

Red Hill Bulk Fuel Storage Facility Update

Board of Water Supply County of Honol

City a

Board Meeting September 24, 2018





Today's Discussion

- Visual Examination of Steel Liner Samples (Coupons) Removed from Red Hill Bulk Fuel Facility Tank 14
- Tank upgrade alternatives (TUA) discussion to date and timeline
- Next steps

Fuel side

of liner

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Vapor or fuel

Steel liner

Concrete Native rock

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O Gap

1/4″

< 4'

Vapor

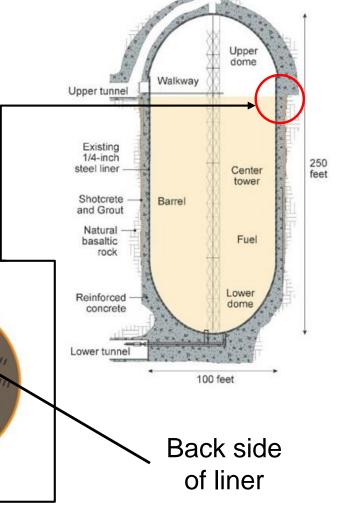
Fuel



Study Condition of Existing Tank

- Examine fuel side and back side of tanks.
- How well is non-destructive evaluation (NDE) techniques able to identify need for tank repairs

Existing Tank

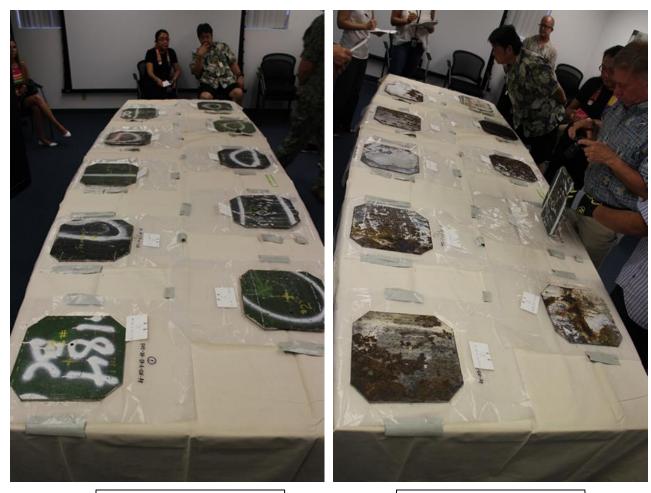


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Tank 14 Coupon Viewing

- June 18 -22, 2018 Navy removed ten 12" X 12" coupons from Tank 14
- June 25, 2018
 Coupons viewed by regulatory agencies and interested subject matter experts (SMEs)

