QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	INC 025
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	(b) (3) (A)
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	07 FEB 2024
QV Engineer	(b) (6)		

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
E&I Assessment	N/A	(b) (3) (A)	

Repair Description	[Original] FOR line shows minor pitting, corrosion, and bare piping. Need to ensure proper cleaning and re-coating on all bare, rusting, corroding or pitting piping. [Revised] Perform Leak Detection test prior to residual fuel/tank cleaning ops.	Source Contract Reference	N/A
Description of Contractor QC Method(s) Used	Multiple "Pressure Step" tests conducted for data reproducibility. Differing volumes of "Simulated Leak" tests completed for data comparison.	Contractor QC Records Reviewed	Report Attached
Description of QA Validation and Observations	Observed line pack, air content evaluations, line flushing, and witnessed "Pressure Step" testing. Reviewed and verified field test procedure to written methodology. Final acceptance by government. Date: 11 JAN 2024		

Rework Needed				Photo Record Attached	Repair Work Validated as Complete			
○	Yes	◉	No	See Pages 2 & 3.	◉	Yes	○	No

Comments

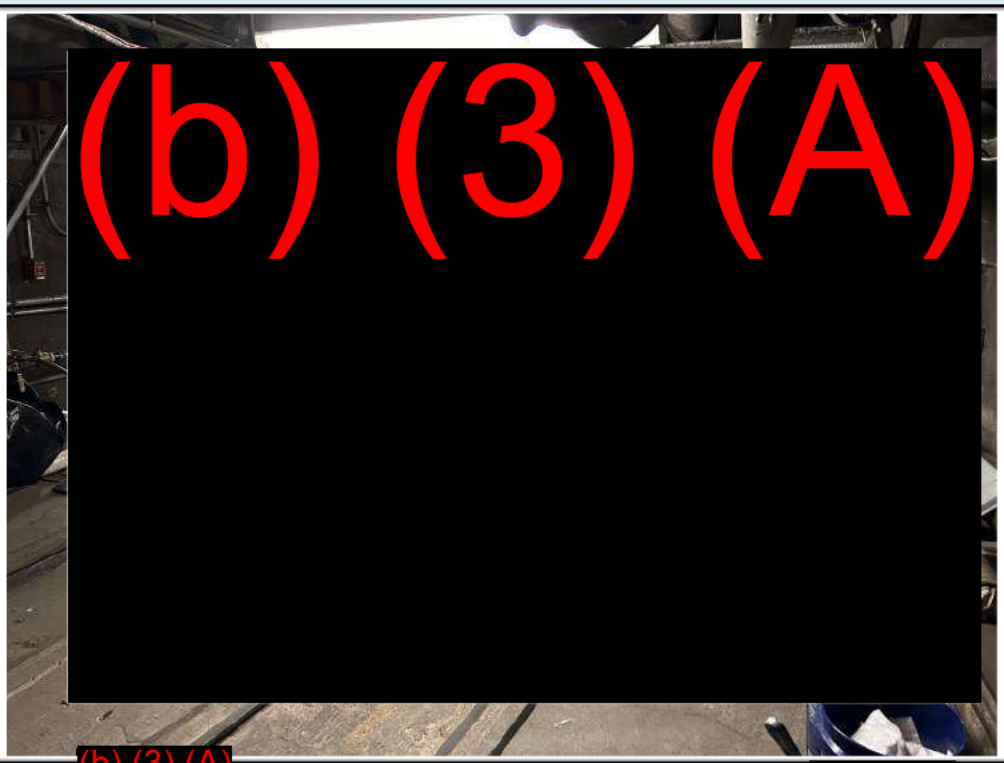
Contractor performed a leak detection test between (b) (3) (A) targeting a Minimum Leak Detection Rate of 0.5 gallons per hour. Since the test is highly sensitive to air content (less than 2% is acceptable), the line was packed with water, allowed to settle overnight before expressing air at vents along the FOR line. The line was flushed with 3 pipe volumes into (b) (3) (A) with flow rates up to (b) (3) (A) to entrain air. Vents were expressed until only liquid was recovered. A series of five discrete 45-minute "Pressure Step" tests were completed. The line was continually inspected throughout the test with no visible leaks. Final Report attached; note reference to the event as a "one-time" leak detection test, as it is outside of the Facility's normal testing program.

