# Joint Task Force-Red Hill

## Monthly Quality Validation Working Group Meeting



27 April 2023

This brief is classified: UNCLASSIFIED

#### UNCLASSIFIED

#### Discussion up to: UNCLASSIFIED

This presentation is pre-decisional and not subject to FOIA

(b) (3) (A)

As of 06 0900 OCT 22



# **BACKGROUND/DESCRIPTION**

- On January 27, 2023, the Hawai'i Department of Health (DOH) conditionally approves the Independent Third-Party Quality Validation Plan, with the following conditions:
  - Para #1, Provide resumes of those working QV (31 Jan) OUTSTANDING
  - Para #2, Provide QV Plan Addendum detailing testing requirements that will follow repairs (28 Feb)
  - Para #3a, Provide DoH/EPA our first monthly QV report (23 Feb)
  - Para #3b, Provide list of dates of major repair/inspection events that DoH/EPA can attend (23 Feb)
  - Para #4, Provide final report (last repair + 30 days)



| NO. | Validation Complete   | Date      | Location    |
|-----|---|-----------|-------------|
| 32  | Tunnel wall leakage leading to coating and corrosion issues <sup>(b) (3) (A)</sup> . Assess pipe integrity and repair pipe as appropriate.  | 19 Apr 23 | (b) (3) (A) |
| 33  | pipe with unknown crack in exterior surface. Assess pipe integrity and repair pipe as appropriate.  | 19 Apr 23 |             |
| 42  | (b) (3) (A) carbon steel low point drain valve is located on . Valve classification is unknown. Replace valve with a Class 150 ball valve.  | 19 Apr 23 |             |
| 111 | <sup>(b) (3) (A)</sup> ball valve located on the (b) (3) (A)<br>pipeline is not plugged off. This valve is susceptible to being<br>accidentally opened if something were to impact the ball valve handle<br>causing it to open. Install plug. | 19 Apr 23 |             |
| 116 | The (b) (3) (A) tank isolation valve on the (b) (3) (A) has product staining on the valve body. This is indicative of a prolonged slow weep possibly from valve plugs in the body. Clean valve body and monitor for drips and weeps.          | 19 Apr 23 |             |
| 117 | The (b) (3) (A) is constructed out of a combination of hard pipe and hoses. Replace connections and hoses with hard pipe.   | 19 Apr 23 |             |



| NO. | Validation Complete  | Date        | Location |  |  |  |  |
|-----|--|-------------|----------|--|--|--|--|
| 120 | Three temporary pipe clamps on (b) (3) (A) pipeline within trench<br>(b) (3) (A) . Pipe clamp lengths are (b) (3) (A)<br>Also, UTT indicates pipe wall loss in this area over 55% metal loss is<br>present. Repair pipe. | (b) (3) (A) |          |  |  |  |  |
| 126 | (b) (3) (A) low point drain valve is missing a plug. Provide plug on valve. Facility Personnel corrected this finding during our inspection. 19 Apr 23   |             |          |  |  |  |  |
| 127 | (b) (3) (A) low point drain valve is missing a plug (b) (3) (A)<br>. Provide plug on valve. Facility Personnel corrected this finding during our inspection.   | 19 Apr 23   |          |  |  |  |  |
| 130 | The(b) (3) (A) valve, located outside of the secondary containment, has a loose fastener. Tighten fastener.  | 21 Apr 23   |          |  |  |  |  |
| 132 | Actively dripping, medium-high corrosion, metal to metal contact, corroded at pipe support interface, photo taken for how wall support should look, labeled by others. Replace support.                                  | 21 Apr 23   |          |  |  |  |  |
| 133 | Highly corroded and deformed, no contact w/ pipe, labeled by <sup>(b) (4)</sup> .<br>Replace support.  | 21 Apr 23   |          |  |  |  |  |
| 134 | Corroded, in contact w/ pipe, labeled by <sup>(b) (4)</sup> Replace support.   | 21 Apr 23   |          |  |  |  |  |



| NO. | Validation Complete  | Date      | Location |  |  |  |  |  |
|-----|--|-----------|----------|--|--|--|--|--|
| 135 | Corroded, intact, metal to metal contact, only top anchor to wall present, lower part of bracket not in contact w/ wall. Replace support. 21 Apr 23 (b) (3 |           |          |  |  |  |  |  |
| 136 | Not supporting pipe, no anchorage to wall at top, metal to metal<br>contact. API 570: Support anchor dislodged from tunnel wall. Replace21 Apr 23support.  |           |          |  |  |  |  |  |
| 137 | No guide, support broken so pipe is at end of arm. API 570: Missing pipe clamp bolt (no isolation Teflon pad). Replace support.                            | 21 Apr 23 |          |  |  |  |  |  |
| 138 | Bottom of bracket deformed from impact. Replace support.   | 21 Apr 23 |          |  |  |  |  |  |
| 139 | No contact w/ pipe. Replace support or modify support to properly support pipe.  | 21 Apr 23 |          |  |  |  |  |  |
| 140 | No contact w/ pipe. Replace support or modify support to properly support pipe.  | 21 Apr 23 |          |  |  |  |  |  |
| 141 | No sleeve on U-bolt, U-bolt corroded to delamination, significant corrosion at baseplate and anchors. Replace support.                                     | 21 Apr 23 |          |  |  |  |  |  |
| 142 | Front support flange bent from apparent impact, U-bolt displaced on pipe, not U-shaped. API 570: Loose U-bolt. Replace support.                            | 21 Apr 23 |          |  |  |  |  |  |



| NO. | Validation Complete  | Date     | Location |  |  |  |  |  |
|-----|--|----------|----------|--|--|--|--|--|
| 143 | Support completely deformed, removed from baseplate. API 570:<br>Damaged pipe support (impacted by a moving vehicle). Replace 21 Apr 23 (b)<br>support.  |          |          |  |  |  |  |  |
| 187 | Three separate corrosion findings < apart. (b) (3) (A)<br>associated with pipe support. Remaining thickness < the structural<br>minimum thickness per API 574. (b) (3) (A)<br>are combined into one site. Fitness for service<br>(FFS) assessment and repair if necessary. |          |          |  |  |  |  |  |
| 189 | 9 Dent with crease; Approximate dent depth measurement: 0.300". Dent<br>located at bottom of a tee and has has a crease. Fails FFS Level 2<br>assessment. FFS assessment and repair if necessary.  |          |          |  |  |  |  |  |
| 190 | Corrosion under bubble coating. Not able to assess without coating removal.  | 3 Apr 23 |          |  |  |  |  |  |
| 191 | Dent, crosses long seam. FFS assessment and repair if necessary.   | 3 Apr 23 |          |  |  |  |  |  |
| 192 | Dent, on long seam. FFS assessment and repair if necessary.  | 3 Apr 23 |          |  |  |  |  |  |
| 193 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.  | 3 Apr 23 |          |  |  |  |  |  |



| NO. | Validation Complete   | Date     | Location    |
|-----|---|----------|-------------|
| 195 | Double dent. FFS assessment and repair if necessary.                              | 3 Apr 23 | (b) (3) (A) |
| 196 | Dent, on long seam. FFS assessment and repair if necessary.                       |          |             |
| 197 | Dent, adjacent to girth weld. FFS assessment and repair if necessary.             | 3 Apr 23 |             |
| 198 | Dent, on long seam. FFS assessment and repair if necessary.                       | 3 Apr 23 |             |
| 199 | Dent, on long seam. FFS assessment and repair if necessary.                       | 3 Apr 23 |             |
| 200 | Dent, on long seam. FFS assessment and repair if necessary.                       | 3 Apr 23 |             |
| 201 | Dent, on long seam. FFS assessment and repair if necessary.                       | 3 Apr 23 |             |
| 202 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary. | 3 Apr 23 |             |
| 203 | Double dent. FFS assessment and repair if necessary.                              | 3 Apr 23 |             |



| NO. | Validation Complete   | Date     | Location |  |  |  |  |
|-----|---|----------|----------|--|--|--|--|
| 204 | Dent, on long seam. FFS assessment and repair if necessary. 3 Apr 23 (b) (        |          |          |  |  |  |  |
| 205 | Dent, on long seam. FFS assessment and repair if necessary. 3 Apr 23              |          |          |  |  |  |  |
| 206 | Double dent. FFS assessment and repair if necessary.                              | 3 Apr 23 |          |  |  |  |  |
| 207 | Double dent. FFS assessment and repair if necessary.                              | 3 Apr 23 |          |  |  |  |  |
| 208 | Dent, on long seam. FFS assessment and repair if necessary.                       | 3 Apr 23 |          |  |  |  |  |
| 209 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary. | 3 Apr 23 |          |  |  |  |  |
| 210 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary. | 3 Apr 23 |          |  |  |  |  |
| 211 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary. | 3 Apr 23 |          |  |  |  |  |
| 212 | Double dent. FFS assessment and repair if necessary.                              | 3 Apr 23 |          |  |  |  |  |



| NO. | Validation Complete  | Date     | Location    |
|-----|--|----------|-------------|
| 213 | Dent, on long seam. FFS assessment and repair if necessary.  | 3 Apr 23 | (b) (3) (A) |
| 214 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.  | 3 Apr 23 |             |
| 215 | Dent, on long seam. FFS assessment and repair if necessary.  | 3 Apr 23 |             |
| 216 | Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.  | 3 Apr 23 |             |
| 217 | Dent, on long seam. FFS assessment and repair if necessary.  | 3 Apr 23 |             |
| 218 | Poor Ultrasonic Reading; Crosses Long Seam. Estimated Depths of 25.4% and 27.4%; , remove coating and inspect. FFS assessment and repair if necessary. | 3 Apr 23 |             |
| 219 | ILI data reports metal loss of 31.5%. Not able to assess without coating removal remove coating and inspect. FFS assessment and repair if necessary.   | 3 Apr 23 |             |
| 220 | ILI data reports metal loss of 32.0%. Not able to assess without coating removal. remove coating and inspect. FFS assessment and repair if necessary.  | 3 Apr 23 |             |



| NO. | Validation Complete  | Date     | Location    |
|-----|--|----------|-------------|
| 222 | Metal loss of 33.0%. Not able to assess without coating removal.   | 3 Apr 23 | (b) (3) (A) |
| 223 | Heavy corrosion reported under sleeve from ILI data. Heavy corrosion<br>also on sleeve, ILI data reports metal loss of 45.8%, Sleeve is wide. Corrosion extends through long seam on sleeve. Need coating<br>removed to assess. , remove coating and inspect. FFS<br>assessment and repair if necessary. | 3 Apr 23 |             |
| 224 | Dent/gouge measured 0.130" (0.120" dent + 0.010" gouge). FFS assessment and repair if necessary.   | 3 Apr 23 |             |
| 225 | Dent/gouge measured 0.180" (0.160" dent + 0.020" gouge). FFS assessment and repair if necessary.   | 3 Apr 23 |             |
| 226 | Metal loss of 43%. Not able to assess without coating removal.   | 3 Apr 23 |             |
| 227 | Pitting estimated at 0.050". Not able to assess without coating removal.   | 3 Apr 23 |             |



| NO. | Validation Complete  | Date     | Location    |
|-----|--|----------|-------------|
| 228 | Pitting estimated at 0.050". Not able to assess without coating removal. | 3 Apr 23 | (b) (3) (A) |
| 229 | Dent with depth of 0.165". FFS assessment and repair if necessary.       | 3 Apr 23 |             |
| 230 | Dent with depth of 0.145". FFS assessment and repair if necessary.       | 3 Apr 23 |             |



# **Rework - Quality Validation Report**

| NO. | Validation Complete | Date | Location |
|-----|---------------------|------|----------|
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |



# **Relief - Quality Validation Report**

| NO. | Validation Complete | Date | Location |
|-----|---------------------|------|----------|
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |
|     |                     |      |          |



#### **Transition to Microsoft Teams**

|   |                                    | QUALITY VALIDATION (                   | QV) REPORT                        |                | QUALITY ASSURANCE VALIDATION REPORT  |
|---|------------------------------------|--|-----------------------------------|----------------|--|
|   | 1                                  | Red Hill Bulk Fuel Storage Fac         | cility Defuel                     |                | Red Hill Bulk Fuel Storage Facility Defuel   |
| Validation Firm                                     |                                    |  | Inc. Repair<br>No.                |                | and the second |
| Address   | 9781 S. Meridian Bh                | vd., Suite 400, Englewood, CO          |                                   |                |  |
| Contract No.  | FA890315D0007, D                   | O. FA8903-19-F-0027                    | Report XX<br>Date                 | FEB 2023       |  |
| QV Engineer   | (b) (6)                            |  |                                   |                |  |
|   |                                    | VALIDATION                             |                                   |                |  |
| Source  | PDF Page N                         | o. Facility Geograph                   | nic Area Location Rel             | ference        |  |
| Repair Description                                  | t<br>Codes & Criteria:             | 1                                      | Source Contract<br>Reference      |                |  |
| Description of<br>Contractor QC<br>Method(s) Used   |                                    |  | Contractor QC<br>Records Reviewed |                | Caption  |
| Description of QA<br>Validation and<br>Observations | 5                                  |  |                                   |                |  |
| Rework  | Final acceptance by go<br>k Needed | Photo Record Attacher                  | d Repair Work Validate            | ed as Complete |  |
| O Yes   | No No                              |  | Yes                               | O No           |  |
| Comments  |                                    | CERTIFICATION<br>QV ENGINEER SIGNATURE |                                   |                |  |
| eport was personally sub<br>eport is true.          | bstantialed and this               | DATE                                   | xx FEB 2023                       |                | ើងplipn  |
|   |                                    |  | 1                                 |                |  |



#### **Testing & Inspection Dates**

| NO. | Testing & Inspection Dates         | Date       | Location    |
|-----|------------------------------------|------------|-------------|
| 1   | (b) (3) (A) Test #2 (36-hour test) | 3-5 May 23 | (b) (3) (A) |
| 2   |                                    |            |             |
| 3   |                                    |            |             |
| 4   |                                    |            |             |



#### Around the Horn

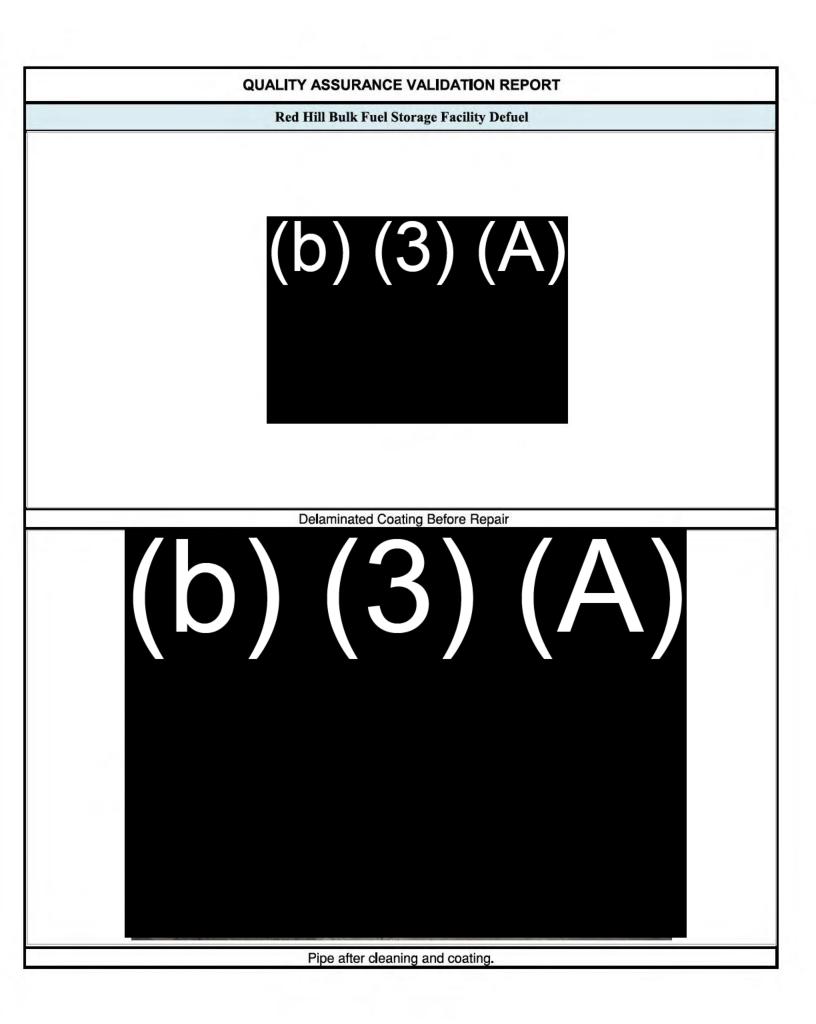
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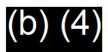
#### AGENCIES:

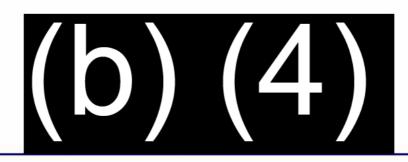
- NAVAL FACILITIES ENGINEERING SYS COMMAND-HAWAII (NAVFAC-HI)
- JOINT TASK FORCE-RED HILL (JTF-RH)
- ENVIRONMENTAL PROTECTION AGENCY (EPA)
- DEPARTMENT OF HEALTH (DOH)
- FLEET LOGISTIC CENTER-PEARL HARBOR (FLC-PH)
- DEFENSE LOGISTIC AGENCY (DLA)
- COMMANDER, NAVY REGION-HAWAII (CNR-HI)
- ENGINEERING AND EXPEDITIONARY WARFARE CENTER (EXWC)
- NAVY-OTHER



|  | QUALITY VALIDATION (QV) REPORT              |           |              |                              |   |              |                         |                          |                          |        |  |  |
|--|---|-----------|--------------|------------------------------|---|--------------|-------------------------|--------------------------|--------------------------|--------|--|--|
|  |   |           | 1            | Red Hill B                   | ulk Fuel Storage Fac                            | ility Defuel | 1                       |                          |                          |        |  |  |
| Vali   | dation Firm                                 | HDR Env   | ironmenta    | l, Operatio                  | ns and Construction,                            | Inc.         |                         | Repair<br>No.            | 32                       |        |  |  |
|  | Address                                     | 9781 S. N | /leridian Bl | vd., Suite                   | 400, Englewood, CO                              | 80112        |                         |                          | (b) (4) <sub>HT.</sub> ( | 03     |  |  |
| С  | Contract No.                                | FA89031   | 5D0007, D    | O. FA8903-19-F-0027          |   |              |                         | Report<br>Date           |                          | 023    |  |  |
| Q  | V Engineer                                  | (b) (6    |              | Phone (b) (6)                |   |              | <sub>Emai</sub> (b) (6) |                          |                          |        |  |  |
| VALIDATION   |   |           |              |                              |   |              |                         |                          |                          |        |  |  |
| Source PDF Page  |   |           | PDF Page N   | Io. Facility Geographic Area |   |              | Location Reference      |                          |                          |        |  |  |
| (b) (4)  |   | 393       |              |                              | (b) (3) (A)                                     |              |                         |                          |                          |        |  |  |
|  |   |           |              |                              | coating and corrosio<br>rity and repair pipe a  |              | Sour                    | ce Contract<br>Reference | N/A for in<br>labor.     | -house |  |  |
| Description of<br>Contractor QC<br>Method(s) Used Two-party integrity                                  |   |           |              |                              | verification by FLC personnel. Records Reviewed |              |                         |                          |                          | (4)    |  |  |
| (b) (4) site visit comments issued 21 FEB 2023.<br>Description of QA<br>Validation and<br>Observations |   |           |              |                              |   |              |                         |                          |                          |        |  |  |
|  | Rework                                      | Needed    | plance by ge |                              | Date: 13 APR 2023<br>Photo Record Attached      | 1            | Repair                  | r Work Vali              | dated as Co              | mplete |  |  |
| 0  | Yes   | ullet     | No           |                              | See Page 2.                                     |              | $\odot$                 | Yes                      | 0                        | No     |  |  |
| Comments<br>JTF-RH/QV confirmed back side of pipe has been coated, MAR 2023.<br>CERTIFICATION          |   |           |              |                              |   |              |                         |                          |                          |        |  |  |
|  | tify that repair<br>personal <b>l</b> y sub |           |              | QV ENG                       | INEER SIGNATURE                                 | (b) (        | ( <b>6</b> )            |                          |                          |        |  |  |
| report is true   | *   |           |              |                              | DATE  | 19 APR 2     |                         |                          |                          |        |  |  |







June 28, 2022

#### Inspection of Red Hill Fuel Oil (b) (3) (A)

#### Introduction

(b) (4) was contracted to perform a visual evaluation of Red Hill Fuel Reclamation Line (b) (3) (A). This inspection included visually inspecting the pipeline for external conditions such as active corrosion, pitting, dents, and / or physical damage. This inspection defined the corrosion and pitting into three category levels.

- 1 Minor; corrosion and / or pitting is measured to be <20% of pipe wall thickness
- 2 Moderate; corrosion and / or pitting is measured to be >20% but <50% of pipe wall thickness
- 3 Severe; corrosion and / or pitting is measured to be at 50% or greater of pipe wall thickness.

#### Summary of Findings

FOR Coating (b) (3) (A) was a required defueling repair & was completed as Repair #32.

• Stations (b) (3) (A) Needs proper cleaning and recoating on all bare piping.



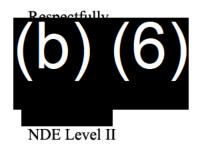
06/28/22 Page 2 of 6



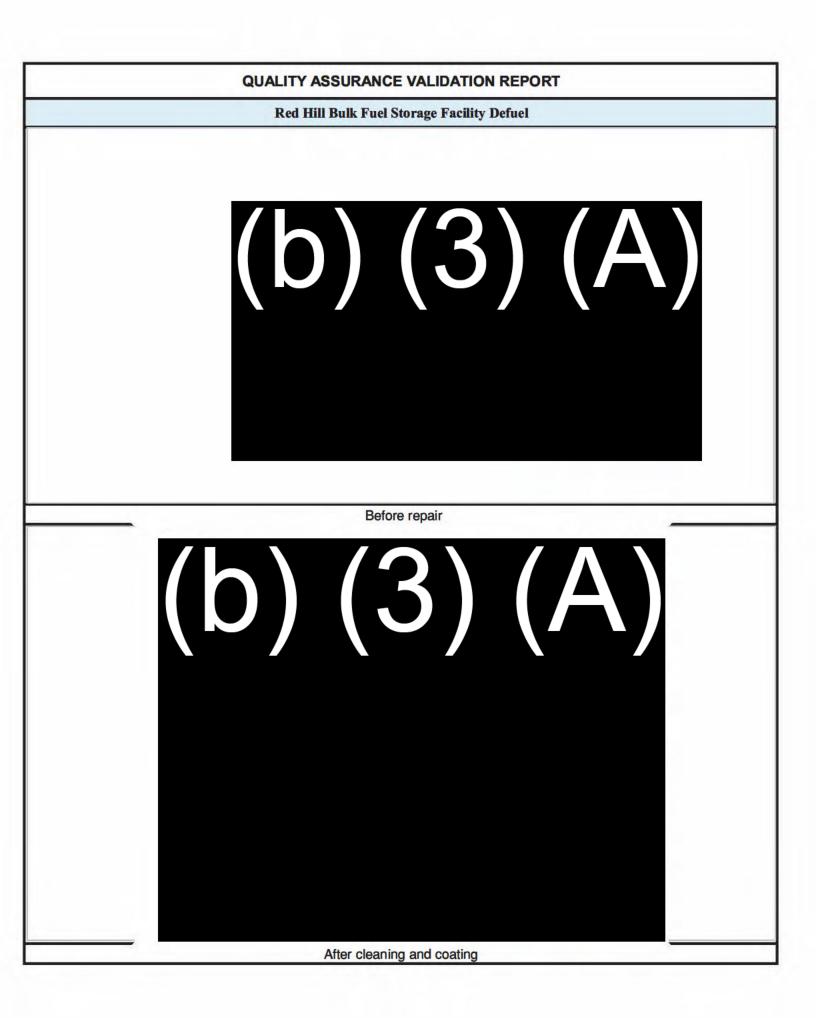
**Recommendations** 

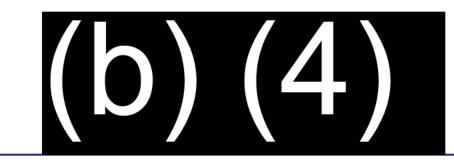


If you have any questions or concerns regarding this inspection, please feel free to contact me at



| HDR Environmenta<br>9781 S. Meridian B<br>FA890315D0007, D<br>(b) (6)<br>PDF Page N<br>HT-6<br>FOR pipe with unkr<br>pipe integrity and re | II, Operations a<br>Ivd., Suite 400<br>D.O. FA8903-1  | 9, Englewood, CO<br>9-F-0027<br>Phone (b) (6)<br>VALIDATION<br>Facility Geograph   | , Inc.<br>0 80112<br>hic Area  | Email<br>(b) (3) (A   | Report<br>Date<br>(b) (6)<br>Location   | (b) (4) <sub>HT.</sub>  | 2023  |
|--|---|--|--|---|---|---|---|
| 9781 S. Meridian B<br>FA890315D0007, D<br>(b) (6)<br>PDF Page N<br>HT-6<br>FOR pipe with unkr<br>pipe integrity and re                     | Ivd., Suite 400<br>D.O. FA8903-1  | 9, Englewood, CO<br>9-F-0027<br>Phone (b) (6)<br>VALIDATION<br>Facility Geograph   | ) 80112  | (b) (3) (A  | No.<br>Repair ID<br>Report<br>Date<br>(b) (6)   | (b) (4)<br>HT.<br>19 APR 2<br>Reference   | 2023  |
| FA890315D0007, D<br>(b) (6)<br>PDF Page N<br>HT-6<br>FOR pipe with unkr<br>pipe integrity and re   | No.   | 9-F-0027<br>Phone (b) (6)<br>VALIDATION<br>Facility Geograph   | hic Area   | (b) (3) (A  | Repair ID<br>Report<br>Date<br>(b) (6)  | 19 APR 2  | 2023  |
| (b) (6)<br>PDF Page N<br>HT-6<br>FOR pipe with unkr<br>pipe integrity and re   | No.   | Phone (b) (6)<br>VALIDATION<br>Facility Geograph   | hic Area   | (b) (3) (A  | Report<br>Date<br>(b) (6)<br>Location   | 19 APR 2  | 2023  |
| PDF Page N<br>HT-6<br>FOR pipe with unkr<br>pipe integrity and re  | No.   | VALIDATION<br>Facility Geograph  | hic Area   | (b) (3) (A  | (b) (6)   | 1   | house   |
| HT-6<br>FOR pipe with unkr<br>pipe integrity and re  | No.   | Facility Geograph  |  |   |   | 1   | house   |
| HT-6<br>FOR pipe with unkr<br>pipe integrity and re  | nown crack in (   | exterior surface.  |  |   |   | 1   | house   |
| FOR pipe with unkr<br>pipe integrity and re  |   |  | Assess   |   |   | N/A for in  | -house  |
| pipe integrity and re  |   |  | Assess   |   | 7.11  | N/A for in  | -house  |
| (b) (C)  |   |  |  | Sour  | ce Contract<br>Reference  | labor.  | HUUSE   |
| Two-party integrity  | verification by FLC personnel. Records Re-  |  |  |   |   | 1.28 II IN 20122 and  |   |
|  | 1   |  |  | Ponsi   | W/1- W12  | dated on Co   |   |
| -  |   |  | d  | 0   |   | dated as Co   | No  |
| d back side of pipe  | C   | ERTIFICATION   |  | (6)   |   |   |   |
|  | Two-party integrity b) (4) site visit comr Final acceptance by g Needed No d back side of pipe vork validated in this | Two-party integrity verification by         b) (4)         site visit comments issued 2         Final acceptance by government. Da         Veded       Pho         Image: Site of the si | Two-party integrity verification by FLC personnel.         b) (4) site visit comments issued 21 FEB 2023.         Final acceptance by government. Date: 13 APR 2023         Needed       Photo Record Attache         Image: One of the page 2.         Image: One of the page 3.         Image: O | Two-party integrity verification by FLC personnel.   (4) site visit comments issued 21 FEB 2023.   Final acceptance by government. Date: 13 APR 2023   No   No   See Page 2.   d back side of pipe has been coated, MAR 2023.   CERTIFICATION   work validated in this tantiated and this   QV ENGINEER SIGNATURE | Record         Record         (4)         Site visit comments issued 21 FEB 2023.         Final acceptance by government. Date: 13 APR 2023         Needed         Photo Record Attached         Repair         Image: Colspan="2">Image: Colspan="2">Certification by FLC personnel.         No         Site visit comments issued 21 FEB 2023.         Needed         Photo Record Attached       Repair         Image: Colspan="2">Image: Colspan="2">O         O         O         Certification         Vector Attached         Image: Colspan="2">O         O         O         O         Certification         Vector validated of pipe has been coated, MAR 2023.         Vector validated in this lantiated and this         QV ENGINEER SIGNATURE         (b) (6) | Records Reviewed         Records Reviewed         O(4)         Site visit comments issued 21 FEB 2023.         Final acceptance by government. Date: 13 APR 2023         Needed       Photo Record Attached       Repair Work Vali         O       No       See Page 2.       O       Yes         CERTIFICATION         Work validated in this lantiated and this | Records Reviewed 28 JUN 2 10 AUG 2         OT (4) site visit comments issued 21 FEB 2023.         Final acceptance by government. Date: 13 APR 2023         Needed Photo Record Attached Repair Work Validated as Col         Image: Colspan="2">Image: Colspan="2">O Yes         Image: Colspan="2">O Yes         Image: Colspan="2">CERTIFICATION         Vork validated in this lantiated and this |





June 28, 2022

(b) (

#### Inspection of Red Hill Fuel Oil Reclamation(b) (3) (A) (b) (3) (A)

#### **Introduction**

(b) (4) was contracted to perform a visual evaluation of Red Hill Fuel Reclamation Line (FOR) (b) (3) (A) This inspection included visually inspecting the pipeline for external conditions such as active corrosion, pitting, dents, and / or physical damage. This inspection defined the corrosion and pitting into three category levels.

- 1 Minor; corrosion and / or pitting is measured to be <20% of pipe wall thickness
- 2 Moderate; corrosion and / or pitting is measured to be >20% but <50% of pipe wall thickness
- 3 Severe; corrosion and / or pitting is measured to be at 50% or greater of pipe wall thickness.

#### Summary of Findings



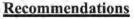


06/28/22 Page 2 of 6 (b) (3) (A)

required defueling repair & was completed as Repair #33.

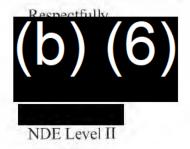
(b) (3) (A) Showed Moderate to severe pitting and corrosion. Pipe support and Ubolts need removed for further evaluation.

Ultrasonic thickness readings were taken along the pipe, during this inspection, at random areas. All readings were equated  $t_c(b)(3)(A)$ 





If you have any questions or concerns regarding this inspection, please feel free to contact me at



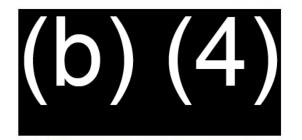
# (b) (4)

(b) (4)

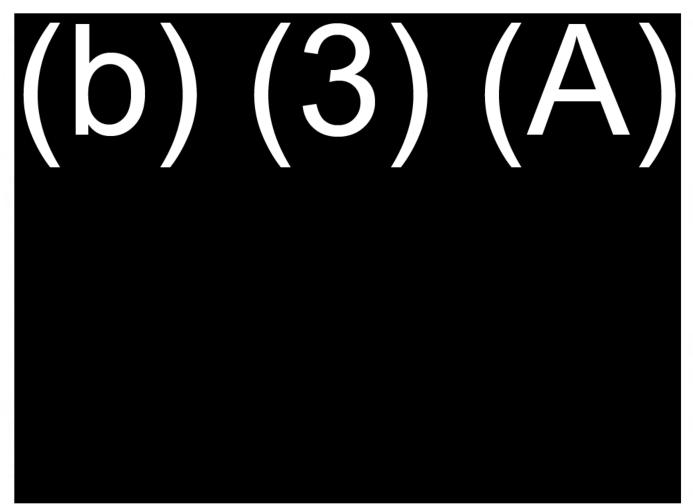
| Structural                            | Client: NAVSUP                      |
|---------------------------------------|-------------------------------------|
| Pipe Casting                          | Report No.: <u>GS081022</u>         |
| Tank No.:                             | Job No.: 22-133                     |
| Material Type: <u>CS</u>              | PO No.:                             |
| Weld Type: 🗌 Fillet 🗌 Butt            | Lap Other: <u>Piping</u>            |
| Drawing No.: ISOMETRIC DRAWING        | Sheet No.: Rev.:                    |
| Location: <u>Red Hill</u> (b) (3) (A) | Shop 🗌 Field 🔀                      |
| Surface Condition: In service         | Stage of Mfg.: <u>Completed</u>     |
| Specifications: Customer              | Acceptance Std.: Customer Specified |
| Gauges:                               |                                     |

| Item (s)    | Accept | Reject | Sketch / Notes              |
|-------------|--------|--------|-----------------------------|
| (b) (3) (A) |        |        | Light pitting and corrosion |
|             |        |        |                             |
|             |        |        |                             |
|             |        |        |                             |
|             |        |        |                             |
|             |        |        |                             |
|             |        |        |                             |
|             |        |        |                             |

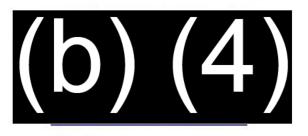
| (b) (5)       |          |                  |
|---------------|----------|------------------|
| Performed By: | VT LVLII | Date: 08/10/2022 |
| Reviewed By:  |          | Date:            |
| PCP-11.1      |          | Rev. A (06/05/03 |



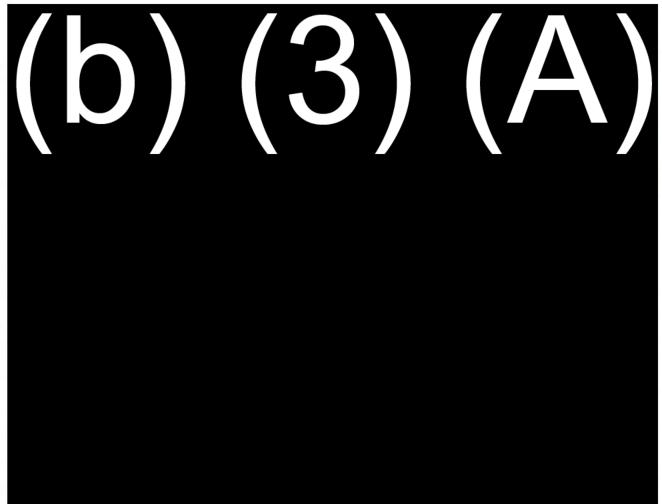
08/15/22 Page 2 of 3



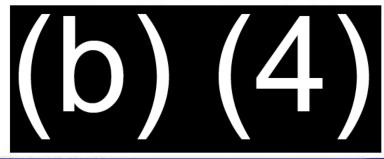
Light pitting and corrosion



08/15/22 Page 3 of 3



Light pitting and corrosion



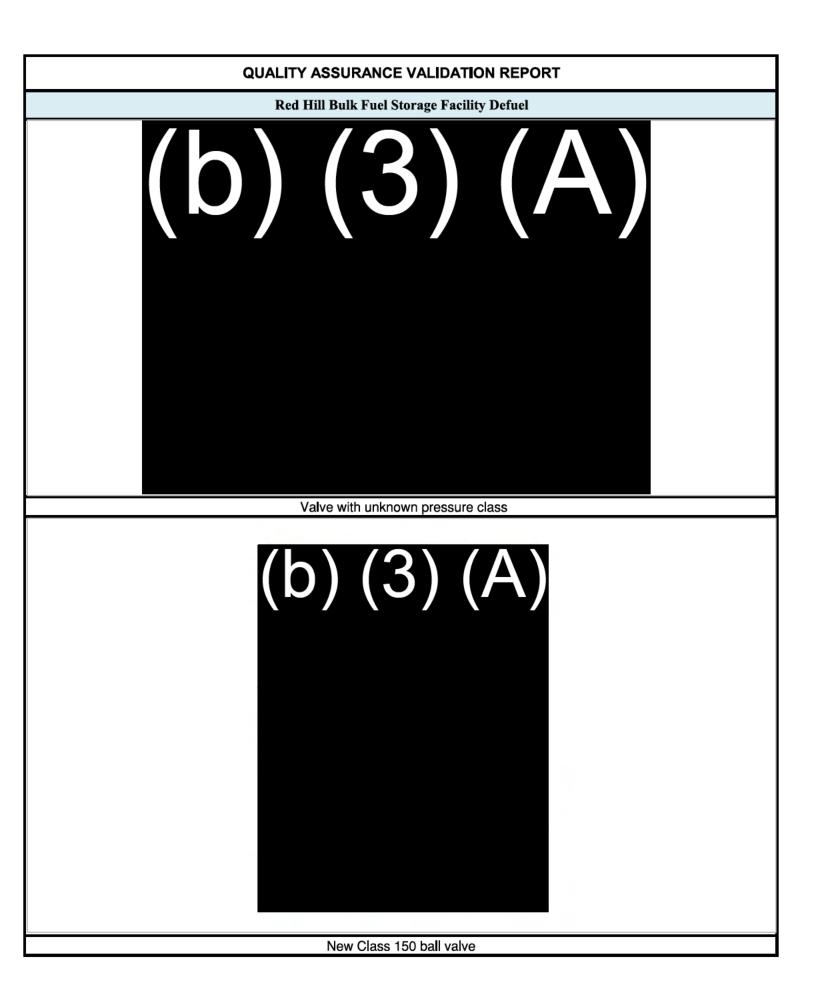
Form NDT 004.12 Rev. 0 (03/01/01)

