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P.O. BOX 3378
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In reply, please refer to:

November 8, 2022

Rear Admiral John Wade
Joint Task Force, Red Hill
1025 Quincy Avenue, Suite 900
Joint Base Pearl Harbor Hickam, Hawai'i 96860-5101
[via email only: john.f.wade2.mil@us.navy.mil]

Dear RDML Wade:

SUBJECT: Defueling Plan Supplements 1.A and 1.B and Defueling Consolidated Repair/Enhancement List, Red Hill Bulk Fuel Storage Facility

On September 7, 2022, the Hawai'i Department of Health (DOH) received from the U.S. Department of the Navy (Navy) documents including:

- Defueling Plan Supplement 1.A; and
- Unredacted copy of the NDAA for FY22 Section 318 report entitled "August 31, 2022 Fuel Transfer System Inspection Report."

On September 28, 2022, the DOH received from the Navy:

- Defueling Plan Supplement 1.B;
- Enclosure (1) Defueling CPM Schedule as of September 28, 2022;
- Enclosure (2) DOH Superseding Emergency Order – Status and Ongoing Progress;
- Enclosure (3) DoD Technical Initial Assessment of NDAA Section 318 Report;
- Enclosure (4) Infrastructure Repairs and Enhancements Report as of September 28, 2022;
- Enclosure (5) Redacted Contract Documents in Support to Defueling; and
- Enclosure (6) Responses to August 11, 2022 EPA Letter on DoD Defueling Plan.

On October 24, 2022, the DOH received from the Joint Task Force – Red Hill (JTF-RH):

- Enclosure (1) Defueling Consolidated Repair Enhancement List;
- Enclosure (2) Red Hill Lower Access Tunnel Pipeline Stress Analysis and Structural Evaluation Report; and
- Enclosure (3) Hotel Pier to Underground Pump House (UGPH) Fuel Transfer Infrastructure Assessment Report – Repair Recommendations.

On October 27, 2022, the DOH received from the JTF-RH:

- Joint Task Force – Red Hill, Defueling Consolidated Repair/Enhancement List (Report); and
- An updated Enclosure (1) Defueling Consolidated Repair Enhancement List (with source report PDF page numbers).

This letter and its enclosure offer comments on the JTF-RH's proposed enhancements and repairs necessary for defueling, based on the aforementioned submitted documents. One of our primary concerns is the inconsistency and conflict between some of the statements provided in the assessment reports. We understand that the JTF-RH is considering a meeting among the consultants and the regulatory agencies to address these conflicts.

Should you have any questions regarding this letter or the enclosed comments, please contact Ms. Kelly Ann Lee, Red Hill Project Coordinator at (808) 586-4226 or kellyann.lee@doh.hawaii.gov.

Sincerely,

Kathleen Ho

KATHLEEN S. HO
Deputy Director for Environmental Health

Enclosure

c: [redacted]
Ms. Gabriela Carvalho, U.S. Environmental Protection Agency (w/encl.) [via email only]

Red Hill Bulk Fuel Storage Facility, O'ahu, Hawai'i
Defueling Plan Supplement 1.A
Department of Defense, September 7, 2022

1. **Page 5, last paragraph:** The U.S. Department of Defense (DoD) is proposing to utilize the JP-5 line in lieu of the F-76 line to defuel Tanks 15 and 16, negating the need to repair the F-76 line. Please confirm whether the associated laterals required to defuel Tanks 15 and 16 via the JP-5 line were included in the infrastructure assessment and whether repairs to those lines are required.

2. **Page 7, footnote 2:** The footnote states, "If a fire were to occur, a worst case fire scenario would release approximately 24,000 gallons of water/AFFF solution which would be expected to be recovered from the lower tank gallery and AFFF sumps within approximately 4 hours." In the event of a fire, the additional volume contributed by a fuel release should also be considered for recovery.

