

Enclosure (3) to
Red Hill Bulk Fuel Storage Facility, Oahu, Hawaii
28 September 2022 Supplement 1.B

DoD Technical Initial Assessment of NDAA Section 318 Report

Enclosure 3: DoD Technical Initial Assessment of NDAA Section 318 report

NDA Fuel Transfer System Inspection Report Repair Recommendations for Defueling 13 Sep 2022

Enclosures

- (1) Repair Recommendations for defueling table

Repair Recommendation Assumptions

1. Duration of fuel system service < 2 years.
2. Contractor designation "Urgent" is < 2 years duration.
3. Contractor designation "Long Term" is > 2 years duration.
4. Transfer (b)(3)(A) from Tanks 15/16 done through (b)(3)(A) system piping to UGPH where it will cross back to the (b)(3)(A) piping system. Repairs to (b)(3)(A) piping system between RHTF and UGPH not necessary.
5. Conditions of fuel service operations are gravity defuel.
6. Some findings require further assessment.
7. Unnecessary disassembly and reassembly of threaded appurtenances might cause unintended problems.
8. NDAA findings and repair recommendations to be folded into Consolidated Repair list and further deconflicted with other sources of piping system repair recommendations. Not yet complete due to abbreviated recommendation time constraints. Recommendations
9. are based on the NDAA 318 contractor inspection report and information known as of the date of this document. Should conditions change or further information become available, these recommendations are subject to change.

Pipeline	Quantity of Repairs for Defueling
F-24	28
JP-5	26
F-76	14
Fuel Oil Recovery (FOR)	18
FOR Pipe Supports	13
Frame Pipe Supports (JP-5/F-24)	26
Total (not on contract)	125

Repair Recommendations Table Legend

A	Accept finding/recommendation
R	Reject finding/recommendation
M	Accept with modification
RHTF	Red Hill Tank farm
UGPH	Underground pumphouse
TG	Tank gallery
PS	Pipe stand
PSF	Pipe stand FOR
PSC	Pipe stand concrete
FFS	Fitness for service assessment
FY21EPRC	FY21 Emergent Pipeline Repair Contract

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)			RHTF	TK 1, 2, 3, 4, 5, 6	Tank sample piping downstream of the isolation valves are open to the atmosphere. If the isolation valves were to be bumped or inadvertently forced open, this could lead to an accidental fuel spill.	Provide threaded caps on tank sample piping downstream of isolation valves. NOTE: This deficiency has been corrected for the tanks that have been previously cleaned, inspected, and repaired.	A	Install caps
(b) (3) (A)	A1		RHTF	TK 15/16 (b) (3) (A)	Brass/bronze valve (low melting point) attached to the blind flange of the F-24 (b) (3) (A) pipeline. Rating of valve is unknown.	Replace valve with a Class 150 ball valve. Long-term consideration should be given into replacing threaded pipe and fittings with welded pipe.	M	Remove valve and cap pipe. Valve function unknown.
(b) (3) (A)	A4		RHTF	TK 2, 3, 4, 6, 15, 16	The DBB valves are equipped with a drain valve in lieu of a plug. The end of the valves is not secured with a pipe plug. - Tank 2 - (b) (3) (A) DBB - Tank 3 - (b) (3) (A) DBBs - Tank 4 - (b) (3) (A) DBBs - Tank 6 - (b) (3) (A) DBB - Tank 15 - (b) (3) (A) DBB - Tank 16 - (b) (3) (A) DBB	Provide threaded plug on ball valve drain.	A	Install plugs.
(b) (3) (A)	A9		RHTF	(b) (3) (A)	(b) (3) (A) F-24 pipeline is not adequately supported, approximately 47 feet between (b) (3) (A) and (b) (3) (A), with a saddle missing at PS-46.	Install saddle support at (b) (3) (A) to properly support the pipeline.	M	Install saddle. Same as PS.46, PS.47.
(b) (3) (A)	A8	LAT-47	RHTF	(b) (3) (A)	(b) (3) (A) pipeline is not adequately supported. Saddle is not engaged, wood shim is used, and saddle is not secured to I-beam support.	Replace pipe support at this location with a suitable saddle of sufficient height to properly support the pipe and secure support to the I-beam structure. Provide Teflon pad between saddle support and pipeline.	M	Reset saddle. Provide shims to close gap between the pipe and pipe support.
(b) (3) (A)	A11		RHTF	(b) (3) (A)	(b) (3) (A) pipeline is unsupported between supports approximately 58 feet.	Shim the pipe or pipe supports to uniformly support the pipe.	M	Install saddle
(b) (3) (A)	A11		RHTF	(b) (3) (A)	16-inch F-24 pipeline is unsupported between supports. Support is partial engagement on one side of the pipeline.	Shim the pipe or pipe supports to uniformly support the pipe.	M	Adjust pipe support
(b) (3) (A)	A14		RHTF	TK 6	Two loose joint harness fasteners were noted on the Dresser coupling on the (b) (3) (A) F-24 pipeline.	Tighten fasteners per manufacturers or designer of record specifications.	A	Tighten fasteners
(b) (3) (A)	A16		RHTF	Between (b) (3) (A) and (b) (3) (A)	3-inch welded and flanged branch connection on top of the (b) (3) (A) pipeline. Six of the flange fasteners are not fully engaged.	Replace hardware to ensure fasteners are fully engaged (nuts are fully engaged with threaded bolts).	A	Replace fasteners
(b) (3) (A)	B48 Table H		Harbor Tunnel	(b) (3) (A) Pipeline in Harbor Tunnel	The pipeline is covered by a protective wrap throughout the Harbor Tunnel. Protective wrap is failing in numerous locations and prohibits external inspection of the piping condition.	Remove protective pipe wrap and perform visual inspection of these sections of pipe for external corrosion.	M	Removal of wrap and assessment based on 2017 ILI data in progress.
(b) (3) (A)	B7		Harbor Tunnel	(b) (3) (A) to UGPH Bulkhead	There are two high point vents on the (b) (3) (A) pipeline between the UGPH concrete bulkhead and PS (b) (3) (A) (within the vicinity of Valve (b) (3) (A)) that are constructed of threaded valves, nipples, and piping. Staining and weeping were noted around the threaded fittings. Valve classifications are unknown.	Disassemble threaded connections, retape, and reassemble to prevent future weeps. Replace valves with Class 150 carbon steel ball valves. Long term consideration should be given to replacing the high point vent piping and valves with welded pipe with flanged connections.	M	HPV finding not condition-based. Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor.
(b) (3) (A)	B7 B8		Harbor Tunnel	(b) (3) (A) to UGPH Bulkhead	There are two low point drains on the (b) (3) (A) F-24 pipeline between the UGPH concrete bulkhead and PS (b) (3) (A) that are constructed of threaded valves, nipples, and piping. Notable corrosion was observed on the LPD just before the bulkhead to the UGPH. Valve classifications are unknown.	Replace low point drains with Class 150 carbon steel ball valves, replace corroded piping, and recoat affected areas. Long term consideration should be given to replacing the low point drain piping and valves with welded pipe with flanged connections.	A	Corroded LPD. Replace. See (b) (3) (A) for counterpart (b) (3) (A) finding.

