Poor quality
12032

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

UST Cathodic Protection System Evaluation
Impressed Current Type
Underground Storage Tanks (UST) Program

Doc Type. Compliance Certification

Instructions: Within 30 days, send completed form to Joann Henry, Minnesota Pollution Control Agency (MCPA) at the address above, fax to 651-297-2343, or e-mail joann.henry@state.mn us.

- **All reports must be submitted regardless of results (pass, fail, or inconclusive)**
- **Incomplete, unsigned, or illegible forms will not be accepted and will be returned.**

1. UST facility MPCA Site ID # ______

Name: Olsons Truck Stop BP
Address: 4101 148th St NW
City: Clearwater Zip code: 55320
County: (Wright) Phone: 763 878 1658
Contact name (if different than above): Kyle

2. UST owner/operator

Name: ______
Address: ______
City: ______ State: ______
Zip code: ______ Phone: ______
Contact phone: ______

3. Cathodic Protection (CP) tester information and qualifications

Tester name (print): Chris Bickford Company name: Westside Equipment
Address: 902 Hwy 55 City: Medina
State: Mn Zip code: 55340 Phone: 763 478 9572 E-mail: service@westside equipment.com
National Association of Corrosion Engineers (NACE) International certification # ______ Steel Tank Institute (STI) certification #: CP 411121

4. Reason survey was conducted (check only one)

☒ Routine - Annual ☐ Routine - within 6 months of install ☐ 30-day re-survey after fail ☐ Re-survey within 6 months of repair/modification

Date next CP survey must be conducted by (mm/dd/yyyy): 8-3-2013 (Required within 6 months of install or repair, and annually thereafter.)

5. CP tester's evaluation (check only one)

☐ **Pass** All protected structures at this facility pass the CP survey and the continuity survey indicates all protected structures are continuous. It is judged that adequate CP has been provided to the UST system (Complete sections 7 and 8)

☒ **Fail** One or more protected structures at this facility fail the CP survey, and it is judged that adequate CP has not been provided to the UST system (Complete sections 7 and 8).

☐ **Inconclusive** Stray current may be affecting one or more of the protected structures, or the tester cannot conclusively determine a pass or failing test result based on irregular test results (Corrosion Expert to complete section 6)

CP Tester Signature: [signature] Date CP survey performed (mm/dd/yyyy): 8-3-12

6. Corrosion expert's evaluation (if applicable)

The attached survey must be conducted and/or evaluated by a corrosion expert when: a) supplemental anodes or any repairs of the impressed current system are made; b) current output changes are made to the rectifier; c) the continuity survey indicates one or more of the protected structures are not continuous, d) stray current may be effecting protected structures, e) when required by MPCA (Corrosion Expert to complete sections 7 and 8).

☐ **Pass** All protected structures at this facility have been judged that the adequate CP is provided to the UST system.

☐ **Fail** One or more protected structures at this facility fail the CP survey and it is judged that adequate CP has not been provided to the UST system

Corrosion expert's name (print): ______ Phone: ______
Company name: ______
NACE Int./PE certification: ______ NACE Int./PE certification #: ______
CP Expert Signature: ______ Date (mm/dd/yyyy): ______

7. Criteria applicable to evaluation (check all that apply)

☒ **-850 Off** Structure-to-soil potential more negative than -850 mV with the protective current momentarily interrupted. ("Instant Off")

☒ **100 mV** Structure tested exhibits at least 100 mV of cathodic polarization. ("Instant Off" readings minus native /depol readings)

Facility name: Olsons Truck Stop BP Date of test: 8-3-12

(Note: The facility name and date of test will automatically populate from page one upon printing, if filled out electronically.)

8. Action required as a result of this evaluation (check only one)

☐ None — CP is adequate. No further action is necessary at this time. Test again by no later than (see section 4)

☐ Retest — CP may not be adequate. Retest within 30 days to determine if passing results can be achieved. (Retests may occur only if all intended protected structures are continuous with each other)

☒ Repair & Retest — CP is not adequate. Repair/modification is necessary within the next 60 days, or permanently close the tank system.

9. Impressed Current rectifier data

50mV = 25A .5 Shunt factor

Rectifier manufacturer: Good All Electric Model: CSAYSE 140-18KNZ Serial #: 94C1563

Rated DC output: 140 volts 18 amps Rectifier output as designed or lastly recommended (If available) ______ volts ______ amps

Event	Date (mm/dd/yyyy)	Tap settings		DC output		Hour meter	Comments
		Course	Fine	Volts	Amps		
"As Found"	7/27/12	A	2	19.5V	8.5 amps	—	
"As Left"							

Note: If rectifier output settings are modified, a corrosion expert must be consulted first and approve the modifications by signing section 6

10. Impressed Current positive and negative circuit measurements (output amperage)

Complete if the system is designed to allow such measurements (e.g., individual lead wires for each anode are installed and shuts are present)

Circuit	1	2	3	4	5	6	7	8	9	10	Total amps
Anode (+)											
Tank/Pipe (-)											

