PITTSBURG TANK & TOWER GROUP
MAINTENANCE DIVISION Since 1919

1 Watertank Place
PO Box 1849
Henderson, KY 42419
P: (270) 826-9000
F: (270) 767-6912
www.pttg.com

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Mercury North (Area 23); Mercury, NV
1,500,000 Gallon GST
September 16, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-A

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

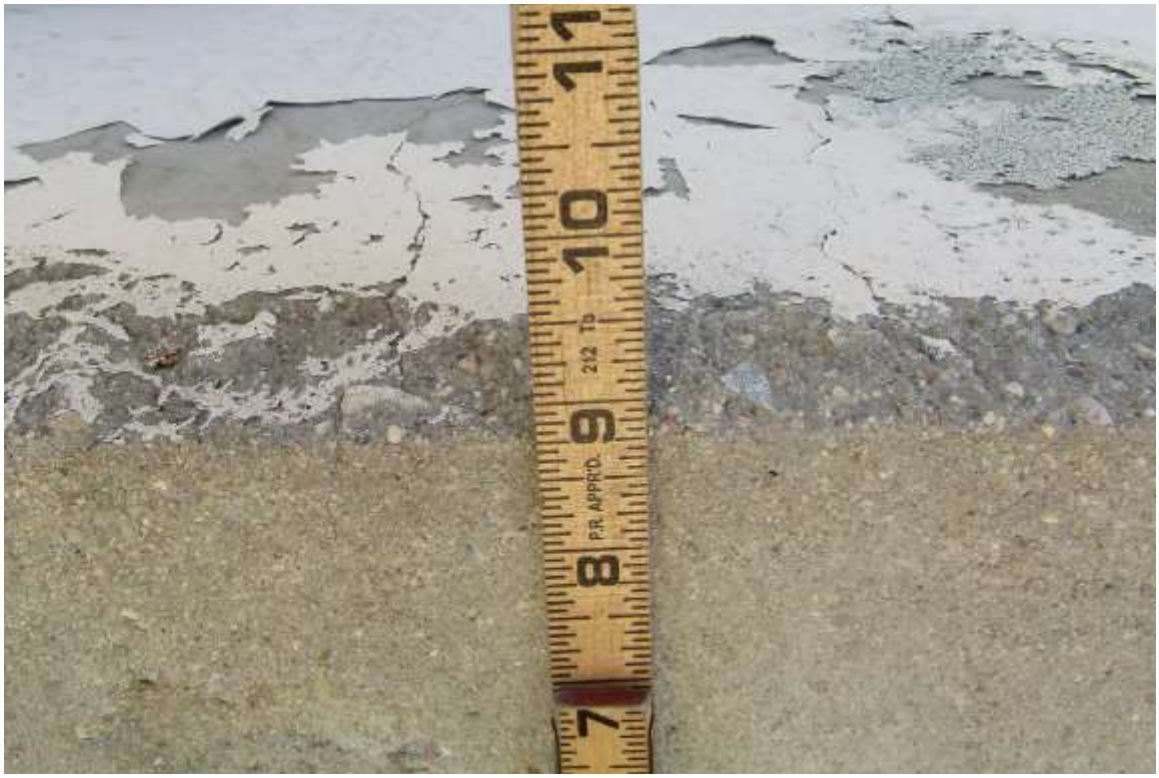


Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. NFPA 22-2018; 12.2.1.2 states, "… the junction of the tank bottom and the top of the concrete foundation shall be tightly sealed to prevent water from entering the base." We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks.

Photo shows the condition of one (1) of the fifty-one (51) anchor bolts. AWWA D100-11; 3.8.1.1 Required anchorage states, “For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks.” We recommend cleaning the area around the anchor bolts then tightening the jam nuts to specifications.

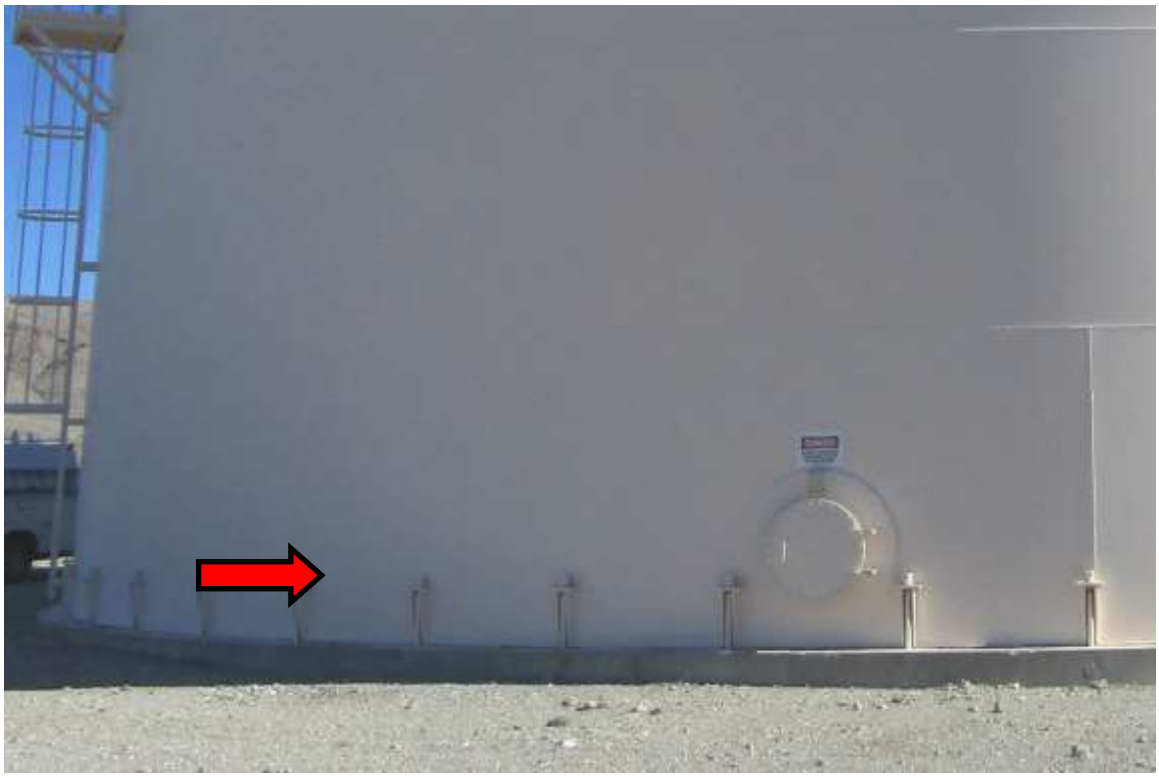


Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, 14.7.2.1.1, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Replace 24” manway with 30” manway
Post **Confined Space Entry** sign
Install maintenance free galvanized steel bolts

Photo shows the 12” overflow pipe system, which appears to be in good condition.

Shell access ladders in above photos are 16” wide, but are not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, cable type ladder safety devices, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the condition of the shell access standoff platform, which is equipped with an anti-skid floor and a 43” high OSHA compliant handrail system, complete with an intermediate rail and toeboard. We recommend installing a swing gate at the access standoff platform.

Photo shows the tank is not equipped with a liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, “A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained.” We recommend installing a liquid level indicator, complete with target board and float.

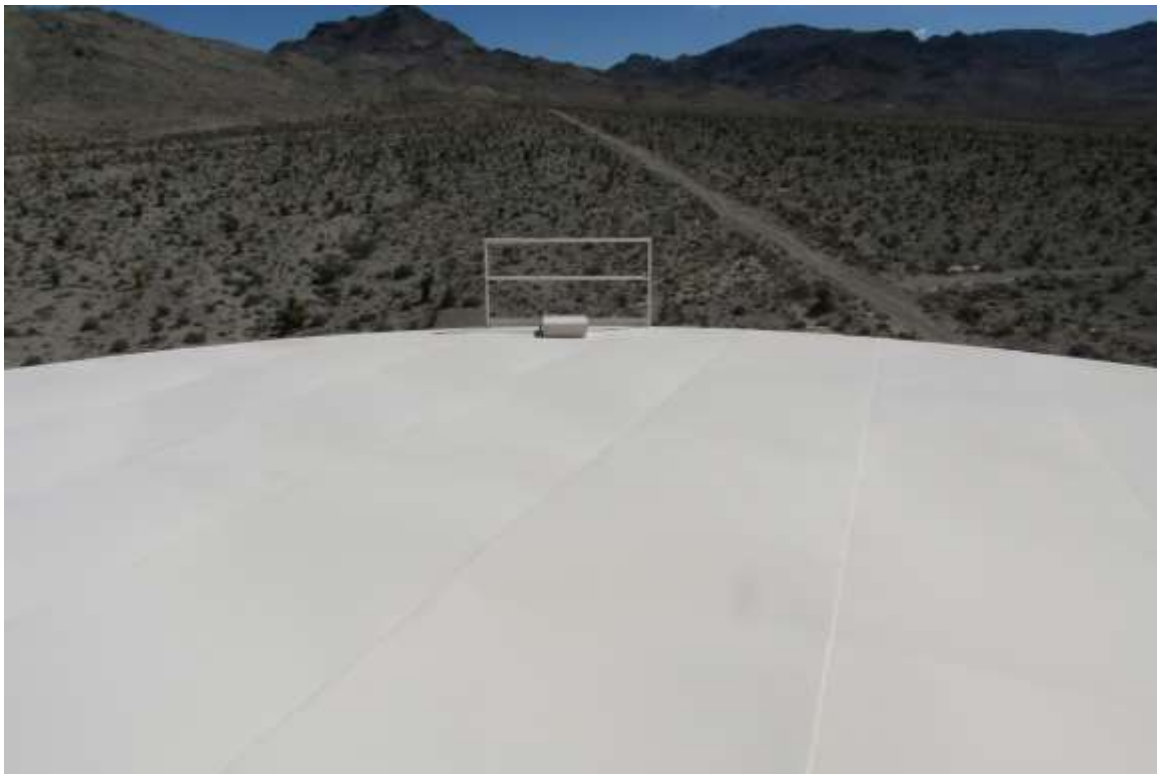


Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24" primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

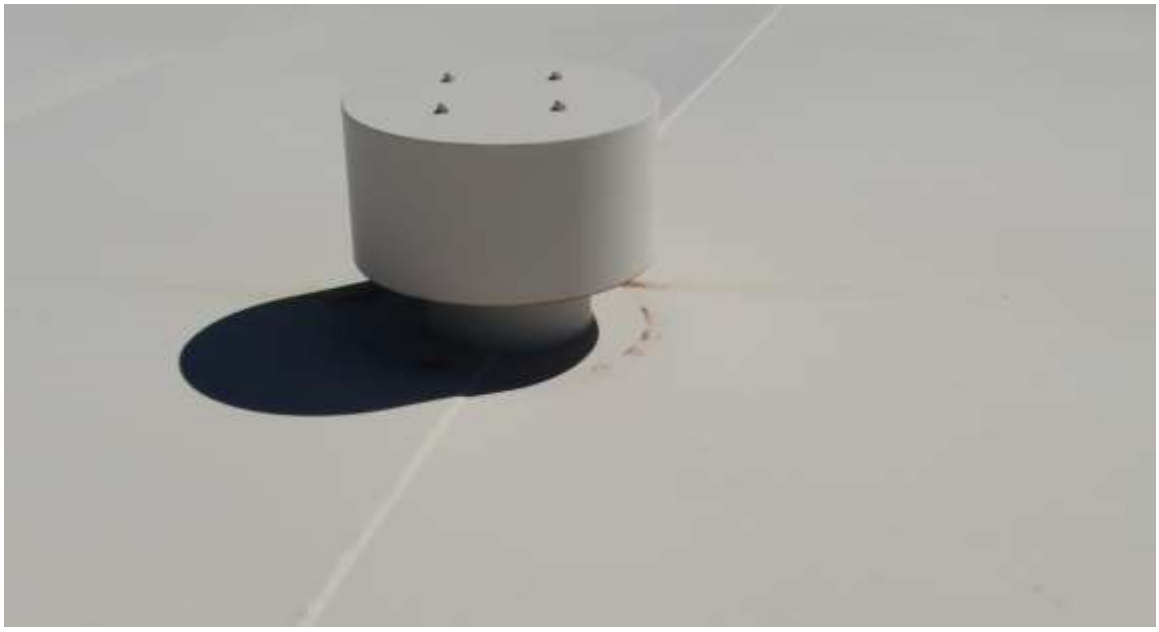
Photo shows the condition of the 24” secondary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the secondary roof hatch.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*



Photos show the existing 12” roof vent, which appears to be in good condition.

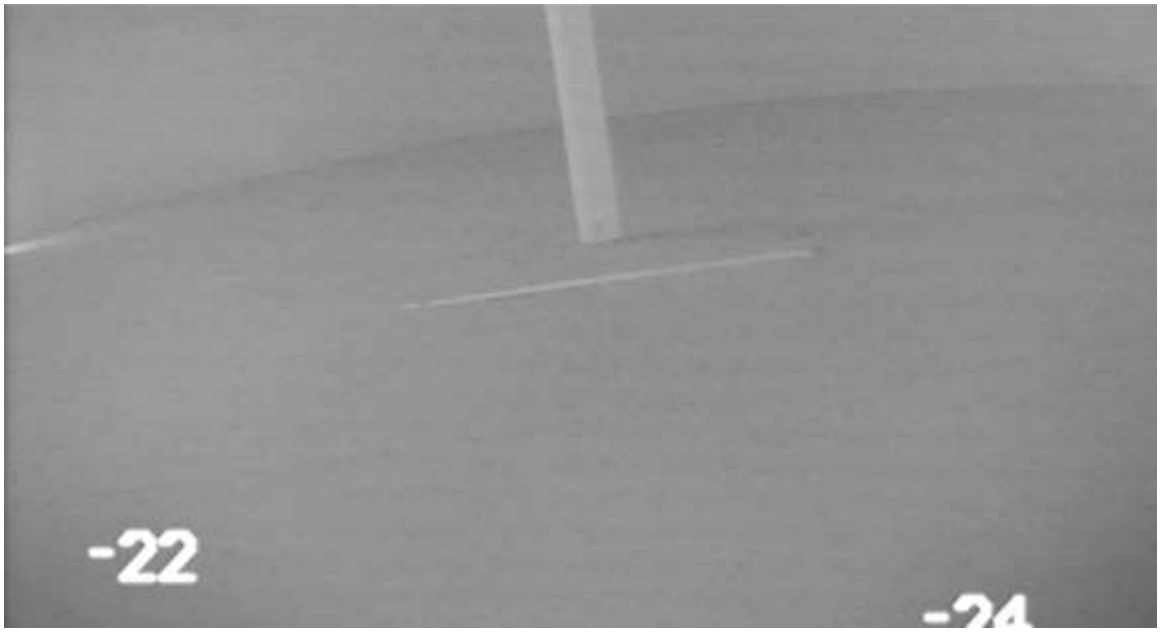
Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Primary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the primary interior access ladder.

Top photo shows the interior roof lap seams, which appear to be in good condition.

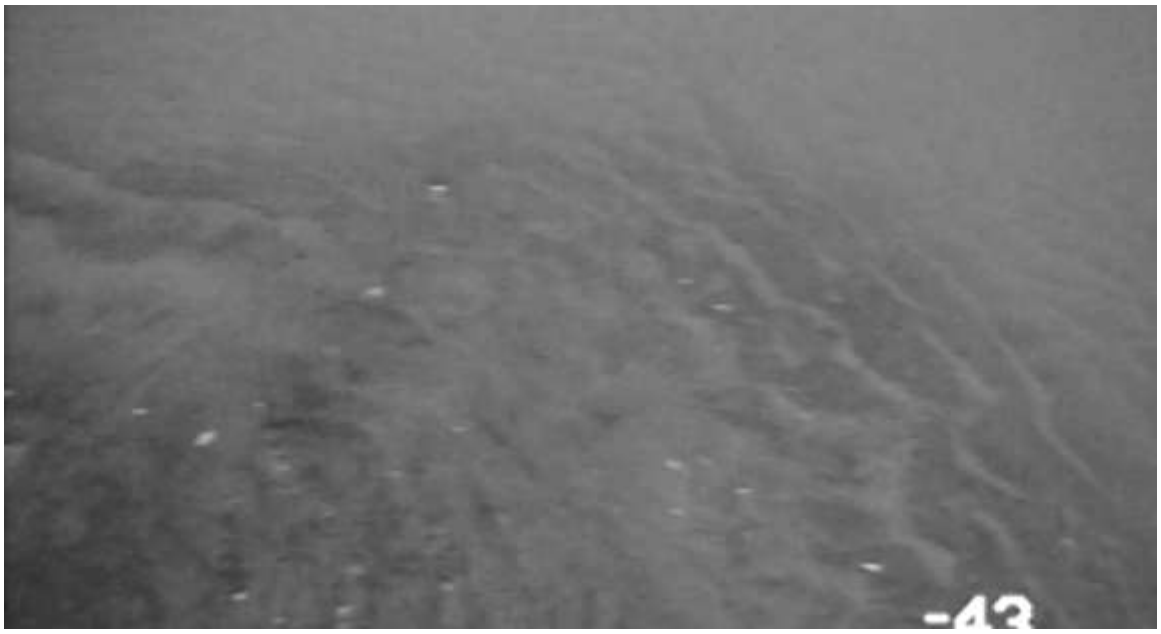
Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.



Top photo shows the center support column, which appears to be in good condition.

Bottom photo shows the support column baseplate-to-floor connection, which appears to be in good condition.



Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.

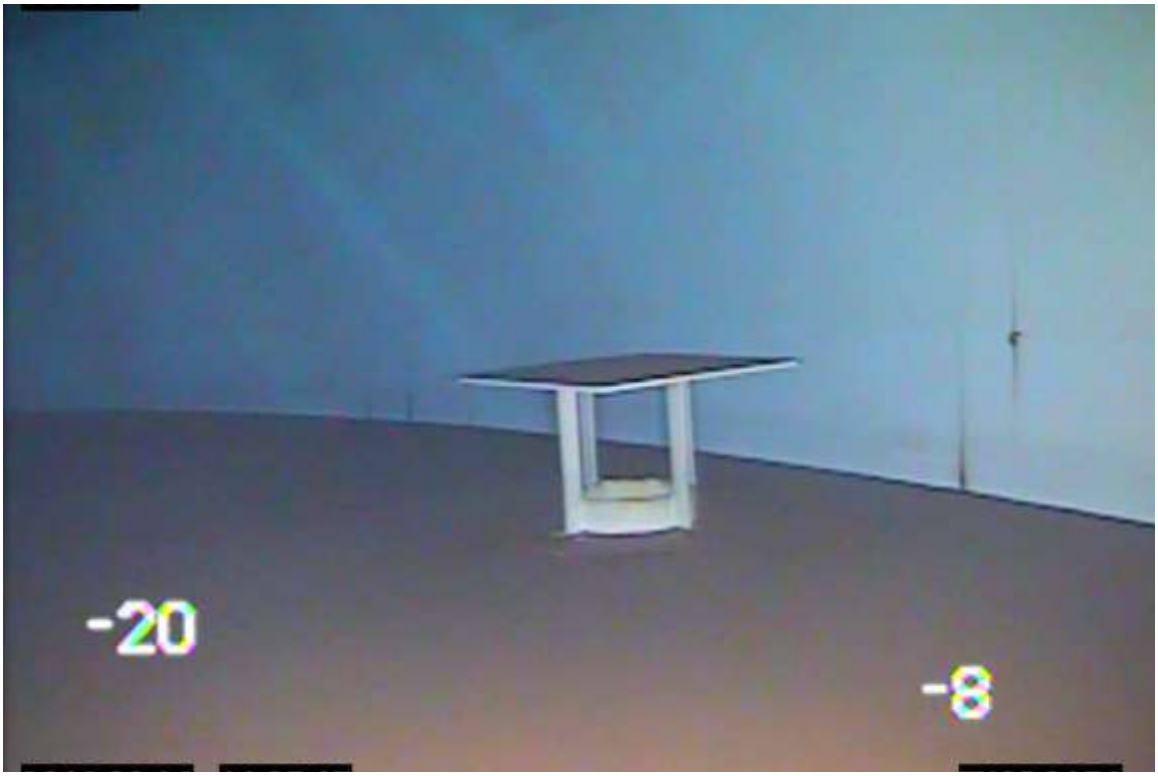
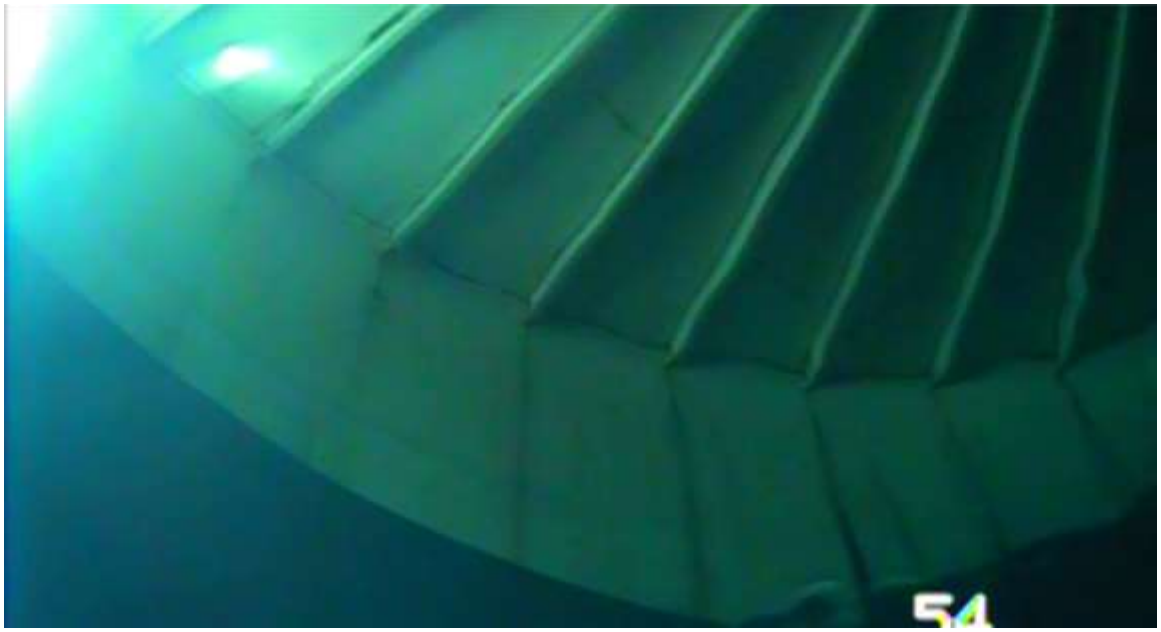
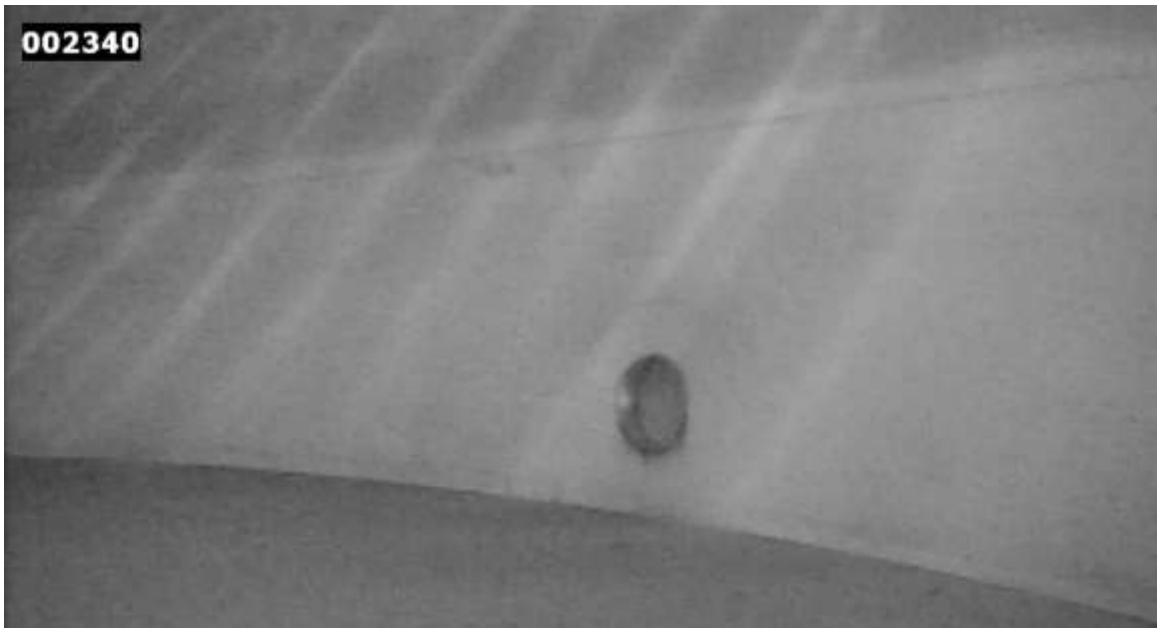


Photo shows a suction pipe on the interior of the tank, which is equipped with a properly sized anti-vortex plate to prevent formation of a vortex.





Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-A INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Mercury North (Area 23); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 16, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: 95-1756 A YEAR BUILT: 1995

ORIGINAL MANUFACTURER: Schuff Steel Company CAPACITY: 1,500,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable/Fire

DIAMETER: 80'-0" HEIGHT: 42'-0"

OVERFLOW: 12" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A1@6.1	A0@8.3

Mil Thickness Testing								
Roof	3.5	1.8	7.2	9.1	3.7	3.0	4.5	7.3
	5.5	1.9						
Ring 5	2.7	5.3						
Ring 4	6.0	3.9						
Ring 3	5.8	8.1						
Ring 2	2.3	6.2						
Ring 1	3.9	9.9	9.7	4.5	3.8	4.7	4.0	5.4
	3.1	3.8	2.5	1.0	1.2	2.1	1.7	4.0

Ultrasonic Thickness Testing								
Roof	0.207	0.202	0.220	0.209	0.214	0.211	0.207	0.215
	0.221	0.205						
Ring 5	0.267	0.270						
Ring 4	0.276	0.270						
Ring 3	0.407	0.404						
Ring 2	0.559	0.563						
Ring 1	0.679	0.684	0.681	0.687	0.669	0.665	0.668	0.672
	0.685	0.677	0.676	0.670	0.656	0.665	0.670	0.665

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Clean the area around the anchor bolts, then tighten the jam nuts to specifications.					X
6	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
8	Replace 24" secondary shell manway with 30" manway.		X	X		
	Post Confined Space Entry sign on secondary shell manway.			X		
	Install maintenance free galvanized steel bolts on secondary shell manway.					X
10	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install cable type ladder safety devices on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
11	Install a swing gate at the exterior shell access standoff platform.			X		
12	Install a liquid level indicator complete with a target board and float.		X			
13	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
14	Post Confined Space Entry sign on primary roof hatch.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
15	Post Confined Space Entry sign on secondary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
17	Re-evaluate the tank exterior at next inspection cycle.					X
18	Install anti-skid rung covers on the primary interior access ladder.		X			
	Install a cable type ladder safety device on the primary interior access ladder.			X		
22	Install a passive cathodic protection system.					X
25	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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1,500,000 Gallon GST
September 23, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-B

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Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

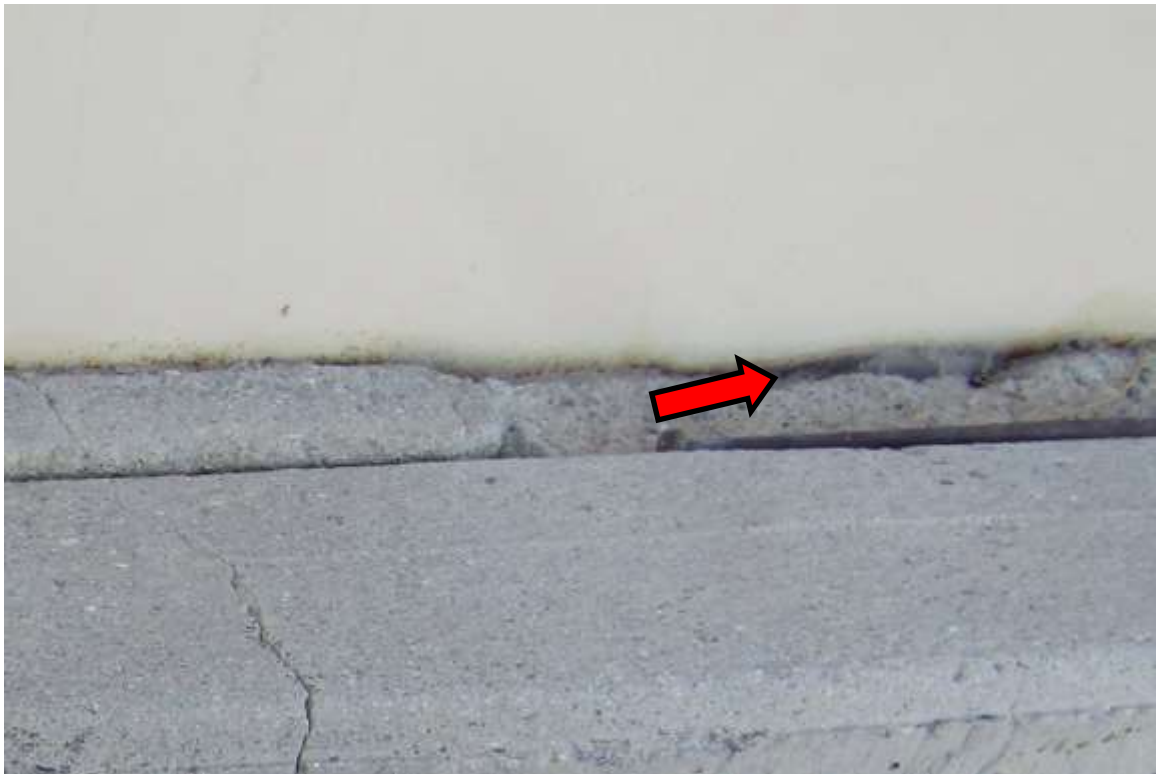


Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and appears to be in good condition.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign

Photos show the condition of the overflow pipe system. AWWA D100-11; 7.3 Overflow states, “An internal overflow is defined as an overflow with piping inside the tank container. The consequences of an overflow failure, which can empty the tank contents, shall be considered when an internal overflow is provided.” We recommend replacing the internal overflow system with a properly sized exterior overflow system, which will be complete with a weir box on the interior, standoffs every 10' on center extended to grade, an elbow fitted with a flapper valve and screen to prevent the ingress of contaminants, and a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is 24” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, replacing the notched rail safety climb with a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is equipped with a 42” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

Photo shows the condition of the 30” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

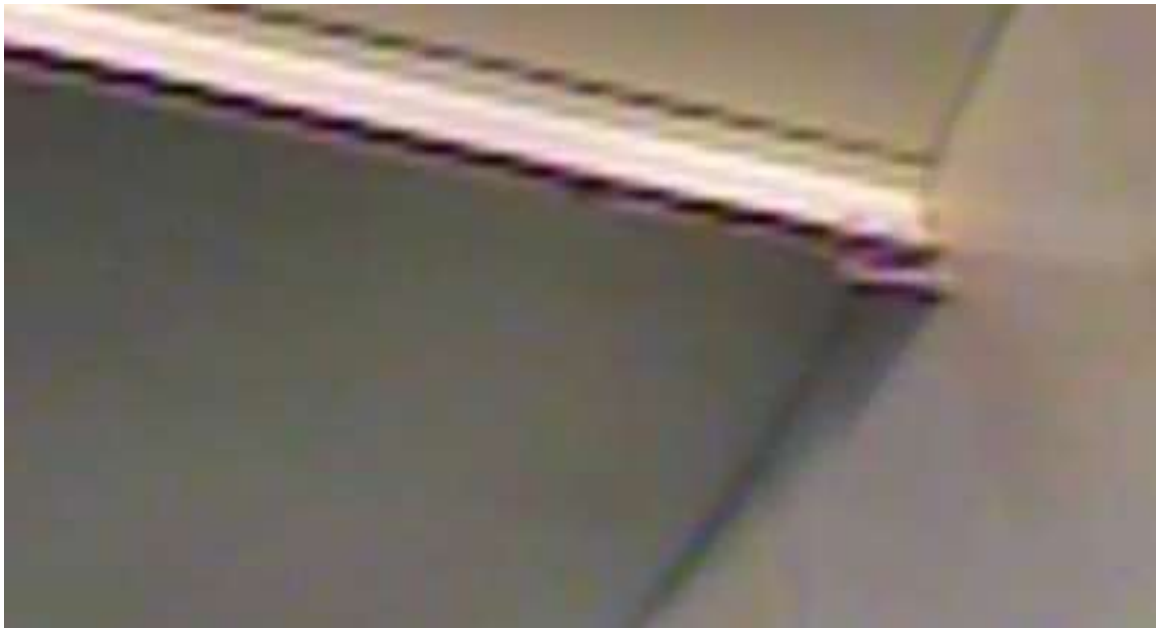
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photos show the existing roof vent, which appears to be in good condition.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.



Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.

Top photo shows one (1) of the six (6) center support columns, which appear to be in good condition.

Bottom photo shows one (1) of the six (6) support column baseplate-to-floor connections, which appear to be in good condition.

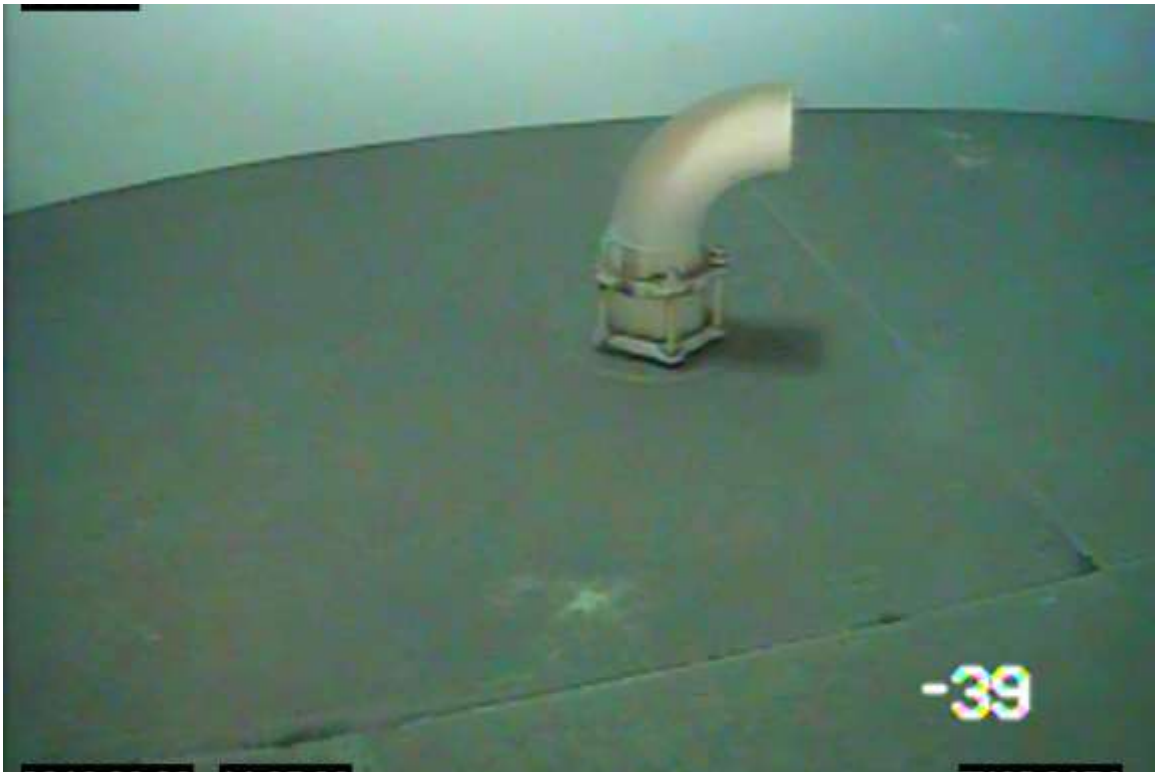
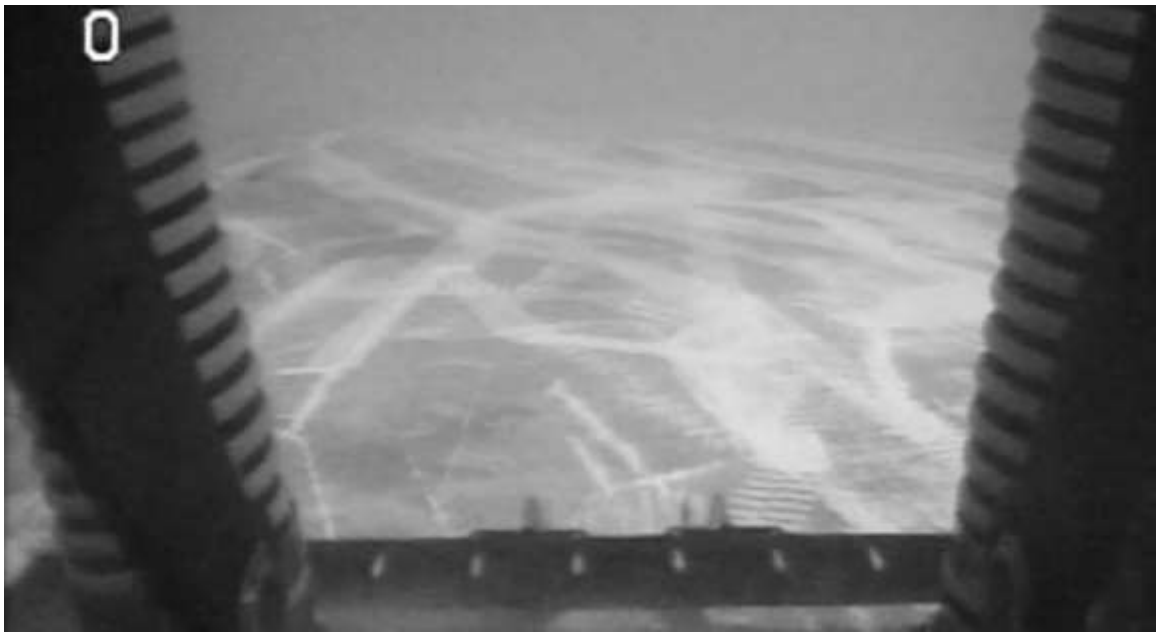


Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.



