From: maheshi kloepfer
To: Perry, Thu
Subject: [EXTERNAL] Red hill meeting 6/5;23
Date: Saturday, June 3, 2023 6:18:16 PM

Aloha Thu. These are my thoughts, concerns and convictions. No one can predict the future, especially when trying out new 'things'. No one can guarantee that nothing the navy does, or anyone else, around Red Hill will not endanger our drinking water. Therefore, NOTHING should be put in the area or surrounding area now or in the future into perpetuity. It is in the vital interest of national security to safeguard this drinking water because without it, this island is Pau, ie no bases, no military can live here without clean safe drinking water, therefore no national security.
I respectfully urge the Fuel Tank Advisory Committee, Department of Defense, U.S. Navy and Hawai'i Department of Health to implement the following demands:

. Decommission the Red Hill tanks, do not repurpose them for any use
. Provide immediate financial and other relief for impacted families, civilians and Service members
. Complete a full remediation of aquifer and 'aina surrounding facility
. Implement water monitoring by the Department of Defense of entire aquifer in Perpetuity with on-island water testing facility

Mahalo for allowing me to comment on this urgent matter of water security.
Ola I ka wai, water is life

Sincerely
Maheshi Kae, Honolulu

Sent from my iPad

From: Dylan Ramos
To: Perry, Thu
Subject: [EXTERNAL] 6/6/23 FTAC Meeting testimony
Date: Monday, June 5, 2023 6:40:22 PM

Aloha,

My name is Dylan Ramos, born, raised, living and working in Honolulu. The following testimony is for the June 6, 2023 FTAC meeting:

Nineteen months after the November 2021 fuel leak, the Navy is still at least four months out from defueling the Red Hill tanks. While I appreciate that the defueling timeline has been slightly shortened, it should not have taken this long to remove the fuel. Every day the fuel remains in the tanks is another day that the well-being of O‘ahu’s residents, ‘āina, and natural resources are put at risk.

Poisoned families continue to struggle physically, mentally, and financially, and many still report symptoms of petroleum poisoning. The leaked fuel, and likely PFAS, remain in our aquifer and on our ‘āina. The location of the fuel plume and the real-time quality of our drinking water remain unknown. Meetings of the Joint Task Force Red Hill, Fuel Tank Advisory Committee, and other bodies continue to be infrequent, despite the urgency of this matter.

I respectfully urge the Fuel Tank Advisory Committee, Department of Defense, US Navy, and Hawai‘i Department of Health to implement the following demands:

- Decommission the Red Hill tanks, do not repurpose them for any use
- Provide immediate financial and other relief for impacted families, civilians and service members
- Complete a full remediation of aquifer and ‘āina surrounding facility
- Implement water monitoring of the entire aquifer in perpetuity with on-island water testing facility, paid for by the Department of Defense through a fund overseen by the State and City and County of Honolulu. DOH and the Board of Water Supply in particular should be responsible for using that fund to perform or solicit the performance of monitorings with integrity that can be trusted to alert the public of any potential dangers.

Thank you for allowing me to comment on this urgent matter of water security.

Ola i ka wai, water is life.

Sincerely,
Dylan Ramos
96816

From: rberger2@hawaii.rr.com
To: Perry, Thu
Subject: [EXTERNAL] Testimony for FTAC 06/06/23 Meeting
Date: Monday, June 5, 2023 1:48:58 PM

Aloha Thu,

My name is Lois Berger of Aiea. I am writing today to comment to the Fuel Tank Advisory Committee in light of the June 6 FTAC meeting.

Every day the fuel remains in the tanks is another day that the well-being of O‘ahu’s residents, ‘āina, and natural resources are put at risk.

Poisoned families continue to struggle physically, mentally, and financially, and many still report symptoms of petroleum poisoning. The leaked fuel, and likely PFAS, remain in our aquifer and on our ‘āina. The location of the fuel plume and the real-time quality of our drinking water remain unknown. Meetings of the Joint Task Force Red Hill, Fuel Tank Advisory Committee, and other bodies continue to be infrequent, despite the urgency of this matter.

I respectfully urge the Fuel Tank Advisory Committee, Department of Defense, US Navy, and Hawai‘i Department of Health to implement the following demands:

> Decommission the Red Hill tanks, do not repurpose them for any use. Complete remediation of the soil around and under the tanks and facilities to prevent seepage of contaminates into the aquifer. We have delayed this closure for so many decades, we cannot leave another ticking time bomb for future generations to suffer and deal with. Remediation is costly but water is priceless on an island in the middle of an ocean.
>
> Provide immediate financial and other relief for impacted families, civilians and service members.
>
> Implement water monitoring by the Department of Defense of entire aquifer in perpetuity with on-island water testing facility

Thank you for allowing me to comment on this urgent matter of water security.

Sincerely,
Lois Berger

FTAC Prep June 5-6, 2023

How serious are **valves** to a drinking water distribution system?

The Navy says, “Not one Drop.” I say, “Not one valve.

An introduction to my biggest fear: **Valves**.

I have included evidence of valve failures in the following 4 documents, throughout this written testimony

1. In the 1st Endorsement of the Command Investigation of the 6 May 2021 and the 20 November 2021 Incidents at the Red Hill Storage Facility provides a substantive amount of detail. (Note: unable to cut and paste from original document, I am using pertinent screenshots from the report regarding **valve** issues). It appears **valve** operation contributed to the May 6, 2021, leak and had a domino effect to the November 20, 2021, spill.
2. **Department of Defense September 7, 2022** Red Hill Defueling Plan Supplement 1.A. **(September 7, 2022)**
3. **Department of Defense** Red Hill Defueling Plan Supplement 2 **(May 15, 2023)**
4. The recently published 2023 Consent Decree addresses **valve** failures and expected deliverables regarding **valves** in the Standard (SOW) Appendix A.
5. In the Final Assessment Report from Simpson Gumpertz & Heger Inc. **of 29 April 2022**, **valve** operations are repeatedly mentioned.
6. Memorandum FOR Interagency Drinking Water System Team (IDSWT) Bldg C-27, Army Flushing Report for Zone I1 of 7 February 2022.

1. The 1st Endorsement of the Command Investigation of the 6 May 2021 and the 20 November 2021 Incidents at the Red Hill Storage Facility provides a substantive amount of detail. (Note: unable to cut and paste from original document, I am using pertinent screenshots from the report regarding **valve** issues). It appears **valve** operation contributed to the May 6, 2021, leak and had a domino effect to the November 20, 2021, spill.

I believe these screenshots from the Cavenaugh report tell you all about how important all **valves** are and the consequences of not maintaining them, as well as lack operator training. This document is available. I found it to be one of the most comprehensive document from the Navy. In my opinion, it is the most accurate at the time of posting.

Included are also screenshots from this document that also supports the Navy's inability to operate a large facility safely and correctly.

Can the Navy operate the water distribution system safely after Closure?

DEPARTMENT OF THE NAVY
COMMANDER
UNITED STATES PACIFIC FLEET
250 MAKALAPA DRIVE
PEARL HARBOR HI 96860-3131

IN REPLY REFER TO:
5830
Ser N00/0076
20 Jan 22

FIRST ENDORSEMENT on RDML Christopher J. Cavanaugh, USN, ltr 5830 of 14 Jan 22
w/encl

From: Commander, U.S. Pacific Fleet
To: Vice Chief of Naval Operations

Subj: COMMAND INVESTIGATION INTO THE 6 MAY 2021 AND 20 NOVEMBER 2021 INCIDENTS AT RED HILL BULK FUEL STORAGE FACILITY

Starting with 6 May 2021

57. At approximately 1600, [redacted] relieved as CRO, and [redacted] relieved as pump operator. [redacted] relieved as Red Hill rover, and [redacted] relieved as the Kuahua rover. They continued fuel transfer evolution 3, pumping fuel from surge tank 2 to tank 20. [Encls (79)-(82), (84), (85)]

58. At 1709, the pump operator secured pumping fuel and isolated surge tank 2 from the pump discharge header. Tank 20 remained aligned to the main pipeline. [Encl (65)]

59. At 1725, contrary to the operations order, the pump operator opened the surge tank 2 pipeline gravity feed valve. Once this valve opened, all valves between tank 20 and surge tank 2 were open except for the inline butterfly valves. This alignment put the full gravity head of tank 20 on the JP-5 pipeline between the upper tank gallery and closed butterfly valves lower in the system. Leakage past the butterfly valves resulted in fuel flowing into surge tank 2. [Encls (64), (65), (73), (76)]

60. At 1735, the pump operator isolated tank 20 by shutting both the associated ball valve and double block and bleed valve. Surge tank 2's fuel level continued to rise due to continued leakage past the butterfly valves. This resulted in a vacuum condition at the top of the pipeline. [Encls (64), (65)]

61. At 1742, the pump operator isolated surge tank 2 by shutting the pipeline gravity feed valve. Surge tank 2 level stopped rising. Surge tank 2 fuel level had increased a total of 23 barrels (966 gallons), correlating to a 23-barrel vacuum in the pipeline. [Encls (64)-(66), (73)]

62. At 1800, the CRO and pump operator completed fuel transfer evolution 3. Contrary to the operations order, they did not close all valves or return the piping system to its normal configuration once the transfer was complete. This was an intentional procedural shortcut while transitioning between evolutions 3 and 4. [Encls (64), (65), (73)]

63. A review of valve operations recorded in the AFHE system shows that none of the increments of fuel transfer evolution 3 were performed in accordance with the approved operations order. Specifically, watch teams performed each increment differently and did not restore the system to a normal lineup between increments. Additionally, CROs utilized ball valves to isolate the tanks between increments, instead of using double block and bleed valves. [Encl (64)]

64. At 1801, watch standers initiated fuel transfer evolution 4. [Encls (64), (65), (73)]

65. Fuel transfer evolution 4 consisted of gravity feeding fuel from tank 12 to surge tank 2, then pumping fuel from surge tank 2 to destination tank 9 for tightness testing. [Encl (64)]

66. At 1803, contrary to the operations order, the pump operator opened the surge tank 2 pipeline gravity feed valve. Because the watch team did not properly restore the system at the completion of evolution 3, leakage past the butterfly valves again resulted in fuel flowing into surge tank 2. This exacerbated the vacuum condition at the top of the pipeline. [Encls (64), (73)]

67. At 1808, the pump operator isolated surge tank 2 by shutting the pipeline gravity feed valve. Surge tank 2 level stopped rising. Surge tank 2 fuel level had increased to a total of 39 barrels (1,638 gallons) since tank 20 was isolated, correlating to a final 39-barrel vacuum in the pipeline. [Encls (64)-(66)]

68. At 1810, the CRO aligned tank 12 to the pipeline. This caused the 39-barrel vacuum in the pipeline to collapse and exert forces on the system leading to failure of dresser couplings at tanks 18 and 20. [Encls (70), (73)]

29 September Pressure Surge

Overview

149. On 29 September 2021, personnel at Red Hill observed indications of a pressure surge in the F-24 pipeline during a fuel transfer evolution. The FLC Pearl Harbor CO conducted an operational pause, and during a review of data over the past year, Fuels Department engineers determined pressure surges are more common than previously thought. FLC Pearl Harbor put corrective actions in place to monitor for and mitigate pressure surges, but this phenomenon is not fully understood and requires further analysis. [Encls (68), (84), (150)]

Timeline

150. At approximately 0800 on 29 September 2021, [redacted] relieved as the day shift CRO, and [redacted] relieved as the assistant CRO. [redacted] and [redacted] relieved as the Red Hill rovers. [Encls (83), (151)-(153)]

