

April 20<sup>th</sup>, 2021

6460-4800-32640-02

Bruce Gigg  
VP Engineering  
Kelt Exploration (LNG) Ltd.  
300, 311 - 6th Ave SW  
Calgary, AB T2P 3H2

Dear Mr. Gigg,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL  
KELT LNG OAK A6-35-86-18; WA# 40189  
OAK FIELD – HALFWAY ‘A’ POOL**

The Commission has reviewed the application submitted by VZFOX Canada Ltd, on behalf of Kelt Exploration (LNG) Ltd, dated March 26, 2021, requesting approval for produce water disposal in the Halfway formation of the subject.

The well A6-35 was purpose drilled for disposal in January of 2021 and completed into the Oak Halfway 'A' pool in February 2021. The well was drilled with a deviated profile from A6-35-86-18 to 14-26-86-18, with the completed Halfway interval in 3-35-86-18. The Oak Halfway 'A' pool is an oil and gas pool that began production in 1973. Currently, 8 wells have had their Halfway intervals abandoned, 5 are suspended, and one well, Strathcona et al Oak 10-14-86-18 (WA 7478) is still on production. The pool is highly depleted, at a current reservoir pressure of approximately 1MPa, 8% of the initial pressure.

Attached please find **Order 21-02-002**, designating an area in the Oak field, Halfway 'A' pool, 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). The Commission notes that the production casing used is of relatively weak grade; the Commission expects the operator to closely monitor casing pressure for any increases in casing pressure above the expected range, 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).

Disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure. It is the responsibility of the permit holder make adjustments to wellhead injection pressure.

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

Sincerely,



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

Attachment



IN THE MATTER of the application from Kelt Exploration (LNG) Ltd. to the Oil and Gas Commission dated March 26<sup>th</sup>, 2021 requesting disposal approval:

**ORDER 21-02-002**

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 Oak field – Halfway ‘A’ pool as a special project in the following area:

DLS        Twp 86 Rge 18 W6M Section 35 – LDSs 3, 4, 5, and 6

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 Kelt LNG OAK A6-35-86-18; WA# 40189 Halfway formation from 1,604.0 – 1,610.0 mKB MD.
  - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 19,000 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 9,825 kPaa, measured at 1,388.6 mKB TVD.
  - 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, P.L.Eng.  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 20<sup>th</sup> day of April 2021.

### **Advisory Guidance for Order 21-02-002**

- 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.