



Joint Task Force – Red Hill Red Hill Bulk Fuel Storage Facility, O 'ahu, Hawai'i

Defueling Consolidated Repair/Enhancement List
October 24, 2022

**Joint Task Force – Red Hill
Defueling Consolidated Repair/Enhancement List**

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Purpose

The purpose of this document is to provide a consolidated list of repairs/enhancements identified in the reports listed in Table 1 below. The intent of this consolidated list of repairs and enhancements is to inform stakeholders (including both regulatory agencies, State of Hawai'i leadership and the public) in a fully transparent manner of the necessary repairs and improvements identified in the reports listed below, including any repairs or enhancements Joint Task Force-Red Hill (JTF-RH) assesses as not required for safe defueling and the justification why those repairs and enhancements are not necessary. JTF-RH's intent is to conduct all necessary repairs in the most efficient manner possible without compromising quality or safety. JTF-RH also intends to only perform repairs that are necessary for safe defueling and not perform repairs whenever other mitigations can be accomplished in a more expedient manner while still ensuring fuel can be safely removed from the Red Hill Bulk Fuel Storage Facility (RHBFSF) as quickly as possible to best protect the people of Hawai'i, military families, and the environment.

Background

JTF-RH was officially established on September 30, 2022 by the Department of Defense (DoD) as the organization to defuel the RHBFSF. As part of the commitment from DoD included in Section IV of Defuel Plan Supplement 1.B., JTF-RH is submitting this defueling consolidated repair/enhancement list to the State of Hawai'i Department of Health for concurrence (Critical Path Method (CPM) schedule UID 358).

The following definitions are included for the purposes of this report.

- I. Repairs: Recommended repairs are items identified during assessments that are deemed necessary to restore the fuel transfer infrastructure or supporting appurtenances to original condition prior to defueling.
- II. Enhancements: Recommended enhancements are items identified during assessments that are deemed necessary to improve the fuel transfer infrastructure or supporting appurtenances to better than original condition prior to defueling.
- III. Urgent: Urgent repairs are those repairs deemed necessary prior to defueling by subject matter experts.

This list was prepared based on information obtained from the following reports listed in Table 1. Dates the DoD submitted the document to the State of Hawai'i Department of Health are included.

Table 1: Reports Used to Identify Repairs/Enhancements Necessary for Defueling

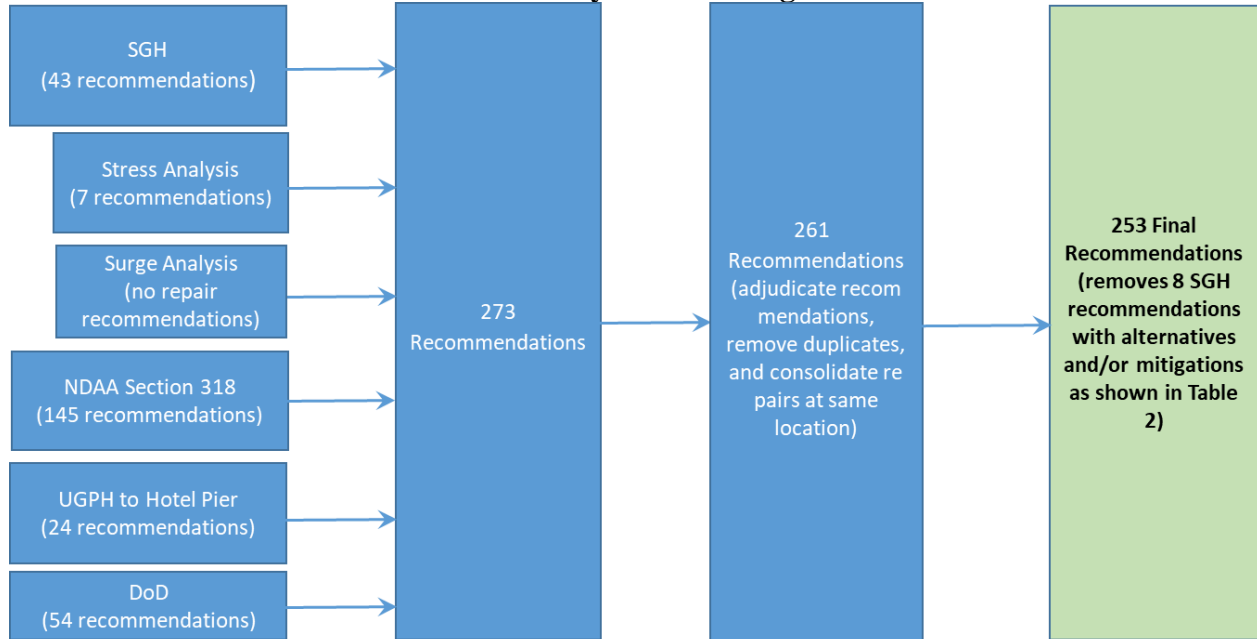
Report	Publication Date	Date Submitted
1. Simpson Gumpertz & Heger Inc (SGH) Assessment of Red Hill Underground Fuel Storage Facility	4/29/22	5/30/22
2. FY22 National Defense Authorization Act (NDAA) Section 318 Fuel Transfer System Inspection Report	8/30/22	9/7/22
3. Pipeline Stress Analysis and Structural Evaluation Report – Red Hill Lower Access Tunnel	9/27/22	10/24/22
4. Hotel Pier to Underground Pump House (UGPH) Fuel Transfer Infrastructure Assessment Report	TBD	Expected: 11/15/22
5. Surge Analysis Report	TBD	Expected 11/15/22