151. The CRO initiated fuel transfer evolution 2 at 0836 on 29 September 2021. This evolution consisted of transferring F-24 fuel from Red Hill tank 4 to Hickam Airfield. Reconstructed AFHE information shows a pressure indicating transmitter (PIT) located inside the underground pump house read 34 psig just prior to commencing the evolution. Due to an approximate [redacted] elevation change from Red Hill to the underground pump house, the F-24 pipeline static condition pressure at this PIT should never fall below 46-48 psig. Any pressure below this range indicates there is some degree of vacuum in the pipeline (or the instrument is inaccurate). The exact pressure for creating a vacuum in this part of the system depends on the specific gravity of

fuel in the pipeline and the valve lineup. [Encls (150), (154)]

152. At 0838, the CRO opened the tank 4 isolation ball valve, then the associated double block and bleed valve. [Encls (68), (155)]

153. Similar to 6 May 2021, the operations orders for 29 September 2021 were unclear regarding valve operations. For example, while the operations order listed the tank 4 double block and bleed valve prior to the ball valve, the valve operations were not required to be completed in that order. [Encls (68), (156)]

154. As the double block and bleed valve opened, the PIT recorded a rapid pressure increase from 33 psig to 125 psig. [Encls (150), (154)]

155. At the same time, two *ENGlobal* contractors and one Red Hill rover who were working in the lower access tunnel heard a loud noise and felt the pipe shake. The Red Hill rover, [redacted], reported this noise to the CRO. [Encls (83), (84), (150), (153), (154)]

20 November Fuel Spill and Release to the Environment

Overview

174. On 20 November 2021, the Red Hill rover inadvertently struck a fire suppression system retention line drain valve with the passenger cart of a train, cracking the PVC pipe near Adit 3. Although not known at the time, this retention line contained up to 16,999 gallons of JP-5 fuel from the 6 May 2021 spill. A portion of this fuel was released to the environment and ultimately entered the Red Hill well and the Navy water distribution system. [Encls (33), (54), (83), (168), (169), (170), (172)]

Timeline

175. At approximately 1600 on 20 November 2021, [redacted] relieved as swing shift CRO, and [redacted] relieved as swing shift assistant CRO. [redacted] relieved as a swing shift Red Hill rover, and [redacted] commenced his second shift of the day as the second Red Hill rover. [Encls (78), (83), (153), (171)]

176. There is a 3.5-ton train with an attached passenger cart in the lower access tunnel. The train travels the length of the lower access tunnel from tanks 15 and 16 to Adit 1, in addition to the Adit 3 Y. The rovers utilize the train to conduct physical checks and collect samples in the lower access tunnel. [Encls (83), (172)]

177. At approximately 1650, the Red Hill rover was driving a train from the Red Hill lower tank gallery toward the Adit 2 Y while conducting pipeline checks. He passed a fire suppression

317. FLC Pearl Harbor did not conduct a causal analysis of the spill on 6 May 2021. Instead, the command relied on the external NAVSUP investigation. Neither the NPO Deputy OIC nor

FLC Pearl Harbor supervisors reviewed AFHE data to determine which operators incorrectly operated the valves that resulted in the JP-5 pipeline vacuum. As a result, the FLC Pearl Harbor leadership held the CRO accountable who pressurized the pipeline, but failed to note that many of the valves that created the vacuum condition were operated by the pump operator (albeit under the supervision of the CRO). [Encls (84), (135), (256)]

318. On 1 October 2021, the FLC Pearl Harbor CO suspended operations to determine the cause of an unexpected pressure surge. The FLC Pearl Harbor CO resumed operations on 8 October 2021 based on preliminary reporting and a working hypothesis of the cause. However, Facilities Division engineering analysis was ongoing and had not conclusively determined the cause. [Encls (139), (150), (154), (163), (165)]

CHAPTER 3
Opinions

6 May Fuel Spill

1. The proximate cause of the fuel spill on 6 May 2021 was human error. The CRO and pump operator took intentional shortcuts when transitioning between procedures. Their improper valve operations resulted in drawing a vacuum in the JP-5 line, then rapidly pressurizing it. This pressure surge caused mechanical failure of two piping joints. This opinion is consistent with a root cause analysis conducted by *Austin Brockenbrough and Associates, LLC*, a private engineering and consulting firm. [FF (41), (42), (47)-(50), (52)-(73), (164), (304), (306)-(310), (313), (314)]

2. The FLC Pearl Harbor Fuels Department does not have adequate defense in depth against human error. Safe and effective operations require: (1) clear and accurate procedures, (2) trained and proficient operators, and (3) effective supervision. Weaknesses in all three of these areas led to poor standards of procedural compliance across the FLC Pearl Harbor Fuels Department. For example, on 6 May 2021, operators performed four fuel movements governed by the same operations order; no two of those four transfers were conducted in the same sequence. Although FLC Pearl Harbor has taken steps to improve operations orders and processes for controlling valve operations, supervision of control room operations and validation of training effectiveness remain blind spots. Finally, the AFHE system does not provide operator aids or interlocks to prevent human error. [FF (48)-(50), (52)-(56), (63), (90), (120), (126), (129), (135)-(138), (140), (161), (164), (165), (168)-(170), (173), (299)-(310), (313)-(318)]

16. The CRO on 6 May 2021 was responsible for the safe execution of scheduled fuel movements in accordance with approved operations orders, which he failed to do. Automated logs show that valves were consistently operated not in accordance with prescribed operations orders during his shift. Cognizant officials initiated employment actions to hold the CRO accountable. He has since retired from FLC Pearl Harbor, effective 31 December 2021. [FF (41), (48), (49), (54), (57)-(71), (304)]

17. The pump operator on 6 May 2021 was not directly responsible for the safe execution of scheduled fuel movements. Nevertheless, he operated valves not in accordance with prescribed operations orders, under the supervision of the CRO. This was a common practice between CROs and pump operators, and was widely understood within Fuels Department to be the manner by which a pump operator would learn and ultimately become a CRO. The pump operator incorrectly sequenced the valves that created the vacuum condition, which ultimately led to the pipe rupture and fuel spill on 6 May 2021. [FF (48)-(50), (54), (57)-(71), (304)]

2. **Department of Defense September 7, 2022 Red Hill Defueling Plan Supplement 1.A. (September 7, 2022)**

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Table 3 – SGH Recommendations Underway as of September 7, 2022

SGH ID No.	**Specific Requirement**
27	Equalization Line - Install across tank isolation **valve**s
PM-1	Equalization Line - Install bypass from Tank 20 to other side of DBB **valve** (JP5 pipe)
PM-2	Equalization Line - Install bypass after Tank 20 ball **valve** to main lateral (JP5 pipe)
PM-5	Equalization Line - Install bypass from Tank 6 to other side of DBB **valve** (F24 pipe)
PM-6	Equalization Line - Install bypass after Tank 6 ball **valve** to main lateral (F24 pipe)

Table 4 – SGH Recommendations for Defueling F-76 Product with Alternative Solutions

SGH ID No.	Specific Requirement
PM-3	Equalization Line - Install bypass from Tank 15 to other side of DBB **valve** (F76 pipe)
PM-4	Equalization Line - Install bypass after Tank 15 ball **valve** to main lateral (F76 pipe)

Table 5 – Additional SGH Recommendations with Alternative Solutions

SGH ID No.	Specific Requirement
LAT-15	AFFF Retention Line - install protection to overhead **valve** (PS 14-15)
LAT-29	AFFF Retention Line - install protection to overhead **valve** (PS 26)
LAT-44	AFFF Retention Line - install protection to overhead **valve** (PS 61)
HP-12	AFFF Retention Line - install protection to overhead **valve** (**Adit 3)**

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Concept of Operations (CONOPs) and Operation Orders (OPORDs) are the first two critical operational planning documents generated for all Red Hill fuel evolutions. In April 2022, DoD established a continuous process improvement effort at Defense Fuel Support Point (DFSP) JBPHH to eliminate ambiguity from the OPORDs, thereby increasing standardization of operator inputs and resulting outputs throughout fuel movement evolutions. **DoD also has developed and implemented a third critical operational planning document, Valve Alignment Baseline Orders (Baselines), which ensure that valves are positioned correctly before the start of a**

fuel movement evolution. Upon completion of the fuel movement evolution, the OPORD specifies that valve positions must return to a baseline configuration.

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Controls and procedures currently in place to prevent incidences that may cause a release;

DoD also has implemented a formal procedure to confirm that all **valve**s are in the proper position (now known as a baseline **valve** alignment) prior to preparing for transferring fuel or conducting other evolutions. The baseline **valve** alignment requires a two-person verification of the flow path and **valve**s isolating the flow path.

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Additional Responses	Description
Response: Item 1 – DoD, in partnership with third-party industry experts, developed detailed operational orders including safety and **two-person valve integrity and baseline valve plant configuration and training**. The program and its contents are being reviewed by subject matter experts from the DoD's Safety, Training and Environmental Office for completeness, and a team of experts will assist in standing the programs up. A component of the program is to document and maintain training records for easy reference and auditability.	Include verification step in Operations Order that piping is restrained before starting any evolution involving transferring liquid from any tank in Red Hill Tank Gallery. **(High Priority)**
Response: Item 2 - System configuration of Red Hill fuels infrastructure is reviewed as part of the criteria for developing Operation Orders and **Baseline Valve Alignments.** A separate pre-check of system configuration, including verification of pipeline stability, will be performed prior to OPORD execution and a signature block confirming completion will be included in the OPORD.	Consider adding observer and/or remote camera observation at Dresser Couplings during initial pressurization prior to defueling. **(High Priority)**
Response: Item 3 - Watchstanders will observe the Dresser Couplings during initial pressurization and will	Develop a car-seal or lock administrative control system and **identify safety-critical manual valves**

confirm system integrity as part of their roving verification responsibilities.	**which should be controlled to reduce the likelihood of human error. Valves to consider include but are not limited to 24" butterfly tank vent valves at Red Hill (RHL), manual block valves on the inlet or discharge of relief devices, manual block valves on bleed of the body cavity of twin-seal Double Block, and Bleed (DBB) device, key firewater supply, and distribution valves.** **(High Priority)**
Response: Item 4 - **The Lockout / Tagout (LOTO) program requires the "lock-out" of non-flow path valves, which isolates the flow path**. This includes all **Red Hill Tank skin valves and ball valves that are not part of the fuel line flow path**, **UGPH valves that lead to Surge Tanks, and valves that isolate flow to non-aligned distribution areas (Upper Tank Farm Tanks, Bldg. 1554, and Truck Loading Rack). Valves along the FOR line in Red Hill will also be locked out while water draw and sampling evolutions are not being conducted.** Lastly, skillets and flanges that are installed to prevent flow will be tagged to indicate as such. Operation of components isolated under the LOTO program is prohibited without prior authorization from command leadership.	The Navy policy is to use the Incident Command System (ICS)/Unified Command (UC) for structuring Navy spill response management organizations. The NAVSUP FLCPH fuel personnel manages the initial response. If additional resources are needed, the Federal Fire Department Incident Commander will establish an emergency command post and assume responsibility for the response. The Emergency Spill Coordinator or the Commanding Officer can contact the Region Navy On-Scene Coordinator to activate the Region Spill Management Team (SMT). The Region SMT will then establish other ICS functions. Port Operations is the coordinator for the Facility Response Team (FRT), an on- water contractor resource based on Ford Island. The roles, staffing, and

	resources for each organization need to be clearly defined, drilled, and aligned prior to defueling operations. **(High Priority)**
Response: Item 6 - DoD has increased both roles and personnel in support of all operations. For defueling evolutions, personnel will be placed at locations where: mechanical operations occur; system pressure readings are available; and any areas potentially open to environment (high point vents, sumps, pier risers) initially on start-up, throughout line-up changes, and during shutdown. In addition to rovers and assigned personnel at issuing locations, two control room operators will be present at all times, **independent validators will verify all valve positions,** and a Supervisor of the Watch will provide oversight throughout the operation.	Consider additional operators and technical support for defueling operations. **(High Priority)**

