



STATE OF HAWAII
DEPARTMENT OF HEALTH
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In reply, please refer to:
File:

June 23, 2023

Vice 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 Vice Admiral Wade:

SUBJECT: DOH Conditional Approval of *Defueling Plan* with Enclosed Comments on *Defueling Plan Supplement 2*

The Hawai'i Department of Health (DOH) acknowledges receipt on May 16, 2023, of the Department of Defense's (DoD's) *Defueling Plan Supplement 2 (Supplement 2)*. This along with the *Defueling Plan*, *Defueling Plan Supplement 1.A*, and *Defueling Plan Supplement 1.B*, are collectively referred to hereinafter as the "*Defueling Plan*." These documents summarize past and upcoming tasks necessary to defuel the Red Hill Bulk Fuel Storage Facility (Facility) underground storage tanks, surge tanks, and related pipelines and, in addition to any future submissions necessary to complete the Defueling Phase of the Closure Plan, are provided to the DOH for concurrence. After reviewing the *Defueling Plan*, the DOH has determined that the information required under Paragraph 4 of our May 6, 2022 Emergency Order (Emergency Order) has either been submitted or will be submitted for approval according to an appropriately specified timeline. Therefore, pursuant to paragraph 5 of the Emergency Order, the DOH approves the *Defueling Plan* with the following conditions.

1. The DoD addresses the DOH's enclosed comments.
2. The DoD proposes any changes to the *Defueling Plan* to the DOH with justification. The DOH may approve, conditionally approve, or disapprove the proposed changes. With

- respect to the *Integrated Master Plan*, this condition only applies to significant changes. We understand some dates (e.g., concept of operations briefs) have already changed.
3. The DOH may approve, conditionally approve, or disapprove any future submission. If the DOH disapproves a submission, the DOH will identify the basis for disapproval and require a resubmittal. The primary list of submissions follows Table 5 of *Supplement 2*.
 4. In *Supplement 2*, the DoD estimates 100,000 to 400,000 gallons of fuel may remain in the Facility after the identified stages of defueling have been completed. The DoD shall submit to the DOH for review and approval, prior to implementation, any plans necessary to address the removal of all fuel remaining in the portion of the Facility that will be closed.
 5. Upon the DOH's approval, subsequent submissions will be considered part of the *Defueling Plan*. Accordingly, the Joint Task Force – Red Hill (JTF-RH) shall implement such plans in accordance with Paragraph 5 of the Emergency Order.

We note this conditional approval only applies to the *Defueling Plan*. The DOH will respond to the following submissions under separate covers: 1) The JTF-RH's May 31, 2023 letter regarding discrepancies in surge analyses supporting the October 24, 2022 *Defueling Consolidated Repair/Enhancement List*, and 2) the JTF-RH's June 2, 2023 *Red Hill Bulk Fuel Storage Facility (RHBFSF) AFFF [aqueous film forming foam] Reclamation Line Repair Plan*.

Lastly, while we understand some information in *Supplement 2* is preliminary, the DOH offers the enclosed comments, so that our feedback may be incorporated into the final documents submitted for our review and approval.

If 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

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c: Grant Scavello, U.S. Environmental Protection Agency (w/encl.) [via email only]

