

QUALITY VALIDATION (QV) REPORT

Red Hill Bulk Fuel Storage Facility Defuel

Validation Firm	HDR Environmental, Operations and Construction, Inc.	Repair No.	INC-029
Address	9781 S. Meridian Blvd., Suite 400, Englewood, CO 80112	Repair ID	AFFF.Line.2
Contract No.	FA890315D0007, D.O. FA8903-19-F-0027	Report Date	18 SEP 2023
QV Engineer	(b) (6)		

VALIDATION

Source	PDF Page No.	Facility Geographic Area	Location Reference
NAVFAC	N/A	(b) (3) (A)(b) (3) (A)	(b) (3) (A)(b) (3) (A)
Repair Description	Cross connect to F76 line if feasible.		Source Contract Reference N6247823P2503
Description of Contractor QC Method(s) Used	Methods outlined in detail in CQCP. Pipe butt welds 100% inspection via Radiographic Testing, 100% in-process NDE by VT or MT/PT. Fabricated spools shop-tested hydrostatically and air tested post-assembly. Break tests for concrete used in thrust block. Pull test on roof anchors.		Contractor QC Records Reviewed CQCP and Daily Reports.
Description of QA Validation and Observations	Government Quality Assurance is documented by the QSR's in the daily CQC reports using NAVFAC Form 4296/2. Visually inspected completed installation; matched completed construction against design and material submittals. Reviewed NDE reports. JTF-RH secondary QA and 3rd Party QV completed. JTF-RH QV visually inspected repairs and reviewed contractor QC documentation (Work Plan, submittals, daily reports). Beneficial Occupancy Date: 15 SEP 2023		
Rework Needed		Photo Record Attached	Repair Work Validated as Complete
<input type="radio"/>	Yes	<input checked="" type="radio"/>	No
		See Page 2.	<input checked="" type="radio"/> Yes <input type="radio"/> No

Comments

Contractor removed section of existing (b) (3) (A) downstream of MOV to allow for installation a Class 75 weld neck flange. From the point of connection on the (b) (3) (A) Contractor installed a flange with (b) (3) (A) Flanged piping was routed across the tunnel, stepping to a 14x12-inch reducer to a PVC to steel transition coupling connecting existing (b) (3) (A) retention line. A concrete thrust block was installed to encase the (b) (3) (A) New pipe hangers were installed, with brackets bolted to the tunnel walls to provide seismic restraint. (b) (3) (A) was installed on an existing (b) (3) (A) to facilitate operations. Pipe spools hydrostatically tested for 4 hours at (b) (3) (A) (Class 150) and (b) (3) (A) PSI (Class 75) items NDE inspection report, hydrotest results and weld map/design detail included for reference.

CERTIFICATION

I hereby certify that repair work validated in this report was personally substantiated and this report is true.	QV ENGINEER SIGNATURE	(b) (6)(b) (6)(b) (6)
	DATE	18 SEP 2023

QUALITY ASSURANCE VALIDATION REPORT

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QUALITY ASSURANCE VALIDATION REPORT

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QUALITY ASSURANCE VALIDATION REPORT

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QUALITY ASSURANCE VALIDATION REPORT

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(b) (4)

MAGNETIC PARTICLE EXAMINATION RECORD

(b) (4)

Location: Red Hill Date: 8/14/2023
Job No. 23-195
Code: ASME B 31.3

MATERIAL	MAGNETIZING TECHNIQUE	MAGNETIZING EQUIPMENT
Type: C/S	Prod: <input checked="" type="checkbox"/> AC <input type="checkbox"/> DC Spacing 6"	Mfg.: Contour probe Serial #: 28977
(b) (3) (A)(b) (3) (A)	Amps <u>fixed</u> Coil Dia. _____ Longitudinal Turns <u>n/a</u> Amp Turns _____ Direct <u>n/a</u> Circular <u>n/a</u> Central Conductor <u>n/a</u> Amps <u>n/a</u>	Calibration: 8/14/23 Field Verification By: Pie Gauge UV Meter : n/a MODEL: n/a Serial #: n/a
Geometry <input type="checkbox"/> Pipe <input checked="" type="checkbox"/> Plate <input type="checkbox"/> Rod <input checked="" type="checkbox"/> Other: Fillet Weld	<u>Inspection Medium</u> <input checked="" type="checkbox"/> Dry Powder Color: <u>Grey</u> <input type="checkbox"/> Wet Visible Type Batch No.: <u>19K092</u>	
Item: (b) (3) (A) reducer flange Stage of Mfg.: New	<u>Illumination</u> <input checked="" type="checkbox"/> White <input type="checkbox"/> Ultraviolet	
Surface Condition: As Welded		