Photos show the tank interior during a cleanout.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-B INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Mercury South Area (23); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 23, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: 35708-01 YEAR BUILT: 1965

ORIGINAL MANUFACTURER: Pittsburgh-Des Moines CAPACITY: 1,500,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable

DIAMETER: 80'-0" HEIGHT: 40'-6"

OVERFLOW: Internal INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@11.8	A0@9.5

Mil Thickness Testing								
Roof	10.2	7.7	13.6	10.1	10.5	14.6	18.1	12.0
	11.6	8.7						
Ring 5	9.9	14.1						
Ring 4	18.7	14.3						
Ring 3	11.4	7.2						
Ring 2	13.1	17.9						
Ring 1	16.8	15.8	14.9	15.2	16.9	15.7	15.1	15.9
	14.3	12.1	9.5	8.4	10.0	12.6	14.1	17.1

Ultrasonic Thickness Testing								
Roof	0.236	0.250	0.262	0.260	0.229	0.234	0.257	0.249
	0.244	0.239						
Ring 5	0.296	0.289						
Ring 4	0.315	0.310						
Ring 3	0.426	0.435						
Ring 2	0.587	0.576						
Ring 1	0.708	0.688	0.679	0.674	0.686	0.689	0.680	0.685
	0.705	0.655	0.684	0.671	0.674	0.695	0.681	0.689

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
5	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry signs on suggested secondary shell manway.			X		
7	Replace the internal overflow system with a properly sized exterior overflow system, complete with a weir box on the interior, standoffs every 10' on center, an elbow fitted with a flapper valve and screen, and a splash pad. *Splash pad to be installed by owner.*		X			
8	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Replace the notched rail safety climb with a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install compliant interior access ladders complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on primary and suggested secondary interior access ladders.			X		
13	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install a mixing system. Electrical work to be done by others if required.		X			
18	Install a passive cathodic protection system.					X
20	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Camp North (Area 12); Mercury, NV
317,000 Gallon GST
September 16, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-C

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and appears to be in good condition.

Photo shows the condition of the existing drain valve, which is not equipped with a locking device or splash pad. We recommend installing a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

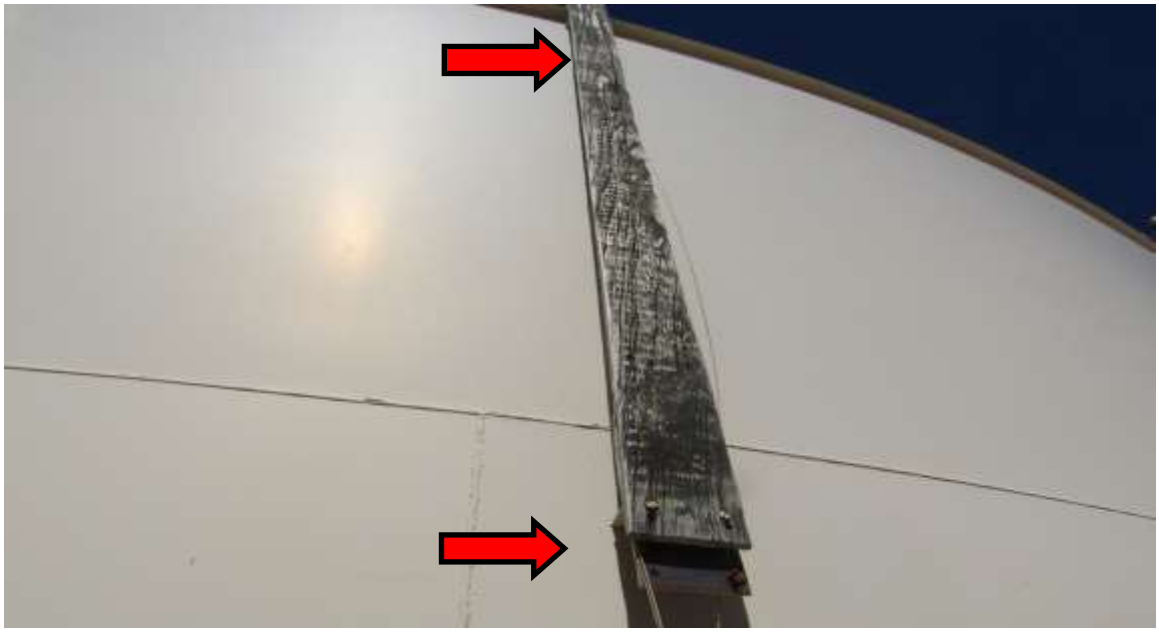
Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign

Photos show the condition of the 6" overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photos is not equipped with anti-skid rungs, and is only 15” wide. OSHA 1910.23(b)(4) states, “Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders,… ” We recommend installing an OSHA compliant shell access ladder complete with standoffs every 10' on center, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access and posting a **Fall Protection Required** sign at the base of the ladder.



Photos show the condition of the liquid level indicator. Due to the condition of the indicator, we recommend replacing the existing liquid level indicator.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

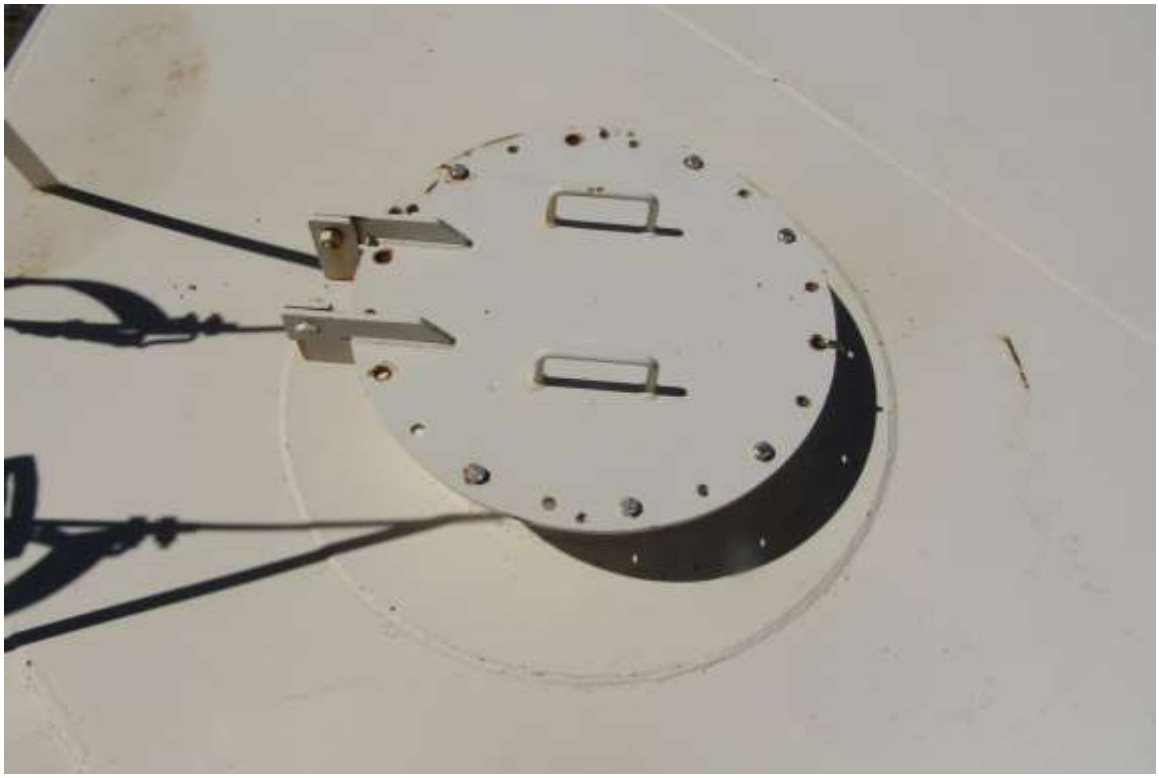


Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** sign

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

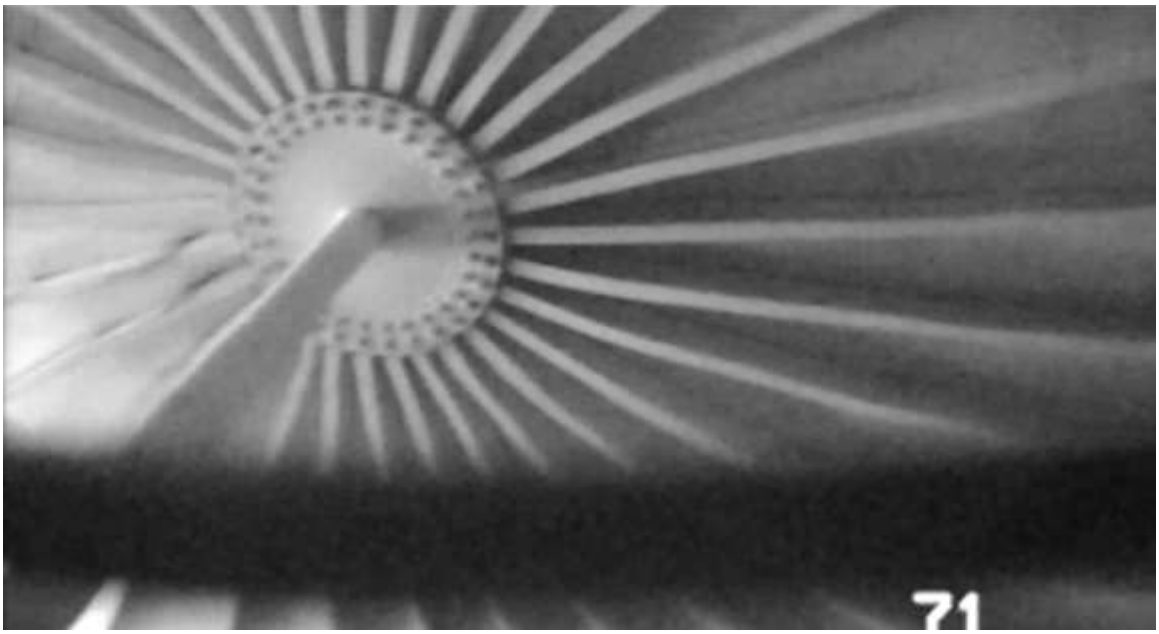
Photos show the condition of the existing 8" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.



Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.

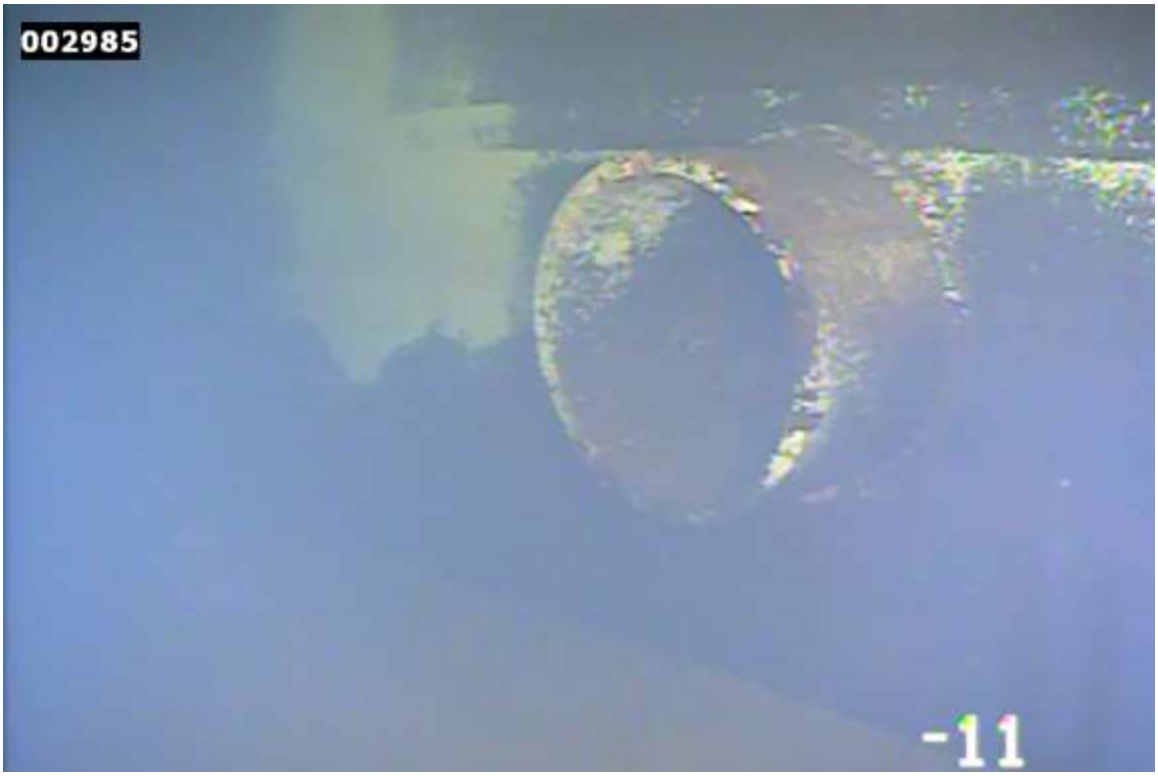
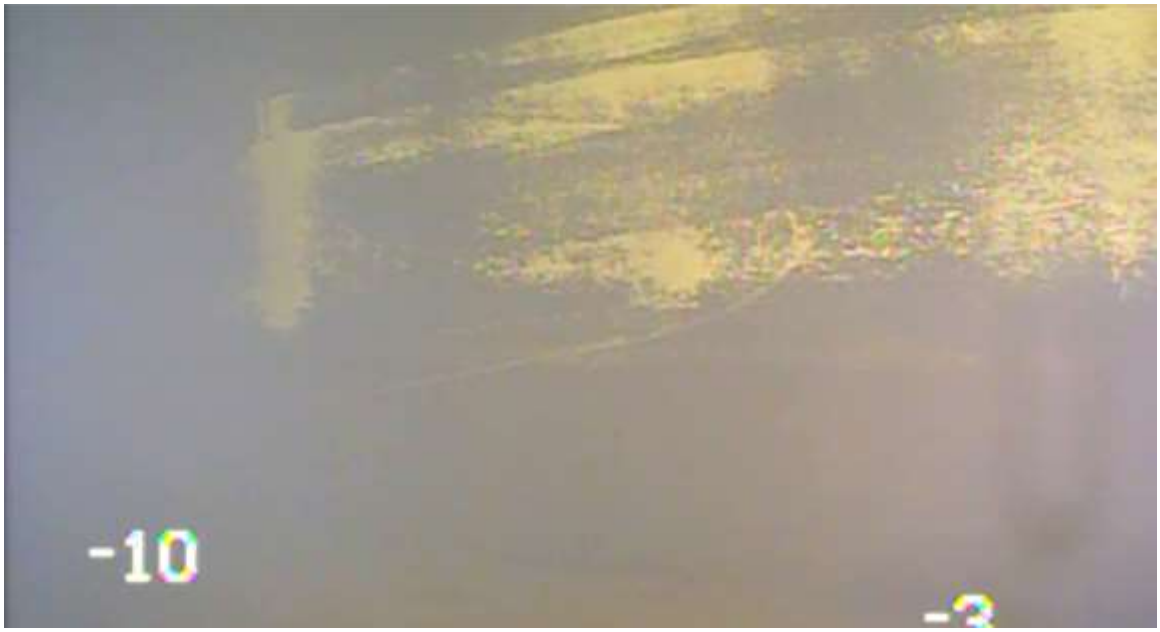


Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.



Photos show the condition of the interior coating system. We recommend sand-blasting all rusted and abraded interior areas to SSPC-SP10 (near white), and brush blasting all remaining interior areas to SSPC-SP7; then applying one (1) spot coat of epoxy primer to all areas sandblasted to #10, stripe coating all weld seams, and applying epoxy to the entire tank, to achieve 8 to 10 mils of total dry film thickness. Total mil thickness will include a combination of the existing and new coating.

PITTSBURG TANK & TOWER GROUP
MAINTENANCE DIVISION Since 1919

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Henderson, KY 42419
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www.pttg.com

GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-C INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Camp North (Area 12); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 16, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: TS-1336 YEAR BUILT: 1964

ORIGINAL MANUFACTURER: General American Trans. CAPACITY: 317,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable

DIAMETER: 60'-0" HEIGHT: 16'-0"

OVERFLOW: 13" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A4@4.7	A1@12.1

Mil Thickness Testing								
Roof	10.7	8.5	8.1	7.7	8.6	5.5	8.8	5.0
	8.5	8.4						
Ring 2	5.4	6.1						
Ring 1	3.7	1.6	2.3	4.9	6.4	6.2	5.8	5.3
	5.2	1.7						

Ultrasonic Thickness Testing								
Roof	0.232	0.226	0.227	0.218	0.236	0.226	0.230	0.228
	0.227	0.231						
Ring 2	0.261	0.263						
Ring 1	0.263	0.268	0.259	0.262	0.268	0.264	0.268	0.263
	0.262	0.260						

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Seal the foundation with a sealant.					X
5	Install a locking device and a splash pad on the existing drain valve. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry sign on primary shell manway.			X		
7	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
8	Install a compliant exterior shell access ladder complete with standoffs every 10' on center.			X		
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Replace the liquid level indicator.		X			
10	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry sign on primary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the primary and suggested secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on primary and suggested secondary interior access ladders.			X		
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Re-evaluate the tank exterior at next inspection cycle.					X
16	Install a mixing system. Electrical work to be done by others if required.		X			
17	Install a passive cathodic protection system.					X
19	Sandblast all rusted and abraded interior areas to SSPC-SP10 (near white), and brush blast all remaining interior areas to SSPC-SP7; then apply one (1) spot coat of epoxy primer to all areas sandblasted to #10, stripe coat all weld seams, and apply one (1) full coat of epoxy to the entire tank, to achieve 8 to 10 mils of total dry film thickness. Total mil thickness will include a combination of the existing and new coating.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Camp South (Area 12); Mercury, NV
500,000 Gallon GST
September 13, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-D

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and appears to be in good condition.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign
Install maintenance free galvanized steel bolts

Photos show the condition of the 6” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photos is 24” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

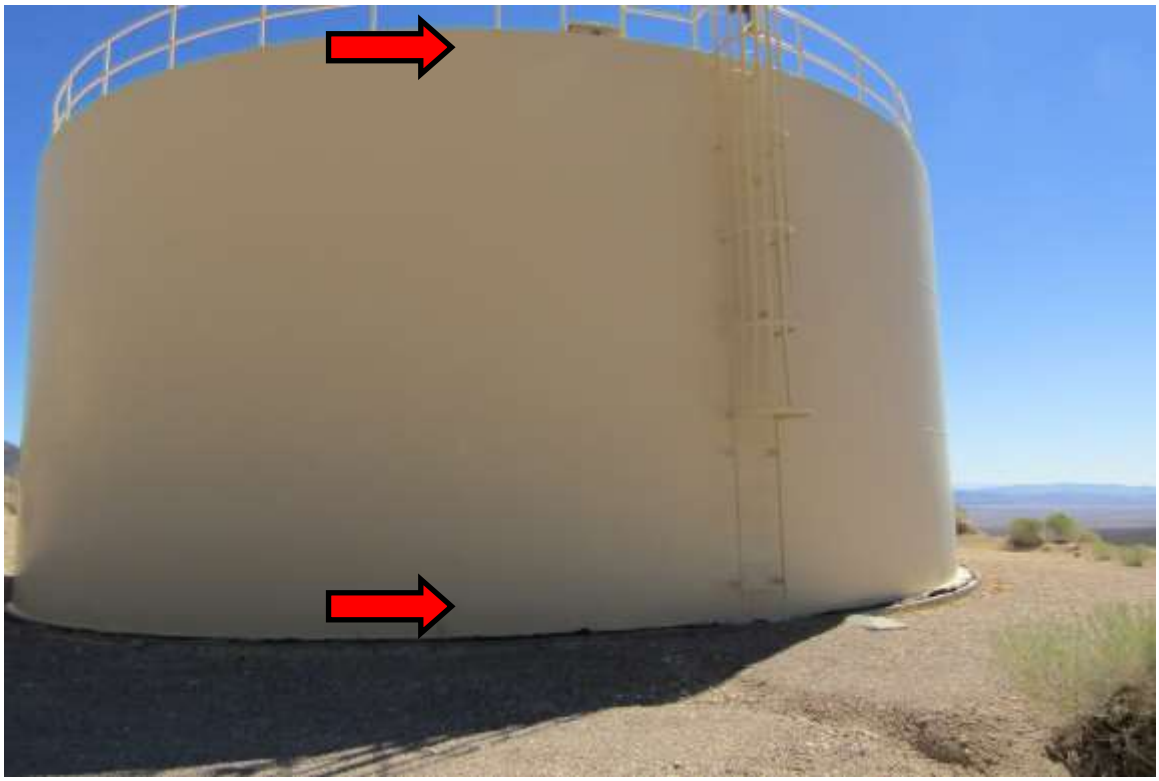


Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photos show the tank roof edge is equipped with a 43” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** sign

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

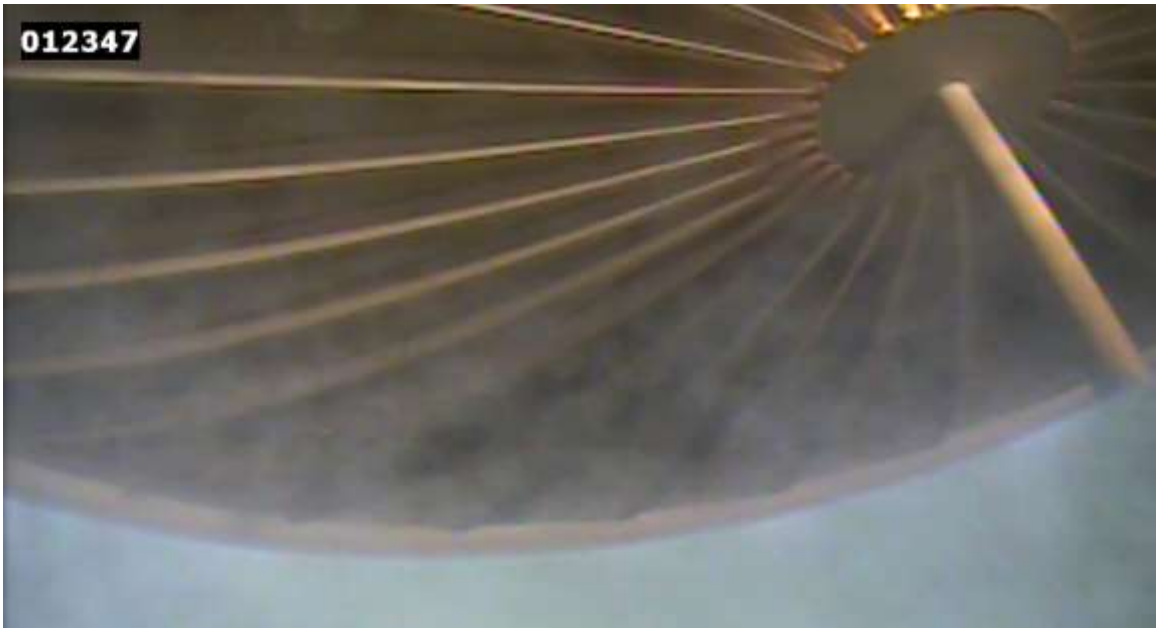
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photos show the existing roof vent, which appears to be in good condition.

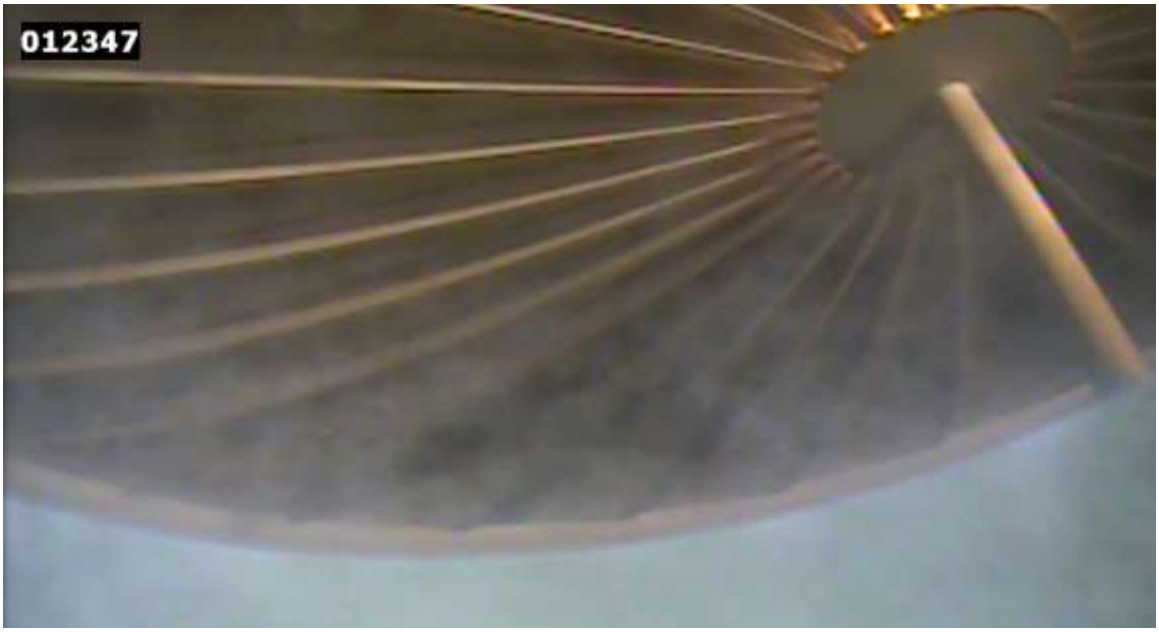
Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.



Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.



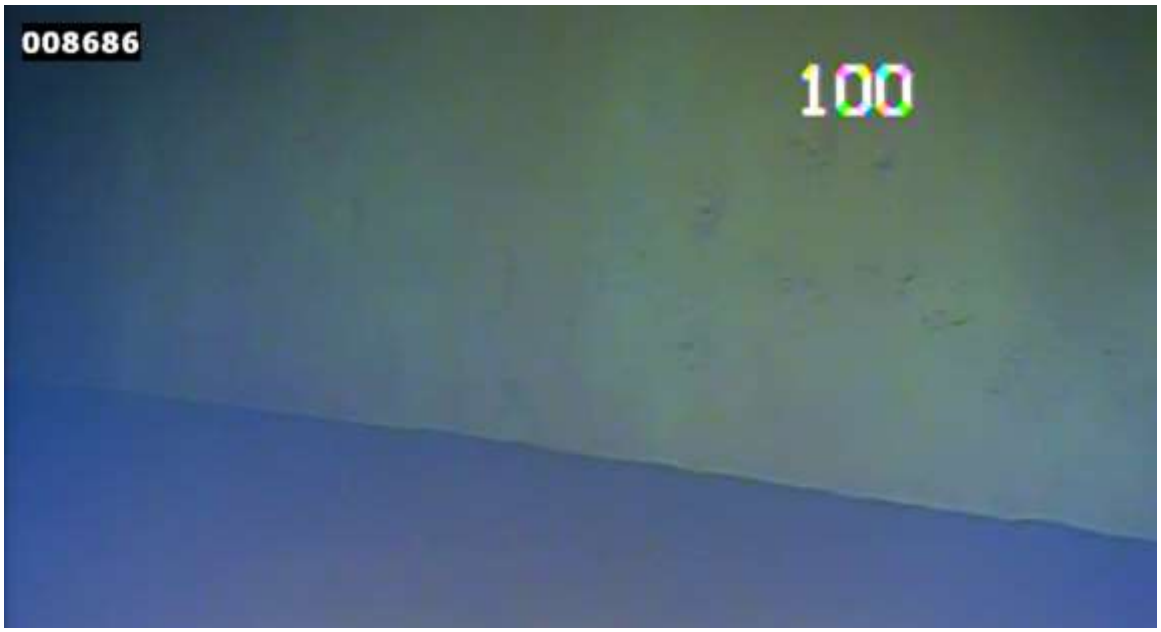
Top photo shows the center support column, which appears to be in good condition.

Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.



Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-D INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Camp South (Area 12); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 13, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: 1987

ORIGINAL MANUFACTURER: Brown Tank and Steel CAPACITY: 500,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable

DIAMETER: 60'-0" HEIGHT: 24'-0"

OVERFLOW: 6" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@14.3	A1@8.3

Mil Thickness Testing								
Roof	12.7	17.9	19.1	11.5	16.3	16.8	14.5	18.1
	13.2	16.1						
Ring 3	19.0	15.3						
Ring 2	11.7	13.2						
Ring 1	16.0	16.3	19.6	15.5	17.2	20.3	20.7	24.0
	14.8	17.1	14.5	17.6				

Ultrasonic Thickness Testing								
Roof	0.230	0.241	0.237	0.249	0.245	0.238	0.243	0.244
	0.240	0.234						
Ring 3	0.282	0.297						
Ring 2	0.319	0.308						
Ring 1	0.300	0.310	0.297	0.306	0.296	0.302	0.307	0.300
	0.305	0.310	0.314	0.303				

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Install a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry sign on suggested secondary shell manway.			X		
	Install maintenance free galvanized steel bolts on primary and suggested shell manway.					X
7	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
8	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry sign on primary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on the primary and suggested secondary interior access ladders.			X		
13	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install a mixing system. Electrical work to be done by others if required.		X			
18	Install a passive cathodic protection system.					X
19	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Well 4/4a North (Area 6); Mercury, NV
150,000 Gallon GST
September 14, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-G

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the condition of the foundation. AWWA D100-11; 12.7.1 Height aboveground states, “The tops of the concrete foundations shall be a minimum of 6” above the finished grade, unless otherwise specified.” We recommend clearing any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6” below top of foundation. This should be done by a local excavating company.

Photo shows the condition of the foundation. NFPA 22-2018; 12.2.1.2 states, "… the junction of the tank bottom and the top of the concrete foundation shall be tightly sealed to prevent water from entering the base." We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks and appears to be in good condition.

Photo shows the condition of the anchor bolts. AWWA D100-11; 3.8.1.1 Required anchorage states, “For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks.” We recommend cleaning the area around the anchor bolts, tightening the anchor nuts, then tack welding the circumference of the nut-to-base plate connections and bolt-to-nut connections to reinforce.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

Photo shows the condition of the 24” secondary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Replace 24” manway with 30” manway

Photos show the condition of the 12” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photos is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, “A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained.” We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

The tank is equipped with 42" high handrails to the left and right of the access ladder. We recommend extending the handrails around the circumference of the tank roof, complete with an intermediate rail, a toeboard, and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

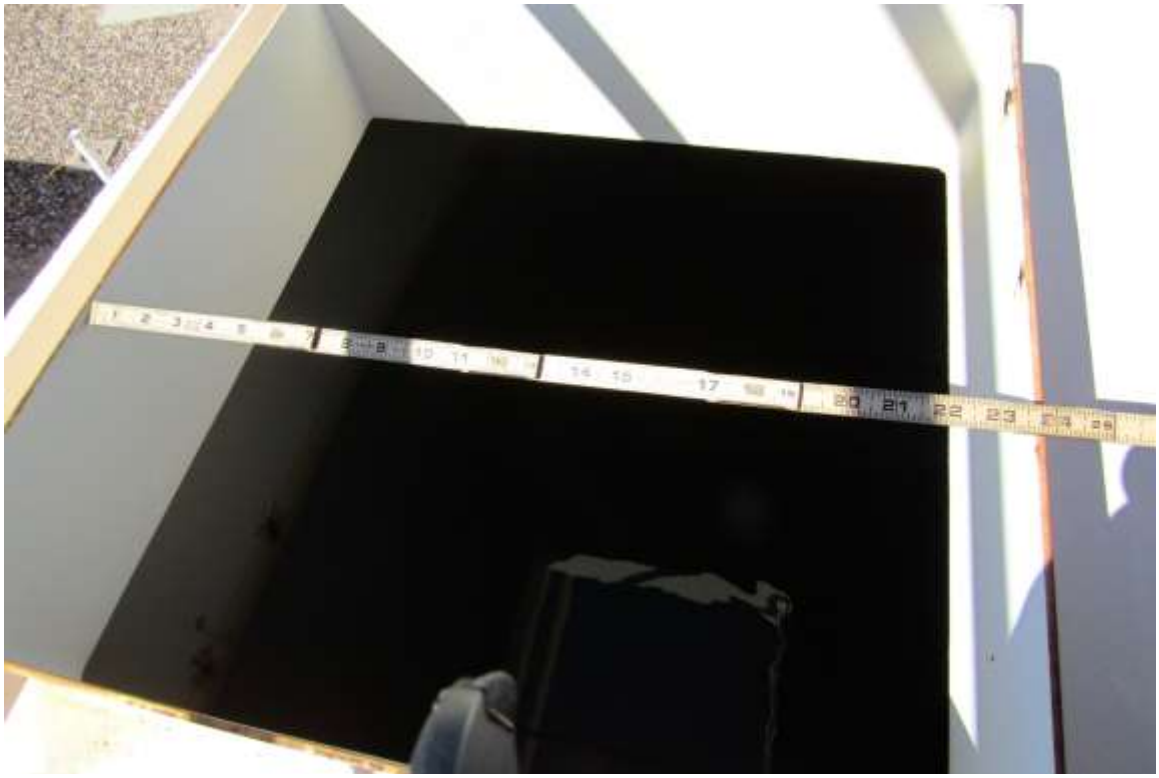


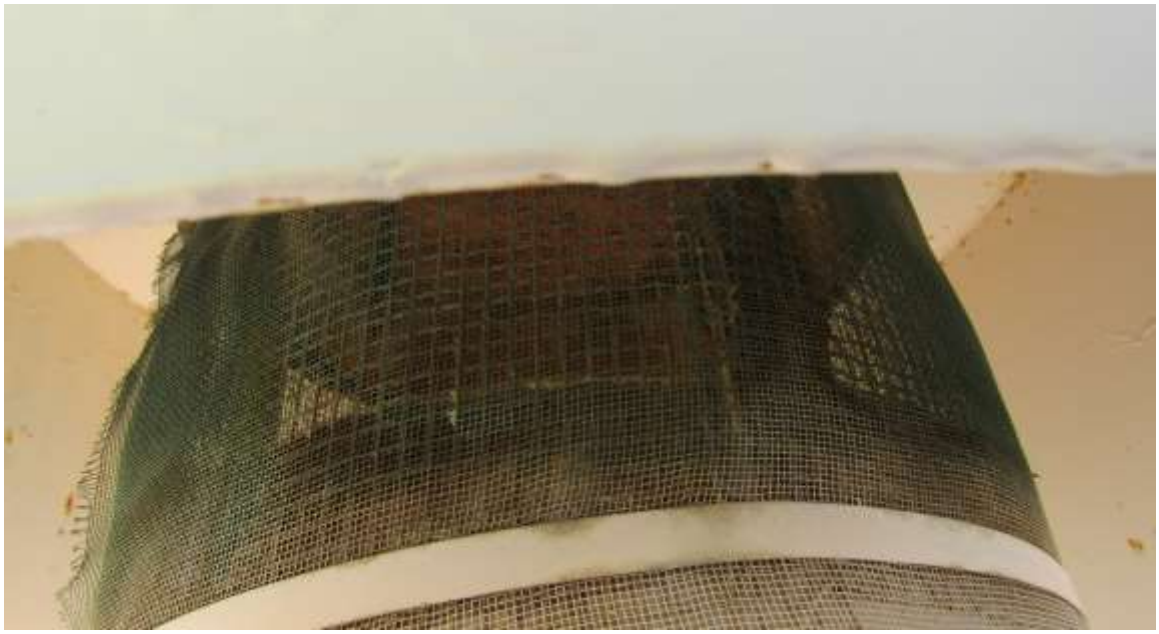
Photo shows the condition of the 24” secondary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

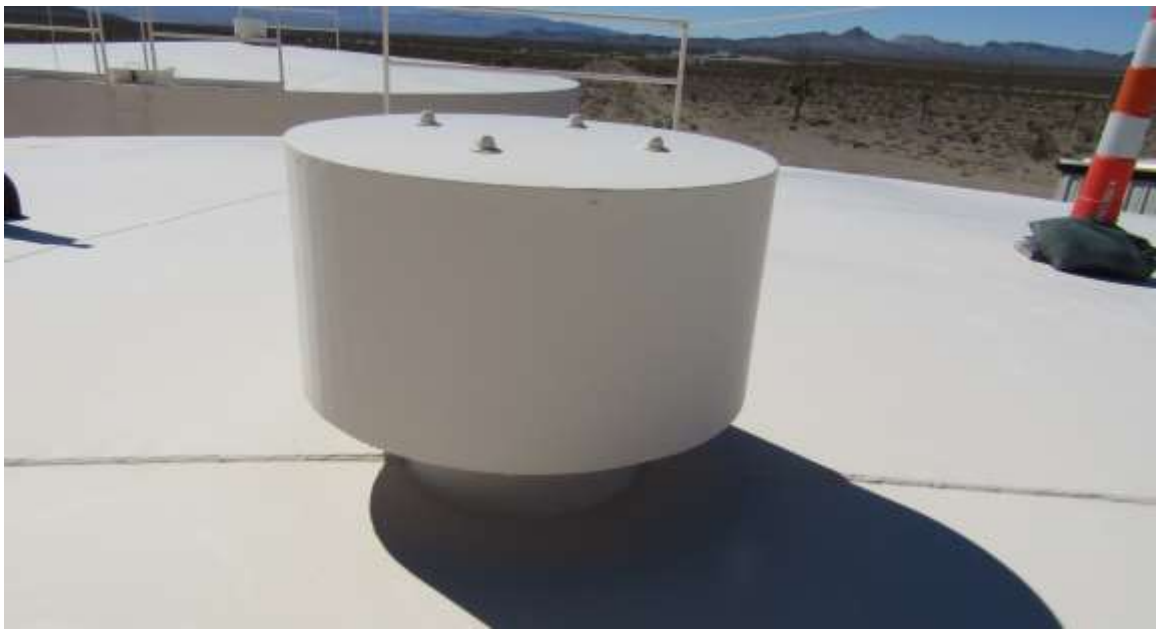
We recommend:

Post **Confined Space Entry** sign

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the secondary roof hatch.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*





Photos show the existing 8” roof vent, which appears to be in good condition.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

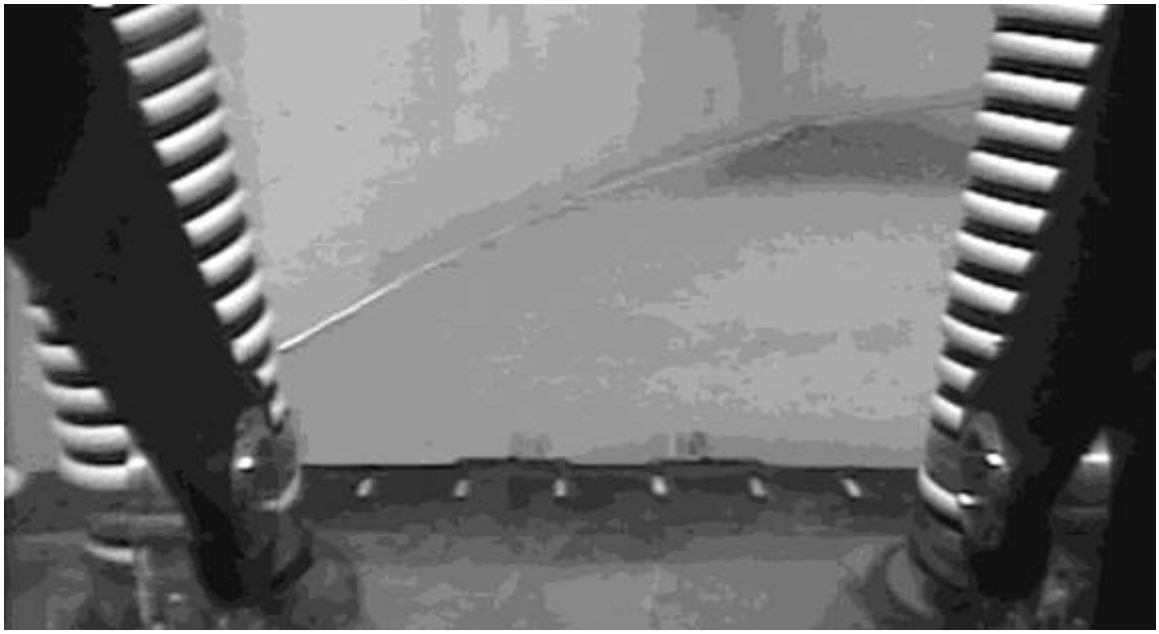
Primary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the primary interior access ladder.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.



