



September 21, 2017

8130-4520-32640-02

Chad Grywacheski  
Regulatory Specialist  
Shell Canada Limited  
P.O. Box 100, Station M  
Calgary, AB T2P 2H5

Dear Mr Grywacheski,

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL; AMENDMENT #1  
SHELL ET AL SUNSET 14-8-80-18; WA# 7640  
SUNSET PRAIRIE FIELD – CECIL 'A' POOL**

Approval for disposal of produced water, Order 17-02-006, was issued for the subject well, Cecil 'A' pool, on May 2, 2017. In an email dated June 28, 2017, Shell Canada Limited (Shell) requested approval to use future annual reservoir pressure tests performed on WA 8355 (Shell et al Sunset 8-6-80-18) to meet the requirement for annual reservoir pressure testing on the subject well.

Attached please find **Order 17-02-006 Amendment #1**, designating an area in the Sunset Prairie field – Cecil '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 disposal of produced water. This Order makes a number of changes to Order 17-02-006, as follows. Condition 2h) specifies that the annual reservoir pressure testing requirement for the subject well can be met by either a pressure test at the subject well or a pressure test at offsetting well WA 8355. If the pressure test for WA 8355 is used for the annual requirement for both wells, the Commission expects a valid, static reservoir pressure to be submitted. Shell should pay close attention to the wellhead injection pressures on the subject well; increasing pressures are an indicator that downhole pressures are increasing. If it is believed that reservoir pressures at WA 8355 are no longer representative of pressures at the subject well, the Commission may re-instate the annual reservoir pressure testing requirement. Condition 2i) lists a maximum fill-up pressure for the pool, corrected to pool datum depth. Once fill-up has been reached, the Commission requires a final reservoir pressure to be taken on the subject well, as outlined in Condition 2j).

All other conditions remain unchanged. As stated in the letter dated May 2, 2017 for Order 17-02-006, prior to disposal start the Commission expects Shell to install a bridge plug 10 - 20 m below the Cecil perforations to protect casing below this depth. Shell must also install a tubing injection string with packer, with annulus filled with corrosion-inhibiting fluid. Within 4 weeks of starting disposal, Shell must complete an inspection as per Condition 2m) of Order 17-02-006 Amendment #1. This can be arranged via email to [OGCPipelines.Facilities@bcogc.ca](mailto:OGCPipelines.Facilities@bcogc.ca)

In certain circumstances, disposal well operation may induce seismicity of values that require modification of operations to mitigate.

Disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure

Should you have any questions, please contact Michelle Harding at (250) 419-4493 or the undersigned at (250) 419-4430.

Sincerely,


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

Attachment



### ORDER 17-02-006 Amendment #1

- 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, including flowback from fracturing operations, into the Cecil 'A' pool – Sunset Prairie field as a special project in the following area:  
DLS Twp 80 Rge 18 W6M Section 8 - 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 only into the well Shell et al Sunset 14-8-80-18; WA# 7640 – Cecil 'A' pool (disposal perforations 1844.0 – 1846.0 mKB).
  - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 25,570 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) Meet the annual reservoir pressure test requirement with either a reservoir pressure test on the subject well or with the annual reservoir pressure test on offset disposal well WA 8355 (Shell et al Sunset 8-6-80-18), unless otherwise specified by the Commission
  - i) Cease injection upon reaching a maximum pool pressure of 26,510 kPa, measured at 1001mSS.
  - j) Upon reaching the fill-up pressure specified in 2i), perform a final reservoir pressure test on the subject well.
  - k)
    - 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.
  - l) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
  - m) Complete an inspection, satisfactory to the Commission, within 4 weeks of initial disposal operations.

  
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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 21<sup>st</sup> day of September, 2017.

## Advisory Guidance for Order 17-02-006 Amendment #1

- 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 submitted, 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 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.
- V. Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.