Corporate Office
PO Box 3668
Englewood, CO 80155-3668

800.774.3230
303.773.3230
Fax: 800.774.3201

API-653 Inspection Report

Modified for Out-of-Service Inspection of Fertilizer Tanks

Nutrien Ag Solutions - Five Points
Mount Sterling, Ohio

October 6, 2020

Tank # 1
51’ Diameter x 32’ High Tank
Carbon Steel Construction
28% Nitrogen Solution

Inspector’s Signature

Charlie C. McCluskey
Inspector, Heartland Tank Services, Inc.
API Certification No.:93629
Report No.: HTS-20-300

Reviewed & Approved by:

C.H. Brooks
President, Heartland Tank Services, Inc.

Index

1.0 EXECUTIVE SUMMARY

An API-653 tank inspection modified for the storage of fertilizer was conducted in accordance with client criterion for Non-Destructive Examination (NDE) that included visual and Ultrasonic Thickness (UT) examinations. The inspection was conducted in accordance with the requirements of the API-653 standards to collect data to evaluate the tank's mechanical integrity and fitness for continued service. Neither radiograph nor soil reports were available at the time of the inspection. Complete tank information is depicted on the Tank Data page, section 2.0.

Ultrasonic Thickness (UT) examinations of tank components (shell, roof, and floor) were completed on all accessible surfaces. UT measurements were performed on the tank's shell plates in six (6) locations according to a consistent test pattern. On the lower courses, every sheet was numbered and tested. On the upper courses, four (4) sheets on each course were numbered and tested. On the roof plates, a single measurement was taken in the center of each plate. The roof was divided into quadrants and the lowest measurement of each quadrant is recorded. On the floor plates, five (5) UT measurements were taken. The sheet numbers and locations are depicted in the appendices, section 5.0.

Summary Conclusions:

- The tank shell is fit for continued service:
  - Shell UT readings are above API minimum thickness requirements.
  - Weld joints are in full configuration and good condition with no corrosion present.
- The tank roof is fit for continued service:
  - Roof UT readings are above API minimum thickness requirements.
  - Roof weld joints are in full configuration and good condition with no corrosion present.
- The tank floor is out of service until repairs are completed.
  - Weld joints on floor and patch plates have severe corrosion in need of repair.
  - After completed repairs, continued use of floor is at Owner's Risk due to patch plates present that do not meet API Specifications.
- AFTER REPAIRS, THE RECOMMENDED MAXIMUM FILL HEIGHT IS 30'4" WITH 28% NITROGEN SOLUTION.

Summary Recommendations:

- **To meet API Specifications**
  - Owner should repair, to API Specifications, the marked damaged floor weld joints and patch plate weld joints with low hydrogen welding rods prior to returning tank into service. Refer to section 5.0 – Floor CML locations for areas needing repair.

- **Discretionary recommendations**
  - Owner should reapply internal coating on the repairs and other areas of the floor missing internal coating after weld joint repairs are complete to prevent future corrosion damage.
  - Keep external chime area free of gravel and foliage to prevent corrosion damage from occurring.

Next inspection intervals are:

- UT Thickness 10/06/2025
- Internal 10/06/2025
- External 10/06/2025

2.0 TANK DATA

Tank #:	1	***Diameter:***	51’
Client:	Nutrien Ag Solutions - Five Points	***Height/Length:***	32’
Location:	Mount Sterling, OH	***Corr. Allowance:***	0.000
Inspection Date:	10/06/20	***Joint Efficiency:***	0.85
Type Inspection:	Out-of-Service	***Specific Gravity:***	1.28
Test Methods:	UT, Visual & Vacuum	***Plate Spec:***	A 36
Manufacturer:	Skinner Tank	***Course 1 t:***	0.312
Year Built:	1997	***Course 2 t:***	0.312
Const. Code:	API-650	***Course 3 t:***	0.312
After Repairs, Capacity @ 30’4”:	462,994 gallons	***Course 4 t:***	0.312
Shell Construction:	Butt Welded	***Course 5 t:***	N/A
Roof Type:	Fixed / Cone	***Course 6 t:***	N/A
Foundation:	Earthen	***Course 7 t:***	N/A
Product:	28% Nitrogen Solution	***Roof / Head 1 t:***	0.187
Recommended Fill Height After Repairs:	30’4”	***Bttm / Head 2 t:***	0.250

3.0 INSPECTION RESULTS

3.1 *Foundation:*

3.1.1 The tank was constructed on an earthen foundation. The foundation was observed to be in good condition.

3.1.2 A settlement survey was completed from the inside of the tank. Beginning at the highest point, moving clockwise, eight (8) equally spaced measurements were performed around the circumference of the tank. Results reveal a planar tilt is present of 0.600" but is within the parameters of the API Specifications and fit for continued service.

3.2 *Shell:*

3.2.1 UT readings were performed on all shell courses on the tank. A weld joint efficiency of 0.85 and a specific gravity of 1.28 were used in the minimum thickness calculations. Results reveal all shell courses to be above API minimum thickness requirements. The tank shell is fit for continued service.

3.2.2 Calculation results from this inspection reveal the maximum fill height to be 32'. However, to keep product below the internal rafters, and AFTER COMPLETED REPAIRS, THE RECOMMENDED MAXIMUM FILL HEIGHT IS 30'4" WITH 28% NITROGEN SOLUTION.

3.2.3 A visual examination revealed the external shell plates and weld joints to be in good condition with minor corrosion damage present.

3.2.4 Visual examination of the internal shell plates and weld joints found the condition to be good with minor corrosion damage present.

3.2.5 The internal and external chime welds, or where the tank shell and floor meet, were visually examined and found to be in good condition with minor corrosion present.

3.2.6 The external coating was visually examined and found to be in good condition.

3.3 *Appurtenances:*

3.3.1 The tank is equipped with:

- One (1) 4" inlet nozzle.
- One (1) 6" suction nozzle.
- One (1) 24" shell manway.

3.3.2 Welds on all nozzles and manway were visually examined. The nozzles, manway neck, and reinforcement pads were UT tested. Welds were found to be in good condition with minor corrosion present. The nozzles and manway were found to have proper reinforcement pads and threaded tell-tale holes for testing as required by API Specifications. Nozzles and manway are fit for continued service.

3.4 *Roof:*

3.4.1 The plates on the roof are lap welded. One UT reading was performed in the center of each roof plate. Results reveal all roof plates to be above API minimum thickness requirements and fit for continued service.

3.4.2 Roof plate welds joints were visually examined and found to be in good condition with minor corrosion present.

3.4.3 The tank is equipped with one (1) 10" vent. Vent is equipped with a proper screen to prevent debris from entering roof vent and restricting airflow during the filling and emptying processes.

3.4.4 The roof of the tank is equipped with one (1) 20" manway and one (1) 8" gauge port. Welds on manway and gauge port were visually examined and found to be in good condition.

3.4.5 The external coating on the roof was visually examined and found to be in good condition.

3.5 *Floor:*

3.5.1 The plates on the floor are lap welded. UT readings were completed on all floor plates. Results reveal all floor plates to be above API minimum thickness requirements. However, the floor is out of service until repaired. See section 3.5.3 for details. Once repairs are complete, continued use of floor is at Owner's Risk based on findings mentioned in section 3.5.3.2.

3.5.2 Floor plates were visually examined and found to be in fair condition with corrosion present where the internal coating has failed.

3.5.3 Floor weld joints were visually examined and found to have severe corrosion damage in areas where internal coating has failed. Although the vacuum test completed in these areas did not reveal leaks, the weld joints have been marked with orange spray paint for immediate repair.

3.5.3.1 There are seven patch plates that have corrosion damage on the weld joints in need of repair. There is approximately one-foot (1') of floor weld joint repair needed as well.

3.5.3.2 There are existing floor patch plates installed that do not meet API requirements.

3.5.3.1.1 During inspection, no leaks or issues were found in these areas. The tank has been in service with the code violations at Owner's knowledge. Continued use after repairs is at Owner's Risk.

3.5.4 UT readings were taken on the sump bottom plate and sidewall in six (6) locations. Results reveal the lowest reading to be 0.501 on sump bottom plate and 0.502 on sump sidewall. Readings are above API minimum thickness requirements. Sump is fit for continued service.

3.6 *Ancillary Equipment:*

3.6.1 Access to the tank roof was made by way of spiral stairway welded to the shell or a landing to an adjacent tank. The stairway and landing are equipped with proper handrails for safety as required by OSHA. Welds on stairway, landing, handrail, and attachments were visually examined and found to be in good condition. The external coating was found to be in good condition. Spiral stairway and landing are fit for continued service.

3.6.2 Roof support column and rafters were visually examined and are in good condition. Center pole readings were taken at two feet (2'), four feet (4'), and six feet (6'). Low readings for each location, respectively, were: 0.309, 0.313, and 0.305.

3.6.3 An automatic gauge is present and is in operable condition.

4.0 RECOMMENDATIONS

4.1 *Foundation:*

4.1.1 Keep external chime area free of gravel and foliage to prevent corrosion damage from occurring.

4.2 *Shell:*

4.2.1 AFTER COMPLETED FLOOR REPAIRS, THE RECOMMENDED MAXIMUM FILL HEIGHT IS 30’4” WITH 28% NITROGEN SOLUTION.

4.3 *Appurtenance:*

4.3.1 None.

4.4 *Roof:*

4.4.1 None.

4.5 *Floor:*

4.5.1 Owner should repair, to API Specifications, the marked damaged floor weld joints and patch plate weld joints with low hydrogen welding rods prior to returning tank into service. Refer to section 5.0 – Floor CML locations for areas needing repair.

4.5.2 Owner should reapply internal coating on the repairs and other areas of the floor missing internal coating after weld joint repairs are complete to prevent future corrosion damage.