Item(s)	Accept	Reject	Item(s)	Accept	Reject	Sketch/Notes
(b) (3) (A)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	(b) (3) (A) (b) (3) (A)
W-3	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
(b) (3) (A)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
W-4	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Performed By: (b) (6) Level: II Date: 8/14/2023 Reviewed By: (b) (6)(b) (6) Date: Page 1 of 1

(b) (4)

LIQUID PENETRANT EXAMINATION RECORD

(b) (4)

Location: Red Hill Page 1 of 1
Job No.: 23-195
Acceptance Standard: ASME B31.3

ITEM: C/S Reducer

MATERIAL		PENETRANT MATERIAL				TECHNIQUE
Type: C/S (b) (3) (A)		BRAND	DESIGNATION	PO#	BATCH #	Preclean Drying Time: 2 min
Surface Condition: <input type="checkbox"/> As Welded <input type="checkbox"/> Ground <input checked="" type="checkbox"/> Other <u>X</u>	Cleaner	Magnaflux	SKC-S		18L05K	Method of Application: Spray
	Penetrant	Magnaflux	SKL-SP2		19G04K	Dwell Time: 10
	Emulsifier	N/A	N/A		N/A	Emulsification Time: N/A
	Developer	Magnaflux	SKD-S2		20L02U	Developing Time: 10
Temperature: <input checked="" type="checkbox"/> 60 F – 125 Other _____		Illumination: <input checked="" type="checkbox"/> White FC <u>150</u> Ultraviolet MW/CM2 _____			E & 1 Control # _____ UV Meter _____ N/A	

Item(s)	Accept	Reject	Sketch/Notes
(b) (3) (A)	<input type="checkbox"/>	<input type="checkbox"/>	PT performed on (b) (3) (A) (b) (3) (A) weld. There were three pin holes spotted at time of inspection on the (b) (3) (A) (b) (3) (A) weld. Repairs done on site. P1 performed after repairs, no indications after repair.
W-1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
(b) (3) (A)	<input type="checkbox"/>	<input type="checkbox"/>	<div style="display: flex; justify-content: space-around;"> <div style="background-color: black; color: white; padding: 5px;">(b) (3) (A)</div> <div style="background-color: black; color: white; padding: 5px;">(b) (3) (A)</div> <div style="background-color: black; color: white; padding: 5px;">(b) (3) (A)</div> </div>
W-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
(b) (3) (A)	<input type="checkbox"/>	<input type="checkbox"/>	
W-2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	

Performed By: (b) (6) (b) (6) Level II

Date: 08/14/2023

Reviewed By: (b) (6) (b) (6)

Date:

(b)

(3)

(A)

(b)

(3)

(A)

(b)

(3)

(A)

(b)

(3)

(A)

(b) (4)

*By code, welds within the view of the radiographic film are subject to evaluation. The existing longitudinal welded seam on the 32-inch piping intersects with the new weld. The seamed pipe weld does not conform to existing code requirements, therefore fails radiographic inspection. Given 1) the existing (b) (3) (A) piping will not operate under pressure and 2) the point of connection weld passed in-process visual testing, the contractor submitted an RFI to allow the Government to accept the repair; Government concurred.