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)	B20		Harbor Tunnel	(b) (3) (A)	A non-standard repair at the bulkhead between PS-651 and PS-652 was noted. The repair includes a full encirclement welded split sleeve (clamshell) on PS-652 side and a partial patch plate style repair on PS-651 side of the bulkhead with square corners.	This repair is scheduled for completion.	A	Replace piping through bulkhead
(b) (3) (A)	B9		Harbor Tunnel	(b) (3) (A)	The 16-inch DBB valve was manufactured with four studs on the top and four studs on the bottom of the valve flanges where clearance to install a hexagonal bolt behind the flange is not possible. The threaded studs are not fully engaged at these locations. Engagement between 0.250 and 0.550 inches was observed with the valve flange.	Replace fasteners that are not fully engaged per manufacturers recommendations.	A	Replace fasteners
(b) (3) (A)	B18		Harbor Tunnel	Throughout the Harbor Tunnel	Several HPVs and LPDs throughout the harbor tunnel. These are composed of threaded valves, piping, and components. Minor staining was noted on some of these fittings. Also, the valve classifications in several locations are unknown. Locations include: - 1-inch threaded plug on top of pipe (b) (3) (A) - 1-inch threaded plug on top of pipe (b) (3) (A) - Two 2-inch high point vents (b) (3) (A) - 1.5-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) - 1.5-inch high point vent (b) (3) (A) (weeping) - 1.5-inch high point vent (b) (3) (A) - 1.5-inch threaded plug on bottom of pipe (b) (3) (A) - 1.5-inch low point drain (b) (3) (A) - 1.5-inch high point vent (b) (3) (A)	Disassemble threaded connections, retape, and reassemble to prevent future weeps at the high point vent between PS-267 and PS-268. Replace all associated valves with Class 150 ball valves. Long term consideration should be given to replacing threaded connections with welded and flanged connections.	M	HPV finding not condition-based. Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor.
(b) (3) (A)	C18		UPGH	(b) (3) (A)	Conduit plug is being used to plug tee fitting on pressure gauge assemblies.	Install appropriate threaded pipe plugs on tee fittings.	A	Install plugs.
(b) (3) (A)	C37		UGPH	Various	Fuel staining and weeping was noted on the pipe tie-ins associated with the temperature sensors, pressure sensors, high point vents, and low point drains. Weeping is present at threaded connections associated with these fittings. The following locations should be addressed: - PIT (b) (3) (A) and adjacent Temperature Sensor - Valve GI58B - Valve GI18H - Valve GI38B - Valve GI38C - Valve GI48B - Valve GI48C - Valve GI48D	Disassemble threaded connections, retape, and reassemble to prevent future weeps. Long term consideration should be given to replacing threaded connections with welded connections where possible.	M	Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor. HPV finding is (b) (3) (A).

