UST CATHODIC PROTECTION SYSTEM EVALUATION IMPRESSED CURRENT TYPE

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF WASTE MANAGEMENT
SFN 60640 (5-2014)

Clear Form

918 East Divide Avenue, 3rd Floor
Bismarck, ND 58501-1947
Telephone: 701-328-5166
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www.ndhealth.gov/wm

Instructions: Within 30 days, send completed form to:

North Dakota Department of Health
Division of Waste Management
918 E Divide Ave 3rd Fl
Bismarck ND 58501-1947

- 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.

ND UST ID Number

1. UST FACILITY

Name		
Address		
City	State	ZIP Code
County	Telephone Number	
Name of Contact (if different than above)		Telephone Number

2. UST OWNER/OPERATOR

Name		
Address		
City	State	ZIP Code
County	Telephone Number	
Name of Contact (if different than above)		Telephone Number

3. CATHODIC PROTECTION (CP) TESTER INFORMATION AND QUALIFICATIONS

Name of Tester		Name of Company	
Address		City	State	ZIP Code
Telephone Number	E-mail Address		
National Association of Corrosion Engineers (NACE) International Certification Number		Steel Tank Institute (STI) Certification Number	

4. SURVEY

Reason Survey Conducted (check 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 Survey must be Conducted By

(Required within 6 months of installation or repair; and annually thereafter.)

5. EVALUATION

CP Tester's Evaluation (check 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.)

Name of Facility	Date

6. CORROSION EXPERTS 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.

Name of Corrosion Expert	Telephone Number
Name of Corrosion Company	
NACE Int./PE Certification	NACE Int./PE Certification Number
Signature of CP Expert	Date

7. EVALUATION CRITERIA

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.)

8. EVALUATION ACTION

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 and 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

Name of Rectifier Manufacturer			
Model	Serial Number	Volts	Amps

Rectifier output as designed or lastly recommended (if available)	Volts	Amps

Rated DC Output

Event	Date (mm/dd/yyyy)	Tap Settings Course	Tap Settings Fine	DC Output Volts	DC Output Amps	Hour Meter	Comments
"As Found"							
"As Left"							

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

Name of Facility	Date

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	Date of Repair	Name of Repair Company

Name of Lead Repair Technician	Telephone Number

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

☐ 2. Repair or replacement of anode header cables were needed

☐ 3. Continuity was established between all protected structures

☐ 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).

Repairs/modifications for 1-4 must be designed by a “corrosion expert”. Attach corrosion experts design specifications.
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).

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.

Describe Soil Type(s) of Local Reference Cell Placements:

Number 12 continued on next page

Name of Facility	Date

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) -1070 mV	(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

Comments

Name of Facility	Date

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) Soil @ Prem STP manway	(example) 8 mV	(example) Inconclusive
Comments			

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

Attach additional sheets as needed.

Name of Facility	Date

14. DESCRIPTION OF UST SYSTEM

Tank/ Pipe No.	Product	Capacity (Gallons)	Tank Type[1]	Piping Type[2]	Metal Segments at Tank Sump[3]	Metal Segments at Dispenser[4]
1						
2						
3						
4						
5						
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-P3®, 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.**