(b) (4)(b) (4) 23-195
(b) (4) 6581723
Date: 8/17/23
Page 1 of 1

FORM NDT-005.1

CUSTOMER (b) (4)		CUST JOB#		SPECIFICATION ASME V		ACCEPTANCE ASME B31.3		1. Single Wall									
PROJECT (b) (3) (A) Red H.I.		DWG. NO.		PROCEDURE WOTDOL REV E		ACC. PROC. B31.3 REV 2015		Panoramic									
RT SOURCE DR 192	FILM AGFA DS	PB SCREENS	PENS: ASTM		SHIMS MAT'L/THKNS		MATERIAL CS		2. Single Wall								
SOURCE STRENGTH 29.8	SIZE 4 1/2 x 17	FRONT .010	TYPE 1B		TECHNIQUE USED 1		THICKNESS (b) (3) (A)		Offset								
FOCAL SPOT SIZE .115	SINGLE LOAD [v]	MIDDLE /	MATERIAL SS		EXPOSURE TIME 2:45		JOINT TYPE But		3. Double Wall								
SFD 16"	DOUBLE LOAD []	BACK .010	LOCATION F		PROCESSING []		PIPE DIA. 32"		4. Double Wall 0/90								
WELD #	VIEW #	GEOMETRIC UNSHARPNESS "UG"	ACCEPT	REJECT	Porosity	Slag Inclusions	Cracks	Lack of Fusion	Lack of Penet.	Undercut	Burn Thru	Suck Back	T.I.	Film Artifact	REMARKS	5. Plate	
FW1	0-1	.020	X														
	1-2		X	/													
	2-3		X	/													
	3-4		X	/													
	4-5		X	/													
	5-6		X														
	6-7		X														
	7-0		X														
	Existing Long Seam	.050	X	X	X	X											
	*See Note																

(b) (4), (b) (6)


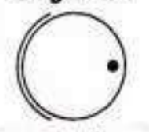
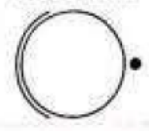

Radiographer: [Signature] Date: 8/17/23 Film Interpreter: [Signature] SNT-TC-1A Level: [Signature] Date of Inspection: 8/17/23 Customer: [Signature]

(b) (4)

RADIOGRAPHIC INSPECTION REPORT

(b) (4) W. O. No.: 23-195
Report No.: GS82923
Date: 8/29/23
Page 1 of 2

FORM NDT-005.1

CUSTOMER (b) (4)		CUST JOB#		SPECIFICATION <u>ASME V</u>		ACCEPTANCE <u>ASME B31-3</u>		1. Single Wall  Panoramic								
PROJECT <u>Red Hill piping</u>		DWG. NO.		PROCEDURE <u>ADTRN</u> REV <u>E</u>		ACC. PROC. <u>B31-3</u> REV <u>2015</u>										
RT SOURCE <u>IR 192</u>	FILM <u>AGFA D5</u>	PB SCREENS	PENS: <u>ASTM</u>	SHIMS MAT'L/THKNS <input checked="" type="checkbox"/>		MATERIAL <u>CS</u>		2. Single Wall  Offset								
SOURCE STRENGTH <u>6.8</u>	SIZE <u>4' X 17'</u>	FRONT <u>.010</u>	TYPE <u>1B</u>	TECHNIQUE USED <u>3</u>		THICKNESS (b) (3) (A)										
FOCAL SPOT SIZE <u>.115</u>	SINGLE LOAD [<input checked="" type="checkbox"/>]	MIDDLE <input checked="" type="checkbox"/>	MATERIAL <u>SS</u>	EXPOSURE TIME <u>1:30</u>		JOINT TYPE <u>Butt</u>		3. Double Wall  Double Wall								
SFD <u>12"</u>	DOUBLE LOAD [<input type="checkbox"/>]	BACK <u>.010</u>	LOCATION <u>F</u>	PROCESSING <input checked="" type="checkbox"/> MANUAL <input type="checkbox"/> AUTOMATIC	PIPE DIA. <u>12"</u>											
WELD #	VIEW #	GEOMETRIC UNSHARPNESS 'UG'	ACCEPT	REJECT	Porosity	Slag Inclusions	Cracks	Lack of Fusion	Lack of Penet.	Undercut	Burn Thru	Suck Back	T.I.	Film Artifact	REMARKS	4. Double Wall 0/90  Elliptical
W1	0-13	-024	X													
	13-26	/	X													
	26-0	/	X													
W2	0-13	-024	X													
	13-26	/	X													
	26-0	/	X													
W3	0-13	-024	X													
	13-26	/	X													
	26-0	/	X													
W4	0-13	-024	X													
	13-26	/	X													
	26-0	/	X													

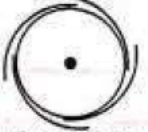



Radiographer: (b) (6) Date: 8/29/23 Film Interpreter: (b) (6) SNT-TC-1A Level: II Date of Inspection: 8/29/23 Customer: _____

(b) (4)

