



DEPARTMENT OF THE NAVY

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Mr. Bob Pallarino  
U.S. Environmental Protection Agency, Region IX  
75 Hawthorne Street  
San Francisco, CA 94105

Mr. Steven Y.K. Chang, P.E., Chief  
State of Hawaii Department of Health  
Environmental Management Division  
Solid and Hazardous Waste Branch  
919 Ala Moana Boulevard, Room 210  
Honolulu, HI 96814

SUBJECT: SUMMARY OF DETAILED DISCUSSIONS CLARIFYING SPECIFICATIONS FOR TIRM AND APPENDICES BD AND BE OF THE TIRM REPORT UNDER THE ADMINISTRATIVE ORDER ON CONSENT STATEMENT OF WORK, RED HILL BULK FUEL STORAGE FACILITY, JOINT BASE PEARL HARBOR-HICKAM, OAHU, HAWAII

Dear Mr. Pallarino and Mr. Chang:

The U.S. Department of the Navy ("Navy") and Defense Logistics Agency ("DLA") has held many meetings with the U.S. Environmental Protection Agency ("EPA") and Hawaii Department of Health ("DOH") over the past months having in-depth technical discussions on the Specifications outlined in Appendices BD and BE, addressing the inspection and repair, respectively, of Red Hill Bulk Fuel Storage Tanks, of the TIRM Report. The feedback provided by EPA/DOH and PEMY Consulting was extremely beneficial in the refinement of many of the Specification Guidelines used at Red Hill. For example, the use of specific terminology, where applicable, for Red Hill so as to not confuse regulatory requirements associated with industry that also uses the same terms, has been incorporated into the Specification Guidelines.

Enclosure (1) is attached and contains written responses to all comments from EPA/DOH and PEMY Consulting. If you have any questions or concerns, please contact Mr. Mark Manfredi, Red Hill Regional Program Director/Project Coordinator at (808) 473-4148 or [mark.manfredi@navy.mil](mailto:mark.manfredi@navy.mil).

Sincerely,

R. D. HAYES, III  
Captain, CEC, U.S. Navy  
Regional Engineer  
By direction of the Commander

Enclosure: Response to Enclosures A and B from EPA/DOH ltr of June 16, 2017

Item	Source	Type	Page No	Para No	Line	Comment	Rationale	Decision (A/R/M)
<b>Comment Letter Heading: Appendix BD</b>								
1	EPA/PEMY		1	1	1	...Appendices BD and BE were created specifically for Red Hill tanks. If so, there are many remnants that weaken this assertion. An example, the title of Appendix BD should include the words 'Red Hill Tanks'.	Attachments BD and BE, UFGS Sections 33 56 17.00 20 and 33 56 18.00 20 respectively, were written specifically for Red Hill tanks. Titles edited and new regional numbers will be assigned to clarify.	A
2	EPA/PEMY		1	1	3	...clarifying the indexing and references to components of the main report should be implemented so that there is no confusion about what attachment really applies to what.	Attachments BD and BE will form a portion of a NAVFAC contract.	A
3	EPA/PEMY		1	1	5	There are many reference standards and documents listed. We think that by segregating them into informative (such as API 575) versus mandatory (such as applicable parts of API 653) may help with clarity.	NAVFAC design policy is to adhere to UFC 1-300-02. This UFC requires the UFGS format for specification criteria. Attachments BE and BE were prepared pursuant to the UFGS format.	M
4	EPA/PEMY		1	2	3	[details of what how the validation of the NDE will be done and how coupon sampling will be used]...topics may be best placed into a separate annex that covers the NDE validation process. The basic requirements for NDE can be left in the current annexes but hooks or references to the NDE validation process should be made to ensure clarity and work scope.	Validation of NDE operators and tank screening technology is an inspection best practice. NDE verification is being performed as part of AOC Section 5. The NDE validation portion of Attachment BE clarified to implement best practice.	A
5	EPA/PEMY		2	2	6	...requirements of paragraph 1.5.2.4 (and others such as 1.6.4 Destructive Testing) for the Non Destructive Examination Company clearly apply to the selected tank inspection company. However, this company (see Section 2.2.2) may not be the one that does the destructive testing, coupon cutting and execution of the NDE validation process	Destructive testing will also be addressed in AOC Section 5. Attachment BD is limited in destructive testing scope to determining plate pedigree.	M
6	EPA/PEMY		2	2	10	...area that we believe needs clarity is more specifically how and when the POD analyst will be applied and what specifically the outcome is expected to be.	Validation of NDE operators and tank screening technology is a inspection best practice. NDE verification is being performed as part of AOC Section 5. The NDE validation portion of Attachment BE clarified to implement best practice.	M