Photos show the tank interior during a cleanout.

Photo shows a suction pipe on the interior of the tank, which is equipped with a properly sized anti-vortex plate to prevent formation of a vortex.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-G INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Well 4/4a North Area (6); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 14, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: 95-1756B YEAR BUILT: 1995

ORIGINAL MANUFACTURER: Schuff Steel Company CAPACITY: 150,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable/Fire

DIAMETER: 42'-6" HEIGHT: 16'-0"

OVERFLOW: 12" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A1@5.3	A1@8.7

Mil Thickness Testing								
Roof	7.1	6.2	6.5	4..0	5.3	4.2	7.7	6.3
	6.1	5.9						
Ring 2	4.7	6.1						
Ring 1	3.8	4.6	3.0	5.1	6.2	4.1	3.8	6.6

Ultrasonic Thickness Testing								
Roof	0.261	0.257	0.263	0.258	0.260	0.264	0.261	0.257
	0.260	0.265						
Ring 2	0.258	0.251						
Ring 1	0.267	0.263	0.259	0.264	0.267	0.263	0.260	0.2265

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
2	Clear any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6" below top of foundation. This should be done by a local excavating company.					X
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
5	Clean the area around the anchor bolts, tighten the anchor nuts to specifications, then tack weld on the circumference of the nut-to-base plate connections and bolt-to-nut connections.					X
6	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
8	Replace 24" secondary shell manway with 30" manway.		X	X		
9	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
10	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
11	Install a liquid level indicator complete with a target board and float.		X			
12	Extend the handrails around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
13	Post Confined Space Entry sign on primary roof hatch.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
14	Post Confined Space Entry sign on secondary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
16	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install anti-skid rung covers on the primary interior access ladder.		X			
	Install a cable type ladder safety device on the primary interior access ladder.			X		
19	Install a passive cathodic protection system.					X
22	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Well 4/4a South (Area 6); Mercury, NV
150,000 Gallon GST
September 24, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-H

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the condition of the foundation. AWWA D100-11; 12.7.1 Height aboveground states, “The tops of the concrete foundations shall be a minimum of 6” above the finished grade, unless otherwise specified.” We recommend clearing any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6” below top of foundation. This should be done by a local excavating company.

Photo shows the condition of the foundation. NFPA 22-2018; 12.2.1.2 states, "… the junction of the tank bottom and the top of the concrete foundation shall be tightly sealed to prevent water from entering the base." We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks and appears to be in good condition.

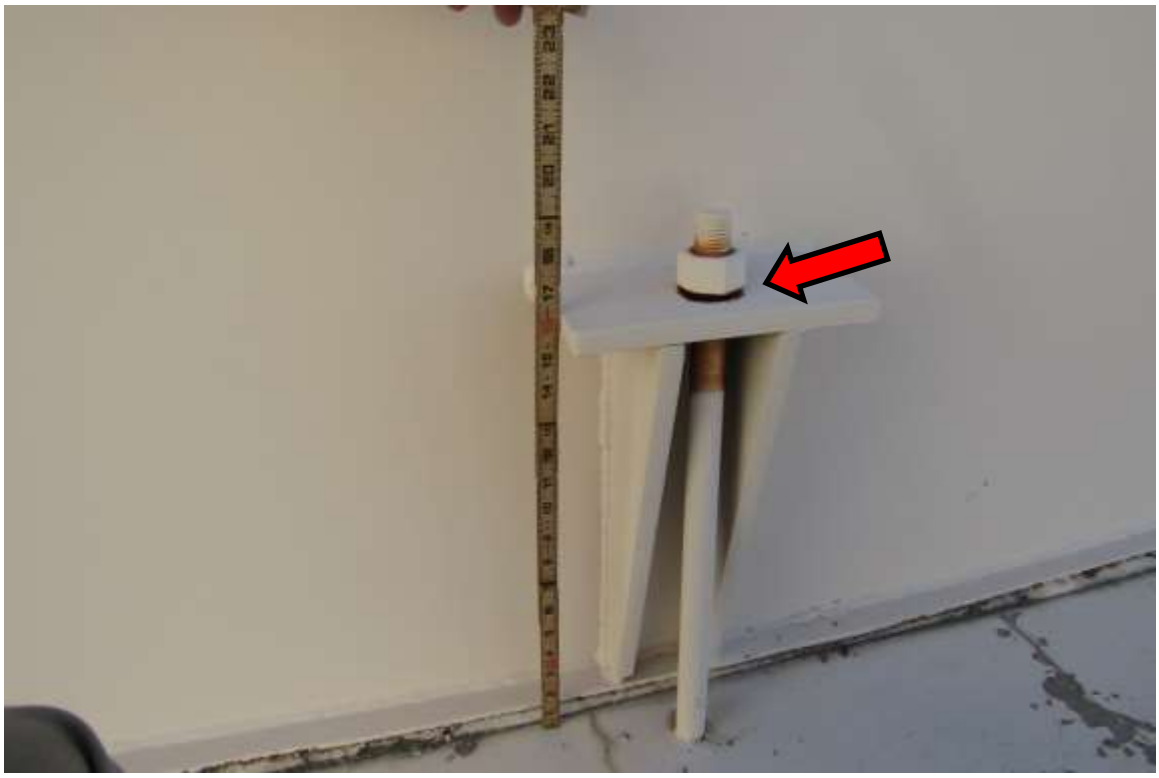


Photo shows the condition of one (1) of the sixteen (16) anchor bolts. AWWA D100-11; 3.8.1.1 Required anchorage states, “For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks.” We recommend cleaning the area around the anchor bolts, tightening the anchor nuts, then tack welding the circumference of the nut-to-base plate connections and bolt-to-nut connections to reinforce.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

Photo shows the condition of the 24” secondary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Replace 24” manway with 30” manway

Photos show the condition of the 12” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photos is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

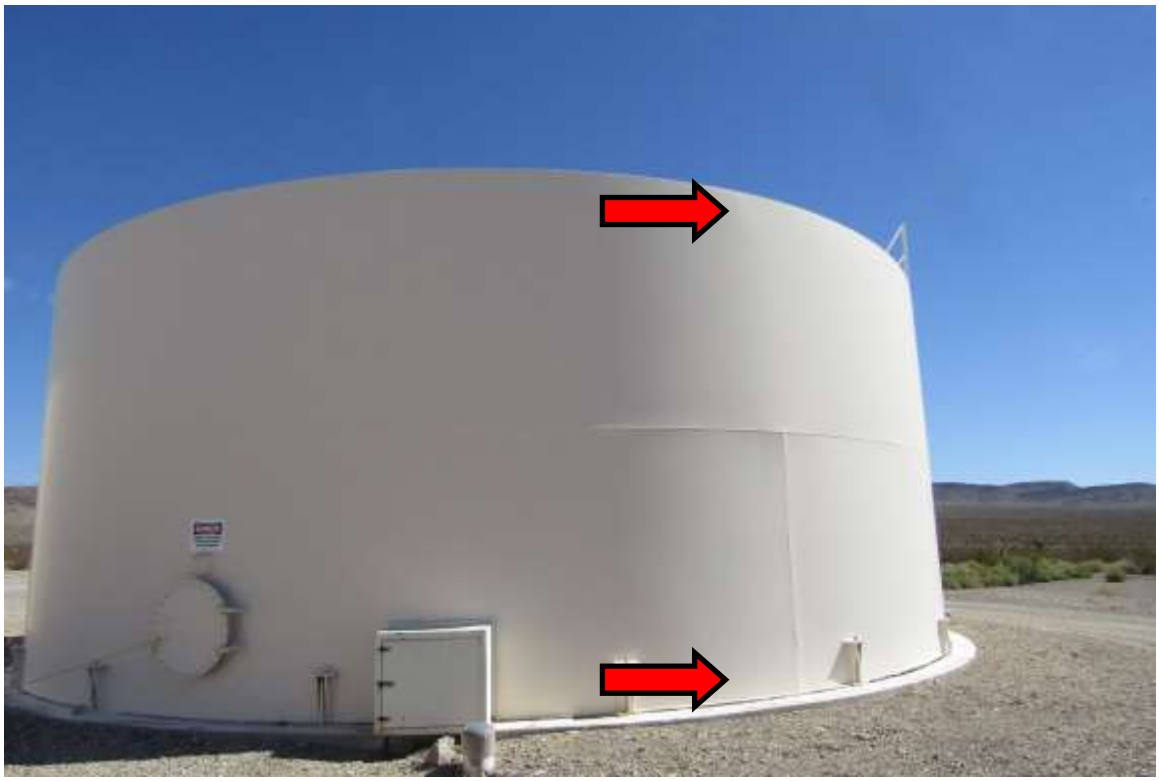
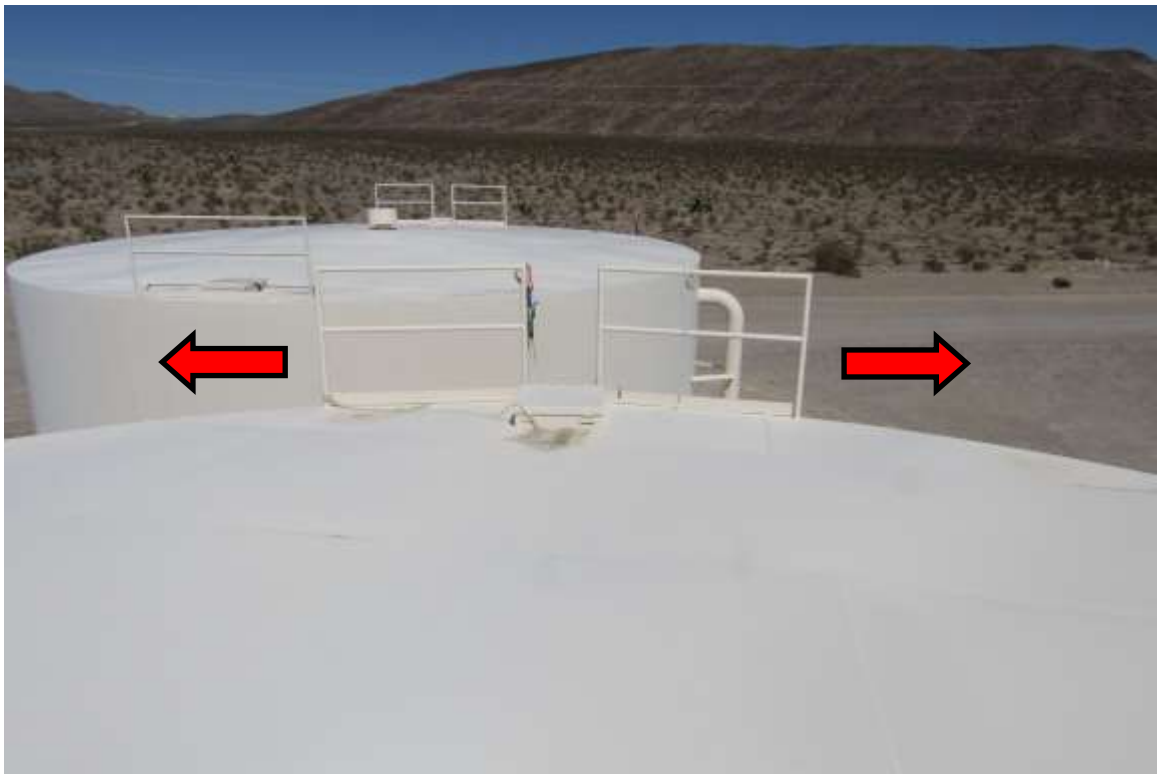


Photo shows the tank is not equipped with a liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, “A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained.” We recommend installing a liquid level indicator, complete with target board and float.



Photos show the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."
The tank is equipped with 42" high handrails to the left and right of the access ladder. We recommend extending the handrails around the circumference of the tank roof, complete with an intermediate rail, a toeboard, and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

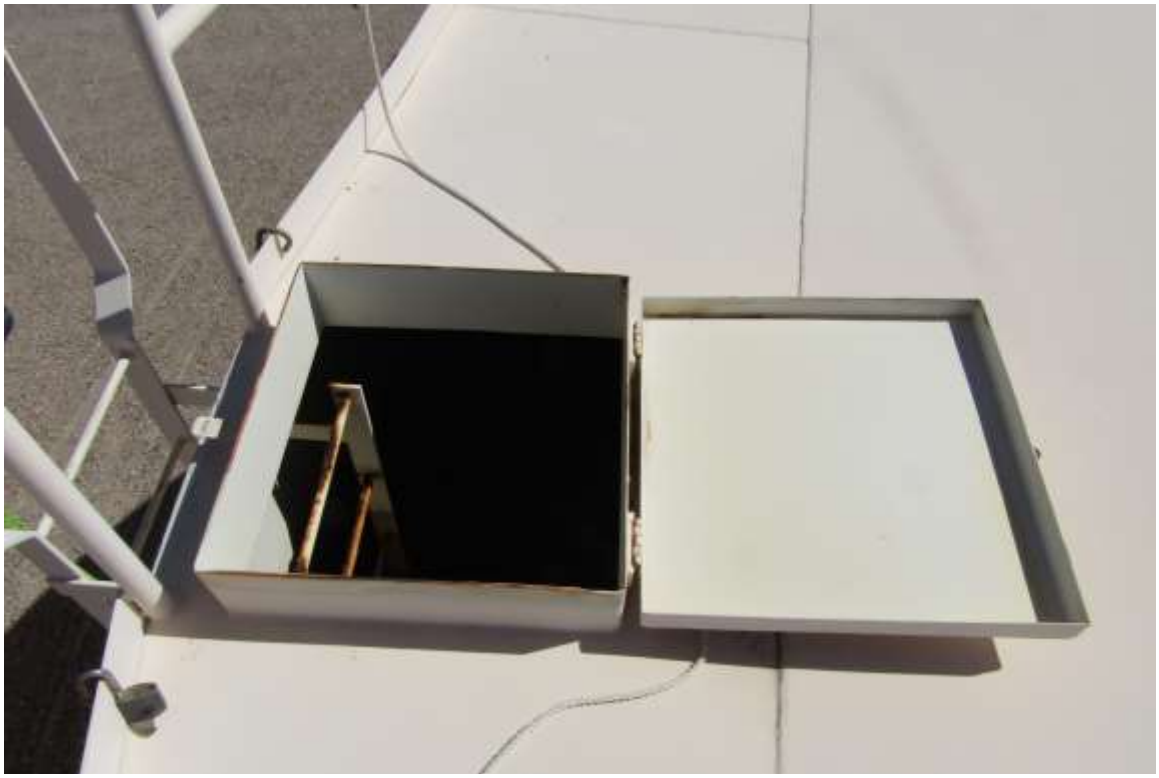


Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

Photo shows the condition of the 24” secondary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the secondary roof hatch.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

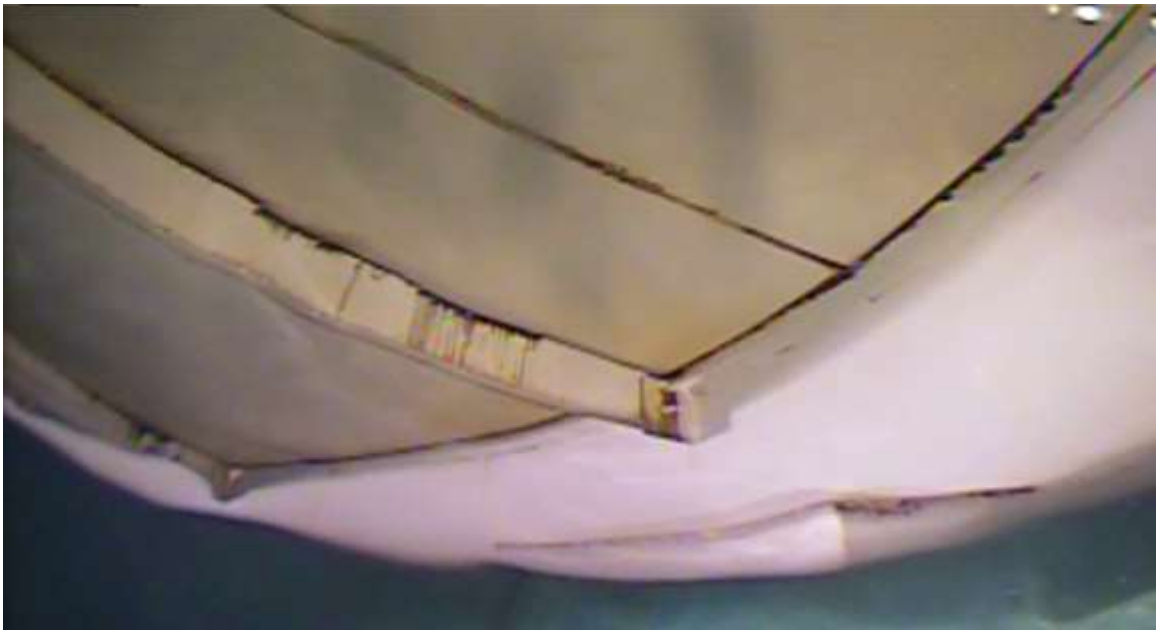
Photos show the existing 12” roof vent, which appears to be in good condition.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Primary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs and is seriously deteriorated. OSHA 1910.23(b)(10) states, "Any ladder with structural or other defects is immediately tagged "Dangerous: Do Not Use" or with similar language in accordance with § 1910.145 and removed from service until repaired in accordance with § 1910.22(d), or replaced; … " We recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the primary roof hatch.

This ladder should be replaced on an emergency basis.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*



Top photo shows the interior roof lap seams, which appear to be in good condition.

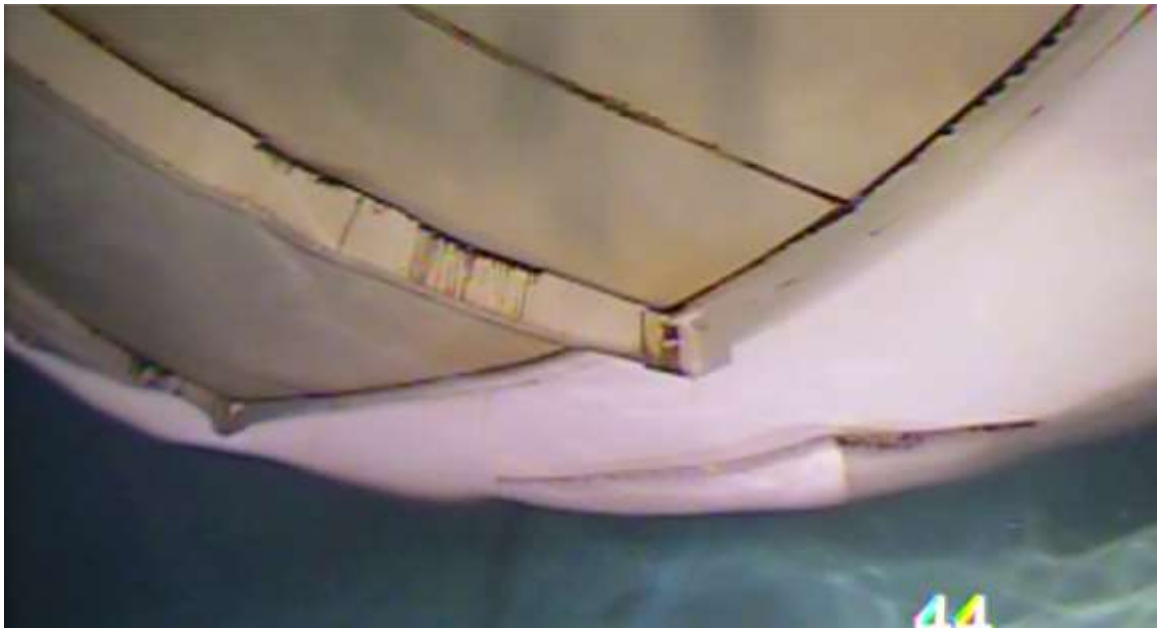
Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.

Photo shows a suction pipe on the interior of the tank, which is equipped with a properly sized anti-vortex plate to prevent formation of a vortex.



Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-H INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Well 4/4a South Area (6); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 24, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: 95-1756 B YEAR BUILT: 1995

ORIGINAL MANUFACTURER: Schuff Steel Company. CAPACITY: 150,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable/Fire

DIAMETER: 42'-6" HEIGHT: 16'-0"

OVERFLOW: 12" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@6.6	A0@9.1

Mil Thickness Testing								
Roof	6.3	8.1	11.5	11.9	9.2	8.0	3.8	9.3
	8.1	6.4						
Ring 2	9.5	9.1						
Ring 1	9.8	7.2	11.4	8.7	8.1	9.9	5.3	7.6

Ultrasonic Thickness Testing								
Roof	0.200	0.204	0.202	0.206	0.200	0.211	0.202	0.213
	0.205	0.209						
Ring 2	0.267	0.263						
Ring 1	0.261	0.265	0.272	0.269	0.267	0.270	0.269	0.270

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
2	Clear any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6" below top of foundation. This should be done by a local excavating company.					X
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
5	Clean the area around the anchor bolts, tighten the anchor nuts to specifications, weld steel plates over the shoe openings, install grease fittings and fill the spaces with grease, then tack weld on the circumference of the bolt-to-nut and nut-to-base plate connections.					X
6	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
8	Replace 24" secondary shell manway with 30" manway.		X	X		
9	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
10	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
11	Install a liquid level indicator complete with a target board and float.		X			
12	Extend the handrails around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
13	Post Confined Space Entry sign on primary roof hatch.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
14	Post Confined Space Entry sign on secondary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the suggested secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
16	Re-evaluate the tank exterior at next inspection cycle.					X
17	Replace the existing primary interior access ladder with a compliant ladder complete with standoffs every 10' on center. This ladder should be replaced on an emergency basis. In cold climates it's up to the owner's discretion on placement of internal ladders.		X			
	Install a cable type ladder safety device on the primary interior access ladder.			X		
19	Install a passive cathodic protection system.					X
22	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: C-1 North (Area 6); Mercury, NV
50,000 Gallon GST
September 21, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-O

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign
Install maintenance free galvanized steel bolts

Photos show the 8” overflow pipe system, which is equipped with a flapper valve as required by AWWA D100-11; 7.3 Overflow. We recommend installing a screen on the existing overflow pipe elbow.

Shell access ladder in above photos is 18” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, and posting a **Fall Protection Required** sign at the base of the ladder.

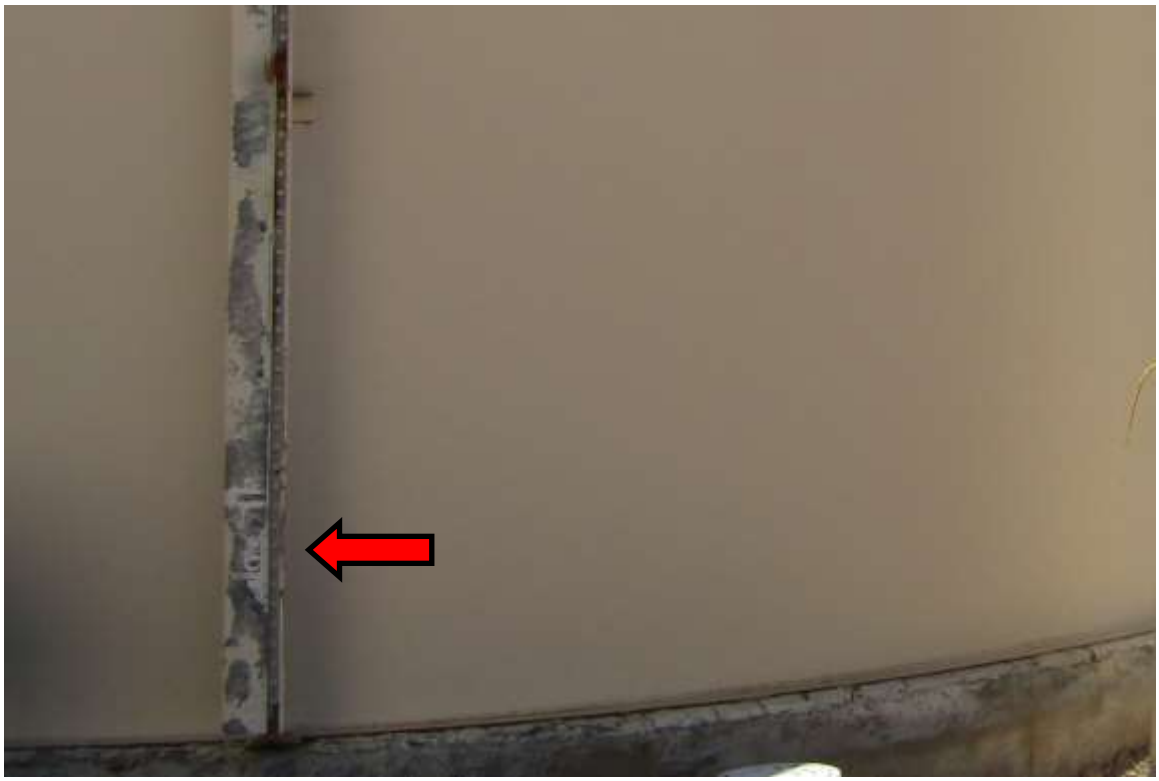


Photo shows the condition of the liquid level indicator. Due to the condition of the indicator, we recommend replacing the existing liquid level indicator.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

The tank is equipped with 42" high handrails to the left and right of the access ladder. We recommend extending the handrails around the circumference of the tank roof, complete with an intermediate rail, a toeboard, and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

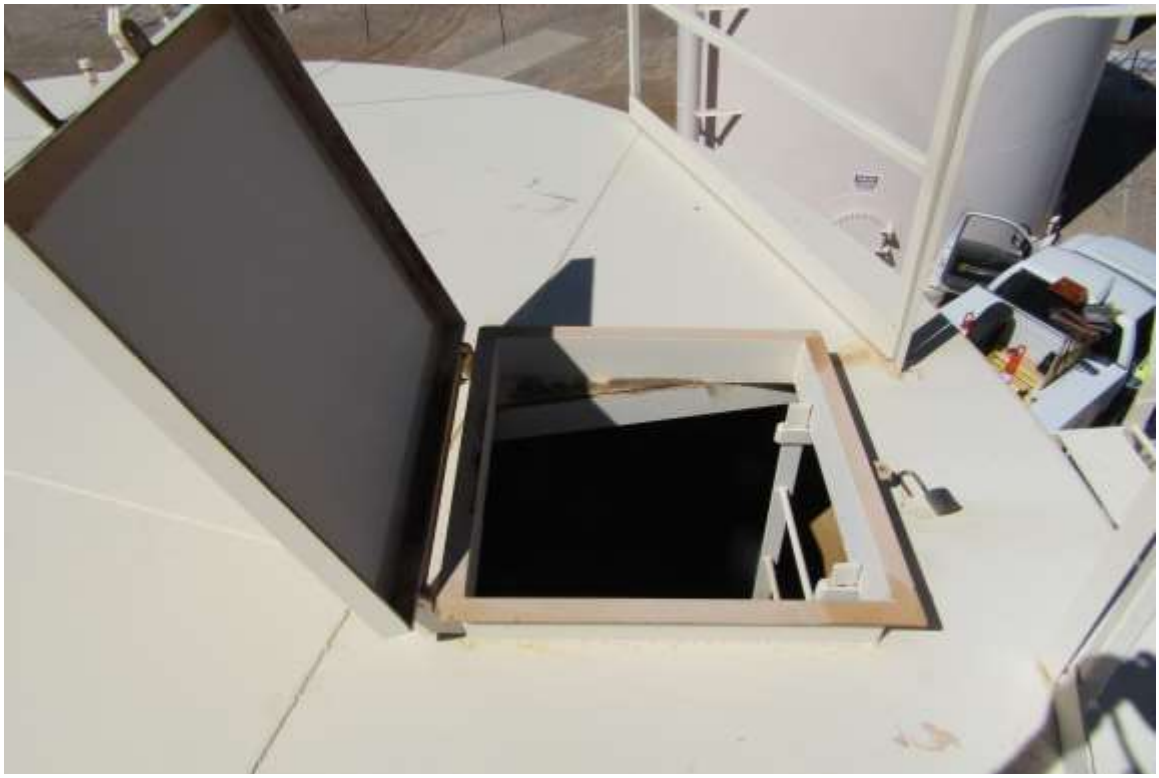


Photo shows the condition of the 30” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the suggested secondary roof hatch.

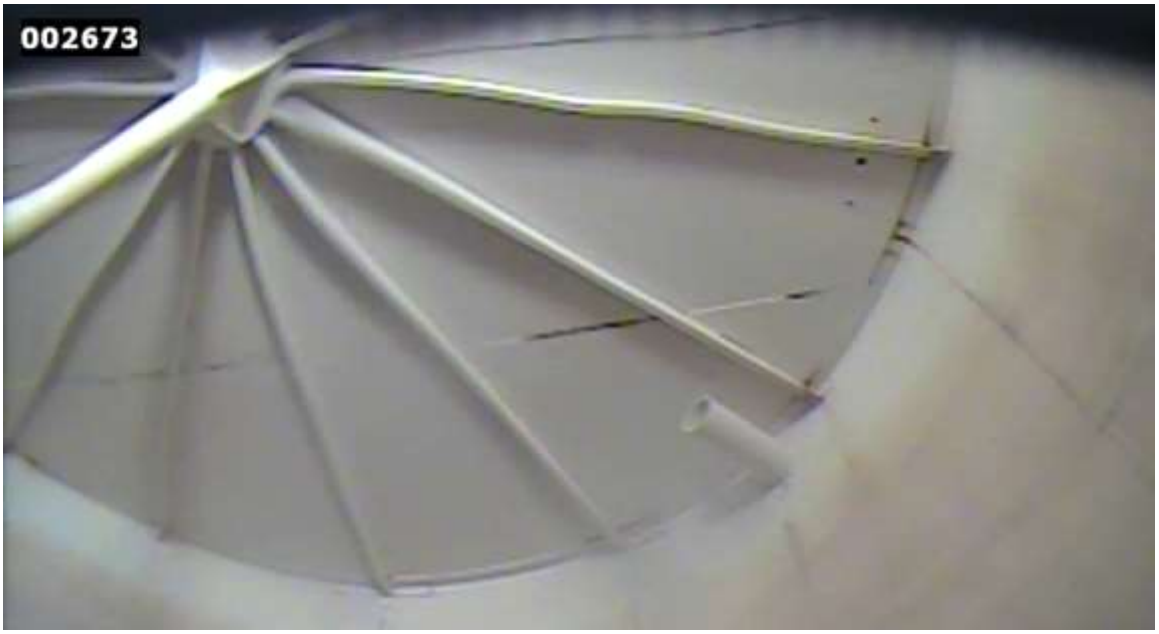
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

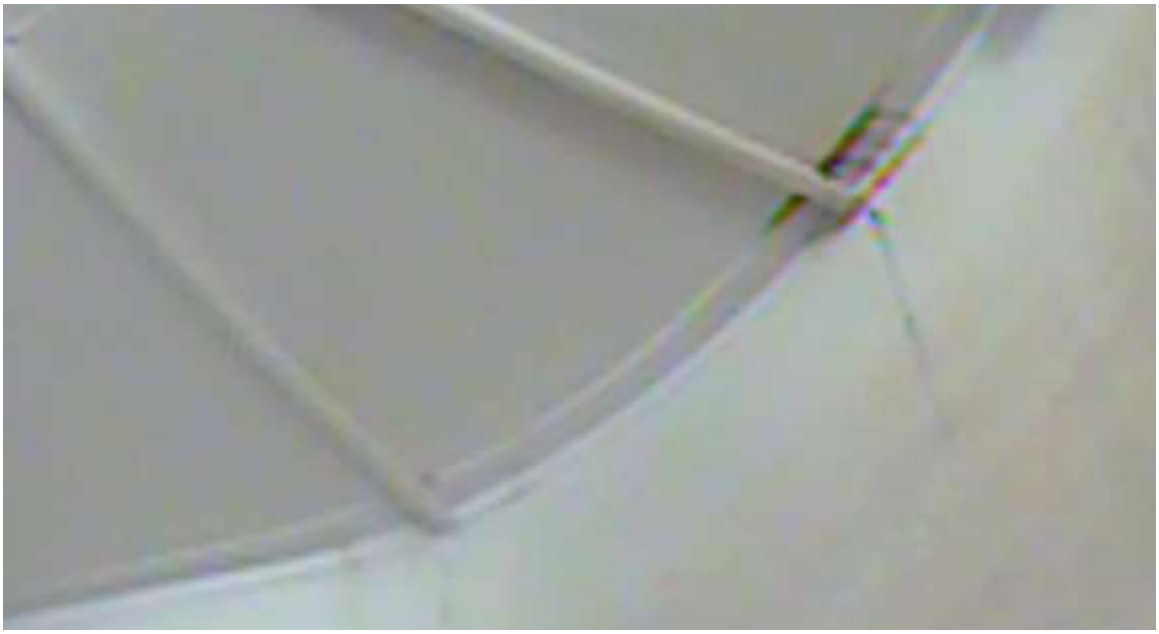
Photos show the condition of the existing 6" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Primary interior access ladder in above photo is 18” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the primary interior access ladder.

