1) Piezometer Data

EnCana would like to thank Husky for the time and expense it incurred in obtaining piezometer data from 32 recorders installed in seven wells. It is good field data like this and the data provided by Imperial Oil that will lead to a better understanding of the processes involved and hopefully a technical resolution of some of the issues. EnCana's preliminary review of this data has involved adjusting all of the pressures to a common reservoir datum of +238 mSS and producing pressure time graphs on common graph scales for all wells in and around the proposed Husky pilot. The concept of a continuous water phase within the bitumen is complex and requires more detailed examination. However, due to uncertainties concerning the variation of bitumen density with depth we have used a water gradient of 9.85 kPa/m to adjust the bitumen pressures to datum. Since most pressures are measured below the datum this adjustment results in datum pressures slightly lower than if a bitumen gradient was used. Coupled with the logs on the piezometer wells provided by Husky, and piezometer data provided by CNRL, EnCana's analysis to date has lead to the following observations and conclusions.

For all piezometers there appears to be a temperature and pressure "stabilization period", most pronounced in the first few weeks following installation, but in most cases lasting for months and in some cases for over a year. During this time pressure readings usually fall slightly but in some cases increase.

3-4-69-4W4

The piezometer at 491.5m is in a very high water saturation gas zone, is recording pressures that are consistent with previous pressure readings in the 10-33-68-4W4 Clearwater gas well, and is likely in the same gas pool as 10-33.

The piezometer at 496 is recording datum adjusted pressures about 100 kPa higher than the gas zone that are in line with what we would expect where good vertical communication exists between the gas zone and an underlying water zone or high water saturation bitumen zone. We look forward to receiving the core analysis data for this well and the other piezometer wells as previously requested.

The piezometer readings at 509 m and 516 m are within the range of our current estimate of initial reservoir pressure in the area of 2500-2550 kPaa at +238 mSS.

4-9-69-4W4

The piezometer at 470 m is in a very high water saturation gas zone. It and the one at 474m in a shaley(?) interval initially recorded pressures of approximately 1600 kPaa which would be in line with what we would expect for a tight edge to the gas pool that includes 5-10-69-4W4. Since that time the pressures have increased in an erratic manner to approximately 2200 kPaa. The lower piezometer at 492 m recorded a pressure of 2488 on Aug. 28 2006.

It appears that there may be some behind pipe communication that is affecting the pressures in this well.

16-7-69-4W4

The pressures from the two upper recorders, which appear to be in a low water saturation bitumen sand, have fallen to 2390 and 2307 kPaa at the end of August 2006. The middle recorder at 702.3 has also fallen but to a lower pressure of 2277. The two bottom recorders at 478 and 483 initially exhibited an increasing pressure but in August they spiked and started to decline in an erratic manner with final readings at the end of August of 2293 and 2257. This well is remote from any gas producer, or as Husky has pointed out from any current CSS producers, so it seems very unlikely that these short term pressure changes could result from any well interference effects. It is possible there is one low pressure zone in this well and some behind pipe communication that is permitting the pressures to equalize, but since the lowest pressures to date are associated with the lower zones which are the least likely to be depleted this well remains an anomaly that hopefully core data or the field reports for the well will help explain.

10-5-69-4W4

The three top piezometers at 480, 489, and 494 m, which appear to be set in high water saturation bitumen and/or shaley intervals, have final August pressures from 2318 to 2369 kPaa. The two bottom recorders at 499 and 503.5 which appear to be in a low water saturation bitumen zone have pressures of 2427 and 2412 kPaa. The top of porosity in this well is at +240.6 mSS and Husky's recently provided structure map suggests there may be a connection to the gas pool to the east. Core may help in this interpretation, but if there is no thin gas zone or swept gas zone at the top of this well it would be the one example to date in this area where a well not immediately adjacent to or under a gas cap has reported what appear to be good pressures that are more than 5 % down from virgin pressure.

3-7-69-4W4

The piezometer pressures in this well are all within 5% of virgin pressure but the apparent distribution by depth is a little strange. It is possible that there has been some small impact from the CSS pilot project conducted in this section and 12-69-5W5 from Dec 1986 to April 1992.

All other piezometer pressures appear to be at or within 5% of virgin pressure. There is no obvious evidence on the logs of the piezometer wells of any increased gas saturation in bitumen zones as a result of gas liberation in the reservoir. A case could be made for a slight increase in neutron density approach in a few wells but it is likely within the error range of the instruments and the effects of differences in lithology.

EnCana requests that Husky:

1. When Husky has completed it's analysis of the piezometer data, give its views on EnCana's preliminary analysis.
2. Provide piezometer data in digital form (or an update of the previously provided Excel workbooks) for the seven wells from the end of August to the present time and provide monthly updates to the EUB and hearing participants.
3. Provide any other non-public pressure data which is available for its area.
4. Provide any pressure data or any other non-public data or analysis it may have on the 1986 to 1992 pilot.
5. Provide any bitumen (oil) analysis data, including any core extract fluid that it has for its area.
6. Comment on the variation of oil viscosity, oil density and solution gas oil ratio with depth in the Husky area and provide data from any studies Husky has conducted, including any oil characterization for reservoir simulation purposes.
7. Provide data (as opposed to opinions) on the amount of gas that would evolve from bitumen in this area at pressures of 5% to 15% below virgin pressure and the potential for this gas to migrate through a bitumen zone of various water saturations (i.e. PVT data, relative permeability data, critical gas saturations etc.).
8. What effect on bitumen recovery factor has Husky calculated to result from a reduction in pressure 5% to 15% below virgin pressure? Show back up data, assumptions, use of analogues and calculations to support this answer.