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DEFUELING PLAN SUPPLEMENT 2

General Comments

1. Clarify when the Joint Task Force – Red Hill (JTF-RH) expects the 253 planned repairs to be completed. Page 6 states the JTF-RH “projects completing all required repairs by May 31, 2023.” However, page 13 states the “JTF-RH is on track to complete all repairs to the existing system by June 30, 2023.”
2. The Hawai'i Department of Health (DOH) understands repairs beyond the 253 identified in the October 24, 2022 *Consolidated List of Repairs for Safe Defueling* are being performed. However, the DOH has not received the additional list of repairs nor the basis and status of those repairs. We recognize the repair list is a living document that may change as additional assessments, evaluations, and repairs are performed. Submit the additional repairs list to the DOH as soon as possible, along with the associated timeline for finishing those repairs and submitting quality validation (QV) reports.
3. The DOH is currently reviewing and will provide separate responses to the JTF-RH's May 31, 2023 letter regarding discrepancies in surge analyses supporting the October 24, 2022 *Defueling Consolidated Repair/Enhancement List*. Please address any outstanding comments.
4. As of *Supplement 2*'s submission on May 16, 2023, the JTF-RH states it has completed 214 of 253 repairs on the October 24, 2022 *Consolidated List of Repairs for Safe Defueling*. However, the DOH can only account for 177 completed repairs, based on the QV reports submitted as of June 15, 2023. If some QV reports have not yet been submitted, please submit those reports. If there is another reason for the discrepancy, please explain.
5. Clarify the proposed timeline for repairs to the aqueous film forming foam (AFFF) retention line. We received the JTF-RH's *Red Hill Bulk Fuel Storage Facility (RHBFSF) AFFF Reclamation Line Repair Plan (AFFF Reclamation Line Repair Plan)* on June 2, 2023, which did not commit to a final design. However, page 7 of *Supplement 2* states “JTF-RH projects that AFFF retention line repairs will be complete by May 31, 2023.” The DOH provided comments on the *AFFF Reclamation Line Repair Plan* in a letter dated June 19, 2023. We look forward to receiving an updated plan and responses to our comments. Provide sufficient time for the DOH to review the submission.
6. The DOH understands the schedule is a living document that changes with events on the ground. We also understand dates can change in the time it takes to prepare, review, and submit documents. Perhaps an overall qualifying statement should be made

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that dates are subject to change. Please note, any major changes to the schedule are subject to the DOH's review and approval, per the conditional approval letter these comments are attached to.

7. *Supplement 2* states a number of risk-mitigating recommendations were incorporated into each concept of operations (CONOP). For example, page 17 states the "JTF-RH identified 13 recommendations to mitigate risk...for repacking operations and incorporated them while developing the repacking CONOP." However, it is unclear what the recommendations were and how those were incorporated. Please submit this information with the next version of each CONOP.
8. The DOH may provide additional comments on updated versions of CONOPs and operation orders (OPORD). Please confirm when the updated tank mains and tank bottoms CONOPs and OPORDs will be submitted and briefed to the DOH. The scheduled dates for those items have passed, but there is no indication of when we will receive an updated schedule. Provide sufficient time for regulatory review before implementing plans.
9. *Supplement 2* estimates 100,000 to 400,000 gallons (gal) of fuel will remain in the facility after the identified stages of defueling are complete. Please clarify:
 - a. Where the JTF-RH expects the remaining fuel to be.
 - b. What additional stages of defueling the JTF-RH expects will be necessary to remove the remaining fuel and the proposed date of completion.
 - c. How many additional *Defueling Plan* supplements the JTF-RH expects to submit and the timeline for those submittals.

Specific Comments

10. **Page 2, I. Introduction:** This section states "[t]he fuel from the tank mains, flowable tank bottoms, surge tanks, and unpacked pipelines will be transferred into tankers and relocated to approved defense fuel support points (DFSPs)." However, we understand from the May 22, 2023 *Surge Tank Draining CONOP* that flowable fuel from the surge tanks will be transferred to three different locations. Does the statement quoted above mean the fuel will then be transferred from the three locations to tankers? Or will the fuel from the surge tanks be used from the three locations in the normal course of business? If it is the later, what will be the final disposition of the fuel from the surge tank flowable tank bottoms?
11. **Page 8, ii. Most Likely Release in LAT [Lower Access Tunnel] Piping – Re-Packing/Un-Packing:** This section describes the pre-positioned rigid flood barriers as "the mitigation measure utilized to prevent the fuel from flowing to the HT [Harbor

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Tunnel]. In this scenario, the release fuel would collect at the UGPH [underground pump house] and pump out to surge tank B-2, ...”

