretary using the appropriate American Society of Testing and Methods (ASTM) method.

Volatile Organic Compound (VOC) Limitations

9. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

> "14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

10. The emissions of VOCs in building 206 from the Medium Pressure Water and Chemical Paint Stripping operations, etc. and associated operations shall not exceed:

5.41 tons per rolling 12-month period for VOCs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

The emissions of VOCs emitted to the atmosphere from Building 206 shall be determined by maintaining a record of volatile organic compound potential contained in materials used each month. The record shall include the following data for each item used:

V. RECOMMENDED APPROVAL ORDER CONDITIONS

General Conditions:

1. This Approval Order (AO) applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:
   4,551 kilometers Northing; 418 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (AFB) shall install and operate the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 according to the terms and conditions of this AO as requested in the Notice of Intent dated November 27, 1995 and additional information submitted to the Executive Secretary dated December 7, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Aqua Miser Medium Pressure Water Paint Stripper

   B. Air Operated Drum Pump and Spray Wand with non-atomizing tip

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

B. Use of an alternative fuel or raw material by reason of an order under Sections 2a and 2b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

For VOC emissions, there is no model that can predict an ozone impact directly from VOC emissions. However, since VOCs are precursors to ozone formation, this new source will contribute to the existing exceedances of the ozone standard in Davis County. The amount of that contribution has not been decided. The ozone Nonattainment area of Davis and Salt Lake Counties must show reasonable further progress toward attainment of the standard. This source, along with all other VOC sources having emissions above ten tons per year, may have to apply more controls to lower the VOC emissions. This would be a SIP change action.

29. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

A. Maintenance, repair, and replacement

B. An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

C. An increase in the hours of operation

D. Use of an alternate fuel or raw material if, before the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

E. The addition or use of any system or device whose primary function is the reduction of air pollutants

F. Relocation or change in ownership

Also see R307-1-1 (Modification), which is the State's definition. This Notice of Intent is a modification.

30. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

A. The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

B. It is technologically and economically feasible to meet the applicable standards set forth in this part

This Notice of Intent is a reconstruction.

31. R307-1-1, Definition of Major Modification - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

9) Bulk Gasoline Plants
10) Storage of Petroleum Liquids in Fixed Roof Tanks
11) Wastewater Separators and process unit turnarounds
12) Use of Cutback Asphalt
13) Tank Truck Gasoline Loading Terminals
14) Stage I Vapor Control Systems - Gasoline Service Stations
15) Leaks from Petroleum refinery Equipment
16) Manufacture of Vegetable Oils
17) Petroleum Liquid Storage in External Floating Roof Tanks
18) Perchloroethylene Dry Cleaning Systems
19) Leaks from Gasoline Tank Trucks and Vapor Collection Systems
20) Large Petroleum Dry Cleaners
21) Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment
22) Leaks from Natural Gas/Gasoline Processing Plants
23) Solvent Metal Cleaning
24) Synthesized Pharmaceutical Products
25) Pneumatic Rubber Tires
26) Stationary Sources
27) Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry
28) High-Density Polyethylene, Polypropylene, and Polystyrene Resins
29) Fugitive Emission Sources of Organic Compounds
30) Synthetic Organic Chemical Manufacturing Industry - Reactor and Distillation Operations Processes
31) Measurement of Volatile Organic Compounds

For ozone attainment areas the requirements of UACR 3.1.1 (BACT) apply. However, BACT for these sources should be evaluated in light of the RACT requirements that have been established by UACR 14. BACT in an attainment area may be determined to be less stringent than the RACT requirements established in rule 14 or a published Control Techniques Guidance document (which apply to a Nonattainment area) however, a detailed BACT analysis should be conducted by the source to justify a less stringent control measure in an attainment area. This source is located in Davis County. Therefore, this rule applies to this source.

26. 40 CFR, Part 60 - New Source Performance Standards (NSPS) - There is no NSPS for this industrial process. There is a NSPS for this industrial process.

27. 40 CFR, Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP) - There is no NESHAP for this industrial process. There is a NESHAP for this industrial process.

28. 40 CFR, Part 50 - National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a Nonattainment area for ozone.

The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. This is because of the small quantity of emissions involved and the conservative predictions made by modeling. However, it will make a small contribution to the existing violation for ozone of the NAAQS.

4.B Wastewater separators
4.C Process unit turnaround
4.D Catalytic cracking units
4.E Safety pressure relief valves
4.F Leaks from petroleum refinery equipment

E. Section 14-5 - Degreasing and solvent cleaning operations

1) Cold cleaning facilities
2) Open top vapor degreasers
3) Conveyorized degreasers

F. Section 14-6 - Cutback asphalt

G. Section 14-7 - Surface Coating Processes

1) Section 7.A - General Provisions
2) Section 7.B - Paper Coating
3) Section 7.C - Fabric and Vinyl Coating
4) Section 7.D - Metal Furniture Coating VOC Emissions
5) Section 7.E - Large Appliance Surface Coating VOC Emissions
6) Section 7.F - Magnet Wire Coating VOC Emissions
7) Section 7.G - Flat Wood Coating
8) Section 7.H - Miscellaneous Metal Parts and Products VOC Emissions
9) Section 7.I - Graphic Arts
10) Section 7.J - Exemptions
11) Section 7.K - Capture Systems
12) Section 7.L - Testing and Monitoring

H. Section 14-8 - Perchloroethylene Dry Cleaning Plants

I. Section 14-9 - Compliance Schedule

J. Section 14-10 - Stage II Vapor Recovery Systems

For painting operations this rule specifies specific limits on the VOC content in paints and coatings used. In addition there is a provision for allowing use of coatings with higher VOC content if, because of emission control measures, "equivalent" emissions will result. Therefore, sources proposing to use coatings that do not meet the VOC contents specified in rule 14, must submit an analysis of their control measure that demonstrates equivalency with the VOC limitations of rule 14.

The published CTGs as of April 1, 1995 include:

1) Control Methods for Surface Coating Operations
2) Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks
3) Surface Coating of Metal Furniture
4) Surface Coating of Insulation of Magnet Wire
5) Surface Coating of Large appliances
6) Surface Coating of Miscellaneous Metal Parts and Products
7) Surface Coating of Flat Wood Paneling
8) Graphic Arts - Rotogravure and Flexography

represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

21. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, an opacity limitation of 10% is recommended as BACT.

22. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

23. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the executive secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). R307-1-4.7.2 discusses penalties.

24. R307-1-5, UAC - Emergency episode requirements. This rule requires the executive secretary to determine the stage and extent of an air pollution episode based on pollution levels and meteorological conditions. Under Section 40 of the Code of Federal Regulations, Part 51, Subpart H (51.150 to 153), it is required that sources plan emergency measures based upon the severity of the Nonattainment area in which they operate. In Utah, these rules require that CO sources in CO Nonattainment areas and sources of ozone precursors in ozone Nonattainment areas, who emit at least 25 tons per year (SIP, Section VII.B.) of either pollutant, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. (Some sources are required to submit an emergency episode plan according to Section VII.B. of the SIP). This rule applies.

25. R307-14, UAC - Review requirements for volatile organic compound (VOC) sources located in an ozone Nonattainment area. For sources located in ozone Nonattainment areas (Salt Lake and Davis Counties) this rule specifies the minimum (RACT) control measures promulgated by the Utah Air Quality Board. In addition, UACR 3.1.1 requires application of BACT for all new or modified sources in the state. However, within an ozone Nonattainment area BACT can not be less stringent than RACT. Therefore, for ozone Nonattainment areas the more stringent requirement is applicable (i.e., BACT as required by UACR 3.1.1 or RACT as defined by rule 14 or as defined in a published Control Techniques Guidance document).

This 14 rule covers the following processes:

A. Section 14-1 - General

B. Section 14-2 - Petroleum liquid storage

C. Section 14-3 - Gasoline transfer/storage

D. Section 14-4 - Control of hydrocarbon emissions in refineries

4.A. Vacuum producing systems

Class I Area	25	5	2
Class II Area	512	91	20

NO_x ($\mu g/m^3$)

Class I Area	N/A	N/A	2.5
Class II Area	N/A	N/A	25

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already Nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment.

16. R307-1-3.6.5 (b), UAC - Prevention of Significant Deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

17. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations that occur in the state. No known violations have yet occurred. This proposed Notice of Intent will not consume any increments.

18. R307-1-3.7, UAC - Air Quality Modeling - All estimates of ambient concentrations required in meeting the requirements of the regulations shall be based on appropriate air quality models, data bases, and other requirements specified in the Utah Guidelines to Air Quality Models. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(≥ Tons per Year)

TSP	10
PM_{10}	5
SO_2	20
NO_2	20
CO	50
VOC	20
O_3	5
HAPs	10

The increase in emissions will be less than the amounts listed above. Therefore, modeling will not be required.

19. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. The maximum creditable height of 65 meters (213.2 feet) is allowed. Hill AFB has no stacks that exceed 65 meters in height. Therefore, this source/facility is in compliance with this rule.

20. R307-1-3.10, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not

8. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

9. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. There will be no burners replaced at this time. Therefore, this rule does not apply.

10. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a Nonattainment area. This rule has been superseded by the Section IX, Parts A and H of the SIP except for Weber County. This source is not listed in the SIP. Therefore, this rule does not apply.

11. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a Nonattainment area or which impact a Nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

12. R307-1-3.3.3.B (3), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year but less than 50 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. This source will have no increase in PM_{10}, SO_2, and NO_x emissions. Therefore, an offset will not be required.

13. R307-1-3.3.3.C, UAC - Enforceable offset of 1.15:1 required for new sources or modifications of sources as defined in Section 182 of the CAA. Section 182(b)(1)(A)(i) of the CAA defines these sources as sources of volatile organic compounds and as sources of oxides of nitrogen. This is required in Salt Lake and Davis Counties and in any area that affects these three counties as defined in the rule. The effective date is August 16, 1993. If it is an existing Major source with a 40 tpy increase or a new major source offsets of 1.15:1 are required. The emissions increase will be less than 40 tpy. Therefore, an offset will not be required.

14. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant or any Part 70 source to submit an emission inventory to the Division of Air Quality every year or as determined necessary by the executive secretary. This source must comply with this rule.

15. R307-1-3.6.3, UAC - Prevention of Significant Deterioration (PSD) Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for Particulate (PM_{10}), SO_2, and NO_x. The allowable increments are as follows:

Particulate (PM_{10}) ($\mu g/m^3$)

	Three Hour	24 Hour	Annual
Class I Area	N/A	8	4
Class II Area	N/A	30	17

SO_2 ($\mu g/m^3$)

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The VOC emissions from the MPW system is 1000 lbs/aircraft. When the more traditional paint stripping system with methylene chloride is utilized there is 10.000 lbs of HAPS (methylene chloride) and 4.000 lbs of VOCs per airplane.

The New Source Review section recommends that the new medium pressure water and chemical stripping of C-130 aircraft with a 10% opacity limit be accepted as BACT.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC)

This Notice of Intent is for grandfathered source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies. A Notice of Intent is required for the new medium pressure water and chemical paint stripping of C-130 aircraft operations..

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the executive secretary may revoke the Approval Order.

3. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for all natural gas fuel burning equipment with a total rated capacity of less than 5 MMBTU per hour. There will be no new natural gas devices installed. Therefore, this rule applies, and a Notice of Intent is not required based on this rule but is required based on R307-1-3.1, UAC.

4. R307-1-3.1.7 (E), UAC - Notice of Intent required for a new parking lot of 600 or more spaces and adding 350 or more spaces to an existing lot. This rule will not apply because a new lot or addition is not being constructed.

5. R307-1-3.1.7 (F), UAC - Notice of Intent not required for sources with emissions less than 10 tons/yr of the following compounds: 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane, dichlorodifluoromethane, chlorodifluoromethane, trifluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,2-dichloro1,1,2,2-tetrafluoroethane, methane, ethane and chloropentafluoroethane. However, if the source is emitting more than 10 tons/yr of any of these compounds, a Notice of Intent must be filed and an annual report of emissions thereafter. This emission point will not emit 10 tons/year of any of these regulated pollutants. Therefore, this rule applies, and a Notice of Intent is not required based on this rule.

6. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies to all sources throughout the state unless they are located in a Nonattainment area. RACT applies in Nonattainment areas.

7. R307-1-3.1.8 (C), UAC - Approval of the Utah Air Quality Board (UAQB) is required before the executive secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

Abstract

Hill Air Force Base (HAFB) is requesting approval to use a Medium Pressure Water (MPW) stripping system to strip paint off of aircraft. In the past a chemical paint stripping method using methylene chloride was used to strip paint off of aircraft. The VOC and Hazardous Air Pollutants will be less when the MPW system is utilized. The VOC emissions in shall be 5.41 tons per 12-month period.

I. DESCRIPTION OF PROPOSAL

Historically aircraft paint removal has been accomplished with methylene chloride based paint stripper. However, methylene chloride is a hazardous air pollutant (HAP), and its use will be severely limited by the NESHAPs and proposed Aerospace Control Technology Guide. Because of these limitations and because of the large quality of waste water and hazardous waste generated from this process Hill Air Force Base (HAFB) explored another alternative.

HAFB's review of industrial paint removal processes revealed the most promising alternative to chemical paint stripping is medium (15,000 psi) pressure water (MPW). Emissions from this process are significantly less than chemical paint stripping. The MPW process erodes paint from the aircraft surface and entrains it in the water stream. There is 1000 lbs of VOC emissions per airplane when the MPW system is used and when Methylene Chloride is used there is 10,000 lbs of HAPS (methylene chloride) and 4,000 lbs of VOCs per airplane.

The medium pressure water stripping system consists of a 15,000 psi 3.2 gallon per minute water pump and a bicarbonate of soda ($Na\ HCO_3$) injection system with control and peripheral equipment. The system includes a hand-held wand with various nozzle configurations that are matched to the function being performed. Currently a nozzle with a tuned port that produces a fan-like blast pattern is used for aircraft paint stripping.

The MPW process with water pressure alone is not effective for removal of the paint systems used on C-130s. Also, in some areas of the aircraft with exceptionally thin skins (where full pressure can not be applied) and in areas with difficult to remove coatings, a chemical paint softener will be needed to remove the paint.

The softener, containing Benzyl Alcohol, will be spray applied on the aircraft using an air operated drum pump and spray wand. The softener will be allowed to dwell on the surface from 4 to 10 hours and then will be sprayed off with water.

II. EMISSION SUMMARY

The emissions from the Hill Air Force Base Medium Pressure Water & Chemical Paint Stripping of Aircraft will be as follows:

Pollutant	Current Emissions tons/year	Emission Changes tons/year	Total Emissions tons/year
PM_{10}	0.0	0.65	0.65
VOC	0.0	5.41	5.41

There will be no PM_{10} emissions because the sodium bicarbonate solution contains a 2.5 ounces of $Na\ HCO_3$ per gallon of water. Water is 8.3 lb/gallon (132.8 oz/gal). This is less about 2% $Na\ HCO_3$ per gallon of water.

TYPE OF IMPACT AREA

Nonattainment Area

PM_{10}	Yes
SO_2	No
NO_x	No
CO	No
Ozone	Yes

NSPS	No
NESHAP	No
Hazardous Air Pollutants	No
Hazardous Air Pollutants Major Source	No
New Major Source	No
Major Modification	No
PSD Permit	No
PSD Increment (modeling)	No
Send to EPA	No
Operating Permit Program	Yes

FOR MODIFIED SOURCES

The Notice of Intent is for a modification to an existing source. The following standards apply in this review:

NSPS applies to modification?	No
PSD review of entire source required?	No
NESHAPS applies to modification?	No
HAPs involved in modification?	No
TITLE V required for entire source?	Yes
HAPs MAJOR for modification?	No
NONATT MAJOR for entire source?	Yes

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director, Environmental Management
Department of the Air Force
Headquarters Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah

RE:	Medium Pressure Water & Chemical Paint Stripping of Aircraft Davis County, CDS A1; NA; HAPs, TITLE V MAJOR
REVIEW ENGINEER:	Nando Meli
DATE:	December 8, 1995
NOTICE OF INTENT DATED:	December 7, 1995
PLANT CONTACT:	John Vidic
PHONE NUMBER:	(801) 777-2050
FAX NUMBER	(801) 777-6742
PLANT LOCATION:	East of Exit 336 on Interstate 15 Freeway
UTM COORDINATES:	4,552.0 km Northing, 418.0 km Easting, Zone 12

APPROVALS:

Peer Engineer Lynn R. Menlove 12-8-95
Lynn Menlove

We request that you read the proposed Approval Order conditions; if you do not understand or do not agree with the contents of the conditions, please contact the review engineer within five days. However, when you understand the attached proposed/draft Approval Order conditions, please sign below and return. Thank You.

Applicant Contact Nando Meli for John Vidic Per Her Dayton
(Signature & Date) Dec 14, 95

F:\AQ\ENGINEER\NMeli\WP\HI-Strip.Rev

C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions from the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 are currently calculated at the following values:

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

Pollutant	Tons/yr
PM_{10}	0.65
VOC	5.41

The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. Unless public comments are received which require additional work, the fee for this AO will be $1,000.00. An invoice will follow. You may pay this fee prior to the end of the comment period. If there are comments or additional fees, you will be notified.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified and subtracted from the quantities calculated above. This is done to allow quantification by the source of the total VOCs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the executive secretary upon request, and shall include a period of two years ending with the date of the request.

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up, or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the executive secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC consumption records	(Condition number 10)

Volatile Organic Compound (VOC) Limitations

9. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

> "14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

10. The emissions of VOCs in building 206 from the Medium Pressure Water and Chemical Paint Stripping operations, etc. and associated operations shall not exceed:

5.41 tons per rolling 12-month period for VOCs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

The emissions of VOCs emitted to the atmosphere from Building 206 shall be determined by maintaining a record of volatile organic compound potential contained in materials used each month. The record shall include the following data for each item used:

A. Name of the VOC emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$\text{VOC} = \frac{(\%\ \text{Volatile by Weight})}{(100)} \times \frac{(\text{Density lb})}{(\text{gal})} \times \frac{(\text{Gal Consumed})}{} \times \frac{(1\ \text{ton})}{(2{,}000\ \text{lb})}$$

3. Hill Air Force Base (AFB) shall install and operate the Medium Pressure Water & Chemical Paint Stripping of Aircraft in Building 206 according to the terms and conditions of this AO as requested in the Notice of Intent dated November 27, 1995, and additional information submitted to the Executive Secretary dated December 7, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Aqua Miser Medium Pressure Water Paint Stripper

   B. Air Operated Drum Pump and Spray Wand with non-atomizing tip

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. 3300 gallons of Paint Stripper per rolling 12-month period

   B. 150,000 lbs of Sodium Bicarbonate per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the executive secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Fugitive Dust

8. The moisture content of the material used containing sodium bicarbonate shall be maintained at a minimum of 80.0% by weight. All of the sodium bicarbonate shall be periodically swept or sprayed clean from all surface areas as dry conditions warrant or as determined necessary by the Executive Secretary. The moisture content shall be tested if directed by the Executive Secretary using the appropriate American Society of Testing and Methods (ASTM) method.

Abstract

Hill Air Force Base (HAFB) is requesting approval to use a Medium Pressure Water (MPW) stripping system to strip paint off of aircraft. In the past a chemical paint stripping method using methylene chloride was used to strip paint off of aircraft. The VOC and Hazardous Air Pollutants will be less when the MPW system is utilized. The VOC emissions in shall be 5.41 tons per 12-month period.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

A Notice of Intent to issue an AO will be published in the Newspaper Agency on January 9, 1996. A 30-day period following the publishing date will be allowed during which the proposal and evaluation of its impact on air quality will be available for both you and the public to review and comment. If anyone so requests within 15 days of publication of the notice, a hearing will be held. The hearing will be held as close as practicable to the location of the source. Any comments received during the 30-day period and the hearing, if held, will be evaluated.

Please review the proposed AO conditions during this period and make any comments you may have before its closure. The proposed conditions of the AO may be changed as a result of the comments received. Unless changed, the AO will be based upon the following conditions:

General Conditions:

1. This AO applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:
   4,551 kilometers Northing; 418 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE Medium Pressure Water & Chemical Paint Stripping of Aircraft

Prepared By: Nando Meli, Engineer
801-536-4052

INTENT TO APPROVE NUMBER

DAQE-013-95

Date: January 5, 1996

Source

Hill Air Force Base
James R. Van Orman
801-777-2050

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.

DAQE-013-96

January 5, 1996

James R. Van Orman
Hill Air Force Base
Headquarters
Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah 84056

Dear Mr. Van Orman:

Re: Intent to Approve Medium Pressure Water & Chemical Paint Stripping of Aircraft
Davis County, CDS-A1, Non-Attainment, Title V

The attached document is an Intent to Approve for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Nando Meli. He may be reached at (801) 536-4052.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section
Utah Division of Air Quality

LRM:NM:aj

cc: Davis County Health Department
28 East State Street
POB 618
Farmington, UT 84025-618

4. In the Best Available Control Technology (BACT) Analysis section, page 4, the VOC emissions should be changed to 1000 lbs/aircraft. Also note this process is BACT for the HAP Methylene chloride (from 10,000 lbs to 0 lbs). The process is BACT for VOC because using Benzyle Alcohol stripper alone on the entire aircraft would emit approximately 6000 lbs of VOC per aircraft (3 applications @ 11 drums each). With the medium pressure water process, Benzyle Alcohol is used only on areas where the MPW will not work thus reducing emissions to approximately 1,000 lbs / aircraft.

5. In item 6 of APPLICABILITY OF GENERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC), page 4, the following statement appears "Reasonably Achievable Control Technology (RACT) applies in non-attainment areas." Is this correct? Or, should we be doing a RACT analysis?

6. Item 3 in the general conditions section states "the Chemical Processing Line in Building 538". The statement should be replaced with: "the MPW operations in 206"

7. On page 13 item 7. B, indicates the use of 516 lbs of Sodium Bicarbonate. It should be 150,000 lbs.

8. Page 13, item 9 "written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment...", should read "written procedures for the operation and maintenance of the striping equipment...".

As we have indicated in our 8 December letter, a formal test report will be forwarded prior to 4 February, 1996. Please contact David Budak, at (801) 777-1449, for additional information.

LYNN S. HILL
Chief, Environmental Compliance Div.
Environmental Management Directorate

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

December 14, 1995

Mr. Lynn S. Hill
OO-ALC/EME
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Nando Meli
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

RE: Edits for Notice of Intent for Medium Pressure Water and Chemical Paint Stripping of C-130 Aircraft in Bldg. 206 (DAQE-1000-95 , 2 Nov 95)

The Draft Approval Order *Medium Pressure Water & Chemical Paint Striping of Aircraft, Davis County*, dated December 8 1995 was reviewed and the following comments are provided for consideration:

1. The footer at the bottom of each page indicates this OA is for our Chem Mill Line. It should read "Medium Pressure Paint Stripping"

2. The statement "The VOC emissions is estimated at 750 lbs using the MPW and 10,000 lbs when Methylene Chloride is used." is not entirely accurate. We estimate approximately 1000 lbs of VOC per C-130 with MPW but zero HAP emissions. The Methylene chloride process emits 10,000 lbs of HAP (Methylene chloride) and 4,000 lbs of VOC. (1400 gal stripper * 10.3 lbs/gal * 0.68 lbs Methylene chloride per lb. of stripper = 10,000; 1400 gal stripper * 10.3 lbs/gal * 0.27 lbs VOC per lb. of stripper = 4,000 lbs of VOC)

3. In the Emissions Summary section, page 3, the first line indicates this is for the Chemical Milling Process Line. It should read "Medium Pressure Paint Stripping". In addition this section states there will be no PM_{10} emissions. We feel the PM_{10} emissions will be extremely small (~ 130 lbs / aircraft, .87% PM_{10} x 15,000 lbs, conservatively assuming none is entrained in the water and minimal > PM_{10} material fractures to PM_{10}) This number is based on a particle size distribution analysis conducted on the sodium bicarbonate to be used.

FAX TRANSMITTAL SHEET

OO-ALC/EM
7274 WARDLEIGH ROAD
HILL AFB UT 84056-5137

To Nando Meli (801) 536-4052

DAQ / Engineering

(FAX Number)

From John Vidic (801) 777-2050

(Phone Number)

EM/EMR/EME
DSN 777-4306
Comm (801) 777-4306

EMH/EMP/EMX
DSN 777-6142
Comm (801) 777-6142

EM Directorate Voice: DSN 777-6917 or (801) 777-6917

"Do not transmit classified information over unsecured telecommunications systems. Official DoD telecommunications systems are subject to monitoring and use of DoD telecommunications systems constitutes consent to monitor. This device is subject to monitoring at all times. Use of this device constitutes consent to monitor."

Total Number of Pages Including Cover Sheet 2

(where full pressure can not be applied) and in areas with difficult to remove coatings, a chemical paint softener will be needed to remove the paint.

The softener, containing Benzyl Alcohol, will be spray applied on the aircraft using an air operated drum pump and spray wand. The softener will be allowed to dwell on the surface from 4 to 10 hours and then will be sprayed off with water.

UTM COORDINATES: 4552.0 km Northing, 418.0 km Easting, Zone 12

GENERAL DESCRIPTION

Historically aircraft paint removal has been accomplished with methylene chloride based paint stripper. However, methylene chloride is a hazardous air pollutant (HAP), and its use will be severely limited by the NESHAPs and proposed Aerospace Control Technology Guide. Because of these limitations and because of the large quality of waste water and hazardous waste generated from this process another alternative was explored.

Review of industrial paint removal processes revealed the most promising alternative to chemical paint stripping is medium (15,000 psi) pressure water. Emissions from this process are significantly less than chemical paint stripping. The MPW process erodes paint from the aircraft surface and entrains it in the water stream.

The medium pressure water stripping system consists of a 15,000 psi 3.2 gallon per minute water pump and a bicarbonate of soda ($Na\ HCO_3$) injection system with control and peripheral equipment. The system includes a hand-held wand with various nozzle configurations that are matched to the function being performed. Currently a nozzle with a tuned port that produces a fan-like blast pattern is used for aircraft paint stripping.

The system used is an Aqua Miser model E25 manufactured by Carolina Equipment, North Charleston, SC, 29418. The system will be operated with the following nominal perimeters:

Stripping medium	-	Sodium bicarbonate water suspension
Mean feed rate	-	3 Lb / min
Nozzle design	-	0.5 inch diameter, # 8
Stand off distance	-	> 18 inches
Impingement angle	-	45 - 60 degrees
Estimated stripping rate	-	1 ft^2 / min

The MPW process with water pressure alone is not effective for removal of the paint systems used on C-130s. Also, in some areas of the aircraft with exceptionally thin skins

UTAH DIVISION OF AIR QUALITY

FAX COVER SHEET

150 NORTH 1950 WEST

SALT LAKE CITY, UTAH 84114-4820

CANNON L770 FAX # (801) 536-4099

CONFIRMATION # (801) 536-4000

FROM: Nando Meli Jr.

PHONE: (801) 536 - 4052

TO: John Vidic PHONE: 777-2050

AGENCY/FIRM Hill AFB

FAX NUMBER 777-4352 CONFIRMATION #: _____

NUMBER OF PAGES TO FOLLOW: 15

SUBJECT: ENGINEERING REVIEW

REMARKS: Could you reply as soon as possible with any comments that you may have on this Engineering Review.

Thank you.

LOGGED: 12/8 SENT: 12/8 RECEIVED: 1/8 CONFIRMED: LVE

To: HOBSTERB
From: John Vidic
CC: BUDAKD.LAODOMAIN:LAO_W CHRISTEJ
Subject: Comments on DAQE-013-96 Notice of Intent to Approve, your ltr 18 Jan
Date Wednesday, January 24, 1996 3:07 PM

Bonnie,

I have the following comments on the subject notice.

1. On page 3, the last sentence of the first paragraph appears to have a typo. It should read "... emissions shall be 5.41tons..."

2. On page 4, items 5, A & B the notice indicates the equipment in the singular tense. For example "paint stripper". However, we have several strippers, so the notice should read "paint stripper(s)" for item 5, A and "Drum Pump(s) and Spray Wands(s) with non-automizing tip(s)" for item 5, B.

3. Under item 7, page 4, we request the rolling total for a particular month be calculated by the 5th of the following month rather than on the 1st of the following month.

4. In talking with the permit writer we understand the requirement for maintaining minimum 80% moisture content in the bicarbonate. However the notice should be clarified (page 4, item 8) to indicate 80% is the moisture content as blasted from the Aqua Miser for the following reason.

To function properly the sodium bicarbonate must be loaded into the Aqua Miser dry (wet sodium bicarbonate will plug the hopper and feed mechanism). The Aqua Miser then adds water to the sodium bicarbonate to a level of at least 80% moisture (98% typical) before blasting the sodium bicarbonate on the aircraft.

5. Item 10, requirement F, page 6, directs us to subtract out VOC and HAP emissions potential that is disposed of in our hazardous and solid waste streams. However based on data from our experimental approval order testing we estimate very little HAPs and VOCs will make it to these waste streams. Therefore, we request this not be a requirement but only an option since it is more conservative to assume all emissions potential is released neglecting what may be found in hazardous waste sent to a

TOTAL P.02

FAX TRANSMITTAL SHEET

OO-ALC/EM
7274 WARDLEIGH ROAD
HILL AFB UT 84056-5137

To Nando Meli
Division of Air Quality
536-4099
(FAX Number)

From Steve Rasmussen
Hill AFB Env Mgt
777-0359
(Phone Number)

EM/EMR/EME
DSN 458-4306
Comm (801) 777-4306

EMH/EMP/EMX
DSN 458-6142
Comm (801) 777-6142

EM Directorate Voice: DSN 458-6917 or (801) 777-6917

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LYNN S. HILL
Chief, Environmental Compliance Div.
Environmental Management Directorate

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE. UTAH

December 14. 1995

Mr. Lynn S. Hill
OO-ALC/EME
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Nando Meli
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

RE: Edits for Notice of Intent for Medium Pressure Water and Chemical Paint Stripping of C-130 Aircraft in Bldg. 206 (DAQE-1000-95 , 2 Nov 95)

The Draft Approval Order *Medium Pressure Water & Chemical Paint Striping of Aircraft, Davis County*, dated December 8 1995 was reviewed and the following comments are provided for consideration:

1. The footer at the bottom of each page indicates this OA is for our Chem Mill Line. It should read "Medium Pressure Paint Stripping"

2. The statement "The VOC emissions is estimated at 750 lbs using the MPW and 10,000 lbs when Methylene Chloride is used." is not entirely accurate. We estimate approximately 1000 lbs of VOC per C-130 with MPW but zero HAP emissions. The Methylene chloride process emits 10,000 lbs of HAP (Methylene chloride) and 4,000 lbs of VOC. (1400 gal stripper * 10.3 lbs/gal * 0.68 lbs Methylene chloride per lb. of stripper = 10,000; 1400 gal stripper * 10.3 lbs/gal * 0.27 lbs VOC per lb. of stripper = 4,000 lbs of VOC)

3. In the Emissions Summary section, page 3, the first line indicates this is for the Chemical Milling Process Line. It should read "Medium Pressure Paint Stripping". In addition this section states there will be no PM_{10} emissions. We feel the PM_{10} emissions will be extremely small (~ 130 lbs / aircraft, .87% PM_{10} x 15,000 lbs, conservatively assuming none is entrained in the water and minimal > PM_{10} material fractures to PM_{10}) This number is based on a particle size distribution analysis conducted on the sodium bicarbonate to be used.

Scott M. Matheson
Governor

James O. Mason, M.D., Dr.P.H.
Executive Director
801-533-6111

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Community Health Services
Environmental Health
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Health Care Financing

OFFICES
Administrative Services
Community Health Nursing
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DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

150 West North Temple, P.O. Box 2500, Salt Lake City, Utah 84110-2500

Kenneth Lee Alkema, Jr
Room 474 801-533-6121

July 18, 1983
533-6108

Col. Robert L. Allen
Dept. of the Air Force
Headquarters 2849th Air Base Group
Hill Air Force Base, Utah 84056

RE: Approval Order for Paint Booth, Hil 347
Hil 36-1 HVAC Modification, Standby
Hil 172-3 Generators, and Fuel Storage Hil 103-3
Tanks, Davis County

Dear Col. Allen:

On May 17, 1983, the Executive Secretary published a notice of intent to approve the air pollution controls/operating procedures for the following projects: Hil 347-2 paint booths (2), Hil 36-1 HVAC system modifications, Hil 172-3 standby power generators (2), and Hil 103-3 underground fuel storage tanks (3). The 30 day public comment period has expired, and no comments were received.

This air quality approval order authorizes the projects as proposed in your notice of intent dated March 31, 1983, with the following operating conditions:

1. The aircraft paint booth in Building 48, Project Hil 347-2, shall have 264 sq. ft. of particulate filters. The filter bank and associated four (4) 35,000 cfm fans shall be properly installed to the manufacturer's specifications and good engineering practice.

2. The HVAC system modification consisting of two (2) new Protectaire model S1210 WCC water wash spray booths shall be installed and operated to the manufacturer's specifications and good engineering practice.

3. The 2,000 gallon gasoline storage tanks shall be equipped with an Emco-Wheaton model A-88 and A-97 phase I coaxial vapor recovery system as proposed.

4.2.4-1012

4. The proposed standby diesel generators, ONAW model 300 DFS 300 IW and model 400 DFV 400 KW, shall be installed to manufacturer's specifications. Visible emissions shall not exceed 20% opacity. Manufacturer's recommended air/fuel ratio for low NOx emissions shall be used.

5. A construction/installation/modification schedule shall be provided to the Executive Secretary when finalized.

6. The Executive Secretary shall be notified upon startup/normal operations as an initial compliance inspection is required.

Sincerely,

Brent C. Bradford
Executive Secretary
Utah Air Conservation Committee

MRK/ads
cc: EPA Region VIII (J. Philbrook)
Davis County Health Dept.
3431

Minor VOC in Non-Attainment
Appoval 7/18/83
ID# MIN 052483 -2NT (mod)

BUREAU OF AIR QUALITY
ENGINEERING REVIEW - SUMMARY (NOI Dated 3-31-83)
ENGINEER/DATE Carl Broadhead 4/13/83

Owner/Operator: Department of the Air Force Headquarters
2849th Air Base Group

Source: Paint Booths, Diesel Engines, and VOC from Storage Tanks

Applicant/Official: Col. Robert L. Allen (Bill Taylor)

Applicant/Official Address: Hill Air Force Base, Utah 84056

Telephone Number of Contact: 801-777-2065

Plant/Activity Location and Address: Hill Air Force Base

Type of Operation: Military Installation

I. Hill Air Force Base proposes:

A. One (1) aircraft paint booth (5' X 20') filter bank (90% particulate control).

B. (a) Two (2) Protectaire model S1210 WCC water wash spray booths as part of modification on the HVAC system. 95% particulate control.

(b) Enlarge the present make-up air filter bank from 1364 square feet to 2,208 square feet using an underwriters class I or class II filter.

C. Two (2) diesel powered generators for (300 kw & 400 kw) emergency standby power, and estimated operation 25.5 hours per year.

D. Three (3) underground tanks; one 2,000 gallon gasoline tank, one 2,000 gallon JP-4 tank, and one 1,000 gallon Stodard solvent tank. The gasoline tank will have Enco Wheaton coaxial phase I vapor recovery.

III. BACT & Emission Summary

	PM	VOC
1. Paint booth (aircraft)	0.40	7.2
2. Paint booth (HVAC System)	0.01	3.5
3. Standby generators (NO_X) 740 lb/yr)	neg	neg
4. Storage tanks	--	.16
Emission increase in	0.41 T/yr	10.86 T/yr

The above installations qualify for BACT. The first paint booth (aircraft) is too small to require VOC recovery. Particulate control is 90%. The water wash paint booths are sufficiently small (less than 40 ton of HC per year) to be exempt as a major HC modification. Particulate control is 95%. The two diesel standby generators are okay, and the gasoline storage tanks have phase I recovery.

IV. Recommendation and Conditions:

Approval is recommended with the following conditions:

1. The aircraft paint booth in building 48, project #HL. 327-2, shall have 264 sq. ft. of particulate filters. The filter bank and associated four 35,000 cfm fans shall be properly installed to the manufacturers specification and good engineering practice.

2. The HVAC system modification consistency of two (2) new protectaire model 5121OWCC water wash spray booths shall be installed and operated to the manufacturers specifications and good engineering practices.

3. The 2,000 gallon gasoline storage tank shall be equipped with an Emco-Wheaton model A-88 and A-97 phase I coaxial vapor recovery system as proposed.

4. The proposed standby diesel generators, ONAN model #300 DFS 300 kw and model #400 DFV 400 kw shall be installed to manufacturer's specifications. Visible emissions shall not exceed 20% opacity. Manufacturer's recommended air-fuel ratio for low NO_X emissions shall be used.

5. The Executive Secretary shall be notified when the installations are completed, as an initial compliance inspection is required.

LCB:wml
3169

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 2849TH AIR BASE GROUP (AFLC)
HILL AIR FORCE BASE, UTAH 84056

REPLY TO ATTN OF: DE

31 MAR 1983

SUBJECT: Notices of Intent to Construct

BP

RECEIVED
APR 1 1983
Utah ... Of Environmental Health

TO: Utah Air Conservation Committee
ATTN: Brent C. Bradford, Executive Secretary
Bureau of Air Quality
PO Box 2500
Salt Lake City UT 84110

1. In compliance with Section 3.1 of the State Air Conservation Regulations, the four attached Notices of Intent to Construct are submitted by the US Air Force, Hill AFB. Construction and operation approval is requested for the following four projects for which notices of intent are submitted: a new aircraft paint booth, two new parts paint booths, a standby power generator, and three new storage tanks.

2. If additional information is required, please feel free to write this office or telephone Keith Davis or Bill Taylor at 777-2065.

ROBERT L. ALLEN
Colonel, USAF
Base Civil Engineer

4 Atch
1. Notice of Intent, HIL 347-2
2. Notice of Intent, HIL 36-1
3. Notice of Intent, HIL 172-3
4. Notice of Intent, HIL 103-3

4.2.4-1016

Notice of Intent to Construct
Fuel Storage Tank and Pumps, Project Number HIL 103-3
Hill Air Force Base, Utah

1. Project Description: Hill AFB proposes to install two 2,000-gallon and one 1,000-gallon underground storage tanks and pumps on the north side of Building 592. The tanks will store 2,000 gallons of JP-4 and gasoline and 1,000 gallons of PD680 solvent (Stoddard Solvent). These new tanks will replace older existing tanks and are shown on the attached map (see Atch 1).

2. Pollution Emissions: The two sources of hydrocarbon vapor emissions from these fixed roof tanks are breathing losses and working losses. The following table summarizes the fuel and solvent vapor emissions from the new tanks based on the estimated amount of fuel to be used and EPA publication AP-42, "Compilation of Air Pollution Emission Factors."

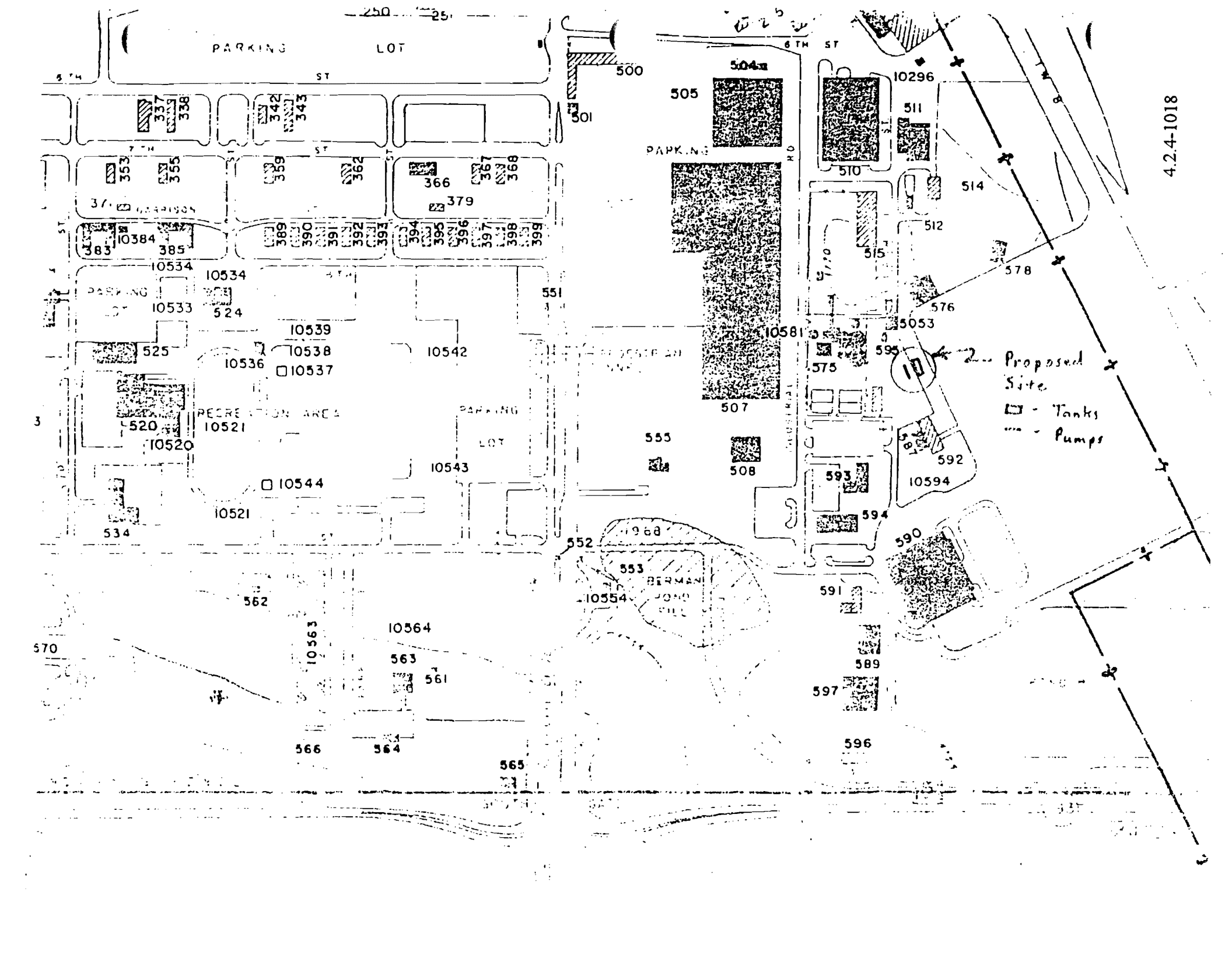
FUEL [annual throughput-gals / average storage/day]	BREATHING LOSSES Emission Factor	Lbs/Yr	WORKING LOSSES Emission Factor	Lbs/Yr
Gasoline (21,000/1,000)	1.0[1]	21	10[1]	210
JP-4 (42,000/1,000)	0.086[2]	31.4	2.5[2]	105
PD680 (12,000/500)	0.0046[2]	Neg	0.025[2]	Neg

NOTES: (1) Page 4.4-11 of AP-42
(2) Table 4.3-4 on page 4.3-15 of AP-42

3. Air Cleaning Devices: Vapor emissions from the filling of the 2,000-gallon gasoline storage tank will be controlled by an EMCO WHEATON model A-88 and A-97 coaxial vapor recovery drop tube and 4" adaptor which are similar to the parts shown on Attachment 2.

4. Emission Point: Attachment 1 shows the location of the tanks and pumps and the surrounding industrial facilities.

5. Sampling Points: No sampling points are anticipated.


4.2.4-1018
Proposed Site
- Tanks
- Pumps
PARKING LOT
6TH ST
PARKING
RECREATION AREA
PARKING LOT
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353
355
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366
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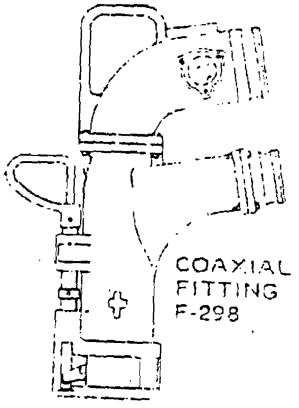
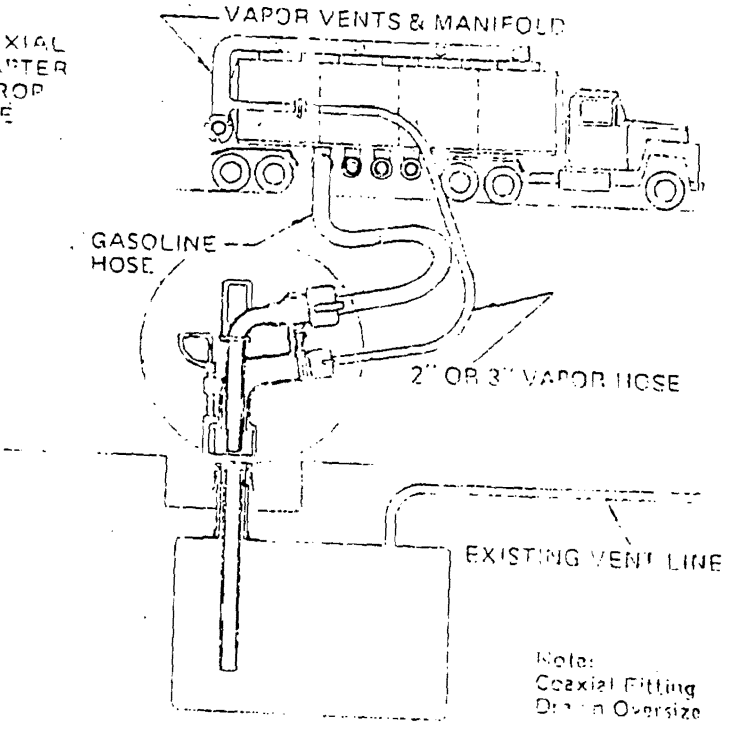
COAXIAL VAPOR RECOVERY SYSTEM



- NO DIGGING-slips into existing Fill Tube
- Negligible Flow Rate Reduction
- Thoroughly Field Tested
- Priced Right



Notice of Intent to Construct
Paint Booth, Building 48, Project Number HIL 347-2
Hill Air Force Base, Utah

1. Project Description: Hill AFB proposes to modify the existing nose dock, Building 48, into an aircraft paint booth. This paint booth can be simply described as a sealed room with make-up air fans and exhaust filters and fans. The room will be 45 ft by 52 ft and the filter bank will be 5 ft by 20 ft. Four 35,000 cfm fans will supply the make-up air and will exhaust the air. The attached map shows the location of the proposed paint booth.

2. Pollution Emissions: The proposed paint booth will exhaust two types of air pollutants, paint particulates and hydrocarbon solvent vapors. The estimated filter efficiency in the "Air Pollution Engineering Manual" is 90% for particulates and 0% for hydrocarbon vapors. Using EPA publication AP-42, "Compilation of Air Pollution Emission Factors" and the estimated quantities of paint, lacquer, and primer to be used, emissions from the paint booth will be 7.3 tons of hydrocarbons and 400 lbs of particulates. A sample calculation is shown below:

$$\frac{(12.5 \text{ lbs paint/gal})\ (40 \text{ gals paint used/week})\ (52 \text{ weeks/yr})}{(2000 \text{ lbs/ton})}$$

$$\frac{(1120 \text{ lbs HC/ton paint})}{(2000 \text{ lbs/ton})} = 7.3 \text{ tons of hydrocarbons}$$

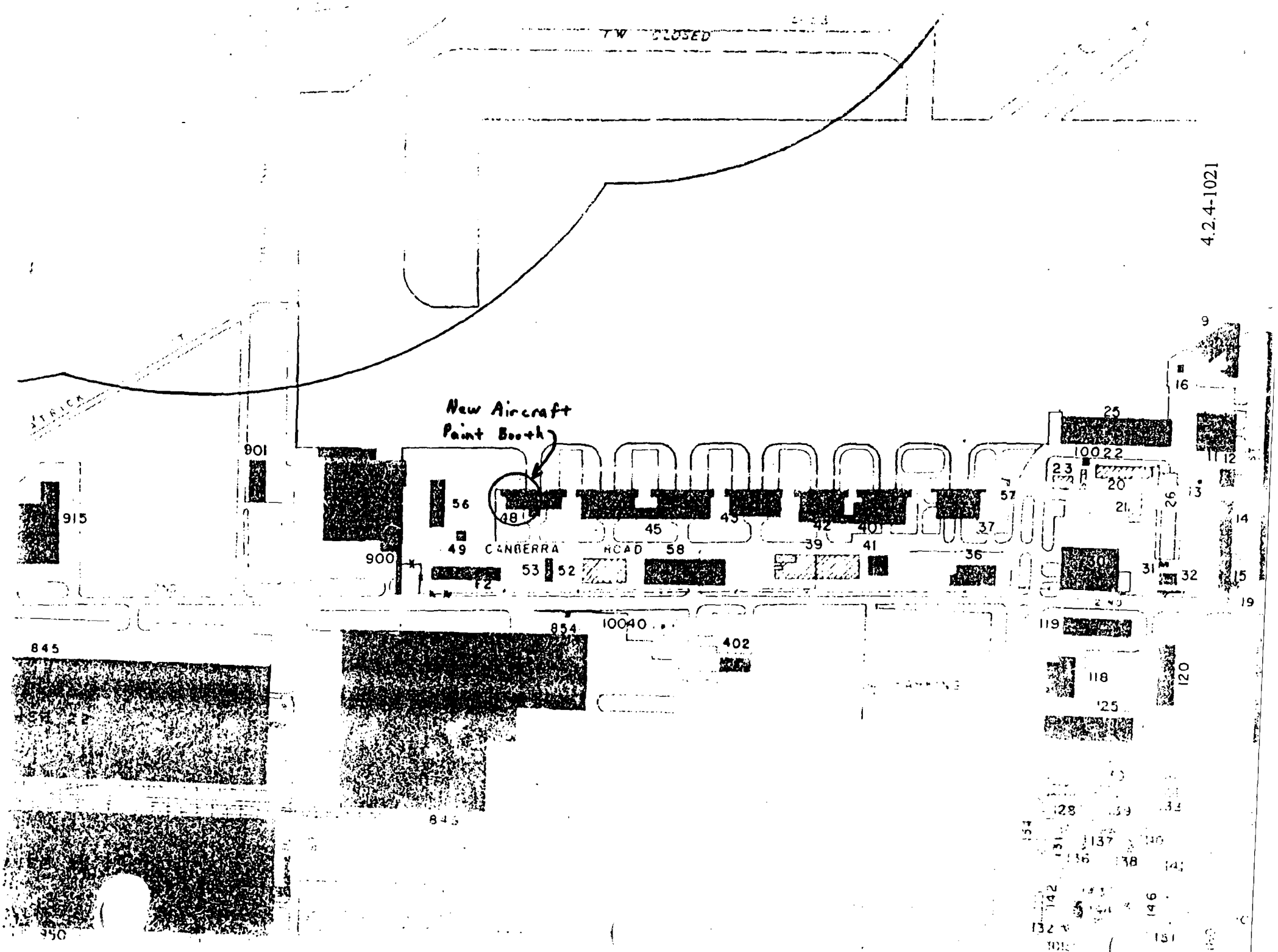
3. Air Cleaning Devices: Two-hundred-sixty-four sq ft of particulate filters will be supplied by the contractor so the type to be used is unknown at this time.

4. Emission Point: The top of the 48-inch diameter exhaust stack will be 45 ft above the ground and approximately 150 ft from the nearest adjacent facility.

5. Sampling Points: No sampling points are anticipated.

6. Operation: The paint booth will be operated eight hours per day and five days per week.

7. References: "Air Pollution Engineering Manual," US Department of Health and Welfare, National Center for Air Pollution Control, Cincinnati, Ohio, 1967 (page 389)


TW CLOSED
New Aircraft Paint Booth
CANBERRA
HEAD
901
915
900
845
850
854
10040
402
10022
4.2.4-1021

Notice of Intent to Construct
Modify HVAC System, Building 220, Project Number HIL 36-1
Hill Air Force Base, Utah

1. Project Description: Hill AFB proposes to modify an existing painting facility by removing the existing 1,364 sq ft filter bank, installing a new 2,208 sq ft filter bank, adjusting the fan belts and pulleys, and installing two PROTECTAIRE model S1210 WCC water wash spray booths. The remaining portion of this discussion will focus on the new paint booths since no change in air emissions is expected from the HVAC modification or change in filters. Attachment 1 shows the location of Building 220, the new paint booths, and the surrounding industrial facilities. Attachment 2 is a manufacturer's brochure describing the proposed paint booths.

2. Pollution Emissions: The two types of pollutants to be emitted by the proposed paint booths are particulates and hydrocarbon solvent vapors. The "Air Pollution Engineering Manual" estimates that the water spray efficiency is 95% for particulates and no collection of vapors. Using EPA publication AP-42, "Compliance of Air Pollution Emission Factors," and the estimated quantities of paint to be used, an estimated 3.5 tons of hydrocarbon vapors and 100 lbs of particulates will be emitted. A sample calculation is shown below:

$$\frac{(12.5 \text{ lbs paint/gal})\ (20 \text{ gal paint used/day})\ (260 \text{ days/yr})}{(2{,}000 \text{ lb/ton})}$$

$$\frac{(1{,}120 \text{ lbs HC/ton paint})}{(2{,}000 \text{ lbs/ton})} = 3.5 \text{ tons of hydrocarbons}$$

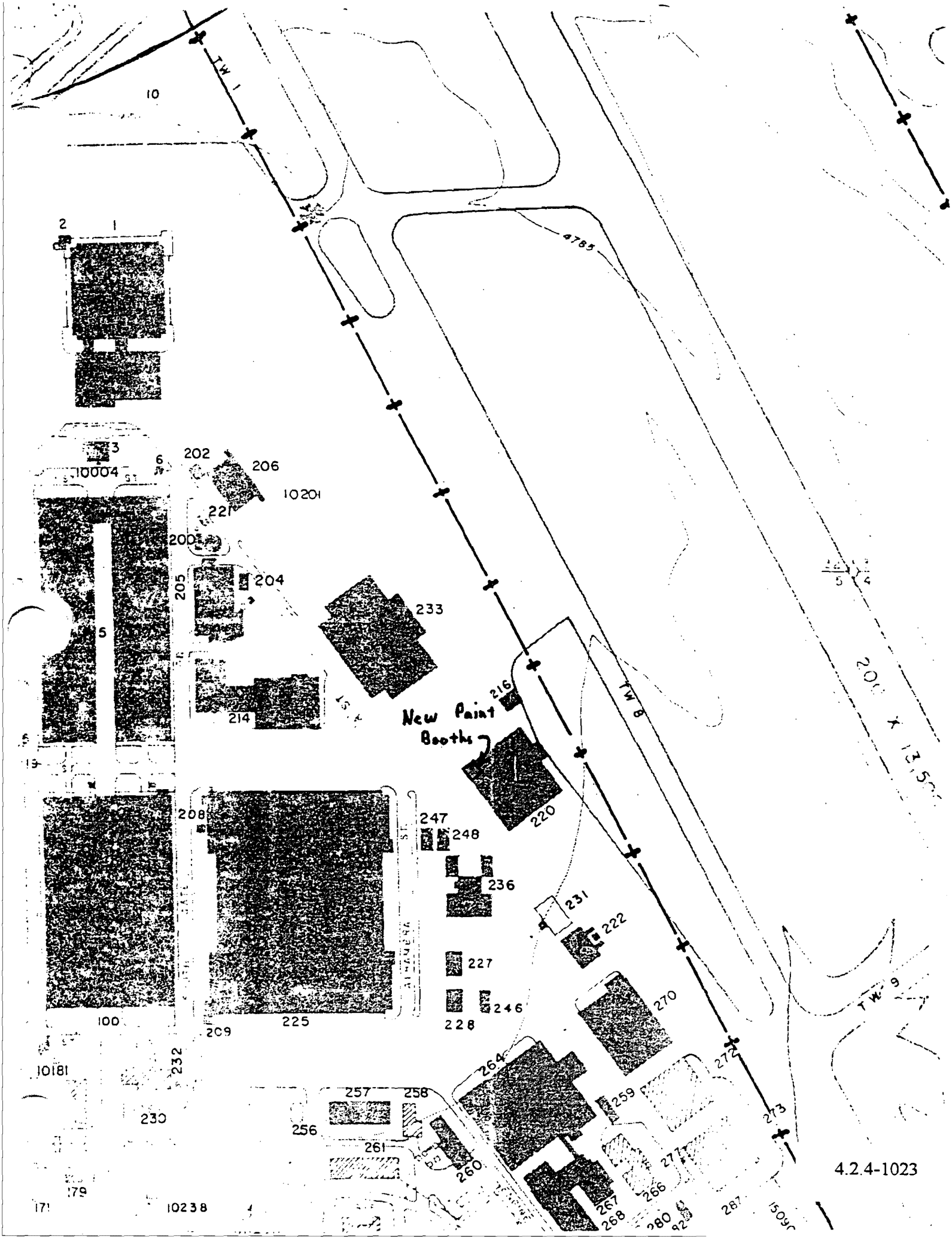
3. Air Cleaning Devices: Paint particulates are controlled by a spray of water and baffle plates.

4. Emission Point: The top of the exhaust stack will be above the roof of Building 220, 24 ft above the ground and 200 ft from the closest adjacent facility.

5. Sampling Points: No sampling points are anticipated.

6. Operation: The proposed new painting facilities will be operated for 16 hours per day and five days per week. In the future, the painting facility may be operated for three shifts per day.

7. References: "Air Pollution Engineering Manual," US Department of Health and Welfare, National Center for Air Pollution Control, Cincinnati, Ohio, 1967 (page 389)


TW 1
TW 8
TW 9
10
2
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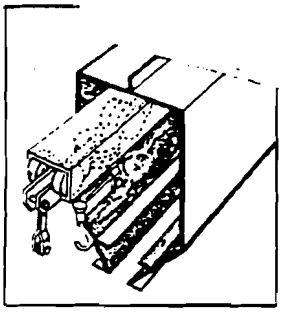
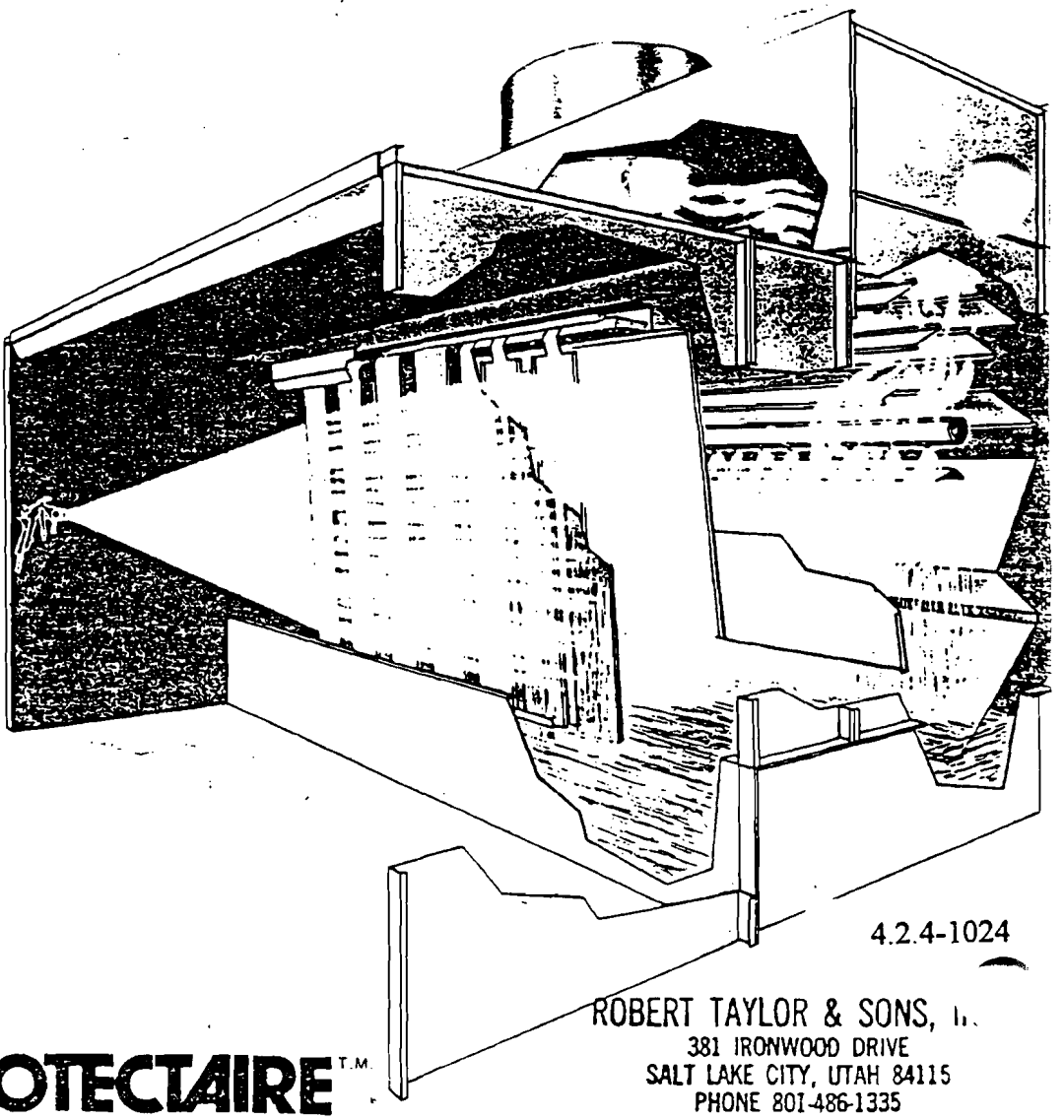
4785
3
6
10004
202
206
10201
221
200
205
204
233
5
214
216
New Paint Booths
220
208
247
248
236
231
222
227
246
228
270
100
209
225
232
10181
264
272
257
258
259
230
256
261
260
273
271
266
267
268
280
287
179
171
10238
20' x 12.5'

4.2.4-1023

PROTECTAIRE™



Patented Protectaire system eliminates conveyor problems



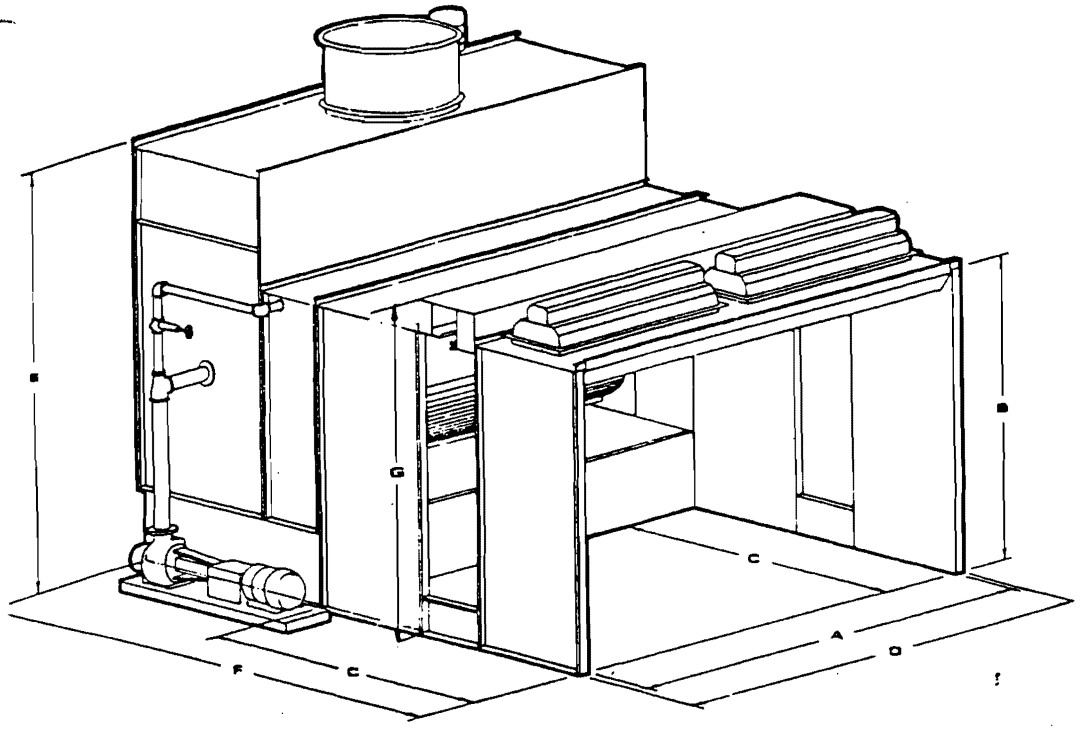
4.2.4-1024

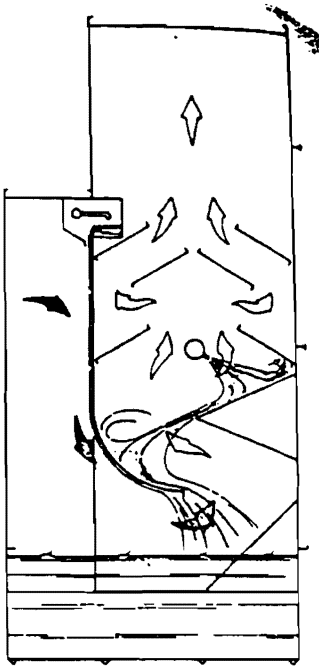
ROBERT TAYLOR & SONS, I.
381 IRONWOOD DRIVE
SALT LAKE CITY, UTAH 84115
PHONE 801-486-1335

PROTECTAIRE™ systems co. 1353 N. McLean Boulevard, Elgin, Illinois 60120 ● Tel: (312) 697-3400

Conventional Water Wa , Spray Booths

PROTECTAIRE™





The Protectaire Conventional Water Wash Spray Booth is scientifically engineered to handle all oduction spraying in areas with a limited height. rotectaire's exclusive high volume low velocity water curtain design using non-clog nozzles with a large water manifold, assures long, trouble free performance. This floods the curtain with water for more effective overspray pickup. Much more effective than an atomized spray!

No pads to replace. Overspray is trapped in recirculating water. This allows longer periods between major cleanups, perfect for high volume use.

Moisture eliminator plates remove paint laden moisture by changing air flow directions. Easily removable for cleaning. Front access to the washing chamber with easily removable front panels for cleaning. No longer is it necessary to have access to the rear of the spray booth. This feature is important for saving space and maintenance.

Water tank is of 10 or 12 gauge steel welded construction, reinforced with angles, supplied with drains, overflow and automatic water level control with filling chamber. Wash area is of 16 gauge steel and work area of 18 gauge. All panels are flanged for added rigidity punched every 6" with ⅜" round holes.

\ll models furnished with:

- Suitable Heavy Duty exhaust unit AMCA "B" spark proof construction and open type motor.
- Suitable Heavy Duty water pump with an explosion proof Heavy Duty motor.
- Light fixtures 3—tube 48" sealed and gasketed fluorescent for class 1 division 2 Hazard Locations.

Water Wash booths are available in two versions.

1.) Booths with Protectaire System, mounting heights are variable. Please refer to page 5.

2.) Conventional Booths without a Protectaire System.

Protectaire system features

Reduce

- Air make-up requirements, exhaust requirements, and overall energy usage by lowering your spray booth height requirements with a Protectaire System.
- Product rework due to particles dislodged from conveyor.

Eliminate

- Production stoppage due to conveyor breakdowns.
- Excessive maintenance costs.

Prevent

- Build-up of overspray, dirt, dust and other contaminants.
- Costly deterioration of bearings and chain.

Protect

- Against breakdowns in electrostatic equipment and assurance of best possible efficiency through better grounding.
- Product quality due to consistent wrap-around in electrostatic spraying.

The Patented Protectaire System Is Your Problem Solver.

125 F.P.M. Minimum Face Velocity Without Conveyor Opening*
100 F.P.M. Minimum Face Velocity With Conveyor Opening*

Spray Booth Model Numbers				Spray Booth Dimensions									Water Pump & Motor Furnished	
				Inside Working			Outside Overall							
Without Conveyor Opening	With Conveyor Opening	With Conv. Opening and Prot. Sys.	Approx. Shipping Wt. (Lbs)	A Width	B Height	C Depth	D Width	E Height	F Depth	G Conv. Height	No. Of Light Fixtures Furnished	Exhaust Unit Supplied	Maximum Conveyor Opening Sq. Ft./Side	CAP G.P.M.	Motor H.P.
57WC	57WCC	57WCCP	1785	5'-0"	7'-0"	6'-0"	5'-4"	11'-2"	11'-2"	8'-0"	1	24200	9	200	1½
67WC	67WCC	67WCCP	2142	6'-0"	7'-0"	6'-0"	6'-4"	11'-2"	11'-2"	8'-0"	1	24300	11	240	1½
87WC	87WCC	87WCCP	2856	8'-0"	7'-0"	6'-0"	8'-4"	11'-2"	11'-2"	8'-0"	1	24300	14	320	3
107WC	107WCC	107WCCP	3570	10'-0"	7'-0"	7'-0"	10'-4"	11'-2"	12'-2"	8'-0"	2	34300	18	400	5
127WC	127WCC	127WCCP	4284	12'-0"	7'-0"	7'-0"	13'-0"	11'-2"	12'-2"	8'-0"	2	34300	21	480	5
147WC	147WCC	147WCCP	4998	14'-0"	7'-0"	7'-0"	15'-0"	11'-2"	12'-2"	8'-0"	2	34300	25	560	5
167WC	167WCC	167WCCP	5712	16'-0"	7'-0"	7'-0"	17'-0"	11'-2"	12'-2"	8'-0"	3	34500	28	640	5
187WC	187WCC	187WCCP	6426	18'-0"	7'-0"	7'-0"	19'-0"	11'-2"	12'-2"	8'-0"	3	42500	32	720	7½
207WC	207WCC	207WCCP	7140	20'-0"	7'-0"	7'-0"	21'-0"	11'-2"	12'-2"	8'-0"	4	42500	35	800	7½
58WC	58WCC	58WCCP	2040	5'-0"	8'-0"	6'-0"	5'-4"	11'-2"	11'-2"	9'-0"	1	24300	10	200	1½
68WC	68WCC	68WCCP	2448	6'-0"	8'-0"	6'-0"	6'-4"	11'-2"	11'-2"	9'-0"	1	24300	12	240	1½
88WC	88WCC	88WCCP	3264	8'-0"	8'-0"	6'-0"	8'-4"	11'-2"	11'-2"	9'-0"	1	34200	16	320	3
108WC	108WCC	108WCCP	4080	10'-0"	8'-0"	7'-0"	10'-4"	11'-2"	12'-2"	9'-0"	2	34300	20	400	5
128WC	128WCC	128WCCP	4896	12'-0"	8'-0"	7'-0"	13'-0"	11'-2"	12'-2"	9'-0"	2	34300	24	480	5
148WC	148WCC	148WCCP	5712	14'-0"	8'-0"	7'-0"	15'-0"	11'-2"	12'-2"	9'-0"	2	34500	28	560	5
168WC	168WCC	168WCCP	6528	16'-0"	8'-0"	7'-0"	17'-0"	11'-2"	12'-2"	9'-0"	3	42500	32	640	5
188WC	188WCC	188WCCP	7344	18'-0"	8'-0"	7'-0"	19'-0"	11'-2"	12'-2"	9'-0"	3	42500	36	720	7½
208WC	208WCC	208WCCP	8160	20'-0"	8'-0"	7'-0"	21'-0"	11'-2"	12'-2"	9'-0"	4	42500	40	800	7½
59WC	59WCC	59WCCP	2295	5'-0"	9'-0"	6'-0"	5'-4"	13'-2"	11'-2"	10'-0"	1	24300	11	200	1½
69WC	69WCC	69WCCP	2754	6'-0"	9'-0"	6'-0"	6'-4"	13'-2"	11'-2"	10'-0"	1	24300	14	240	1½
89WC	89WCC	89WCCP	3672	8'-0"	9'-0"	6'-0"	8'-4"	13'-2"	11'-2"	10'-0"	1	34300	18	320	3
109WC	109WCC	109WCCP	4590	10'-0"	9'-0"	7'-0"	10'-4"	13'-2"	12'-2"	10'-0"	2	34300	23	400	5
129WC	129WCC	129WCCP	5508	12'-0"	9'-0"	7'-0"	13'-0"	13'-2"	12'-2"	10'-0"	2	34500	27	480	5
149WC	149WCC	149WCCP	6426	14'-0"	9'-0"	7'-0"	15'-0"	13'-2"	12'-2"	10'-0"	2	34500	32	560	5
169WC	169WCC	169WCCP	7344	16'-0"	9'-0"	7'-0"	17'-0"	13'-2"	12'-2"	10'-0"	3	42500	36	640	5
189WC	189WCC	189WCCP	8262	18'-0"	9'-0"	7'-0"	19'-0"	13'-2"	12'-2"	10'-0"	3	42500	41	720	7½
209WC	209WCC	209WCCP	9180	20'-0"	9'-0"	7'-0"	21'-0"	13'-2"	12'-2"	10'-0"	4	42750	45	800	7½
510WC	510WCC	510WCCP	2550	5'-0"	10'-0"	6'-0"	5'-4"	13'-2"	11'-2"	11'-0"	1	24300	13	200	1½
610WC	610WCC	610WCCP	3060	6'-0"	10'-0"	6'-0"	6'-4"	13'-2"	11'-2"	11'-0"	1	24300	15	240	1½
810WC	810WCC	810WCCP	4080	8'-0"	10'-0"	6'-0"	8'-4"	13'-2"	11'-2"	11'-0"	1	34300	20	320	3
1010WC	1010WCC	1010WCCP	5100	10'-0"	10'-0"	7'-0"	10'-4"	13'-2"	12'-2"	11'-0"	2	34300	25	400	5
1210WC	1210WCC	1210WCCP	6120	12'-0"	10'-0"	7'-0"	13'-0"	13'-2"	12'-2"	11'-0"	2	34500	30	480	5
1410WC	1410WCC	1410WCCP	7140	14'-0"	10'-0"	7'-0"	15'-0"	13'-2"	12'-2"	11'-0"	2	42500	35	560	5
1610WC	1610WCC	1610WCCP	8160	16'-0"	10'-0"	7'-0"	17'-0"	13'-2"	12'-2"	11'-0"	3	42500	40	640	5
1810WC	1810WCC	1810WCCP	9180	18'-0"	10'-0"	7'-0"	19'-0"	13'-2"	12'-2"	11'-0"	3	42750	45	720	7½
2010WC	2010WCC	2010WCCP	10200	20'-0"	10'-0"	7'-0"	21'-0"	13'-2"	12'-2"	11'-0"	4	42750	50	800	7½
511WC	511WCC	511WCCP	2805	5'-0"	11'-0"	6'-0"	5'-4"	13'-2"	11'-2"	12'-0"	1	74300	14	200	1½
611WC	611WCC	611WCCP	3366	6'-0"	11'-0"	6'-0"	6'-4"	13'-2"	11'-2"	12'-0"	1	34200	17	240	1½
811WCC	811WCC	811WCCP	4488	8'-0"	11'-0"	6'-0"	8'-4"	13'-2"	11'-2"	12'-0"	1	34300	22	320	3
1011WC	1011WCC	1011WCCP	5610	10'-0"	11'-0"	7'-0"	10'-4"	13'-2"	12'-2"	12'-0"	2	34500	28	400	5
1211WC	1211WCC	1211WCCP	6732	12'-0"	11'-0"	7'-0"	13'-0"	13'-2"	12'-2"	12'-0"	2	42500	33	480	5
1411WC	1411WCC	1411WCCP	7854	14'-0"	11'-0"	7'-0"	15'-0"	13'-2"	12'-2"	12'-0"	2	42500	39	560	5
1611WC	1611WCC	1611WCCP	8976	16'-0"	11'-0"	7'-0"	17'-0"	13'-2"	12'-2"	12'-0"	3	42750	44	640	5
1811WC	1811WCC	1811WCCP	10098	18'-0"	11'-0"	7'-0"	19'-0"	13'-2"	12'-2"	12'-0"	3	42750	50	720	7½
2011WC	2011WCC	2011WCCP	11220	20'-0"	11'-0"	7'-0"	21'-0"	13'-2"	12'-2"	12'-0"	4	2-34500	55	800	7½
512WC	512WCC	512WCCP	3060	5'-0"	12'-0"	6'-0"	5'-4"	13'-2"	11'-2"	13'-0"	1	24300	15	200	1½
612WC	612WCC	612WCCP	3672	6'-0"	12'-0"	6'-0"	6'-4"	13'-2"	11'-2"	13'-0"	1	34300	18	240	1½
812WC	812WCC	812WCCP	4896	8'-0"	12'-0"	6'-0"	8'-4"	13'-2"	11'-2"	13'-0"	1	34300	24	320	3
1012WC	1012WCC	1012WCCP	6120	10'-0"	12'-0"	7'-0"	10'-4"	13'-2"	12'-2"	13'-0"	2	34500	30	400	5
1212WC	1212WCC	1212WCCP	7344	12'-0"	12'-0"	7'-0"	13'-0"	13'-2"	12'-2"	13'-0"	2	42500	36	480	5
1412WC	1412WCC	1412WCCP	8568	14'-0"	12'-0"	7'-0"	15'-0"	13'-2"	12'-2"	13'-0"	2	42500	44	560	5
1612WC	1612WCC	1612WCCP	9792	16'-0"	12'-0"	7'-0"	17'-0"	13'-2"	12'-2"	13'-0"	3	42750	48	640	5
1812WC	1812WCC	1812WCCP	11016	18'-0"	12'-0"	7'-0"	19'-0"	13'-2"	12'-2"	13'-0"	3	2-34300	54	720	7½
2012WC	2012WCC	2012WCCP	12240	20'-0"	12'-0"	7'-0"	21'-0"	13'-2"	12'-2"	13'-0"	4	2-34500	60	800	7½

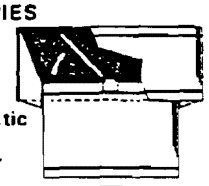
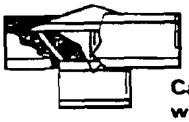
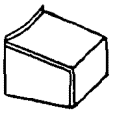
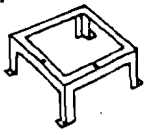
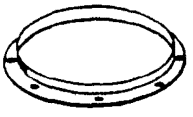
Conveyor Opening requires sketch of location and size of opening.

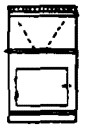
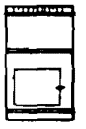
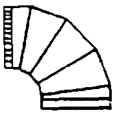
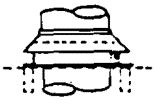
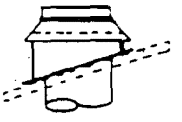
Water pump motors are explosion proof, 3 phase, 60 cycle, 230/460 volt. Other voltage motors are available to meet local requirements, specify on order.

NOTE: Pump unit furnished may be located on right side or left side, specify on order.

Ducting: Protectaire spray booth construction and exhaust air flows velocities are designed to meet O.S.H.A. standards. Exhaust units and motors supplied are based on the booth installed with a maximum of 25' straight exhaust ducting. When additional ducting or elbows are used, higher output fan and large motors may be required. Consult Protectaire Systems, Co. Representative.

*Other face velocities are available upon request. Consult Protectaire Systems Co. Representative.

	Pipe Model Size Numbers	Shp. Wt. Lbs.
DELUXE WEATHER CANOPIES With Rain Guard And Automatic Gravity Damper 	18" ARV-18	85
	24" ARV-24	120
	30" ARV-30	160
	34" ARV-34	200
	36" ARV-36	225
	42" ARV-42	250
WEATHER CANOPIES  Canopy with Rain Guard	18" WPC-18	155
	24" WPC-24	200
	30" WPC-30	240
	34" WPC-34	265
	36" WPC-36	300
	42" WPC-42	340
AUTOMATIC SHUTTER ADAPTOR FLANGE  Simplifies Attaching Shutter to Round Pipe	18" ASF-18	60
	24" ASF-24	80
	30" ASF-30	90
	34" ASF-34	110
	36" ASF-36	130
	42" ASF-42	140
EXHAUST UNIT MOTOR PROTECTION COVER  Order By Pipe Diameter Size	18" EPC-18	40
	24" EPC-24	45
	30" EPC-30	65
	34" EPC-34	80
	36" EPC-36	85
	42" EPC-42	95
EXHAUST UNIT ROOF MOUNT SUPPORT 	18" RMS-18	45
	24" RMS-24	54
	30" RMS-30	65
	34" RMS-34	75
	36" RMS-36	85
	42" RMS-42	100
FAN CONNECTOR RINGS 	18" FCR-18	10
	24" FCR-24	13
	30" FCR-30	15
	34" FCR-34	18
	36" FCR-36	19
	42" FCR-42	21

	Pipe Model Size Numbers	Shp. Wt. Lbs.
***EXHAUST PIPING**  Exhaust Pipe Plain	18" EPP-18	45
	24" EPP-24	70
	30" EPP-30	75
	34" EPP-34	80
	36" EPP-36	85
	42" EPP-42	95
 Exhaust Pipe with Automatic Gravity Damper and Clean-out Door	18" EPA-18	55
	24" EPA-24	80
	30" EPA-30	75
	34" EPA-34	95
	36" EPA-36	100
	42" EPA-42	110
 Exhaust Pipe with Clean-out Door	18" EPD-18	50
	24" EPD-24	80
	30" EPD-30	75
	34" EPD-34	95
	36" EPD-36	100
	42" EPD-42	110
***OVERALL LENGTH 36". ASSEMBLED LENGTH 34".**		
EXHAUST ELBOWS  45°	18" EEF-18	50
	24" EEF-24	65
	30" EEF-30	85
	34" EEF-34	105
	36" EEF-36	120
	42" EEF-42	145
 90°	18" EEN-18	70
	24" EEN-24	100
	30" EEN-30	120
	34" EEN-34	160
	36" EEN-36	185
	42" EEN-42	215
ROOF FLANGES  For Flat Roof	18" FRF-18	45
	24" FRF-24	60
	30" FRF-30	70
	34" FRF-34	80
	36" FRF-36	85
	42" FRF-42	95
 For Pitched Roof (Specify Pitch of Roof)	18" PRF-18	120
	24" PRF-24	155
	30" PRF-30	175
	34" PRF-34	200
	36" PRF-36	210
	42" PRF-42	220

GUY WIRE SETS

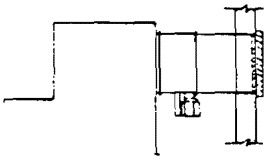
Includes one 50 ft. length of #9 gal. wire cable, (3) 5/16" turnbuckles, (6) cable clamps.

Exhaust Stack Diameter	Model Number	Exhaust Stack Diameter	Model Number
18"	GWS-18	34"	GWS-34
24"	GWS-24	36"	GWS-36
30"	GWS-30	42"	GWS-42

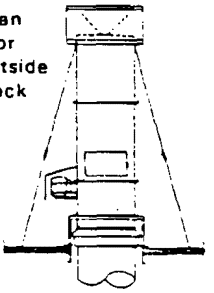
Typical exhaust unit and stack installations

The diagrams below illustrate how the different components are used to make up the several systems shown. For unusual applications, consult the factory for recommendation.

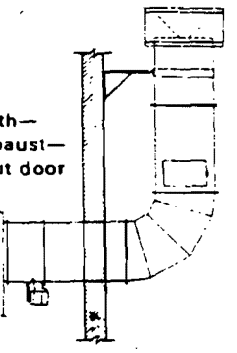
Water wash booth —back exhaust— automatic hutter in stack.



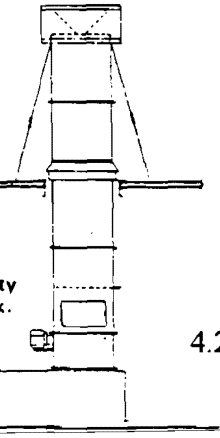
Exhaust fan and motor mounted outside on roof deck



Dry Booth— back exhaust— Clean-out door in stack



Water wash booth— top exhaust— automatic gravity damper in stack.



SERVICE SINCE 1932

Robert Taylor and Sons, Inc.

Petroleum and Industrial Equipment

[X] P.O. BOX 151049
SALT LAKE CITY, UTAH 84115
801-486-1335

[ ] 3821 OVERLAND ROAD
BOISE, IDAHO 83705
208-345-9643

QUOTATION NO. HFB-83182 DATE AUG. 31, 1982

TO DIRECTORATE OF CONTRACTING & MFG. ATTENTION:

ADDRESS

JOB:

WE PROPOSE TO FURNISH:

QUANTITY	MATERIALS AND SPECIFICATIONS	PRICE

CSA approved for Class 1, Division 2 hazardous locations. Glass is sealed in a tight cover for safety. Cover is hinged for easy access. White baked enamel finish for long life and efficiency. The cover frame is finished in porcelain enamel. 120 watt light fixture less tubes with hinged mounting brackets fluorescent, rapid start.

120 - 1 - 60 hz.

4 - Windows with 15" X 53" Misco hammered glass in mounting hardware for ease of cleaning and replacement.

ACCESSORIES:

1). 1 - #EPA-42 - Exhaust Pipe with Automatic Damper and Clean Door.

2). 1 - #SV-10 - Safety Valve.

3). 1 - Electrical Panel with Motor Starters, Disconnect, Transformer & fuses.

ITEM 0003:

2 - PROTECTAIRE Model #S1210WCC Water Wash Spray Booth with Conveyor Openings of 17 sq. ft.

1). The spray booth will be constructed of 18 gauge sheet steel with 2 inch edge flantes, punched on 6" centers for assembly. All parts will be tagged with corresponding part numbers as per drawings supplied. Booth will be complete with a 4 inch fire deflector curtain along top front edge.

Tooth parts will be factory painted with one coat of medium

ok 18ga 2"

4.2.4-1028

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208-345-9643

QUOTATION NO. HFB-83182 DATE AUG. 31, 1982

TO DIRECTORATE OF CONTRACTING & MFG. ATTENTION:

ADDRESS

JOB:

WE PROPOSE TO FURNISH:

QUANTITY	MATERIALS AND SPECIFICATIONS	PRICE
	blue industrial type enamel.	
	2). Inside Working Dimensions:	OK
	12'0" width, 10'0" height, 15'0" depth	
	3). Outside Overall Dimensions	OK
	13'0" width, 13'2" height, 21'2" depth	
	4). Tubeaxial Fan: 180 F.P.M. Design Face Velocity 29,600 CFM.	OK
	1 - #421000 - 42 inch diameter high performance, spark resistant fans. Fan is belt driven with motor pulley, fan pulley, v-belts, motor base and factory grease packed bearings with external grease fittings.	
	10 H.P. explosion proof, 1800 RPM, 230/460/3/60 hz. Motor.	
	5). All booths come complete with all necessary assembly hardware, construction drawings and installation instructions.	
	WASHING CHAMBER	
	1 - 12 ft. Protectaire exclusive washing chamber complete with water collecting tank, exclusive air washing chamber and exhaust top with fan connector ring to connect to fan or exhaust stack.	OK
	The water collecting tank will be fabricated from 12 gauge sheet steel reinforced with angle iron, 5'0" deep and 2'0" high flanged on 3 sides with holes punched on 6" centers for assembly.	Better

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QUOTATION NO. HFB-83182 DATE AUG. 31, 1982

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ADDRESS

JOB:

WE PROPOSE TO FURNISH:

QUANTITY	MATERIALS AND SPECIFICATIONS	PRICE
	Tank is factory welded and painted for long trouble-free life.	
	Tank is complete with fresh water intake of 2' diameter, overflow coupling of 2" diameter, pump intake connection with strainer to prevent pump clogging.	OK
	The Water Tank Assembly is complete with automatic water level control float valve assembly to maintain the correct level in the water collecting pan.	OK
	The washing section will be fabricated from 16 gauge sheet steel panels with reinforced angels prepunched on 6" centers for ease of assembly. This section is complete with water headers, Protectaire exclusive non-clogging nozzles, gate valves(s) for front water curtain for fine tuning front water sheet, moisture eliminator baffles and easily removable front water curtain baffle plates for access and maintenance, exhaust top with fan connector ring to connect to fan or exhaust stack.	Better.
	WATER PUMP - Located Behind Booth	
	One centrifugal end section frame mounted pump, with a 5 H.P., 1750 RPM, ball bearing explosion proof motor for 460 volt, 3 phase, 60 hertz. Pump is sized to deliver 480 gallons per minute.	? 50 GPM 15 H.P.
	Pump assembly includes complete pump mounted on a center drain base, Lovejoy coupling, enclosed coupling guard and motor mounted and pre-tested.	
	SPRAY BOOTH ILLUMINATION	
	4 - 300 watt incadescent explosion-proof light fixtures, for Class 1, Division 1 hazardous locations. Lamps not included.	OK
	120 - 1 - 60 hz.	4.2.4-1030

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[ ] 3821 OVERLAND ROAD
BOISE, IDAHO 83705
208-345-9643

QUOTATION NO. HFB-83182 DATE AUG. 31, 1982

TO DIRECTORATE OF CONTRACTING & MFG. ATTENTION:

ADDRESS

JOB:

WE PROPOSE TO FURNISH:

QUANTITY	MATERIALS AND SPECIFICATIONS	PRICE
	4 - Windows with 15" X 53" Misco hammered glass in mounting hardware for ease of cleaning and replacement.	
	ACCESSORIES:	
	1). 2 - #EPA-42 - Exhaust Pipe with Automatic Damper and Clean Out Door.	OK
	2). 2 - #SV-10 - Safety Valve.	OK
	3). 2 - Electrical Panels with Motor Starters, Disconnect, Fuses, Transformer, and On-Off Toggle Light Switch.	EP?

Explosion proof?

Notice of Intent to Construct
Standby Power Generators, Building 1274, Project Number HIL 172-3
Hill Air Force Base, Utah

1. Project Description: Hill AFB proposes to build a shed and install two diesel powered generators. The generators are to be supplied by the contractor and are to be ONAN model 300 DFS 300 KW and model 400 DFV 400 KW or equivalent. The project will also include the associated diesel fuel tank and will be located at the southwest corner of the Mission Control Center for the 6501st Range Squadron. The attached map shows the project location and the surrounding administrative offices.

2. Pollution Emissions:

a. The sources of air pollution involved in the proposed project are evaporative emissions from the 950-gallon fuel tank and exhaust emissions from the diesel engines. Evaporation losses from a 950-gallon tank with minimal throughput are very small, estimated at less than five pounds of hydrocarbons per year. Exhaust emissions from diesel generators are dependent on the amount of time it is operational. Since the generators are for standby power only, they will be in operation only during power outages and for periodic maintenance start-ups. We estimated that the generators will be run for 25.5 hours per year (two-year average run time for all diesel generators on base).

b. Emission calculations were made utilizing emission factors provided in section 3.3.3 of EPA publication AP-42 "Compliance of Air Pollution Emission Factors." The emissions were calculated assuming that the load factor is 1.0 and using the following formula:

(Emission Factor in gm/KW-hr) (25.5 hrs/yr) (300 KW + 400 KW) = Emissions gm/yr

Specifically, the emissions are shown in the table below.

Pollutant	Emission Factor (gm/kw-hr)	Emissions gm/yr	Emissions lbs/yr
Carbon Monoxide	4.06	72,471	160
Exhaust Hydrocarbons	1.50	26,775	59.0
Nitrogen Oxides	18.8	335,580	740
Aldehydes	0.28	4,998	11.0
Sulfur Oxides	1.25	22,313	49.2
Particulates	1.34	23,919	52.7

3. Air Cleaning Devices: No air cleaning devices are proposed.

4. Emission Point: The exhaust stack from the generator shelter will be approximately 10 feet above the surrounding ground elevation. The shelter will be located about 16 feet from the southwest end of Building 1274 which will be the nearest adjacent facility.

5. Sampling Points: No sampling points are anticipated.

6. Operation: The diesel engines will be run only for monthly maintenance and during scheduled and unscheduled power outages.

New Diesel Generators
N15
N14
N13
N12
14
13
12
1131AB
1130
1131CD
1121
1135
1136
1125
1123
1119
1128
1120
1122
1124
1151
H103
1103
1106
1118
1107
1102
1104
1108
1115
1110
1112
1114
1116
1294
1284
1274
1264
1254
1253
1295
1285
1275
1265
255
1286
11290
1276
266
256
1297
1287
1277
1267
1257
1298
1288
1278
1268
1279
1269
1292
1296

State	Utah
State Agency	Department of Environmental Quality
Affected Area	Hill AFB
Regulation	Source-specific requirements
Rule Number	Ozone NAAQS Approval Orders
Rule Title	BAQE-669-88, Approval Order for Paint Distillation Unit in Building 514, Davis County (12/20/1988)
State Effective Date	03/04/1997
State Adoption Date	02/05/1997
EPA Effective Date	08/18/1997
Notice of Final Rule Date	07/17/1997
Notice of Final Rule Citation	62 FR 38213
Comments	

Rule:

Hill AFB - DAQE-669-88.pdf

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-669-88

December 20, 1988

Thayne Judd, Colonel
United States Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill AFB, Utah 84056-5149

Dear Colonel Judd:

Re: Approval Order for Paint Distillation Unit in Building 514
Davis County, CDS A1

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install and operate the two distillation units to be located in building 514 according to the information submitted in the notice of intent dated August 2, 1988.

2. The total amount of nonexempt paints/solvents to be distilled in both units shall not exceed 40,000 gallons per 12-month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitations shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of usage shall be kept for all periods when the plant is in operation. Records of usage shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. Usage shall be determined by maintenance of an operations log which shall be kept in building 514. Entries for the volumes of liquids distilled shall be made on a daily basis.

3. Both distillation units shall be equipped with a water cooled shell and tube condensers. They shall operate whenever distillation is taking place.

4. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

5. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

The fee for issuing this approval order is $278.56. The amount is payable to the Bureau of Air Quality, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order.

Sincerely,

F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/MK/cc

cc: EPA Region VIII, John Dale
Davis County Health Department

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5149

AUG 0 2 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Notice of Intent to Construct Solvent & Waste Paint Distillation Units - Bldg 514

Dear Mr Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations, we submit the attached Notice of Intent to Construct.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-6742.

Sincerely

THAYNE H. JUDD, Col, USAF
Chief, Environmental Mgt Office

1 Atch
Notice of Intent to Construct

RECEIVED
AUG 5 1988
AIR QUALITY

NOTICE OF INTENT TO CONSTRUCT
SOLVENT AND WASTE PAINT DISTILLATION UNITS - BLDG 514

1. PROJECT DESCRIPTION:

We propose to install two distillation units in bldg 514. A Finish Engineering Co's Model BCF-380, solvent distillation unit will be used to distill only the "exempt solvent" 1,1,1-trichloroethane (TCA) and possibly freon. A waste paint distillation unit (not yet selected) will be used to distill solvents from waste paints and paint cleanup solvents. Both of these projects are waste reduction projects aimed at substantially reducing hazardous waste while recovering valuable solvents for recycle and reuse. Each unit comprises of a still pan with heating coils, a water cooled condenser, associated controls and a clean solvent receiving drum. Brochures from two manufacturers of this type of equipment are attached.

2. AIR EMISSIONS:

The possible air emissions from this equipment are non-condensible and fugitive hydrocarbon vapors displaced during filling of clean solvent drums. These Volatile Organic Compounds (VOCs) may consist of, but not limited to, methyl ethyl ketone, toluene, xylene, methyl isobutyl ketone, methyl cellosolve, etc.

For calculation and estimation purposes, it is assumed that all emissions consist of methyl ethyl ketone (MEK). Air is saturated with MEK vapors as drums are being filled. Temperature of emissions is 40°C and ideal behavior is applicable.

Waste paint material recycled = 20,000 gals/yr
Assume saturated air displaced = volume of material recycled.
Vapor pressure of MEK at 40°C = 188 mm Hg
Use ambient pressure = 640 mm Hg

$$\frac{188 \text{ mm Hg MEK}}{640 \text{ mm Hg Total}} \times \frac{20{,}000 \text{ Gal total}}{\text{Yr}} = 5{,}875 \frac{\text{gal MEK Vapor}}{\text{Yr}}$$

Density of MEK Vapor:

$$V = \frac{ZRT}{P}$$

Z is approximately = 1

$$V = 1 \times 998.9 \frac{(\text{mm Hg})\ (\text{cu ft})}{\text{Lb Mole}\ \ ^{\circ}\text{K}} \times \frac{(273+40)^{\circ}\text{K}}{640 \text{ mm Hg}}$$

$$= 488.5 \frac{\text{cu ft}}{\text{Lb Mole}}$$

Molecular Wt of MEK = $\frac{72.1 \text{ Lb}}{\text{Lb Mole}}$

$488.5 \frac{\text{cu ft}}{\text{Lb Mole}} \times \frac{\text{Lb Mole}}{72.1 \text{ Lb}} = 6.77 \frac{\text{cu ft}}{\text{Lb}}$

Pounds of MEK emitted:

$5{,}875 \frac{\text{gal MEK vapor}}{\text{Yr}} \times \frac{\text{cu ft}}{7.48 \text{ gal}} \times 6.77 \frac{\text{Lb}}{\text{cu ft}} = 116 \text{ Lb MEK Vapor/yr}$

$= 0.06 \text{ ton/yr}$

Likewise, emissions from TCA solvent distillation unit may be calculated as follows:

Vapor pressure of TCE at 40°C = 233 mm Hg

TCE emissions $\frac{233}{640} \times 20{,}000 = 7{,}281$ gals/yr

Density of TCA $\frac{1 \times 998.9 \times 313}{640 \times 133.4} = 3.66 \frac{\text{cu ft}}{\text{Lb}}$

Pounds of TCE emitted $\frac{7{,}281}{7.48 \times 3.66} = 266$ Lb/Yr

$= 0.13$ Ton/Yr

Note: TCE & freon are exempt solvents.

3. AIR CLEANING DEVICES:

Hydrocarbon emissions from distillation units will be controlled by use of water cooled shell and tube condensers.

4. EMISSION POINTS:

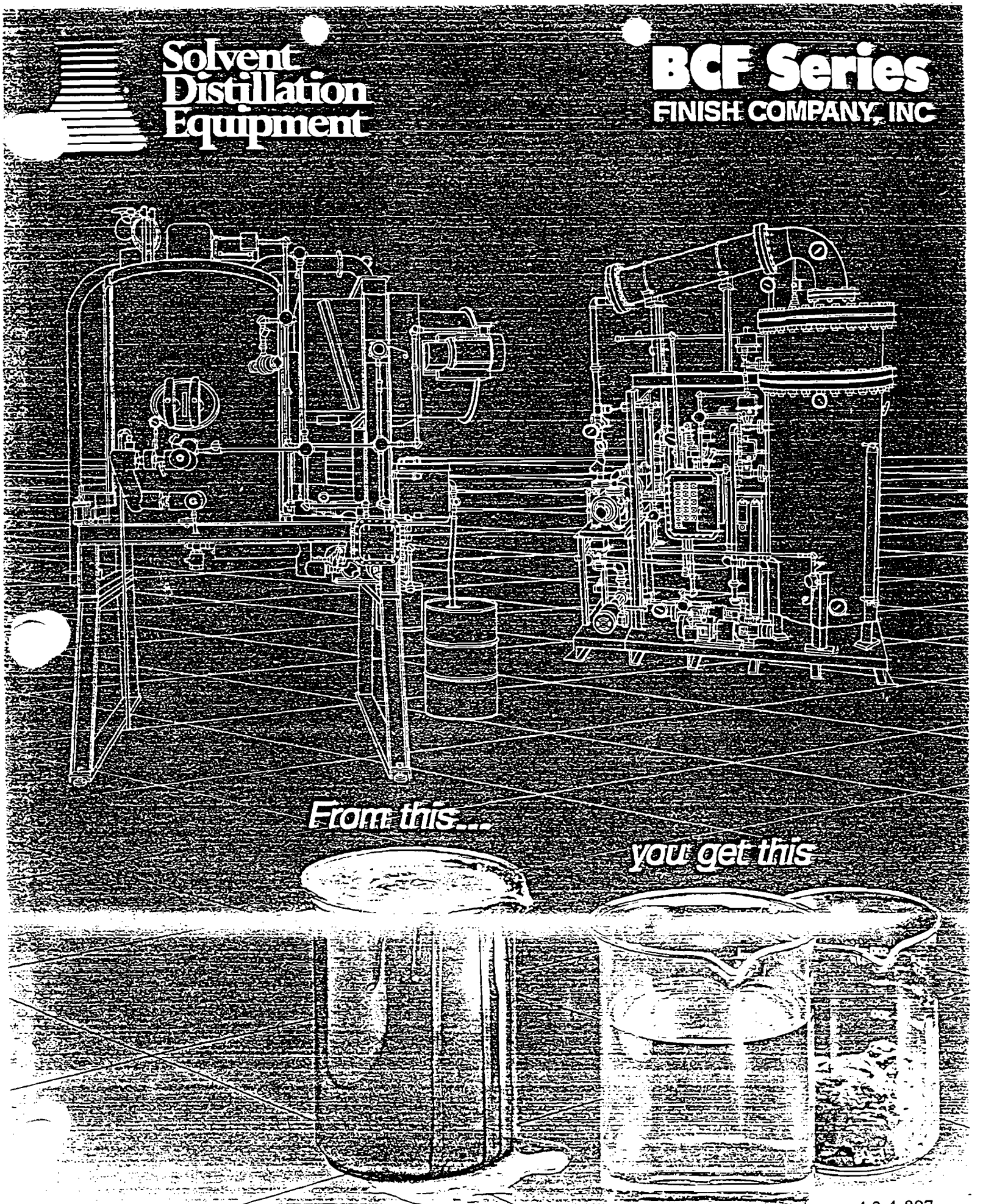
Distillation units have no stacks. Fugitive hydrocarbon emissions will be exhausted via building vent fan. The vent is approximately 20 ft high and two feet in diameter.

5. SAMPLE POINTS:

No sampling points are provided

6. OPERATING SCHEDULE:

These units may be operated 2-3 weeks a month depending on paint and solvent wastes inventory on hand.


Solvent
Distillation
Equipment
BCF Series
FINISH COMPANY, INC
From this...
you get this

How it Works...

Automatic Fill Activated

Contaminated solvent is fed into the BCF boiling chamber one drum at a time or continuously from an existing solvent storage tank.

Solvent Heated

After a minimum liquid level is achieved within the boiling vessel, the heat source is circulated through our unique, integral steam coils. The heat source can be existing in-plant steam or produced by our pre-packaged steam boiler or thermal oil system.

Vapors Condensed

After a time period the solvent will boil and produce vapors which rise and leave the heat chamber through the vapor tube into the condenser. This air or water-cooled condenser will restore the vapors to a liquid state. The clean, clear solvent then gravity flows into a 55-gallon drum or automatically into an existing storage tank.

Cycle Repeated

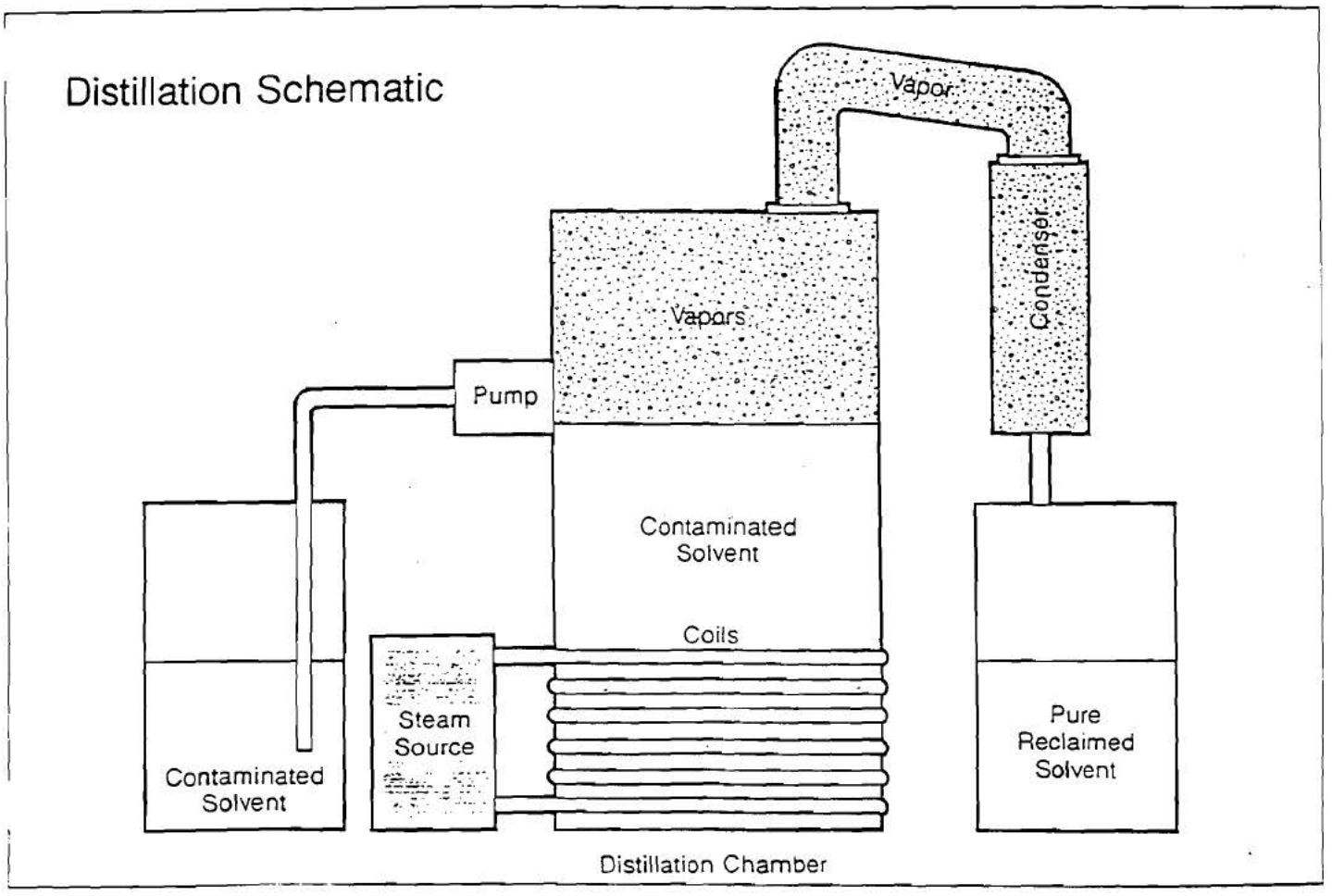
The process is repeated several times as the unit automatically cycles between high and low level sensors. With each cycle, residue in the vessel bottom will become more viscous. This material is kept in suspension by four rotating scraper blades and our exclusive viscosity monitor/recirculation system until ready to gravity drain into a standard 55-gallon drum.

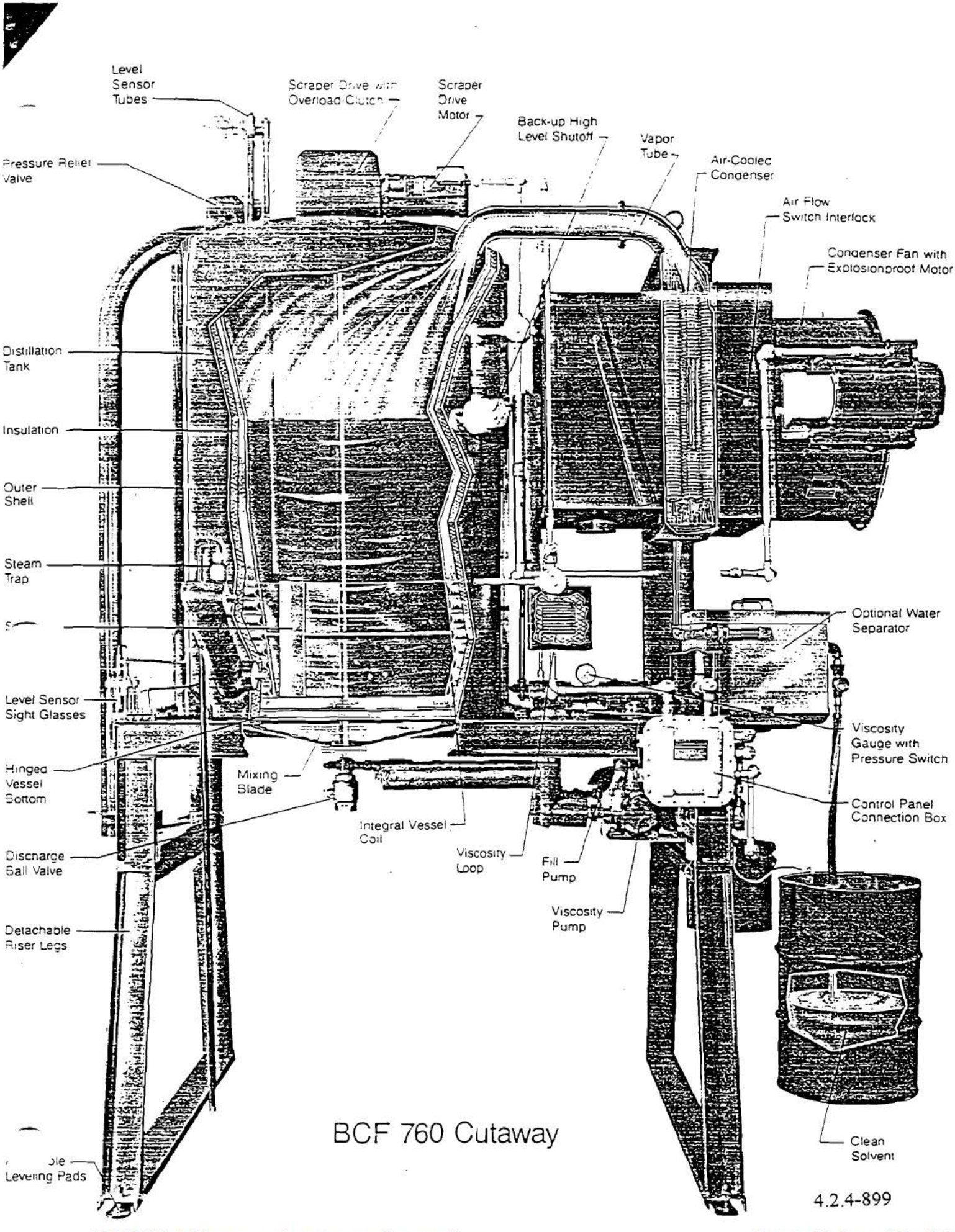
Automatic Shut-off

Should the supply of solvent terminate in the automatic operation, the unit will simply reclaim down to a low level sensor and shut off. In batch operation, the unit will shut off after each drum.

Special Applications

The BCF Model 600 is a special high output unit designed for waste solvent contaminated with little or no solids. It utilizes a twin heat exchanger system rather than integral steam coils and does not require scraper blades. The unit processes up to 200 gallons per hour.




Level Sensor Tubes
Scraper Drive with Overload Clutch
Scraper Drive Motor
Back-up High Level Shutoff
Vapor Tube
Air-Cooled Condenser
Air Flow Switch Interlock
Condenser Fan with Explosionproof Motor
Pressure Relief Valve
Distillation Tank
Insulation
Outer Shell
Steam Trap
Optional Water Separator
Level Sensor Sight Glasses
Viscosity Gauge with Pressure Switch
Hinged Vessel Bottom
Mixing Blade
Control Panel Connection Box
Integral Vessel Coil
Viscosity Loop
Fill Pump
Discharge Ball Valve
Viscosity Pump
Detachable Riser Legs
Clean Solvent
Leveling Pads
BCF 760 Cutaway
4.2.4-899

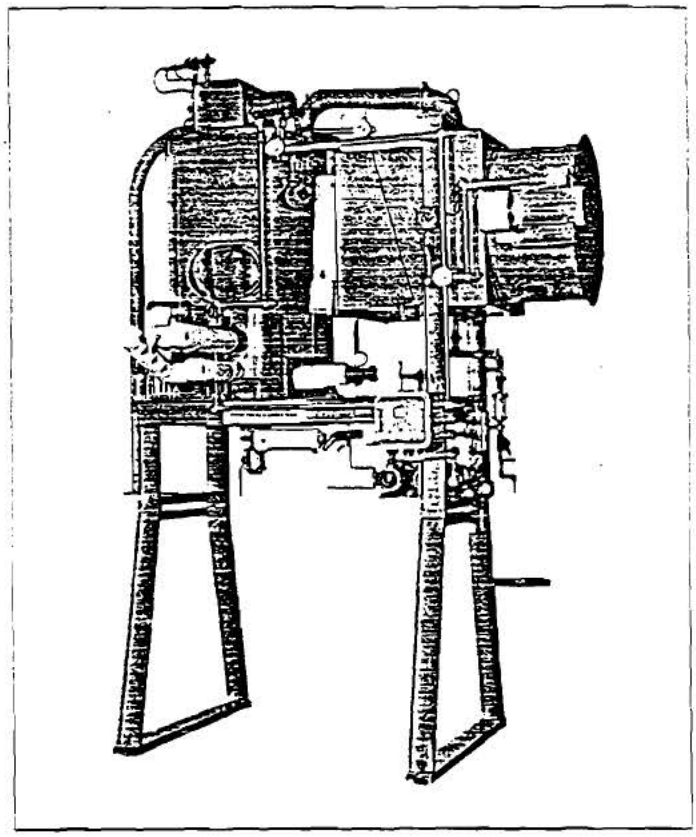
BCF Series

Batch or Continuous Feed Distillation

Model 380

250 Gallons Per Shift

	380/760	380V/760V	380B/760B	380VB/760VB	600	600V	600B	600VB
Standard distillation	•	•	•	•	•	•	•	•
Vacuum distillation		•		•		•		•
Handles solvents with 100-320°F (38-160°C) boiling points	•	•	•	•	•	•	•	•
Handles solvents with 100-500°F (38-260°C) boiling points		•		•		•		•
Electric motor-powered scraper/agitator	•	•	•	•				
Liquid level controls	•	•	•	•	•	•	•	•
Internal viscosity indicator	•	•	•	•				
Steam-heated boiling jacket	•	•	•	•				
Shell-and-tube heat exchanger					•	•	•	•
Air-cooled condenser	•		•					
Water-cooled condenser	•	•	•	•	•	•	•	•
Boiling chamber access cleanout door	•	•	•	•				
2" drain valve (4" optional)	•	•	•	•	•	•	•	•
Elevated ball valve discharge (option on 380 and 760)					•	•	•	•
Differential temperature measurement	•	•	•	•				
Temperature controls	•	•	•	•	•	•	•	•
75 psi relief valve	•		•		•		•	
2 psi relief valve		•		•		•		•
Fill pump timer	•	•	•	•	•	•	•	•
Separate remote electric controls panel (explosionproof controls on unit optional)	•	•	•	•	•	•	•	•
Standard relay logic or microprocessor control	•	•	•	•	•	•	•	•
Boiling chamber of carbon steel construction and full heat area insulation	•	•	•	•	•	•	•	•
Pump piping cleanout system	•	•	•	•	•	•	•	•
Automatic shutdown	•	•	•	•	•	•	•	•
Automatic cycle	•	•	•	•	•	•	•	•
Reclaimer liquid level and temperature indicators	•	•	•	•	•	•	•	•
All electricals to NEMA 7 explosionproof construction and Class 1, Division 1, Group D NEC, 220V or 440V, 3Ø	•	•	•	•	•	•	•	•
Vacuum design with selection switch, control valve, gauge, pump, reservoir tank		•		•		•		•
Utilizes existing steam source	•	•			•	•		
Pre d steam boiler or thermal			•	•			•	•
Optional stainless steel construction	•	•	•	•	•	•	•	•
Optional temperature and	•	•	•	•				
Optional water separator	•	•	•	•	•	•	•	•



Specifications

BCF		380 (air)		380 (water)		380 (vacuum)	
Process Rate (gal/shift)		250		250		250	
Boiling Range	(°F)	100-320		100-320		100-500	
	(°C)	38-160		38-160		38-260	
Pressure Relief (PSI)		.75		.75		2	
Utility Requirements							
Water (GPM)		—		4-10		4-10	
Steam (lbs/hr)		100		100		100	
Electricity (KW)		12.5		12.5		16.5	
Unit Dimensions							
Length (in/mm)		100	2540	65	1651	90	2286
Width (in/mm)		60	1524	60	1524	60	1520
Height (in/mm)		135	3429	145	3683	135	3429
Weight (lbs/kg)		2000	907	2200	998	2000	907

Boiler	Electric		Fuel Oil		Natural Gas	
Utility Requirements	30 KW		1.5 GPH		175 SCFH	
Unit Dimensions						
Length (in/mm)	72	1829	72	1829	72	1829
Width (in/mm)	60	1524	60	1524	60	1524
Height (in/mm)	60	1524	85	2159	85	2159
Weight (lbs/kg)	1700	771	3000	1361	3000	1361

4.2.4-900

RX-35

RECYCLENE RX-35 SOLVENT RECOVERY SYSTEM

■ The RX-35 is a cost effective way to reduce your hazardous waste problems. Utilizing a patented design, the RX-35 allows you to purify (up to 99.5%) flammable and non-flammable solvents on-site safely and easily (as easy to operate as a washing machine). The RX-35, Recyclene's high production model, can usually pay for itself in less than a year if you generate 8 drums per month of waste solvent.

■ Fast payback—usually less than one year.

■ Reduces EPA liability—reclaims hazardous waste.

■ Simple to clean—patented disposable liner.

■ Easy to operate—push button control and gauges.

■ Safe to use—multiple shutdown controls and lid lock.

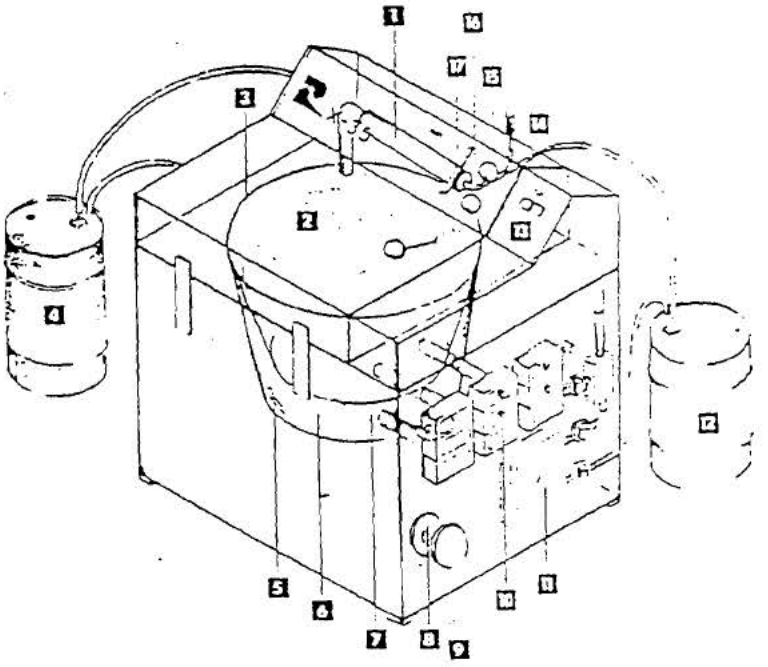
■ Multiple solvent applications—boiling points up to 400°F.

■ Explosion-proof construction—designed to meet NFPA specifications.

■ Optional automatic refill—for continuous operation.

■ Auto-quench and cooldown—activated when all solvent distilled.