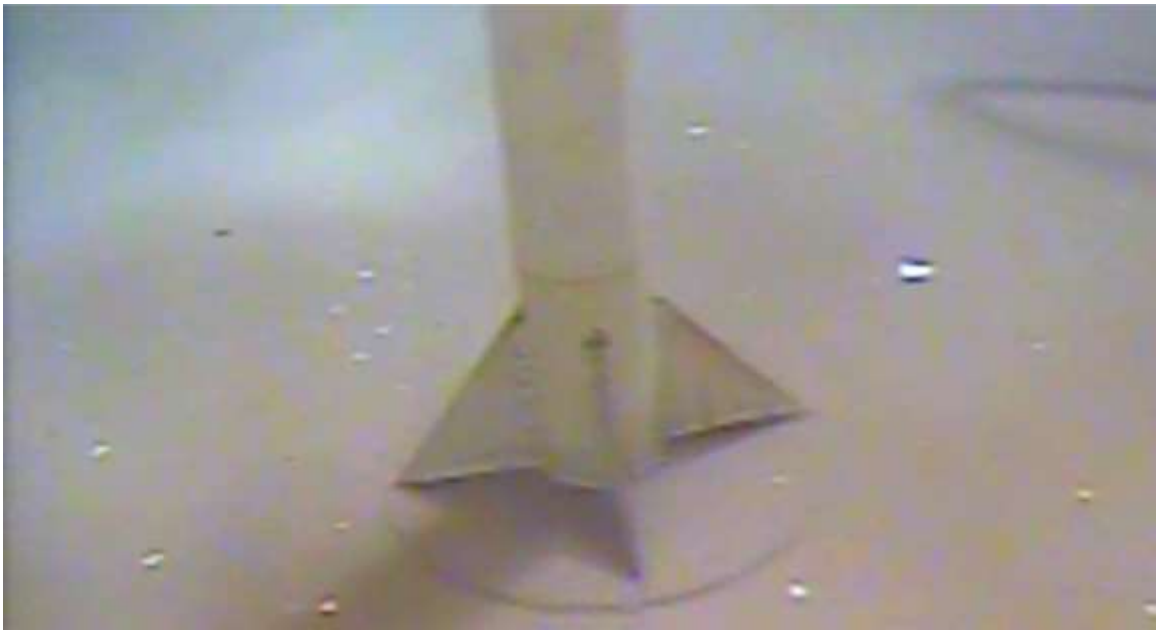




Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.



Top photo shows the center support column, which appears to be in good condition.

Bottom photo shows the support column baseplate-to-floor connection. Notice the baseplate is welded to the floor. Should the floor settle, the roof and structure could be damaged. We recommend disconnecting the support column baseplate from the floor and installing guides on the sides of the plate to ensure it stays in place.

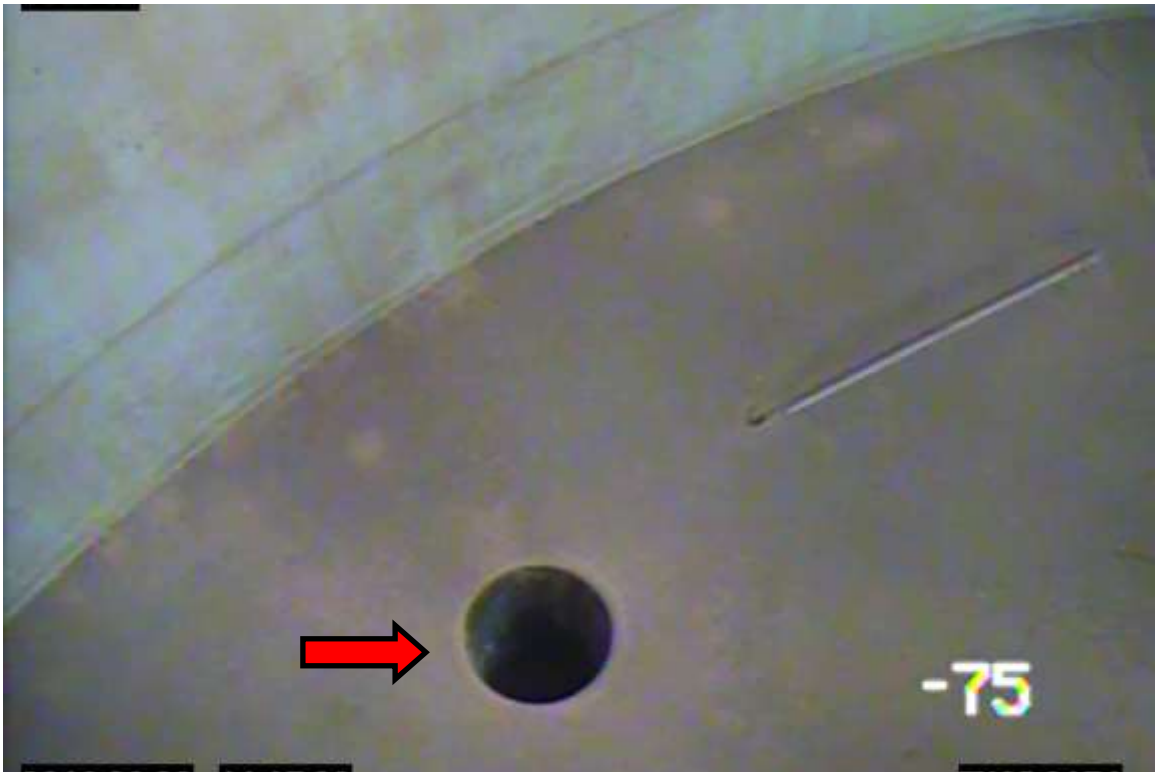
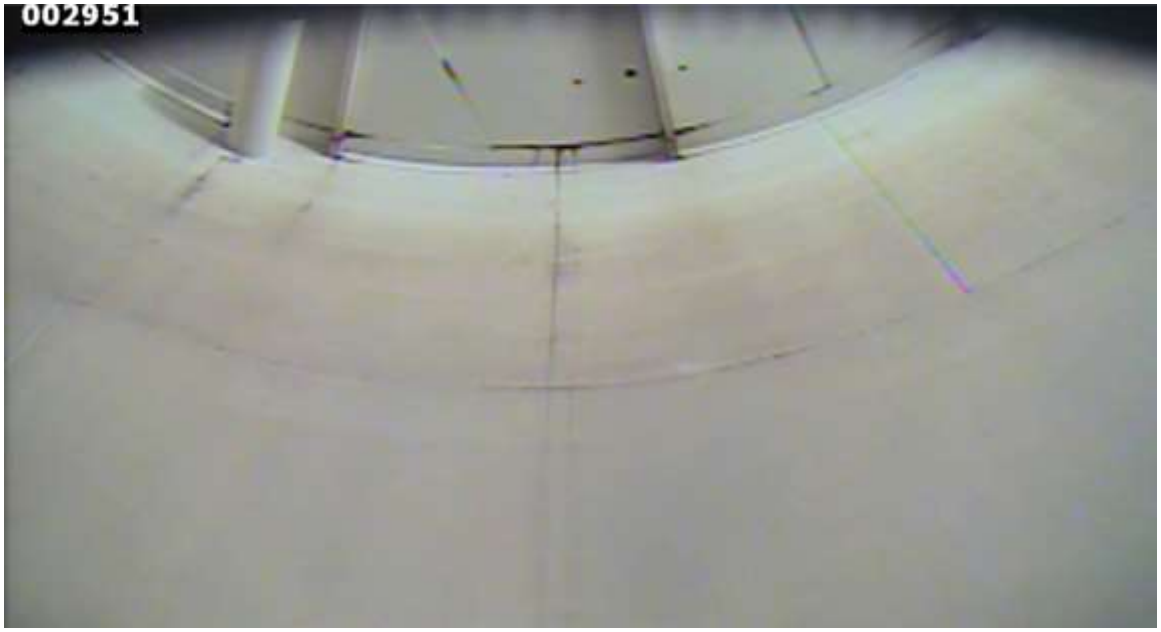


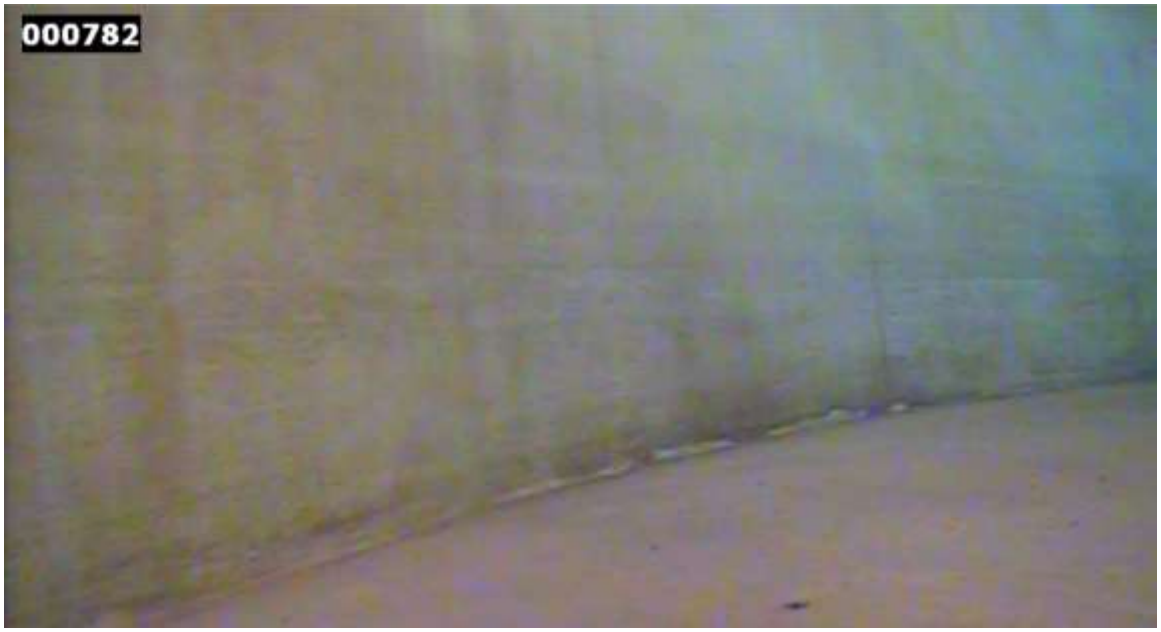
Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.





Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-O INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: C-1 North Area (6); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 21, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: Not Provided

ORIGINAL MANUFACTURER: Not Provided CAPACITY: 50,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 22'-0" HEIGHT: 20'-6"

OVERFLOW: 8" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@7.1	A0@9.4

Mil Thickness Testing								
Roof	4.1	6.9	5.3	8.0	8.2	3.7	7.1	2.5
	1.9	5.3						
Ring 3	7.2	7.5						
Ring 2	8.6	11.3						
Ring 1	5.4	5.8	4.3	4.5	6.9	6.5		

Ultrasonic Thickness Testing								
Roof	0.257	0.251	0.260	0.253	0.264	0.252	0.249	0.256
	0.251	0.263						
Ring 3	0.261	0.264						
Ring 2	0.278	0.275						
Ring 1	0.273	0.267	0.265	0.267	0.271	0.274		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry sign on secondary shell manway.			X		
	Install maintenance free galvanized steel bolts on secondary shell manway.					X
7	Install a screen on the overflow pipe elbow.		X			
8	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Replace the liquid level indicator.		X			
10	Extend the handrails around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the suggested secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on suggested secondary interior access ladder.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Re-evaluate the tank exterior at next inspection cycle.					X
14	Install anti-skid rung covers on the primary interior access ladder.		X			
	Install a cable type ladder safety device on the primary interior access ladder.			X		
17	Disconnect the support column baseplate from the floor and install guides on the sides of the plate.				X	
18	Install a mixing system. Electrical work to be done by others if required.		X			
19	Install a passive cathodic protection system.					X
21	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: C-1 South (Area 6); Mercury, NV
50,000 Gallon GST
September 20, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-P

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. NFPA 22-2018; 12.2.1.2 states, "… the junction of the tank bottom and the top of the concrete foundation shall be tightly sealed to prevent water from entering the base." We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks.

Photo shows the condition of one (1) of the twenty-one (21) anchor bolts. AW-WA D100-11; 3.8.1.1 Required anchorage states, “For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks.” We recommend cleaning the area around the anchor bolts, tightening the anchor nuts, then tack welding the circumference of the nut-to-base plate connections and bolt-to-nut connections to reinforce.

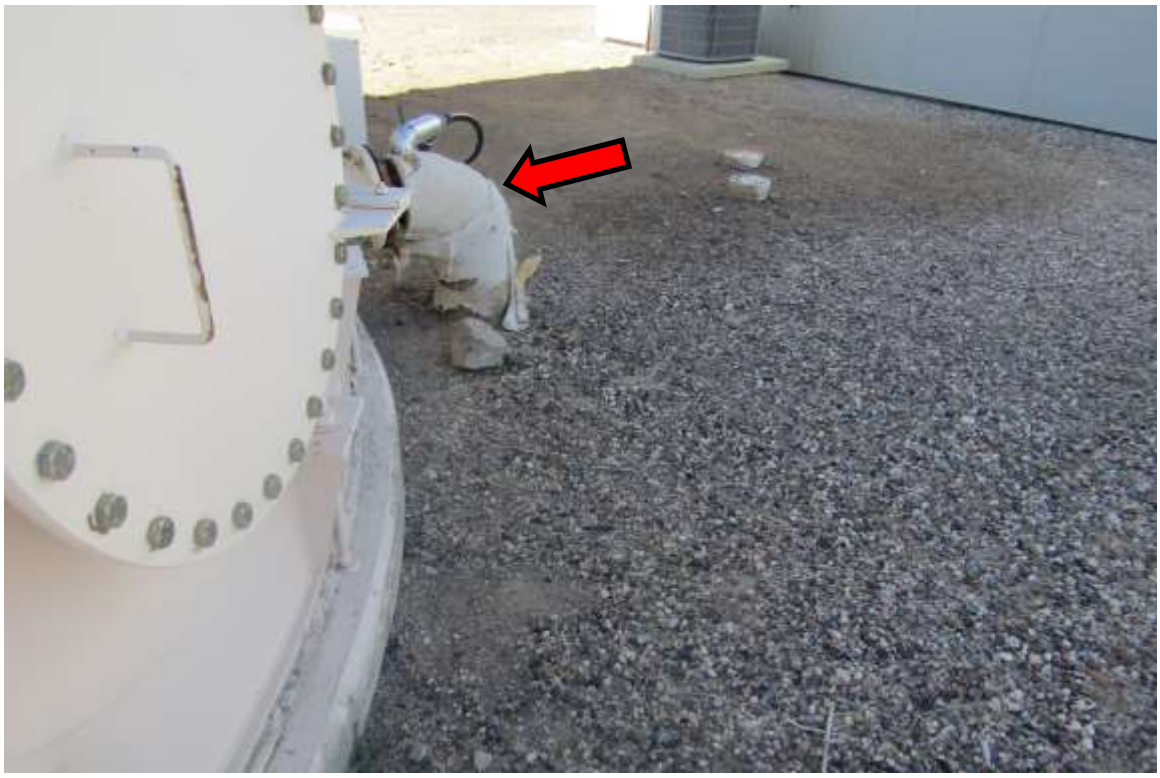


Photo shows the existing drain valve, which appears to be in good condition.

Photo shows the condition of the 24” primary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

Photo shows the condition of the 24” secondary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Replace 24” manway with 30” manway
Install maintenance free galvanized steel bolts

Photos show the condition of the 10” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photos is 18” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, “A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained.” We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

The tank is equipped with 43" high handrails to the left and right of the access ladder. We recommend extending the handrails around the circumference of the tank roof, complete with an intermediate rail, a toeboard, and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

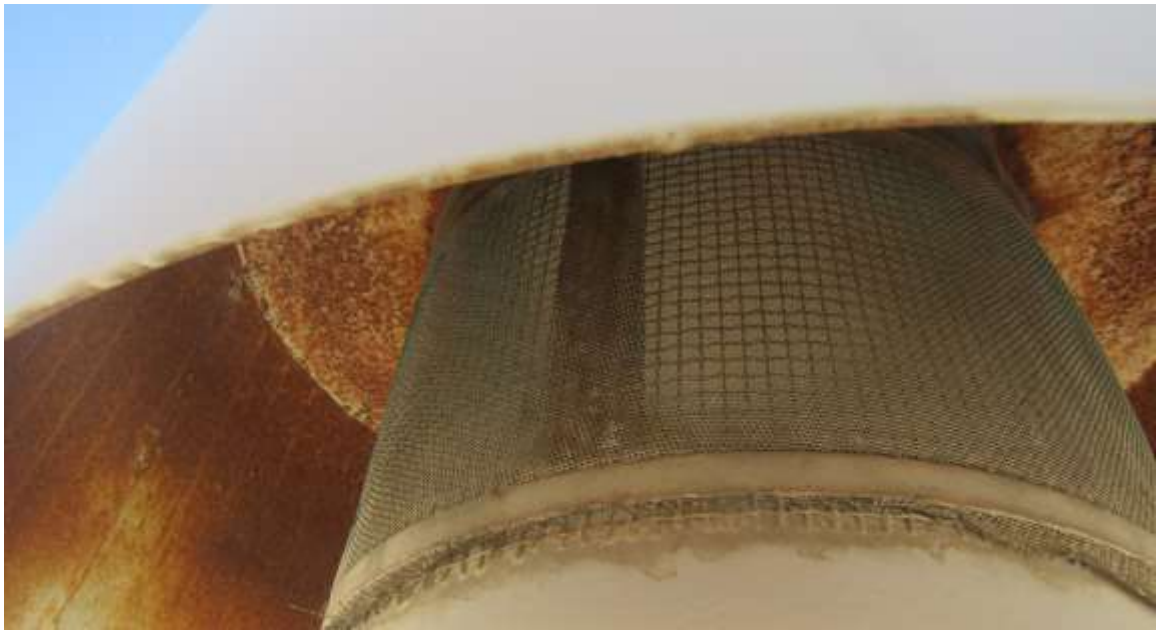
We recommend:

Post **Confined Space Entry** sign

Photo shows the condition of the 24” secondary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign



Photos show the existing 12” roof vent, which appears to be in good condition.

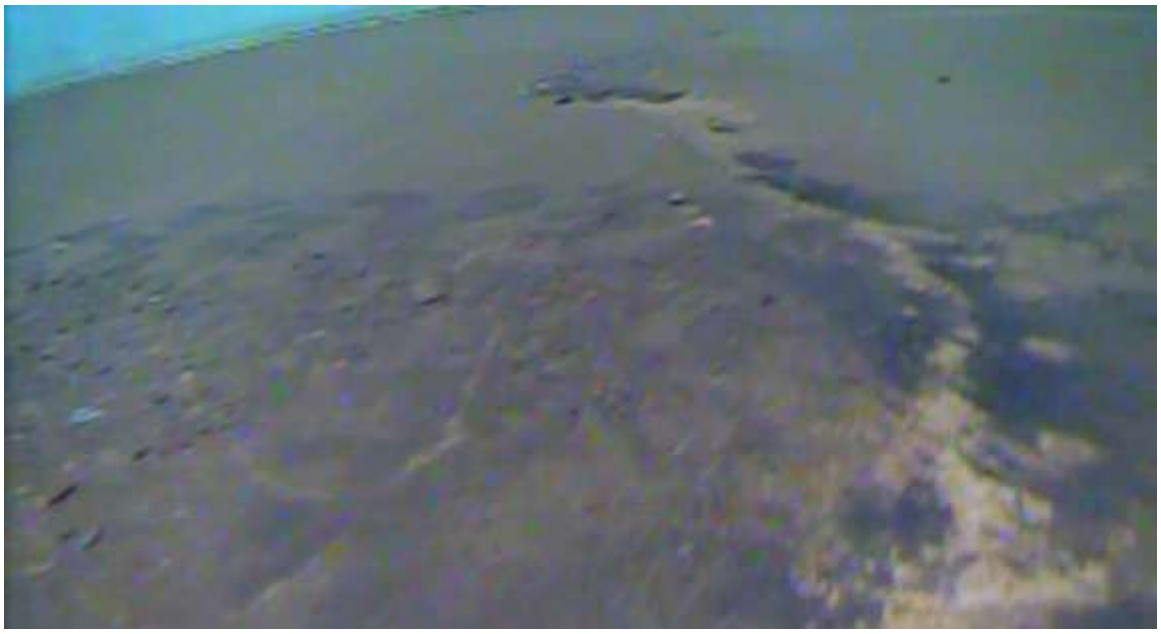
Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Primary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the primary interior access ladder.

Secondary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the secondary interior access ladder.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.



Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.

Photo shows a suction pipe on the interior of the tank. NFPA 22-2018; 14.2.13.1 states, " The discharge outlet for every suction tank shall be equipped with an anti-vortex plate assembly." We recommend installing an elbow be added to the existing suction pipe in the down direction and installing a properly sized anti-vortex plate on the elbow to prevent formation of a vortex.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-P INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: C-1 South Area (6); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 20, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: 1995

ORIGINAL MANUFACTURER: Schuff Steel Company CAPACITY: 50,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable/Fire

DIAMETER: 22'-0" HEIGHT: 21'-0"

OVERFLOW: 10" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@7.0	A0@9.9

Mil Thickness Testing								
Roof	6.3	8.0	3.1	7.9	6.2	6.7	4.5	6.5
	5.3	7.0						
Ring 3	5.9	7.1						
Ring 2	9.1	4.7						
Ring 1	6.1	8.4	5.3	6.2	6.9	3.0	7.4	8.2

Ultrasonic Thickness Testing								
Roof	0.231	0.225	0.237	0.233	0.227	0.229	0.234	0.230
	0.229	0.222						
Ring 3	0.253	0.260						
Ring 2	0.282	0.278						
Ring 1	0.356	0.379	0.357	0.359	0.356	0.363	0.355	0.368

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Clean the area around the anchor bolts, tighten the anchor nuts to specifications, then tack weld on the circumference of the nut-to-base plate connections and bolt-to-nut connections.					X
8	Replace 24" manway with 30" manway.			X		
	Install maintenance free galvanized steel bolts on secondary shell manway.					X
9	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
10	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
11	Install a liquid level indicator complete with a target board and float.		X			
12	Extend the handrails around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
13	Post Confined Space Entry sign on primary roof hatch.			X		
14	Post Confined Space Entry sign on secondary roof hatch.			X		
16	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install anti-skid rung covers on the primary interior access ladder.		X			
	Install a cable type ladder safety device on the primary interior access ladder.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
18	Install anti-skid rung covers on the secondary interior access ladder.		X			
	Install a cable type ladder safety device on the secondary interior access ladder.			X		
20	Install a passive cathodic protection system.					X
22	Install an elbow to be added to the existing suction pipe and a properly sized anti-vortex plate on the elbow.		X			
23	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Las Vegas, NV
RE: CP Hill; Las Vegas, NV
500,000 Gallon GST
April 3, 2019
Mr. Anthony Myers
Senior Procurement
(702) 295-0404
Job No. 318590-B

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Mission Support and Test Services, LLC
RE: CP Hill; Las Vegas, NV
500,000 Gallon GST
Job No. 318590-B

Photo shows the tank is not secured with fencing. We recommend fencing the area around the tank. We further recommend posting a **No Trespassing** sign and a **Warning, Tampering With This Facility is a Federal Offense** (US code title 42, section 300i-1) sign. Fence installation to be done by others.

Photo shows the condition of the foundation. AWWA D100-11; 12.7.1 Height aboveground states, “The tops of the concrete foundations shall be a minimum of 6” above the finished grade, unless otherwise specified.” We recommend clearing any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6” below top of foundation. This should be done by a local excavating company.

Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

We further recommend inserting sacrificial cathodic protection rods radially every 15' beneath the floor of the tank.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and appears to be in good condition.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

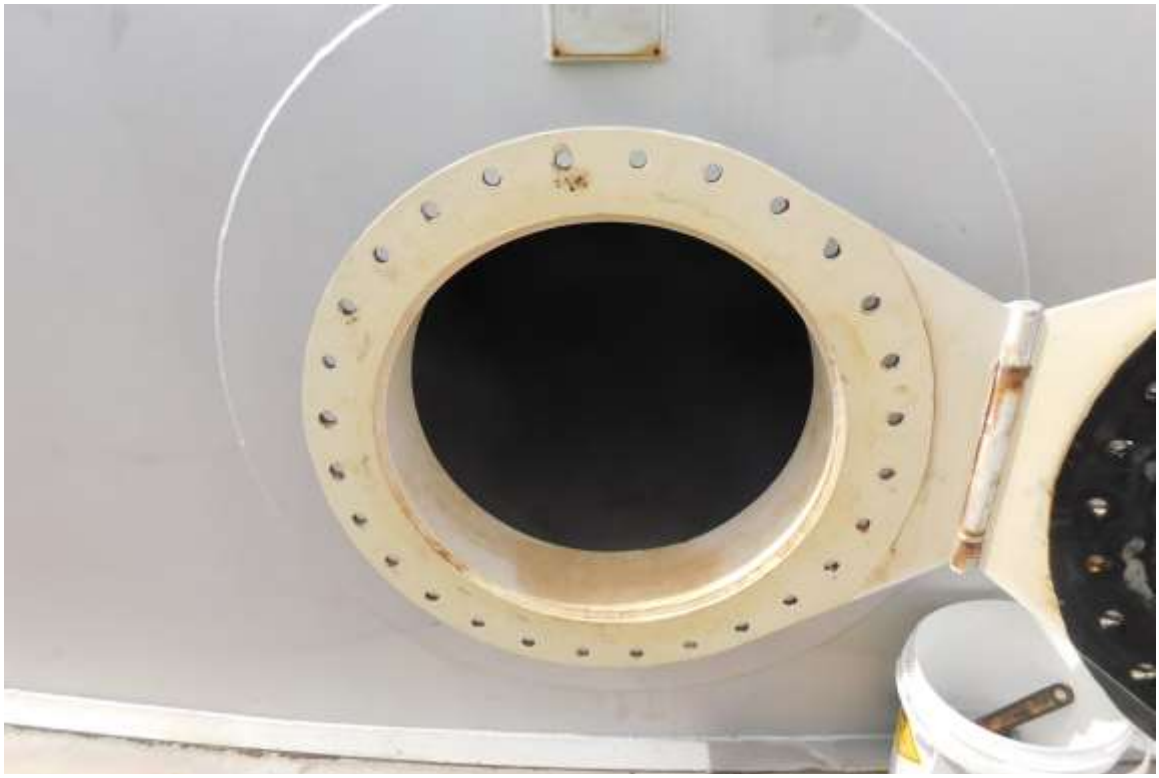


Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

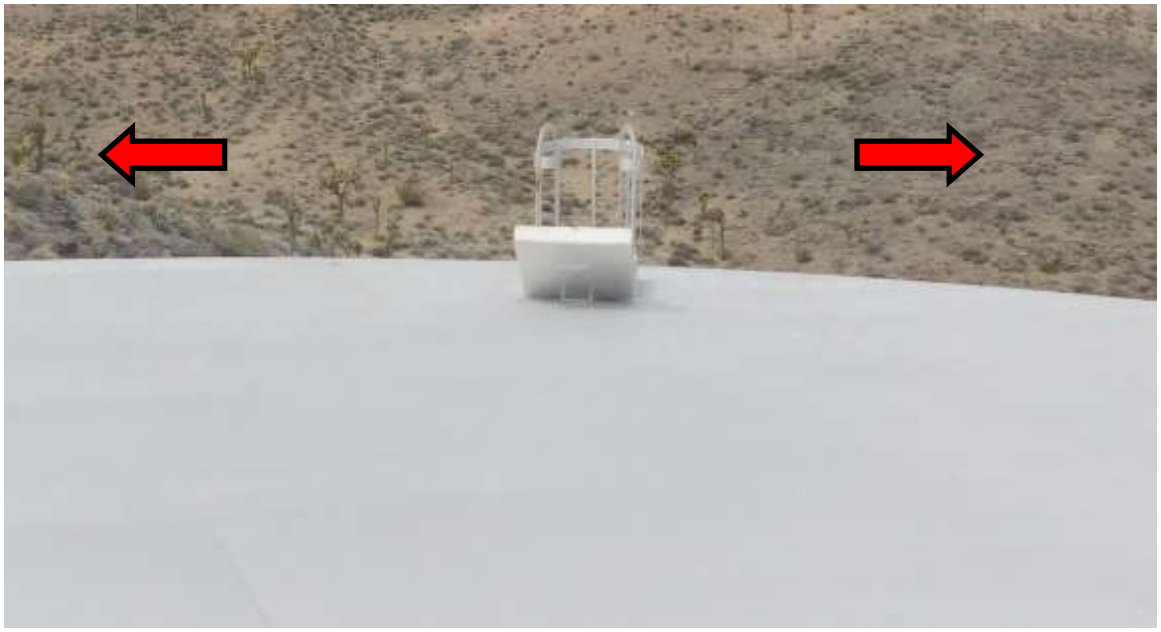
Install 30” secondary shell manway 180º from primary manway

Photo shows the condition of the 8” overflow pipe system. AWWA D100-11; 7.3 Overflow states, “An internal overflow is defined as an overflow with piping inside the tank container. The consequences of an overflow failure, which can empty the tank contents, shall be considered when an internal overflow is provided.” We recommend replacing the internal overflow system with a properly sized exterior overflow system, which will be complete with a weir box on the interior, standoffs every 10' on center extended to grade, an elbow fitted with a flapper valve and screen to prevent the ingress of contaminants, and a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photos show the condition of the liquid level indicator. We recommend repairing the existing liquid level indicator, replacing damaged parts as needed, then adjusting and calibrating the unit. We further recommend replacing sticker on target board.



Photos show the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems." We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign
Install lock on primary hatch

Primary interior access ladder in above photo is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers and a cable type ladder safety device on the primary interior access ladder.

Photo shows the condition of the 24” secondary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

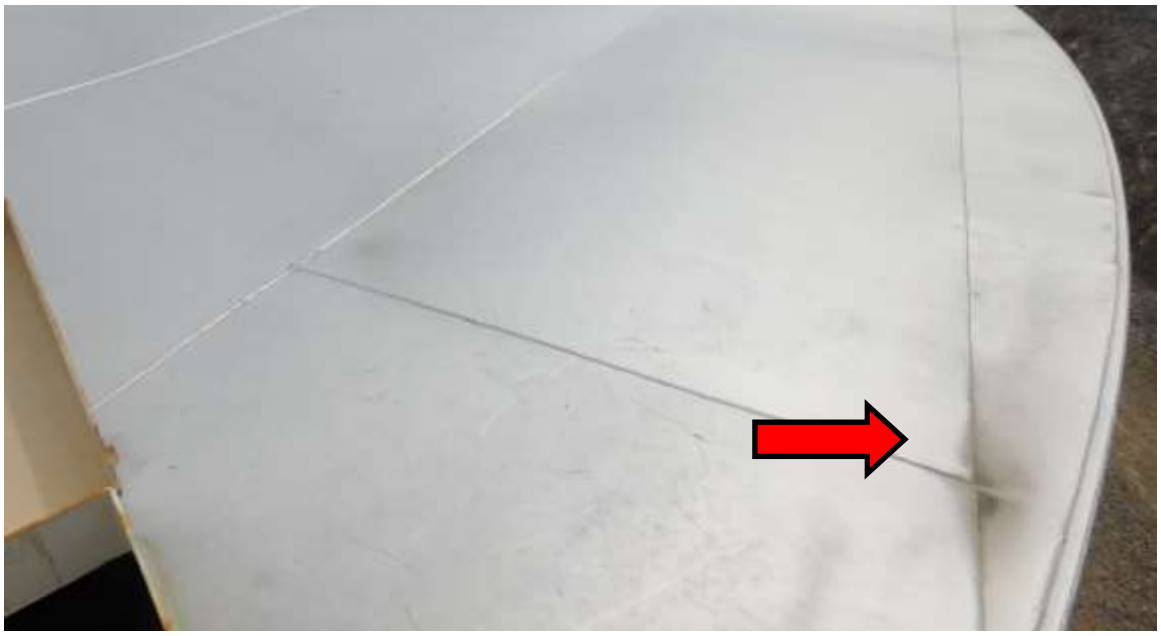
We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the secondary roof hatch.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Mission Support and Test Services, LLC
RE: CP Hill; Las Vegas, NV
500,000 Gallon GST
Job No. 318590-B

Photos show the condition of the existing 18" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.



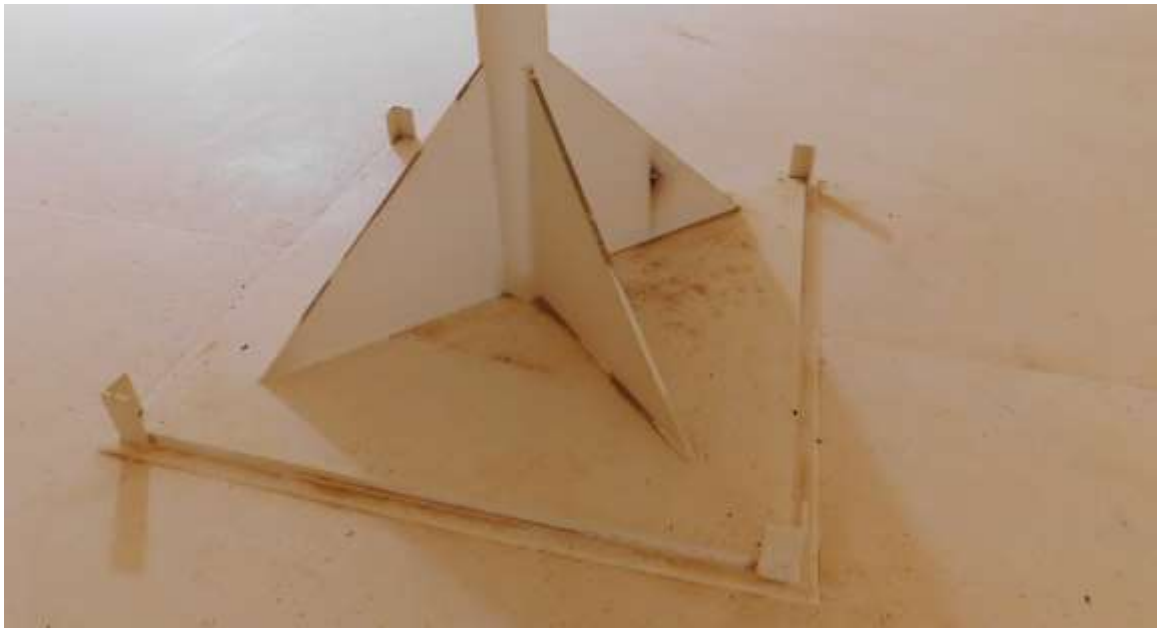
Top photo shows the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

However, bottom photo shows water is ponding on the roof, causing deterioration of the paint and metal. We recommend hand tool cleaning of all ponding areas, then applying a commercial epoxy adhesive filler, as needed, to prevent ponding of water.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.



Top photo shows the center support column, which appears to be in good condition.

Bottom photo shows the support column baseplate-to-floor connection, which is disconnected from the floor and equipped with guides on the sides of the plate to ensure it stays in place, and appears to be in good condition.

