

Kiskatinaw Seismic Monitoring and Mitigation Area Q&As

Questions and Answers

- 1. Why is the Commission instituting this Kiskatinaw Seismic Monitoring and Mitigation Area (KSMMA)?**
 - The Commission has noticed a series of ongoing, low level – but felt – seismic events arising from hydraulic fracturing in the greater Farmington area.
 - While the magnitudes and ground motion associated with these events is low, the Commission recognizes it can be disturbing for area residents and has therefore implemented special monitoring and notification requirements for activities in the area to help address those concerns.

- 2. Does this mean hydraulic fracturing leads to ongoing earthquakes?**
 - Not necessarily. A fraction (less than 1%) of hydraulic fracturing stages are linked to induced seismic events - or minor earthquakes.
 - The Commission was the first regulator in North America to draw the link between hydraulic fracturing and induced seismic events. The Commission has taken a leadership role in the detection and mitigation of induced seismicity from unconventional oil and gas development.
 - As such, in 2016 the Commission designated two regions, the North Peace and South Peace Ground Motion Monitoring areas, noting they were more susceptible to induced seismicity.
 - The KSMMA replaces the South Peace Ground Motion Monitoring area.
 - The frequency of felt events occurring in the Farmington area requires the Commission to take further steps to address the issue.

- 3. Why aren't similar requirements being put in place in other regions of the northeast?**
 - The Commission identified two areas that are more susceptible to induced seismicity and the KSMMA is replacing one of those areas by maintaining the requirements of the South Peace Ground Motion Monitoring area, while adding further oversight.
 - This new KSMMA covers a wide region, near to some more heavily populated areas.
 - The Commission will continue to research induced seismic events and if other areas show similar trends to what is happening in this area, will consider appropriate actions at that time.

- 4. Why are the requirements to shut down being set at 3.0 – when elsewhere, the requirement for shut down of an induced event only comes with a 4.0 magnitude event?**
 - This magnitude is being set at 3.0 because the area where this applies has a unique seismic history that indicates a magnitude 3.0, while low, would be an unusually high magnitude event for the region.

- In both instances, operators are required to stop operations and prepare a Commission-approved mitigation program before operations can resume.
- 5. Why is this being issued as a “Section 75 Special Project Order”?**
- Through an Order made under section 75 of the [Oil and Gas Activities Act](#), the Commission has rapidly responded to this emerging issue by requiring all operators in the area to apply innovative methods for conducting activities.
 - The Commission is committed to continuous improvement of its regulatory framework, including the development and implementation of regulatory requirements respecting the carrying out of oil and gas activities.
- 6. Did the Commission consult with industry and the community regarding this Order?**
- The Commission integrated input received by affected area residents accumulated through investigations into felt events and hydraulic fracturing operations in the area. Permit holders in the area, the Canadian Association of Petroleum Producers and the Explorers and Producers Association of Canada were consulted on the Order and notified that the Commission would be taking action to require additional monitoring and communication with area residents.
 - After making the Order, the Commission issued [Industry Bulletin 2018-09](#), which was posted to the Commission website, disseminated to media in the area and circulated via social media.
- 7. This only deals with induced seismicity in and around Farmington – what is the Commission doing about other issues the community has raised – such as flaring, light pollution, truck traffic, noise, and impacts to agricultural activity?**
- The Commission is working on all of these issues, analysing data and developing appropriate responses to help alleviate the concerns expressed by residents.
 - Seismicity was the first step – a review of lighting requirements is now underway and longer-term solutions to other issues are also under consideration.
- 8. Who should I contact if I have questions? Who should I contact in the event there is a felt event or if there are technical questions about seismicity, reporting, etc?**
- If you have inquiries of a technical nature or questions about how to implement the direction provided in Appendix II, contact Stu Venables at 250-419-4472. Public enquiries and concerns can be made via the Commission’s 24 hour public number: 250-794-5200. Email inquiries can also be sent to OGCSeismic.Reports@bcogc.ca.
- 9. Are notification requirements the same as described in the Emergency Management Regulation and/or Consultation and Notification Regulation, and associated guidance?**
- No, while some of the language and structure may be similar to that found in the regulations, the requirements for notification under [Special Project Order 18-90-001](#) are distinct and captured in Appendix II of the Order.

