



**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 (MPCA) at the address above, fax to 651-297-2343, or e-mail [joann.henry@state.mn.us](mailto: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: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ Zip code: \_\_\_\_\_

County: \_\_\_\_\_ Phone: \_\_\_\_\_

Contact name (if different than above): \_\_\_\_\_

## 2. UST owner/operator

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Zip code: \_\_\_\_\_ Phone: \_\_\_\_\_

Contact phone: \_\_\_\_\_

## 3. Cathodic Protection (CP) tester information and qualifications

Tester name (print): \_\_\_\_\_ Company name: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_ Zip code: \_\_\_\_\_ Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

National Association of Corrosion Engineers (NACE) international certification #: \_\_\_\_\_ Steel Tank Institute (STI) certification #: \_\_\_\_\_

## 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): \_\_\_\_\_ (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: \_\_\_\_\_ Date CP survey performed (mm/dd/yyyy): \_\_\_\_\_

## 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: \_\_\_\_\_ Date of test (mm/dd/yyyy): \_\_\_\_\_  
(Note: The facility name and date of test will automatically populate from page one, 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

Rectifier manufacturer: \_\_\_\_\_ Model: \_\_\_\_\_ Serial #: \_\_\_\_\_

Rated DC output: \_\_\_\_\_ volts \_\_\_\_\_ 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"							
"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: \_\_\_\_\_ Date of repair: \_\_\_\_\_ Repair company: \_\_\_\_\_  
(mm/dd/yyyy) (mm/dd/yyyy)

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)

- |  |   |
|--|---|
| <input type="checkbox"/> 1. Anodes for an impressed current system were added or replaced  | <i>Repairs /modifications for 1-4 must be designed by a "corrosion expert". Attach corrosion experts design specifications.</i> |
| <input type="checkbox"/> 2. Repair or replacement of anode header cables were needed   |   |
| <input type="checkbox"/> 3. Continuity was established between all protected structures  |   |
| <input type="checkbox"/> 4. Rectifier was repaired or replaced   |   |
| <input type="checkbox"/> 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

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

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

[illegible]

**COMMENTS:**

**Attach additional sheets as needed.**

(Note: The facility name and date of test will automatically populate from page one, 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.

[illegible]

**COMMENTS:**

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

**Attach additional sheets as needed.**

Facility name: \_\_\_\_\_ Date of test (mm/dd/yyyy): \_\_\_\_\_  
 (Note: The facility name and date of test will automatically populate from page one, if filled out electronically.)

#### 14. Description of UST system

Tank/ Pipe #	Product	Capacity (Gallons)	Tank type <sup>1</sup>	Piping type <sup>2</sup>	Metal Segments at Tank sump <sup>3</sup>	Metal Segments at Dispenser <sup>3</sup>
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-P<sub>3</sub><sup>®</sup>, 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.**



[Indicate North Here]