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)	C40		UGPH	Various	Several transducers are attached to the piping and the conduits do not have seal off fittings. Additionally, the conduits are ridged which could break under pipe movement.	Provide appropriate seal fittings and flexible conduit connections at transducers.	M	Install conduit seal fittings and LFMC as appropriate. See (b) (3) (A), (b) (3) (A).
(b) (3) (A)	C42		UGPH	Ball Valves	There is staining and some minor drips noted on the Cameron ball valves throughout the UGPH. Drips appear to be coming from the stem injection port.	Clean valve body, service stem nut/upper stem seal to prevent future weeps/drips.	M	Service valves. See (b) (3) (A), (b) (3) (A).
(b) (3) (A)	C46		UGPH	Valve 216E3	There is a 3/4-inch high point vent located on the (b) (3) (A) pipeline downstream of MOV (b) (3) (A). The 3/4-inch piping terminates just before the UGPH sump and is lacking a threaded pipe plug.	Provide threaded pipe plug to prevent accidental discharge of product from high point vent. Consideration should be given to modify the high point vent piping, so it terminates near the high point vent.	A	Install plug
(b) (3) (A)	C47		UGPH	Valve GI48B	There is a 3/4-inch threaded valve mounted on the side of the (b) (3) (A) pipeline. There is no pipe cap or plug at the end of the valve. Note: It is not clear as to the purpose of this connection. Valve classification is unknown.	Provide plug or cap to prevent accidental discharge of product. Replace valve with Class 150 ball valve. Long term consideration should be given to removing this connection if it serves no purpose.	A	Install plug
(b) (3) (A)	C48 C54		UGPH	Various	There was noticeable fuel drips and weeps coming from pressure relieving devices on the valve above the grating. (Cla Val relief devices)	Service pressure relieving devices to prevent future weeps. If valves are not serviceable, consideration should be given to replacement of these valves. Perform routine pressure testing/calibration of pressure relieving devices.	A	Service valves. See (b) (3) (A) and (b) (3) (A)
(b) (3) (A)	C51		UGPH	Valve (b) (3) (A)	Valve flange for the 12-inch gate valves is missing a fastener.	Install new fastener on valve flange.	A	Install fastener
(b) (3) (A)	LRUT Results CML# GW B17		Harbor Tunnel	PS (b) (3) (A) / PS-207	An area of inactive pitting (approximately 0.050 inches deep) with some large area scaling was identified. An additional two areas of possible corrosion of similar magnitude of pitting are suspect under the pipe wrap at this location.	Remove the pipe wrap and inspect these areas on the pipeline.	A	Removal of wrap and coating and FFS assessment in progress.
(b) (3) (A)	16-TG-2		TG	(b) (3) (A)	Remove 2" threaded bronze gate valve. Provide 2" carbon steel Class 150 ball valve.	Same deficiency observed. Concur with 2016 recommendation.	M	HPV finding not condition-based. Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor.
(b) (3) (A)	B23		Harbor Tunnel	(b) (3) (A)	2-inch threaded HPV is located on the (b) (3) (A) pipeline. The ball valve does not have a lock and the reducing bushing is not fully engaged in the threaded connection. Valve classification is unknown.	Lock 2-inch ball valve out. Remove the reducing bushing and install a 2-inch pipe plug. Replace valve with a Class 150 carbon steel ball valve. Long term consideration should be given to replacing the threaded piping and valve with welded pipe and flanged connections.	M	For defueling (b) (3) (A) piping, secure valve handle.
(b) (3) (A)	B18		Harbor Tunnel	PS-205 PS-206	Several HPVs and LPDs throughout the harbor tunnel. These are composed of threaded valves, piping, and components. Minor staining was noted on some of these fittings. Also, the valve classifications in several locations are unknown. - 1-inch threaded plug on top (b) (3) (A) - 1-inch threaded plug on bottom (b) (3) (A) (- 2-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) (weeping)	Disassemble threaded connections, retape, and reassemble to prevent future weeps at the 2-inch high point vent located between PS-205 and PS-206. Replace all associated valves with Class 150 ball valves. Long term consideration should be given to replacing threaded connections with welded and flanged connections.	M	For defueling (b) (3) (A) piping, review HPV between PS (b) (3) (A) for mechanical integrity. Mitigate weeping. Monitor.