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7	EPA/PEMY		2	3	2	[RE: checks on the work being implemented]...in paragraph 1.6.5 Storage Tank inspection Design, it is clear that the selected contractor develop a plan to design repair details, to determine when API standards are applicable or not, to make details related to welds, repairs, and inspections. However, it is not clear that each of these many development activities are being reviewed and approved by the navy.	Clarified to require inspection design be submitted IAW UFGS 01 33 00.05 20 Submittal Requirements.	A
8	EPA/PEMY		2	3	5	We believe that a checklist and/or a submittal plan for each activity that the contractor designs in paragraph 1.6.5 and related paragraphs, should be submitted by the contractor and a sign off by the appropriate people in the navy be required.	Concur. NAVFAC contract requires a design for which the engineer of record has professional liability and has submittal requirements in UFGS 01 33 10.05 20.	A
9	EPA/PEMY		2	4	3	While we understand that compliance with industry standards [API 653] is a “good thing”, over reliance may result in unwanted and unnecessary effort and expense.	Noted, concur.	A
10	EPA/PEMY		2	4	9	... it is not needed to justify in detail why there are many deviations and exceptions to the requirements of both API 650 and API 653.	Concur. Reconciliation of industry standards by the engineer of record is best practice.	A
11	EPA/PEMY		2	5	1	In paragraph 1.6.5.3 corrosion rate requirements are outlined. We believe that this section should be written entirely independently of the API standards, especially API 653.	Concur. See comment and reply #13 in Attachment BE.	A
12	EPA/PEMY		2	5	2	We believe that the navy correctly wants to use a “straight line” corrosion rate method or linear corrosion rate assumption which is consistent with API standards. However, defining how this will be done needs more specificity. For example, how is it done for general corrosion versus pitting.	Concur. See comment and reply in Attachment BE.	A

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13	EPA/PEMY		2	5	5	We also believe that setting the minimum remaining thickness has not been sufficiently developed. Determining the minimum remaining thickness is something that the contractor could propose based on statistical theory, risk and NDE capabilities or some other means. The navy could approve such proposals for setting the minimum remaining thickness criteria for which we believe API 653 is completely irrelevant.	Concur, NAVFAC business decision to be revisited once inspection results and analysis are obtained.	M
14	EPA/PEMY		2	6	1	For the tower, bridge and catwalk assessment, inspection and repairs starting in paragraph 1.6.5.6 we believe that the contractor should submit proposal for how these will be implemented and that the navy should review and approve the results.	Concur.	A
15	EPA/PEMY		3	7	1	For vent piping (1.6.5.7) we believe that an analysis that is based on flow rate and pressure changes in the tank relative to outside atmospheric pressure should be implemented. Such an analysis should be prepared by the contractor but the navy should specify the rationale and criteria.	Concur, clarified.	A
16	EPA/PEMY		3	7	B1	An assumption that liquid fuel spills into the tank interior from some operation such as removing a coupon or a test hole, its evaporation rate, and the desired maximum concentration of that fuel based on the number of air changes per hour	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A
17	EPA/PEMY		3	7	B2	Minimum oxygen concentrations for breathing based on some assumption that oxygen is being consumed by the steel in an atmospheric corrosion model	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A
18	EPA/PEMY		3	7	B3	Minimum oxygen concentrations and maximum carbon dioxide concentrations based on maximum numbers of workings inside the tank at any one time.	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A
19	EPA/PEMY		3	7	B4	Ventilation rate based on welding fume generation, number and type of welding operations going on simultaneously	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A

