

**REPORT TO THE THIRTIETH LEGISLATURE
STATE OF HAWAII
2019**

**PURSUANT TO SECTION 342L-62 HAWAII REVISED STATUTES
THE THIRD ANNUAL FUEL TANK ADVISORY COMMITTEE MEETING
TO STUDY THE ISSUES RELATED TO LEAKS OF FIELD-CONSTRUCTED
UNDERGROUND STORAGE TANKS AT RED HILL BULK FUEL STORAGE FACILITY,
AND FOUR OTHER DOD FACILITIES**

**PREPARED BY:
STATE OF HAWAII
DEPARTMENT OF HEALTH
UNDERGROUND STORAGE TANK SECTION
JANUARY 2019**

Introduction

This report summarizes the third annual Fuel Tank Advisory Committee (FTAC) meeting as required under Chapter 342L, Section 62, Hawaii Revised Statutes (HRS), which was held on November 1, 2018 at the state Capitol. The agenda and list of committee members are attached as Appendices A and B. A transcript of the meeting, as prepared by a court reporter, is presented in Appendix C.

The work of the FTAC is generally a continuation of work from two previous task forces that were formed per Senate Concurrent Resolution (SCR) 57 (2015) and SCR 73 (2014). The purpose of these groups was to; gauge the impact of a 27,000-gallon fuel leak at the Red Hill Bulk Fuel Storage Facility, assess what efforts were being made to prevent future releases from that facility, and evaluate 26 additional field-constructed tanks (FCTs) at four Department of Defense (DOD) facilities.

For additional details of advisory committee efforts, please see the Hawaii Department of Health (HDOH) Solid & Hazardous Waste Branch's (SHWB) website on Underground Storage Tanks (USTs) and namely the Red Hill Task Force Meetings link (<http://health.hawaii.gov/shwb/red-hill-task-force-meetings-2014/>).

Duties of the Fuel Tank Advisory Committee

In accordance with HRS Section 342L-62:

1. The advisory committee shall study issues related to leaks of field-constructed underground storage tanks at:
 - a. Red Hill
 - b. Kuahua Peninsula
 - c. Pacific Missile Range
 - d. Hickam POL Annex
 - e. Schofield Barracks
2. The advisory committee shall consider:
 - a. The short- and long-term effects of leaks of the fuel tanks, including effects relating to the health of residents, safe drinking water, and the environment;
 - b. Response strategies to mitigate the effects of leaks from fuel tanks;
 - c. Methods to improve communication between the United States Navy, Air Force, and Army; the State; any local board of water supply; and the public in the event of a leak of any fuel tank;
 - d. Groundwater test results in relation to the surrounding areas of fuel tank facilities, with a particular emphasis on the groundwater near the Red Hill Bulk Fuel Storage Facility;
 - e. The implications of shutting down any fuel tank facility; and
 - f. Updates on progress toward meeting goals of agreement between the State, the affected county, and the federal government.
3. The advisory committee shall submit a report on its findings, including groundwater test results, and recommendations, including any proposed legislation, to the legislature.

After the first FTAC meeting in 2016, the committee excused the U. S. Air Force and U.S. Army from future participation since they no longer own and operate FCTs. Schofield Barracks was no longer a DOD facility of interest because they had been mistakenly identified as a FCT facility. In addition,

Senator Brian Schatz's representative emphasized that they are not an ex official member due to the Senator's assignments, but would attend as an observer.

Summary of the 2018 FTAC Meeting

Before this year's update from the U.S. Navy (Navy) began, there was a request from Mr. Ernest Lau, Chief Engineer at the Honolulu Board of Water Supply (HBWS) that changes should be made to the draft report to the Legislature summarizing the 2017 FTAC meeting. A draft of this report is available on the SHWB website previously referenced. HDOH was agreeable to incorporate all of the requested changes in the final report except one. That one request will require additional time to address and was reiterated again in this year's meeting. Mr. Lau asked for, "some references of historical releases at these closed facilities like Kipapa or Hickam POL Annex in Waikakalua, [and] that the history of releases should be described further in the report... [like] how much was released, [and] when... the suspected release occurred... [and that] remediation efforts be more descriptive in terms of what types of remediation, was there [like] soil vapor extraction, [and when were] monitoring wells drilled." Due to the deadline for the submission of this report, this information will be collected and presented to the committee in the next meeting.

The Navy's presentation began with opening remarks from Rear Admiral Brian Fort, Commander of Navy Region Hawaii, Naval Surface Group Middle Pacific, about the Red Hill Facility. Specifically, he stated that the work to continually "modernize" the facility was being done to ensure safe operations and emphasized that the Red Hill Facility is considered "critical infrastructure" by the DOD.

At various time during the meeting, HBWS challenges the validity of some of the Admiral's "factual findings." Many of these specific issues were brought up in HBWS's follow up letter responding to the first draft of this report and dated December 24, 2018, which is included as Appendix F. The exact verbal exchanges are memorialized in the transcript provided, Appendix C.

The Navy presentation (Appendix D) on the subject FCTs was given by Captain Marc Delao, Commanding Officer of NAVPAC Hawaii. He first discussed the one site that is temporarily out of use, Kuahua Peninsula, and the two closed sites that are part of the Hickam POL Annexes, Kipapa and Waikakalua. The former, site also known as the former Diesel Purification Plant, is still scheduled to be put permanently out of use in the next one to two years, pending funding and contracting considerations. The two Hickam POL sites were both installed in the 1940s and were operational for 50 years. After that time both sites were decommissioned and remain permanently out of service for the last 20 years. The 17 monitoring wells at Waikakalua are still sampled annually as a result of a historic release that occurred prior to Navy acquisition. The Navy confirmed that Total Petroleum Hydrocarbons (TPH) results from the last sampling event were all under the TPH clean-up goals (Appendix D, Slide #7).

In an exchange with the Navy, Mr. Lau acknowledged that although the Navy inherited these two closed sites through Pearl Harbor/Hickam Joint Base consolidation, he again requested a more comprehensive summary of the historic releases at those two sites, asking, "is it possible to get an overview of the whole field facility... and also connecting pipelines,...[to] get an overall picture of what was released, how much was released, and the remediation efforts and monitoring efforts?" The Navy responded that they would look in to this request.

Besides Red Hill, the only other active FCT site is the Pacific Missile Range Facility (PMRF) in Kauai. While constructed in the early 1940s, the same time as Red Hill, these nine tanks are smaller with an estimate volume of 50,000-gallons each. They are protected from corrosion by an impressed current cathodic protection system and are not located over a drinking water resource. It is also monitored monthly and annually for releases.

Red Hill Bulk Fuel Storage Facility & Surge Tanks

On the Red Hill facility, the Navy first addressed a question from last year's meeting, asking for the number of repairs that were completed after the modified American Petroleum Institute (API) 653 inspections for the four 400,000-gallon surge tanks. The Navy confirmed that a total of 19 repairs had been done to these tanks.

The Navy then listed the studies and improvements that have been made since the 2014 release and the additional improvements scheduled for implementation in the next couple of years. Some of these improvements included: an increase from annual to semi-annual tank tightness testing, continuation of quarterly groundwater monitoring, installation of additional groundwater monitoring wells, and the regular assembly of a Groundwater Modeling Working Group, which includes other Subject Matter Experts (SMEs) like the U.S. Geological Survey and the Department of Land and Natural Resources, Commission on Water Resource Management.

The Navy confirmed the continuation of the clean, inspect and repair process for the tanks. After the entire tank is scanned, this protocol dictates repair patches be welded on any area that is less than the 0.16-inch criteria. The cost for this process range from \$16 to \$18 million per tank. They also predicted that the second round of repairs to Tank 5, which was responsible for the 2014 fuel release, will be slated for completion by 2020.

The Navy briefly talked about current "high level DOD studies" to examine fuel needs for the Pacific Rim. The Navy is waiting on the completion of these studies to ascertain long-term options available for the Red Hill facility.

The Navy is on course to submit the combination Tank Upgrade Alternative (TUA)/Release Detection Decision Document by the end of the 2018. Other pending documents for 2019 include the Destructive Testing Results Report and the Groundwater Flow Model Report.

There was an in-depth discussion of the process and purpose of the destructive testing project, which included the removal of 10 coupons from Tank 14 earlier this year. The selection of the coupon sites was not to locate the worse cases of corrosion but examine various scenarios to challenge whether the scanning technology, known as the Non-Destructive Evaluation (NDE), used to validate the repair criteria, proves consistent and accurate. Some of the coupons were selected because they appear to meet the repair criteria while others were chosen for the fact that it would not require repair. The Navy's presentation addressed each coupon that was cut out but emphasized that no conclusion could be made from only visual observation. The laboratory results need to validate whether the steel thickness observed corroborates the thickness predicted by the scanning data. This information will be presented in a final report due in spring 2019.

In their December letter, Appendix F, page 3, HBWS takes issue with the statement that "no conclusion could be made from only visual observation." HBWS experts believe that, "the Navy is unlikely to

achieve its “quantitative validation” criteria regarding nondestructive evaluation (NDE) techniques,” of ensuring that a minimum thickness of 20 mils of steel remains in between inspection cycles. This in turn reflects on, “the uncertainty associated with the current Navy NDE methods and that the Navy should not rely on the unproven accuracy of the NDE in going forward with a single-wall TUA option.” HBWS used this letter as an opportunity to ask the Navy again for an opportunity to measure the maximum pit depth and/or to review the third-party coupon sample laboratory testing report.

At the meeting, HBWS made a formal request for the raw data, anticipated from the laboratory from analysis of the coupons, to be given to them in order to obtain an “independent assessment over the effectiveness of the NDE process.” They also submitted three letters to the committee that includes their comments on the destructive testing process and challenges the Navy’s draft groundwater flow model that implies that the aquifer could handle 700,000 gallons of fuel without affecting the drinking water. These letters have been included as Appendix E.

The Navy summarized the six TUA options plus the new construction at an alternative site option. The Navy confirmed that they will formally present their selected TUA in the TUA Decision Document later this year. The Navy identified their planned TUA selection as their current clean, inspect and repair regimen, with many improvements including the installation of a more accurate leak protection system, and a pilot of epoxy coating the bottom dome and barrel of one tank (identified as options 1A and 1B on slide #31 of Appendix D). Currently, under the Navy’s planned TUA selection, only the bottom dome of the tanks will be coated. The Navy stated that there are engineering challenges to coating the whole tank that needs to be addressed in the pilot study. The Navy listed two factors in this selection. The first is that historically, the tanks have not failed. The 2014 release was from “bad contractor, bad quality control, bad quality assurance, [and] operator error.” The second factor is their confidence in the improvements to operations at the facility like the increased tank tightness testing, and improvements in the clean, inspect and repair protocols. Regulators are waiting for the full details of this decision in the TUA Decision Document, along with the thorough justification of any TUA selection, before they can comment.

HBWS added in their December letter (Appendix F, page 4), regarding the Tank 5 repair work that, “any leaks attributed to [the contractor’s] errors, and the Navy’s inability to properly supervise and inspect the work, is at the most fundamental level due to the tank deterioration. Second, human error is but one of the underlying causes of potential tank leaks. Human errors that increase the likelihood of leaks are not limited to the type of flawed weld repairs that failed Tank 5, but also include errors in scanning for corroded areas, errors in scanning for weld defects, errors in testing repair patches, and errors in applying and inspecting coatings.” They also added that moving the facility so that it is not operating over a drinking water aquifer or secondary containment would provide an advantage when addressing these issues.

The Navy acknowledged that in the first draft of their own vulnerability assessment, the highest risk of large releases is from the nozzles in the lower access tunnel, not the tanks. The Navy will consider coating the nozzles with epoxy.

Other work mandated in the enforceable agreement called the Administrative Order on Consent (AOC), include studies to address the environmental consequences if a release were to occur. The Navy’s goal is to improve response time and decrease the volume allowed to be released, in order “to do the right

thing and to respond... [in order to be] good stewards of the aquifer, of the environment, of the taxpayer's money, [and] of this infrastructure.”

Because of the continuation of additional AOC work beyond the first selection of TUA, the Navy made assurances that any determination made now, may be improved upon, even before the mandatory five-year review, if and when, new and relevant information becomes forthcoming. Any decision made now, will not slow the collaboration with regulators and SMEs and other work mandated by the AOC.

During the question and answer period, the committee asked the following questions. The exact exchanges and responses are in the meeting transcript, provided in Appendix C.

1. Is the Navy prepared to treat the water, the groundwater, in the unlikely event of a release tomorrow or next week?
2. Besides the 2014 release, is the Navy's presentation correct in stating that there has not been a release from the Red Hill facility since 1988?
3. Was there a leak around 2002 from Tank 6?
4. Is there an option to close the tanks that are the closest to the aquifer?
5. Are there improvements that can get you from 90% safe to closer to 100% safe?
6. Is the military security of the Red Hill facility compromised since it's location and so much information about it is now public?
7. During the NDE scanning process, what measures are being taken to ensure human error is not a problem again?
8. In the Navy's July 27, 2018 groundwater report, it is stated that a fuel release as large as 700,000-gallons would not cause an exceedance of risk-based decision criteria, is that factually verifiable or an opinion?
9. Is the Navy committed to no more leaks at Red Hill?
10. How many square inches in each tank, that is potentially in contact with fuel, needs to be scanned?
11. Can you acknowledge that the NDE process is crucially important in determining the effectiveness of the single wall TUA selection, of the 1A and 1B combination, in being able to ensure no more leaks in the tank?
12. If five of 10 coupons indicated that repairs are necessary, can you extrapolate to say that 50% of the tank would also need repair?

Mr. Lau also added that if the effectiveness of the Navy's tentative TUA selection (1A and 1B combination) depends on the effectiveness of the NDE process, then the TUA Decision Document should not be submitted until the NDE process has been validated, and that information incorporated to justify that selection. This would potentially extend submission after Spring 2019. Mr. Lau reiterated the request to get the corrosion data from the coupons so that HBWS experts could examine independently. Mr. Lau referenced these requests in their letters, Appendix E, to the committee that also challenges the Navy's declaration that there were no releases at Red Hill between 1988 and 2002. Along with Mr. Lau, Senator Thielen also stressed that the Navy send the laboratory report for the coupon samples to the HBWS for independent evaluation. Further, Captain Delao committed to transparency and to sending the HBWS the name of the laboratory that analyzed the coupon samples.

HDOH announced that they had received almost 70 written comments in anticipation of this committee meeting. These will be posted verbatim on their website. Several members of the public who attended this committee meeting, insisted that the Chair allow them time to give oral comments. Over the course

of the next hour, 15 people came to the front of the room to speak. The exact comments are in the meeting transcript as provided in Appendix C.

Next Committee Meeting

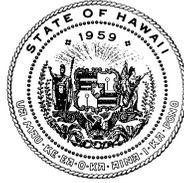
The committee recommended that they continue to meet annually. HDOH is tentatively scheduling the next Fuel Advisory Committee meeting for the end of 2019.

Appendices

- Appendix A - Agenda
- Appendix B – List of FTAC Members
- Appendix C – Meeting Transcript
- Appendix D – Navy Presentation on FCTs and Red Hill
- Appendix E – HBWS Letters
- Appendix F – HBWS Letter, Comment Letter on Draft Report, Dated December 24, 2018

Additional information from previous meetings are available at <http://health.hawaii.gov/shwb/red-hill-task-force-meetings-2014/>.

Appendix A



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

**FUEL TANK ADVISORY COMMITTEE
AGENDA FOR THE THIRD ANNUAL MEETING
Thursday, November 1, 2018
9:00 a.m. to 11 a.m.
Hawaii State Capitol, 415 S. Beretania St., Room 016
Honolulu, HI 96814**

- 1. Call to Order**
- 2. Welcome & Introductions – Keith Kawaoka, Deputy Director of Health, Department of Health (DOH), Committee Chair**
 - a. Congressional Delegation
 - b. State Legislature
 - c. Department of Defense
 - d. Subject Matter Experts (Board of Water Supply, Department of Land and Natural Resources and Commission on Water Resource Management)
 - e. Public Members
 - f. U.S. Environmental Protection Agency
- 3. Review of Duties of the Committee – HRS 342L-62 (below)**

Committee to focus on field-constructed tanks (FCTs) at Red Hill Bulk Fuel Storage Facility, Kuaehua Peninsula, Pacific Missile Range Facility Barking Sands, Hickam Pol Annex, and Schofield Barracks Military Reservation
- 4. Summary of November 2017 Meeting**
- 5. Navy Updates for Subject Field-Constructed Tanks pursuant to HRS 342L-62(1), (2), (3) and (5)**
 - a. Groundwater Results Pursuant to HRS 342L-62(4)
 - b. Answers to Outstanding Questions
- 6. Navy and DOH Update on the Actions Through the Administrative Order on Consent (AOC) at the Red Hill Bulk Storage Facility Pursuant to HRS 342L-62(6)**
 - a. Improvements to the Facility
 - b. Studies Completed and Pending
 - c. Regulatory Oversight and Approvals
 - d. Future Work Timetable
- 7. Advisory Committee Discussion on Adequacy of Response Measures and Communication**
 - a. Recommendations
 - b. Discuss Future Schedule
- 8. Public Comment Period**

The committee will receive comments from the public concerning issues related to leaks of field-constructed underground storage tanks. Anyone seeking to provide information relevant to the committee's study of these issues is welcome to address the committee in person, as time allows. The committee will also accept any written information concerning the subject matter of the committee's inquiry.
- 9. Adjournment**

The Honorable David Y. Ige
Governor of Hawaii
Re: Agenda for 3rd Annual Fuel Tank Advisory Committee Meeting
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HRS 342L-62 The advisory committee shall study issues related to leaks of field-constructed underground fuel storage tanks at the Red Hill Bulk Fuel Storage Facility, Kuahua Peninsula, Pacific Missile Range Facility Barking Sands, Hickam Pol Annex, and Schofield Barracks Military Reservation. The advisory committee shall consider:

- a. Short- and long- term effects of leaks of the fuel tanks, including effects relating to the health of residents, safe drinking water, and the environment
- b. Response strategies to mitigate the effects of leaks from fuel tanks;
- c. Methods to improve communication between the United States Navy, Air Force, and Army; the State; any local board of water supply; and the public in the event of leak of any fuel tank;
- d. Groundwater test results in relation to the surrounding areas of fuel tank facilities, with a particular emphasis on the groundwater near the Red Hill Bulk Fuel Storage Facility;
- e. The implications of shutting down any fuel tank facility; and
- f. Updates on progress toward meeting goals of agreement between the State, the affected country, and the federal government.

If you need an auxiliary aid or accommodation due to a disability, contact Thu Perry by **October 25, 2018** at 586-4226 or e-mail thu.perry@doh.hawaii.gov so arrangements can be made. If you reply after the date given, we cannot assure that your request will be fulfilled.

Underground Storage Tank Program Website <http://health.hawaii.gov/shwb/underground-storage-tanks/>

Red Hill Website <http://health.hawaii.gov/shwb/ust-red-hill-project-main/>

Appendix B

November 1, 2018 Fuel Tank Advisory Committee Members	
Keith Kawaoka, Deputy Director, Department of Health	
Chuck Freedman, Senator Brian Schatz's Office	Not Official Member
Representative Colleen Hanabusa (attended in person)	
Senator Mazie Hirono	Did Not Attend
Kainoa Penarosa, Representative Tulsi Gabbard's Office	
Captain Marc Delao, NAVFAC Hawaii	
Senator Mike Gabbard, Agriculture & Environment Committee	
Representative Chris Lee, Energy & Environmental Protection Committee	
Steven Linder, EPA Region IX	
Ernest Lau, P.E., Honolulu Board of Water Supply	
Patrick Casey, Commission on Water Resource Management	
Roy Hardy, Department of Land & Natural Resources	
Steven Onoue, President, Moanalua Valley Community Association	
David Yomes, Chair Aliamanu/Salt Lake Neighborhood Board	
Director of Public Works, Army Hawaii (N/A)	Exempt
Air Force Hawaii (N/A)	Exempt

Appendix C

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THIRD ANNUAL FUEL TANK ADVISORY COMMITTEE

Thursday, November 1, 2018

9:03 a.m. to 11:59 a.m.

State Capitol

Honolulu, Hawaii

P R O C E E D I N G S

1
2 COMMITTEE CHAIR: Let's call to order.
3 Good morning, everybody. Happy November 1st. Waited
4 till the end of the year almost. Thank you for coming
5 to this Third Annual Fuel Tank Advisory Committee. My
6 name is Keith Kawaoka. I'm the Deputy Director for
7 Environmental Health, Department of Health, and I'll
8 serve as your chairperson this morning.

9 Just a reminder to everybody that this
10 session is being documented by a court reporter,
11 sitting right here in the front, so before you speak,
12 especially committee members, could you please
13 introduce yourself if you have a comment or a question
14 as we proceed on.

15 As a reminder, this is a committee
16 meeting that we can technically only have committee
17 members for two hours. So we started just after 9:00,
18 just about 9:05. We have a full agenda, you have the
19 agenda in front of you, so to make sure that we get
20 through our primary objectives through the agenda,
21 after the items of the agenda have been completed and
22 the questions of the committee have been addressed,
23 we'll be happy to accept comments from the public,
24 both verbal and written, time permitting.

25 At this time I'd like to have each of the

1 members introduce themselves. Let's start on this
2 side first.

3 CAPT. DELAO: Yes. My name is Marc
4 Delao. I'm the commanding officer at NAVFAC Hawaii.

5 SEN. GABBARD: Mike Gabbard. I represent
6 District 20 in West Oahu. And I also chair the
7 Agriculture Environment Committee for the Senate.

8 MR. LAU: Ernie Lau, manager Honolulu
9 Board of Water Supply.

10 MR. YOMES: David Yomes, Neighborhood
11 Board 18.

12 MR. ONOUE: Steven Onoue, Moanalua Valley
13 Community Association president.

14 MR. FREEDMAN: Chuck Freedman from
15 Senator Schatz's office.

16 REP. HANABUSA: Colleen Hanabusa,
17 Congressional District 1.

18 MR. PENAROSA: Kainoa Penarosa
19 representing Tulsi Gabbard.

20 COMMITTEE CHAIR: And we have EPA on the
21 line. EPA, introduce yourself.

22 MR. LINDER: Yes, this is Steve Linder
23 from EPA, and I have Omer Shalev and Lyndsey Tu here
24 with me.

25 COMMITTEE CHAIR: There may be possibly

1 some other members coming in later, but -- oh, I'm
2 sorry, Senator.

3 SEN. THIELEN: I'm not (inaudible).

4 MR. CASEY: Patrick Casey, geologist with
5 the Commission on Water Resource Management, DLNR.

6 MR. HARDY: Roy Hardy, I'm the
7 groundwater hydrologic program manager for the
8 commission as well, but sitting in for DLNR right now.

9 COMMITTEE CHAIR: Thank you everybody,
10 committee members.

11 First I'd like to review the duties of
12 the committee, based on HRS 342L-62. The provision
13 requires the advisory committee to study issues
14 related to leaks related to field-constructed tanks of
15 underground storage tanks at the Red Hill Fuel Storage
16 Facility, Kuahua Peninsula, Pacific Missile Range
17 Barking Sands, the Hickam POL Annex, as well as the
18 Schofield Barracks Military Reservation.

19 The committee shall consider both
20 short-term and long-term effects of leaks from fuel
21 tanks, including effects relating to the health of
22 residents, safe drinking water and the environment;
23 response strategies to mitigate the leaks -- effects
24 of leaks from fuel tanks; methods to improve
25 communication between the United States Navy, Air

1 Force and Army, the state and any local board of Board
2 of Water Supply, as well as the public in the event of
3 a leak of any fuel tank; groundwater test results in
4 relation to surrounding areas of the fuel tank
5 facilities, with a particular emphasis on the
6 groundwater near Red Hill Bulk Fuel Storage Facility,
7 as well as the implication of shutting down any fuel
8 tank facility; the updates on the progress towards
9 meeting the goals of the agreement between the state
10 and the federal government.

11 At this time I'd like to have Thu Perry
12 kind of give a rundown of what happened at the
13 November 2017 meet.

14 MS. PERRY: Thank you.

15 My name is Thu Perry. I'm the public
16 participation coordinator for the underground storage
17 tank program for Department of Health, and I just want
18 to take a few minutes to give you some context about
19 how this committee was formed and then also what
20 they've done so far.

21 So for two years, starting in 2014, the
22 Hawaii legislature passed a handful of concurrent
23 resolutions putting together a number of temporary
24 task force. This was to gather information about Red
25 Hill, how they operated, and what they were going to

1 do in order to prevent releases in the future. During
2 one of these meetings it was highlighted that Hawaii
3 had other field-constructed tanks, not just Red Hill.
4 So in 2016, as stated by Keith, this fuel tank
5 advisory committee was formed in statute as law, not
6 just part of a resolution.

7 In that first year, in 2016, the
8 committee was told that the Army no longer had
9 field-constructed tanks. Also, the Navy inherited all
10 of the remaining field-constructed tanks from the Air
11 Force that the Air Force used to own and operate.
12 This was done during Pearl Harbor Joint Base
13 consolidation. The committee chose to excuse these
14 two agencies from future meetings.

15 Last year the Navy put together a formal
16 presentation for the committee about the remaining
17 field-constructed tanks. In summary, there are 31
18 active field-constructed tanks, excuse me, at two
19 sites, Red Hill and PMRF, Pacific Missile Range
20 Facility in Kauai, as well as other field-constructed
21 tanks that are no long operational or either
22 temporarily out of use or permanently out of use.
23 These tanks are the subject of this meeting today.

24 That Navy presentation in 2017, as well
25 as all other presentations, reports, minutes from

1 previous meetings are all available on our website,
2 which is most easily accessed by Googling UST
3 Department of Health Red Hill Task Force. I've also
4 provided my business card outside if you prefer to
5 email me for more information.

6 And before I hand it over to the Navy for
7 this year's update, I just wanted to personally
8 apologize for the crowdedness of this room.
9 Historically, all of the meetings thus far have been
10 50 to 60 people, so this capacity would have been
11 totally adequate. For the next meeting we'll consider
12 a larger room. Thank you.

13 COMMITTEE CHAIR: Okay, thank you, Thu.

14 At this time are there any questions or
15 comments from the committee members on the agenda
16 items so far?

17 MR. LAU: Ernie Lau from the Board of
18 Water Supply. I understand that there is a -- thank
19 you for distributing a draft report from 2017, which
20 was submitted.

21 AUDIENCE MEMBER: Can you speak into the
22 mic, please.

23 MR. LAU: Is this better? Is it on?
24 Ernie from the Honolulu Board of Water Supply.

25 The 2017 report is in draft form and

1 we've got a copy. I have some comments about the 2017
2 report which Thu just talked about. I'd like to
3 recommend that the -- that there be some additions or
4 corrections to the report, the draft report.

5 MS. PERRY: Sure.

6 MR. LAU: On page 3 of the report, and I
7 apologize to the public you don't have a copy of this
8 report, but on page 3 of the report, under permanently
9 out of use, 13 tanks, Kipapa Gulch Fuel Storage Annex,
10 I notice that there's -- it doesn't indicate, as it
11 does indicate for the Red Hill facility and the PMRF
12 facility on Kauai, whether or not the Kipapa Gulch
13 Fuel Storage Annex is located over a drinking water
14 aquifer. I think it should be consistent for all the
15 descriptions of the tanks if it's over a drinking
16 water aquifer or not over a drinking water aquifer,
17 even if it's no longer in use.

18 And also I'd like to suggest that there's
19 some references of historical releases at these closed
20 facilities like Kipapa or the Hickam POL Annex in
21 Waikakalaua, that the history of releases should be
22 described further in the report, you know, how much
23 was released, when it was -- the suspected releases
24 occurred. And it mentions a record of decision and
25 remediation efforts, and I'd like to suggest that the

1 remediation efforts be more descriptive in terms of
2 what types of remediation, was there soil vapor
3 extraction, monitor wells drilled?

4 So that's some of my recommendations
5 over -- on this report to make it a better report.

6 And lastly, there's some acronyms used in
7 the report. For clarity to the legislature and to the
8 public, I'd like to suggest that the acronyms be
9 spelled out, at least maybe in the beginning of the
10 report.

11 And I note, Thu, you just mentioned that
12 there's stuff -- the draft report has links to the DOH
13 website for documents, including the minutes of the
14 meeting. I'd like to suggest that not everybody has
15 access to the Internet, that the report be stand alone
16 by itself, a complete document with all references
17 that are currently on the website, like PowerPoint
18 presentations by the Navy, the verbatim discussion
19 records, all be part of the report itself so it's a
20 complete document by itself.

21 Because I'm also concerned about in the
22 future that -- and it isn't the Navy, but more I've
23 seen it happen in other federal agencies where things
24 on the website over time get taken down, and these
25 reports are supposed to be part of a permanent record,

1 so my suggestion is this report by itself should be a
2 complete stand-alone document with no references to
3 links on websites that are contained components of the
4 report. That's why the report is so thin, I suspect.

5 Those are my recommendations to the chair
6 of the committee.

7 COMMITTEE CHAIR: Okay. Thank you for
8 those comments. If you can provide that to Thu for
9 incorporation.

10 MR. LAU: Thu, I'll convert this to a
11 letter from us summarizing our comments on the draft
12 report.

13 MS. PERRY: Thank you.

14 MR. LAU: Do you have a timeline for
15 submittal of the report to the legislature?

16 MS. PERRY: Right now it's drafted for
17 internal review, so amendments are fine at this point.

18 MR. LAU: Thank you.

19 COMMITTEE CHAIR: Any other comments or
20 questions from members?

21 Okay, hearing none, we'll move to item 5,
22 Navy updates on the subject field-constructed tanks.

23 Captain Delao:

24 CAPT. DELAO: Keith, thank you very much.
25 Before I get into this -- into our brief this year,

1 I'd like to turn it over to my boss, Admiral Fort for
2 a few comments, and then I'll provide the update.

3 So Admiral Fort.

4 REAR ADM. FORT: Sure, thanks.

5 Good morning. Thank you for this
6 opportunity to provide a few opening remarks before I
7 turn it over to Captain Delao.

8 Is it on? Better? Great.

9 Sir, first of all, my name is Brian Fort.
10 I'm a rear admiral in the United States Navy. In my
11 current assignment I serve as Commander, Navy Region
12 Hawaii, and Commander, Naval Surface Group Middle
13 Pacific. Those are facts. I think I'm pretty good at
14 my job. That's an opinion. And there's a distinction
15 between the two. In my remarks and what you're going
16 to hear from Captain Delao and any other members of my
17 team today, will be nothing but facts. The truth,
18 veritas. Not conjecture, not hyperbole, and certainly
19 not fear, sir. Just facts.

20 A few important facts I would like to
21 share. Our drinking water continues to be safe. And
22 we are absolutely committed to keeping it safe. The
23 Navy continues to modernize Red Hill. In fact, we've
24 been doing so since prior to the 2014 release and the
25 Administrative Order on Consent, and as a fact, since

1 2006 we've invested more than a quarter of a billion
2 dollars to modernize and update the facility.

3 As part of that investment and in June of
4 this past year, we began work to validate the
5 effectiveness of our nondestructive examination, or
6 what we call NDE processes, which many of you have
7 read about in the paper or seen in the news. We use
8 that to identify areas within the tank needing repair,
9 and that will be part of Captain Delao's presentation
10 today.