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ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
	C34		UGPH	Various	There are several open conduits, junction boxes, and unsealed electrical fittings throughout the UGPH that will not meet hazardous area ratings.	Seal all electrical fittings per NFPA requirements to meet hazardous area classifications.	A	Provide covers on electrical fittings.
	C35		UGPH	Various	There are several locations throughout the UGPH where abandoned/open conduit penetrates the UGPH floor, potentially negating the secondary containment.	Cap, seal, or remove all abandoned conduits within the UGPH.	M	Provide covers on open electrical conduits.
(b) (3) (A)	C36		UGPH	Various	There are several bronze/brass valves installed on the small ancillary piping systems within the UGPH. A few examples are Gate Valve (b) (3) (A). Valve classification is unknown.	Replace low melting point valves with Class 150 carbon steel ball valves.	A	Replace valves.
(b) (3) (A)	C37		UGPH	Various	Fuel staining and weeping was noted on the pipe ties associated with the temperature sensors, pressure sensors, high point vents, and low point drains. Weeping is present at threaded connections associated with these fittings. <ul style="list-style-type: none"> - PIT-0018 and adjacent Temperature Sensor - Valve (b) (3) (A) - Valve (b) (3) (A) - Valve (b) (3) (A) 	Disassemble threaded connections, retape, and reassemble to prevent future weeps. Long term consideration should be given to replacing threaded connections with welded connections where possible.	M	Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor.
(b) (3) (A)	C39		UGPH	Bypass Loop	Lack of thread engagement was observed on 12 fasteners on the bypass loop flanges associated with the (b) (3) (A) pipeline.	Install proper flange bolts and hardware to insure proper thread engagement at all flanged connections.	A	Replace fasteners
(b) (3) (A)	C40		UGPH	Various	Several transducers are attached to the piping and the conduits do not have seal off fittings. Additionally, the conduits are ridged which could break under pipe movement.	Provide appropriate seal fittings and flexible conduit connections at transducers.	A	Install conduit seal fittings and LFMC as appropriate. See (b) (3) (A) 046, (b) (3) (A) 038.
(b) (3) (A)	C42		UGPH	Ball Valves	There is staining and some minor drips noted on the Cameron ball valves throughout the UGPH. Drips appear to be coming from the stem injection port.	Clean valve body, service stem nut/upper stem seal to prevent future weeps/drips.	A	Service valves. See (b) (3) (A) 048, (b) (3) (A) 040.
(b) (3) (A)	C44		UGPH	Valve (b) (3) (A)	Gate valve (b) (3) (A) is missing wheel nut on valve stem.	Install new wheel nut.	A	Install nut.
(b) (3) (A)	C45		UGPH	Valve (b) (3) (A)	The (b) (3) (A) DBB valve on the (b) (3) (A) pipeline has six fasteners/studs that are not fully engaged.	Remove existing hardware and reinstall studs to ensure proper thread engagement with valve body flange.	A	Install studs properly.
(b) (3) (A)	C48 C54		UGPH	Various	There was noticeable fuel drips and weeps coming from pressure relieving devices on the valve above the grating. (Cla Val relief devices)	Service pressure relieving devices to prevent future weeps. If valves are not serviceable, consideration should be given to replacement of these valves.	A	Service valves. See (b) (3) (A) 049, (b) (3) (A) 043
(b) (3) (A)	D8		UGPH	Surge Tank Piping	Lack of thread engagement on nuts and bolts associated with the 4-inch low suction pipe flange for Surge Tank 3 at the pipe branch tie-in connection.	Tighten fasteners or install new flange bolting hardware to ensure proper thread engagement is achieved at the flanged joint.	A	Replace fasteners.
(b) (3) (A)	D9 D15		UGPH	Surge Tank Piping	The 1-inch ball valves that are mounted on the 4-inch low suction line at Surge Tanks 3 and 4 are missing plugs. A brass/bronze valve was noted at Surge Tank 3 location. Valve classification is unknown.	Install a plug to prevent accidental fuel release. Replace bronze/brass valve with Class 150 carbon steel ball valve.	A	Install plugs.
FOR.004	E7		RHTF	TK 18	1-inch ball valve located on the blind flange on Tank 18 s FOR pipeline is not plugged off. This valve is susceptible to being accidentally opened if something were to impact the ball valve handle causing it to open.	Provide plug or cap on ball valve to prevent accidental fuel release.	A	Install plug.
FOR.011	E11		RHTF	Sump 7 (Door C)	The pressure gauge on the FOR line on the discharge side of the sump pump is out of calibration and the glass gauge is cracked.	Replace damaged pressure gauge.	A	Replace gage.