10. Under the KSMMA, who will be notified?

- The intent of the KSMMA is to ensure companies are notifying residents when undertaking hydraulic fracturing operations at a well and informing them that there could be induced seismic – and felt – events.
- Opening lines of communication with those most likely to be affected can help reduce concerns and provides residents with a contact person to notify, if an event occurs.
- The Commission is also developing a webmap where anyone can view the location of current and/or upcoming activities. This will allow anyone, including those people who were previously under the notification provisions, to be aware of activity. The webmap is expected to be available by November 1, 2018.

11. Who is captured under Appendix II, Notification Requirements, s. 1?

- An individual who resides on the land within 3km of the well trajectory. The radius was reduced from 5km to 3km, as the majority of felt seismic events occur within a 2km radius of the wellbore trajectory.
- The diagram below illustrates the notification area within the 3 km radius of the well(s) from a common drilling pad:



12. Under Appendix II, when is the notification deemed received by recipient?

- The following table can be used as guidance for when notification can be deemed received:

Notice periods based on minimum two day notice before hydraulic fracturing begins.

Notice Mailed <i>Calendar day 1</i>	<i>Calendar day 2</i>	Email; Leave on door / mailbox; Publish; Broadcast <i>Calendar day 3</i>	<i>Calendar day 4</i>	<i>Calendar day 5</i>	<i>Calendar day 6</i>	Deemed received <i>Calendar day 7</i>
<i>Calendar day 8</i>	<i>Calendar day 9</i>	Earliest hydraulic fracture start <i>Calendar day 10</i>				

13. Do we need to prepare and submit a line list as part of the notification requirements?

- Permit holders are not required to submit a line list to the Commission, analogous to application submission requirements, as part of the KSMMA requirements. However, it would be prudent for permit holders to document their notification plans and any actions taken, in the event there was a question or complaint that the permit holder did not comply with the Order. In such a circumstance, the Commission could request the submission of the records.

14. If a permit holder has a multi-well pad and has fulfilled the Order requirements and completed operations on a subset of the wells, does the permit holder need to notify again if hydraulic fracturing operations are scheduled for the subsequent wells at a later date? What if the seismic monitoring and mitigation plan needs to be updated?

- The notice requirements must be fulfilled each time hydraulic fracturing is initiated on a wellpad, regardless of time elapsed. If there are several wells located on a common wellpad, and the operator intends to drill each subsequent to the next, a single notification to recipients detailing the proposed scheduling and duration will suffice. If there is a gap of six months between cessation and then resumption of drilling activities, notification must begin again.
- The plan required under the Order must be submitted to the Commission with each Notice of Operations; if that plan is changed, an updated plan should be provided to the Commission by either amending the Notice of Operations or by emailing updated plans to OGCSeismic.Reports@bcogc.ca, referencing all WA #s from the common drilling pad.

15. How can a permit holder best apply the notification requirements to residents located within a referenced municipality that may be captured in the Order?

- The table included in Appendix II provides direction as to notification methods. Notification method (f) in the first row of the table allows the permit holder to determine the most effective means to communicate with persons occupying land within municipalities. It is most effective for permit holders to discuss options and seek advice from the given municipalities directly.

16. Appendix II, s. 2(h) refers to providing additional information in the notification package. What type of information might that include?

- Permit holders will want to include the expected duration of hydraulic fracturing activities, details about specific Commission or other contacts for reporting felt events (for example), a map indicating the wellpad location, information about induced seismicity, etc.

17. By what means does a permit holder submit an exemption request? What information is required? Who is the decision maker?

- The Commission's Chief Executive Officer, Chief Operating Officer and Vice President, Applications are able to grant exemptions to the Order. Exemption requests should be provided to OGCSeismic.Reports@bcogc.ca and include specific information about the nature of the requested exemption along with a detailed rationale explaining why the exemption request is reasonable and justified.

18. Do seismicity monitors fall under the category of “structure owned by the government of Canada”?

- No; seismicity monitors in the KSMMA are owned by GeoScience BC, not the federal government.

19. Appendix II, s. 2(d) may require that a permit holder contact notification recipients after a seismic event occurs. Is there a specific magnitude threshold for initiating this contact?

- Under the KSMMA Special Project Order, the Commission may require the permit holder to contact notification recipients if a seismic event that is equal to or above magnitude 2.5, or a confirmed felt event, or a recorded seismic event less than magnitude 2.5 that would be expected to be felt given the seismic history of the operating area occurs.

20. What option do I have to object to this activity occurring?

- You are being notified about an activity that has been permitted by the Commission and is already underway.