Red Hill Bulk Fuel Storage Facility, O'ahu, Hawai'i
Defueling Plan Supplement 1.A
Department of Defense, September 7, 2022
Response to Requests for Information from DOH dated September 19, 2022

SPECIFIC COMMENTS

1. ***Page 2, bullet 1, Community Engagement: The U.S. Department of the Navy (Navy) should create a website for unpacking and defueling information separate from the Joint Base Pearl Harbor-Hickam (JBPHH) water website. Adding defueling information to the JBPHH water website may be confusing to some readers.***

   Response: DoD is developing and will publish a website solely for providing information associated with the defueling of Red Hill.

2. ***Page 3, Unpacking Plan Overview: This page states, "DoD estimates that it can complete gravity-flow unpacking in a matter of hours." Table 1 also lists the estimated time to gravity unpack the F-76 pipeline as two hours. However, Page 9 of the Enclosure (1) Unpacking Plan states this activity will take 2 days, rather than hours. Please clarify.***

   Response: Due to setup and transitions, F-76 gravity fuel flow to the Yard Oiler Non-Propelled (YON) is scheduled for two days. Day one, DoD will drain approximately 250,000 gallons to fueling barge YON (b) (3) (B) over approximately (b) (3) (B). Day two, DoD will drain approximately 372,979 gallons to YON (b) (3) (B) over approximately (b) (3) (B).

3. ***Pages 3 and 4, Safety Measures for Unpacking: This section describes the installation of a diversion barrier oil recovery system to protect (b) (3) (B) and the Red Hill Shaft in the event of an oil spill in the Lower Access Tunnel (LAT). The Navy On-Scene Coordinator (OSC) has provided preliminary diagrams and engineering information in previous meetings with the State OSCs. Such diagrams and information must be included in the Unpacking Plan, including engineering details and specific locations of the main barrier system, back-up barriers, and recovery sumps.***

   Response: Calculations and drawings on the diversion barriers and recovery sumps are included in the Spill Exercise Plan dated September 22, 2022. Information from the spill exercise plan and lessons learned from the spill exercise will be incorporated into the facility response plan prior to defueling. Worst Case Scenario discharge rate, flow rate velocity and containment calculations are contained in the final Spill Exercise Plan in Section 3.2.1 on PDF pages 37 and 38. Release Diversion calculations are found in the final Spill Exercise Plan in Section 8.1 beginning on page 53. Diversion methods will be reviewed as part of the DOH walk through of Red Hill prior to unpacking. As agreed upon with DOH and EPA, DoD will adopt the mitigation measures summarized on PDF pages 57 through 62 of the Regulator-approved spill exercise plan for unpacking.

4. ***Page 6, Hotel Pier (HP-(b) (3)): If Hotel Pier is used for unpacking, the Navy must show that the pipelines and trench can capture any fuel leaks or spills.***

   Response: Photos and diagram below show Hotel Pier trench, which can capture and contain fuel spills and leaks. The concrete trench is currently used to capture rainwater which drains to the main sump for collection. If a spill were to occur, the fuel would collect into either a pipeline

trench drain or a pier stormwater trench drain, each connecting to their respective drain line that directs fluid to the Hotel Pier Sump. The Hotel Pier Sump is outfitted with sump pumps that are float actuated that transfer fluid to the FORFAC for reclamation.

Concrete trenches on Hotel Pier:

Pipeline trench is outboard of yellow curb. Pier stormwater trench is inboard of yellow curb.

Diagram of trench system on Hotel Pier (green lines):