4.6 *Ancillary Equipment:*

4.6.1 None.

4.7 *Next Inspection based on The Fertilizer Institute recommendations:*

4.7.1 Next internal inspection is due by 10/06/2025.

4.7.2 Next external inspection is due by 10/06/2025.

4.7.3 Next UT inspection is due by 10/06/2025.

4.7.4 Governing component limiting life on the tank is the shell.

5.0 APPENDICES

Engineering Calculations

Settlement Survey

Thickness Measurement Record

Inspection Drawings

Inspection Photographs

Certifications & Inspection Warranty

Tank Shell Minimum Thickness and Remaining Life Calculations Date 10/06/2020

File No.	Report No.	Client	Tank No.	Temp. (degF)	Initials
4443	HTS-20-300	Nutrien Ag Solutions	Tank 1		Charlie McCluskey

SHELL MINIMUM THICKNESS CALCULATIONS

$$t_{min} = \frac{2.6(H-1)DG}{SE}$$

Where:

H = The height above the bottom of the course of study to the maximum liquid level height of the product, in ft. For corroded or pitted areas, H = the height from the bottom of the corroded or pitted area to the maximum liquid level height of the product, in ft.

tmin = The calculated minimum acceptable shell thickness, in inch (cannot be less than 0.10 inch for any course). The minimum acceptable shell thickness allowed by API-653 and STI-SP001 for tank size, in inch .

D = Nominal diameter of tank, in ft.

G = Highest specific gravity of the contents (including test water if tank will, or may, be tested in the future).

S = Maximum allowable stress, in psi. For welded tanks; use the smaller of 0.80Y of 0.429T for bottom and second course or the smaller of 0.88Y or 0.472T for all other courses. For riveted tanks; S = 21000 psi. For STI Tank Inspections S = 26000 psi (E = 1)

Y = Specified minimum yield strength of the plate, in psi; use 30000 psi if not known (N/A for riveted tanks).

T = The smaller of the specified minimum tensile strength of the plate or 80000 psi; use 55000 psi if not known (N/A for riveted tanks).

E = Original joint efficiency for the tank. For welded tanks; use API-653, Table 2-1 ; use E = 1.0 when evaluating the retirement thickness in a corroded plate, when away from welds or joints by at least the greater of one inch or twice the plate thickness. For riveted tanks; use E = 1.0 for shell plates greater than 1 inch away from rivets; use the value of E from API-653 Table 2-1 when within 1 inch of rivets. For STI Tank Inspections E = 1 where S = 26000 psi.

D (ft) 51 G 1.28 E 0.85 Fill Height (ft) 32.0

	Material	Crs H (ft)	H (ft)	S (psi)	tmin (inch)
Course 1	A 36	8	32.0	24900	0.249
Course 2	A 36	8	24.0	24900	0.184
Course 3	A 36	8	16.0	27400	0.109
Course 4	A 36	8	8.0	27400	0.100

Tank Shell Minimum Thickness and Remaining Life Calculations Date 10/06/2020

File No.	Report No.	Client	Tank No.	Temp. (degF)	Initials
4443	HTS-20-300	Nutrien Ag Solutions	Tank 1		Charlie McCluskey

SHELL REMAINING LIFE CALCULATIONS

Ca = tact-tmin = Remaining Corrosion Allowance (inch)
Cr = tprev-tact / Y = Corrosion Rate (inch/Yr)
RL = Ca / Cr = Remaining Life (year)
Y = 5 = Tank age (year)

Where:

Ca = Remaining corrosion allowance of the shell course under consideration, in inch.

Cr = Corrosion rate of the shell course under consideration, in inch per year.

FHc = Calculated fill Height = (SEtact/2.6DG+1) + (product height below course of interest), in ft.

tact = Minimum thickness measurement of the shell course under consideration, as recorded at the time of inspection, in inch.

tmin = minimum required thickness of shell course, at the maximum allowable fill height, in inch.

tprev = previous thickness measurement of shell course under consideration, as recorded at last inspection or nominal thickness if no previous thickness measurements, in inch.

RL = Estimated remaining life of the shell course under consideration, in year.

Y = Time span between thickness readings or age of the tank if nominal thickness is used for tprev, in year.

	tprev	tact	tmin	Ca	Cr	RL	FHc
Course 1	0.312	0.299	0.249	0.050	0.0026	19	38.29
Course 2	0.312	0.299	0.184	0.115	0.0026	44	46.29
Course 3	0.312	0.309	0.109	0.200	0.0006	333	59.40
Course 4	0.312	0.311	0.100	0.211	0.0002	1055	67.68

AST ATMOSPHERIC STORAGE TANK FIXED ROOF EVALUATION
MINIMUM THICKNESS, REMAINING LIFE, PRESSURE CALCULATIONS

Date: 10/06/2020

File No	Report No	Client	Inspector	Tank No	Temp(degF)
2291	HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	

Where;
Ca = remaining corrosion allowance of the tank component under consideration, in inch (t act - t min).
Cr = corrosion rate of the tank component under consideration, in inch per year (t prev - t act / Y).
oz = unit of measurement, (weight, in ounces, per square inch), (16 oz per pound)
psi = unit of measurement, (weight, in pounds, per square inch)
RL = estimated remaining life of the tank component under consideration, in year (Ca / Cr).
t act = actual thickness measurement of the tank component under consideration, as recorded at the time of inspection, in inch.
t min = minimum required thickness of tank component, at the design MAWP at the design temperature (200 degF for atm AST's), in inch (greater of psi/wt or 0.090").
t nom = design nominal thickness of tank component under consideration, in inch.
t prev = previous thickness measurement of the tank component under consideration, as recorded at last inspection or nominal thickness if no previous thickness measurements, in inch.
t yn = thickness of the tank component under consideration at the next inspection at twice the calculated corrosion rate, in inch (t act - (2*Cr*Yn).
wt = weight of plate per cubic inch.
wc = unit of measurement, (height, in inch, of water column bearing on 1 Sq.Inch area), (27.7 wc per pound)
Y = time span between thickness readings or age of the tank component if tnom is used for tprev, in year.
Yn = estimated time span to next inspection of the tank component under consideration, in year.

ROOF PLATES - REMAINING LIFE

Y	t prev (inch)	t act (inch)	t min (inch)	Cr (inch/Yr)	Ca (inch)	RL
23	0.187	0.183	0.090	0.00017	0.093	535

ROOF MAXIMUM ALLOWABLE INTERNAL PRESSURE

Material Category	wt	Yn	tyn	psi	oz.	wc
CS/Crom. Stl	0.2833	5	0.181	0.051	0.822	1.427

STORAGE TANK FLOOR EVALUATION
MINIMUM REMAINING THICKNESS (MRT) CALCULATIONS

Date 10/06/2020

File No	Report No	Client	Inspector	Tank No	Temp (degF)
1779	HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	

Liner	CP Protec	50mil Liner	RPB	Ca	Shell tmin	Shell tnom	D	H	S
No	No	No	No			0.312	51.000	32.000	

Where;
Ca = corrosion allowance, in (inch).
MRT = minimum remaining thickness at the end of interval Or. This value must meet the requirements of Table 4-1 and sections 2.4.7.4 and 2.4.8.
Or = In-service interval of operation (years to next internal inspection) not to exceed that allowed by 4.4.2.
RTbc = minimum remaining thickness from bottom side corrosion after repairs.
RTip = minimum remaining thickness from internal corrosion after repairs.
StPr = maximum rate of corrosion not repaired on the top side. StPr = 0 for coated areas of the bottom. The expected life of the must equal or exceed Or to use StPr = 0.
tmin = minimum allowable thickness in accordance with requirements of Table 4-1 and sections 2.4.7.4 and 2.4.8.
to = bottom plate original thickness.
UPr = maximum rate of corrosion on the bottom side. To calculate the corrosion rate, use the minimum remaining thickness after repairs. Assume a linear rate based on the age of the tanks.
D = nominal diameter of tank, in (ft).
H =Height, in (ft), from the bottom of the 1st shell course to the maximum allowable fill height
S=Stresses are calculated from 2.6(H-1)DG/SE.

GENERAL PLATES-AFTER INSPECTION / REPAIRS

Age	to	RTbc	RTip	UPr	StPr	Or	MRT	tmin	Results
23	0.250	0.198	0.198	0.00226	0.00226	5	0.175	0.100	ACCEPTABLE

PLATES IN CRITICAL ZONE (3") - AFTER INSPECTION / REPAIRS

Age	to	RTbc	RTip	UPr	StPr	Or	MRT	tmin	Results
23	0.250	0.212	0.212	0.00165	0.00165	5	0.195	0.100	ACCEPTABLE

ANNULAR PLATES - AFTER INSPECTION / REPAIRS

Age	to	RTbc	RTip	UPr	StPr	Or	MRT	tmin	Results

AST STORAGE TANK EVALUATION

Nozzle/Pipe Remaining Life Calculations

Report No	Client	Inspector	Vessel	Date
HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	10/06/2020

Minimum Thickness Determinations:

a) The following pipe minimum thicknesses are based on the current in-house engineering standards, which take into consideration, pressures, structural integrity and localized corrosion allowance.

