

December 2, 2010

2940-5000/7400-59070-20

Scott Smith
Exploitation Engineer
Progress Energy Ltd.
1200, 205 – 5th Avenue SW
Calgary AB T2P 2V7

Dear Mr. Smith:

RE: PERMIT AMENDMENT - COMMINGLED PRODUCTION APPROVAL PROGRESS CARIBOU A-A028-J/094-G-07; WELL PERMIT # 23802

The OGC has reviewed your application dated September 13, 2010 requesting approval to commingle gas production from the Montney and Debolt formations in the subject well. The Commission has designated the zones under application to be part of the Caribou – Montney "A" and Debolt "C" gas pools. Both pools contain multiple wells.

The subject well was rig released in February, 2008. The Debolt formation was initially completed openhole and produced from March, 2008 until February, 2010 when it was shut-in to recomplete the Montney. The Debolt zone declined from an initial rate of 67 10<sup>3</sup>m<sup>3</sup>/d to 8 10<sup>3</sup>m<sup>3</sup>/d before shut in. The Montney came on production at 7 10<sup>3</sup>m<sup>3</sup>/d and is currently producing at 3 10<sup>3</sup>m<sup>3</sup>/d. The Montney production was incorrectly reported to the Debolt completion event (/00) and is being corrected by Progress's production accounting group.

The Montney contains sweet gas (0%  $H_2S$ ), and the Debolt contains ~0.11%  $H_2S$ , (based on an offset gas analysis). The current reservoir pressure of the Montney is higher than the Debolt so there is no concern of crossflow of sour gas from the Debolt flowing into the Montney sweet gas pool during prolonged shut-ins. We concur that commingling the Montney and Debolt zones will result in increased reserves recovery.

We wish to advise you that your permit is hereby amended to allow commingled production from these zones, under the authority of Section 31 (7) of the *Oil and Gas Activities Act*, subject to the following conditions:

- 1. Production from the Montney (1690.0 1846.0 mKB) and Debolt (1961.0 1995.0 mKB) zones may be commingled.
- Gas, condensate and water production from the commingled well should be allocated on the Ministry of Finance BC S-1, BC S-2 and BC 08 forms on the basis of Montney 35% and Debolt 65%. The allocation factors may be amended to reflect results of any future tests.

Should you have any questions, please contact the undersigned at (250) 419-4421 or Kelly Okuszko at (250) 419-4433.

Sincerely,

Richard Slocomb, P. Eng.

Supervisor, Reservoir Engineering

## RATIONAL FOR PERMIT AMENDMENT

I have made this Permit Amendment for the well Progress Caribou A-A028-J/094-G-07; (Well Permit #23802) after having considered:

- > The proposed method of commingling production of the Montney and Debolt zones through the production tubing will reduced liquid loading and thereby maximize reserve recovery.
- ➤ Crossflow of sour Debolt gas (~0.11% H2S) into the sweet Montney pool (0% H2S) is not a concern because the Debolt reservoir pressure (~13,600 kPaa) is lower than the Montney (~16,000 kPaa).
- Production allocation was calculated based on a 50/50 weighting of current gas deliverability and remaining reserves.
- Mark Hayes (OGC) mapped the Montney zone as part of the Caribou Montney "A" gas pool. There was difficulty assigning pay because the openhole density reading was low. The Debolt zone is part of the Caribou Debolt "C" gas pool. There are no concerns about commingling from a geological perspective as it will result in capture of additional reserves that otherwise would be left behind.
- > Received written confirmation from Progress that the land owner is the Crown. Therefore, land owner notification is not required.

Richard Slocomb, P.Eng.

Supervisor, Reservoir Engineering

Oil and Gas Commission

December 2, 2010