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Pitfalls in the Typical RBI Methodology for CUI Management Programs

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ABSTRACT

Modern-day risk-based inspection (RBI) platforms are designed to evaluate the safety and/or financial risk of assets using industry-recommended RBI methodologies (e.g., API 581). There are cases where the RBI methodology does not represent the true risk profile of the asset, despite implementing the best possible inspection programs and careful input of inspection data. One of the main pitfalls present is the inherent limitation in the risk calculation methodologies that makes no or little use of the inspection data. An example of such a situation is the CUI risk assessments that are subjected to uncertainties due to numerous scientific parameters that are partially addressed (or even unaddressed) in modern-day RBI approaches. This work addresses two case studies of external corrosion rates due to CUI for two pairs of test rigs made with small bore piping deployed with two different insulation designs, namely conventional design, and moisture egress design. The assemblies were tested using two different methods for CUI simulation and testing conditions. The first pair was tested per ASTM G189-07 under isothermal wet-dry conditions at 100 ºC (212ºF) for three days, while the second pair was submerged under water for two days followed by outdoor exposure for one year. The experimentally determined corrosion rates were compared to those