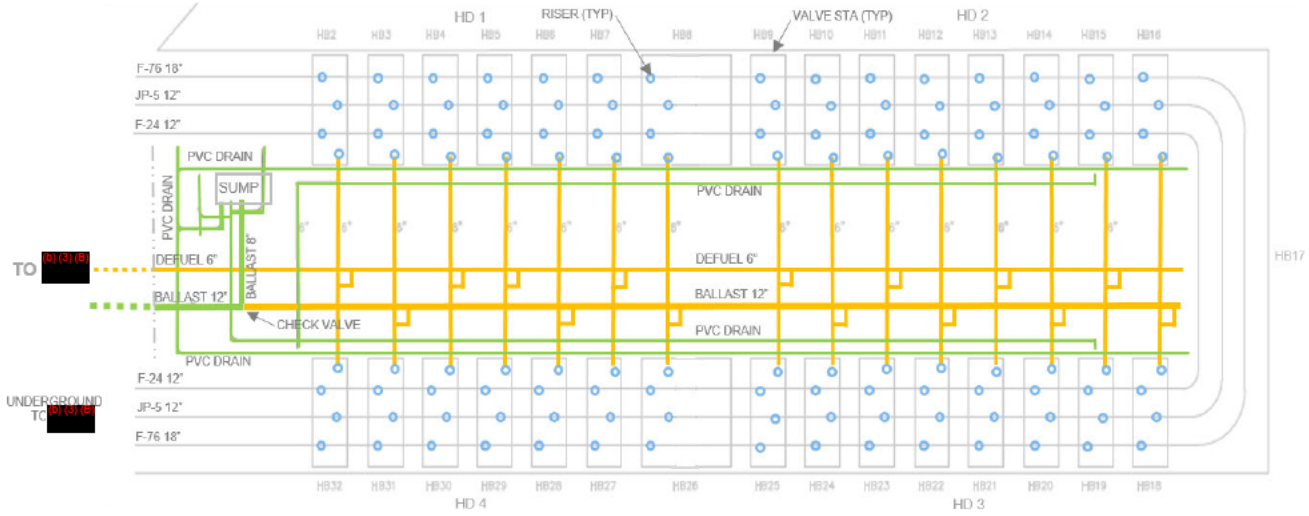


Photo of drain at bottom of pipeline trench on Hotel Pier:

Drain line from Hotel Pier pipeline trench:

5. ***Page 19, comment 6.b.i: As stated in this response, the Navy held a Red Hill Pipeline Unpacking Brief with the DOH on July 28, 2022. However, the DOH would like to clarify that the Concept of Operations (CONOPS) presented at this July 28 meeting proposed to unpack each fuel line (by product type) to a different point and with fuel going to different destinations than what is now planned. The Navy briefed the DOH on its current plans on September 7, 2022. Thus, some of the comments in this document could not be provided to the Navy at an earlier date. The DOH recognizes that plans may change as new information is obtained and appreciates being provided new plans as early as possible.***

   Response: DoD provided updated CONOPS and Operations Orders on September 27, 2022, to reflect the Low Point Drain Transfers to Tank (b) (3) (B). The revised Unpacking Plan includes changes from Vacuum Trucks to a Transfer Pump for Phase IV suction operations, a change to the F-76 Phase III receipt YON, and addresses DOH and EPA comments from their respective responses to the Unpacking Plan.

6. ***Pages 25 and 26, comment 14.b.ii: The Navy's response lists six (6) actions being pursued to identify and mitigate conditions that may result in aquifer contamination if there is a fuel release. These actions include repairing compromised areas in the tunnels and pre-deployment of protective measures, such as flood control barriers and spill mats.***

   a. ***The DOH requests additional documentation describing, in detail, all areas identified and repaired; results of the Navy's review of existing records and infrastructure drawings for preferential pathways; methods to divert potential spills away from (b) (3) (B) and the Red Hill Shaft and to protect the groundwater sump and water well from fuel intrusion; methods to test tightness of the main sumps to confirm integrity; evaluation of the bottoms of elevator shafts; prepositioning of assets for fuel recovery; and pre-deployment of oil recovery equipment.***

      Response: DoD recently completed an inspection of the lower access tunnel to determine potential areas that could allow contaminants to reach the environment. DoD forwarded that inspection to DOH and EPA via email on September 26, 2022. These identified areas are being addressed prior to unpacking and DOH will be able to review the lower access tunnel prior to unpacking.

DoD has completed a thorough review of existing records (e.g. decommissioned pipeline from slop tank near (b) (3) (B) and decommissioned fuel line from former power plant generator, etc.) to confirm there are no other preferential pathways or penetrations to sumps to contaminate the environment. On September 26, 2022, DoD forwarded DOH and EPA a memo from CDR Leslie Watson to CAPT Carl Porter dated 28 June 1949, documenting a release in early 1948 from a deteriorated fuel supply pipe that was connected to a 25,000-gallon generator fuel storage tank that provided fuel to generators at the old Red Hill Standby Power Plant near (b) (3) (B) It was determined that the release contaminated the Red Hill Shaft and the suspected path from the surface to the aquifer was a 10-inch diameter drilled hole that was drilled by the U.S. Army in support of the Navy in August of 1945. Records indicate the hole was eventually sealed with concrete. Records indicate it took about two months of flushing and skimming to eventually remove the contamination from the Red Hill Shaft. No remnants of this hole are evident today.