3. **Department of Defense Red Hill Defueling Plan Supplement 2 (May 15, 2023)**

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Table 1- Comprehensive List of Submitted Deliverables and Completed Events

DATE	**JTF-RH DELIVERABLES AND EVENTS**
24 OCT 22	Execution of Unpacking Equalization and **Valve** Cycling
14 APR 23	Tank 311 Draining and **Valve** Repair and F24 Draining Complete

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i. Most Likely Release in the Tank Gallery – Defueling:

JTF-RH assessed that, if a release were to occur in the Tank Gallery during defueling, it likely would result from one or more of the following events: (1) a pipe rupture; (2) a failed repair; or **(3) failure of a valve in the tank gallery along a length of pipe downstream of tank skin-valves (double-block and bleed valves).**

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ii.Most Likely Release in LAT Piping – Re-Packing/Un-Packing:

JTF-RH assessed that, if a release were to occur in the LAT Piping during Repacking or unpacking, it likely would result from one or more of the following events: (1) a pipe rupture; (2) a failed repair; or **(3) failure of a valve.**

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iii.Most Likely Release Harbor Tunnel (HT) Piping – Re-Packing/Un-Packing:

JTF assessed that, if a release were to occur in the Harbor Tunnel, during repacking or unpacking, it likely would result from one or more of the following events occurring: (1) a pipe rupture; (2) a failed repair; or **(3) failure of a valve.**

v.Most Dangerous Release – Defueling

In this scenario, a possible release could occur if a fuel hammer, or vacuum condition, **causes a fracture to a section of piping just north of a double blocking blow valve.**

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b. Safety Measures for Repacking

A supervisor and work leader will oversee all phases of repacking operations and, prior to commencement of repacking, will verify all **valve** positions. JTF-RHwill use independent validators to verify these inspections and confirm proper operation of **valve**s to ensure correct system configuration. Additionally, LOTO will be used to isolate **valve** and energy control points vital to safe repacking operations.

4. As written in the 2023 Consent Decree, valves play another important part for the Standard of Work.

Excerpts 2023 Consent Decree:

On April 4-8, 2022, inspectors from EPA's National Enforcement Investigations Center, accompanied by EPA Region 9 credentialed inspectors, conducted an inspection of the JBPHH System. DOH also participated in the inspection. During this inspection, inspectors identified significant concerns, including concerns related to inadequate system maintenance, inadequate operations, maintenance and recordkeeping program, no operator safety training program, incorrect chemical storage, **no written valve exercise program**, no written flushing plan, no written cross connection control program, failure to issue a Tier 1 public notification of the fuel leak contamination of the Red Hill Shaft, insufficient coverage by qualified operators, an inadequate Emergency Response Plan, and an inadequate System Risk and Resilience Assessment. EPA provided the inspection report on May 27, 2022.

6.5.1 STANDARD OPERATING PROCEDURES FOR SYSTEM OPERATORS

6.5.1.1 SCOPING MEETING

Operator SOPs shall include step-by-step procedures that describe how operators carry out daily, w Appendix C of this SOW. Procedures shall include process flow schematics identifying critical sources, treatment storage tanks, booster pump stations, **valves**, monitoring locations, daily inspections (including a checklist), start-up and shutdown procedures, chemical addition and handling, troubleshooting procedures, safety procedures, emergency response procedures (including water system staff and first responder contact numbers (updated annually on October 1st) and associated notification protocols), and operator daily log requirements.

6.5.4 UNIDIRECTIONAL FLUSHING PLAN

Within one-hundred-and-eighty (180) days after EPA's approval of the Hydraulic Model, Navy shall submit, for EPA approval, a Unidirectional Flushing ("UDF") Plan. The UDF Plan shall include: • **A contaminant slug study from each active source or potential location of the contaminant within the distribution system, identifying early valve closure response to contain the spread of contamination;**

6.5.6 VALVE EXERCISING AND REPLACEMENT PROGRAM

6.5.6.1 VALVE INVENTORY UPDATE

Within one-hundred-and-twenty (120) days after the Effective Date, Navy shall update its **valve** inventory.

6.5.6.2 VALVE EXERCISING AND REPLACEMENT PROGRAM

6.5.6.2.1. VALVE EXERCISING

Within one-hundred-and-twenty (120) days after updating its **valve** inventory required under Section 6.5.6.1 above, Navy shall submit to EPA for approval a **Valve Exercising Program**. All **valves** four inches or greater in size in the JBPHH System shall be exercised annually in accordance with AWWA Standard G200-15 Distribution Systems Operation and Management, effective May 1, 2015 (available at AWWA's website at:

https://www.awwa.org/Portals/0/Awwa/Publishing/Standards/G200-15LookInside.pdf?ver=2020-03-09-114002-377).

Records of each **valve** exercise shall include the following: **valve** size and type, function, manufacturer, type of access, normal position (open or closed), **valve** opening direction (right or left), a count of the full turns required to isolate the **valve**, date of installation (if known), and **valve** maintenance/repair/replacement events. Navy shall update its **valve** exercising records on an annual basis and an electronic PDF summary of the record shall be made available for inspection during EPA inspections or sanitary surveys.

6.5.6.2.2 VALVE REPLACEMENT

In addition to **valve** replacement performed during implementation of Navy's Asset Management Program, **valves** identified for replacement during regular implementation of the **Valve Exercise Program** shall be replaced within a reasonable amount of time, but no later than sixty (60) days after identification for replacement unless EPA and Navy agree an additional amount of time is necessary.

5. In the Final Assessment Report from Simpson Gumpertz & Heger Inc. of 29 April 2022, **valve** operations are repeatedly mentioned.

SGH Final Assessment Report: April 29, 2022

Valve issues from this report:

Description	**Severity**	**Recommendation Description**	**Priority**	**Additional Comments**
Lack of bypass from Tank 20 to other side of DBB **Valve** on JP-5 line.	H	Install bypass from Tank 20 to other side of DBB **valve** using existing sample outlets and drain line.	D1	Install pressure equalization lines across double block and bleed **valves** on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and stainless tubing installed using a ladder.
PM-2 Lack of bypass from after Tank 20 DBB **valve** to main JP-5 lateral	H	Install bypass from after Tank 20 ball **valve** to main JP-5 lateral	D1	Install pressure equalization lines across double block and bleed **valves** on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and

				stainless tubing installed using a ladder.
PM-3 Lack of bypass from Tank 15 to other side of DBB **Valve** on F-76 line.	H	Install bypass from Tank 15 to other side of DBB **valve** using existing sample outlets and drain line, or other F-76 tank to be drained last.	D1	Install pressure equalization lines across double block and bleed **valves** on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and stainless tubing installed using a ladder.
PM-4 Lack of bypass from after Tank 15 ball **valve** to main F-76 lateral.	H	Install bypass from after Tank 15 ball **valve** to main F-76 lateral.	D1	Install pressure equalization lines across double block and bleed **valves** on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and stainless tubing installed using a ladder.
PM-5 Lack of bypass from Tank 6 to other side of DBB **Valve** on F-24 line.	H	Install bypass from Tank 6 to other side of DBB **valve** using	D1	Install pressure equalization lines across double block and bleed **valves** on three different product

		existing sample outlets and drain line.		tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and stainless tubing installed using a ladder.
PM-6 Lack of bypass from after Tank 6 ball **valve** to main F-24 lateral	H	Install bypass from after Tank 6 ball **valve** to main F-24 lateral.	D1	Install pressure equalization lines across double block and bleed **valve**s on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and stainless tubing installed using a ladder.
PM-7 Lack of bypass from after ball **valve** to main lateral	H	Install bypasses from tank wall across inboard and outboard **valve**s at the 15 tanks that do not have equalization lines that are	D1	Install pressure equalization lines across double block and bleed **valve**s on three different product tanks for defueling and the remaining tanks for continued operation. Swagelok fittings and

		installed for defueling		stainless tubing installed using a ladder.
Pg. 364	H	Butterfly **valve** is known to leak, causing vacuum surge loads in packed F-24 product line	P1	Do not use butterfly **valves** as isolation **valves**. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow
Pg. 364	H	Butterfly **valve** is known to leak, causing vacuum surge loads in packed F-76 product line.	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow
Pg. 364	H	Butterfly **valve** is known to leak, causing vacuum surge loads in packed JP-5 product line.	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow

AST-11	M	Maintenance is needed (replace significantly corroded **valve**s as necessary)	P2	Tanks B1 & B2 are currently in NAVFAC CIR. Tank B1 has not been inspected. It is expected that this will be included in the CIR.
Pg. 375	L	Flange protection clamps inconsistently installed	P3	Evaluate maintenance requirements and balance with installation of protective flange clamps
Pg. 375 (1)	L	Crevice corrosion leading to pitting under name plate at globe **valve**	P3	Local coating repair
Pg. 378	L	Corrosion of **valve**/ equipment flanges	P2	Clean to determine if section loss is acceptable for performance, recoat or replace
Pg. 378	L	Corrosion of **valve** stem	P2	Disassemble flange, recoat
Pg. 378	H	Corrosion on **valve**, **valve** appears to have been	P1	Clean to determine if section loss is acceptable for performance, recoat or replace

		submerged, steel appears to have lamellar corrosion		
Pg. 381	M	Crevice corrosion in pipe flanges	P1	Clean to determine if section loss is acceptable for performance, recoat or replace
Pg. 396	H	Butterfly **valve** is known to leak, causing vacuum and surge loads in packed F-24 product line.	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow
Pg. 396	H	Butterfly **valve** is known to leak, causing vacuum and surge loads in packed F-24 product line.	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow
Pg. 396	H	Butterfly **valve** is known to leak, causing vacuum surge loads in	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream.

		packed JP-5 product line.		Add'l: Butterfly **valve**s are used to throttle flow
Pg. 396	H	Butterfly **valve** is known to leak, causing vacuum surge loads in packed F-24 product line.	P1	Do not use butterfly **valve**s as isolation **valve**s. Consider using double block and bleed **valve**s Upstream. Add'l: Butterfly **valve**s are used to throttle flow
Pg. 402	M	Crevice corrosion in pipe flanges	P1	Clean to determine if section loss is acceptable for performance, recoat or replace. Add'l: Entire length of pipe needs to be inspected, but this could not be accessed during our inspection. It is important to check bottom surface of flanges - these were the areas most corroded from the **valve**s removed in January 2022.

Pg. 475-488

APPENDIX A.5 Valve Equalization Bypass Line Concept

Valve Pressure Equalization using Bypass Line

Pressure equalization across a **valve** is commonly used in the oil, gas, and chemicals industry to avoid opening a valve with high differential pressure. This design feature increases the sealing surface life and provides a safe method to pressurize the section of piping downstream of the **valve**. Figure 1 illustrates some examples of pressure equalization bypass **valves** installed across various **valves**.

