BRITISH COLUMBIA ENERGY REGULATOR

January 3, 2025 7745-2885-32640-02

Tanya Goertzen
Shell Canada Limited
6814 Airport Road
Fort St. John, BC
V1J 4M6

Dear Ms. Goertzen:

RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
SHELL PCC HZ SATURN B8-26-80-19 (WA #40650)
SATURN FIELD – CADOMIN-NIKANASSIN FORMATION

The Regulator has reviewed the application submitted by Shell Canada Limited received July 31, 2024, requesting approval for disposal of produced water into the Saturn field Cadomin-Nikanassin formation via the subject well.

The subject well was purpose-drilled for disposal into the Cadomin-Nikanassin formation in April of 2024. The well was drilled horizontally in the Cadomin-Nikanassin zone and completed hydraulically using a 6-stage plug and perforation method.

Attached please find **Order 25-02-001**, designating an area in the Saturn field, Cadomin-Nikanassin formation, as a Special Project under section 75 of the Energy Resource Activities Act, for the operation and use of a storage reservoir for the injection of produced water. The Regulator recognizes the Cadomin and Nikanassin formations as a compound, unsegregated zone in this area for disposal use. This Order includes numerous detailed operational, measurement and reporting conditions. Disposal wells are subject to regular field inspection and audit. Contravention of a condition of this Order may be subject to enforcement under section 62 of ERAA, or suspension or cancellation of the Order under section 75(2)(b).

For the inspection requirement of Order condition 2l), please arrange via email to Pipelines.Facilities@bc-er.ca.

Disposal of fluid with high total dissolved solids content requires adjustment of the wellhead injection pressure to remain below formation fracture pressure. It is the responsibility of the permit holder to adjust wellhead injection pressure.

Should you have any questions, please contact Michelle Gaucher at (250) 419-4482 or the undersigned at (250) 419-4430.

Sincerely,

Ron Stefik, P.L. Eng.
Supervisor, Reservoir Engineering
BC Energy Regulator

Attachments

IN THE MATTER of the application from Shell Canada Ltd. to the Energy Regulator received July 31, 2024, requesting disposal approval:

ORDER 25-02-001

1 Under Section 75(1)(c.1) of the *Energy Resource Activities Act*, the Regulator designates the operation and use of a storage reservoir for the disposal of produced water, including flowback from fracturing operations, in the Saturn field – Cadomin-Nikinassin formation as a special project in the following area:

DLS Twp 80 Rge 19 W6M Section 24 – Lsds 9, 10, 15 and 16
Section 25 – Lsds 1-8

2 Under section 75(2) of the *Energy Resources Activities* Act, the special project designation in this Order is subject to the following conditions. The Permit Holder shall:

a) Inject produced water into the well Shell HZ Saturn B8-26-80-19; WA# 40650 Cadomin-Nikinassin formation from 1582.0 – 2626.0 mKB MD.

b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 11,650 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) Alarm the casing-tubing annulus pressure monitoring system to indicate when casing pressure varies outside the normal operating range.

f) Cease injection and notify the Regulator at Reservoir@bc-er.ca immediately if there are any indications that hydraulic isolation is lost in the wellbore or formation.

g) Conduct and submit an annual Surface Casing Vent Flow test to the Regulator 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.

i) Cease injection upon reaching a maximum formation pressure of 13,080 kPaa, measured at 1302.5 mKB TVD.

j) i) Perform a casing inspection log on the subject well and submit results to the Regulator within 30 days of the completion of logging, at an interval of not more than every 10 years, commencing from the date of initial disposal.

ii) Perform a hydraulic isolation temperature log on the subject well and submit results to the Regulator within 30 days of the completion of logging, at an interval of not more than every 5 years, commencing from the date of initial disposal.

k) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Regulator approval.

l) Complete an inspection, satisfactory to the Regulator, within 4 weeks of initial disposal operations.

Ron Stefik, P.L.Eng.
Supervisor, Reservoir Engineering
Energy Regulator

DATED AT the City of Victoria, in the Province of British Columbia, this 3rd day of January 2025.

Advisory Guidance for Order 25-02-001

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 conducted and the associated report must be submitted to the Regulator 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 including the volume of disposal fluid, maximum wellhead injection pressure, and total operating hours must be submitted to the Regulator 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 disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.