



April 10, 2020

8100-4800-59240-16

Lynn Wood, P.Eng.
Exploitation Engineer
Canadian Natural Resources Limited
2100, 855 – 2nd St. S.W.
Calgary, AB T2P 4J8

Dear Ms. Wood:

**RE: ACID GAS DISPOSAL APPROVAL 98-16-003 AMENDMENT #3
CNRL W STODDART 7-34-87-21 ; WA# 11398
STODDART WEST FIELD – HALFWAY FORMATION**

Commission staff have reviewed the application by Canadian Natural Resources Limited (CNRL), dated April 9, 2020, requesting temporary disposal use of the subject well. The subject well 7-34 was approved for deep disposal of waste by-product acid gas (H₂S & CO₂), as Special Project Order 98-16-003 under section 75 of the Oil and Gas Activities Act. Having reached the maximum permissible reservoir storage pressure, the well is no longer suitable for on-going continuous disposal. In March 2017 the Commission approved the well CNRL HZ W Stoddart 8-29-87-21 (WA 10347) for disposal operation into a depleted Doig pool, replacing the Halfway formation disposal into well 7-34.

On February 19, 2020, the Commission suspended Order 98-16-003 Amendment #2; effective March 31, 2020. A reservoir pressure test conducted on the subject well following disposal suspension has been submitted and the subject of conference call meetings between CNRL and Commission technical staff. Test results of a declining pressure may indicate remaining reservoir storage capacity suitable for temporary operation.

As a temporary measure, attached is Order 98-16-003 Amendment #3 valid until August 31, 2020 allowing a single maximum continuous period of 24 hour disposal operation into the subject well, should disposal at well 8-29 become unavailable.

Further availability of this well for back-up operation beyond the date of August 31 will require an application by CNRL with supporting results from ongoing well testing, and may be subject to additional conditions including, but not limited to, a cement bond and casing inspection logs.

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 blue ink, appearing to read "R. Stefik", is written over a horizontal line.

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

ORDER 98-16-003 AMENDMENT #3

- 1 Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Commission designates the Halfway formation as a special project for the operation and use of a storage reservoir for the disposal of acid gas within the following area:

DLS TWP 87 RNG 21 Sec 34.

- 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:

Well Details

- a) Inject acid gas only into the well CNRL W Stoddart 7-34-87-21; WA 11398 – Halfway formation (1587.5 – 1596.0 mKB).

Operating Limits

- b) Limit the maximum H₂S concentration of the injection fluid stream to 70%.
- c) Not exceed an injection pressure, measured at the wellhead on the subject well, of 10,500 kPag or the pressure required to fracture the formation, whichever is lesser.
- d) i) In the event of an issue preventing alternative disposal, injection may occur for a single consecutive 24 hour period.
ii) If injection occurs, inform the Commission at reservoir@bcogc.ca as soon as practicable.
- e) This approval is terminated August 31, 2020.
- f) Inject only through tubing with a packer set as near as is practical above the injection interval.
- g) Continually measure and record the wellhead casing and tubing pressures electronically, including when the disposal well is inactive or suspended.

Monitoring

- h) Conduct and submit an annual Surface Casing Vent Flow test to the Commission within 30 days of the completion of the test
- i) Conduct a reservoir pressure test on the formation in the subject well, and submit results to the Commission prior to July 31, 2020.

Wellbore Integrity

- j) Ensure a Wellhead Emergency Shut-Off Device and Subsurface Safety Valve (SSSV) are installed to operate “fail-safe” and are linked to H₂S detector heads at the wellhead.
- k) Annually confirm the Subsurface Safety Valve is capable of activation remote from the wellhead.
- l) Implement appropriate corrosion and freeze protection measures in the casing-tubing annulus.

- m) Cease injection and notify the Commission immediately at Reservoir@BCOGC.ca if there are any indications that hydraulic isolation is lost in the wellbore or formation.
- n) Maintain a barricade around the wellhead that is capable of withstanding vehicle collision.
- o) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
- p) Submit a Progress Report to the Commission for each six month period the project is in operation. The Progress Report must be filed within 60 days after the end of each period and must contain the information specified in the Acid Gas Progress Report Requirements document found on the OGC website here:
<http://www.bco.gc.ca/industry-zone/documentation/Subsurface-Disposal>.
- q) Prior to abandonment of the disposal zone, conduct a reservoir pressure test on the zone 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.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 10th day of April, 2020.

Advisory Guidance for Order 98-16-003 Amendment #3

- 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 volume, hours and temperature must be submitted to Petrinex not later than the 20th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.
- V. All fluid analyses must be submitted with 30 days of analysis completion as per section 34 (5) (a) of the Drilling and Production Regulation.