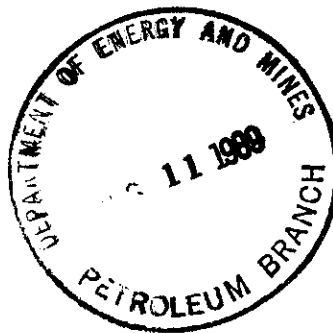




1300 SUN LIFE PLAZA III
112 - 4th AVENUE S.W.
CALGARY, ALBERTA, CANADA T2P 0H3
TELEPHONE (403) 261-0743

July 26, 1989

Royalty Interest Owners
Waskada Unit No. 1
(Addressee List Attached)



Gentlemen:

Re: Waskada Unit No. 1
Unit Agreement Revisions

Enclosed for your records is a revision to Exhibit A in the Waskada Unit No. 1 Unit Agreement. This revision reflects an amalgamation of Masai Minerals Limited into Triton Canada Resources Ltd.

Yours truly,

OMEGA HYDROCARBONS LTD.

A handwritten signature in dark ink, appearing to be "R.A. Brekke", written over a horizontal line.

R.A. Brekke
Chairman, Operating Committee

c.c.: Unit File
Accounting
Land

WASKADA UNIT NO. 1

**Royalty Interest Owners
Addressee List**

The Canada Trust Company
230 Portage Avenue
Winnipeg, Manitoba
R3C 2S6

Department of Energy & Mines
Mineral Resource Division
Petroleum Branch
550 - 330 Graham Avenue
Winnipeg, Manitoba
R3C 4E3

Que West Resources Ltd.
1110, 910 - 7th Avenue S.W.
Calgary, Alberta
T2P 3N8

PanCanadian Petroleum Limited
150 - 9th Avenue S.W.
P.O. Box 2850
Calgary, Alberta
T2P 2S5

Triton Canada Resources Ltd.
c/o Canadian Worldwide Energy Ltd.
4th Floor, 255 - 5th Avenue S.W.
Calgary, Alberta
T2P 3G6

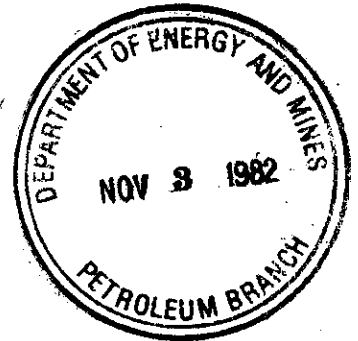


HYDROCARBONS Ltd.

TELEPHONE: (403) 261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

November 1, 1982



Department of Energy and Mines
Petroleum Branch
975 Century Street
Winnipeg, Manitoba
R3H 0W4

Attention: Mr. Bob Dubreuil

Dear Bob:

RE: Omega Waskada Unit No.1

In response to your letter of October 4, this letter is to explain Omega's situation with respect to water injection at Omega Waskada WIW 6-30-1-25 WPM.

As you are probably aware water injection into both 6-30 and the non-unit well, 1-30, has been essentially a water disposal system for quite some time. As a result of the need to dispose of produced water from other wells in the field up until about February, 1982 substantially more water has been injected into 6-30 than what was required to replace voidage. Between March - June, 1982 the water cuts in the unit wells 3-30, 4-30 and 12-30 rose markedly and the unit was cycling a large volume of water.

In July, 1982 it was decided to temporarily suspend water injection at 6-30 for the following reasons:

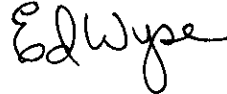
- 1) Whatever we injected at 6-30 we seemed to recover at the producers very quickly. This effect was putting a great strain on our facilities particularly our injection pump.
- 2) Cumulative fluid production from unit wells 3-30, 4-30, 12-30 and 5-30 and 11-30 before they were recompleted was 91,347 m³ as of the end of June, 1982. Cumulative injection into 6-30 was 98,808 m³. It appeared we could afford to let up for a while.

Our intention is to resume injection at 6-30 on a voidage replacement basis once changes in field facilities will more comfortably allow. The changes that seem necessary are:

- 1) The completion of our new water plant.
- 2) The initiation of water injection in the Waskada Lower Amaranth Unit No.1 wells.

I hope you find this⁴ satisfactory and would invite your comments.

Yours truly,

A handwritten signature in cursive script, appearing to read 'Ed Wyse'.

Ed Wyse

cc: G. Patey
B. Wilcox

Dan S.

*File Omega Unit
No 1*

General Corra

October 4th, 1982

Omega Hydrocarbons Ltd.
630 - 330 - 5th Ave. S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. G. A. Patey

Dear George:

Omega Waskada Unit No. 1

A review of progress reports submitted by Omega to the Department, with regards to the subject unit indicates that the well, Omega Waskada WIW 6-30-1-25 has been inactive since May of 1981 (see copy of reports attached).

With reference to Subclause 1 (2) of Order No. PM30 (copy attached), which requires the Unit operator to "endeavour to maintain continuous injection", we request that you submit your comments outlining the reasons for the discontinuance of injection and the steps being taken to reactivate the well.

Yours sincerely,

L. R. Dubreuil
Chief Petroleum Engineer
Petroleum Branch

LRD/sb

COPY

May 15, 1981

Omega Hydrocarbons Ltd.
630 - 330 Fifth Avenue S.W.
Calgary, Alberta
T2P 0L4

Attention: Mr. V. F. Maxwell,
Chief Engineer

Dear Sir:

Re: Waskada Unit No. 1

Receipt of two (2) copies of your Pressure Maintenance Progress Report No. 2 for the subject unit is acknowledged. Please note that the statement in the report indicating that the water source well (11-29-1-25) was inactive during the report period is incorrect. This well was operated continuously over most of the report period.

As we had previously discussed, scheduling of bottom hole pressure surveys to coincide with any downhole work is acceptable. We request, however, that at least two-thirds of the wells be surveyed prior to December 31, 1981 and the remaining wells surveyed prior to May 31, 1981. Please inform this office in advance of each survey of specifics of your planned survey including shut-in time and the criteria used to determine when a well's pressure has built up.

With respect to your proposals regarding completion of wells with known casing leaks (reference your letter of January 14, 1981) by running a packer above the production interval, we are concerned that a packer or tubing failure could go unnoticed for some period of time during which any uphole aquifer zones may be contaminated by reservoir water. This

....2

COPY

is of particular concern in the Waskada area where the Blairmore and Ashville aquifers have potential for agricultural use. To safeguard against the possibility of contamination, and if economics cannot justify casing repairs, you are requested to devise a system which would indicate the integrity of the downhole equipment used to isolate wellbore fluids from the casing. Such a system could involve holding a pressure on the annulus and regular monitoring of this pressure.

Yours sincerely,

L. R. Dubreuil
Chief Petroleum Engineer

LRD/lk

c.c. G. E. Johnson

Wilgosh to Beesley

I, Helen Thea Beesley, of the City of Winnipeg, Dispatcher, have been issued a Legal Change of Name Certificate for my unmarried infant child, Karen Lynn Mary Wilgosh changed to Karen Lynn Mary Beesley.

Date: December 2, 1976.

11512—51

Young to Young

I, Deborah Ann Young, of the City of Winnipeg, Student, have been issued a Legal Change of Name Certificate to Deborah Ann Czaplynsky Young.

Date: November 30, 1976.

11513—51

L. L. DESJARDINS,

Minister of Health & Social Development.

UNDER THE HIGHWAY TRAFFIC ACT

Notice is hereby given that the following applications have been received by the Manitoba Highway Transport Board.

Peter Enns & Sons,
o/a Carberry Transfer,
Carberry, Manitoba.

Application for an extension of Public Service Vehicle Certificate for authority to transport potatoes for and on behalf of the Carnation Food Company Limited from various points in Alberta to Carberry, Manitoba.

Bloodvein Band Foundation, Inc.,
Bloodvein, Manitoba.

Application for Public Service Vehicle Certificate for the transportation of general freight and fuel:

1. to and from Winnipeg and Bloodvein, via Highway No. 3 and No. 234 for furtherance by ferry during summer months, and;

2. from Winnipeg to and from the Bloodvein Indian Reserve, Berens River,

Little Grand Rapids Indian Reserve, and Pauingassi Settlement, via Highways No. 59, 219, and 304 for furtherance by Winter Road Corridor authority only with no pick up or drop offs between the above named four points.

Anyone wishing to make representation or oppose the granting of the above applications, must file such notice with the Secretary of the Board, either by mail or personal filing not later than 4:30 p.m., Tuesday, January 4, 1977.

Notices received after this date, will not be accepted.

Subsequent to the above date, the Board will set the date the applications will be heard and advise the applicant and those opposing of the time, date and place of the Hearing.

L. G. OLIJNEK,
Secretary.

THE HIGHWAY TRANSPORT
BOARD.

—51

UNDER THE MINES ACT

To: All Purchasers of Manitoba Crude Oil.

Re: Nominations for Crude Oil.

All persons intending to purchase Manitoba crude oil in the month of February, will be required to file a nomination with the Petroleum Branch, Department of Mines, Resources and Environmental Management on or before January 16, 1977.

Copies of nomination forms may be obtained from the Petroleum Branch, Department of Mines, Resources and Environmental Management.

No public Inquiry will be held.

A tabulation of the said nomination will be published in Crude Oil and Water Production Statistics.

Dated at Winnipeg, Manitoba, this 1st day of December, 1976.

H. C. MOSTER,
Director,

Petroleum Branch.

—51

WASKADA FIELD

Omega Hydrocarbons Ltd., as Unit Operator of Waskada Unit No. 1, has made application to The Oil and Natural Gas Conservation Board to exempt wells in the Unit from maximum permissible rate of production restrictions.

Any interested party wishing to file a valid objection in this matter may do so within 14 days of the publishing of this notice, to: Petroleum Branch, 933 Century Street, Winnipeg, Manitoba, R3H 0W4.

Dated at Winnipeg, Manitoba, this 10th day of December, 1976.

J. S. ROPER,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board

—51

TELEPHONE (403) 261-6743



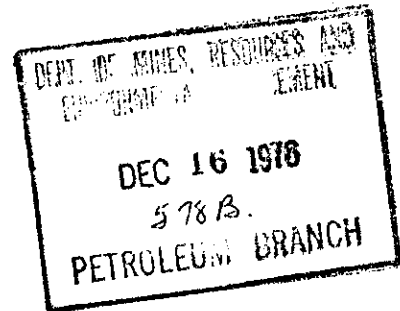
WASKADA CARBONS

630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

December 13, 1976

Department of Mines, Resources
and Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster,
Director Petroleum Branch



Dear Sir:

Re: Waskada Unit No. 1

Several months past, Omega made application and received approval to unitize and waterflood its portion of the Waskada Oil Field. Prior to submitting the application, Omega researched the Mines Act to see if there was some means of having the proposed waterflood wells designated as New Wells, only to find that the definitions in the Act did not cover such a scheme. However, further analysis indicated that the Manitoba incremental tax would not seriously affect the profitability of the waterflood. This situation arose as a result of having a Federal Crown lease covering the major portion of the proposed flood area. Omega then proceeded without the co-operation of the neighbouring producer, Copperhead Oil Company.


My understanding is that Copperhead decided not to proceed because there was no incentive by virtue of the mineral tax classification and we have received no indication that the Company has changed its views. A stalemate appears to have taken place and this is of great concern to Omega.

Omega stated at the March 12, 1976 Hearing that we would not expect the Board to force Copperhead into the scheme until we could demonstrate favourable response to waterflood. We have adequate proof of flood response and we feel that it is the responsibility of the Board to proceed with positive action.

Therefore, Omega herein submits a request that the Board call a "Show Cause Hearing" at the earliest possible date. The Board should call the Hearing on it's own motion and thereby refrain from calling upon Omega to demonstrate it's case. The onus should be placed upon Copperhead to show cause why it does not see fit to join Omega's waterflood.

By separate letter, a copy of which is attached, Omega is requesting that Copperhead join our scheme of waterflood. Your early response to this request will be very much appreciated.

Yours very truly,
OMEGA HYDROCARBONS LTD.



T. J. Hall
President

TJH:bcf
Attch.

TELEPHONE: (403) 261-0743



HYDROCARBONS LTD.

630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

December 13, 1976

Copperhead Oil Company Ltd.
415 - 7th Avenue South
Virden, Manitoba

Attention: Mr. Steve Hegion

Dear Sir:

Re: Waskada Waterflood

On November 19, 1975, Omega submitted an application to the Manitoba Oil and Gas Conservation Board to unitize and waterflood it's portion of the Waskada Oil Field. A hearing was held on March 12, 1976 in Winnipeg following which approval was granted by the Board. Subsequent to the approval, Omega proceeded with the waterflood scheme. Early indications provided encouragement that the flood response would be rapid and, in fact, that has already occurred.

Oil production has increased from approximately 35 - 40 barrels per day to some 180 - 200 barrels per day with water breakthrough in one well. Two of the five producing wells have not yet reached their expected capability, and should this occur, the productivity could peak to 300 barrels per day or more.

The D & S Waterflood Study prognosticated that the pool flood would reach producing rates in the range of 184,000 barrels per year, which would amount to 500 barrels per day from eight wells. At this stage of the flood, we believe that the pool is capable of this magnitude. However, it is not our objective to reach such high rates, which of course would require the installation of high volume pumping equipment at considerable expense.

Omega is confident that the waterflood scheme is functioning well and an adequate supply of water is available for extension of the flood and for that reason, we invite Copperhead to join the scheme. It is proposed that Copperhead agree and proceed as follows:

1. Make application to The Oil and Gas Conservation Board to join the waterflood scheme.
2. Copperhead designate two wells as injectors. These should be 12-19 and 14-19, Twp. 1, Rge. 25; such wells to be approved by the Board.

3. Following approval, 12-19-1-25 and 14-19-1-25 be reworked where necessary and both converted to water injectors.
4. That Copperhead agree to install a high pressure water line from Lsd. 6-30-1-25 to the above injectors having a capacity of 1000 bbls/day at 1500 psig.
5. Copperhead agree to purchase high pressure water from Omega or that Copperhead agree to share the capital and operating cost of supplying water to the Copperhead wells.
6. The alternate to the above would be to join the Unit and allow Omega to proceed as above.

If you are in agreement to this proposal, we will proceed to assist you in every way possible so that you are able to make a contribution to the waterflood program.

Yours very truly,
OMEGA HYDROCARBONS LTD.



T. J. Hall
President

TJH:bef

c.c. H. C. Moster,
Director of Petroleum Branch
Department of Mines, Resources
and Environmental Management
Winnipeg, Manitoba

*Original letter
on company file*

October 13, 1976

Omega Hydrocarbons Ltd.
630 One Calgary Place
330 - 5th Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. J. Hall
President

Dear Sir:

Re: Waskada Unit No. 1
Bottom Hole Pressure Surveys

This letter will confirm our approval of your proposed pressure survey program for Waskada Unit No. 1 as per your letter of October 8, 1976.

When submitting the results of the fluid level survey to be carried out during October 1976, please ensure the following data for each well are presented:

1. Fluid level and fluid gradient (oil and/or water).
2. Surface casing pressure at time of test.
3. Gas column pressure, if applicable.
4. Static bottom hole pressure.

Also an isobaric map of the Unit area plus a written analysis of the data obtained as related to flood response is requested.

Yours sincerely,

Original Signed by H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch.

HCH/et

SAM
Unit File



HYDROCARBONS Ltd.

TELEPHONE: (403)261-0743

630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

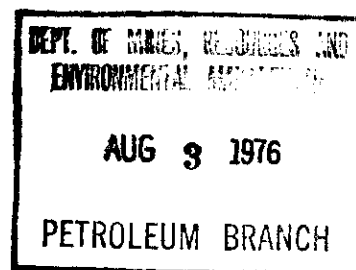
July 30, 1976

Department of Mines, Resources and
Environmental Management
Mineral Resources Division,
Petroleum Branch,
993 Century Street,
Winnipeg, Manitoba. R3H 0W4

Attention: H. C. Moster, P. Eng.
Director, Petroleum Branch

Dear Sir:

Re: Waskada Unit No. 1
Water Flood Program



Pursuant to discussions with you regarding the Copperhead Wells, we have not been able to contact Mr. Hegion by telephone and have been led to understand that he is residing at Clear Lake for the summer months. Earlier attempts to get in touch with him have not been successful, so I can only assume that we would not be able to contact him until late August or September.

You may be interest to know that the immediate offset wells to the injection well have shown considerable response to our flood program. At this time of writing we have in excess of 100,000 barrels of water injected into the producing horizon.

Although, we have experienced problems with gas locking of the bottom hole pumps and subsequent changeout of the pumps at 3-30, 5-30 and 11-30 we are recovering approximately 90 - 100 barrels of oil per day. The maximum in any one day has reach 120 barrels of clean oil. Gas production varies from well to well and we have been forced to vent gas from the casing at 12-30 to keep the BH pumps functioning. At 5-30 gas production was not sufficient to run the prime mover for a period of two weeks. The water cut shows varying amount of water being returned following the use of water to kill wells where pumps were changed. No water break through has occurred to date, however, we are monitoring water cuts at the battery on a daily basis and well sites on a weekly basis.

All evidence thus far provides a reasonable degree of confidence that waterflood will be successful and should be pursued throughout the entire pool.

In addition, we believe that good engineering practice can only be maintained if gas and water are measured in all segments of the pool. It is therefore important that gas and water measuring facilities be installed at the Copperhead battery. However, if Copperhead would agree to enter the Unit and Waterflood scheme we would seriously consider consolidating production facilities at our battery site at 11-30-1-25.

If, in your discussion with Copperhead you find any degree of interest in joining the flood we would be most interested in discussing it with that Company.

We have now received a Unit allowable of 300 barrels per day and wish to extend our appreciate for approving the application.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. J. Hall,
President.

TJH:jw

bcc BOARD MEMBERS ✓ 7/6/77

COPY

Omega Hydrocarbons Ltd.,
630 One Calgary Place,
330 - 5th Avenue S. W.,
Calgary, Alberta.
T2P 0L4

Attention: Mr. T. Jack Hall

Dear Sir:

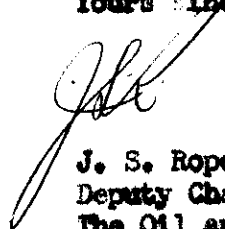
Re: Waskada Unit No. 1

Enclosed for your purposes, pursuant to Section 90 of The
Mines Act, are:

1. Four (4) certified copies of Unitization Order No. 22.
2. One (1) certified copy of the Unit Agreement.

Please be advised that the Department has a copy of Unitization
Order No. 22 together with the Unit Agreement.

Yours sincerely,



J. S. Roper,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board.

Enclosure
c.c. H. C. Mott

COPY

June 9, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall
President

Dear Sir:

With reference to your letter dated January 27, 1976 pertaining to your Application for Exemption under Section 23 of The Pipe Line Act, please ensure that the required survey plat is submitted prior to July 1, 1976.

Enclosed are copies of Unitization Order No. 22 and Order No. PM 30 (both passed May 11, 1976) pertaining to the Waskade Field.

Please note that Rule No. 7 under Pressure Maintenance Rules requires the Unit Operator to file with the Branch each month a report of the quantity, source and pressure of water injected during the preceding month, therefore, the first report should be filed with the Branch prior to June 25, 1976 for the month of May, 1976.

With respect to Pressure Maintenance Rule No. 5 please submit your proposed 1976 subsurface pressure survey program to the Branch for approval prior to July 15, 1976.

Yours sincerely,

H. G. Moser, P. Eng.,
Director, Petroleum Branch.

HGM/et
Encls.

The Oil and Natural Gas
Conservation Board:
Jas. T. Cawley, P. Eng., Chairman,
J. S. Roper, Deputy Chairman,
I. Haugh, Member.

76 04 30

H. C. Moster,
Director,
Petroleum Branch.

XXXXXX

Subject:

Unitization Order No. 22 and Pressure Maintenance Order
No. PM 30 Pertaining to the Proposed "Waskada Unit No. 1"

Background:

Omega Hydrocarbons Ltd., on behalf of itself as Working Interest Owner, submitted on November 19, 1975 an application for Unitization and Pilot Waterflood for a portion of Waskada Field. The portion of the Field being applied for consists of the SW $\frac{1}{4}$ and Legal Subdivisions 11 and 12 of Section 30, Township 1, Range 25 NPM.

The Board held a Public Hearing in Winnipeg, Manitoba on March 12, 1976 to consider the application.

Discussion:

The primary reason for the application is to initiate a Pilot Waterflood scheme in the subject area. Available reservoir data including pressure determination and recent gas measurements plus studies made to date on the Waskada Field indicate that the pool has reached the stage of depletion when it becomes necessary to repressure the reservoir in an attempt to increase the ultimate recovery of oil.

Based on the discussion at the Hearing, certain changes in the Unitization Agreement were requested from Omega and corrected pages reflecting these changes have been received.

Temporary approval to commence water injection effective April 1, 1976 was given by the Branch under the Board's authorization.

There were no objections to the application and written consents to the Unitization and Pilot Waterflood were obtained in writing from one hundred percent (100%) of the Working Interest Owners and Royalty Owners in the Proposed Unit area.

Recommendation:

That the attached Unitization Order No. 22 and Order No. PM 30 for the proposed Unit Area be approved.

The necessary Order-In-Council (Section 76(3) of "The Mines Act") will be prepared and forwarded to the Board when Unitization Order No. 22 has been approved and dated (date of Order is required for O.I.C.).

Original Signed by H. C. Mosler

H. C. Mosler

HCM/et
Attachs.

The Oil and Natural Gas Conservation
Board:

Jas. T. Cawley, P. Eng., Chairman,
J. S. Roper, Deputy Chairman,
I. Haugh, Member.

76 03 25

H. C. Moster,
Director,
Petroleum Branch.

Subject:

Approval to Commence Water Injection
Pilot Waterflood — Proposed Waskada Unit No. 1

Background:

Omega Hydrocarbons Ltd. submitted an application for Unitization and a Pilot Waterflood for a portion of Waskada Field on November 19, 1975. The Board held a public hearing in Winnipeg on March 12, 1976 to hear the application.

Discussion:

No significant points of contention resulted from the hearing on the waterflood application. The transcripts for the hearing shall not be completed for another 2 - 3 weeks. Finalization of the Unitization Order must await the hearing transcripts. Similarly the Pressure Maintenance Order is contingent on the Unitization Order.

The reservoir is badly underpressured and should be repressured as early as possible. Due to the above, the necessary Orders will probably not be ready in time to permit Omega to commence water injection until May 1, 1976 at the earliest. Installation of the field injection facilities has been completed and Omega is awaiting approval to start injecting water.

Recommendation:

It is recommended that with the Board's approval the Petroleum Branch be permitted to authorize Omega to commence water injection effective April 1, 1976.

A draft of such letter of authorization is attached.


H. C. Moster

HCM/cf
Attach.

DRAFT ONLY

March 25, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall
President

Dear Sir:

Re: Temporary Approval for Water Injection
Omega Waskada 6-30-1-25

Pursuant to your request, Omega Hydrocarbons is hereby given temporary approval to commence water injection through the subject well into the Mission Canyon Formation prior to the necessary Board Orders being prepared, approved and gazetted, effective April 1, 1976.

This approval expires June 1, 1976, shall be superceded by any future Board Pressure Maintenance Order and may be terminated at any time upon notification from the undersigned.

Please contact our Virden Office prior to commencement of injection operations.

Yours sincerely,

H. C. Moster, P. Eng.
Director, Petroleum Branch.

HCM/cf
c.c. The Oil & Natural Gas
Conservation Board
Virden Office

April 15, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall,
President

Dear Sir:

Re: Waskada Unitization Agreement

Pursuant to the Public Hearing held in Winnipeg on March 12, 1976 the Board has requested me to advise you of the following amendments required in the proposed agreement, "Unit Agreement, Waskada Unit No. 1", filed as Exhibit No. 5 at the Hearing:

1. In the Table of Contents the reference page number corresponding to Article IV should read "6" instead of "7".
2. On Page 12 under Article VIII the ^ttitle should read "Use, Loss and Reinjection of Unitized Substances" instead of "Use, Loss and Storage of Unitized Substances".
3. On Page 12 the title for Section 801 should read "Use or Loss" instead of "Use of Loss".
4. On Page 10 under Section 702 add the following sentence:
"The allocation of Unitized Substances to a Spacing Unit within a Tract shall be determined by dividing the amount of Spacing Units within the Tract."

of Unitized Substances allocated to the Tract by the number

JACK HALL
was advised of the
above typing error
(line missed) via
telephone on 1976 04 20
by H.G. Masters.

. . . 2

5. On Page 21 add the following section after Section 1504:
"1505 Conform To Legislation

All operations conducted under this Agreement shall conform to all applicable statutes, regulations and other legislation, as amended from time to time.

Please submit to this office at your earliest convenience amended pages (6copies of each) to cover these changes. Such pages should indicate that they are revised pages with a date and signature.

eg: "REVISION, April , 1976 signature ."

Yours sincerely,



for: H. C. Moster, P. Eng.,
Director, Petroleum Branch

HGM/cf

cc : J.S. ROPER

Province of Manitoba

inter-departmental memo

To:

H. C. Moster,
Director of Petroleum Branch,
Mineral Resources Division,
993 Century Street.

Date

76 04 14

From

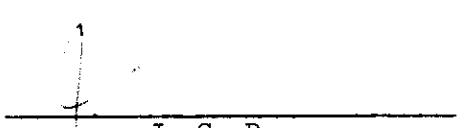
J. S. Roper,
Policy Advisor.

Subject:

UNIT AGREEMENT WASKADA UNIT NO. 1 - Your memo of 76 04 12.

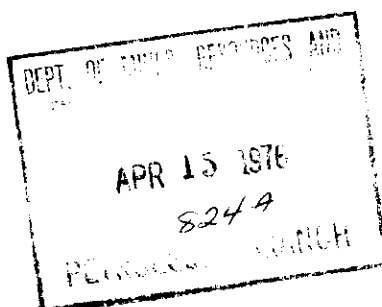
The Board approves the changes to the Unitization Agreement as recommended by you in your memorandum.

Please proceed to have the necessary pages amended so as to process the Unitization Agreement to operational status a.s.a.p.


