



ORDER 18-90-001 (Amendment #1)

Kiskatinaw Seismic Monitoring and Mitigation Area Special Project Order

- A. Under section 75(1)(c) of the *Oil and Gas Activities Act*, the Oil and Gas Commission (Commission) designates an innovative method of carrying out oil and gas activities and related activities as a special project in the following area:
- Kiskatinaw Seismic Monitoring and Mitigation Area (KSMMA) Special Project Order (Appendix I)
- B. Per section 75(2) of the *Oil and Gas Activities Act*, the special project designation in this Order is subject to the following conditions:

Pre-Operation Requirements:

A permit holder of any well wholly or partially located in the KSMMA Area (see Appendix I) must, prior to initiating hydraulic fracturing operations involving horizontal, multi-stage fracturing in a well (hydraulic fracturing operations) on or after May 28, 2018:

1. Submit a seismic monitoring and mitigation plan with any notice of operation that includes hydraulic fracturing operations. The seismic monitoring and mitigation plan must include:
 - a. A pre-assessment of seismic hazard.
 - b. A seismic monitoring and mitigation outline.
2. Notify residents of hydraulic fracturing operations at a well in accordance with the requirements set out in Appendix II.
3. Notify the Commission not less than 24 hours and not more than 72 hours before hydraulic fracturing operations begin on a common drilling pad.

Active Operation Requirements:

A permit holder of any well wholly or partially located in the KSMMA must, during hydraulic fracturing operations:

1. Deploy an accelerometer within three km of the common drilling pad.
2. Have access to a seismic array that will give real-time seismicity readings.
3. On request, submit a summary of monitoring reports to the Commission.

Seismic Thresholds During Operations:

1. If a well is identified by the well permit holder or the Commission as being responsible for a seismic event with a magnitude of 3.0 or greater, the well permit holder must suspend hydraulic fracturing operations on the common drilling pad immediately. Hydraulic fracturing operations may not continue without the written consent of the Commission.
2. The minimum level at which the well permit holder must take action and initiate their mitigation plan is magnitude 2.0.
3. If a well is identified by the well permit holder or the Commission as being responsible for a seismic event with a magnitude of 1.5 or greater event, the well permit holder must communicate the initial event to the Commission within 24 hours and develop a protocol satisfactory to the Commission to maintain communication regarding any subsequent magnitude 1.5 or greater events during hydraulic fracturing activities on the common drilling pad.



4. If the common drilling pad is identified as being responsible for a cluster of seismic events, the Commission may require the suspension of hydraulic fracturing activities.

Post-Operation Requirements:

Submit to the Commission a report respecting monitoring of hydraulic fracturing operations in a format acceptable to the Commission within 30 days of concluding hydraulic fracturing operations.

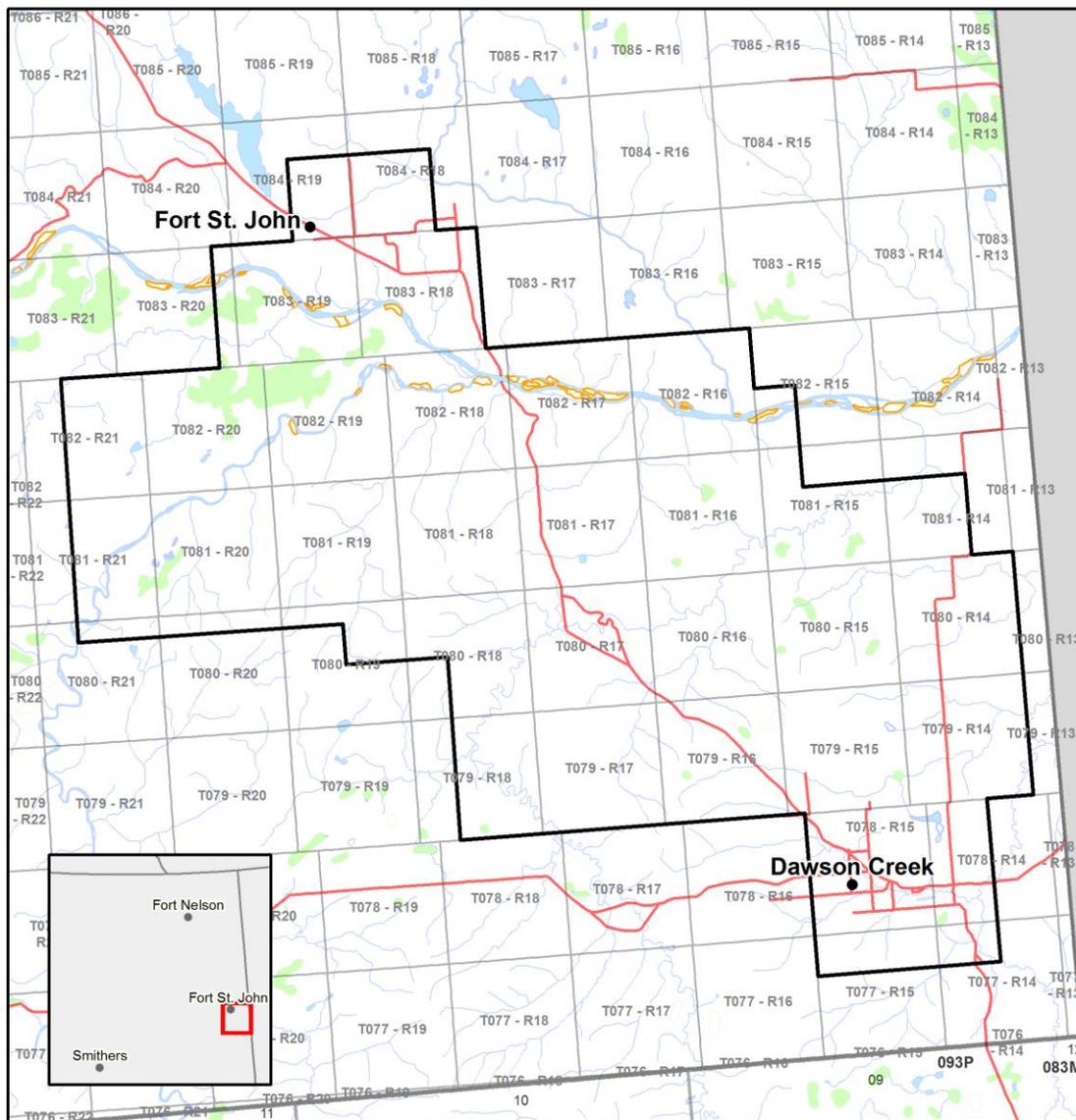
A handwritten signature in black ink, appearing to read "Paul Jeakins", written over a horizontal line.

