

Abstract: Sweet & Sour: A Unique Case Study of Orphaned Well Abandonments in the Northwest Territories

Emma Pike¹, Dean Casorso², Matthew McElwaine³

¹Aboriginal Affairs and Northern Development Canada

²Fire Creek Resources Ltd.

³Public Works and Government Services Canada

The objective of the presentation is to describe the remediation of several sour gas wells in the Northwest Territories and the associated lessons learned.

When concerns with seven orphaned sour gas wells near the town of Hay River, NWT, were first identified, Aboriginal Affairs and Northern Development Canada (AANDC) had administration and control of these federal lands as well as managed the oil and gas rights. The National Energy Board (NEB), as the federal regulator, directed AANDC to address the health, safety and environmental risks. This then became the first gas well abandonment program undertaken by AANDC North of 60, and also represented the first time the NEB regulated a federal department.

When taking on responsibility for orphaned properties whose drilling history dated back to the 1920s and 1940s, it can be very challenging to determine the well history, well status, geological or reservoir information, etc., as the information may not be gathered to today's standards, the information was in poor form, or the information has simply been lost over the years. The work was further complicated with no road access, and therefore an ice bridge and associated snow ramps needed to be built to access the property across the Hay River, within the lease area of the Hay River Ski Club.



Abstract: Sweet & Sour: A Unique Case Study of Orphaned Well Abandonments in the Northwest Territories

Within these limitations, an initial abandonment program was undertaken in 2011. Only one of the three wells drilled was properly abandoned (on par for the typical industry success rate for abandonment [33%]). With real-time sour gas monitoring and additional assessment in between, including locating a well that previously could not be found, AANDC with the procurement support of Public Works and Government Services Canada tendered a well abandonment program in late 2014, and awarded the contract to Fire Creek Resources Ltd. (FCRL).

FCRL, partnered with local sub-contractor Rowe's Construction, were uniquely positioned to determine the appropriate construction and decision-making process for the abandonment of these shallow, over-pressured sour wells within the Slave Point formation. Conventional well construction design and remediation ideology would be to cement the well with full-length plugs; however alternative design criteria should be considered in situations of remote site access and high mobilization costs.

The wells were remediated successfully in 2015 but still many lessons were learned in the process related to procurement strategy, scheduling, abandonment design, access construction, stakeholder engagement and regulatory oversight and approvals. As the oil and gas industry continues to evolve and fluctuate over time, there is value in sharing these lessons with regulators and other land/resource managers.