Wear and tear on a **valve** may increase when the **valve** is repeatedly opened and closed with high differential pressure, as this can damage the sealing surfaces. This effect is illustrated in Figure 2, where high pressure is imposed on the upstream side of a closed ball **valve**, and a resultant net force is exerted on the sealing surfaces. When the **valve** is opened (or closed), the force on the sealing surfaces can wear over time and **lead to a "leak-by" condition allowing the fluid to pass to the downstream side of the valve when it is closed.** In addition, this situation may also require more than anticipated torque to rotate the **valve** stem to open or close the **valve** and **may lead to a failed valve actuator or failed valve stem.**

This situation can be avoided by allowing the fluid pressure to equalize across the **valve** before it is opened by **installing a pressure equalization line across the valve.** A typical pressure equalization arrangement is illustrated in Figure 3. Pressure equalization allows the pressure differential across the **valve** to be zero, thus reducing the **valve** wear and tear and reducing the torque on the **valve** stem when operating the **valve.**

The pressure equalization arrangement also reduces hydraulic erosion of the sealing surfaces if the **valve** is "cracked" open to allow the downstream piping segment to be pressurized. Hydraulic erosion occurs where high-velocity fluid flows over the sealing surfaces of the **valve**. Over time, this situation can lead to the sealing surface wear in the localized area of the high-velocity fluid and **cause "leak-by" of the valve when it is closed**. Using the pressurization line also allows for an opportunity to check for leaks in the downstream pipe segment without opening the main **valve**. In this case, if a leak is detected or observed in the downstream segment, the

equalization **valve** is the only **valve** that needs to be closed. If the main **valve** is used for this purpose, the time to close the main **valve** may be longer as compared to a relatively smaller **valve** and could lead to an increased fluid leak volume.

Application to Red Hill Facility

At Red Hill, there can be a specific issue that is suspected of forming when the butterfly valves in the Underground Pump House "leak-by," causing line "sag" and allowing a vacuum to form in the resultant void space at the upper end of the main product lines. This vacuum is believed to be a contributor to the JP-5 line movement that occurred on 6 May 2021 and the surge load that led to the Dresser coupling separation.

Since that time, the Red Hill fuel team has adopted a procedure to clear this vacuum by attaching a flexible hose to the high point vent (Figure 4A) of the product line and to the FOR-sump system (Figure 4B). The high point vent valve is opened to relieve the vacuum with ambient air. Once the vacuum is relieved, the main tank valve is slowly "cracked" open or "throttled" to allow fuel to enter the product line and displace the air from the high point vent and into the FOR-sump system. Once fuel is observed through a sight glass in the vent line, the high point vent valve and the main fuel valve are closed.

The main tank **valves** do not have pressure equalization and are opened manually at the various **valve** locations. This process has **three main risk factors**:

1) opening the main **valves** manually and not filling the product line too fast requires specialized hands-on training and a "feel" for how much is too much to open these **valves**,

2) if this manual operation of the main tank **valves** is not managed correctly, control of the fuel flow into the product line is lost thus creating a potential for product line pipe movement and a Dresser coupling separation, and

3) if there is a loss of containment, the personnel in the area are exposed to this hazard.

Pressure equalization can mitigate these risks by allowing a controlled flow of fuel into the product line to clear the vacuum in the product line. Since the equalization **valve** is small compared to the main tank **valves**, the **valve** can be fully opened with only standard **valve** operation training. This will mitigate the chance of pipe movement and loss of containment if the product line (void space) is "filled" too fast. If a leak is detected, the only **valve** that needs to be closed is the pressure equalization **valve,** which reduces the exposure risk of personnel to a large loss of containment. The installation of the pressure equalization lines is a recommendation, and further engineering and risk assessment needs to be completed during the detailed design phase.

<u>Pressure Equalization Line Concept for Installation Before Defueling</u>

Before defueling the Red Hill storage tanks, the one proposed approach is to install pressure equalization on the tank **valves** on each of the fuel product **tanks.** These three product **tanks** should be the last tanks to be defueled so that they are the source of fuel to clear the vacuum/void space in the product lines. These tanks should also be the tanks that are at the highest elevation possible for each product type.

The procedure to clear the vacuum/void space is required to be completed each time fuel is removed from the storage tanks. It is also assumed that the defueling of each tank will not be a continuous process in that the process may be stopped and restarted as the various defueling vessels arrive and depart, and the time in between may be long enough to allow for a vacuum to form in the fuel lines.

Installation of pressure equalization and differential pressure gauges on the three selected fuel tank **valves** can utilize some of the existing **valves** with minimal modifications to the piping contingent upon qualification of these components for the operating pressure and other applicable loads.

At each tank location, there is a manifold that is used for fuel sampling and dewatering. One of the outlets at these manifolds can be used to pressurize the in-board fuel **valve** (Figure 5). The in-board **valve** would then be pressurized by routing the fuel to the drain location in the pipe segment between the inboard and outboard tank **valves**. These drain **valves** are encircled in Figure 6.

These drain **valves** will need to be modified for the pressurization piping and valving (Figure 7), where the existing drain **valve** remains, and a pipe "cross" is added with **valves** added on three connections for drain, fuel source, and connection to the outboard **valve** downstream piping.

The proposed modifications for the connections to the fuel source and connection to the pipe downstream of the outboard **valve a**re sketched in Figure 8 in red color. Flanged **valves** should be considered to improve the constructability and maintenance of the **valves**.

The line size from the tank manifold to the drain **valve** location should be the same size as the existing manifold pipe size, which is approximately 1 in. diameter pipe. The line size that connects from the drain location to the downstream side of the outboard tank should be the same size as the pipe at the drain location, which is approximately 2 in. diameter pipe.

The pipe segment between the inboard and outboard main tank **valves** is relatively small (approximately 10 ft long), and a 1 in. diameter pipe is expected to fill and pressurize the pipe segment in a relatively short period of time. According to the flow rates available in the literature, fuel flow through a 1 in. pipe with 139 ft of the head would be approximately 47 gpm. The downstream portion of the outboard main tank **valve** has a much larger volume compared to the upstream portion. Therefore, a 2 in. diameter pipe is expected to allow the downstream piping to fill and pressurize faster compared to 1 in. diameter line. The actual duration will depend on the

vacuum/void space volume that is recommended to be calculated during the detailed design stage. The piping on the downstream side of the outboard main tank **valve** will require a 2 in. pipe tap to be installed in the piping. This modification may require a segment of the pipe to be removed.

Differential pressure gauges are also needed to verify that each **valve** has been pressure equalized before the main **valve** is opened. The current main tank **valves** have "taps" in the **valve** flanges that can be used to connect a differential pressure gauge. These "taps" are encircled in red in Figure 9 and are common for the main tank **valves**. Small diameter tubing (typically 1/2 in.) would be installed and connected at the tap locations and the gauge connection points. Two **valves** should be installed to isolate the gauge for repairs and full Isolation (Figure 10).

It is recommended to verify the existing sampling piping as fit for purpose with respect to internal pressure, temperature, and dynamic forces for this option.

Permanent Pressure Equalization Installation Concept for Continuing Operations

After defueling, the pressure equalization lines at each of the storage tanks' main **valves** can be installed using dedicated piping instead of utilizing the drain **valve** on the pipe segment between the inboard and outboard main tank **valves** if the underground fuel storage tanks were to remain in service.

For the inboard main tank **valve**, the pressure equalization source is from the sampling manifold but should be routed to a new location on the pipe segment just downstream of the in-board valve (Figure 11). The pipe tap connection to the pipe segments and the **valve** should be flanged connections. The connection to the tank manifold should be consistent with the pipe and **valving** that is currently installed. The pressure equalization piping and **valves** should be 1 in.

A pressure equalization gauge should be installed at the main **valve** flanges using existing pipe tap locations (Figure 10). A **valve** should be installed at each tap location so that the **valve** can be removed for servicing. The piping for the pressure equalization gauge should be 1/2 in. tubing and **valves.**

For the outboard main, the pressure equalization line source will be the pipe segment upstream of the outboard **valve** (Figure 11). New pipe taps need to be installed in the upstream and downstream piping of the outboard **valve**. The connection to the pipe segments and the **valve** should be flanged connections. The pressure equalization piping and **valves** should be 2 in.

A pressure equalization gauge should be installed at the main **valve** flanges using existing pipe tap locations (Figure 10). A **valve** should be installed at each tap location so that the **valve** can be removed for servicing. The piping for the pressure equalization gauge should be 1/2 in tubing and **valves**.

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Although the 07 September, 2021 Red Hill Fuel Facility Pipeline Failure Full System Integrity Report showed a root **cause of "incorrect sequencing of valves" and "procedural error",** a modern incident investigation technique would look closely at the organizational procedural issues, including why the procedures were deficient and how the management system should be improved to address procedural issues. It was also observed that the Investigation report did not utilize an industry accepted incident investigation tool. Focusing on human behavior as a root cause is not part of a modern incident investigation technique.

Pg. 779

The DLA's current organizational structure and complex accountability/responsibility roles has created an environment where operational readiness is threatened. **The facility has not kept up with modern industrial trends for operational philosophy, technology, or safeguards. For example, a standard set of piping and instrumentation drawings showing all installed equipment, including instrumentation, is not available.** Also,

Control Room Operators (CROs) must rely on a single PIT (Pressure Indicating Transducer / Transmitter) to monitor the gravity pressure created by 3.5 miles of pipeline and approximately 200 feet of product head from any of the Red Hill tanks.

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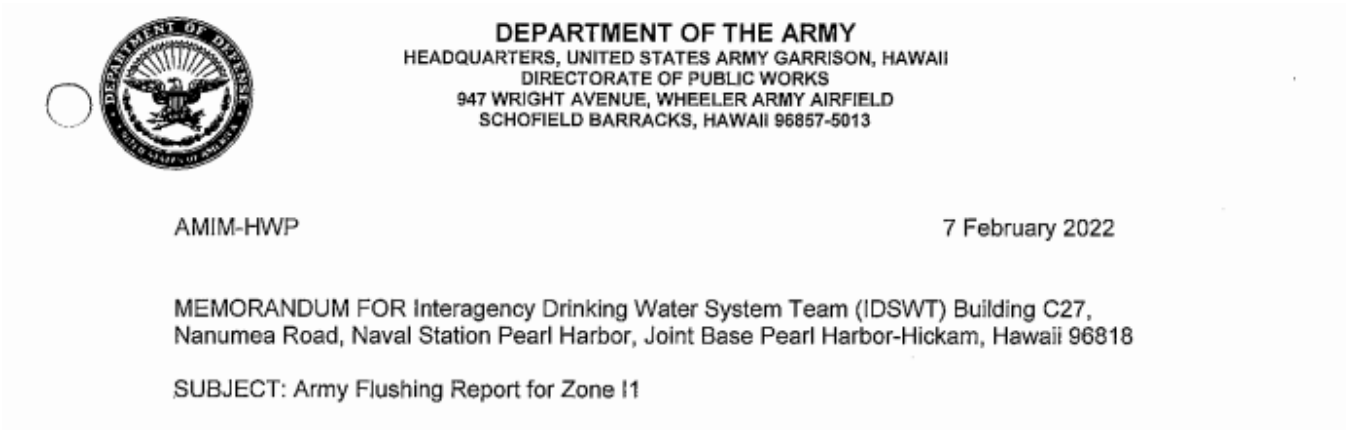
Process Safety Management Compliance Audit Worksheets

Evidence of Compliance/Findings	Factors that contributed to the incident
The following is what appears to have happened on **May 6th.** Towards the end of Evolution 3, the **valve** lineup below Tank 20 was set as described above for a period of over five minutes creating a vacuum with a volume of 23 bbl. Operations then moved to Evolution 4. As Tank 12 was being prepared for use in Evolution 4, the **valve** lineup was again set to allow for another five minutes of sag creating an additional 16 bbl. of vacuum. When Tank 12's skin **valve** was opened, the inrush from the head in Tank 12 collapsed the 39 bbl. of vacuum. This created a calculated transient surge pressure of approximately 350 psig in only milliseconds, or almost instantaneously, near Tanks 18 and 20. This energy displaced the JP-5 mainline piping near Tank 20 at least 16 inches laterally and separated the Dresser couplings at Tanks 18 and 20.	Human error as they did not follow the instructions per the evolution, leaking butterfly **valve**s, dresser couplings, etc.