3. **Page 15, comment 3:** The U.S. Department of the Navy (Navy) has indicated it will not repair the aqueous film forming foam (AFFF) drain line or provide a backup pathway to remove potential fire suppression material or oil to the existing oil recovery system in the Lower Access Tunnel (LAT), in the event of a fire or spill. However, no quantitative probability analysis was provided to justify the additional probability of groundwater contamination caused by using a slower pumping system.

    a. Please provide a quantitative analysis of the probability of a significant spill (10,000 gallons or more) occurring and reaching the groundwater during the defueling time frame. We assume that the proposed repairs and changes in operation procedures would each reduce the probability of a spill and subsequent groundwater impact to a certain extent. On the other hand, we expect that using the fuel oil reclamation (FOR) line instead of a faster oil removal option would increase the probability of groundwater impact. Given the increase in groundwater plume concentrations after the May 6, 2021 spill, the probability of any spill contaminating the groundwater, regardless of severity, appears high. As part of the quantitative analysis, please provide the respective probabilities of groundwater impact associated with using the FOR line versus another option that would remove an oil spill more quickly.

    b. As part of the probability analysis, please quantify the overall probability reduction of a spill similar to the May 6, 2021 event occurring, due to pipe support repairs, installation of pressure gauges and bypass lines, improved operator training, and other preventative measures.

4. **Enclosed Draft SPCC, Tab A-21, Table A-3 (PDF page 29):** This table states there are "2 Ground water drain pumps within each AFFF sump." Our understanding is there is only one groundwater drain pump in each AFFF sump. Please clarify.

Red Hill Bulk Fuel Storage Facility, O‘ahu, Hawai‘i
Defueling Plan Supplement 1.B
Department of Defense, September 28, 2022

5. **Page 4, paragraph 2:** This paragraph states, “the updated plans include planned responses to worst case spill release scenarios....” The current Facility Response Plan (FRP) “Worst-Case Discharge Scenario” on “Tab A-1" describes a release of 460,400 gallons from the 32-inch F-76 pipeline during an earthquake. According to the Defueling Plan, the F-76 pipeline should be empty during defueling, so this scenario does not seem realistic.

    a. Please provide an updated worst case discharge scenario in the FRP that is more realistic for the defueling phase of the project. Additionally, clarify whether the following worst-case scenarios are relevant for defueling: 1) Pipeline failure involving the JP-5 and F-24 pipelines in the LAT; and 2) Red Hill tank failure due to a nozzle break and or valve failure in the LAT.

    b. Based on the revised worst-case scenario, please provide an updated response plan as well as calculations, designs, and construction for the diversion barrier system in Adit 3. This system must be in place before defueling starts to protect the drinking water and surface water and ensure that adequate resources are in place.

    c. Based on lessons learned from the unpacking spill exercise, and in order to more effectively address comments 5a and 5b above, we recommend that planning meetings be held as soon as possible between the Navy, DOH, U.S. Environmental Protection Agency, and U.S. Coast Guard, so that issues such as concurrence on discharge scenarios may be resolved as soon as possible. Lastly, we recommend that a defueling exercise(s) be conducted to improve response preparedness and capabilities.

6. **Page 5, The NDAA [National Defense Authorization Act] Section 318 Report:** Please clarify who the contractor mentioned in the first paragraph is.

7. **Page 5, footnote 5:** This footnote states, “The NDAA Section 318 assessment recommended more pipeline repairs than did the SGH [Simpson Gumpertz & Heger, Inc.] assessment, as the Section 318 assessment included more in-depth inspections using hydraulic integrity analysis....” Please provide more detail on this hydraulic integrity analysis.

8. **Page 8, Table 1:** Row 2 states that the DOH provided concurrence. The DOH has not yet provided concurrence to any of the listed repairs.

9. **Page 8, Table 1:** SGH ID No. LAT-20 lists status as “Pursuing Alternative Solution,” however, on page 4 of the Defueling Plan Supplement 1.A, the status was listed as complete. Please clarify.

10. **Page 9, Table 1:** SGH ID Nos. 27, PM-5, PM-6, AGP-1, and AGP-2 list status as “Pursuing Alternative Solution,” however, the Consolidated List of Repairs for Safe Defueling, dated October 24, 2022, does not offer proposed alternatives. Please confirm whether alternative solutions are no longer being considered for these repair items.

11. **Page 10, item d:** This item states the “Recurring Maintenance / Minor Repair Contract” includes service for “a minor repair.” Please clarify what this minor repair is.

