

November 16, 2020

2000-4535-59240-09

Kimberley Toews-Koch
Senior Engineering Technologist
TAQA North Ltd.
2100, 308 – 4 Ave. SW
Calgary, AB T2P 0H7

Dear Ms. Toews-Koch:

**RE: PRESSURE MAINTENANCE WATERFLOOD SPECIAL PROJECT – AMENDMENT #2
OTHER THAN NORMAL SPACING ORDER – AMENDMENT #2
BOUNDARY LAKE FIELD – BOUNDARY LAKE “A” POOL – PROJECT #2**

The Commission is presently reviewing and amending waterflood approvals to conform to current requirements. The continued operation of a pressure maintenance waterflood in the Boundary Lake field – Boundary Lake “A” pool Project #2 by TAQA North Ltd. requires this review.

The Boundary Lake - Boundary Lake ‘A’ pool Project #2 oil commenced production in August 1960. A pressure maintenance waterflood project was approved in July 1964, with injection starting in March 1965. Operated in proximity to several adjoining project approvals, the Project #2 portion of the Boundary Lake “A” pool currently has three active producers and one injector. A review of reservoir performance indicates that the waterflood was successful in stabilizing the GOR, achieving a high cumulative oil recovery.

The following Orders are attached;

- 1) Order 64-09-005 Amendment #2 designating Pressure Maintenance Waterflood within the Boundary Lake field – Boundary Lake “A” pool – Project #2, as a Special Project under section 75 of the *Oil and Gas Activities Act*, and
- 2) Order 64-09-005 Amendment #2 - OTN approving Other Than Normal Spacing under section 65.1 of the *Petroleum and Natural Gas Act* for the subject area and formation.

The submitted reservoir pressure test on well TAQA North Boundary 8-13-85-14 (WA # 603), is part of Project #2, is below the initial reservoir pressure and is in agreement with the area pressures trend. Going forward TAQA will need to submit a reservoir pressure test of the injector, TAQA North Boundary 16-12-085-14 (WA 602), at the time of suspension.

This amended approval includes a maximum wellhead injection pressure (MWHIP), an ultimate pool pressure limit, and restriction of injection for the purpose of oil recovery.

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 reported via Petrinex not later than the 20th day of the month following the reported month.

Should you have any questions, please contact Petra Kriescher-Trudgeon at (250) 419-4415 or the undersigned at (250) 419-4430.

Sincerely,



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

Attachments



ORDER 64-09-005 Amendment #2

- 1 Under section 75(1)(a) of the *Oil and Gas Activities Act*, the Boundary Lake field – Boundary Lake “A” pool – Project #2 is designated as a Special Project for the recovery of oil utilizing pressure maintenance waterflood within the following area;
Twp 85 Rge 14 W6M S/2 & NE/4 Section12, SE/4 Section 13.
- 2 Under section 75(2) of the *Oil and Gas Activities Act*, I specify the following:
 - a) The project unadjusted daily oil allowable (UDOAA) is 235.8 m³/d
 - b) Water may be injected into well Taqa North Boundary 16-12-085-14 (WA 602).
 - i. For wells injecting other than fresh water, 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 14,300 kPa or the pressure required to fracture the formation, whichever is lesser.
 - c) Not exceed an average pool pressure of 12,631 kPaa measured at 533 meters subsea.
 - d) Cease injection into a well referenced in (b) and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - e) Submit reservoir pressure of injector Taqa North Boundary 16-12-085-14 (WA 602) at the time of suspension.
 - f) Submit the annual packer isolation test report for wells referenced in (c) to the Commission within 30 days of the completion of the test.
 - g) Include the monthly injected volume, injection hours and the maximum injection pressure value for the wells referenced in (c) via Petrinex.
 - h) Injection must cease upon termination of production from the pool.
 - i) Annual pool VRR must not exceed 1.0

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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 16th day of November 2020.

Advisory Guidance for Order 64-09-005 Amendment #2

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



ORDER 64-09-005 Amendment #2 - OTN

1 Under Section 65.1(2) of the *Petroleum and Natural Gas Act*, Other Than Normal Spacing is approved within the Boundary Lake field – Boundary Lake “A” pool – Project #2 within the following area;

Twp 85 Rge 14 W6M S/2 & NE/4 Section 12, SE/4 Section 13.

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 target area specified in paragraph (a) may be subject to an off-target production penalty,
- c) oil wells drilled within the specified project area are not subject to spacing requirements.

A handwritten signature in blue ink, appearing to read 'R Stefik'.

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

DATED AT the City of Victoria, in the Province of British Columbia, this 16th day of November 2020.