FINAL 2016 REGULATION APPLICABILITY STUDY OF 22 FUELING SYSTEMS

JOINT BASE PEARL HARBOR-HICKAM, HAWAII

Prepared for:
Defense Logistics Agency Energy
Fort Belvoir, Virginia

Prepared under:
Air Force Civil Engineer Center
Contract FA8903-08-D-8791-0053

Submitted by:
Michael Baker International
Virginia Beach, Virginia
And

[redacted] (b) (4)

Date:
13 March 2018

Michael Baker INTERNATIONAL

Project: 149137
Task: 15.02.198

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Exhibit N-5H

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13 March 2018

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LIST OF ABBREVIATIONS AND ACRONYMS

40 CFR 280	Title 40 Code of Federal Regulation Part 280
AFCEC	Air Force Civil Engineer Center
AHS	Airport Hydrant System
AMC	Air Mobility Command
AST	Aboveground storage tank
DLA	Defense Logistics Agency
DoD	Department of Defense
DOT	Department of Transportation
E-85	85 Percent Ethanol Fuel Blend
F-24	Jet A Commercial Aviation Fuel with Military Additives
F-76	Diesel Fuel Marine
FOR	Fuel Oil Reclaim
HSV	Hydrant service vehicle
JB	Joint Base
JP-5	Jet Propellant 5
JPTS	Jet Propellant Thermally Stable
Michael Baker	Michael Baker International
Mogas	Motor Gasoline
MP	Multi-Product
NCTAMS	Naval Computer and Telecommunications Area Master Station
POC	Point(s) of contact
POL	Petroleum, Oil, Lubricants
PRT	Product recovery tank
SPCC	Spill Prevention, Control, and Countermeasure
TFS	Truck fill stand
TOL	Truck offload
USCG	United States Coast Guard
US EPA	United States Environmental Protection Agency
UST	Underground storage tank

PROFESSIONAL ENGINEER CERTIFICATION

FINAL 2016 REGULATION APPLICABILITY STUDY
OF 22 FUELING SYSTEMS

JOINT BASE PEARL HARBOR-HICKAM, HAWAII

This report has been reviewed by a professional engineer and has been prepared in accordance with good engineering practices. Laboratory results, field notes, and supporting data have been reviewed and referenced correctly.

I hereby certify that I have examined this report and attest that it has been prepared in accordance with good engineering practices.

Engineer: Christopher D. Caputi, P.E.
Registration Number: 032382
State: Virginia
Date: 13 March 2018

EXECUTIVE SUMMARY

The scope of this project is to perform an analysis of fueling systems that utilize capitalized fuels at Joint Base (JB) Pearl Harbor-Hickam, Hawaii to determine their regulatory definition relative to the revised Federal Underground Storage Tank (UST) regulations (Title 40 Code of Federal Regulation Part 280 [40 CFR 280]). In July 2015, the United States Environmental Protection Agency's (US EPA's) UST regulations were revised to remove the previous deferrals of certain UST systems described as Airport Hydrant Systems (AHSs) and field-constructed USTs. The revised UST regulation, among other items, requires owners and operators of regulated AHSs and field-constructed USTs to make a one-time notification to the US EPA identifying any currently installed UST systems, with newly changed regulatory status, no later than 13 October 2018. The focus of this project is to determine if the capitalized fueling systems at this base are newly regulated UST systems, by revised definition, and require notification to the US EPA. If applicable, it is the responsibility of the base to register newly regulated UST systems with their implementing agency. Owners and operators of UST systems with unchanged regulatory status shall verify the notification to the US EPA, however, confirmation of the registration is out of the scope of this report.

Fueling operations associated with JB Pearl Harbor-Hickam include 11 bulk systems (one Jet A Commercial Aviation Fuel with Military Additives [F-24], one Jet Propellant 5 [JP-5], one Diesel Fuel Marine [F-76], one Multi-Product [MP], two Fuel Oil Reclaim [FOR], two Lube Oil, one Diesel, and two Jet Propellant Thermally Stable [JPTS]) and 11 non-bulk systems (five Motor Gasoline [Mogas], five Diesel, and one 85 Percent Ethanol Fuel Blend [E-85]). The analysis of the 22 fuel systems at JB Pearl Harbor-Hickam was completed on 2 February 2016; the volumes of the 22 individual fuel systems were evaluated.

The summary of the calculations to determine applicability are shown in the following table.

Fuel System	Percent of Underground Volume
Pearl Harbor, Upper Tank Farm, Hickam Bulk Storage, and Red Hill Bulk Storage Facilities	
Bulk F-24 System	76.74 %
Bulk JP-5 System	95.67 %
Bulk F-76 System	57.95 %
Bulk MP System	2.01 %
Bulk FOR System 1	0.45 %
Bulk FOR System 2	0.07 %
Bulk Lube Oil System 1	0 %
Bulk Lube Oil System 2	0 %
Facility [redacted]	
Bulk Diesel System	0 %
Facility [redacted]	
Bulk JPTS System 3	0 %
Bulk JPTS System 4	0 %
Facility [redacted] (b)	
Non-Bulk Mogas System	100 %
Non-Bulk Diesel System	100 %
Facility [redacted] (b) (3)	
Non-Bulk Mogas System 1	0 %
Non-Bulk Mogas System 2	0 %
Non-Bulk Diesel System 3	0 %
Non-Bulk Diesel System 4	0 %
Non-Bulk E-85 System	0 %
Facility [redacted] (b)	
Non-Bulk Mogas System	0 %
Non-Bulk Diesel System	0 %
Facility [redacted] (b)	
Non-Bulk Mogas System	0 %
Non-Bulk Diesel System	0 %

The analysis of the 22 fueling systems that utilize capitalized fuels at JB Pearl Harbor-Hickam determined that two of the 22 fuel systems, identified as the Bulk F-24 and JP-5 Systems, were confirmed to have more than 10 percent of system volume underground, and are thereby defined as newly regulated UST AHS systems per 40 CFR 280. One of the 22 fuel systems, identified as Bulk F-76 System, was confirmed to have more than 10 percent of system volume underground, and is thereby defined as a newly regulated UST system per 40 CFR 280. Two of the 22 fuel systems, identified as the Non-Bulk Mogas and Diesel Systems located at Facility [redacted] (b), were confirmed to have more than 10 percent of their volumes underground. The regulatory status of these two fuel systems remains unchanged; therefore, these two fuel systems continue to be classified as UST systems regulated per 40 CFR 280. The 17 remaining fuel systems were found to be aboveground storage tank (AST) systems, which have less than 10 percent of their volume underground; therefore, they are not UST systems per 40 CFR 280.

For the two fuel systems confirmed as newly regulated UST AHS systems and the one system confirmed as a newly regulated UST system, per 40 CFR 280, the recommended action for operators is to provide a one-time notification, to the US EPA, identifying the Bulk F-24, JP-5, and F-76 Systems as UST systems no later than 13 October 2018. It is the responsibility of the base to register the newly regulated UST systems with the applicable implementing agencies; however, the notification and verification are out of the scope of this report. For the two fuel systems confirmed as UST systems, identified as the Non-Bulk Mogas and Diesel Systems located at Facility (b), the recommended action for operators is to verify that these two UST systems have been registered with the implementing agency; confirmation of this registration is out of scope for this report. For the 17 remaining fuel systems found to be AST systems, no further actions are required, at this time, to comply with the revised regulations of 40 CFR 280.

1.0 INTRODUCTION

1.1 Purpose of Project

The Defense Logistics Agency (DLA) Energy contracted Michael Baker International (Michael Baker) through Air Force Civil Engineer Center (AFCEC) Contract FA8903-08-D-8791-0053 to perform an analysis of fueling systems that utilize capitalized fuels at Joint Base (JB) Pearl Harbor-Hickam, Hawaii to determine their regulatory definition relative to the revised Federal Underground Storage Tank (UST) regulations. In July 2015, the United States Environmental Protection Agency's (US EPA's) UST regulations were revised to remove the previous deferrals of certain UST systems described as Airport Hydrant Systems (AHSs) and field-constructed USTs. The revised UST regulation, among other items, requires owners and operators of regulated AHSs and field-constructed USTs to make a one-time notification to the US EPA identifying any currently installed UST systems, with newly changed regulatory status, no later than 13 October 2018. The focus of this project is to determine if the capitalized fueling systems at this base are newly regulated UST systems, by revised definition, and require notification to the US EPA. If applicable, it is the responsibility of the base to register newly regulated UST systems with their implementing agency. Owners and operators of UST systems with unchanged regulatory status shall verify the notification to the US EPA, however, confirmation of the registration is out of the scope of this report.

1.2 Applicable Regulation

In the 15 July 2015 Federal Register, the US EPA published the revised UST regulations (Appendix A). This is the first major revision to the federal UST regulations since 1988. The 2015 UST regulation changed certain portions of the 1988 UST regulation in Title 40 Code of Federal Regulation Part 280 (40 CFR 280).

Specifically of interest to DLA Energy, this revised regulation now addresses certain UST systems which had been previously deferred in the 1988 regulation. By removing the deferral, many Department of Defense (DoD) AHSs and field-constructed UST systems now may meet the definition of a fully regulated UST system.

To determine whether a fuel storage system is regulated under the revised UST regulations, the total system volume (aboveground storage plus the underground storage and system piping) is compared to the total

volume of underground storage and its associated underground piping. If the volume of the underground system (storage and system piping) is more than 10 percent of the total system volume, then the total system is considered a regulated UST system.

Note that aboveground storage tanks (ASTs) associated with a regulated UST AHS or regulated field-constructed USTs are partially excluded in the revised UST regulation. Partially excluded ASTs which are part of the UST system may be subject to Spill Prevention, Control, and Countermeasure (SPCC) requirements in Title 40 Code of Federal Regulation Part 112.

1.3 Data Acquisition

On 2 February 2016, Mr. Chris Caputi, of Michael Baker, met with Mr. John Floyd, Mr. Tom Williams, and Mr. Alphonso Parks, of JB Pearl Harbor-Hickam, to discuss the assets at the facilities and to gather additional documentation of the fueling systems necessary to determine regulatory applicability. Specifically, the capacities of all ASTs, USTs, and piping, were confirmed in order to support the required calculations.