JTF-RH has included a list of repairs required prior to defueling from the Underground Pump House to Hotel Pier Assessment. JTF-RH has not yet received the full version of this report from the contractor performing this assessment but will forward to the State of Hawai'i Department of Health once received. JTF-RH expects to receive the full report no later than November 15, 2022. However, JTF-RH has received the list of repairs recommended prior to defueling. This is provided as enclosure (3). Additionally, JTF-RH has received some initial feedback from the surge analysis (also known as second root cause analysis from the September 29, 2021 F24 surge event) and does not anticipate any additional recommended repairs or enhancements. The surge analysis report from the contractor is being drafted and is also expected to be received by JTF-RH no later than November 15, 2022.

JTF-RH reviewed the reports in Table 1 to develop a consolidated list based on recommendations of the contractors that prepared the reports. In addition to the three reports cited in Table 1, DoD petroleum, oil and lubricant (POL) engineers identified an additional fifty four repairs/enhancements necessary for safe defueling.

The following Figure 1 shows the process used to consolidate the list of repairs and enhancements to arrive at the final number of 253 repairs/enhancements necessary for defueling.

Figure 1: Consolidation Process for Determining Final Number of Repairs/Enhancements Necessary for Defueling



The details for determining the final number of repairs/enhancements are shown in Table 2 below.

Table 2: Summary of Repairs/Enhancements for Defueling

Report	No. of Repairs/Enhancements Identified for Defueling
Simpson Gumpertz & Heger Inc (SGH) Assessment of Red Hill Underground Fuel Storage Facility	43
FY22 National Defense Authorization Act (NDAA) Section 318 Fuel Transfer System Inspection Report	145
Hotel Pier to Underground Pump House (UGPH) Fuel Transfer Infrastructure Assessment Report	24
Pipeline Stress Analysis and Structural Evaluation Report – Red Hill Lower Access Tunnel (PSAR)	7
Surge Analysis	0
Additional Repairs identified as necessary prior to defueling by DoD POL Engineers	54
Subtotal	273
Adjudicating recommendations, removing duplicates and consolidating repairs at same location	-12
Subtotal	261
Eliminating SGH repairs/enhancements using alternatives and/or mitigations	-8
Total Number of Repairs/Enhancements Required for Defueling	253

The complete list of repairs/enhancements recommended prior to defueling is included in Enclosure 1.

Exceptions to List of Repairs/Enhancements Required for Defueling

JTF-RH assesses that it can meet the overall safety objectives of many repair and enhancement recommendations but also reduce the overall timeline for defueling by replacing those work items with different technical solutions and/or operational procedures. JTF-RH proposes addressing eight SGH recommendations with alternative solutions that continue to mitigate risk while reducing schedule times. A summary is included below in Table 3.

