Sunoco Inc.(R&M) Philadelphia Refinery

3144 Passyunk Ave.
Philadelphia, PA 19145

SO2 Operating Permit

July 27, 2000

City of Philadelphia
Department of Public Health
Air Management Services

Permit No. SO2-95-039

Expiration Date: None

City of Philadelphia
Department of Public Health
Air Management Services

Effective Date: July 27, 2000

Expiration Date: None

Replaces Permit No. None

SECTION A. SOURCE IDENTIFICATION

In accordance with the provisions of the Pennsylvania Code Title 25, Philadelphia Code Title III, and Air Management Regulation (AMR) XIII, the owner or operator (Permittee) identified below is authorized by Philadelphia Air Management Services (AMS) to operate the air emission source(s) listed in Tables A-1 & A-2. This facility is subject to all terms and conditions specified in this permit. Nothing in this permit relieves the Permittee from its obligations to comply with all applicable Federal, State and Local laws and regulations.

Facility:	Sunoco Inc.(R&M) Philadelphia Refinery
Owner:	Sunoco Inc.
Location:	3144 Passyunk Ave, Philadelphia , PA 19145
Mailing Address:	3144 Passyunk Ave, Philadelphia , PA 19145
SIC Code(s):	2911
Plant ID:	1501
Facility Contact:	Eric Schneider
Phone:	(215) 339-2091
Permit Contact:	Eric Schneider
Phone:	(215) 339-2091
Responsible Official:	Michael G. Ruffner
Title:	Refinery Manager

Thomas Huynh, Chief of Source Registration

7/28/2000
Date

TABLE A1-FACILITY INVENTORY LIST (Girard Point)

ID	Group	Source Name	Design Capacity		Fuel/Material	Construction Date
CU-004		B-104 - Unit 1232	70	MMBTU/hour	Refinery Gas	1954
CU-005		H-1 - Unit 1332	45	MMBTU/hour	Refinery Gas	1958
CU-006		H-602 - Unit 1332	43	MMBTU/hour	Refinery Gas	1958
CU-007		H-601 - Unit 1332	48	MMBTU/hour	Refinery Gas	1958
CU-008		H-600 - Unit 1332	21	MMBTU/hour	Refinery Gas	1958
CU-009		H-2 - Unit 1332	60	MMBTU/hour	Refinery Gas	1958
CU-010		H-401 - Unit 1332	233	MMBTU/hour	Refinery Gas	1958
CU-011		H-400 - Unit 1332	186	MMBTU/hour	Refinery Gas	1958
CU-012		H-3 - Unit 1332	36	MMBTU/hour	Refinery Gas	1958
CU-013		F-1 - Unit 137	415	MMBTU/hour	Refinery Gas/ #6 Oil	1952
CU-014		F-2 - Unit 137	155	MMBTU/hour	Refinery Gas/ #6 Oil	1952
CU-015		F-3 - Unit 137	60	MMBTU/hour	#6 Oil	1974
CU-016		B-101 - Unit 231	91	MMBTU/hour	Refinery Gas	1957
CU-017		H-1 Heater - Unit 433	243	MMBTU/hour	Refinery Gas	1973
CU-018		37 Boiler - Boiler House #3	495	MMBTU/hour	Refinery Gas/ #6 Oil	1952
CU-019		38 Boiler - Boiler House #3	495	MMBTU/hour	Refinery Gas/ #6 Oil	1952
CU-020		39 Boiler - Boiler House #3	495	MMBTU/hour	Refinery Gas/ #6 Oil	1952
CU-021		40 Boiler - Boiler House #3	660	MMBTU/hour	Refinery Gas/ #6 Oil	1954
CD-004		FCCU CO Boiler - Unit 1232	580	MMBTU/hour	Refinery Gas/ #6 Oil	1964
P-117		1231 Flare - Unit 1232				1946
P-118		1232 Flare - Unit 1232				1954

TABLE A2-FACILITY INVENTORY LIST (Point Breeze)

