

AER Bulletin 2015-03

February 3, 2015

Observed Seismicity and Oil and Gas Operations: Operators' Responsibilities

The Alberta Geological Survey (AGS), a part of the Alberta Energy Regulator (AER), regularly monitors seismic activity throughout the province. Including the Regional Alberta Observatory for Earthquake Studies Network (RAVEN), the AGS uses 53 monitors to measure seismic activity across Alberta.

On Thursday, January 22, 2015, the AER confirmed a seismic event measuring 4.4 on the Richter scale approximately 33 kilometres (km) west of Fox Creek, Alberta. The event was one in a sequence of lower level seismic events in the Crooked Lake area that began in early January 2015. Preliminary information indicates that the event might be related to hydraulic fracturing operations in the area. There were no surface impacts associated with this event and no damage was reported. There were no impacts to the public or the environment.

The AER is investigating the events and reminds licensees of their responsibility to ensure well control and subsurface integrity at all stages of drilling, completions and injection operations. *AER Directive 083: Hydraulic Fracturing – Subsurface Integrity* sets out related requirements. The AER expects licensees in the Fox Creek/Crooked Lake area to immediately report to the applicable AER field centre any seismic activity observed during or in the vicinity of their operations.

The AER regularly reviews and amends requirements to address new technologies, risks, or impacts of development, including impacts from completion activities such as hydraulic fracturing. As part of those efforts, the AER will continue to assess seismicity in the vicinity of hydraulic fracturing operations and will determine what, if any, response is necessary.

The AER continues to monitor seismic activity across Alberta using the RAVEN stations in conjunction with networks operated by other research organizations, including Natural Resources Canada (NRCan), the University of Alberta, the Montana Bureau of Mines and Geology, the University of Western Ontario, and the University of Calgary. The AER has monitored seismicity in the province since 2010. Before then, seismicity was monitored by NRCan.

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