



October 27, 2017

7400-4900-59240-09

Russell Gonie, C.E.T.
Production and Operations Manager
Pavilion Energy Corporation
1100, 800 – 6th Ave S.W.
Calgary, AB T2P 3G3

Dear Mr. Gonie:

**RE: PRESSURE MAINTENANCE WATERFLOOD SPECIAL PROJECT – AMENDMENT #4
OTHER THAN NORMAL SPACING ORDER – AMENDMENT #4
RED CREEK FIELD – DOIG “C” POOL**

Prior to reactivation of well Pavilion HZ Red A13-03-085-21(WA11563) as an injector, approved Amendment #3 required that a packer isolation test (PIT) be completed. This test failed and revealed further corrosion of tubing and casing. This amendment is in response to the reduced integrity seen for the injector. Pavilion is required under condition 2 (g) to install, prior to re-commencement of injection operations, continuous monitoring equipment to measure the wellhead casing and tubing pressures, to verify ongoing fluid isolation. This data must be included in tabulated and in graphical form in the yearly submission of the Progress Report, condition 2 (l).

The following Orders are attached;

- 1) Order 00-09-003 Amendment #4 designating Pressure Maintenance Waterflood within the Red Creek field – Doig “C” pool, as a Special Project under section 75 of the *Oil and Gas Activities Act*, and
- 2) Order 00-09-003 OTN - Amendment #4 approving Other Than Normal Spacing under section 65.1 of the *Petroleum and Natural Gas Act* for the subject area and formation.

The above Order includes a maximum wellhead injection pressure (MWHIP), an ultimate pool pressure limit, and restriction of injection to the purpose of oil recovery.

For the inspection requirement of Order condition 2 (m), please arrange via email to OGCPipelines.Facilities@bcogc.ca

Please note that, as per section 75 of the *Drilling and Production Regulation*, a record of the volume of water injected must be included on a Monthly Injection or Disposal Statement (BC-S18), which must be submitted to the Commission no later than the 25th day of the following month.

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

Sincerely,

Ron Stefik, Eng. L.
Supervisor, Reservoir Engineering
BC Oil and Gas Commission
Attachments

ORDER 00-09-003 Amendment #4

- 1 Under section 75(1)(a) of the *Oil and Gas Activities Act*, the Red Creek field – Doig“C” pool is designated as a Special Project for the recovery of oil utilizing pressure maintenance waterflood within the following area;

DLS Twp. 85 Rge 21 W6M W/2 Section 3, E/2 Section 4, NW/4 and E/2 Section 9,
W/2 Section 10

- 2 Under section 75(2) of the *Oil and Gas Activities Act*, I specify the following:
- a) The project daily oil allowable is 418.4 m³
 - b) All associated produced gas must be conserved.
 - c) Water may be injected into the well Pavilion HZ Red A13-03-085-21 (WA # 11563),
 - d) Inject only through tubing with a packer set as near as is practical above the injection interval.
 - e) Not exceed an injection pressure, measured at the wellhead, of
 - i. 18,000 kPa for well A13-03-085-21, or
 - ii. the pressure required to fracture the formation, whichever is lesser.
 - f) Not to exceed an average pool pressure of 17,995 kPaa measured at 877 mSS.
 - g) Continually measure and record the wellhead casing and tubing pressures electronically.
 - h) Cease injection and notify the Commission immediately if hydraulic isolation is lost in the wellbore or formation.
 - i) Prior to re-activation, and annually thereafter, a packer isolation test report must be submitted to the Commission within 30 days of the completion of the test.
 - j) Include the injection hours and the maximum injection pressure value on the monthly BC-S18 form.
 - k) Injection must cease upon termination of production from the pool.
 - l) The permit holder must submit a Progress Report to the Commission for each 12 month period the project is in operation, filed by March 31st the following year, and must contain the information specified in Pressure Maintenance Progress Report Requirements.
 - m) Complete an inspection, satisfactory to the Commission, within 4 weeks of re-commencement of water injection operations.



Ron Stefik, Eng.L.
Supervisor, Reservoir Engineering
BC Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 27th day October 2017.

Advisory Guidance for Order 00-09-003 Amendment #4

- 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 submitted, 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 injection statement must be submitted to the Commission not later than the 25th day of the month following the reported month, as per section 75 of the Drilling and Production Regulation.

