BRITISH COLUMBIA ENERGY REGULATOR

November 29, 2024 7745-2885-32640-02

Tanya Goertzen
Shell Canada Limited
PO Box 100, Station M
400 – 4th Ave SW
Calgary, AB V1J 4M6

Dear Ms. Goertzen:

RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL; AMENDMENT #1
SHELL HZ SATURN A8-26-80-19 (WA #37940)
SATURN FIELD - CADOMIN-NIKANASSIN FORMATION

The subject horizontal well was purpose-drilled for disposal in May 2019 and was approved for disposal on August 13th, 2019, by Order 19-02-013. The well began disposal in October 2019 and last reported disposal in May of 2024, with a cumulative disposal volume of $305e^3m^3$. In November of 2024, errors in the approval order area and injection interval were noted.

The injection interval was previously indicated as 1,512.7 – 2,798.0 mKB MD based on the uncemented liner interval - it has been corrected to 1,582.7 – 2,683.0 mKB MD based on the top and base depth of the hydraulically stimulated portion of the wellbore, as per condition 2a).

The approval area previously included the SE quarter of section 26-80-19; however, the wellbore is only completed in the north half of the section. As such, condition 1 now reflects that the approval area only includes the north half of section 26.

Attached please find **Order 19-02-013 Amendment #1**, 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 a number of 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).

The BCER apologizes for this error and hopes that no inconvenience has occurred. Should you have any questions, please contact Logan Gray at (250) 419-4465 or the undersigned at (250) 419-4430.

Sincerely,

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

Attachment

ORDER 19-02-013 Amendment #1

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 produced water, including flowback from fracturing operations, in the Saturn field – Cadomin-Nikanassin formation as a special project in the following area:

   DLS Twp 80 Rge 19 W6M Section 26 LSDs 9-16

2. Under section 75(2) of the *Energy Resource 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 A8-26-80-19; WA# 37940 Cadomin-Nikanassin* formation from 1,582.7 – 2,683.0 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 13,250 kPaa, measured at 1,283.8 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.

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

DATED AT the City of Victoria, in the Province of British Columbia, this 29th day of November 2024.

Advisory Guidance for Order 19-02-013 Amendment #1

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.