11 A few more facts. The Navy doubles the
12 American Petroleum Institute approved industry
13 standard for steel liners on the tanks at Red Hill.
14 Those tanks as designed are quarter-inch steel; that's
15 .25 inches. The API standard for such liners is only
16 .05 inches. As part of our clean, inspect and repair
17 process, if we find anything less than .16 inches, we
18 repair it.

19 The tanks are not just steel lining,
20 though, as those of you who have toured know. The
21 tanks have up to four feet of concrete, a layer of
22 gunite, and then a pressure injected layer of gunite
23 which ensures that there is a positive inward pressure
24 on the tanks at all times.

25 Each of these tanks must pass an annual

1 tank tightness test as part of our modernization. No
2 tank has ever failed the tank tightness test. Similar
3 to how we double the API standard for the steel liner,
4 the API standard now requires that you test those
5 tanks every year, vice every two years. We're now
6 going to double that as well and we'll be inspecting
7 our tanks for tank tightness every six months as
8 opposed to annually.

9 And, yes, it is a fact that the tanks are
10 more than 70 years old. That's why we modernize, and
11 that's why we have such a rigorous, ongoing clean,
12 inspect, repair process.

13 A few more facts about the facility. Red
14 Hill is considered critical infrastructure by the
15 Department of Defense. It is physically protected, it
16 is cyber hardened, and it can operate without power.
17 In the event of a national emergency and under the
18 right circumstances, we can provide fuel to the state
19 of Hawaii if the state were cut off from outside
20 shipments.

21 Red Hill provides fuel for every branch
22 of the military, including the Coast Guard and
23 including the Hawaii National Guard. Red Hill fuel
24 was used during recovery and relief efforts, not only
25 on Kauai after the flooding, but on the Big Island

1 after the volcanic eruptions. The hospital ship USNS
2 Mercy carried Red Hill fuel throughout the western
3 Pacific and to Oceania as part of her partnership
4 mission. Red Hill fuel is used by the military to
5 protect the shipping lanes to and from the state of
6 Hawaii. Red Hill fuel provides support to security,
7 stability and prosperity throughout the entire
8 Pacific.

9 Just a few more facts and I'll wrap up.
10 We have taken more than 350 community outreach
11 stakeholders through tours of Red Hill. We've
12 provided briefings to hundreds more at neighborhood
13 board meetings and public workshops. My predecessor
14 and I have released ten stakeholder letters to date
15 and had numerous engagements with both the media and
16 many public officials. We will continue to be open
17 and transparent and provide nothing but facts about
18 Red Hill.

19 The fuel release, now almost five years
20 ago, was the one and only release to the public since
21 the Clean Water Act of 1988. The one and only
22 release. That was due to a contractor's error and
23 poor oversight, we acknowledged that after it
24 happened, not due to an old, rusty, leaky tank.
25 That's an example of fact versus opinion, and

1 sometimes outright untruth.

2 Over the past four and a half years we
3 have improved workmanship, oversight, procedures and
4 training. We've instituted additional safeguards,
5 checks and balances and alarms, and we continue to
6 work with both the EPA and the Hawaii Department of
7 Health and are committed to the best, affordable,
8 practicable technology when it comes to updating the
9 facility.

10 One closing fact. In the extremely
11 unlikely event petroleum ever reached the drinking
12 water, we would immediately respond to ensure the
13 drinking water remained clean. That is federal law,
14 and a responsibility we take very seriously. Red Hill
15 a vital to our national defense. Operating Red Hill
16 safely and continuing to modernize is both vital to
17 protecting our drinking water as well. We are
18 certainly and most unequivocally committed to doing
19 both.

20 Thank you, Senator, for giving me a few
21 minutes. I'll turn it over to Marc, and I'll be here
22 to answer any questions, if you have any, that are
23 directed to me.

24 COMMITTEE CHAIR: Thank you, Admiral.

25 CAPT. DELAO: All right, Admiral Fort,

1 thank you very much for that. And Senator and Members
2 of the Fuel Tank Advisory Committee, also members of
3 the general population, Marc Delao again, commanding
4 officer NAVPAC Hawaii, also Admiral Fort's regional
5 engineer, and I am honored to be here. Honored, all
6 right, as an American, as a naval officer that served
7 almost 30 years, this is -- this is what our country
8 is all about. And the preparation for this is really
9 part of our great democracy, and so I thank you for
10 taking interest in this.

11 So without further ado, I'd like to walk
12 you through an update on our fuel tanks and sort of
13 show you what we've been doing, and also give you a
14 sense for the continued work, the commitment that the
15 admiral just spoke of that we continue to put forth.

16 MS. PERRY: Sorry, Captain. Anyone want
17 a hard copy?

18 CAPT. DELAO: Excellent. What was the
19 question?

20 MS. PERRY: Is it available online?

21 CAPT. DELAO: It is not, but this is all
22 information, obviously, that's for the public.

23 AUDIENCE MEMBER: How are you going to
24 get it published? How would it be published and we
25 can see it?

1 MS. PERRY: All of these reports are
2 available on the website. They're public.

3 CAPT. DELAO: Okay, everybody's okay?
4 Copies have been distributed.

5 Let's -- so the first slide is just a
6 transitional slide, and so here are the sites that
7 we'll be talking about, okay, and so I was not here
8 for last year's iteration, but obviously the Navy, in
9 continuity, we're going to replicate sort of what we
10 did last year in sort of giving you a sense for all
11 sites, and then of course Red Hill being the one
12 probably of the most interest and we'll probably spend
13 the most time on that one. Okay? So that's really
14 just the order of march and without further ado, if I
15 can advance to the next slide, please.

16 So the first slide that we'll talk about,
17 and I will say that really in comparison to what was
18 presented last year, nothing really has changed, and
19 so this is a site that is out of use. It was
20 operationally in use from 1941 to 1991, so about 50
21 years of use, and so it is under contract, awaiting
22 approval for a contract mod for some work that's being
23 done in cleanup, but the system itself and the
24 facility itself is out of use. And then you can
25 see -- and this is -- goes a little bit to what

1 Mr. Lau's comments were about showing graphically, and
2 this is really for those in the audience, right,
3 obviously green being the aquifer and non-green being
4 non-aquifer. So you can see out of commission, being
5 cleaned up, and then obviously not in the footprint of
6 the aquifer. So that's really -- that's the first
7 site.

8 So let's go ahead and advance to the next
9 one. Next site would be -- we've got two sites that
10 are part of the Hickam POL Annexes. And so you can
11 see there those two sites fall within the aquifer, but
12 these are not in operational use, okay. So let me
13 walk you through that a little bit.

14 Next slide, Darrell. Okay. So this site
15 is again not in use. It was operational for about 50
16 years from 1943 to 1993, and so this one is currently
17 taken off site, offline. And now there were some
18 questions from last year, and if you'll advance.

19 Okay. And so, again, not having been
20 here last year, but I did want to make sure in sort of
21 the fidelity and sort of the spirit of this committee,
22 make sure that we picked up those questions. So the
23 question from last year was what are TPH cleanup goals
24 for the Hickam POL Annex?

25 And so we are showing there what the

1 goals are. And what I would say for the committee and
2 for the audience, that these are the parameters, the
3 goals, and then the actual data right here would show
4 that we are below those criteria, okay. And so I
5 think that answers the mail, but I definitely want to
6 make sure that in the spirit of transparency and
7 reporting that we took the homework assignment to
8 heart and that we did the research and that we are
9 showing the math and science and facts and figures,
10 and again currently both thresholds below the
11 standard, okay.

12 Next slide, please. Okay, so the second
13 Hickam POL site. Similar, this one is out of use, so
14 permanently out of use. It was online for 50 years,
15 and so this one sits in a nonoperational status, and
16 the picture there is just simply showing the
17 infrastructure as it is currently. But again, it's
18 not an active fuel POL facility.

19 All right, next. Which brings us really
20 to, I think, the two sites that we'll spend a little
21 bit of time on. So these two sites are operational.
22 So as Thu mentioned, this site is in Kauai. This is
23 PMRF and, again, you can see in use. Aquifer here.
24 Really along the coastline, and so not on the
25 footprint of the aquifer. So that's key to note.

1 That's a certain risk area that, you know, mitigated
2 risk in that regard.

3 Darrell, if you'll advance, I'll sort of
4 provide a graphic, and this is just representative
5 sample of what the facility looks like, what the
6 infrastructure looks like. So obviously it's
7 constructed in ground, you get that sense, and then on
8 the right you get a sense for sort of the pristine
9 status.

10 And I'll say with this facility, much
11 smaller than Red Hill, but nonetheless, you know, high
12 level of investment and interest in making sure that
13 the system is well maintained, and, again, from an
14 operational standpoint, integral to the operations out
15 at Barking Sands and so diligence being given to
16 maintaining the infrastructure.

17 So let me just walk you through some
18 facts on this facility. Nine tanks. Each tank -- and
19 each tank obviously below ground is slightly greater
20 than 50,000 gallons, okay, and so really the threshold
21 for a lot of these criteria is 50,000, and so we're
22 slightly above it, so we must comply and we must
23 report on this, and we do that and that's why this is
24 part of the brief this morning.

25 Again, currently in use. These are

1 epoxy-lined steel tanks constructed back in 1942. All
2 tanks were inspected between 2011 and 2012, and they
3 are all in compliance with API 653 standards. This
4 system employs an impressed current cathodic
5 protection system, and we employ an annual third-party
6 cathodic protection assessment survey to ensure that
7 that system is functioning the way it was designed.

8 All tanks are equipped with visual and
9 audible alarms for spill prevention. All tanks are
10 equipped with a third-party certified fuels manager
11 defense leak detection system. Leak detection tests
12 are done on these tanks monthly, and leak detection
13 system certification is done annually. And that's the
14 PMRF system.

15 So I'm going to pause. And very quickly
16 I've covered the systems that are offline. I've
17 covered the Kauai Barking Sands system, and so I will
18 open up for any questions before transitioning to Red
19 Hill.

20 Mr. Lau.

21 MR. LAU: Just a question. With the
22 recently passed USD regulations updated rules by the
23 state Department of Health, is this facility, does it
24 have a permit to operate? Or will you be applying to
25 a permit under the new DOH rules to operate the

1 facility within one year?

2 CAPT. DELAO: Mr. --

3 MR. LAU: Can you folks hear the
4 question?

5 AUDIENCE MEMBER: No.

6 MR. LAU: So the question I had was the
7 Department of Health passed some recent underground
8 storage tank rules and update to their administrative
9 rules in July of this year, and my question was,
10 because this is a field-constructed tank that was
11 previously not required to get a permit, but under the
12 new rules I think they're required to get a permit.
13 And is the intent by the Navy to get a permit for this
14 facility and also the other operating facility, which
15 is Red Hill?

16 CAPT. DELAO: Correct, the intent is to
17 comply with that and to submit the permits.

18 MR. LAU: And you have to do that within
19 one year; is that correct?

20 CAPT. DELAO: (Nodding head.)

21 MR. LAU: I see nodding heads from Navy
22 sites.

23 CAPT. DELAO: Any other questions on
24 PMRF?

25 MR. YOMES: Yes.

1 CAPT. DELAO: Yes, sir.

2 MR. YOMES: These tanks that's not in
3 operation at different sites, are these tanks the same
4 size as what you're dealing with in Halawa?

5 CAPT. DELAO: No, they are much smaller.

6 MR. YOMES: And these tanks have been
7 used for 50 years, have you folks ever took one of
8 those tanks out and find out what happens on the
9 bottom of these tanks as far as erosion and stuff to
10 see what happens underneath?

11 CAPT. DELAO: So, turning back to the
12 experts that have been here for a while, so
13 indications are no, we have not done anything of that
14 nature.

15 MR. LAU: On the -- a question on the
16 tanks that are no longer in service but were in
17 service for maybe 50 years or so, at Hickam POL Annex
18 at Kipapa and Waikakalaua, did you have leaks from the
19 tanks and what was the estimated volume of the leaks,
20 since these are also located over the drinking water
21 aquifer.

22 CAPT. DELAO: Go ahead. This is Aaron
23 Fuentes, he is my environmental director. He's been
24 with NAVPAC for a while. Go ahead, Aaron.

25 MR. POENTIS: As far as these tanks that

1 are concerned, you know, these are being cleaned up
2 under the, I guess what we call Super Fund, Super Fund
3 regulations, and it's completely under the oversight
4 of the Department of Health.

5 And so as Captain Delao has indicated,
6 these facilities are closed down. We're in the
7 process of cleanup. It's -- some of these were
8 inherited by the Navy as part of Joint Base from the
9 Air Force. And so we're in the long-term cleanup
10 program. We have monitoring wells. We're seeing the
11 cleanup is progressing as anticipated.

12 I cannot speak to the specific volume
13 offhand of what the releases are, but to, you know,
14 address the concern that you had made, and I think we
15 expressed this in previous meetings, all of this work,
16 you know, by rule is under a lot of public scrutiny.
17 So we have routine public meetings, we call them
18 Restoration Advisory Board meetings. All of the
19 documents and reports, studies, the proposed plans,
20 they're all well documented, all submitted to the
21 agencies. They are in public repositories either in
22 the state libraries and the various communities. And
23 I believe we put you on the mailing list so you're
24 made aware of these reports as well as provided
25 committees of copies of these reports as.

1 MR. LAU: Thank you, Aaron. I think
2 periodically a CD shows up in our mailbox. I haven't
3 seen one for a while, though.

4 MR. POENTIS: Because we're in the
5 long-term cleanup right now.

6 MR. LAU: There's also these field
7 facilities, and I know it's not the Navy's, you kind
8 of inherited this when Joint Base Pearl Harbor-Hickam
9 was created, there's also connecting pipelines that
10 connected both facilities all the way to Pearl Harbor
11 or to Hickam; is that correct.

12 MR. POENTIS: That's correct, that's
13 correct, several sites.

14 MR. LAU: And several sites have leaked.

15 MR. POENTIS: That's correct. And we
16 have cleanup for all those sites as part of the
17 overall effort under the Super Fund program.

18 MR. LAU: Is it possible, I notice you
19 have the separate actions under the Super Fund cleanup
20 process, but is it possible to get like an overview of
21 the whole field facility of both of Hickam, both
22 facilities at Hickam that are no longer in operation
23 and also connecting pipelines, kind of get an overall
24 picture of what was released, how much was released,
25 and the remediation efforts and monitoring efforts,

1 kind of an overview, instead of having to go to
2 separate actions and try to dig out the separate
3 actions.

4 MR. POENTIS: So certainly all of the
5 actions are, like I mentioned, subject to public
6 scrutiny. We have public meetings. I mean, I
7 understand your question and we can take that for
8 consideration.

9 MR. LAU: I would appreciate it, because
10 Pearl Harbor aquifer is one of the most important
11 aquifers, and we have a lot of wells around the areas
12 where these facilities are located.

13 MR. POENTIS: Sure.

14 MR. LAU: Although I want to make it
15 clear, we have not detected fuel at this time in those
16 wells.

17 MR. POENTIS: And as part of the cleanup
18 program that is overseen by the Department of Health,
19 they recognize through the monitoring program that we
20 are not affecting groundwater.

21 MR. LAU: It is great for us to
22 understand where the releases occurred, when they
23 occurred, what was released, what is the -- what was
24 detected in the vadose zone, the unsaturated zone or
25 in the groundwater itself, what remediation efforts

1 have been taken, how much has it cost, and when is it
2 going to end?

3 MR. POENTIS: Sure, I mean, like I said,
4 all of that information is publically available in
5 public repositories, but if the desire is to aggregate
6 them together --

7 MR. LAU: Just as a request, as a task
8 force committee -- Fuel Tank Advisory Committee
9 member, can you make it easier for us to actually get
10 access to that information by consolidating it or
11 summarizing it so we can see the big picture of what
12 happened here in the past?

13 And then I want to make clear, this is
14 not under Navy's responsibility, but when it was
15 operated by other services of the military.

16 MR. POENTIS: Yeah, it wasn't caused by
17 Navy activities, but we have functional responsibility
18 to continue the cleanup.

19 MR. LAU: Right, you inherited, but for
20 at least for us it would be much easier to understand
21 the scope and magnitude of what happened there.

22 MR. POENTIS: Understand.

23 MR. LAU: Thank you.

24 CAPT. DELAO: Okay, Aaron, thank you.

25 Okay, so let's -- we've got a few more

1 copies.

2 So let's transition to Red Hill, and so
3 slide 11, Navy and Department of Health update on the
4 administrative order on --

5 COMMITTEE CHAIR: Let me pause here real
6 quick. Are there any other questions from committee
7 members, comments on the current field-constructed
8 tanks?

9 Okay, thank you. Go ahead, Marc.

10 CAPT. DELAO: Okay, all right. So,
11 Darrell, next. Okay, so similar to what I did with
12 the question from last year, same here, right. So
13 going back to last year, the question that I wanted to
14 address up front and then sort of go into the new
15 stuff, stuff that we've done over this last year, but
16 a question from last year: When Red Hill surge tanks
17 last underwent American Petroleum Institute
18 inspection, how many areas were found requiring
19 repair?

20 And so we have bulletized the response
21 there. API 653 inspections last completed on all four
22 surge tanks back in 2004.

23 19 areas were identified for repair
24 during this inspection.

25 All repairs successfully completed and

1 passed subsequent testing.

2 Each surge tank successfully passed tank
3 tightness testing since those repairs have been done.

4 And next cycle of clean, inspect, repair
5 has already began. And in fact the next cycle started
6 in 2018, this year, and the plan is to kick up all
7 four. And one thing I want to point out there is that
8 there's a periodicity of 20 years, and so we're in
9 fact picking this up early, and we're going to go
10 through and take care of that.

11 So again that was a question that was
12 brought up last year. I wanted to make sure that we
13 addressed that, wanted to make -- provide that vision
14 for not just follow up, but also leaning forward.

15 All right, next slide. So this slide is
16 pretty busy, it's pretty wordy, but it's a good
17 rundown of all the actions that we've taken, all
18 right. And ladies and gentlemen, you know, hear me
19 well. We're taking this very seriously. And the
20 admiral spoke of money that's been invested in this,
21 I'm going to speak to experts and experts, and a lot
22 of work that's been done in relation to the AOC, but
23 in some regards above and beyond the AOC, okay. And
24 so this is where I sort of talk a little bit about,
25 hey, as the engineer, as Admiral Fort's engineer, I've

1 got certain responsibilities there. As a steward of
2 the environment, I've got responsibilities there. As
3 a naval officer being a steward at your taxpayer
4 money, I've got certain responsibilities there. I'm
5 also a purveyor of water to our military.

6 And so I'll show you a graphic in
7 relation to Red Hill where we've got a shaft, water
8 shaft, and we've got a few others throughout the
9 island where we draw from that very same aquifer.

10 So ladies and gentlemen, I've got a
11 little bit of a vested interested in doing this right,
12 and so in the short time that I've been here, I've
13 taken it very, very seriously. Very seriously. And
14 I'm going to be in this job for a couple of years, and
15 I plan on taking that AOC, following it to the letter
16 of the law, and where it is practical and where it
17 makes sense, to exceed the minimum requirements.

18 And this goes back to my early training
19 at the Naval Academy and 20-plus years of serving this
20 fine nation, the minimum standard is the minimum
21 standard. You know, we strive for much higher than
22 that. And so I look forward to sharing with you this
23 morning some of those efforts in that regard.

24 But this is a quick rundown, and I'll
25 walk you through some of this, not all of it, but

1 certainly the ones up at the top that are bolded, you
2 know, I think those are the ones that are probably of
3 the most interest, and so we'll definitely spend time
4 talking about that. But this is a good list of
5 efforts. And for the nontechnical, you know, I'll do
6 my best to sort of explain what some of them are, but
7 it's a lot of math and science, it's a lot of
8 accumulating of facts, truth, veritas as the admiral
9 spoke of, and analytics that go behind it.

10 So without further ado, let's step
11 through some of these, and I look forward to sharing
12 with you the work that we've been doing. All right,
13 Darrell.

14 Okay, so this slide shows, again, for the
15 audience, for the experts that have been tracking this
16 for a while obviously you're familiar, but the Red
17 Hill facility, right? So 20 tanks. And of course you
18 know that two are offline, so really what we're
19 talking about is 18 tanks that we are maintaining and
20 doing inspections on and repairing and improving,
21 okay. And so this slide is meant to show those tanks,
22 and then it's also meant to show the sampling that we
23 do.

24 So we talk a lot about maintaining the
25 tanks and that's where it starts. The structural

1 integrity of those tanks and understanding the
2 condition of those tanks, and we'll talk a little bit
3 about further corroborating the techniques that we use
4 for ensuring that we're inspecting and repairing them
5 accurately and correctly. We'll talk a little bit
6 more about that, but it starts with that.

7 This graphic is showing you and showing
8 me and showing, really, consumers of that precious
9 water, the system that we have put in place to monitor
10 the aquifer, to be able to draw samples in the
11 vicinity of Red Hill, and to understand what's in the
12 aquifer, what the condition of that water is, and to
13 do that in a manner where we're employing the latest
14 technologies, math and science, doing testing, okay.
15 And we do quarterly testing, we do monthly testing of
16 the sampling areas around the fuel facility. We also
17 do soil vapor testing underneath the tanks themselves.
18 Okay? And we are extremely judicious about that, and
19 with everything else that we do, absolutely
20 transparent. So all the results are available to you,
21 and I'm going to tell you right now, and as the
22 admiral said, it's testing and it's testing with no
23 issues, okay, and so you need to understand that.

24 This graphic is also showing that we're
25 not resting on our laurels. Understanding the

1 hydrology, understanding the water around the facility
2 is important, but we continue to make investments. We
3 continue to make investments in that area in the form
4 of additional sampling sites so that we can further
5 understand what's going on, and that we have further
6 assurances.

7 And so this graphic, I use this quite a
8 bit. It gets a lot of run time in terms of showing
9 exactly what we've set up, what we've got today, but
10 more importantly the future investments of
11 understanding, again, the condition around the Red
12 Hill facility.

13 COMMITTEE CHAIR: Captain Delao, would
14 you take questions during your presentation from
15 committee members, or would you rather wait till the
16 end?

17 CAPT. DELAO: I think, if I may, I'd like
18 to go through this, okay, and you've got my promise, I
19 will provide time at the back end, okay, and really
20 there's a lot of slides in here, but there's a lot of
21 wash, rinse, repeat. So we're going to get into the
22 coupons, and I know you're interested and intrigued
23 with the coupons, we're going to talk through that,
24 and then we'll pick up questions at the very end.

25 Darrell, if you would go back.

1 So I mentioned the coupon removal. We'll
2 talk about that extensively, and I've -- Senator
3 Gabbard, you had requested previously pictures, and so
4 we have that in the presentation to show what that is.
5 I want to explain to you, I want to demystify and
6 explain to you what we've done and where we are in
7 that process, okay, and so I'll definitely do that.

8 I've shown you the water sampling. You
9 know, very quickly, I'll sort of hit some of the items
10 up at the top. You know, this Monitoring Well No. 11,
11 that was something that we just did this last year,
12 and that goes back to that graphic I showed of adding
13 additional sampling areas. We've got plans to add
14 three more.

15 Things that we've done. We continue to
16 do tank tightness testing, and as the admiral said,
17 we've been doing that annually. This year we're going
18 to transition to twice a year. So we're taking the
19 standard and we're doubling that. And historically
20 there have been no issues as we've done these tests.
21 But again, not resting on our laurels, we're going to
22 do that more frequently. We're taking this very
23 seriously.

24 The coupon removal. So hold that
25 thought. We're going to get into that. We're going

1 to spend quite a bit of time talking about coupon
2 removal. There's a lot of intrigue and interest in
3 that area, and rightfully so. I'm going to give you
4 facts. I'm going to give you the science and math
5 behind what we're doing, why we're doing it. I'm also
6 going to give you a sense of where we are in the time
7 frame.

8 The other things that we've done. The
9 Tank Upgrade Alternatives Report. That's a document
10 provided by the AOC. We did that. That was required
11 by the AOC. We did it on time. Submitted it. It's
12 out there for consumption by anyone who is interested.
13 And I've got a slide in this slide deck that sort of
14 summarizes some of that information from that report.

15 We established a working group for
16 groundwater modeling, and this -- that really is a
17 provision above and beyond the AOC, okay, and so that
18 effort, that faction, that group, that venue is really
19 a good example, good representative sample of your
20 Navy taking, again, that AOC and doing a little bit
21 more than the minimum requirement, okay, and doing it
22 in a collaborative manner with regulators, Board of
23 Water Supply, those that have a vested interest in
24 understanding the hydrology, right, and not to bore
25 you with details, but that's what this is all about

1 is, not the structural integrity of the tanks, not the
2 condition of the aquifer, but understanding the
3 science, the hydrology of how water flows in that area
4 so that in the event, the highly unlikely event of an
5 inadvertent release, we understand the conditions of
6 flow in and around and under that facility.

7 I already talked about the monitoring
8 well, what we put in there. And then some other
9 things that we've done this last year, again, per the
10 AOC and, again, we report that to you.

11 All right, Darrell, if you could advance.

12 Here are some of the documents that we --
13 this last year that we have completed, and these are
14 documents that are -- that were required per the AOC,
15 and so this is a good summary, if you will, of when we
16 submitted those, and these are available for, again,
17 for public review. The Tank Upgrade Alternatives
18 Report, that was submitted May 2018. Predates my
19 tenure at NAVFAC Hawaii, but again it's a testament to
20 the continuity, the consistency of the team, and the
21 fact that in uniform we come, we go, but this process
22 transcends that. And so that was taken care of back
23 in May of 2018.

24 Destructive Testing Plan, that was
25 submitted June of 2018.

1 Release Detection Alternatives Report,
2 that document was submitted August of 2018. And
3 although three small bullets on one slide, those three
4 small bullets represent a lot of math and science and
5 expertise. And, again, if you are intrigued, if
6 you're interested in what's contained in those
7 documents, that information is available, and -- but,
8 again, this doesn't really give it justice in terms of
9 the level of effort and sobriety given to, you know,
10 doing the work and doing it thoroughly and doing it
11 well. But that was homework submitted, if you will.

12 Darrell, next.

13 So let's talk a little bit about the here
14 and now and the future, all right. So part of this
15 faction is reporting what we've done, but also casting
16 a vision for where we're going. So that long list
17 that I sort of went through previously was really what
18 we've done this last year, this is we're looking at
19 accomplishing over the next year.

20 The first bullet is a study. So if
21 you've been following Red Hill and following it pretty
22 closely, you've heard maybe in the newspapers or maybe
23 in media, a compilation of studies that the DoD have
24 undertaken or completed recently or are in the midst
25 of completing. And so what I highlight with this

1 first bullet is one study that just recently kicked
2 off. It's a high-level study that's looking at not
3 Red Hill, but there's obviously equities and there's
4 interest in terms of Red Hill, and rightfully so, but
5 it's really a holistic look at fuel DoD wide, Pacific
6 theatre, right, looking west, looking at things that
7 are happening out there, some of our peer competitors,
8 that kind of thing, not to get into a lot of detail,
9 but in the event something were to happen, where that
10 fuel needs to be, where we need to access it, and what
11 makes the most sense, okay.

12 And, again, not to bore you with details,
13 but ships, submarines, aircraft, the whole military
14 complex, you can, in your mind's eye, picture that,
15 and in the Pacific we've got multiple sites all over
16 the place where fuel resides, okay. Red Hill
17 obviously is a big one, but not the only one, you
18 know, Far East and all the way to the West Coast,
19 right, and so this study is going to look at all of
20 that. It's almost like playing chess in terms of time
21 and distance and what we need to do as a military and
22 how fuel is the driver for that, okay?

23 So this is, you know, a big study, and it
24 doesn't play into the AOC per se, but it does play
25 into sort of our higher level thinking. And everybody

1 in this room can appreciate that fuel, if we go to
2 war, is going to be -- that fuel and where it needs to
3 be and its accessibility and its ability to be tapped
4 into by our operating forces, extremely important.
5 And so this study is going to give us great insight,
6 okay. I'm not a prophet nor am I betting man, but I
7 would surmise that in this study Red Hill will be
8 mentioned, and I think it will probably affirm and
9 highlight, you know, sort of that importance of that,
10 as the admiral said, critically important
11 infrastructure that goes back to World War II and the
12 importance there. And so I would surmise that in some
13 way, shape, or form that probably will be called out
14 in some fashion in this study.

15 But I want to give you that because I
16 want you to understand, people, that the military
17 thinks through this, and just like there's analytics,
18 math and science to the facility itself, the actual
19 requirement for these fuels, the same level of
20 analytics, right? And so that's a key point. So over
21 the next year that study will be looking at stuff like
22 that.

23 We've got the Tank Upgrade Alternative
24 Decision document. That is part of the AOC. And I
25 would say this bullet and this bullet are -- the

1 Release Detection Decision document, two different
2 deliverables, but are going to be submitted at the
3 same time, okay? And so ladies and gentlemen, that is
4 tracking for December. So pretty soon. And I know
5 the team over here has been working extensively,
6 working very hard on that, and when we submit that,
7 again, to the regulators, right, and the regulators
8 being EPA, Department of Health, that those documents
9 will be made available as have everything else under
10 the AOC, but that's sort of our next milestone coming
11 up.

12 Other items that we'll be looking out
13 throughout this next year: Destructive Testing
14 Results Report, continuation of this Groundwater
15 Modeling Working Group, Groundwater Flow Model Report,
16 okay, and you can see some other items that we're
17 going to be implementing. This last one here, again,
18 just to sort of foot stop that one, we're going to
19 semiannual tank tightness testing for the tanks. So
20 that is a big shift.

21 Okay. So that sort of gives you a
22 summary of things that we're going to be doing this
23 upcoming year.

24 This slide speaks to current projects
25 that we have, right? So as we talk about AOC and as

1 we talk about leveraging technology and improving
2 processes, be it the process to ensure the integrity
3 of the tanks or be it the processes that the
4 operators, and I'm looking at Blake Whittle and John
5 Floyd who run our fuel operation and run it very
6 professionally, be it the processes that play into the
7 operations, nonetheless, all of that, we're always
8 looking for, again, that continual improvement.

9 This speaks to the projects, and so we
10 are in the midst of doing clean, inspect, repair for
11 four of the tanks, right, four of the 20 tanks, and so
12 you have the tank numbers there, 5, 13, 14 and 17.
13 And so those are still in progress, various degrees of
14 clean, inspect, repair.

15 Tank 5, we're looking at, and this is
16 just to give you a little bit more detail, a little
17 bit more specificity, Tank 5, tracking for a
18 completion 2020, okay. So, again, I would say Tank 5
19 has under repair for a while, and rightfully so, okay,
20 that was the tank that we had issues with, and so we
21 are taking that extremely seriously, and in that
22 regard have started over. And so this is the second
23 run at Tank 5, pushing to the end, and so we're
24 projecting being completed with that 2020. Tank 13,
25 14 and 17, also 2020, but later, like midyear 2020.

1 And I would say for those that are new to
2 this, that maybe this is your first exposure to Red
3 Hill, clean, inspect, repair, you're thinking, okay,
4 that's a couple years down the road, right, I mean,
5 these projects take several years. These projects, if
6 I had more time, you know, I'll just sort of give a
7 quick summary, but the level of effort that goes into
8 cleaning that gigantic tank and the technologies of
9 scanning every square inch, every square inch, two
10 people in a basket in a massive tank, every square
11 inch, and then really understanding what you are
12 scanning and what you're seeing and then doing the
13 repairs based on the criteria that we have in place,
14 you can see that that is not a quick evolution. So
15 these projects take years. These projects run upwards
16 15 to \$18 million a tank. So we're not talking
17 inconsequential maintenance investments, we're talking
18 substantial, substantial maintenance investments, and
19 time that goes along with that.