#### ULTRASONIC EXAMINATION REPORT

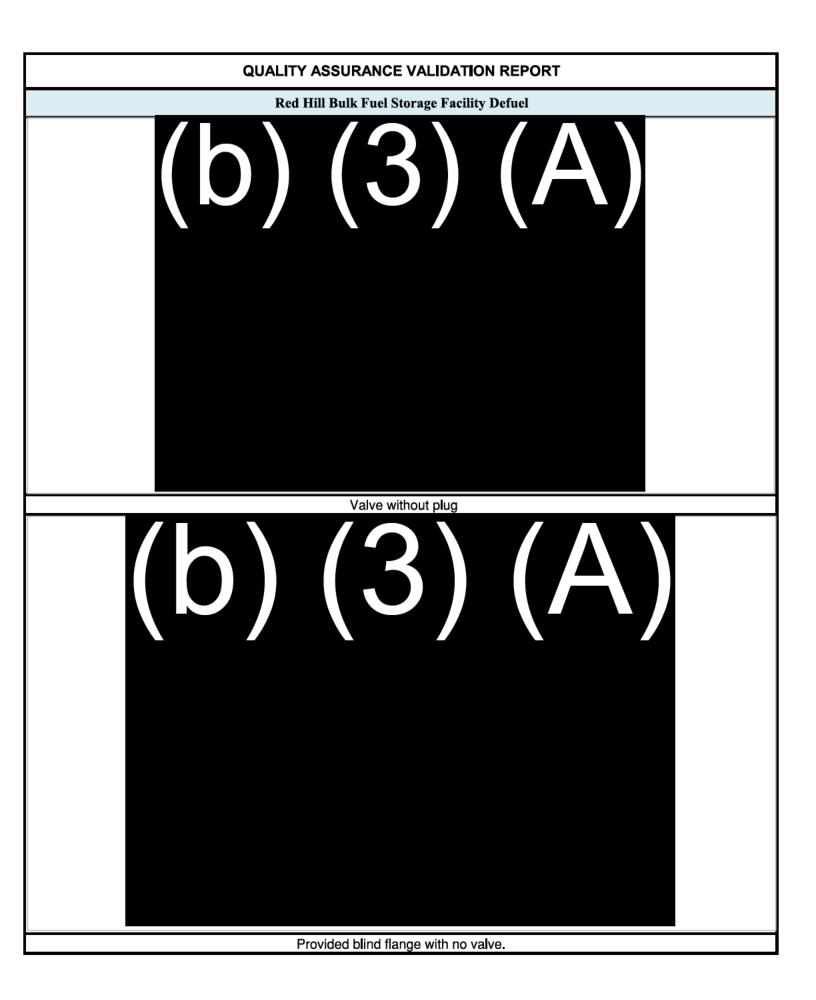
Page 1 Date: 08/10/2022

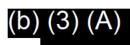
| NAVSUP/Red Hill Red Hill Fuel oil reclamation pipeline/ Main |   |
|--|---|
|  | sump  |
|  | <u>nt</u><br>Type: Glycerin<br>atch: NPD-053-8007 |

|  | QUALITY VALIDATION (QV) REPORT              |                 |              |                     |                                      |             |                                   |                           |                       |       |  |  |
|--|---|-----------------|--------------|---------------------|--------------------------------------|-------------|-----------------------------------|---------------------------|-----------------------|-------|--|--|
|  |   |                 | 1            | Red Hill B          | ulk Fuel Storage Fac                 | ility Defue | el                                |                           |                       |       |  |  |
| Vali   | idation Firm                                | HDR Env         | ironmenta    | l, Operation        | ns and Construction,                 | Inc.        |                                   | Repair<br>No.             | 42                    |       |  |  |
|  | Address                                     | 9781 S. N       | leridian Bl  | vd., Suite 4        | 400, Englewood, CO                   | 80112       | Repair ID F24.012                 |                           |                       |       |  |  |
| c  | Contract No.                                | FA89031         | 5D0007, D    | .O. FA890           | .O. FA8903-19-F-0027                 |             |                                   | Report<br>Date            | 19 APR 2              | 023   |  |  |
| QV Engineer (b) (6)  |   |                 |              | Phone (b) (6) Email |                                      |             | (b) (6)                           |                           |                       |       |  |  |
| VALIDATION   |   |                 |              |                     |                                      |             |                                   |                           |                       |       |  |  |
| Source PDF Page 1  |   |                 | PDF Page N   | lo.                 | Facility Geograph                    | ic Area     |                                   | Location Reference        |                       |       |  |  |
| NDAA   |   | 41              |              |                     | (b) (3) (A) (b) (3) (A)              |             |                                   |                           |                       |       |  |  |
| Repair Description (b) (3)   |   |                 |              | ) (A                |                                      |             | Sour                              | ce Contract<br>Reference  | N/A for in-<br>labor. | house |  |  |
| Two-party integrity<br>Description of<br>Contractor QC<br>Method(s) Used                               |   |                 |              |                     |                                      |             |                                   | ntractor QC<br>s Reviewed | N/A                   |       |  |  |
| (b) (4) site visit comments issued 21 FEB 2023.<br>Description of QA<br>Validation and<br>Observations |   |                 |              |                     |                                      |             |                                   |                           |                       |       |  |  |
|  | Derrorde                                    | Final acception | otance by go |                     | Date: 13 APR 2023                    | 1           | Repair Work Validated as Complete |                           |                       |       |  |  |
| 0  | Yes   | •               | No           |                     | Photo Record Attached<br>See Page 2. | 1           | (epair                            | Yes                       |                       | No    |  |  |
| Comments CERTIFICATION   |   |                 |              |                     |                                      |             |                                   |                           |                       |       |  |  |
|  | tify that repair<br>personal <b>l</b> y sub |                 |              | QV ENG              | INEER SIGNATURE                      | (D) (       | (6)                               |                           |                       |       |  |  |
| report is true   | *   |                 |              |                     | DATE                                 | 19 APR 2    | 2023                              |                           |                       |       |  |  |

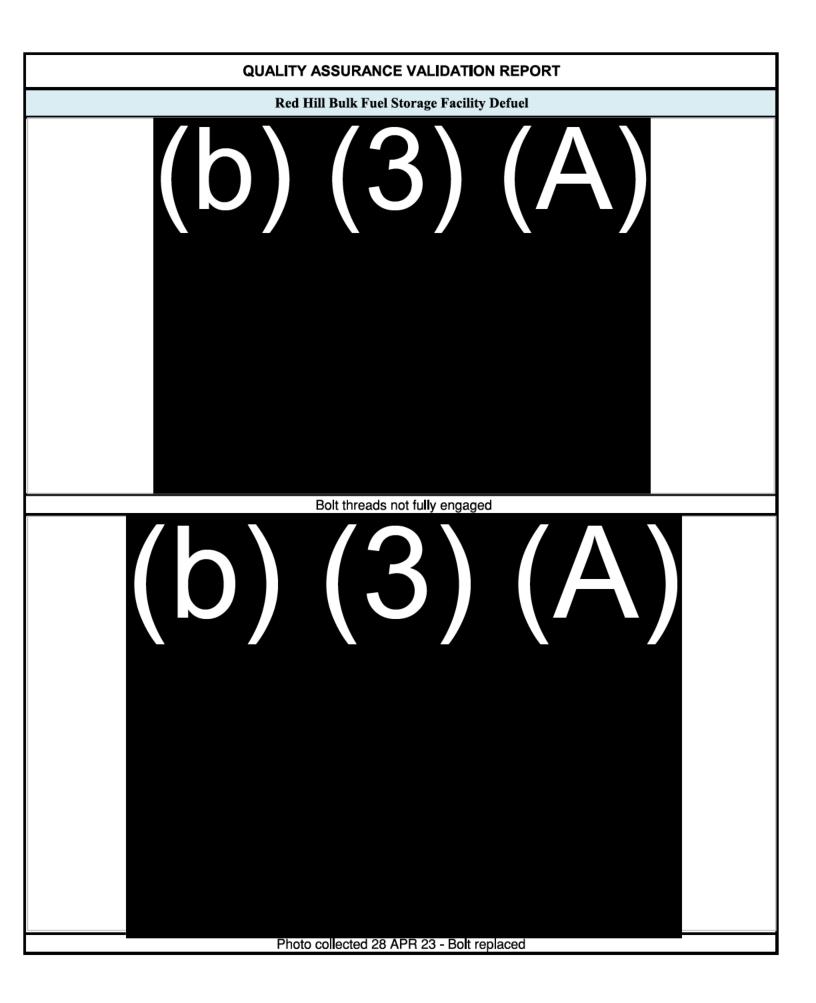


| Address S<br>Contract No.<br>QV Engineer<br>Source<br>NDAA   | HDR Environmenta<br>9781 S. Meridian B<br>FA890315D0007, D      | Red Hill Bulk Fuel Storage Faull, Operations and Construction,         I, Operations and Construction,         Ivd., Suite 400, Englewood, CO         D.O. FA8903-19-F-0027         Phone (b) (6)         VALIDATION | ), Inc.<br>D 80112 | Repair<br>No.<br>Repair ID<br>Report<br>Date | 111<br>FOR.004<br>19 APR 2 | 023   |  |  |  |  |  |  |  |  |
|--|---|--|--------------------|--|----------------------------|-------|--|--|--|--|--|--|--|--|
| Address S<br>Contract No.<br>QV Engineer<br>Source<br>NDAA   | 9781 S. Meridian B<br>FA890315D0007, D<br>(b) (6)<br>PDF Page N | Ivd., Suite 400, Englewood, CO<br>D.O. FA8903-19-F-0027<br>Phone (b) (6)   | 0 80112            | No.<br>Repair ID<br>Report<br>Date           | FOR.004                    | 023   |  |  |  |  |  |  |  |  |
| Contract No.<br>QV Engineer<br>Source<br>NDAA (<br>Repair Description  | FA890315D0007, D<br>(b) (6)<br>PDF Page N                       | D.O. FA8903-19-F-0027<br>Phone (b) (6)   |                    | Report                                       |                            | 023   |  |  |  |  |  |  |  |  |
| QV Engineer Source NDAA  | (b) (6)<br>PDF Page N   | Phone (b) (6)  | Email              | Date   | 19 APR 2                   | 023   |  |  |  |  |  |  |  |  |
| Source<br>NDAA (<br>Repair Description   | PDF Page N  |  | Email              |  |                            |       |  |  |  |  |  |  |  |  |
| NDAA (   |   | VALIDATION   |                    |  | Email (b) (6)              |       |  |  |  |  |  |  |  |  |
| NDAA (   |   |  | VALIDATION         |  |                            |       |  |  |  |  |  |  |  |  |
| (t<br>G<br>Repair Description  | 66  | No. Facility Geograph  | hic Area           | Location Reference                           |                            |       |  |  |  |  |  |  |  |  |
| Repair Description   |   | (b) (3) (A)  |                    |  |                            |       |  |  |  |  |  |  |  |  |
|  | (b)(3)(A)<br>being accidentally o                               | cated on the (b) (3) (A)<br>plugged off. This valve is susc<br>opened if something were to imp<br>ausing it to open. Install plug.   |                    | rce Contract<br>Reference                    | N/A for in-<br>labor.      | house |  |  |  |  |  |  |  |  |
| Description of<br>Contractor QC<br>Method(s) Used  |   | verification by FLC personnel. N/A<br>Contractor QC<br>Records Reviewed  |                    |  |                            |       |  |  |  |  |  |  |  |  |
| Description of QA<br>Validation and<br>Observations  | Validation and  |  |                    |  |                            |       |  |  |  |  |  |  |  |  |
| Rework N   |   | overnment. Date: 13 APR 2023<br>Photo Record Attache   | ed Repai           | Repair Work Validated as Complete            |                            |       |  |  |  |  |  |  |  |  |
| O Yes  | No No   | See Page 2.  | $\odot$            | Yes  | 0                          | No    |  |  |  |  |  |  |  |  |
| Yes       No       See Page 2.       Yes       No         Comments         Rather than installing a plug, a new blind flange was provided with no valve connected. This repair provides additional protection against unintended operation or weeps.       This repair provides additional         CERTIFICATION         I hereby certify that repair work validated in this report was personally substantiated and this report is true.         QV ENGINEER SIGNATURE       (b)       (6)         DATE       19 APR 2023 |   |  |                    |  |                            |       |  |  |  |  |  |  |  |  |

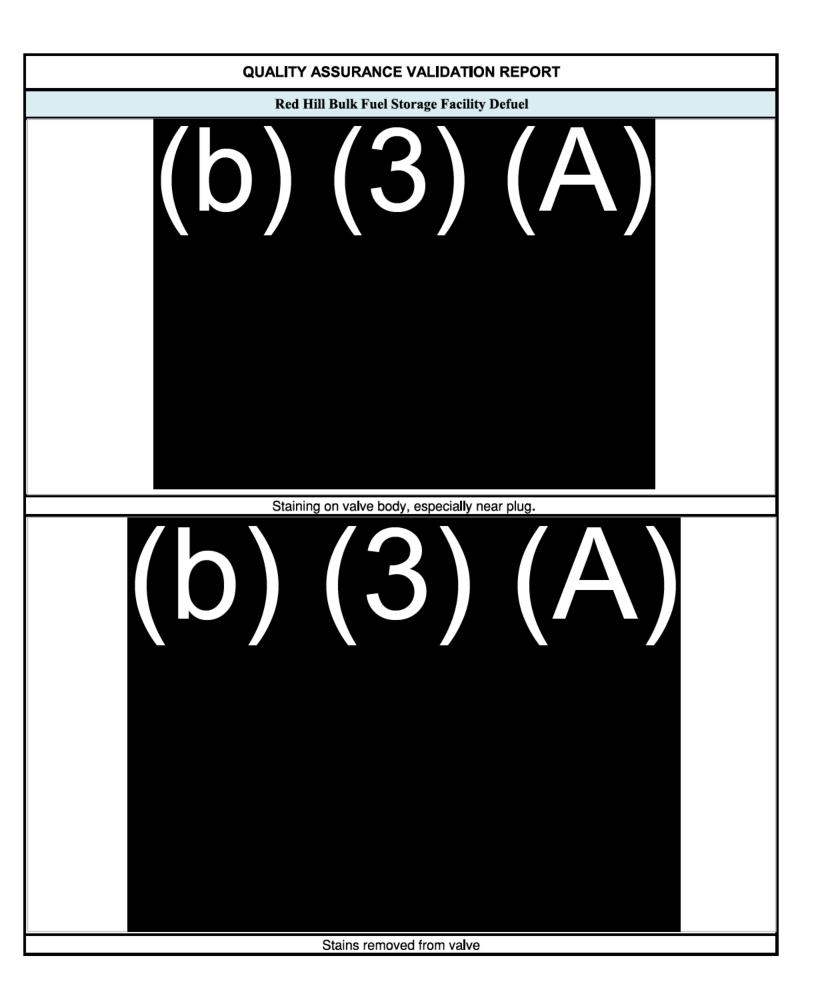


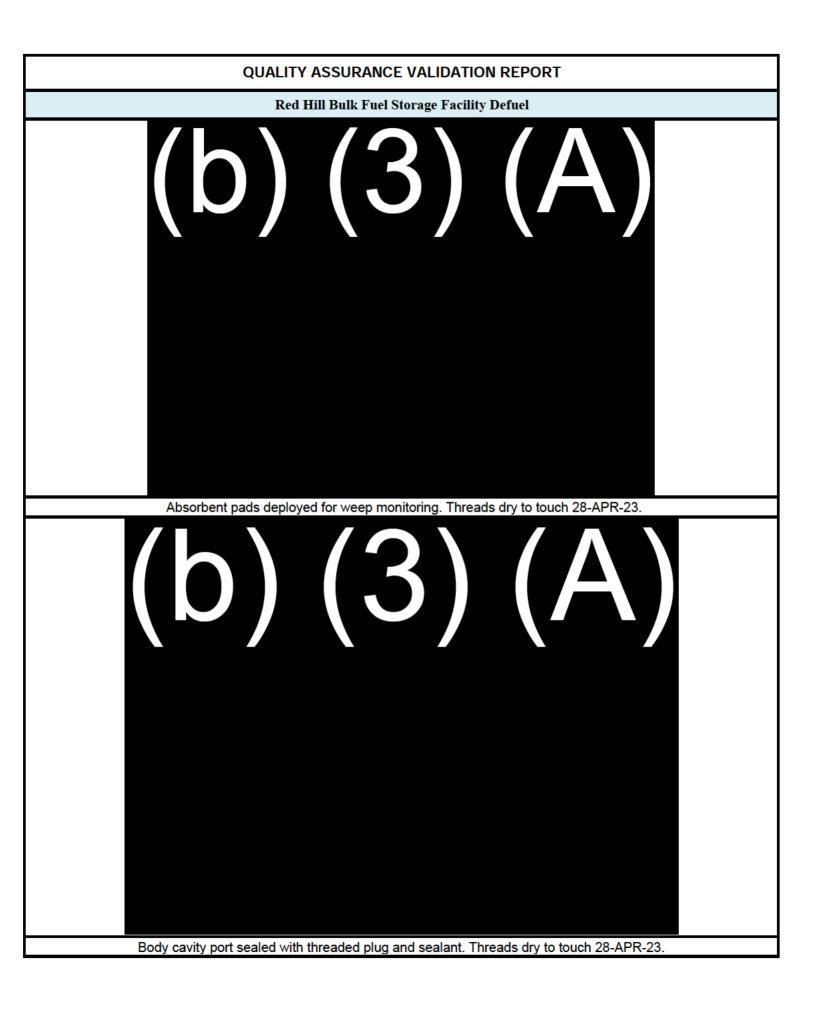


|  | QUALITY VALIDATION (QV) REPORT             |  |              |              |                                      |             |  |                           |                      |        |  |  |  |
|--|--|--|--------------|--------------|--------------------------------------|-------------|--|---------------------------|----------------------|--------|--|--|--|
|  |  |  | ]            | Red Hill B   | ulk Fuel Storage Fa                  | ility Defue | el   |                           |                      |        |  |  |  |
| Valie  | dation Firm                                | HDR Env  | ironmental   | , Operatior  | ns and Construction,                 | Inc.        |  | Repair<br>No.             | 114                  |        |  |  |  |
|  | Address                                    | 9781 S. N  | /leridian Bl | vd., Suite 4 | 100, Englewood, CO                   | 80112       |  | Repair ID                 | FOR.021              |        |  |  |  |
| С  | ontract No.                                | FA89031  | 5D0007, D    | .O. FA890    | 3-19-F-0027                          |             |  | Report<br>Date            | 02 MAY 2             | 2023   |  |  |  |
| Q  | V Engineer                                 | (b) (6)  |              |              | Phone (b) (6)                        |             | Email                                      | (b) (6)                   |                      |        |  |  |  |
|  |  |  |              |              |                                      |             |  |                           |                      |        |  |  |  |
| Soι  | urce                                       | I  | PDF Page N   |              | Facility Geograph                    | ic Area     | Location Reference                         |                           |                      |        |  |  |  |
| NDAA   |  | 67   |              |              | (b) (3) (A)                          |             | Tank 16                                    |                           |                      |        |  |  |  |
| Tank isolation value fastener that is not Repair Description         |  |  |              |              | ) (3) (A) ha<br>ed. Replace fastener | s one       | Sourc                                      | ce Contract<br>Reference  | N/A for in<br>Iabor. | -house |  |  |  |
| Cor  | scription of<br>ntractor QC<br>nod(s) Used | Two-party integrity verification by FLC personnel. |              |              |                                      |             |  | atractor QC<br>8 Reviewed | N/A                  |        |  |  |  |
| Validated com<br>Description of QA<br>Validation and<br>Observations |  |  |              | by JTF-RH    | H/QV 28APR 2023.                     |             |  |                           |                      |        |  |  |  |
|  |  | Final accept                                       | ptance by go | overnment.   | Date: 26 APR 2023                    |             |  |                           |                      |        |  |  |  |
| -  | Rework                                     | Needed   |              |              | Photo Record Attache                 | 1           | Repair                                     | Work Vali                 | dated as Co          | mplete |  |  |  |
| $\bigcirc$   | Yes  | ullet  | No           |              | See Page 2.                          |             | igodoldoldoldoldoldoldoldoldoldoldoldoldol | Yes                       | O                    | No     |  |  |  |
| Comments   |  |  |              |              |                                      |             |  |                           |                      |        |  |  |  |
|  |  |  |              |              | CERTIFICATION                        |             |  |                           |                      |        |  |  |  |
|  | ify that repair<br>ersonal <b>l</b> y sub  |  |              | QV ENG       | INEER SIGNATURE                      | (b) (       | (6)  |                           |                      |        |  |  |  |
| report was p<br>report is true                                       |  | stantiateu an                                      |              |              | DATE                                 | 02 MAY 2    |  |                           |                      |        |  |  |  |



|   | QUALITY VALIDATION (QV) REPORT   |             |                   |  |              |                                   |                          |                      |        |  |  |  |
|---|--|-------------|-------------------|--|--------------|-----------------------------------|--------------------------|----------------------|--------|--|--|--|
|   |  |             | Red Hill B        | Bulk Fuel Storage Fac                                | cility Defue | el                                |                          |                      |        |  |  |  |
| Validation F  |  | vironmenta  | l, Operatio       | ns and Construction,                                 | Inc.         |                                   | Repair<br>No.            | 116                  |        |  |  |  |
| Add   | ress 9781 S. I   | Meridian Bl | vd., Suite        | 400, Englewood, CO                                   | 80112        |                                   | Repair ID                | FOR.025              |        |  |  |  |
| Contract  | No. FA89031  | 5D0007, D   | .O. FA890         | )3-19-F-0027   |              |                                   | Report<br>Date           | 19 APR 2             | 2023   |  |  |  |
| QV Engi   | eer (b) (6   | 6)          | Phone (b) (6) Ema |  |              | Email                             | (b) (6)                  |                      |        |  |  |  |
| VALIDATION  |  |             |                   |  |              |                                   |                          |                      |        |  |  |  |
| Source  | 1  | PDF Page N  | lo.               | Facility Geograph                                    | ic Area      |                                   | Location Reference       |                      |        |  |  |  |
| NDAA  | 67   |             |                   | (b) (3) (A)  |              | Tank 15                           |                          |                      |        |  |  |  |
| Repair Description The (b) (3) (A) pipeline has product staining on the valve body. This is indicative of a prolonged slow weep possibly from valve plugs in the body. Clean valve body and monitor for drips and weeps.                  |  |             |                   |  |              | Sour                              | ce Contract<br>Reference | N/A for in<br>labor. | -house |  |  |  |
| Descriptio<br>Contractor<br>Method(s) U   | n of<br>QC   | y integrity | verification      | erification by FLC personnel.<br>Contra<br>Records F |              |                                   |                          |                      |        |  |  |  |
| Validation  | Description of QA<br>Validation and<br>Observations<br>Final acceptance by government. Date: 13 APR 2023 |             |                   |  |              |                                   |                          |                      |        |  |  |  |
| Rev   | ork Needed   |             |                   | Photo Record Attached                                | đ            | Repair Work Validated as Complete |                          |                      |        |  |  |  |
| O Yes   | $\odot$  | No          |                   | See Page 2.  |              | $   \mathbf{O} $                  | Yes                      | 0                    | No     |  |  |  |
| Comments<br>JTFRH/QV performed visual inspection 03 MAR 23. Valve body has aged stains and loose corrosion product. Work item<br>is incomplete.<br>Additional cleaning was provided. Valve was reexamined 16 MAR 23 and found acceptable. |  |             |                   |  |              |                                   |                          |                      |        |  |  |  |
|   |  |             |                   | CERTIFICATION  |              |                                   |                          |                      |        |  |  |  |
| I hereby certify that r   | epair work validat   | ed in this  | QV ENG            | INEER SIGNATURE                                      | (b) (        | (6)                               |                          |                      |        |  |  |  |
| report was personally report is true.   |  |             |                   | DATE   | 19 APR 2023  |                                   |                          |                      |        |  |  |  |

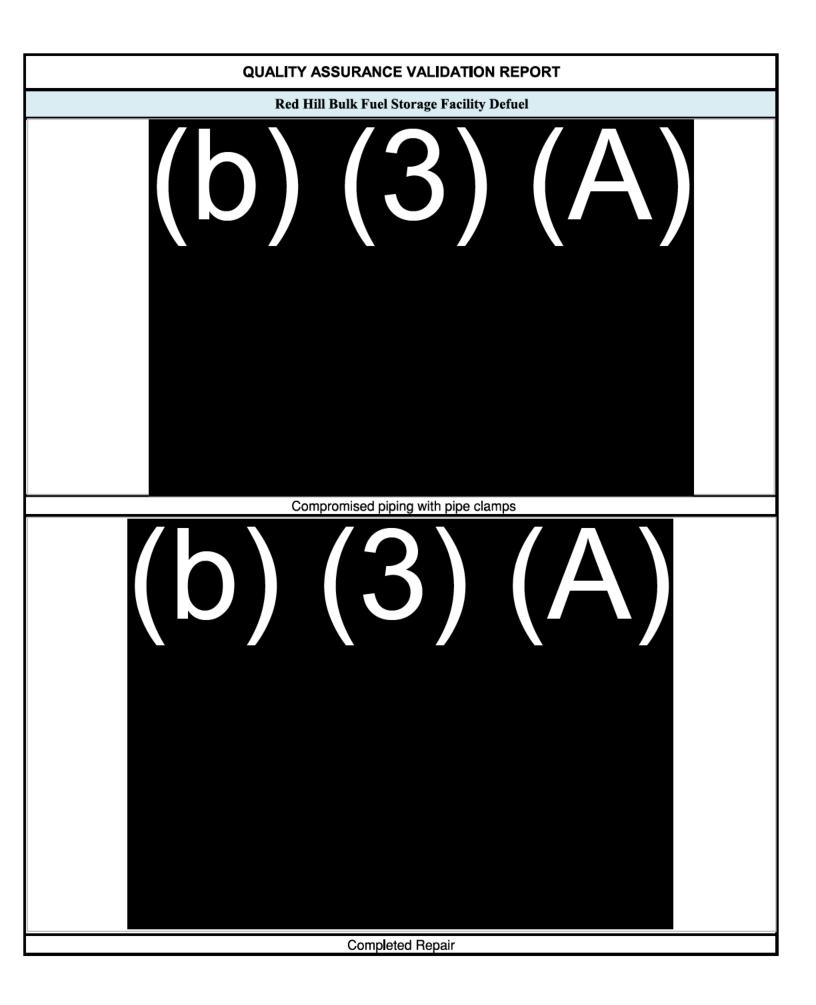




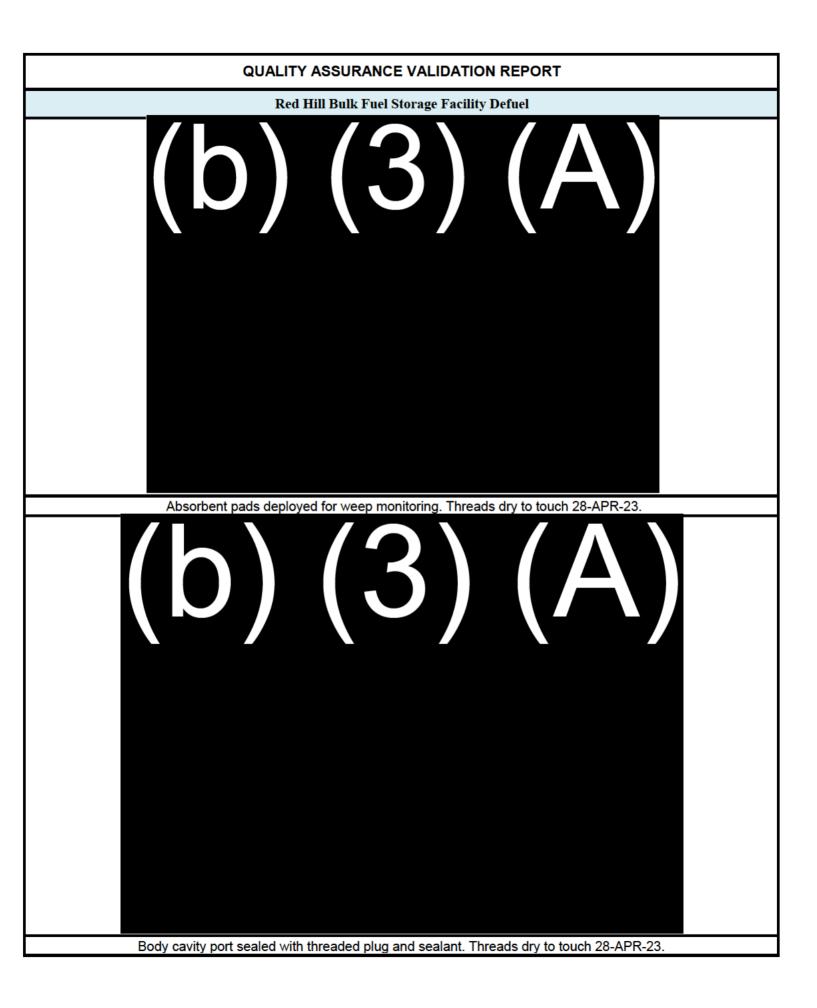
|                |  |              |              | QUALI        | TY VALIDATION (   | QV) REPC    | DRT         |                           |                       |        |
|----------------|--|--------------|--------------|--------------|---|-------------|-------------|---------------------------|-----------------------|--------|
|                |  |              | 1            | Red Hill B   | ulk Fuel Storage Fac                                      | ility Defue | 1           |                           |                       |        |
| Vali           | idation Firm                                 | HDR Env      | ironmenta    | l, Operatior | ns and Construction,                                      | Inc.        |             | Repair<br>No.             | 117                   |        |
|                | Address                                      | 9781 S. N    | leridian Bl  | vd., Suite 4 | 100, Englewood, CO  | 80112       |             |                           | FOR.026               |        |
| (              | Contract No.                                 | FA89031      | 5D0007, D    | .O. FA890    | 3-19-F-0027   |             |             | Report<br>Date            | 28 APR 2              | 023    |
| Q              | V Engineer                                   | (b) (6       |              |              | Phone (b) (6)   |             | Email       |                           |                       |        |
|                |  | •            |              |              | VALIDATION  |             |             |                           |                       |        |
| So             | ource  | F            | PDF Page N   | lo.          | Facility Geograph   |             |             | Location                  | Reference             |        |
| NDAA           |  | 67           |              |              | (b) (3) (A)   |             | (b) (3) (A) |                           |                       |        |
| Repair         | Description                                  | out of a co  | ombinatior   | n of hard pi | product lines is cons<br>pe and hoses. Repla<br>Ird pipe. |             | Sour        | ce Contract<br>Reference  | N/A for in-<br>labor. | house  |
| Co             | escription of<br>ntractor QC<br>hod(s) Used  | and supe     |              | verification | by FLC personnel; te                                      | echnician   |             | ntractor QC<br>s Reviewed | N/A                   |        |
| Va             | ption of QA<br>lidation and<br>Dbservations  | FLC pers     |              |              | d 21 FEB 2023.<br>accepted repair on 1                    | 3 Apr 23.   |             |                           |                       |        |
|                |  | Final accept | otance by go | overnment.   | Date: 13 APR 2023   |             |             |                           |                       |        |
|                | Rework                                       | Needed       |              |              | Photo Record Attached                                     | 1           |             |                           | dated as Cor          | mplete |
| O              | Yes  | ullet        | No           |              | See Page 2.   |             | ullet       | Yes                       | $\bigcirc$            | No     |
| Comments       | ,  |              |              |              |   |             |             |                           |                       |        |
|                |  |              |              |              | CERTIFICATION   | (b)         | 6)          |                           |                       |        |
|                | rtify that repair<br>personal <b>l</b> y sub |              |              | QV ENG       | NEER SIGNATURE  | (b) (       | 0)          |                           |                       |        |
| report is true | e.   |              |              |              | DATE  | 28 APR 2    | 023         |                           |                       |        |

QUALITY ASSURANCE VALIDATION REPORT **Red Hill Bulk Fuel Storage Facility Defuel** 5) L: Elex hose from pipeline high point vent R: Pipe with hose connections into (b) (3) (A)  $(\mathbf{3})$ R: Pipe with hose connections into(b) (3) (A) L: Line from (b) removed. (3) (A)

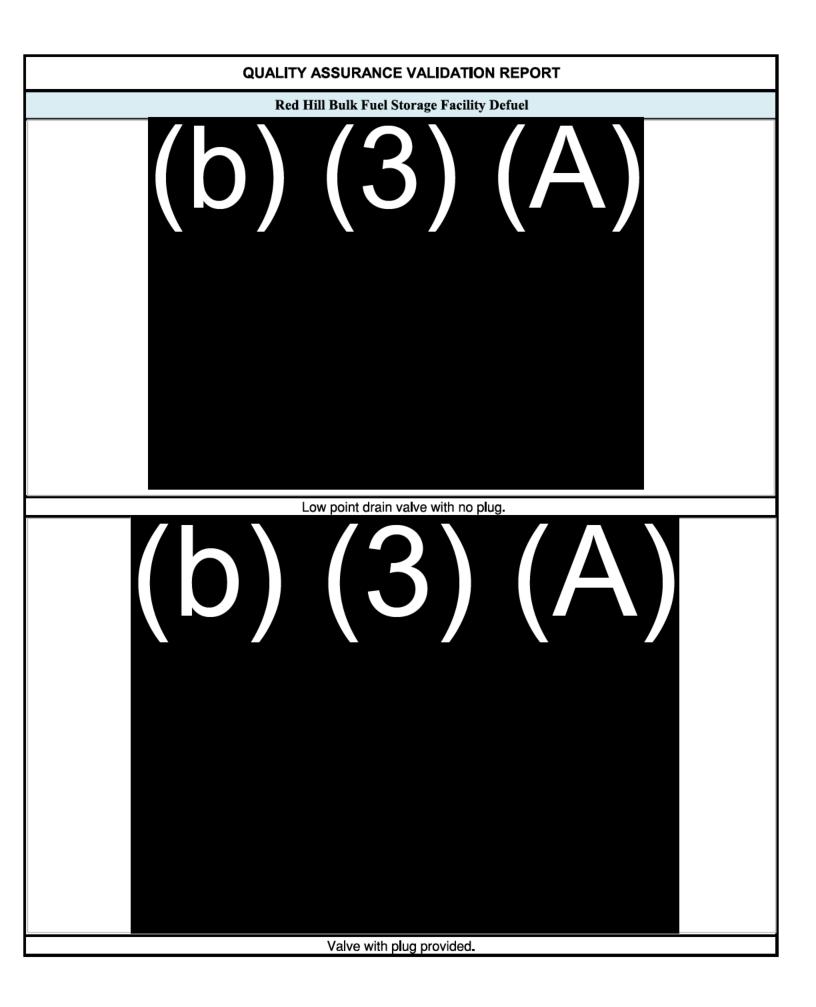
|                                |  |                            |               | QUALI        | TY VALIDATION (  | QV) REPO           | RT        |                           |                       |        |
|--------------------------------|--|----------------------------|---------------|--------------|--|--------------------|-----------|---------------------------|-----------------------|--------|
|                                |  |                            | ]             | Red Hill B   | ulk Fuel Storage Fac   | ility Defue        | 1         |                           |                       |        |
| Vali                           | idation Firm                                 | HDR Env                    | ironmenta     | l, Operatio  | ns and Construction,   | Inc.               |           | Repair<br>No.             | 120                   |        |
|                                | Address                                      | 9781 S. N                  | /leridian Bl  | vd., Suite   | 400, Englewood, CO   | 80112              |           |                           | FOR.044               |        |
| С                              | Contract No.                                 | FA89031                    | 5D0007, D     | .O. FA890    | 3-19-F-0027  |                    |           | Report<br>Date            | 19 APR 2              | 2023   |
| Q                              | V Engineer                                   | (b) (6                     | )             |              | Phone (b) (6   | <b>5</b> )         | Email     |                           |                       |        |
|                                |  |                            |               |              | VALIDATION   |                    |           |                           |                       |        |
| So                             | ource  | ł                          | PDF Page N    | lo.          | Facility Geograph  | ic Area            |           | Location                  | Reference             |        |
| NDAA                           |  | 68                         |               |              | (b) (3) (A)  |                    | (b) (3) ( | (A)                       |                       |        |
| Repair                         | Description                                  | $\frac{(b)(3)(A)}{(b)(3)}$ | A) Als        | o, UTT ind   | on <mark>(b) (3) (A)</mark><br>clamp lengths are <sup>(b) (</sup><br>licates pipe wa <b>ll l</b> oss i<br>resent. Repair pipe. | (3) (A)<br>in this | Sour      | ce Contract<br>Reference  | N/A for in-<br>labor. | -house |
| Co                             | escription of<br>ntractor QC<br>hod(s) Used  |                            | y integrity v | verification | by FLC personnel.  |                    |           | ntractor QC<br>s Reviewed | N/A                   |        |
| Va                             | ption of QA<br>lidation and<br>Dbservations  |                            |               |              | 29 MAR 2023.   |                    |           |                           |                       |        |
|                                |  |                            | ptance by go  |              | Date: 13 APR 2023  |                    |           |                           |                       |        |
| $\cap$                         | Rework<br>Yes                                | Needed                     | No            |              | Photo Record Attached<br>See Page 2.   | 1                  | Repair    | r Work Valı<br>Yes        | dated as Co           | No     |
| Comments                       |  |                            |               |              |  |                    | 0         |                           |                       |        |
|                                |  |                            |               |              | CERTIFICATION  |                    |           |                           |                       |        |
|                                | rtify that repair<br>personal <b>l</b> y sub |                            |               |              |  |                    |           |                           |                       |        |
| report was p<br>report is true | *  | istantiateu an             | u una         |              | DATE   | 19 APR 2           | 023       |                           |                       |        |



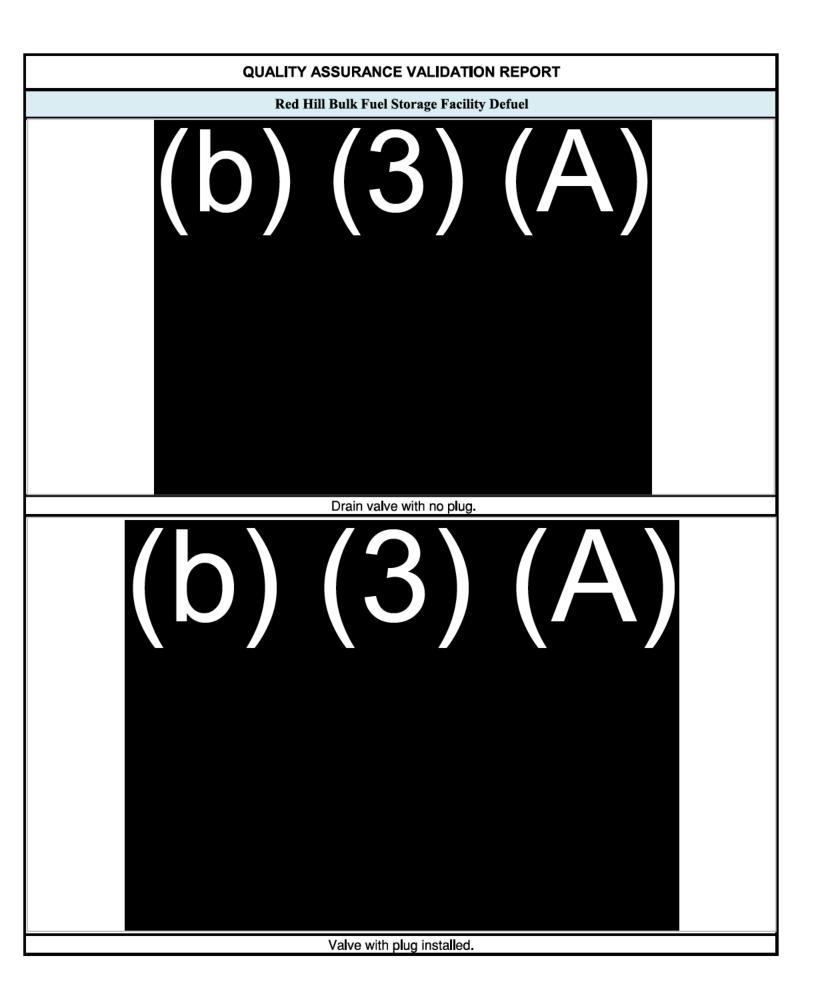
QUALITY ASSURANCE VALIDATION REPORT **Red Hill Bulk Fuel Storage Facility Defuel** b) (3) (A) Absorbent pads deployed for weep monitoring. Threads dry to touch 28-APR-23. (3)Body cavity port sealed with threaded plug and sealant. Threads dry to touch 28-APR-23.