CERTIFICATION

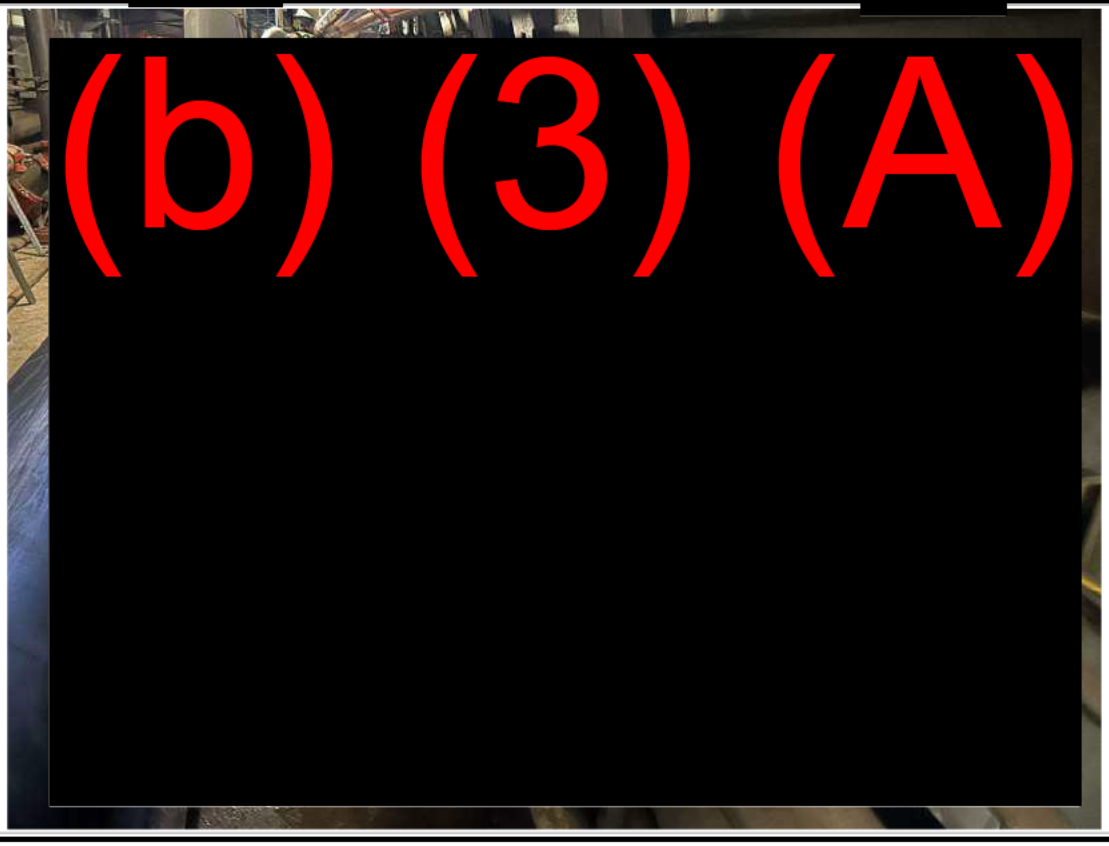
I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)
	DATE	07 FEB 2024

