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Standard Practice

The Use of Coupons for Cathodic Protection Monitoring Applications

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Foreword

Coupons are used to determine the level of corrosion protection provided by a cathodic protection (CP) system to a variety of structures, such as buried or submerged pipelines, underground storage tanks (USTs), aboveground (on-grade) storage tank bottoms, and steel in reinforced concrete structures. Structure-to-electrolyte potential measurements have long been used as the basis for assessing CP levels and compliance with CP criteria. It is well known that a voltage (IR) drop exists in the soil and across the coating, and that this IR drop produces an error in the structure-to-electrolyte potential measurement. This IR drop can be a function of reference electrode placement, soil resistivity, burial depth of the structure, coating condition, stray currents, local or long-line corrosion cells, and the amount of CP current applied.

CP coupons have been used since the 1930s by several pioneers of the corrosion-control industry, both in North America and in Europe. CP coupons have been shown to be a practical tool for determining the level of polarization of a structure and to confirm the IR drop in a potential measurement. Research sponsored by the pipeline industry has evaluated the use of CP coupons and has helped validate the use of this technology. The purpose of this standard practice is to provide a method for evaluating the effectiveness of a CP system using coupons. It is intended for use by people who design and maintain CP systems for buried or submerged pipelines, USTs, on-grade storage tank bottoms, reinforcing steel in concrete, water storage tanks, and various other structures in buried or aqueous environments.

The body of the standard primarily addresses applications for coupons attached to buried pipelines. Appendixes cover the use of coupons for other applications, including USTs, aboveground storage tanks (ASTs), internal surfaces of water tanks, and reinforced concrete structures.

This standard was originally prepared in 2004 by Task Group (TG) 210, "Coupon Technology for Cathodic Protection Applications." It was reaffirmed in 2014 by Specific Technology Group (STG) 35, "Pipelines, Tanks, and Well Casings." TG 210 is administered by STG 35 and is sponsored by STG 05, "Cathodic/Anodic Protection." This standard is issued by NACE under the auspices of STG 35.

In NACE standards, the terms *shall, must, should,* and *may* are used in accordance with the definitions of these terms in the *NACE Publications Style Manual*. The terms *shall* and *must* are used to state a requirement, and are considered mandatory. The term *should* is used to state something good and is recommended, but is not considered mandatory. The term *may* is used to state something considered optional.

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