REGION 9
SAN FRANCISCO, CA 94105

VIA ELECTRONIC MAIL – READ RECEIPT REQUESTED

Rear Admiral Stephen Barnett
Commander
Navy Closure Task Force – Red Hill
850 Ticonderoga Street, Suite 110
Joint Base Pearl Harbor-Hickam, Hawaii 96860-5101
stephen.d.barnett.mil@us.navy.mil

Re: Final Report; Interim Defueling Completion Inspection

Dear Rear Admiral Barnett,

From March 5 to 8, 2024, United States Environmental Protection Agency Region 9 (EPA) conducted an Interim Defueling Completion Inspection of the Red Hill Bulk Fuel Storage Facility (RHBFSF). EPA performed the inspection with consideration of the 2023 Consent Order between EPA, the Department of Defense, and the Defense Logistics Agency for the purpose of evaluating the status of the facility following completion of primary defueling operations conducted by the Joint Task Force – Red Hill (JTF-RH). In the time between this inspection and the generation of the inspection report, authority over the RHBFSF has been transferred from JTF-RH to the Navy Closure Task Force – Red Hill (NCTF-RH).

The final report for the Interim Defueling Completion Inspection is attached for NCTF-RH to review within 14 days from the date of this letter to determine whether any portion is protected from public disclosure or is otherwise privileged pursuant to the 2023 Consent Order. The Report includes numerous figures, tables, and diagrams from various origins. Some pictures were taken by EPA during the inspection and are labeled as "EPA Inspection Photo Log," while other diagrams and tables were taken from prior submittals by JTF-RH in support of its defueling work. Where possible, EPA has cited these original documents from which these figures were taken. EPA intends to publish this report to the public by July 3, 2024, unless we receive a response requesting either additional time for review or list of proposed redactions.

EPA also seeks an acknowledgement that NCTF-RH has received the recommendations at the end of the report. These recommendations should be implemented by NCTF-RH as final defueling and closure actions are planned and carried out in the coming months and years. These

recommendations do not constitute an exhaustive list of EPA's concerns regarding removal of remaining fuel, and NCTF-RH should expect future comments on individual defueling/closure submittals. EPA is not requiring a response to these recommendations at this time but would welcome any feedback from the NCTF-RH. Our hope is that this inspection report and the included recommendations will benefit everyone—EPA, NCTF-RH, and all other stakeholders—by adding transparency to EPA's oversight of defueling activities and setting expectations for remaining fuel removal that must still occur under the 2023 Consent Order.

Should you have any questions regarding this letter or seek clarification, please contact Drew Suesse (808-539-0545, suesse.andrew@epa.gov).

Sincerely,

Jamie Marincola
2023 Red Hill Consent Order Coordinator

Enclosure: Interim Defueling Completion Inspection Report

cc: RADM Marc Williams, Navy Closure Task Force – Red Hill [email only]
CAPT Steve Stasick, Navy Closure Task Force – Red Hill [email only]
Mr. Milton Johnson, Navy Closure Task Force – Red Hill [email only]
Mr. Joshua Stout, Navy Closure Task Force – Red Hill [email only]
Ms. Kathleen Ho, Hawaii Department of Health [email only]
Ms. Kelly Ann Lee, Hawaii Department of Health [email only]

Interim Defueling Completion Inspection Report

March 5-8, 2024

Red Hill Bulk Fuel Storage Facility

Joint Base Pearl Harbor-Hickam

Oahu, Hawai'i

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105

Executive Summary

The U.S. Environmental Protection Agency, Region 9 (EPA) conducted an Interim Defueling Completion Inspection of the Red Hill Bulk Fuel Storage Facility (RHBFSF) between March 5-8, 2024, to gather information on the status of the facility following the completion of large scale gravity-based defueling activities and before the transition of facility oversight from the Joint Task Force – Red Hill (JTF-RH) to the Navy Closure Task Force – Red Hill (NCTF-RH). This inspection was carried out in consideration of the 2023 Consent Order between EPA, the Department of Defense (DoD), and the Defense Logistics Agency (DLA), and will also serve as a guide for the Final Defueling Completion Inspection as required by the Order once all fuel is removed.

Based on observations, EPA has determined that an overwhelming majority of fuel has been removed from the RHBFSF. This assessment aligns with statements made by JTF-RH concerning progress towards defueling; namely, that the Underground Storage Tanks (USTs) and associated pipelines have been drained of over 104 million gallons of fuel by gravity-based defueling. Based on inspection observations, other potential accumulation locations such as pipeline laterals, standpipes, and assorted piping structures, show no indication of holding significant fuel accumulations that could be drained by non-destructive, gravity-based operations. Overall, EPA found no evidence that would directly disprove the assertions made by JTF-RH that remaining fuel in the RHBFSF is limited to approximately 4,000 gallons of fuel in pipelines and 28,000 gallons of fuel-containing sludge in the USTs.

As anticipated prior to the start of the inspection, EPA found evidence that fuel remains in the RHBFSF necessitating continued defueling of this facility. EPA finds no reason to believe that the volume of remaining fuel accumulations will vary significantly from the estimates provided by JTF-RH; though, based on the complexity of the RHBFSF system and limitations to the methods by which this assessment occurred, there remains the possibility that larger accumulations of fuel could be found during closure work. This report describes uncertainties that could impact the final volume of fuel removed moving forward, and provides a list of recommendations for NCTF-RH to consider while completing Phase 1 Closure. See the section at the end of this report, ***Recommendations***.

The most recent Integrated Master Schedule submitted by NCTF-RH projects completion of defueling in 2029 when the pipeline will be removed in full. As an "*Interim*" effort, this inspection provides valuable information for all parties to consider in the years leading up to the Final Defueling Completion Inspection as required by the 2023 Consent Order.

Inspectors: **Pete Reich** **Evan Osborne**

Stormwater, Wetlands, and Oil Supervisor: **Jamie Marincola**

Table of Contents

Introduction

The RHBFSF is a large capacity underground fuel storage system located on the island of Oahu in Hawai'i. It is owned and operated by the U.S. Department of the Navy (Navy), serving Joint Base Pearl Harbor-Hickam (JBPHH). Prior fuel leaks from the RHBFSF have severely threatened and at times caused material impact to the environment and residents of Oahu, Hawai'i. On November 20, 2021, a release of fuel from within the RHBFSF directly impacted the JBPHH drinking water system, initiating an emergency public health response. On June 2, 2023, EPA, DoD (acting by and through the Navy), and DLA entered into the 2023 Consent Order (EPA DKT NO. RCRA 7003-R9-2023-001, EPA DKT NO. PWS-AO-2023-001) to address and prevent releases of solid and hazardous wates and protect drinking water, natural resources, human health, and the environment. As a requirement of the 2023 Consent Order, DoD and DLA were required to defuel the RHBFSF. The 2023 Consent Order defines:

> *"**Defueling**" shall mean the physical and mechanical process of removing all fuel from the Facility Subject to Closure using the identified infrastructure but does not include any continued use of pipelines and associated infrastructure downstream of the pumphouse once all of the fuel has been removed from the Facility Subject to Closure.*
>
> *"**Facility Subject to Closure**" shall mean the 20 field-constructed bulk fuel USTs ("20 USTs"), Surge Tanks, and the pumps, infrastructure, and associated piping between the 20 USTs and the pumphouse at the Red Hill Bulk Fuel Storage Facility.*

DoD established the Joint Task Force – Red Hill (JTF-RH) to fulfill defueling requirements. JTF-RH conducted pre-defueling preparations for much of 2022 and 2023 and began primary defueling operations in October 2023. JTF-RH disbanded at the end of March 2024 following completion of primary defueling activities. As acknowledged by JTF-RH, some fuel does remain in the facility following the completion of primary defueling activities ; though, these accumulations are limited to pockets, low points, and valves that cannot be drained without deconstruction of the piping and the active removal of tank sludge bottoms. JTF-RH estimated that approximately 4,000 gallons of fuel product and 28,000 gallons of sludge material remains in the facility.

The 2023 Consent Order requires DoD and DLA to conduct several activities to ensure proper defueling and closure of the facility, including a Final Defueling Completion Inspection following the completion of defueling. While complete removal of all fuel from the facility—specifically, the remaining residual fuel and tank sludge mentioned in the preceding paragraph—will likely take years to complete, EPA found that an interim defueling inspection was warranted to accomplish the following:

- Corroborate public statements on defueling progress made by the JTF-RH,
- Specify potential locations for remaining fuel,
- Develop recommendations for fuel removal and closure activities,
- Provide information on potential uncertainties in expected locations and/or volumes of remaining fuel,
- Establish and document facts regarding defueling for the sake of posterity.

Due to the interim nature of this report and the broad scope of regulatory requirements at Red Hill, this inspection was explicitly narrowed in scope. Potentially relevant topics outside the scope of this inspection, include:

- Quantitative accounting of fuel removed (i.e., auditing),
- Assessment of implemented engineering practices,
- Regulatory compliance under the UST, Drinking Water, and Oil Pollution Prevention Programs,
- Ongoing environmental assessment,
- Establishing the scope of the facility to be closed under the UST program,
- Any requirements established by other local, state, or federal programs (e.g., The Emergency Order issued by the Hawai'i Department of Health).
- Final documentation of defueling.

Due to the complexity of the RHBFSF, EPA has provided a thorough Background section to this report summarizing information pertinent to the evaluation of fuel removal. This includes information on the configuration of the various systems inspected by EPA, as well as key defueling activities. EPA intends for this document to be used for the sake of posterity.

EPA performed the Interim Defueling Completion inspection of the RHBFSF between March 5 and 8, 2024. The inspection focused on six key components of the facility related to defueling:

1. The Red Hill Bulk Fuel USTs
2. USTs in the Surge Gallery
3. Main fuel pipelines from the Red Hill USTs to JBPHH
4. The Fuel Oil Recovery (FOR) system
5. The AFFF Concentrate system
6. The AFFF Retention System.

Below the Background section one will find EPA's inspection findings, relevant conclusions, and a list of recommendations for continued fuel removal.

Background

This section provides background information on the fuel releases at Red Hill in 2021, a brief description of facility infrastructure, a summary of pre-defueling preparations, and an overview of key defueling activities.

2021 Releases and Response

Navy is the owner, operator, and entity responsible for providing, maintaining, and improving shore infrastructure, service, support, and training to enable fleet operations at the JBPHH, including the RHBFSF. The RHBFSF is a large underground fuel storage facility. b) (3) (A) [redacted]. A system failure at the RHBFSF on May 6, 2021, resulted in the release of thousands of gallons of JP-5 jet fuel to the environment. The Navy has estimated that approximately 21,000 gallons of fuel was spilled. A significant portion of this fuel was captured in a PVC pipeline intended for storage of AFFF in the event of a fire suppression event ("AFFF Retention Line"). Fuel remained in the AFFF Retention Line until November 21, 2021, when a Low Point Drain (LPD) was struck, resulting in a second environmental release of JP-5. Estimated volumes of fuel spilled, recovered, and unaccounted for following these events are discussed in the January 20, 2022, Command Investigation Report and the April 15, 2022, Supplemental Investigation Report, performed by the Navy[1]. Fuel contaminated the Red Hill Shaft and the JBPHH water distribution system, resulting in a drinking water emergency during the winter of 2021. On December 6, 2021, the Hawai'i Department of Health (DOH) issued an Emergency Order requiring the Navy to suspend operations and defuel the RHBFSF. On March 6, 2022, Secretary of Defense Lloyd J. Austin III directed the Navy to defuel and permanently close the RHBFSF.

EPA led an immediate response to the drinking water emergency in November 2021, and conducted on-site inspections of the RHBFSF from February 28, 2022, to March 4, 2022, to evaluate compliance with the Oil Pollution Prevention regulations and Hawai'i's approved UST regulations pursuant to Subtitle I of RCRA, 42 U.S.C. §§ 6991-6991m. EPA has provided regulatory oversight and support to DOH throughout the defueling and closure process. In 2023, EPA entered into an administrative order establishing legally-binding requirements concerning the defueling and closure of the RHBFSF ("2023 Consent Order").

On September 30, 2022, the DoD required the JTF-RH to assume responsibility to safely and expeditiously defuel the RHBFSF. JTF-RH established physical control of the RHBFSF, oversaw all maintenance actions, and implemented all planning and activities needed to complete defueling activities. JTF-RH led maintenance and operational preparedness actions and served as the primary interface between the DoD and stakehoders, including EPA, regarding the RHBFSF. JTF-RH disbanded March 30, 2024, and transitioned site authority and defueling and closure reponsiblities to the Navy Closure Task Force – Red Hill (NCTF-RH).

[1] https://www.epa.gov/system/files/documents/2022-07/FOIA-Release-Red%20Hill-CI-%28June%202022%29.pdf

Infrastructure

The RHBFSF was built by contractor Pacific Naval Air Bases in the early 1940s to relocate and make safe fuel stored in above-ground storage tanks at Pearl Harbor. It is operated by the Department of The Navy (Navy), locally operated by the Navy Supply Systems Command Fleet Logistics Center, Pearl Harbor, Hawaii (FLC). The Facility is comprised of twenty large USTs for primary fuel storage (i.e., "tank gallery area"), four underground Surge Tanks, and a network of piping systems connecting the twenty Red Hill USTs with the Underground Pumphouse (UGPH), located at Pearl Harbor. A Fuel Oil Recovery (FOR) system is constructed in the Red Hill tank gallery Area, the UGPH, and on Hotel Pier to process waste fuel and contaminated water. AFFF dispersal and retention systems are built in the tank gallery and Lower Access Tunnel area to address the risk of fire and subsequent recapture of any dispersed AFFF, respectively.

Beyond the scope of the RHBFSF, the greater JBPHH fuel facility is comprised of:

- Six above-ground storage tanks near Pearl Harbor,
- Four above-ground storage tanks at Hickam Air Force Base,
- Truck fill stands at Pearl Harbor and Hickam Air Force Base,
- Pumphouses at Pearl Harbor and Hickam Air Force Base,
- Five piers for loading/unloading,
- A network of piping systems, valve stations, and valve chambers.

Red Hill Underground Storage Tanks

Red Hill USTs are constructed of a steel liner encased by an estimated 2.5 to 4' thick prestressed concrete shell and surrounded and supported by basaltic bedrock. Each of the 20 USTs, numbered Tank 1 through Tank 20, has a potential maximum fuel storage capacity ranging from approximately 12 to 12.7 million gallons for a total combined facility storage volume of approximately 250 million gallons. Three fuel types are stored in the Facility: Tanks 15 and 16 hold Marine Diesel F-76 (transferred through (b) (3) (A) (") pipelines), Tanks 7 through 12 and Tank 20 hold Jet Fuel Propellent JP-5 (transferred through (b) (3) (A), and Tanks 2 through 6 hold Jet Fuel F-24 (transferred through (b) (3) (A) . In total, 14 of the 20 tanks contained fuel at the time defueling began. Tanks 1 and 19 have been out of service for several years and store no fuel. Tanks 13, 14, 17, and 18 did not contain fuel at the time of defueling, having gone through a Clean Inspect Repair process.

Tanks are constructed below the surface of the hillside at Red Hill, with the top of each at least 100 feet (') underground. Tanks are constructed with hemispherical upper and lower domes and a cylindrical portion called the barrel of the tank. Each tank is approximately 100 feet (') in diameter and 250' tall. Fuel is moved into/from tanks via lateral pipeline connections at the bottom of the tank. A "standpipe",

oriented in a vertical manner at the bottom of each tank, serves as a fuel inlet and outlet approximately 7' off the bottom of the tank. An FOR inlet is made flush with the tank bottom.

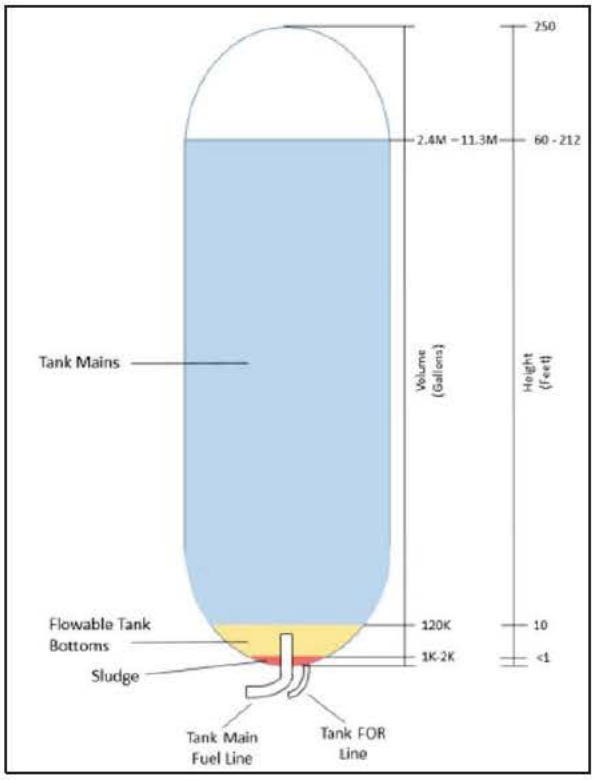


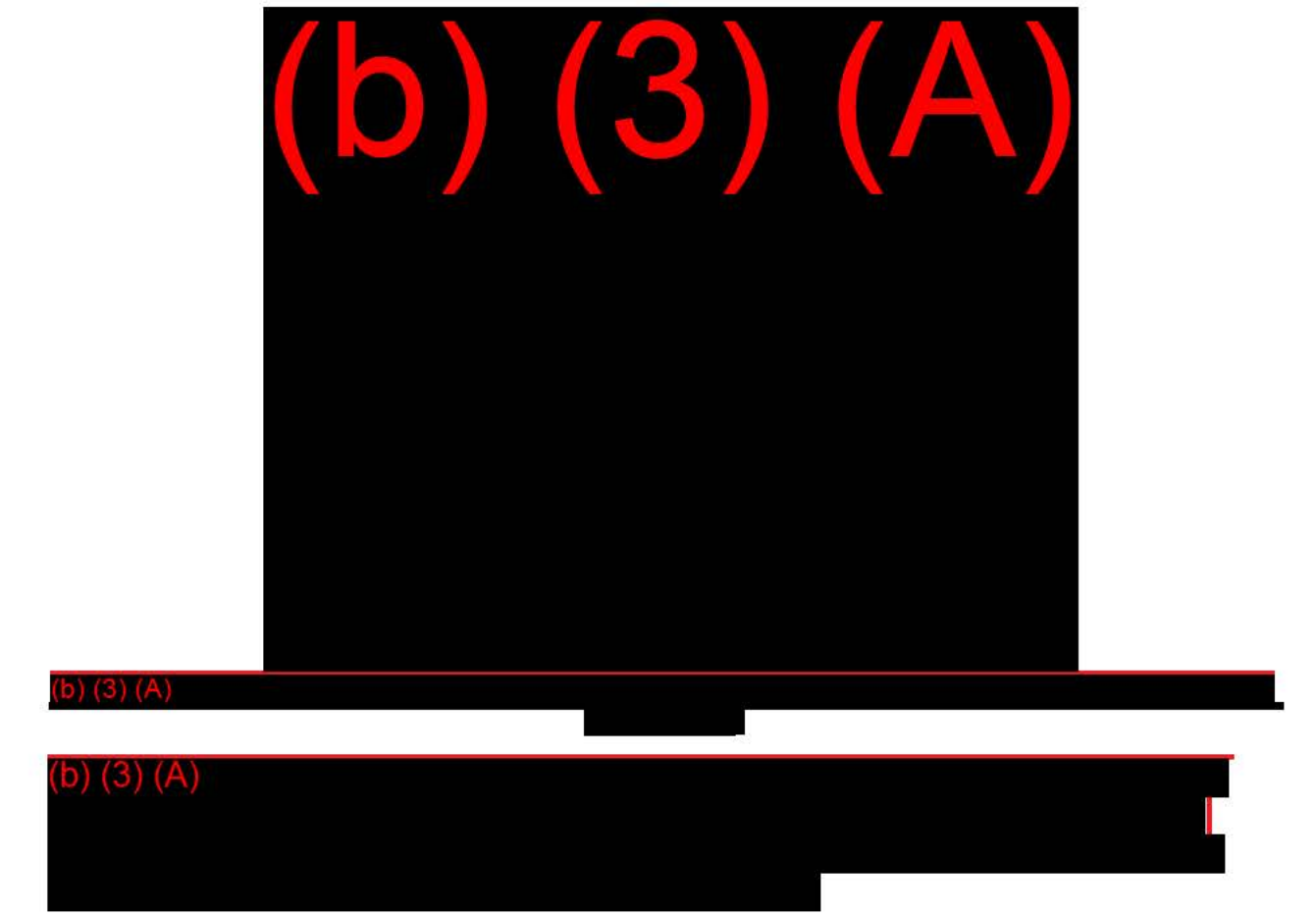
Figure 1 - Generic Red Hill UST Schematic. Twenty USTs of this type exist at the RHBFSF. Multiple standpipes ("Tank Main Fuel Line," above) may exist depending on tank. (Defueling Plan Supplement 2).