1. Shell and Tube Condenser
2. Solvent Liner (Nylon or Teflon)
3. Teflon Gasket Seal
4. Dirty Solvent Drum
5. Oil-Immersed Rapid Cooling System
6. Stainless Steel Double Boiler
7. Oil-Immersed Resistance Heater
8. Air-Operated Pump for Autofill
9. Pneumatic Lid Foot Pedal
10. Multiple System Thermostats (Explosion-proof):
    a. Vapor
    b. Condenser
    c. Boiler
    d. Lid Interlock
    e. Safety
11. Main Contactor Box
12. Clean Solvent Drum
13. On/Off Controls and "Cycle On" Light Panel
14. Breather Vent
15. Vapor Temperature Gauge
16. Oil Temperature Gauge
17. Water Flow Meter



4.2.4-901

INTERMOUNTAIN ENVIRON
(801) 972-5965
3061 So. 3600 West #2
Salt Lake City, Utah 84127-0645

State	Utah
State Agency	Department of Environmental Quality
Affected Area	Hill AFB
Regulation	Source-specific requirements
Rule Number	Ozone NAAQS Approval Orders
Rule Title	BAQE-026-88, Approval Order for Paint Spray Booth in Bulding 1913 and Solvent Spray Booth in Building 1915, Davis County (1/20/1988)
State Effective Date	03/04/1997
State Adoption Date	02/05/1997
EPA Effective Date	08/18/1997
Notice of Final Rule Date	07/17/1997
Notice of Final Rule Citation	62 FR 38213
Comments	

Rule:

Hill AFB - DAQE-026-88.pdf

UTAH
DEPARTMENT OF HEALTH

Norman H. Bangerter,
Governor

Suzanne Dandoy, M.D., M.P.H.
Executive Director

BAQE-026-88

January 20, 1988

Thayne Judd, Colonel
United States Air Force
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Dear Colonel Judd:

Re: Approval Order for Paint Spray Booth in Building 1913 and Solvent Spray Booth in Building 1915
Davis County, CDS A1

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions:

1. Hill Air Force Base shall install the paint spray booths in Buildings 1913 and 1915 according to the information submitted in the notice of intent dated May 28, 1987 and additional information dated August 26, 1987.

2. The approved installations shall consist of the following equipment located at the site:

   A. Devilbiss booth, Model XDF-6342, with particulate filters in Building 1913

   B. Bleeker Brothers booth, Model VF-82, with air/grease filters type GF #2025, in Building 1915

Suzanne Dandoy, M.D., M.P.H. • Office of the Executive Director

C. Other associated equipment

3. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply. The opacity of any single reading shall not exceed 20% for intermittent sources.

4. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

5. The Executive Secretary shall be notified upon start-up of the installation, as an initial compliance inspection is required.

6. Eighteen months from the date of this approval order the Executive Secretary shall be notified of the status of construction of this project.

7. The owner/operator shall not exceed the following usages of paints as shown below:

Booth 1913

Nitro cellulose lacquer Mill 19537C - 780 gallons per year
Poly mide prime Mill P 23377 - 780 gallons per year
Polyurethane Mill C-83286 - 780 gallons per year

Booth 1915

Stoddard solvent - 780 gallons per year

These values shall not be exceeded without prior approval in accordance with Section 3.1, UACR. Records of usage shall be kept for all periods when the plants are in operation. Records of usage shall be made available to the Executive Secretary upon request and shall include a period of two years ending with the date of the request. Records of usage for each booth shall be maintained at the booth in question.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

The fee for issuing this approval order is $322.72. The amount (see enclosure for breakdown of costs) is payable to the Utah Department of Health, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order. Please return payment in the enclosed self-addressed envelope.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/DK/pt

cc: EPA Region VIII (John Dale)
Davis County Health Department

Norman H. Bangerter

Suzanne Dandoy, M.D., M.P.H.
Executive Director

BAQ-5997-1

October 29, 1987

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on November 4, 1987.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84116-0690.

Sincerely,

Sheri Holloway

Sheri Holloway
Engineering Section
Bureau of Air Quality

Kenneth L. Alkema, Director • Division of Environmental Health
Salt Lake City, Utah 84116-0690 • (801) 538-6121

N O T I C E

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Hill Air Force Base, Changes in Buildings 840, 268 and 509, Davis County; Paint Spray Booth in Building 1913 and Solvent Spray Booth in Building 1915, Davis County; Missile Maintenance Facility, Davis County; Paint Booth in Building 1133, Davis County; Seals on Storage Tanks, Refrigeration Unit on Vapor Degreaser, Davis County.
2. Morton Thiokol, Inc., T-97 Boiler and Third Boiler at M-72, Box Elder County; Fuel Conversion for 18 Boilers From Fuel Oil to Natural Gas, Box Elder County; T-111 and M-348 Boilers, Box Elder County.
3. Hatchco, Soda Ash Trans Loading Facility, Salt Lake County.
4. Redi Therm Insulation, Cellulose Insulation Plant, Salt Lake County.
5. Brasier Asphalt, Mobile Asphalt Plant.

The engineering evaluations and air quality impacts have been completed and no adverse air quality impacts are expected. No PSD increment consumed by these proposals. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0700. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before December 4, 1987, will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation or establishment.

Date of Notice: November 4, 1987

DK/sh

5996Q

UTAH
DEPARTMENT OF HEALTH

Norman H. Bangerter

Suzanne Dandoy, M.D., M.P.H

BAQ-5997-1

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Sincerely,

Sheri Holloway

Sheri Holloway
Engineering Section
Bureau of Air Quality

Kenneth L. Alkema, Director • Division of Environmental Health
288 North 1460 West • P.O. Box 16690 • Salt Lake City, Utah 84116-0690 • (801) 538-6121

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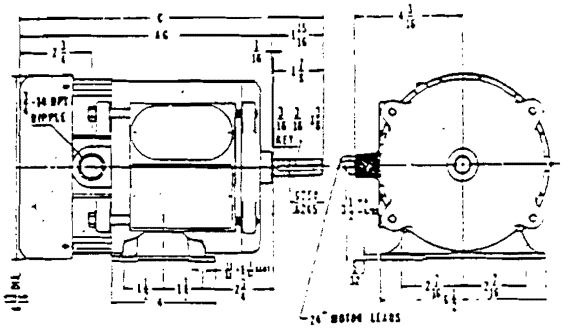
Date of Notice: November 4, 1987

DK/sh

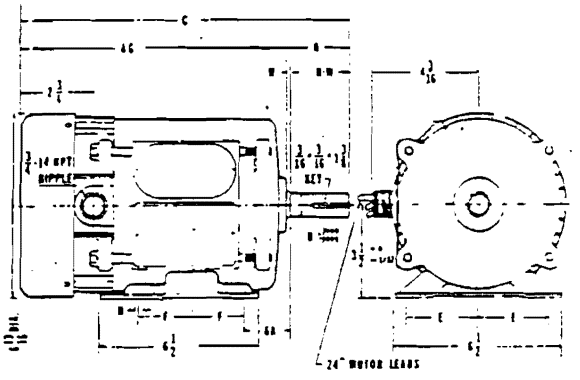
5996Q

GENERAL PURPOSE /
56 FRAME, EXPLOSION PROOF (T.E.F.C.)



FRAME	AG	C
D56	9 1/16	11 5/8
F56	10 7/16	12 3/8
G56	10 15/16	12 7/8
H56	11 7/16	13 3/8
J56	11 15/16	13 7/8
K56	12 7/16	14 3/8
L56	12 15/16	14 7/8

GENERAL PURPOSE /
56H, 140T FRAME, EXPLOSION PROOF (T.E.F.C.)

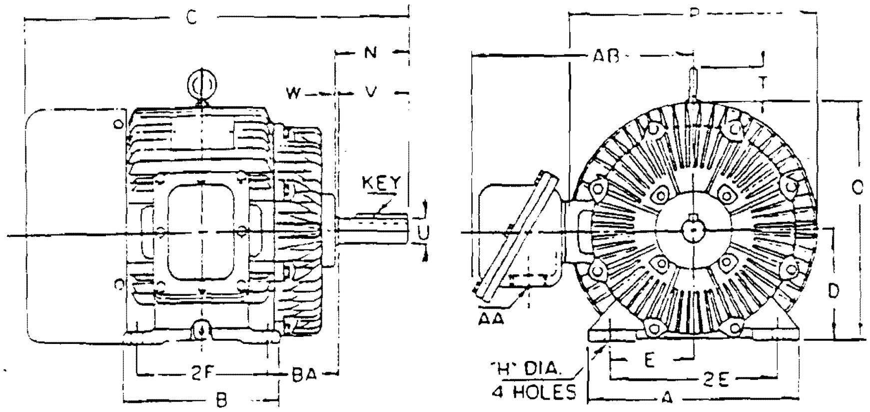


FRAME	C	E	F	H	N	N-W	U	W	AG	BA
H56H	13 3/8	2 7/16	1 1/2	11/32x17/32 SLOT	1 15/16	1 7/8	5/8	1/16	11 7/16	2 3/4
J56H	13 7/8								11 15/16	
K56H	14 3/8								12 7/16	
H143T	13 13/16	2 3/4	2	11/32	2 3/8	2 1/4	7/8	1/8	11 7/16	2 1/4
J145T	14 5/16		2 1/2						11 15/16	
K145T	14 13/16								12 7/16	
L145T	15 5/16								12 15/16	

hree Phase

ISIONS

xplosion Proof, Blue Chip™ Explosion Proof and XPW™



ll dimensions are approximate.
ertified prints available on request.

Frame	A (Max)	B (Max)	C	D	2E	2F	H	N	O	P	T	U	V	AA[2]	AB	BA	Key
143T	7.00	5.00	12.56	3.50	5.50	4.00	.34[1]	2.31	7.38	7.75	—	.87	2.12	.75	8.75	2.25	.19x.19x1.38
145T	7.00	6.00	13.56	3.50	5.50	5.00	.34[1]	2.31	7.38	7.75	—	.87	2.12	.75	8.75	2.25	.19x.19x1.38
182T	8.75	5.50	15.19	4.50	7.50	4.50	.44[1]	2.78	9.69	9.88	2.62	1.12	2.62	.75	9.69	2.75	.25x.25x1.75
[illegible]	8.75	6.50	16.19	4.50	7.50	5.50	.44[1]	2.78	9.69	9.88	2.62	1.12	2.62	.75	9.69	2.75	.25x.25x1.75
[illegible]	10.38	7.00	18.16	5.25	8.50	5.50	.44[1]	3.56	11.00	11.50	2.25	1.38	3.25	.75	10.88	3.50	.31x.31x2.38
21[illegible]	10.38	8.50	19.66	5.25	8.50	7.00	.44[1]	3.56	11.00	11.50	2.25	1.38	3.25	.75	10.88	3.50	.31x.31x2.38
254T	12.00	10.25	23.12	6.25	10.00	8.25	.53	4.19	12.62	12.75	3.12	1.62	3.87	1.25	11.69	4.25	.38x.38x2.87
256T	12.00	12.00	24.87	6.25	10.00	10.00	.53	4.19	12.62	12.75	3.12	1.62	3.87	1.25	11.69	4.25	.38x.38x2.87
284T	13.00	11.50	26.19	7.00	11.00	9.50	.53	4.81	14.75	15.50	3.12	1.87	4.50	1.50	13.00	4.75	.50x.50x3.25
284TS	13.00	11.50	24.81	7.00	11.00	9.50	.53	3.44	14.75	15.50	3.12	1.62	3.12	1.50	13.00	4.75	.38x.38x1.87
286T	13.00	13.00	27.69	7.00	11.00	11.00	.53	4.81	14.75	15.50	3.12	1.87	4.50	1.50	13.00	4.75	.50x.50x3.25
286TS	13.00	13.00	26.31	7.00	11.00	11.00	.53	3.44	14.75	15.50	3.12	1.62	3.12	1.50	13.00	4.75	.38x.38x1.87
324T	15.75	13.00	28.75	8.00	12.50	10.50	.66	5.50	17.12	18.25	3.12	2.12	5.12	2.00	14.12	5.25	.50x.50x3.87
324TS	15.75	13.00	27.25	8.00	12.50	10.50	.66	4.00	17.12	18.25	3.12	1.87	3.62	2.00	14.12	5.25	.50x.50x2.00
326T	15.75	14.50	30.25	8.00	12.50	12.00	.66	5.50	17.12	18.25	3.12	2.12	5.12	2.00	14.12	5.25	.50x.50x3.87
326TS	15.75	14.50	28.75	8.00	12.50	12.00	.66	4.00	17.12	18.25	3.12	1.87	3.62	2.00	14.12	5.25	.50x.50x2.00
364T	17.75	13.25	31.50	9.00	14.00	11.25	.66	6.12	19.00	20.00	3.62	2.38	5.62	3.00	17.75	5.87	.62x.62x4.25
364TS	17.75	13.25	29.38	9.00	14.00	11.25	.66	4.00	19.00	20.00	3.62	1.87	3.50	3.00	17.75	5.87	.50x.50x2.00
365T	17.75	14.25	32.50	9.00	14.00	12.25	.66	6.12	19.00	20.00	3.62	2.38	5.62	3.00	17.75	5.87	.62x.62x4.25
365TS	17.75	14.25	30.38	9.00	14.00	12.25	.66	4.00	19.00	20.00	3.62	1.87	3.50	3.00	17.75	5.87	.50x.50x2.00
404T	19.25	14.75	35.62	10.00	16.00	12.25	.81	7.50	20.87	21.75	3.62	2.87	7.00	3.00	18.62	6.62	.75x.75x5.62
404TS	19.25	14.75	32.62	10.00	16.00	12.25	.81	4.50	20.87	21.75	3.62	2.12	4.00	3.00	18.62	6.62	.50x.50x2.75
405T	19.25	16.25	37.12	10.00	16.00	13.75	.81	7.50	20.87	21.75	3.62	2.87	7.00	3.00	21.50	6.62	.75x.75x5.62
405TS	19.25	16.25	34.12	10.00	16.00	13.75	.81	4.50	20.87	21.75	3.62	2.12	4.00	3.00	21.50	6.62	.50x.50x2.75
444T	21.50	18.00	41.25	11.00	18.00	14.50	.81	8.75	23.12	24.25	3.62	3.38	8.25	3.00	22.81	7.50	.87x.87x6.87
444TS	21.50	18.00	37.50	11.00	18.00	14.50	.81	5.00	23.12	24.25	3.62	2.38	4.50	3.00	22.81	7.50	.62x.62x3.00
445T	21.50	20.00	43.25	11.00	18.00	16.50	.81	8.75	23.12	24.25	3.62	3.38	8.25	3.00	22.81	7.50	.87x.87x6.87
445TS	21.50	20.00	39.50	11.00	18.00	16.50	.81	5.00	23.12	24.25	3.62	2.38	4.50	3.00	22.81	7.50	.62x.62x3.00

hole size.

Three Phase

BLUE CHIP™ EXPLOSION PROOF

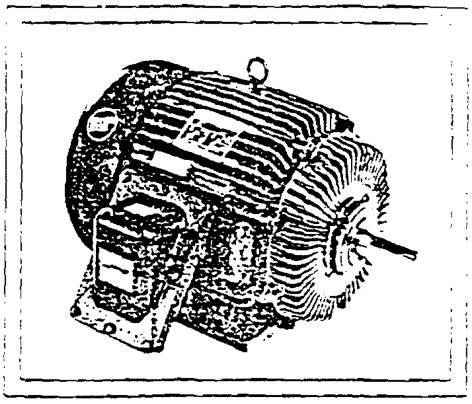
Class I Group D Only

FEATURES

- All Cast Iron Construction[2]
- 1.15 Service Factor
- 60/50 Hertz (50 Hz at next lower HP rating at 190/380V or 380V)
- Extra Dips and Bakes
- Continuous Duty, 40° C Ambient
- Ball Bearing
- NEMA Design B
- Class F Insulation
- F-1 Assembly, Horizontal Mount
- 3/4 - 100 HP Suitable for PWS at 230 Volts; 125 - 200 HP Suitable for PWS at 460 Volts
- Drain and Breather in Shaft End Bracket
- Slinger
- 230 Volt Motors Operational on 208 Volt Networks
- UL Listed under File No. E12044
- Meets UL Frame Temperature Limit Code T2A
- CSA Certified under File Nos. LR 21839 and LR 47504

APPLICATIONS

For use in extra demanding, hazardous-duty applications where premium construction and performance features are required. Specially designed for use in the petroleum industries.



Discount Symbol N-3AP

HP	RPM	Volts[3]	Cat. No.	Model No.	List Price	Wt. Lbs.
3/4	1200	230/460	H557	143TTGS8076	$352.00	65
1	1800	230/460	H575	143TTGS8026 •	310.00	65
	1200	230/460	H558	145TTGS8076 •	364.00	79
	3600	230/460	H514	143TTGS8001 •	316.00	64
	1800	230/460	H531	145TTGS8026 •	334.00	72
	1200	230/460	H559	182TTGS8076 •	383.00	98
2	3600	230/460	H515	145TTGS8001 •	352.00	74
	1800	230/460	H532	145TTGS8027 •	358.00	75
	1200	230/460	H560	184TTGS8076 •	443.00	127
3	3600	230/460	H516	182TTGS8001 •	398.00	107
	1800	230/460	H533	182TTGS8026 •	419.00	105
	1200	230/460	H561	213TTGS8076 •	570.00	173
5	3600	230/460	H517	184TTGS8001 •	500.00	116
	1800	230/460	H534	184TTGS8026 •	467.00	116
	1200	230/460	H562	215TTGS8076 •	756.00	215
7½	3600	230/460	H518	213TTGS8001 •	640.00	195
	1800	230/460	H535	213TTGS8026 •	640.00	184
	1200	230/460	H563	254TTGS8076 •	1010.00	286
10	3600	230/460	H519	215TTGS8001 •	738.00	208
	1800	230/460	H536	215TTGS8026 •	760.00	219
	1200	230/460	H564	256TTGS8076 •	1237.00	287
15	3600	230/460	H520	254TTGS8001 •	986.00	265
	1800	230/460	H537	254TTGS8026 •	997.00	283
	1200	230/460	H565	284TTGS8076 •	1702.00	438
20	3600	230/460	H521	256TTGS8001 •	1265.00	370
	1800	230/460	H538	256TTGS8026 •	1211.00	327
	1200	230/460	H566	286TTGS8076 •	2008.00	498
25	3600	230/460	H522	284TSTGS8001[1] •	1608.00	427
	1800	230/460	H539	284TTGS8026 •	1513.00	442
	1800	230/460	H540	284TSTGS8036[1] •	1513.00	438
	1200	230/460	H567	324TTGS8076 •	2510.00	652
30	3600	230/460	H523	286TSTGS8001[1] •	$1744.00	482
	1800	230/460	H541	286TTGS8026 •	1777.00	485
	1800	230/460	H542	286TSTGS8036[1] •	1777.00	479
	1200	230/460	H568	326TTGS8076 •	2972.00	705
40	3600	230/460	H524	324TSTGS8001[1] •	2333.00	640
	1800	230/460	H543	324TTGS8026 •	2348.00	658
	1800	230/460	H544	324TSTGS8036[1] •	2348.00	652
	1200	230/460	H569	364TTGS8086 •	3920.00	845
50	3600	230/460	H525	326TSTGS8001[1] •	3074.00	715
	1800	230/460	H545	326TTGS8026 •	2903.00	729
	1800	230/460	H546	326TSTGS8036[1] •	2903.00	724
	1200	230/460	H570	365TTGS8086 •	4480.00	908
60	3600	230/460	H526	364TSTGS8001[1] •	4467.00	830
	1800	230/460	H547	364TTGS8036 •	4310.00	865
	1800	230/460	H548	364TSTGS8026[1] •	4310.00	861
	1200	230/460	H571	404TTGS8086 •	5284.00	1144
75	3600	230/460	H527	365TSTGS8001[1] •	5209.00	870
	1800	230/460	H549	365TTGS8036 •	5349.00	997
	1800	230/460	H550	365TSTGS8026[1] •	5349.00	992
	1200	230/460	H572	405TTGS8086 •	6194.00	1289
100	3600	230/460	H528	405TSTGS8001[1] •	7023.00	1270
	1800	230/460	H551	405TTGS8036 •	6528.00	1390
	1800	230/460	H552	405TSTGS8026[1] •	6528.00	1387
	1200	230/460	H573	444TTGS8086 •	8695.00	1840
125	3600	460	H529	444TSTGS8001[1] •	9777.00	1800
	1800	460	H553	444TTGS8036 •	8488.00	1912
	1800	460	H554	444TSTGS8026[1] •	8488.00	1910
	1200	460	H574	445TTGS8086 •	10349.00	2030
150	3600	460	H530	445TSTGS8001[1] •	11500.00	1994
	1800	460	H555	445TTGS8036 •	10094.00	2060
	1800	460	H556	445TSTGS8026[1] •	10094.00	2054
200	1800	460	H576	445TTGS8038	11990.00	2132

[1] Short shaft.

[2] 143T and 145T Frame motors have rolled steel fan guards 200 volt and 575 volt motors are also available at the same list price.

CAUTION: Class I Group D only motors should not be used where vapors or gases with an ignition temperature of 280° C or less are present.

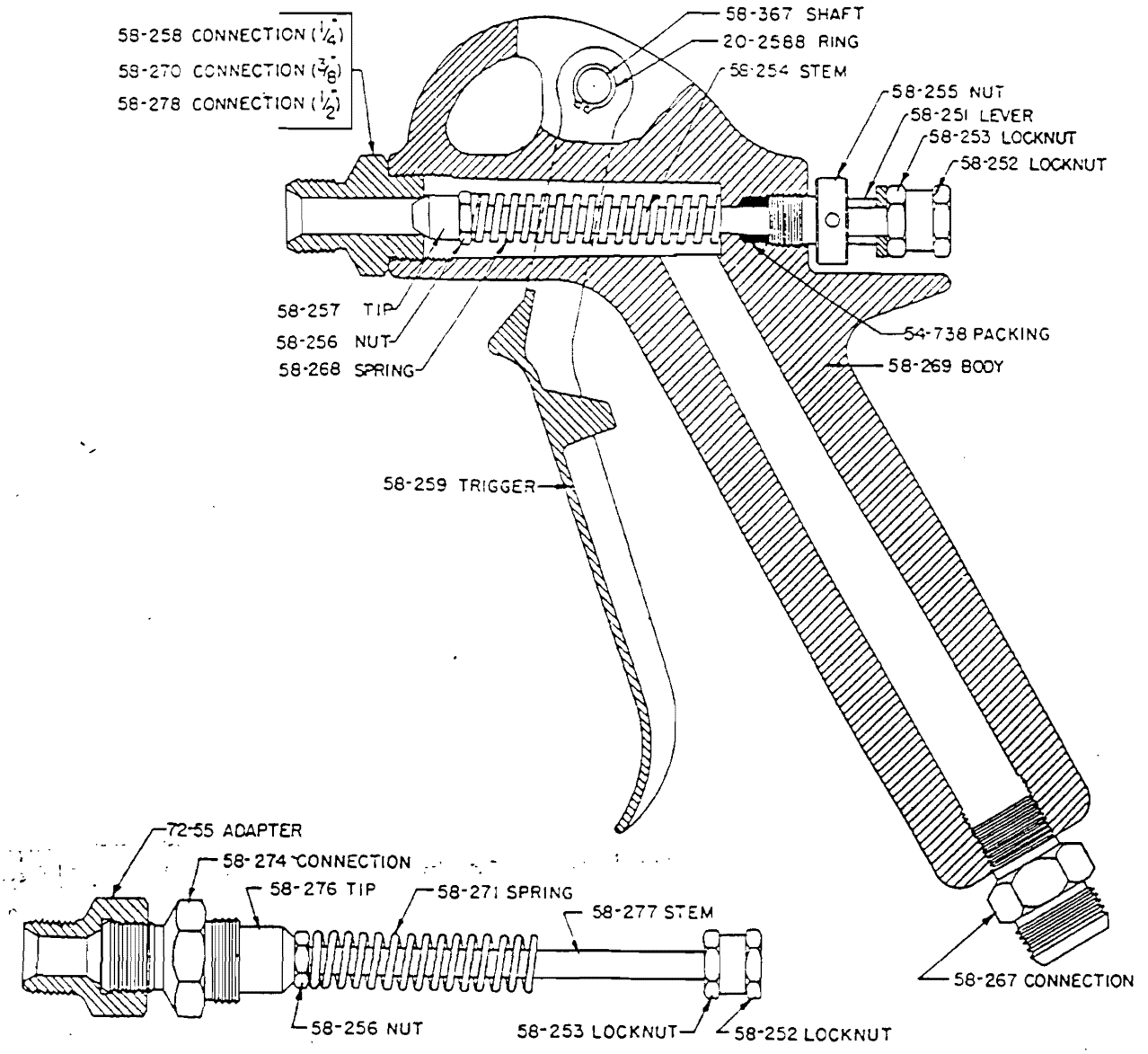
4.2.4-940

For dimensions, see page 42.
For performance, see page 51.

• Normally Stocked

Prices and data subject to change without notice.
Printed in U.S.A.

Binks MODELS 31 and 31V FLOW GUNS
MAXIMUM WORKING PRESSURE 1500 PSI 105.45 kg/cm²



FOR MODEL 31V GUN

PARTS LIST

Part No.	Description	Qty.	Part No.	Description	Qty.
20-2588	Retainer Ring	2	58-267	Fluid Connection	1
54-738	Stem Packing	3	58-268	Stem Spring (31)	1
58-251	Trigger Lever	1	58-269	Gun Body	1
58-252	Rear Lock Nut	1	58-270	Connection, 3/8 N.P.S. (31)	1
58-253	Front Lock Nut	1	58-271	Stem Spring (31V)	1
58-254	Needle Stem (31)	1	58-274	Nozzle Connection (31V)	1
58-255	Packing Nut	1	58-276	Needle Tip (31V)	1
58-256	Needle Tip Nut	1	58-277	Needle Stem (31V)	1
58-257	Needle Tip (31)	1	58-278	1/2 Connection, 1/2 N.P.S. (31)	1
58-258	Connection, 1/4 N.P.S. (31)	1	58-367	Shaft	1
58-259	Trigger	1	72-55	Adapter	1

NOTICE OF INTENT TO CONSTRUCT

NEW SOLVENT BOOTH IN BLDG 1915

HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

The proposed action provides for installation of a new solvent booth in Building 1915 for spraying miscellaneous missile components. The spray booth is a Bleeker-VF-8 4' H x 8' W x 5' D working area, complete with exhaust chamber filters. Attached is a copy of the manufacturer's specifications for this booth. At a face velocity of 190 feet/minute, the air flow rate at 1/4" sp. is estimated to be 6,370 cfm.

2. POLLUTANT EMISSIONS:

The primary source of air pollutants from the spray booth are solvent particulates and hydrocarbon vapors. Using EPA Publication AP-42 method for calculating solvent losses, the emissions from these sources are calculated as follows:

a. TYPE OF SOLVENT: Stoddard Solvent, PD 680.(2).
DENSITY: 6.5 lb/gal
METHOD OF APPLICATION: Pressure atomization.
PERCENT VOLATILE: 99%
AMOUNT: 15 gal/week

b. $\frac{(6.5\ \text{lb/gal})\ (15\ \text{Gal/Week})\ (52\ \text{weeks/yr})\ (.99\ \text{vol})}{2{,}000\ \text{lbs/ton}}$

Total Voc Emission = 2.5 ton/yr.

3. AIR CLEANING DEVICES:

Multi-purpose air/grease filter type GF #AG2025.

4. EMISSION POINTS:

A 24" dia. duct will be discharging approximately by 6370 cfm at 33' above ground.

5. SAMPLE POINTS:

No sampling points are anticipated.

6. OPERATING SCHEDULE:

The proposed facilities will normally be operated 8 hours on day shift, 5 days a week, 52 weeks per year.

Bleeker Bros.

10868 DRURY LANE LYNWOOD, CALIFORNIA 90262
(213) 639-4367 • (213) 636-7967 • (714) 994-1712

LOCATED IN BLDG 1915

OPERATING & MAINTENANCE INSTRUCTIONS
FOR
VARSOL CLEANING BOOTH.

BUYER: HILL-AFB-UT.

JOB NO: C-3645

ORDER # F4265D87M0601

SHIPPED: 12/29

OPERATING & MAINTENANCE INSTRUCTIONS

FOR

VARSOL CLEANING BOOTH.

After the Varsol Booth has been erected, the following procedure should be used, to place the booth in operation.

1. Clean the plenum as well as the working area from any debris.
2. Install Metal Exhaust Filters and lock same in place.
3. Check the Manometer (draft gauge).
   a. Manometer is installed per instructions.
   b. Red Gauge oil is filled in.
   c. Set Manometer to zero.
4. Check Fan and "V" Belt drive.
   a. Fan and Motor should turn easily by hand.
   b. The Fan Bearings are pre-lubricated and sealed and require no servicing for the life of the bearing.
   c. The Fan blade should be inspected periodically for deposits which may unbalance the blade, causing excessive vibration and possible breakage.
5. Check Recirculating pump units.
   a. The pump unit should turn easily by hand. If it does not, the coupling may be out of alignment. Check these points carefully.
6. For any special Spray equipment, refer to the attached instruction.

Regular cleaning and maintenance schedules should be set up and adhere to, to obtain the maximum efficiency of the booth. These schedules will depend on the production of work and the type of Varsol that is being sprayed.

Bleeker Bros.

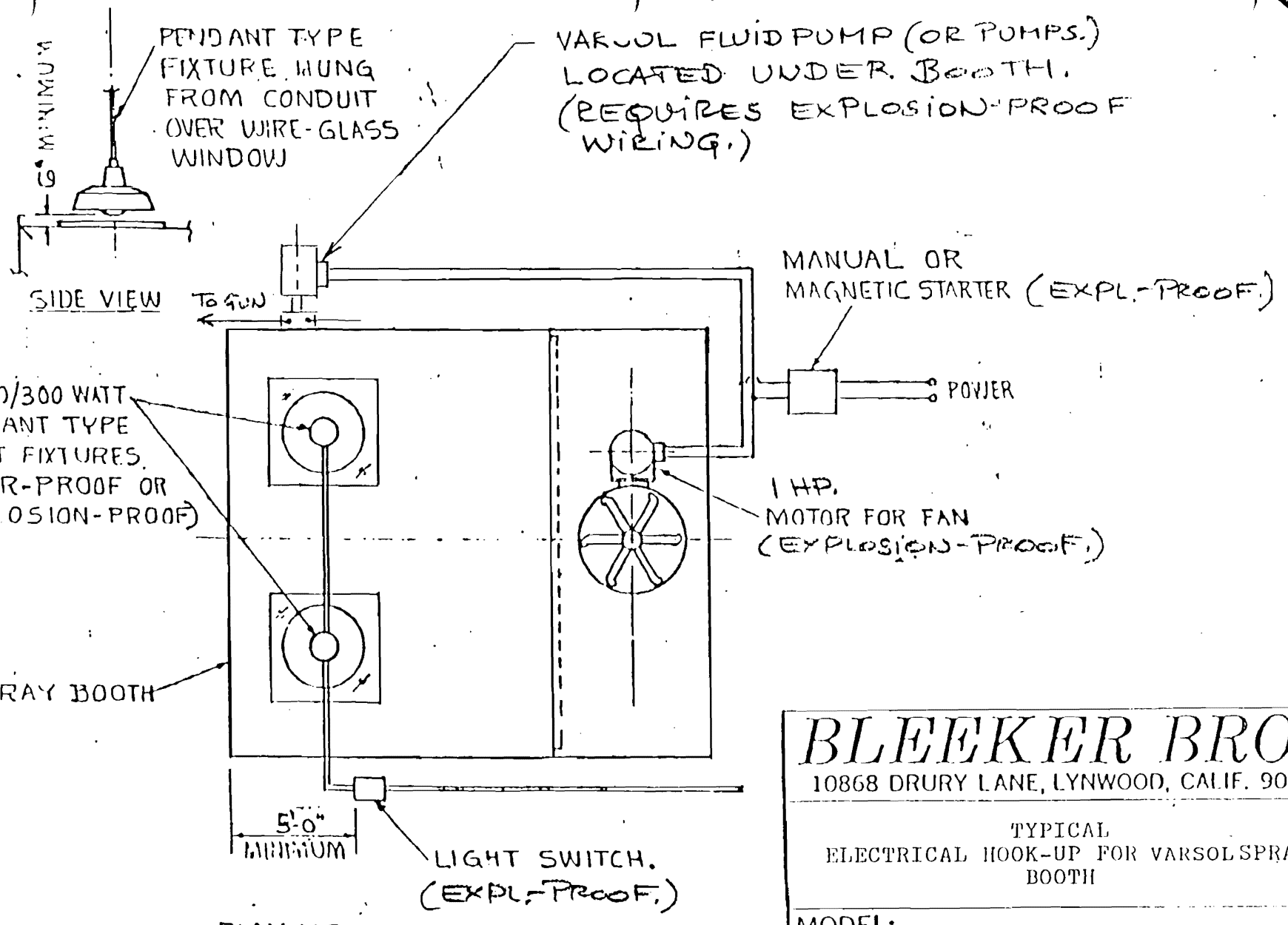
10868 DRURY LANE LYNWOOD, CALIFORNIA 90262
(213) 639-4367 • (213) 636-7967 • (714) 994-1712

BUYER HILL AFB UT
JOB NO. C-3645
DATE 11/26/86

BOOTH MODEL VF-8
DRAWING NO. CS-358

MATERIAL LIST

NO	ITEM	QTY	DESCRIPTION
	1	2	REAR WALL PANEL - 26" x 50" (1-RH & 1-LH)
	2	2	SIDE WALL PANELS 30" x 50" (1-RH & 1-LH) W/EXTRA HOLES
	3	2	SIDE WALL PANELS - 30" x 50"
	4	1	BOXED PANEL - 30" x 48" W/24" HOLE
	5	2	BOXED PANELS - 30" x 48" W/(1) - 24" x 24" WINDOW
	6	1	FIRE CURTAIN - 96" long
	7	4	BENCH LEGS - 30" long
	8	2	BOXED PANELS - 24" x 30"
	9	2	PANELS - 24" x 50"
	10	2	FILTER BANKS 48" x 55" W/(2) - 20" x 25" CELLS
	11	1	PARTITION - 50" x 52"
	12	1	BENCH COLLECTING PAN - 60" x 100"
	13	1	COLLECTING TANK - 24" x 24" x 23" HIGH
	14	2	PCS - OBSCURE WIRE GLASS - 17-1/2" x 17-1/2"
	15	1	ROLL - 1/4" x 1/2" RUBBER GASKET MATERIAL
	16	4	WINDOW HOLD DOWNs - 18" long
	17	4	METAL FILTERS - 20" x 25" x 2"
	18	2	300 WATT INCAND. FIXTURES (EXPLOSION PROOF)
	19	2	MOUNTING BRACKETS
	20	1	24" DIA. EXHAUST FAN
	21	1	1 H.P. EXPL. PROOF MOTOR 230/460V, 60C, 3-PHASE
52	22	1	PULLEY/COMPONENT PART FOR MOTOR
74	23	1	BUSHING/COMPONENT PART FOR MOTOR
72	24	1	V-BELT/COMPONENT PART FOR MOTOR
	25	1	BELT GUARD
	26	2	GEAR PUMP ASSEMBLIES
	27	2	1/2" H.P. EXPL. PR. MOTOR - 230/460V, 60C, 3-PHASE
	28	2	MANIFOLD & PIPE ASSEMBLIES
	29	2	1/4" HOSE ASSEMBLIES
	30	2	# 31 - SPRAY GUNS W/58 - 139 NOZZLES
	31	2	GUN HOOKS



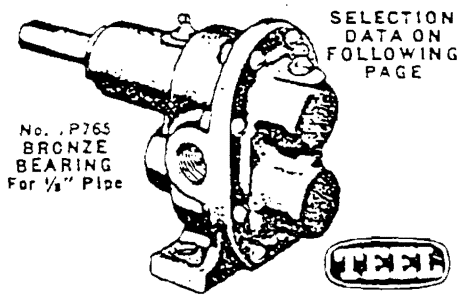
BLEEKER BROS.

10868 DRURY LANE, LYNWOOD, CALIF. 90262

TYPICAL
ELECTRICAL HOOK-UP FOR VARSOL SPRAY BOOTH

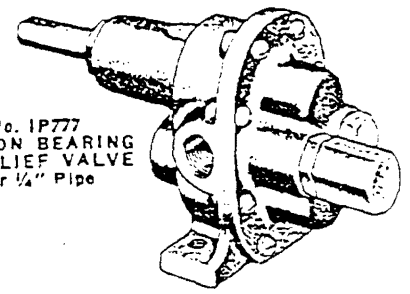
MODEL:		
DATE 4-85	DRAWN BY F.H.M.	DWG. NO.
SCALE	JOB #	A-36-E

TEEL ALL-BRONZE ROTARY GEAR PUMPS



No. 1P765 BRONZE BEARING For ⅛" Pipe

SELECTION DATA ON FOLLOWING PAGE



No. 1P777 CARBON BEARING W/RELIEF VALVE For ¼" Pipe

Positive displacement pumps handle clear, flammable fluids that are abrasive-free and chemically compatible with stainless steel shaft and bronze and graphite asbestos packing. Pumps are compatible with acidic solutions, rather than caustics; however not necessarily compatible with all acidic solutions. Designed for spraying, recirculating, cleaning or general transfer application where high pressures are required. Temperature range —40°F to + 210°F. ⅛ to 1" pipe size. Capacity from 1 to 24 GPM. Maximum pressure is 100 PSI. Pumps can be direct coupled with motor, power take-off, or belt drive; use of ball bearing pillow block recommended if pump is belt-driven. Pumps have Type 303 stainless steel shafts with bronze or carbon-graphite bearings; latter also with or without adjustable relief valve. Bronze bearing models designed for light intermittent service or continuous duty applications with low pressure needs. These models have Zerk type grease fittings for periodic lubrication. Carbon bearing pumps are designed for continuous service at high pressures; never need lubrication. These are available with or without a relief valve. On models having the relief valve, the valve is adjustable. Valve provides pressure relief by allowing liquid to recirculate, thus avoiding damage when blockage or discharge line occurs for less than 1 minute. If blockage can be expected longer than 1 minute, an external relief valve is required. See listing under Relief Valves in Index.

PUMP PERFORMANCE AND MOTOR HP REQUIRED FOR WATER @ 60 TO 90°F.

Pipe Size	Pump RPM*	Free Flow GPM	Free Flow HP	20 PSI GPM	20 PSI HP	40 PSI GPM	40 PSI HP	60 PSI GPM	60 PSI HP	80 PSI GPM	80 PSI HP	100 PSI GPM	100 PSI HP
1/8"	900	1.2	1/6	1.0	1/6	0.8	1/6	0.4	1/4	0.2	1/4	—	—
	1200	1.6	1/6	1.3	1/6	1.1	1/4	0.9	1/4	0.6	1/4	0.3	1/6
	1725	2.2	1/6	2.0	1/4	1.8	1/4	1.5	1/3	1.3	1/3	1.0	1/2
1/4"	900	2.2	1/6	1.8	1/6	1.5	1/4	1.2	1/4	1.0	1/3	0.8	1/3
	1200	2.9	1/6	2.5	1/4	2.2	1/3	2.0	1/3	1.8	1/2	1.6	1/2
*	1725	3.8	1/4	3.7	1/3	3.5	1/2	3.2	1/2	3.0	3/4	2.8	3/4
3/8"	900	4.1	1/6	3.6	1/4	3.2	1/3	2.8	1/2	2.4	1/2	2.1	3/4
	1200	5.5	1/6	5.0	1/3	4.7	1/2	4.3	1/2	3.9	3/4	3.5	3/4
	1725	7.0	1/3	6.9	1/2	6.9	3/4	6.8	1	6.8	1 1/2	6.6	1 1/2
1/2"	900	5.4	1/4	4.9	1/3	4.4	1/2	4.0	1/2	3.6	3/4	3.3	3/4
	1200	7.5	1/4	7.0	1/2	6.5	1/2	6.0	3/4	5.6	1	5.2	1
	1725	11.3	1/3	10.8	1/2	10.3	3/4	9.9	1	9.5	1 1/2	8.9	1 1/2
3/4"	900	10.3	1/2	9.8	3/4	9.4	3/4	9.0	1	8.5	1 1/2	8.0	1 1/2
	1200	13.8	1/2	13.3	3/4	13.0	1	12.6	1 1/2	12.0	2	11.9	2
	1725	19.9	1	19.6	1 1/2	19.4	1 1/2	19.0	2	18.5	2	18.0	3
1"	900	12.5	1/2	12.3	1/2	12.1	3/4	11.9	1	11.5	1 1/2	11.0	2
	1200	16.6	1/2	16.4	3/4	16.3	1	16.1	1 1/2	15.6	2	15.2	2
	1725	24.0	1	24.0	1 1/2	24.0	1 1/2	23.9	2	23.4	3	23.1	3

(*) RPM and GPM are in proportion; ie., at 860 RPM, pump output is approx. ½ GPM figure for 1725 RPM.

BRONZE BEARING PUMPS WITHOUT RELIEF VALVE

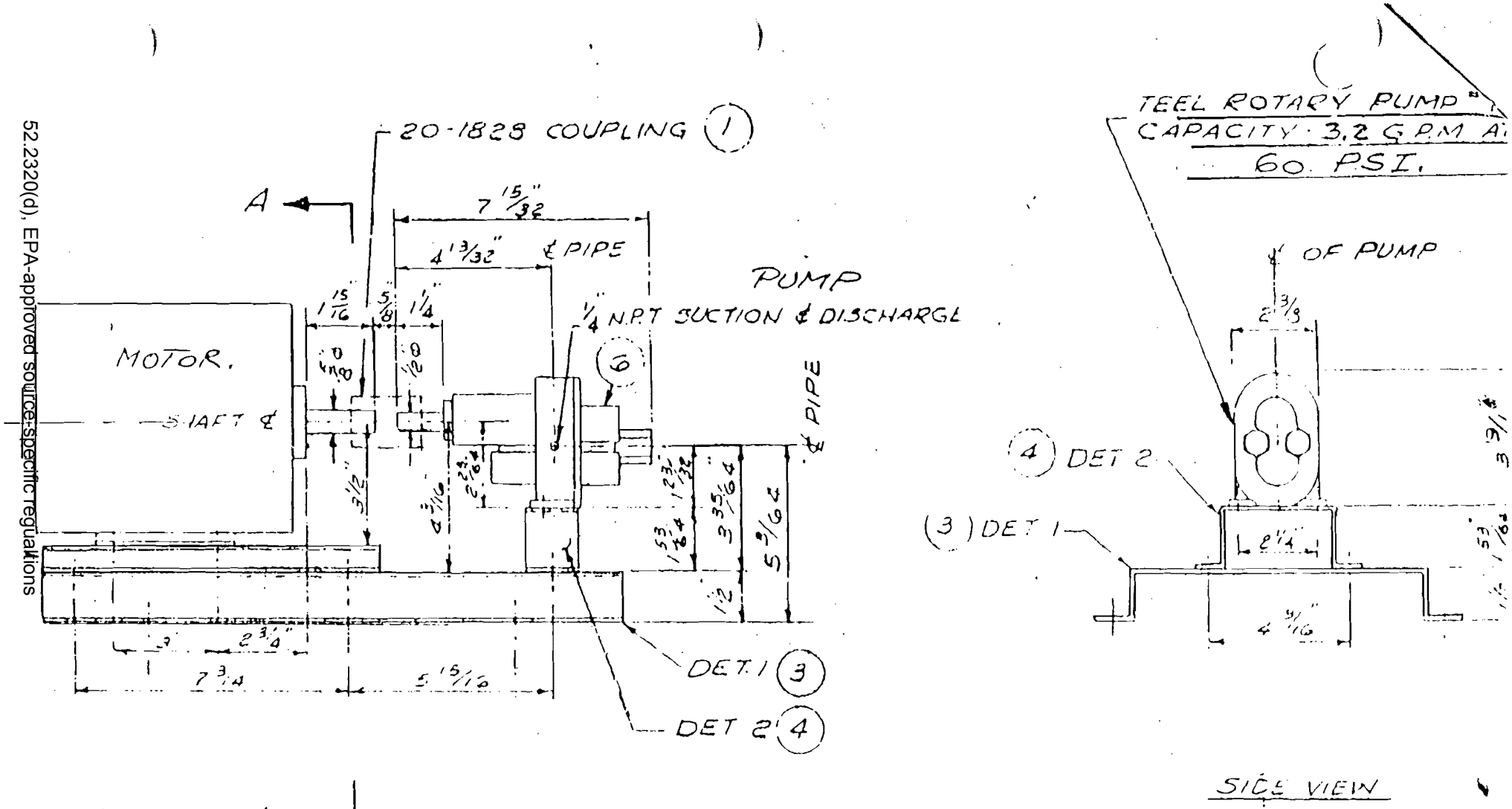
Pipe Size	Shaft Diameter	Shaft Height	Overall H	Overall W	Overall L	Stock No.	Shpg. Wt.
1/8"	3/8"	1 7/8"	2 7/8"	2 3/8"	6"	1P765	3
1/4	1/2	2 13/16	3 5/8	3	6 1/4	1P766	4 1/2
3/8	5/8	2 5/8	4	3 5/8	6 5/8	1P767	6
1/2	5/8	2 5/8	4	3 5/8	7	1P768	6 1/2
3/4	5/8	3 9/16	5 1/4	4	7	1P769	9
1	5/8	3 9/16	5 1/4	4	7 1/2	1P770	10

CARBON BEARING PUMPS WITHOUT RELIEF VALVE

1/8"	3/8"	1 7/8"	2 7/8"	2 3/8"	5 3/4"	1P771	3
1/4	1/2	2 13/16	3 5/8	3	6 1/4	1P772	4
3/8	5/8	2 5/8	4	3 5/8	6 5/8	1P773	5 1/2
1/2	5/8	2 5/8	4	3 5/8	7	1P774	6
3/4	5/8	3 9/16	5 1/4	4	7	1P775	9
1	5/8	3 9/16	5 1/4	4	7 1/4	1P776	9 1/2

CARBON BEARING PUMPS WITH RELIEF VALVE

* 1/4"	1/2"	2 13/16"	3 5/8"	3"	7 1/4"	1P777	5
3/8	5/8	2 5/8	4	3 5/8	8	1P778	6
1/2	5/8	2 5/8	4	3 5/8	8 3/8	1P779	7
3/4	5/8	3 9/16	5 1/4	4	8 7/8	1P780	10
1	5/8	3 9/16	5 1/4	4	9 1/8	1P781	11

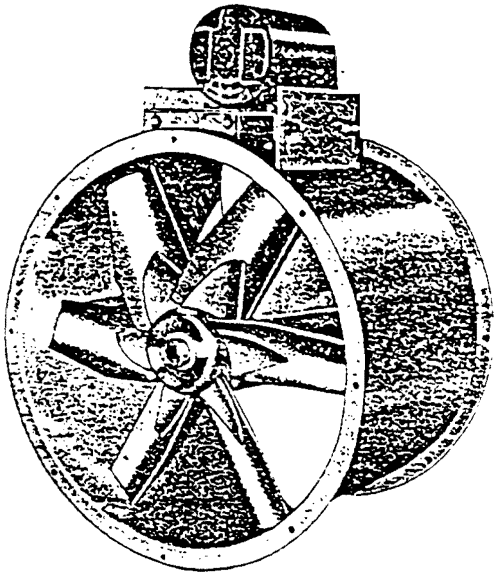


PUMP ASSEMBLY

SCALE 3" = 1'-0"

12 TO 24" BELT-DRIVEN TUBEAXIAL FANS

For Positive Exhausting of Fumes and Vapors in Spray Booths and Other Hazardous Locations



CERTIFIED RATINGS FOR AIR AND SOUND

Dayton Electric Mfg. Co. certifies that the tubeaxial fans shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with AMCA Standard 210 and AMCA Standard 300 and comply with the requirements of the AMCA Certified Ratings Program. Performance shown is for units with inlet duct and without outlet duct.

The sound power level ratings shown are in decibels referred to 10^{-12} watt. The sound ratings were obtained in accordance with AMCA Standard 300 test setup No. 4. The sound power A weighted levels Lw(A) were calculated in accordance with AMCA Standard 301. Values shown are the sound power levels at the fan inlet, A weighted.

TUBEAXIAL FAN PERFORMANCE DATA

Blade Dia.	CFM & Sound Power Lw (A) Decibels at Static Pressure Shown: Free Air	1/8" SP	1/4" SP	3/8" SP	1/2" SP	5/8" SP	3/4" SP	Single Phase Motors: Fan RPM	HP	Max. BHP†
12"	1300	1170	990	—	—	—	—	1670	¼	.254
	78	76	75	—	—	—	—			
	1520	1405	1280	1070	—	—	—	1946	⅓	.341
	82	81	80	79	—	—	—			
	1760	1660	1560	1440	1245	—	—	2253	½	.457
	86	85	84	83	84	—	—			
	2250	2170	2095	2010	1925	1825	1695	2877	¾	.772
	92	92	92	91	91	91	90			
16"	2040	1780	1190	—	—	—	—	1336	⅓	.304
	78	79	79	—	—	—	—			
	2750	2565	2350	2045	—	—	—	1800	½	.488
	86	86	87	87	—	—	—			
	3390	3245	3090	2910	2690	2337	—	2221	¾	.754
	92	92	92	92	93	93	—			
	3890	3760	3630	3490	3330	3140	2895	2547	1	1.032
	95	96	96	96	96	96	97			
18"	2850	2560	2195	—	—	—	—	1213	⅓	.325
	81	80	84	—	—	—	—			
	3495	3260	3000	2690	2110	—	—	1487	½	.525
	83	83	85	88	88	—	—			
	4040	3845	3625	3385	3115	2785	—	1719	¾	.708
	87	87	87	90	91	92	—			
	4670	4505	4320	4130	3920	3690	3435	1988	1	1.008
	91	91	91	92	94	95	96			
	5300	5155	5000	4830	4660	4475	4275	2255	1½	1.340
	94	95	94	94	95	97	98			
24"	7085	6745	6370	5955	5490	—	—	1312	1	1.008
	89	88	89	90	92	—	—			
	7915	7615	7285	6940	6555	6135	5655	1466	1½	1.405
	92	90	91	93	93	95	95			

CONVERSION FACTORS NECESSARY TO COMPUTE SOUND PRESSURE

Floor Area Square Feet	Distance to Work Station from Fan: 5'	10'	15'	20'
1000	5	6	7	7
10000	9	12	13	13
20000	10	13	14	15
40000	10	15	16	17

These conversion factors can be used to determine the approximate sound pressure level [dB(A)] for the above listed Dayton tubeaxial fans installed in your plant using the sound power levels (LwA) given above.

(†) Maximum horsepower required at air delivery shown. Includes drive losses.

AIR MOVING EQUIPMENT FUNDAMENTALS—See Pages 1108 and 1109 for discussion of the various types of air moving devices, their characteristics and glossary of terminology used throughout the industry and in this book.

ASSEMBLY INSTRUCTIONS & PARTS LIST

TUBEAXIAL FANS

MODELS 3C411, 3C412, 3C413, 3C414, 3C415 & 3C416

FORM 5S2410
01120

DAYTON ELECTRIC MANUFACTURING CO., CHICAGO 60648

0981/288/1M

READ INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO ASSEMBLE, INSTALL OR SERVICE DAYTON TUBEAXIAL FANS. FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE! RETAIN INSTRUCTIONS FOR FUTURE REFERENCE.

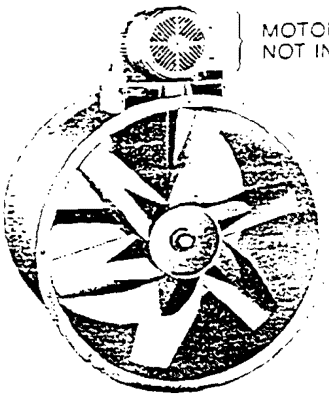


Figure 1

Description

Dayton tubeaxial fans are designed and built for use as an exhauster in paint spray booths, cleaning tanks, mixing rooms, etc. Can also be used in industrial ventilation systems handling temperatures up to a maximum of 200°F.

Motor, drive belts, and self-aligning sealed ball bearings are isolated from air stream so that contaminated air or vapors can be exhausted without damage to drive or motor.

Fan housing finished with a special zinc chromate primer and a coat of aklyd baked enamel.

CERTIFIED RATINGS FOR AIR AND SOUND

Dayton Electric Manufacturing Co. certifies that the tubeaxial fans shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with AMCA Standard 210 and AMCA Standard 300 and comply with the requirements of the AMCA Certified Ratings Program. Performance shown is for units with inlet duct and without outlet duct.

The sound power level ratings shown are in decibels referred to 10^{-12} watt. The sound ratings were obtained in accordance with AMCA Standard 300 test setup No. 4. The sound power A weighted levels Lw(A) were calculated in accordance with AMCA standard 301. Values shown are the sound power levels octave band.

Unpacking

When unpacking, consider the following:

1. Double groove fan pulley with malleable split-taper bushing is assembled on fan.
2. Motor, motor pulley, and belts packed separately when fan is ordered complete.
3. Remove jack screws from cloth bag attached to motor mounting base for use in assembly.

General Safety Information

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
2. Motor must be securely and adequately grounded. This can be accomplished by wiring with a grounded, metal-clad raceway system, by using a separate ground wire connected to the bare metal of the motor frame, or other suitable means.
3. Always disconnect power source before working on or near a motor or its connected load. If the power disconnect point is out-of-sight, lock it in the open position and tag to prevent unexpected application of power.
4. All moving parts should be guarded.
5. Be careful when touching the exterior of an operating motor — it may be hot enough to be painful or cause injury. With modern motors this condition is normal if operated at rated load and voltage — modern motors are built to operate at higher temperatures.
6. Make certain that the power source conforms to the requirements of your equipment.
7. Wiping or cleaning rags and other flammable waste materials must be placed in a tightly closed metal container and disposed of later in the proper fashion.
8. When cleaning electrical or electronic equipment, always use an approved cleaning agent such as dry cleaning solvent.

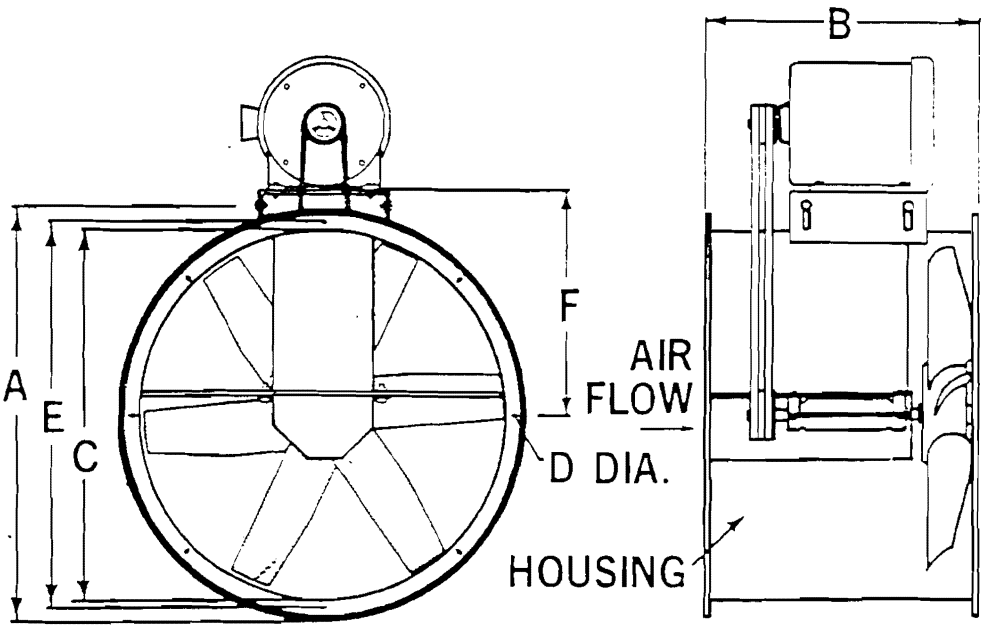


Figure 2

DIMENSIONS

MODELS	A	B	C	D	E	F	SHAFT DIA.
3C411	27.00	18.00	24-5/16	7/16	25-3/4	16-3/16	1
3C412	33-5/8	24.00	30-1/2	7/16	32-1/4	19-1/4	1-3/16
3C413	37-3/4	29.00	34-1/2	7/16	36-1/4	21-3/8	1-3/16
3C414	39-3/4	29.00	36-1/2	7/16	38-1/4	22-7/16	1-3/16
3C415	45-3/4	32.00	42-1/2	9/16	44-1/4	25-3/16	1-7/16
3C416	51-3/4	36.00	48-1/2	9/16	50-1/4	28-5/16	1-7/16

Specifications

	DRIVE REQUIREMENTS (‡)					
MODEL	MOTOR HP	FAN RPM	MOTOR SHEAVE BELT PITCH DIA.	RMA • BELT	FAN SHEAVE BELT PITCH DIA.	GROOVES
3C411	1½	1466	3.8-AV	A48	4.5-A	2
	2	1688	4.4-A	A50	4.5-A	2
	3	1910	5.0-A	A53	4.5-A	2
3C412	1½	1030	3.4-A	A55	5.8-A	2
	2	1146	3.8-A	A55	5.8-A	2
	3	1320	4.4-A	A60	5.8A	2
	5	1551	5.2-A	A60	5.8A	2
3C413	2	936	3.4-A	A60	6.4-A	2
	3	1074	3.8-A	A64	6.4A	2
	5	1251	4.6-A	A66	6.4-A	2
3C414	2	837	3.8-A	A66	8.0-A	2
	3	964	4.4-A	A71	8.0-A	2
	5	1133	5.2-A	A71	8.0-A	2
3C415	3	746	3.2-A	A71	7.6-A	2
	5	880	3.8-A	A75	7.6-A	2
	7½	1013	4.4-A	A75	7.6-A	2
	10	1147	5.0-A	A75	7.6-A	2
3C416	5	731	4.4-A	A85	10.6-A	2
	7½	827	5.0-A	A90	10.6-A	2
	10	891	5.4-A	A90	10.6-A	2

(‡) Drive requirements show minimum Motor HP required. Other drives may be used, provided they meet the Fan RPM stated above and have adequate load-carrying capacity.
(•) Rubber Manufacturer's Association.

LIMITED WARRANTY

Dayton tubeaxial fans, Models 3C411, 3C412, 3C413, 3C414, 3C415 & 3C416, are warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use (rental use excluded), for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be repaired or replaced at Dayton's option. For warranty claim procedures, see "Prompt Disposition" below. This warranty gives purchasers specific legal rights, and purchasers may also have other rights which vary from state to state.

WARRANTY DISCLAIMER. Dayton has made a diligent effort to illustrate and describe the products in this literature accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions.

Except as provided below, no warranty or affirmation of fact, express or implied, other than as stated in "LIMITED WARRANTY" above is made or authorized by Dayton, and Dayton's liability in all events is limited to the purchase price paid.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some states do not allow limitations on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

PROMPT DISPOSITION. Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within warranty. For any product believed to be defective within warranty, first write or call dealer from whom product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date and number of dealer's invoice, and describing the nature of the defect. If product was damaged in transit to you, file claim with carrier.

DAYTON ELECTRIC MFG. CO., 5959 W. HOWARD ST.
CHICAGO, ILLINOIS 60648

Performance

Model	Blade Dia.	CFM & (Sound Power LW(A) decibels) at Static Pressure Shown									
		Free Air	1/8" S.P.	1/4" S.P.	1/2" S.P.	3/8" S.P.	1" S.P.	1-1/2" S.P.	Fan RPM	Motor HP	Max. BHP
3C411	24"	7915	7615	7285	6555	5855	—	—	1466	1-1/2	1.31
		92	90	91	93	95	—	—			
		9115	8860	8580	7985	7295	6490	—	1688	2	1.98
		95	94	94	95	98	99	—			
		10310	10090	9850	9335	8780	8155	7445	1910	3	2.87
		99	98	97	97	99	101	102			
3C412	30"	10955	10415	9815	8395	—	—	—	1020	1-1/2	1.40
		90	89	89	93	—	—	—			
		12190	11710	11180	9990	8485	—	—	1146	2	1.90
		93	94	94	93	95	—	—			
		14040	13630	13180	12220	11100	9740	—	1320	3	2.91
		98	96	96	96	99	99	—			
		16495	16150	15785	14995	14145	13190	12125	1551	5	4.72
		102	101	100	100	100	102	104			
3C413	34"	14450	13760	13020	11285	9355	—	—	936	2	1.83
		94	92	92	94	96	—	—			
		16560	15985	15350	13905	12305	7750	—	1074	3	2.78
		100	100	99	99	100	102	—			
		19290	18800	18280	17150	15880	14445	12180	1251	5	4.36
		101	102	101	100	100	102	103			
3C414	36"	15255	14453	13510	11430	—	—	—	837	2	1.82
		92	90	90	94	—	—	—			
		17570	16890	16135	14450	12345	—	—	964	3	2.79
		98	99	97	98	100	—	—			
		20650	20080	19460	18135	16600	14825	—	1133	5	4.53
		100	101	100	99	101	102	—			
3C415	42"	21465	20450	19275	16565	—	—	—	745	3	2.76
		90	91	92	95	—	—	—			
		25320	24460	23505	21435	18965	—	—	880	5	4.53
		98	98	98	98	99	—	—			
		29150	28410	27610	25900	23960	21775	18120	1013	7-1/2	6.88
		100	100	101	102	103	103	103			
		33000	32355	31670	30185	28620	26850	24920	1147	10	9.98
		103	104	104	105	106	107	107			
3C416	48"	31260	30070	28745	25810	22170	—	—	731	5	5.00
		100	99	98	99	100	—	—			
		35365	34325	33185	30780	37900	24390	—	827	7-1/2	7.25
		102	102	102	100	101	103	—			
		38100	37140	36105	33885	31380	28550	24060	891	10	9.04
		104	104	104	103	103	104	105			

Performance Notes

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW FOR:

Mr. Thayne Judd
Colonel, USAF
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Re: Paint Spray Booth in Building 1913 and Solvent Spray Booth in Building 1915
Davis County, CDS A1

Date: September 16, 1987

Notice of Intent Dated: May 28, 1987

Plant Contact: Jay Gupta

Phone Number: (801) 777-2065

Plant Location: Hill Air Force Base, Utah

Filing Fee		=	$ 100.00
Review Engineer - total hours	9	($22.08/hr) =	$ 198.72
Modeler - total hours		($17.63/hr) =	$.
Computer time - total hours		($ 5.00/hr) =	$.
Notice To Paper		=	$ 24.00
Travel - total miles		($ 0.23/mile) =	$.
		Total =	$ 322.72

Approved by Compliance TAH 10/23/87

Approved by Section Manager DK 10/23/87

Approved by Executive Secretary For 10/26/87

1069q

4.2.4-956

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base has filed a notice of intent dated May 28, 1987, in which they intend to install a new paint booth in Building 1913 and a new one in Building 1915.

The booth in Building 1913 will be for spraying aircraft landing gear components. The booth has the following parameters:

1. Devilbiss Model XDF-6342
2. 14 feet wide by 15 feet deep
3. Face velocity - 125 feet per minute
4. 17,900 ACFM
5. Stack height - 31 feet
6. Stack diameter - 3.50 feet

The following types of paints will be used in this booth:

1. Nitro Cellulose Lacquer

   Mill - 19537c
   7.8 LB/GAL
   70% VOC
   3 gallons per day

2. Poly Mide Prime

   Mill - P 23377
   9.0 LB/GAL
   51% VOC
   3 gallons per day

3. Polyurethane

   Mill - C-83286
   9.20 LB/GAL
   56% VOC
   3 gallons per day

Particulate will be controlled by dry filters. Hours of operation are 2,080 per year.

The booth in Building 1915 will be used for spraying miscellaneous missile components. The booth has the following parameters:

1. Bleeker - VF-8
2. 4 feet high by 8 feet wide by 5 feet deep
3. Face velocity - 190 feet per minute
4. 6,370 ACFM
5. Stack height - 33 feet
6. Stack diameter - 2.0 feet

Stoddard solvent will be used in this booth. It has the following parameters:

1. 6.5 LB/GAL
2. 99% VOC
3. 15 gallons per week

This booth will use multipurpose air/grease filters, GF #AG2025. Hours of operation are 2,080 per year.

II. EMISSION SUMMARY

Hill Air Force Base is an existing major source. This notice of intent does not represent a major modification. The emissions are as follows:

TSP - 0.11 TON/YR
VOC - 8.42 TON/YR

III. BACT ANALYSIS

BACT for Building 1913

The proposed paint booth meets the requirements of BACT because:

1. The paint arrestor filter pads are rated at 95% efficient for collecting paint solids and aerosols. This is state-of-the-art for paint booth particulate control.

2. Low solvent paints have not been developed that will meet the specifications for aircraft service.

3. The VOC emissions are below 10 tons per year.

4. The cost of installation and operation of an incinerator for this quantity of low concentration VOCs would be excessive on a cost-per-ton-captured basis.

5. The cost of installation and operation of a carbon adsorption unit for this quantity of low concentration VOCs would be excessive on a cost-per-ton-captured basis.

BACT for Building 1915

The proposed paint booth meets the requirements of BACT because:

1. The booth configuration does not conform to the typical control technique for a cold solvent cleaner. The solvent is pumped through a nozzle to form a stream, not an atomized spray, that is directed at the parts to be cleaned. The used solvent is collected in a pan under a drain rack and then drains from the pan into an enclosed 25 gallon tank below the pan for recirculation. The enclosed tank would be as effective as a cover when not in use.

2. The estimated cost of installation and operation of a carbon adsorption unit or an incinerator for this quantity of low concentration VOCs would be excessive on a cost-per-ton-captured basis.

3. Particulate emissions are negligible from this emission point.

IV. APPLICABLE REGULATIONS

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification. It is not a PSD source. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for a modified source. This regulation applies.

2. Section 3.1.8, UACR - Application of BACT required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.

4. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. Hill Air Force Base is listed in this regulation. However, only the boilers are covered. Therefore, this regulation will not apply to the paint booths.

5. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This source does not qualify as a new major source or a major modification. Therefore, this regulation will not apply to the paint booths.

6. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation.

7. Section 3.6.5(b), UACR - PSD review requirements for new major sources or major modifications. This source does not qualify as a new major source or a major modification under PSD rules. Therefore, this regulation does not apply.

8. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good

engineering practice are found in 40 CFR 51.1. A deminimus height of 65 meters (213.2 feet) is allowed. This source has no stacks which exceed 65 meters in height. It is in compliance with this regulation.

9. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This source is not a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

10. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by NSPS or BACT or NESHAPS. In this case, the 20% opacity limitation applies.

11. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

12. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This emission point does not use oil or coal for combustion. This regulation does not apply.

13. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

14. Section 4.9, UACR - Review requirements for VOC sources located in a nonattainment area for ozone. Section 4.9.6(g), UACR, will apply to these paint booths on an individual basis if the VOC emissions for either booth exceeds 10 tons per year. At the present time, they do not exceed 10 tons per year. For details on the regulatory requirements, consult the regulation.

15. Section 5, UACR - Emergency episode requirements. This regulation applies.

16. NSPS - there is no NSPS for this industrial process.

17. NESHAPS - There is no NESHAPS for this industrial process.

18. NAAQS - This source is located in Davis County which is a nonattainment area for ozone. The emission rates are small enough that the Bureau of Air Quality guidelines do not call for this source to be modeled for any pollutant. The modeling guidelines were developed to screen for sources which might show an ambient air impact. No new violation of the NAAQS for ozone should occur.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install the paint spray booths in Buildings 1913 and 1915 according to the information submitted in

the notice of intent dated May 28, 1987, and additional information dated August 26, 1987.

2. The approved installations shall consist of the following equipment located at the site:

   A. Devilbiss booth, Model XDF-6342, with particulate filters in Building 1913.

   B. Bleeker Brothers booth, Model VF-82, with air/grease filters type GF #2025, in Building 1915.

   C. Other associated equipment.

3. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply. The opacity of any single reading shall not exceed 20% for intermittent sources.

4. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

5. The Executive Secretary shall be notified upon start-up of the installation, as an initial compliance inspection is required.

6. Eighteen months from the date of this approval order the Executive Secretary shall be notified of the status of construction of this project.

7. The owner/operator shall not exceed the following usages of paints as shown below:

   Booth 1913

   Nitro cellulose lacquer Mill 19537C - 780 gallons per year
   Poly mide prime Mill P 23377 - 780 gallons per year
   Polyurethane Mill C-83286 - 780 gallons per year

   Booth 1915

   Stoddard solvent - 780 gallons per year

These values shall not be exceeded without prior approval in accordance with Section 3.1, UACR. Records of usage shall be kept for all periods when the plants are in operation. Records of usage shall be made

available to the Executive Secretary upon request and shall include a period of two years ending with the date of the request. Usage shall be determined by vendor sales receipts.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

DER/sh
1069q

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

AUG 2 6 1987

Mr Carl Broadhead
Bureau of Air Quality
288 North 1460 West
P.O. Box 16690
Salt Lake City, Ut 84116-0690

Re: Notice of Intent (NOI) dated 28 May, 1987.

Dear Mr Broadhead

Below is our reponse to your letter of 30 June 1987. Based on your telephone conversation of 12 Aug 87, with our Jay Gupta, this letter also provides additional process information on proposed solvent cleaning booth in building 1915.

1. We agree section 4.9.4A, UACR, applies to the solvent spray booth and section 4.9.6G applies to the paint booth.

2. Pursuant to section 1.1.24, UACR, "Best Available Control Technology" (BACT) is determined on a case by case basis by the Air Conservation Committee. We cannot interpret your regulation in place of the Committee. However, based on information available to us at this time, we believe the control measures listed in UACR 4.9.4A and 4.9.6G meet the definition of BACT in our case.

The requested additional process information on proposed solvent cleaning booth in building 1915 is listed below:

1. The quantity 15 gallons/week (evaporation loss) used in computing solvent emissions is based on actual make-up rate of Stoddard Solvent to a similar unit in operation.

2. The term "Pressure Atomization" here means, solvent under pressure forced through a restrictive opening, a nozzle in this case, to achieve a spray pattern that would enhance cleaning miscellaneous missile components. The intent is not to create atomized fine droplets or a solvent mist that would accelerate solvent loss to the atmosphere.

3. Holding capacity of collecting tank, that holds used solvent from the booth, is approximately 25 gallons. Solvent is recycled to the booth from this tank via circulating pump.

d) Parts to be cleaned are placed on a screen inside the booth and are sprayed with the cleaning solvent. After dripping ceases, parts are removed and solvent is recirculated.

We hope this answers your questions on this N.O.I. If this office can provide additional information, please feel free to contact Jay Gupta at 777-2065.

Sincerely

THAYNE H. JUDD, Col, USAF
Chief, Environmental Mgt Office

4.2.4-964

NOTICE OF INTENT TO CONSTRUCT

NEW SOLVENT BOOTH IN BLDG 1915

HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

The proposed action provides for installation of a new solvent booth in Building 1915 for spraying miscellaneous missile components. The spray booth is a Bleeker-VF-8 4' H x 8' W x 5' D working area, complete with exhaust chamber filters. Attached is a copy of the manufacturer's specifications for this booth. At a face velocity of 190 feet/minute, the air flow rate at 1/4" sp. is estimated to be 6,370 cfm.

2. POLLUTANT EMISSIONS:

The primary source of air pollutants from the spray booth are solvent particulates and hydrocarbon vapors. Using EPA Publication AP-42 method for calculating solvent losses, the emissions from these sources are calculated as follows:

a. TYPE OF SOLVENT: Stoddard Solvent, PD 680.(2).

DENSITY: 6.5 lb/gal

METHOD OF APPLICATION: Pressure atomization.

PERCENT VOLATILE: 99%

AMOUNT: 15 gal/week

b. $\frac{(6.5 \text{ lb/gal})\ (15 \text{ Gal/Week})\ (52 \text{ weeks/yr})\ (.99 \text{ vol})}{2{,}000 \text{ lbs/ton}}$

Total Voc Emission = 2.5 ton/yr.

4.2.4-965

The primary source of air pollutants from paint booth are paint particulates and hydrocarbon vapors. Using EPA Publication AP-42 method for calculating solvent losses, the emissions from these sources are calculated as follows:

a. TYPE: Nitro cellulose lacquer. Mil 19537C

DENSITY: 7.8 lb/gal

METHOD: Air Atomization

PERCENT VOLATILES: 70%

AMOUNT: 3 gal/day

b. TYPE: Poly Mide Prime Mil P 23377

DENSITY: 9.0 lb/gal

METHOD OF APPLICATION: Air Atomization

PERCENT VOLATILES: 51%

AMOUNT: 3 gal/day

c. TYPE: Polyurethane, Mil C-83286

DENSITY: 9.2

METHOD OF ATOMIZATION: Air atomization

PERCENT VOLATILES: 56%

AMOUNT: 3 gal/day

b. BUILDING 1913:

(1) $\frac{(7.8 \text{ lb/gal})\ (15 \text{ gal paint/week})\ (52 \text{ weeks/yr})\ .7 \text{ vol}}{2{,}000 \text{ lbs/ton}}$

= 2.13 tons vol/year.

(2) $\frac{(9.0 \text{ lb/gal})\ (15 \text{ gal/week})\ (52 \text{ weeks/yr})\ .51/\text{vol}}{2{,}000 \text{ lb/ton}}$

= 1.79 tons vol/yr.

(3) $\frac{(9.2 \text{ lb/gal})\ (15 \text{ gal/week})\ (52 \text{ weeks/yr})\ .56 \text{ vol}}{2{,}000 \text{ lb/ton}}$

= 2.00 ton vol/yr.

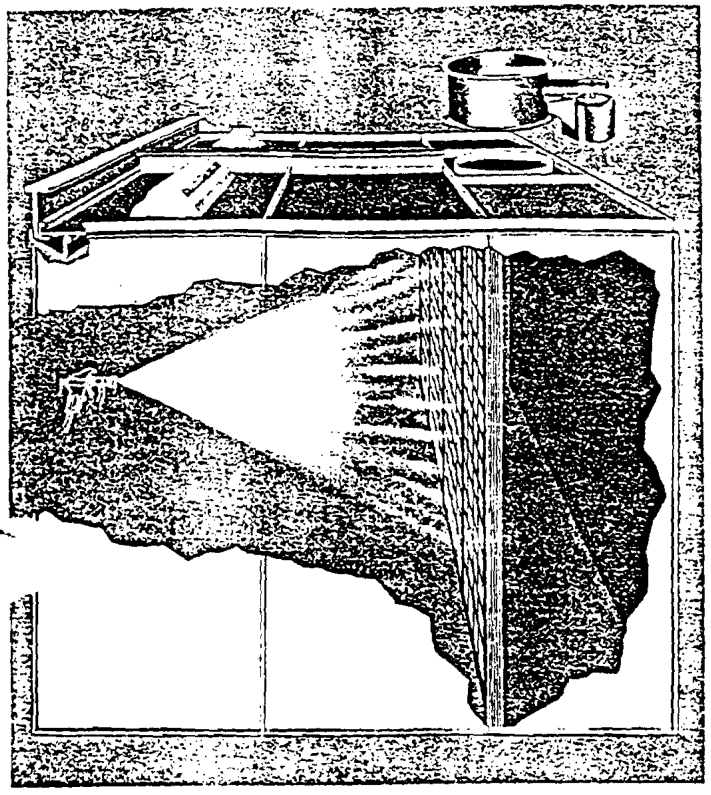
Total vol emission - 5.92 tons/yr.

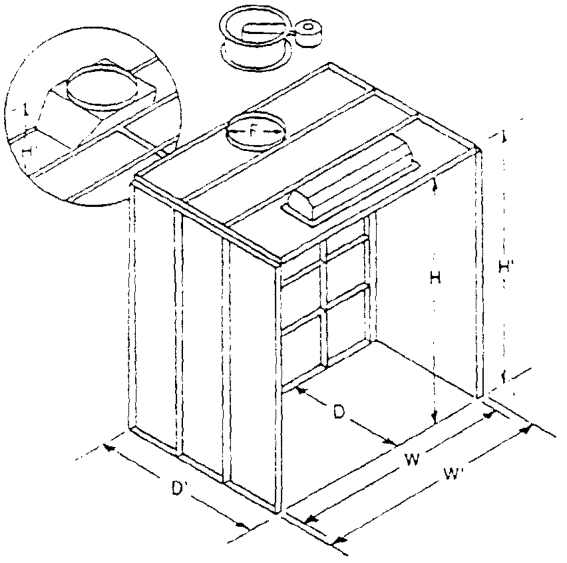
3 AIR CLEANING DEVICES.

LOCATED IN BLDG 1 13

DEVILBISS

PAINT ARRESTOR TYPE SPRAY BOOTHS





uses

for removal of air-borne paint particles from spray booth exhaust air by means of disposable filters. Requires regular schedule of filter replacement. Ideally suited for limited or intermittent spray operations, such as refinish shops, schools and production lines where paint consumption is moderate.

standard equipment

- **lights**—3 tube, vapor-proof type, rapid-start fluorescent fixtures provide broad source illumination for maximum reduction of shadows in work area.
- **fan rings**—provide reinforced flange type mounting to exhaust stack.
- **DF-483 draft gauge**—for compliance with OSHA.
- **exhaust** fan—Correct size and capacity to produce required air velocity for booths with or without conveyor openings. Open type motor is standard; explosion-proof or totally enclosed available. Fans conform to O.S.H.A. required noise levels of 90 db(A) or less.
- **paint arrestor pads**—Full set of pads sufficient for initial operating period; plus generous supply for replacement.
- **hardware**—All nuts, bolts, fittings, seals, floor clip and tie angles furnished.

important: Specify electric current from which fan motor is to operate. Order required components for exhaust stack. (See pages 46-47).

exhaust chambers

Ideal for special enclosures constructed from standard panels, beams, etc. (see pages 42 and 43)—or for installation in a "spray finishing room." Consist of the complete exhaust chamber section (without the painting area enclosure), paint arrestor frame and retainers and arrestor pads. See pages 50 and 51 for accessories.

Note: Arrestor booths may be erected for top or back exhaust outlet.

AINT ARRESTOR TYPE
'Y BOOTHS

Models and Specifications									100 fpm air velocity without conveyor openings						125 fpm air velocity without conveyor openings 100 fpm air velocity with conveyor openings up to 20% of booth frontal area						
DIMENSIONS						No. of Lights*	No. of 20 x 25 Filters		Exhaust Chamber Only—No Fan	Booths with Lights, Fan and Motor	Booths with Fan and Motor with Light Openings Without Lights	Booths with Fan and Motor Without Light Openings and Lights	Fan less Motor	Dia. (in.)	H P	Exhaust Chamber Only—No Fan	Booths with Lights, Fan and Motor	Booths with Fan and Motor with Light Openings Without Lights	Booths with Fan and Motor Without Light Openings and Lights	Fan less Motor	Dia (in.)	H P
Working Chamber (in feet)			Booth Overall (in feet and inches)																			
W	H	D	W'	H'	D'		Req	Fur														
4	7	5	4-4	7-2	9-2	—	12	36	XCF-600	—	—	XDF-6132	JH-4842	24	½	XCF 600	—	—	XDF-6332	JH-4844	24	¾
6	7	6	6-4	7-2	9-2	1	18	36	XCF-601	XDF-6000	XDF-6066	XDF-6133	JH-4846	24	1	XCF-601	XDF-6200	XDF-6266	XDF-6333	JH-4850	24	1½
6	7	9	6-4	7-2	12-2	1	18	36	XCF-601	XDF-6001	XDF-6067	—	JH-4846	24	1	XCF-601	XDF-6201	XDF-6267	—	JH-4850	24	1½
6	8	6	6-4	8-2	9-2	1	18	36	XCF-602	XDF-6002	XDF-6068	XDF-6134	JH-4850	24	1½	XCF-602	XDF-6202	XDF-6268	XDF-6334	JH-4429	24	1½
6	8	9	6-4	8-2	12-2	1	18	36	XCF-602	XDF-6003	XDF-6069	—	JH-4850	24	1½	XCF-602	XDF-6203	XDF-6269	—	JH-4428	24	1½
8	7	6	8-4	7-2	9-2	1	24	36	XCF-603	XDF-6004	XDF-6070	XDF-6135	JH-4427	24	1½	XCF-603	XDF-6204	XDF-6270	XDF-6335	JH-4428	24	2
8	7	9	8-4	7-2	12-2	1	24	36	XCF-603	XDF-6005	XDF-6071	—	JH-4427	24	1½	XCF-603	XDF-6205	XDF-6271	—	JH-4429	24	2
8	8	6	8-4	8-2	9-2	1	24	36	XCF-605	XDF-6006	XDF-6072	XDF-6136	JH-4428	24	1½	XCF-605	XDF-6206	XDF-6272	XDF-6336	JH-4430	24	3
8	8	9	8-4	8-2	12-2	1	24	36	XCF-605	XDF-6007	XDF-6073	—	JH-4428	24	1½	XCF-605	XDF-6207	XDF-6273	—	JH-4430	24	3
10	7	6	10-4	7-2	9-2	2	36	36	XCF-607	XDF-6008	XDF-6074	XDF-6137	JH-4429	24	2	XCF-607	XDF-6208	XDF-6274	XDF-6337	JH-4425	24	3
10	7	9	10-4	7-2	12-2	2	36	36	XCF-607	XDF-6009	XDF-6075	—	JH-4429	24	2	XCF-607	XDF-6209	XDF-6275	—	JH-4425	24	3
10	8	6	10-4	8-2	9-2	2	36	36	XCF-609	XDF-6010	XDF-6076	XDF-6138	JH-4430	24	3	XCF-610	XDF-6210	XDF-6276	XDF-6338	JJ-4404	34	2
10	8	9	10-4	8-2	12-2	2	36	36	XCF-609	XDF-6011	XDF-6077	—	JH-4430	24	3	XCF-610	XDF-6211	XDF-6277	—	JJ-4404	34	2
10	8	12	10-4	8-2	15-2	4	36	36	XCF-609	XDF-6012	XDF-6078	—	JH-4430	24	3	XCF-610	XDF-6212	XDF-6278	—	JJ-4404	34	2
10	10	6	10-4	10-2	9-2	2	48	72	XCF-611	XDF-6013	XDF-6079	—	JJ-4841	34	2	XCF-611	XDF-6213	XDF-6279	—	JJ-4400	34	3
10	10	9	10-4	10-2	12-2	2	48	72	XCF-611	XDF-6014	XDF-6080	—	JJ-4841	34	2	XCF-611	XDF-6214	XDF-6280	—	JJ-4400	34	3
10	10	12	10-4	10-2	15-2	4	48	72	XCF-611	XDF-6015	XDF-6081	—	JJ-4841	34	2	XCF-611	XDF-6215	XDF-6281	—	JJ-4400	34	3
12	7	6	12-4	7-2	9-2	2	42	72	XCF-613	XDF-6016	XDF-6082	XDF-6139	JH-4431	24	3	XCF-614	XDF-6216	XDF-6282	XDF-6339	JJ-4404	34	2
12	7	9	12-4	7-2	12-2	2	42	72	XCF-613	XDF-6017	XDF-6083	—	JH-4431	24	3	XCF-614	XDF-6217	XDF-6283	—	JJ-4404	34	2
12	8	6	12-4	8-2	9-2	2	42	72	XCF-615	XDF-6018	XDF-6084	XDF-6140	JJ-4839	34	1½	XCF-615	XDF-6218	XDF-6284	XDF-6340	JJ-4400	34	3
12	8	9	12-4	8-2	12-2	2	42	72	XCF-615	XDF-6019	XDF-6085	—	JJ-4839	34	1½	XCF-615	XDF-6219	XDF-6285	—	JJ-4400	34	3
12	8	12	12-4	8-2	15-2	4	42	72	XCF-615	XDF-6020	XDF-6086	—	JJ-4839	34	1½	XCF-615	XDF-6220	XDF-6286	—	JJ-4400	34	3
12	8	15	12-4	8-2	18-2	4	42	72	XCF-615	XDF-6021	XDF-6087	—	JJ-4839	34	1½	XCF-615	XDF-6221	XDF-6287	—	JJ-400D	34	3
12	10	6	12-4	10-2	9-2	2	56	72	XCF-617	XDF-6022	XDF-6088	—	JJ-4400	34	3	XCF-617	XDF-6222	XDF-6288	—	JJ-4402	34	5
12	10	9	12-4	10-2	12-2	2	56	72	XCF-617	XDF-6023	XDF-6089	—	JJ-4400	34	3	XCF-617	XDF-6223	XDF-6289	—	JJ-4402	34	5
12	10	12	12-4	10-2	15-2	4	56	72	XCF-617	XDF-6024	XDF-6090	—	JJ-4400	34	3	XCF-617	XDF-6224	XDF-6290	—	JJ-4402	34	5
12	10	15	12-4	10-2	18-2	4	56	72	XCF-617	XDF-6025	XDF-6091	—	JJ-4400	34	3	XCF-617	XDF-6225	XDF-6291	—	JJ-4402	34	5
14	7	6	14-4	7-8	9-2	2	48	72	XCF-619	XDF-6026	XDF-6092	XDF-6141	JJ-4839	34	1½	XCF-619	XDF-6226	XDF-6292	XDF-6341	JJ-4400	34	3
14	7	9	14-4	7-8	12-2	2	48	72	XCF-619	XDF-6027	XDF-6093	—	JJ-4839	34	1½	XCF-619	XDF-6227	XDF-6293	—	JJ-4400	34	3
14	8	6	14-4	8-8	9-2	2	48	72	XCF-621	XDF-6028	XDF-6094	XDF-6142	JJ-4405	34	3	XCF-621	XDF-6228	XDF-6294	XDF-6342	JJ-4401	34	5
14	8	9	14-4	8-8	12-2	2	48	72	XCF-621	XDF-6029	XDF-6095	—	JJ-4405	34	3	XCF-621	XDF-6229	XDF-6295	—	JJ-4401	34	5
14	8	12	14-4	8-8	15-2	4	48	72	XCF-621	XDF-6030	XDF-6096	—	JJ-4405	34	3	XCF-621	XDF-6230	XDF-6296	—	JJ-4401	34	5
14	8	15	14-4	8-8	18-2	4	48	72	XCF-621	XDF-6031	XDF-6097	—	JJ-4405	34	3	XCF-621	XDF-6231	XDF-6297	—	JJ-4401	34	5
14	10	6	14-4	10-8	9-2	2	64	72	XCF-623	XDF-6032	XDF-6098	—	JJ-4401	34	5	XCF-624	XDF-6232	XDF-6298	—	JK-4401	42	5
14	10	9	14-4	10-8	12-2	2	64	72	XCF-623	XDF-6033	XDF-6099	—	JJ-4401	34	5	XCF-624	XDF-6233	XDF-6299	—	JK-4401	42	5
14	10	12	14-4	10-8	15-2	4	64	72	XCF-623	XDF-6034	XDF-6100	—	JJ-4401	34	5	XCF-624	XDF-6234	XDF-6300	—	JK-4401	42	5
14	10	15	14-4	10-8	18-2	4	64	72	XCF-623	XDF-6035	XDF-6101	—	JJ-4401	34	5	XCF-624	XDF-6235	XDF-6301	—	JK-4401	42	5
16	7	6	16-4	7-8	9-2	2	54	72	XCF-626	XDF-6036	XDF-6102	XDF-6143	JJ-4405	34	3	XCF-626	XDF-6236	XDF-6302	XDF-6343	JJ-4401	34	5
16	7	9	16-4	7-8	12-2	2	54	72	XCF-606	XDF-6037	XDF-6103	—	JJ-4405	34	3	XCF-626	XDF-6237	XDF-6302	—	JJ-4401	34	5
16	8	6	16-4	8-8	9-2	2	54	72	XCF-628	XDF-6038	XDF-6104	XDF-6144	JJ-4400	34	3	XCF-628	XDF-6238	XDF-6304	XDF-6344	JJ-4402	34	5
16	8	9	16-4	8-8	12-2	2	54	72	XCF-628	XDF-6039	XDF-6105	—	JJ-4400	34	3	XCF-628	XDF-6239	XDF-6305	—	JJ-4402	34	5
16	8	12	16-4	8-8	15-2	4	54	72	XCF-628	XDF-6040	XDF-6106	—	JJ-4400	34	3	XCF-628	XDF-6240	XDF-6306	—	JJ-4402	34	5
16	8	15	16-4	8-8	18-2	4	54	72	XCF-628	XDF-6041	XDF-6107	—	JJ-4400	34	3	XCF-628	XDF-6241	XDF-6307	—	JJ-4402	34	5
16	10	6	16-4	10-8	9-2	2	72	72	XCF-631	XDF-6042	XDF-6108	—	JJ-4402	34	5	XCF-632	XDF-6242	XDF-6308	—	JK-4402	42	5
16	10	9	16-4	10-8	12-2	2	72	72	XCF-631	XDF-6043	XDF-6109	—	JJ-4402	34	5	XCF-632	XDF-6243	XDF-6309	—	JK-4402	42	5
16	10	12	16-4	10-8	15-2	4	72	72	XCF-631	XDF-6044	XDF-6110	—	JJ-4402	34	5	XCF-632	XDF-6244	XDF-6310	—	JK-4402	42	5
16	10	15	16-4	10-8	18-2	4	72	72	XCF-631	XDF-6045	XDF-6111	—	JJ-4402	34	5	XCF-632	XDF-6245	XDF-6311	—	JK-4402	42	5
18	7	6	18-4	7-8	9-2	3	60	72	XCF-634	XDF-6046	XDF-6112	XDF-6145	JJ-4400	34	3	XCF-634	XDF-6246	XDF-6312	XDF-6345	JJ-4402	34	5
18	7	9	18-4	7-8	12-2	3	60	72	XCF-634	XDF-6047	XDF-6113	—	JJ-4400	34	3	XCF-634	XDF-6247	XDF-6313	—	JJ-4402	34	5
18	8	6	18-4	8-8	9-2	3	60	72	XCF-637	XDF-6048	XDF-6114	XDF-6146	JJ-4401	34	5	XCF-638	XDF-6248	XDF-6314	XDF-6346	JK-4405	42	5
18	8	9	18-4	8-8	12-2	3	60	72	XCF-637	XDF-6049	XDF-6115	—	JJ-4401	34	5	XCF-638	XDF-6249	XDF-6315	—	JK-4405	42	5
18	8	12	18-4	8-8	15-2	6	60	72	XCF-637	XDF-6050	XDF-6116	—	JJ-4401	34	5	XCF-638	XDF-6250	XDF-6316	—	JK-4405	42	5
18	8	15	18-4	8-8	18-2	6	60	72	XCF-637	XDF-6051	XDF-6117	—	JJ-4401	34	5	XCF-638	XDF-6251	XDF-6317	—	JK-4405	42	5
18	10	6	18-4	12-8	9-2	3	80	108	XCF-640	XDF-6052	XDF-6118	—	JK-4405	42	5	XCF-641	XDF-6252	XDF-6318	—	JL-4400	48	5
18	10	9	18-4	12-8	12-2	3	80	108	XCF-640	XDF-6053	XDF-6119	—	JK-4405	42	5	XCF-641	XDF-6253	XDF-6320	—	JL-4400	48	5
18	10	12	18-4	12-8	15-2	6	80	108	XCF-640	XDF-6054	XDF-6120	—	JK-4405	42	5	XCF-641	XDF-6254	XDF-6320	—	JL-4400	48	5
18	10	15	18-4	12-8	18-2	6	80	108	XCF-640	XDF-6055	XDF-6121	—	JK-4405	42	5	XCF-641	XDF-6255	XDF-6321	—	JL-4400	48	5
20	7	6	20-4	7-8	9-2	4	72	72	XCF-624	XDF-6056	XDF-6122	XDF-6147	JJ-4401	34	5	XCF-643	XDF-6256	XDF-6322	XDF-6347	JK-4401	42	5
20	7	9	20-4	7-8	12-2	4	72	72	XCF-642	XDF-6057	XDF-6123	—	JJ-4401	34	5	XCF-643	XDF-6257	XDF-6323	—	JK-4401	42	5
20	8	6	20-4	8-8	9-2	4	72	72	XCF-645	XDF-6058	XDF-6124	XDF-6148	JJ-4402	34	5	XCF-646	XDF-6258	XDF-6324	XDF-6348	JK-4402	42	5
20	8	9	20-4	8-8	12-2	4	72	72	XCF-645	XDF-6059	XDF-6125	—	JJ-4402	34	5	XCF-646	XDF-6259	XDF-6325	—	JK-4402	42	5
20	8	12	20-4	8-8	15-2	8	72	72	XCF-645	XDF-6060	XDF-6126	—	JJ-4402	34	5	XCF-646	XDF-6260	XDF-6326	—	JK-4402	42	5
20	8	15	20-4	8-8	18-2	8	72	72	XCF-645	XDF-6061	XDF-6127	—	JJ-4402	34	5	XCF-646	XDF-6261	XDF-6327	—	JK-4402	42	5
20	10	6	20-4	12-8	9-2	4	96	108	XCF-648	XDF-6062	XDF-6128	—	JK-4402	42	5	XCF-649	XDF-6262	XDF-6328	—	JL-4400	48	5
20	10	9	20-4	12-8	12-2	4	96	108	XCF-648	XDF-6063	XDF-6129	—	JK-4402	42	5	XCF-649	XDF-6263	XDF-6329	—	JL-4400	48	5
20	10	12	20-4	12-8	15-2	8	96	108	XCF-648	XDF-6064	XDF-6130	—	JK-4402	42	5	XCF-649	XDF-6264	XDF-6330	—	JL-4400	48	5
20	10	15	20-4	12-8	18-2	8	96	108	XCF-648	XDF-6065	XDF-6131	—	JK-4402	42	5	XCF-649	XDF-6265	XDF-6331	—	JL-4400	48	5

*LF-524 Lights will be supplied on "Booth with Light."
One (1) Light Bracket Assembly (LF-438) furnished with each light.

Fan models shown in gray areas indicate fan is set up for an open motor and is being used with the next higher H.P. motor.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

December 7, 1995

DAQE-1134-95

Lynn S. Hill
Hill Air Force Base
Headquarters
Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah 84056

Dear Mr. Hill:

Re: Approval Order for Setup Chemical Milling Process Line in Bldg 238
Davis County, CDS-A1, Non-Attainment, Title V

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Nando Meli. He may be reached at (801) 536-4052.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:NM:aj

cc: Davis County Health Department
28 East State Street
PO Box 618
Farmington, UT 84025-618

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER FOR SETUP CHEMICAL MILLING PROCESS LINE IN BLDG 238

Prepared By: Nando Meli, Engineer
801-536-4052

APPROVAL NUMBER

DAQE-1134-95

Date: December 7, 1995

Source

Hill Air Force Base
Lynn S. Hill
801-777-0359

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Hill Air Force Base (AFB) is requesting approval to move and replace their existing Chemical Milling Process Line (Chem Mill Line). The current Chem Mill Line is a grandfathered source and needs to be relocated from Building 265 to Building 238. A water based maskant will replace the existing solvent based maskant that is currently being used. This new maskant will result in the VOC emissions being reduced from 11.9 to 0.38 tons per year. The Sodium Hydroxide emissions will remain at 0.29 tons per year and the Isoprep emissions will remain at 0.44 tons per year. Hill AFB is a major source that is located in Davis County which is a Nonattainment Area for PM_{10} and Ozone.

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this AO reflect any changes to the proposed conditions which resulted from the evaluation of the comments received.This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

General Conditions:

1. This AO applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:
   4,55.5 kilometers Northing; 418.0 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (AFB) shall install and operate the Chemical Processing Line in Building 238 according to the terms and conditions of this AO as requested in the Notice of Intent dated March 3, 1995, and additional information submitted to the Executive Secretary dated May 3, 1995, and May 6, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Five 2000 gallon Chemical Milling Process Tanks

      1) Maskant Dip Tank
      2) Hot Water Dip Tank
      3) Isoprep Tank
      4) Water Spray Rinse Tank
      5) Sodium Hydroxide Tank

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. 1500 gallons of Water Based Maskant per rolling 12-month period

   B. 660 gallons of Sodium Hydroxide per rolling 12-month period

   C. 220 gallons of Isoprep per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the executive secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Volatile Organic Compound (VOC) and Hazardous Air Pollutants (HAPs) Limitations

8. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

"14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

9. The emissions of VOCs from the Chemical Milling Process Line tanks, etc. and associated operations located in Building 238 shall not exceed:

0.38 tons per rolling 12-month period for VOCs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

VOCs and HAPs emissions from the chemical milling process line in Building 238 emitted to the atmosphere shall be determined by maintaining a record of volatile organic compound potential and hazardous air pollutant potential contained in materials used each month. The record shall include the following data for each item used:

A. Name of the VOC and HAPs emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs and HAPs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$\text{VOC} = \frac{\text{(\% Volatile by Weight)}}{(100)} \times \frac{\text{(Density lb)}}{\text{(gal)}} \times \frac{\text{(Gal Consumed)}}{\text{(2,000 lb)}} \times \text{(1 ton)}$$

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified and subtracted from the quantities calculated above. This is done to allow

quantification by the source of the total VOCs and HAPs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs and HAPs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the executive secretary upon request, and shall include a period of two years ending with the date of the request.

10. All HAPs are subject to the annual Operating Permit Program if one of the following conditions is met:

A. The emissions of any one of the 189 HAPs listed in the 1990 Clean Air Act is over ten (10) tons/yr

B. The emissions of any combination of these HAPs are over 25 tons/yr

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up [or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the executive secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall

be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC and HAP consumption records	(Condition number 10)
C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this Chemical Milling Process Line at Building 238 are currently calculated at the following values:

	Pollutant	Tons/yr
A.	VOC	0.38
B.	NaOH	0.29
C.	Isoprep	0.44

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and Nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969, sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	Tons/yr
A.	VOC	0.38

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

October 18, 1995

DAQE-951-95

Hill Air Force Base
Headquarters
Ogden Logistics Center (AFMC)
Hill Air Force Base, UT 84056

Dear Mr. Graziano:

Re: Intent to Approve Setup Chemical Milling Process Line in Bldg 238
Davis County, CDS-A1, Non-Attainment, Title V

The attached document is an Intent to Approve for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Nando Meli. He may be reached at (801) 536-4052.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section
Utah Division of Air Quality

LRM:NM:aj

cc: Davis County Health Department
28 East State Street
POB 618
Farmington, UT 84025-618

4.2.4-68

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE SETUP CHEMICAL MILLING PROCESS LINE IN BLDG 238

Prepared By: Nando Meli, Engineer
(801) 536-4052

INTENT TO APPROVE NUMBER

DAQE-951-95

Date: October 18, 1995

Source

Hill Air Force Base
Lynn S. Hill
(801) 777-0359

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Hill Air Force Base (AFB) is requesting approval to move and replace their existing Chemical Milling Process Line (Chem Mill Line). The current Chem Mill Line is a grandfathered source and needs to be relocated from Building 265 to Building 238. A water based maskant will replace the existing solvent based maskant that is currently being used. This new maskant will result in the VOC emissions being reduced from 11.9 to 0.38 tons per year. The Sodium Hydroxide emissions will remain at 0.29 tons per year and the Isoprep emissions will remain at 0.44 tons per year. Hill AFB is a major source that is located in Davis County which is a Nonattainment Area for PM_{10} and Ozone.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

A Notice of Intent to issue an AO will be published in the Newspaper Agency on October 23, 1995. A 30-day period following the publishing date will be allowed during which the proposal and evaluation of its impact on air quality will be available for both you and the public to review and comment. If anyone so requests within 15 days of publication of the notice, a hearing will be held. The hearing will be held as close as practicable to the location of the source. Any comments received during the 30-day period and the hearing, if held, will be evaluated.

Please review the proposed AO conditions during this period and make any comments you may have before its closure. The proposed conditions of the AO may be changed as a result of the comments received. Unless changed, the AO will be based upon the following conditions:

General Conditions:

1. This AO applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:

4,55.5 kilometers Northing; 418.0 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (AFB) shall install and operate the Chemical Processing Line in Building 238 according to the terms and conditions of this AO as requested in the Notice of Intent dated March 3, 1995, and additional information submitted to the Executive Secretary dated May 3, 1995, and May 6, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Five 2000 gallon Chemical Milling Process Tanks

      1) Maskant Dip Tank
      2) Hot Water Dip Tank
      3) Isoprep Tank
      4) Water Spray Rinse Tank
      5) Sodium Hydroxide Tank

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. 1500 gallons of Water Based Maskant per rolling 12-month period

   B. 660 gallons of Sodium Hydroxide per rolling 12-month period

   C. 220 gallons of Isoprep per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month

using data from the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the executive secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Volatile Organic Compound (VOC) and Hazardous Air Pollutants (HAPs) Limitations

8. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

> "14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

9. The plant-wide emissions of VOCs from the Chemical Milling Process Line tanks, etc. and associated operations shall not exceed:

0.38 tons per rolling 12-month period for VOCs

This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

VOCs and HAPs emissions from the chemical milling process line in building 238 emitted to the atmosphere shall be determined by maintaining a record of volatile organic compound potential and hazardous air pollutant potential contained in materials used each month. The record shall include the following data for each item used:

A. Name of the VOC and HAPs emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight

of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs and HAPs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$\text{VOC} = \frac{(\%\ \text{Volatile by Weight})}{(100)} \times \frac{(\text{Density lb})}{(\text{gal})} \times \frac{(\text{Gal Consumed})}{} \times \frac{(1\ \text{ton})}{(2{,}000\ \text{lb})}$$

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified and subtracted from the quantities calculated above. This is done to allow quantification by the source of the total VOCs and HAPs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs and HAPs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the executive secretary upon request, and shall include a period of two years ending with the date of the request.

10. All HAPs are subject to the annual Operating Permit Program if one of the following conditions is met:

A. The emissions of any one of the 189 HAPs listed in the 1990 Clean Air Act is over 10 tons/yr

B. The emissions of any combination of these HAPs are over 25 tons/yr

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up [or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating

devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the executive secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC and HAP consumption records	(Condition number 10)
C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this Chemical Milling Process Line at Building 238 are currently calculated at the following values:

	Pollutant	Tons/yr
A.	VOC	0.38
B.	NaOH	0.29
C.	Isoprep	0.44

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and Nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	Tons/yr
A.	VOC	0.38

The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. Unless public comments are received which require additional work, the fee for this AO will be $1,000.00. An invoice will follow. You may pay this fee prior to the end of the comment period. If there are comments or additional fees, you will be notified.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

143 SOUTH MAIN ST.
P.O. BOX 45838
SALT LAKE CITY, UTAH 84145
FED. TAX I.D. # 87-0217663

Newspaper Agency Corporation

The Salt Lake Tribune (NA) DESERET NEWS

CUSTOMER'S COPY

PROOF OF PUBLICATION

CUSTOMER NAME AND ADDRESS	ACCOUNT NUMBER	
UT ST DEPT OF ENVR QULTY DIV OF AIR QUALITY P.O. BOX 144820 SALT LAKE CITY, UT 84114	U5364000L-07	10/23/95

ACCOUNT NAME	
UT ST DEPT OF ENVR QULTY	
TELEPHONE	INVOICE NUMBER
801-536-4000	TLAI8200701
SCHEDULE	
START 10/23/95 END 10/23/95	
CUST. REF. NO.	
HILL AIR F	
CAPTION	
NOTICETHE FOLLOWING NOTICE OF	
SIZE	
66 LINES 1.00 COLUMN	
TIMES	RATE
1	1.64
MISC. CHARGES	AD CHARGES
.00	108.24
	TOTAL COST
	108.24

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, has been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. Mike Graziano, Hill Air Force Base, 7274 Wardleigh Road, Hill Air Force Base, Utah 84056-5137. Location: Setup Chemical Milling Process Line in Bldg. 238.

The Net Increase in Approved ...sions will be (A negative ...ndicates a decrease in on rates.):

-11.47 tons/year

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84114-4820. Written comments received by the Division at the same address on or before November 22, 1995, will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: Oct. 23, 1995.
AI820070

AFFIDAVIT OF PUBLICATION

NEWSPAPER AGENCY CORPORATION LEGAL BOOKKEEPER, I CERTIFY THAT THE ATTACHED ...VERTISEMENT OF NOTICETHE FOLLOWING NOTICE OF FOR UT ST DEPT OF ENVR QULTY WAS PUBLISHED BY THE NEWSPAPER AGENCY ...RPORATION, AGENT FOR THE SALT LAKE TRIBUNE AND DESERET NEWS, DAILY NEWSPAPERS ...INTED IN THE ENGLISH LANGUAGE WITH GENERAL CIRCULATION IN UTAH, AND PUBLISHED ... SALT LAKE CITY, SALT LAKE COUNTY IN THE STATE OF UTAH.

...BLISHED ON START 10/23/95 END 10/23/95

SIGNATURE Mike Mooney

DATE 10/23/95

NOTARY PUBLIC
JOANNE MOONEY
2626 Hartford St.
Salt Lake City, UT 84106
My Commission Expires
March 31, 1996
STATE OF UTAH

2320 6131 2XXX ANSRP 20G N10/30/95

THIS IS NOT A STATEMENT BUT A "PROOF OF PUBLICATION"
PLEASE PAY FROM BILLING STATEMENT.

4.2.4-76

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

October 18, 1995

DAQE-952-95

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, UT 84111

This letter will confirm the authorization to publish the attached NOTICE in the Newspaper Agency on October 23, 1995.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 144820, Salt Lake City, Utah 84114-4820.

Sincerely,

Amelia Jaramillo
Office Technician
Utah Division of Air Quality

Enclosure

4.2.4-77

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, has been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. Mike Graziano

   Hill Air Force Base

   7274 Wardleigh Road

   Hill Air Force Base, UT 84056-5137

   Location: Setup Chemical Milling Process Line in Bldg 238

   The Net Increase in Approved Emissions will be (A negative sign indicates a decrease in emission rates.):

   VOC ..... -11.47 tons/year

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84114-4820. Written comments received by the Division, at the same address on or before November 22, 1995, will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, hearing will be held to explain the project and technical rationale for proposed action. A hearing will be

scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: October 23, 1995

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Lynn S. Hill
Chief, Environmental Compliance
Department of the Air Force
Headquarters Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah

RE:	Relocation of Chemical Milling Process Line Davis County, CDS A1; NA; HAPs, TITLE V MAJOR
REVIEW ENGINEER:	Nando Meli
DATE:	September 13, 1995
NOTICE OF INTENT DATED:	May 3, 1995
PLANT CONTACT:	Mike Graziano
PHONE NUMBER:	(801) 777-0359
FAX NUMBER	(801) 777-6742
PLANT LOCATION:	East of Exit 336 on Interstate 15 Freeway
UTM COORDINATES:	4,551.5 km Northing, 418.0 km Easting, Zone 12

FEES:

Basic Approval Order Fee	$1000.00
Review Engineer	$000.00
Modeler	$000.00
Notice To Paper	$80.00
Travel	$000.00
TOTAL	**$1080.00**

APPROVALS:

Peer Engineer Mike M. Beheshti 09/19/95
Mike Beheshti

We request that you read the proposed Approval Order conditions: if you do not understand or do not agree with the contents of the conditions, please contact the review engineer within five days. However, when you understand the attached proposed/draft Approval Order conditions, please sign below and return. Thank You.

Applicant Contact Nando Meli for Michael Graziano Oct 3, 95 fax
(Signature & Date)

F:\AQ\ENGINEER\NMeli\WP\Hil-Chem.Rev

TYPE OF IMPACT AREA

Nonattainment Area

PM_{10}	Yes
SO_2	No
NO_x	No
CO	No
Ozone	Yes

NSPS	No
NESHAP	No
Hazardous Air Pollutants	No
Hazardous Air Pollutants Major Source	No
New Major Source	No
Major Modification	No
PSD Permit	No
PSD Increment (modeling)	No
Send to EPA	No
Operating Permit Program	Yes

FOR MODIFIED SOURCES

The Notice of Intent is for a modification to an existing source. The following standards apply in this review:

NSPS applies to modification?	No
PSD review of entire source required?	No
NESHAPS applies to modification?	No
HAPs involved in modification?	No
TITLE V required for entire source?	Yes
HAPs MAJOR for modification?	No
NONATT MAJOR for entire source?	Yes

Abstract

Hill Air Force Base (AFB) is requesting approval to move and replace their existing Chemical Milling Process Line (Chem Mill Line). The current Chem Mill Line is a grandfathered source and needs to be relocated from Building 265 to Building 238. A water based maskant will replace the existing solvent based maskant that is currently being used. This new maskant will result in the VOC emissions being reduced from 11.9 to 0.38 tons per year. The Sodium Hydroxide emissions will remain at 0.29 tons per year and the Isoprep emissions will remain at 0.44 tons per year. Hill AFB is a major source that is located in Davis County which is a Nonattainment Area for PM_{10} and Ozone.

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base (AFB) is requesting approval to move and replace their existing Chemical Milling Process Line (Chem Mill Line). The current Chem Mill Line is a grandfathered source and needs to be relocated from Building 265 to Building 238. A water based maskant will replace the existing solvent based maskant is presently being used. This new maskant will result in the VOC emissions being reduced from 11.9 tons to 0.11 tons per year.

II. EMISSION SUMMARY

The emissions from the Hill Air Force Base Chemical Milling Process Line will be as follows:

Pollutant	Current Emissions tons/year	Emission Changes tons/year	Total Emissions tons/year
VOC	11.85	-11.47	0.38
NaOH	0.29	0.0	0.29
Isoprep	0.44	0.0	0.44

The VOC emissions come from the water based maskant, and 0.4% of the maskant is Styrene (0.4% x 0.11 tpy = 0.0004 tpy), 4% of the maskant is Toluene (4% x 0.11 tpy = 0.0044 tpy).

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

Presently a VOC maskant is being used on the Chemical Milling Process Line in Building 265. When the Chemical Milling Line is moved to Building 238 a new water based maskant will be used. This will result in a 99% reduction in VOC emissions.

The New Source Review section recommends that the new Chemical Milling Process Line be accepted as BACT with a 10% opacity limit.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC)

This Notice of Intent is for grandfathered source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a modified source. This rule applies. A Notice of Intent is required for the new Chemical Milling Process Line.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the executive secretary may revoke the Approval Order.

3. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for all natural gas fuel burning equipment with a total rated capacity of less than 5 MMBTU per hour. There will be no new natural gas devices installed. Therefore, this rule applies, and a Notice of Intent is not required based on this rule but is required based on R307-1-3.1, UAC.

4. R307-1-3.1.7 (E), UAC - Notice of Intent required for a new parking lot of 600 or more spaces and adding 350 or more spaces to an existing lot. This rule will not apply because a new lot or addition is not being constructed.

5. R307-1-3.1.7 (F), UAC - Notice of Intent not required for sources with emissions less than 10 tons/yr of the following compounds: 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane, dichlorodifluoromethane, chlorodifluoromethane, trifluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,2-dichloro1,1,2,2-tetrafluoroethane, methane, ethane and chloropentafluoroethane. However, if the source is emitting more than 10 tons/yr of any of these compounds, a Notice of Intent must be filed and an annual report of emissions thereafter. This emission point will not emit 10 tons/year of any of these regulated pollutants. Therefore, this rule applies, and a Notice of Intent is not required based on this rule.

6. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies to all sources throughout the state unless they are located in a Nonattainment area. RACT applies in Nonattainment areas.

7. R307-1-3.1.8 (C), UAC - Approval of the Utah Air Quality Board (UAQB) is required before the executive secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

8. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

9. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. There will be no burners replaced at this time. Therefore, this rule does not apply. However, BACT requires low NOx burners.

10. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a Nonattainment area. This rule has been superseded by the Section IX, Parts A and H of the SIP except for Weber County. This source is not listed in the SIP. Therefore, this rule does not apply.

11. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a Nonattainment area or which impact a Nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

12. R307-1-3.3.3.B (2), UAC - Enforceable offset of 1.2:1 required for new sources or modifications that would produce an emission increase greater than or equal to 50.00 tons

per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. This source will have no emission increases. Therefore, an offset will not be required.

13. R307-1-3.3.3.B (3), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year but less than 50 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. This source will have no emission increases. Therefore, an offset will not be required.

14. R307-1-3.3.3.C, UAC - Enforceable offset of 1.15:1 required for new sources or modifications of sources as defined in Section 182 of the CAA. Section 182(b)(1)(A)(i) of the CAA defines these sources as sources of volatile organic compounds and as sources of oxides of nitrogen. This is required in Salt Lake and Davis Counties and in any area that affects these three counties as defined in the rule. The effective date is August 16, 1993. This source will have no emission increases. Therefore, an offset will not be required.

If the contingency measures are triggered the following will not apply and see R30713.3.3.C on offsets for ozone Nonattainment area restrictions.

If it is an existing Major source with a 40 tpy increase or a new major source offsets of 1.15:1 are required. There will be no emissions increase. Therefore, an offset will not be required.

15. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant or any Part 70 source to submit an emission inventory to the Division of Air Quality every year or as determined necessary by the executive secretary. This source must comply with this rule.

16. R307-1-3.6.3, UAC - Prevention of Significant Deterioration (PSD) Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for Particulate (PM_{10}), SO_2, and NO_x. The allowable increments are as follows:

Particulate (PM_{10}) ($\mu g/m^3$)

	Three Hour	24 Hour	Annual
Class I Area	N/A	8	4
Class II Area	N/A	30	17

SO_2 ($\mu g/m^3$)

Class I Area	25	5	2
Class II Area	512	91	20

NO_x ($\mu g/m^3$)

Class I Area	N/A	N/A	2.5
Class II Area	N/A	N/A	25

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already Nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment.

17. R307-1-3.6.5 (b), UAC - Prevention of Significant Deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

18. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations that occur in the state. No known violations have yet occurred. This proposed Notice of Intent will not consume any increments.

19. R307-1-3.7, UAC - Air Quality Modeling - All estimates of ambient concentrations required in meeting the requirements of the regulations shall be based on appropriate air quality models, data bases, and other requirements specified in the Utah Guidelines to Air Quality Models. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(≥ Tons per Year)

TSP	10
PM_{10}	5
SO_2	20
NO_2	20
CO	50
VOC	20
O_3	5
HAPs	10

There will be no increase in emissions. Therefore, modeling will not be required.

20. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. The maximum creditable height of 65 meters (213.2 feet) is allowed. Hill AFB has no stacks that exceed 65 meters in height. Therefore, this source/facility is in compliance with this rule.

21. R307-1-3.10, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

22. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, an opacity limitation of 10% is recommended as BACT.

23. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

24. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the executive secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). R307-1-4.7.2 discusses penalties.

25. R307-1-5, UAC - Emergency episode requirements. This rule requires the executive secretary to determine the stage and extent of an air pollution episode based on pollution levels and meteorological conditions. Under Section 40 of the Code of Federal Regulations, Part 51, Subpart H (51.150 to 153), it is required that sources plan emergency measures based upon the severity of the Nonattainment area in which they operate. In Utah, these rules require that CO sources in CO Nonattainment areas and sources of ozone precursors in ozone Nonattainment areas, who emit at least 25 tons per year (SIP, Section VII.B.) of either pollutant, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. (Some sources are required to submit an emergency episode plan according to Section VII.B. of the SIP). This rule applies.

26. R307-14, UAC - Review requirements for volatile organic compound (VOC) sources located in an ozone Nonattainment area. For sources located in ozone Nonattainment areas (Salt Lake and Davis Counties) this rule specifies the minimum (RACT) control measures promulgated by the Utah Air Quality Board. In addition, UACR 3.1.1 requires application of BACT for all new or modified sources in the state. However, within an ozone Nonattainment area BACT can not be less stringent than RACT. Therefore, for ozone Nonattainment areas the more stringent requirement is applicable (i.e., BACT as required by UACR 3.1.1 or RACT as defined by rule 14 or as defined in a published Control Techniques Guidance document).

This 14 rule covers the following processes:

A. Section 14-1 - General

B. Section 14-2 - Petroleum liquid storage

C. Section 14-3 - Gasoline transfer/storage

D. Section 14-4 - Control of hydrocarbon emissions in refineries

- 4.A. Vacuum producing systems
- 4.B Wastewater separators
- 4.C Process unit turnaround
- 4.D Catalytic cracking units
- 4.E Safety pressure relief valves
- 4.F Leaks from petroleum refinery equipment

E. Section 14-5 - Degreasing and solvent cleaning operations

1) Cold cleaning facilities
2) Open top vapor degreasers
3) Conveyorized degreasers

F. Section 14-6 - Cutback asphalt

G. Section 14-7 - Surface Coating Processes

1) Section 7.A - General Provisions
2) Section 7.B - Paper Coating
3) Section 7.C - Fabric and Vinyl Coating
4) Section 7.D - Metal Furniture Coating VOC Emissions
5) Section 7.E - Large Appliance Surface Coating VOC Emissions
6) Section 7.F - Magnet Wire Coating VOC Emissions
7) Section 7.G - Flat Wood Coating
8) Section 7.H - Miscellaneous Metal Parts and Products VOC Emissions
9) Section 7.I - Graphic Arts
10) Section 7.J - Exemptions
11) Section 7.K - Capture Systems
12) Section 7.L - Testing and Monitoring

H. Section 14-8 - Perchloroethylene Dry Cleaning Plants

I. Section 14-9 - Compliance Schedule

J. Section 14-10 - Stage II Vapor Recovery Systems

For painting operations this rule specifies specific limits on the VOC content in paints and coatings used. In addition there is a provision for allowing use of coatings with higher VOC content if, because of emission control measures, "equivalent" emissions will result. Therefore, sources proposing to use coatings that do not meet the VOC contents specified in rule 14, must submit an analysis of their control measure that demonstrates equivalency with the VOC limitations of rule 14.

The published CTGs as of April 1, 1995 include:

1) Control Methods for Surface Coating Operations
2) Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks
3) Surface Coating of Metal Furniture
4) Surface Coating of Insulation of Magnet Wire
5) Surface Coating of Large appliances
6) Surface Coating of Miscellaneous Metal Parts and Products
7) Surface Coating of Flat Wood Paneling
8) Graphic Arts - Rotogravure and Flexography
9) Bulk Gasoline Plants
10) Storage of Petroleum Liquids in Fixed Roof Tanks
11) Wastewater Separators and process unit turnarounds
12) Use of Cutback Asphalt
13) Tank Truck Gasoline Loading Terminals
14) Stage I Vapor Control Systems - Gasoline Service Stations
15) Leaks from Petroleum refinery Equipment
16) Manufacture of Vegetable Oils
17) Petroleum Liquid Storage in External Floating Roof Tanks
18) Perchloroethylene Dry Cleaning Systems
19) Leaks from Gasoline Tank Trucks and Vapor Collection Systems
20) Large Petroleum Dry Cleaners

21) Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment
22) Leaks from Natural Gas/Gasoline Processing Plants
23) Solvent Metal Cleaning
24) Synthesized Pharmaceutical Products
25) Pneumatic Rubber Tires
26) Stationary Sources
27) Air Oxidation Processes in Synthetic Organic Chemical Manufacturing Industry
28) High-Density Polyethylene, Polypropylene, and Polystyrene Resins
29) Fugitive Emission Sources of Organic Compounds
30) Synthetic Organic Chemical Manufacturing Industry - Reactor and Distillation Operations Processes
31) Measurement of Volatile Organic Compounds

For ozone attainment areas the requirements of UACR 3.1.1 (BACT) apply. However, BACT for these sources should be evaluated in light of the RACT requirements that have been established by UACR 14. BACT in an attainment area may be determined to be less stringent than the RACT requirements established in rule 14 or a published Control Techniques Guidance document (which apply to a Nonattainment area) however, a detailed BACT analysis should be conducted by the source to justify a less stringent control measure in an attainment area. This source is located in Davis County. Therefore, this rule applies to this source.

27. 40 CFR, Part 60 - New Source Performance Standards (NSPS) - There is no NSPS for this industrial process. There is a NSPS for this industrial process.

