



# FINAL 2018 ANNUAL LEAK DETECTION TESTING REPORT OF 17 BULK FIELD- CONSTRUCTED UNDERGROUND STORAGE TANKS AT RED HILL FUEL STORAGE COMPLEX

## 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 N6247018F4143**

*Submitted by:*  
**Michael Baker International**  
**Virginia Beach, Virginia**

*Date:*  
**23 January 2019**

**Michael Baker**  
INTERNATIONAL  
*Project: 169227*  
*Task: 3.0*

## 1.5 Project Team

Michael Baker subcontracted [Procurement Sensitive] to perform the annual 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 testing procedures used were those defined as the [Procurement Sensitive] **Procurement Sensitive** leak detection method. Determination of leakage is based on the criteria established in the [Procurement Sensitive] third-party evaluation and as listed in the National Work Group on Leak Detection Evaluations (NWGLDE) (Reference 4.3). The [Procurement Sensitive] **Procurement Sensitive** is certified with a capability to detect leaks on a tank proportional to the product surface area with a probability of detection of 95 percent and probability of a false alarm of 5 percent. Multiple non-overlapping tests can be performed and averaged to obtain a more sensitive MDLR.

This project utilized two test units to perform five 24-hour precision tightness tests per test unit over a 5-day period (120 hours total) for BFCUSTs 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 16, 18, and 20. These five 24-hour tests were averaged, meeting project scope 0.5 gallons per hour (gph) MDLR requirements.

This project utilized one test unit to perform two 24-hour precision tightness tests per test unit over a 2-day period (48 hours total) for BFCUSTs S1224, S1225, and S1226. These two 24-hour tests were averaged, meeting project scope 0.5 gph MDLR requirements.

The [Procurement Sensitive] standard operating procedure includes ensuring that any isolation valve(s) are properly seated (via closing, reopening, and reclosing) and that the bleed ports of double-block and bleed isolation valves are checked for the presence of product at the conclusion of a test.

Table 2-1: Results Summary

Fuel System	Designation	Height <sup>1</sup> (Feet)	Capacity <sup>2</sup> (Gallons)	Product	Test Method	Certified MDLR (gph)	Test Date	Result	Test Product Height (Feet)
Red Hill Underground Fuel Storage Facility	BFCUST 2	Critical Infrastructure	12,000,000	F-24	(5) 24-hour tests	0.5	22 November - 27 November 2018	Pass	Critical Infrastructure
	BFCUST 3		12,000,000	F-24	(5) 24-hour tests	0.5	26 October - 31 October 2018	Pass	
	BFCUST 4		12,000,000	F-24	(5) 24-hour tests	0.5	31 October - 5 November 2018	Pass	
	BFCUST 5		12,700,000	F-24	N/A	N/A	N/A	N/A <sup>4</sup>	
	BFCUST 6		12,700,000	F-24	(5) 24-hour tests	0.5	13 November - 18 November 2018	Pass	
	BFCUST 7		12,700,000	JP-5	(5) 24-hour tests	0.5	27 October - 1 November 2018	Pass	
	BFCUST 8		12,700,000	JP-5	(5) 24-hour tests	0.5	11 October - 16 October 2018	Pass	
	BFCUST 9		12,700,000	JP-5	(5) 24-hour tests	0.5	15 October - 20 October 2018	Pass	
	BFCUST 10		12,700,000	JP-5	(5) 24-hour tests	0.5	16 October - 21 October 2018	Pass	
	BFCUST 11		12,800,000	JP-5	(5) 24-hour tests	0.5	5 November - 10 November 2018	Pass	
	BFCUST 12		12,800,000	JP-5	(5) 24-hour tests	0.5	21 October - 26 October 2018	Pass	
	BFCUST 13		12,800,000	JP-5	N/A	N/A	N/A	N/A <sup>4</sup>	
	BFCUST 14		12,800,000	JP-5	N/A	N/A	N/A	N/A <sup>4</sup>	
	BFCUST 15		12,700,000	F-76	(5) 24-hour tests	0.5	21 November - 26 November 2018	Pass	
	BFCUST 16		12,700,000	F-76	(5) 24-hour tests	0.5	22 October - 27 October 2018	Pass	
	BFCUST 17		12,700,000	JP-5	N/A	N/A	N/A	N/A <sup>4</sup>	
	BFCUST 18		12,700,000	JP-5	(5) 24-hour tests	0.5	8 November - 13 November 2018	Pass	
	BFCUST 20		12,700,000	JP-5	(5) 24-hour tests	0.5	10 October - 15 October 2018	Pass	
Underground Pump House Facility	BFCUST S1224		420,000	F-24	(2) 24-hour tests	0.5	1 November - 3 November 2018	Pass	
	BFCUST S1225		420,000	JP-5	(2) 24-hour tests	0.5	18 October - 20 October 2018	Pass	
	BFCUST S1226		420,000	F-76	(2) 24-hour tests	0.5	23 October - 25 October 2018	Pass	
	BFCUST S1227		420,000	F-76	N/A	N/A	N/A	N/A <sup>4</sup>	

Notes:  
N/A = not applicable  
1. Tank height is rounded to the nearest foot.  
2. Tank volume is rounded to the nearest hundred thousand gallon.  
3. Tank product level is maintained at the test product height or below.  
4. Tank not tested due to being temporarily out-of-service.  
5. Tank tested at the current product level, per base request, due to operational issues at the time of testing. Testing at tank high level must be scheduled when tanks return to normal operating levels.

#### 4.0 REFERENCES

- 4.1 “Final 2017 Annual Leak Detection Report of 18 Bulk Field-Constructed Underground Storage Tanks at Red Hill Fuel Storage Complex, 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-9007-0004; Submitted by: Michael Baker International, Virginia Beach, Virginia; Date: 23 January 2018.
- 4.2 “Final 2018 Annual Leak Detection Report of Two Bulk Field-Constructed Underground Storage Tanks at Red Hill Fuel Storage Complex, 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, Task Order N6247018F4006; Submitted by: Michael Baker International, Virginia Beach, Virginia; Date: 15 June 2018.

# Procurement Sensitive