11. CP system repairs and/or modification information

Date of "failing" test: 8-3-12 (mm/dd/yyyy) Date of repair: ______ (mm/dd/yyyy) Repair company ______

Name of lead repair technician: ______ Phone # ______

Certification of repair technician (check all that apply): ☐ Steel Tank Institute ☐ NACE ☐ MPCA certified supervisor

Note: submit failing test results with this report

Description of repairs (check all that apply)

☐ 1. Anodes for an impressed current system were added or replaced	*Repairs /modifications for 1-4 must be designed by a "corrosion expert" Attach corrosion experts design specifications*
☐ 2. Repair or replacement of anode header cables were needed	
☐ 3. Continuity was established between all protected structures	*Retests after repairs/modifications are made must be evaluated by the corrosion expert to assure the system is functioning properly (Section 6 must be signed by expert).*
☐ 4. Rectifier was repaired or replaced	

☐ 5. Rectifier output was modified (explain in "remarks/other" below; CP expert to approve modifications by signing section 6).

Remarks/Other: ______

12. Impressed Current structure to soil potential survey

- ***Half Cell Placement (testing) on frozen soil, concrete, asphalt, or other paving materials is not acceptable***
- The half cell must be placed locally in the soil directly over the structure being tested. **A minimum of three half cell locations per tank, and three half cell locations per piping run** are required. The three locations must be as evenly distributed over the protected structure, and as far away from any active anode as practical. (Refer to the MPCA cathodic protection evaluation guidance document for detailed discussion of electrode placement.)
- When testing flex connectors in contact with an electrolyte, **one tests point is required for each flex connector** with the half cell placed locally in the soil directly over the flex connector being tested.
- Both "ON" and "Instant Off" potential readings are required at each half cell placement. Each half cell location must meet the "Instant Off" potential of -850 mV or more negative, or the 100 mV polarization criterion must be satisfied in order to pass.
- Check polarity (+/-) when taking readings and be sure to record them properly

Facility name: Olson Truck Stop Date of test: 8-3-12

(Note: The facility name and date of test will automatically populate from page one upon printing, if filled out electronically.)

Describe soil type(s) of local reference cell placements: Sandy soil

Half cell site map code	Structure tested	Structure contact point	Reference cell placement	On voltage (mV)	Instant off voltage (mV)	Native/ depol (mV)	mV polarized	Pass/ Fail/inc
(example) 1	(example) Tank 1 (premium)	(example) Tank bottom	(example) Soil @ Prem STP manway	(example) -1070mV	(example) -875 mV			(example) Pass
(example) 2	(example) Pipe 2 (diesel)	(example) Dispenser 7/8	(example) Soil @ Diesel dispenser 7/8	(example) -810 mV	(example) -680 mV	(example) -575 mV	(example) 105 mV	(example) Pass
1	Tank #1	Tank Bottom	soil above tank	-1243mV	-992mV			pass
2	(Diesel #2)			-660mV	-598mV	-524mV	74mV	fail
3				-1625mV	-1006mV			pass
1a	Piping tank	Piping @	soil above pipe	-1286mV	-914mV			pass
2	#1	piping sump		-654mV	-592mV	-527mV	65mV	fail
3				-1527mV	-938mV	-842mV		pass
4	Tank #2	Tank Bottom	soil above tank	-1578mV	-972mV			pass
5	(#1 Diesel)			-503mV	-455mV	-408mV	49mV	fail
6				-932mV	-743mV	-643mV	100mV	pass
4a	piping #2	piping @	soil above pipe	-1679mV	-917mV	-879mV	–	pass
5		piping sump		-487mV	-449mV	-418mV	31mV	fail
6				-880mV	-691mV	-649mV	42mV	fail
7	Tank #3	Tank Bottom	soil above tank	-1148mV	-934mV			pass
8	(midgrade)			-514mV	-489mV	-428mV	61mV	fail
9				-953mV	-774mV	-647mV	127mV	pass
7a	piping #3	piping @ sump	soil above pipe	-1545mV	-835mV	-776mV	59mV	fail
8				-587mV	-562mV	-439mV	123mV	pass
9				-880mV	-763mV	-670mV	93mV	fail
10	Tank #4	Tank Bottom	soil above tank	-1740mV	-970mV			pass
11	(Premium)			-534mV	-511mV	-447mV	64mV	fail
12				-885mV	-755mV	-623mV	132mV	pass
10a	piping #4	pipe @ sump	soil above pipe	-1473mV	-871mV	-816mV		pass
11				-538mV	-516mV	-470mV	46mV	fail
12				-822mV	-691mV	-654mV	37mV	fail

COMMENTS: tanks are failing mostly in center big tanks passing on the ends assuming they have anode on each end small tanks failing in middle and south side assuming anode on north end only

#5 17mV 25x = 50 mV

Attach additional sheets as needed.

Facility name: Olsons Date of test: 8-8-12

(Note: The facility name and date of test will automatically populate from page one upon printing, if filled out electronically.)