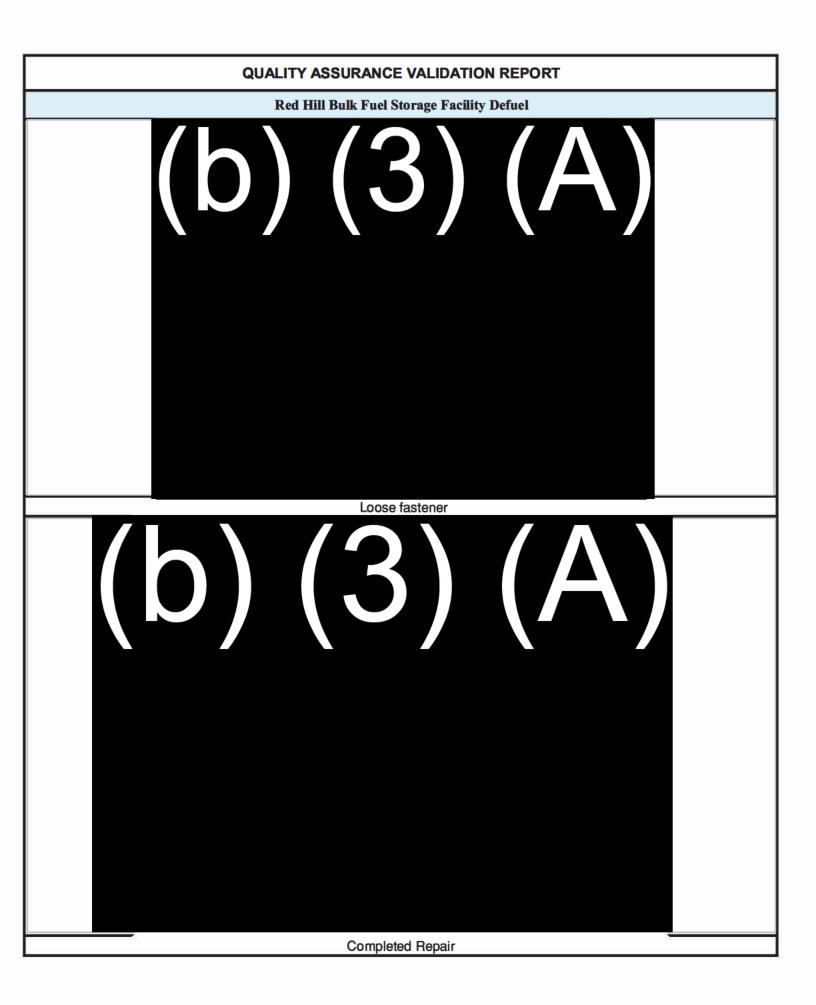
|                                |   |                         |              | QUALI       | TY VALIDATION (                            | QV) REPC    | DRT        |                           |                       |        |
|--------------------------------|---|-------------------------|--------------|-------------|--|-------------|------------|---------------------------|-----------------------|--------|
|                                |   |                         | J            | Red Hill B  | Bulk Fuel Storage Fac                      | ility Defue | 1          |                           |                       |        |
| Vali                           | dation Firm   | HDR Env                 | ironmenta    | l, Operatio | ns and Construction,                       | Inc.        |            | Repair<br>No.             | 126                   |        |
|                                | Address   | 9781 S. N               | /leridian Bl | vd., Suite  | 400, Englewood, CO                         | 80112       |            | Repair ID                 | FOR.056               |        |
| С                              | Contract No.  | FA89031                 | 5D0007, D    | .O. FA890   | )3-19-F-0027                               |             |            | Report<br>Date            |                       | :023   |
| Q                              | V Engineer  | (b) (6)                 |              |             | Phone (b) (6)                              | )           | Email      | (L)                       |                       |        |
|                                |   |                         |              |             | VALIDATION                                 |             |            |                           |                       |        |
| So                             | urce  | J                       | PDF Page N   | lo.         | Facility Geograph                          | ic Area     |            |                           | Reference             |        |
| NDAA                           |   | 69                      |              |             | (b) (3) (A)                                |             | (b) (3) (A | )                         |                       |        |
| Repair                         | Description   | (b) (3) (A<br>on valve. |              | valve i     | is missing a plug. Pro                     | vide plug   | Sour       | ce Contract<br>Reference  | N/A for in-<br>labor. | -house |
| Co                             | Two-party integr<br>Description of<br>Contractor QC<br>Method(s) Used |                         |              |             | by FLC personnel.                          |             |            | ntractor QC<br>s Reviewed |                       |        |
| Va                             | ption of QA<br>lidation and<br>Observations                           |                         |              |             | ed 21 FEB 2023.                            |             |            |                           |                       |        |
|                                | Pework  | Final accept            | otance by go |             | Date: 13 APR 2023<br>Photo Record Attached | 4           | Repair     | r Work Vali               | dated as Co           | malete |
| 0                              | Yes   | O                       | No           |             | See Page 2.                                |             |            | Yes                       |                       | No     |
|                                | I hereby certify that repair work validated in this                   |                         |              |             | CERTIFICATION                              | (b)         | (6)        |                           |                       |        |
| report was p<br>report is true | personally sub<br>e.  | stantiated an           | d this       |             | DATE                                       | 19 APR 2    |            |                           |                       |        |



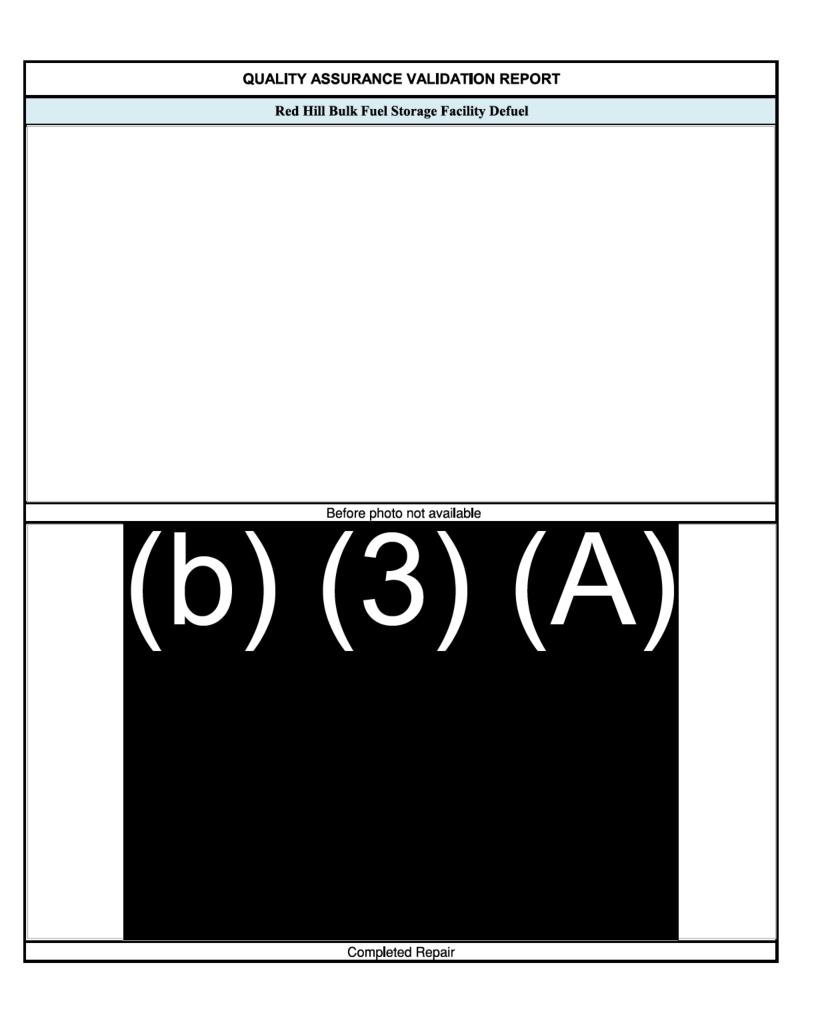
|                                |   |               |              | QUALI                       | TY VALIDATION (                            | QV) REPC    | ORT   |                           |                       |        |
|--------------------------------|---|---------------|--------------|-----------------------------|--|-------------|---|---------------------------|-----------------------|--------|
|                                |   |               | J            | Red Hill B                  | Bulk Fuel Storage Fac                      | ility Defue | el  |                           |                       |        |
| Vali                           | dation Firm   | HDR Env       | ironmenta    | l, Operatio                 | ons and Construction,                      | Inc.        |   | Repair<br>No.             | 127                   |        |
|                                | Address   | 9781 S. N     | /leridian Bl | vd., Suite                  | 400, Englewood, CO                         | 80112       |   |                           | FOR.057               |        |
| С                              | Contract No.  | FA89031       | 5D0007, D    | .O. FA890                   | 03-19-F-0027                               |             |   | Report<br>Date            | 19 APR 2              | 023    |
| Q                              | V Engineer  | (b) (6)       | )            |                             | Phone (b) (6)                              | )           | Email   | $(1 \rightarrow )$        | 6)                    |        |
|                                |   |               |              |                             | VALIDATION                                 |             |   |                           |                       |        |
| So                             | urce  | F             | PDF Page N   | Jo.                         | Facility Geograph                          | ic Area     |   | Location                  | Reference             |        |
| NDAA                           |   | 69            |              |                             | (b) (3) (A)                                |             | (b) (3) (A) <mark>E</mark>  | ntrance                   |                       |        |
| Repair                         | Description   | (b) (3) (A)   | ow point dr  | rain valve i<br>rovide plug | is missing a plug unde<br>g on valve.      | er the      | Sour  | ce Contract<br>Reference  | N/A for in-<br>labor. | -house |
| Co                             | Description of<br>Contractor QC<br>Method(s) Used   |               |              |                             | n by FLC personnel.                        |             |   | ntractor QC<br>s Reviewed |                       |        |
| Va                             | ption of QA<br>lidation and<br>)bservations         |               |              |                             | ed 21 FEB 2023.                            |             |   |                           |                       |        |
|                                | Rework  | Final accer   | ptance by go |                             | Date: 13 APR 2023<br>Photo Record Attached | 4           | Repair  | r Work Vali               | dated as Co           | mplete |
| 0                              | Yes   |               | No           |                             | See Page 2.                                |             | . Contraction of the second s | Yes                       | 0                     | No     |
|                                | I hereby certify that repair work validated in this |               |              |                             | CERTIFICATION<br>SINEER SIGNATURE          | (b) (       | (6)   |                           |                       |        |
| report was p<br>report is true | personally sub<br>e.                                | stantiated an | d this       |                             | DATE                                       | 19 APR 2    | 2023  |                           |                       |        |



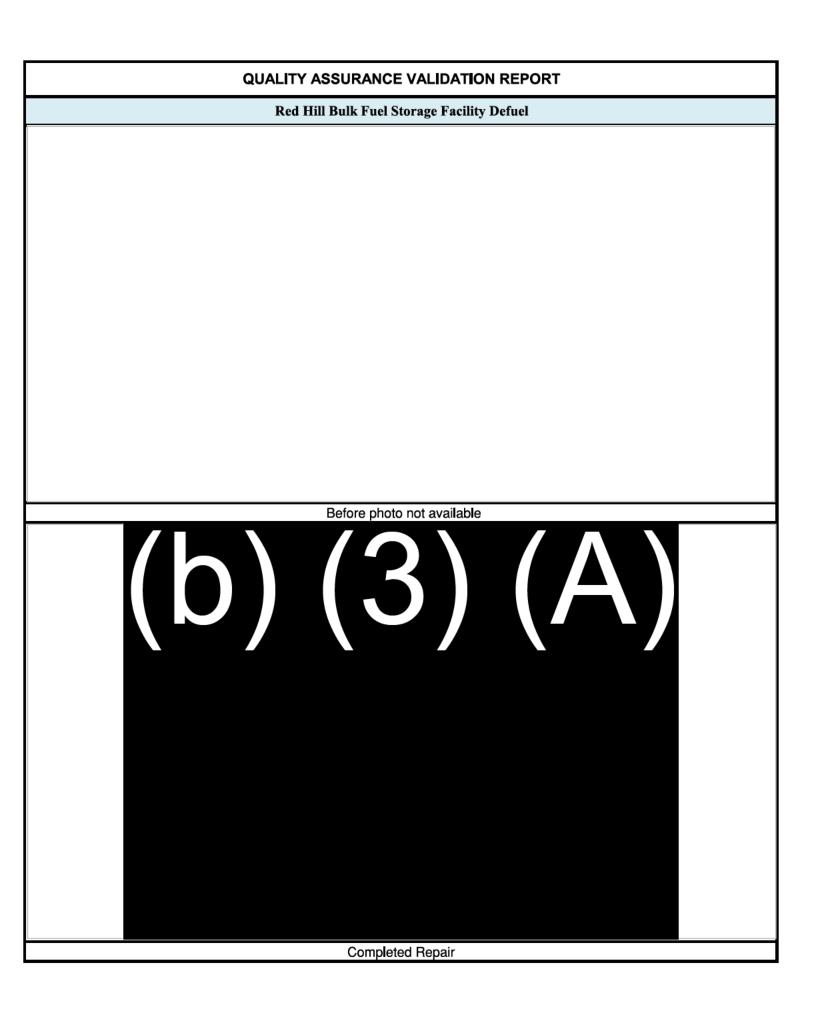
|  |   |           |              | QUALI       | TY VALIDATION (                               | QV) REPO    | ORT            |                           |                     |       |
|--|---|-----------|--------------|-------------|---|-------------|----------------|---------------------------|---------------------|-------|
|  |   | -         | ]            | Red Hill B  | ulk Fuel Storage Fac                          | cility Defu | el             |                           |                     |       |
| Vali   | idation Firm                                | HDR Env   | rironmental  | , Operatio  | ns and Construction,                          | Inc.        |                | Repair<br>No.             | 130                 |       |
|  | Address                                     | 9781 S. I | Meridian Bl  | vd., Suite  | 400, Englewood, CO                            | 80112       |                | Repair ID                 | FOR.064             |       |
| С  | Contract No.                                | FA89031   | 5D0007, D    | .O. FA890   | 3 19 F 0027                                   |             |                | Report<br>Date            | 26 APR 2            | 023   |
| Q  | V Engineer                                  | (b) (     | 6)           | 3           | Phone   |             | Email          |                           | 6)                  |       |
|  |   |           |              |             | VALIDATION                                    |             |                |                           |                     |       |
| So   | urce  | ]         | PDF Page N   | <b>o</b> .  | Facility Geograph                             | ic Area     |                | Location                  | Reference           |       |
| NDAA   |   | 69        |              |             | (b) (3) (A)                                   |             | (b) (3) (A)    |                           |                     |       |
| Repair   | Description                                 | containm  |              |             | outside of the secon<br>ener. Tighten fastene |             | Sour           | ce Contract<br>Reference  |                     |       |
| Co   | escription of<br>ntractor QC<br>hod(s) Used |           | outlined in  | detail in Q | CP.   |             |                | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily |
| Va   | ption of QA<br>lidation and<br>Observations |           | outlined in  |             |   |             |                |                           |                     |       |
|  |   |           | ptance by go |             | Date: 08 MAR 2023                             |             |                |                           | 1.1.0               |       |
| 0  | Yes   | Needed    | No           |             | Photo Record Attached<br>See Page 2.          | 1           | Repair         | Yes                       | dated as Cor        | No    |
| Comments<br>Valve was removed and reinstalled in new piping by Repair 128. |   |           |              |             |   |             |                |                           |                     |       |
|  |   |           |              |             | CERTIFICATION                                 |             | $(\mathbf{C})$ |                           |                     |       |
|  | tify that repair<br>personally sub          |           |              | QV ENG      | INEER SIGNATURE                               | (D) (       | (6)            |                           |                     |       |
| report is true   | -   |           | _            |             | DATE  | 26 APR 2    | 2023           |                           |                     |       |



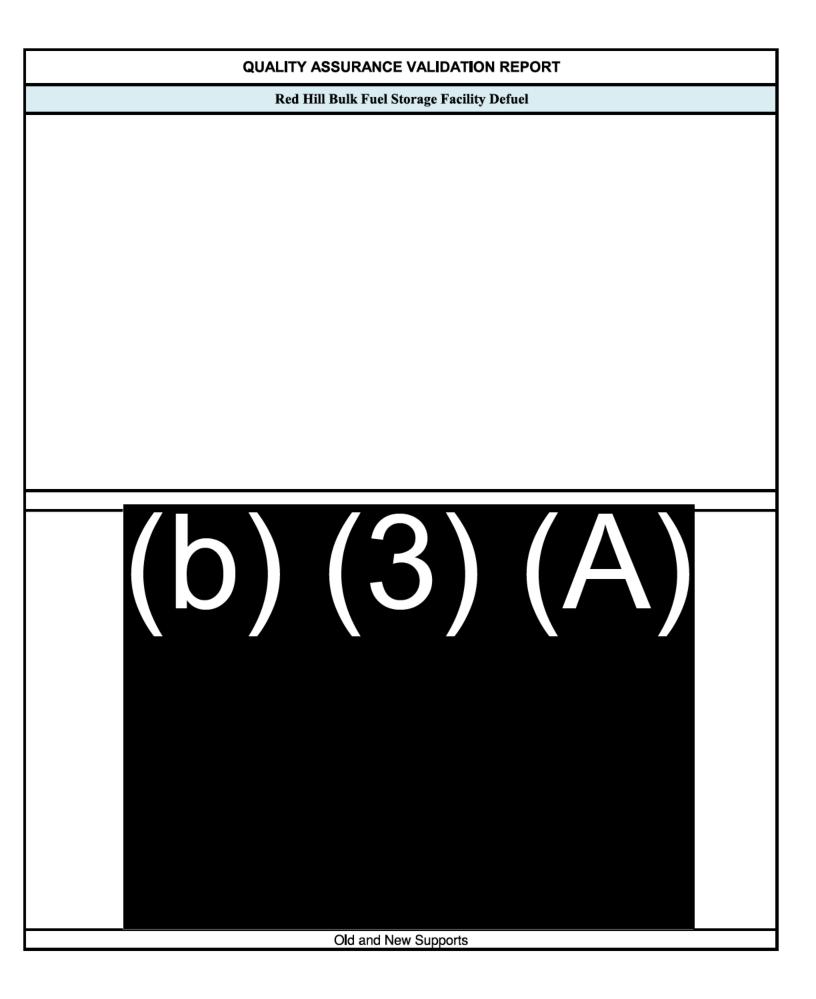
|        |   |             |              |                 | ALIDATION (   | QV) REPC          | DRT         |                          |                     |          |
|--------|---|-------------|--------------|-----------------|---|-------------------|-------------|--------------------------|---------------------|----------|
|        |   |             | ]            | Red Hill Bulk   | Fuel Storage Fac  | ility Defue       | 1           |                          |                     |          |
| Vali   | idation Firm                                | HDR Env     | ironmental   | , Operations a  | nd Construction,  | Inc.              |             | Repair<br>No.            | 132                 |          |
|        | Address                                     | 9781 S. N   | leridian Bl  | vd., Suite 400, | Englewood, CO   | 80112             |             | Repair ID                | PSF.013             |          |
| C      | Contract No.                                | FA89031     | 5D0007, D    | .O. FA8903-19   | )-F-0027  |                   |             | Report<br>Date           | 26 APR 2            | 023      |
| Q      | V Engineer                                  | (b) (6)     |              |                 | Phone (b) (   | 6)                | Email       | (6) (                    | 6)                  |          |
|        |   |             |              | v               | ALIDATION   |                   |             |                          |                     |          |
| So     | ource                                       | F           | PDF Page N   | 0.              | Facility Geograph   | ic Area           |             |                          | Reference           |          |
| NDAA   |   | 71          |              | (b) (3          |   |                   | (b) (3) (A) |                          |                     |          |
| Repair | Description                                 | contact, c  | orroded at   | pipe support in | rosion, metal to<br>nterface, photo ta<br>led by others. Re | aken for          | Sourc       | ce Contract<br>Reference |                     |          |
| Co     | escription of<br>ntractor QC<br>hod(s) Used |             | outlined in  | detail in QCP.  |   |                   |             | tractor QC<br>Reviewed   | QCP and<br>Reports. | Daily    |
| Va     | ption of QA<br>lidation and<br>Dbservations |             | outlined in  |                 |   |                   |             |                          |                     |          |
|        | Derver                                      | Final accep | otance by go |                 | e: 08 MAR 2023  | 1                 | Densin      | West Vol:                | dated as Co         | uuu lata |
| 0      | Yes   | •           | No           | Filot           | See Page 2.   | 1                 | (epair      | Yes                      |                     | No       |
|        | tify that repair                            |             |              | QV ENGINEE      | RTIFICATION<br>R SIGNATURE                                  | (b) (<br>26 APR 2 |             |                          |                     |          |



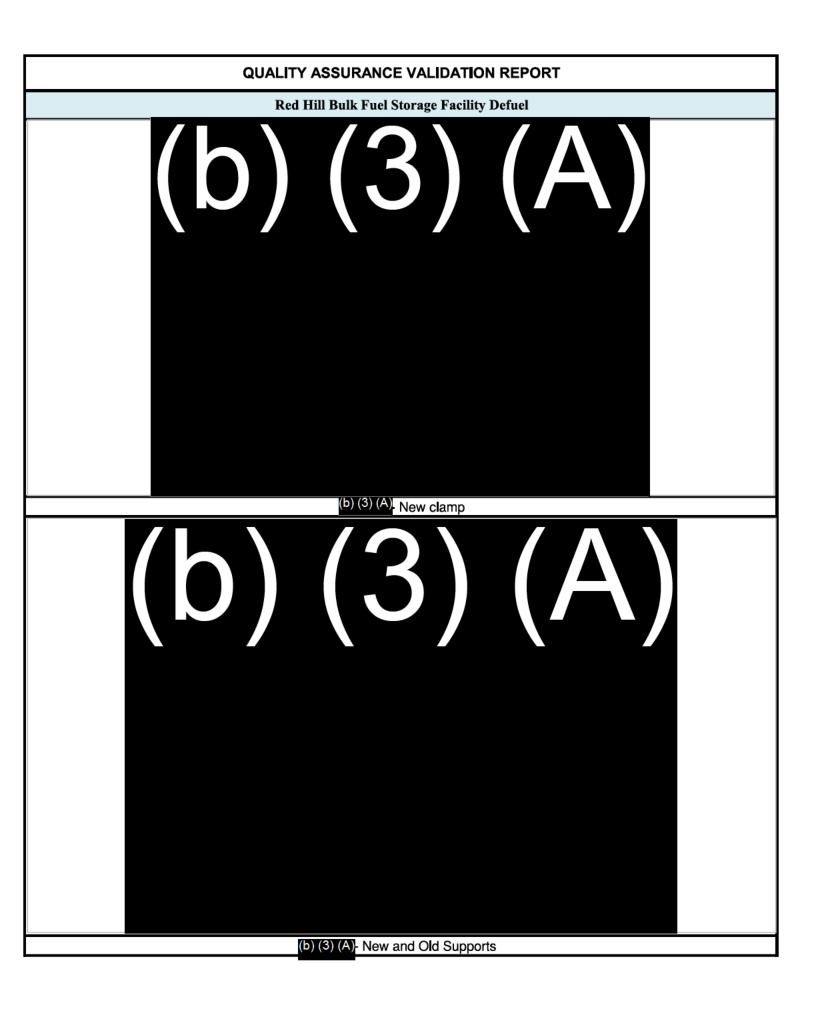
|                |  |                          |                          | QUALI       | TY VALIDATION (                            | QV) REPC     | DRT         |                           |                     |        |
|----------------|--|--------------------------|--------------------------|-------------|--|--------------|-------------|---------------------------|---------------------|--------|
|                |  |                          |                          | Red Hill B  | Bulk Fuel Storage Fac                      | cility Defue | 1           |                           |                     |        |
| Vali           | idation Firm   | HDR Env                  | ironmenta                | l, Operatio | ns and Construction,                       | Inc.         |             | Repair<br>No.             | 133                 |        |
|                | Address  | 9781 S. N                | /leridian Bl             | vd., Suite  | 400, Englewood, CO                         | 80112        |             | Repair ID                 | PSF.014             |        |
| 0              | Contract No.   | FA89031                  | 5D0007, D                | .O. FA890   | )3-19-F-0027                               |              |             | Report<br>Date            | 26 APR 2            | 023    |
| Q              | V Engineer   | (b) (6                   |                          |             | Phone (b) (                                | 6)           | Email       |                           |                     |        |
|                |  |                          | ,                        |             | VALIDATION                                 |              |             |                           |                     |        |
| So             | urce   | F                        | PDF Page N               | lo.         | Facility Geograph                          | ic Area      |             | Location                  | Reference           |        |
| NDAA           |  | 71                       |                          |             | (b) (3) (A)                                |              | (b) (3) (A) |                           |                     |        |
| Repair         | Description  | b <mark>(b) (4)</mark> F | rroded and<br>Replace su |             | d, no contact w/ pipe,                     | labeled      | Sour        | ce Contract<br>Reference  |                     |        |
| Co             | Description of<br>Contractor QC<br>Method(s) Used  |                          |                          |             | QCP.                                       |              |             | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily  |
| Va             | ption of QA<br>lidation and<br>Observations  |                          | outlined in              |             | D. (                                       |              |             |                           |                     |        |
| <u> </u>       | Rework   | Final accept             | ptance by g              | overnment.  | Date: 08 MAR 2023<br>Photo Record Attached | 4            | Renai       | work Vali                 | dated as Co         | mnlete |
| 0              | Yes  |                          | No                       |             | See Page 2.                                |              |             | Yes                       | 0                   | No     |
| report was p   | I hereby certify that repair work validated in this report was personally substantiated and this |                          |                          |             |  |              | 6)          |                           |                     |        |
| report is true |  |                          |                          |             | DATE                                       | 26 APR 2     | 023         |                           |                     |        |



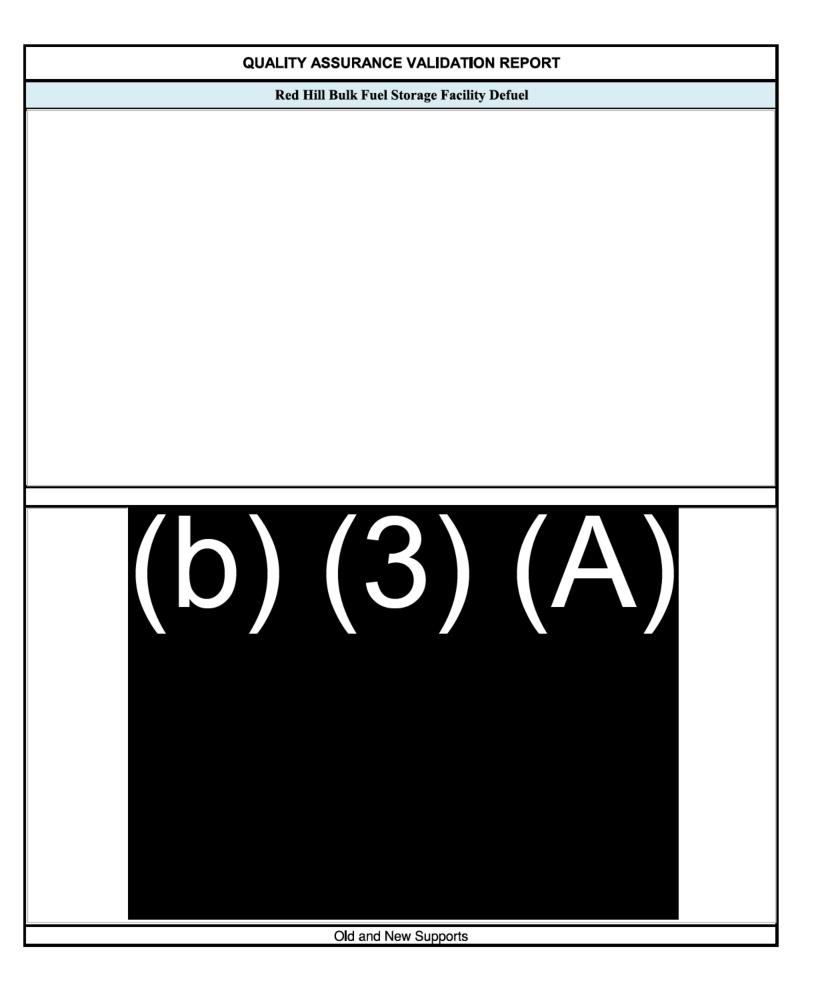
|                                |  |                |              | QUALI                 | TY VALIDATION (                     | QV) REPC     | ORT        |                           |                     |        |
|--------------------------------|--|----------------|--------------|-----------------------|-------------------------------------|--------------|------------|---------------------------|---------------------|--------|
|                                |  |                | ]            | Red Hill B            | ulk Fuel Storage Fac                | cility Defue | el         |                           |                     |        |
| Vali                           | idation Firm   | HDR Env        | ironmenta    | l, Operatio           | ns and Construction,                | Inc.         |            | Repair<br>No.             | 134                 |        |
|                                | Address  | 9781 S. N      | /leridian Bl | vd., Suite            | 400, Englewood, CO                  | 80112        |            |                           | PSF.015             |        |
| С                              | Contract No.   | FA89031        | 5D0007, D    | .O. FA890             | )3-19-F-0027                        |              |            | Report<br>Date            | 26 APR 2            | :023   |
| Q                              | V Engineer   | (b) (6)        |              |                       | Phone (b) (6)                       | )            | Email      |                           | 5)                  |        |
|                                |  |                |              |                       | VALIDATION                          |              |            |                           |                     |        |
| So                             | urce   | H              | PDF Page N   | lo.                   | Facility Geograph                   | nic Area     |            | Location                  | Reference           |        |
| NDAA                           |  | 71             |              |                       | (b) (3) (A)                         |              | (b) (3) (A | )                         |                     |        |
| Repair                         | Description  | support.       | , in contac  | t w/ pipe, <b>l</b> a | abeled by <sup>(b) (4)</sup> . Repl | ace          | Sour       | ce Contract<br>Reference  |                     |        |
| Co                             | Description of<br>Contractor QC<br>Method(s) Used  |                |              |                       | λCΡ.                                |              |            | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily  |
| Va                             | ption of QA<br>lidation and<br>Dbservations  |                | outlined in  |                       | Date: 08 MAR 2023                   |              |            |                           |                     |        |
|                                | Rework   | Needed         | Mance by go  |                       | Photo Record Attached               | d            | Repair     | r Work Vali               | dated as Co         | mplete |
| 0                              | Yes  | ullet          | No           |                       | See Page 2.                         |              | $\odot$    | Yes                       | 0                   | No     |
|                                | I hereby certify that repair work validated in this report was personally substantiated and this |                |              |                       | CERTIFICATION                       |              | (6)        |                           |                     |        |
| report was p<br>report is true | *  | istantiated an | u inis       |                       | DATE                                | 26 APR 2     | 2023       |                           |                     |        |



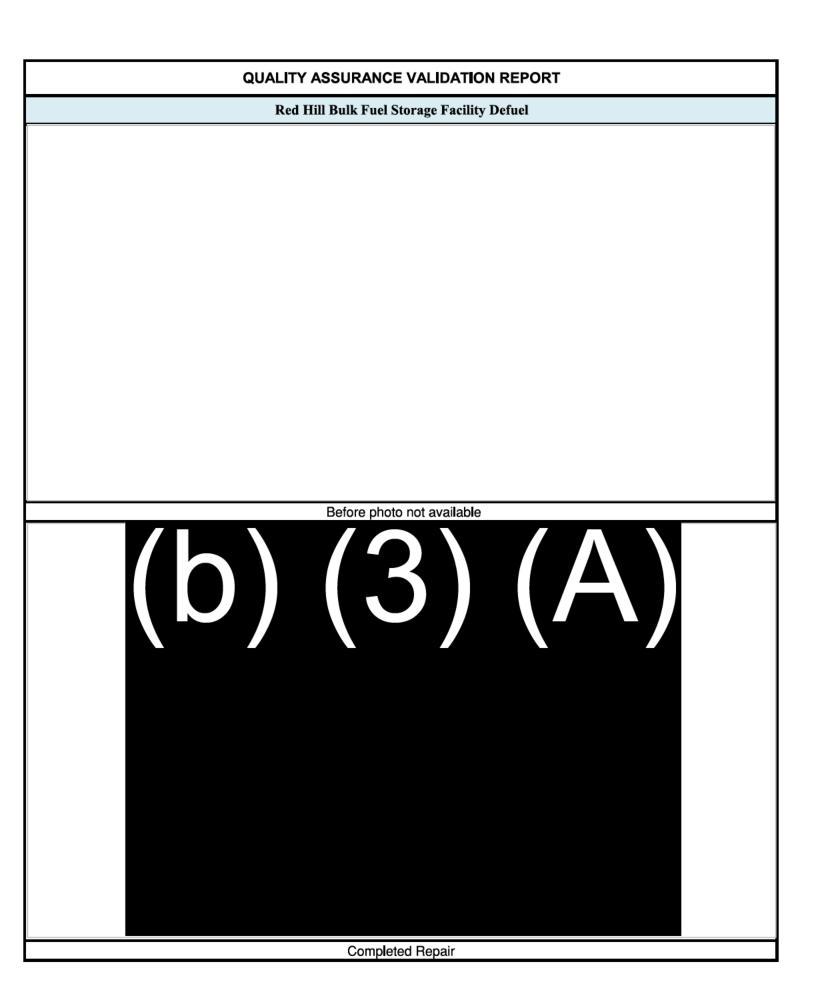
|                |   |           |              | QUALI       | TY VALIDATION (                            | QV) REPO    | DRT     |                           |                     |        |
|----------------|---|-----------|--------------|-------------|--|-------------|---------|---------------------------|---------------------|--------|
|                |   |           | ]            | Red Hill B  | ulk Fuel Storage Fac                       | ility Defue | ł       |                           |                     |        |
| Vali           | idation Firm  | HDR Env   | ironmenta    | , Operatio  | ns and Construction,                       | Inc.        |         | Repair<br>No.             | 135                 |        |
|                | Address   | 9781 S. N | leridian Bl  | vd., Suite  | 400, Englewood, CO                         | 80112       |         | Repair ID                 | PSF.016             |        |
| C              | Contract No.  | FA89031   | 5D0007, D    | .O. FA890   | 3-19-F-0027                                |             |         | Report<br>Date            | 26 APR 2            | 023    |
| Q              | V Engineer  | (b) (6)   |              |             | Phone(b) (6                                |             | Email   | (b) (6                    |                     |        |
|                |   |           |              |             | VALIDATION                                 |             | •       |                           |                     |        |
| So             | urce  | I         | PDF Page N   | lo.         | Facility Geograph                          | ic Area     |         | Location                  | Reference           |        |
| NDAA           |   | 71        |              |             | (b) (3) (A)                                |             | (b) (3) | ) (A)                     |                     |        |
| Repair         | Repair Description Corroded, intact, metal to metal contact, only top anchor wall present, lower part of bracket not in contact w/ wall. Replace support. |           |              |             |  |             |         | ce Contract<br>Reference  |                     |        |
| Co             | escription of<br>ntractor QC<br>hod(s) Used   |           | outlined in  | detail in G | CP.  |             |         | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily  |
| Va             | ption of QA<br>lidation and<br>0bservations   |           | outlined in  |             | Data: 08 MAR 2022                          |             |         |                           |                     |        |
|                | Rework  | Needed    | blance by go |             | Date: 08 MAR 2023<br>Photo Record Attached | 1           | Repair  | · Work Vali               | dated as Co         | mplete |
| 0              | Yes   | ullet     | No           |             | See Page 2.                                |             | $\odot$ | Yes                       | 0                   | No     |
| Comments       |   |           |              |             | CERTIFICATION                              | (b)-        |         |                           |                     |        |
|                | tify that repair<br>personally sub  |           |              | QV ENG      | INEER SIGNATURE                            | (b)         | (6)     |                           |                     |        |
| report is true | *   |           |              |             | DATE                                       | 26 APR 2    | 2023    |                           |                     |        |