The Red Hill Draft Facility Response Plan in Tab A (worst-case discharge scenario) and B (Maximum most probable discharge scenario) details mitigation strategies to direct any potential release away from (b) (3) (B) and the Red Hill shaft including proactively sealing and/or blocking any potential drainage pathways out of the tunnels in the vicinity of these areas. Specific mitigation measures taken include: Placing engineered flood control barriers at the entrance to the (b) (3) (B) spur tunnel and (b) (3) (B) "wye" tunnel; sealing cracks and holes in the tunnel that may serve as a preferential pathway to groundwater; deploying flood mats and other protective barriers to protect possible preferential pathways to groundwater (i.e. groundwater monitoring wells, soil vapor wells, etc.); staging pumps, hoses, and a 330 gallon storage tote in the (b) (3) (B) spur tunnel as a contingency in the event a discharge breaks through flood control barriers; and staging spill kits with large absorbent in the (b) (3) (B) spur tunnel.

b. A previous search of the Navy's records indicated there is a Hume line connected to a ground water sump in one of the adits. Is there a Hume line connected to the sumps in the LAT under Tanks (b) (3) (B) or other portions of the LAT as well? If so, where does the perforated piping run and ultimately drain to?

Response: Existing records and inspections do not show any hume lines in the lower access tunnel tank gallery between Tanks (b) (3) (B). There is a hume line located far downstream of the tank gallery in the vicinity of (b) (3) (B) by Pearl Harbor which discharge to the swale outside of the underground pumphouse.

(b) (3) (B) does have a Hume line which no longer discharges to the environment. Discharge of the pumps is now routed to a temporary tank to prevent any further potential contamination from being discharged to the environment. Mitigations will be in place to prevent any fuel near the (b) (3) (B) area as discussed above.

c. The DOH requests a site visit to the LAT, (b) (3) (B) and (b) (3) (B) prior to the start of unpacking to inspect the above repairs and systems being installed to divert and recover oil in the event of a spill.

Response: DoD will gladly support a visit ahead of unpacking.

7. ***Page 29, comment 17, item 4: The Navy's response mentions that "Valves along the FOR [fuel oil recovery] line in Red Hill will also be locked out while water draw and sampling evolutions are not being conducted." Clarify whether this will still allow the FOR system to be readily available to accommodate emergency collection of fuel during an unexpected release.***

   Response: Only tank water draw valves are locked out, which isolates the tanks from the FOR system. Zone 7 and Main sump will be operational and the FOR system is fully operational.

Enclosure (1) Unpacking Plan

GENERAL COMMENTS

8. ***Initially, the Navy planned to unpack by gravity to the surge tanks, which may have avoided the use of vacuum trucks or transfer pumps. Verify the reason for this change.***

   Response: Initially DoD only planned to unpack to (b) (3) (B) wye level. However, additional repairs identified in the NDAA 318 report/evaluation resulted in the requirement to unpack the lines to the fire valves at the underground pumphouse. Additionally, DoD has revised the Phase IV suction operations, replacing the vacuum truck with a positive displacement transfer pump positioned inside Valve Station 1C containment and placed in a tertiary containment.

9. ***Fuel volume calculations: The DOH could not replicate calculations for fuel volumes in the three lines shown throughout the Unpacking Plan. However, assuming there is a full pipe and typical schedule 40 wall thickness, our calculations can come close. Does the Navy have measurements of the pipe inside diameters (IDs)? If not, what assumptions were used to generate these volumes?***

   Response: F-76: 32" Pipeline. Ultrasonic thickness testing indicates the nominal wall thickness is 0.4" which translates to an Inner Diameter of 31.2" and is slightly smaller than the original identified diameter of 31.25" used in the CONOPs volume calculations. The .05" difference results in a conservative volume estimate.

   F-24: 16" Pipeline. Ultrasonic thickness testing indicates the nominal wall thickness is 0.25" which translates to an Inner Diameter of 15.5" and matches the original diameter used for calculations in the CONOPs.