2) Hydraulic Diffusivity

1. Does Husky have any information on pressure diffusivity in Clearwater zones of varying hydrocarbon saturation other than that presented by CNRL to this hearing and Husky's conclusion based on its interpretation of the 4-6-69-4W4 pressures that hydraulic diffusivity is "higher" in Husky's area.
2. Can Husky provide any additional data, studies or references to support the theory that there is a "mobile water phase" that is continuous throughout the Clearwater formation. Please include any data Husky has on the migration of solution gas out of bitumen and through this "mobile water phase".

3) Bitumen Net Pay

With respect to Husky's Bitumen Net Pay Map (Figure 16) and the net pay intervals indicated on the logs on the recently submitted cross sections, EnCana requests that Husky provide an explanation of why the net pay values often exceed by significant amounts the intervals with bitumen saturations greater than 50% as reported in cores. For example in the well 16-8-69-4W4 Husky's net pay map indicates 23.9268 m of pay but

the core only had 13.85 m over 50% bitumen saturation including some intervals that were not analyzed for oil saturation.

EnCana requests that Husky:

1. Explain the difference in the 16-8-69-4 W4 well.
2. If Husky has used the core data in determining net pay or a portion of net pay in cored wells please describe the methodology and provide a list by well of the core derived net pay compared to that determined from logs.
3. If Husky has used log data to determine net pays please give full details of all parameters and assumptions used in the calculation of shale percentage, porosity, mineralogy cutoffs and water saturation (including Rw, a, m, and n values)

4) Shale Isopach

Husky has provided a shale isopach map as Figure IR3-1. This map shows shale thicknesses centered in T69R4 constrained with a clipping polygon. However, shale is present to the west of this polygon. For example, 11-33-68-5 W4 well has shale between the two sets of perfs (450.5-452.0 and 462.0-463.0) requested by Husky to be shut in. This situation occurs in several wells west of the clipping polygon.

1. Why has Husky chosen not to map this shale in the submission?
2. Please remap the shale isopach using all well data relevant to the submission.

5) Gas Reserves

In Husky's response to the most recent Board IR #7 a table of gas reserve estimates by pool is presented.

Please provide:

1. A table of net pay, porosity, and water saturation values by well.
2. Full details of all log analysis parameters and assumptions used in the calculation of net pay, shale percentage, porosity, and water saturation (including Rw, a, m, and n values).
3. Please provide any seismic data used in determining pool areas.

6) HSAGD

In its explanation of the HSAGD process in response to the Board staff original information request #4 Husky states that "Husky's Caribou lease reservoir also has about 35 to 40% clay content with a 57% bitumen saturation and 34% porosity. The bitumen is 10 API and the insitu viscosity is about 100,000 cp."

Please provide:

1. An explanation of how all of these averages were derived.
2. Provide any studies Husky has conducted on the types and amounts of clays present.
3. A discussion of how the clays are distributed throughout the reservoir (i.e. dispersed, in layers, etc.) in a few representative wells.
4. An explanation of how the clays were handled in the net pay determination for individual wells (if not already covered in Husky's reply to Item 2)
5. A review of work Husky has done to examine the effect of steam injection on the clays, including effects of temperature, pressure and swelling.
6. Examples of other reservoirs of this quality where SAGD or CSS have produced viable commercial projects.
7. A detailed description of the preliminary model referred to in the HSAGD discussion and a description of how Husky has incorporated the pressure depletion that it believes is taking place in its area.

7) Bitumen Reserves

1. In light of the data provided in your answer to 6) above please provide details on the source of Husky's "conservative estimate for the bitumen recovery in the primary development area" of 27% "with a potential to go as high as 50%". Were the results of the old pilot project in sections 7-69-4 and 12-69-5W4 considered in these estimates?

2. In its discussion of the pressure data in 3-4-69-4W4 Husky has stated that it "considers the entire zone to be prospective for HSAGD operations". Does Husky consider that there are commercially viable bitumen reserves in the zone between Husky's picks of the base of gas at 493m and top of shale at 497.5m? If so please provide the pay cutoffs (both core and log) it is currently using for bitumen directly under gas caps and a discussion of the method it expects to use to exploit these reserves.

3. Please identify all the areas on Husky lands where Husky believes there are commercially viable bitumen reserves that are below gas and above the top of the Clearwater Shale mapped by Husky (Figure IR 3-1) and provide detailed estimates of these bitumen reserves for each gas pool where Husky believes that continued gas production will affect bitumen recovery.

4. Has Husky done any work to correlate bitumen recovery to sand quality and bitumen saturation? Please provide the summary and conclusions to this work.