Size (inch)	<2	3	4	6	8	10	12	>12
tmin (inch)	0.080	0.100	0.100	0.125	0.125	0.156	0.188	0.188

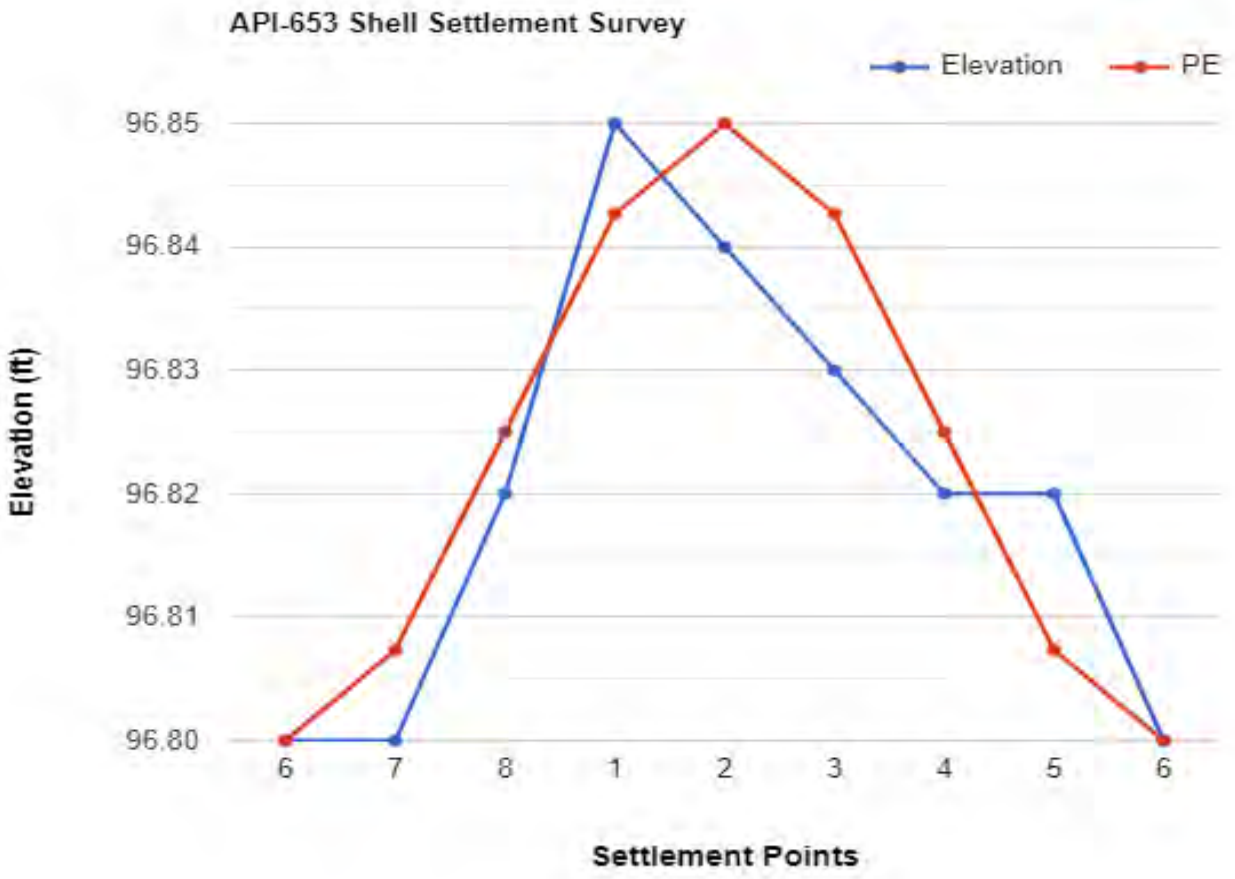
Nozzle Remaining Life Calculations:

CML	Age (year)	Comp.Disc. (inch)	Size (inch)	tprev (inch)	tact (inch)	tmin (inch)	Ca (inch)	Cr (inch/Yr)	RL (year)
067	23	24" MW	24.000	0.500	0.492	0.188	0.304	0.00035	874
068	23	4" Nozzle	4.000	0.337	0.245	0.100	0.145	0.00400	36
069	23	6" Nozzle	6.000	0.432	0.426	0.125	0.301	0.00026	1154

API-653 APPENDIX B SHELL SETTLEMENT EVALUATION

(para. B.2.2.4)

Report No	Client	Inspector	Vessel	Date
HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	10/06/2020



	Base Elev	Max Elev	ΔElev		
FT	96.800	96.850	0.050	R^2 =	0.933
IN	1161.600	1162.200	0.600		

API-653 APPENDIX B SHELL SETTLEMENT EVALUATION

Report No.: HTS-20-300

D	H	Roof Type	L	1st Crs Plt Spec	Y	E
51	32	F	20.03	A 36	36000	29000000

Where:
D = Tank Diameter, in ft
H = Tank Height, in ft
Roof Type: F = fixed, O = Open
L = Arc length between measurement points, in ft (32' max) (greatest dist. allowed based on even # of points)
Y = Yield strength of shell 1st course , in pounds per Sq.Inch (psi)
E - Young's modulus, in pounds per Sq.Inch (psi)
θ = Angle theta at elevation point, in degrees
PE = Predicted elevation, in ft
Ui = Measured out-of-plane settlement in relation to a cosine curve, in ft
Si = Deflection, in ft, (out-of-plane distortion)
Smax = Maximum allowed deflection, in ft, (out-of-plane distortion)

Smax =((L^2*Y*11)/2*(E*H)) = **0.086**

Point	*Elevation*	θ	*PE*	*Ui*	*Si*	*Results*
1	96.850	0	96.843	0.007	0.015	SAT
2	96.840	45	96.850	-0.010	-0.007	SAT
3	96.830	90	96.843	-0.013	-0.005	SAT
4	96.820	135	96.825	-0.005	-0.005	SAT
5	96.820	180	96.807	0.013	0.015	SAT
6	96.800	225	96.800	0.000	-0.003	SAT
7	96.800	270	96.807	-0.007	-0.005	SAT
8	96.820	315	96.825	-0.005	-0.005	SAT

Point one begins on the Northwest side of the tank. Consecutive readings follow a clockwise direction around the tank.

AST Storage Tank Evaluation

AST Component Inspection Data

Report No	Client	Inspector	Vessel	Date
HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	10/06/2020

Component Thickness Measurements in (inch)

CML	*Component*	*Location*	*tml-1*	*tml-2*	*tml-3*	*tml-4*	*tml-5*	*tml-6*	*Minimum*
001	Shell Crs 1	Plt 1	0.309	0.310	0.313	0.310	0.315	0.319	0.309
002	Shell Crs 1	Plt 2	0.310	0.319	0.311	0.318	0.304	0.314	0.304
003	Shell Crs 1	Plt 3	0.302	0.312	0.318	0.319	0.314	0.309	0.302
004	Shell Crs 1	Plt 4	0.316	0.310	0.313	0.314	0.314	0.309	0.309
005	Shell Crs 1	Plt 5	0.305	0.307	0.310	0.307	0.308	0.316	0.305
006	Shell Crs 1	Plt 6	0.313	0.312	0.309	0.311	0.305	0.310	0.305
007	Shell Crs 1	Plt 7	0.310	0.312	0.317	0.306	0.305	0.317	0.305
008	Shell Crs 1	Plt 8	0.303	0.306	0.309	0.313	0.299	0.308	0.299
009	Shell Crs 2	Plt 9	0.314	0.313	0.312	0.313	0.318	0.309	0.309
010	Shell Crs 2	Plt 10	0.314	0.318	0.311	0.315	0.311	0.314	0.311
011	Shell Crs 2	Plt 11	0.316	0.318	0.309	0.314	0.312	0.309	0.309
012	Shell Crs 2	Plt 12	0.319	0.312	0.317	0.316	0.315	0.306	0.306
013	Shell Crs 2	Plt 13	0.318	0.311	0.319	0.315	0.315	0.315	0.311
014	Shell Crs 2	Plt 14	0.317	0.312	0.317	0.311	0.310	0.307	0.307
015	Shell Crs 2	Plt 15	0.318	0.312	0.311	0.317	0.319	0.308	0.308
016	Shell Crs 2	Plt 16	0.304	0.310	0.307	0.307	0.299	0.307	0.299
017	Shell Crs 3	North	0.314	0.318	0.317				0.314
018	Shell Crs 3	South	0.314	0.309	0.311				0.309
019	Shell Crs 3	East	0.318	0.319	0.319				0.318
020	Shell Crs 3	West	0.314	0.316	0.312				0.312
021	Shell Crs 4	North	0.313	0.314	0.315				0.313
022	Shell Crs 4	South	0.315	0.313	0.311				0.311
023	Shell Crs 4	East	0.318	0.316	0.319				0.316
024	Shell Crs 4	West	0.319	0.319	0.319				0.319
025	Roof	Q1	0.184						0.184
026	Roof	Q2	0.188						0.188
027	Roof	Q3	0.183						0.183
028	Roof	Q4	0.187						0.187
029	Floor	Plt 29	0.221	0.224	0.213	0.224	0.226		0.213
030	Floor	Plt 30	0.224	0.225	0.223	0.228	0.219		0.219
031	Floor	Plt 31	0.221	0.216	0.232	0.215	0.223		0.215
032	Floor	Plt 32	0.227	0.228	0.223	0.231	0.220		0.220
033	Floor	Plt 33	0.229	0.228	0.231	0.211	0.221		0.211
034	Floor	Plt 34	0.224	0.224	0.225	0.220	0.217		0.217