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ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
FOR.012	E12		RHTF	Door C	The 2-inch FOR pipeline between the tee and gate valve at Door C is covered with a stained plastic wrap and c-clamps. This is indicating a weep at the threaded joint.	Remove wrap and repair piping connections to prevent future weeps and drips.	A	Replace piping.
FOR.021	E21		RHTF	TK 16	Tank isolation valve on the 6-inch FOR pipeline has one fastener that is not fully engaged.	Replace bolt on flange with a longer bolt to ensure nut has adequate thread engagement.	A	Replace fastener.
FOR.023	E23		RHTF	TK 15	The FOR-gate valve flange has three fasteners that are not fully engaged.	Replace bolts on flange with a longer bolt to ensure nuts have adequate thread engagement.	A	Replace fasteners.
FOR.025	E25		RHTF	TK 15	The 6-inch DBB tank isolation valve on the 6-inch FOR 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. Service the DBB valve as required.	M	Monitor and mitigate drips. Not possible to repair without defueling.
FOR.026			RHTF	(b) (3) (A)	The FOR connection from the product lines is constructed out of a combination of hard pipe and hoses.	Replace connections and hoses with hard pipe.	A	Remove hoses.
FOR.031	E32		RHTF	TK 1-20	The tank sampling piping associated with Tanks is showing signs of minor to moderate corrosion at areas where the piping has not been upgraded. Tank 9 sample piping is severely corroded and requires replacement.	Repair by replacement the small-bore tank sample piping up to the sampling stations associated with Tank 9. Long term - Clean, prep, and recoat other sampling lines associated with the storage tanks.	A	Assessment underway. There are isolation valves between the tank and the corroded segments.
FOR.043	E48		RHTF	Sump S-23	Unsecured flange and pipe nozzle at 6-inch ball valve. The flange is missing several fasteners and the pipe is not capped.	Provide fasteners to secure flange connection to 6-inch ball valve and provide cap to secure pipe end.	A	Replace fasteners. Provide cap.
FOR.044	E44 E45 E46		RHTF	Sump S-23	Three temporary pipe clamps on 4-inch FOR pipeline within trench adjacent to S-23. Pipe clamp lengths are 6-inch, 16-inch, 8-inch. Also, UTT indicates pipe wall loss in this area over 55% metal loss is present.	This piping repair is being performed as part of the "FLC POL Pipeline Repairs" project (E-Project Work Order No. 1615884). The temporary pipe clamps are being removed and pipeline segment is being replaced with a pipe pup.	A	Repair pipe.
FOR.045	E43		RHTF	Sump S-23	A loose fastener was observed on a 4-inch pipe flange within the pipe trench adjacent to S-23.	Tighten fastener on pipe flange.	A	Tighten fastener.
FOR.046	E47		RHTF	Sump S-23	The 6-inch DBB on the sump pump discharge piping within Sump S-23 is missing a body cavity relief handle and does not have a plug.	Provide handle and threaded plug on cavity relief valve.	A	Provide handle. Provide plug.
FOR.053	E54		ADIT (b) (3) (A)	(b) (3) (A)	2-inch Low Point Drain – No cap on cam-lock fitting. Two fasteners are not fully engaged on the 2-inch low point drain flange.	Provide cam-lock cap on fitting and provide longer bolts to ensure nuts are fully engaged.	A	Replace camlock cap. Provide fasteners.
FOR.054	E55		ADIT (b) (3) (A)	(b) (3) (A)	2-inch Low Point Drain – No cap on cam-lock fitting. Two fasteners are not fully engaged on the 2-inch low point drain flange.	Provide cam-lock cap on fitting and provide longer bolts to ensure nuts are fully engaged.	A	Replace camlock cap. Provide fasteners.
FOR.059	E60		TK (b) (3) (A) – ADIT (b) (3) (A) Entrance	Outside FOR Piping	Severe corrosion and pitting at several locations between ADIT 3 and S-311. Wall Loss observed between 60%-79%. Severe corrosion also observed at pipe support cradle interfaces.	Replace approximately 150 linear feet of 6-inch pipe on the aboveground portion of the FOR line outside of ADIT (b) (3) (A) Limits are from 6-inch riser pipe outside ADIT (b) (3) (A) to the DBB isolation valve outside of the secondary containment area of Tank S-311.	A	Repair pipe.
FOR.063	E63		TK S-311	TK S-311	The body cavity relief valve on the 8-inch DBB located on the FOR-receipt pipeline is discharging to isolated segment of piping downstream and should be discharging to the atmospheric, tank side of the valve.	Replumb the body cavity relief to relieve towards Tank S-311.	A	Switch BCR side.
FOR.064	E64		TK S-311	TK S-311	The 8-inch DBB valve, located outside of the secondary containment has a loose fastener.	Tighten loose fastener on valve flange.	A	Tighten fastener.
FOR.065	E67		TK S-311	TK S-311	The body cavity relief valve on the 8-inch DBB located on the FOR-issue pipeline is discharging to isolated segment of piping downstream and should be discharging to the atmospheric, tank side of the valve.	Replumb the body cavity relief to relieve towards Tank S-311.	A	Switch BCR side.