28. 40 CFR, Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP) - There is no NESHAP for this industrial process. There is a NESHAP for this industrial process.

29. 40 CFR, Part 50 - National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a Nonattainment area for ozone.

The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. This is because of the small quantity of emissions involved and the conservative predictions made by modeling. However, it will make a small contribution to the existing violation for ozone of the NAAQS.

For VOC emissions, there is no model that can predict an ozone impact directly from VOC emissions. However, since VOCs are precursors to ozone formation, this new source will contribute to the existing exceedances of the ozone standard in Davis County. The amount of that contribution has not been decided. The ozone Nonattainment area of Davis and Salt Lake Counties must show reasonable further progress toward attainment of the standard. This source, along with all other VOC sources having emissions above ten tons per year, may have to apply more controls to lower the VOC emissions. This would be a SIP change action.

30. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any

pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

A. Maintenance, repair, and replacement

B. An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

C. An increase in the hours of operation

D. Use of an alternate fuel or raw material if, before the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

E. The addition or use of any system or device whose primary function is the reduction of air pollutants

F. Relocation or change in ownership

Also see R307-1-1 (Modification), which is the State's definition. This Notice of Intent is a modification.

31. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

A. The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

B. It is technologically and economically feasible to meet the applicable standards set forth in this part

This Notice of Intent is a reconstruction.

32. R307-1-1, Definition of Major Modification - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Sections 2a and 2b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) ..nich the source was capable of accommoda..ng before January 6, 1975, - unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

V. RECOMMENDED AI . ROVAL ORDER CONDITIONS

General Conditions:

1. This Approval Order (AO) applies to the following company:

   Facility Location

   Department of the Air Force
   Headquarters Ogden Logistics Center (AFMC)
   Hill Air Force Base, Utah

   PHONE NUMBER (801) 777-0359
   FAX NUMBER (801) 777-6742

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   East of Exit 336 on Interstate 15

   Universal Transverse Mercator (UTM) Coordinate System:
   4,55.5 kilometers Northing; 418.0 kilometers Easting; Zone 12

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (AFB) shall install and operate the Chemical Processing Line in Building 538 according to the terms and conditions of this AO as requested in the Notice of Intent dated March 3, 1995 and additional information submitted to the Executive Secretary dated May 3, 1995, and May 6, 1995.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment or equivalent:

   A. Five 2000 gallon Chemical Milling Process Tanks

      1) Maskant Dip Tank
      2) Hot Water Dip Tank
      3) Isoprep Tank
      4) Water Spray Rinse Tank
      5) Sodium Hydroxide Tank

   * Equivalency shall be determined by the Executive Secretary.

Limitations and Tests Procedures

6. Visible emissions from any stationary point or fugitive emission source associated with the source or with the control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

7. The following production limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. 1500 gallons of Water Based Maskant per rolling 12-month period

   B. 660 gallons of Sodium Hydroxide per rolling 12-month period

   C. 220 gallons of Isoprep per rolling 12-month period

   Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption, including rolling 12-month totals shall be made available to the executive secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by purchase records and operations log. The records shall be kept on a daily basis.

Volatile Organic Compound (VOC) and Hazardous Air Pollutants (HAPs) Limitations

8. The facility shall abide by all applicable requirements of UAC R307-14 for volatile organic compound (VOC) sources located in an ozone Nonattainment area. At a minimum, RACT control measures are required and BACT will be no less stringent than RACT. These requirements include but are not limited to:

   > "14-5.A.(5) Written procedures for the operation and maintenance of the degreasing or solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment."

   The full text of UAC R307-14 is included as Appendix A. However, to be in compliance, this facility must operate in accordance with the most current version of R307-14 or the applicable section(s), if renumbered.

9. The plant-wide emissions of VOCs from the Chemical Milling Process Line tanks, etc. and associated operations shall not exceed:

   0.38 tons per rolling 12-month period for VOCs

   This value shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months.

   from the Chemical Milling Reg 5 lol 38
   Process line in

   The ~~plant-wide~~ emissions of VOCs and HAPs emitted to the atmosphere shall be determined by maintaining a record of volatile organic compound potential and hazardous air pollutant potential contained in materials used each month. The record shall include the following data for each item used:

A. Name of the VOC and HAPs emitting material, such as: paint, adhesive, solvent, thinner, reducers, chemical compounds, isocyanates, etc.

B. The weight and use location of the volatile organic compound potential and hazardous air pollutant potential of the material(s) listed in A in pounds per gallon.

C. Percent by weight of all volatile organic compound potential and hazardous air pollutant potential for each individual material listed in A. The percent by weight of the volatile and hazardous air pollutant potentials can be obtained from the manufacturers' MSDSs. The owner/operator can obtain MSDS data from the manufacturers of the materials and retain the information on-site.

D. Amount and location of materials containing VOCs and HAPs used on a monthly basis and summed for every location and for the entire plant each month.

E. To calculate the above potentials contained in the material listed in D use the following procedure:

$$\text{VOC} = \frac{(\%\ \text{Volatile by Weight})}{(100)} \times \frac{(\text{Density lb})}{(\text{gal})} \times \frac{(\text{Gal Consumed})}{} \times \frac{(1\ \text{ton})}{(2{,}000\ \text{lb})}$$

F. The amount of volatile organic content potential (potential air emissions) and hazardous air pollutant potential (potential air emissions) in pounds contained in materials deposited as solid or hazardous waste for the month shall be quantified and subtracted from the quantities calculated above. This is done to allow quantification by the source of the total VOCs and HAPs emissions. (The assumption is that all the two above potentials of the materials applied to a product evaporate and are therefore considered emissions).

G. Records of consumption of VOCs and HAPs shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the executive secretary upon request, and shall include a period of two years ending with the date of the request.

10. All HAPs are subject to the annual Operating Permit Program if one of the following conditions is met:

A. The emissions of any one of the 189 HAPs listed in the 1990 Clean Air Act is over 10 tons/yr

B. The emissions of any combination of these HAPs are over 25 tons/yr

11. This source is a major Title V source needing an Operating Permit. It is required to pay an annual emission fee upon start-up [or if an existing facility, upon issuance of this AO. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instructions for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

13. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

14. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. All excess emissions shall immediately be reported to the executive secretary. The total of excess emissions shall be reported to the executive secretary as directed for each calendar year.

15. All records referenced in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. All records shall be kept for a period of two years. Examples of records to be kept at this source shall include the following as applicable:

A.	Production rate	(Condition number 7)
B.	VOC and HAP consumption records	(Condition number 10)
C.	Maintenance records	(Condition number 12)
D.	Upset, breakdown episodes	(Condition number 14)

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this Chemical Milling Process Line at Building 238 are currently calculated at the following values:

	Pollutant	Tons/yr
A.	VOC	0.38
B.	NaOH	0.29
C.	Isoprep	0.44

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and nonattainment area major source requirements of the UACR. Except for VOC's they are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Emissions of the following pollutants from all sources, including pre-November 19, 1969 sources, may be subject to the operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	Tons/yr
A.	VOC	0.38

F:\AQ\ENGINEER\NMeli\WP\Hil-Chem.Rev

UTAH DIVISION OF AIR QUALITY

FAX COVER SHEET

150 NORTH 1950 WEST

SALT LAKE CITY, UTAH 84114-4820

CANNON L770 FAX # (801) 536-4099

CONFIRMATION # (801) 536-4000

FROM: Nando Meli Jr.

PHONE: (801) 536 - 4052

TO: Mike Graziano PHONE: 777-0359

AGENCY/FIRM Hill AFB

FAX NUMBER 777-6242 CONFIRMATION #: _____

NUMBER OF PAGES TO FOLLOW: 16

SUBJECT: ENGINEERING REVIEW

REMARKS: Could you reply as soon as possible with any comments that you may have on this Engineering Review.

Thank you.

LOGGED: 9/21 SENT: 9/21 RECEIVED: 1:45 CONFIRMED: MF

4.2.4-96

Mike Graziano HAFB Sept 12 1:31 phone message

41.112° Latitude

111.476° Longitude

41.112

60 × 0.112 = 6.72

60 × 0.72 = 43.2

41.112° = 41° 6' 43"

111.976°

0.476 × 60 = 58.56

0.56 × 60 = 33.6

111.976 = 111° 58' 34"

111° 58" 34" Long = 418.040 Km Easting

41.P6 6' 43" Lat 4,551.462 Northing

Zone 12

FAX MESSAGE

From: Michael J. Graziano
Air Quality Manager
OO-ALC/EME
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Phone: (801) 777-0359 or DSN: 458-0359
FAX: (801) 777-4306 or DSN 458-4306

To: NANDO MELI
DAQ

Phone: 536-4052

NANDO:

These are my comments regarding the Chem Mill Process we discussed this morning.

1. Page 12, Item # 3: Change building number from 538 to 238.

2. Page 13, Item #9, last Paragraph: Change first sentence to read as follows: VOC and HAP emissions from the Chem Mill process shall be determined by maintaining a record of volatile organic compound potential and hazardous air pollutant potential contained in materials used each month.

Number of pages this Transmission: _____

5. I have informed [illegible] Chief of Environmental Compliance, in order to expedite the processing of this AO.

Please contact me if you have any further questions.

Thank
Mike Grazioso

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Lynn S. Hill
Chief, Environmental Compliance
Department of the Air Force
Headquarters Ogden Logistics Center (AFMC)
Hill Air Force Base, Utah

RE:	Relocation of Chemical Milling Process Line Davis County, CDS A1; NA; HAPs, TITLE V MAJOR
REVIEW ENGINEER:	Nando Meli
DATE:	September 13, 1995
NOTICE OF INTENT DATED:	May 3, 1995
PLANT CONTACT:	Mike Graziano
PHONE NUMBER:	(801) 777-0359
FAX NUMBER	(801) 777-6742
PLANT LOCATION:	East of Exit 336 on Interstate 15 Freeway
UTM COORDINATES:	4,551.5 km Northing, 418.0 km Easting, Zone 12

FEES:

Basic Approval Order Fee	$1000.00
Review Engineer	$000.00
Modeler	$000.00
Notice To Paper	$80.00
Travel	$000.00
TOTAL	**$1080.00**

APPROVALS:

Peer Engineer Mike M. Beheshti 09/19/95
Mike Beheshti

We request that you read the proposed Approval Order conditions; if you do not understand or do not agree with the contents of the conditions, please contact the review engineer within five days. However, when you understand the attached proposed/draft Approval Order conditions, please sign below and return. Thank You.

Applicant Contact Lynn S. Hill 10/3/95
(Signature & Date)

F:\AQ\ENGINEER\NMeli\WP\Hill-Chem.Rev

FAX MESSAGE

From: Michael J. Graziano
Air Quality Manager
OO-ALC/EME
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Phone: (801) 777-0359 or DSN: 458-0359
FAX: (801) 777-4306 or DSN 458-4306

To: Nando Meli
DAQ

Phone: 536-4052

Nando:

This is the revised atch 1-2 for the Chem Mill Washout NOI, as we discussed earlier today. Please note revised VOC emissions 756 lbs and Water based washout quantity (1,500 gal). Please call if you have questions.

Mike Graziano

Number of pages this Transmission: 2

Sodium Hydroxide (MSDS Attachment 4)

Twelve 55 gallon drums per year = 660 gallons
Specific gravity = 2.12
therefore 8.4 lb water/gallon X 2.12 X 660 gallons = 11,753.3 lb NaOH
Engineering estimate for NaOH losses from process tanks is 5%
11,753.3 lb X .05 = **588 lbs NaOH**

Isoprep (MSDS Attachment 5)

Four 55 gallon drums per year = 220 gallons
Specific gravity = 1.43
therefore 8.4 lb water/gal X 1.43 X 220 gallons = 2,642.6 lb Isoprep
Engineering estimate for Sulfuric Acid losses from process tanks is 33%
2,642.6 lb X .33 = **872 lb Isoprep**

Emissions Summary Grandfathered Process

VOC Maskant	2,252.8 lbs	
VOC Thinners	21,450.0	
Total VOC	**23,702.8**	**11.9 tons**
Sodium Hydroxide	**588.0**	**0.30 ton**
Isoprep	**872.0**	**0.44 ton**

D. Emissions Estimate Proprosed Process

Water based Maskant (MSDS Attachment 6)

Estimated Use 1,500 gallons
Specific Gravity = 1.2
therefore 8.4 lb water/gallon X 1.2 X 1,500 gallons = 15,120 lb maskant
from MSDS solvent content is 5% so
15,120 lb maskant X 5% VOC = **756 lb VOC**

Thinning agent for this maskant is deionized water

Emissions from Sodium Hydroxide and Isoprep remain the same.

E. Annual Emissions Summary

	VOC	NaOH	Isoprep
Old Maskant	23,702.8 lb	588.0 lb	872.0 lb
Test Maskant	756 lb	588.0 lb	872.0 lb

Estimated Annual VOC Emissions from new Process 756 lbs

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

Mr Lynn Menlove
Manager, New Source Review
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

3 May 1995

RE: Relocation of the Chemical Milling Process Line from Building 265 into Building 238

Dear Mr Menlove

This letter supersedes the one dated 3 March 1995 in which we requested an Experimental Approval Order to test a new maskant in the chemical milling process, and to relocate the process to Building 238. The current chemical milling operation is a grandfathered source and must be relocated from its present location in Building 265 into Building 238. However, there is no need for on-site testing of the altemative maskant material. Process engineers have investigated the use of the new material at other locations and based upon this information have determined it will meet their needs. This letter is to serve as Notice of Intent for an Approval Order to use the new maskant material and relocate the process to Building 238.

A detailed emissions estimate is provided in attachment 1. This estimate shows that the new maskant will reduce VOC emissions, from this process, by more than 11.5 tons. The estimated annual VOC emissions from the new process would be approximately 223 lbs per year. Based upon this analysis the new process would qualify as an insignificant source under Title V. The new maskant exceeds standards established in the proposed 40 CFR 63.747, National Emission Standards for Hazardous Air Pollutants, Aerospace Manufacturing and Rework, which specifies VOC content for compliant maskants must be less than 1.3 lbs/gal.

Your prompt response to this request would be greatly appreciated, so we may start up this new process as soon as possible. The original 3 March 1995 letter was assigned to Mr Nando Meli. If you have any questions regarding this matter please contact Mike Graziano at 777-0359.

Sincerely,

LYNN S. HILL
Chief, Environmental Compliance

6 Attachments
1. Process Description & Emissions Estimate
2. Project Layout
3. High VOC Maskant Tech Data Bulletin
4. MSDS Sodium Hydroxide
5. MSDS Isoprep
6. MSDS Low VOC Maskant

cc: LAOPE (John Vidic)
LARTW (Rich Trejos)

CHEMICAL MILLING PROCESS DESCRIPTION

AND EMISSIONS ESTIMATE

A. Install five new process tanks in building 238 (Proposed layout attachment 2)

Tank #1 Maskant Dip, exhausted to outside
Tank #2 Hot Water Dip, exhausted to outside
Tank #3 Isoprep, exhausted to outside
Tank #4 Water Spray Rinse
Tank #5 Sodium Hydroxide, exhausted to outside

All dip tanks are 2000 gallons.
Slotted ventilation systems across the top of tanks 1, 2, and 3 will be manifolded together and exhausted through a 38" duct 60' above ground level.
The slotted ventilation system across the top of tank 5 will be exhausted through a 24" duct 60' above ground level.

B. The general process for each part is as follows;

1. Dip in Sodium Hydroxide, tank #5, for 30 seconds; flash cleaning.
2. Dip in Hot Rinse, tank #2.
3. Dip in Isoprep, tank #3; desmutting.
4. Spray Rinse in tank #4
5. Hang Dry
6. Dip in Maskant, tank #1.
7. Hang Dry 24 hours
8. Use template and cut away maskant from area to be milled.
9. Dip in Sodium Hydroxide tank #5, exposed metal areas are milled at 0.001 inch per minute.
10. Dip in Hot Rinse tank #2.
11. Dip in Isoprep tank #3, for cleaning.
12. Spray Rinse in tank #4.
13. Repeat steps 8-12 as needed to mill various areas to desired depths.

C. Emissions Estimate Grandfathered Process

Maskant (Tech Data Sheet Attachment 3)

Eight 55 gallon drums per year = 440 gallons
8.0 lbs per gallon = 3,520 lbs
from MSDS solids are 36%, therfore solvents are 64%

3,520 lbs of maskant/yr X 64% VOC = **2,252.8 lb VOC**

Thinner

Maskant must be thinned with 1 drum of solvent each week
52 drums/yr X 55 gal/drum X 7.5 lbs VOC/gal = **21,450 lbs VOC**

Attch 1-1

Sodium Hydroxide (MSDS Attachment 4)

Twelve 55 gallon drums per year = 660 gallons
Specific gravity = 2.12
therefore 8.4 lb water/gallon X 2.12 X 660 gallons = 11,753.3 lb NaOH
Engineering estimate for NaOH losses from process tanks is 5%
11,753.3 lb X .05 = **588 lbs NaOH**

Isoprep (MSDS Attachment 5)

Four 55 gallon drums per year = 220 gallons
Specific gravity = 1.43
therefore 8.4 lb water/gal X 1.43 X 220 gallons = 2,642.6 lb Isoprep
Engineering estimate for Sulfuric Acid losses from process tanks is 33%
2,642.6 lb X .33 = **872 lb Isoprep**

Emissions Summary Grandfathered Process

VOC Maskant	2,252.8 lbs	
VOC Thinners	21,450.0	
Total VOC	**23,702.8**	**11.9 tons**
Sodium Hydroxide	**588.0**	**0.30 ton**
Isoprep	**872.0**	**0.44 ton**

D. Emissions Estimate Proprosed Process

Water based Maskant (MSDS Attachment 6)

Eight 55 gallon drums per year = 440 gallons
Specific Gravity = 1.2
therefore 8.4 lb water/gallon X 1.2 X 440 gallons = 4435.2 lb maskant
from MSDS solvent content is 5% so
4435.2 lb maskant X 5% VOC = **221.8 lb VOC**

Thinning agent for this maskant is deionized water

Emissions from Sodium Hydroxide and Isoprep remain the same.

E. Annual Emissions Summary

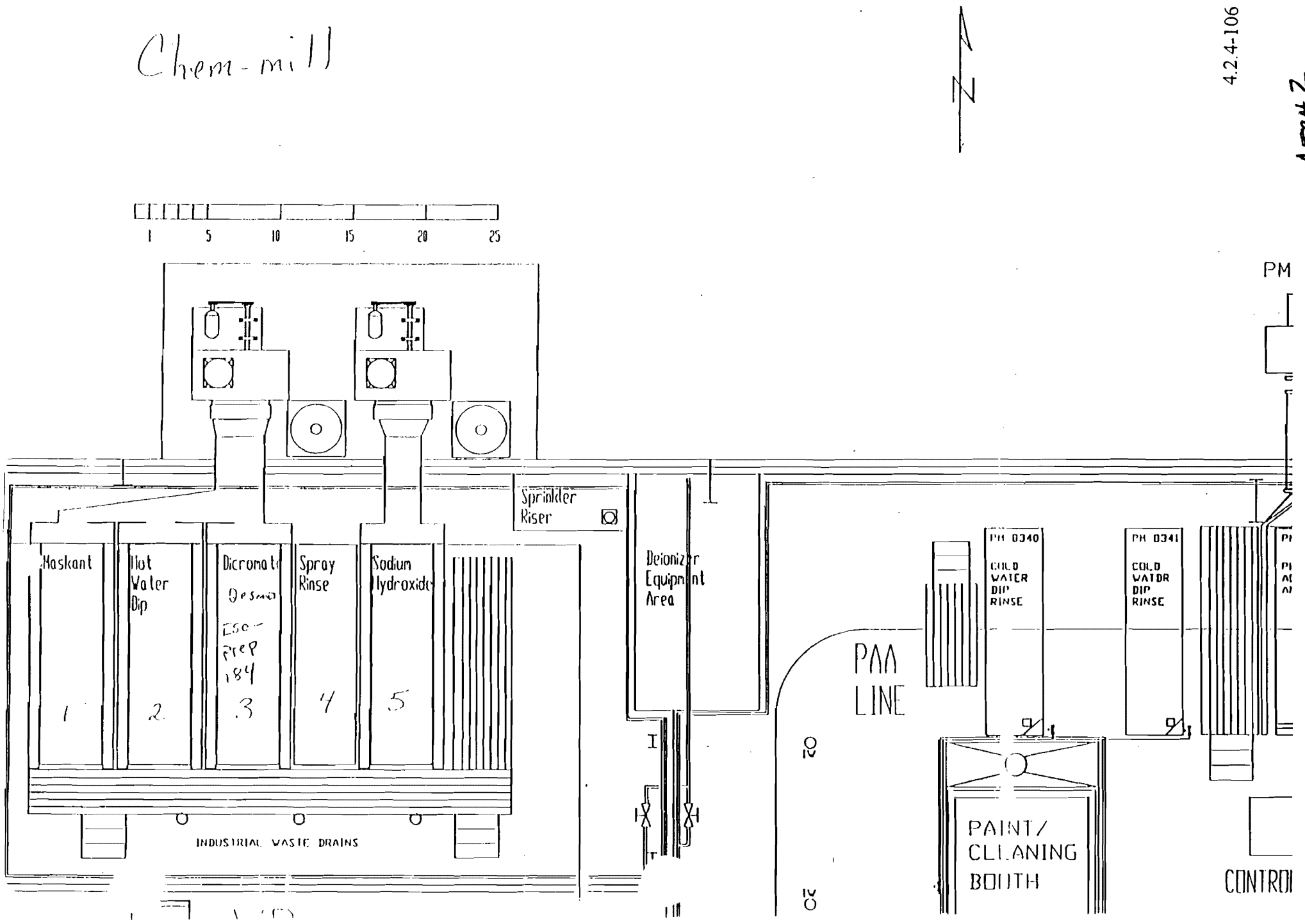
		VOC	NaOH		Isoprep	
Old Maskant	11.85	23,702.8 lb	588.0 lb	0.29	872.0 lb	0.44
Test Maskant	0.11	221.8 lb	588.0 lb		872.0 lb	

ATCH 1-2

Chem-mill

4.2.4-106

ATTACH 2



TECHNICAL DATA BULLETIN NO. 490

TURCO PRODUCTS INC., 7300 BOLSA AVENUE, WESTMINSTER, CALIFORNIA 92684-3500

TURCOFORM® MASK 522

DIP AND FLOW COAT CHEM-MILL MASKANT

DESCRIPTION:

TURCOFORM® MASK 522 is a tan, liquid, single component, air curing, peelable protective coating formulated to provide protection against the corrosive action of hot caustic and acidic solutions used in the Chem-Mill processing of aluminum, magnesium, steel and titanium alloys.

TURCOFORM MASK 522 can be applied by immersion or flow coating methods and dries to a chemical resistant elastomeric film within 12 hours. TURCOFORM MASK 522 can be forced dried by conventional methods after air drying for 2 to 3 hours at room temperature.

A top-coat of TURCOFORM MASK 550 is recommended for steel and titanium processing to provide additional protection against aggressive acid etchant solutions.

LIQUID PROPERTIES:

Appearance	Tan viscous liquid
Solids by wt.	34.5 ± 1%
Gallon weight	8.0# min.
Viscosity, Poise	15 ± 4
Flash Point (SETA)	40°F
Storage life @ 75°F	1 year min.

FILM PROPERTIES:

Tensile strength	900 psi min.
Elongation at rupture	475% min.
Peel Adhesion:	(pounds/in. width)

Solvent wiped panels	Before etch	After etch
2024-T3 Clad Aluminum	0.6 ± 0.3	1.3 max.

DIRECTIONS FOR USE:

1. **Precleaning:** For optimum uniformity in adhesion and performance the parts to be masked must be free of oil, grease, dirt or corrosion. Your TURCO Territory Manager can recommend suitable TURCO cleaners based on specifications and production needs.
2. **Mixing:** To assure reproducible results in application and performance of the TURCOFORM MASK 522, adequate mixing of the solution is very important prior to and during use. Caution must be exercised to prevent air from being drawn into the mask by the mixing action. Since some solvent is lost during use due to evaporation, periodic additions of thinner are required. The amount of thinner required is based on viscosity measurements. A #5 Zahn cup viscometer may be used to measure and adjust the maskant to the desired operating viscosity.

4.2.4-108

ATCH 4-7

MATERIAL SAFETY DATA SHEET

tem Name	SODIUM HYDROXIDE,ACS
art Number/Trade Name	SODIUM HYDROXIDE
ational Stock Number	6810000778570
AGE Code	70829
art Number Indicator	A
SDS Number	89815
facturer Name	J.T.BAKER CHEMICAL CO
Street	222 RED SCHOOL LANE
City	PHILLIPSBURG
State	NJ
Country	US
Zip Code	08865-2210
mergency Phone	201-859-2151
nformation Phone	201-859-2151
ate MSDS Prepared/Revised	PRE-HCS
ate of Technical Review	27FEB84
ctive Indicator	Y
endor #5 CAGE	BCXNJ
pecification Number	NOT APPLICABLE
pecification Type/Grade/Class	N/R
ard Storage Compatibility Code	C2
RC License Number	N/R
et Propellant Weight (Ammo)	N/R
ppearance/Odor	WHITE, DELIQUESCENT PIECES, LUMPS OR STICKS.
oiling Point	2534F,1390C
elting Point	UNKNOWN
apor Pressure	N/R
apor Density	N/R
pecific Gravity	2.120
ecomposition Temperature	UNKNOWN
vaporation Rate	N/R
olubility in Water	APPRECIABLE
hemical PH	N/R
lash Point	NONE

ATCH 4-2

...guishing Media.....	WATER
...cial Fire Fighting Procedures.....	FLOOD WITH WATER, DO NOT SPLASH OR SPLASH MATERIAL
...usual Fire/Explosion Hazards.....	NONCOMBUSTIBLE BUT SOLID FORM IN CONTACT WITH MOISTURE MAY GENERATE SUFFICIENT HEAT TO SEE SUP DATA
...ability.....	YES
...terials to Avoid.....	MOISTURE, METALS, EXPLOSIVES, ORGANIC PEROXIDES
...zardous Decomposition Products.....	MAY GENERATE HYDROGEN GAS ON CONTACT WITH METALS
...zardous Polymerization.....	NO
...toms of Overexposure.....	HIGHLY CORROSIVE ACTION UPON BODY TISSUE.
...ergency/First Aid Procedures.....	SPEED IN REMOVING THIS CAUSTIC MATERIAL IN CONTACT WITH SKIN IS OF VERY IMPORTANCE TO AVOID BURNS. REMOVE ALL CONTAMINATED CLOTHING AT ONCE AND GIVE SHOWER UNDER DELUGE TUPE OF WATER, IRRIGATE EYES WITH WARM WATER FOR AT LEAST 15 MINUTES.
...eps if Material Released/Spilled.....	COLLECT AND REMOVE WITH A BROOM IN A LARGE BUCKET. DILUTE WITH WATER AND NEUTRALIZE WITH 6M HCL. DRAIN INTO A SEWER WITH SUFFICIENT WATER.
...ste Disposal Method.....	PUT INTO A LARGE VESSEL CONTAINING WATER. NEUTRALIZE WITH 6M HCL. DISCHARGE INTO THE SEWER WITH SUFFICIENT WATER.
...dling & Storage Precautions.....	TECT AGAINST PHYSICAL DAMAGE OF CONTAINERS. STORE IN A DRY PLACE. PROTECT AGAINST MOISTURE. STORE SEPARATELY FROM ACIDS, METALS, OXIDIZING MATERIALS. AV
...her Precautions.....	AVOID SKIN CONTACT.
...spiratory Protection.....	NIOSH/MSHA APPROVED RESP DEVICE IN ACCORD WITH EXPOSURE OF CONCERN.
...ntilation.....	LOCAL/MECHANICAL
...otective Gloves.....	RUBBER
...e Protection.....	GOGGLES
...her Protective Equipment.....	PLASTIC OVERALLS
...pplemental Health/Safety Data.....	IGNITE COMBUSTIBLE MATERIALS. CONTAINER SIZE: 1 LB BOTTLE

...gredient 01

Ingredient Name	SODIUM HYDROXIDE (SARA III)
CAS Number	1310-73-2
NIOSH Number	WB4900000
Proprietary	NO
Percent	>97
OSHA PEL	2 MG/M3
ACGIH TLV	C 2 MG/M3 ; 9293

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

4.2.4-110

Attch 4-3

4.2.4-111

ATTN 5-1

MATERIAL SAFETY DATA SHEET

em Name	ISOPREP 18
rt Number/Trade Name	ISOPREP 18 SULFURIC ACID SOLUTION
tional Stock Number	6810PISOPREP184
GE Code	99442
rt Number Indicator	A
DS Number	12429
nufacturer Name	ALLIED-KELITE
Street	2911 MILFORD DR.
City	NEW HUDSON
State	MI
Country	US
Zip Code	48165
ergency Phone	800-424-9300
formation Phone	313-437-8151
te MSDS Prepared/Revised	NONE
tive Indicator	Y
pearance/Odor	AMBER BROWN / ACEDIC ODOR
i ng Point	238 DEG F
c .fic Gravity	1.43
lubility in Water	FREELY
rcent Volatiles by Volume	45
ash Point	N/R
tinguishing Media	USE WATER SPRAY, DRY CHEMICAL, CO2,
ecial Fire Fighting Procedures	FIRE FIGHTERS SHOULD WEAR PROTECTIVE EQUIPMENT
usual Fire/Explosion Hazards	NONE
ability	YES
terials to Avoid	STRONG ACIDS
zardous Decomposition Products	N/R
zardous Polymerization	NO
lymerization Conditions to Avoid	WILL NOT OCCUR
50 - LD50 Mixture	N/R
ute of Er : Skin	YES
ute of F[: Inhalation	YES

alth Hazards - Acute & Chronic.....	INHALATIO CAUSE EYE, NOSE AND THROAT IRRITATIO , PULMONARY EDEMA, AND BRONCHIAL EMPHYSEMA; BURNS SKIN AND EYES, AND AUSES DENTAL EROSION. CORROSIVE EYES AND SKIN AND INTERNAL ORGANS
rcinogenity: NTP.....	NO
rcinogenity: IARC.....	NO
rcinogenity: OSHA.....	NO
mptoms of Overexposure.....	SKIN AND EYE BURNS AND INTERNAL ORGANS
dical Cond. Aggrevated by Exposure...	N/R
ergency/First Aid Procedures.....	[EYES] FLU H WITH WATER FOR 15 MIN WHILE HOLDING EY LIDS APART TO INSURE OF CLE
ps if Material Released/Spilled.....	DIKE SPILL AREA WITH INERT MATERIAL, COVER AND REMOVE AND PLACE INTO CONTAINER ARKED FOR DISPOSAL
utralizing Agent.....	LIME
ste Disposal Method.....	DISPOSE OF IN ACCORDANCE TO ALL STATE AND FEDERA , LAWS
spiratory Protection.....	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
ntilation.....	;LOCAL OR GENERAL
otective Gloves.....	RUBBER
e Protection.....	CHEMICAL GOGGLES
rk Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER HANDELING ANY CHEMICAL

gredient #.....	01
dient Name.....	POTASSIUM DICHROMATE
S Number.....	7778-50-9
oprietary.....	NO

gredient #.....	02
gredient Name.....	POTASSIUM FLUOBORATE
S Number.....	14075-53-
oprietary.....	NO

gredient #.....	03
gredient Name.....	SODIUM BISULFATE
S Number.....	7681-38-1
oprietary.....	NO

4.2.4-112

ATCH 5-2

MAT RIAL SAFETY DATA SHEE.

I. GENERAL INFORMATION

de Name: CAX-200, CAX-200+, CAX-100LA, CAX-177, CAX-177+, CAX-200 R WATERBORNE MASKANTS	Formula: Proprietary mixture
Manufacturer: Malek, Incorporated	Manufacturer's Phone Number: 619-279-0277
Manufacturer's Address: 4951 Ruffin Road San Diego, CA 92123	Name of Preparer: Malek, Incorporated

II. HAZARDOUS INGREDIENTS

Principal Hazardous Components	Composition (% by weight)	Exposure Limits in Air (give units)	
		ACGIH TLV	OSHA PEL
Styrene (CAS #100-42-5)	< 0.4	50 ppm (TWA) 100 ppm (ceiling)	100 ppm (TWA) 200 ppm (ceiling)
Toluene (CAS #108-88-3)	< 4	100 ppm (TWA) 150 ppm (STEL)	200 ppm (TWA) 300 ppm (STEL)
Sodium Dodecylbenzene Sulfonate (CAS #25155-30-0)	≤ 1.0	N/A	N/A
Water (CAS #7732-18-5)	~50	N/A	N/A
Proprietary Non-hazardous Solids	~48	N/A	N/A

III. PHYSICAL DATA

Boiling Point (°F): 212°F	Specific Gravity (H_2O = 1): 1.1 - 1.2
Vapor Pressure (mm Hg.) @ 20°C: 17 mm (water)	Evaporation Rate (butyl acetate = 1): Less than one
Vapor Density (Air = 1): Not Known	pH: 8.8 - 9.2

Solubility in Water: Miscible with water	Melting Point or Range, °F: Liquid at room temperature
Appearance & Odor: Liquid, mild odor	

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): Not applicable	Auto Ignition Temperature: Not Applicable	
Flammable Limits in Air, Volume %: Not applicable	LEL: N/A	UEL: N/A

Extinguishing Media: As this product is primarily aqueous, it is not a fire hazard. After water is evaporated the remaining solids could burn.

X	Water Spray		Carbon dioxide
X	Foam	X	Dry chemical

Special Fire Fighting Procedures: Wear NIOSH/MSHA approved self-contained breathing apparatus

Unusual Fire & Explosion Hazards: If residual solids are combusted, toxic and irritating gases will be generated.

V. HEALTH HAZARD DATA

SYMPTOMS OF EXPOSURE:	
Ingestion	Ingestion is not a probable route of exposure. However, if ingested, this substance may cause gastrointestinal irritation, nausea, vomiting and diarrhea. The degree of irritation will depend on the quantity swallowed, and the speed and thoroughness of the first aid treatments.
Skin Irritation	This substance may cause skin irritation. Signs and symptoms may include discoloration and swelling.
Dermal Toxicity	The dermal toxicity of this substance has not been determined.
Inhalation	The inhalation toxicity of this substance has not been determined. However, it may cause irritation if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. Breathing toluene vapor concentrations above the recommended exposure standard can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness and loss of coordination.

Eye Contact	Direct contact with the liquid may result in severe irritation to the eyes and could cause impairment of vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, redness, and blurred vision.

SUSPECTED CARCINOGENIC AGENTS: Styrene has been listed by the International Agency for Research on Cancer (IARC) as Group 2B (possible human) carcinogens. This designation indicates there was strong evidence of carcinogenicity in animals, but limited evidence of carcinogenicity in humans. No significant amount of exposure is anticipated when good industrial hygiene practices are observed.

EMERGENCY FIRST AID:

Ingestion	Immediately consult a physician (report pH of product). Dilute by drinking water or milk. If vomiting occurs, aspiration (breathing) of vomit into the lungs must be avoided since it may lead to aspiration pneumonitis.
Skin Contact	Wash thoroughly with soap and water. Remove and wash contaminated clothing. Consult a physician if irritation develops.
Inhalation	Remove exposed person to fresh air. Treat symptoms of irritation if needed. Consult a physician if irritation persists.
Eyes	Flush thoroughly with water for several minutes. Consult a physician immediately.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

a specific to product. Individuals with sensitive airways (e.g. asthmatics) may react to airborne vapors. rsons with preexisting skin conditions may have a reaction to contact with liquid product.

VI. REACTIVITY DATA

Stability		Unstable	Conditions to Avoid: None known
	X	Stable	
Incompatibility			Materials to Avoid: None known
Hazardous Polymerization		May Occur	Conditions to Avoid: None known
	X	Will Not Occur	

Hazardous Decomposition Products (including combustion products): CO_2, CO and small amounts of aromatic or aliphatic hydrocarbons can be generated from combustion of dried product.

VII. ENVIRONMENTAL PROTECTION PROCEDURES

Spill Response: Spilled material is slippery. Use an inert absorbent to contain the spill and to dry the area. An ved NIOSH/MHSA respirator should be worn as well as chemically resistant gloves. Place absorbed al in a closed container to await disposal.

Waste Disposal Method: Liquid product should not be disposed of in a landfill. Solids should be disposed of in accordance with all local, state and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Eye Protection: Wear chemical safety goggles when product is sprayed, or when spills or splashing of product may occur.

Skin Protection: Water proof and chemically resistant gloves should be worn when working with product. Wear chemically resistant clothing when contact with liquid product is expected.

Respiratory Protection (Specific Type): Where airborne concentrations are expected to exceed limits, wear a NIOSH/MSHA air purifying respirator with an organic vapor cartridge or canister to provide protection appropriate for exposure to generated aerosols, mists and vapors containing chemicals listed in Section II.

Ventilation and Engineering Controls: Ventilation must be adequate to control aerosols, mists or vapors generated when using this product. Ventilation must be adequate to keep exposures below the limits listed in Section III.

IX. SPECIAL PRECAUTIONS

Hygienic Practices in Handling and Storage: Avoid skin and eye contact. Do not take internally. Employees should wash thoroughly after handling product. Employees should wash-up before eating, smoking or using toilet facilities. If clothing or shoes become contaminated, wash before reuse.

Precautions for Repair & Maintenance of Contaminated Equipment: Flush with water to clean product off of equipment.

Other Precautions: Do not freeze product. Do not store product above 90°F

X. FEDERAL REGULATIONS

Styrene, sodium dodecylbenzene sulfonate and toluene are present in concentrations that exceed the de minimis amount for the SARA Title III Section 313 and 40CFR372 annual release reporting requirements. You must transmit this information if you distribute this product to others.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

Mr Russell A. Roberts
Executive Secretary
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

3 Mar 1995

RE: Notice of Intent to Setup a Chemical Milling Process Line in Building 238

Dear Mr Roberts

This letter is to serve as a Notice of Intent to setup a chemical milling process line in Building 238. The current chemical milling operation is a grandfathered source located in Building 265 which must be relocated. During the first 90 days of operation, we also request approval to test a new water based maskant in the process. If the results of this test are favorable, we will use the water based maskant in place of the solvent based maskant currently being used in Building 265. However, if the test is not successful, we request approval to continue using the present solvent based maskant at the new location until a lower VOC maskant can be found that meets the performance requirements. A report of the results comparing the two maskants will be made available upon completion of the test period.

The proposed project requires the installation of five 2000 gal dip tanks in Building 238, four of which will be exhausted to the outside (see Attachment 1, detailed process description and emissions estimate). The only difference between the two candidate processes is the type of maskant used. All equipment and other materials are the same.

Your prompt response to this matter would be greatly appreciated as we would like to begin testing the new maskant as soon as possible. Please contact Michael Graziano at 777-0359 if you require additional information.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director, Environmental Management

6 Attachments;
1. Process Description & Emissions Estimate
2. Project Layout
3. High VOC Maskant Tech Data Bulletin
4. MSDS Sodium Hydroxide
5. MSDS Isoprep
6. MSDS Low VOC Maskant

cc: LAOPE (John Vidic)
LARTW (Rich Trejos)

CHEMICAL MILLING PROCESS DESCRIPTION

AND EMISSIONS ESTIMATE

A. Install five new process tanks in building 238 (Proposed layout attachment 2)

Tank #1 Maskant Dip, exhausted to outside
Tank #2 Hot Water Dip, exhausted to outside
Tank #3 Isoprep, exhausted to outside
Tank #4 Water Spray Rinse
Tank #5 Sodium Hydroxide, exhausted to outside

All dip tanks are 2000 gallons.
Slotted ventilation systems across the top of tanks 1, 2, and 3 will be manifolded together and exhausted through a 38" duct 60' above ground level.
The slotted ventilation system across the top of tank 5 will be exhausted through a 24" duct 60' above ground level.

B. The general process for each part is as follows;

1. Dip in Sodium Hydroxide, tank #5, for 30 seconds; flash cleaning.
2. Dip in Hot Rinse, tank #2.
3. Dip in Isoprep, tank #3; desmutting.
4. Spray Rinse in tank #4
5. Hang Dry
6. Dip in Maskant, tank #1.
7. Hang Dry 24 hours
8. Use template and cut away maskant from area to be milled.
9. Dip in Sodium Hydroxide tank #5, exposed metal areas are milled at 0.001 inch per minute.
10. Dip in Hot Rinse tank #2.
11. Dip in Isoprep tank #3, for cleaning.
12. Spray Rinse in tank #4.
13. Repeat steps 8-12 as needed to mill various areas to desired depths.

(Note: The process and materials are the same for both regardless of the maskant used.)

C. Emissions Estimate Grandfathered Process

Maskant (Tech Data Sheet Attachment 3)

Eight 55 gallon drums per year = 440 gallons
8.0 lbs per gallon = 3,520 lbs
from MSDS solids are 36%, therfore solvents are 64%

3,520 lbs of maskant/yr X 64% VOC = **2,252.8 lb VOC**

ATCH 1-1

Thinner

Maskant must be thinned with 1 drum of solvent each week
52 drums/yr X 55 gal/drum X 7.5 lbs VOC/gal = **21,450 lbs VOC**

Sodium Hydroxide (MSDS Attachment 4)

Twelve 55 gallon drums per year = 660 gallons
Specific gravity = 2.12
therefore 8.4 lb water/gallon X 2.12 X 660 gallons = 11,753.3 lb NaOH
Engineering estimate for NaOH losses from process tanks is 5%
11,753.3 lb X .05 = **588 lbs NaOH**

Isoprep (MSDS Attachment 5)

Four 55 gallon drums per year = 220 gallons
Specific gravity = 1.43
therefore 8.4 lb water/gal X 1.43 X 220 gallons = 2,642.6 lb Isoprep
Engineering estimate for Sulfuric Acid losses from process tanks is 33%
2,642.6 lb X .33 = **872 lb Isoprep**

Emissions Summary Grandfathered Process

VOC Maskant	2,252.8 lbs	
VOC Thinners	21,450.0	
Total VOC	**23,702.8**	**11.9 tons**
Sodium Hydroxide	**588.0**	**0.30 ton**
Isoprep	**872.0**	**0.44 ton**

D. Emissions Estimate Experimental Process

Water based Maskant (MSDS Attachment 6)

Eight 55 gallon drums per year = 440 gallons
Specific Gravity = 1.2
therefore 8.4 lb water/gallon X 1.2 X 440 gallons = 4435.2 lb maskant
from MSDS solvent content is 5% so
4435.2 lb maskant X 5% VOC = **221.8 lb VOC**

Thinning agent for this maskant is deionized water

Emissions from Sodium Hydroxide and Isoprep remain the same.

E. Annual Emissions Summary

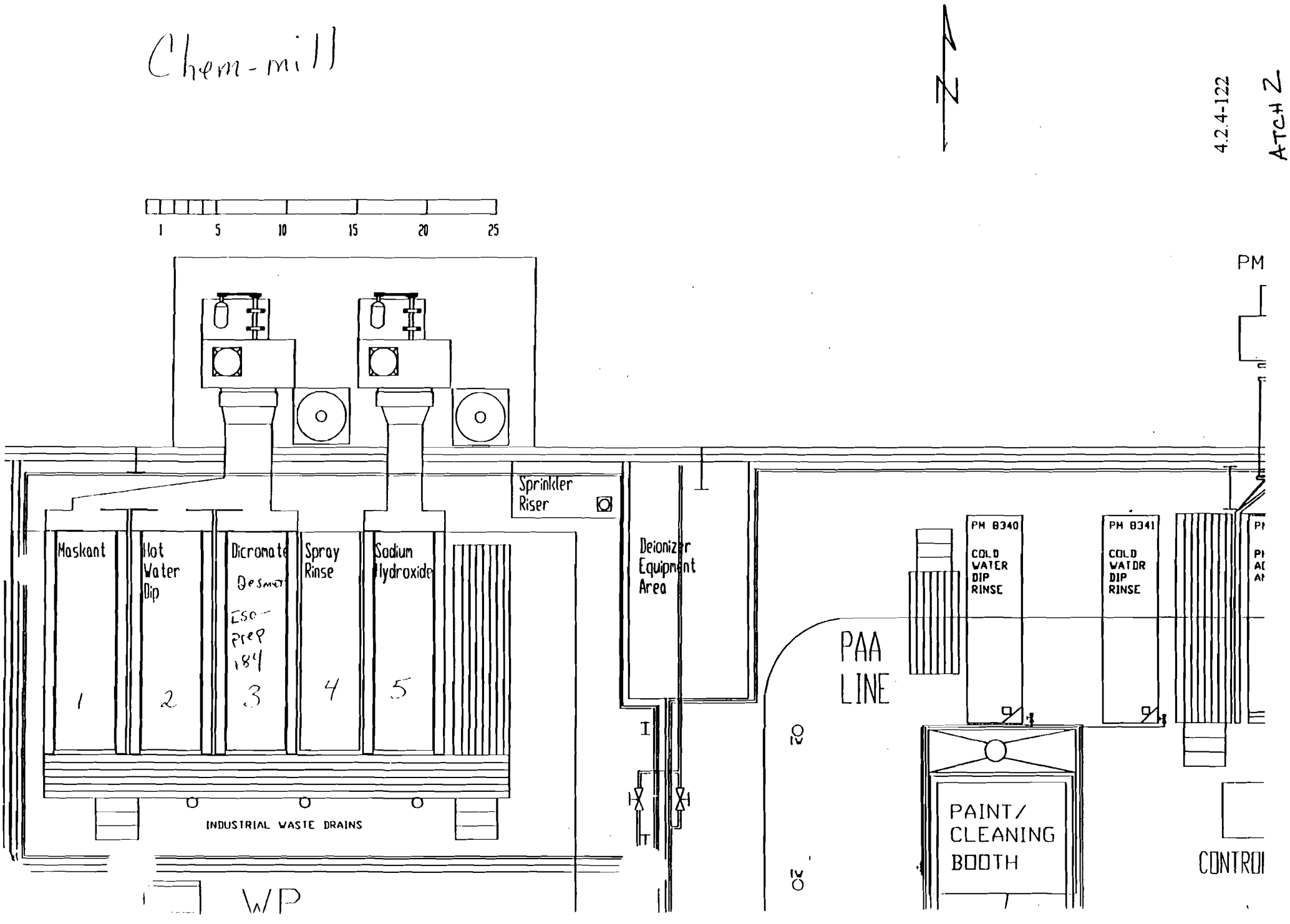
	VOC	NaOH	Isoprep
Old Maskant	23,702.8 lb	588.0 lb	872.0 lb
Test Maskant	221.8 lb	588.0 lb	872.0 lb

ATCH 1-3

Chem-mill

4.2.4-122

ATCH 2



TECHNICAL DATA BULLETIN NO. 490

PENNWALT

TURCO PRODUCTS INC., 7300 BOLSA AVENUE, WESTMINSTER, CALIFORNIA 92684-3600

TURCOFORM® MASK 522

DIP AND FLOW COAT CHEM-MILL MASKANT

DESCRIPTION:

TURCOFORM® MASK 522 is a tan, liquid, single component, air curing, peelable protective coating formulated to provide protection against the corrosive action of hot caustic and acidic solutions used in the Chem-Mill processing of aluminum, magnesium, steel and titanium alloys.

TURCOFORM MASK 522 can be applied by immersion or flow coating methods and dries to a chemical resistant elastomeric film within 12 hours. TURCOFORM MASK 522 can be forced dried by conventional methods, after air drying for 2 to 3 hours at room temperature.

A top-coat of TURCOFORM MASK 550 is recommended for steel and titanium processing to provide additional protection against aggressive acid etchant solutions.

LIQUID PROPERTIES:

Appearance	Tan viscous liquid
Solids by wt.	34.5 ± 1%
Gallon weight	8.0# min.
Viscosity, Poise	15 ± 4
Flash Point (SETA)	40°F
Storage life @ 75°F	1 year min.

FILM PROPERTIES:

Tensile strength	900 psi min.
Elongation at rupture	475% min.
Peel Adhesion:	(pounds/in. width)

Solvent wiped panels	Before etch	After etch
2024-T3 Clad Aluminum	0.8 ± 0.3	1.3 max.

DIRECTIONS FOR USE:

1. **Precleaning:** For optimum uniformity in adhesion and performance the parts to be masked must be free of oil, grease, dirt or corrosion. Your TURCO Territory Manager can recommend suitable TURCO cleaners based on specifications and production needs.
2. **Mixing:** To assure reproducible results in application and performance of the TURCOFORM MASK 522, adequate mixing of the solution is very important prior to and during use. Caution must be exercised to prevent air from being drawn into the mask by the mixing action. Since some solvent is lost during use due to evaporation, periodic additions of thinner are required. The amount of thinner required is based on viscosity measurements. A #5 Zahn cup viscometer may be used to measure and adjust the maskant to the desired operating viscosity.

MATERIAL SAFETY DATA SHEET

Item Name	SODIUM HYDROXIDE,ACS
Part Number/Trade Name	SODIUM HYDROXIDE
National Stock Number	6810000778570
CAGE Code	70829
Part Number Indicator	A
MSDS Number	89815
Manufacturer Name	J.T.BAKER CHEMICAL CO
Street	222 RED SCHOOL LANE
City	PHILLIPSBURG
State	NJ
Country	US
Zip Code	08865-2219
Emergency Phone	201-859-2151
Information Phone	201-859-2151
Date MSDS Prepared/Revised	PRE-HCS
Date of Technical Review	27FEB84
Active Indicator	Y
Vendor #5 CAGE	BCXNJ
Specification Number	NOT APPLICABLE
Specification Type/Grade/Class	N/R
Hazard Storage Compatibility Code	C2
NRC License Number	N/R
Net Propellant Weight (Ammo)	N/R
Appearance/Odor	WHITE, DELIQUESCENT PIECES, LUMPS OR STICKS.
Boiling Point	2534F,1390C
Melting Point	UNKNOWN
Vapor Pressure	N/R
Vapor Density	N/R
Specific Gravity	2.120
Decomposition Temperature	UNKNOWN
Evaporation Rate	N/R
Solubility in Water	APPRECIABLE
Chemical PH	N/K
Flash Poi	NONE

4.2.4-124

Attach 4-1

ATCH 4-2

guishing Media	WATER
ecial Fire Fighting Procedures	FLOOD WITH WATER,DO NOT SPLASH OR SPLASH MATERIAL
Unusual Fire/Explosion Hazards	NONCOMBUSTIBLE BUT SOLID FORM IN CONTACT WITH MOISTURE MAY GENERATE SUFFICIENT HEAT TO SEE SUP DATA
Stability	YES
Materials to Avoid	MOISTURE,METALS,EXPLOSIVES,ORGANIC PEROXIDES
Hazardous Decomposition Products	MAY GENERATE HYDROGEN GAS ON CONTACT WITH METALS
Hazardous Polymerization	NO
Symptoms of Overexposure	HIGHLY CORROSIVE ACTION UPON BODY TISSUE.
Emergency/First Aid Procedures	SPEED IN REMOVING THIS CAUSTIC MATERIAL IN CONTACT WITH SKIN IS OF VERY IMPORTANCE TO AVOID BURNS. REMOVE ALL CONTAMINATED CLOTHING AT ONCE AND GIVE SHOWER UNDER DELUGE TUPE OF WATER, IRRIGATE EYES WITH WARM WATER FOR AT LEAST 15 MINUTES.
Steps if Material Released/Spilled	COLLECT AND REMOVE WITH A BROOM IN A LARGE BUCKET. DILUTE WITH WATER AND NEUTRALIZE WITH 6M HCL. DRAIN INTO A SEWER WITH SUFFICIENT WATER.
Waste Disposal Method	PUT INTO A LARGE VESSEL CONTAINING WATER. NEUTRALIZE WITH 6M HCL. DISCHARGE INTO THE SEWER WITH SUFFICIENT WATER.
Handling & Storage Precautions	TECT AGAINST PHYSICAL DAMAGE OF CONTAINERS. STORE IN A DRY PLACE. PROTECT AGAINST MOISTURE. STORE SEPARATELY FROM ACIDS,METALS,OXIDIZING MATERIALS. AV
Other Precautions	AVOID SKIN CONTACT.
Respiratory Protection	NIOSH/MSHA APPROVED RESP DEVICE IN ACCORD WITH EXPOSURE OF CONCERN.
Ventilation	LOCAL/MECHANICAL
Protective Gloves	RUBBER
Eye Protection	GOGGLES
Other Protective Equipment	PLASTIC OVERALLS
Supplemental Health/Safety Data	IGNITE COMBUSTIBLE MATERIALS. CONTAINER SIZE: 1 LB BOTTLE

Ingredient " 01

Name	SODIUM HYDROXIDE (SARA III)
CAS Number	1310-73-2
NIOSH Number	WB4900000
Proprietary	NO
Percent	>97
OSHA PEL	2 MG/M3
ACGIH TLV	C 2 MG/M3; 9293

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

Atch 4-3

4.2.4-127

Attach 5-1

MATERIAL SAFETY DATA SHEET

tem Name	ISOPREP 184
art Number/Trade Name	ISOPREP 184 SULFURIC ACID SOLUTION
ational Stock Number	6810PISOPREP184
AGE Code	99442
art Number Indicator	A
SDS Number	12429
ai facturer Name	ALLIED-KELITE
Street	29111 MILFORD DR.
City	NEW HUDSON
State	MI
Country	US
Zip Code	48165
mergency Phone	800-424-9300
nformation Phone	313-437-8161
ate MSDS Prepared/Revised	NONE
ctive Indicator	Y

ppearance/Odor	AMBER BROWN / ACEDIC ODOR
oiling Point	238 DEG F
p fic Gravity	1.43
olubility in Water	FREELY
ercent Volatiles by Volume	45
lash Point	N/R
xtinguishing Media	USE WATER SPRAY, DRY CHEMICAL, CO2,
pecial Fire Fighting Procedures	FIRE FIGHTERS SHOULD WEAR PROTECTIVE EQUIPMENT
nusual Fire/Explosion Hazards	NONE
tability	YES
aterials to Avoid	STRONG ACIDS
azardous Decomposition Products	N/R
azardous Polymerization	NO
olymerization Conditions to Avoid	WILL NOT OCCUR
D50 - LD50 Mixture	N/R
oute of Entry: Skin	YES
oute of E : Inhalation	YES

ealth Ha ds - Acute & Chronic.....	INHALATION C 3 EYE, NOSE AND THROAT IRRITATION, PULMONARY EDEMA, AND BRONCHIAL EMPHYSEMA; BURNS SKIN AND EYES, AND CAUSES DENTAL EROSION. CORROSIVE 2 EYES AND SKIN AND INTERNAL ORGANS
arcinogenity: NTP.....	NO
arcinogenity: IARC.....	NO
arcinogenity: OSHA.....	NO
ymptoms of Overexposure.....	SKIN AND EYE BURNS AND INTERNAL ORGANS
edical Cond. Aggrevated by Exposure...	N/R
mergency/First Aid Procedures.....	[EYES] FLUSH WITH WATER FOR 15 MIN WHILE HOLDING EYE LIDS APART TO INSURE OF CLE
t s if Material Released/Spilled.....	DIKE SPILL AREA WITH INERT MATERIAL, COVER AND REMOVE AND PLACE INTO CONTAINER MARKED FOR DISPOSAL
eutralizing Agent.....	LIME
aste Disposal Method.....	DISPOSE OF IN ACCORDANCE TO ALL STATE AND FEDERAL LAWS
espiratory Protection.....	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
entilation.....	;LOCAL OR GENERAL
rotective Gloves.....	RUBBER
ye Protection.....	CHEMICAL GOGGLES
ork Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER AHNDELING ANY CHEMICAL

ngredient #.....	01
n edient Name.....	POTASSIUM DICHROMATE
AS Number.....	7778-50-9
roprietary.....	NO
ngredient #.....	02
ngredient Name.....	POTASSIUM FLUOBORATE
AS Number.....	14075-53-7
roprietary.....	NO
ngredient #.....	03
ngredient Name.....	SODIUM BISULFATE
AS Number.....	7681-38-1
roprietary.....	NO

4.2.4-128

ATCH 5-2

MA ERIAL SAFETY DATA SHEET

I. GENERAL INFORMATION

Trade Name: CAX-200, CAX-200+, CAX-100LA, CAX-177, CAX-177+, CAX-200 R WATERBORNE MASKANTS	**Formula:** Proprietary mixture
Manufacturer: Malek, Incorporated	**Manufacturer's Phone Number:** 619-279-0277
Manufacturer's Address: 4951 Ruffin Road San Diego, CA 92123	**Name of Preparer:** Malek, Incorporated

II. HAZARDOUS INGREDIENTS

Principal Hazardous Components	Composition (% by weight)	Exposure Limits in Air (give units)	
		ACGIH TLV	OSHA PEL
Styrene (CAS #100-42-5)	< 0.4	50 ppm (TWA) 100 ppm (ceiling)	100 ppm (TWA) 200 ppm (ceiling)
Toluene (CAS #108-88-3)	< 4	100 ppm (TWA) 150 ppm (STEL)	200 ppm (TWA) 300 ppm (STEL)
Sodium Dodecylbenzene Sulfonate (CAS #25155-30-0)	≤ 1.0	N/A	N/A
Water (CAS #7732-18-5)	~50	N/A	N/A
Proprietary Non-hazardous Solids	~48	N/A	N/A

III. PHYSICAL DATA

Boiling Point (°F): 212°F	**Specific Gravity (H_2O = 1):** 1.1 - 1.2
Vapor Pressure (mm Hg.) @ 20°C: 17 mm (water)	**Evaporation Rate (butyl acetate = 1):** Less than one
Vapor Density (Air = 1): Not Known	**pH:** 8.8 - 9.2

Solubility in Water: Miscible with water	**Melting Point or Range, °F:** Liquid at room temperature

Appearance & Odor: Liquid, mild odor

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Test Method): Not applicable	**Auto Ignition Temperature:** Not Applicable	
Flammable Limits in Air, Volume %: Not applicable	**LEL:** N/A	**UEL:** N/A

Extinguishing Media: As this product is primarily aqueous, it is not a fire hazard. After water is evaporated the remaining solids could burn.

_X_ Water Spray _____ Carbon dioxide

_X_ Foam _X_ Dry chemical

Special Fire Fighting Procedures: Wear NIOSH/MSHA approved self-contained breathing apparatus

Unusual Fire & Explosion Hazards: If residual solids are combusted, toxic and irritating gasses will be generated.

V. HEALTH HAZARD DATA

SYMPTOMS OF EXPOSURE:

Ingestion	Ingestion is not a probable route of exposure. However, if ingested, this substance may cause gastrointestinal irritation, nausea, vomiting and diarrhea. The degree of irritation will depend on the quantity swallowed, and the speed and thoroughness of the first aid treatments.
Skin Irritation	This substance may cause skin irritation. Signs and symptoms may include discoloration and swelling.
Dermal Toxicity	The dermal toxicity of this substance has not been determined.
Inhalation	The inhalation toxicity of this substance has not been determined. However, it may cause irritation if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. Breathing toluene vapor concentrations above the recommended exposure standard can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness and loss of coordination.

Eye Contact	Direct contact with the liquid may result in severe irritation to the eyes and could cause impairment of vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, redness, and blurred vision.

SUSPECTED CARCINOGENIC AGENTS: Styrene has been listed by the International Agency for Research on Cancer (IARC) as Group 2B (possible human) carcinogens. This designation indicates there was strong evidence of carcinogenicity in animals, but limited evidence of carcinogenicity in humans. No significant amount of exposure is anticipated when good industrial hygiene practices are observed.

EMERGENCY FIRST AID:

Ingestion	Immediately consult a physician (report pH of product). Dilute by drinking water or milk. If vomiting occurs, aspiration (breathing) of vomit into the lungs must be avoided since it may lead to aspiration pneumonitis.
Skin Contact	Wash thoroughly with soap and water. Remove and wash contaminated clothing. Consult a physician if irritation develops.
Inhalation	Remove exposed person to fresh air. Treat symptoms of irritation if needed. Consult a physician if irritation persists.
Eyes	Flush thoroughly with water for several minutes. Consult a physician immediately.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

ıe specific to product. Individuals with sensitive airways (e.g. asthmatics) may react to airborne vapors. ersons with preexisting skin conditions may have a reaction to contact with liquid product.

VI. REACTIVITY DATA

Stability		Unstable	**Conditions to Avoid:** None known
	X	Stable	
Incompatibility			**Materials to Avoid:** None known
Hazardous Polymerization		May Occur	**Conditions to Avoid:** None known
	X	Will Not Occur	

Hazardous Decomposition Products (including combustion products): CO_2, CO and small amounts of aromatic or aliphatic hydrocarbons can be generated from combustion of dried product.

VII. ENVIRONMENTAL PROTECTION PROCEDURES

ill Response: Spilled material is slippery. Use an inert absorbent to contain the spill and to dry the area. An proved NIOSH/MHSA respirator should be worn as well as chemically resistant gloves. Place absorbed material in a closed container to await disposal.

Waste Disposal Method: Liquid product should not be disposed of in a landfill. Solids should be disposed of in accordance with all local, state and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

Eye Protection: Wear chemical safety goggles when product is sprayed, or when spills or splashing of product may occur.	**Skin Protection:** Water proof and chemically resistant gloves should be worn when working with product. Wear chemically resistant clothing when contact with liquid product is expected.
Respiratory Protection (Specific Type): Where airborne concentrations are expected to exceed limits, wear a NIOSH/MSHA air purifying respirator with an organic vapor cartridge or canister to provide protection appropriate for exposure to generated aerosols, mists and vapors containing chemicals listed in Section II.	**Ventilation and Engineering Controls:** Ventilation must be adequate to control aerosols, mists or vapors generated when using this product. Ventilation must be adequate to keep exposures below the limits listed in Section III.

IX. SPECIAL PRECAUTIONS

Hygienic Practices in Handling and Storage: Avoid skin and eye contact. Do not take internally. Employees should wash thoroughly after handling product. Employees should wash-up before eating, smoking or using toilet facilities. If clothing or shoes become contaminated, wash before reuse.

Precautions for Repair & Maintenance of Contaminated Equipment: Flush with water to clean product off of equipment.

Other Precautions: Do not freeze product. Do not store product above 90°F

X. FEDERAL REGULATIONS

Styrene, sodium dodecylbenzene sulfonate and toluene are present in concentrations that exceed the de minimis amount for the SARA Title III Section 313 and 40CFR372 annual release reporting requirements. You must transmit this information if you distribute this product to others.

XI. STATE REGULATIONS

ARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE REPRODUCTIVE TOXICITY:

Toluene (CAS #108-88-3)

State	Utah
State Agency	Department of Environmental Quality
Affected Area	Hill AFB
Regulation	Source-specific requirements
Rule Number	Ozone NAAQS Approval Orders
Rule Title	BAQE-525-88, Approval Order for Structural Repair and Maintenance Facility, Davis County (10/13/1988)
State Effective Date	03/04/1997
State Adoption Date	02/05/1997
EPA Effective Date	08/18/1997
Notice of Final Rule Date	07/17/1997
Notice of Final Rule Citation	62 FR 38213
Comments	

Rule:

Hill AFB - DAQE-525-88.pdf

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-525-88

October 13, 1988

Mr. Robert Cameron
Department of the Air Force
Environmental Planning Division
Regional Civil Engineer, Western Region (AFESC)
630 Sansome Street, Room 1316
San Francisco, California 94111-2278

Dear Mr. Cameron:

Re: Approval Order for Structural Repair and Maintenance Facility
Davis County, CDS A1

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions:

1. Hill Air Force Base shall construct the Structural Repair and Maintenance Facility according to the information submitted in the notice of intent dated May 8, 1988.

2. The approved installations shall consist of the following equipment located at the site:

   A. Primer booth moved from Building 220
   B. Nine dip tanks (new)
   C. Six paint booths from Buildings 205 and 266
   D. One steam cleaner booth (new)
   E. General ventilation exhaust (four fans at 6,000 acfm each)
   F. Bead blast equipment moved from Building 278
   G. Dock area ventilation exhaust (new, 10,200 acfm)
   H. Boiler, natural gas fired, 500 HP

3. Visible emissions from the following emission points shall not exceed the following values:

   A. All paint booths - 5% opacity
   B. All dip tanks - 5% opacity
   C. Bead blasting equipment - 5% opacity
   D. All general ventilation points - 7% opacity
   E. Boiler -5% opacity
   F. All other points - 20% opacity

4. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply.

5. The owner/operator shall use only natural gas as a fuel in the proposed boiler. If any other fuel is to be used, an approval order shall be required in accordance with Section 3.1, UACR.

6. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

7. The Executive Secretary of the Utah Air Conservation Committee shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

The fee for issuing this approval order is $565.60. The amount is payable to the Bureau of Air Quality, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/MK/sh

cc: EPA Region VIII, John Dale
Davis County Health Department

DEPARTMENT OF THE AIR FORCE
REGIONAL CIVIL ENGINEER, WESTERN REGION (AFESC)
630 SANSOME STREET - ROOM 1316
SAN FRANCISCO, CALIFORNIA 94111-2278

JUN 17 1988

REPLY TO ATTN OF: ROVE (Lt Donaghue/556-0883)

SUBJECT: Additional Information for Notice of Intent to Construct, FY88MCP, PDC# KRSM880083, Structural Repair and Maintenance Facility, Hill AFB, UT

TO: Utah State Division of Environmental Health
Bureau of Air Quality
288 North 1460 West
P.O. Box 16690
Salt Lake City, UT 84116-0690
ATTN: Mr. Lynn Menlove

1. In response to your verbal request of 14 June 1988, enclosed is a building plan for the subject project. Hill AFB has assigned this project Building #238.

2. The original application had the equipment broken down by the areas they would be installed in. The areas referred to are those shown on the building plan.

3. Refer any further questions to Lt Donaghue, 415-556-0883.

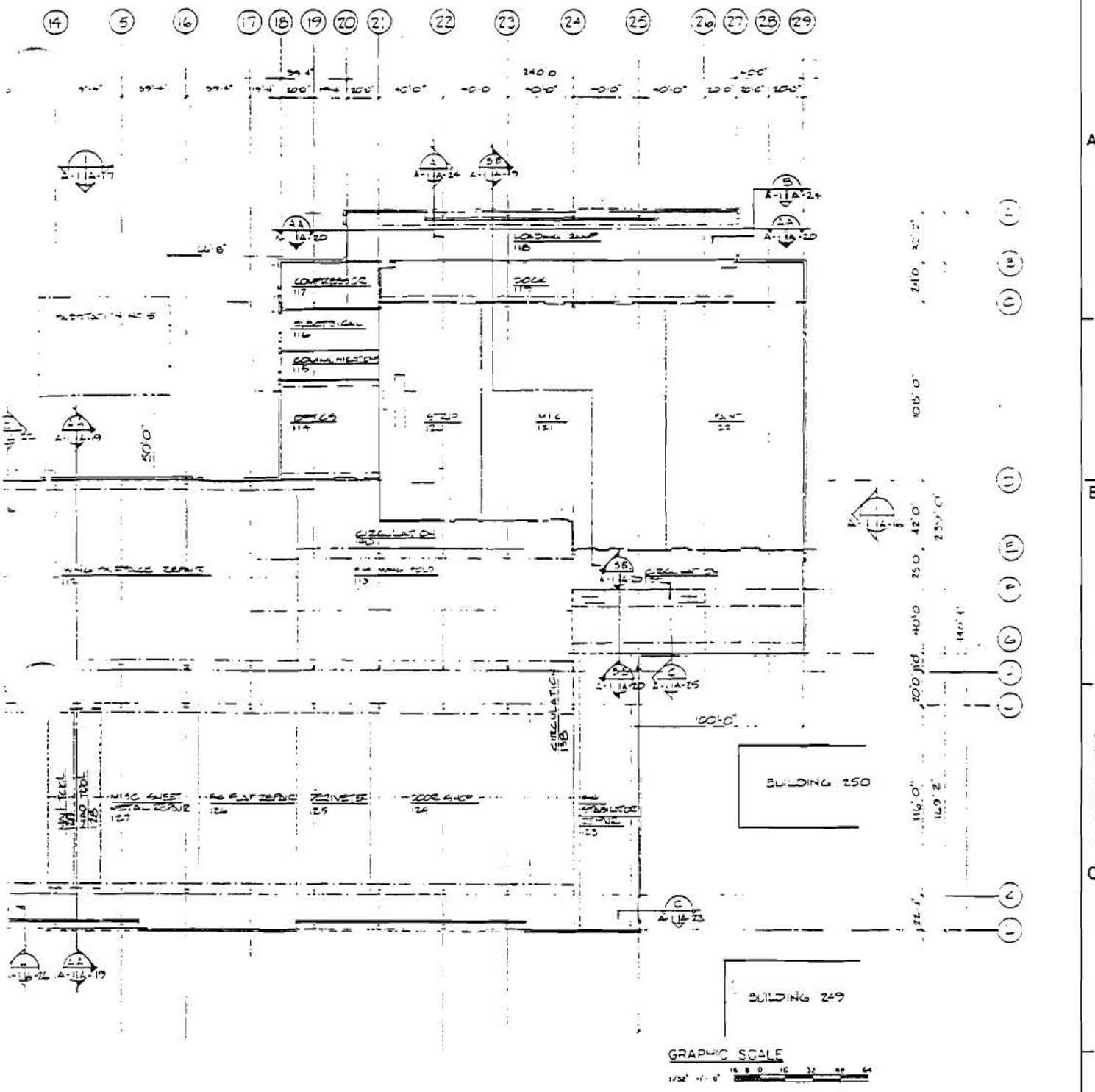
PHILLIP E. LAMMI, Chief
Environmental Planning Division

1 Atch: Building Plan

cc: AFLC/DEV w/o Atch
2849ABG/DEEV " "
CESPD-ED-PM " "
CESPK-ED-M(Nightingale) " "

RECEIVED
AIR QUALITY
JUN 20 1988

4.2.4-904

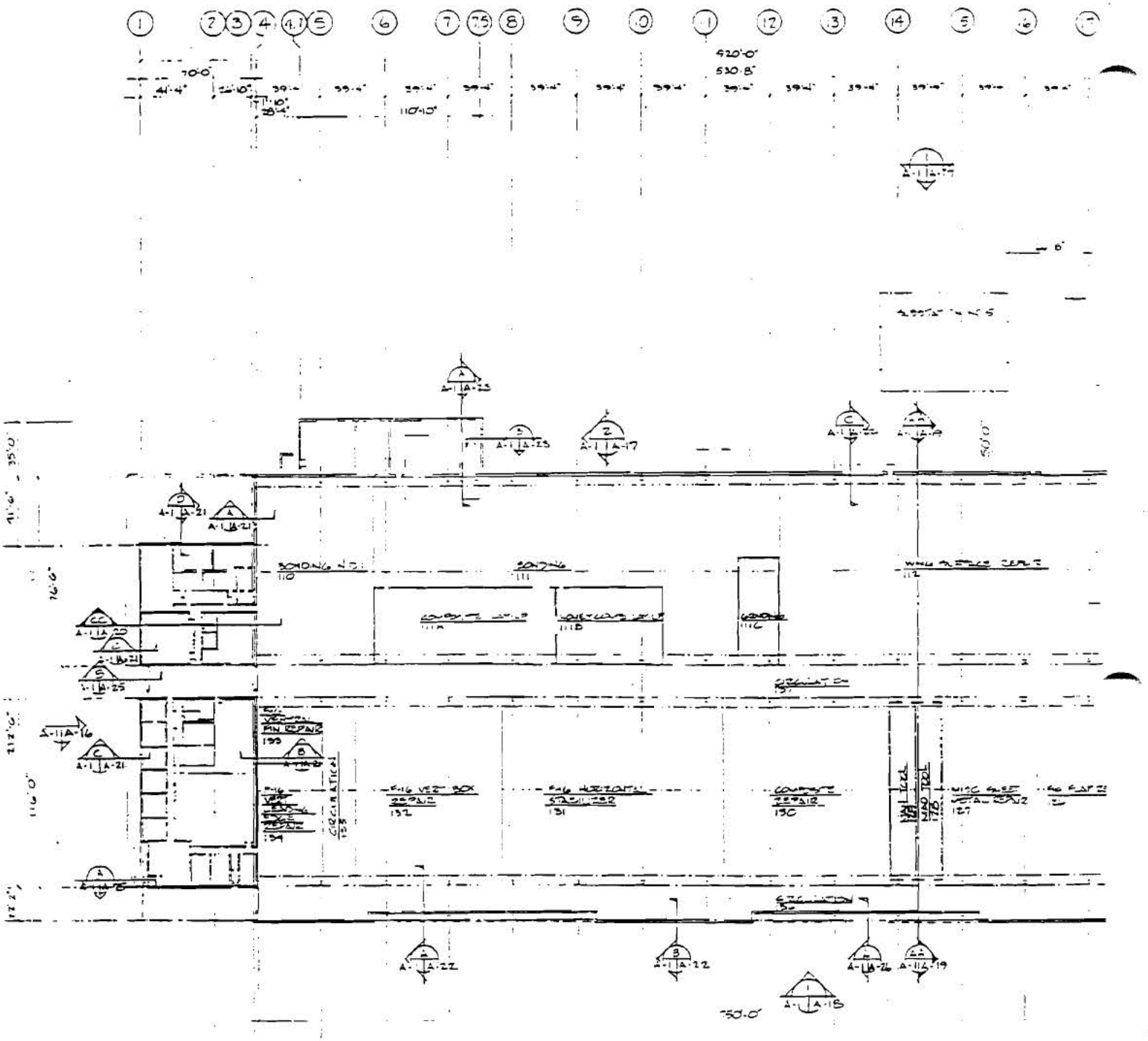


RECEIVED
AIR QUALITY
JUN 20 1988

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

HILL AIR FORCE BASE UTAH
STRUCTURAL REPAIR AND MAINTENANCE FACILITY
OVERALL FLOOR PLAN

DRAWING REDUCED ONE HALF SIZE



OVERALL FLOOR PLAN

SCALE: 1/32" = 1'-0"

FINISH FLOOR ELEVATION 100'-0"
EQUALS DATUM ELEVATION 4781.5'

SEE SHEETS C18 AND C19 FOR HORIZONTAL LAYOUT DATA ALONG SOUTH SIDE OF D STREET

RECEIVED
AIR QUALITY
JUN 20 1988

4.2.4-906

DEPARTMENT OF THE AIR FORCE
REGIONAL CIVIL ENGINEER, WESTERN REGION (AFESC)
630 SANSOME STREET - ROOM 1316
SAN FRANCISCO, CALIFORNIA 94111-2278

REPLY TO ATTN OF: ROVE (Lt Donaghue/556-0883)

SUBJECT: Notice of Intent to Construct, FY88MCP, PDC# KRSM880083, Structural Repair and Maintenance Facility, Hill AFB, UT

TO: Utah State Division of Environmental Health
Bureau of Air Quality
288 North 1460 West
P.O. Box 16690
Salt Lake City, UT 84116-0690

1. Please consider this letter a Notice of Intent to Construct and a Request for Permit for the subject project. Attachment 1 is a list of the operations of the facility, as well as amount of materials used.

2. Refer questions to Lt Donaghue, 415-556-0883.

ROBERT B. CAMERON, Acting Chief
Environmental Planning Division

1 Atch: Operating Information

cc: AFLC/DEV w/Atch
2849ABG/DEEV " "
CESPD-ED-PM " "
CESPK-ED-M(Nightingale) " "

4.2.4-907

Re: Structural Repair & Maintenance Facility
Hill Air Force Base, Utah

To Whom It May Concern:

The following is a Notice of Intent (NOI) to construct the above mentioned project.

This facility is a new building intended to consolidate the repair and painting of aircraft parts, and operations carried on in several buildings into this one facility. Material consumptions are based on existing operations and should potentially decrease because of operating efficiency in new facility. Efficiency is based on equipment specification for equipment not yet purchased.

A. Operation: Wing Surface Repair #112

1. Primer Booth - Operation moved from Building #220 to north center of new building. Vertical exhaust discharge located 54' above grade. CFM total discharge. Air cleaning device - 95% efficient water spray and wet plate baffles.

   Total paint consumption for the entire operation includes:

   a. 5 kits (2 gallons per kit) per month of MIL-C-83286: FSCM 33461, Deft Chemical Coatings, polyurethane coating.

   b. 1 aersol can per month of one of the following:

      (1) FSCM 09869 Ameron Industrial Coating Division, lacquer, acrylic.

      (2) FSCM 12904, Lenmar Lacquers, Inc., lacquer.

      (3) FSCM 61196, Pratt & Lambert, lacquer, acrylic.

   There has been no determination as to what percentage of paint (over spray) is exhausted vs. percentage of paint being applied to aircraft component.

2. Dip Tanks - This is a new process involving the dipping of aircraft parts into tanks as listed as a final cleaning/etching process prior to application of primer. Only four of nine tanks contain anything besides water. These four tanks are uncovered but have fume pick-up ducts along each side of tank. There have been no evaporation rates determined but the chemical contents are as follows:

Tank #1 - Alkaline Cleaner - Operating temperature 140 degrees to 160 degrees F. Chemical 'Turco' 4215-S, concentration 4 to 8 oz./gallon of water - exhausting 10,280 CFM.

Tank #2 - Hot Water Dip Rinse - Operating temperature 70 degrees to 110 degrees F. Deionized water - exhausting 7,279 CFM.

Tank #3 - F.P.L. Etch - Operating temperature 150 degrees to 160 degrees F. Chemicals: Sodium Dichromate, 4.1 to 12 oz./gallon of water. Sulfuric Acid, 3.85 to 4.15 oz./gallon of water. Aluminum, 0.2 oz./gallon. Exhausting 14,152 CFM.

Tank #4 - Water only - no exhaust.

Tank #5 - Water only - no exhaust.

Tank #6 - Phosphoric Acid Anodize - Operating temperature 67 degrees to 77 degrees F. Phosphoric acid, 13 to 16 oz./gallon of water - exhausting 8,786 CFM.

Tank #7 - Water only - no exhaust.

Tank #8 - Water only - no exhaust.

Tank #9 - Drip dry only - no exhaust.

B. Operation: Paint #122

1. Paint booths (total of 6) - Processes being moved from Buildings 205 and 266 to east end of new building. 6 separate exhaust discharges above roof 54' above grade. Six paint booths at 12,000 CFM each equals 72,000 CFM being exhausted through paint booths, with 95% efficient air cleaning device of water spray and wet plate baffles.

Total paint consumption for the entire operation includes:

<u>From Building 205</u>

a. 25 kits (2 gallons per kit) per month of one or a combination of the following of MIL-P-23377:

(1) FSCM 09869 Ameron Industrial Coatings Division.

(2) FSCM 33200 Coronado Paint Co.

(3) FSCM 33461 Deft Chemical Coating, polyurethane coating.

(4) FSCM 61196 Pratt & Lambert, epoxy polyamide primer.

(5) FSCM 80592 Koppers Company Inc.

(6) FSCM 81349 Crown Metro Inc., epoxy polyamide primer coating.

(7) FSCM 96595 Desoto Inc.

b. 25 kits (2 gallons per month of one or a combination of the following of MIL-C-83286 or 83286B:

(1) FSCM 33461, Deft Chemical Coatings, coating, two-part kit (1 quart each).

(2) FSCM 81349, Deft Chemical Coatings, polyurethane coating.

c. 10 aerosol cans per month of one or a combination of the following of MIL-L-81352:

(1) FSCM 09869, Ameron Industrial Coating Division, lacquer, acrylic.

(2) FSCM 12904, Lenmar Lacquers, Inc., lacquer.

(3) FSCM 61196, Pratt & Lambert, lacquer, acrylic.

From Building 266

a. 20 kits (2 gallons per kit) per month of MIL-P-23377, 2997 paint primer epoxy polyamide.

b. 10 gallons per month of MIL-C-82386, 2967 paint polyurethane coating.

2. Steam Cleaner Booth: One each 2,000 CFM exhaust with 95% efficient air cleaning device of water spray and wet plate baffles. Discharges up, 54' above grade.

3. General ventilation exhaust, 4 fans at 6,000 CFM each - draws from top of room at 46' above finish floor - no filtering - discharges up, 54' above grade.

C. Strip Area #120

Bead Blast Equipment - This operation will be relocated from Auto Bead Blast Facility in Building 278. This facility is just about to go on line at this time. A 'N.O.I.' for this project has already been filed prior to start of construction. Discharger information is as follows:

Auto Bead Blast Equipment: 32,780 CFM discharge. Manual Bead Blast Equipment: 17,200 CFM. Both units discharge through dust collectors that have Hepa filters with .3 micron drawings. These filters are rated at 99.99% efficient at 0% opacity. A total of 80,000 lbs. of solid waste is generated by this process, 24% of which is classed as toxic paint chips. (The same material being applied to aircraft parts in the paint area.) This is being disposed of by the Base.

D. Loading Ramp Area #118

General ventilation exhaust for carbon monoxide from vehicle exhaust in dock area, 10,200 CFM. Draws from 46' above finish floor, discharge at 50' above grade, above roof, northeast corner of building.

E. Boiler Room #141

Process boiler (back-up system only), 500 HP = 12,750 MBH - .1 SCFM/MBH CH4, 8750 SCFM/MBH N, 1030 SCFM/MBH CO2, .2 SCFM/MBH CO., total flow - 11,990 SCFM/MBH.

4.2.4-912

MATERIAL NOMENCLATURE (Manufacturer & Major Ingredients)	NATIONAL STOCK NUMBER (or NIOSH Number)	SPECIFICATION (MIL or FED)	MSDS ON FILE ? (Y or N)	QUANTITY USED (per day, wk, mo, yr)	DISPOSAL METHOD (recycle, in process, etc.)	IEX CODE (8, 9, none)	POTENTIAL HAZARD (Y or N)			
							Inh	Abs	Ing	Con
Epoxy Primer	NSN 8010-00-082-2450	MIL-P-23377	Y	20 kt/mo	In process	9	—	—	—	—
A. 2-Ethoxyethanol (15%)	NIOSH # KP5685000	—	—	—	—	—	Y	Y	N	Y
B. Strontium Chromate (25%)	NIOSH # WK8600000	—	—	—	—	—	N	N	N	Y
C. Isobutyl Alcohol (15%)	NIOSH # NP9625000						Y	N	N	Y
D. Toluene (7.5%)	NIOSH # XS5250000	—	—	—	—	—	Y	Y	N	Y
Polyurethane Coating	LTPN 8010P521X427		N		On Order					

PERCENT	INH ABS ING CON	NIOSH NAME
	Y Y Y Y	TOXYETHANOL
	]]]]	SODIUM SULFONATE
	Y Y Y Y	NONYLPHENOXYPOLYETHOXYETHANOL
	]]]]	TETRAPOTASSIUM PYROPHOSPHATE
	Y Y Y Y	WATER

COMPOSITION PRINT REPORT 09/09/86

ING 205 ORGANIZATION WINGFOLD REPAIR/MANPSB

NSN ==) 8010000822450 HAZ CODE ==) 7M ITEM NAME ==)

MILL SPEC ==) MIL-P-23377 FSCM ==) 09849 MGF NAME ==) AMERON INDUSTRIAL COATINGS DIVISION

HEALTH HAZARD ==) (OVEREXPOSURE)

ANESTHETIC;IRR OF RESPIRATORY TRACT OR ACUTE NERVOUS SYS. DEPRESSION, EYE & SKIN IRRITATION

POTENTIAL HAZARD

Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH ABS ING CON	NIOSH NAME
XS5250000	15	Y Y Y Y	TOLUENE
EO1400000	15	Y Y Y Y	N-BUTYL ALCOHOL
NT8050000	15	Y Y Y Y	ISOPROPYL ALCOHOL
EL6475000	15	Y Y Y Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3; 1983 ACGIH
KK8050000	20	Y Y Y Y	CELLOSOLVE SOLVENT (2-ETHOXYETHANOL)

NSN ==) 8010000822450 HAZ CODE ==) 7M ITEM NAME ==)

MILL SPEC ==) MIL-P-23377 FSCM ==) 33200 MGF NAME ==) CORONADO PAINT CO. 309 OLD COUNTY RD., EDGEWATER, FL

HEALTH HAZARD (OVEREXPOSURE)

IRRITATION OF EYES, NOSE AND THROAT. HEADACHE, INTOXICATION & DROWSINESS MAY OCCUR. DRYING OF SKIN

POTENTIAL HAZARD

Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH ABS ING CON	NIOSH NAME
7900	11.4	Y Y Y Y	STRONTIUM CHROMATE
SORE	7.6	]]]]	RESINS
KD4380000	14	]]]]	EPOXY RESIN
XS5250000	8.0	Y Y Y Y	TOLUENE
		]]]]	

NSN ==) 8010000822450 HAZ CODE ==) 7M ITEM NAME ==) POLYURETHANEK COATING

MILL SPEC ==) MIL-P-23377 FSCM ==) 33461 MGF NAME ==) DEFT CHEMICAL COATING

HEALTH HAZARD (OVEREXPOSURE)

SKIN/EYE:IRRIT/SENSITIZR;INH:IRRIT OF RESP TRACT;ACUTE NERVOUS SYSTEM DEPRESSION,FOLLOWD BY HEAD/DIZ

POTENTIAL HAZARD

Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH ABS ING CON	NIOSH NAME
EL6475000	15.0	Y Y Y Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3; 1983 ACGIH
AF7850000	15.0	Y Y Y Y	BUTYL ACETATE
GB3240000	15	Y Y Y Y	STRONTIUM CHROMATE
GB2975000	5.0	Y Y Y Y	LEAD CHROMATE
XS5250000	10.0	Y Y Y Y	TOLUENE

NSN ==) 8010000822450 HAZ CODE ==) 7M ITEM NAME ==) EPOXY POLYAMIDE PRIMER

MILL SPEC ==) MIL-P-23377 FSCM ==) 61196 MGF NAME ==) PRATT & LAMBERT

HEALTH HAZARD (OVEREXPOSURE)

IRRIT OF NOSE, THROAT, EYES & POSS DIZZINESS & NAUSEA. SPRAY MIST CONTN LEAD.

POTENTIAL HAZARD

Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH ABS ING CON	NIOSH NAME
KP5685000	15	Y Y Y Y	2-ETHOXYETHANOL
MK8600000	25	Y Y Y Y	STRONTIUM CHROMATE
NP9625000	10	Y Y Y Y	ALCOHOL, ISOBUTYL, TYPE, PERCENT NOT MORE THAN 20%
XS5250000	7.5	Y Y Y Y	TOLUENE

***

NSN ==) 8010000822450 HAZ CODE ==) 7H ITEM NAME ==)
MILL SPEC ==) MIL-P-23377 FSCM ==) 80592 MOF NAME ==) KOPPERS COMPANY INC
HEALTH HAZARD (OVEREXPOSURE)
50 PPM: IRRIT EYES,NOSE,THROAT. HI CONC: DROWSINESS, DIZ,CONF. VERY HI CONC: POSS DEATH. LIQ DEFATTING

POTENTIAL HAZARD
Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
XS5250000		Y	Y	Y		TOLUENE
ZE2100000		Y	Y	Y		XYLOL
EO1400000		Y	Y	Y		N-BUTYL ALCOHOL
NT8050000		Y	Y	Y		ISOPROPYL ALCOHOL

***

NSN ==) 8010000822450 HAZ CODE ==) 7H ITEM NAME ==) EPOXY POLYAMIDE PRIMER, TT-P-INC — one the shop uses
MILL SPEC ==) MIL-P-23377D,CLASS FSCM ==) 81349 MOF NAME ==) CROWN PETRO INC
HEALTH HAZARD (OVEREXPOSURE)
BREATHING VAPOR WILL BE IRRITATING TO NOSE AND THROAT MAY CAUSE NAUSEA AND WHEN IN CONTACT WITH SKI

POTENTIAL HAZARD
Y OR N QUANTITY USED 25 kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
1000131ER	13.7	Y	N	Y	Y	EPOXY RESIN
1000516PD	7.5	-	Y	Y	Y	POLYAMIDE
WK8600000	12.	Y	Y	Y	Y	STRONTIUM CHROMATE
1000465TD	2.3	Y	N	P	Y	TITANIUM DIOXIDE,CAS# 13463-67-7 (A-P3)
1000241MS	5.5	Y	N	Y	Y	MAGNESIUM SILICATE,WTI RANGE 0-5% ALL FLU DATA SUPPLIED BY MFG DATA FOR FLUX COMPON

NSN ==) 8010000822450 HAZ CODE ==) 7H ITEM NAME ==)
MILL SPEC ==) MIL-P-23377 FSCM ==) 96595 MOF NAME ==) DEBOTO INC
HEALTH HAZARD (OVEREXPOSURE)
INHAL:ANESTHETIC, IRRITATION, CNS DEPRESSION,HEADACHE, DIZZINESS UNCONSCIOUS SEVERE EYE IRRIT

POTENTIAL HAZARD
Y OR N QUANTITY USED 25kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
KK8225000	15.0					CELLOSOLVE ACETATE
EL6475000	10.0	Y	Y	Y	Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3 1983 ACGIH
EO1400000	5.0	Y	Y	Y	Y	N-BUTYL ALCOHOL
XS5250000	10.0	Y	Y	Y	Y	TOLUENE
GB3240000	20.0	Y	Y	Y	Y	STRONTIUM CHROMATE

***

NSN ==) 8010004825662 HAZ CODE ==) 7H ITEM NAME ==) COATING, TWO-PART KIT (ONE QUART EACH) — one the shop uses
MILL SPEC ==) MIL-C-83286B FSCM ==) 33461 MOF NAME ==) DEFT CHEMICAL COATINGS
HEALTH HAZARD (OVEREXPOSURE)
EYE & SKIN IRRITANT. INHALATION CAN IRRITATE LUNGS OR CAUSE NARCOSIS.

POTENTIAL HAZARD
Y OR N QUANTITY USED 25kits/mo DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
EL6475000	10.0	Y	Y	Y	Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3 1983 ACGIH
AH54250	10.0	Y	Y	Y	Y	ETHYL ACETATE
KK8225000	20.	Y	Y	Y	Y	CELLOSOLVE ACETATE

POTENTIAL HAZARD
Y OR N | NTITY USED 25 lbs/mo | DISPOS[illegible]THOD in process

	PERCENT	INH	ABS	ING	CON	NIOSH NAME
[illegible]	10	Y	N	Y	Y	METHYL ETHYL KETONE
[illegible]	10	Y	N	Y	Y	ETHYL ACETATE
[illegible]	10	Y	N	Y	Y	ETHYLENE GLYCOL MONOETHYL ETHER ACETATE
[illegible]	[illegible]	Y	Y	Y	Y	POLYURETHANE ENAMEL,ALIPHATIC

NSN ==) 8010004825674 HAZ CODE ==) 7H ITEM NAME ==) POLYURETHANE COATING
SPEC ==) MIL-C-83286 FSCM ==) 33461 MGF NAME ==) DEFT CHEMICAL COATINGS
HEALTH HAZARD (OVEREXPOSURE)
EYES:MODERATE IRRIT;SKIN:POSSIBLE IRRIT BY SOLVENTS;INH:SOLVENT VAPORS CAN CAUSE IRRIT OR NARCOSIS

POTENTIAL HAZARD
Y OR N | QUANTITY USED 50 lbs/mo | DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
EL6475000	10.0	Y	Y	Y	Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3; 1983 ACGIH
KK8225000	19.2	Y	N	Y	N	CELLOSOLVE ACETATE
1000554PR	31.	Y	Y	N	Y	POLYESTER RESIN
AH4250000	11.3	Y	N	Y	N	ETHYL ACETATE (CAS #141-78-6)
XS5250000	0.9	Y	Y	Y	Y	TOLUENE

NSN ==) 8010009357062 HAZ CODE ==) U ITEM NAME ==) LACQUER,ACRYLIC
MILL SPEC ==) MIL-L-81352 FSCM ==) 07869 MGF NAME ==) AMERON INDUSTRIAL COATING DIVISION
HEALTH HAZARD (OVEREXPOSURE)
INHALE:ANESTHETIC,IRRITATION OF RESPIRATORY TRACT,ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY

POTENTIAL HAZARD
Y OR N | QUANTITY USED 10 cns/mo | DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
UY8250000	3.9	Y	N	Y	Y	ISOPROPYL ALCOHOL
[illegible]	26.0	Y	Y	Y	Y	2-BUTANONE;METHYL ETJYL KETONE;CAS# 78-93-3; 1983 ACGIH
[illegible]	12.	Y	Y	Y	Y	TOLUENE
GW1050000	22.7	Y	N	Y	Y	CYCLOHEXANONE
OF7525000	0.7	Y	N	Y	Y	LEAD; 36.65%

NSN ==) 8010009357062 HAZ CODE ==) U ITEM NAME ==) LACQUER
MILL SPEC ==) MIL-L-81352 FSCM ==) 12904 MGF NAME ==) LENMAR LACQUERS,INC
HEALTH HAZARD (OVEREXPOSURE)
INHAL:ANEST.IRRIT OF RESPIRAT TRACT OR ACUTE NERV SYS DEPRES,HDACH,DIZZNSS,STAG GAIT,UNCONSC,COMA

POTENTIAL HAZARD
Y OR N | QUANTITY USED 10 cns/mo | DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
PM7780000	25	Y	N	Y	Y	METHYL ETHYL KETONE
EO0720000	15	Y	N	Y	N	N-BUTYL ACETATE
XV1400000	15	Y	Y	Y	Y	TOLUOL
FJ4375000	5	Y	N	Y	N	CELLOSOLVE ACETATE
EK8480000	5	[illegible]	[illegible]	[illegible]	[illegible]	BUTANOL

COMPOSITION PRINT REPORT 09/09/86
BUILDING 205 ORGANIZATION WINGFOLD REPAIR/MANPSB

NSN ==) 8010009357062 HAZ CODE ==) U ITEM NAME ==) LACQUER,ACRYLIC
SPEC ==) MIL-L-81352 FSCM ==) 61196 MGF NAME ==) PRATT AND LAMBERT
H HAZARD (OVEREXPOSURE)
LATION-ANESTHETIC,IRRITATION OF RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION

POTENTIAL HAZARD
Y OR N | QUANTITY USED 10 cns/mo | DISPOSAL METHOD in process

NIOSH	PERCENT	INH	ABS	ING	CON	NIOSH NAME
GV7875000	25	Y	N	Y	Y	CYCLOHEXANOL (9-10%)
PM7780000	52.2320(d) EPA approved source specific regulations	Y	N	Y	Y	

State	Utah
State Agency	Department of Environmental Quality
Affected Area	Hill AFB
Regulation	Source-specific requirements
Rule Number	Ozone NAAQS Approval Orders
Rule Title	BAQE-353-88, Approval Order for Two Cold Solvent Cleaning Tanks in Building 2013 Weber County (7/21/1988)
State Effective Date	03/04/1997
State Adoption Date	02/05/1997
EPA Effective Date	08/18/1997
Notice of Final Rule Date	07/17/1997
Notice of Final Rule Citation	62 FR 38213
Comments	

Rule:

Hill AFB - DAQE-353-88.pdf

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-353-88

July 21, 1988

Mr. Thayne Judd
Department of the Air Force
Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Dear Mr. Judd:

Re: Approval Order for Two Cold Solvent Cleaning Tanks in Building 2013
Weber County, CDS A1

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions:

1. Hill Air Force Base shall install the two cold solvent cleaning tanks and a 1,500 gallon waste storage tank at Building 2013 according to the information submitted in the notice of intent dated November 6, 1987 and the additional information dated January 6, 1988.

2. The owner/operator shall operate the solvent cleaning tanks in compliance with the following conditions:

   A. A cover shall be installed on each tank. The covers shall remain closed except during actual periods of operation of the tanks.

   B. An internal draining rack for cleaned parts shall be installed in both tanks. The parts shall be drained until all dripping ceases.

C. Waste or used solvent shall be stored in covered containers and disposed of by a method which prevents its emission to the atmosphere.

D. Tanks, containers, and all associated equipment shall be maintained in good operating condition, and leaks shall be repaired immediately.

E. Written procedures for the operation and maintenance of the solvent cleaning equipment shall be posted in an accessible and conspicuous location near the equipment.

3. The cleaning solvent used shall be isopropyl alcohol. The use of any other solvent shall require prior approval in accordance with Section 3.1, UACR.

4. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

5. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

The fee for issuing this approval order is $322.72. The amount is payable to the Bureau of Air Quality, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/MK/sh

cc: EPA Region VIII, John Dale
Davis County Health Department

JAN 0 6 1988

Mr F. Burnell Cordner, Executive Secretary
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Notice of Intent to Construct Submittal Dated 6 Nov 1987 - Two Cold Solvent Cleaning Tanks in Building 2013

Dear Mr Cordner

Attached is a supplement to the referenced Notice of Intent to Construct. We propose adding a 1500 gallon isopropyl alcohol and waste water tank to the solvent cleaning process at Bldg 2013.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-7651.

Sincerely

signed
NATHAN O. CURRIER
Dep Chief, Environmental Mgt Office

1 Atch
Emissions From Waste Water Tank

DEV OFFICIAL FILE COPY

Coordination		
	Name	Date
DEVX		1/5/88
DEVX	Gupta	5
DEV		

NOI for
AO E353-88

EMISSIONS FROM WASTE WATER TANK

1. Project Description:

A 1500 gallon tank will be constructed outside of building 2013. This tank will accept floor drains, wash downs and any alcohol spill from the dip cleaning tanks. The tank will be provided with a 6KW single phase, 208 volt heater to heat the solution sufficient to drive off alcohol vapors. The tank will have a cover with four 4-inch vents to discharge alcohol vapors to the atmosphere.

2. Pollutant Emissions:

The primary source of air pollutant from the evaporation tank will be isopropyl alcohol vapors. It is estimated that one day operation will yield approximately one quart of alcohol per day per tank and the spray/cleaning operations will yield about two quarts of alcohol per day. Thus, a maximum of one gallon alcohol per day will be lost to the waste tank.

Therefore, total alcohol emissions to atmosphere:

$$1 \frac{\text{Gallon}}{\text{Day}} \times 7.4 \frac{\text{Lbs}}{\text{Gallon}} \times 5 \frac{\text{Days}}{\text{Wk}} \times 52 \frac{\text{Wks}}{\text{Yr}} \times \frac{\text{Ton}}{2{,}000 \text{ Lbs}} = 0.96 \text{ Ton/Yr}$$

3. Air Cleaning Devices:

No air cleaning devices are proposed.

4. Emission Points:

Four 4-inch vents in the top of the tank will discharge pollutant to the atmosphere.

5. Sample Points:

No sampling points are anticipated.

6. Operating Schedule:

The proposed equipment will be operated eight hours a day, 5 days a week and 52 weeks a year.

DEC-12-1994

Gupta/DEVR/4 Oct 97/72065/ss/1817v

NOV 06

R. [illegible] Cordner, Executive Secretary
[illegible] Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City, UT 84116-0690

Re: Notice of Intent to Construct

Dear Mr Cordner

In compliance with section 3.1 of the State Air Conservation Regulations, the attached Notice of Intent to Construct is submitted by Hill AFB.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-2065.

Sincerely

SIGNED
THAYNE H. JUDD, Col, USAF
Base Civil Engineer

1 Atch
Notice of Intent to Construct

Coordination		
		Date
DEVR	[illegible]	11/6
DEVR	[illegible]	11/4
DEV	[illegible]	11/4

4.2.4-921

NOTICE OF INTENT TO CONSTRUCT

TWO (2) COLD SOLVENT CLEANING TANKS IN BLDG 2013

HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

The proposed action provides for installation of two (2) isopropyl alcohol dip cleaning tanks in building 2013. These cold cleaning tanks will be used for cleaning F-16 emergency power unit (EPU) components including small tanks, valve components, valve body and other associated accessories. Each cleaning tank will be approximately 8'H X 4'-6"W X 3'D, complete with ventilation hood, an exhaust fan and a stack. Each tank will be provided with a cover which will be kept closed at all times except for loading/unloading parts. Each stack will exhaust approximately 2,100 cubic feet per minute (cfm) to the atmosphere.

2. POLLUTANT EMISSIONS:

The primary source of air pollutants from cold cleaning tanks is hydrocarbon vapors. Using EPA Publication AP-42, second edition, Table 4.6-2, the emissions from these sources are calculated as follows:

Type of solvent: Isopropyl Alcohol

Method of application: Dip cleaning

Emission Factor = 0.08 Lb/Hr, Ft^2

Total HC Emissions

$$\frac{0.08\ Lb}{Hr,\ Ft^2,\ Unit} \times 13.5\ Ft^2 \times \frac{2\ Hrs}{Day} \times \frac{5\ Days}{Wk} \times \frac{52\ Wks}{Yr} \times 2\ Units \times \frac{Ton}{2,000\ Lbs}$$

Total VOC Emission = 0.56 Ton/Yr

3. AIR CLEANING DEVICES:

No air cleaning devices are proposed.

4. SAMPLE POINTS:

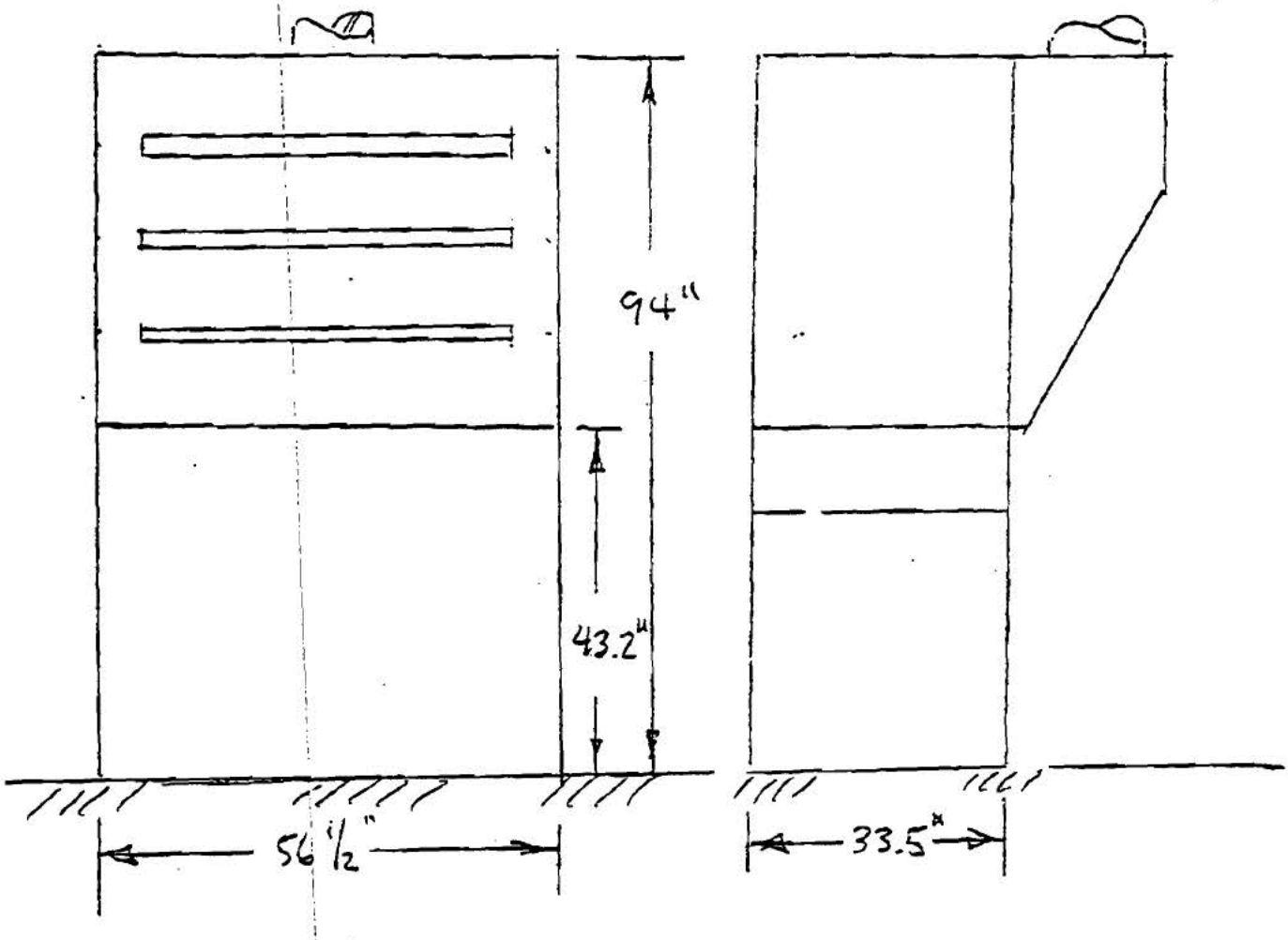
No sampling points are anticipated.

5. EMISSION POINTS:

There shall be two (2), 14-inch stacks, 25 feet above floor level discharging 2,100 cfm through each stack.

6. OPERATING SCHEDULE:

The proposed facility will normally be operated two hours a day, five days a week, 52 weeks per year.



TANK DIMENSION

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

DAQE-067-95

January 31, 1995

James R. Van Orman
Director, Environmental Management
Headquarters Ogden Air Logistics Center
Department of the Air Force
Hill Air Force Base, Utah 84056

Re: Modified Approval Order to DAQE-1006-94, Paint Booth Consolidation

Dear Mr. Van Orman:

The attached document is an Approval Order with Fee Statement in the amount of $400.00 for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:AR:dn

4.2.4-226

Abstract

This Approval Order (AO) consolidates the permit requirements for all paint booths at Hill Air Force Base (HAFB). This AO covers booths that are presently permitted, those that require permits (proposed booths and existing booths in operation), and grandfathered booths. The sum of the allowable volatile organic compound (VOC) emissions from booths that are presently permitted is 201.2 tons per year. HAFB anticipates that no more that 201.2 tons per year of VOCs will be emitted out of all the paint booths at the base, including emissions from presently operating and permitted booths, booths operating without a permit, grandfathered booths, and future booths. HAFB will centrally monitor and manage the VOC emissions from the paint booths on the base. The following emissions are expected from the facility:

Volatile Organic Compounds (VOCs)	201.2 tons per year
Total Suspended Particulates (TSP)	1.5 tons per year
PM_{10}	0.6 tons per year

General Conditions:

1. This AO applies to the following company:

   Department of the Air Force
   Headquarters Ogden Air Logistics Center (AFMC)
   Hill Air Force Base, Utah 84056-5990
   Telephone: (801) 777-0359
   Fax: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   Universal Transverse Mercator (UTM) Coordinate System: 4,552,000 meters Northing, 415,000 meters Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the paint booths according to the information submitted in the Notice of Intent dated July 29, 1993, and additional information submitted to the Executive Secretary dated January 12, 1994; February 14, 1994; May 4, 1994; and September 20, 1994.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the paint booths listed in Table 1 and Table 2, which are given below. This AO is also applicable to several portable, custom built paint booths which are used to paint such portions of the aircraft that typically cannot be painted in other installed paint booths, listed in Table 1 and Table 2. The conditions in this AO that are applicable to individual paint booths shall apply to each of the paint booths listed in Table 1 and Table 2, unless indicated otherwise. The information provided in Table 1 and Table 2 about the characteristics of each paint booth is only to be used to identify the booths and the stacks.

Table 1: The following booths have been permitted by previously issued AOs. This AO shall replace all painting related conditions in the AO for the individual paint booths given in the table below:

Building (AQUIS #)	Previous AO (if issued)	Manufac-turer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
5D (3314)	BAQE-977-1	Binks	10,500	Water Fall	34"
5N (3859)	DAQE-167-92	DeVilbiss	2,000	Dry	12"
48 (3649)	7/18/83	Custom	140,000	Dry	60"
220 (3116)	DAQE-167-92	Binks (9 Bays)	18,500 per bay	Water Fall (each bay)	2 @ 48" (each bay)
220 (3117)	DAQE-036-87	DeVilbiss (6 bays)	11,500 per bay	Water Fall (each bay)	60" (each bay)
238 (34265)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34268)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34271)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34274)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34277)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34280)	BAQE-525-88	Binks	12,000	Water Fall	36"
238 (34244)	BAQE-525-88	Binks	8,000	Water Fall	24
270 (3903)	BAQE-454-89	JBI	470,000	Dry	6 @ 60"
507 (3050)	BAQE-551-89	DeVilbiss	25,000	Water Fall	2 @ 42"
507 (3053)	6/27/78	DeVilbiss	14,000	Water Fall	48"
507 (3054)	6/27/78	DeVilbiss	14,000	Water Fall	48"
507 (3055)	6/27/78	DeVilbiss	14,000	Water Fall	48"
507 (3056)	6/27/78	DeVilbiss	14,000	Water Fall	48"
507 (3057)	6/27/78	DeVilbiss	27,175	Water Fall	42"

507 (3058)	6/27/78	DeVilbiss	27,175	Water Fall	42"
507 (3251)	6/27/78	DeVilbiss	27,175	Water Fall	42"
509 (3150)	BAQE-494-89	DeVilbiss	16,000	Water Fall	34"
509 (3151)	BAQE-494-89	DeVilbiss	16,000	Water Fall	34"
509 (3153)	BAQE-494-89	DeVilbiss	2,141	Dry	16"
509 (34058)	BAQE-494-89	DeVilbiss	2,141	Dry	16"
514 (3102)	BAQE-174-91	DeVilbiss	5,250	Dry	24"
534 (3737)	BAQE-359-88	Custom	12,000	Dry	16"
751 (34161)	DAQE-752-93	Binks	3,500	Dry	18"
847 (3156)	BAQE-030-88	Binks	193,600	Water Fall	8 @ 36"
1133 (3734)	BAQE-029-88	Custom	43,000	Dry	60"
1251 (3741)	BAQE-101-89	Binks	27,000	Dry	42"
1424 (34256)	BAQE-355-88	Binks	25,200	Water Fall	48"
1701 (3915)	BAQE-039-91	DeVilbiss	18,000	Dry	34"
1701 (3919)	BAQE-039-91	JBI	190,000	Dry	6 @ 60"
1913 (3728)	BAQE-026-88	DeVilbiss	17,900	Dry	42"
1938 (3560)	BAQE-642-88	Binks	10,000	Dry	36"
2026 (3732)	BAQE-977-1	Binks	15,000	Dry	34"

Table 2: The following booths have been constructed. They shall be permitted to operate under the conditions of this AO.

Building (AQUIS #)	Manufacturer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
5E (3332)	Binks	5,000	Dry	18"
12 (3953)*	Custom	10,500	Dry	36"
48 (3650)	JBI	15,000	Water Fall	48"
100J (3286)	Binks	7,700	Dry	36"
100J (3292)	DeVilbiss	13,500	Water Fall	48"
220 (3982)	DeVilbiss	25,200	Water Fall	6 @ 36"
238 (34407)	DeVilbiss	45,000	Water Fall	2 @ 20"
505 (3263)	Paasch	7,500	Water Fall	42"
509 (34901)	DeVilbiss	18,200	Water Fall	40"
509 (34902)	DeVilbiss	18,200	Water Fall	40"
515 (34409)	DeVilbiss	48,000	Dry	2 @
590 (3929)	Protectaire	6,000	Water Fall	36"
592 (3931)	Protectaire	10,000	Water Fall	36"
810 (34217)	DeVilbiss	8,000	Dry	42"
847 (3247)	Binks	15,000	Water Fall	48"
847 (3248)	Binks	16,000	Water Fall	48"
988 (34408)	DeVilbiss	6,000	Dry	42"

*Grandfathered booth that is permitted under this consolidated permit

The requirements of Condition #10 (use of high VOC paints) voids the AO DAQE-548-91, dated August 6, 1991.

6. A Notice of Intent is required if HAFB plans to construct new paint booths at the Base (refer to Condition #1 for Base location) in the future. Such new paint booths may be appended to the list of paint booths in Table 1 (Condition #5) of this consolidated AO. For new paint booths, the Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation

is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

7. Visible emissions from any point or fugitive emissions source associated with the paint booths shall not exceed 10% opacity. Opacity observations of emissions from the paint booths shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

8. The VOC emissions from all painting operations at HAFB shall not exceed a combined total of 201.2 tons per year for high-VOC and low-VOC paints. This limit includes painting operations in paint booths, identified in Condition #5, as well as other painting operations identified in Condition #11. Compliance with the annual limitations shall be determined on a rolling 12-month total. HAFB shall calculate a new 12-month total before the fifteenth day of each month using data from the previous 12 calendar months. Records of paint/thinner consumption shall be kept on a daily basis for all periods when the paint booths are in operation. Records of paint/thinner consumption, including rolling 12-month totals, shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. For reporting VOC emissions from clean-up operations, refer to Condition #13 B. The records shall include the following data for each item (paint/thinner) used by the paint booths:

A. Name of paint or thinner
B. VOC content of the paint (pounds of VOC per gallon of paint)
C. Amount of paint used on a daily basis for each paint booth

VOC emissions from the paint shall be determined as follows:

$$\text{VOC emission (tons)} = \frac{\text{(VOC content of paint (lb/gal))} * \text{(gallons of paint consumed)}}{2{,}000 \text{ lb/ton}}$$

VOC emissions from solvents and thinners shall be determined as follows:

$$\text{VOC emission (tons)} = \frac{\text{(Density (lb/gal))} * \text{(gallons of thinner or solvent consumed)}}{2{,}000 \text{ lb/ton}}$$

The VOC emissions from each painting operation shall be calculated using the above procedure, for each paint booth. The combined total of the VOC emissions thus determined for all painting operations at HAFB shall not exceed 201.2 tons on a rolling 12-month basis.

9. Particulate control devices for the existing booths are given in Table 1 and Table 2 (Condition #5). All paint booths that HAFB plans to construct at the Base (refer to

Condition #1 for Base location) in the future shall be equipped with a water wall, or set of paint arrestor particulate filters to control particulate emissions, or equivalent. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

10. The volatile organic content of the paints used in the booths shall not exceed 3.5 pounds per gallon without prior approval in accordance with R307-1-3.1, UAC, except for 3,500 gallons of high VOC paint (VOC content greater than 3.5 pounds per gallon) per rolling 12-month that may be used for:

    A. specific painting operations for which low VOC paints (VOC content less than 3.5 pounds per gallon) are not commercially available, or

    B. Painting operations that require high VOC paints because of performance specifications and corrosion control requirements.

    High solids (low VOC) paints shall not be thinned or otherwise reduced beyond manufacturers recommendations. These parameters shall be tested if directed by the Executive Secretary using the appropriate American Society for Testing Materials (ASTM) method or another method approved by the Executive Secretary.

11. HAFB shall be permitted to paint (touch up) up to a maximum of 10 square feet area on any component or aircraft outside of the paint booths specified in Table 1 and Table 2 (Condition #5), within the Base (refer to Condition #1 for Base location). The following two situations are exemptions to this condition:

    A. The use of 150 gallons of high VOC paint (this is included in the use of 3,500 gallons of high VOC paint allowed base-wide, as per condition #10) and 100 gallons of low VOC paint (high and low VOC paints are defined in Condition #10) at HAFB museum in accordance with DAQE-461-92.

    B. The use of up to 200 gallons of paint per year for touch up painting associated with painting C-130 aircraft at HAFB.

    Records shall be maintained on the amount of paint used for such "touch up" painting operations (including the paint used in the exemptions stated above), and the resulting emissions (determined according to the procedure described in condition #8) shall be accounted for in the rolling 12-month VOC emissions limit of 201.2 tons per year from all painting operations at HAFB.

12. HAFB shall operate paint guns and solvent cleaning stations for paint guns and other painting equipment according to the following conditions (in accordance with Section 4.9.4, UACR):

    A. HAFB shall use paint gun cleaners to clean all paint guns. Fabricated paint gun cleaners shall only be used to clean those paint guns for which commercial paint gun cleaners are not available.

B. A cover shall be installed which shall remain closed except during actual loading, unloading, or handling of parts in the cleaner. The cover shall be designed so that it can easily be operated with one hand.

C. An internal draining rack for cleaned parts shall be installed on which parts shall be drained until dripping ceases. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

D. Waste or used solvent shall be stored in covered containers. Waste solvents or waste materials which contain solvents shall be disposed of by recycling, reclaiming, by incineration in an incinerator approved to process hazardous materials, or by an alternate means approved by the Executive Secretary.

E. Tanks, containers, and all associated equipment shall be maintained in good operating condition and leaks shall be repaired immediately or the solvent cleaner shall be shut down.

F. All painting operations for the exterior of the aircraft shall use High Volume Low Pressure (HVLP) spray guns, except in applications where the use of high VOC paint is required, as described in Condition #10 of this AO.

G. Written procedures for the operation and maintenance of paint guns and solvent cleaning equipment shall be permanently posted in an accessible and conspicuous location near the equipment.

Reporting

13. HAFB shall centrally manage and monitor the VOC emissions from all the paint booths (specified in Table 1 and Table 2, Condition #5), from portable paint booths, and from clean-up operations. The VOC emissions from the paint booths and clean-up operations shall be determined according to the method described in Condition #8. For each calendar year (January 1st to December 31st), HAFB shall submit to the Executive Secretary the following information before March 31st of the following year (except for item D under this condition):

A. A list of paints used in quantities greater than 1% of the Base-wide total annual paint usage. This list shall identify paint type, quantity, and VOC content in pounds per gallon. The Manufacturer's Material Safety Data Sheet (MSDS) for each of the listed paints shall be included with this list.

B. A list of thinners, solvents, and chemical compounds, consumed in the clean-up operations as defined in Condition #8. This shall only include VOC emissions from cleaning operations that use other than commercial paint gun cleaners. This list will identify material type, quantity, and VOC content in pounds/gallon. The MSDS for each of the listed paints shall be included with this list.

C. An inventory of all the paint booths with the monthly totals of all VOCs emitted from paints and thinners/solvents. These monthly totals shall be

summed up to give an annual quantity of paints and thinners/solvents. This list will also be used to update the status of all booths located at HAFB.

D. The total amounts of each Hazardous Air Pollutant (HAP) as defined in Title III of the Federal Clean Air Act as Amended in 1990, emitted from all the paint booths. This list will be submitted in conjunction with the annual Base-wide emission inventory of HAPs submitted to the Division of Air Quality (DAQ).

E. The amounts of VOCs or HAPs reclaimed (if any) shall be quantified and subtracted from the quantities calculated above, to provide the monthly and annual total VOC emissions.

F. Records of consumption of VOC emitting materials used in painting operations at HAFB shall be kept for all periods when any painting operations are performed at the Base. Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

14. All sources of HAPs are subject to the Operating Permit Program if one of the following conditions is met:

A. The emissions of any one of the 189 HAPs listed in the 1990 Clean Air Act is over 10 tons/yr.

B. The emissions of any combination of these HAPs are over 25 tons/yr.

15. HAPs Reporting Criteria: HAFB is permitted to change the paint/solvent/thinner used in their painting operations without prior approval from DAQ, subject to the conditions listed in support document DAQE-068-95, dated January 30, 1995.

Miscellaneous

16. HAFB shall be permitted to use any of the paint booths (listed in Table 1 and Table 2, Condition #5) to perform any painting operation, provided that the booth manufacturer's operating specification and recommendations are complied with. HAFB is permitted to move any of the paint booths from its location given in Table 1 and Table 2 (Condition #5) to any other building location within the Base (Refer to Condition #1 for Base location). HAFB is required to submit a list of new locations for paint booths that have relocated during any calendar year, before March 31st of the following year. This AO shall then be revised by DAQ including the new locations of the paint booths in Table 1 and/or Table 2 in Condition #5.

17. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor-recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, etc., shall be installed and operated properly and

easily accessible to compliance inspectors. A copy of all manufacturers' operating instruction for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

18. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements. The annual reporting requirements for compliance demonstration given in Condition #13 may be used as a guideline to comply with emission inventory reporting requirements. However, HAFB is required to submit any additional information in the appropriate format that may fulfill compliance with R307-1-3.5, UAC.

19. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year. For the paint booths, any excess particulate emissions resulting from the malfunction or breakdown of particulate control devices (filters, baghouses, etc.), shall be reported to the Executive Secretary for each calendar year, before March 31st of the following calendar year.

20. Under section 40 of the Code of Federal Regulations, Part 51, Subpart H (51.150 to 153), it is required that sources plan emergency measures based upon the severity of the Non-Attainment area in which they operate. In Utah, these rules require that CO sources in CO Non-Attainment areas and sources of Ozone precursors in Ozone Non-Attainment areas, who emit at least 25 tons per year (see SIP section VII.B.) of either pollutant, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). HAFB shall submit to the Executive Secretary an emergency plan within 60 days of the date of this AO. The values for the various levels are listed in R307-1-5, UAC. Also see 40 CFR, Part 51, Subpart H (40 CFR 51.150 to 153) and appendix L. The emergency plan shall be approved by the Executive Secretary. The Alert Level actions to be taken should be curtailment of all unnecessary activities causing air pollution. The other two levels of actions should be a progressive curtailment of production and activities causing pollution, to the point of complete shutdown of operations.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions from all the paint booths listed in Table 1 and Table 2 (Condition #5) of this AO are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	0.60
B.	Total Suspended Particulate (TSP)	1.50
C.	VOC	201.20

These calculations are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are also to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fee rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	Tons/yr
A.	Total Suspended Particulate (TSP)	1.50
B.	VOC	201.20

In accordance with the requirements of Title V of the 1990 Clean Air Act, certain sources are subject to an operating permit fee. Both the fee rate and the class of pollutants are subject to change by State, the federal agencies, or both. As of the date of this Approval Order, sources with emissions of 10 tons per year or more of a single hazardous air pollutant, or sources with emissions of 25 tons per year or more of any combination of hazardous air pollutants, are subject to these operating permit fees. Hazardous air pollutants are determined to be any one of the 189 pollutants listed in the 1990 Clean Air Act Amendments, November 15, 1990. A list of these 189 pollutants is attached to this AO.

The paint booths listed in Table 1 and Table 2 (Condition 5) may be subject to Title V due to the emissions of hazardous air pollutants. Within 90 days of the date of this AO, HAFB shall submit a breakdown of their emissions categorized by chemical compound, with the annual emissions of each, listed in terms of weight. The list shall be submitted to:

Utah Division of Air Quality
Attn: Cheryl Heying - Manager, Operating Permits Section
150 North 1950 West
Salt Lake City, Utah 84114-4820

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Headquarters Ogden Air Logistics Center
Department of the Air Force
Hill Air Force Base, Utah 84056

RE:	Consolidation of all paint booths in Hill Air Force Base (HAFB) under a single Approval Order (AO) Davis County, CDS A1; NA
ENGINEER:	Arjun Ram
DATE:	November 8, 1994
INITIAL NOTICE OF INTENT DATED:	July 29, 1993
NOI COMPLETE DATE:	September 20, 1994
PLANT CONTACT:	Mr. Michael Graziano
PHONE NUMBER:	(801) 777-0359
FAX NUMBER	(801) 777-4306
PLANT LOCATION:	Hill Air Force Base, Utah
UTM COORDINATES:	455,000 m Northing 416,500 m Easting

FEES:

Filing Fee	$1,500.00
Review Engineer - 18 hours at $50.00/hour	$900.00
Modeler - XXXX hours at $50.00/hour	$000.00
Computer Usage Fee	$000.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$2,400.00

APPROVALS:

Review Engineer AC 11/10/94

Engineering Unit Manager _____

Applicant Contact Made _____

F:\AQ\ENGINEER\ARAM\WP\AO\HAFBPB.AO

TYPE OF IMPACT AREA

Attainment Area	No
Nonattainment Area	
PM_{10}	No
SO_2	No
NO_X	No
CO	No
Ozone	Yes
NSPS	No
NESHAP	No
Toxic Pollutants	Yes
Toxic Major Source	Yes
New Major Source	No
Major Modification	No
PSD Permit	No
PSD Increment (modeling)	No
Send to EPA	Yes
Operating Permit program	Yes

FOR MODIFIED SOURCES

The Notice of Intent is for a modification to an existing source. The following standards apply in this review:

NSPS applies to modification?	NO
PSD review of entire source required?	NO
NESHAPS applies to modification?	NO
TOXICS involved in modification?	YES
TITLE V required for entire source?	YES
TOXIC MAJOR for modification?	NO
NONATT MAJOR for entire source?	YES

Abstract

This Approval Order (AO) consolidates the permit requirements for all paint booths at Hill Air Force Base (HAFB). This AO covers booths that are presently permitted. those that require permits (proposed booths and existing booths in operation), and grandfathered booths. The sum of the allowable VOC emissions from booths that are presently permitted is 201.2 tons per year. HAFB anticipates that no more that 201.2 tons per year of VOCs will be emitted out of all the paint booths at the base, including emissions from presently operating and permitted booths, booths operating without a permit, grandfathered booths, and future booths. HAFB will centrally monitor and manage the VOC emissions from the paint booths on the base. The following emissions are expected from the facility.

Volatile Organic Compounds (VOCs)	*201.2 tons per year*
Total Suspended Particulates (TSP)	*1.5 tons per year*
PM_{10}	*0.6 tons per year*

I. DESCRIPTION OF PROPOSAL

The proposal is to permit all the paint booths at Hill Air Force Base (HAFB) under a consolidated Approval Order (AO). The paint booths permitted under the proposed consolidated AO includes booths that are presently operating under a permit. booths that are operating without a permit, and booths that are grandfathered. HAFB has proposed a limit of 201.2 tons per year of VOC emissions from all these paint booths, including future booths. The total annual VOC emissions proposed by HAFB is the sum of the allowable emissions from the permitted paint booths, which is 201.2 tons per year. HAFB has proposed to centrally manage and monitor the VOC emissions from the numerous paint booths on the base. Allocation of these emissions will be based on the workloads and at the discretion of the Director of Environmental Management. Logs of paint usage will be maintained at each booth. These monthly paint logs will be submitted to the Directorate of Environmental Management which will calculate the VOC emissions from all the paint booths for the past 12-month period. The total emissions from all the paint booths located on the base shall not exceed 201.2 tons on a rolling 12-month basis. HAFB needs to use high VOC paints (VOC content greater that 3.5 pounds per gallon paint) for certain special painting operations. HAFB has requested that they be allowed to use 3,500 gallons of high VOC paint per year compared to 2,500 gallons per year that is allowed under the existing permit.

II. EMISSION SUMMARY

The emissions from this source will be as follows:

Pollutant	Current Emissions tons/year	Emission Increases tons/year	Total Emissions tons/year
Particulate	1.50	0.00	1.50
PM_{10}	0.60	0.00	0.60

VOC . . . . . 201.20 . . . . . 0.00 . . . . . 201.20

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

VOC Destruction/Removal Technologies:

Several VOC destruction and removal technologies are available. These technologies include thermal incineration, catalytic incineration, and carbon adsorption. However, these technologies are not cost effective due to relatively low levels of VOC emissions from individual paint booths and also due to wide fluctuations in VOC flowrates.

Other Efforts to Reduce VOC Emissions

HAFB as a source has been voluntarily reducing VOC emissions by application of better technology. HAFB has converted 97% of its surface coating from high VOC paints to low VOC paints. Also, the use of High Volume Low Pressure (HVLP) spray guns has significantly improved transfer efficiency. At present 80% of all industrial painting operations utilize High Volume Low Pressure (HVLP) paint guns. The potential to use HVLP at the remaining 20% of the operations will be assessed and implemented as practical over the next 24 months. HVLP paint guns have a transfer efficiency of 65%. However, they are not usable in application of high-glossed or textured finishes and on small spherical or tight radius paths. HAFB uses cold cleaning facilities for cleaning paint guns. Approximately 60% of all paint booths have enclosed paint gun cleaners. At the present time, commercial paint gun cleaners are only available for pressure pot sizes less than 3 gallons. For pressure pots greater than 3 gallons, paint gun cleaners have been fabricated from old covered cold cleaning units. These units are not as efficient as commercial units. However, they are significantly better than uncontrolled gun cleaning.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC)

This Notice of Intent is for consolidating permits of existing sources (paint booths) and including new sources (paint booths) in the consolidated permit. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a new source, modified source, new piece of control equipment. This rule applies.

2. R307-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for natural gas fuel burning equipment with a rated capacity of less than 5 x 10^6 BTU per hour. Natural gas burning equipment is not involved in the project. This rule does not apply.

4. R307-1-3.1.7 (F), UAC - Notice of Intent not required for certain compounds that are not photochemically reactive. This list includes 1,1,1-trichloroethane. However, if the source is emitting more than 10 tons/yr of any compound, a Notice of Intent must be filed. This rule does not apply because non-photochemically reactive compounds are not emitted from the paint booths.

5. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

6. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. Burners are not involved in the project. This rule does not apply.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a nonattainment area. This source is located in Davis County, which is an attainment area for particulates. Therefore, this rule does not apply.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.3.3.B (3), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year but less than 50 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. Note: see R307-1-3.3.3.C on offset for ozone nonattainment area restrictions. Among the pollutants stated in this rule, only PM_{10} is emitted. There are no increase in PM_{10} emissions from this project. Therefore, this rule does not apply.

12. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant or any Part 70 source to submit an emission inventory to the Division of Air Quality every year or as determined necessary by the Executive Secretary. This source must comply with this rule.

13. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP ($\mu g/m^3$)

	Three Hour	24 Hour	Annual
Class I Area		**10**	**5**
Class II Area		**37**	**19**

SO_2 ($\mu g/m^3$)

Class I Area	**25**	**5**	**2**
Class II Area	**512**	**91**	**20**

NO_x ($\mu g/m^3$)

Class I Area	**2.5**
Class II Area	**25**

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. The paint booths are located in a non-attainment area. Therefore PSD increment consumption is not an issue.

Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling
(≥ Tons per Year)

	Nonattainment Areas	Attainment Areas
TSP	10	10
PM_{10}	5	5
SO_2	10	20
NO_2	20	20
CO	25	50

VOC	10	20
O_3	5	5

VOC emissions from the source is 201.2 tons per year, and according to the above guidelines, Screen modeling was required to be performed for VOC emissions. However, no allowable emission increases are involved in this project. The total VOC emissions of 201.2 tons per year allowed by this project has already been allowed by existing permits. Therefore, Screen modeling was not performed for VOC emissions.

Screen modeling was performed to evaluate the effect of toxic emissions from the paint booths. Certain critical paint booths (paint booths that were close to the fence line and paint booths that have maximum emission rates of air toxics) were chosen for screen modeling. The maximum concentrations of air toxics at the fence line as obtained from Screen modeling were well within the Division of Air Quality's guideline, which is Threshold Limit Value (TLV)/100 for non-carcinogens, and TLV/300 for suspected or confirmed carcinogens (according to American Association of Governmental and Industrial Hygienists handbook, 1993-94).

14. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A de minimis height of 65 meters (213.2 feet) is allowed. The paint booths have no stacks that exceed 65 meters in height. It is in compliance with this rule.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, an opacity limitation of 10% is recommended as BACT.

18. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

19. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers

breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

A. Sources required to install CEMS as required by the following documents:

1) NSPS
2) State Implementation Plan
3) Approval Order
4) Consent Decree
5) Administrative Orders and Agreements

This source is not required to install CEMS by any of the above documents.

B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack. The stacks do not interfere with VEOs and therefore, an opacity monitor is not required on any stacks connected to the paint booths.

20. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the Executive Secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

21. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule covers the following processes:

A. Section 4.9.1 - Petroleum liquid storage

B. Section 4.9.2 - Gasoline transfer/storage

C. Section 4.9.3 - Control of hydrocarbon emissions in refineries

1) Vacuum producing systems
2) Wastewater separators
3) Process unit turnaround
4) Catalytic cracking units
5) Safety pressure relief valves
6) Leaks from petroleum refinery equipment

D. Section 4.9.4 - Degreasing and solvent cleaning operations

1) Cold cleaning facilities
2) Open top vapor degreasers
3) Conveyorized degreasers

E. Section 4.9.5 - Cutback asphalt

F. Section 4.9.6 - VOC used for various processes

1) Section 4.9.6(A) - General Provisions

2) Section 4.9.6(B) - Paper Coating

3) Section 4.9.6(C) - Fabric and Vinyl Coating

4) Section 4.9.6(D) - Metal Furniture Coating VOC Emissions

5) Section 4.9.6(E) - Large Appliance Surface Coating VOC Emissions

6) Section 4.9.6(F) - Magnet Wire Coating VOC Emissions

7) Section 4.9.6(G) - Flat Wood Coating

8) Section 4.9.6(H) - Miscellaneous Metal Parts and Products VOC Emissions

9) Section 4.9.6(I) - Graphic Arts

10) Section 4.9.6(J) - Exemptions

11) Section 4.9.6(K) - Capture Systems

12) Section 4.9.6(L) - Testing and Monitoring

G. Section 4.9.7 - Perchloroethylene Dry Cleaning Plants

H. Section 4.9.8 - Compliance Schedule

This rule applies only in Salt Lake and Davis Counties. The paint booths are located in Davis County. Therefore, this rule applies.

Section 4.9.4 for Degreasing and Solvent Cleaning Operations applies to the solvent gun cleaning operations. HAFB uses cold cleaning facilities for cleaning paint guns. Approximately 60% of all paint booths have enclosed paint gun cleaners. At the present time, commercial paint gun cleaners are only available for pressure pot sizes less than 3 gallons. For pressure pots greater than 3 gallons, paint gun cleaners have been fabricated from old covered cold cleaning units. These units are not as efficient

as commercial units. However, they are significantly better than uncontrolled gun cleaning. HAFB is required to comply with the provisions of Section 4.9.4 for its Cold Cleaning Facilities.

4.9.6.H for Miscellaneous Metal Parts and Products VOC emissions apply to the painting operations in the paint booths. However, Section 4.9.4.H (1)(h)(3) states that this regulation does not apply to the exterior of airplanes. For painting the exterior of airplanes, HAFB would otherwise have been subject to comply with 4.9.6.H.(2)(b), which states that:

"No owner or operator of a facility engaged in the surface coating of miscellaneous metal parts and products may cause, allow or permit discharge to the atmosphere of any volatile organic compounds in the excess of 0.42 kilograms per liter (3.5 pounds per gallon) of coating, excluding water and solvents exempt from the definition of volatile organic compound, delivered to a coating applicator in a coating application system that utilizes air or forced warm air at temperatures up to 90 degrees C (140 degrees F).

The painting operations in the booths are not restricted to painting the exterior of aircrafts. HAFB is required to comply with 4.9.6.H(2)(b) for painting parts other than the exterior of aircrafts, subject to the following exemptions:

1. Specific painting operations at HAFB for which Low VOC paints (less than 3.5 pounds VOC per gallon paint) are not commercially available.

2. Painting operations that require high VOC paints (greater than 3.5 pounds of VOC per gallon paint) because of performance specifications or corrosion control requirements.

Exemption from complying with 4.9.6.H for painting of parts other than the exterior of aircraft was granted by DAQ on August 6, 1991 (DAQE-548-91). The exemption which permits HAFB to use 2,500 gallons of high VOC paint per year was granted in response to a request by HAFB, dated April 2, 1991. Also, HAFB has made a voluntary effort to reduce VOC emissions from painting operations that are exempt from having to comply with 4.9.6.H, by shifting to the usage of low VOC paints where possible. HAFB has requested that they be allowed to use 3,500 gallons of high VOC paint per year, compared to 2,500 gallons of high VOC paint per year that the base is presently allowed to use. This increase in allowable high VOC paint usage is justified because the overall emissions from the base would still fall within the presently permitted 201.2 tons VOC per year. Moreover, HAFB as a source has been voluntarily reducing VOC emissions by application of better technology. HAFB has converted 97% of its surface coating from high VOC paints to low VOC paints. Also, the use of High Volume Low Pressure (HVLP) spray guns has significantly improved transfer efficiency. Presently, HAFB and the paint industry are working together to find low VOC substitutes for those applications that still require high VOC paints. In view of the HAFB's efforts to reduce VOC emissions from the painting

operations, it is proposed that, in the consolidated permit, HAFB be allowed to use 3,500 gallons of high VOC paint per year, and still be subject to an overall emissions limit of 201.2 tons VOC per year from all the painting operations at the base.

22. R307-1-4.10, UAC - Abrasive Blasting Requirements - Opacity limitations and performance standards for abrasive blasting - Abrasive blasting is not involved in this project. Therefore, this rule does not apply.

23. R307-1-5, UAC - Emergency episode requirements. This rule requires the Executive Secretary to determine the stage and extent of an air pollution episode based on pollution levels and meteorological conditions. Under section 40 of the Code of Federal Regulations, Part 51, Subpart H (51.150 to 153), it is required that sources plan emergency measures based upon the severity of the Non-Attainment area in which they operate. In Utah, these rules require that CO sources in CO Non-Attainment areas and sources of Ozone precursors in Ozone Non-Attainment areas, who emit at least 25 tons per year (see SIP section VII.B.) of either pollutant, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. (Some sources are required to submit an emergency episode plan in the PM_{10} SIP). This rule applies.

24. 40 CFR, Part 60 - New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. 40 CFR, Part 61 - National Emission Standards for Hazardous Air Pollutants (NESHAP) - There is no NESHAP for this industrial process.

26. 40 CFR, Part 50 - National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for ozone.

    This source contributes to an existing violation of the ozone NAAQS but does not cause a new violation. The total allowable VOC emissions under the consolidated permit is 201.2 tons per year, which is the sum of the VOC emissions allowed for the paint booths in operation at HAFB, under their respective permits.

27. 40 CFR 60.18, General Control Device Requirements. These requirements apply to NSPS that refer to this section. It specifically covers flares. No flares are involved in this project. Therefore, this rule does not apply.

28. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. This project does not involve an increase in emissions. Therefore, this notice of intent is not a modification according to this rule.

Also see R307-1-1 (Modification), which is the State's definition. It is a planned increase in emissions. This Notice of Intent is not a modification because no increase in emissions result from this project.

29. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

    1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

    2) It is technologically and economically feasible to meet the applicable standards set forth in this part

    This Notice of Intent is not a reconstruction.

30. R307-1-1, Definition of Major Modification - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. This Notice of Intent is not a major modification.

31. 40 CFR 80.29, Controls and Prohibitions on Diesel Fuel Quality - Diesel fuel is not used in this project. Therefore, this rule does not apply.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

20 Sep 1994

OO-ALC/EME
7274 Wardleigh Road
Hill AFB, UT 84056-5127

Mr Arjun Ram, Permitting Engineer
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

Re: Hill AFB Consolidated Permit Application for Paint Booths

Dear Mr. Ram

Attached are our comments regarding the Proposed Consolidated Permit for Paint Booths at Hill Air Force Base, dated May 10, 1994. These comments include those that were discussed at our 15 Jun 94 meeting as well as updates to the list of booths.

I apologize for the delay in returning these comments to you. However, we were actively involved in the comment and public hearing process of the Aerospace Industries - Surface Coating NESHAP. It was our intent to assure there were not any major inconsistencies between the NESHAP and the consolidated permit. Even though the NESHAP has yet to be promulgated, we recommend that this permit not be delayed any further. Whatever modifications that may result from the NESHAP will only involve a portion our paint booths and we are assuming can be addressed at a later time.

We appreciate your patience and assistance in this matter. Please contact Michael Graziano at 777-0359 if you have any questions or wish to discuss this matter further.

LYNN S. HILL
Ch, Environmental Compliance Division

Atch
Consolidated Paint Booth Permit Comments

CONSOLIDATED PAINT BOOTH PERMIT

COMMENTS

1. PAGE 13, # 3, Include the submittal date of these comments. Change to read as follows;

Hill Air Force Base shall install and operate the Paint Booths according to the information submitted in the Notice of Intent dated July 29, 1993, and additional information submitted to the Executive Secretary dated January 12, 1994, February 14, 1994, May 4, 1994, and 1 Sep 1994.

2. Page 14, #5, Include several portable booths used when painting portions of the C-130. Change to read as follows;

The approved installations shall consist of the paint booths listed in Table 1 and Table 2, which are given below. This approval order is also applicable to several portable, custom built, paint booths which are used to paint sections of aircraft that are typically unaccessible during normal painting operations. The conditions in this approval order that are applicable to individual paint booths shall apply to each of the paint booths listed in Table 1 and Table 2, unless indicated otherwise. The information provided in Table 1 and Table 2 about the characteristics of each paint booth is only to be used to identify the booths and the stacks. Data about the manufacturer, Design Flowrate, Type of particulate control device and Stack Configuration have been provided in the tables for information purposes only.

3. Page 17, #8, Modern paint systems do not require thinners or solvents be added. They come pre-mixed or in pre-proportioned kits. The VOC content specified for a particular coating is determined from the "as applied" mixture. Change this paragraph by removing the words thinner or solvent on the section that appears on page 17.

OK to have it

4. Page 18, #8, With item 3 above in mind the only solvents and thinners that would be unaccounted for are those that are consumed during clean up operations. At the present time there is no requirement to track usage of clean up materials. It should be noted that Hill AFB is currently installing commercial paint gun washers in many of the booths. If used properly emissions from this source are virtually eliminated. Therefore it is requested that the requirement for computing emissions from commercial paint gun washers be eliminated. Change this section of paragraph to read as follows;

> VOC emissions from solvents and thinners consumed during clean up, in other than commercial paint gun washers, shall be determined as follows:
>
> VOC Emissions (Tons) = $\frac{\text{Density (lbs/gal)} * \text{(gallons of thinner or solvent consumed)}}{\text{2,000 lb/ton}}$

the amount consumed is defined as the volume of clean material input into the process less the volume of material captured at the end of process for reuse, recycle, or disposal.

5. Page 18, #11, This paragraph should address all instances of open air spraying. Change to read as follows;

Hill Air Force Base shall be permitted to paint (touch up) up to a maximum of 10 square feet area on any component or aircraft outside of the paint booths specified in Table 1 and Table 2 (Condition #5), within the base (refer to condition #1 for Base location). The following two situations are exemptions to this condition.

a. The use of 150 gallons of high and 100 gallons of low VOC paint at the Hill Air Force Base Museum in accordance with DAQE-461-92.

b. The use of up to 200 gallons of paint per year for touch up painting associated with the C-130 program.

Records shall be maintained on the amount of paint used for such "touch up" painting operations, and the resulting emissions (determined according to the procedure described in condition #8) shall be accounted for in the rolling 12-month VOC emissions limit of 201.2 tons per year from all painting operations at Hill Air Force Base.

6. Page 19, #13, Make reporting requirements more in line with data currently available. Change to read as follows;

Hill Air Force Base shall centrally manage and monitor the VOC emissions from all the paint booths (specified in Table 1 and Table 2, Condition #5). The VOC emissions from the paint booths shall, be determined according to the method described in Condition #8. For each calendar year (January 1st to December 31st), Hill Air Force Base shall submit to the Executive Secretary the following information:

A. A list of paints used in quantities of greater than or equal to 1% of the base wide total for paint usage. This list will identify paint type, quantity, and VOC content in pounds/gallon. Also included as part of this list will be a MSDS for each of the listed paints.

B. A list of thinners, solvents, and chemical compounds, consumed in clean up operations as defined in Condition #8. This list will identify material type, quantity, and VOC content in pounds/gallon. Also included as part of this list will be a MSDS for each of the items listed.

C. An inventory of all paint booths with the monthly totals of all VOCs emitted from paint and thinners/solvents. These monthly totals will be summed to give an annual quantity of paints and thinners/solvents. This list will also be used to update the status of all booths located at Hill Air Force Base.

D. The total amounts of each Hazardous Air Pollutant (HAP), as defined in Title III of the Federal Clean Air Act as amended in 1990, emitted from all paint booths. This list will be submitted in conjunction with the Annual Base wide Inventory of Hazardous Air Pollutants submitted to the DAQ.

7. Page 20, # 15.A., Change to read as follows;

If Hill Air Force Base intends to change the rates and/or chemical composition of non-criteria pollutant emissions from those submitted as a part of the Notice of Intent for this Approval Order, Screen modeling is required to be performed by Hill Air Force Base, using TLV/100 for non-carcinogens or TLV/300 for suspected or confirmed carcinogens, as the ambient standard. If the Risk Index (defined in D. below) exceeds the following concentrations of these compounds, a Notice of Intent shall be filed in accordance with Section 3.1, UACR;

a. Methyl Ethyl Ketone

non-Carcinogen TLV=590 mg/m^3
TLV/100=5.90 mg/m^3

b. Methyl Isobutyl Ketone

non-carcinogen TLV=205 mg/m^3
TLV/100=2.05 mg/m^3

c. Xylene

non-Carcinogen TLV=435 mg/m^3
TLV/100=4.35 mg/m^3

d. Toluene

non-Carcinogen TLV=375 mg/m^3
TLV/100=3.75 mg/m^3

e. Ethyl Benzene

non-Carcinogen TLV=435 mg/m^3
TLV/100=4.35 mg/m^3

8. Page 14, Table 1

Delete 238 (34407) from the table. This is a new booth and is already listed in Table 2.

9. Page 16, Table 2, change as follows;

a. Bldg 48 (3649) change to Bldg 48 (3650)

b. Delete the following

Bldg 220 (3118)
Bldg 220 (3978)
Bldg 220 (3073)

Add the following;

Bldg (AQUIS #)	Manufacturer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
220 (3982)	DeVilbiss	25,200	Water Fall	6 @ 36"

This one AQUIS # will be used to consolidate the three booths to be deleted from above.

c. Delete Bldg 265 (3402), this building has been demolished.

d. Delete the three booths in bldg 266; AQUIS numbers 3838, 3839, and 3840. They have been taken out of service and the building will be demolished by October 94.

e. Make the following changes to Bldg 590 (3929)

Bldg (AQUIS #)	Manufacturer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
590 (3929)	Protectaire	6,000	Water Fall	36"

f. Include the following additional information for building 509

Bldg (AQUIS #)	Manufacturer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
509 (34901)	DeVilbiss	18,200	Water Fall	40"
509 (34902)	DeVilbiss	18,200	Water Fall	40"

g. Include the following information regarding four portable booths (enclosures) used to paint sections of the C-130.

Bldg (AQUIS #)	Manufacturer	Design Flowrate (CFM)	Type	Stack Diameter (inches)
Portable A (34903)	Custom	1,360	Dry Filter	8"
Portable B (34904)	Custom	1,360	Dry Filter	8"
Portable C (34905)	Custom	1,360	Dry Filter	8"
Portable D (34906)	Custom	1,360	Dry Filter	8"

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

14 Feb 1994

OO-ALC /EME
7274 Wardliegh Rd.
Hill AFB, Ut 84056-5127

Mr Arjun Ram, Permitting Engineer
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

Re: Hill AFB Consolidated Permit Application for Paint Booths (Hill AFB ltrs 20 July 93 and 5 Jan 94; and mtg 7 Jan 94)

Dear Mr. Ram

This letter is to submit the paint usage data you requested during our 7 Jan 94 meeting. Specifically, you requested a list of those paints that were used in excess of 1% of the total paint usage at Hill AFB. The attached list gives the National Stock Number (NSN), Description, and quantity in ounces. Please note that even though there are 13 separate paints identified, nine of them are polyurethane. Additionally, I suggest the following reporting requirement be incorporated into the proposed consolidated paint booth permit;

> "During January of each year the base shall report the total quantity of paints used during the just completed calendar year and identify those that were used in excess of 1% of the total. Additionally the base shall provide to the DAQ an MSDS for each paint that appears on the 1% or greater list."

If you have any questions regarding this matter, please do not hesitate to contact Mike Graziano at 777-0359.

LYNN S. HILL
Chief, Env Compliance Div.

2 Attachments
1. 1% or Greater List
2. MSDS's for 13 Paints

Total Paint consumption CY 93 is 3,097,341.33 ounces which is 24,198 gallons.

Report those paints which exceed 1% of the total, ie. 30,973 ounces

For this report identify all paints (Search for Common Stock Numbers) used in excess of 30,000 ounces.

	NSN		Descrip	Ounces
1.	8010012137898	8557	Koroflex Primer Yellow	320,294.40
2.	8010012659143	33461 A	Polyurethane White	21,639.35
	8010012659143	33461 B		41,137.06
3.	8010012659151	33461 A	Polyurethane Paint	56,197.65
	8010012659151	33461 B		6,648.01
4.	8010012853554	33461 A	Polyurethane Paint	42,560.97
	8010012853554	33461 B		32,600.79
5.	8010013055551	33461 A	Polyurethane Paint	766,690.32
	8010013055551	33461 B		188,603.29
6.	8010013121169	85570 A	Epoxy Paint	188,804.18
	8010013121169	85570 B		26,790.17
7.	8010013226622	33461 A	Polyurethane Paint	26,751.01
	8010013226622	33461 B		5,456.37
8.	8010013226623	33461 A	Polyurethane Paint	34,560.00
	8010013226623	33461 B		28,416.00
9.	8010013443218	33461 A	Polyurethane Paint	55,554.00
	8010013443218	33461 B		9,904.00
10.	8010013456535	33461 A	Polyurethane Paint	153,496.00
	8010013456535	33461 B		92,688.00
11.	8010L00006F	85570 A	Waterborne Primer	44,728.32
12.	8010P400017F	85570 A	Fast Dry Paint	176,576.00
13.	8010P887670F	33461 A	Polyurethane	22,808.32
	8010P887670F	33461 B		6,949.77
			TOTAL	2,349,853.98

THIS TOAL REPRESENTS APPROXIMATELY 75% OF ALL PAINT USED AT HILL AFB

E

MATERIAL SAFETY DATA SHEET

Item Name	POLYESTER KOROFLEX PRIMER 823X439
Part Number/Trade Name	KOROFLEX PRIMER, YELLOW, 823X439
nal Stock Number	8010012137898
Code	85570
Part Number Indicator	A
Manufacturer Name	COURTAULDS AEROSPACE
Street	1608 4TH STREET
City	BERKELEY
State	CA
Zip Code	94710
Emergency Phone	800-228-5635 INFO 818-549-7823
Information Phone	818-349-7823
Date MSDS Prepared/Revised	08MAY92
Specification Number	N/R
Appearance/Odor	LIQUID,SOLVENT ODOR V.O.C. GR/L:582 AS APPLIED
Boiling Point	175-313 F
Specific Gravity	1.05
Evaporation Rate	SLOW
Flash Point	22 F
Flash Point Method	SETAFL
Lower Explosive Limit	1.1
nguishing Media	EXTINGUISHERS (CARBON DIOXIDE,DRY CHEMICAL OR FOAM).
cial Fire Fighting Procedures	WATER SPRAY MAY BE INEFFECTIVE.COOL FIRE EXPOSED CONTAINERS W/WATER. FOG NOZZLES ARE PREFERRABLE. WEAR NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS &
Unusual Fire/Explosion Hazards	VAPORS MAY ACCUMULATE IN INADEQUATELY VENTILATED OR CONFINED AREAS. VAPORS MAY FORM EXPLOSIVE MIXTURES W/AIR. VAPORS MAY TRAVEL LONG DISTANCES. FLASHBACK OR FLT
Stability	YES
Stability Conditions to Avoid	TEMPERATURES ABOVE MAXIMUM STORAGE TEMPERATURES DO NOT STOREABOVE 49 C (120 F)
Materials to Avoid	AVOID CONTACT W/WATER, ALCOHOLS AND AMINES
Hazardous Decomposition Products	CARBON MONOXIDE AND CARBON DIOXIDE, OXIDES OF NITROGEN AND TRACES OF HCN AND ISOCYANATE MONOMER
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	MAY CAUSE NASAL & RESP IRRITATION ASPHYXIATION MAY RESULT FROM BREATHING OXYGEN DEFICIENT AIR. MAY CAUSE ALLERGIC SENSITIZATION.MAY CAUSE IRRITATION, DEFATTING OR DERMATITIS OF THE SKIN.
Carcinogenity: NTP	YES
Carcinogenity: IARC	YES

Carcinogenity: OSHA.....	YES
Symptoms of Overexposure.....	CNS DEPRESSION CHARACTERIZED BY HEADACHE, DIZZINESS, STAGGERING,CONFUSION OR UNCONSIOUSNESS MAY CAUSE ALLERGIC SENSITIZATION CHAI NUCOUS MEMBRANE IRRITATION, TIGHTNESS CHEST, IRRITATIONOF THE RESPIRATORY TRACK, COUGHING AND SHORTNESS OF BREATH. MAY
Medical Cond. Aggrevated by Exposure...	PRE-EXISTING SKIN, LUNG, AND EYE CONDITIONS.
Emergency/First Aid Procedures.....	INHALATION:REMOVE TO FRESH AIR FROM EXPOSURE. GIVE ARTIFICIAL RESP OR CARDIOPULMONARY RESUSCITATION(CPR)IF REUQIRED. IF BREATHING IS DIFFICULT GIVE OXYGEN. KEEP WARM & QUIET. GET MEDICAL ATTENT. SKIN:WASH AFFECTED AREAS W/SOAP & WATER. DO NOT USE SOLVENTS. REMOVE CONTAMINATED CLOTHING & WASH BEFORE REUSE. GET MEDICAL ATTENT. EYE:FLUSH W/WATER 15 MIN. GET MEDICAL ATTENT PREFERRABLY FROM AN OPTHALM.
Steps if Material Released/Spilled.....	DEPENDING ON QUANTITY & CIRCUMSTANCES,AN UNAUTHORIZED RELEASE OF THIS MATERIAL TO THE ENVIRON MAY BE REPORTABLE UNDER FEDERAL LAW TO THE NATIONAL RESPONSE CENTER. STATE & LOCAL GOV. AGENCIES MAY ALSO HAVE REPORTING REQUIREMENTS OF WHICH YOU SHOULD. A
P iratory Protection.....	IN AREAS WHERE TLVS MAY BE EXCEEDED OR IF SPRAY MIST IS PRESENT, USE NIOSH/M APPROVED RESPIRATORY PROTECTION APPROPRIATE FOR INDICATED COMPONENTS.
Ventilation.....	GENERAL DILUTION OR LOCAL EXHAUST VENTILATION TO KEEP LEVELSBELOW RECOMMENDED LIMIT.
Protective Gloves.....	CHEMICAL RESISTANT
Eye Protection.....	SAFETY W/SIDE SHIELDS OR GOGGLES
Supplemental Health/Safety Data.....	1ST AID: INHAL:REMOVE TO FRESH AIR. GIVE ART RESP/CPR OR OXYGEN IF REQUIRED. KEEP WARM & QUITE. GET MD ATTN. SKIN:WASH AREA W/SOAP & WATER. DO NOT USE SOLVENTS. WASH CLOTHING BEFORE REUSE. GETMD ATTN. EYE:FLUSH FOR 15 MINS, GET MD ATTN. INGEST:GET MD ATTN

Ingredient #.....	00
Ingredient Name.....	METHYL N-AMYL KETONE
CAS Number.....	110-43-0
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	10
ACGHIH TLV.....	50 PPM

edient #.....	002
Ingredient Name.....	METHYL ETHYL KETONE
CAS Number.....	78-93-3
NIOSH Number.....	N/R
Proprietary.....	NO

Percent..... 35\
ACGHIH TLV..... 200 PPM

Ingredient #..... 03
Ingredient Name..... POLYERIC URETHANE RESIN
CAS Number..... 51855-41-5
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 25
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 04
Ingredient Name..... STRONTIUM CHROMATE
CAS Number..... 7789-06-2
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 20
ACGHIH TLV..... .05 MG/M3

Ingredient #..... 05
Ingredient Name..... CYCLOHEXANONE
CAS Number..... 108-94-1
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 15
ACGHIH TLV..... 25 SKIN PPM

Ingredient #..... 06
Ingredient Name..... ETHYLENE BISPHENYL ISOCYANATE
CAS Number..... 101-68-8
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... .005 PPM

NOTICE: If you require a complete, unabbreviated MSDS,
call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE
[illegible] Number/Trade Name	MIL-C-85285B, 17925, TYPE II
[illegible]onal Stock Number	8010012659143
C[illegible] Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMEN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	714-474-0400
Date MSDS Prepared/Revised	092393
Specification Number	MIL-C-85285B
Appearance/Odor	WHITE LIQUID WITH SOLVENT ODOR.
Boiling Point	175 DEG F
Specific Gravity	1.37
Flash Point	23 DEG F
Lower Explosive Limit	1.0%
Extinguishing Media	FOAM, ALCOHOL FOAM, DRY CHEMICAL, WATER FOG.
Special Fire Fighting Procedures	FULL FIRE FIGHTERS EQUIPMENT WITH SELF CONTAINED BREATHING APPARATUS AND FU[illegible] PROTECTIVE CLOTHING SHOULD BE WORN E FIRE FIGHTERS. WATER MAY BE USED TO COOL CON
Unusual Fire/Explosion Hazards	EXPLOSIVE HAZARD UNDER FIRE CONDITIONS OR PRESSURE BUILD UP
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES, SPARKS AND OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	CARBON DIOXIDE, CARBON MONOXIDE AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	VAPORS ARE IRRITATING TO EYES, NOSE AND THROAT. INHALATION MAY CAUSE HEADACHE, DIFFICULT BREATHING AND LOSS OF CONCSCIOUSNESS. PROLONGED CONTACT WILL CAUSE DRYING AND CRACKING OF THE SKIN, DUE TO DEFATTING ACTION. SKIN SENSITIZATION, ASTHMA OR OTHER ALLE
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
[illegible]ptoms of Overexposure	INHALATION; IRRITATION OF THE RESPIRATORY TRACT.AND ACUTE NERVOUS SYSTEM DEPRESSION,FOLLOWED BY HEADACHE,DIZZINESS, STAGGERING GAIT, CONFUSION,UNCONSCIOUSNESS OR COMA.SKIN AND EYE CONTACT; IRROTATION. INGESTION;

	MAY CAUSE CORROSION TO THE MOUTH AND STOMAC
Medical Cond. Aggrevated by Exposure...	SWELLING , REDNESS, AND RASH MAY CAUSE HEADACHE, DIZZINESS, STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR EVEN COMA. MAY CAUSE DEFATTING OF SKIN.
Emergency/First Aid Procedures.....	EYES.= FLUSH WITH WATER FOR 15 MIN LIFT EYE LIDS OCCASIONALY FOR GOOD CLEANING. SKIN.= FLUSH WITH WATER,THEN WASH WITH SOAP AND WATER. INHALATION.= REMOVE TO FRESH AIR, GIVE MEDICAL ATTENTION IF NEEDED. INGESTION.= CALL PHY IMMEDIATELY ON ANY CASE OF OVEREXPOSURE.
Steps if Material Released/Spilled.....	REMOVE IGNITION SOURCES, COVER WITH INERT MATERIAL. REMOVE AND PLACE INTO CONTAINER FOR DISPOSAL.
Waste Disposal Method.....	DISPOSE OF IN ACCORDANCE TO ALL STATE AND FEDERAL REGULATIONS.
Handling & Storage Precautions.....	STORE AWAY FROM ALL IGNITION SOURCES,
Respiratory Protection.....	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED, USE AIR PURIFYING OR FRESH AIR SUPPLY
Ventilation.....	EXHAUST VENTILATION TO MAINTAIN TLV AT RECOMMENDED LEVELS
Protective Gloves.....	NEOPRENE, RUBBER, POLYETHYLENE GLOVES
Eye Protection.....	USE SAFETY GLASSES OR GOGGLES
Work Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER HANDELING ANY CHEMICAL.
Supplemental Health/Safety Data.....	INHALATION; REMOVE TO FRESH AIR. SKIN CONTACT; WASH AFFECTED AREAS WITH SOAP AND WATER, REMOVE CONTAMINATED CLOTHING.=EYES=FLUSHWITH WATER FOR 15 MIN, LIFTING EYE LIDS TO FLUSH. INGESTION;= DO NOT INDUCE VOMITING, CALL PHYSICIAN. CALL PHYSICIAN ON ANY C

Ingredient #.....	01
Ingredient Name.....	METHYLENE ETHYL KETONE
CAS Number.....	78-93-3
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	20%
ACGHIH TLV.....	200 PPM

Ingredient #.....	02
Ingredient Name.....	METHYL ISOBUTYL KETONE
CAS Number.....	108-10-1
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	10%
ACGHIH TLV.....	50 PPM

Ingredient #.....	03
[illegible]edient Name.....	PMGE ACETATE
[illegible] Number.....	108-65-6
[illegible]H Number.....	NR
[illegible]oprietary.....	NO
Percent.....	0.1 %
ACGHIH TLV.....	NR

Ingredient #..... 04
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
RTECS Number..... NR
Proprietary..... NO
Percent..... 0.1%
ACGHIH TLV..... 100 PPM

Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
Percent..... 0.1
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

E

MATERIAL SAFETY DATA SHEET

Item Name	POLUURETHANE PAINT WHITE 17925 TYPE I
[illegible] Number/Trade Name	POLYURETHANE PAINT WHITE 17925 TYPE I (LOW VLC)
[illegible]onal Stock Number	8010012659143
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMEN AVE
City	IRVINE
State	CA
Emergency Phone	714-474-0400
Information Phone	715-474-0400
MSDS Preparer Name	STREBEL
Date MSDS Prepared/Revised	081193
Specification Number	MIL-C-85285B
Appearance/Odor	WHITE LIQUID WITH SOLVENT ODOR
Boiling Point	175-338 F
Specific Gravity	1.47179
Evaporation Rate	0.95
Solubility in Water	INSOLUBLE
Flash Point	23 DEG F
Extinguishing Media	FOAM, ALCOHOL FOAM,CO2, DRY CHEMICAL, WATER FOG
[illegible]al Fire Fighting Procedures	FULL FIRE FIGHTING EQUIPMENT WITH SELF-CONTAINED BREATHING APPARAYUS AND FULL PROTECTIVE CLOTHING SHOULD BE WORN BY FIRE FIGHTERS, WATER MAY BE USED TO COOL CON
Unusual Fire/Explosion Hazards	KEEP CONTAINER TIGHTLY CLOSED. ISOLATE FROM HEAT,SPARKS,ELECTRICAL EQUIPMENT AND OPEN FLAME. CLOSED CONTAINER MAY EMPLODE TO EXTREME HEAT
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES, SPARKS, OR OPEN FLAMES.
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE: VAPORS ARE IRRITATING TO EYES, NOSE, AND THROAT. INHALATION MAY CAUSE HEADACHE, DIFFICULT BREATHING AND LOSS OF CONSCIOUSNESS. CHRONIC: PROLONGED CONTACT WILL CAUSE DRYING AND CRACKING OF SIN, DUE TO DEFATTING ACTION. SKIN SENSITIZATION, ASTHMA
[illegible]inogenity: NTP	NR
[illegible]cinogenity: IARC	NR
Carcinogenity: OSHA	NR
Symptoms of Overexposure	INHALATION: IRRITATION OF THE RESPIRATORY TRACT AND ACUTE NERVOUS

	SYSTEM DEPRESSION, FOLLOWED BY HEADACHE, DIZZINESS,STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR COMA. SKIN: CAUSES IRRITATION, MAY HAVE SWELLING, REDNESS RASH.
Me. .al Cond. Aggrevated by Exposure...	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES, ECZEMA, AND DERMITITIS.
Emergency/First Aid Procedures.....	ANY CASE OF OVEREXPOSURE CONTACT PHY. INHALATION; REMOVE TO FRESH AIR, RESTORE BREATHING IF NEC. ASSTHAMATIC TYPE SYMPTOMS MAY DEVELOP. SKIN;= REMOVE CONTAMINATED CLOTHING,WASH WITH SOAP AND WATER,LAUNDER CLOTHING BERFORE REUSE. EYES;= FLUSH WITH WATER FOR 15 MIN, WHILE LIFTING EYE LIDS OCCASIONALLY. INGESTION, DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION.
Steps if Material Released/Spilled.....	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION, FLAME, SPARKS, HOT SURFACE. VENTILATE AREA CONTAIN AND REMOVE WITH INERT ABSORBANT AND NON-SPARKING TOOLS.
Neutralizing Agent.....	N/R
Waste Disposal Method.....	WASTE MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL ENVIROMENTTAL CONTROLL REGULATIONS, EMPTY CONTAINERS MUST BE HANDLED WITH CARE, DUE TO PRODUCT RESIDUE AND FLAMMABLE VAPORS. DO NOT INCINERATE CLOSED CONTAINERS.
Handling & Storage Precautions.....	AVOID STORING NEAR HIGH TEMPERATUREES, FIRE, OPEN FLAMES, AND SPARK SOURCE. STORE IN TIGHTLY CLOSED CONTAINER. STORE IN WELL VENTILATED AREA.
Other Precautions.....	KEEP CONTAINERS TIGHT AND UPRIGHT TO PREVENT LEAKAGE. PREVENT PROLONGED BREATHING OF VAPORS OR SPRAY MIST. PROLONGED OVEREXPOSURE MAY CAUSE AN ALLERGIC REACTION. AVOID CONTACT, DO NOT TAKE INTERNALLY.
Respiratory Protection.....	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED USE AIR PURIFYING OR FRESH AIR SUPPLIED IF NECESSARY.
Ventilation.....	EXHAUST VENTILATION TO MAINTAIN TLV LEVELS
Protective Gloves.....	COTTON, NEOPRENE, RUBBER,POLYETHYLENE
Eye Protection.....	CHEMICAL GOGGLES OR FULL FACE SHIELD
Work Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER EACH USAGE.
Supplemental Health/Safety Data.....	INHALATION: REMOVE TO FRESH AIR, RESTORE BREATHING IF NECESSARY.SKIN: REMOVE CONTAMINATED CLOTHING, WASH AFFECTED AREAS WITH SOAP AND WATER, LAUNDER CLOTHING BEFORE REUSE. EYES: FLUSH WITH WATER FOR 15 MIN, OCCASIONALLY LIFTI EYELIDS. INGESTION: DO NOT

Ingredient #..... 01

Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
[illegible]rietary..... NO
nt..... 5
[illegible]IH TLV..... 150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... NR
Proprietary..... NO
Percent..... 10
ACGHIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL N-AMYL KETONE
CAS Number..... 110-43-0
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
[illegible]IH TLV..... 50 PPM

[illegible]gredient #..... 05
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 100 PPM

Ingredient #..... 06
Ingredient Name..... PMGE ACETATE
CAS Number..... 108-65-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1
ACGHIH TLV..... NR

Ingredient #..... 07
Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 0.1
ACGHIH TLV..... 1 MG/ M3

[illegible]edient #..... 08
[illegible]edient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH N!mber..... NR
Proprietary..... NO

Percent..... 5
ACGHIH TLV..... 200 PPM

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

#3A

MATERIAL SAFETY DATA SHEET

Item Name	PAINT GRAY #36375
Part Number/Trade Name	POLYURETHANE MIL-C-85285B,36375, TYPE I
nal Stock Number	8010012659151
Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT,INC.
Emergency Phone	714-474-0400
Specification Number	MIL-C-85285B
Boiling Point	175-338 DEG
Flash Point	23 DEG F
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES,SPARKS,OR OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE= VAPORS ARE IRRITATING TO EYES, NOSE, AND THROAT. INHALATION MAY CAUSE HEADACHE, DIFFICULT BREATHING AND LOSS OF CONSCIOUSNESS. CHRONIC= PROLONGED CONTACT WILL CAUSE DRYING AND CRACKING OF THE SKIN, DUE TO DEFATTING ACTION. SKIN SENSITIZATION, ASTHM
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
Symptoms of Overexposure	INHALATION:= IRRITATION OF THE RESPIRATRORY TRACT AND ACUTE NERVOUS SYSTEM DEPRESSION. SKIN CONTACT:= CAN CAUSE IRRITATION. EYE CONTACT:= LIQUID AREOSOLS, OR VAPORS ARE IRRITATING AND MAY CAUSE TEARING,REDNESS,AND SWELLING. INGESTION:=CAN RESULT IN IRRITA
Medical Cond. Aggrevated by Exposure	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES, ECZEMA, AND DERMITITIS.
Respiratory Protection	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
Ventilation	EXHAUST VENTILATION TO MAINTAIN TLV AT RECOMMENDED LEVELS
Protective Gloves	NEOPRENE, RUBBER,POLYETHYLENE
Eye Protection	CHEMICAL GOGGLES OR FULL FACE SHIELD
Supplemental Health/Safety Data	INHALATION:= REMOVE TO FRESH AIR.RESTORE BREATHING IF NECESSARY SKIN:= REMOVE CONTAMINATED CLOTHING, WASH AFFECTED AREA WITH SOAP AND WATER, LAUNDER CLOTHING BEFORE REUSE. EYES:= FLUSH WITH WATER FOR 15 MIN, WHILE LIFTING EYE LIDS. INGESTION:= DO NOT INDU

Ingredient #..... 01
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL ISOBUTYL KETONE
CAS Number..... 108-10-1
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 50 PPM

Ingredient #..... 05
Ingredient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 200 PPM

Ingredient #..... 06
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1
ACGHIH TLV..... 100 PPM

Ingredient #..... 07
Ingredient Name..... PMGE ACETATE
CAS Number..... 108-65-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1
ACGHIH TLV..... NR

Ingredient #..... 08
Ingredient Name..... IBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... NR

Proprietary..... NO
Percent..... 0.1
ACGHIH TLV..... 1 MG/M3

dient #..... 09
dient Name..... -4 PENTANEDIONE
CAS Number..... 123-54-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... NR

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

E MATERIAL SAFETY DATA SHEET

Item Name	ALIPHATIC ISOCYANATES #36375 PAINT GRAY
P- - Number/Trade Name	ALIPHATIC ISOCYANATE CAT, MIL-C-85285P 36375 TYPE I
Na. .nal Stock Number	8010012659151
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT,INC.
Street	17451 VON KARMAN AVE,
City	IRVINE
State	CA
Country	US
Zip Code	33461
Emergency Phone	800-424-9300-
Information Phone	714-474-0400
Date MSDS Prepared/Revised	111893
Specification Number	MIL-C-85285B,
Appearance/Odor	AMBER LIQUIR WITH SOLVENT ODOR.
Boiling Point	260 -338 F
Specific Gravity	1.08043
Flash Point	76 DEG F
Flash Point Method	TCC
Lower Explosive Limit	1.0
U Explosive Limit	7.60
E. guishing Media	FOAM, ALCOHOL FOAM,CO2,DRY CHEMICAL,WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL FIRE FIHJTERS EQUIPMENT WITH SELF CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. WATER MAY BE USED TO COOL CLOSED CONTAINERS`
Unusual Fire/Explosion Hazards	KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, SPARKS, AND OPEN FLAMES.CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT.
Stability	YES
Stability Conditions to Avoid	CONTACT WITH MOISTURE, MATERIALS WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES.
Materials to Avoid	WATER, AMINES, STRONG BASES, ALCOHOLS, MATAL COMPOUNDS AND SURFACE ACTIVE MATERIALS.
Hazardous Decomposition Products	CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN, TRACED OF HCN AND HDI
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	NO
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
R , of Entry: Inhalation	YES
H .h Hazards - Acute & Chronic	ACUTE: VAPORS ARE IRRITATING TO EYES, NOSE AND THROAT. INHALATION MAY CAUSE HEADACHE, DIFFICULT BREATHING AND LOSS OF CONSCIOUSNESS. CHRONIC: AS A RESULT OF PREVIOUS REPEATED OVEREXPOSURE OR

	ASINGLE LARGE DOSE, CERTAIN INDIVIDUALS WILL DEVELOPE ISICYANATE
Carcinogenity: NTP.....	NR
Carcinogenity: IARC.....	NR
nogenity: OSHA.....	NR
coms of Overexposure.....	INHALATION: IRRITATION OF THE RESPIRATORY TRACT. SKIN; ISOCYANATES REACTS WITH SKIN PROTEIN AND MOISTURE AND CAN CAUSE IRRITATION. EYES: AREOSOLS, OR VAPORS ARE ITTITATING AND MAY CAUSE TEARING,REDNESS, AND SWELLING. INGESTION: IRRITATION AND POSSIBLE COR
Medical Cond. Aggrevated by Exposure...	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES, ECZEMA, AND DERMITIS. ISOCYANATES SENSITIZATION.
Emergency/First Aid Procedures.....	EYES.= FLUSH WITH WATER FOR 15 MIN WHILE LIFTING EYE LIDS TO INSURE CLEANING OF EYES. SKIN.= REMOVE CONTAMINATED CLOTHING, WASH AFFECTED AREA WITH SOAP AND WATERLAUNDER CLOTHGING BEFORE REUSE. INHALATION, REMOVE TO FRESH AIR GIVE KEDICAL ATTENTION IF NEEDED. INGESTION.= DO NOT INDUCE VOMITING,SEEK MEDICAL ADVISE. SEEK MEDICAL ATTENTION ON ANY CASE OF OVEREXPOSURE.
Steps if Material Released/Spilled.....	EVACUATE ALL IGNITION SOURCES AND NON ESSENTIAL PERSONELL. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT MATERIAL./ PLACE INTO CONTAINER FOR DISPOSAL,
e Disposal Method.....	DISPOSE OF IN ACCORDANCE TO ALL STATE AND FEDERAL LAWS
piratory Protection.....	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
Ventilation.....	EXHAUST VENTILATION
Protective Gloves.....	NEOPRENE, RUBBER, POLYETHYLENE
Eye Protection.....	CHEMICAR RESISTANT GOGGLES
Work Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER HANDELING ANY CHEMICALS.
Supplemental Health/Safety Data.....	INHALATION: REMOVE TO FRESH AIR, RESTORE BREATHING IF NECESSARY.SKIN: REMOVE CONTAMINATED CLOTHING, WASG AFFECTED AREA WITH SOAQP AND WATER. WASH CLOTHING BEFORE REUSE. EYES: FLUSH WITH WATER FOR 15 MIN. WHILE LIFTING EYE LIDS. INGESTION; DO NOT INDUCE VO

Ingredient #.....	01
Ingredient Name.....	ETHYL 3-ETHOXYPROPIONATE
CAS Number.....	763-69-9
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	20
ACGHIH TLV.....	NR

edient #.....	02
edient Name.....	ALIPHATIC ISOCYANATE**
CAS Number.....	28182-81-2
NIOSH Number.....	NR
Proprietary.....	NO

Percent..... 20
ACGHIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... C 8&10 AROMATIC HYDROCARBON
CAS Number..... 64742-95-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 150 PPM

Ingredient #..... 05
Ingredient Name..... METHYL ISOBUITYL KETONE
CAS Number..... 108-10-1
NIOSH Number..... NR
Proprietary..... NO
Percent..... 40
ACGHIH TLV..... 50 PPM

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	PAINT POLYURETHANE 37038
Part Number/Trade Name	MIL-C-85285B,37038,TYPE I POLYURETHANE PAINT
onal Stock Number	8010012853554
CAGE Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT,INC.
Street	17451 VON KARMAN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Date MSDS Prepared/Revised	02OCT92
Specification Number	C-85285B
Appearance/Odor	BLACK ODOR WITH SOLVENT ODOR
Boiling Point	175-401F
Specific Gravity	1.2401
Evaporation Rate	1.46 X N-BUTYL ACETATE
Solubility in Water	INSOLUABLE
Percent Volatiles by Volume	54.1
h Point	23 DEG F
h Point Method	TCC
ver Explosive Limit	.90
Upper Explosive Limit	11.40
Extinguishing Media	FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL FIRE FIGHTING EQUIP. WITH SELF-CONT. BREATHING APP. AND FULL PROT. CLOTHING. USE WATER TO COOL CLOSED CONT.TO PREVENT PRESS. BLD-UP,AUTO IGN., OR EXPLOSION
Unusual Fire/Explosion Hazards	KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. OVER EXP.TO DECOMP. PROD. MAY CAUSE HEALTH HAZ.
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES, SPARKS AND OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN.
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
lth Hazards - Acute & Chronic	VAPORS ARE IRRITATING TO EYES NOSE AND THROAT.INHALE MAY CAUSE HEADACHE, DIFF. IN BREATHING AND UNCONSCIOUS CHRONIC; PROLONGED CONTACT WILL CAUSE DRYNESS AND CRACKING OF THE SKIN, DUE TO DEFATTING. SKIN SENSITIZATION,ASTHMA OR OTHER

!	ALLERGY RESP. MAY DEV.
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
ɔms of Overexposure	INHAL: IRRI. OF THE RESP. TRACT.AND ACUTE NERV.SYSTEM DEPR. SKIN AND EYE CONTACT; CAN CAUSE IRRI. SKIN ABSORP. MAY CAUSE MODERATE IRRI. INGEST: CAN CAUSE IRRI. AND POSS. CORCSIVE ACTION IN MOUTH,STOMACH DIGEST. TRACT. VOMIT MAY CAUSE CHEMICAL PNEUMONITIS
Medical Cond. Aggrevated by Exposure	SYMPTOMS MAY CAUSE SWELLING, REDNESS, RASH,TEARING, AND STINGING SENSITATION, IF INGESTED MAY CAUSE A CORROSIVE ACTION IN MOUTH OR STOMACH TISSUE.
Emergency/First Aid Procedures	EYES: FLUSH LUKEWARM LOW PRESS. WATER 15 MIN. LIFT EYELIDS. GET MED. ATT. SKIN: REMOVE CONTAMINATED CLOTHING WASH WITH SOAP AND WATER. INHALE: GET TO FRESH AIR. ASTHMATIC COND. MAY DEVELOP GET MED. ATT. INGEST: DO NOT INDUCE VOMIT. GET MED. ATT.
Steps if Material Released/Spilled	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION. CONTAIN AND REMOVE WITH INERT ABSORBANT AND NON-SPARKING TOOLS.
Waste Disposal Method	IN ACCORDANCE WITH LOCAL, STATE, AND FED. GUIDLINES. DO NOT INCINERATE CLOSED CONTAINERS
ing & Storage Precautions	DO NOT STORE NEAR HIGH TEMPS., FIRE, OPEN FLAME, AND SPARK SOURCES. STORE TIGHTLY CLOSED CONTAINERS, IN WELL VENTILATED AREA.
Other Precautions	STORE IN BLDGS COMPLYING WITH OSHA 1910.106. AVOID CONTACT WITH SKIN AND EYES.
Respiratory Protection	USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
Ventilation	EXHAUST OR MECHANICAL TO MAINTAIN TLV AT RECOMMENDED LEVELS
Protective Gloves	NEOPRENE, RUBBER, OR POLYETHYLENE
Eye Protection	SAFETY GLASSES OR GOGGLES
Other Protective Equipment	USE OF LONG SLEEVED AND LONG LEG CLOTHING RECOMMENDED
Supplemental Health/Safety Data	WASH HANDS BEFORE EATING, SMOKING, OR USING WASHROOM. SMOKE IN SMOKING AREA ONLY. DO NOT HANDLE UNTIL THE MANUFACTURERS SAFETY PRECAUTIONS HAVE BEEN READ AND UNDERSTOOD.

Ingredient #	01
Ingredient Name	BUTYL ACCETATE
CAS Number	123-86-4
N H Number	NR
I cietary	NO
Percent	5%
OSHA PEL	150 PPM
ACGHIH TLV	150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 776-69-9
[illegible]H Number..... NR
[illegible]rietary..... NO
[illegible]ent..... 5%
ACGHIH TLV..... 200 PPM

Ingredient #..... 03
Ingredient Name..... TOLUENE
CAS Number..... 106-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... 1%
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHY ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5%
ACGHIH TLV..... 200 PPM

Ingredient #..... 05
Proprietary..... YES
Percent..... <1
ACGHIH TLV..... NR

[illegible]edient #..... 06
[illegible]edient Name..... DISUTYLTIN DILAURATE
[illegible] Number..... 77-58-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 0.1%
ACGHIH TLV..... .1 MG/M3

Ingredient #..... 07
Ingredient Name..... 2-4 PENTANEDIONE
CAS Number..... 123-54-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... NR

Ingredient #..... 10
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
Percent..... <.1
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PMM

Ingredient #..... 11
Ingredient Name..... ETHYL BENZENE
[illegible] Number..... 100-41-4
[illegible]ent..... <.1
[illegible]A PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 12

Ingredient Name..... FLOW AGENT
CAS Number..... 77-58-7
Percent..... <1
ACGIH TLV..... .1 MG/M3

Ingredient #..... 13
Ingredient Name..... METHYL ISOBUTYL KETONE
CAS Number..... 108-10-1
Percent..... 20
OSHA PEL..... 50 PPM
ACGHIH TLV..... 50 PPM

Ingredient #..... 8
Ingredient Name..... MINERAL SPIRITS
CAS Number..... 64742-88-7
Percent..... <1

Ingredient #..... 9
Ingredient Name..... ANTI MAR AGENT
Percent..... <1

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

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MATERIAL SAFETY DATA SHEET

Item Name	37038 ALIPHATIC ISOCYANATE
Part Number/Trade Name	CAT,MIL-C-85285B, 37038 ALIPHATIC ISOCYANATE PAINT BLACK
National Stock Number	8010012853554
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMAN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Date MSDS Prepared/Revised	10FEB92
Specification Number	MIL-C-82585B
Appearance/Odor	AMBER LIQUID WITH SOLVENT ODOR
Boiling Point	268-338 F
Specific Gravity	1.08043
Evaporation Rate	.15
Solubility in Water	INSOLUABLE
Percent Volatiles by Volume	30.1
Flash Point	76 DEG F
Flash Point Method	TCC
Lower Explosive Limit	1.00
Upper Explosive Limit	7.60
Extinguishing Media	FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL FIRE FIGHTING EQUIP. WITH SELF-CONTAINED BREATHING APPARATUS. WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD UP.
Unusual Fire/Explosion Hazards	KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT. CONTAINERS MAY EXPLODE WHEN EXPOSED TO HEAT. DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD.
Stability	YES
Stability Conditions to Avoid	CONTACT WITH MOISTURE, MATERIALS WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES.
Materials to Avoid	WATER, AMINES, STRONG BASES, ALCOHOLS, METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS.
Hazardous Decomposition Products	CARBON MONOXIDE CARBON DIOXIDE AND OXIDES OF NITROGEN, TRACES OF HCN AND HDI
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE; VAPORS ARE IRRITATING TO EYES NOSE AND THROAT.INHALATION;MAY CAUSE HEADACHES, DIFFICULT BREATHING AND LOSS OF CONSCIOUNESS. CHRONIC; PROLONGED

	CONTACT WILL CAUSE DRYING AND CRACKING OF THE SKIN, DUE TO DEFATTING ACTION SKIN SENSITIZATION, ASTHMA OR
C- -inogenity: NTP.....	NR
:nogenity: IARC.....	NR
Ca..inogenity: OSHA.....	NR
Symptoms of Overexposure.....	INHAL: IRRIT. OF RESP.TRACT & NERV SYS. DEPRES. HEADACHE,DIZZI,CONFUS., UNCON.,COMA. SKIN:IRRIT. SWELLING, REDNESS, RASH.DRYING, DEFATTING EYES: IRRITATING,TEARING, REDNESS,SWELLING, STINGING. INGEST: IRRITA., CORROSIVE TO MOUTH, STOMACH.
Medical Cond. Aggrevated by Exposure...	ASTHMA AND ANY OTHER RESP. DISORDER. SKIN ALLERGIES, ECZEMA, AND DERMITITIS. ISOCYANATE SENSITIZATION.
Emergency/First Aid Procedures.....	EYES: FLUSH CLEAN WARM WATER 15 MIN. LIFTING EYELIDS. GET MED. ATT. SKIN: REMOVE CONTAMINATED CLOTH. WASH WITH SOAP AND WATER. INHALE: GET FRESH AIR. RESTORE BREATHING. ASTHMATIC SYMPTOMS MAY DEVELOP IMMED. OR DELAYED. GET MED. ATT. INGEST: DO NOT INDUCE VOMIT. GET MED. ATT. DO NOT GIVE ANYTHING TO AN UNCON. PERSON.
Steps if Material Released/Spilled.....	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBANT AND NON-SPARKING TOOLS.
' e Disposal Method.....	IN ACCORANCE WITH LOCAL, STATE, AND F REGS. DO NOT INCINERATE CLOSED CONTAINERS.
Handling & Storage Precautions.....	STORE IN CLOSED CONTAINERS, IN WELL VENTILATED AREAS, AWAY FROM HIGH TEMPS., FIRE, SPARK SOURCES. IN BLDGS. DESIGNED TO COMPLY WITH OSHA 1910.106
Other Precautions.....	KEEP CONTAINERS TIGHT AND UPRIGHT. PREVENT PROLONGED BREATHING OF VAPORS OR SPRAY MISTS. AVOID CONTACT WITH SKIN AND EYES. DO NOT TAKE INTERNALLY.
Respiratory Protection.....	USE NIOSH APPROVED RESPIRATOR.WHEN TLV LEVELS ARE EXCEEDED
Ventilation.....	GENERAL OR LOCAL VENTILATION TO MAINTAIN TLV LEVELS AT RECOMMENDED LEVELS
Protective Gloves.....	NEOPRENE, RUBBER, POLYETHYLENE
Eye Protection.....	SAFETY GLASSES OR GOGGLES
Other Protective Equipment.....	LONG SLEEVE AND LONG LEG CLOTHING. REMOVE AND WASH CONTAMINATED CLOTHING .
Work Hygenic Practices.....	WASH HANDS BEFORE EATHING, SMOKING, OR USING WASHROOM. SMOKE IN SMOKING AREAS ONLY.
Supplemental Health/Safety Data.....	EMPTY CONTAINERS MUST BE HANDLED WITH CARE, DUE TO PRODUCT RESIDUE AND FLAMMABLE VAPOR.

Ingredient #.....	01
Ingredient Name.....	ALIPHATIC ISOCYANATE
CAS Number.....	28182-81-2
NIOSH Number.....	NR

Proprietary..... NO
Percent..... 75%

Ingredient #..... 02
Ingredient Name..... C8&10 AROMATIC HYDROCARBON
CAS Number..... 64742-95-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5%
ACGHIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5
OSHA PEL..... 150 PPM 200 PPM STEL
ACGHIH TLV..... 150 PPM 200 PPM STEL

Ingredient #..... 04
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... NR
Proprietary..... NO
Percent..... 20
Recommended Limit..... 50 PPM TWA 100 STEL

Ingredient Name..... HEXAMETHYLENE DIISOCYANATE (HDI) FREE MONOMER
CAS Number..... 822-06-0
Percent..... .5-1.6
ACGHIH TLV..... .005PPM TWA

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE
P[illegible] Number/Trade Name	MIL-C-85285B,36118,G/S,TYPE I
[illegible]nal Stock Number	8010013055551
CAGE Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMAN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Date MSDS Prepared/Revised	15JAN93
Specification Number	NR
Appearance/Odor	GRAY LIQUID WITH SOLVENT ODOR
Boiling Point	175-338 F
Specific Gravity	1.21
Evaporation Rate	1.33
Solubility in Water	INSOLUABLE
Percent Volatiles by Volume	53 VOL
Flash Point	23 DEG F (TCC)
F[illegible] Point Method	TCC
L[illegible] Explosive Limit	.90%
Upper Explosive Limit	11.40%
Extinguishing Media	FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL PROTECTIVE CLOTHING WITH SELF-CONTAINED BREATHING APP. COOL CLOSED CONTAINERS WITH WATER TO PREVENT PRESSURE BUILD-UP,AUTO IGNITION OR EXPLOSION
Unusual Fire/Explosion Hazards	OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES,SPARKS,OR OPEN FLAME
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMPERATURE:CARBON MONOXIDE,CARBON DIOXIDE,AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	A:VAPORS ARE IRRIT.TO EYES,NOSE&THROAT.INHAL.MAY CAUSE HEADACHESDIFF.BREATHING&LOSS OF CONSCIOUSNESS.C:PROLONGED CONTACT WILL CAUSE DRYING&CRACKING OF SKIN,DEFATTI ACTION.SKIN SENSITIZATION,ASTHMA OR OTHER ALLERGIC RESPONSES MAY DEVELOP
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR

Carcinogenity: OSHA	NR
Symptoms of Overexposure	INHAL:IRRIT.OF THE RESP.TRACT&ACUTE NERVOUS SYS.DEPRESSION,RESPECTIVALY:HEADACHE,DIZZINESS,STAGERING GAIT,CONFUSION,UNCONSC.,COMA;SKIN:IRRIT. SWELLING,REDNESS,RASH;EYES:IRRIT.TEARING ,REDNESS,SWELLING,STINGING;INGEST:ACUTE: IRRIT.&POSS.CORROSIVE ACTION IN TH
Medical Cond. Aggrevated by Exposure	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS.SKIN ALLERGIES,ECZEMA,ANDDERMITITIS
Emergency/First Aid Procedures	EYES: FLUSH WITH WATER 15 MIN. CALL PHY. SKIN: WASH WITH SOAP AND WATER. WASH CONTAM. CLOTHES. INHALE: GET TO FRESH AIR. ASTHMATIC SYPMTOMS MAY DEVELOP CALL PHY. INGEST: DO NOT INDUCE VOMITTING. GET MED. HELP
Steps if Material Released/Spilled	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBANT AND NON-SPARKING TOOLS
Waste Disposal Method	IN ACCORDANCE WITH LOCAL, STATE, AND FED. REGS.
Handling & Storage Precautions	STORE IN OSHA 1910.106 APPROVED BUILDINGS. AWAY FROM HIGH TEMPS., FIRE, OPEN FLAMES, AND SPARK SOURCES. WELL VENTILATED AREA. IN TIGHTLY CLOSED CONT.
Other Precautions	KEEP CONTAINERS TIGHT AND UPRIGHT.EMPTY CONTAINERS MUST BE HANDLED WITH CARE. PREVENT PROLONGED BREATHING OF VAPORS AND CONTACT WITH SKIN AND EYES
Respiratory Protection	A RESP.THAT IS APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRONMENT(AIR PURIFYING OR FRESH AIR SUPPLIED)IS NECESSARY.OBSERVEOSHA REGULATIONS FOR RESPIRATOR USE
Ventilation	EXHAUST SUFFICIENT TO KEEP THE AIRBORNE CONC.OF SOLVENT VAPORS OR MISTS BELOW THEIR RESPECTIVE TLV'S MUST BE UTILIZED
Protective Gloves	COTTON,NEOPRENE,RUBBER POLYETHYLENE
Eye Protection	SIDE SHIELDS,CHEM.GOGGLES,FACE SHIELD
Other Protective Equipment	LONG SLEEVE AND LONG LEG CLOTHING
Work Hygenic Practices	WASH HANDS BEFORE EATING, SMOKING OR USING WASHROOM

Ingredient #	01
Ingredient Name	BUTYL ACETATE
CAS Number	123-86-4
NIOSH Number	NR
Proprietary	NO
Percent	<5.
OSHA PEL	150 PPM
IH TLV	150 PPM

edient #	02
Ingredient Name	ETHYL 3-ETHOXYPROPIONATE
CAS Number	763-69-9
NIOSH Number	NR

Proprietary..... NO
Percent..... <5.
ACGHIH TLV..... NR

:dient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL ISOBUTYL KETONE
CAS Number..... 108-10-1
NIOSH Number..... NR
Proprietary..... NO
Percent..... 25
OSHA PEL..... 50 PPM
ACGHIH TLV..... 50 PPM

Ingredient #..... 05
Ingredient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5.
OSHA PEL..... 200 PPM
ACGHIH TLV..... 200 PPM

Ingredient #..... 06
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
ACGHIH TLV..... 100 PPM

Ingredient #..... 07
Ingredient Name..... MINERAL SPIRITS
CAS Number..... 64742-88-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
ACGHIH TLV..... NR

Ingredient #..... 08
Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <0.1
ACGHIH TLV..... .1 MG/M3

:edient #..... 09
Ingredient Name..... 2-4 PENTANEDIONE
CAS Number..... 123-54-6
NIOSH Number..... NR
Proprietary..... NO

Percent..... <5.
ACGHIH TLV..... NR

Ingredient #..... 10
Ingredient Name..... ETHYL BENENE
CAS Number..... 100-41-4
Percent..... <1
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 11
Ingredient Name..... ANTI-FLOAT AGENT
CAS Number..... 1317-65-3
Percent..... <1
OSHA PEL..... 10 MP/F3
ACGHIH TLV..... 10 MP/F3

Ingredient #..... 12
Proprietary..... YES
Percent..... <1

Ingredient #..... 13
Ingredient Name..... ANTI-MAR AGENT
Percent..... <1

Ingredient #..... 14
Ingredient Name..... FLOW AGENT
CAS Number..... 26376-86-3
Percent..... <1

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	ALIPHATIC ISOCYANATE
P- - Number/Trade Name	CAT,MIL-C-85285B,36118,G/S
: onal Stock Number	8010013055551
C.. Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMAN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Specification Number	MIL-C-85285B,36118
Appearance/Odor	AMBER LIQUID WITH SOLVENT ODOR
Boiling Point	260-338 F
Specific Gravity	.95
Evaporation Rate	.15
Solubility in Water	INSOLUBLE
Percent Volatiles by Volume	26 VOL
Flash Point	76 DEG F
Flash Point Method	TCC
r Explosive Limit	1%
r Explosive Limit	7.6%
Extinguishing Media	FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL PROTECTION WITH SELF-CONTAINED BREATHING APP. USE WATER TO COOL CLOSED CONTAINERS. HDI VAPORS MAY BE GENERATED
Unusual Fire/Explosion Hazards	CLOSED CONTAINER MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD
Stability	YES
Stability Conditions to Avoid	CONTACT WITH MOISTURE,MATERIAL WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES
Materials to Avoid	WATER,AMINES,STRONG BASES,ALCOHOLS,METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS
Hazardous Decomposition Products	BY HIGH HEAT/TEMPERATURE:CARBON MONOXIDE,CARBON DIOXIDE,AND OXIDES OF NITROGEN,TRACES OF HCN AND HDI
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	A:VAPORS IRRIT.TO EYES,NOSE&THROAT.MAY CAUSE HEADACHE,DIFF.BREATHING&UNCONS.C:PRE PEATED OVEREXP. OR A LG SINGLE DOSE, MAY DEVELOP ISOCYANATE(ISO)SENSITIZATION CAUSING A REACTION AT LATER EXPOSURE OF ISO WELL BELOW TLV VALUE OF ISO

Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
`toms of Overexposure	INHAL:IRRIT.OF THE RESP.TRACT&ACUTE NERVOUS SYS.DEPRESS.,RESPECTIVELY:HEADACHE,DIZZINESS,STAGGERING GAIT,CONFUSION,UNCONSCIOUSNESS,COMA;SKIN:IRRIT.SWELLING,REDNESS,RASH;EYES:IRRIT.TEARING,REDNESS,SWELLING,STINGING;INGEST:IRRIT.POSS.CORROSIVE TO MOUTH,STOM
Medical Cond. Aggrevated by Exposure	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS.SKIN ALLERGIES,ECZEMA,DERMITITIS.ISO SENSITIZATION
Emergency/First Aid Procedures	EYES: FLUSH WITH WATER 15 MIN. CALL PHY. SKIN:REMOVE CONTAM. CLOTHES. WASH AFFECTED AREA WITH SOAP AND WATER. INHALE: GET FRESH AIR.ASTHMATIC COND. MAY DEVELOP. CALL PHY. INGEST: DO NOT INDUCE VOMITTING. CALL PHY.
Steps if Material Released/Spilled	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS
Waste Disposal Method	IN ACCORDANCE WITH LOCAL, STATE, AND FED REGS.
Handling & Storage Precautions	IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. DO NOT STORE NEAR HIGH TEMPS., FIRE, OPEN FLAMES, AND SPARK SOURCES. IN TIGHTLY CLOSED CONTAINERS
..ner Precautions	STORE IN WELL VENTILATED AREAS.
Respiratory Protection	A RESP.APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRONMENT(AIR PURIFYING OR FRESH AIR SUPPLIED)IS NECESSARY.OBSERVE OSHA REGULATIONS FOR RESPIRATOR USE
Ventilation	EXHAUST SUFFICIENT TO KEEP THE AIRBORNE CONCENTRATIONS OF SOLVENT&OTHER INGRED'S BELOW THEIR TLV'S MUST BE UTILIZED
Protective Gloves	COTTON,NEOPRENE,RUBBER,POLYETHLENE
Eye Protection	SPLASH GUARDS,CHEM.GOGGLES,FACE SHIELD
Other Protective Equipment	LONG SLEEVE AND LONG LEG CLOTHING

Ingredient #	01
Ingredient Name	ETHYL 3-ETHOXYPROPIONATE
CAS Number	763-69-9
NIOSH Number	NR
Proprietary	NO
Percent	20
ACGHIH TLV	NR

Ingredient #	02
Ingredient Name	ALIPHATIC ISOCYANATE
Number	28182-81-2
;H Number	NR
prietary	NO
Percent	35
ACGHIH TLV	NR

Ingredient #..... 04
Ingredient Name..... C8&10 AROMATIC HYDROCARBON
CAS Number..... 64742-95-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5.

Ingredient #..... 05
Ingredient Name..... BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5.
OSHA PEL..... 150 PPM
ACGHIH TLV..... 150 PPM

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	EPOXY
Number/Trade Name	513X419 EPOXY
onal Stock Number	8010013121169
Code	85570
Part Number Indicator	A
Manufacturer Name	DESOTO AEROSPACE COATINGS, INC.(DESOTO AEROSPACE)
Street	1608 FOURTH STREET
City	BERKELEY
State	CA
Country	US
Zip Code	94710
Emergency Phone	1-800-228-5635
Information Phone	818-549-7823
Date MSDS Prepared/Revised	21AUG92
Specification Number	MIL-P-2377F TY1 CLS2
Appearance/Odor	YELLOW LIQUID . SOLVENT ODOR
Boiling Point	232 DEG F.
Specific Gravity	1.55
Flash Point	61 DEG F.
Lower Explosive Limit	1
Extinguishing Media	CO2 . DRY CHEMICAL. OR FOAM.
ial Fire Fighting Procedures	WATER SPRAY MAY BE INEFFECTIVE . COOL FIRE EXPOSED CONTAINERS WITH WATER. FOG NOZZLE ARE PREFFERED. WEAR NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS
Unusual Fire/Explosion Hazards	VAPORS MAY ACCUMULATE IN INADEQUATELY VENTILATED OR CONFINED AREA. VAPORS MAY FORM AN EXPLOSIVE MIXTURE WITH AIR. VAPORS MAY TRAVEL LONG DISTANCES, FLASH BACK
Stability	YES
Stability Conditions to Avoid	NONE RECOGNIZED
Materials to Avoid	NONE RECOGNIZED
Hazardous Decomposition Products	CO, CO2
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	NO
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	EYE OR SKIN IRRITATION, MAY CAUSE DEFATTING OF SKIN. INHALED: MAY CAUSE CNS OR RESP. DEPRESSION, IRRIT. OF RESP. TRACT. ASPHY-XIATION MAY RESULT FROM OXYGEN DEFICIENT ATMOSPHERE. MAY CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING AND DIARRHEA.
cinogenity: NTP	YES
rcinogenity: IARC	YES
Carcinogenity: OSHA	YES
Symptoms of Overexposure	IRRITATION OF SKIN OR EYES-SKIN DRYNESS. NAUSEA, DIZZINESS, VOMITING, STAGGERING.

	CONFUSION, UNCONSCIOUSNESS.
Medical Cond. Aggrevated by Exposure...	XYLENE AND TOLUENE HAVE CAUSED LIVER, KIDNEY AND FETOTOXIC EFFECTS IN LAB ANIMALS. PREGNANT WOMEN SHOULD EXERCISE CAUTION IN USE OF THIS PRODUCT.
Emergency/First Aid Procedures.....	EYES.= FLUSH WITH WATER FOR 15 MIN WHILE LIFTING EYE LIDS TO INSURE CLEANING. SKIN.= WASH AFFECTED AREA WITH SOAP AND WATER, DO NOT USE SOLVENTS, REMOVE CONTAMINATED CLOTHING,LAUNDER BEFORE REUSE. INHALATION.= REMOVE TO FRESH AIR,GIVE MEDICAL ASSISTANCE IF NEEDED. INGESTION.= GET MEDICAL ATTENTION,
Steps if Material Released/Spilled.....	REMOVE ALL IGNITION SOURCES,WEAR PROTECTIVE EQUIPMENT TO AVOID BREATHING VAPORS.USE NON SPARKING TOOL TO PICKUP, DIKE SPILL AREA WITHJ INERT MATERIAL, COVE AND REMOVE AND PLACE INTO CONTAINER FOR DISPOSAL
Waste Disposal Method.....	DISPOSE OF IN ACCORDANCE TO STATE AND FEDERAL LAWS
Handling & Storage Precautions.....	KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT,SPARKS, AND FLAME. DO NOT STORE ABOVE 120F.
Other Precautions.....	USE GROUNDING AND BONDING WHEN TRANSFERRING. AVOID FREE FALL OF LIQUID. EMPTY DRUMS MAY CONTAIN EXPLOSIVE VAPORS. DO NOT SMOKE WHERE MATERIAL IS USED OR STORED. USE IN PRESENCE OF AN OBSERVER FOR ASSISTANCE.
Respiratory Protection.....	NIOSH APPROVED RESPIRATOR FOR SOLVENT VAPOR PROTECTION. AIR FED RESPIRATOR IF CARTRIDGE RESPIRATOR INSUFFICIENT FOR CONFINED AREAS.
Ventilation.....	LOCAL OR GENERAL DILUTION TO KEEP TLV LEVELS BELOW 25% OF MAXIMUM.
Protective Gloves.....	CHEMICAL RESISTANT
Eye Protection.....	SAFETY GLASSES W/SIDE SHIELDS
Work Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER HANDELING ANY CHEMICAL
Supplemental Health/Safety Data.....	AVOID SKIN CONTACT BY USE OF PROTECTIVE CLOTHING. A SAFETY SHOWER AND EMERGENCY EYEWASH FACILITIES SHOULD BE AVAILABLE. WASH ALL CLOTHING BEFORE REUSE.

Ingredient #.....	01
Ingredient Name.....	EPOXY RESIN
CAS Number.....	39817-09-9
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	25
OSHA PEL.....	UK
ACGIH TLV.....	UK

Ingredient #.....	02
Ingredient Name.....	METHYL N-AMYL KETONE
CAS Number.....	110-43-0
Proprietary.....	NO

Percent..... 5%
OSHA PEL..... 100 PPM
ACGHIH TLV..... 50 PPM

dient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
Proprietary..... NO
Percent..... <5
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... ETHYL-3-ETHOXY PROPIONATE
CAS Number..... 763-69-9
Proprietary..... NO
Percent..... <5

Ingredient #..... 05
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
Proprietary..... NO
Percent..... 10
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 06
Ingredient Name..... STRONTIUM CHROMATE
CAS Number..... 7789-06-2
H Number..... NR
rietary..... NO
cent..... 25%
ACGHIH TLV..... .05 MG/M3

Ingredient #..... 07
Ingredient Name..... TITANIUM DIOXIDE
CAS Number..... 13463-67-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5%
OSHA PEL..... 10 MG/M3
ACGHIH TLV..... 10 MG/M3

Ingredient #..... 08
Ingredient Name..... CRYSTALLINE SILICA-QUARTZ
CAS Number..... 14808-60-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... 20%
ACGHIH TLV..... 0.1 PPM (RESP)

Ingredient #..... 09
Ingredient Name..... EPOXY RESIN
CAS Number..... 37312-33-7
H Number..... NR
rietary..... NO
ent..... <5%
ACGHIH TLV..... NOT DETERMINED

MATERIAL SAFETY DATA SHEET

Item Name	HIGH SOLIDS PRIMER ACITVATOR
Part Number/Trade Name	910X942 ACTIVATOR
National Stock Number	8010013121169
CAGE Code	85570
Part Number Indicator	B
Manufacturer Name	COURTAULDS AERSPACE (DESOTO AEROSPACE)
Street	1608 FOURTH STREET
City	BERKELEY
State	CA
Country	US
Zip Code	94710
Emergency Phone	1-800-228-5635
Information Phone	818-549-7823
Date MSDS Prepared/Revised	010594
Specification Number	NR
Appearance/Odor	AMBER LIQUID, SOLVENT ODOR
Boiling Point	175 DEG F.
Specific Gravity	0.96
Evaporation Rate	SLOWER THAN N-BUTYL
Flash Point	42 DEG F.
Extinguishing Media	CO2, DRY CHEMICAL, OR FOAM
Special Fire Fighting Procedures	WATER SPRAY MAY BE INEFFECTIVE, COOL FIRE EXPOSED CONTAINER WITH WATER, FOG NOZZLE ARE PREFFERED, WEAR NIOSH APPROVED RSELF CONTAINED BREATHING APPARATUS,
Unusual Fire/Explosion Hazards	VAPORS MAY ACCUMULATE IN INADEQUATELY VENTILATED OR CONFINED AREAS. VAPORS MAY FORM EXPLOSIVE MIXTURE WITH AIR, VAPORS MAY TRAVEL LOONG DISTANCE , FLASHBACK
Stability	YES
Stability Conditions to Avoid	NONE RECOGNIZED
Materials to Avoid	NONE RECOGNIZED
Hazardous Decomposition Products	CO, CO2
Hazardous Polymerization	NO
Polymerization Conditions to Avoid	NO
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	PROLONGED CONTACT MAY CAUSE IRRITATION OR BURNING TO EYES, IRRI-TATION OR DERMATITIS TO SKIN. MAY CAUSE RESPIRATORY IRRITATION OR CENTRAL NERVOUS SYS. DEPRESSION IF INHALED, CHAR BY: NAUSEA, DIZZINESS, CONFUSION, UNCONSCIOUSNESS. MAY CAUSE GASTROINTEST-
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
Symptoms of Overexposure	IRRITATION TO SKIN, EYES, RESPIRATOR. GASTROINTESTINAL TRACT.BURNING OF EYES, NAUSEA, DIZZINESS, VOMITING, UNCONSCIOUSNESS.

Medical Cond. Aggrevated by Exposure...	PRE-EXISTING SKIN, LUNG AND EYE CONDITIONS.
Emergency/First Aid Procedures.....	EYES.= FLUSH WITH WATER FOR 15 MIN WHILE LIFTING EYE LIDS OCCASIONALLY TO INSURE CLEANING. SKIN.= REMOVE AND LAUNDER CLOTHING BEFORE REUSE, WASG AFFECTED AREA WITH SOAP AND WATER. INHALATION= REMOVE TO FRESH AIR, GIVE MEDICAL ASSISTANCE IF NEEDED, INGESTION, CALL [PHY IMMEDIATELY.
Steps if Material Released/Spilled.....	REMOVE ALL IGNITION SOURCES, VEMTILATE AREA, DIKE SPILL AREA WITH INERT MATERIAL, COVER THEN REMOVE AND PLACE INTO CONTANIER FOR DISPOSAL.
Waste Disposal Method.....	DISPOSE OF IN ACCORDANCE TO ALL STATE AND FEDERAL LAWS
Respiratory Protection.....	NIOSH APPROVED RESPIRATOR FOR ISOPROPYL ALCOHOL AND TOLUENE.SOLVENT VAPOR CARTRIDGE OR AIR FED RESPIRATOR.
Ventilation.....	GENERAL DILUTION OR LOCAL TO MAINTAIN TLV BELOW 25% OF TLV LEVEL.
Protective Gloves.....	CHEMICAL RESISTANT.
Eye Protection.....	SAFETY GLASSES W/SIDE SHIELDS OR GOGGLES
Work Hygenic Practices.....	WASH WITH SOAP AND WATER AFTER HANDELING.
Supplemental Health/Safety Data.....	AVOID SKIN CONTACT BY WEARING PROTECTIVE CLOTHING. A SAFETY SHOWER AND EYEWASH FACILITY SHOULD BE AVAILABLE.

edient #.....	01
prietary.....	YES
Percent.....	<5
ACGHIH TLV.....	NOT DETERMINED
Ingredient #.....	02
Proprietary.....	YES
Percent.....	70
Ingredient #.....	03
Ingredient Name.....	ALIPHATIC AMINE
CAS Number.....	90-72-2
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	10%
ACGHIH TLV.....	NOT DETERMINED
Ingredient #.....	04
Ingredient Name.....	XYLENE
CAS Number.....	1330-20-7
Percent.....	5
OSHA PEL.....	100 PPM 150STEL
ACGHIH TLV.....	100 PPM 150 STEL
edient #.....	05
edient Name.....	ETHYL BENZENE
Number.....	100-41-4
NIOSH Number.....	NR
Proprietary.....	NO
Percent.....	<5

OSHA PEL	100 PPM 125 STEL
ACGHIH TLV	100 PPM 125 STEL
Ingredient #	06
Ingredient Name	METHYL ETHYL KETONE
CAS Number	78-93-3
Proprietary	NOS
Percent	10
OSHA PEL	200 PPM STEL300
ACGHIH TLV	200PPM STEL300
Ingredient #	07
Ingredient Name	BUTYL ALCOHOL
CAS Number	71-63-3
NIOSH Number	NR
Proprietary	NO
Percent	<5
OSHA PEL	STEL C50
ACGHIH TLV	STEL C50

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

DOD Hazardous Materials Information System
DoD 6050.5-L
AS OF August 1993

FSC: 8010
NIIN: 013226622
Manufacturer's CAGE: 33461
Part No. Indicator: A
Part Number/Trade Name: MIL-C-85285B, 26270 PC 03GY363

General Information

Item Name: POLYURETHANE COATING, GRAY 26270, PART 1 OF 2
Manufacturer's Name: DEFT, INC
Manufacturer's Street: 17451 VON KARMAN AVE
Manufacturer's P. O. Box: N/K
Manufacturer's City: IRVINE
Manufacturer's State: CA
Manufacturer's Country: US
Manufacturer's Zip Code: 92714
Manufacturer's Emerg Ph #: 800-424-9300 CHEMTREC
Manufacturer's Info Ph #: 714-474-0400
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
fety Focal Point: G
cord No. For Safety Entry: 001
ot Safety Entries This Stk#: 002
Status: KM
Date MSDS Prepared: 19APR89
Safety Data Review Date: 28JAN93
Supply Item Manager: GSA
MSDS Preparer's Name: N/K
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BQDSS
Specification Number: MIL-C-85285
Spec Type, Grade, Class: TYPE 1; KIT 2
Hazard Characteristic Code: N/
Unit Of Issue: KT
Unit Of Issue Container Qty: 2 GL KT
Type Of Container: METAL
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K

Ingredients/Identity Information

Proprietary: NO
Ingredient: N-BUTYL ACETATE (VAPOR PRESSURE 13 MM HG @ 68F)
Ingredient Sequence Number: 01
Percent: 10
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: AF7350000
CAS Number: 123-86-4
OSHA PEL: 150 PPM/STEL 200 PPM
ACGIH TLV: 150 PPM/STEL 200 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ETHYL 3-ETHOXYPROPIONATE (VAPOR PRESSURE .7 MM HG @ 68F)
Ingredient Sequence Number: 02
Percent: <5
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: UF3325000
CAS Number: 763-69-9
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 50 PPM/STEL 100 PPM

Proprietary: NO
Ingredient: ANTISETTLING AGENT (VAPOR PRESSURE 0 MM HG)
Ingredient Sequence Number: 03
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1003375AA
CAS Number: N/K
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: TOLUENE (SARA III) (VAPOR PRESSURE 22 MM HG @ 68F)
Ingredient Sequence Number: 04
Percent: 2.66
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 100 PPM/STEL 150 PPM
ACGIH TLV: 100 PPM/STEL 150 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: DISPERSION AID (VAPOR PRESSURE 0 MM HG)
Ingredient Sequence Number: 05
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G

OSH (RTECS) Number: 1001523DA
S Number: N/K
SHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: XYLENE (SARA III) (VAPOR PRESSURE 21 MM @ 100F)
Ingredient Sequence Number: 06
Percent: 0.29
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: ZE2100000
CAS Number: 1330-20-7
OSHA PEL: 100 PPM/STEL 150 PPM
ACGIH TLV: 100 PPM/STEL 150 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ANTI-FLOAT AGENT (VAPOR PRESSURE 0 MM HG)
Ingredient Sequence Number: 07
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1004702AF
CAS Number: PROPRIETARY
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED
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oprietary: NO
gredient: FLOW AGENT (VAPOR PRESSURE 0 MM HG)
ngredient Sequence Number: 08
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1001678FA
CAS Number: TRADE SECRT
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: METHYL ETHYL KETONE (SARA III) (VAPOR PRESSURE 70 MM HG @ 68F)
Ingredient Sequence Number: 09
Percent: 4.94
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: EL6475000
CAS Number: 78-93-3
OSHA PEL: 200 PPM/STEL 300 PPM
ACGIH TLV: 200 PPM/STEL 300 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ANTI MAR AGENT (VAPOR PRESSURE 0 MM HG)
Ingredient Sequence Number: 10

rcent: <1
redient Action Code:
gredient Focal Point: G
NIOSH (RTECS) Number: 1001519AA
CAS Number: N/K
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ETHYL BENZENE (SARA III) (VAPOR PRESSURE 7.1 MM HG @ 68F)
Ingredient Sequence Number: 11
Percent: 0.08
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: DA0700000
CAS Number: 100-41-4
OSHA PEL: 100 PPM/STEL 125 PPM
ACGIH TLV: 100 PPM/STEL 125 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: FLOW AGENT (VAPOR PRESSURE 0 MM HG)
Ingredient Sequence Number: 12
Percent: <1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1001678FA
CAS Number: N/K
OSHA PEL: NOT ESTABLISHED
IH TLV: NOT ESTABLISHED
er Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: DIBUTYLTIN DILAURATE (VAPOR PRESSURE .2 MM HG @ 320F)
Ingredient Sequence Number: 13
Percent: <0.1
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: WH7000000
CAS Number: 77-58-7
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: 0.1 MG/M3
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: 2-4 PENTANEDIONE (VAPOR PRESSURE 6.9 MM HG @ 68F)
Ingredient Sequence Number: 14
Percent: <5
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: SA1925000
CAS Number: 123-54-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: UNION CARBIDE:20 PPM
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oprietary: NO
gredient: VOC: 303 G/L
gredient Sequence Number: 15
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 9999999VO
CAS Number: NR
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: GRAY LIQUID WITH SOLVENT ODOR
Boiling Point: 175 TO 401F
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): > AIR
Specific Gravity: 1.31933
Decomposition Temperature: N/K
Evaporation Rate And Ref: 1.69 X N-BUTYL ACETATE
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: 34.5
Viscosity: N/K
pH: N/K
Radioactivity: N/K
Form (Radioactive Matl): N/K
Magnetism (Milligauss): N/K
Corrosion Rate (IPY): N/K
toignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: 23.0F,-5.0C
Flash Point Method: TCC
Lower Explosive Limit: 1.00
Upper Explosive Limit: 11.40
Extinguishing Media: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG
Special Fire Fighting Proc: WEAR FULL FIRE FIGHTING EQUIP W/SCBA & FULL PROTECTIVE CLOTHING. USE WATER TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP, AUTO IGNITION, OR EXPLOSION.
Unusual Fire And Expl Hazrds: KEEP CNTNR CLSD. KEEP FROM HEAT/IGNIT SOURCE. CLSD CNTNR MAY EXPLODE W/HEAT. APPLIC TO HOT SURFACE REQ SPECIAL PRECAUTION. OVEREXPOSURE TO DECOMP PROD-HLTH HZD.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): HIGH TEMPERATURES, SPARKS, OR OPEN FLAMES
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomp Products: BY HIGH HEAT/TEMPERATURE: CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): HIGH TEMPERATURES, SPARKS, OR OPEN FLAMES

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE; IRRITATING TO EYES (TEARING, REDNESS, SWELLING W/STINGING), NOSE, & THROAT. INHALATION: HEADACHES, DIFFICULT BREATHING, DIZZINESS, STAGGERING, CONFUSION, UNCONSCIOUSNESS, COMA. INGEST: IRRITATION, CORROSIVE TO GI TRACT. VOMITING MAY CAUSE ASPIRATION (SOLVENT), RESULTING IN CHEM PNEUMONITIS. LIVER & KIDNEY DAMAGE
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
Signs/Symptoms Of Overexp: CHRONIC; PROLONGED CONTACT WILL CAUSE DRYING AND CRACKING OF THE SKIN DUE TO DEFATTING ACTION. SKIN SENSITIZATION, ASTHMA OR OTHER ALLERGIC RESPONSES MAY DEVELOP.
Med Cond Aggravated By Exp: ASTHMA AND ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES, ECZEMA, AND DERMATITIS.
Emergency/First Aid Proc: INHAL: MOVE TO FRESH AIR. RESTORE BREATHING. ASTHMATIC TYPE SYMPTOMS MAY DEVELOP (IMMED/DELAYED). GET MED AID. SKIN: REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREAS WITH SOAP AND WATER. WASH CONTAMINATED CLOTHING BEFORE REUSE. EYES: FLUSH WITH LUKEWARM WATER (LOW PRESSURE) 15 MIN, LIFTING EYELIDS. GET MED AID. INGEST: DONT INDUCE VOMITING. DONT GIVE ANYTHING TO UNCONSCIOUS PERSON. GET MED AID.

Precautions for Safe Handling and Use

ps If Matl Released/Spill: EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE , SOURCES OF IGNITION (FLAME, SPARK SOURCES, HOT SURFACES). VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS.
Neutralizing Agent: N/K
Waste Disposal Method: DISPOSE IN ACCORDANCE WITH FEDERAL, STATE & LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS MUST BE HANDLED WITH CARE DUE TO PRODUCT RESIDUE & FLAMMABLE VAPOR. DONT INCINERATE CLOSED CONTAINERS. EPA HZD WASTE #: D001, F003, F005, IGNITABLE.
Precautions-Handling/Storing: STORE IN BLDGS IN COMPLIANCE WITH OSHA 1910.106. AVOID STORING NEAR HIGH TEMPS, IGNITION SOURCES. STORE IN CLOSED CONTAINERS IN WELL VENTED AREA.
Other Precautions: KEEP CONTAINER TIGHT/UPRIGHT (PREVENT LEAK). AVOID PROLONGED BREATHING-VAPOR. PROLONGED OVEREXPOSURE MAY CAUSE ALLERGIC REACTION. AVOID SKIN/EYE CONTACT. DONT INGEST. DONT HANDLE TILL PRECAUTION READ/UNDERSTOOD. SMOKE IN SMOKING AREAS ONLY.

Control Measures

Respiratory Protection: RESPIRATOR RECOMMENDED FOR ORGANIC VAPOR ENVIRONMENT (AIR PURIFYING/FRESH AIR SUPPLIED). OBSERVE OSHA RESPIRATOR REGULATIONS. IF AIRBORNE CONCENTRATIONS CAN BE MAINTAINED/DOCUMENTED BELOW TLV/PEL, OTHER NIOSH/MSHA RESPIRATOR MAY BE USED.
Ventilation: EXHAUST VENTILATION SUFFICIENT TO KEEP AIRBORNE CONCENTRATIONS (SOLVENTS) BELOW TLV'S. REMOVE ALL IGNITION SOURCES.
Protective Gloves: COTTON, NEOPRENE, RUBBER POLYETHYLENE
Eye Protection: SPLSH GUARDS,SIDESHLDS,GOGGLES,FACESHLDS
Other Protective Equipment: THE USE OF LONG SLEEVE AND LONG LEG CLOTHING

RECOMMENDED. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.
:k Hygienic Practices: WASH HANDS BEFORE EATING, SMOKING, OR USING
WASHROOM.
Suppl. Safety & Health Data: N/K

DOD Hazardous Materials Information System
DoD 6050.5-L
AS OF August 1993

FSC: 8010
NIIN: 013226622
Manufacturer's CAGE: 33461
Part No. Indicator: B
Part Number/Trade Name: CAT, MIL-C-85285B, 26270 PC 03GY363CAT

General Information

Item Name: POLYURETHANE COATING GRAY 26270 PART 2 OF 2
Manufacturer's Name: DEFT, INC
Manufacturer's Street: 17451 VON KARMAN AVE
Manufacturer's P. O. Box: N/K
Manufacturer's City: IRVINE
Manufacturer's State: CA
Manufacturer's Country: US
Manufacturer's Zip Code: 92714
Manufacturer's Emerg Ph #: 800-424-9300 CHEMTREC
Manufacturer's Info Ph #: 714-474-0400
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
ety Focal Point: G
ord No. For Safety Entry: 002
ot Safety Entries This Stk#: 002
Status: KM
Date MSDS Prepared: 19APR89
Safety Data Review Date: 28JAN93
Supply Item Manager: GSA
MSDS Preparer's Name: N/K
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BQDST
Specification Number: MIL-C-85285
Spec Type, Grade, Class: TYPE 1; KIT 2
Hazard Characteristic Code: N/
Unit Of Issue: KT
Unit Of Issue Container Qty: 2 GL KT
Type Of Container: METAL
Net Unit Weight: N/K
NRC/State License Number: N/K
Net Explosive Weight: N/K
Net Propellant Weight-Ammo: N/K
Coast Guard Ammunition Code: N/K

Ingredients/Identity Information

Proprietary: NO
Ingredient: ETHYL 3-ETHOXYPROPIONATE (VAPOR PRESSURE .7 MM HG @ 68F)
Ingredient Sequence Number: 01
Percent: 15
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: UF3325000
CAS Number: 763-69-9
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: 50 PPM/STEL 100 PPM

Proprietary: NO
Ingredient: ALIPHATIC ISOCYANATE (HEXAMETHYLENE DIISOCYANATE [HDI] CAS: 822-06-0; FREE MONOMER CONTENT <.5%)
Ingredient Sequence Number: 02
Percent: 20
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: HQ9170000
CAS Number: 28182-81-2
OSHA PEL: N/K
ACGIH TLV: TWA: 0.005 PPM
Other Recommended Limit: MOBAY:CEILING.02 PPM

Proprietary: NO
Ingredient: ALIPHATIC ISOCYANATE (HEXAMETHYLENE DIISOCYANATE [HDI] CAS: [illegible]-06-0; FREE MONOMER CONTENT <.5%)
[illegible]gredient Sequence Number: 03
[illegible]ercent: 25
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: HQ9170000
CAS Number: 28182-81-2
OSHA PEL: N/K
ACGIH TLV: TWA: 0.005 PPM
Other Recommended Limit: MOBAY:CEILING.02 PPM

Proprietary: NO
Ingredient: C8&10 AROMATIC HYDROCARBON (VAPOR PRESSURE 3 MM HG @ 68F)
Ingredient Sequence Number: 04
Percent: <5
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1004285AH
CAS Number: 64742-95-6
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: MFR PEL: 100 PPM

Proprietary: NO
Ingredient: N-BUTYL ACETATE (VAPOR PRESSURE 13 MM HG @ 68F)
Ingredient Sequence Number: 05
Percent: <5

rredient Action Code:
redient Focal Point: G
OSH (RTECS) Number: AF7350000
CAS Number: 123-86-4
OSHA PEL: 150 PPM/STEL 200 PPM
ACGIH TLV: 150 PPM/STEL 200 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: METHYL ISOBUTYL KETONE (SARA III) (VAPOR PRESSURE 15 MM HG @ 68F)
Ingredient Sequence Number: 06
Percent: 36.2
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: SA9275000
CAS Number: 108-10-1
OSHA PEL: 50 PPM/STEL 75 PPM
ACGIH TLV: 50 PPM/STEL 75 PPM
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: VOC: 532 G/L
Ingredient Sequence Number: 07
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 9999999VO
CAS Number: NR
OSHA PEL: N/K
IH TLV: N/K
er Recommended Limit: NONE SPECIFIED

Physical/Chemical Characteristics

Appearance And Odor: AMBER LIQUID WITH SOLVENT ODOR
Boiling Point: 241 TO 338F
Melting Point: N/K
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): > AIR
Specific Gravity: 0.95438
Decomposition Temperature: N/K
Evaporation Rate And Ref: 0.92 X N-BUTYL ACETATE
Solubility In Water: INSOLUBLE
Percent Volatiles By Volume: 63.1
Viscosity: N/K
pH: N/K
Radioactivity: N/K
Form (Radioactive Matl): N/K
Magnetism (Milligauss): N/K
Corrosion Rate (IPY): N/K
Autoignition Temperature: N/K

Fire and Explosion Hazard Data

Flash Point: 60.0F,15.6C
Flash Point Method: TCC

ver Explosive Limit: 1.00
er Explosive Limit: 8.00
tinguishing Media: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG
Special Fire Fighting Proc: USE FULL PROTECT CLOTH/FIREFIGHT EQUIP W/ SCBA. WATER MAY BE USED TO COOL CLSD CNTNRS (PREVENT PRESS BLDUP/AUTOIGNIT/ EXPLOS). HDI/IRRIT VAPOR GENERATED BY FIRE.
Unusual Fire And Expl Hazrds: KEEP CNTNR CLSD. KEEP FROM HEAT/IGNIT SOURCE. CLSD CNTNR MAY EXPLODE W/HEAT. APPLIC TO HOT SURFACE REQ SPECIAL PRECAUTION. OVEREXPOSURE TO DECOMP PROD-HLTH HZD.

Reactivity Data

Stability: YES
Cond To Avoid (Stability): CONTACT WITH MOISTURE, MATERIAL WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES.
Materials To Avoid: WATER, AMINES, STRONG BASES, ALCOHOLS, METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS.
Hazardous Decomp Products: BY HIGH HEAT/TEMPERATURE: CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN, TRACES OF HCN AND HDI.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): CONTACT WITH MOISTURE, MATERIALS WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES.

Health Hazard Data

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE: IRRITATING TO EYES, NOSE, THROAT. HAL: HEADACHES, DIZZINESS, STAGGERING, DIFFICULT BREATHING, CONFUSION, CONSCIOUSNESS, COMA. SKIN: IRRITATING (SWELLING, REDNESS, RASH). EYES: IRRIT (TEARING, REDNESS, SWELLING W/STINGING). INGEST: IRRITATION, CORROSIVE TO GI TRACT. ASPIRATION (VOMITING)-CHEMICAL PNEUMONITIS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: N/K
Signs/Symptoms Of Overexp: CHRONIC; AS A RESULT OF PREVIOUS REPEATED OVEREXPOSURE OR A SINGLE LARGE DOSE, CERTAIN INDIVIDUALS WILL DEVELOP ISOCYANATE SENSITIZATION WHICH WILL CAUSE THEM TO REACT TO A LATER EXPOSURE OF ISOCYANATE LEVELS WELL BELOW THE TLV VALUE OF ISOCYANATES.
Med Cond Aggravated By Exp: ASTHMA AND ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES, ECZEMA AND DERMATITIS. ISOCYANATE SENSITIZATION.
Emergency/First Aid Proc: INHAL: MOVE TO FRESH AIR. RESTORE BREATHING. ASTHMATIC TYPE SYMPTOMS MAY DEVELOP (IMMED/DELAYED). GET MED AID. SKIN: REMOVE CONTAMINATED CLOTHING. WASH AFFECTED AREAS WITH SOAP & WATER. WASH CONTAMINATED CLOTHES BEFORE REUSE. EYES: FLUSH WITH LUKEWARM WATER (LOW PRESSURE) 15 MIN, LIFTING EYELIDS. GET MED AID. INGEST: DONT INDUCE VOMITING. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS PERSON. GET MED AID.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION (FLAME, SPARK SOURCES, HOT SURFACES). VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBENT AND NON-SPARKING TOOLS.
Neutralizing Agent: N/K

ste Disposal Method: DISPOSE IN ACCORDANCE WITH FEDERAL, STATE & LOCAL
'IRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS MUST BE HANDLED WITH
RE, DUE TO PRODUCT RESIDUE & FLAMMABLE VAPOR. DONT INCINERATE CLOSED
CONTAINER. EPA HZD WASTE #: D001, F003, F005, IGNITABLE.
Precautions-Handling/Storing: STORE IN BUILDINGS IN COMPLIANCE WITH OSHA
1910.106. AVOID STORING NEAR HIGH TEMPS/IGNITION SOURCE. STORE IN CLOSED
CONTAINER IN WELL VENTILATED AREA.
Other Precautions: KEEP CNTNR TIGHT/UPRIGHT (PREVENT LEAK). PREVENT
PROLONG VAPOR BREATHING. PROLONG OVEREXPOSURE MAY CAUSE ALLERGIC REACTION.
AVOID CONTACT W/SKIN & EYES. DONT INGEST.DONT HANDLE TILL MFR PRECAUTIONS
READ/UNDERSTOOD. SMOKE IN SMOKE AREAS ONLY.

Control Measures

Respiratory Protection: USE RESPIRATOR RECOMMENDED FOR USE IN ORGANIC
VAPOR ENVIRONMENT (AIR PURIFYING/FRESH AIR SUPPLIED). OBSERVE OSHA
RESPIRATOR REGULATIONS.VAPOR PARTIC RESPIRATOR (TC23C) MAY BE USED WHEN AIR
MONITORING SHOWS VAPOR LEVELS BELOW 10X TLV/PEL.
Ventilation: EXHAUST VENT TO KEEP AIRBORNE CONCENTRATION (HDI,
POLYISOCYANATES, SOLVENT) BELOW TLVS. REMOVE IGNITION SOURCES.
Protective Gloves: COTTON, NEOPRENE, RUBBER, POLYETHYLENE
Eye Protection: CHEM GOGGLES,FACESHLDS,SPLSH GRDS,SDSHLD
Other Protective Equipment: THE USE OF LONG SLEEVE AND LONG LEG CLOTHING
RECOMMENDED. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.
Work Hygienic Practices: WASH HANDS BEFORE EATING, SMOKING OR USING
WASHROOM.
Suppl. Safety & Health Data: N/K

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE
Part Number/Trade Name	POLYURETHANE 26118
National Stock Number	8010013226623
FSC Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC
Emergency Phone	1-800-424-9300
Specification Number	MIL-C-85285B,26118,
Boiling Point	175 - 338 F
Flash Point	23 F TCC LEL:1%
Stability	YES
Stability Conditions to Avoid	HIGH TEMP, SPARKS, OR OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMP:CARBON MONOXIDE,CARBON DIOXIDE,&OXIDES OF NITROGEN
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE:VAPORS ARE IRRITATING TO EYES/NOSE/THROAT.INHALATION MAY CAUSE HEADACHES/DIFICULT BREATHING & LOSS OF CONSCIOUSNESS. CHRONIC:PROLONGED CONTACT WILL CAUSE DRYING & CRACKING OF THE SKIN, DUE TO DEFATTING ACTION.SKIN SENSITIZATION,ASTHMA OR OTHER ALLER
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHALATION:IRRITATION TO RESP TRACT & ACUTE NERVOUS SYSTEM DEPRESSION/HEADACHE/DIZZINESS/STAGGERING GAIT/CONFUSION/UNCONSCIOUSNESS/COMA. SKIN:CAUSE IRRITATION/SWELLING/REDNESS/RASH. EYES:CAUSETEARING/REDNESS/SWELLING/STING ING. INGESTION:POSSIBLE CORROSIVE
Medical Cond. Aggrevated by Exposure	ASTHMA & OTHER RESP DISORDERS. SKIN ALLERGIES/ECZEMA/DERMITITIS
Respiratory Protection	APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRON. OBSERVE OSHA REGULATIONS FOR RESP USE. VENTILATION SHOULD BE PROVIDED TO KEEP EXPOSURE LEVELS BELOW THE OSHA PERMISSIBLE LIMITS.
Ventilation	EXHAUST VENTILATION SUFFICIENT. REMOVE ALL IGNITION SOURCES/HEAT/SPARKS/FLAME/HOT SURFACES
Protective Gloves	YES/COTTON/NEOPRENE/RUBBER/POLYETHYLENE
Eye Protection	YES/SPLASH GUARDS/SIDE SHEIDS/CHEICAL GO
Supplemental Health/Safety Data	USE OF LONG SLEEVE & LONG LEG CLOTHING IS RECOMMENDED. REMOVE & WASH CONTAMINATED CLOTHING BEFORE REUSE.

Ingredient #..... 01
Ingredient Name..... N-BUTYL ACETATE STEL=200 PPM MM HG 8.4
CAS Number..... 123-86-4
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 10
ACGHIH TLV..... 150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 03
Ingredient Name..... XYLENE
STEL = 150 PPM MM HG 21
CAS Number..... 1330-20-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL ETHYL KETONE
STEL=300 PPM MM HG 70.2
CAS Number..... 78-93-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 200 PPM

Ingredient #..... 05
Ingredient Name..... TOLUENE
STEL = 150 PPM MM HG 22
CAS Number..... 108-88-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 100 PPM

Ingredient #..... 06
Ingredient Name..... PMGE ACETATE
MM HG 3.8
CAS Number..... 108-65-6
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 07
Ingredient Name..... DIBUTYLTIN DILAURATE
STEL=.2 MM HG .2
CAS Number..... 77-58-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <0.1
ACGHIH TLV..... .1 MG/M3

Ingredient #.....	08
Ingredient Name.....	2-4 PENTANEDIONE MM HG 7
Number.....	123-54-6
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	<5
ACGHIH TLV.....	UNDETERMINED

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	ALIPHATIC ISOCYANATE
Part Number/Trade Name	ALIPPHATIC ISOCYANATE 26118
National Stock Number	8010013226623
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC
Emergency Phone	1-800-424-9300
Specification Number	MIL-C-85285B,26118
Boiling Point	237-338 F
Flash Point	60 F TCC LEL:1%
Stability	YES
Stability Conditions to Avoid	CONTACT WITH MOISTURE, MATERIAL WHICH REACT WITH ISOCYANATES& HIGH TEMP
Materials to Avoid	WATER, AMINES, STRONG BASES, ALCOHOLS, METAL COMPOUNDS & SURFACE ACTIVE MATERIALS
Hazardous Decomposition Products	BY HIGH HEAT/TEMP: CARBON MONOXIDE, CARBON DIOXIDE, & OXIDESOF NITROGEN, TRACES OF HCN & HDI
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE:VAPORS ARE IRRITATION TO EYES/NOSE/THROAT.INHALATION MAY CAUS. HEADACHES/DIFFICULT BREATHING/LOSS OF CONSCIOUNESS. CHRONIC:AS A RESULT OF PREVIOUS REPEATED OVEREXPOSURE OR A SINGLE LARGEDOSE, CERTAIN INDIVIDUALS WILL DEVELOP ISOCYANATE SENSITIZATION
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHALATION:IRRITATION TO RESP TRACT&ACUTE NERVOUS SYSTEM DEPRESSION/HEADACHES/DIZZINESS/STAGGERIN G GAIT/CONFUSION/UNCONSCIOUNESS/COMA. SKIN ISOCYANTES REACT WITH SKIN PROTEIN & MOISTURE CAN CAUSE IRRITATION. SWELLING/REDNESS/RASH. EYES: TEARING/REDNESS/RA
Medical Cond. Aggrevated by Exposure	ASTHMA & ANY OTHER RESP DISORDERS. SKIN ALLERGIES/ECZEMA/DERMITITIS.ISOCYANATE SENSITIZATION.
Respiratory Protection	A RESP RECOMMENDED OR APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRON. OBSERVE OSHA REGULATIONS FOR RESP USE. VENTILATION SHOULD BE PROVIDED TO KEEP EXPOSURE LEVELS BELOW THE OSHA PERMISSIBLE LIMITS
Ventilation	EXHAUST VENTILATION SUFFICIENT TO KEE. THE AIRBORNE CONCENTRATIONS OF SOVENTS BELOW RESP LEVELS
Protective Gloves	YES/COTTON/NEOPRENE/RUBBER/POLYETHYLENE

Eye Protection	YES/SPLASH GUARDS/SIDE SHIELDS/CHEMICAL
Supplemental Health/Safety Data	USE OF LONG SLEEVE & LONG LEG CLOTHING IS RECOMMENDED REMOVE & WASH CONTAMINATED CLOTHING BEFORE REUSE

Ingredient #	01
Ingredient Name	ETHYL 3-ETHOXYPROPIONATE MM HG .7
CAS Number	763-69-9
NIOSH Number	N/R
Proprietary	NO
Percent	15
ACGHIH TLV	UNDETERMINED

Ingredient #	02
Ingredient Name	ALIPHATIC ISOCYANATE
CAS Number	28182-81-2
NIOSH Number	N/R
Proprietary	NO
Percent	20
ACGHIH TLV	UNDETERMINED

Ingredient #	03
Ingredient Name	HEXAMETHYLENE DIISOCYANATE(HDI) FREE MONOMER CONTENT <.7% AFTER 3-6 MO STORAGE FREE MONOMER CONTENT RISE
CAS Number	822-06-02
NIOSH Number	N/R
[illegible]rietary	NO
[illegible]ent	1.6%
[illegible]GHIH TLV	.005CEILINGLEVEL.02P

Ingredient #	04
Ingredient Name	ALIPHATIC ISOCYANATE
CAS Number	28182-81-2
NIOSH Number	N/R
Proprietary	NO
Percent	25
ACGHIH TLV	UNDETERMINED

Ingredient #	05
Ingredient Name	HEXAMETHYLENE DIISOCYANATE(HDI)FREE MONOMER CONTENT <.7% AFTER 3-6 MON STORAGE FREE MONOMER CONTENT RISE TO 1.6%
CAS Number	822-06-0
NIOSH Number	N/R
Proprietary	NO
Percent	<7-1.6
ACGHIH TLV	.005 PPMCEILING .02P

Ingredient #	06
Ingredient Name	C8&10 AROMATIC HYDROCARBON STEL = 150 PPM MM HG 3
[illegible]Number	64742-95-6
[illegible]SH Number	N/R
Proprietary	NO
Percent	<5
ACGHIH TLV	100 PPM

Ingredient #.....	07
Ingredient Name.....	N-BUTYL ACETATE STEL = 200 PPM MM HG 8.4
C umber.....	123-86-4
NI. .H Number.....	N/R
Proprietary.....	NO
Percent.....	<5
ACGHIH TLV.....	150 PPM

Ingredient #.....	08
Ingredient Name.....	METHYL ISOBUTYL KETONE STEL = 75 PPM MM HG 15
CAS Number.....	108-10-1
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	35
ACGHIH TLV.....	50 PPM

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE TYPE I, 36270
[illegible] Number/Trade Name	POLYURETHANE #36270 GRAY
[illegible]onal Stock Number	8010013443218
[illegible] Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC
City	IRVINE
State	CA
Country	US
Emergency Phone	1-800-424-9300 INFO 714-474-0400
Specification Number	MIL-C-85285B
Boiling Point	175-338 F
Flash Point	23 F
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES, SPARKS, OR OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMP:CARBON MONOXIDE, CARBON DIOXIDE & OXIDES OF NITROGEN
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
[illegible]th Hazards - Acute & Chronic	ACUTE:VAPORS ARE IRRITATING TO EYES, NOSE & THROAT. INHALATION MAY CAUSE HEADACHES, DIFFICULT BREATHING & LOSS OF CONSCIOUSNESS.CHRONIC:PROLONGED CONTACT WILL CAUSE DRYING & CRACKING OF THE S KIN, DUE TO DEFATTING ACTION. SKIN SENSITIZATION, ASTHMA OR OTH
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHAL:IRRITATION OF RESP TRACT & ACUTE NSD, HEADACHE, DIZZINESS,STAGGERING GAIT, CONFUSION, UNCONSCIOUSNESS OR COMA. SKIN & EYE:IRRITATION, SWELLING, REDNESS & RASH, TEARING, STINGING. INGESTION:CORROSIVE IRRITATION ACTION IN MOUTH, STOMACH TISSUE & DIGES
Medical Cond. Aggrevated by Exposure	ASTHMA & ANY OTHER RESP DISORDERS. SKIN ALLERGIES,ECZEMA & DERMITITIS.
Respiratory Protection	A RESP THAT IS RECOMMENDED IS RECOMMENDED OR APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRON(AIR PURIFYING OR FRESH AIR SUPPLIED)IS NECESSARY. OBSERVE OSHA REGULATION FOR RESP USE.VENTILATION SHOULD BE BELOW THE EXPOSURE LIMITS.
[illegible]ilation	EXHAUST VENTILATION SUFFICIENT. REMOVE IGNITION SOURCES.
[illegible]ective Gloves	COTTON/NEOPRENE/RUBBER POLYETHYLENE
Eye Protection	SPLASH GUARDS/SIDE SHIELDS/CHEMICAL
Supplemental Health/Safety Data	USE OF LONG SLEEVE & LONG LEG CLOTHING IS RECOMMENDED. REMOVE & WASH

CONTAMINATED CLOTHING BEFORE REUSE. KEEP CONTAINERS TIGHT &UPRIGHT TO PREVENT LEAKAGE.