035	Floor	Plt 35	0.223	0.222	0.224	0.226	0.226	0.222
036	Floor	Plt 36	0.229	0.227	0.229	0.219	0.217	0.217
037	Floor	Plt 37	0.212	0.226	0.214	0.215	0.228	0.212
038	Floor	Plt 38	0.238	0.217	0.220	0.209	0.219	0.209
039	Floor	Plt 39	0.228	0.229	0.214	0.216	0.223	0.214
040	Floor	Plt 40	0.220	0.211	0.207	0.229	0.204	0.204
041	Floor	Plt 41	0.225	0.224	0.231	0.217	0.219	0.217
042	Floor	Plt 42	0.227	0.207	0.212	0.228	0.223	0.207
043	Floor	Plt 43	0.221	0.232	0.224	0.217	0.229	0.217
044	Floor	Plt 44	0.198	0.224	0.226	0.206	0.228	0.198
045	Floor	Plt 45	0.210	0.217	0.217	0.213	0.213	0.210
046	Floor	Plt 46	0.224	0.239	0.227	0.228	0.224	0.224
047	Floor	Plt 47	0.220	0.218	0.209	0.207	0.206	0.206
048	Floor	Plt 48	0.205	0.206	0.219	0.213	0.228	0.205
049	Floor	Plt 49	0.218	0.225	0.219	0.210	0.212	0.210
050	Floor	Plt 50	0.218	0.222	0.208	0.229	0.229	0.208
051	Floor	Plt 51	0.220	0.219	0.217	0.221	0.228	0.217
052	Floor	Plt 52	0.221	0.224	0.230	0.228	0.225	0.221
053	Floor	Plt 53	0.207	0.204	0.220	0.224	0.214	0.204
054	Floor	Plt 54	0.233	0.220	0.225	0.222	0.229	0.220
055	Floor	Plt 55	0.233	0.224	0.238	0.236	0.210	0.210
056	Floor	Plt 56	0.233	0.240	0.223	0.218	0.213	0.213
057	Floor	Plt 57	0.229	0.216	0.224	0.224	0.228	0.216
058	Floor	Plt 58	0.230	0.223	0.228	0.224	0.230	0.223
059	Floor	Plt 59	0.220	0.229	0.211	0.214	0.228	0.211
060	Floor	Plt 60	0.223	0.213	0.223	0.220	0.237	0.213
061	Floor	Plt 61	0.224	0.234	0.224	0.223	0.230	0.223
062	Floor	Plt 62	0.226	0.229	0.212	0.218	0.236	0.212
063	Floor	Plt 63	0.204	0.239	0.224	0.220	0.229	0.204
064	Floor	Sump BP	0.506	0.504	0.501			0.501
065	Floor	Sump SW	0.504	0.502	0.502			0.502
066	Floor	Center Pole	0.304	0.313	0.305			0.304

API-653 STORAGE TANK EVALUATION

Nozzle Inspection Data

Report No	Client	Inspector	Vessel	Date
HTS-20-300	Nutrien Ag Solutions	Charlie McCluskey	Tank 1	10/06/2020

Nozzle Thickness Measurements in (inch)

Components with Vert. Axis: tml-1 N., tml-2 E., tml-3 S., tml-4 W. (Drawing N.)

Component with Horz. Axis:tml-1 Top, tml-2 Side, tml-3 Bttm., tml-4 Side (Clock Wise)

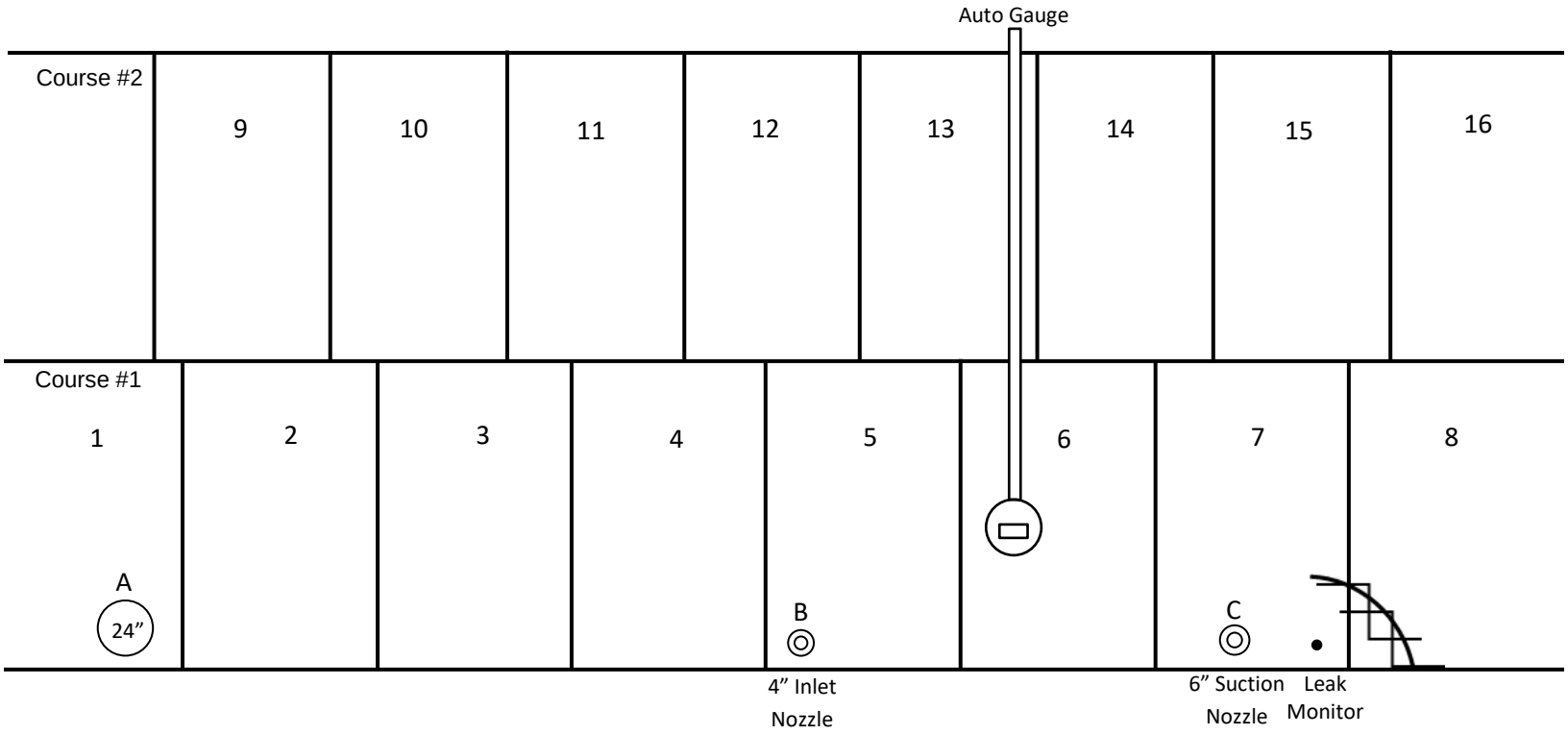
CML #	*Comp. ID*	*Size*	*Location*	*Service*	*tml-1*	*tml-2*	*tml-3*	*tml-4*	*Minimum*
067	24" MW	24.000	A	Manway	0.494	0.492	0.495	0.494	0.492
068	4" Nozzle	4.000	B	Inlet	0.251	0.246	0.245	0.243	0.245
069	6" Nozzle	6.000	C	Suction	0.426	0.429	0.433	0.431	0.426

Customer: Nutrien Ag Solutions	**City, State:** Mt. Sterling, OH (Five Points)	**Tank #:** 1
Diameter: 51’	**Height**: 32’	**Date of Inspection:** 10/6/2020

Drawing is not to scale

SHELL CML LOCATIONS

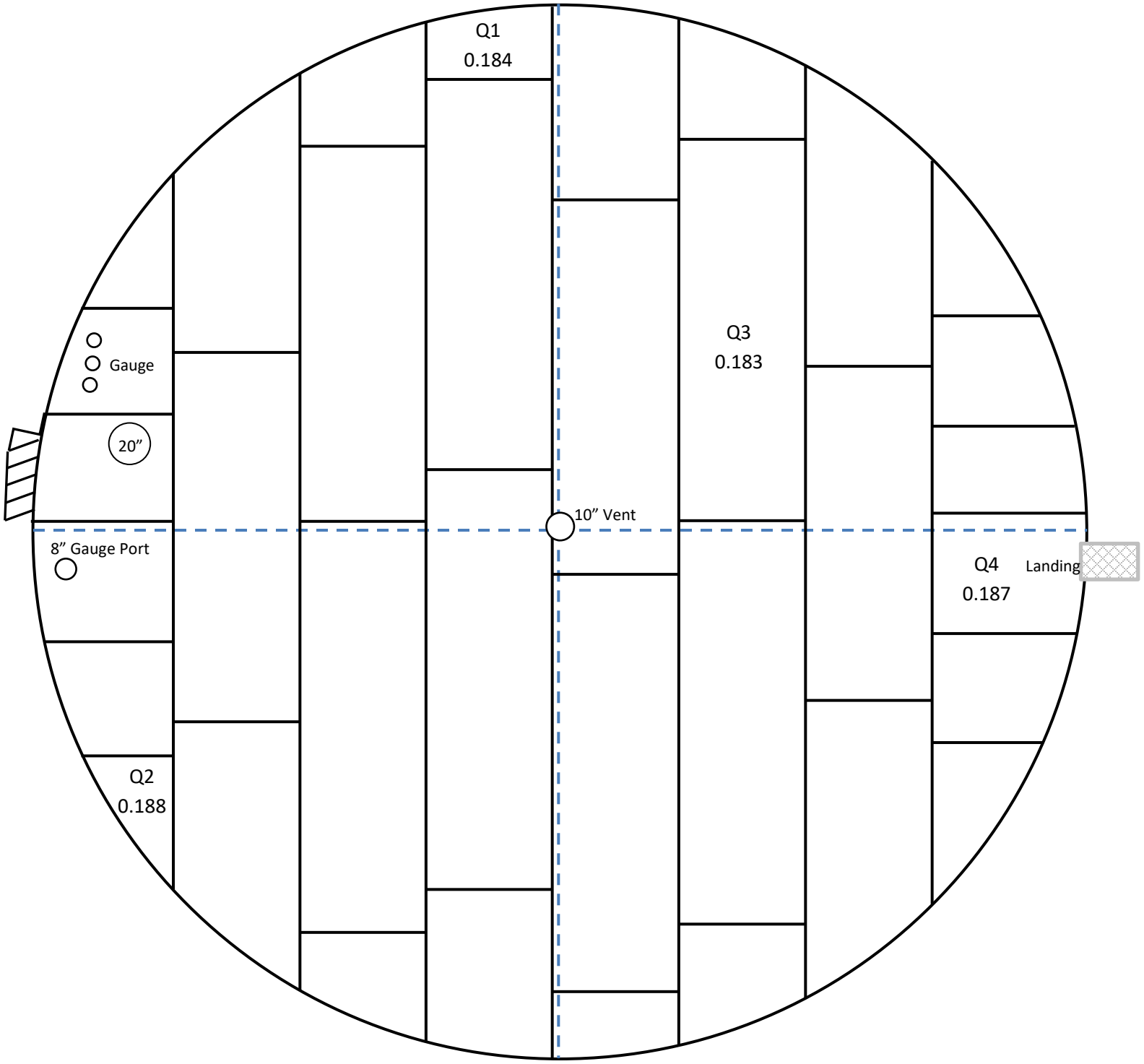
COURSE	NORTH	SOUTH	EAST	WEST
4	21	22	23	24
3	17	18	19	20