A summary of the points of contact (POC) for this project can be found in Table 1-1.

Table 1-1: Points of Contact

Name / Position	Organization	Email / Phone
Mr. John Floyd / Deputy Director	JB Pearl Harbor-Hickam, Hawaii	john.floyd@navy.mil / (808) 473-7801
Mr. Tom Williams / Fuels Operations Manager	JB Pearl Harbor-Hickam, Hawaii	thomas.m.williams@navy.mil / (808) 448-3358
Mr. Alphonso Parks / Hickam POL Primary	JB Pearl Harbor-Hickam, Hawaii	alphonso.parks@hickam.af.mil / (808) 448-3358

POL = Petroleum, oil, lubricants

1.4 Future Construction Applicability

The 10 percent evaluation and assessment completed for this report is based on the current status of the fuel systems as of the site visit date of 2 February 2016. Potential construction projects that change or modify the configuration of the fuel systems could impact the 10 percent calculation and subsequent notification. Accordingly, the base will need to review and reassess the status of a fuel system upon completion of a construction project to determine if a notification is required.

2.0 SITE INFORMATION

JB Pearl Harbor-Hickam is located on the island of Oahu, approximately 8 miles northwest of Honolulu, Hawaii. Fueling operations at JB Pearl Harbor-Hickam include 11 bulk systems (one Jet A Commercial Aviation Fuel with Military Additives [F-24], one Jet Propellant 5 [JP-5], one Diesel Fuel Marine [F-76], one Multi-Product [MP], two Fuel Oil Reclaim [FOR], two Lube Oil, one Diesel, and two Jet Propellant Thermally Stable [JPTS]) and 11 non-bulk systems (five Motor Gasoline [Mogas], five Diesel, and one 85 Percent Ethanol Fuel Blend [E-85]). Figure 2-1 provides an overview of fueling systems included in this report.

2.1 Summary of Bulk F-24 System Operation

F-24 is received via barge at the Hotel and Kilo Piers at Pearl Harbor and by an off-base commercial pipeline at the Upper Tank Farm. The Kilo Pier and the off-base commercial pipeline are designated as MP. The Department of Transportation (DOT) and United States Coast Guard (USCG) jurisdictional valves are located near the Upper Tank Farm. Only underground receipt piping after the jurisdictional valves is included in this calculation. Fuel can also be received via truck offload (TOL) at Hickam Bulk Storage Facility. Fuel is stored in (b) field-constructed vertical ASTs; (b) ASTs (ASTs (b) and (b)) at the Upper Tank Farm and (b) ASTs (ASTs (b) through (b) at Hickam Bulk Storage Facility. Fuel is also stored in (b) bulk field-constructed underground storage tanks (BFCUSTs) (BFCUSTS (b) through (b) and (b) (3)) at Red Hill Bulk Storage Facility. There is one aboveground product recovery tank (PRT) (Filter Pad PRT) and two underground PRTs (AMC PRT and Type III PRT) located at Hickam Bulk Storage Facility. Fuel is transferred from the Upper Tank Farm to Hickam Bulk Storage Facility, via a primarily underground transfer pipeline, and to Red Hill Bulk Storage Facility, via an aboveground transfer pipeline located in a tunnel. Fuel is issued to the Hotel and Kilo Piers at Pearl Harbor, the truck fill stands (TFSs) at the Upper Tank Farm and Hickam Bulk Storage Facility, the hydrant service vehicle (HSV) at Hickam Bulk Storage Facility, and the Air Mobility Command (AMC) Hydrant Loop and the Type III Hydrant Loop at Hickam Bulk Storage Facility. The fuel system piping is aboveground and underground. Refer to Figures 2-2 through 2-6 for the Bulk F-24 System layout and see Appendix B, page 1, for fuel system capacities.

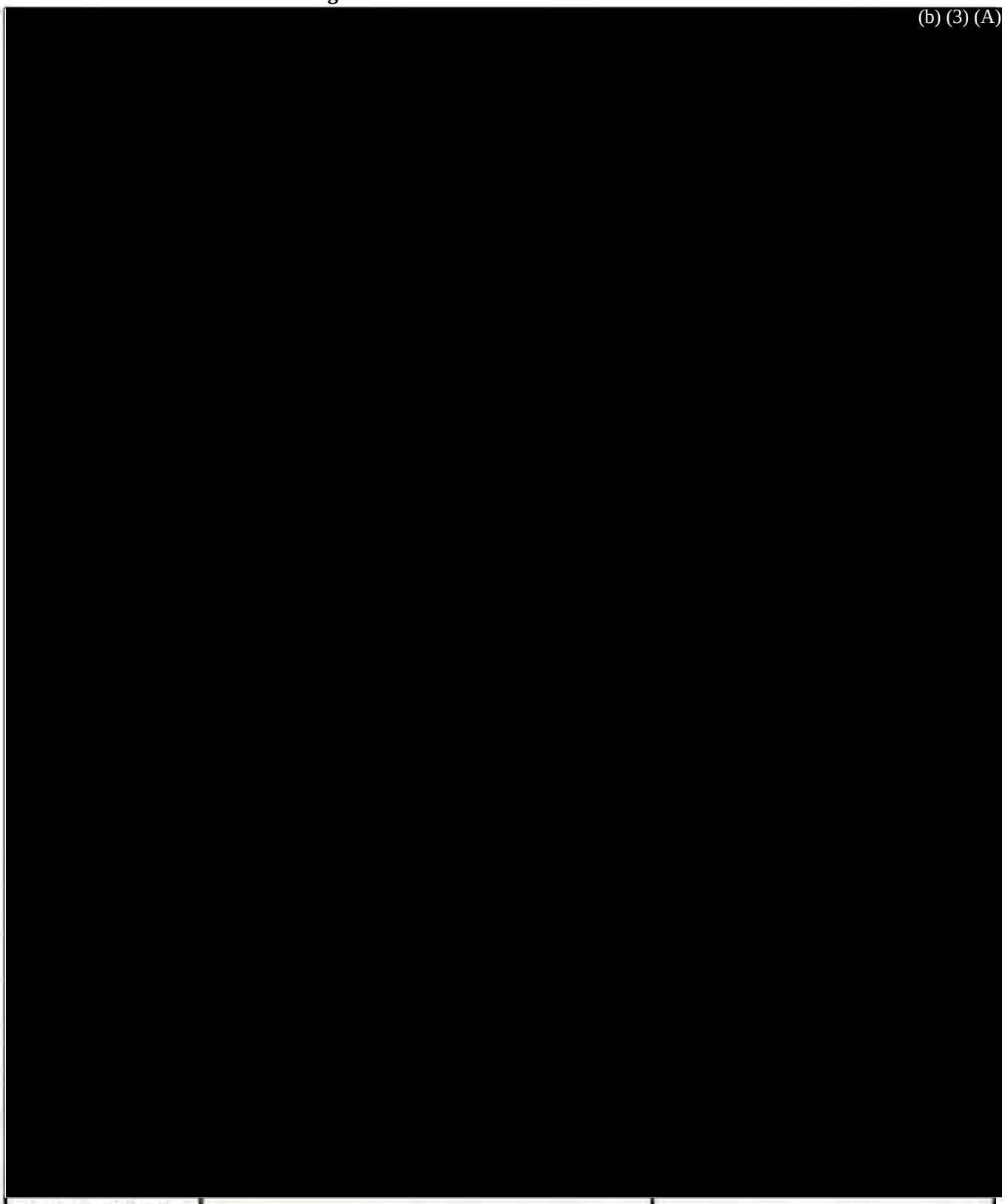
Figure 2-1: JB Pearl Harbor-Hickam Overview

Figure 2-2: Transfer Pipelines and Hydrant Loops Overview

(b) (3) (A)

DATE: DECEMBER 2017 SCALE: NTS DGN / DWN / CHK BY: CC / JES / LB JOB: 149137 TASK: 15.02.198	Michael Baker INTERNATIONAL Michael Baker International Virginia Beach, Virginia	FIGURE 2-2 TRANSFER PIPELINES AND HYDRANT LOOPS OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII

Figure 2-3: Pearl Harbor Piers Overview



DATE: DECEMBER 2017 SCALE: NTS DGN / DWN / CHK BY: CC / JES / LB JOB: 149137 TASK: 15.02.198	Michael Baker INTERNATIONAL Michael Baker International Virginia Beach, Virginia	FIGURE 2-3 PEARL HARBOR PIERS OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII

Figure 2-4: Upper Tank Farm Overview

(b) (3) (A)

