

GALVANIC CATHODIC PROTECTION EVALUATION CHECKLIST FOR UNDERGROUND STORAGE TANKS

This checklist certifies that cathodic protection testing activities were performed and conducted in accordance with Chapter 173-360A WAC. Instructions are found on the back page.

State of Washington		I. UST FACILITY				II. CERTIFIED CATHODIC PROTECTION TESTER				
Facility Compliance Tag #:					Service Provider Name:					
UST ID #:					Company Name:					
Site Name:					Address:					
Site Address:					City:		State:		Zip:	
City:					Phone:			Email:		
County:					Certification Type:					
Phone:					Certification Number:			Exp. Date:		
III. RESULTS OF EVALUATION (which include results of both continuity and system surveys)										
<input type="checkbox"/> PASS		The criteria used to evaluate whether cathodic protection is adequate were in accordance with a code of practice developed by a nationally recognized association (e.g. NACE), as required by the								
<input type="checkbox"/> FAIL		Washington State Underground Storage Tank Regulations.								
Date CP Evaluation Performed:										
IV. CRITERIA APPLICABLE TO EVALUATION										
Continuity Survey		<input type="checkbox"/> PASS – continuity data is passing and no action is needed				<input type="checkbox"/> FAIL – continuity data is failing and the system requires a repair or retrofit				
System Survey		# TANKS		# PIPE RUNS		# STP SFCS¹		# DISP. SFCS²		
Neg. 850 mV ON		<input type="checkbox"/> PASS								A negative (cathodic) potential of at least -850 mV with the cathodic protection applied. This potential is with respect to a saturated copper-copper sulfate reference electrode containing electrolyte.
		<input type="checkbox"/> FAIL								
Neg. 850 mV Instant Off		<input type="checkbox"/> PASS								A negative polarized potential of at least 850 mV relative to a saturated copper-copper sulfate reference electrode (Instant Off Potential).
		<input type="checkbox"/> FAIL								
100 mV Polarization		<input type="checkbox"/> PASS								A minimum of 100 mV of cathodic polarization between the structure surface and a stable reference electrode contacting the electrolyte.
		<input type="checkbox"/> FAIL								
V. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (check one box and explain further in comment box below)										
<input type="checkbox"/> NONE		The cathodic protection system is adequately providing protection. No further action is necessary at this time. System must be tested in three years unless more immediate attention is required.								
<input type="checkbox"/> RETEST		The cathodic protection system may not be adequately protecting steel from corroding. Retesting is necessary.								
<input type="checkbox"/> RETROFIT/REPAIR		The cathodic protection system is not adequately providing protection. Retrofitting or repairing is necessary.								
<input type="checkbox"/> RETEST AFTER RETROFIT/REPAIR		The cathodic protection system has been retrofitted or repaired and tested at time of the retrofit/repair. Testing is required again within one to six months after the retrofit or repair.								
Comments (include type of testing gear used, steel components tested, etc.):										

1. If no submersible turbine pump (STP) is present, these steel flex connectors (SFC) are on the tank end of piping.
2. If no dispenser is installed, these SFCs are on the non-tank end of piping.

VIII. UST SITE PLAN

Diagram the UST System, including tanks, piping, and dispenser locations, approximate scale, and any other notable structures/physical features. Indicate north with arrow. Include the cathodic protection test locations used during this testing. The test points must be easily identifiable, so that testing can be reproduced and your results verified.

IX. RETROFIT OR REPAIR DESIGN (if applicable)

All retrofitting or repairs to CP systems shall be designed by a Corrosion Expert. I certify that I am a Corrosion Expert qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. I have attached copies of the retrofit/repair design and of the Underground Storage Tank Retrofit and Repair Checklist.

Corrosion Expert's Name:

Company's Name:

Nationally Recognized Association:

Certification Number:

Corrosion Expert's Signature:

Date:

X. REQUIRED SIGNATURES

The certified supervisor certifies the criteria used to evaluate whether cathodic protection is adequate were in accordance with a code of practice developed by a nationally recognized association (e.g. NACE), as required by the Washington State Underground Storage Tank Regulations.