   JP-5: l8" Pipeline. Ultrasonic thickness testing indicates the nominal wall thickness is 0.23" which translates to an Inner Diameter of 17.54" and is slightly larger than the original identified diameter of 17.50" used for calculations in the CONOPs. The 0.04" difference equates to approximately 1,372 gallons of fuel.

10. ***Vacuum Truck: Spill Prevention Control Countermeasures (SPCC) and best management practices consistent with Industry Standards and U.S. Environmental Protection Agency SPCC regulations must be provided for the vacuum trucks. Specifically:***

    a. ***Secondary containment must be provided for vacuum trucks (able to contain the largest truck compartment plus rainfall volume from a 25-year, 24-hour storm event);***
    b. ***Storm drains that may be impacted by an uncontrolled release must be secured;***

c. Overfill protection procedures for vacuum trucks and tanks must be provided;

d. The facility (which includes the vacuum truck, piping, and valves as shown in Phase IV) must be manned at all times during fuel transfer operations;

e. The facility must have spill surveillance at all times;

f. Spill kits and cleanup personnel must be stationed on-site at all times to address any incidental or minor spills;

g. A contingency plan should include spill response personnel resources and equipment adequate to respond to a large spill immediately (e.g., stationing another vacuum truck on-scene is recommended);

h. The vacuum truck and related piping and valve system must be properly grounded and secured to avoid ignition due to static electricity, lightning, and stray currents, in accordance with industry best management practices (e.g., American Petroleum Institute 2003 Section 4.2); and

i. The response measures above must be documented in the SPCC and Facility Response Plan as appropriate.

j. Additionally, clarify whether the hose connection points to the truck and valves will be contained within a secondary containment system. If not, what method will be used to contain releases and prevent off-site discharge?

Response: A transfer pump has replaced the vacuum truck for all suction evolutions (Phase IV) in the Unpacking Plan as outlined in the updated unpacking plan sent on 27 September. Utilizing a pump mitigates the risk associated with vacuum truck operations. However, a vacuum truck will be pre-staged to serve as an emergency recovery measure for all unpacking fuel movement evolutions and the following responses address 10a. - 10j.

a. DoD will meet secondary containment requirements. The pump will have secondary containment meeting secondary containment requirements of 40 CFR 112.7(c). The pump will also be placed inside a 10x10 tertiary containment as an additional protective measure. Vacuum trucks will only be used for emergency recovery and will have required secondary containment if employed.
b. There are no storm drains in (b) (3) (B) or (b) (3) (B).
c. There are no overfill protection requirements for the transfer pump. Vacuum trucks will only be used for emergency recovery.
d. The facility will be staffed at all times during fuel transfer operations. CONOPs and OPORDs indicate DoD staffing posture.
e. CONOPs and OPORDs indicate DoD staffing posture, including spill surveillance.
f. Spill kits and cleanup personnel and will be onsite at all times to address any incidental or minor spills.
g. An emergency response vacuum truck will be stationed on-scene. Emergency response personnel will be stationed at (b) (3) (B). Additionally, there is a valve at the drainage culvert which can isolate the swale in the case of a release.
h. All vacuum trucks will be properly grounded and bonded per API recommended practices. The transfer pump will also be grounded.
i. The FRP is a living document and an appendix will be added to address these measures.
j. As previously mentioned, a transfer pump (air driven displacement pump) will be used in place of a vacuum truck to transfer fluid to Tank (b) (3) (B). This is a safer option with a lower risk for releases. The transfer pump will be located on a concrete pad as well as in a tertiary containment structure. Emergency response personnel will be onsite to respond

as needed. There is an isolation valve (shown below) at the drainage culvert which will be closed in the event of a release.

Drainage Culvert Isolation Valve (Aerial View and Ground View from Bridge):

11. Operations at Hotel Pier: For unpacking operations at Hotel Pier, DOH recommends the following SPCC and response practices be implemented for unpacking and defueling:

a. Containment booms secured around the Yard Oiler Non-Self Propelled (YONs) (or other vessels used) at all times to contain releases during unpacking and defueling. The surface water must be inspected regularly for evidence of oil spills, especially when the vessel departs, and booms are being moved.

b. A vacuum truck should be stationed on-scene during unpacking and defueling to address any releases, and the Hotel Pier sump must be emptied regularly to prevent overflow into the ocean.