J. S. Roper.

JSR/gls

c.c. - Jas. T. Cawley
- I. Haugh



April 14, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall,
President

Dear Sir:

Re: Waskoda Unitization Agreement

Pursuant to the Public Hearing held in the City of Calgary on March 12, 1976 the Board has requested us to advise you of the following amendments required in the proposed agreement, "Waskoda Unit Rec. 1", filed as Exhibit No. 5 at the hearing:

1. In the Table of Contents the left hand page number corresponding to Article 14 should read page number 14 of "74".
2. On Page 12 under Article VIII the title should read "Use, Lease and Production of Oil and Gas" instead of "Use or Lease and Production of Oil and Gas".
3. On Page 13 the title for Section 701 should read "Use or Lease" instead of "Use or Lease".
4. On Page 16 under Section 702 add the following language:
"The allocation of oil and gas shall be determined by dividing the total production of oil and gas within the area by the number of producing wells within the area."
5. On Page 21 add the following section after Section 1504:
"1505 Conform to Legislation"

All operations conducted under this Agreement shall conform to all applicable statutes, regulations and other legislation, as amended from time to time."

Please submit to this office at your earliest convenience amended pages (6 copies of each) to cover these changes. Each page should indicate that they are revised pages with a date and signature.

cc: "Waskoda Unit", April 14, 1976 Signature _____

Yours sincerely,

H. G. Foster, P. Eng.,
Director, Petroleum Branch

RE - TYPE

April 14, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall,
President

Dear Sir:

Re: Waskada Unitization Agreement

Pursuant to the Public Hearing held in Winnipeg on March 12, 1976 the Board has requested me to advise you of the following amendments required in the proposed agreement, "Unit Agreement, Waskada Unit No. 1", filed as Exhibit No. 5 at the Hearing:

1. In the Table of Contents the reference page number corresponding to Article IV should read "6" instead of "7".
2. On Page 12 under Article VIII the title should read "Use, Loss and Reinjection of Unitized Substances" instead of "Use or Loss and Storage of Unitized Substances".
3. On Page 12 the title for Section 801 should read "Use or Loss" instead of "Use of Loss".
4. On Page 10 under Section 702 add the following sentence:
"The allocation of Unitized Substances to a Spacing Unit within a Tract shall be determined by dividing the amount of Unitized Substances allocated to the Tract by the number of Spacing Units within the Tract."

Please submit to this office at your earliest convenience amended pages (6 copies of each) to cover these changes. Such pages should indicate that they are revised pages with a date and signature.

eg: "REVISION, April , 1976 signature "

Yours sincerely,

H. C. Moster, P. Eng.,
Director, Petroleum Branch

HCM/cf

76 04 12

The Oil and Natural Gas
Conservation Board:
Jas. T. Cawley, P. Eng., Chairman,
J. S. Roper, Deputy Chairman,
I. Haugh, Member.

H. C. Moster,
Director,
Petroleum Branch.

XXXX

SUBJECT:

"Unit Agreement, Waskada Unit No. 1"
Recommended Changes to Proposed Agreement

BACKGROUND:

The Board held a Public Hearing in Winnipeg, Manitoba on March 12, 1976 to consider an application by Omega Hydrocarbons Ltd. for Unitization and a Pilot Waterflood for a portion of Waskada Field.

DISCUSSION:

Certain items with respect to the Unitization Agreement were discussed at the Hearing. The following is a list of the items and the corresponding changes proposed by the Branch:

1. In the Table of Contents the reference page number corresponding to Article IV should read "6" instead of "7".
2. On Page 12 under Article VIII the title should read "Use, Loss and Reinjection of Unitized Substances" instead of "Use, Loss and Storage of Unitized Substances".
3. On Page 12 the title for Section 801 should read "Use or Loss" instead of "Use of Los".
4. On Page 10 under Section 702 add the following sentence:
"The allocation of Unitized Substances to a Spacing Unit within a Tract shall be determined by dividing the amount of Unitized Substances allocated to the Tract by the number of Spacing Units within the Tract."
5. On Page 21 add the following section after Section 1504:
"1505 Conform To Legislation

All operations conducted under this Agreement shall conform to all applicable statutes, regulations and other legislation, as amended from time to time."

6. The need for identification of the well name and location on Exhibit "C" was discussed at the hearing. The applicant's opinion was that this exhibit was adequately identified by definition (5) on Page 3. We propose to accept this explanation.

RECOMMENDATIONS:

The above changes are recommended to the Board for approval.

Upon confirmation from the Board of these or other changes, the Branch shall proceed to request the Applicant submit amended pages to the Unit Agreement to reflect these changes.

Original Signed by H. C. Moster

H. C. Moster

HCM/cf

(Proposed Questions for Hearing)

Omega Hydrocarbons Ltd.

Waskada Field

Pilot Waterflood & Unitization Application

PILOT WATERFLOOD APPLICATION

"Exhibit No. 1 - Unit Proposal & Waterflood Plan"

- JSR — 1. The five typographical errors in Exhibit No. 1 have been corrected in accordance with your letter dated February 17, 1976. They are:
- (1) Table of Contents
Delete the word "Discussion" and add the word "Introduction".
 - (2) Page 4, line 2 - Water Injection Facilities
Delete the Words "Figure No. 5" and add "Figure No. 3".
 - (3) Page 4 the third last line after the word production
Add "(438 barrels)" including brackets.
 - (4) Page 5 - Second last line of the second paragraph
After the words - A typical - delete the word "well"
and add the word "water".
 - (5) Page 6 - line number 7
Add the word "Initially" to the sentence so as to read
"Initially, the only change anticipated"

Are there any further corrections the Applicant wishes to make to this or the other exhibits at this time?

- JSR — 2. On Page 1 (Exhibit No. 1) the Applicant has stated that both Copperhead Oil Company Limited and Whistler Petroleum Ltd. were requested to subscribed to the D & S study (Exhibit No. 2) and organize a Steering Committee. Could the Applicant please explain what interest Whistler Petroleum Ltd. has in the Waskada Field? (none known to Petroleum Branch, four southern wells owned/operated by Copperhead).
- SR — 3. On Page 2 (Exhibit No. 1) under Interim Period. Should the description of Interim Period in the last line also include the phrase "but no later than Sept. 1, 1977" as is stated in the proposed Unit Agreement (Exhibit No. 5, Section 601)
- SR — 4. On Page 5 (Exhibit No. 1), line 4, the applicant has stated the "injection rates indicated that the well (6-30-1-25) would accept water in the range of 1,000 barrels per day with zero wellhead pressure." On what basis is this statement predicated? (our records for Oct./75 indicate the well took a feed rate of 1 bbl./min. (1,440 bbl./day) under 1000 psi. pressure and 1/4 bbl./min. (360 bbl./day) under 0 psi pressure).

0 1000

- JSR — 5. What are the initial and final expected wellhead injection pressures for 6-30 and the corresponding injection rates?
- JSR — 6. What steps are going to be taken to insure proper measurement of injected water (volumes and pressures)?
- JSR — 7. What safety features will the injection system contain to prevent pollution (SW spills)?
- JSR — 8. Has the applicant carried out, or have plans to carry out, compatibility tests between the source water (Blairmore Formation - Lower Cretaceous) and the produced water (Mission Canyon - Mississippian)?
- JSR — 9. What is the expected "fill-up" time?
- JSR — 10. At what injection rates? (Volumes and pressures)
- JSR — 11. Explain measures to be used to prevent corrosion problems? *What is the latest technique the industry uses?*
- JSR — 12. Does the Applicant expect the production capacity of any of the wells to exceed the Field allowable (60 BOPD)?
- JSR — 13. What is the handling capacity of the proposed Unit battery facilities? *(1500 bbl/s)*
- JSR — 14. What steps does the Applicant propose to take to monitor the response of the pilot waterflood with respect to:
- (1) injection profiles and waterflood fronts
 - (2) reservoir pressures
 - (3) water breakthrough
- What is the capital input for the operation?*

"Exhibit No. 2 - Waterflood Potential - D & S Consultants"

- IH — 1. What is the Applicant's feeling as to whether or not a "small gas cap" was present initially in the pool?
- IH — 2. What was the initial pressure of the pool? (1358 psi.)
- IH — 3. What is the present pressure of the pool? (50 psi.)
- IH — 4. Is this low pressure representative of the entire pool? (southern area)
- IH — 5. What is the producing drive in the pool?
- IH — 6. Are the ten oil wells producing from the same pool? (MC-3b)
- IH — 7. Is there any evidence of an active aquifer?
- IH — 8. What, if any, is the response of such natural aquifer?

12-11
disposed

- JH — 9. Under Geology on Page 4 (D & S) it states "The pay zone is impermeable to the west due to a facies change." Is it not true that the beds dip to the west and are water wet (porous), not impermeable as stated?
- JSR — 10. Why was pressure maintenance not studied years ago?
- JSR — 11. Have reserves been lost due to the pressure being permitted to drop so low?
- JSR — 12. Does the Applicant anticipate having to repressure the entire pool (10 wells) before response is felt in the northern area (6 wells)? If not, why? (same pool)
- JSR — 13. Will the southern area of the pool feel any response (pressure) from the pilot waterflood?
- JSR — 14. What is the present gas saturation in the pool? (D & S estimate slightly less than 30 percent)
- JSR — 15. What are the anticipated problems such gas saturation may have on the success of the waterflood?
- JSR — 16. By what mechanism shall the free gas saturation be reduced? (2nd paragraph, Page 6, D & S) (re-dissolved or produced)
- JTC — 17. Was there a significant reduction in the initially expected costs of the scheme when the need to drill a water source well (Page 7) was precluded with takeover of the 11-29 well from Manitoba Mineral Resources Ltd.?
- JTC — 18. If the pilot waterflood proves successful, what will be the next steps? (enlarged waterflood)
- JTC — 19. Will Omega continue the expansion of the waterflood without the inclusion of the 4 southern wells (Copperheads) in the program?
- JTC — 20. Has Omega plans to drill on 13-30 as per the recommendation of the D & S study?
- JTC — 21. How well are the pool's limits delineated?
- JTC — 22. If the pilot fails have you any alternative plans with respect to enhanced recovery?
- JTC — 23. Due to the present low pressure in the pool does the Applicant feel that a complete waterflood scheme for the entire pool might be the proper step at this time? (if not, why).
- JTC — 24. Does the Applicant have any knowledge of why the southern portion of the pool does not also require water flooding at this time?

- C — 25. Is the Applicant aware of Copperhead's reasons for not joining the scheme at this time?
- C — 26. What are the estimated remaining primary and ultimate recoverable reserves for the Omega portion of the pool with and without water-flooding? (167,480 bbl. and 803,600 bbl.)
- C — 27. Has the recent gas production measurements revealed anything new with regards to the reservoir?

"Exhibit No. 5 - Unit Agreement - Waskada"

Amendments Required:

- R — 1. Should the title under Article VIII on Page 12 read "Use, Loss and Reinjection of Unitized Substances" instead of "Use, Loss and Storage of Unitized Substances".
- R — 2. Should not the heading of 801 on Page 12 read "Use or Loss" instead of "Use of Loss".
- R — 3. The present mechanism for calculating Freehold mineral tax in Manitoba requires the actual production from, or allocated to, individual wells. For this reason it is required that an amended Exhibit "A" be filed that indicates tract participation factors for individual wells. (Such values can be easily calculated from the data on Table 1 and 2 of Exhibit No. 1).
- l — ^{why} 4. Exhibit "C" requires identification as to the well it represents. (Omega Waskada 4-30-1-25 (WPM), KB = 1552.4').
- l — 5. Request that an additional clause (1505) be added which would read as follows:

"1505 All operations conducted under this agreement shall conform to all applicable statutes, regulations and other legislation (in effect at that time.)"

(This will clarify the operator's powers under such sections as 401).

Questions:

- 1. (a) Could the Applicant please explain or clarify the meaning or intent of Section 502(b) on Page 7? (who has final decision?, the Board under Section 1312?)
- (b) Similar for Section 901?

JSR — 2. Under 601(a) on Page 9 it states that in the determination of the Interim Tract Participation for a tract an adjustment for "down time" was made.

(a) What is meant by, or the definition of, "down time"?

(b) Does "mechanical down time" include circumstances of nature such as spring flooding?

(c) Do operations such down due to government road ban restrictions fall under "down time"?

(d) What all are included under "mechanical down time"?

JSR — 3. Would the Applicant please explain how and why the "Correction for down time" values indicated on Table to Exhibit No. 1 were determined? (what caused down time?, how correction derived?, validity?) (see attached Table A and xeroxed production cards)

JSR — 4. Why was no "down time" correction made for:

(a) 6-30-1-25, 6 month period (March - August 1975)?

(b) 11-30-1-25, 6 month period (March - August, 1975)?

JSR — 5. For the well 12-30-1-25 would not a correction of "400 barrels" (May, June 2/3 July 1975) been more appropriate than the "250 barrels" given?

IH — 6. In determining the Final Tract Participations for tracts it appears that a constant 50% ultimate recovery factor was used. Is this correct?

IH — 7. If so does the Applicant believe that using such a constant recovery factor for all tracts, irregardless of individual tract reservoir parameters (pay thicknesses, porosities, permeabilities, etc.) is appropriate?

JTC — 8. In Exhibit No. 4 to your application you have stated that you "have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood".

(a) What steps did Omega take to "persuade" Copperhead?

(b) What was Copperhead's reaction?

(c) Do Copperhead own 3 wells, or 4 wells in the south end of the pool? (4 according to Branch)

JTC — 9. What would be Omega's opinion of the Board requesting Copperhead to join the proposed unit at this time opposed to some future date? (appears Board could not order Copperhead to join now due to Section 77(a) of The Mines Act, but could do so at future date under Section 79(3) of The Mines Act)

INTERIM TRACT PARTICIPATION CALCULATIONS
(using "down time" corrections)

| Well | Omega (Applicant) | | | Petroleum Branch Staff | | |
|-------|--------------------------------------|--------------------|----------------------------|--------------------------------------|----------------------------|--|
| | Down Time Correction (barrels) | Period | Reason | Down Time Correction (barrels) | Period | Reason |
| 3-30 | 650 | May and June/75 | Spring flooding | 650 | (same) | Is "spring flooding" mechanical! |
| 4-30 | (No correction) | | | (agreed) | | |
| 5-30 | (No correction) | | | (agreed) | | |
| 6-30 | 150 | Jan./75 | Gas locking | 150 | Jan./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 11-30 | 75 | Sept./74 | Down hole pump problems | 75 | Sept./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 12-30 | 250 | May and June/75 | Spring flooding | 400 | May, June, 2/3 July/75 | "Spring flooding"? |



HYDROCARBONS Ltd.

TELEPHONES

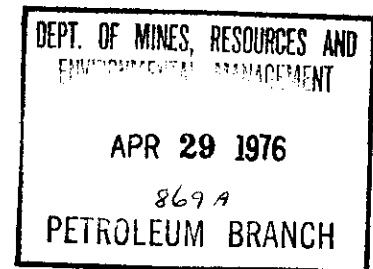
ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

April 28, 1976

Province of Manitoba
Department of Mines, Resources and Environmental
Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster, P. Eng.,
Director, Petroleum Branch




Dear Sir:

Re: Waskada Unitization Agreement

Pursuant to your letter dated April 15, 1976 with respect to the above agreement, we have made the amendments requested by your Department and enclose herewith six copies of each revised page.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. Jack Hall,
President

TJH*vs

Encl.

person is bound by this agreement as of the time of such delivery. This agreement inures to the benefit of and is binding upon the heirs, executors, administrators, successors and assigns of the Parties.

1502. Termination

This agreement terminates 90 days after all wells for the production of Unitized Substances in the Unit Area have been abandoned, plugged or disposed of or upon the termination of any applicable Unit Operating Agreement, and thereafter the Parties shall be governed by the terms and provisions of their Leases and other agreements or instruments relating to the Unitized Zone or Unitized Substances.

1503. Salvaging Equipment Upon Termination

The Royalty Owners grant the Working Interest Owners the right for a period of 6 months after termination of this agreement to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with unit operations.

1504. Notice to Royalty Owners

The Working Interest Owners shall give notice in accordance with their Leases to their respective Royalty Owners of the termination of this agreement within 30 days thereafter.

IN WITNESS WHEREOF the Parties have executed this agreement each on the date shown opposite its execution hereof.

Date:

_____ — Old
Amended
Pages.

ARTICLE VIII

USE, LOSS AND STORAGE OF UNITIZED SUBSTANCES

801. Use of Loss

The Working Interest Owners may use as much of the Unitized Substances as they deem necessary for the operation and development of the Unitized Zone including, but not limited to, the injection thereof into the Unitized Zone and in the operation of any plant or plants handling Unitized Substances. Unitized Substances so used or injected and Unitized Substances lost shall be excluded in allocating Unitized Substances to Tracts, and no royalty or other payment shall be payable in respect thereof.

802. Reinjection

The Working Interest Owners are hereby granted the right to inject Unitized Substances into the Unitized Zone for enhanced recovery purposes. Unitized Substances so injected shall be excluded in allocating Unitized Substances to Tracts; and no royalty or other payment shall be payable in respect thereof until they are recovered from the Unitized Zone and sold or used for operations other than operations hereunder.

ARTICLE IX

ENLARGEMENT OF UNIT AREA

901. Application for Enlargement

After the expiry of 90 days from the Effective Date, if an Owner of a Working Interest in lands in the vicinity of the Unit Area indicated to be potentially productive of Petroleum Substances from the Mission Canyon

Participations. The amount of Unitized Substances allocated to each Tract, and only that amount, regardless of whether it be more or less than the amount of actual production of Unitized Substances from the well or wells, if any, on the Tract, shall be deemed conclusively to have been produced from the Tract.

702. Distribution Within Tracts

The Unitized Substances allocated to a Tract shall be distributed by the Working Interest Owners thereof among, or accounted for to, the Parties entitled to share in production from the Tract in the same manner, the same proportions, and upon the same conditions as they would have participated and shared in the production from the Tract, or in the proceeds from the sale thereof, had the Unitized Substances allocated to the Tract been actually produced therefrom by the Working Interest Owners.

703. Calculation of Royalty

The Working Interest Owners of each Tract shall calculate royalty on the Unitized Substances allocated to the Tract at the applicable rate under the Lease, other agreement or instrument relating to the Tract. The Royalty Owners of each Tract agree to accept payment of royalty so calculated in satisfaction of the obligation of a Working Interest Owner to make royalty payments on Unitized Substances under the Lease, agreement or other instrument covering such Tract; but a lessee under a Lease shall not be relieved from making payment of royalty to its lessor if payment is not made by the Working Interest Owner as aforesaid.

704. Taking Unitized Substances in Kind

The Unitized Substances allocated to a Tract shall be delivered in

UNIT AGREEMENT

WASKADA UNIT No. 1

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| ARTICLE VI | TRACT PARTICIPATION | 8 |
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DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

TO

FROM

TO

FROM

☐ For your approval or revision☐ Reply direct with copy to me☐ Please sign☒ For your information☐ Please supply data for my reply☐ Please return☐ Please take action☐ Return with comments and/or recommendations☐ Please see me☐ Extracts of minutes for your information and action☐ Investigate and report☐ Please phone☐ Please draft reply for signature of

Date

Subject

Message

MNR-A-94

Use reverse side if necessary



HYDROCARBONS Ltd.

TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

April 20, 1976

Department of Mines, Resources and
Environmental Management
Petroleum Inspection Section
Box 1359
Virden, Manitoba ROM 2C0

Attention: Mr. G. E. Johnson,
District Petroleum Engineer

Dear Sir:

Pursuant to your request for details of Waterflood start up we submit the following:

Start up date - April 2, 1976

First day injection rate - 480 bbls. in 24 hrs.

Flowing Pressure Omega Waskada WSW 11-29-1-25 was 10 psig at 480 bbls. per day.

Injection Pressure at Omega Waskada 6-30-1-25 was 0 psig (vacuum)

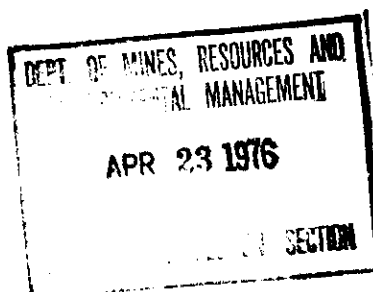
Injectivity at the sand face of 6-30

$$\frac{480 \text{ bbls/day}}{3010 \text{ ft} \times 0.4331} = 0.3680 \text{ bbls/day/psi (1st day)}$$

$$\frac{2850 \text{ bbls}}{3010 \times 0.4331 \times 7} = 0.3123 \text{ bbls/day/psi (7 day average)}$$

For your further information we are preparing to install a surface pumping unit to be connected to the water line at 11-30 battery site. The unit will be a National triplex J 30 powered with a Whittey B gas engine. This should increase the injection rate to approximately 700 bbls. per day. A second unit will be installed at the water source well as required. Our objective is 1000 - 1500 bbls. per day.

..... 2



- 2 -

We trust this will fulfill your present requirements. If you require any other information, please do not hesitate to keep us informed.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall,
President

TJH*vs

(Proposed Questions for Hearing)
Omega Hydrocarbons Ltd.
Waskada Field
Pilot Waterflood & Unitization Application

PILOT WATERFLOOD APPLICATION

"Exhibit No. 1 - Unit Proposal & Waterflood Plan"

JSR — 1. The five typographical errors in Exhibit No. 1 have been corrected in accordance with your letter dated February 17, 1976. They are:

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and add the word "water".
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Add the word "Initially" to the sentence so as to read
"Initially, the only change anticipated"

Are there any further corrections the Applicant wishes to make to this or the other exhibits at this time?

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*25%
Interest
in Copperhead
wells*

JSR — 3. On Page 2 (Exhibit No. 1) under Interim Period. Should the description of Interim Period in the last line also include the phrase "but no later than Sept. 1, 1977" as is stated in the proposed Unit Agreement (Exhibit No. 5, Section 601)

✓

JSR — 4. On Page 5 (Exhibit No. 1), line 4, the applicant has stated the "injection rates indicated that the well (6-30-1-25) would accept water in the range of 1,000 barrels per day with zero wellhead pressure." On what basis is this statement predicated? (our records for Oct./75 indicate the well took a feed rate of 1 bbl./min. (1,440 bbl./day) under 1000 psi. pressure and 1/4 bbl./min. (360 bbl./day) under 0 psi pressure).

500-1000 psi

JSR — 5. What are the initial and final expected wellhead injection pressures for 6-30 and the corresponding injection rates? *1000 BOPD*

JSR — 6. What steps are going to be taken to insure proper measurement of injected water (volumes and pressures)? *meter*

JSR — 7. What safety features will the injection system contain to prevent pollution (SW spills)?

JSR — 8. Has the applicant carried out, or have plans to carry out, compatibility tests between the source water (Blairmore Formation - Lower Cretaceous) and the produced water (Mission Canyon - Mississippian)?

JSR — 9. What is the expected "fill-up" time?

JSR — 10. At what injection rates? (Volumes and pressures)

JSR — 11. Explain measures to be used to prevent corrosion problems?

JSR — 12. Does the Applicant expect the production capacity of any of the wells to exceed the Field allowable (60 BOPD)?

*1500 oil
2000*

JSR — 13. What is the handling capacity of the proposed Unit battery facilities?

JSR — 14. What steps does the Applicant propose to take to monitor the response of the pilot waterflood with respect to:

- (1) injection profiles and waterflood fronts
- (2) reservoir pressures
- (3) water breakthrough ✓

*measure gas prod.
water*

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IH — 2. What was the initial pressure of the pool? (1358 psi.)

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WEST
- JSR — 10. Why was pressure maintenance not studied years ago?
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- JTC — 24. Does the Applicant have any knowledge of why the southern portion of the pool does not also require water flooding at this time?

12-19

S.W.D. ?

- 4 -

- JTC -- 25. Is the Applicant aware of Copperhead's reasons for not joining the scheme at this time? ✓
- JTC -- 26. What are the estimated remaining primary and ultimate recoverable reserves for the Omega portion of the pool with and without water-flooding? (167,480 bbl. and 803,600 bbl.) ✓
- JTC -- 27. Has the recent gas production measurements revealed anything new with regards to the reservoir? ✓

"Exhibit No. 5 - Unit Agreement - Waskada"

Amendments Required:

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- JSR -- 2. Should not the heading of 801 on Page 12 read "Use or Loss" instead of "Use of Loss". ✓
- JSR -- 3. The present mechanism for calculating Freehold mineral tax in Manitoba requires the actual production from, or allocated to, individual wells. For this reason it is required that an amended Exhibit "A" be filed that indicates tract participation factors for individual wells. (Such values can be easily calculated from the data on Table 1 and 2 of Exhibit No. 1). ✓
- JSR -- 4. Exhibit "C" requires identification as to the well it represents. (Omega Waskada 4-30-1-25 (WPM), KB = 1552.4'). ✓
- JSR -- 5. Request that an additional clause (1505) be added which would read as follows: ✓

"1505 All operations conducted under this agreement shall conform to all applicable statutes, regulations and other legislation in effect at that time."

(This will clarify the operator's powers under such sections as 401).

Questions:

- JSR -- 1. (a) Could the Applicant please explain or clarify the meaning or intent of Section 502(b) on Page 7? (who has final decision?, the Board under Section 1312?)
- (b) Similar for Section 901?