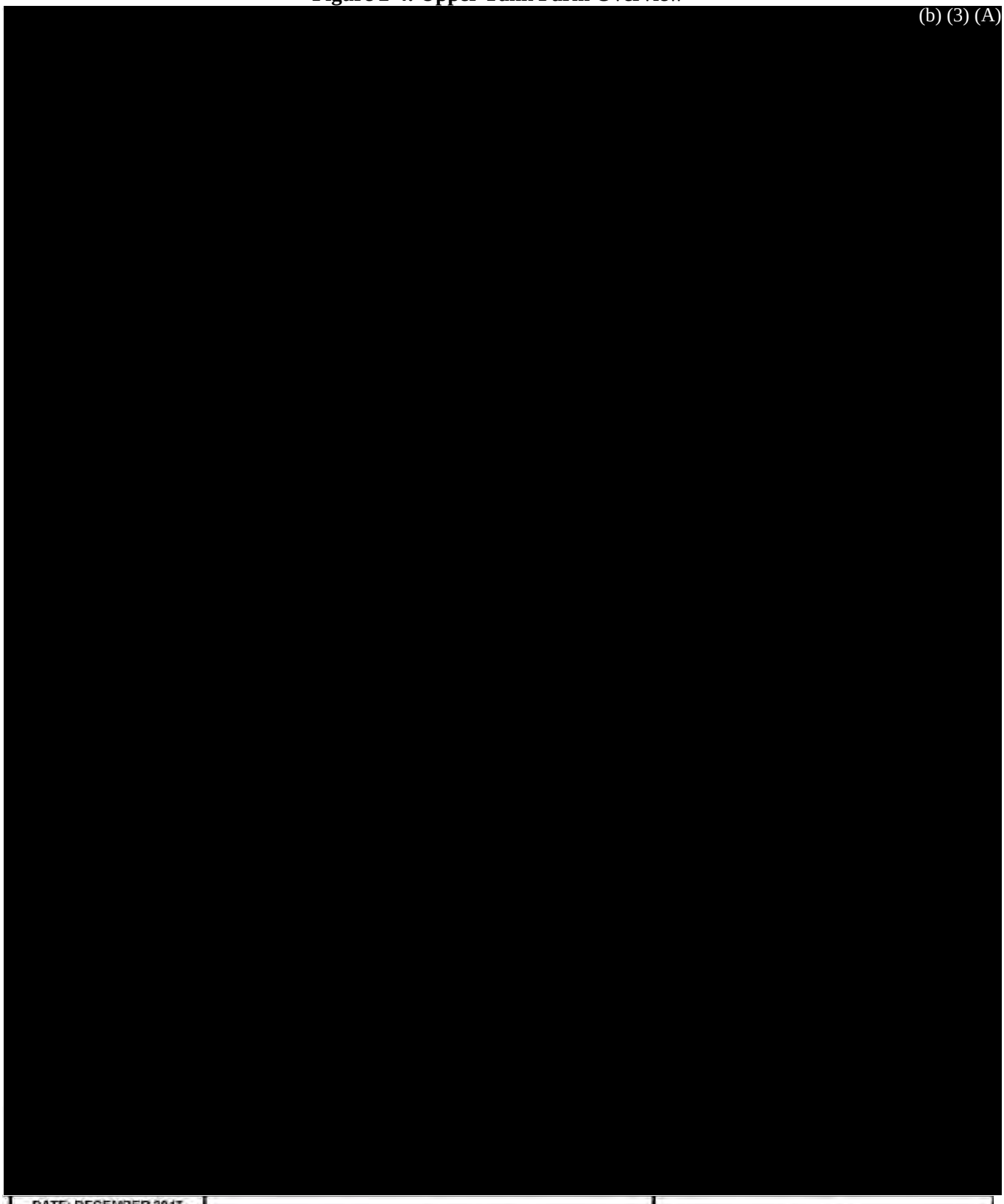


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Figure 2-5: Hickam Bulk Storage Facility Overview

Figure 2-6: Red Hill Bulk Storage Facility Overview

2.2 Summary of Bulk JP-5 System Operation

JP-5 is received via barge at the Hotel and Kilo Piers at Pearl Harbor and by an off-base commercial pipeline at the Upper Tank Farm. The Kilo Pier and the off-base commercial pipeline are designated as MP. The DOT and USCG jurisdictional valves are located near the Upper Tank Farm. Only underground receipt piping after the jurisdictional valves is included in this calculation. Fuel is stored in (b) field-constructed vertical AST (AST (b)) at the Upper Tank Farm and (b BFCUSTs (BFCUSTS (through (b) (3) (A), and (b) (3)) at Red Hill Bulk Storage Facility. Fuel is transferred from the Upper Tank Farm to Red Hill Bulk Storage Facility via an aboveground transfer pipeline located in a tunnel. Fuel is issued to the Hotel and Kilo Piers at Pearl Harbor and TFSs at the Upper Tank Farm. The fuel system piping is aboveground and underground. Refer to Figures 2-2, 2-3, 2-4, and 2-6 for the Bulk JP-5 System layout and see Appendix B, page 2, for fuel system capacities.

2.3 Summary of Bulk F-76 System Operation

F-76 is received via barge at the Hotel, Kilo, and Sierra Piers at Pearl Harbor and by an off-base commercial pipeline at the Upper Tank Farm. The Kilo Pier and the off-base commercial pipeline are designated as MP. The DOT and USCG jurisdictional valves are located near the Upper Tank Farm. Only underground receipt piping after the jurisdictional valves is included in this calculation. Fuel is stored in (b) field-constructed vertical ASTs (AST (b) (3), and (b)) at the Upper Tank Farm and (b) BFCUSTs (BFCUSTS (b) (3) (A), and (b) (3)) at Red Hill Bulk Storage Facility. Fuel is transferred from the Upper Tank Farm to Red Hill Bulk Storage Facility via an aboveground transfer pipeline located in a tunnel. Fuel is issued to the Hotel, Kilo, Mike, and Bravo Piers at Pearl Harbor and TFSs at the Upper Tank Farm. The fuel system piping is aboveground and underground. Refer to Figures 2-2, 2-3, 2-4, and 2-6 for the Bulk F-76 System layout and see Appendix B, page 3, for fuel system capacities.

2.4 Summary of Bulk MP System Operation

MP is received via barge at the Kilo Pier at Pearl Harbor and by an off-base commercial pipeline at the Upper Tank Farm. Fuel is stored in (b) field-constructed, vertical AST (AST (b)) at the Upper Tank Farm. The DOT and USCG jurisdictional valves are located near the Upper Tank Farm. Only underground receipt piping after the jurisdictional valves is included in this calculation. Fuel is issued to the Kilo Pier at Pearl Harbor and one TFS at the Upper Tank Farm. Fuel system piping is aboveground and underground. Refer to Figures 2-2 through 2-4 for the Bulk MP System layout and see Appendix B, page 4, for fuel system capacities.

2.5 Summary of Bulk FOR System 1 Operation

FOR is received via barge at the Hotel Pier at Pearl Harbor and from the reclaim system from BFCUSTs (b) (3) through (b) (3). The USCG jurisdictional valve is located near the Upper Tank Farm. Only underground receipt piping after the jurisdictional valve is included in this calculation. FOR is stored in (b) field-constructed, vertical ASTs (ASTs (b) and (b)) at the Upper Tank Farm. Fuel is issued via one TFS at the Upper Tank Farm. Fuel system piping is primarily aboveground. Refer to Figures 2-3 and 2-4 for the Bulk FOR System 1 layout and see Appendix B, page 5, for fuel system capacities.

2.6 Summary of Bulk FOR System 2 Operation

FOR is received from the reclaim system from BFCUSTs (through (b and (b at Red Hill Bulk Storage Facility and stored in (b) shop-fabricated, vertical AST (AST (b)) at (b) (3) Fuel is issued to one TFS at (b) (3) Fuel system piping is primarily aboveground. Refer to Figure 2-7 for the Bulk FOR System 2 layout and see Appendix B, page 6, for fuel system capacities.

Figure 2-7: FOR System 2 Overview

2.7 Summary of Bulk Lube Oil System 1 Operation

Lube Oil is received by over-the-road transport at one TOL and stored in (b) shop-fabricated AST (AST (b)) at (b) (3) Fuel is issued to one TFS. Fuel system piping is aboveground. Refer to Figure 2-8 for the Bulk Lube Oil System 1 layout at (b) (3) and see Appendix B, page 7, for fuel system capacities.

2.8 Summary of Bulk Lube Oil System 2 Operation

Lube Oil is received by over-the-road transport at one TOL and stored in (b) shop-fabricated AST (AST (b) at (b) (3) Fuel is issued to one TFS. Fuel system piping is aboveground. Refer to Figure 2-8 for the Bulk Lube Oil System 2 layout at (b) (3) and see Appendix B, page 8, for fuel system capacities.

Figure 2-8: Bulk Lube Oil Systems Overview

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FIGURE 2-8 BULK LUBE OIL SYSTEMS OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII		

2.9 Summary of Bulk Diesel System at Facility [redacted] Operation

Diesel is received by over-the-road transport at two combination TOL/TFSs and stored in [redacted] shop-fabricated, horizontal ASTs (ASTs [redacted] and [redacted]) at Facility [redacted]. Fuel is issued to two combination TOL/TFSs. Fuel system piping is aboveground. Refer to Figure 2-9 for the Bulk Diesel System layout at Facility [redacted] and see Appendix B, page 9, for fuel system capacities.

Figure 2-9: Facility (b) (3) (A) Overview

(b) (3) (A)

