

April 8, 2021

4700-8550-32640-02

Wade Thesen  
Operations Manager  
Erikson National Energy Inc.  
Suite 1900-717 7<sup>th</sup> Ave. SW  
Calgary, AB T2P 0Z3

Dear Mr. Thesen,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL  
ERIKSON HELMET c-54-G/94-P-10; WA# 23622  
HELMET FIELD – EVIE FORMATION**

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The subject well was drilled and completed into both the Muskwa-Otter Park 'A' pool and the Evie formation in March of 2008. The Evie formation was later recompleted at a lower interval and hydraulically fractured in February of 2011. All completed intervals were found to be unproductive and the well was suspended.

The Commission concurs that the Evie formation is likely connected to the Pine Point (Lower Keg River) formation below, through the hydraulic fracture stimulation on the Evie and/or through existing faulting. Most of the disposal fluid may be stored in the Pine Point formation, for which Erickson is the owner of the subsurface lease. The primary source of disposal fluid is legacy frac flow-back storage from a previous operator. The initial application for nonhazardous waste disposal has been appropriately modified to only produced water.

Attached please find **Order 21-02-001**, designating an area in the Helmet field, Evie formation, as a Special Project under section 75 of the Oil and Gas Activities Act, for the operation and use of a storage reservoir for the injection of produced water. This Order includes a number of detailed operational, measurement and reporting conditions. Disposal wells are subject to regular field inspection and audit. Contravention of a condition of this Order may be subject to enforcement under section 62 of OGAA, or suspension or cancellation of the Order under section 75(2)(b).

Due to the demonstrated volume need, the uncertainty of the formation of ultimate disposal storage, and potential faulting, the approved cumulative disposal volume has been limited to 125,000 m<sup>3</sup> by condition 2i). Additionally, to safeguard the integrity strength of the cement squeezed Muskwa-Otter Park interval, the casing pressure must be monitored and must not exceed 7 MPa, as per condition 2f).

For the inspection requirement of Order condition 2l), please arrange via email to [OGCPipelines.Facilities@bcogc.ca](mailto:OGCPipelines.Facilities@bcogc.ca).

Should you have any questions, please contact Logan Gray at (250) 419-4465 or the undersigned at (250) 419-4430.

Sincerely,



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Ron Stefik, Eng. L.  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

Attachment



IN THE MATTER of the application from Erikson National Energy Inc. to the Oil and Gas Commission dated March 12<sup>th</sup>, 2021 requesting disposal approval:

**ORDER 21-02-001**

1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Commission designates the operation and use of a storage reservoir for produced water, including flowback from fracturing operations, in the Helmet field – Evie and Pine Point formations as a special project in the following area:

NTS            93-P-4 Block G Unit 54

2. Under section 75(2) of the *Oil and Gas Activities Act*, the special project designation in this Order is subject to the following conditions. The Permit Holder shall:
- a) Inject water into the well Erikson Helmet c-54-G/94-P-10; WA# 23622 Evie formation from 1,968.0 – 2,007.0 mKB MD.
  - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 11,025 kPag or the pressure required to fracture the formation, whichever is lesser.
  - c) Inject only through tubing with a packer set as near as is practical above the injection interval.
  - d) Continually measure and record the wellhead casing and tubing pressures electronically.
  - e) Include the disposal operating hours and the maximum injection pressure value on the monthly Petrinex disposal report.
  - f) Cease injection and notify the Commission at Reservoir@bcogc.ca immediately if there are any indications that hydraulic isolation is lost in the wellbore or formation or if casing pressure measured at surface exceeds 7 MPa.
  - g) Conduct and submit an annual Surface Casing Vent Flow test to the Commission within 30 days of the completion of the test.
  - h) Conduct an annual reservoir pressure test on the formation in the subject well, with a shut-in period of sufficient length to provide data for calculation of the reservoir pressure, and submit a report of the test within 60 days of the end of the test.
  - i) Cease injection upon reaching a maximum formation pressure of 22,400 kPaa, measured at 1,987.5 mKB TVD, or when cumulative injection volume reaches 125,000 m<sup>3</sup>, whichever occurs first.
  - j)
    - i) Perform a casing inspection log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 10 years, commencing from the date of initial disposal.
    - ii) Perform a hydraulic isolation temperature log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 5 years, commencing from the date of initial disposal.
  - k) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
  - l) Complete an inspection, satisfactory to the Commission, within 4 weeks of initial disposal operations.

A handwritten signature in blue ink, appearing to read 'R. Stefik'.

Ron Stefik, Eng.L.  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 8<sup>th</sup> day of April 2021.

### **Advisory Guidance for Order 21-02-001**

- I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion and frost inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required to be conducted and the associated report must be submitted to the Commission within 30 days of test completion, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered and the injection pressure measured at the wellhead, as per section 74 of the Drilling and Production Regulation.
- IV. A monthly disposal statement must be submitted to the Commission via Petrinex not later than the 20<sup>th</sup> day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.
- V. Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.