

Field Deployment of Corrosion Inhibitor Developed for Sour Oil and Gas Carbon Steel Pipelines

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Abstract : A major oil and gas operator in western Canada producing approximately 50,000 BOE per day of sour fluids was experiencing increased water production along with decreased oil production over several years. The higher water volumes being produced meant an increase in the operator's incumbent corrosion inhibitor (CI) chemical requirements but with reduced oil production revenues. Thus, a cost-effective corrosion inhibitor solution was sought to deliver enhanced corrosion mitigation of the carbon steel pipeline infrastructure but at reduced chemical injection dose rates. This paper presents the laboratory work conducted on the development of a corrosion inhibitor under the operator's simulated sour operating conditions and then subsequent field testing of the product. The new CI not only provided extremely good levels of general and localized corrosion inhibition and outperformed the incumbent CI under the laboratory test conditions but did so at vastly lower concentrations. In turn, the novel CI product facilitated field chemical injection rates to be optimized and reduced by 40% compared with the incumbent whilst maintaining superior corrosion protection resulting in significant cost savings and associated sustainability benefits for the operator.

Keywords : carbon steel, sour gas, hydrogen sulphide, localized corrosion, pitting, corrosion inhibitor

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