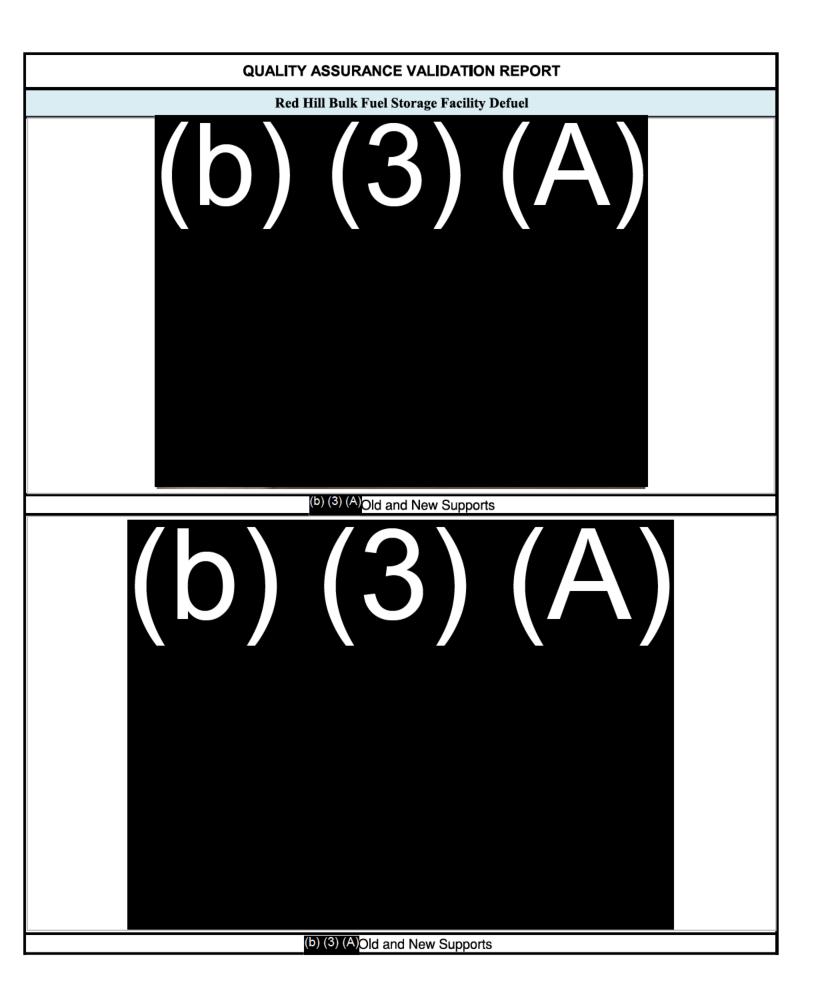
|                |  |              |              | QUALI       | TY VALIDATION (                                    | QV) REPC     | DRT                |                           |                     |        |
|----------------|--|--------------|--------------|-------------|--|--------------|--------------------|---------------------------|---------------------|--------|
|                |  |              | J            | Red Hill B  | Bulk Fuel Storage Fac                              | cility Defue | 1                  |                           |                     |        |
| Vali           | idation Firm                                 | HDR Env      | ironmenta    | l, Operatio | ons and Construction,                              | Inc.         |                    | Repair<br>No.             | 136                 |        |
|                | Address                                      | 9781 S. N    | /leridian Bl | vd., Suite  | 400, Englewood, CO                                 | 80112        |                    |                           | PSF.042             |        |
| С              | Contract No.                                 | FA89031      | 5D0007, D    | .O. FA890   | 03-19-F-0027                                       |              |                    | Report<br>Date            | 26 APR 2            | 2023   |
| Q              | V Engineer                                   | (b) (6       | 6)           |             | Phone(b) (6  |              | Email              | (1)                       | )                   |        |
|                |  |              |              |             | VALIDATION   |              |                    |                           |                     |        |
| So             | ource  | F            | PDF Page N   | Io.         | Facility Geograph                                  | iic Area     |                    | Location                  | Reference           |        |
| NDAA           |  | 71           |              |             | (b) (3) (A)  |              | (b) (3) ( <i>i</i> | ۹)                        |                     |        |
| Repair         | Description                                  | metal con    | ntact. API   | 570: Supp   | brage to wall at top, m<br>port anchor dislodged t |              | Sour               | ce Contract<br>Reference  |                     |        |
| Co             | escription of<br>ontractor QC<br>hod(s) Used |              | outlined in  | detail in C | λCP.   |              |                    | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily  |
| Va             | ption of QA<br>lidation and<br>Dbservations  |              | outlined in  |             |  |              |                    |                           |                     |        |
|                | Rework                                       | Final accept | stance by go |             | Date: 08 MAR 2023<br>Photo Record Attached         | a            | Renaii             | - Work Vali               | dated as Co         | mplete |
| 0              | Yes  | O            | No           |             | See Page 2.  | 1            |                    | Yes                       |                     | No     |
|                | rtify that repair<br>persona <b>ll</b> y sub |              |              | QV ENG      | CERTIFICATION<br>SINEER SIGNATURE                  | (b) (        | (6)                |                           |                     |        |
| report is true | 5.   |              |              |             | DATE   | 26 APR 2     | :023               |                           |                     |        |



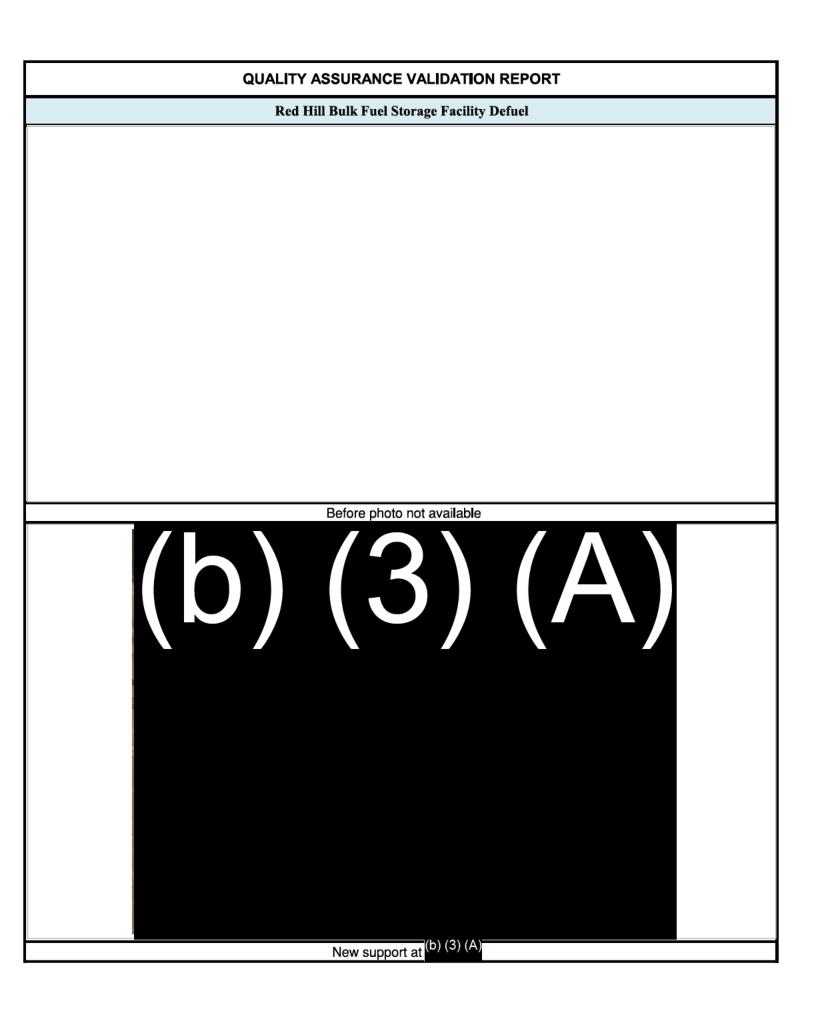
|  |                                   |               |              | QUALI       | TY VALIDATION (                                     | QV) REPO     | ORT        |                           |                     |        |
|--|-----------------------------------|---------------|--------------|-------------|---|--------------|------------|---------------------------|---------------------|--------|
|  |                                   |               | 1            | Red Hill B  | ulk Fuel Storage Fac                                | cility Defue | el         |                           |                     |        |
| Validat  | ion Firm                          | HDR Env       | ironmenta    | l, Operatio | ns and Construction,                                | Inc.         |            | Repair<br>No.             | 137                 |        |
|  | Address                           | 9781 S. N     | leridian Bl  | vd., Suite  | 400, Englewood, CO                                  | 80112        |            | Repair ID                 | PSF.060             |        |
| Cont   | ract No.                          | FA89031       | 5D0007, D    | .O. FA890   | )3-19-F-0027  |              |            | Report<br>Date            | 26 APR 2            | 023    |
| QV I   | Engineer                          | (b) (6)       |              |             | Phone $(b)$ (6)                                     | 5)           | Email      | (1)                       | )                   |        |
|  |                                   |               |              |             | VALIDATION  |              |            |                           |                     |        |
| Source   | e                                 | F             | PDF Page N   | lo.         | Facility Geograph                                   | ic Area      |            | Location                  | Reference           |        |
| NDAA   |                                   | 71            |              |             | (b) (3) (A)   |              | (b) (3) (A | A)                        |                     |        |
| Repair Des   | scription                         | API 570:      | Missing pip  |             | pipe is at end of arm.<br>Toolt (no isolation Tefle | on pad).     | Sour       | ce Contract<br>Reference  |                     |        |
| Contra   | iption of<br>actor QC<br>(s) Used |               | outlined in  | detail in G | QCP.  |              |            | ntractor QC<br>s Reviewed | QCP and<br>Reports. | Daily  |
|  | on of QA<br>tion and<br>ervations |               | outlined in  |             | D. (  |              |            |                           |                     |        |
|  | Rework                            | Final accept  | ptance by go | overnment.  | Date: 08 MAR 2023<br>Photo Record Attached          | 4            | Repair     | · Work Vali               | dated as Co         | mnlete |
| 0  | Yes                               | $\bullet$     | No           |             | See Page 2.   |              | •          | Yes                       | 0                   | No     |
| Comments   | that repair                       | work validate | ed in this   | QV ENG      | CERTIFICATION                                       | (b) (        | (6)        |                           |                     |        |
| report was personeered to the termination of terminatio of ter |                                   |               |              |             | DATE  | 26 APR 2     |            |                           |                     |        |



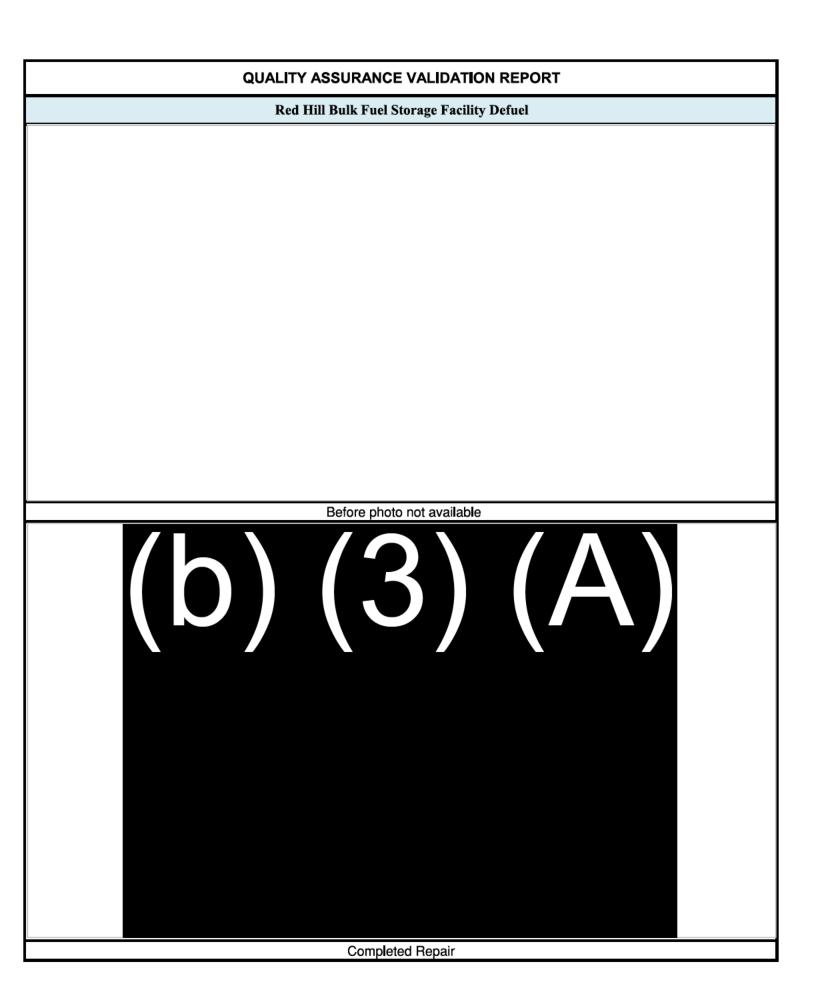
|                                |                              |               |              | QUALI       | TY VALIDATION (       | QV) REPC         | DRT                 |                          |             |        |
|--------------------------------|------------------------------|---------------|--------------|-------------|-----------------------|------------------|---------------------|--------------------------|-------------|--------|
|                                |                              |               | ]            | Red Hill B  | ulk Fuel Storage Fac  | ility Defue      | 1                   |                          |             |        |
| Vali                           | dation Firm                  | HDR Env       | ironmenta    | l, Operatio | ns and Construction,  | Inc.             |                     | Repair<br>No.            | 138         |        |
|                                | Address                      | 9781 S. N     | /leridian Bl | vd., Suite  | 400, Englewood, CO    | 80112            |                     |                          | PSF.061     |        |
| С                              | Contract No.                 | FA89031       | 5D0007, D    | .O. FA890   | )3-19-F-0027          |                  |                     | Report<br>Date           | 26 APR 2    | :023   |
| Q                              | V Engineer                   | (b) (6)       | )            |             | Phone $(b)$ (6        | )                | Email               |                          | 5)          |        |
|                                |                              |               |              |             | VALIDATION            |                  |                     |                          |             |        |
| So                             | urce                         | H             | PDF Page N   | lo.         | Facility Geograph     | ic Area          |                     | Location                 | Reference   |        |
| NDAA                           |                              | 71            |              |             | (b) (3) (A)           |                  | (b) (3)             | (A)                      |             |        |
|                                |                              | Bottom of     | bracket de   | eformed fre | om impact. Replace s  | support.         |                     |                          |             |        |
| Repair                         | Description                  |               |              |             |                       |                  | Sour                | ce Contract<br>Reference |             |        |
|                                |                              |               |              |             |                       |                  |                     |                          |             |        |
|                                | escription of                |               | outlined in  | detail in G | ICP.                  | QCP and Reports. | Daily               |                          |             |        |
|                                | ntractor QC<br>hod(s) Used   |               |              |             |                       |                  | Record              | s Reviewed               |             |        |
|                                |                              | Methods       | outlined in  | QASP.       |                       |                  |                     |                          |             |        |
|                                | ption of QA                  |               |              |             |                       |                  |                     |                          |             |        |
|                                | lidation and<br>Observations |               |              |             |                       |                  |                     |                          |             |        |
|                                |                              | Final accept  | ptance by go | overnment.  | Date: 08 MAR 2023     |                  |                     |                          |             |        |
|                                | Rework                       | Needed        |              |             | Photo Record Attached | 1                | Repair              | r Work Vali              | dated as Co | mplete |
| 0                              | Yes                          | ullet         | No           |             | See Page 2.           |                  | $oldsymbol{igodol}$ | Yes                      | 0           | No     |
| Comments                       |                              |               |              |             |                       |                  |                     |                          |             |        |
|                                |                              |               |              |             |                       |                  |                     |                          |             |        |
|                                |                              |               |              |             |                       |                  |                     |                          |             |        |
|                                |                              |               |              |             |                       |                  |                     |                          |             |        |
|                                |                              |               |              |             | CERTIFICATION         |                  |                     |                          |             |        |
|                                | tify that repair             |               |              | QV ENG      | INEER SIGNATURE       | (b) (            | (6)                 |                          |             |        |
| report was p<br>report is true | personally sub<br>e.         | stantiated an | a this       |             | DATE                  | 26 APR 2         | 2023                |                          |             |        |



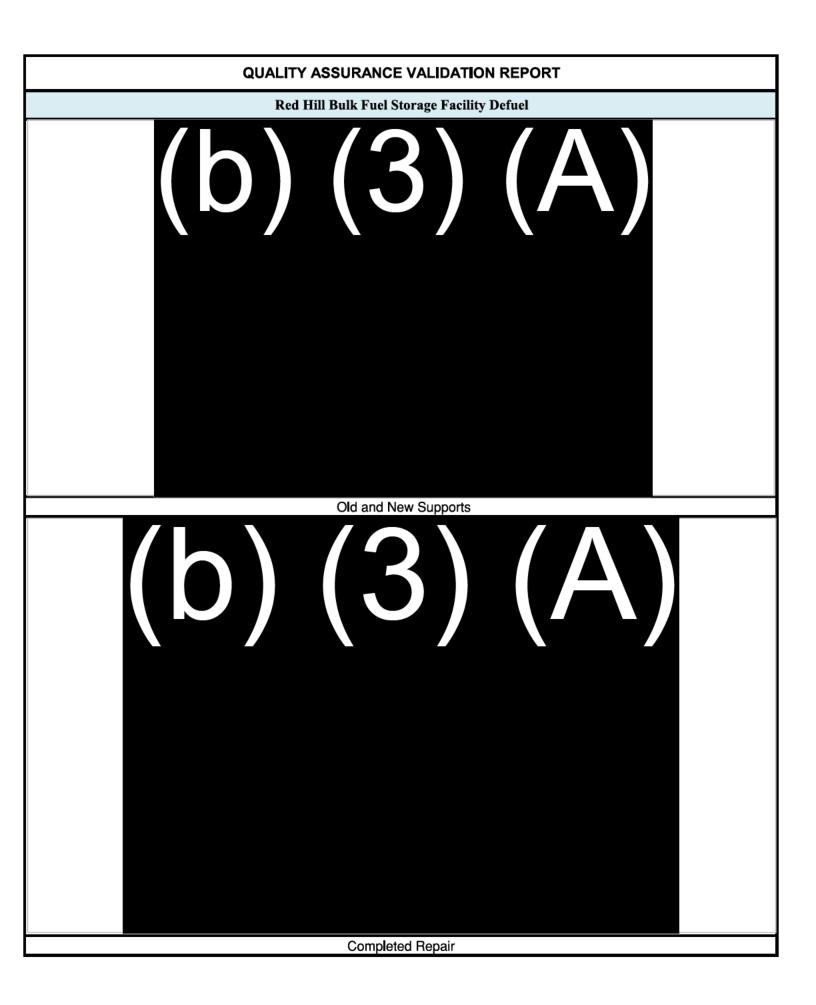
| QUALITY VALIDATION (QV) REPORT   |   |                  |              |                       |                       |             |                    |                           |             |        |  |
|--|---|------------------|--------------|-----------------------|-----------------------|-------------|--------------------|---------------------------|-------------|--------|--|
|  |   |                  | ]            | Red Hill E            | Bulk Fuel Storage Fac | ility Defue | 1                  |                           |             |        |  |
| Valid  | lation Firm                               | HDR Env          | ironmenta    | l, Operatio           | ons and Construction, | Inc.        |                    | Repair<br>No.             | 139         |        |  |
|  | Address                                   | 9781 S. N        | /leridian Bl | vd., Suite            | 400, Englewood, CO    | 80112       |                    | Repair ID                 | PSF.087     |        |  |
| Cc   | ontract No.                               | FA89031          | 5D0007, D    | .O. FA89(             | 03-19-F-0027          |             |                    | Report<br>Date            | 26 APR 2    | :023   |  |
| Q۱   | V Engineer                                | (b) (6)          |              |                       | Phone $(b)$ $(6)$     |             |                    | il (b) (6)                |             |        |  |
|  |   |                  |              |                       | VALIDATION            |             |                    |                           |             |        |  |
| Sou  | Source PDF Page 1                         |                  |              |                       | Facility Geograph     | ic Area     | Location Reference |                           |             |        |  |
| NDAA   |   | 71               |              |                       | (b) (3) (A)           |             | (b) (3) (A)        |                           |             |        |  |
| Repair Description No contact w/ pip   |   |                  |              |                       | upport or modify supp | port to     | Sour               | ce Contract<br>Reference  | N/A         |        |  |
| Cont   | scription of<br>atractor QC<br>od(s) Used |                  |              |                       |                       |             |                    | ntractor QC<br>s Reviewed | N/A         |        |  |
| Vali   | tion of QA<br>idation and<br>bservations  |                  | eviewed a    | nd approv             | red 20 APR 2023.      |             |                    |                           |             |        |  |
|  |   | Final accept     | ptance by go | overnment.            | Date: 08 MAR 2023     | r           |                    |                           |             |        |  |
|  | Rework                                    | Needed           | []           | Photo Record Attached |                       | 1           | Repair Work Vali   |                           | dated as Co | mplete |  |
| 0  | Yes                                       | $oldsymbol{igo}$ | No           |                       | See Page 2.           |             | $oldsymbol{igo}$   | Yes                       | 0           | No     |  |
| Comments<br>Not required. Existing new(b) (3) (A) replaces (b) (3) (A) with sufficient spacing between (b) (3) (B)<br>Work pre-validated as complete 11/21/22. |   |                  |              |                       |                       |             |                    |                           |             |        |  |
|  |   |                  |              |                       | GINEER SIGNATURE      | (h) (       | (6)                |                           |             |        |  |
| I hereby certify that repair work validated in this<br>report was personally substantiated and this<br>report is true.   |   |                  |              |                       | DATE                  | 26 APR 2023 |                    |                           |             |        |  |



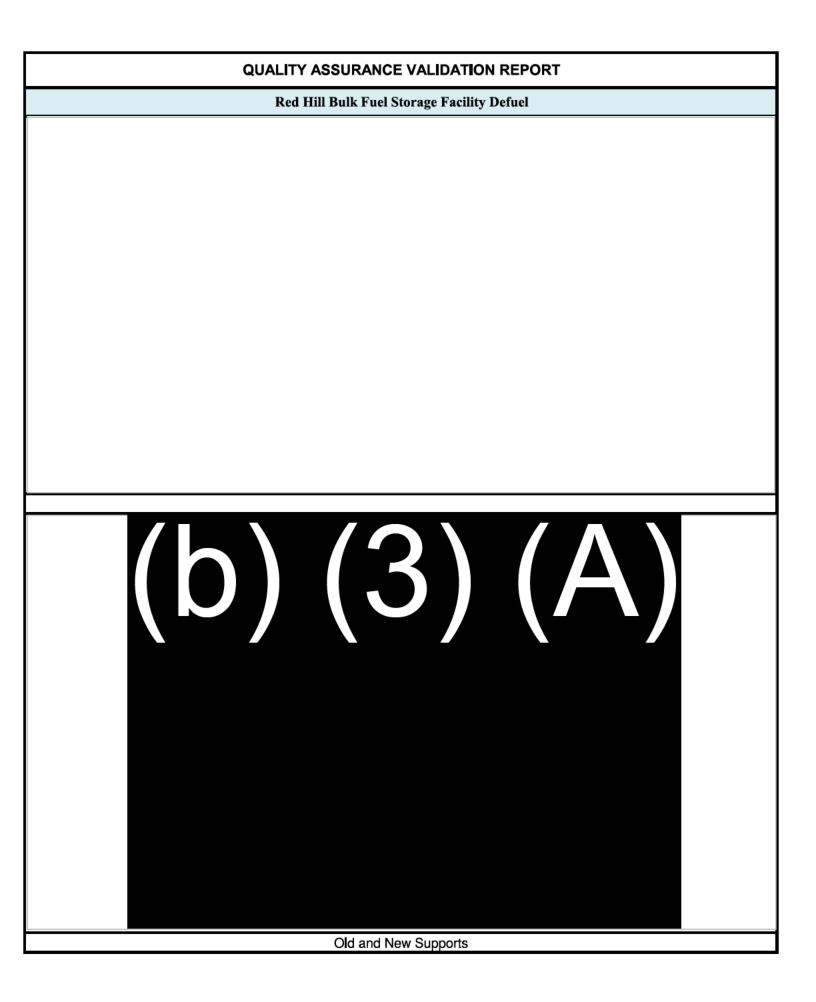
| QUALITY VALIDATION (QV) REPORT   |   |            |                            |                       |                       |             |                              |                           |          |        |  |
|--|---|------------|----------------------------|-----------------------|-----------------------|-------------|------------------------------|---------------------------|----------|--------|--|
|  |   |            | ]                          | Red Hill B            | Bulk Fuel Storage Fac | ility Defue | 1                            |                           |          |        |  |
| Vali   | dation Firm                                 | HDR Env    | ironmenta                  | l, Operatio           | ons and Construction, | Inc.        |                              | Repair<br>No.             | 140      |        |  |
|  | Address                                     | 9781 S. N  | /leridian Bl               | vd., Suite            | 400, Englewood, CO    | 80112       |                              | Repair ID                 | PSF.089  |        |  |
| С  | Contract No.                                | FA89031    | 5D0007, D                  | O. FA890              | )3-19-F-0027          |             |                              | Report<br>Date            | 26 APR 2 | :023   |  |
| Q  | V Engineer                                  | (b) (6     | )                          |                       | Phone (b) (6)         | )           | Email                        |                           |          |        |  |
|  | VALIDATION                                  |            |                            |                       |                       |             |                              |                           |          |        |  |
| So   | urce  | F          | PDF Page N                 | lo.                   | Facility Geograph     | ic Area     |                              | Location Reference        |          |        |  |
| NDAA   |   | 71         |                            |                       | (b) (3) (A)           |             | (b) (3) (A                   | N)                        |          |        |  |
| Repair Description   |   | properly s | ct w/ pipe.<br>support pip |                       | upport or modify supp | port to     | Source Contract<br>Reference |                           |          |        |  |
|  |   |            |                            |                       |                       |             |                              |                           |          |        |  |
| Co   | escription of<br>ntractor QC<br>hod(s) Used |            | outlined in                | detail in C           | JCP.                  |             |                              | ntractor QC<br>s Reviewed |          | Daily  |  |
| Va   | ption of QA<br>lidation and<br>Dbservations |            | outlined in                |                       | D-4 09 MAD 2022       |             |                              |                           |          |        |  |
|  | Rework                                      | Needed     | Mance by go                | Photo Record Attached |                       |             | Repair Work Validated as Cor |                           |          | mplete |  |
| 0  | Yes   | $\bullet$  | No                         |                       | See Page 2.           |             | •                            | Yes                       | 0        | No     |  |
| Comments<br>CERTIFICATION<br>CERTIFICATION<br>I hereby certify that repair work validated in this<br>QV ENGINEER SIGNATURE (b) (6) |   |            |                            |                       |                       |             |                              |                           |          |        |  |
|  | personally sub                              |            |                            |                       |                       |             |                              |                           |          |        |  |



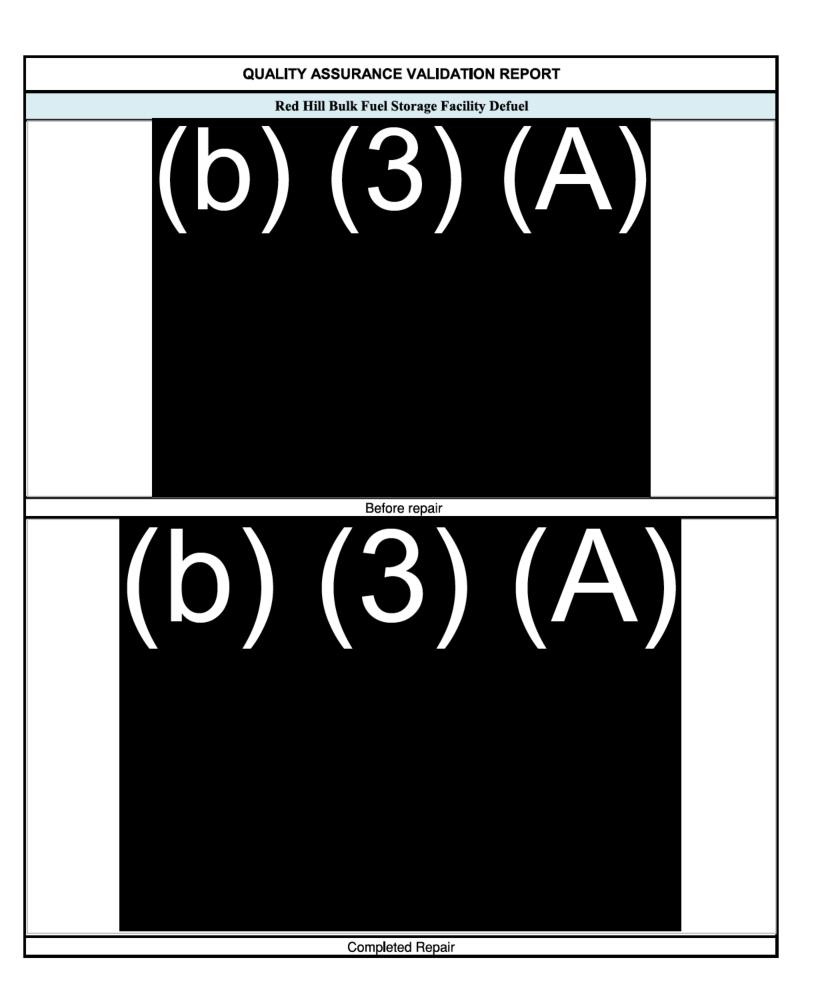
| QUALITY VALIDATION (QV) REPORT   |   |           |                                    |   |                    |                                      |                    |                                   |          |     |  |  |
|--|---|-----------|------------------------------------|---|--------------------|--------------------------------------|--------------------|-----------------------------------|----------|-----|--|--|
| Red Hill Bulk Fuel Storage Facility Defuel   |   |           |                                    |   |                    |                                      |                    |                                   |          |     |  |  |
| Vali   | idation Firm                                | HDR Env   | ironmenta                          | I, Operations and Construction, Inc.  |                    |                                      |                    | Repair<br>No.                     | 141      |     |  |  |
|  | Address                                     | 9781 S. N | leridian B                         | vd., Suite 4  | 100, Englewood, CO | 80112                                |                    | Repair ID                         | PSF.169  |     |  |  |
| c  | Contract No.                                | FA89031   | 5D0007, D                          | .O. FA890   | 3-19-F-0027        |                                      |                    | Report<br>Date                    | 26 APR 2 | 023 |  |  |
| Q  | V Engineer                                  | (b) (6)   |                                    | Phone $(b)$ $(6)$   |                    |                                      | Email              |                                   |          |     |  |  |
| VALIDATION   |   |           |                                    |   |                    |                                      |                    |                                   |          |     |  |  |
| So   | urce  | F         | PDF Page N                         | lo.   | Facility Geograph  | ic Area                              | Location Reference |                                   |          |     |  |  |
| NDAA   |   | 71        |                                    |   | (b) (3) (A)        |                                      | (b) (3) (A         | <b>()</b>                         |          |     |  |  |
|  |   |           |                                    | t, U-bolt corroded to delamination,<br>n at baseplate and anchors. Replace Sc |                    |                                      | Sour               | Source Contract<br>Reference      |          |     |  |  |
| Co   | escription of<br>ntractor QC<br>hod(s) Used |           | Methods outlined in detail in QCP. |   |                    |                                      |                    | Contractor QC<br>Records Reviewed |          |     |  |  |
| Methods outlined<br>Description of QA<br>Validation and<br>Observations                                  |   |           |                                    |   |                    |                                      |                    |                                   |          |     |  |  |
|  |   |           | otance by g                        |   | Date: 08 MAR 2023  | ed Repair Work Validated as Complete |                    |                                   |          |     |  |  |
| 0  | Yes   | Needed    | No                                 | Photo Record Attached<br>See Page 2.  |                    |                                      | Repair             | Yes                               |          | No  |  |  |
| Comments CERTIFICATION L hereby certify that repair work validated in this QV ENGINEER SIGNATURE (b) (6) |   |           |                                    |   |                    |                                      |                    |                                   |          |     |  |  |
| report was personally substantiated and this report is true.   |   |           |                                    | DATE 26 APR 2023  |                    |                                      |                    |                                   |          |     |  |  |



| QUALITY VALIDATION (QV) REPORT   |   |           |              |   |   |          |                               |                |          |        |  |  |
|--|---|-----------|--------------|---|---|----------|-------------------------------|----------------|----------|--------|--|--|
|  | Red Hill Bulk Fuel Storage Facility Defuel  |           |              |   |   |          |                               |                |          |        |  |  |
| Vali   | idation Firm                                | HDR Env   | ironmenta    | l, Operations and Construction, Inc.                  |   |          |                               | Repair<br>No.  | 142      |        |  |  |
|  | Address                                     | 9781 S. N | /leridian Bl | vd., Suite  | 400, Englewood, CO                          | 80112    |                               |                | PSF.234  |        |  |  |
| 0  | Contract No.                                | FA89031   | 5D0007, D    | .O. FA890   | 3-19-F-0027                                 |          |                               | Report<br>Date | 26 APR 2 | 023    |  |  |
| Q  | V Engineer                                  | (b) (6    | )            | Phone (b) (6)   |   |          | Email                         | (b) (C)        |          |        |  |  |
|  | VALIDATION                                  |           |              |   |   |          |                               |                |          |        |  |  |
| So   | Source F                                    |           |              | lo.   | Facility Geograph                           | ic Area  | Location Reference            |                |          |        |  |  |
| NDAA   |   | 71        |              |   | (b) (3) (A)                                 |          | (b) (3) (A)                   |                |          |        |  |  |
| Repair   | Description                                 | displaced | on pipe, n   |   | apparent impact, U-<br>ed. API 570: Loose U |          | Source Contract<br>Reference  |                |          |        |  |  |
| Co   | escription of<br>ntractor QC<br>hod(s) Used |           | outlined in  | detail in C   | QCP.  |          | Contractor QC Reports.        |                |          | Daily  |  |  |
| Va   | ption of QA<br>lidation and<br>Dbservations |           | outlined in  |   | Data: 08 MAR 2022                           |          |                               |                |          |        |  |  |
|  | Rework                                      | Needed    | nance by go  | overnment. Date: 08 MAR 2023<br>Photo Record Attached |   |          | Repair Work Validated as Comp |                |          | mplete |  |  |
| 0  | Yes   | $\bullet$ | No           |   | See Page 2.                                 |          |                               | Yes            | 0        | No     |  |  |
| Comments CERTIFICATION I hereby certify that repair work validated in this report was personally substantiated and this report was personally substantiated and this |   |           |              |   |   |          |                               |                |          |        |  |  |
| report is true   | е.  |           |              |   | DATE  | 26 APR 2 | 023                           |                |          |        |  |  |



