

Geophysical and Geotechnical Mapping of Bedrock Down the Side of a Mountain in Northern British Columbia

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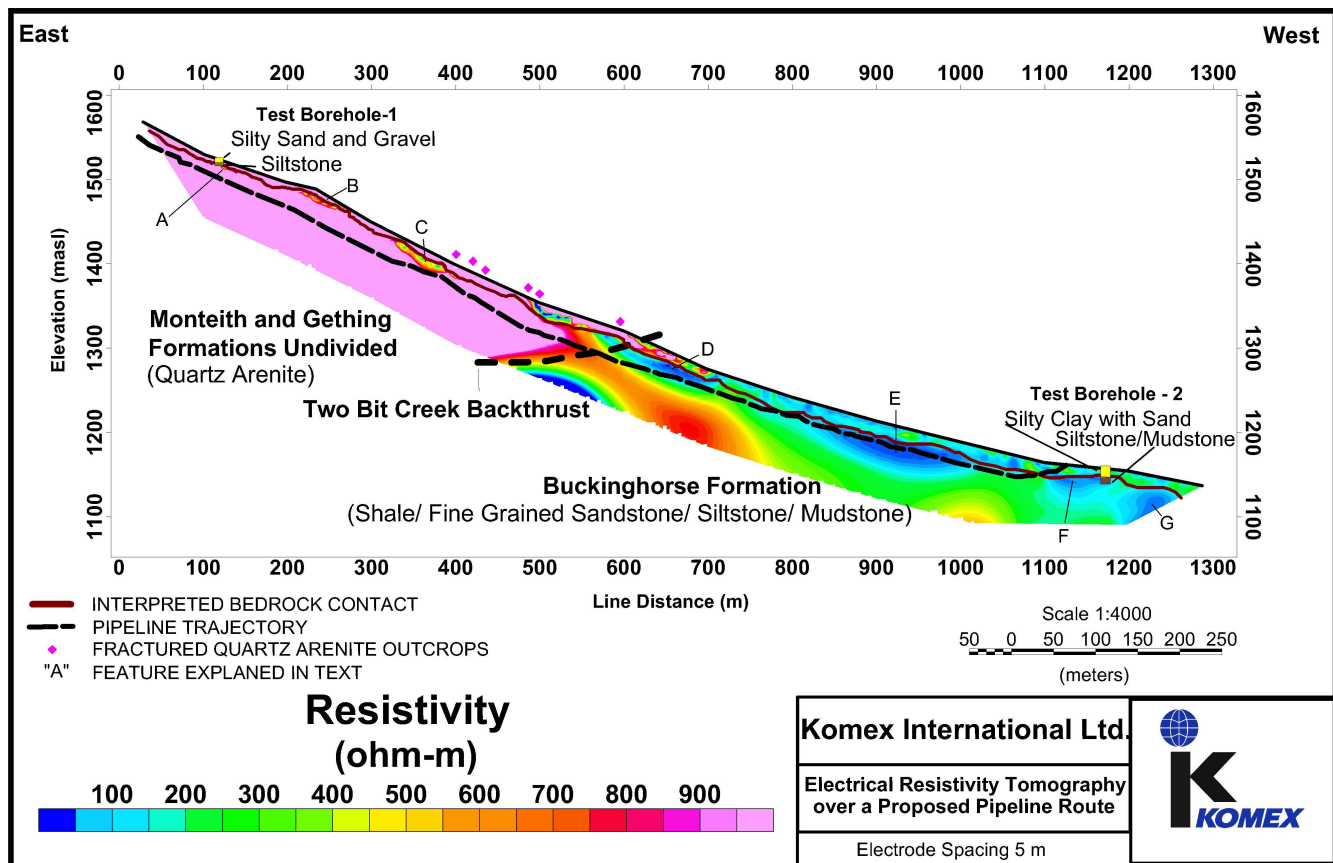
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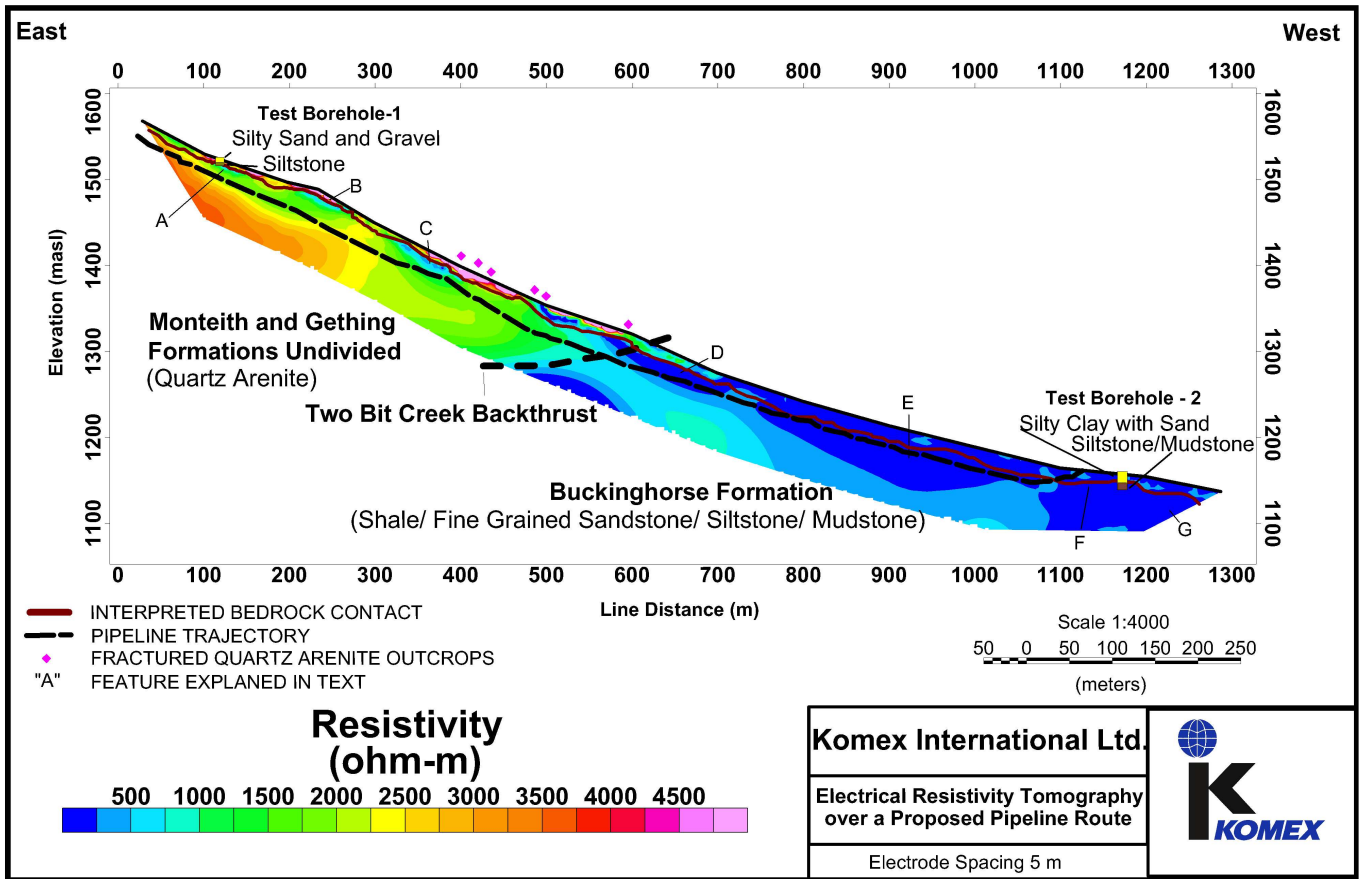