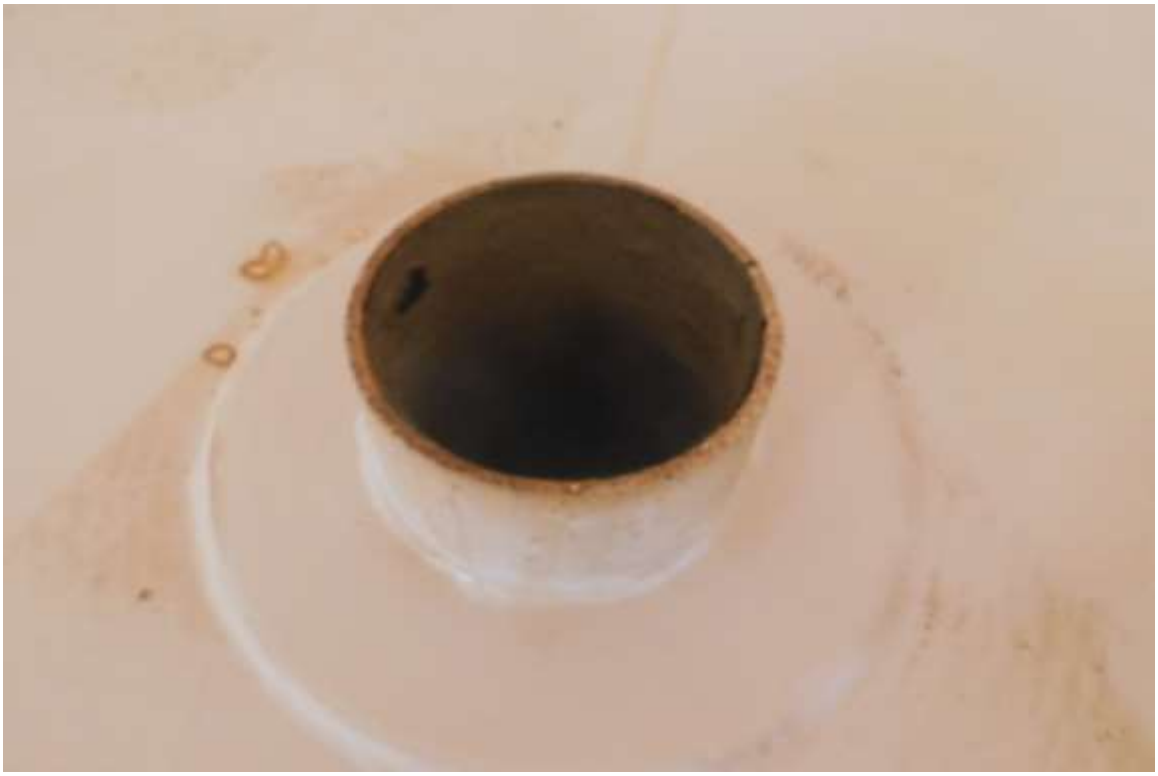


Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show no sediment in the tank.

We recommend installing a passive cathodic protection system.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318590-B INSPECTOR: Christian Fenwick (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Anthony Myers

TITLE: Senior Procurement

MAILING ADDRESS: Nevada National Security Site Las Vegas, NV

PHYSICAL ADDRESS: Nevada National Security Site Las Vegas, NV

E-MAIL: MyersAJ@nv.doe.gov

CITY, STATE: Las Vegas, NV ZIP: N/A COUNTY: Nye County

TELEPHONE: (702) 295-0404 FAX: Not Provided

LOCATION OF TANK: CP Hill; Las Vegas, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Las Vegas, NV
April 3, 2019
Mr. Anthony Myers
Senior Procurement
(702) 295-0404

ORIGINAL CONTRACT NO: A 115 YEAR BUILT: 1991

ORIGINAL MANUFACTURER: Not Provided CAPACITY: 500,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 74'-0" HEIGHT: 16'-0"

OVERFLOW: 8" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative

Mil Thickness Testing								
Floor	13.7	11.6	10.8	10.7	11.9	14.4	12.5	17.4
Floor	17.3							
Floor	14.1	12.7	14.8	13.2	14.1	14.0	13.3	15.4
	12.0	16.2	13.0	15.4	11.3			
Floor	13.7							
Base	11.1	10.6	11.8	8.7	7.2	5.4	6.4	5.9
	5.3	6.8	6.8	5.8	5.2	5.1	6.1	6.2
	5.7	6.7	6.7	5.1				

Ultrasonic Thickness Testing								
Floor	0.251	0.252	0.132	0.251	0.251	0.121	0.258	0.256
	0.124	0.128	0.259					
Floor	0.253							
Floor	0.251	0.169	0.268	0.266	0.132	0.261	0.160	0.265
	0.246	0.110	0.246					
Floor	0.265							
Base	0.257	0.267	0.267	0.258	0.269	0.269	0.256	0.256
	0.2268	0.263	0.262	0.257	0.252	0.253	0.251	0.268
	0.252	0.252	0.252	0.253				

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
2	Fence the area around the tank. Fence installation to be done by others.		X			
	Post a Warning, Tampering With This Facility is a Federal Offense (US code title 42, section 300i-1) sign.		X			
	Post a No Trespassing sign.		X			
3	Clear any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6" below top of foundation. This should be done by a local excavating company.					X
4	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
	Insert sacrificial cathodic protection rods radially every 15' beneath the floor of the tank.					X
6	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
7	Install 30" secondary shell manway 180° from primary manway.		X	X		
8	Replace the internal overflow system with a properly sized exterior overflow system, complete with a weir box on the interior, standoffs every 10' on center, an elbow fitted with a flapper valve and screen, and a splash pad. *Splash pad to be installed by owner.*		X			
9	Install anti-skid rung covers on exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
10	Repair the liquid level indicator and replace damaged parts as needed, then adjust and calibrate the unit.		X			
	Replace sticker on target board.		X			

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
11	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
12	Post Confined Space Entry sign on primary roof hatch.			X		
	Install lock on primary roof hatch.					X
13	Install anti-skid rung covers on primary interior access ladder.		X			
	Install a cable type ladder safety device on primary interior access ladder.			X		
14	Post Confined Space Entry sign on secondary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on secondary interior access ladder.			X		
15	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
16	Re-evaluate the tank exterior at next inspection cycle.					X
	Hand tool clean all ponding areas, then apply a commercial epoxy adhesive filler as needed.					X
20	Install a mixing system. Electrical work to be done by others if required.		X			
21	Install a passive cathodic protection system.					X
22	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Camp North (Area 6); Mercury, NV
317,000 Gallon GST
September 15, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-E

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the 8” flange. Currently there is no drain valve. We recommend installing a frost proof drain valve on the flange / threaded connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

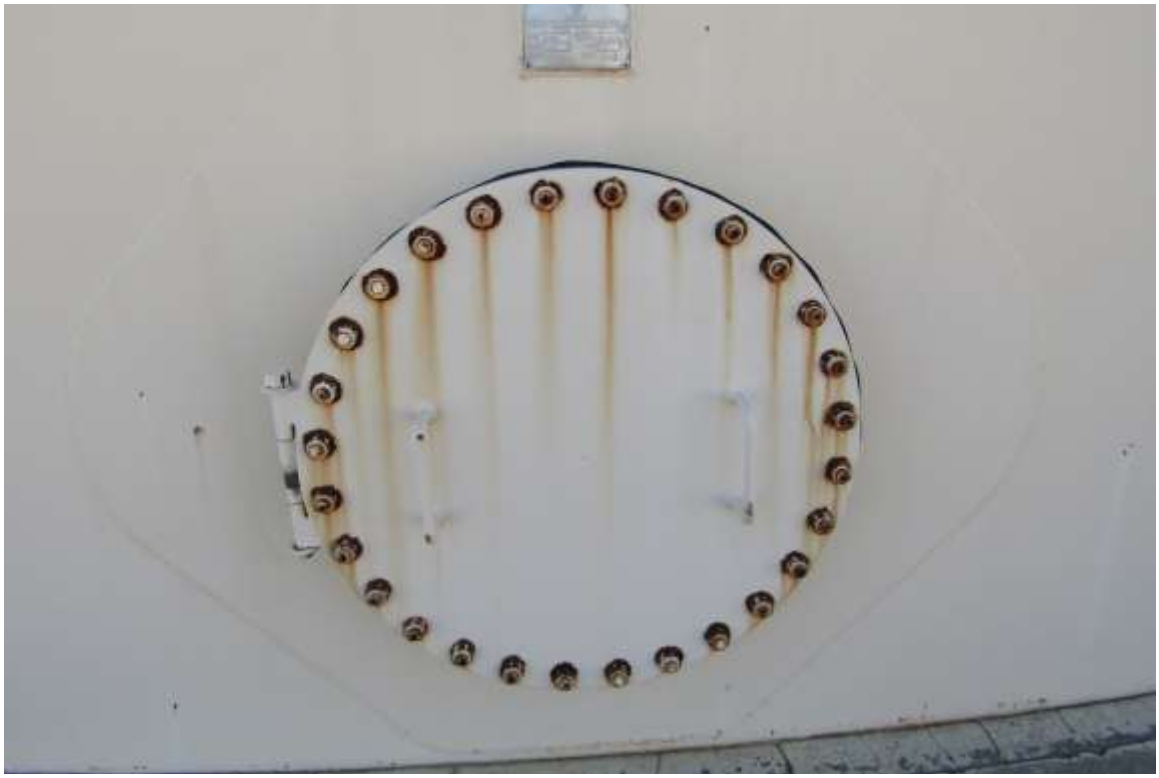


Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign
Install maintenance free galvanized steel bolts

Photos show the condition of the 6” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply.

Shell access ladder in above photo is not equipped with anti-skid rungs, and is only 15” wide. OSHA 1910.23(b)(4) states, “Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders,… ” We recommend installing an OSHA compliant shell access ladder complete with standoffs every 10' on center, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photos show the condition of the existing 8" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.

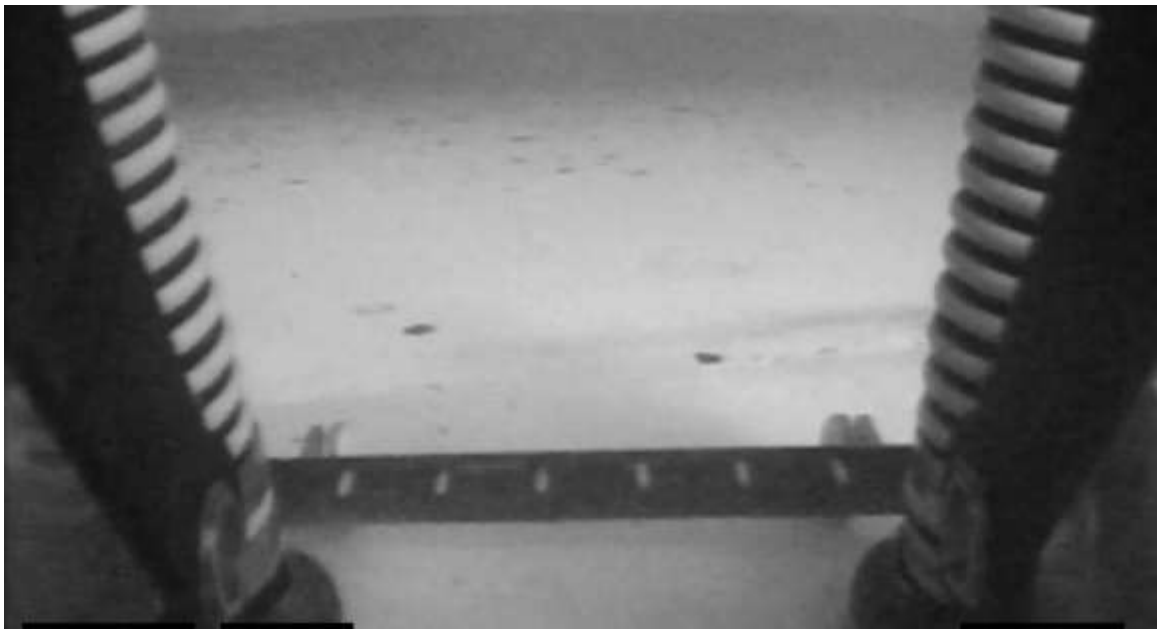
Top photo shows the center support column, which appears to be in good condition.

Bottom photo shows the support column baseplate-to-floor connection, which appears to be in good condition.

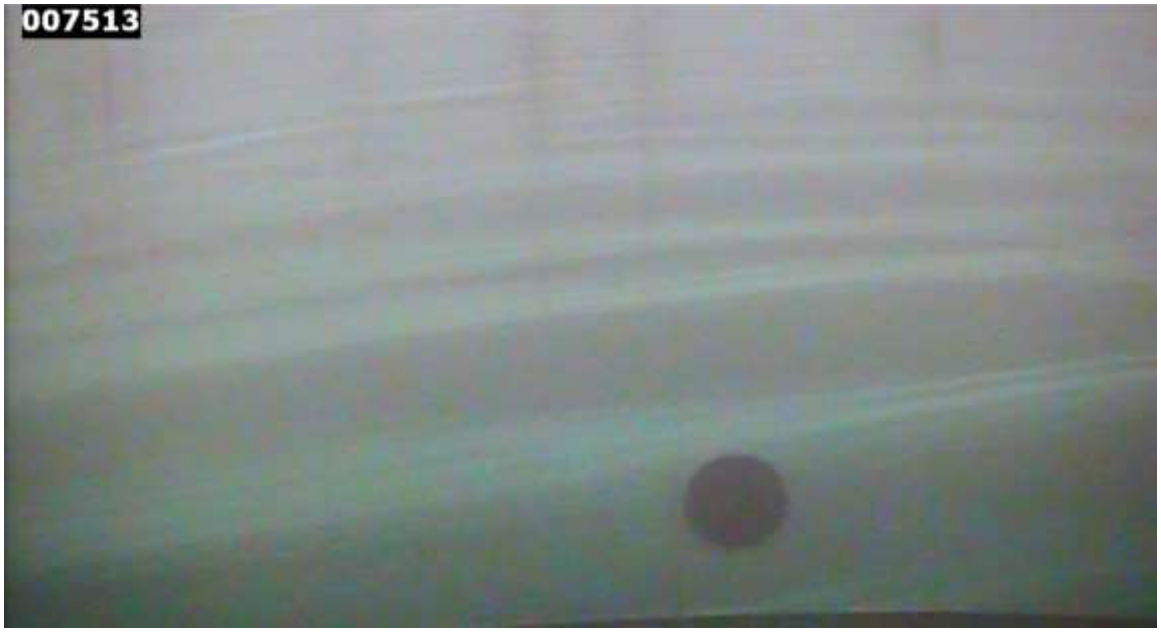
Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.



Photos show the tank interior during a cleanout.



Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-E INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Camp North Area (6); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 15, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: TS-1336 YEAR BUILT: 1964

ORIGINAL MANUFACTURER: General American Trans. CAPACITY: 317,000 Gallon

DATE OF LAST INSPECTION: 2013 TYPE: Potable

DIAMETER: 60'-0" HEIGHT: 16'-0"

OVERFLOW: 6" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A1@6.0	A1@9.3

Mil Thickness Testing								
Roof	9.3	9.9	9.6	7.4	7.8	9.1	8.3	9.1
	7.6	7.9						
Ring 2	6.9	7.9						
Ring 1	5.4	2.8	3.2	6.8	6.3	5.8	6.1	4.0
	4.1	3.9	2.3	3.2				

Ultrasonic Thickness Testing								
Roof	0.222	0.230	0.227	0.230	0.223	0.234	0.228	0.225
	0.232	0.230						
Ring 2	0.272	0.275						
Ring 1	0.275	0.278	0.274	0.285	0.273	0.269	0.267	0.264
	0.271	0.269	0.277	0.271				

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Install a frost proof drain valve on the flange / threaded connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry signs on suggested secondary shell manway.			X		
	Install maintenance free galvanized steel bolts on primary shell manway.					X
7	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen.		X			
8	Install a compliant exterior shell access ladder complete with standoffs every 10' on center.			X		
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
10	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install compliant interior access ladders complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on primary and suggested secondary interior access ladders.			X		
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install a mixing system. Electrical work to be done by others if required.		X			
18	Install a passive cathodic protection system.					X
20	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Booster (Area 5); Mercury, NV
50,000 Gallon STP
September 24, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-M

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the condition of the foundation. AWWA D100-11; 12.7.1 Height aboveground states, “The tops of the concrete foundations shall be a minimum of 6” above the finished grade, unless otherwise specified.” We recommend clearing any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6” below top of foundation. This should be done by a local excavating company.

Photo shows the condition of the foundation. We recommend trimming the fiberboard back to where it comes in contact with the tank base. Once this is done allowing for a clean edge, apply caulk/grout around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the condition of one (1) of the twelve (12) anchor bolts. AWWA D100-11; 3.8.1.1 Required anchorage states, “For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks.” We recommend cleaning the area around the anchor bolts, tightening the anchor nuts, then tack welding the circumference of the nut-to-base plate connections and bolt-to-nut connections to reinforce.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign

Photos show the condition of the 6” overflow pipe system. We recommend disconnecting the pipe from the underground drain then installing an air break complete with a flapper valve and screen to prevent the ingress of contaminants into the water supply, and a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is 16” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

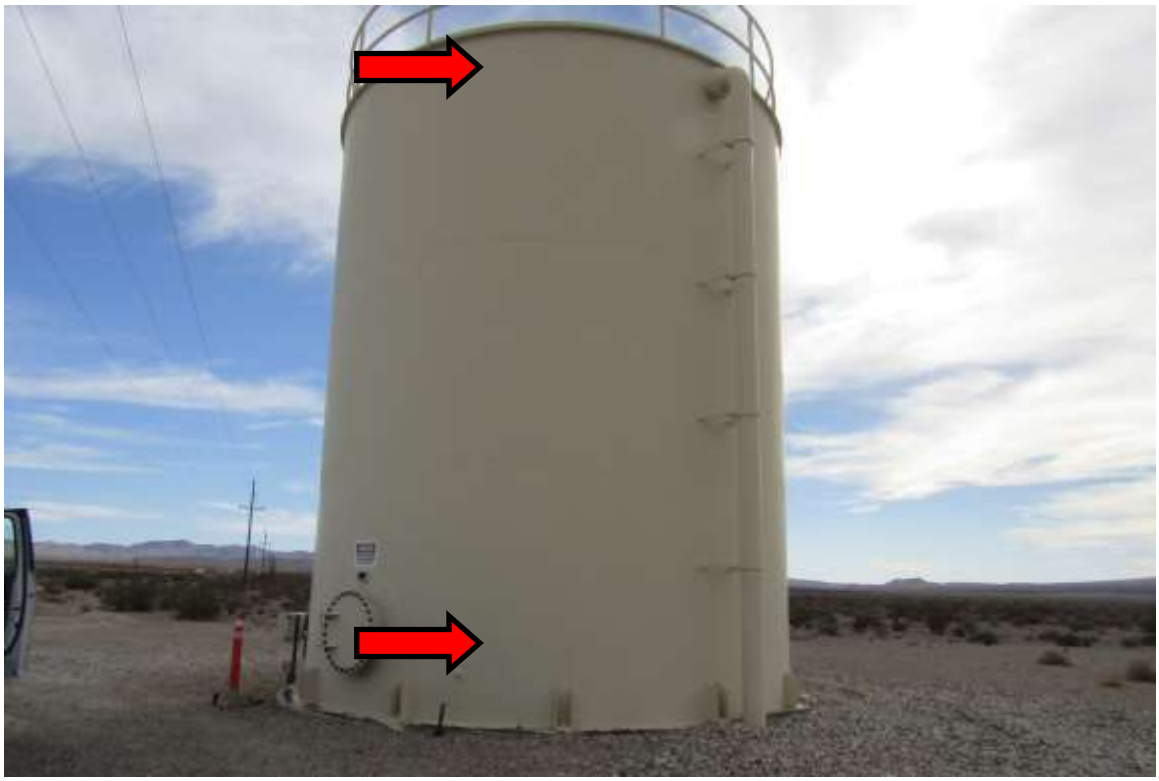


Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is equipped with a 43” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

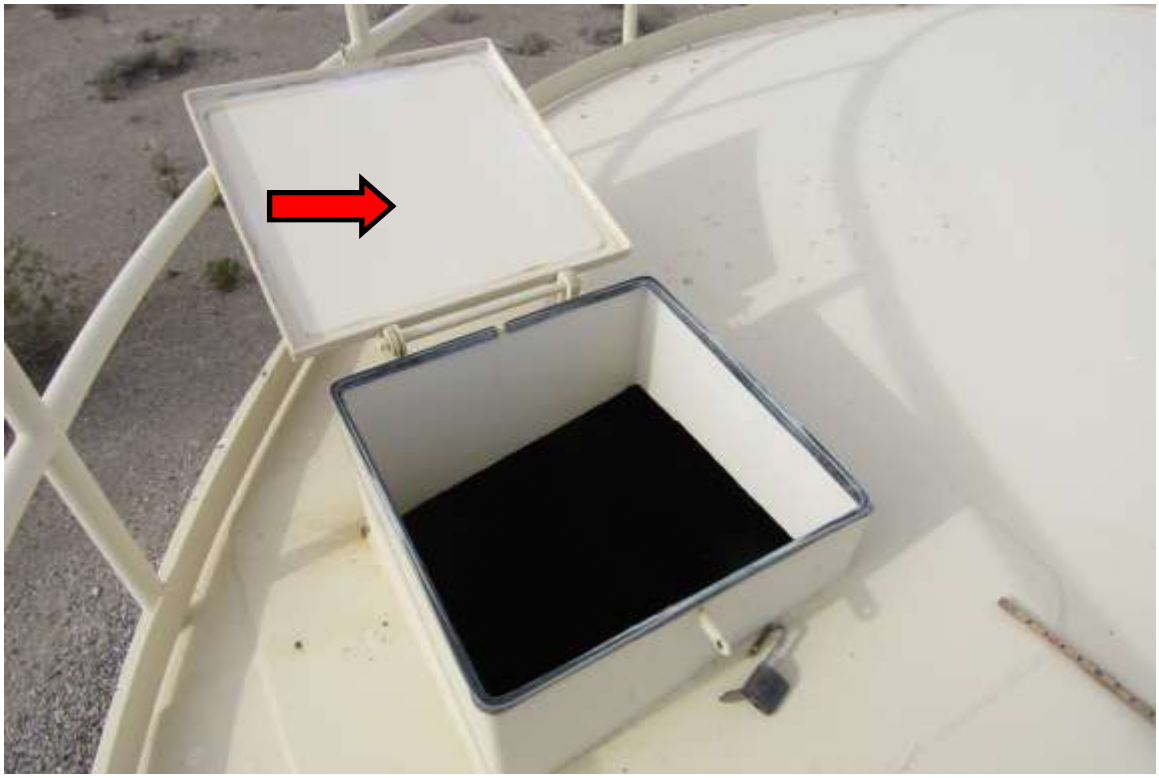


Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** sign

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photos show the condition of the existing 24" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

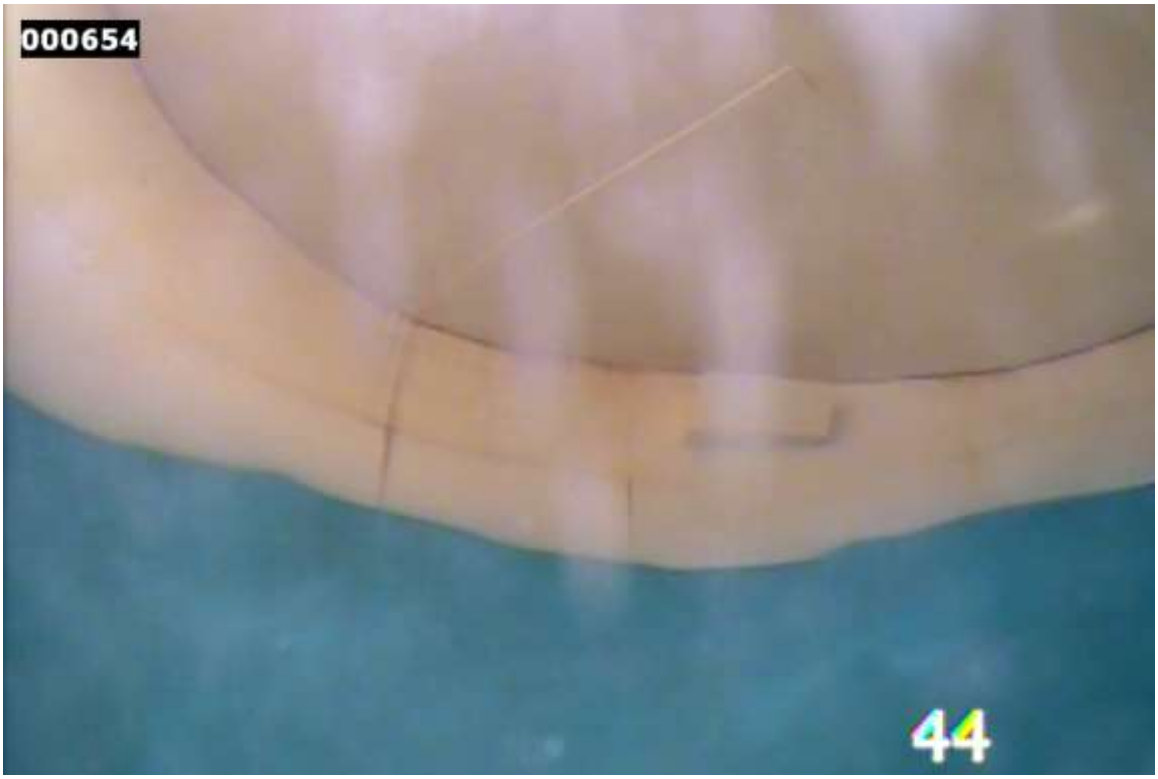
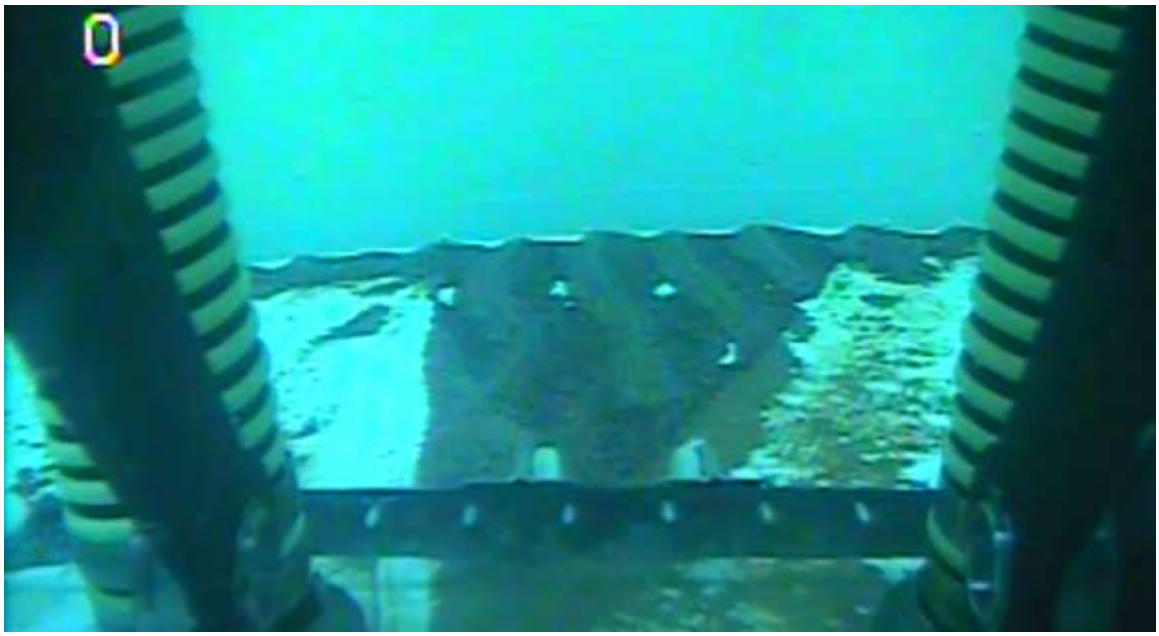


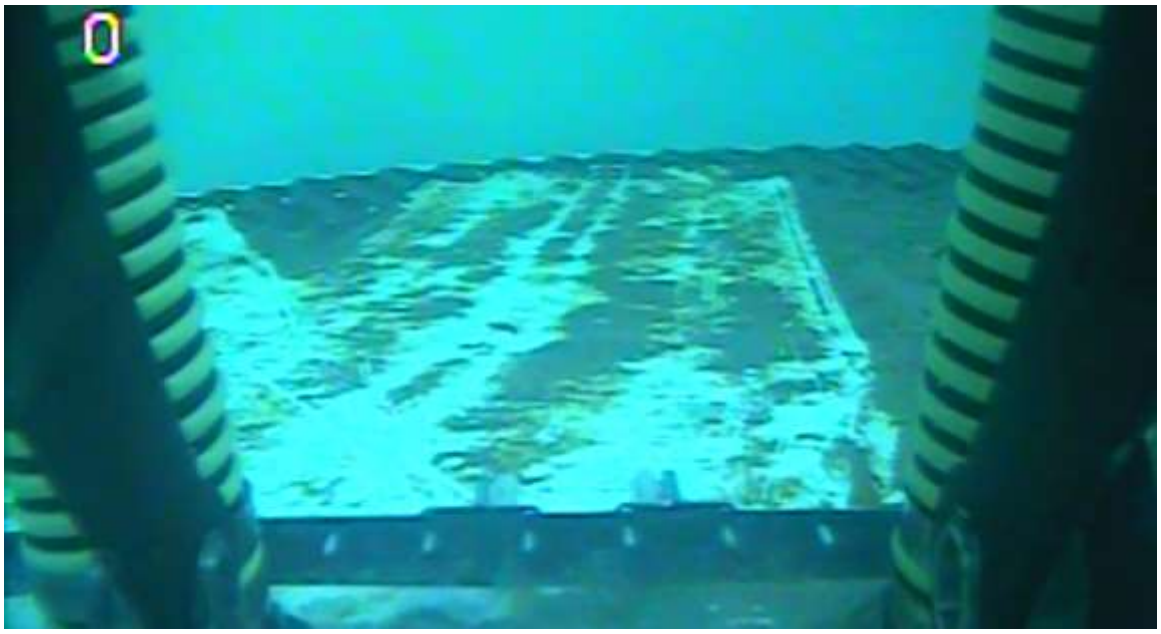
Photo shows the interior roof, which appears to be in good condition.

Photo shows an inlet/outlet pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.





Photos show the tank interior during a cleanout.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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www.pttg.com

STANDPIPE INSPECTION REPORT

JOB NO: 318448-M INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Booster Area (5); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 24, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: 1982

ORIGINAL MANUFACTURER: Brown Tank & Steel CAPACITY: 50,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 20'-0" HEIGHT: 24'-0"

OVERFLOW: 8" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A@15.2	A0@14.9

Mil Thickness Testing								
Roof	19.2	21.8	25.3	20.1	18.5	15.7	15.9	17.3
	15.0	19.4						
Ring 4	19.8	22.5						
Ring 3	22.1	24.0						
Ring 2	26.4	25.7						
Ring 1	12.8	15.4	19.3	13.9	17.6	12.5		

Ultrasonic Thickness Testing								
Roof	0.231	0.242	0.238	0.244	0.233	0.230	0.241	0.246
	0.238	0.238						
Ring 4	0.221	0.228						
Ring 3	0.246	0.248						
Ring 2	0.247	0.251						
Ring 1	0.244	0.246	0.253	0.230	0.247	0.252		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
2	Clear any dirt, debris and other loose gravel away from the tank foundation, down to a minimum 6" below top of foundation. This should be done by a local excavating company.					X
3	Trim the fiberboard back to where it comes in contact with the tank base.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Clean the area around the anchor bolts, tighten the anchor nuts to specifications, then tack weld on the circumference of the nut-to-base plate connections and bolt-to-nut connections.					X
6	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
7	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry sign on primary shell manway.			X		
8	Disconnect the overflow pipe from the underground drain, install an air break complete with a flapper valve and screen, and a splash pad. *Splash pad to be installed by owner.*		X			
9	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
10	Install a liquid level indicator complete with a target board and float.		X			

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
12	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry sign on primary roof hatch.			X		
	Install compliant interior access ladders complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on interior access ladders.			X		
13	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
14	Re-evaluate the tank exterior at next inspection cycle.					X
16	Install a mixing system. Electrical work to be done by others if required.		X			
17	Install a passive cathodic protection system.					X
19	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Hilltop (Area 18); Mercury, NV
48,000 Gallon STP
September 12, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-I

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. NFPA 22-2018; 12.2.1.2 states, "… the junction of the tank bottom and the top of the concrete foundation shall be tightly sealed to prevent water from entering the base." We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, then sealing the foundation with a sealant.

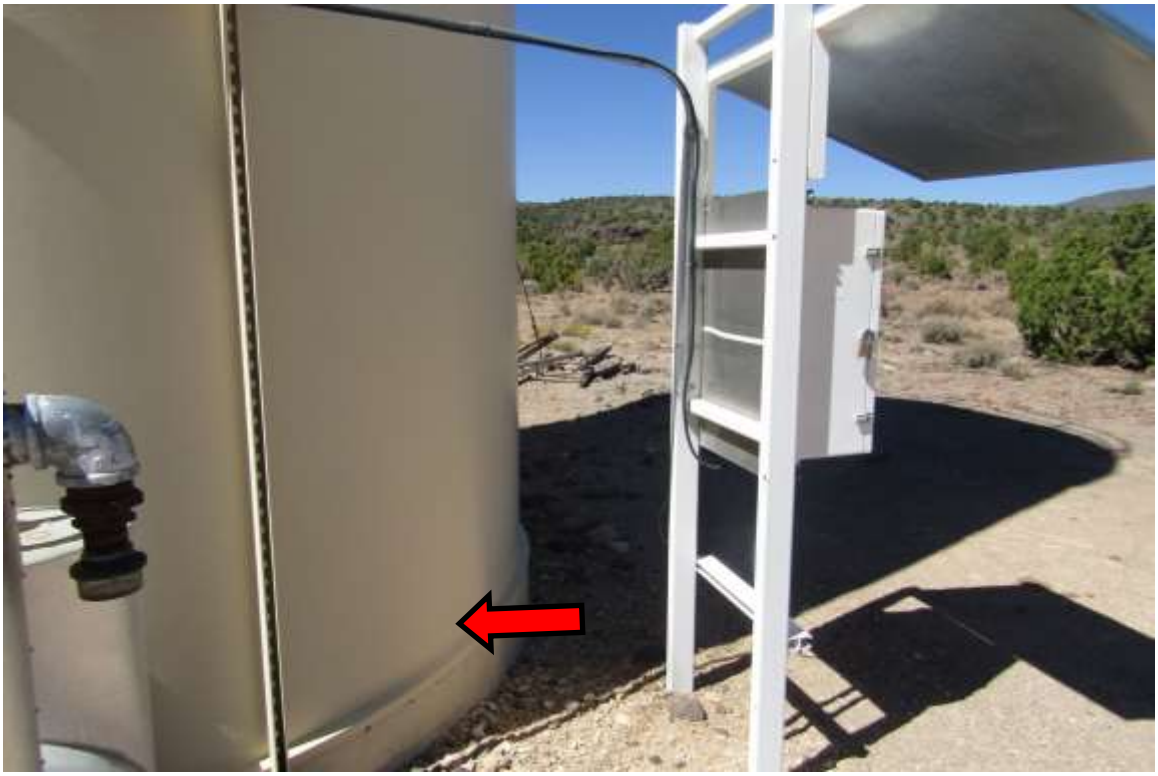


Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks.

Photo shows the existing drain, which appears to be in good condition.