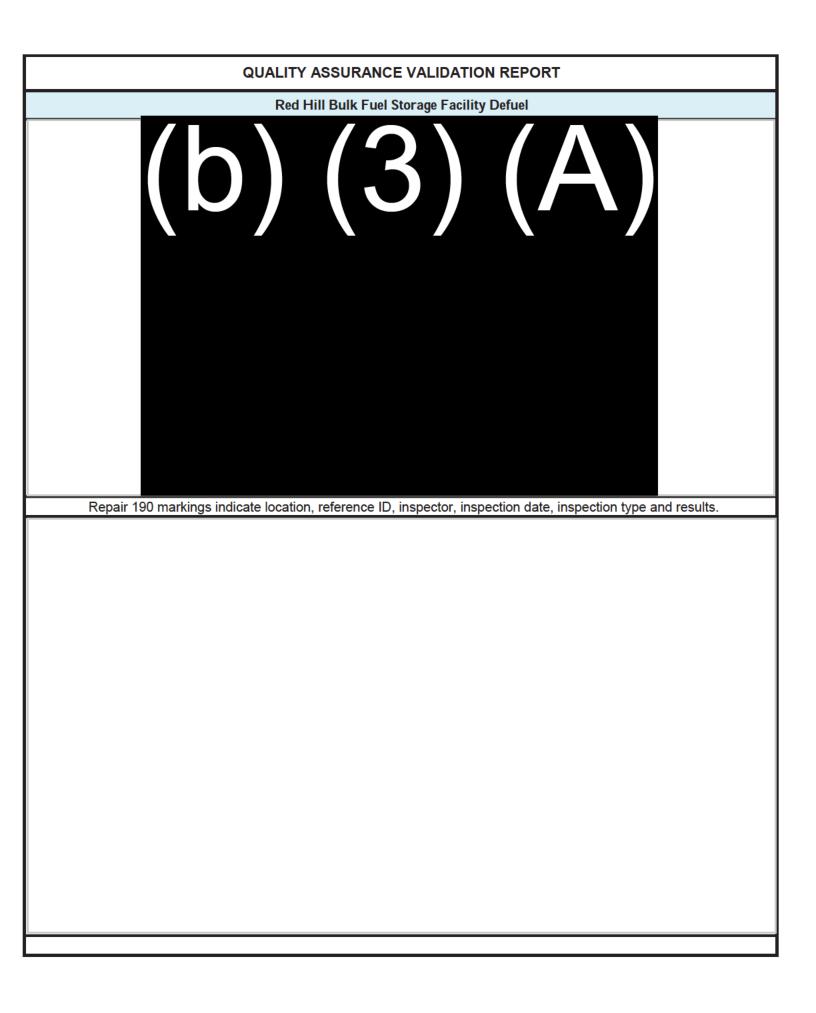
| QUALITY VALIDATION (QV) REPORT   |   |              |  |                                      |  |  |                                   |                |          |     |  |  |
|--|---|--------------|--|--------------------------------------|--|--|-----------------------------------|----------------|----------|-----|--|--|
|  | Red Hill Bulk Fuel Storage Facility Defuel                            |              |  |                                      |  |  |                                   |                |          |     |  |  |
| Vali   | idation Firm  | HDR Env      | ironmenta  | I, Operations and Construction, Inc. |  |  |                                   | Repair<br>No.  | 143      |     |  |  |
|  | Address   | 9781 S. N    | leridian B   | vd., Suite                           | 400, Englewood, CO                         | 80112                                      |                                   | Repair ID      | PSF.238  |     |  |  |
| C  | Contract No.  | FA89031      | 5D0007, D  | .O. FA890                            | 3-19-F-0027                                |  |                                   | Report<br>Date | 26 APR 2 | 023 |  |  |
| Q  | V Engineer  | (b) (6)      |  | Phone $(b)$ (6)                      |  |  | Email                             |                | )        |     |  |  |
|  |   |              |  |                                      | VALIDATION                                 |  |                                   |                |          |     |  |  |
| So   | urce  | F            | PDF Page N   | lo.                                  | Facility Geograph                          | ic Area                                    | Location Reference                |                |          |     |  |  |
| NDAA   |   | 71           |  |                                      | (b) (3) (A)                                |  | (b) (3) (A)                       |                |          |     |  |  |
| 570: Damage  |   |              | port completely deformed, removed from baseplate. API<br>Damaged pipe support (impacted by a moving vehicle).<br>lace support. |                                      |  |  | Source Contract<br>Reference      |                |          |     |  |  |
| Co   | escription of<br>ntractor QC<br>hod(s) Used                           |              | outlined in  | detail in C                          | CP.  | Contractor QC Reports.<br>Records Reviewed |                                   |                | Daily    |     |  |  |
| Va   | Methods outlin<br>Description of QA<br>Validation and<br>Observations |              |  |                                      | D-4 09 MAR 2022                            |  |                                   |                |          |     |  |  |
|  | Rework  | Final accept | ptance by g  |                                      | Date: 08 MAR 2023<br>Photo Record Attached | 1  | Repair Work Validated as Complete |                |          |     |  |  |
| 0  | Yes   |              | No   |                                      | See Page 2.                                |  |                                   | Yes            | 0        | No  |  |  |
| Comments CERTIFICATION L hereby certify that repair work validated in this QV ENGINEER SIGNATURE (b) (6) |   |              |  |                                      |  |  |                                   |                |          |     |  |  |
| report was personally substantiated and this report is true.   |   |              |  | DATE 26 APR                          |  |  |                                   |                |          |     |  |  |



|   | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel  |           |              |              |   |              |             |                           |             |             |  |
|---|---|-----------|--------------|--------------|---|--------------|-------------|---------------------------|-------------|-------------|--|
|   |   |           | ]            | Red Hill B   | ulk Fuel Storage Fac                    | ility Defue  | 1           |                           |             |             |  |
| Validat   | tion Firm   | HDR Env   | ironmental   | , Operatio   | ns and Construction,                    | Inc.         |             | Repair<br>No.             | 187         |             |  |
|   | Address   | 9781 S. N | leridian Bl  | vd., Suite   | 400, Englewood, CO                      | 80112        |             | Repair ID                 | JP5.A21.    | 01          |  |
| Con   | tract No.   | FA89031   | 5D0007, D    | .O. FA890    | 3-19-F-0027                             |              |             | Report<br>Date            | 05 APR 2    | 2023        |  |
| QV  | Engineer  | (b) (6)   |              |              | Phone (b) (6)                           |              | Email       | (b) (                     | (6)         |             |  |
|   |   |           |              |              | VALIDATION                              |              |             |                           |             |             |  |
| Sourc   | e   | F         | DF Page N    | o.           | Facility Geograph                       | ic Area      |             | Location                  | Reference   |             |  |
| EXWC  |   | EXWC Re   | ecommend     | ation        | (b) (3) (A)                             |              | (b) (3) (A) |                           |             |             |  |
| Repair De   | (b) (3) (A)<br>associated with pipe support.  |           |              |              |   |              | Sour        | ce Contract<br>Reference  |             |             |  |
| Description of<br>Contractor QC<br>Method(s) Used |   |           |              |              |   |              |             | ntractor QC<br>s Reviewed |             |             |  |
|   | on of QA<br>ation and<br>ervations  |           |              |              | ed EXWC - Compreh<br>Service Assessment | ensive Rep   | air List Re | commend                   | ations      |             |  |
|   |   |           | otance by go |              | Date: 08 MAR 2023                       |              |             |                           |             |             |  |
|   |   | Needed    | No           |              | Photo Record Attached                   | 1            | 0           |                           | dated as Co |             |  |
| . S<br>leveraged p                                | Yes       No       N/A         Comments       Localized Fitness for Service (FFS) assessments were conducted at specific indications was limited to mechanical integrity principles leveraged previous integrity management work. |           |              |              |   |              |             |                           |             | No<br>, and |  |
| FFS performed, no repair required for defuel.     |   |           |              |              |   |              |             |                           |             |             |  |
| Reference:  | EXWC -  | Comprehe  | ensive Rep   | pair List Re | ecommendations / Pi                     | peline Fitne | ess for Ser | vice Asses                | sment       |             |  |
|   |   |           |              |              | CERTIFICATION                           |              |             |                           |             |             |  |
| l hereby certify<br>report was pers               | -   |           |              | QV ENG       | INEER SIGNATURE                         | (b)          | (6)         |                           |             |             |  |
| report is true.                                   | shany Sub   |           |              |              | DATE                                    | 05 APR 2     | 023         |                           |             |             |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                  |                           |   |              |                    |                          |  |             |  |  |
|--|--|------------------|---------------------------|---|--------------|--------------------|--------------------------|--|-------------|--|--|
|  |  | F                | Red Hill B                | ulk Fuel Storage Fac  | ility Defue  | I                  |                          |  |             |  |  |
| Validation Firm  | HDR Environr   | mental           | , Operatio                | ns and Construction,  | Inc.         |                    | Repair<br>No.            | 189                                    |             |  |  |
| Address  | 9781 S. Merid  | lian Bl          | vd., Suite                | 400, Englewood, CO  | 80112        |                    | Repair ID                | JP5.A21.                               | 03          |  |  |
| Contract No  | FA890315D00  | 007, D           | .O. FA890                 | 3-19-F-0027   |              |                    | Report<br>Date           | 05 APR 2                               | .023        |  |  |
| QV Engineer  | (b) (6)  |                  |                           | Phone (b) (6)   |              | Email              | (b) (6                   | 5)                                     |             |  |  |
|  |  |                  |                           | VALIDATION  |              |                    |                          |  |             |  |  |
| Source   | PDF I  | Page N           | 0.                        | Facility Geograph   | ic Area      |                    | Location                 | Reference                              |             |  |  |
| EXWC   | EXWC Recom   | nmend            | ation                     | (b) (3) (   |              | (b) (3) ( <i>i</i> | A)                       |  |             |  |  |
| Repair Description   | 0.300". Dent lo  | ocated<br>FFS Le | at bottom                 | e dent depth measure<br>of a tee and has has<br>essment. FFS assess | a            | Sour               | ce Contract<br>Reference | N3943020<br>TO<br>N394302 <sup>-</sup> |             |  |  |
| Description o<br>Contractor QC<br>Method(s) Used   |  |                  | ntractor QC<br>s Reviewed | N/A   |              |                    |                          |  |             |  |  |
| Description of QA<br>Validation and<br>Observation   | Update: Pipe   |                  |                           | ed EXWC - Compreh<br>Service Assessment                             | ensive Rep   | oair List Re       | commenda                 | ations                                 |             |  |  |
|  | •  | e by go          | vernment.                 | Date: 08 MAR 2023   |              |                    |                          |  |             |  |  |
|  | Needed   | N                |                           | Photo Record Attached   |              |                    | Work Vali                | dated as Co                            |             |  |  |
| Yes       No       N/A       Yes         Comments       Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (a)         Selection of indications was limited to mechanical integrity principles under assumed service conditional leveraged previous integrity management work. |  |                  |                           |   |              |                    |                          |  | No<br>, and |  |  |
| FFS performed, no repair required for defuel.  |  |                  |                           |   |              |                    |                          |  |             |  |  |
| Reference: EXWC  | - Comprehensi  | ve Rep           | air List Re               | ecommendations / Pi   | peline Fitne | ess for Ser        | vice Asses               | sment                                  |             |  |  |
|  |  |                  |                           | CERTIFICATION   | (1)          |                    |                          |  |             |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |                  |                           |   |              |                    |                          |  |             |  |  |
| report is true.  | ostantiiditeu dhu tills  |                  |                           | DATE  | 05 APR 2     | 023                |                          |  |             |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                             |              |   |             |                    |                           |  |              |  |  |
|--|--|-----------------------------|--------------|---|-------------|--------------------|---------------------------|--|--------------|--|--|
|  |  | I                           | Red Hill B   | ulk Fuel Storage Fac                                      | ility Defue | I                  |                           |  |              |  |  |
| Validation Firn  | HDR Enviro   | onmental                    | , Operatio   | ns and Construction,                                      | Inc.        |                    | Repair<br>No.             | 190                                    |              |  |  |
| Addres   | <sup>6</sup> 9781 S. Me  | ridian Bl                   | vd., Suite 4 | 400, Englewood, CO  | 80112       |                    | Repair ID                 | JP5.A21.0                              | 04           |  |  |
| Contract No  | FA890315D  | 00007, D                    | .O. FA890    | 3-19-F-0027   |             |                    | Report<br>Date            | 05 APR 2                               | 023          |  |  |
| QV Enginee   | (b) (6)  |                             |              | Phone (b) (6)   |             | Email              | (b) (                     | (6)                                    |              |  |  |
|  |  |                             |              | VALIDATION  |             |                    |                           |  |              |  |  |
| Source   | PD   | F Page N                    | ю.           | Facility Geograph   | ic Area     |                    | Location                  | Reference                              |              |  |  |
| EXWC   | EXWC Reco  | ommend                      | lation       | (D) (3) (.  |             | (b) (3) ( <i>i</i> | A)                        |  |              |  |  |
| Repair Description   | coating rem  | noval <sup>(b) (3) (4</sup> | a remove o   | g. Not able to assess<br>coating and inspect, F<br>ssary. |             | Sour               | ce Contract<br>Reference  | N3943020<br>TO<br>N394302 <sup>-</sup> |              |  |  |
| Description of<br>Contractor QC<br>Method(s) Used  |  |                             |              |   |             |                    | ntractor QC<br>s Reviewed | N/A                                    |              |  |  |
| Description of QA<br>Validation and<br>Observation   | Update: Pij  |                             |              | ed EXWC - Comprehe<br>Service Assessment                  | ensive Rep  | air List Re        | commenda                  | ations                                 |              |  |  |
|  |  | ince by go                  |              | Date: 08 MAR 2023   |             | <b>D</b> .         |                           |  |              |  |  |
| Yes  | k Needed   | No                          |              | Photo Record Attached<br>N/A                              |             | Repair             | Work Vali                 |  | npiete<br>No |  |  |
| s. Selection<br>leveraged previous<br>FFS performed, no  |  |                             |              |   |             |                    |                           |  |              |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this |  |                             |              |   |             |                    |                           |  |              |  |  |
| report is true.  |  |                             |              | DATE  | 05 APR 2    | 023                |                           |  |              |  |  |



|   | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel   |                |              |            |  |             |                |                |             |        |  |  |
|---|--|----------------|--------------|------------|--|-------------|----------------|----------------|-------------|--------|--|--|
|   |  |                | I            | Red Hill B | ulk Fuel Storage Fac                     | ility Defue | el .           |                |             |        |  |  |
| Validatio   | on Firm  | HDR Env        | ironmental   | , Operatio | ns and Construction,                     | Inc.        |                | Repair<br>No.  | 191         |        |  |  |
| ļ   | Address  | 9781 S. N      | leridian Bl  | vd., Suite | 400, Englewood, CO                       | 80112       |                | Repair ID      | JP5.A21.    | 05     |  |  |
| Contr   | ract No.   | FA89031        | 5D0007, D    | .O. FA890  | 3-19-F-0027                              |             |                | Report<br>Date | 05 APR 2    | 2023   |  |  |
| QV E  | ngineer  | (b) (6)        |              |            | Phone (b) (6)                            |             | Email          | (b) (          | (6)         |        |  |  |
|   |  |                |              |            | VALIDATION                               |             |                |                |             |        |  |  |
| Source  | •  | F              | DF Page N    | 0.         | Facility Geograph                        | ic Area     |                | Location       | Reference   |        |  |  |
| EXWC  |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                              |             | (b) (3) (      | A)             |             |        |  |  |
| Repair Desc   | Repair Description       Dent, crosses long seam. FFS assessment and repair if necessary.       N3943020D2         Repair Description       Source Contract Reference       N3943021F4   |                |              |            |  |             |                |                |             |        |  |  |
| Description of<br>Contractor QC<br>Method(s) Used     N/A - no work provided.     N/A |  |                |              |            |  |             |                |                | N/A         |        |  |  |
| Descriptior<br>Validat<br>Obser   |  | Update:        |              |            | ed EXWC - Comprehe<br>Service Assessment | ensive Rep  | oair List Re   | commenda       | ations      |        |  |  |
|   |  |                | otance by go |            | Date: 08 MAR 2023                        |             |                |                |             |        |  |  |
|   | Rework   | Needed         |              |            | Photo Record Attached                    |             |                | Work Vali      | dated as Co | mplete |  |  |
| $\bigcirc$  | Yes  | $oldsymbol{O}$ | No           |            | N/A                                      |             | $oldsymbol{O}$ | Yes            | O           | No     |  |  |
| . Se<br>leveraged pre   | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                |              |            |  |             |                |                |             |        |  |  |
|   |  |                |              |            | CERTIFICATION                            |             |                |                |             |        |  |  |
| I hereby certify th   |  |                |              | QV ENG     | INEER SIGNATURE                          | (b)         | (6)            |                |             |        |  |  |
| report was perso<br>report is true.   | onally sub   | stantiated an  | d this       |            | DATE                                     | 05 APR 2    |                |                |             |        |  |  |

|   | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel   |                |              |             |   |              |              |                           |  |              |  |  |
|---|--|----------------|--------------|-------------|---|--------------|--------------|---------------------------|--|--------------|--|--|
|   |  |                | I            | Red Hill B  | Bulk Fuel Storage Fac                   | ility Defue  |              |                           |  |              |  |  |
| Vali  | dation Firm  | HDR Env        | ironmental   | , Operatio  | ons and Construction,                   | Inc.         |              | Repair<br>No.             | 192                                    |              |  |  |
|   | Address  | 9781 S. N      | /leridian Bl | vd., Suite  | 400, Englewood, CO                      | 80112        |              | Repair ID                 | JP5.A21.0                              | 06           |  |  |
| С   | ontract No.  | FA89031        | 5D0007, D    | .O. FA890   | )3-19-F-0027                            |              |              | Report<br>Date            | 05 APR 2                               | 023          |  |  |
| Q   | V Engineer   | (b) (6)        |              |             | Phone (b) (6)                           |              | Email        | (b) (                     | 6)                                     |              |  |  |
|   |  |                |              |             | VALIDATION                              |              |              |                           |  |              |  |  |
| Sou   | urce   | F              | PDF Page N   | ю.          | Facility Geograph                       | ic Area      |              | Location                  | Reference                              |              |  |  |
| EXWC  |  | EXWC Re        | ecommend     | lation      | (b) (3) (A)                             |              | (b) (3) (    | A)                        |  |              |  |  |
| Repair I  | Description  | necessar       | -            | . FFS asse  | essment and repair if                   |              | Sour         | ce Contract<br>Reference  | N3943020<br>TO<br>N394302 <sup>-</sup> |              |  |  |
| Description of<br>Contractor QC<br>Method(s) Used                                 |  |                |              |             |   |              |              | ntractor QC<br>s Reviewed | N/A                                    |              |  |  |
| Val   | otion of QA<br>lidation and<br>bservations   | Update:        |              |             | ed EXWC - Compreh<br>Service Assessment | ensive Rep   | oair List Re | commend                   | ations                                 |              |  |  |
|   |  | •              | otance by go | overnment.  | Date: 08 MAR 2023                       |              |              |                           |  |              |  |  |
| $\cap$  |  | Needed         | No           |             | Photo Record Attached                   | 1            | Repair       | Vork Vali<br>Yes          | dated as Co                            | mplete<br>No |  |  |
| leveraged   | Yes       No       N/A         Comments       Localized Fitness for Service (FFS) assessments were conducted at specific indic         Selection of indications was limited to mechanical integrity principles ur         everaged previous integrity management work.         FFS performed, no repair required for defuel. |                |              |             |   |              |              | ed Hill <mark>(b)</mark>  |  |              |  |  |
| Reference   | e: EXWC  | - Compreh      | ensive Rep   | oair List R | ecommendations / Pi                     | peline Fitne | ess for Ser  | vice Asses                | sment                                  |              |  |  |
|   |  |                |              |             | CERTIFICATION                           |              |              |                           |  |              |  |  |
| I hereby certify that repair work validated in this QV ENGINEER SIGNATURE (b) (6) |  |                |              |             |   |              |              |                           |  |              |  |  |
| report was p<br>report is true  | -  | ostantiated an | a mis        |             | DATE                                    | 05 APR 2     | 2023         |                           |  |              |  |  |

|   | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                |                          |            |   |             |                    |                           |                            |     |  |  |
|---|--|----------------|--------------------------|------------|---|-------------|--------------------|---------------------------|----------------------------|-----|--|--|
|   |  |                | I                        | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                  |                           |                            |     |  |  |
| Vali  | dation Firm  | HDR Env        | ironmental               | , Operatio | ns and Construction,                    | Inc.        |                    | Repair<br>No.             | 193                        |     |  |  |
|   | Address  | 9781 S. N      | leridian Bl              | vd., Suite | 400, Englewood, CO                      | 80112       |                    | Repair ID                 | JP5.A21.0                  | )7  |  |  |
| С   | ontract No.  | FA89031        | 5D0007, D                | .O. FA890  | 3-19-F-0027                             |             |                    | Report<br>Date            | 05 APR 2                   | 023 |  |  |
| Q   | V Engineer   | (b) (6)        |                          |            | Phone (b) (6)                           |             | Emai               | (b) (6                    | 5)                         |     |  |  |
|   |  | I              |                          |            | VALIDATION                              |             |                    |                           |                            |     |  |  |
| Sou   | urce   | F              | PDF Page N               | ю.         | Facility Geograph                       | ic Area     |                    | Location                  | Reference                  |     |  |  |
| EXWC  |  | EXWC Re        | ecommend                 | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i> | A)                        |                            |     |  |  |
| Repair I  | Description  | and repair     | c anomaly<br>r if necess |            | o girth weld. FFS ass                   | essment     | Sour               | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |     |  |  |
| Cor   | Description of<br>Contractor QC<br>Method(s) Used                            |                |                          |            |   |             |                    | ntractor QC<br>s Reviewed | N/A                        |     |  |  |
| Val   | otion of QA<br>lidation and<br>bservations                                   | Update:        |                          |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re       | commenda                  | ations                     |     |  |  |
|   |  |                | otance by go             | overnment. | Date: 08 MAR 2023                       |             |                    |                           |                            |     |  |  |
|   |  | Needed         |                          |            | Photo Record Attached                   |             | 0                  |                           | dated as Co                |     |  |  |
| Comments  | Yes  | ullet          | No                       |            | N/A                                     |             | ullet              | Yes                       | $\bigcirc$                 | No  |  |  |
| Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, at<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                |                          |            |   |             |                    | and                       |                            |     |  |  |
|   |  |                |                          |            | CERTIFICATION                           |             |                    |                           |                            |     |  |  |
| I hereby certify that repair work validated in this QV ENGINEER SIGNATURE   |  |                |                          |            |   |             |                    |                           |                            |     |  |  |
| report was p<br>report is true  |  | estantiated an | d this                   |            | DATE                                    | 05 APR 2    | 023                |                           |                            |     |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                |              |            |   |             |                    |   |                            |        |  |  |
|--|--|----------------|--------------|------------|---|-------------|--------------------|---|----------------------------|--------|--|--|
|  |  |                | l            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                  |   |                            |        |  |  |
| Vali   | dation Fi <b>rm</b>  | HDR Env        | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                    | Repair<br>No.                               | 195                        |        |  |  |
|  | Address  | 9781 S. N      | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |                    | Repair ID                                   | JP5.A21.0                  | )9     |  |  |
| С  | ontract No.  | FA89031        | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                    | Report<br>Date                              | 05 APR 2                   | 023    |  |  |
| Q  | V Engineer   | (b) (6)        |              |            | Phone (b) (6)                           |             | Emai               | $\left( l_{a} \right) \left( l_{a} \right)$ | 5)                         |        |  |  |
|  |  |                |              |            | VALIDATION                              |             |                    |   |                            |        |  |  |
| Sou  | urce   | I              | PDF Page N   | o.         | Facility Geograph                       | ic Area     |                    | Location                                    | Reference                  |        |  |  |
| EXWC   |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i> | A)  |                            |        |  |  |
| Repair   | Description  |                | ent. FFS a   | ssessment  | and repair if necess                    | ary.        | Sour               | ce Contract<br>Reference                    | N3943020<br>TO<br>N3943021 |        |  |  |
| Cor  | Description of<br>Contractor QC<br>Method(s) Used                            |                |              |            |   |             |                    | ntractor QC<br>s Reviewed                   | N/A                        |        |  |  |
| Val  | otion of QA<br>lidation and<br>bservations                                   | Update:        |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re       | commenda                                    | ations                     |        |  |  |
|  |  | Final accep    | ptance by go | overnment. | Date: 08 MAR 2023                       |             |                    |   |                            |        |  |  |
|  | Rework   | Needed         |              |            | Photo Record Attached                   | 1           | Repair             | Work Vali                                   | dated as Cor               | nplete |  |  |
| 0  | Yes  | $oldsymbol{O}$ | No           |            | N/A                                     |             | $oldsymbol{O}$     | Yes   | 0                          | No     |  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                |              |            |   |             |                    |   | and                        |        |  |  |
|  |  |                |              |            | CERTIFICATION                           |             |                    |   |                            |        |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |                |              |            |   |             |                    |   |                            |        |  |  |
| report was p<br>report is true   | -  | stantiated an  | a this       |            | DATE                                    | 05 APR 2    | .023               |   |                            |        |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                |              |            |   |             |                              |                           |                            |        |  |  |
|--|--|----------------|--------------|------------|---|-------------|------------------------------|---------------------------|----------------------------|--------|--|--|
|  |  |                | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                            |                           |                            |        |  |  |
| Valio  | dation Firm  | HDR Env        | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                              | Repair<br>No.             | 196                        |        |  |  |
|  | Address  | 9781 S. N      | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |                              | Repair ID                 | JP5.A21.1                  | 10     |  |  |
| C  | ontract No.  | FA89031        | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                              | Report<br>Date            | 05 APR 2                   | 023    |  |  |
| Q  | V Engineer   | (b) (6)        |              |            | Phone (b) (6)                           |             | Emai                         | (b) (e                    | 5)                         |        |  |  |
|  |  |                |              |            | VALIDATION                              |             |                              |                           |                            |        |  |  |
| Sou  | ırce   | I              | PDF Page N   | 0.         | Facility Geograph                       | ic Area     |                              | Location                  | Reference                  |        |  |  |
| EXWC   |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i>           | A)                        |                            |        |  |  |
| Repair [   | Description  | necessar       | -            | FFS asse   | essment and repair if                   |             | Sour                         | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |        |  |  |
| Cor  | Description of<br>Contractor QC<br>Method(s) Used                            |                |              |            |   |             |                              | ntractor QC<br>s Reviewed | N/A                        |        |  |  |
| Val  | ntion of QA<br>idation and<br>bservations                                    | Update:        |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                 | commenda                  | ations                     |        |  |  |
|  |  | Final accep    | otance by go | overnment. | Date: 08 MAR 2023                       |             |                              |                           |                            |        |  |  |
|  | Rework   | Needed         |              |            | Photo Record Attached                   |             | Repair                       | Work Vali                 | dated as Cor               | mplete |  |  |
| 0  | Yes  | $oldsymbol{O}$ | No           |            | N/A                                     |             | $oldsymbol{O}$               | Yes                       | 0                          | No     |  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                |              |            |   |             |                              |                           | and                        |        |  |  |
|  |  |                |              |            | CERTIFICATION                           |             | $\langle \mathbf{O} \rangle$ |                           |                            |        |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |                |              |            |   |             |                              |                           |                            |        |  |  |
| report is true   | -  |                | u 110        |            | DATE                                    | 05 APR 2    | 023                          |                           |                            |        |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                  |              |            |   |             |                              |   |                            |        |  |  |
|--|--|------------------|--------------|------------|---|-------------|------------------------------|---|----------------------------|--------|--|--|
|  |  |                  |              | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                            |   |                            |        |  |  |
| Valid  | lation Firm  | HDR Env          | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                              | Repair<br>No.                               | 197                        |        |  |  |
|  | Address  | 9781 S. N        | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |                              | Repair ID                                   | JP5.A21.1                  | 11     |  |  |
| Co   | ontract No.  | FA89031          | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                              | Report<br>Date                              | 05 APR 2                   | 023    |  |  |
| Q  | V Engineer   | (b) (6)          |              |            | Phone (b) (6)                           |             | Emai                         | $\left( l_{a} \right) \left( l_{a} \right)$ | 5)                         |        |  |  |
|  |  |                  |              |            | VALIDATION                              |             |                              |   |                            |        |  |  |
| Sou  | rce  | I                | PDF Page N   | 0.         | Facility Geograph                       | ic Area     |                              | Location                                    | Reference                  |        |  |  |
| EXWC   |  | EXWC Re          | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i>           | A)  |                            |        |  |  |
| Repair D   | Description  | necessar         | -            | th weld. F | FS assessment and r                     | epair if    | Sour                         | ce Contract<br>Reference                    | N3943020<br>TO<br>N3943021 |        |  |  |
| Con  | Description of<br>Contractor QC<br>Method(s) Used                            |                  |              |            |   |             |                              | ntractor QC<br>s Reviewed                   | N/A                        |        |  |  |
| Vali   | tion of QA<br>idation and<br>oservations                                     | Update:          |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                 | commenda                                    | ations                     |        |  |  |
|  |  | Final accep      | ptance by go | overnment. | Date: 08 MAR 2023                       |             |                              |   |                            |        |  |  |
|  | Rework   | Needed           |              |            | Photo Record Attached                   |             | Repair                       | Work Vali                                   | dated as Cor               | mplete |  |  |
| 0  | Yes  | $oldsymbol{eta}$ | No           |            | N/A                                     |             | $oldsymbol{igo}$             | Yes   | 0                          | No     |  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                  |              |            |   |             |                              |   | and                        |        |  |  |
|  |  |                  |              |            | CERTIFICATION                           |             | $\langle \mathbf{O} \rangle$ |   |                            |        |  |  |
| l hereby certi<br>report was pe  |  |                  |              | QV ENG     | INEER SIGNATURE                         | (b)         | (6)                          |   |                            |        |  |  |
| report is true.  | -  |                  |              |            | DATE                                    | 05 APR 2    | .023                         |   |                            |        |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |           |              |            |   |             |                              |                           |                            |     |  |
|--|--|-----------|--------------|------------|---|-------------|------------------------------|---------------------------|----------------------------|-----|--|
|  |  |           | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                            |                           |                            |     |  |
| Validati   | ion Firm   | HDR Env   | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                              | Repair<br>No.             | 198                        |     |  |
|  | Address  | 9781 S. N | leridian Bl  | vd., Suite | 400, Englewood, CO                      | 80112       |                              | Repair ID                 | JP5.A21.1                  | 12  |  |
| Cont   | ract No.   | FA89031   | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                              | Report<br>Date            | 05 APR 2                   | 023 |  |
| QV E   | Engineer   | (b) (6)   |              |            | Phone (b) (6)                           |             | Emai                         | (b) (e                    | 5)                         |     |  |
|  |  |           |              |            | VALIDATION                              |             |                              |                           | -                          |     |  |
| Source   | e  | F         | DF Page N    | 0.         | Facility Geograph                       | ic Area     |                              | Location                  | Reference                  |     |  |
| EXWC   |  | EXWC Re   | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i>           | A)                        |                            |     |  |
| Repair Des   | scription  | necessar  | -            | FFS asse   | essment and repair if                   |             | Sour                         | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |     |  |
| Contra   | Description of<br>Contractor QC<br>Method(s) Used                            |           |              |            |   |             |                              | ntractor QC<br>s Reviewed | N/A                        |     |  |
|  | n of QA<br>ition and<br>ervations  |           |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                 | commenda                  | ations                     |     |  |
|  |  |           | otance by go | overnment. | Date: 08 MAR 2023                       |             |                              |                           |                            |     |  |
|  | Rework   | Needed    |              |            | Photo Record Attached                   |             |                              |                           | dated as Co                |     |  |
| O  | Yes  | ullet     | No           |            | N/A                                     |             | ullet                        | Yes                       | $\bigcirc$                 | No  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |           |              |            |   |             |                              |                           | and                        |     |  |
|  |  |           |              |            | CERTIFICATION                           |             | $\langle \mathbf{O} \rangle$ |                           |                            |     |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |           |              |            |   |             |                              |                           |                            |     |  |
| report is true.  | onuny oub  |           | a ano        |            | DATE                                    | 05 APR 2    | 023                          |                           |                            |     |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                |                 |            |   |             |                          |                            |             |        |  |  |
|--|--|----------------|-----------------|------------|---|-------------|--------------------------|----------------------------|-------------|--------|--|--|
|  |  |                | I               | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                        |                            |             |        |  |  |
| Validatio  | on Firm  | HDR Env        | ironmental      | , Operatio | ns and Construction,                    | Inc.        |                          | Repair<br>No.              | 199         |        |  |  |
| ļ  | Address  | 9781 S. N      | leridian Bl     | vd., Suite | 400, Englewood, CO                      | 80112       |                          | Repair ID                  | JP5.A21.1   | 13     |  |  |
| Contr  | act No.  | FA89031        | 5D0007, D       | .O. FA890  | 3-19-F-0027                             |             |                          | Report<br>Date             | 05 APR 2    | 023    |  |  |
| QV E   | ngineer  | (b) (6)        |                 |            | Phone (b) (6)                           |             | Emai                     | (b) (e                     | 5)          |        |  |  |
|  |  |                |                 |            | VALIDATION                              |             |                          |                            |             |        |  |  |
| Source   |  | I              | PDF Page N      | 0.         | Facility Geograph                       | ic Area     |                          | Location                   | Reference   |        |  |  |
| EXWC   |  | EXWC Re        | ecommend        | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i>       | A)                         |             |        |  |  |
| Repair Desc  | cription   | necessar       | ong seam.<br>y. | FFS asse   |   | Sour        | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |             |        |  |  |
| Contrac  | Description of<br>Contractor QC<br>Method(s) Used                            |                |                 |            |   |             |                          | ntractor QC<br>s Reviewed  | N/A         |        |  |  |
| Descriptior<br>Validat<br>Obser  |  | Update:        |                 |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re             | commenda                   | ations      |        |  |  |
|  |  |                | ptance by go    | overnment. | Date: 08 MAR 2023                       |             |                          |                            |             |        |  |  |
|  | Rework   | Needed         |                 |            | Photo Record Attached                   |             |                          |                            | dated as Co | mplete |  |  |
| $\bigcirc$   | Yes  | ullet          | No              |            | N/A                                     |             | ullet                    | Yes                        | $\bigcirc$  | No     |  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                |                 |            |   |             |                          |                            | and         |        |  |  |
|  |  |                |                 |            | CERTIFICATION                           |             |                          |                            |             |        |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |                |                 |            |   |             |                          |                            |             |        |  |  |
| report is true.  |  | ostantuateu an | u (())          |            | DATE                                    | 05 APR 2    | 023                      |                            |             |        |  |  |

|  | QUALITY VALIDATION (QV) REPORT<br>Red Hill Bulk Fuel Storage Facility Defuel |                |              |            |   |             |                              |                           |                            |        |  |  |
|--|--|----------------|--------------|------------|---|-------------|------------------------------|---------------------------|----------------------------|--------|--|--|
|  |  |                | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                            |                           |                            |        |  |  |
| Valio  | dation Firm  | HDR Env        | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                              | Repair<br>No.             | 200                        |        |  |  |
|  | Address  | 9781 S. N      | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |                              | Repair ID                 | JP5.A21.1                  | 14     |  |  |
| C  | ontract No.  | FA89031        | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                              | Report<br>Date            | 05 APR 2                   | 023    |  |  |
| Q  | V Engineer   | (b) (6)        |              |            | Phone (b) (6)                           |             | Emai                         | (b) (e                    | 5)                         |        |  |  |
|  |  |                |              |            | VALIDATION                              |             |                              |                           | -                          |        |  |  |
| Sou  | urce   | I              | PDF Page N   | 0.         | Facility Geograph                       | ic Area     |                              | Location                  | Reference                  |        |  |  |
| EXWC   |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) (                    | A)                        |                            |        |  |  |
| Repair [   | Description  | necessar       | -            | FFS asse   | essment and repair if                   |             | Sour                         | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |        |  |  |
| Cor  | Description of<br>Contractor QC<br>Method(s) Used                            |                |              |            |   |             |                              | ntractor QC<br>s Reviewed | N/A                        |        |  |  |
| Val  | ntion of QA<br>idation and<br>bservations                                    | Update:        |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                 | commenda                  | ations                     |        |  |  |
|  |  | Final accep    | otance by go | overnment. | Date: 08 MAR 2023                       |             |                              |                           |                            |        |  |  |
|  | Rework   | Needed         |              |            | Photo Record Attached                   |             | Repair                       | Work Vali                 | dated as Cor               | mplete |  |  |
| 0  | Yes  | $oldsymbol{O}$ | No           |            | N/A                                     |             | $oldsymbol{igo}$             | Yes                       | 0                          | No     |  |  |
| Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |  |                |              |            |   |             |                              |                           | and                        |        |  |  |
|  |  |                |              |            | CERTIFICATION                           |             | $\langle \mathbf{O} \rangle$ |                           |                            |        |  |  |
| I hereby certify that repair work validated in this report was personally substantiated and this   |  |                |              |            |   |             |                              |                           |                            |        |  |  |
| report is true   | -  |                | G UII3       |            | DATE                                    | 05 APR 2    | .023                         |                           |                            |        |  |  |

|                        |   |  |  | QUALI                           | TY VALIDATION (  | QV) REPO    | DRT                |                |              |        |
|------------------------|---|--|--|---------------------------------|--|-------------|--------------------|----------------|--------------|--------|
|                        |   |  | l                                      | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I                  |                |              |        |
| Valio                  | dation Firm   | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,   | Inc.        |                    | Repair<br>No.  | 201          |        |
|                        | Address   | 9781 S. N                                    | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO   | 80112       |                    | Repair ID      | JP5.A21.1    | 15     |
| C                      | ontract No.   | FA89031                                      | 5D0007, D                              | .O. FA890                       | 3-19-F-0027  |             |                    | Report<br>Date | 05 APR 2     | 023    |
| Q                      | V Engineer  | (b) (6)                                      |  |                                 | Phone (b) (6)  |             | Emai               | (b) (e         | 5)           |        |
|                        |   |  |  |                                 | VALIDATION   |             |                    |                |              |        |
| Soι                    | ırce  | I  | PDF Page N                             | 0.                              | Facility Geograph  | ic Area     |                    | Location       | Reference    |        |
| EXWC                   |   | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i> | A)             |              |        |
| Repair I               | Description Dent, on long seam. FFS assessment and repair if necessary. Source Contract Reference   |  |  |                                 |  |             |                    |                |              |        |
| Cor                    | Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |  |  |                                 |  |             |                    |                |              |        |
| Val                    | ntion of QA<br>idation and<br>bservations   | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re       | commenda       | ations       |        |
|                        |   | Final accep                                  | otance by go                           | overnment.                      | Date: 08 MAR 2023  |             |                    |                |              |        |
|                        | Rework  | Needed                                       |  |                                 | Photo Record Attached  |             | Repair             | Work Vali      | dated as Cor | mplete |
| 0                      | Yes   | $oldsymbol{O}$                               | No                                     |                                 | N/A  |             | $oldsymbol{O}$     | Yes            | 0            | No     |
| leveraged<br>FFS perfo | Selection<br>I previous i<br>ormed, no i  | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity pri<br>ecommendations / Pip | nciples und | ler assume         | ed service     | conditions,  | and    |
|                        |   |  |  |                                 | CERTIFICATION  |             | $(\mathbf{O})$     |                |              |        |
|                        |   | work validate                                |  | QV ENG                          | INEER SIGNATURE  | (D)         | (6)                |                |              |        |
| report is true         | -   |  | -                                      |                                 | DATE   | 05 APR 2    | .023               |                |              |        |

|  |   |  |   | QUALI                           | TY VALIDATION (  | QV) REPC    | DRT          |                              |             |        |
|--|---|--|---|---------------------------------|--|-------------|--------------|------------------------------|-------------|--------|
|  |   |  | I                                       | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I            |                              |             |        |
| Valid  | lation Firm   | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,   | Inc.        |              | Repair<br>No.                | 202         |        |
|  | Address   | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO   | 80112       |              | Repair ID                    | JP5.A21.1   | 16     |
| Co   | ontract No.   | FA89031                                      | 5D0007, D                               | .O. FA890                       | 3-19-F-0027  |             |              | Report<br>Date               | 05 APR 2    | 023    |
| Q  | V Engineer  | (b) (6)                                      |   |                                 | Phone (b) (6)  |             | Emai         | $\left( \mathbf{b} \right) $ | 5)          |        |
|  |   |  |   |                                 | VALIDATION   |             |              |                              |             |        |
| Sou  | rce   | I  | DF Page N                               | o.                              | Facility Geograph  | ic Area     |              | Location                     | Reference   |        |
| EXWC   |   | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)  |             | (b) (3) (    | A)                           |             |        |
| Repair D   | Repair Description       Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.       N3943020D2222         Repair Description       Source Contract Reference       N3943021F4207 |  |   |                                 |  |             |              |                              |             |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A<br>Contractor QC<br>Records Reviewed |   |  |   |                                 |  |             |              |                              |             |        |
| Vali   | tion of QA<br>idation and<br>oservations  | Update:                                      |   |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re | commenda                     | ations      |        |
|  |   |  | otance by go                            | overnment.                      | Date: 08 MAR 2023  |             |              |                              |             |        |
|  | Rework  | Needed                                       |   |                                 | Photo Record Attached  |             | Repair       | Work Vali                    | dated as Co | nplete |
| O  | Yes   | ullet  | No                                      |                                 | N/A  |             | ullet        | Yes                          | O           | No     |
| leveraged<br>FFS perfo   | Selection<br>previous i<br>rmed, no i   | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | ere conducted at spe<br>echanical integrity priv<br>ecommendations / Pip | nciples und | ler assume   | ed service                   | conditions, | and    |
|  |   |  |   |                                 | CERTIFICATION  |             |              |                              |             |        |
|  |   | work validate                                |   | QV ENG                          | INEER SIGNATURE  | (b)         | (6)          |                              |             |        |
| report was pe<br>report is true.   | -   | stantiated an                                |   |                                 | DATE   | 05 APR 2    | .023         |                              |             |        |