Describe soil type(s) of local reference cell placements. _____

Half cell site map code	Structure tested	Structure contact point	Reference cell placement	On voltage (mV)	Instant off voltage (mV)	Native/ depol (mV)	mV polarized	Pass/ Fail/Inc
(example) 1	(example) Tank 1 (premium)	(example) Tank bottom	(example) Soil @ Prem STP manway	(example) -1070mV	(example) -875 mV			(example) Pass
(example) 2	(example) Pipe 2 (diesel)	(example) Dispenser 7/8	(example) Soil @ Diesel dispenser 7/8	(example) -810 mV	(example) -680 mV	(example) -575 mV	(example) 105 mV	(example) Pass
13	Tank #5	Tank Bottom	soil above tank	-1970mV	-1070mV			pass
14	(unlocked)			-940mV	-786mV	-695mV	91mV	fail
15				-1385mV	-1035mV			pass
13a	Pipe #5	Pipe@Sump	soil above pipe	-1601mV	-959mV	-915mV		pass
14				-934mV	-786mV	-695mV	91mV	fail
15				-1241mV	-920mV	-929mV		pass

COMMENTS: Allowed tanks to depol for 4 hours before depol readings taken

Attach additional sheets as needed.

Facility name: Olsons Date of test: 7-27-12

(Note: The facility name and date of test will automatically populate from page one upon printing, if filled out electronically.)

13. Impressed Current continuity survey (Point-to-Point Method)

- Point-to-Point: When conducting this method, **the rectifier must be turned off**, and is recommended the negative cable should be disconnected from the rectifier. The leads of the volt meter are required to contact the two structures being examined to demonstrate isolation or continuity. A half cell is not used for this test method.
- To interpret continuity data, compare the difference in voltage of the structures evaluated and use the following guidelines. 1 mV or less = continuous, 1-10 mV= inconclusive, greater than 10 mV = isolated.
- For impressed current systems, all metallic structures intended to be protected must be continuous with each other in order to "pass"
- If other approved continuity testing methods are used, alter this form or submit the data on a separate sheet.

Protected structure	Other structure[1]	Point-to-point voltage difference	Isolated/ continuous/ inconclusive
(example) Tank #1 (premium) tank bottom	*(example)* Tank # 1 (premium) fill riser	*(example)* 8 mV	*(example)* Inconclusive
(example) Tank #1 (premium) tank bottom	*(example)* Pipe #1 (premium) @ STP	*(example)* 1 mV	*(example)* Continuous
Tank #1 Bottom	Vent	0 mV	cont
	Fill Riser	1 mV	cont
	Piping	0 mV	cont
	Conduit	187 mV	isolated
Tank #2 Bottom	Vent	2 mV	cont
	Fill riser	0 mV	cont.
	piping	0 mV	cont
	Conduit	29 mV	isolated
Tank #3 Bottom	Vent	6 mV	cont.
	Fill riser	0 mV	cont
	Electric Conduit	450 mV	isolated
	piping	0	cont.
Tank #4 Bottom	Vent	3 mV	cont
	Fill riser	0 mV	cont.
	piping	0 mV	cont
	electric conduit	280 mV	isolated
Tank #5 Bottom	Vent	0 mV	cont
	Fill riser	2 mV	cont
	piping	0 mV	cont
	electric conduit	145 mV	isolated

COMMENTS:

1. Describe the "other" metallic structure that you are attempting to demonstrate is continuous or isolated

Attach additional sheets as needed.

Facility name: Olsons Date of test: 7-27-12

(Note: The facility name and date of test will automatically populate from page one upon printing, if filled out electronically.)

14. Description of UST system

Tank/ Pipe #	Product	Capacity (Gallons)	Tank type[1]	Piping type[2]	Metal Segments at Tank sump[3]	Metal Segments at Dispenser[3]
1	Diesel #2	20000	SW steel	SW steel	Bonded	Containment
2	Diesel #1	10000	|	|	|	|
3	Mid Grade	10000	|	|	|	|
4	Premium	10000	|	|	|	|
5	Unleaded	20000	|	|	|	|
6						
Ex:	*Premium*	*10,000*	*SW Bare Steel*	*SW Fiberglass*	*Bonded to IC system*	*In Containment*

1. Indicate if tank is Double Wall (DW) or Single Wall (SW). Also indicated type (e g , steel, fiberglass, sti-P$_3$®, composite etc). Also indicate if tank is compartmental if applicable
2. Indicate if piping is Double Wall (DW) or Single Wall (SW) Also indicate type (e.g., coated steel, fiberglass, galvanized, flex, etc).
3. Indicate how metal segments such as flex connectors or metal pipe segments are protected from corrosion (e g , isolated, booted, bonded, in containment, etc)

15. UST facility site drawing

Attach detailed drawing or use the space provided to draw a sketch of the UST and CP systems. At a minimum you should indicate the following: All tanks, piping and dispensers; Location of anodes and wires if known; All buildings and streets; Location of CP test stations; Each reference cell placement must be indicated by a code (e.g., 1,2, T-1,) corresponding with the appropriate test in Section 12 of this form. If supplemental anodes are added to the tank system, indicate number, size, location and depth of the new anodes. **An evaluation of the CP system is not complete without an acceptable site drawing** N