



March 3, 2014

7320-4100-32640-02

Mark Miller
Crew Energy Inc.
800, 250 - 5th Street SW
Calgary, Alberta
T2P 0R4

Dear Mr. Miller:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT (AMENDMENT #1)
CREW PORTAGE a-20-D/094-A-04; WA# 22031
BALDONNEL FORMATION**

Oil and Gas Commission staff have been made aware of the potential to recommence disposal operations at the subject well, originally granted under Approval 08-02-008. The Commission is presently amending active disposal well approvals to conform to current requirements.

The subject well was originally drilled by Hudson's Hope Gas Ltd. (HHG), rig released November 25, 2006. The well was completed in the Nikanassin formation, acidized and perforated with the intention of water disposal to support local production. Injection testing indicated this formation was not capable of accepting required water disposal rates. Subsequent recompletion in the Baldonnel formation indicated water disposal potential. Approval for produced water disposal into the Baldonnel formation was granted September 08, 2008. Cumulative disposal volume from December 2008 to April 2010 was 96,479 m³. The Baldonnel formation was suspended August 2011. Crew Energy Inc. became operator of the well in March 2013. We note that Peace River Corporation is the tenure holder of Petroleum and Natural Gas Lease 62660, with rights to the Baldonnel formation in this well.

Attached find **Order 08-02-008 (Amendment #1)**, designating an area in the Portage field – Baldonnel formation a Special Project under section 75 of the *Oil and Gas Activities Act* (OGAA), for use of a storage reservoir for the disposal of produced water, including well stimulation flowback fluid. This amended Order includes a number of detailed operational conditions including: maximum wellhead injection pressure, ultimate reservoir pressure limit, wellbore integrity monitoring and reporting requirements.

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

Sincerely,



Richard Slocomb, P.Eng.
Deputy Commissioner, Engineering
Oil and Gas Commission

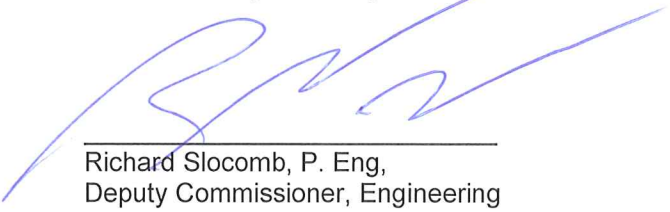
Attachment

ORDER 08-02-008 (Amendment #1)

1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Oil and Gas Commission (Commission) designates the operation and use of a storage reservoir for the disposal of salt water and produced water, including flowback from fracturing operations, into the Baldonnel formation– Portage field as a special project in the following area:

NTS 94-A-04 Block D – Unit 20.

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. The Permit Holder shall:
 - a) Inject produced water, including well flowback completion fluids, only into the well Crew Portage a-20-D/094-A-04 (Well Permit # 22031), Baldonnel formation (1520.0 mKB to 1574.5 mKB).
 - b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 6,200 kPag or the pressure required to fracture the formation, whichever is lesser.
 - c) Inject only through tubing.
 - d) Continually measure and record the wellhead casing and tubing pressures.
 - e) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - f) Submit the annual packer isolation test report to the Commission within 30 days of the completion of the test.
 - g) Include the disposal operating hours and the maximum injection pressure values on the monthly disposal statement.
 - h) Cease injection upon reaching a maximum formation pressure of 18,000 kPaa, measured at mid point perfs (1547.3 mKB).
 - i) Conduct a reservoir pressure test on the Baldonnel formation in the subject well prior to recommencement of disposal operations and submit a report of the test within 10 days of the end of the test to the Commission.
 - j) Conduct an annual reservoir pressure test on the Baldonnel 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.
 - k) Perform a casing inspection log on the subject well and submit results to the Commission within 30 days of the completion of logging, at an interval of not more than every 10 years, commencing from the original date of initial disposal.
 - l) Perform a hydraulic isolation log on the subject well within 60 days of the date of recommencement of produced water disposal and submit results to the Commission within 30 days of the completion of logging, and thereafter at an interval of not more than every 5 years, commencing from the date of recommencement of disposal.
 - m) Not conduct hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.
 - n) Install dense array seismic monitoring, if required, due to seismic activity occurring in the area following recommencement of injection.



Richard Slocomb, P. Eng,
Deputy Commissioner, Engineering
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 3rd day of March 2014.