(b) (3) (A)

controlling movement of fuel into and out of the tanks occurs through a Lower Access Tunnel (LAT). This tunnel runs from the area of the 20 tanks ("tank gallery area") to Pearl Harbor, over (b) (3) (A) The nomenclature for this underground tunnel changes from LAT to Harbor Tunnel in the lower portion of the tunnel above (b) (3) (A)

Fuel Pipelines and Connections

Pipelines distribute fuel between the Red Hill USTs, the UGPH, above-ground storage tanks ("Upper Tank Farm"), truck loading racks, fueling piers at Pearl Harbor, the flight line on Hickam Airfield, and from a transfer point to PAR Hawai'i Refinery. In this report, the "main" pipelines refers to the three primary pipelines used to move fuel between the Red Hill USTs and the UGPH, one for each of the three fuel types. (b) (3) (A)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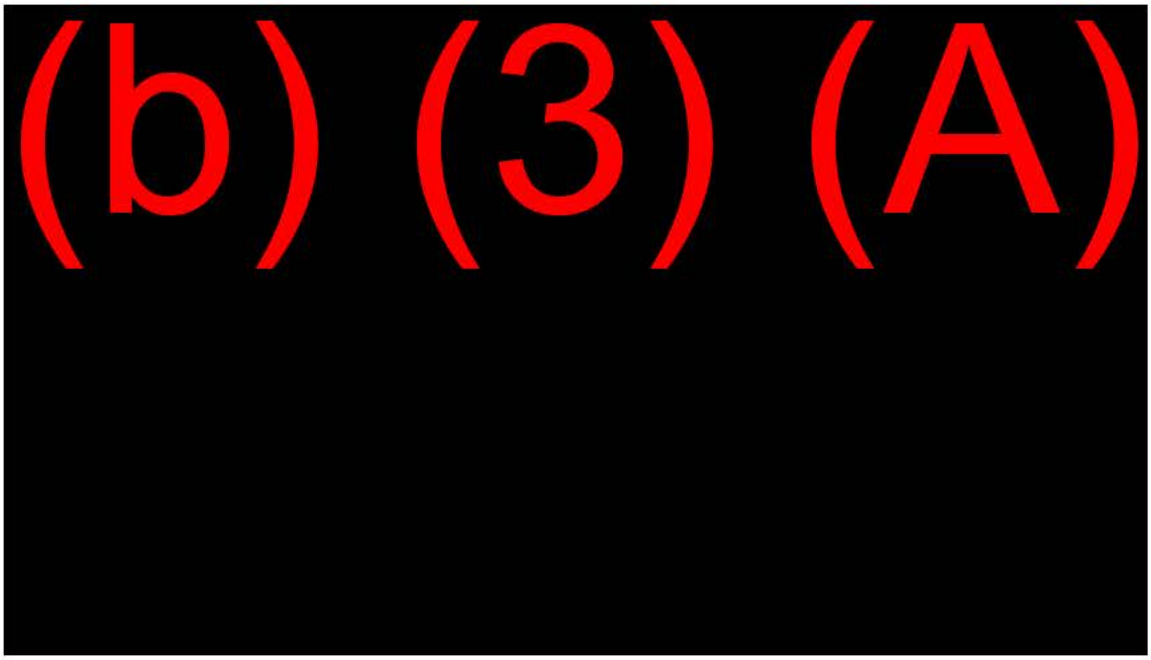

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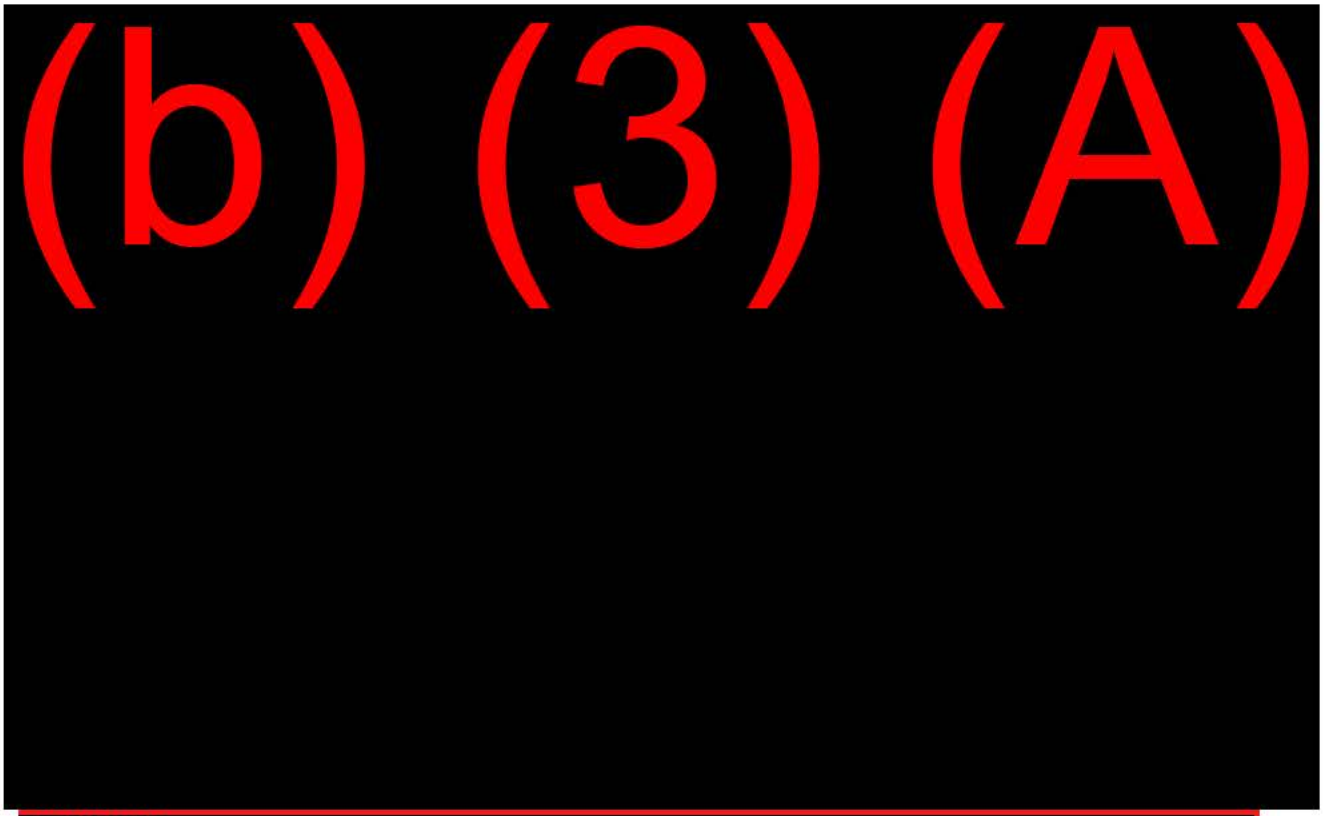


(b) (3) (A)

(b) (3) (A)

DoD has previously stated that multiple ultrasonic thickness measurements have been utilized in determining an average nominal wall thickness of each pipeline, and that the length of each pipeline was measured directly with a measuring wheel[2]. Pipeline volume estimates are calculated from pipeline length, diameter, and nominal wall thickness and diameter.

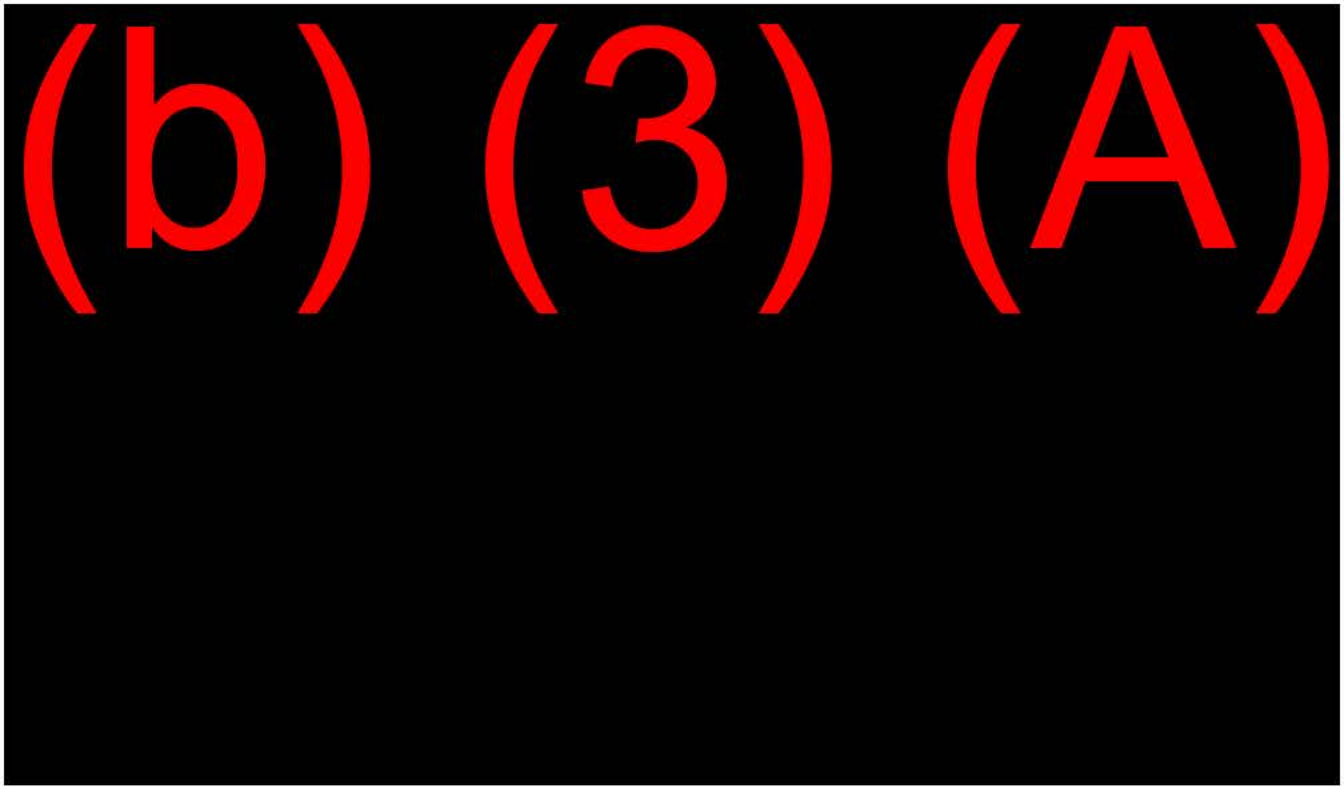
Other components and connections off the main pipelines may hold residual fuel, including: spectacle blinds, standpipes, valve bodies, sampling stations, valves, instrumentation sensing lines, and equalization lines.

Pipeline laterals are relatively short pipeline segments that connect the Red Hill USTs to the main pipeline. Disregarding tanks that have previously been closed, each Red Hill UST is connected to at least

[2] September 28, 2022, Navy Response to September 21, 2022, EPA Comments on the Unpacking Plan

[redacted]

[redacted]



Spectacle blinds are isolation devices installed between two pipe flanges allowing flexibility in maintenance and system operations; they act as high reliability valves that are either open or closed. The device can be rotated to provide either mechanical isolation or open flow of fluid across a pipeline segment in "closed" or "open" positions, respectively. Spectacle blinds are installed throughout the pipeline infrastructure in the Red Hill tank gallery Area. It was expected that small volumes of fuel would be trapped at the spectacle blinds connecting pipeline laterals to the main pipelines requiring removal as fuel residuals.

(b) (3) (A)

Standpipes occur inside the Red Hill USTs as vertical piping allowing the introduction of fuel stored in the USTs into the pipeline system. Based on the orientation of the piping, standpipes used during tank mains defueling were presumedly drained during primary defueling activities. Some Red Hill USTs have multiple standpipes within the tank structure. For these USTs, the secondary standpipe not used for tank mains defueling needed to be defueled during residual fuel removal operations.

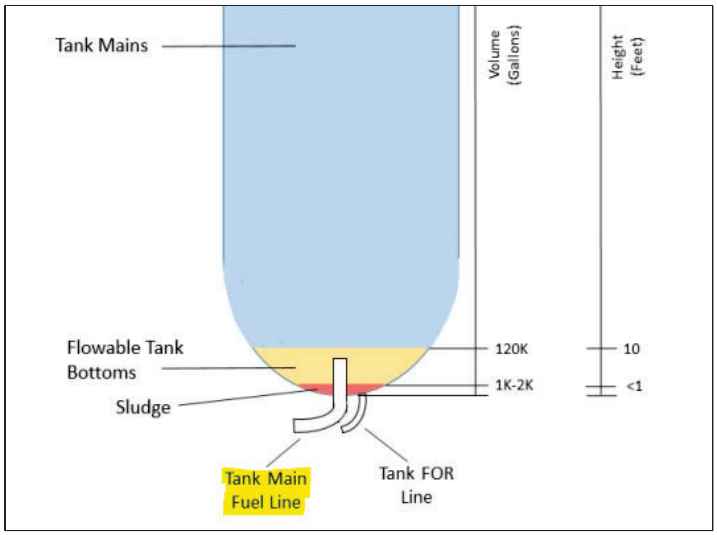
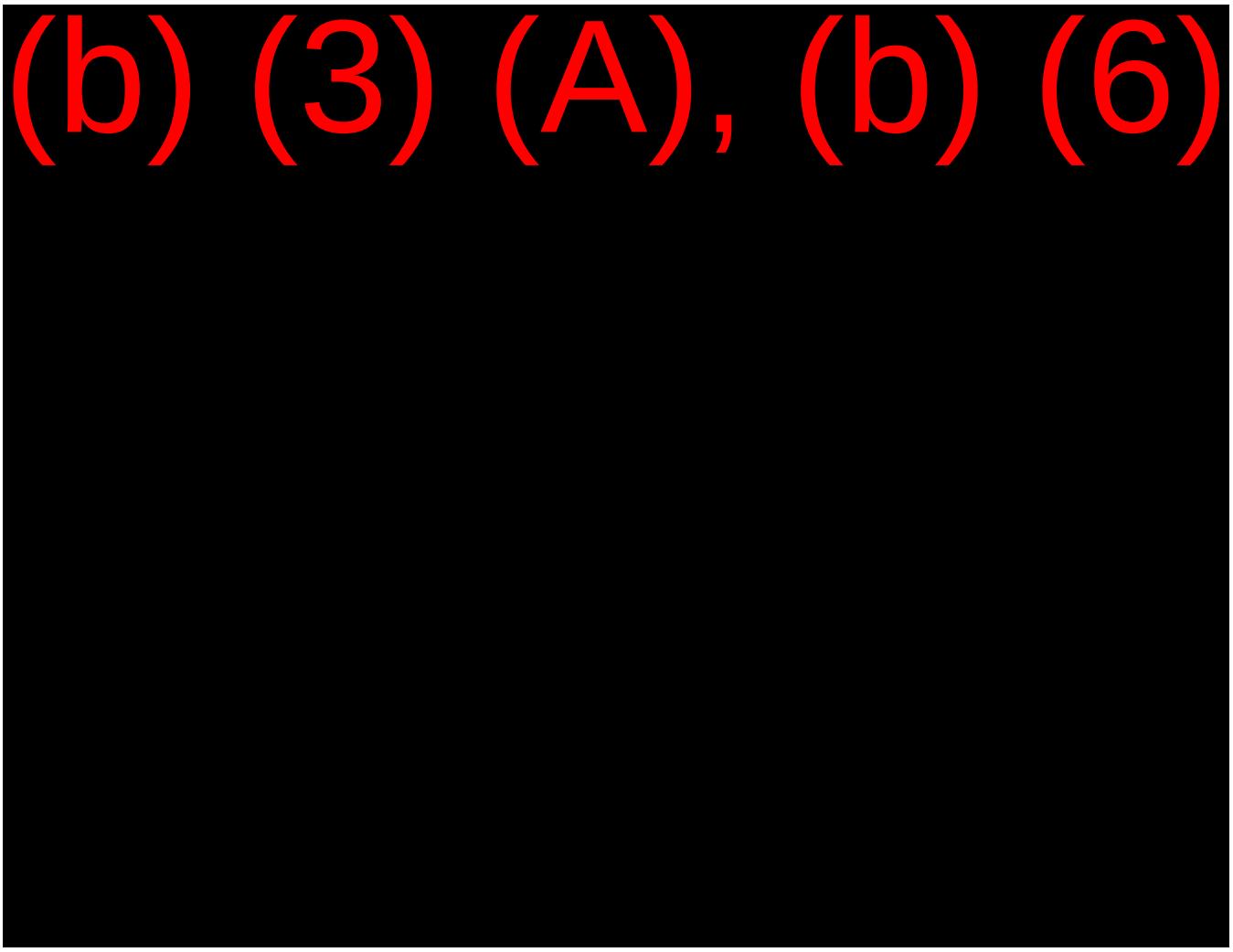
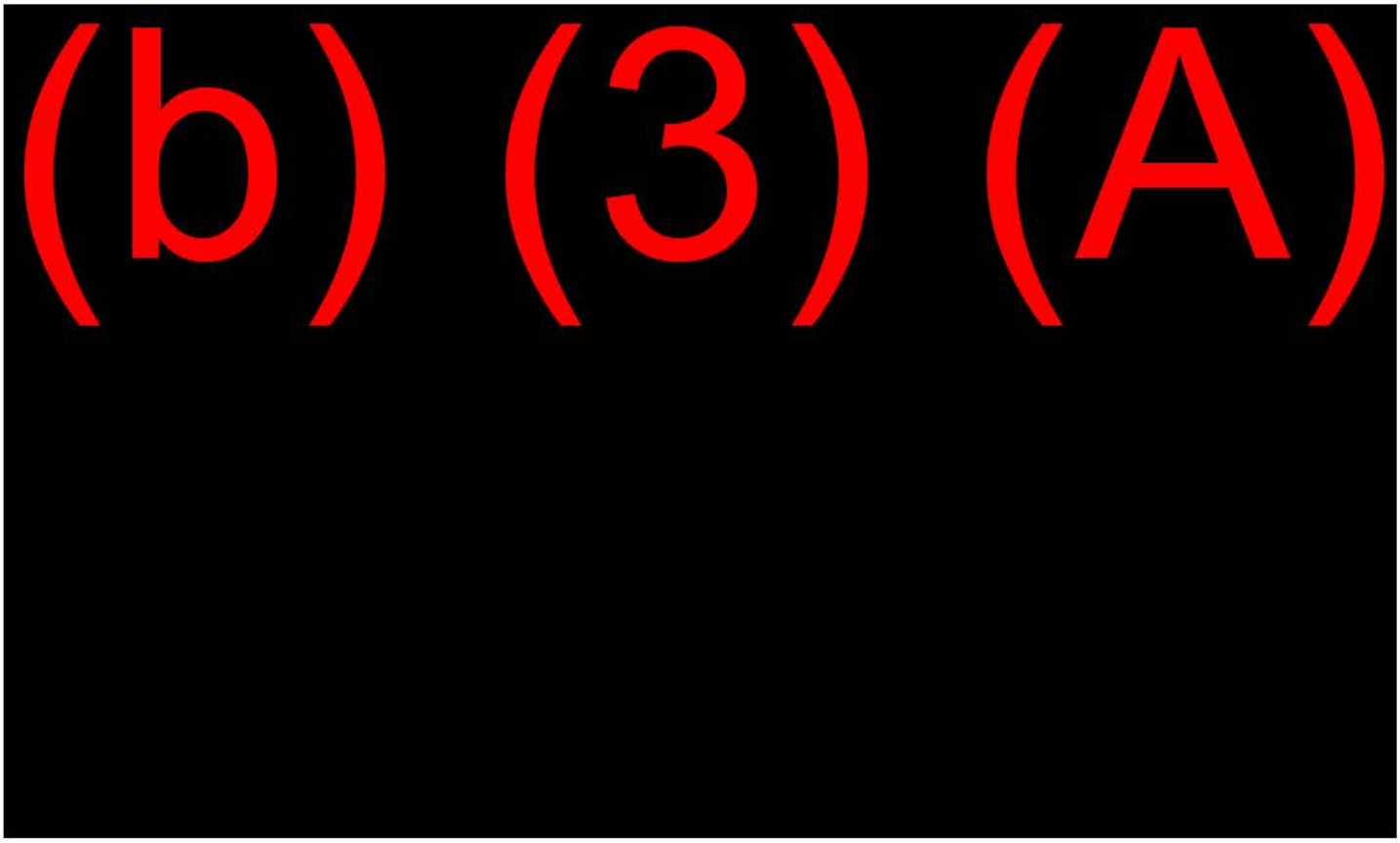


Figure 9 - Lower section of Red Hill UST displaying standpipe. The standpipe, here labeled as the "Tank Main Fuel Line" extends into the Red Hill UST at a vertical orientation approximately 7' from the tank bottom. Some Red Hill USTs have multiple standpipes (Defueling Plan Supplement 2, JTF-RH).

Sample stations include a service tree of small diameter piping allowing for direct sampling of the Red Hill USTs at heights of(b) (3) (A) from tank bottom. These stations were used to sample fuel and were likely to contain residual fuel.



Equalization lines were installed to Tanks 5, 16, and 20. Their purpose is to allow for the gradual movement of fuel from the Red Hill USTs to the pipeline, allowing the pressure in the pipeline to slowly equalize with that of the tank prior to conducting fuel movement activities. Thus, their use requirements movement of fuel through the small diameter piping.