6. Memorandum FOR Interagency Drinking Water System Team (IDSWT) Bldg C-27, **Army Flushing Report for Zone I1** of 7 February 2022.



DEPARTMENT OF THE ARMY
HEADQUARTERS, UNITED STATES ARMY GARRISON, HAWAII
DIRECTORATE OF PUBLIC WORKS
947 WRIGHT AVENUE, WHEELER ARMY AIRFIELD
SCHOFIELD BARRACKS, HAWAII 96857-5013

AMIM-HWP 7 February 2022

MEMORANDUM FOR Interagency Drinking Water System Team (IDSWT) Building C27, Nanumea Road, Naval Station Pearl Harbor, Joint Base Pearl Harbor-Hickam, Hawaii 96818

SUBJECT: Army Flushing Report for Zone I1

It is important to characterize Zone A1 as Army US Garrison Hawaii (not Navy). Note: All flushing Zones Had this document in it and the same constraints across the board.

2.5. The Army owns and operates the Aliamanu Military Reservation (AMR) community water system (Public Water System ID: HI0000337) which is a consecutive system of the JBPHH water distribution system and was impacted by the incident. AMR is a residential community water system located in Oahu South area in the Aliamanu volcanic crater. It includes the Red Hill Housing residential area.

SUBJECT: Army Flushing Report for Zone I1

2.6. This memorandum is specific to Red Hill Housing also called Flushing Zone I1. Water is supplied to Red Hill Housing by the JBPHH water system via a 30" water main which is pumped to two (2) 250K storage tank and gravity fed to consumers. Red Hill Housing (I1) is hydraulically distinct after water is conveyed to the storage tank. A water distribution system diagram is provided in Enclosure 1.

3. Engineering Analysis and Tools. US Army Garrison-Hawaii (USAG-HI) utilized engineering judgement informed by existing tools and data sources such as ArcGIS, Supervisory Control and Data Acquisition (SCADA) system historic and current data, water system hydraulic model, and input from water system infrastructure contamination subject matter experts (SMEs) to include US Army Environmental Command (USAEC), US Army Corps of Engineers (USACE), and Naval Facilities Engineering Systems Command (NAVFAC) to develop water system flushing methodologies. The following text provides additional information on this analysis and tools.

Section 4.4.2 "...many mainline isolation **valves** would not properly close and could not be relied upon to isolate pipe segments."

4.4.2. Water system operators indicated that many mainline isolation valves would not properly close and could not be relied upon to isolate pipe segments.

Other CONSTRAINTS:

4. CONSTRANTS. The following constraints were considered during development of the plan:

4.1. Waiawa Shaft pumps are capable of pumping 19 million gallons day (MGD) with 2 pumps. There are 4 pumps at Waiawa Shaft, 2 are operational, one is standby, and one is down for maintenance. Average daily demand at JBPHH since the incident, and after water conservation measures were implemented, has ranged from 12 to 17 MGD. Maximum potable water system flushing flows were limited to 5 MGD to avoid excessive drawdown of the S1/S2 tanks and stay within the capacity of Waiawa Shaft pumps.

4.2. The two 6 million gallon (each) tanks, S1 and S2 could not be drawn down below the 28-foot level. This constraint was imposed by the water system operators who wanted to avoid low water system pressures that would be caused by S1/S2 drawdown below 28-feet.

4.3. Water service was required to be maintained for residents as well as fire protection services. Many families have remained in their homes and mission essential Government activities require continuous water service.

4.4. JBPHH and USAG-HI did not have an established unidirectional flushing plan developed prior to the incident. Unidirectional flushing typically involves inducing one-way flow through each pipe segment in a water distribution system by closing mainline isolation valves and opening hydrants for a short period of time. The number of hydrants required would be determined by the pipe size and the minimum water velocity required to flush sediments and

other contaminants from the pipe segment. True unidirectional flushing of the system was determined not to be a feasible method for flushing the potable water system for the following reasons:

4.4.1. The distribution system was to be recovered with critical urgency. Additionally, SMEs advised that the longer contaminants remained in the system, the more likely it was that they would migrate into plastics, gaskets, sediments, etc. A unidirectional flushing program would take several months to develop and implement and the timeline was not considered feasible for a return to service.

4.4.2. Water system operators indicated that many mainline isolation valves would not properly close and could not be relied upon to isolate pipe segments.

4.4.3. A single short duration flush of higher velocity flow through each pipe segment may be effective at removal of sediments from a single pipe segment. However, the method was considered to be less effective at system-wide removal of aqueous phase fuel contaminants than other options.

4.6. Flushing zones with higher risk of contamination were identified and prioritized using water user complaint history, testing results, the hydraulic model, and the hydraulic proximity to Red Hill Shaft. A factor of safety was applied to the highest priority zones by specifying a minimum of five volumetric turnovers. Army Zones were flushed with this safety factor.

5. Flushing Operations. Flushing plans are designed with a directional flush of the distribution system starting from the clean water source and moving systematically through the entire system. The limited water source capacity at Waiawa Shaft and disposal constraints required that the system be broken down into smaller flush zones. Four (4) total zones were established that could be independently flushed without adverse hydraulic or water quality impacts to previously flushed zones.

From several website searches, I also learned that **valves** are a part of a system that must work correctly or the system fails. I recall my toilet about to over flow and saw the valve in back. I quickly turned it off to avoid a flooding disaster.

Keeping the flow of oil and gas in pipelines is a monumental task and requires several reliable pieces of equipment. Gas **valves** are one of these crucial components. Without gas **valves**, the oil and gas industry could not ensure that crude oil, refined gas, natural gas, and other materials get to their destination. Learn the basics of **valves**, including seven common types used within the oil and gas industry, to better understand what is required for the smooth and safe flow of materials.

What is a Gas Valve?

A **gas valve** is a device used to regulate the flow of oil and gas. Opening or closing an aperture controls the amount of liquids and gases allowed through pipes. The **valve** controls the flow of fluids by stopping and starting, adjusting the amounts, controlling the direction, regulating pressure, or relieving pressure.

No two environments are the same. Some are highly corrosive. At the same time, others function under constant high pressure. Because of these variants, many different types of **valves** have been developed over the decades. Each type of **valve** has its own advantages and disadvantages. Successful operation and application require understanding the different types and uses within the gas and oil industry.

Types of Gas **Valves** and How They Are Used

There are several types of gas **valves** because of the different environments in which they are used. Below is a breakdown of seven kinds commonly used in the oil and gas industry.

1. **Gate Valves**

The gate valve may be the most commonly used in the industry. It uses **a gate system to open or close a pipeline entirely.** This is an excellent choice if the flow rate needs to be controlled and maintained. When the actuator completely opens the valve, the channel is unobstructed, allowing even slurry fluids like crude oil to flow easier. While it is not an ideal candidate if throttling is required in an application, *there is not a noticeable pressure drop when this valve is used.*

2. **Globe Valves**

When pressure control is necessary, the globe valve is frequently chosen. It is also often used for open and close operations. The valve plug sits vertically raised and lowered by the actuator as needed. They tend to create a more significant pressure drop than other valve types because of the S-shaped passageway within them. They are *a good choice for flow regulation and throttling functions.*

3. **Check Valves**

Gas refineries find check **valves** extremely helpful as the device *opens under pressure and does not allow backflow of fluid or material*. Because of the restricted backflow, cross-contamination of the product is prevented. That is, different materials can use the same pipeline. There is no need for an actuator as required in other valve types. However, it does need precise installation to ensure the response to fluid pressure occurs as required.

4. **Plug Valves**

The plug valve comprises a plug-shaped disc with a horizontal passageway bored through it. When the linear valve is open, fluid will move through the hole. Turning the actuator 90 degrees from the open position blocks any flow through the pipeline. This valve is not suggested for throttling functions but is ideal for unrefined oil products as found in biogas production.

5. **Ball Valves**

Ball **valves** are rotary **valves** that *give pipelines fast shut-offs where tight sealing is often required.* They are best suited for operation under fully open or fully closed positions as they do not offer reasonable regulation control or throttle functions. This type of valve comes in many different styles, which provides options within the industry. For example, a floating ball valve works better in low-to-medium pressure pipelines, and trunnion ball **valves** can handle high-pressure conditions. These are easy to repair, offer solid sealing, and provide quick shut-offs.

6. **Butterfly Valves**

These **valves** are simple in their construction, are lightweight, and compact. They use a disc-type element held by a rod to regulate flow. *They can handle high-pressure pipelines and allow easy flow of materials. When they are closed, they shut tightly.* Often, these are used in pipes with large diameters and where a gate valve is not applicable.

7. **Slam-shut Valves**

These **valves** provide additional safety of equipment either upstream or downstream from them. This type of valve may be found immediately before a regulator and is *designed to remain open until a significant pressure change is detected*. *It then immediately shuts off the flow and must be reopened manually*. They are sometimes referred to as relief and safety **valves** and are *vital to the oil and gas industry in avoiding accidents and injury.*

From: davidsher@juno.com
To: Perry, Thu
Subject: [EXTERNAL] Re: Hawaii Department of Health Fuel Tank Advisory Committee Meeting C onfirmation
Date: Tuesday, June 6, 2023 2:37:52 PM

Aloha Thu

Q: Are you aware that there is an online petition to shut down the tanks and NOT repurpose them? There are more than 500 signers so far to this petition. Is this being factored in to assessing the feedback from the community and community input? Many did not want to participate in the Nakupuna survey as they felt it was biased. Only using that Nakupuna survey for data will not get the true picture and miss a large segment of the community and their input.

Mahalo.

---------- Original Message ----------
From: Thu Perry <no-reply@zoom.us>
To: davidsher@juno.com
Subject: Hawaii Department of Health Fuel Tank Advisory Committee Meeting Confirmation
Date: Tue, 06 Jun 2023 23:51:27 +0000 (UTC)

Hi Sherry Pollack,

Thank you for registering for "Hawaii Department of Health Fuel Tank Advisory Committee Meeting".

Please submit any questions to: Thu.Perry@doh.hawaii.gov

Date Time: Jun 6, 2023 01:00 PM Hawaii

Join from a PC, Mac, iPad, iPhone or Android device:
Click Here to Join
Note: This link should not be shared with others; it is unique to you.
Password: 172731
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Or Telephone:
Dial(for higher quality, dial a number based on your current location):
US: +1 346 248 7799 or +1 602 753 0140 or +1 669 219 2599 or +1 669 900 6833 or +1 720 928 9299 or +1 971 247 1195 or +1 206 337 9723 or +1 213 338 8477 or +1 253 215 8782 or

+1 470 250 9358 or +1 470 381 2552 or +1 646 518 9805 or +1 651 372 8299 or +1 786 635 1003 or +1 929 205 6099 or +1 267 831 0333 or +1 301 715 8592 or +1 312 626 6799
Webinar ID: 983 7136 7637
Password: 172731
International numbers available: https://hawaii.zoom.us/u/advhh1hASP

You can cancel your registration at any time.

