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*approval catalogue*

Union Oil Company of Canada Limited  
 335 Eighth Ave., S.W.  
 Calgary, Alberta  
 T2P 2K6

Attention: Mr. H. E. Hughes, P. Eng.  
 Manager of Engineering

*Unocal Unit #1 (02)*

Dear Sir:

Re: Application for Waterflood Scheme  
Bulrush-Halfway Pool 'A'

This is to advise that your application for installation of a waterflood scheme in the Bulrush-Halfway Pool 'A' is approved. The approval is granted under Section 117 of the Petroleum and Natural Gas Act and is subject to the following conditions:

1. The area of the project consists of units 78, 88, 89, and 99 Block F/94-A-16.
2. Water will be injected into the Halfway formation through the well located in d-78-F/94-A-16. The Chief, Petroleum Resources Branch, may require additional injection points if, in his opinion, performance necessitates.
3. Water will be injected at rates sufficient to maintain balanced net fluid withdrawals, as measured at reservoir conditions at the time of flood-start.
4. The project Daily Oil Allowable will be 61.8 m<sup>3</sup>/d.
5. A monthly operations report will be filed with the Petroleum Resources Branch, within 60 days of the end of the report month. This report will contain:
  - a) a summary of monthly and cumulative production and injection data

Page 2

Union Oil Company of Canada Limited



- b) a summary of monthly and cumulative reservoir withdrawal and replacement data
  - c) a graphical reservoir history, showing complete production and injection data for the project.
6. Periodic comprehensive progress reports will be required, as stipulated under Division 104 of the Drilling and Production Regulations.
  7. The net gas-oil ratio, and gas-oil ratio adjustment factor shall be calculated and applied on a project basis.
  8. The operation of the waterflood scheme will be subject to periodic review and, as a result, modification to the scheme or to this approval may be ordered by the Chief, Petroleum Resources Branch.

Yours sincerely,

R. H. McClelland  
Minister

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