



March 30, 2010

9000-4100-32640-02

Wendell Beavers  
Hudson's Hope Gas Ltd.  
5336 Stadium Trace Parkway Suite 206,  
Birmingham, Alabama 35244

Dear Mr. Beavers:

**RE: SALT WATER DISPOSAL APPROVAL - AMENDMENT #1  
HHG PORTAGE a-20-D/94-A-4, (WA# 22031); BALDONNEL FORMATION**

In response to a letter received from BC Hydro, dated February 3, 2010, the Commission has compiled and reviewed technical information regarding the potential impacts of completion and water injection operations with respect to the integrity of the Peace River Dam.

In January 2010, the Commission hired a consultant to research the potential of fracturing and water injection causing local seismic events. In February, received a draft report which concluded that the possibility of fracturing causing an impactful seismic event are remote due to the relatively small size (low energy) of the fracs being done by Hudson's Hope Gas (HHG).

However, the research indicates that more attention should be focused on the a-020-D/94-A-04 Baldonnel water injection well and the possibility of increased pressurization in the reservoir due to injection could cause local fracturing of the reservoir and initiate subsequent seismic events.

Combining injection rate and pressure data from the a-20-D well with research of formation fracture gradients yielded a theoretical maximum wellhead injection of 6500 kPa. The commission will make available the results of this research to Hudson's Hope Gas upon request.

As a result of the study the Commission has modified the HHG Portage a-20-D/94-A-4 water disposal approval to include a maximum wellhead injection pressure limit of 6500 kPa, which corresponds to a maximum sandface injection pressure of 22,000 kPa. The Commission considers these thresholds to be conservative yet reasonable given the lack of available fracture data for the Baldonnel zone within the Hudson's Hope region. In the event that HHG suspends injection operations at the subject location for an extended period of time the Commission requests that additional tests be performed within the Baldonnel zone in order to establish a fracture pressure.

Attached is Approval 08-02-008 (Amendment #1) for the application granted under Part 8, Division 3, Section 94 of the *Drilling and Production Regulation*.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Slocomb', is written over a light blue horizontal line.

Richard Slocomb, P. Eng.  
Supervisor, Reservoir Engineering  
Resource Conservation

Attachment

**APPROVAL 08-02-008 (AMENDMENT #1)**

**THE PROVINCE OF BRITISH COLUMBIA  
PETROLEUM AND NATURAL GAS ACT  
DRILLING AND PRODUCTION REGULATION  
OIL AND GAS COMMISSION**

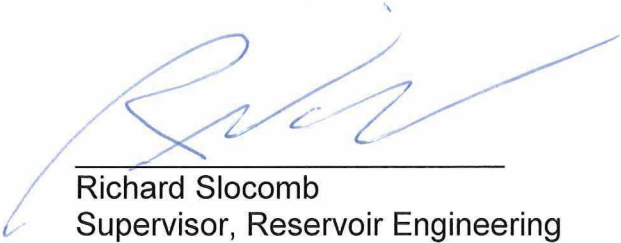
---

IN THE MATTER of a scheme of Hudson's Hope Gas Ltd. (HHG) for Salt Water and Recovered Fluids Disposal in the Baldonnel formation in the well HHG Portage a-20-D/94-A-4 (WA# 22031).

NOW, THEREFORE, pursuant to Part 8, Division 3, Section 94 of the *Drilling and Production Regulation*, the scheme is hereby approved, as such scheme is described in

*an application from HHG to the Commission dated July 31, 2008 and related submissions.*

1. The water disposal interval must be in the Baldonnel formation.
2. A record of volume of salt water disposed of through this well 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.
3. The wellhead injection pressure must not exceed 6500 kPa.
4. The disposal/injection pressure at the sandface must not exceed 22,000 kPa.
5. This approval may be modified or rescinded if deemed appropriate through a change in circumstances.



Richard Slocomb  
Supervisor, Reservoir Engineering  
Resource Conservation  
Oil and Gas Commission

DATED AT the City of Victoria, in the Province of British Columbia, this 30<sup>th</sup> day of March 2010.