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CUI Management Through Moisture Barrier System and Field Assessment

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ABSTRACT

CUI (Corrosion Under Insulation) is a key degradation in plant assets and contributes 40% - 60% failures in the piping systems. CUI is known to trigger from soaked insulation that are held in-contact with the metal(s). This article presents a case study of moisture management where a hydrocarbon operator faced challenge of frequent soaking of thermal insulations that caused the operator to replace the entire insulation on a multi-kilometer pipeline twice within an operating period of 10 years. The newer insulation was installed with and without various combinations of moisture barrier devices. The various moisture barrier devices included low point drains, ventilation windows, as well as standoffs between insulation and jacketing. The assessment was made via monitoring of moisture content (Vol.%) in the insulation for which moisture readings were taken at the pipe's surface as well as alongside the thickness of insulation on a bi-weekly basis over a period of 7 months. The standoffs between jacketing and insulation significantly reduced the moisture content of the entire insulated system. This article also addresses the modular management via termination gaskets for compartmentalization and assessment of trapped moisture within any insulated system.

Key words: Thermal insulation, CUI, moisture assessment, contact-free insulation, perforated dimple wraps, low point drain