ID	Group	Source Name	Design Capacity	Fuel/Material	Construction Date
CU-101		H-101- Unit 210A	183.0 MMBTU/hour	Refinery Gas / #6 Oil	12/64
CU-102		H-201- Unit 210B	242.0 MMBTU/hour	Refinery Gas / #6 Oil	5/73
CU-103		13H-1- Unit 210C	235.4 MMBTU/hour	Refinery Gas / #6 Oil	5/73
CU-104		1H-1- Unit 859	76.0 MMBTU/hour	Refinery Gas / #6 Oil	2/2/72
CU-105		1H-2- Unit 859	70.0 MMBTU/hour	Refinery Gas / #6 Oil	2/2/72
CU-106		1H-3- Unit 859	211.4 MMBTU/hour	Refinery Gas / #6 Oil	2/2/72
CU-107		1H-4- Unit 859	19.0 MMBTU/hour	Refinery Gas / #6 Oil	2/2/72
CU-108		2H-1- Unit 860	49.0 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-109		2H-2- Unit 860	69.8 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-110		2H-3- Unit 860	174.7 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-111		2H-4- Unit 860	99.4 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-112		2H-5- Unit 860	155.0 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-113		2H-6- Unit 860	36.7 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-114		2H-7- Unit 860	59.0 MMBTU/hour	Refinery Gas / #6 Oil	3/6/67
CU-115		2H-8- Unit 860	49.6 MMBTU/hour	Refinery Gas	3/6/67
CU-116		2H-9- Unit 860	165.0 MMBTU/hour	Refinery Gas	1994
CU-118		PH-1- Unit 864	80.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-119		PH-2- Unit 864	45.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-120		PH-3- Unit 864	80.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-121		PH-4- Unit 864	57.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-122		PH-5- Unit 864	90.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-123		PH-7- Unit 864	45.5 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-124		PH-11- Unit 864	74.0 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-125		PH-12- Unit 864	85.1 MMBTU/hour	Refinery Gas / #6 Oil	8/2/71
CU-126		11H-1- Unit 865	72.2 MMBTU/hour	Refinery Gas / #6 Oil	5/73
CU-127		11H-2- Unit 865	49.9 MMBTU/hour	Refinery Gas / #6 Oil	5/73
CU-128		12H-2- Unit 866	43.0 MMBTU/hour	Refinery Gas / #6 Oil	5/73
CU-129		8H-101- Unit 868	39.7 MMBTU/hour	Refinery Gas	1980

TABLE A2-FACILITY INVENTORY LIST (Point Breeze continued)

ID	Group	Source Name	Design Capacity	Fuel/Material	Construction Date
CU-134		NO. 1 Boiler - 22 Boilerhouse	169.0 MMBTU/hour	Refinery Gas / Natural Gas/ Propane	1942
CU-135		NO. 2 Boiler - 22 Boilerhouse	169.0 MMBTU/hour	Refinery Gas / Natural Gas/ Propane	1942
CU-136		NO. 3 Boiler - 22 Boilerhouse	203.0 MMBTU/hour	Refinery Gas / Natural Gas/ Propane	1947
P-642		North Flare in South Yard			1967
P-643		South Flare in South Yard (alternate for the North Flare)			1973
P-659		North Claus Sulfur Recovery Unit - Unit 867			1990
P-660		South Claus Sulfur Recovery Unit- Unit 867			1980
P-661		FCCU Return Stack 868 8H-103			1980

TABLE A3-FACILITY INVENTORY LIST (Girard Point Stack Parameters)