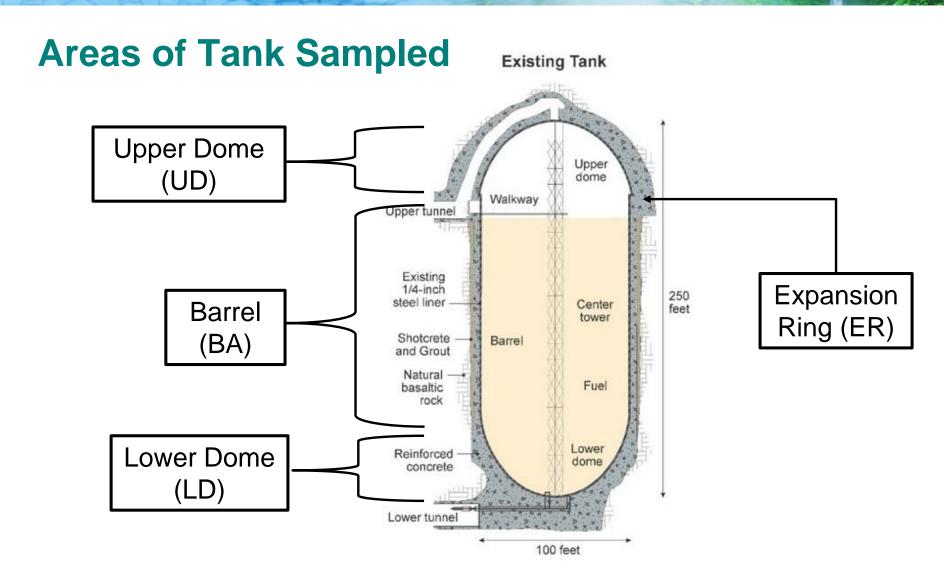


Coupons with Fuel Side Up

Coupons with Back Side Up

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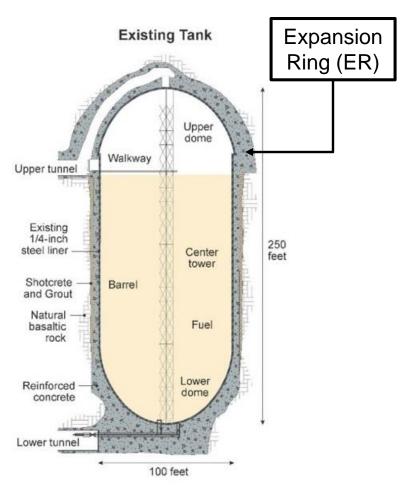


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(Coupon #2) Expansion ring – fuel side





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(Coupon #2) Expansion ring – back side



NDE Prediction:

Remaining thickness: 0.150" to 0.157"

June 25th Observations:

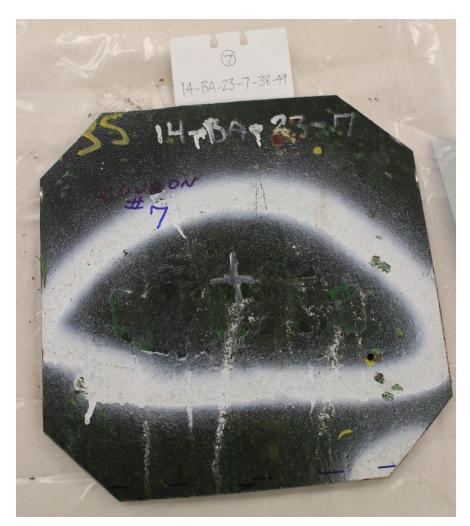
 Apparent remaining thickness: 3mm = 0.118"

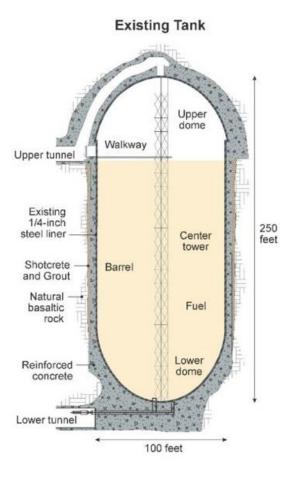


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(Coupon #7) Barrel – fuel side





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(Coupon #7) Barrel – back side



NDE Predictions:

 Minimum remaining thickness: 0.135" to 0.187"

June 25th Observations:

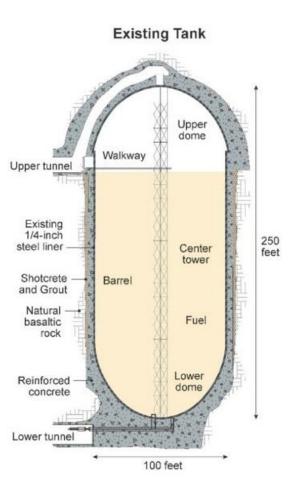
 Apparent remaining thickness: 2mm = 0.079"







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(Coupon #10) Lower dome – back side