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ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)			RHTF	TK 7, 8, 9, 10, 11, 12, 13, 14, 17, 18, 20	Tank sample piping downstream of the isolation valve are open to the atmosphere. If the isolation valves were to be bumped or inadvertently forced open, this could lead to an accidental fuel spill.	Provide threaded caps on tank sample piping downstream of isolation valves. NOTE: This deficiency has been corrected for the tanks that have been previously cleaned, inspected, and repaired.	A	Install caps
(b) (3) (A)	A3		RHTF	TK 16	HPV on Tank 16 jet fuel piping downstream of the 12-inch tank isolation valve is missing a threaded plug. Some fuel was noted inside the valve body.	Provide threaded plug on high point vent.	A	Install plug
(b) (3) (A)	A4		RHTF	TK 7, 8, 9, 10	The DBB valves are equipped with a drain valve in lieu of a plug. The end of the valves is not secured with a pipe plug. - Tank 7 – 20 & 12-inch DBBs - Tank 8 – 12-inch DBB - Tank 9 – 20-inch DBB - Tank 10 – 20-inch DBB	Provide threaded plug on ball valve drain.	A	Install plugs.
(b) (3) (A)	LRUT Results CML# GW B26		Harbor Tunnel	(b) (3) (A)	One indication was observed approximately -460 inches from setup on the (b) (3) (A) JP-5 pipeline.	Remove pipe wrap and inspect the pipeline at these locations.	A	Removal of wrap and coating and FFS assessment in progress.
(b) (3) (A)	B5 B6		Harbor Tunnel	(b) (3) (A) to UPGH Bulkhead	There are two low point drains on the (b) (3) (A) pipeline between the UPGH concrete bulkhead and PS (b) (3) (A) that are constructed of threaded valves, nipples, and piping. There is evidence of fuel staining and weeping noted around the threaded fittings. Moderate corrosion was observed on low point drain piping adjacent to PS (b) (3) (A). Notable corrosion was observed on LPD pipe adjacent to isolation valve (b) (3) (A). Valve classification is unknown.	Remove, retape, and reassemble threaded connections. Replace low point drains with Class 150 carbon steel ball valves. Recoat affected areas to prevent further corrosion. Replace corroded piping with new. Long term consideration should be given to replacing the low point drain piping and valves with welded pipe with flanged connections.	A	Corroded LPD. Replace. See (b) (3) (A) 021 for the counterpart (b) (3) (A) finding.
(b) (3) (A)	B18		Harbor Tunnel	Throughout the Harbor Tunnel	Several HPVs and LPDs throughout the harbor tunnel. These are composed of threaded valves, piping, and components. Minor staining was noted on some of these fittings. Also, the valve classifications in several locations are unknown. - 1-inch high point vent (b) (3) (A) - Two 2-inch high point vents (b) (3) (A) (weeping) - 2-inch high point vent (b) (3) (A) - 0.5-inch threaded plug on top of pipe (b) (3) (A) (weeping) - 0.5-inch threaded plug on top of pipe (b) (3) (A) (weeping) - 1-inch threaded plug on top (b) (3) (A) (weeping) - 2-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A) - Two 1.5-inch threaded plugs on top (b) (3) (A) (weeping) - Two 1-inch high point vent (b) (3) (A) - 2-inch high point vent (b) (3) (A)	Disassemble threaded connections, retape, and reassemble to prevent future weeps at the two high point vents between (b) (3) (A) and (b) (3) (A) and the threaded plug between (b) (3) (A) and (b) (3) (A). Replace all associated valves with Class 150 ball valves. Long term consideration should be given to replacing threaded connections with welded and flanged connections.	M	HPV finding not condition-based. Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor.
(b) (3) (A)	C18		UPGH	(b) (3) (A) through (b) (3) (A)	Conduit plug is being used to plug tee fitting on pressure gauge assemblies.	Install appropriate threaded pipe plugs on tee fittings.	A	Install plugs.

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)	C37		UGPH	Various	Fuel staining and weeping was noted on the pipe ties associated with the temperature sensors, pressure sensors, high point vents, and low point drains. Weeping is present at threaded connections associated with these fittings.	Disassemble threaded connections, retape, and reassemble to prevent future weeps. Long term consideration should be given to replacing threaded connections with welded connections where possible.	M	Review for mechanical integrity. Disassemble and reassemble only if warranted. Monitor. HPV finding is (b) (3) (A).032
(b) (3) (A)	C40		UGPH	Various	Several transducers are attached to the piping and the conduits do not have seal off fittings. Additionally, the conduits are ridged which could break under pipe movement.	Provide appropriate seal fittings and flexible conduit connections at transducers.	A	Install conduit seal fittings and LFMC as appropriate. See (b) (3) (A).038, (b) (3) (A).075.
(b) (3) (A)	C42		UGPH	Ball Valves	There is staining and some minor drips noted on the Cameron ball valves throughout the UGPH. Drips appear to be coming from the stem injection port.	Clean valve body, service stem nut/upper stem seal to prevent future weeps/drips.	A	Service valves. See (b) (3) (A).040, (b) (3) (A).077.
(b) (3) (A)	C48 C54		UGPH	Various	There was noticeable fuel drips and weeps coming from pressure relieving devices on the valve above the grating. (Cla Val relief devices)	Service pressure relieving devices to prevent future weeps. If valves are not serviceable, consideration should be given to replacement of these valves.	A	Service valves. See (b) (3) (A).043 and (b) (3) (A).081
(b) (3) (A)	C52		UGPH	(b) (3) (A) Header (Above Grating)	The (b) (3) (A) header manifold has a 3/4-inch gate valve (Valve (b) (3) (A)) at the end of the header. The 3/4-inch valve is allowing product to weep by and drip into a catchment basin. It was also noted that there are no pressure relief devices installed on the header piping.	Provide pressure relief devices to prevent an over pressurization of the header piping.	M	Service or replace NPS 0.75 Valve GP98J.
(b) (3) (A)	C55		UPGH	Valve (b) (3) (A)	4-inch gate valve is weeping at bonnet.	Service valve to prevent future weeps. If valve cannot be serviced, consider for replacement.	A	Service valve.
(b) (3) (A)	D7		UGPH	Surge Tank Piping	The 1-inch ball valve that is mounted on the 4-inch low suction line at Surge Tank 2 is missing a plug.	Install a plug to prevent accidental fuel release.	A	Install plug
(b) (3) (A)	F12		RHTF	MOV (b) (3) (A)	There is heavy corrosion on the conduit and fittings associated with MOV (b) (3) (A).	Replace corroded conduit and associated fittings on (b) (3) (A).	M	Repair deteriorated conduit.
(b) (3) (A)	F21	PM-23	RHTF	PS (b) (3) (A)	The 18-inch dresser coupling joint harness has four lugs that are welded backwards on the upstream side of the coupling.	Correct positioning of the lugs in accordance with manufacturer's recommendation. Note: This is programmed for repair as part of the FY21 Emergent Pipeline Repair Project	A	Remove this mainline DC and repair piping. Duplicate to (b) (3) (A).
(b) (3) (A)	B52		Harbor Tunnel	(b) (3) (A)	A dent was observed at the bell joint. Due to location of anomaly's proximity to a weld this will not pass API 579 Section 12 Level 1 assessment. Measured depth of anomaly was 0.320 inches.	Perform follow-on NDE examination of the weld at this location to validate if weld is acceptable for continued service.	A	Further FFS assessment in progress
(b) (3) (A)	16-TG-3		TG	(b) (3) (A)	Provide shims to close gap between the pipe and pipe support.	Same deficiency observed. Concur with 2016 recommendation.	M	Provide shim.
(b) (3) (A)	A7 Table E1 Table E2	LAT-38 LAT-40	RHTF	(b) (3) (A)	Severe corrosion and loss of support at bottom of column, minor flange deformation at free end, corrosion at (b) (3) (A) saddle, corrosion and loss of angle at lower angle support, no saddle at (b) (3) (A). API 570: Metal to metal contact. No Teflon shims/insulation strip. Missing steel saddle (floating pipe) (b) (3) (A). Corrosion on base of pipe support and I-beam.	Replace support. This repair is scheduled for completion.	A	Repair support. Also see (b) (3) (A).