- JSR — 2. Under 601(a) on Page 9 it states that in the determination of the Interim Tract Participation for a tract an adjustment for "down time" was made.
- (a) What is meant by, or the definition of, "down time"?
 - (b) Does "mechanical down time" include circumstances of nature such as spring flooding?
 - (c) Do operations such down due to government road ban restrictions fall under "down time"?
 - (d) What all are included under "mechanical down time"?
- JSR — 3. Would the Applicant please explain how and why the "Correction for down time" values indicated on Table to Exhibit No. 1 were determined? (what caused down time?, how correction derived?, validity?) (see attached Table A and xeroxed production cards)
- JSR — 4. Why was no "down time" correction made for:
- (a) 6-30-1-25, 6 month period (March - August 1975)?
 - (b) 11-30-1-25, 6 month period (March - August, 1975)?
- JSR — 5. For the well 12-30-1-25 would not a correction of "400 barrels" (May, June 2/3 July 1975) been more appropriate than the "250 barrels" given?
- IH — 6. In determining the Final Tract Participations for tracts it appears that a constant 50% ultimate recovery factor was used. Is this correct?
- IH — 7. If so does the Applicant believe that using such a constant recovery factor for all tracts, irregardless of individual tract reservoir parameters (pay thicknesses, porosities, permeabilities, etc.) is appropriate?
- JTC — 8. In Exhibit No. 4 to your application you have stated that you "have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood".
- (a) What steps did Omega take to "persuade" Copperhead?
 - (b) What was Copperhead's reaction?
 - (c) Do Copperhead own 3 wells, or 4 wells in the south end of the pool? (4 according to Branch)
- JTC — 9. What would be Omega's opinion of the Board requesting Copperhead to join the proposed unit at this time opposed to some future date? (appears Board could not order Copperhead to join now due to Section 77(a) of The Mines Act, but could do so at future date under Section 79(3) of The Mines Act)

TABLE "A"

INTERIM TRACT PARTICIPATION CALCULATIONS
(using "down time" corrections)

| Well | Omega (Applicant) | | | Petroleum Branch Staff | | |
|-------|--------------------------------------|--------------------|----------------------------|--------------------------------------|----------------------------|--|
| | Down Time Correction (barrels) | Period | Reason | Down Time Correction (barrels) | Period | Reason |
| 3-30 | 650 | May and June/75 | Spring flooding | 650 | (same) | Is "spring flooding" mechanical? |
| 4-30 | (No correction) | | | (agreed) | | |
| 5-30 | (No correction) | | | (agreed) | | |
| 6-30 | 150 | Jan./75 | Gas locking | 150 | Jan./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 11-30 | 75 | Sept./74 | Down hole pump problems | 75 | Sept./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 12-30 | 250 | May and June/75 | Spring flooding | 400 | May, June, 2/3 July/75 | "Spring Flooding"? |

1975

PRODUCTION RECORD

1976

WELL LICENSE NO. 2267

OPERATOR

Omega Waskada

WELL NAME

LOCATION

12-30-1-25

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD- UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE BBLs. | MONTH | DAYS PROD- UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|--------------------|--------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|
| CARR'D FWD. | | | | 44,608 | | 1 - | 8.10 | CARR'D FWD. | | | | 46,198 | | - |
| Jan | 8 | 216 | | | - | | 6.96 | Jan | 28 | 74 | | | - | |
| Feb | 23 | 185 | 401 | | | | 8.0 | | | | | | | |
| Mar | 29 | 160 | 561 | | - | | 5.5 | | | | | | | |
| Apr | 29 | 187 | 748 | | | | 6.4 | | | | | | | |
| May | | - | 748 | | | | | | | | | | | |
| Jun | | - | 748 | | | | | | | | | | | |
| Jul | 11 | 66 | 814 | | | | 6.0 | | | | | | | |
| Aug | 21 | 145 | 959 | | | | 4.7 | | | | | | | |
| Sep | 27 | 188 | 1147 | | | | 7.0 | | | | | | | |
| Oct | 30 | 122 | 1269 | | | | 4.1 | | | | | | | |
| Nov | 27 | 155 | 1424 | | | | 5.7 | | | | | | | |
| Dec | 31 | 166 | 1590 | | | | | | | | | | | |
| CUM. TO DATE | | | | | | | | CUM. TO DATE | | | | | | |

1973

PRODUCTION RECORD

1974

OPERATOR

Omega Alaskada

WELL NAME

WELL LICENSE NO. 2267

LOCATION

12-80-1-25

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD- UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | * TOTAL WATER PROD. | CUM. WATER PRODUCED | TOTAL CUM. OIL PROD. BBLs. | DAYS PROD- UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|-------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|------------------------|------------------------|----------------------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|
| CARR'D FWD. | | | | 36,333 | | | | | 41,432 | | | | | | |
| Jan 30 | 12.1 | 387 | | | | | | | | 13.9 | 433 | | | | |
| Feb 28 | 11.0 | 309 | 696 | | | | | | | 12.1 | 364 | 797 | | | |
| Mar 27 | 11.7 | 389 | 1085 | | | | | | | 12.3 | 369 | 1166 | | | |
| Apr 30 | 14.2 | 486 | 1571 | | | | | | | 12.4 | 199 | 1365 | | | |
| May 25 | 13.5 | 495 | 2066 | | | | | | | | | 1365 | | | |
| Jun 23 | 15.8 | 414 | 2480 | | | | | | | | 235 | 1600 | | | |
| Jul 28 | 15.0 | 421 | 2901 | | | | | | | 12 | 319 | 1919 | | | |
| Aug 31 | 15.2 | 472 | 3373 | | | | | | | 30 | 310 | 2229 | | | |
| Sep 30 | 15.5 | 465 | 3838 | | | | | | | 30 | 323 | 2552 | | | |
| Oct 25 | 15.7 | 394 | 4232 | | | | | | | 30 | 260 | 2489 | | | |
| Nov 27 | 17.0 | 461 | 4693 | | | | | | | 27 | 215 | 2767 | | | |
| Dec 26 | 15.6 | 406 | 5099 | | | | | | | 29 | 234 | 3001 | | | |
| CUM TO DATE | | | 41,432 | | | | | | | 25 | 175 | 3176 | | | |
| | | | 44,462 | | | | | | | | | 44,608 | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

OPERATOR

WELL NAME Omegal Washburn

BATTERY NO. _____

WELL NAME

FIRST PRODUCTION

LOCATION

11-30-1-25

TEST PRODUCTION

FIELD

ALLOWABLE _____ BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 32,395 | | | CARR'D FWD. | | | | 32,855 | | |
| Jan. 30 | 86 | | | | - | | Jan. 30 | | | | | - | |
| Feb. 6 | 74 | 160 | | | - | | Feb. 6 | | | | | | |
| Mar. 1 | - | 160 | | | - | | Mar. 1 | | | | | | |
| Apr. 1 | - | 160 | | | - | | Apr. 1 | | | | | | |
| May 1 | - | 160 | | | - | | May 1 | | | | | | |
| Jun. 1 | - | 160 | | | - | | Jun. 1 | | | | | | |
| Jul. 1 | - | 160 | | | - | | Jul. 1 | | | | | | |
| Aug. 1 | - | 160 | | | - | | Aug. 1 | | | | | | |
| Sep. 1 | - | 160 | | | - | | Sep. 1 | | | | | | |
| Oct. 1 | - | 160 | | | - | | Oct. 1 | | | | | | |
| Nov. 1 | - | 160 | | | - | | Nov. 1 | | | | | | |
| Dec. 1 | - | 160 | | | - | | Dec. 1 | | | | | | |
| CUM. TO DATE | | | | | | | CUM. TO DATE | | | | | | |

197 3

PRODUCTION RECORD
WELL LICENSE NO. 2194

1974

OPERATOR Omega Washburn
WELL NAME 11-30-1-25-
LOCATION

BATTERY NO _____
FIRST PRODUCTION _____
TEST PRODUCTION _____

| ALLOWABLE | | | | | | | | | | NORMAL PRODUCTION | | | | |
|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|------|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PRODUCED | | MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PRODUCED |
| CARR'D FWD | | | | 30855 | | | 8/10 | CARR'D FWD | | | | 32,161 | | 8/10 |
| Jan 8 | 8.2 | 66 | | | | | 8.3 | Jan | | - | | | - | |
| Feb 11 | 6.7 | 74 | 140 | | | | 6.7 | Feb | | - | | | | |
| Mar | - | - | 140 | | | | | Mar | | - | | | | |
| Apr | - | - | 140 | | | | | Apr | | - | | | | |
| May | - | - | 140 | | | | | May | | - | | | | |
| Jun 16 | 2.0 | 140 | 280 | | | | 8.8 | | | - | | | | |
| Jul 29 | 10.7 | 107 | 387 | | | | 3.7 | | | - | | | | |
| Aug 29 | 36.8 | 368 | 755 | | | | 13.2 | | | - | | | | |
| Sep 30 | 384 | 384 | 1139 | | | | 12.8 | | | - | | | | |
| Oct 14 | 167 | 167 | 1306 | | | | 11.9 | Oct 9 | 9 | 82 | 82 | | | 9.1 |
| Nov 2 | - | - | 1306 | | | | | Nov 29 | 29 | 66 | 148 | | | 2.3 |
| Dec | - | - | 1306 | | | | | Dec 25 | 25 | 86 | 467 | | | 3.4 |
| CUM. TO DATE | | | 32,161 | | | | | CUM. TO DATE | | | 32,395 | | | |

1975

PRODUCTION RECORD

1976

OPERATOR

WELL NAME Omega Washburn

LOCATION

6-30-1-25

WELL LICENSE NO. 2266

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | | MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | |
|--------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|-----|--------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|--|
| CARR'D FWD. | | | | 64,577 | | | 8/D | CARR'D FWD. | | | | 64,731 | | | |
| Jan | | - | | | - | | | Jan | | - | | | - | | |
| Feb 19 | | 154 | 154 | | - | | 8.1 | | | | | | | | |
| Mar | - | - | 154 | | - | | | | | | | | | | |
| Apr | - | - | 154 | | - | | | | | | | | | | |
| May | - | - | 154 | | - | | | | | | | | | | |
| Jun | - | - | 154 | | - | | | | | | | | | | |
| Jul | - | - | 154 | | - | | | | | | | | | | |
| Aug | - | - | 154 | | - | | | | | | | | | | |
| Sep | - | - | 154 | | - | | | | | | | | | | |
| Oct | - | - | 154 | | - | | | | | | | | | | |
| Nov | - | - | 154 | | - | | | | | | | | | | |
| Dec | - | - | 154 | | - | | | | | | | | | | |
| CUM. TO DATE | | | | | | | | CUM. TO DATE | | | | | | | |

1973

PRODUCTION RECORD

WELL LICENSE NO. 2266

1974

OPERATOR

Well Name Omega Washada

LOCATION

630-1-25

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | * TOTAL WATER PROD. | CUM. WATER PRODUCED | |
|--------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|------------------------|------------------------|-------|
| CARR'D FWD. | | | | 57,238 | | — | 8 1/2 | 61,812 | 8 1/2 |
| Jan 29 | | 647 | | | | | 32.3 | | 11.7 |
| Feb 28 | | 478 | 1125 | | | | 17.1 | | 11.5 |
| Mar 29 | | 484 | 1609 | | | | 16.7 | | 9.6 |
| Apr 28 | | 477 | 2086 | | | | 17.0 | | 15.6 |
| May 30 | | 450 | 2536 | | | | 15.0 | | 20.0 |
| Jun 24 | | 365 | 2901 | | | | 15.2 | | 11.8 |
| Jul 23 | | 416 | 3317 | | | | 18.1 | | 16.2 |
| Aug 30 | | 150 | 3467 | | | | 5.0 | | 14.1 |
| Sep 22 | | 155 | 3622 | | | | 7.0 | | 10.8 |
| Oct 27 | | 314 | 3936 | | | | 11.6 | | 2.1 |
| Nov 30 | | 287 | 4223 | | | | 9.6 | | 3.7 |
| Dec 31 | | 351 | 4574 | | | | 11.3 | | 5.8 |
| CUM. TO DATE | | | 61,812 | | | | | | |
| | | | 61,812 | | | | | 64,577 | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

WELL LICENSE NO. 2207

OPERATOR

WELL NAME *Omega Washburn*

LOCATION

5-30-1-25

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

NORMAL PRODUCTION

ALLOWABLE BBLs.

FIELD

| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 86,609 | | - | | 610 | | 91,652 | | - |
| Jan | 21 | 359 | | | - | | 30 | 510 | | | - | |
| Feb | 28 | 307 | 666 | | | | | | | | | |
| | | 377 | 1043 | | | | | | | | | |
| Mar | 28 | 383 | 1049 | | - | | | | | | | |
| Apr | 29 | 378 | 1421 | | - | | | | | | | |
| May | 26 | 444 | 1865 | | - | | | | | | | |
| Jun | 19 | 459 | 2324 | | - | | | | | | | |
| Jul | 27 | 548 | 2872 | | - | | | | | | | |
| Aug | 28 | 465 | 3337 | | - | | | | | | | |
| Sep | 25 | 400 | 3737 | | - | | | | | | | |
| Oct | 31 | 465 | 4202 | | - | | | | | | | |
| Nov | 28 | 405 | 4607 | | - | | | | | | | |
| Dec | 30 | 436 | 5043 | | - | | | | | | | |
| CUM. TO DATE | | | | | | | CUM. TO DATE | | | | | |

1973

PRODUCTION RECORD

1974

OPERATOR

WELL NAME Omega Washada

BATTERY NO

LOCATION 5-30-1-25

FIRST PRODUCTION

FIELD

TEST PRODUCTION

ALLOWABLE

BBL'S

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBL'S. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBL'S. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|-----------------|---------------------------|-------------------------|-----------------------------|---------------------|---------------------|--------------|-----------------|---------------------------|-------------------------|-----------------------------|---------------------|---------------------|
| CARR'D FWD | | | | 77928 | | — | CARR'D FWD | | | | 83,593 | | 810 |
| Jan 29 | 29 | 869 | | | — | | Jan 31 | 31 | 239 | | | | 7.7 |
| Feb 27 | 27 | 661 | 1530 | | | | Feb 27 | 27 | 193 | 432 | | | 7.7 |
| Mar 29 | 29 | 659 | 2189 | | | | Mar 27 | 27 | 240 | 672 | | | 8.9 |
| Apr 28 | 28 | 606 | 2795 | | | | Apr 25 | 25 | 228 | 900 | | | 9.1 |
| May 31 | 31 | 617 | 3412 | | | | May 4 | 4 | 61 | 961 | | | 15.3 |
| Jun 25 | 25 | 497 | 3909 | | | | Jun 21 | 21 | 242 | 1203 | | | 11.5 |
| Jul 31 | 31 | 524 | 4433 | | | | Jul 28 | 28 | 297 | 1500 | | | 10.6 |
| Aug 28 | 28 | 184 | 4617 | | | | Aug 29 | 29 | 365 | 1865 | | | 12.6 |
| Sep 27 | 27 | 178 | 4795 | | | | Sep 30 | 30 | 310 | 2175 | | | 10.3 |
| Oct 31 | 31 | 375 | 5170 | | | | Oct 27 | 27 | 219 | 2394 | | | 8.1 |
| Nov 30 | 30 | 221 | 5391 | | | | Nov 29 | 29 | 234 | 2628 | | | 8.1 |
| Dec 31 | 31 | 274 | 5665 | | | | Dec 28 | 28 | 388 | 3016 | | | 13.9 |
| CUM. TO DATE | | | 83,593 | | | | CUM. TO DATE | | | 86,609 | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

WELL LICENSE NO. 2274

OPERATOR

WELL NAME Omega Westwood

LOCATION H-30-1-25

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE BBLs. | MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|-----------------|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 41,090 | | - | 610 | CARR'D FWD. | | | | 45,867 | | - |
| Jan 30 | | 388 | | | - | | 129 | Jan 23 | | 675 | | | - | |
| Feb 27 | | 254 | 642 | | - | | 94 | | | | | | | |
| Mar 31 | | 481 | 1123 | | - | | 155 | | | | | | | |
| | | 446 | 1058 | | | | | | | | | | | |
| Apr 30 | | 378 | 1501 | | - | | 126 | | | | | | | |
| May 27 | | 461 | 1962 | | - | | 171 | | | | | | | |
| Jun 20 | | 483 | 2445 | | - | | 242 | | | | | | | |
| Jul 24 | | 413 | 2858 | | - | | 172 | | | | | | | |
| Aug 30 | | 420 | 3278 | | - | | 140 | | | | | | | |
| Sep 27 | | 378 | 3656 | | - | | 140 | | | | | | | |
| Oct 31 | | 403 | 4059 | | - | | 130 | | | | | | | |
| Nov 27 | | 346 | 4405 | | - | | 128 | | | | | | | |
| Dec 24 | | 372 | 4777 | | - | | | | | | | | | |
| CUM. TO DATE | | | | | | | | CUM. TO DATE | | | | | | |

1973

PRODUCTION RECORD

1974

WELL LICENSE NO. 2274

OPERATOR

WELL NAME Omega Washala

BATTERY NO

LOCATION

4-60-1-25

FIRST PRODUCTION

TEST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLS.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. | MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. |
|--------------|-----------------|----------------------|----------------------|---------------------------|---------------------|------------------|--------------|-----------------|----------------------|----------------------|---------------------------|---------------------|------------------|
| CARR'D FWD | | | | 35,394 | | — | CARR'D FWD | | | | 38,332 | | 810 |
| Jan 29 | 29 | 382 | | | — | | Jan 29 | 29 | 216 | | | | 74 |
| Feb 27 | 27 | 233 | 615 | | | | Feb 27 | 27 | 148 | 364 | | | 88 |
| Mar 31 | 31 | 313 | 928 | | | | Mar 29 | 29 | 255 | 619 | | | 88 |
| Apr 29 | 29 | 240 | 1168 | | | | Apr 26 | 26 | 220 | 839 | | | 85 |
| May 31 | 31 | 235 | 1403 | | — | | May 4 | 4 | 59 | 898 | | | 148 |
| Jun 28 | 28 | 172 | 1575 | | | | Jun 27 | 27 | 200 | 1098 | | | 74 |
| Jul 31 | 31 | 289 | 1864 | | | | Jul 31 | 31 | 299 | 1397 | | | 96 |
| Aug 30 | 30 | 133 | 1997 | | | | Aug 18 | 18 | 357 | 1754 | | | 198 |
| Sep 22 | 22 | 157 | 2154 | | | | Sep 16 | 16 | 180 | 1934 | | | 113 |
| Oct 30 | 30 | 332 | 2486 | | | | Oct 29 | 29 | 255 | 2189 | | | 88 |
| Nov 30 | 30 | 205 | 2691 | | | | Nov 26 | 26 | 258 | 2447 | | | 99 |
| Dec 29 | 29 | 247 | 2938 | | | | Dec 29 | 29 | 311 | 2758 | | | 107 |
| CUM. TO DATE | | | 38,332 | | | | CUM. TO DATE | | | 41,090 | | | |

1975

PRODUCTION RECORD

1976

OPERATOR Omega Washburn
WELL NAME 3-130-1-25
LOCATION 3-130-1-25

BATTERY NO. _____
FIRST PRODUCTION _____
TEST PRODUCTION _____

| FIELD | | ALLOWABLE | | BBLs. | | NORMAL PRODUCTION | |
|--------------|-----------------|-----------------------|----------------------------|----------------------------|---------------------|-------------------|---------------------|
| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBLs. | CUMULATIVE OIL PROD. BBLs. | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PROD. | * TOTAL WATER PROD. |
| CARR'D FWD. | | | | | | | |
| Jan 25 | 388 | | | 42,283 | | | |
| Feb 27 | 254 | 642 | | 15.5 | | | |
| Mar 29 | 372 | 1014 | | 9.4 | | | |
| Apr 29 | 400 | 1014 | | 12.8 | | | |
| May 29 | 314 | 1328 | | 10.8 | | | |
| Jun 29 | - | 1328 | | | | | |
| Jul 29 | - | 1328 | | | | | |
| Aug 29 | 393 | 1721 | | 19.7 | | | |
| Sep 29 | 349 | 2070 | | 12.0 | | | |
| Oct 29 | 324 | 2394 | | 12.0 | | | |
| Nov 29 | 319 | 2713 | | 11.0 | | | |
| Dec 28 | 286 | 2999 | | 10.2 | | | |
| Dec 30 | 308 | 3307 | | | | | |
| CUM. TO DATE | | | | | | | |

1973

PRODUCTION RECORD

1974

OPERATOR

Omega Washada

WELL NAME

LOCATION

3-3061-25

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

WELL LICENSE NO. 2273

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBLs. | CUMULATIVE OIL PROD. BBLs. | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PROD. | ALLOWABLE | MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBLs. | CUMULATIVE OIL PROD. BBLs. | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PROD. | ALLOWABLE |
|--------------|-----------------|-----------------------|----------------------------|----------------------------|---------------------|------------------|-----------|--------------|-----------------|-----------------------|----------------------------|----------------------------|---------------------|------------------|-----------|
| CARR'D FWD. | | | | 35,947 | | — | 6 1/2 | CARR'D FWD. | | | | 39,045 | | | 6 1/2 |
| Jan 26 | 26 | 264 | | | — | | 10.2 | Jan 30 | 30 | 313 | | | | | 10.4 |
| Feb 26 | 26 | 202 | 466 | | | | 7.8 | Feb 27 | 27 | 354 | 667 | | | | 13.1 |
| Mar 31 | 293 | 759 | | | | | 9.5 | Mar 31 | 31 | 278 | 945 | | | | 9.0 |
| Apr 28 | 247 | 1006 | | | | | 8.8 | Apr 26 | 26 | 232 | 1177 | | | | 8.9 |
| May 31 | 252 | 1258 | | | — | | 8.1 | May 4 | 4 | 54 | 1231 | | | | 13.5 |
| Jun 28 | 208 | 1466 | | | | | 7.4 | Jun 20 | 20 | 235 | 1466 | | | | 11.8 |
| Jul 29 | 366 | 1832 | | | — | | 12.6 | Jul 30 | 30 | 317 | 1783 | | | | 10.6 |
| Aug 27 | 169 | 2001 | | | — | | 6.3 | Aug 30 | 30 | 370 | 2153 | | | | 12.3 |
| Sep 30 | 214 | 2215 | | | — | | 7.1 | Sep 30 | 30 | 266 | 2419 | | | | 8.9 |
| Oct 29 | 308 | 2523 | | | — | | 10.6 | Oct 29 | 29 | 250 | 2669 | | | | 8.6 |
| Nov 30 | 256 | 2779 | | | — | | 8.5 | Nov 26 | 26 | 258 | 2927 | | | | 9.9 |
| Dec 25 | 319 | 3098 | | | — | | 12.8 | Dec 30 | 30 | 311 | 3238 | | | | 10.4 |
| CUM. TO DATE | | | 39,045 | | — | | | CUM. TO DATE | | | 42,283 | | | | |



HYDROCARBONS *ltd.*

TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

March 10, 1976

Petroleum Branch,
Department of Mines, Resources &
Environmental Management,
993 - Century Street,
Winnipeg, Manitoba R3H 0W4

ATTENTION: Mr. H. C. Moster

Dear Sir:

Pursuant to our program of conducting gas tests at Waskada, we find that the gas production varies considerably from one day to the next. Our latest reading taken on the group test is that the GOR varies from approximately 400 to 600. The higher reading seems to take place when one pump unit stops because of mechanical problems, resulting in about the same gas reading but having less oil production.

Our best estimate at full production at this time is 400 cubic feet per barrel from the four producing wells.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. JACK HALL
President

TJH/eh



HYDROCARBONS *Ltd.*

TELEPHONES

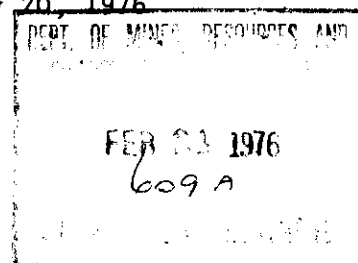
ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

February 20, 1976

Petroleum Branch,
Department of Mines Resources & Energy,
Government of Manitoba,
Winnipeg, Manitoba.

ATTENTION: Mr. Moster



Re: Waskada Production Tests,
December 1, 1975 to February 15, 1976

Further to discussion concerning gas production and gas-oil ratio measurements, we are now able to provide you with such data. These measurements, as indicated below, have been taken over the recent period as shown above. Additional data should be available by the hearing date of March 12, 1976 in which case we will make it available to you prior to the proceedings.

✕ Incidentally, if you have anything in the way of procedures for a hearing where one individual is present on behalf of the applicant, I would appreciate having a copy of a precedent case.

| <u>TIME ON TEST</u> <u>DAYS</u> | <u>WELL</u> <u>NO:</u> | <u>GAS</u> <u>MCF</u> | <u>OIL</u> <u>BBLs</u> | <u>GOR</u> <u>CU FT/BBL</u> |
|------------------------------------|---------------------------|--------------------------|---------------------------|--------------------------------|
| 7 | 3-30 | 54.6 | 49 | 1114 |
| 5 | 4-30 | 21.5 | 75 | 286 |
| 4 | 5-30 | 38.0 | 108 | 350 |
| 7 | 12-30 | 823 | 12 | 823 |
| 2 | (group 4 wells) | 32.1 | 82 | 391 |

Yours very truly,

OMEGA HYDROCARBONS LTD.,

T. Jack Hall
President

TJH/eh



HYDROCARBONS *Ltd.*

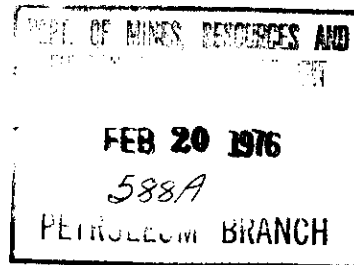
TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

February 17, 1976

Department of Mines, Resources and
Environmental Management
Petroleum Branch
Mineral Resources Division
993 Century Street
Winnipeg, Manitoba R3H 0W4



Attention: Mr. H. C. Moster

Dear Sir:

Re: Application - Unitization and
Waterflood, Waskada Field


Please be advised that we have discovered a number of typographical errors in Exhibit 1 of our application. They are as follows:

1. Table of Contents
Delete the word "Discussion" and add the word "Introduction". ✓
2. Page 4, line 2 - Water Injection Facilities
Delete the Words "Figure No. 5" and add "Figure No. 3" ✓
3. Page 4 the third last line after the word production ✓
Add "(438 barrels)" including brackets.
4. Page 5 - Second last line of the second paragraph ✓
After the words - A typical - delete the word "well" and
add the word "water".
5. Page 6 - line number 7 ✓
Add the word "Initially" to the sentence so as to read ✓
"Initially, the only change anticipated"

We trust that you will make these corrections in the copies which were forwarded with the application.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. Jack Hall,
President

TJH*vs

The Oil and Natural Gas
Conservation Board:
Jas. T. Gaeley, P. Eng., Chairman
J. S. Roper, Deputy Chairman
I. Haugh, Member

76 01 29

H. C. Moster
Director
Petroleum Branch

XXXXX

Subjects:

Unitization and Pilot Waterflood Application
Omega Hydrocarbons Ltd.
Waskada Field

Background:

The Waskada Field is located approximately 55 - 60 miles south of Virden and 4 miles north of the Canada - U.S. border. It was discovered in 1967 and to date contains 10 oil wells (Presently 7 producing and 3 suspended wells). The field produces light gravity crude (37 API) from the Mississippian Mission Canyon (MC-3b) formation. No water has been produced from the 6 Northern wells, whereas small amounts of water have been produced from the 4 southern wells. Attachment 1 shows the layout of the wells, their ownership, the portion of the field proposed for unitization and the initial proposed injection well for the pilot waterflood.