Paul Jeakins
Commissioner and CEO
BC Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 24th day of Oct. 2018

Appendix I:

Kiskatinaw Seismic Monitoring and Mitigation Area (KSMMA)



Legend:

Kiskatinaw Seismic Monitoring and Mitigation Area (KSMMA) —

Appendix II

NOTIFICATION REQUIREMENTS

- (1) Subject to (4), a permit holder must give the information set out in (2) to an individual who resides on land that is located in the KSMMA and within 3 km of the well trajectory (resident).
- (2) Subject to (4), the information provided under (1) must include:
 - (a) a description of what activities will be taking place, where the activities will be located and when the activities will happen;
 - (b) an explanation that the activities may induce seismic events;
 - (c) a description of what seismic events are like and impacts that might occur with seismic events;
 - (d) well permit holder contact details, and an explanation that the Commission may require the well permit holder to contact residents as a result of a seismic event;
 - (e) a description of how these activities are regulated and contact information for the BC Oil and Gas Commission (Commission);
 - (f) an outline of seismic monitoring and mitigation plans;
 - (g) a description of monitoring and measurement as well as reporting; and
 - (h) additional information as may be practical, necessary or required in the circumstance.
- (3) Subject to (4), the information given under (1) must be provided no less than two days prior to initiating hydraulic fracturing operations as follows:

RESIDENT	NOTIFICATION METHOD
<p>An individual who resides on land that is:</p> <ul style="list-style-type: none"> • located <u>within</u> district municipalities of Fort St. John, Dawson Creek, Pouce Coupe or Taylor • located within the KSMMA; and • located within 3 km of the well trajectory. 	<p>Notification will preferably be provided verbally and in-person, or by phone. Alternatively, notification may be accomplished using the following method(s):</p> <ol style="list-style-type: none"> (a) by leaving a copy with the individual or an agent of that individual; (b) by sending a copy by ordinary mail or registered mail to the address at which that individual resides; (c) by sending a copy by electronic mail to the electronic mail address provided by that individual; (d) by leaving a copy in a mail box or mail slot for the address at which that individual resides; (e) by attaching a copy to a door or other conspicuous place at the address at which that individual resides; (f) through other means that ensures adequate notification, including but not limited to public meeting, broadcast, publication, and public posting.

<p>An individual who resides on land that is:</p> <ul style="list-style-type: none"> • located <u>outside</u> the district municipalities of Fort St. John, Dawson Creek, Pouce Coupe, or Taylor; • located within the KSMMA; and • located within 3 km of the well trajectory. 	<p>Notification will preferably be provided verbally and in-person, or by phone. Alternatively, notification may be accomplished using the following method(s):</p> <ul style="list-style-type: none"> (a) by leaving a copy with the individual or an agent of that individual; (b) by sending a copy by ordinary mail or registered mail to the address at which that individual resides; (c) by sending a copy by electronic mail to the electronic mail address provided by that individual; (d) by leaving a copy in a mail box or mail slot for the address at which that individual resides; (e) by attaching a copy to a door or other conspicuous place at the address at which that individual resides.
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(4) The Commission, on written request, may exempt a person from one or more of the requirements set out in (1) to (3) above and, on making an exemption, substitute other requirements.