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)	18-TG-45	LAT-41 LAT-42	RHTF	(b) (3) (A)	Severe corrosion and loss of support at train-side column (photo), minor corrosion at center column baseplate, grout pad edges destroyed at center column baseplate (photo), severe corrosion and loss of material at beam near wall (photo) API 570: Metal to metal contact. No Teflon shims/insulation strip. Rail-ties wedged between pipe and saddle (b) (3) (A)). Corrosion on base of pipe support and I-beam.	Replace support. This repair is scheduled for completion.	A	Repair support. Also see (b) (3) (A).
(b) (3) (A)	16-TG-16		TG	(b) (3) (A)	Provide shims to close gap between the pipe and pipe support.	Same finding was observed. Concur with 2016 recommendation.	M	Provide shim.
(b) (3) (A)			TG	(b) (3) (A)	Provide shims to close gap between the pipe and pipe support.	Same finding was observed. (b) (3) (A) were also observed to be floating during this inspection. Concur with 2016 recommendation.	M	Provide shims.
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ loss of material at any number of locations, impacted and deformed column flanges.	Replace support.	M	Repair pipe support
(b) (3) (A)	B32 Table E2	HT-26	Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, moderate column corrosion, complete loss of section at (b) (3) (A) anchor to wall on ADIT side	Replace support.	M	Repair pipe support
(b) (3) (A)		HT-26	Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, column moderately corroded, (b) (3) (A) anchor to wall complete section loss. API 570: Corrosion on pipe support at the tunnel wall attachment.	Replace support.	M	Repair pipe support
(b) (3) (A)	Table E2		Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, extreme corrosion at bottom of column and significant loss of column flange section at baseplate interface.	Replace support.	M	Repair pipe support
(b) (3) (A)		HT-26 HT-28	Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, column flanges completely deteriorated at slab, baseplate is dust, (b) (3) (A) attachments to wall completely corroded - not attached at (1) side. API 570: Corrosion on base of pipe support (attachment to tunnel floor)	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations (b) (3) (A) at wall.	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ loss of material at any number of locations, grout pad broken, loss of bearing.	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed.	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed	Replace support.	M	Repair pipe support
(b) (3) (A)	Table E2		Harbor Tunnel	(b) (3) (A)	Severe corrosion w/ significant loss of material at any number of locations, column flange deformed	Replace support.	M	Repair pipe support