The initial pressure of the pool was 1,358 psi (original pressure on the discovery well 11-30-1-25). The present pressure within the pool, or atleast in the northern portion, is very low (approximately 50 psi). The estimated bubble point pressure is 1,535 psig indicating that since discovery, the pool has always been saturated and possibly has a small gas cap. The following are reserve estimates:

| | <u>Total Area</u> | | <u>Proposed Unitized Area</u> | |
|---|------------------------|---------------|-------------------------------|---------------|
| | <u>D & S Study</u> | <u>Branch</u> | <u>Omega</u> | <u>Branch</u> |
| Original Oil-in-Place (bbl.) | 2,876,000 | 2,786,000 | 1,597,000 | 1,974,000 |
| Cum. Prod. (Dec. 1/75) (bbl.) | 502,422 | 502,422 | 325,311 | 325,311 |
| Recovery to Dec. 1/75 (%) | 17.5 | 18.0 | 20.4 | 16.5 |
| Primary Recoverable (bbl.) | 719,000 | 985,500 | 399,250 | 664,500 |
| Primary Recovery Factor (%) | 25 | 35 | 25 | 33.7 |
| Total Recoverable (Prim. & Waterflood) (bbl.) | 1,438,000 | 1,504,000 | 798,500 | 1,085,000 |
| Total Recovery Factor (%) | 50 | 54 | 50 | 55 |

Discussion:

A. Factors pertaining to the unitization application:

1. Omega in a letter dated October 6, 1975 submitted a draft of a proposed Unitization Agreement for comments as to its acceptability. Because Omega is the only working interest owner in the proposed unitization area, it presented an agreement which did not provide for the normal operating provisions of the plans presently in effect in Manitoba (i.e. excluding organization of the operating committee, powers and duties of unit operator, individual rights and privileges of working interest owners). The Agreement was modelled after the standard model agreement presently used in Alberta. The proposed Agreement was reviewed and suggestions (approved by J. S. Roper) were made to Omega with respect to changes which would provide similar Board controls on operations under this Agreement as are presently contained in existing unitization agreements in Manitoba.

Omega amended the proposed Agreement as suggested by the Branch and submitted the amended agreement entitled "Unit Agreement - Waskada Unit No. 1 Manitoba, Canada" as an application on December 11, 1975. A review of this final draft Agreement has indicated the following changes are required:

(a) The title under Article VIII on Page 12 should read "USE, LOSS AND REINJECTION OF UNITIZED SUBSTANCES".

(b) The heading for 801. on Pg. 12 should read "Use or Loss".

(c) In Exhibit "A" of the Agreement the applicant has divided the proposed unit area into 2 multiwell tracts with a tract participation factor for each tract (not each well). The basis for this is the common royalty ownership in each tract. Because of the method of calculating provincial "Mineral Tax" (on production from or allocated to individual wells), it is required that the tract participation factors for the two (2) wells on freehold minerals be shown individually (namely 11-30 and 12-30). To allow for future similar problems on other wells in or to be included in the Unit, it is suggested that this requirement be placed on all wells (i.e. - single well tracts only).

(d) Exhibit "C" should also indicate the following "Omega Waskada 4-30-1-25 (WPM) - K. B. 1552.4".

2. The method of calculating Interim tract participation factors has required clarification and is presently being checked by the Branch.

3. The Mines Act [Section 74(2)] allows for voluntary unitization without a Board hearing or unitization order (unitization agreement requires Board approval). This alternative is not recommended as it provides little Board control once initiated.

4. This unitization application is for only a portion of the Waskada Field. We believe the D & S Study conducted in 1974 covering the whole pool was jointly financed by both Omega and Copperhead. The overall recommendation of the study was "that the pool should be waterflooded as soon as possible". The application states that Omega "have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood". A major factor therefore in this application is to whether the Board should attempt to exercise its power under Section 76 and 77 of The Mines Act with respect to holding a hearing upon its own motion to consider the advisability or necessity for the operation of a part of a pool or field as a unit (namely the southern 4 wells). Section 77 requires the Board to have consent from 75% of both the working interest owners and the royalty owners before a unitization order may be made. As the present application only covers 6 of 10 wells or 60%, the above requirement would not be met. As the flood is only a pilot at this time, the Board if desirable could act under Section 79(3) at some future date to force enlargement of the new unit.

Copperhead's reasons for not wishing to be part of the unitization and waterflood at this time are not presently known. However, a letter has been sent to Copperhead, dated January 23, 1976, requesting them to state the reasons behind their decision not to participate in this project. It is believed that Copperhead's refusal is mainly due to economic reasons (Attached hereto is a copy of a letter dated January 21, 1976 from Copperhead with respect to other concerns the Branch has with the company). At present there is no royalty or mineral tax reduction on additional production due to secondary recovery. This may be the point on which Copperhead would attempt to justify its not entering the project at this time. Omega has stated verbally that it has considered, and may make, a request for such treatment, but is proceeding with its application, mainly due to the fact that 4 of its 6 wells are situated on Federal minerals and therefore only subject to a straight 12¹/₂% royalty. These 4 wells therefore are not affected by neither the provincial Crown incremental royalty nor the freehold mineral tax. The difference between Federal royalty rates and total freehold royalty and mineral tax rates in Manitoba can amount to as much as an additional 31.65% (off the top) at production rates over 25 BOPD. The maximum provincial crown royalty is 44.2%. Production from freehold minerals is subject to a similar maximum reduction at production rates over 25 BOPD.

The proposed Unitization Agreement provides for enlargement at a future date.

A list of questions regarding the unitization application shall be prepared prior to the hearing.

B. Factors pertaining to the pilot waterflood application:

The immediate need for commencement of a waterflood scheme in this pool is supported by the extremely low apparent pressure in the reservoir. The reservoir should respond favourably under waterflood with the major potential problem being the free gas saturation expected in the reservoir due to the major pressure drop below the saturation point.

No reasons are evident at this time as to why a pilot waterflood should not be approved.

The D & S Study did not indicate that there was no need for a flood in the southern portion of the pool. An enlargement of the waterflood project to cover the entire pool will be dependent on the results of the proposed pilot. The power given to the Board under Section 62(9)(d) of The Mines Act could be exercised, if required at some future date, once the initial pilot's results are known. The pressure maintenance order covering the pilot could contain a condition requiring a pool wide waterflood scheme be implemented at a future date if in the Board's opinion it was warranted.

The proposed pilot injector is one of the wells proposed by the D & S Study as an injector under a 5 spot pattern. This location appears suitable with respect to this application (an Omega pilot waterflood) and should not create any lease line migration out of the proposed unitized area.

The Branch is continuing to receive and process additional data from the Applicant on the technical items relevant to the application.

A comprehensive list of questions regarding the pilot waterflood shall be compiled for the hearing.

Recommendation:

It is recommended that this dual application be heard at a public hearing.

Original Signed by H. C. Moster

H. C. Moster

HCM/et
Attach.

Copperhead Oil Company Limited

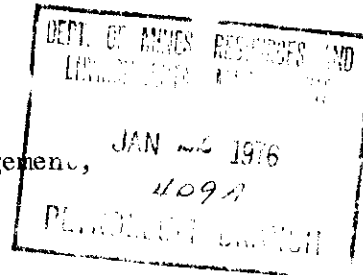
P. O. BOX 1027
415 SEVENTH AVENUE SOUTH
VIRIDEN, MANITOBA
R0M 2C0

TEL: 204 - 748-2624

OFFICE OF
THE PRESIDENT

January 21st, 1976

Petroleum Branch,
Dept. of Mines, Resources and Environmental Management,
993 Century Street,
Winnipeg, Manitoba



Attention: H. C. Moster, P.Eng.

Dear Sir:

RE: Suspended Well Operations

We enclose herewith applications to suspend production as per your letter of December 18, 1975 with respect to the following:

| | |
|-------------------------|---------------|
| Copperhead - Tilston | #9-31-5-29 ✓ |
| " " | #10-31-5-29 ✓ |
| " " | #11-31-5-29 ✓ |
| " " | #15-31-5-29 |
| Copperhead-South-Regent | #6-7-4-21 |
| Copperhead-Waskada | #12-19-1-25 ✓ |

The Tilston wells have not been producing for some time and for reasons given. It is hoped that, as our Company's economic position improves, these wells will again be placed on production by methods and with equipment that will be less costly than the methods used to date, and it is for this reason that we do not wish to permanently abandon the wells. Also, with the high cost of abandonment, at least \$3000.00 for each well, our company cannot afford to abandon the wells at this time.

The South-Regent well can only be produced during the summer months, due to the lack of natural gas required for treating purposes, and to overcome severe freezing conditions.

The Waskada well, although it cannot produce on a commercial basis, due to the problem and cost of disposing of the salt water, might be able to produce when a disposal facility becomes available in the immediate area. Another possibility would be to convert this #12-19-1-25 well in to a disposal well to accommodate our own water production if this situation should arise as time goes on.

continued..

Copperhead Oil Company Limited

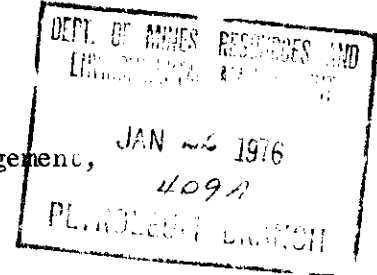
P. O. BOX 1027
415 SEVENTH AVENUE SOUTH
VIRIDEN, MANITOBA
R0M 2C0

OFFICE OF
THE PRESIDENT

TEL: 204 - 748-2624

January 21st, 1976

Petroleum Branch,
Dept. of Mines, Resources and Environmental Management,
993 Century Street,
Winnipeg, Manitoba



Attention: H. C. Moster, P.Eng.

Dear Sir:

RE: Suspended Well Operations

We enclose herewith applications to suspend production as per your letter of December 18, 1975 with respect to the following:

| | | |
|-----------------------|-------------|---------------|
| Copperhead - Tilston | #9-31-5-29 | ✓ |
| " | " | #10-31-5-29 ✓ |
| " | " | #11-31-5-29 ✓ |
| " | " | #15-31-5-29 |
| Copperhead-So. Regent | #6-7-4-21 | |
| Copperhead-Waskada | #12-19-1-25 | ✓ |

The Tilston wells have not been producing for some time and for reasons given. It is hoped that, as our Company's economic position improves, these wells will again be placed on production by methods and with equipment that will be less costly than the methods used to date, and it is for this reason that we do not wish to permanently abandon the wells. Also, with the high cost of abandonment, at least \$3000.00 for each well, our company cannot afford to abandon the wells at this time.

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The Waskada well, although it cannot produce on a commercial basis, due to the problem and cost of disposing of the salt water, might be able to produce when a disposal facility becomes available in the immediate area. Another possibility would be to convert this #12-19-1-25 well into a disposal well to accommodate our own water production if this situation should arise as time goes on.

continued..

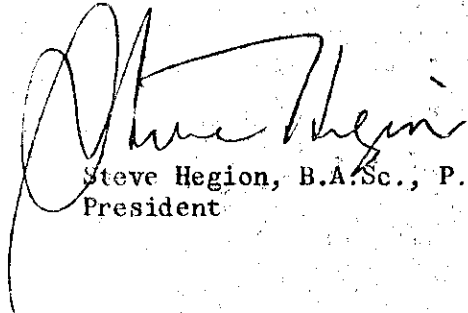
- 2 -

With regard to the South-Regent #7-7-4-21 well, we propose to abandon this well as soon as our economic position permits, and an application to abandon will be submitted hopefully, before October 1, 1976.

We trust the foregoing will meet your requirements.

Very truly yours,

COPPERHEAD OIL COMPANY LIMITED

A handwritten signature in dark ink, appearing to read "Steve Hegion". The signature is fluid and cursive, with a large initial "S" and "H".

Steve Hegion, B.A.Sc., P.Eng.,
President

SH/G
encl.



TELEPHONES

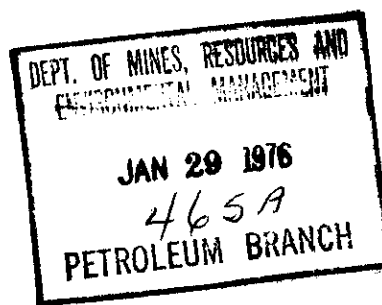
ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

January 27, 1976

Department of Mines, Resources and
Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster, Director



Dear Sir:

Re: Application - Unitization and
Waterflood, Waskada Field

Further to my telephone call of today, we wish to verify our comments with respect to our letter of January 14, 1976 in which we note an error in the year for which down time is considered. In this regard please revise the letter to correspond with the production period referred to in Page 2, Exhibit 1 Under "Interim Period" being September 1, 1974 to August 31, 1975 as follows:

Well 3-30 - Down time is all of May and June, 1975. ✓

Well 6-30 - Down time is during January, 1975. ✓

Well 11-30 - September 1974 is correct and October and November, 1974 is correct.

Well 12-30 - The period of shut in was May and June, 1975. ✓

With regard to your comments stated in your letter of January 22, 1976 concerning down time credit for 11-30 we provide you with our reasoning as follows:

- (a) The production period under consideration relative to calculating the interim participation factor was September 1, 1974 to August 31, 1975. September, 1974 being the first month of such period was credited with 75 barrels which was an estimate of October - November production period.


.... 2

- (b) Both 11-30 and 6-30 were reworked in October, 1974 thus providing evidence that 11-30 was in fact capable of such production. It was thought that had the well been reworked in August or September, 1974 such credit would have been verified by production.
- (c) An argument could be put forth suggesting that because 11-30 stopped producing in February, 1975 it may have stopped producing one month earlier if in fact the well had been reworked one month earlier thus reducing its production during the 12 month period. However it appears after pulling and rerunning the pump in late 1975 with no further results that the area surrounding the well has become plugged or depleted. The only apparent solution to continued production would appear to be through secondary recovery means.
- (d) In our best judgment it would appear that this well should be credited with the down time figure of 75 barrels. However, we remain flexible in the matter of assessing interim and final participation factors.

We trust that the above corrections and comments will be helpful in assessing the matter of participation factors.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall, P. Eng.
President

TJH*vs

22/1/76

Waskada Field

Reservoir Factors

| | | |
|---------------------------|------|---------------|
| Average porosity, Percent | 10.7 | Logs Analysis |
| " " , " | 10.9 | Core Analysis |

| | | |
|-----------------------------------|------|------|
| Average Water Saturation, Percent | 37 | Log |
| " " " , Core | 37.8 | Core |

Average Formation Volume factor 1.115 bbl/STB

| | | |
|-----------------------|------|-----|
| Average Net pay, feet | 10.2 | Log |
|-----------------------|------|-----|

| | | |
|---------------------------------|--------|------|
| Average Residual Oil Saturation | 10.4 % | Core |
|---------------------------------|--------|------|

| | |
|----------------------|------------------------|
| Average permeability | 20.7 cp md. |
|----------------------|------------------------|

| | |
|----------------------|------|
| Rock volume, Acre-ft | 4730 |
|----------------------|------|

| | |
|--|------|
| discovery pressure of the Reservoir, Psi | 1150 |
|--|------|

| | |
|--|------------|
| Present pressure of the Reservoir, Psi | <u>300</u> |
|--|------------|

Original Oil in place, Volumetric method

2.219×10^6 bbls

Original oil in place, Material balance

2.786×10^6 bbls
will be used

Estimated Production
Projected Primary Performance of Omega wells
(3-30, 4-30, 5-60, 6-30, 11-30 and 12-30)

664,500 bbls

Estimated Production
Primary Performance of 4 southern wells
(11-19, 12-19, 13-19 and 14-19)

320,500 bbls

Total Primary Production for the Pool 985,500 bbls
or 35% of O.O.I.P. (Recovery Factor)

Assuming 30 bbls/day Economic
limit for the pool
Time of Termination of pool under primary ~~Recovery~~ ^{Recovery}
Mid 1982

Ultimate Recovery Factor, Percent 54

Secondary Recovery Factor, Percent 19

Primary Recovery Factor, Percent 35

Cumulative Oil production to end of 1975

501,344 bbls or 18% of O.O.I.P.

O₂ 6 well

OOIP
Prod (Dec '75)
%

1,974,000 bbls

325,311 BBls

16.5

Prim Rec. (BBL)

664,500 bbls

" " (%)

33.7

Total Re (BBL)

1,085,000 bbls

" " (%)

55

8C.

January 22, 1976

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. Jack Hall, President

Dear Sir:

Re: Application for Unitization and
Waterflood - Maskada Field

Further to your letter of January 14, 1976 we still would like to obtain more clarification as to the method used for determining the down time correction shown in Table 1 of Exhibit 1 of your application for Unitization and Waterflood. The results of a review of the production history on the six well in the proposed unit are as follows:

Well 3-30 - Correction of 650 bbls. was used.

A correction figure of 350 bbls. instead of the 650 would appear to be more realistic. The well lost some twenty-five days of production in May and a few days in June of 1974. Multiplying the total days of lost production (35) by the average production rate per day for this well (10) resulted in the 350 bbl. figure.

Wells 4-30 and 5-30 - No correction was made.

Both wells have lost more than twenty days of production in May of 1974. A correction of 200 - 250 bbls. is suggested for each.

Well 6-30 - Correction of 150 bbls.

Our files indicate that in January 1974, the well was operating close to maximum capacity (produced 30 days), however, the No. of producing days in May, 1974 was only 2. Please clarify your statement of the down time correction for this well for January 1974 as mentioned in your letter.

Well 11-30 - Correction of 75 bbls.

This well did not produce for almost a year (November 1973 - October 1974). Please clarify your statement "The period of shut in was September 1974" and indicate how the correction of 75 bbls. was determined.

Well 12-30 - Correction of 250 bbls.

This figure would appear low by about 100 bbls.

Please advise this office of your views and comments on the above.

Yours sincerely,

Original Signed by H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch.

HCM/et

1973
Omaha Nebraska
 3-3041-25

PRODUCTION RECORD
 WELL LICENSE NO. 2273

1974

| DATE | PROD. (BBL) | WATER PROD. (BBL) | CUM. PROD. (BBL) | CUM. WATER PROD. (BBL) | ALLOWABLE (BBL) |
|------|-------------|-------------------|------------------|------------------------|-----------------|
| 26 | 264 | - | 10.2 | 10.2 | 8.0 |
| 26 | 262 | 466 | 18 | 18 | 8.0 |
| 31 | 293 | 759 | 95 | 95 | 8.0 |
| 28 | 247 | 1056 | 82 | 82 | 8.0 |
| 31 | 252 | 1258 | 81 | 81 | 8.0 |
| 28 | 208 | 1466 | 74 | 74 | 8.0 |
| 29 | 366 | 1832 | 126 | 126 | 8.0 |
| 27 | 169 | 2001 | 63 | 63 | 8.0 |
| 23 | 214 | 2215 | 71 | 71 | 8.0 |
| 29 | 308 | 2523 | 106 | 106 | 8.0 |
| 30 | 256 | 2779 | 85 | 85 | 8.0 |
| 35 | 319 | 3098 | 121 | 121 | 8.0 |
| | | 39645 | | | |

1975
Omaha Nebraska
 3-3301-25

PRODUCTION
 WELL LICENSE

| DATE | PROD. (BBL) | CUM. PROD. (BBL) | WATER PROD. (BBL) | CUM. WATER PROD. (BBL) | ALLOWABLE (BBL) |
|------|-------------|------------------|-------------------|------------------------|-----------------|
| 25 | 388 | 15.5 | - | - | 8.0 |
| 27 | 234 | 64.2 | - | - | 8.0 |
| 29 | 440 | 104.2 | - | - | 8.0 |
| 29 | 314 | 132.8 | - | - | 8.0 |
| 34 | - | 132.8 | - | - | 8.0 |
| 30 | 393 | 172.1 | - | - | 8.0 |
| 29 | 349 | 207.0 | - | - | 8.0 |
| 27 | 322 | 239.4 | - | - | 8.0 |
| 21 | 319 | 271.3 | - | - | 8.0 |
| 28 | 386 | 279.9 | - | - | 8.0 |

Omega Washburn
4-680-1-25

1973 PRODUCTION RECORD 1974
WELL LICENSE NO. 2274

| DATE | CUM. OIL PROD. (BBL.) | CUM. WATER PROD. (BBL.) | ALLOWABLE |
|-------------|-----------------------|-------------------------|-----------|
| 29 382 | - | 132 | 6/15 |
| 27 233 615 | Jan 29 216 | 86 | 8.6 |
| 31 313 928 | Feb 27 148 | 101 | 10.1 |
| 29 246 1168 | Mar 29 255 | 8.3 | 8.3 |
| 31 235 1403 | Apr 26 220 | 76 | 7.6 |
| 28 172 1575 | May 4 59 898 | 61 | 6.1 |
| 31 289 1864 | June 27 200 1098 | 13 | 1.3 |
| 30 133 1997 | July 31 299 1397 | 44 | 4.4 |
| 22 157 2154 | Aug 18 357 1754 | 11 | 1.1 |
| 30 332 2486 | Sept 16 453 2447 | 11.1 | 11.1 |
| 30 205 2691 | Oct 29 255 2691 | 6.1 | 6.1 |
| 29 247 2938 | Nov 29 311 2758 | 8.5 | 8.5 |

Omega Washburn
4-30-1-25

1975 PRODUCTION RECORD
WELL LICENSE NO.

| DATE | CUM. OIL PROD. (BBL.) | CUM. WATER PROD. (BBL.) | ALLOWABLE |
|-------------|-----------------------|-------------------------|-----------|
| 27 388 | - | 129 | 8.1 |
| 27 254 642 | - | 14 | 1.4 |
| 31 481 1123 | - | 15.5 | 15.5 |
| 31 446 1650 | - | 12.6 | 12.6 |
| 30 378 1501 | - | 11.1 | 11.1 |
| 27 461 1962 | - | 24.2 | 24.2 |
| 20 483 2445 | - | 12 | 1.2 |
| 24 413 2858 | - | 14.0 | 14.0 |
| 30 420 3278 | - | 11.6 | 11.6 |
| 27 378 3656 | - | 12.6 | 12.6 |
| 31 403 4059 | - | 12.6 | 12.6 |
| 27 346 4405 | - | 12.6 | 12.6 |

W-921 Blackhawk
5-30-1-25

1973 PRODUCTION RECORD
WELL LICENSE NO. 2207

1974

| DATE | PROD. OIL BBL. | CUMULATIVE PROD. OIL BBL. | TOTAL WATER PROD. BBL. | CUM. WATER PROD. BBL. | WELL |
|----------|-------------------|---------------------------------|------------------------------|--------------------------|------|
| Jan. 31 | 239 | 432 | | | 71 |
| Feb. 21 | 193 | 432 | | | 72 |
| Mar. 27 | 240 | 672 | | | 73 |
| Apr. 25 | 228 | 900 | | | 74 |
| May 4 | 61 | 961 | | | 75 |
| Jun. 21 | 242 | 1203 | | | 76 |
| Jul. 28 | 297 | 1500 | | | 77 |
| Aug. 29 | 365 | 1865 | | | 78 |
| Sept. 20 | 245 | 2110 | | | 79 |
| Oct. 27 | 219 | 2329 | | | 80 |
| Nov. 24 | 245 | 2574 | | | 81 |
| Dec. 28 | 288 | 2862 | | | 82 |
| | | | | | 83 |
| | | | | | 84 |
| | | | | | 85 |
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| | | | | | 100 |

W-921 Blackhawk
5-30-1-25

1975 PRODUCTION RECORD
WELL LICENSE

1976

| DATE | PROD. OIL BBL. | CUMULATIVE PROD. OIL BBL. | TOTAL WATER PROD. BBL. | CUM. WATER PROD. BBL. | WELL |
|----------|-------------------|---------------------------------|------------------------------|--------------------------|------|
| Jan. 31 | 359 | 466 | | | 171 |
| Feb. 28 | 377 | 843 | | | 172 |
| Mar. 28 | 383 | 1226 | | | 173 |
| Apr. 29 | 378 | 1604 | | | 174 |
| May 26 | 444 | 2048 | | | 175 |
| Jun. 15 | 459 | 2507 | | | 176 |
| Jul. 24 | 543 | 3050 | | | 177 |
| Aug. 28 | 465 | 3515 | | | 178 |
| Sept. 25 | 400 | 3915 | | | 179 |
| Oct. 31 | 465 | 4380 | | | 180 |
| Nov. 28 | 405 | 4785 | | | 181 |
| Dec. 28 | | | | | 182 |
| | | | | | 183 |
| | | | | | 184 |
| | | | | | 185 |
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| | | | | | 199 |
| | | | | | 200 |

Omiga Blackhawk
6-30-1-25

1973 PRODUCTION RECORD 1974
WELL LICENSE NO. 2266

| DAYS | TOTAL OIL PROD. (BBL) | CUMULATIVE OIL PROD. (BBL) | TOTAL WATER PROD. (BBL) | CUMULATIVE WATER PROD. (BBL) | ALLOWABLE (BBL) |
|------|-----------------------|----------------------------|-------------------------|------------------------------|-----------------|
| 29 | 647 | | | | 8 1/2 |
| 28 | 478 | 1125 | | | |
| 27 | 484 | 1609 | | | |
| 26 | 477 | 2086 | | | |
| 25 | 450 | 2536 | | | |
| 24 | 365 | 2901 | | | |
| 23 | 416 | 3317 | | | |
| 22 | 150 | 3467 | | | |
| 21 | 155 | 3622 | | | |
| 20 | 314 | 3936 | | | |
| 19 | 287 | 4223 | | | |
| 18 | 351 | 4574 | | | |
| 17 | | 4925 | | | |
| 16 | | | | | |
| 15 | | | | | |
| 14 | | | | | |
| 13 | | | | | |
| 12 | | | | | |
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| 6 | | | | | |
| 5 | | | | | |
| 4 | | | | | |
| 3 | | | | | |
| 2 | | | | | |
| 1 | | | | | |

Jan 30 350 No prod decrease

Omiga Blackhawk
6-30-1-25

1975 PRODUCTION RECORD
WELL LICENSE

| DAYS | TOTAL OIL PROD. (BBL) | CUMULATIVE OIL PROD. (BBL) | TOTAL WATER PROD. (BBL) | CUMULATIVE WATER PROD. (BBL) | ALLOWABLE (BBL) |
|------|-----------------------|----------------------------|-------------------------|------------------------------|-----------------|
| 19 | 154 | 154 | | | 8 1/2 |
| 18 | | 154 | | | |
| 17 | | 154 | | | |
| 16 | | 154 | | | |
| 15 | | 154 | | | |
| 14 | | 154 | | | |
| 13 | | 154 | | | |
| 12 | | 154 | | | |
| 11 | | 154 | | | |
| 10 | | 154 | | | |
| 9 | | 154 | | | |
| 8 | | 154 | | | |
| 7 | | 154 | | | |
| 6 | | 154 | | | |
| 5 | | 154 | | | |
| 4 | | 154 | | | |
| 3 | | 154 | | | |
| 2 | | 154 | | | |
| 1 | | 154 | | | |

