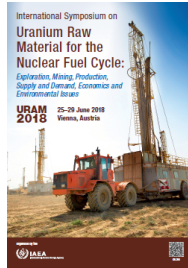


International Symposium on Uranium Raw Material for the Nuclear Fuel Cycle: Exploration, Mining, Production, Supply and Demand, Economics and Environmental Issues (URAM-2018)



Contribution ID: 162

Type: ORAL

Integration and Cost Saving Utilization of the Seismic Reflection Technique in the Athabasca Basin, Canada

Tuesday, 26 June 2018 10:20 (20 minutes)

The Seismic Laboratory (UofS) through industrial partnerships has conducted many seismic reflection experiments within the western and eastern Athabasca Basin. Results to date illustrate that the seismic investigations deliver high-quality primary structural images of the subsurface, with resolution not matched by other geophysical techniques. Correlation of similar seismic signatures from section to section has defined the mineralization fault systems and allowed spatial extension of previously unrecognized exploration target zones. Extended analysis of seismic signal attributes and full-wave data offer detailed lithological characterization, including anomalous alteration zones and petrophysical attributes. Although seismically detected anomalies are primary indicators of mineralization, the seismic method is still not a “standard basin” exploration tool because of its negative attribute. Unquestionably, locally, drilling of boreholes provides the most explicit reliable information to a certain depth. Comparing the costs of all geophysical techniques to the cost of a single logged drill-hole illustrates that the results of a properly designed seismic data acquisition program not only leads to more effective drilling programs, but also to much quicker recognition of the major mineralized zones and their fingerprints. This integrated approach to exploration would translate into significant reduction of required exploratory boreholes and the total exploration expenditure.

Country or International Organization

CANADA, FRANCE

Primary author: Dr HAJNAL, Zoltan (Department of Geological Sciences, University of Saskatchewan)

Co-authors: Dr PANDIT, Bhaskar (Department of Geological Sciences); Dr TAKACS, Erno (Department of Geological Sciences, University of Saskatchewan); Dr ANNESLEY, Irvine R. (ENSG, Universite de Lorraine and Department of Geological Sciences, University of Saskatchewan)

Presenters: Dr ANNESLEY, Irvine R. (ENSG, Universite de Lorraine and Department of Geological Sciences, University of Saskatchewan); Dr HAJNAL, Zoltan (Department of Geological Sciences, University of Saskatchewan)

Session Classification: Advances in Exploration

Track Classification: Track 4. Advances in exploration