BC Oil & Gas COMMISSION

November 10, 2014 8100-2800-32640-02

Travis Loewen
Operations Manager
Albright Flush Systems Ltd.
P.O. Box 6148
Fort St. John, BC V1J 4H6

Dear Mr. Loewen,

RE: PRODUCED WATER DISPOSAL SPECIAL PROJECT APPROVAL
ABT W STODDART A10-09-087-21; WA# 14095
WEST STODDART FIELD - CADOMIN FORMATION

Oil and Gas Commission staff have reviewed the application submitted through IHS Global Canada Ltd., dated September 5, 2014, requesting disposal approval into the Cadomin formation of the subject well. The application requested non-hazardous waste approval but consultation with IHS and Albright confirmed disposal would include only produced and completion flowback fluid, requiring only a produced water disposal approval.

The subject well, rig released September 25, 2001, was drilled to evaluate the Baldonnel and Charlie Lake formations. After drilling and casing to 1424m, the open hole section (1424 to 1528m) was tested. Based on the poor test results, the well was abandoned, cut and capped in September 2001. In June 2014, Albright re-entered the wellbore, installed a casing bowl, wellhead and tubing. Cement plugs were drilled out, the casing was pressure tested, and the Cadomin was perforated. A mini-frac, hydraulic fracture and post-frac injectivity test were conducted followed by a second casing pressure test.

Pressure testing conducted on the wellbore before and after fracture stimulation confirmed casing pressure integrity. However, damaged to the surface casing due to operations in 2001, and uncertain cement quality behind surface casing, require attentive monitoring of the annulus pressure. Continuous monitoring and recording of the casing pressure, with action to address anomalous values, will be important.

Attached please find **Order 14-02-013** designating an area in the West Stoddart field – Cadomin formation as a Special Project under section 75 of the *Oil and Gas Activities Act*, for the use of a storage reservoir for the disposal of produced water. This Order contains a number of detailed operational conditions. Additional general information regarding disposal wells is available on the Commission's website at http://www.bcogc.ca/industry-zone/documentation/Subsurface-Disposal.

In certain circumstances, disposal well operation may induce seismicity. The Commission advises that disposal well permit holders monitor seismic events in proximity to the well and be prepared to modify operations to mitigate induced seismicity. Permit holders may monitor seismic events through the Natural Resources Canada seismic monitoring network at: http://www.earthquakescanada.nrcan.gc.ca/recent/index-eng.php.

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

Sincerely,

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

Attachment

cc:Robyn.Swanson@ihs.com

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ORDER 14-02-013

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 produced water, into the Cadomin formation – West Stoddart field as a special project in the following area:

DLS Twp 87 Rge 21 W6M Section 9 - Lsd 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. The Permit Holder shall:

a) Inject produced water, including well flowback completion fluids, only into the well ABT W Stoddart A10-9-87-21; WA# 14095 – Cadomin formation (1259 to 1273 mKB).

b) Not exceed an injection pressure, measured at the wellhead on the subject well, of 18,900 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) 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 value on the monthly BC-S18 disposal statement.

h) Conduct a reservoir pressure test on the formation in the subject well every 3 years, 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 12,700 kPaa.

j) i) 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 7 years, commencing from the date of initial injection.

ii) Perform a hydraulic isolation temperature 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 5 years, commencing from the date of initial injection.

k) Not conduct a hydraulic fracture stimulation on any formation in the subject well without prior Commission approval.

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

DATED AT the City of Victoria, in the Province of British Columbia, this 10th day of November, 2014.

Advisory Guidance for Order 14-02-013

I. A production packer must be set above the injection interval and the space between the tubing and casing filled with corrosion inhibiting fluids, as per section 16(2) of the Drilling and Production Regulation.

II. Annual packer isolation tests are required, as per section 16(3) of the Drilling and Production Regulation.

III. Injected fluids must be metered, as per section 74 of the Drilling and Production Regulation.

IV. A monthly disposal 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.