Environmental Caucus of
The Democratic Party of Hawaiʻi

via email: thu.perry@doh.hawaii.gov

June 6, 2022

Members of the Fuel Tank Advisory Committee
Underground Storage Tank (UST) Section
Department of Health
1250 Punchbowl Street
Honolulu, Hawaii 96813

Ms. Thu Perry
Public Participation Coordinator
Solid & Hazardous Waste Branch
Department of Health
919 Ala Moana Boulevard, #212
Honolulu, Hawaii 96814

Re: Red Hill Bulk Fuel Storage Facility Tank Upgrade Alternatives

Aloha, Members of the Fuel Tank Advisory Committee and Ms. Perry:

Thank you for this opportunity for the Environmental Caucus of the Democratic Party of Hawaiʻi (DPH) to provide comments relating to the mandate of the Fuel Tank Advisory Committee (FTAC) under Hawaiʻi Revised Statutes (HRS) §342L-62(a).

The Democratic Party of Hawaiʻi (DPH) has an enrolled membership of over 140,000 active and associate members in the State of Hawaiʻi. The Environmental Caucus of the Democratic Party of Hawaiʻi is a semi-autonomous organization within the Party with a membership of 7,500 that advocates and advances the Platform and Resolutions adopted by the Party's members at the Democratic Party's State Conventions and County Democratic Conventions.

As we have seen, the Red Hill tanks cannot be maintained in a manner that is protective of our groundwater. Leaks cannot be "cleaned up." The water will simply be rendered undrinkable for anyone – civilians and military. Many studies have already shown detected petroleum contamination in the groundwater beneath the tanks. Since their construction in the 1940s, it is estimated that the tanks have leaked more than 178,434 gallons of fuel. This latest November 2021 spill of 19,000 gallons and the Navy's recovery of 100 gallons after three months of skimming the wells by Navy divers prove that the 80-year-old Red Hill fuel tanks and pipelines continue to pose a serious threat to drinking water for hundreds of thousands of residents, visitors, and businesses, and there are no viable safeguards now that the Aquifer has already been contaminated.

To be in compliance with the Governor's second Emergency Order, dated May 6, 2022, to defuel and permanently decommission the Red Hill Fuel Tank Facility, the Navy must provide its independent contractor's assessment on facility operations by May 15, a plan and implementation schedule to defuel by June 30, and a plan for closure of the facility by Nov. 1.

On May 13, 2022, the independent third-party, Simpson Gumpertz & Heger, Inc., issued it assessment, finding among other things, the following:

- Major extensive and critical structural repairs are needed for the piping and distribution system including the three pipelines that run through an underground tunnel and lead to fueling piers at Pearl Harbor and Hickam Airfield to enable safe defueling and minimize risk of another spill.
- There is also a need for lead abatement.
- The Navy needs to develop written additional procedures for normal and emergency operations for its personnel to reduce the risk of a release and fire. There are fire risks as cabinets holding flammable materials are not anchored to the floor, and a control room in the pump house is not blast-resistant. In addition, in the event of an earthquake, the emergency generator may lose functionality.
- Operating personnel must receive additional training to prevent spills, safely operate, and respond to emergencies.

The Navy's defueling plan includes: (1) defueling 98% of the fuel through the three gravity-fed pipelines beginning on or about October 16, 2023 for 4-6 weeks for the removal of 63M gallons of fuel which will be distributed to Island Energy Services at PAR Pacific and 40M gallons of fuel will be transported via 10 tanker ships to 3 West Coast U.S. Military Installations, and U.S. Installations in Singapore, Philippine Islands, Japan, and Australia; (2) 100K to 400K gallons Flowable Tank Bottom fuel which will be defueled via under the tank pipelines as this volume falls below the three existing gravity-fed pipelines will be repacked into the lower end of the gravity-fed pipelines and pump house for a period of 12 to 18 months; and (3) the removal of the black Tank Bottom unusable Sludge has yet to be determined.

Our main concerns focus on safety, risk of fire, sufficient emergency response, personnel training in the event of spill and fire, and defueling of the remaining 100K – 400K gallons of Flowable Tank Bottom fuel. The Flowable Tank Bottom Fuel will be repacked in the gravity-fed pipelines and pump house for a period of 12-18 months. We would like to see all fuel removed from the pipelines and no fuel remains repacked and or stored in the pump house. We do not want to endure another spill whether it is from the UST or the pipelines regardless of whether the spill is above the sole-source aquifer or not. Any Red Hill fuel spill, regardless of its location along the pipelines, would be harmful to human health and the environment, including Pearl Harbor which has already suffered from nearly a century of petroleum contamination among

other toxic contaminants. Under the Hawaiian Kingdom, Pearl Harbor was its Breadbasket, rich in fish, oysters, crustaceans, limu and other edible marine life. Sadly, today, the minimal marine life that can survive under such toxic conditions remain unfit and poisonous for human consumption.

In conclusion, given that (1) O'ahu's sole-source groundwater aquifer provides critical drinking water supplies that simply cannot be replaced; (2) an enormous amount of fuel, currently 104 million gallons of fuel, is stored merely 100 feet above the major drinking-water aquifer that lies in saturated volcanic rock; (3) petroleum chemicals have repeatedly been released and detected in groundwater and rocks underneath the tanks; and (4) the 200+ extensive and critical repairs to the three pipelines from Red Hill to the Pearl Harbor and Hickam fueling stations necessary to safely drain the 104 million gallons of jet fuel, marine diesel, and other petroleum constituents, it is incumbent that the Fuel Tank Advisory Committee oversee the safe defueling and relocation of the fuel to state-of-the-art above-ground tanks in areas where such fuel storage will not pose a "clear and present danger" or cause an "imminent and substantial endangerment (ISE)" to human health and the environment from these UST and gravity-fed pipeline releases above our major drinking water aquifer as well as Pearl Harbor and connecting waterways.

Mahalo for this opportunity to provide public comments on this very critical matter.

Melodie Aduja
Melodie Aduja
Co-Chair, Environmental Caucus of the Democratic Party of Hawai'i
Email: legislativepriorities@gmail.com

Alan B. Burdick
Alan B. Burdick
Co-Chair, Environmental Caucus of the Democratic Party of Hawai'i
Email: burdick808@gmail.com

From: Fiona Robinson
To: Perry, Thu
Subject: [EXTERNAL] Question to Adm Wade and Navy
Date: Tuesday, June 6, 2023 5:11:11 PM

You stated you and your team are training for any mishap in the defueling, and you have found fuel trapped in the pipelines.

Have you included in your training the notification of Foster Village residents about the possibility of contamination or worse to their property. Your tunnels run under their property.

And also, has the DOD addressed the safety of the residents of Foster Village.

Fiona Robinson

June 6, 2023 Testimony for the Red Hill Tank Advisory Committee Meeting, Hawaii

Hello, my name is Katherine Mcclanahan. Like hundreds if not thousands, my family and I continue struggling with symptoms since Red Hill.

7 months ago I testified before you. In case you don't remember, I asked for a toxin list families could provide to our doctors. You never provided that list/ summary list of known or suspected chemicals in the water or used at Red Hill.

When families were unable to receive such a list from you, we testified and requested the same from the Hawaii Dept of Health and EPA. I want to thank the EPA for providing the Chemicals of Potential Concern List of 2016 and especially the Dept of Health for their memo in Feb 2023 with a summary table that provides our doctors a starting place to view our exposure between May and December 2021. I have included that summary table below (If you are in the auditorium, It is also being held up for you to see). While the DOH memo with summary table is a good starting point, you will notice the last row in Table 3 states "not available or unknown." In case you wonder why, it's because even the Hawaii Dept of Health has been unable to receive the necessary information from you, the Navy, in order for them to assist families & doctors.

So here we are again today. Our families continue having to testify and essentially beg for information and help after you exposed us to dangerous toxins. But over the last year and a half, we continue finding out that you have hidden much from us like November meetings where staff present smelled and saw fuel in the water. During months of town halls and FB live briefings that started in late Nov 2021, Navy leaders failed to mention your own leaders had already met behind closed doors smelling and seeing visual signs of fuel in the tap water. But instead of warning us, you did nothing but hide that information. For months from Nov 2021 through March 2022, Navy leaders touted transparency and encouraging water system flushing & water test results during daily FB town halls BUT FAILED TO MENTION that ANTIFREEZE test results dated DECEMBER 27th, 2021 SHOWED 32,000 parts per liter while the maximum allowed level is 800. ANTIFREEZE….

The Navy HID & BURIED THOSE RESULTS FROM FAMILIES, DOCTORS, AND REGULATORS. While initial lab reports were dated December 27, 2021, the final report was mysteriously delayed with multiple date changes and finally dated and reported on APRIL 4, 2022. And our families now know that the Navy and Defense Logistics Agency had successfully DROPPED Antifreeze from long term monitoring tests in 2016 so we don't even know what the levels of Antifreeze were from May of 2021 until December 17, of 2021. While our doctors were struggling to understand what was happening to our bodies, the Navy buried test results for over 3 months-

results that showed exactly why doctors notes from patients stated and I quote: "Patient reports feeling 'drunk.' Episode at lunch time was associated with general fatigue." In case you don't have time to research the health effects, according to the CDC, ethylene glycol poisoning, aka fuel system icing inhibitor or Antifreeze exposure causes drowsiness and signs of inebriation, decreased level of consciousness, headache, and seizures. Our doctors could have used the information provided from the ANTIFREEZE test results and LORD only knows what other HIDDEN or DELAYED TEST RESULTS to HELP US but you have done nothing but block information that could help our families.

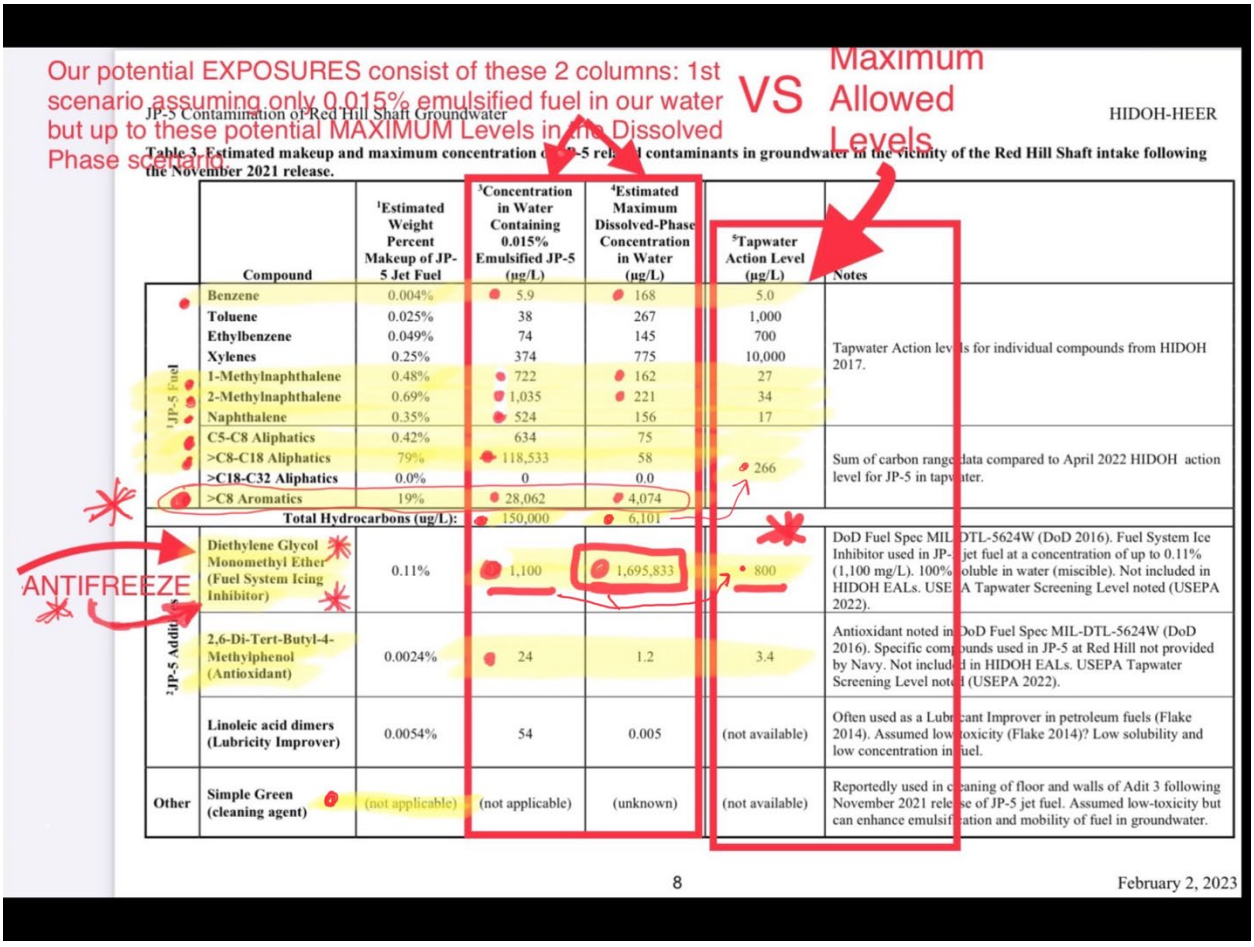
If the Navy/DOD really wants to right the wrong as you claim, start by living up to the oath you swore and protect us from enemies, both foreign AND DOMESTIC. Care enough to be honest with us. Stop the practice of delayed test results and the absurdity of ignoring our ongoing medical issues. Start by providing real medical care by assembling the country's best neurotoxicologists and occupational and environmental medicine doctors & actually have honest conversations with doctors and families.

