

BY EMAIL ONLY

January 23, 2019

Lily Lau-Porta, Reservoir Engineering Advisor
ISH Energy Ltd.
900, 700 – 4 Avenue SW
Calgary, AB T2P 3J4
Attention: Lily Lau-Porta
Email: lilyl@ishenergy.ca

ISH ENERGY LTD.

APPLICATION NO. 1909395

STATEMENT OF CONCERN NO. 31196

Dear Ms. Lau-Porta:

You are receiving this letter because you filed a statement of concern about Application No.1909395. The Alberta Energy Regulator (AER) has reviewed your statement of concern, along with the company's application, and all applicable requirements and other submissions or information about the application. The AER has decided that a hearing is not required under an enactment, or necessary, to consider the concerns outlined in your statement of concern.

In our review of your concerns, we considered the following:

- Thermal Compatibility of Well 100/10-01-75-09W4
ISH Energy Ltd. (ISH) stated that it has no record of CNRL's work completed on the well 100/10-01-75-09W4 to make it thermally compatible; therefore ISH considers this well to be thermally non-compliant.

The AER's records indicate that this well was remedied with a thermal cement plug in January 2015 and is now thermally compatible. Therefore, all wellbores within 300 m of the proposed drainage box for KN06 development were found to be thermally compatible.

- Injection Pressure of 7 MPa

ISH objects to the 7 MPa startup pressure and the non-limited time frame at that pressure. A lower maximum initial injection pressure of 6 MPa would mitigate that risk.

The AER is satisfied that the unloading pressure of 7 MPa for a maximum duration of 14 days to displace liquid in the wellbore to commence circulation will not pose a risk of fracturing the shale barrier between the McMurray and the overlying gas over bitumen (GOB) zone.

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The AER notes that CNRL conducted minifrac tests in 2012 at well 1AA/09-06-075-08W4M located within the Kirby North Development Area. The test results show that the Clearwater 'A' shale has a minimum in situ stress of 7.61 MPa. The results are consistent with the 2011 CNRL minifrac test run at well 100/13-20-073-07W4M in the Kirby South Development Area indicating a minimum stress of 7.67 MPa for Clearwater 'A' shale. CNRL's operating strategy for this KN06 pad will be the same as the other existing pads in the Kirby South. CNRL will not exceed 6.0 MPa except during startup where bottomhole injection pressures may reach up to 7.0 MPa for a short time period (<14 days) to overcome friction and hydrostatic head in order to unload wellbore fluids and start circulation. Once steam circulation is established, bottomhole pressure will be reduced below 6 MPa.

- Observation Wells

ISH is opposed to CNRL's plan to have no observation wells.

The AER is satisfied that no observation wells are required because the injection pressure of 7 MPa for a maximum duration of 14 days to displace liquid in the wellbore to establish circulation will not pose a risk of fracturing the shale barrier between the McMurray and the overlying GOB zone.

- 4-D Seismic Monitoring

The AER notes that 4-D seismic is usually conducted by thermal operators to monitor steam chamber development and steam conformance along SAGD wellbores. As stated above, the AER is satisfied that the injection pressure of 7 MPa for a maximum duration of 14 days to displace liquid in the wellbore to start circulation will not fracture the shale barrier between the McMurray and the overlying GOB zone. Therefore, it is not necessary or reasonable for CNRL to conduct 4-D seismic at the Kirby South for the purpose of protecting the GOB Zone in the KN06 area.

Based on the above, the AER has concluded that it is not necessary to hold a hearing before making a decision on the application. The AER has issued the applied-for approval and this is your notice of that decision. A copy of the approval is attached.

All AER- regulated parties must comply not only with the conditions of their authorizations, but with all of the AER's regulatory requirements. To ensure industry compliance the AER has developed its *Integrated Compliance Assurance Framework*,

which embodies the three main components of all effective compliance assurance programs, those being education, prevention, and enforcement. You can find out more about how the AER verifies industry compliance and responds to noncompliance here: <https://aer.ca/regulating-development/compliance/compliance-assurance-program>.

You may file a regulatory appeal on the AER's decision to issue the approval if you meet the criteria within section 36 of the *Responsible Energy Development Act*. Filing instructions and forms are on our website under Regulatory Appeal Process.

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If you have any questions, contact Jiancheng Du at 403-297-4138 or jiancheng.du@aer.ca.

Sincerely,

<original signed by>

Rob Cruickshank
Director Business Process, Authorizations

Attachment: Approval No. 11475

cc: CNRL: Marc Scrimshaw, P. Eng., Regulatory Coordinator