1974

WELL LICENSE NO. 219.4

Unigob. blanda
411-30-1-25-

| CUMULATIVE TOTAL ON | | | CUMULATIVE TOTAL ON | | | CUMULATIVE TOTAL ON | | |
|---------------------|--------|---------|---------------------|--------|---------|---------------------|--------|---------|
| DATE | AMOUNT | BALANCE | DATE | AMOUNT | BALANCE | DATE | AMOUNT | BALANCE |
| Jan 8 | 66 | 83 | Jan 8 | 66 | 83 | Jan 8 | 66 | 83 |
| Jan 11 | 140 | 6.7 | Jan 11 | 140 | 6.7 | Jan 11 | 140 | 6.7 |
| Jan 14 | 140 | 8.8 | Jan 14 | 140 | 8.8 | Jan 14 | 140 | 8.8 |
| Jan 16 | 140 | 3.7 | Jan 16 | 140 | 3.7 | Jan 16 | 140 | 3.7 |
| Jan 29 | 107 | 12.7 | Jan 29 | 107 | 12.7 | Jan 29 | 107 | 12.7 |
| Jan 29 | 368 | 13.1 | Jan 29 | 368 | 13.1 | Jan 29 | 368 | 13.1 |
| Jan 30 | 384 | 11.7 | Jan 30 | 384 | 11.7 | Jan 30 | 384 | 11.7 |
| Jan 14 | 167 | 8.2 | Jan 14 | 167 | 8.2 | Jan 14 | 167 | 8.2 |
| Jan 2 | - | 8.5 | Jan 2 | - | 8.5 | Jan 2 | - | 8.5 |
| Jan 25 | 1306 | 86 | Jan 25 | 1306 | 86 | Jan 25 | 1306 | 86 |
| 32,161 | | | 32,161 | | | 32,161 | | |

1375-

PRODUCTION
WELL LICENSE

WELL LICENSE

NAME *Dr. J. L. L. L. L.*
11-30-1-25

[illegible]

Omega Blackhead
12-80-1-25

1973 PRODUCTION RECORD 1974
WELL LICENSE NO. 7267

BATTERY NO.
FIRST PRODUCTION
TEST PRODUCTION

WELLS

DATE

WELL PRODUCTION

LOWABLE

| DATE | WELLS | DATE | WELLS | DATE | WELLS | DATE | WELLS | DATE | WELLS |
|------|-------|------|-------|----------|-------|------|-------|------|-------|
| 30 | 387 | 12.1 | 12.1 | Jan. 31 | 433 | 4.1 | 4.1 | 12.1 | 12.1 |
| 29 | 369 | 11.0 | 11.0 | Dec. 27 | 364 | 12.5 | 12.5 | 11.0 | 11.0 |
| 27 | 389 | 10.8 | 10.8 | Nov. 30 | 369 | 11.6 | 11.6 | 10.8 | 10.8 |
| 26 | 486 | 15.7 | 15.7 | Oct. 21 | 199 | 13.6 | 13.6 | 15.7 | 15.7 |
| 25 | 495 | 20.6 | 20.6 | Sept. 12 | 235 | 13.6 | 13.6 | 20.6 | 20.6 |
| 23 | 411 | 24.8 | 24.8 | Aug. 30 | 319 | 19.1 | 19.1 | 24.8 | 24.8 |
| 28 | 421 | 29.0 | 29.0 | July 30 | 310 | 22.2 | 22.2 | 29.0 | 29.0 |
| 31 | 472 | 33.7 | 33.7 | June 30 | 323 | 25.5 | 25.5 | 33.7 | 33.7 |
| 25 | 465 | 38.3 | 38.3 | May 30 | 306 | 24.5 | 24.5 | 38.3 | 38.3 |
| 27 | 461 | 42.3 | 42.3 | Oct. 27 | 215 | 21.6 | 21.6 | 42.3 | 42.3 |
| 26 | 406 | 46.9 | 46.9 | Nov. 29 | 296 | 30.6 | 30.6 | 46.9 | 46.9 |
| 26 | 406 | 51.9 | 51.9 | Dec. 25 | 175 | 31.1 | 31.1 | 51.9 | 51.9 |

WELLS

DATE

WELL PRODUCTION

LOWABLE

| DATE | WELLS | DATE | WELLS | DATE | WELLS | DATE | WELLS | DATE | WELLS |
|------|-------|------|-------|----------|-------|------|-------|------|-------|
| 31 | 216 | 12.1 | 12.1 | Jan. 31 | 433 | 4.1 | 4.1 | 12.1 | 12.1 |
| 23 | 185 | 11.0 | 11.0 | Dec. 27 | 364 | 12.5 | 12.5 | 11.0 | 11.0 |
| 22 | 160 | 10.8 | 10.8 | Nov. 30 | 369 | 11.6 | 11.6 | 10.8 | 10.8 |
| 22 | 187 | 15.7 | 15.7 | Oct. 21 | 199 | 13.6 | 13.6 | 15.7 | 15.7 |
| 21 | 148 | 20.6 | 20.6 | Sept. 12 | 235 | 13.6 | 13.6 | 20.6 | 20.6 |
| 21 | 148 | 24.8 | 24.8 | Aug. 30 | 319 | 19.1 | 19.1 | 24.8 | 24.8 |
| 31 | 145 | 29.0 | 29.0 | July 30 | 310 | 22.2 | 22.2 | 29.0 | 29.0 |
| 27 | 143 | 33.7 | 33.7 | June 30 | 323 | 25.5 | 25.5 | 33.7 | 33.7 |
| 30 | 144 | 38.3 | 38.3 | May 30 | 306 | 24.5 | 24.5 | 38.3 | 38.3 |
| 27 | 155 | 42.3 | 42.3 | Oct. 27 | 215 | 21.6 | 21.6 | 42.3 | 42.3 |
| 27 | 155 | 46.9 | 46.9 | Nov. 29 | 296 | 30.6 | 30.6 | 46.9 | 46.9 |
| 27 | 155 | 51.9 | 51.9 | Dec. 25 | 175 | 31.1 | 31.1 | 51.9 | 51.9 |



HYDROCARBONS Ltd.

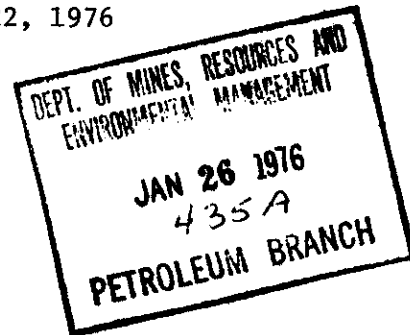
TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

January 22, 1976

Department of Mines, Resources and
Environmental Management
Petroleum Branch
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4



Attention: Mr. H. C. Moster, Director

Dear Sir:

Re: Waskada Field
Unitization and Waterflood Application

In accordance with your request for information as outlined in your letter dated December 18, 1975 relating to our application we enclose five (5) copies of the following:

Item B(2) Recovery Factor

D. & S. Consultants Ltd. has provided a letter in which they show recoveries relative to water-oil ratio fractions. It should be recognized that this information is based on a five spot pattern when in fact we will have one injector until response dictates otherwise.

Item B(4) Performance Prediction

We have prepared a graphical presentation which includes past production history of Omega's wells including;

- (a) A prediction based on Table 3 of the D. & S. Report assuming Omega's share of the pool being 60% of remaining recoverable reserves. Peak production is shown to average 8700 B/M during 1978. The total recoverable oil for this prediction is 561,200 barrels over the remaining life of the pool. This is approximately 100,000 barrels greater than the estimated remaining recoverable oil. Schedule A which is the estimated producing rates is attached.

- (b) The cross hatched area is a modified prediction curve which accounts for the over production and the questionable response from the currently shut in 11-30-1-25 well. Therefore, the peak production rate was brought down to correspond with the peak production year of 1968. The recoverable reserve in this instance is approximately 50% of original oil in place as calculated. The estimated annual production rates are shown in the attached Schedule B.

With regard to individual well predictions, we refer you to Tables **8 to 13 inclusive, showing primary prediction only. It is our feeling that any prediction of individual well performance for a pilot waterflood scheme is of questionable value. In view of the lack of good reservoir information such as gas production and pressure history we would regard the prediction of pool performance under a pilot flood with a great deal of uncertainty. Flood response of a moderate nature will make our efforts worth while.

Please be advised that we have had considerable difficulty with our gas measuring equipment and although we are doing all things possible to rectify the situation we do not yet have individual well measurements of a satisfactory nature.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. Jack Hall,
President

TJH*vs

Encl.

** Note: D. & S. Petroleum Consultants Ltd. Report
Waskada Alida Beds Oil Pool - Waterflood Potential
dated August 1, 1974

December 22, 1975

Omega Hydrocarbons Ltd.
574 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T.J. Hall
President

Dear Sir:

Re: Salt Water Production Lease
Led. 11 of Section 29-1-25 WPM

Pursuant to your letter to the Minister dated September 10, 1975 requesting a permit to produce water from the Swan River zone through a well located on the subject land, enclosed please find two (2) copies of a Salt Water Production Lease.

You are requested to properly execute the subject Lease in duplicate and return both signed copies to this office together with:

1. An application fee of ten dollars (\$10.00), and
2. The first year rental of forty dollars (\$40.00).

Upon receipt of the above, the Lease shall be presented for consideration.

*Rec'd executed Lease on JAN. 9/76.
Lease sent to Minister on JAN. 12/76.
Lease returned from Dep. Min on JAN. 18/76.
Lease sent to Omega on JAN. 19/76.*

Yours sincerely,

Original Signed by H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch.

HCM/et
Encl.



HEM

D&S PETROLEUM CONSULTANTS (1974) LTD.

732 Calgary House-550-6 Avenue S.W. Calgary, Alberta T2P 0S2
Telephone: 403-266-1601 Cable: Denescons Calgary

January 19, 1976

Omega Hydrocarbons Ltd.
524, 330 Fifth Avenue S.W.
CALGARY, Alberta.
T2P 0L4.

Attention: Mr. T. Jack Hall

Dear Sir:

As requested, I have enclosed the information you outlined in your letter of January 5th. 1976. I trust this will be sufficient to answer the questions.

1) Bubble Point Pressure

Because there were indications of excess gas production from the commencement of production it was assumed that the reservoir was initially saturated. There are no PVT data to verify this assumption.

2) Waterflood Recovery Factor

The estimated waterflood recovery of 50 percent was based on an evaluation of displacement efficiency, areal conformance factor and vertical conformance factor. The displacement efficiency was based on data obtained from the literature and was believed to be representative of this type of reservoir. The relative permeability curves used in the study are shown on Figure 16 of the August 1, 1974 report. These curves were used to generate a fractional flow curve and the corresponding recovery factor for a homogeneous system.

The areal conformance factor was assumed to be represented by that of a five spot waterflood. A similar result would have occurred if an inverted nine spot pattern was considered.

.....Cont'd.

The vertical conformance accounts for the effects of stratification and was evaluated by a method similar to Pratts et al (Pratts, M. et al - Prediction of Injection Rate and Production History for Multi-fluid Five-Spot Floods - Journal of Petroleum Technology, Vol. 11, No. 5, 1959, P. 98 - 105). This approach divides the section into non-communicating layers of various permeability and assumes they are flooded individually with common pressure at the well. Water injection into the different layers progresses at different rates depending on the permeability of each layer. The total performance at any given time is obtained by a summation of the individual layers.

A summary of the three conformance factors at various water-oil ratios is shown below:

| <u>WOR</u> | <u>Areal Conformance</u> | <u>Vertical Conformance</u> | <u>Displacement Efficiency</u> | <u>Total</u> |
|------------|--------------------------|-----------------------------|--------------------------------|--------------|
| 0.52 | 0.783 | 0.690 | 0.392 | 0.212 |
| 1.04 | 0.830 | 0.775 | 0.410 | 0.264 |
| 5.20 | 0.950 | 0.945 | 0.470 | 0.422 |
| 10.4 | 0.983 | 0.983 | 0.511 | 0.494 |
| 20.8 | 0.998 | 0.998 | 0.560 | 0.557 |
| 52.0 | 1.000 | 1.000 | 0.601 | 0.601 |

The total conformance factor indicates the recovery of remaining oil and assumes an initial gas saturation of 28 percent.

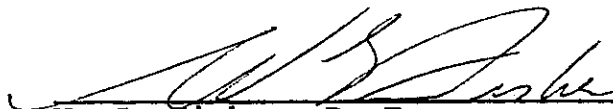
3) Performance

The production performance of the total field is divided into Omega and Copperhead wells as shown in the attached tables. Predictions are shown in the economic runs of the August 1, 1974 report.

If you require additional information please do not hesitate to call.

Yours truly,

D&S PETROLEUM CONSULTANTS (1974) LTD.


W. G. Fisher, P. Eng.

WGF:rk

SCHEDULE A

Prediction of Waterflood Response
Omega Properties Waskada, Manitoba

Based on Table 3 - D. & S. Report

| <u>Year</u> | <u>60% D. & S. Producing Rate Bbls.</u> | <u>Time Adjusted Rate - Bbls.</u> | <u>Monthly Rate - Bbls.</u> | <u>Cumm. WF Production</u> |
|--------------------------------|---|---------------------------------------|---------------------------------|--------------------------------|
| 1976 | 11,000 | 13,200 | 1,100 | 13,200 |
| 1977 | 97,400 | 54,000 | 4,500 | 67,200 |
| 1978 | 110,400 | 104,000 | 8,670 | 171,200 |
| 1979 | 67,250 | 89,000 | 7,420 | 260,200 |
| 1980 | 47,600 | 57,400 | 4,780 | 317,600 |
| 1981 | 36,900 | 42,200 | 3,516 | 359,800 |
| 1982 | 30,100 | 33,500 | 2,790 | 393,300 |
| 1983 | 25,400 | 27,700 | 2,310 | 421,000 |
| 1984 | 21,200 | 23,300 | 1,940 | 444,300 |
| 1985 | 17,300 | 19,200 | 1,600 | 463,500 |
| 1986 | 14,600 | 16,000 | 1,330 | 479,500 |
| 1987 | 12,600 | 13,600 | 1,130 | 493,100 |
| 1988 | 11,150 | 11,900 | 990 | 505,000 |
| 1989 | 9,970 | 10,600 | 880 | 515,600 |
| 1990 | 9,000 | 9,500 | 790 | 525,100 |
| 1991 | 8,200 | 8,600 | 720 | 533,700 |
| 1992 | 7,600 | 7,900 | 660 | 541,600 |
| 1993 | 7,000 | 7,300 | 610 | 548,900 |
| 1994 | 6,500 | 6,700 | 560 | 555,600 |
| 1995 | 4,700 | 5,600 | 470 | 561,200 |
| Production to date | | | | <u>338,000</u> |
| Total Primary and W F Recovery | | | | 899,200 |

SCHEDULE B

Predicted Performance (cross hatch area)
Omega Waskada Pool Area
Omega Estimate 50% Total Recovery

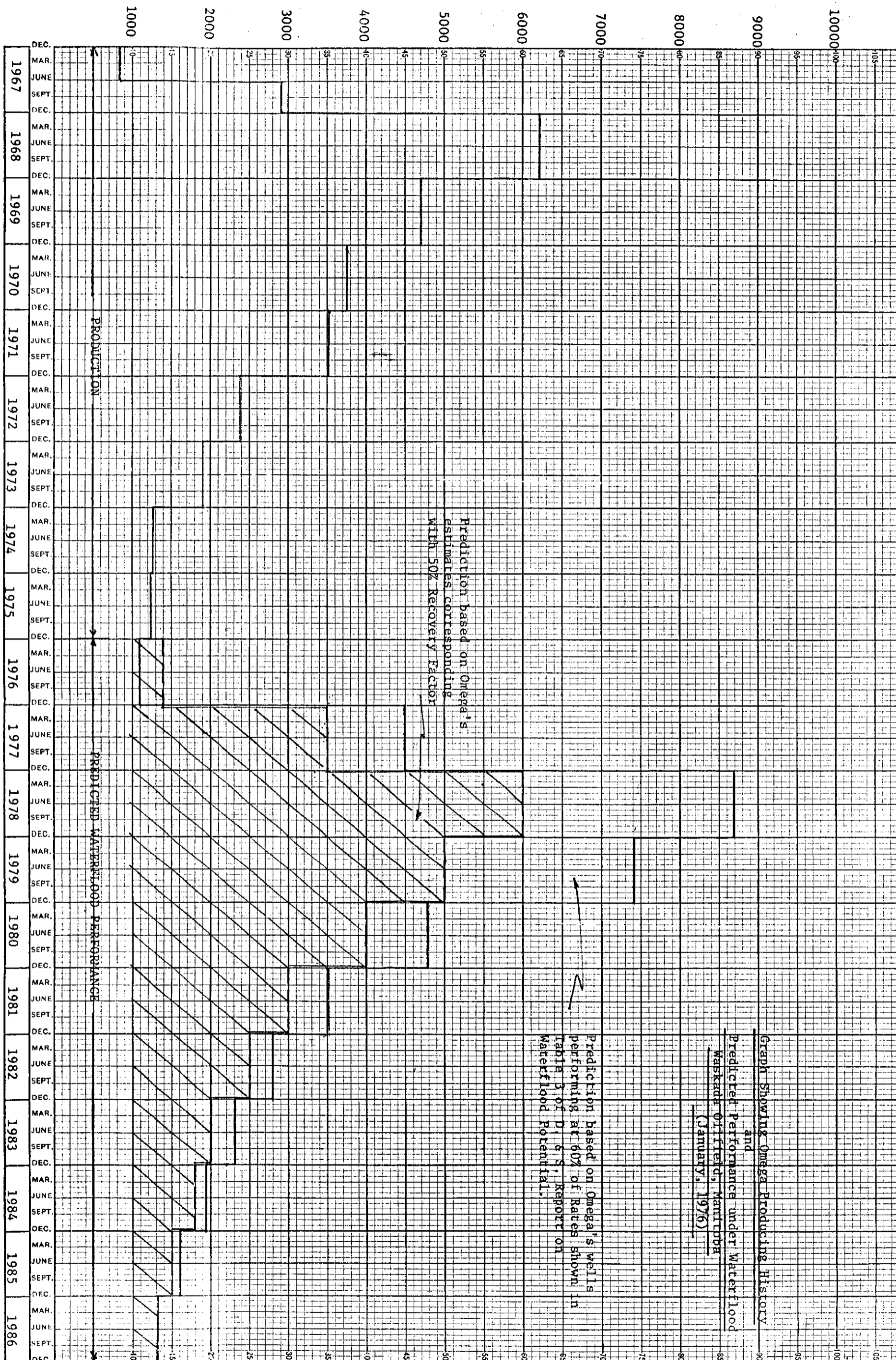
| <u>Year</u> | <u>Monthly Average</u> | <u>Annual</u> | <u>Waterflood Cummulative</u> |
|--------------------|----------------------------|---------------|-----------------------------------|
| 1976 | 1,400 | 16,800 | 16,800 |
| 1977 | 3,500 | 42,000 | 58,800 |
| 1978 | 6,000 | 72,000 | 130,800 |
| 1979 | 5,000 | 60,000 | 190,800 |
| 1980 | 4,000 | 48,000 | 238,800 |
| 1981 | 3,000 | 36,000 | 274,800 |
| 1982 | 2,500 | 30,000 | 304,800 |
| 1983 | 2,000 | 24,000 | 328,800 |
| 1984 | 1,800 | 21,600 | 350,400 |
| 1985 | 1,500 | 18,000 | 368,400 |
| 1986 | 1,300 | 15,600 | 384,000 |
| 1987 | 1,100 | 13,200 | 397,200 |
| 1988 | 1,000 | 12,000 | 409,200 |
| 1989 | 900 | 10,800 | 420,000 |
| 1990 | 800 | 9,600 | 429,600 |
| 1991 | 700 | 8,400 | 438,000 |
| 1992 | 650 | 7,800 | 445,800 |
| 1993 | 600 | 7,200 | 453,000 |
| 1994 | 550 | 6,600 | 459,600 |
| 1995 | 500 | 6,000 | 465,600 * |
| Production to date | | | <u>338,000 **</u> |
| Total Recovery | | | 803,600 |

* Note - This value corresponds with 472,527 Bbls. in Column 7, Table 2, Exhibit 1 of our application.

** Corresponds with Cummulative production of Column 6, Table 2 plus estimated production of 1,200 Bbls. for December, 1975.



PRODUCTION BARRELS/MONTH STO





HYDROCARBONS

TELEPHONES

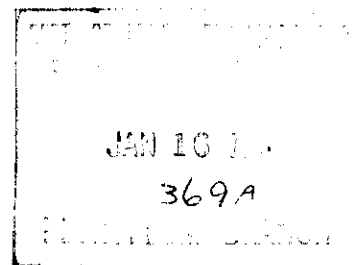
ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

January 14, 1976

Department of Mines, Resources and
Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: H. C. Moster, P. Eng.,
Director, Petroleum Branch



Dear Sir:

Re: Application - Unitization
and Waterflood - Waskada Field

In response to your request for information on estimated production during down time as shown in Table 1 of Exhibit 1 of our application for Unitization and Waterflood, we are pleased to provide you with the following:

Well 3-30 - Correction 650 bbls. ✓ 15

Down time is all of May and June, 1974. This resulted from spring flooding of the surface lease. It was estimated that lost production during this period was 650 bbls. based on the capability shown during a normal operating period.

Wells 4-30 and 5-30 - ~~No correction~~ ✓ Aug, 74 - Aug, 75 Sept 1/74 - Sept 1/75

Although these wells were shut in for several days they were able to produce their normal volume of production.

Well 6-30 - Correction 150 bbls. / 15

Down time is during January, 1974 which was caused by downhole pumping problems found to be gas locking. Production was estimated from normal operating periods.

Well 11-30 - Correction 75 bbls.

The period of shut in was September 1974 when the well experienced downhole pump problems. Production lost during this month was estimated from October and November, 1974 production.

Well 12-30 - Correction 250 bbls. ✓

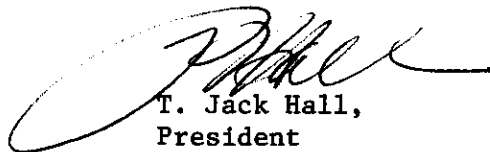
The period of shut in was May and June, 197⁵~~4~~, at a time when spring flooding caused weakness in the surface on which the pump base and pump jack is located. Continued operation could have resulted in serious damage to the pump unit.

If you have any further questions concerning the estimated loss of production we will be pleased to assist you.

Other deficiencies should be forthcoming in a few days.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall,
President

TJH*vs

Waskada Field
Unitization & Waterflood Application

I. Comments on Material submitted by Omega in response to our letter of Dec. 18, 1975.

A. Pressure Measurements:

Material submitted suggests an average reservoir pressure of about 50 psi (very low) which supports their application for waterflooding.

An estimate of the bubble point pressure indicates that it is in the order of 1535 psig (1369 psi in D+S study)

The original reservoir pressure is 1358 psi (discovery pressure on 11-30-1-25).

B. Secondary Recovery:

1. Records on Gas measurements are poor, however, We will wait for more precise data from Omega within the next few weeks as mentioned in their letter.

2. We have not received any supporting data as to the estimation of 50 % secondary recovery, awaiting their calculations and graph for predicted performance.

C. Tract Participation:

No data has been received as to how the "down time" was used in table I. A possible question at the hearing.

*

D. Proposed Injection Well, Omega Waskada 6-30-1-25

Again, Omega didn't mention anything about any future plans to insure proper completion on the subject well, will send a letter to Omega requesting their plans on the subject well if no answer is received prior to January 15, 1976. "Possible inquiry by phone."

EXHIBIT #2

Table #1 (Omega Wells) (Primary)

$N_p = 167,481$ (1974 - 1999)
Present Worth (@ 9%) = \$331,888.
Total Revenue = \$486,267.

TABLE #2 (Total Pool) (Primary)

$N_p = 202,225$ (1974 - 1999)
Present Worth (@ 9%) = \$554,253
Total Revenue = \$812,066.

Table #3 (Total Pool) (Waterflood)

$N_p = 675,052$ (1974 - 1994)
Present Worth = \$2,310,227.
Total Revenue = \$3,872,697.

OOIP = 2,876,000

December 18, 1975

Omega Hydrocarbons Ltd.
574-330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T.J. Hall, President

Dear Sir:

Re: Waskade Field
Unitization and Waterflood Application

Further to our telephone conversation of December 16, 1975, this is to confirm our request for submission of data supporting the following items:

A. Pressure Measurements

In the third paragraph, Page 1 of D & S Petroleum Consultant's study on Waskade, 1974, it states that "Recent pressure measurements suggest that the reservoir pressure is in the 150 - 350 p.s.i. range." Please submit to this office data supporting this statement. Such data should include:

1. The times and locations these measurements were taken and the results, including the shut-in times.
2. The original "discovery" reservoir pressure, also the reservoir's "bubble-point" pressure.

B. Secondary Recovery and Reservoir Characteristics

Please include in the submission:

1. The results of any measurements of gas production, also the producing Gas-Oil ratios for the wells.
2. Calculations supporting the estimation of 50% ultimate recovery (i.e. - secondary recovery calculations).
3. The proposed water injection rate of the well 6-30-1-25 and also the expected fill-up time.
4. Calculations and graphs (production vs time) indicating the predicted performance of the wells and pool with and without secondary recovery.

C. Tract Participation

1. The submission should also include the calculations used to determine the original oil-in-place for the tracts 3-30, 4-30, 5-30, 6-30, 11-30 and 12-30-1-25 used in Table 2 to Exhibit No. 1 to calculate the Final Tract Participation (%).
2. Also describe how the "down time" production used in Table 1 was determined.

D. Proposed Injection Well, Omega Waskada 6-30-1-25

A review of our records on the subject well shows that after a cement squeeze was performed in October 1975 to seal off the leak in the 4" production casing, pressure bled from 400 p.s.i. to 20 p.s.i. in one minute which would indicate that there is still a completion problem. Please advise this office of your plans to insure the proper completion of this well for water injection purposes.

An early reply to these items will enable use to process your applications more efficiently.

Yours sincerely,

Original Signed by H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch.

HCM/et

Waskada Field
Unitization and Waterflood
Application

Leading Questions at hearing

Item I : Clarification on some items
mentioned in their application

a. D & S study

- Line No. 6, Page 4, under Geology - The Pay zone is impermeable to the west due to a facies change. To our knowledge, the pay zone is wet to the west but not impermeable. Need further clarification.

- Last sentence, Page 5, under Recovery Factor Calculations - Gas saturation of hydrocarbon pore space is only slightly less than 30 percent. Need further comments.

b. Exhibit No. 1, Unit proposal and Waterflood plan:

- Definition of "down time". Further explanation ✓ to how they apply "down time correction" used in table I.
- There is a rather abnormal difference between Interim and Final participation percent on the wells 3-30 and 4-30-1-25 (23.614% interim and 13.876% final for 3-30 & 26.575% interim and 39.846% Final for 4-30). Need royalty holders' consent ??

- Need further supporting data as to the statement on the third line, Page 5 "Injection rates indicated that the well 6-30-1-25 would accept water in the range of 1,000 bbls/day with 0 wellhead pressure. "We could mention that in our letter".