RADIOGRAPHIC INSPECTION REPORT

(b) (4) V. O. No.: 23-195
Report No.: GS 90523
Date: 9/5/23
Page 1 of 2

FORM NDT-005.1

CUSTOMER (b) (4)		CUST JOB#		SPECIFICATION ASME V		ACCEPTANCE ASME B31.3		1. Single Wall									
PROJECT Red Hill P. pip		DWG. NO.		PROCEDURE ASME REV E		ACC. PROC. B31.3 REV 2015											
RT SOURCE IR 192	FILM AGFA D5	PB SCREENS	PENS: ASTM	SHIMS MAT'L/THKNS	MATERIAL CS 1		Panoramic										
SOURCE STRENGTH 578	SIZE 4 1/2 x 17	FRONT .010	TYPE 1B	TECHNIQUE USED 3	THICKNESS (b) (3) (A)		2. Single Wall										
FOCAL SPOT SIZE .111	SINGLE LOAD U	MIDDLE /	MATERIAL SS	EXPOSURE TIME 1:30	JOINT TYPE Butt												
SFD 12" / 14"	DOUBLE LOAD []	BACK .010	LOCATION F	PROCESSING MANUAL	PIPE DIA. (b) (3) (A)		3. Double Wall										
WELD #	VIEW #	GEOMETRIC UNSHARPNESS "UG"	ACCEPT	REJECT	Porosity	Slag Inclusions	Cracks	Lack of Fusion	Lack of Penet	Undercut	Burn Thru	Suck Back	T.I.	Film Artifact	REMARKS	4. Double Wall 0/90	
																	
W5	0-13	.020	X													5. Plate	
	13-24	/	X														
	26-0	/	X													6. Other	
W6	0-13	.020	X														
	13-24	/	X														
	26-0	/	X														
W7	0-13	.020	X														
	13-24	/	X														
	26-0	/	X														
W8	0-13	.020	X														
	13-24	/	X														
	26-0	/	X														

(b) (6)

II

9/5/23

(b) (4)

RADIOGRAPHIC INSPECTION REPORT

(b) (4) W. O. No.: 23-195
Report No.: 6582923
Page 2 of 2

WELD #	VIEW #	GEOMETRIC UNSHARPNESS 'UG'	ACCEPT	REJECT	Porosity	Slag Inclusions	Cracks	Lack of Fusion	Lack of Penet.	Undercut	Burn Thru	Suck Back	T. L.	Film Artifact	REMARKS
W9	0-13	.020	X	/											
	13-26	/	X	/											
	26-0	/	X	/											
W10	0-13	.020	X	/											
	13-26	/	X	/											
	26-0	/	X	/											
W11	0-13	.020	X	/											
	13-26	/	X	/											
	26-0	/	X	/											
W12	0-13	.020	X	/											
	13-26	/	X	/											
	26-0	/	X	/											
W13	0-13	.020	X	/											
	13-26	/	X	/											
	26-0	/	X	/											

(b) (6)

#

8/29/23

(b) (4)

RADIOGRAPHIC INSPECTION REPORT

(b) (4) W. O. No.: 23-195
Report No.: GS 90523
Page 2 of 2

WELD #	VIEW #	GEOMETRIC UNSHARPNESS 'UG'	DEFECTS											REMARKS			
			ACCEPT	REJECT	Porosity	Slag Inclusions	Cracks	Lack of Fusion	Lack of Penet.	Undercut	Burn Thru	Suck Back	T. I.		Film Artifact		
W14	0-13	.020	X														
	13-26	/	X														
	26-0	/	X														
W15	0-13	.020	X														
	13-26	/	X		/				/								
	26-0	/	X		/				/								
W16	0-13	.020	X														
	13-26	/	X														
	26-0	/	X														
W17	0-13	.020	X														
	13-26	/	X														
	26-0	/	X														
W18	0-13	.020	X														
	13-26	/	X		/												
	26-0	/	X		/												
W19	0-14	.020	X														
	14-28	/	X		/												
	28-0	/	X		/												

(b) (6)

Film Interpreter

SNT-TC-1A Level

II

9/5/23

Date of Inspection

(b) (4)

MAGNETIC PARTICLE EXAMINATION RECORD

Client: (b) (4)	Location: RED HILL	Date 9/05/2023
P.O. No.: NA	Job No. 23-195	
(b) (4) Procedure: NDT 003.2 rev D	Code: ASME B31.3	

