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Understanding and Mitigating Induced Seismicity Risk in the Kiskatinaw Area, BC: Enhanced Seismograph Network Coverage

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Summary

The Kiskatinaw Seismic Monitoring and Mitigation Area (KSMMA) is under active development for unconventional resources within the Montney play. This area straddles the southern segment of the Fort St. John graben and exhibits high susceptibility to induced seismicity, with abundant recorded events and numerous felt reports by local residents. In November 2019, the University of Calgary, in collaboration with Nanometrics and other industry partners, commenced a joint project with support from Geoscience BC. This program is acquiring high-quality ground motion data in near real-time by deploying a dense array with 15 stations (13 broadband seismometers and 2 accelerometers) to enhance existing coverage within KSMMA. Researchers supported by this project will use advanced interpretive methods to reveal the underlying structural architecture and dynamics of fault activation by analysis of array observations including: stress inversion based on seismic moment tensors; establishing a workflow for fault risk ranking; applying state-of-the-art in-house and licensed commercial computational tools; and disseminating research results through reports, conferences and peer-reviewed contributions. The high spatial density of the seismograph stations will enable testing of recently developed models for fault activation. For transparency, raw data and seismicity catalogues will be released to the public following a 3-month embargo period. The transparency and input from multiple stakeholders aim to contribute to responsible natural resource development within BC's energy sector. This presentation provides a project update, focusing on the installation of the seismograph array and preliminary data analysis.