- a. Our understanding is the pre-positioned rigid-flood barriers are meant to prevent fuel from flowing to Adit 3. Please clarify.
 - b. Where is surge tank B-2 located? Does this refer to Fuel Oil Recovery (FOR) tank B-2?
 - c. The last sentence states “the released fuel would collect at the UGPH and pump out to surge tank B-2, which has a 385K gallon capacity.” If the fuel cannot be pumped out of the UGPH faster than it arrives, is there sufficient capacity to contain the fuel? How large of a spill can this scenario handle without fuel bypassing the UGPH?
12. **Page 9, iii. Most Likely Release Harbor Tunnel (HT) Piping – Re-Packing/Un-Packing:** This section describes the pre-positioned rigid flood barriers as “the mitigation measure utilized to prevent the fuel from flowing to the HT.” Our understanding is the flood barriers are meant to deflect the spill pathway away from Adit 3, towards the HT. Please clarify.
13. **Page 9, iv. Tanker Overfill:** Please clarify:
- a. Whether the tanker(s)/barge(s) will be pre-boomed.
 - b. Whether spill-response equipment, supplies, and crew will be nearby.
14. **Page 10, v. Most Dangerous Release – Defueling:** This section states “JTF-RH further estimates that, in this worst-case scenario, 4.3 M [million] gallons of fuel would be discharged over 30 hours.” Several fuel storage tanks currently contain more than 11 million gal of fuel. Please clarify why the JTF-RH is only considering a worst-case scenario discharge of 4.3 million gal and explain the rationale for the discharge taking 30 hours.
15. **Page 10, v. Most Dangerous Release – Defueling:** This section mentions this scenario “would overwhelm the pumps and exceed B-2’s surge tank capacity...” Please confirm B-2 is an above ground FOR storage tank, and not a surge tank.
16. **Page 10, Figure 5 – Scenario 5: Most Dangerous Release – Defueling:** There is a discrepancy for the capacity of tank B-2. Figure 5 states the capacities for Fleet Logistics Center Pearl Harbor FOR Facility tanks B-1 and B-2 are 378,000 gal each (see lower middle white rectangle). However, the paragraph above Figure 5 states tank B-2’s capacity is 385,000 gal. Please clarify.

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17. Page 11, vi. Fire Suppression

- a. The DOH observed several electric bicycles during walk-throughs of the LAT. Electric bicycles are powered by lithium-ion batteries, which pose an ignition source should a thermal runaway occur. Because runaway fires cannot be extinguished, the DOH recommends removing electric bicycles from the tunnel for the duration of repacking, defueling, and unpacking operations.
- b. The DOH recommends the *Defueling Fire Suppression Plan* addresses fires involving lithium-ion battery devices. However, we defer to the Federal Fire Department's (FedFire's) expertise to determine whether the *Defueling Fire Suppression Plan* is adequate.
- c. What types of personal protective equipment will fire watch teams have? The DOH recommends reviewing the dry chemical extinguisher's Safety Data Sheet and protecting workers accordingly.

18. **Pages 12-13, a. AFFF Reclamation Line Repairs:** This section states the "JTF-RH intends to repair/reallocate/replace sump pumps in order to maintain two working pumps per sump to support the JTF-RH Spill Response Plan." Will two pumps per sump be sufficient? For example, Page 7, Section i. Most Likely Release in the Tank Gallery – Defueling mentions using three pumps.

19. **Page 13, a. AFFF Reclamation Line Repairs:** This section mentions "[r]epairs may also include connection of the AFFF retention line to the F-76 line." Please note, on January 13, 2023, the DOH conditionally approved the JTF-RH's request to forgo F-76 line repairs "with the understanding that the F-76 line will not be used." If the JTF-RH decides to use the F-76 line for defueling or spill response, an assessment of required repairs for this proposed use shall be submitted to the DOH.

20. **Page 13, b. Hotel Pier FOR [fuel oil recovery] Line Repairs:** During a May 24, 2023 site visit, the DOH personnel learned from an on-site contractor that a bi-directional valve connects the Hotel Pier FOR piping to the Hotel Pier FOR sump or drains into the ocean below the pier. Please clarify whether this valve is bi-directional or tri-directional and provide valve specifications. How will the JTF-RH ensure the valve is in the correct position when the vessels are bunkered?