Table 3: List of Repairs/Enhancements Considered Unnecessary for Defueling

Repair	Description
SGH-LAT-15/29/44	AFFF Retention Line – Install Valve Protection in Lower Access Tunnel
SGH-HT-12	AFFF Retention Line – Install Valve Protection in Harbor Tunnel
SGH-PM-3/4	F-76 - Install Equalization Lines around Tank Isolation Valves
SGH-PM-12	F-76 - Install Longitudinal Restraints
SGH-HP-14	Replace Polyvinylchloride (PVC) Fuel Oil Recovery (FOR) Pipeline at Hotel Pier

Further details and justifications for delaying or eliminating each of the repairs or enhancements follow.

AFFF Retention Line Enhancements (SGH-LAT-15/29/44 and SGH-HT-12):

The AFFF fire suppression system at Red Hill remains fully operational to extinguish a fire. The original PVC AFFF reclamation line, which is the subject of the above four SGH recommendations, was designed to recover and remove AFFF after activation of the system. As SGH found, the AFFF reclamation line is unusable because of the damage sustained from holding fuel for an extended period of time.

However, notwithstanding the deactivation of this line, Red Hill has a reliable secondary capability to recover discharged AFFF as outlined in DoD Defuel Plan supplement 1.A and 1.B. Because JTF-RH can rely on its in-place reclamation system, JTF-RH proposes to defer work on the four SGH AFFF reclamation line recommendations which involve protecting low point drains. DoD stated in supplement 1.A, it will take the following additional steps to mitigate any risk of AFFF or fuel entering the environment and particularly the Red Hill shaft:

1. Inspecting the lower access tunnel (LAT) to identify compromised areas of the concrete floor and repairing those areas prior to unpacking.
2. Conducting a thorough review of existing records (e.g. decommissioned pipeline from the former slop tank near Adit 6 and decommissioned fuel line from former power plant generator, etc.) to confirm there are no preferential pathways to contaminate the environment.
3. Designing a method to redirect flow down the harbor tunnel away from Adit 3 and the Red Hill Shaft if a spill were to occur.
4. Assessing methods to test the tightness of the main sump and Zone 7 sump to confirm their integrity and prevent any release of the fire suppression agent into the environment.

5. Evaluating the bottom of both elevator shafts to confirm that there are no pathways for any fuel that is collected to be released into the environment.

JTF-RH has completed Item Nos. 1 and 3.

With respect to Item No. 4, JTF-RH completed preliminary testing on the main sump and confirmed there was no leakage out of the sump to the environment. JTF-RH will complete additional tightness testing on both the main sump and the Zone 7 sump prior to requesting approval from the State of Hawai'i Department of Health to defuel.

Finally, JTF-RH will complete Item Nos. 2 and 5 prior to requesting approval from the State of Hawai'i Department of Health to defuel.

DoD has briefed State of Hawai'i Department of Health in detail on its assessment of all options considered for AFFF reclamation. JTF-RH will continue these discussions with the shared goal of defueling Red Hill at the earliest date feasible, consistent with safety of the community and the environment.

F-76 Pipeline Enhancements (SGH-PM-3/4/12):

JTF-RH has identified alternative means to mitigate the relevant risk that drove three SGH recommendations associated with the F-76 line. As outlined in Defuel Plan Supplement 1.A and 1.B DoD assessed that it is not necessary to repair the F-76 line. JTF-RH can safely complete the defueling of all tanks by utilizing the JP-5 and F-24 fuel lines. Because the two tanks storing F-76 (Tanks 15 and 16) are already connected to the JP-5 line, JTF-RH can reroute the F-76 product to the JP-5 line, simply by reconfiguring the flanges on those tanks. This non-intrusive adjustment would remove the need to install longitudinal restraints on the F-76 pipeline (SGH-PM-12).

Replace Polyvinylchloride (PVC) Fuel Oil Recovery (FOR) Pipeline at Hotel Pier (SGH-HP-14):

While developing the schedule for defueling the RHBFSF, DoD identified these replacement projects as long duration items that drive the timeline for defueling the facility. This has been outlined in both DoD's defuel supplements 1.A and 1.B. The scope of work includes removing approximately 2,400 feet of existing 4-inch diameter secondary containment PVC FOR drain line beneath Hotel Pier and replacing it with coated carbon steel piping. JTF-RH is requesting concurrence to use alternative mitigation measures rather than delaying the start of defueling until the pipeline and pipe seals are replaced.