Response:
a. A permanent boom is in place under Hotel Pier and a temporary boom will be placed around the YONs while positioned at Hotel Pier. Fuels Operators, Port Operations, and response personnel are trained to continuously monitor surface waters to identify spills.

b. A vacuum truck will be stationed at Hotel Pier during YON transfer operations and at (b) (3) (B) during low point drain pump transfer operations. Hotel Pier sump pumps are operational and have float switches that automatically transfer sump fluid to the Fuel Oil Reclamation Facility.

The FRP is a living document and an appendix will be added to address the containment booms around YONs or ships and have a vacuum truck stationed on-scene during unpacking.

SPECIFIC COMMENTS

12. Pages 4, 7, and 10; Tank ullage: Tank ullage (unfilled space in a container) is listed as 60,000 gallons for F-24 and JP-5 unpacking, and 100,000 gallons for F-76 unpacking (Pages 4, 7, and 10 respectively). We assume the receiving tank will be emptied between unpacking each line. Please clarify where the fuel will go and how will it be transferred from the receiving tank.

Response: Tank (b) (3) (B) will be emptied prior to the start of unpacking. Fuel from tank (b) (3) (B) will be transferred to Upper Tank Farm ASTs using fixed pumps at (b) (3) (B). Tank ullage when Tank (b) (3) (B) is completely empty is 180,000 gallons. Total volume of fuel transferred to tank (b) (3) (B) will be significantly less than tank ullage.

13. Pages 23, 85, 132, and 205; Evolution order warning: The warning on Pages 23, 85, 132, and 205 states, "Take immediate action to shut the nearest valve to prevent the movement of fuel." Provide an explanation of why this would be the correct course of action in an emergency. Also, could closing the valve quickly in an emergency situation cause a large pressure surge upstream?

Response: Shutting the nearest valve to prevent the movement of fuel is the correct course of action because it minimizes the amount of fuel that would be released. Closing the valve in an emergency situation will not cause a large pressure surge upstream because the cycle of operations for the motor operated valves (MOVs) is programmed to close slow enough to prevent large pressure surges upstream. For manual valves, valve operators are trained to close valves slowly and manual closure of valves involved in unpacking cannot physically be manually closed quickly. The OPORDs address opening and closing valves slowly. Isolating fuel movement is the first priority in the event of a release. No surge or additional pressure will result when isolating or closing a valve in the event of a release.

14. Page 3, Gravity Drain Down diagram

a. This page indicates the F-24 line will be gravity drained to the building shown in the diagram, then pumped under pressure to the receiving tank at 90-100 pounds per square inch (psi), according to the Operations Order on Page 29. How long is this pumped line? Will the integrity of the line be verified prior to unpacking?

b. This diagram lists the maximum gravity flow rate as 100,000 gallons per hour (gph). However, the Operations Order on Page 31 lists the maximum flow rate (controlled by a bypass valve) as 105,000 gph. The bypass valve is not depicted on Page 3, but its location described on Page 31 indicates that it should be.

Response:
a. This line length is approximately 3 miles to Hickam Airfield. An integrity test will be performed prior to moving fuel to Hickam; this will be conducted prior to beginning the gravity drain operation. Pressure test 1 occurs when personnel open Red Hill valves to (b) (3) (B). Pressure test 2 occurs when personnel start the 1554 pumps and verify pressures.

b. The gravity flow rate is 100,000 GPH and the OPORD has been updated to reflect. The bypass valve is located at (b) (3) (B), which is shown on the F-24 Unpack Gravity HCK Diagram and is labelled in the valve alignment as "Bypass".

15. Page 25, Operations Order: Is the minimum required ullage of 178,276 gallons for the receiving tank based on 10% over the expected volume in the lines for F-24?

Response: Minimum required ullage was based on total volume of fuel in the line plus 10%.

16. Page 26, Operations Order: The yellow box contains two cautions. The first states a pipeline pressure of less than 47.3 pounds per square inch, gauge (psig) corresponds to a vacuum. The second states a pipeline pressure of less than 32.8 psig corresponds to a "dangerous vapor bubble." Why is one condition "dangerous" and the other not, and how was that difference derived?