20 So, again, 5, 13, 14, and 17, projected
21 to be completed 2020. And then you can see the next
22 batch. The next salvo we have Tanks 4 and 18, but
23 from an operational standpoint, those will not come
24 offline, they will not jump into the clean, inspect,
25 repair cycle until 5, 13, 14, 17 come back online, and

1 it's one-for-one sort of phasing.

2 But that gives you a good sense for the
3 maintenance. When I say "maintenance," it really is,
4 it's high-end maintenance. So it's not bare bones
5 maintenance. It is, again, leveraging the latest
6 technologies and making repairs. The admiral spoke of
7 the criteria for invoking a repair, .05 is the
8 minimum, right, that's the minimum thickness of the
9 steel, we go for .1, but in fact we repair anything
10 that's at .16, and the reason why is we're projecting
11 out in terms of future, right, and not doing the
12 minimum, in fact doubling the minimum and then going
13 above that. And so that's the process that we
14 continue to follow.

15 And the technologies of scanning, okay,
16 and this is a perfect segue into the coupons, because
17 that really is sort of what that's all about in terms
18 of the latest technologies used, and try to, in your
19 mind's eye, visualize being in scaffolding or a basket
20 on the side of a large tank with a scanning device,
21 almost like an ultrasound kind of thing, where you're
22 looking at, you're pressing up against the tank, and
23 you're trying to get a sense for the backside of that
24 steel, and it's going to give you insights as to
25 whether what you're looking at needs to be repaired or

1 not.

2 Okay, and so my point is that technology,
3 as we live in this fine country, continues to get
4 better and better. And as it gets better and better,
5 we continue to leverage that technology, so that we
6 have a clear sight picture of exactly what we're doing
7 as we're doing the tank inspections so that we know
8 exactly what needs to be repaired.

9 Darrell, next slide.

10 So this slide is intended to give you an
11 up front "so what," if you will, of this -- the
12 destructive testing that we're doing, specifically the
13 coupon removal. So lots of words, but let me sort of
14 walk you through the pertinent pieces here, okay?

15 So what we're doing per the AOC is we are
16 validating, verifying, and corroborating our
17 techniques. Okay, it has nothing to do with the
18 actual condition of any tank, in this case Tank 14.
19 It has everything to do, ladies and gentlemen,
20 everything to do with validating and corroborating our
21 technique. Really understanding that phenomena of
22 being on the inside of the tank and understanding
23 what's on the backside of the tank liner. That's what
24 it's all about, okay?

25 And so we use technology to scan the

1 tanks, the tank liner and to understand what's on the
2 backside. And that process then drives what we do for
3 repairs. Has the steel thinned to a point where the
4 section I'm looking at needs to be patched or another
5 piece of steel needs to be placed over it, okay? Is
6 the corrosion -- and I'm going to tell you right now,
7 corrosion, right, you're in a mountain, there's water,
8 you're going to have corrosion, you're going to have
9 surface corrosion, but as an engineer the corrosion
10 that I'm most concerned about is the kind that pits
11 steel and drives into the steel and starts eroding the
12 steel, okay. And so our technique is going to scan on
13 one side and is going to give us a picture of that
14 type of corrosion on the backside. And again we're
15 looking at every square inch.

16 And so this testing is all about doing
17 that scanning, coming up with what we think needs to
18 be repaired or not repaired, and then cutting out
19 sections of the tank liner. And it's the standard
20 proof is in the pudding, okay? Scanning says do this,
21 we take the coupon off, and we actually physically,
22 you know, no longer electronically, no longer
23 electrically, but physically validate that, okay, and
24 that's done by a lab. And in this case the lab,
25 mainland, we took the coupons out, shipped it off, and

1 they do deep forensics on those coupons to give us a
2 true picture, fact-based picture of the condition of
3 that steel so that we can then compare it to what we
4 predicted. Again, it's all about verification,
5 validation and corroboration.

6 So we are awaiting the results. I'm
7 going to show you pictures, and these pictures were
8 taken back earlier in the year before we shipped off
9 the coupons, the metal coupons to the lab in Kentucky,
10 and so full transparency, I'm going to show you what
11 those pictures are. I'm also going to give you my
12 prediction, the prediction, again, predicated in the
13 scanning techniques that we currently use. That
14 prediction is going to be corroborated with the
15 analytics done by the lab when we get those results.
16 And ladies and gentlemen, we don't have those results
17 yet. The coupons are still at the lab.

18 Testing is only the first phase of the
19 study. So what is that saying? That is saying that
20 we cut the coupons out, you ship them off, they get
21 analyzed, and we get data back. It's data. It's not
22 a report. It's not a final conclusion. It's data
23 from the lab. And then we analyze the data, and we
24 synthesize it, and we come up with a conclusion. So
25 the students, I just saw them get up and leave, but

1 it's the basic scientific method, and so it works, and
2 so this is the -- this is step 1, which is getting
3 data. Do not have the data yet. Do not have the data
4 yet. It's still at the lab.

5 I just spoke of the next bullet. Next
6 phase compares lab analysis with the data from
7 non-destructive evaluation. Again, those are
8 subsequent steps that are going to lead to a final
9 report next year, okay, next year. So it's got to
10 take the steps and we've got to have time to be able
11 to do this analysis again of the techniques we're
12 following.

13 AOC requires the results of comparisons
14 submitted in the middle 2019. I just mentioned that.
15 And again we are awaiting the results before we make
16 any conclusions, and so, ladies and gentlemen, I want
17 to really highlight that. It goes back to the opening
18 comments of facts, truth, veritas, and we are
19 committed to that. By virtue of doing this testing we
20 are committed to that. And we need to allow it to run
21 its course in terms of getting the facts back, getting
22 the data back, and being given the chance, the
23 opportunity to do the analytics and to package it, as
24 Mr. Lau was asking for information on history of some
25 of our, you know, inop -- you know, removed systems,

1 but to package things in a manner that's cogent,
2 succinct and easy to follow, so we're going to do
3 that. But again, we need some time to do that.

4 Next slide.

5 So for those unfamiliar with Red Hill,
6 this is a representative sample of what one of the
7 tanks looks like. And there's, again, 20 of them.
8 Two of them offline. 12.5 million gallons in a
9 gigantic tank. 250 feet high, 100 feet diameter.
10 This picture, my verbal description does not give it
11 justice. It's one of those things, truly, you've got
12 to see it to believe it.

13 And the admiral spoke of, you know, many,
14 many, many tours, many, many opportunities, many, many
15 people both here on island, off island, DC, just in
16 the short time that I've been here, lots of tours. We
17 have a tour this afternoon with the staff delegation.
18 But the point being is this is one of these things in
19 our fine world that you've got to see it to really get
20 a sense for it.

21 And so this is a picture of one tank, and
22 the purpose of this picture is to show you in the
23 blue, you know, sort of the four areas that we drew
24 coupon samples from, by design. And I want to
25 highlight that because there was math and science in

1 the actual process of taking those coupons out. So
2 there were ten coupons cut out of the steel liner of
3 Tank 14, and we wanted to get a good representative
4 sample, right, so, again, going back to that
5 scientific method, a good representative sample of the
6 situation in a tank.

7 And again, ladies and gentlemen, this has
8 nothing to do with the condition of the tank or the
9 structural integrity of the liner, it has everything
10 to do, again, with the validation and corroboration of
11 the techniques that we're following.

12 So lower dome, barrel section, expansion
13 ring, upper dome, so you can see from the top down to
14 the bottom, those are the four areas that we targeted
15 for pulling coupons out.

16 Darrell, next slide.

17 All right. Ladies and gentlemen, this
18 table is a quick summary, again, the four areas that I
19 just spoke of in that -- in Tank 14 and then number of
20 coupons taken from each of those four areas, so upper
21 dome, expansion ring, barrel section, lower dome. Ten
22 samples cut out, okay, and then the right column is --
23 and this is by design, we picked coupons, because,
24 again, corroborating our techniques, we picked a 50/50
25 split of areas that our scanning said you must repair

1 and then areas where the scanning said, no, this is
2 fine, you know, the condition is such that don't need
3 to repair this.

4 So the engineer in me, the scientist
5 that's exactly what you want. You want, basically,
6 that balance to be able to look at the technique again
7 and to fairly assess. The scanning said I'm good,
8 ship it off to the lab, they either corroborate that
9 as such or they don't, or scanning says, hey, this is
10 thin or the corrosion is such that it must be
11 repaired, pull it off, again, the lab is going to
12 validate exactly, you know, corroborate yes, the
13 scanning got it right, or you're not below the
14 threshold. So that's the whole idea behind removal of
15 the coupons. 50/50, I wanted to show that to you, and
16 I think this is important because until we get the
17 report back, I think it's important for folks to
18 understand what we've done in the process of doing
19 this coupon removal and the technique behind what we
20 selected and why we selected it.

21 Next slide.

22 Okay. So now what I'm going to do is I'm
23 going to walk you through the ten that we pulled off,
24 sent to the lab, okay, and again, we do not have the
25 results back, but what we do have, and as I've

1 explained the technique, we do the scanning and so we
2 have that assessment up front, basically that's the
3 opening argument in terms of what we saw through our
4 contractor, through our scanning techniques, pull off
5 the coupon, now it's at the lab and we're awaiting the
6 validation corroboration.

7 So coupon number 1, screening scan. And
8 not to get into a lot of detail, but it further drives
9 home and accentuates the point of the technique, okay?
10 So as we go into that tank, we do a screening scan and
11 then we do a prove up scan. So it's a two-step
12 process of step 1, what do we think, okay, we've got a
13 positive, okay, step 2, let's really validate that,
14 okay? And again, try to visualize in that tank two
15 folks in a basket doing that for years. Every square
16 inch, okay.

17 So this is saying, coupon number 1,
18 screening scan indicates repair is necessary. In
19 other words, that steel is below the minimum standards
20 that we've set, .16. Prove up scan indicates that
21 second step that, yes, indeed that patch, that piece
22 needs to be repaired. So that is a positive, you
23 know, in the context of doing clean, inspect, repair,
24 that section, that coupon, that area, you must repair
25 it. Put a plate. Fortify it.

1 So we expect -- we expect, based on
2 techniques that we follow and the fidelity of the
3 testing and the confidence in our techniques and the
4 contractor that we are using now, we expect that the
5 lab when we get the data back and we've done the
6 analytics, we expect the measurement to validate what
7 we said with the scanning. And so we will wait to get
8 that, but that's the prediction, if you will, so
9 that's coupon number 1.

10 All right, Darrell.

11 All right, coupon number 2, same. I'm
12 going to walk you through you all ten of them, and you
13 can sort of visually, and I would say the visual,
14 right, you know, sometimes, you know, not everything
15 is as you would see or that you would think you would
16 see, so I would caution that there's more to it than
17 meets the eye. There is more to it than meets the
18 eye. You're going to get a picture on the right,
19 you're going to get the prediction on the left, and
20 again the lab is going to reconcile those two.

21 So for coupon number 2 screening scan
22 indicates repair is necessary. The second step showed
23 the same. So like the first coupon, we're thinking
24 the lab is going to corroborate that, that that
25 section, that coupon, as our techniques had indicated,

1 requires replacement, requires action, okay, and so
2 that is what we're expecting to get back.

3 Darrell, next.

4 Okay, so coupon number 3, a little
5 variation here. The scanning, the first step scanning
6 indicated that repair was necessary. The second step,
7 you know, deeper look, more comprehensive look,
8 indicated that repair is not necessary, that it was
9 not below the minimum threshold, and so we expect the
10 lab to corroborate that.

11 Darrell, next.

12 Coupon number 5, similar to the first
13 couple. First scan indicates repair is necessary.
14 Second scan indicates, again, it's necessary, so we're
15 assuming -- we're operating under the context that
16 this will be validated for nondestructive.

17 Okay, go ahead.

18 Okay, coupon number 6 was a control
19 sample that was taken.

20 All right, Darrell.

21 Okay, number 7, same. Same here, that
22 first scan indicates repair is necessary. Deeper
23 scan, secondary scan, same, and so we're expecting
24 that to be substantiated.

25 Coupon number 8, so this one showed

1 initially repair was necessary, prove up scan
2 indicates repair is not necessary, so we're expecting
3 that.

4 This one is a good example of first scan
5 saying this patch was good, that it met the
6 requirements, did not need repair. And so pulled it
7 off, ship it off, we expect the lab to validate that.

8 And then coupon A1, we've got a situation
9 where the first scan indicates repair is necessary,
10 the secondary scan, again, repair is necessary. We
11 expect that to come back corroborated as such.

12 And then coupon A2, similar to one a
13 couple back. This showed through our scanning
14 techniques that repair was not required, pull it off,
15 and so we expect the lab to substantiate that.

16 Okay. So we are getting close it the
17 end. So this slide is the tank upgrade alternatives.
18 It's a matrix showing the six alternatives plus an
19 alternate location down at the very bottom. So this
20 is not news. It's not new. It's that which was
21 reported previously, but I wanted to include it in the
22 presentation as context and just for history.

23 So -- and it also serves as a segue into
24 sort of last thing that I'm going to talk about this
25 morning, which is the preferred alternative that we're

1 going to be proposing, and again this will be in the
2 decision document that's tracking for December.

3 All right. Darrell.

4 Okay. So the -- this slide summarizes
5 our -- where we are right now in terms of the tank
6 upgrade alternatives and what we're going to be
7 proposing. And so what we're -- what you're going to
8 see in the document when we submit it is that we're
9 going to be proposing that we continue with our clean,
10 inspect, and repair regimen that I have talked about
11 at length morning.

12 We're also going to be proposing a pilot,
13 and that's one -- that is actually tank upgrade
14 alternative 1B. We're going to be proposing it for
15 one tank, and that is going to be a full epoxy of a
16 tank, okay, and so that's what tank upgrade
17 alternative 1B is all about. The AOC includes
18 provisions for pilots, okay, and so we plan on doing
19 that with one of our tanks.

20 So it's a combination of clean, inspect,
21 repair using the latest technologies that continue to
22 evolve and giving that full diligence, and then doing
23 the pilot on the epoxy coating for a full tank, the
24 entire tank. And then the last piece of it is
25 installing leak detection systems on all the tanks,

1 using the latest technologies, which will then give us
2 structural integrity with a clean, inspect, repair,
3 okay, the pilot with the epoxy, and then situational
4 awareness and full cognizance real time for leak
5 detection and having that site picture for the tanks.
6 So that's based on our analytics and discussions
7 internal to the Navy, also with the regulators, that's
8 what we're going to be proposing.

9 So why? Why is this the best available,
10 practical technology? And so this is really Marc
11 Delao's sort of explanation on why I feel, as the
12 regional engineer purveyor of water to our DoD, why I
13 have confidence in this decision, okay.

14 And so the first bullet is it's history.
15 It's fact. Okay. And that is the inadvertent release
16 at Tank 5, as Admiral Fort established, operator
17 error, and not to go into a lot of detail of what
18 happened, but I think it does bear a quick reminder in
19 terms of bad contractor, bad quality control, bad
20 quality assurance, operator error, okay, a compilation
21 of things that led to that situation. And I would say
22 all of those factors have been addressed, have been
23 addressed, and that, you know, almost five years ago,
24 improvements made in all of those areas, okay.

25 Second bullet expounds upon what I just

1 said, human error. All right? Human error and really
2 nothing to do with the condition of the tanks,
3 everything to do with humans, okay, not following up
4 or not doing things as well as should have been done
5 or could have been done. That was then. This is now.

6 All right, so the next bullets really
7 speak to "this is now" part, which is we continue to
8 do tank tightness testing and all tanks continue to
9 pass. I've talked previously about the requirement of
10 doing this annually, and then this year going to
11 semiannually. So the data would show tank tightness
12 testing working, working well, but we're still going
13 to do it twice a year, and we're going to do that to
14 further build confidence and assurances that the
15 system has full integrity and that the techniques that
16 we're following, both in clean, inspect, repair when
17 we take a tank off or just in the daily operations and
18 the daily maintenance are truly keeping the condition
19 of that infrastructure where it needs to be.

20 Current maintenance practices effectively
21 measure the tank liner thickness and identify repair
22 locations. That speaks to the scanning techniques
23 that we follow, and it goes back to the coupons, and
24 it goes back to that part of the AOC of corroborating
25 that, but I'm going to tell you as CO of NAVFAC,

1 responsible for the infrastructure, responsible for
2 the contracting, I have confidence in that system.
3 It's a system that is industry accepted, it's not a
4 system that's unique or just used in Red Hill, it's a
5 system and it's a process that across the industry is
6 being used. So I have assurances with that.

7 The vulnerability assessment, noted
8 highest risk of large release in the nozzles in the
9 lower access tunnel, not the tanks, okay? And so
10 that's fact. That is fact. And we're taking that
11 fact, and we're doing actions with that in terms of
12 looking at the nozzles and looking at opportunities as
13 we take tanks offline to address the nozzles, to limit
14 risk, if you will, in terms of taking systems where
15 perhaps you have more nozzles than you might need and
16 sort of mitigating and limiting risk by consolidating
17 that down.

18 We're also looking at upgrades to the
19 nozzle. We're looking at epoxy coating nozzles. But
20 that is a fact in terms of those nozzles bearing more
21 of a risk than the structural liner of the tank, okay?
22 So I just wanted to drill that home, okay? And again,
23 not to say that we don't take the structural liner
24 seriously, clearly we do, clearly we're putting
25 investments against that, and the coupon testing

1 speaks to that.

2 Proposed BAPT focuses on rapid
3 identification if release occurs to minimize volume.
4 So these are efforts and analysis that we continue to
5 do in terms of understanding not just the integrity of
6 the system, not just the operations of the system,
7 but, again, as I showed in the graphic of the Red Hill
8 facility and the groundwater sampling that we're
9 doing, understanding the hydrology, understanding the
10 that if something were to happen, having the math and
11 science, having the wherewithal, having the data to
12 understand what that means, what it means to the
13 aquifer. And then as the admiral indicated,
14 understanding that if something were to happen, that
15 we are bound, we are bound to do the right thing and
16 to respond. And so that's part of the AOC. It's also
17 part of, you know, our very ethos in our fiber in
18 terms of being good stewards of the aquifer, of the
19 environment, of the taxpayer's money, of this
20 infrastructure.

21 The lead detection system, we have talked
22 about that a little bit, and so requirements of the
23 AOC to provide documentation on that, we've done that,
24 we're doing that, but we're also putting our money
25 where our mouth is in terms of making those

1 investments. And I showed that to you in the context
2 of our tank upgrade alternative decision that's going
3 to be in the document and addressing leak detection
4 and doing that across the board in all the tanks.

5 And then the next bullet, other
6 alternatives involve construction risks, do not reduce
7 risk to most vulnerable elements, and again that's the
8 nozzles. And so we're looking at that as well in
9 terms of mitigating, minimizing risk. Like I said,
10 the epoxy liner or the epoxy coatings, looking at that
11 in the context of the nozzles.

12 And then the last bullet, I think that
13 this is very important, and it's -- it's one that we
14 live and certainly the AOC predicates this, but I
15 think, you know, for those that are maybe new to this
16 or bears reminder, and that is, this is a dynamic
17 process, right? This is not a make a decision and
18 then don't ever change the decision. This is all
19 about collaboration with regulators, collaboration
20 with the Board of Water Supply, keeping our eyes open,
21 our ears open, understanding that a decision today may
22 be the best decision today, but tomorrow there may be
23 new information, new data, new technology, and keeping
24 it dynamic, and keeping our minds open to that.

25 And so that bullet speaks exactly to

1 that, the Navy will revisit decisions if new
2 information suggests prior to the five year mandatory
3 review. And we're committed to that, and I would say
4 the team back here and our consultants and the
5 regulators are constantly surveilling and
6 understanding what is the best that we can do, what is
7 the best that we can do.

8 Okay, next slide.

9 All right, so in summary, and this is
10 last slide, Admiral Fort said it, I'm going to echo
11 it, I'm going to stand behind it, the water continues
12 to be safe to drink. I drink it. My family drinks
13 it. There are tens of thousands of military that live
14 on this island that drink water that I provide, that I
15 purvey that is drawn from the Red Hill shaft, okay, as
16 part of the system and that I do testing on, and that
17 I am absolutely transparent in that testing on, and it
18 is safe and it continues to be safe. And we remain
19 committed to that.

20 And so it goes back to the sampling
21 points that I showed and additional investments that
22 we're making to increase assurances and to really
23 provide that confidence, not just to uniform citizens,
24 but all citizens. And Mr. Lau's pointed it out and
25 it's part of why we take this so seriously. It's a

1 community aquifer. We get that. We understand that,
2 and we are fully committed to that. And as I tell my
3 team, you know, everything we do, every dollar we
4 invest as the U.S. Navy towards Red Hill, is a dollar
5 that I need to be able to stratify to protecting that
6 aquifer.

7 And this goes back to that stewardship of
8 taxpayer money, in conjunction, in concert with
9 stewardship of the environment. And you have my
10 promise that that taxpayer money, I owe that to you to
11 be able to vector every dollar towards protecting that
12 aquifer. And so -- and we take that very seriously.

13 The next bullet is tanks continue to pass
14 the annual tightness testing, and in '19 we're going
15 to do semiannually. So we continue to do that.

16 The AOC is working and I am very proud of
17 that. I mean, this is -- in the military, federal
18 government, executive branch, you know, what we do
19 downrange, what we do in harm's way is one thing, and
20 I've been wearing the cloth of our nation for several
21 decades, and I've seen some stuff in different
22 countries and I've been part of operations where you
23 do what you have to do to defend this nation. But
24 back in our country, it is the democracy, and in this
25 case the U.S. Navy has taken something that has

1 occurred and said, you know what, as part of this
2 democratic nation, the Republic of America, we're
3 going to do the right thing, and we're going to submit
4 to regulation and to regulators, to the EPA, and to
5 the Department of Health, and we're going to do it in
6 writing, and we're going to do it transparently.

7 And ladies and gentlemen, we've done
8 exactly that, and we continue to do that and I'm proud
9 of that. I am very proud of that. We owe that to
10 you, we owe it to our Navy, and we're fully committed
11 to that. And so that bullet of the AOC is working,
12 short time I've been on deck, it's working, it is
13 working. Steve Linder on the line, I've met with him
14 several times, EPA. Keith, Department of Health, I've
15 met with him numerous times. Board of Water Supply,
16 Mr. Lau, although not officially part of the AOC,
17 definitely a key stakeholder, a key partner, a key
18 partner, and we remain committed to that.

19 The word accountability, ladies and
20 gentlemen, I mean, that is the essence of our
21 military, okay? I'm not going to bore you with that,
22 but I would say that very essence is a huge part of
23 what we're doing, and it's a huge part of this AOC,
24 and it's a huge part of why the AOC is working. We've
25 met all deadlines. That's part of the accountability.

1 We've taken this seriously. Like I said, we're
2 submitting to regulation because it's totally the
3 right thing to do. And not just minimum, but hitting
4 milestones and seeking out opportunities to exceed
5 that which is documented. And so we've met deadlines,
6 we'll continue to do that, and we take at that
7 seriously.

8 The clean, inspect, repair, as I said and
9 as I showed you, that is still in progress for those
10 tanks, along with Tank 5, and that's the next bullet,
11 Tank 5 warranty repair work. I mentioned previously
12 because of Tank 5 and because of that history, you
13 know, we've definitely given that a lot of seriousness
14 and essentially started over to make sure that we are
15 doing that correctly before we contemplate bringing
16 that back online.

17 And then the last thing, as I mentioned,
18 December, end of December we'll be submitting our
19 homework, and so we'll be submitting, per the AOC, our
20 Tank Upgrade Alternative Decision document, and then
21 along with that, and we've worked this with the
22 regulators in terms of being able to submit both
23 products end of this year, and so that is the TUA
24 Decision document, and the Release Detection Decision
25 document and so we'll be submitting that.

1 And ladies and gentlemen, that concludes
2 my presentation, okay, and if nothing else, you know,
3 I've been accused in my career of being a little bit
4 passionate. It has served me well. As I look at this
5 situation, no different. Somewhat new to this, but a
6 hundred percent committed to it, okay? And hopefully
7 this was helpful to you, and I am now opening the deck
8 to any questions you may have. Thank you.

9 COMMITTEE CHAIR: Thank you, Captain
10 Delao and your staff on the work you've been doing.

11 So ladies and gentlemen of the committee,
12 sort of gather your thoughts here and reflect what was
13 said. So we'd like the committee members to ask
14 questions and make comments.

15 I'd like to ask the first question.

16 CAPT. DELAO: Yes, sir.

17 COMMITTEE CHAIR: You mentioned about the
18 alternative sites evaluation, can you further
19 elaborate in summary what that study entailed, what
20 were some of the conclusions.

21 CAPT. DELAO: The key -- the Alternative
22 Site Location Study, it's -- so that -- I showed that
23 on the matrix of sort of looking at the different
24 alternatives, and so that -- that concluded -- and for
25 those that are new to this, that would be brand-new

1 infrastructure, new facility, okay, and so in your
2 mind's eye, not to get into a lot of detail of the
3 current Red Hill facility, but one of a kind, large,
4 massive. So the Alternative Location Study basically
5 proposes a system essentially in the same location,
6 okay, and it would be smaller tanks, and I would say
7 we carry that as an idea, as an option, but really in
8 the short time that I've been on deck, it really --
9 it's hard to envision how that would be done. And
10 from an operational standpoint, it's hard to envision
11 where that would get us in a better place, if you
12 will, in terms of supporting operations.

13 Now, that said, a lot of analytics went
14 into that, and I think transparency would dictate that
15 we need to keep that on the table, and that's why it's
16 in the brief and why it's something we studied and we
17 continue to look at, and I think that, you know, as we
18 look at Red Hill and the future and sort of where we
19 might be going and sort of the operational
20 imperatives, it would be foolhardy not to at least
21 consider and keep that on the table in some way,
22 shape, or form.

23 COMMITTEE CHAIR: Thank you. Committee
24 members, any questions, comments.

25 MR. CASEY: I have a question. Thank

1 you, Captain for your presentation. Patrick Casey
2 with the Commission on Water Resource Management.

3 You mentioned earlier that should there
4 be at the very unlikely release, you mentioned that
5 you're prepared to treat the water, the groundwater to
6 make it safe. Could you elaborate on that?

7 CAPT. DELAO: Let me -- Aaron, would you
8 mind?

9 MR. POENTIS: Sure. I think if there
10 was -- you know, history has dictated in situations
11 where we've had releases in the past, you know, where
12 we have cleanup activities, where it would dictate,
13 not so much in Hawaii, but throughout the Navy
14 enterprise, where there are releases, where there is
15 refloating fuel, we've had -- or the Navy has
16 demonstrated the responsibility and executed
17 activities to actually do water recovery and cleanup
18 in order to mitigate the problem. We have history of
19 having doing it. We haven't done it in Hawaii as it's
20 not been necessary, but the Navy enterprise has done
21 it in the past.

22 MR. CASEY: I guess that trumps my
23 question. Is the Navy prepared, should there be a
24 release tomorrow, or next week, something like that,
25 are they prepared now to treat that?

1 MR. POENTIS: We have contingencies
2 within the Navy operations to address situations,
3 whether it be releases into the aquifer or open --
4 open navigable water releases, we have contingency
5 plans.

6 MR. CASEY: Thank you.

7 COMMITTEE CHAIR: Senator Gabbard.

8 SEN. GABBARD: Thank you, Captain, for
9 your presentation, sir.

10 You know, you and the admiral were --
11 made it a point to talk about facts, about veritas,
12 and so one question, the first question I had in your
13 PowerPoint you said that there have been no leaks
14 since -- with the exception of the 2014 leak since
15 1988; is that correct? And how do you know that?
16 What methods are you using to make that determination?

17 CAPT. DELAO: So, Senator, I'll start and
18 then I'm going to turn over to the operators, but the
19 techniques that we use for monitoring the tanks, the
20 operators, just the controls of walking around and the
21 accountability and the accounting of the fuel, really
22 sort of gives us that sense of we know what's in the
23 tanks, we know what the movements are, we know where
24 the fuel is going, and as we reconcile that
25 information from the operators, really, well,

1 factually, it's that release in 2014 and that's been
2 it.

3 So, Blake -- actually, sir, I was going
4 to turn it over to Blake to add anything to do that.

5 MR. WHITTLE: Yes, sir. We refer to the
6 way we track everything as a system of systems, and
7 inherent in that is our leak detection technology in
8 what we do. And above and beyond the EPA standard,
9 we're now moving to semiannually. But we know that
10 leaks don't fix themselves in the tank, so every time
11 we've done a tank tightness test, and the tanks have
12 passed, which they've always passed, we know that
13 there wasn't a prior leak in that tank.

14 In addition, we use inventory
15 reconciliation processes to make sure there's no loss
16 of fuel moving in or out of the system. Myself and my
17 deputy do trend analysis on all inventories over time
18 within the tank's fuel to make sure we have no
19 downward trends we can't account for otherwise.

20 In addition, we have alarms built into
21 our inventory monitoring system that allow us to
22 monitor and detect for any alarm over time.

23 Those are a few of the ways we can be
24 confident that leaks have not occurred that we are not
25 accounting for, sir.

1 SEN. GABBARD: The follow-up question is,
2 and again trying to get to the facts, was there a leak
3 in -- in or around 2002 in Tank 6?

4 MR. WHITTLE: Not to the best of our
5 knowledge, sir. I believe all reports were made. So
6 the -- what we use monthly is we bring in a third
7 party to do soil vapor analysis. Effectively, there
8 are small copper tubes that run underneath each tank,
9 and we bring a third party and they take a section of
10 those copper tubes and they pull up any VOCs, looking
11 for if there has been any historical releases. And
12 that's how we track.

13 And those, of course, every month we take
14 that and NAVFAC actually submits that to the
15 Department of Health and our regulators to show if we
16 have any issues under the tanks.

17 What -- in order to build that system,
18 what we saw is we had to do coring underneath there.
19 That coring came back, when we did that coring drill,
20 with indications that there had been historic releases
21 in the facility prior to that drill. It's hard to say
22 when that happened; however, that was reported in the
23 '98 to 2002 time frame. So that accounts for why
24 there are reports, but that does not mean there was a
25 release that occurred at that time. Somewhere prior

1 to that time a release occurred.

2 SEN. GABBARD: So no leak, Tank 6, in or
3 around 2002, correct?

4 MR. WHITTLE: Not to the best of mine or
5 anybody else's I know knowledge.

6 SEN. GABBARD: Thank you.

7 COMMITTEE CHAIR: Any other questions,
8 comments?

9 MR. YOMES: I wanted to thank the Navy
10 for using the best practices and new technology to
11 keep track of these tanks.

12 With that said, nothing is ever a hundred
13 percent. Navy, let's say you're at 90 percent, and
14 there are other extra things you can do to bring your
15 percentage higher. With that said, can you meet the
16 community -- these are real concerns with the
17 community, especially where I live and in surrounding
18 communities in Halawa -- with that said, is there
19 something you guys can do to meet the community
20 halfway such as closing some tanks that's closest to
21 the water source in case there is a leak and the tanks
22 that leak is beyond the empty tanks that's close to
23 the water source, we have time -- you have time and
24 people have time, emergency responders have time, to
25 control that leak before it reaches the water source.