Stack ID	COMMENT	UTME	UTMN	Base elevation	Height	Diameter
S-111	1232 FCCU Feed Preheat Furnace B104	482.181	4417.285	4.570	35.052	2.438
S-112	1332 htr H1	482.181	4416.764	4.570	27.432	1.981
S-113	Heater 602	482.176	4416.772	4.570	26.822	1.448
S-114	Heater 601	482.190	4416.808	4.570	25.603	1.372
S-115	Heater 600	482.176	4416.808	4.570	26.822	1.448
S-116	1332 htr H2	482.194	4416.762	4.570	26.822	1.372
S-117	Heater 400 & 401 comb	482.142	4416.809	4.570	30.480	2.286
S-119	1332 htr H3	482.186	4416.756	4.570	27.432	1.981
S-120	AVU 137 UNIT F1 & F2 FUEL BURNING	481.793	4417.475	4.570	60.960	3.962
S-122	AVU 137 UNIT F3 FUEL BURNING	481.774	4417.498	4.570	23.012	1.372
S-123A	B101 htr 231 Stack A	482.150	4416.710	4.570	22.860	1.052
S-123B	B101 htr 231 Stack B	482.153	4416.705	4.570	22.860	1.052
S-123C	B101 htr 231 Stack C	482.156	4416.701	4.570	22.860	1.052
S-124	H1 htr 433 FUEL BURNING	482.072	4417.018	4.570	41.453	2.896
S-125	#3 BOILER HOUSE stack	481.845	4416.765	4.570	60.960	5.791
S-153	1231 Flare	482.348	4417.595	4.570	62.880	1.110
S-154	1232 Flare	482.300	4417.549	4.570	60.360	1.110
S-155	433 Flare	481.960	4417.431	4.570	81.700	1.110
S-156	1232 FCCU Unit/ CO boiler stack	482.096	4417.363	4.570	45.720	2.896

TABLE A4-FACILITY INVENTORY LIST (Point Breeze Stack Parameters)

Stack ID	COMMENT	UTME (km)	UTMN (km)	Base elevation (m	Height (m)	Diameter (m)
S-801	210A – HTR H101	482.829	4418.297	7.250	41.605	2.254
S-802	210B – HTR H201	482.838	4418.290	7.250	60.817	2.896
S-803	210C – HTR 13H1	482.910	4418.269	7.470	66.396	3.232
S-804	UNIT 859 1H-1 & 1H-2 Common Stack	482.700	4417.991	5.791	33.528	2.134
S-805	UNIT 859 1H-3	482.708	4418.003	5.761	45.427	2.720
S-806	UNIT 859 1H-4	482.715	4418.012	5.761	33.528	0.915
S-807	MAGNAFORMER 860 - HTRS 2H1, 2H2 & 2H4, STACK A comm	482.868	4418.026	5.790	35.636	1.905
S-808	MAGNAFORMER 860 - 2H1, 2H2 & 2H4 STACK B common	482.875	4418.022	5.790	35.636	1.905
S-809	MAGNAFORMER 860 - HTR 2H3 AND 2H5 STACK A common	482.865	4418.014	5.790	33.528	2.045
S-810	MAGNAFORMER 860 - HTRS 2H3 & 2H5 – STACK B common	482.872	4418.010	5.790	33.528	2.045
S-811	MAGNAFORMER 860 - HTR 2H6	482.882	4418.052	5.760	33.528	1.270
S-812	MAGNAFORMER 860 - HTR 2H7	482.885	4418.058	5.760	33.528	1.372
S-813	MAGNAFORMER 860 HTR 2H8	482.888	4418.063	5.760	33.528	1.372
S-814	860 FUEL GAS TO TEMP BOILER 2H9	482.884	4418.028	5.760	24.380	1.450
S-818	MAGNAFORMER 864 - HTR PH1	483.132	4418.262	7.890	39.091	1.486
S-819	MAGNAFORMER 864 - HTR PH2 & HTR PH4	483.111	4418.263	7.890	33.528	2.122
S-820	MAGNAFORMER 864 - HTR PH3	483.101	4418.255	7.890	33.528	2.046
S-822	MAGNAFORMER 864 - HTR PH5	483.101	4418.269	7.890	33.528	2.046
S-822	MAGNAFORMER 864 - HTR PH7	483.142	4418.269	7.890	33.528	1.372
S-823	MAGNAFORMER 864 - HTR PH11	483.151	4418.268	7.890	33.528	1.486
S-824	MAGNAFORMER 864 - HTR PH12	483.163	4418.272	7.890	36.576	1.626
S-825	DISTILLATE HDS 865 - HTR 11H1	483.106	4418.379	7.800	42.680	1.830
S-826	DISTILLATE HDS 865 - HTR 11H2	483.119	4418.379	7.800	55.169	1.880
S-827	GAS OIL HDS 866 - HTR 12H1	483.145	4418.382	7.830	38.100	1.524
S-828	FCCU 868 8H-101	483.210	4418.154	6.710	35.947	1.308
S-833	22 BLRHSE - BLR #1	482.652	4419.316	4.650	24.610	1.890
S-834	22 BLRHSE - BLR #2	482.676	4419.312	4.650	24.610	1.890
S-835	22 BLRHSE - BLR #3	482.696	4419.310	4.850	24.490	2.120
S-976	NORTH FLARE - SOUTH YARD	482.807	4417.911	5.300	90.500	2.930
S-977	SOUTH FLARE - SOUTH YARD	482.719	4417.582	3.320	90.130	2.930
S-985	FCCU RETURN STACK 868 8H-103	483.214	4418.253	6.710	60.960	2.700
S-983	UNIT 867 SRU COMBUSTION	482.648	4418.010	5.670	70.100	1.070