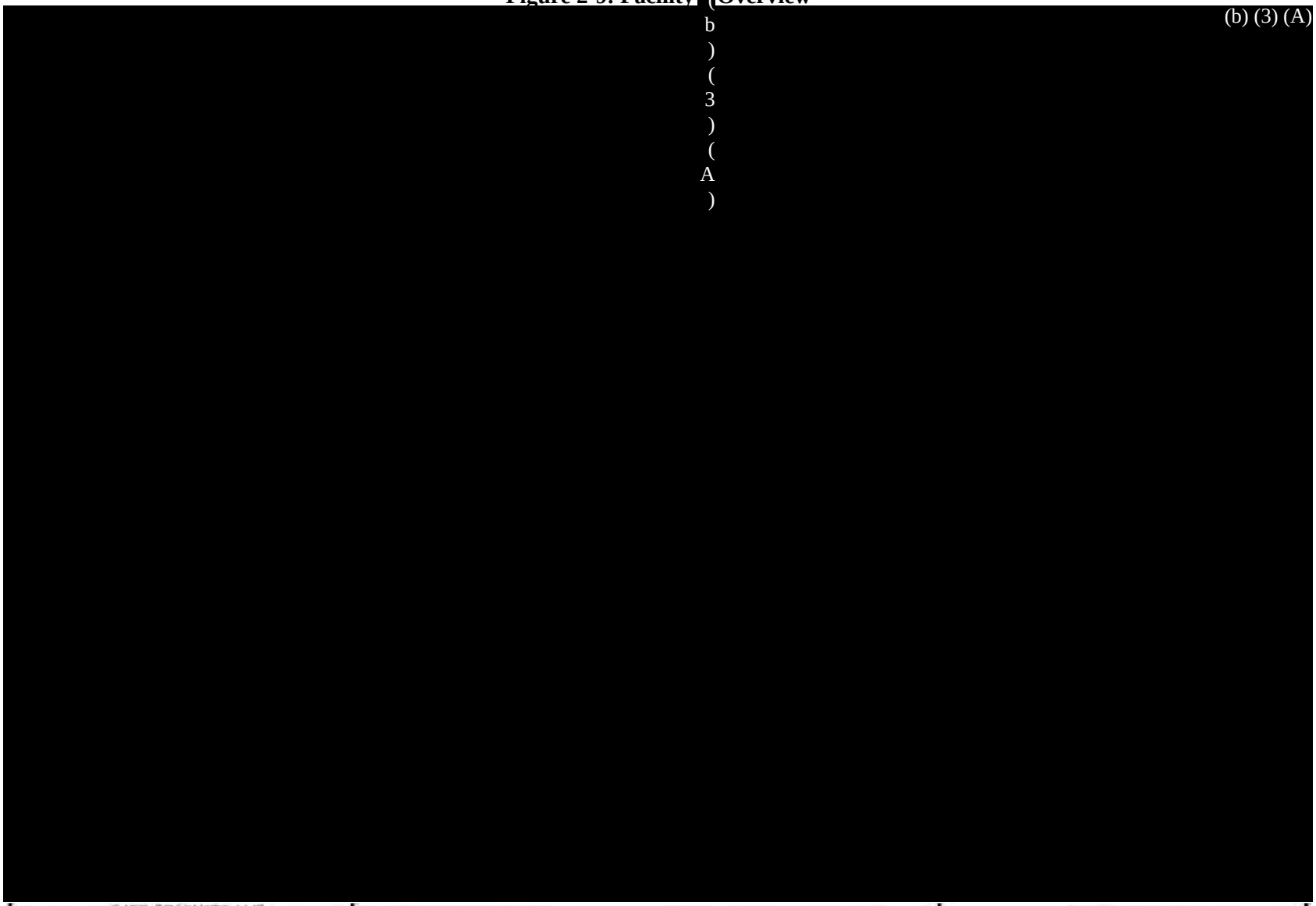

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FIGURE 2-9
FACILITY (b) OVERVIEW
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2.10 Summary of Bulk JPTS System 3 at Facility (b) Operation

JPTS is received by over-the-road transport at one TOL and stored in (b) shop-fabricated AST (AST (b)) at Facility (b). Fuel is issued to one TFS. Fuel system piping is aboveground. Refer to Figure 2-10 for the Bulk JPTS System 3 layout at Facility (b) and see Appendix B, page 10, for fuel system capacities.

2.11 Summary of Bulk JPTS System 4 at Facility (b) Operation

JPTS is received by over-the-road transport at one TOL and stored in (b) shop-fabricated AST (AST (b)) at Facility (b). Fuel is issued to one TFS. Fuel system piping is aboveground. Refer to Figure 2-10 for the Bulk JPTS System 4 layout at Facility (b) and see Appendix B, page 11, for fuel system capacities.

Figure 2-10: Facility (Overview

(b) (3) (A)

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3
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A
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DATE: DECEMBER 2017 SCALE: NTS DGN / DWN / CHK BY: CC / JES / LB JOB: 149137 TASK: 15.02.198	Michael Baker INTERNATIONAL	Michael Baker International Virginia Beach, Virginia	FIGURE 2-10 FACILITY (b) OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII

2.12 Summary of Non-Bulk Mogas System at Facility (b) Operation

Mogas is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated USTs (USTs (b) (3) and (b) (3)) at Facility (b). Fuel is issued to one retail-style dispenser. Fuel system piping is underground. Refer to Figure 2-11 for the Non-Bulk Mogas System layout at Facility (b) (3) and see Appendix B, page 12, for fuel system capacities.

2.13 Summary of Non-Bulk Diesel System at Facility (b) Operation

Diesel is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated USTs (USTs (b) (3) and (b) (3)) at Facility (b). Fuel is issued to two retail-style dispensers. Fuel system piping is underground. Refer to Figure 2-11 for the Non-Bulk Diesel System layout at Facility (b) and see Appendix B, page 13, for fuel system capacities.

Figure 2-11: Facility (b) Overview

(b) (3) (A)

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2.14 Summary of Non-Bulk Mogas System 1 at Facility (b) (3) Operation

Mogas is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated dual-compartment horizontal AST (AST (b) (3)) at Facility (b) (3). Fuel is issued to (b) retail-style dispensers. Fuel system piping is aboveground. Refer to Figure 2-12 for the Non-Bulk Mogas System 1 layout at Facility (b) (3) and see Appendix B, page 14, for fuel system capacities.

2.15 Summary of Non-Bulk Mogas System 2 at Facility (b) (3) Operation

Mogas is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated dual-compartment horizontal AST (AST (b) (3) at Facility (b) (3). Fuel is issued to (b) retail-style dispensers. Fuel system piping is aboveground. Refer to Figure 2-12 for the Non-Bulk Mogas System 2 layout at Facility (b) (3) and see Appendix B, page 15, for fuel system capacities.

2.16 Summary of Non-Bulk Diesel System 3 at Facility (b) (3) Operation

Diesel is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated dual-compartment horizontal AST (AST (b) (3)) at Facility (b) (3). Fuel is issued to (b) retail-style dispensers. Fuel system piping is aboveground. Refer to Figure 2-12 for the Non-Bulk Diesel System 3 layout at Facility (b) (3) and see Appendix B, page 16, for fuel system capacities.

2.17 Summary of Non-Bulk Diesel System 4 at Facility (b) (3) Operation

Diesel is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated dual-compartment horizontal AST (AST (b) (3)) at Facility (b) (3) Fuel is issued to (b) retail-style dispensers. Fuel system piping is aboveground. Refer to Figure 2-12 for the Non-Bulk Diesel System 4 layout at Facility (b) (3) and see Appendix B, page 17, for fuel system capacities.

2.18 Summary of Non-Bulk E-85 System at Facility (b) (3) Operation

E-85 is received by over-the-road transport via direct fill port and stored in (b) shop-fabricated horizontal AST (AST (b) (3)) at Facility (b) (3). Fuel is issued to (b) retail-style dispensers. Fuel system piping is aboveground. Refer to Figure 2-12 for the Non-Bulk E-85 System layout at Facility (b) (3) and see Appendix B, page 18, for fuel system capacities.

Figure 2-12: Facility (b) (3) Overview

(b) (3) (A)

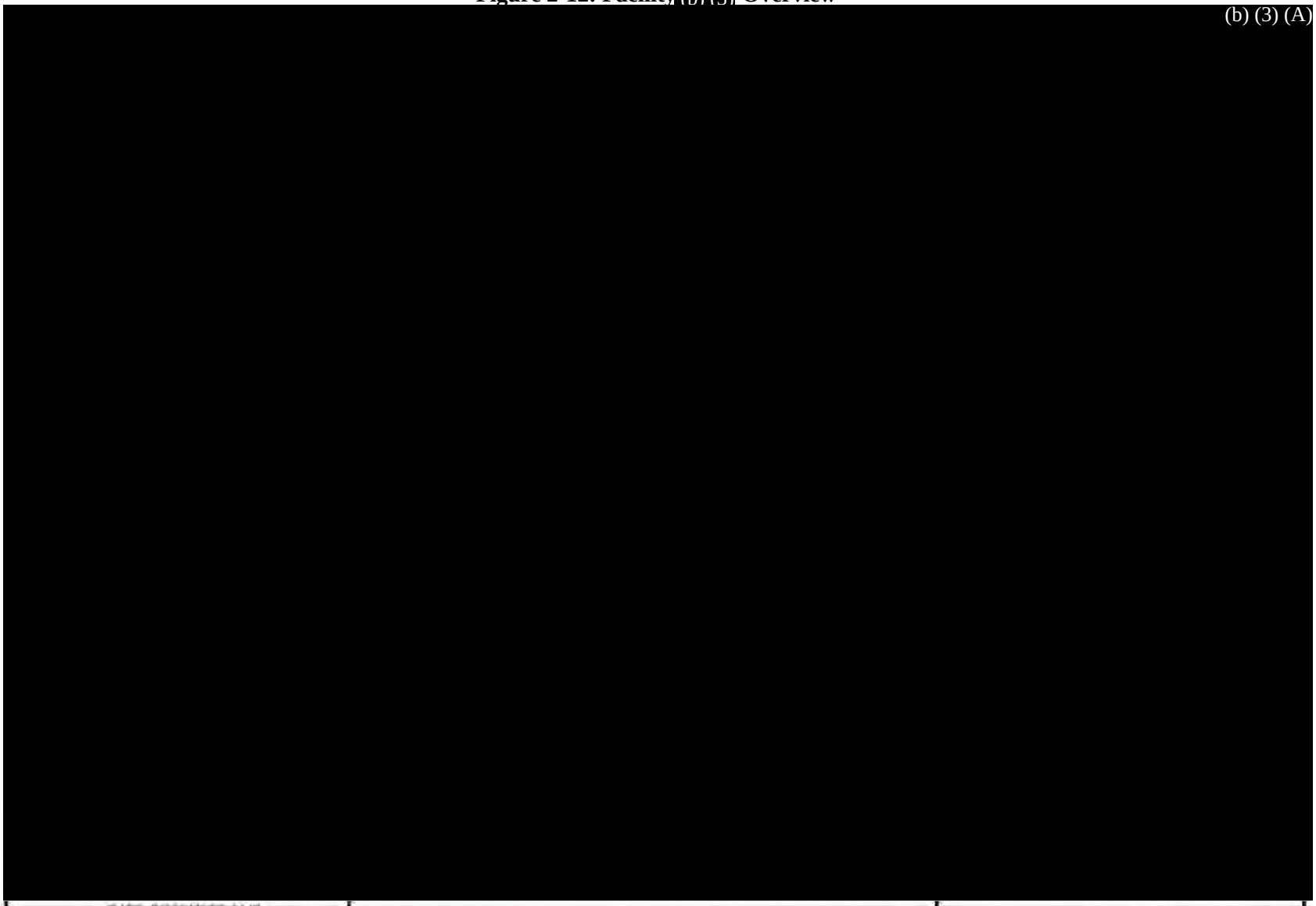

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FIGURE 2-12
FACILITY (b) OVERVIEW
2016 REGULATION APPLICABILITY STUDY
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2.19 Summary of Non-Bulk Mogas System at Facility (b) Operation

Mogas is received by over-the-road transport via remote fill port and stored in (b) shop-fabricated horizontal AST (AST (b)) at the West Loch Annex Facility (b). Fuel is issued to (b) retail-style dispenser. Fuel system piping is aboveground. Refer to Figure 2-13 for the Non-Bulk Mogas System layout at Facility (b) and see Appendix B, page 19, for fuel system capacities.