21. **Page 14, c. F-76 Line:** This section states "JTF-RH determined that F-76 line repairs are no longer required since F-76 fuel will be rerouted through the JP-5 line." Does this determination change if the F-76 line is used for emergency spill response, as indicated on page 13 of *Supplement 2* and proposed in the JTF-RH's June 2, 2023 *AFFF Reclamation Line Repair Plan*?

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22. **Page 14, e. Fire Suppression:** This section states the JTF-RH's *Defueling Fire Suppression Plan* uses dry chemical fire extinguishers, existing water sprinklers, and FedFire to respond to a fire event. It then goes on to say, "[h]owever, should the use of AFFF be mandated by regulatory agencies JTF-RH is conducting repairs to the AFFF pipe from the pump house to the Adit 6 Tunnel."
 - a. The DOH is not mandating the use of AFFF for fire protection. Given the considerable risks to public health and the environment, the DOH prefers AFFF not be used.
 - b. What is the FedFire's recommendation on the use of AFFF versus dry chemical for petroleum fires during defueling?

23. **Page 14, f. Main Fuel Oil Recovery (FOR) Sump and FOR Zone 7 Sump Tank Tightness Testing (TTT)**
 - a. The DOH has reviewed the test results for the Zone 7 sump and will provide comments under a separate cover. Please address those comments. We note the integrity test was only performed on the bottom 23 inches of the Zone 7 sump.
 - b. The last sentence states the "JTF-RH will repeat the test upon completing repairs and will submit written results to DOH and EPA [U.S. Environmental Protection Agency] within thirty days of testing." Please specify what repairs need to be completed and the associated schedule.

24. **Page 15, Fuel Locations:** Where is the "West Oahu, HI" location?

25. **Pages 15 to 16, 1. Regulatory Approval(s)**
 - a. This list of approvals does not include documents that will be necessary to address how the remaining 100,000 to 400,000 gal of fuel will be removed. Please include those.
 - b. **Item 7 CONOP for Fire Response and Regulatory Approval:** The DOH defers to the FedFire's expertise to determine whether the *Defueling Fire Suppression Plan* is adequate, including the proposed fire suppression system and mitigation of any associated risks of contaminant releases.
 - c. **Item 10 Regulatory Approvals of Response Drills**
 - i. Does this item refer to Response Drills or Spill Response?
 - ii. "Approval" for this item is under Federal jurisdiction. The DOH would provide concurrence.
 - iii. Add the DOH with the U.S. Coast Guard for item 10.b Response at Hotel Pier.

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26. **Page 17, b. Safety Measures for Repacking:** During walk-throughs, the DOH observed electric bicycles in the LAT. Electric bicycles are powered by lithium-ion batteries, which are subject to thermal runaways where battery packs/modules burn at intense temperatures and pressures and cannot be extinguished. The resulting expanding smoke/emission is highly toxic. The DOH recommends removing the electric bicycles from the tunnel system for the duration of repacking, defueling, and unpacking operations.
27. **Pages 17 and 18, C. Phase 5 Update – Defuel and Relocate Fuel**
- a. The first sentence states “Phase 5 constitutes the physical defueling of RHBFSF (20 underground fuel storage tanks...” Our understanding, based on the “14 in-service Red Hill tanks” listed on page 19, is that only fourteen fuel storage tanks will be defueled. Please confirm.
 - b. This section states “[t]he discussion of defueling activities in Supplement 2 focuses on the gravity-based defueling of the underground storage tanks and associated pipelines and on the removal of fuel from the four surge tanks.” We understand from the May 22, 2023 *Surge Tank Draining CONOP* that pumps will be used to defuel the surge tanks. Please confirm.
 - c. This section states “JTF-RH’s estimated flowrates indicate that each tanker requires only three days to reach maximum fill capacity.” Do these estimated flow rates match those used to develop the maximum expected surge pressure in Risktec’s evaluation?
 - d. Please clarify the order in which the four listed stages of defueling will occur. The order listed does not match the *Integrated Master Schedule* (Enclosure 8), which indicates the surge tanks will be defueled first.
 - e. This section states “[t]he fuel removed from the surge tanks will be transferred into the UTF [upper tank farm].” However, the *Surge Tank Draining CONOP*, received on May 22, 2023, states ~180 gal (out of ~480 gal total) of fuel will be transferred to Hickam. Please clarify.
28. **Page 19, 1. Tank Mains Defueling:** This section lists the fourteen active tanks to be defueled. Is there any residual fuel in the other non-active tanks?
29. **Page 20, 2. Flowable Tank Bottoms:** The DOH requests drawings and details on the planned re-routing of the FOR piping to the JP-5 pipeline to remove the remaining 120,000 gal of flowable tank bottoms left after the tank mains are defueled. After the flowable tank bottoms are removed, does the JTF-RH intend to reconfigure the tank FOR line to its original (or a different) configuration for use by the closure team?