In summary, my 4 questions today are:

1) WHEN will the Navy provide the Hawaii DOH the necessary information regarding Simple Green??
2) WHEN will any federal agency provide a summary list of the MEDICAL EFFECTS known or suspected of each chemical used in & around Red Hill?
3) WHEN will the DOD assemble the best toxicologists in the country, both civilian and military, to aid our families? IF no agency is willing to provide such medical assistance, please tell me when I might receive a phone call explaining why that information & that assistance from a KNOWN TOXIC EXPOSURE caused by the United States NAVY is NOT available to families **who serve this country** and civilians who support them and live on the Navy's water line. (I would like a phone call explaining why the country's best doctors can't be assembled to discuss similar exposures, common symptoms, and resulting illness/symptoms/diseases.)

   It is easy to find me. There are 2 MCCLANAHANS in the global, so I don't think it will be too difficult to find my husband & thus me. He is a colonel in the Air Force Reserves and we are now stationed in Warner Robins, GEORGIA.
4) To the EPA/HDOH/CDC, WHEN can you provide an updated health advisory memo families can share with our doctors regarding currently known, ongoing, chronic or long term symptoms? (I appreciate your survey from 7 months ago and the fact that epidemiologists visited Oahu recently, but both civilian and military families are now scattered around the country and we need more than a survey to present to doctors to have the best chance of a healthy life.)

Families are brave enough to endure the almost 2 years of symptoms & still show up. Its time the Navy is brave enough to face us, show up, provide toxicological medical experts for real discussions & provide the whole truth to families. Our lives and our children's lives depend on it.



Our potential EXPOSURES consist of these 2 columns: 1st scenario assuming only 0.015% emulsified fuel in our water but up to these potential MAXIMUM Levels in the Dissolved Phase scenario

VS Maximum Allowed Levels

JP-5 Contamination of Red Hill Shaft Groundwater HIDOH-HEER

Table 3. Estimated makeup and maximum concentration of JP-5 related contaminants in groundwater in the vicinity of the Red Hill Shaft intake following the November 2021 release.

	Compound	[1]Estimated Weight Percent Makeup of JP-5 Jet Fuel	[3]Concentration in Water Containing 0.015% Emulsified JP-5 (µg/L)	[4]Estimated Maximum Dissolved-Phase Concentration in Water (µg/L)	[5]Tapwater Action Level (µg/L)	Notes
[2]JP-5 Fuel	Benzene	0.004%	5.9	168	5.0	Tapwater Action levels for individual compounds from HIDOH 2017.
	Toluene	0.025%	38	267	1,000	
	Ethylbenzene	0.049%	74	145	700	
	Xylenes	0.25%	374	775	10,000	
	1-Methylnaphthalene	0.48%	722	162	27	
	2-Methylnaphthalene	0.69%	1,035	221	34	
	Naphthalene	0.35%	524	156	17	
	C5-C8 Aliphatics	0.42%	634	75		Sum of carbon range data compared to April 2022 HIDOH action level for JP-5 in tapwater.
	>C8-C18 Aliphatics	79%	118,533	58	266	
	>C18-C32 Aliphatics	0.0%	0	0.0		
	>C8 Aromatics	19%	28,062	4,074		
	Total Hydrocarbons (ug/L):		150,000	6,101		
[2]JP-5 Additives	Diethylene Glycol Monomethyl Ether (Fuel System Icing Inhibitor)	0.11%	1,100	1,695,833	800	DoD Fuel Spec MIL-DTL-5624W (DoD 2016). Fuel System Ice Inhibitor used in JP-5 jet fuel at a concentration of up to 0.11% (1,100 mg/L). 100% soluble in water (miscible). Not included in HIDOH EALs. USEPA Tapwater Screening Level noted (USEPA 2022).
	2,6-Di-Tert-Butyl-4-Methylphenol (Antioxidant)	0.0024%	24	1.2	3.4	Antioxidant noted in DoD Fuel Spec MIL-DTL-5624W (DoD 2016). Specific compounds used in JP-5 at Red Hill not provided by Navy. Not included in HIDOH EALs. USEPA Tapwater Screening Level noted (USEPA 2022).
	Linoleic acid dimers (Lubricity Improver)	0.0054%	54	0.005	(not available)	Often used as a Lubricant Improver in petroleum fuels (Flake 2014). Assumed low toxicity (Flake 2014)? Low solubility and low concentration in fuel.
Other	Simple Green (cleaning agent)	(not applicable)	(not applicable)	(unknown)	(not available)	Reportedly used in cleaning of floor and walls of Adit 3 following November 2021 release of JP-5 jet fuel. Assumed low-toxicity but can enhance emulsification and mobility of fuel in groundwater.

ANTIFREEZE

8 February 2, 2023

So today, I ask you if the EPA, ATSDR, CDC or even the DHA will start by taking the Hawaii DOH memo Table 3 of chemicals known or suspected to have been in the water (I have attached both the full report and Table 3 summary for your convenience) and begin by having epidemiologists and toxicologists, provide the best, full and HONEST answers as to what diseases, illnesses, symptoms are known OR suspected to be caused by each of these chemicals. Provide the Hawaii DOH with the answers to their Simple Green inquiries. Spend money, time and resources to bring specialists from all over this country together and talk, discuss, and plan how our families can be better medically evaluated and treated- both military and civilian families. IF doctors and families have that information, doctors may succeed in providing treatments that slow the progression of disease, successfully treat symptoms, catch cancers early, and save lives.

Provide doctors, including civilian ones, with real, useful, easily digestible information regarding medical symptoms and diseases from the known or suspected toxins we were exposed to.

FTAC Meeting 6.6.2023 M Wilson Comment

Aloha, my name is Meredith Wilson and I relied on water supplied by Joint Base Pearl Harbor-Hickam at my home for 5 years. Now, like tens of thousands of others, I have to live with the daily dealing of the fact that our water was insidiously poisoning us and continues to cause some seen & unforeseen havoc amongst this community.

The very thing that was supposed to hydrate us during those once-in-a-lifetime Oahu hikes, the sprinkler we turned on for our kids to get out & enjoy the Hawaii sunshine, the bowl we filled thinking we were keeping our loving pets healthy—all of these innocent, seemingly insignificant actions, were stolen from us. We no longer do any of these things the same due to the *inaction* many of you here displayed.

To the the DoD leadership, at this time, I direct these questions:

1. As recent as April 27th, less than 2 months ago, an address in my previous neighborhood measured 67.3 ppb TPH-d. How do you explain that this is not a JP-5 or fuel-related detection? We have heard that there is a different "fingerprinting" rationale, but please explain this further, feel free to use technical terms, we can handle it.

2. As an outlined duty for the Fuel Tank Advisory Committee, DLA especially should be "considering the short & long-term effects" from this exposure. What is the Navy doing, other than establishing their registry, to accomplish this? The CDC/ATSDR study is an ancillary effort, what has DLA studied and collected thus far if they didn't even open their clinic to virtual appointments to off-island affected people? How can a total picture of the outcomes be collected this way?

Now for the Hawaii Department of Health, I'd appreciate answers to the following:

1. Why has there not been a response from the state's toxicologist, Diana Felton, or chief of the Safe Drinking Water Branch, Dennis Lopez, after the now 4-month-old February 2nd memo written by Dr. Roger Brewer regarding the Estimates of Contaminants and Concentrations, including most notably, antifreeze, from the Nov 2021 spill? Surely these revelations would spark some thoughts or guidelines that either of them could share with the public.

2. And finally, Dr. Roger Brewer mentioned at a previous EPA Red Hill in Focus webinar that we can expect an EAL for TPH and all types of fuel update by the end of this month. Is that still on track? And should the EAL change, will the screening levels for Long Term Monitoring be reflected appropriately?

Mahalo for everyone continuing to keep this at top of mind and realizing that there is, like BWS says, no substitute for pure water.

From: pete doktor
To: Perry, Thu
Subject: [EXTERNAL] public testimony for 6/6/23 FTAC
Date: Tuesday, June 6, 2023 9:24:22 PM

RED HILL FTAC PUBLIC TESTIMONY 06/06/23

Aloha Thu and/or Whomever This May Concern,

I am Pete Doktor, a Moanalua homeowner, `ohana member, military veteran of military family, and like all animate life on this `āina -- completely dependent on water to survive. I am writing today because I couldn't get out of work and `ohana obligations to testify in public for comment to the Fuel Tank Advisory Committee dog and pony show at Moanalua High.

Its been 19 months after the November 2021 fuel leak, and the Navy is still lolly-gagging at least four months out from the defueling the DoD purportedly authorized (or, lied to us). Every day the fuel time bomb ticks in the tanks is another day we chance the well-being of O‘ahu’s communities and ‘āina that sustains us. My `ohana has lived in terror ever since the 2014 fuel tank leaks caused us to worry about any impacts our then newborn daughter could be exposed, throughout the world where there are military bases such as my maternal homeland of Ryūkyū (Okinawa) is poisoning family and friends there with the same PFAS the military is threatening us with here. The Navy and its political enablers need to take responsibility, stop terrorizing the people of O`ahu, instead of stroking itself like a rapist giddy about himself because they bought doughnuts for the rape victims. Meanwhile, fellow poisoned servicemembers and their dependents continue to struggle physically, mentally, and financially, and still report symptoms of petroleum poisoning.
I respectfully but adamantly request the Fuel Tank Advisory Committee, Department of Defense, US Navy, and Hawai‘i Department of Health to implement the following:

- Decommission the Red Hill tanks (definition of decommission is to put out of commission for good, not "repurpose" for something else; only fools or cult members believe Navy based on track record)
- You Break It, You Pay for It: Immediate financial and other relief for impacted families, civilians and servicemembers
- You Break It, You Fix It: Full remediation of aquifer and ‘āina surrounding facility, considering DoD gorges most of our Fed tax dollars.
- You Break It, You Manage It: Implement water monitoring by the DoD of entire aquifer in perpetuity with on-island water testing facility

- Acknowledge the proliferation of military poisoning nationally and worldwide as systemic and SOP (standard operational procedure), and stop gaslighting contractors and human error for what occurs systematically, to include the lack of truth, transparency or priority of mission over human life, to include that of American citizens as well as those colonized by America.