12. **Page 11, item h:** This item states that “acquisition for design services is underway” for the “AFFF Systems Repair Contract.” Please clarify whether this means the Navy has decided to repair the AFFF line, and if so, to what extent.

13. **Page 12, footnote 8, item 2:** This item states that access to Hotel Pier for defueling could be limited by “real-world military operations.” Please clarify whether these military operations would involve any use of the fuel in the Red Hill fuel tanks.

14. **Page 12, Section C:** This section discusses relocation of fuel. We note that the critical path method (CPM) schedules received on September 28 and October 31, 2022 do not include details for off-site fuel transport or the destination of fuel, except that fuel will be transported by tanker or barge. If a portion of the fuel is proposed to be transported to West Oʻahu, as mentioned in the Defueling Plan Supplement 1.A, has the Navy considered using the existing pipeline? Instead of moving fuel to the mainland, are there other potential uses in-state to minimize transport and potentially decrease defueling time?

Joint Task Force – Red Hill
Red Hill Bulk Fuel Storage Facility, O‘ahu Hawai‘i
Defueling Consolidated Repair/Enhancement List, October 24, 2022

15. **Page 4, Figure 1:** This figure shows that the surge analysis included no repair recommendations. However, the initial SGH report recommended several structural repairs to mitigate damage due to risk. The DOH assumes that the SGH recommendations based on surge still apply, and the surge analysis showed that the expected surge is equal to or less than the 320 pounds per square inch (psi) used in that analysis, meaning no additional repairs are required. Please clarify whether this understanding is correct.

Enclosure (1) Consolidated List of Repairs for Safe Defueling

GENERAL COMMENTS

16. This repairs list contains 253 items, which is a significant increase from the 43 SGH repairs described in the June 30, 2022 Defueling Plan. Many of the added repairs are minor, but there

are roughly twenty-six additional pipe repairs that could be more significant. Are any of the new repairs long-lead items, due to procurement or implementation?

17. Does the latest CPM schedule, submitted to the DOH on October 31, 2022, account for the additional 218 repairs? If not, what is the expected end-date for defueling, considering these new repairs?

18. Has the Navy considered keeping the F-76 pipeline intact until repair work and integrity testing on the JP-5 and F-24 pipelines are complete? Having the F-76 pipeline available during the JP-5 and F-24 pipeline repairs could provide a route for emergency drain down of Tanks 2 to 12, 15, and 16, in the event of a release.

SPECIFIC COMMENTS

19. **Repair 113** indicates there is a weep at the threaded joint on the FOR line that was repaired using plastic wrap and C-clamps. Please verify that the entire FOR line will be inspected (unless the NDAA report already included a full inspection) and repaired appropriately before defueling, if this system will be used to remove any spills.

20. **Repair 125** states the buried portion of the FOR line had ineffective anodes, which may have allowed the pipe to corrode. The description mentions a borescope examination to verify pipe integrity. Please confirm whether this study will be performed, and if yes, when the results will be provided to the DOH.

21. **Repairs 117, 120, 125, and 128** involve replacing a portion of the FOR line, due to severe corrosion and improper connections. Please verify that all situations like these will be corrected.

22. **Repairs 172 through 249** identify the source of the comment as "EXWC." What document does this refer to? If the document has not already been provided to the DOH, please provide a copy.

Enclosure (2) Pipeline Stress Analysis and Structural Evaluation Report – Red Hill Lower Access Tunnel

23. **Page vii, Executive Summary**

    a. This analysis was done using gravity, sustained pressure, and seismic loads, but no surge loads. Will a surge analysis be performed (as recommended by SGH and included as Repair 1 in the Consolidated List of Repairs for Safe Defueling) to evaluate whether a surge load larger than the value used by SGH to perform the structural analysis (320 pounds per square inch, gauge [psig]) could occur?

b. Seismic loads are appropriate when evaluating sustained pressure operations but may not be warranted in a surging situation because it is unlikely that a seismic event would occur simultaneously with an earthquake. If a surge analysis is performed, will seismic loading be included in that evaluation?

c. The Findings and Recommendations state the system fails code requirements in hoop, sustained, and occasional seismic stress under a pressure load of 285 psi. Please clarify whether failing code requirements means that the pipe would fail and cause a leak.