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ENCLOSURE 1: DEFUELING FIRE SUPPRESSION CONOP

30. **Page 2, Additional Risk Reduction Measures:** Has the JTF-RH considered a vapor meter with a lower explosive limit alarm in the enclosed spaces as a viable additional mitigation measure?
31. **Pages 7 and 8, Event Probability**
- a. This page references the *Release Event Tree Analysis*, submitted on February 22, 2023, but it appears the JTF-RH's May 31, 2023 letter regarding discrepancies in surge analyses supporting the October 24, 2022 *Defueling Consolidated Repair/Enhancement List* may have updated this analysis. The DOH is currently reviewing the JTF-RH's May 31, 2023 submission and will respond under a separate cover.
 - b. The DOH notes this estimate event probability is meant to show that the system's improvements are reducing the probability of an event, but that the estimate is still an order of magnitude estimate.
 - c. The *Release Event Tree Analysis* contains a table that explains what each control is intended to mitigate and why the failure of probability for each is justified. This information should accompany the event probability analyses on Pages 7 and 8 because the failure rates are otherwise difficult to corroborate.
 - d. It is unclear how the "One-year Odds" numbers were calculated, but they seem superfluous, considering the probability of a leak in one year is shown in the "Frequency (per year)" numbers.
 - e. The probability of a catastrophic fire on Page 8 assumes a leak of 30,000 gal must occur for a catastrophic fire to occur. Explain how 30,000 gal was chosen as the appropriate starting point for this analysis.

ENCLOSURE 2: SPILL RESPONSE SCENARIOS

32. **PDF Page 2 (redacted version) or PDF page 43 (unredacted version), Most Likely Release in LAT or HT Piping – Re-Packing/Un-Packing:** The Executive Overview states "[i]f a rupture occurs in the LAT, the fuel will be directed away from Adit 3 'Wye' (protecting direct pathways to the aquifer [stet]) and down the HT by the pre-positioned rigid flood barriers, which is the mitigation measure utilized to prevent the fuel from flowing to the HT."
- a. Our understanding is the flood barriers are in place to deflect the spill pathway away from Adit 3, towards the HT. Please clarify.
 - b. How will the French Drains, Sweep Drains, and monitoring wells in the HT be protected?

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ENCLOSURE 4: REPACKING LINES CONOP

33. Include the maximum flowrates for each line. We understand this submission is preliminary because some information has not yet been determined, such as the available source fuel inventory and required pressure ranges at specified locations. We look forward to receiving updated information as it becomes available.

ENCLOSURE 5: RED HILL TANK MAINS DEFUEL CONOP

34. **Page 6 (redacted version) or page 5 (unredacted version), F-76 Defueling – Tanks, Gravity:** Why is the third listed tank included under “Preparation for Execution” and “Execution”?
35. On June 2, 2023, the DOH provided comments on the May 22, 2023 *Surge Tank Draining CONOP*. We look forward to receiving an updated CONOP and responses to our comments. Provide sufficient time for the DOH to review the responses and revised CONOP before implementation.