



# 2019 ANNUAL LEAK DETECTION TESTING REPORT OF 35 SECTIONS (57,136 FEET) OF PETROLEUM PIPELINES

## JOINT BASE PEARL HARBOR - HICKAM, HAWAII



*Prepared for:*  
**Defense Logistics Agency Energy  
Fort Belvoir, Virginia**

*Prepared under:*  
**Naval Facilities Engineering Command Atlantic  
Contract N62470-16-D-9007,  
Delivery Order N6247019F4016**

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*Date:*  
**14 March 2019**

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*Project: 170482  
Task: 4.1.071A*

## EXECUTIVE SUMMARY

The purpose of this project is to perform the annual leak detection testing of 39 sections (60,236 feet) of petroleum pipelines at Joint Base Pearl Harbor-Hickam, Hawaii. At Hickam Air Field Facility and NS Pearl Harbor Facility, testing of 33 sections (56,931 feet) of petroleum pipelines, associated with underground storage tank systems, is performed in accordance with Hawaii Administrative Rules, Title 11, Chapter 280.1 (HAR 11-280.1), Subchapter 4, §11-280.1-44(4)(A)(i). At NS Pearl Harbor Facility, testing of six sections (3,305 feet) of petroleum pipelines, associated with aboveground storage tank systems, is performed in accordance with Defense Logistics Agency (DLA) Energy's Leak Detection Centrally Managed Program (CMP) as a pollution prevention Best Management Practice (BMP).

Upon mobilization and system review, the 39 sections (60,236 feet) were revised as follows:

- The following five sections (3,056 feet) were not tested due to being temporarily out-of-service:
  - *VS 8/9 – VC 38* (479 feet)
  - *Tank 55 Valve 1406B – ADIT 1 PH* (615 feet)
  - *Tank 54 – VS 8/9* (747 feet)
  - *Truck Rack – VC 12* (865 feet)
  - *VS 8/9 – VC 12 (FORFAC)* (350 feet)
- The length of one section (*Truck Fill Loop*) was permanently decreased from 3,274 feet to 3,230 feet due to a new isolation valve being installed.
- One section (*Hickam Transfer VS 50 – Filter Pad*) was temporarily separated and tested as two sections (*Hickam Transfer VS 50 – IVP 78* and *Hickam Transfer IVP 78 – Filter Pad*).

The final 2019 annual leak detection testing event included 35 sections (57,136 feet) of petroleum pipelines.

The annual leak detection testing of 34 sections (56,851 feet) of petroleum pipelines was performed,

Procurement Sensitive

Procurement Sensitive between 8 and 28 January 2019, with no detectable leak above the test methods' minimum detectable leak rates (MDLRs), resulting in passing tests. The annual leak detection testing of the remaining one section, *Tank 47 – VS 8/9* (285 feet), of petroleum pipeline was performed, Procurement Sensitive on 24 January 2019, with a detectable leak above the test method's MDLR, resulting in a failing test. A leak confirmation/leak locate is being performed under a separate project.

In accordance with HAR 11-280.1-44(4)(A)(i), leak detection testing of the following three sections (1,841 feet) of petroleum pipelines must be performed prior to returning to service:

- *VS 8/9 – VC 38* (479 feet)
- *Tank 55 Valve 1406B – ADIT 1 PH* (615 feet)
- *Tank 54 – VS 8/9* (747 feet)

In accordance with DLA Energy's Leak Detection CMP, as a pollution prevention BMP, leak detection testing of the following two sections (1,215 feet) of petroleum pipelines should be performed prior to returning to service.

- *Truck Rack – VC 12* (865 feet)
- *VS 8/9 – VC 12 (FORFAC)* (350 feet)

In accordance with HAR 11-280.1-44(4)(A)(i), semi-annual leak detection testing of the following four sections (21,741 feet) of petroleum pipelines, must be initiated on or before the semi-annual anniversary date of 10 July 2019 due to the MDLRs exceeding the maximum leak detection rate per section volume in accordance with HAR for annual testing.

- *Hydrant Issue – Type III PH to IVP 1 and 4 to HSV Issue* (5,001 feet)
- *Hydrant Return – IVP 2 to Type III PH* (4,657 feet)
- *Hydrant Issue – IVP 1 to IVP 2* (7,583 feet)
- *AMC Hydrant Loop Outlet Row 1* (4,500 feet)

In accordance with HAR 11-280.1-44(4)(A)(i), annual leak detection testing of 33 sections (56,887 feet) of petroleum pipelines must be initiated on or before the anniversary date of 8 January 2020.