|  |   |  |  | QUALI                           | TY VALIDATION (   | QV) REPC              | DRT                          |   |              |        |
|--|---|--|--|---------------------------------|---|-----------------------|------------------------------|---|--------------|--------|
|  |   |  | l                                      | Red Hill B                      | ulk Fuel Storage Fac  | ility Defue           | I                            |   |              |        |
| Valio  | dation Firm   | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,  | Inc.                  |                              | Repair<br>No.                               | 203          |        |
|  | Address   | 9781 S. N                                    | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO  | 80112                 |                              | Repair ID                                   | JP5.A21.1    | 17     |
| C  | ontract No.   | FA89031                                      | 5D0007, D                              | .O. FA890                       | )3-19-F-0027  |                       |                              | Report<br>Date                              | 05 APR 2     | 023    |
| Q  | V Engineer  | (b) (6)                                      |  |                                 | Phone (b) (6)   |                       | Emai                         | $\left( l_{a} \right) \left( l_{a} \right)$ | 5)           |        |
|  |   |  |  |                                 | VALIDATION  |                       |                              |   |              |        |
| Sou  | urce  | I  | PDF Page N                             | 0.                              | Facility Geograph   | ic <mark>A</mark> rea |                              | Location                                    | Reference    |        |
| EXWC   |   | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)   |                       | (b) (3) ( <i>i</i>           | A)  |              |        |
| Repair I   | epair Description Double dent. FFS assessment and repair if necessary.<br>N3943020D22<br>Source Contract<br>Reference |  |  |                                 |   |                       |                              |   |              |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided. N/A<br>Contractor QC<br>Records Reviewed |   |  |  |                                 |   |                       |                              |   |              |        |
| Val  | ntion of QA<br>idation and<br>bservations   | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                   | ensive Rep            | oair List Re                 | commenda                                    | ations       |        |
|  |   | Final accep                                  | ptance by go                           | overnment.                      | Date: 08 MAR 2023   |                       |                              |   |              |        |
|  | Rework  | Needed                                       |  |                                 | Photo Record Attached   | 1                     | Repair                       | Work Vali                                   | dated as Cor | mplete |
| 0  | Yes   | $oldsymbol{O}$                               | No                                     |                                 | N/A   |                       | $oldsymbol{O}$               | Yes   | Ο            | No     |
| leveraged<br>FFS perfo   | Selection<br>I previous i<br>ormed, no r  | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity priv<br>ecommendations / Pip | nciples unc           | ler assume                   | ed service                                  | conditions,  | and    |
|  |   |  |  |                                 | CERTIFICATION   |                       | $\langle \mathbf{O} \rangle$ |   |              |        |
|  |   | work validate                                |  | QV ENG                          | INEER SIGNATURE   | (b)                   | (6)                          |   |              |        |
| report is true   | -   |  | u iio                                  |                                 | DATE  | 05 APR 2              | .023                         |   |              |        |

|  |   |  |  | QUALI                           | TY VALIDATION (   | QV) REPC    | DRT                          |                |              |        |
|--|---|--|--|---------------------------------|---|-------------|------------------------------|----------------|--------------|--------|
|  |   |  |  | Red Hill B                      | ulk Fuel Storage Fac  | ility Defue | I                            |                |              |        |
| Vali   | dation Firm   | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,  | Inc.        |                              | Repair<br>No.  | 204          |        |
|  | Address   | 9781 S. N                                    | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO  | 80112       |                              | Repair ID      | JP5.A21.1    | 18     |
| С  | ontract No.   | FA89031                                      | 5D0007, D                              | .O. FA890                       | 3-19-F-0027   |             |                              | Report<br>Date | 05 APR 2     | 023    |
| Q  | V Engineer  | (b) (6)                                      |  |                                 | Phone (b) (6)   |             | Emai                         | (b) (e         | 5)           |        |
|  |   |  |  |                                 | VALIDATION  |             |                              |                |              |        |
| Sou  | urce  | I  | PDF Page N                             | о.                              | Facility Geograph   | ic Area     |                              | Location       | Reference    |        |
| EXWC   |   | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)   |             | (b) (3) ( <i>i</i>           | A)             |              |        |
| Repair   | air Description Dent, on long seam. FFS assessment and repair if necessary.<br>N3943020D22<br>Source Contract<br>Reference N3943020D22<br>N3943021F42 |  |  |                                 |   |             |                              |                |              |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |   |  |  |                                 |   |             |                              |                |              |        |
| Val  | otion of QA<br>lidation and<br>bservations  | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                 | ensive Rep  | oair List Re                 | commenda       | ations       |        |
|  |   | Final accep                                  | otance by go                           | overnment.                      | Date: 08 MAR 2023   |             |                              |                |              |        |
|  | Rework  | Needed                                       |  |                                 | Photo Record Attached   | 1           | Repair                       | Work Vali      | dated as Cor | mplete |
| 0  | Yes   | ullet  | No                                     |                                 | N/A   |             | $oldsymbol{O}$               | Yes            | 0            | No     |
| leveraged<br>FFS perfo   | Fitness fo<br>Selection<br>I previous i<br>prmed, no i  | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity pri<br>ecommendations / Pi | nciples unc | ler assume                   | ed service     | conditions,  | and    |
|  |   |  |  |                                 | CERTIFICATION   |             | $\langle \mathbf{O} \rangle$ |                |              |        |
|  | tify that repair<br>ersonally sub   |  |  | QV ENG                          | INEER SIGNATURE   | (D)         | (6)                          |                |              |        |
| report is true   | -   |  |  |                                 | DATE  | 05 APR 2    | 023                          |                |              |        |

|  |  |  |   | QUALI                           | TY VALIDATION (   | QV) REPC    | DRT                |                          |                            |     |
|--|--|--|---|---------------------------------|---|-------------|--------------------|--------------------------|----------------------------|-----|
|  |  |  |   | Red Hill B                      | ulk Fuel Storage Fac  | ility Defue | 1                  |                          |                            |     |
| Valid  | lation Firm                              | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,  | Inc.        |                    | Repair<br>No.            | 205                        |     |
|  | Address                                  | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO  | 80112       |                    | Repair ID                | JP5.A21.1                  | 19  |
| Co   | ontract No.                              | FA89031                                      | 5D0007, D                               | .O. FA890                       | )3-19-F-0027  |             |                    | Report<br>Date           | 05 APR 2                   | 023 |
| Q  | V Engineer                               | (b) (6)                                      |   |                                 | Phone (b) (6)   |             | Emai               | (b) (e                   | 5)                         |     |
|  |  |  |   |                                 | VALIDATION  |             |                    |                          |                            |     |
| Sou  | rce                                      | I  | DF Page N                               | o.                              | Facility Geograph   | ic Area     |                    | Location                 | Reference                  |     |
| EXWC   |  | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)   |             | (b) (3) ( <i>i</i> | A)                       |                            |     |
| Repair D   | Description                              | necessar                                     | -                                       | FFS asse                        | essment and repair if   |             | Sour               | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |     |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |  |  |   |                                 |   |             |                    |                          |                            |     |
| Vali   | tion of QA<br>idation and<br>oservations | Update:                                      |   |                                 | ed EXWC - Compreh<br>Service Assessment                                   | ensive Rep  | oair List Re       | commenda                 | ations                     |     |
|  |  |  | ance by gov                             | ernment. I                      | Date: 08 MAR 2023   |             |                    |                          |                            |     |
| $\sim$   |  | Needed                                       |   |                                 | Photo Record Attached   |             |                    |                          | dated as Cor               |     |
| Commente   | Yes                                      | ullet  | No                                      |                                 | N/A   |             | ullet              | Yes                      | $\bigcirc$                 | No  |
| leveraged<br>FFS perfor  | Selection<br>previous i<br>rmed, no r    | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples und | ler assume         | ed service               | conditions,                | and |
|  |  |  |   |                                 | CERTIFICATION   |             |                    |                          |                            |     |
| l hereby certi   |  |  |   | QV ENG                          | INEER SIGNATURE   | (b)         | (6)                |                          |                            |     |
| report was pe<br>report is true.   | -  | stantiated an                                | d this                                  |                                 | DATE  | 05 APR 2    | .023               |                          |                            |     |

|   |  |  |   | QUALI                           | TY VALIDATION (   | QV) REPC    | DRT                |                          |                            |        |
|---|--|--|---|---------------------------------|---|-------------|--------------------|--------------------------|----------------------------|--------|
|   |  |  | I                                       | Red Hill B                      | ulk Fuel Storage Fac  | ility Defue |                    |                          |                            |        |
| Valid   | lation Firm                              | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,  | Inc.        |                    | Repair<br>No.            | 206                        |        |
|   | Address                                  | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO  | 80112       |                    | Repair ID                | JP5.A21.2                  | 20     |
| Co  | ontract No.                              | FA89031                                      | 5D0007, D                               | .O. FA890                       | )3-19-F-0027  |             |                    | Report<br>Date           | 05 APR 2                   | 023    |
| Q   | V Engineer                               | (b) (6)                                      |   |                                 | Phone (b) (6)   |             | Emai               | (b) (e                   | 5)                         |        |
|   |  |  |   |                                 | VALIDATION  |             |                    |                          |                            |        |
| Sou   | irce                                     | F  | PDF Page N                              | 0.                              | Facility Geograph   | ic Area     |                    | Location                 | Reference                  |        |
| EXWC  |  | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)   |             | (b) (3) ( <i>i</i> | A)                       |                            |        |
| Repair D  | Description                              |  | ent. FFS as                             | ssessment                       | t and repair if necessa   | ary.        | Sour               | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |  |  |   |                                 |   |             |                    |                          |                            |        |
| Vali  | tion of QA<br>idation and<br>oservations |  |   |                                 | ed EXWC - Comprehe<br>Service Assessment                                  | ensive Rep  | oair List Re       | commenda                 | ations                     |        |
|   |  | Final accep                                  | otance by go                            | overnment.                      | Date: 08 MAR 2023   |             |                    |                          |                            |        |
|   | Rework                                   | Needed                                       |   |                                 | Photo Record Attached   |             |                    | Work Vali                | dated as Co                | mplete |
| 0   | Yes                                      | ullet  | No                                      |                                 | N/A   |             | $oldsymbol{O}$     | Yes                      | Ο                          | No     |
| leveraged<br>FFS perfo  | Selection<br>previous i<br>rmed, no r    | of indication<br>ntegrity ma<br>repair requi | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples und | ler assume         | ed service               | conditions,                | and    |
|   |  |  |   |                                 | CERTIFICATION   |             | $(\mathbf{c})$     |                          |                            |        |
| l hereby certi<br>report was pe   |  |  |   | QV ENG                          | INEER SIGNATURE   | (D)         | (6)                |                          |                            |        |
| report is true.   |  |  |   |                                 | DATE  | 05 APR 2    | .023               |                          |                            |        |

|  |  |  |  | QUALI                           | TY VALIDATION (  | QV) REPC    | DRT                          |                              |              |        |
|--|--|--|--|---------------------------------|--|-------------|------------------------------|------------------------------|--------------|--------|
|  |  |  | l                                      | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I                            |                              |              |        |
| Valid  | lation Firm  | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,   | Inc.        |                              | Repair<br>No.                | 207          |        |
|  | Address  | 9781 S. N                                    | leridian Bl                            | vd., Suite                      | 400, Englewood, CO   | 80112       |                              | Repair ID                    | JP5.A21.2    | 21     |
| Co   | ontract No.  | FA89031                                      | 5D0007, D                              | .O. FA890                       | 3-19-F-0027  |             |                              | Report<br>Date               | 05 APR 2     | 023    |
| Q  | V Engineer   | (b) (6)                                      |  |                                 | Phone (b) (6)  |             | Emai                         | $\left( \mathbf{b} \right) $ | 5)           |        |
|  |  | I  |  |                                 | VALIDATION   |             | •                            |                              |              |        |
| Sou  | rce  | I  | PDF Page N                             | o.                              | Facility Geograph  | ic Area     |                              | Location                     | Reference    |        |
| EXWC   |  | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i>           | A)                           |              |        |
| Repair D   | air Description Double dent. FFS assessment and repair if necessary.<br>N3943020D22<br>TO<br>N3943021F42 |  |  |                                 |  |             |                              |                              |              |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided. N/A<br>Contractor QC<br>Records Reviewed |  |  |  |                                 |  |             |                              |                              |              |        |
| Vali   | tion of QA<br>dation and<br>oservations  | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re                 | commenda                     | ations       |        |
|  |  | Final accep                                  | otance by go                           | overnment.                      | Date: 08 MAR 2023  |             |                              |                              |              |        |
|  | Rework   | Needed                                       |  |                                 | Photo Record Attached  |             | Repair                       | Work Vali                    | dated as Cor | mplete |
| 0  | Yes  | $oldsymbol{O}$                               | No                                     |                                 | N/A  |             | $\odot$                      | Yes                          | 0            | No     |
| leveraged<br>FFS perfor  | Selection<br>previous i<br>rmed, no r  | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | ere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples und | der assume                   | ed service                   | conditions,  | and    |
|  |  |  |  |                                 | CERTIFICATION  |             | $\langle \mathbf{O} \rangle$ |                              |              |        |
| l hereby certit<br>report was pe   |  |  |  | QV ENG                          | INEER SIGNATURE  | (b)         | (6)                          |                              |              |        |
| report is true.  | -  |  | u u ii ə                               |                                 | DATE   | 05 APR 2    | 2023                         |                              |              |        |

|  |  |  |  | QUALI                           | TY VALIDATION (   | QV) REPC    | DRT                |                          |                            |        |
|--|--|--|--|---------------------------------|---|-------------|--------------------|--------------------------|----------------------------|--------|
|  |  |  | l                                      | Red Hill B                      | ulk Fuel Storage Fac  | ility Defue | I                  |                          |                            |        |
| Valio  | dation Firm  | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,  | Inc.        |                    | Repair<br>No.            | 208                        |        |
|  | Address  | 9781 S. N                                    | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO  | 80112       |                    | Repair ID                | JP5.A21.2                  | 22     |
| С  | ontract No.  | FA89031                                      | 5D0007, D                              | .O. FA890                       | 3-19-F-0027   |             |                    | Report<br>Date           | 05 APR 2                   | 023    |
| Q  | V Engineer   | (b) (6)                                      |  |                                 | Phone (b) (6)   |             | Emai               | (b) (e                   | 5)                         |        |
|  |  |  |  |                                 | VALIDATION  |             |                    |                          |                            |        |
| Sou  | urce   | I  | PDF Page N                             | 0.                              | Facility Geograph   | ic Area     |                    | Location                 | Reference                  |        |
| EXWC   |  | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)   |             | (b) (3) ( <i>i</i> | A)                       |                            |        |
| Repair I   | Description  | necessar                                     | -                                      | FFS asse                        | essment and repair if   |             | Sour               | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |  |  |  |                                 |   |             |                    |                          |                            |        |
| Val  | otion of QA<br>lidation and<br>bservations             | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                   | ensive Rep  | oair List Re       | commenda                 | ations                     |        |
|  |  | Final accep                                  | ptance by go                           | overnment.                      | Date: 08 MAR 2023   |             |                    |                          |                            |        |
|  | Rework   | Needed                                       |  |                                 | Photo Record Attached   | 1           | Repair             | Work Vali                | dated as Co                | nplete |
| 0  | Yes  | $oldsymbol{O}$                               | No                                     |                                 | N/A   |             | $oldsymbol{O}$     | Yes                      | 0                          | No     |
| leveraged<br>FFS perfo   | Fitness fo<br>Selection<br>I previous i<br>prmed, no i | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | rere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples unc | ler assume         | ed service               | conditions,                | and    |
|  |  |  |  |                                 | CERTIFICATION   | (b)         | $(\mathbf{C})$     |                          |                            |        |
|  |  | work validate                                |  | QV ENG                          | INEER SIGNATURE   | (D)         | (6)                |                          |                            |        |
| report is true   | -  |  |  |                                 | DATE  | 05 APR 2    | .023               |                          |                            |        |

|  |  |  |   | QUALI                           | TY VALIDATION (  | QV) REPO    | DRT                |                |             |        |
|--|--|--|---|---------------------------------|--|-------------|--------------------|----------------|-------------|--------|
|  |  |  | I                                       | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I                  |                |             |        |
| Valio  | dation Firm  | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,   | Inc.        |                    | Repair<br>No.  | 209         |        |
|  | Address  | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO   | 80112       |                    | Repair ID      | JP5.A21.2   | 23     |
| C  | ontract No.  | FA89031                                      | 5D0007, D                               | .O. FA890                       | 3-19-F-0027  |             |                    | Report<br>Date | 05 APR 2    | 023    |
| Q  | V Engineer   | (b) (6)                                      |   |                                 | Phone (b) (6)  |             | Emai               | (b) (6         | 5)          |        |
|  |  |  |   |                                 | VALIDATION   |             |                    |                |             |        |
| Sou  | urce   | I  | PDF Page N                              | 0.                              | Facility Geograph  | ic Area     |                    | Location       | Reference   |        |
| EXWC   |  | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i> | A)             |             |        |
| Repair [   | Repair Description       Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.       N3943020D222         Repair Description       Source Contract Reference       N3943021F4207 |  |   |                                 |  |             |                    |                |             |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A<br>Contractor QC<br>Records Reviewed |  |  |   |                                 |  |             |                    |                |             |        |
| Val  | ntion of QA<br>idation and<br>bservations  | Update:                                      |   |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re       | commenda       | ations      |        |
|  |  |  | otance by go                            | overnment.                      | Date: 08 MAR 2023  |             |                    |                |             |        |
|  | Rework   | Needed                                       |   |                                 | Photo Record Attached  |             | Repair             | Work Vali      | dated as Co | mplete |
| 0  | Yes  | $oldsymbol{O}$                               | No                                      |                                 | N/A  |             | $oldsymbol{O}$     | Yes            | O           | No     |
| leveraged<br>FFS perfo   | Fitness fo<br>Selection<br>I previous i<br>prmed, no i   | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | rere conducted at spe<br>echanical integrity pri<br>ecommendations / Pip | nciples unc | der assume         | ed service     | conditions, | and    |
|  |  |  |   |                                 | CERTIFICATION  |             |                    |                |             |        |
|  |  | work validate                                |   | QV ENG                          | INEER SIGNATURE  | (b)         | (6)                |                |             |        |
| report is true   | -  | ostantuateu an                               | u (())                                  |                                 | DATE   | 05 APR 2    | 2023               |                |             |        |

|  |  |  |   | QUALI                           | TY VALIDATION (  | QV) REPO    | DRT                |                              |             |        |
|--|--|--|---|---------------------------------|--|-------------|--------------------|------------------------------|-------------|--------|
|  |  |  | I                                       | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I                  |                              |             |        |
| Valio  | dation Firm  | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,   | Inc.        |                    | Repair<br>No.                | 210         |        |
|  | Address  | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO   | 80112       |                    | Repair ID                    | JP5.A21.2   | 24     |
| C  | ontract No.  | FA89031                                      | 5D0007, D                               | .O. FA890                       | 3-19-F-0027  |             |                    | Report<br>Date               | 05 APR 2    | 023    |
| Q  | V Engineer   | (b) (6)                                      |   |                                 | Phone (b) (6)  |             | Emai               | $\left( \mathbf{b} \right) $ | 5)          |        |
|  |  | I  |   |                                 | VALIDATION   |             |                    |                              |             |        |
| Sou  | ırce   | I  | PDF Page N                              | o.                              | Facility Geograph  | ic Area     |                    | Location                     | Reference   |        |
| EXWC   |  | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i> | A)                           |             |        |
| Repair I   | Repair Description Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary. N3943020D2228<br>N3943020D2228<br>TO<br>N3943021F4207 |  |   |                                 |  |             |                    |                              |             |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A<br>Contractor QC<br>Records Reviewed |  |  |   |                                 |  |             |                    |                              |             |        |
| Val  | ntion of QA<br>idation and<br>bservations  | Update:                                      |   |                                 | ed EXWC - Compreh<br>Service Assessment                                    | ensive Rep  | oair List Re       | commenda                     | ations      |        |
|  |  |  | otance by go                            | overnment.                      | Date: 08 MAR 2023  |             |                    |                              |             |        |
|  | Rework   | Needed                                       |   |                                 | Photo Record Attached  |             | Repair             | Work Vali                    | dated as Co | mplete |
| 0  | Yes  | $oldsymbol{O}$                               | No                                      |                                 | N/A  |             | $oldsymbol{O}$     | Yes                          | O           | No     |
| leveraged<br>FFS perfo   | Fitness fo<br>Selection<br>I previous i<br>prmed, no i   | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | rere conducted at spe<br>echanical integrity prive<br>ecommendations / Pip | nciples unc | der assume         | ed service                   | conditions, | and    |
|  |  |  |   |                                 | CERTIFICATION  |             |                    |                              |             |        |
|  |  | work validate                                |   | QV ENG                          | INEER SIGNATURE  | (b)         | (6)                |                              |             |        |
| report was p<br>report is true   | -  | stantiated an                                | a this                                  |                                 | DATE   | 05 APR 2    | 2023               |                              |             |        |

|  |   |  |   | QUALI                           | TY VALIDATION (  | QV) REPO    | DRT                          |                |             |        |
|--|---|--|---|---------------------------------|--|-------------|------------------------------|----------------|-------------|--------|
|  |   |  |   | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue |                              |                |             |        |
| Valid  | ation Firm  | HDR Env                                      | ironmental                              | , Operatio                      | ns and Construction,   | Inc.        |                              | Repair<br>No.  | 211         |        |
|  | Address   | 9781 S. N                                    | leridian Bl                             | vd., Suite                      | 400, Englewood, CO   | 80112       |                              | Repair ID      | JP5.A21.2   | 25     |
| Co   | ontract No.   | FA89031                                      | 5D0007, D                               | .O. FA890                       | 3-19-F-0027  |             |                              | Report<br>Date | 05 APR 2    | 023    |
| QV   | / Engineer  | (b) (6)                                      |   |                                 | Phone (b) (6)  |             | Emai                         | (b) (6         | 5)          |        |
|  |   |  |   |                                 | VALIDATION   |             |                              |                |             |        |
| Sou  | rce   | I  | DF Page N                               | 0.                              | Facility Geograph  | ic Area     |                              | Location       | Reference   |        |
| EXWC   |   | EXWC Re                                      | ecommend                                | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i>           | A)             |             |        |
| Repair D   | Repair Description       Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.       N3943020D222         Repair Description       Source Contract Reference       N3943021F420 |  |   |                                 |  |             |                              |                |             |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>N/A - no work provided.<br>Records Reviewed |   |  |   |                                 |  |             |                              |                |             |        |
| Vali   | tion of QA<br>dation and<br>oservations   | Update:                                      |   |                                 | ed EXWC - Comprehe<br>Service Assessment                                 | ensive Rep  | oair List Re                 | commenda       | ations      |        |
|  |   | Final accep                                  | otance by go                            | overnment.                      | Date: 08 MAR 2023  |             |                              |                |             |        |
|  | Rework  | Needed                                       |   |                                 | Photo Record Attached  |             | Repair                       | Work Vali      | dated as Co | nplete |
| 0  | Yes   | $oldsymbol{O}$                               | No                                      |                                 | N/A  |             | $oldsymbol{O}$               | Yes            | 0           | No     |
| leveraged<br>FFS perfor  | Selection<br>previous i<br>rmed, no i   | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for def | nited to me<br>t work.<br>fuel. | ere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples unc | ler assume                   | ed service     | conditions, | and    |
|  |   |  |   |                                 | CERTIFICATION  |             | $\langle \mathbf{O} \rangle$ |                |             |        |
| l hereby certif<br>report was pe   |   |  |   | QV ENG                          | INEER SIGNATURE  | (b)         | (6)                          |                |             |        |
| report is true.  | -   |  | u ulio                                  |                                 | DATE   | 05 APR 2    | .023                         |                |             |        |

|  |   |  |  | QUALI                           | TY VALIDATION (  | QV) REPC    | DRT                |                |              |        |
|--|---|--|--|---------------------------------|--|-------------|--------------------|----------------|--------------|--------|
|  |   |  | l                                      | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue | I                  |                |              |        |
| Valio  | dation Firm   | HDR Env                                      | ironmental                             | , Operatio                      | ns and Construction,   | Inc.        |                    | Repair<br>No.  | 212          |        |
|  | Address   | 9781 S. N                                    | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO   | 80112       |                    | Repair ID      | JP5.A21.2    | 26     |
| C  | ontract No.   | FA89031                                      | 5D0007, D                              | .O. FA890                       | 3-19-F-0027  |             |                    | Report<br>Date | 05 APR 2     | 023    |
| Q  | V Engineer  | (b) (6)                                      |  |                                 | Phone (b) (6)  |             | Emai               | (b) (e         | 5)           |        |
|  |   |  |  |                                 | VALIDATION   |             |                    |                |              |        |
| Sou  | ırce  | I  | PDF Page N                             | о.                              | Facility Geograph  | ic Area     |                    | Location       | Reference    |        |
| EXWC   |   | EXWC Re                                      | ecommend                               | ation                           | (b) (3) (A)  |             | (b) (3) ( <i>i</i> | A)             |              |        |
| Repair I   | air Description Double dent. FFS assessment and repair if necessary.<br>N3943020D22<br>Source Contract<br>Reference N3943021F42 |  |  |                                 |  |             |                    |                |              |        |
| Description of<br>Contractor QC<br>Method(s) Used N/A - no work provided. N/A - no work provided. N/A<br>Contractor QC<br>Records Reviewed |   |  |  |                                 |  |             |                    |                |              |        |
| Val  | ntion of QA<br>idation and<br>bservations   | Update:                                      |  |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re       | commenda       | ations       |        |
|  |   | Final accep                                  | ptance by go                           | overnment.                      | Date: 08 MAR 2023  |             |                    |                |              |        |
|  | Rework  | Needed                                       |  |                                 | Photo Record Attached  |             | Repair             | Work Vali      | dated as Cor | mplete |
| 0  | Yes   | $oldsymbol{O}$                               | No                                     |                                 | N/A  |             | $oldsymbol{O}$     | Yes            | 0            | No     |
| leveraged<br>FFS perfo   | Selection<br>I previous i<br>ormed, no r  | of indication<br>integrity ma<br>repair requ | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | rere conducted at spe<br>echanical integrity pri<br>ecommendations / Pip | nciples und | ler assume         | ed service     | conditions,  | and    |
|  |   |  |  |                                 | CERTIFICATION  |             |                    |                |              |        |
|  |   | work validate                                |  | QV ENG                          | INEER SIGNATURE  | (b)         | (6)                |                |              |        |
| report is true   | -   |  | u iio                                  |                                 | DATE   | 05 APR 2    | .023               |                |              |        |

|   |  |                |              | QUALI      | TY VALIDATION (                         | QV) REPC    | DRT                                      |  |              |        |
|---|--|----------------|--------------|------------|---|-------------|--|--|--------------|--------|
|   |  |                | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I  |  |              |        |
| Valio   | dation Firm  | HDR Env        | ironmental   | , Operatio | ns and Construction,                    | Inc.        |  | Repair<br>No.  | 213          |        |
|   | Address  | 9781 S. N      | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |  | Repair ID  | JP5.A21.2    | 27     |
| С   | ontract No.  | FA89031        | 5D0007, D    | .O. FA890  | )3-19-F-0027                            |             |  | Report<br>Date   | 05 APR 2     | 023    |
| Q   | V Engineer   | (b) (6)        |              |            | Phone (b) (6)                           |             | Emai                                     | (b) (e   | 5)           |        |
|   |  |                |              |            | VALIDATION                              |             |  |  |              |        |
| Sou   | urce   | I              | PDF Page N   | 0.         | Facility Geographic Area                |             |  | Location   | Reference    |        |
| EXWC  |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) ( <i>i</i>                       | A)   |              |        |
| Repair I  | Dent, on long seam. FFS assessment and repair if necessary.<br>Repair Description  |                |              |            |   |             |  | Source Contract<br>Reference N3943020D2<br>TO<br>N3943021F42 |              |        |
| Description of<br>Contractor QC<br>Method(s) Used |  |                |              |            |   |             | N/A<br>Contractor QC<br>Records Reviewed |  |              |        |
| Val   | otion of QA<br>lidation and<br>bservations   | Update:        |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                             | commenda   | ations       |        |
|   |  | Final accep    | otance by go | overnment. | Date: 08 MAR 2023                       |             |  |  |              |        |
|   | Rework   | Needed         |              |            | Photo Record Attached                   |             | Repair                                   | Work Vali  | dated as Cor | nplete |
| 0   | Yes  | $oldsymbol{O}$ | No           |            | N/A                                     |             | $oldsymbol{O}$                           | Yes  | 0            | No     |
| leveraged<br>FFS perfo                            | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                |              |            |   |             |  |  |              |        |
|   |  |                |              |            | CERTIFICATION                           |             | $(\mathbf{O})$                           |  |              |        |
|   |  | work validate  |              | QV ENG     | INEER SIGNATURE                         | (D)         | (6)                                      |  |              |        |
| report is true                                    | -  |                |              |            | DATE                                    | 05 APR 2    | .023                                     |  |              |        |

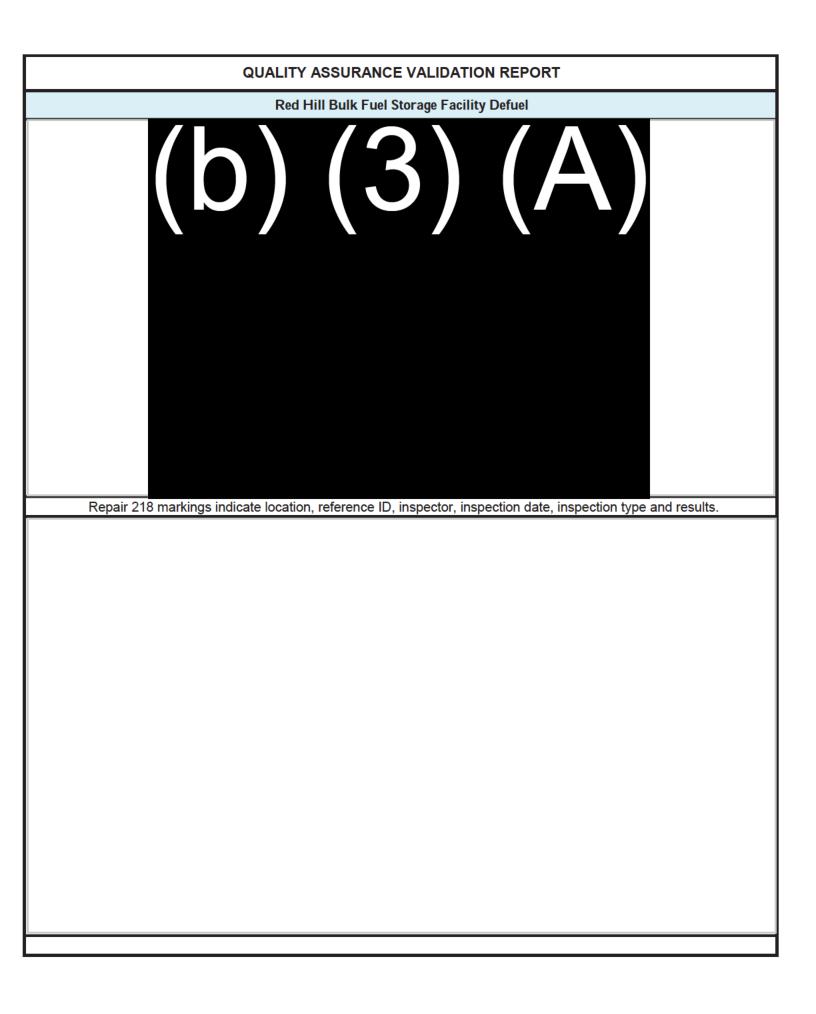
|                        |  |                |              | QUALI      | TY VALIDATION (                         | QV) REPO    | DRT                          |   |             |        |
|------------------------|--|----------------|--------------|------------|---|-------------|------------------------------|---|-------------|--------|
|                        |  |                |              | Red Hill B | ulk Fuel Storage Fac                    | ility Defue |                              |   |             |        |
| Valio                  | dation Firm  | HDR Env        | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                              | Repair<br>No.   | 214         |        |
|                        | Address  | 9781 S. N      | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |                              | Repair ID   | JP5.A21.2   | 28     |
| С                      | ontract No.  | FA89031        | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                              | Report<br>Date  | 05 APR 2    | 023    |
| Q                      | V Engineer   | (b) (6)        |              |            | Phone (b) (6)                           |             | Emai                         | (b) (6  | 5)          |        |
|                        |  |                |              |            | VALIDATION                              |             |                              |   |             |        |
| Sou                    | urce   | I              | PDF Page N   | 0.         | 5. Facility Geographic Area             |             |                              | Location  | Reference   |        |
| EXWC                   |  | EXWC Re        | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) (A)                  |   |             |        |
| Repair I               | Repair Description Geometric anomaly adjacent to girth weld. FFS assessment and repair if necessary.   |                |              |            |   |             |                              | Source Contract<br>Reference<br>N3943020D22<br>TO<br>N3943021F420 |             |        |
| Cor                    | Description of<br>Contractor QC<br>Method(s) Used  |                |              |            |   |             |                              | N/A<br>Contractor QC<br>Records Reviewed                          |             |        |
| Val                    | otion of QA<br>lidation and<br>bservations   | Update:        |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re                 | commenda  | ations      |        |
|                        |  | Final accep    | otance by go | overnment. | Date: 08 MAR 2023                       |             |                              |   |             |        |
|                        | Rework   | Needed         |              |            | Photo Record Attached                   |             | Repair                       | Work Vali   | dated as Co | mplete |
| 0                      | Yes  | $oldsymbol{O}$ | No           |            | N/A                                     |             | $oldsymbol{O}$               | Yes   | Ο           | No     |
| leveraged<br>FFS perfo | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                |              |            |   |             |                              |   |             |        |
|                        |  |                |              |            | CERTIFICATION                           |             | $\langle \mathbf{O} \rangle$ |   |             |        |
|                        |  | work validate  |              | QV ENG     | INEER SIGNATURE                         | (D)         | (6)                          |   |             |        |
| report is true         | -  |                |              |            | DATE                                    | 05 APR 2    | 2023                         |   |             |        |

|   |  |           |              | QUALI      | TY VALIDATION (                         | QV) REPO    | ORT          |  |                            |     |
|---|--|-----------|--------------|------------|---|-------------|--------------|--|----------------------------|-----|
|   |  |           | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I            |  |                            |     |
| Validat   | tion Firm  | HDR Env   | ironmental   | , Operatio | ns and Construction,                    | Inc.        |              | Repair<br>No.                            | 215                        |     |
|   | Address  | 9781 S. N | leridian Bl  | vd., Suite | 400, Englewood, CO                      | 80112       |              | Repair ID                                | JP5.A21.2                  | 29  |
| Con   | ntract No.   | FA89031   | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |              | Report<br>Date                           | 05 APR 2                   | 023 |
| QV  | Engineer   | (b) (6)   |              |            | Phone (b) (6)                           |             | Emai         | (b) (6                                   | 5)                         |     |
|   |  |           |              |            | VALIDATION                              |             |              |  |                            |     |
| Sourc   | ce   | F         | PDF Page N   | 0.         | Facility Geographic Area                |             |              | Location                                 | Reference                  |     |
| EXWC  |  | EXWC Re   | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) (A)  |  |                            |     |
| Repair De                                       | Repair Description Dent, on long seam. FFS assessment and repair if  |           |              |            |   |             |              | ce Contract<br>Reference                 | N3943020<br>TO<br>N3943021 |     |
| Contra  | Description of<br>Contractor QC<br>Method(s) Used  |           |              |            |   |             |              | N/A<br>Contractor QC<br>Records Reviewed |                            |     |
|   | on of QA<br>ation and<br>ervations   |           |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re | commenda                                 | ations                     |     |
|   |  |           | ptance by go | overnment. | Date: 08 MAR 2023                       |             |              |  |                            |     |
|   | Rework   | Needed    |              |            | Photo Record Attached                   |             |              |  | dated as Co                |     |
| O   | Yes  | ullet     | No           |            | N/A                                     |             | ullet        | Yes                                      | $\bigcirc$                 | No  |
| Localized Fi<br>S<br>leveraged p<br>FFS perform | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |           |              |            |   |             |              |  |                            |     |
|   |  |           |              |            | CERTIFICATION                           |             |              |  |                            |     |
| I hereby certify<br>report was pers             |  |           |              | QV ENG     | INEER SIGNATURE                         | (b) (6)     |              |  |                            |     |
| report is true.                                 | sonany sub   |           | u ulio       |            | DATE                                    | 05 APR 2    | 023          |  |                            |     |