Customer: Nutrien Ag Solutions	**City, State:** Mt. Sterling, OH (Five Points)	**Tank #:** 1
Diameter: 51’	**Height**: 32’	**Date of Inspection:** 10/6/2020

Drawing is not to scale

ROOF CML LOCATIONS
North

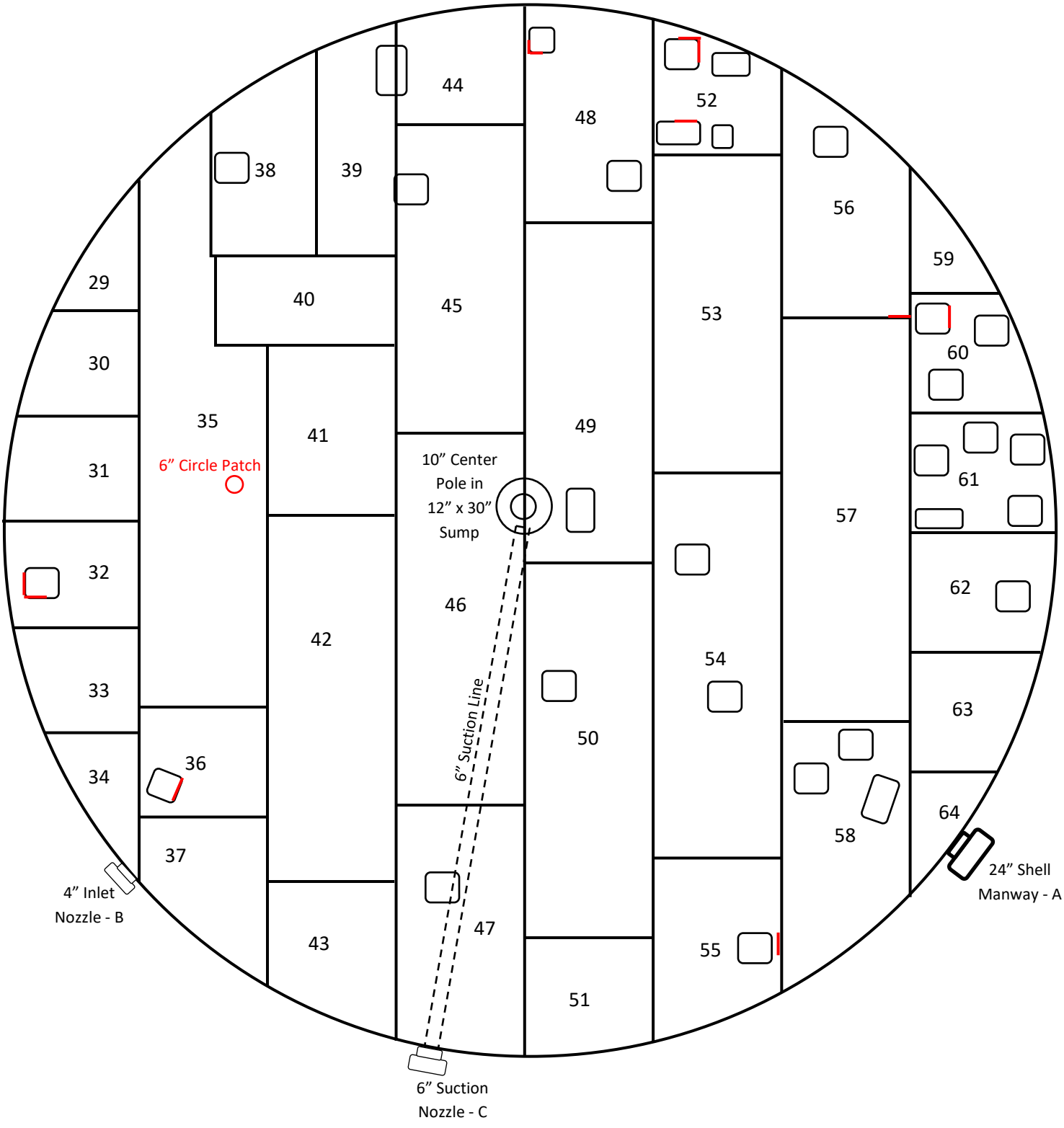


Customer: Nutrien Ag Solutions	**City, State:** Mt Sterling, OH (Five Points)	**Tank #:** 1
Diameter: 51’	**Height:** 32’	**Date of Inspection:** 10/6/2020

