

January 27, 2017

5200-7400-32640-02

Justin Downey, P.Eng.
Production Engineer
Suncor Energy Inc.
PO Box 2844, 150 - 6 Avenue SW
Calgary, AB, T2P 3E3

Dear Mr Downey:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL, AMENDMENT #1
SUNCOR PC TETHYS KOBES a-A87-G/94-B-09; WA# 14126
KOBES FIELD – DEBOLT FORMATION**

Approval for disposal of produced water, Order 05-02-009, was issued for the subject well, Debolt formation, on November 3, 2005. The Commission is presently amending disposal well approvals to conform to current requirements.

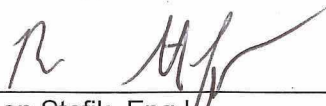
The subject well was dually completed as a Baldonnel gas producer and a Debolt water disposal well. Baldonnel production occurred between July 2003 and June 2013. The Debolt water disposal started in October 2005 and is still ongoing. Because the Baldonnel perforations are open to the annulus, the wellbore configuration is not ideal for disposal purposes.

Attached please find **Order 05-02-009 Amendment #1**, designating an area in the Kobes 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 contains a number of detailed operational conditions including a maximum wellhead injection pressure and continuous tubing and casing pressure monitoring. Condition 2 g) specifies a modified annual segregation test methodology in order to meet the requirements of the Drilling and Production Regulation Section 16. An ultimate disposal limit is set in condition 2 j) to ensure that the disposal well is only used for continued declining production in the area, and no new sources of disposal volumes. Additional general 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 Harding at (250) 419-4493 or the undersigned at (250) 419-4430.

Sincerely,




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

Attachment

ORDER 05-02-009 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 Debolt formation – Kobes field as a special project in the following area:
NTS 94-B-09 Block G Unit 87
- 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 Suncor PC Tethys Kobes a-A87-G/94-B-09; WA# 14126 – Debolt formation (perforations from 2230.0 – 2292.0 mKB MD).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 11,030 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) Maintain an inhibited water column over packer (2220 mKB) to base of Baldonnel perforations (1410 mKB)
 - g) Perform a modified annual segregation test that consists of:
 - i) Perform an annual tubing pressure test to ensure tubing integrity
 - ii) Perform an annual hydraulic isolation log, and submit results to the Commission within 30 days of the completion of logging.
 - h) Include the disposal operating hours and the maximum injection pressure value on the monthly BC-S18 disposal statement.
 - i) 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.
 - j) Cease injection upon reaching a cumulative disposal volume of 233,200 m³, or a maximum formation pressure of 24,360 kPaa, measured at 2250.5 mKB TVD, whichever comes first.
 - 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.
 - l) 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 27th day of January, 2017.



ORDER 05-02-009 Amendment #1

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Advisory Guidance for Order 05-02-009 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 25th 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.