In accordance with DLA Energy's Leak Detection CMP, as a pollution prevention BMP, the annual leak detection testing of six sections (3,305 feet) of petroleum pipelines should be initiated on or before the anniversary date of 17 January 2020.

The semi-annual testing will be repeated in 2019 and the annual testing will be repeated in 2020 under the DLA Energy's Leak Detection CMP, in accordance with HAR 11-280.1-44(4)(A)(i) and as a pollution prevention BMP; other regulatory obligations are the responsibility of the base and the service.

Figure 1-1: JB Pearl Harbor-Hickam Overview

# Critical Infrastructure

Figure 1-2: Hickam Air Field Facility Storage Overview

# Critical Infrastructure

Figure 1-3: Hickam Air Field Facility AMC Hydrants Overview

# Critical Infrastructure

Figure 1-4: Hickam Air Field Facility Type III Hydrants Overview

# Critical Infrastructure

Figure 1-5: NS Pearl Harbor Facility System Overview

# Critical Infrastructure



Figure 1-6: Red Hill (ADIT 3) Facility System Overview

# Critical Infrastructure

## 1.5 Project Team

Michael Baker subcontracted [Procurement Sensitive] to perform the leak detection testing. Field-testing oversight, coordination with facility fuel representatives, quality assurance/quality controls, and final report preparation and submission were provided by Michael Baker personnel.

## 1.6 Qualifications of Testing Procedures Used

The leak detection testing in this report was performed at normal operating pressure or higher with a test method listed with the National Work Group on Leak Detection Evaluations (NWGLDE) as described below.

The leak detection testing procedures used are defined as the [Proprietary] [Proprietary] Determination of leakage is based on the criteria established in the [Procurement Sensitive] [Procurement Sensitive] third party evaluation as listed with the NWGLDE.

- [Proprietary] is certified with a capability to detect leaks at a rate of 0.002 percent of the line volume per hour with a probability of detection ( $P_D$ ) greater than 95 percent and a probability of a false alarm ( $P_{FA}$ ) less than 5 percent. Version 2.0 was approved by [Procurement Sensitive] third party evaluation to test volumes between 5,000 gallons and 175,000 gallons.
- [Proprietary] is certified with a capability to detect leaks at a rate of 0.068 gph with a  $P_D$  of 95 percent and a  $P_{FA}$  of 5 percent. Version 2.1 was approved by [Procurement Sensitive] third party evaluation to test volumes equal to or less than 5,000 gallons.

Table 2-1: Results Summary: Hickam Air Field Facility

Fuel System	Test Section	Designation <sup>1</sup>	Product	Length (Feet)	Volume (Gallons)	Reference Pressure <sup>2</sup> (psi)	Certified MDLR <sup>3</sup> (gph)	Test Date	Result
F-24 - Pipeline - Type III Hydrant / Pearl Harbor Receipt Line	1	Truck Fill Loop	F-24	Critical Infrastructure			0.26	11 January 2019	Pass
	2	Hydrant Issue – Type III PH to IVP 1 and 4 to HSV Issue	F-24				0.67 <sup>5</sup>	10 January 2019	Pass
	3	Hydrant Return – IVP 2 to Type III PH	F-24				0.67 <sup>5</sup>	10 January 2019	Pass
	4	Hydrant Issue – IVP 1 to IVP 2	F-24				1.09 <sup>5</sup>	10 January 2019	Pass
	5	Hydrant Return – IVP 3 to IVP 2	F-24				0.39	10 January 2019	Pass
	6	Type III PH Generator Fill	F-24				0.07	9 January 2019	Pass
	7	Hickam Transfer VS 14 – VS 50	F-24				0.43	22 January 2019	Pass
	8A <sup>8</sup>	Hickam Transfer VS 50 – IVP 78	F-24				0.27	14 January 2019	Pass
	8B <sup>8</sup>	Hickam Transfer IVP 78 – Filter Pad	F-24				0.20	14 January 2019	Pass
	9	Hydrant Issue – IVP 2 to IVP 3	F-24				0.48	10 January 2019	Pass
	10	Type III PRT Issue	F-24				0.07	9 January 2019	Pass
	11	Filter Pad to AMC PH	F-24				0.07	11 January 2019	Pass
	12	AMC Generator Fill	F-24				0.07	9 January 2019	Pass
	13	AMC PRT Issue	F-24				0.07	9 January 2019	Pass
	14	AMC Hydrant Loop Outlet Row 1	F-24				0.53 <sup>5</sup>	15 January 2019	Pass
	15	AMC Hydrant Loop Outlet Rows 2 & 3	F-24				0.41	15 January 2019	Pass
	16	Type III PH to AMC PH – Crossover (Issue and Return)	F-24				0.07	9 January 2019	Pass
	17	Filter Pad to Type III PH	F-24				0.07	9 January 2019	Pass
	18	Truck Offload Stand to Filter Pad	F-24				0.07	11 January 2019	Pass
	19	HSV Return to Type III PH	F-24				0.07	11 January 2019	Pass
	20	AMC AST 1 and 2 Issue Line	F-24				0.11	8 January 2019	Pass
	21	AMC AST 1 and 2 Receipt Line	F-24				0.07	8 January 2019	Pass