Fuel Oil Recovery Systems

A Fuel Oil Recovery system (sometimes, "Fuel Oil Reclamation," or FOR) exists In both the Red Hill tank gallery and Surge Tank gallery areas to serve as a transfer pipeline for discarded fuel samples and dewatering, during normal operations(b) (3) (A)

(b) (3) (A)

(b) (3) (A)

Underground Pumphouse

The Red Hill USTs are connected to the greater JBPHH fuel distribution system by the Underground Pumphouse (UGPH), a concrete-constructed underground area containing numerous pipeline crossovers, connections, pumps, and valves. This area contains the control room and serves as a passthrough for defueling and fuel movement activities. Following defueling and closure of the RHBFSF, the UGPH will continue serving a role in fuel transfers on base.

(b) (3) (A) [redacted]

Four Surge Tanks are connected to the UGPH by multiple pipelines: fuel pipelines, relief lines, and a FOR pipeline.

Surge Tanks

Like the Red Hill USTs, each Surge Tank was constructed by first excavating the volcanic rock formation, then installing a steel tank surrounded by cement. Original structural drawings for the Surge Tanks document the tanks at 60' in diameter by 21' in height, constructed with a minimum 12" thick reinforced concrete shell with a $^1/_4$" thick interior steel liner plate. (b) (3) (A) [redacted] hese tanks were used for used as atmospheric buffers during pumping operations and temporary storage.

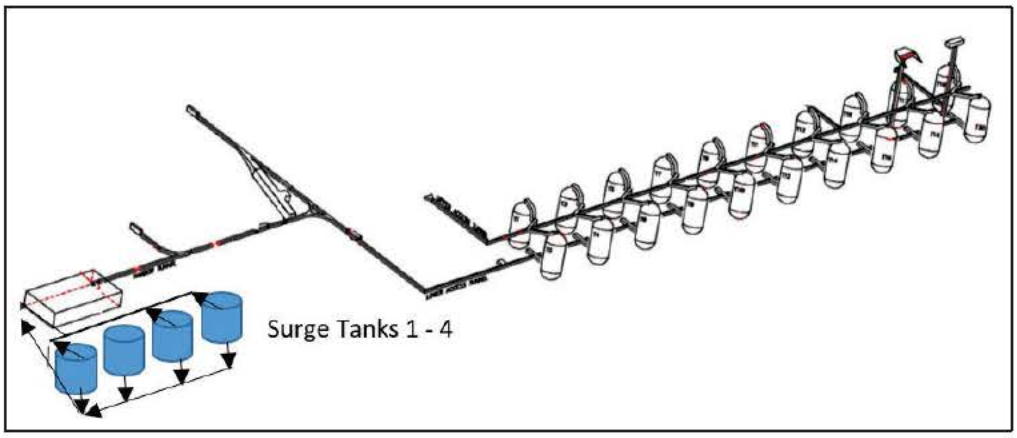
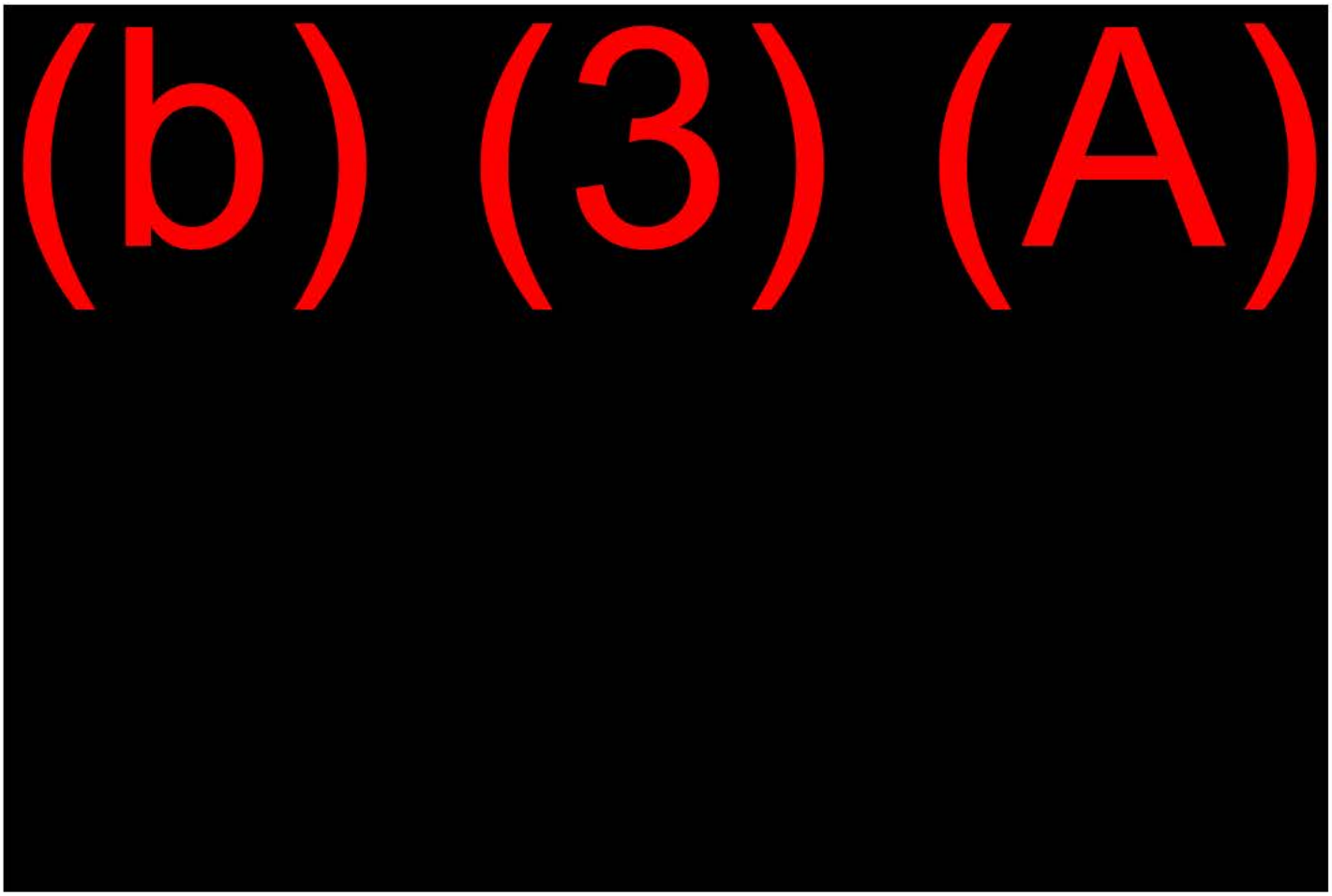


Figure 13 – RHBFSF, including the Surge Tanks. Not to scale. (Modified from Surge Tank Draining CONOPS May 18, 2023).

(b) (3) (A) [redacted]



AFFF Concentrate

The AFFF concentrate system consists of a (b) (3) (A) All bulk storage and the transfer pump systems are in Building (b) (3) (A) which is found above ground outside of (b) (3) (A) near Red Hill. The transfer pumps in Building (b) (3) (A) historically kept the AFFF concentrate piping fully packed for material transfer via belowground piping from Building (b) (3) (A) to the (b) (3) (A) entrance where it then runs through the (b) (3) (A) In the event of a fire, the mixing/dispersal pumps located in the AFFF mixing closets would be activated, blending AFFF concentrate and fire suppression water to create a firefighting foam that would be dispersed throughout the AFFF zone.

AFFF Release

In November 2022, AFFF concentrate was released from an inoperative air bleeder system near the (b) (3) (A) Modifications were made to the AFFF concentrate system and aboveground piping was installed between (b) (3) (A) to replace the existing belowground piping. Existing piping was drained through a low point drain (b) (3) (A) Likewise, the bulk storage tank and all AFFF

concentrate piping (b) (3) (A) was drained by gravity through low point drains to accommodate repairs.

AFFF Retention Line

(b) (3) (A)

(b) (3) (A)

(b) (3) (A)

System Repairs and Enhancements in Preparation for Defueling

This section provides background on key activities preceding defueling of the RHBFSF.

2022 Unpacking

In October 2022, Navy drained the three main fuel pipelines by a process informally called, "Unpacking." This step removed fuel from the pipelines so various infrastructure repairs and enhancements could be performed to the pipelines. Many repairs required cutting and welding on the pipelines, processes which necessitate the removal of fuel from the pipelines. After initial preparations, fuel movement occurred in two phases: an initial gravity drain-down step, followed by a low point drain transfer involving a diaphragm pump and movement of fluids from (b) (3) (A) Final volumes of fuel removed from the pipelines were: F-24 (161,220 gallons), JP-5 (215,359 gallons), and F-76 (681,608 gallons). Unpacking in 2022 did not require or involve any movement of fuel from the Red Hill USTs. Following completion of Unpacking, infrastructure repairs and improvements were made on the pipelines in preparation for defueling.

This process is described as "2022 Unpacking" to avoid confusion with the unpacking of the pipelines that occurred in 2024 as part of final defueling activities ("2024 Unpacking").

Repairs and Enhancements

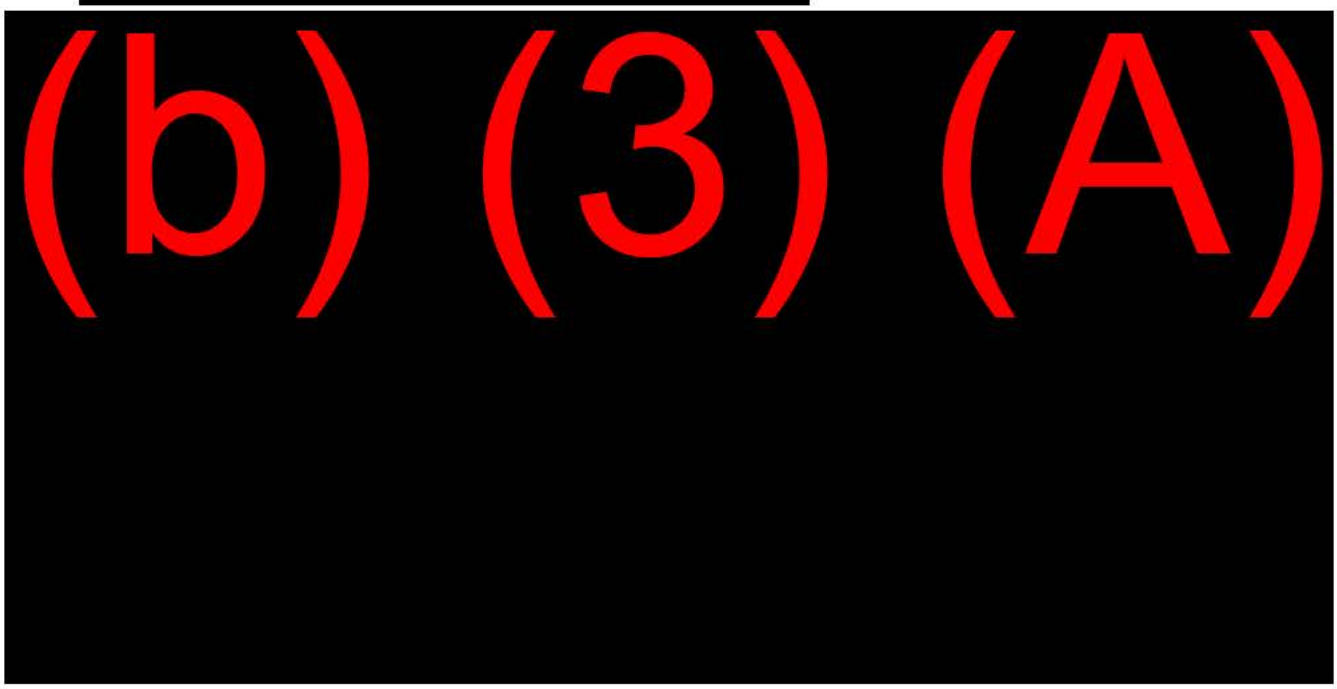
JTF-RH completed repairs and enhancements to the RHBFSF to increase system capability and reduce operational risk before defueling. On October 24, 2022, JTF-RH submitted the RHBFSF Defueling Consolidated Repair and Enhancement List to EPA intended to be a comprehensive account of all repairs and enhancements to occur before defueling began. JTF-RH later submitted an Incremental Repair List including another 44 repair items, resulting in 297 total planned repairs. Ultimately, all repairs were reviewed by a 3rd-Party Quality Validator and approved by EPA prior to the start of Defueling.

This report briefly describes repairs or enhancements that directly affected methods of defueling or created new locations were fuel could possibly accumulate within the facility. This includes the disconnection of the F-76 pipeline as a fuel path and subsequent connection to the AFFF Retention Line; the (b) (3) (A) to allow for fuel movement and/or venting; (b) (3) (A) installation of Pressure Indicating Transducers (PITs); and the installation of equalization lines at Tanks 5, 16 and 20.

Many repairs are outside the scope of this report, such as those intended to bolster the mechanical structure of the pipelines or replace sections of pipeline that have been damaged by corrosion or impact. These types of repairs are not discussed in this report.

Equalization/Bypass Lines

Equalization pipelines were installed at three locations to reduce the likelihood of a hydraulic surge occuring during defueling (b) (3) (A)



Pressure Indicating Transmitters

Pressure indicating transmitters (PITs) were installed at multiple locations along the three fuel pipelines. PITs were integrated into facility automated fuel handling equipment and supervisory control and data acquisition systems. PITs require interface with the fuel pipelines to allow for pressure reading and are assumed to contain fuel. (b) (3) (A)

(b) (3) (A)

AFFF Retention Line - F-76 Crossover

(b) (3) (A)

The crossover between the AFFF Retention Line and the F-76 pipeline also involved the disconnection and capping of the AFFF Retention Line (b) (3) (A) This isolated the AFFF Retention pipeline

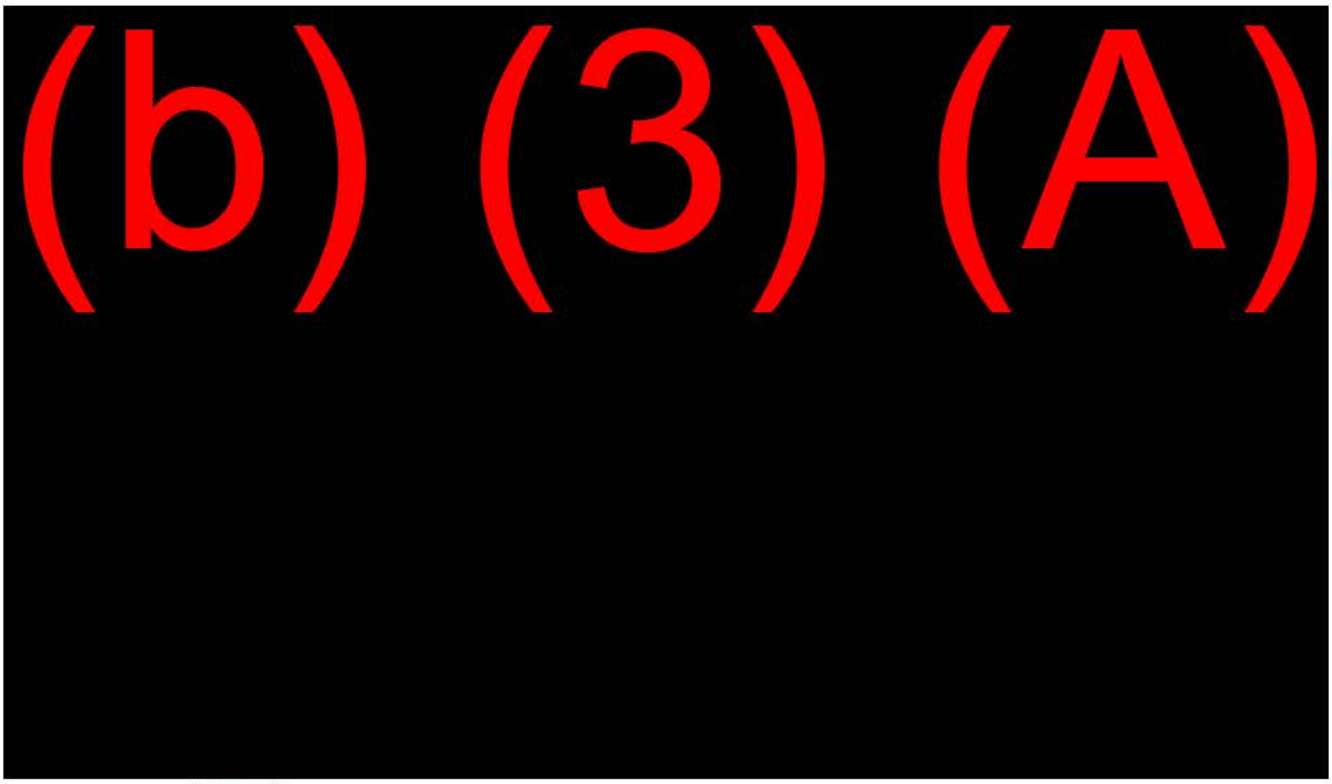
(b) (3) (A)

FOR to JP-5 Connection

JTF-RH installed a crossover connection between the FOR pipeline and the JP-(b) (3) (A)

Crossover vent (b) (3) (A)

(b) (3) (A)



(b) (3) (A) *Bypass Pipeline*

(b) (3) (A)

Defueling

This section provides background on defueling operations that occurred between 2023 and early 2024. Defueling was a multi-phase process to remove over 104 million gallons of fuel from the RHBFSF.

Main phases to defueling included:

1. Surge Tank Drainage – Removal of fuel from the four Surge Tanks near the UGPH.
2. Repacking – Returning fuel to the main fuel pipelines following repair work.
3. Tank Mains Defueling – Removal of fuel from the Red Hill USTs using the main fuel pipelines.
4. Tank Bottoms Defueling – Removal of fuel from Red Hill USTs using the FOR pipeline.
5. Unpacking (2024) – Removal of additional fuel from the main fuel pipelines.
6. Residual Fuel Removal – Targeted efforts to remove fuel that could not otherwise be drained via gravity or pumping during other defueling phases.

Surge Tank Drainage

The 2023 Consent Order states that the Surge Tanks, as part of the "**Facility Subject to Closure**," must be defueled. Surge Tank Drainage refers to the actions conducted by JTF-RH to remove approximately 478,000 gallons of fuel to Hickam Air Force Base.(b) (3) (A)
Surge Tank Drainage occurred in three phases:(b) (3) (A)

(b) (3) (A)

Surge Tank Drainage started on July 17, 2023, and ended on July 28, 2023. Starting and ending volumes of fuel within the four tanks as estimated by FLC manual gauging systems are shown in table, below:

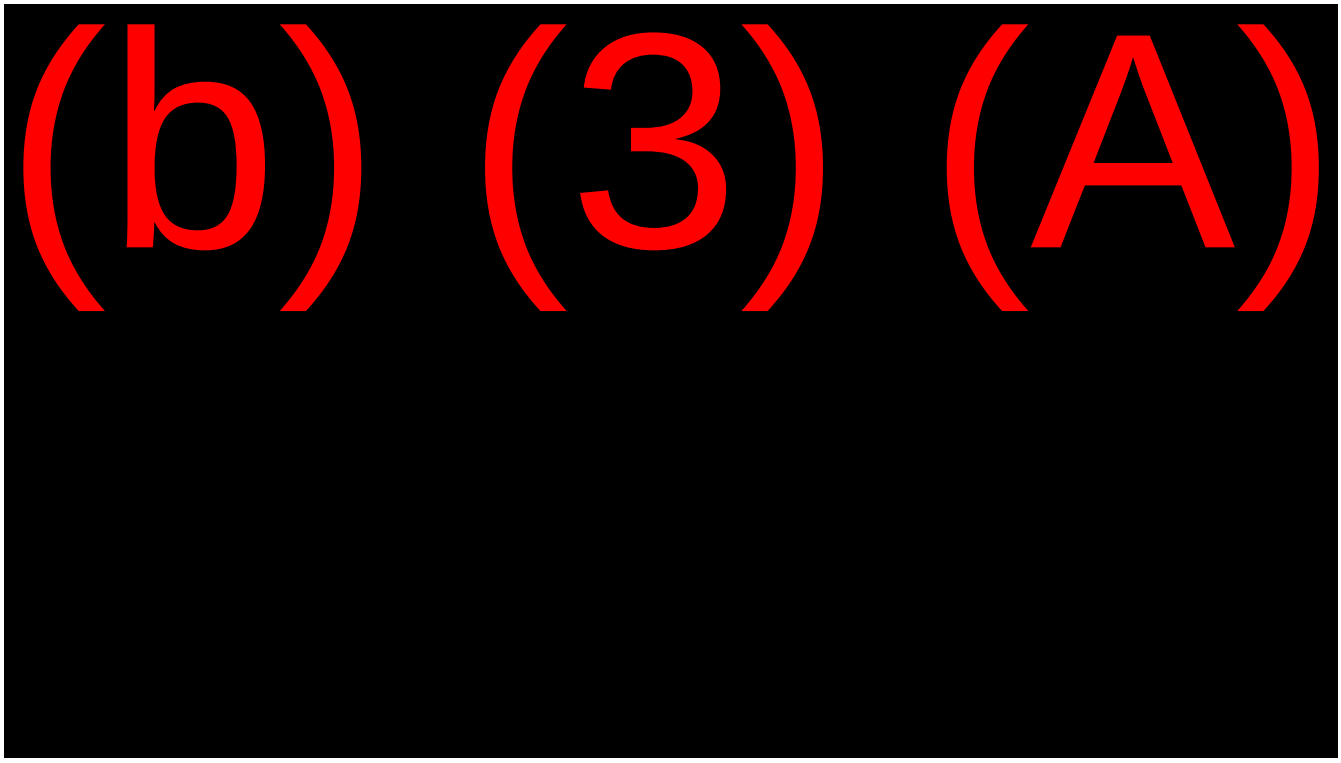
(b) (3) (A)

Repacking

Following completion of repairs and enhancements, the F-24 and JP-5 main pipelines were filled with fuel (i.e., “repacked”) prior to the start of Tank Mains defueling. Repacking occurred in two phases: First, the pipelines were repacked from the UTF by gravity equalization/pump transfer equalization. Then, the pressure in the pipelines were equalized by moving small amounts of fuel from the Red Hill USTs using equalization lines.