2.20 Summary of Non-Bulk Diesel System at Facility (b) Operation

Diesel is received by over-the-road transport via remote fill port and stored in one shop-fabricated horizontal AST (AST (b)) at the West Loch Annex Facility (b). Fuel is issued to one retail-style dispenser. Fuel system piping is aboveground. Refer to Figure 2-13 for the Non-Bulk Diesel System layout at Facility (b) and see Appendix B, page 20, for fuel system capacities.

Figure 2-13: Facility (b) Overview

(b) (3) (A)

DATE: DECEMBER 2017 SCALE: NTS DGN / DWN / CHK BY: CC / JES / LB JOB: 149137 TASK: 15.02.198	Michael Baker INTERNATIONAL Michael Baker International Virginia Beach, Virginia	FIGURE 2-13 FACILITY (b) OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII

2.21 Summary of Non-Bulk Mogas System at Facility (b) Operation

Mogas is received by over-the-road transport via remote fill port and stored in (b) shop-fabricated horizontal AST (AST (b)) at Naval Computer and Telecommunications Area Master Station (NCTAMS) Wahiawa Annex Facility (b). Fuel is issued to (b) retail-style dispenser. Fuel system piping is aboveground. Refer to Figure 2-14 for the Non-Bulk Mogas System layout at Facility (b) and see Appendix B, page 21, for fuel system capacities.

2.22 Summary of Non-Bulk Diesel System at Facility (b) Operation

Diesel is received by over-the-road transport via remote fill port and stored in (b) shop-fabricated horizontal AST (AST (b)) at NCTAMS Wahiawa Annex Facility (b). Fuel is issued to (b) retail-style dispenser. Fuel system piping is aboveground. Refer to Figure 2-14 for the Non-Bulk Diesel System layout at Facility (b) and see Appendix B, page 22, for fuel system capacities.

Figure 2-14: Facility (b) Overview

(b) (3) (A)

DATE: DECEMBER 2017 SCALE: NTS DGN / DWN / CHK BY: JES / JES / LB JOB: 149137 TASK: 15.02.198	Michael Baker INTERNATIONAL Michael Baker International Virginia Beach, Virginia	FIGURE 2-14 FACILITY (b) OVERVIEW 2016 REGULATION APPLICABILITY STUDY JB PEARL HARBOR-HICKAM, HAWAII

3.0 REGULATORY ANALYSIS AND RESULTS

3.1 Assumptions and Excluded Components

As indicated in the preamble of 40 CFR 280 (Appendix A) the start of the regulated AHS "begins where fuel enters one or more tanks from an external source such as a pipeline, barge, rail car, or other motor fuel carrier." For the purpose of this analysis, the calculation to determine if a fuel system is regulated as a UST fuel system, will begin at the point of change in ownership, or change in regulatory jurisdiction (as applicable), and will include the receipt piping that connects to the one, or more, fuel system tanks under analysis.

The underground piping volume calculations may include some small portions of incidental aboveground piping as part of the total. This small amount of volume, does not significantly impact the calculation results.

Spill collection (emergency containment) ASTs and USTs, if present, are not part of the calculation as these types of tanks are not for storing fuels.

3.2 Data Sources

Several sources of data were utilized to evaluate the bulk and non-bulk fuel systems, such as the base SPCC plans (References 5.1 and 5.2), previous leak detection testing and evaluation reports (References 5.3 through 5.7), and field data collections.

3.3 Calculation of Applicability

The calculation of applicability included determining:

Equation 1:

$$V_{Total} = V_{ASTs} + V_{USTs} + V_P$$

Where V_{ASTs} = volume of ASTs
V_{USTs} = volume of USTs
V_P = volume of underground piping

Equation 2:

$$V_{UG} = V_{USTs} + V_P$$

Where V_{UG} = total volume of USTs and underground piping

Equation 3:

$$Percent\ of\ Underground\ Volume = \frac{V_{UG}}{V_{Total}}$$

3.4 Results

The evaluation of volumes is located in Appendix B. The evaluation of 22 fuel systems at JB Pearl Harbor-Hickam was completed on 2 February 2016. The evaluation results are listed in Table 3-1.

Table 3-1: Evaluation Results

Fuel System	Percent of Underground Volume	Date of Evaluation	Evaluation Data
Pearl Harbor, Upper Tank Farm, Hickam Bulk Storage, and Red Hill Bulk Storage Facilities			
Bulk F-24 System	76.74 %	2 February 2016	Appendix B, Page 1
Bulk JP-5 System	95.67 %	2 February 2016	Appendix B, Page 2
Bulk F-76 System	57.95 %	2 February 2016	Appendix B, Page 3
Bulk MP System	2.01 %	2 February 2016	Appendix B, Page 4
Bulk FOR System 1	0.45 %	2 February 2016	Appendix B, Page 5
Bulk FOR System 2	0.07 %	2 February 2016	Appendix B, Page 6
Bulk Lube Oil System 1	0 %	2 February 2016	Appendix B, Page 7
Bulk Lube Oil System 2	0 %	2 February 2016	Appendix B, Page 8
Facility 5			
Bulk Diesel System	0 %	2 February 2016	Appendix B, Page 9
Facility 9			
Bulk JPTS System 3	0 %	2 February 2016	Appendix B, Page 10
Bulk JPTS System 4	0 %	2 February 2016	Appendix B, Page 11
Facility 1037			
Non-Bulk Mogas System	100 %	2 February 2016	Appendix B, Page 12
Non-Bulk Diesel System	100 %	2 February 2016	Appendix B, Page 13
Facility S-169			
Non-Bulk Mogas System 1	0 %	2 February 2016	Appendix B, Page 14
Non-Bulk Mogas System 2	0 %	2 February 2016	Appendix B, Page 15
Non-Bulk Diesel System 3	0 %	2 February 2016	Appendix B, Page 16
Non-Bulk Diesel System 4	0 %	2 February 2016	Appendix B, Page 17
Non-Bulk E-85 System	0 %	2 February 2016	Appendix B, Page 18
Facility S-60			
Non-Bulk Mogas System	0 %	2 February 2016	Appendix B, Page 19
Non-Bulk Diesel System	0 %	2 February 2016	Appendix B, Page 20
Facility 238			
Non-Bulk Mogas System	0 %	2 February 2016	Appendix B, Page 21
Non-Bulk Diesel System	0 %	2 February 2016	Appendix B, Page 22

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The analysis of the 22 fueling systems that utilize capitalized fuels at JB Pearl Harbor-Hickam determined that two of the 22 fuel systems, identified as the Bulk F-24 and JP-5 Systems, were confirmed to have more than 10 percent of system volume underground, and are thereby defined as newly regulated UST AHS systems per 40 CFR 280. One of the 22 fuel systems, identified as Bulk F-76 System, was confirmed to have more than 10 percent of system volume underground, and is thereby defined as a newly regulated UST system per 40 CFR 280. Two of the 22 fuel systems, identified as the Non-Bulk Mogas and Diesel Systems located at Facility 1037, were confirmed to have more than 10 percent of their volumes underground. The regulatory status of these two fuel systems remains unchanged; therefore, these two fuel systems continue to be classified as UST systems regulated per 40 CFR 280. The 17 remaining fuel systems were found to be AST systems, which have less than 10 percent of their volume underground; therefore, they are not UST systems per 40 CFR 280.

4.2 Recommendations

For the two fuel systems confirmed as newly regulated UST AHS systems and the one system confirmed as a newly regulated UST system, per 40 CFR 280, the recommended action for operators is to provide a one-time notification, to the US EPA, identifying the Bulk F-24, JP-5, and F-76 Systems as UST systems no later than 13 October 2018. It is the responsibility of the base to register the newly regulated UST systems with the applicable implementing agencies; however, the notification and verification are out of the scope of this report. For the two fuel systems confirmed as UST systems, identified as the Non-Bulk Mogas and Diesel Systems located at Facility (b) the recommended action for operators is to verify that these two UST systems have been registered with the implementing agency; confirmation of this registration is out of scope for this report. For the 17 remaining fuel systems found to be AST systems, no further actions are required, at this time, to comply with the revised regulations of 40 CFR 280.

5.0 REFERENCES

5.1 2013 Spill Prevention, Control, and Countermeasure Plan for CNRH, Naval Supply Systems Command, Fleet Logistics Center Pearl Harbor, Oahu, Hawaii; Prepared for: Department of the Navy, Commanding Officer, Naval Facilities Engineering Command, Hawaii; Prepared by: Element Environmental, LLC; Prepared under: Environmental Technical Services Contract Number N62472-12-D-1820, CTO 0006; Date: March 2014.

5.2 2013 Spill Prevention, Control, and Countermeasure Plan for CNRH, Joint Base Pearl Harbor-Hickam, Hickam Air Force Base, Oahu, Hawaii; Prepared for: Department of the Navy, Commanding Officer, Naval Facilities Engineering Command, Hawaii; Prepared by: Element Environmental, LLC; Prepared under: Environmental Technical Services Contract Number N62472-12-D-1820, CTO 0006; Date: March 2014.

5.3 "Final 2016 Annual Leak Detection Report of 18 Bulk Field-Constructed Underground Storage Tank at RedHill 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: 31 March 2017.

5.4 "Final 2017 Annual Static Liquid Pressure Testing Report of Seven Sections (36,364 Feet) of Petroleum Pier Pipelines, Joint Base Pearl Harbor-Hickam, Hawaii", Prepared for: Defense Logistics Agency Energy, Fort Belvoir, Virginia; Prepared under: NAVFAC Atlantic Contract N62470-16-D-9007-0004; Submitted by: Michael Baker International, Virginia Beach, Virginia; Date: 15 May 2017.

5.5 "Final 2017 Biennial Leak Detection Testing Report of 36 Sections (59,084 Feet) of Petroleum Pipelines, Joint Base Pearl Harbor-Hickam, Hawaii", Prepared for: Defense Logistics Agency Energy, Fort Belvoir, Virginia; Prepared under: NAVFAC Atlantic Contract N62470-16-D-9007-0004; Submitted by: Michael Baker International, Virginia Beach, Virginia; Date: 4 May 2017.

