



December 15, 2014

3540-7400-32640-02

Russ Huck  
Artek Exploration Ltd.  
2300, 520 – 5<sup>th</sup> Ave SW  
Calgary AB T2P 3R7

Dear Mr. Huck:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT  
ARTEK FIREWEED c-093-I/94-A-12; WA# 16268  
FIREWEED FIELD - DEBOLT FORMATION**

Oil and Gas Commission staff have reviewed your application, dated September 11, 2014, with supplemental data provided November 17, 2014, requesting approval to disposal of produced water into Debolt formation of the subject well.

Directional well Artek Fireweed c-93-/94-A-12 (Well Permit 16268) was drilled in 2004 targeting Slave Point gas but after drilling to 3578m tools were lost in the hole at 3530m and a bridge plug was set at 3479m. A window was milled at approximately 3470m, then a sidetrack around the abandoned hole was drilled to 3578m. The open hole was logged and suspended with a bridge plug set at 3440m. The well never produced and was abandoned with two bridge plugs at 3430 and 2075m. In November 2014, the well was re-entered and the Debolt was perforated and tested for disposal potential.

Attached please find Order 14-02-016, designating an area in the Fireweed field – Debolt 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 including: continuous tubing and casing pressure measurements, a maximum wellhead injection pressure, an ultimate reservoir pressure limit, as well as wellbore integrity monitoring and reporting requirements. 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).

It is noted that the prospective Montney formation is in close vertical proximity to the Debolt. Potential development of the Montney will require prudent management of completion operations to avoid contact with the disposal interval.

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>

Monthly reporting requirement instructions are posted at <http://www.bcogc.ca/node/11152/download>. Additional general information regarding disposal wells is available on the Commission's website at <http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.

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

Sincerely,



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

Attachment

**ORDER 14-02-016**

- 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 disposal of produced salt water into the Debolt formation – Fireweed field as a special project in the following area:

NTS 94-A-12 Block - I Unit - 93.

- 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, including well flowback completion fluids only into the well Artek Fireweed c-93-1/94-A-12; WA# 16268 – Debolt formation (1953.5 to 1976.0 mKB MD).
- b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 13,600 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 a reservoir pressure test on the formation in the subject well annually, 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 20,800 kPaa.
- 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 injection.
  - 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 injection.
- k) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.

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

DATED AT the City of Victoria, in the Province of British Columbia, this 15<sup>th</sup> day of December, 2014.

## Advisory Guidance for Order 14-02-016

- 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 25<sup>th</sup> day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.