1 And I'll ask Mr. Lau after I finish with
2 that question, to ask him about the water source
3 because I'm not really too familiar which tanks are
4 closest to the water source, and if that's possible, I
5 think it would be a good thing for the community
6 because right now it's a top -- this topic is really
7 in the minds of a lot of people living in the
8 community, and they're concerned. And they also
9 understand, they understand the national security part
10 of it, that, you know, might have it, we need to have
11 it, but also there are concerns about if there is a
12 leak, it's going to affect our water structure.

13 CAPT. DELAO: So the first part of your
14 question about taking tanks offline, again, we've got
15 two that are offline and it's all driven by
16 requirement. So I'll give you short answer, and then
17 sort of expound on it. So I have -- that's not my
18 decision to make, right. This is USINDOPACOM. Ties
19 back to that study that I was speaking of in terms of
20 how much we hold in reserve and where that is, and so
21 I really do not have any latitude in that regard.

22 Now, the second part is safeguarding,
23 right. So -- and also 90 percent and incremental
24 improvements to sort of get to higher levels of
25 assurance and confidence. We're doing that. I feel

1 that whether it's the clean, inspect, repair, or
2 whether it's just upgrades that we've made to the
3 infrastructure, we've upgraded -- we put in some doors
4 as you walk through the system, the tunnels, we've
5 upgraded the infrastructure there in the event that
6 there were a leak, putting in sort of a substantial
7 door system to be able to hold fuel back.

8 And so we've made investments where it's
9 been prudent, where we can see, you know, value added
10 in terms of, okay, to your point, sir, there are no
11 guarantees, so what if something happens, I feel that
12 we've done that. We continue to look for
13 opportunities to make upgrades to the ancillary
14 components to be able to contain and provide that
15 added assurance, incremental, albeit, added assurance
16 to protecting the aquifer and keeping it contained, if
17 you will.

18 MR. YOMES: That said, having assurance,
19 wouldn't you think common sense wise if the two tanks
20 closest to the water source is empty, you would have
21 time, if there is a leak on the other tanks, we would
22 have time to stop that leak from entering the water
23 source, so something extra that you might have to do,
24 but that's the problem where these fuel might go into
25 the water source, it makes sense that you empty out

1 two or three tanks that's closest to the water source
2 and then beyond that tanks are full, but at least you
3 have to time to react if something does happen.

4 CAPT. DELAO: Yes, sir.

5 MR. LAU: Related to Mr. Yomes' question,
6 related to Mr. Yomes' question which tanks are closest
7 to the water source, there are 20 tanks from our
8 understanding from the Navy's records, 20 tanks
9 holding 12.5 million gallons of fuel. Two tanks have
10 been out of service, I think it was Tank 19 and
11 Tank No. 1 for quite a while. So there are 18
12 actually in service, but the three are undergoing a
13 clean, inspect and repair cycle; is that correct?

14 CAPT. DELAO: Correct.

15 MR. LAU: Three or four?

16 CAPT. DELAO: Four.

17 MR. LAU: So that leaves maybe, if I can
18 do the math correctly -- maybe --

19 REAR ADM. FORT: 14.

20 MR. LAU: 14, thanks, Admiral. I'm only
21 an engineer.

22 So there are 14 that have fuel in them.
23 All 20 tanks, including the 14 that contain fuel, are
24 a hundred percent over our drinking water aquifer.

25 CAPT. DELAO: That is true.

1 MR. LAU: The bottom of the tanks, I
2 think it kind of varies, but the closest distance
3 vertically from the bottom of the fuel tank to the top
4 of the water table and the aquifer is about a hundred
5 feet of lava rock. And remember, lava rock is porous,
6 it's like a sponge, too. So all 20 tanks are located
7 100 percent over the aquifer.

8 CAPT. DELAO: Now, one point I will draw
9 out, and it sort of goes back to some of the history
10 of Red Hill, that the actual location, to Mr. Lau's
11 point, you know, basalt rock, it is porous, but that
12 location was actually selected and sited because of
13 the condition of that basalt rock. So it actually,
14 although in the purest sense we're talking about that
15 type of rock structure, that was selected because it's
16 more substantial and a little bit more stable than
17 other locations. So I just wanted to provide that
18 counterpoint.

19 But Mr. Lau's point is accurate, you
20 know, we're taking about a hundred foot minimum and
21 then it varies, but the bottom of the tanks to the top
22 of the aquifer.

23 MR. LAU: So it is a fact and truth and
24 veritas?

25 CAPT. DELAO: Veritas.

1 MR. LAU: I've got to look up that word.
2 That's beyond my capabilities.

3 CAPT. DELAO: Let's do Latin.

4 COMMITTEE CHAIR: Any other comments,
5 questions?

6 MR. YOMES: Can I add real quickly? The
7 underground tanks, the military put it there for
8 national security, they want it hidden, that's why
9 it's underground and not top heavy.

10 CAPT. DELAO: Correct.

11 MR. YOMES: With that said, is this
12 location compromised where everybody in Hawaii knows
13 it, globally knows it, all of this stuff said, now
14 becomes a target per se. So wouldn't it be, like you
15 mentioned alternative sites, is it a problem now
16 because of all of this publicity that it might not be
17 a good place to leave it there?

18 CAPT. DELAO: Well, I mean, it's -- yeah,
19 certainly today is a whole lot different from the
20 '40s, right? But that said, the fact that it is below
21 ground, the fact that, as Admiral indicated, you know,
22 a hardened facility from the cyber security
23 standpoint, the gravity aspect, I mean, the very
24 attributes that made it a prized jewel back in World
25 War II still stand and absolutely resonate today.

1 And, yeah, you know, satellite imagery and the way
2 that we do warfare today, a little bit different, but
3 from an operational and critical infrastructure
4 perspective, it's still very much relevant. And I
5 think this study that's being done might touch on some
6 of those aspects.

7 MR. PENAROSA: I don't have a mic so I'll
8 try to speak up a little louder, but to quote my boss
9 and the phrase she always uses is that water is life,
10 and we can never be too careful with our resources
11 here.

12 So the question I had is with regards to
13 the NDE testing. You mentioned two people in a basket
14 kind of scanning every inch of the tank here, and in
15 your last slide you had mentioned that the human error
16 was solely the cause of the Tank 5 release. So in
17 that scanning process, what are the measures being
18 taken to ensure human error isn't encountered again
19 and ensuring we're looking at proper corrosion testing
20 and all of that.

21 CAPT. DELAO: Right, yes. I mean, that's
22 a terrific question. And so it does bear a little bit
23 of explanation and not to backtrack, but I think it's
24 always good to sort of -- history and why we study
25 history. It's to not repeat things that happened, but

1 also to have an appreciation for what happened.

2 And so Tank 5, the human error, not so --
3 it wasn't scanning, I mean, your point is well taken.
4 It was really the workmanship. It was the technique
5 that was followed in terms of drilling holes in the
6 liner, right, to be able to put equipment to be able
7 to sniff the backside, that's the term used, to make
8 sure you don't have volatile gases back there before
9 you start welding and doing hot work. And so that --
10 we still follow those techniques.

11 The flaw back then was there was no --
12 well, I shouldn't say no oversight, it was overlooked
13 in terms of filling those holes back in as we
14 started -- as the contractor starting putting patches
15 on. So that, combined with the quality of welds
16 around the patch, okay, so in your mind envision an
17 area that you've identified that requires
18 fortification and so you're going to do that with a
19 patch of steel and you're going to weld that onto the
20 existing liner. Well, you've just done that on top of
21 a liner that's got holes in it, and so you can see
22 where if you've done that enough times and you fill
23 the tank up and you don't really have the level of
24 quality assurance and quality control for the welds,
25 fuel is going to make its way around the patch,

1 through the holes, and you're going to leak. And so
2 I've given you basically the quick and dirty on what
3 happened with Tank 5.

4 That said, our current contracting
5 techniques and the level of quality control, the
6 third-party oversight, the quality assurance, that's
7 not going to happen. And so that's the human error
8 and what we've done in response to Tank 5 to drive out
9 that level of human error.

10 Now the human error of the scanning,
11 well, that goes back to the coupon testing, right, and
12 I think the math and science is going to pick up those
13 types of aspects, right, in addition to the
14 technology, right? So you've got an operator using
15 the equipment, makes an assessment, we do the coupons
16 and it's either corroborated and validated or it's not
17 substantiated. I think the math and science is going
18 to pick up variance and variations on the human error
19 and the operational side of that equipment, in
20 addition to the technology itself.

21 SEN. GABBARD: Quick question.

22 COMMITTEE CHAIR: Senator.

23 SEN. GABBARD: Captain, in your July 27,
24 2018, groundwater report, you stated that a fuel
25 release as large as 700,000 gallons would not cause an

1 exceedance of risk-based decision criteria. I'm just
2 wondering, do you have -- is that verifiable,
3 scientific rationale making that statement, or is it
4 opinion or fact?

5 CAPT. DELAO: Good question, sir.
6 That's -- I would characterize that as somewhat
7 predecisional. So ladies and gentlemen, let me
8 explain to you that report and what we're doing,
9 right. So part of what we need to do as part of the
10 AOC is vulnerability assessment, understand the risks,
11 right, the "what if." What if a catastrophic leak or
12 a catastrophic event occurred, what if a gradual
13 release occurred, and sort of walk through, you know,
14 what that might look like.

15 And you can imagine, you know, again,
16 we're talking tanks that are in a mountain so you
17 can't really physically verify it, you have to use
18 math science and engineering to model it. So what
19 we've effectively done is we've started, and it's very
20 nascent, very nascent, we've started the iterative
21 process of understanding that phenomenon.

22 And so what you've read, sir, is sort of
23 the early stages of first iterations of understanding
24 that, and what I'll say is that that's not complete
25 and we have subsequent iterations to really understand

1 the true risk and true vulnerabilities of catastrophic
2 and slow release, and so that's additional work that
3 we need to do, sir.

4 COMMITTEE CHAIR: Okay, any further
5 comments, questions?

6 CAPT. DELAO: Yes, ma'am.

7 MR. LAU: I think it's -- isn't it
8 committee members first before going to the public?

9 COMMITTEE CHAIR: Yes.

10 MR. LAU: Thanks. Good try, ma'am.

11 Okay, I wanted to just kind of hold up
12 and give other community members the opportunity to
13 ask questions, but I do have a series of questions to
14 ask.

15 I understand there's a newspaper article
16 today that the Navy is committed to no more leaks from
17 this facility, and I just wanted to confirm that, no
18 more leaks from the Red Hill, no more fuel leaks from
19 Red Hill.

20 CAPT. DELAO: That's -- well...

21 MR. LAU: That was in the newspaper, a
22 quote there, but I just wanted to verify that. And I
23 also heard Admiral Fort --

24 CAPT. DELAO: So Mr. Lau, what --

25 MR. LAU: -- in the session of

1 legislature last year in a bit of passion explain that
2 he's committed also to no more leaks at Red Hill.

3 REAR ADM FORT: Absolutely.

4 CAPT. DELAO: Committed to doing
5 everything we can to safeguard that aquifer, yes, sir.

6 MR. LAU: So no more leaks at Red Hill.

7 CAPT. DELAO: No more leaks. We're
8 committed to it.

9 MR. LAU: Thank you. Navy is committed
10 to no more leaks.

11 I want to understand, also, I saw in a
12 stakeholder letter or email sent out to stakeholders,
13 the public basically, including we get a copy, so
14 mahalo for getting a copy, that the preference -- if
15 you can bring back the slide that shows the tank
16 alternatives here, appreciate it. There.

17 Help me understand, and I just wanted to
18 confirm that the Navy's preference, and this is before
19 the TUA decision or tank upgrade option alternatives
20 decisions report is actually submitted to the
21 Department of Health and USEPA, that you've already
22 kind of disclosed that your preference is toward -- is
23 it 1A or 1 alpha here? I just wanted to reconfirm
24 that.

25 CAPT. DELAO: Yes, sir. So it's 1A and

1 1B as a pilot.

2 MR. LAU: So 1A, 1B, is that closer to
3 what you're currently doing, the clean, inspect,
4 repair, and, clean, respect and repair?

5 CAPT. DELAO: It is. So it is the clean,
6 respect, repair, and then again, it's clean, respect,
7 repair with the continual commitment of improving that
8 as techniques and technologies make themselves
9 available.

10 MR. LAU: I appreciate that you did
11 acknowledge that every five years you -- or even
12 closer to less than five years you're willing to
13 revisit it, so I just want to point out that we're
14 kind of at this decision now. The AOC was signed in
15 September of 2015 and it's now almost approaching
16 three years later that decisions of this nature don't
17 occur too quickly, so I'm a little concerned that --
18 and I appreciate you being willing to reconsider that
19 decision of 1 alpha or 1 bravo in a less than
20 five-year period of time, but I'm a little concerned
21 is that even realistic or practical, given that also
22 the funding cycles that you have to work with congress
23 to get the funds to change gears and go to our
24 preference, which is a double-wall tank.

25 CAPT. DELAO: Right, yeah.

1 MR. LAU: But a question on -- you
2 mentioned that your two men in a basket hanging there,
3 and I've been in the tank and they're literally
4 hanging there from a crane that's at the top of the
5 tank, that they're going to scan every square inch in
6 the tank. How many square inches in the tank is
7 actually in contact with fuel that needs to get
8 scanned in total per tank?

9 CAPT. DELAO: Yeah, that's a -- running
10 the risk of doing public math.

11 MR. POENTIS: It's about 70,000 square
12 feet in each tank. I'm not sure where you're going
13 with that question, but...

14 CAPT. DELAO: That's almost four acres.

15 MR. LAU: 70,000 square feet, times 144
16 square inches per square foot, is that correct, let me
17 make sure.

18 CAPT. DELAO: It's a lot.

19 MR. LAU: Then you multiply that out. If
20 you have a calculator you can do the math. I left my
21 calculator back at the office, but that needs to be
22 scanned. So I guess the concern about human error,
23 that you're scanning every square inch. And remember
24 the -- and correct me if I get this wrong, but the NDE
25 process is basically this was the tank plate here, and

1 this is the side that's facing the fuel, that you're
2 scanning -- because you can't see the backside,
3 because it's up against concrete --

4 CAPT. DELAO: It's up against concrete.

5 MR. LAU: -- and unless you cut it out,
6 you don't see it. That you're actually using
7 electronic or other high-tech technology to scan, look
8 through the metal and figure out how deep the pits of
9 corrosion or rust that's happening, like we saw in the
10 picture, on the outside of the steel plate and trying
11 to predict that when you get to about half, and if you
12 use this pencil as the thickness of the existing steel
13 plate that was installed, if it gets about the half
14 the thickness of this pencil, that's when you're going
15 to slap a piece of steel on like a Band-Aid and patch
16 it and weld it on there; is that correct.

17 CAPT. DELAO: That's correct.

18 MR. LAU: So the NDE, the effectiveness
19 of the NDE process is really going to determine the
20 effectiveness of 1A or 1B being able to achieve no
21 more leaks from these tanks; is that correct?

22 CAPT. DELAO: I would say that's --
23 that's the thesis of it, yes.

24 MR. LAU: Okay. So I think the
25 decision -- so from my perspective, tank upgrade

1 alternative decision or recommendation report should
2 not come out until the NDE process of scanning from
3 the inside to figure out what is rusting on the
4 outside and how deep those rust pits are, until that
5 report is actually out so we can evaluate the
6 effectiveness of the NDE process. So you've got the
7 aspect of two men in a basket scanning 70,000 square
8 feet times 144 square inches and the potential for
9 human error that they might miss a square inch in the
10 tank, and then also the effectiveness of their
11 scanning method or technology of determining how much
12 rust is happening on the backside of this plate. So
13 that would be my recommendation.

14 And I guess the -- from my understanding,
15 the TUA decision report's coming out and going to be
16 submitted to the EPA and the DOH at the end of this
17 year?

18 CAPT. DELAO: Yes, sir, tracking end of
19 December.

20 MR. LAU: And the report on the
21 destructive testing, or actually just the data is
22 coming out sometime next year?

23 CAPT. DELAO: The data we should be
24 getting this month, now that we're in November, and
25 then the analytics and the actual report, I'd have to

1 go back to the AOC, but I'd want to say it's like
2 March, April 2019.

3 MR. LAU: Of next year.

4 And I appreciate, I know you mentioned
5 transparency here. So a couple questions about the
6 lab doing the testing, the lab in Kentucky.

7 CAPT. DELAO: Yes, sir.

8 MR. LAU: Can you identify what lab
9 you're using in Kentucky, the name of the lab?

10 MR. FUENTES: I can get you that
11 information. I don't know it off the top of my head.

12 CAPT. DELAO: We'll get you the
13 information.

14 MR. LAU: For sake of transparency and
15 helping to build a level of confidence with your NDE
16 process upon which you strongly spend upon for 1 alpha
17 and 1 bravo alternatives up there, I'd like to
18 formally request that the Board of Water Supply be
19 given a complete copy of all the data so we can have
20 our experts actually do kind of an independent
21 assessment over the effectiveness of the NDE process,
22 and hopefully it will be in complete agreement with
23 the Navy's own analysis. So I'd like to request that
24 data be given to the Board of Water Supply, just to
25 give the -- our customers the ability to have like an

1 independent, objective evaluation of that same data
2 that you're going to do, be analyzing to determine the
3 effectiveness of the NDE process. And we do have --
4 retained experts in the industry for corrosion,
5 metallurgy, that can analyze that data and be able to
6 determine if the NDE process is effective or not.

7 The other thing I'd like to -- just
8 looking at the pictures of the plates, and if you can
9 go back to the pictures of the plates, if you don't
10 mind, I kind of just looked at how many of the ten
11 required repair? And correct me, Captain, if I'm
12 wrong, I thought I came up with seven out of the ten
13 samples required repair.

14 DARRELL: Should I go back to that chart,
15 sir?

16 MR. LAU: I must have missed the chart.

17 CAPT. DELAO: Should be five.

18 MR. LAU: So five out of the ten coupons,
19 and I know we've requested that actually more coupons
20 be taken because, remember, 70,000 square feet, and
21 each coupon we think was about a foot -- 12-inches
22 by -- so ten square feet out of -- sample out of
23 70,000 square feet in one tank, and out of the ten
24 samples, five required repair. So I want to be
25 careful because I don't think this is statistically

1 significant sample, but if you just did the simple --
2 I went to public school, so five out of ten or
3 50 percent of the samples require repair, if I
4 extrapolated that to 70,000 square feet in a tank
5 surface, I want to be very careful, is that implying
6 that maybe 50 percent of the tank needs repair?

7 I think I'm going to be wrong there, but,
8 again, I want to be careful here, because important
9 decisions are being -- going to be based on this, so
10 the method should be scientifically and mathematically
11 defensible to support your decision on which upgrade
12 alternative to pick.

13 So I appreciate getting that information
14 and look forward to it. If you can get it to us as
15 soon as possible when you get it, and we can actually
16 try to do the analysis and hopefully get it completed
17 with my consultant team on the same time frame as when
18 the TUA decision document comes out at the end of the
19 year, we can actually determine or -- the
20 effectiveness of the NDE process to support that
21 alternative being selected.

22 So chair of this committee, Keith Kawaoka
23 from the Department of Health, I'd like to formally
24 submit a letter to the committee that includes copies
25 of our Board of Water Supply comments on the

1 destructive testing coupons and also on the reference
2 to that 700,000 gallons, that the aquifer can handle
3 700,000 gallons and it won't affect the drinking water
4 source nearby. That also included a groundwater flow
5 model which we have really serious concerns about the
6 validity of that model. This letter does contain
7 copies of our two comments.

8 And I'd like to inform the community that
9 all Board of Water Supply comments on the AOC is on
10 our website at boardofwatersupply.com. We want to
11 make sure that this whole process is as transparent as
12 it can be, because this is -- we're talking about the
13 source of our drinking water, not all of our drinking
14 water, but a portion of our drinking water. It's very
15 important to our community. We provided over a
16 hundred formal comments and all of those comments are
17 on our boardofwatersupply.com, and I'd like to welcome
18 the community to go to our website to the see those
19 comments.

20 I'd like to apologize ahead of time.
21 It's very technical, but we're trying to write these
22 comments so that the common person can understand it,
23 but also the technical people can see that it has a
24 sound technical basis for those comments.

25 I'd like to point out in this letter, I

1 just noticed it, could we go back to that chart of --
2 that shows the BAPT discussions. It's near the end.
3 There's a list of things, and I'd like to, in
4 particular, look at the first photo, if you don't
5 mind.

6 CAPT. DELAO: That one?

7 MR. LAU: Right there. So first bullet,
8 2014 release is first reported release to the
9 environment since the introduction of the UST or
10 underground storage regulations in 1988, and you can
11 pass out -- we have copies for the public and for the
12 committee members of the letter to Bruce Anderson, the
13 chair of the Department of Health, and the chair of
14 this committee, the director of the Department of
15 Health and chair of this committee.

16 I see that there is a copy of a formal
17 reported release, and I think it was referred to back
18 in, actually, 2002.

19 UNIDENTIFIED SPEAKER: Can I address
20 that?

21 MR. LAU: I just want to say, this is a
22 form that was sent to the Department of Health. So it
23 does indicate, looking in this report, and folks in
24 the community, we're handing out copies right now,
25 there was petroleum chemicals or -- detected, it looks

1 like in almost 20 tanks. And they're correct, it's
2 hard to tell when these things occurred as the date of
3 this report, former report to the Department of
4 Health, but it's also hard to tell if between the
5 period of 1988 and 2002 there was -- were there any
6 releases. Even releases that were smaller than what
7 could be detected by the inventory or control systems
8 or tank tightness tests done by the Navy.

9 So that is -- I just wanted to kind of
10 point that out. I just noticed that you folks made a
11 point of making that point in the discussion today,
12 the copy of the letter earlier.

13 So, Keith, here is the letter for Bruce.

14 COMMITTEE CHAIR: Okay, so noted. Are
15 you done?

16 MR. LAU: I think I'm done now.

17 COMMITTEE CHAIR: Okay, Ernie, thank you
18 for those questions and summary. It helped me out.

19 I mentioned -- before we get to the next
20 item, I mentioned that I'm respectful of the
21 committee's time. By the clock in the back we've gone
22 over that time allotment, so I'm just going to cover
23 the next item for committee members only as far as any
24 recommendations that they see going forward. We are
25 going to provide you, as we have in the past, a draft

1 report for you to review and -- before we submit that
2 to the legislature.

3 So right now we're meeting annually, and
4 if that's the frequency that the committee feels
5 that's supportive, I'd like to hear your thoughts on
6 it, if you have any comments on that.

7 Okay. Hearing none, I move -- the public
8 comment period, I'm sorry, we're out of time.

9 AUDIENCE MEMBER: No.

10 AUDIENCE MEMBER: Excuse me, I just want
11 to call your attention, I think it might be important
12 to remind you this is a public meeting and chapter
13 92-3 requires public testimony be accepted on all
14 public meetings, any agenda item. We can read it to
15 you.

16 COMMITTEE CHAIR: The public comments can
17 also be provided with written comments as well.

18 AUDIENCE MEMBER: No, it's oral
19 testimony. All public meetings "shall also afford all
20 interested persons an opportunity to present oral
21 testimony on any agenda item." Chapter 92-3.

22 COMMITTEE CHAIR: How many comments are
23 wanted to provide oral comment?

24 MS. PERRY: Since last Friday we received
25 almost 70 written comments and also today we have 14

1 people signed up to give oral testimony.

2 SEN. THIELEN: I'm sorry, Chair, if I
3 might also add, I wasn't aware that we needed to sign
4 up. So if you could add my name to the list as one of
5 the legislators who helped pass this committee, I'd
6 also like to ask some questions.

7 COMMITTEE CHAIR: How many are on the
8 list for signing up?

9 MS. PERRY: Now it's 15.

10 COMMITTEE CHAIR: With the indulgence of
11 the committee members, I will allow five oral
12 comments.

13 AUDIENCE MEMBER: No, no, no.

14 COMMITTEE CHAIR: I've got to respect the
15 committee members as well. This is a committee --

16 (Multiple audience members talking.)

17 AUDIENCE MEMBER: The same thing over and
18 over again.

19 AUDIENCE MEMBER: Wasting the time.

20 AUDIENCE MEMBER: I'm going first. I'm
21 going first.

22 AUDIENCE MEMBER: It's disrespectful.

23 AUDIENCE MEMBER: That's right.

24 AUDIENCE MEMBER: It's patronizing.

25 COMMITTEE CHAIR: I understand that.

1 This is a committee meeting, like I said at the start.
2 We've allowed comments from the public as far as
3 written comments and if we had time for oral comments.
4 So as the chair, I'll allow five, limited to about
5 three minutes.

6 So who signed up first.

7 AUDIENCE MEMBER: It's really not worth
8 getting sued over for this public meeting. Just allow
9 everyone to talk for three minutes. You're allowed to
10 legally, reasonably regulate the amount of time people
11 have to testify. It would have been great if you'd
12 applied that equally to the Navy, but you didn't, so
13 be that as it may, still everyone here should be
14 afforded the opportunity to testify. That's what
15 state requires and the courts have upheld this
16 repeatedly. It's not worth it. The extra few minutes
17 is worth it.

18 AUDIENCE MEMBER: It's only 15 people
19 talking. You have time to do it.

20 MR. YOMES: She's correct, but you can --
21 how we do it at the neighborhood board. You can make
22 it one minute, hear their testimony, we don't have to
23 answer -- answer the questions, let them make their
24 comments in one minute and get everybody on board and
25 the room is small, so you can get about 20 people.

1 COMMITTEE CHAIR: How are we doing on the
2 room? We're okay on the room? The time for the room?

3 MS. PERRY: Yeah, the room's fine.

4 COMMITTEE CHAIR: Okay. We'll allow oral
5 comments limited to three minutes.

6 AUDIENCE MEMBERS: Thank you.

7 (Clapping.)

8 MS. PERRY: So in order, can we get Shu
9 Yuan Hsieh, the first person that signed up here.
10 Thank you.

11 MS. HSIEH: Thank you very much for your
12 fine report. And I'd like to say hello to all of you
13 gentleman's club, except for the two or three ladies.

14 The report make me understand much, much
15 more about the situation in Hawaii, and I wonder, my
16 question is, have you compared the situation here with
17 those in Ukraine or Jordan or East Turkestan and -- or
18 Tibet? Probably haven't, because they have the
19 similar kind of issue like we have here.

20 Let me add, I move here from hillbilly
21 West Virginia, and I live there for over 20 years, and
22 we all know about Monsanto reputation with the
23 environment, but my issue today is in the northern
24 West Virginia, there are rural area, small village,
25 small town, and there are lots of hazardous waste,

1 also toxic chemical. Besides I have done research
2 over the years with nuclear waste and also toxic
3 chemical, and oil is one of the toxic chemicals from
4 our earth, so it's included here.

5 And people in that northern village area,
6 the government wait till more than 50 percent of
7 population have cancer to study what's wrong with it,
8 and ordinary people didn't know what's wrong. And
9 finally studies show the toxic sink into the
10 groundwater. And that by the time, like this, you
11 already have repair, you already have the cleaning
12 that show the problem already there, and don't wait
13 till we have half of the population have cancer, then
14 to change the new tank.

15 And we drink toxic water today, we don't
16 get cancer tomorrow, not even next week. It takes
17 decade to give it up, and I saw it in Tibet and in
18 Jordan. It just so heart sickening to think -- to see
19 that in Hawaii. So thank you very much considering
20 this social issue.

21 COMMITTEE CHAIR: Thank you.

22 MR. HULIHEE: Hi. My name is Calvin
23 Hulihee. I represent the Kingdom of Hawaii, and our
24 religion is the mauna because it filters the water,
25 the living water, that we depend on, number one, for

1 everything: our food, our livelihood, the ocean,
2 everything. Number one. So we have to respect that.
3 That's in our constitution. And by the way, military
4 under this article, our constitution from Kamehameha
5 III, article 18, the military shall always be subject
6 to the law of the land, and no soldier shall, in time
7 of peace, in peace, are we at war? You tell me right
8 now, are we at war? I've been at war, and when we're
9 at war, we're whacking. We're not just dancing.
10 We're just not talking, war is action. We're not at
11 war, okay? We can talk, stink and everything, do 'em
12 in your bedroom, don't do 'em outside in the public.
13 Okay, you act, whatever, do 'em in the bedroom, but
14 not out in the public and everything. And don't let
15 nobody hear you doing talking in the bedroom anyway,
16 too.

17 But anyway, hey, in peace, no time to be
18 quartered in any house in peace now. You cannot be
19 quartered in Hawaii when there's peace, okay, without
20 the consent of the owner. That's our kingdom. Not in
21 time at war, but in manner of -- prescribe by the
22 legislature, yeah, our noble people. From the king we
23 get our legislature noble people. You guys, what you
24 guys doing this kind, chain of command, okay.

25 Like I said, water is very important.

1 It's been happening too long already, we hear all kind
2 of story, and I from Palolo housing, and I was
3 watching the neighborhood board and you guys never
4 show up two times, that's why I'm here today to talk
5 to you guys, and I'm glad you guys showed up, because
6 this is very important, very important. And you guys
7 should empty 'em. That's my basic thinking right now,
8 empty 'em and aloha to whatever ship. Take the Jones
9 Act away and let all the shipping that come over here,
10 give 'em free fuel for our safety for our people.

11 Talking about cancer, I had two cancers
12 already, brudah, okay? I hope I no get the third one.
13 Bless you. If I got to go see my mother, I go see
14 'em. But, you know what, the water, that's why I'm
15 here today, it's number one. It's very serious, okay.
16 Thank you.

17 COMMITTEE CHAIR: Thank you very much.

18 MS. BOISVERT: Hello, my name is Denise
19 Boisvert, and thank you for this opportunity to speak
20 to you.

21 It is my hope that the Department of
22 Health is more concerned about preventing a
23 catastrophic crisis than about having to eventually
24 deal with one. 1989 saw the Exxon Valdez disaster in
25 Alaska. The body of water was the Prince William

1 Sound. 11 million gallons of oil contaminated
2 1300 miles of coastline. It was caused by human
3 error.

4 2010 saw the Deepwater Horizon disaster
5 in Louisiana. The body of water was the Gulf of
6 Mexico. Approximately 210 million gallons of oil were
7 discharged. It was caused by five key human errors
8 and one colossal mechanical error.

9 Red Hill, here in Hawaii. The body of
10 water is Oahu's primary sole source aquifer. Which
11 year could become equally as famous is anyone's guess.
12 Captain, I'm also not a profit and I'm also not a
13 gambling person. Could it be 2019? 2020? 2025? It
14 could even be 2018.

15 The U.S. Navy is trying to convince the
16 citizens of Oahu that we don't have to worry for at
17 least 20 more years. It was human error to install
18 the tanks on top of the aquifer in the 1940s. Will it
19 be human error to believe what the Navy is telling us
20 now? The aging and rusting single-layer tanks deep
21 inside Red Hill that store 225 million gallons of jet
22 fuel need to be urgently emptied and retired. Now is
23 the time to prioritize the health and safety of
24 hundreds of thousands of Oahu's citizens over what
25 some perceive to be a wolf in sheep's clothing trying

1 to sell us a Band-Aid for a gaping wound.

2 We must stop being gullible and trusting.
3 We know that the earth is not flat now. We know
4 cigarettes and secondhand smoke is not good for
5 someone's health. We know that by introducing the
6 mongoose to the islands, it did not control the rat
7 problem. And the Navy's Red Hill jet fuel tanks are
8 not safe. I'm begging you to be as worried as I am.