Weld joints needing repair

Lap patch plate needed for repair

FLOOR CML LOCATIONS
North



Nutrien Ag Solutions-Five Points—Mount Sterling, Ohio Tank 1

Manufacturer's Nameplate

24" Shell Manway—A

4" Inlet Nozzle—B

6" Suction Nozzle—C

Leak Monitor

Automatic Gauge

Automatic Gauge

Floor Lip Extension

Floor Lip Extension

External Shell Weld Joints

External Shell Weld Joints

External Horizontal Shell Weld Joint, Stairs

Stairway Landing

Stairway Landing, 20" Roof Manway, Gauge

20" Roof Manway

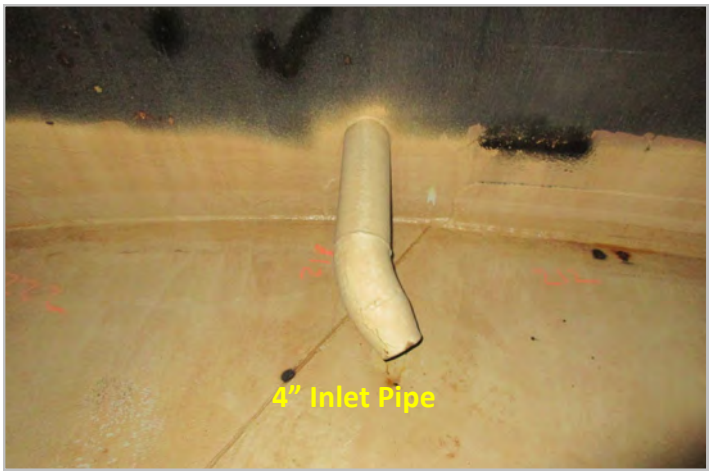
8” Gauge Port

10” Roof Vent

Landing to Next Tank

Roof Plates

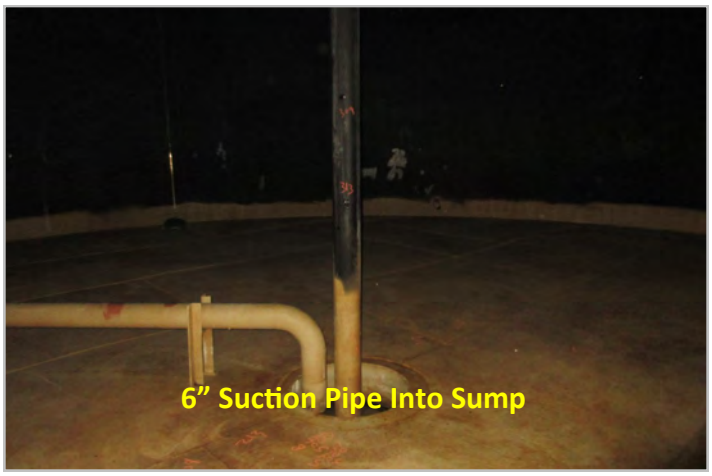
24” Shell Manway



4” Inlet Pipe

6” Suction Pipe

6” Suction Pipe

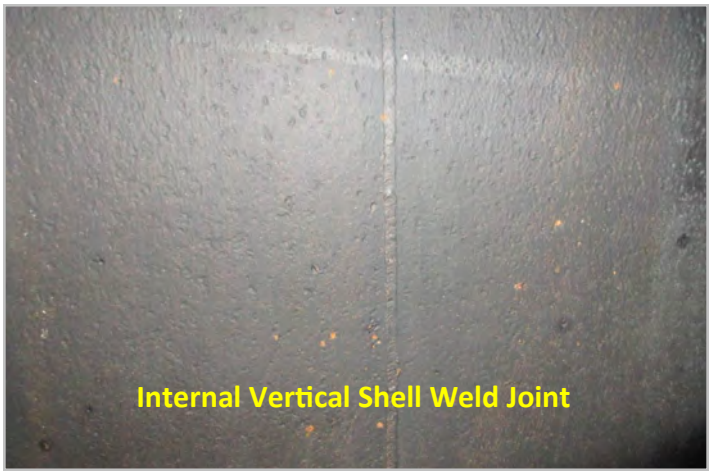


6” Suction Pipe Into Sump

6” Suction Pipe Into Sump, Center Pole

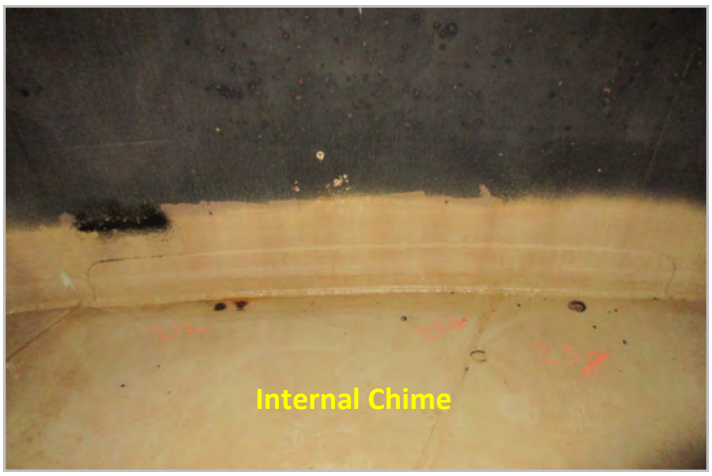
Internal Shell Plates

Internal Vertical Shell Weld Joint



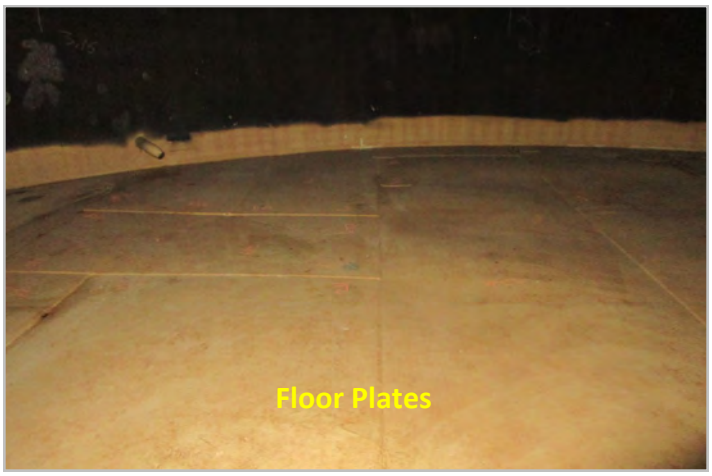
Internal Vertical Shell Weld Joint

Internal Horizontal Shell Weld Joint

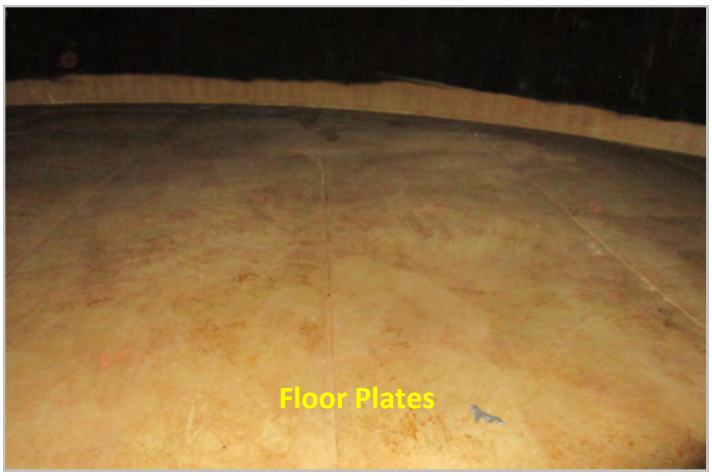


Internal Chime

Internal Chime, Floor Plate Weld Joint Corrosion Damage



Floor Plates



Floor Plates

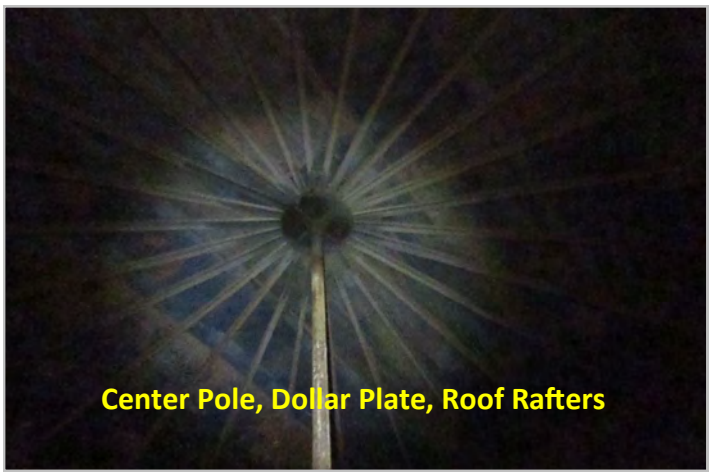
Corrosion Damage on Floor Patch Plate Weld

Corrosion Damage on Floor Patch Plate Weld

Corrosion Damage on Floor Plate

Corrosion Damage on Floor Patch Plate Weld and Floor Plate Weld Joint

Corrosion Damage on Floor Plate Weld Joint



Center Pole, Dollar Plate, Roof Rafters

OHIO FERTILIZER LAW **BASELINE INSPECTION** COMPLETION FORM

Ohio Fertilizer Law defines a **BASELINE INSPECTION** as an internal and external inspection done in accordance with the API 653 standard, establishing the condition of a permanent storage vessel that was erected on site to determine the vessel's suitability for the storage of liquid fertilizer. Written verification from a certified API-653 Inspector verifying completion of the required **BASELINE INSPECTION** must be sent to the Ohio Department of Agriculture (ODA)

Authorized Inspector Name/Certification #: Richard A Burtt #32743

Firm Name/Tank Location: Mt Sterling Five Points, Ohio

Tank Number: 1

Year Constructed: 1997

Tank Capacity: 488970 gallons

Inspection Date: 10/6/2020

Internal and External Inspection Completed? (YES) NO

Complies with the API-650 Standard? (YES) NO

If the vessel was constructed on site prior to 2002, and it does not comply with the API-650 Standard, an Authorized Inspector must provide written verification that based upon generally accepted engineering standards and practices, it is safe to be used to store liquid fertilizer.

The ODA requires a BASELINE INSPECTION be completed at least once every ten years. If a shorter **BASELINE INSPECTION** interval is being recommended for this vessel, by what date must the next **BASELINE INSPECTION** be completed?

Comments: Tank has 7 patchs plates on the floor with weld joint corrosion. These are to be repaired before tank is returned to service.

Signed: Richard A Burtt

Date: 10/19/2020

AMERICAN PETROLEUM INSTITUTE
Individual Certification Programs: ICP™

API Individual Certification Programs

verifies that

Charles Curtis McCluskey

has met the requirements for API certification

API-653 Aboveground Storage Tank Inspector

Certification Number *93629*

Original Certification Date *January 31, 2020*

Current Certification Date *January 31, 2020*

Expiration Date *January 31, 2023*

Manager, Individual Certification Programs

ICP

2015-027 | PDF


NLPA Special Inspector - Level 2C
NLPA 631 & SNT-TC-1A
has been successfully completed by
Richard Buntt
DATE: 04/04/19
Authorized NLPA Instructor
T.R.Consulting, Inc
5351 Setters Way
CO Sprgs CO 8091
(719) 359-8467
#CO-0046-08-2C


NLPA Special Inspector - Level 2C
NLPA 631 & SNT-TC-1A
has been successfully completed by
Michael Buntt
DATE: 04/04/19
Authorized NLPA Instructor
T.R.Consulting, Inc.
5351 Setters Way
CO Sprgs CO 80919
(719) 359-8467
#CO-0047-08-2C


NLPA Special Inspector - Level 1C
NLPA 631 & SNT-TC-1A
has been successfully completed by
Jerry Pickens
DATE: 04/04/19
Authorized NLPA Instructor
T.R.Consulting, Inc
5351 Setters Way
CO Sprgs CO 8091
(719) 359-8467
#IL-0086-15-1C


NLPA Special Inspector - Level 1
NLPA 631 & SNT-TC-1A
has been successfully completed by
Dennis Dixon
DATE: 04/04/19
Authorized NLPA Instructor
T.R.Consulting, Inc.
5351 Setters Way
CO Sprgs CO 80919
(719) 359-8467
#OK-0085-15-1C

CONFINED SPACE SAFETY

29 CFR Part 1926.1207
has been successfully completed by

Jerry Pickens

DATE: 03/31/20

T.R. Consulting, Inc.
5351 Setters Way

CO Springs CO 80919
(719) 359-8467

AUTHORIZED INSTRUCTOR #OK20033118

CONFINED SPACE SAFETY

29 CFR Part 1926.1207
has been successfully completed by

Michael Buntt

DATE: 03/31/20

T.R. Consulting, Inc.
5351 Setters Way

CO Springs CO 80919
(719) 359-8467

AUTHORIZED INSTRUCTOR #OK20033117

CONFINED SPACE SAFETY

29 CFR Part 1926.1207
has been successfully completed by

Dennis Dixon

DATE: 03/31/20

T.R. Consulting, Inc.
5351 Setters Way

CO Springs CO 80919
(719) 359-8467

AUTHORIZED INSTRUCTOR #OK20033107

CONFINED SPACE SAFETY

29 CFR Part 1926.1207
has been successfully completed by

Richard Buntt

DATE: 03/31/20

T.R. Consulting, Inc.
5351 Setters Way

CO Springs CO 80919
(719) 359-8467

AUTHORIZED INSTRUCTOR #OK20033103

TR Consulting
5351 Setters Way
Colorado Springs, CO 80919

Colorado Springs CO Phone: (719) 359-8467
Los Angeles CA Phone: (213) 787-6800
Central Facsimile Number: (310) 844-7240
http://www.trconsultinggroup.com

03/31/2020

Mr. Chris Brooks
Heartland Tank Services
P.O. Box 3668
Englewood, CO 80155-3668

Re: Training conducted 31 March, 2020 at your facility in Oklahoma City, OK.

