

August 14, 2024

6140-2885-32640-02

Brad Makowecki  
Crew Energy Inc.  
Suite 800, 250 – 5<sup>th</sup> Street S.W.  
Calgary, Alberta  
T2P 0R4

Dear Mr. Makowecki:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL  
CREW HZ MONIAS H8-22-82-20 (WA #30383)  
MONIAS FIELD – CADOMIN-NIKANASSIN FORMATION**

The Regulator has reviewed the application submitted by Crew Energy Inc. (Crew) received November 6<sup>th</sup>, 2023, requesting approval for disposal of produced water into the Monias field Cadomin-Nikanassin formation via the subject well.

The subject well was purpose-drilled for disposal into the Cadomin-Nikanassin formation in August of 2023. The well was drilled horizontally in the Cadomin-Nikanassin zone and completed hydraulically with a 23-stage ball drop system.

Attached please find **Order 24-02-001**, designating an area in the Monias field, Cadomin-Nikanassin, 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 Regulator has not identified concerns with the packer assembly in place with respect to Advisory Guidance item I.

For the inspection requirement of Order condition 2I), please arrange via email to [OGCPipelines.Facilities@bcogc.ca](mailto:OGCPipelines.Facilities@bcogc.ca).

The BCER notes the current seismic monitoring array. As noted in Advisory Guidance item V, the permit holder must report seismic events and suspend operations in the circumstances outlined section 21.1 of the Drilling and Production Regulation.

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 make adjustments to wellhead injection pressure.

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

Attachments



IN THE MATTER of the application from Crew Energy Inc. to the Energy Regulator received November 6<sup>th</sup>, 2023, requesting disposal approval:

**ORDER 24-02-001**

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

DLS            Twp 82 Rge 20 W6M   S/2 Section 21 and S/2 Section 22

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 water into the well Crew HZ Monias H8-22-82-20; WA# 30383 Cadomin-Nikanassin from 1,129.0 – 3,386.0 mKB.
  - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 10,325 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 10,250 kPaa, measured at 898.4 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 14<sup>th</sup> day of August 2024.



### **Advisory Guidance for Order 24-02-001**

- 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 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 disposal operations suspended as per section 21.1 of the Drilling and Production Regulation.