9 Thank you.

10 COMMITTEE CHAIR: Thank you.

11 MS. IWAMOTO: Good morning. My name is
12 Kim Coco Iwamoto. As many of your members may know,
13 there is a military strategy commonly known as
14 scorched earth, and its general goal is to destroy
15 anything that might be useful to the enemy, including
16 food supplies and oftentimes poisoning wells, as in
17 the Medieval times they would throw like a decaying
18 body into a water well to just make sure the enemy
19 couldn't drink from that well.

20 So scorched earth was widely used during
21 World War II. The Nazis implemented this policy
22 across Europe during their retreat at the end of the
23 war. And so I did some research, and according to
24 this, it's an inventory of documents compiled by the
25 U.S. Army Corps of Engineers, and it's titled "U.S.

1 Army Engineers in Hawaii, an Inventory of Records
2 Before 1948."

3 So Pearl Harbor was attacked in 1941.
4 Immediately the military created fuel tanks, and it
5 was finished -- the Red Hill was installed by 1943.
6 During that time, the military came up with numerous,
7 numerous scorched earth plans. In fact, in this
8 document alone there are 122 references to scorched
9 earth plans, and they all kind of came to a head in
10 1943, the same time when Red Hill was completed.

11 So I actually would love to see the
12 document you refer to stating that this location was
13 selected just because it's such solid ground. I
14 actually believe, and maybe the records -- the records
15 are in Maryland, this is just an inventory of the
16 records, but I believe it was actually selected and
17 the fuel tanks are put close together so that they
18 could implement a scorched earth policy should Pearl
19 Harbor have been taken over.

20 And so fast forward to the U.S. -- the
21 scorched earth tactics used during the Vietnam War,
22 the U.S. used Agent Orange to take out the foliage,
23 Agent Blue to the eliminate the rice paddies, and
24 flame throwers to literally scorch the earth in Viet
25 Nam and some of its people. The scale of

1 environmental and humanitarian destruction got so out
2 of hand that by the 1977 Geneva Convention it finally
3 banned the use of this military tactic to destroy the
4 food and water supply of civilian populations.

5 Despite this 1977 Geneva Convention ban,
6 the U.S. Navy continues to weaponize Red Hill and to
7 keep it on the ready to destroy this important
8 aquifer. Because fuel goes bad over time, is it
9 around 100 days? The tanks need to be constantly
10 depleted, and every time the Navy refuels these fuel
11 tanks they are basically reloading this weapon.

12 I urge this committee to advise the U.S.
13 Navy to comply with the Geneva Convention, completely
14 abandon the 1943 scorched earth plans, immediately
15 deweaponize Red Hill, and remove the ripcord that
16 would destroy our water supply.

17 Thank you.

18 COMMITTEE CHAIR: Thank you.

19 MS. PERRY: Melanie Lau.

20 MS. LAU: Can I stand because I'm kind of
21 short.

22 So, hi, hello. Thank you for the
23 opportunity to speak with you today. I am Melanie
24 Lau, and I am not here with any group. I am here as a
25 concerned citizen.

1 First of all, I want to point out that
2 the Red Hill storage facility is an amazing feat of
3 engineering, truly. It was built quickly, in secrecy,
4 and requiring bringing in thousands of miners, tons of
5 concrete and steel undetected. But perhaps the tanks
6 were built in haste. After all, we were at war. The
7 Navy may not have anticipated the corrosiveness of the
8 salty island environment. In its latest report, the
9 Navy admits that the thinness and extent of corrosion
10 of the tank walls took it by surprise.

11 Since the Administrative Order of Consent
12 was established in 2014, because of the leak of 27,000
13 gallons of fuel, the Navy has spent millions, although
14 today you said billions, of dollars and countless
15 hours studying the problem. They are quick to blame
16 the leak on faulty work by local contractors; however,
17 they are also to blame for faulty oversight.

18 Therefore, we should not rely so heavily
19 on the Navy to find solutions. Asking the Navy to
20 come up with solutions and a timetable is like asking
21 the fox to guard the henhouse. Do you know that Pearl
22 Harbor draws its water from a different aquifer? So
23 the Navy would be all right should we have a
24 disastrous leak, but what about the half a million
25 people who live between Moanalua and Hawaii Kai? We

1 live on an island, people.

2 The Navy's preferred solution before
3 today was to build 20 entirely new double-walled tanks
4 further up the valley, but they will still be over the
5 aquifer. This is not a solution. Neither is leaving
6 the tanks in place. I propose instead of tanks we
7 consider tankers, three super tankers can hold the
8 entire 240 million gallons of fuel that are sitting in
9 the Red Hill tanks. The Navy is composed the sailors,
10 so sail.

11 A scary proposition for the environment?
12 Perhaps. Then choose the more common sense one of
13 above-ground tanks away from the aquifer that can be
14 monitored visually for leaks. These tanks are
15 75 years old. It's time to retire them before they
16 fail. They are truly a remarkable feat of engineering
17 and would make an excellent museum. I would pay
18 admission to visit one.

19 Thank you.

20 COMMITTEE CHAIR: Thank you.

21 MS. PERRY: Nate.

22 MR. YUEN: Good morning. I'm Nate Yuen.
23 I'm with the Sierra Club of Hawaii.

24 This morning we heard a lot of talk about
25 science and technology. I just want to point out that

1 logic undermines or underplays all science and
2 technology, and by logic, it's not a good idea to
3 store your fuel over your water, your water supply.

4 We have heard from the Board of Water
5 Supply that the aquifer is actually made of lava rock,
6 porous lava rock and the water is stored in the little
7 spaces, these little micro bubbles that are in there,
8 and there is no technology that is known to clean
9 that. So if a big leak were to occur, that would be
10 it for Oahu's primary water supply.

11 And the Navy would like you to believe
12 that a system can be designed, built, and operated
13 without leaks. That is a huge understatement --
14 excuse me, overstatement. There is no system that is
15 free from human error. The 2014 leaks were blamed on
16 human error. We also know that there actually have
17 been previous leaks, not quite sure exactly when, but
18 there actually were prior leaks.

19 And one of the most disturbing things is
20 that the current Department of Health rules require
21 private operators to upgrade their underground fuel
22 storage tanks so that they're double-lined. And the
23 reason why they're double-lined and have sensors to
24 warn of any mishap is because that's the highest level
25 of protection that's known. So for the Navy to

1 propose not to use that level of protection is crazy.

2 So I think that what we need to do is we
3 need to decouple fuel storage from water -- from our
4 aquifer. That provides the best safety to the island
5 of Oahu and actually increases national security. Not
6 only do we protect -- so that in case an attack is
7 made on the fuel supply, it doesn't affect our water.

8 So please consider this when you're
9 making your decisions. Thank you.

10 COMMITTEE CHAIR: Thank you.

11 MS. PERRY: Alison.

12 MS. BHATTACHARYYA: Hi. I am a cancer
13 survivor. That is a fact. I am a mother, and that is
14 also a fact. Am I good mom? That's an opinion.

15 There are some facts that I'd like to go
16 over. Number one, the Navy has a very poor track
17 record when it comes to underground storage tanks.
18 The contamination at Camp Lejeune, under Navy control,
19 1953 to 1987, contaminated and made many people very
20 sick. And now there's a \$2 billion fund to pay for
21 the cancer treatment and other diseases that resulted
22 from that contamination.

23 In 1991, Diego Garcia Island had a
24 massive fuel leak. 130,000 gallons of fuel were
25 recovered. It contaminated the water aquifer on that

1 island. 1993, there was still very high levels of
2 benzene, a known carcinogen, in that atoll in the
3 aquifer. And in 1999 they were still talking about
4 cleanup operations.

5 The third fact is federal law, since
6 1988, has required secondary containment for any
7 hazardous substance in underground storage tanks.
8 That has been since 1988. 30 years later nothing has
9 been done at Red Hill fuel. They keep asking for more
10 time and they keep taking more time. Okay? Something
11 needs to be done. You've had plenty of time to think
12 about this. And, you know, I've been angry about this
13 since Ernie Lau sent out a letter to all the
14 homeowners -- thank you, Ernie.

15 MR. LAU: You're welcome.

16 MS. BHATTACHARYYA: -- in 2015. I'm
17 still angry about it. I don't see any sense of
18 urgency. I don't see any sense of coming up with
19 different ways of looking at the problem. How much of
20 this fuel is a stockpile, a really neat, cool
21 stockpile, and you want to keep your hands on this
22 stockpile. You could get rid of the stockpile because
23 whatever contingency you're planning for that you will
24 need the stockpile of fuel is not as important as our
25 own health and safety of the water supply in Oahu.

1 That is paramount. What other contingency are you
2 planning for?

3 Clear out all of that stockpile tomorrow.
4 It could be done. There needs to be actions taken
5 immediately and today. This is a long-standing
6 problem. Now you're talking about another four or
7 five years. I read in the paper that you need to
8 figure out how much fuel you actually really need.

9 To me, you guys have all the facts and
10 all the veritas, you should know immediately, today,
11 how much fuel you need in those tanks. And you guys
12 to get on it and solve it.

13 And that's all I have to say.

14 AUDIENCE MEMBER: That's right. Clean up
15 your mess.

16 MS. PERRY: David.

17 MR. MULINIX: Aloha. Is this working?
18 Dave Mulinix from 350 Hawaii.

19 This is really amazing it has just taken
20 this long from just all the testimony and all the
21 information we have. I've really got to thank
22 department of water. You guys are -- you're
23 protecting us. Department of Health, it's shocking
24 how unresponsive they have been.

25 Really, this is a disaster that's just

1 waiting to happen, and we know this because all across
2 the U.S. water has been contaminated in community and
3 community all across the country by the U.S. military.
4 This -- they do this all the time. Out in the middle
5 of the South Pacific, the Marshall Islands where we
6 did our nuclear testing, they just covered over all of
7 this contaminated nuclear waste, and it's
8 deteriorating. They're not paying any attention to it
9 at all. They only respond when they have no other
10 choice.

11 And how responsible have the military
12 been? Well, we have to look at Pearl Harbor,
13 Kahoolawe, Makua, they even contaminated Kauai over
14 and over again and doing nothing. These places are
15 permanently contaminated because of U.S. military
16 irresponsibility. And so now we're supposed to, like,
17 oh, trust us. How can we trust them when over and
18 over again they've proven they are untrustworthy?

19 Their concern is national security. And
20 national security is supposedly to protect us, yet
21 military has this, you know, we're going to waste --
22 we're going to lose -- I can't think of the right
23 words here, but in a battle, the risk, you know, we're
24 going to risk 10,000 guys to take this hill, and it's
25 worth the risk to us to take that hill. And so for

1 military standards, like, oh, it's worth the risk to
2 them to keep Red Hill for the national security that
3 they're planning. But what about us, the people
4 they're supposed to be protecting? You're protecting
5 fuel supply, but you're not protecting the people, and
6 that's what it's really all about. You've gotten your
7 priorities all messed up.

8 U.S. spent \$700 billion in the recent
9 budget for the military. 700 billion. It's more
10 than -- the next ten countries around the world, eight
11 of them are our allies, we're prepared to fight two
12 World War IIs simultaneously. We haven't had to fight
13 a World War II for 70 years. The military is out of
14 control. They are wasting our money. They are
15 wasting our resources preparing for wars that will
16 never come. We will never fight another World War II.

17 So they do have other plans. There is
18 other places to put this fuel. It does not have to be
19 there. It's just more convenient. It's just easier.
20 It's just simpler. But easy and simple and
21 convenient, that has nothing to do with our health and
22 safety. That needs to be the number one priority.
23 Everybody here has children, grandchildren, that's
24 what the Navy should be talking about. What are we
25 doing to protect those kids? What are we doing to

1 protect the future?

2 The focus is on, well, we don't want to
3 lose this military asset. It's worth the risk to us
4 militarily.

5 COMMITTEE CHAIR: Wrap up soon.

6 MR. MULINIX: Yes.

7 It is not worth the risk for our health
8 and safety and our future. Close these things down.
9 Do the right thing. For once. We're asking the
10 military to do the right thing.

11 And every legislator, you folks need to
12 be on these guys. We need to pass local legislation
13 to do everything we can to shut this down.

14 Thank you.

15 COMMITTEE CHAIR: Thank you.

16 MS. PERRY: Paul Eyre?

17 MS. GRAY: My name is Laura Gray. I'm a
18 registered nurse. I do deal in facts and figures and
19 not -- I don't accept "just trust us." I have an
20 instructor that said, "Never assume. You know what
21 assume means." I won't say it, but we all know what
22 that means. Don't assume they're looking out for us.
23 We need to protect ourselves. That's our
24 responsibility. Our water supply is our life. I'm a
25 registered nurse, and I know the results of what will

1 happen if that water contaminated. We probably won't
2 be told about it, just like at Camp Lejeune when the
3 military drank the water. Don't use that as an
4 example. It's not a good example. That, oh, we're
5 going to keep it safe because we're going to be
6 drinking it. No, that's not a good example.

7 History shows they have not been cleaning
8 up their messes. They have left the American people
9 to deal with the cancer, to deal with all the other
10 resulting diseases that come from that, because it's
11 not just cancer. We cannot allow this to happen. We
12 need to get these tanks safe.

13 And there's nothing in this nice slick
14 packet that tells what has been done to clean up the
15 existing messes, and it's not just about hydrology.
16 And it is important. The condition of those tanks are
17 important. I heard someone say that it's not
18 important, the condition of the tanks, it's all about
19 hydrology. What about the ground? What about the
20 soil? What about the surface water? What about the
21 ocean?

22 I mean, it baffles me that someone would
23 come in here and expect to gloss over and appease us,
24 and that's really what this whole thing was about. It
25 was not about facts. It was not about science. It

1 was just about appeasing the public, and that's not
2 acceptable, and it's an insult.

3 Thank you.

4 COMMITTEE CHAIR: Thank you.

5 MS. PERRY: Paul Eyre? Did he leave?

6 Gilmore Ching?

7 Danna Olsen?

8 Charessa Frye?

9 And Senator Thielen, you're up.

10 SEN. THIELEN: Thank you, Captain and
11 Admiral, for being here today. I appreciate it. I
12 had a couple quick requests for the public report on
13 the coupon sampling.

14 So you mentioned in your presentation
15 that the coupon sampling was not really about the
16 actual thickness, it was about validating the
17 nondestructive evaluation technique. And in the
18 slides it just says you're expecting that the data is
19 going to validate it. But there's a significant
20 difference when the NDE tests would, say, predict a
21 thickness of, say, 0.13 to 1.18 and an actual
22 thickness of, say, 0.08. So my request and actually
23 question is your public report going to just say it
24 validates the prediction, or is it actually going to
25 include a comparison of the NDE estimated thickness

1 and the actual range of thickness in each of the
2 coupons?

3 CAPT. DELAO: So I think, you know, as we
4 get the data back, it would be foolhardy not to get
5 all the information and use that information to really
6 understand. So, you know, my characterization almost
7 of a go/no go is really at the highest level. We
8 expect the lab to give us all of that detail --

9 SEN. THIELEN: I understand the lab will.
10 I'm asking if the public report will contain that
11 comparison between the NDE estimated range and the
12 actual range of the coupons.

13 CAPT. DELAO: I think whatever goes into
14 the report will be made available.

15 SEN. THIELEN: My request, Admiral, is
16 that you do include that in the public report, because
17 there is a significant difference in just a, yes, it
18 validates it and what the actual range is.

19 The other question I have is there's a
20 concern about the age of the tanks, whether they're
21 thinning over time. Is there going to be a comparison
22 of the -- I can't remember, the API 653 CRI, whatever
23 you call it testing that's being done now that's
24 coming out of this report, and the most recent similar
25 tests that were done on those tanks, which looks like

1 they were about 20 years ago, so we can see whether
2 there is a consistency in the estimated thickness or
3 whether there has been some additional thinning with
4 age?

5 MR. MANFREDI: May I address that?
6 Actually, I'll address your first question as well.
7 So our intent is that we will get the lab report and
8 do our analysis --

9 AUDIENCE MEMBER: Can you use the mic.

10 COMMITTEE CHAIR: State your name.

11 MR. MANFREDI: Mark Manfredi. I'm the
12 Red Hill program director. My job is to manage all
13 the work under the AOC. I work for Admiral Fort.

14 So my intent would be that the lab result
15 would be an attachment to our validation. So anybody
16 who wanted to go back and verify our results against
17 the lab report would have the ability to do so.

18 But bear in mind that this analysis that
19 we're doing right now, again, it is not to assess the
20 condition of the tank, but to validate the NDE. And
21 when the inspectors go in and inspect the tank, let's
22 say they're looking at, you know, one eight-foot by
23 five-foot area of the tank, and they mark it all out
24 with chalk so that they know exactly where they are in
25 the tank, where they are in that particular plate, and

1 that gets annotated in their notes both electronically
2 and in a log as well, paper log as well.

3 If they -- they begin to identify an area
4 of concern, and then they begin to find out, okay, we
5 need to -- we need to, you know, put a patch plate in
6 an area that's this big, they're not concerned about
7 the depth of every single pit in that area because the
8 plate is going to cover the entire area of concern.

9 SEN. THIELEN: So Mr. Manfredi, I'm just
10 asking a simple question because we're being told that
11 the purpose of testing the plates is to validate the
12 NDE.

13 MR. MANFREDI: Correct.

14 SEN. THIELEN: So I'm just asking whether
15 we're going to see a comparison of the actual NDE and
16 the actual thickness of the plates? That's all.

17 MR. MANFREDI: Yes.

18 SEN. THIELEN: Okay, thank you.

19 And then as far as the history, whether
20 there has been a change over time, will we be able to
21 see a comparison of the NDE results from the last --
22 I'm sorry, I don't know what the acronym is, CRI
23 testing or whatever --

24 MR. MANFREDI: Yes.

25 SEN THIELEN: -- for that tank that took

1 place 20, 25 years ago.

2 MR. MANFREDI: So probably not. And
3 probably not because so far in this current process
4 that we're using that started back 2005, 2006, the
5 scanning technology, and it has slowly improved over
6 the years, each tank there's lessons learned, but all
7 that to say is of the 18 tanks that are currently in
8 service, at this point in time we've only gone through
9 nine tanks. Nine tanks that have -- a total of nine
10 tanks that have been done, and so six tanks that have
11 been completed and four tanks that are currently under
12 repair. So I don't have information going back
13 20 years that I can compare this analysis to that
14 analysis.

15 SEN. THIELEN: I couldn't tell from the
16 draft report whether only the six surge tanks had gone
17 through that CRI -- is it CRI testing?

18 MR. MANFREDI: CRI.

19 SEN. THIELEN: So have other had 18 tanks
20 not undergone that CRI testing back in '04?

21 MR. MANFREDI: So prior to 2004, 2005
22 there was a maintenance process in place, but it was
23 not -- I can't speak to the specifics of it, but I can
24 tell you it was not as robust as we are operating
25 under today.

1 SEN. THIELEN: Do you have any trend data
2 on the estimated thickness that you'd be able to
3 provide in the report to be able to compare the
4 current with the past to see whether there's been any
5 change in the thickness over time?

6 MR. MANFREDI: To the extent that we can
7 provide that, we will. I just don't know.

8 SEN. THIELEN: Thank you.

9 And then the last question I had is, you
10 know, I appreciate the big "no" to the Board of Water
11 Supply's question about whether we can say 5 percent
12 of the -- or five of the ten samples, you know, does
13 that mean 50 percent of the tank needs to be repaired,
14 but I also recall from my statistics class that a
15 sampling, you cannot rely on a sampling of under 100
16 to give you that information.

17 So will you folks do or are you willing
18 to do some additional coupons testing in the tanks in
19 order to actually have a more accurate statistical
20 sampling?

21 MR. MANFREDI: Well, so, we -- that was
22 part of our discussions with the regulators, and that
23 to provide -- it's actually higher than a hundred in
24 this particular case, but to provide a statistically
25 representative sample, if you were going in -- and

1 merely doing destructive testing to evaluate the
2 condition of the tank, it would probably take
3 thousands of coupons, and then you would virtually end
4 of turning what was a fairly good tank into Swiss
5 cheese, and so it just doesn't make sense to do that.

6 So we felt that instead of trying to
7 validate the condition of the tank by cutting out a
8 punch bunch of coupons from the tank, let's validate
9 our destructive testing process, and so what we did
10 is, in conjunction with the regulators, we went in and
11 scanned the tank -- we selected Tank 14, by the way,
12 because it was already part of -- it was under
13 maintenance, it was already under the maintenance
14 contract, and we sat down and we looked at the
15 scanning data, and we deliberately went in and
16 selected areas that we knew, or felt pretty confident
17 on that scanning data that we would find corrosion
18 behind the backside, and then we went and looked at
19 the scanning data and we selected sites that we were
20 pretty confident would not have any corrosion on the
21 backside. Again, this is all about validating the
22 process.

23 So to say that five or six of the coupons
24 had corrosion and the other four or five did not is
25 irrelevant because we deliberately selected those

1 sites based on what we thought we were going to find.

2 SEN. THIELEN: Well, I think if that's
3 the case, my recommendation to the Navy is that rather
4 than waiting until you issue the report to release the
5 data, that you do go through the process of providing
6 that data from the lab to the Board of Water Supply so
7 they can conduct a concurrent, independent analysis,
8 because you simply are not going to have public
9 confidence in your findings without having that
10 independent analysis. And the benefit to you is if it
11 comes back with similar results as yours, is that
12 there's going to be a lot more confidence in that
13 lower statistical sampling.

14 MR. MANFREDI: Well, and bear in mind
15 too --

16 SEN. THIELEN: And I think especially
17 because there's going to be some significant decisions
18 that have to be made by the AOC in the timetable of
19 when that report comes out, you know, giving it to --
20 the data to the Board of Water Supply afterwards is
21 not going to help with getting that independent
22 analysis before those decisions are made, and that's,
23 again, going to lead to a lot of speculation and
24 concern about the validity of those decisions.

25 So choice is up to you, but that would be

1 my recommendation.

2 MR. MANFREDI: Well, thank you, Senator,
3 but just to remind everybody that this is not just the
4 Navy doing this, we do this in conjunction with the
5 regulators.

6 SEN. THIELEN: But the regulators are not
7 having the data and doing an independent analysis. So
8 I think that's where --

9 MR. MANFREDI: Yes, they have their own
10 consultants that will be doing that.

11 SEN. THIELEN: But, again, I think having
12 that independent analysis done is going to be
13 something that's going to be essential to having
14 public confidence in their findings.

15 MR. MANFREDI: Thank you.

16 COMMITTEE CHAIR: Thank you, Senator. Do
17 you have any further comments?

18 SEN. THIELEN: No, thank you.

19 MS. FELDMAN: Good morning, I
20 have something very short to say.

21 I understand rainwater takes decades to
22 reach the aquifer. Likewise, this jet fuel may take
23 decades to reach the aquifer. This morning I felt
24 that the Navy had no plans to decontaminate drinking
25 water in Hawaii should that occur or when that occurs,

1 and it may be decades from now, but I didn't hear
2 anything. That's I have to say.

3 MS. PERRY: Can you identify yourself.

4 MS. FELDMAN: Eileen Feldman.

5 MR. YOMES: Mr. Chair, I make a motion to
6 adjourn this meeting.

7 COMMITTEE CHAIR: Motion to adjourn.

8 Any second?

9 COMMITTEE MEMBER: I second.

10 COMMITTEE CHAIR: Meeting is adjourned.

11 Thank you, audience.

12 (The proceedings adjourned at 11:59 a.m.)
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C E R T I F I C A T E

1
2
3 I, Jessica R. Perry, Certified Shorthand Reporter
4 for the State of Hawaii, hereby certify that the
5 proceedings were taken down by me in machine shorthand
6 and was thereafter reduced to typewritten form under
7 my supervision; that the foregoing represents to the
8 best of my ability, a true and right transcript of the
9 proceedings had in the foregoing matter.

10 I further certify that I am not attorney for any of
11 the parties hereto, nor in any way concerned with the
12 cause.

13 DATED this 15th day of November, 2018, in Honolulu,
14 Hawaii.

15
16 *Jessica R. Perry*-----

17 Jessica R. Perry, RPR, CSR No. 404
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Appendix D

Aloha

2018 Update

Fuel Tank Advisory Committee (FTAC)

November 1, 2018



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Navy Update on Field-Constructed Tanks

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Review of Sites

Temporarily out of use:

- Kuahua Peninsula (a.k.a. Diesel Purification Plant)

Permanently out of use:

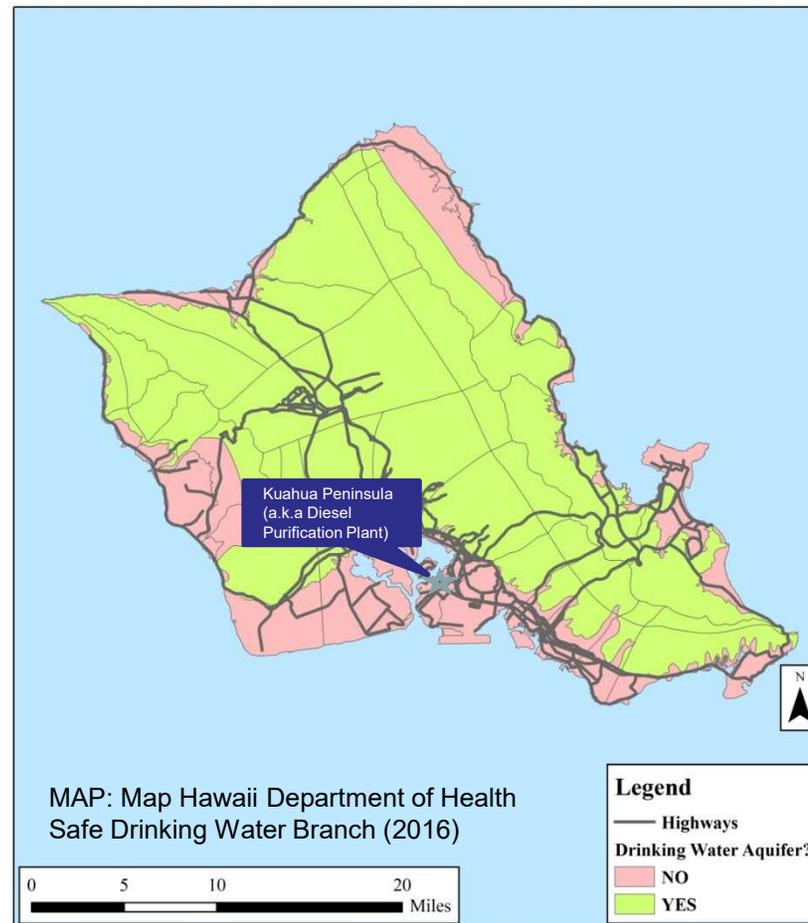
- Hickam POL Annex (Kipapa)
- Hickam POL Annex (Waikakalaua)

Currently in use:

- Pacific Missile Range Facility
 - Red Hill Underground Storage
-

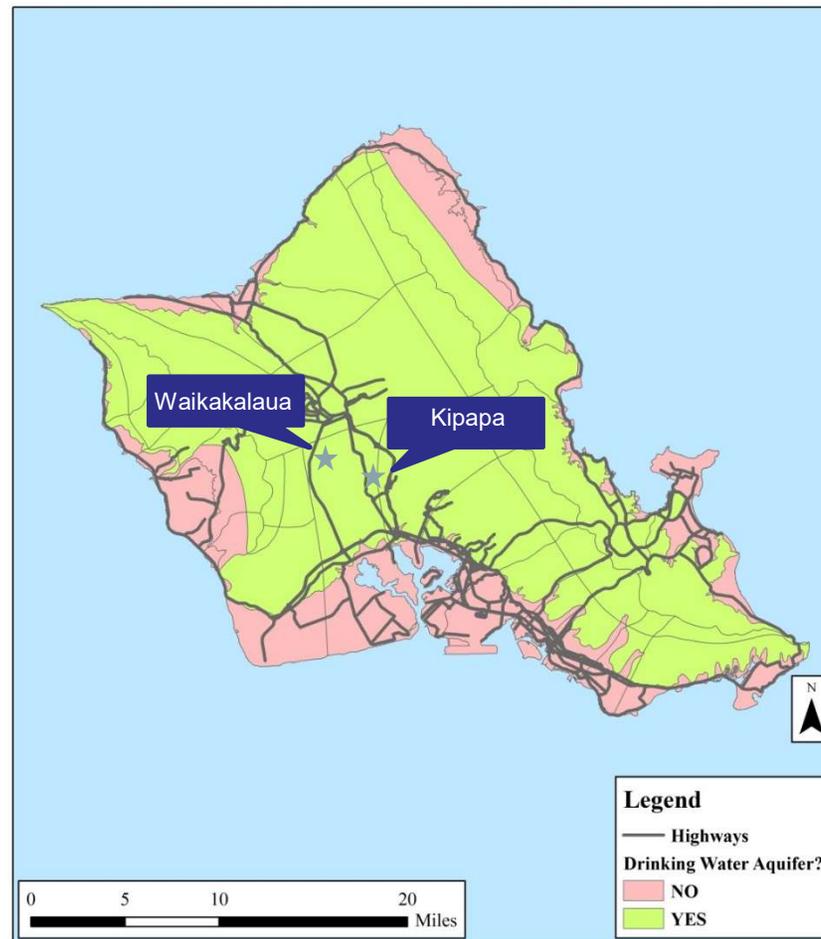


Kuahua Peninsula (a.k.a Diesel Purification Plant)



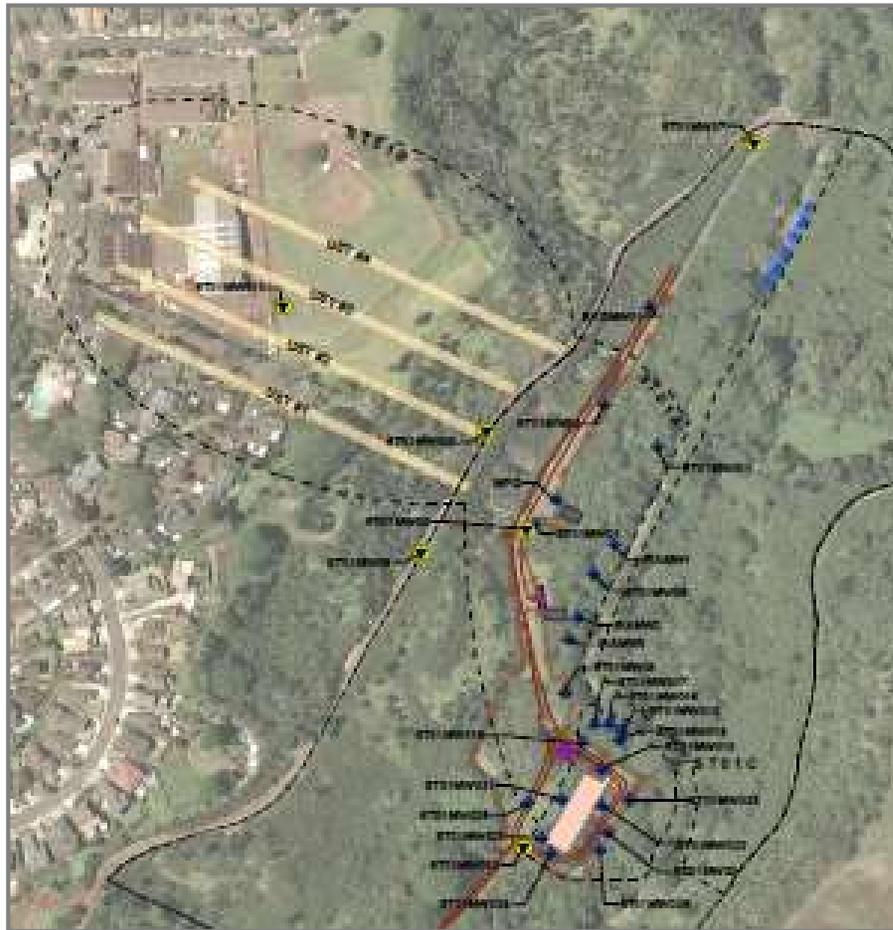


Hickam POL Annexes





Hickam POL Annex - Kipapa





Answers to Outstanding Questions From Last Meeting

What are TPH cleanup goals at Hickam POL Annex - Kipapa?