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel



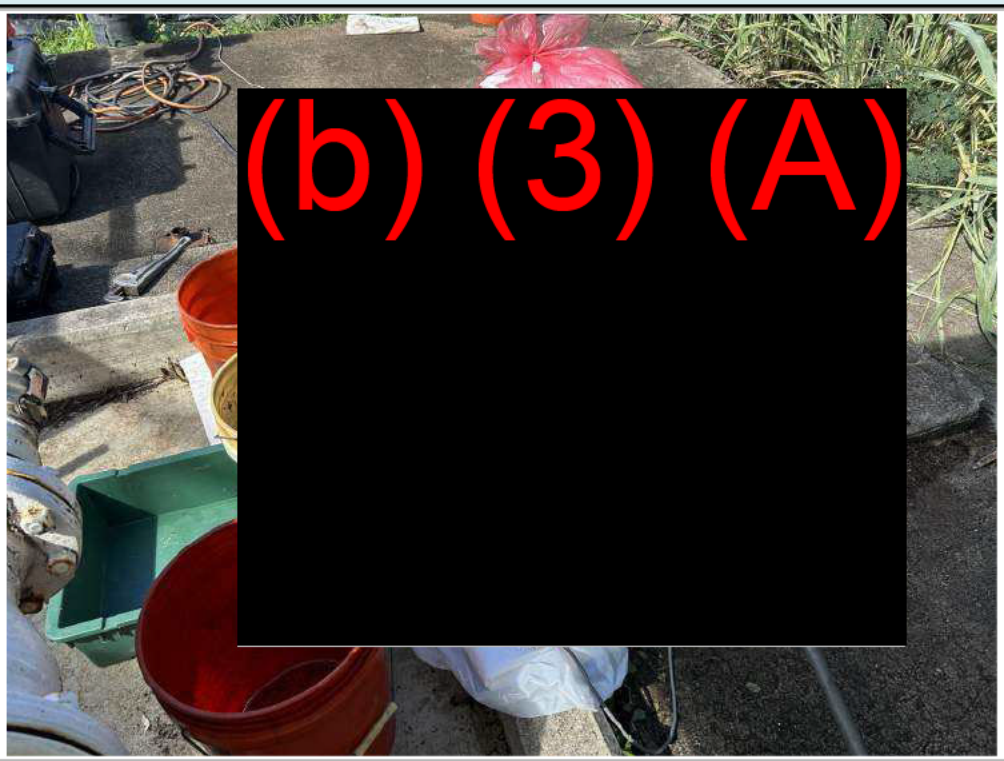
Fire suppression water at (b) (3) (A) backed and flushed 3 pipe volumes FOR line into (b) (3) (A) at rates up to (b) (3) (A)