Response: Both require vacuum recovery procedures. Below 47.3 psig is indicative of a potential vacuum condition. 32 psig, is indicative of a critical vacuum and fuel will begin to vaporize; vapor may condense and collapse the bubble when the vacuum is equalized. Currently the system is not under these conditions, but the check is included for additional risk mitigation.

17. Page 58, pipe schematic: The previous evolution order indicated the gravity flow rate should be controlled using a valve on the bypass line. However, during a recent call to discuss this plan, the DOH understood there was insufficient elevation to transfer the fuel to Hickam without an assist pump. It is unclear how the valve will control the flow to a max of 100,000 or 105,000 gph (see previous comment 14.b) if the pump is necessary. What is the flow rate of the pump, if that will be the controlling factor?

Response: The flow rate of the pump is 100,000 GPH (maximum). Pump flowrate depends on suction head pressure. The suction head pressure for this evolution will be lower than a normal operation and variable, as there is no tank pressure just pressure from the elevation of fluid in the

line. The bypass valve will serve to mitigate this issue by allowing the pump flow to run in a loop and feed back into the pump, maintaining suction side head pressure.

18. ***Page 60, Operations Order: The volume of 18,349 gallons does not seem to correspond to the F-24 diagram on Page 4, which shows 17,707 gallons between two motor operated valves (MOVs). Please clarify.***

    Response: The correct estimated volume is 17,707 gallons between the two motor operated valves (MOVs). The OPORD has been modified to reflect this volume.

19. ***Page 81, 8/29 - F24 Vac Configuration: This schematic appears to indicate a different pipe alignment in the Red Hill gallery than the F-24 unpacking diagram on Page 4. Explain why the alignments would be different.***

    Response: The diagram was marked incorrectly. A corrected version has been provided in the revised Unpacking Plan.

JP-5 UNPACKING

20. ***Page 6, Gravity Drain Down diagram: This diagram shows a total JP-5 volume of 194,156 gallons, which is duplicated in the evolution order. However, the vacuum truck volume is only 22,234 gallons. It is unclear why the vacuum truck needs to be used. Could the line be unpacked directly to the YON, negating the need for the vacuum truck?***

    Response: Most of the fuel will be drained to the YON during the gravity drain operation. In the case any fuel remains in the line, a transfer pump will be used in place of the vacuum truck to transfer the fuel to Tank [redacted]. CONOPs and OPORDs have been updated to reflect the changes.

21. ***Page 113, Operations Order: The fuel volume in the first pipe segment is listed as 193,431 gallons, which appears inconsistent with the volume shown on Page 6 and in the Operations Order on Page 96, which is 194,156 gallons. Please clarify.***

    Response: The correct calculated volume is 194,156 gallons. The OPORD has been modified to reflect this volume.

F-76 UNPACKING

22. ***Page 165, Operations Order: The volume for Phase III gravity drain down is listed as 620,464 gallons. This appears inconsistent with the Phase III volume in the diagram on Page 9, which lists 622,979 gallons. Please clarify.***

    Response: The correct calculated volume is 622,979 gallons. The OPORD has been modified to reflect this volume.

23. ***Page 192, Operations Order: The DOH understands the F-76 line will be drained down to the same adit as the F-24 and JP-5 lines. If the F-76 line will not be used for defueling, as stated in Pages 5 and 6 of Defueling Plan Supplement 1.A, why will this line not be drained completely?***

Response: The Red Hill F-76 line will be completely emptied to the end of the Harbor Tunnel.

24. ***Page 205, Operations Order: The evolution orders for the two YONs depicted on Page 9 state the expected fuel movement is 620,464 gallons. This amount should be broken down based on the available ullage for each YON to ensure the correct amount of fuel goes into each tank.***

    Response: The OPORDs have been updated to reflect the amounts for each evolution. Day one DoD will drain approximately 250,000 gallons to fueling barge YON [redacted] over approximately 3 hours. Day two DoD will drain approximately 372,979 gallons to YON [redacted] over approximately 4 hours. YON [redacted] will be emptied in between the two evolutions.