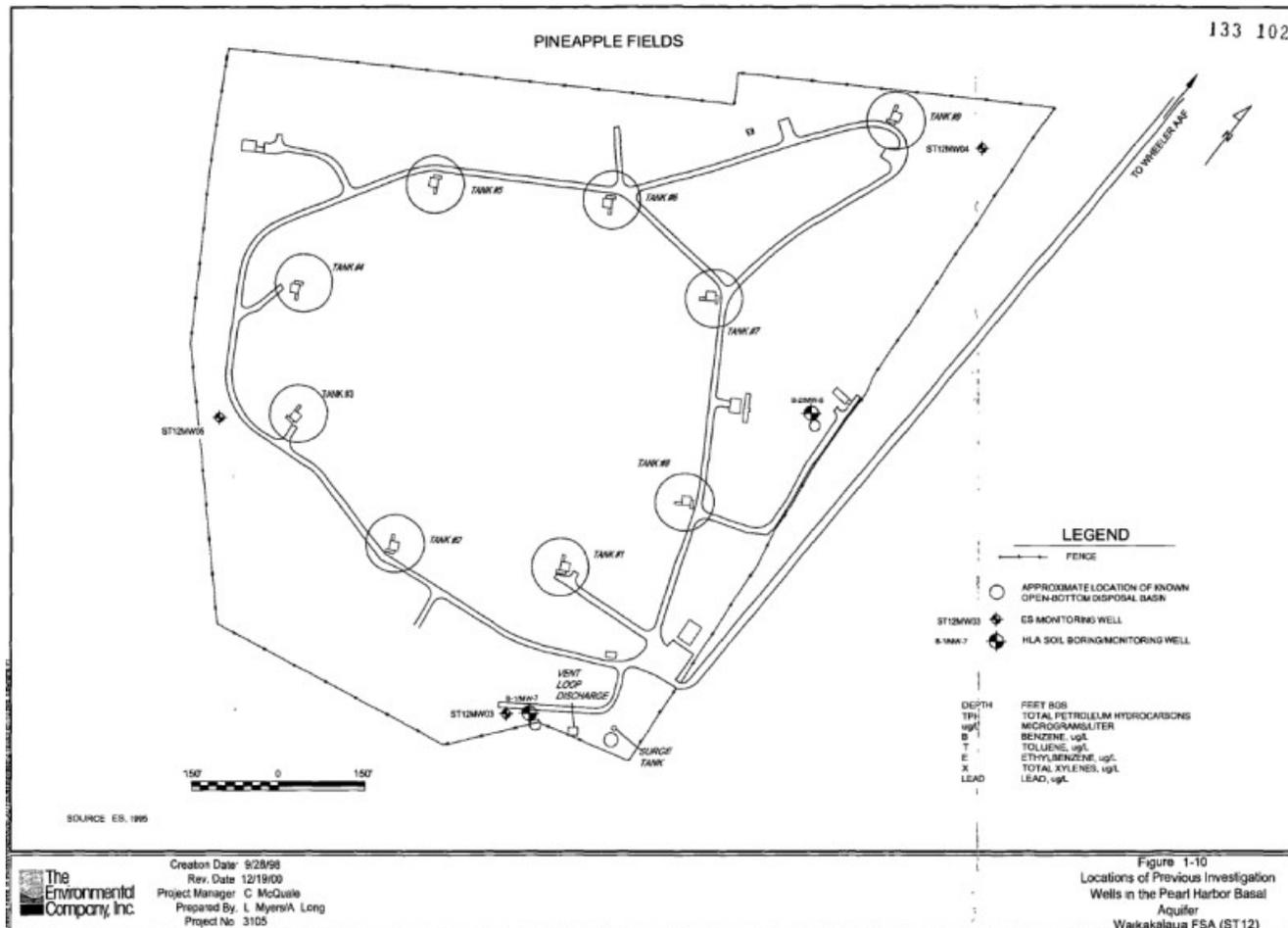
Compound of Concern	Soil (mg/kg)	Shallow Groundwater ($\mu\text{g/l}$)	Soil Gas ($\mu\text{g/m}^3$)
TPH-d	500/500	5,000/5,000	1,180,000/9,940,000
TPH-g	1,240/4,520	150,000/150,000	1,180,000/9,940,000

Notes:

1. TPH-d: Total Petroleum Hydrocarbons-diesel (currently 47-180 $\mu\text{g/l}$)
2. TPH-g: Total Petroleum Hydrocarbons-gasoline (currently 160-3,100 $\mu\text{g/l}$)
3. First number indicates max contaminant level (MCL) for residential occupancy. Second number indicates MCL for industrial occupancy.
4. Ultimate goal is reducing MCL below residential occupancy requirements. Intermediate goal is reducing MCL below industrial occupancy requirements. Achieving industrial occupancy MCL still requires monitoring. No current estimate for completion of cleanup.
5. 17 monitoring wells sampled annually.



Hickam POL Annex - Waikakalua



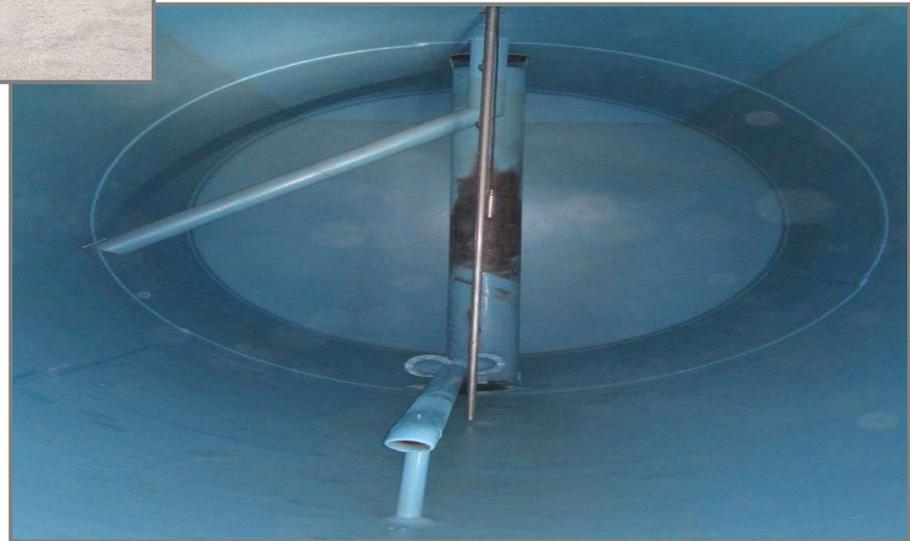


Pacific Missile Range Facility





Pacific Missile Range Facility





Navy and DOH Update on the
Administrative Order on Consent
(AOC) at the
Red Hill Bulk Fuel Storage Facility



Answers to Outstanding Questions from Last Meeting

When Red Hill Surge Tanks last underwent American Petroleum Institute (API) inspection, how many areas were found requiring repairs?

- API 653 inspections last completed on all 4 Red Hill Surge Tank in 2004.
- 19 areas identified for repair during inspection.
- All repairs successfully completed and passed testing.
- Each surge tank has successfully passed tank tightness testing since repairs completed.
- Next cycle of cleaning, inspection, and repairs (CIR) recently began.



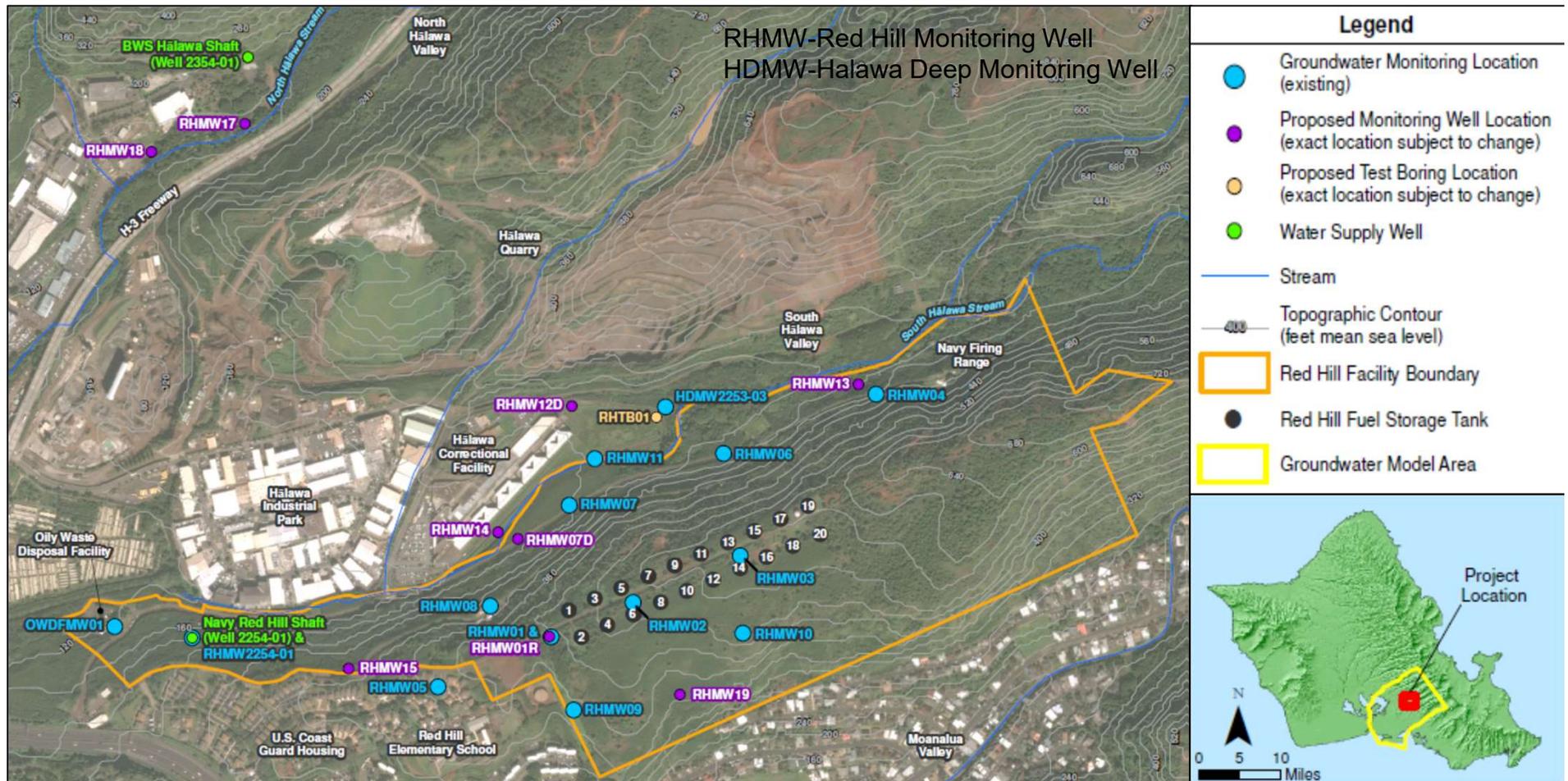
Red Hill Bulk Fuel Storage Facility Update on AOC Actions

Actions completed since last meeting

- **FY18 Tank Tightness Testing**
- **Coupon Removal**
- **Alternative Location Study**
- **Tank Upgrade Alternatives Report**
- **Establishment of Groundwater Modeling Working Group**
- **Installation of Monitoring Well #11**
- New Release Detection Alternatives Report
- Scope of Work for Destructive Testing
- Groundwater Monitoring Split Sampling with EPA
- Seismic Geologic Survey
- Various Natural Attenuation Studies
- Regional Synoptic Water Level Study
- Conceptual Site Model Report
- Groundwater Protection and Evaluation Considerations Report



Groundwater Monitoring Wells





Red Hill Bulk Fuel Storage Facility Regulatory Oversight and Approvals

DOH/EPA approvals since last FTAC meeting:

- Tank Upgrade Alternatives Report (May, 2018)
- Destructive Testing Plan (June, 2018)
- Release Detection Alternatives Report (August, 2018)



Red Hill Bulk Fuel Storage Facility Update on AOC Actions

Actions scheduled for completion prior to next meeting:

- DoD Strategic Fuel Storage/Distribution Analysis Study
- Tank Upgrade Alternative Decision Document
- Release Detection Decision Document
- Destructive Testing Results Report
- Continued Execution of Long-term Groundwater and Soil Vapor Monitoring
- Groundwater Flow Model Report
- Continued Execution of Regional Synoptic Water Level Study
- Investigation and Remediation of Releases Report
- Installation of Additional Monitoring Wells and Test Boring
- Contaminant Fate and Transport Modeling Report
- Quantitative Risk and Vulnerability Assessment-Phase 1
- Semi-annual Tank Tightness Testing



Red Hill Bulk Fuel Storage Facility Current Projects

- Continue with Clean, Inspect and Repair Program for Tanks 5, 13, 14, and 17.
- Begin Clean, Inspect and Repair Program for Tanks 4 and 18 after above tanks returned to service.

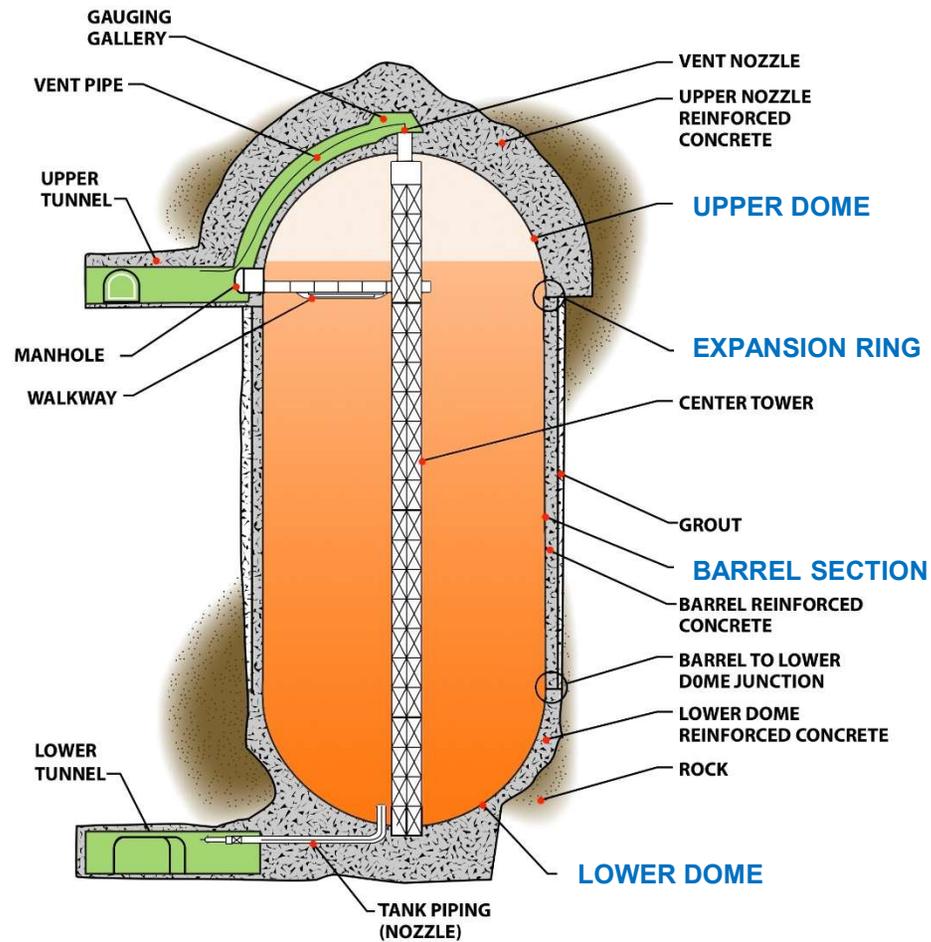


Destructive Testing Way Ahead

- Laboratory analysis used to validate present non-destructive technology used to determine liner thickness.
- Navy awaiting results of coupon lab analysis.
- Testing is only 1st phase of study.
- Next phase compares lab analysis results with data from non-destructive evaluation.
- AOC requires results of comparisons submitted by middle of 2019.
- Navy awaiting results of comparison before developing any conclusions.



Tank Diagram





Coupon Location Summary

Region of Tank	No. of Coupons	No. of Areas Already Identified for Repair
Upper Dome	1	1
Expansion Ring	2	1
Barrel Section	6	3
Lower Dome	1	0
Total	10	5



Coupon #1

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**





Coupon #2

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**





Coupon #3

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**





Coupon #5

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**





Coupon #6

Initial indications:

- No Non Destructive Evaluation performed
- Control sample only





Coupon #7

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**





Coupon #8

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**





Coupon #10

Initial indications:

- Screening scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**





Coupon #A1

Initial indications:

- Screening scan indicates repair is necessary
- Prove-up scan indicates repair is necessary
- **Expect lab measurements to validate NDE measurements**





Coupon #A2

Initial indications:

- Screening scan indicates repair is unnecessary
- **Expect lab measurements to validate NDE measurements**



Tank Upgrade Alternatives

Alt	Description	Pros	Cons	Est Cost (millions)-ROM
1A	Restoration of Existing Tank	<ul style="list-style-type: none"> Proven construction method Interior barrier can be inspected/repaired 	<ul style="list-style-type: none"> Single wall construction Requires leak detection system 	\$180-\$450
1B	Restoration of Existing Tank plus Interior Coating	<ul style="list-style-type: none"> Proven construction method Interior barrier can be inspected/repaired 	<ul style="list-style-type: none"> Single wall construction Requires leak detection system Coating challenges due to tank size 	\$450-\$1,800
1D	Remove existing Liner, Install New Steel Liner with Interior Coating	<ul style="list-style-type: none"> New steel liner Interior barrier can be inspected/repaired 	<ul style="list-style-type: none"> Single wall construction Requires leak detection system Construction methods high risk Risk of compromising structural concrete support for tank 	\$1,800-\$4,500
2A	Composite Tank (Double Wall) Carbon Steel, with Interior Coating	<ul style="list-style-type: none"> Double wall/adds carbon steel liner Provides secondary containment Interior barrier can be inspected/repaired 	<ul style="list-style-type: none"> Reduced capacity Construction methods high risk Secondary containment and exterior of primary containment cannot be inspected/repaired 	\$500-\$2,000
2B	Composite Tank (Double Wall) Stainless Steel	<ul style="list-style-type: none"> Stainless steel liner provides better corrosion protection Provides secondary containment Interior barrier can be inspected/repaired 	<ul style="list-style-type: none"> Reduced capacity Construction methods high risk Secondary containment and exterior of primary containment cannot be inspected/repaired 	\$2,000-\$5,000
3A	Tank within a Tank (Carbon Steel), Full Interior and Exterior Coating	<ul style="list-style-type: none"> New carbon steel tank Provides secondary containment Space between tanks can be inspected/repaired 	<ul style="list-style-type: none"> Lowest capacity Construction methods high risk 	\$2,000-\$5,000
ALS	New Tanks (Cut and Cover including remediation of existing site)	<ul style="list-style-type: none"> New facility Provides secondary containment 	<ul style="list-style-type: none"> Recommended site still located above aquifer 	\$4,000-\$10,000



Red Hill Bulk Fuel Storage Facility Future Work Timetable

Subject to approval of regulatory agencies, Navy plans to implement the following recommended BAPT:

- Continue using AOC-approved CIR program and implement continued enhancements and improvements where practicable.
- Conduct pilot project to apply coating to entire interior of tank and restore or abandon nozzles.
- Install leak detection system for all tanks currently in service or proposed to be returned to service.



Red Hill Bulk Fuel Storage Facility Future Work Timetable

Why is this BAPT?

- 2014 release is first reported release to the environment since the introduction of the underground storage tank regulations in 1988.
- Solely due to human error, not from tank deterioration.
- All tanks passing annual tank tightness tests. Test frequency increasing to semi-annually in 2019.
- Current maintenance practices effectively measure tank liner thickness and identify repair locations well before they are problems.
- QRVA noted highest risk of large release to environment is nozzles and lower access tunnel, not tanks.
- Proposed BAPT focuses on rapid identification if release occurs to minimize volume.
- Improved release detection (system of systems) and response procedures reduce volume of potentially released fuel to levels well below that endangering drinking water.
- Other alternatives involve construction risk, do not reduce risk to most vulnerable elements in facility i.e. the lower access tunnel and the nozzles, and are costly.
- Navy will revisit decision if new information suggests prior to 5-year mandatory review.



Summary

- Water continues to be safe to drink
 - Routine water sampling/testing
- Tanks pass annual tank tightness tests
- AOC is working
 - Navy/DLA is accountable
 - Navy/DLA has met/meeting all AOC deadlines
- CIR program in progress for Tanks 13, 14 and 17
- Tank 5 warranty repair work complete
 - 2nd full inspection with improved quality assurance complete. Waiting on award to complete repairs.
- TUA and Release Detection Decision Document scheduled for delivery by end of 2018





Questions



Appendix E

BOARD OF WATER SUPPLY

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August 20, 2018

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and

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2827 Waimano Home Road
Pearl City, Hawaii 96782

Dear Mr. Shalev and Ms. Kwan:

Subject: Honolulu Board of Water Supply (BWS) Comments on the Red Hill Bulk Fuel Storage Facility (RHBFSF), Scope of Work for Destructive Testing Supplement – Destructive Testing Plan, Supplement to Administrative Order on Consent (AOC) and Statement of Work (SOW) Section 5.3.2, dated June 1, 2018 and Our Inspection on June 25, 2018 of Coupons Removed from Tank 14.

The BWS appreciates the opportunity to review the Navy's Destructive Testing (DT) Plan (NAVFAC, 2018) and to view and photograph the steel plate samples (coupons) removed from the steel liner of RHBFSF Tank 14. This letter summarizes our observations and comments.

Coupon Observations

1. Presence of substantial backside corrosion — There were areas of substantial corrosion on the backside (non-fuel wetted side) of the ¼-inch thick steel plate lining the tank (Figure 1, for example).

2. Staining on Backside of Steel — Deposits on the backside of some coupons suggest hydrocarbon-staining and should be tested for presence of released product (Figure 2, for example).
3. Non-Destructive Evaluation (NDE) Technique Underestimates Remaining Wall Thickness — Corrosion pit depths measured on the cut specimen edges suggest that NDE techniques were not able to locate and measure the thinnest wall of the coupon. For instance, the scale shown in Figure 1 indicates the wall along the edge of Coupon No. 2 has thinned to about 0.079-inches (reduced from 0.25-inches thick when new). However, the two NDE techniques (screening and Prove-up) predicted the thinnest area of this coupon to be 0.187-inches and 0.135-inches, respectively, underestimating the measured thickness by 51%.

Again, these are our observations, and we await the results of the independent testing laboratory for confirmation. Overall, it appears that the corrosion exhibited by the 10 coupons removed from Tank 14 justify our concerns regarding the risks of through-wall pitting associated with corrosion of the steel liners. In addition, NDE test results raise serious concerns regarding the ability of the tank inspection and repair methodology to find and repair all critical defects.

Destructive Testing Plan

1. Scope does not include piping — We first note that the DT plan pertains only to the liner of Tank 14, and the BWS would like to reiterate our previously expressed concerns regarding how piping, from the tank to the tunnel, is inspected and repaired as being insufficient to assure leak free operation for the currently set 20-year re-inspection interval.
2. Scope of Testing Reduced to a Single Tank — It is our understanding that the Navy now intends to remove coupons from only one tank. This is a reduction in scope from the three tanks initially discussed as being examined with NDE (Tank 14, 17 and Tank 18) (Navy/DLA, 2017) and the initial destructive evaluation plan that proposed destructive testing on both Tank 14 and 17 (NAVFAC, 2017). With a sample size of ten coupons from only one of twenty tanks, generalization of the condition of the steel to other tank steel liners and the reliability of the NDE technique to other tanks is not possible.
3. Tank 14 may not be Representative of Others — It has not been shown that the nature of the backside corrosion in Tank 14 is representative of other tanks. If other tanks exhibit conditions (e.g., pitting, thinning, cement paste adhesion, weld flaws) outside the range found in the Tank 14 coupons, the accuracy of the NDE method calculated for Tank 14 coupons may not apply. In this respect, we disagree with the Navy's position, expressed in the conditionally approved scope

of work that any destructively tested tank does not necessarily need to be representative in condition.

4. Navy Stated Goals for DT Cannot be Achieved — As stated in NAVFAC's Supplement to the DT Plan (NAVFAC, 2018), the Navy's goals (Goal A and Goal D) include:

"A. Validate the results of NDE inspection technologies, specifically the NDE process used at Red Hill." This is also mentioned in Section 3 "Destructive Testing Discussion" of the DT Section 5 plan where it reiterates: "The intent of this section is to validate the results of NDE technologies and processes used to scan the Red Hill storage tanks."

And

"D. Analyze corrosion rate calculation procedures and recommend improvements as warranted."

Goal A cannot be achieved: There are too few specimens to validate whether the NDE technology employed by the Navy can reliably find severe corrosion. The Navy acknowledges this in Section 5 of their Destructive Testing Plan: "Due to the huge surface area presented by the steel tank liner, acquiring sufficient number of samples for worthwhile statistical analysis of a particular tank's status and behavior with respect to corrosion would be an inordinate task."

While the sample size is insufficient to validate NDE results to any reasonable confidence level, the converse is not true. Initial results indicate the NDE techniques are not sufficiently accurate to provide confidence that all defects that could grow to through wall failure prior to the next inspection interval will be found and repaired.

For instance, comparison of the results from the two independent NDE techniques applied at the same locations (the screening and prove-up measurements) suggests the two techniques produce inconsistent results. This is illustrated in the Navy's Table 1 for coupon #1 where the "screening measurement" NDE method predicts a remaining thickness of 0.147-inches whereas the "Prove-up Measurement" estimates the remaining wall as 0.112-inches. This difference between the measurement methods indicates that there is a high probability that not all damaged areas that need to be repaired (i.e. areas where the remaining wall less than 0.160-inch) will be repaired.

Furthermore, our visual observations of some coupons suggest that the actual defect depth was greater than measured by either NDE technique. For example, Coupon #7 measurements indicated a remaining wall of either 0.157-inches or 0.135-inches whereas the cut edge of this coupon appears to show a minimum

remaining wall of 0.079-inches (see Figure 1). These are our observations, and we look forward to reviewing the results of the independent testing laboratory for confirmation.

In summary, the current NDE/DT testing reinforces BWS's previously stated concerns about the accuracy of the NDE and the reliability of the API inspection and repair methodology. The BWS informed the AOC parties of this in several letters (BWS 2016a, BWS 2016b, BWS 2017a, BWS 2017b, BWS 2017c, BWS 2017d, and BWS 2017e). In particular, the current NDE/DT results further indicate the need to develop probability of detection (POD). The POD for the NDE techniques can be done using plates manufactured with various flaw types of various depths as we have previously described. This information will help ascertain the reliability of the API inspection and repair procedures used to assure leak free tank operation for the next 20-years until the next inspection.

Goal D cannot be achieved: Since the Navy does not have any prior API inspection reports regarding Tank 14, accurate estimates of the corrosion rate from the current NDE/DT testing are not possible. Corrosion rates are not necessarily constant over long time-intervals. The observed corrosion may have occurred over 76 years, or it may have only occurred since the last inspection and repair cycle. In addition, it will not be known if the corrosion found was from a previously non-corroded area, from a prior defect that was of a size that did not need repairing, or from a previously non-detected defect. Some of this uncertainty could have been avoided if the Navy selected a tank that had a complete API report showing the location of previously found defects and repairs.

5. **Selected Locations of Tank 14 Coupons** — The sample location selection process was not transparent, and the BWS cannot comment on how well the Tank 14 coupons represent the general condition of the steel liner elsewhere in Tank 14.
6. **Lack of Integration with Quantitative Risk and Vulnerability Assessment (QRVA)** — The Navy acknowledges that the number of samples generated in the DT plan will be insufficient to support “worthwhile statistical analysis (page 4). The test plan contains no mention of supplemental testing with manufactured coupons to address this limitation, which implies the ongoing QRVA will be unable to account for the contribution of NDE inspection failures in estimating the frequency of future tank leaks and ruptures at Red Hill.

Laboratory Testing of the Coupons

The BWS understands that the coupons removed from Tank 14 will now be tested by an independent laboratory. Although some of the testing procedures are outlined in the DT plan, detailed protocols are not included. Given the importance of these specimens and the nature of the DT being planned, the BWS requests that we be allowed to attend and

observe the laboratory examination of the steel coupons. In the interim, we offer the following suggestions to add to the DT protocols.

1. Collect samples of corrosion product and stains for scanning electron microscopy (SEM/EDS) and Fourier Transform Infrared (FTIR) spectroscopy prior to any cutting or grinding.
2. X-ray radiographs on each of the coupons to locate the thinnest locations on each coupon. These areas should be marked for corrosion depth measurements by pit depth gaging as well as metallography.
3. Grind each of the four edges of the coupons flat and perpendicular to the plate faces in order to accurately document the minimum remaining wall thickness on each edge.
4. Section 4.2 of the DT Plan (NAVFAC, 2018) report states that independent laboratory analysis will include "Performing surface characterization of the exterior and interior surfaces of the steel coupon using three-dimensional profilometry after the coupon is cleaned". It is unclear from the report how this profilometry will be accomplished. The independent lab should provide the raw data that comprises the profiles of each coupon, including the raw point cloud files if laser scanning is being used. The BWS requests that the Navy provide this raw data to the BWS as soon as possible after the completion of the surface characterization analysis.

If you have any questions, please contact Mr. Erwin Kawata, Program Administrator of the Water Quality Division at (808) 748-5080.