5.6 "Final 2017 Annual Certification and Testing Report of the Monitoring Systems, Leak Detectors, Spill Buckets, and Overfill Protection Valves Associated with the Four Underground Storage Tanks at Military Service Station 1037, Joint Base Pearl Harbor-Hickam, Hawaii", Prepared for: Defense Logistics Agency Energy, Fort Belvoir, Virginia; Prepared under: NAVFAC Atlantic Contract N62470-16-D-9007-0004; Submitted by: Michael Baker International, Virginia Beach, Virginia; Date: 23 June 2017.

5.7 "Leak Detection Evaluation, Capitalized Military Service Stations and Underground Storage Tank Systems, Naval Supply System Command, Fleet Logistics Center Pearl Harbor Facilities (NAVSUP-FLCPH) - Hawaii", Prepared for: Defense Logistics Agency Energy, Fort Belvoir, Virginia; Prepared under: NAVFAC Atlantic Contract N62470-10-D-3000-0018; Submitted by: Michael Baker Jr., Inc., a Michael Baker International Company, Virginia Beach, VA; Date: 24 June 2015.

APPENDIX A –

2015 REVISED FEDERAL UST REGULATIONS
(FEDERAL REGISTER / VOLUME 80, NUMBER 135, DATED 15 JULY 2015,
EXCERPTS 41585, 41587 - 41589)

power generators notify implementing agencies that their systems exist. Commenters stated that this requirement is unnecessary because the 1988 UST regulation excluded emergency generator tanks from only the release detection requirement. EPA agrees with commenters. This final UST regulation does not include this one-time notification requirement for emergency generator tanks.

2. Airport Hydrant Fuel Distribution Systems and UST Systems With Field-Constructed Tanks

This final UST regulation removes the 1988 deferral and requires owners and operators of airport hydrant fuel distribution systems (referred to as airport hydrant systems) comply with applicable requirements. However, EPA is tailoring the requirements to the unique nature of airport hydrant systems. Airport hydrant systems function and are designed differently than conventional USTs. Unlike conventional USTs, airport hydrant systems consist of networks of large diameter underground piping operating at high pressures to deliver fuel to aircraft. In addition, operation and maintenance requirements for airport hydrant systems may differ from those for conventional UST systems.

This final UST regulation removes the 1988 deferral and requires owners and operators of UST systems with field-constructed tanks comply with applicable requirements. Similar to airport hydrant systems, EPA is tailoring the requirements to the unique nature of field-constructed tanks. UST systems with field-constructed tanks (referred to as field-constructed tanks) range from conventional sizes to very large capacities greater than 2 million gallons.

A few commenters suggested EPA write regulations specifically for airport hydrant systems and field-constructed tanks, since they are distinctly different from conventional USTs. EPA agrees that airport hydrant systems and field-constructed tanks are different from conventional USTs. Additionally, EPA thinks it would help owners and operators if the requirements for airport hydrant systems and field-constructed tanks are in a separate subpart of the final UST regulation. In order to help owners and operators of these systems comply, this final UST regulation adds subpart K (*UST Systems with Field-Constructed Tanks and Airport Hydrant Fuel Distribution Systems*) and places most regulatory requirements for both airport hydrant systems and field-constructed tanks in one location. Since 1988, owners and operators of these systems have been required to comply with the requirements for subparts A (*Program Scope and Interim Prohibition*) and F (*Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances*).

This final UST regulation requires airport hydrant systems and field-constructed tanks installed on or before the effective date of the final UST regulation begin meeting the requirements of subpart K according to the schedule below. Airport hydrant systems and field-constructed tanks installed after the effective date of this final UST regulation must meet the requirements at the time of installation.

Requirement	Effective date
Upgrading UST systems, general operating requirements, and operator training.	Three years after the effective date of this final UST regulation.
Release detection	Three years after the effective date of this final UST regulation.
Release reporting, response, and investigation; closure; financial responsibility and notification, except as provided in § 280.251(2)(b).	On the effective date of this final UST regulation.

This final UST regulation modifies the 2011 proposed UST regulation by revising the definition of airport hydrant fuel distribution system and defining a field-constructed tank.

An airport hydrant fuel distribution system (also called airport hydrant system) is defined as an UST system which fuels aircraft and operates under high pressure with large diameter piping that typically terminates into one or more hydrants (fill stands). The airport hydrant system begins where fuel enters one or more tanks from an external source, such as a pipeline, barge, rail car, or other motor fuel carrier.

A field-constructed tank is defined as a tank constructed in the field. For example, a tank constructed of concrete that is poured in the field, or a steel or fiberglass tank primarily fabricated in the field is considered field-constructed.

Overview of Actions

Release Detection—Tanks

This final UST regulation requires airport hydrant system tanks and field-constructed tanks meet these requirements:

- These tanks must be monitored using release detection methods specified in subpart D:
  - Shop fabricated tanks and
  - Field-constructed tanks with a capacity less than or equal to 50,000 gallons
- Field-constructed tanks with a capacity greater than 50,000 gallons must either be monitored using release detection methods specified in subpart D (except tanks using groundwater and vapor monitoring must combine that method with inventory control as described in the alternatives below) or use one of the alternatives below
  - Conduct an annual tank tightness test that can detect a 0.5 gallon per hour (gph) leak rate
  - At least once every 30 days, use an automatic tank gauging system to perform release detection, which can detect a leak rate of 1 gallon per hour or less; and at least once every three years, use a tank tightness test that can detect a 0.2 gallon per hour leak rate
  - At least once every 30 days, use an automatic tank gauging system to perform release detection, which can detect a leak rate of 2 gallons per hour or less; and at least every two years, use a tank tightness test that can detect a 0.2 gallon per hour leak rate
  - At least every two years, perform vapor monitoring (conducted according to § 280.43(e) for a tracer compound placed in the tank system) capable of detecting a 0.1 gallon per hour leak rate
  - At least every 30 days, perform inventory control, conducted according to Department of Defense (DoD) Directive 4140.25; Air Transport Association (ATA) Airport Fuel Facility Operations and Maintenance Guidance Manual; or equivalent procedures that can detect a leak equal to or less than 0.5 percent of flow through and either
    - At least every two years, perform a tank tightness test that can detect a 0.5 gallon per hour leak rate or
    - At least every 30 days, perform vapor monitoring or groundwater monitoring (conducted according to § 280.43(e) or (f), respectively, for the stored regulated substance)

periodic spill testing and overfill inspection requirements of § 280.35. Owners and operators must install the equipment and conduct the first spill test and overfill inspection no later than three years after the effective date of this final UST regulation and every three years thereafter. For airport hydrant systems brought into use after the effective date of this final UST regulation, spill and overfill prevention equipment requirements must be met at installation.

Owners and operators must conduct walkthrough inspections that meet the requirements of § 280.252(c). Owners and operators must conduct the first inspection within three years after the effective date of the final UST regulation. In addition to the items inspected as part of the walkthrough inspection for other regulated UST systems, owners and operators of airport hydrant systems must inspect hydrant pits and hydrant piping vaults every 30 days for areas that do not require confined space entry according to the Occupational Safety and Health Administration (OSHA) and annually for areas that do require confined space entry. Owners and operators must keep documentation of the inspection according to § 280.36(b).

Notification

This final UST regulation requires owners and operators of regulated airport hydrant systems and field-constructed tanks meet these notification requirements:

- For airport hydrant systems and field-constructed tanks currently installed, owners and operators must submit no later than 3 years after the effective date of this final UST regulation a one-time notification to their implementing agency that their systems exist
- For airport hydrant systems and field-constructed tanks installed after the effective date of the final UST regulation, owners and operators must provide their implementing agency a notification of each newly installed system within 30 days of bringing each system into use
- Owners must provide their implementing agency a notification of ownership change for each newly acquired airport hydrant system or field-constructed tank within 30 days of the date on which the new owner assumes ownership

Financial Responsibility

This final UST regulation requires owners and operators of airport hydrant systems and field-constructed tanks that have not been permanently closed meet the financial responsibility requirements in subpart H at the time the one-time notification of existence is submitted to the implementing agency. Owners and operators who install these systems after the effective date of this final UST regulation must meet the financial responsibility requirements at installation. This requirement does not apply to state or federal owners of airport hydrant systems and field-constructed tanks.

Partially Excluded Components

This final UST regulation excludes aboveground storage tanks associated with airport hydrant systems and field-constructed tanks from the requirements of subparts B, C, D, E, G, J, and K. Owners and operators are still required to comply with subparts A (*Program Scope and Installation Requirements for Partially Excluded UST Systems*); and F (*Release Response and Corrective Action for UST Systems Containing Petroleum or Hazardous Substances*) for these tanks.

Operator Training

This final UST regulation requires owners and operators of airport hydrant systems and field-constructed tanks meet the operator training requirements in subpart J.

Closure Requirements for Previously Closed Tanks

When directed by the implementing agency, owners and operators of airport hydrant systems and field-constructed tanks permanently closed before the effective date of this final UST regulation must assess the excavation zone and close the UST system according to subpart G if releases from the UST may, in the judgment of the implementing agency, pose a current or potential threat to human health and the environment.

Background

Tanks and piping associated with airport hydrant systems and field-constructed tanks can store millions of gallons of fuel and handle large volumes of regulated substances on a daily basis. Leaks from these systems can contaminate subsurface soil beneath the airport apron and runways, groundwater, and nearby surface water systems, posing a significant risk to human health and the environment. As a result, EPA is removing the deferral.

Some commenters indicated EPA needed to justify that airport hydrant systems and field-constructed tanks are leaking in order to regulate them. The 1988 UST regulation required owners and operators report only confirmed releases from these tanks to implementing agencies. Owners and operators were not required to report suspected releases to implementing agencies, which sometimes resulted in gaps for ensuring proper site investigations or transmission of sufficient release information. As a result, implementing agencies have little to no available historical records regarding releases of regulated substances from airport hydrant systems and field-constructed tanks.