d. The first paragraph of Findings and Recommendations states, "The effects of pressure surges on piping stress and support loads were not evaluated because they cannot be mitigated by structural or piping modifications and must be prevented by operational procedures." This seems to directly contradict the structural analysis previously performed by SGH, which designed structural elements to mitigate leaks caused by surges of up to 320 psig (78,000-pound force [lbf] of surge force).

e. According to the SGH Report (page 47, second to last paragraph), structural calculations performed by Enterprise Engineering, Inc. (EEI) in 2016 concluded the 16-inch, 18-inch, and 32-inch pipelines did not meet the required maximum operating pressure (MOP) of 275 psig, but the MOP could be reestablished by making necessary repairs. The Pipeline Stress Analysis (Enclosure 2) states the maximum allowable operating pressure (MAOP) is 285 psig. Why was a different requirement used, if the normal MOP is 275 psig? The SGH structural analysis assumed an operating pressure of 200 psig on page 203 of the report.

f. According to the Findings and Recommendations, the system can be brought into code compliance for up to 85 psi with the recommended changes. Could any normal operations during defueling be expected to exceed 85 psig? The report states 85 psig would be sufficient to gravity drain the tanks. Will the approximately five-month-long repacking and defueling process only consist of gravity draining operations?

g. The Findings and Recommendations state that minor deficiencies were noted in thirteen of the eighteen supports evaluated. Using this ratio of 72%, how many total deficiencies are expected in the two lines planned for use during defueling? Additionally, it remains unclear if the majority of these issues were caused by seismic loading or normal operations. What would the number of deficiencies be if seismic loading were excluded (i.e., if a seismic event is not considered high-risk during the approximately five-month-long defueling process)?

24. **Page 1, Objective**

a. This paragraph states, "no evaluation of pumping scenarios will be included, only tank pressure head...." Does the Navy intend to conduct the entire defueling operation using only head pressure from the tanks and no pumping?

b. This paragraph also states, "Pressure surges can create damaging impulses that cannot be mitigated by structural or piping modifications and must be prevented by operational procedures or mitigated by pressure control and relief systems." Similar to the statement quoted in comment 23.d, this seems to directly contradict the SGH report, which recommended piping and structural repairs for this purpose. It is unclear how EEI knows if its statement is accurate because they did not evaluate surge as SGH did. Please provide clarification on this apparent conflict.

25. **Page 7, Mandatory Repairs:** This report recommends adding a new vertical support under the 16-inch tee between Tanks 1 and 2. However, the SGH report, which was done under higher surge pressure, does not make this recommendation. The difference may be due to seismic loading, but please provide clarity on this.

26. **Page 10, Alternative Repairs**

    a. This section states that "Alternative to providing a vertical support (recommendation 6) under the 18-inch to 12-inch tee at Tank 11 and 12, removing the dresser couplings of Tank 12 reduces the occasional code stress to 0.91. This code stress considers recommendations 1-5 in addition to recommendation 7." Is replacing the Dresser couplings with hard pipe being considered?

    b. The last paragraph states, "Though the hoop stress at PS-101 is within code limits up to 193 psi, it is recommended that the facility not exceed the design case of defueling the facility with a maximum tank head pressure of 85 psi." This recommendation and the results of the analysis appear inconsistent with using structural supports to withstand a pressure surge of up to 320 psig, as suggested in the SGH report. Please clarify these apparent conflicts.

27. **Page 14, Recommendations:** This report recommends different repairs based on different loading scenarios than the SGH report, which included a preliminary design for the pipe support. Will SGH be doing additional design based on the maximum suggested surge pressure? If so, and the two reports conflict for the proposed designs, which will be followed? In other words, which of the following will be prioritized: Surge pressure mitigation, seismic mitigation, or operating at 85 psig under gravity only?

28. **Page A-2:** Figure 2 "Tank 17-20 Piping Configuration" does not seem to show the new Dresser coupling installed in the JP-5 pipeline for Tank 20, however, the pipeline stress analysis included the Dressler coupling. Please clarify whether the Dresser coupling impacts the MAOP.