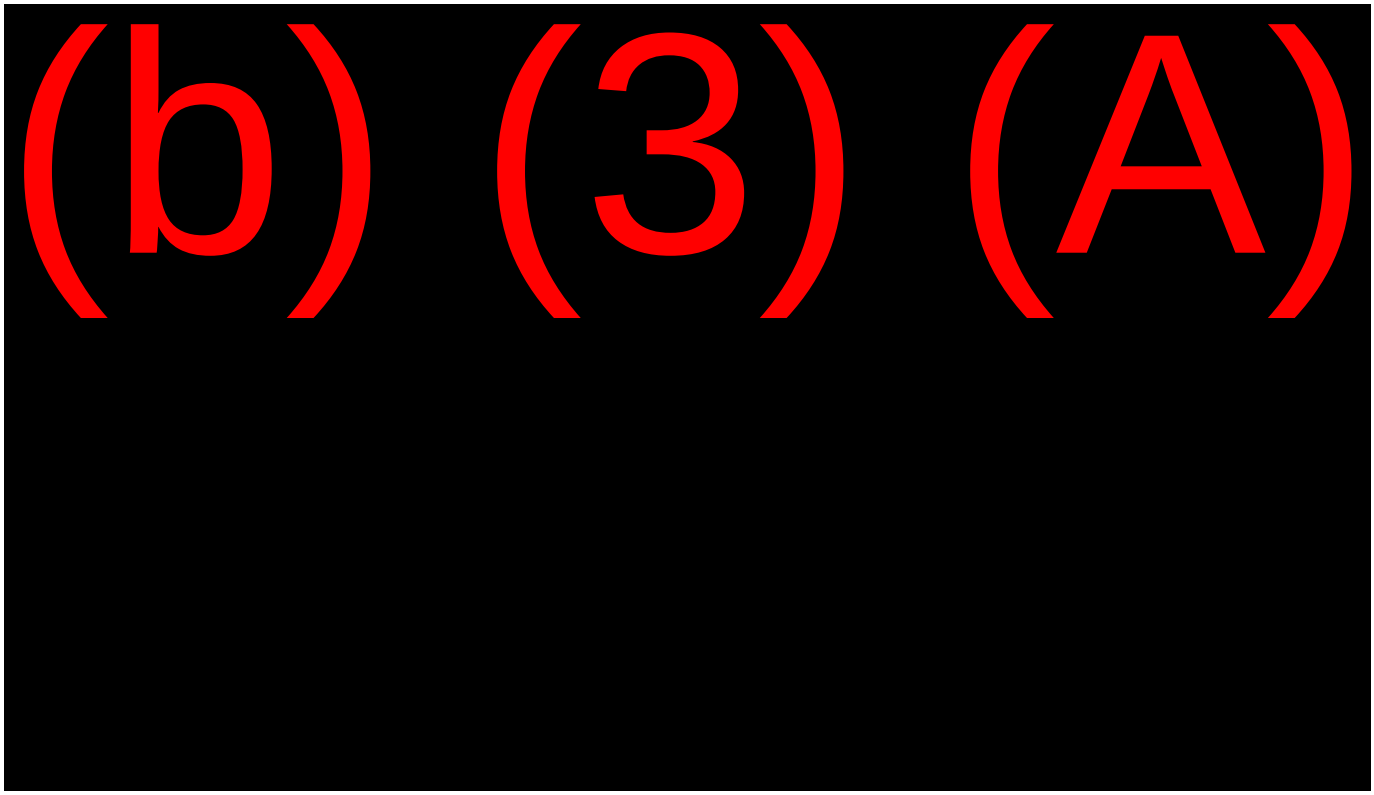
Reintroducing fuel to the pipelines fluid-packed the system in preparation for defueling and effectively tested the integrity of pipeline repairs and modifications. EPA staff witnessed repacking operations to provide oversight and to monitor for any pipeline integrity issues.

(b) (3) (A)



Tank Mains Defueling

Tank Mains defueling removed most of the fuel from the Red Hill USTs. Occuring between October 16, 2023, and November 17, 2023, JTF-RH followed previously-established operation orders to move fuel from the USTs to fuel tankers at Hotel Pier and ASTs at the UTF. Tanks containing F-24 were defueled through the F-24 pipeline, while tanks containing JP-5 or F-76 were defueled through the JP-5 pipeline.



Below is a summary of approximate volumes of fuel removed from each Red Hill UST. The total gallons removed, in **bold**, was based on information submitted by JTF-RH prior to the Interim Defueling Inspection based on official manual gauging measurements. Sub-bullets provide additional information on removal destination and dates, as well as estimated volumes included in FLC Defuel Sequence – Revision 8 – 21 November 2023. Sub-bullets were submitted as estimated figures and do not represent exact removal volumes and are included to provide readers a relative sense of fuel destinations.

- **Red Hill Tank 2** (F-24) – **9.95 million gallons removed.**
  - 9.9 million gallons removed to Vessel MT Empire State between October 16-18, 2023.
- **Red Hill Tank 3** (F-24) – **9.67 million gallons removed.**
  - 9.7 million gallons removed to Vessel MT Empire State between October 23-25, 2023.
- **Red Hill Tank 4** (F-24) – **6.21 million gallons removed.**
  - 6.2 million gallons removed to (b) (3) (A) between October 19-21, 2023.
- **Red Hill Tank 5** (F-24) – **9.99 million gallons removed.**
  - 1 million gallons removed to Vessel MT Empire State between October 23-25, 2023.
  - 9 million gallons removed to Vessel MT Empire State between October 30-November 1, 2023.
- **Red Hill Tank 6** (F-24) – **6.00 million gallons removed.**
  - 2 million gallons removed to Vessel MT Empire State between October 16-18, 2023.
  - 2.7 million gallons removed to (b) (3) (A) between October 19-21, 2023.
  - 1.3 million gallons removed to Vessel MT Empire State between October 23-25, 2023.
- **Red Hill Tank 7** (JP-5) – **8.16 million gallons removed.**
  - 7.3 million gallons removed to Vessel MT Empire State between November 6-8, 2023.
  - 0.8 million gallons removed to Vessel MT Stena Imperative between November 13-15, 2023.
- **Red Hill Tank 8** (JP-5) – **4.71 million gallons removed.**
  - 4.61 million gallons removed to Vessel MT Empire State between November 6-8, 2023.
- **Red Hill Tank 9** (JP-5) – **11.18 million gallons removed.**
  - 0.65 million gallons removed to (b) (3) (A) between October 19-21, 2023.
  - 10.45 million gallons removed to Vessel MT Torm Thunder between October 26-28, 2023.
- **Red Hill Tank 10** (JP-5) – **3.38 million gallons removed.**
  - 2.3 million gallons removed to Vessel MT Empire State between October 30-November 1, 2023.

    - 1.04 million gallons removed to Vessel MT Stena Imperative between November 13-15, 2023.
- **Red Hill Tank 11** (JP-5) – **2.48 million gallons removed.**
    - 1.24 million gallons removed to Vessel MT Torm Thunder between October 26-28, 2023.
    - 1.19 million gallons removed to Vessel MT Stena Imperative between November 13-15, 2023.
- **Red Hill Tank 12** (JP-5) – **8.87 million gallons removed.**
    - 8.81 million gallons removed to Vessel MT Stena Impeccable between November 2-4, 2023.
- **Red Hill Tank 15** (F-76) – **5.79 million gallons removed.**
    - 5.71 million gallons removed to (b) (3) (A) between November 9-11, 2023.
- **Red Hill Tank 16** (F-76) – **5.79 million gallons removed.**
    - 2.33 million gallons removed to (b) (3) (A) between November 9-11, 2023.
    - 3.4 million gallons removed to Vessel Yosemite Trader between November 16-18, 2023.
- **Red Hill Tank 20** (JP-5) – **11.19 million gallons removed.**
    - 3.08 million gallons removed to Vessel MT Stena Impeccable between November 2-4, 2023.
    - 0.9 million gallons removed to (b) (3) (A) between November 9-11, 2023.
    - 7.23 million gallons removed to Vessel MT Stena Imperative between November 13-15, 2023.

JTF-RH also conducted two fuel transfer operations to maximize fuel drainage from the tanks and main fuel pipelines, wherein multiple tank valves were opened at once to accommodate maximal fuel drainage from the tanks and the pipeline itself:

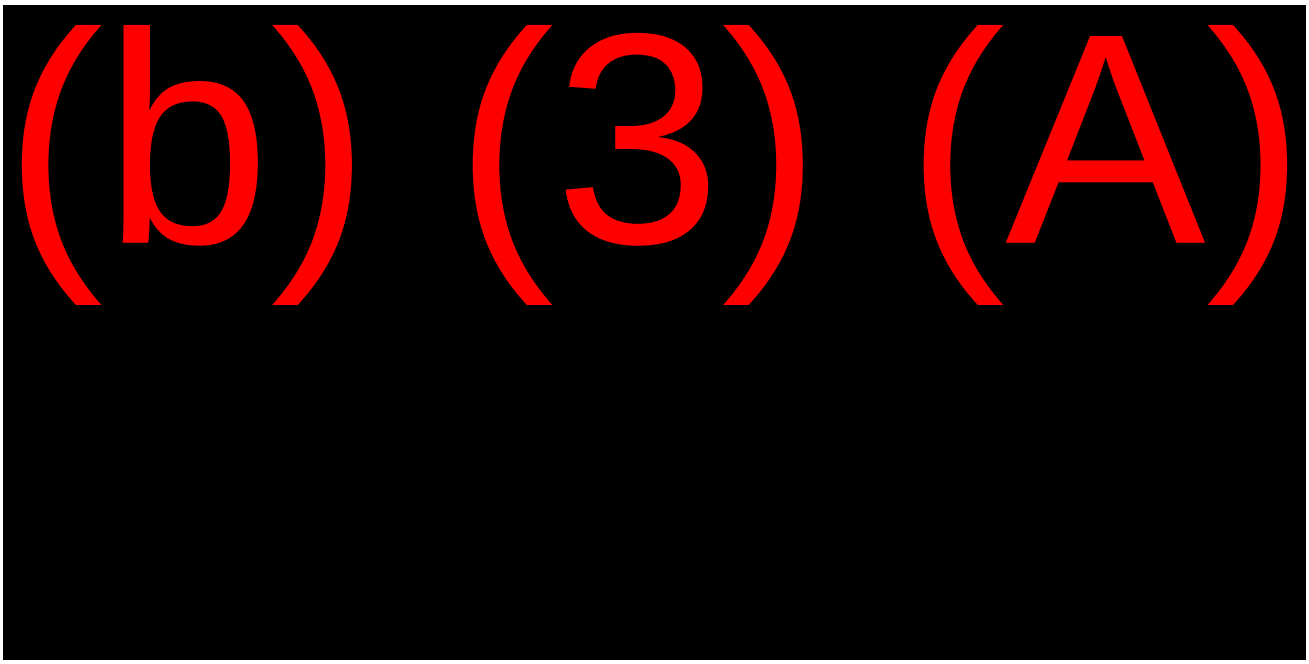
- **Red Hill Tanks 2-6, and F-24 Pipeline** (F-24)
    - 0.38 million gallons removed to Vessel MT Empire State between October 30 – November 1, 2023.
- **Red Hill Tanks 7-12** (JP-5)**, 15, 16** (F-76) **and JP-5 Pipeline**
    - 0.5 million gallons removed to Vessel Yosemite Trader between November 16-18, 2023.

(b) (3) (A)

Tank Bottoms Defueling

(b) (3) (A)

(b) (3) (A)



Tank Bottoms Defueling removed approximately 1.0 million gallons of fuel based on Daily Physical Inventory Reports, but did not remove all fuel/fuel substances from the Red Hill USTs. Based on previous tank cleaning activities, JTF-RH estimated that a total of 28,000 gallons of sludge material remains in the Red Hill USTs. Based on manual gauging of the tanks and correlating strapping chart height/fuel volumes, JTF-RH estimated that 4,758 gallons of fuel resides within the Red Hill USTs (*see table*, below). Actual volumes will not be known until sludge removal and tank cleaning activities commence.

Fuel Asset	Tank Bottoms Defueling	
	Start Volume	End Volume
Tank 1		
Tank 2	67,038	(b) (3) (A)
Tank 3	62,168	
Tank 4	62,000	
Tank 5	57,566	
Tank 6	49,442	
Tank 7	73,864	
Tank 8	59,221	
Tank 9	48,039	
Tank 10	57,626	
Tank 11	44,965	
Tank 12	61,451	
Tank 13		
Tank 14		
Tank 15	64,033	
Tank 16	58,490	
Tank 17		
Tank 18		
Tank 19		
Tank 20	101,699	

Table 23 - Estimated fuel volumes in Red Hill UST tanks prior to, and after, Tank Bottoms defueling. Tank 5 is constructed with a unique FOR inlet limiting total fuel drainage, reflected in the remaining fuel estimate. Starting tank volumes based on last manual tank gauge prior to defueling evolution (JTF-RH Interim Defueling Report, Enc. 1).

Unpacking (2024)

Following completion of tank mains defueling and tank bottoms defueling on December 8, 2023, EPA approved the Joint Task Force – Red Hill (JTF-RH) request to begin Unpacking the fuel pipelines at the RHBFSF(b) (3) (A) JTF-RH drained the (b) (3) (A)) utilized for defueling the Red Hill in a method like the Unpacking process in 2022 by using a low point drain transfer from(b) (3) (A) (b) (3) (A) A total of 220,626 gallons of fuel were removed during Unpacking as reported by JTF-RH in daily situation reports. Unpacking marked the end of the "gravity-based" defueling phases. Remaining fuel would need to be removed by more targeted and invasive efforts.

Residual Fuel Removal

Under the 2023 Consent Order, the DoD and DLA are required to removal all fuel from the RHBFSF which includes any fuel that remains within the pipelines used to transport fuel from the twenty large USTs to locations elsewhere at JBPHH. Following the completion of Unpacking (2024), JTF-RH located and drained residual fuel found in small pockets trapped within the line. These included areas where free-flowing fuel could be drained without otherwise performing destructive activities to the pipelines. Residual fuel was removed from targeted locations in the Red Hill tank gallery area, including pipeline laterals, spectacle blinds, standpipes, sampling stations, and equalization lines, as well as from the Surge Tank pipelines (aka, "surge lines") located near the UGPH.

Between February and June of 2023, prior to defueling, JTF-RH removed residual fuel from LPDs, pipeline spools, and other miscellaneous locations during repair processes. A total of 3,088 gallons was removed during this period. Similarly, JTF-RH conducted AFFF Retention Line testing that recovered approximately 803 gallons of fuel in August 2023, before Tank Mains Defueling.

Following Tank Mains and Bottoms Defueling, Pipeline laterals and standpipes were drained through (b) (3) (A) Out of service pipeline lateral connections (e.g., Tanks 1, 13, 14, 17, 18, 19) were confirmed to be "dry" with no fuel present[3]. Lastly, LPDs at key locations along the pipeline main were opened and checked for residual fuel at (b) (3) (A) with any flowable fuel being captured in barrels for transport. Results of residual fuel removal were tracked and reviewed by third-party quality validation, and reports in Quality Validation Reports. Volumes of fuel removed by these methods as reported by Quality Validation Reports related to removal activities are provided in the table, below:

Location	Total Volume Removed (Gallons)	Removal Locations
Tank 2	800	(b) (3) (A)
Tanks 3-4	3,446	
Tanks 5-6	2,029	
Tanks 7-8	4,076	
Tanks 9-10	5,199	
Tanks 11-12	5,322	
Tanks 15-16	4,437	
Tank 20	284	
Out of Service Tanks	0	
PITs	<1	Bottom drain opened, all valves opened and vented.
TOTAL	25,593	

Table 32 - Summary of total volumes of fuel removed during Residual Fuel defueling in the Red Hill tank gallery area. Not shown are volumes of fuel removed from the Surge Lines, also considered part of residual fuel removal. All volumes and removal locations reported on Quality Validation Reports prepared by HDR Environmental and submitted by JTF-RH.

Within the (b) (3) (A) Fuel was captured and pumped into a vacuum truck and finally transferred to (b) (3) (A) JTF-RH submitted a Quality Validation Report that recorded a total removal of 29,852 gallons from this area.

It is known that residual fuel removal activity has not removed all fuel from the pipelines to date. Prior to EPA's inspection on March 5-8, 2024, JTF-RH submitted pre-inspection reporting information related to remaining fuel within the RHBFSF. This included an estimate of remaining residual fuel in the F-24, JP-5, and F-76 pipelines. The pipeline survey estimated the total volume of residual fuel in the (b) (3) (A)

[3] Quality Validation Report "RF-OOS"

(b) (3) (A)

AFFF Retention Line Pigging

The AFFF Retention Line was contaminated with JP-5 fuel following the May 2021 release and, while a significant amount of this fuel was spilled to the LAT on November 21, 2021, some fuel remained in the pipeline. JTF-RH removed this remaining residual fuel in early 2024 by first scoping the pipeline, disconnecting the line, and performing pigging operations to collect fuel.

(b) (3) (A)

(b) (3) (A)

Surge Line Drainage

The pipelines between the (b) (3) (A) were drained as part of residual fuel removal

(b) (3) (A)

Inspection Results

On March 5, 2024, EPA Inspectors Pete Reich and Evan Osborne along with EPA staff Andrew Suesse and Ash Nieman met with JTF-RH leadership in a pre-inspection brief. EPA inspector Pete Reich presented inspector credentials and stated his role as a credentialed inspector. EPA and JTF discussed the methods and overall timeline for the planned inspection. A general schedule was agreed upon:

- Day 1, March 5, 2024 – Visual inspections of the RHBFSF from (b) (3) (A) (b) (3) (A)
- Day 2, March 6, 2024 – Visual inspections of the RHBFSF and UGPH areas (b) (3) (A)
- *[Break on March 7, 2024, to attend the Fuel Tanks Advisory Committee Meeting]*
- Day 3, March 8, 2024 – On-site follow-up, and inspection close-out meeting.

Days 1 and 2 proceeded as planned. EPA determined at the conclusion of Day 2 that additional observations were needed in the (b) (3) (A) and this work would occur on Day 3.

EPA staff gathered information in the form of photographs, interactions with on-site personnel, and noted observations. EPA was accompanied by Hawaii Department of Health (DOH) Engineer Hugh Myers; JTF-RH Repairs Directorate (b) (6) Third-party Quality Validator (b) (4) Fleet Logistics Center (FLC) staff and contractors; and numerous JTF-RH support staff.

Results from the inspection are organized and presented according to specific systems within the facility:

- Red Hill USTs
- Fuel Pipelines
- FOR System and Sumps in the LAT
- Surge Tanks and Underground Pumphouse
- AFFF Concentrate System
- AFFF Retention System

Red Hill USTs

This section presents key findings related to the Red Hill USTs.