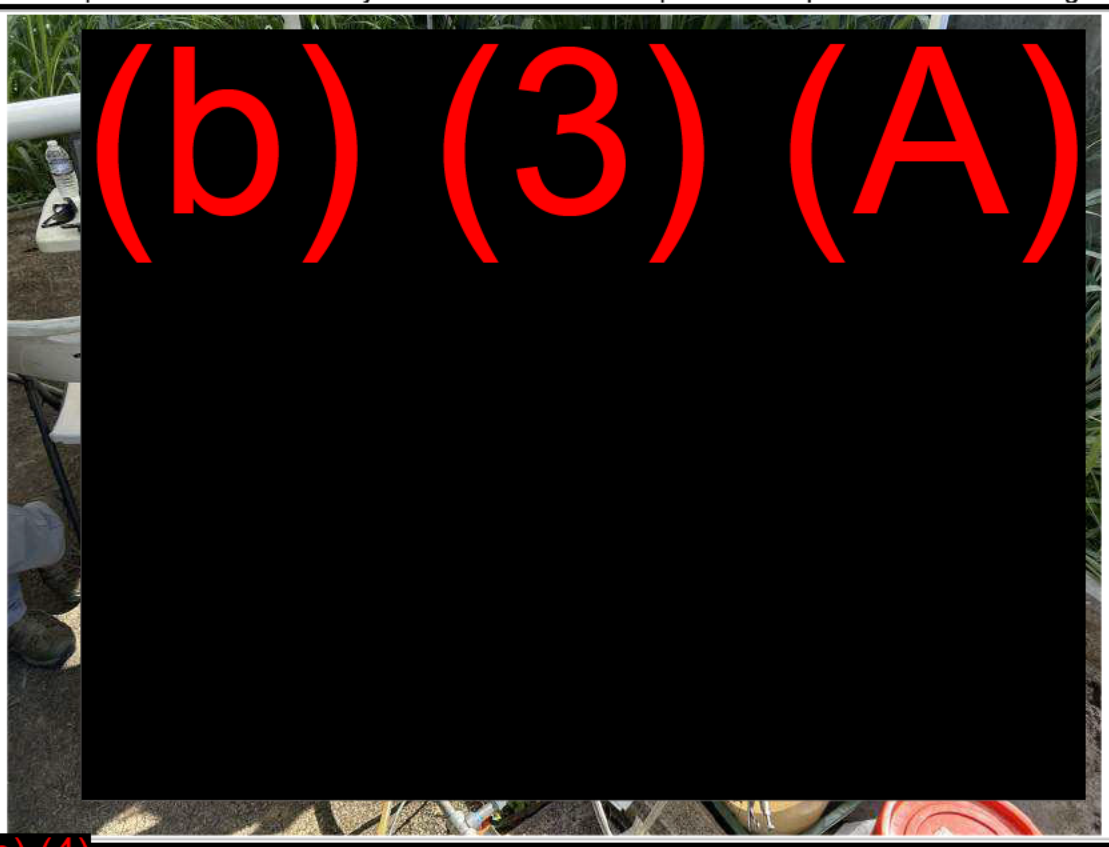
Throughout the test duration, teams walked the line inspecting the FOR line for leaks (visible wetness in photo from rainfall).

QUALITY ASSURANCE VALIDATION REPORT

Red Hill Bulk Fuel Storage Facility Defuel



Pump and test tree assembly outside Tank S-311 for pressure step leak detection testing.



(b) (4) chnician performs timed simulated leak tests into graduated cylinders for data validation.

PREPARED FOR: (b) (6)
PREPARED UNDER:

PREPARED BY:
QC REVIEW:
DATE: 16 January 2024

Executive Summary

The one-time leak detection testing of the one section of the aboveground Fuel Oil Recovery (FOR) transfer pipeline, identified as (b) (3) (A) at Joint Base Pearl Harbor-Hickam (JBPHH), Red Hill Storage Complex, Hawaii, was performed by (b) (4) between 9 and 10 January 2024. The one section of the FOR transfer pipeline passed the one-time leak detection testing. The leak detection testing was performed at the direction of Naval Facilities Engineering Systems Command (NAVFAC) Atlantic, in accordance with the Defense Logistics Agency (DLA) Energy Leak Detection Centrally Managed Program (CMP) pollution prevention Best Management Practice (BMP) in conformance with Hawaii Administrative Rules, Title 11, Chapter 280.1 (HAR 11-280.1).

Background

NAVFAC Atlantic contracted (b) (6) through NAVFAC Atlantic Contract (b) (3) (A) o perform the one-time leak detection testing of one section of FOR pipeline, identified as (b) (3) (A) at the Red Hill Fuel Storage Complex, JBPHH, Hawaii.

This memorandum documents the findings of the one-time leak detection testing of the one section of the aboveground FOR transfer pipeline at Red Hill Fuel Storage Complex, JBPHH, Hawaii.

Field Activities and Results

The one-time leak detection testing of the one section of the aboveground FOR transfer pipeline was performed b(b) (6) etween 9 and 10 January 2024.