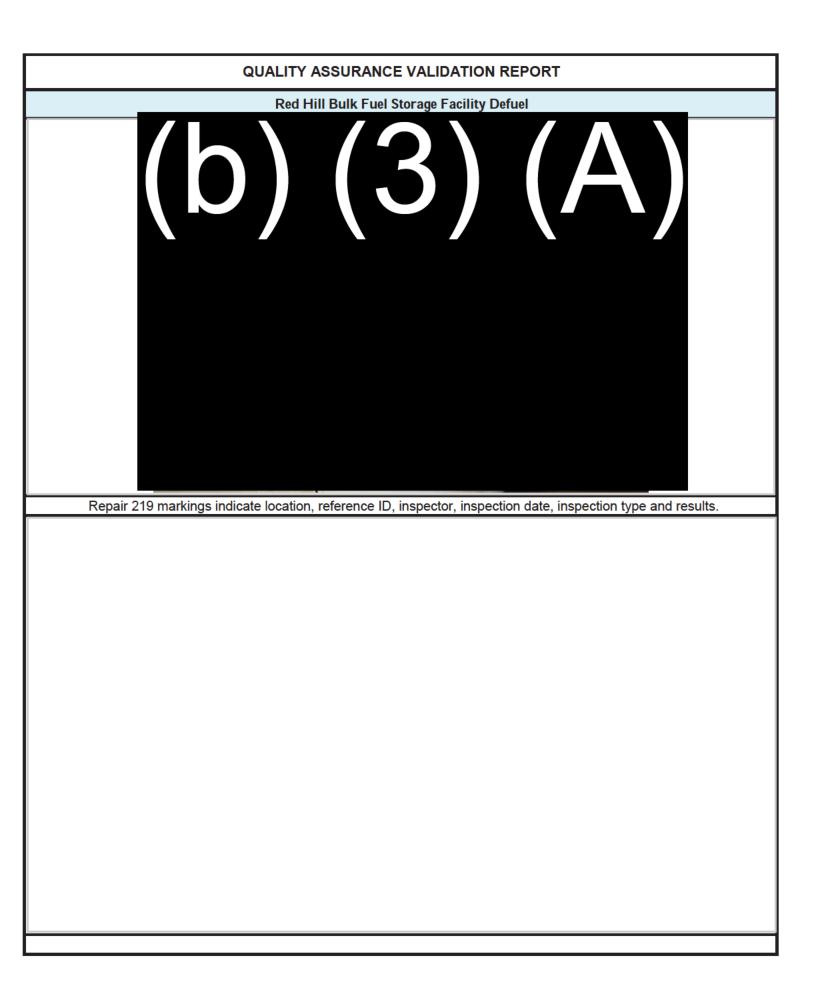
|                                |  |               |              | QUALI      | TY VALIDATION (                         | QV) REPO    | DRT          |   |              |        |
|--------------------------------|--|---------------|--------------|------------|---|-------------|--------------|---|--------------|--------|
|                                |  |               |              | Red Hill B | ulk Fuel Storage Fac                    | ility Defue |              |   |              |        |
| Valio                          | dation Firm  | HDR Env       | ironmental   | , Operatio | ns and Construction,                    | Inc.        |              | Repair<br>No.   | 216          |        |
|                                | Address  | 9781 S. N     | /leridian Bl | vd., Suite | 400, Englewood, CO                      | 80112       |              | Repair ID   | JP5.A21.3    | 30     |
| C                              | ontract No.  | FA89031       | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |              | Report<br>Date  | 05 APR 2     | 023    |
| Q                              | V Engineer   | (b) (6)       |              |            | Phone (b) (6)                           |             | Emai         | (b) (e  | 5)           |        |
|                                |  |               |              |            | VALIDATION                              |             |              |   | -            |        |
| Sou                            | urce   | I             | PDF Page N   | о.         | o. Facility Geographic Area             |             |              | Location  | Reference    |        |
| EXWC                           |  | EXWC Re       | ecommend     | ation      | (b) (3) (A)                             |             | (b) (3) (A)  |   |              |        |
| Repair I                       | Geometric anomaly adjacent to girth weld. FFS assessmen<br>and repair if necessary.  |               |              |            |   |             |              | Source Contract<br>Reference N3943020D22<br>TO<br>N3943021F42 |              |        |
| Cor                            | Description of<br>Contractor QC<br>Method(s) Used  |               |              |            |   |             |              | N/A<br>Contractor QC<br>Records Reviewed                      |              |        |
| Val                            | ntion of QA<br>idation and<br>bservations  | Update:       |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re | commenda  | ations       |        |
|                                |  |               | ance by gov  |            | Date: 08 MAR 2023                       |             |              |   |              |        |
|                                | Rework   | Needed        |              |            | Photo Record Attached                   |             |              | Work Vali   | dated as Cor | nplete |
| O                              | Yes  | ullet         | No           |            | N/A                                     |             | ullet        | Yes   | $\bigcirc$   | No     |
| leveraged<br>FFS perfo         | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |               |              |            |   |             |              |   |              |        |
|                                |  |               |              |            | CERTIFICATION                           |             |              |   |              |        |
|                                |  | work validate |              | QV ENG     | INEER SIGNATURE                         | (b)         | (6)          |   |              |        |
| report was p<br>report is true | -  | stantiated an | a this       |            | DATE                                    | 05 APR 2    | 2023         |   |              |        |

|                                      |  |           |              | QUALI      | TY VALIDATION (                          | QV) REPC    | DRT                |  |                            |        |
|--------------------------------------|--|-----------|--------------|------------|--|-------------|--------------------|--|----------------------------|--------|
|                                      |  |           | I            | Red Hill B | ulk Fuel Storage Fac                     | ility Defue |                    |  |                            |        |
| Valid                                | lation Firm  | HDR Env   | ironmental   | , Operatio | ns and Construction,                     | Inc.        |                    | Repair<br>No.                            | 217                        |        |
|                                      | Address  | 9781 S. N | leridian Bl  | vd., Suite | 400, Englewood, CO                       | 80112       |                    | Repair ID                                | JP5.A21.3                  | 31     |
| Co                                   | ontract No.  | FA89031   | 5D0007, D    | .O. FA890  | )3-19-F-0027                             |             |                    | Report<br>Date                           | 05 APR 2                   | 023    |
| Q                                    | V Engineer   | (b) (6)   |              |            | Phone (b) (6)                            |             | Emai               | (b) (e                                   | 5)                         |        |
|                                      |  |           |              |            | VALIDATION                               |             |                    |  |                            |        |
| Sou                                  | rce  | I         | PDF Page N   | o.         | Facility Geographic Area                 |             |                    | Location                                 | Reference                  |        |
| EXWC                                 |  | EXWC Re   | ecommend     | ation      | (b) (3) (A)                              |             | (b) (3) ( <i>i</i> | A)                                       |                            |        |
| Repair D                             | Repair Description Dent, on long seam. FFS assessment and repair if  |           |              |            |  |             |                    | ce Contract<br>Reference                 | N3943020<br>TO<br>N3943021 |        |
| Con                                  | Description of<br>Contractor QC<br>Method(s) Used  |           |              |            |  |             |                    | N/A<br>Contractor QC<br>Records Reviewed |                            |        |
| Vali                                 | tion of QA<br>dation and<br>oservations  | Update:   |              |            | ed EXWC - Comprehe<br>Service Assessment | ensive Rep  | oair List Re       | commenda                                 | ations                     |        |
|                                      |  |           | otance by go | overnment. | Date: 08 MAR 2023                        |             |                    |  |                            |        |
|                                      | Rework   | Needed    |              |            | Photo Record Attached                    |             |                    | Work Vali                                | dated as Co                | mplete |
| 0                                    | Yes  | ullet     | No           |            | N/A                                      |             | $oldsymbol{O}$     | Yes                                      | O                          | No     |
| Localized<br>leveraged<br>FFS perfor | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |           |              |            |  |             |                    |  |                            |        |
|                                      |  |           |              |            | CERTIFICATION                            |             | $(\mathbf{O})$     |  |                            |        |
| l hereby certit<br>report was pe     |  |           |              | QV ENG     | INEER SIGNATURE                          | (D)         | (6)                |  |                            |        |
| report is true.                      |  |           |              |            | DATE                                     | 05 APR 2    | 023                |  |                            |        |

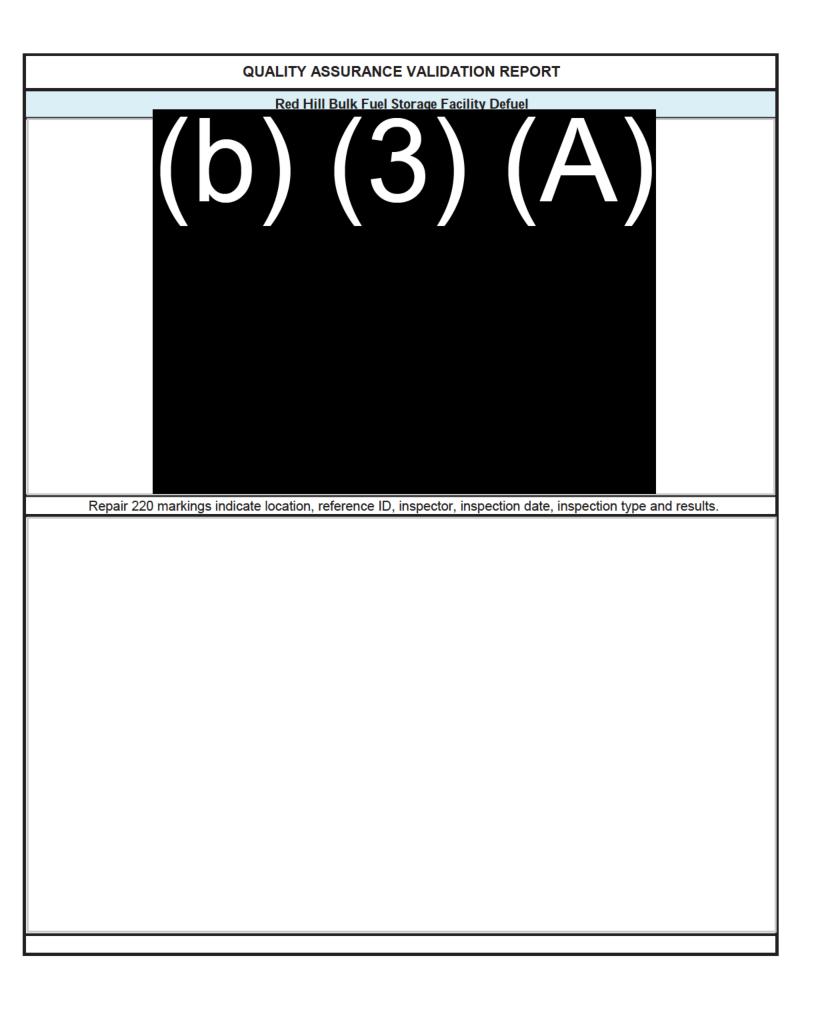
|                                     | QUALITY VALIDATION (QV) REPORT   |                |   |                             |  |             |              |   |            |     |  |  |  |
|-------------------------------------|--|----------------|---|-----------------------------|--|-------------|--------------|---|------------|-----|--|--|--|
|                                     |  |                | I   | Red Hill B                  | ulk Fuel Storage Fac                     | ility Defue | I            |   |            |     |  |  |  |
| Vali                                | dation Firm  | HDR Env        | ironmental                                  | , Operatio                  | ns and Construction,                     | Inc.        |              | Repair<br>No.                                       | 218        |     |  |  |  |
|                                     | Address  | 9781 S. N      | leridian Bl                                 | vd., Suite                  | 400, Englewood, CO                       | 80112       |              | Repair ID   | JP5.A21.3  | 32  |  |  |  |
| С                                   | ontract No.  | FA89031        | 5D0007, D                                   | .O. FA890                   | 3-19-F-0027                              |             |              | Report<br>Date                                      | 05 APR 2   | 023 |  |  |  |
| Q                                   | V Engineer   | (b) (6)        |   |                             | Phone (b) (6)                            |             | Emai         | $\left( l_{a} \right) \left( l_{a} \right)$         | 5)         |     |  |  |  |
|                                     |  | 1              |   |                             | VALIDATION                               |             |              |   |            |     |  |  |  |
| Sou                                 | urce   | F              | DF Page N                                   | o. Facility Geographic Area |  |             |              | Location  | Reference  |     |  |  |  |
| EXWC                                |  | EXWC Re        | ecommend                                    | ation                       | (b)                                      |             |              | A)  |            |     |  |  |  |
| Repair I                            | Repair Description Repair Description Repair Description Poor Ultrasonic Reading; Crosses Long Seam. Estimated remove coating and inspect. FFS assessment and repair if necessary.   |                |   |                             |  |             |              | Source Contract<br>Reference N3943020D<br>N3943021F |            |     |  |  |  |
| Cor                                 | Description of<br>Contractor QC<br>Method(s) Used  |                |   |                             |  |             |              | N/A<br>Contractor QC<br>Records Reviewed            |            |     |  |  |  |
| Val                                 | otion of QA<br>lidation and<br>bservations   | Update:        |   |                             | ed EXWC - Comprehe<br>Service Assessment | ensive Rep  | oair List Re | commenda  | ations     |     |  |  |  |
|                                     |  |                | otance by go                                | overnment.                  | Date: 08 MAR 2023                        |             |              |   |            |     |  |  |  |
|                                     | Rework   | Needed         |   |                             | Photo Record Attached                    |             | Repair       | Repair Work Validated as Complete                   |            |     |  |  |  |
| O                                   | Yes  | ullet          | No  |                             | N/A                                      |             | ullet        | Yes   | $\bigcirc$ | No  |  |  |  |
| Localized<br>leveraged<br>FFS perfo | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                |   |                             |  |             |              |   |            |     |  |  |  |
|                                     |  |                |   |                             | CERTIFICATION                            |             |              |   |            |     |  |  |  |
| -                                   |  |                | ork validated in this QV ENGINEER SIGNATURE |                             |  |             |              |   |            |     |  |  |  |
| report was p<br>report is true      |  | ostantiated an | u this                                      |                             | DATE                                     | 05 APR 2    | 023          |   |            |     |  |  |  |



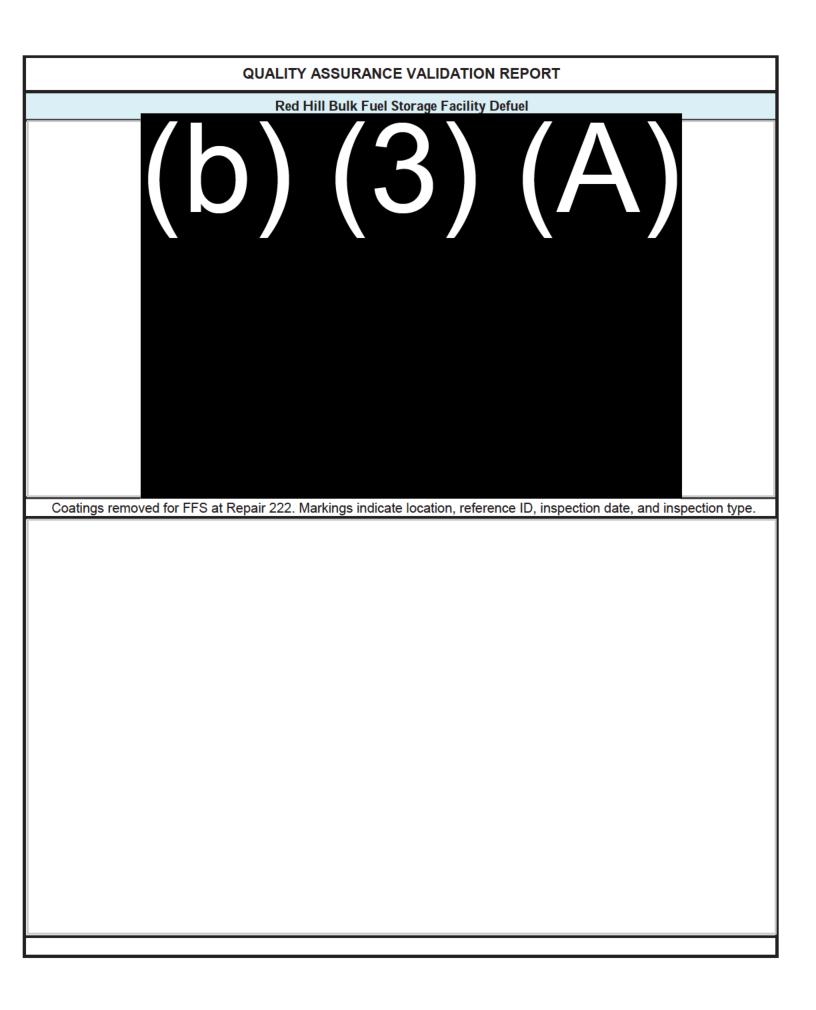
|                                  |  |                  |              | QUALI                       | TY VALIDATION (                         | QV) REPC    | DRT                |   |                    |     |  |
|----------------------------------|--|------------------|--------------|-----------------------------|---|-------------|--------------------|---|--------------------|-----|--|
|                                  |  |                  | I            | Red Hill B                  | ulk Fuel Storage Fac                    | ility Defue | Į                  |   |                    |     |  |
| Valid                            | lation Firm  | HDR Env          | ironmental   | , Operatio                  | ns and Construction,                    | Inc.        |                    | Repair<br>No.   | 219                |     |  |
|                                  | Address  | 9781 S. N        | /leridian Bl | vd., Suite                  | 400, Englewood, CO                      | 80112       |                    | Repair ID   | JP5.A21.3          | 33  |  |
| Co                               | ontract No.  | FA89031          | 5D0007, D    | .O. FA890                   | 3-19-F-0027                             |             |                    | Report<br>Date  | 05 APR 2           | 023 |  |
| Q                                | V Engineer   | (b) (6)          |              |                             | Phone (b) (6)                           |             | Email              | (b) (6)   |                    |     |  |
|                                  |  |                  |              |                             | VALIDATION                              |             |                    |   |                    |     |  |
| Sou                              | irce   | I                | PDF Page N   | o. Facility Geographic Area |   |             |                    | Location  | Location Reference |     |  |
| EXWC                             |  | EXWC Re          | ecommend     | ation                       | (b) (3) (A)                             |             | (b) (3) ( <i>i</i> | A)  |                    |     |  |
| Repair D                         | Repair Description ILI data reports metal loss of 31.5%. Not able to assess without coating removal remove coating and inspect. FFS assessment and repair if necessary.  |                  |              |                             |   |             |                    | Source Contract<br>Reference N3943020D2<br>TO<br>N3943021F4 |                    |     |  |
| Con                              | Description of<br>Contractor QC<br>Method(s) Used  |                  |              |                             |   |             |                    | N/A<br>Contractor QC<br>Records Reviewed                    |                    |     |  |
| Vali                             | tion of QA<br>idation and<br>oservations   | Update:          |              |                             | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re       | commenda  | ations             |     |  |
|                                  |  |                  | ptance by go | overnment.                  | Date: 08 MAR 2023                       |             |                    |   |                    |     |  |
|                                  | Rework   | Needed           |              |                             | Photo Record Attached                   | i           | Repair             | Work Vali   | idated as Complete |     |  |
| 0                                | Yes  | $oldsymbol{O}$   | No           |                             | N/A                                     |             | $oldsymbol{O}$     | Yes   | 0                  | No  |  |
| leveraged<br>FFS perfo           | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                  |              |                             |   |             |                    |   |                    |     |  |
|                                  |  |                  |              |                             | CERTIFICATION                           | (b)-        | $(\mathbf{C})$     |   |                    |     |  |
| l hereby certi<br>report was pe  |  |                  |              | QV ENG                      | INEER SIGNATURE                         | (D) (       | (6)                |   |                    |     |  |
| report was pe<br>report is true. |  | ostantilatieu an |              |                             | DATE                                    | 05 APR 2    | 023                |   |                    |     |  |



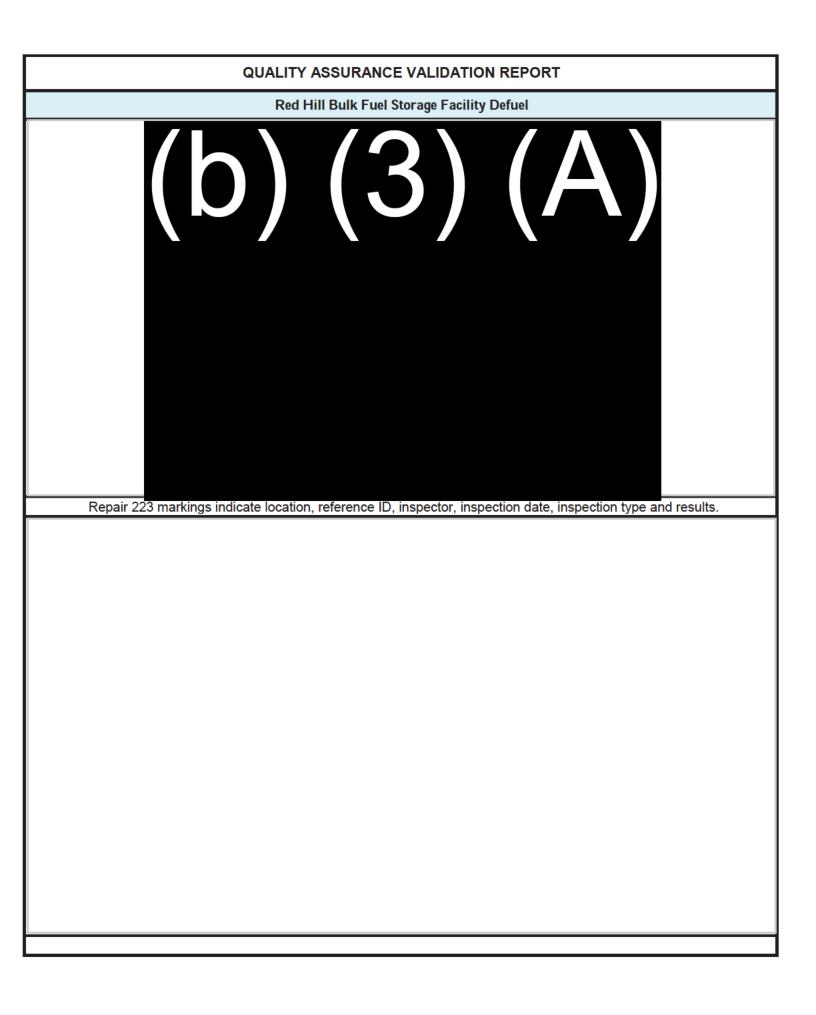
|   | QUALITY VALIDATION (QV) REPORT   |                  |              |                             |   |                 |                    |                           |                            |        |  |  |  |
|---|--|------------------|--------------|-----------------------------|---|-----------------|--------------------|---------------------------|----------------------------|--------|--|--|--|
|   |  |                  | l            | Red Hill B                  | Bulk Fuel Storage Fac   | ility Defue     |                    |                           |                            |        |  |  |  |
| Vali  | dation Firm  | HDR Env          | ironmental   | , Operatio                  | ns and Construction,  | Inc.            |                    | Repair<br>No.             | 220                        |        |  |  |  |
|   | Address  | 9781 S. N        | /leridian Bl | vd., Suite                  | 400, Englewood, CO  | 80112           |                    | Repair ID                 | JP5.A21.3                  | 34     |  |  |  |
| С   | ontract No.  | FA89031          | 5D0007, D    | .O. FA890                   | )3-19-F-0027  |                 |                    | Report<br>Date            | 05 APR 2                   | 023    |  |  |  |
| Q   | V Engineer   | (b) (6)          |              |                             | Phone (b) (6)   |                 | Email              | (b) (                     | 6)                         |        |  |  |  |
|   |  | •                |              |                             | VALIDATION  |                 |                    |                           |                            |        |  |  |  |
| So  | urce   | I                | PDF Page N   | o. Facility Geographic Area |   |                 |                    | Location                  | Reference                  |        |  |  |  |
| EXWC  |  | EXWC Re          | ecommend     | ation                       | (b) (3) (A)   |                 | (b) (3) ( <i>i</i> | A)                        |                            |        |  |  |  |
| Repair  | Description  | without co       | ating remo   | oval. (()(3)(A)             | 32.0%. Not able to ass<br>remove coating and ir<br>necessary. | sess<br>ispect. | Sour               | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |        |  |  |  |
| Description of<br>Contractor QC<br>Method(s) Used |  |                  |              |                             |   |                 |                    | ntractor QC<br>s Reviewed | N/A                        |        |  |  |  |
| Va  | otion of QA<br>lidation and<br>bservations   | Update:          |              |                             | ed EXWC - Compreh<br>Service Assessment                       | ensive Rep      | oair List Re       | commenda                  | ations                     |        |  |  |  |
|   |  | Final accep      | ptance by go | overnment.                  | Date: 08 MAR 2023   |                 |                    |                           |                            |        |  |  |  |
|   | Rework   | Needed           |              |                             | Photo Record Attached   |                 | Repair             | Work Vali                 | dated as Cor               | mplete |  |  |  |
| O   | Yes  | $   \mathbf{O} $ | No           |                             | N/A   |                 | ullet              | Yes                       | O                          | No     |  |  |  |
| Localized<br>leveraged<br>FFS perfo               | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>leveraged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                  |              |                             |   |                 |                    |                           |                            |        |  |  |  |
|   |  |                  |              |                             | CERTIFICATION   | (b) (l)         | 2)                 |                           |                            |        |  |  |  |
|   |  | work validate    |              | QV ENG                      | INEER SIGNATURE   | (b) (6          | 0)                 |                           |                            |        |  |  |  |
| report is true                                    | 9.   |                  |              |                             | DATE  | 05 APR 2        | 023                |                           |                            |        |  |  |  |



|                                  |   |                    |              | QUALI       | TY VALIDATION (                               | QV) REPO    | DRT          |                           |                            |     |  |  |
|----------------------------------|---|--------------------|--------------|-------------|---|-------------|--------------|---------------------------|----------------------------|-----|--|--|
|                                  |   |                    |              | Red Hill B  | ulk Fuel Storage Fac                          | ility Defue |              |                           |                            |     |  |  |
| Valid                            | ation Firm                              | HDR Env            | ironmenta    | , Operatio  | ns and Construction,                          | Inc.        |              | Repair<br>No.             | 222                        |     |  |  |
|                                  | Address                                 | 9781 S. N          | leridian Bl  | vd., Suite  | 400, Englewood, CO                            | 80112       |              | Repair ID                 | JP5.A21.3                  | 36  |  |  |
| Co                               | ontract No.                             | FA89031            | 5D0007, D    | .O. FA890   | )3-19-F-0027                                  |             |              | Report<br>Date            | 05 APR 2                   | 023 |  |  |
| Q                                | 7 Engineer                              | (b) (6)            |              |             | Phone (b) (6)                                 |             | Email        | (6) (6                    | 5)                         |     |  |  |
|                                  |   | I                  |              |             | VALIDATION                                    |             | I            |                           |                            |     |  |  |
| Sou                              | rce                                     | F                  | PDF Page N   | ю.          | Facility Geograph                             | ic Area     |              | Location                  | Reference                  |     |  |  |
| EXWC                             |   | EXWC Re            | ecommend     | lation      | (b) (3) (A)                                   |             | (b) (3) (A)  |                           |                            |     |  |  |
| Repair D                         | Description                             | (b) (3) ( <i>i</i> |              | e coating   | to assess without coa<br>and inspect. FFS ass | •           | Sour         | ce Contract<br>Reference  | N3943020<br>TO<br>N3943027 |     |  |  |
| Con                              | cription of<br>tractor QC<br>od(s) Used |                    | work provid  | (           |   |             |              | ntractor QC<br>s Reviewed | N/A                        |     |  |  |
| Vali                             | tion of QA<br>dation and<br>oservations | Update:            | Pipeline Fi  | tness for S | ed EXWC - Compreh<br>Service Assessment       | ensive Rep  | oair List Re | commenda                  | ations                     |     |  |  |
|                                  |   |                    | otance by go | overnment.  | Date: 08 MAR 2023                             |             |              | M 1 1 1 1                 |                            |     |  |  |
| $\bigcirc$                       | Yes                                     | Needed             | No           |             | Photo Record Attached                         | 1           |              | Yes                       | dated as Co                | No  |  |  |
| leveraged<br>FFS perfor          |   |                    |              |             |   |             |              |                           |                            |     |  |  |
| CERTIFICATION                    |   |                    |              |             |   |             |              |                           |                            |     |  |  |
| l hereby certif<br>report was pe |   |                    |              | (b)         | (6)   |             |              |                           |                            |     |  |  |
| report is true.                  | -                                       |                    | G U113       | 05 APR 2    | 2023  |             |              |                           |                            |     |  |  |



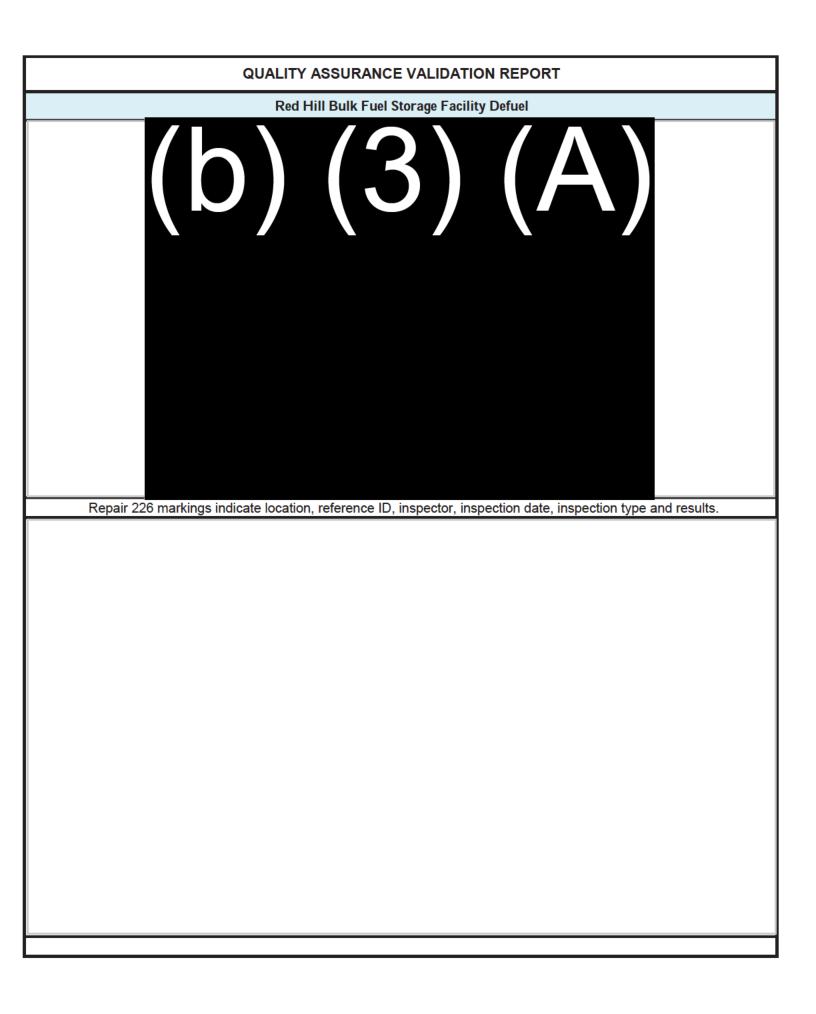
|  |   |   | QUALI                           | TY VALIDATION (  | QV) REPO                 | DRT                        |  |             |              |
|--|---|---|---------------------------------|--|--------------------------|----------------------------|--|-------------|--------------|
|  |   |   | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue              | Į                          |  |             |              |
| Validation Fi  | m HDR Env   | ironmenta   | l, Operatio                     | ns and Construction,   | Inc.                     |                            | Repair<br>No.                          | 223         |              |
| Addr   | ss 9781 S. N  | /leridian Bl  | vd., Suite                      | 400, Englewood, CO   | 80112                    |                            | Repair ID                              | JP5.A21.3   | 37           |
| Contract I   | o. FA89031  | 5D0007, D   | .O. FA890                       | 3-19-F-0027  |                          |                            | Report<br>Date                         | 05 APR 2    | 023          |
| QV Engin   | er (b) (6)  |   |                                 | Phone (b) (6)  |                          | Email                      | (b) (6                                 | 5)          |              |
|  |   |   |                                 | VALIDATION   |                          |                            |  |             |              |
| Source   | ]   | PDF Page N  | lo.                             | Facility Geograph  | ic Area                  |                            | Location                               | Reference   |              |
| EXWC   | EXWC R  | ecommenc  | lation                          | (b) (3) (A)  |                          | (b) (3) (A)                |  |             |              |
| Repair Descript  | corrosion   | rrosion rep<br>also on sl<br>leeve is <sup>(b)</sup><br>sleeve. | of                              | Sour   | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |  |             |              |
| Description<br>Contractor (<br>Method(s) U   | of<br>QC  | work provi  |                                 |  |                          |                            | ntractor QC<br>s Reviewed              | N/A         |              |
| Description of (<br>Validation a<br>Observatio                                     | A Update:   |   |                                 | ed EXWC - Compreh<br>Service Assessment                                | ensive Rep               | oair List Re               | commenda                               | ations      |              |
|  |   | ance by gov   |                                 | Date: 08 MAR 2023  |                          |                            |  |             |              |
| Yes  | ork Needed  | No  |                                 | Photo Record Attached  | 1                        |                            | Yes                                    | dated as Co | mpiete<br>No |
| Comments<br>Localized Fitness<br>. Select<br>leveraged previou<br>FFS performed, r | for Service (<br>on of indicati<br>s integrity m<br>o repair requ | FFS) asse<br>ons was lir<br>anagemen<br>ired for de             | nited to me<br>t work.<br>fuel. | ere conducted at spe<br>echanical integrity pri<br>ecommendations / Pi | nciples unc              | tions on Re                | ed Hill <mark>(b)</mark><br>ed service | conditions, |              |
|  |   |   |                                 |  |                          |                            |  |             |              |
| I hereby certify that re   |   |   | (b) (                           | (6)  |                          |                            |  |             |              |
| report was personally<br>report is true.   | substantiated an  | d this  | 05 APR 2                        | .023   |                          |                            |  |             |              |



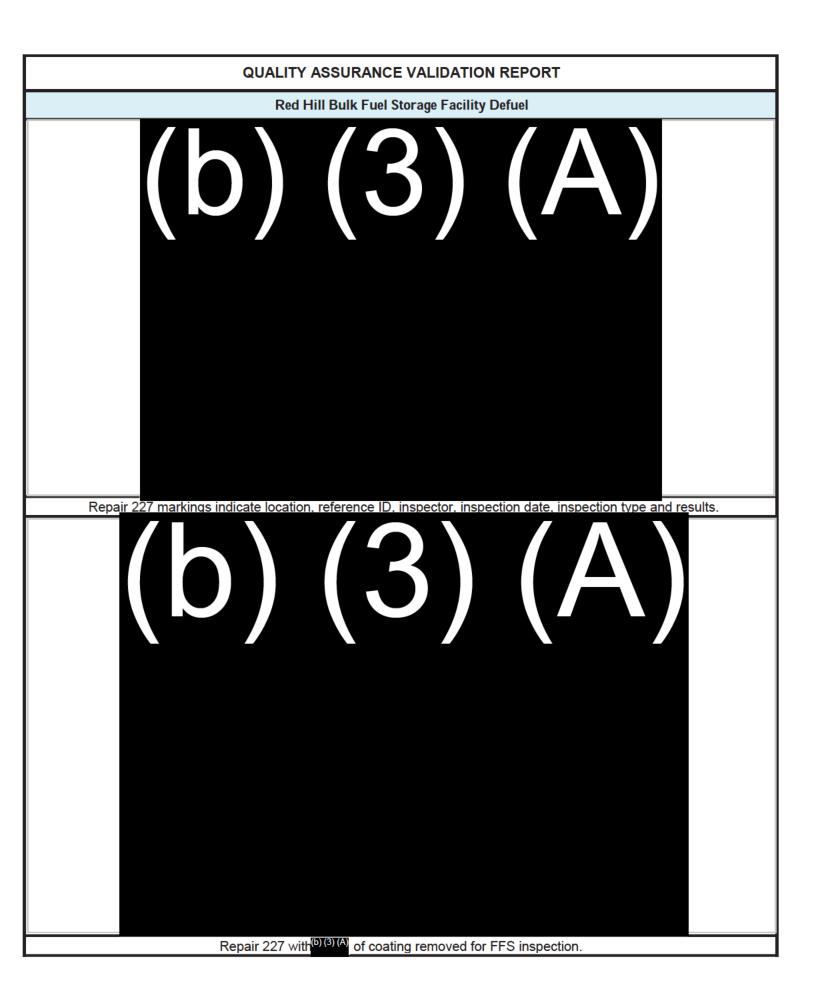
|                                |  |   |  | QUALI                           | TY VALIDATION (   | QV) REPO    | ORT                       |                          |  |        |
|--------------------------------|--|---|--|---------------------------------|---|-------------|---------------------------|--------------------------|--|--------|
|                                |  |   |  | Red Hill B                      | Bulk Fuel Storage Fac   | ility Defue | el                        |                          |  |        |
| Vali                           | dation Firm  | HDR Env                                       | ironmenta                              | , Operatio                      | ns and Construction,  | Inc.        |                           | Repair<br>No.            | 224                                    |        |
|                                | Address  | 9781 S. N                                     | /leridian Bl                           | vd., Suite                      | 400, Englewood, CO  | 80112       |                           | Repair ID                | JP5.A21.                               | 38     |
| С                              | Contract No.   | FA89031                                       | 5D0007, D                              | .O. FA890                       | )3-19-F-0027  |             |                           | Report<br>Date           | 05 APR 2                               | :023   |
| Q                              | V Engineer   | (b) (6)                                       |  |                                 | Phone (b) (6)   |             | Email                     | (b) (                    | 6)                                     |        |
|                                |  |   |  |                                 | VALIDATION  |             |                           |                          |  |        |
| So                             | urce   | F   | PDF Page N                             | ю.                              | Facility Geograph   | ic Area     |                           | Location                 | Reference                              |        |
| EXWC                           |  | EXWC Re                                       | ecommend                               | lation                          | (b) (3) (A)   |             | (b) (3) (                 | A)                       |  |        |
| Repair                         | Description  | FFS asse                                      |  |                                 | (0.120" dent + 0.010<br>necessary.  | " gouge).   | Sour                      | ce Contract<br>Reference | N3943020<br>TO<br>N394302 <sup>-</sup> |        |
| Со                             | Description of<br>Contractor QC<br>Method(s) Used        |   |  |                                 |   |             | ntractor QC<br>s Reviewed | N/A                      |  |        |
| Va                             | ption of QA<br>lidation and<br>bservations               | Update:                                       | Pipeline Fi                            | tness for S                     | ed EXWC - Comprehe<br>Service Assessment                                  | ensive Rep  | oair List Re              | commenda                 | ations                                 |        |
|                                | Rework   | Needed  | ptance by go                           | overnment.                      | Date: 08 MAR 2023<br>Photo Record Attached                                | 1           | Repair                    | Work Vali                | dated as Co                            | mplete |
| 0                              | Yes  |   | No                                     |                                 | N/A   |             |                           | Yes                      | 0                                      | No     |
| leveraged<br>FFS perfo         | l Fitness fo<br>Selection<br>d previous i<br>prmed, no i | of indication<br>integrity ma<br>repair requi | ons was lir<br>anagemen<br>ired for de | nited to me<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity prin<br>ecommendations / Pip | nciples und | der assume                | ed service               | conditions,                            | , and  |
|                                |  |   |  |                                 | CERTIFICATION   |             |                           |                          |  |        |
| -                              | tify that repair   |   |  | QV ENGINEER SIGNATURE           |   |             | (6)                       |                          |  |        |
| report was p<br>report is true | ersonally sub<br>e.                                      | stantiated an                                 | a this                                 |                                 | DATE  | 05 APR 2    | 2023                      |                          |  |        |

|                                     |   |               |              | QUALI      | QV) REPC                                | DRT         |                    |                           |                            |     |  |  |
|-------------------------------------|---|---------------|--------------|------------|---|-------------|--------------------|---------------------------|----------------------------|-----|--|--|
|                                     |   |               | I            | Red Hill B | ulk Fuel Storage Fac                    | ility Defue | I                  |                           |                            |     |  |  |
| Valid                               | lation Firm   | HDR Env       | ironmental   | , Operatio | ns and Construction,                    | Inc.        |                    | Repair<br>No.             | 225                        |     |  |  |
|                                     | Address   | 9781 S. N     | leridian Bl  | vd., Suite | 400, Englewood, CO                      | 80112       |                    | Repair ID                 | JP5.A21.3                  | 39  |  |  |
| Co                                  | ontract No.   | FA89031       | 5D0007, D    | .O. FA890  | 3-19-F-0027                             |             |                    | Report<br>Date            | 05 APR 2                   | 023 |  |  |
| Q                                   | V Engineer  | (b) (6)       |              |            | Phone (b) (6)                           |             | Email              | (b)                       | (6)                        |     |  |  |
|                                     |   |               |              |            | VALIDATION                              |             |                    |                           |                            |     |  |  |
| Sou                                 | urce  | I             | PDF Page N   | ю.         | Facility Geograph                       | ic Area     |                    | Location                  | Reference                  |     |  |  |
| EXWC                                |   | EXWC Re       | ecommend     | lation     | (b) (3) (A)                             |             | (b) (3) ( <i>i</i> | A)                        |                            |     |  |  |
| Repair [                            | Description   | FFS asse      |              |            | (0.160" dent + 0.020<br>necessary.      | " gouge).   | Sour               | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |     |  |  |
| Con                                 | scription of<br>atractor QC<br>od(s) Used   |               | work provid  |            |   |             |                    | ntractor QC<br>s Reviewed | N/A                        |     |  |  |
| Val                                 | tion of QA<br>idation and<br>bservations  | Update:       |              |            | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | pair List Re       | commenda                  | ations                     |     |  |  |
|                                     |   |               | ptance by go | overnment. | Date: 08 MAR 2023                       |             |                    |                           |                            |     |  |  |
| $\sim$                              |   | Needed        |              |            | Photo Record Attached                   | i           |                    |                           | dated as Co                |     |  |  |
| Commonto                            | Yes   | $\bullet$     | No           |            | N/A                                     |             | ullet              | Yes                       | $\bigcirc$                 | No  |  |  |
| Localized<br>leveraged<br>FFS perfo | Comments<br>Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A)<br>Selection of indications was limited to mechanical integrity principles under assumed service conditions, and<br>everaged previous integrity management work.<br>FFS performed, no repair required for defuel.<br>Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |               |              |            |   |             |                    |                           |                            |     |  |  |
|                                     |   |               |              |            |   |             |                    |                           |                            |     |  |  |
|                                     |   | work validate |              | (b) (      | 6)                                      |             |                    |                           |                            |     |  |  |
| report was pe<br>report is true     |   | stantiated an | a this       |            | 05 APR 2                                | 023         |                    |                           |                            |     |  |  |

