



March 8, 2020

8100-4800-59240-16

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

Dear Ms. Wood:

**RE: ACID GAS DISPOSAL APPROVAL 98-16-003 AMENDMENT #5  
CNRL W STODDART 7-34-87-21 W6M; WA# 11398  
STODDART WEST FIELD – HALFWAY FORMATION**

The subject well was approved for acid gas disposal on September 18, 1998. A following amendment specified a maximum H<sub>2</sub>S limit of 70%. The Commission recently became aware that the H<sub>2</sub>S content occasionally exceeds 70%, requiring an update to the pipeline and well permit. It is recognized that the H<sub>2</sub>S content in the disposal stream varies. The attached Order, condition 2 b), has been amended to reflect a higher H<sub>2</sub>S content. The only other change to the Order is the addition of condition 2 n), requiring casing inspection logs.

The Emergency Planning Zone (EPZ) is calculated based on the maximum H<sub>2</sub>S and maximum allowed reservoir pressure. The changes to the Emergency Response Plans and planning zones will be conducted through the Commission's Public Protection and Safety group. If the EPZ existing has not been determined using these values, please contact the Peter Dalton (Peter.Dalton@bcogc.ca), Director, Public Protection and Safety, Compliance to make the required amendments.

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'.

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

## **ORDER 98-16-003 AMENDMENT #5**

- 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 07-34-087-21; WA 11398 – Halfway formation (1587.5 – 1596.0 mKB).

### **Operating Limits**

- b) Limit the maximum H<sub>2</sub>S concentration of the injection fluid stream to 95%.
- 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 48 hour period, to a maximum of 3 disposal sessions per year.  
ii) If injection occurs, inform the Commission at [reservoir@bcogc.ca](mailto:reservoir@bcogc.ca) as soon as practicable.
- e) Inject only through tubing with a packer set as near as is practical above the injection interval.
- f) Continually measure and record the wellhead casing and tubing pressures electronically, including when the disposal well is inactive or suspended.

### **Monitoring**

- g) Conduct and submit an annual Surface Casing Vent Flow test to the Commission within 30 days of the completion of the test
- h) 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.

### **Wellbore Integrity**

- i) Ensure a Wellhead Emergency Shut-Off Device is installed to operate “fail-safe” and is linked to H<sub>2</sub>S detector heads at the wellhead.
- j) Ensure a Subsurface Safety Valve (SSSV) is installed to operate “fail-safe”.
- 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 if hydraulic isolation is lost in the wellbore or formation.
- n) Perform 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 10 years, commencing from the date of initial disposal. Through tubing logging is acceptable.
- o) Perform a Distributed Temperature Survey (DTS) 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 5 years, commencing from the date of initial disposal
- p) Maintain a barricade around the wellhead that is capable of withstanding vehicle collision.
- q) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
- r) Submit a Progress Report to the Commission for each six month period the well status is active. 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.bcogc.ca/industry-zone/documentation/Subsurface-Disposal>.
- s) 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.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 8th day of March, 2021.

### **Advisory Guidance for Order 98-16-003 Amendment #5**

- 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 to be conducted and the associated report must be submitted to the Commission within 30 days of test completion, 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 via Petrinex not later than the 20<sup>th</sup> 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 tests as per section 34(5)(a) of the Drilling and Production Regulation.
- VI. Seismic events must be reported and disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.