On 9 January 2024, (b) (6) with the mechanical support of (b) (6) (b) (6) ttempted to pack the pipeline by gravity-filling the pipeline with water from the fire

water system through a ported flange installed in the vicinity of the FOR sump identified as "Main Product Reclaim Sump". Air was bled from the system while water was added to the pipe at available high-point valves along the pipeline length from the FOR sump to the (b) (3) (A) ntrance. Multiple attempts were made to bleed the air from the system. (b) (6) ttempted to pressurize the system, with results indicating that a significant amount of trapped air remained in the system that interfered with testing. A review of the system indicated that high points of the pipeline were not equipped with high-point valves to allow the air to be displaced during the gravity filling of the line.

On 10 January 2023, (b) (6) attempted to displace the trapped air by flushing water through the pipeline into (b) (3) (A) utilizing the water pressure of the fire water system. (b) (4) imes the volume of the pipeline (b) (3) (A) was pushed through the line. At the completion of flushing the system, (b) (6) tested the line at the normal operating pressure of (b) (3) (A) ls per square inch (psi) with passing results.

The BMP leak detection testing in this report was performed with water to detect leaks no smaller than 0.5-gallons per hour (gph) at the normal operating pressure as provided by base personnel or greater with a test method listed with the National Work Group on Leak Detection Evaluations (NWGLDE).

The test method utilized is defined as the (b) (4) The test method capability is based on the criteria established in the (b) (6) third party evaluations as listed by the NWGLDE.

- The (b) (4) s certified with a capability to detect a leak rate of 0.002 percent of line volume per hour, with a probability of detection greater than 95 percent, and a probability of false alarm less than 5 percent for pipeline volume greater than 5,000 gallons.

Table 1 provides a results summary. Specific details regarding the one-time leak detection testing of the one section of the aboveground FOR transfer pipeline are included in the attached (b) (6) endor report.

Table 1: Results Summary

(b) (4)	Result
	Pass

Table Notes:
1. Basis of test pressure: normal operating pressure (provided by base personnel)

Conclusions

The 2024 one-time leak detection testing of the one section of the aboveground FOR transfer pipeline, identified as (b) (3) (A) was performed by (b) (6) between 9 and 10 January 2024 with passing results.

(b) (6)

(b) (6) **Leak Detection Certification**

Location: JBPHH Red Hill
Date: January 11, 2024
Customer: (b) (6)
Project No.: (b) (4)
Project: DLA Energy Leak Detection Centrally Managed Program

General Pipeline Configuration Data:

Section No.	Designation	Pipeline Material	Pipeline Schedule	Pipeline Length [ft] 2"	4"	6"	8"	10"	12"	Total Length [ft]
1	(b) (4)									
TOTAL:										(b) (4)

Table 1: General Pipeline Configuration Data of Tested Fuel System @ JBPHH Red Hill

Legend:
SS: Stainless Steel
CS: Carbon Steel
FG: Fiberglass
AL: Aluminum
STD: Standard Schedule

(b) (6)

(b) (6) Leak Detection Certification

Certification Test Data:

Section No.	Designation	Total Length [ft]	Section Volume [gal]	Reference Pressure [psi]	EPA MALDR [1] [gal/h] [2]	HCNA LDS [Version]	Test Date	Result
1	(b) (4)						10-JAN-24	PASS

Table 2: Leak Detection Sections' Results of Tested Fuel System @ JBPHH Red Hill

Result Criteria:

PASS: Test results were within the stated EPA MADLR
FAIL: Test results exceed the stated EPA MADLR and/or unsatisfactory result was observed.

(b) (4)

In accordance with the above stated *"Result Criteria for Classification of Tightness", statement of work requirements, and client direction*, (b) (6) hereby certifies that this piping was tested on the date(s) and with the result(s) stated in the above table.

(b) (6) January 11, 2024

Principal

[1] EPA 40 CFR 280 Subpart K - Maximum Allowable Leak Detection Rate (MALDR) Per Test Section Volume.
[2] Annual test - leak detection rate not to exceed - (EPA Maximum Allowable Leak Detection Rate (b) (6) third-party certified).