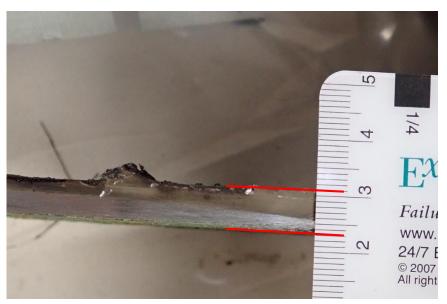


NDE Predictions:

• Remaining thickness expected to exceed 0.200"

June 25th Observations:

Apparent remaining thickness:
6.3mm = 0.25" (full original thickness)





Coupon Review

- Presence of backside corrosion
 - Half of the coupons exhibited considerably more corrosion than others [Coupons # 1 (UD), 2 (ER), 3 (ER), 7 (BA) and A1(BA)].
 - Potential for through-wall pitting, and associated fuel leaks, is a concern.
- Staining on Backside of Steel
 - Deposits on the backside of some coupons suggest hydrocarbon-staining. [Coupon # 2 (ER), 3 (ER), 7 (BA), 10 (LD) and A1 (BA)]
 - Chemical analysis by independent lab will determine nature of staining.



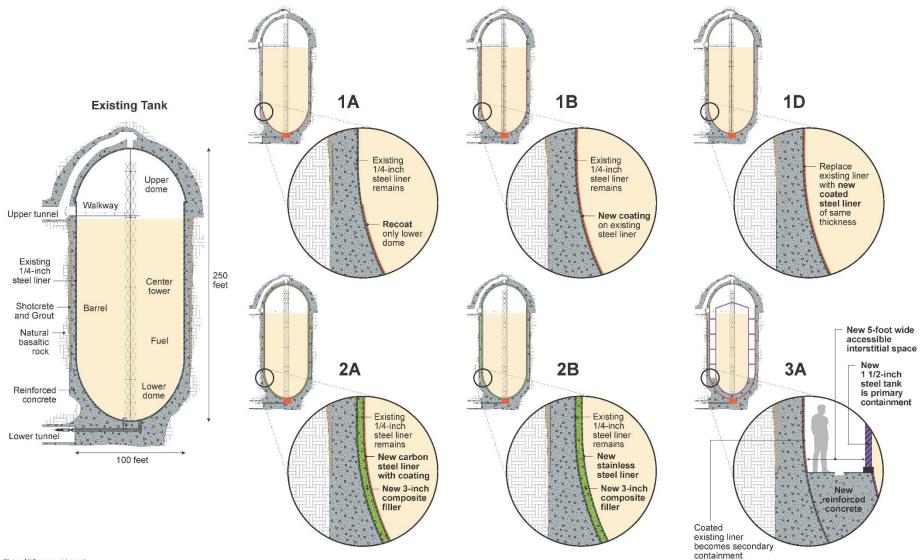


Coupon Review – cont.

- Current NDE Technique Appears to Underestimate 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.
- Work continues under Red Hill Administrative Order on Consent (AOC) to understand tank condition and reach decision on tank upgrade alternative (TUA) selection.

Tank Upgrade Alternatives

Adapted from: Navy, Red Hill AOC SOW Section 3.0 Tank Upgrade Alternatives (TUA), Red Hill Fuel Storage Facility, NAVSUP FLC Pearl Harbor (PRL), Hawaii, Final Report, December 2017; https://www.epa.gov/red-hill/tank-upgrade-alternatives-red-hill



