



June 3, 2015

3425-2600-32640-02

Andrew Evans, P.Eng.
Production/Completion Engineer
Tourmaline Oil Corp.
3700, 250 – 6th Avenue SW
Calgary, AB T2P 3H7

Dear Mr. Evans:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
TOURMALINE DOE F04-25-80-16; WA# 30057
BLUESKY FORMATION**

Oil and Gas Commission staff have reviewed the application, dated April 9, 2015, requesting approval to dispose of produced water into the Bluesky formation of the subject well.

The subject well, rig released September 3, 2014, was drilled for the purpose of produced water disposal into the Bluesky formation. Testing for hydrocarbons, wellbore integrity, formation fracture pressure and reservoir pressure was completed and indicate this well is suitable for disposal.

Attached please find **Order 15-02-010**, designating an area in the Doe field – Bluesky 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 disposal of produced water. This Order includes a number of detailed operational conditions to ensure that the subject well is in line with current OGC standards for disposal wells. Additional information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

In certain circumstances, disposal well operation may induce seismicity. The Commission advises that disposal well permit holders monitor seismic events in proximity to the well and be prepared to modify operations to mitigate induced seismicity. Permit holders may monitor seismic events through the Natural Resources Canada seismic monitoring network at <http://www.earthquakescanada.nrcan.gc.ca/recent/index-eng.php>

Should you have any questions, please contact Michelle Gaucher at (250) 419-4482 or Ron Stefik at (250) 419-4430.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ron Stefik', is written over a horizontal line.

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

Attachment

ORDER 15-02-010

- 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 the disposal of produced water, into the Bluesky formation – in the Doe field as a special project in the following area:

DLS Twp 80 Rge 16 W6M Section 25 - Lsds 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 produced water only into the well Tourmaline Doe F04-25-80-16; WA# 30057 – Bluesky formation (disposal perforations 1129.0 – 1131.0 mKB).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 11,650 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) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - f) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.
 - g) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.
 - 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 10,900 kPaa, measured at MPP.
 - 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.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 3rd day of June, 2015.

Advisory Guidance for Order 15-02-010

- I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.
- II. Annual packer isolation tests are required, as per section 16(3) of the Drilling and Production Regulation.
- III. Injected fluids must be metered, as per section 74 of the Drilling and Production Regulation.
- IV. A monthly disposal statement must be submitted to the Commission not later than the 25th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.