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** sign

Photos show the 4” overflow pipe system, which is equipped with a flapper valve as required by AWWA D100-11; 7.3 Overflow. We recommend installing a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is 24” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, replacing the notched rail safety climb with a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

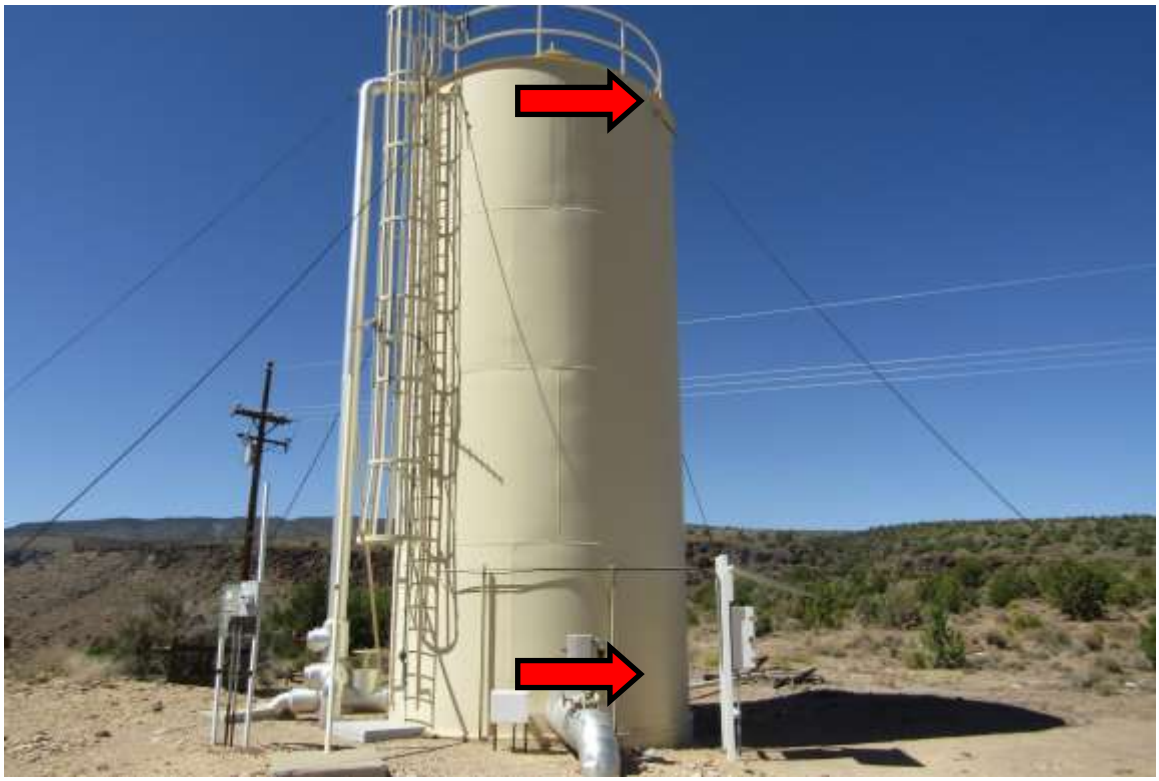


Photo shows the tank is not equipped with a liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, “A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained.” We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is equipped with a 43” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

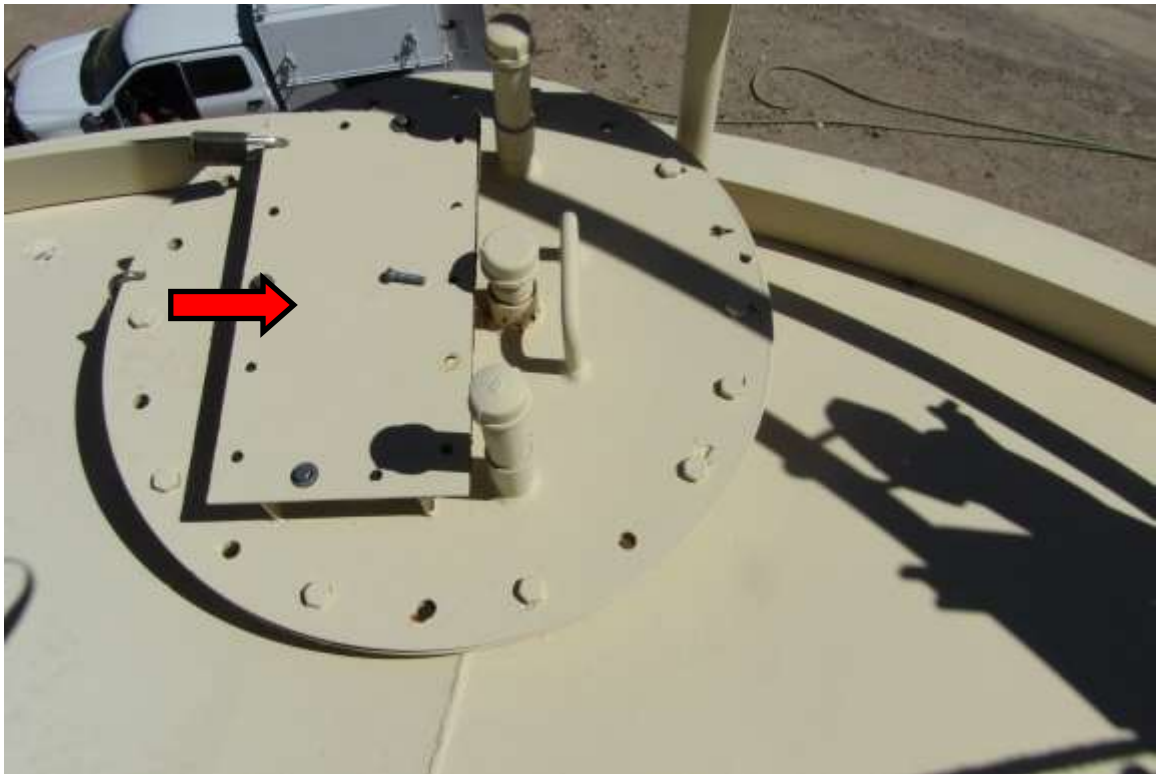


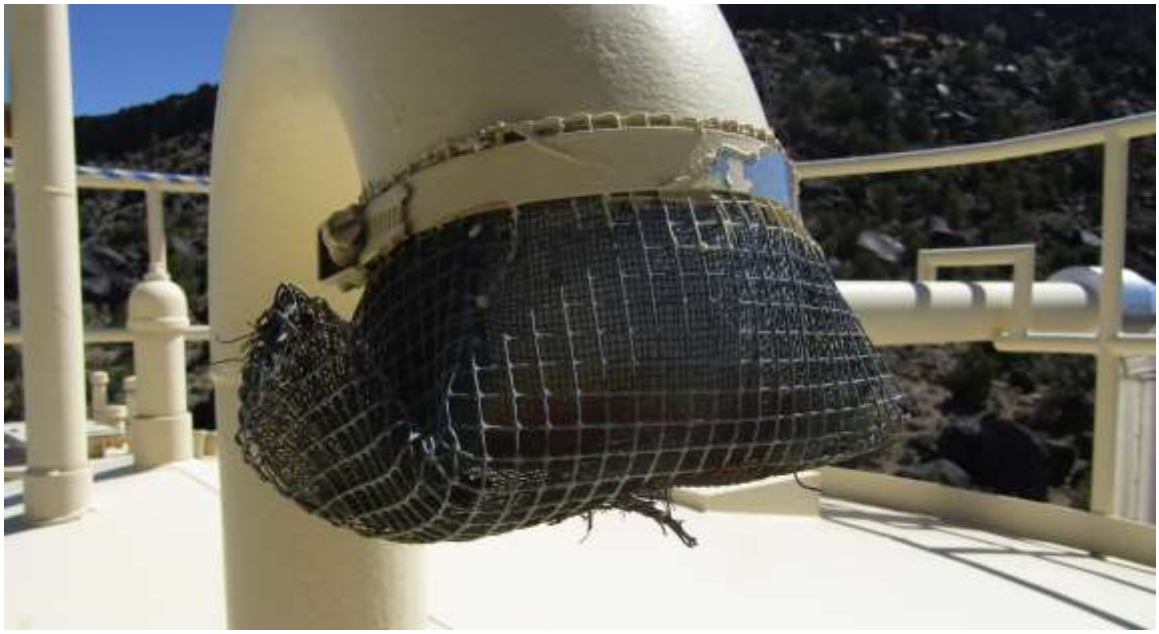
Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** sign

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*



Photos show the condition of the existing 4" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

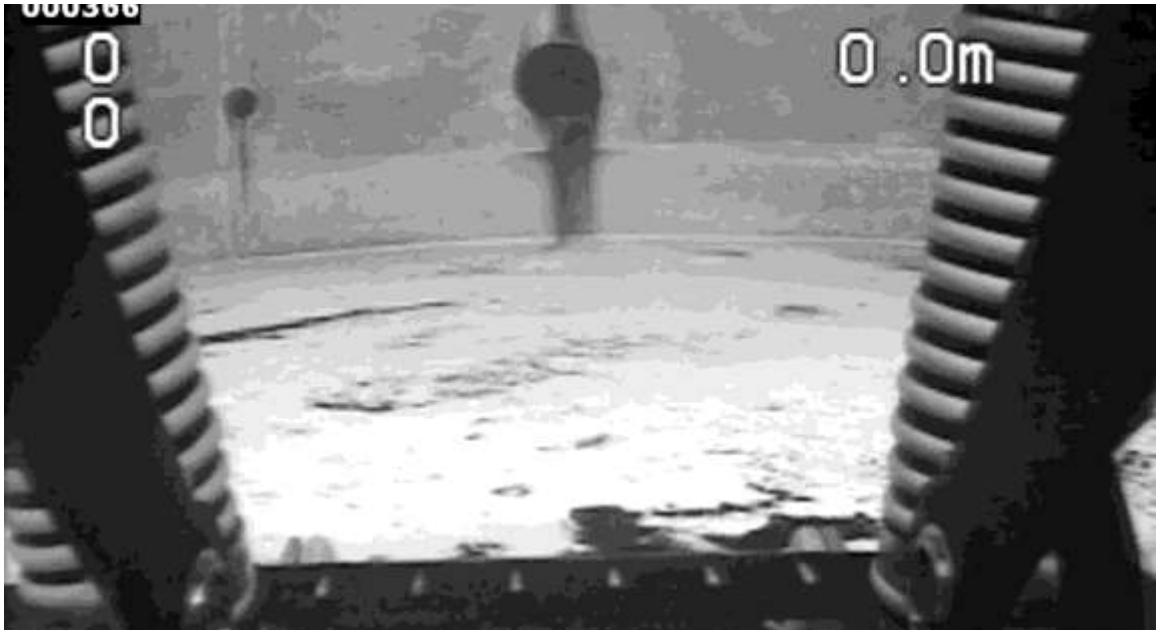
This work should be performed on an emergency basis.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Photo shows the interior roof, which appears to be in good condition.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.



Photos show the tank interior during a cleanout.

Photo shows a suction pipe on the interior of the tank. NFPA 22-2018; 14.2.13.1 states, " The discharge outlet for every suction tank shall be equipped with an anti-vortex plate assembly." We recommend installing an elbow be added to the existing suction pipe in the down direction and installing a properly sized anti-vortex plate on the elbow to prevent formation of a vortex.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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STANDPIPE INSPECTION REPORT

JOB NO: 318448-I INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Hilltop Area (18); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 12, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: 1965

ORIGINAL MANUFACTURER: Not Provided CAPACITY: 48,000 Gallon

DATE OF LAST INSPECTION: 2005 TYPE: Potable/Fire

DIAMETER: 16'-0" HEIGHT: 32'-0"

OVERFLOW: 4" INLET: 6"

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A@15.2	A0@14.9

Mil Thickness Testing								
Roof	19.2	21.8	25.3	20.1	18.5	15.7	15.9	17.3
	15.0	19.4						
Ring 4	19.8	22.5						
Ring 3	22.1	24.0						
Ring 2	26.4	25.7						
Ring 1	12.8	15.4	19.3	13.9	17.6	12.5		

Ultrasonic Thickness Testing								
Roof	0.231	0.242	0.238	0.244	0.233	0.230	0.241	0.246
	0.238	0.238						
Ring 4	0.221	0.228						
Ring 3	0.246	0.248						
Ring 2	0.247	0.251						
Ring 1	0.244	0.246	0.253	0.230	0.247	0.252		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry sign on primary shell manway.			X		
7	Install a splash pad at the existing overflow. *Splash pad to be installed by owner.*		X			
8	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Replace notched rail safety climb with a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry sign on primary roof hatch.			X		
	Install lock on primary roof hatch.					X
	Install compliant interior access ladders complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on interior access ladders.			X		
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Re-evaluate the tank exterior at next inspection cycle.					X
15	Install a passive cathodic protection system.					X
17	Install an elbow to be added to the existing suction pipe and a properly sized anti-vortex plate on the elbow.		X			
18	Re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: J-11 (Area 25); Mercury, NV
50,000 Gallon GST
September 19, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-K

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the condition of the shell. Currently there is no drain valve. We recommend installing a frost proof drain valve near the shell-to-floor connection, complete with a locking device to prevent unauthorized draining of the tank and a splash pad to direct water away from the foundation.

**Splash pad to be installed by owner.*

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway

Photo shows the condition of the overflow pipe system. AWWA D100-11; 7.3 Overflow states, “An internal overflow is defined as an overflow with piping inside the tank container. The consequences of an overflow failure, which can empty the tank contents, shall be considered when an internal overflow is provided.” We recommend replacing the internal overflow system with a properly sized exterior overflow system, which will be complete with a weir box on the interior, standoffs every 10' on center extended to grade, an elbow fitted with a flapper valve and screen to prevent the ingress of contaminants, and a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is not equipped with anti-skid rungs, and is only 15" wide. OSHA 1910.23(b)(4) states, "Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders,… " We recommend installing an OSHA compliant shell access ladder complete with standoffs every 10' on center, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing OSHA a compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the suggested secondary roof hatch.

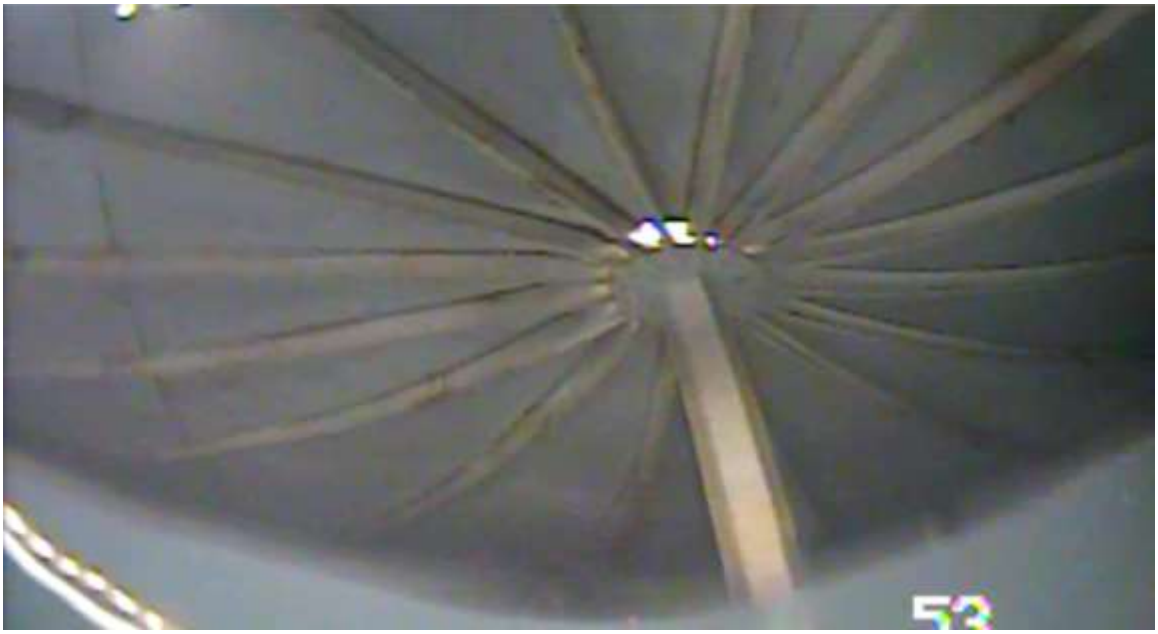
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photo shows the condition of the existing 18" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

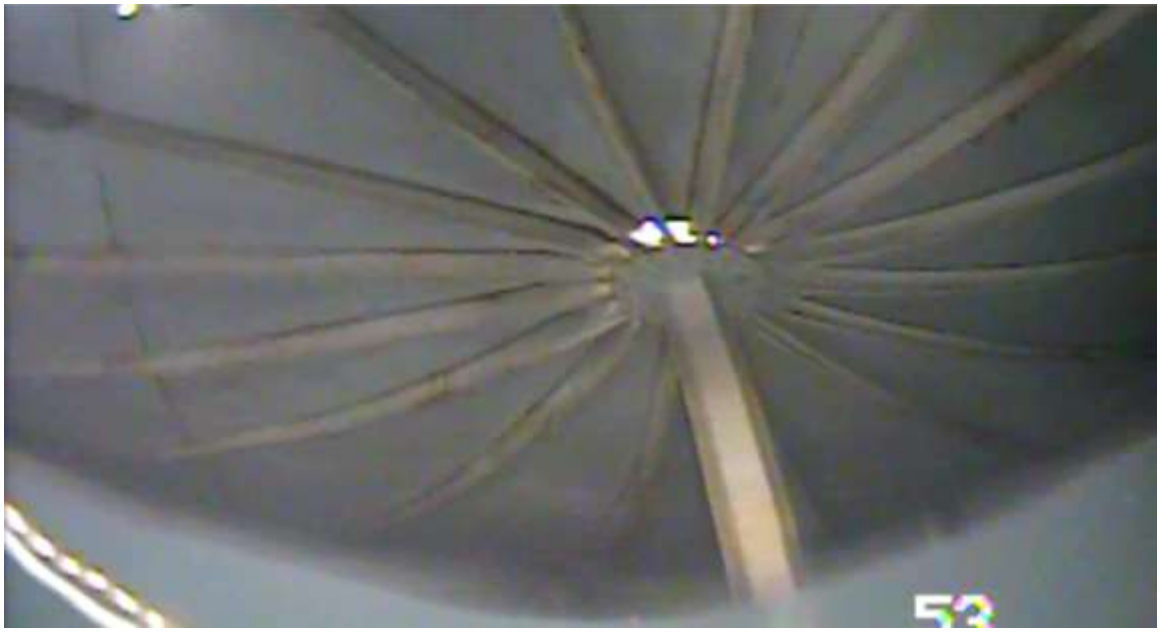
Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend pressure washing the roof exterior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm) then removing all loose rust and scale with wire brushes and hand scrapers in accordance with SSPC#2 (hand tool cleaning), spot priming and applying one (1) finish coat of acrylic paint. We further recommend re-evaluating the rest of the tank at next inspection cycle.

Primary interior access ladder in above photo is not equipped with anti-skid rungs, and is only 15” wide. OSHA 1910.23(b)(4) states, “Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders… ” We recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the primary roof hatch.



Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.



Photos show the rafter-to-support column and rafter-to-shell connections, which appear to be in good condition.

Top photo shows the center support column, which appears to be in good condition.

Bottom photo shows the support column baseplate-to-floor connection, which appears to be in good condition.

Photo shows a inlet/outlet pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.

Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-K INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: J-11 Area (25); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 19, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: Not Provided

ORIGINAL MANUFACTURER: Not Provided CAPACITY: 50,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 30'-0" HEIGHT: 29'-8"

OVERFLOW: Not Provided INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A5@3.1	A1@9.2

Mil Thickness Testing								
Roof	4.0	1.4	3.3	1.4	1.2	2.7	6.9	3.8
	1.5	4.2						
Ring 4	3.9	7.1						
Ring 3	1.2	4.6						
Ring 2	2.1	2.7						
Ring 1	1.5	2.8	1.8	4.2	3.5	0.6	2.0	1.3
	3.7	2.4						

Ultrasonic Thickness Testing								
Roof	0.206	0.211	0.222	0.214	0.216	0.207	0.218	0.211
	0.204	0.209						
Ring 4	0.264	0.255						
Ring 3	0.269	0.261						
Ring 2	0.259	0.251						
Ring 1	0.262	0.259	0.255	0.255	0.269	0.261	0.268	0.273
	0.274	0.268						

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
4	Electrically ground the tank.		X	X		
5	Install a frost proof drain valve near the shell-to-floor connection, complete with a locking device and a splash pad. *Splash pad to be installed by owner.*		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
7	Replace the internal overflow system with a properly sized exterior overflow system, complete with a weir box on the interior, standoffs every 10' on center, an elbow fitted with a flapper valve and screen, and a splash pad. *Splash pad to be installed by owner.*		X			
8	Install a compliant exterior shell access ladder complete with standoffs every 10' on center.			X		
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
10	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the suggested secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on suggested secondary interior access ladder.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Pressure wash the roof exterior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm) then remove all loose rust and scale with wire brushes and hand scrapers in accordance with SSPC#2 (hand tool cleaning), spot prime and apply one (1) finish coat of acrylic paint.					X
	Re-evaluate the rest of the tank exterior at next inspection cycle.					X
14	Install a compliant interior access ladder complete with standoffs every 10' on center at the primary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
18	Install a mixing system. Electrical work to be done by others if required.		X			
19	Install a passive cathodic protection system.					X
21	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: J-12 (Area 25); Mercury, NV
50,000 Gallon GST
September 19, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-L

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend trimming the fiberboard back to where it comes in contact with the tank base. Once this is done allowing for a clean edge, apply caulk/grout around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the condition of the existing drain valve, which is not equipped with a locking device or splash pad. We recommend installing a locking device to prevent unauthorized draining of the tank.

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install a davit arm on primary shell manway
Install 30” secondary shell manway 180º from primary manway
Post **Confined Space Entry** signs
Install maintenance free galvanized steel bolts

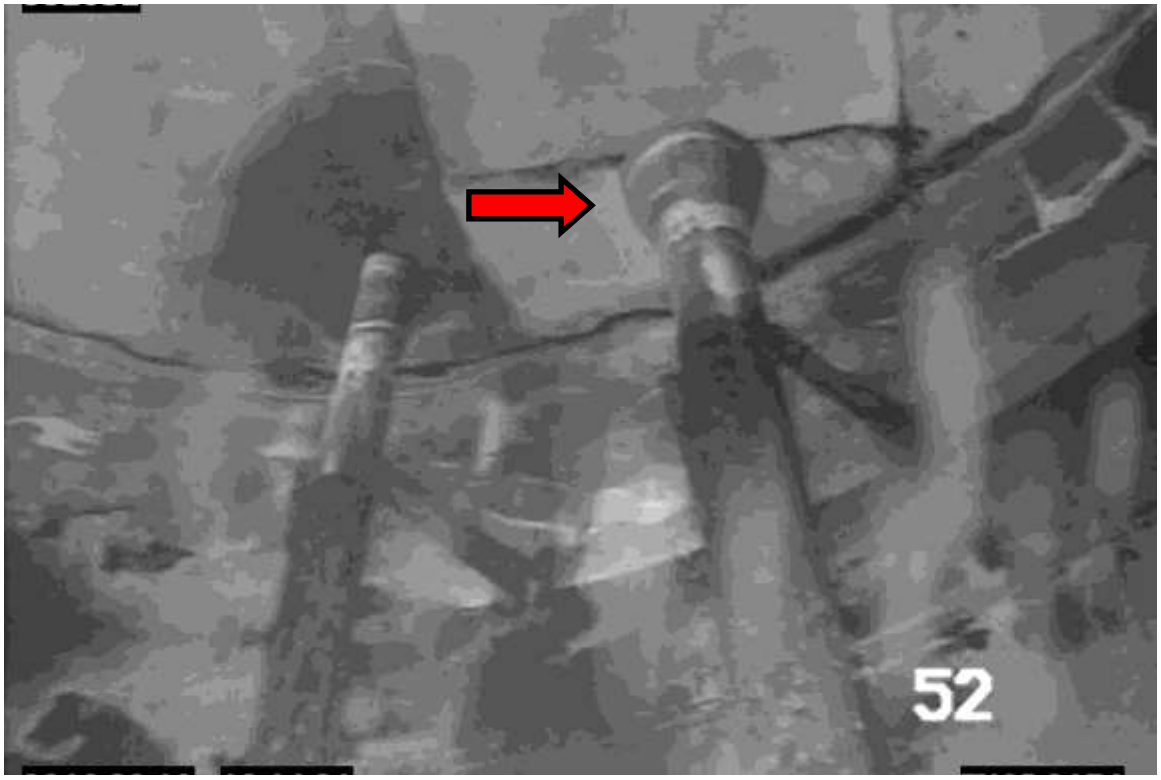


Photo shows the condition of the overflow pipe system. AWWA D100-11; 7.3 Overflow states, “An internal overflow is defined as an overflow with piping inside the tank container. The consequences of an overflow failure, which can empty the tank contents, shall be considered when an internal overflow is provided.” We recommend replacing the internal overflow system with a properly sized exterior overflow system, which will be complete with a weir box on the interior, standoffs every 10' on center extended to grade, an elbow fitted with a flapper valve and screen to prevent the ingress of contaminants, and a splash pad to direct the water away from the tank foundation.

**Splash pad to be installed by owner.*

Shell access ladder in above photos is not equipped with anti-skid rungs, and is only 13" wide. OSHA 1910.23(b)(4) states, "Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders,… " We recommend installing an OSHA compliant shell access ladder complete with standoffs every 10' on center, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access and posting a **Fall Protection Required** sign at the base of the ladder.

Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

Photo shows the tank roof edge is not equipped with a required handrail system for fall protection. OSHA 1910.28(b)(1)(i) states, "...the employer must ensure that each employee on a walking-working surface with an unprotected side or edge that is 4 feet (1.2 m) or more above a lower level is protected from falling by one or more of the following: 1910.28(b)(1)(i)(A) Guardrail systems."

We recommend installing an OSHA compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the suggested secondary roof hatch.

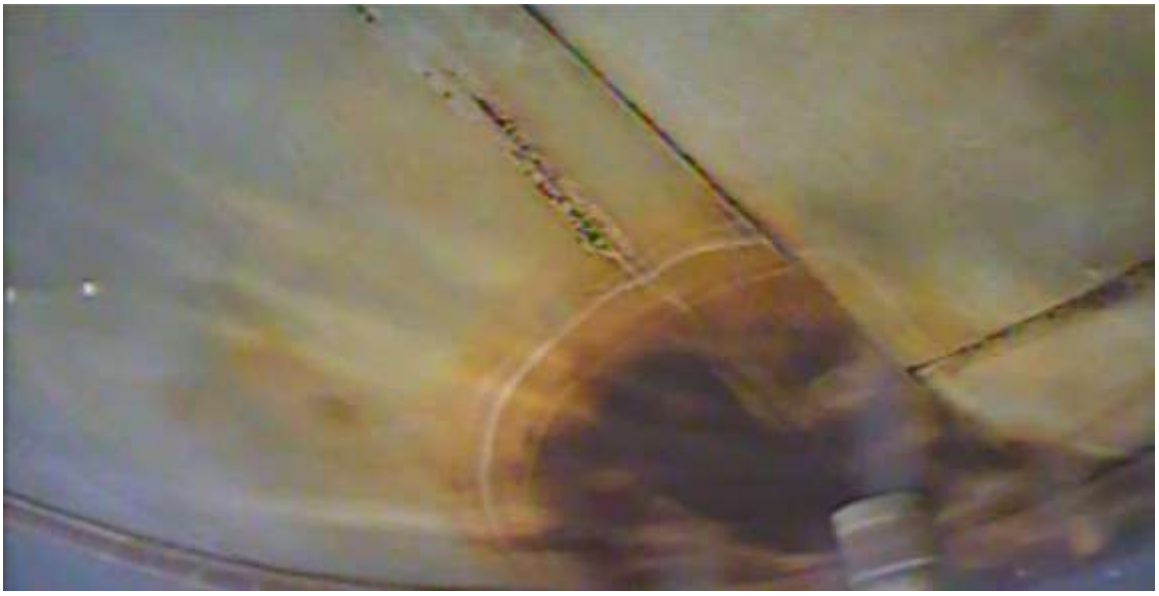
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Photo shows the condition of the existing 12" roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.

Photos show the tank exterior coating system. We recommend pressure washing the tank exterior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm) then removing all loose rust and scale with wire brushes and hand scrapers in accordance with SSPC#2 (hand tool cleaning), spot priming and applying one (1) finish coat of aluminum paint.

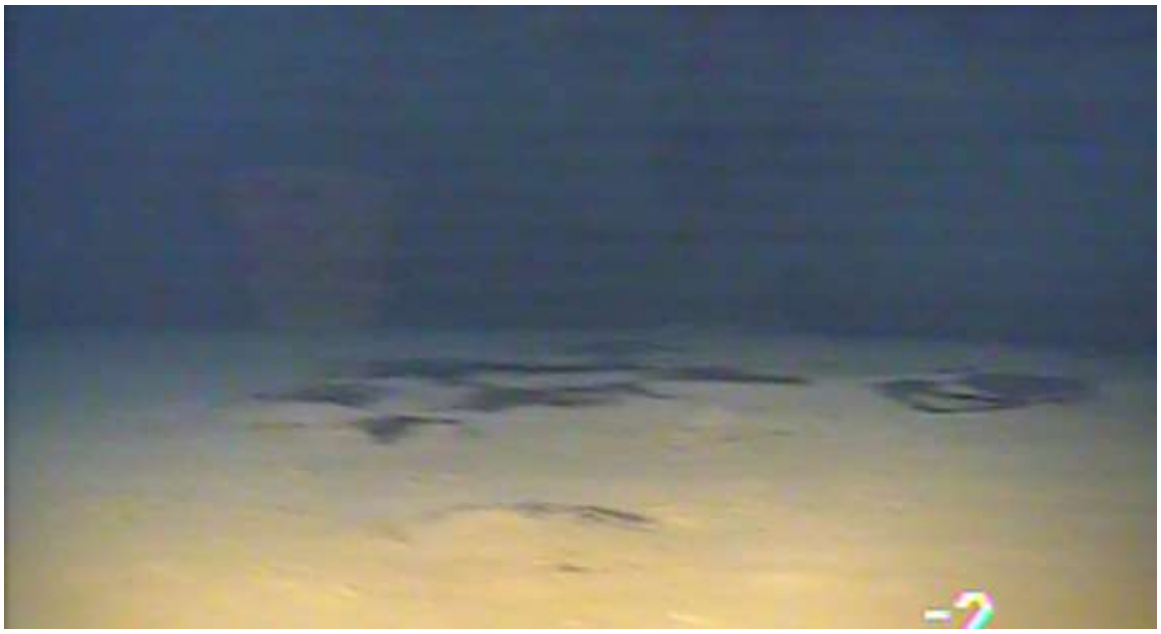
Primary interior access ladder in above photo is not equipped with anti-skid rungs, and is only 13" wide. OSHA 1910.23(b)(4) states, "Ladder rungs, steps, and cleats have a minimum clear width of… 16 inches (41 cm) (measured before installation of ladder safety systems) for fixed ladders… " **Notice the interior access ladder is equipped with a cage safety device. This would restrict access in the case of an emergency.** We recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the primary roof hatch.



Top photo shows the condition of the interior roof. Notice the rust forming at the roof lap seams. We recommend seam sealing using Sikaflex® 1a on all unwelded interior roof lap seams to prevent failure of a new interior liner. This work is to be performed in conjunction with application of new interior liner.

Bottom photo shows the condition of the interior roof-to-rim angle connection. Notice the rust forming in the crevice between the roof and rim angle. We recommend seam sealing using Sikaflex® 1a around the circumference of this connection to prevent failure of a new interior liner. This work is to be performed in conjunction with application of new interior liner.

Photo shows an inlet/outlet pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.



Photos show sediment and debris on the tank interior before a cleanout was performed.

We recommend installing a passive cathodic protection system.

Photos show the tank interior during a cleanout.

Photos show the tank interior coating system. We recommend sandblasting all interior areas to SSPC-SP10 (near white), apply one (1) stripe coat of epoxy primer to weld seams, then apply two (2) full coats of epoxy to the entire tank to achieve 8 to 10 mils of total dry film thickness.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-L INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: J-12 Area (25); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 19, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: 8-1755 YEAR BUILT: 1960

ORIGINAL MANUFACTURER: Chicago Bridge & Iron Co. CAPACITY: 50,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 18'-0" HEIGHT: 18'-0"

OVERFLOW: Internal INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Paint Sample	Negative
Adhesion	A3@1.1	A5@0.4

Mil Thickness Testing								
Roof	1.3	6.7	1.1	4.4	3.2	1.7	2.5	1.3
	1.9	0.4						
Ring 3	0.6	2.1						
Ring 2	1.1	1.4						
Ring 1	0.1	0.3	1.2	2.0	0.4	1.3		

Ultrasonic Thickness Testing								
Roof	0.196	0.201	0.198	0.207	0.199	0.203	0.200	0.206
	0.191	0.194						
Ring 3	0.251	0.255						
Ring 2	0.262	0.273						
Ring 1	0.295	0.274	0.294	0.281	0.265	0.271		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Trim the fiberboard back to where it comes in contact with the tank base.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Install a locking device on the existing drain valve.		X			
6	Install davit arm on primary shell manway.		X	X		
	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Post Confined Space Entry signs on primary and secondary shell manways.			X		
	Install maintenance free galvanized steel bolts on primary shell manway.					X
7	Replace the internal overflow system with a properly sized exterior overflow system, complete with a weir box on the interior, standoffs every 10' on center, an elbow fitted with a flapper valve and screen, and a splash pad. *Splash pad to be installed by owner.*		X			
8	Install a compliant exterior shell access ladder complete with standoffs every 10' on center.			X		
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
10	Install a compliant 42" high handrail system around the circumference of the tank roof, complete with intermediate rail, toeboard and a swing gate at the junction of the shell-to-roof access ladder and tank roof.			X		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the suggested secondary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on suggested secondary interior access ladder.			X		
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Pressure wash the tank exterior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm) then remove all loose rust and scale with wire brushes and hand scrapers in accordance with SSPC#2 (hand tool cleaning), spot prime and apply one (1) finish coat of aluminum paint.					X
14	Install a compliant interior access ladder complete with standoffs every 10' on center at the primary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
15	Seam seal all un-welded interior roof lap seams using Sikaflex® 1a.					X
	Seal the circumference of the interior roof-to-rim angle connection using Sikaflex® 1a.					X
16	Install a mixing system. Electrical work to be done by others if required.		X			
17	Install a passive cathodic protection system.					X
19	Sandblast all interior areas to SSPC-SP10 (near white), apply one (1) stripe coat of epoxy primer to weld seams, then apply one (1) full coat of epoxy to the entire tank to achieve 8 to 10 mils of total dry film thickness.					X

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Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
RE: Well 8 (Area 18); Mercury, NV
63,000 Gallon GST
September 12, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485
Job No. 318448-J

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

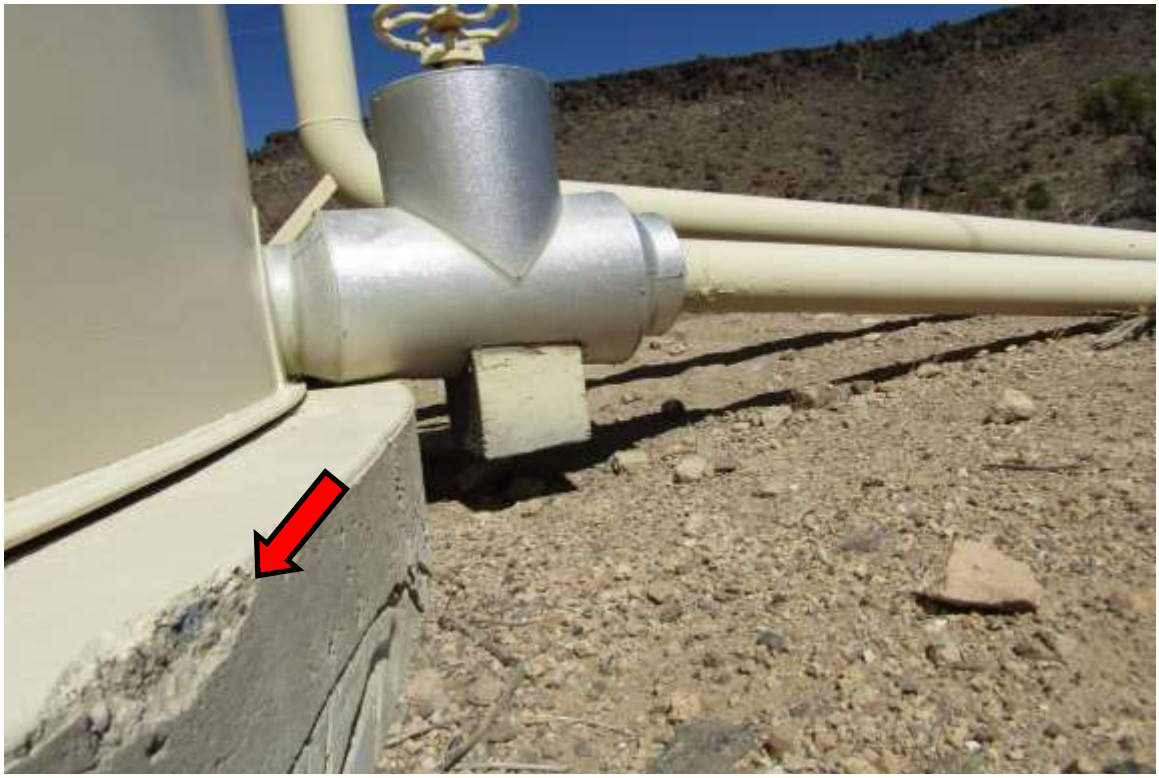


Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank has no grounding system. We recommend electrically grounding the tank for lightning protection as required by OSH Act of 1970 Section 5.

Photo shows the condition of the existing 10” drain valve, which is not equipped with a locking device or splash pad. We recommend installing a locking device to prevent unauthorized draining of the tank.

Photo shows the condition of the 24” primary shell manway. The following is required for the tank to be in compliance with AWWA D100-11; 7.4.4 Shell manholes and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install 30” secondary shell manway 180º from primary manway
Install maintenance free galvanized steel bolts

Photos show the 6” overflow pipe system, which appears to be in good condition.

Shell access ladder in above photos is 24” wide, but is not equipped with anti-skid rungs. We recommend installing anti-skid rung covers, a cable type ladder safety device, a lockable ladder guard to prevent unauthorized access, and posting a **Fall Protection Required** sign at the base of the ladder.

Photos show the condition of the liquid level indicator. NFPA 22-2018; 14.1.8* Water-Level Gauge states, "A water-level gauge of suitable design shall be provided. It shall be carefully installed, adjusted, and properly maintained." Due to the condition of the indicator, we recommend replacing the existing liquid level indicator.