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20	EPA/PEMY		3	8	1	It is not clear in either annex the details of how the bottom drain pipe will be repaired and/or replaced nor whether the design requires double wall or single wall pipe.	The tank nozzles will be repaired pursuant to an engineered design required in Attachment BE.  Replacement of nozzle piping is under study by AOC Section 3.	M
21	EPA/PEMY		3	9	1	Hydrostatic testing for the piping sections should be clarified in terms of what the test pressures are, how long the minimum and maximum duration is, how the water will be removed (including from low points) protection of sensors and gauges attached to the piping or other limitations that would cause the hydrostatic test to be highly limited...	Clarified in Attachments BD and BE.	M
22	EPA/PEMY		3	9	4	...as well as safety precautions.	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A
23	EPA/PEMY		3	9	4	A "what if" type analysis should be conducted to check safeguards about various types of failures such as breaking of fittings, hoses, pumps, parts of the piping system...	Clarified. tank piping hydrostatic testing plan in Attachment BD.	M
24	EPA/PEMY		3	9	6	People should not approach the pipe while the pressure is increasing; but they can do up close visual examination after the pressure is being brought down below the maximum pressure.	Concur, Government safety specification UFGS 01 35 26.05 20 requires adherence to EM 385-1-1.	A
25	EPA/PEMY		3	10	1	...if any piping is replaced then descaling and cleaning the internal bore scale should be covered...	Concur. Added requirements to Attachment BE.	A
26	EPA/PEMY		3	10	2	...how the removal of weld slag will be accomplished.	NDE acceptance criteria clarified in Attachment BE 3.5.3.5.	M
27	EPA/PEMY		3	10	2	A review of how to flush the pipe and with what substance is in order.	Concur. Added requirements to Attachment BE.	A
28	EPA/PEMY		3	11	1	All of these piping considerations should be submitted to the navy for review by the contractor.	Concur. Attachment BE requires a repair design.	A
29	EPA/PEMY		3	12	1	A major up-front planning consideration involves whether or not "weld stripe coating" will be used or not needs to be in the inspection and repair spec	Concur that stripe coating has value. Intend to selectively implement in design-build contract's Part 3. Surface preparation and coating specification is UFGS Section 09 97 13.15 which is included in the design-build contract's Part 5.	M

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30	EPA/PEMY		3	12	2	If the navy will use stripe coating over all internal welds that are below the maximum liquid level, then specific procedures such as sand blasting the margin (say 4 – 6 “ on either side of the welds) to near white or white metal (as dictated by the coating specification) should be decided now.	Concur that stripe coating has value. Intend to selectively implement in the design-build contract's Part 3. Surface preparation and coating specification will be UFGS Section 09 97 13.15.	M
31	EPA/PEMY		3	12	5	If stripe coating is to be done then the requirements for weld and coating cleaning, NDE, sand blasting and humidity control all need to be included in the current specifications.	Concur that stripe coating has value. Intend to selectively implement in design-build contract's Part 3. Surface preparation and coating specification is UFGS Section 09 97 13.15 which is included in the design-build contract's Part 5.	M
32	EPA/PEMY		3	13	1	As the tank inspection process is modified and changes throughout future years, we believe that the data management system should maintain as much information as possible so that it can be “re-used”. For example, shell plate numbering, locations of nozzles or other appurtenances should remain the same if possible so that as multiple reports are collected on the tanks large amounts of time and effort are not wasted by requiring each future contractor to re-invent the reference points, the numbering systems, the benchmarks etc. This is not clearly discussed in the specifications.	Concur. Attachments BD and BE clarified.	A
33	EPA/PEMY		4	14	1	We believe that a failure modes and effect analysis, a fault tree, or other detailed analyses should be conducted for the most vulnerable parts of the tank such as the expansion joints, small bore piping, or main bottom draw off nozzles.	Failure mode analysis is within the purview of AOC Section 8.	M
34	EPA/PEMY		4	15	1	...we do believe that the tower and piping should have an analysis for dynamic sloshing and liquid movement that is possible at various liquid levels. The analyses should ensure that stress levels caused by liquid movement do not result in any critical failure modes. Of course, the contractor should prepare such analyses and submit them to the navy for approval.	Failure mode analysis is within the purview of AOC Section 8.	M

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<b>Comment Letter Heading: Appendix BE</b>								
1	EPA/PEMY		4	16	1	Comments about Appendix BD which pertain to titling, references and organization also apply to this appendix.	Concur, see reply to comment #1 to Attachment BD above.	A
2	EPA/PEMY		4	17	1	We have the same types of comments made earlier about the over reliance of repairs based on the requirements of API 653.	Comment noted.	A
3	EPA/PEMY		4	18	1	The comments related to "stripe coating" of welds also apply in this annex.	Concur that stripe coating has value. Intend to selectively implement in the design-build contract's Part 3. Surface preparation and coating specification is UFGS Section 09 97 13.15, which is included in the design-build contract's Part 5.	M
4	EPA/PEMY		4	19	1	The Contractor's QC organization structure should be clarified with reference to 01 45 00.00 20 Quality Control. Generally, technical inspectors with specialist expertise are called QC Specialists and report to the QC Manager, whose qualifications are established in the Division 01 General Requirements part. It's not clear how the Tank Inspector of Record, the (several) Independent Tank Inspectors, the Weld Examiners, and the NDE Examiners are organized and how they report to the QC Manager. It may be perfectly workable that the Tank Inspector of Record assumes all of the QC Manager's duties and the rest of the team are just "Specialists" organized under that person's supervision.	NAVFAC contracts include UFGS Section 01 45 00.05 20 tailored to each contract. The Section includes specifications for the specialists.	A

