



**US Army Corps
of Engineers.**
Construction Engineering
Research Laboratory

Fact Sheet

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CATHODIC PROTECTION (CP) DIAGNOSTIC

The Problem

The Army owns and maintains approximately 20,000 underground fuel storage tanks (USTs); 2,500 miles of buried gas pipes, and 300 elevated water storage tanks. Millions of dollars are spent annually to repair corrosion damage to these structures. Many installations use cathodic protection (CP) systems to protect these structures against corrosion. If CP systems fail or malfunction, the structure is no longer protected. Proper maintenance of CP systems involves troubleshooting and the evaluation of large amounts of data. This is a difficult task for many installations because they do not have personnel trained in CP and corrosion control. In addition, U.S. Environmental Protection Agency (EPA) regulations have made it mandatory to monitor the CP systems protecting USTs and their piping so that corrosion protection is ensured. Assistance is needed in the evaluation, troubleshooting, and storage of CP system data.

The Technology

The U.S. Army Construction Engineering Research Laboratory (CERL) has developed the CP Diagnostic computer program which operates on an IBM-AT or compatible microcomputer with hard drive and 640 kilobyte of random access memory. This program assists installations in evaluating, troubleshooting, and maintaining data on CP systems for underground piping, USTs, elevated water storage tanks, and civil works structures, such as miter and sector gates. Background information (e.g., structure data, anode and test point data, and rectifier specifications) and data from field measurements (e.g., structure-to-soil potential, anode currents, rectifier currents, and voltages) are loaded into the program. Based on the data, CP Diagnostic pinpoints malfunctioning systems which are not providing proper corrosion protection, as well as deteriorating systems whose performance has shown a marked decline over time. The CP Diagnostic program also generates data collection forms for the system inspector. CP Diagnostic helps schedule CP system testing and repairs such that regulatory compliance is maintained.

Benefits/Savings

CP Diagnostic improves the reliability of CP systems and the structures that they protect. Malfunctioning CP systems are diagnosed so that they can be promptly repaired. Properly maintained CP systems reduce the chance of costly and potentially dangerous corrosion-induced failures of structures, including USTs, underground piping systems, elevated water storage tanks, and civil works structures, such as miter and sector gates. In addition, CP Diagnostic keeps easily accessible records which can be used to ensure compliance with the EPA corrosion protection regulations for USTs.

Status

The DOS version of the CP Diagnostic software and user manuals are currently available. The user manual is ADP Report M-91/24, *Cathodic Protection Diagnostic Computer Program for Sacrificial*

and Impressed Current Systems: Overview and Users Manual. CP Diagnostic has been implemented at several Army, Navy, and Air Force installations. A Windows version of CP Diagnostic is currently under development and is scheduled for release during the 4th quarter FY99.

Points of Contact

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