Ingredient #..... 00
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 150 PPM

Ingredient #..... 00
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 100 PPM

Ingredient #..... 00
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 00
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 00
Ingredient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 200 PPM

Ingredient #..... 00
Ingredient Name..... PMGE ACETATE
CAS Number..... 108-65-6
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 00
Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <.1
ACGHIH TLV..... .1 MG/M3

Ingredient #	00
Ingredient Name	2-4 PENTANEDIONE
CAS Number	123-54-6
RTECS Number	N/R
Proprietary	NO
Percent	<5
ACGHIH TLV	UNDETERMINED

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

#9B

MATERIAL SAFETY DATA SHEET

m Name	ALIPHATIC ISOCYANATE
..rt Number/Trade Name	ALIPH ISOCYANATE, TYPE I, 36270
National Stock Number	8010013443218
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC
Emergency Phone	800-424-9300 INFO 714-474-0400
Specification Number	MIL-C-85285B
Boiling Point	237-338 F
Flash Point	60 F
Stability	YES
Stability Conditions to Avoid	CONTACT WITH MOISTURE OR MATERIAL WHICH REACT W/ISOCYANATES AND HIGH TEMPS
Materials to Avoid	WATER, AMINES, STRONG BASES, ALCOHOLS, METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS.
Hazardous Decomposition Products	BY HIGH HEAT/TEMP:CARBON MONOXIDE, CARBON DIOXIDE AND OXIDESOF NITROGEN, TRACES OF HCN AND HDI.
LD50 - LD50 Mixture	N/R
..te of Entry: Skin	YES
..te of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	VAPORS ARE IRRIT TO EYES,NOSE & THROAT. INHALATION MAY CAUSE HEADACHES,DIFFICULT BREATHING & UNCONSCIOUSNESS.RESULTS OF PREVIOUSOVEREXP OR SINGLE LRG DOSE-SOME PEOPLE W/DEVELOP ISOCYANATE SEN SITIZATION WHICH CAUSES REACTION TO LATER EXPOSURE OF ISOCYANAT
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHAL:IRRIT OF RESP TRACT & ACUTE NSD CHARACTERIZED BY HEADACHE,DIZZINESS,STAGGERING GAIT, CONFUSTION,UNCONSCIOUSNESS OR COMA.SKIN:IRRIT,SWELLING,REDNESS, DEFATTING. INGEST:IRRIT & POSSIBLE CORROSIVE ACTION IN MOUTH, STOMACH TISSUE & DIGESTIVE TRACT. VOMI
Medical Cond. Aggrevated by Exposure	ASTHMA & ANY OTHER RESPIRATORY DISORDERS, SKIN ALLERGIES, ECZEMA & DERMITITIS. ISOCYANATE SENSITIZATION.
Respiratory Protection	AIR SUPPLIED RESP IS RECOMMENDED(VAPOR PARTICULATE RESPIRATOR NIOSH/MSHA) MAY BE USED WHERE AIR MONITORING DEMONSTRATED VAPOR LEVELS BELOW 10 TE APPLICABLE EXPOSURE LIMITS.
Ventilation	EXHAUST VENT SUFFICIENT TO KEEP AIRBORN CONCENTRATIONS OF SOLVENT BELOW TLV'S MUST BE UTILIZED.
Protective Gloves	COTTON,NEOPRENE, RUBBER, POLYETHYLENE
Eye Protection	CHEMICAL GOGGLES OR FACE SHIELD

Supplemental Health/Safety Data.....	1ST AID:INHAL:REMOVE TO FRESH AIR, RESTORE BREATHING, SEEK MD. SKIN:WASH AREA WITH SOAP/WATER, WASH CONTAMINATED CLOTHING BEFOREREUSE. EYES:FLUSH W/WATER FOR 15 MINUTES, SEEK MD ATTN. INGEST:DO NOT INDUCE VOMITING. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS P

Ingredient #.....	00
Ingredient Name.....	ETHYL 3-ETHOXYPROPIONATE
CAS Number.....	763-69-9
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	20
ACGHIH TLV.....	N/R

Ingredient #.....	00
Ingredient Name.....	ALIPHATIC ISOCYANATE
CAS Number.....	28182-81-2
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	20
ACGHIH TLV.....	N/D

Ingredient #.....	00
Ingredient Name.....	HEXAMETHYLENE DIISOCYANATE
CAS Number.....	822-06-02
NIOSH Number.....	N/R
Pr[illegible]etary.....	NO
P[illegible]t.....	.7
A[illegible]H TLV.....	N/E

Ingredient #.....	00
Ingredient Name.....	C8-10 AROMATIC HYDROCARBON
CAS Number.....	64742-95-6
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	<5
ACGHIH TLV.....	100 PPM

Ingredient #.....	00
Ingredient Name.....	N-BUTYL ACETATE
CAS Number.....	123-86-4
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	<5
ACGHIH TLV.....	150PPM

Ingredient #.....	00
Ingredient Name.....	METHYL ISOBUTYL KETONE
CAS Number.....	108-10-1
NIOSH Number.....	N/R
Proprietary.....	NO
Pe[illegible]t.....	40
C[illegible] TLV.....	50 PPM

NOTICE: If you require a complete, unabbreviated MSDS,

#107

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE C3GY321
P... Number/Trade Name	3:1,MIL-C-85285B,36173,TYPE I
...nal Stock Number	8010013456535
CA... Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC
Emergency Phone	1-800-424-9300 INFO:714-474-0400
Specification Number	MIL-C-85285B,36173
Boiling Point	175 - 338 F
Flash Point	24 F TCC LEL:1%
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES,SPARKS, OR OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMP:CARBON MONOXIDE,CARBON DIOXIDE,& OXIDES OFNITROGEN
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE:VAPORS ARE ITTITATING TO EYES,NOSE,THROAT. INHALATION MAY CAUSE HEADACHES,DIFFICULT BREATHING & LOSS OF CONSCIOUSNESS. CHRONIC:PROLONGED CONTACT WILL CAUSE DRYING & CRACKING OF THE SKIN,DUE TO DEFATTING ACTION. SKIN SENSITIZATION,ASTHMA OR OTHER ALL
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHALATION:IRRITATION OF RESP TRACT & ACUTE NERVOUS SYSTEM DEPRESSION,HEADACHE,DIZZINESS,STAGGERING GAIT,CONFUSION,UNCONSCIOUSNESS OR COMA. SKIN & EYE:IRRITATING,SWELLING,REDNESS,RASH,TEARING,STINGING,DEFATTING OF SKIN. INGESTION:CORROSIVE ACTION TO MOUTH
Medical Cond. Aggrevated by Exposure	ASTHMA & ANY OTHER RESPIRATORY DISOVERS. SKIN ALLERGIES, ECZEMA & DERMITITIS.
Respiratory Protection	RECOMMENDED OR APPROVED RESPIRATOR FOR ORGANIC VAPOR ENVIRON(AIR PURIFYING OR FRESH AIR SUPPLIED). OBSERVE OSHA REGULATIONS FOR RESP USE. VENTILATION SHOULD BE PROVIDED. IF TLV LIMITS BELOW OSHA LEVEL A RESP MAY NOT BE REQUIRED
Ventilation	EXHAUST VENT SUFFICIENT TO KEEP AIRBORNE CONCENTRATIONS BELOW TLV LIMIT.
Protective Gloves	COTTON,NEOPRENE,RUBBER POLYETHYLENE
F... Protection	CHEMICAL GOGGLES/SPLASH GUARDS,SIDE S...
S... lemental Health/Safety Data	USE OF LONG SLEEVE & LONG LEG CLOTHII IS RECOMMENDED. REMOVE & WASH CONTANIMATED CLOTHING BEFORE REUSE. 1ST AID:INHALATION:REMOVE TO FRESH AIR RESTORE BREATHING. ASTHMATIC TYPE

SYMPTOMS MAY DEVELOP. OBTAIN MED ATTENTION. SKIN:WASH W/SOAP & WATER. EYES:FL

edient #..... 01
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 03
Ingredient Name..... ANITSETTLING AGENT
CAS Number..... UNKNOWN
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <0.1
ACGHIH TLV..... NOT ESTAB

edient #..... 04
edient Name..... TOLUENE
Number..... 108-88-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 05
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 06
Proprietary..... YES
Percent..... <1
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 07
Ingredient Name..... FLOW AGENT
CAS Number..... TRADE-SECRE
NIOSH Number..... N/R
rietary..... NO
ent..... <1
IIH TLV..... UNDETERMINED

Ingredient #..... 08
Ingredient Name..... METHYL ISOBUTYL KETONE

CAS Number..... 108-10-1
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 20
ACGIH TLV..... 50 PPM

Ingredient #..... 09
Ingredient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 200 PPM

Ingredient #..... 10
Ingredient Name..... ANTI MAR AGENT
CAS Number..... UNKNOWN
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... NOT ESTAB

Ingredient #..... 11
Ingredient Name..... ETHYL BENZENE
CAS Number..... 100-41-4
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <0.1
ACGHIH TLV..... 100 PPM

Ingredient #..... 12
Ingredient Name..... FLOW AGENT
CAS Number..... UNKNOWN
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 13
Ingredient Name..... PMGE ACETATE
CAS Number..... 108-65-6
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... UNDETERMINED

Ingredient #..... 14
Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <0.1
ACGHIH TLV..... .1MG/M3

Ingredient #..... 15
Ingredient Name..... 2-4 PENTANEDIONE
CAS Number..... 123-54=6
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5

ACGHIH TLV..... UNDETERMINED

:E: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

#10B

MATERIAL SAFETY DATA SHEET

Item Name	ISOCYANATE
Part Number/Trade Name	ISOCYANATE 03GY321CAT 3:1,CAT,MIL-C-85285,36173,TYPE
National Stock Number	8010013456535
CAGE Code	33461
Part Number Indicator	B
Manufacturer Name	DEFT, INC
Street	17451 VON KARMAN AVE
City	IRVINE
State	CA
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Specification Number	MIL-C-85285,36173
Boiling Point	260 - 338 F
Flash Point	76 F TCC LEL:1%
Stability	YES
Stability Conditions to Avoid	CONTACT W/MOISTURE,MATERIAL WHICH REACT WITH ISOCYANATES & HIGH TEMPERATURES.
Materials to Avoid	WATER, AMINES,STRONG BASES, ALCOHOLS,METAL COMPOUNDS & SURFACE ACTIVE MATERIALS.
Hazardous Decomposition Products	BY HIGH HEAT/TEMP:CARBON MONOXIDE,CARBON DIOXIDE,& OXIDES OFNITROGEN,TRACES O HCN & HDI.
LD50 - LD50 Mixture	N/R
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	ACUTE:VAPORS AREA IRRITATING TO EYES,NOSE & THROAT. INHALATION MAY CAUSE HEADACHE,DIFFICULT BREATHING & LOSS OF CONSCIOUSNESS. CHRONIC:AS A RESULT OF PREVIOUS REPEATED OVEREXPOSURE OR A SINGLELARGE DOSE,CERTAIN INDIVIDUALS WILL DEVELOP ISOCYANATE SENSITIZ
Carcinogenity: NTP	NO
Carcinogenity: IARC	NO
Carcinogenity: OSHA	NO
Symptoms of Overexposure	INHALATION:IRRITATION OF RESP TRACT & ACUTE NERVOUS SYSTEM DEPRESSION,HEADACHE,DIZZINESS,STAGGERING GAIT,CONFUSION,UNCONSCIOUNESS OR COMA. SKIN:IRRITATION,SWELLING,REDNESS & RASH. DEFATTING. EYE,IRRITATING,TEARING,REDNESS,STINING. INGESITON:CORROSIVE ACTI
Medical Cond. Aggrevated by Exposure	ASTHMA & ANY OTHER RESPIRATORY DISORDERS. SKIN ALLERGIES,ECZEMA & DERMATITIS. ISOCYANATE SENSITIZATION
Respiratory Protection	VENTILATION SHOULD BE PROVIDED. AN AIR SUPPLIED RESP IS RECOMMENDED. A VAPOR PARTICULATE FULL FACE RESP(TC23C NIOSH/MSHA) MAY BE APPROPRIATE WHERE AIR

	MONITORING DEMONSTRATES LEVELS BELOW TEN TIMES THE APPLICABLE EXPOSURE LIMITS.
Ventilation	EXHAUST VENT SUFFICIENT TO KEEP CONCENTRATIONS OF SOLVENTS BELOW TLV.
ective Gloves	COTTON,NEOPRENE,RUBBER,POLYEHTLENE YES
Protection	SPLASH GUARDS OR SIDE SHIELDS,CHEM GOGGL
Supplemental Health/Safety Data	USE OF LONG SLEEVE & LONG LEG CLOTHING IS RECOMMENDED. REMOVE CONTAMINATED CLOTHING & WASH. FIRST AID:INHALATION:REMOVE TO FRESHAIR,ASTHMATIC TYPE SYMPTOMS MAY DEVELOP OBTAIN MEDICAL ATTENTIO N. SKIN:WASH W/SOAP & WATER. EYES:FLUSH W/WATER WARM FOR 15 MIN

Ingredient #	01
Ingredient Name	ALIPHATIC ISOCYANATE
CAS Number	28182-81-2
NIOSH Number	N/R
Proprietary	NO
Percent	35
ACGHIH TLV	UNDETERMINED

Ingredient #	02
Ingredient Name	HEXAMETHYLENE DIISOCYANATE (HDI) 7% AT MANUFACTURER AFTER 3-6 MONTHS STORAGE CHANGES TO1.6% MOBAY RECOMMENDS .02 PPM
CAS Number	822-06-02
H Number	N/R
rietary	NO
rcent	1.6
ACGHIH TLV	.005 PPM

Ingredient #	03
Ingredient Name	ALIPHATIC ISOCYANATE
CAS Number	28182-81-2
NIOSH Number	N/R
Proprietary	NO
Percent	40
ACGHIH TLV	UNDETERMINED

Ingredient #	04
Ingredient Name	HEXAMETHYLENE DIISOCYANATE (HDI) <.7% AT TIME OF MANUFACTUREAFTER 3-6 MO CHANGES TO 1.6% MOBAY RECOMMENDS LEVEL .02 PPM
CAS Number	822-06-0
NIOSH Number	N/R
Proprietary	NO
Percent	.7
ACGHIH TLV	.005 PPM

Ingredient #	05
Ingredient Name	C8&10 AROMATIC HYDROCARBON
Number	64742-95-6
H Number	N/R
prietary	NO
Percent	<5
ACGHIH TLV	UNDETERMINED

Ingredient #..... 06
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... N/R
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 150 PPM

Ingredient #..... 07
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 20
ACGHIH TLV..... UNDETERMINED

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

Item Name	WATER BORNE PRIMER S.C. 910X831
Number/Trade Name	WATER BORNE PRIMER C.S. 910X831
onal Stock Number	8010L00006F
Code	85570
Part Number Indicator	A
Manufacturer Name	COURTAULDS AEROSPACE
P.O.Box	N/R
Street	1608 FOURTH STREET
City	BERKELEY
State	CA
Country	US
Zip Code	94710
Emergency Phone	(800)2285635
Information Phone	(818)549-7823
MSDS Preparer Name	N/R
Street	1608 FOURTH STREET
City	BERKELEY
State	CA
Zip Code	94710
Vendor #1 Name	N/R
Vendor #1 CAGE	N/R
Vendor #2 Name	N/R
Vendor #2 CAGE	N/R
Vendor #3 Name	N/R
or #3 CAGE	N/R
or #4 Name	N/R
ndor #4 CAGE	N/R
Vendor #5 Name	N/R
Vendor #5 CAGE	N/R
Specification Number	N/R
Specification Type/Grade/Class	N/R
Appearance/Odor	LIQUID, SOLVENT ODOR
Boiling Point	212-340 F.
Melting Point	N/R
Vapor Pressure	N/R
Specific Gravity	1.01
Decomposition Temperature	N/R
Evaporation Rate	< N-BUTYL ACETATE
Solubility in Water	N/R
Percent Volatiles by Volume	82.0 %
Chemical PH	N/R
Corrosion Rate	N/R
Flash Point	> 200 DEG. F.
Flash Point Method	N/R
Lower Explosive Limit	1.1 %
Upper Explosive Limit	N/R
Extinguishing Media	USE NATIONAL FIRE PROTECTION ASSOCIATION CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL OR FOAM).
cial Fire Fighting Procedures	COOL FIRE EXPOSED CONTAINERS W/WATER. WEAR NIOSH/MSHA APPVD. SCBA APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

Unusual Fire/Explosion Hazards.....	CLOSED CONTAINERS MAY RUPTURE/EXPLODE WHEN EXPOSED TO EXTREME HEAT.
Stability.....	YES
Stability Conditions to Avoid.....	FIRE OR EXCESSIVE HEAT
Materials to Avoid.....	NONE RECOGNIZED
Hazardous Decomposition Products.....	CARBON, CARBON MONOXIDE, CARBON DIOXIDE.
Hazardous Polymerization.....	NO
Polymerization Conditions to Avoid.....	NO
LD50 - LD50 Mixture.....	N/R
Route of Entry: Skin.....	YES
Route of Entry: Ingestion.....	YES
Route of Entry: Inhalation.....	YES
Health Hazards - Acute & Chronic.....	INHALATION: NOT EXPECTED TO BE HAZARDOUS UNDER NORMAL USE CONDITIONS. SKIN: MAY CAUSE MILD IRRITATION. EYES:MAY CAUSE MILD IRRITATION. INGEST: MAY CAUSE GASTROINTESTINAL IRRIT.
Carcinogenity: NTP.....	N/R
Carcinogenity: IARC.....	N/R
Carcinogenity: OSHA.....	N/R
Symptoms of Overexposure.....	STUDIES IN EXPERIMENTAL ANIMALS HAVE PRODUCED DAMAGE TO THE RED BLOOD CELL BY INHALATION, SKIN ABSORPTION AND INGESTION OF 2-PROPOXYETHANOL. OVEREXPOSURE TO A COMPONENT OF THIS PRODUCT MAY CAUSE LIVER AND KIDNEY DAMAGE.
Medical Cond. Aggrevated by Exposure...	PRE-EXISTING RESPIRATORY AND SKIN CONDITIONS.
Emergency/First Aid Procedures.....	INHALATION: REMOVE FROM EXPOSURE TO FRESH AIR. GIVE ARTIF. RESPIR., CPR, OXYGEN IF NECESS. KEEP WARM/QUIET. GET MED. ATTN. SKIN: WASH AFFECTED AREA W/SOAP & WATER. USE NO SOLVENTS. GET MED. ATTN. EYES: FLUSH W/WATER 15 MINS. GET MED. ATTN. INGESTION: GET MED. ATTN. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.
Steps if Material Released/Spilled.....	WEAR PPE TO AVOID BRERATHING VAPORS AND SKIN AND EYE CONTACT WITH THE SPILLED MATERIAL. FOR SMALL SPILLS, DIKE AND ABSORB WITH INERT MATERIAL. USE EMERGENCY RESPONSE PROFESSIONALS IF MANAGING A RELEASE IS BEYOND THE CAPABILITY OF IN-HOUSE PERSONNEL.
Neutralizing Agent.....	N/R
Waste Disposal Method.....	THIS MATERIAL IS NOT CLASSIFIED AS AN IGNITABLE HAZARDOUS WASTE ACCORDING TO FEDERAL REGULATIONS. NO DISPOSAL METHOD SHOULD BE USED WHICH WOULD POSE AN ENVIRONMENTAL OR HUMAN HEALTH THREAT INCLUDING ANY WHICH WOULD CONTAMINATE GROUND OR SURFACE WATER
Handling & Storage Precautions.....	KEEP CONTAINER TIGHTLY CLOSED.
Other Precautions.....	DO NOT TAKE INTERNALLY. PREVENT CONTACT WITH CONTAMINATED CLOTHING. WASH CONTAMINATED CLOTHING BEFORE REUSE.

	FOLLOW LABEL WARNINGS.
Respiratory Protection.....	NOT REQUIRED UNDER NORMAL OPERATING CONDITIONS. IN AREAS WHERE TLVS IN SECTION II MAY BE EXCEEDED OR IF SPRAY MIST IS PRESENT, USE NIOSH/MSHA APPRVD. AIR SUPPLIED RESPIRATORS. FOLLOW RESPIRATOR MANUFACTURERS DIRECTIONS AND OSHA REGULATIONS.
Ventilation.....	PROVIDE ADEQUATE GENERAL DILUTION OR LOCAL EXHAUST VENTILA- TION TO MINIMIZE EMPLOYEE EXPOSURE.
Protective Gloves.....	CHEMICAL RESISTANT GLOVES
Eye Protection.....	SAFETY GLASSES W/SIDESHIELDS, GOGGLES
Other Protective Equipment.....	AVOID SKIN CONTACT BY USE OF PROTECTIVE CLOTHING. A SAFETY SHOWER, EYE BATH & WASHING FACILITIES SHOULD BE AVAILABLE.
Work Hygenic Practices.....	WASH CONTAMINATED CLOTHING BEFORE REUSE
Supplemental Health/Safety Data.....	ANIMALS RECEIVING REPEATED DOSES OF 2-BUTOXYETHANOL DEVELOPED HEMOLYTIC ANEMIA AND SECONDARY INJURY TO THE KIDNEY AND LIVER.

Ingredient #.....	1
Proprietary.....	YES
Percent.....	20. %
OSHA PEL.....	UNDETERMINED
ACGHIH TLV.....	UNDETERMINED
Recommended Limit.....	N/R

edient #.....	2
ngredient Name.....	2-PROPOXYETHANOL
CAS Number.....	002807309
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	15. %
OSHA PEL.....	UNDETERMINED
ACGHIH TLV.....	UNDETERMINED
Recommended Limit.....	N/R

Ingredient #.....	3
Proprietary.....	YES
Percent.....	< 5. %
OSHA PEL.....	UNDETERMINED
ACGHIH TLV.....	UNDETERMINED
Recommended Limit.....	N/R

Ingredient #.....	4
Ingredient Name.....	2-BUTOXYETHANOL
CAS Number.....	000111762
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	15. %
OSHA PEL.....	25 SKIN
IH TLV.....	25 SKIN
mmended Limit.....	N/R

Ingredient #.....	5
Ingredient Name.....	WATER
CAS Number.....	007732185

NIOSH Number..... N/R
Proprietary..... NO
Percent..... 50. %
OSHA PEL..... UNDETERMINED
ACGIH TLV..... UNDETERMINED
Recommended Limit..... N/R

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

#12

MATERIAL SAFETY DATA SHEET

Item Name	DESOTHANE 420 HS FAST DRY
Number/Trade Name	DESOTHANE 420 HS FST DRY 821X830
onal Stock Number	8010P400017F
Code	85570
Part Number Indicator	A
Manufacturer Name	COURTAULDS AEROSPACE
P.O.Box	N/R
Street	1608 4TH STREET
City	BERKELEY
State	CA
Country	US
Zip Code	94710
Emergency Phone	800-328-3633
Information Phone	415-526-1525
MSDS Preparer Name	N/R
Street	1608 FOURTH STREET
City	BERKELEY
State	CA
Zip Code	94710
Date MSDS Prepared/Revised	102993
Vendor #1 Name	N/R
Vendor #1 CAGE	N/R
Vendor #2 Name	N/R
Vendor #2 CAGE	N/R
or #3 Name	N/R
or #3 CAGE	N/R
endor #4 Name	N/R
Vendor #4 CAGE	N/R
Vendor #5 Name	N/R
Vendor #5 CAGE	N/R
Specification Number	N/R
Specification Type/Grade/Class	N/R
Appearance/Odor	WHITE LIQUID, SOLVENT ODOR
Boiling Point	213-300 F.
Melting Point	N/R
Vapor Pressure	N/R
Specific Gravity	1.50
Decomposition Temperature	N/R
Evaporation Rate	< N-BUTLY ACETATE
Solubility in Water	N/R
Percent Volatiles by Volume	37.8
Chemical PH	N/R
Corrosion Rate	N/R
Flash Point	49 F.
Flash Point Method	SETA
Lower Explosive Limit	1 %
Upper Explosive Limit	N/R
nguishing Media	CARBON DIOXIDE, DRY CHEMICAL OR FOAM
cial Fire Fighting Procedures	WEAR NIOSH/MSHA APPRVD. SCBA. AVOID SKIN EYE CONTACT. WATER SPRAY MAY BE INEFFECT. FOG NOZZLES PREFERRABLE. COOL FIRE EXPOSED CONTAINERS W/WATER.
Unusual Fire/Explosion Hazards	VAPORS MAY ACCUMULATE IN INADEQUATELY

	VENTILATED/CONFINED AREAS. VAPORS MAY FORM EXPLOSIVE MIXTURES WITH AIR. VAPORS MAY TRAVEL LONG DISTANCES.
Stability.....	YES
[illegible]lity Conditions to Avoid.....	NONE RECOGNIZED
Ma[illegible]cials to Avoid.....	NONE RECOGNIZED
Hazardous Decomposition Products.....	PRODUCTS OF COMBUSTION ARE HAZARDOUS INCLUDING CARBON MONOXIDE AND CARBON DIOXIDE.
Hazardous Polymerization.....	NO
Polymerization Conditions to Avoid.....	NO
LD50 - LD50 Mixture.....	N/R
Route of Entry: Skin.....	YES
Route of Entry: Ingestion.....	YES
Route of Entry: Inhalation.....	YES
Health Hazards - Acute & Chronic.....	INHAL.: NASAL & RESPIR. IRRIT. & ACUTE CNS DEPRESS., HEADACHE, DIZZINESS, STAGG. GAIT, UNCONSCIOUS., ASPHYXIATE. SKIN: IRRIT., DEFATT., DERMATITIS. EYE: IRRIT. INGESTION: MAY CAUSE GASTROINTESTINAL IRRIT., NAUSEA, VOMITING AND DIARRHEA.
Carcinogenity: NTP.....	N/R
Carcinogenity: IARC.....	N/R
Carcinogenity: OSHA.....	N/R
Symptoms of Overexposure.....	INHAL.:MAY CAUSE NASAL & RESPIR. IRRIT. & ACUTE CNS DEPRESS.,HEADACHE,DIZZINESS,STAG.GAIT,CONFUSION,UNCONSIOUS. SKIN: IRRIT.,DERMATITIS,DEFATTING,SKIN SENSITIZATION. EYES: IRRIT. INGEST.: GASTROINTESTINAL IRRIT.,NAUSEA,VOMITING AND DIARRHEA.
Medical Cond. Aggrevated by Exposure...	PRE-EXISTING SKIN, LUNG AND EYE CONDITIONS.
Emergency/First Aid Procedures.....	INHAL: REMOVE TO FRESH AIR. ARTIF. RESPIR., CPR, OXYGEN IF REQUIRE. KEEP WARM & QUIET. GET MED. ATTN. SKIN: WASH W/SOAP & WATER. NO SOLVENTS. GET MED. ATTN. EYES: FLUSH W/WAETR FOR 15 MINS. GET MED. ATTN. INGEST: GET MED. ATTN. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.
Steps if Material Released/Spilled.....	REMOVE ALL SOURCES IGNITION. WEAR PPE AVOID BREATH VAPORS & SKIN & EYE CONTACT. USE NON-SPARKING TOOLS. USE EMERGENCY RESPONSE PROFESSIONAL IF MANAGING A RELEASE IS BEYOND THE CAPABILITY OF IN-HOUSE PERSONNEL. SMALL SPILL: DIKE & ABSORB W/INERT MATL.
Neutralizing Agent.....	ABSORB WITH INERT MATERIAL.
Waste Disposal Method.....	ENSURE THAT IT IS PACKAGED,STORED,TRANSPORTED & OTHERWISE MANAGED IAW LOCAL,STATE & FEDERAL REGULATIONS. NO DISPOSAL METHOD IS T USED THAT WOULD POSE AN ENVIRON., OR HUMAN HEALTH THREAT INCLUDING ANY WHICH CONTAMINATE GROUND OR SURFACE WATER.
Handling & Storage Precautions.....	KEEP CONTAINER TIGHTLY CLOSED. ISOLATE

	FROM HEAT, ELECTRICAL EQUIP. SPARKS & FLAME. DO NTO STORE ABOVE 49 DEG C (120 DEG. F.).GROUND WHEN TRANSFERRING
Other Precautions.....	EMPTY DRUMS MAY CONTAIN EXPLOSIVE VAPORS. DO NOT CUT , PUNCTURE OR WELD ON OR NEAR DRUM. DO NOT TAKE INTERNALLY. DO NOT INHALE VAPORS. VAPORS MAY COLLECT IN LOW/CONFINED AREAS. DO NOT ENTER SUCH AREAS WITHOUT FOLLOW. APPROPRIATE PROCEDURE
Respiratory Protection.....	USE NIOSH/MSHA APPRVD. RESPIR. PROTECTION APPROPRIATE FOR INDICATED COMPONENTS. IN CONFINED AREAS USE NIOSH/MSHA APP-ROVED AIR SUPPLIED RESPIRATORS. FOLLOW RESPIRATOR MANUFACTURER'S DIRECTIONS AND OSHA REGUALTIONS FOR USE.
Ventilation.....	PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP LEVEL OF HAZARDOUS INGREDIENTS BE
Protective Gloves.....	WEAR CHEMICALLY RESISITANT GLOVES
Eye Protection.....	SAFETY GLASSES W/SIDE SHIELDS/GOGGLES.
Other Protective Equipment.....	AVOID SKIN CONTACT BY USE OF OTHER PROTECTIVE CLOTHING. A SAFETY SHOWER AND EYE BATH SHOULD BE AVAILABLE.
Work Hygenic Practices.....	WASHING FACILITIES SHOULD BE AVAILABLE.
Supplemental Health/Safety Data.....	CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT SMOKE. AVOID PROLONGED AND REPEATED CONTACT W/THIS PRODUCT. REPORTS HAVE ASSOCIATED REPEATED & PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN & NS DAMAGE.

Ingredient #.....	1
Ingredient Name.....	METHYL N-AMYL KETONE
CAS Number.....	000110430
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	10. %
OSHA PEL.....	100 PPM
ACGHIH TLV.....	50 PPM
Recommended Limit.....	N/R

Ingredient #.....	2
Ingredient Name.....	POLYESTER RESIN
CAS Number.....	085959882
NIOSH Number.....	N/R
Proprietary.....	NO
Percent.....	20. %
PEL.....	UNDETERMINED
IH TLV.....	UNDETERMINED
mmended Limit.....	N/R

Ingredient #.....	3
Ingredient Name.....	TITANIUM DIOXIDE @

CAS Number..... 013463677
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 45. %
PEL..... 10
ACGIH TLV..... 10 MG/M3
Recommended Limit..... N/R

Ingredient #..... 4
Ingredient Name..... METHYL PROPYL KETONE
CAS Number..... 000107879
NIOSH Number..... N/R
Proprietary..... NO
Percent..... 5. %
OSHA PEL..... 200 PPM
ACGHIH TLV..... 200 PPM
Recommended Limit..... N/R

Ingredient #..... 5
Proprietary..... YES
Percent..... 15. %
OSHA PEL..... UNDETERMINED
ACGHIH TLV..... UNDETERMINED
Recommended Limit..... N/R

Ingredient #..... 6
Ingredient Name..... TOLUENE
CAS Number..... 000108883
NIOSH Number..... N/R
Proprietary..... NO
Percent..... < 1. %
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM
Recommended Limit..... N/R

Ingredient #..... 7
Ingredient Name..... BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEPACATE
CAS Number..... 041556267
NIOSH Number..... N/R
Proprietary..... NO
Percent..... < 5.%
OSHA PEL..... UNDETERMINED
ACGHIH TLV..... UNDETERMINED
Recommended Limit..... N/R

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

#157

MATERIAL SAFETY DATA SHEET

Item Name	POLYURETHANE
Part Number/Trade Name	MIL-C-85285B,34102 TYPE I POLYURETHANE
nal Stock Number	8010P887670F
C Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC.
Emergency Phone	714-474-0400
Specification Number	C-85285B,34102,G/S I
Boiling Point	175-338 F
Flash Point	23 DEG F TCC
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES, SPARKS, OR OPEN FLAMES
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMPERATURE:CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	A:VAPORS ARE IRRITATING TO THE EYES,NOSE,AND THROAT.INHALATION MAY CAUSE HEADACHES,DIFFICULT BREATHING AND LOSS OF CONSCIOUSNESS;C:PROLONGED CONTACT WILL CAUSE DRYING AND CRACKING OF THE SKIN,DUE TO DEFATTING ACTION.SKIN SENSITIZATION,ASTHMA OR OTHER ALLE
Carcinogenity: NTP	NR
Carcinogenity: IARC	NR
Carcinogenity: OSHA	NR
Symptoms of Overexposure	INHALATION:IRRITATION,HEADACHE,DIZZINESS ,STAGGERING GAIT,CONFUSION,UNCONSCIOUSNESS OR COMA;SKIN:IRRITATION,SWELLING,REDNESS,RE ASH;EYES:IRRITATION,TEARING,REDNESS, AND SWELLING,STINGING;INGESTION:IRRITATION&P OSS.CORROSIVE ACTION IN THE MOUTH,STOMACH TISSUE
Medical Cond. Aggrevated by Exposure	ASTHMA,RESPIRATORY DISORDERS,SKIN ALLERGIES,ECZEMA, AND DERMITITIS
Respiratory Protection	A RESPIRATOR THAT IS RECOMMENDED OR APROVED FOR USE IN AN ORGANIC0VAPOR ENVIRONMENT(AIR PURIFYING OR FRESH AIR SUPPLIED)IN NECESSARY.USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
Ventilation	EXHAUST VENTILATION SUFFICIENT TO KEEP THE AIRBORNE CONCENTRATIONS BELOW TLV LEVELS.IN ALL CASES OF OVEREXOSURE,CALL DOC
ective Gloves	COTTON/NEOPRENE/RUBBER POLYETHYLENE
Eye Protection	SIDDE SHIELDS/CHEM.GOGGLES/FACE SHIELD
Supplemental Health/Safety Data	1ST AID:INHALATION:REMOVE TO FRESH AIR.RESTORE BREATHING.ASTHMATIC SYMPTOMS

DELAYED,SEE A DOCTOR;SKIN:WASH WITH SOAP&WATER.SEE ADOC;EYES:FLUSH WITH WATER FOR 15 MINUTES.OBTAIN MEDICAL ATTENTI ON;INGESTION:DO NO INDUCE VOMITING.DO NOT GIVE ANYTHING BY MOU.

Ingredient #..... 01
Ingredient Name..... N-BUTYL ACETATE
CAS Number..... 123-86-4
NIOSH Number..... NR
Proprietary..... NO
Percent..... 5
ACGHIH TLV..... 150 PPM

Ingredient #..... 02
Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL ISOBUTYL KETONE
CAS Number..... 108-10-1
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... 50 PPM

Ingredient #..... 05
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... 200 PPM

Ingredient #..... 06
Ingredient Name..... PMGE ACETATE
CAS Number..... 108-65-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1
ACGHIH TLV..... NR

Ingredient #..... 07
Ingredient Name..... DIBUTYLTINE DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... NR
Proprietary..... NO

Percent..... <0.1
ACGHIH TLV..... .1 MG/M3

Ingredient #..... 08
dient Name..... 2-4 PENTANEDIONE
Number..... 123-54-6
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5
ACGHIH TLV..... NR

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

MATERIAL SAFETY DATA SHEET

em Name	ALIPHATIC ISOCYANATE
rt Number/Trade Name	CAT,MIL-C-85285B,34102,G/S,TYP ALIPHATIC ISOCYANATE
tl l Stock Number	8010P887670F
GE Code	33461
rt Number Indicator	B
nufacturer Name	DEFT, INC.
ergency Phone	714-474-0400
ecification Number	C-85285B,34102,G/S
iling Point	237-338 F
ash Point	60 DEG F TCC
ability	YES
ability Conditions to Avoid	CONTACT WITH MOISTURE,MATERIAL WHICH REACT WITH ISOCYANATES AND HIGH TEMPERATURES
terials to Avoid	WATER,AMINES,STRONG BASES,ALCOHOLS,METAL COMPOUNDS AND SURFACE ACTIVE MATERIALS
zardous Decomposition Products	BY HIGH HEAT/TEMPERATURE:CARBON MONOXIDE,CARBON DIOXIDE; ANDOXIDES OF NITROGEN, TRACES OF HCN AND HDI
50 - LD50 Mixture	NR
ute of Entry: Skin	YES
of Entry: Inhalation	YES
a Hazards - Acute & Chronic	A:VAPORS ARE IRRITATING TO EYES,NOSE,AN THROAT.INHALATION MAY CAUSE HEADACHES,DIFFICULT BREATHING AND LOSS OF CONSCIOUSNESS;C: REPEATED OVEREXPOSURE OR A SINGLE LG DOSE, CERTAIN INDIVIDUALS WILL DEVELOP ISOCYANATE SENSITIZATION WHICH WILL CAUSE THEM TO R
rcinogenity: NTP	NR
rcinogenity: IARC	NR
rcinogenity: OSHA	NR
mptoms of Overexposure	INHALATION:IRRITATION,HEADACHE,DIZZINESS ,STAGGERING GAIT,CONFUSION,UNCONSCIOUSNESS OR COMA;SKIN:IRRITATION,SWELLING,REDNESS,ST INGING;EYES:IRRITATION,TEARING,REDNESS,S WELLING,STINGING;INGESTION:IRRITATION,PO SS.CORROSIVE ACTION IN THE MOUTH,STOMACH TISSUE,D
dical Cond. Aggrevated by Exposure	ASTHMA,RESPIRATORY DISORDERS,SKIN ALLERGIES,ECZEMA,DERMITITIS.ISOCYANATE SENSITIZATION
spiratory Protection	A RESPIRATOR APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRONMENT(AIR PURIFYING OR FRESH AIR SUPPLIED)IS NECESSARY. USE NIOSH APPROVED RESPIRATOR WHEN TLV LEVELS ARE EXCEEDED
ntilation	EXHAUST VENTILATION SUFFICIENT TO KEEP THE AIRBORNE CONCENTRATIONS BELOW THEIR RESPECTIVE TLV LIMITS, IS NECESSSARY

rotective Gloves..... COTTON/NEOPRENE/RUBBER/POLYETHYLENE
ye Protection..... SPLASH GUARD/CHEM.GOGGLES/FACE SHIELD
upplemental Health/Safety Data..... 1ST AID:INHALATION:REMOVE TO FRESH AIR.RESTORE BREATHING.GET MEDICAL ATTENTION;SKIN:WASH WITH SOAP&WATER.SEE DOC;EYES:FLUSH WITHWATER FOR 15 MINUTES.SEE A DOCTOR;INGESTION:DO NOT INDUCE VOMIT ING.NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.GET M

ngredient #..... 01
ngredient Name..... ETHYL 3-ETHOXYPROPIONATE
AS Number..... 763-69-9
IOSH Number..... NR
roprietary..... NO
ercent..... 20
CGHIH TLV..... NR

ngredient #..... 02
ngredient Name..... ALIPHATIC ISOCYANATE
AS Number..... 28182-81-2
IOSH Number..... NR
roprietary..... NO

ngredient #..... 03
ngredient Name..... ALIPHATIC ISOCYANATE**
AS Number..... 28182-81-2
IOSH Number..... NR
r[illegible]etary..... NO
[illegible]t..... 20
[illegible]H TLV..... NR

ngredient #..... 04
ngredient Name..... C8&10 AROMATIC HYDROCARBON
AS Number..... 64742-95-6
IOSH Number..... NR
roprietary..... NO
ercent..... <5
CGHIH TLV..... 100 PPM

ngredient #..... 05
ngredient Name..... N-BUTYL ACETATE
AS Number..... 123-86-4
IOSH Number..... NR
roprietary..... NO
ercent..... <5
CGHIH TLV..... 150 PPM

ngredient #..... 06
ngredient Name..... METHYL ISOBUTYL KETONE
AS Number..... 108-10-1
IOSH Number..... NR
roprietary..... NO
e[illegible]nt..... 35
C[illegible] TLV..... 50 PPM

OTICE: If you require a complete, unabbreviated MSDS,

call Bioenvironmental Engineering.

Emissions Rate: 204,360 lb/yr × 454 gr/lb × 1 yr/52 wks × 1 wk/5 days
× 1 day/18 hrs × 1 hr/60 min × 1 min/60 sec
= 5.51 gr/sec

Paint 1 gl/gal = 3.4 lb VOC/gal – 7.6 lb Solids

Paint = 31% VOC 69% Solid
VOC = 204,360 × .31 = 63,351.6 lb/yr
Solids = 204,360 × .69 = 141,008.4 lb/yr

VOC Emission Rate = 63,351.6 lb × 454 g/lb × 1 yr/52 wk × 1 wk/5 day
× 1 day/18 hr × 1 hr/60 min × 1 min/60 sec
= 1.71 gr/sec VOC

Solids Assume 75% on part and 25% overspray
141,008.4 lb solid × .25 = 35,252.1

Assume 90% capture and 10% escapes stack
35,252.1 lb solid × .10 = 3,525.21 lb solid

Solid Emission Rate = 3,525.21 lb/yr × 454 g/lb × 1 yr/52 wk × 1 wk/5 day
× 1 day/18 hr × 1 hr/60 min × 1 min/60 sec
= .095 g/sec

Stack Height

18 @ 45'
6 @ 45'
6 @ 30'
2 @ 30'

ave stack height = 41.25 ft = 12.53 m

Stack Diameter

18@ 48"
6@ 60"
6 @ 36"
2 @ 48"

ave stack Φ = 48" = 1.2192 m

Velocity 110 ft/min = .56 m/sec

Distance to fence ≈ 4,600' = 1,402 m

Building Dimensions 415' x 240' x 45

VOC @ Fence 61.87 ug/m³

Solids @ Fence 3.437 ug/m³

3 part to 1 part mix

Butyl Acetate	11.0	
Ethyl 3-Ethoxypropionate	9.1	
Xylene	1.6	
Methyl Isobutyl Ketone	41.2	
MEK	8.3	
Toluene	1.7	
Mineral Spirits	1.7	
2-4 Pentandione		24
Ethyl Benzene	1.7	
Anti Float		5
Propietary		5
Anti Mar Agent		5
sw Agent		5
ethyl 3-Ethoxypropionate	11	
Aliphatic Isocyanates		56
C_8 - C_{10} Aromatic	2.7	

VOC 61.87 mg/m³

Butyl Acetate = 61.87 × .11 = 6.81 mg/m³ = 1.31 ppb < 1.5ppm

Ethyl 3-Ethoxypropionate = 61.87 × .191 = 11.82 mg/m³ no TLV

Xylene = 61.87 × .016 = .99 mg/m³ < 4.35 mg/m³

IK = 61.87 × .412 = 25.49 mg/m³ < 2.05 mg/m³

4.2.4-339

MEK = 61.87 × .083 = 5.13 mg/m³ < 5.9 mg/m³

Toluene 61.87 × .017 = 1.05 mg/m³ < 3.75 mg/m³

Mineral Spirits 61.87 × .017 = 1.05 mg/m³ TLV not Established

Ethyl Benzene 61.87 × .017 = 1.05 mg/m³ TLV 100ppm

C_8-C_9 Aromatic 61.87 × .027 = 1.67 mg/m³ = .34 ppb < 1 ppm

Solids @ Fence .095 mg/m³

2.4 Pentanedione .095 × .24 = .0228 mg/m³ TLV not Est

Anti Float .095 × .05 = .0048 mg/m³ TLV not Est
pigtary
Anti Mar
Flow

Aliphatic Isocyanate = .095 × .56 = .0532 mg/m³ = .007 ppb < .05 ppb ~~.0078 ppb < .05 ppb~~

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

220 VOC

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.710
STACK HEIGHT (M)	=	12.53
STK INSIDE DIAM (M)	=	1.22
STK EXIT VELOCITY (M/S)	=	.56
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .03 M**4/S**3; MOM. FLUX = .11 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1402.	61.87	5	1.0	1.1	5000.0	18.9	123.5	63.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	61.87	1402.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

g 220 Solids

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.9500E-01
STACK HEIGHT (M)	=	12.53
STK INSIDE DIAM (M)	=	1.22
STK EXIT VELOCITY (M/S)	=	.56
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .03 M**4/S**3; MOM. FLUX = .11 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1402.	3.437	5	1.0	1.1	5000.0	18.9	123.5	63.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	3.437	1402.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

MATERIAL SAFETY DATA SHEET

Name	POLYURETHANE
Part Number/Trade Name	MIL-C-85285B,36118,G/S,TYPE I
National Stock Number	8010013055551
CAGE Code	33461
Part Number Indicator	A
Manufacturer Name	DEFT, INC.
Street	17451 VON KARMAN AVE.
City	IRVINE
State	CA
Country	US
Zip Code	92714
Emergency Phone	800-424-9300
Information Phone	714-474-0400
Date MSDS Prepared/Revised	15JAN93
Specification Number	NR
Appearance/Odor	GRAY LIQUID WITH SOLVENT ODOR
Boiling Point	175-338 F
Specific Gravity	1.21
Evaporation Rate	1.33
Solubility in Water	INSOLUABLE
Percent Volatiles by Volume	53 VOL
Flash Point	23 DEG F (TCC)
Flash Point Method	TCC
Lower Explosive Limit	.90%
Upper Explosive Limit	11.40%
Extinguishing Media	FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, WATER SPRAY
Special Fire Fighting Procedures	FULL PROTECTIVE CLOTHING WITH SELF-CONTAINED BREATHING APP. COOL CLOSED CONTAINERS WITH WATER TO PREVENT PRESSURE BUILD-UP,AUTO IGNITION OR EXPLOSION
Unusual Fire/Explosion Hazards	OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD
Stability	YES
Stability Conditions to Avoid	HIGH TEMPERATURES,SPARKS,OR OPEN FLAME
Materials to Avoid	STRONG OXIDIZING AGENTS
Hazardous Decomposition Products	BY HIGH HEAT/TEMPERATURE:CARBON MONOXIDE,CARBON DIOXIDE,AND OXIDES OF NITROGEN
LD50 - LD50 Mixture	NR
Route of Entry: Skin	YES
Route of Entry: Ingestion	YES
Route of Entry: Inhalation	YES
Health Hazards - Acute & Chronic	A:VAPORS ARE IRRIT.TO EYES,NOSE&THROAT.INHAL.MAY CAUSE HEADACHESDIFF.BREATHING&LOSS OF CONSCIOUSNESS.C:PROLONGED CONTACT WILL CAUSE DRYING&CRACKING OF SKIN,DEFATTING ACTION.SKIN SENSITIZATION,ASTHMA OR

	OTHER ALLERGIC RESPONSES MAY DEVELOP
Carcinogenity: NTP.....	NR
Carcinogenity: IARC.....	NR
Carcinogenity: OSHA.....	NR
toms of Overexposure.....	INHAL:IRRIT.OF THE RESP.TRACT&ACUTE NERVOUS SYS.DEPRESSION,RESPECTIVALY:HEADACHE,DIZZINESS,STAGERING GAIT,CONFUSION,UNCONSC.,COMA;SKIN:IRRIT. SWELLING,REDNESS,RASH;EYES:IRRIT.TEARING ,REDNESS,SWELLING,STINGING;INGEST:ACUTE: IRRIT.&POSS.CORROSIVE ACTION IN TH
Medical Cond. Aggrevated by Exposure...	ASTHMA AND ANY OTHER RESPIRATORY DISORDERS.SKIN ALLERGIES,ECZEMA,ANDDERMITITIS
Emergency/First Aid Procedures.....	EYES: FLUSH WITH WATER 15 MIN. CALL PHY. SKIN: WASH WITH SOAP AND WATER. WASH CONTAM. CLOTHES. INHALE: GET TO FRESH AIR. ASTHMATIC SYPMTOMS MAY DEVELOP CALL PHY. INGEST: DO NOT INDUCE VOMITTING. GET MED. HELP
Steps if Material Released/Spilled.....	EVACUATE ALL NON-ESSENTIAL PERSONNEL. REMOVE ALL SOURCES OF IGNITION. VENTILATE AREA. CONTAIN AND REMOVE WITH INERT ABSORBANT AND NON-SPARKING TOOLS
Waste Disposal Method.....	IN ACCORDANCE WITH LOCAL, STATE, AND FED. REGS.
Handling & Storage Precautions.....	STORE IN OSHA 1910.106 APPROVED BUILDINGS. AWAY FROM HIGH TEMPS., FIRE, OPEN FLAMES, AND SPARK SOURCES. WELL VENTILATED AREA. IN TIGHTLY CLOSED C
Other Precautions.....	KEEP CONTAINERS TIGHT AND UPRIGHT.EMP CONTAINERS MUST BE HANDLED WITH CARE. PREVENT PROLONGED BREATHING OF VAPORS AND CONTACT WITH SKIN AND EYES
Respiratory Protection.....	A RESP.THAT IS APPROVED FOR USE IN AN ORGANIC VAPOR ENVIRONMENT(AIR PURIFYING OR FRESH AIR SUPPLIED)IS NECESSARY.OBSERVEOSHA REGULATIONS FOR RESPIRATOR USE
Ventilation.....	EXHAUST SUFFICIENT TO KEEP THE AIRBORNE CONC.OF SOLVENT VAPORS OR MISTS BELOW THEIR RESPECTIVE TLV'S MUST BE UTILIZED
Protective Gloves.....	COTTON,NEOPRENE,RUBBER POLYETHYLENE
Eye Protection.....	SIDE SHIELDS,CHEM.GOGGLES,FACE SHIELD
Other Protective Equipment.....	LONG SLEEVE AND LONG LEG CLOTHING
Work Hygenic Practices.....	WASH HANDS BEFORE EATING, SMOKING OR USING WASHROOM

Ingredient #.....	01
Ingredient Name.....	BUTYL ACETATE
CAS Number.....	123-86-4
NIOSH Number.....	NR
rietary.....	NO
ent.....	<5.
OSHA PEL.....	150 PPM
ACGHIH TLV.....	150 PPM

Ingredient #.....	02

Ingredient Name..... ETHYL 3-ETHOXYPROPIONATE
CAS Number..... 763-69-9
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5.
ACGIH TLV..... NR

Ingredient #..... 03
Ingredient Name..... XYLENE
CAS Number..... 1330-20-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 04
Ingredient Name..... METHYL ISOBUTYL KETONE
CAS Number..... 108-10-1
NIOSH Number..... NR
Proprietary..... NO
Percent..... 25
OSHA PEL..... 50 PPM
ACGHIH TLV..... 50 PPM

Ingredient #..... 05
Ingredient Name..... METHYL ETHYL KETONE
CAS Number..... 78-93-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <5.
OSHA PEL..... 200 PPM
ACGHIH TLV..... 200 PPM

Ingredient #..... 06
Ingredient Name..... TOLUENE
CAS Number..... 108-88-3
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
ACGHIH TLV..... 100 PPM

Ingredient #..... 07
Ingredient Name..... MINERAL SPIRITS
CAS Number..... 64742-88-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <1.
ACGHIH TLV..... NR

Ingredient #..... 08
Ingredient Name..... DIBUTYLTIN DILAURATE
CAS Number..... 77-58-7
NIOSH Number..... NR
Proprietary..... NO
Percent..... <0.1
ACGIH TLV..... .1 MG/M3

Ingredient #..... 09
Ingredient Name..... 2-4 PENTANEDIONE

CAS Number..... 123-54-6
NIOSH Number..... NR
Proprietary..... NO
ent..... <5.
IH TLV..... NR

Ingredient #..... 10
Ingredient Name..... ETHYL BENENE
CAS Number..... 100-41-4
Percent..... <1
OSHA PEL..... 100 PPM
ACGHIH TLV..... 100 PPM

Ingredient #..... 11
Ingredient Name..... ANTI-FLOAT AGENT
CAS Number..... 1317-65-3
Percent..... <1
OSHA PEL..... 10 MP/F3
ACGHIH TLV..... 10 MP/F3

Ingredient #..... 12
Proprietary..... YES
Percent..... <1

Ingredient #..... 13
Ingredient Name..... ANTI-MAR AGENT
Percent..... <1

redient #..... 14
edient Name..... FLOW AGENT
Number..... 26376-86-3
Percent..... <1

NOTICE: If you require a complete, unabbreviated MSDS, call Bioenvironmental Engineering.

Typical Input for Point be) taken from Bldg 270 screen model run Input Submitted by OAFB.

09/30/94
13:34:56

*** SCREEN2 MODEL RUN ***
*** VERSION DATED 92245 ***

HAFBPB.MOD

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	25.3700
STACK HEIGHT (M)	=	22.2500
STK INSIDE DIAM (M)	=	1.5200
STK EXIT VELOCITY (M/S)	=	.5600
STK GAS EXIT TEMP (K)	=	297.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	URBAN
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

BUOY. FLUX = .043 M**4/S**3; MOM. FLUX = .179 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1128.	993.3	6	1.0	1.3	10000.0	26.99	103.03	55.05	NO
1200.	912.9	6	1.0	1.3	10000.0	26.99	108.53	57.42	NO
1300.	818.4	6	1.0	1.3	10000.0	26.99	116.01	60.59	NO
1400.	739.8	6	1.0	1.3	10000.0	26.99	123.32	63.65	NO
1500.	673.5	6	1.0	1.3	10000.0	26.99	130.46	66.60	NO
1600.	617.1	6	1.0	1.3	10000.0	26.99	137.45	69.45	NO
1700.	568.5	6	1.0	1.3	10000.0	26.99	144.29	72.22	NO
1800.	526.5	6	1.0	1.3	10000.0	26.99	150.99	74.90	NO
1900.	489.7	6	1.0	1.3	10000.0	26.99	157.56	77.50	NO
2000.	457.3	6	1.0	1.3	10000.0	26.99	163.99	80.03	NO
2100.	428.6	6	1.0	1.3	10000.0	26.99	170.31	82.50	NO
2200.	403.0	6	1.0	1.3	10000.0	26.99	176.51	84.91	NO
2300.	380.1	6	1.0	1.3	10000.0	26.99	182.60	87.25	NO
2400.	359.5	6	1.0	1.3	10000.0	26.99	188.59	89.55	NO
2500.	340.8	6	1.0	1.3	10000.0	26.99	194.47	91.79	NO
2600.	323.9	6	1.0	1.3	10000.0	26.99	200.25	93.99	NO
2700.	308.4	6	1.0	1.3	10000.0	26.99	205.95	96.15	NO
2800.	294.3	6	1.0	1.3	10000.0	26.99	211.55	98.26	NO
2900.	281.4	6	1.0	1.3	10000.0	26.99	217.06	100.33	NO
3000.	269.4	6	1.0	1.3	10000.0	26.99	222.50	102.36	NO
3500.	221.7	6	1.0	1.3	10000.0	26.99	248.53	112.02	NO
4000.	187.7	6	1.0	1.3	10000.0	26.99	272.89	120.97	NO
4500.	162.5	6	1.0	1.3	10000.0	26.99	295.83	129.34	NO
5000.	143.0	6	1.0	1.3	10000.0	26.99	317.55	137.22	NO

```
MAXIMUM 1-HR CONCENTRATION AT OR BEYOND  1128. M:
  1128.   993.3         6     1.0     1.3 10000.0   26.99  103.03   55.05    NO

 DWASH=   MEANS NO CALC MADE (CONC = 0.0)
 DWASH=NO MEANS NO BUILDING DOWNWASH USED
 DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
 DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
 DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

     ****************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ****************************************

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
-------------      -----------    -------    -------
SIMPLE TERRAIN       993.3          1128.        0.

**********************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
**********************************************************
```

993.3 $\mu g/m^3$ = [redacted] 0.99 mg/m^3

[redacted]

~~found highest toxicity~~

Lowest TLV (most toxic) compound omitted

Substantially from the Paints used at

HAIB.S Methyl Isobutyl Ketone (TLV = 2.05 mg/m^3)

(MIK)

TLV/100 (non-carcinogen) = 2.05 mg/m^3.

0.99 mg/m^3 (from screen2 output) < 2.05 mg/m^3 (TLV/100) for MIK

Worst case screen modeling provided.

4.2.4-348

Arjan:

These answers are in response to the questions you FAXed me 4/29/94.

1. PARTICULATE EMISSIONS FROM PAINTING OPERATIONS

- Assume paint weight 11 lbs per gallon

High VOC paint is assumed to be 5.5 lbs of VOC + 5.5 lbs of Solids

Low VOC paint is assumed to be 3.5 lb of VOC + 7.5 lbs of solids

- Assume 100% of VOCs are evaporated while 65% of solids are deposited on part and 35% is over spray. Of the over spray assume 90% is captured in booths filter system and 10% is emitted from stack.

CY 93 High VOC paint usage:	2,463.69 gal
lbs of solid per gallon :	x 5.50
	13,550.30 lbs
percent over spray :	x 0.35
	4,742.61 lbs
percent up stack :	x 0.10
lbs from high VOC paint :	474.26
CY 93 Low VOC paint usage :	15,235.13 gal
lbs of solid per gallon :	x 7.50
	114,263.48
percent over spray :	x 0.35
	39,992.22
percent up stack :	x 0.10
lbs from low VOC paint :	3,999.22

TSP from painting = 474.26 + 3,999.22 = 4,473.48 lbs

2. STACK DIAMETERS

AQUIS # 3728 = 42 "
AQUIS # 3560 = 36"

3. PAINT GUN EFFICIENCY

At present 80% of all industrial painting operations utilize High Volume Low Pressure (HVLP) paint guns. The potential to use HVLP at the remaining 20% will be assessed and implemented as practical over the next 24 months. HVLP paint equipment has a transfer efficiency of 65%, however the are not usable in application of high-gloss or textured finishes and on small spherical or tight radius parts.

4. PAINT GUN CLEANING

Approximately 60% of all paint booths have enclosed paint gun cleaners. At the present time commercial paint gun cleaners are only available for pressure pot sizes less than 3 gallons. For many pressure pots greater than 3 gallons paint gun cleaners have been fabricated from old covered cold cleaning units. These units are not as efficient as commercial units, however they are significantly better than uncontrolled gun cleaning.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

Mr Arjun Ram, Permitting Engineer
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

5 Jan 1994

Re: Hill AFB Consolidated Permit Application for Paint Booths (Hill AFB ltr 20 July 93)

Dear Mr Ram

This letter is to submit a revised list of booths currently in operation at Hill AFB. This list is to be substituted for the one included with the original submittal. The attached list contains the following modifications to the original submittal.

1. Bldg 100J AQUIS #3286: This is an existing unpermitted booth that was omitted from the original list.

2. Bldg 238 AQUIS # 4407: This booth is currently operational under the terms of DAQE 0961-93.

3. Bldg 988 AQUIS #4408: The operation that once used this booth in Bldg 935 has just relocated to Bldg 988. The booth has been reassembled in Bldg 988, and is operational.

If you have any questions regarding this matter, please do not hesitate to contact me at 777-0359.

MICHAEL J. GRAZIANO
Air Quality Engineer

Atch
Revised Paint Booth List

4.2.4-352

PAINT BO[illegible]VENTORY

Bldg	AQUIS #	AO	Mnfgr	Model	CFM	Type	Stack Dia. in		
5D	3314	BAQE-977-1	Binks	WE-10-8-T-LH	10,500	Water Fall	34"		
5E	3332	Needs Permit	Binks		5,000*	Dry	18"		
5N	3859	DAQE-167-92	DeVilbiss	DF-564	2,000	Dry	12"		
12	3953	Grandfathered	Custom		10,500*	Dry	36"		
48	3649	7/18/83	Custom		140,000	Dry	60"		
48	3650	Needs Permit	JBI	WT-35-SB	15,000	Dry	48"		
100J	3286	Needs Permit	Binks	29-784	7,700	Dry	36"		
100J	3292	Needs Permit	DeVilbiss	DCC-5081	13,500	Water Fall	48"		
205	4198	Inactive							
220	3116	DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		

Note, these 9 seperate waterfalls make up one booth that is segregated by curtains and can be configured in various ways to accn different aircraft. At present it is seperated by cuirtains into 3 bays.

PAINT BOOTH INVENTORY

220	3117	DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60*		
Note, these 6 pieces of equipment make up one booth that is segregated by curtains and can be configured in various ways to acc									
	different aircraft. At present it is sererated by curtains into 3 bays.								
220	3118	Grandfathered	DeVilbiss		3,600*	Water Fall	6 @ 36*		
220	3978	Grandfathered	DeVilbiss	2000	10,800*	Water Fall			
220	3073	Grandfathered	DeVilbiss	2000	10,800*	Water Fall			
238	4265	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4268	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4271	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4274	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4277	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4280	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36*		
238	4244	BAQE-525-88	Binks	WE-8-8-TLH	8,000*	Water Fall	24		
238	4407	DAQE-0961-93	DeVilbis	Custom	45,000	Water Fall	2@20*		
266	3838	Grandfathered	DeVilbiss		10,000*	Water Fall	48*		
266	3839	Grandfathered	DeVilbiss	J-K4214	10,000*	Water Fall	48*		
266	3840	Grandfathered	Custom		15,000*	Water Fall	48*		
270	3903	BAQE-454-89	JBI	C-130 Custom	470,000	Dry	6 @ 60*		
274	3402	BAQ-973-1	DeVilbiss	XNO-568	6,000*	Water Fall	42*		
505	3263	Needs Permit	Paasch	O962	7,500*	Water Fall	42*		

4.2.4-353

507	3050	BAQE-551-89	DeVilbiss		25,000	Water Fall	2 @ 42"		
507	3053	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3054	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3055	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3056	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3057	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
507	3058	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
507	3251	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
509	3150	BAQE-494-89	DeVilbiss	DCL-1689-125	16,000	Water Fall	34"		
509	3151	BAQE-494-89	DeVilbiss	DCL-1689-125	16,000	Water Fall	34"		
509	3153	BAQE-494-89	DeVilbiss	DF-6220	2,141	Dry	16"		
509	4058	BAQE-494-89	DeVilbiss	DF-6220	2,141	Dry	16"		
514	3102	BAQE-174-91	DeVilbiss	DF-L-676-125	5,250	Dry	24"		
534	3737	BAQE-359-88	Custom		12,000	Dry	16"		
590	3929	Needs Permit			6,000*	Water Fall	36"		
592	3931	Needs Permit	Protectaire		10,000*	Water Fall	36		
751	4161	BAQE-492-92	Binks		3,500	Dry	18"		
810	4217	Needs Permit	DeVilbiss		8,000*	Dry	42"		
847	3155	BAQE-030-88	Binks	NPB-24-20-T	193,600	Water Fall	8 @ 36"		
847	3247	Needs Permit	Binks	NPB-14-10-T-LH	15,000*	Water Fall	48"		
847	3248	Needs Permit	Binks		16,000*	Water Fall	48"		
988	4408	Needs Permits	DeVilbiss	XCL-58789	6000	Dry	42"		

4.2.4-354

PAINT BOOTH INVENTORY

1133	3734	BAQE-029-88	Custom		43,000	Dry	60"		
1251	3741	BAQE-101-89	Binks		27,000	Dry	42"		
1424	4256	BAQE-355-88	Binks	TWW-530-T-LO	25,200	Water Fall	48"		
1701	3915	BAQE-039-91	DeVilbiss	ASEY-914-34	18,000	Dry	34"		
1701	3919	BAQE-039-91	JBI	TSD-98-DT-S	190,000	Dry	6 @ 60"		
1913	3728	BAQE-026-88	DeVilbiss	XDF-6342	17,900	Dry			
1938	3560	BAQE-642-88	Binks		10,000*	Dry			
2026	3732	BAQE-977-1	Binks	PFA-12-10-T-LH	15,000	Dry	34"		

(*) Estimated CFM's

4.2.4-355

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

Mr. F. Burnell Cordner
Director, Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

20 July 1993

Re: Hill AFB Consolidated Air Permit, Paint Booths

Dear Mr Cordner

We propose to consolidate all paint booths, owned and operated by the Air Force, at Hill AFB, under a single Approval Order. Atch 1 is a current inventory of all paint booths located on base. Atch 2 is a list of permitted paint booths with their associated AO Number; and Atch 3 is a list of unpermitted, grandfathered, and proposed paint booths. At this time there are 37 permitted paint booths, 9 unpermitted booths, 7 grandfathered booths currently in operation at Hill AFB, as well as 4 proposed booths. It is the intent of this action to consolidate the permitting of all booths under a single approval order. Atch 4 is a list of proposed conditions for the single approval order.

We further propose that the maximum allowable VOC emissions from painting operations at Hill AFB shall not exceed 402,420 lbs/yr (201.2 tons/yr). It is anticipated that this amount will cover all existing and potential future painting workloads at the base. This amount was determined by summing the total quantity of VOC emissions currently permitted and adding to it the amount of a recently submitted Notice of Intent (NOI). This proposal, currently under review by the Department of Air Quality, Julie Rose, will consolidate BAQE 454-89 and DAQE 167-92 (Bldgs 5N, 220, and 270) under a single consolidated Approval Order.

We will centrally manage and monitor the VOC emissions from the numerous paint booths on base. The Environmental Management Directorate will allocate VOC emissions to each of the paint booths located on base. Allocation of these emissions will be based upon workloads and at the discretion of the Director of Environmental Management. Logs of paint and thinner usage and VOC emissions will be maintained at the individual booths. These monthly paint logs will be submitted to Environmental Management which will be responsible for calculating the VOC emissions from all paint booths for the past 12-month period. The total emissions from all paint booths located on base shall not exceed 201.2 tons during the past 12-month period.

Emissions from individual booths will be determined in the following manner:

VOC = (Percent Volatile by Weight/100) X (Density lb/gal) X (Gallons Consumed) / (2,000 lb/ton)

VOC emissions will be controlled by continued substitutions of high VOC paint to compliant low VOC paint wherever possible and the continued use of high efficiency paint transfer equipment. Typically, paint booth exhaust streams contain a large mass of air with a very low concentration of VOC emissions, typically 30-40 PPMV. There are currently several technologies available to control VOC emissions from surface coating operations. These include carbon adsorption, thermal incineration, and regenerative thermal incineration. However, these technologies have proven to be highly energy intensive. Over the past three years, Hill AFB has converted 97 percent of its surface coating applications from High to Low VOC paints. Additionally, the use of High Volume Low Pressure (HVLP) spray guns has significantly improved transfer efficiency. Both of these methods have resulted in significant reductions of VOC emissions. In addition to the above, the Air Force and the paint industry are working together to find low VOC substitutes for those applications that still require high VOC paint. Therefore, it is proposed that VOC emissions be controlled by continued substitution and use of high efficiency transfer equipment.

It is further proposed that modification of existing paint booths or addition of new booths be accomplished through amendments of the Consolidated Approval Order. It is the intent of this effort to simplify the issuing and management of permits. Since the total VOC emissions will not increase from the approved 201.2 tons/yr, any action involving paint booths at Hill AFB could reference the single Approval Order with a new revision number.

Your assistance in this matter would be greatly appreciated. If you have any questions regarding this matter, please do not hesitate to contact the Hill AFB project manager, Michael Graziano, at 777-0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

4 Atch
1. Paint Booth Inventory
2. Permitted Paint Booths
3. Unpermitted Grandfathered, Proposed Booths
4. Proposed AO Conditions

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY PERMIT

CONSOLIDATED AIR PERMIT FOR ALL PAINT BOOTHS AT HILL AIR FORCE BASE, UTAH

This approval order is being issued to combine AOs for numerous existing paint spray booths and to approve the operations of several currently un-permitted paint booths. A list of those paint spray booths covered under this AO is attached.

PAINT SPRAY BOOTH PERMIT CONDITIONS

1. Emissions of VOC from operations within the identified paint spray booths shall not exceed a combined total of 201.2 tons per 12- month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the limitation shall be determined on a rolling 12 month total. Based on the first day of each month a new 12 month total shall be calculated using the previous 12 months. The emissions of VOC shall be determined by maintaining a record of paints and thinners used at each individual paint booth. The record shall include the following data for each item used:

a. Name of paint or thinner.
b. Weight in pounds per gallon. VOC lb/gal in lieu of b) & c)
c. Percent VOC by weight
d. Amount used on a daily basis.

Records of consumption shall be kept for all periods when the booth is in operation . Records of consumption shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request.

VOC emissions shall be determined in the following manner:

VOC = (% Volatile by weight / 100) X (Density lb/gal) X (Gallons Consumed) / 2,000 lb/ton)

change made

The VOC emissions in pounds for each surface coating item shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 201.2 tons per 12 month period as specified.

2. Visible emissions from any point or fugitive emissions source associated with thew emission points listed in this AO shall not exceed 10% opacity. Opacity

Attn A-1

observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

3. All paint spray booths will be equipped with a paint capture system, ie. water wall or filters, to control particulate emissions . All air exiting the booth shall pass through this control system before being vented into the atmosphere. Equivalency shall be determined by the Executive Secretary.

4. A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment described in this AO, shall receive instruction as to their responsibilities in operating the equipment in compliance with all relevant conditions.

5. All paint spray booths authorized by this Approval Order shall be adequately and properly maintained.

6.. The owner/operator shall comply with R307-1-3.5 , UAC. This rule addresses emission inventory reporting requirements.

7. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calender year.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO represents a consolidated permit for the paint spray booth source category at Hill AFB. Future modifications to booths identified under this AO; or additions, deletions of paint spray booths, or changes in paint booth operations will be made by amending this Approval Order.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

ATT# 4-2

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

14 Feb 1994

OO-ALC /EME
7274 Wardliegh Rd.
Hill AFB, Ut 84056-5127

Mr Arjun Ram, Permitting Engineer
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

Re: Hill AFB Consolidated Permit Application for Paint Booths (Hill AFB ltrs 20 July 93 and 5 Jan 94; and mtg 7 Jan 94)

Dear Mr. Ram

This letter is to submit the paint usage data you requested during our 7 Jan 94 meeting. Specifically, you requested a list of those paints that were used in excess of 1% of the total paint usage at Hill AFB. The attached list gives the National Stock Number (NSN), Description, and quantity in ounces. Please note that even though there are 13 separate paints identified, nine of them are polyurethane. Additionally, I suggest the following reporting requirement be incorporated into the proposed consolidated paint booth permit;

> "During January of each year the base shall report the total quantity of paints used during the just completed calendar year and identify those that were used in excess of 1% of the total. Additionally the base shall provide to the DAQ an MSDS for each paint that appears on the 1% or greater list."

If you have any questions regarding this matter, please do not hesitate to contact Mike Graziano at 777-0359.

LYNN S. HILL
Chief, Env Compliance Div.

2 Attachments
1. 1% or Greater List
2. MSDS's for 13 Paints

4.2.4-360

Total Paint consumption CY 93 is 3,097,341.33 ounces which is 24,198 gallons.

Report those paints which exceed 1% of the total, ie. 30,973 ounces

For this report identify all paints (Search for Common Stock Numbers) used in excess of 30,000 ounces.

NSN	Descrip	Ounces
1. 8010012137898 8557	Koroflex Primer Yellow	320,294.40
2. 8010012659143 33461 A	Polyurethane White	21,639.35
8010012659143 33461 B		41,137.06
3. 8010012659151 33461 A	Polyurethane Paint	56,197.65
8010012659151 33461 B		6,648.01
4. 8010012853554 33461 A	Polyurethane Paint	42,560.97
8010012853554 33461 B		32,600.79
5. 8010013055551 33461 A	Polyurethane Paint	766,690.32
8010013055551 33461 B		188,603.29
6. 8010013121169 85570 A	Epoxy Paint	188,804.18
8010013121169 85570 B		26,790.17
7. 8010013226622 33461 A	Polyurethane Paint	26,751.01
8010013226622 33461 B		5,456.37
8. 8010013226623 33461 A	Polyurethane Paint	34,560.00
8010013226623 33461 B		28,416.00
9. 8010013443218 33461 A	Polyurethane Paint	55,554.00
8010013443218 33461 B		9,904.00
10. 8010013456535 33461 A	Polyurethane Paint	153,496.00
8010013456535 33461 B		92,688.00
11. 8010L00006F 85570 A	Waterborne Primer	44,728.32
12. 8010P400017F 85570 A	Fast Dry Paint	176,576.00
13. 8010P887670F 33461 A	Polyurethane	22,808.32
8010P887670F 33461 B		6,949.77
	TOTAL	2,349,853.98

THIS TOAL REPRESENTS APPROXIMATELY 75% OF ALL PAINT USED AT HILL AFB

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
1370002941279359 87A	FUSEE STARTER,FIRE	-				OZF
1730PGAK2200 88952F		-			128	OZF
292000888059159501A	COIL,IGNITION	-				OZF
34390017885750ACE2A	ELECTRODE, WELDING	-				OZF
34390025545808761 8A	FLUX, WELDING	-			384	OZF
3439P55 39918B		-				OZF
5610001417842702 28A	WALKWAY COMPOUND,NONSLIP	-				OZF
5610001417842729 88A	WALKWAY COMPOUND LIGHT GRAY	-				OZF
5610005160038835 74B	FLIGHT DECK COMPOUND,NONSLIP	-				OZF
5610006410427702 28A	WALKWAY COMPOUND	-				OZF
5610PHEYDIK111Z185A		-				OZF
5640000627873807 03A	SAUEREISEN LOW EXPANSIONCEMENT, NO. 29	-				OZF
5960011699692094 8A	ELECTRON TUBE	-			1280	
5960006244718314 35A	ELECTRON TUBE	-				OZF
5960008366273949 8BA	ELECTRON TUBE	-				OZF
5970010729738211 09A	INSULATION CMPD	-			2	OZF
5970011716410211 09A	INSULATING COMPOUND, ELECTRICAL	-				OZF
61350029969182A917A	BATTERY(1) NONRECHARGEALBE	-				OZF
6520007642262333 39B	PERMLASTIC CATALYST, DENTAL IMPRESSION MTL	-				OZF
6520012119601086 75A	CEMENT, IONOMER, GLASS	-				OZF
6525010985799191 39B		-				OZF
6630013153734154 81A	DETERGENT SOLN, BLOOD CELL COUNTER ANALYZER	-				OZF
6750001538915191 39A	DEVELOPER,PHOTOGRAPHIC	-				OZF
6750006199946191 39B	FIXING BATH,PHOTOGRAPHIC	-			33	
6750009456529191 39B	DEVELOPER,PHOTOGRAPHIC	-				OZF
6750009654951191 39B	DEVELOPER, REPLENISHER	-			64	OZF
6750010202137191 39A	BLEACH REPLENISHER,PHOTOGRAPHIC	-			128	
6750010420872191 39P	CHEMICAL KIT,PHOTOGRAPHICCOLOR PROCESSING	-				OZF
6810001223963 5W216A		-			128	OZF
6810001746581 5A188A	SODIUM HYDROXIDE,TECHNICAL	-				OZN
6810001844796865 11A	ACETONE, TECHNICAL	-				OZF
6810002010906 1F942A	SPECIALLY DENATURED ALCOHOL	-			544	OZF
6810002010906 3T076A	ALCOHOL,DENATURED	-				OZF
6810002010906 61305A	ALCOHOL,DENATURED	-			12	OZF
6810002010906 82925A	ALCOHOL,DENATURED	-			196	OZF
681000201090 68F	ALCOHOL,DENATURED	-				OZF
68100020109078	ALCOHOL,DENATURED	-				OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
681000201090782925A	ALCOHOL,DENATURED	-			6400	OZF
681000201090786511A	ALCOHOL,94.9% BY VOLUME,DENATURED	-				OZF
68100020567860A9L8A		-			2668	OZF
68100020567864N760A	DENATURED ETHYL ALCOHOL	-			64	OZF
681000205678678918A	PROPRIETARY SOLVENT III-1,190 (TYPE 4)	-			256	
681000222964362910A	AMMONIUM HYDROXIDE,TECHNICAL	-			2048	OZF
68100022327394N760A	ACETONE	-				OZF
681000227041032939A	ISOPROPYL ALCOHOL,ACS	-			12	OZF
681000227041061305A	ISOPROPYL ALCOHOL, ACS	-				OZF
681000236567082925A	NITRIC ACID, TECHNICAL	-				OZF
68100023729541L164A	NITRIC ACID,ACS	1987/09/21 -	87-244	YES		
68100024993543A536A	N/R	-			256	OZF
681000264661890038A	SODIUM BICARBONATE,TECHNICAL	-			2560	
681000264898360777A	METHYL ETHYL KETONE, TECHNICAL	-			3	OZF
681000270998860777A	TALC, TECH	-				OZF
68100028127624N760A	METHYL ETHYL KETONE, TECH	-			18560	OZF
681000281276297984A	METHYL ETHYL KETONE, TECHNICAL	-				OZF
681000281276329700A	METHYL ETHYL KETONE, TECHNICAL	-				OZF
68100028127634N760A	METHYL ETHYL KETONE, TECHNICAL	-			21120	OZF
681000281276382925A	METHYL ETHYL KETONE,TECHNICAL	-			288512	OZF
681000281276394684A	METHYL ETHYL KETONE,TECHNICAL	-				OZF
6810002812763HAFBBA		-			35200	OZF
68100028127853D253A	METHYL ETHYL KETONE	-				OZF
68100028127855W216A	METHYL ETHYL KETONE, TECHNICAL	-				OZF
68100029000465A188A	TOLUENE,TECHNICAL	-				OZF
681000290004677416A	TOLUENE,TECHNICAL	-			14080	OZF
681000290004678628A	TOLUENE, TECHNICAL	-			70528	OZF
68100029055741U692A	SODIUM BICARBONATE,BAKINGSODA, SX0325	-			128	OZF
681000356493620385A	WATER, DISTILLED/DEIONIZED	-				OZF
68100035649366A021A	DISTILLED WATER,TECHNICAL	-				OZF
681000476561282925A	1,1,1-TRICLOROETHANE, TECHNICAL	-			1280	OZF
681000476561297984A	1,1,1 TRICHLOROETHANE,INHIBITED	-				OZF
68100047656131B637A	1,1,1 TRICHLOROETHANE, TECHNICAL	-				OZF
68100047656135T283A		-				OZF
681000551148781348A	1,1,1 TRICHLOROETHANE	-				OZF
681000586664761637A	ISOPROPYL ALCOHOL,ACS	-				OZF
68100059736085W216A	METHANOL,TECHNICAL	-				OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
6810005987316829 25A	SODIUM HYPOCHLORITE SOLUTION	-				OZF
6810005987316 9H634A	SODIUM HYPOCHLORITE SOLUTION	-			2188	OZF
68100085561604N760A	ISOPROPYL ALCOHOL	-				OZF
6810008556160829 25A	ISOPROPYL ALCOHOL,TECHNICAL	-				OZF
68102CHLOROE 8Y898A		-				OZF
68102CHLOROI 8Y898A		-				OZF
68104BROMOPH 8Y898A		-				OZF
6810BIS2CHLO 8Y898A		-				OZF
6810ISOPHORON8Y898A		-			1	OZF
6810P0000006060928A		-			1152	OZF
6810P000000660 69K0A		-			704	OZF
6810P208 7R331A	DEFOAMER	-			32	OZF
6810P886325F 05083A	POTASSIUM PERMANGANATE SOLUTION	-				OZF
6810PB81174 21667A		-			16	OZF
6810PC105564146575A		-				OZF
6810POGD0156 84111A	SULFURIC ACID	-				OZF
6830001449952188 73A	SEE SUPPLEMENTAL DATA	-				OZF
6830004249580212 67A	REFILL, DICHLORODIFLUOROMETHANE	-				OZF
68300093598961L164A	MONOCHLORIDIFLUOROMETHANE,TECHNICAL	-				OZF
68300093598965P414A	MONOCHLORODIFLUOROMETHANE, TECHNICAL	-			512	OZF
6830P7800001 58746A		-				OZF
6840005705299409 12A	SANITIZER-DETERGENT,GENERAL PURPOSE	-				OZF
6840007216055539 84A	DEODORANT,GENERAL PURPOSE	-				OZF
6840007216055813 48A	DEODORANT,GENERAL PURPOSE	-				OZF
6840012985141 3J700A	DISINFECTANT, GENERAL PURPOSE	-				OZF
6850000035295547 00A	CLEANING&LUBRICATING COMPOUND,ELECTRICAL CON	-			448	OZF
6850002246657829 25A	CLEANING COMPOUND,RIFLE BORE	-				OZF
68500026465747K183A	DESICCANT, ACTIVATED	-				OZN
6850002813042D9808A	CARBON REMOVING COMPOUND	-				OZF
6850003009008213 61A	CORROSION REMOVING COMPOUND	-			77440	OZF
6850003009008 3D863A	CORROSION REMOVING COMPOUND	-				OZF
6850003009008606 72A	CORROSION REMOVING COMPOUND	-				OZF
6850003009008713 61A	CLEANING COMPOUND, ALUMINUM SURFACE	-			35200	OZF
6850003190834865 11A	CLEANING COMPOUND SOLVENTTRICHLOROTRIFLORETH	-			128	
6850003929751607 77A	CLEANING COMPOUND,OPTICAL LENS	-			4	OZF
6850004571521570 [illegible]	TONER, DIRECT ELECTROSTATIC PROCESS	-			8.818	
68500053809294	CLEANING COMPOUND SOLVENT	-				OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
685000702429701139A	SILICONE COMPOUND	-			16	OZF
685000702429701139B	SILICONE COMPOUND	-			320	OZF
685000754267223894A	ANTIFOGGING COMPOUND	-				OZF
685000823786198727A	FUEL,ENGINE PRIMER	-			32	OZF
685000926227518375A	CLEANING COMPOUND,WINDSHIELD	-			16	OZF
685001140568217405C	TONER CONCENTRATE AND DISPERSANT KIT	-				OZF
685001164573826921A	FUSER LUBRICANT	-				OZF
685001181717882925A		-				OZF
685001239760989431A	COPY MACHINE TONER	-			128	
685001260805586938A	SYN-LEC ELECTROWASH	-				OZF
6850012648679HAFBBA		-			128	OZF
685001266661911924A	#10 ACTIVATING SOLUTION	-				OZF
6850L003580F 55208A		-			49408	OZF
6850P00745F 78774A		-				OZF
6850P886378F 21361A	CLEANING COMPOUND	-				OZF
6850P901380F 4W800A	ENZYME CLEANER/DEGREASER	-			4480	OZF
6850PARGL02 20772A		-				OZF
6850PBBM-47 21361A	CLEANING COMPOUND	-				OZF
6850PLA 5K793A	DEOXIDIZING COMPOUND	-				OZF
6850PM5200 26023A	CLEANING COMPOUND	-			1152	OZF
7510PER111 76708A	EPOXY RESIN INK	-				OZF
79300092652801A862A	P-D-1747,CLEANER, ALL PURPOSE	-			129	OZF
7930P1879G 21361A		-			98560	OZF
7930PDS104 30256A		-			240	OZF
801000001335l6F266A	SEMI-GLOSS ENAMEL BLUE	-				OZF
8010000453478331484A	PAINT	-				OZF
801000079376433451A	ENAMEL	-				OZF
8010000822439516868	EPOXY POLYAMIDE COATING	1987/05/07 - 1989/03/28		YES	128	OZF
801000082243981349A	COATING	-			128	OZF
801000082245000297A	EPOXY POLYAMIDE COATING	-	87-298			OZF
801000082245009869A	EPOXY PRIMER	1987/12/28 -	89-012	YES	256	
801000082245060003A	PRIMER	-	89-012		256	OZF
801000082245060035A	PRIMER POLY	-	89-012		256	OZF
801000082245060035B	PRIMER	-	89-012		64	OZF
801000082245061196A	EPOXY POLYAMIDE PRIMER	-	89-012		256	OZF
801000082245061196B	EPOXY POLYAMIDE PRIMER	-	89-012		512	OZF
801000082245080592A	EPOXY PRIMER SPRAY PAINT	-	87-298			OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
8010000822450HL007A		-	87-298			OZF
801000087010792216A	ENAMEL ALKYD	-				OZF
80100014129580FTT5A	AEROSOL GRAY LACQUER	-				OZF
801000159451933333A	POSTAL RED 11136	-			448	OZF
801000165611161196A	LACQUER	-				OZF
801000165614061196A	LACQUER	-			128	
801000165862833201A	DARK OAK STAIN, TT-S-711,FORMULA 51	-				OZF
801000166166709869A	799-716,TT-L-54C TY1, WHITE 17875	-				OZF
801000166314709869A	BLACK 37038	-				OZF
801000166314761196A	LACQUER	-				OZF
801000166315109869A	RED 31136	-				OZF
801000166315209869A	WHITE 37875	-			160	OZF
801000166315261196A	LACQUER	-				OZF
801000180634333201A	VARNISH, OIL	-				OZF
801000181819533461A	POLYURETHANE COATING	1987/09/21 -	87-242	YES		
801000181825433461A	POLYURETHANE COATING	- 1993/01/01	87-151			OZF
801000181825433461B	POLYURETHANE COATING	- 1993/01/01	87-151			OZF
801000181825533461A	POLYURETHANE COATING	1987/05/07 - 1993/01/01	89-012	YES		OZF
801000181827733461A	POLYURETHANE COATING	1987/12/28 - 1993/01/01	87-298	YES		OZF
801000181827733461B	POLYURETHANE COATING	- 1993/01/01	87-298			OZF
801000181828133461A	POLYURETHANE COATING	- 1993/01/01	87-151			OZF
801000181828133461B	POLYURETHANE COATING	- 1993/01/01	87-151			OZF
801000181828233461B	POLYURETHANE COATING	1987/05/07 - 1989/03/28	87-151	YES		OZF
801000181828433461A	POLYURETHANE ENAMEL	- 1993/01/01				OZF
801000181828498502A	ENAMEL ALIPHATIC POLYURETHANE	1987/05/07 - 1993/01/01	87-152	YES		
801000181828533461A	COATING, TWO-PART KIT(ONE QUART EACH)	1987/05/07 -	87-151	YES		OZF
801000181828533461B	POLYURETHANE COATING	- 1993/01/01	87-151			OZF
801000181828733461A	POLYURETHANE COATING	1987/05/07 - 1993/01/01	87-152	YES		OZF
801000181829233461A	POLYURETHANE COATING	- 1993/01/01	87-150			OZF
801000181829233461B	POLYURETHANE COATING	- 1993/01/01	87-150			OZF
801000181829233461C	POLYURETHANE COATING	1987/05/07 - 1993/01/01	87-150	YES		
801000181829633461A	POLYURETHANE COATING	1987/09/21 - 1993/01/01	89-012	YES		OZF
801000181830233461A	POLYURETHANE COATING	1987/05/07 - 1993/01/01	87-152	YES		
801000181830233461B	POLYURETHANE COATING	- 1993/01/01				OZF
801000242631509869A	WHITE 17875	-				OZF
801000242631512[illegible]	LACQUER,CELLOUSE	-				OZF
80100024263156	LACQUER	-				OZF

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8010002426318098 69A	BLUE 15044	-				OZF
8010002426318611 96A	LACQUER	-				OZF
8010002445791802 44A	PAINT,OIL	-			128	
8010002482838611 96A	LACQUER	-				OZF
8010002482839098 69A	YELLOW 13538	-				OZF
8010002516503098 69A	RED 11136	-				OZF
8010002516503129 04A	LACQUET,CELLULOSENITRATE,GLOSS	-				OZF
8010002516503611 96A	LACQUER	-				OZF
8010002516505611 96A	LACQUER C/N GLOSS	-			256	
8010002575377098 69A	WHITE 17875	-				OZF
8010002575377611 96A	LACQUER	-				OZF
8010002575378098 69A	POLYURETHANE COATING	-				OZF
8010002575378611 96A	LACQUER	-				OZF
8010002629171235 77A	INSTANT WOOD FILLER	-				OZF
8010002633192333 33A	URAFILM GLOSS BLACK	-			128	OZF
8010002633192917 94A	WRINKLE FINISH COATING	-				OZF
8010002801751334 61A	THINNER,ALIPHATIC,POLYURETHANE COATING	-			35200	OZF
8010002801751 4N760A	AIRCRAFT COATING THINNER	-			98688	OZF
8010002812074334 29A	TT-S-171B STAIN OIL, INTERIOR,LT WALNUT	-				OZF
8010002867737098 69A	PAINT	-			288	OZF
8010002867758338 32A	TT-E-489F YELLOW,13538, ENAMEL,ALKYD,GLOSS	-			32	OZF
8010002970546098 69A	BLACK,37038	-			64	OZF
8010002970546601 89A	LUSTERLESS ENAMEL BLACK	-			192	OZF
8010002970546611 96A	ENAMEL ALKYD LUSTRELESS	-				OZF
8010002970547611 96A	ENAMEL ALKYD LUSTRELESS	-			128	OZF
8010002970549611 96A	ENAMEL ALKYD LUSTRELESS	-			32	OZF
8010002970570611 96A	ENAMEL ALKYD LUSTRELESS	-			640	OZF
8010002970584611 96A	ENAMEL ALKYD SG	-				OZF
8010002972120611 96A	ENAMEL-LUSTERLESS QD	-				OZF
8010002982302098 69A	ENAMEL, ALKYD, GLOSS	-				OZF
8010002982302611 96A	ALKYD ENAMEL-GLOSS	-			128	OZF
8010003307704627 58B		-			128	OZF
8010003307704855 70A	POLYURETHANE COATING GRAY	-			448	OZF
8010003307704855 70B	ISOCYANATE ACTIVATOR SOLUTION	-	89-012		352	
8010004020953B05 2C	ANTENNA PRIMER CATALYST	1986/07/16 - 1989/07/16	86-098	YES		
8010004020953558 49B	COATING KIT, EPOXY	-			3968	OZF
8010004108458333 33A	F-151, HAZE GRAY, MIL-P-24441/2, 65165 A	-			1280	

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8010004591756333333A	RAIN EROSION KIT	1987/09/21 -	87-242	YES		OZF
8010004591756609222A	POLYURETHANE COATING BLACK	-	89-012		288	
8010004825651334611A	POLYURETHANE COATING	- 1993/01/01	89-012			OZF
8010004825651334611B	POLYURETHANE COATING	- 1993/01/01	89-012			OZF
8010004825653334611A	POLYURETHANE COATING	- 1993/01/01				OZF
8010004825653985021A	COATING URETHANE,ALIPHATIC ISOCYANATE	1987/05/07 - 1993/01/01	87-152	YES		
8010004825662334611A	COATING, TWO-PART KIT (ONE QUART EACH)	- 1993/01/01	87-148			OZF
8010004825662813491B	POLYURETHANE COATING	1987/05/07 -	87-149	YES		OZF
8010004825663334611A	POLYURETHANE ENAMEL, 2-PART SYSTEM, COMP A	- 1993/01/01				OZF
8010004825666334611A	COATING, TWO-PART KIT(ONE QUART EACH)	1987/05/07 - 1993/01/01	87-152	YES		OZF
8010004825670334611A	POLYURETHANE ENAMEL	1987/05/07 - 1993/01/01	87-151	YES		OZF
8010004825671334611A	POLYURETHANE ENAMEL	1987/05/07 - 1993/01/01	87-151	YES		OZF
8010004825671334611B	POLYURETHANE COATING BLACK	- 1993/01/01				OZF
8010004825674334611A	POLYURETHANE COATING	1987/05/07 -	87-149	YES		
8010004825674334611B	POLYURETHANE COATING	1987/12/28 - 1993/01/01	87-298	YES		
8010005151568098691A	GREY 36231	-				OZF
8010005152211776721A	PRIMER COATING	-				OZF
8010005270216HL002B		-				OZF
8010005272045338321A	TT-E-489FYELLOW, 13538, ENAMEL,ALKYD,GLOSS	-				OZF
8010005272045611961A	ALKYD ENAMEL-GLOSS	-				OZF
8010005272045842391A	TT-E-489F, YELLOW #13538(PAINT)	-				OZF
8010005272045922161A	ENAMEL ALKYD	-				OZF
8010005272053098691A	BLACK 17038,ENAMEL ALKYDGLOSS 742-702	-			96	OZF
8010005272053338321A	ALKYD ENAMEL BLACK	-				OZF
8010005272053611961A	ENAMEL	-				OZF
8010005272493129041A	LACQUER	-			256	OZF
8010005273198098691A	RED #11136-1	-			256	OZF
8010005273198338321A	ENAMEL, ALKYD, GLOSS	-				OZF
8010005273198611961A	ENAMEL	-			128	OZF
8010005273198922161A	ENAMEL ALKYD GLOSS	-				OZF
8010005273199334611A	ENAMEL, ALKYD, GLOSS, TT-E-489G	-			320	OZF
8010005273199922161A	ENAMEL ALKYD GLOSS	-				OZF
8010005305326098691A	WHITE #37875	-				OZF
8010005305565611961A	ENAMEL ALKYD SG	-				OZF
8010005308370619451A	SEALER, FLOOR	-				OZF
8010005825318341	X-3917 ZINC CHROMATE PRIMER					OZF
8010005825318711	PRIMER COATING					OZF

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0100058253825N005A	AEROSOL PAINT	-			160	OZF
0100058253828134 8A	AEROSOL PAINT	-				OZF
8010005843081338 2A	ENAMEL,ALKYD, GLOSS	-				OZF
8010005843148813 8A	PAINT, AEROSOL	-				OZF
8010005985729331 8A	PAINT	-			96	OZF
0100059857375914 2A	LATEX PAINT	-				OZF
0100059859299221 6A	ENAMEL,ALKYD,GLOSS	-				OZF
8010005985933805 2A	LACQUER.CELLULOSENITRATE,GLOSS FOR AIRCRAFUS	-				OZF
0100059891563333 3A	TT-T-390, 1A BLACK, LAMPBLACK	-			32	OZF
8010006169143334 1A	POLYURETHANE PAINT	-				OZF
3010006169181569 1A	SPRAY PAINT	-				OZF
8010006410426HAF8 A		-			512	OZF
8010006632673611 6A	LACQUER	-				OZF
8010006641913611 6A	LACQUER	-				OZF
3010006641914129 4A	TT-L-20A,LACQUER CAMOUFLAGE,GRAY #36231	-				OZF
8010006643365098 9A	GRAY 36231,LUSTERLESS ALKYD ENAMEL 741-612	-				OZF
8010006643365611 6A	ENAMEL ALKYD LUSTRELESS	-			256	OZF
1010006644761002 7A	ALKYD ENAMEL WHITE 17875	-			3840	OZF
0100066447613383 2A	ENAMEL	-				OZF
8010006644761343 6A	ALKYD ENAMEL	-				OZF
8010006644761322 8A	ENAMEL PAINT WHITE 17875	-			896	OZF
8010006644761601 9A	ENAMEL,ALKYD,GLOSS,COMP L	-				OZF
0100066447616119 6A	ALKYD ENAMEL-GLOSS	-				OZF
0100066476510986 9A	BLACK #37038	-			384	OZF
1000680020309869A	GRAY # 16473	-			256	OZF
0100068002036119 6A	ENAMEL	-			384	OZF
8010007219746595 1B	LACQUER	-				OZF
8010007219748HL001A		-				
3010007219754HL001A		-				OZF
8010007219882922 6A	LACQUER,SPRAYING,ACID RESISTANT	-				OZF
1000815269234346B	X-5767,ALUM HEAT RESIST PAINT,1200F,COMP L	-			128	OZF
8010008238012002 7A	INTERIOR ALKYD ENAMEL	-				OZF
8010008515524334 1A	27142	-				OZF
3010008835329HL001A		-				OZF
1000900293733148A	TRAFFIC MARKING PAINT	-			256	
0100090029383320 0A	TRAFFIC PAINT	-				OZF
1000900293833832A	TT-P-115E,TV2,PAINT, TRAFFIC,WHITE	-				OZF

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8010009003648332O0A	TRAFFIC PAINT	-				OZF
80100009262133165 22A	FILLER,DENT	-			48	OZF
80100009269174813 48A	POLYURETHANE COATING CLEAR	1987/09/21 -	87-242	YES		
80100009353994619 45A	PAINT, ENAMEL ALKYD SG	-			32	
80100009357061611 96A	LACQUER	-			320	OZF
80100009357072098 69A	LACQUER,ACRYLIC	-			384	
80100009357073098 69A	LACQUER,ACRYLIC	-				OZF
80100009357076611 96A	LACQUER	-			128	OZF
80100009368369722 25A	LACQUER	-				OZF
80100009437128813 48A	PAINT REMOVER	-			128	OZF
80100009588148599 86A	ORANGE FLUORESCENT, 38903	-				OZF
80100009652390917 94A	LACQUER	-			384	
80100101724803346 1A	POLYURETHANE PAINT	-				OZF
80100101724803346 1B	ALIPHATIC ISOCYANATE CATA LYST	-				OZF
80100104010593D8 63A	MIL-R-83936B,AM1,REMOVER,PAINT,TANK TYPE	-				OZF
80100105326460634 1A	COATING, EPOXY-POLYAMIDE	1987/09/21 -	87-242	YES		OZF
80100105326460634 1B	COATING, EPOXY-POLYAMIDE	-				OZF
80100105326466000 3B	EPOXY PAINT CATALYST	-				OZF
80100106064619179 4A	ENAMEL	-				OZF
80100106956916110 2A	REMOVER,PAINT	-				OZF
80100108469633346 1A	POLYURETHANE COATING G/S GRAY	1987/12/28 -	87-298	YES		OZF
80100110090943346 1A	POLYURETHANE PAINT	- 1993/01/01	89-012			OZF
80100110090943346 1B	POLYURETHANE PAINT CATALY ST	- 1993/01/01	89-012			OZF
80100110465213346 1A	POLYURETHANE GRAY	1986/04/04 - 1989/04/04	89-012	YES		OZF
80100110465213346 1B	ALIPHATIC ISOCYANATE CATALYST	- 1993/01/01	89-012			OZF
8010011046524HAFBBA		-			128	OZF
8010011046524HAFBBB		-			32	OZF
80100110465353346 1A	POLYURETHANE ENAMEL - COMPONENT I	1987/12/28 -	87-298	YES		OZF
80100110465353346 1B	POLYURETHANE ENAMEL - COMPONENT II	-				OZF
80100112476316119 6A	ENAMEL	-			32	
8010011261427HAFBBA		-			1312	OZF
8010011271960HAFBBA		-			29088	OZF
80100120026370BBA1A	THINNER	-				OZF
80100121378988557 0A	POLYURETHANE PRIMER	-	89-012		189120	
80100121378989659 5A	EPOXY PRIMER	-	89-012		29056	OZF
80100121808563346 1A	POLYAMIDE COATING	-	89-012			OZF
80100126229793	POLYURETHANE PAINT	- 1993/01/01	89-012			OZF

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0100126229793346 1B	ALIPHATIC ISOCYANATE CATA LYST	- 1993/01/01				OZF
0100126229818557 0A	POLYURETHANE COATING GRAY	- 1993/01/01	89-012			OZF
0100126591433346 1A	POLYURETHANE COATING WHITE	-	89-012		7471.18600	OZF
0100126591433346 1B	POLYURETHANE COATING WHITE	-	89-012		15884.9580	OZF
0100126591433346 1C	WHITE POLYURETHANE COATING TYPE I PART B 03-	-	89-012		7696.95900	OZF
0100126591453346 1A	POLYURETHANE COATING GRAY	-	89-012			OZF
0100126591453346 1B	POLYURETHANE CATALYST GRA Y	-	89-012			OZF
0100126591513346 1A	POLYURETHANE COATING GRAY	-	89-012		44960	OZF
0100126591513346 1B	POLYURETHANE COATING GRAY	-	89-012		8736	OZF
0100126591543346 1A	POLYURETHANE COATING GLOSS RED 03-R-64	-	89-012		1216	OZF
0100126591543346 1B	POLYURETHANE COATING GLOSS RED 03-R-64 PART	-	89-012		864	OZF
0100128530358AFBAA		-			1184	OZF
0100128530358AFBCA		-			1152	OZF
0100128530383346 1A	POLYURETHANE COATING YELL OW	-	89-012		992	OZF
0100128530383346 1B	POLYURETHANE COATING YELLOW	-	89-012		928	OZF
0100128530483346 1A	POLYURETHANE COATING BLAC K	-	89-012		864	OZF
0100128530483346 1B	POLYURETHANE CATALYST BLA CK	-	89-012		896	OZF
0100128533543346 1A	POLYURETHANE COATING BLAC K	-	89-012		25468	OZF
0100128533543346 1B	POLYURETHANE CATALYST BLACK	-	89-012		21716	OZF
0100130555513346 1A	POLYURETHANE COATING GRAY	-	89-012		769216	OZF
0100130555513346 1B	POLYURETHANE COATING GRAY	-	89-012		197485.029	OZF
0100131211698557 0A	HIGH SOLIDS PRIMER YELLOW	-	89-012		72693.0329	OZF
0100131211698557 0B	EPOXY PRIMER ACTIVATOR910X942	-	89-012		15502.2799	OZF
0100132266223346 1A	POLYURETHANE COATING GRAY 26270	-	89-012		12160	
0100132266223346 1B	POLYURETHANE COATING GRAY	-	89-012		5120	
0100132266228AFBBA		-			2432	OZF
0100132266228AFBBB		-			1312	OZF
0100132266233346 1A	POLYURETHANE COATING GRAY	-	89-012		29632	OZF
0100132266233346 1B	POLYURETHANE COATING GRAY	-	89-012		30592	OZF
0100132266243346 1A	POLYURETHANE COATING GRAY	-	89-012		1568	OZF
0100132266243346 1B	POLYURETHANE COATING GRAY	-	89-012		1184	OZF
0100132288643346 1A	POLYURETHANE COATING GRAY03-GY-348	-			65	
0100132288643346 1B	POLYURETHANE COATING GRAY03-GY-348 PART B	-			64	
0100132288648AFBBA		-			448	OZF
0100132288648AFBBB		-			480	OZF
0100132799813346 1A	POLYURETHANE COATING GREEN		89-012		160	
0100132799813346 1B	POLYURETHANE COATING GREEN		89-012		136	

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801001329630433461A	POLYURETHANE COATING BLUE	-			128	
801001329630433461B	POLYURETHANE COATING BLUE	-			128	
801001336303233461A	POLYURETHANE COATING GRAY	-			384	
80100133630 32HAFBBB		-			384	OZF
801001336303333461A	POLYURETHANE COATING GRAY	-	89-012		224	
801001336303333461B	POLYURETHANE COATING GRAY	-	89-012		224	
80100133630 34HAFBAA		-			5312	OZF
80100133630 34HAFBBB		-			128	OZF
80100133630 36HAFBAA		-			14656	OZF
80100133630 36HAFBBA		-			3904	OZF
801001336398165860A		-			6272	OZF
801001344321833461A	POLYURETHANE COATING GRAY	-	89-012		36626	OZF
801001344321833461B	POLYURETHANE COATING GRAY	-	89-012		9520	
801001345653533461A	POLYURETHANE COATING GRAY	-	89-012		147720	OZF
801001345653533461B	POLYURETHANE COATING GRAY	-	89-012		56752	OZF
8010L002143F 85570A	HIGH SOLIDS PRIMER YELLOW	-				OZF
8010L002143F 85570B	HIGH SOLIDS CURING SOLUTION	-				OZF
8010P000986F 33461A	POLYURETHANE COATING ORANGE	-	86-012		416	OZF
8010P000986F 33461B	POLYURETHANE COATING ORANGE	-	86-012		1184	OZF
8010P000987F 33461A	POLYURETHANE COATING GRAY	-	89-012		2128	OZF
8010P000987F 33461B	POLYURETHANE COATING GRAY	-	89-012		1857	OZF
8010P000989F 33461A	POLYURETHANE COATING BLUE	-			160	OZF
8010P000989F 33461B	POLYURETHANE COATING BLUE	-			128	OZF
8010P03GN176 33461B	POLYURETHANE COATING GREEN	-				OZF
8010P03GN176 97460A	POLYURETHANE COATING	-				OZF
8010P03GN204 HAFBBA		-			128	OZF
8010P03GN204 HAFBBB		-			2689.97500	OZF
8010P03GY323 33461A	POLYURETHANE COATING GRAY	-	89-012		3944	OZF
8010P03GY323 33461B	ALIPHATIC ISOCYANATE CATA LYST	-	89-012		2216	OZF
8010P03GY330S33461A	POLYURETHANE COATING GRAY	-			512	OZF
8010P03X085 33461A	POLYURETHANE COATING CLEAR	-	89-012		992	OZF
8010P03X085 33461B	POLYURETHANE COATING CLEAR	-	89-012		992	OZF
8010P1801 6R552A	ACRYLIC LATEX WHITE	-			128	OZF
8010P319214F*96717A		-				
8010P319478F*96595A		-				
8010P400029F HAFBBA		-			384	OZF
8010P400030F F		-			384	OZF

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8010P4221T10206367A		-			258	OZF
8010P4221T10206367B		-			128	OZF
8010P4411 21361A	PAINT STRIPPER 4411	-	92-017		28160	OZF
8010P5075NP HAFBBA		-			21120	OZF
8010P887174F 33461A	EPOXY PRIMER COMP A GREEN	-				OZF
8010P887174F 33461B	EPOXY PRIMER COMP B GREEN	-				OZF
8010P887174F*33461A		-				
8010P887174F*33461B		-				
8010P887664F 33461B	POLYURETHANE COATING GRAY	-				OZF
8010P887664F*33461A		-				
8010P887664F*33461B		-				
8010P887665F 33461A	POLYURETHANE COATING GRAY	-				OZF
8010P887665F 33461B	POLYURETHANE COATING GRAY	-				OZF
8010P887665F*33461A		-				
8010P887665F*33461B		-				
8010P887666F 33461A	POLYURETHANE COATING GREEN	-	89-012		14432	OZF
8010P887666F 33461B	POLYURETHANE COATING GUNSHIP GREEN 03-GN-239	-	89-012		5328	OZF
8010P887669F 33461A	POLYURETHANE COATING GRAY	-				OZF
8010P887669F 33461B	POLYURETHANE COATING G/S GRAY	-				OZF
8010P887669F*33461A		-				
8010P887669F*33461B		-				
8010P887670F 33461A	POLYURETHANE COATING GREE N	-	89-012		13312	OZF
8010P887670F 33461B	POLYURETHANE COATING G/S GREEN	-	89-012		7712	OZF
8010P887989F 33461A	POLYURETHANE COATING BLUE	-				OZF
8010P920X348 33461A	URETHANE ACCELERATOR	-			160	OZF
8010P920X348 96595A	ACCELERATOR SOLUTION	-	89-012		192	OZF
8010PPMR 06629A		-				OZF
8030000087198583 39A	SEALING COMPOUND	-			4.409	OZF
8030000087198835 74A	PRO SEAL 870 PART A	-	90-093		59.994	OZF
8030000087198835 74B	POLYSULFIDE SEALING COMPOUND	-	90-093		145.482	OZF
8030000087205835 74B	SEALING COMPOUND	-				OZF
8030000095023835 27B	SEALING COMPOUND	-			1.764	OZF
8030000095023835 74B	POLYSULFIDE SEALING COMPO UND	-			14.108	OZF
8030000062695088 55A	CORROSION PREVENTIVE COMPOUND	-				OZF
8030000627580835 74A	CORROSION PREVENTIVECOMPOUND	1986/12/04 - 1989/12/04	86-198	YES		OZF
8030000627581 9A232A	EROSION COATING	1986/12/04 - 1989/12/04	86-198	YES		
8030000628449835 74A	CORROSION PREVENTIVE COMPOUND					OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
303000081233342400A	ADHESIVE	-			128	OZF
803000086150686961A	EPON 828	-			7040	OZF
80300011127635V071A	ANAEROBIC WICKING COMPOUND	-			32	OZF
303000251398007431A	LEAD-FREE ANTISEIZE CMPD	-				OZF
303000291838004011A		-			192	OZF
803000344366683574A	SEALING COMPOUND	-			7936	OZF
803000348788883574A	SEALING.COMPOUND	-			10.581	OZF
803000433903283574A	SEALING COMPOUND	-	90-093		288	OZF
803000474141983574A	SEALING COMPOUND	-	90-093		3340.97999	OZF
803000485920001139B	SEALING COMPOUND	-			32	OZN
803000573291772556A	METAL ETCH PRIMER BLACK	-				OZF
803000582519182814A	SEALING COMPOUND	-			318	OZN
803000683901407681D	SEALING COMPOUND TAPE	-				OZF
803000762880783574B	SEALING COMPOUND	-				OZF
803000779470004963A	SEALING COMPOUND	-				OZF
803000823803933150A	CORROSION RESISTANT COATING	-				OZF
803000838778991794A	CORROSION PREVENTIVE COMPOUND	-				OZF
303000850075804011A	GC-408 CLASS B	-				OZF
803000871848983527A	PRO-SEAL 870 BASE SPRAYABLE	-			37.033	OZF
803000871848983574A	SEALING COMPOUND	-	89-012		5309.04900	OZF
803000871848983574B	POLYSULFIDE SEALING COMPO UND	-	89-012		20177.4190	OZF
803000904576033333A	ER11-955 A&BNATURAL COLOR(INC ALL COLORS)	-				OZF
803000936994004963A	SCOTCHAL BRAND EDGE SEALER 3950	-			28	OZF
803001041159656921A	AML-GARD, CORROSION PREVENTIVE COMPD, TY	-				OZF
803001043764584063A	CHEMICAL CONVERSION COATING	-			49280	OZF
303001126142760922A	POLYURETHANE COATING RAIN AND THERMAL RESIST	-	89-012			OZF
303001126142760922B	FLUOROELASTOMER TYPE VSEALING COMPOUND PART	-				OZF
303001127196060922A	FLUOROELASTOMER COATING	-	89-012			OZF
803001127196060922B	POLYURETHANE CURING AGENT	-	89-012			OZF
803001154925683574A	SEALING COMPOUND	-				OZF
80300118403280NYS9A		-			304	OZF
803001184032883574A	SEALING COMPOUND	-	90-093		141	OZF
803001184032883574B	SEALING COMPOUND	- 1993/01/01	90-093		686	OZF
803001184032983574A	SEALING COMPOUND	-	90-093		3970.82600	OZF
803001184032983574B	POLYSULFIDE SEALING COMPOUND	-	90-093		740.64	OZF
80300128781852	BMS 3-2 TYPE I SOLVENT	-				OZF
303012933223						OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
8030P113125A 33244A		-			384	OZF
8030P113125A 33244B		-			384	OZF
8030P400067F 61102A	CHEMICAL CONVERSION COATING	-	90-040		7040	
8030P400067F HAFBBA		-			63360	OZF
8030P71 03795A		-				OZF
8030PACCELAGO61102A	ACCELAGOLD ALODINE	-			21120	OZF
8040000656578763B1A	PRIMER, ADHESIVE	-			34032	OZF
8040000656578763B1B	PRIMER, ADHESIVE	-			25988	OZF
8040000922816335 64A	608 HYSOL ADHESIVE	-				OZF
8040000922816969 00A	EPOXY ADHESIVE	-			0.141	OZF
8040000976524011 39A		-				OZF
8040001178510719 84A	RTV SEALANT	-				OZF
8040001182695719 84A	ADHESIVE	-				OZF
8040001236954049 63B	EPOXY ADHESIVE	-				OZF
8040001429193608 59A	CYANOACRYLATE ADHESIVE TB1743	-				OZF
8040001450530049 63B	ADHESIVE	-				OZF
8040001578677925 28A		-				OZF
8040001578677925 28B		-				OZF
8040001658614HAFBAA		-			192	OZF
8040001711535763 81A	SCOTCH 6065 SPRA-MOUNT ADHESIVE	-			16	OZF
8040001817761049 63A	ADHESIVE	-			1	OZF
8040002213811763 81A	ADHESIVE	-			128	OZF
8040002629060813 49A	ADHESIVE	-			5504	OZF
80400027386970HZU1A	LA-132 SYNTHETIC RUBBER ADHESIVE	-				OZF
8040002981946256 70A	ADHESIVE RUBBER	-			8	OZF
8040002981946925 28A	SC-840	-				OZF
8040003907959049 63A	ADHESIVE, RUBBER & GASKET	-			32	OZF
8040004665914558 49A	ADHESIVE	-			128	
8040005261910607 77A	PVC ADHESIVE	-				OZF
80400073864293L885A		-				OZF
80400073864293L885B		-			11	OZF
8040007770631813 48A		-				OZF
8040007799595333 33A	1113B ADHESIVE, MMM-A-130B	-				OZF
8040008609772191 39A	ADHESIVE	-				OZF
8040009168534049 63A	EPOXY ADHESIVE, TWO PART	-			128	OZF
8040009386860318 68A	RUBBER ADHESIVE	-			96	OZF
8040009957080949 59A	ADHESIVE	-			128	OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
8040010246988608594	CYANOACRYLATE ADHESIVETB1743	-			4	OZF
8040010246988HAFBBA		-			155.741	OZN
8040011759193335644	ADHESIVE	-				OZF
8040012827954HAFBAA		-			7456	OZF
8040012827954HAFBBA		-			1888	OZF
8040013185531211094	MODIFIED EPOXY-AMINE RESIN	-				OZF
8040L885794F 57432A		-			32	OZF
8040P400096F 85570A		-			5120	OZF
8040P400096F 85570B		-			2048	OZF
8040P400096F HAFBBA		-			2944	OZF
8040P400096F HAFBBB		-			4096	OZF
9140002865286G027A		-			256	OZF
9150000249623719844	DC200-1000,CENTISTROKES	-			1536	
91500007147127B131A	CAPELLA OIL WF-68, CODE 01562	-				OZF
9150001110209SA565A	MIL-L-21260C,GRADE30.	-				OZF
9150001450268545274	AEROSHELL GREASE 22	-			288	OZF
91500018898677A348A	MIL-L-2104 SAE 50	-				OZF
9150002234134079504	HYDRAULLIC FLUID, PETROLEUM	-				OZF
91500023166767A348A	MIL-L-6081C, GC1010, LUBRICATING OIL,JET ENG	-			28160	OZF
9150002319062864594	PETROTECT 4072C	-			512	
9150002500926S446A	TECHNICAL PETROLATUM	-				OZF
9150002500926829254	PETROLATUM, TECHNICAL	-				OZF
9150002617899257054	PENETRATING OIL	-				OZF
91500026178996T203C		-				OZF
9150002617899829254	PENETRATING OIL, VV-P-216, TYPE I	-			32	OZF
9150002732389079504	LUBRICATING OIL, GENERAL PURPOSE	-			58	OZF
9150002732389829254	L BRICATING OIL,GENERALPURPOSE	-			25	OZF
9150002732389928954	LUBRICATING OIL	-			4	OZF
9150004506938732774	CUTTING FLUID	-			96	OZF
9150004580075079504	LUBRICATING OIL,GENERAL PURPOSE	-			32	
9150004580075279784	LUBRICATING OIL,GENERAL PURPOSE	-				OZF
9150004580075569214	LUBRICATING OIL,GENERAL PURPOSE	-			48	OZF
9150004580075829564	LUBRICATING OIL, GENERAL PURPOSE	-				OZF
9150005421430829564	LUBRICATING OIL,GENERALPURPOSE	-				OZF
91500069823828X531A	DEXRON II ATF;HYDRAULIC FLUID	-				OZF
9150009051387[illegible]	KANO AEROKROIL	-				OZF
9150009668833[illegible]	HYDRAULIC 8-46	-				OZF

LIST OF ALL MATERIALS IN A ZONE

ZONE	ZONE DESCRIPTION
Z140	PAINTERS 220 LAOSAC

MATERIAL NUMBER	MATERIAL DESCRIPTION	DATE RANGE	LICENSE NO	HAZARD	QTY ISSUED TO-DATE	UNIT OF ISSUE
915000985723358563A	IMPERIAL 2075TH,, QUAL #634-D-346	-				OZF
915001035539229700A	WS 1311 GEAR OIL 80W-90	-			1	OZF
915001035539301326A	HDX ALL PURPOSE GEAR LUBESAE 80W/90	-			4	OZF
915001108708109137A	CORROSION PREVENTIVE COMPOUND	-			60	OZF
9150L888958F 15958A	BEARING GREASE	-			32	OZF
9150P600WCYLO3U728A		-				OZF
9150P87746-8071984A		-				OZF
F4265089P132662758A		-				OZF

PAINT BOO VENTORY

Bldg	AQUIS #	AO	Mnfgr	Model	CFM	Type	Stack Dia. in		
5D	3314	BAQE-977-1	Binks	WE-10-8-T-LH	10,500	Water Fall	34"		
5E	3332	Needs Permit	Binks		5,000*	Dry	18"		
5N	3859	DAQE-167-92	DeVilbiss	DF-564	2,000	Dry	12"		
12	3953	Grandfathered	Custom		10,500*	Dry	36"		
48	3649	7/18/83	Custom		140,000	Dry	60"		
48	3650	Needs Permit	JBI	WT-35-SB	15,000	Dry	48"		
100J	3292	Needs Permit	DeVilbiss	DCC-5081	13,500	Water Fall	48"		
205	4198	Inactive							
220	3116	DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		
220		DAQE-167-92	Binks		18,500	Water Fall	2 @ 48"		

Note, these 9 seperate waterfalls make up one booth that is segregated by curtains and can be configured in various ways to accn different aircraft. At present it is seperated by cuirtains into 3 bays.