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, extreme delamination at baseplate, columns not attached due to extreme deterioration, (b) (3) (A) bracket to the wall deteriorated and detached. API 570: Corrosion on base of pipe support (attachment to tunnel floor)	Replace support.	M	Repair pipe support
(b) (3) (A)	Table E2		Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, extreme corrosion at baseplate and column flanges, appears unattached and detached when sounded.	Replace support.	M	Repair pipe support
(b) (3) (A)	Table E2		Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, wall anchor not visible, flanges at angle column not attached to baseplate, severe delamination at baseplate. API 570: Support wear plate to support not engaged (b) (3) (A) (floating pipe)	Replace support.	M	Repair pipe support
(b) (3) (A)		HT-32	Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, severe corrosion over entire support complete less of support at bottom of both columns and both flanges, delamination (severe) at baseplate, angles to wall severely deteriorated. API 570: Corrosion on base of pipe support (attachment to tunnel floor).	Replace support.	M	Repair pipe support
(b) (3) (A)	Table E2	HT-32	Harbor Tunnel	(b) (3) (A)	Extreme corrosion w/ no or very little material at any number of locations, complete deterioration through bottom front flange of both columns, extreme deterioration of anchor bolts over back flange of both columns.	Replace support.	M	Repair pipe support
(b) (3) (A)		HT-33	Harbor Tunnel	(b) (3) (A)	Corrosion to loss of support, wall anchors not visible.	Replace support.	M	Repair pipe support
(b) (3) (A)	B14 Table E2		Harbor Tunnel	(b) (3) (A)	Extreme corrosion with no or very little material at any number of locations, active dripping.	Replace support, support on minimum 6" raised concrete pier.	M	Repair pipe support
(b) (3) (A)	B14 Table E2		Harbor Tunnel	(b) (3) (A)	Severe corrosion and loss of support at baseplate and lower column connection.	Replace support, support on minimum 6" raised concrete pier.	M	Repair pipe support
(b) (3) (A)	TK19-TG-1		Harbor Tunnel	(b) (3) (A)	Severely corroded base plate and bottom of column, loss of steel in column, delamination of base plate, no grout pad (b) (3) (A) connected to wall severely corroded.	Replace support.	M	Repair pipe support
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Concrete has been chipped out and removed on tank side around flange for the (b) (3) (A) lines; concrete around (b) (3) (A) line has broken out (but not fallen) on opposite side.	Remove and replace concrete at anchor bulkhead.	A	Repair concrete.
(b) (3) (A)			Harbor Tunnel	(b) (3) (A)	Concrete at (b) (3) (A) line has been broken out on tanks side, no flange visible.	Remove and replace concrete at anchor bulkhead.	A	Repair concrete.
(b) (3) (A)			ADIT 3	(b) (3) (A)	Actively dripping, medium-high corrosion, metal to metal contact, corroded at pipe support interface	Replace support.	M	Repair pipe support.
(b) (3) (A)	Table E2		ADIT 3	(b) (3) (A)	No contact w/ pipe.	Replace support or modify support to properly support pipe.	A	Repair (b) (3) (A).
(b) (3) (A)			ADIT 3	(b) (3) (A)	Highly corroded and deformed, no contact w/ pipe	Replace support.	M	Repair pipe support.
(b) (3) (A)	Table E2		ADIT 3	(b) (3) (A)	Corroded, in contact w/ pipe	Replace support.	M	Replace (b) (3) (A)

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	Corroded, intact, metal to metal contact, only top anchor to wall present, lower part of bracket not in contact w/ wall. See (b) (3) (A)	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	No sleeve on U-bolt, U-bolt corroded to delamination, significant corrosion at baseplate and anchors.	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	Front support flange bent from apparent impact, U-bolt displaced on pipe, not U-shaped. API 570: Loose U-bolt.	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			Between door and sump	(b) (3) (A)	Support completely deformed, removed from baseplate. API 570: Damaged pipe support (impacted by a moving vehicle).	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	Not supporting pipe, no anchorage to wall at top, metal to metal contact. API 570: Support anchor dislodged from tunnel wall.	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	No guide, support broken so pipe is at end of arm. API 570: Missing pipe clamp bolt (no isolation Teflon pad).	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)			ADIT (b) (3) (A)	(b) (3) (A)	Bottom of bracket deformed from impact.	Replace support.	A	Replace (b) (3) (A)
(b) (3) (A)	Table E2		ADIT (b) (3) (A)	(b) (3) (A)	No contact w/ pipe.	Replace support or modify support to properly support pipe.	A	Repair (b) (3) (A)
	16-TG-15		TG	(b) (3) (A)	Remove, provide, and install 16" tee. The repair will require piping rework to fit a new tee. Engineering will be required for the repair design.	Same finding observed. Visual inspection did not indicate area of concern during this inspection. Concur with 2016 recommendation.	A	FFS programmed
	16-TG-21		TG	(b) (3) (A)	Remove 4 ft of coating and inspect. Coating has not been removed yet by coating removal contractor.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	16-TG-23		TG	(b) (3) (A)	Remove 4 ft of coating and inspect. Coating was not adequately removed by coating removal contractor.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-TG-11		TG	(b) (3) (A)	Remove, provide, and install 4 ft 18" pup piece to eliminate the dent.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-TG-27		TG	(b) (3) (A)	Remove 2 ft of coating and inspect.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-TG-50		TG	(b) (3) (A)	Remove 2 ft of coating and inspect.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-TG-51		TG	(b) (3) (A)	Remove 2 ft of coating and inspect.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-UGPH-2		UGPH	(b) (3) (A)	Remove, provide, and install 4 ft 18" pup piece to eliminate the dent.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-UGPH-7		UGPH	(b) (3) (A)	Remove, provide, and install 4 ft 18" pup piece to eliminate the dent.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-LRUT-3		HT	(b) (3) (A)	Remove, provide, and install 4 ft 18" pup piece to eliminate the dent.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.
	18-LRUT-5		HT	(b) (3) (A)	Remove, provide, and install 4 ft 18" pup piece to eliminate the dent/gouge.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.

Contractor Finding							DOD Recommended Repairs Required to Defuel	
ID	Source ID Cross Reference	SGH Cross Reference	Geographic Area	Loc Reference	Ktr Description	Ktr Recommended Repair	Repair Rec	Rationale
	18-LRUT-6		HT	(b) (3) (A)	Remove 4 ft of coating and inspect.	This repair is currently programmed as part of the FY21 Emergent Pipeline Repair Project.	A	Removal of coating and FFS assessment in progress.