Enclosure (2) Draft Unpacking Spill Exercise Plan

GENERAL COMMENTS

25. ***The DOH is aware that the State OSCs have been participating in planning the exercise in coordination with the EPA and U.S. Coast Guard (USCG) and agree with the objectives of the exercise. In addition to the Navy's ability to deploy containment and recovery resources in a timely manner, the DOH has and will continue to emphasize the immediate activation of the incident command system and establishing a Unified Command that includes the DOH, EPA, Navy, and USCG. The DOH intends to continue participating and offering comment in planning meetings and full exercises for the purpose of improving the response capabilities of all parties involved.***

    Response: Thank you for your continued support. It is DoD's intention to immediately implement the incident command system and establish a Unified Command that includes the DOH, EPA and USCG for events that have actual or potential releases to the environment. Discussion of the implementation of the Unified Command with participation by DOH, EPA and USCG can be found in the Draft Facility Response Plan Section 10.2.3 page 10-13 and the Draft Integrated Contingency Plan (ICP) Appendix B Section B-6.1 page B-9.

SPECIFIC COMMENTS

26. ***Page 10, Figure 5: Confirm that the adit numbers in this figure are correct.***

    Response: The final unpacking spill exercise plan has been provided with the correct adit numbers.

27. ***Page 44, Protecting the Red Hill Drinking Water Aquifer: This page states that if the "sump pump was removing product at a rate of 250 gallons per minute (gpm), it would take approximately six (6) hours for the sump pump to clear the fuel . . .." Is the sump pump motor capable of operating for six (6) continuous hours without overheating?***

    Response: Pumps are submerged for cooling and continuous operations are not a concern.

Enclosure (4) Draft Facility Response Plan

SPECIFIC COMMENTS

28. Page "RP-1," RED PLAN: This page lists 7 facility personnel positions for the Control Room Operator to call, while the RH Spill Notification Call Tree diagram on Page "RP-5" shows the Fuel Control Room only calling the Regional Dispatch Center and Fuel Operations Director. Please clarify and explain the numbers listed before some of the caller/call recipient positions.

Response: Call tree numbers are listed on PDF page 45 of the spill exercise plan dated September 22, 2022. This information will be included in the Red Plan in the Facility Response Plan prior to defueling.

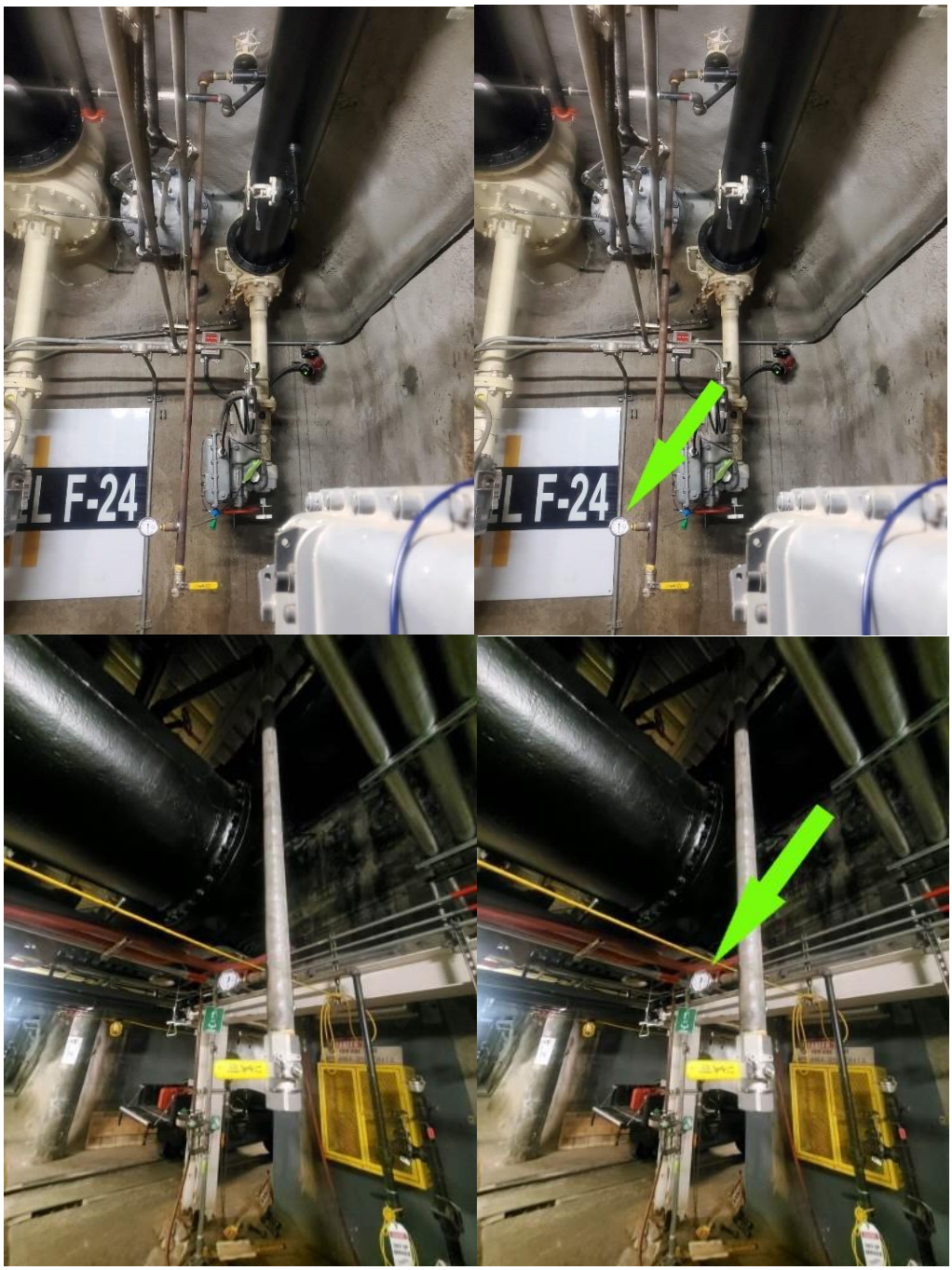
29. ***Page 2-1, HPV [High point vent] elevation calculation***