Very truly yours,

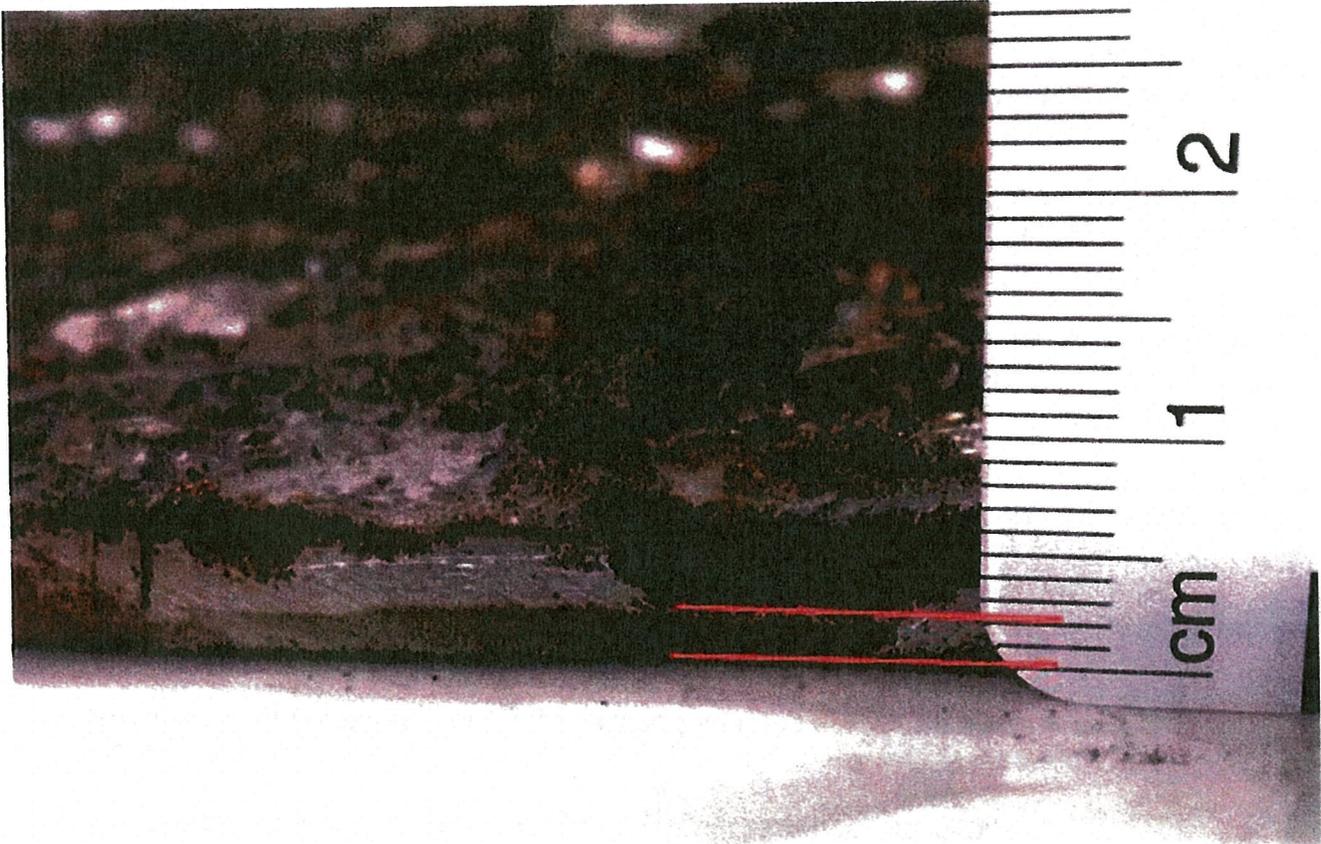

ERNEST Y.W. LAU, P.E.
Manager and Chief Engineer

cc: Mr. Steve Linder, United States Environmental Protection Agency, Region IX
Mr. Mark Manfredi, NAVFAC Hawaii

References

BWS, 2016a. Comments to the Work Plans Being Developed Under the Red Hill Bulk Fuel Storage Facility Administrative Order on Consent (AOC) Statement of Work (SOW) Sections 2 through 5 and 8, May 27

Figures



NDE remaining thickness: 0.135" to 0.187"
Apparent remaining thickness: 2mm = 0.079"

Figure 1: Coupon No. 7 viewed from the cut edge shows the corrosion and staining on the backside against the concrete. Remaining wall appears to be about 2 mm or 0.079 inches.

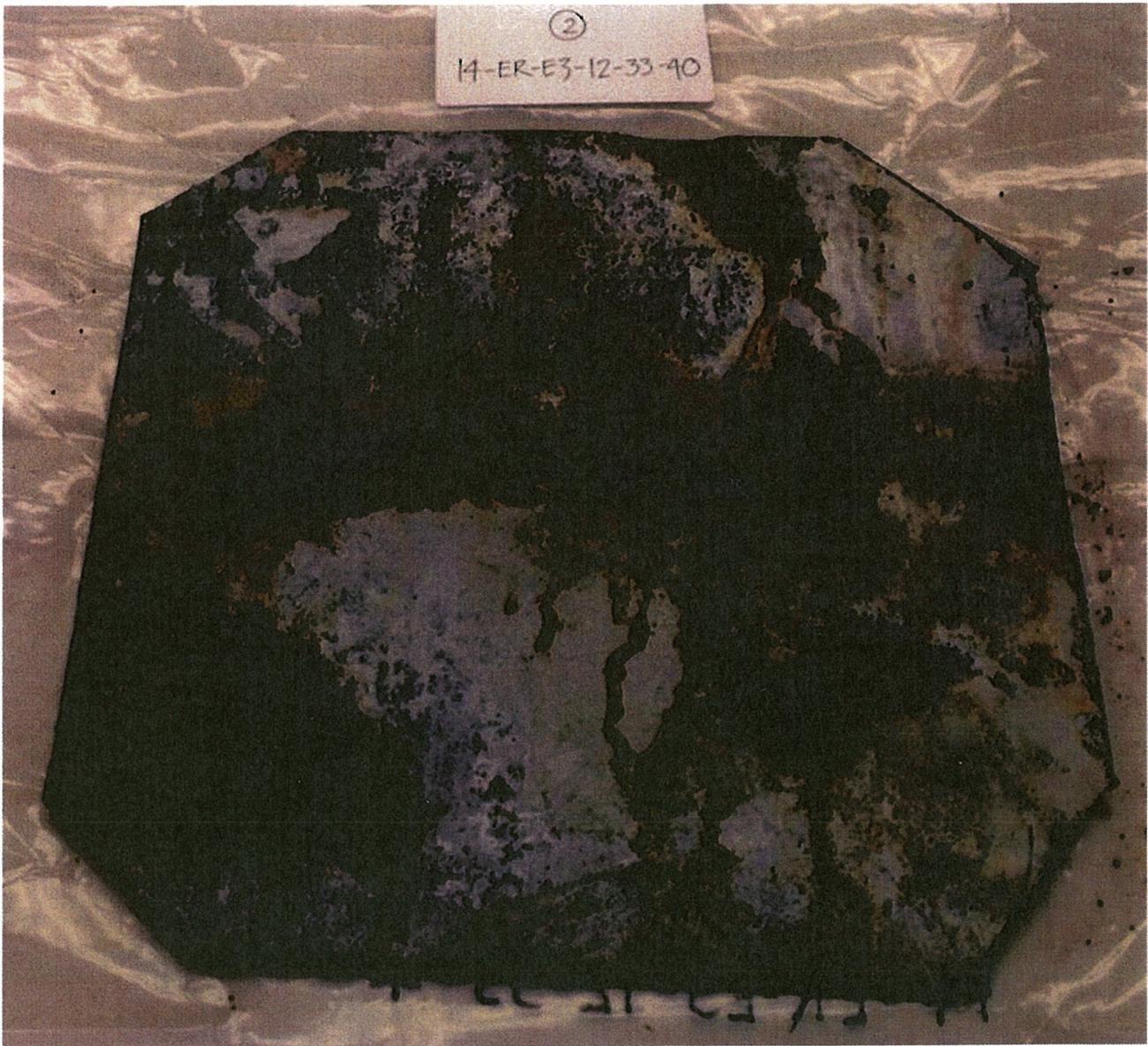
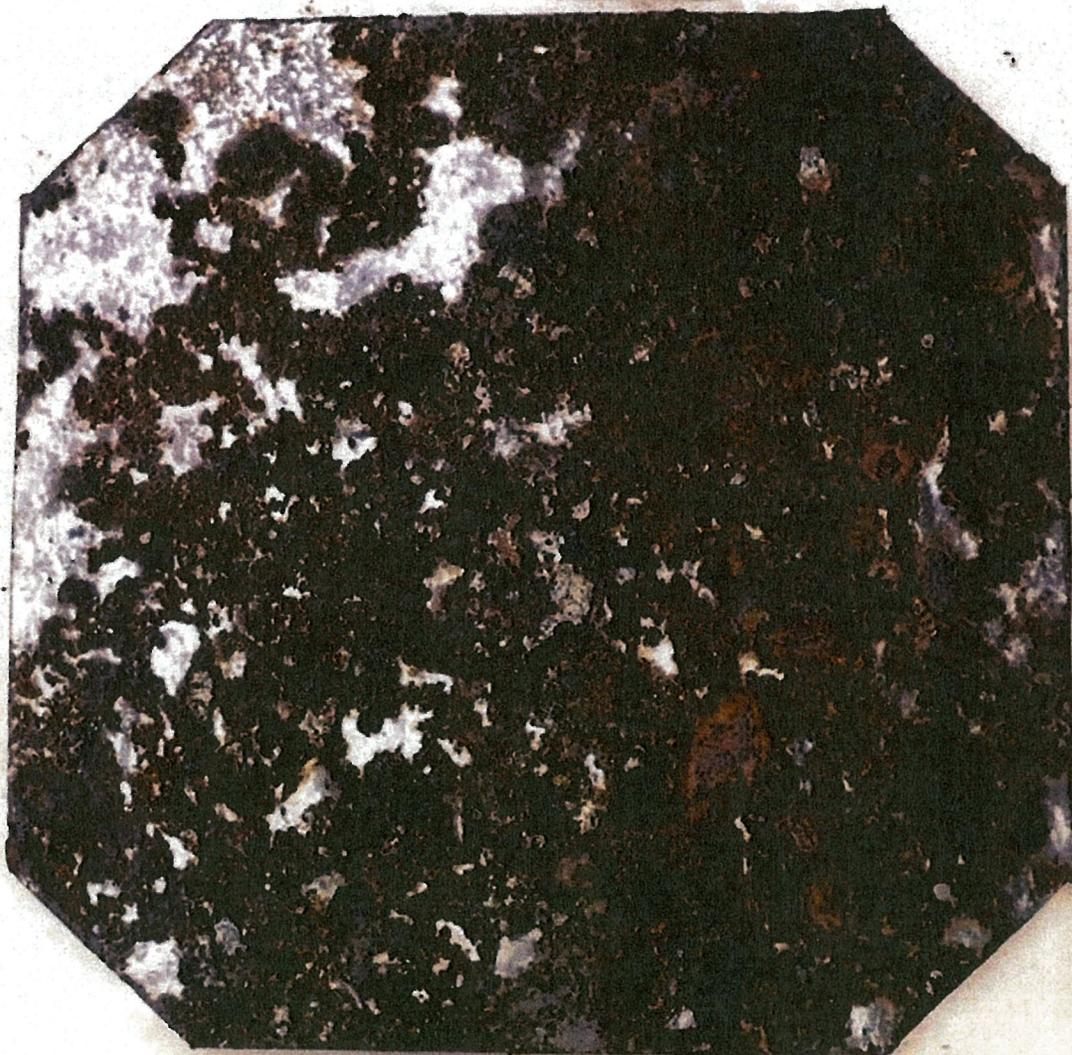


Figure 2: Backside of Coupon No 2 – The dark horizontal stain is likely corrosion product and/or hydrocarbon stains. Drip seen running down backside.

Supplemental photo



Coupon No. 7 viewed from the backside shows corrosion.

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October 2, 2018

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Dear Mr. Shalev and Ms. Kwan:

Subject: Board of Water Supply (BWS) Comments on the Groundwater Protection and Evaluation Considerations for the Red Hill Bulk Fuel Storage Facility (RHBFSF) Report, dated July 27, 2018

The BWS reviewed the above reference report and offers the following comments. The report is available on the United States Environmental Protection Agency's (EPA) website and is titled "interim groundwater flow model". It also has been referred by the Navy as the "tank upgrade alternative (TUA) technical memo".

This report presents, among others, the following conclusions:

1. An undetected chronic release of 2,300 gallons of light non-aqueous phase liquid (LNAPL) per year per tank would be biodegraded in the vadose zone, prior to reaching groundwater.
2. A sudden release of approximately 120,000 gallons of LNAPL would likely be retained in the vadose zone and/or at the water table without causing an exceedance of risk-based decision criteria (RBDC) at Red Hill Shaft. According to the report, the RBDC is the conservative, initial screening criteria

Mr. Shalev and Ms. Kwan

October 2, 2018

Page 2

that is protective of drinking and domestic water use. For total petroleum hydrocarbons – diesel (TPH-d), the RBDC is 400 parts per billion (ppb).

3. It is possible that a fuel release as large as 700,000 gallons would not cause an exceedance of the RBDC at Red Hill Shaft.

The BWS strongly opposes these conclusions. The report is granting acceptance to allowing fuel releases into our island's sole source drinking water aquifer. This is absurd and unacceptable. Regulatory agencies charged with protecting our environment and drinking water resources should not approve this report. The Red Hill fuel tanks should have secondary containment or be relocated away from the aquifer to ensure there are no more leaks into our environment and drinking water sources rather than continue "sustainment / maintenance of the existing tanks in accordance with current procedures." Oahu's sole source aquifer is the only one of its kind and cannot be replaced. Any cost to preserve, protect and prevent it from being contaminated is worth the investment. Allowing any amount of fuel leaks into this resource is passing along a problem to future generations.

The report also presents conclusions about the distribution of Navy fuel as LNAPL in the subsurface, dissolved groundwater contaminants, groundwater flow directions and groundwater capture by Red Hill Shaft pumping, degradation of fuel contaminants, and the migration extent of future fuel releases from the RHBFSF.

The BWS finds nearly all the conclusions presented are either unsupported or contradicted by available evidence, and that the report underestimates the risk to Oahu's drinking water supply from RHBFSF fuel releases. The report provides a non-conservative assessment of the risks from RHBFSF contamination to our sole source groundwater aquifer and our drinking water supply. The report concludes that with Red Hill Shaft pumping, groundwater from beneath the RHBFSF tanks is "entirely captured" even though the results of the interim groundwater flow models deviate considerably from observed groundwater levels and even though examination of groundwater head data indicates pumping at Red Hill Shaft induces a very small head change at the monitoring wells beneath the RHBFSF fuel tanks. The report concludes that fuel will likely be sequestered in the vadose zone for releases much larger than the January 2014 Tank 5 release even though there is credible evidence that LNAPL from the release reached the water table near monitoring well RHMW02. The report also concludes that biodegradation of fuel contaminants can effectively remove contaminants before groundwater migrates offsite of the RHBFSF even though it assumes a flow direction that does not match observed heads.

Given the unfounded and/or non-conservative nature of many of these conclusions, the report should not be used as an input to the upcoming Navy's TUA selection process unless and until these flaws are corrected. Accordingly, we request that the EPA and Hawaii Department of Health (DOH) (collectively, "Regulatory Agencies") take all steps

necessary to protect our drinking water by ensuring that the Navy select a TUA that is in balance with a conservative estimate of environmental risk from the RHBFSF fuel tanks.

The BWS offers comments to the following, non-exhaustive list of conclusions in Section 10 (titled Summary and Conclusions) of the report:

1. Navy report Section 10.1: Navy states that the fuel LNAPL is “located primarily within the upper one-third of the vadose zone between the lower access tunnel and the water table” according to thermal measurements in wells.

BWS Comment: This conclusion is unfounded because thermal data provide little to no indication of LNAPL location in the subsurface. As the DOH’s subject matter expert (SME) explained on August 16, 2018, LNAPL can be found much lower than the depth intervals with high temperatures. Moreover, the EPA SME stated on August 16, 2018 that the inferred temperature differences at monitoring well RHMW02 were dependent on the choice of background well. The Navy’s conclusion is further contradicted by the available evidence that LNAPL migrated to the water table after the January 2014 Tank 5 release and in other instances since 2005. Thus, the conclusion places inappropriate weight on the small temperature differences calculated for monitoring well RHMW02 given that the slightly elevated temperatures calculated for this well are a function of the choice of background well. Even if slightly elevated temperatures exist in the vadose zone around monitoring well RHMW02, the fuel undergoing degradation may have come from the fuel leak of unknown volume from Tank 6 reported to the DOH in 2002 (see Attachment 1) or from other unreported fuel leaks from the RHBFSF. The only clear evidence of elevated temperatures in the subsurface is at RHMW03, which is relatively distant from Tank 5. Lastly, the rapid rise in volatile organic compound concentrations in soil vapor at the “deep” (distal) soil vapor monitoring point beneath Tank 5 following the 2014 release shows that LNAPL quickly migrated to at least 26 feet (ft) below the lower access tunnel and then an unknown distance further downward over time.

2. Navy report Section 10.1: Navy states that “No LNAPL has been measured on any of the Red Hill monitoring wells.” and “Weathered LNAPL from a release prior to 2005 may be present in the immediate vicinity of RHMW02 or within the saturated zone upgradient from this well.”

BWS Comment: The first statement cannot be considered conclusive because it assumes that any released LNAPL would necessarily find its way to the sparse set of Red Hill monitoring wells; the rapid rise in soil vapor concentration at the deep (distal) Tank 5 soil vapor monitoring point following the 2014 release shows that LNAPL quickly migrated to and below this location, which is located more than 100 ft to the northwest of RHMW02 whereas the soil vapor detector nearest to the well showed a delayed change in concentrations. The second statement

appears to be unsupported conjecture and is contradicted by the available data. The Navy has presented no evidence that the concentrations observed at RHMW02 are from releases prior to 2005. Furthermore, groundwater concentration data show that the effective solubility values for TPH-d were exceeded at monitoring well RHMW02 between 2005 and 2014 and since the start of 2014, indicating that LNAPL has appeared in or near the well several times since 2005. (Figure 1 shows the maximum TPH-d concentrations observed at this well since 2005.) Naphthalene concentrations in groundwater at RHMW02 were near or exceeded its effective solubility value for jet fuels several times during 2006 and 2008, indicating that LNAPL is in or near the well (Lau, 2016). The anoxic reducing groundwater conditions observed at RHMW02 also indicate that LNAPL is and has been present near the well.

3. Navy report Section 10.2: Navy states that "Available data suggest the presence of weathered LNAPL (i.e., pre-2005) in the immediate vicinity of RHMW02 or within the saturated zone upgradient from this well."

BWS Comment: Again, this conclusion appears to be mere conjecture because the Navy has presented no evidence that the weathered LNAPL observed at this well was released prior to, during, or after 2005. The rapid rise in TPH-d concentration to exceed the effective solubility of jet fuel (ATSDR, 2016) at this well during January 2014 and the essentially simultaneous increases in soil vapor concentrations at the central and deep (distal) soil vapor monitoring points appear to demonstrate that LNAPL from the 2014 release migrated rapidly through the vadose zone and reached groundwater. It is possible that some weathering of the LNAPL released in 2014 occurred as the fuel migrated through the vadose zone to the aquifer. Apparently, the Navy concurs because in Section 10.4 it states, "Soil vapor monitoring and fingerprinting analysis show that rapid weathering of petroleum is occurring in the vadose zone."

4. Navy report Section 10.3: Navy states that the dozens of interim groundwater flow models show no flow from groundwater at the RHBFSF to Halawa Shaft (barring one model it disregards), that "When operating under normal pumping conditions (REDACTED mgd), Red Hill Shaft captures all groundwater flow from beneath the tanks underlying Red Hill", and that "groundwater flow from beneath the Facility is toward Red Hill Shaft even when Red Hill Shaft is not pumping."

BWS Comment: These conclusions, even if consistent with the Navy's modeling efforts to date, should not be relied upon because the large data set collected during the 2017-2018 synoptic water level survey show very different groundwater levels and gradients than those predicted by the model. Examination of the synoptic water level data show that water levels at Red Hill Shaft often are higher than those at RHMW04 and OWDFMW01 when the shaft is not pumping, contradicting the modeling-based conclusion that "groundwater

flow from beneath the Facility is toward Red Hill Shaft even when Red Hill Shaft is not pumping.” Examination of the head changes at RHMW01, RHMW02, and RHMW03 (the monitoring wells nearest to the tanks) caused by the normal pumping schedule at Red Hill Shaft reveals that pumping causes maximum changes of roughly 0.1 ft. This raises serious questions as to whether Red Hill Shaft is in reality capturing any water from beneath the tanks because the models appear to predict far larger head changes than those observed. Our calculations of groundwater gradients using three monitoring wells and all available 2017-2018 synoptic water level data demonstrate that the groundwater gradient from Red Hill ridge is oriented toward Halawa Shaft whether Red Hill Shaft is pumping or not (please see Figure 2 of the report). This data-based analysis calls into question the model-based conclusion that groundwater from the RHBFSF will not migrate toward Halawa Shaft, particularly where, as here, the interim groundwater flow model predicts results that do reflect real world conditions. Moreover, it highlights the importance of conservatively interpreting the information available about the valley fill and saprolite in Halawa Valley. Unless and until these flaws are addressed, the Regulatory Agencies should not use the Navy interim models as an input to the TUA selection process. During the August 16, 2018 groundwater modeling working group meeting, EPA and DOH contractors stated that the interim model and its results are not “believable” because of the large mismatches between the measured and the simulated hydraulic gradients in the area of Red Hill Shaft. Their statements corroborate our statement that the BWS has no confidence in the current interim model (Lau, 2018a; 2018b; 2018c). When it comes to choosing between actual observations or several dozen poorly-calibrated models that do not match those observations, we recommend that the Regulatory Agencies and other decision makers put aside the models and focus on the actual data.

5. Navy report Section 10.4: Navy states that natural source zone depletion (NSZD) is active in the vadose zone near the RHBFSF fuel tanks based on measurements of carbon dioxide concentrations and temperature differences. Using the temperature data, the Navy estimates that between “between 2,600 and 17,300 gallons per year” are metabolized in the vadose zone within the RHBFSF tank footprint.

BWS Comment: The BWS does not disagree that some degradation of past and ongoing fuel releases occurs in the vadose zone. However, the depletion rates may not be significant for either past, ongoing, or future releases. As we explained in comment 1 above, the purported temperature differences at RHMW02 and RHMW01 are very small and most likely the result of the choice of background well. The temperature differences may also be affected by conduction into the vadose zone of the heat brought into the access tunnels by ventilation, which may lead to overestimates of heat produced by NSZD. The maximum NSZD rate assumes that the LNAPL is distributed across the footprint,

which is not likely unless LNAPL migrates across the entire footprint surrounding the tanks. The minimum leak rate that can be detected using the present methods is about 0.5 gallon per hour per tank, which equates to about 4,400 gallons of fuel per year per tank. Thus, the range of NSZD rates can be exceeded when chronic leaks below the detection level occur at one to four fuel tanks.

6. Navy report Section 10.4: Navy states that “Based on available data, the plume attenuation half-lives for dissolved constituents are likely on the order of 10–100 days.”

BWS Comment: This conclusion is based on an assumption that groundwater flows from monitoring well RHMW02 to monitoring well RHMW01, a situation predicted by the interim groundwater flow model but not observed in the actual groundwater level data from the 2017-2018 synoptic water level survey. Examination of Figure 3 in the report, which depicts the mean water level for each monitoring well based on the thousands of observations collected over the survey period, shows no difference in mean water levels at the two monitoring wells (18.4 ft at both wells). It is not valid practice to derive degradation rates from the differences in concentrations between monitoring wells when the groundwater flow direction is unknown. As in the past, we recommend that the Navy install more groundwater and vadose zone monitoring wells to adequately define the distribution of fuel in the vadose zone and the direction of groundwater flow in the shallow aquifer.

7. Navy report Section 10.7: Navy states that 120,000 to 700,000 gallons could be released from a tank, depending on its location relative to Red Hill Shaft, and “not cause an exceedance of the RBDC at Red Hill Shaft.” These release volumes were calculated assuming that the LNAPL remains entrapped in the 20 to 30 ft below the lower access tunnel.

BWS Comment: As we explain in comment 1 above, this assumption is suspect as no defensible data has been provided demonstrating that LNAPL is retained solely in this part of the vadose zone. Also, Red Hill Shaft water quality is not the only important water quality to be considered. Furthermore, we remain concerned about continuous migration of fuel contaminants captured by infiltrated water that encounters LNAPL in the vadose zone. This recharge-driven mass flux of contaminants will increase as the vadose zone extent of the LNAPL increases.

8. Navy report Section 10.8: In this section on the path forward, Navy states that “Given the results of the interim environmental analysis of current data, conditions are reasonably bounded by the current monitoring well network.”

BWS Comment: This conclusion is unfounded because the current monitoring well network is insufficient to determine the actual hydraulic gradients across Halawa Valley or even the gradients along Red Hill ridge. The dozens of interim models do not adequately match the groundwater levels observed in 2015 or 2017-2018. Evidence indicates that LNAPL has migrated through the vadose zone to the groundwater following the 2014 release and perhaps on several occasions since 2005.

Specific Technical Comments to the Sections Noted Below

1. **Navy report Section 2.C:** LNAPL Release and Source-Zone Model makes no mention of the evidence from concentrations exceeding effective solubility of TPH-d that LNAPL reached groundwater at in monitoring well RHMW02 on multiple occasions. See Figure 1 of the report. Average TPH-d concentrations at RHMW02 have exceeded 5,000 micrograms per liter ($\mu\text{g/L}$) five times since 2005: once in 2008 and four times since the January 2014 fuel spill at Tank 5 (Element Environmental, LLC, 2016). The most recent sample's value was slightly below the GWPP Site-Specific Risk-Based Screening Level (SSRBL) of 4,500 $\mu\text{g/L}$ (Element Environmental, LLC, 2016). The water solubility for JP-5 and JP-8 is 5,000 $\mu\text{g/L}$ (ATSDR, 2016), which is also the water solubility for the F-76 marine diesel fuel (CITGO, 2015) that was stored at the nearby Tank 6 (AMEC, 2002). TPH-d concentrations at RHMW02 have exceeded the ATSDR 5,000 $\mu\text{g/L}$ fuel solubility value for JP-5, JP-8, and F-76 five times since 2005 and four times since the January 2014 fuel spill at Tank 5. Thus, the historical TPH-d concentrations indicate the presence of NAPL from one or more of the tanks near RHMW02. The rapid rise in groundwater TPH-d in RHMW02 immediately after the Tank 5 releases to above the effective solubility appears to indicate that the LNAPL from Tank 5 migrated to groundwater within days.
2. **Section 2.D:** Vadose Zone Model states that basalt vertical hydraulic conductivity is "often orders of magnitude lower" than horizontal hydraulic conductivity. This statement may be true, but, is potentially misleading and/or speculative because it does not explain what is known and what is estimated. Available estimates of horizontal to vertical anisotropy are inherently difficult to determine and, in this case, are solely based on flow models. According to Hunt, "Anisotropy has not been measured directly in Hawaiian lavas" (Hunt, 1996). Hunt listed anisotropy rates of 5:1 to 200:1 for models of regional flow on Maui and Oahu (Hunt, 1996). This sentence should be revised to explain that horizontal-vertical anisotropy has not been measured and estimates are highly uncertain because they are based on models only. Furthermore, anisotropy may be scale-dependent, and so for contaminant transport, it may depend on plume length.

3. **Section 2.D: Vadose Zone Model** states that "Horizontal permeability is significantly higher in the direction that the lava flowed." This appears to be mere conjecture because the Navy has neither cited nor presented any studies or other evidence that demonstrate whether there is horizontal anisotropy at any scale in the basalt aquifer.

4. **Section 2.F: Fate and Transport of LNAPL and Dissolved COPCs in Groundwater** states "Occurrence of LNAPL is primarily limited to a depth of 30 ft beneath wells RHMW02 and RHMW03." As explained by the DOH's SME on August 16, 2018, studies have shown that thermal data provide little to no indication of LNAPL location in the subsurface. Any temperature anomaly at monitoring well RHMW02 (if it exists), may be due to leaks from Tank 6, not Tank 5. AMEC reported forensic analysis of 2 core samples and 2 fluid samples revealed weathered fuels from beneath Tanks 6, 11, and 14 and unweathered fuel from beneath Tanks 6 and 14 (AMEC, 2002). The Navy's conclusion is directly contradicted by the available evidence that LNAPL migrated to the water table after the January 2014 release and at recent times since 2005. The conclusion places inappropriate weight on the small temperature differences calculated for monitoring well RHMW02 given that the slightly elevated temperatures calculated for this well are a function of the choice of background well. The only clear evidence of elevated temperatures in the subsurface is at monitoring well RHMW03, which is relatively distant from Tank 5. Lastly, the rapid rise in concentration at the "deep" (distal) soil vapor monitoring point beneath Tank 5 following the 2014 release shows that LNAPL quickly migrated to at least 26 ft below the lower access tunnel and then an unknown distance further downward over time.

5. **Section 2.G: Exposure Model** ends with the text below. BWS comments are found in italicized underlined parentheses following each sentence:

"Even if some LNAPL had migrated to the saturated zone, the source would be very small, as evidenced by the depletion in naphthalene concentrations after the 2014 release. *(BWS Comment: Section 4.2 states "The concentrations of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene are equal to or greater than the expected concentration based on the effective solubility of these compounds in jet fuel" at monitoring well RHMW02. Continued anaerobic conditions and high TPH-d concentrations in 2014-2016 provide strong indications that LNAPL was present in or near RHMW02).* The thermal study conducted in October 2017 shows evidence that residual LNAPL is primarily limited to a depth of 30 ft beneath wells RHMW02 and RHMW03 and is being biodegraded. *(BWS Comment: According to the DOH's SME, studies have shown that temperature is a poor indicator of the location of LNAPL in the subsurface.)* COPC concentrations in groundwater suggest that there is not a significant source of LNAPL at the water table. *(BWS Comment: Continued*

anaerobic conditions and high TPH-d concentrations in 2014-2016 provide strong indications that LNAPL was present in or near RHMW02.) General transport of COPCs in the dissolved plume is in the southwest direction toward Red Hill Shaft. (BWS Comment: Synoptic water level data do not show such a migration direction – see report Figure 3). Migration to the southeast and northwest is limited by the extent of lower-permeability materials (valley fill and saprolite) extending below the water table in the valleys bounding the Facility. (BWS Comment: The Navy’s interpretation of the core from RHMW11 is not the only possible interpretation and is not conservative. Our review of the core indicates saprolite does not extend as deep as the Navy has interpreted.) Attenuation of COPCs in the dissolved plume in the saturated zone limit the extent of the existing dissolved plume before reaching Red Hill Shaft under present conditions and within the context of historical releases”

6. **Section 3.2:** Release History does not list all of the evidence for LNAPL beneath the RHBFSS tanks. According to AMEC (AMEC, 2002), multiple lines of evidence for LNAPL contamination were collected beneath Tanks 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 16, 17, 18, 19, and 20:
 - a. LNAPL or a mixture of fuel and water was detected in the borings beneath Tanks 1, 13, 14, 17, and 19;
 - b. Core samples from Tanks 1, 2, 6, 14, 16, and 17 had concentrations of TPH-d, ethylbenzene, naphthalene, or methylene chloride that exceeded DOH Tier I Environmental Action Limits (EALs) with TPH-d values of 25,300 ppm (milligrams per kilogram of core – mg/kg) at Tank 1, 10,200 and 43,100 mg/kg at Tank 6, and 26,200 mg/kg at Tank 16; Additional constituents detected in core samples where a EAL has not been established by DOH include: 2-methylnaphthalene, 4-methyl-2-pentanone, bis(2-ethylhexyl)phthalate, chrysene, dibenzofuran, fluorene, methyl ethyl ketone (MEK), phenanthrene, pyrene, and total xylenes;
 - c. Forensic analysis of 2 core samples (Tank 6 and Tank 14) and 2 fluid samples (Tank 6 and Tank 11 – samples collected during boring activities not from the vapor monitoring wells) revealed weathered fuels from beneath Tanks 6, 11, and 14 and unweathered fuel from beneath Tanks 6 and 14.
7. **Section 3.6:** Conclusions. BWS disagrees with all but one of the seven conclusions for the reasons already discussed above.
8. **Section 5:** Interim Groundwater Flow Model.
 - a. During the August 16, 2018 meeting EPA and DOH’s contractors identified significant concerns and short-comings about the Navy’s interim groundwater flow model. EPA and DOH contractors stated that the

interim model and its results are not “believable” because of the large mismatches between the measured and the simulated hydraulic gradients in the area of Red Hill Shaft. In addition to the concerns with the mismatches between the observed and simulated hydraulic gradients, EPA and DOH shared nine other concerns with the USGS, the Navy, and the BWS. The discussions of concerns by DOH’s and EPA’s consultants support the BWS position that the interim model and its results are not adequate for assessing the risk from the RHBFSF to our drinking water supply.