The SGH Assessment of Red Hill Underground Fuel Storage Facility noted that the PVC FOR line under Hotel Pier potentially has joints with Nitrile seals and recommends replacing the "PVC with appropriate materials" (SGH # HP-14). SGH designated this repair as required prior to defueling.

DoD has a contract to design the above Hotel Pier FOR pipeline replacement to address SGH-HP-14. The work to complete this pipeline replacement can be completed at the earliest in December of 2023. This enhancement is the longest lead repair effort to support defueling. **As outlined in DoD's defuel supplements 1.A and 1.B, DoD assess this repair is not required for safe**

defueling and could reduce the overall defuel timeframe by three months and accelerate the completion of defueling from June 2024 to March 2024.

Unlike other FOR pipelines, this FOR pipeline normally collects only storm water draining into the containment trench and strip drains on the surface of Hotel Pier and as such is routinely flushed by storm water. The FOR pipeline only contains fuel if it is released on the pier. It is not used to convey fuel from Red Hill to a vessel. This pipeline is only considered a FOR pipeline because it is capable of collecting any fuel oil discharged to the strip drains on the surface of Hotel Pier or the containment trench that provides secondary containment for the fuel pipelines serving Hotel Pier. The FOR pipeline is considered a secondary containment drain pipeline and provides drainage from the Hotel Pier surface and the fuel pipeline containment trench to Hotel Pier collection sump. Based on valve alignment, flow is directed to either the Hotel Pier collection sump or directly to the harbor. Normally all flow is routed to the sump for collection and then pumped to the Fuel Oil Reclamation Facility (FORFAC) for separating water from fuel and then processed for disposal.

JTF-RH is proposing an alternative mitigation to avoid the need for these repairs prior to defueling. The alternative mitigation includes five steps to mitigate the risk of discharging fuel into the harbor in the event of a possible fuel spill on Hotel Pier.

1. Repair the FOR pipe hanger between columns 1 and 2 at Hotel Pier (SGH-HP-8) referenced in SGH report and specifically identified by Hawai'i State Department of Health. The concrete column repairs identified by Hawai'i State Department of Health letter of July 22, 2022 will be completed. However, JTF-RH assesses the additional repairs recommended by Hawai'i State Department of Health (HP-5, 6, 7, 11 and 12) are not necessary prior to defueling. SGH structural engineers re-evaluated Hotel Pier during the last week of September 2022 and confirmed these additional structural repairs are not considered necessary for defueling.
2. Complete a pipeline leak detection test on the fuel pipelines on Hotel Pier prior to defueling.
3. Prior to defueling, conduct a leak test of the PVC FOR pipeline by filling the PVC pipeline with a liquid containing a safe dye (such as food coloring) and monitoring the liquid level and the joints to confirm there are no leaks. Repair any leaks in the PVC FOR pipeline.
4. Have on-water spill response contractors located at Hotel Pier during defueling to quickly capture and collect any fuel from the surface of the harbor.
5. During defueling, install booms around the perimeter of Hotel Pier to contain any fuel on the surface of the harbor and prevent dispersion. Booms are already installed around ships moored at Hotel Pier to avoid the dispersion of any fuel products that reach the surface of the harbor. This strategy has proven effective.

JTF-RH has reviewed these alternative mitigation recommendations with SGH and SGH takes no exception to the proposed approach above in lieu of completing these repairs and delaying the defueling schedule. The PVC FOR pipeline will be tested prior to defueling to demonstrate it maintains its proper integrity. Furthermore, the PVC pipeline is located in an inaccessible location under the pier and not subject to accidental damage. Subject to completing the above alternative recommendations, JTF-RH is requesting the State of Hawai'i Department of Health allow defueling to occur prior to completing these repairs.

Conclusion

All assessment recommendations along with DOD's additional identified repair actions result in 253 total repair actions listed in enclosure (1).

JTF-RH continues to seek ways to more expeditiously defuel RHBFSF in a manner that is protective of the people of Hawai'i, our military families, and the environment. As a continuing act of transparency, JTF-RH will provide monthly updates to the State of Hawai'i Department of Health regarding the status of repairs and enhancements and the schedule for completing remaining work.