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5	EPA/PEMY		4	20	1	Although the annex requires drawings, calculations and specific procedures for the various repairs we believe that the requirement to submit each and every such repair for review and approval by the navy or its designee is important. We believe that all repair details for each type of repair should be categorized, detailed, drawn, supported by calculations or specifications should be indexed and cataloged with a checklist and submitted to the navy for approval and/or changes.	Under the NAVFAC design-build model, the designer of record is in responsible charge of the repair design, pursuant to contract requirements. NAVFAC is the Government reviewing authority.	A
6	EPA/PEMY		5	21	1	For the tower, bridge and other internal structures we believe that structural calculations should be submitted along with all load cases, assumptions, for both normal operating and abnormal conditions (i.e. seismic, loads during internal maintenance or repairs) should be submitted as a baseline.	Clarified to address tower, bridge, and catwalk repair design requirements.	A
7	EPA/PEMY		5	22	1	We believe that a feasibility study should be conducted for how to make repairs for indications such as excessive pitting. This means that the best way to repair the defect should be decided in advance.	Concur. Government intends to produce a concept design.	A
8	EPA/PEMY		5	22	3	We also believe that in general all of the anticipated weld repairs should be worked out in advance. For example, pits may be covered with fillet welded patch plates, weld cracks repaired by a complete grind out and reweld of the defective weld, small areas of thinning by patch plates, large areas of thinning by new insert plates. These types of ideas should be worked out and approved prior to any field work starting.	Concur. Government intends to produce a concept design.	A



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9	EPA/PEMY		5	23	1	Very important in both appendices is the entire issue of the sampling system. If it is to be used then not enough detail is given. Because sampling piping is small bore, even heavy wall piping has a small wall thickness. So use of stainless steel piping is definitely worth considering. Use of double extra strong piping and all flanged and/or socket welded joints should be considered and decided. There is little guidance about that in these specifications.	Use of non-carbon steel components will be reviewed on a case-by-case basis. The DoD standard design for AST's does not allow any material that will cause the tank shell to become an anode.	M
10	EPA/PEMY		5	24	1	Another area of vagueness is the lack of discussion related to the main drain line or fuel outlet line at the bottom of the tank. If new pipe is put in how will it be done? Is the pipe single or double wall? Will a large bore be chipped from the concrete encasing so that the new pipe can be installed or is the navy attempting to install a new inner pipe within the existing pipe? All of this needs to be specified up front.	Concur but addressed in AOC Section 3.	M
11	EPA/PEMY		5	25	1	Because all material forming the envelope of the tank is garden variety carbon steel, we think that the positive material identification (PMI) program specified for Red Hill tanks may be "over kill". While it won't hurt it will cost more than needed. Simply tracking material by heat number and running standard lab tests for steel chemistry on a periodic basis will ensure that unsuitable materials are not used.	Concur. Navy intends to establish tank plate pedigree. PMI removed.	A
12	EPA/PEMY		5	26	1	We believe that the specification should not imply that post weld heat treating and preheat is required. Rather we suggest that the contractor suggest which sections of the tank (i.e. thin ¼ in plates or thicker ½ inch thick plates) need special treatment such as preheating or postweld heat treatment.	Concur. Clarified Attachment BE.	A

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13	EPA/PEMY		5	27	1	The repair annex has a contradiction about full penetration and full fusion welds. We believe that the vast majority of repairs will be by fillet welded patch plates. We also believe that they do not need to be full penetration welds and this is entirely unnecessary since these tanks do not have significant membrane stresses. The criteria for these welds is for the most part leak tightness and good quality welds.	Concur, clarified.	A

**Column 9 – DECISION (to be used in reconciliation)**

A - Accept

R – Reject (Rationale required for rejection.)

M - Accept with modification (Rationale required for modification.)