Item No. II: Waterflooding

- Estimated life of project, at what stage the pool will be considered "Uneconomical to produce". (Question not necessary if data submitted before hearing).
- If the waterflood is successful, what are the future plans for project expansion?
 - i.e. include the 4 southern wells in the waterflood
 - i.e. drill a well in 13-30 for evaluation of the extension of the existing pool.
- Will Omega analyze the injected water for possible breakthrough? How frequent? What method to be used? i.e. put dye in ^{injected} water and analysis of produced water.
- Will Omega make any attempt to determine the injection profile and relative positions of waterflood fronts?
- What is the predicted max. rate of production? Would production exceed the field allowance?
(60 B/d)

- What is the approximate injection pressure?

if high
At high rate of injection pressure and large quantities of injected water, what is the possibility of damaging the reservoir? i.e. Fracturing, channelling.

General:

??? - Reasons behind Copperhead refusal to participate in the project?

Item III : Unitization.

Material with
SAM



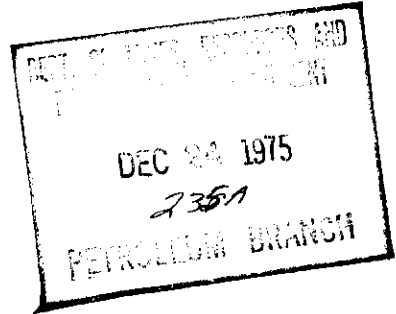
HYDROCARBONS

TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

December 22, 1975



Department of Mines, Resources and
Environmental Management
Petroleum Branch
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster, Director

Dear Sir:

Re: Unitization and Waterflood Application
Waskada Field, Manitoba

In accordance with your request we are enclosing the following information:

1. Summary of reservoir factors including estimated primary recovery and original oil in place for each of the six spacing units.
2. A copy of a report prepared by Delta Consultants in October, 1971 referring to fluid level surveys.
3. A summary of shut-in pressure readings taken from drill stem test charts, relating to pressure decline during the development period.
4. A copy of a letter from Omega to D. & S. Consultants relating to a fluid level survey conducted in July, 1974.
5. Reference to the Lasiter Correlation - This article is taken from AIME Transaction, May 1958, and Journal of Petroleum Technology, May 1958. A copy of the article is enclosed for your purposes.

As mentioned to you we have very poor records on pressure history of this pool. Omega ran a fluid level survey in mid summer 1974 and from records presented we could not determine a definitive fluid level on any of the wells. Our best estimates from the sonolog tapes would reflect an operating pressure in the range of 20 - 120 psig.

The pool may very well be producing on a gravity mechanism as the up dip wells are not performing as otherwise expected.

We have just recently moved the satellite separator to the main battery and have started taking gas readings. GOR on 12-30 appears to be in the range of 1000 whereas the two wells situated along the down dip side of the pool (4-30 and 5-30) appear to have a very low GOR in the range of 120 - 200. Hopefully, we will have more precise data within the next few weeks.

As for our proposed water injection rates, that will depend on the capability of the water source well and injection pressures. However, our current objective is approximately 1000 barrels per day. This will provide reservoir fill up within an eighteen month period.

Regarding the graphical presentation of past reservoir performance and projected waterflood performance, we have not yet prepared such a graph. However, it is expected that we will attempt to prepare an illustration of our expectations keeping in mind that this is a pilot flood program. Our only reference to projected performance at this time is shown in Table 3 of the D. & S. Consultant's Report, which encompasses the entire pool and two injectors. Our application is intended to cover a portion of the pool and one injector.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall,
President

TJH*vs

Encl.

ACROLL OIL & GAS LTD.

REPORT ON WELLS IN WASKADA AREA

Prepared by
DELTA CONSULTANTS
CALGARY Alberta.

ACPOL OIL & GAS LTD.

REPORT ON WELLS IN WASKADA AREA

October 4, 1971.

Shoot fluid levels on all wells to determine bottom hole pump efficiency and a shut in bottom hole pressure derived from 6-30 which had been shut in approximately 30 days prior to survey.

Obtain oil sample and analyze to determine proper acid stimulation.

| <u>Well No.</u> | <u>Jts. Tbg. In Hole</u> | <u>Level from Surface</u> | <u>Pressure Csg.</u> | <u>Pump Submergence</u> |
|-----------------|--------------------------|---------------------------|----------------------|-------------------------|
| 3-30 | 98 | 95 | 13 psig | 93' |
| 4-30 | 98 | 96 | 19 psig | 65' |
| 5-30 | 98 | 97 | 23 psig | 30' |
| 6-30 | 96 | 79 | 62 psig | 527' |
| 11-30 | 96 | 98.5 ? | 20 psig | 15' |
| 12-30 | 104 | 101 | 24 psig | 93' |

ANALYSIS OF FLUID LEVEL DETERMINATION:

3-30 The sonic survey shows a pump submergence of 93'. An attempt to pressure up pump showed a pressure increase on the upstroke but a pressure loss on the downstroke which indicates a leaking standing valve in the bottom hole pump. The pressure remained constant when the pump was stopped, this was done to check the tubing for leaks.

The high annular fluid level proves very low system efficiency.

We recommend the bottom hole pump be repaired.

4-30 The same circumstances exist in this well. The tubing has no leaks, but the bottom hole pump requires repairs.

5-30 The bottom hole pump is operating at maximum efficiency and the tubing has no leaks.

6-30 The survey indicates a surface pressure of 62 PSIG; 527' of fluid at a gradient of .35#/ft or 184.5 PSIG, hydrostatic of fluid; and at gas hydrostatic of 5 psi equals total bottom hole pressure of $62 + 184.5 + 5 = 251.5$ PSIG.

The bottom hole pressure determined above may be incorrect due to formation plugging and/or wellhead leaks, but is accurate enough to show a substantial drop due to depletion.

11-30 The bottom hole pump is operating at maximum efficiency and the tubing has no leaks.

12-30 The pressure test indicates the bottom hole pump does not need repairs and the tubing does not leak, but the bottom hole pump is prone to gas locking. This results in poor system efficiency, and explains the high fluid level encountered in the well.

October 5, 1971.

Determination of production capability of each well by recording annular fluid rise in 3, 10 and 30 minute intervals, after shut in.

| <u>Well</u> <u>#</u> | <u>Shot</u> <u>#1</u> | <u>Shot</u> <u>#2</u> | <u>Shot</u> <u>#3</u> | <u>Csg.</u> <u>PSIG</u> | <u>Calcu-</u> <u>lated</u> | <u>Pro-</u> <u>rated</u> |
|-------------------------|--------------------------|--------------------------|--------------------------|----------------------------|-------------------------------|-----------------------------|
| 3-30 | 95 | 95- | 94+ | 18 | 12 | 12 |
| 4-30 | 96 | 96- | 95+ | 20 | 12 | 9 |
| 5-30 | 97 | 96 | 95 | 22 | 72 | 50 |
| 11-30 | 98.5 | 98.5 | 98+ | 19 | 4 | 3 |
| 12-30 | 101 | 101- | 100+ | 24 | 10 | 7 |
| | | | | | <u>116</u> | <u>80</u> |

Due to a foaming condition in the annulus the calculated production is high, however an actual production rate of 80 BOPO was used and each well prorated back to this amount to determine more accurately the productivity of each well.

It was assumed that the GOR on each well remained constant.

October 6, 1971.

Order S. & A. Service Rig.

Pull pump and rods on 6-30.

Pull pump and rods on 4-30.

Both pumps were taken to Continental Emco at Virden for repairs.

The 6-30 pump did not require any major repairs, which indicates a formation plugging problem rather than a bottom hole pump failure.

The pump from the 4-30 well required replacement of the standing valve and travelling valve due to wear and corrosion.

Samples of wax and oil were obtained from the bottom hole pumps for further analysis in order to definitely determine the proper stimulation treatment.

The 3-30 location was too wet to pull the rods and pump at the present time.

October 7, 1971.

Run in bottom hole pump and rods at 4-30.

6-30

An acid treatment for production stimulation was performed using 1500 gals D.A.D. with 70%, (23% HCl) 30% D.A.D. with Anti-sludge & surfactant added.

A double amount of inhibitor was added to prevent corrosion to bottom hole pump and rods after start up of pump unit.

The retarding effect of this acid emulsion was 4 hours. The acid was spotted on bottom and left for 30 mins. Squeeze 3 bbls at 1/10 BPM, at 200 PSIG. Shut in 30 mins.

Squeeze 3 bbls at 1/10 BPM at 125 PSIG.

Shut in 15 mins.

Squeeze 6 bbls @ 1/5 BPM at 0 pressure (vacuum) at maximum rate of 1/3 BPM. Run in BH pump and rods. Allow acid to remain in formation for 1 3/4 hours prior to start up of pump units. Total time acid in formation = 6 hours.

October 8, 1971.

Pull pump and rods on 3-30.

The standing and travelling valves showed signs of wear and corrosion. The seating cups showed severe wear and were replaced.

The controls on the test separator on 6-30 were dismantled, cleaned and re-adjusted to facilitate testing of wells.

A sonic fluid level on 6-30 indicated a pump submergence of 1020' under pumping conditions at a rate of 60 BOPD, recorded on test separator. This level may be lower than recorded due to foaming, but shows a marked increase in the production rate.

The pump stroke/minute was increased to 12.5/minute which would result in a rate of 91 BOPD at 80% efficiency.

October 9, 1971.

The test separator at 6-30 was functioning normally, however minor adjustments were necessary.

An inspection of the treator at 11-30 showed normal operation.

Fluid levels performed on 6-30 showed 1090' of pump submergence at a rate of 73 BOPD, proving the increase of productivity after the stimulation.

An extended test on 6-30 well to keep a close check on the production rate to determine the effectiveness of the stimulation for sustained production is recommended.

A fluid level on 4-30 showed the fluid on bottom.

October 10, 1971.

Check on well at 8:00 A.M.

Shoot levels at 4-30 and 6-30.

The results were similar.

Check separator operation.

Drive to Calgary.

XXXXXX
263-6161

XXXXXXXXXXXXXXXXXXXX
#574, 330 - 5th Avenue S.W.,

Omega corner

July 29, 1974

D. & S. Consultants Ltd.,
7th Flr., 550 - 6th Ave. S.W.,
Calgary, Alberta.

Attention: Mr. George Misner

Dear Sir:

Enclosed please find two production summary forms, both of which illustrate royalty details on Omega's wells.

Also, we have obtained by telephone the fluid level shots that were mentioned to you by telephone today.

Fluid levels are as follows:

| WELL | TUBING JOINTS TO FLUID | FLUID LEVEL OVER PERFS | CASING PRESSURE | ESTIMATED PRESSURE |
|----------|------------------------|------------------------|-----------------|--------------------|
| 3-30 | 95 | 85' | 20 PSIG | 50 |
| 4330 | 96 | 70' | 20 | 45 |
| 5-30 | 96 | 60' | 20 | 40 |
| * 6-30 | 94 | 100' | 80 | 120 |
| ** 11-30 | 90 | 220' | 0 | 70 |
| 12-30 | 99 | 0 | 20 | 20 |

Production from 4 wells 40-45 bbls/day.

Oil Gradient \approx .35 psi/ft

- * This well has been shut in for about two weeks because of pump problems.
- ** This well has been shut in for several months following an acid job and has not responded to pumping. It will be reworked in the near term.

We have not been successful in raising Steve Hegion by telephone so I have asked Whistler Petroleum for the royalty details, which will be forwarded to you.

.... /2

- 2 -

If we can obtain any other useful information such as operating cost, now estimated to be \$350/month, we will forward same to you.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T. J. Hall, P. Eng.

TJH/ml
Enclosures

WASKADA OIL FIELD

Summary of Drill Stem Test, Pressure Data
taken from D.S.T., Charts of Waskada wells -
indicating reservoir pressure decline over
the first year of production.

| <u>Waskada Well Number</u> | <u>Date of Test</u> | <u>Initial Shut-in PSIG</u> | <u>Final Shut-in PSIG</u> |
|----------------------------|-------------------------|-------------------------------------|-----------------------------------|
| *11-30 | Jan/67 | 1358 | <u>1358</u> |
| 5-30 | March/67 | 1335 | 1353 |
| 8-25 | May/67 | 1334 | 1334 |
| 6-30 | Nov/67 | 1017 | 1017 |
| 3-30 | Nov/67 | 1109 | 1109 |
| 12-30 | Nov/67 | 1000 | 951 |
| 4-30 | Dec/67 | - | 937 |

*11-30 was the discovery well indicating
an original reservoir pressure of 1358 psig

Bubble Point Pressure Correlation

J. A. IASATER

MAGNOLIA PETROLEUM CO.
DALLAS, TEX.

ABSTRACT

A correlation of the bubble point pressure for black oil systems is developed using the standard physical-chemical equations of solutions. The correlation is based on 158 experimentally measured bubble point pressures of 137 independent systems and is expressed in terms of the usually measured field parameters—flash separation gas-oil ratio, tank oil gravity, total gas gravity, and reservoir temperature.

The data were obtained on systems produced in Canada, Western and Mid-Continental United States, and South America. The average error (algebraic) in the representation is 3.8 per cent, and the maximum error encountered is 14.7 per cent.

INTRODUCTION

In the absence of experimentally measured properties of reservoir fluids, it is often necessary for the field engineer to make estimates regarding the fluid properties based on the usually measured producing parameters. To aid in these estimations, various correlations have appeared in the literature in recent years. Among the pertinent properties of interest is the bubble point pressure. A correlation for this parameter has been reported by Standing¹. However, this correlation was based essentially on California produced crudes and this limitation was pointed out with its presentation. The correlation presented in this paper utilized data on crude oil systems from Canada, Wes-

tern and Mid-Continental United States, and South America.

CORRELATION DEVELOPMENT

The basic assumption used in this development is the same as employed by Standing¹,

$$p_b = f(R, \gamma_g, t, \Gamma) \quad (1)$$

There is a wide variety of ways to combine these parameters; however, in this instance the combination was made on the basis of Henry's law². Accordingly, the relationship proposed is

$$p_b = \gamma_g H' \quad (2)$$

Although Eq. 2 defines an individual system, it is of limited value since H' is a function of gas-phase composition and the system temperature.

It was observed that for the systems where the bubble point was measured at several temperatures that the ratio of the bubble point pressures and the ratio of the corresponding absolute temperatures ($^{\circ}\text{R}$) were practically identical. Thus, for correlation purposes the bubble point pressure may be taken as a direct function of the absolute temperature. This relation is valid only for those systems that are not near the critical point. Accordingly, this correlation will be inadequate for systems in the region of the critical point.

The solubility of the various hydrocarbons found in the gas phase increases with the molecular weight. Thus, the saturation pressure should be inversely related to the gas gravity.

Applying these principles to Eq. 2 and rearranging terms gives:

$$\frac{(p_b)(\gamma_g)}{T} = \gamma_g H \quad (3)$$

The variables on the left side of Eq. 3 were designated as the "bubble point pressure factor".

$$p_b = \frac{n_g}{n_g + n_o} H \quad (4)$$

The number of mols of tank oil per barrel is a function of the "molecular weight" of the tank oil. Although the tank oil is a complex mixture, it was assumed for the purposes of this correlation that a unique molecular weight could be assigned to a given oil. This was designated as the "effective molecular weight", and was related to the oil gravity,

$$M_e = f(\Gamma) \quad (5)$$

This empirical relationship was developed simultaneously with the correlation by assuming values of M_e and working to obtain a smooth curve for both the correlation and the effective molecular weight. The relationship between the oil gravity and the effective molecular weight used in this correlation is shown in Fig. 1.

The effective molecular weight is somewhat higher than the molecular weight of the C_{7+} fraction. The difference between these values is largest for the low-gravity systems. It is noted that this effective molecular

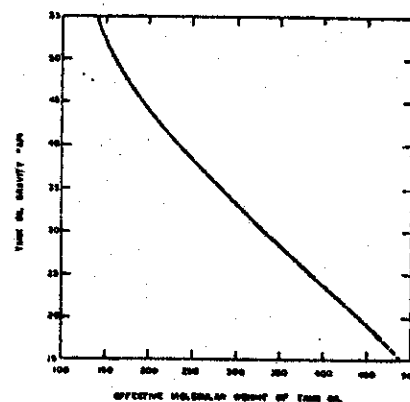


FIG. 1—EFFECTIVE MOLECULAR WEIGHT RELATED TO TANK OIL GRAVITY.

Original manuscript received in Society of Petroleum Engineers office Sept. 15, 1957. Revised manuscript received April 3, 1958. Paper presented at Fall Meeting of Southern California Petroleum Section in Los Angeles, Oct. 17-18, 1957.

¹References given at end of paper.

eight relationship corresponds closely to that given for crude oil system with a UOP characterization factor of 11.8.

The relationship between the bubble point pressure factors calculated from the experimental data and the gas mol fraction is shown graphically in Fig. 2. Representative values of the curve are given in Table 1. Since the representation of Fig. 2 is not a linear function of the variables, H is not a constant. Thus, a simple analytical expression was not obtained, and it is necessary to rely on the graphical representation of Fig. 2 to obtain p_r from y_g .

The bubble point pressure for a given gas-oil system may be obtained from the correlation by the utilization of Figs. 1 and 2. The effective molecular weight is established from the crude oil gravity, Fig. 1, and the gas mol fraction is obtained from the following equation.

TABLE 1—SMOOTHED BUBBLE POINT FACTOR FUNCTION

| Gas Mol Fraction | Bubble Point Pressure Factor |
|------------------|------------------------------|
| 0.05 | 0.17 |
| 0.100 | 0.30 |
| 0.150 | 0.43 |
| 0.200 | 0.58 |
| 0.250 | 0.75 |
| 0.300 | 0.94 |
| 0.350 | 1.19 |
| 0.400 | 1.47 |
| 0.450 | 1.74 |
| 0.500 | 2.10 |
| 0.550 | 2.70 |
| 0.600 | 3.29 |
| 0.650 | 3.80 |
| 0.700 | 4.30 |
| 0.750 | 4.90 |
| 0.800 | 5.70 |
| 0.850 | 6.70 |

$$y_g = \frac{R/379.3}{R/379.3 + \frac{350 y_g}{M_o}} \quad (6)$$

The value of the gas mol fraction is applied in Fig. 2 to obtain the bubble point pressure factor. The bubble point pressure is calculated by use of the following equation

$$p_b = \frac{(p_r)(t + 459.6)}{y_g} \quad (7)$$

The 158 experimentally determined bubble point pressures of the 137 independent crude oil systems were compared with the values predicted by the correlation. This comparison showed an algebraic deviation of 3.8 per cent. Approximately 21 per cent of the data points show a deviation of 0.5 per cent, and 80 per cent have a deviation of less than 6.5 per cent. The maximum error encountered was 14.7 per cent.

The ranges of the field measured parameters covered in this correlation were as follows.

| | |
|-----------------------------------|------------------|
| Bubble point pressures | 48-5780 psia |
| Flash gas-oil ratios | 3-2905 cu ft/bbl |
| Tank oil gravities | 17.9-31.1° API |
| Total Gas gravities (air = 1.0) | 0.574-1.223 |
| Reservoir temperatures | 82-272°F |
| Separator stages (stock tank = 1) | 1-3 |
| Separator temperatures | 34-106°F |
| Separator pressures | 15-605 psia |

This correlation was based on systems essentially free of non-hydrocarbon material. The presence of large amounts of nitrogen, carbon dioxide, hydrogen sulfide, etc., will result in the predicted bubble point being low. The following is given as a guide to the effect of the presence of non-hydrocarbon materials.

| Component | Per Cent of Gas | Error in Predicted ps (Per Cent low) |
|------------------|-----------------|--------------------------------------|
| Carbon dioxide | 9.1 | 5.0 |
| Hydrogen sulfide | 3.1 | 1.1 |
| Carbon dioxide | 3.1 | 1.1 |
| Nitrogen | 2.5 | 2.7 |
| Carbon dioxide | 0.3 | 2.7 |

A calculation chart has been prepared based on this correlation that

permits rapid graphical evaluation of the predicted bubble point. This calculation chart is shown in Fig. 3. The error distribution using the calculation chart is essentially the same as found for the correlation.

CONCLUSION

The correlation is generally applicable to a large number of producing areas and provides a rapid method of estimating the bubble point pressure of crude systems with a reasonable degree of accuracy.

NOMENCLATURE

f = function

γ_g = total gas gravity (air = 1.0)

γ_o = tank oil specific gravity

H' = general Henry's law constant

H = specific Henry's law constant (independent of gas composition and temperature)

M_o = effective molecular weight of tank oil

n_g = mols of gas

n_o = mols of tank oil

y_g = mol fraction of gas

p_b = bubble point pressure, psia

p_r = bubble point pressure, factor

R = total flash separation gas-oil ratio, cu ft/bbl (measured at 60°F)

Γ = tank oil gravity, °API (corrected to 60°F)

t = temperature, °F

T = absolute temperature, °R

ACKNOWLEDGMENT

The author is indebted to C. A. Connally and L. G. Sharp for their many helpful suggestions pertaining to the phase behavior of fluids, and to the Magnolia Petroleum Co. for permission to publish this work.

REFERENCES

1. Standing, M. B.: *Drill. and Prod. Prac.*, API (1947) 275.
2. Hougen, O. A., and Watson, K. M.: *Chemical Process Principles*, John Wiley & Sons, Inc., N. Y. (1943) 1, 146.
3. Watson, K. M., and Murphy, G. F.: *Ind. Engr. Chem.* (1935) 27, 1460.

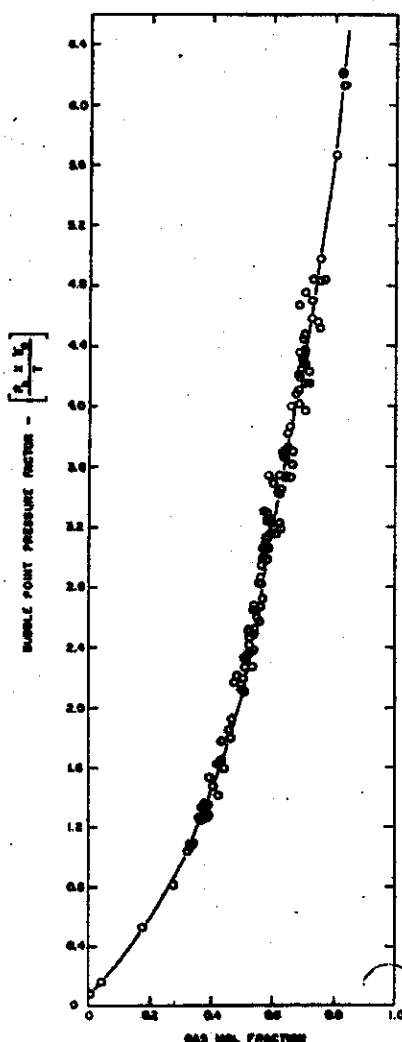
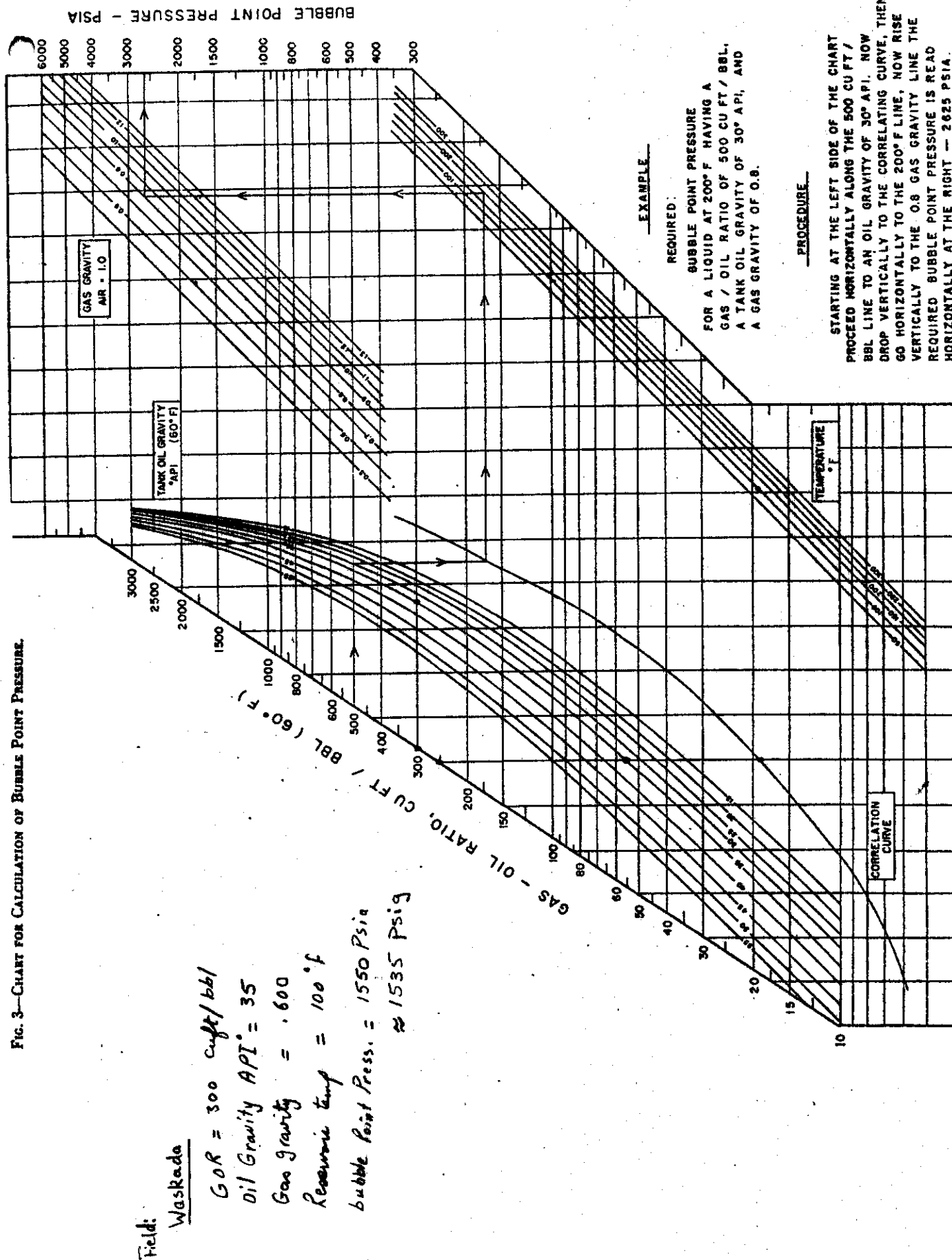


FIG. 2—CORRELATION OF BUBBLE POINT PRESSURE FACTOR.

FIG. 3—CHART FOR CALCULATION OF BUBBLE POINT PRESSURE.