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220	3117	DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
220		DAQE-036-87	DeVilbiss		11,500*	Water Fall	60"		
Note, these 6 pieces of equipment make up one booth that is segregated by curtains and can be configured in various ways to acc									
	different aircraft. At present it is sererated by curtains into 3 bays.								
220	3118	Grandfathered	DeVilbiss		3,600*	Water Fall	6 @ 36"		
220	3978	Grandfathered	DeVilbiss	2000	10,800*	Water Fall			
220	3073	Grandfathered	DeVilbiss	2000	10,800*	Water Fall			
238	4265	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4268	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4271	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4274	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4277	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4280	BAQE-525-88	Binks	NPB-15-10-TLH	12,000	Water Fall	36"		
238	4244	BAQE-525-88	Binks	WE-8-8-TLH	8,000*	Water Fall	24		
238	4281		DeVilbiss		45,000	"	2@60"		
266	3838	Grandfathered	DeVilbiss		10,000*	Water Fall	48"		
266	3839	Grandfathered	DeVilbiss	J-K4214	10,000*	Water Fall	48"		
266	3840	Grandfathered	Custom		15,000*	Water Fall	48"		
270	3903	BAQE-454-89	JBI	C-130 Custom	470,000	Dry	6 @ 60"		
~~274~~	3402	BAQ-973-1	DeVilbiss	XNO-568	6,000*	Water Fall	42"		
505	3263	Needs Permit	Paasch	O962	7,500*	Water Fall	42"		
507	3050	BAQE-551-89	DeVilbiss		25,000	Water Fall	2 @ 42"		
507	3053	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		

ATCH 1-2

delete moved

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507	3054	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3055	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3056	8/21/78	DeVilbiss	XNE-50415	14,000	Water Fall	48"		
507	3057	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
507	3058	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
507	3251	8/21/78	DeVilbiss	XNE-5151	27,175	Water Fall	42"		
509	3150	BAQE-494-89	DeVilbiss	DCL-1689-125	16,000	Water Fall	34"		
509	3151	BAQE-494-89	DeVilbiss	DCL-1689-125	16,000	Water Fall	34"		
509	3153	BAQE-494-89	DeVilbiss	DF-6220	2,141	Dry	16"		
509	4058	BAQE-494-89	DeVilbiss	DF-6220	2,141	Dry	16"		
509	3440 5441		DeVilbiss	TL-L-M1030-125	18	200 lbs/hr	5-16 10"		
514	3102	BAQE-174-91	DeVilbiss	DF-L-676-125	5,250	Dry	24"		
515	4100	PAQE-165-92							
534	3737	BAQE-359-88	Custom		12,000	Dry	16"		
590	3929	Needs Permit			6,000*	Water Fall	36"		
592	3931	Needs Permit	Protectaire		10,000*	Water Fall	36		
751	4161	BAQE-492-92	Binks		3,500	Dry	18"		
810	4217	Needs Permit	DeVilbiss		8,000*	Dry	42"		
	3156								
847	~~3135~~	BAQE-030-88	Binks	NPB-24-20-T	193,600	Water Fall	8 @ 36"		
847	3247	Needs Permit	Binks	NPB-14-10-T-LH	15,000*	Water Fall	48"		
847	3248	Needs Permit	Binks		16,000*	Water Fall	48"		
935	None	Inactive							
935									
1133	3734	BAQE-029-88	Custom		43,000	Dry	60"		

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PAINT BOO. /ENTORY

1251	3741	BAQE-101-89	Binks		27,000	Dry	42"		
1424	4256	BAQE-355-88	Binks	TWW-530-T-LO	25,200	Water Fall	48"		
1701	3915	BAQE-039-91	DeVilbiss	ASEY-914-34	18,000	Dry	34"		
1701	3919	BAQE-039-91	JBI	TSD-98-DT-S	190,000	Dry	6 @ 60"		
1913	3728	BAQE-026-88	DeVilbiss	XDF-6342	17,900	Dry	42"	Stand	
1938	3560	BAQE-642-88	Binks		10,000*	Dry			
2026	3732	BAQE-977-1	Binks	PFA-12-10-T-LH	15,000	Dry	34"		

(*) Estimated CFM's

ATCH 1-4

4.2.4-381

SCREEN Model Inputs for Paint Booth AQUIS #3903 Bldg 270

1. Material usage data for this booth identified the following three paints as having the greatest usage.

8010012137898	Polyester Koroflex Primer
8010013226622	50-50 Polyurethane Paint
8010013121169	75-25 Epoxy Paint

2. Model Inputs

EMISSIONS RATE

Emissions Rate was estimated based upon the following analysis;

Historically paint usage is typically broken down as 71% low VOC top coat (3.4 lb/gal), 14.5% low VOC primer (2.8 lb/gal), 14.5% high VOC primer (3.5 lb/gal).

Based upon the Approval Order for this booth, BAQE-454-89, the density of primers must not exceed 8 lb/gal while the density of paints must not exceed 11 lb/gal. Based upon this the VOC and non VOC components of the coatings are as follows;

Low VOC Primer= 8 lb/gal= 2.8 lb VOC/gal + 5.2 lb Solids/gal

High VOC Primer= 8 lb/gal= 3.5 lb VOC/gal + 4.5 lb Solids/gal

Paint= 11 lb/gal = 3.4 lb VOC/gal + 7.6 lb Solids/gal

A weighted average was used to estimate the emissions rates of both VOC's and solids. Hours of operation used in calculation are from approval order.

VOC Emissions

(.71 X 3.4 lb VOC/gal paint) + (.145 X 2.8 lb VOC/gal low VOC primer) + (.145 X 3.5 lb VOC/gal high VOC primer) X 2,096.7 gal/yr X 454 gm/lb X 1 yr/52 wks X 1 wk/5 day X 1 day/16 hr X 1 hr/60 min X 1 min/60 sec **=.211 gm/sec of VOC emissions** (Assume 100% of VOCs are emitted)

Solids emissions

(.71 X 7.6 lb solids/gal paint) + (.145 X 5.2 lb solids/gal low VOC primer) + (.145 X 4.5 lb solids/gal low VOC paint) X 2,096.7 gal/yr X 454 gm/lb X 1 yr/52 wks X 1 wk/5 day X 1 day/16 hr X 1 hr/60 min X 1 min/ 60 sec = **.432 gm/sec**

Assume 75% of solids are deposited on part and 25% is considered over spray.

.432 gm/sec X .25 = .108 gm/sec solid

Assume that the filter system has a capture efficiency of 90% therefore the actual amount of solids emitted to the atmosphere is;

.108 lb solid X .10 = .011 gm/sec

Screen Model will be run twice using an emission rate of .211 gm/sec to estimate VOC emissions and .011 gm/sec to compute emissions of solids.

STACK HEIGHT

73 ft X 12 in/ft X .0254 m/in = 22.25 meters

STACK DIAMETER

6 ea 60 in (Assume all emissions up one stack)

60 in X .0254 m/in = 1.52 meters

STACK VELOCITY

110 ft/min X 12 in/ft X .0254 m/in X 1 min/60 sec = .56 meter/sec

STACK GAS TEMP

Assume 75° F which is approximately 24° C = 297° K

AMBIENT AIR TEMP

Use default 293° K

DISTANCE TO FENCE LINE

3,700 ft X 12 in/ft X .0254 m/in = 1,128 meter

MODEL RESULTS (Printouts attached)

VOCs emission at fence line were calculated to be 8.138 ug/m^3
Solids emission at fence line were calculated to be .4242 ug/m^3

COMPONENT EMISSIONS

Department of Air Quality personnel requested that component emissions be computed and compared against the TLV/100 for each. The following analysis is based upon the MSDS for each material identified above.

NSN #8010012137898 Polyester Koroflex Primer

compound/% of tot	% of VOC	%of solid
Methyl N-Amyl Ketone/9	16	0
Methyl Ethyl Ketone/32	58	0
Polyeric Urethane Resin/23	0	51
Strontium Chromate/18	0	40
Cyclohexanone/14	26	0
Ethylene Bisphenyl Isocyanate/4	0	9

VOC at Fence line = 8.138 ug/m^3

Methyl N-Amyl Ketone (MW=114)

TLV = 50 ppm, TLV/100 = .5 ppm = 500 ppb
.16 X 8.138 ug/m^3 = 1.3 ug/m^3, at fence
1.3 ug X1 u mole/114 ug = .011 u mole X 1 mole/10^6 = 1.1 X 10^{-8} X .0224=
2.46X 10^{-10} =**.246 ppb < 500 ppb**

Methyl Ethyl Ketone

TLV = 590 mg/m^3, TLV/100= 5.9 mg/m^3
.58 X 8.138 ug/m^3 = 4.72 ug/m^3, at fence
4.72 ug/m^3 < 5.9 mg/m^3

Cyclohexanone

TLV= 100 mg/m^3, TLV/100 = 1 mg/m^3
.26 X 8.138 ug/m^3 = 2.12 ug/m^3, at fence
2.12 ug/m^3 < 1 mg/m^3

Solids at fence line = .4242 ug/m^3

Polyeric Urethane Resin

TLV undetermined; none found in literature
.51 X .4242 ug/m^3 = **.216 ug/m^3**

Strontium Chromate

TLV = .05 mg/m^3, TLV/100 = .5 ug/m^3
.40 X .4242 ug/m^3 = **.17 ug/m^3 < .5 ug/m^3**

Ethylene Bisphenyl Isocyanate (MW =250)

TLV = 5 ppb, TLV/100 = .05 ppb
.09 X .4242ug/m^3 = .04 ug/m^3
.04 ug X 1 u mole/250 ug = .00016 u mole X 1 mole/10^6 u mole = 1.6 X 10^{-10} mole
1.6 X 10^{-10} mole X .0224= 3.6 X 10^{-12}
.003 ppb < .05 ppb

NSN # 8010013226622 (Two part Mix 50-50)

compound/% tot	VOC %	Solid %
n-Butyl Acetate/7.5	14	0
Ethyl 3-Ethoxypropionate/10	18	0
Xylene/0.5	1	0
Methyl Ethyl Ketone/2.5	4.5	0
Toluene/2.5	4.5	0
2-4 Pentanedione/2.5	0	10
Aliphatic Isocynate/10	19	0
C_8-C_{10} Aromatics/2.5	4.5	0
Methyl Isobutyl Ketone/17.5	33	0
Miscellaneous/44.5	0	90

VOC Emission at the fence line = 8.138 ug/m^3

n-Butyl Acetate (MW = 116.18)

TLV = 150 ppm, TLV/100 = 1.5 ppm
.17 X 8.138 ug/m^3 = 1.4 ug/m^3
1.4 ug X 1 u mole/116.18 ug =.012 u mole X 1 mole/10^6 u mole =
1.2 X 10^{-8} mole X .0224 = 2.69 X 10^{-10} = **.269 ppb < 1.5 ppm**

Ethyl 3-Ethoxypropionate

TLV not established; none found in literature
.23 X 8.138 ug/m^3 = **1.87 ug/m^3**

Xylene

TLV = 435 mg/m^3, TLV/100 = 4.35/m^3
.01 X 8.138 ug/m^3 = **.08 ug/m^3 < 4.35 mg/m^3**

Methyl Ethyl Ketone

TLV= 590 mg/m^3, TLV/100 = 5.9 mg/m^3
.06 X 8.138 ug/m^3 = **.49 ug/m^3 < 5.9 mg/m^3**

Toluene

TLV = 375 mg/m^3, TLV/100 =3.75 mg/m^3
.06 X 8.138 ug/m^3 = **.49 ug/m^3 < 3.75 mg/m^3**

C_8-C_{10} Aromatics (assume ave MW = 108)

TLV = 100 ppm, TLV/100 = 1 ppm
.06 X 8.138 ug/m^3 = .49 ug/m^3
·49 ug X 1 u mole/108 u g = .0045 u mole X 1 mole/10^6 u mole = 5 X 10^{-9} mole
X .0224 = 1.0 X10^{-10} = **.1 ppb < 1 ppm**

Methyl Isobutyl Ketone

TLV =205 mg/m^3, TLV/100 = 2.05 mg/m^3
.41 X 8.138 ug/m^3 = **3.34 ug/m^3 < 2.05 mg/m^3**

Solids Emission at fence line = .4242 ug/m^3

2-4 Pentanedione

TLV not established, not found in literature
.05 X .4242 ug/m^3 = **.02 ug/m^3**

Aliphatic Isocyanate (MW=168.22)

TLV = 5 ppb, TLV/100 = .05 ppb
.17 X .4242 ug/m^3 X .2 = .07 ug/m^3
.07 ug X 1 u mole/168.22 ug = .0004 u mole X 1 mole/10^6 u mole =
4.2 X 10^{-10} mole X .0224 = 9.3 X10^{-12} = **.009 ppb < .05 ppb**

Miscellaneous

TLV not established;
.95 X .4242 ug/m^3 = .403 ug/m^3

NSN # 8010013121169 (Two part mix 75-25)

compound/%tot	% VOC	% Solids
Epoxy Resin/22.5	0	30
Methyl N-Amyl Ketone/3.75	15	0
Xylene/3.75	15	0
Ethyl-3 Ethoxy Propionate/3.75	15	0
Toluene/10	40	0
Strontium Chromate/15	0	20
Crystalline Silica- Quartz/15	0	20
Titanium Dioxide/3.75	0	5
Proprietary B/17.5	0	23.3
Aliphatic Amine/2.5	10	0
Isopropyl Alcohol/1.25	5	0
Additive B/1.25	0	1.7

VOC emission at fence line = 8.138 ug/m^3

Methyl N-Amyl Ketone (MW = 114)

TLV = 50 ppm, TLV/100 = .5 ppm = 500 ppb
.15 X 8.138 ug/m^3 = 1.22 ug/m^3
1.22 ug X 1 u mole/114 ug = .0107 u mole X 1 mole/106 u mole =
1.1 X 10^{-8} mole X .0224 = 2.4 X 10^{-10} = **.24 ppb < 500 ppb**

Xylene

TLV = 435 mg/m^3, TLV/100 = 4.35 mg/m^3
.15 X 8.138 ug/m^3 = **1.22 ug/m^3 < 4.35 mg/m^3**

Ethyl-3 Ethoxy Propionate

TLV not established, no reference found in literature
.15 X 8.138 ug/m^3 = **1.22 ug/m^3**

Toluene

TLV = 375 mg/m^3, TLV/100 = 3.75 mg/m^3
.4 X 8.138 ug/m^3 = **3.26 ug/m^3 < 3.75 mg/m^3**

Aliphatic Amine

TLV not established, no reference in literature
.1 X 8.138 ug/m^3 = **.81 ug/m^3**

Isopropyl Alcohol (MW = 60.11)

TLV = 400 ppm, TLV/100 = 4 ppm
.05 X 8.138 ug/m^3 = .4 ug/m^3
.4 ug X 1 u mole/60.11 ug = .0067 u mole X 1 mole/10^6 u mole =
7 X 10^{-9} mole X .0224 = 1.5 X 10^{-10} = **.15 ppb < 4 ppm**

Solids Emission at Fence line = .4242 ug/m^3

Epoxy Resin

TLV not established, no reference found in literature
.3 X .4242 ug/m^3 = **.13 ug/m^3**

Strontium Chromate

TLV = 50 ug/m^3, TLV/100 = .5 ug/m^3
.2 X .4242 = **.085 ug/m^3 < .5 ug/m^3**

Crystaline Silica Quartz (MW = 60.09)

TLV = 100 ppb, TLV/100 = 1 ppb
.2 X .4242 ug/m^3 =.085 ug/m^3
.085 ug X 1 u mole/60.09 ug = .0014 u mole X 1 mole/10^6 u mole=
1 X 10^{-9} mole X .0224 = 3.136 X10^{-11} = **.03 ppb < 1 ppb**

Titanium Dioxide

TLV = 10 mg/m^3, TLV/100 = .1 mg/m^3
.05 X .4242 ug/m^3 = **.021 ug/m^3 < .1 mg/m^3**

Proprietary B

TLV not established
.233 X .4242 ug/m^3 = **.1 ug/m^3**

Additive B

TLV not established
.017 X .4242 ug/m^3 = **.007 ug/m^3**

*** SCREEN-1.1 MODEL RUN ***
* VERSION DATED 88300 ***

270 AQUIS #3903 BAQE-454-89 Other Emissions

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1100E-01
STACK HEIGHT (M)	=	22.25
STK INSIDE DIAM (M)	=	1.52
STK EXIT VELOCITY (M/S)	=	.56
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .04 M**4/S**3; MOM. FLUX = .18 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1128.	.4242	5	1.0	1.3	5000.0	28.6	103.0	55.1	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.4242	1128.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

10-19-93
11:12:35

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

g 270 AQUIS #3903 BAQE-454-89 VOC Emissions

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.2110
STACK HEIGHT (M)	=	22.25
STK INSIDE DIAM (M)	=	1.52
STK EXIT VELOCITY (M/S)	=	.56
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .04 M**4/S**3; MOM. FLUX = .18 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1128.	8.138	5	1.0	1.3	5000.0	28.6	103.0	55.1	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	8.138	1128.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

SCREEN Model Results for Paint Booth AQUIS #3050 Bldg 507

1. Material usage data for this booth identified the following as the paint applied in this booth.

   8010P001369F Desothane 420

2. Model Inputs

   EMISSION RATE Emission rate was based upon the following analysis;

   Based upon the past years 12 mo rolling total paint usage was 535.5 gal.

   Based upon the MSDS's for this material the density of a gallon of sprayed material is 10.35 lb/gal. Of this assume 3.4 lb/gal is VOC while the remaining 6.95 lb/gal are solids.

   VOC Emissions

   3.4 lb/gal X 535.5 gal /yr X 454 gm/lb X 1 yr/ 52 wks X 1 wk/5 day X 1 day/8 hr X 1 hr/60 min X 1 min/60 sec = .11 gm/sec

   Solids Emission

   6.95 lb/gal X 535.5 gal/yr X 454 gm/lb X 1 yr/52 wks X 1 wk/5 day X 1 day/8 hr X 1 hr/60 min X 1 min/60 sec = .23 gm/sec

   Assume 75% of solids attach to part and 25% is over spray

   .25 X .23 gm/sec = .06 gm/sec

   Assume the filter system has a capture efficiency of 90%, therefore the actual amount of solids released to the atmosphere is;

   .1 X .06 gm/sec = .006 gm/sec

   STACK HEIGHT

   45 ft X 12 in/ft X .0254 m/in = 13.7 m

   STACK DIAMETER

   2 ea, 42 " diameter. (Assume all emissions up one stack)
   42 in X .0254 m/in = 1.07 m

   STACK VELOCITY

   110 ft/min X 12 in ft X .0254 m/in X 1 min/ 60 sec = .56 m/sec

STACK GAS TEMP

Assume 75° F which is approximately 24° C = 297° K

AMBIENT AIR TEMP

Use default 293° K

DISTANCE TO FENCE LINE

1,800 ft which is approximately 550 meters

MODEL RESULTS

VOC emissions at the fence line were calculated to be 14.75 ug/m^3
Solids emissions at the fence line were calculated to be .8046 ug/m^3

COMPONENT EMISSIONS

Department of Air Quality personnel requested that component emissions be computed and compared against the TLV/100 for each. The following analysis is based upon the MSDS for the material identified above.

NSN #8010P001369

compound/% of Tot	% of VOC	% of Solid
Methyl Ethyl Ketone/26.5	45	0
Ethyl 3-Ethoxy Propionate/5	8.5	0
Cyclohexanone/12.5	21	0
N-Butyl Acetate/6	10	0
Ketone/3	5.5	0
Resins & Pigments/8.5	0	21
Methyl N-Amyl Ketone/3	5.5	0
Titanium Dioxide/11	0	27
Methyl Propyl Ketone/2	3	0
Aromatic Solvent/1	1.5	0
Aliphatic Polyisocyanate/21	0	51
Stabilizer/.5	0	1

VOC at Fence line = 14.75 ug/m^3

Methyl Ethyl Ketone

TLV = 590 mg/m^3 , TLV/100 = 5.9 mg/m^3
.45 X 14.75 ug/m^3 = **6.64 ug/m^3 < 5.9 mg/m^3**

Ethyl 3-Ethoxy Propionate

TLV not established, none found in literature.
.085 X 14.75 ug/m^3 = **1.25 ug/m^3**

Cylcohexanone

TLV = 100 mg/m^3, TLV/100 = 1 mg/m^3
.21 X 14.75 ug/m^3 = **3.1 ug/m3 < 1 mg/m^3**

N-Butyl Acetate (MW = 116.18)

TLV = 150 ppm, TLV/100 = 1.5 ppm
.10 X 14.75 ug/m^3 = 1.45 ug/m^3
1.45 ug X 1 ug/116.18 ug = .012 u mole X 1 mole/10^6 u mole =
1.2 X 10^{-8} X .0224 = 2.69 X 10^{-10} = **.269 ppb < 1.5 ppm**

Ketone

TLV not established for this generic compound
.055 X 14.75 ug/m^3 = **.81 ug/m^3**

Methyl N-Amyl Ketone (MW=114)

TLV = 50 ppm, TLV/100 = .5ppm = 500 ppb
.055 X 14.75 ug/m^3 = .81 ug/m^3
.81 ug X 1 u mole/114 ug = .007u mole X 1 mole/10^6 u mole =
7 X 10^{-9} X .0224 =1.56 X 10^{-10} = **.156 ppb < 500 ppb**

Methyl Propyl Ketone (MW = 86.13)

TLV = 200 ppm, TLV/100 = 2 ppm
.03 X 14.75 ug/m^3 = .44 ug/m^3
.44 ug X 1 u mole/86.13 ug = .005 u mole X 1 mole/10^6 u mole =
5 X 10^{-9} X .0224 = 1.1 X 10^{-10} = **.11 ppb < 2 ppm**

Aromatic Solvent

TLV not established
.015 X 14.75 ug/m^3 = **.22 ug/m^3**

Solids at Fence Line = .8046

Resins & Pigments

TLV not established
.21 X .8046 ug/m^3 = **.169 ug/m^3**

Titanium Dioxide

TLV = 10 mg/m^3, TLV/100 = .1 mg/m^3
.27 X .8046 ug/m^3 = **.217 ug/m^3 < 100 ug/m^3**

Aliphatic Polyisocyanate (Assume MW = 168.22)

TLV = 5 ppb, TLV/100 .05 ppb
.51 X .8046 ug/m^3 = .41 ug/m^3
.41 ug X 1 u mole/168.22 ug = .002 u mole X 1 mole/10^6 u mole=
2 X 10^{-9} mole X .0224 = 4.4 X 10^{-11} = **.044 ppb < .05 ppb**

Stabilizer

TLV not established
.01 X .8046 ug/m^3 = **.08 ug/m^3**

11-08-93
10:38:11

*** SCREEN-1.1 MODEL RUN ***
VERSION DATED 88300 ***

Bldg 507 AQUIS #3050 AO# BAQE-551-89, Solids

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.6000E-02
STACK HEIGHT (M)	=	13.70
STK INSIDE DIAM (M)	=	1.07
STK EXIT VELOCITY (M/S)	=	.63
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .02 M**4/S**3; MOM. FLUX = .11 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
550.	.8046	5	1.0	1.1	5000.0	20.0	54.8	32.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.8046	550.	0.

****
EMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

*** SCREEN-1.1 MODEL RUN ***
VERSION DATED 88300 ***

Bldg 507 AQUIS #3050 AO#-551-89, VOC

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1100
STACK HEIGHT (M)	=	13.70
STK INSIDE DIAM (M)	=	1.07
STK EXIT VELOCITY (M/S)	=	.63
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .02 M**4/S**3; MOM. FLUX = .11 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
550.	14.75	5	1.0	1.1	5000.0	20.0	54.8	32.7	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	14.75	550.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

DESOTO, INC. 85570 000939 Prepared: 10/29/9

SECTION I - PRODUCT IDENTIFICATION 8010P00136

Manufacturer: DESOTO, INC. part B
BOX 5030
1700 S. MOUNT PROSPECT RD.
DES PLAINES IL 60017

Information Phone: 708/391-9000
Emergency Phone: 708/391-9000
CHEMTREC Phone: 1-800-424-93

Product Class: ISOCYANATE
Trade Name : CURING SOLUTION
Product Code : 910X819 (1)
C.A.S. Number: NA-MIXTURE
Prepared By : WILLIAM P. JOYCE
Title : CORPORATE SAFETY MANAGER

Hazard Ratings: none -> extreme
0 ---> 4
Health -
Fire -
Reactivity -

SECTION II - INGREDIENTS

Ingredients	CAS #	Weight %	Exposure Limits ACGIH/TLV	Exposure Limits OSHA/PEL	VP mm H
N-BUTYL ACETATE	123-86-4	11.	150 ppm STEL= 200	150 ppm 200	8.
ALIPHATIC POLYISOCYANATE	TRADE SECRET	84.	Undetermined		0
HEXAMETHYLENE DIISOCYANATE (HDI) [822-06-2] LESS THAN 0.07% AT TIME OF MANUFACTURE BASED ON RESIN SOLIDS. THE FREE MONOMER CONTENT MAY RISE TO A MAXIMUM OF 1.6% AFTER 3 TO 6 MONTHS STORAGE. A TLV OF 0.005 PPM HAS BEEN ESTABLISHED FOR HDI.					
AROMATIC SOLVENT	64742-94-5	4.7	Undetermined		0

*** ALL Ingredients in this product are listed in the T.S.C.A. Inventory.

IF AN INGREDIENT IS LISTED WITH A SINGLE ASTERISK, THE CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

PERCENT BY WEIGHT:
TO NEAREST 5% FOR SUBSTANCES 5-95%
<5.0% FOR SUBSTANCES 1.0-5.0%

S=SKIN; C=CEILING LIMIT
NE=NOT ESTABLISHED
NA=NOT APPLICABLE

SECTION III - PHYSICAL DATA

Boiling Range: 249 - 418 Deg. F
Evap. Rate: Slower than n-Butyl Acetate
Volatiles volume: 100%

Vapor Density: Heavier than Air.
Liquid Density: Heavier than Water.
Wgt per gallon: 9.28 Pounds.
Spec. Gravity: 1.11

Appearance: LIQUID, SOLVENT ODOR
V.O.C.: 178 G/L

MATERIAL SAFETY DATA SHEET 11/26/90
DESOTO, INC. 000939
8010P01369F Prepared: 10/15/90

SECTION I - PRODUCT IDENTIFICATION

ifacturer: DESOTO, INC.
BOX 5030
1700 S. MOUNT PROSPECT RD.
DES PLAINES IL 60017

Information Phone: 708/391-9(
Emergency Phone: 708/391-9000
CHEMTREC Phone: 1-800-424-9300

Product Class: SOLVENT REDUCER
Trade Name : REDUCER FOR HIGH SOLIDS GLOSS
Product Code : 020X463
C.A.S. Number: NA-MIXTURE
Prepared By : WILLIAM P. JOYCE
Title : CORPORATE SAFETY MANAGER

Hazard Ratings: Health -
none -> extreme Fire -
0 ---> 4 Reactivity -

SECTION II - INGREDIENTS

Ingredients	CAS #	Weight %	--- Exposure Limits --- ACGIH/TLV		OSHA/PEL		VP mm HG
*METHYL ETHYL KETONE	78-93-3	53.	200	ppm	200	ppm	74.9
		STEL=	300		300		
ETHYL-3-ETHOXY PROPIONATE	763-69-6	10.	NE	ppm	NE	ppm	1.1
CYCLOHEXANONE	108-94-1	25.	S-25	ppm	S-25	ppm	2
N-BUTYL ACETATE	123-86-4	6.1	150	ppm	150	ppm	8.4
		STEL=	200		200		
KETONE	TRADE SECRET	5.9	NE	ppm	NE	ppm	3.5

*** ALL Ingredients in this product are listed in the T.S.C.A. Inventory.

IF AN INGREDIENT IS LISTED WITH A SINGLE ASTERISK, THE CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

PERCENT BY WEIGHT:
TO NEAREST 5% FOR SUBSTANCES 5-95%
<5.0% FOR SUBSTANCES 1.0-5.0%

S=SKIN; C=CEILING LIMIT
NE=NOT ESTABLISHED
NA=NOT APPLICABLE

SECTION III - PHYSICAL DATA

Boiling Range: 175 - 329 Deg. F
Evap. Rate: Slower than n-Butyl Acetate
Volatiles volume: 100%

Vapor Density: Heavier than Air.
Liquid Density: Same as Water.
Wgt per gallon: 7.19 Pounds.
Spec. Gravity: 0.86

Appearance: CLEAR LIQUID, SOLVENT ODOR
V.O.C.: 862 GRAMS/LITER

DESOTO, INC. 000333

8010P 001369F Prepared: 06/25

SECTION I - PRODUCT IDENTIFICATION 85570 96595

Part A lves C

Manufacturer: DESOTO, INC.
BOX 5030
1700 S. MOUNT PROSPECT RD.
DES PLAINES IL 60017

Information Phone: 708/391-900
Emergency Phone: 708/391-900
CHEMTREC Phone: 1-800-424-9

Hazard Ratings: Health -
none -> extreme Fire -
0 ---> 4 Reactivity -

Product Class: POLYESTER
Trade Name : DESOTHANE 420 HS FAST DRY
Product Code : 821X830 (2)
C.A.S. Number: NA-MIXTURE
D.O.T. Hazard Class : FLAMMABLE LIQUID
ID #: UN1263
Proper Shipping Name: PAINT

SECTION II - INGREDIENTS

Ingredients	CAS #	Weight %	Exposure Limits ACGIH/TLV	OSHA/PEL	mm
NON-HAZARDOUS ADDITIVES, RESIN AND PIGMENTS	TRADE SECRET	33.	Undetermined		C
METHYL N-AMYL KETONE	110-43-0	12.	50 ppm	100 ppm	2
TITANIUM DIOXIDE	13463-67-7	44.	10 mg/M3	10 mg/M3	0
METHYL PROPYL KETONE	107-87-9	7.1	200 ppm STEL= 250	200 ppm 250	2
STABILIZER	TRADE SECRET	2.0	Undetermined		0

*** ALL Ingredients in this product are listed in the T.S.C.A. Inventory.

IF AN INGREDIENT IS LISTED WITH A SINGLE ASTERISK, THE CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

PERCENT BY WEIGHT:
TO NEAREST 5% FOR SUBSTANCES 5-95%
<5.0% FOR SUBSTANCES 1.0-5.0%

S=SKIN; C=CEILING LIMIT
NE=NOT ESTABLISHED
NA=NOT APPLICABLE

SECTION III - PHYSICAL DATA

Boiling Range: 213 - 300 F
Evap. Rate: Slower than n-Butyl Acetate
Volatiles volume: 37.93%

Vapor Density: Heavier than Air.
Liquid Density: Heavier than Wate
Wgt per gallon: 12.47 Pounds.
Spec. Gravity: 1.50

Appearance: LIQUID, SOLVENT ODOR

SCREEN Model Inputs for Paint Booth AQUIS #3919 Bldg 1701

1. Material usage data for this booth identified the following four paint as having the greatest usage.

8010009704942	Water Based Primer - Green
801001X414742	Water Based Primer Black
801001X414614	Glossy Red Top Coat

2. Model Inputs

EMISSIONS RATE

The average density of coatings used in this booth is approximately 12 lb/gal. The approval order for this booth restricts the VOC content of coatings to 2.75 lb/gal. This being the case then the solids are 9.25 lb/gal.

The latest paint log shows a total of 670.53 gallons used in the past 12 months.

Based upon this information the VOC emission rate is estimated as follows;

670.53 gal/yr X 2.75 lb/gal X 454 gm/lb X 1 yr/52 wk X 1 wk/5 d X 1d/8 hr X 1 hr/ 60 min X 1 min/60 sec= **.11 gm/sec**

Based upon the above information the solids emission rate is estimated as follows;

670.53 gal/yr X 9.25 lb/gal X 454 gm/lb X 1 yr/52/wk X 1 wk/5 d X 1d/8 hr X 1 hr/60 min X 1 min/60 sec= **.38 gm/sec**

Assume 75% of all solids are deposited on part being painted and 25% is over spray;

.38 gm/sec X .25 = .095 gm/sec over spray

Assume that the filter system has a capture efficiency of 90% therefore the actual amount of solids emitted to the atmosphere is;

.095 gm/sec X .10 = .01 gm/sec

The screen model will be run twice using an emission rate of .11 gm/sec to estimate the VOC emissions and .01 gm/sec to estimate the emission of solids.

STACK HEIGHT

50 ft X 12 in/ft X .0254 m/in = 15.24 m

STACK DIAMETER

6 ea at 60 in (assume all emissions up single stack)

60 in X .0254 m/in = 1.52 m

STACK VELOCITY

110 ft/min X 12 in/ft X .0254 m/in X 1min/60 sec = .56 m/sec

STACK GAS TEMP

Assume 75^{o} F which is approximately 24^{o} C = 297^{o} K

AMBIENT AIR TEMP

Use default 293^{o}

DISTANCE TO FENCE LINE

300 ft X 12 in/ft X .0254 m/in = 86.4 m

COMPONENT EMISSIONS

Department of Air Quality personnel requested that component emissions be computed and compared against the TLV/100 for each. The following analysis is based upon the MSDS for each material identified above.

NSN 8010009704942 WATER BASED PRIMER GREEN
NSN 801001X414742 WATER BASED PRIMER BLACK

compound/% of tot	% of VOC	%of solid
2- Butoxyethanol/10	22	0
Titanium Dioxide/15	0	28
Ammonium Hydroxide/5	0	9
Diethylene Glycol Monobutyl Ether/2	4	0
Nonhazardous Organics/34	74	0
Non hazardous Solids/34	0	63

VOC at Fence line = 88.29 ug/m^{3}

2-Butoxyethanol (MW = 118.17)

TLV = 25 ppm, TLV/100 = .25 ppm
.22 X 88.29 ug/m^3 = 19.4 ug/m^3
19.4 ug X 1 u mole/ 118.17 ug = .164 u mole X 1mole/ 10^6 u mole =
1.64 X 10^{-7} X .0224 =4 X 10^{-9} = **4 ppb < 250 ppb**

Diethylene Glycol Monobutyl Ether

TLV not established, no reference found in literature.
.04X 88.29 ug/m^3 = **3.53 ug/m^3**

Nonhazardous Organics

TLV not established
.74 X 88.29 ug/m^3 = **65.33 ug/m^3**

Solids at fence line = 8.03 ug/m^3

Titanium Dioxide

TLV = 10 mg/m^3, TLV/100 = .1 mg/m^3
.28 X 8.03 ug/m^3 = **2.25 ug/m^3 < 100 ug/m^3**

Ammonium Hydroxide (MW = 35.06)

TLV = 25 ppm, TLV/100 = .25 ppm
.09 X 8.03 ug/m^3 = .72 ug/m^3
.72 ug X 1 u mole/35.06 ug = .02 u mole X 1 mole/10^6u moles=
2.1 X 10^{-8} X .0224 = 4.7 X 10^{-10}= **.47 ppb < 250 ppb**

Nonhazardous Solids

TLV not established
.63 X 8.03 ug/m^3= **5.06 ug/m^3**

NSN #801001X414614 Red Top Coat

compound/% of tot	% of VOC	% of solid
Toluene/4	13	0
Methyl-n-Amyl Ketone/22	79	0
Non-hazardous Solids/48	0	72
Naptha/1	1	0
1,3,5 Trimethyl Benzene/1	1	0
1,2,4 Trimethyl Benzene/2	2	0
Butyl Acetate/4	4	0
Hexamethyl Diisocyanate Polymer/17	0	26
Hexamethyl Diisocyanate/1	0	2

VOC emissions at fence = 88.29 ug/m^3

Toluene

TLV = 375 mg/m^3, TLV/100 = 3.75 mg/m^3
.13 X 88.29 ug/m^3 = **11.48 ug/m^3 < 3.75 mg/m^3**

Methyl-n-Amyl Ketone (MW = 114)

TLV = 50 ppm, TLV/100 = .5 ppm = 500 ppb
.79 X 88.29 ug/m^3 = 69.75 ug/m^3
69.75 ug X 1 u mole/ 114 ug = .61 u mole X 1 mole/10^6 u mole =
6.1 X 10^{-7} X .0224 = 1.4 X 10^{-8} = **14 ppb < 500 ppb**

Naptha (MW = 128)

TLV = 100 ppm, TLV/100 = 1 ppm
.01 X 88.29 ug/m^3 = .88 ug/m^3
.88 ug X 1 u mole/128 ug = .007 u mole X 1 mole/10^6 u mole =
7 X 10^{-9} X .0224 = 1.6 X 10^{-10} = **.16 ppb < 1 ppm**

1,3,5 Trimethyl Benzene (MW = 120)

TLV = 25 ppm, TLV/100 = .25 ppm
.03 X 88.29 ug/m^3 = 2.65 ug/m^3
2.65 ug X 1 u mole/120 ug = .022 u mole X 1 mole/10^6 u mole =
2.2 X 10^{-8} X .0224 = 4.9 X 10^{-10} = **.49 ppb < .25 ppm**

n-Butyl Acetate (116.18)

TLV = 150 ppm, TLV/100 = 1.5 ppm
.04 X 88.29 ug/m^3= 3.5 ug/m^3
3.5 ug X 1 u mole/116.18 ug = .03 u mole X 1 mole/10^6 u mole =
3 X 10^{-8} X .0224 = 6.75 X 10^{-10} = **.675 ppb < 1.5 ppm**

Solids emissions at fence line = 8.026 ug/m^3

Non Hazardous Solids

TLV not established
.72 X 8.026 ug/m^3 = **5.91 ug/m^3**

Hexamethyl Diisocyanate Polymer

TLV = 1.0 mg/m^3, TLV/100 = .01 mg/m^3 = 10u g/m^3
.26 X 8.206 ug/m^3 = **2.13 ug/m^3 < 10 ug/m^3**

Hexamethyl Diisocyanate (MW = 168.22)

TLV = 5 ppb, TLV/100 = .05 ppb
.02 X 8.026 ug/m^3 = .16 ug/m^3
.16 ug X 1 u mole/168.22 ug = .001 u mole X 1 mole/10^6 u mole =
1 X 10^{-9} X .0224 = 2.24 X 10^{-11} = **.022 ppb < .05 ppb**

10-26-93
15:12:26

*** SCREEN-1.1 MODEL RUN ***
*** VERSION DATED 88300 ***

Bldg 1701 AQUIS 3919 BAQE-039-91, VOC

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1100
STACK HEIGHT (M)	=	15.24
STK INSIDE DIAM (M)	=	1.52
STK EXIT VELOCITY (M/S)	=	.63
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .05 M**4/S**3; MOM. FLUX = .23 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
86.	88.29	4	1.0	1.1	320.0	15.0	13.6	12.0	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	88.29	86.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

10-26-93
15:15:55

*** SCREEN-1.1 MODEL RUN ***
VERSION DATED 88300 ***

Bldg 1701 AQUIS #3919 AO# BAQE-039-91, Other

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.1000E-01
STACK HEIGHT (M)	=	15.24
STK INSIDE DIAM (M)	=	1.52
STK EXIT VELOCITY (M/S)	=	.63
STK GAS EXIT TEMP (K)	=	297.00
AMBIENT AIR TEMP (K)	=	293.00
RECEPTOR HEIGHT (M)	=	.00
IOPT (1=URB,2=RUR)	=	1
BUILDING HEIGHT (M)	=	.00
MIN HORIZ BLDG DIM (M)	=	.00
MAX HORIZ BLDG DIM (M)	=	.00

BUOY. FLUX = .05 M**4/S**3; MOM. FLUX = .23 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN DISCRETE DISTANCES ***
****

TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
86.	8.026	4	1.0	1.1	320.0	15.0	13.6	12.0	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	8.026	86.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

BAQE-079-91

February 6, 1991

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICES in the Salt Lake Tribune and Deseret News on February 12, 1991.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84110-0690.

Sincerely,

Joyce I. Wiswell
Office Technician
Bureau of Air Quality

MRK:jiw

Enclosure

Faxed 2-6-91 jiw

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. **Mission Support, Inc.**

   Paint Booth

   Davis County CDS B

   Net increase of emissions from this source is calculated at the following values:

TSP	0.1	tons/yr
PM_{10}	0.1	tons/yr
SO_2	neg	tons/yr
NO_x	neg	tons/yr
CO	neg	tons/yr
VOC	13.2	tons/yr

2. **The Duriron Company, Inc.**

   Service Center Paint Booth

   Salt Lake County CDS B

   Net emissions from this new source are calculated at the following values:

TSP	0.03	tons/yr
PM_{10}	0.02	tons/yr
SO_2	neg	tons/yr
NO_x	neg	tons/yr
CO	neg	tons/yr
VOC	2.0	tons/yr

3. **Le Grand Johnson Construction Co.**

Cement Silo\Baghouse Control Unit

Mobile CDS B

Net increase of emissions from this source is calculated at the following values:

TSP	0.5	tons/yr
PM_{10}	0.4	tons/yr

4. **Thiokol Corporation, Strategic Operations**

Paint Booth

Box Elder County CDS A1

Net emissions from this source are calculated at the following values:

TSP	0.01	tons/yr
PM_{10}	0.01	tons/yr
VOC	0.8	tons/yr

5. **Hill Air Force Base**

Paint Booth

Davis County CDS A1

Net increase of emissions from this new source is calculated at the following values:

TSP	0.04	tons/yr
PM_{10}	0.03	tons/yr
SO_2	neg	tons/yr
NO_x	neg	tons/yr
CO	neg	tons/yr
VOC	0.19	tons/yr

6. **Glen's Excavating & Grading, Inc.**

Portable Concrete Batch Plant

Mobile CDS B

Net emissions from this new mobile source are calculated at the following values:

Particulate	4.71	...s/yr
PM_{10}	2.83	tons/yr
SO_2	0.94	tons/yr
NO_x	12.85	tons/yr
CO	3.03	tons/yr
VOC	1.33	tons/yr
Aldehydes	0.21	tons/yr

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. It is the intent to the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 1950 West North Temple, Salt Lake City, Utah 84116-0690. Written comments received by the Bureau, 1950 West North Temple, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before March 21, 1991 will be considered in making the final decisions on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: February 12, 1991

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

...rman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-723-88

December 1, 1988

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on December 12, 1988.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84110-0690.

Sincerely,

David Kopta

Dave Kopta
Engineering Unit Manager
Bureau of Air Quality

DK/cc

Enclosure

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Superstition Crushing, Sand and Gravel Plant, Iron County
2. Paint Booth in Building 1251, Department of the Air Force, Davis County

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. No Prevention of Significant Deterioration (PSD) increment will be consumed by these proposals. It is the intent to the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0690. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before January 10, 1988 will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: December 12, 1988

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.

August 30, 1995

DAQE-775-95

James VanOrman
Hill Air Force Base
OO-ALC/EM
7276 Wardleigh Road
Hill Air Force Base, Utah 84056--5990

Re: Approval Order to Modify AO for Engine Test Facilities. Davis County, CDS-A2

Dear Mr. VanOrman:

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Dwight V. Bird. He may be reached at (801) 536-4048.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:DVB:aj

cc: Davis County Health Department
Mike Owens, EPA Region VIII
Mike Graziano

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER TO MODIFY AO FOR ENGINE TEST FACILITIES

Prepared By: Dwight V. Bird, Engineer

APPROVAL NUMBER

DAQE-775-95

Date: August 30, 1995

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Hill Air Force Base has requested a modification to the consolidated Approval Order (AO) for all of its aircraft engine test facilities. The AO covers eight test facilities (either hush houses or test stands), one of which is grandfathered, and two of which are replacements for grandfathered stands. This AO will supersede DAQE-469-94, dated June 9, 1994. This modification clarifies the location of the test stands and hush houses, and allows for the use of JP-5 jetfuel, which is required for Navy Aircraft.

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A public comment period was not required for this project. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

General Conditions:

1. This AO applies to the following company:

   Hill Air Force Base
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone: (801)-777-0359
   FAX: (801)-777-4306

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   See Condition #5 for location of buildings.

   Universal Transverse Mercator (UTM) Coordinate System: (4,525,000) meters Northing, (425,000) meters Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the Aircraft Engine Test Facilities according to this AO requested in the Notices of Intent dated October 14, 1994, January 7, 1994, January 20, 1993, and April 15, 1987.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive

instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment:

A.	Building 222	One hush house with two aircraft bays AQUIS# 3647 AQUIS# 34680
B.	Building 268	Three test cells #8 AQUIS# 3654 #11 AQUIS# 3652 #12 AQUIS# 3644
C.	Area 5134	Sound Suppressor model #A/F 32A-25 AQUIS# 3648
D.	Pad 24 Near building 8	Hush house model #A/F37T10 AQUIS not assigned
E.	Pad 18 Pad 27 Near building 8	Two hush houses model #A/F37T10 AQUIS# 34346 AQUIS# 34399
F.	Pad 17 Near building 8	Hush house model #A/F37T10 AQUIS# 3645
G.	Area 10901	Mobile test stand model AM37T-21A AQUIS# 3002
H.	Area 10901	Mobile test stand
I.	Near building 33	Engine test cell #A/M37T-9

6. This AO shall replace the AO dated November 27, 1987, (BAQE-068-87).

7. The Executive Secretary shall be notified in writing upon start-up of the two new facilities near building 901, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions (i.e. there are no emissions) shall not be included.

9. The following limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

A. 1,400 F-16 (Engines F-100/110/120/200/220) engine tests per 12-month period
B. 110 F-4 (Engine J-79) engine tests per 12-month period
C. 200 F-18 engine tests per 12-month period
D. 300 C-130 (Engine T-56) engine tests per 12-month period

The total number of tests from all of the cells, hush houses, and test stands on the base combined shall not exceed the above specified limits by aircraft engine category. Tests conducted in the test stands outside building 222 shall not be considered part of the total F-16 test limitation above because these are grandfathered test stands. However, their emissions shall be included in the emissions inventory report for the facility. Records of the number of tests by the aircraft/engine category shall be kept on a daily basis for all tests conducted. For each test, the type of engine, date and time of test, and duration of each test in different test modes (idle, intermed, military, afterburner) shall be recorded. Compliance with the annual limitations shall be determined on a rolling 12-month total. Hill Air Force Base shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of tests conducted, including rolling 12-month totals shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request.

Fuels

10. The owner/operator shall use only JP-4,JP-5 or JP-8 as fuels in the engines. If any other fuels are to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

11. The sulfur content of any fuel burned shall not exceed 0.85 pounds per million BTU heat input. Sulfur content shall be decided by ASTM Method D-4239-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

12. This source is required to pay an annual emission fee upon start-up [or if an existing facility, upon issuance of this AO]. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

13. All records referred to in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Records that are to be kept include number of engine tests by category (Condition number 9)

14. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. A copy of all manufacturers' operating instruction for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment, and shall be made available to compliance inspectors upon their request.

15. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

16. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (all aircraft engine test facilities) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	Particulate	3.32
B.	PM_{10}	3.32
C.	SO_2	8.87
D.	NO_x	73.39
E.	CO	42.22
F.	Hydrocarbons (as VOC)	4.24

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration and Nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fee rate and the class of pollutants are subject to change by state, the federal agencies, or both.

	Pollutant	Tons/yr
A.	PM_{10}	3.0
B.	SO_x	9.0
C.	NO_x	73.0
D.	VOC	4.0

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

4 Jan 95

OO-ALC/EME
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
150 North 1950 West
P.O. Box 144820
Salt Lake City Utah 84114-4820

Dear Mr. Roberts

The attached Approval Order #BAQE-642-88 for a spray booth and an oil/water separator needs to be eliminated. The spray booth is presently covered in the Consolidated Paint Booth Permit (DAQE-1006-94, 29 Nov 94) and the oil/water separator does not require an air permit.

If you have questions, please contact Ms. Bonnie Miller at 777-1449. Thank you for your cooperation in this matter.

Sincerely

LYNN S. HILL
Chief, Environmental Compliance Div
Environmental Management Directorate

Attachment:
1. AO BAQE-642-88

cc:
388 FW/LSWE
MSgt Prymek

MEMORANDUM

To: Russell Roberts, Director, Division of Air Quality

Through: Lynn Menlove, Manager, New Source Review Section, Division of Air Quality

From: Dwight Bird, Environmental Engineer DB 7/6

Date: August 17, 1995

Subject: Modification for Hill AFB aircraft engine test stand Approval Order (DAQE-0469-95)

File Path: f:\aq\engineer\dbird\wp\memos\hillairc.mem

Description

Hill AFB submitted a request dated October 14, 1994, to modify language in their Aircraft Engine Test Facility consolidated Approval Order. The changes in language are necessary to clarify the location of the test stands, and to add JP-5 to the list of acceptable fuels. JP-5 is similar in formulation to JP-8, but with a higher flash point. This fuel is required by Navy aircraft that will land on aircraft carries, as a safety precaution.

Emissions

There will be no change in emissions from this modification, because emissions are restricted by the type and number of tests allowed.

BACT

There was no BACT determination for this modification

Recommendation

The attached approval order should be sent (it contains redline and ~~strikeout~~ text identifying language changes in conditions 5, and 10).

Fees

There is no fee required for this modification

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

DAQE-~~XXX~~-95

~~August 17, 1995~~June 9, 1994

Mike Graziano
Hill Air Force Base
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Re: ~~Modified~~ Approval Order To Consolidate Permit For All Aircraft Engine Tests
Davis County CDS A1 NA Title V Major

Dear Mr. Graziano:

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Dwight Bird. He may be reached at (801) 536-4048.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:DB:dn

cc: Davis County Health Department
EPA Region VIII, Mike Owens

C. NO_x 73.0
D. VOC 4.0

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

Abstract

Hill Air Force Base has requested a ~~modification to the~~ consolidated Approval Order for all of its aircraft engine test facilities. ~~The Approval Order covers There will be~~ eight test facilities (either hush houses or test stands), one of which is grandfathered, and two of which are replacements for grandfathered stands. This Approval Order will supersede ~~DAQE-469-94 BAQE-0680-87~~, dated ~~June 9, 1994 November 27, 1987~~. This modification clarifies the location of the test stands and hush houses, and allows for the use of JP-5 jetfuel, which is required for Navy Aircraft.

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order.

General Conditions:

1. This AO applies to the following company:

   Hill Air Force Base
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone: (801)-777-0359
   FAX: (801)-777-4306

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   See condition #5 for location of buildings.

   Universal Transverse Mercator (UTM) Coordinate System: (4,525,000) meters Northing, (425,000) meters Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the Aircraft Engine Test Facilities according to ~~this Approval Order the information submitted~~ requested in the Notices of Intent dated ~~October 14, 1994~~, January 7, 1994, January 20, 1993, and April 15, 1987.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as

to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment:

A.	Building 222	One hush house with two aircraft bays AQUIS# 3647 AQUIS# 34680
B.	Building 268	Three test cells #8 AQUIS# 3654 #11 AQUIS# 3652 #12 AQUIS# 3644
C.	Area 5134	Sound Suppressor model #A/F 32A-25 AQUIS# 3648
D.	Pad 24 Near building 8	Hush house model #A/F37T10 AQUIS not assigned
E.	Pad 18 Pad 27 Near building 8	Two hush houses model #A/F37T10 AQUIS# 34346 AQUIS# 34399
F.	Pad 17 Near building 8	Hush house model #A/F37T10 AQUIS# 3645
G.	Area 10901	Mobile test stand model AM37T-21A AQUIS# 3002
H.	Area 10901	Mobile test stand
I.	Near building 33	Engine test cell #A/M37T-9

~~A. Building 589 with hush house~~
~~B. Building 222 with hush house model #A/F37T-10~~
~~C. Building 268 with one model #A/F32T-9 noise suppression system~~
~~D. Test facilities #1 and #2 in building 8 using model#A/F37T-10 hush house~~
~~E. Building 222 F-16 sound suppressor (grandfathered)~~
~~F. Two new model AM37T-21A mobile test stands to be anchored near building 901~~

6. This AO shall replace the AO dated November 27, 1987, (BAQE-068-87).

7. The Executive Secretary shall be notified in writing upon start-up of the two new facilities near building 901, as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from intermittent sources shall use procedures similar to Method 9, but

the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions (i.e. there are no emissions) shall not be included.

9. The following limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

A. 1,400 F-16 (Engines F-100/110/120/200/220) engine tests per 12-month period
B. 110 F-4 (Engine J-79) engine tests per 12-month period
C. 200 F-18 engine tests per 12-month period
D. 300 C-130 (Engine T-56) engine tests per 12-month period

The total number of tests from all of the cells, hush houses, and test stands on the base combined shall not exceed the above specified limits by aircraft engine category. Tests conducted in the test stands outside building 222 shall not be considered part of the total F-16 test limitation above because these are grandfathered test stands. However, their emissions shall be included in the emissions inventory report for the facility. Records of the number of tests by the aircraft/engine category shall be kept on a daily basis for all tests conducted. For each test, the type of engine, date and time of test, and duration of each test in different test modes (idle, intermed, military, afterburner) shall be recorded. Compliance with the annual limitations shall be determined on a rolling 12-month total. Hill Air Force Base shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of tests conducted, including rolling 12-month totals shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request.

Fuels

10. The owner/operator shall use only JP-4, JP-5 or JP-8 as fuels in the engines. If any other fuels are to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

11. The sulfur content of any fuel burned shall not exceed 0.85 pounds per million BTU heat input. Sulfur content shall be decided by ASTM Method D-4239-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

12. This source is required to pay an annual emission fee upon start-up [or if an existing facility, upon issuance of this AO]. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Records & Miscellaneous

13. All records referred to in this AO which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Records that

are to be kept include number of engine tests by category (Condition number 9)

14. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. A copy of all manufacturers' operating instruction for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment, and shall be made available to compliance inspectors upon their request.

15. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

16. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (all aircraft engine test facilities) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	Particulate	3.32
B.	PM_{10}	3.32
C.	SO_2	8.87
D.	NO_x	73.39
E.	CO	42.22
F.	Hydrocarbons (as VOC)	4.24

These calculations are for the purposes of determining the applicability of prevention of significant deterioration and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fee rate and the class of pollutants are subject to change by state, the federal agencies, or both.

	Pollutant	Tons/yr
A.	PM_{10}	3.0
B.	SO_x	9.0

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

14 Oct. 94

OO-ALC/EME
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Dwight V. Bird
State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City Ut 84114-4820

Re: Approval Order DAQE-469-94

Dear Mr. Bird

After reviewing Approval Order #DAQE-469-94, please modify General Conditions, Paragraph 5, to read as follows:

Condition 5. Approved Installations

A. Building 222	One hush house with two aircraft bays AQUIS# 3647 AQUIS# 34680
B. Building 268	Three engine test cells #8 AQUIS# 3654 #11 AQUIS# 3652 #12 AQUIS# 3644
C. Area 5134	Sound suppressor model A/F 32A-25 AQUIS# 3648
D. Pad 24 Near building 8	Hush house model #A/F37T10 AQUIS not assigned
E. Pad 18 Pad 27 Near building 8	Two hush houses model #A/F37T10 AQUIS# 34346 AQUIS# 34399
F. Pad 17 Near building 8	Hush house model #A/F37T10 AQUIS# 3645

G.	Area 10901	Mobile test stand model AM37T-21A AQUIS# 3002
H.	Area 10901	Mobile test stand (planned)
I.	Near building 33	Engine test cell #A/M37T-9 (under construction)

As the emissions are calculated with the engine type and the number of tests only, the emissions do not depend on the number of test facilities. Therefore, there is no increase of emissions. Notification will be given to you concerning the planned facilities startup date.

Also please change Condition 10. Fuels. As Hill AFB maintains Navy aircraft too, we request JP-5 to be included as a permitted fuel. JP-5 is essentially the same fuel as JP-8,but it has a higher flashpoint to meet shipside requirements. Emissions from the Aircraft Test Cells using JP-5 will be the same as using JP-8.

If you have any questions, please call Mr. Andreas Zekorn at 777-0359.

Sincerely

LYNN S. HILL
Chief, Environmental Compliance Div.
Environmental Management Directorate

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-894-91

November 25, 1991

James Van Orman
Dept. of the Air Force
AFLC
HAFB, Utah 84056-5990

Re: Approval Order; Wording Change to Approval Order Dated June 22, 1988
Davis County CDS A1 NA

Dear Mr. Van Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install and operate the boilers in Building 260 according to the information submitted in the Notice of Intent dated June 22, 1988.

   A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of two Cleaver Brooks DL-86 boilers rated at 87.5 million BTU/hr each. The boiler installations shall be complete with Cleaver Brooks low-NO_x burner design.

3. This AO shall replace the AO dated June 22, 1988.

4.2.4-823

4. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. The combined total natural gas consumed for the two boilers shall not exceed 809.1 million standard cubic feet per 12-month period without prior approval from the Executive Secretary in accordance with R446-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Production/Consumption shall be determined by calculations based on meter readings and/or examination of fuel bills. The records shall be kept on a monthly basis.

6. The owner/operator shall use only natural gas as a primary fuel and No. 2 Fuel Oil as a backup fuel in the boilers approved by this AO. If any other fuel is to be used, an AO shall be required in accordance with R446-1-3.1, UAC.

7. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89 approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

8. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A.	PM_{10}	0.0053	lb per 10^6 BTU heat input
B.	NO_x	0.10	
C.	CO	0.0038	
D.	VOC	0.004	

A stack test for any or all of the above pollutants shall be performed if directed by the Executive Secretary.

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be

designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

$\underline{PM_{10}}$

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using the method specified by the Executive Secretary.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM_{10}.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Sample Location

40 CFR 60. Appendix A, Method 1, if required by test mehtod used

Volumetric flow rate

40 CFR 60, Appendix A, Method 2, if required by test mehtod used

Nitrogen oxides

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

Volatile organic compounds

40 CFR 60, Appendix A, Method 25

Carbon monoxide

40 CFR 60, Appendix A, Method 10

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate listed in this Approval Order. For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous 3 years.

9. All records referenced in this AO or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

10. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

11. The owner/operator of any new major source or major modification anywhere in Utah shall submit to the Executive Secretary an emergency plan within 60 days of the date of this AO. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). The values for the various levels are listed in R446-1-5, UAC. The emergency plan shall approved by the Executive Secretary.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for these boilers are currently calculated at the following values:

A. 2.02 tons/yr for Particulate
B. 1.21 tons/yr for PM_{10}
C. 0.24 tons/yr for SO_2
D. 37.62 tons/yr for NO_x
E. 1.50 tons/yr for VOC
F. 14.16 tons/yr for CO

The annual emissions for the entire base are not quantified at this time. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UAC. They are not to be used for the purposes of determining compliance.

Sincerely,

F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:DJ:cl

cc: EPA Region VIII, Mike Owens
Davis County Health Department

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James Van Orman
Dept. of the Air Force
AFLC
HAFB, Utah 84056-5990

ENGINEER:	Doug Jones
RE:	AO of June 22, 1988 for 2 Boilers, Wording Change Davis County, CDS A1 NA
DATE:	November 6, 1991
NOTICE OF INTENT DATED:	September 16, 1991
PLANT CONTACT:	James Van Orman
PHONE NUMBER:	(801) 777-7651
PLANT LOCATION:	Hill Air Force Base, Building 260

FEES:

Filing Fee	$00.00
Review Engineer - 3 hours at $50.00/hour	$150.00
Modeler - 0 hours at $50.00/hour	$000.00
Computer Usage Fee	$000.00
Notice to Paper	000.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$150.00

APPROVALS:

Engineering Unit Manager GP 11-15-91

Applicant Contact Made GP

I. Description of Proposal

Hill Air Force Base has sent a Notice of Intent dated September 16, 1991 requesting modifications to an Approval Order issued June 22, 1988. This Approval Order allowed the use of two natural gas fired boilers. Condition #5 of the Approval Order allows 66.49 x 10^6 SCF per rolling 30-day period. The request is for a change in the volume of natural gas allowed to 136 x 10^6 per rolling 30 day period.

Hill Air Force Base is also asking for this volume of gas consumed per 30-day period be converted to the volume of gas consumed per rolling 12-month period at the same rate. There appears to be an error in the original Approval Order wording of the allowed natural gas consumed. The request is for the combined design capacity of the boilers; the Approval Order reflects approximately the design capacity of one boiler but does not state the consumption as that allowed for each boiler. There are no changes in the recommended Approval Order conditions.

II. Emission Summary

The total emissions for this source (the entire base) are not quantified at this time. There are no net emission decreases or increases represented by this Notice of Intent. The total emissions for these boilers are as follows.

Total Emissions from the Two Boilers

Particulate	2.02 tons/year
PM_{10}	1.21
SO_x	0.24
NO_x	37.63
CO	14.16
VOC	1.21

III. Review of Rules and Regulations

A review of the rules and regulations is not required since the Notice of Intent represents a change in wording and not a change in operating parameters or emissions.

IV. BACT ANALYSIS

The BACT analysis was completed with the original review for the June 22, 1988 Approval Order. No changes to this review are being made.

V. Calculations

The request for 136 x 10^6 SCF is the number represented in the original Notice of Intent and the number used in the original calculations. No new calculations of emissions are necessary. If the proposed change in wording from a 30-day rolling total to a 12-month rolling total is accepted, then this number will not be represented in the Approval Order.

The original calculations were based on operation of the boilers 4300 hours per year for each boiler. Consumption of natural gas at these operating hours is equal to 809.1 million SCF for the combined consumption of both boilers. This number was used in the original calculations. No new calculations are necessary. The proposed change is to 809.1 million standard cubic feet per rolling 12-month period.

VI. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the boilers in Building 260 according to the information submitted in the Notice of Intent dated June 22, 1988.

   A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of two Cleaver Brooks DL-86 boilers rated at 87.5 million BTU/hr each. The boiler installations shall be complete with Cleaver Brooks low-NO_x burner design.

3. This Approval Order shall replace the Approval Order dated June 22, 1988.

4. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. The combined total natural gas consumed for the two boilers shall not exceed 809.1 million standard cubic feet per 12-month period without prior approval from the Executive Secretary in accordance with R446-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Production/Consumption shall be determined by calculations based on meter readings and/or examination of fuel bills. The records shall be kept on a monthly basis.

6. The owner/operator shall use only natural gas as a primary fuel and No. 2 Fuel Oil as a backup fuel in the boilers approved by this Approval Order. If any other fuel is to be used, an Approval Order shall be required in accordance with R446-1-3.1, UAC.

7. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89 approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

8. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A) Particulate	0.0053	lb per 10^6 BTU heat input
B) NO_x	0.10	
C) CO	0.0038	
D) VOC	0.004	

   The test methods used shall be as follows:

   A) Particulate - 40 CFR 60, Appendix A, Method 5
   B) NO_x - 40 CFR 60, Appendix A, Method 7

C) CO - 40 CFR 60, Appendix A, Method 10
D) VOC - 40 CFR 60, Appendix A, Method 25

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) approvable access shall be provided to the test location.

9. All records referenced in this Approval Order or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

10. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

11. The owner/operator of any new major source or major modification anywhere in Utah shall submit to the Executive Secretary an emergency plan within 60 days of the date of this Approval Order. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). The values for the various levels are listed in R446-1-5, UAC. The emergency plan shall approved by the Executive Secretary.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for these boilers are currently calculated at the following values:

A. 2.02 tons/yr for Particulate
B. 1.21 tons/yr for PM_{10}
C. 0.24 tons/yr for SO_2
D. 37.62 tons/yr for NO_x
E. 1.50 tons/yr for VOC
F. 14.16 tons/yr for CO

The annual emissions for the entire base are not quantified at this time. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UAC. They are not to be used for the purposes of determining compliance.

DOUG\WP\HILLCHG.AO

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

16 SEP 1991

Mr Don Robinson
Chief, Permit Section
Department of Environmental Quality
Division of Air Quality
1950 W North Temple
Salt Lake City, Utah 84114-4820

RE: Boiler Numbers 8 & 9, Building 260
Request for Amendment to A. O. Dated 22 June 88, BAQE-256-88

Dear Mr Robinson

In our 4 Sep 91 meeting regarding 30 day rolling average for the natural gas consumption for the two boilers, we request that the condition 5 of the permit be modified to allow for $136X10^6$ SCF per 30 days of natural gas firing rate at design value. Additionaly, we request that the rolling average period be revised to a 12 month period.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

Norman H. Bangerter
Governor

Suzanne Dandoy, M.D., M.P.H.
Executive Director

BAQE-252-88

April 27, 1988

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on May 6, 1988.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84116-0690.

Sincerely,

Sheri Holloway

Sheri Holloway
Engineering Section
Bureau of Air Quality

4.2.4-833

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Crossroads Refining, Inc., Precious Metals Refining, Salt Lake County.
2. Hill Air Force Base, Two Replacement Boilers in Boilerhouse 260, Davis County; 50 KW Diesel Generator in Building 800, Davis County; 150 KW Diesel Generator in Building 887.
3. Johnson Matthey, Increase Gold Production, Salt Lake County.
4. Genwal Coal Company, Temporary Crusher, Emery County.
5. Ashley Valley Engineering, Escalante Cogeneration Plant, Garfield County.
6. J&J Mill and Lumber, Concrete Block Plant, Washington County.

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. No Prevention of Significant Deterioration (PSD) increment will be consumed by these proposals. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0700. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before June 4, 1988

will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation or establishment.

Date of Notice: May 6, 1988

DK/sh

7226Q

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW FOR:

Mr. Thayne Judd
Department of the Air Force
Environmental Management Office
Hill Air Force Base, Utah 84056

Re: Two Replacement Boilers in Boilerhouse 260
Davis County, CDS A1

Date: April 18, 1988 JR

Notice of Intent Dated: February 23, 1988

Plant Contact: Jay Gupta

Phone Number: (801) 777-6742

Plant Location: Hill Air Force, Utah

Filing Fee		=	$ 100.00
Review Engineer - total hours	11.5 ($22.08/hr)	=	$ 253.92
Modeler - total hours	($18.07/hr)	=	$.
Computer time - total hours		=	$.
Notice To Paper		=	$ 24.00
Travel - total miles	($ 0.23/mile)	=	$.
		Total =	$ 377.92

Approved by Engineering Unit Manager JR 4-18-88

Approved by Technical Evaluation Section Manager MK 4/26/88

1350q

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base (HAFB) has filed a notice of intent dated February 23, 1988 in which they propose to replace two existing old boilers with two new packaged steam boilers. The existing boilers are rated at 40,000 LB/HR. The new boilers are rated at 70,000 LB/HR.

The packaged steam boilers will be Cleaver Brooks Model DL-86 complete with waterwall tubes, furnace section, boiler convection section, "CB" burner, lower drum, upper steam drum, soot blowers, and all associated piping, controls, safety interlocks, pressure relief valves, outlet dampers, and stack. At 100% load, each boiler will be capable of delivering 70,000 LB/HR of steam at an operating pressure of 125 psig and steam quality of 99.5%. Each unit will be designed to fire natural gas as the primary fuel with No. 2 fuel oil as a backup. At full load, the heat input per unit will be 87.5 million BTU per hour with an efficiency of 80.03%.

There are currently eight boilers in Building 260. The average load factor is 70-75%. The two new boilers are scheduled to become operative in summer 1988.

II. EMISSION SUMMARY

The steam demand varies considerably over the year. For this reason boilers are cycled up and down. There will be an emission increase as a result of the installation of these two new boilers.

Emissions of The Two Existing Boilers Being Replaced

Particulate	0.184 Ton/Yr
PM_{10}	0.110 Ton/Yr
SO_2	0.022 Ton/Yr
NO_x	5.148 Ton/Yr
CO	1.287 Ton/Yr
VOC	0.103 Ton/Yr
Methane	0.110 Ton/Yr

Emissions of The Two Proposed New Boilers

Particulate	2.023 Ton/Yr
PM_{10}	1.214 Ton/Yr
SO_2	0.243 Ton/Yr
NO_x	37.625 Ton/Yr
CO	14.160 Ton/Yr
VOC	1.505 Ton/Yr
Methane	1.214 Ton/Yr

Proposed Emission Increase at Building 260

Particulate	1.839 Ton/Yr
PM_{10}	1.103 Ton/Yr

SO_2	0.221 Ton/Yr
NO_x	32.477 Ton/Yr
CO	12.873 Ton/Yr
VOC	1.402 Ton/Yr
Methane	1.103 Ton/Yr

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The recommended best available control technology (BACT) for the generation of heat for production of steam for process use and space heat is to use boilers which are fired on natural gas and equipped with low NO_x burners. There are other options. The options for the generation of process steam are combustion of:

1. Natural gas
2. No. 2 fuel oil
3. No. 5 fuel oil
4. Coal

The emission factors in AP-42 show that natural gas has the lowest emission rate per unit of heat. The gas burners will be low NO_x design burners. The Cleaver Brooks low NO_x burners reduce NO_x emissions as much as 43%. All other sources of heat will have higher emissions than the proposed heat generation method.

The proposed natural gas fired Cleaver Brooks Model DL-86 boilers with CB Industrial Burners for low NO_x firing are recommended as having applied BACT.

IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for a modified source. This regulation applies.

2. Section 3.1.8, UACR - Application of best availaole control technology (BACT) required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.

4. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation (existing boilers, 20% opacity limitation).

However, any new emission points at HAFB will not be subject to this regulation.

5. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation will not apply.

6. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation.

7. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This source does not qualify as a new major source or a major modification under PSD rules. Therefore, this regulation does not apply.

8. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.1. A deminimus height of 65 meters (213.2 feet) is allowed. This source has no stacks which exceed 65 meters in height. It is in compliance with this regulation.

9. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This source is not a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

10. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, the 20% opacity limitation applies.

11. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

12. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This emission point burns oil as a backup fuel. The limitation is 0.85 LB of sulfur per 10^6 BTU heat input.

13. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

14. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. This process is not covered in this regulation.

15. Section 5, UACR - Emergency episode requirements. This regulation applies.

16. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

17. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

18. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County which is a nonattainment area for ozone. The Bureau of Air Quality guidelines do not call for this source to be modeled for ozone. Therefore, it is very unlikely that any new violation of the NAAQS for ozone will occur.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install the two Cleaver Brooks Model DL-86 natural gas fired boilers (these are replacement boilers) according to the information submitted in the notice of intent dated February 23, 1988.

2. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

3. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested only if directed by the Executive Secretary.

5. Natural gas consumption for the two new Cleaver Brooks boilers shall not exceed a total of 66.49×10^6 SCF per 30-day period (based on a 30-day rolling average) without prior approval in accordance with Section 3.1, UACR. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon

request, and shall include a period of two years ending with the date of the request. Consumption shall be determined by calculations based on meter records and/or fuel bills.

6. The boiler stacks shall be stack tested if directed by the Executive Secretary. The emission rate for each boiler stack shall not exceed any of the following values:

   A. Particulate - 0.0053 Lb per 10^6 BTU heat input
   B. NO_x - 0.10 Lb per 10^6 BTU heat input
   C. CO - 0.0038 Lb per 10^6 BTU heat input
   D. VOC (nonmethane) - 0.004 Lb per 10^6 BTU heat input

   The test methods used shall be as follows:

   A. Particulate - 40 CFR 60, Appendix A, Method 5
   B. NO_x - 40 CFR 60, Appendix A, Method 7
   C. CO - 40 CFR 60, Appendix A, Method 10
   D. VOC - 40 CFR 60, Appendix A, Method 25

   A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stack need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 1 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

7. The owner/operator shall use only natural gas as a fuel in the boilers. If any other fuel is to be used, an approval order shall be required in accordance with Section 3.1, UACR. Diesel fuel may be used only as an emergency backup fuel.

8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

DER/sh
1350q

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR

SOURCE: TWO BOILER CHANGE-OUT EMISSION INCREASE

FILE: HAFB260

COMPANY NAME: HILL AFB, BLDG. 260, BOILERS 8 & 9
LOCATION: LAYTON , UT
DATE: 01-APR-1988 01:30:13 PM

TOTAL ANNUAL EMISSIONS ESTIMATE FOR THIS SOURCE

TSP	1.639	TON/YR
PM-10	1.103	TON/YR
SOX	0.221	TON/YR
NOX	32.477	TON/YR
CO	12.573	TON/YR
VOC non METHANE	1.402	TON/YR
VOC METHANE	1.103	TON/YR

LIST:

2 EXISTING BOILERS

MINUS

2 PROPOSED BOILERS

GIVES INCREASES LISTED ABOVE

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: 3 BOILERS

COMPANY NAME: HILL AFB, BLDG. 260, BOILERS 8 & 9 FILE: T1
LOCATION: LAYTON, UT
DATE: 01-APR-1988 TIME: 11:43:07 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =
(EMISSION FACTOR)(GAS CONSUMPTION)(1 TON/2000 LBS)

TOTAL PARTICULATE	0.184	TONS/YR
PM-10	0.110	TONS/YR
SOx	0.022	TONS/YR
NOx	5.148	TONS/YR
CO	1.287	TONS/YR
VOC, non-METH	0.103	TONS/YR
VOC, METH	0.110	TONS/YR

AP-42 FOURTH EDIT'N, SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.4 NATURAL GAS COMBUSTION
TABLE 1.4-1 COMMERCIAL BOILERS (10 - 100 MILLION BTU/HR)

EMISSION FACTOR IN LBS/MILLION CUBIC FEET OF GAS COMBUSTED

PARTICULATE	BAQ DEFAULT VALUE	5.0 LBS/MCF
PM10	NEDS SOURCE CLASSIFICATION CODES	3.0 LBS/MCF
SO2	SULFUR CONT. = 2000 GR/1E6 SCF	0.6 LBS/MCF
NOX		140.0 LBS/MCF
CO		35.0 LBS/MCF
NON METHANE VOC		2.8 LBS/MCF
METHANE		3.0 LBS/MCF

GAS CONSUMPTION IN MILLION CUBIC FT. / YR FROM
(FUEL CONSUMPTION)(ANNUAL OPERATION)/(FUEL HEAT VALUE)

FROM GAS CONSUMPTION RECORDS	73.5	MCF/YR
HOURLY BOILER FUEL COMSUMPTION: NOI INFO	100.00	MMBTU/HR
HOURS/YR OPERATION SCHEDULE: NOI INFORMATION	683.9	HR/YR
FUEL HEAT CONTENT	930.0	BTU/CU FT

9

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: 2 PROPOSED BOILERS

COMPANY NAME: HILL AFB, BLDG. 260, BOILERS 8 & 9 FILE: T2
LOCATION: LAYTON , UT
DATE: 01-APR-1988 TIME: 11:43:07 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =
(EMISSION FACTOR)(GAS CONSUMPTION)(1 TON/2000 LBS)

TOTAL PARTICULATE	2.023 TONS/YR
PM-10	1.214 TONS/YR
SOx	0.243 TONS/YR
NOx	37.625 TONS/YR
CO	14.160 TONS/YR
VOC, non-METH	1.505 TONS/YR
VOC, METH	1.214 TONS/YR

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.4 NATURAL GAS COMBUSTION
TABLE 1.4-1 INDUSTRIAL BOILERS (10 - 100 MILLION BTU/HR)

EMISSION FACTOR IN LBS/MILLION CUBIC FEET OF GAS COMBUSTED

PARTICULATE	BAQ DEFAULT VALUE	5.0 LBS/MCF
PM10	NEDS SOURCE CLASSIFICATION CODES	3.0 LBS/MCF
SO2	SULFUR CONT. = 2000 GR/1E6 SCF	0.6 LBS/MCF
NOX	NOI INFO.	93.0 LBS/MCF
CO		35.0 LBS/MCF
NON METHANE VOC	NOI INFO.	3.7 LBS/MCF
METHANE		3.0 LBS/MCF

GAS CONSUMPTION IN MILLION CUBIC FT. / YR FROM
(FUEL CONSUMPTION)(ANNUAL OPERATION)/(FUEL HEAT VALUE)

APPROVAL ORDER CONDITION	809.1 MCF/YR
HOURLY BOILER FUEL COMSUMPTION: NOI INFO.	175.00 MMBTU/HR
HOURS/YR OPERATION SCHEDULE: NOI INFORMATION.	4,300.0 HR/YR
FUEL HEAT CONTENT	930.0 BTU/CU FT

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

FEB 23 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Notice of Intent to Construct

Dear Mr Cordner

In compliance with section 3.1 of the State Air Conservation Regulations, attached are three Notices of Intent to Construct for projects at Hill AFB.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-6742.

Sincerely

THAYNE H. JUDD, Col, USAF
Chief, Environmental Mgt Office

1 Atch
Notices of Intent to Construct (3)

RECEIVED
AIR QUALITY
FEB 29 1988

4.2.4-845

NOTICE OF INTENT TO CONSTRUCT
REPLACE EXISTING BOILERS #8 & #9, BLDG 260
HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

Hill AFB proposes to replace two existing old boilers each rated at 40,000 lbs/hr steam with two new packaged steam boilers each rated at 70,000 lbs/hr steam. The packaged steam boilers will be Cleaver Brooks Model DL-86 complete with waterwall tubes, furnace section, boiler convection section, "CB" burner, lower drum, upper steam drum, soot blowers and all associated piping, controls, safety interlocks, pressure relief valves, outlet damper and stack. At 100% load, each boiler will be capable of delivering 70,000 lbs/hr of steam at an operating pressure of 125 psig and steam quality of 99.5%. Each unit will be designed to fire natural gas as the primary fuel with #2 fuel oil as a back up fuel. At full load, the total heat input to each unit will be 87.5 million BTU/hr with unit efficiency of 80.03%.

2. POLLUTANT EMISSIONS: At present, boiler house in building 260 houses 8 boilers. Because both boiler load and steam demand vary considerably, boilers are often cycled to meet varying process and heating steam requirements. For instance, some boilers may be shut down completely for several months during the summer due to low heating steam demand while in winter months continuous operation may be required to meet increasing heating steam demand. Due to cyclic nature of operation, it is fairly accurate to assume an average load factor of 70-75% to reflect emissions averaged over the entire year. Additionally, since existing boilers are being replaced with new boilers of larger capacity, only incremental emissions represent the net increase in emissions from this project. Emissions from existing boilers are estimated based on calendar year 1987 average fuel consumption, operating hours and using the EPA publication, AP-42, Emission Factors. Emissions from the replacement boilers are estimated using Cleaver Brooks Stack Emission Data. These emissions are representative of Cleaver Brooks CB burners and industrial burners and is a compilation of the results of laboratory and field tests.

(i) Emissions From Existing Boilers:

Total gas consumption 73,536,000 CU FT/YR

Emission Factors: AP-42, Vol 1, 4 Ed, Table 1.4-1

POLLUTANT	FUEL $1X10^6$ CU FT	E.F. LB/10^6 CU FT	EMISSIONS LB/YR	TONS/YR
Particulate	73.536	3	220.6	0.1
SOX	73.536	0.6	44.1	0.02
NOX	73.536	140	10,295	5.14
HC	73.536	5.8	426.5	0.21
CO	73.536	35	2,573.8	1.29

(ii) Emissions From New Boilers:

Data (ea. boiler):

Primary fuel: Natural gas
Approximate heating value: 930 BTU/SCF
Approximate operating hours: 4,300

		100% Load	75% Load	50% Load
Steam Flow	Lbs/Hr	70,000	52,500	35,000
Total Heat Input	MBTU/HR	87.5	64.9	43.0
Fuel Fired	SCFM	1,570	1,164	772
Excess Air	%	10	10	10
Flue Gas Temp	°F	485	435	400
Flue Gas to Stack	Lbs/Hr	74,795	55,437	36,768
	ACFM	28,575	20,060	12,784
	SCFM	15,748	11,672	7,741

Emissions (two boilers):

Pollutant	E.F. Lb/10^6 BTU	PPM	Emissions (tons/yr) 100% Load	75% Load	50% Load
Particulates	0.01	-	3.76	2.8	1.85
NOX	0.10	85	37.6	27.9	18.5
HC	0.004	10	1.5	1.1	.74
SOX	NA	-	-	-	-

Based on average load factor of 75%,
Net increase in NOX emissions = 27.9 - 5.1
= 22.8 tons NOX/Yr

3. AIR CLEANING DEVICES

Cleaver Brooks standard low NOX burner design is the Best Available Control Technology (BACT) for control of nitrogen oxides (NOX) from boiler stacks. Recent developments and modifications of burner design has resulted in NOX reduction of as much as 43%, i.e., 85 ppm compared with 150 ppm NOX emissions from these burners a few years ago.

4. EMISSION POINTS: Each boiler will discharge approximately 12,000 SCFM via 42" diameter stack. Point of discharge will be about 30' above ground.

5. SAMPLE POINTS: No sampling points are anticipated.

6. OPERATING SCHEDULE: New boilers are scheduled to go into operation this summer. Their operation will be cyclic as explained above.

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

September 20, 1995

DAQE-860-95

James R. Van Orman
Director, Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFMC)
Hill Air Force Base, Utah 84056

Re: Your Letter of 6 September 1995, Phase II Vapor Recovery at Building 454

Dear Mr. Van Orman:

The attachments to the referenced letter includes a letter from James J. Morgester, Chief of Compliance Division of the State of California's Air Resources Board, to Wayne Tarpley of Schlumberger Technologies. Mr. Morgester's letter provides a certification of Schlumberger 4000 Series dispensers that use the Gilbraco VaporVac Assist System.

Section 4.9.9 of the Utah Air Conservation Rules [R307-1-4.9.9B(1)] requires all phase II vapor recovery systems to be designed and operated in accordance with CARB's requirement of 95% gasoline vapor recovery while dispensing, transferring, or pumping gasoline from storage tanks to vehicles.

In accordance with UACR-307-1-4.9.9, therefore, this letter may serve as a certification of your proposed phase II vapor recovery system to be installed and operated in Building 454 at HAFB. The installation, operation and maintenance of the proposed Schlumberger Model 4330 fuel dispensers shall be done in accordance with the manufacturer's specifications and requirements.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:MMB:DN

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

RECEIVED
SEP 11 1995
Air Quality

Mr Russell A. Roberts
Executive Secretary
Division of Air Quality
1950 West North Temple
PO Box 144820
Salt Lake City, UT 84114-4820

6 Sep 1995

FAX 7774306

RE: Notice of Intent to Construct and Operate a Phase II Vapor Recovery System at Building 454

Dear Mr Roberts

This letter is to serve as a Notice of Intent to construct and operate a Phase II Vapor Recovery System at building 454. Building 454 is a commercial service station that sells fuel to military personnel and their families. This Phase II Vapor Recovery System is being installed as part of a project to upgrade the underground fuel storage tanks at this facility.

The proposed system is a Gilbarco VaporVac Phase II Vapor Recovery System, California Air Resources Board (CARB) Executive Order G-70-150-AB (attached). The specified system will utilize the Schlumberger 4000 Series Dispensers; CARB certified under letter # 94-8, April 25, 1994 (attached). The system will be installed according to the attached sketch. Specific equipment to be installed under this project is as follows;

Schlumberger Model 4330 Fuel Dispensers (literature attached)
OPW 11 VAI Bellowless Nozzles (literature attached)
OPW 66CI Breakaway Couplings
Dayco 8' Assist Vapor Recovery Hoses
Dayco 12" Vapor Assist Whip Hoses

As per the requirements of R307-1-4.9.9.B.(1) the system has been certified by CARB to recover 95% of the gasoline vapor emissions resulting from dispensing fuel into motor vehicle fuel tanks. During 1994 the station dispensed approximately 3,000,000 gallons of motor vehicle fuel. Had this system been in place during 1994, VOC emissions from fuel dispensing at building 454 would have been 2,800 lbs (1.4 tons) rather than the 25,207.6 lbs (12.6 tons) reported in the 1994 emissions inventory.

24,674 lbs/yr

"9/12/79"

Based upon our analysis of R307-1-4.9.9 it is not clear whether an Approval Order is required for this installation. Your prompt response in approving this system and issuing the necessary approval documentation would be greatly appreciated as construction has already begun on the underground tank upgrades. If you have any questions or require any additional information regarding this matter please do not hesitate to contact Mike Graziano at 777-0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director, Environmental Management

Atch

1. CARB Executive Order G-70-150-AB
2. CARB Certification Schlumberger Series 4000 Dispensers
3. Vapor Recovery System Piping Layout Sketch
4. Schlumberger Dispenser Model 4330, Literature
5. OPW 11 VAI Vapor Assist System Nozzle, Literature

Called 11/07/95 no answer, will try later

State of California
AIR RESOURCES BOARD

Executive Order G-70-150-AB

Modification to the Certification of the Gilbarco VaporVac Phase II Vapor Recovery System

WHEREAS, the California Air Resources Board ("the Board" or "CARB") has established, pursuant to California Health and Safety Code sections 39600, 39601 and 41954, certification procedures for systems designed for the control of gasoline vapor emissions during motor vehicle fueling operations ("Phase II vapor recovery systems") in its "Certification Procedures for Gasoline Vapor Recovery Systems at Service Stations" as last amended December 4, 1981 (the "Certification Procedures"), incorporated by reference in Title 17, California Code of Regulations section 94001;

WHEREAS, the Board has established, pursuant to California Health and Safety Code sections 39600, 39601 and 41954, test procedures for determining the compliance of Phase II vapor recovery systems with emission standards in its "Test Procedures for Determining the Efficiency of Gasoline Vapor Recovery Systems at Service Stations" as last amended September 1, 1982 (the "Test Procedures"), incorporated by reference in Title 17, California Code of Regulations section 94000;

WHEREAS, Gilbarco Inc. ("Gilbarco"), requested and was granted certification of the VaporVac Phase II vapor recovery system ("VaporVac system") pursuant to the Certification Procedures and Test Procedures on March 26, 1993, by Executive Order G-70-150, and was granted a modifications to the certification by Executive Order G-70-150-AA, issued August 31, 1993;

WHEREAS, Gilbarco requested modification of the VaporVac system certification regarding manifolding at the vent lines in lieu of an underground manifold for existing installations, the storage tank pressure limitation, and interaction with the the Phase I system;

WHEREAS, Section VIII-A of the Certification Procedures provides that the Executive Officer shall issue an order of certification if he or she determines that the vapor recovery system conforms to all of the requirements set forth in Sections I through VII of the Certification Procedures; and

WHEREAS, I find that the VaporVac system conforms with all the requirements set forth in Sections I through VII of the Certification Procedures, and results in a

vapor recovery system which is at least 95 percent effective for attendant and/or self-serve use at gasoline service stations when used in conjunction with a Phase I vapor recovery system which has been certified by the Board.

NOW THEREFORE, IT IS HEREBY ORDERED that the certification, Executive Order G-70-150 AA, is hereby modified to allow manifolding at the vent lines in lieu of an underground manifold for existing installations, to remove the storage tank pressure limitation, and to clarify the interaction of the Phase I system with the Phase II system. The maximum dispensing rate for the VaporVac system shall be thirteen (13.0) gallons per minute. Exhibit 1 contains a list of the equipment certified for use with the VaporVac system. Exhibit 2 contains installation and performance specifications for the system.

IT IS FURTHER ORDERED that compliance with the certification requirements and rules and regulations of the Division of Measurement Standards of the Department of Food and Agriculture, the State Fire Marshal's Office, and the Division of Occupational Safety and Health of the Department of Industrial Relations is made a condition of this certification.

IT IS FURTHER ORDERED that the certified VaporVac system shall, at a minimum, be operated in accordance with the manufacturer's recommended maintenance intervals and shall use the manufacturer's recommended operation, installation, and maintenance procedures.

IT IS FURTHER ORDERED that any alteration of the equipment, parts, design, or operation of the systems certified hereby is prohibited, and deemed inconsistent with this certification, unless such alteration has been approved by the Executive Officer or his/her designee.

IT IS FURTHER ORDERED that installations of the system certified hereby shall perform in actual use with the same effectiveness as the certification test systems. If, in the judgment of the Executive Officer, a significant fraction of installations fail to meet the specifications of this certification, or if a significant portion of the vehicle population is found to have configurations which significantly impair the system's collection efficiency, the certification itself may be subject to modification, suspension or revocation. Any revision to the certification and/or test procedures relevant to this certification may be the basis for evaluation of the system and may constitute grounds for modification, suspension or revocation of this certification.

IT IS FURTHER ORDERED that all nozzles approved for use with the VaporVac system shall be 100 percent performance checked at the factory, including checks of proper functioning of all automatic shut-off mechanisms.

IT IS FURTHER ORDERED that the following requirements are made a condition of certification. The VaporVac system shall be installed only in facilities which are

capable of demonstrating on-going compliance with the vapor integrity requirements of the local air pollution control district ("district"). The owner or operator of the installation shall conduct, and pass, a static pressure decay test at least once in each twelve month period. The district may elect to impose more stringent test frequency requirements. The test shall be conducted in accordance with a CARB-approved or district-approved test procedure. (The most current draft procedure TP-201.3 may be used until a static pressure decay test procedure is adopted by the Board.) Alternative test procedures may be used if determined by the Executive Officer to yield comparable results and to not require components to possess greater integrity than was required for certification.

IT IS FURTHER ORDERED that, at such time as the contribution of the fugitive emissions which may result from pressurization of the storage tanks can be quantified, if such emissions are found to affect the overall effectiveness of the system, the efficiency of the system may be reevaluated and revised.

IT IS FURTHER ORDERED that the certified VaporVac system shall be performance tested during installation for ability to dispense gasoline and collect vapors without difficulty in the presence of the station manager or other responsible individual. The station manager, owner or operator shall also be provided with instructions on the proper use of the VaporVac system, its repair and maintenance, and where system replacement and system components can be readily obtained. Copies of the manufacturer's warranty for the VaporVac system shall be made available to the station manager, owner or operator.

Executed at Sacramento, California, this 15th day of February, 1994.

James D. Boyd
Executive Officer

Attachments

Executive Order G-70-150-AB

Exhibit 1

VaporVac System Equipment List

Component	Manufacturer/Model	State Fire Marshal Identification Number
Nozzle	OPW 11-VAI-42 (leaded) -47 (unleaded) -22 (leaded, Hold Open Latch) -27 (unleaded, Hold Open Latch) OR Any inverted coaxial nozzle CARB-certified for use with the VaporVac system.	005:008:050
Inverted Coaxial Hose	Thermoid Hi-Vac Goodyear Flexsteel Dayco 7282 Superflex 2000 OR Any inverted coaxial hose CARB-certified for use with the VaporVac system.	005:037:003 005:036:002 005:033:005
Pressure/Vacuum Valve	Any CARB-certified valve with the following pressure and vacuum settings, in inches water column (wc). Pressure: three plus or minus one-half inches (3.0 ± 0.5") water column. Vacuum: eight plus or minus two inches (8 ± 2") water column. Note: For systems installed before two CARB-certified valves which meet the above criteria are available, or within thirty days after that date, a valve with the following settings may be used for a period not to exceed four years from the date the second valve was certified: Pressure: at least one and not exceeding three and one-half inches (1 - 3.5") water column. Vacuum: at least one-half ounce/inch^2(0.87" wc). Local districts may require valves with higher settings and/or may require earlier replacement of the 1" pressure/vacuum valves.	

Breakaway Couplings	Catlow AV200, AV200-1	005:030:005
	Richards Industries VA-50, VA-51	005:031:007
	OPW 66CI	005:030:005
	OR	
	Any inverted coaxial breakaway CARB-certified for use with the VaporVac system.	
Dispensers	Advantage Series B"XY" ("X" may be 0 through 9 or A, "Y" may be 0 through 9, A through P)	
VaporVac Retrofit Assemblies (For the Advantage Series and MPD-1, 2/C, and 3)	CV00"XY"-"ZZ" ("X" may be 0 through 3 "Y" may be 0 through 9 "Z" may be 0 through 9 and designates cosmetic features such as color)	

Executive Order G-70-150-AB

Exhibit 2

Specifications for the VaporVac Bootless Nozzle System

Figure 2-A contains a drawing of a typical installation of the VaporVac system. Figures 2-B and 2-C depict the operation and location of component parts of the VaporVac system.

Nozzles

1. Leaded and unleaded spouts are interchangeable.

2. Failure mode testing demonstrated that blockage of some of the vapor collection holes in the spout has negligible effect on the operation of the system until only four or fewer holes remain unblocked. Any OPW 11-VAI nozzle which is found to have less than four unobstructed vapor collection holes is defective and shall be immediately removed from service.

Inverted Coaxial Hoses

1. The maximum length of the hose shall be fifteen (15) feet.

2. The length of hose which may be in contact with the island and/or ground when the nozzle is properly mounted on the dispenser is limited to six inches.

Breakaway Couplings

1. Breakaway couplings are optional but, if installed, only certified breakaways may be used.

VaporVac System

1. The normal operating range of the system, as measured by air-to-liquid ratio testing, is 1.10 to 1.15 plus or minus 0.10 (1.00 to 1.25). Failure mode testing has demonstrated that potential malfunctions which do not shut down the fueling point result in an air-to-liquid ratio less than 0.9. Therefore, the air-to-liquid ratio of the system shall be not less than 0.9, measured at a flowrate of at least eight gallons per minute (8 gpm). Any fueling point not capable of demonstrating compliance with this performance standard shall be deemed defective and removed from service. For the purpose of determining non-compliance, the results of at least three air-to-liquid ratio tests shall be

averaged. The air to liquid ratio shall be determined by a CARB-approved or district-approved test procedure. (Draft procedure TP-201.5 may be used until an air to liquid ratio test procedure is adopted by the Board.) Alternative test procedures may be used if they are determined by the Executive Officer to yield comparable results.

Note: this test procedure returns air rather than vapor to the storage tank, and normally causes an increase in storage tank pressure and may cause vent emissions. This is a temporary condition due to the test is should not be considered an indication of malfunction or noncompliance.

2. The VaporVac shall be equipped with electronic safeguards designed to ensure that no fuel is dispensed unless the VaporVac system is operating properly. An error code is indicated which identifies the problem as being related to VaporVac.

   The following conditions shall halt or inhibit the operation of the one side of the dispenser, with an error code indicated, while allowing the other side to operate.

   - Excessive vapor pump motor current (possible causes include bearing failure, locked rotor, motor winding shorts or fluid in pump cavity for more time than required to clear a blockage).
   - Failure of the vapor pump to start while fuel is being dispensed (possible causes include control electronics failure, disconnected or severed motor wiring, or locked rotor).
   - Vapor pump activity during idle periods when no fuel is being dispensed.
   - Maximum permissible pump speed exceeded (possible causes include loose connections in vapor path or pump malfunction).
   - Disconnection or accidental swapping of Side A/B vapor pumps.

The following conditions shall shut down the entire dispenser in a manner similar to a "dead-man switch", in that VaporVac must actively prevent its activation. This is achieved by requiring the VaporVac to maintain a normally-closed switch, which will open should the VaporVac be taken "off line" via various mechanisms.

- Failure or loss of VaporVac power supply.
- A.C. line fuse opens.
- Cabling/wiring missing or disconnected (tampering).

3. The mass emission rate measured during the efficiency test: 0.277 pounds per 1,000 gallons.

Vapor Lines and Tank Vents

1. The pressure drop through the system, measured at a flow rate of 60 SCFH, should be as low as possible. The maximum recommended pressure drop from the dispenser riser to the storage tank is 0.02 inches water column (0.03 inches water column if the measurement includes an impact valve). The maximum allowable pressure drop through the system shall not exceed one/half inch (0.5") water column measured at a flow rate of 60 SCFH with dry Nitrogen. The pressure drop shall be measured from the dispenser riser to the storage tank with the poppeted Phase I vapor connection open and with pressure/vacuum valves installed or with the vents capped.

2. The dispenser shall be connected to the riser with either flexible or rigid material which is listed for use with gasoline. The dispenser-to-riser connection shall be installed so that any liquid in the lines will drain toward the storage tank. The internal diameter of the connector, including all fittings, shall be not less than five-eights inch (5/8").

3. The recommended nominal inside diameter of the underground Phase II plumbing is as indicated in Figure 2-A. Smaller vapor lines are not recommended but may be used provided the pressure drop criteria specified above is met. The vapor return lines shall be manifolded as shown in Figure 2-A.

Exception: For installations with a vapor return line directly to only one tank, and for which a manifold on the tank vents will be used to provide part of the vapor return path to other tanks, the vent manifold may be used as an alternative to the underground manifold only in existing installations where the vapor piping is already installed, and shall not be used in "new" installations where vapor piping is being installed. For installations with

dedicated vapor piping directly to each tank, the vent manifold is approved for both new and existing installations and an additional tank manifold below grade is optional but not required.

4. All vapor return lines shall slope a minimum of 1/8 inch per foot. A slope of 1/4 inch or more per foot is recommended wherever feasible.

5. A pressure/vacuum (P/V) valve shall be installed on each tank vent. Vent lines may be manifolded provided the manifold is installed at a height not less than 12 feet above the driveway surface used for Phase I tank truck filling operations. At least one P/V valve shall be installed on manifolded vents. If two P/V valves are desired, they shall be installed in parallel, so that each can serve as a backup for the other if one should fail to open properly. The P/V valve shall be CARB-certified as specified in Exhibit 1. The outlets shall vent upward and be located to eliminate the possibility of vapors accumulating or traveling to a source of ignition or entering adjacent buildings.

6. All vapor return and vent piping shall be installed in accordance with the manufacturer's instructions and all applicable regulations.

Storage Tank and Phase I System

WARNING: Phase I fill caps should be opened with caution because the storage tank may be under pressure.

1. A threaded tap shall be installed at which the storage tank pressure may be monitored. The tap may be in the dispenser riser connection or on the vent line, and shall be accessible for connection to a pressure gauge. One tap is adequate for manifolded systems. The tap shall remain plugged and vapor tight except when test equipment is being connected to or removed from it. If located on the vent line, the tap shall be at least six feet (6') and not more than eight feet (8') above grade.

   Note:- Frequent venting, except when caused by air ingested into the system during the performance of the air-to-liquid ratio test or Phase I activities, may indicate system malfunction. Observation of rapid pressure decay when no vehicles are fueling may indicate leaks in the system; a static pressure decay test may be used to determine compliance with the vapor integrity requirements.

2. The Phase I vapor and fill caps provide an additional seal which may prevent vapor emissions when they are in place. However, the caps must be removed during Phase I operations and may result in loss of vapor from the storage tank. Therefore, compliance with static pressure decay test criteria

shall be demonstrated with these caps removed. Prior to pressurizing the system, verify that the liquid level in the storage tanks is at least eight inches (8") above the highest opening at the bottom of the submerged drop tube.

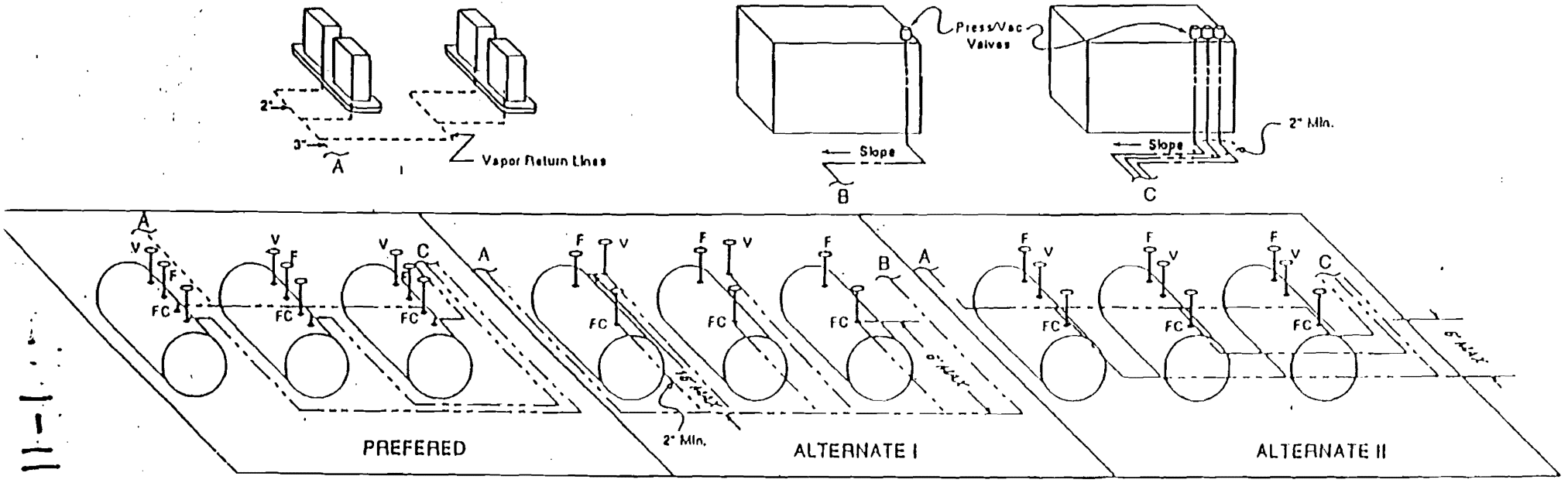
3. Spill containment manholes which have drain valves shall demonstrate compliance with the static pressure decay criteria with the drain valves installed as in normal operation. Manholes with cover-actuated drain valves shall demonstrate compliance with static pressure decay test criteria both with the cover open and with the cover closed.

4 Coaxial Phase I vapor recovery systems and manholes with cover-actuated drain valves certified prior to the effective date of this Order shall not be used with the VaporVac Phase II system; only CARB-certified two-point Phase I systems shall be installed. Where the VaporVac installation is made by retrofitting previously installed equipment, local districts may elect to allow the existing coaxial Phase I systems to remain in use for a specifically identified period of time provided the following conditions are met:

- the existing coaxial Phase I system is a poppeted, CARB-certified system;
- installation of the Phase II system requires no modification of the storage tanks and/or connections; and
- the existing coaxial Phase I equipment is in good working order and has demonstrated compliance with the static pressure decay test criteria when tested with all fill caps removed.

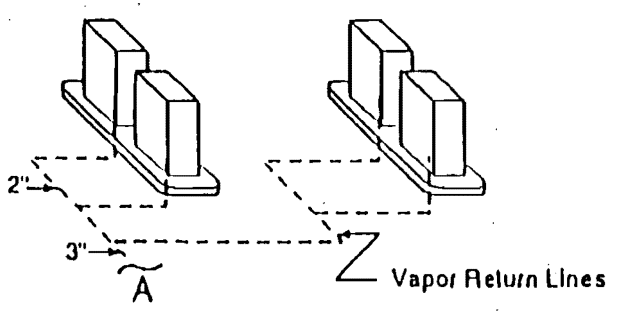
5. The Phase I vapor recovery system shall be operated during product deliveries so as to minimize the loss of vapors from the facility storage tank, which may be under pressure. Provided it is not in conflict with established safety procedures, this may be accomplished in the following manner: The Phase I vapor return hose is connected to the delivery tank and to the delivery elbow before the elbow is connected to the facility storage tank. The delivery tank vapor valve is opened only after all vapor connections have been made, and is closed before disconnection of any vapor hoses. The vapor hose is disconnected from the storage tank before it is disconnected from the delivery tank.

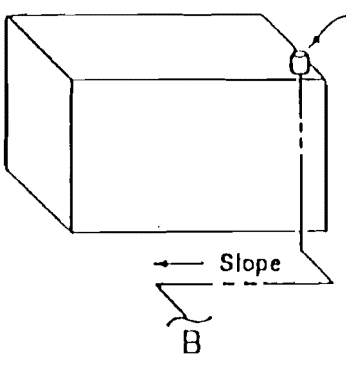
Executive Order G-70-150-AB
Figure 2-A
Typical Installation of the
Gilbarco VaporVac Phase II Vapor Recovery System
With Two-Point Phase I System

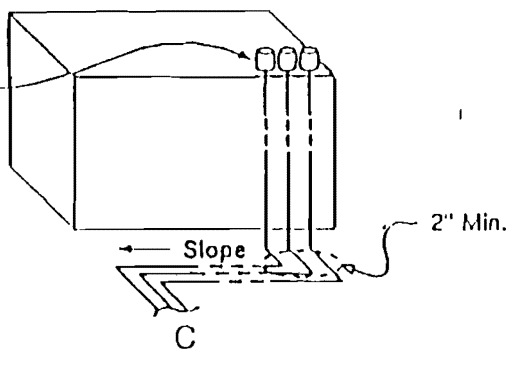


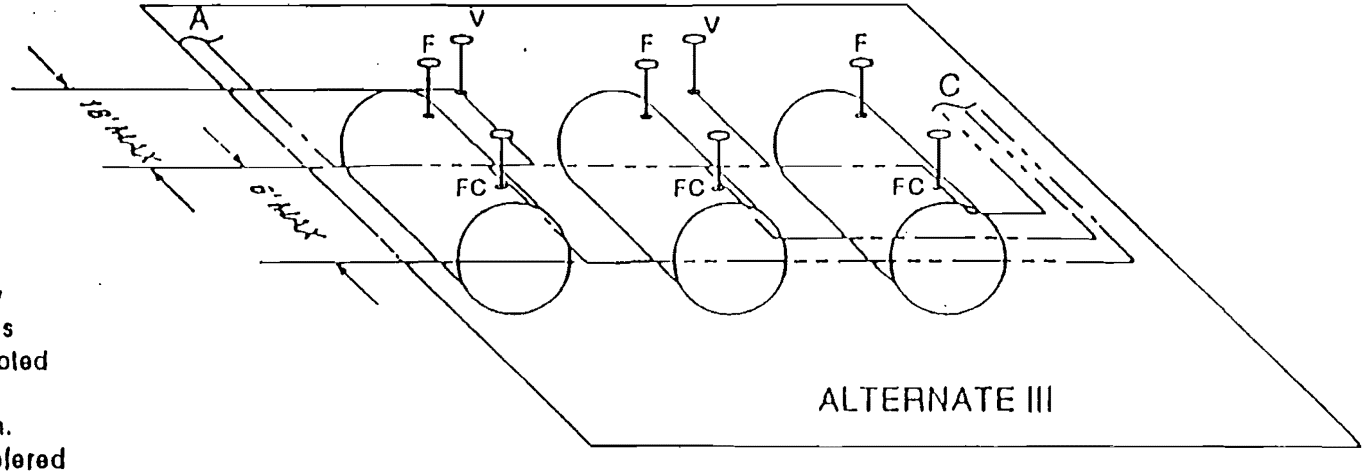
FC = Float Check Valve
F = Fill Line
V = Stage I Vapor Recovery
Note: 1. All Vapor/Vent Lines
Are 3" Except As Noted
2. Slope:
1/8" Per Foot Min.
1/4" Per Foot Prefered
3. Maintain 2'0" Clearrance Between Fill Line
And Stage I Vapor Return Line To Truck

Executive Order G-70-150-AB
Figure 2-A (continued)
Typical Installation of the
Gilbarco VaporVac Phase II Vapor Recovery System
With Two-Point Phase I System









FC = Float Check Valve
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1/8" Per Foot Min.
1/4" Per Foot Prefered
3. Maintain 2'0" Clearance Between Fill Line
And Stage I Vapor Return Line To Truck

Executive Order G-70-150-AB

Figure 2-B
Gilbarco VaporVac System

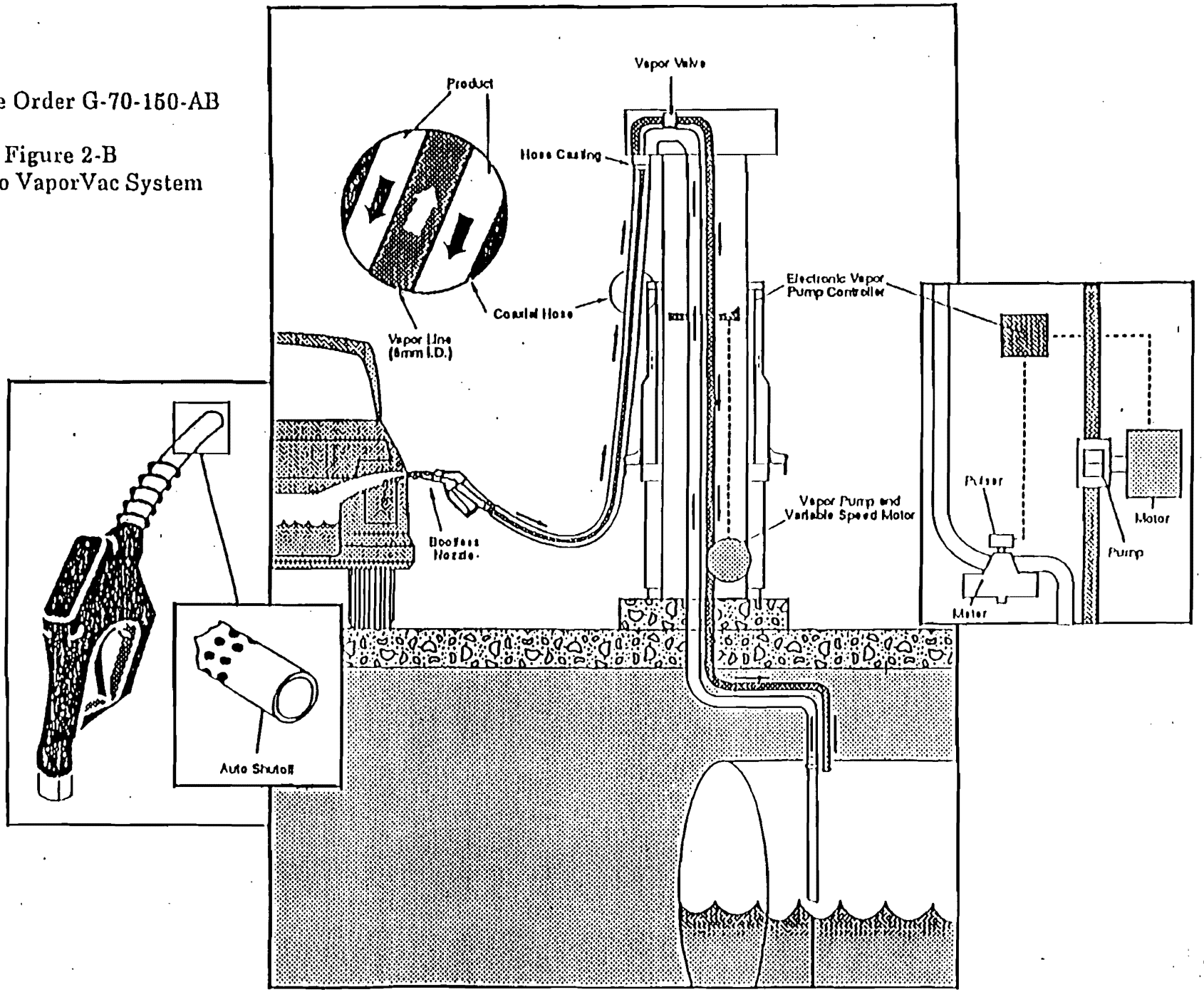

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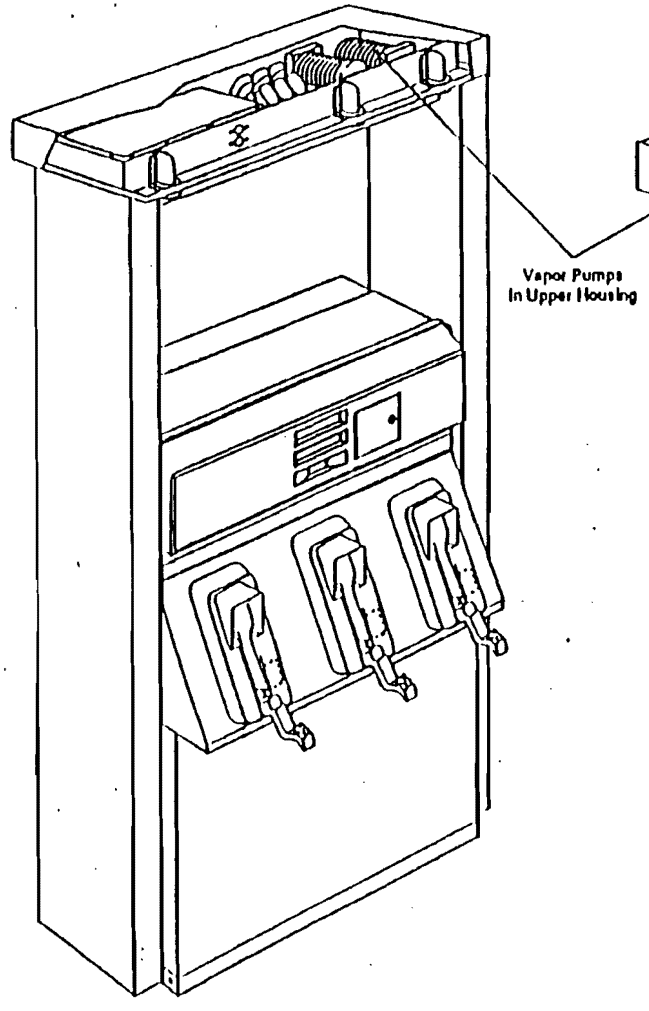
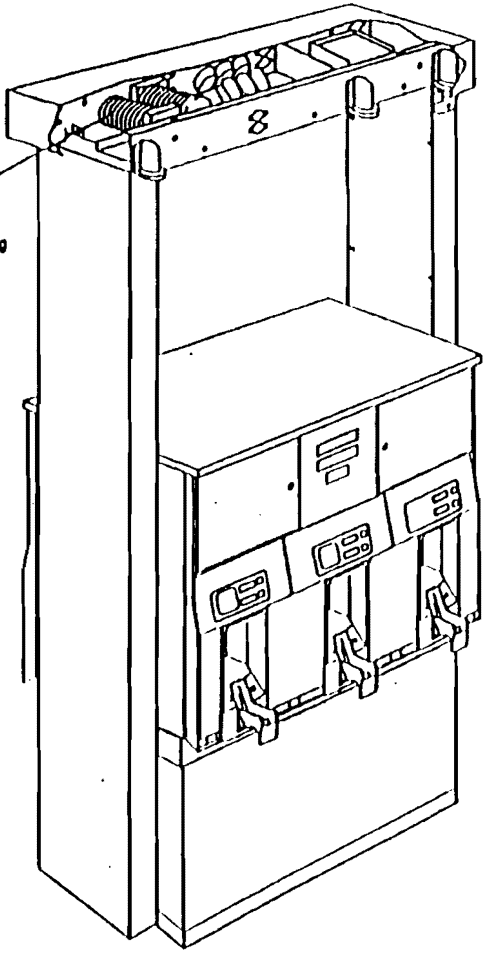
Figure 2-C

VaporVac™ Vaccum Assist Vapor Recovery Systems

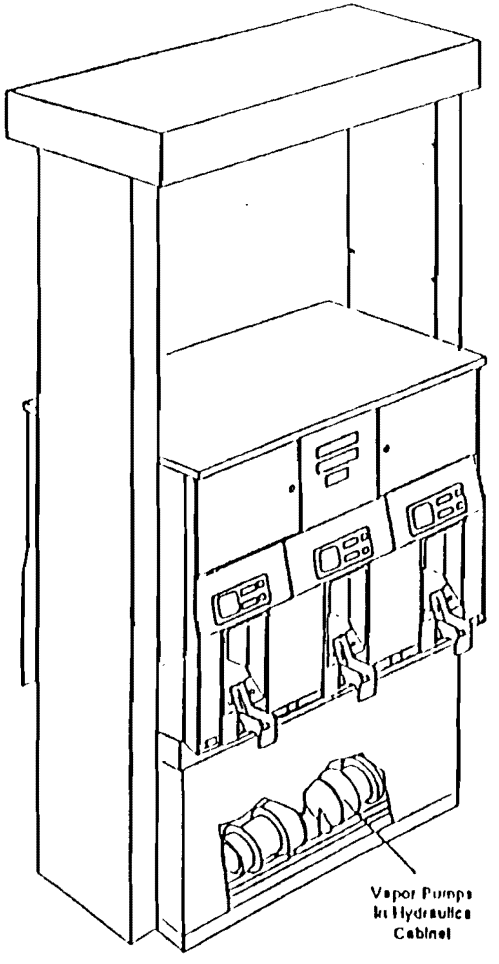
Component Locations



MPD® 1-2/C and 3 Dispenser Retrofits



The Advantage™ MPD Dispenser Retrofits



The Advantage™ MPD Dispenser Production Models

Gilbarco

STATE OF CALIFORNIA

AIR RESOURCES BOARD
2020 L STREET
P.O. BOX 2815
SACRAMENTO, CA 95812

PETE WILSON, Governor

April 25, 1994

Mr. Wayne Tarpley
Engineering Manager - Dispensers
Schlumberger Technologies
1300 Bicentennial Drive
Post Office Box 280
Bonham, Texas 75418

#94-8

Dear Mr. Tarpley:

Certification of Schlumberger 4000 Series Dispensers using Gilbarco VaporVac Vapor Assist System

You requested California Air Resources Board (CARB) certification of the Schlumberger 4000 series dispensers using the certified Gilbarco VaporVac retrofit vapor recovery assembly.

The Schlumberger 4000 series dispensers were formerly a product of Southwest Pump company which was acquired by Schlumberger in April of 1992. Recently, Schlumberger has entered into a license agreement with Gilbarco, allowing Schlumberger to install VaporVac into its 4000 series Dispenser. The 4000 series dispensers were previously CARB certified for Balance vapor recovery systems by Executive Order G-70-52-AM, Exhibit 10 (refer to approval letter #92-25). It was the task of CARB staff to test and ensure that the Schlumberger 4000 dispensers equipped with VaporVac functioned equivalent to the certified Gilbarco dispensers with respect to vapor recovery.

Schlumberger provided the necessary additional circuitry in order to ensure electronic "communication" with the 4000 series dispenser central processing unit and the Gilbarco VaporVac unit. The additional circuit boards added to ensure dispenser/VaporVac Interface consists of a VaporVac interface board installed in the dispenser canopy and a Pulser Signal Amplifier installed in the dispenser computer area. The interfacing circuit also ensures that error signals from VaporVac are read and repeated by the Schlumberger 4000 series central processing board.

CARB staff also verified that the vapor recovery system of the Schlumberger 4000 series dispensers with Gilbarco VaporVac functioned equivalent to the certified units. CARB staff conducted air to liquid ratios of the 4000 series dispensers, using the same type of bootless nozzle and hose as the certified vapor recovery system, and found the performance

ATCH 2-1

of the 4000 series dispensers to meet the A/L data of 1.00 to 1.25 as specified in Executive order G-70-150-AB.

As required by the Air Resources Board certification procedures, you requested the approval of the Division of Occupational Safety and Health, the Office of the State Fire Marshal and the Department of Food and Agriculture, Division of Measurement Standards. The necessary approvals have been obtained from these agencies.

I find that the use of the Schlumberger 4000 series dispenser with Gilbarco VaporVac, when installed in accordance with the manufacturer's instructions, will not adversely affect the performance of vapor recovery systems on which they are installed. Based on my staff's analysis and testing, I also find the Schlumberger 4000 series dispenser equipped with Gilbarco VaporVac equivalent to the certified Gilbarco VaporVac bootless nozzle vapor recovery system as contained in Executive Order G-70-150-AB. Therefore, I certify the following model number matrix for the Schlumberger 4000 series dispenser:

4abc - yz - s - VG

"a" = 1 thru 4 (Number of products on the front side)
"b" = 0 thru 4 (Number of products on the back side)
"c" = 0 thru 3 (Number of hoses per side)
"y" = 2 thru 7 (Computer options)
"z" = A; D; or none (Computer options)
"s" = B; L; R; -B-L; -B-R; -L-R; -B-L-R; or no characters (optional features)
VG = VG (Gilbarco VaporVac vapor recovery system)

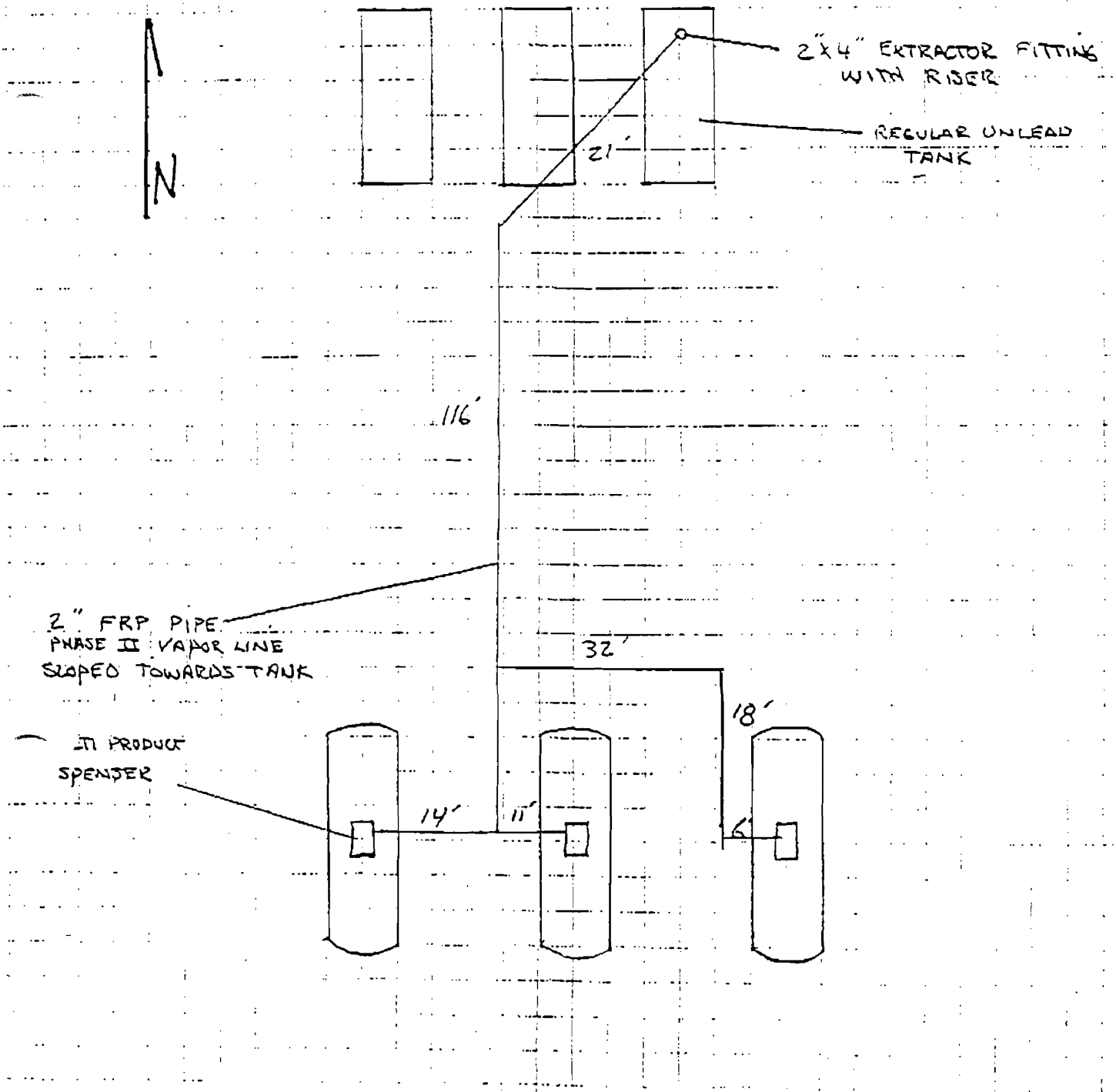
The above dispenser model matrix number will be added to the Gilbarco Executive Order G-70-150-AB at the next revision.