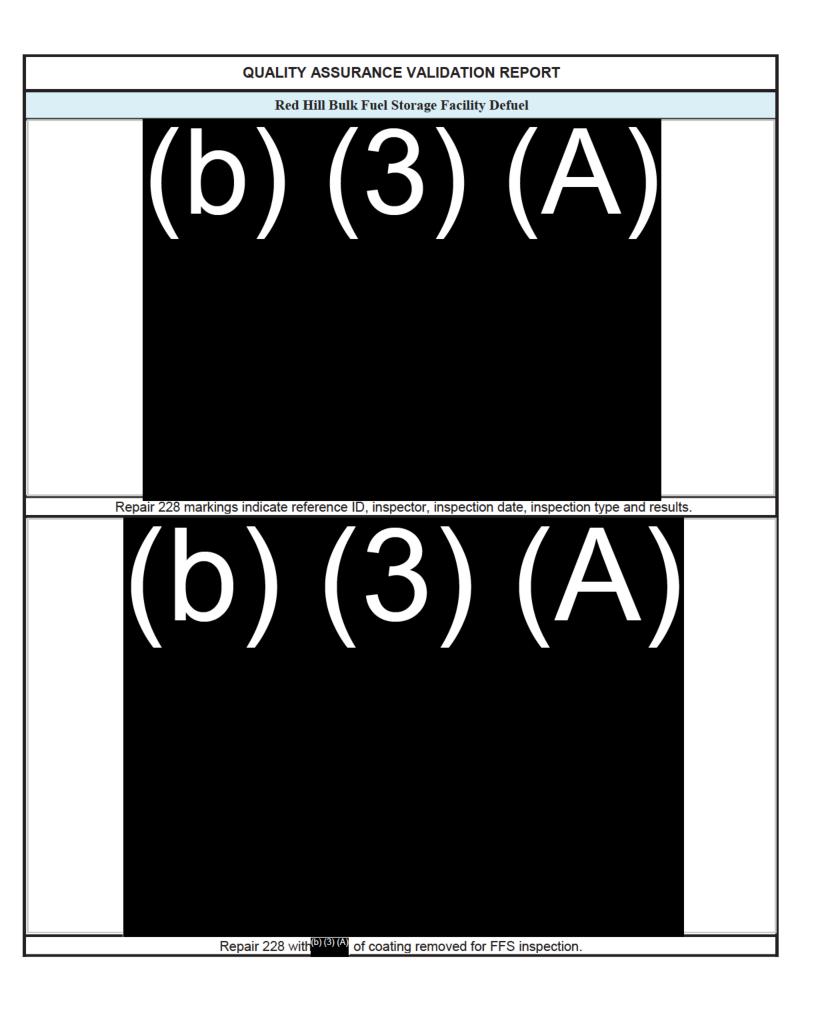
|                                |  |   |   | QUALI                           | TY VALIDATION (  | QV) REPO              | DRT                      |                            |             |         |
|--------------------------------|--|---|---|---------------------------------|--|-----------------------|--------------------------|----------------------------|-------------|---------|
|                                |  |   | l   | Red Hill B                      | ulk Fuel Storage Fac   | ility Defue           | I                        |                            |             |         |
| Valio                          | dation Firm  | HDR Env                                       | ironmental  | , Operatio                      | ns and Construction,   | Inc.                  |                          | Repair<br>No.              | 226         |         |
|                                | Address  | 9781 S. N                                     | leridian Bl   | vd., Suite                      | 400, Englewood, CO   | 80112                 |                          | Repair ID                  | JP5.A21.4   | 12      |
| С                              | ontract No.  | FA89031                                       | 5D0007, D   | .O. FA890                       | 3-19-F-0027  |                       |                          | Report<br>Date             | 05 APR 2    | 023     |
| Q                              | V Engineer   | (b) (6)                                       |   |                                 | Phone (b) (6)  |                       | Email                    | (b)                        | (6)         |         |
|                                |  |   |   |                                 | VALIDATION   |                       |                          |                            |             |         |
| Sou                            | urce   | F   | DF Page N   | ō.                              | Facility Geograph  | ic <mark>A</mark> rea |                          | Location                   | Reference   |         |
| EXWC                           |  | EXWC Re                                       | ecommend  | ation                           | (b) (3) (A)  |                       | (b) (3) (                | A)                         |             |         |
| Repair I                       | Description  | removal.                                      | s of 43%. N<br><sup>NOIM</sup> remov<br>r if necess | e coating a                     |  | Sour                  | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |             |         |
| Cor                            | scription of<br>ntractor QC<br>nod(s) Used           |   | work provid   | ded.                            | ed.<br>Contractor (<br>Records Review                                    |                       |                          |                            |             |         |
| Val                            | otion of QA<br>lidation and<br>bservations           | Update:                                       |   |                                 | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep            | oair List Re             | commenda                   | ations      |         |
|                                |  |   | otance by go  | overnment.                      | Date: 08 MAR 2023  |                       |                          |                            |             |         |
|                                |  | Needed  |   |                                 | Photo Record Attached  |                       |                          |                            | dated as Co | · · · · |
| Commonte                       | Yes  | ullet   | No  |                                 | N/A  |                       | ullet                    | Yes                        | $\bigcirc$  | No      |
| leveraged<br>FFS perfo         | Fitness fo<br>Selection<br>I previous<br>ormed, no i | of indication<br>integrity ma<br>repair requi | ons was lir<br>anagemen<br>ired for de              | nited to me<br>t work.<br>fuel. | rere conducted at spe<br>echanical integrity pri<br>ecommendations / Pij | nciples unc           | ler assume               | ed service                 | conditions, | and     |
|                                |  |   |   |                                 |  |                       |                          |                            |             |         |
|                                |  | work validate                                 |   | (b) (                           | 6)   |                       |                          |                            |             |         |
| report was p<br>report is true |  | ostantiated an                                | d this  |                                 | 05 APR 2   | 023                   |                          |                            |             |         |



|                                     |   |                |                            | QUALI      | TY VALIDATION (   | QV) REPO    | DRT                |                           |                            |        |  |  |
|-------------------------------------|---|----------------|----------------------------|------------|---|-------------|--------------------|---------------------------|----------------------------|--------|--|--|
|                                     |   |                | I                          | Red Hill B | ulk Fuel Storage Fac                                    | ility Defue | l                  |                           |                            |        |  |  |
| Validati                            | ion Firm  | HDR Env        | ironmental                 | , Operatio | ns and Construction,                                    | Inc.        |                    | Repair<br>No.             | 227                        |        |  |  |
|                                     | Address   | 9781 S. N      | leridian Bl                | vd., Suite | 400, Englewood, CO                                      | 80112       |                    | Repair ID                 | JP5.A21.4                  | 43     |  |  |
| Cont                                | tract No.   | FA89031        | 5D0007, D                  | .O. FA890  | 3-19-F-0027   |             |                    | Report<br>Date            | 05 APR 2                   | 023    |  |  |
| QV E                                | Engineer  | (b) (6)        |                            |            | Phone (b) (6)   |             | Email              | (b) (6                    | 5)                         |        |  |  |
|                                     |   |                |                            |            | VALIDATION  |             |                    |                           |                            |        |  |  |
| Source                              | e   | P              | DF Page N                  | 0.         | Facility Geograph                                       | ic Area     |                    | Location                  | Reference                  |        |  |  |
| EXWC                                |   | EXWC Re        | commend                    | ation      | (b) (3) (A)   |             | (b) (3) ( <i>i</i> | A)                        |                            |        |  |  |
| Repair Des                          | scription   | coating re     | moval <sup>(b) (3) (</sup> |            | t able to assess with<br>coating and inspect.<br>ssary. |             | Sour               | ce Contract<br>Reference  | N3943020<br>TO<br>N3943021 |        |  |  |
| Contra                              | iption of<br>actor QC<br>I(s) Used  |                | work provid                | Co         |   |             |                    | ntractor QC<br>s Reviewed | N/A                        |        |  |  |
|                                     | on of QA<br>ation and<br>ervations  | Update: I      |                            |            | ed EXWC - Compreh<br>Service Assessment                 | ensive Rep  | bair List Re       | commenda                  | ations                     |        |  |  |
|                                     |   |                | otance by go               | overnment. | Date: 08 MAR 2023                                       |             |                    |                           |                            |        |  |  |
|                                     | Rework  | Needed         |                            |            | Photo Record Attached                                   | I           | Repair             | Work Vali                 | dated as Co                | mplete |  |  |
| 0                                   | Yes   | $oldsymbol{O}$ | No                         |            | N/A   |             | $oldsymbol{O}$     | Yes                       | Ο                          | No     |  |  |
| . S<br>leveraged pr<br>FFS perform  | Comments Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A) . Selection of indications was limited to mechanical integrity principles under assumed service conditions, and leveraged previous integrity management work. FFS performed, no repair required for defuel. Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment |                |                            |            |   |             |                    |                           |                            |        |  |  |
| CERTIFICATION                       |   |                |                            |            |   |             |                    |                           |                            |        |  |  |
| I hereby certify t                  |   |                | (b) (                      | (6)        |   |             |                    |                           |                            |        |  |  |
| report was perso<br>report is true. | onally sub  | stantiated an  | u this                     |            | DATE  | 05 APR 2    | 2023               |                           |                            |        |  |  |



|                                    |   |  |  | QUALI                           | TY VALIDATION (  | QV) REPO    | DRT          |                          |                           |        |
|------------------------------------|---|--|--|---------------------------------|--|-------------|--------------|--------------------------|---------------------------|--------|
|                                    |   |  |  | Red Hill B                      | Bulk Fuel Storage Fac  | ility Defue |              |                          |                           |        |
| Valida                             | tion Firm   | HDR Env                                      | ironmenta                              | l, Operatio                     | ns and Construction,   | Inc.        |              | Repair<br>No.            | 228                       |        |
|                                    | Address   | 9781 S. N                                    | leridian Bl                            | vd., Suite                      | 400, Englewood, CO   | 80112       |              | Repair ID                | JP5.A21.4                 | 44     |
| Con                                | ntract No.  | FA89031                                      | 5D0007, D                              | .O. FA890                       | )3-19-F-0027   |             |              | Report<br>Date           | 05 APR 2                  | 2023   |
| QV                                 | Engineer  | (b) (6)                                      |  |                                 | Phone (b) (6)  |             | Email        | (b) (                    | 6)                        |        |
|                                    |   |  |  |                                 | VALIDATION   |             |              |                          |                           |        |
| Sourc                              | ce  | F  | DF Page N                              | lo.                             | Facility Geograph  | ic Area     |              | Location                 | Reference                 |        |
| EXWC                               |   | EXWC Re                                      | ecommend                               | lation                          | (b) (3) (A)  |             | (b) (3) (    | A)                       |                           |        |
| Repair De                          | escription  | coating re                                   |  | <sup>A)</sup> remove            | ot able to assess with<br>coating and inspect.<br>essary.                |             | Sour         | ce Contract<br>Reference | N3943020<br>TO<br>N394302 |        |
| Contr                              | Description of<br>Contractor QC<br>Method(s) Used |  |  |                                 | ded.<br>Contrac<br>Records Ret   |             |              |                          |                           |        |
|                                    | on of QA<br>ation and<br>ervations                | Update:                                      | Pipeline Fi                            | tness for S                     | ed EXWC - Compreh<br>Service Assessment                                  | ensive Rep  | oair List Re | commend                  | ations                    |        |
|                                    | Rework  | Needed                                       | nance by go                            | overnment.                      | Date: 08 MAR 2023<br>Photo Record Attached                               | 1           | Repair       | Work Vali                | dated as Co               | mplete |
| 0                                  | Yes   | ۲  | No                                     |                                 | N/A  | -           | •            | Yes                      | 0                         | No     |
| . S<br>leveraged p<br>FFS perform  | Selection<br>previous i<br>med, no r              | of indication<br>ntegrity ma<br>repair requi | ons was lir<br>anagemen<br>ired for de | nited to mo<br>t work.<br>fuel. | vere conducted at spe<br>echanical integrity pri<br>ecommendations / Pij | nciples und | der assume   | ed service               | conditions,               | , and  |
|                                    |   |  |  |                                 | CERTIFICATION  |             |              |                          |                           |        |
| I hereby certify                   | -   |  |  | QV ENG                          | INEER SIGNATURE  | (b)         | (6)          |                          |                           |        |
| report was pers<br>report is true. | sonally sub                                       | stantiated an                                | d this                                 |                                 | DATE   | 05 APR 2    |              |                          |                           |        |



|   |                          |              | QUALI       | TY VALIDATION (                         | QV) REPO    | DRT          |                           |  |              |  |  |  |
|---|--------------------------|--------------|-------------|---|-------------|--------------|---------------------------|--|--------------|--|--|--|
|   |                          |              | Red Hill E  | Bulk Fuel Storage Fac                   | ility Defue | el l         |                           |  |              |  |  |  |
| Validation Fi   | m HDR Env                | ironmenta    | l, Operatio | ons and Construction,                   | Inc.        |              | Repair<br>No.             | 229                                    |              |  |  |  |
| Addre   | ss 9781 S. N             | /leridian Bl | vd., Suite  | 400, Englewood, CO                      | 80112       |              | Repair ID                 | JP5.A21.4                              | 46           |  |  |  |
| Contract N  | o. FA89031               | 5D0007, D    | .O. FA890   | 03-19-F-0027                            |             |              | Report<br>Date            | 05 APR 2                               | 023          |  |  |  |
| QV Engine   | er <mark>(b) (6)</mark>  |              |             | Phone (b) (6)                           |             | Email        | (b) (                     | 6)                                     |              |  |  |  |
|   |                          |              |             | VALIDATION                              |             |              |                           | -                                      |              |  |  |  |
| Source  | ]                        | PDF Page N   | lo.         | Facility Geograph                       | ic Area     |              | Location                  | Reference                              |              |  |  |  |
| EXWC  | EXWC R                   | ecommend     | lation      | (b) (3) (A)                             |             | (b) (3) (    | A)                        |  |              |  |  |  |
| Repair Descripti  | necessar                 |              | ).165". FFS | S assessment and rep                    | oair if     | Sour         | ce Contract<br>Reference  | N3943020<br>TO<br>N394302 <sup>-</sup> |              |  |  |  |
| Description<br>Contractor (<br>Method(s) Us                           | of<br>C                  | work provid  | ded.        |   |             |              | ntractor QC<br>s Reviewed | N/A                                    |              |  |  |  |
| Description of C<br>Validation a<br>Observatio                        | A<br>Update:<br>nd       |              |             | ed EXWC - Compreh<br>Service Assessment | ensive Rep  | oair List Re | commend                   | ations                                 |              |  |  |  |
|   |                          | ptance by go | overnment.  | Date: 08 MAR 2023                       |             |              | M 1 1 1 1                 |  |              |  |  |  |
| Yes   | rk Needed                | No           |             | Photo Record Attached                   | 1           |              | Yes                       | dated as Co                            | mpiete<br>No |  |  |  |
| . Selecti<br>leveraged previou<br>FFS performed, n                    |                          |              |             |   |             |              |                           |  |              |  |  |  |
| I horoby and if the t   | oir work of the first of | ad in this   | (h)         | (6)                                     |             |              |                           |  |              |  |  |  |
| I hereby certify that rep<br>report was personally<br>report is true. |                          |              |             | DATE                                    | 05 APR 2    |              |                           |  |              |  |  |  |

|  |   | ) REPORT                                     | EPORT           |                           |                          |                            |              |  |  |  |  |  |
|--|---|--|-----------------|---------------------------|--------------------------|----------------------------|--------------|--|--|--|--|--|
|  | l   | Red Hill Bulk Fuel St                        | torage Facilit  | y Defuel                  |                          |                            |              |  |  |  |  |  |
| Validation Firm  | HDR Environmenta  | l, Operations and Cor                        | nstruction, Inc | ).                        | Repair<br>No.            | 230                        |              |  |  |  |  |  |
| Address  | 9781 S. Meridian Bl   | vd., Suite 400, Engle                        | wood, CO 80     | )112                      | Repair ID                | JP5.A21.4                  | 47           |  |  |  |  |  |
| Contract No.   | FA890315D0007, D  | .O. FA8903-19-F-002                          | 27              |                           | Report<br>Date           | 05 APR 2                   | 023          |  |  |  |  |  |
| QV Engineer  | (b) (6)   | Phone  | (b) (6)         | Emai                      | (b) (                    | 6)                         |              |  |  |  |  |  |
|  | •   | VALID  | ATION           |                           |                          |                            |              |  |  |  |  |  |
| Source   | PDF Page N  | To. Facility                                 | y Geographic A  | Area                      | Location                 | Reference                  |              |  |  |  |  |  |
| EXWC   | EXWC Recommend  | lation (b) (3) (A                            | 4)              | (b) (3) (                 | A)                       |                            |              |  |  |  |  |  |
| Repair Descriptior                                     | necessary.  | .145". FFS assessme                          | ent and repair  |                           | ce Contract<br>Reference | N3943020<br>TO<br>N3943021 |              |  |  |  |  |  |
| Description of<br>Contractor QC<br>Method(s) Used      |   | ded.   |                 | ntractor QC<br>s Reviewed | N/A                      |                            |              |  |  |  |  |  |
| Description of QA<br>Validation and<br>Observations    | Update: Pipeline Fi   | nd approved EXWC -<br>itness for Service Ass |                 | sive Repair List Re       | commenda                 | ations                     |              |  |  |  |  |  |
|  |   | overnment. Date: 08 M                        |                 |                           | 147 1 17 11              |                            |              |  |  |  |  |  |
| Yes  | Needed No   |  | rd Attached     | Repair                    | Yes                      | dated as Co                | npiete<br>No |  |  |  |  |  |
| . Selection<br>leveraged previous<br>FFS performed, no | Comments Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill (b) (3) (A) . Selection of indications was limited to mechanical integrity principles under assumed service conditions, and everaged previous integrity management work. FFS performed, no repair required for defuel. Reference: EXWC - Comprehensive Repair List Recommendations / Pipeline Fitness for Service Assessment CERTIFICATION OVERGINEER SIGNATURE |  |                 |                           |                          |                            |              |  |  |  |  |  |
| report was personally su<br>report is true.            | bstantiated and this  | 5 APR 2023                                   |                 |                           |                          |                            |              |  |  |  |  |  |



Naval Facilities Engineering Systems Command Engineering and Expeditionary Warfare Center 1000 23<sup>rd</sup> Avenue Port Hueneme, CA 93043

## Comprehensive Repair List Recommendations Update: Pipeline Fitness for Service Assessment

Ref: (a) API Standard 570 Piping Inspection Code: In-service Inspection, Rating, Repair, and Alteration of Piping Systems, 4<sup>th</sup> Ed, Feb 2016

(b) API Recommended Practice 1183 Assessment and Management of Pipeline Dents, 1<sup>st</sup> Ed, Errata 1, Jan 2021

(c) API 579-1/ASME FFS-1 Fitness for Service, Dec 2021

(d) NAVFAC EXWC HAR 2022-2301, 19 Oct 2022

- Encl: (1) FFS New Repair Actionable Summary, 08Mar2023
  - (2) Comprehensive Repair List Table, 08Mar2023

Localized Fitness for Service (FFS) assessments were conducted at specific indications on Red Hill F-24 and JP-5 transfer pipelines. Selection of indications was limited to mechanical integrity principles under assumed service conditions, and leveraged previous integrity management work.

F-24 and JP-5 pipelines and pipe stands were also screened for concerns of mechanical and structural integrity using principles of API 570.

Enclosure (1) details FFS assessment results. Enclosure (2) provided details on RMMR-recommended actions.

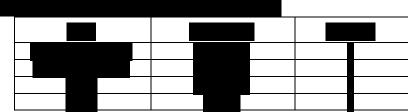
## **Assessment Assumptions**

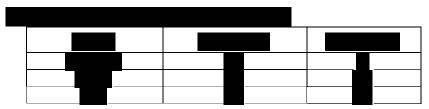
- 1. Service conditions of gravity transfer defuel
- 2. Assessment limits: Red Hill and the Underground Pumphouse
- 3. Indications cleared at lowest of Level 2 or Level 3 FFS
- 4. Temporary repairs acceptable for service conditions
- 5. Recommendations based on information known as of the date of this document. Should conditions change or further information become available, these recommendations are subject to change.

## FFS Assessment Sources of Indications

| Source | Year | Title                                   |
|--------|------|---|
| EEI    | 2017 | Pipeline Inline Inspection              |
| EEI    | 2019 | Update to FFS, (b) (3) (A) in Pipelines |
| NDAA   | 2022 | Fuel Transfer System Inspection Report  |
| EEI    | 2022 | Pipeline API Integrity Screening Survey |







|                      |                                |           |  |                               |  | ity      |   |            |  |                         |                |                | []      |
|----------------------|--------------------------------|-----------|--|-------------------------------|--|----------|---|------------|--|-------------------------|----------------|----------------|---------|
|                      |                                |           |  |                               |  | cy/Prior |   |            |  |                         |                |                |         |
| ID                   | Source                         | Produc    | (b) (4) Cross<br>Source ID Cross Ref Ref | Geographic Area Loc Reference | Description  | Urgeno   | Repair  | Repair Rec | Rationale  | Contract<br>Disposition | Under Contract | Repair<br>Comp | RAC     |
|                      | -                              |           |  |                               |  |          |   |            |  |                         |                |                |         |
|                      |                                |           |  |                               |  |          |   |            |  |                         |                |                |         |
|                      | -                              |           | -  |                               |  |          |   |            |  |                         |                |                |         |
|                      |                                |           |  |                               |  |          |   |            |  |                         |                |                |         |
|                      |                                |           |  |                               |  |          |   |            |  |                         |                |                |         |
| Renai                | r #187                         |           | (b) (2) (A)                              |                               |  |          |   |            |  |                         |                |                |         |
| JP5 A21.01           | 2017 EEI                       | JP5       | (b) (3) (A)                              | (b) (3) (A)                   | Three separate corrosion findings < <sup>12</sup> ft apart.(b) (3) (A)<br>associated with pipe support. Remaining thickness < the structural<br>minimum thickness per API 574. | Urgent   | (b) (3) (A) are combined into one site. Fitness for service (FFS) assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | Ν              | Medium  |
| JP5 A21.02           | 2017 EEI                       | JP5       |  |                               | Corrosion at bulkhead. Three separate features. Reported<br>corrosion depths 26.8%, 30.8%, and 38.0%. Remaining thickness <<br>minimum thickness per API 574.                  | Urgent   | Remove, provide, and install $(0, 3)$ (A) pup piece to eliminate the corroded areas in the bulkhead. One repair for (b) (3) (A) | А          |  | FY21EPRC                | Y              | N              | Medium  |
| JP5 A21.03           | <b>ir #189</b><br>2017 EEI     | JP5       |  |                               | Dent with crease; Approximate dent depth measurement: 0.300".<br>Dent located at bottom of a tee and has has a crease. Fails FFS<br>Level 2 assessment.                        | Urgent   | FFS assessment  | А          | [JP5 <mark>(b) (3) (A)</mark> ]; FFS performed, no repair<br>required for defuel.              | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.04           | ir #190<br>2017 EEI            | JP5       |  |                               | Corrosion under bubble coating. Not able to assess without coating removal.  | Urgent   | Interpretending and inspect, FFS assessment   | А          | [JP5 <sup>(b) (3) (A)</sup> ]; FFS performed, no repair<br>required for defuel.                | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.05           | ir #191<br>2017 EEI<br>ir #192 | JP5       |  |                               | Dent, crosses long seam  | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | Ν              | Medium  |
| JP5 A21.06           | 2017 EEI<br>ir #193            | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.07           | 2017 EEI                       | JP5       |  |                               | Geometric anomaly adjacent to girth weld   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.08           | 2017 EEI<br><b>ir #195</b>     | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  |            | FFS performed with failed result. Repair<br>required. Temporary means acceptable for<br>defuel | FY21EPRC                | Ν              | N              | Serious |
| JP5 A21.09           | 2017 EEI<br><b>ir #196</b>     | JP5       |  |                               | Double dent  | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.10           | 2017 EEI<br><b>ir #197</b>     | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.11           | 2017 EEI<br><b>ir #198</b>     | JP5       |  |                               | Dent, adjacent to girth weld   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | Ν              | Medium  |
| JP5 A21.12           | 2017 EEI<br>ir <b>#199</b>     | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.13           | 2017 EEI<br>ir #200            | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.14           | 2017 EEI<br><b>r #201</b>      | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.15           | 2017 EEI<br>ir #202            | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.16           | 2017 EEI<br><b>r #203</b>      | JP5       |  |                               | Geometric anomaly adjacent to girth weld   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.17           | 2017 EEI                       | JP5       |  |                               | Double dent  | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repai                |                                | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.19<br>Repair | r #205<br>2017 EEI<br>#206     | JP5       |  |                               | Dent, on long seam   | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.20           | 2017 EEI                       | JP5       |  |                               | Double dent  | Urgent   | FFS assessment  | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
|                      | •                              | · · · · · |  |                               |  |          | •   |            |  |                         |                |                |         |

|                                |                  |         |                                       |                 |               |  | Priority  |  |            |  |                         |                |                |         |
|--------------------------------|------------------|---------|---------------------------------------|-----------------|---------------|--|-----------|--|------------|--|-------------------------|----------------|----------------|---------|
|                                | HO Source        | Product | (비생) Cross<br>Source ID Cross Ref Ref | Geographic Area | Loc Reference | Description  | Urgency/I | Repair                                     | Repair Rec | Rationale  | Contract<br>Disposition | Under Contract | Repair<br>Comp | RAC     |
| JP5 A21.21                     | #207<br>2017 EEI | JP5     | (b) (3) (A)                           | (b) (3          | S) (A)        | Double dent  | Urgent    | FFS assessment                             | A          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repair                         | 2017 EEI         | JP5     |                                       |                 | · · · · ·     | Dent, on long seam   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.23                     | 2017 EEI         | JP5     |                                       |                 |               | Geometric anomaly adjacent to girth weld   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repair<br>JP5 AZ1.24<br>Repair | 2017 EEI         | JP5     |                                       |                 |               | Geometric anomaly adjacent to girth weld   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.25<br>Repair           | 2017 EEI         | JP5     |                                       |                 |               | Geometric anomaly adjacent to girth weld   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.26<br>Repair           | 2017 EEI         | JP5     |                                       |                 |               | Double dent  | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.27                     | 2017 EEI         | JP5     |                                       |                 |               | Dent, on long seam   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.28                     | 2017 EEI         | JP5     |                                       |                 |               | Geometric anomaly adjacent to girth weld   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repair<br>JP5 A21.29<br>Repair | 2017 EEI         | JP5     |                                       |                 |               | Dent, on long seam   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.30<br>Repair           | 2017 EEI         | JP5     |                                       |                 |               | Geometric anomaly adjacent to girth weld   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.31                     | 2017 EEI         | JP5     |                                       |                 |               | Dent, on long seam   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.32<br>Repair           | 2017 EEI         | JP5     |                                       |                 |               | Poor Ultrasonic Reading; Crosses Long Seam. Estimated Depths of 25.4% and 27.4%;   | Urgent    | remove coating and inspect. FFS assessment | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.33                     | 2017 EEI         | JP5     |                                       |                 |               | ILI data reports metal loss of 31.5%. Not able to assess without coating removal.  | Urgent    | remove coating and inspect. FFS assessment | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| <b>Repair</b><br>JP5 A21.34    | 2017 EEI         | JP5     |                                       |                 |               | ILI data reports metal loss of 32.0%. Not able to assess without coating removal.  | Urgent    | remove coating and inspect. FFS assessment | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.35<br><b>Repair</b>    | 2017 EEI<br>#777 | JP5     |                                       |                 |               | Two separate corrosion findings < 6 ft apart. Remaining thickness < the minimum thickness per API 574.   | Urgent    | FFS assessment                             | А          | FFS performed with failed result. Repair<br>required. Temporary means acceptable for<br>defuel.  | FY21EPRC                | N              | N              | Serious |
| JP5 A21.36                     | 2017 EEI         | JP5     |                                       |                 |               | Metal loss of 33.0%. Not able to assess without coating removal.   | Urgent    | remove coating and inspect. FFS assessment | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repair 4                       | 2017 EEI         | JP5     |                                       | -               |               | Heavy corrosion reported under sleeve from ILI data. Heavy corrosion also on sleeve, ILI data reports metal loss of 45.8%, Sleeve is ft wide. Corrosion extends through long seam on sleeve. Need coating removed to assess. | Urgent    | remove coating and inspect. FFS assessment | A          | FFS performed, no repair required for<br>defuel.   | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.38                     | 2017 EEI         | JP5     |                                       |                 |               | Dent/gouge measured 0.130" (0.120" dent + 0.010" gouge)  | Urgent    | FFS assessment                             | А          | [JP5 <mark>(b) (3) (A)</mark> ] FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| <b>Repair #</b><br>JP5 A21.39  | 225<br>2017 EEI  | JP5     |                                       |                 |               | Dent/gouge measured 0.180" (0.160" dent + 0.020" gouge)  | Urgent    | FFS assessment                             |            | (b) (3) (A) FFS [FFS performed, no repair required for defuel.   | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.40                     | 2017 EEI         | JP5     |                                       | -               |               | Dent has crease, crosses over long seam, measured depth of<br>0 275" Fails FFS Level 2 assessment.   | Urgent    | ອາອາດ<br>pup to eliminate the dent.        |            | (b) (3) (A) $]^{[b](4)}$ has notified this repair<br>has been completed 01/2/2018 under the<br>2017 EEI repair ;repair (b) (3) (A) ID<br>JP5 (b) (3) (A) | N/A                     | Dup            |                |         |
| JP5 A21.41<br><b>Repair #</b>  | 2017 EEI         | JP5     |                                       | _               |               | Dent/gouge measured 0.190" (0.160" dent + 0.030" gouge)  | Urgent    | pup piece to eliminate the dent/gouge.     | А          | [JP5 <mark>(b) (3) (A)</mark> <sup>[b) (4)</sup> duplicate repair<br>covered by [JP5 <sup>(b)</sup> (3) (A) (b) (3) (A)                                  | N/A                     | Dup            |                |         |
| JP5 A21.42                     | 2017 EEI         | JP5     |                                       |                 |               | Metal loss of 43%. Not able to assess without coating removal.   | Urgent    | remove coating and inspect. FFS assessment | А          | [JP5 <mark>(b) (3) (A)</mark> ] FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| Repair #                       | 2017 FFI         | JP5     |                                       |                 |               | Pitting estimated at 0.050". Not able to assess without coating removal.   | Urgent    | remove coating and inspect. FFS assessment | A          | (b) (3) (A) FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| <b>Repair #</b><br>JP5 A21.44  | 2017 EEI         | JP5     |                                       |                 |               | Pitting estimated at 0.050". Not able to assess without coating removal.   | Urgent    | remove coating and inspect. FFS assessment | А          | [JP5 <sup>(D) (3) (A)</sup> ] FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.45                     | 2017 EEI         | JP5     |                                       |                 |               | Corrosion at (b) (3) (A) Pitting measured at 0.080". Additional pitting (b) (3) (A) measured at 0.100".  | Urgent    | N/A  | A          | (5) (3) (  | FY21EPRC                | Dup            |                |         |
| Repair #                       | 229<br>2017 EEI  | JP5     |                                       |                 |               | Dent with depth of 0.165".   | Urgent    | FFS assessment                             | А          | FFS performed, no repair required for defuel.  | FY21EPRC                | N/A            | N              | Medium  |

| Bonoi      | - un source | Product |             | (b) (4)<br>Cross<br>Ref | Geographic Area | Loc Reference | Description   | Urgency/Priority | Repair                  | Repair Rec |   | Contract<br>Disposition | Under Contract | Repair<br>Comp | RAC     |
|------------|-------------|---------|-------------|-------------------------|-----------------|---------------|---|------------------|-------------------------|------------|---|-------------------------|----------------|----------------|---------|
| JP5 A21.47 | 2017 EEI    | JP5     | (b) (3) (A) |                         | (b) (3          | 3) (A)        | Dent with depth of 0.145".                                | Urgent           | FFS assessment          | А          | FFS performed, no repair required for defuel.   | FY21EPRC                | N/A            | Ν              | Medium  |
| JP5 A21.48 | NDAA        | JP5     | -           |                         |                 | ////          | One indication approximately (()) -inches from LRUT setup | Urgent           | FFS assessment          |            | FFS performed, no repair required for defuel.   | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.49 | NDAA        | JP5     |             |                         |                 |               | Deteriorated sample piping on Tank <sup>©</sup>           | Urgent           | FFS assessment          |            | Reviewed for FFS. Replacement of sample<br>pipes too risky, not recommended. Close<br>four sample pipe valves to mitigate risk: 1)<br>(b) (3) (A) | RMMR                    | N              | N              | Serious |
| JP5 A21.50 | NDAA        | JP5     | -           |                         |                 |               | Dent was on bell joint. Measured depth was 0.320 in.      | Urgent           | FFS assessment          | А          | FFS performed, no repair required for defuel.   | FY21EPRC                | N/A            | N              | Medium  |
| JP5 A21.51 | 2022 EEI    | JP5     |             |                         |                 |               | Dent on bell joint  | Urgent           | API and FFS assessments |            | FFS performed with failed result. Repair<br>with welded pup required.   | FY21EPRC                | N              | N              | Serious |
| JP5 A21.52 | 2022 EEI    | JP5     |             |                         |                 |               | Dent near seam weld. Failed Level 2 FFS.                  | Urgent           | API and FFS assessments | ٨          | FFS performed, no repair required for defuel.   | FY21EPRC                | N/A            | N              | Medium  |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
| -          |             |         |             |                         |                 |               |   |                  |                         | I          |   | -                       |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                | _       |
|            |             |         |             |                         |                 |               |   |                  |                         | I          |   |                         |                |                |         |
|            | -           |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         | I          |   |                         |                |                |         |
| -          |             | -       |             |                         |                 |               |   | -                |                         |            |   | -                       |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                |         |
|            |             |         |             |                         |                 |               |   |                  |                         |            |   |                         |                |                | +       |
|            |             |         |             |                         |                 |               |   |                  |                         | ∎∣■        |   |                         |                |                |         |