Table Notes:

psi = pounds per square inch

- All sections associated with the F-24 UST AHS are tested in accordance with HAR 11-280.1-44(4)(A)(i).
- Basis for reference pressure: base pipeline integrity management plan, unless otherwise noted.
- MDLR rounded to the hundredth decimal place.
- Critical Infrastructure
- MDLR exceeds maximum leak detection rate per section volume in accordance with HAR for annual testing.
- Critical Infrastructure
- Basis for reference pressure: vendor test methodology.
- Test Section 8 temporarily tested as two sections.

**Table 2-2: Results Summary: NS Pearl Harbor Facility**

Fuel System	Test Section	Designation <sup>1, 2</sup>	Product	Length (Feet)	Volume (Gallons)	Reference Pressure <sup>3</sup> (psi)	Certified MDLR <sup>4</sup> (gph)	Test Date	Result
Transfer Pipelines	1	Truck Rack – VC 1 (F-24 Issue)	F-24	<b>Critical Infrastructure</b>			0.07	18 January 2019	Pass
	2	VS 8/9 – VC 1	F-24				0.07	22 January 2019	Pass
	3	Tank 46 – Valve 1421C	F-24				0.07	18 January 2019	Pass
	4	Truck Rack – VS 1C (F-24 Issue)	F-24				0.07	18 January 2019	Pass
	5	Truck Rack – VS 1C (F-76 Issue)	F-76				0.07	23 January 2019	Pass
	6	Tank 48 – VS 8/9	F-76				0.07	23 January 2019	Pass
	7	Truck Rack – VS 1C (JP-5 Issue)	JP-5				0.07	23 January 2019	Pass
	8	Tank 301 – VS 1A <sup>2</sup>	MP				0.07	25 January 2019	Pass
	9	Truck Rack – VC 12 <sup>2</sup>	FOR				N/A	Not tested <sup>5</sup>	N/A
	10	Truck Rack – VS 1A <sup>2</sup>	MP				0.07	25 January 2019	Pass
	11	VS 8/9 – VC 38	F-76				N/A	Not tested <sup>5</sup>	N/A
	12	Tank 55 Valve 1406B – ADIT 1 PH	JP-5				N/A	Not tested <sup>5</sup>	N/A
	13	Tank 53 – North Road Tie In (NI1)	F-24				0.07	22 January 2019	Pass
	14	VS 1A – VS 2A <sup>2</sup>	MP				0.07	28 January 2019	Pass
	15	Tank 54 – VS 8/9	F-76				N/A	Not tested <sup>5</sup>	N/A
	16	VS 8/9 – VC 12 (FORFAC) <sup>2</sup>	FOR				N/A	Not tested <sup>5</sup>	N/A
	17	Tank 47 – VS 8/9	F-76				N/A	24 January 2019	Fail <sup>6</sup>
	18	ADIT 3 – Tank S311 <sup>2</sup>	FOR				0.07	17 January 2019	Pass

**Table Notes:**

psi = pounds per square inch

1. Sections associated with the F-24 and JP-5 UST AHSs are tested in accordance with HAR 11-280.1-44(4)(A)(i).
2. Sections associated with the MP and FOR AST systems are tested in accordance with the DLA Energy's Leak Detection CMP, as a pollution prevention BMP.
3. Basis for reference pressure: base pipeline integrity management plan.
4. MDLR rounded to the hundredth decimal place.
5. Not tested due to being temporarily out-of-service.
6. Failed due to detectable leak above the test method's MDLR.