If you have any questions, please feel free to call Jorge Fernandez at (916) 445-0383 or Laura Sullivan McKinney at (916) 327-1525.

Sincerely,

James J. Morgester, Chief
Compliance Division

cc: Vapor Recovery Technical Committee
Mr. Craig Hartsell, Gilbarco



DISPENSER ACCESSORY LIST

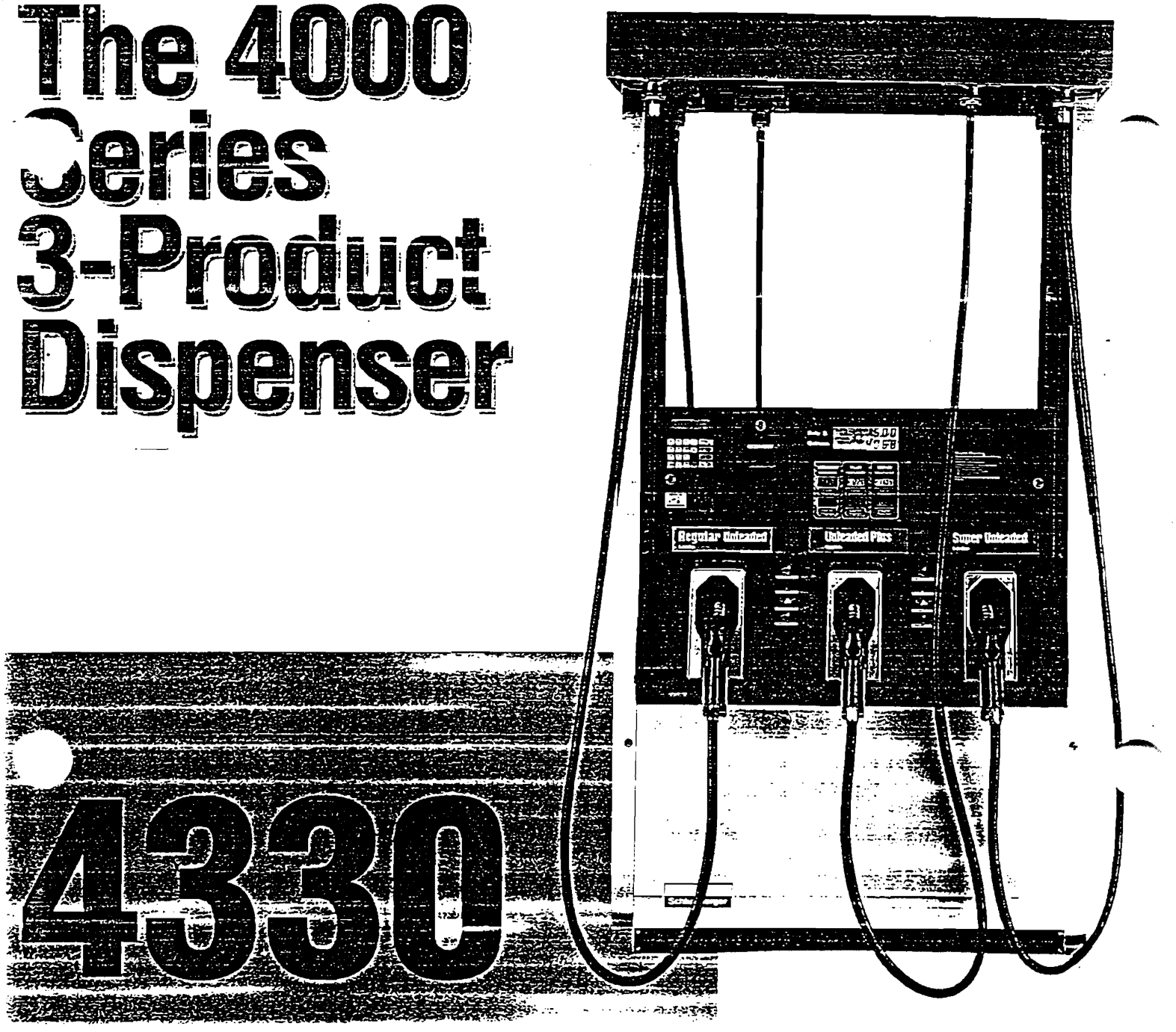
OPW 11VAI VACUUM ASSIST NOZZLE
DAYCO 8' ASSIST V.R HOSE.
OPW 66CI ASSIST BREAKAWAY
DAYCO 12" ASSIST WHIP HOSE.

LAYOUT

4.2.4-153

ATCH 3

The 4000 Series 3-Product Dispenser



4330

The latest dispenser technology – simplified.

Schlumberger's 4300 (single-sided) and 4330 (two-sided) models dispense three products from a single fueling point to provide customer convenience and reduce space requirements. Featuring a modern, visually pleasing design, powerful electronic capabilities and economic upgradability, these dispensers offer the technology you need today and in the future. A low clearance design improves visibility of island activities for store and kiosk attendants, and customers, too. The user-friendly display panel, which prompts customers easily through the fueling process, insures simplified operations. Add to this Schlumberger's streamlined hydraulics and you have a dispenser with maximum versatility and high marketability. Schlumberger's 4300 and 4330: the latest technology, simplified.

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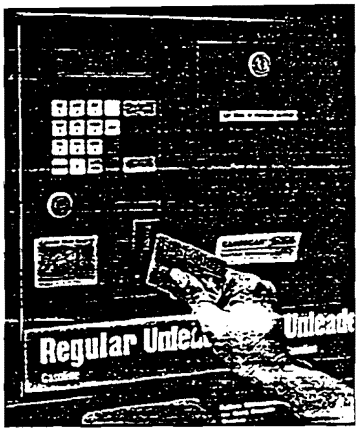
Schlumberger Technologies

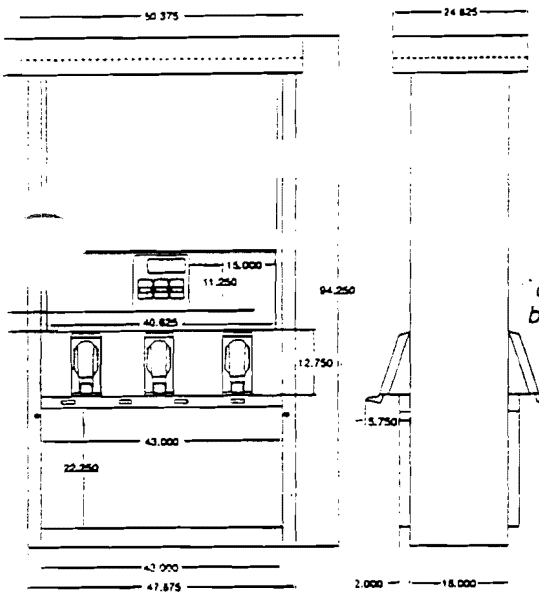
ATCH 4-1

4300/4330

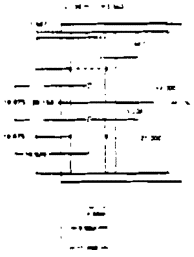


The 4300 and 4330's modular design allows CardScan as well as other options to be installed at the factory or at your site.

■ Three products, two models	■ Fuel from one side or two
■ Modular design	■ Gives the versatility of adding new capabilities as needed
■ Two hydraulic base plans	■ Easy upgradability from 2000 series to 4000 series
■ Customer display panel	■ Step-by-step prompts guide customers through fueling procedure
■ Low clearance design	■ Improves visibility of island activities for store and kiosk attendants
■ Streamlined hydraulics	■ Easier to work on, less downtime; fewer connections, environmentally safer
■ Programmability	■ Interfaces to PCs for easy PC upgradability
■ Standard vapor ready or balance vapor recovery available	■ Compliance flexibility
■ Security	■ Data storage is in non-volatile memory to maintain totals integrity during power loss ■ Mechanical totalizers provide backup for electronic totals



All dimensions are for reference only. consult factory for exact specifications



Schlumberger's 2000 compatible A, B, C hydraulic base plan. For reference only.

Schlumberger's standard hydraulic base plan. For reference only.

SPECIFICATIONS

Computer
- V25+ 16 bit microprocessor • 2 meg flash memory
- Non-volatile memory • Error checking bi-directional communications

Meter
- Positive displacement design • 2-year warranty

Display
- Fluorescent Backlighting • 6 digit single sale/volume display
- Step-by-step customer prompts • Sales information will remain visible for up to 15 minutes after power failure

Vapor Ready

8-digit back-up totalizer

UL approved

AVAILABLE OPTIONS

customer presets • In-pump card reader pay point • Balance Vapor Recovery • Vapor Prep • Fixed Blend • Customized graphics

Customer convenience and full compatibility.

With Schlumberger's 4000 Series, you can serve your customers and get them back on the road quickly. The latest dispenser technology is easy for customers to use, easy to maintain and easy to upgrade. Fast. Efficient. Fully computerized and compatible with most major POS devices, including the Micro-Max™, Pro Series and T-2000. That's the 4300 and 4330, products backed by the resources of Schlumberger, a worldwide leader in the development of services and equipment for petroleum industry.

4.2.4-155

Schlumberger Technologies

Retail Petroleum Systems Division
825-M Greenbrier Circle • Chesapeake, VA 23320
(804) 366-4400 • (800) 368-3063

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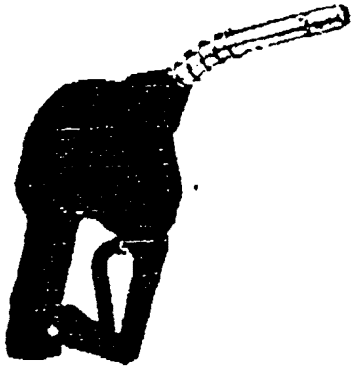
4-2

OPW 11VAI GILBARCO VAPORVAC™ AND HASSTECH HP1000™ VACUUM-ASSIST SYSTEM NOZZLES

New on the Market

The OPW 11VAI Series bellowless nozzle operates exclusively with a vacuum assist system. This type of system creates a slight vacuum at the nozzle spout breather holes and the vehicle fillpipe. The assist system draws gasoline vapors through the coaxial spout breather holes, then back through the nozzle and hose and into the underground storage tank.

- **Ideal for vapor recovery conversion areas** - with only minor changes in the appearance of the nozzle, customers will appreciate the familiarity of the nozzle, resulting in no negative impact on the customer friendliness of the station.
- **Dependable** - based on successful OPW 11A and 11B series of nozzles.
- **Low maintenance** - no bellows or face seal to replace.
- **Easy to install replacements kits** - replacing spouts and hand insulators is quick and easy using stocked and readily available replacement kits.
- **Rugged Duratuff® lever and lever guard** - stands up to self-serve abuse better and longer and won't corrode.



11VAI
VaporVac™
(GILBARCO)
HP1000™
(HASSTECH)

Features Superior Customer Convenience

Based on the design of the OPW 11B, one of the most widely accepted automatic nozzles on the market, the 11VAI Series bellowless nozzle features superior customer convenience.

- **No insertion force** - with no bellows, simply insert the spout into the fillpipe. No insertion force or positive seal with vehicle fill pipe is required.
- **Short hand span** - female consumers will appreciate the slim design which makes the nozzle easy to use.
- **One hand operation** - the easily seen hold-open clip can be activated with the flick of a finger. Other nozzle clips may be difficult to locate and may require the use of both hands.
- **Attractive, compact design** - customers will be attracted to the sleek, modern design which makes the nozzle light and easy to operate.
- **Lightweight** - the 11VAI weighs less than other vapor recovery nozzles on the market. Simple to install, maintain and repair.
- **Exclusive self-serve prepay feature** - nozzle closes automatically when line pressure is removed, and can only be opened when line pressure returns.
- **Metric threaded "inverted" coaxial inlet style** - the OPW 11VAI connects to the new inverted style hoses. This type of hose generally results in higher flow rates, longer usable length, and eliminates the need for hose venturi for evacuation of vapor space.

Meets Vapor Assist System Requirements

The OPW 11VAI Series meets the requirements of the Gilbarco and Hasstech vacuum-assist systems.

Listings and Certifications

All OPW vapor recovery nozzles are Underwriters Laboratories listed and CARB (California Air Resources Board) certified as a component of various vacuum-assist systems unless otherwise noted.

Note: The following patents apply to OPW 11VA Vapor Recovery Nozzles: 4,199,012, 4,351,375, and 4,453,578. Other patents pending.

Breakaway nut
→ C3827P

Anchor Spring
~~HP864M~~
#12176M

To d

Post-it® Fax Note 7671	Date 9-6-95	# of pages ▶ 2
To Mike	From Customer Service	
Co./Dept. Hill AFB	Co. OPW	
Phone #	Phone #	
Fax # (801) 777-4306	Fax #	

OPW FUELING COMPONENTS
A Dover Resources Company
Telephone: (513) 870-3219 ◆ (800) 422-2525 ◆ Fax: (513) 870-9186 ◆ (800) 421-3297
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VR 65.D

ATCH 5

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
F. Burnell Cordner
Director

150 North 1950 West
Salt Lake City, Utah 84114
(801) 536-4000
(801) 536-4099 Fax
(801) 538-6621 T.D.D.

Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

DAQE-0103-93

February 11, 1993

James Van Orman
Department of the Air Force
HQ Ogden AFMC
HAFB, Utah 84056-5990

Re: Modified Approval Order for Aircraft Purge System Near Building 287
Davis County CDS A1

Dear Mr. Van Orman:

This Modified Approval Order revises and replaces Modified Approval Order BAQE-021-91 dated January 15, 1991, by replacing two catalytic incinerators, used to control hydrocarbon emissions from the Aircraft Purge Facility near Bldg 287, with a closed loop distillation unit. The Aircraft Purge Facility is a facility used to purge the fuel from aircraft fuel cells thus eliminating the danger of explosion during the repair of an aircraft fuel cell. This Air Quality Modified Approval Order authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install a 28,000 gallon purge oil reclamation unit, which shall operate in conjunction with the two existing 6,000 gallon units. The unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988, October 8, 1992, and additional information submitted December 3, 1992.

2. A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in

3. This Modified Approval Order shall replace Modified Approval Order BAQE-021-91 dated January 15, 1992, and Variance DAQC-670-92 dated June 4, 1992.

4. The JP-4 and purge oil from all three purge oil units shall be processed by closed loop distillation unit that is operating under vacuum. The purge oil is stored and reused in the purge system. The JP-4 is separated by distillation and diverted to a portable 1,000 gallon tank where it is transported to a storage area. The JP-4 tank venting emissions are not controlled.

5. Visible emissions from the vent on the JP-4 portable tank shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

6. The following extraction limits for JP-4 shall not be exceeded without prior approval in accordance with R307-1-3.1, UACR:

A. 24,000 gallons per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Production/Consumption shall be determined by a log of the JP-4 recovered in the portable tank. The log shall be kept in area 15090. The records shall be kept on a daily basis.

7. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UACR. R307-1-3.5, UACR addresses emission inventory reporting requirements. R307-1-4.7, UACR addresses unavoidable breakdown reporting requirements which result in excess emissions. It specifies the reporting requirements where excess emissions result from the breakdown. The owner or operator shall take all reasonable measures to minimize emissions which may include curtailment of production. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal emissions shall be reported to the Executive Secretary as directed for each calendar year.

8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Conservation Regulations.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary

FBC:JTB:dn

cc: EPA Region VIII, Mike Owens
Davis County Health Department

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH 84056

Mr Tim Blanchard
Division of Air Quality
1950 W. North Temple
P O Box 144820
Salt Lake City, UT 84114-4820

17 DEC 1992

Re: Distillation Units for the Aircraft Purge System

Reference your telecon 2 Dec. 92, we answer your questions as follows:

JP-4 distillate tank capacity is about 1,000 gallons. The tank is vented and there will be a small amount of hydrocarbon emissions. Based on our workload, we estimate distilling about 2,000 gallons of JP-4 per month.

Emission Factor:
Use AP-42, 4th Edition, Eqn (1), Page 4.4-5
L = 12.46 x SPM/T
For JP-4
S, Saturation Factor, AP-42, Table 4.4-1, Assume splash loading, Dedicated normal service = 1.45
P, True Vapor Pressure, AP-42 Table 4.3-2, Assume 60 degree F = 1.3 PSIA
M, Molecular Weight, AP-42, Table 4.3-2 = 80 Lb/Lb mole
T, Absolute temperature, Assume average 460+60 = 520 R
L, Loading Loss = 12.46x1.45x1.3x80/520 = 3.61
Use 4.0 Lb Loading Loss/1,000 gallons

Hydrocarbon Emissions:
4 Lb HC/1,000 gals x 2,000 gals/Mo x 12 Mo/Yr x Ton/2,000 Lbs
= 0.048 Ton/Yr
These emissions are insignificant.

Please also note that we have specified " Factory Mutual Valves" ie dead ended valves with petroleum service gaskets, the best in the petroleum

industry, to almost eliminate fugitive hydrocarbon emissions. Therefore, fugitive emissions reported in our 8 Oct. 92 transmittal will be negligible.

We hope this answers your questions. If there are any more questions, please feel free to contact Jay Gupta at 777-0359.

Sincerely

James R. Van Orman

James R. Van Orman
Director of Environmental Management

FAX 777-1510

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To TIM BLANCHARD	From JAY GUPTA
Co. Div Air Quality	Co. Hill Air Force Base
Dept.	Phone # 777-0359
Fax # 536-4099	Fax #

From : OO-ALC/EME, HAFB Jay Gupta 12/3/92

Sub: Distillation Units for the Aircraft Purge System

TO: Div Air Quality (Attn: Tim Blanchard)

Reference your telecon 2 Dec 92, we answer your questions as follows:

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Use 4.0 Lb Loading Loss/1,000 gallons

Hydrocarbons Emissions:
4 Lb HC/1,000 gal x 2,000 gal/Mo x 12 Mo/Yr x Ton/2,000 Lbs
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These emissions are insignificant.

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We hope this answers your questions. If there are any more questions, please feel to call Jay Gupta at 777-0359.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

8 OCT 1992

F. Burnell Cordner, Executive Secretary
Division of Air Quality
1950 W. North Temple
P.O. Box 144820
Salt Lake City UT 84114-4820

Re: 15 Jan 91 A.O. for Aircraft Purge System Near Bldg 287 (BAQE-021-91); 4 Jun 92 Ltr, Twelve Month Extension of Variance for Aircraft Purge System (DAQC-670-92)

Dear Mr Cordner

In Oct 90, a fire destroyed the catalytic incinerators which were the pollution control equipment on our JP-4 purge facility near Bldg 287. On 31 Jan 91, the State granted us an 18 month variance for continued operation of the purge facility. On 4 Jun 92, a twelve month extension of variance was granted. After the variance was granted, we began a project to install new air pollution control equipment.

In lieu of catalytic incinerators, we propose to install distillation units operating under a vacuum. A schematic of distillation units is Attachment 1. Distillation units will separate and recycle the two product streams, namely, JP-4 and the purge oil. Since the distillation units will be closed loop, they will not be a source of air pollution and we feel a NOI is not required for these units. Fugitive emissions from piping valve flanges are negligible and estimated as follows:

Number of Pipe Line Valves = 23
Process Stream Category = I
Emission Factor, AP-42 Table 9.1-2 = 0.00056 lb/hr source

Fugitive Emissions = $\frac{23 \times .00056 \times 24 \times 365}{2,000}$ = 0.11 ton/yr

We request you modify our 15 Jan 91 Approval Order deleting any reference to catalytic incinerators and include distillation units in the same.

If you have any questions, please feel free to contact Jay Gupta at 777-0359.

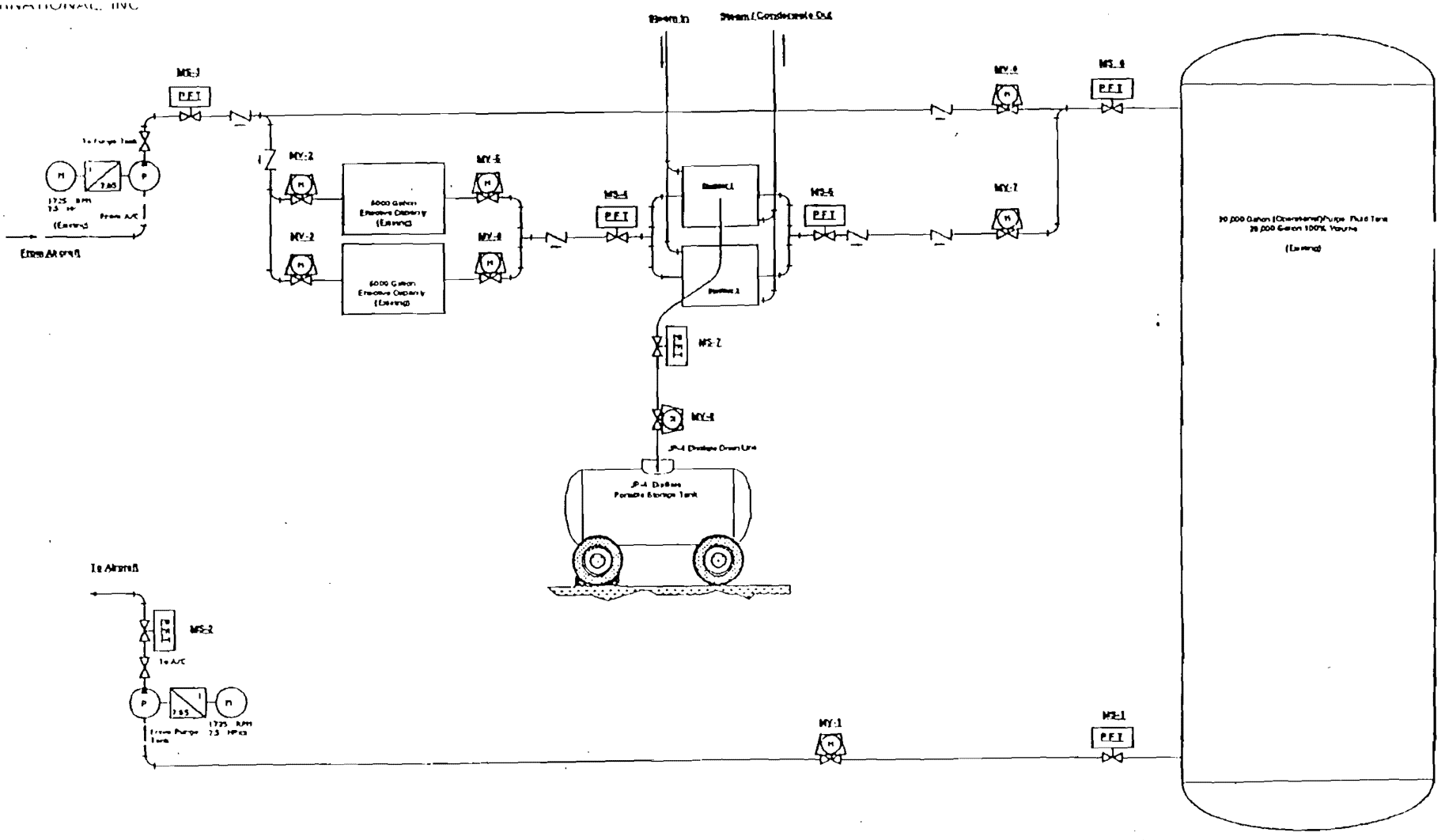
Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Distillation Units
Schematic

4.2.4-599



BDM INTERNATIONAL CONCEPT DRAWING
JP-4 Removal System

4.2.4-600

ATCH-1

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

SEP 12 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Additional Information on Notice of Intent (NOI) to Construct New Aircraft Purge System Near Building 287

Dear Mr Cordner

In our NOI dated 1 Aug 88, we proposed using either an activated carbon adsorption or a refrigeration unit to control JP-4 emissions from the purge tanks. Subsequent evaluation reveals that activated carbon is not suitable for JP-4 vapors and a refrigeration unit is not cost-effective. As a result, we propose using two catalytic incineration units. Additional information on control devices and air emissions is provided as Atch 1. Atch 2 is a descriptive brochure on catalytic incineration unit.

If you have any questions, please feel free to contact Jay Gupta at 777-6742.

Sincerely

NATHAN O. CURRIER
Dep Chief
Environmental Mgt Office

2 Atch
1. Additional Info
2. Brochure

RECEIVED
SEP 14 1988
AIR QUALITY

4.2.4-601

ADDITIONAL INFORMATION ON NOTICE OF INTENT (NOI)
TO CONSTRUCT
NEW AIRCRAFT PURGE SYSTEM NEAR BUILDING 287

1. Control Devices:

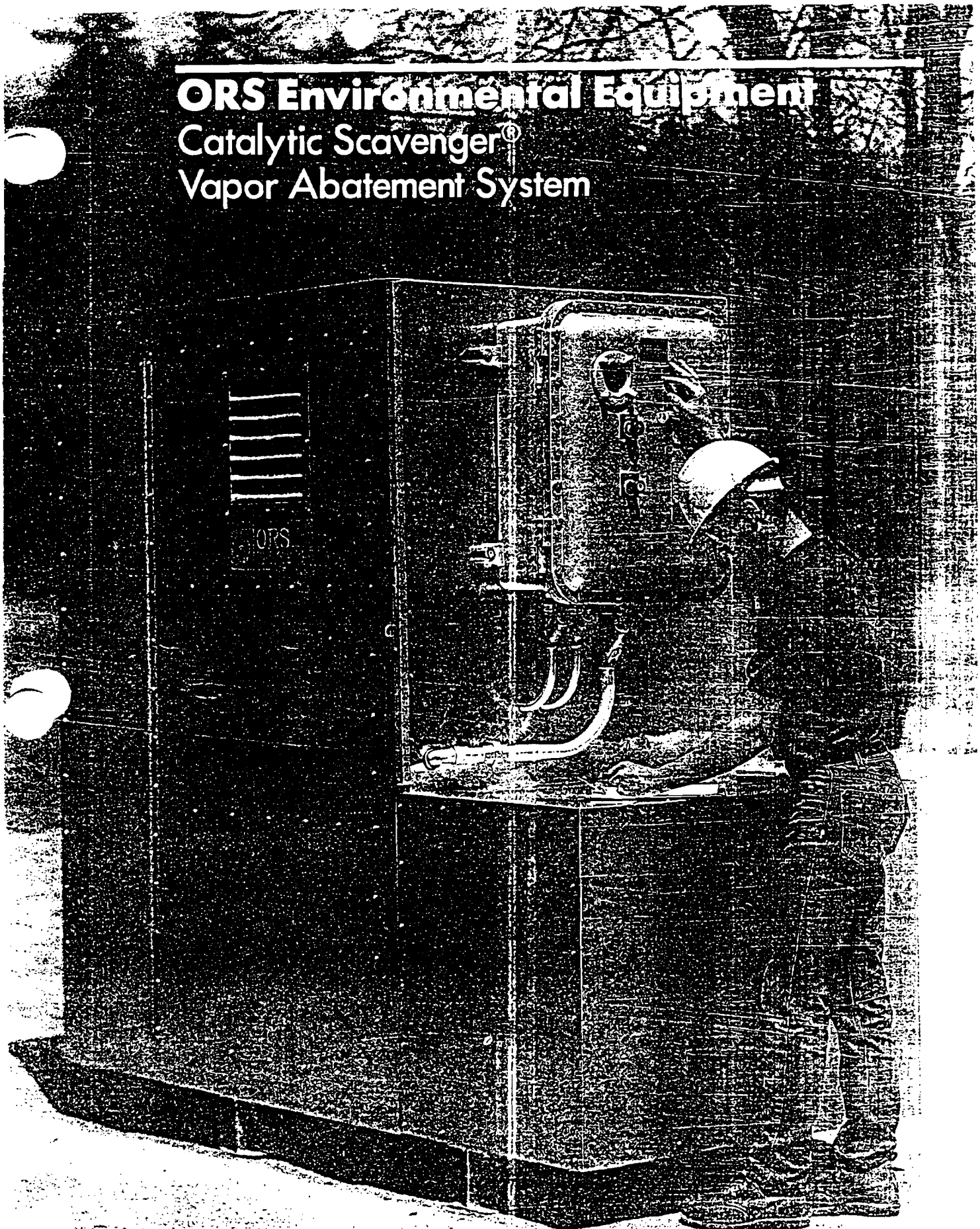
a. In our NOI dated 1 August 1988, we proposed activated carbon adsorption or a refrigeration heat transfer solvent recovery unit for controlling JP-4 emissions from the purge tanks. We have determined that these control devices are not cost effective for the recovery of JP-4 vapors from the purge tanks.

b. We are now proposing to control these emissions by two catalytic incineration units. One 200 SCFM catalytic unit will be installed on two existing 6,000-gallon purge tanks, while a second unit will control emissions from the proposed 28,000-gallon tank. Descriptive brochure from the equipment manufacturer is attached.

2. Air Emissions: We estimate 95-98% destruction efficiency for the catalytic incineration units. Based on this, hydrocarbon emissions to the atmosphere will be reduced to 0.26 tons per year.

ORS Environmental Equipment

Catalytic Scavenger®
Vapor Abatement System



4.2.4-603

ATCH-2

ORS Environmental Equipment

Catalytic Scavenger®
Vapor Abatement System

When Clean Air Matters

Most site remediation projects start off with contaminated soil and groundwater. But they often end up with a contaminated air stream from the very systems that are doing the cleanup! Now, ORS Environmental Equipment has combined proven catalytic conversion technology with years of site remediation experience to create the Catalytic Scavenger® system. This unique state of the art system is specifically designed to handle the vapors emitted from air strippers and soil vent systems during site cleanups.

Cost Effective And Efficient

The ORS Catalytic Scavenger system is highly cost effective because of its unique design. At the heart of the system is a durable platinum-coated catalytic element. This unit operates at temperatures which efficiently destroy organic contaminants. Special ceramic insulation retains the heat, which is recovered during the process and recycled to pre-heat the inlet gases. Reusing this energy greatly reduces operating costs.

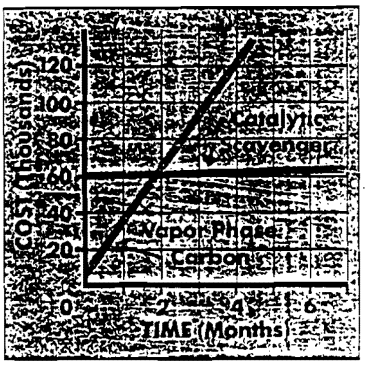
Meets Environmental Standards

Contominated air streams that have been processed through the Catalytic Scavenger system may be safely released into the atmosphere. High destruction rates meet state and federal VOC and air toxics emissions stanaards. Since the Catalytic Scavenger system runs on convenient electricity and creates no emissions of its own, it is an extremely clean unit. Unlike activated carbon which merely transfers contaminants to an expensive medium, the Catalytic Scavenger system destroys contamination on site, eliminating chain-of-custody and other lingering liability issues.

Safe

Safety precautions have been built into the Catalytic Scavenger system at every level. Digital output displays provide quick, easy-to-read references for site personnel. From its explosion-proof design to its gas monitoring, temperature sensing, and automatic shut-off systems, the Catalytic Scavenger system has been designed to provide completely safe operation.

Above: Interior view of control module showing electrical circuitry.



Graph shows comparative costs of carbon and catalytic conversion. In this example, the Scavenger system saved the client $30,000 over 3 months. Carbon was regenerated off-site.

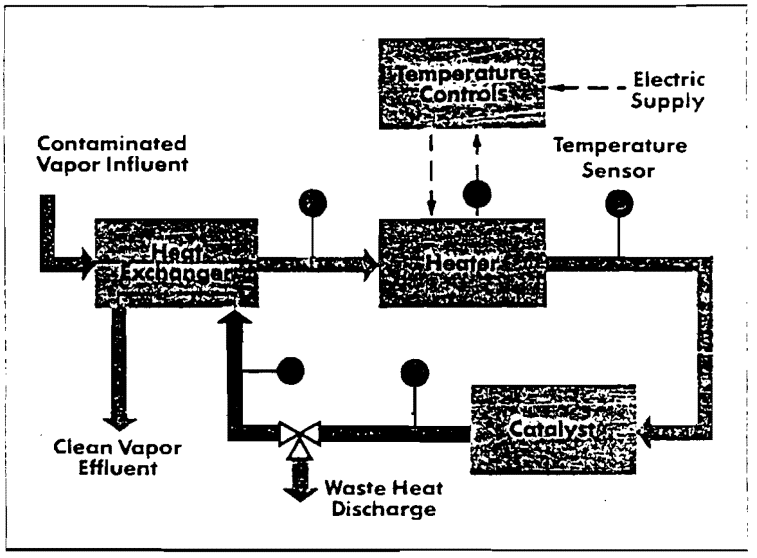
Reliable

ORS Environmental Equipment has been designing, manufacturing and installing innovative systems for site remediation and contaminant recovery since 1975. ORS systems have been field-proven on thousands of projects worldwide. From the innovative Filter Scavenger® oil/water separator, to our ambient monitoring units, to our full-scale remediation systems, ORS equipment has operated reliably on virtually every kind of remediation project. This experience is built into every Catalytic Scavenger system and is ·t of what you can depend on every ORS product.

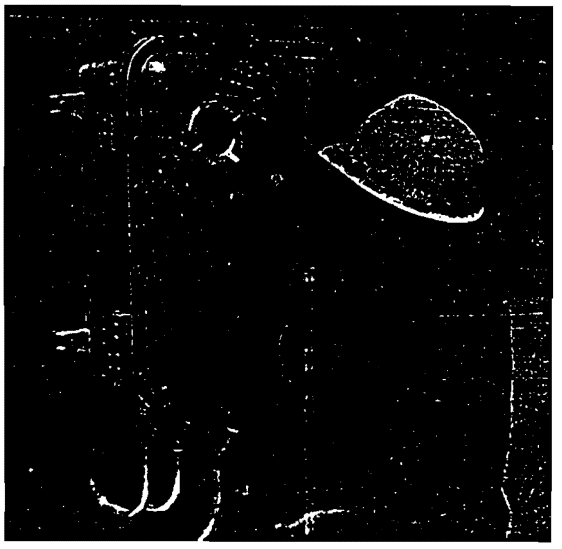
·enefits

- On-site contaminant destruction
- No off-site hauling or disposal
- No long-term liability
- Flexible design accommodates multiple applications
- Low operating costs

When environmental regulations require clean emissions, put the Catalytic Scavenger system to work for you.



Above: Process flow diagram showing path of gas from remediation system to discharge. Contaminated vapors are preheated in the heat exchanger by hot exhaust released from the catalyst. Gas passes through the heater to the catalyst where combustion takes place. The clean vapor effluent is discharged after being cooled in the heat exchanger.



Engineer taking digital readout of influent air temperature at the catalyst through glass viewing port.

At a service station on the West Coast, the ORS Catalytic Scavenger system was used for on site destruction of contaminated vapors emitted from a Soil Vent System. The unit achieved a 99% destruction rate for benzene, which met California Air Pollution Control District requirements. Operating costs were less than $300 per month.

The Catalytic Scavenger system was used on site to destroy the vapors from an underground fuel spill in Maryland. The unit was installed to replace a carbon tank which cost the client $15,000 in just three days. In five months, the Catolytic Scavenger destroyed approximately 6000 lbs. of vapor phase contaminants, and saved the client hundreds of thousands of dollars in operating costs.

ORS Environmental Equipment

Catalytic Scavenger®
Features and Specifications

Features

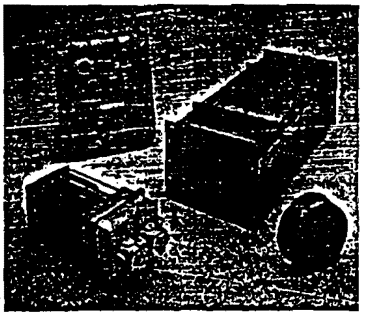
Applications: Can be used with Air Strippers, Soil Vent Systems, or other vapor streams.
Portable: Lightweight, skid mounted unit is easily transported.
Durable: Precious metal catalyst is designed for long life with proper maintenance.
Efficient Operation: Up to 70% heat recovery by heat exchanger.
Explosion Proof Design: Control system and heater meet NFPA standards for use in Class 1, Division 1, Group D hazardous environments.
Sensor Redundancy: System features two LEL sensors wired in series.
Control Mechanism: Allows interruption of other site operations during alarm conditions.
Manual Blast Gate Dampers: Allow the processing of higher contamination levels produced by Soil Vent Systems.
Manual Temperature Monitoring: Thermocouples and hand held thermometers provide additional monitoring capabilities.
Manual Reset: After an alarm condition or shutdown, system will not restart without operator intervention. This feature prevents restarting before the cause of the shutdown has been investigated.
High and Low Temperature Shutoffs: Prevent overheating and release of untreated vapors.
Continuous Gas Monitoring: LEL sensors and controller shut down system if flammable gas concentrations rise beyond adjustable limits.
Gas Sensor Failure Alarm: Shuts system down and triggers audible/visible alarm with audible shut-off.
Automatic Dampers: Divert explosion proof vapors away from catalyst during alarm conditions.
Minimal Temperature Drift: System electronics provide tight temperature control of gas entering the catalyst.

Model Information	#1282001	#1282002
	20 kw	**35 kw**
Air Flow Rate	100-200* SCFM	200-500 SCFM
Power Requirements**	230V (1 or 3 Ph.) or 460V (3 Ph.)	230V/460V (3Ph.)
Dimensions	85" h × 85" l × 42" w	62" h × 132" l × 62" w
Weight	~1300 lb.	~2000 lb.
Operating Temp. Range	400°–900F°	400°–900°F

* 300 SCFM is achievable with special duplex unit.
** Up to 125 amp service depending on voltage and phase. Consult factory for specific requirements.

Specifications

Catalyst: Platinum coated.
Enclosure: 15 gauge sheet aluminum.
Gas Exposed Components: 304 stainless steel.
Inlet Pipe: 4" female PVC flange.
Outlet Pipe: 6" O.D. stainless steel discharge port.
Insulation: 3" ceramic blanket.
Patent: Pending.



Components of Catalytic Scavenger unit clockwise from lower left: heater, control module, heat exchanger, catalyst.

Partial List of Destructible Compounds

Aromatics:
Benzene
Toluene
Xylenes
Ethyl benzene
Naphthalene
Styrene
Isobutyl benzene
Ketones:
Methyl ethyl ketone (MEK)
Methyl isobutyl ketone (MIBK)
Acetone
Alcohols:
Isopropanol
Methonol
Butanol
Ethanol
2 methyl-1-butanol
Esters:
Ethyl acetate
Propyl acetate
Isobutyl acetate
Cyclohexyl acetate
Alkenes:
Propylene
Ethylene
Aldehydes:
Formaldehyde
Benzaldehyde
Other gases:
Acetylene
Carbon monoxide
Alkanes:
Butane
Heptanes
Hexanes
Pentanes
Octane
...and other organic compounds

ORS ENVIRONMENTAL EQUIPMENT
A DIV OF GROUNDWATER TECHNOLOGY, INC.

4 Mill Street, Greenville, NH 03048
Fax: (603) 878-3866 Telex: 75-2858

For more information or to place an order, please call **(603) 878-2500.** Sales and service facilities are located throughout the U.S., Canada, and overseas.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5149

AUG 0 1 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Notice of Intent to Construct New Aircraft Purge System Near Bldg 287

Dear Mr Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations, we submit the attached Notice of Intent to Construct.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-6742.

Sincerely

THAYNE H. JUDD, Col, USAF
Chief, Environmental Mgt Office

1 Atch
Notice of Intent to Construct

RECEIVED
AUG 3 1988
AIR QUALITY

4.2.4-607

NOTICE OF INTENT TO CONSTRUCT
NEW AIRCRAFT PURGE & RECOVERY SYSTEM
HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

Hill AFB presently operates two 6,000 gallon purge fluid recycling units. Approval orders for these units were granted on 19 Oct 77 and 11 Jan 83 respectively. These units are operating with Rotamist 650 oil mist collection device. Due to increased workload and larger aircraft programmed for depot maintenance at HAFB, a new purge system at area 15090 adjacent to building 287 will be built. The system includes a 28,000 gallon tank purge oil reclamation unit and will function in conjunction with the existing 12,000 gallon purge system. Aircraft is defueled and bucket drained in area 15090. Aircraft fuel tanks are then connected to the purge oil lines and are pumped full of purging oil. The oil is left in the aircraft for ten minutes and then is pumped out and back into the purge tank. The flash point of purge oil and JP-4 mixture in purge tank must be maintained above 120°F. This requirement is fulfilled by aerating the mixture and by maintaining the tank temperature between 100-120°F.

2. AIR EMISSIONS:

Based on projected workload (FY92), total JP-4 defueled and estimated emissions from purging are as follows:

Total JP-4 defueled	546,000 gals/yr
Assuming 1% retention, fuel extracted by purge fluid	5,460 gallons
Upon aeration, assuming 70-75% JP-4 "bubbled off" JP-4 emissions to the atmosphere	4,040 gals/yr
Assuming carbon adsorption/condenser efficiency 90% Net HC emissions	404 gals/yr

$$404 \frac{\text{gals}}{\text{yr}} \times 6.5 \frac{\text{lbs}}{\text{gal}} \times \frac{\text{ton}}{2{,}000 \text{ lbs}} = 1.3 \text{ ton VOC/yr}$$

3. AIR CLEANING DEVICES:

Hydrocarbon emissions from purging operations will be controlled through the use of either an activated carbon adsorption equipment or a refrigeration heat transfer solvent recovery equipment. We are currently evaluating these control devices.

4. EMISSION POINTS:

A 20" diameter duct will discharge approximately 1,000 standard cubic feet per minute, 10' above ground level.

5. SAMPLE POINTS:

No sampling points are provided

6. OPERATING SCHEDULE:

The proposed facility will normally be operated two eight-hour shifts per day, five days a week and 52 weeks per year.

D. Kopta

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
801) 538-6108

BAQE-653-88

January 13, 1989

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

Dear Colonel Judd:

Re: Approval Order for Aircraft Purge System Near Building 287
Davis County, CDS A1

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Regulations (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this approval order reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality approval order authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which will operate in conjunction with the two existing 6000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.

2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the 28,000 gallon unit, and one incinerator shall be used on the two existing 6000 gallon units. Both incinerators shall be an ORS Environmental Equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.

3. Either one or both of the catalytic incinerators shall be stack tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:

   A. 19.18 LB/1000 gallons burned for particulate
   B. 11.89 LB/1000 gallons burned for PM_{10}

   The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.

6. The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be the volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.

7. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.

8. This approval order shall replace the approval orders dated October 19, 1977 and January 11, 1983.

9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

The fee for issuing this approval order is $411.04. The amount is payable to the Bureau of Air Quality, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order.

Sincerely,

F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/MK/cc

cc: EPA Region VIII, John Dale
Davis County Health Department

UTAH BUREAU OF AIR QUALITY APPROVAL ORDER FEE

Department of the Air Force
Aircraft Purge System Near Building 287

Filing Fee _____ = $ 100.00

Review Engineer - total hours 13 ($22.08/hr) = $ 287.04

Modeler - total hours _____ ($18.07/hr) = $.

Computer time - total hours _____ = $.

Notice To Paper _____ = $ 24.00

Travel - total miles _____ ($ 0.23/mile) = $.

Total = $ 411.04

Please send payment to:

Utah Bureau of Air Quality
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

Memorandum To: Montie Keller

Through: Dave Kopta

From: Don Robinson DR

Subject: Response To Comments from HAFB on Aircraft Purge System near Building 287; NOI Dated August 1, 1988

Date: December 19, 1988

HAFB submitted a notice of intent dated August 1, 1988 to install an additional aircraft purge system at area 15090 adjacent to Building 287. The intent to approve letter is dated November 1, 1988. The comment period began on November 15, 1988. HAFB submitted comments on December 13, 1988. Following are the affected conditions, the comments, and our suggested responses:

Condition #6

The total amount of JP-4 to be defueled from aircraft shall not exceed 546,000 gallons per 12 month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of defueling shall be kept for all periods when the plant is in operation. Records of defueling shall be made available to the Executive Secretary upon request, and shall include a period of two years ending with the date of the request. The total amount of JP-4 to be defueled from aircraft shall be determined by the use of flow meters on the purge lines. An operations log shall be kept in which shall be recorded daily the volume of JP-4 which is defueled. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.

Comment on Condition #6

HAFB has submitted six separate comments on condition #6. I will summarize them here. For additional details consult their letter dated December 13, 1988.

HAFB has a defueling process and a purging process. The defueling process is as follows:

A. An aircraft is brought into the purging area.

B. A fuel truck pumps as much fuel as possible from the aircraft into the fuel truck for later use.

C. Leftover fuel is bottom drained to fuel bowsers.

The purging operation is as follows:

A. The only fuel left in the aircraft is residue that must be removed to avoid any flammability problems while the aircraft is in the repair hangar. This is done by running purge fluid through the fuel system.

B. Purge fluid is stored in tanks that can be attached to the aircraft.

C. The purge fluid is pumped into the fuel system and mixes with the JP-4 residue. The fuel purge fluid mixture is pumped back to the purge fluid tank.

D. The fuel purge fluid mixture is continually heated and aerated to drive off the residual fuel which the purge fluid has picked up.

E. The fuel being driven off will be controlled by the catalytic incinerator units.

HAFB recommends that this condition be changed because the defueling and purging processes are independent. Regulating the volume of fuel reclaimed will not control VOC emissions from the purging operation.

Since submitting the NOI, HAFB has concluded that this condition is not a sound method of determining VOC emissions. There are simply too many variables with this method. For example, there are too many different configurations in the various aircraft serviced. Some aircraft have fuel foam and some do not. In looking at more reliable methods we concluded that using replenishment figures for the purge oil would be much more reliable.

The best method of measuring VOC emissions is to record the amount of purge fluid replenished in the storage tanks annually. The purge oil lost annually is attributed to it being retained in the aircraft after the purging operation. The purge oil/JP-4 mixture is returned to the storage tanks where the JP-4 is is evaporated and incinerated. New purge oil is pumped into the storage tanks to retain the same level, hence replacing the volume of JP-4 evaporated.

This intent would be served by the following conditions:

A. Use of catalytic incineration of JP-4 vapors

B. Accurate recording of purge oil replenishment figures

Response

The reasoning of HAFB seems to be logical, considering the fact that the defueling and purging operations are separate. The BAQ realizes that the actual process has many variables in it. Condition #6 will be rewritten to read as follows:

"The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be the volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request."

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

1 3 DEC 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Public Comments on Notice of Intent to Approve Aircraft Purge System Near Bldg 287 for HAFB

Dear Mr Cordner

In reference to the above Intent to Approve Notice dated 1 Nov 88, we submit our comments as an attachment.

If you have any questions, please feel free to contact Jay Gupta at 777-6742.

Sincerely

NATHAN O. CURRIER
Director
Env Mgt Directorate

1 Atch
Comments

RECEIVED
DEC 14 1988
AIR QUALITY

COMMENTS ON INTENT TO APPROVE FOR PURGE FACILITY

1. Condition 6 indicates we did not adequately explain the difference between the defueling process and the purging operation. The detailed process we use to defuel and purge an aircraft are as follows:

a. The defueling process:

(1) An aircraft is brought into the purging area.

(2) A fuel truck pumps as much fuel as possible from the aircraft into the fuel truck for later reuse.

(3) Leftover fuel is bottom-drained to fuel bowsers.

b. The purging operation:

(1) The only fuel left in the aircraft is residue that must be removed to avoid any flammability problems while the aircraft is in the repair hangar. This is done by running purge fluid through the fuel system.

(2) Purge fluid is stored in tanks that can be attached to the aircraft.

(3) The purge fluid is pumped into the fuel system and mixes with the JP-4 residue, the fuel-purge fluid mixture is pumped back to the purge fluid tank.

(4) The fuel-purge fluid mixture is continually heated and aerated to drive off the residual fuel the purge fluid has picked up.

(5) The fuel being driven off will be controlled by the catalytic incinerator units.

2. Recommend condition six in the proposed approval order be changed because defueling and purging processes are independent. Regulating the volume of fuel reclaimed during the defueling process will not control hydrocarbon emissions into the air as a result of the purging operation and may well affect the Air Force mission. The submitted Notice of Intent included a linkage between the two processes only for the purpose of estimating air emissions. These figures vary annually and are by no means a maximum.

3. Since submitting the Notice of Intent, we have concluded that this is not a sound method of predicting or measuring emissions. There are simply too many variables with this method. For example, there are too many different configurations in the

various aircraft we service and some aircraft have fuel foam and some do not. Furthermore, arbitrarily limiting the quantity of fuel may have direct impact on the military operations at Hill AFB. In looking at more reliable methods of estimating, we concluded that using replenishment figures for the purge oil would be much more reliable.

4. The best method of measuring hydrocarbon emissions in the air is to record the amount of purge fluid replenished in the storage tanks annually. The purge oil lost annually is attributed to it being retained in the aircraft after the purging operation. The purge oil/JP-4 mixture is returned to the storage tanks where the JP-4 is evaporated and incinerated into carbon dioxide and water vapors. New purge oil is pumped into the storage tanks to retain the same level, hence replacing the volume of JP-4 evaporated.

5. It would be premature to require or limit the quantity of JP-4 fuel defueled. Such a requirement could result in disastrous effects upon the Air Force mission. The intent of the Bureau should be that we control actual emissions to the maximum practical extent possible.

6. This intent would be served by the following conditions:

a. Use of catalytic incineration of JP-4 vapors.

b. Accurate recording of purge-oil replenishment figures.

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor

[illegible]
Executive Director

[illegible]
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
801 538-6108

BAQE-629-88

November 2, 1988

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on Tuesday, November 15, 1988.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84116-0690.

Sincerely,

David Kopta

David Kopta, Manager
Engineering Unit
Bureau of Air Quality

Enclosure

DK/cc

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Tooele Army Depot, Four Air Stripping Towers, Tooele County
2. Overlook Gold Mining, Surface Mining Operation, Uintah County
3. Tooele Army Depot, Spray Booth in Building 511, Tooele County
4. The Pillsbury Company, Gas Fired Boiler, Weber County
5. Hill Air Force Base, Paint Spray Booth & Oil/Water Separator, Weber County.
6. Nucor Steel, Increase Zinc Oxy-Sulfate Plant, Box Elder County
7. Hercules Aerospace Company, Exhaust Systems for Mazzk Flexible Machining Center, G & L Machining Center, and Niles Lathe Machining Center; Clearfield Plant, Davis County
8. James M. Lekas Mineral Exploration, Gilsonite Mine, Uintah County
9. Hercules Aerospace Company, Flexseal Boiler System at Clearfield Plant, Davis County
10. Department of the Army, Two Bead Blast Booths in Building 271, Davis County
11. Department of the Air Force, Aircraft Purge System Near Building 287, Davis County

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. No Prevention of Significant Deterioration (PSD) increment will be consumed by these proposals. It is the intent to the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0690. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before Thursday, December 15, 1988 will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation, or establishment.

Date of Notice: November 15, 1988

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

Re: Aircraft Purge System Near Building 287
Davis County, CDS A1

DATE: October 7, 1988 BR

NOTICE OF INTENT DATED: August 1, 1988

PLANT CONTACT: Jay Gupta

PHONE NUMBER: (801) 777-6742

PLANT LOCATION: Hill Air Force Base

Filing Fee _____ = $ 100.00

Review Engineer - total hours 13 ($22.08/hr) = $ 287.04

Modeler - total hours _____ ($18.07/hr) = $.

Computer time - total hours _____ = $.

Notice To Paper _____ = $ 24.00

Travel - total miles _____ ($ 0.23/mile) = $.

Total = $ 411.04

Approved by Engineering Unit Manager DK 10/12/88

Approved by Technical Evaluation Section Manager M. Keller 10/25/88

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base has filed a notice of intent dated August 1, 1988 in which they are proposing to install an additional aircraft purge system at area 15090 adjacent to building 287.

HAFB presently operates two 6000 gallon purge fluid recycling units. These units are operating with Rotamist 650 oil mist collection devices. When aircraft are to receive certain repairs, they must be completely defueled. The fuel is first drained from the aircraft, and then a purging oil is pumped through the craft's fuel system to remove the remaining estimated 1% of the JP-4 fuel. Air is then blown through the purge oil to remove the JP-4, and the purge oil is recycled back to the fuel purge unit. For safety purposes, the flash point must be kept below 120°F.

Due to increased workload and larger aircraft programmed for depot maintenance, the new purge system is needed. The system includes a 28,000 gallon tank purge oil reclamation unit which will function in conjunction with the existing 12,000 gallon system.

Aircraft fuel tanks are defueled and bucket drained in area 15090. The tanks are then connected to the purge oil lines and are pumped full of purging oil. The oil is left in the aircraft for 10 minutes and is then pumped out and back into the purge tank. The flash point requirement is fulfilled by aerating the mixture and by maintaining the tank temperature between 100-120°F.

The total amount of JP-4 to be defueled is projected to reach 546,000 gallons per year. An estimated 1% of the fuel is picked up by the purge system. HAFB is proposing to pass them through two catalytic incineration units. One unit will handle the two existing 6000 gallon purge units, and the other unit will handle the new 28,000 gallon purge unit.

Installation will begin as soon as approval is granted.

II. EMISSION SUMMARY

The emissions from the JP-4 being bubbled off and from the incineration units will be as follows:

JP-4	
VOC	0.66 tons/yr
Incineration	
Particulate	0.04 tons/yr
PM_{10}	0.02 tons/yr
SO_2	0.00 tons/yr
NO_x	0.11 tons/yr
CO	0.01 tons/yr
VOC	0.00 tons/yr
Methane	0.00 tons/yr

These emissions represent a net emission increase.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The proposed new purge unit was to have either a carbon adsorption unit or a refrigeration unit as a control device for VOC emissions. The refrigeration unit would have recovered JP-4 from all three purge units. The cost of the

refrigeration unit was considered to be too high.

The vendors for the carbon adsorption unit claimed that some of the polarized components in JP-4 would become so attached to the carbon bed that the beds would not last very long. This would make the operating cost of the unit too high. Both control systems are rated at a capture efficiency of 90%.

The vapor stream from the purge oil recycling unit will be suitable for catalytic incineration. The proposed incinerators (two) will have destruction efficiencies of 95-99%. BACT for the incinerators has been determined to be the following limitations:

Particulate	19.18 LB/1000 gallons burned
PM_{10}	11.892
SO_2	0.27
NO_x	55.0
CO	5.0
VOC	1.13
Methane	0.475
Opacity	10.0 %

The inclusion of the catalytic incinerator for the existing units will result in a decrease in VOC emissions. However, the combustion units will produce other emissions.

The low temperatures of the units will result in a lowered emission rate of NO_x.

The proposed units are identical. The units will be ORS Environmental Equipment model #1282001 incinerators. The catalyst is a platinum-coated element. The unit operates at temperatures which efficiently destroy organic contaminants. The unit has ceramic insulation which will reduce operating costs. The exhaust flow rate is at most 200 scfm. The operating temperature range is 400-900°F. A partial list of destructible compounds includes benzene and toluene.

It is recommended that the two catalytic incinerators be approved as BACT.

IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for a modified source. This regulation applies.

2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.

4. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation. The existing boilers are limited to 20% opacity. However, these new emission points are not listed. Therefore, this regulation does not apply to this notice of intent.

5. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or

which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation does not apply.

6. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. HAFB must submit an inventory every year, and this new emission point must be included in that inventory.

7. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This notice of intent does not represent a new major source or a major modification under PSD rules. Therefore, this regulation does not apply.

8. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.1. A deminimus height of 65 meters (213.2 feet) is allowed. HAFB has no stacks which exceed 65 meters in height. It is in compliance with this regulation.

9. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This notice of intent does not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

10. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, BACT has been determined to be a 10% opacity limitation.

11. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

12. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This new emission point (the catalytic incinerators) burns JP-4. The limitation is 0.85 LB of sulfur per 10^6 BTU heat input.

13. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

14. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. This process (catalytic incineration) is not covered in this regulation.

15. Section 5, UACR - Emergency episode requirements. This regulation applies.

16. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

17. National Emission Standards for Hazardous Air Pollutants (NESHAPS)\- There is no NESHAPS for this industrial process.

18. National Ambient Air Quality Standards (NAAQS) - This source is

located in Davis County which is a nonattainment area for ozone. The Bureau of Air Quality guidelines do not call for this new emission point to be modeled for any pollutant. The bureau has found through experience that, because of the conservative predictions made by modeling, a source or emission point of this small size will not cause a new violation of the NAAQS.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which will operate in conjunction with the two existing 6000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.

2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the 28,000 gallon unit, and one incinerator shall be used on the two existing 6000 gallon units. Both incinerators shall be an ORS Environmental Equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.

3. Either one or both of the catalytic incinerators shall be stack tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:

   A. 19.18 LB/1000 gallons burned for particulate
   B. 11.89 LB/1000 gallons burned for PM_{10}

   The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

5. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.

6. The total amount of JP-4 to be defueled from aircraft shall not exceed 546,000 gallons per 12 month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of defueling shall be kept for all periods when the plant is in operation. Records of defueling shall be made available to the Executive Secretary upon request, and shall

include a period of two years ending with the date of the request. The total amount of JP-4 to be defueled from aircraft shall be determined by the use of flow meters on the purge lines. An operations log shall be kept in which shall be recorded daily the volume of JP-4 which is defueled. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.

7. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.

8. This approval order shall replace the approval orders dated October 19, 1977 and January 11, 1983.

9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

DER/sh
HAFPURG

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: CATALYTIC INCINERATOR VENT, BLDG. 287 FILE: HAFB287

COMPANY NAME: HILL AIR FORCE BASE
LOCATION: DAVIS COUNTY
DATE: 15-SEP-1998

TOTAL ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

TSP	0.039	TON/YR
PM-10	0.024	TON/YR
SOX	0.0005	TON/YR
NOX	0.11	TON/YR
CO	0.010	TON/YR
VOC non METHANE	0.66	TON/YR
VOC METHANE	0.0010	TON/YR

SOURCES INCLUDED:

VOC MATERIAL BALANCE
OIL COMBUSTION EMISSIONS

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: VOC MATERIAL BALANCE

COMPANY NAME: HILL AIR FORCE BASE FILE: APMTLB
LOCATION: DAVIS COUNTY
DATE: 19-SEP-1988 TIME: 11:28:59 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

VOC, non-METH.....	0.66 TONS/YR

MATERIAL BALANCE CALCULATIONS

JP-4 BUBBLED OFF: NOI INFO.....	4,040 GAL/YR
% JP-4 INCINERATED: BACT ESTIMATE	95 %
VOC EXAUSTED TO THE ATMOSPHERE:	202 GAL/YR
VOC EMISSIONS EST.: (GAL/YR)(LB/GAL)/(2000 LB/TON)	0.66 TON/YR
JP-4 DENSITY	6.5 LB/GAL

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: OIL COMBUSTION EMISSIONS

FILE: AP1.3OR

COMPANY NAME: HILL AIR FORCE BASE
LOCATION: DAVIS COUNTY
DATE: 15-SEP-1988 TIME: 11:29:59 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =
(EMISSION FACTOR)(FUEL OIL CONSUMPTION)(1TON/2000LBS)

TSP	0.04 TONS/YR
PM10	0.02 TONS/YR
SOx	0.00 TONS/YR
NOx	0.11 TONS/YR
CO	0.01 TONS/YR
VOC, non-METH	0.00 TONS/YR
METHANE	0.00 TONS/YR

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.3 FUEL OIL COMCUSTION
TABLE 1.3-1 FUEL OIL COMBUSTION

COMMERCIAL BOILER (0.5 MMBTU/HR TO 10 MMBTU/HR) USING RESIDUAL OIL

EMISSION FACTOR IN POUNDS PER 1000 GALLONS OF FUEL OIL COMBUSTED

TSP	19.18 LB/10^3GAL
% CONTROL FROM BACT DETERMINATION	0.0 %
PM10 = (% <= 10um)(TSP)	11.892 LB/10^3GAL
% <= 10um (FROM TABLE 1.3-5)	62.0 % PASS
SOX= (144)(%S CONTENT OF FUEL)(100-% CONTROL)/(100)	0.27 LB/10^3GAL
% SULFER CONTENT OF FUEL: UACR 4.2 LIMIT	1.70 % WT.
% CONTROL FROM BACT DETERMINATION	99.9 %
NOX	55.0 LB/10^3GAL
CO	5.0 LB/10^3GAL
NON METHANE VOC	1.13 LB/10^3GAL
METHANE	0.475 LB/10^3GAL

FUEL OIL CONSUMPTION IN 1000 GALLONS / YR FROM :

(MMBTU/HR)(HR/YR)/(BTU/GAL)	4.0 10^3GAL/YR
MMBTU/HR: (HP)((MMBTU/HR)/HP)/((BOILER EFF)/100))	0.126 MMBTU/HR
HP: NOI INFO.	2 HP
BOILER % EFF. : NOI INFO.	60 %
HR/YR: NOI INFO.	4,160 HR/YR

% SULFUR BY WT. ALLOWED: UACR 4.2=
(LB/MMBTU ALLOWED)(OIL HEAT VALUE BTU/GAL)/
(FUEL OIL DENSITY)(100)/(1000000)

	1.70 % (S)
LB/MMBTU= ALLOWED SULFER BY UACR 4.2	0.85 LB/MMBTU
OIL HEAT VALUE FROM: AP42 PG. A-3	130000.0 BTU/GAL
FUEL OIL DENSITY	6.50 LB/GAL

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

BAQE-065-91

January 31, 1991

Thayne Judd, ~~Colonel, USAF~~
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056-5149

Re: Eighteen Month Variance for Aircraft Purge System near Building 287 to use Rota-Mist while Repairs are Accomplished
Davis County CDS A1

Dear Colonel Judd:

The above-referenced request was presented to the Utah air Conservation Committee (UACC) on January 17, 1991. Under authority of Title 26, Chapter 13-15, Utah Code Annotated, as amended, the UACC approved the request to temporarily use alternate, less efficient, Rota-Mist emissions control equipment on the aircraft fuel purge system (approval order BAQE-653-90). It is understood, you will proceed with redesign and installation of the burned-out incinerators or equivalent technology as quickly as possible. The following conditions shall be applicable during the time of the variance:

1. Hill Air Force Base shall install the Rota-Mist emissions control equipment on the 28,000 gallon purge oil reclamation unit. The purge unit shall be located at area 15090 near Building #287.

2. The reclamation unit shall operate with the Rota-Mist emissions control equipment no longer than June 30, 1992. Effort needs to be extended to minimize the actual time the Rota-Mist emissions control equipment will be used before the incinerators or equivalent technology will be put into service.

3. The purge oil reclamation unit shall not be operated without the Rota-Mist emissions control equipment in place and operational.

4. The applicable conditions of the approval order BAQE-040-91, numbers 4, 5, 6 and 9, shall apply while the Rota-Mist emissions control equipment is in use.

5. Emissions from the reclamation unit shall not exceed 2.6 ton per 12 month period and shall be included in the emissions inventory. Emissions shall be calculated using the data obtained from compliance with conditions in approval order BAQE-040-91 and an efficiency factor recommended by the manufacturer or as determined by testing if directed by the Executive Secretary.

6. A notice of intent shall be submitted for the new incinerators or alternate technology for the reclamation unit emissions in accordance with Section 3.1, Utah Air Conservation Regulations.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee

FBC:LCB:jiw

cc: EPA Region VIII, Mike Owens
Davis County Health Department

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

MEMORANDUM TO: F. Burnell Cordner, Executive Secretary

THROUGH: Montie Keller, Branch Manager (MK) agree

THROUGH: Donald E. Robinson, P. E., Manager, Engineering Section

FROM: Carl Broadhead, Environmental Health Engineer

Subject: Hill Air Force Base Fuel Purge System Intermediate Control Variance

Date: January 14, 1991

Background

The fuel must be removed from an aircraft before moving it into a hangar for repairs due to safety and fire concerns. After draining the tanks, the mechanics pump a purge fluid through the fuel system and then regenerate the purge fluid. This is done by heating the used purge fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and is located near Building 236. The ROTAMIST collectors are about 70% effective. On January 13, 1989 HAFB was issued an approval order for a second purge system to be located near Building 287 which had two incinerators for emissions control which are both 98% effective. The new unit became the unit of primary use. In October 1990 the incinerators became overheated and caught fire, rendering both incinerators nonfunctional.

HAFB has determined that there was condensation of JP-4 fuel vapors into droplets plus carryover droplets in the vapors from the purge fluid regenerator that were going to the incinerators. The incinerators were designed for only vapors. The higher BTU value of the droplets drove the temperature beyond the maximum allowable temperature of the catalyst and destroyed the units.

Problem

The purge system emissions control system will have to be redesigned and replaced. It is estimated that the time required to have a new high efficiency emissions control system on line will be

18 months. Meanwhile, the fuel purge system is still required to be used because of fire and safety concerns, and the purge fluid needs to be regenerated. HAFB has available ROTAMIST oil mist collectors for immediate installation and use. The estimated difference in emissions between the incinerators and the mist collectors is approximately 2.6 ton per year of VOC.

Applicant Request

HAFB requests the Air Conservation Committee to grant a variance allowing the use of the less efficient ROTAMIST collectors only until the new high efficient incinerators can be replaced. The requested time period is not to exceed 18 months or no later than June 30, 1992.

Recommendation

I recommend that the request be granted, based on the following:

A. The ROTAMIST collectors are the best control option which is available on short notice. No uncontrolled emissions will be released.

B. The 18 month request is reasonable and a relatively short time to accomplish the work.

C. The 2.6 tpy increase in VOC emissions is a small amount for that time period.

D. The emissions will be controlled at the same level as the older unit near Building 236.

CARL
HAFB-VAR.REQ

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

Mr Mike Beheshti
Bureau of Air Quality
1950 West North Temple
PO Box 16690
Salt Lake City, UT 84116-0690

Ref: Request for Modification of 13 Jan 89 Approval Order for Aircraft Purge System Near Bldg 287 (BAQE-653-88)

Dear Mr Beheshti:

Per 10 Dec 90 telephone conversation between Jay Gupta and you, we submit this request for modification of the referenced approval order.

On 10 Oct 90, we reported that one of the JP-4 purge incinerators caught fire rendering both incinerators nonfunctional. Since then, we have not operated our purge facility near Bldg 287. We wish to operate this facility using Rotamist oil mist collectors, until we can put the incinerators back in operation. We anticipate 15-18 months for the redesign and installation of new incinerators. Actual performance data on Rotamist collectors is not available. Estimating, at best, 70% collection efficiency, additional JP-4 vapors emissions to the atmosphere will be 5,250 pounds per year. Manufacturer's brochure on Rotamist collector is attached.

We would also like to operate our purge facility in Bldg 236 under an Approval Order, issued 11 Jan 83. However, condition 8 of the referenced approval order states, "This approval order shall replace the Approval Orders, dated 19 Oct 77 and 11 Jan 83". 11 Jan 83 approval order was for the purge facility in Bldg 236. We did not intend that this approval order be replaced when we filed NOI for the purge facility near Bldg 287.

We request two modifications to the referenced approval order as follows:

1. Change condition 8 to read, "This approval order shall replace the approval order dated October 19, 1977."

2. Change condition 2 or add a new condition to read, "For a period not to exceed 18 months from the date of this modified approval order, emissions from all three purge oil units near Bldg 287, shall be controlled using Rotamist oil mist collectors. At the end of this period, emissions shall be controlled by catalytic incinerators."

If you have any questions or need additional information, please feel free to contact Jay Gupta at 777-6917.

Sincerely

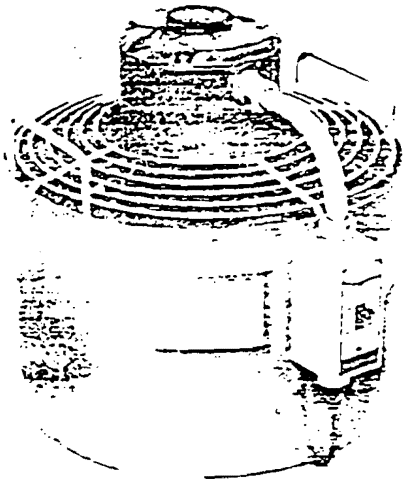
James R. VanOrman

1 Atch
Manufacturer's Brochure

cc: JAM
TIVV

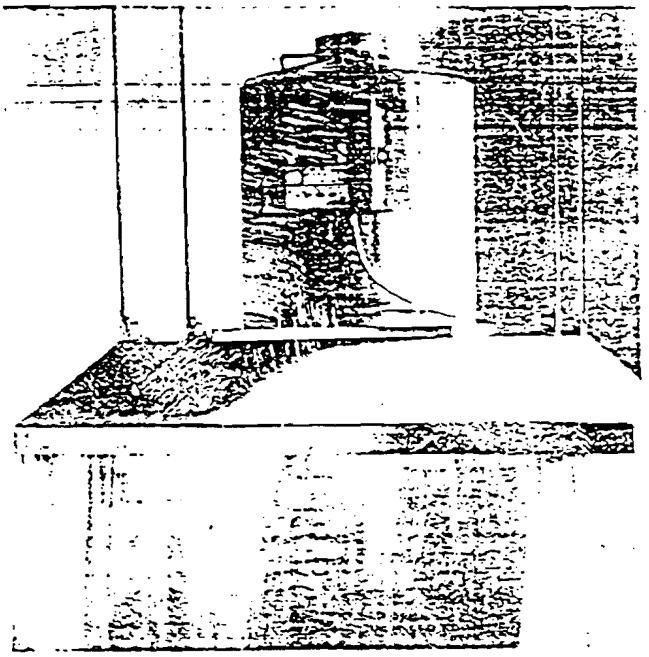
ROTAMIST COLLECTORS

FOR AUTOMATIC SCREW [illegible] AND OTHER MACHINE TOOLS

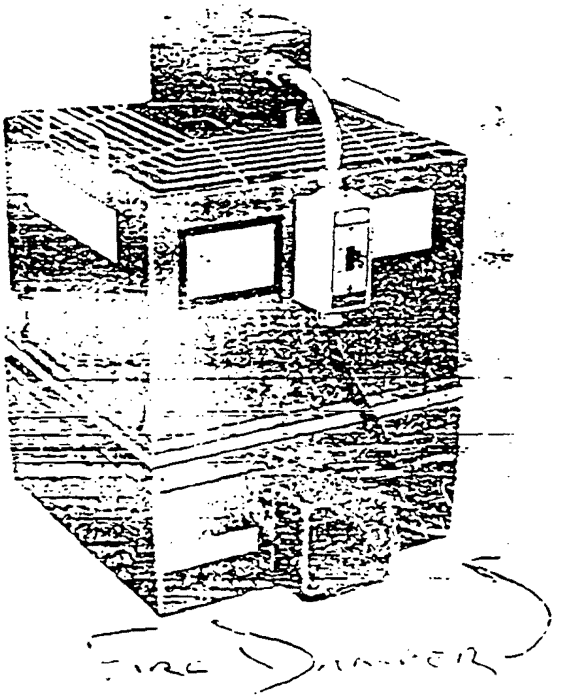


MODEL 450

Often used on Browns and Sharpes, Index Werks, Jet Grinders, power drills and other small machine tools. This model handles 475 cfm with power input of only 2½ hp and operating weight of 25 lbs. shown mounted on ram adapter RMS 104



MODEL 650



HOODS AND ADAPTERS

ROTAMIST offers an extensive line of adapters and fittings to simplify installation of mist control on automatic screw machines and other machine tools. Hoods and curtains are available for general purpose use with machines not equipped with enclosures. Shown on left, is Model 604 mounted on suspended 24 x 36 hood. Filtration element may be cleaned in place from below, entire unit is readily removable. Hood and unit assembly may also be floor supported with standard pedestal and swivel adapter. Suspended arrangement also applicable to Model 750.

Two models available for Davenport Automatics, 450 and 5000, for top mounting on the machine. Refer to catalog for details on this line of high efficiency and compact mist collectors that has won acclaim for reliability and low cost of maintenance.

Lake Erie TECHNOLOGY, INC.

ROTAMIST® Division
210 FRENCH ROAD • GARDENVILLE INDUSTRIAL PARK
BUFFALO, NEW YORK 14227
(AC 716) PHONE 668-5222

REPRESENTED BY

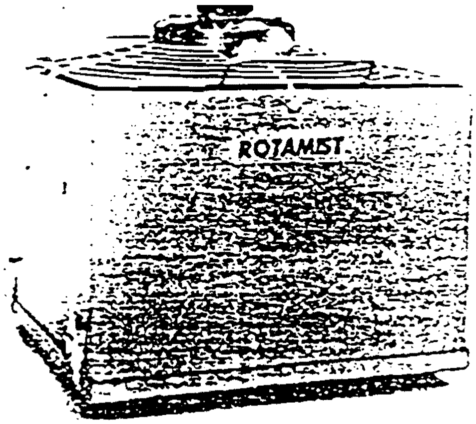
Manufactured and sold under U.S. Patents 3538657 or 3844084 and Canadian Patent 811703 and Patents Pending.

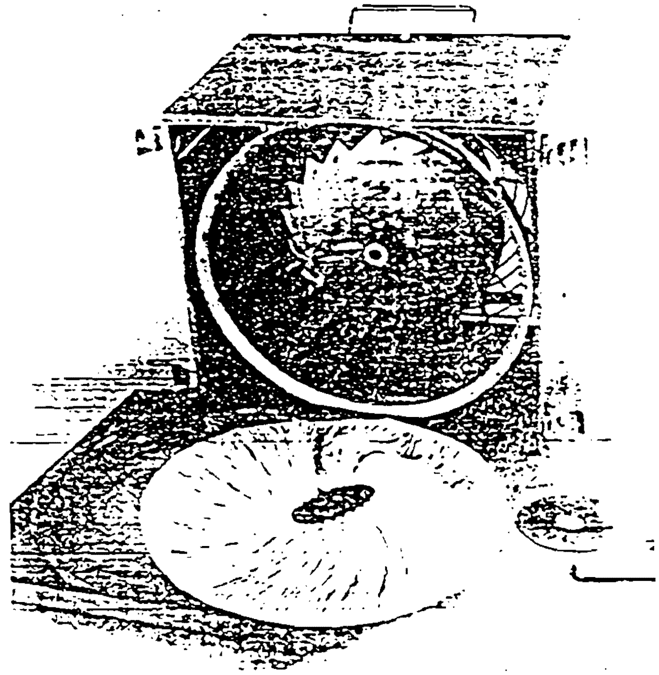
Printed in U.S.A. Form A15

Lake Erie
TECHNOLOGY, INC.

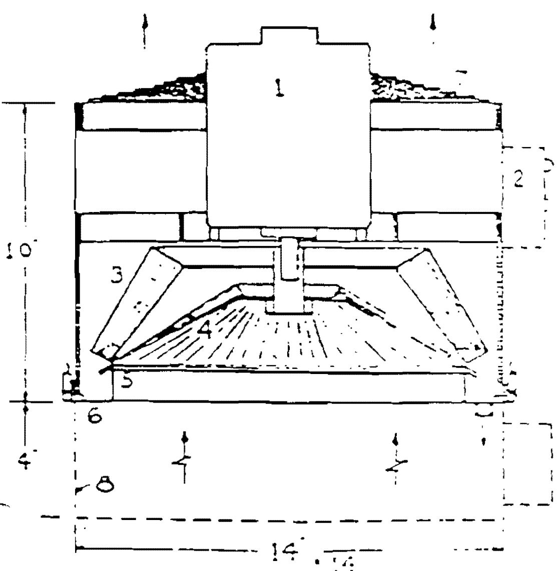
ROT MIST Divisio
210 Fre. n Road
Gardenville Industrial Park
Buffalo, New York 14227
(716) 668-5222

ROTAMIST®
650
675 CFM





The permanent collector element is self-draining, and can be easily cleaned with a jet spray of solvent while operating. C eparated from the air stream and deposits in the ie drain pan, from which it returns to the machine t use. Drain pan removable by opening spring-latches, affords complete access to inside of unit. Removal of shaft collar allows collector element to slip out for cleaning off the machine with water soluble detergent if desired. Combination element cage and centrifugal type fan wheel with backward inclined blades is riveted and welded and permanently balanced. Handles provided on top of unit shell.



SPECIFICATIONS

1. 1/2 H.P. 1725 Rpm enclosed type Ball Bearing G.E. Motor, single or 3 phase, standard voltages.
2. Single phase models supplied with manual overload relay starter and pilot light mounted on shell, with 6 ft. service cord and plug.
3. Element cage and fan with backward inclined blades for high performance at low noise level, complete assembly balanced as a unit.
4. Permanent Nylon collector element, cleanable and easily removable.
5. Highly efficient 675 SCFM performance.
6. Removable drain pan assembly attached with spring latches provides complete access to interior of unit.
7. Safety discharge grille and lifting handles.
8. Optional Fire Damper with electrical interlock to shut down collector if temperature exceeds 160°. May also be ... to shut down ...

Manufactured and sold under U.S. Patents 3535857 ... Patent 841703 and Patents Pending.

4.2.4-637

ATCH - 1

State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

MEMORANDUM TO: F. Burnell Cordner, Executive Secretary

THROUGH: Montie Keller, Branch Manager

THROUGH: Donald E. Robinson, P. E., Manager, Engineering Section

FROM: Carl Broadhead, Environmental Health Engineer

Subject: Hill Air Force Base Fuel Purge System Intermediate Control Variance

Date: January 14, 1991

Background

The fuel must be removed from an aircraft before moving it into a hangar for repairs due to safety and fire concerns. After draining the tanks, the mechanics pump a purge fluid through the fuel system and then regenerate the purge fluid. This is done by heating the used purge fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and is located near Building 236. The ROTAMIST collectors are about 70% effective. On January 13, 1989 HAFB was issued an approval order for a second purge system to be located near Building 287 which had two incinerators for emissions control which are both 98% effective. The new unit became the unit of primary use. In October 1990 the incinerators became overheated and caught fire, rendering both incinerators nonfunctional.

HAFB has determined that there was condensation of JP-4 fuel vapors into droplets plus carryover droplets in the vapors from the purge fluid regenerator that were going to the incinerators. The incinerators were designed for only vapors. The higher BTU value of the droplets drove the temperature beyond the maximum allowable temperature of the catalyst and destroyed the units.

Problem

The purge system emissions control system will have to be redesigned and replaced. It is estimated that the time required to have a new high efficiency emissions control system on line will be

18 months. Meanwhile, the fuel purge system is still required to be used because of fire and safety concerns, and the purge fluid needs to be regenerated. HAFB has available ROTAMIST oil mist collectors for immediate installation and use. The estimated difference in emissions between the incinerators and the mist collectors is approximately 2.6 ton per year of VOC.

Applicant Request

HAFB requests the Air Conservation Committee to grant a variance allowing the use of the less efficient ROTAMIST collectors only until the new high efficient incinerators can be replaced. The requested time period is not to exceed 18 months or no later than June 30, 1992.

Recommendation

I recommend that the request be granted, based on the following:

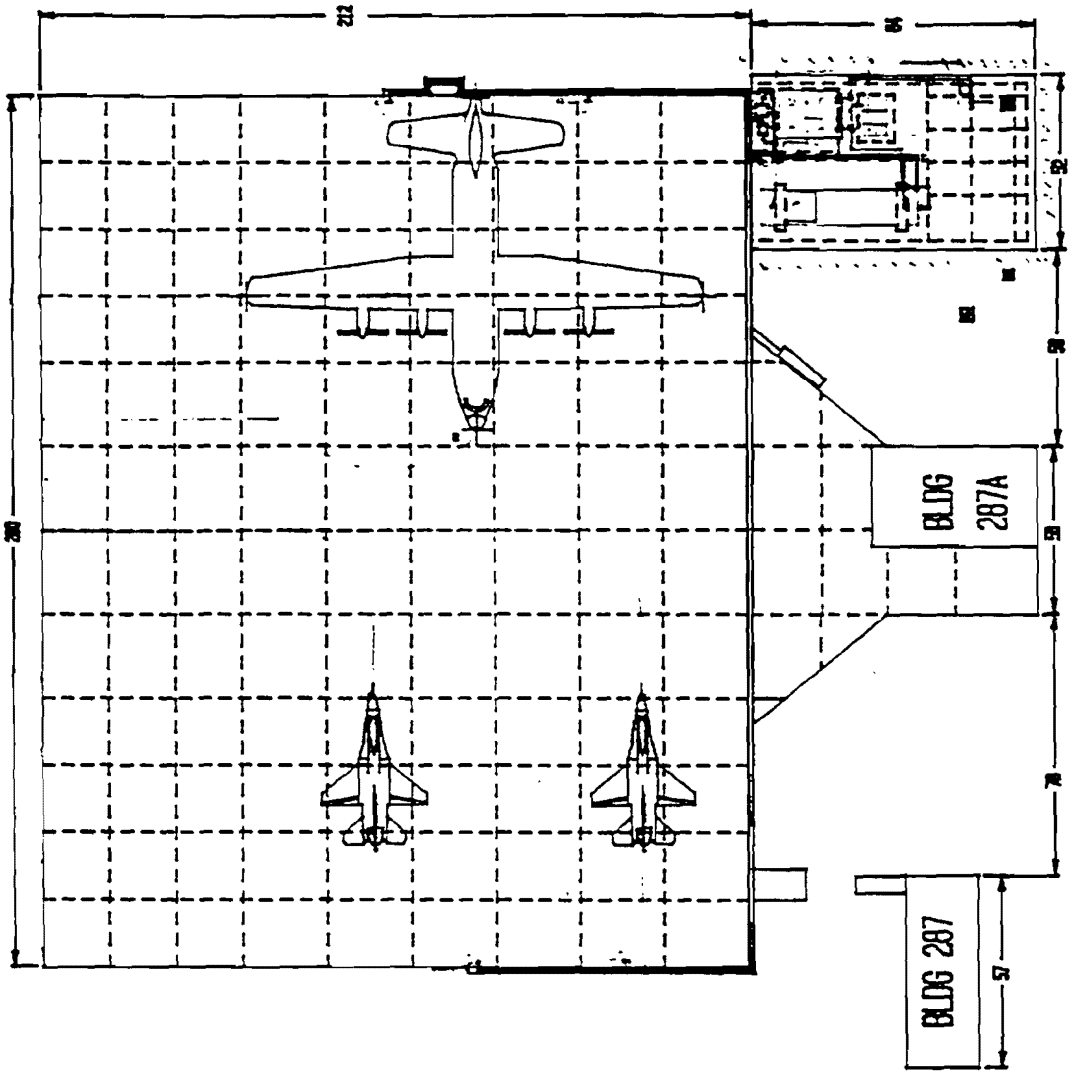
A. The ROTAMIST collectors are the best control option which is available on short notice. No uncontrolled emissions will be released.

B. The 18 month request is reasonable and a relatively short time to accomplish the work.

C. The 2.6 tpy increase in VOC emissions is a small amount for that time period.

D. The emissions will be controlled at the same level as the older unit near Building 236.

CARL
HAFB-VAR.REQ


212
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57

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P O Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

BAQE-020-1991

MEMORANDUM

MEMORANDUM TO : Donald E. Robinson, Manager, Engineering Section, BAQ

FROM: Carl Broadhead, Environmental Health Engineer

SUBJECT: Hill Air Force Base, Aircraft Fuel Purge System

DATE: January 10, 1991

==========

The fuel must be removed from an aircraft before moving it into a hanger for repairs for safety and fire concerns. After draining the tanks, they pump a purge fluid through the fuel system and then recover the purge fluid. This is done by heating the used fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and was located near Building 236. On January 13, 1989 Hill Air force Base was issued an AO for a new purge system located near Building 287 which had incinerator controls. The new unit became the unit of primary use. The wording in the second notice of intent appeared to indicate it to be a replacement of the first unit so the old AO was rescinded in Condition #8 of the AO # BAQE-653-88.

With the new unit at Building 287 on line the purge system a Building 236 has not been used extensively. During the public comment period and until recently. the deletion of the AO was not detected. In a letter dated December 13, 1990, Hill AFB has requested that the approval order for the purge unit at Building 236 be reinstated as they still need to use it on occasion.

It is recommended that the request be granted and a modified AO is attached.

Note: The modified AO (1/15/91) deletes the exclusion of the Rotomist system authorized by AO 1/11/83 by deleting the AO 1/13/89 (cond #7) that deleted the Rotomist system! Now AO 1/11/83 is back in 1/15/91 order in place until the 18 month variance granted by the ACC on Jan 17, 1991 expires when the burned out incinerators will be back on-line or equivalent technology is installed. (MP)

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

BAQE-021-91

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

January 15, 1991

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

Re: Modified Approval Order for Aircraft Purge System Near Building 287
Davis County CDS A1

Dear Colonel Judd:

The above-referenced project has been reevaluated as per your request in the letter dated December 13, 1990. It has been determined that the approval order for the purge system near Building #236 had been rescinded due to a misinterpretation of the submitted information for the new purge system that was approved to be located near Building #287 in approval order #BAQE-653-88. The conditions of this approval order reflect any changes to the previous conditions which resulted from the evaluation. This air quality approval order and authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which shall operate in conjunction with the two existing 6,000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.

2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the two existing 6,000 gallon units. Both incinerators shall be an ORS environmental equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.

3. Either one or both of the catalytic incinerators shall be stacked tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:

   A. 19.18 lb per 1,000 gallons of purge oil burned for particulate

   B. 11.89 lb per 1,000 gallons of purge oil burned for PM_{10}

   The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60,

Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 60-minute period shall not apply. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.

5. The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary or his representative upon request.

6. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.

7. This approval order shall replace the approval orders dated October 19, 1977 and January 13, 1989.

8. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

9. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Conservation Regulations.

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee

FBC:LCB:jiw

cc: EPA Region VIII, Mike Owens
Davis County Health Department

Social Services

Scott M. Matheson, Governor, State of Utah
Anthony W. Mitchell, Ph.D., Executive Director

533-6108
July 12, 1979

Alfred J. Nowoweijski
Deputy Civil Engineer
Civil Engineering Division
Department of the Air Force
Headquarters 2849th Air Base Group (AFLC)
Hill Air Force Base, Utah 84406

Re: Air Quality Approval Order
for Remodeling Base Exchange
BX Service Station

Dear Mr. Nowoweijski:

The thirty-day comment period ended on July 7, 1979 and no comments were received. Installation of the three new 10,000 gallon underground storage tanks which are to be equipped with submerged-fill equipment and a vapor return line is approved under the following conditions:

1. The proposed installation be as described in the May 15, 1979 Notice of Intent to Construct and as approved by the Executive Secretary.

2. The equipment be maintained and operated according to accepted operational and engineering practices.

Because we must both schedule and perform an initial compliance inspection, please give us an estimate of the date when the new equipment will be placed in service, followed by notice of the actual date.

Sincerely,

Alvin E. Rickers
Executive Director
Utah Air Conservation Committee

CAN:jo tlm

cc: Weber-Morgan District Health Dept.

Division of Health
Lyman J. Olsen, M.D., M.P.H.
Director of Health

150
P.O. Box 25C

4.2.4-1035

TO FILE DATE 5-23-79

FROM KEB

EVALUATION PUB JUN 8, 79

HILL AIR FORCE BASE Approved July 16, 79

BASE EXCHANGE SERVICE STATION REMODEL

HAFB proposes to remodel the existing Base Exchange BX service station. This will involve relocating the existing pumps on the same grounds [illegible] replacing the existing storage tanks with [illegible] new 10,000 gal capacity each, underground storage tanks. The old storage tanks will be filled with [illegible]. New equipment, including vapor recovery [illegible] will be added also.

EMISSION FACTORS

PROCEDURE	FACTOR lb/10^3 gal
Submerged Filling	7.3
Splash Filling	11.5
Daily Breathing Loss	1.0
Motor Vehicle Refueling	9.0
Spillage Loss	0.7
Submerged Filling - HC vapor balance system	0.3

EXISTING EMISSIONS

In 1978 the BX sold approximately 1,954,000 gallons of gas and it is assumed that each of three existing 10,000 gallon underground storage tanks had an average stored quantity of 5,000 gallons.

Operation	Emission Factor	HC Emissions
1. Splash Filling	11.5 lb/10^3 gal	22,471 lb/yr
2. Daily Breathing Loss	1.0 " "	1,954 "
3. Auto Refueling	9.0 " "	17,586 "
4. Spillage Loss	0.7 " "	1,367 "

TOTAL = 43,378 lb/yr
= 21.69 tons/yr

RESULTING EMISSIONS

The proposed project will install new underground storage tanks which will have submerged fill equipment and a vapor return line such that vapors displaced during their filling will be returned to the delivery truck.

Operation	Emission Factor	HC Emissions
1. Submerged Filling - HC Vapor Recovery System	0.316/10^3 gal	582 lb/yr
2. Daily Breathing Loss	1.0 "	1,954 "
3. Auto Refueling	9.0 "	17,586 "
4. Spillage Loss	0.7 "	1,367 "

New TOTAL = 21,493 lb/yr

= 10.75 tons/yr.

SUMMARY

HAFB has complied with Sec. 3.1.1 of the VECR. Installation of the new underground storage tanks represents BACT and a reduction the emissions of HC emissions by 10.94 tons/yr.

I recommend approval.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 2849TH AIR BASE GROUP (AFLC)
HILL AIR FORCE BASE, UTAH 84056

RECEIVED
MAY 16 1979
Bureau of Air Quality Div. of Health

15 MAY 1979

REPLY TO ATTN OF: DE

SUBJECT: Relocation of Service Station Pump Islands, Hill Air Force Base - Notice of Intent to Construct

TO: Utah Air Conservation Committee
ATTN: Al Rickers, Executive Secretary
Bureau of Air Quality
P.O. Box 2500
Salt Lake City, Utah 84110

1. In compliance with section 3.1 of the State Air Conservation Regulations, the attached "Notice of Intent to Construct" is submitted by Hill AFB, U.S. Air Force.

2. If this office can provide additional information, please feel free to contact Keith Davis at 777-2065.

ALFRED T. NOWAKOWSKI
Deputy Civil Engineer
Civil Engineering Division

1 Atch
Notice of Intent to Construct

NOTICE OF INTENT TO CONSTRUCT
RELOCATION OF SERVICE STATION PUMP ISLANDS
HILL AIR FORCE BASE, UTAH

1. Project Description:

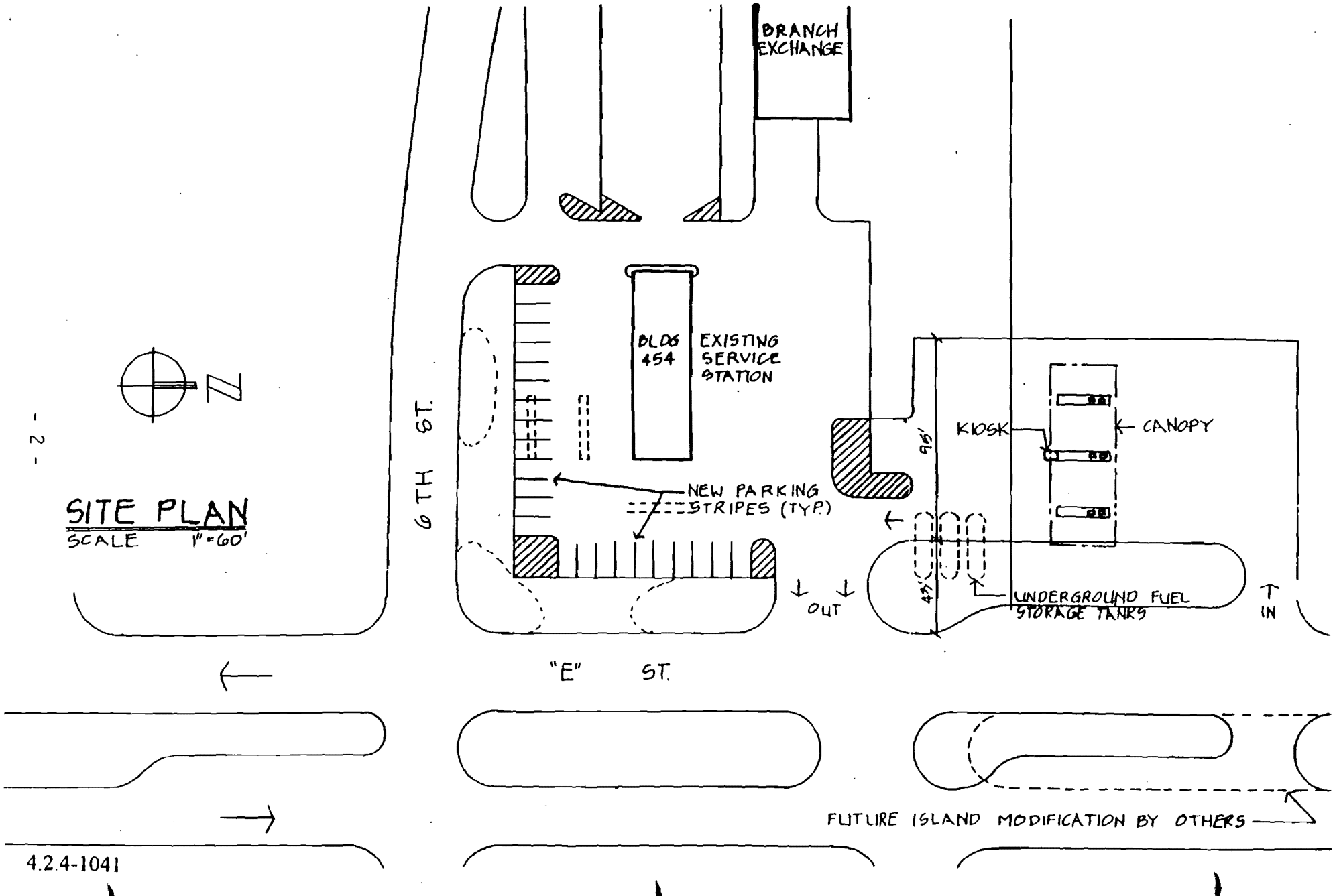
a. The proposed action provides for the remodeling of the existing Base Exchange (BX) service station at Hill AFB within Davis County. The BX service station presently has 3 pump islands; two on the south side and one on the east side. The proposal is to relocate these islands, with new equipment, to the north side of the service station as shown in Figure 1. Also included in the project will be 18,000 SF of paving, three new 10,000 gallon underground storage tanks, utilities and adjacent landscaping. The pump islands will be removed and the existing underground storage tanks will be filled with sand.

b. The relocation of the pumps is required to eliminate the existing hazardous traffic conditions and to replace antiquated equipment. The new pump islands will be adjacent to the existing service station to provide garage and gas pumping services at the same general location plus allow adequate backup space for waiting cars. Currently, during heavy use hours, vehicles will back up restricting flow through the intersection adjacent to the service station.

2. Pollutant Emissions:

a. The primary source of air pollutants from the BX service station is the emission of volatile organic compounds from the evaporation associated with gasoline transfer, storage and occasional spillage. In 1978, the BX service station sold approximately 1,954,000 gallons of gasoline and it is assumed that each of the three 10,000 gallon underground storage tanks had an average stored quantity of 5,000 gallons. Utilizing emission factors found in sections 4.3 and 4.4 of the EPA publication AP-42, "Compilation of Air Pollutant Emission Factors", the hydrocarbon (HC) emissions for the existing service station are calculated as outlined below:

Operation	Emission Factor	Quantity (KGal)	HC Emissions (lb/yr)
1. Storage	0.25 lb/day Kgal	15(x365days)	1,369
2. Splash Loading of Underground Tanks	11.5 lb/Kgal	1,954	22,471
3. Unloading Delivery Trucks	2.1 lb/Kgal	1,954	4,103
4. Dispensing to Vehicles	11.0 lb/Kgal	1,954	21,494
5. Liquid Spillage Loss	0.67 lb/Kgal	1,954	1,309
		TOTAL	= 50,746
			= 25.4 tons/yr


N
SITE PLAN
SCALE 1" = 60'
6TH ST.
BRANCH EXCHANGE
BLDG 454
EXISTING SERVICE STATION
NEW PARKING STRIPES (TYP.)
OUT
IN
KIOSK
CANOPY
95'
45'
UNDERGROUND FUEL STORAGE TANKS
"E" ST.
FUTURE ISLAND MODIFICATION BY OTHERS

b. The proposed project will install new underground storage tanks which will have submerged fill equipment and a vapor return line such that vapors displaced during their filling will be returned to the delivery truck. In calculating the reduction in emissions this equipment will make, it is assumed that the commercial trucks delivering fuel will be equipped with a return vapor collection system. Again utilizing emission factors from AP-42, emissions for the altered BX service station are calculated as outlined below:

Operation	Emission Factor	Quantity (KGal)		HC Emissions (Lb/Yr)
1. Storage	0.22 lb/day	15(x365 days)		1,205
	Kgal			
2. Submerged Loading with Open Return Vapor System	0.80 lb/Kgal	1,954		1,563
3. Unloading Delivery Trucks	2.1 lb/Kgal	1,954		4.103
4. Dispensing to Vehicles	11.0 lb/Kgal	1,954		21,494
5. Liquid Spillage Loss	0.67 lb/Kgal	1,954		1,309
		TOTAL	=	29,674
			=	14.8 tons/yr

c. As indicated in the preceeding paragraphs, under ideal situations, the proposed project will reduce HC emissions from the BX service station by about 10.6 tons per year. There will also be some dust and heavy equipment exhaust created during the construction phase but these quantities will be small and created on a short-term basis only.

3. Air Cleaning Devices: The three new gasoline tanks will have control equipment such that they will be submerged filled and have a vapor return line to return back to the delivery truck those vapors displaced during filling. No additional air cleaning devices are proposed.

4. Emission Point: All the HC emissions will be due to gasoline evaporation and are emitted at ground level from various locations around the pump islands and storage tanks. The nearest adjacent facility is a small branch exchange (quick-stop type store) located about 150 feet southwest of the pump islands.

5. Sampling Points: No sampling points are anticipated.

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
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DAQE-068-95

January 30, 1995

James R. Van Orman
Director of Environmental Management
Headquarters Ogden Air Logistics Center
Department of the Air Force
Hill Air Force Base, Utah 84056

Re: Support Document for Approval Order DAQE-067-95

Dear Mr. Van Orman:

This letter is a support document for Approval Order (AO) DAQE-067-95, dated January 30, 1995, and it establishes reporting requirements when Hill Air Force Base intends to change paint/solvent/thinner used in their painting operations. Hill Air Force Base is permitted to change the paint/solvent/thinner used in their painting operations without prior approval from the Division of Air Quality (DAQ), subject to the following conditions:

A. If Hill Air Force Base intends to increase the rates of emissions of specific non-criteria pollutants and/or change the chemical composition of non-criteria pollutant emissions, compared to the emissions listed in the 1993 Base-wide HAPs emissions inventory times a scaling factor of 5.43[1], then Risk Index (defined in D. below) needs to be calculated for those compounds that would contribute to the increase in the rates of emissions and/or the chemical composition of the emissions. If the calculated Risk Index exceeds 21.22 (current high value as per the Notice of Intent (NOI) for this AO), a NOI shall be filed in accordance with Section 3.1, UACR.

B. If the AO is determined to require changes, Hill Air Force Base shall submit as part of the NOI, the proposed rates and chemical composition of the new emissions, and screen modeling results to demonstrate that the proposed changes in the amounts and/or character of the emissions shall not cause an exceedance of TLV/100 (for non-

[1]A scaling factor of 5.43 is the ratio of the total Base-wide allowable HAP emissions (201.2 tons per year considering all HAP emissions as VOC emissions) to the total Base-wide HAP emissions listed in the 1993 (the latest Base-wide HAPs emissions inventory available before this AO was issued), which was reported as 74.076 pounds per year (37.04 tons per year). 201.2 TPY/37.04 TPY = 5.43

carcinogens) and TLV/300 (for carcinogens). The present Maximum Risk Index of 21.22 shall then be revised (increased) to reflect the proposed change in the amounts and/or character of emissions.

C. If Hill Air Force Base intends to change the rates and/or chemical composition of the non-criteria pollutant emissions currently approved according to the information submitted from the 1993 emissions inventory as a part of the NOI for this AO, and determines that a change in the AO is not required because the maximum Risk Index of 21.22 is not exceeded by the changes, then Screen modeling is not required to be performed and a formal NOI is not required to be filed. Hill Air Force Base is only required to submit to the Executive Secretary a list of changes in the chemical composition and emission rates, along with the annual HAPs emissions inventory submittal.

D. Risk Index shall be calculated according to the formula given below:

$$\text{Risk Index} = \frac{\text{actual maximum pounds of toxics emitted per eight-hour period}}{\text{TLV/100 or TLV/300}}$$

where, TLV represents the Threshold Limit Value of the chemical compound. TLV/100 is used in the above equation when the chemical compound is not considered to be a carcinogen and TLV/300 is used when the chemical compound is a suspected or a confirmed carcinogen. TLV values and the carcinogenicity of chemical compounds can be found in a handbook published by the Association of Governmental and Industrial Hygienists (Technical Affairs Office, 6500 Glenway Ave., Bldg. D-7, Cincinnati, OH 45211-4438). Any other source of TLV values shall be accepted, subject to approval by the Executive Secretary. To calculate the actual maximum pounds of toxics emitted per eight-hour period (numerator in the Risk Index expression), the total scaled-up (to scale up, the proposed emissions are multiplied by a factor of 5.43) emissions in pounds per year of the chemical compound after the proposed increase is divided by 2,000 hours of operation per year (assumed at 40 hours per week and 50 weeks per year).

If you have any questions or concerns, please contact Arjun Ram at (801) 536-4066.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:AR:dn

cc: Davis County Health Department
EPA Region VIII, Mike Owens

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

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Governor
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Reply to: State of Utah
Division of Air Quality
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Salt Lake City, Utah 84114-4820

August 20, 1993

DAQE-0719-93

James R. Van Orman
Hill Air Force Base
OO-ALC/EM
7276 Wardleigh Road
Hill Air Force Base, Utah 84056-5127

Re: Approval Order for Air Permit for Emergency Power Generators
Davis County CDS A2 NA Title V

Dear Mr. Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order.

General Conditions:

1. This AO applies to the following organization:

   Headquarters, Ogden Air Logistics Center OO-ALC/EM (AFMC)
   7276 Wardleigh Road
   Hill Air Force Base, Utah 84056-5127

   The emergency power generating equipment listed in Attachment 1 of this AO shall be operated at the specified locations listed in the attachment.

   Universal Transverse Mercator (UTM) Coordinate System: 4,552,000 meters Northing, 418,000 meters Easting (Modeling will require more accurate UTM coordinates)

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (HAFB) shall install and operate the 81 emergency generators, as listed in Attachment 1 of this AO, according to the information submitted in the Notice

of Intent dated April 1, 1993, and the Notices of Intent associated with the generator engines operating under current AOs.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the 81 emergency generators as listed in Attachment 1 to this AO.

6. This AO shall replace all conditions regarding generators that are listed in Attachment 1 that have a valid AO. These AOs are dated January 4, 1993 (DAQE-1171-92), May 22, 1992 (DAQE-492-92), November 22, 1988 (BAQE-585-88), June 15, 1988 (BAQE-260-88), June 15, 1988 (BAQE-257-88), March 10, 1983, and March 20, 1980.

Limitations and Tests Procedures

7. Visible emissions from any emergency generator emission source associated with this AO shall not exceed 20% opacity after warm-up. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

8. All emergency generators listed in Attachment 1 shall be limited to 100 operating hours per 12-month period for each generator engine. This limit shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC.

   Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month, a new 12-month total shall be calculated using data from the previous 12 months. Records of operating hours shall be kept for all periods when the generators are in operation. Records of operating hours shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending, with the date of the request. Operating hours shall be determined by engine operating hour meters. The records shall be kept on a monthly basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

9. Any or all of the diesel emergency power generator engines listed in Attachment 1 shall be stack tested for NO_x emissions if directed by the Executive Secretary. The emission rate/concentration shall not exceed 14 grams of NO_x per horsepower-hour. The test method used shall be 40 CFR 60, Appendix A, Method 7 (all Method 7 tests are acceptable test methods). A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stack need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 1, and to provide Occupational Safety and Health Administration (OSHA) approvable access to the test location shall be retrofitted to the emission point.

The horsepower output during all compliance testing shall be no less than 90% of rated horsepower (KW) rating per engine.

Fuels

10. The sulfur content of any diesel fuel oil used in the emergency generator engines shall not exceed 0.50 percent by weight (0.05% when available). Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Construction Limitations

11. Eighteen months from the date of this AO, the Executive Secretary shall be notified in writing of the status of this project. If installation of all generators are complete and operation has commenced a notice is not required.

12. All records referenced in this AO, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

13. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors.

14. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

15. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

16. The owner/operator has submitted to the Executive Secretary an emergency plan dated October 5, 1990. This plan should identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (all emergency generators located on the contiguous confines of Hill AFB) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	Particulate	2.86
B.	PM_{10}	2.86
C.	SO_2	2.66
D.	NO_x	40.07
E.	CO	8.67
F.	VOC	3.21
G.	Aldehydes	0.60

These calculations are for the purposes of determining the applicability of the prevention of significant deterioration and nonattainment area major source requirements of the UACR.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by the state, the federal agencies, or both.

	Pollutant	Tons/yr
A.	TSP	2.86 ton/yr
B.	SO_x	2.66 ton/yr
C.	NO_x	40.07 tons/yr

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:HGN:sbq

cc: Davis County Health Department

Sorted by building number

Attachment 1

Hill Air Force Base Emergency Generators

Item No.	Building Number	Manufacturer	Model	Serial #	Year	KW	Fuel	Annual op hours 1992	Maximum allowable op hours	NOX 14.00 gm/hp-hr lbs/year	CO 3.03 gm/hp-hr lbs/year	SOX 0.93 gm/hp-hr lbs/year	PM 1.00 gm/hp-hr lbs/year	VOC 1.12 gm/hp-hr lbs/year	ALD 0.21 gm/hp-hr lbs/year	Current Approval Order number or date
1	7	John Deere	T0239TZ241	4239TP0011	90	50	D	12.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
2	9	Cummins	6BT-5-91	44139583	86	100	D	13.50	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
3	101	Cat	3116	2SG00483	88	125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
4	111	Cat	3416	75Z00456	91	300	D	4.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
5	141	Cat (not installed	3412DIT			500	D	12.00	100.00	2,069.49	447.90	137.62	147.82	165.56	31.04	DAQE-1171-92
6	141	Cat (not installed)				350	D	12.00	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	DAQE-1171-92
7	201	Cummins	NT855G4	11469041	88	200	D	27.90	100.00	827.80	179.16	55.05	59.13	66.22	12.42	
8	251	Cat	3114	6AF00402	88	50	D	16.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
9	361	Detroit	4A0234430	10437000	65	66	D	30.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
10	1331	John Deere	6359TP002	T06359	89	80	D	15.90	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
11	2001	Detroit	10647311	GA422903	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
12	2001	Detroit	10647311	GA422749	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
13	2001	Detroit	10647311	GA423076	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
14	2001	Detroit	10647311	GA422898	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
15	2001	Detroit	10647311	6A423230	83	175	D		100.00	310.42	67.18	20.64	22.17	24.83	4.66	
16	221	Cummins	NTA855	30125017	86	350	D	26.70	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
17	2601	Cummins	KTA38G5	31111066	85	750	D	15.70	100.00	3,104.24	671.85	206.43	221.73	248.34	46.56	
18	400	Onan	L423D11	H833702711	83	20	D	47.50	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
19	505	Cummins	VTA28G52	37112182	86	600	D	9.80	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
20	507	Onan	45.0DYJ-15R	17803588531	79	45	D	48.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
21	511	Onan	30.0EK-15R	18709248931	88	30	D	100.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
22	566	Cat	3306B01	2AJ00536	90	225	D	9.00	100.00	931.27	201.55	61.93	66.52	74.50	13.97	DAQE-1171-92
23	570	Cummins	NRTO8G	500924	63	100	D	35.80	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
24	575	Cat	3412 DITA	81Z12595	91	600	D	17.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	DAQE-1171-92
25	590	Onan	15DRDJ	J904609171	79	15	D	15.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
26	598	White	D196ERI	343362691	79	45	D	16.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
27	727	Cummins	483.9	44249904	89	30	D	112.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
28	727	Cat	3412DTI	38S13871	88	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
29	758	Cummins	NT495GS	56712	83	100	D	15.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
30	759	Onan	H76PI	1624871	76	15	D	3.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
31	769	Onan	6AT34-91	5311288321	91	40	D	17.00	100.00	165.56	35.83	11.01	11.83	13.24	2.48	
32	774	Cummins	6BT-5-91	44140217	86	80	D	8.00	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
33	776	White	N/A	3435678	79	45	D	23.10	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
34	780	Cummins	KTA1150G	C790406269	79	350	D	12.90	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
35	782	John Deere	6414TF	516236CD	82	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
36	782	Cat	3208	03Z07476	87	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
37	783	Cat	3306B	6A06687	87	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
38	799	Cummins	4B39	69011341	69	30	D	18.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
39	825	Cat	3406B	41B17541	58	300	D	18.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
40	830	Hercules	D298ERI	52-30-561	65	30	D	14.20	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
41	839	Cummins	N1855C2	30106793	80	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	20-Mar-80
42	851	Cummins	NT855F3	11245213	84	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
43	851	Cummins	NT855F3	11232676	84	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
44	877	Cummins	6CTA83G1	443506	88	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	BAQE-257-88
45	900	White	M-131	UK3436721	79	60	D	13.40	100.00	248.34	53.75	16.51	17.74	19.87	3.73	
46	915	Cummins	4B39	4A2065011	87	20	D	12.10	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
47	925	Cummins	NTA495	52633	86	155	D	14.40	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
48	1102	Cummins	KTA19G5	25145921	86	155	D	14.30	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
48	1151	Perkins	ED22433	0894351	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	DAQE-1171-92
49	1152	Perkins	ED22433	894351	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
50	1204	Allis Chalm	70001	7-21581	68	70	D	29.00	100.00	289.73	62.71	19.27	20.69	23.18	4.35	
51	1212	(Not installed)				200	D	112.00	100.00	827.80	179.16	55.05	59.13	66.22	12.42	DAQE-492-92
52	1213	(Not installed)				125	D	112.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	DAQE-492-92
53	1214	Cummins	NTA855G2	34371	90	300	D	23.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
54	1219	Cat	3304B	83Z05403	89	125	D	11.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
55	1230	Cummins	NT855GS3	30122838	86	260	D	112.00	100.00	1,076.13	232.91	71.56	76.87	86.09	16.14	
56	1250	Onan	067LTI	52145	85	125	D	13.10	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
57	1286	Cat	3208	SVP00855	89	150	D	18.00	100.00	620.85	134.37	41.29	44.35	49.67	9.31	
58	1311	Onan	600JB	CR18100AC	85	6	D	15.00	100.00	24.83	5.37	1.65	1.77	1.99	0.37	
59	1538	Cat	D333	87Z22651	70	110	D	48.00	100.00	455.29	98.54	30.28	32.52	36.42	6.83	
60	1570	Cummins	483.9	44249878	86	30	D	2.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
61	1570	Cat	3406D	6TB04619	88	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
62	1590	Onan	6CTA83G1	4470079	92	175	D	75.00	100.00	724.32	156.76	48.17	51.74	57.95	10.86	
63	1803	Cat	3208	90N67185	85	100	D	112.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
64	11531	MMM	TDZ26-61	2266750471	88	80	D	15.70	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
65	11537	Allis Chalm	70001	4336820	68	75	D	126.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
66	11538	Cat	D330	85B18121	70	100	D	48.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
67	1275-N	Onan	KTA19G2	25166568	89	600	D	112.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
68	1275-S	Onan	VTA28G2	31132286	84	400	D	112.00	100.00	1,655.59	358.32	110.10	118.26	132.45	24.83	
69	1-A	Detroit	6A0231	6F-45862	79	65	D	112.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
70	519-1	Cat	3508	22Z02999	89	900	D	32.00	100.00	3,725.08	806.21	247.72	266.08	298.01	55.88	
71	519-2	Cat	3508	81Z08195	89	475	D	31.00	100.00	1,966.02	425.50	130.74	140.43	157.28	29.49	
72	800-A	Onan	0649	30424.7	87	50	D	10.30	100.00	206.95	44.79	13.76	14.78	16.56	3.10	BAQE-260-88
73	800-A	Onan	0649	30424.7	86	50	D		100.00	206.95	44.79	13.76	14.78	16.56	3.10	
74	800-B	Generac	40L	642381	89	50	D	11.50	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
75	837-1	Cat	D3491	61P01547	84	600	D	3.60	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
76	837-2	Cat	D3491	61P01551	84	600	D	3.50	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
77	837-3	Cat	D3491	61P15491	84	600	D	2.70	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
78	837-4	Cat	D3491	61P15501	84	600	D	3.40	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
79	891-1	Cat	3516STD	4AF00236	88	1700	D	20.80	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88

4.2.4-563

80	891-21Cat	3516STD	4XF00231	88	1700	D	36.40	100.00	7,036.27	1,522.85	467.91	522.59	562.90	105.54	BAQE-585-88
81	891-31Cat	3516STD	4XF00237	88	1700	D	39.40	100.00	7,036.27	1,522.85	467.91	522.59	562.90	105.54	BAQE-585-88
						Avg.	19.35								
							Lbs/Yr		80,134.79	17,343.46	5,328.96	5,723.91	6,410.78	1,202.02	
							Tons/Yr		40.07	8.67	2.66	2.86	3.21	0.60	
Generators in buildings 14, 1212, and 1213 have not been installed.															
Model numbers and serial numbers shall be provided on installation.															
	6/8/93	3:31 PM													

4.2.4-564

Sorted by Serial Number

Attachment 2

Hill Air Force Base Emergency Generators

Item No.	Building Number	Manufacturer	Model	Serial #	Year	KW	Fuel	Annual op hours 1992	Maximum allowable op hours	NOX 14.00 gm/hp-hr lbs/year	CO 3.03 gm/hp-hr lbs/year	SOX 0.93 gm/hp-hr lbs/year	PM 1.00 gm/hp-hr lbs/year	VOC 1.12 gm/hp-hr lbs/year	ALD 0.21 gm/hp-hr lbs/year	Current Approval Order number or date
1	1214	Cummins	NTA855G2	64371	90	300	D	23.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
2	1250	Onan	067LTI	521451	85	125	D	13.10	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
3	925	Cummins	NTA495	526331	86	156	D	14.40	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
4	758	Cummins	NT495GS	567121	83	100	D	15.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
5	800-B	Generac	40L	642381	89	50	D	11.50	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
6	1152	Perkins	ED22433	894351	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
7	759	Onan	H76P1	624871	76	15	D	3.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
8	877	Cummins	6CTA83G	443506	88	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	BAQE-257-88
9	570	Cummins	NRTO8IG	5009241	63	100	D	35.80	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
10	20	Cummins	NT855G4	11469041	88	200	D	27.90	100.00	827.80	179.16	55.05	59.13	66.22	12.42	
11	776	White	N/A	34356781	79	45	D	23.10	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
12	11537	Allis Chalm	70001	43388201	68	75	D	126.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
13	799	Cummins	4839	69011341	69	30	D	18.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
14	36	Detroit	4A0234430	104370001	66	65	D	30.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
15	851	Cummins	NT855F3	11233676	84	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
16	851	Cummins	NT855F3	11245213	84	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
17	1102	Cummins	NTA195GS	25145721	86	156	D	14.30	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
18	1275-N	Onan	KTA19G2	25166658	89	600	D	112.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
19	839	Cummins	N1855C2	30106793	80	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	20-Mar-80
20	1230	Cummins	NT855GS3	30122838	86	260	D	112.00	100.00	1,076.13	232.91	71.56	76.87	86.09	16.14	
21	221	Cummins	NTA855	30125017	86	350	D	26.70	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
22	1275-S	Onan	VTA28G2	31132286	84	400	D	112.00	100.00	1,656.59	358.32	110.10	118.26	132.45	24.83	
23	260	Cummins	KTA38GS1	33111065	85	750	D	15.70	100.00	3,104.24	671.85	206.43	221.73	248.34	46.56	
24	508	White	D198ERI	34336269	79	45	D	16.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
25	505	Cummins	VTA28GS2	37112182	86	600	D	6.80	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
26	9	Cummins	6BT-5-9	44139683	86	100	D	13.50	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
27	724	Cummins	6BT-5-9	44140217	86	80	D	8.00	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
28	1570	Cummins	483.9	44249878	86	30	D	0.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
29	727	Cummins	483.9	44249904	89	30	D	112.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
30	1590	Onan	6CTA83G	44700790	92	175	D	75.00	100.00	724.32	156.76	48.17	51.74	57.95	10.86	
31	11531	MMM	TD226-6	2266750471	88	80	D	15.70	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
32	769	Onan	6AT34-9	5311288321	91	40	D	17.00	100.00	165.56	35.83	11.01	11.83	13.24	2.48	
33	507	Onan	45.0DYJ-15R	1780358853	79	45	D	48.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
34	511	Onan	30.0EK-15R	1870924893	88	30	D	100.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
35	782	Cat	3208	03207476	87	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
36	519-1	Cat	3508	23202909	89	900	D	32.00	100.00	3,725.08	806.21	247.72	266.08	298.01	55.88	
37	565	Cat	33068011	2AJ00536	90	225	D	9.00	100.00	931.27	201.55	61.93	66.52	74.50	13.97	DAQE-1171-92
38	10	Cat	3116	2SG00483	88	125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
39	800-A	Onan	O6491	30424 ?	87	50	D	10.30	100.00	206.95	44.79	13.76	14.78	16.56	3.10	BAQE-260-88
40	800-A	Onan	O6491	30424 ?	86	50	D		100.00	206.95	44.79	13.76	14.78	16.56	3.10	
41	727	Cat	3412DTI	38S13871	88	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
42	825	Cat	3406B	41817541	58	300	D	18.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
43	7	John Deere	T02391Z241	4239TP001	90	50	D	12.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
44	915	Cummins	4839	4A2065011	87	20	D	12.10	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
45	891-2	Cat	3516STDI	4XF002311	88	1700	D	36.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
46	891-1	Cat	3516STDI	4XF002236	88	1700	D	22.80	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
47	891-3	Cat	3516STDI	4XF002237	88	1700	D	39.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
48	782	John Deere	6414TFI	516236CD	82	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
49	830	Hercules	D298ERI	52-30-5611	65	30	D	14.20	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
50	1286	Cat	3208	5YF00855	89	150	D	18.00	100.00	620.85	134.37	41.29	44.35	49.67	9.31	
51	837-1	Cat	D349	61P01547	84	600	D	3.60	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
52	837-2	Cat	D349	61P01551	84	600	D	3.50	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
53	837-3	Cat	D349	61P15491	84	600	D	2.70	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
54	837-4	Cat	D349	61P15501	84	600	D	3.40	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
55	783	Cat	3306B	64Z06871	87	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
56	200	Detroit	0647311	6A232301	83	175	D		100.00	310.42	67.18	20.64	22.17	24.83	4.66	
57	28	Cat	3114	6AF00428	88	50	D	16.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
58	1570	Cat	3406D	6TB04619	88	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
59	1204	Allis Chalm	70001	7-215811	68	70	D	29.00	100.00	289.73	62.71	19.27	20.69	23.18	4.35	
60	111	Cat	3416	75D04561	91	300	D	4.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
61	519-2	Cat	3508	81Z08195	89	475	D	31.00	100.00	1,966.02	425.50	130.74	140.43	157.28	29.49	
62	575	Cat	3412 DITA	81Z12595	91	600	D	17.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	DAQE-1171-92
63	1219	Cat	3304B	83Z06403	89	125	D	11.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
64	11538	Cat	D330	85818121	70	100	D	48.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
65	1538	Cat	D333	87Z22651	70	110	D	48.00	100.00	455.29	98.54	30.28	32.52	36.42	6.83	
66	1803	Cat	3208	90N67185	85	1100	D	112.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
67	780	Cummins	KTA1150G	C790405269	79	350	D	12.90	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
68	1311	Onan	600JB	CR18100AC	85	6	D	15.00	100.00	24.83	5.37	1.65	1.77	1.99	0.37	
69	200	Detroit	0647311	GA4227491	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
70	200	Detroit	0647311	GA4228981	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
71	200	Detroit	0647311	GA4229031	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
72	200	Detroit	0647311	GA4230761	83	175	D	112.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
73	400	Onan	L423D1I1	HB337027111	83	20	D	47.50	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
74	590	Onan	15DRDJI	590460917	79	15	D	15.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
75	1	A1 Detroit	4A02311	JF-458621	79	65	D	112.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
76	1151	Perkins	ED22433	O894351	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	DAQE-1171-92
77	133	John Deere	6359TP002	T06359	89	80	D	15.90	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
78	900	White	M-131	UK3436721	79	60	D	13.40	100.00	248.34	53.75	16.51	17.74	19.87	3.73	
79	14	Cat not inst.	3412DTI			500	D	112.00	100.00	2,069.49	447.90	137.62	147.82	165.56	31.04	DAQE-1171-92
80	14	Cat not inst.				350	D	112.00	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	DAQE-1171-92

4.2.4-565

Attachment 2

80	1212	Not Installed	200	D	112.00	100.00	827.80	179.16	55.06	59.13	66.22	12.42	DAQE-492-92
81	1213	Not Installed	125	D	112.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	DAQE-492-92
				Avg	19.69								
					Lbs/yr		80,134.79	17,343.46	5,328.96	5,723.91	6,410.78	1,202.02	
					Tons/yr		40.07	8.67	2.66	2.86	3.21	0.60	
Generators in buildings 14, 1212, and 1213 have not been installed.													
Model numbers and serial numbers shall be provided on installation.													
6/8/93	3:26 PM												

4.2.4-566

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
OO-ALC/EM
7276 Wardleigh Road
Hill AFB, Utah 84056-5127

RE:	Emergency Power Generators Davis County, CDS A2; NA
ENGINEER:	Herman G. Nellestein
DATE:	May 24, 1993
NOTICE OF INTENT DATED:	April 1, 1993
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-0359
FAX NUMBER	(801) 777-4306/1866
PLANT LOCATION:	Hill Air Force Base, Utah
UTM COORDINATES:	4,552,000 m Northing 418,000 m Easting

FEES:

Filing Fee	$1,500.00
Review Engineer - XXXX hours at $50.00/hour	$000.00
Modeler - XXXX hours at $50.00/hour	$000.00
Computer Usage Fee	$000.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$1,500.00

APPROVALS:

Review Engineer J Jim Blanchard 6/15/93

Engineering Unit Manager _____

Applicant Contact Made yes - Jay Gupta - 6/8/93

F:\AQ\ENGINEER\DUTCH.N\WP\RVW\HILLGEN.RVW

TYPE OF IMPACT AREA

Attainment Area . . . . . No

Nonattainment Area

- PM_{10} . . . . . Yes
- SO_2 . . . . . Yes
- NO_X . . . . . Yes
- CO . . . . . No
- Ozone . . . . . Yes

NSPS . . . . . No

Subparts A and _____

NESHAP . . . . . No

Subparts A and _____

Toxic Pollutants . . . . . No

_____

Toxic Major Source . . . . . No

[> 10 tpy of any one Hazardous Air Pollutant (HAP) or > 25 tpy of any combination of HAPs]

New Major Source . . . . . No

Major Modification . . . . . No

PSD Permit . . . . . No

PSD Increment . . . . . No
(modeling)

Send to EPA . . . . . No

Operating Permit program . . . . . Yes

FOR MODIFIED SOURCES

The Notice of Intent is for a modification to an existing source. The following standards apply in this review:

NSPS applies to modification? . . . . . NO

PSD review of entire source required? . . . . . NO

NESHAPS applies to modification? . . . . . NO

TOXICS involved in modification? . . . . . NO

TITLE V required for entire source? . . . . . YES

TOXIC MAJOR for modification? . . . . . NO

NONATT MAJOR for entire source? . . . . . Yes

Abstract

Hill Air Force Base (AFB) has requested all emergency generators on base be consolidated under one Approval Order. Some generators were installed prior to 1970. Some were approved previously, and some generators installed since 1970 were never approved. This Approval Order will consolidate all emergency generators as reported by Hill AFB. Please see Attachment 1 for a complete listing.