WASKADA OIL FIELD

SUMMARY SHEETS

containing reservoir factors and oil reserve
values for each of the Omega oil wells

OIL RESERVE DETERMINATION

Well: Lsd. 3-30-1-25 WPM
Zone: Alida (Interval 3027 - 3040')
Pay Thickness: 11.0' (log and core analysis)
Average Porosity: 11.5% (log and core analysis)
Porosity Range: 9.0 - 15.3%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 2.2 md.

Based upon the above reservoir factors, the proven primary recoverable oil in the Alida Formation was calculated at 126 Barrels per acre - foot and the original oil in place at 504 barrels per acre - foot.

Based on a productive area of 440 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 3-30-1-25 was calculated at 55,500 Barrels and the original oil in place at 222,000 Barrels.

OIL RESERVE DETERMINATION

Well: Lsd. 4-30-1-25 WPM
Zone: Alida (3046 - 3064')
Pay Thickness: 15.0' (logs) 16' (core analysis)
Average Porosity: 17.9% (logs) 17.5 (core analysis)
Porosity Range: 8.0 - 23.3%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 45.2 md.

Based upon the above reservoir factors including the log data, the proven primary recoverable oil in the Alida Formation was calculated at 196.0 Barrels per acre - foot and original oil in place to be 784 Barrels per acre - foot.

Based upon a productive area of ⁶⁴⁰ 600 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 4-30-1-25 was calculated at 117,000 Barrels and the original oil in place is 468,000 Barrels.

OIL RESERVE DETERMINATION

Well: Lsd. 5-30-1-25 WPM
Zone: Alida (3046 - 3062')
Pay Thickness: 15.9' (core and log analysis)
Average Porosity: 14.3% (core and log analysis)
Porosity Range: 7.6 - 21.7%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 41.2 md.

Based upon the above reservoir factors, the proven primary recoverable oil in the Alida Formation was calculated at 156.0 Barrels per acre - foot and the original oil in place at 624 Barrels per acre - foot.

Based upon a productive area of ⁸⁴⁰ 636 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 5-30-1-25 was calculated at 99,000 Barrels and the original oil in place at 396,000 Barrels.

OIL RESERVE DETERMINATION

Well: Lsd. 6-30-1-25 WPM
Zone: Alida (3022 - 3034')
Pay Thickness: 12.0' (log) (7.9' core analysis)
Average Porosity: 9.0% (log) (10.0% core analysis)
Porosity Range: 6.6 - 15.5%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 5.4 md.

Based upon the above reservoir factors, the proven original oil in place in the Alida Formation was calculated at 99 Barrels per acre - foot and the original oil in place at 395 Barrels per acre - foot.

Based on a productive area of 480 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 6-30-1-25 was calculated at 47,500 Barrels and the original oil in place at 190,000 Barrels.

OIL RESERVE DETERMINATION

Well: Lsd. 8-25-1-26 WPM

Zone: Alida (3068 - 3084')

This zone tested water on a drill stem test and the well was abandoned. Electric logs and diamond cores indicate similar characteristics as the 4-30-1-25 and 5-30-1-25 wells. The pay section appears to be entirely below the water line.

OIL RESERVE DETERMINATION

Well: Lsd. 11-30-1-25 WPM
Zone: Alida (3026 - 3038')
Pay Thickness: 6.0' (log) 5.1% (core analysis)
Average Porosity: 9.8% (log) 9.6% (core analysis)
Porosity Range: 6.4 - 14.2%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 4.85 md.

Based upon the above reservoir factors, including the log data the proven primary recoverable oil in the Alida Formation was calculated at 107.4 Barrels per acre - foot, and the original oil in place at 430.0 Barrels per acre - foot.

Based upon a productive area of ³²⁰240 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 11-30-1-25 was calculated at 25,800 Barrels and the original oil in place at 103,000 Barrels.

OIL RESERVE DETERMINATION

Well: Lsd. 12-30-1-25 WPM
Zone: Alida (3040 - 3055')
Pay Thickness: 10.5' (log) 8.5' (core analysis)
Average Porosity: 11.8% (log) 10.6% (core analysis)
Porosity Range: 5.8 - 13.9%
Recovery Factor: 25%
Formation Volume Factor: 1.150
Connate Water: 35%
Average Permeability: 41.8 md.

Based upon the above reservoir factors, including log data, the proven primary recoverable oil in the Alida Formation was calculated at 130 Barrels per acre - foot and original oil in place at 518 Barrels per acre - foot.

Based upon a productive area of ⁴⁸⁰420 acre - feet, the proven primary recoverable Alida oil underlying Lsd. 12-30-1-25 was calculated at 55,000 Barrels and the original oil in place at 218,000 Barrels.

1 copy to SAM



HYDROCARBONS

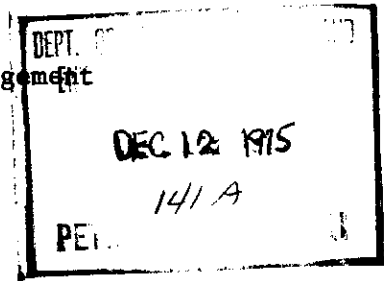
TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

December 11, 1975

Oil and Gas Conservation Board
Petroleum Branch
Department of Mines, Resources and Environmental Management
Province of Manitoba
993 Century Street
BOX 12
WINNIPEG, Manitoba R3H 0W4



Attention: Mr. H. C. Moster, Director

Dear Sir:

RE: Unitization and Waterflood Application

In further support of the above referenced application, we enclose twelve (12) counterparts of the Unit Agreement entitled "Unit Agreement - Waskada Unit No. 1 Manitoba, Canada". These agreements are being forwarded to all Royalty Owners today and we expect to obtain immediate response from all parties.

These documents may be classed as Exhibit No. 5 in our original application and unless advised of any deficiencies we will assume that requirements have been met prior to appearing at the hearing.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T. J. Hall
President

TJH/dlw
Encs.

NW 1/4 - 19 - 1 - 25

O+NG Lease (W 1/2 19) (April 5/67) 1/3 int. J.S. Redden → Copperhead
" " " " (" " ") 1/3 int. D.L. JACK → Copperhead
" " " " (March 29/67) 1/6 int J.W.M. Thompson → Niagara Pet. & Exp. Co.

Assign O+NG Lease " (Sept. 25/67) 1/6 int Niagara → Tri-West Pet. Ltd.

O+NG Lease (W 1/2 19) (April 27/67) 1/6 int R.D. Jack → Western Land Dev. Ltd.

Assign O+NG Lease " (Aug. 15/67) 1/6 int Western L.S.L. → Base Pet. Co. of Can.

Farmout Agreement March ~~1968~~ 22/68 1/6 int Base → $\frac{3}{4} \times \frac{1}{6} = \frac{1}{8}$ Copperhead
 $\frac{1}{4} \times \frac{1}{6} = \frac{1}{24}$ Tri-West

Operating Agreement (W 1/2 19) (Feb. 21/68) Copperhead 19/24 (Operator)
Tri-West 5/24 (Non-Operator)

Surface Lease (NW 1/4 - 19) L.J. McGregor → Copperhead

Province of Manitoba

inter-departmental memo

To:

Mr. H. C. Moster,
Director of Petroleum Branch,
Mineral Resources Division,
993 Century Street.

Date December 2nd, 1975.

From J. S. Roper,
Policy Advisor.

Subject: Draft Unit Agreement - Proposed Waskada Unit No. 1 - Omega Hydrocarbons Ltd.

Due to the pressure of other responsibilities, Mr. Cawley has requested that I respond to your memo of November 20th, 1975 on the above subject.

Re: Your Recommendations

1. Concur with your proposed addition to clause 302. ✓
2. Concur with your proposed addition of clause 503.
 - (i) Question: In the event of acceptance of clause 503, it is assumed that the Board would have to approve any change in the Unit Operating Agreement. Is this correct? (see comment (b) under General)
3. Suggest rewording clause 802 to allow only for re-injection for enhanced recovery purposes. ✓
4. Concur with changing clauses 901 and 1501 to read "two" instead of "one". ✓
5. Suggest rewording clause 1401 - "The unitization provided herein shall become effective at 0800 hours, official time on the first day of A.D. 197 ". Such date being set by the Board.
6. Concur with your proposed clause 1312. ✓
7. "Tract Participation" factors should be included together with the calculations thereof.
8. Concur with your recommendation re "Exhibit B"

General

- (a) In view of the inclusion of the four Copperhead wells to the south in the D. & S. Petroleum Consultants Ltd. report and in the interests of conservation, efficient and economical development and production, it is suggested

. . . 2.

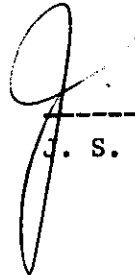
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that the applicant, other parties that may be involved, or the Petroleum Branch, should demonstrate to the Board why the Waskada Field should not be unitized at this time, rather than to proceed with partial unitization of the field.

- (b) In view of the apparent lack of interest in unitization by Copperhead, it is recommended that this application be the subject of a public hearing of the Board so that all Persons have the opportunity of presenting evidence; also that the Board may deliberate the matter of partial or total unitization of the Waskada Field.
- (c) Mr. Redgwell's comments in the second and third paragraphs of his memo to you dated November 19th, 1975, are significant and it is suggested that the Petroleum Branch should place itself in a position to make recommendations to the Board on both subjects.

JSR/eh

c.c. - Jas. T. Cawley, P. Eng.,
- Dr. I. Haugh,
- Mr. J. Redgwell.


J. S. Roper

Province of Manitoba

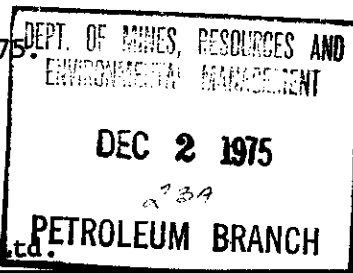
inter-departmental memo

To:

Mr. H. C. Moster,
 Director of Petroleum Branch,
 Mineral Resources Division,
 993 Century Street.

Date December 2nd, 1975

From J. S. Roper,
 Policy Advisor.

Subject: Waterflood Application - Waskada Field - Omega Hydrocarbons Ltd.

Copy of Omega's application to the Board to initiate a pilot waterflood scheme in the subject field, dated November 19th, 1975, together with Exhibit No. 1, 2, 3 and 4 is acknowledged.

Review of the material suggests that the subjects of unitization and waterflood can be handled at the same time and it is suggested that the Petroleum Branch prepare the material accordingly.

Some of the comments in the exhibits appear to bear on the advisability of unitizing the field and waterflooding the field versus partially doing so.

As per our telephone discussion the D. & S. report suggests a different sequence in initiating the waterflood than is being proposed by Omega. However, this is undoubtedly occasioned by the lack of interest on the part of Copperhead and Whistler. Your attention is drawn to Exhibit No. 4 re Copperhead and reference to possible expansion.

Subject to concurrence by other members of the Board, it is suggested that, if possible, the several matters presently requiring the attention of the Board be included in one agenda for a hearing; further that the hearing be convened in Winnipeg at an early date convenient to the Chairman.

 J. S. Roper.

JSR/eh

c.c. - Jas. T. Cawley, P. Eng.,
 - Dr. I. Haugh,
 - Mr. J. Redgwell.

First | Fold

- ① No "Accounting Procedure" - not req'd because only 1 WIO
- ② Appears "Article IX" should have Clause stating that if unit is enlarged to include more than 1 WIO, then an "Accounting Procedure" shall be entered into by all WIO's.
Also "Common Account"
- ③ "Effective Date" - should be better controlled
"say as per Board Unit Order" possibly OK
- ④ Defn of "Gas & Oil" included under defn of "Petroleum Substances"
- ⑤ "Investment Account" also not included which would be req'd if more than 1 WIO.
- ⑥ Defn of "Lease" different, appears workable!
do all overriding royalties, formants, etc qualify as "Working Interest"?
- ⑦ "Operating Committee" should allow for same if more than 1 WIO.
- ⑧ "Participating Interest" - (same)
- ⑨ "Royalty Interest" + "Royalty Owner" used instead of "Royalty Owner"
- ⑩ Should add "Unit Facilities" and "Unit Operated Wells" if more than 1 WIO!
- ⑪ No defn. of "Well"? OK under 307. ✓
- ⑫ Should spell out unit's Name?
- ⑬ "Personal Property Excepted" - due to no accounting agreement or Investment Account due to only 1 WIO, this clause appears satisfactory. Would not work if more than 1 WIO.
- ⑭ Determination of Trust Participation Factors? 602
- ⑮ Unit operator to comply with all laws of Province
- ⑯ No insurance clause (one WIO)

November 20, 1975

The Oil & Natural Gas

Conservation Board:

Jas. T. Cawley, P. Eng., Chairman

J. S. Roper, Deputy Chairman

I. Haugh, Member

H. C. Moster

Director

Petroleum Branch

Draft Unit Agreement — Proposed Waskada Unit No. 1 — Omega Hydrocarbons Ltd.

Via letter dated October 6, 1975, Omega Hydrocarbons submitted a draft copy of a proposed Unit Agreement covering a portion of the Waskada Field requesting an answer as to the acceptability of the draft.

Sec. 74(2) of The Mines Act states that a unitization agreement "shall not be put into effect unless the agreement has been approved by the board."

Sec. 74(3) states "The board shall not approve a unitization agreement . . . unless the royalty owners . . . agree to the unit operation thereof, either as parties to the unitization agreement or by separate agreement."

In light of the above it appears that only an opinion or suggestion should be given as the draft agreement prior to it being finalized, approved by the royalty owners and submitted to the Board for official approval.

The draft was checked by comparing it with the "Normal" unitization agreements used to date in Manitoba (Chevron's standard format). Although the essential ingredients appeared to be included, the wording in the draft varied significantly. The draft and a copy of the unit agreement for West Butler Unit No. 1 were submitted to the Departmental Solicitor for comment. These comments were received via memo dated November 19, 1975 (copy attached).

A check on the standard unitization agreement presently being used in Alberta and recommended by the Minister of Energy and Natural Resources indicated the draft to be almost identical (copy of North. Kitscoty attached).

Recommendations:

With the concurrence of the Board, I propose to contact Omega with the following suggested amendments to the proposed agreement:

1. Add the following to clause 302:

"subject to the Working Interest Owner's rights and interests therein as may be set forth in a Unit Operating Agreement."

2. Add the following clause after clause 502:

"503. Unit Operating Agreement

If more than one person executes this agreement as a Working Interest Owner, then the Working Interest Owners shall negotiate and execute a Unit Operating Agreement, providing among other things, for the conduct of the operations hereunder and the distribution of costs among the Working Interest Owners. Until such Unit Operating Agreement has been executed by the Working Interest Owners, only those Tracts in which the Working Interest is held by the person holding the Working Interest in the majority of the Tracts may be qualified for inclusion in the Unit Area. Subject to the other provisions of this Agreement, the cost of all operations conducted hereunder by the Working Interest Owners shall be borne by the Working Interest Owners."

7th Unit Operating Agreement and all amendments thereto are subject to the approval of the Board.

- 601
3. The storage rights granted under clause 802 are quite liberal. Should this clause possibly be re-worded to only allow for re-injection for enhanced recovery purposes?
 4. Change clauses 901 and 1501 to read "two" counterparts of agreement to enable Unit Operator to keep one and have one available to submit to the Board.
 5. To comply with Section 74(2) of the Act clause 1401 with respect to Effective Date be amended to read as follows:

changed { "The unitization provided for herein shall become effective at 8:00 a.m. on the first day of the month following the date on which the Conservation Board has approved this agreement."

6. The following clause be added after clause 1311:

"1312. Approval of Conservation Board

This agreement is subject, in its entirety, to the approval of the Conservation Board."

7. The "Tract Participation" figures have not been included in the draft nor is there any indication as to how such interests will be determined. Also the tracts have been determined according to common royalty ownership. Such would indicate that individual well performance may not be used in determining tract participation. This is not known at this time.
8. Omega be requested to improve the general presentation shown on "Exhibit B" to better illustrate Ltd. layout and general unit location, Unit boundary and tract boundaries.

Notes:

Section 74 of the Act permits the Board to approve a unitization agreement without holding a public hearing provided 100% of the royalty owners affected agree to the agreement (i.e. - voluntary unitization).

Section 76 of the Act states the Board may hold a hearing upon its own motion to consider unitization and may order (with the approval of the Lieutenant Governor in Council) the unitization within certain conditions.

Therefore the Board has 2 means of effecting the proposed unitization:

1. Approve final agreement when submitted by applicant.
2. Call a hearing and make a Unitization Order.

Nine of the present ten units had hearings and are covered by Unit Orders.

Units covered by Unit Orders require hearings or re-hearings for any amendments, enlargements, etc. to the Unit Order.

The Applicant has stated he would like to avoid the expense of attending a hearing if possible. A hearing would allow the parties outside the proposed unit to see and express their views on the agreement, especially with respect to possible future enlargements. Also it appears that a "pilot" waterflood application for within the proposed unit will also be submitted prior to approval of the final agreement, which may require a hearing.

The present unitization application being processed for Daly Unit No. 3 shall require a hearing to be held.

In light of the above points, it is recommended the final unitization agreement be heard at a hearing. Arrangements to cover all, or as many of the above matters as possible, at such hearing could be arranged.

The Board's views on the items discussed herein are requested on or before November 25, 1975.

H. C. Moster

HCM/et
Attachs.

inter-departmental memo

To:

Mr. H. C. Moster, Director
Petroleum Branch
Mines, Resources and
Environmental Management
Century Plaza

Date

November 19, 1975

From

J. F. Redgwell
Departmental Solicitor

Subject:

UNIT AGREEMENT - WASKADA UNIT NO. 1 - OMEGA HYDRO CARBON LTD.

Confirming our telephone conversation of the 17th, the Waskada Agreement runs somewhat parallel to the West Butler Agreement, however there are some important distinctions.

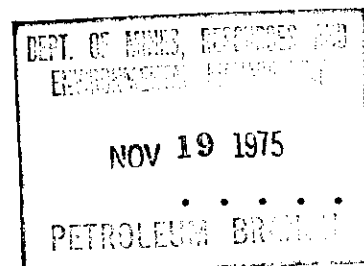
In the Waskada Agreement, the operations of the Unit Operator are not controlled at all, whereas the West Butler Agreement contains a number of provisions.

The Waskada Agreement omits many portions of the West Butler Agreement which pertain to the relationship between the working interest owners.

Whether or not these omissions should be included in the Waskada Agreement probably depends on whether or not the Board will allow the Waskada Agreement to operate so as to allow for enlargement at a later date. I think that any enlargement (section 901) really requires further approval of the Board, and that Omega should really be looking to the execution of a new agreement at such time as enlargement takes place.

Perhaps the agreement should contain a provision that it is subject, in its entirety, to the approval of the Board. The "effective date" of the agreement, at least, cannot be a date prior to the approval given by the Board pursuant to section 74(2).

Exhibit "A" does not have a percentage figure for Tract participation.




H. C. Moster

- 2 -

Nov. 19, 1975

Whether or not the Board decides to proceed to a hearing is entirely up to it, as it is not necessary to do so.

Both agreements are attached.



.....
J. F. Redgwell
Departmental Solicitor

/gs
Encs.

767m



HYDROCARBONS Ltd.

TELEPHONES

ACCOUNTING 263-6161

EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

November 19, 1975

Oil and Gas Conservation Board
Petroleum Branch
Department of Mines, Resources and Environmental Management
Province of Manitoba
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster, Director

Dear Sir:

Re: Unitization and Waterflood Application

Pursuant to Section 74 Part III of the Mines Act and Revised Regulation, Omega Hydrocarbons Ltd. herein submits on behalf of itself an application to Unitize its segment of the Waskada Oil Field and to initiate a pilot waterflood scheme covering the area (Lsd. 11, 12 and the SW $\frac{1}{4}$ of Section 30, Township 1, Range 25, West of the First Meridian) as more particularly described in the enclosed and accompanying material.

In support of the application we submit twelve (12) copies of each of this letter and the following Exhibits:

Exhibit No. 1

Unit Proposal and Waterflood Plan dated October, 1975;

Exhibit No. 2

Waterflood Report prepared by D. & S. Consultants Ltd.
entitled Waskada Alida Beds Oil Pool Waterflood Potential;

Exhibit No. 3

A set of updated production decline curves which incorporates production information subsequent to the date of preparation of the D. & S. Consultants report;

With regard to the Unit Agreement we have already provided your Department with draft copies of our proposed form of Agreement. It is proposed that once having your direction as to the preferred form of Unit Agreement we would then submit the required number of copies of such Agreement and in further support of the application proof of Royalty Owner approval.

November 19, 1975

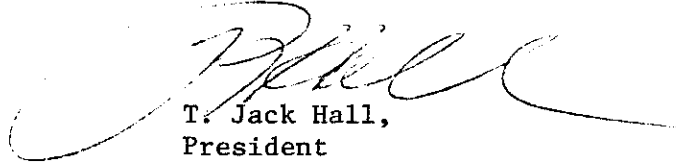
Exhibit No. 4

A draft copy of the letter which is intended to be forwarded to all Royalty Owners.

It would be appreciated if you could advise this office of any additional requirements or deficiencies which would be instrumental in your approval.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall,
President

TJH*vs

Letter to J. L. G. Oct 16



HYDROCARBONS Ltd.

TELEPHONES

ACCOUNTING 263-6161
EXECUTIVE 261-7670

574 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

October 6, 1975

Province of Manitoba
Department of Mines, Resources and
Environmental Management
Petroleum Branch
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4

Attention: Mr. M. Less

Dear Sirs:

Re: Waskada Oil Field, Manitoba

Pursuant to our interest in installing a water flood scheme in the North end of the Waskada Field we enclose four (4) copies of a draft Unit Agreement which if acceptable to the Department will be prepared in execution form.

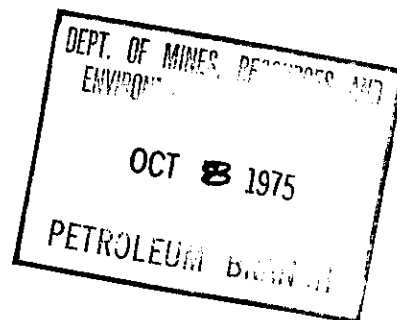
We wish to draw your attention to a number of items which we consider unique to this Agreement.

Firstly Omega is the only working interest owner and therefore should not require the normal operating provisions of the Plans now in effect. We have provided for the situation where enlargement would bring in at least one additional working interest owner. At that time we would propose entering into an Operating Agreement with the new Parties which would be negotiated with such parties. The Unit Agreement is based on the model and revised to incorporate the single Working Interest Owner but of course providing for the possibility of enlargement.

* As mentioned, we would appreciate having an answer on the draft as to its acceptability as soon as possible as we are taking every avenue in our attempt to place the flood into operation.

Incidentally initial tests on our 11-29 water wells is an available supply of some 1500 barrels per day flowing. This volume

.... 2



would provide reservoir fill up in approximately one year. The sooner we get it under way the sooner the response.

If you have any problems with the Agreement please call by telephone because the mail has been very slow in recent weeks.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T. Jack Hall,
President

TJH*vs

Encl.

COPY

DEC 29 1976

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

ATTENTION: Mr. T. J. Hall,
President.

Dear Mr. Hall:

Further to the Department's letter of 76 11 18, Omega's letter of 76 11 30, and subsequent telephone conversations, attached is a revised draft agreement for your perusal.

Your comments will be appreciated.

Yours sincerely,

RECEIVED BY

RECEIVED BY

for H. C. Moser, P. Eng.,
Director, Petroleum Branch.

JSR/dw

Attachment.

c.c.: Manitoba Mineral Resources Ltd.
Jas. T. Cawley, P. Eng.

b.c.: J. S. Roper.
I. Haugh.✓
J. F. Redgwell.

DEC 30 1976

RECEIVED BY

THIS AGREEMENT made as of this th day of , 19 .

B E T W E E N:

OMEGA HYDROCARBONS LTD., a body corporate,
with a registered office in the City of
Calgary, in the Province of Alberta and
duly licensed to carry on business in the
Province of Manitoba
(hereinafter called "Omega")

PARTY OF THE FIRST PART

A N D

MANITOBA MINERAL RESOURCES LTD., a body
corporate, incorporated under the laws
of the Province of Manitoba
(hereinafter called "Manitoba Mineral")

PARTY OF THE SECOND PART.

WHEREAS Manitoba Mineral wishes to expedite the further exploration and
development of oil and gas opportunities in the Province of Manitoba;

AND WHEREAS Manitoba Mineral is entitled to work the Crown oil and gas
mining rights within the Crown lands as hereinafter described and to acquire Crown
leases within the Crown lands;

AND WHEREAS Manitoba Mineral and Omega wish to carry out joint oil and gas
exploratory operations thereon;

AND WHEREAS Omega is prepared to provide the operational management of the
program as hereinafter described;

NOW THEREFORE THIS AGREEMENT WITNESSETH THAT in consideration of the premises
and of the mutual covenants and agreements hereinafter set forth and contained the
parties hereto agree as follows:

1. DEFINITIONS

In this Agreement, including this Clause and the recitals hereof, unless the
context otherwise requires:

- (a) "Accounting Procedure" means the Accounting Procedure attached to the Operating Procedure;
- (b) "complete", "completion" or "completed" means:
 - (i) in the case of a gas well, to set in the well production casing and to place in the well all equipment necessary for the taking of production up to and including the outlet valve of the wellhead and running an adequate back pressure test, or
 - (ii) in the case of an oil well, equipping such well for taking production up to and including the outlet valve of the wellhead or pump if initially required and supplying sufficient tankage and other equipment required for the taking of production, or
 - (iii) in the case of a well which, according to good oilfield practice, should be abandoned, to abandon;
- (c) "contract depth" means with respect to the drilling of any well hereunder, the drilling thereof to a depth sufficient to test the Mission Canyon formation or to the projected subsurface depth as determined by Omega in its capacity as Operator;
- (d) "Crown lands" means the Crown oil and gas mining rights in the geological formations under Section 29-1-25 WPM;
- (e) "Crown leases" means the grants or dispositions of petroleum substances arising out of this Agreement which Manitoba Mineral is entitled to acquire from the Manitoba Crown in accordance with the Oil and Gas Regulations;
- (f) "Joint Operator" shall mean a party to the Agreement having an interest in the joint lands;
- (g) "oil and gas mining rights" means the rights granted under Section 6 of The Mines Act, Cap. M160;
- (h) "Operating Procedure" means the attached Schedule "A";
- (i) "the Operator" shall mean the party hereto appointed by the Joint Operators to carry out operations hereunder for the joint account;
- (j) "paying quantities" means the output from a well of such quantity of petroleum substances, or any of them, as considering the cost of completing and operating a well and the price, kind and quality of such production would warrant and justify the drilling and completion of a like well;
- (k) "petroleum substances" means petroleum and natural gas and every other mineral or substance, or any of them, an interest in which is granted or acquired under the title documents.