Note: All figures not to scale



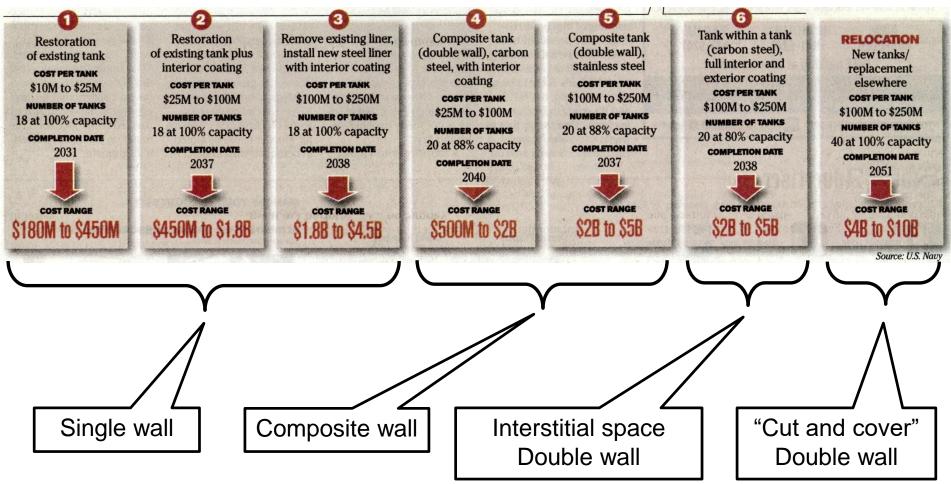
Figure 7.1-1 Kapūkaki Tank Layout

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Tank Upgrade Alternatives

Source: Star Advertiser, March 19, 2018



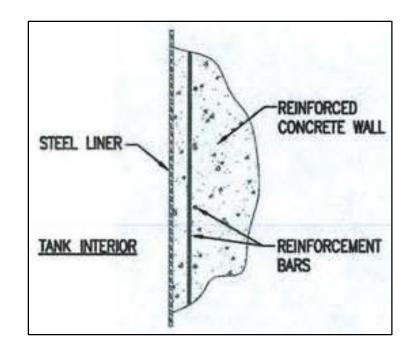
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Tank Wall Types and Differences

Single wall

- Existing 1940 single ¼ inch wall separating fuel and environment
- Cannot inspect or maintain back side of the wall
- Back side of wall subject to potential groundwater contact and corrosion



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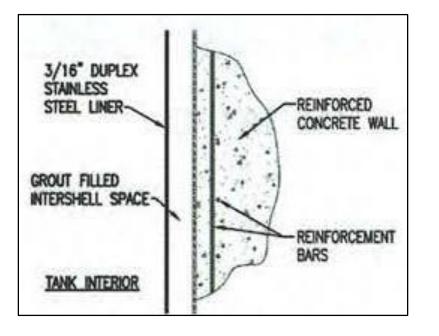
Tank Wall Types and Differences – cont.

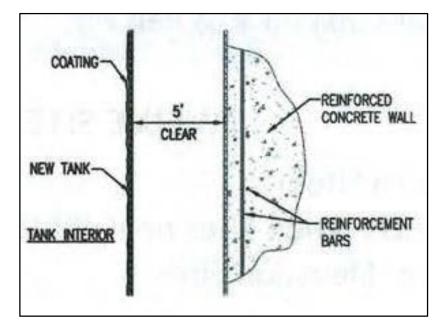
Composite Wall

 Two walls with 3 inch space filled with cement

Interstitial Double Wall

 Two walls with 5 ft. space in between to collect leaked fuel, inspect and maintain inner wall.







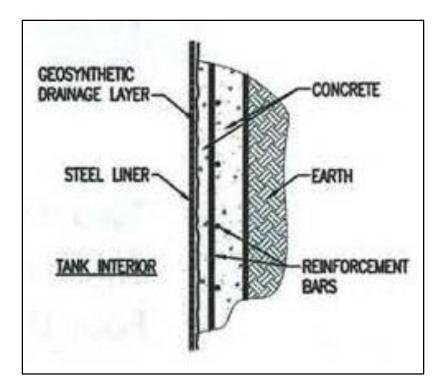
Tank Wall Types and Differences – cont.