Inspection Methods

JTF-RH estimated remaining fuel and sludge volumes in the Red Hill USTs by manual gauging and comparison with historical tank cleanings, as discussed in the ***Background*** section, above. As part of the inspection, EPA witnessed FLC personnel perform manual gauging of two Red Hill USTs — Tanks 20 and 6—to confirm methods used by JTF-RH to make their estimates for remaining fuel. The Red Hill USTs are not accessible for internal visual inspection based on the presence of hazardous conditions (i.e., fuel vapors).,

Inspection Observations

On March 5, 2024, at approximately 10:30 AM HST, EPA inspectors witnessed FLC personnel perform manual gauging of Tank 20. Gauging occurred from the access port at the top of the tank, accessed from the Upper Access Tunnel. FLC personnel coated a plumb bob with fuel gauging paste and descended the bob on gauging tape until it struck the bottom of the tank. The depth to tank bottom was recorded at (b) (3) (A) Upon retrieval, the fuel paste indicated fuel at a depth of less than [redacted] approximated at [redacted]

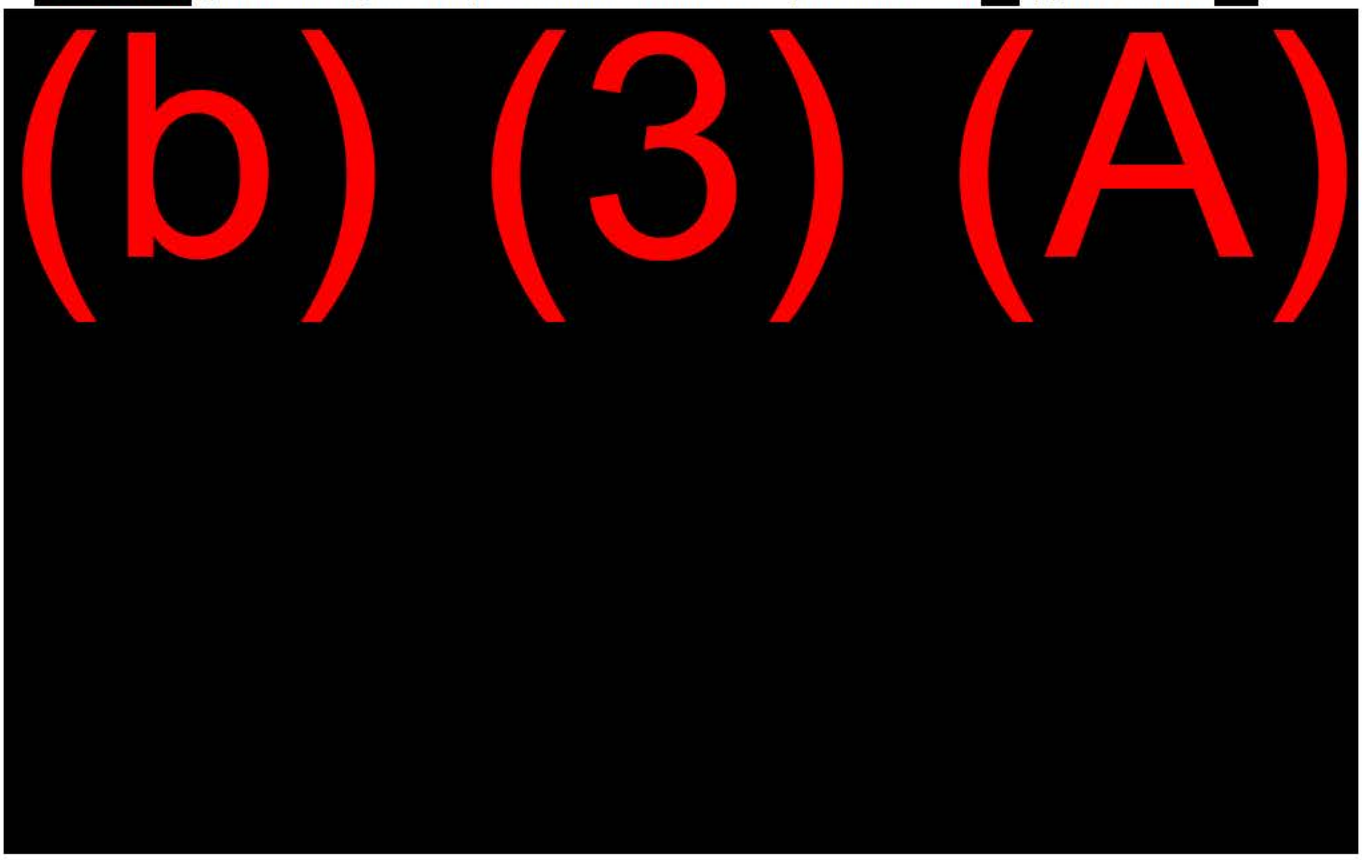


Figure 26 - Plumb bob after retrieval in gauging Tank 20. Fuel paste that changes color in contact with fuel indicated than [redacted] of fuel present at location where bob struck tank bottom (EPA Inspection Photo Log).

On March 8, 2024, at approximately 9:00 AM HST, EPA inspectors witnessed FLC personnel perform manual gauging of Tank 6. Gauging occurred from the access port at the top of the tank, accessed from the Upper Access Tunnel. FLC personnel coated a plumb bob with fuel gauging paste and descended the bob with gauging tape until it struck the bottom of the tank. The depth to tank bottom was recorded at [redacted] Upon retrieval, the fuel paste indicated a fuel depth of [redacted]

Relative volumes of remaining fuel reported before the inspection ([redacted] gallons in Tanks 20 [redacted] gallons in Tank 6) aligned with gauged total depth of fuel in tank bottoms [redacted]

Fuel Pipelines

This section presents key findings related to the fuel pipelines occurring within the tank gallery, LAT, and HT areas. Pipelines associated with the Surge Tanks near the Underground Pumphouse are addressed in the section ***Underground Pumphouse and Surge Tanks.***

Inspection Methods

EPA gathered information that would confirm, refute, and/or provide additional information related to statements made by JTF-RH regarding the amount of fuel remaining in the fuel pipelines. EPA made both passive observations (i.e., viewing tank bay areas, observing sump containment areas) and witnessed active performances by JTF-RH to demonstrate whether fuel was present in the pipeline (e.g., opening LPDs while EPA was on-site).

During the on-site activities, EPA visibly inspected the fuel pipelines and key appurtenances to determine whether significant volumes of fuel remained within the system. EPA inspectors completed a visual inspection of pipelines from the (b) (3) (A) [redacted] Visual inspection of piping and tank external structure allowed inspectors to gage general mechanical integrity of the system and gather any evidence of fuel release. Visi-flow indicators installed on the sampling trees at the base of each Red Hill UST allowing direct viewing of piping contents (*see*, Figure 31). Visi-flow indicators are also located at the FOR to JP-5 and the F-24 to JP-5 crossover connections.

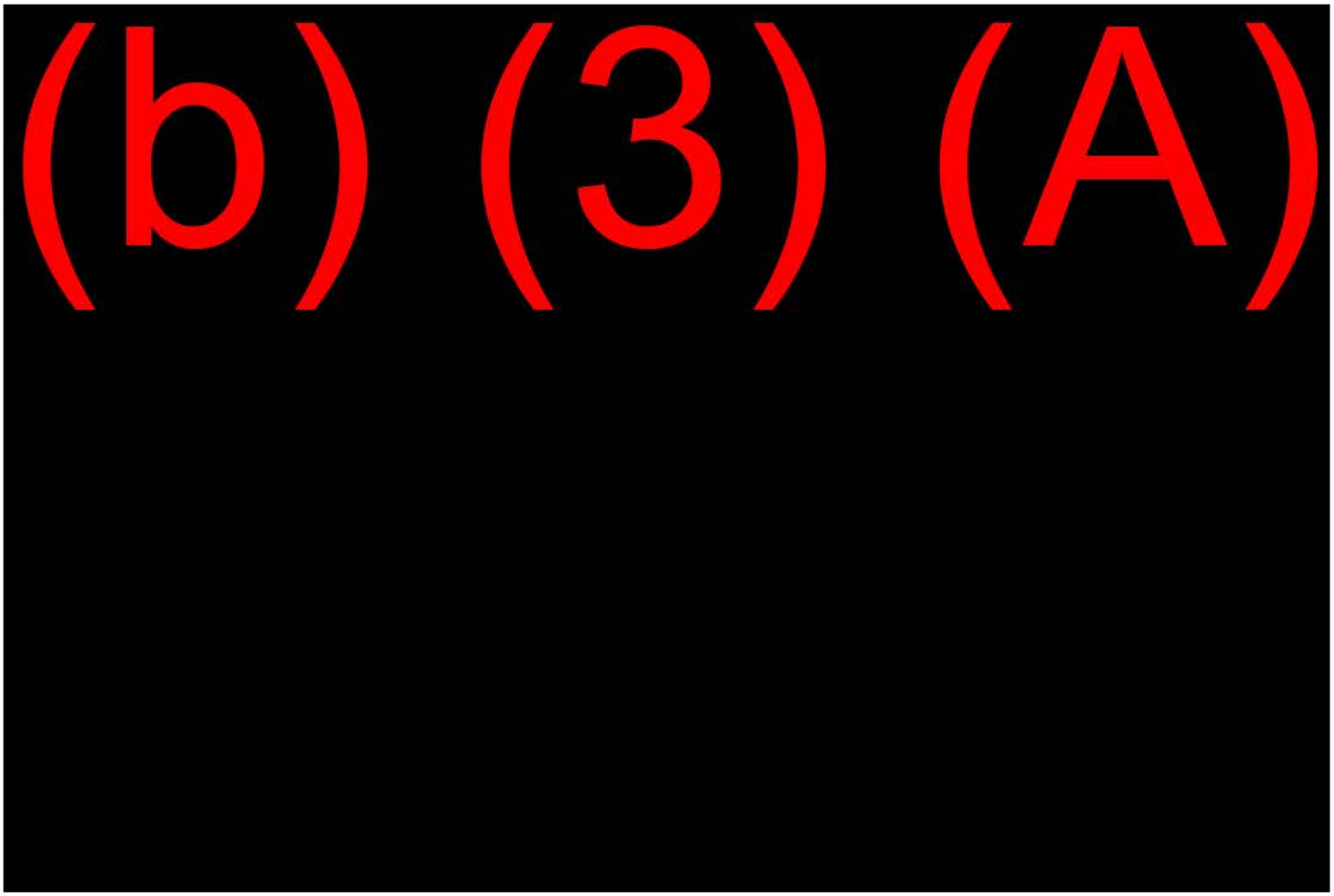
While on-site, EPA requested that JTF-RH open certain low points on the pipelines to demonstrate presence of flowable fuel. This included the opening of LPDs that, due to their position on the bottom of the pipeline, allowing onlookers the ability to determine whether any fuel exists in a location and quantity that would result in discharge from the LPD. For this inspection it was assumed that fuel flows in a natural hydraulic gradient corresponding with the design of the RHBFSF to accommodate gravity-based fuel movements from the highest elevation (i.e., Red Hill USTs) to the lowest (i.e., the UGPH). Along the same strategy, EPA requested that JTF-RH open certain High Point Vents (HPVs) within the Lower Access Tunnel and Harbor Tunnel to determine fuel levels within the pipeline. This process involves the opening of a HPV on the top of the pipeline and probing of the internal pipeline space with a rod dipped in fuel paste to determine whether fuel exists in that section of the pipeline, and if so, to what depth. EPA chose specific LPDs and HPVs to check for fuel presence based on key access points within the facility. EPA witnessed opening of LPDs or fuel gauging at HPVs at [redacted] HPVs immediately upstream of the UGPH were also gauged. At other locations, EPA asked JTF-RH officials for information on when LPDs/HPVs were most recently accessed and what results were observed. Examples of these methods are shown in the following images:

(b) (3) (A)

(b) (3) (A)

Figure 29 - Example of Navy personnel reading the probe coated in fuel paste at the HPV on the JP-5 pipeline near [redacted] Results indicate approximatel [redacted] of fuel present (EPA Inspection Photo Log).

EPA also requested that sampling station valves found in Red Hill UST bays be opened to demonstrate that tanks were empty [redacted] This inspection method was used to confirm tank gauging data submitted by JTF-RH regarding fuel height in each tank. Flowable fuel can be detected by visual observation of a visi-flow visual sight indicator, shown below.



EPA chose which sampling trees to open in an impromptu manner during the inspection to provide an element of randomness and "spot-checking."(b) (3) (A)

Inspection Observations

On March 5, 2024, at approximately 10:45 AM HST, EPA inspectors and JTF-RH personnel arrived at (b) (3) (A) and entered the RHBFSF(b) (3) (A)

(b) (3) (A)

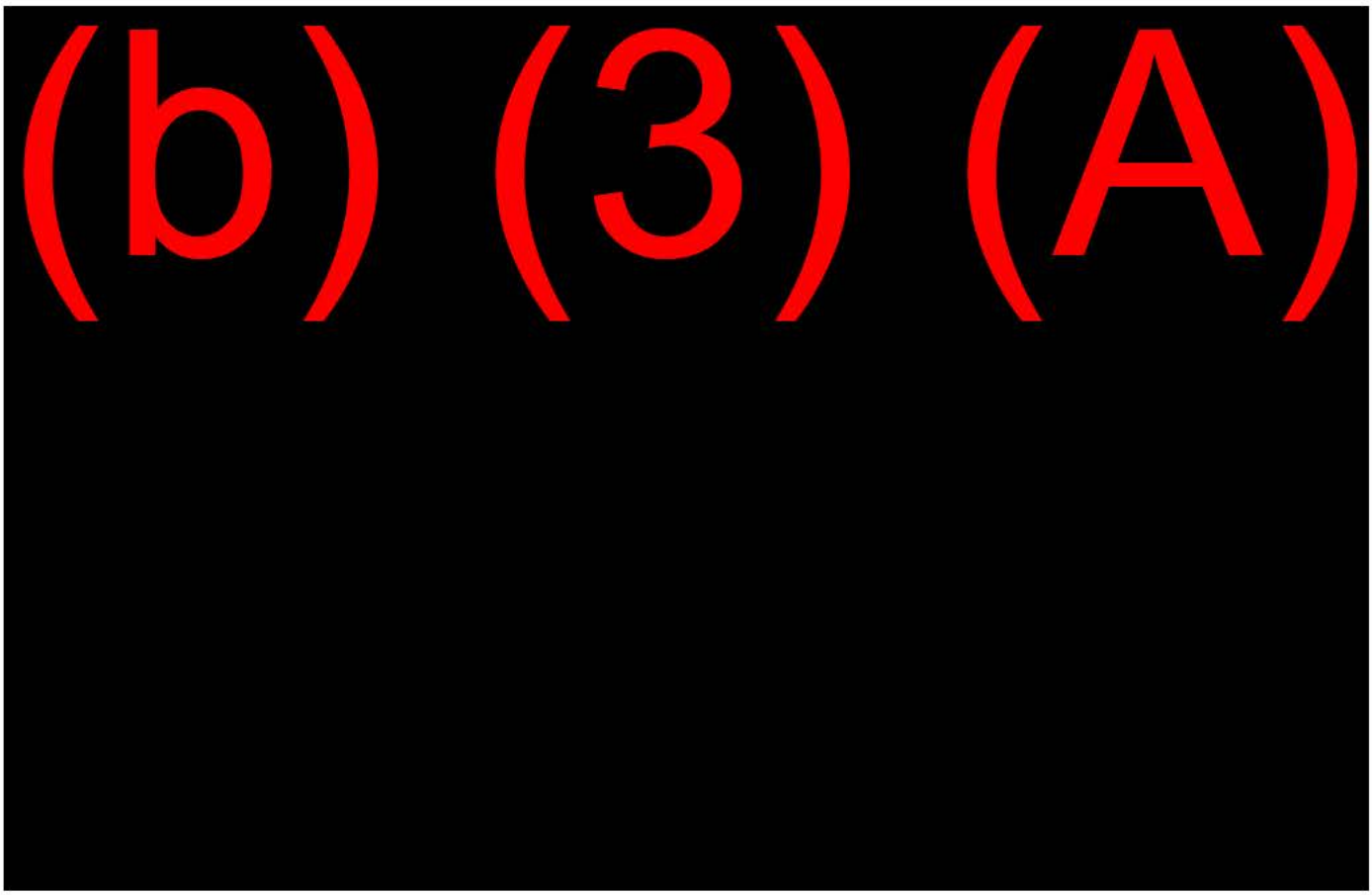
Observations in this section are organized in this manner, beginning with the upper tank area and moving through the system to the Surge Tanks and UGPH.

EPA visually inspected the equalization line and sampling ports in the Tank 20 bay and requested that JTF-RH open all sampling ports on the sampling tree.(b) (3) (A)

No other fuel movement was detected.

(b) (3) (A)

(b) (3) (A)



Tanks 19, 18, and 17 were all out of service prior to the start of defueling. No notable observations were made in these tank bay areas. During the inspection JTF-RH (b) (3) (A) was checked on February 20, 2024, and no fuel was detected.

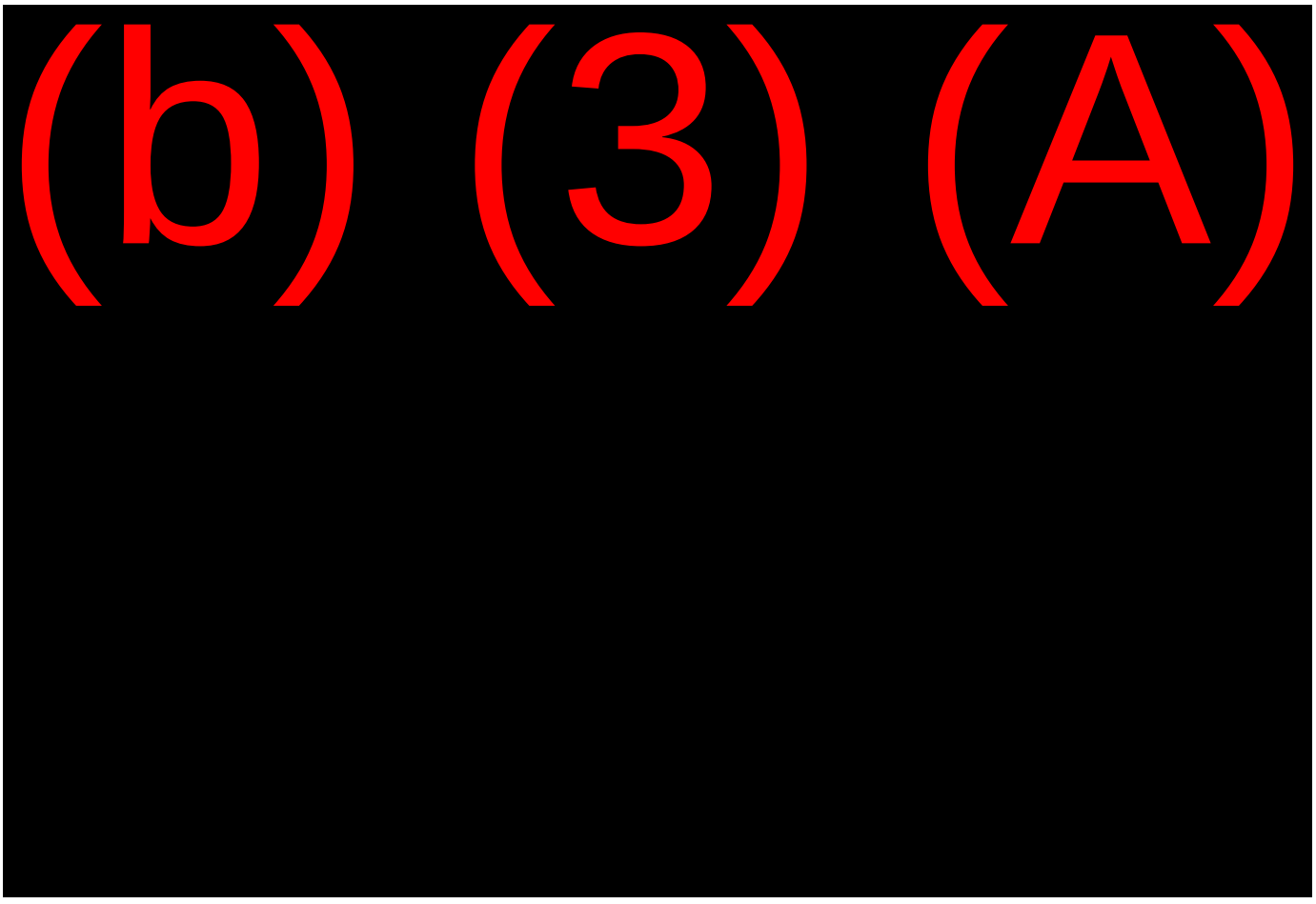
Continuing down the LAT (b) (3) (A) to the knowledge of JTF-RH personnel on site during the inspection, was used for pigging procedures and has not been drained during residual fuel removal.

EPA requested that JTF-RH open all sampling ports connected to (b) (3) (A) JTF-RH opened all valves connected to the equalization line and approximately (b) (3) (A) of fuel drained into containment. EPA was informed that

(b) (3) (A)
An accumulation behind this lip approximately (b) (3) (A) is expected to be present inside the (b) (3) (A).

At Tank 15, EPA inspected the visi-flow component of the sample station and observed no fuel present. Tanks 13 and 14 were out of service prior to the start of defueling. No notable observations were made in these tank bay areas. Visi-flow sight indicators on sampling stations at Tanks 12, 11, 10, 9 and 8 were visibly confirmed dry. No other significant observations made. Contractors were staging for tank cleaning at the Tank 7 bay during the inspection. No noteworthy observations were made at Tank 6. JTF-RH confirmed that the Tank 5 equalization line was previously drained in accordance with the residual fuel removal procedures. No other significant observations made. EPA requested that JTF-RH open the Tank 4 (b) (3) (A) to the tank, with no fuel seen moving through the visi-flow sight indicator connected to the sampling tree. No significant observations were made in the Tank 2 and 3 bays. Tank 1 was out of service prior to defueling so no observations related to fuel piping were made, though, EPA identified a collection of storage barrels in the Tank 1 bay. *See,* Section **AFFF Retention System** Inspection Observations for more information.

EPA and JTF-RH stopped at multiple LPDs and HPVs in the Lower Access Tunnel and Harbor Tunnel to discuss and/or observe FLC personnel open LPDs or probe HPVs. Below, observations are ordered from the most "upstream" (b) (3) (A) to most "downstream (b) (3) (A) locations along the pipeline:



Observations related to Surge Lines in the Section, **Surge Tanks and Underground Pumphouse.**

FOR System

This section presents key findings related to the FOR within the Red Hill UST tank gallery and LAT areas. The FOR system associated with the Surge Tanks near the Underground Pumphouse is addressed in the section "***Underground Pumphouse and Surge Tanks***."