SECTION B. SPECIAL CONDITIONS

1. Emission Limitations

(a) The following SO_2 emission limitations are placed on the sources at Girard Point:

(1) CO Boiler at Girard Point

(i) CD-004 (The CO Boiler at the 1232 FCCU) shall not exceed 500 ppmvd SO_2 at any time.

(2) Heaters and Boilers

Table 1 Girard Point Emission Limitations Heaters and Boilers

ID	*COMMENT*	*Emission Rate (lb.SO_2/ MMBTU)*	*Rolling 365 Day Average Emission Rate (lb.SO_2/ MMBTU)*
CU-004	B104 @ 1232	0.53	0.33
CU-005	H1 @ 1332	0.53	0.33
CU-006	H602 @ 1332	0.53	0.33
CU-007	H601 @ 1332	0.53	0.33
CU-008	H600 @ 1332	0.53	0.33
CU-009	H2 @ 1332	0.53	0.33
CU-010	H401 @ 1332	0.53	0.33
CU-011	H400 @ 1332	0.53	0.33
CU-012	H3 @ 1332	0.53	0.33
CU-013	F1 @ 137	0.53	0.33
CU-014	F2 @ 137	0.53	0.33
CU-015	F3 @ 137	0.53	0.53
CU-016	B101 @ 231	0.53	0.33
CU-017	H1 @ 433	0.53	0.33
CU-018	No 37 Boiler	0.53	0.33
CU-019	No 38 Boiler	0.53	0.33
CU-020	No 39 Boiler	0.53	0.33
CU-021	No 40 Boiler	0.53	0.33

(b) The following SO_2 emission limitations are placed on the sources at Point Breeze:

(1) SO_2 Sources at Point Breeze:

(i) The emissions from C-129 (heater 8H101) shall not exceed 0.1 gr.H_2S/dscf

(ii) The combined SO_2 emission rate from P-659 & P-660 (the Sulfur Recovery units) shall not exceed 31.72 lb./hour

(iii) The SO_2 emission rate from P-661 (FCCU) shall not exceed 358 lb./hour.

(2) Heaters and Boilers

Table 2 Point Breeze Emission Limitations Heaters and Boilers

ID	*COMMENT*	*Emission Rate (lb.SO_2/ MMBTU)*	*Rolling 365 Day Average Emission Rate (lb.SO_2/ MMBTU)*
CU-101	H101 @ 210A	0.53	0.33
CU-102	H201 @ 210B	0.53	0.33
CU-103	13H1 @ 210C	0.53	0.33
CU-104	1H-1 @ 859	0.53	0.33
CU-105	1H-2 @ 859	0.53	0.33
CU-106	1H-3 @ 859	0.53	0.33
CU-107	1H-4 @ 859	0.53	0.33
CU-108	2H1 @ 860	0.53	0.33
CU-109	2H2 @ 860	0.53	0.33
CU-110	2H3 @ 860	0.53	0.33
CU-111	2H4 @ 860	0.53	0.33
CU-112	2H5 @ 860	0.53	0.33
CU-113	2H6 @ 860	0.53	0.33
CU-114	2H7 @ 860	0.53	0.33
CU-115	2H8 @ 860	0.53	0.33
CU-116	2H9 @ 860	0.034	0.034
CU-118	PH1 @ 864	0.53	0.33
CU-119	PH-2 @ 864	0.53	0.33
CU-120	PH-3 @ 864	0.53	0.33
CU-121	PH-4 @ 864	0.53	0.33
CU-122	PH-5 @ 864	0.53	0.33
CU-123	PH7 @ 864	0.53	0.33
CU-124	PH11@ 864	0.53	0.33
CU-125	PH12@864	0.53	0.33
CU-126	11H1@865	0.53	0.33