Dear Mr. Brooks,

First let me thank you for giving T.R. Consulting, Inc. the opportunity to assess your company's safety training needs, listen to your safety goals, and develop and implement a training program to meet those goals. As such, the following training programs were completed on Tuesday March 31st of this year:

- Lock Out/Tag Out in accordance with 29 CFR Part 1910.147
- HAZCOM/GHS in accordance with 29 CFR 1910.1200
- Bloodborne Pathogens in accordance with 29 CFR 1910.1030
- Confined Space Safety in accordance with the requirements of 29 CFR Part 1926.1207
- Ladder Safety in accordance with 29 CFR Parts 1926.1053 and 1910.27
- Aerial Lifts in accordance with 29 CFR 1910.67
- Fire Protection/Extinguishers in accordance with 29 CFR 1910.157
- Hand and Power Tool Safety in accordance with 29 CFR 1926.300
- Process Safety Management – Contractor Responsibilities 29 CFR 1910.119
- Excavation/Trenching Safety – Trenching/Shoring in accordance with 29 CFR 1926.650
- Spill Prevention/Response – 29 CFR 1910.120 Appendix C
- Heat Stress Prevention

The following Heartland Tank Services employees completed the above-listed training programs:

Chris Brooks	Juan Carlos Paredes	Jesus Herrera	Elizabeth Jenkins
Mario Romero	Dennis Dixon	Terry Cuthbertson	Michael Buntt
Richard Buntt	Salvador Villagran	Luis Corral	Jerry Pickens
Jose Trejo Macias	Cesar Romero	Diego Romero Ceja	Ramon Sanchez Luque

Thank you again for the opportunity to address your company's safety program needs. I look forward to working with you in the future.

Sincerely,

T.R. Consulting, Inc.

Tony Rieck (Tony)
President/CEO
TR/bfc

TR Consulting
5351 Setters Way
Colorado Springs, CO 80919

Colorado Springs CO Phone: (719) 359-8467
Los Angeles CA Phone: (213) 787-6800
Central Facsimile Number: (310) 844-7240
http://www.trconsultinggroup.com

04/01/2020

Mr. Chris Brooks
Heartland Tank Services
P.O. Box 3668
Englewood, CO 80155-3668

Re: Training conducted 01 April, 2020 at your facility in Oklahoma City, OK.

Dear Mr. Brooks,

First let me thank you for giving T.R. Consulting, Inc. the opportunity to assess your company's safety training needs, listen to your safety goals, and develop and implement a training program to meet those goals. As such, the following training programs were completed on Wednesday April 01st of this year:

- Scaffold User in accordance with the requirements of 29 CFR Parts 1926.451 & 1910.28
- Rigging Material Handling in accordance with 29 CFR 1926.251
- Electrical Safety Awareness in accordance with 29 CFR 1926.400 & Assured Grounding/GFCI
- Personal Protective Equipment in accordance with 29 CFR Parts 1910.132, 1910.133, 1910.135, 1910.136 & 1910.138
- Respiratory Protection in accordance with 29 CFR 1910.134
- Noise Exposure in accordance with 29 CFR 1910.95
- Fall Protection in accordance with 29 CFR Part 1926.500-503
- Hydro Blasting Safety in accordance with ASTM E1575

The following Heartland Tank Services employees completed the above-listed training program:

Chris Brooks	Juan Carlos Paredes	Jesus Herrera	Elizabeth Jenkins
Mario Romero	Dennis Dixon	Terry Cuthbertson	Michael Buntt
Richard Buntt	Salvador Villagran	Luis Corral	Jerry Pickens
Jose Trejo Macias	Cesar Romero	Diego Romero Ceja	Ramon Sanchez Luque

Thank you again for the opportunity to address your company's safety program needs. I look forward to working with you in the future.

Sincerely,

T.R. Consulting, Inc.

Tony Rieck (Tony)
President/CEO
TR/bfc

J.A. KING

PRECISION MEASUREMENT PROFESSIONALS

Certificate Of Calibration and Traceability

Certificate #: OKC-53389-1042676-1

Calibration Performed By:

J.A. King

1100 SE 66th Street

Oklahoma City, OK 73149

Toll Free: 800-327-7727

For:

Heartland Tank Services, Inc

5200 South Hattie Ave.

Oklahoma City, OK 73129

P. O. Number: Maritza Rodriguez

Procedure No.:	ICP-164 Coating. Film. and Ultrasonic Thickness Gages	**Performed At:**	J.A. King & Co.
Tolerance:	Manufacturer's Specifications	**Equipment ID:**	77630
Temp./RH:	74.4 F / 45.3%	**Manufacturer:**	Dakota Ultrasonics
Cal Interval:	12 Month(s)	**Model Number:**	MVX
Cal Date:	06/16/2020	**Serial Number:**	77630
Cal Due Date:	06/16/2021	**Description:**	Ultrasonic Thickness Gauge
Calibration Result:	Pass	**Capacity x Resolution:**	0.1 to 4 x 0.001 in
Technician:	Chandler, Dante T	**Department:**	N/A

Remarks: In Tolerance - Meets The Manufacturer's Published Specifications.

Thickness

Description	Nominal	Tolerance -	Tolerance +	Results	As Found	As Left	Units
Thickness Measurement	0.100	0.099	0.101	P	0.100	0.100	in
Thickness Measurement	0.200	0.199	0.201	P	0.200	0.200	in
Thickness Measurement	0.500	0.499	0.501	P	0.499	0.499	in
Thickness Measurement	1.000	0.999	1.001	P	1.001	1.001	in
Thickness Measurement	2.000	1.999	2.001	P	2.000	2.000	in

P=Passed "As Found/As Left" **A=Out of Tolerance "As Found"** **F=Out of Tolerance "As Found/As Left"** **R=Report of Actual Value**

Standards Used To Calibrate Equipment

Traceability#	I.D.	Description	Last Cal.	Cal. Due Date
44525-8691-1	ALI-O-048	Gage Block Set 36 pcs.	06/13/2019	06/23/2020

Certification Done and Authorized By: **Chandler, Dante T Calibration Technician** (6/16/2020 17:14:51 UTC)

J.A. KING

PRECISION MEASUREMENT PROFESSIONALS

Certificate Of Calibration and Traceability

Certificate #: OKC-53689-996085-1

Calibration Performed By:
J.A. King
1100 SE 66th Street
Oklahoma City, OK 73149
Toll Free: 800-327-7727

For:
Heartland Tank Services, Inc
5200 South Hattie Ave.
Oklahoma City, OK 73129
P. O. Number: Credit Card

Procedure No.:	ICP-164 Coating. Film. and Ultrasonic Thickness Gages	**Performed At:**	J.A. King & Co.
Tolerance:	± 0.001 in	**Equipment ID:**	77518
Temp./RH:	72 F / 47%	**Manufacturer:**	Dakota Ultrasonics
Cal Interval:	12 Month(s)	**Model Number:**	MVX
Cal Date:	06/23/2020	**Serial Number:**	77518
Cal Due Date:	06/23/2021	**Description:**	Ultrasonic Thickness Gauge
Calibration Result:	Pass	**Capacity x Resolution:**	0.025 to 9.999 x 0.001 in
Technician:	Perry, Lawrence D	**Department:**	N/A

Remarks: In Tolerance - Meets The Manufacturer's Published Specifications.

Thickness

Description	Nominal	Tolerance -	Tolerance +	Results	As Found	As Left	Units
Thickness Measurement	0.100	0.099	0.101	P	0.101	0.101	in
Thickness Measurement	0.250	0.249	0.251	P	0.249	0.249	in
Thickness Measurement	0.500	0.499	0.501	P	0.500	0.500	in
Thickness Measurement	1.000	0.999	1.001	P	1.000	1.000	in
Thickness Measurement	2.000	1.999	2.001	P	2.001	2.001	in

P=Passed "As Found/As Left" **A=Out of Tolerance "As Found"** **F=Out of Tolerance "As Found/As Left"** **R=Report of Actual Value**

Standards Used To Calibrate Equipment

Traceability#	I.D.	Description	Last Cal.	Cal. Due Date
OKC-47897-8743-1	ALI-O-060B	Gage Block Set 81 pcs.	10/17/2019	07/17/2020

This instrument has been processed and calibrated in accordance with the J. A. King Quality Assurance manual and is traceable to the International System of Units (SI) via national metrology institutes (e.g., NIST) that are signatories to the CIPM Mutual Recognition Arrangement. Reported uncertainties are expressed as expanded uncertainty values at approximately the 95% confidence level using a coverage factor of K=2. Statements of compliance, where applicable, are based upon the test results falling within the specified limits with no reduction by the uncertainty of the measurement. The results contained herein relate only to the item calibrated. This certificate shall not be reproduced, except in full without the written permission of J. A. King. Calibration due dates appearing on the Certificate of Calibration and label are determined by the customer and do not imply continued conformance to specifications. The J. A. King Quality Management system complies with the requirements of ISO/IEC 17025. View our Scope of Accreditation at www.jaking.com.

Certification Done and Authorized By: **Perry, Lawrence D Calibration Technician** (6/23/2020 14:24:9 UTC)

J.A. KING

PRECISION MEASUREMENT PROFESSIONALS

Certificate Of Calibration and Traceability

Certificate #: OKC-56030-993973-1

Calibration Performed By:
J.A. King
1100 SE 66th Street
Oklahoma City, OK 73149
Toll Free: 800-327-7727

For:
Heartland Tank Services, Inc
5200 South Hattie Ave.
Oklahoma City, OK 73129
P. O. Number: Rick Buntt

Procedure No.:	ICP-164 Coating. Film. and Ultrasonic Thickness Gages	**Performed At:**	J.A. King & Co.
Tolerance:	± 0.001 in	**Equipment ID:**	77910
Temp./RH:	72 F / 45%	**Manufacturer:**	Dakota Ultrasonics
Cal Interval:	12 Month(s)	**Model Number:**	MVX
Cal Date:	10/08/2020	**Serial Number:**	77910
Cal Due Date:	10/08/2021	**Description:**	Ultrasonic Thickness Gauge
Calibration Result:	Pass	**Capacity x Resolution:**	0.025 to 9.999 x 0.001 in
Technician:	Perry, Lawrence D	**Department:**	N/A

Remarks: In Tolerance - Meets The Manufacturer's Published Specifications.