"Cut and Cover" Double Wall

 New steel liner, geosynthetic drainage layer and concrete design

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- Steel liner is one wall, concrete is the second wall
- No interstitial space to inspect between new steel liner and concrete
- Back side of wall in contact with environment



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"The Proposed TUA Way Forward. At this time, the Navy and DLA will:

Continue with sustainment / maintenance of the existing tanks in accordance with current procedures as the Navy's initial best available practicable technology (BAPT) decision submittal."

other stakeholders such as the U.S. Geological Service and the Board of Water Supply. This serties of meetings could take up to several months, but once complete, the Navy and DLA will have 60 days to submit a formal TUA recommendation report for regulatory agency approval. The Proposed TUA Way Forward. At this time, the Navy and DLA will: • Continue with sustainment/maintenance of the existing tanks in accordance with current procedures as the Navy's initial best available practicable technology (BAPT) decision submittal. • Demonse a nilet for examination approval of dapplication of an interior epoxy coating bility of this upproven coating method.

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Aloha, Stakeholder

DEPARTMENT OF THE NAVY COMMANDER NAVY REGION HAWAII 050 THCONDEROGA ST STE 110 JBPHH HI 94580-3101

August 15, 2018

This is the Navy's tenth and my third stakeholder letter to the community to share news from Navy Region Hawaii. This letter also coincides with completion of my first year of service as the Regional Commander. As I have shared with everyone I have met over the last year, my number one priority remains the warfighting readiness of our infrastructure and the force protection of that infrastructure. That most certainly includes the Red Hill Bulk Puel Storage Facility.

Navy Leadership and Red Hill. I assure you Red Hill has the attention of our leaders both in Hawaii and in Washington, D.C. Commander, U.S. Pacific Fleet, Admiral Chris Aquilino, toured Red Hill shortly after his change of command in May, and then he personally led our Secretary of the Navy, the Honorable Richard Spencer, on a tour of the facility just last month. This is all in advance of Secretary Spencer providing testimony to the House Armed Services Committee in 2019 on the future funding of Red Hill upgrades. Leadership, on and off island, understands the national strategic importance of Red Hill and the absolute necessity of protecting public health by keeping our drinking water safe.

Red Hill Engagement. In addition to meeting with many neighborhood boards this year, we also hosted an open forum in March where we publicly presented the possible Red Hill upgrades for the first time. Both regulators, the Environmental Protection Agency (EPA) and Hawaii Department of Health (DOH), were in attendance as were other members of the public to include many from the Siener Club. Open and professional dialogue is an important aspect of my command and this particularly applies to Red Hill. In March, I also tourde several Hawaii State Legislators through Red Hill and provided restimony to two House Committees. I was very pleased that the Governor's office championed an additional engagement meeting on Red Hill to include both the Board of Water Supply and the Sierra Club. At all of these engagements, Itook the opportunity to talk about not only the strategic importance of Red Hill but our commitment to ensure we never spill another drop of fuel. Most importantly, these engagements, like the one at the Governor's office, allow stakeholders the opportunity to speak with each other, not just to each other. That's the spirit of Aloha.

Our Approach to the Tank Upgrade Alternative (TUA) Decision. On May 21 of this year, the EPA and DOH approved our TUA report. In accordance with the Administrative Order on Consent, that required 1 brief both regulators within 60 days on our TUA selection and proposed way forward. On July 20, I had phone calls with both the EPA and DOH to discuss our proposal. As you would expect, our preferred TUA option and proposed way forward was coordinated with numerous senior military staffs to include U.S. Pacific Fleet, U.S. Indo-Pacific Command, Defense Logittics Agency (DLA), Navy Installations Command the Navy Staff, and both the Socretary of the Navy and the Socretary of Defense staffs. As I opened with in this letter, Red Hill has the attention of our leaders both in Heavili and Washington D.C.

My phone calls to the EPA and DOH were just the first step, though. This week actually began a series of face-to-face meetings in Hawaii amongst the Navy, the regulators, and many proactive actions being taken by Indo-Pacific Institute for Defense Analyses to revalidate the fuel i Indo-Pacific Command Area of Responsibility he fuel requirement validation and logistics laydown plan for Red Hill. Moving forward, these studies decisions by stakeholders, recognizing that changes of other alternatives and should feed into the first

etection system.

