UST CATHODIC PROTECTION SYSTEM EVALUATION GALVANIC (SACRIFICIAL ANODE) TYPE

NORTH DAKOTA DEPARTMENT OF HEALTH
DIVISION OF WASTE MANAGEMENT
SFN 60641 (5-2014)

918 East Divide Avenue, 3rd Floor
Bismarck, ND 58501-1947
Telephone: 701-328-5166
Fax: 701-328-5200
www.ndhealth.gov/wm

Clear Form

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)		Date Next Survey must be Conducted By
☐ Routine - Annual	☐ Routine - within 6 months of install	
☐ 30-day re-survey after fail	☐ Re-survey within 6 months of repair/modification	(Required within 6 months of installation or repair; and every 3 years 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 isolated. 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**	The remote and the local do not both indicate the same test result on all protected structures (both pass or both fail),or the continuity survey indicates continuous or inconclusive results when compared to non-protected structures, the survey must be evaluated by a corrosion expert. (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) conducting repairs to metallic structures which are non-factory coated with dielectric material; b) adding supplemental anodes to the tanks and/or piping without following accepted industry standards; c) the local and remote structure-to-soil potential did not result in the same outcome (both pass or both fail); d) the continuity survey indicates one or more of the protected structures are not isolated; 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.

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 On** Structure-to-soil potential more negative than -850 millivolts (mV) with the protective current applied.

☐ **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 protected structures are isolated from non-protected structures.)

☐ **Repair and Retest** CP is not adequate. Repair/modification is necessary within the next 60 days, **or** permanently close the tank system.

9. 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. Supplemental anodes for a sti-P3® tank.

☐ 2. Supplemental anodes for metallic pipe which is factory coated with dielectric material (fusion bonded epoxy or equivalent).

☐ 3. Supplemental anodes for a non-sti-P3® tank (e.g., bare steel).

☐ 4. Supplemental anodes for metallic pipe which is non-factory coated with dielectric material (e.g., galvanized, copper, bare steel, etc.).

☐ 5. Isolation of galvanically protected tanks/piping (explain in “remarks/other” below).

☐ 6. Isolation of non-protected metal pipe segments (e.g., flex connectors) at STP or dispenser sumps (explain in “remarks/other” on following page).

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.)

Name of Facility	Date

Remarks/Other (for #9 Description of Repairs)

10. GALVANIC (SACRIFICIAL ANODE) STRUCTURE TO SOIL POTENTIAL AND CONTINUITY SURVEY
Half Cell Placement (testing) on frozen soil, concrete, asphalt, or other paving materials is not acceptable.

Structure to Soil Potentials:

- The half cell must be placed in a minimum of **three locations per tank, and three locations per piping run**. At least one of the reference cell locations must be in the soil directly over the tested structure (local); and at least one must be placed in soil approximately 25 to100 feet away from the structure (remote). The third location is at the discretion of the tester (either local or remote).
  When testing flex connectors only, **two tests points are required for each flex connector**, one local and one remote.

  Both the local and the remote voltage must meet one of the three criteria listed in Section 7 in order for the structure to pass.

  Inconclusive must be indicated when both the local and the remote structure-to-soil potentials do not result in the same outcome (both pass or both fail).

  If the “-850 mV Off” or the “100 mV Polarization” criteria is used for galvanic systems, record structure-to-soil potential readings on the MPCA Impressed Current data sheet or similar form.

Continuity Testing: (Point-to-Point and/or Fixed Cell-Moving Ground):

Point-to-Point: When conducting this method, 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.

Fixed Cell-Moving Ground: When conducting this method, the half cell must be placed in the soil at a **remote** location approximately 25 to100 feet away and left undisturbed. The other lead of the meter is moved to structures being evaluated.

To interpret continuity data for either method 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 galvanic systems, the structure that is to be protected must be isolated from all other non-protected metallic structures in order to “pass” the continuity survey.

If other approved continuity testing methods are used, alter this form or submit the data on a separate sheet.

Describe soil type and location(s) of remote reference cell placement(s)
(e.g., Black Dirt, 30 feet NW of Tank #1 spill bucket)**:**

Remote Location #1
Remote Location #2

Number 10 continued on next page

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

Structure to Soil Potentials (mV)			Continuity Testing (mV)			
Half Cell Site Map Code	**Half Cell Placement Description**	**"ON" Voltage**	**Structure Tested**	**Point-to-Point Voltage**	**Fixed Cell Remote Voltage**	**Isolated/ Continuous/ Inconclusive**
Structure: (Example) Tank 1						
(Ex) 1	Local, Soil at ATG manway	-1011 mV	(Ex) ATG Conduit	475 mV		Isolated
(Ex) 2	Local, Soil at STM manway	-995 mV	(Ex) STPG Conduit		-528 mV	Isolated
(Ex) R-1	Remote #1	-1042 mV	(Ex) Vet	421 mV		Isolated
Structure Contact Point(s): (Ex) Tank Bottom			(Ex) Fill Riser	375 mV	-522 mV	Isolated
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						

Structure to Soil Potentials (mV)			Continuity Testing (mV)			
Half Cell Site Map Code	**Half Cell Placement Description**	**"ON" Voltage**	**Structure Tested**	**Point-to-Point Voltage**	**Fixed Cell Remote Voltage**	**Isolated/ Continuous/ Inconclusive**
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						

Name of Facility	Date

Structure to Soil Potentials (mV)			Continuity Testing (mV)			
Half Cell Site Map Code	**Half Cell Placement Description**	**"ON" Voltage**	**Structure Tested**	**Point-to-Point Voltage**	**Fixed Cell Remote Voltage**	**Isolated/ Continuous/ Inconclusive**
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						
Structure:						
Structure Contact Point(s):						
Overall Structure Results (structure to soil potentials and continuity): ☐ Pass ☐ Fail ☐ Inconclusive						

Comments

If separate corrosion protection is required on flex connectors, treat each flex as if it were an individual metal pipe.

Attach additional sheets as needed.

Name of Facility	Date

11. 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 sti-P*	*DW Fiberglass*	*CP w/anodes*	*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.).

12. 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 10 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.**