I. DESCRIPTION OF PROPOSAL

Attachment 1 contains a complete listing of all emergency generators installed at Hill AFB. This listing of 81 generators provides the make, model, serial number, KW rating, and emission calculations. Emission factors were taken from EPA's *Compilation of Air Pollutant Emission Factors* (AP-42) manual, Table 3.3-1 (Emission factors for uncontrolled gasoline and diesel industrial engines), dated September 1985, Supplement E, dated October 1992. Several generators were approved in the past with 100 hours/year maximum operation hour restrictions. This Approval Order (AO) will consolidate all emergency generators into one AO. The maximum allowable operating time will be restricted to 100 hours/year for all generators. Additional restrictions will be the use of low sulfur diesel fuel and proper maintenance.

II. EMISSION SUMMARY

The emission reduction from this source (all emergency generators) will be as follows:

Pollutant	Current Emissions	Emission Increases	Total Emissions
Particulate	2.86	0	2.86
PM_{10}	2.86	0	2.86
SO_2	2.66	0	2.66
NO_X	40.07	0	40.07
CO	8.67	0	8.67
VOC	3.21	0	3.21
Aldehydes	0.60	0	0.60

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

Most of the generators listed in Attachment 1 have been install between 1963 and the present. Some have yet to be installed. Several generators were previously approved (see last column on Attachment 1). All of the engines were installed prior to the Lean Burn/Clean Burn technology becoming available. No requirement to retrofit these generator engines with catalytic converters is recommended because these are intended for emergency purposes only and all engines have been previously installed and operated. Most operating hours will be for periodic maintenance and servicing. They all burn Diesel fuel. Low sulfur diesel fuel will be required.

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES

(UAC)

This Notice of Intent is for the addition of several minor point sources to and existing major source. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this Notice of Intent:

1. R307-1-3.1, UAC - Notice of Intent required for a new source, modified source, or new piece of control equipment. This rule does not apply.

2. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for natural gas fuel burning equipment with a rated capacity of less than 5 x 10^6 BTU per hour. This rule does not apply.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the Utah Air Quality Board (UAQB) is required before the Executive Secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply to this NOI because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications that would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. This rule does not apply.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. This rule does not apply.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990. This rule does not apply.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. This source is not listed in the SIP. Therefore, this rule does not apply.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary. This source must comply with this rule.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules, the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP			
	Three Hour	24 Hour	Annual
Class I Area		**10 $\mu g/m^3$**	**5 $\mu g/m^3$**
Class II Area		**37 $\mu g/m^3$**	**19 $\mu g/m^3$**
SO_2			
Class I Area	**25 $\mu g/m^3$**	**5 $\mu g/m^3$**	**25 $\mu g/m^3$**
Class II Area	**512 $\mu g/m^3$**	**91 $\mu g/m^3$**	**20 $\mu g/m^3$**
NO_X			
Class I Area			**2.5 $\mu g/m^3$**
Class II Area			**25 $\mu g/m^3$**

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling (Tons per Year)		
	Nonattainment Areas	Attainment Areas
TSP	10	10
PM_{10}	5	5
SO_2	10	20
NO_X	20	20
CO	25	50
VOC	10	20
O_3	5	5

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations that occur in the state. No known violations have yet occurred.

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed. Hill AFB has no stacks that exceed 65 meters in height. It is in compliance with this rule.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, the 20% opacity limitation applies.

18. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This source, emission point, burns Diesel fuel. The limitation in the rule is 0.5 percent sulfur by weight.

20. R307-1-4.6, UAC - Continuous Emission Monitoring Systems Program - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule two or more emission points, which may interfere with VEO's, shall install an opacity monitor on each stack.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the Executive Secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule covers the following processes:

A. Section 4.9.1 - Petroleum liquid storage

B. Section 4.9.2 - Gasoline transfer/storage

C. Section 4.9.3 - Control of hydrocarbon emissions in refineries

1) Vacuum producing systems
2) Wastewater separators
3) Process unit turnaround
4) Catalytic cracking units
5) Safety pressure relief valves
6) Leaks from petroleum refinery equipment

D. Section 4.9.4 - Degreasing and solvent cleaning operations

1) Cold cleaning facilities
2) Open top vapor degreasers
3) Conveyorized degreasers

E. Section 4.9.5 - Cutback asphalt

F. Section 4.9.6 - VOC used for various processes

1) Section 4.9.6(A) - General Provisions

2) Section 4.9.6(B) - Paper Coating

3) Section 4.9.6(C) - Fabric and Vinyl Coating

4) Section 4.9.6(D) - Metal Furniture Coating VOC Emissions

5) Section 4.9.6(E) - Large Appliance Surface Coating VOC Emissions

6) Section 4.9.6(F) - Magnet Wire Coating VOC Emissions

7) Section 4.9.6(G) - Flat Wood Coating

8) Section 4.9.6(H) - Miscellaneous Metal Parts and Products VOC Emissions

9) Section 4.9.6(I) - Graphic Arts

10) Section 4.9.6(J) - Exemptions

11) Section 4.9.6(K) - Capture Systems

12) Section 4.9.6(L) - Testing and Monitoring

G. Section 4.9.7 - Perchloroethylene Dry Cleaning Plants

H. Section 4.9.8 - Compliance Schedule

This process is not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule applies.

24. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment area for PM_{10} and ozone.

The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. The Division has found through experience that a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS. This is because of the small quantity of emissions involved and the conservative predictions made by modeling.

For VOC emissions, there is no model that can predict an ozone impact directly from VOC emissions. However, since VOC are precursors to ozone formation, this new source will contribute to the existing exceedances of the ozone standard in Davis County. The amount of that contribution has not been decided. The ozone nonattainment area of Davis and Salt Lake Counties must show reasonable further progress toward attainment of the standard. This source, along with all other VOC sources having emissions above 10 tons per year, may have to apply more controls to lower the VOC emissions. This would be a SIP change action.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

1) Maintenance, repair, and replacement

2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternate fuel or raw material if, before the date any standard under this

part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This Notice of Intent is a modification.

28. 40 CFR 60.15, Definition of Reconstruction - the replacement of components of an existing facility to such an extent that:

1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

2) It is technologically and economically feasible to meet the applicable standards set forth in this part

This Notice of Intent is not a reconstruction.

29. R307-1-1.89, Definition of Major Modification - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This Notice of Intent is not a major modification.

30. 40 CFR 80.29, Controls and Prohibitions on Diesel Fuel Quality - The effective date of the regulation is September 20, 1990. This rule implements a new national program of diesel fuel quality control. The rule requires that refiners reduce the sulfur content of on-highway diesel fuel from current average levels of approximately 0.25% to levels not exceeding 0.05%. This rule also requires that on-highway diesel fuel have a minimum cetane index specification of 40 (or meet a maximum aromatics level of 35%).

Both requirements will take effect at all points throughout the distribution system on October 1, 1993. Special provisions providing for a phasing-in of these requirements for small domestic refineries are also included.

Certification diesel fuel will also be changed beginning with both the 1991 and 1994 model years to reflect the above mentioned changes in commercial diesel fuel quality. Vehicles sold in model years 1991 through 1993 will be certified using 0.10% fuel, reflecting the average fuel sulfur level expected to be used over these vehicles' useful lives. Beginning with the 1994 model year, the certification fuel sulfur level would be that of commercial diesel fuel (not to exceed 0.05% by weight) and a minimum cetane index value of 40 will be established.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

General conditions:

1. This Approval Order (AO) applies to the following organization:

   Headquarters, Ogden Air Logistics Center OO-ALC/EM (AFMC)
   7276 Wardleigh Road
   Hill Air Force Base, Utah 84056-5127

   The emergency power generating equipment listed in Attachment 1 of this AO shall be operated at the specified locations listed in the attachment.

   Universal Transverse Mercator (UTM) Coordinate System: 4,552,000 meters Northing, 418,000 meters Easting (Modeling will require more accurate UTM coordinates)

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base (HAFB) shall install and operate the 81 emergency generators, as listed in Attachment 1 of this Approval Order, according to the information submitted in the Notice of Intent (NOI) dated April 1, 1993 and NOIs associated with generator engines operating under current AOs.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the 81 emergency generators as listed in Attachment 1 to this Approval Order.

6. This Approval Order shall replace all conditions regarding generators that are listed in Attachment 1 that have a valid AO. These AOs are dated January 4, 1993 (DAQE-1171-92), May 22, 1992 (DAQE-492-92), November 22, 1988 (BAQE-585-88), June 15, 1988 (BAQE-260-88), June 15, 1988 (BAQE-257-88), March 10, 1983, and March 20, 1980.

Limitations and tests procedures

7. Visible emissions from any emergency generator emission source associated with this Approval Order shall not exceed 20% opacity after warm-up. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

8. All emergency generators listed in Attachment 1 shall be limited to 100 operating hours per 12 month period for each generator engine. This limit shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC.

   Compliance with the annual limitations shall be determined on a rolling 12-month total. Based

on the first day of each month a new 12-month total shall be calculated using data from the previous 12 months. Records of operating hours shall be kept for all periods when the generators are in operation. Records of operating hours shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Operating hours shall be determined by engine operating hour meters. The records shall be kept on a monthly basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

9. Any or all of the diesel emergency power generator engines listed in Attachment 1 shall be stack tested for NO_x emissions if directed by the Executive Secretary. The emission rate/concentration shall not exceed 14 grams of NO_x per horsepower-hour. The test method used shall be 40 CFR 60, Appendix A, Method 7 (all Method 7 tests are acceptable test methods). A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stack need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 1, and to provide Occupational Safety and Health Administration (OSHA) approvable access to the test location shall be retrofitted to the emission point. The horsepower output during all compliance testing shall be no less than 90% of rated horsepower (KW) rating per engine.

Fuels

10. The sulfur content of any Diesel fuel oil used in the emergency generator engines shall not exceed 0.50 percent by weight (0.05% when available). Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Construction limitations

11. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of this project. If installation of all generators are complete and operation has commenced a notice is not required.

12. All records referenced in this Approval Order which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

13. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as; pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, CEMs, etc., shall be installed and operated properly and easily accessible to compliance inspectors.

14. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

15. The owner/ operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

16. The owner/operator has submitted to the Executive Secretary an emergency plan dated October 5, 1990. This plan should identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this source (all emergency generators located on the contiguous confines of Hill AFB) are currently calculated at the following values:

	Pollutant	tons/yr
A.	Particulate	2.86
B.	PM_{10}	2.86
C.	SO_2	2.66
D.	NO_x	40.07
E.	CO	8.67
F.	VOC	3.21
G.	Aldehydes	0.60

These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the federal agencies, or both.

	Pollutant	tons/yr
A.	TSP	2.86 ton/yr
B.	SO_x	2.66 ton/yr
C.	NO_x	40.07 tons/yr

Sorted by building number

Attachment 1

Hill Air Force Base Emergency Generators

Item No.	Building Number	Manufacturer	Model	Serial #	Year	KW	Fuel	Annual op hours 1992	Maximum allowable op hours	NOX 14.00 gm/hp-hr lbs/year	CO 3.03 gm/hp-hr lbs/year	SOX 0.93 gm/hp-hr lbs/year	PM 1.00 gm/hp-hr lbs/year	VOC 1.12 gm/hp-hr lbs/year	ALD 0.21 gm/hp-hr lbs/year	Current Approval Order number or date
1	7	John Deere	T02391T224	4239TF001	90	50	D	12.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
2	9	Cummins	6BT-5-9	44139583	86	100	D	13.50	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
3	10	Cat	3116	2SG00483	88	125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
4	11	Cat	3416	75Z00456	91	300	D	4.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
5	14	Cat (not installed	3412DIT			500	D	12.00	100.00	2,069.49	447.90	137.62	147.82	165.56	31.04	DAQE-1171-92
6	14	Cat (not installed)				350	D	12.00	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	DAQE-1171-92
7	20	Cummins	NT855G4	1146904	88	200	D	27.90	100.00	827.80	179.16	55.05	59.13	66.22	12.42	
8	28	Cat	3114	6AF00428	88	50	D	16.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
9	36	Detroit	4A0234430	10437000	65	66	D	30.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
10	133	John Deere	6359TF002	T06359	89	80	D	15.90	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
11	200	Detroit	1064731	GA422903	83	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
12	200	Detroit	1064731	GA422749	83	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
13	200	Detroit	1064731	GA423076	83	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
14	200	Detroit	1064731	GA422898	83	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
15	200	Detroit	1064731	6A423230	83	75	D		100.00	310.42	67.18	20.64	22.17	24.83	4.66	
16	221	Cummins	NTA855	30125017	86	350	D	26.70	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
17	260	Cummins	KTA38GS1	33111065	85	750	D	15.70	100.00	3,104.24	671.85	206.43	221.73	248.34	46.56	
18	400	Onan	L423D11	HB33702711	83	20	D	47.50	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
19	505	Cummins	VTA28GS2	37112182	86	600	D	6.80	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
20	507	Onan	45.0DYJ-15R	1780358853	79	45	D	48.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
21	511	Onan	30.0EK-15R	1870924893	88	30	D	100.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
22	565	Cat	3306B01	2AJ00536	90	225	D	9.00	100.00	931.27	201.55	61.93	66.52	74.50	13.97	DAQE-1171-92
23	570	Cummins	NRTO8IG	500924	63	100	D	35.80	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
24	575	Cat	3412 DITA	81Z12595	91	600	D	17.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	DAQE-1171-92
25	590	Onan	15DRDJ	J900460917	79	15	D	15.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
26	598	White	D198ER	34336269	79	45	D	16.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
27	727	Cummins	483.9	44249904	89	30	D	12.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
28	727	Cat	3412DT	38S13871	88	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
29	758	Cummins	NT495GS	56712	83	100	D	15.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
30	759	Onan	H76P	162487	76	15	D	3.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
31	769	Onan	6AT34-91	5311288321	91	40	D	17.00	100.00	165.56	35.83	11.01	11.83	13.24	2.48	
32	774	Cummins	6BT-5-9	44140217	86	80	D	8.00	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
33	776	White	N/A	3435678	79	45	D	23.10	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
34	780	Cummins	KTA1150G	C790405269	79	350	D	12.90	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
35	782	John Deere	6414TF	516236CD	82	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
36	782	Cat	3208	03Z07476	87	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
37	783	Cat	33068	64Z06687	87	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
38	799	Cummins	4B39	69011134	69	30	D	18.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
39	825	Cat	34068	41B17754	58	300	D	18.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
40	830	Hercules	D298ER	52-30-561	65	30	D	14.20	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
41	839	Cummins	N1855C2	30106793	80	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	20-Mar-80
42	851	Cummins	NT855F3	11245213	84	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
43	851	Cummins	NT855F3	11232676	84	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
44	877	Cummins	6CTA83G	443506	88	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	BAQE-257-88
45	900	White	M-13	UK3436721	79	60	D	13.40	100.00	248.34	53.75	16.51	17.74	19.87	3.73	
46	915	Cummins	4B39	4A205501	87	20	D	12.10	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
47	925	Cummins	NTA495	52633	86	155	D	14.40	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
48	1102	Cummins	NTA195GS	25145921	86	155	D	14.30	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
49	1151	Perkins	ED22433	O89435	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	DAQE-1171-92
50	1152	Perkins	ED22433	89435	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
51	1204	Allis Chalm	7000	7-21581	68	70	D	29.00	100.00	289.73	62.71	19.27	20.69	23.18	4.35	
52	1212	(Not Installed)				200	D	12.00	100.00	827.80	179.16	55.05	59.13	66.22	12.42	DAQE-492-92
53	1213	(Not Installed)				125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	DAQE-492-92
54	1214	Cummins	NTA855G2	6437	90	300	D	23.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
55	1219	Cat	33048	83Z06403	89	125	D	11.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
56	1230	Cummins	NT855GS3	30122838	86	260	D	12.00	100.00	1,076.13	232.91	71.56	76.87	86.09	16.14	
57	1250	Onan	067LT	52145	85	125	D	13.10	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
58	1286	Cat	3208	5YF00855	89	150	D	18.00	100.00	620.85	134.37	41.29	44.35	49.67	9.31	
59	1311	Onan	60DJB	CR181100AC	85	6	D	15.00	100.00	24.83	5.37	1.65	1.77	1.99	0.37	
60	1538	Cat	D333	87Z2265	70	110	D	48.00	100.00	455.29	98.54	30.28	32.52	36.42	6.83	
61	1570	Cummins	483.9	44249878	86	30	D	0.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
62	1570	Cat	3406D	6TB04619	88	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
63	1590	Onan	6CTA83G	44700790	92	175	D	75.00	100.00	724.32	156.76	48.17	51.74	57.95	10.86	
64	1803	Cat	3208	90N67185	85	100	D	12.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
65	11531	MMM	TD226-6	226675047	88	80	D	15.70	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
66	11537	Allis Chalm	7000	4338820	68	75	D	126.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
67	11538	Cat	D330	85B1812	70	100	D	48.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
68	1275-N	Onan	KTA19G2	25166558	89	600	D	12.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
69	1275-S	Onan	VTA28G2	31132286	84	400	D	12.00	100.00	1,655.59	358.32	110.10	118.26	132.45	24.83	
70	1-A	Detroit	4A0231	JF-45862	79	65	D	12.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
71	519-1	Cat	3508	23Z02909	89	900	D	32.00	100.00	3,725.08	806.21	247.72	266.08	298.01	55.88	
72	519-2	Cat	3508	81Z08195	89	475	D	31.00	100.00	1,966.02	425.50	130.74	140.43	157.28	29.49	
73	800-A	Onan	O649	30424 ?!	87	50	D	0.30	100.00	206.95	44.79	13.76	14.78	16.56	3.10	BAQE-260-88
74	800-A	Onan	O649	30424 ?!	86	50	D		100.00	206.95	44.79	13.76	14.78	16.56	3.10	
75	800-B	Generac	40L	64238	89	50	D	11.50	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
76	837-1	Cat	D349	61P01547	84	600	D	3.60	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
77	837-2	Cat	D349	61P01551	84	600	D	3.50	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
78	837-3	Cat	D349	61P1549	84	600	D	2.70	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
79	837-4	Cat	D349	61P1550	84	600	D	3.40	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
80	891-1	Cat	3516STD	4XF00236	88	1700	D	22.80	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88

4.2.4-581

80	891-2	Cat	3516STD	40F00231	88	1700	D	36.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
81	891-3	Cat	3516STD	40F00237	88	1700	D	39.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
							Avg	19.35								
								Lbs/yr		80,134.79	17,343.46	5,328.96	5,723.91	6,410.78	1,202.02	
								Tons/yr		40.07	8.67	2.66	2.86	3.21	0.60	
	Generators in buildings 14, 1212, and 1213 have not been installed.															
	Model numbers and serial numbers shall be provided on installation.															
	6/8/93	3:31 PM														

4.2.4-582

Sorted by Serial Number

Attachment 2

Hill Air Force Base Emergency Generators

em No.	Building Number	Manufacturer	Model	Serial #	Year	KW	Fuel	Annual op hours 1992	Maximum allowable op hours	NOX 14.00 gm/hp-hr lbs/year	CO 3.03 gm/hp-hr lbs/year	SOX 0.93 gm/hp-hr lbs/year	PM 1.00 gm/hp-hr lbs/year	VOC 1.12 gm/hp-hr lbs/year	ALD 0.21 gm/hp-hr lbs/year	Current Approval Order number or date
1	1214	Cummins	NTA855G2	6437	90	300	D	23.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
2	1250	Onen	067LT	52145	85	125	D	13.10	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
3	925	Cummins	NTA495	52633	86	155	D	14.40	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
4	758	Cummins	NT495GS	56712	83	100	D	15.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
5	800-B	Generac	40L	64238	89	50	D	11.50	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
6	1152	Perkins	ED22433	89435	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
7	759	Onen	H76P	162487	76	15	D	3.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
8	877	Cummins	6CTA83G	443506	88	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	BAQE-257-88
9	570	Cummins	NRTO8IG	500924	63	100	D	35.80	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
10	20	Cummins	NT855G4	1146904	88	200	D	27.90	100.00	827.80	179.16	55.05	59.13	66.22	12.42	
11	776	White	N/A	3435678	79	45	D	23.10	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
12	11537	Allis Chalm	7000	4338820	68	75	D	126.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
13	799	Cummins	4B39	6901134	69	30	D	18.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
14	36	Detroit	4A02344301	10437000	65	65	D	30.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
15	851	Cummins	NT855F3	11232676	84	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
16	851	Cummins	NT855F3	11245213	84	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
17	1102	Cummins	NTA195GS	25145921	86	155	D	14.30	100.00	641.54	138.85	42.66	45.82	51.32	9.62	
18	1275-N	Onan	KTA19G2	25166558	89	600	D	12.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
19	839	Cummins	N1855C2	30106793	80	150	D	7.80	100.00	620.85	134.37	41.29	44.35	49.67	9.31	20-Mar-80
20	1230	Cummins	NT855GS3	30122838	86	260	D	12.00	100.00	1,076.13	232.91	71.56	76.87	86.09	16.14	
21	221	Cummins	NTA855	30125017	86	350	D	26.70	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
22	1275-S	Onan	VTA28G2	31132286	84	400	D	12.00	100.00	1,655.59	358.32	110.10	118.26	132.45	24.83	
23	260	Cummins	KTA38GS1	33111065	85	750	D	15.70	100.00	3,104.24	671.85	206.43	221.73	248.34	46.56	
24	508	White	D198ER	34336269	79	45	D	16.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
25	505	Cummins	VTA28GS2	37112182	86	600	D	6.80	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	
26	9	Cummins	6BT-5-91	44139583	86	100	D	13.50	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
27	774	Cummins	6BT-5-91	44140217	86	80	D	8.00	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
28	1570	Cummins	4B3.9	44249878	86	30	D	0.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
29	727	Cummins	4B3.9	44249904	89	30	D	12.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
30	1590	Onen	6CTA83G	44700790	92	175	D	75.00	100.00	724.32	156.76	48.17	51.74	57.95	10.86	
31	11531	MMM	TD226-6	226675047	88	80	D	15.70	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
32	769	Onan	6AT34-91	531128832	91	40	D	17.00	100.00	165.56	35.83	11.01	11.83	13.24	2.48	
33	507	Onan	45.0OYJ-15R	17803588531	79	45	D	48.00	100.00	186.25	40.31	12.39	13.30	14.90	2.79	
34	511	Onan	30.0EK-15R	18709248931	88	30	D	100.00	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
35	782	Cat	3208	03207476	87	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
36	519-1	Cat	3508	23Z02909	89	900	D	32.00	100.00	3,725.08	806.21	247.72	266.08	298.01	55.88	
37	565	Cat	3306B01	2AJ00536	90	225	D	9.00	100.00	931.27	201.55	61.93	66.52	74.50	13.97	DAQE-1171-92
38	10	Cat	3116	2SG00483	88	125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
39	800-A	Onan	O649	30424 ?	87	50	D	10.30	100.00	206.95	44.79	13.76	14.78	16.56	3.10	BAQE-260-88
40	800-A	Onan	O649	30424 ?	86	50	D		100.00	206.95	44.79	13.76	14.78	16.56	3.10	
41	727	Cat	3412DT	38S13871	88	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
42	825	Cat	3406B	41B1754	58	300	D	18.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
43	7	John Deere	T0239T224	4239TF001	90	50	D	12.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
44	915	Cummins	4B39	4A205501	87	20	D	12.10	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
45	891-2	Cat	3516STD	4XF00231	88	1700	D	36.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
46	891-1	Cat	3516STD	4XF00236	88	1700	D	22.80	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
47	891-3	Cat	3516STD	4XF00237	88	1700	D	39.40	100.00	7,036.27	1,522.85	467.91	502.59	562.90	105.54	BAQE-585-88
48	782	John Deere	6414TF	516236CD	82	75	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
48	830	Hercules	D298ER	52-30-S61	65	30	D	14.20	100.00	124.17	26.87	8.26	8.87	9.93	1.86	
49	1286	Cat	3208	SYF00855	89	150	D	18.00	100.00	620.85	134.37	41.29	44.35	49.67	9.31	
50	837-1	Cat	D349	61P015471	84	600	D	3.60	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
51	837-2	Cat	D349	61P01551	84	600	D	3.50	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
52	837-3	Cat	D349	61P1549	84	600	D	2.70	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
53	837-4	Cat	D349	61P1550	84	600	D	3.40	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	10-Mar-83
54	783	Cat	3306B	64Z06871	87	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
55	200	Detroit	1064731	6A423230	83	175	D		100.00	310.42	67.18	20.64	22.17	24.83	4.66	
56	28	Cat	3114	6AF00428	88	50	D	16.00	100.00	206.95	44.79	13.76	14.78	16.56	3.10	
57	1570	Cat	3406D	6TB04619	88	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
58	1204	Allis Chalm	7000	7-21581	68	70	D	29.00	100.00	289.73	62.71	19.27	20.69	23.18	4.35	
59	11	Cat	3416	75Z00456	91	300	D	4.00	100.00	1,241.69	268.74	82.57	88.69	99.34	18.63	
60	519-2	Cat	3508	81Z08195	89	475	D	31.00	100.00	1,966.02	425.50	130.74	140.43	157.28	29.49	
61	575	Cat	3412 DITA	81Z12595	91	600	D	17.00	100.00	2,483.39	537.48	165.15	177.38	198.67	37.25	DAQE-1171-92
62	1219	Cat	3304B	83Z05403	89	125	D	11.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	
63	11538	Cat	D330	8581812	70	100	D	48.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
64	1538	Cat	D333	8722265	70	110	D	48.00	100.00	455.29	98.54	30.28	32.52	36.42	6.83	
65	1803	Cat	3208	90N67185	85	100	D	12.00	100.00	413.90	89.58	27.52	29.56	33.11	6.21	
66	780	Cummins	KTA1150G	C790405269	79	350	D	12.90	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	
67	1311	Onan	60DJB	CR18100AC	85	6	D	15.00	100.00	24.83	5.37	1.65	1.77	1.99	0.37	
68	200	Detroit	1064731	GA422749	83	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
69	200	Detroit	1064731	GA422898	83	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
70	200	Detroit	1064731	GA422903	83	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
71	200	Detroit	1064731	GA423076	83	175	D	12.00	100.00	310.42	67.18	20.64	22.17	24.83	4.66	
72	400	Onan	L423D11	HB33702711	83	20	D	47.50	100.00	82.78	17.92	5.50	5.91	6.62	1.24	
73	590	Onen	15DRDJ	J90460917	79	15	D	15.00	100.00	62.08	13.44	4.13	4.43	4.97	0.93	
74	1-A	Detroit	4A0231	JF-45862	79	65	D	12.00	100.00	269.03	58.23	17.89	19.22	21.52	4.04	
75	1151	Perkins	ED22433	O89435	68	15	D	14.80	100.00	62.08	13.44	4.13	4.43	4.97	0.93	DAQE-1171-92
76	133	John Deere	6359TF002	T063591	89	80	D	15.90	100.00	331.12	71.66	22.02	23.65	26.49	4.97	
77	900	White	M-13	UK3436721	79	60	D	13.40	100.00	248.34	53.75	16.51	17.74	19.87	3.73	
78	14	Cat not inst.	3412DIT			500	D	12.00	100.00	2,069.49	447.90	137.62	147.82	165.56	31.04	DAQE-1171-92
79	14	Cat not inst.				350	D	12.00	100.00	1,448.64	313.53	96.33	103.47	115.89	21.73	DAQE-1171-92

4.2.4-583

Attachment 2

80	1212	Not installed			200	D	12.00	100.00	827.80	179.16	55.05	59.13	66.22	12.42	DAQE-492-92
81	1213	Not installed			125	D	12.00	100.00	517.37	111.97	34.41	36.96	41.39	7.76	DAQE-492-92
						Avg.	19.69								
							Lbs/yr		80,134.79	17,343.46	5,328.96	5,723.91	6,410.78	1,202.02	
							Tons/yr		40.07	8.67	2.66	2.86	3.21	0.60	
Generators in buildings 14, 1212, and 1213 have not been installed.															
Model numbers and serial numbers shall be provided on installation.															
6/8/93	3:26 PM														

4.2.4-584

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
F. Burnell Cordner
Director

150 North 1950 West
Salt Lake City, Utah 84114
(801) 536-4000
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(801) 538-6621 T.D.D.

Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

DAQE-0542-93

June 11, 1993

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, UT 84111

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune on June 18, 1993.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 144820, Salt Lake City, Utah 84114-4820.

Sincerely,

Diane Nielson

Diane Nielson
Office Technician
Division of Air Quality

LRM:dn

Enclosure

4.2.4-585

NOTICE

The following notice of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, has been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. James R. Van Orman

   Department of the Air Force

   Hill Air Force Base, Utah

   Air Permit for Emergency Power Generators

   Davis County - CDS A2 NA Title V

Emission Summary

Pollutant	Current Emission	Emissions Increases
Particulate	2.86	0
PM_{10}	2.86	0
SO_2	2.66	0
NO_x	40.07	0
CO	8.67	0
VOC	3.21	0
Aldehydes	0.06	0

2. Russel Larsen

   Lakeview Rock Products, Inc.

   North Salt Lake

P.O. Box 870256

West Bountiful, Utah

Increased Production and Processing Limitations

Davis County - CDS B NA NSPS Title V

Emissions Summary

TSP	9.29 tons/yr
PM_{10}	3.21 tons/yr
SO_2	0.47 tons/yr
NO_x	5.52 tons/yr
CO	2.30 tons/yr
VOC	0.50 tons/yr
Aldehydes	0.11 tons/yr

3. Stephen L. Aardema

Thatcher Company

Thatcher Company

1905 West Fortune Road

Salt Lake City, Utah

Impinjet, Sulfur Dioxide, Chlorine, and Ferric Chloride Scrubbers

Salt Lake County - CDS B NA Toxics

Emissions Summary

The emissions from this source (all four scrubbers will be a follows:

Pollutant	Current Emissions	Emission Increase
SO_2	0.405	0
NO_x	0.034	0
Cl_2	0.033	0

4. Dave Peck

Waste Management of Utah, Inc.

8652 South 4000 West

West Jordan, Utah

Paint Booth

Salt Lake County - CDS B NA Toxics

Emissions Summary

TSP	0.10 tons/yr
PM_{10}	0.03 tons/yr
SO_2	0.00 tons/yr
NO_x	0.32 tons/yr
CO	0.07 tons/yr
VOC	4.02 tons/yr
Methane	0.01 tons/yr

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction project.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 150 North 1950 West, Salt Lake City, Utah 84114-4820. Written comments received by the Division, at the same address on or before July 18, 1993 will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: June 18, 1993

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-0787-92

August 17, 1992

Newspaper Agency
Legal Advertising Department
157 Regent Street
Salt Lake City, UT 84111

This letter will confirm the authorization to publish the attached NOTICE in the Deseret News and the Salt Lake Tribune on August 25, 1992.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84114-4820.

Sincerely,

Cheery Love
Office Technician
Division of Air Quality

MK:cl

Enclosure

4.2.4-590

NOTICE

The following Notices of Intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Rules, have been received for consideration by the Executive Secretary, Utah Air Quality Board:

1. Department of the Air Force
   Headquarters Ogden AFLC
   Hill Air Force Base, UT 84056-5990

Emergency Generators and Media Blast Booth
Davis County - CDS NA

Existing Emissions (from existing emergency generator in Building 575)

Particulate	0.04 ton/yr
PM_{10}	0.02
SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

Proposed Emissions (from new generator)

Particulate	0.09 ton/yr
PM_{10}	0.05
SO_2	0.08
NO_x	1.24
CO	0.26
VOC	0.10
Aldehydes	0.02

Net Increase in Emissions

Particulate	0.05 ton/yr
PM_{10}	0.03

SO_2	0.04
NO_x	0.62
CO	0.13
VOC	0.05
Aldehydes	0.01

2. Southwest Soil Remediation, Inc.
   6262 N. Swan, Suite 200A
   Tucson, AZ 85718

Mobile - Soil Decontaminator

Mobile County - CDS B NA

Emissions were calculated using a maximum concentration of 5000 milligrams of VOC per kilogram contaminated soil and maximum contaminated soil throughput of 12.5 tons/hr.

Proposed Emissions

Particulate	4.08	tons/year
PM_{10}	2.94	
SO_x	1.38	
NO_x	24.50	
CO	6.02	
VOC	7.38	

The engineering evaluation and air quality impact analysis have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84114-4820. Written comments received by the Division, at the

same address on or before September 24, 1992 will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the project.

Date of Notice: August 25, 1992

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
(801) 536-4099 Fax
(801) 538-4414 T.D.D.

DAQE-824-94

September 29, 1994

James R. Van Orman
Hill Air Force Base
Headquarters Ogden Air Logistics Center
Dept. of the Air Force
Hill Air Force Base, Utah 84056

Re: Approval Order For Used Oil Burner/Boiler Permit Modification
Davis County CDS B NA

Dear Mr. Van Orman:

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:AR:dn

cc: Davis County Health Department
Mike Owens, EPA Region VIII
Cheryl Prawl, Solid & Hazardous Waste

4.2.4-434

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER FOR USED OIL BURNER/BOILER PERMIT MODIFICATION

Prepared By: Arjun Ram, Engineering Technician

Reviewed By: Dale Chapman, Engineer

APPROVAL ORDER NUMBER

DAQE-824-94

Date: September 29, 1994

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Your request dated July 18, 1994, to change Approval Order (AO) DAQE-501-92, has been reviewed. The increase for NO_x emissions from the approved used oil boiler while burning used oil is approved. The emissions were changed from 110 ppmv as stated in the original NOI to 240 ppmv. The AO has been modified to reflect the requested change (Reference conditions #5 for the changes).

This project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this AO reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order.

1. Hill Air Force Base shall install and operate the used oil fired boiler rated at 20.9 million BTU/hr in Building 1703 according to the information submitted in the Notice of Intent dated March 27, 1990, with additional information submitted dated October 31, 1990, and requests for modifications dated May 13, 1992, and July 18, 1994. This AO shall replace the AO DAQE-501-92, dated May 26, 1992. The boiler shall be a dual-fuel boiler with the capability of burning used oil.

   A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with the appropriate and relevant conditions.

2. The approved installation shall consist of the following equipment:

   A. 500 hp Scotch Marine 3 Pass Boiler or equivalent, complete with dual (natural gas and used oil) burner - Equivalency shall be determined by the Executive Secretary.

   B. Oil filtration system

   C. Associated piping, control, and alarms, chemical feed pump, chemical mixing tank, and appropriate tie-ins to existing feed water and natural gas line systems

3. Visible emissions from the boiler shall not exceed 20% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The following fuel consumption limits for the boiler shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

   A. Used oil consumption - 100,000 gallons per 12-month period
   B. Natural gas consumption - 166.89 x 10^6 scf per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month, a new 12-month total shall be calculated using the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. Natural gas fuel consumption shall be determined by examination of records from a fuel meter. Used oil consumption for the boiler shall be determined by examination of records from the used oil transfer log. The records shall be kept on a daily basis.

5. Emissions to the atmosphere from the used oil boiler operating with used oil shall not exceed the following rates and concentrations:

A. SO_2

1) 10.3 lbs/hr
2) 270 ppmdv (7% oxygen, dry)

B. NO_x

1) 6.62 lbs/hr
2) 240 ppmdv (7% oxygen, dry)

6. Stack testing to show compliance with the emission limitations in condition #5 operating with used oil shall be performed for the following emission points and air contaminants, as determined by the following test methods in accordance with 40 CFR 60, Appendix A, and as directed by the Executive Secretary:

Pollutant	Method	First test	Retest
SO_2	6	No later than 180 days after start-up	Every 5 years
NO_x	7	No later than 180 days after start-up	Every 5 years

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approved access shall be provided to the test location.

Sample Location

40 CFR 60, Appendix A, Method 1, if required by test method used

Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2, if required by test method used

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate at which the facility will be operated.

7. The ash content of any used oil burned shall not exceed 0.65 percent by weight without prior approval in accordance with R307-1-3.1, UAC. The ash content shall be tested using the appropriate ASTM method if directed by the Executive Secretary.

8. Used oil may be used for fuel, except that oil which contains more than 1000 ppm by weight of total halogen shall be considered hazardous and shall be treated as a hazardous waste and shall not be burned in the boiler. The halogen content shall be tested by ASTM Method D-808-81 before used oil is transferred to the boiler tank and burned.

9. Used oil which does not exceed the following listed contaminants content is considered to be specification used oil per Used Oil Regulation 40 CFR 266 Subpart E § 266.40:

A.	Total halogens	1000 ppm by weight
B.	Cadmium	2 ppm by weight
C.	Chromium	10 ppm by weight
D.	Lead	100 ppm by weight
E.	Arsenic	5 ppm by weight

In addition, the nitrogen content of the used oil shall not exceed 0.3% (by weight) and the sulfur content of the used oil shall not exceed 0.5% (by weight). The flash point of the used oil shall not be less than 100 degrees Fahrenheit.

The owner/operator shall provide test certification for each load of used fuel oil from 55 gallon drums or bulk carrier. Certification shall be either by his own testing or test

reports from a testing contractor. Records of used fuel oil consumption and the test reports shall be kept for all periods when the plant is in operation. The records shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request.

Used oil which does exceed the above listed contaminants content is considered to be off-specification used oil per Used Oil Regulation 40 CFR 266 Subpart E § 266.40 and may be used except for halogens, but they are subject to the record keeping provisions of § 266.43.

10. In addition to the requirements of this AO, all provisions of 40 CFR 60, new source performance standards (NSPS) Subparts A and Dc apply to this installation. Consult 40 CFR 60 for additional details on this regulation.

    For sources which are subject to NSPS (provided there is an opacity standard in the applicable NSPS), visible emission observations which are performed during the initial compliance inspection shall consist of 30 observations of six minutes each in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9. It is the responsibility of the owner/operator of the source to supply these observations to the Executive Secretary. A certified observer must be used for these observations. Emission points which are subject to the initial observations are the boiler stacks.

11. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.

12. The Executive Secretary shall be notified in writing upon start-up of the installation as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of construction/installation if construction/installation is not completed. At that time, the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this boiler are calculated at:

2.85 tons/yr for Particulates
2.85 tons/yr for PM_{10}
3.75 tons/yr for SO_2
10.86 tons/yr for NO_x
3.17 tons/yr for CO
0.33 tons/yr for VOC
0.0008 ton/yr for Barium
0.0013 for Cadmium
0.0011 ton/yr for Chromium
0.0358 ton/yr for Lead

These calculated emission rates are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
Salt Lake City, Utah 84114
(801) 536-4000
(801) 536-4099 Fax
(801) 536-4414 T.D.D.

Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

MEMORANDUM

To: File

Through: Lynn R. Menlove, Manager, New Source Review Section, Utah Division of Air Quality

Through: Dale Chapman, Engineer III, New Source Review Section Utah Division of Air Quality DC

From: Arjun Ram, Environmental Engineering Technician

Date: September 29, 1994

Subject: AO Modification for Used Oil Boiler at Hill Air Force Base

---

Abstract

Hill Air Force Base (HAFB) has requested permission to modify the allowable emission rates listed on their current AO for their used oil boiler. The maximum allowable concentration of NO_x emissions will change from 110 to 240 ppmdv and the maximum allowable concentration of SO_2 emissions will change from 39 to 270 ppmdv. This will require a modification of the AO DAQE-501-92, dated May 26, 1992. The increase has been requested because the boiler could not meet the concentration limits specified for SO_2 and NO_x in the existing AO. Also, a discussion with the manufacturer (Internal Combustion, Monroe, Wisconsin) revealed that there is no low-NO_x technology available for used oil boilers, and that the boiler that HAFB presently has, is BACT for dual fuel (oil and natural gas) boilers. The amount of gas used and the total oil burned per year would be the same as before. The total allowable emissions will increase from 10.05 to 10.86 TPY for NO_x and decreases from 6.72 to 3.75 TPY for SO_2. The decrease in allowable SO_2 emissions results from the overestimation of allowable SO_2 emissions in the previous AO. The minimal increase in allowable NO_x emissions will be more than offset by the decrease in allowable SO_2 emissions, since both are considered to be PM_{10} precursors.

This issue was previously discussed in the Level III staff meeting of the NSR section, and the increase in concentrations was approved. This will not result in a violation of any State or Federal rules.

Recommendation

It is recommended that the proposed emission rates be accepted as BACT, as requested. The minimal increase in NO_x will be more than offset by the decrease in SO_2 emissions, and therefore, a waiver is requested from the public comment process.

Fee

A $400 fee needs to be charged to HAFB for the AO modification.

F:\AQ\ENGINEER\ARAM\WP\MEMOS\HAFB_UOB.MEM

Calculation NOX

Molecular weight for NO_2 :	46	lb/lb Mole
S-Factor for waste oil :	12200	SCF/MMBTU
S-Factor for Natural Gas :	11990	SCF/MMBTU
	2.64E-03	lb Mole/SCF NOX
HHV of oil :	133000	BTU/gal oil
HHV of Gas :	1000	BTU/SCF
Firing rate Natural Gas :	350	SCF/min
Firing rate Waste Oil :	~~155~~ 140	gal/hr
Heat Input :	20.9	MMBTU/Hr
Max Oil Firing :	100000	gal/yr
Max Gas Firing :	7985	hr/yr
Emissionlimit Waste-Oil:	**160**	**ppmv**
Emission Gas:	**70**	**ppmv**

Combustion of Waste Oil

0.032 lb NOX/Gal	Calculations (next page)	
6.066 **~~4.884~~ lb NOX/hr**		
0.237 lb NOX/MMBTU		
2.166 TPY **~~1.576~~ tons/yr**		
3.100 lb NOX/hr	AP 42	
1.000 tons NOX/yr	AP 42	

Combustion of Natural Gas

2.129 lb NOX/hr	
0.102 lb NOX/MMBTU	
8.500 tons/yr	
2.100 lb NOX/hr	AP 42
8.384 tons NOX/yr	AP 42

Combustion of Waste Oil

Calculation of lb NOX / Gal Oil

$$\frac{160 \text{ SCF NOX}}{1.00E+06 \text{ SCF Flue Gas}} \times \frac{12200 \text{ SCF Flue Gas}}{1.00E+06 \text{ BTU}} \times 2.64E-03 \frac{\text{lb Mole}}{\text{SCF NOX}} \times 46 \frac{\text{lb}}{\text{lb Mole}} \times 133{,}000 \frac{\text{BTU}}{\text{gal Oil}}$$

0.032 lb NOX/Gal

Calculation of lb NOX / hr

0.032 lb NOX/Gal X 155 gal/hr =

4.884 lb NOX/hr

Calculation of lb NOX / MMBTU

$$\frac{160 \text{ SCF NOX}}{1.00E+06 \text{ SCF Flue Gas}} \times 12200 \frac{\text{SCF Flue Gas}}{\text{MMBTU}} \times 2.64E-03 \frac{\text{lb Mole}}{\text{SCF NOX}} \times 46 \frac{\text{lb}}{\text{lb Mole}}$$

0.237 lb NOX/MMBTU

Calculation of tons NOX / yr

$$0.032 \text{ lb NOX/Gal} \times 100000 \text{ gal/yr} \times \frac{1}{2000} \frac{\text{tons}}{\text{lb}} =$$

1.576 tons/yr

Combustion of Natural Gas

Calculation of lb NOX / MMBTU

$$\frac{70 \text{ SCF NOX}}{1.00\text{E+06 SCF Flue Gas}} \times \frac{11990 \text{ SCF Flue Gas}}{\text{MMBTU}} \times \frac{2.64\text{E-03 lb Mole}}{\text{SCF NOX}} \times \frac{46 \text{ lb}}{\text{lb Mole}}$$

0.102 lb NOX/MMBTU

Calculation of lb NOX / SCF

$$0.102 \frac{\text{lb NOX}}{\text{MMBTU}} \times 1000 \frac{\text{BTU}}{\text{SCF}} =$$

101.868 lb NOX/SCF

Calculation of lb NOX / hr

$$0.102 \frac{\text{lb NOX}}{\text{MMBTU}} \times 20.9 \frac{\text{MMBTU}}{\text{hr}} =$$

2.129 lb NOX/hr

Calculation of tons NOX / yr

$$2.1290 \frac{\text{lb}}{\text{hr}} \times 7985 \frac{\text{hr}}{\text{yr}} \times \frac{1 \text{ tons}}{2000 \text{ lb}} =$$

8.500 tons/yr

Calculation of NOX using AP 42 Emissionfactors

Emissionfactor Nitrogen Oxides Waste Oil : 20 lb/1000 gal
Emissionfactor Nitrogen Oxides Natural Gas : 100 lb/mill SCF

Combustion of Waste Oil

2.3 lb/1000 gal ?
1.42 — 11-9

$\frac{20}{1000}$ lb/gal X 155 gal/hr = **3.100 lb NOX/hr**

Calculation of tons NOX / yr

$\frac{20}{1000}$ lb/gal X 100000 gal/yr X $\frac{1}{2000}$ tons/lb =

1.000 tons NOX/yr

Combustion of Natural Gas

Small Industrial boilers (AP 42 1.4-1) 140 lb/10^6 ft^3

$\frac{100}{1000000}$ lb/SCF X 350 SCF/min X 60 min/hr =

2.100 lb NOX/hr

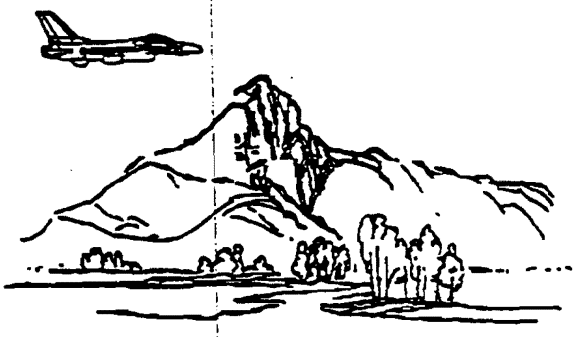
Calculation of tons NOX / yr

2.100 $\frac{lb}{hr}$ X 7985 $\frac{hr}{yr}$ X $\frac{1}{2000}$ tons/lb =

8.384 tons NOX/yr

RECEIVED
JUL 0 8 1994
Air Quality

FAX COVER SHEET



From:

Andreas Zekorn
Environmental Management Directorate
OO-ALC/EME
7274 Wardleigh Road
Hill AFB,UT 84056-5137

Tel: Commercial: 801-777-0359
DSN 458-0359
Fax:Commercial:801-777-4306

Date: 7/8/94

To:
Name: **Arjun Ram**
Organization: **DAQ**
Fax No.: **536-4099**

Message:

Dear Mr. Arjun Ram

attached are some information from the burner manufacturer and the analaysis of the nitrogen content of the waste oil.

Sincerely

Andreas Zekorn

Total number of pages including cover sheet: 9

WESTERN ANALYTICAL, INC.
2417 CONSTITUTION BOULEVARD
SALT LAKE CITY, UTAH 84119-1225
PHONE (801) 973-9238 OR (800) 383-5924
FAX (801) 973-7635

CERTIFICATE OF ANALYSIS

June 15, 1994
P94-317
ACCT: No. 1000
YOUR PURCHASE ORDER: F-47650-94-M0758

HILL AIR FORCE BASE
MR. JIM BATES
EMH BILLING 514
H.A.F.B UTAH 84056

Dear Mr. Bates:

Transmitted herewith are the analytical data for the three (3) oil samples delivered to our laboratory for nitrogen (N) analysis.

DATE RECEIVED: June 13, 1994
DATE OF ANALYSIS: June 14, 1994
RECEIVED BY: Julie Lopez

SAMPLE IDENTIFICATION	N (%)
Sample #1	0.20
Sample #2	0.23
Sample #3	0.19

E. H. PHILLIPS
Laboratory Director

EHP/jl

INDUSTRIAL COMBUSTION
DIVISION OF AQUA-CHEM, INC.
351-21st Street - Monroe, Wisconsin 53566-2798 - Phone: 608/325-3141 - Fax: 608/325-4379 - Telex II: 910/280-2870

INDUSTRIAL AND COMMERCIAL BURNERS AND BOILERS

June 14, 1994

Hill Air Force Base
OO-ALC/EME
Att: Mike Graziano
7276 Wardleigh Road
Hill Air Force Base, UT 84056

Re: Boiler Emissions

Dear Mr. Graziano:

Please find enclosed two (2) copies of our Boiler Emission Guide as well as a graph with fuel bound nitrogen versus expected NOx emissions. You notice that the range on the graph varies and so for your standard "D" burner you should use the upper line as the reference.

For the waste oil which you are firing, in my opinion the burner system presently installed on your boiler is the best available technology for NOx reduction.

If you have any questions, please let me know.

Sincerely,

INDUSTRIAL COMBUSTION

Kim Black sm.

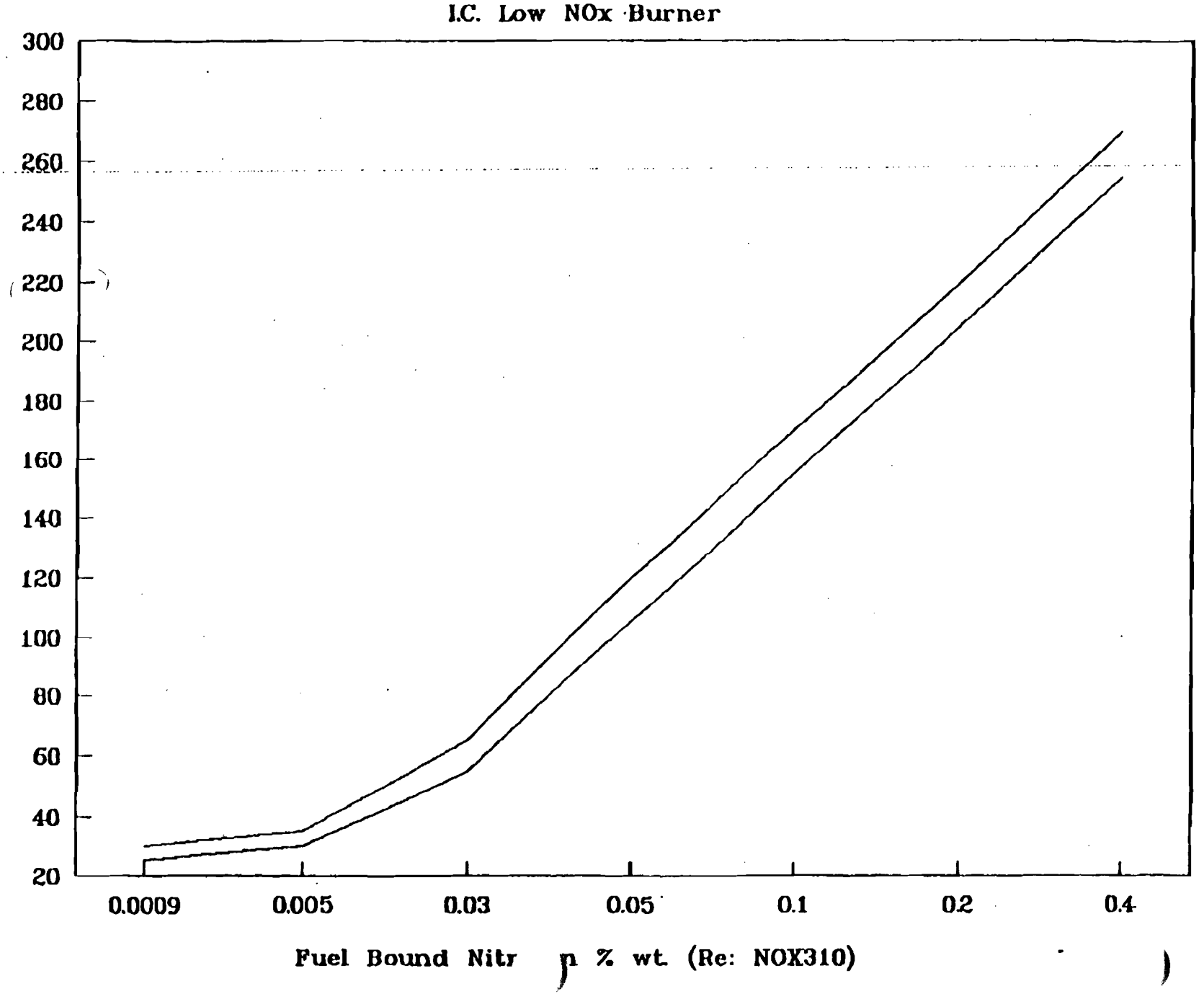
R. Kim Black

RKB/sm

Enclosures: IC-1155, Charts

cc: Ken Hanninen

NOx EMISSIONS FIRING LIQUID FUEL



NOx500
Job Name:

Distributor:

Attn:
SO#
Fax No.
Tel No.

ESTIMATED Burner Emissions

I.C. Burner Model - DEG-210-P **BTU's per Hour - 21,000,000**

Fuel - Natural Gas

	PPMv (Corr to 3% O2)	Pounds per 1,000,000 BTU's	TOTAL Pounds per Hour @ 100% Firing Rate
Particulate (PM-10)	N/A	0.0060	0.13
Carbon Monoxide (CO)	50	0.0367	0.77
SOx (<8 PPM wt Sulfur in Fuel)	0.4	0.0007	0.01
VOC (Methane + Non-Methane)	15	0.0080	0.17
NOx	70	0.0844	1.77

Required Combustion Air (60 Degrees F.) SCFM	3,815
Flue Gas Volume (400 Degrees F. Gross) ACFM	6,888
Flue Gas Velocity (24" Stack Diameter) Feet per Minute	2,193

NOX500A
Job Name:

Distributor:

Attn:
SO#
Fax No.
Tel No.

ESTIMATED Burner Emissions

I.C. Burner Model - DEG-210-P **BTU's per Hour - 21,000,000**

Fuel - #2 Oil **Gallons per Hour - 150.0**

	PPMv (Corr to 3% O2)	Pounds per 1,000,000 BTU's	TOTAL Pounds per Hour @ 100% Firing Rate
Particulate (PM-10)	N/A	0.021	0.44
Carbon Monoxide (CO)	50	0.039	0.82
SOx (<0.5% wt. Sulfur in Fuel)	290	0.539	11.32
VOC (Methane + Non-Methane)	10	0.006	0.13
NOx (<.04% wt. Nitrogen in Fuel)	120	0.157	3.30

Required Combustion Air (60 Degrees F.) SCFM	3,867
Flue Gas Volume (400 Degrees F. Gross) ACFM	6,748
Flue Gas Velocity (24" Stack Diameter) Feet per Minute	2,148

NOXSOC
Job Name:

Distributor:

Attn:
SO#
Fax No.
Tel No.

ESTIMATED Burner Emissions

I.C. Burner Model - DEG-210-P

BTU's per Hour - 21,000,000

Fuel - # 6 Oil

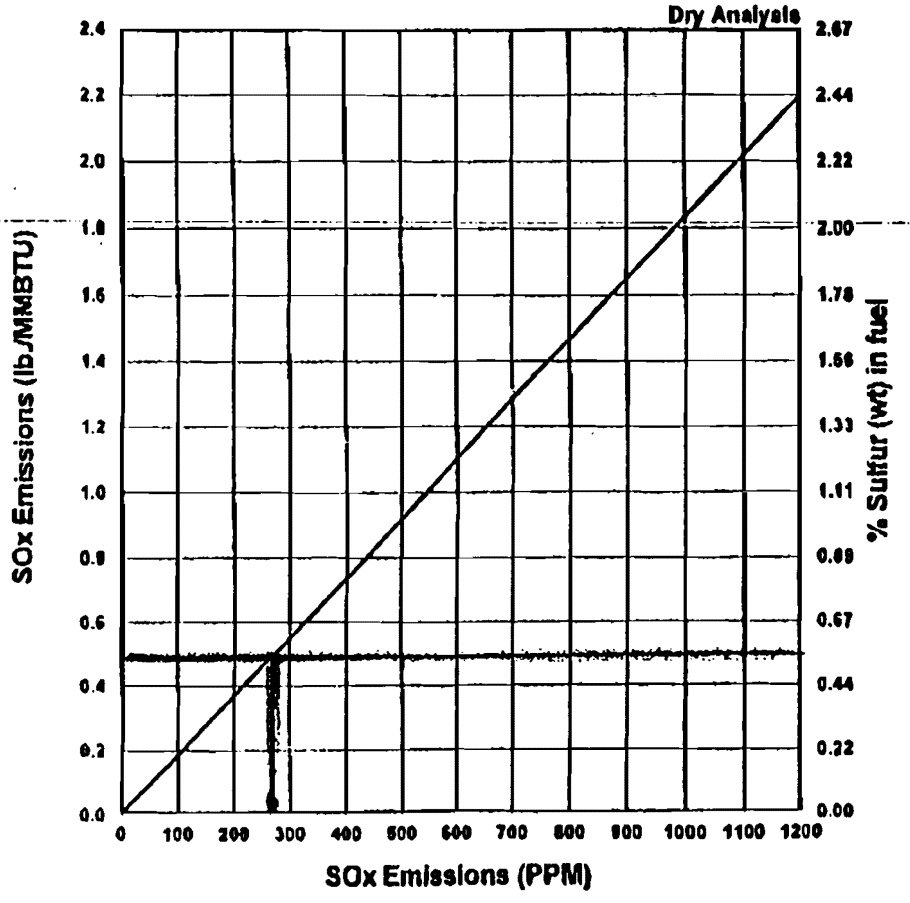
Gallons per Hour - 140.0

	PPMv (Corr to 3% O2)	Pounds per 1,000,000 BTU's	TOTAL Pounds per Hour @ 100% Firing Rate
Particulate (PM-10)	N/A	0.098	2.06
Carbon Monoxide (CO)	50	0.039	0.82
SOx (<1.0% wt. Sulfur in Fuel)	560	1.041	21.86
VOC (Methane + Non-Methane)	20	0.012	0.25
NOx (<0.5% wt. Nitrogen in Fuel)	300+	0.393	8.25

8.25 x 100 hrs / 1 day / 2000 lbs = 2.34 TPY NOx

Required Combustion Air (60 Degrees F.) SCFM	3,867
Flue Gas Volume (400 Degrees F. Gross) ACFM	6,748
Flue Gas Velocity (24" Stack Diameter) Feet per Minute	2,148

SOx Emissions Conversion Curves ($3\% O_2$)



—— #2 & #6 Oil

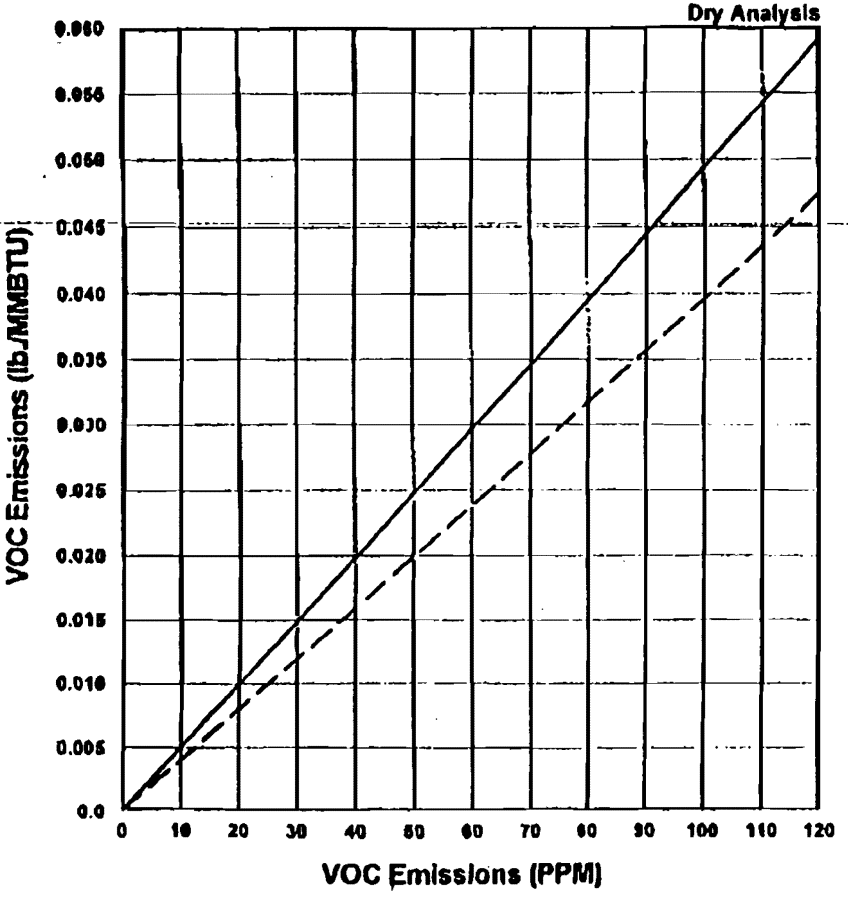
Conversion Equations

#2 & #6 Oil:

PPM = (lb./MMBTU) X 538

lb./MMBTU = (PPM) / 538

VOC Conversion Curves ($3\% O_2$)



—— #2 & #6 Oil

— — Natural Gas & Propane

Conversion Equations

#2 & #6 Oil:

PPM = (lb./MMBTU) X 2000

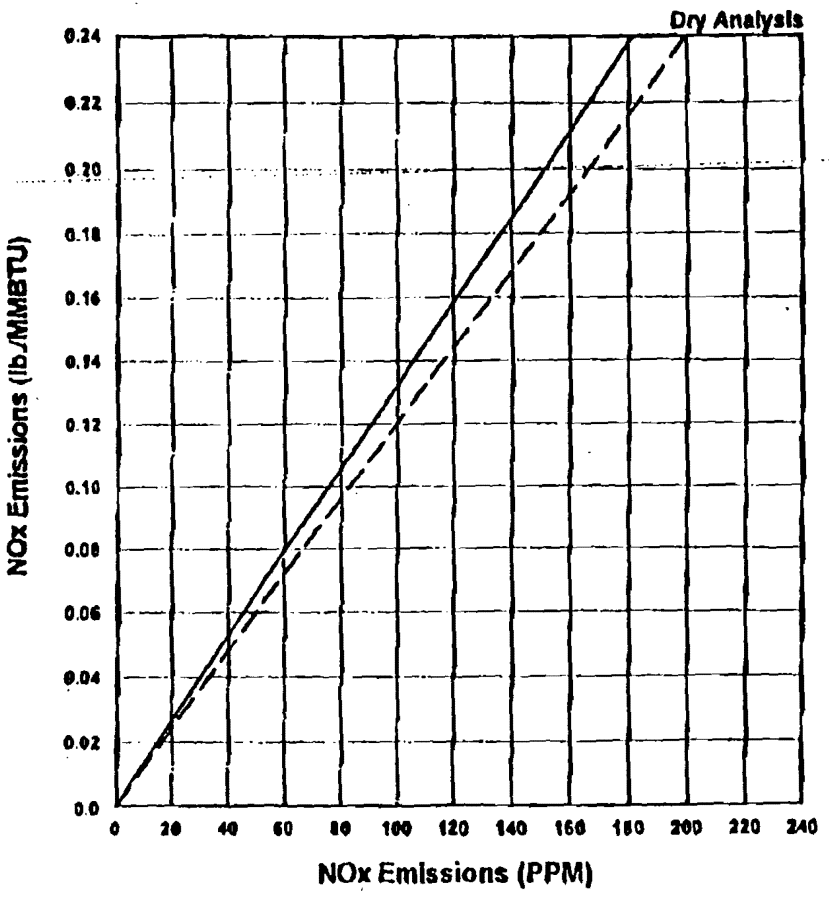
lb./MMBTU = (PPM) / 2000

Natural Gas & Propane:

PPM = (lb./MMBTU) X 2500

lb./MMBTU = (PPM) / 2500

NOx Emissions Conversion Curves (3% O_2)

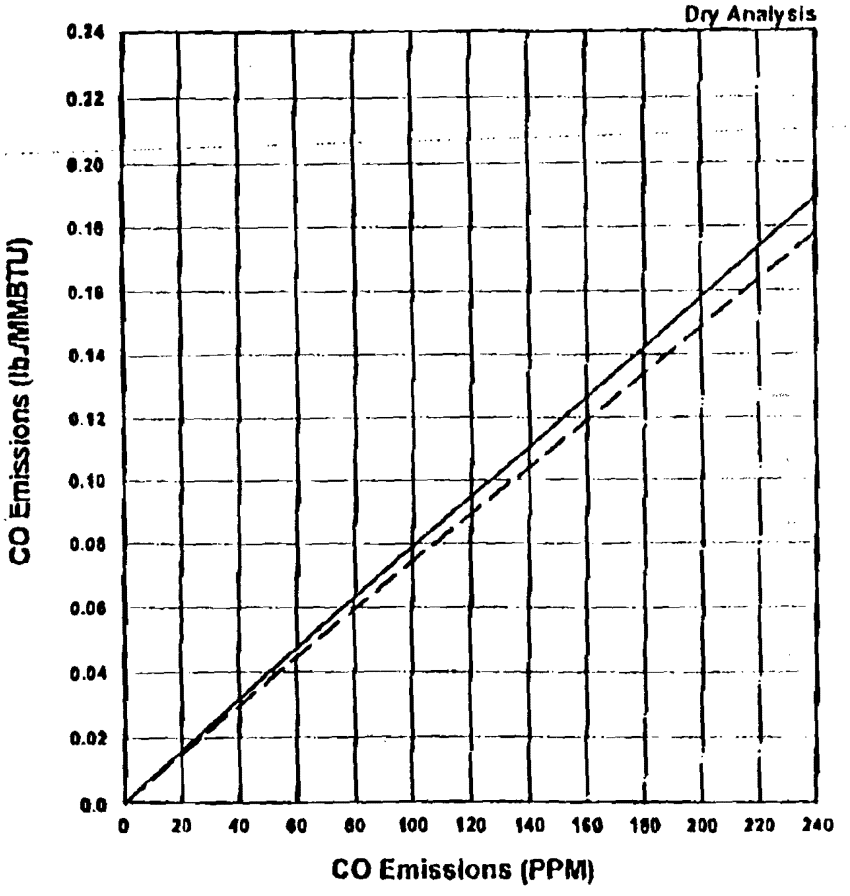


Conversion Equations

#2 & #6 Oil:
PPM = (lb./MMBTU) X 763
lb./MMBTU = (PPM) / 763

Natural Gas & Propane:
PPM = (lb./MMBTU) X 829
lb./MMBTU = (PPM) / 829

CO Conversion Curves (3% O_2)



Conversion Equations

#2 & #6 Oil:
PPM = (lb./MMBTU) X 1270
lb./MMBTU = (PPM) / 1270

Natural Gas & Propane:
PPM = (lb./MMBTU) X 1361
lb./MMBTU = (PPM) / 1361

TABLE 45. PARTICULATE EMISSIONS DURING USED OIL COMBUSTION IN LARGE BOILERS

Type of Virgin Oil	Percent Waste Oil	Ash Conc. %	O_2 Conc. %	Gas Volume Corrected to Zero Excess Air[a]	Average Emissions grains/SCF (dry)	Emissions Corrected to Zero Excess Air grains/SCF (dry)
No. 2	0	0.02	13.0	0.3812	0.0179	0.047
No. 2	15-25[b]	0.13	11.0	0.4764	0.0329	0.069
No. 2	8[c]	0.04	10.0	0.5240	0.0310	0.059
No. 6	0	0.01	9.8	0.5335	0.0062	0.012
No. 6	9.72[c]	0.09	6.6	0.6858	0.0139	0.020
No. 6	60.4[c]	0.48	7.5	0.6430	0.0476	0.074
No. 6	20.8[d]	0.20	5.3	0.7477	0.0283	0.038
--	100[d]	0.91	6.0	0.7144	0.0841	0.118
No. 6	20.6[b]	0.05	5.8	0.7239	0.0145	0.020

rection = [100 x ($\%O_2$) x (4.76)]/100.
d industrial oils.
d otive oils.
d oil.

es: Recon Systems, Inc. and ETA Engineering, Inc. (26)

with an average value of 0.73 lb/hour [0.34 lb/m
This is significantly higher than the literature
for commercial boilers firing residual oil; but
with the much higher ash content of used oil, wh
1.5%. Further, particulate sizing measurements
test sites indicated that 80 to 90% of the parti
submicron in nature and would be readily inhalab

Few data are available about the fate of in
sulfur, nitrogen, phosphorus, and halides during
general, the form of emissions resulting from th
the source and type of waste oil and the nature
Some examples of inorganic emissions expected fr
include:

- Sulfur -- the majority of the sulfur cont as sulfur dioxide (SO_2) with some sulfur acid (H_2SO_4). Small amounts of sulfur ar emissions and as boiler deposits in sulfa Approximately 0.152 to 0.465 lb SO_2/milli used oil containing 0.16 to 0.36% sulfur

- Nitrogen -- as gaseous emissions, nitroge nitrous oxide (NO) and nitric oxide (NO_2) boiler deposits (as nitrate and nitrite c ammonia compounds are other sources of ni instances. Some nitrogen emissions data

- Halides and phosphorus -- organic bromine compounds are emitted as hydrobromic, hyd acids. Phosphorus, in comparison, is emi form of phosphates.

ORGANIC EMISSIONS

With respect to organic emissions from comme
12.5 million Btu/hour), EPA's data indicate that
cies will range from 99% to greater than 99.9%, w
destruction and removal efficiencies of 99.4 to 9
strong correlations were observed by EPA between
boiler sizes or firing techniq However, one
the data was that the destructi fficiencies fo

TABLE 21. USED OIL PROPERTIES BY OIL TYPE

Property	Automotive Oils		Industrial Oils[a]	
	Low	High	Low	High
Physical Properties				
Viscosity, SUS (at 100°F)	87	837	143	330
API gravity (at 60°F)	19.1	31.3	25.7	26.2
Specific gravity	0.9396	0.8692	0.9002	0.8972
Water, vol %	0.2	33.8	0.1	4.6
Bottom sediment and water, vol %	0.1	42	--	--
Flashpoint, °F	174	430	315	--
Carbon residue, wt %	1.82	4.43	--	--
Ash, sulfated, wt %	0.03	6.43	3.2	5.9[b]
Benzene insolubles, wt %	0.56	3.33	--	--
Gasoline dilution, vol %	2.0	9.7	--	--
Heating value, Btu/lb	13,580	19,316	17,268	18,008
Chemical Properties				
Fatty oils, wt %	--	--	0	60
Chlorine, wt %	0.17	0.47	<0.1	0.83
Sulfur, wt %	0.17	1.09	0.54	1.03
Zinc, ppm	260	1,787	--	--
Calcium, ppm	211	2,291	--	--
Barium, ppm	9	3,906	--	--
Phosphorus, ppm	319	1,550	--	--
Lead, ppm	85	21,676	--	--
Aluminum, ppm	<0.5	758	--	--
Iron, ppm	97	2,401	--	--

[a]Limited data available for used industrial oils.
[b]Values for industrial oils are for regular not sulfated ash.

Source: Kirk-Othmer (12)

reduce the fouling and corrosion of boiler heat exchange surfaces or emission of metallic contaminants that would result from waste oil combustion. In order to obtain a significant metallic contaminant removal, higher level advanced reprocessing techniques must be utilized (14).

Finally, a comparison of the properties of used automotive oils with virgin distillate and residual fuels is shown in Table 23. This table, in conjunction with Table 8, provides an overall picture of used oil composition

TABLE 22. POTENTIAL IMPACTS AND IMPACT RE
OF USING UNTREATED USED OIL AS

Property	Potential Impacts	
Specific gravity	Formation of concentration gradients when combined in storage tanks with distillate oils.	• Storag via co • Separa prior
Water	Fuel line freezing	• Use wi • Remova pretre
	Burner flameout	• Use wi flame.
	Inconsistent heating value	• Use fo tion. • Removal pretrea
Coarse solids	Sludge buildup in storage tank	• Storage moval d • Use wit sludge • Removal pretrea
	Line strainer fouling	• Removal level p
	Abrasion of positive displacement pump seals	• Separat port pr impelle • Removal pretrea
	Abrasion of burner nozzles	• Use wit • Removal pretrea
Ash forming materials	Health hazard to boiler-cleaning personnel	• Use of • Removal to use
	Scaling and corrosion of heat transfer surfaces	• Use in • Removal to use
	Hazardous emissions	• Use wit control • Removal to use
	Ash disposal problems	• Removal to use

Source: GCA Corporation (14)

BOILER PLANT 1703

WASTE OIL BOILER

90% LOAD	CO		O2		NOX	S/TEMP	A/TEMP	SO2	
1/19/94		8		5.8	141	490	84	78	
1/21/94		26		6.1	150	530	74	81	
1/31/94		6		6.9	144	408	59	66	
2/1/94		7		6.7	155	529	78	63	
LOW FIRE									
1/21/94		29		5.6	114	341	74	75	
1/31/94		3		8.1	108	206	59	52	
2/1/94		2		9.1	110	359	78	42	

12% CO_2 15% excess air

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

18 July 1994

OO-ALC/EM
7274 WARDLEIGH ROAD
HILL AFB, UT 84056-5137

Mr. Russell A. Roberts
State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Ut 84114-4820

Re: Waste Oil Boiler Approval Order DAQE-501-92

Dear Mr. Roberts

Stack testing of the waste oil boiler prior to startup from 19 January to 1 February 1994 showed that the emissions of NO_X and SO_X were above the limits of the Approval Order.

An analysis of the waste oil indicates an average content of 0.21% fuelbound nitrogen and a sulfur content of 0.2%. As the fuelbound nitrogen content varies depending on the composition of the waste oil, we expect a nitrogen content up to 0.3%. The NO_X emissions for this nitrogen content are calculated to 240 ppm by the manufacturer (Atch.1). As low NO_X burners are not available for firing waste-oil and natural gas in a dual burner, this boiler has the Best Available Control Technology concerning the NO_X-Emissions.

Calculations of the annual emissions are included as Atch. 2. According to our new calculations, the increase of the emissions is less than 1 ton per year over the current Approval Order.

We request a change of the Approval Order to the following limits while burning waste oil.

-240 ppm NO_X or nitrogen content not greater than 0.3 percent.
-sulfur content not greater than 0.5 percent

Compliance with the content requirements above can be done by testing the waste oil in the tank before transfering it to the boiler feed tank.

Burning of the waste oil could be limited to 100,000 gal per year. With a firing rate of 140 gal/hr the waste oil boiler will run only 27 days a year for burning waste oil. The rest of the year the boiler will run with natural gas.

If you have any questions, please contact Mr. Andreas Zekorn at 777-0359

Sincerely

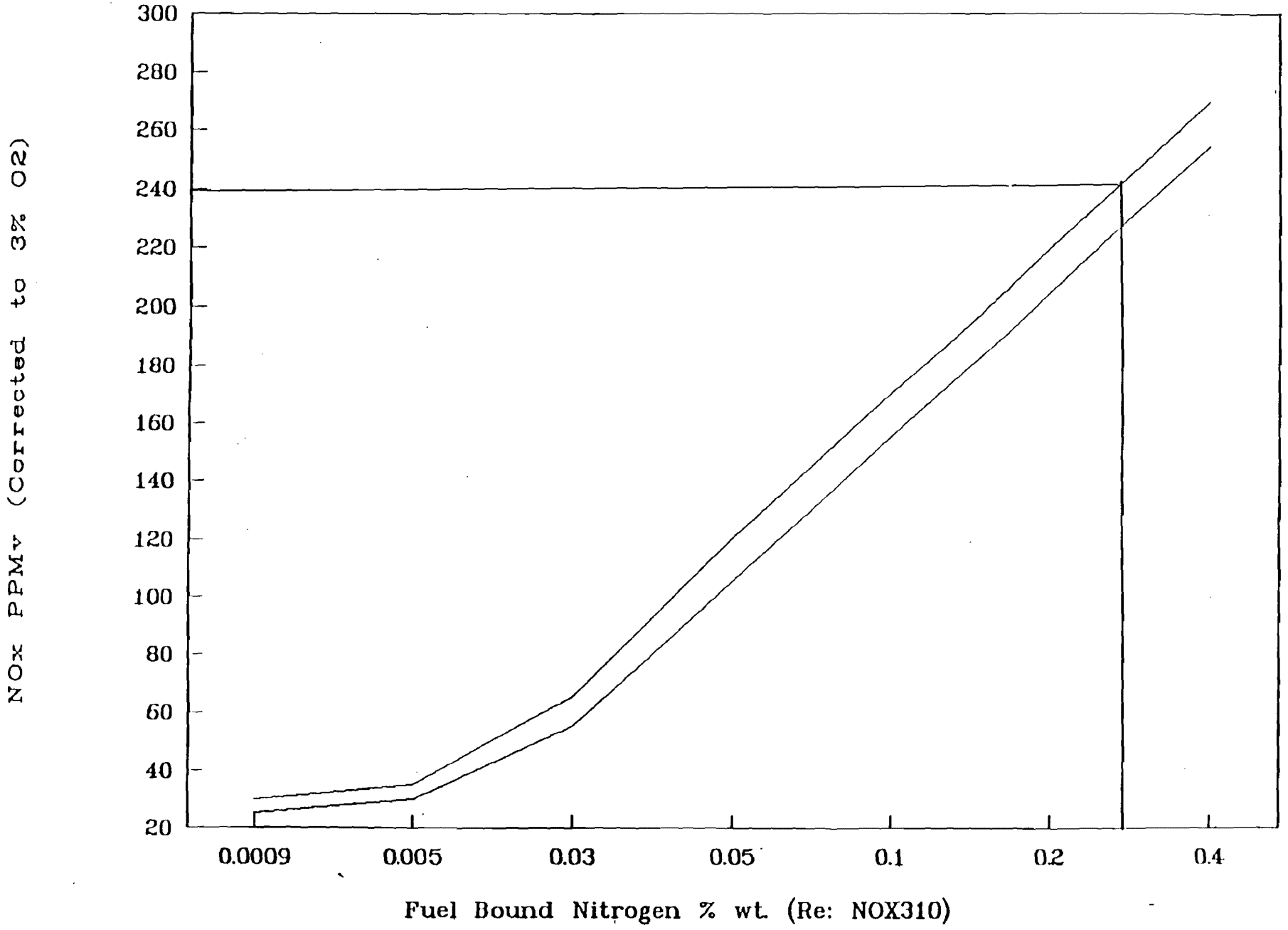
James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

Attachments
NO_X Emissions Chart
Calculation NO_X
Calculation SO_X

NOx EMISSIONS FIRING LIQUID FUEL

I.C. Low NOx Burner



4.2.4-461

Calculation NOX

Molecular weight for NOX :	46 lb/lb Mole
S-Factor for waste oil :	12200 SCF/MMBTU
S-Factor for Natural Gas :	11990 SCF/MMBTU
	2.64E-03 lb Mole/SCF NOX
HHV of oil :	133000 BTU/gal oil
HHV of Gas :	1000 BTU/SCF
Firing rate Natural Gas :	350 SCF/min
Firing rate Waste Oil :	140 gal/hr
Heat Input :	20.9 MMBTU/Hr
Max Oil Firing :	100000 gal/yr
Max Gas Firing :	7985 hr/yr
Emissionlimit Waste-Oil:	**240 ppmv**
Emissions Natural Gas:	**70 ppmv**

Combustion of Waste Oil

0.047 lb NOX/Gal
6.617 lb NOX/hr
0.355 lb NOX/MMBTU
2.363 tons/yr

2.800 lb NOX/hr	AP 42
1.000 tons NOX/yr	AP 42

Combustion of Natural Gas

2.129 lb NOX/hr
0.102 lb NOX/MMBTU
8.500 tons/yr

2.100 lb NOX/hr	AP 42
8.384 tons NOX/yr	AP 42

Combustion of Waste Oil

Calculation of lb NOX / Gal Oil

$$\frac{240\ \text{SCF NOX}}{1.00\text{E+06 SCF Flue Gas}} \times \frac{12200\ \text{SCF Flue Gas}}{1.00\text{E+06 BTU}} \times 2.64\text{E-03}\ \frac{\text{lb Mole}}{\text{SCF NOX}} \times 46\ \frac{\text{lb}}{\text{lb Mole}} \times 133{,}000\ \frac{\text{BTU}}{\text{gal Oil}}$$

0.047 lb NOX/Gal

Calculation of lb NOX / hr

0.047 lb NOX/Gal X 140 gal/hr =

6.617 lb NOX/hr

Calculation of lb NOX / MMBTU

$$\frac{240\ \text{SCF NOX}}{1.00\text{E+06 SCF Flue Gas}} \times 12200\ \frac{\text{SCF Flue Gas}}{\text{MMBTU}} \times 2.64\text{E-03}\ \frac{\text{lb Mole}}{\text{SCF NOX}} \times 46\ \frac{\text{lb}}{\text{lb Mole}}$$

0.355 lb NOX/MMBTU

Calculation of tons NOX / yr

$$0.047\ \text{lb NOX/Gal} \times 100000\ \text{gal/yr} \times \frac{1}{2000}\ \frac{\text{tons}}{\text{lb}} =$$

2.363 tons/yr

Combustion of Natural Gas

Calculation of lb NOX / MMBTU

$$\frac{70 \text{ SCF NOX}}{1.00\text{E+}06 \text{ SCF Flue Gas}} \times \frac{11990 \text{ SCF Flue Gas}}{\text{MMBTU}} \times \frac{2.64\text{E-}03 \text{ lb Mole}}{\text{SCF NOX}} \times \frac{46 \text{ lb}}{\text{lb Mole}}$$

0.102 lb NOX/MMBTU

Calculation of lb NOX / SCF

$$0.102 \frac{\text{lb NOX}}{\text{MMBTU}} \times 1000 \frac{\text{BTU}}{\text{SCF}} =$$

101.868 lb NOX/SCF

Calculation of lb NOX / hr

$$0.102 \frac{\text{lb NOX}}{\text{MMBTU}} \times 20.9 \frac{\text{MMBTU}}{\text{hr}} =$$

2.129 lb NOX/hr

Calculation of tons NOX / yr

$$2.1290 \frac{\text{lb}}{\text{hr}} \times 7985 \frac{\text{hr}}{\text{yr}} \times \frac{1}{2000} \frac{\text{tons}}{\text{lb}} =$$

8.500 tons/yr

Calculation of NOX using AP 42 Emissionfactors

Emissionfactor Nitrogen Oxides Waste Oil : 20 lb/1000 gal
Emissionfactor Nitrogen Oxides Natural Gas : 100 lb/mill SCF

Combustion of Waste Oil

$\frac{20}{1000}$ lb/gal X 140 gal/hr = **2.800 lb NOX/hr**

Calculation of tons NOX / yr

$\frac{20}{1000}$ lb/gal X 100000 gal/yr X $\frac{1}{2000}$ tons/lb =

1.000 tons NOX/yr

Combustion of Natural Gas

$\frac{100}{1000000}$ lb/SCF X 350 SCF/min X 60 min/hr =

2.100 lb NOX/hr

Calculation of tons NOX / yr

2.100 $\frac{lb}{hr}$ X 7985 $\frac{hr}{yr}$ X $\frac{1}{2000}$ tons/lb =

8.384 tons NOX/yr

Calculation SOX

Molecular weight for SOX :	64 lb/lb Mole
S-Factor for waste oil :	12200 SCF/MMBTU
S-Factor for Natural Gas :	11990 SCF/MMBTU
	2.63E-03 lb Mole/SCF SOX
HHV of oil :	133000 BTU/gal oil
HHV of Gas :	1000 BTU/SCF
Firing rate Natural Gas :	350 SCF/min
Firing rate Waste Oil :	140 gal/hr
Heat Input :	20.9 MMBTU/Hr
Max Oil Firing :	100000 gal/yr
Max Gas Firing :	7985 hr/yr
Emissionlimit in ppm :	**270 ppmv**
Emission Gas in ppm :	**0.34 ppmv**

Combustion of Waste Oil

0.074 lb SOX/Gal
10.330 lb SOX/hr
0.555 lb SOX/MMBTU
3.689 tons/yr

10.290 lb SOX/hr AP 42
3.675 tons SOX/yr AP 42

Combustion of Natural Gas

0.014 lb SOX/hr
0.001 lb SOX/MMBTU
0.057 tons/yr

0.013 lb SOX/hr AP 42
0.050 tons SOX/yr AP 42

3.725 tons SOX/yr

Combustion of Waste Oil

Calculation of lb SOX / Gal Oil

$$\frac{270\ \text{SCF SOX}}{1.00\text{E+06}\ \text{SCF Flue Gas}} \times \frac{12200\ \text{SCF Flue Gas}}{1.00\text{E+06}\ \text{BTU}} \times 2.63\text{E-03}\ \frac{\text{lb Mole}}{\text{SCF SOX}} \times 64\ \frac{\text{lb}}{\text{lb Mole}} \times 133{,}000\ \frac{\text{BTU}}{\text{gal Oil}}$$

0.074 lb SOX/Gal

Calculation of lb SOX / hr

0.074 lb SOX/Gal X 140 gal/hr =

10.330 lb SOX/hr

Calculation of lb SOX / MMBTU

$$\frac{270\ \text{SCF SOX}}{1.00\text{E+06}\ \text{SCF Flue Gas}} \times 12200\ \frac{\text{SCF Flue Gas}}{\text{MMBTU}} \times 2.63\text{E-03}\ \frac{\text{lb Mole}}{\text{SCF SOX}} \times 64\ \frac{\text{lb}}{\text{lb Mole}}$$

0.555 lb SOX/MMBTU

Calculation of tons SOX / yr

$$0.074\ \text{lb SOX/Gal} \times 100000\ \text{gal/yr} \times \frac{1}{2000}\ \frac{\text{tons}}{\text{lb}} =$$

3.689 tons/yr

Combustion of Natural Gas

Calculation of lb SOX / MMBTU

$$\frac{0.34 \text{ SCF SOX}}{1.00E{+}06 \text{ SCF Flue Gas}} \times \frac{11990 \text{ SCF Flue Gas}}{\text{MMBTU}} \times \frac{2.63E{-}03 \text{ lb Mole}}{\text{SCF SOX}} \times \frac{64 \text{ lb}}{\text{lb Mole}}$$

0.001 lb SOX/MMBTU

Calculation of lb SOX / SCF

$$0.001 \frac{\text{lb SOX}}{\text{MMBTU}} \times 1000 \frac{\text{BTU}}{\text{SCF}} =$$

0.687 lb SOX/SCF

Calculation of lb SOX / hr

$$0.001 \frac{\text{lb SOX}}{\text{MMBTU}} \times 20.9 \frac{\text{MMBTU}}{\text{hr}} =$$

0.014 lb SOX/hr

Calculation of tons SOX / yr

$$0.0143 \frac{\text{lb}}{\text{hr}} \times 7985 \frac{\text{hr}}{\text{yr}} \times \frac{1}{2000} \frac{\text{tons}}{\text{lb}} =$$

0.057 tons/yr

Calculation of SOX using AP 42 Emissionfactors

Emissionfactor Sulfur Dioxide Waste Oil : 147 lb/1000 gal
Emisslonfactor Sulfur Dioxide Natural Gas : 0.6 lb/mill SCF
Sulfurcontent in Waste Oil : 0.5 %

Combustion of Waste Oil

$\frac{147}{1000}$ lb/gal X 140 gal/hr X 0.5 = **10.290 lb SOX/hr**

Calculation of tons SOX / yr

$\frac{147}{1000}$ lb/gal X 100000 gal/yr X $\frac{1}{2000}$ tons/lb X 0.5 = **3.675 tons SOX/yr**

Combustion of Natural Gas

$\frac{0.6}{1000000}$ lb/SCF X 350 SCF/min X 60 min/hr =

0.013 lb SOX/hr

Calculation of tons SOX / yr

0.013 $\frac{lb}{hr}$ X 7985 $\frac{hr}{yr}$ X $\frac{1}{2000}$ tons/lb =

0.050 tons SOX/yr

HILL AIR FORCE BASE, UTAH 84056-5

Montie R. Keller, Manager Technical Evaluation
Bureau of Air Quality
1950 West North Temple
Salt Lake City, Utah 84116-0690

RE: Intent to Approve Waste Oil Boiler, Building 1703
(BAQE-201-91) Request for an Extension of Comment Period

Dear Mr Keller

We request an extension of comment period to 11 May, 1991 to allow us to fully evaluate and comment on condition 9 of the referenced Intent to Approve. We will request a meeting to discuss this matter with you.

Sincerely

James R. Van Orman
James R. Van Orman
Director of Environmental Management

DON - They have a problem with our 2-3 ppm limit on cadmium (they want ~10 ppm). They want more time to evaluate (no problem). They want to know the basis of our ppm limits.

Approved
Orig

[redacted]

AFLC COMBAT STRENGTH THROUGH LOGISTICS

4.2.4-470

04/25/91 13:11 801 777 4308 OO-ALC/EM → Air Quality 001

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Department of the Air Force
Headquarters Ogden Air Logistic Center
Hill Air Force Base, Utah 84056-5990

RE:	Waste Oil Boiler and Two Tanks, Bldg 1703 Davis County CDS A1
ENGINEER:	J. Tim Blanchard
DATE:	February 25, 1991
NOTICE OF INTENT DATED:	March 27, 1990
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-7651
PLANT LOCATION:	Hill Air Force Base, Bldg 1703

FEES:

Filing Fee	$100.00
Review Engineer - 15 hours at $50.00/hour	$750.00
Modeler - 00 hours at $23.22/hour	$000.00
Computer Usage Fee	$000.00
Notice to Paper	$24.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$874.00

APPROVALS:

Engineering Unit Manager DR 2-25-91

Applicant Contact Made JJB 3-18-91

Technical Evaluation Section Manager M. Keller 3/17/91

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base has filed a notice of intent dated March 27, 1990. They are proposing to install and operate a boiler in Building 1703. The proposed boiler will be equipped with a dual burner capable of firing waste oil and natural gas. The proposed boiler will use natural gas as the primary fuel. Waste oil will be burned as it is available. As a part of the base waste minimization plan, HAFB is proposing to burn waste oil in the proposed boiler and recover generated heat for process steam.

The boiler will have the following equipment/parameters:

A. 500 hp Scotch Marine 3 Pass

B. Low NO_x rated dual burner

C. Two (2) existing 20,000 gallon waste oil storage tanks

D. Oil filtration system

E. Associated piping

F. Chemical feed pump, chemical mixing tank, appropriate tie-ins to existing feed water, natural gas line systems, and controls and alarms

Waste oil will be collected in two existing 20,000 gallon tanks located approximately 2 miles from the boiler. One tank will be used at a time to accept waste oil from throughout the base. The following will contribute to the waste oil used:

A. PD 680 Solvent (15%)

B. Turbine engine oil (11%)

C. JP-4 Turbine engine oil (13%)

D. Waste crank case oil (19%)

E. Hydraulic fluid (25%)

F. Purge Fluid (17%)

Waste oil is collected from the sources in 55 gallon drums and will be tested in bulk for halogen content using the Blastine Test. Waste oil passing this test will be pumped into the waste oil collection tank. Once the waste oil collection tank is full, a sample will be taken from the tank for a metal and halogen test. If no halogenated solvents are found and metals are within permit limits, the waste oil will be transferred to the boiler fuel tank and burned.

Building 1703 has two existing 250 hp gas-fired boilers which will continue to operate on natural gas. The following numbers only describe the proposed waste oil boiler operation:

A. Annual operating hours

1) 645 hours per year for the waste oil operation
2) 7,985 hours per year for the natural gas operation

B. Proposed boiler capacity - 20.9 x 10^6 BTU/hr

C. Fuel - natural gas/waste oil

D. Heating values

1) 133,000 BTU/gallon of waste oil
2) 1000 Btu/scf of natural gas

E. Fuel input

1) 155 gallons of waste oil per hour
2) 20,900 scf of natural gas per hour

F. Stack diameter - 28 inches

G. Stack height - 30 feet above ground

II. EMISSION SUMMARY

The emissions from this new emission point will be as follows:

Particulate	2.85	tons/year
PM_{10}	2.85	tons/year
SO_2	6.72	tons/year
NO_x	9.85	tons/year
CO	3.17	tons/year
VOC	0.33	ton/year
Barium	0.0008	ton/year
Cadmium	0.0013	ton/year
Chromium	0.0011	ton/year
Lead	0.0358	ton/year

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required for all emission points. This includes both the boiler and the waste oil tank.

Boiler

The proposed boiler is equipped with a low NO_x designed burner that is guaranteed by the manufacturer for 75 ppmv or less for NO_x emissions. This low NO_x designed burner is recommended as BACT for the proposed boiler. The boiler must be properly maintained and operated in good working condition.

The use of waste oil fuel which meets the sulfur standards established in 40 CFR Part 60 Subpart Dc is required. For fuel oils, the NSPS standard is 0.50 lb of sulfur dioxide per million BTU heat input. Regarding metal contents, the oil must meet the specifications which are outlined in 40 CFR 266, Subpart E, "Used Oil Burned for Heat Recovery".

Section 1.132, UACR defines the term "significant". No. 2b in the definition states the following:

> "For purposes of Section 3.6, it shall also mean:
>
> b. In reference to a net emission increase or the potential of a source to emit a pollutant subject to regulation under the Clean Air Act not listed above, any emission rate."

Therefore, if HAFB already had a PSD permit, this would be a significant emission increase under PSD. The engineering section recommends that BACT for the metals emissions be compliance with 40 CFR 266, Subpart E and a consumption limitation as proposed.

The quantities of CO, VOC, SO_2 and PM_{10} annual emissions listed in Section II are such that it is not cost effective to install control systems for these pollutants. It is recommended that BACT for these listed pollutants be the proper operation and maintenance of the boiler in accordance with the manufacturer's instructions.

Waste Oil Tank

The only pollutant in question here is VOC emissions. Emissions associated with the waste oil tanks are from tank breathing losses and working losses. Due to the low true vapor pressure of waste oil (less than 1.50 psia), and the small tank sizes, the engineering section recommends that BACT for these two tanks be a fixed roof tank. A vapor recovery system is not cost effective for tanks with these amounts of proposed emissions.

IV. APPLICABILITY OF FEDERAL AND UTAH AIR CONSERVATION REGULATIONS (UACR)

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for a modification. This regulation applies.

2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.

3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.

4. Section 3.1.10, UACR - Additional information requirements for a new major source or major modification which emits precursors of ozone and impacts an area of nonattainment for ozone. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation does not apply.

5. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation. As of the date of the regulation, the boilers are limited to 20% opacity. This new boiler is not listed in this regulation. Therefore, this regulation does not apply.

6. Section 3.3.1, UACR - Emission limitations for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This notice of intent does not represent a new major source. Therefore, this regulation will not apply.

7. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation will not apply.

8. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. HAFB must comply with this regulation. Therefore, HAFB shall include emissions from sources listed in this approval order in its annual emission inventory.

9. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This notice of intent does not represent a major source or a major modification under PSD rules. Therefore, this regulation does not apply.

10. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.1. A de minimums height of 65 meters (213.2 feet) is allowed. This proposed boiler does not have stacks which exceed 65 meters in height. It is in compliance with this regulation.

11. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This notice of intent does not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

12. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). This regulation applies.

13. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

14. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This notice of intent does contain oil combustion. However, the limitation actually imposed (0.5% sulfur by weight) is more stringent and takes precedence.

15. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

16. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. The waste oil combustion is not covered in this regulation. The capacity of the waste oil storage tank is less than the regulated capacity of 40,000 gallons, and the true vapor pressure is less than 1.52 psia. This regulation will not apply.

17. Section 5, UACR - Emergency episode requirements. This regulation applies.

18. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There are no NESHAPS for this notice of intent.

19. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County, which is a nonattainment for ozone. The Bureau of Air Quality guidelines does not call for this source modification to be modeled for any pollutant. The Bureau has found through experience that, because of the small increase in quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small increase is very unlikely to cause a new violation of the NAAQS.

20. 40 CFR 60.40c to 60.48c, NSPS, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units - This regulation applies. The effective date is June 9, 1989. An affected facility is each steam generating unit for which construction, modification, or reconstruction commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 million BTU/hr or less, but greater than 10 million BTU/hr. The heat input is 20.9 million BTU/hr. The standards are as follows:

Sulfur Dioxide

If oil is the only fuel, no owner/operator shall cause to be discharged into the atmosphere any gases which contain SO_2 in excess of 0.50 lb per million BTU heat input.

Particulate

If oil is the only fuel and the heat input is 30 million BTU/hr or less but greater than 10 million BTU/hr, there is no standard. There are also recordkeeping requirements.

21. 40 CFR 60.110b to 60.117b, NSPS, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. This regulation applies to the following tanks:

A. Storage capacity greater than or equal to 151 cubic meters (40,000 gallons) with a volatile organic liquid whose true vapor pressure is from 5.2 kPa to 76.6 kPa

B. Storage capacity greater than or equal to 75 cubic meters but less than 151 cubic meters (40,000 gallons) with a volatile organic liquid whose true vapor pressure is from 27.6 kPa to 76.6 kPa

This regulation will not apply to these two tanks.

22. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

1) Maintenance, repair, and replacement

2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

This notice of intent is a modification under this rule.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the waste oil fired boiler rated at 20.9 million BTU/hr in Building 1704 according to the information submitted in the notice of intent dated March 27, 1990 and additional information submitted to the Executive Secretary dated October 31, 1990. The boiler shall be a dual fuel boiler with the capability of burning waste oil. A copy of this approval order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with the appropriate and relevant conditions.

2. The approved installation shall consist of the following equipment:

A. 500 hp Scotch Marine 3 Pass boiler or equivalent complete with dual (natural gas and waste oil) burner - Equivalency shall be determined by the Executive Secretary.

B. Oil filtration system; and

C. Associated piping, control, and alarms, chemical feed pump, chemical mixing tank, and appropriate tie-ins to existing feed water and natural gas line systems.

3. Visible emissions from the boiler shall not exceed 20% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The following fuel consumption limits for the boiler shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

   A. Waste oil consumption - 100,000 gallons per 12 month period

   B. Natural gas consumption - 166.89 x 10^6 scf per 12 month period

   Compliance with the annual limitations shall be determined on a rolling 12 month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Natural gas fuel consumption shall be determined by the use of records from a fuel meter. Waste oil consumption for the boiler shall be determined by the use of records from the waste oil transfer log. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

5. The emissions of sulfur dioxide from the boiler while burning waste oil shall not exceed 0.50 lb per million BTU heat input.

6. Stack testing to show compliance with the emission limitation of condition #5 shall be performed as specified below:

   Testing Status

   Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source.

   Notification

   The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

Sample Location

40 CFR 60. Appendix A, Method 1

Volumetric flow rate

40 CFR 60, Appendix A, Method 2

SO_2

40 CFR 60, Appendix A, Method 6 or 19

Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate at which the facility will be operated.

7. The ash content of any waste oil burned shall not exceed 0.65 percent by weight. The ash content shall be tested using the appropriate ASTM method if directed by the Executive Secretary.

8. The waste oil used for fuel shall contain no more than 1000 ppm by weight of total halogen. The halogen content shall be tested by ASTM Method D-808-81 before waste oil is transferred to the boiler tank and burned.

9. The following element limitations ~~of metal content~~ in waste oil shall not be exceeded:

A. Total halogens - 1000 ppm by weight
B. Cadmium - 2 ppm by weight
C. Chromium - 10 ppm by weight
D. Lead - 100 ppm by weight
E. Arsenic - 5 ppm by weight

The owner/operator shall provide test certification for each load of waste fuel oil from 55 gallon drums or bulk carrier. Certification shall be either by his own testing or test reports from a testing contractor. Records of waste fuel oil consumption and the test reports shall be kept for all periods when the plant is in operation. The records shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request.

10. In addition to the requirements of this approval order, all provisions of 40 CFR 60, NSPS Subparts A and Dc apply to this installation.

11. Eighteen months from the date of this approval order the Executive Secretary shall be notified in writing of the status of construction of this project unless the construction is complete and operation has commenced.

12. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

13. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

This approval order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Regulations.

Annual emissions for this boiler are calculated at 2.85 tons/yr for particulates, 2.85 tons/yr for PM_{10}, 6.72 tons/yr for SO_2, 9.85 tons/yr for NO_x, 3.17 tons/yr for CO, 0.33 tons/yr for VOCs, 0.0008 ton/yr for barium, 0.0013 for cadmium, 0.0011 ton/yr for chromium, and 0.0358 ton/yr for lead. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

TIM.B
HAFB1703

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: TOTALS
DATE: FEB-06-1991
TIME: 12:33:06 PM

SOURCE: TOTAL PROJECT EMISSION ESTIMATES
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
	HOURLY			ANNUAL			
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TSP	8.0	1.0031	3.0	0.0849		8.0	3.0
PM-10	8.0	1.0031	3.0	0.0849		8.0	3.0
SOX	20.4	2.5755	6.6	0.1910		20.4	6.6
NOX	3.9	0.4905	7.0	0.2016		3.9	7.0
CO	1.5	0.1912	3.2	0.0913		1.5	3.2
VOC non METHANE	0.1	0.0154	0.3	0.0096		0.1	0.3
VOC METHANE	0.2	0.0277	0.3	0.0087		0.2	0.3
ALDEHYDES	0.0	0.0000	0.0	0.0000		0.0	0.0
HCl							
ARSENIC							
BARIUM	0.00	0.0003	0.00	0.0000		0.00	0.00
CADMIUM	0.00	0.0003	0.00	0.0000		0.00	0.00
CHROMIUM	0.00	0.0004	0.00	0.0000		0.00	0.00
COPPER							
LEAD	0.11	0.0140	0.04	0.0010		0.00	0.00
MANGANESE							
MERCURY							
NICKEL							
FORMALDEHYDE							
POLYCYCLIC ORGANIC MATTER (POM'S)							
	pCi/HR		pCi/YR			pCi/HR	pCi/YR
THORIUM-232							
URANIUM-235							

pCi = PICOCURIE = 10^-6 CURIES (A MEASURE OF RADIATION)

THIS TOTAL IS THE TOTAL OF THE FOLLOWING SUBTOTALS:

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: AP1-3IR
DATE: FEB-08-1991
TIME: 12:33:06 PM

SOURCE: BOILER - WASTE OIL COMBUSTION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TSP	7.86	0.9900	2.5	0.0729	0.00	7.9	2.5
PM10	7.86	0.9900	2.5	0.0729	0.00	7.9	2.5
SOx	20.43	2.5739	6.6	0.1895	0.00	20.4	6.6
NOx	2.33	0.2930	0.8	0.0216	0.00	2.3	0.8
CO	0.79	0.0990	0.3	0.0073	0.00	0.8	0.3
VOC, non-METH	0.04	0.0055	0.0	0.0004	0.00	0.0	0.0
METHANE	0.16	0.0198	0.1	0.0015	0.00	0.2	0.1

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.3 FUEL OIL COMBUSTION
TABLE 1.3-1 FUEL OIL COMBUSTION
INDUSTRIAL BOILER (10 MMBTU/HR TO 100 MMBTU/HR) USING WASTE OIL

EMISSION FACTORS: (IN POUNDS PER 1000 GALLONS OF FUEL OIL COMBUSTED)			COMMENTS
P	50.00	LB/10^3GAL	BASED ON 0.65% ASH CONTENT
PM10	50.0	LB/10^3GAL	PM10 = (% <= 10um)*(TSP)
% <= 10um	100.0	% PASS	FROM TABLE 1.3-3
SOx	130.00	LB/10^3GAL	BASED ON 0.5% SULFUR CONTENT
% SULFER BY WEIGHT ALLOWED (s)	0.50	%	NSPS SUBPART Dc
SULFUR ALLOWED BY UACR 4.2 (S)	0.50	LB/MMBTU	FROM UACR SECTION 4.2
OIL HEAT VALUE (Hc)	133000.0	BTU/GAL	FROM AP42 PAGE A-3
FUEL OIL DENSITY (Dc)	6.66	LB/GAL	
NOX	14.8	LB/10^3GAL	FROM NOI
CO	5.0	LB/10^3GAL	FROM TABLE 1.3-1
NON METHANE VOC	0.28	LB/10^3GAL	FROM TABLE 1.3-1
METHANE	1.000	LB/10^3GAL	FROM TABLE 1.3-1
FUEL OIL CONSUMPTION	0.157	K GAL/HR	(MMBTU/HR)/(BTU/GAL)*(1E6)/(1000)
(MMBTU/HR)(HR/YR)/(BTU/GAL)	100.0	K GAL/YR	FROM NOI
MMBTU/HR	20.9	MMBTU/HR	FROM NOI
HP	500	HP	FROM NOI
BOILER % EFFICIENCY	80	%	FROM NOI

HOURS OF OPERATION AO CONDITIONS

HOURS PER DAY	24.0	HRS/DAY	FROM NOI
DAYS PER WEEK	7.0	DAYS/WEEK	FROM NOI
WEEKS PER YEAR	52.0	WEEKS/YR	FROM NOI
HRS PER YEAR	845.0	HRS/YR	FROM NOI

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: AP1-3IR
DATE: FEB-08-1991
TIME: 12:33:08 PM

SOURCE: BOILER - WASTE OIL COMBUSTION
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
TRACE METALS	HOURLY LBS/HR	HOURLY GRAMS/SEC	ANNUAL TONS/YR	ANNUAL GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
ARSENIC	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
BARIUM	0.0026	0.0003	0.0008	0.0000	0.00	0.0000	0.0000
CADMIUM	0.0039	0.0005	0.0013	0.0000	0.00	0.0000	0.0000
CHROMIUM	0.0034	0.0004	0.0011	0.0000	0.00	0.0000	0.0000
COPPER	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
LEAD	0.1110	0.0140	0.0358	0.0010	0.00	0.0000	0.0000
MANGANESE	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
MERCURY	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
NICKEL	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
FORMALDEHYDE	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
POLYCYCLIC ORGANIC MATTER (POM'S)	0.0000	0.0000	0.0000	0.0000	0.00	0.0000	0.0000

SUMMARY OF TRACE EMISSIONS FROM AND RECOMMENDATIONS OF RISK AS
METHODOLOGIES FOR COAL AND OIL COMBUSTION SOURCES FINAL REPORT

INCLUDING EMISSION FACTORS ARE UNCONTROLLED			COMMENTS
ARSENIC	0.0	LB/HR	FROM NOI
BARIUM	0.0	LB/HR	FROM NOI
CADMIUM	0.0	LB/HR	FROM NOI
CHROMIUM	0.0	LB/HR	FROM NOI
COPPER	0.0	LB/HR	FROM NOI
LEAD	0.1	LB/HR	FROM NOI
MANGANESE	0.0	LB/HR	FROM NOI
MERCURY	0.0	LB/HR	FROM NOI
NICKEL	0.0	LB/HR	FROM NOI
FORMALDEHYDE	0.0	LB/HR	FROM NOI
POLYCYCLIC ORGANIC MATTER (POM'S)	0.0	LB/HR	FROM NOI
FUEL OIL CONSUMPTION	0.2	K GAL/HR	(MMBTU/HR)/(BTU/GAL)*(1E6)/(1000)
OIL HEAT VALUE (HV)	138000.0	BTU/GAL	FROM AP42 TABLE A-3

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR: FILE: AP1-4IND
DATE: FEB-08-1991
TIME: 12:33:06 PM

SOURCE: BOILER - NATURAL GAS FIRED
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
TOTAL PARTICULATE	0.105	0.0132	0.42	0.0120	0.0	0.10	0.42
PM-10	0.105	0.0132	0.42	0.0120	0.0	0.10	0.42
SOx	0.013	0.0016	0.05	0.0014	0.0	0.01	0.05
NOx	1.568	0.1975	6.26	0.1800	0.0	1.57	6.26
CO	0.732	0.0922	2.92	0.0840	0.0	0.73	2.92
VOC, non-METH	0.059	0.0074	0.23	0.0067	0.0	0.06	0.23
VOC, METH	0.063	0.0079	0.25	0.0072	0.0	0.06	0.25

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
1.4 NATURAL GAS COMBUSTION
TABLE 1.4-1 INDUSTRIAL BOILERS (10 - 100 MILLION BTU/HR)

EMISSION FACTORS: (IN LBS/MILLION CUBIC FEET OF GAS COMBUSTED)			COMMENTS
RTICULATE	5.0	LBS/MMCF	BAQ DEFAULT VALUE (FROM TABLE 1.4-1)
PM10	5.0	LBS/MMCF	NEDS SOURCE CLASSIFICATION CODES
SO2	0.6	LBS/MMCF	SULFUR CONTENT = 2000 GR/10^6 SCF
NOX	75.0	LBS/MMCF	FROM NOI
CO	35.0	LBS/MMCF	FROM TABLE 1.4-1
NON METHANE VOC	2.8	LBS/MMCF	FROM TABLE 1.4-1
METHANE	3.0	LBS/MMCF	FROM TABLE 1.4-1
GAS CONSUMPTION:	166.9	MMCF/YR	(MMCF/HR) * (HRS/YR)
MILLION CUBIC FEET PER HOUR	0.0	MMCF/HR	(MMBTU/HR)/(BTU/CUBIC FT)
BOILER CAPACITY RATING	20.9	MMBTU/HR	FROM NOI INFORMATION
FUEL HEAT CONTENT	1000.0	BTU/CU FT	FROM NOI INFORMATION

HOURS OF OPERATION AQ CONDITIONS

HOURS PER DAY	24	HRS/DAY
DAYS PER WEEK	7	DAYS/WEEK
WEEKS PER YEAR	52	WEEKS/YR
HOURS PER YEAR	7985	HRS/YR

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: AP4-3EB12
DATE: FEB-08-1991
TIME: 12:33:06 PM

SOURCE: WASTE OIL TANK - TOTAL LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC	0.020	0.00	0.087	0.00		0.020	0.087

TOTAL LOSSES FROM FIXED ROOF TANKS

Lt = Lb + Lw 173.734 LBS/YR

Lb = BREATHING LOSS..... 101.974 LBS/YR

Lw = WORKING LOSS ..... 71.760 LBS/YR

TON/YR = (LB/YR)/(2000 LB/TON)..... 0.087 TON/YR

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: AP4-3E01
DATE: FEB-08-1991
TIME: 12:33:08 PM

SOURCE: WASTE OIL TANK - BREATHING LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
	HOURLY		ANNUAL				
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC	0.012	0.0015	0.051	0.0015	0.0	0.012	0.051

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUID
4.3.2 EMISSIONS AND CONTROLS (FIXED ROOF TANKS)

BREATHING LOSS (Lb) IN POUNDS PER YEAR			COMMENTS
Lb = (2.26E-2)(Mv)((P/(Pa-P))^0.68)(D^1.73)(H^0.51)(AVG T^.50)(Fp)(C)(Kc)			FROM EQUATION (1) PG. 4.3-5
(BREATHING LOSS) =	101.97	LBS/YR	
Mv	130.0	LB/LB MOLE	MOLECULAR WT. OF STORAGE VAPOR, TABLE 4.3-2
Pa (ATMOSPHERIC PRESSURE AT TANK)	12.4	PSIA	Pa = (29.9)/(10^(e/62583.6263))
ELEVATION (e)	4,500.0	FEET	e = FEET ABOVE SEA LEVEL
P = TRUE VAPOR PRESSURE (FROM NOI)	0.230000	PSIA	AT AVE. ACTUAL LIQUID STORAGE TEMPERATURE
D	12.0	FT	D = TANK DIAMETER (FROM NOI)
H (FROM NOI)	11.8	FT	H = AVE. VAPOR SPACE HT. INCLUDING ROOF VOL
AVG T (FROM NOI)	10.0	DEG F	AVG T = AVE AMBIANT DIURNAL TEMP. CHANGE
Fp	1.0	-	Fp = PAINT FACTOR, FROM TABLE 4.3-1
C = ADJUSTMENT FACTOR FOR SMALL DIAMETER TANKS	1.0	-	FROM FIGURE 4.3-4
Kc = PRODUCT FACTOR	0.6	-	SEE NOTE (4) PAGE 4.3-8
TON/YR = (LB/YR)/(2000 LB/TON)	0.051	TON/YR	

CONTROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: AP4-3E02
DATE: FEB-08-1991
TIME: 12:33:08 PM

SOURCE: WASTE OIL TANK - WORKING LOSS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BLDG 1703 - DUAL FUEL BOILER

	CONTROLLED					UNCONTROLLED	
		HOURLY		ANNUAL			
	LBS/HR	GRAMS/SEC	TONS/YR	GRAMS/SEC	% CNTRL	LBS/HR	TONS/YR
VOC	0.008	0.0010	0.036	0.0010	0.0	0.008	0.036

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SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUID
4.3.2 EMISSIONS AND CONTROLS (FIXED ROOF TANKS)
WORKING LOSS (LW) IN LBS/YR

= (2.40E-5)(Mv)(P)(V)(N)(Kn)(Kc).....	71.7600	LBS/YR	EQUATION (2) PAGE 4.3-8
Mv	130.0	lb/lb-mole	MOLECULAR WT. OF STORAGE VAPOR, TABLE 4.3-2
P = TRUE VAPOR PRESSURE (FROM NOI)	0.230000	PSIA	AT AVE. ACTUAL LIQUID STORAGE TEMPERATURE
V	20000	GAL	V = TANK CAPACITY (IN GALLONS)
N = (NUMBER OF TURNOVERS PER YEAR)	5.000	PER YR	N = (Q)/(V)
Q	100,000	GAL/YR	Q = THROUGH-PUT IN GALLONS/YEAR
Kn = TURNOVER FACTOR	1.0	-	FROM FIGURE 4.3-7
Kc = PRODUCT FACTOR	1.0	-	SEE NOTE (1) ON PAGE 4.3-11
TON/YR = (LB/YR)/(2000 LB/TON).....	0.036	TON/YR	