



July 21, 1998

File: 2820-4800-59240-09  
Ref.: 980579

Ms. Cassandra Lai  
Exploitation Engineer  
Canadian Natural Resources Limited  
2000, 425 - 1st Street SW  
Calgary, AB T2P 3L8

Dear Ms. Lai:

**RE: APPLICATION TO AMEND PRESSURE MAINTENANCE APPROVAL  
BULRUSH HALFWAY "A" POOL, UNIT #1**

This refers to your application dated June 25, 1998 wherein you requested an amendment to the approval for gas injection pressure maintenance in the subject oil pool.

Attached is Approval # 66-09-001 (Amendment #2) for the application, granted under section 100 of the Petroleum and Natural Gas Act.

The original approval to re-inject produced gas, dated September 6, 1966, was intended for gas conservation and to reduce net gas production in order to maintain a GOR adjustment factor of 1.00. This has operated in effect as a partial pressure maintenance scheme.

In February 1980, the Bulrush Halfway Unit #1 was formed and a waterflood pressure maintenance scheme was approved with d-78-F/94-A-16 being the approved water injection well. Water was last injected in December of 1989.

It should be noted that both the gas injection and the waterflood approvals are currently in place. The new well d-79-F/94-A-16 (WA 11399) is within the Unit #1. Accordingly, the amendment reflects reserve-based daily oil allowable based on new mapping.

Should you have any questions regarding this order, please contact Peter Attariwala at (250) 952-0311.

Yours sincerely,

B. van Oort, P. Eng.  
Director  
Engineering and Operations Branch

RS/mef

Attachment

Copies for Approval Letter to Industry (11)  
RE: GEP, Salt Water Disposals, etc.

<input type="checkbox"/>	G. Miltenberger
<input type="checkbox"/>	Data Management
<input checked="" type="checkbox"/>	R. Stefik
<input type="checkbox"/>	D. Richardson
<input type="checkbox"/>	P. Attariwala
<input type="checkbox"/>	G. Farr
<input type="checkbox"/>	S. Chicorelli
<input type="checkbox"/>	Resource Revenue
<input type="checkbox"/>	59240
<input type="checkbox"/>	Wellfiles (originals)
<input type="checkbox"/>	Daily

APPROVAL 66-09-001 (Amendment #2)

THE PROVINCE OF BRITISH COLUMBIA  
PETROLEUM AND NATURAL GAS ACT  
MINISTRY OF ENERGY AND MINES  
ENERGY AND MINERALS DIVISION

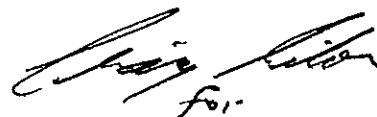
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IN THE MATTER of a pressure maintenance scheme of Canadian Natural Resources Limited (CNRL) for recovery of oil by gas and water injection into the Bulrush Halfway "A" Pool.

The approval granted pursuant to section 100 ( previously s. 117) of the Petroleum and Natural Gas Act, is hereby amended as follows:

The pressure maintenance scheme of CNRL for recovery of oil from the Bulrush Halfway "A" Pool as such scheme is described in the Applications to the Ministry dated July 22, 1966, February 26, 1980 and June 25, 1998, is hereby amended, subject to the terms herein contained.

1. The pressure maintenance scheme area consists of area within the Bulrush Unit # 1, namely units 78, 79, 88, 89, 98 and 99 of Block F and units 8 and 9 of Block K/94-A-16.
2. The reserve based daily oil allowable is 105.7 m<sup>3</sup>.
3. Gas may be injected into the wells d-98-F and d-9-K/94-A-16.
4. Water may be injected into the well d-78-F/94-A-16.
5. The injection pressure at the sandface must not exceed the formation fracture pressure.
6. An oil well may be drilled anywhere within the Bulrush Unit #1 provided that it is not completed nearer than 100 m to the sides of the Unit.
7. The operations of the pressure maintenance scheme will be subject to periodic review, and modification to the approval may be ordered, if deemed appropriate.



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Bou van Oort, P.Eng.  
Director  
Engineering and Operations Branch

DATED AT the City of Victoria, in the Province of British Columbia, this 20<sup>th</sup> day of July, 1998.