Inspection Methods

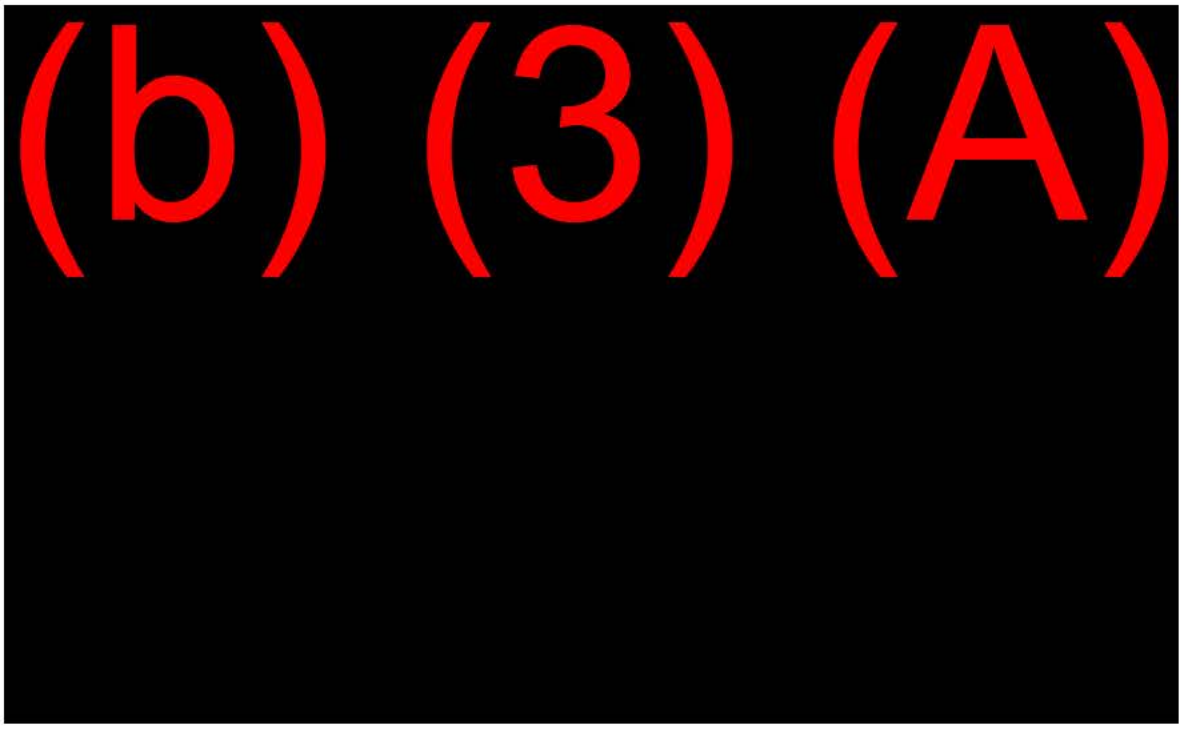
(b) (3) (A) The FOR line above the (b) (3) (A) has a LPD that can be opened to demonstrate no flowable material upgradient. The sumps located along the (b) (3) (A) visually inspected. While on-location, EPA posed questions to JTF-RH regarding the recent use of the FOR system and plans for further defueling and closure work.

Inspection Observations

On March 5, 2024, at approximately 10:45 AM HST, EPA entered (b) (3) (A) and proceeded to the LAT. (b) (3) (A) During the extent of the inspection, EPA saw no evidence of mechanical failure in the piping system and witnessed no evidence ongoing fuel release from this system.

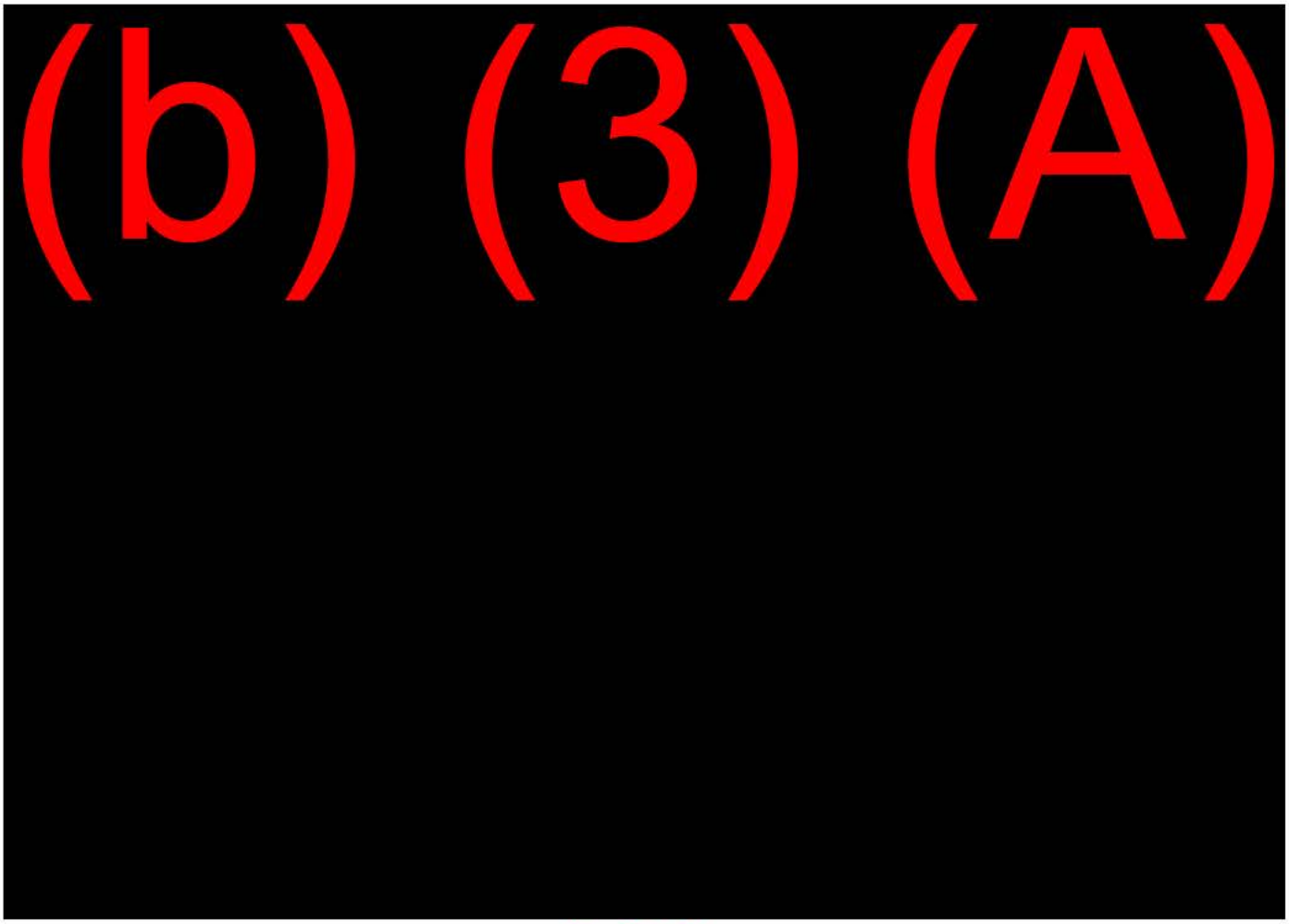
EPA inspected the sump (b) (3) (A) and found no evidence of visible fuel. (b) (3) (A)

EPA and accompanying personnel viewed the (b) (3) (A) FOR Sump. EPA witnessed FLC personnel open a LPD at this location for presence of fuel, and none was observed. One would expect this LPD to release any potential fluids that had accumulated in the FOR pipeline above this point.



(b) (3) (A)

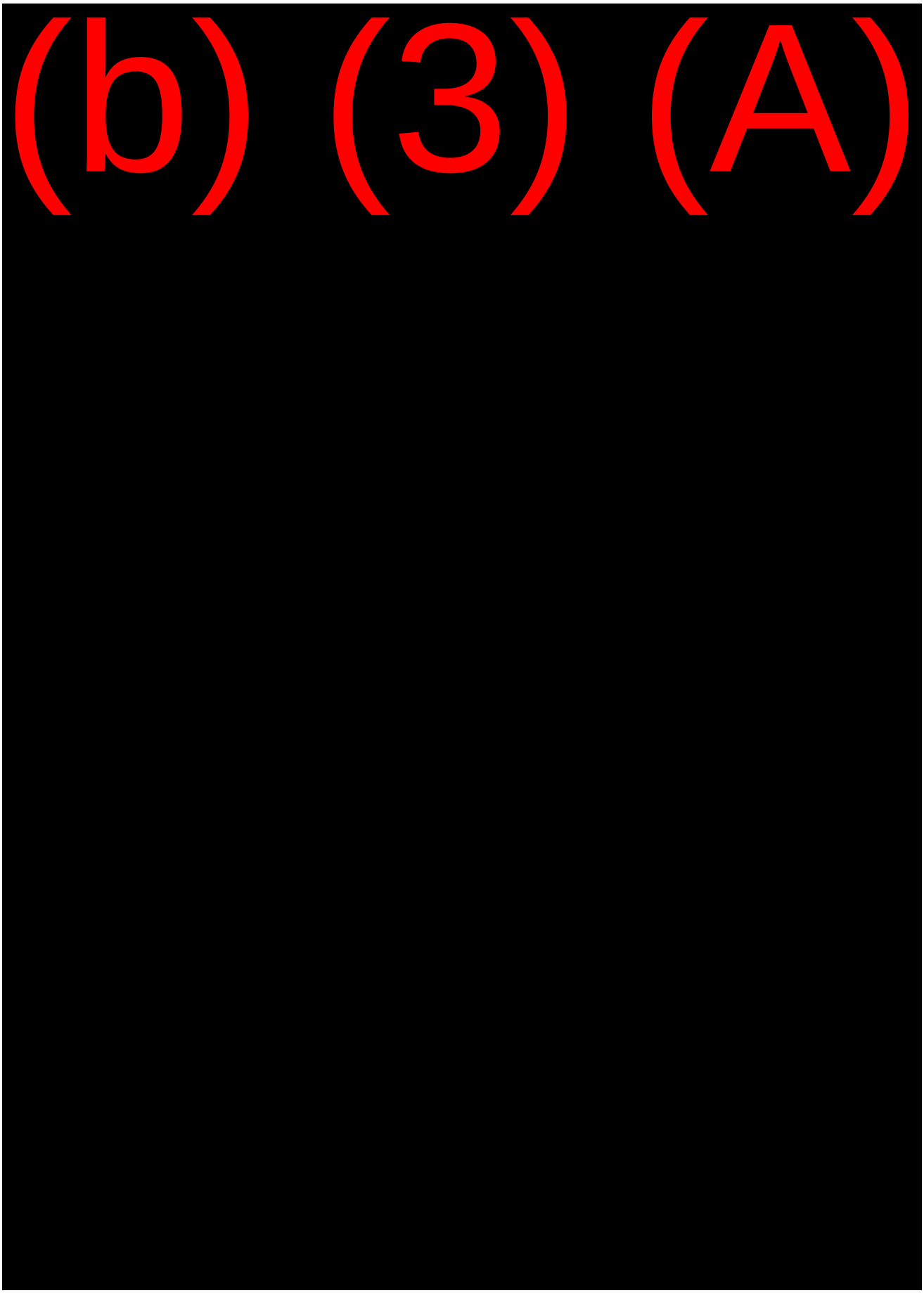
(b) (3) (A)



EPA tracked the FOR pipeline through the (b) (3) (A) PA was informed of multiple integrity tests and/or flushing activities that had taken place in 2024 prior to the inspection, including a pressure test of the FOR pipeline between (b) (3) (A) JTF-RH representatives informed EPA that these tasks were completed to satisfaction and no issues encountered. EPA completed an inspection of the FOR pipeline to the end of Adit 3 on March 5, 2023.

Leak from Tank s311

On March 6, 2023, at approximately 3:15PM HST, while inspecting other portions of the facility (b) (3) (A) JTF-RH informed EPA that a minor leak was identified on Tank s311 and secondary containment had captured all fuel/water that had been released from the tank. The tank had previously been filled with a fuel/water mix from FOR pipeline flushing. EPA arrived at Tank s311 at approximately 3:45PM HST and confirmed the leak, which occurred at a height of approximately (b) (3) (A) under a metal support connected to stairs. Absorbent pads had already been deployed, and sheen was seen in the rainwater collected in the secondary containment. No active leaking was observed.


(b) (3) (A)

Surge Tanks and Underground Pumphouse

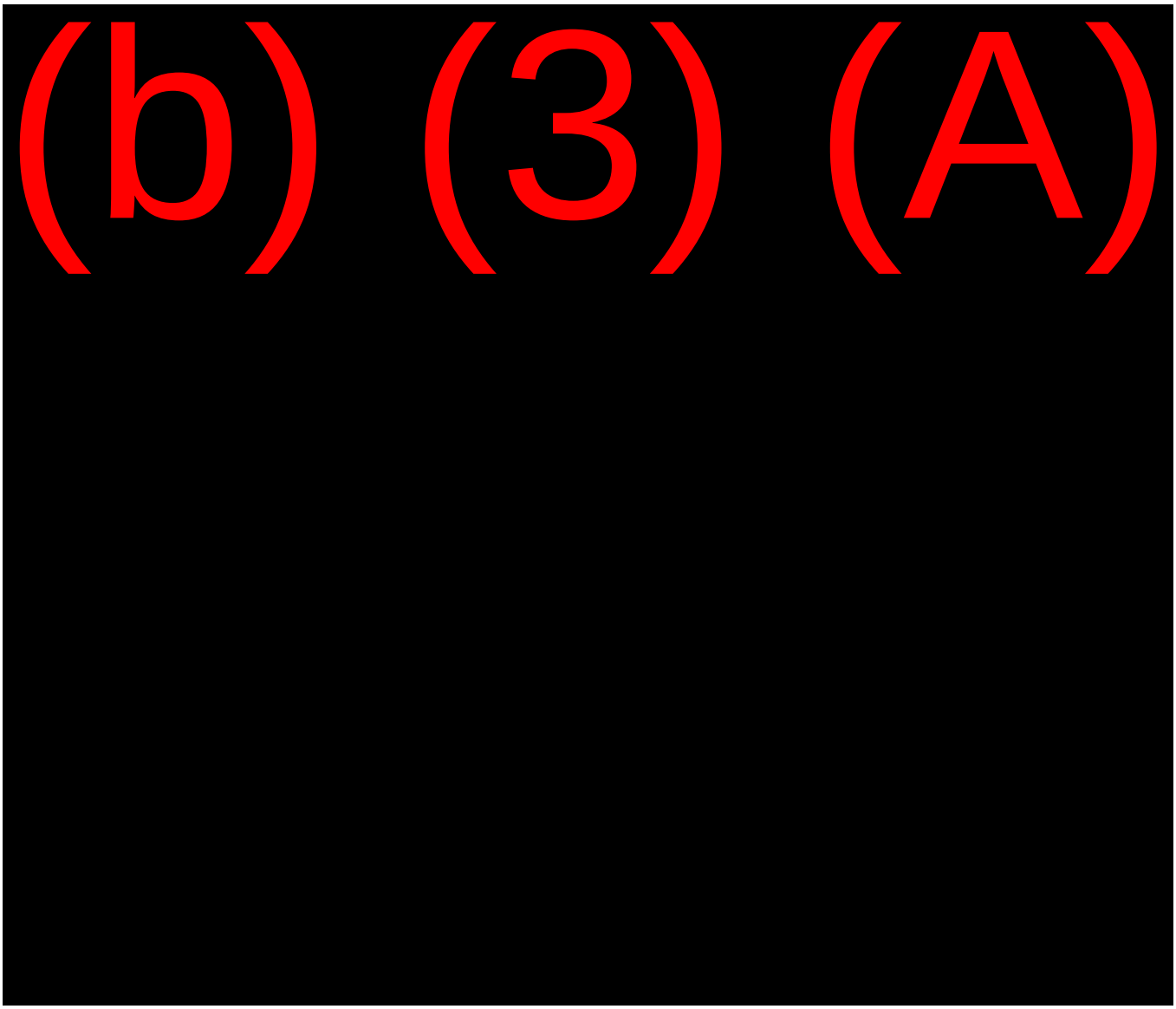
Inspection Methods

EPA inspected specific components of the pipelines in the Harbor Tunne (b) (3) (A) [redacted] While the UGPH is outside the scope of defueling under the 2023 Consent Order, systems such as the Surge Tanks, Surge Tank piping, and fuel pipelines intersect with the UGPH and methods to evaluate fuel removal from these components requires inspection within the UGPH. Methods include visual observations of piping in the Harbor Tunnel, opening certain LPDs in the UGPH, and viewing the main FOR sump in the UGPH.

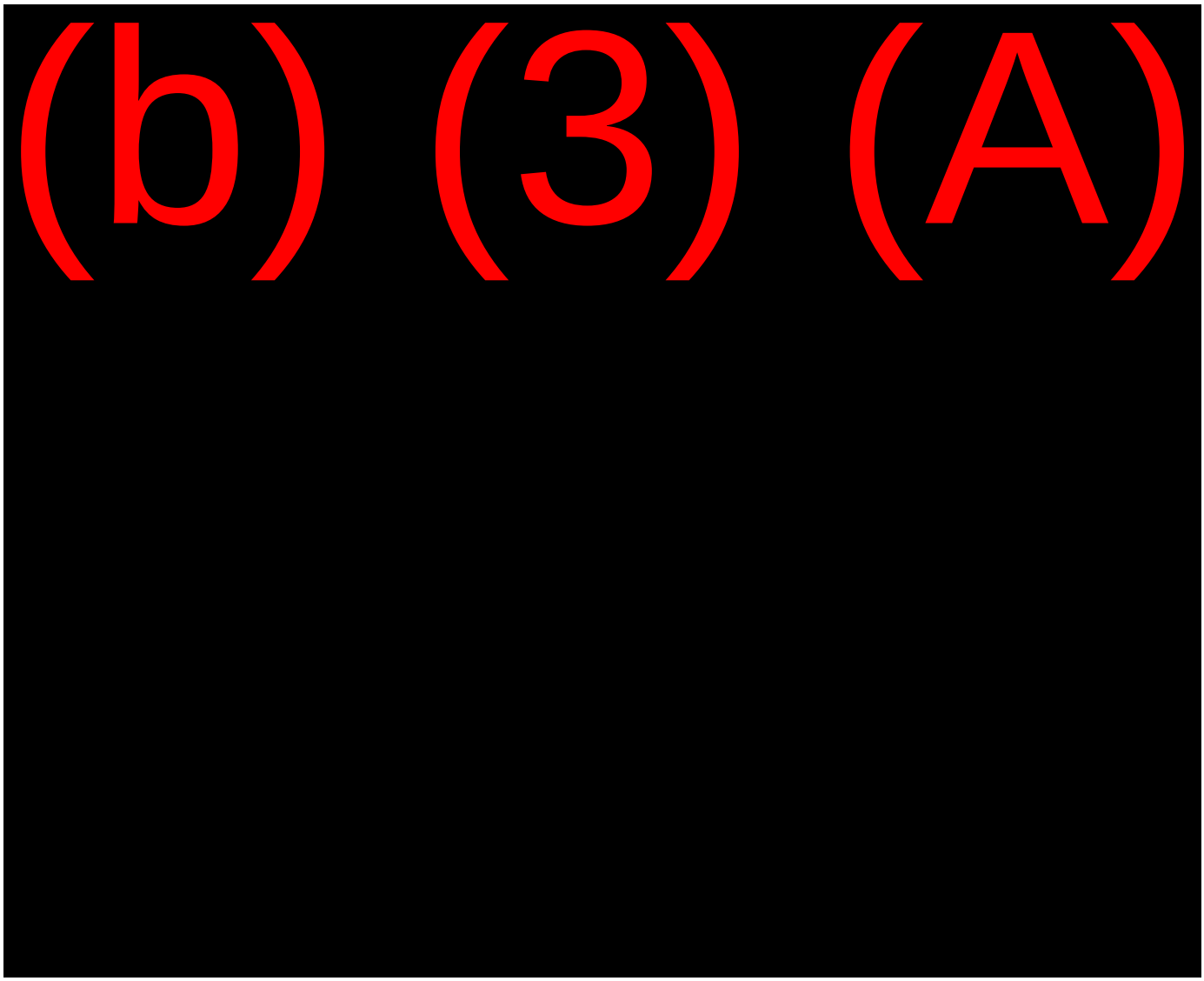
(b) (3) (A) [redacted]

Inspection Observations

March 6, 2024, at approximately 1:45pm HST, EPA arrived at the location of the "fire valves" (b) (3) (A) [redacted] Results are presented in the "***Fuel Pipelines – Inspection Observations*** section, above. (b) (3) (A) [redacted]



EPA returned to this location on March 8, 2024, around 10:40AM HST as part of the inspection and observed that the F-24 pipeline was already air-gapped, and the JP-5 pipeline was actively being disconnected.