a. The Navy stated during an unpacking call that this area was surveyed. However, the "source of errors" section states that laser level was reportedly accurate to 40'. A survey or construction level would generally be much more accurate than this. What type of level was used for this measurement?

Response: An industrial grade laser level, Bosch Professional with Green Laser Technology compliant with 21 CFR 1040.1, was used to measure the elevation. The elevation measurement was recorded in short (less than 40 linear feet) increments for accuracy of the measurement. DoD will slowly open the high point vent and measure the pressure using a compound pressure gauge, to ensure absence of positive pressure prior to opening the vent.

b. Calculations show that the HPV is below the expected fuel level for a specific skillet blind. However, the Notes section states the vacuum condition at this skillet indicates the line is not full. Explain why a negative gauge pressure indicates the line is not full at this location and why the measurements indicate the opposite. If the measurements are correct, what volume of fuel would be expected to spill out when the HPV is opened and how would that be contained?

Response: Fuel is not expected to be present at the high point vent, DoD anticipates air will be drawn in when the vent is slowly opened. The vacuum condition (negative gauge pressure) indicates the fuel level has sagged and is expected to be lower than the HPV. The compound pressure gauges (shown below) will indicate positive pressure if there is fuel at the high point vent and in that case a separate OPORD will be generated to remove the excess fuel. Spill kits, spill bibs and emergency response equipment will be available in the immediate area of the high point vents.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30. ***Page 2-10, Section 2.4, paragraph 1: This paragraph identifies a former entrance to the diesel power plant. Confirm that this entrance has been sealed to the extent it will not provide a pathway for fuel to contaminate the groundwater in the event of a release.***

    Response: According to page 10 of the technical study of possibility of contamination of basal water sources from the Red Hill underground fuel oil storage dated June 28, 1949, a concrete plug was poured in the hole. DoD shared this document with DOH and EPA via email on September 26, 2022. DoD has been unable to locate any pathways from the former diesel plant.

31. ***Page "Tab C-1," Containment and Recovery: The DOH received a document from the Navy entitled "Tab A: Red Hill Pipeline and Drainage Systems," dated September 7, 2022. This document indicates there is a French drain in a tunnel that discharges directly into a stream at one of the adits (Page "Tab A-24," Table A-4). The DOH recommends confirming this information and, as appropriate, using containment booms to prevent oil from discharging into the stream if there is a release in the tunnel.***

    Response: Per discussions at the spill exercise debrief with DOH and EPA, the regulators recommended that any fuel discharged into the drainage swale during a release be contained via a berm and removed from that location. DoD will adopt that recommendation.