In the 2011 proposed UST regulation, EPA provided details on several releases that previously occurred at airport hydrant systems. Since that time, EPA identified additional information on releases from both DoD and commercial airport hydrant systems. For example, at Hartsfield Jackson International Airport in Georgia, active remediation and free product recovery is ongoing (as of 2014) due to a 1988 release of an estimated 14,000 gallons of jet fuel.[44] In 2003, an estimated 100,000 gallons of jet fuel leaked from the valves and flanges of an airport hydrant system at Minneapolis-St. Paul International Airport in Minnesota. Some of the jet fuel was released into the sanitary sewer and nearby waterway. During the investigation of the jet fuel release, personnel discovered a second jet fuel leak at a different concourse; this leak impacted the stormwater system and produced oily sheens in the Minnesota River. Responsible parties agreed to pay civil penalties and complete environmental projects, including continued site remediation and fuel recovery.[45] In 1983 at Camp Lejeune, North Carolina, investigators discovered multiple feet of free product while using a hand auger to investigate the cause of a fuel inventory discrepancy.[46] In addition, from the 1960s to the 1980s, thousands of gallons of jet fuel leaked from a former airport hydrant system at Pope Air Force Base, North Carolina. At one time, it was noted that as much as 75,000 gallons of free product was floating on top of the groundwater because of these releases. As of 2014, the site is undergoing remediation.[47] In addition, at Marine Corps Air Station Cherry Point, North Carolina there have been multiple releases from the airport

[44] Corrective Action Plan—Part B: Hartsfield-Jackson International Airport, Concourse Pit. Number 19 Fuel Spill.

[45] *http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/current-news-releases/news-release-archive-2005/airport-agrees-to-pay-$540000-for-environmental-violations.html?nav=0.*

[46] *http://www.tftptf.com/New_ATSDR3/RR_DRAFT_RAO.pdf.*

[47] Federal Remediation Technologies Roundtable Abstracts of Remediation Case Studies, Volume 3 *http://epa.gov/tio/download/frtr/abstractsvol3.pdf.*

hydrant system underground piping. The station was cited twice in the 1990s for contaminating soil and groundwater under this fuel facility due to leaking tanks or fuel spills. An extensive environmental remediation effort is underway in 2014 to clean this site. Contamination from many of the releases combined and migrated to form a single plume.

In the 2011 proposed UST regulation, EPA also provided details on several previous releases that occurred from field-constructed tanks. Since that time, EPA identified additional anecdotal information on releases from field-constructed tanks. At Adak Island, Alaska's Tank Farm A, records show fuel was released at various times from 21,000 to 420,000 gallon field-constructed tanks and piping. As of 2014, all tanks have been removed, but the former fuel farm is still undergoing remediation through long term monitoring and monitored natural attenuation.[48] Also at Adak Island, an overfill during a fuel transfer caused 142,800 gallons of diesel fuel to leak from a 4.8 million gallon underground field-constructed tank into the immediate and surrounding environment, causing harm to native wildlife.[49]

Releases can have a major impact on human health and the environment. Release prevention equipment, regular release detection tests, operator training, periodic walkthrough inspections, and proper operation and maintenance are keys to preventing and quickly identifying releases before they contaminate the surrounding environment. This final UST regulation adds these requirements for airport hydrant systems and field-constructed tanks in order to help prevent and quickly detect leaks from these systems into the environment.

Definition of an Airport Hydrant System

The 1988 UST regulation did not provide a definition for airport hydrant system. In the 2011 proposed UST regulation, EPA provided a definition of an airport hydrant system to clarify what components would be regulated. However, that definition was based on an airport hydrant system that received fuel at a single delivery point, designed with all components operating in tandem, and included only the immediate piping and tank directly feeding the airport hydrant piping. To clarify for owners and operators, EPA presented scenarios of typical airport hydrant systems in a guidance document provided during the public comment period.

After publishing the 2011 proposed UST regulation, EPA met with stakeholders to gather more information on airport hydrant system design and operation.[50] [51] EPA also provided another iteration of the schematics that contained better defined airport hydrant system scenarios. However, some commenters still were confused about which specific components of an airport hydrant system would be regulated.[52]

Many commenters requested that EPA provide guidance on how to perform the calculations to determine whether the airport hydrant system meets the definition of an underground storage tank and requested clarification of system components. In response to these comments, EPA is providing guidance below.

In order for an airport hydrant system to be subject to the final UST regulation, it must first meet the definition of an underground storage tank. Airport hydrant systems are not regulated UST systems under 40 CFR part 280, unless 10 percent or more of the total capacity of the system is beneath the surface of the ground. When performing the calculation, include all tanks and underground piping that are part of the airport hydrant system. An airport hydrant system may have one or more of the following connected together: Aboveground tanks, underground tanks, field-constructed tanks, or factory constructed tanks. Below are two examples. Note that aboveground piping is not included when calculating the total volume.

Example 1: A 1 million gallon aboveground storage tank (AST) connected to underground piping with a capacity of 100,000 gallons does not meet the definition of an UST, as explained below:

1 million gallons (AST) + 100,000 gallons (underground pipe) = 1.1 million gallons total volume

1.1 million gallons × 10% = 110,000 gallons

The volume of the underground piping (100,000 gallons) is less than 10 percent of the total volume of the tanks and underground piping (110,000 gallons).

Example 2: A 2 million gallon AST feeds two 100,000 gallon field-constructed underground storage tanks and two 50,000 gallon underground tanks constructed in the factory which feed 100,000 gallons of underground hydrant piping. Calculating these values yields a total system capacity of 2,400,000 gallons with 400,000 gallons underground. More than 16% of this airport hydrant system is underground making it an UST.

In response to comments on the proposed definition, EPA is clarifying the definition of an airport hydrant system in this final UST regulation. EPA determined that multiple tanks grouped or interconnected together can function as one system to fuel an airport hydrant system. EPA agrees with commenters that it would not be feasible to separate these tanks to define an airport hydrant system. EPA also found that other tanks not directly connected to the underground airport hydrant piping also could feed the airport hydrant system. The Agency is concluding that an airport hydrant system may consist of interconnected aboveground and underground storage tanks (that could be constructed in the factory or field-constructed) and piping that function as integral and interchangeable components of the fueling system. Field-constructed tanks that are part of the airport hydrant system are treated as part of the airport hydrant system and not independent UST systems that are field-constructed. The airport hydrant system begins when regulated substance enters from an external source such as a pipeline, barge, rail car, or other motor vehicle carrier, but does not include the external source. Airport hydrant systems use large diameter piping and operate at pressures higher than those of a conventional UST. This final definition alleviates stakeholder uncertainty on which components of an airport hydrant system must meet the UST regulation by including all integral components that form an airport hydrant system and deliver fuel to the aircraft. These systems include underground piping and ASTs or USTs that hold aircraft fuel (for example, settling tanks or product recovery tanks). They do not include tanks or underground piping not storing aircraft fuel (for example, additive tanks) or tanks and underground piping not connected to the airport hydrant system (for example, a system that fuels an emergency power generator for a pump house). In addition, EPA is aware there may be instances where an airport hydrant system might include permanently installed dispensing

[48] Tank Farm A *http://dec.alaska.gov/Applications/SPAR/CCReports/Site_Report.aspx?Hazard_ID=686.*

[49] *http://www.darrp.noaa.gov/northwest/adak/pdf/ADAK_DARPEA_FINAL_Draft%20PDF.pdf.*

[50] January 28, 2012, March 29, 2012, and October 19, 2012 meetings with representatives from Airlines for America.

[51] February 28, 2013 and March 18, 2013 meetings with DoD's Defense Logistics Agency Energy.

[52] *Airport Hydrant Systems Scenarios Revised,* dated February 28, 2012.

equipment at the end of the hydrant piping instead of a fill stand. However, since these systems still operate under high pressure and contain large diameter piping, we consider them to be airport hydrant systems.

Definition of a Field-Constructed Tank

The preamble to the 1988 UST regulation described a field-constructed tank as a tank usually constructed of steel or concrete and shaped like flat vertical cylinders, with a capacity of greater than 50,000 gallons. Tanks that are primarily factory built, but assembled in the field, are considered factory built tanks. For example, welding two halves of a factory constructed tank together in the field does not qualify the tank as a field-constructed tank. Several commenters requested EPA define field-constructed tank in the final UST regulation in order for implementing agencies and owners and operators to know which tanks are applicable. While EPA thinks this term is self-evident, this final UST regulation defines field-constructed tank as a tank constructed in the field. For example, a tank constructed of concrete that is poured in the field, or a steel or fiberglass tank primarily fabricated in the field is considered field-constructed. Please note this definition excludes those tanks with components primarily manufactured in a factory with minimal assembly in the field. EPA considers those tanks are factory built tanks. Field-constructed tanks vary from sizes smaller than 50,000 gallons to sizes very large in capacity. Large capacity tanks may exceed size or shape limitations that prohibit transportation of the tank in whole to the UST site. Field-constructed tanks present an engineering, design, or transportation concern that cannot be addressed by fabrication in a factory or are more ideally addressed through in-field construction. This definition includes tanks that are mounded or partially buried, such as those defined in 40 CFR part 112, if 10 percent or more of the volume of the system is beneath the ground's surface or otherwise covered with earthen material. EPA considers a field-constructed tank that is part of a wastewater treatment system to be partially excluded from the final UST regulation according to § 280.10(c). See section C–3 for additional information on the partial exclusion for wastewater treatment tank systems.

Universe of Field-Constructed Tanks and Airport Hydrant Systems Affected

UST systems with field-constructed tanks are generally very large and, in the event of a release, pose a substantial threat to human health and the environment. Typical tank sizes range from 20,000 gallons to greater than 2 million gallons. EPA is aware of approximately 330 UST systems with field-constructed tanks owned by the Department of Defense and 12 field-constructed tanks owned by the Department of Energy (DOE).

One commenter objected to EPA regulating airport hydrant systems because the 2011 proposed UST regulation addressed airport hydrant systems at military facilities and did not include systems at commercial airports. When issuing the 2011 proposed UST regulation, EPA thought the universe of these systems was mainly owned by DoD, based on information from DoD and commercial airport representatives. The 2011 proposed UST regulation also assumed the universe included two commercial airports with airport hydrant systems. Airlines for America (A4A, formerly known as Air Transport Association of America, Inc.) provided additional information during the public comment period that suggested nine commercial airports would be affected by the final UST regulation. As a result of the comments received, EPA did extensive research to confirm which commercial airports might be affected by the final UST regulation. EPA met with personnel from DoD and from eight of the nine suggested commercial airport facilities to gather additional information and determine the universe of airport hydrant systems that would have to comply with the final UST regulation.[53] [54] [55] [56] Additionally, EPA listened to concerns and answered questions about the 2011 proposed UST regulation. EPA also met with release detection vendors to determine whether commercial airports and DoD facilities could achieve release detection compliance within the specified time frames.[57] [58] [59] EPA concluded that of the nine airports A4A named, eight would possibly be affected by the final UST regulation. Based on these meetings, EPA found that most of the commercial airport hydrant systems have release prevention and detection equipment currently installed on them and airport personnel are already performing various activities that can be modified to meet the final UST regulation.