Also on March 6, 2024, EPA entered the Surge Tank gallery area to inspect tanks, pipelines, and associated infrastructure to gather information on residual fuel and remaining plans for defueling/closure. (b) (3) (A)

(b) (3) (A)

EPA requested the opportunity to view the opening/probing of a LPD or HPV, respectively, on the fuel pipelines, FOR line, or relief lines, but was informed that these features do not exist in the Surge Tank Area. EPA was told that fuel pipelines and FOR segments near tank nozzles were drained as part of residual fuel removal and those results were submitted as Quality Validation Reports (*see*, Background Section).

EPA inspected the main FOR sump in the UGPH and found no wet spots.

EPA viewed the valves (b) (3) (A) as reported in Residual Fuel removal CONOPS. Based on the slope of the Surge Lines and distance between these valves and the Surge Tanks, it is possible that significant volumes of fuel still exist within the Surge Lines.

While inspecting this portion of the RHBFSF on March 5, 2023, JTF-RH and FLC personnel were unable to answer the following questions regarding the Surge Tank gallery area:

1. Where specifically will the pipelines be air-gapped between the Surge Tanks and the UGPH?
2. Have all tell tale piping connections been checked for fuel?
3. Approximately how much fuel is still within the fuel pipelines between the Surge Tanks and the UGPH?

EPA was informed that the above questions would be addressed later by the NCTF-RH as part of their closure work. These topics are addressed in the ***Recommendations*** Section, below.

AFFF Concentrate System

Inspection Methods

EPA, in its role in the protection of human health and the environment, requested to inspect the AFFF Concentrate system.

Aside from the abandoned underground portion of piping between (b) (3) (A) all AFFF concentrate equipment can be visually inspected. A qualitative evaluation of all system components was made while EPA staff were onsite. This included an inspection of (b) (3) (A) observation of piping modifications made following the release of AFFF concentrate in November 2022, and viewing the length of the AFFF concentrate piping (b) (3) (A) Additionally, JTF-RH opened each of the (b) (3) (A) AFFF mixing closets to allow visual inspection.

As part of the inspection, questions were posed to JTF-RH regarding the status the AFFF concentrate system and what additional work will need to be carried out by NCTF-RH during closure of the facility.

Inspection Observations

On March 5, 2024, at approximately 9:00 AM HST, EPA and JTF-RH staff visited (b) (3) (A) EPA inspected the bulk storage tank and confirmed most of its contents had been gravity drained from the discharge valve (b) (3) (A) JTF-RH staff confirmed that the tank had not been cleaned, and that there is likely residual AFFF concentrate located in the heel of the tank, below the discharge valve. JTF-RH indicated the remaining volume will be removed by NCTF-RH during facility closure. Other observations of (b) (3) (A) included the visual confirmation of the air gapping of transfer pumps. EPA confirmed that a physical separation as evidenced by the removal of suction/discharge pump piping prevents any liquid from being pumped into AFFF concentrate piping. Additionally, transfer and jockey pumps were observed to be locked out, tagged out. No AFFF concentrate has been pumped through the aboveground piping since this was installed after the November 2022 spill according to JTF-RH personnel. Similarly, the bulk storage tank has remained near-empty and transfer pumps have remained locked out. EPA was told that the AFFF piping within (b) (3) (A) (b) (3) (A) had been previously drained, but not cleaned. Like the bulk storage tank, there is likely some

residual AFFF coating the interior of the pipes. [redacted] No visual evidence of any leaking valves, pipe fittings, or other potential points of failure were seen at the time of the inspection.

During the inspection [redacted] EPA staff identified three waste drums in a room adjacent to the bulk AFFF storage tank. Information on waste storage drums is provided in the section, "*Residual Fuel Storage*," below, within the AFFF Retention Line inspection results.

Following the [redacted] inspection, EPA and JTF-RH walked towards [redacted] while visually inspecting the new aboveground AFFF concentrate line along the way. [redacted] No evidence of AFFF concentrate was observed at either location. This remained true for visual inspection of all AFFF concentrate piping [redacted] No leaks were witnessed at any LPDs or isolation valves. [redacted] EPA was told that NCTF-RH would be draining all concentrate from the piping and mixing closets as their first closure-related operation. [redacted] is estimated to be remaining in the piping. JTF-RH confirmed that all isolation valves [redacted] AFFF zones remained closed, which would mitigate the volume of AFFF concentrate released in the event of pipe failure.

In additon to the piping in the LAT, EPA also visually inspected the AFFF mixing closets located in the LAT of the Red Hill tank gallery area. [redacted] only allowing fire suppression water to be discharged in the event of a fire. Visual inspection did not reveal any evidence of AFFF concentrate release inside of the mixing closets. EPA staff identified LPDs in each closet that will be used to drain AFFF from the system.

AFFF Retention System

Inspection Methods

There are [redacted] in-ground sumps and associated [redacted] area designed to capture released AFFF foam in the event of a discharge, and a PVC/steel pipelin [redacted] contamination of this system with fuel during the May 6, 2021, spill, EPA inspected the sumps and pipeline to determine whether residual fuel remains. Sumps were visually inspected for evidence of fuel (i.e., wet spots, odor, staining), and the pipeline exterior was visually inspected along its length. LPDs exist along the pipeline and these drain valves were opened to see whether fuel or other materials was present at those specific locations along the pipeline. Where the pipeline was disconnected to accommodate residual fuel removal via pigging, visual observation provides confirmation of the pipe's interior condition and contents.

Inspection Observations

On March 5, 2024, EPA walked the LAT [redacted] and inspected each of the [redacted] AFFF sumps, the AFFF Retention Line, and associated appurtenances such as LPDs. EPA found no evidence of fuel accumulation in this system.

EPA visually inspected each AFFF Retention Sump in the [redacted] area for evidence of fuel and general condition of the sump pumps. [redacted]

intended for AFFF foam/water removal in the event of a discharge, and a (b) (3) (A) for removing natural water accumulation into the sump. None of the [redacted] sumps showed signs of fuel accumulation. Only sump [redacted] showed evidence of liquid accumulation in the bottom, which was determined to be groundwater based on the accumulated location and absence of any odor indicating possible fuel accumulation. Al [redacted] primary pumps in Sumps (b) (3) (A) were in an active status [redacted] pumps in Sump [redacted] and (b) (3) (A) were in an active status.

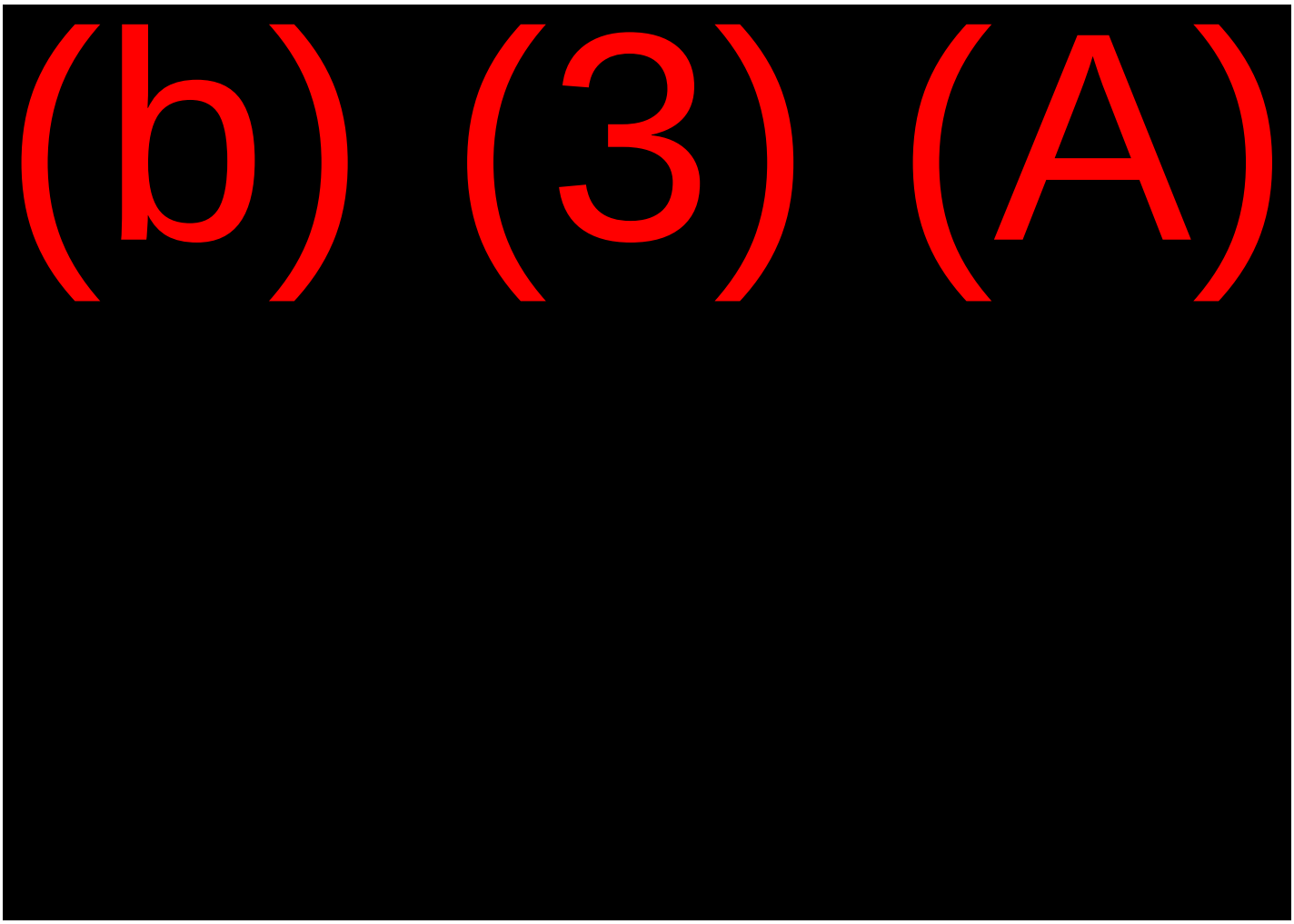
During the inspection JTF-RH confirmed that the AFFF Retention system, such as the sumps, pumps, and modified retention pipeline, could be activated in the event of a fire and subsequent release of water from the suppression system; though, the AFFF concentrate mixing and foam system is currently locked out and would not engage in the event of a fire.

(b) (3) (A) [redacted] Nowhere along the pipeline did EPA see evidence of leakage from the pipeline.

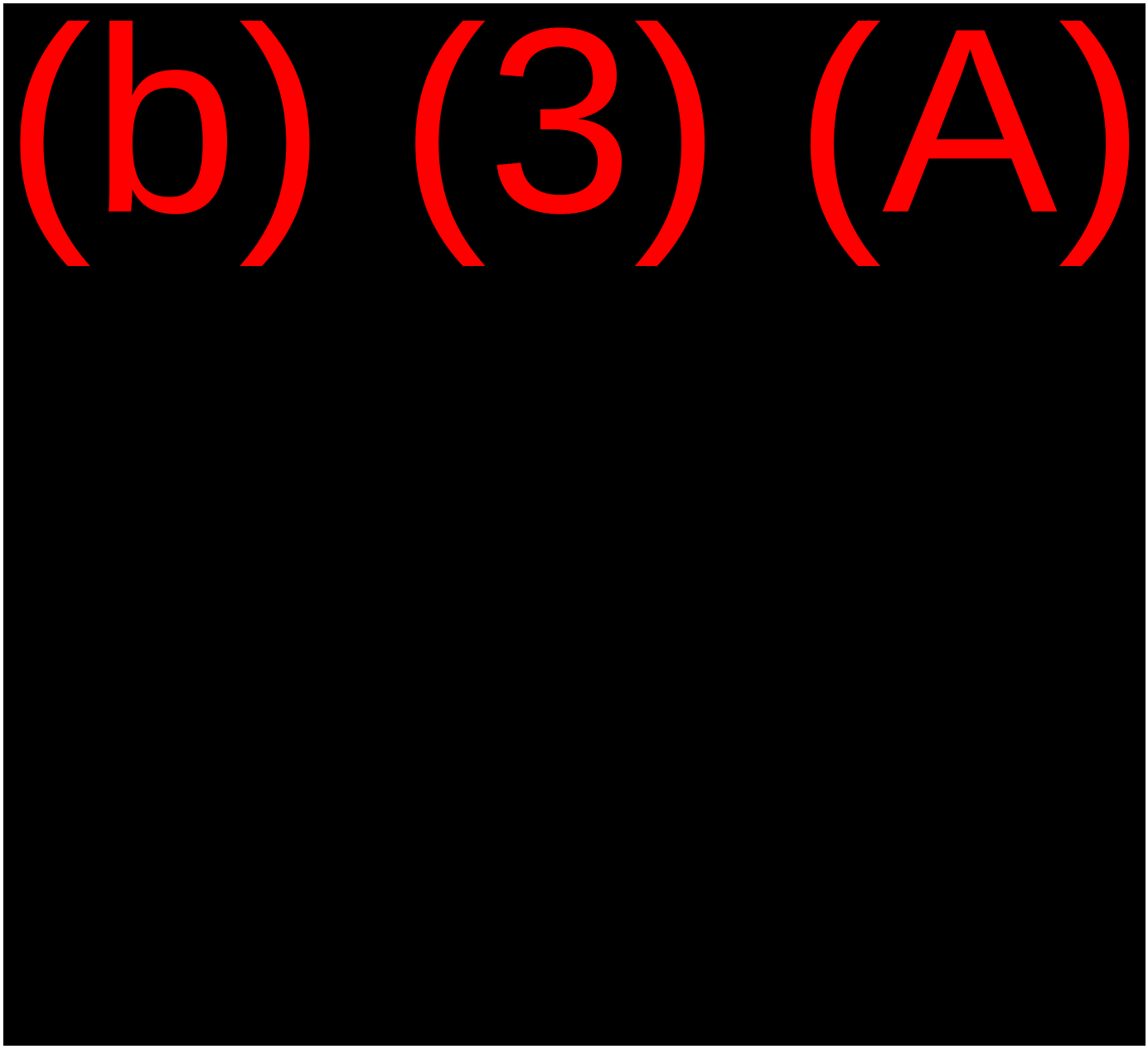
During the walkdown of the pipeline, JTF-RH explained the scoping and pigging work that had occurred.

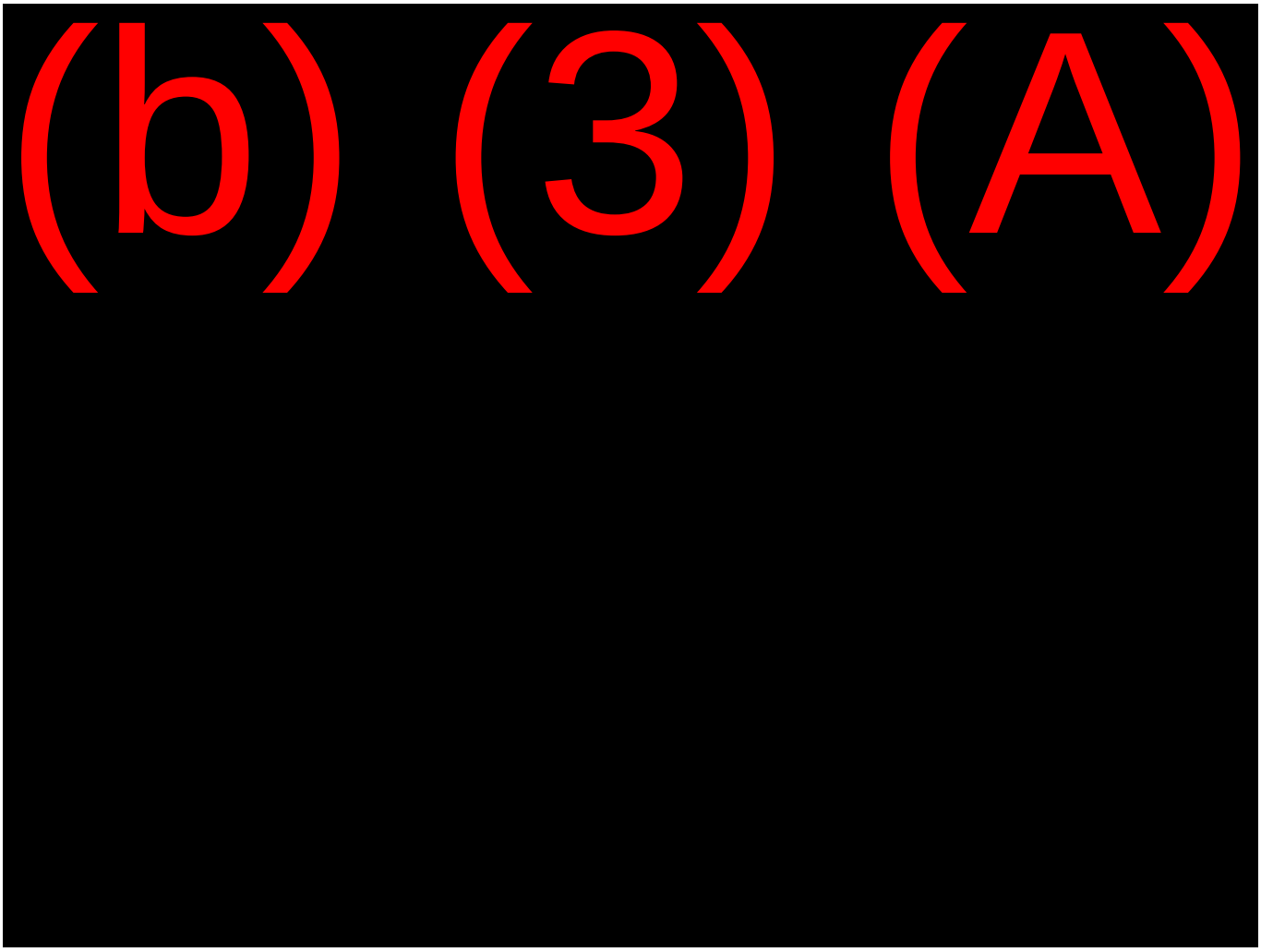
(b) (3) (A) [redacted]

EPA visually inspected the location of the LPD that was struck on November 20, 2021, resulting in the release of JP-5 fuel to the LAT and contamination of the Red Hill Shaft. The broken LPD had since been removed and a cap was installed making probing this point of the line for fuel presence unfeasible.



EPA requested that JTF-RH open (b) (3) (A) LPDs on the AFFF Retention Line: (b) (3) (A) (b) (3) (A). No evidence of fuel or other fluid was detected at either location. EPA also visually inspected the open pipeline (b) (3) (A) entrance and witnessed no sign of fuel or other flowable material. The condition of the pipeline appeared to be good, with no visible material inside.


(b) (3) (A)



On March 5, 2023, EPA requested that JTF-RH open the LPD (b) (3) (A) (b) (3) (A) EPA was informed that this LPD was locked out/tagged out and could not be opened. EPA requested JTF-RH to open this LPD on March 8, 2024, during the final day of the inspection.

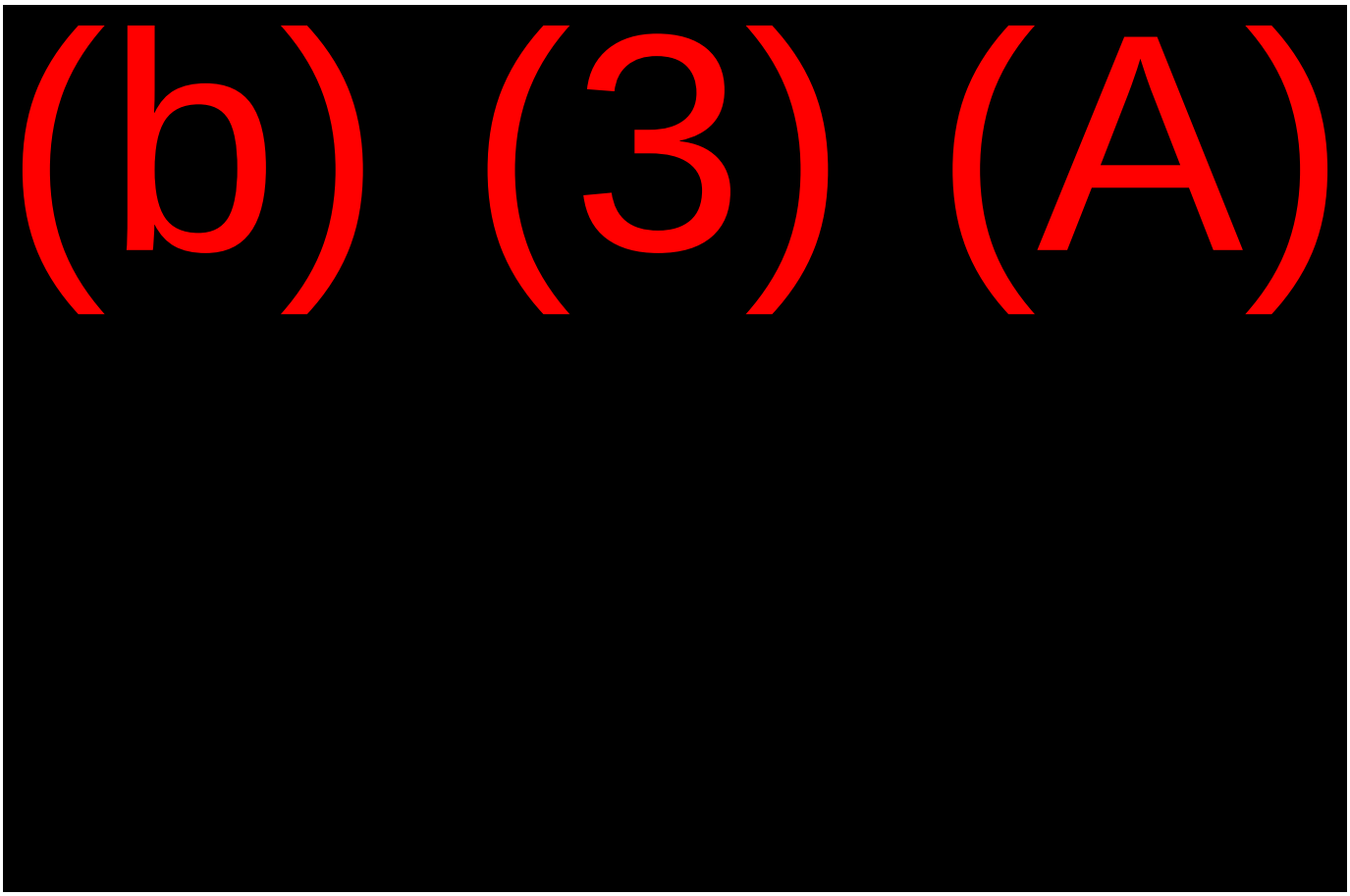
EPA returned on March 8, 2024, and witnessed opening of the (b) (3) (A) Approximately 4 ounces of fluid flowed out of the LPD. The fluid did not present a petroleum-type odor, nor did the fluid appear to have an oily sheen. EPA was told that this portion of the line has historically accumulated water due to condensation and potential groundwater intrusion (b) (3) (A) (b) (3) (A) EPA was informed that the AFFF Tank has never contained fuel and was "dry."