Mahalo for taking my comments for public record, and any sincere recognition and integration of these statements into consideration of the greater good, rather than entrenched political, economic and cultural (nationalist supremacism) interests.

Ola i ka wai! Water is our true wealth and security!
E Mālama Pono,
Pete Doktor
Moanalua

SIERRA CLUB OF HAWAIʻI

To: Fuel Tank Advisory Committee
c/o Thu Perry
VIA E-MAIL: thu.perry@doh.hawaii.gov

Date: June 5, 2023

Re: Testimony and Recommendations to the Fuel Tank Advisory Committee

Dear Members of the Fuel Tank Advisory Committee,

On behalf of the Sierra Club of Hawaiʻi (Sierra Club), we offer the following comments in advance of the 10th Fuel Tank Advisory Committee (FTAC) meeting on June 6, 2023. We continue to remain adamantly opposed to the continued use of the 80-year-old Red Hill Bulk Fuel Storage Facility (Facility) for fuel storage purposes. We strongly urge FTACto recognize, and act upon, its responsibility to uphold the public trust and to apply the Precautionary Principle in its findings and recommendations, and to urge the legislature and all decision makers to take all steps necessary to see to the complete and permanent shut down of the Facility as an unacceptable, existential threat to the groundwater resources of Oʻahu.

Nineteen months after the November 2021 fuel leak, the Navy is unfortunately at least four months out from defueling the Red Hill tanks. While we appreciate that the defueling timeline has been slightly shortened, it should not have taken this long to remove the fuel. Every day the fuel remains in the tanks is another day that the well-being of Oʻahu's residents, ʻāina, and natural resources are put at risk. Poisoned families continue to struggle physically, mentally, and financially, and many still report symptoms of petroleum poisoning. The leaked fuel, and likely PFAS, remain in our aquifer and on our ʻāina. The location of the fuel plume and the real-time quality of our drinking water remain unknown. Meetings of the Joint Task Force Red Hill, FTAC, and other bodies continue to be infrequent, despite the urgency of this matter.

Specifically, we request that the FTAC implements the following recommendations:

1. **Decommission the tanks at Red Hill Fuel Storage Facility rather than repurpose them.**

The direct and indirect impacts of the past leaks in addition to the risks associated with future catastrophic releases are too severe to consider reusing the facility for other purposes. The complete decommissioning of the Facility is the only way to ensure it is not used to store any other toxic or dangerous materials and that the Department of Defense can bring the facility back on line for future fuel storage under the National Defense Authorization Act.

The Navy has recently announced its plans to dismantle three pipelines connected to the Facility as part of its closure plan. While these plans may hint at the Navy's intentions to *never use the facility* to store fuel or toxic materials again, we urge FTAC to take all actions within your control to ensure that the Navy and the Department of Defense have no higher priority in Hawai'i than the expeditious repair and defueling of the Facility, including through the implementation of multiple teams of engineers and experts and the installation of alternative defueling infrastructure to bypass existing facility infrastructure too archaic and/or decrepit for timely repair, as well as the decommissioning of the Facility and the removal of its associated pipelines.

2. **Immediate financial and other relief for impacted families, civilians and service members.**

As a matter of accountability, transparency, and basic human decency, Navy officials should be providing safe living and drinking alternatives – including, at a bare minimum, access to bulk potable water – for those families and children whose acute and long-term mental, physical, and emotional health may only continue to be exacerbated by a water system that is evidently, at least partially, compromised by fuel or other contamination.

While military families received reimbursement to relocate following the November 2021 leak, civilians served by the Navy's water line received no compensation or financial assistance and many have spent their life savings to relocate, seek medical care, and replace most of their household items contaminated by fuel. The Department of Defense should use a small part of its $2 trillion budget to provide financial relief to both military and civilian families poisoned by Red Hill.

We hope and expect that the FTAC members, in your individual, institutional, and collective capacities, take all actions within your control to ensure that the concerns of those directly affected by the current contamination crisis are heard and meaningfully addressed, and that the safety of these individuals and families is appropriately prioritized with full precautionary measures including but not limited to alternative water and living arrangements.

3. **Full remediation of aquifer and 'āina surrounding facility.**

As a result of the Navy's negligent care of the facility, this has impacted the aquifer, surrounding 'āina, people, including its own service members, and the entire island. Much of the impact and damage continues to develop, and especially for those directly impacted by the contaminated waters, their health impacts will be realized over the course of their lifetime.

Furthermore, since the facility's construction, over 200,000 gallons of fuel and an unknown amount of concentrated toxic fire suppressant has been released into the surrounding environment, with much of the historically released fuel never being located or cleaned up. While the EPA and Hawai'i Department of Health (DOH) have established a Red Hill

remediation roundtable to explore remediation, the Navy has yet to truly commit to the roundtable discussions or release any concrete plans outlining the remediation of the surrounding environment or the contaminated aquifer following the closure of the Facility.

In an attempt to try to make its people and ʻāina whole again, full remediation of the aquifer and ʻāina surrounding the Facility is necessary. We hope and expect that the FTAC members, in your individual, institutional, and collective capacities, take all actions within your control to ensure that the Navy and Department of Defense develop and implement a plan for true remediation of the environment and aquifer impacted by the Facility over the last 80 years, starting with identifying the extent of the contamination and finally complete ground-flow models to determine the movement of contaminants in the aquifer.

4. **Ensure proper water monitoring by the Department of Defense of the entire aquifer in perpetuity with on-island water testing facility.**

As highlighted in past testimonies of the Sierra Club and those living on the Navy's water system, the water testing protocols used to sample, store, ship, and test visibly contaminated water is deficient. Clearly, a finding of "non-detect" for water that is visibly contaminated is not evidence of a lack of contamination, but evidence of failure(s) in the Navy's testing protocols to verify and identify an obvious contamination issue. However, rather than provide information on what they are or could be doing to identify the shortcomings in their testing protocols – even after being directly asked – Navy representatives at the FTAC meeting pointed only to the fact that the Navy has been using "DOH-approved" labs.

FTAC members are urged to not only mandate adequate protocols around water monitoring and water quality testing of the South Oʻahu Basal Aquifer in its entirety, but to demand that the Department of Defense fund an on-island water testing facility that meets DOH's requirements. Following the 2021 fuel leak, it took nearly a week for water quality testing results to be sent to the Navy and DOH, as samples had to be shipped to the Continental U.S. for testing—an unacceptable and avoidable delay that would be mitigated should there be an approved testing facility on-island.

5. **Full transparency in current activities (including pipeline removal) and accountability for past neglect.**

The Navy has committed to defueling the Red Hill tanks by June 2024 and Rear Admiral John Wade called transparency "absolutely critical" to the process. Yet, the Navy has uncharacteristically failed to publish reports or correspondence regarding the Navy's Red Hill investigations, levels of contamination to the water and soil, and the defueling process. The Navy must take responsibility and be held accountable for its actions and inactions at the facility. The Sierra Club respectfully requests that the Navy make reports and correspondence relevant to JBPHH Red Hill contamination publicly available on the NAVFAC website.

To date, we have yet to see any of the Navy's leaders take accountability for the extreme neglect of facility, irreparable harm to Hawai'i's previously pristine aquifer, all the while they assured the public, and its own service members, that there was no leak and that the water was safe. We hope and expect that the FTAC members, in your individual, institutional, and collective capacities, take all actions within your control to ensure that the Navy and the Department of Defense have no higher priority in Hawai'i than the expeditious defueling of the Facility and the removal of its pipelines, including through the implementation of multiple teams of engineers and experts and the installation of alternative defueling infrastructure to bypass existing facility infrastructure too archaic and/or decrepit for timely repair. This includes conditions on any discretionary approvals within your agency or legislative committees that may be needed by the Department of Defense.

6. **Again, public meetings are essential for trust and accountability.**

We have yet to see the Navy be trustworthy and accountable for their actions. Public meetings that continue to be inaccessible for the vast majority of people when meetings are held during the day, there are limitations and highly confined ways in which the public is allowed to engage, do not cultivate trust with the Navy, nor provide assurances that they will be accountable.

Even more egregious, as events continue to lay bare the insufficiency of false assurances filtered through Navy liaisons and public relations officials through institutions like neighborhood boards or the FTAC itself, in keeping our water safe and ensuring the public has the information regarding our safety that we all have the right to know. In order to provide the true transparency and venue for accountability necessary to address and resolve the crisis we are in – commensurate with the magnitude of the existential stakes at play – it is imperative that top Navy leaders personally attend to regular community meetings, to field questions and concerns from those whose water and whose future continues to be threatened by the Facility.

As highlighted in previous FTAC testimonies, the arbitrary two minute time limit established by the facilitator was most notably enforced as affected families, Native Hawaiians, and members of the larger community sought to share information regarding the gravity of their suffering, the substance and magnitude of the public's concerns, and the continued lack of transparency and ongoing disconnect between Navy officials' representations and observed or factual information. FTAC members collectively and individually may be uniquely positioned to make recommendations and take actions that can ensure the safety of our groundwater and the viability of life as we know it on O'ahu; accordingly, the facilitator's decision to deprive them of such information will only frustrate their ability to make informed decisions that are essential to the FTAC's overall goals to ensure our safety and the security of both present and future generations. The various alternative choices that the facilitator could have made also belied his claim that this time limit was intended to allow others to testify. For example, the facilitator could have allowed any testifiers with time constraints to volunteer to speak first, rather than randomly choosing between testifiers in the capitol auditorium and on the Zoom platform. This would have accommodated the need for some individuals to testify and leave, while also ensuring that FTAC members had the opportunity to fully hear from the public they are tasked with protecting.

Notably, none of those present in the capitol auditorium indicated any desire to cut off other testifiers and all expressed a keen interest in the thoughts, concerns, and experiences being shared by others in the room and logged into Zoom.

Additionally, the facilitator's decision to arbitrarily reprimand certain testifiers and testimonies for a perceived lack of "civility" was equally if not more disappointing. Many testifiers had taken time out of their day to share the months of suffering they and their families experienced and continued to experience (unbeknownst to Navy representatives) from water contamination; to highlight the years' worth of misrepresentations, omissions, and objectively false information provided by Navy officials; and to express their bona fide, deep fears regarding the imminent peril that the Navy's facility poses to our island's future. While filled with emotion, none of those eliciting the facilitator's reprimands interfered with the conduct of the meeting or could have in any way been construed as personal attacks, much less threats; audience members in the Capitol auditorium and in subsequent discussions felt that the facilitator's admonitions for "civility" when contrasted with the suffering, threats, and misrepresentations of Navy representatives were laughable at best and shameful at worst.

We urge the FTAC and the facilitator to carefully reflect on whether and how calls for "civility" can be highly inappropriate – particularly when used by a non-kamaʻāina man of clear privilege, to chill the speech of mothers of poisoned children, military veterans of color, and Native Hawaiians with ancestral connections to and generational aspirations for the island that is being contaminated.

Thank you very much for your consideration of these concerns and recommendations.

Sincerely,

Sierra Club of Hawaiʻi