Process for Obtaining Public Comment

One commenter suggested that EPA:

- Did not follow all requirements to allow stakeholder input prior to issuing the 2011 proposed UST regulation
- Did not allow stakeholders adequate time to provide comments
- Failed to follow the correct public notice procedures
- Failed to inform stakeholders of two commercial airports that might be affected by the final UST regulation
- May have led commercial airport stakeholders to doubt that any commercial airport hydrant systems would be affected by the final UST regulation

The commenter also suggested EPA should withdraw the 2011 proposed UST regulation because the administrative record and resulting proposal conflicted with Executive Order 13563 (*Improving Regulation and Regulatory Review*).[60]

EPA disagrees with these comments. We performed extensive stakeholder outreach both prior to developing the 2011 proposed UST regulation and during the public comment period. In addition, EPA followed procedures required by the Administrative Procedure Act for providing public notice and requesting public comment through the **Federal Register**. In order to allow additional time for airport authorities to perform a preliminary assessment and respond to the 2011 proposed UST regulation, EPA extended the public comment period by two months as requested by commenters.[61] EPA met with all interested stakeholders who requested meetings, including representatives of commercial airports. EPA carefully researched information provided during the public comment period; this included verifying methods of release detection currently

[53] Discussions With Commercial Airports That May Be Affected By The Final UST Regulation dated February 6, 2013.

[54] Note that EPA did not meet with personnel from Indianapolis International Airport however, A4A and vendors stated that the airport hydrant system is equipped with the necessary equipment to meet requirements in the final UST regulation.

[55] January 28, 2013 and March 29, 2012 meetings with A4A.

[56] February 28, 2013 and March 18, 2013 meetings with DoD's Defense Logistics Agency Energy.

[57] June 20, 2012 and May 19, 2013 meeting with Hansa Consult of North America, LLC.

[58] June 20, 2012 meeting with VISTA Precision Solutions.

[59] August 15, 2012 meeting with Ken Wilcox and Associates.

[60] On January 18, 2011, President Obama issued Executive Order 13563, which directed federal agencies to develop a preliminary plan which outlined the agency's approach for periodically reviewing regulations to determine whether any rules ''should be modified, streamlined, expanded, or repealed so as to make the agency's regulatory program more effective or less burdensome in achieving the regulatory objectives.''

[61] January 5, 2012 request from A4A for a 60-day extension for more time to review and query its membership and potentially affected airports for a more complete understanding of the 2011 proposed UST regulation and potential costs.

APPENDIX B –

EVALUATION OF VOLUMES

Site:	Bulk F-24 System
Date of Evaluation:	2-Feb-2016
System Description:	F-24 is received by barge at the Hotel and Kilo piers at Pearl Harbor, an off-base commercial pipeline, and by over-the-road transport at the TOL at Hickam. Only underground receipt piping after the jurisdicational valves is included in this calculation. Fuel is stored in six BFCUSTs at Red Hill and six field-constructed vertical ASTs; two ASTs at the Upper Tank Farm and four ASTs at Hickam. There is one aboveground PRT and two underground PRTs at Hickam. Fuel is issued at the Hotel and Kilo piers at Pearl Harbor, TFSs at the Upper Tank Farm and Hickam, and two hydrant loops at Hickam. Fuel system piping is aboveground and underground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk JP-5 System
Date of Evaluation:	2-Feb-2016
System Description:	JP-5 is received by barge at the Hotel and Kilo piers at Pearl Harbor and by an off-base commercial pipeline. Only underground receipt piping after the jurisdicational valves is included in this calculation. Fuel is stored in 12 BFCUSTs at Red Hill and one field-constructed vertical AST at the Upper Tank Farm. Fuel is issued at the Hotel and Kilo piers at Pearl Harbor and the TFS at the Upper Tank Farm. Fuel system piping is aboveground and underground.

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Bulk F-76 System
Date of Evaluation: 2-Feb-2016
System Description: F-76 is received by barge at the Hotel, Kilo, and Sierra piers at Pearl Harbor and by an off-base commercial pipeline. Only underground receipt piping after the jurisdicational valves is included in this calculation. Fuel is stored in four BFCUSTs at Red Hill and three field-constructed vertical AST at the Upper Tank Farm. Fuel is issued at the Hotel, Kilo, Mike, and Bravo piers at Pearl Harbor and the TFS at the Upper Tank Farm. Fuel system piping is aboveground and underground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk MP System
Date of Evaluation:	2-Feb-2016
System Description:	MP is received by barge at the Kilo Pier at Pearl Harbor and by an off-base commercial pipeline. Only underground receipt piping after the jurisdicational valves is included in this calculation. Fuel is stored in one field-constructed vertical AST at the Upper Tank Farm. Fuel is issued at the Kilo Pier at Pearl Harbor and the TFS at the Upper Tank Farm. Fuel system piping is aboveground and underground.

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk FOR System 1
Date of Evaluation:	2-Feb-2016
System Description:	FOR is received by barge at the Hotel Pier and and from the reclaim system from BFCUSTs S1224 through S1227. Only underground receipt piping after the jurisdicational valve is included in this calculation. FOR is stored in two shop-fabricated vertical ASTs at the Upper Tank Farm. Fuel is issued via TFS. Fuel system piping is primarily aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk FOR System 2 at Adit 3
Date of Evaluation:	2-Feb-2016
System Description:	FOR is received from the reclaim system from BFCUSTs 2 through 18 and 20 and stored in one shop-fabricated vertical AST at Adit 3. Fuel is issued via TFS. Fuel system piping is primarily aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk Lube Oil System 1
Date of Evaluation:	2-Feb-2016
System Description:	Lube Oil is received by over-the-road transport via TOL and stored in one shop-fabricated horizontal AST. Fuel is issued via TFS. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk Lube Oil System 2
Date of Evaluation:	2-Feb-2016
System Description:	Lube Oil is received by over-the-road transport via TOL and stored in one shop-fabricated horizontal AST. Fuel is issued via TFS. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

(b) (3) (A)

Site: Bulk Diesel System at Facility 5
Date of Evaluation: 2-Feb-2016
System Description: Diesel is received by over-the-road transport at combination TOL/TFSs and stored in two shop-fabricated horizontal ASTs. Fuel is issued via combination TOL/TFSs. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk JPTS System 3 at Facility 9
Date of Evaluation:	2-Feb-2016
System Description:	JPTS is received by over-the-road transport via TOL and stored in one shop-fabricated horizontal AST. Fuel is issued via TFS. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Bulk JPTS System 4 at Facility 9
Date of Evaluation:	2-Feb-2016
System Description:	JPTS is received by over-the-road transport via TOL and stored in one shop-fabricated horizontal AST. Fuel is issued via TFS. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Non-Bulk Mogas System at Facility 1037
Date of Evaluation:	2-Feb-2016
System Description:	Mogas is received by over-the-road transport via direct fill port and stored in two shop-fabricated USTs. Fuel is issued via retail-style dispenser. Fuel system piping is underground.

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Non-Bulk Diesel System at Facility 1037
Date of Evaluation:	2-Feb-2016
System Description:	Diesel is received by over-the-road transport via direct fill port and stored in two shop-fabricated USTs. Fuel is issued via retail-style dispensers. Fuel system piping is underground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Non-Bulk Mogas System 1 at Facility S-169
Date of Evaluation:	2-Feb-2016
System Description:	Mogas is received by over-the-road transport via direct fill port and stored in one shop-fabricated dual-compartment horizontal AST. Fuel is issued via retail-style dispensers. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Non-Bulk Mogas System 2 at Facility S-169
Date of Evaluation: 2-Feb-2016
System Description: Mogas is received by over-the-road transport via direct fill port and stored in one shop-fabricated dual-compartment horizontal AST. Fuel is issued via retail-style dispensers. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Non-Bulk Diesel System 3 at Facility S-169
Date of Evaluation:	2-Feb-2016
System Description:	Diesel is received by over-the-road transport via direct fill port and stored in one shop-fabricated dual-compartment horizontal AST. Fuel is issued via retail-style dispensers. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Non-Bulk Diesel System 4 at Facility S-169
Date of Evaluation: 2-Feb-2016
System Description: Diesel is received by over-the-road transport via direct fill port and stored in one shop-fabricated dual-compartment horizontal AST. Fuel is issued via retail-style dispensers. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Non-Bulk E-85 System at Facility S-169
Date of Evaluation: 2-Feb-2016
System Description: E-85 is received by over-the-road transport via direct fill port and stored in one shop-fabricated horizontal AST. Fuel is issued via retail-style dispensers. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Non-Bulk Mogas System at Facility S-60
Date of Evaluation: 2-Feb-2016
System Description: Mogas is received by over-the-road transport via remote fill port and stored in one shop-fabricated horizontal AST. Fuel is issued via retail-style dispenser. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site:	Non-Bulk Diesel System at Facility S-60
Date of Evaluation:	2-Feb-2016
System Description:	Diesel is received by over-the-road transport via remote fill port and stored in one shop-fabricated horizontal AST. Fuel is issued via retail-style dispenser. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

(b) (3) (A)

Site: Non-Bulk Mogas System at Facility 238
Date of Evaluation: 2-Feb-2016
System Description: Mogas is received by over-the-road transport via remote fill port and stored in one shop-fabricated horizontal AST. Fuel is issued via retail-style dispenser. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)

Site: Non-Bulk Diesel System at Facility 238
Date of Evaluation: 2-Feb-2016
System Description: Diesel is received by over-the-road transport via remote fill port and stored in one shop-fabricated horizontal AST. Fuel is issued via retail-style dispenser. Fuel system piping is aboveground.

Fueling System Details

(b) (3) (A)

Evaluation

(b) (3) (A)