Photo shows the tank roof edge is equipped with a 43” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

Photo shows the condition of the 24” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

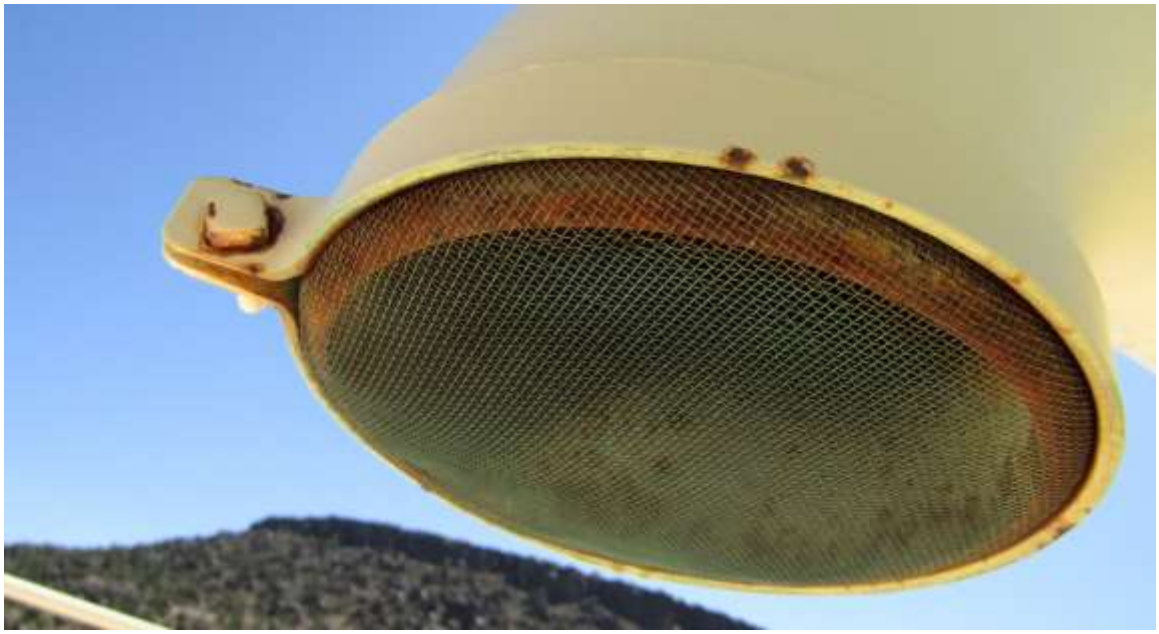
We recommend:

Install 30” secondary hatch 180° from primary roof hatch
Post **Confined Space Entry** signs

We further recommend installing OSHA compliant interior access ladders complete with standoffs every 10' on center, and cable type ladder safety devices at the primary and suggested secondary roof hatches.

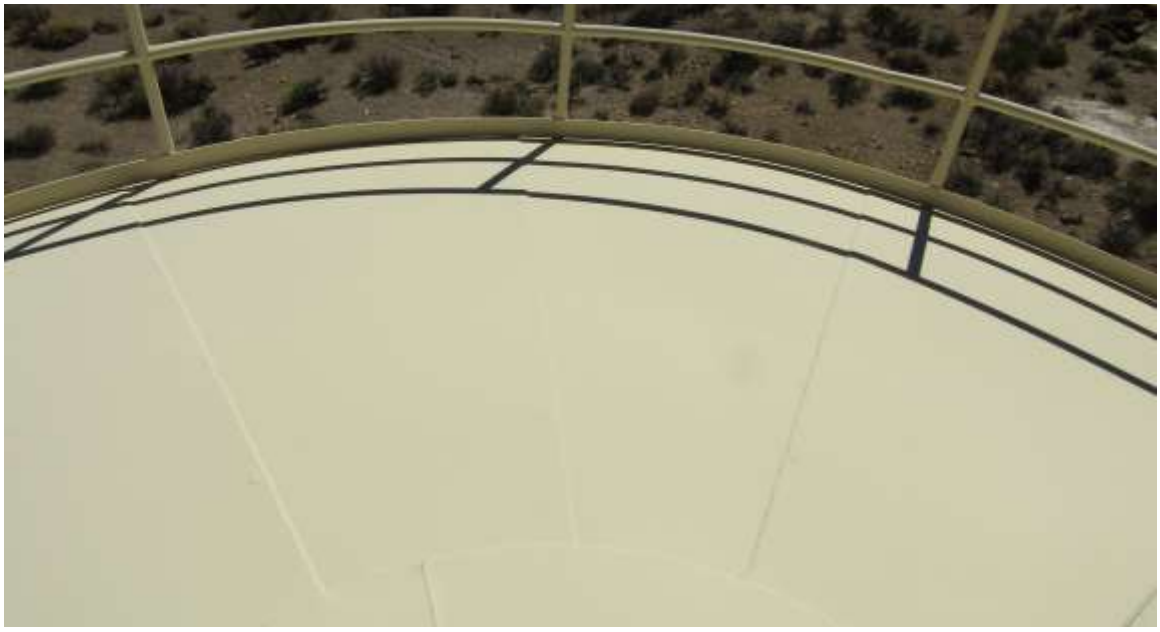
**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*

Mission Support and Test Services, LLC
RE: Well 8 (Area 18); Mercury, NV
63,000 Gallon GST
Job No. 318448-J



Photos show the condition of the existing 8” roof vent. This vent is allowing the ingress of rain and wind-borne contaminants into the water system. **An improperly vented tank may cause external pressure to act on the tank which can cause buckling even at low pressure differential.** We recommend replacing the existing roof vent with a vacuum-pressure, frost proof vent and screen.

This work should be performed on an emergency basis.



Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Top photo shows the interior roof lap seams, which appear to be in good condition.

Bottom photo shows the interior roof-to-rim angle connection, which appears to be in good condition.

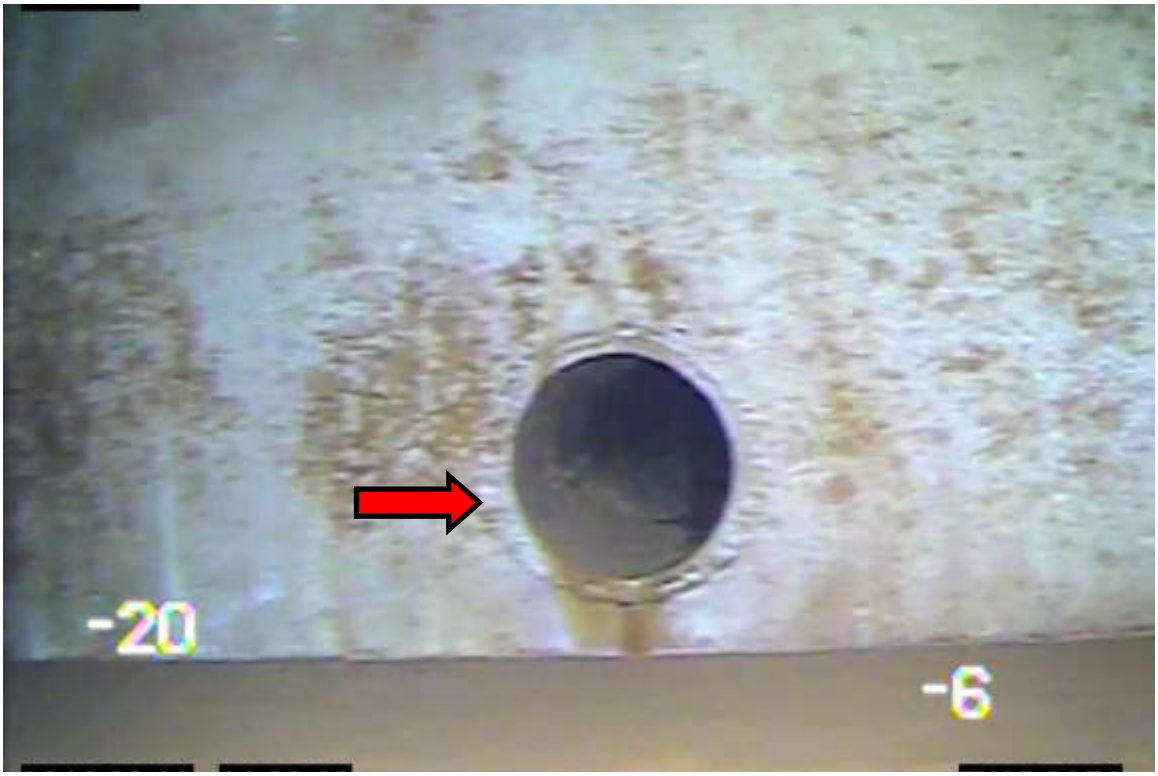
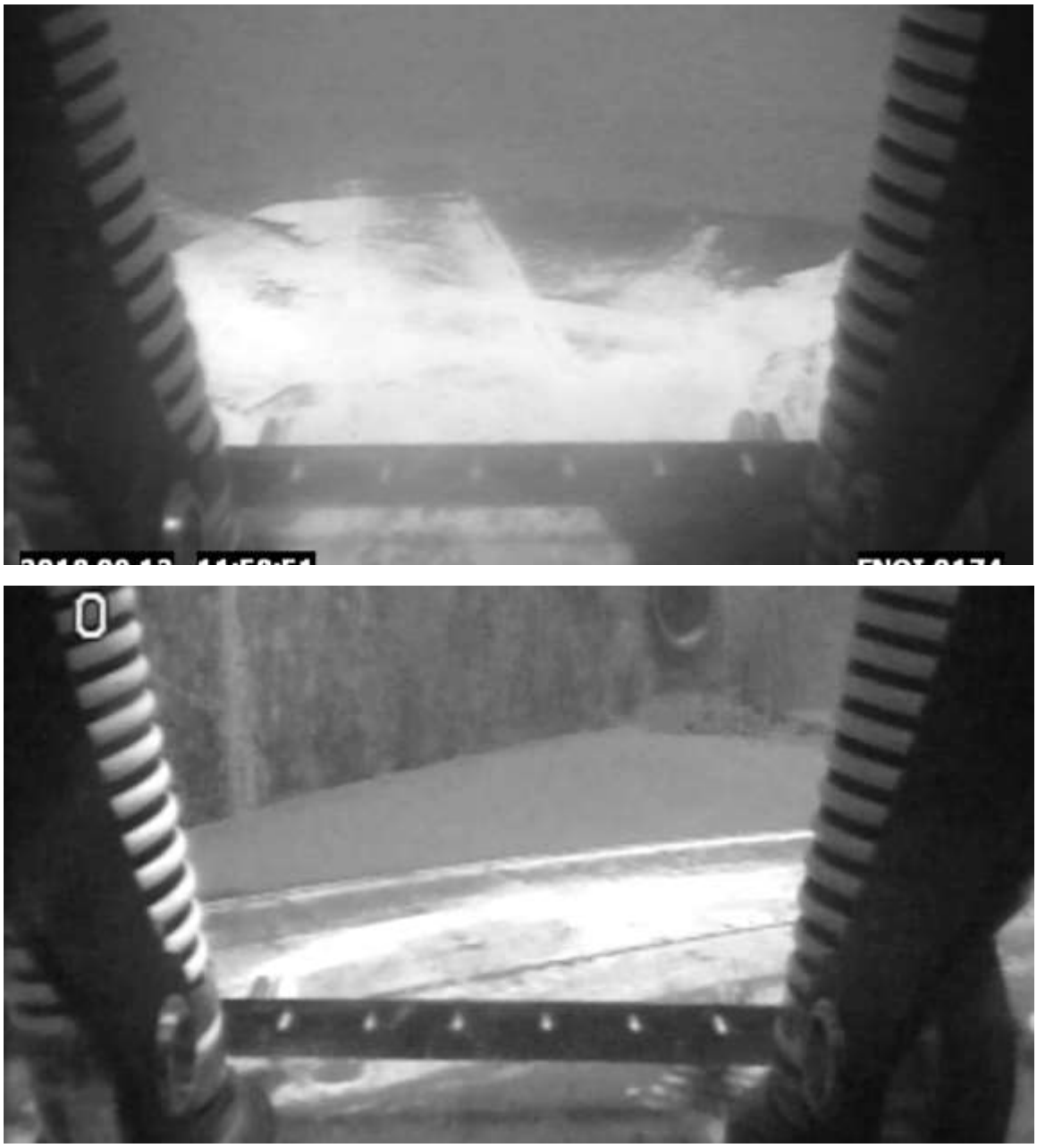


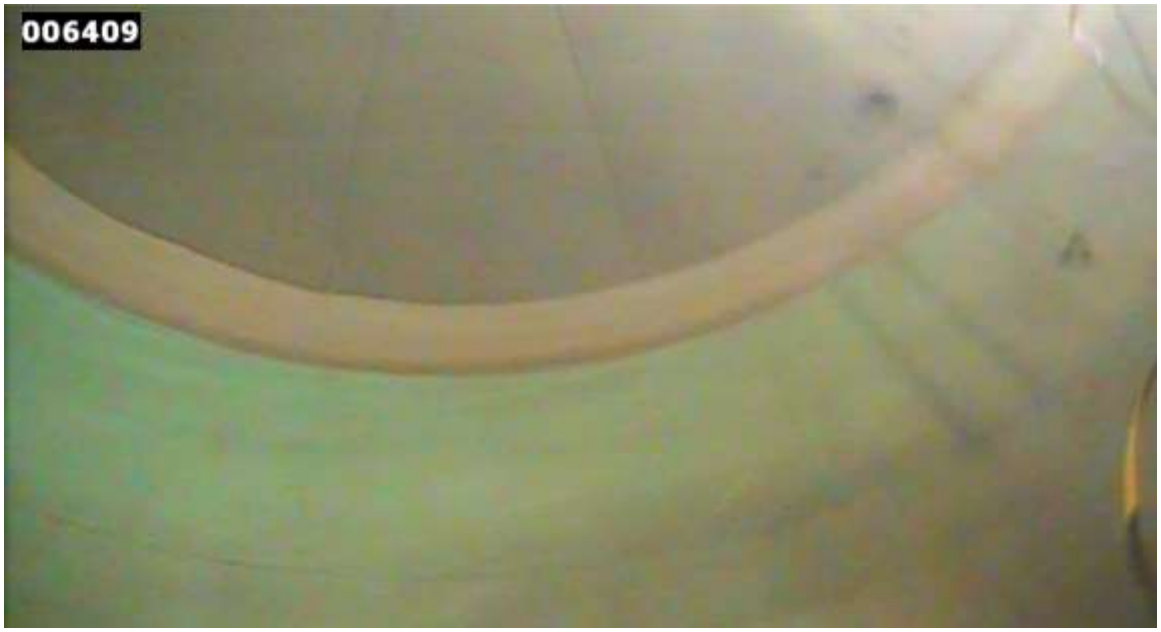
Photo shows a fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

We further recommend installing a passive cathodic protection system.



Photos show the tank interior during a cleanout.



Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend pressure washing the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluating the tank interior at next inspection cycle.

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GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-J INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: Well 8 Area (18); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 12, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: P-7063 YEAR BUILT: 1967

ORIGINAL MANUFACTURER: General American Trans. CAPACITY: 63,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 22'-0" HEIGHT: 24'-0"

OVERFLOW: 6" INLET: 10"

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@14.0	A0@13.0

Mil Thickness Testing								
Roof	15.1	14.6	11.3	11.5	13.0	17.1	15.8	13.5
	11.2	14.7						
Ring 3	14.3	16.5						
Ring 2	18.6	16.6						
Ring 1	16.3	15.9	17.4	16.8	15.3	10.7		

Ultrasonic Thickness Testing								
Roof	0.249	0.230	0.247	0.250	0.236	0.243	0.251	0.233
	0.237	0.245						
Ring 3	0.274	0.269						
Ring 2	0.270	0.264						
Ring 1	0.265	0.274	0.305	0.312	0.268	0.300		

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
4	Electrically ground the tank.		X	X		
5	Install a locking device on the existing drain valve.		X			
6	Install 30" secondary shell manway 180° from primary manway.		X	X		
	Install maintenance free galvanized steel bolts on primary shell manway.					X
8	Install anti-skid rung covers on the existing exterior shell access ladder.		X			
	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Install a lockable ladder guard on exterior shell access ladder.					X
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
9	Install a liquid level indicator complete with a target board and float.		X			
11	Install 30" secondary roof hatch 180° from primary hatch.		X			
	Post Confined Space Entry signs on primary and suggested secondary roof hatches.			X		
	Install compliant interior access ladders complete with standoffs every 10' on center at the primary and suggested secondary roof hatches. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install cable type ladder safety devices on primary and suggested secondary interior access ladders.			X		
12	Replace the existing roof vent with a vacuum-pressure, frost proof vent and screen. This work should be performed on an emergency basis.	X			X	
13	Re-evaluate the tank exterior at next inspection cycle.					X
15	Install a mixing system. Electrical work to be done by others if required.		X			
16	Install a passive cathodic protection system.					X
18	Pressure wash the tank interior with biodegradable detergent injection (minimum 3,500 psi at 3.0 gpm), then re-evaluate the tank interior at next inspection cycle.					X

NNSS - Area 5 North
Inspection Report

CorrTech Report No. 14814-FOR-01-1

Prepared For:

Nevada National Security Site
PO Box 98521
21 Losee Road
Las Vegas, NV 89193-8521

CORRTECH
CORROSION UNDERSTOOD

25 South Street
Hopkinton, MA 01748

9/15/2021

STATEMENT OF LIMITATION

Conclusions presented in this document are based on the services described and performed and not on tasks or procedures beyond the scope of the contracted services or time and budgetary constraints imposed by contract limitations.

CorrTech, Inc. has performed this assessment in a professional manner using the degree of skill and care exercised for similar projects under similar conditions by reputable and competent consultants, and in accordance with the procedures established within CorrTech's quality assurance, quality control protocol.

CorrTech, Inc. shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld or not fully disclosed at the time the evaluation was performed.

Report Prepared by: Alexandra Bosco
Technician

Report Reviewed by: Garth Lund
Project Manager
NACE CIP II #49983
January 31, 2022

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INTRODUCTION

On September 8, 2021, CorrTech representatives, Max Miezejeski and Alex Bosco performed a corrosion and structural assessment of the exterior and interior of a drinking water storage tank for Nevada National Security Site. The inspection was conducted to establish the current condition of the tank's coatings and steel substrate. The tank inspected included:

Area 5 North 250,000 Gallon Tank

For applicable standards used in this inspection, please see below.

The interior of the reservoir was inspected with the MiniRover remotely operated vehicle, while full. The MiniRover is the only piece of equipment like it in the United States and was developed by CorrTech. By using the MiniRover the interior of the tank was inspected with no special preparation, confined space entry, no additional disinfection, and no downtime.

The unit has high-powered thrusters, which are used to maneuver throughout the tank and are used to wash away bottom sediment for observations. Video is recorded with audio narration on site with digital stills captured for the report.

The MiniRover and all tether were prepared for the inspection by disinfecting equipment with a 200-ppm chlorine spray in accordance with AWWA C652-11.

The exterior portions of the tank were inspected by walking the roof and shell portions that were accessible from the ground.

The objectives of the assessment were to:

1. Perform field inspections and tests to assess the structural integrity of the tank.
2. Assess condition of any protective coatings present
3. Review the safety compliance of tank ladders and access.
4. Review sanitary protection equipment
5. Provide recommendations for rehabilitation.

APPLICABLE STANDARDS

AWWA D100, 2011, AWWA D100, Welded Carbon Steel Tanks for Water Storage, American Water Works Association (AWWA) Standard D100, Welded Carbon Steel Tanks for Water Storage
AWWA D101 , 1986, AWWA D101, Inspecting Steel Tanks, Standpipes, Reservoirs, and Elevated Tanks, for Water Storage, American Water Works Association (AWWA) Standard D101, Inspecting Steel Tanks, Standpipes, Reservoirs, and Elevated Tanks for Water Storage
AWWA M42, 2013, AWWA M42, Steel Water Storage Tanks, American Water Works Association (AWWA) Manual M42, Steel Water Storage Tanks

EXECUTIVE SUMMARY

The condition and recommendations for the tank are briefly summarized in this section. For detailed information regarding detailed tank conditions and the specific recommendations,

please refer to the designated section for the tank.

The exterior coating system has minor chalking but is free from major corrosion or adhesion loss.

There is moderate sediment staining along the shell in the fluctuation zone. The shell is free from significant corrosion or coating loss.

A sporadic layer of sediment no more than ¼-in deep has accumulated on the floor.

The overflow pipe needs a fine or coarse screen.

In order to be in compliance with OSHA Standard 1910.23(a)(2) all railing openings or platform pass through openings should be equipped with a self-closing swing gate.

A safety climb system should be installed on any ladder that is 20-ft long or more.

No structural deficiencies were observed.

In accordance with current AWWA recommendations, the Area 5 North tank should be next inspected in 2026.

Tank Data

TANK DATA FOR Area 5 North

Site Information	Fencing In Place:	N/A				Locks on Gates:	N/A
Address:	Area 5					Vault Lock in Place:	N/A
Tank Information	Tank Name:	Area 5 North				Tank Diameter:	34-ft
Tank Height:	UNK	Tank Capacity:	250,000		Previous Cleaning Date:		2005
Previous Inspect. Date:	UNK			Previous Coating Application:		2005	
Foundation	Height:	4-in	Adequate Drainage:	Yes		Chime Plate Size:	7-in
# of Anchors:	36	Anchor Bolt Diameter:		3/4-in		Chair Thickness	N/A
Anchor Chair Dimensions:	N/A						
Shell Manhole	# of Manholes	2		Diameter:		30-in	
Ladder	Height from Ground:	At grade				Safety Cage:	Yes
Anti Climb Lock :	Yes			Climbing Safety System Style:		None	
Rung to Rung Dim:	12-in	Distance from Shell:		15-in		Width:	16-in
Overflow	Diameter:	6-in	Air Gap	12-in		Overflow Protection	Flapper Valve
Screen Condition:	None	Screen Type:	N/A			Splash Pad	Rocks
Roof Hatch	Dimensions:	36 X 36-in		Sanitary Neck		4-5-in	
# of Hatches:	1	Hatch Cover Overlap	1 3/4-in			Lock	Yes
Roof Vent	Style:	Mushroom		Diameter:		24-in	
Cap to Roof Distance:	8-in	Screen Condition:	Intact			Type:	Coarse and fine
Roof Handrail Hts	Top Rail:	42-in	Mid Rail:	22-in		Toe Kick Plate:	None
Interior	Sediment Depth:	1/4-in		Sediment Coverage:		Dusting	
Inlet/Outlet Pipe:	Separate	Sediment Ring:	Yes				
Interior Ladder	Climbing Safety System:	None		Style:		N/A	
Columns:	None	Column Number:	N/A	Interior Column Style		N/A	

OBSERVATIONS

Photos provided in the report were created from a digital camera and interior pictures were captured in digital format from the interior video. The interior images are as clear as our printed technology will allow. The copies in the report provide a reference for our comments. Keep in mind that for underwater video snaps, the video provides the greatest detail and should be viewed as part of the report.

Narration on the video is done in the field and some of the comments may be different than the written report.

TESTING

Dry Film Thickness Readings

A Positector 6000 gauge was used to take dry film coating thickness readings on the exterior shell and roof. These readings measure the thickness of the paint remaining on the substrate. For complete data, see APPENDIX II.

Dry Film Thickness Readings

Location	Number of Readings	Average	Minimum	Maximum
Shell – Batch 91	45	18.47	14.3	24.6

(All measurements taken in mils)

Ultrasonic Thickness Readings

A Cygnus gauge was used to take ultrasonic thickness readings were taken on the shell, roof, and floor of the tank. These readings measure the thickness of the substrate. Based on the reading taken in the field there does not appear to be any metal loss on the shell or floor.

Ultrasonic Thickness Readings

Location	Number of Readings	Average	Minimum	Maximum
Shell	6	.319	.310	.330
Floor	3	.319	.310	.330

(All readings are in inches)

INTERIOR

Roof Structure

The roof is a stainless-steel structure with roof rafters supporting the roof plates. There is no visible bowing or deformation of the roof plates or visible corrosion.

Roof Coating

The roof plates are uncoated stainless steel.

Shell Structure

No visible bowing or deformations were noted. No metal loss was observed.

Shell Coating

There is moderate sediment staining along the shell in the fluctuation zone. The shell is free from significant corrosion or coating loss.

Floor Structure

No bowing or settlement was noted on the floor. There was no apparent corrosion on the floor plates or seams.

Sediment

There is a sporadic dusting of sediment over most of the floor.

Floor Coating

The floor plates and seams had no significant corrosion. No adhesion loss was observed.

Piping

There are separate inlet and outlet pipes on the floor of the tank that both have sediment rings. There are two inlet/outlet pipes along the shell wall.

EXTERIOR

Foundation

The tank foundation has minor cracks and spalls around the tank. There is one spot with grout separating from the concrete between foundation sections. The chime grout is intact, with several areas of general corrosion. There is one area where the grout is separating from the foundation. The anchor bolts are free from major corrosion and are all engaged.

Manholes

There are two 30-in diameter manholes on opposing sides of the lower shell. The hatch bolts have corrosion and there is corrosion staining on both manholes. There are no signs of leaks.

Ladder

The ladder has a locked anti-climb and safety cage. Both the ladder and safety cage are free from bends and warps. There is minor corrosion staining on the ladder rung to rail connections. There is no safety climb.

Overflow

The overflow has an interior weir box, and the pipe extends down the exterior of the tank where it discharges onto rocks next to the tank. The overflow pipe has a flapper cover installed.

Shell Coating

Minor chalking has formed on the coating system. There is less than 1% corrosion on the shell.

Roof Hatch

A hatch is installed at the edge of the roof near the shell ladder. It has a gasket installed along the top of the neck and is free of unsealed penetrations. The hinges showed no significant corrosion or damage.

Roof Vent

There is a roof vent located near the center of the roof. The roof plates extend past the shell walls, with screening underneath as an additional venting system. There are coarse and fine screens intact and free from significant corrosion.

Handrails

Hand rails are installed around the entire perimeter of the tank, and from the ladder to the center of the roof. No corrosion or damage was noted on the railing structure.

RECOMMENDATIONS

In accordance with current AWWA recommendations, the Area 5 North tank should be next inspected in 2026.

Self-Closing Swing Gate should be installed if the owner wants to be compliant with current OSHA Fall Protection requirements.
In order to follow OSHA Standard 1910.23(a)(2) all railing openings or platform pass through openings should be equipped with a self-closing swing gate. Although this standard strictly addresses new construction after 11/19/2018 it is advisable to modify existing tanks with this safety device. If existing ladders are modified or replaced with an existing tank, then this new standard would apply.

Ladder Safety Climb should be installed or updated.
A safety climb system should be installed on any ladder that is 20-ft long or more. For new fixed ladders erected on or after November 19, 2018, the employer must equip the ladder with a ladder safety or personal fall arrest system (1910.28(b)(9)(i)(B)). Fixed notched rail climbs meet OSHA requirements but are very tiring to climb. Installing a cable type safety climb system will keep your tank current with OSHA standards and the device is less tiring to use than a notch railed type device. It is not recommended to use these devices on internal underwater ladders. Underwater galvanic corrosion is caused between the cable and tank making the safety device unsafe after a few years.

Appendix I: Photographs

1 - Tank overview

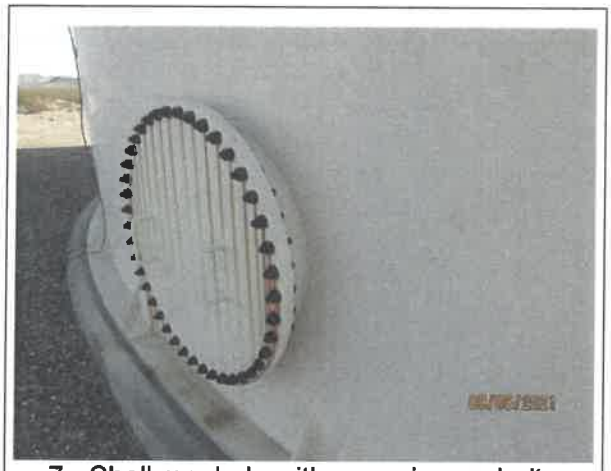
4 - Overflow with flapper valve

2 - Overflow

5 - Interior overflow pipe with no screen

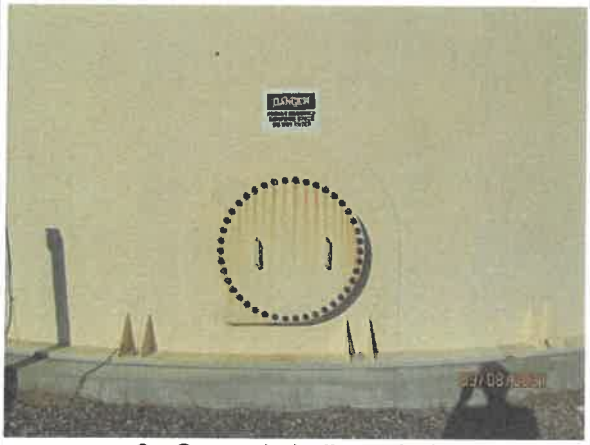
3 - Overflow discharge onto rocks

6 - Shell manhole



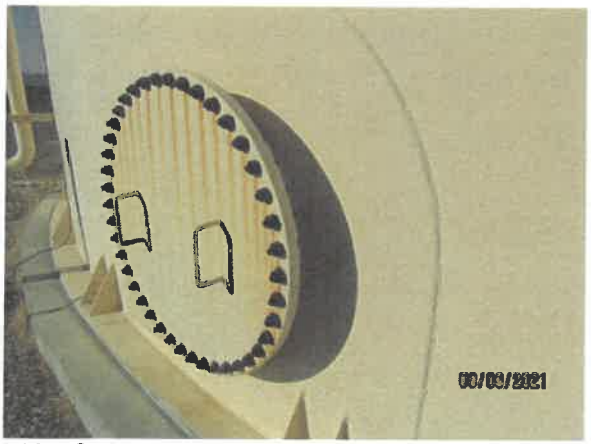
7 - Shell manhole with corrosion on bolts

11 - Tank ladder with safety cage



8 - Second shell manhole

12 - Ladder safety cage



10 - Second shell manhole with corrosion on bolts

13 - Tank ladder with anti climb

14 - Upper tank ladder with safety cage

17 - Small spall on tank foundation

15 - Tank foundation typical condition

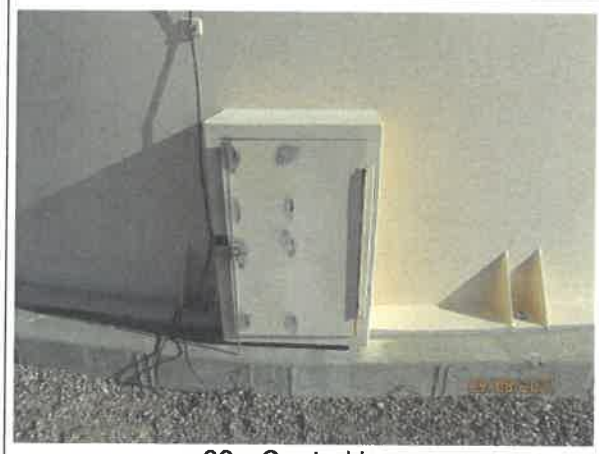
18 - Typical anchor bolt condition

16 - Foundation grouting separating

19 - Corrosion on chime plate

20 – Chime plate with minor corrosion and minor spalling for foundation

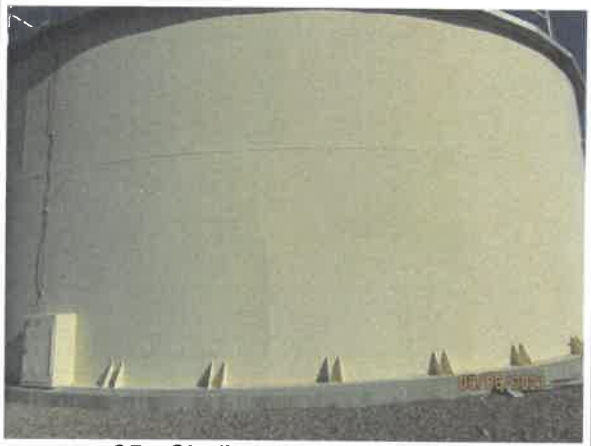
21 - Tank piping with sensors



22 - Control box

23 - Anode junction box

24 – Intact grounding wire



25 - Shell plate coating intact

26 - Welded door sheet in shell

29 - Overview of tank roof

27 – Pin point corrosion on lower tank shell

30 - Open hatch next to ladder

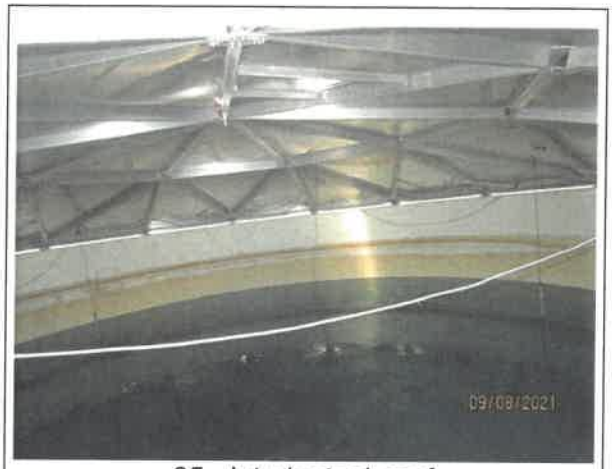
28 - Ladder landing on roof

31 - Guardrails around 100% of roof

32 - Roof vent

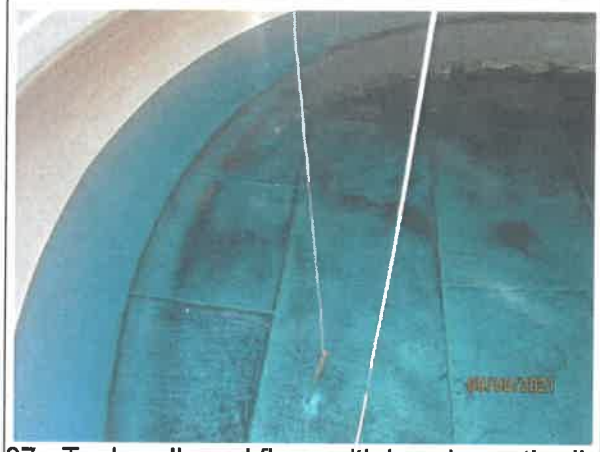
33 - Roof vent to roof connection

34 - Fine and coarse screen intact



35 - Interior tank roof

36 - Roof rafters and roof plates



37 - Tank walls and floor, with hanging cathodic protection system

38 - Hanging cathodic protection system

00:18 - Roof access hatch and roof rafters

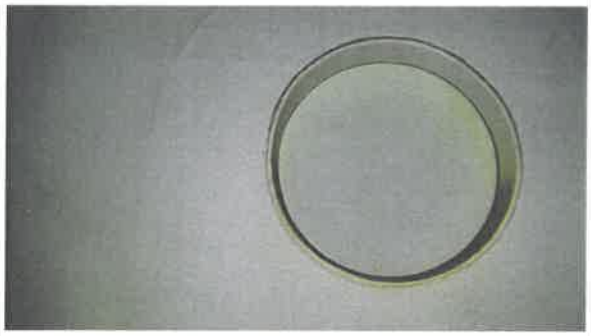
00:25 - Overview of roof rafters and vent

00:41 - Cathodic protection anodes hanging from ceiling

00:54 - Sediment staining on shell in fluctuation zone

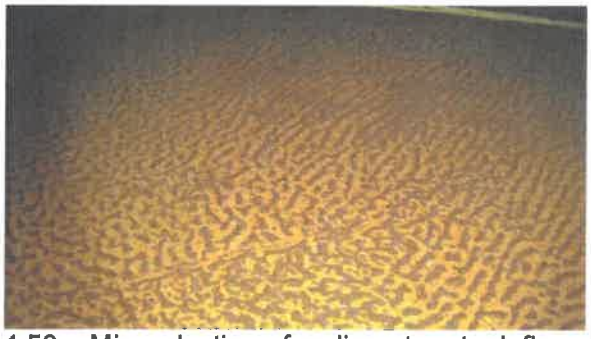
1:52 - Overflow box

2:31 - Roof vent



4:39 - Shell hatch

5:24 - Inlet pipe and shell wall condition



4:50 – Minor dusting of sediment on tank floor, coating is intact and free of corrosion

5:33 - Tank interior overview

4:53 - Outlet pipe with sediment ring and dusting of sediment

5:46 - Welded access section on shell

5:12 - Shell walls with intact coatng

5:56 – Pipe penetration in lower shell

6:56 - Floor inlet pipe with sediment ring

7:12 - Secondary shell hatch

8:28 - Debris on floor of tank

Appendix II
Exterior Paint Thickness Readings

B91 (Shell)

Created:	2021-09-08 11:32:27
PosiTector Body S/N:	846249
Probe Type:	PosiTector 6000 F
Probe S/N:	381458
CAL:	Cal 1

Summary

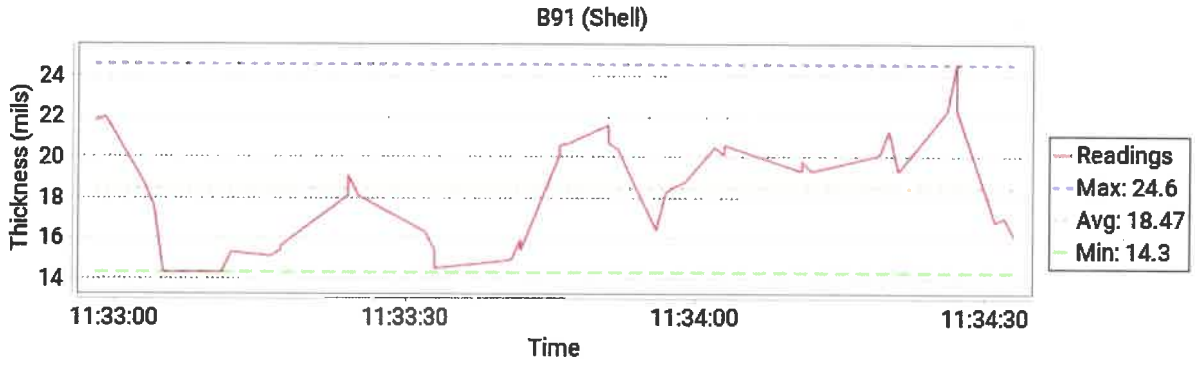
	#	x	σ	↓	↑
Thickness (mils)	45	18.47	2.72	14.3	24.6

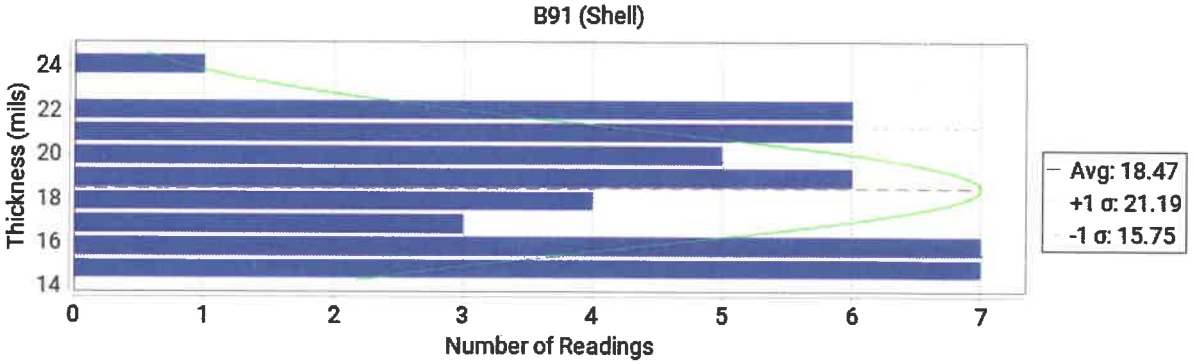
Readings

#	Thickness (mils)	Time
1	21.9	2021-09-08 11:32:58
2	21.8	11:32:58
3	22.0	11:32:59
4	18.7	11:33:03
5	17.6	11:33:04
6	14.3	11:33:05
7	14.3	11:33:10
8	14.3	11:33:11
9	15.3	11:33:12
10	15.1	11:33:16
11	15.4	11:33:17
12	15.6	11:33:17
13	18.1	11:33:24
14	19.1	11:33:24
15	18.1	11:33:25
16	16.3	11:33:32
17	15.4	11:33:33
18	14.5	11:33:33
19	14.9	11:33:41
20	15.9	11:33:42
21	15.4	11:33:42
22	20.1	11:33:46
23	20.6	11:33:46
24	20.7	11:33:47
25	21.6	11:33:51
26	20.7	11:33:51
27	20.4	11:33:52
28	16.4	11:33:56
29	18.3	11:33:57
30	18.8	11:33:59
31	20.5	11:34:02
32	20.1	11:34:03
33	20.6	11:34:03
34	19.3	11:34:11
35	19.8	11:34:11

B91 (Shell) Readings

#	Thickness (mils)	Time
36	19.3	11:34:12
37	20.1	11:34:19
38	21.3	11:34:20
39	19.3	11:34:21
40	22.3	11:34:26
41	24.6	11:34:27
42	22.4	11:34:27
43	16.8	11:34:31
44	17.0	11:34:32
45	16.1	11:34:33





GLOSSARY OF TERMS FOR STEEL/CONCRETE TANKS

Adhesion- State in which two surfaces are held together by interfacial forces which may consist off valence forces or interlocking action or both

Aggregate- Granular material, such as sand, gravel, crushed stone, crushed hydraulic-cement concrete, or iron blast-furnace slag used with a hydraulic cementing medium to produce either concrete or mortar.