Date

Signature of Certified Supervisor

Print or Type Name

Date

Signature of Tank Owner or Authorized Representative

Print or Type Name

GALVANIC CATHODIC PROTECTION EVALUATION CHECKLIST FOR UNDERGROUND STORAGE TANKS

INSTRUCTIONS

This form must be submitted **within thirty days of completing** galvanic cathodic protection testing activities to the following address:

Dept. of Ecology
UST Section
PO Box 47655
Olympia, WA 98504-7655

- The attached Underground Storage Tank (UST) checklist is required for the activity above. Completing this checklist documents and certifies cathodic protection testing activities were performed and conducted in accordance with Chapter 173-360A WAC.
- This checklist must be filled out completely by a certified cathodic protection tester, such as a corrosion expert with at least a NACE CP3 certification or a tester holding a U4 Cathodic Protection ICC certification.
- A copy of the completed form must be provided to the tank system owner/operator.
- The owner/operator is responsible for submitting a copy to Ecology within 30 days of test date.

I. UST Facility: Complete this section about the facility where the cathodic protection system is being tested. If the UST ID number is not known, include the facility compliance tag number.

II. Certified Service Provider: Complete this section about the UST supervisor and service provider company.

III. Results of Evaluation: The pass or fail refers to the overall evaluation of the cathodic protection system for the entire UST system, including tanks, piping, and all steel flex connectors. Testing criteria shall be in accordance with a code of practice developed by a nationally recognized association (e.g. NACE).

IV. Criteria Applicable to Evaluation: Choose criteria used to meet cathodic protection requirements by filling in the number of tanks, piping runs, and steel flex connectors meeting (or failing) the specific criteria (note: the standard chosen to meet the criteria shall be documented in the survey portions of this checklist).

- a. Continuity Test: All galvanic tanks must be discontinuous with risers, turbines, associated piping, and adjacent UST systems to meet criteria to pass the continuity test. Turbines and steel flex connectors may be continuous.
- b. -850 "On": This criterion may only be used if voltage drops (IR drops) other than those across the structure-to-electrolyte are considered (see Section VII for more details).
- c. -850 "Instant Off": This criterion may only be used if anodes can be disconnected from the structure.
- d. 100 mV Polarization: This criterion may only be used if anodes can be disconnected from the structure.

V. Action Required as a Result of this Evaluation:

- a. None: The cathodic protection system is adequately providing protection. No further action is necessary at this time. System must be tested in three years unless more immediate attention is required.
- b. Retest: The cathodic protection system may not be adequately protecting steel from corroding. Retesting is necessary.

- c. Retrofit/Repair: The cathodic protection system is not adequately providing protection. Retrofitting or repairing is necessary.
- d. Retest after Retrofit/Repair: The cathodic protection system has been retrofitted or repaired and tested at time of the retrofit/repair. Testing is required again within one to six months after the retrofit/ repair.

VI. Continuity Survey: This survey is necessary to show that anodes are not protecting structures other than what is intended.

- a. Compare various structures within the UST system (e.g. structures “A” and “B”) using a “fixed cell” or “point-to-point” technique, depending on the standard used. NACE recommends “fixed cell”, STI recommends either “fixed cell” or “point-to-point”.
- b. Document location of Point “A” to Point “B” or “fixed cell” (if fixed cell is used). The fixed cell shall be greater than (>) 30 feet from the structure tested with no metallic structures in between structure tested and half cell.

