

January 22, 2013

7750-2800-32640-02

Lisa Tebbutt
Crew Energy Inc.
Suite 800, 250 – 5th Street S.W.
Calgary, AB T2P 0R4

Dear Ms. Tebbutt:

**RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT
CREW SEPTIMUS 15-29-81-18; WA# 18558
CADOMIN FORMATION**

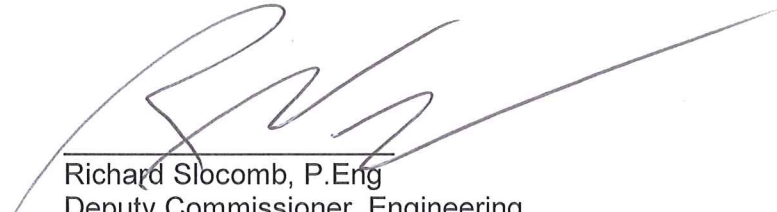
Oil and Gas Commission (Commission) staff have reviewed the application, dated October 2012, requesting approval to dispose of produced water and fracture flowback fluid into the Cadomin formation of the subject well. In September 2012, a step-rate injectivity test was conducted, in excess of Crew's requested injection pressure, without breakdown of the formation.

Attached please find **Order 13-02-001**, designating an area in the Septimus field – Cadomin formation a Special Project under section 75 of the Oil and Gas Activities Act, for use of a storage reservoir for the disposal of produced water and flowback from fracture operations generated from oil and gas operations, specifically, development of shale gas resources in the Montney formation.

This Order contains a number of detailed conditions for approval to operate. The "average reservoir pressure" identified in item 2(d) of the Order refers to the annual reservoir pressure measured at bottom, ensuring that the surveyed well remains shut-in until the reservoir pressure has been attained in the wellbore or until sufficient data are available to permit the calculation of the reservoir pressure.

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

Sincerely,



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

Attachment

IN THE MATTER of the application from Crew Energy Inc, to the Oil and Gas Commission (Commission) dated October, 2012 for the operation and use of a storage reservoir.

ORDER 13-02-001

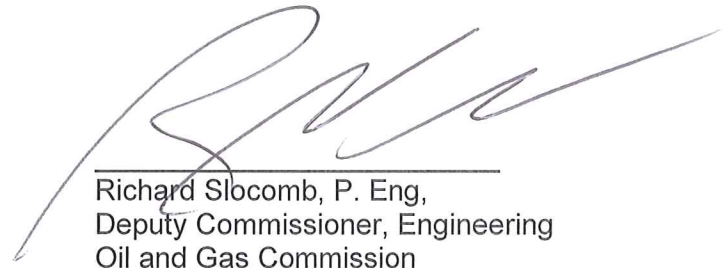
1. Under Section 75(1)(d) of the *Oil and Gas Activities Act*, the Commission designates the operation and use of a storage reservoir for the disposal of produced salt water and flowback from fracturing operations into the Cadomin formation – Septimus field as a special project in the following area:

DLS Twp 81 Rge 18 W6M Section 29 - Lsds 9,10,15,16.

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:
 - a) Produced salt water, including flowback fluids, shall be injected only into the Cadomin formation through the well Crew Septimus 15-29-81-18 W6M (Well Permit # 18558).
 - b) A record of volume disposed of through this well and average injection pressure must be included on a Monthly Injection/Disposal Statement, in the prescribed form (BC-S18), which must be submitted to the Oil and Gas Commission not later than the 25th day of the month following the reported month.
 - c) The wellhead injection pressure must be continually measured and recorded, and must not exceed the formation fracture pressure, to a maximum of 14,700 kPaa.
 - d) The maximum average formation pressure should not exceed 13,800 kPaa, 120% of the initial pressure of 11,500 kPaa.
 - e) The Permit Holder must conduct annual reservoir pressure (fall-off) tests of the Cadomin formation in the subject well (or an observation well in the area of influence), with a shut-in period of sufficient length to provide data for calculation of the reservoir pressure.
 - f) The Operator must monitor the casing, conduct annual packer isolation tests and implement appropriate corrosion protection measures. Every 5 yrs (or during plant turn-around), casing inspection and cement bond logs must be conducted.
 - g) The Permit Holder must maintain hydraulic isolation of the injection zone.
3. The permit holder must submit a progress report to the Commission for each twelve month period the project is in operation. The progress report must be filed within 60 days after the end of each period and must contain the following:
 - a) the daily average injection rate and pressure during each month of injection
 - b) the monthly cumulative volume of fluid injected to each injection well
 - c) the date and type of any well treatment or workover must be included on the production/injection report
 - d) submit results of annual packer isolation tests and quadrennial casing and cement inspection logs

ORDER 13-02-001

- e) a table showing annual bottom hole pressure test results as specified in item 2(e) above,
- f) an outline of the quality control measures in place for injection fluid treatment, or, where there has been no change in the control or treatment from that outlined in a previous report, a statement to that effect
- g) a plot showing monthly injection volume and average pressure versus time on an ongoing basis.



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

DATED AT the City of Victoria, in the Province of British Columbia, this 22 day of January, 2013.