ID	COMMENT	Emission Rate ($lb.SO_2$/ MMBTU)	Rolling 365 Day Average Emission Rate ($lb.SO_2$/ MMBTU)
CU-127	11H2@865	0.53	0.33
CU-128	12H1@866	0.53	0.33
CU-134	BLR 1 @ # 22BH	0.034	0.034
CU-135	BLR 2 @ # 22BH	0.034	0.034
CU-136	BLR 3 @ # 22BH	0.034	0.034

2. Work Practice Standards

(a) The Permittee shall operate its sources consistent with all parameters established in the dispersion model submitted to AMS on August 6, 1999 and listed in tables A3 and A4.

(b) The Permittee shall remodel to demonstrate compliance with the National Ambient Air Quality Standard (NAAQS) for SO2 if AMS has cause to believe that the attainment or maintenance of the standard is in jeopardy.

3. Testing Requirements

(a) The Permittee shall test for sulfur content of the refinery fuel gas burned on a daily basis.

(b) The Permittee shall test for sulfur content of the fuel oil upon receipt of each fuel oil delivery

(c) The test methods to be used to demonstrate compliance with emission limitations shall be consistent with 40 CFR 60 Appendix A and the PA DEP Source Test Manual.

(1) ASTM D1266, D129, D1552, D2622 or D270 shall be used for sulfur in fuel.

(2) ASTM 4294 for sulfur in fuel can be used when the Permittee supports the data with a quality control plan and demonstrates the ability to accurately perform this test.

(3) ASTM D5453 shall be used to determine Hydrogen Sulfide Content of the fuel gas streams. The Permittee shall dedicate separate test equipment for liquid streams and gaseous streams. The Permittee shall calibrate the Antek equipment before each use.

(d) The Permittee may use alternative test methods to those listed in this section if AMS gives them prior approval in accordance with 25 PA Code § 139.3.

4. Monitoring Requirements

[25 Pa Code §§127.511 & 139, §§114(a)(3) & 504 (b) of Clean Air Act]

(a) Sources P-661 (FCCU 868) and P-659 & P-660 (SRU 867):

(1) For P-661 (FCCU 868) and P-659 & P-660 (SRU 867) the Permittee shall monitor the process rates for each unit on a daily basis.

(2) The permittee shall demonstrate compliance with the SO_2 emission limitations through use of Continuous Emission Monitors (CEM) in accordance with 25 Pa Code Chapter 139 procedure.

(b) All other combustion sources excluding flares.

(1) The Permittee shall monitor the fuel type and fuels usage for each combustion unit, boiler, process heater etc. on a daily basis.

(2) The permittee shall demonstrate compliance with the SO_2 emission limitations by monitoring the sulfur content of the fuel burned.

(c) Sources P-117 (The Flare for Unit 1231), P-118 (The Flare for Unit 1232), P-642 (North Flare) and P-643 (South Flare).

(1) The Permittee shall monitor the fuel type and fuels usage and sulfur content of the fuel burned for each flare pilot on a daily basis.

(2) The permittee shall monitor that the feed to the flares has not exceeded the worst case scenario used in the modeling demonstration. The Permittee shall determine SO_2 emissions using the same analysis and calculations used in the modeling demonstration.

5. Recordkeeping Requirements

[25 Pa Code §§127.511, 135.21, 135.5, & 139]

(a) The Permittee shall keep the following records:

(1) Sources P-661 (FCCU 868) and P-659 & P-660 (SRU 867) shall be periodically observed for process and log data, strip chart or electronic monitoring data specified in 4(a) & (b).