Example:

Structure “A”	Structure “B”	Point “A” to Point “B” or Fixed Cell Location >30’	Structure “A” Fixed Voltage >30’	Structure “B” Fixed Voltage >30’	Point-to-Point or Fixed Voltage Difference	P A S S	F A I L	Method and Standards Used (e.g. RP-0285, R051)
Tank bottom	Vapor recovery	NE Corner (30’)	-876 mV	-843 mV	33 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	“Fixed” R051

VII. System Survey: This includes readings of the structure’s potentials.

- a. Structure: Description of structure (e.g. Tank #1)
- b. Contact Point: Description of contact point (e.g. Tank Bottom)
- c. Half Cell Location: Indicate the specific location where the half cell was placed.
- d. Local Voltage “On”: In reference to copper-copper sulfate reference cell, take reading as close to the structure as possible.
- e. Local Voltage “Instant Off”: Can only be used if anodes can be disconnected from structure.
- f. Remote Voltage “On”: Refers to copper-copper sulfate reference cell at remote earth (>30’ with no metallic structures between half cell and structures tested.)
- g. Local Voltage (Depolarized): Can only be used if anodes can be disconnected from structure.
- h. Pass or Fail: Documentation of whether or not the structure passes.
- i. Method and Standard Used: Document which criteria and standard were used based on the following chart.

Structure	Criteria Chosen	
UST #1	-850 “On”	This criteria may be selected if anodes cannot be disconnected from the structure. If standard R051-2006 is used (testing procedures for STI-P3 tanks), both Local Voltage (ON) and Remote Voltage (ON) shall be measured. Both readings shall be more negative than -850 mV for tanks to be considered passing.
UST #2	-850 “Instant Off”	This criteria may be selected if anodes can be disconnected from the structure. If standard RP-0285-2002 is used (Corrosion Control of USTs by Cathodic Protection), both Local Voltage “On” and Local Voltage “Instant Off” shall be measured. Local Voltage “Instant Off” shall be more negative than -850 mV for tanks to be considered passing.
UST #3	100 mV Polarization	This criteria may be selected if anodes can be disconnected from the structure. If standards RP-0285-2002 is used (Corrosion Control of USTs by Cathodic Protection), Local Voltage “On”, Local Voltage “Instant Off” and Local Voltage (Depolarized) shall be

		measured. Depolarized measurement shall be 100 mV or more positive than Local Voltage "Instant Off" measurement.
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Example:

Structure	Contact Point	Half Cell Location	Local Voltage (ON)	Local Voltage (Instant Off)	Remote Voltage (ON) >30'	Local Voltage (Depolarized)	P A S S	F A I L	Method and Standard Used
UST #1	Tank bottom	NE corner of tank	-870 mV		-900 mV		<input checked="" type="checkbox"/>	<input type="checkbox"/>	-850 I/O R051
UST #2	Tank bottom	NE corner of tank	-1000 mV	-910 mV			<input checked="" type="checkbox"/>	<input type="checkbox"/>	-850 I/O RP-0285
UST #3	Tank bottom	NE corner of tank	-1020 mV	-830 mV		-688 mV	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100 mV Pol. RP-0285

- VIII. UST Site Plan:** Diagram the UST System, including tanks, piping, and dispenser locations, approximate scale, and any other notable structures/physical features. Indicate north with arrow. Include the cathodic protection test locations used during this testing. The test points must be easily identifiable, so that testing can be reproduced and your results verified.
- IX. Retrofit or Repair Design:** All retrofitting or repairs to cathodic protection systems shall be designed by a Corrosion Expert. Attach both a copy of the design of the retrofit or repair and a copy of the *UST Retrofit/Repair Checklist*. The Corrosion Expert must fill out this section, including signature and date.
- X. Required Signatures:** The certified service provider must sign the form. This checklist must also be signed and submitted by the owner/operator.

Further questions? Please contact your regional office below and ask for a tank inspector to assist you.

Regional Office

Counties Served

Central (509) 575-2490

Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima

Eastern (509) 329-3400

Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman

HQ (360) 407-7170

Federal facilities in Western Washington

Northwest (425) 649-7000

Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom

Southwest (360) 407-6300

Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum

or find a complete list of UST inspectors at:

www.ecy.wa.gov/programs/tcp/ust-lust/people.html

To request materials in a format for the visually impaired, call Ecology at 360-407-7170, Relay Service 711, or TTY 877-833-6341