Residual Fuel Storage

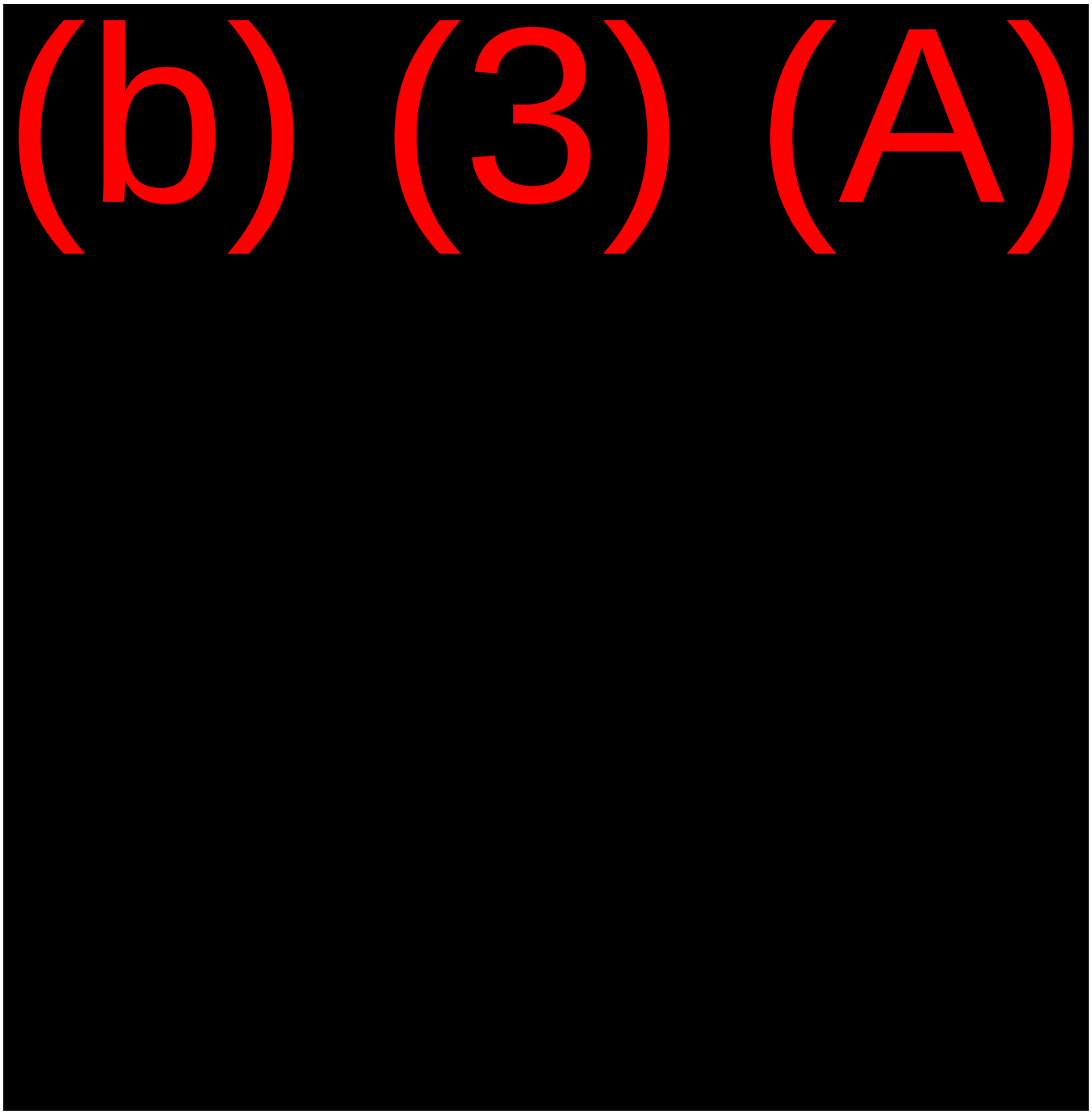
EPA observed two locations storing residual fuel in waste drums that had been drained from the AFFF Retention Line (b) (3) (A) The locations and nature of stored residual fuel is explained, below:

On March 5, 2024, at approximately 9:20AM HST, EPA inspected Building (b) (3) (A) located near the (b) (3) (A) entrance on the (b) (3) (A) of Red Hill. (b) (3) (A) During the inspection on the morning

of March 5, 2024 (b) (3) (A)



On March 5, 2024, at approximately 1:45PM HST, while inspecting the pipelines within the LAT, EPA identified a collection of approximately [redacted] drums (b) (3) (A) These barrels were labeled as containing fluid from the AFFF Retention Line. EPA was informed by JTF-RH that this fluid was primarily fuel and was being stored while chemical analysis was being performed. Secondary containment was provided around the barrels.


(b) (3) (A)

SPCC and FRP Observations

EPA reviewed remaining spill response preparedness equipment as part of the inspection. Since fuel remains in the facility, DoD and DLA must make measurable and effective preparations to respond to a spill. EPA confirmed that the monitoring wells(b) (3) (A) have been sealed with Sikaflex-1A jet fuel-resistant urethane adhesive and each is covered with a rubber sheet and weighted down with sandbags. Visible cracks in the concrete floor and tunnel walls have been patched with cement grout.

(b) (3) (A)

pill diversionary equipment has been installed at all locations where the drains are not sealed to prevent any spilled fuel from reaching these drains.

Sandbags, sorbent materials and large water-filled diversion barriers have been placed in the Lower Access Tunne(b) (3) (A) where it can be safely controlled and removed in a timely manner.

Oil Spill Prevention drills and exercises have been conducted over the past 18 months to reinforce spill prevention procedures and protocols for all operators working in the Facility. Notification drills and exercises have been conducted and the process refined in coordination with U.S. EPA, Hawaii DOH and the U.S. Coast Guard representatives.

Conclusion

Based on field observations, EPA concludes that an overwhelming majority of fuel has been removed from the RHBFSF. This greatly diminishes the risk of a significant fuel release occuring at the RHBFSF with the potential to further contaminate the surrounding environment or impact human health. EPA finds that the general conclusions reached by JTF-RH concerning fuel removal accomplishments are accurate; easily accessible accumulations of fuel have been removed and what fuel remains is limited to known, isolated locations: tank bottoms, pipeline low points, and areas inaccessible without further disassembly and deconstruction activities. EPA has reached this general conclusion based on an assessment of the Red Hill USTs, pipelines, and associated facility systems during the inspection in coordination with pre-inspection information submitted by JTF-RH. Though, despite these accomplishments, a substantial amount of work remains to complete defueling and meet the requirements of the 2023 Consent Order between EPA, DoD, and DLA.

While EPA was unable to visually inspect the inside of the Red Hill USTs due to worker health and safety concerns, manual gauging results indicate that nearly all fuel has been removed from the Red Hill USTs. JTF-RH submitted this data in their pre-inspection summary and EPA observed the methods used to gather this data during the inspection to confirm proper procedures were being used. Based on information submitted and made available, EPA finds it reasonable that a total of 28,000 gallons of sludge remains in the Red Hill USTs as estimated by JTF-RH. Though, this is not a precise value and final removal volumes may vary. EPA will remain closely engaged with NCTF-RH as sludge removal and tank cleaning procedures commence.

Fuel pipeline networks at Red Hill connecting the Red Hill USTs and the UGPH are capable of holding a substantial amount of fuel that, pursuant with the 2023 Consent Order, must be removed in entirety. Gravity-based defueling actions carried out by JTF-RH—in particular, Tank Mains defueling and Unpacking (2024)—removed most of the fuel contained within these pipelines. This was followed by JTF-RH's Residual Fuel removal efforts targeting and removing isolated fuel accumulations that could be easily accessed by non-destructive actions. EPA found no evidence that significant volumes (i.e., greater than 1 gallon) of easily fuel that could be accessed by non-destructive means remained within the system during this inspection, though, there are multiple sources of uncertainty that should be factored into this conclusion. Based on time constraints, EPA was unable to witness opening of all access points along the pipeline, and fuel may have settled within the pipeline after removal efforts took place.

The FOR system will be used for continues defueling and closure activities, but inspection results provided important information on future actions needed to comply with the 2023 Consent Order. For example, the FOR system (b) (3) (A) was not drained or probed but has been rinsed with water in preparation or further fluid removal (tank sludges and tank rinsate, likely). (b) (3) (A)

The 2023 Consent Order is clear that the Surge Tanks must be defueled completely, but some fuel (though relatively small) remains in these tanks. Some amount of sludge may also occur. This material must be removed as part of closure, and any residual fuel must be cleaned off tank walls and removed. Pipelines connecting the Surge Tanks to the UGPH, including the main fuel lines, the relief lines, and the FOR line, must also be completely defueled. (b) (3) (A)

JTF-RH and EPA agreed to inspect the AFFF Concentrate system during the inspection and NCTF-RH has committed to removing AFFF concentrate from the RHBFSF as their first operational order. EPA agrees that this work should be prioritized. Until the AFFF has been drained from the facility, there remains a risk to human health and the environment given the nature of the material. EPA will continue to support and oversee NCTF-RH throughout the removal process of AFFF concentrate.

The AFFF Retention Line was scoped, pigged, and disconnected in a way that allowed EPA to evaluate the possibility of remaining fuel. Based on observations, there is little concern that the pipeline between the crossover to the F-76 pipeline (b) (3) (A) entrance contains residual fuel. Though the AFFF Retention Line (b) (3) (A) should be further investigated.

Overall, EPA finds that the JTF-RH conducted a historic fuel removal project to near completion, greatly reducing the risk of a large-volume fuel spill at the RHBFSF. It will be incumbent on the NCTF-RH to continue this work to address the remaining fuel that continues to pose a risk to the environment and human health. The following section, ***Recommendations***, provides a list of comments intended to help ensure that all parties can remain in agreement on where fuel may still reside and how it should be addressed. In general, it should go without saying that care should be taken by the NCTF-RH during the removal of remaining residual fuel and sludge removal, spill prevention and response capabilities should be retained, and close coordination with regulators should continue. Ultimately, once all fuel is removed, EPA expects DoD and DLA to lead efforts on the planning of a Final Defueling Completion Inspection.

Recommendations

The transition of primary operational goals at the RHBFSF from defueling to closure overlaps with the transition of authority from the JTF-RH to the NCTF-RH. Based on the inspection observations made between March 5-8, 2024, EPA is providing a list of recommendations related to defueling and closure that should be considered by the NCTF-RH as they commence final fuel removal work. This is not intended to be an exhaustive list of actions or changes that should be made to complete defueling, and EPA will continue to review and comment on individual fuel removal and site closure workplans.

Red Hill USTs

1. Without access to tank cavities, EPA was unable to visually observe the amount of fuel and/or sludge in Red Hill USTs. Manual gauging provides a reliable and repeatable method for determining fuel presence (or, presence of fuel-containing sludge). Consider regular manual gauging of tanks until all fuel and sludge removal can be confirmed visually.
2. Where small diameter piping such as sampling lines enter abandoned pipeline laterals and/or other piped connections with the USTs, be aware of possible historic fuel/sludge accumulations. Historical fuel accumulations must be removed as part of defueling and closure.
3. Tank nozzles contain a reducer section before the skin valve that creates a lip preventing all fuel from flowing out of the tank. An accumulation of fuel stacking approximately 6" high may be encountered inside the reducer. These fuel accumulations must be removed as part of defueling and closure.
4. Sampling trees, lateral pipelines, flanges, and other connections to pipelines for tanks out of service prior to defueling (Tanks 1, 13, 14, 17, 18, 19) may contain residual fuel that will be discovered during closure activities. This must be removed.
5. Tanks contain several miscellaneous wall penetrations that will need to be addressed by NCTF:
    - Steam lines
    - "Tell tale" sampling lines
    - Air lines
    - Pipes of unknown purpose

    Because these miscellaneous tank appurtenances are not uniform across all Red Hill USTs, NCTF should document the presences of all such wall penetrations and remove any potentially accumulated fuel.

6. The unique orientation of the (b) (3) (A) inside Tank 5 prevents fluid from being drained directly from the bottom of the tank resulting in significantly more fuel remaining in this tank. The orientation of the FOR line presents challenges in removing the fuel prior to cleaning, as well as the transport of rinsate from the tank during the cleaning process. Consider designing unique suldge removal and/or tank cleaning operations for Tank 5 addressing these unique characteristics.

Fuel Pipelines

7. The Tank 20 pipeline lateral does not have a low point, so this area may have a larger accumulation of fuel than expected during pipeline removal. Appropriate precautions should be taken prior to the deconstruction of this section of pipeline.
8. During pipeline removal, larger fuel accumulations may exist than anticipated. Following Unpacking in 2022, approximately 13,000 gallons of fuel were discovered and safely drained from the F-24 pipeline near the Adit 3 Wye. While it is unlikely that this volume of fuel would be found in this exact location, it serves as an important example of how significant volumes of fuel may be trapped unknowingly within the pipeline systems. Based on the large total volume of the system, size of pipelines, inexact slope of the pipelines within the tunnel, and limited number of LPDs/HPVs to gauge, there remains a possibility that a total volume of fuel greater than the 4,000 gallons estimated by JTF-RH is found within the system. NCTF-RH should proceed with the assumption that significant accumulations of fuel remain with respect to operational and spill response planning.
9. Immediately below the concrete bulkhead and oil pressure door near the (b) (3) (A) that, to the knowledge of JTF-RH personnel during the inspection, was used for pigging procedures and was not drained during residual fuel removal. The contents of this piping are unknown so it should be investigated and any fuel must be removed.
10. Historic pipelines/connections must be addressed. A thorough review of historic drawings may identify unused pipeline segments that contained, or have had the potential to contain, fuel. Any yet undiscovered pipelines and connections must be defueled, cleaned, and/or removed in accordance with an approved Closure Plan regardless of whether the pipelines and/or segments were used during defueling in 2023-2024. As an example, the JP-5 pipeline connection following (b) (3) (A) entrance must be opened and inspected for fuel and addressed by NCTF-RH as part of closure.

FOR System and Sumps in the LAT

11. There are few LPDs and HPVs on the FOR line that would allow for on-site personnel to determine residual fuel presence within the system. It is likely that residual fuel remains within the FOR system, especially at any low points, piping connections, flagged connections, and other physical traps. Based on the piping following the gradient of the LAT and relying on gravity for fuel movement operations, it would seem unlikely that significant volumes of fuel remain within this system. Though, this cannot be stated conclusively based on the lack of monitoring points (i.e., LPDs/HPVs) in the system for determining fuel presence. When the FOR pipeline is used for tank cleaning and rinsate removal, NCTF-RH should assume that the accumulated fluid contains significant portion of fuel or fuel-based materials. All fuel must be removed from the FOR system following tank cleaning activities.
12. Since the (b) (3) (A) used for fuel movement, it is possible that fuel could have entered this area. EPA did not find any evidence of fuel at this location during the inspection but due to confined space and worker safety issues could not access the entire sump area. During closure, NCTF-RH must ensure both

the sump and any piping connected to this sump (in particular, (b) (3) (A) (b) (3) (A)) is emptied of potential fuel. This comment would apply to any other connections to the FOR pipeline in the LAT that were unknown/undiscovered during the time of the inspection.

13. The (b) (3) (A) may have previously contained fuel based on its connection with the FOR system. Other piped connections to the (b) (3) (A) may also contain fuel, or fuel residue. As part of closure and prior to the Final Defueling Completion Inspection, NCTF-RH must investigate all connections and remove any residual fuel found in these locations.
14. At the time of inspection, the sub-tank in the Main FOR Sump contained fluid, likely containing fuel, to a depth of 1' 5 $^{4}/_{16}$". All residual fuel, including any fuel in the Main FOR Sump and/or the sub-tank within, must be drained and the sump cleaned before the Final Defueling Completion Inspection. Similarly, any fuel-containing sludge material must be removed.
15. Cleaning of the FOR line to remove all fuel residue fuel from defueling and tank cleaning will need to occur before a change-in-service or permanent closure of the FOR system under applicable UST regulations. Care will need to be given to remove any residual fuel or sludge materials in a way that minimizes risk of release and/or damage to the FOR pipeline and sump systems.
16. EPA observed a leak from Tank s311 during the inspection. This AST has been proposed by NCTF-RH as a holding tank for rinsate material during closure work. NCTF-RH must complete any repairs and tank evaluations in accordance with federal, state, and local laws before continuing use of this tank. As part of planning, NCTF-RH should clarify the proposed use of the FOR pipeline and the planned disposition for this tank after closure.

<u>Surge Tanks and Underground Pumphouse</u>

17. Surge Tank Internals contain inlet lips, crevices, and other potential low points that could accumulate fuel and/or sludge. This fuel must be removed.
18. It is unclear whether FLC is planning to build a new pump house or rehab the existing UGPH. Timing and coordination between this work and surge line removal is something that needs to be clarified. It is also unclear when the Surge Tanks will be air-gapped from the UGPH, and what section of Surge Tank piping will be removed to facilitate this.
19. There may be significantly more fuel in the Surge Lines than expected, since no LPDs/HPVs exist in the Surge Tank Gallery area for determining height of fuel within the lines. Fuel removal operations must address this unknown.
20. Sections of the (b) (3) (A) area are expected to be extremely degraded based on pipeline failure occuring during Surge Tank Drainage. Removal should address this risk.
21. Final sludge/residual fuel removal activities for the Surge Tanks are unknown and should be developed.

AFFF Concentrate System

22. AFFF Concentrate removal activities have already taken place between the dates of inspection and the completion of this report. EPA witnessed removal of the concentrate from the pipelines within the LAT with no indication of AFFF release. Draining of AFFF concentrate from pipelines does not eliminate the possibility of AFFF remaining in the LAT and diligence should be taken if other sources are identified. There is likely some AFFF concentrate material still coating the inside of the pipelines in the LAT as well as inside the storage and transfer equipment in Building 313. NCTF should provide a plan for safe removal of infrastructure that has contained AFFF concentrate.

AFFF Retention System

23. The twenty sump pumps associated with the AFFF Retention system may have been contaminated by fuel spills in the past and may continue to hold residual contamination. Closure efforts to remove these pumps must account for any residual fuel.
24. While unlikely, there is a possibility that the AFFF Retention Line may still contain small pockets of fuel, especially around any sagging portions of the pipeline. While pigging should have removed any significant volumes of fuel from this line, the low points may contain small volumes of fuel.
25. The underground portion of the AFFF Retention Line from the [redacted] entrance to has not been scoped in its entirety. NCTF-RH must determine whether any fuel entered this section of the pipeline and, should any fuel be found, remove it.
26. EPA has not inspected the AFFF Retention Tank. Based on JTF-RH comments, this tank should be empty with no residual presence of fuel. This should be confirmed prior to the Final Defueling Completion Inspection.
27. During the inspection, EPA identified 55- gallon drums containing residual fuel from the AFFF Retention Line within the RHBFSF. All containers used to store this material need to be managed as a subpart CC RCRA hazardous containers in accordance with standards in 40 CFR 265.1087. Other requirements that may apply include labeling requirements for the hazardous waste in 40 CFR 262.17(a)(5)(i), special conditions for accumulation of ignitable and reactive wastes in 40 CFR 262.17(a)(1)(vi), and RCRA air emission standards. Due to the inherent risk of temporary fuel storage within the RHBFSF within the LAT, NCTF-RH should clarify waste handling and storage plans prior to any further fuel removal activities. Also, EPA awaits the results of waste characterization sampling performed on the fluid stored in these drums.