



March 17, 2014

2920-4800-32640-02

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

Dear Mr. Nociar:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT, AMENDMENT #1  
ARTEK ET AL HZ CACHE 12-36-87-23 W6M; WA# 27127  
CACHE CREEK FIELD - HALFWAY FORMATION**

Oil and Gas Commission staff have reviewed your application, dated January 15, 2014 requesting approval to disposal of produced water into Halfway formation of the subject well.

The horizontal well Artek et al Hz Cache 12-36-87-23 (Well Permit 27127) was completed as a Doig "CC" oil well and produced from September 2011 to April 2012. Production levels became uneconomic and the Doig was suspended. In January 2014 the Halfway was perforated for the purpose of disposal. Following a step-rate injectivity test a hydraulic fracture stimulation was conducted. A post-frac step-rate injectivity test was also conducted.

On March 4, 2014, temporary approval Order 14-02-003 was granted by the Commission for up to 5,000 m<sup>3</sup> of disposal volume at a requested maximum wellhead pressure of 13,800 kPa. However, through the step-rate tests, Artek was not able to achieve a desired rate of 100 m<sup>3</sup>/d at this pressure. Therefore, the temporary test period is concluded and the disposal approval now includes a maximum wellhead pressure of 18,500 kPag as determined by OGC Maximum Wellhead Pressure calculation.

Attached please find Order 14-02-003 Amendment #1, designating an area in the Cache Creek field – Halfway formation 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 and well stimulation flowback. This Order includes a number of detailed operational conditions, including: maximum wellhead injection pressure, annual packer isolation testing, ultimate reservoir pressure limit, wellbore integrity testing and reporting requirements.

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 'R. Slocomb', written over a horizontal line.

Richard Slocomb, P.Eng.  
Deputy Commissioner, Engineering  
Oil and Gas Commission

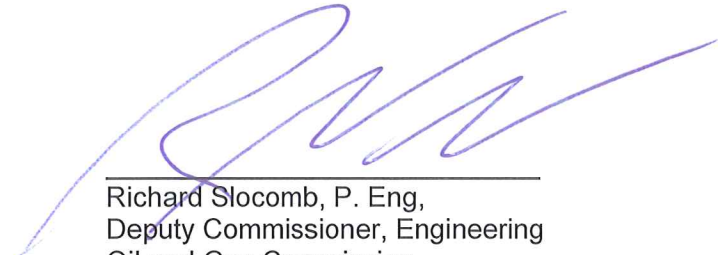
Attachment

**ORDER 14-02-003 Amendment #1**

1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Oil and Gas Commission (Commission) designates the operation and use of a storage reservoir for disposal of produced water, including flowback from fracturing operations into the Halfway formation – Cache Creek field as a special project in the following area:

DLS Twp 87 Rge 23 W6M Section 36 - Lsds 11, 12, 13 and 14.

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 et al Hz Cache 12-36-87-23 (Well Permit # 27127) Halfway formation.
  - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 18,500 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.
  - e) Report the disposal volumes, operating hours and the maximum injection pressure values on the monthly disposal statement.
  - f) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
  - g) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test
  - h) Cease injection upon reaching a maximum formation pressure of 17,100 kPaa.
  - i) Conduct an annual reservoir pressure test on the formations 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.
  - 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.



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Richard Slocomb, P. Eng,  
Deputy Commissioner, Engineering  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 17<sup>th</sup> day of March 2014.

Advisory Guidance for Order 14-02-003 Amendment 1

- I. A production packer must be set above the injection interval and the space between the tubing and casing (including the space between the 3 packers) 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.