Bugholes- Small regular or irregular cavities, usually not exceeding 15 mm in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and compaction.

Cathodic Protection - The use of a sacrificial metal or energized substance to polarize the structures surfaces and prevents corrosion.

Chalking - The degradation of a paint binders when exposed to ultra-violet light which creates a loose residue on the surface.

Chemical Attack- Decomposition of a coating or concrete due to the action of a chemical.

Chime- Portion of tank floor plate that extends outside the tank shell and rests on top of the foundation.

Contraction Joint- Formed, sawed, or tooled groove in a concrete structure to create a weakened plane and regulate the location of cracking resulting

Corrosion Cell - A concentrated localized site of accelerated corrosion that creates pitting.

Disbondment- The loss of adhesion between a coating and the substrate.

Dry Film Thickness - Total thickness of a paint film when completely cured.

Efflorescence- A white crystalline or powdery deposit on the surface of concrete. Efflorescence results from leaching of lime or calcium hydroxide out of a permeable concrete mass over time by water, followed by reaction with carbon dioxide and acidic pollutants.

Finish- The texture of a concrete surface after compaction and finishing operations have been performed.

Finial Vent - The central roof vent on top of a water tank.

Grout- A plastic mixture of cementitious materials and water used as a filler for cracks, or other void spaces, in concrete surfaces to be coated.

Holiday - A hole or void in a protective coating that may be invisible to the unaided eye that extends to the substrate.

Honey Comb- Voids left in concrete due to failure of the mortar to effectively fill the spaces among coarse aggregate particles.

Hydraulic, Hydrostatic Pressure- A force exerted on the concrete/coating interface due to the level of the ground water.

Isolation Joint- A separation between adjoining parts of a concrete structure

Joint Sealant- Compressible material used to exclude water and solid foreign materials from joints.

Lap Joint Seam- Overlapping seam between roof plates that is open and un-welded on the interior.

Laitance- A thin, weak brittle layer of cement and aggregate fines on a concrete surface. The amount of laitance is influenced by the degree of working or the amount of water in the concrete.

Lead Abatement - The removal of a lead bearing paint system.

Lead Encapsulation - The covering over of a lead based paint by applying a compatible topcoat.

Osmotic Blister - Raised coating area created by buildup of fluid under the coating. Fluid moves through coating in response to water/solvent concentrations between coating and tank water.

Osmotic Pressure- A force exerted on the concrete /coating interface through the capillaries in the concrete due to a moisture differential across the coating.

Overflow Weir Box- internal or external box that captures water above the operating height of the tank and directs it to an overflow pipe.

Pack Rust/Crevice Corrosion- Advanced form of steel corrosion that forms visible layers of oxidized steel swollen larger than the original steel plate thickness, usually found between steel plates or surfaces.

Pinholes- Film defect characterized by small pore-like flaws in a coating which extend entirely through the applied film and have the general appearance of pinpricks, fine holes, or voids when viewed by reflected light.

Plastic Cracking or Shrinkage- Cracking that occurs in the surface of fresh concrete soon after it is placed and while it is still plastic,

Porosity- The ratio usually expressed as a percentage, of the volume of voids in a material to the total volume of the material, including the voids.

Reflective Cracking-Cracking that develops in a coating directly over a dynamic crack in concrete.

Rigging plug- Thread steel nipple welded to a tank roof for the purposes of rigging painting cables. Usually sealed with a threaded plug when not in use.

ROV Remotely operated vehicle, underwater inspection device "MiniRover" by CorrTech

Screen Mesh- Number of openings per linear inch of screen.

Silt - Material that accumulates in the bottom of a water tank originating from treatment by products, raw water particles and distribution system debris.

Silt Stop- Solid cylinder installed on a floor inlet or outlet pipe to extend the pipe above the floor. Pipe prevents floor sediment from being stirred up or sucked out of the tank during flow.

Static Cracks- A crack in the concrete surface whose width does not change.

GLOSSARY OF TERMS FOR STEEL/CONCRETE TANKS

Stich or Skip Weld- Method of welding two pieces of steel together with intermittent short sections of weld bead. Leaves open lap joints along the unwelded sections.

Tubercle - Domed shaped buildup of corrosion products over an active corrosion site. Promotes metal loss through pitting due to differential oxygen concentrations.

Ultrasonic Measurement - The use of high frequency sound waves passed through a material to measure the time required to return. The time required to pass through the material is correlated to the speed of sound in the substrate to yield an actual thickness at a specific location.

Vapor Barrier- Waterproof membrane placed under concrete floor slabs that are placed on grade.

PITTSBURG TANK & TOWER GROUP
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250,000 Gallon GST
September 21, 2018
Mr. Kevin Olsen
Scientist 1
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Job No. 318448-N

If you would like to speak with Patrick Heltsley concerning this report, call (270) 826-9000, Ext. 4601

For additional copies of this report call (270) 826-9000, Ext. 4601

Photo shows the area around the tank foundation is properly graded and in compliance with AWWA D100-11; 12.7.1 Height aboveground.

Photo shows the condition of the foundation. We recommend repairing any cracks and spalling in the concrete with a commercial non-shrinking grout, caulking/grouting around the base of the tank to foundation connection to prevent water from entering under the tank, then sealing the foundation with a sealant.

Photo shows the tank is electrically grounded for lightning protection as required by OSH Act of 1970 Section 5 and NFPA 780-2017; 5.4 Metal Towers and Tanks and appears to be in good condition.

Photo shows the condition of one (1) of the thirty-six (36) anchor bolts. AWWA D100-11; 3.8.1.1 Required anchorage states, "For ground-supported flat-bottom reservoirs and standpipes, mechanical anchorage shall be provided when the wind or seismic loads exceed the limits for self-anchored tanks." We recommend cleaning the area around the anchor bolts, tightening the anchor nuts, then tack welding the circumference of the nut-to-base plate connections and bolt-to-nut connections to reinforce.

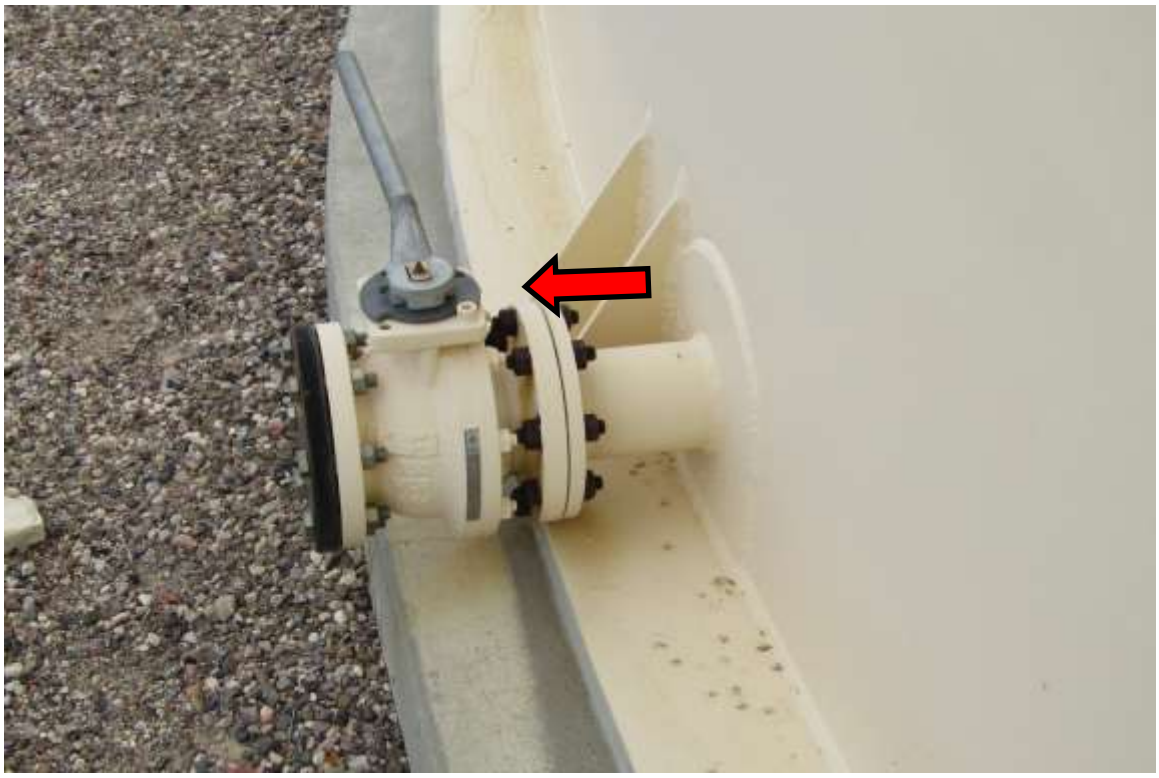


Photo shows the condition of the existing 4” drain valve, which is not equipped with a locking device or splash pad. We recommend installing a locking device to prevent unauthorized draining of the tank.

Photo shows the condition of the 30” primary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

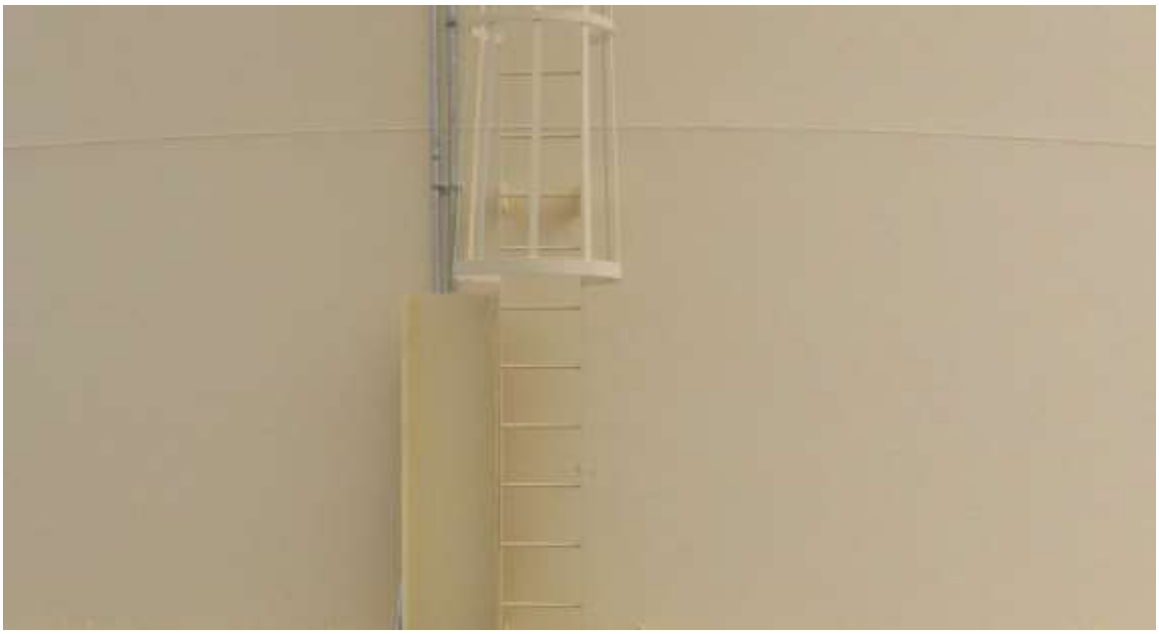
Install maintenance free galvanized steel bolts as a preventive measure

Photo shows the condition of the 30” secondary shell manway, which is in compliance with AWWA D100-11; 7.4.4 Shell manholes, NFPA 22-2018; 14.7.2.1.1 and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Install maintenance free galvanized steel bolts as a preventive measure

Photos show the 6” overflow pipe system, which is equipped with a flapper valve as required by AWWA D100-11; 7.3 Overflow. We recommend installing a new screen on the existing overflow pipe elbow.



Shell access ladder in above photos is 16” wide as required by OSHA 1910.23 Ladders and AWWA D100-11; 7.4.2 Ladders. We recommend installing a cable type ladder safety device, and posting a **Fall Protection Required** sign at the base of the ladder.

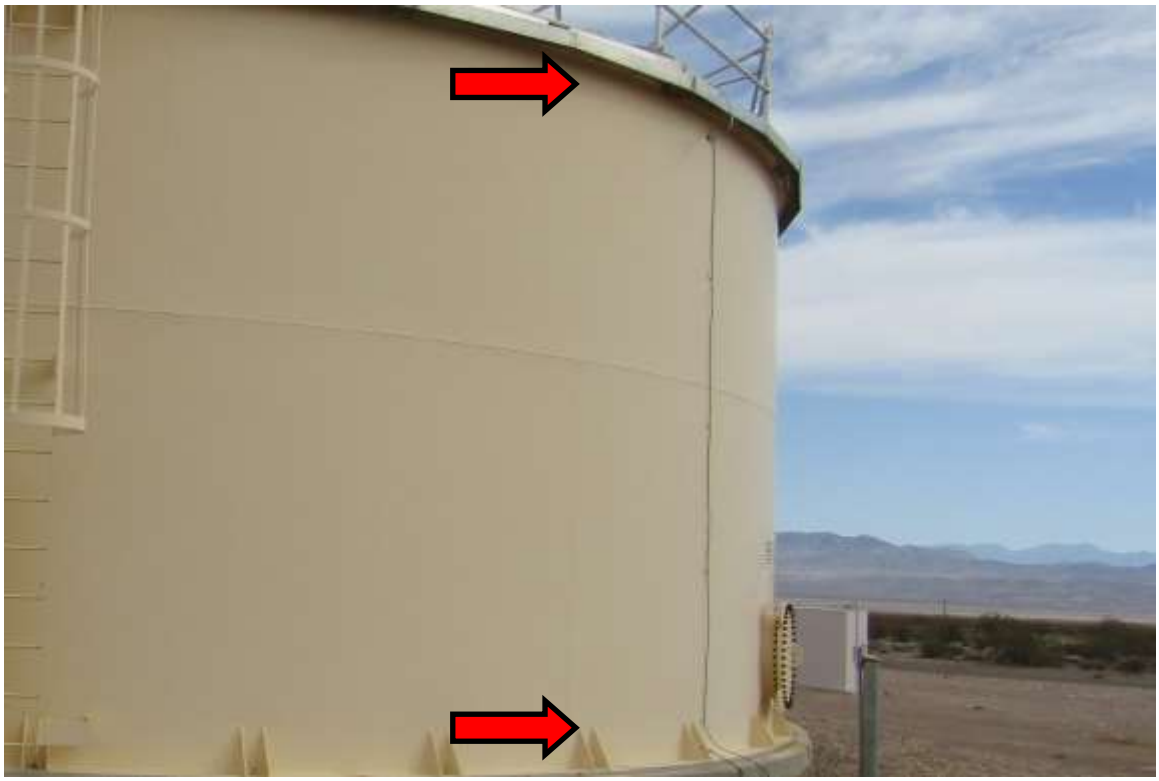


Photo shows the tank is not equipped with a liquid level indicator. We recommend installing a liquid level indicator, complete with target board and float.

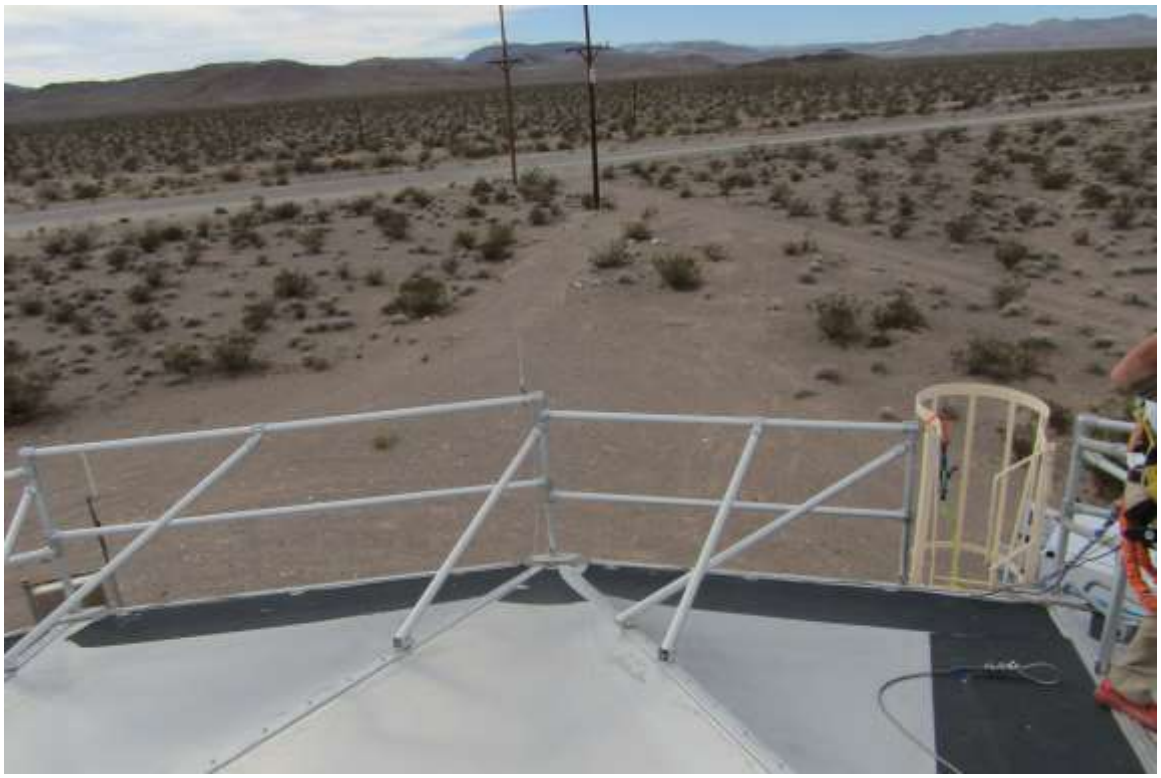


Photo shows the tank roof edge is equipped with a 38” high compliant handrail system for fall protection as required by OSHA 1910.28(b)(1). The handrail system is equipped with an intermediate rail and toeboard.

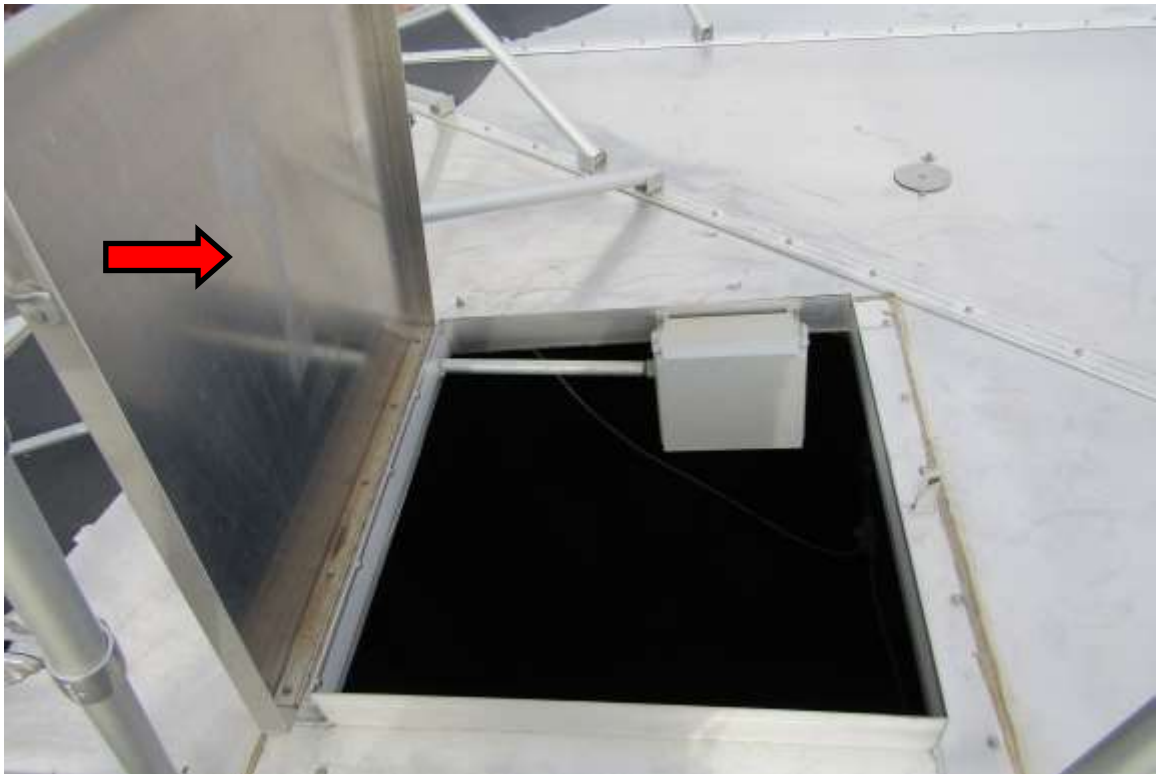


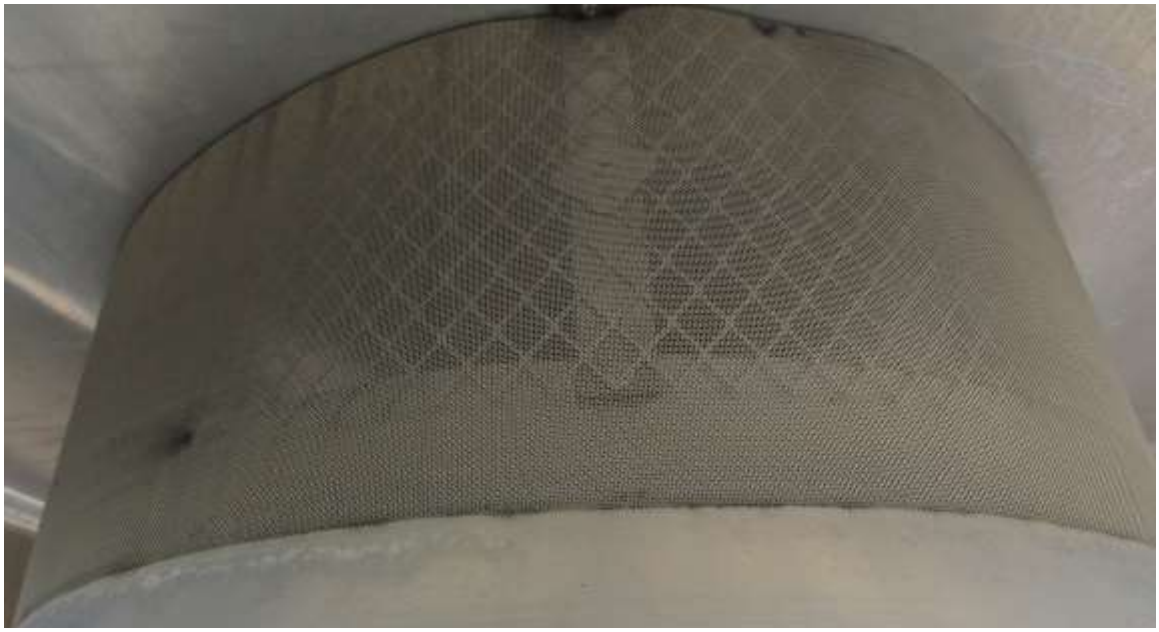
Photo shows the condition of the 36” primary roof hatch. Roof openings on this tank require the following to be in compliance with AWWA D100-11; 7.4.3 Roof openings and OSHA 1910.146(c)(2) Confined spaces.

We recommend:

Post **Confined Space Entry** sign

We further recommend installing an OSHA compliant interior access ladder complete with standoffs every 10' on center, and a cable type ladder safety device at the primary roof hatch.

**In cold climates it’s up to the owner’s discretion on placement of internal ladders.*



Photos show the existing roof vent, which appears to be in good condition.

Photos show the tank exterior coating system. The overall exterior coating system appears to be in good condition. We recommend re-evaluating the tank exterior at next inspection cycle.

Photo shows the interior roof, which appears to be in good condition.

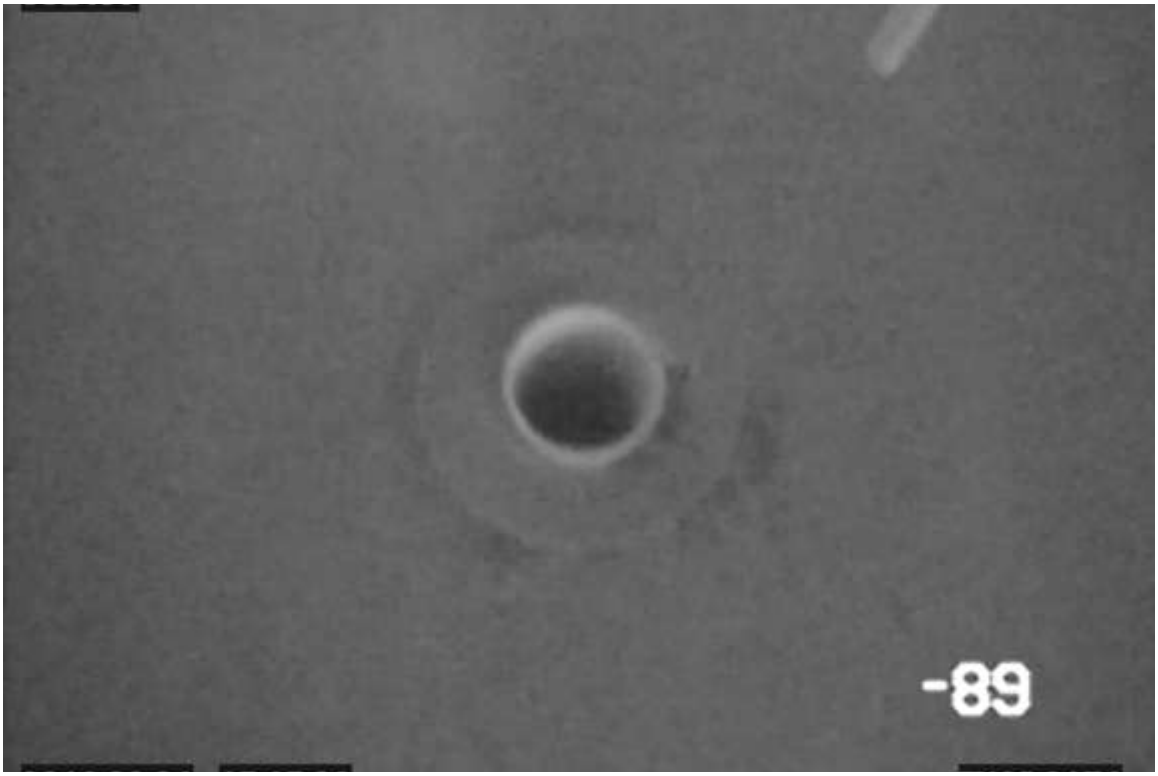
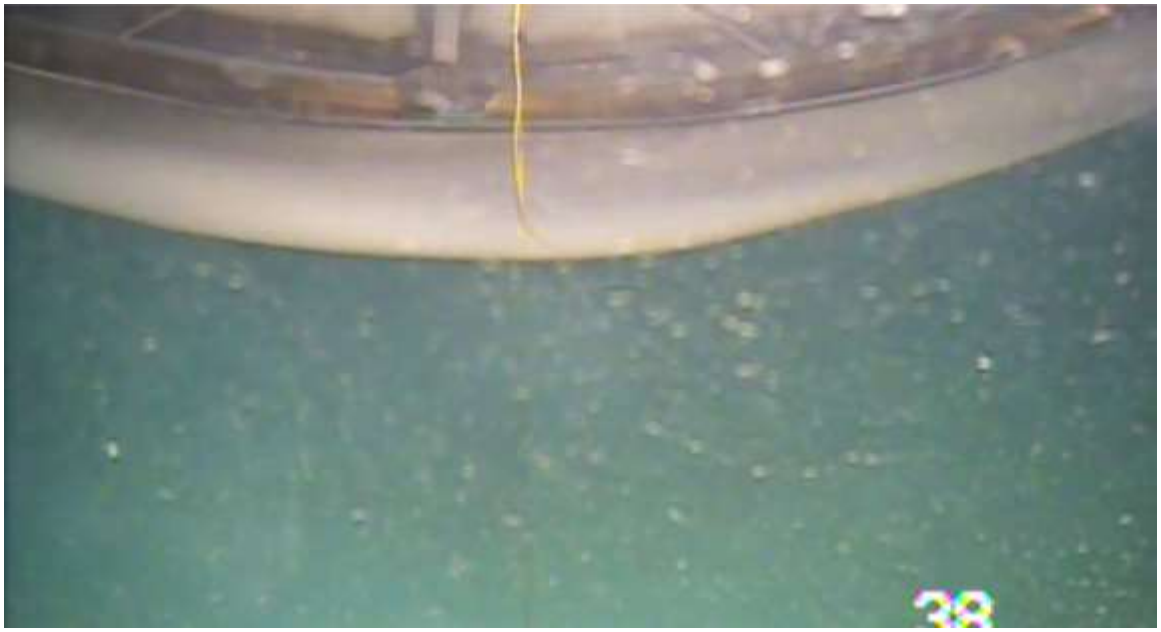


Photo shows an fill pipe on the tank interior. A temperature difference between the water in the top and bottom of a tank, even as little as 1-2 degrees Fahrenheit, is an indication of thermal stratification and the tank water not being completely mixed. Incomplete mixing would result in short-circuiting, and localized increase in water age would develop inside the tank. This typically leads to water quality problems, such as loss of residual, DBP spikes, HPC spikes, bacteria regrowth, formation of bio-film, changes in pH and dissolved oxygen. We recommend installing a mixing system. Electrical work to be done by others if required.

Photos show sediment and debris on the tank interior before a cleanout was performed.

Photos show the tank interior during a cleanout.



Photos show the tank interior coating system. The overall interior coating system appears to be in good condition. We recommend re-evaluating the tank interior at next inspection cycle.

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Henderson, KY 42419
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F: (270) 767-6912
www.pttg.com

GROUND STORAGE INSPECTION REPORT

JOB NO: 318448-N INSPECTOR: James Funk (CE)

TANK OWNER: Mission Support and Test Services, LLC

OWNER'S REPRESENTATIVE: Mr. Kevin Olsen

TITLE: Scientist 1

MAILING ADDRESS: Nevada National Security Site Mercury, NV 89023

PHYSICAL ADDRESS: Nevada National Security Site Mercury, NV 89023

E-MAIL: TottenML@nv.doe.gov

CITY, STATE: Mercury, NV ZIP: 89023 COUNTY: Nye County

TELEPHONE: (702) 295-0485 FAX: Not Provided

LOCATION OF TANK: South Area (5); Mercury, NV

Mission Support and Test Services, LLC
Nevada National Security Site
Mercury, NV 89023
September 21, 2018
Mr. Kevin Olsen
Scientist 1
(702) 295-0485

ORIGINAL CONTRACT NO: Not Provided YEAR BUILT: 1982

ORIGINAL MANUFACTURER: Brown Tank & Steel CAPACITY: 250,000 Gallon

DATE OF LAST INSPECTION: Not Provided TYPE: Potable

DIAMETER: 54'-5" HEIGHT: 19'-0"

OVERFLOW: 6" INLET: Not Provided

TYPE CONSTRUCTION: WELDED: X RIVETED: BOLTED:

ACCOUNT EXECUTIVE: Logan Rascoe

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Testing	Exterior	Interior
Lead	Negative	Negative
Adhesion	A0@5.3	A0@7.2

Mil Thickness Testing							
Ring 2	7.2	7.4					
Ring 1	5.2	6.8	7.5	4.9	5.4	6.2	5.6

Ultrasonic Thickness Testing							
Ring 2	0.271	0.276					
Ring 1	0.269	0.272	0.275	0.268	0.274	0.275	0.278

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Page #	Work Proposed	Critical Deficiency	NON-Critical Deficiency	OSHA	Structural	Preventive Maintenance
3	Repair any cracks and spalling in the concrete with a commercial non-shrinking grout.					X
	Caulk/Grout around the base of the tank to foundation connection.					X
	Seal the foundation with a sealant.					X
5	Clean the area around the anchor bolts, tighten the anchor nuts to specifications, then tack weld on the circumference of the nut-to-base plate connections and bolt-to-nut connections.					X
6	Install a locking device on the existing drain valve.		X			
7	Install maintenance free galvanized steel bolts on primary shell manway.					X
8	Install maintenance free galvanized steel bolts on secondary shell manway.					X
9	Install a new screen on the overflow pipe elbow.		X			
10	Install a cable type ladder safety device on exterior shell access ladder.			X		
	Post Fall Protection Required sign at base of exterior shell access ladder.			X		
11	Install a liquid level indicator complete with a target board and float.		X			
13	Post Confined Space Entry sign on primary roof hatch.			X		
	Install a compliant interior access ladder complete with standoffs every 10' on center at the primary roof hatch. *In cold climates it's up to the owner's discretion on placement of internal ladders.*			X		
	Install a cable type ladder safety device on interior access ladder.			X		
15	Re-evaluate the tank exterior at next inspection cycle.					X
17	Install a mixing system. Electrical work to be done by others if required.		X			
20	Re-evaluate the tank interior at next inspection cycle.					X