Introduction

In 2004, an oil and natural gas exploration, development and production company initiated the installation of a pipeline up the side of a mountain in Northern British Columbia by using horizontal drilling technology. This program was the first time that horizontal directional drilling technology was used to climb a record 423 m vertically over a length of 1300 m. The primary objective of this project was to minimize environmental impact and to maximize worker safety. In January 2004, Komex International Ltd. was retained to conduct a geophysical electrical resistivity tomography (ERT) survey over the proposed pipeline route to determine the thickness of the overburden material, the type of bedrock and fracturing in the bedrock. The drilling of two geotechnical boreholes was completed to confirm the geophysical results and the bedrock lithology. This information was critical to the horizontal drilling program in order to keep the borehole within bedrock. If the drilling had encountered loose overburden material it could have collapsed in behind the drill assembly causing it to become stuck. This could have resulted the loss of expensive drilling equipment and potentially, the need for re-drilling long sections of the borehole. The steep slope of the mountain and the cold weather presented a variety of problems in the completion of the geophysical and geotechnical investigations. The outcropping quartzite at the top half of the mountain presented problems in getting good electrical contact with the ground. To overcome these problems, a strong team effort, constant organization of equipment and good communication was essential. This poster will discuss the challenges that were faced, the solutions that followed and the lessons learned from the investigation.

Figures





References

S.J. Hinds M.P. Cecile 2003: Open File Dossier Public 1464 Geological Survey of Canada.