- b. EPA and DOH SMEs analyzed the synoptic water level data from 2017-2018 to estimate the groundwater gradient between each pair of wells for every 10-minute period with measurements (DOH-EPA comment number 4). They also calculated the frequency of occurrence of those gradients for times when Red Hill Shaft was pumping and times when it was not. They then compared the observed water level gradients to those predicted by the interim model and identified very large differences between observed and modeled gradients. These findings corroborate our recently communicated concerns about the significant discrepancies between observed groundwater levels and those predicted by the interim model (Lau, 2018b; 2018c). Because the model-predicted groundwater levels are incorrect, the model-predicted capture zones for Red Hill Shaft are also incorrect, and the Navy’s argument that Red Hill Shaft pumping will intercept all fuel contaminants that leak from the tanks is without merit. Consequently, the current interim model should not be used to inform the tank upgrade alternative (TUA) decision process.
- c. Robert Whittier of the DOH pointed out early this year that the “calibrated” interim model predicted groundwater heads did a poor job of matching the observed heads and created a gradient along Red Hill ridge where none exists (Lau, 2018a). In our comment letter for the ninth groundwater modeling working group meeting (Lau, 2018a), the BWS showed how the interim groundwater flow model’s predicted 2017 steady-state groundwater levels did not match any measured levels made during six different months in 2017 at the monitoring wells at the RHBFSF. Nor did the interim groundwater model’s predictions match the Navy’s 2017 steady-state observed levels for these same monitoring wells. Furthermore, average 2017 heads based on thousands of measurements made during the synoptic water level survey show no evidence of a gradient from northeast to southwest along Red Hill ridge (see report Figure 3). The heads and gradients predicted by the interim model for 2017 in and around Red Hill ridge do not match the observed heads and gradients (see Figures 2 and 3). This disparity is readily apparent in Table 5.8.2-1, which shows differences between predicted and observed 2017 heads as large as roughly 3 ft.

- d. The synoptic water level data for a two-week period when Red Hill Shaft is not pumping reveal that water levels at Red Hill Shaft often are higher than those at RHMW04 and OWDFMW01. The head differences between the shaft and RHMW02, where the highest levels of contamination have been observed, are very small. Thus, the available data and observed real world conditions appear to be in direct conflict with the Navy's modeling-based conclusion that "groundwater flow from beneath the Facility is toward Red Hill Shaft even when Red Hill Shaft is not pumping".
 - e. Observed head changes at RHMW01, RHMW02, and RHMW03 (the monitoring wells nearest to the tanks) caused by the normal pumping schedule at Red Hill Shaft during the 2017-2018 synoptic water level survey show that pumping causes maximum changes of roughly 0.1 ft at each of these wells. This calls into question whether Red Hill Shaft is in reality capturing any water from beneath the RHBFSF fuel tanks with such small head changes attributable to Red Hill Shaft pumping. In contrast, the interim models appear to predict far larger head changes than those observed. We request that the Regulatory Agencies ensure that the Navy carry out the work necessary to demonstrate with a high degree of confidence that such small head changes do indeed guarantee capture of groundwater beneath the tanks by pumping at Red Hill Shaft. If capture is not occurring now, then it remains unclear what will happen to any contaminants released from the RHBFSF to the groundwater. The disparities between observed and modeled heads and gradients indicate that the several dozen interim models cannot provide answers with any confidence.
9. **Section 8.1: Mass Flux and Trigger Levels.** The approach described in this section is neither conservative nor defensible. It unjustifiably assumes that pumping at Red Hill Shaft will maintain a completely effective capture zone without fail into the future. The BWS questions the validity of estimating risk-based levels for contaminant levels at the sentinel wells without directly addressing important uncertainty about the subsurface environment and flow system in Halawa and Moanalua Valleys.
- a. This section states that the site-specific risk-based levels (SSRBLs) will be calculated as a function of pumping at the Red Hill Shaft but does not explain how such a calculation is applicable to receptors other than Red Hill Shaft. Where is the approach for calculating the SSRBLs for Halawa Shaft and Moanalua Wells? On what basis should the SSRBL for a sentinel well in Halawa Valley (or Moanalua Valley) be calculated as a function of Red Hill Shaft pumping?
 - b. The equation for calculating SSRBL values for each sentinel well that is shown in lines 6 to 14 on page 52 contains conceptual and numerical

errors. SSRBL concentration is defined as the ratio of some mass flux and pumping at Red Hill Shaft. If the pumping rate is kept very low, this equation could yield SSRBLs with dangerously high concentrations that will allow extensive contamination, instead of protecting our aquifer. This section should be revised because the conversion factor of "184 micrograms - gallon - day [$\mu\text{g-gal-day}$] / grams - liter - day [g-L-min]" is either numerically incorrect or the equation itself is in error assuming concentration is defined as parts per billion ($\mu\text{g/L}$).

10. Section 9.1: Hypothetical Large Release. This section assumes that LNAPL from the Tank 5 leak was retained within the upper one third of the vadose zone below the lower access tunnel. For the reasons we have explained above, this assumption is poorly supported or contradicted by the available data. Therefore, all of the calculations and results that rely upon this assumption are also flawed. In brief, the volume of fuel that hypothetically could be released without resulting in any exceedances of RBDC at Red Hill Shaft or other water supplies becomes much smaller if this assumption is not applicable. Based on our review of the available data, it is our understanding that LNAPL from the January 2014 release reached the water table. The Navy's statement that 120,000 to 700,000 gallons could be released from a tank, depending on its location relative to Red Hill Shaft, without affecting water quality at Red Hill Shaft depends on this assumption. Given the importance of understanding how LNAPL is distributed throughout the vadose zone, BWS requests that the AOC Parties collect data about LNAPL distribution in the subsurface from cores. We remain concerned that this analysis ignores the migration of fuel contaminants to the drinking water aquifer within infiltrating water (which will become groundwater recharge) that dissolves out contaminants from LNAPL present in the vadose zone.

Thank you for the opportunity to comment. If you have any questions, please feel free to call Erwin Kawata, Program Administrator of the Water Quality Division, at 808-748-5080.

Very truly yours,


ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

cc: Mr. Steve Linder, United States Environmental Protection Agency, Region IX
Mr. Mark Manfredi, NAVFAC Hawaii

Enclosure: Attachment 1 – Release Response Report, RHBFSF Tank 6, 2002

References

- AMEC Earth & Environmental, Inc. (AMEC). 2002. Comprehensive Long-Term Environmental Action Navy (CLEAN) for Pacific Division, Naval Facilities Engineering Command, Pearl Harbor, Hawai'i. Red Hill Bulk Fuel Storage Facility Investigation Report (Final) for Fleet Industrial Supply Center O'ahu, Hawai'i. August.
- Agency for Toxic Substances and Disease Registry (ATSDR). 2016. Draft Toxicological Profile for JP-5, JP-8, and Jet A Fuels. Draft for public comment. TP-121. February 2016.
- Element Environmental, LLC. 2016. Final Second Quarter 2016 – Quarterly Groundwater Monitoring Report Inside Tunnel Wells. Red Hill Bulk Fuel Storage Facility Joint Base Pearl Harbor-Hickam, Oahu, Hawaii. July 2016.
- Hunt, C.D. 1996. Geohydrology of the Island of O'ahu, Hawai'i. US Geological Survey Prof. Pap. 1412-B 54.
- Lau, E. 2016. Response to Cover Letter Enclosing Work Plan / Scope of Work, Investigation and Remediation of Releases and Groundwater Protection and Evaluation, Red Hill Bulk Fuel Storage Facility, November 5, 2016, Revision 01 Under the Administrative Order on Consent (AOC) Statement of Work (SOW) Sections 6 and 7. November 21.
- Lau, E. 2018a. Honolulu Board of Water Supply (BWS) Comments on the Red Hill Administrative Order on Consent (AOC) Statement of Work (SOW) Sections 6 and 7 Groundwater Modeling Working Group Meeting No. 9 held March 16, 2018. April 24.
- Lau, E. 2018b. Honolulu Board of Water Supply (BWS) Comments on the Red Hill Administrative Order on Consent (AOC) Statement of Work (SOW) Sections 6 and 7 Groundwater Modeling Working Group Meeting (GMMWG) No. 10 held April 13, 2018. April 30.
- Lau, E. 2018c. Honolulu Board of Water Supply (BWS) Comments on the Groundwater Flow Model Progress Report 04, Red Hill Bulk Fuel Storage Facility (RHBFSS), dated April 5, 2018. May 24.



DEPARTMENT OF THE NAVY

COMMANDER
NAVY REGION HAWAII
517 RUSSELL AVENUE, SUITE 110
PEARL HARBOR, HAWAII 96860-4884

JUL 23 2002

7/24/02

IN REPLY REFER TO:

5090
Ser N465/ 00222

17 JUL 2002

CERTIFIED MAIL NO. 7001 1940 0006 1626 3077

Hawaii State Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
Underground Storage Tank Section
919 Ala Moana Boulevard Suite 212
Honolulu HI 96814

QT

SUBJECT: CONFIRMED RELEASE NOTIFICATION FOR RELEASE AT RED HILL TANK
COMPLEX, FLEET AND INDUSTRIAL SUPPLY CENTER (FISC) PEARL
HARBOR

Gentlemen:

In accordance with Subchapter 7, Chapter 281, Title 11 of the Hawaii Administrative Rules, and as discussed during the meeting at the State of Hawaii DOH on July 2, 2002, enclosure (1) is submitted. The suspected releases were discovered during a preliminary site investigation of the Red Hill Tank Complex. The final report should be completed shortly, and will be forwarded to your office as soon as it is available. We are submitting a single Confirmed Release Notification form for the entire Red Hill Tank Complex, even though previous notifications were made for suspected releases at tanks 6 and 16. This is because any response or remedial actions from now on will likely be directed at the Complex as a whole instead of at individual tanks. We will notify your office of follow on actions at a later date.

If there are any questions regarding this matter, please contact Mr. John T. Muraoka at (808) 471-1171, extension 214.

Sincerely,

R. M. WAKUMOTO
Director (Acting)
Regional Environmental Department
By direction of
Commander, Navy Region Hawaii

Enclosure: 1. State of Hawaii Confirmed Release Notification Form for
Red Hill Tank Complex, FISC Pearl Harbor

Copy to: Commanding Officer, Fleet Industrial Supply Center, Pearl
Harbor (Code 700)

APPENDIX 5-B

CONFIRMED RELEASE NOTIFICATION FORM

STATE USE ONLY			
Facility ID:	Release ID:	Date Sent:	Date Received: JUL 23 2002
GENERAL INFORMATION AND INSTRUCTIONS			
<p>This form should be completed immediately and only after reporting a confirmed release by telephone within 24-hours to the Hawai'i DOH UST Section. Completion of this notice will serve to fulfill part of the notification requirements of HAR 11-64-71. Please type or print in ink all items except "Signature" in Section III. This form must be completed for each UST release occurrence. Completed form must be mailed to: Department of Health, Solid and Hazardous Branch, 919 Ala Moana Boulevard, Room 212, Honolulu, Hawaii 96814</p>			
I. REPORTING PARTY AND FACILITY INFORMATION			
24-Hour Reporting Party Name, Title, & Affiliation:			
John Santo Salvo, LCDR, USN, Director, FISC Fuel Department			
Facility Name & Address:			
Red Hill Tank Complex, FISC, Pearl Harbor			
Facility Contact Person, Affiliation, & Address:			
John Muraoka, Environmental Engineer, CNR-HI, Ph: 471-1171			
Facility Information: (Check only one item)			
<input type="checkbox"/> Gas Station	<input type="checkbox"/> Aircraft Owner	<input type="checkbox"/> State Government	<input type="checkbox"/> Commercial
<input type="checkbox"/> Petroleum Distributor	<input type="checkbox"/> Auto Dealership	<input type="checkbox"/> Federal Non-Military	<input type="checkbox"/> Industrial
<input type="checkbox"/> Airline	<input type="checkbox"/> County Government	<input checked="" type="checkbox"/> Federal Military	<input type="checkbox"/> Truck/ Transportation
<input type="checkbox"/> Utilities	<input type="checkbox"/> Other		
II. RELEASE INFORMATION (Circle all that apply in Items A-H)			
A. Source of the Release: Piping Tank(s) Spill Overfill			
Red Hill Tank Complex (see atch)			
If "Tank(s)" list tank sizes:			
B. Method of Discovery & Confirmation: Closure Monthly Release Detection Tightness Test Site Check			
Other (Specify): site investigation			
C. Estimated Quantity of Substance Released: Gallons XX Unknown			
D. Type of Substance Released: Unleaded Gas Leaded Gas Diesel Used or Waste Oil Hazardous Substance			
Other (Specify): unknown			
E. Immediate Hazards: Explosion Fire Vapor Exposure Recoverable Free Product Drinking Water Threat			
Other (Specify): none			
F. Release Impact: Surface Water possible Ground Water XX Soil Air			
G. Migration Pathways: None Utility Conduits Subsurface Drains Sewer Lines Unknown			
Other (Specify): unknown			
H. Actions Taken: Evacuated Nearby Area/Removed UST Contents/Recovered Free Product/Excavated Soils/Ground Water/Recovery			
Other (Specify):			
III. UST OWNER OR OPERATOR CERTIFICATION (Read and sign after completing all sections to the extent possible)			
I certify under penalty of law that I have examined and am familiar with the information submitted in this notice, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true and accurate.			
Name, Title, & Company:			
John Santo Salvo, LCDR, USN, Director, FISC Fuel Department			
Signature: <i>John Santo Salvo</i>		Date: 7/10/02	
		DOH Form CRN (8/92)	

Summary of Site Investigation of Red Hill Tank Complex

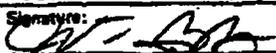
Tank No.	Date sampled	Items Detected	
		Core	liquid
1	7 Feb 01	TPH, lead	TPH, lead
2	5 Feb 01	TPH, methylene chloride	
3	31 Jan 01	TPH, lead, acetone	
4	29 Jan 01	TPH, lead, acetone	
5	25 Jan 01	TPH, lead, acetone, naphthalene	
6	19 Jan 01	TPH, lead	lead
7	17 Jan 01	TPH, lead, acetone, naphthalene, xylene, ethylbenzene	
8	15 Jan 01	TPH, lead	
9	26 Jan 01	unknown hydrocarbon	
10		nothing detected	
11	15 Dec 00	TPH, toluene, xylene, ethylbenzene lead, acetone	
12	12 Dec 00	TPH	
13	11 Dec 00	TPH, lead, acetone	TPH
14	6 Dec 00	TPH, toluene, xylene, ethylbenzene , naphthalene	
15	4 Dec 00	TPH, acetone	
16	22 Oct 98	unknown hydrocarbon, naphthalene, toluene, xylene, ethylbenzene	unknown hydrocarbon, xylene
17	1 Nov 00	TPH, methylene chloride , toluene, lead	lead
18	6 Nov 00	toluene, lead	
19	22 Nov 00	TPH, naphthalene, ethylbenzene, xylene	lead
20	2 Mar 01	TPH, lead	
	vertical well		TPH, lead

Note:

- Under items detected, for both the core and liquid samples, the values in bold denote values exceeding tier I levels.
- In some cases, a liquid was found in the boring. In these cases, the liquid was sampled and tested. The results are shown in the 'liquid' column.
- Confirmed Release Notifications have already been submitted for tanks 6 and 16.

APPENDIX 5-B

CONFIRMED RELEASE NOTIFICATION FORM

STATE USE ONLY			
Facility ID: 920001	Release ID: 020022	Date Sent:	Date Received:
GENERAL INFORMATION AND INSTRUCTIONS			
This form should be completed immediately and only after reporting a confirmed release by telephone within 24-hours to the Hawaii DOH UST Section. Completion of this notice will serve to fulfill part of the notification requirements of HAR 11-64-71. Please type or print in ink all items except "Signature" in Section III. This form must be completed for each UST release occurrence. Completed form must be mailed to: Department of Health, Solid and Hazardous Branch, 919 Ala Moana Boulevard, Room 212, Honolulu, Hawaii 96814			
I. REPORTING PARTY AND FACILITY INFORMATION			
24-Hour Reporting Party Name, Title, & Affiliation: John Santo Salvo, LCDR, USN, Director, FISC Fuel Department			
Facility Name & Address: Red Hill Tank Complex, FISC Pearl Harbor			
Facility Contact Person, Affiliation, & Address: John T. Muraoka, Envir. Engr., CNR-HI Ph: (808) 471-1171			
Facility Information: (Check only one item)			
<input type="checkbox"/> Gas Station	<input type="checkbox"/> Aircraft Owner	<input type="checkbox"/> State Government	<input type="checkbox"/> Commercial
<input type="checkbox"/> Petroleum Distributor	<input type="checkbox"/> Auto Dealership	<input type="checkbox"/> Federal Non-Military	<input type="checkbox"/> Industrial
<input type="checkbox"/> Airline	<input type="checkbox"/> County Government	<input checked="" type="checkbox"/> Federal Military	<input type="checkbox"/> Truck/Transportation
II. RELEASE INFORMATION (Circle all that apply in items A-F)			
A. Source of the Release: Piping Tank(s) Spill Overfill			
If "Tank(s)" list tank sizes: Tank 6, 13 million gallons			
B. Method of Discovery & Confirmation: Closure Monthly Release Detection Tightness Test Site Check			
Other (Specify): Inventory check			
C. Estimated Quantity of Substance Released: Gallons X Unknown			
D. Type of Substance Released: Unleaded Gas Leaded Gas Diesel Used or Waste Oil Hazardous Substance			
Other (Specify): JP-5 Fuel			
E. Immediate Hazards: Explosion Fire Vapor Exposure Recoverable Free Product Drinking Water Threat			
Other (Specify): None			
F. Release Impact: Surface Water possible Ground Water X Soil Air			
G. Migration Pathways: None Utility Conduits Subsurface Drains Sewer Lines XX Unknown			
Other (Specify):			
H. Actions Taken: Evacuated Nearby Area/Removed UST Contents/Recovered Free Product/Excavated Soils/Ground Water/Recovery			
Other (Specify): Tank has been drained and taken out of service			
III. UST OWNER OR OPERATOR CERTIFICATION (Read and sign after completing all sections to the extent possible)			
I certify under penalty of law that I have examined and am familiar with the information submitted in this notice, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true and accurate.			
Name, Title, & Company: John Santo Salvo, LCDR, USN, Director, FISC Fuel Department			
Signature: 		Date: 4/16/02	DOH Form CRN (8/92)

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com



November 1, 2018

*Received 11/1/18
at FTA committee mtg*

KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
KAY C. MATSUI
RAY C. SOON
MAX J. SWORD

ROSS S. SASAMURA, Ex-Officio
JADE T. BUTAY, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer *Ellen*

Dr. Bruce Anderson, Chair
Fuel Tank Advisory Committee
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Dr. Anderson:

Subject: Board of Water Supply (BWS) Letter Dated August 20, 2018 Concerning The Inspection on June 25, 2018 of Coupons Removed from Tank 14 at the Red Hill Bulk Fuel Storage Facility (RHBFSF) and BWS Letter Dated October 2, 2018 Concerning the Groundwater Protection and Evaluation Considerations for the RHBFSF Report dated July 27, 2018

We submit the subject letters for the Committee's information and request a copy be included in the final official Committee report to the legislature.

The BWS comment letter on the Tank 14 coupons discusses the presence of substantial corrosion on the backside of the ¼-inch thick steel plate lining samples (called coupons) taken from Tank 14. It also notes deposits on the backside of some coupons that suggest hydrocarbon-staining and concerns that the non-destructive evaluation (NDE) techniques used to scan the lining were not able to locate and measure the thinnest wall of the coupon.

The Navy's Groundwater Protection and Evaluation Considerations for the RHBFSF Report, dated July 27, 2018 is available on the United States Environmental Protection Agency's (EPA) website and is titled "interim groundwater flow model". It also has been referred by the Navy as the "tank upgrade alternative (TUA) technical memo". The BWS comment letter to this report expresses concerns that the Navy's groundwater model is based on aquifer properties that are not consistent with all of the field data and were selected to promote groundwater flow toward Red Hill Shaft and to reduce the risk of contaminant migration toward Halawa Shaft. The Navy's groundwater model is also unable to reproduce groundwater levels observed in the field showing large differences between measured and simulated water levels. The depth of valley fill that the Navy is using in the model is overestimated and unsupported by the data (or lack thereof); overestimates the hydraulic conductivity of the caprock causing mismatches between

Dr. Bruce Anderson
November 1, 2018
Page 2

observed and predicted groundwater levels and flow patterns; does not adequately account for the effect of preferential flow paths and assumes the basalt is uniform and homogeneous which is not true. Our concerns with the Navy's model has also been expressed by the EPA and Department of Health (DOH) subject matter experts. The BWS recommends that the Navy's interim groundwater model conclusions be rejected and none of the model predictions be considered in the TUA decision.

We also request the final Committee report include a copy of all PowerPoint presentation slides, handouts and other materials submitted by any party. Since the DOH already makes these materials available on its website, including a copy in the final official report to the legislature ensures a complete document that includes all materials and documents submitted and reviewed by the Committee.

If you have any questions, please feel free to call me, at 808-748-5061.

Very truly yours,



ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Enclosure

cc: Mr. Steve Linder, United States Environmental Protection Agency, Region IX
Mr. Mark Manfredi, NAVFAC Hawaii

Appendix F

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com



December 24, 2018

KIRK CALDWELL, MAYOR

BRYAN P. ANDAYA, Chair
KAPUA SPROAT, Vice Chair
KAY C. MATSUI
RAY C. SOON
MAX SWORD

ROSS S. SASAMURA, Ex-Officio
JADE T. BUTAY, Ex-Officio

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

ELLEN E. KITAMURA, P.E.
Deputy Manager and Chief Engineer 

Dr. Bruce Anderson
Chair
Fuel Tank Advisory Committee
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Attention: Ms. Thu Perry

Dear Dr. Anderson and Ms. Perry:

Subject: Honolulu Board of Water Supply (BWS) Comments on draft "Report to the Thirtieth Legislature, State of Hawaii, 2019, Pursuant to Section 342L-62 Hawaii Revised Statutes, The Third Annual Fuel Tank Advisory Committee Meeting to Study the Issues Related to Leaks of Field-Constructed Underground Storage Tanks at Red Hill Bulk Fuel Storage Facility and Four Other DOD Facilities", Prepared By: State of Hawaii, Department of Health (DOH), Underground Storage Tank Section, dated December 2018

The BWS appreciates the opportunity to be a member of the Fuel Tank Advisory Committee (FTAC) and participate in the FTAC meeting held on November 1, 2018 and also those in 2016 and 2017. BWS also participates as a subject matter expert (SME) pursuant to the Red Hill Bulk Fuel Storage Facility (RHBFSF) Administrative Order on Consent (AOC) Statement of Work (SOW) by reviewing various work documents and attending AOC technical meetings.

The BWS reviewed the subject draft report and offers the following comments.

General Comments

Under Chapter 342L, Section 62, the FTAC is required to submit a report after its annual meeting on its findings, including groundwater test results, and recommendations, including any proposed legislation, to the legislature. The draft report summarizes the 2018 meeting discussions but does not include recent groundwater test results, nor any recommendations and/or proposed regulations as is required under the FTAC charter.

Opening Remarks – Rear Admiral Brian Fort

Page 3, Paragraph 2: The report states that the Rear Admiral specifically stated that the work to continually “modernize” the RHBFSF was being done to ensure safe operations and emphasized that the RHBFSF is considered “critical infrastructure” by the Department of Defense. This is all the report states about his opening remarks. In fact, Rear Admiral Fort made several claims, critical infrastructure was just one, that were presented as factual statements, and the BWS rejects as either incorrect or misleading certain of these statements as discussed in greater detail below. The DOH should consider adding considerable text to this paragraph to more accurately describe the Rear Admiral’s remarks. The BWS believes the report should reflect an accurate account of the discussions and presentations made at the meeting to ensure content correctness.

For example, Rear Admiral Fort stated: “The Navy doubles the American Petroleum Institute approved industry standard for steel liners on the tanks at Red Hill. Those tanks as designed are quarter-inch steel; that’s 0.25-inches. The API standard for such liners is only 0.05 inches.” The API standard referenced by the Rear Admiral is for aboveground tanks and does not apply to the underground tanks at the RHBFSF. Instead, the Navy presentation appears to have misinterpreted an API standard that does not apply to the RHBFSF. Namely, the standard prescribes a minimum thickness (0.05 inches) for the floor of an aboveground tank with secondary containment. The loading and behavior of dome and barrel liners differ fundamentally from the floor of an aboveground tank, and there is no secondary containment for the RHBFSF tanks (as demonstrated in the 2014 release). There is, therefore no additional factor of safety on the Navy’s provision for remaining wall thickness as stated by the Navy.

In another example, the Rear Admiral stated: “Each of these tanks must pass an annual tank tightness test as part of our modernization. No tank has ever failed a tank tightness test”. The Navy reliance on tank tightness testing results does not prove that the tanks are not leaking. It is a fact that the RHBFSF tanks can test “tight” yet still leak up to 0.5 gallon/hour of fuel through the steel liner. For a RHBFSF tank, that may result in the loss of up to 4,000 gallons of fuel in a given year.

The Rear Admiral also stated that “the [Tank 5] fuel release, now almost 5 years ago, was the one and only release to the public since the Clean Water Act of 1988. The one and only release.” This is inconsistent with available records of the leak history at the RHBFSF. The BWS, by simply reviewing reports issued by the Navy, found that a release from Tank 6 was reported by the Navy in 2002 (a copy of this Navy completed DOH release report was passed out at the meeting by the BWS). Further, inspection reports provided by the Navy in its recent Tank Inspection Repair and Maintenance report indicate that Tank 15, Tank 16, Tank 19, Tank 10, Tank 5, Tank 17, and Tank 20 underwent inspections after 1988 that identified through-wall corrosion, and, by

extension, leaks occurred. The groundwater data from monitoring wells RHMW01 and RHMW02 are likewise indicative of multiple leaks as evidenced by TPH-d detections in ground water samples. Quite simply, the release from Tank 5 in 2014 is not the only release from the RHBFSF since 1988.

The BWS requests that the DOH amend its report accordingly so the FTAC Report is complete and the State Legislature and the public is adequately informed.

“No conclusions could be made from only a visual observation.”

Page 4, Paragraph 6, Third Sentence: “Some of the coupons were selected because they appear to meet the repair criteria while others were chosen for the fact that it would not require repair. The Navy’s presentation addressed each coupon that was cut out but emphasized that no conclusion could be made from only a visual observation.”

...Page 4, Paragraph 7, First Sentence: HBWS made a formal request for the raw data, anticipated from the laboratory from analysis of the coupons, to be given to them in order to obtain an “independent assessment over the effectiveness of the NDE process.”...

The BWS agrees that the Navy selected coupons from two general classes: those that likely needed repair and those expected not to require repair. BWS takes issue with the Navy’s statement that “no conclusions could be made from only visual observations.” It is BWS opinion that, based on our visual inspection of the coupon’s cut edges, it is unlikely the Navy’s stated “quantitative validation” criteria (NAVFAC, 2018) will be realized. The Navy’s quantitative validation criteria requires that the Navy demonstrate that pit depth is within 20 mils of actual laboratory results and that wall thinning is within 5% of actual laboratory results (NAVFAC, 2018). We believe, even given the very few coupons removed and the limited measurements BWS was allowed to perform, that these observations indicate that the Navy is unlikely to achieve its “quantitative validation” criteria regarding nondestructive evaluation (NDE) techniques. We request that a statement be made in the FTAC report that reflects the uncertainty associated with the current Navy NDE methods and that the Navy should not rely on the unproven accuracy of the NDE in going forward with a single-wall TUA option. Further, the Navy has not allowed BWS to measure the maximum pit depth nor to review the third-party coupon sample laboratory destructive testing report. BWS requests the opportunity to do one or both in order to revisit our preliminary opinions.

TUA Selection ... (identified as Options 1A and Option 1B as a pilot during the question and answer period)

Statement: The Navy identified their planned TUA selection as their current clean, inspect and repair regimen, ... identified as options 1A and 2B on Slide #31 of Appendix D and on pages 82 and 83 of Appendix C). The Navy listed two factors in this selection. The first is that historically, the tanks have not failed. The 2014 release was from "bad contractor, bad quality control, bad quality assurance, [and] operator error."

First, the DOH report likely refers to TUA 1B and not TUA 2B (TUA 2B is for a stainless-steel composite wall that, to our understanding, the Navy has not recommended). Contractors were only working on Tank 5 because of defects and deterioration. Therefore, any leaks attributed to their errors, and the Navy's inability to properly supervise and inspect the work, is at the most fundamental level due to tank deterioration. Second, human error is but one of the underlying causes of potential tank leaks. Human errors that increase the likelihood of leaks are not limited to the type of flawed weld repairs that failed in Tank 5, but also include errors in scanning for corroded areas, errors in scanning for weld defects, errors in testing repair patches, and errors in applying and inspecting coatings. The advantage of moving the tanks to a new location that is not over the aquifer is that any leaks due to human errors will not contaminate the drinking water. The advantage of secondary containment is that any leaks through the primary liner due to human errors should be captured by the secondary liner rather than released into the environment.

Specific Comments

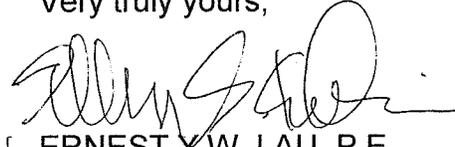
The BWS requests that the second and third sentences of the first paragraph on Page 5 be revised as follows: "The Navy identified their planned TUA selection as their current clean, inspect and repair regimen, with many improvements including the installation of a more accurate leak protection system, and a pilot of epoxy coating the bottom dome and barrel of one tank (identified as options 1A and 1B) on slide #31 of Appendix D). Currently, under the Navy's planned TUA selection, only the bottom dome of the tanks will be coated. The Navy stated that there are engineering challenges to coating the whole tank that needs to be addressed in the pilot study."

The BWS requests that the second sentence of the first paragraph be revised as follows: "Mr. Lau reiterated the request to get the corrosion data from the coupons so that HBWS experts could examine independently." Please add sentences following this statement: "Along with Mr. Lau, Senator Thielen also stressed that the Navy send the laboratory report for the coupon samples to the HBWS for independent evaluation. Further, Captain Delao committed to transparency and to sending the HBWS the name of the laboratory that analyzed the coupon samples."

Dr. Anderson and Ms. Perry
December 24, 2018
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Thank you for the opportunity to comment. If you have any questions, please feel free to call Erwin Kawata, Program Administrator of the Water Quality Division, at 808-748-5080.

Very truly yours,



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Reference

NAVFAC, 2018. Red Hill Bulk Fuel Storage Facility Scope of Work for Destructive Testing Supplement - Destructive Testing Plan, Supplement to Administrative Order on Consent (AOC) and Statement of Work (SOW) Section 5.3.2, June 1.