Way Forward. The Red Hill fuel tanks were long-service life. A Tank Tightness Test for each h federal and state regulations willizing the Mass Precision Mass Measurement System. Since we is have never failed. Further, in 2016 the EPA used asseline evaluation of the systems, management est, at Red Hill with respect to 10 industry and aerican Petroleum Institute, the American Society of y of Civil Engineers, the American Society of y for Testing and Materials, and the National Fire found that the systems, inspection technologies' h practices in place at Red Hill meet or exceed best led storage facilities. Moreover, new equipment and delity.

lan additionally provides a multi-pronged approach g water. Specifically, are collected monthly beneath all tanks and lie organic compound concentrations using a photo-

ling. Samples are drawn from monitoring wells Red Hill lower access tunnel. water interface measurements are taken monthly at ter level at each well is gauged and measured for the phase liquids using an interface meter.

sting our environment and drinking water while at the t of our critical infrastructure, both in the event of conflict s and humanitarian missions.

Very Respectfully,

B. P. FORT Rear Admiral, U. S. Navy

Ref: https://www.cnic.navy.mil/regions/cnrh/om/environmental/red-hill-tank.html



Navy Reasons For TUA Way Forward

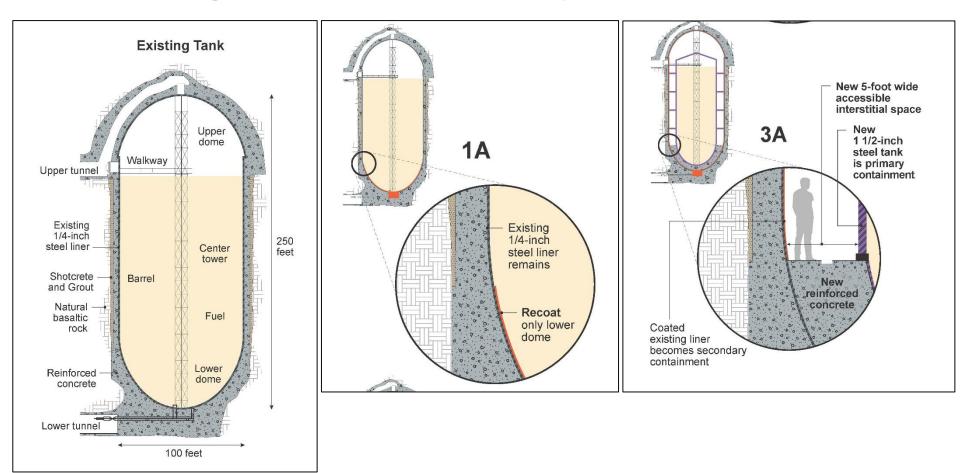
- Annual tank tightness testing since 2008 show no failed results
- Red Hill meet or exceed best practices for petroleum terminals and bulk fuel storage facilities based on 2016 inspection.
- Each tank's online fuel inventory system continuously measures tank level down to 1/16 of an inch.
- Ground water protection plan monitors soil vapor beneath all tanks, quarterly groundwater sampling and monthly oil/water interface measurements.
- 2014 fuel release is only reportable release from Red Hill since establishment of underground storage tank regulations in 1988.
- The 2014 release from Tank 5 due to human error, not tank failure.

*Data does not support above reasons

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Single wall v. Secondary containment

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Next Steps

- Navy to prepare and submit final TUA report for regulatory agencies review and approval.
- Navy TUA report will include Navy recommended TUA for regulators / public consideration.
- Anticipate TUA report and community meeting end of 2018 / early 2019.
- Under AOC, TUA decision revisited every 5 years.
- BWS will submit formal comments on recommended TUA following review of final TUA report and attend TUA community meeting.

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Questions/ Discussion