

February 10, 2020

8100-6200-59240-09

Brittany Jorgensen  
Canadian Natural Resources Limited  
2100, 855 – 2nd St SW  
Calgary, AB T2P 4J8

Dear Brittany Jorgensen:

**RE: PRESSURE MAINTENANCE WATERFLOOD ORDER 91-09-001 AMENDMENT #7**  
**STODDART WEST FIELD – BELLOY ‘C’ POOL**

The Commission is presently reviewing and amending waterflood approvals to conform to current requirements. The continued operation of a pressure maintenance waterflood in the Stoddart West field – Belloy ‘C’ pool by Canadian Natural Resources Limited (CNRL) requires this review.

The discovery well, CNRL W Stoddart 6-3-86-20 (WA 4130), was drilled in November of 1977 and began production in the following month. Approvals were granted for waterflood in the south half of the pool (Order 91-09-001) and concurrent production (Order 97-07-005) in the north of the pool in May of 1991 and injection began in August 1991. The initial waterflood approval allowed for injection into the well CNRL W Stoddart 8-21-85-20 (WA 6671) and subsequent amendments were granted to allow conversion of an additional six wells to injection service. Order 91-09-001 Amendment #3 expanded the waterflood to encompass the area and wells included in the concurrent production project, and thus the concurrent production approval, Order 97-07-005, was rendered spent and is hereby considered cancelled.

The following Orders are attached;

- 1) Order 91-09-001 Amendment #7 designating Pressure Maintenance Waterflood within the Stoddart West field – Belloy ‘C’ pool, as a Special Project under section 75 of the *Oil and Gas Activities Act*, and
- 2) Order 91-09-001 Amendment #7 - OTN approving Other Than Normal Spacing under section 65.1 of the *Petroleum and Natural Gas Act* for the subject area and formation.

This amended approval includes a maximum wellhead injection pressure (MWHIP), an ultimate pool pressure limit, restriction of injection for the purpose of oil recovery, the submission of annual packer isolation tests, and a requirement for an annual reservoir pressure test. The ultimate reservoir pressure has been limited to the initial pool pressure. Only the single active injector, CNRL et al W Stoddart A6-27-85-20 (WA 7063), is approved for injection in the Order as all other injectors have not been used for injection service in over 12 years.

Please note that, as per section 75 of the *Drilling and Production Regulation*, a record of the volume of water injected and the MWHIP must be included on a Monthly Injection statement to the Commission via Petrinex not later than 20<sup>th</sup> day of the month following the reported month.

Should you have any questions, please contact Logan Gray at (250) 419-4465 or the undersigned at (250) 419-4430.

Sincerely,

  
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Ron Stefik, EngL  
Supervisor, Reservoir Engineering  
Oil and Gas Commission

Attachments

**ORDER 91-09-001 – Amendment #7**

1. Under Section 75 (1) (a) of the *Oil and Gas Activities Act*, the Commission designates by Order the development and production of petroleum and natural gas from a pool using pressure maintenance waterflood enhanced recovery scheme within the Stoddart West field – Belloy 'C' pool following area;

DLS    Twp 85 Rge 20 W6M:    E/2 sec 21, SW/4 & N/2 sec 22, NW/4 sec 23,  
sec 27, E/2 sec 28, NE/4 sec 32, sec 33 and  
sec 34.

          Twp 86 Rge 20 W6M:    Sec 3, sec 4, SW/4 & E/2 sec 5, and sec 9.

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:
  - a) The project unadjusted daily oil allowable (UDOA) is 580.0 m<sup>3</sup>.
  - b) All associated produced gas must be conserved.
  - c) Water may be injected into the well: CNRL et al W Stoddart A6-27-85-20 (WA 7063), interval 2,016.3-2,031.0 mKB.
    - i) Inject only through tubing with a packer set as near as is practical above the injection interval.
    - ii) Not exceed an injection pressure, measured at the wellhead of 23,650 kPag for well CNRL et al W Stoddart A6-27-85-20 (WA 7063), or the pressure required to fracture the formation, whichever is lesser.
  - d) An annual reservoir pressure must be obtained from the injector CNRL et al W Stoddart A6-27-85-20 (WA 7063) or from a well in its area of influence, and submitted to the Commission within 60 days of completion of the tests via e-submission.
  - e) Not exceed an average pool pressure of 15,925 kPaa measured at 1179.0 meters subsea.
  - f) Cease injection for the injector CNRL et al W Stoddart A6-27-85-20 (WA 7063) and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation
  - g) Include the monthly injected volume, injection hours and the maximum injection pressure value for the injector CNRL et al W Stoddart A6-27-85-20 (WA 7063) via Petrinex.
  - h) Injection must cease upon termination of production from the pool.

**ORDER 91-09-001 – Amendment #7**

Page 2

## Advisory Guidance for 91-09-001 – Amendment #7

- 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 completed and 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 injection statement must be submitted to 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. Seismic events must be reported and injection operations suspended as per section 21.1 of the Drilling and Production Regulation.

  
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Ron Stefik, Eng.L.  
Supervisor, Reservoir Engineering  
Oil and Gas CommissionDATED AT the City of Victoria, in the Province of British Columbia, this 10<sup>th</sup> day of February 2020.






**ORDER 91-09-001 – Amendment #7 – OTN**

- 1 Under Section 65.1(2) of the *Petroleum and Natural Gas Act*, Other Than Normal Spacing within the Stoddart West field – Belloy 'C' pool formation is hereby approved within the following area;

DLS      Twp 85 Rge 20 W6M:      E/2 sec 21, SW/4 & N/2 sec 22, NW/4 sec 23,  
sec 27, E/2 sec 28, NE/4 sec 32, sec 33 and  
sec 34.

Twp 86 Rge 20 W6M:      Sec 3 , sec 4, SW/4 & E/2 sec 5, and sec 9.

- 2 Under section 65.1(3) of the *Petroleum and Natural Gas Act*, I specify the following:
- a) the target area for an oil well completed within the project area is not nearer than 100 m to the sides of the Other Than Normal Spacing area,
  - b) an oil well completed outside the specified target area may be subject to an off-target production penalty,
  - c) oil wells drilled within the specified project area are not subject to spacing requirements.

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

DATED AT the City of Victoria, in the Province of British Columbia, this 10<sup>th</sup> day of February 2020.