Report No.: GS090523

MATERIAL	MAGNETIZING TECHNIQUE	MAGNETIZING EQUIPMENT
(b) (3) (A) Dead Leg Thickness: .280"	Prod: <input checked="" type="checkbox"/> AC <input type="checkbox"/> DC Spacing <u>6"</u> Amps <u>fixed</u> Coil Dia. _____ Longitudinal Turns <u>n/a</u> Amp Turns _____ Direct <u>n.a</u> Circular <u>n/a</u> Central Conductor <u>n/a</u> Amps <u>n/a</u>	Mfg.: Contour probe Serial #:340 Calibration Date 12/20/23 Field Verification By: Pie Gauge UV Meter : n/a MODEL: n/a Serial #: n/a
Geometry <input checked="" type="checkbox"/> Pipe <input type="checkbox"/> Plate <input type="checkbox"/> Rod <input type="checkbox"/> Other: _____		
Item: Slip-on Flange		
Stage of Mfg.: As Welded	<u>Inspection Medium</u> <input checked="" type="checkbox"/> Dry Powder <input type="checkbox"/> Wet Visible Color: <u>Grey</u>	Type Batch No.: <u>8A</u>
Surface Condition: Smooth	<u>Illumination</u> <input checked="" type="checkbox"/> White <input type="checkbox"/> Ultraviolet	

Item(s)	Accept	Reject	Item(s)	Accept	Reject	Sketch/Notes
W20: (b) (3) (A)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	MT performed on (b) (3) (A) weld revealed no relevant indications.
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	

Performed By: (b) (6) Level: II Date 9/5/2023 Reviewed By: Date: Page 1 of 1

(b) (3) (A)

(b)

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(b) (4)

PNEUMATIC TEST PROCEDURE

1. Installed **(b) (3) (A)** piping connections.
2. Using Portable air compressor threaded air hose to **(b) (3) (A)** piping
3. Introduce compressed air to **(b) (3) (A)**
4. Check all valves, fittings, joints, flanges, etc. for air leaks using soap suds.
5. Continue to soap all valves, fittings, joints, flanges, etc. for air leaks.
6. Once confirmed pneumatic pressure has held for required duration, release pressure.

TEST FORM

TEST DATA

Specification		
Equipment	Portable Compressor	
Subcontractors	None	
Test Fluid	Air	
Preliminary Test Pressure	PSIG	(b) (3) (A)
Test Pressure	PSIG	(b) (3) (A)
Test Duration	1 Hour	Release Pressure After Comp Testing
	Test Start	Test End
Date	9-10-2023	9-10-2023
Time	1:50 pm	3:50 pm
Temperature		
Weather		
Pressure	(b) (3) (A)	(b) (3) (A)

EXAMINATION PERSONNEL

(b) (6)(b) (6)
NAME
(b) (4)(b) (4)(b) (4)(b) (4)
COMPANY
Supervisor
TITLE
NAME
COMPANY
TITLE
NAME
COMPANY
TITLE

(b) (4)

TEST RESULTS

(b)

(3)

(A)

(b)

(3)

(A)

(b) (4)

PNEUMATIC TEST PROCEDURE

1. Installed **(b) (3) (A)** piping connections.
2. Using Portable air compressor threaded air hose to **(b) (3) (A)** piping
3. Introduce compressed air to **(b) (3) (A)**
4. Check all valves, fittings, joints, flanges, etc. for air leaks using soap suds.
5. Continue to soap all valves, fittings, joints, flanges, etc. for air leaks.
6. Once confirmed pneumatic pressure has held for required duration, release pressure.

TEST FORM

TEST DATA

Specification		
Equipment	Portable Compressor	
Subcontractors	None	
Test Fluid	Air	
Preliminary Test Pressure	PSIG	(b) (3) (A)
Test Pressure	PSIG	(b) (3) (A)
Test Duration	1 Hour	Release Pressure After Comp
	Testing	
	Test Start	Test End
Date	9-12-2023	9-12-2023
Time	3:27 pm	5:28 pm
Temperature		
Weather		
Pressure	(b) (3) (A)	(b) (3) (A)

EXAMINATION PERSONNEL

(b) (6)(b) (6)
NAME
(b) (4)(b) (4)(b) (4)(b) (4)(b) (4)
COMPANY
Supervisor
TITLE
NAME
COMPANY
TITLE
NAME
COMPANY
TITLE

(b) (4)

TEST RESULTS

(b) (3) (A)
(b) (3) (A)