(i) Continuous emission records of SO_2 in accordance with Chapter 139.

(2) Non CEM Sources excluding flare sources.

(i) Fuel types, fuel usage, and sulfur analysis of the fuel burned on a daily basis.

(3) Sources P-117 (The Flare for Unit 1231), P-118 (The Flare for Unit 1232), P-642 (North Flare) and P-643 (South Flare).

(i) Fuel types, fuel usage, and sulfur analysis of the fuel burned in the pilots on a daily basis.

(ii) Occurrences when the feed to the flare has exceeded the worst case analysis for SO_2 in the modeling demonstration including the date, time, duration and calculated emissions of the exceedance.

(4) The Permittee shall establish and maintain baseline operating records, sampling data concurrent with any emission tests, and any supporting calculations used to determine emissions;

(5) Records of the occurrence and duration of each startup, shutdown, and malfunction of operation of an emission unit;

(6) Records of the occurrence, duration, and cause (if known) of each malfunction of air pollution equipment or monitoring equipment used to comply with the restrictions or monitoring provisions of this permit;

(7) For monitoring equipment used to comply with the monitoring requirements of this permit, records documenting the completion of installation, calibration checks, and maintenance.

6. Reporting Requirements

[25 Pa Code §127.511(c) & AMR I Sec. II]

(a) The Permittee shall submit to AMS the CEM report for SO2 in accordance to Chapter 139 procedure quarterly. The report shall contain, at the minimum, the following information:

(1) The date, time duration, and magnitude of excess emissions.

(2) The reason for any excessive emissions.

(3) Corrective action taken.

(4) For each day, the number of valid monitoring hours, the causes for any invalid monitoring hours contained in daily average and corrective actions taken.

(5) The results of all quality control and quality assurance actions taken.

(b) The Permittee shall submit to AMS Quarterly reports of the performance of the facility using the City of Philadelphia Monitoring Report Form. These reports shall consist of the following:

(1) A description of any deviations from permit requirements that occurred during the three-month reporting period, the probable cause of such deviations, and corrective actions or preventive measures taken;

(2) A description of any malfunction of processes, air pollution control equipment, or monitoring equipment that occurred during the three-month reporting period, the date and duration of the incidents, the probable cause of the incidents, and actions taken to remediate such incidents;

(3) A description of any sources which have not operated in more than one year.

(c) Annual compliance certification.

7. Reporting Of Malfunctions

[25 Pa Code §127.441 and AMR I Sec. II.A.5]

(a) The Permittee shall, within two (2) hours of any occurrence, notify AMS, by calling 685-7572 during business hours and 686-4514 during other times, of any malfunction of the source(s) or associated air pollution control devices listed in Table A1 of this permit, which results in, or may possibly result in, the emission of air contaminants in excess of the limitations specified in this permit, or regulation contained in 25 Pa Code Article III or the Philadelphia Air Management Code.

(b) Malfunction(s) which occur at this facility, and pose(s) an imminent danger to public health, safety, welfare and the environment, and would violate permit conditions if the source were to continue to operate after the malfunction, shall immediately be reported to AMS by telephone at the above number.

(c) A written report shall be submitted to AMS within two (2) working days following the (notification of the) malfunction, and shall describe, at a minimum, the following:

(1) The nature and degree of malfunction(s).

(2) The estimated emission(s) of each pollutant.

(3) The duration.

(4) Any corrective action taken.

8. Permit Expiration

[25 Pa Code §127.446]

(a) This operating permit shall not have an expiration date, as it is a revision to the Commonwealth of Pennsylvania's State Implementation Plan (SIP) for SO_2. This permit shall remain in effect until any subsequent revision to the SIP requires the modification of the permit.

9. Federally Enforceability

[25 Pa Code §127.424]

(a) This permit shall remain enforceable by the U.S. EPA as to SO_2 emission sources as part of the Pennsylvania SIP, as to requirements generally applied by EPA.

10. Submissions

(a) Reports, test data, monitoring data, notifications, and requests for renewal shall be submitted to:

Chief of Source Registration
Air Management Services
321 University Ave.
Philadelphia, PA 19104-4543