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## 4200 FOOT HDD BELOW CHIN LAKE RESERVOIR IN ALBERTA CANADA

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**ABSTRACT:** During a recent drought that exposed part of their Taber - Coutts gas line to potential vandalism and damage, ATCO Pipelines (ATCO) decided they needed to replace the existing 4 inch (100mm) diameter pipeline crossing of Chin Lake Reservoir. Routing around the long narrow reservoir would require about 14 km of additional pipeline plus placement of the pipeline on a bridge or dam structure. Chin Reservoir is a major component in the local irrigation district and is also a major local recreation and fishing area. ATCO, decided to utilize Horizontal Directional Drilling technology to drill below Chin Reservoir a distance of 1277 metres (4200 feet).

Drilling commenced September 22 and progressed 7 days a week 24 hours a day and successfully exited October 15, 2004. Drilling progressed almost entirely without circulation creating numerous problems including the need to continuously replenish the drilling fluid. The height of the reservoir banks was 52 metres (170 ft) and the depth of the no drill zone was 40 metres (130 ft) below the reservoir bottom. At the deepest point the drill path was about 8 metres (26ft) below the no drill zone creating a total depth of 100 metres (330 feet). The pipeline utilized a yellow jacket coating system and a ShawCor abrasion protection coating product called Rock Jacket. This project is one of the longest installations of Rock Jacket utilizing HDD technology. The equipment sent to site was a contractor modified CMS 350 with 350,000 lb of push/pull.

This paper describes the challenges anticipated, those that were encountered and the methods used to meet these challenges.