Checklist for Completing MDE Five Year Assessment for Impressed Current Cathodic Protection System:

As per the requirements of COMAR 26.10, a five year formal assessment is required for all impressed current cathodic protection systems (ICCPS) on fuel tanks/piping in Maryland. The goals of this assessment are as follows:

- Ensure functionality of all equipment,
- Confirm suitability of the equipment for protecting the current structures at the site,
- Review code compliance, and
- Assess that the system will continue to protect the site from soil side corrosion for at least another five years.

During a five year period, many changes can occur at a fueling facility. Wiring can be added, trenches dug, piping and tanks modified, and new equipment installed. Any such activity could adversely affect many component parts of an ICCPS. Further, parts deteriorate with time and one can never assume that anything was installed correctly in the first place. Thus, the cathodic protection engineer must evaluate every part of the design and the functioning of the equipment of the ICCPS in order to sign off its adequacy for another five years of service controlling corrosion at the site.

The following constitutes the elements of a Five Year Assessment for a typical ICCPS for a gas station or other small fuels facility:

1. Electrical Continuity
    a. Tanks to each other
    b. Tanks to piping
    c. Tanks to other buried utilities
2. Transformer-Rectifier Evaluation
    a. Visual inspection of contacts, terminals, stacks and cabinet
    b. Accuracy of meters and idiot lights
    c. Load testing (must at least be well beyond maximum amperage needed for protection at this site)
    d. Waveform review or an evaluation of diode performance and possibly anodic spiking
3. Potential survey
    a. Atop tanks recording $V_{INSTANT-OFF}$, V_{OFF} and polarization shift
    b. Atop piping
    c. Sufficient number of readings to meet NACE Codes and Standards for corrosion control
    d. Adjust transformer-rectifier as required
    e. Adjust idiot light controllers as required
    f. Revise or prepare local log sheet for 60 day inspection with details on acceptable limits for voltage and current

4. Wiring inspection
    a. Insure dedicated and locked circuit breaker powers Transformer-Rectifier
    b. Assess site for electrical code compliance
    c. Immediately advise site personnel if electric code violations are egregious
5. Anode evaluation (Note: This step is only required if Step #3 above fails.)
    a. Locate all anodes
    b. Verify current distribution to each
    c. Investigate any anodes with excessive/inadequate current
6. Prepare report
    a. Include details of all information obtained in the course of the assessment
    b. Provide drawing with sufficient detail to locate tanks, protected piping (if any), anodes and transformer-rectifier
    c. Provide recommendations to site owner for upgrades/replacement of system components if they are unable to protect fuel system or can not maintain protection for the next five years

MDE

26.10. Oil Pollution and Tank Management

26.10.02.04

.04 Definitions.

A. In COMAR 26.10.02—26.10.11, the following terms have the meanings indicated.

B. Terms Defined.

(14) "Corrosion expert" means a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. This person shall be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.

26.10.04.02

.02 Operations and Maintenance of Corrosion Protection.

A. All owners and operators of steel UST systems with corrosion protection shall comply with the requirements of this regulation to ensure that releases due to corrosion are prevented for as long as the UST system is used to store regulated substances.

B. All corrosion protection systems shall be operated and maintained to continuously provide corrosion protection to the metal components of that portion of the tank and piping that is in contact with the ground.

C. An underground storage system protected by impressed current systems shall be designed so that the impressed current source cannot be de-energized at any time, except to perform service work on the storage system or the impressed current cathodic protection system.

D. All UST systems equipped with cathodic protection systems shall be inspected for proper operation by a qualified cathodic protection tester in accordance with the following requirements:

(1) All field-installed cathodic protection systems shall be tested within 6 months of installation and at least every year after that;

(2) All factory-installed cathodic protection systems shall be tested within 6 months of installation and at least once every 3 years after that; and

(3) The criteria that are used to determine that cathodic protection is adequate as required by this section shall be in accordance with a code of practice developed by the National Association of Corrosion Engineers.

E. If a qualified tester determines that the cathodic protection is inadequate, repairs shall be made to the cathodic protection system within 60 days of the test measurement.

F. Time of Inspection.

(1) UST systems with impressed current cathodic protection systems shall:

(a) Be inspected every 60 days to ensure that the equipment is functioning properly; and

(b) Have a complete assessment of the impressed current system performed by a corrosion expert when the impressed current system reaches 5 years of age and every 5 years thereafter.

(2) The corrosion expert shall follow guidance as established by the National Association of Corrosion Engineers in performing the assessment, under §F(1)(b) of this regulation.

G. For UST systems using cathodic protection, records of the operation of the cathodic protection shall be maintained in accordance with Regulation .05 of this chapter and shall demonstrate compliance with the performance standards in this regulation. These records shall include the following:

(1) The results of the last three inspections and the last assessment required in §F of this regulation; and

(2) The results of testing from the last two inspections required in §D of this regulation.