Thickness

Description	Nominal	Tolerance -	Tolerance +	Results	As Found	As Left	Units
Thickness Measurement	0.100	0.099	0.101	P	0.101	0.101	in
Thickness Measurement	0.300	0.299	0.301	P	0.300	0.300	in
Thickness Measurement	0.500	0.499	0.501	P	0.501	0.501	in
Thickness Measurement	1.000	0.999	1.001	P	1.001	1.001	in

P=Passed "As Found/As Left" **A=Out of Tolerance "As Found"** **F=Out of Tolerance "As Found/As Left"** **R=Report of Actual Value**

Standards Used To Calibrate Equipment

Traceability#	I.D.	Description	Last Cal.	Cal. Due Date
OKC-53579-8691-1	ALI-O-048	Gage Block Set 36 pcs.	06/24/2020	06/24/2021

Certification Done and Authorized By: **Perry, Lawrence D Calibration Technician** (10/8/2020 18:15:30 UTC)

DAKOTA ULTRASONICS
SOUND SOLUTIONS
1500 Green Hills Road, #107, Scotts Valley, California 95066 Tel.(831)-431-9722 / Fax (831)-431-9723

Corrosion Gauge Calibration Certificate

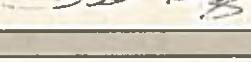
Dakota Ultrasonics certifies that the instrument identified below meets or exceeds its operational specifications and has been calibrated using standards traceable to the National Institute of Standards and Technology (NIST).

Model / Type: MVX USB	**Serial No:** 78692	**Date Manufactured:** 8/11/20	**Station #:** 3
Humidity: 52%RH	**Temp:** 72°F	**Date In Service:**	**Next Cal:** 1 yr.
Transducer Type: ¼" 5MHz HD Dual Element		**Velocity:** .2330 in/µsec	**Procedure:** CP112

NIST Certificates:	17-36856-A&B	17-38209-A&B	**MIL Standards:**	45562A

Calibration Standards Used			
Station #1	**Station #2**	**Station #3**	**Station #4**
08-4023 (.020" coupon)	08-4020 (.020" coupon)	05-6953 (.020" coupon)	
08-4025 (.025" coupon)	05-6962 (.025" coupon)	08-4027 (.025" coupon)	
08-4032 (.030" coupon)	08-4030 (.030" coupon)	14-4791 (.030" coupon)	
05-6956 (.035" coupon)	08-4034 (.035" coupon)	05-6970 (.035" coupon)	
97-7715 (.040-.250" block)	07-9960 (.040-.250" block)	11-1583 (.040-.250" block)	
04-6524 (.100-.500" block)	08-4373 (.100"-.500" block)	13-1550 (.100"-.500" block)	
04-6340 (.250-1.00" block)	08-4652 (.250-1.00" block)	12-4646 (.250-1.00" block)	
95-5570 (1.25" Cyl.)	07-9962 (1.25" Cyl.)	14-8426 (1.25" Cyl.)	
93-5716 (2.00" Cyl.)	07-9964 (2.00" Cyl.)	14-8427 (2.00" Cyl.)	
95-5572 (3.00" Cyl.)	07-9967 (3.00" Cyl.)	14-8428 (3.00" Cyl.)	
93-5718 (4.00" Cyl.)	07-9969 (4.00" Cyl.)	14-8429 (4.00" Cyl.)	
95-5571 (6.00" Cyl.)	07-9970 (6.00" Cyl.)	14-8430 (6.00" Cyl.)	

Test Criteria									
Sta.#1	**Sta.#2**	**Sta.#3**	**Tol.+/-**	**Pass**	**Sta.#1**	**Sta.#2**	**Sta.#3**	**Tol.+/-**	**Pass**
0.0252"	0.0247"	0.0252"	0.003		0.3993"	0.3993"	0.4002"	0.003	√
0.0301"	0.0300"	0.0300"	0.003		0.4988"	0.4996"	0.5004"	0.003	√
0.0343"	0.0346"	0.0343"	0.003		0.7493"	0.7497"	0.7497"	0.003	√
0.0390"	0.0401"	0.0397"	0.003		0.9989"	0.9996"	0.9998"	0.005	√
0.0495"	0.0510"	0.0499"	0.003	√	2.0001"	1.9980"	1.9990"	0.005	√
0.0748"	0.0750"	0.0751"	0.003	√	2.9999"	2.9970"	3.0000"	0.005	√
0.0988"	0.0990"	0.1002"	0.003	√	4.0000"	4.0000"	4.0000"	0.010	√
0.1993"	0.1993"	0.2002"	0.003	√	5.9989"	6.0010"	6.0000"	0.010	√
0.2988"	0.2998"	0.3001"	0.003	√					

Technicians: AL	**Jaime Rico**	**Fil Perez**
		
	Andy Lona	
		

DAKOTA ULTRASONICS
SOUND SOLUTIONS
1500 Green Hills Road, #107, Scotts Valley, California 95066 Tel.(831)-431-9722 / Fax (831)-431-9723

Corrosion Gauge Calibration Certificate

Dakota Ultrasonics certifies that the instrument identified below meets or exceeds its operational specifications and has been calibrated using standards traceable to the National Institute of Standards and Technology (NIST).

Model / Type: MVX USB	**Serial No:** 78693	**Date Manufactured:** 8/11/20	**Station #:** 3
Humidity: 52%RH	**Temp:** 72°F	**Date In Service:**	**Next Cal:** 1 yr.
Transducer Type: ¼" 5MHz HD Dual Element		**Velocity:** .2330 in/µsec	**Procedure:** CP112

NIST Certificates:	17-36856-A&B	17-38209-A&B	**MIL Standards:**	45562A

Calibration Standards Used

Station #1	Station #2	Station #3	Station #4
08-4023 (.020" coupon)	08-4020 (.020" coupon)	05-6953 (.020" coupon)	
08-4025 (.025" coupon)	05-6962 (.025" coupon)	08-4027 (.025" coupon)	
08-4032 (.030" coupon)	08-4030 (.030" coupon)	14-4791 (.030" coupon)	
05-6956 (.035" coupon)	08-4034 (.035" coupon)	05-6970 (.035" coupon)	
97-7715 (.040-.250" block)	07-9960 (.040-.250" block)	11-1583 (.040-.250" block)	
04-6524 (.100-.500" block)	08-4373 (.100"-.500" block)	13-1550 (.100"-.500" block)	
04-6340 (.250-1.00" block)	08-4652 (.250-1.00" block)	12-4646 (.250-1.00" block)	
95-5570 (1.25" Cyl.)	07-9962 (1.25" Cyl.)	14-8426 (1.25" Cyl.)	
93-5716 (2.00" Cyl.)	07-9964 (2.00" Cyl.)	14-8427 (2.00" Cyl.)	
95-5572 (3.00" Cyl.)	07-9967 (3.00" Cyl.)	14-8428 (3.00" Cyl.)	
93-5718 (4.00" Cyl.)	07-9969 (4.00" Cyl.)	14-8429 (4.00" Cyl.)	
95-5571 (6.00" Cyl.)	07-9970 (6.00" Cyl.)	14-8430 (6.00" Cyl.)	

Test Criteria

Sta.#1	Sta.#2	Sta.#3	Tol.+/-	Pass	Sta.#1	Sta.#2	Sta.#3	Tol.+/-	Pass
0.0252"	0.0247"	0.0252"	0.003		0.3993"	0.3993"	0.4002"	0.003	√
0.0301"	0.0300"	0.0300"	0.003		0.4988"	0.4996"	0.5004"	0.003	√
0.0343"	0.0346"	0.0343"	0.003		0.7493"	0.7497"	0.7497"	0.003	√
0.0390"	0.0401"	0.0397"	0.003		0.9989"	0.9996"	0.9998"	0.005	√
0.0495"	0.0510"	0.0499"	0.003	√	2.0001"	1.9980"	1.9990"	0.005	√
0.0748"	0.0750"	0.0751"	0.003	√	2.9999"	2.9970"	3.0000"	0.005	√
0.0988"	0.0990"	0.1002"	0.003	√	4.0000"	4.0000"	4.0000"	0.010	√
0.1993"	0.1993"	0.2002"	0.003	√	5.9989"	6.0010"	6.0000"	0.010	√
0.2988"	0.2998"	0.3001"	0.003	√					

Technicians: AL	**Jaime Rico**	**Fil Perez**
	Jaime Rico	Fil Perez
	Andy Lona	
	Andy Lona	

Corporate Office
PO Box 3668
Englewood, CO 80155-3668

800.774.3230
303.773.3230
Fax: 800.774.3201

INSPECTION WARRANTY

Heartland Tank Services, Inc. has evaluated the condition of this tank based on the observations and measurements made by the Heartland Tank Services, Inc. inspector. While our evaluation accurately describes the condition of the tank at the time of inspection, the tank owner/operator must independently assess the inspection information/report provided by Heartland Tank Services, Inc. and any conclusions reached by the tank owner/operator and any action taken or omitted are the sole responsibility of the owner/operator. With respect to the inspection and testing, Heartland Tank Services, Inc. warrants only that the services have been performed in accordance with accepted industry practice. If any such services fail to meet the foregoing warranty, Heartland Tank Services, Inc. shall re-perform the service to the same extent and on the same conditions as the original service.

The preceding paragraph sets forth the exclusive remedy for claims based on failure or defect in materials or services, whether such claim is made in contract or tort (including negligence) and however instituted, and, upon expiration of the warranty period, all such liability shall terminate. The foregoing warranty is exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. NO IMPLIED WARRANTY OF MERCHANTABILITY FOR FITNESS OR PURPOSE SHALL APPLY, nor shall Heartland Tank Services, Inc. be liable for any loss or damage whatsoever by reason of its failure to discover, report, repair or modify latent defects or defects inherent in the design of any tank inspected. In no event, whether a result of breach of contract, warranty or tort (including negligence) shall Heartland Tank Services, Inc. be liable for any consequential or incidental damages including, but not limited to, loss of profit or revenues, loss of use of equipment tested or services by Heartland Tank Services, Inc. or any associated damage to facilities, down-time costs or claims of other damages.

For further information regarding this report, please contact our office at 1-800-774-3230.

Thank you for your business!