Words and expressions used in this Agreement, unless otherwise specified or necessarily required by the context, shall have the same meaning as in The Mines Act, R.S.M. 1970, Cap. M160, as amended from time to time and the Regulations thereunder ("Oil and Gas Regulations"), as amended from time to time.

The headings of the Clauses of this Agreement are inserted for convenience of reference only and shall not affect the meaning or construction thereof.

Whenever the plural or masculine or neuter is used in this Agreement, the same shall be construed as meaning singular or feminine or body politic or corporate and vice versa where the context so requires.

The provisions of The Mines Act and the Oil and Gas Regulations, as amended from time to time shall apply to all operations under this Agreement.

2. INTEGRATION OF INTERESTS

- (a) Manitoba Mineral and Omega hereby combine and integrate their respective interests in the Crown lands for the purposes of conducting the joint operations hereinafter set forth and described. For so long as this Agreement is in effect the parties hereto shall, subject to Clause 4 hereof, jointly own the production of petroleum substances from the Crown lands and shall jointly own all property relating thereto and shall share all costs for the joint account incurred after the signing of this Agreement except as noted in Clause 2(b) and (c) in accordance with the following undivided percentages of interest (hereinafter called "participating interests")

| | |
|------------------|-------|
| Omega | -75% |
| Manitoba Mineral | - 25% |

- (b) All costs and expenses for the drilling and completion of the test well referred to in Clause 4(a) shall be shared, Omega 80%, Manitoba Mineral 20%, and the resulting participating interests shall be Omega 75%, Manitoba Mineral 25%. For each well drilled after the test well referred to in Clause 4(a), all costs and expenses shall be shared, Omega 75%,

Manitoba Mineral 25% and the resulting participating interests shall be Omega 75%, Manitoba Mineral 25%.

- (c) Omega shall conduct and bear the costs of such geological and/or geophysical studies as are required for locating the test well referred to in Clause 4(a).
- (d) All costs of maintaining productive Crown leases in good standing and in full force and effect shall be for the Joint Account.
- (e) The terms of the Operating Procedure shall apply provided that if any conflict arises between the provisions of the Operating Procedure and the provisions of this Agreement, the latter shall prevail.

3. WARRANTY OF TITLE

Subject to the terms of any lease acquired pursuant to Clause 4, Manitoba Mineral covenants that it has the right or is entitled to acquire the right to explore for and produce petroleum substances from the Crown lands, and that with the exception of the Crown royalty such right is unencumbered and that it has not entered into any agreement under which any other person, firm or corporation may acquire an interest therein. Other than the aforesaid Manitoba Mineral makes no warranty of its respective rights.

4. WELL OBLIGATIONS - PROGRAM

The parties agree to conduct the following program:

- (a) Prior to January 1, 1978 Omega shall have drilled a test well to contract depth within the Crown lands, and
- (b) Prior to January 1, 1979 Omega shall have drilled a further test well to contract depth on a quarter section within the Crown lands not drilled pursuant to (a).

- (c) In the event that the test well referred to in (a) above or any subsequent well drilled within the same quarter section produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on that quarter section as warranted in accordance with Clause 3.
- (d) In the event that the test well referred to in (b) above or any subsequent well drilled within the Crown lands produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the quarter section on which the well is located as warranted in accordance with Clause 3.
- (e) In the event that a well is drilled to contract depth within the Crown lands and does not produce oil in paying quantities and is not completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the quarter section on which the well is located for a minimum primary term of three (3) years.

5. ASSIGNMENTS

Manitoba Mineral shall deliver to Omega such assignment or assignments or other instruments as may be necessary or proper in order to vest that portion of the Crown leases and the Crown lands in Omega in accordance with its respective participating interest.

6. TERMINATION

- (a) This Agreement shall terminate in the event that the test well referred to in 4(a) has not been drilled by January 1, 1978.
- (b) This Agreement shall terminate twelve (12) months from the date of rig release from the last well drilled under this Agreement with respect to any of the Crown lands not under lease.

- Unless otherwise agreed*
- (c) This Agreement shall not terminate with respect to any of the Crown lands held under lease during the term of such lease.
- (d) Notwithstanding the provisions of (a), (b) and (c) this Agreement shall terminate if both parties to this Agreement agree in writing to the termination thereof.

7. CONDUCT OF OPERATIONS

- (a) Omega shall be the initial operator and in carrying out all operations hereunder the operator shall use only approved and accepted methods and scientific instruments and will carry out the operations with all reasonable diligence and to the best of its skill and ability, and will, if required in writing by a Joint-Operator, meet with said Joint-Operator or such employees or agents as shall be designated to confer and discuss the operations being carried on by the operator, said meeting to be held at the time and place designated by the Joint-Operator;
- (b) The operator shall pay all accounts for labour, wages, salaries, materials, fees and other services supplied for the carrying out of all operations under this Agreement in accordance with the terms and conditions as set out in the Operating Procedure;
- (c) The operator shall not allow any liens or other encumbrances to arise or accumulate on or against the Crown lands resulting from its operations hereunder except such as may be contested in good faith and shall take such steps as may be necessary to have any lien or other encumbrance removed from the Crown lands forthwith;
- (d) The operator shall supply the Joint-Operator with copies of original invoices.

8. TIME

Time is of the essence.

9. CONFORM TO LEGISLATION

The operator shall conform to all applicable statutes, regulations and other legislation, as amended from time to time.

10. FORCE MAJEURE

A party to this Agreement shall not be liable for damages to the extent that such party is prevented from complying with its obligations under this Agreement in whole or in part by strikes, lockouts, acts of God or the Queen's enemies, war, laws, orders or regulations of governmental bodies or agencies, unavoidable accidents, delays in transportation, inability to obtain necessary materials in the open market, or any other cause, except lack of finances, whether similar or dissimilar to those specifically enumerated, beyond the reasonable control of the party affected, but such party shall, as far as possible remedy the cause of such non-compliance with all reasonable dispatch, provided that this requirement does not impose upon such party the necessity to settle strikes, lockouts or other labour difficulties to its detriment, and provided further that the force majeure exoneration as contained in this paragraph shall not operate as a suspension or relief of obligations mentioned in agreements with the respective owner or lessor of mineral rights.

11. REPORTS OF WORK

The Operator shall keep the Joint-Operator informed in writing as to all operations conducted under this Agreement and shall supply the Joint-Operator with any additional information it may specifically request pertaining to operations under this Agreement.

12. NO USE OF NAME OF DEPARTMENT

Omega covenants and agrees that it will not use, suffer or permit to be used, directly or indirectly, the names of either Manitoba Mineral or the Province of Manitoba

(including the name of any department of the Government of Manitoba) for the purposes of or in connection with the financing of or obtaining financial assistance for any of the operations under this Agreement or the promotion of any corporate enterprise, syndicate, partnership or other association designed, intended or purporting to control, direct or finance, directly or indirectly, such operations.

13. ADDRESSES FOR SERVICE

The addresses for service of or notice to the parties are:

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

Manitoba Mineral Resources Ltd.,
603 - 491 Portage Avenue,
Winnipeg, Manitoba.
R3B 2E4

A party may from time to time change its foregoing address by written notice to the other. Any notice may be served by mailing the same, postage prepaid, in a properly addressed envelope addressed to the party to whom the notice is to be given at its stated address for service and such notice shall be deemed to be received seventy-two (72) hours after the mailing thereof.

14. PUBLIC INFORMATION RELEASES

All public information releases shall prior to release, be first approved by both parties.

15. RELATIONSHIP OF PARTIES

Where the parties incur a liability to any other person, such liability shall not be joint or several, but each party shall be separately liable to the other person for a portion of the total liability calculated in accordance with its participating interest. It is not the purpose of this Agreement to create any partnership or joint venture relationship, and neither this Agreement nor the program nor any operation conducted under it shall be construed and considered as creating any such relationship.

6. FURTHER DOCUMENTS

Each of the parties shall at all times do all such further acts and execute and deliver all such further deeds and documents as shall be reasonably required in order fully to perform and carry out the terms and intent of this Agreement.

17. CONFIDENTIAL INFORMATION

Subject to the Oil and Gas Regulations, all data and information of whatsoever nature acquired by the parties from any operation pursuant to this Agreement or supplied by one party to the other pursuant to this Agreement shall be for the sole and exclusive use and benefit of the parties unless the parties agree to the dissemination of such information, or unless a party is required to give such information to any recognized association within the petroleum industry, of which it is a member, that engages in the exchange of factual information relating to the type of operations contemplated by this Agreement, provided that information relating to wells drilled on a confidential basis to the parties, or any of them, shall not be disclosed. For greater certainty, upon the termination of this Agreement, any relationship of a fiduciary nature among the parties, or any of them, that may have been created with respect to any information as described above shall also terminate.

18. ENUREMENT

This Agreement and everything therein contained shall enure to the benefit of and be binding upon the parties hereto and the successors and assigns of the parties hereto.

IN WITNESS WHEREOF the parties hereto have duly executed this Agreement as of the day and year first above written.

MANITOBA MINERAL RESOURCES LTD.

OMEGA HYDROCARBONS LTD.

attached to and made a part of that certain Agreement dated the _____ day of _____, A.D. 19____; and made between Omega Hydrocarbons Ltd. and Manitoba Mineral Resources Ltd.

ACCOUNTING PROCEDURE

PART I GENERAL

101. Definitions

In this Accounting Procedure:

- (a) "Agreement" means the agreement to which this Schedule is attached.
- (b) "Controllable Material" means Material classified as controllable in the Controllable Material Price Catalogue, as revised from time to time, of the Petroleum Accountants Society of Western Canada.
- (c) "For the Joint Account" means for the benefit and risk and at the expense of the Parties, in accordance with their respective interests in the Joint Property.
- (d) "Joint Operations" means all operations for the Joint Account.
- (e) "Joint Property" means property held for the Joint Account.
- (f) "Material" means the equipment, machinery and supplies acquired for the Joint Account and classified as follows:
 - (1) Condition "A" means that which is new;
 - (2) Condition "B" means that which has been used but is sound and is suitable for its original function without reconditioning;
 - (3) Condition "C" means that which has been used and would be suitable for its original function after reconditioning or that which cannot be reconditioned for, but has a limited service in, its original function;
 - (4) Condition "D" means that which is not suitable for its original function but is usable for another function; and
 - (5) Condition "E" means that which is junk.
- (g) "New Price" means the cost of Condition "A" Material at the reputable supply store where such Material is available or at the carrier-receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. Tubular goods 2 inches in diameter and over shall be priced on a carload basis. Any cash discount that may be allowed by a dealer shall not be deducted in determining the New Price.
- (h) "Non-Operators" means the Parties, whether one or more, other than Operator.
- (i) "Operator" means the person, firm or corporation designated in the Agreement to conduct the Joint Operations.
- (j) "Parties" means the persons, firms and corporations who are bound by the Agreement.

102. Approvals

- (a) Approvals required under Clauses 204, 306, 316, 318, 405, and 501 shall be obtained by Operator in writing from the _____ ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.
- (b) Approvals required under Clauses 303(c) and 314(b)(2) shall be obtained by Operator in writing from the ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.

PART II

RECORDS, BILLINGS AND RELATED MATTERS

201. Records

Operator shall maintain records of Controllable Material (excluding replacements) showing the date of acquisition, description, cost for the Joint Account and details of retirement of each item of Controllable Material. Operator may maintain records of replacements of Controllable Material.

202. Bills

Operator shall bill Non-Operators on or before the last day of each month for their share of charges recorded during the next preceding calendar month. Bills shall be accompanied by statements as set forth under paragraph b below:

- (a) statements of all charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof.
- (b) statements, as follows:
 - (1) Controllable Material, in detail; and
 - (2) ordinary charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof; and
 - (3) other charges and credits, in detail.

203. Payments and Refunds

Bills shall be paid within 15 days after receipt thereof. Credits shall be refunded within 15 days after bills are rendered.

204. Right to Protest or Question Bills

Any of Non-Operators may protest or question the correctness of a bill, notwithstanding the payment of it, if such protest or question is made in writing to Operator within the 26 months next following the end of the calendar year in which the bill was presented, otherwise the bill shall be deemed conclusively to be correct for all purposes. No adjustment favourable to Operator shall be made after such period except with approval pursuant to Clause 102(a).

205. Audits

Any of Non-Operators, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records maintained for the Joint Account for any calendar year within the 24 month period next following the end of such calendar year. Any claims of discrepancies disclosed by such audit shall be made in writing to Operator within the 26 month period next following the end of such calendar year. Where two or more Non-Operators desire to conduct audits, they shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to Operator. Costs of audits shall be borne by all Non-Operators.

PART III CHARGES

Operator may incur for the Joint Account and charge under this Part III the following:

301. Rentals, Royalties and Other Payments

Rentals, royalties and other payments required to maintain the interest of the Parties in the Joint Property.

302. Labour

- (a) Salaries and wages of Operator's employees while directly engaged in work, other than operation and maintenance, on the Joint Property.
- (b) Salaries and wages of Operator's employees (up to and including) (below) the first level of field supervision while directly engaged in operation and maintenance on the Joint Property, and salaries and wages of Operator's technical employees while directly engaged in operation and maintenance on the Joint Property.
- (c) In this Clause, "operation and maintenance" means all operations associated with the Joint Property exclusive of exploration operations, Construction Projects and Drilling, as defined in Clauses 314(a)(1) and 314(a)(4).

303. Employee Benefits

Operator's costs with respect to employees whose salaries and wages are chargeable under Clause 302:

- (a) for holiday, vacation, sickness and disability benefits and other customary allowances, which may be charged as a percentage of the said salaries and wages in accordance with Operator's cost experience; and
- (b) for any payments made and borne by Operator pursuant to any law applicable to it as an employer other than any law relating to benefits chargeable under Clause 303(a); and
- (c) for its established employee benefit plans, but not in excess of 15 percent of the total charges under Clauses 302 and 303(a). The said rate may be adjusted from time to time upon approval pursuant to Clause 102(b).

304. Travel Expenses

Travel expenses of employees whose salaries and wages are chargeable under Clause 302.

305. Material

Costs, as provided in Part IV, of Material purchased or furnished by Operator and of transporting such Material.

306. Services and Utilities

Costs of services and utilities for Joint Operations obtained from persons not Parties, except costs of professional consultants' services which shall be charged only with approval pursuant to Clause 102(a).

307. Operator's Facilities and Equipment

Costs for use of Operator's own facilities and equipment in accordance with Clause 406.

308. Damage or Loss to Joint Property

Costs of replacements or repairs to the Joint Property resulting from damage or loss for which Operator is not liable.

309. Damage Claims

Costs of damage claims arising out of Joint Operations and for which Operator is not liable.

310. Acquisition of Surface Rights and Legal Services

Costs of acquisition of surface rights and of legal services for title work. Fees and related expenses associated with other legal services may be charged only with approval of the Parties.

311. Taxes

Taxes paid for the Joint Account.

312. Insurance

Premiums paid for insurance that Operator is required to carry for the Joint Operations.

313. Camp and Housing Expense

Costs of operating and maintaining all necessary camp and housing facilities for, and boarding of, employees whose salaries and wages are chargeable under Clause 302; provided that the charges for Operator's own facilities shall be commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment, less any revenue therefrom. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year. When operations in addition to the Joint Operations are served by these facilities the charge for such facilities shall be apportioned among all such operations on an equitable basis.

314. Overhead

Overhead as provided in Clause 314(b).

(a) In this Clause 314:

- (1) "Construction Project" means any construction or installation undertaken for the Joint Account, including each subsequent addition thereto or alteration thereof or replacement of Controllable Material thereon, but does not include Development.
- (2) "Cost" means the total direct expenditures (less any credits received thereon) exclusive of expenses of litigation, judgments, settlement of claims, royalties on production, salvage credits for Material retired and the value of injected substances purchased for enhanced recovery.
- (3) "Development" means Drilling, installation or additions of equipment and replacement of Controllable Material on or in wells.
- (4) "Drilling" means the drilling, completing, capping, plugging and abandoning, deepening, plugging back, drilling or reconditioning of a well (except routine cleanout and pump or rod pulling operations) or the conversion of a well to a source, input or producing well.
- (5) "Operation and Maintenance" means all operations associated with the Joint Property exclusive of Development, exploration operations and Construction Projects.
- (6) "Overhead" means an allowance for salaries, wages, employee benefits and expenses of all Operator's employees not chargeable elsewhere in this Part III, and maintaining and operating offices that are not Joint Property.

(7) "Producing Well" means a well for the Joint Account that in a calendar month:

- (i) has an allowable for crude oil attributable to it; or
- (ii) is connected to a permanent gas sales outlet, source or injection system; or
- (iii) is used as a disposal well;

provided that a well that is Drilling during the entire month or is permanently shut in and awaiting abandonment shall not be considered a Producing Well, and a well completed in more than one zone shall be considered a separate Producing Well for each such zone.

NOTE:

Select either the Combined Rate Basis or the Percentage Rate Basis below.

(b) Combined Rate Basis

(1) (i) for Drilling with a rig and crew, \$ 55.00 per well per day beginning on the date of commencement of Drilling and terminating on the rig release date, but, if Drilling is suspended for any period of 15 or more consecutive days while a rig is on location, no charge shall be made for any part of such period of suspension.

(ii) for each Producing Well, \$ 125.00 per month.

(iii) for each Construction Project,

(a) 5 percent of the first \$ 25,000.00 of Cost, plus

(b) 3 percent of the next \$ 50,000.00 of Cost, plus

(c) 1 percent of Cost exceeding the sum of (a) and (b),

provided that no charge shall be made under this Clause 314(b)(1)(iii) for any Construction Project the total Cost of which is less than \$ 10,000.00 5,000

(iv) for exploration operations the following charges shall begin on the day an exploration crew or party commences work on the site of exploration operations and terminate when it ceases work on the site:

| | Charge Per Operating Crew or Party Day Operator Owned | Contract |
|---|--|-------------------|
| Seismograph Party | | |
| Gravimeter Party (including Aeromagnetic surveys) | | |
| Geological Surface Party | | To be negotiated. |

The rates in this Clause 314(b) (1) (iv) do not cover interpretation of technical data.

(2) The rates in Clause 314(b)(1), except rates on Construction Projects, shall be adjusted as of the first day of July each year following the year in which the Agreement became effective. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly wages and salaries of the Canadian petroleum and natural gas industry for the last calendar year compared with the calendar year next preceding such last calendar year as reported by the Dominion Bureau of Statistics. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment rounded to the nearest dollar. Notwithstanding the provisions hereof the rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).

(3) Rates will be negotiated when required for operation of facilities such as, but not limited to, gathering systems and related facilities, gas processing plants, compressor plants, secondary recovery systems, injection systems and salt water disposal facilities other than disposal wells.

(b) Percentage Rate Basis

(1) (i) for Development, _____ percent of Cost.

(ii) for Operation and Maintenance, except of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.

(iii) for Operation and Maintenance of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.

- ~~(iv) for each Construction Project,~~
- ~~(a) _____ percent of the first \$ _____ of Cost, plus~~
 - ~~(b) _____ percent of the next \$ _____ of Cost, plus~~
 - ~~(c) _____ percent of Cost exceeding the sum of (a) and (b).~~
 - ~~(v) for geophysical and geological exploration operations, _____ percent of Cost if a contract crew or party is employed and _____ percent of Cost if Operator utilizes its own crew or party. The rates in this Clause 314(b)(1)(v) do not cover interpretation of technical data.~~
- ~~(2) The rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).~~

315. Interpretation of Technical Data

Costs, as approved by the Parties, of interpreting technical data from exploration operations.

316. Engineering Design

Costs of engineering design with approval pursuant to Clause 102(a).

317. Warehousing Handling

- (a) 2 1/2 percent of the cost of tubular goods 2 inches in diameter and over and each other item of Material having a New Price in excess of \$ 1,000.00 delivered from Operator's warehouse and 5 percent of the cost of all other Material delivered from Operator's warehouse, where Operator's warehouse is not maintained as part of the Joint Property.
- (b) Costs of maintaining warehouses which are part of the Joint Property.

318. Other Costs

Costs, as approved pursuant to Clause 102(a), for which provision is not made elsewhere in this Accounting Procedure.

PART IV
BASIS OF CHARGES

401. Purchases

Operator shall, whenever practicable:

- (a) purchase Material for delivery directly to the Joint Property; and
- (b) purchase for or transfer to the Joint Property only such Material as is required for immediate use and avoid the accumulation of surplus stocks.

402. Charges for Purchases

Material purchased shall be charged at the price paid by Operator. Discounts actually received in respect thereof shall be for the Joint Account.

403. Charges for Material Furnished by Operator

When it is not practicable to purchase Material for delivery directly to the Joint Property, Material may be furnished by Operator from its stocks, in which event Material shall be charged as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B" at 75 percent of New Price;
- (c) Condition "C" at 50 percent of New Price; and
- (d) Condition "D" at a reasonable price based on the use to which it is to be put.

404. Premium Prices

Whenever, in Operator's opinion, Material is not available at reasonable prices, Operator shall in writing notify Non-Operators thereof. Within 2 days after receipt of such notice each Non-Operator may notify Operator in writing that it wishes to deliver to Operator such Material and such notice shall set forth the price and delivery date. Operator shall decide if the price and date for delivery of such Material are reasonable in the circumstances and, if so, shall purchase such Material from such Non-Operators. If more than one Non-Operator wishes to supply such Material, Operator shall decide the quantity of such Material that each such Non-Operator may deliver. If Operator decides such Material is not available from the Non-Operators on reasonable terms, Operator may acquire such Material and make a charge for the Joint Account of the actual cost and expense incurred in purchasing, transporting and preparing such Material for use.

405. Transportation of Material

Operator may charge the actual cost of transporting Material to or from the Joint Property, provided that the charge for transporting Material furnished by Operator shall not exceed the estimated cost of transporting such Material from the regular supply store where such Material is available or the carrier receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. No charge shall be made for transporting Material from the Joint Property to other properties of Operator except with approval pursuant to Clause 102(a).

406. Operator's Facilities

- (a) Operator may charge for use of Operator's own facilities and equipment at rates, not exceeding those prevailing in the immediate area for available like facilities and equipment, commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year.
- (b) In lieu of rates provided in Clause 406(a), Operator may charge for use of its own facilities and equipment, except automotive equipment, at the commercial rates prevailing in the immediate area, less 20 percent.
- (c) When requested to do so, Operator shall inform Non-Operators in advance of the rates to be charged.

PART V DISPOSAL OF MATERIAL

501. Operator's Authority to Dispose of Material

Operator may dispose of any surplus Material the New Price of which is less than \$ 5,000.00. Operator shall obtain the approval of Non-Operators pursuant to Clause 102(a) to dispose of any other Material.

502. Sales

The proceeds of sales of Material shall be for the Joint Account.

503. Valuation of Material

Material disposed of to the Parties shall be valued as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B"
 - (1) at 75 percent of New Price if the Material was a charge for the Joint Account as Condition "A", or
 - (2) at 65 percent of New Price if the Material was a charge for the Joint Account as Condition "B";
- (c) Condition "C" at 50 percent of New Price; and
- (d) Conditions "D" and "E" at the best price obtainable.

When the use of Material is temporary and the reduced value provided in this Clause is not justified, such Material shall be valued on a basis consistent with its use.

PART VI INVENTORIES

601. Frequency of Inventory and Expense

An inventory of Controllable Material shall be taken at reasonable intervals and the expense of such inventory shall be a charge for the Joint Account.

602. Notice of Inventories

Operator shall give Non-Operators 30 days' notice of any inventory proposed to be taken hereunder and each Party shall be entitled to be represented at the taking of such inventory.

603. Reconciliation

The Parties participating in the inventory shall reconcile the inventory with the records maintained pursuant to Clause 201 and the expense of such reconciliation shall be a charge for the Joint Account.

604. Report of Inventory

Operator shall submit each inventory to Non-Operators, together with a list of overages and shortages, showing the cost for the Joint Account of shortages and the original or estimated cost of overages to each Party.

605. Special Inventory

Operator shall, upon written notice from any Non-Operator, cause the taking of a special inventory of Controllable Material. Such Non-Operator shall be entitled to be represented at the taking of the special inventory. The inventory shall be commenced within 30 days of receipt of the written notice. The expense of such inventory and, if a reconciliation is requested by the Non-Operator, the expense of such reconciliation shall be borne by such Non-Operator.

COPY

DEC 23 1976

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

ATTENTION: Mr. T. J. Hall,
President.

Dear Mr. Hall.

Re: Secondary Recovery of Oil in the
Province of Manitoba.

Your letter of 76 12 13 to the Honourable Sidney Green has been brought to the attention of this office.

Your concerns have been noted. It would be appropriate for Omega, other Companies or persons, as well as the Petroleum Associations to present facts and figures in support of your concerns, along with comparative figures for other provinces which it is alleged 'have realized the necessity to encourage wherever possible the maximum recovery of oil and gas'.

On several occasions, this Department has solicited submissions on this or any other concerns that producers may have regarding oil exploration and production in Manitoba. The response has been minimal and seldom received with sufficient backup information or data to substantiate a recommendation requesting a change in present operating conditions.

Your comments regarding recovery of casing in the well abandonment process have been noted. Here, too, it would be helpful to have some producer-generated facts or estimates on what is involved.

Your further submission will be anticipated.

Yours sincerely,
Original Signed by
JAS. T. CAWLEY
Jas. T. Cawley, P. Eng.,
Deputy Minister.

JSR/dw

c.c.: The Honourable Sidney Green.

b.c.: J. S. Roper.
I. Haugh ✓

x.c. - H. C. Moster

76 12 30 - ra

Department of Mines, Energy and
& Environmental Development
Mineral Resources Division

DEC 23 1976

ASSISTANT DEPUTY MINISTER

DATE:

Dec 21 / 76

TO:

Monter

FROM:

Hough

- | | |
|---|--|
| <input type="radio"/> Take action | <input type="radio"/> Circulate |
| <input type="radio"/> Per your request | <input type="radio"/> See me re attached |
| <input type="radio"/> Call me on this matter | <input type="radio"/> For your information |
| <input type="radio"/> Investigate and report | <input type="radio"/> Supply data for my reply |
| <input type="radio"/> For your revision and/or approval | <input type="radio"/> Reply direct with copy to me |
| <input type="radio"/> Return with comments and/or recommendations | <input type="radio"/> Draft reply for signature of |

..... Minister

COMMENTS:

Reply should state that this matter has been
referred to Department for study

TELEPHONE: (403)261-0743



HYDROCARBONS Ltd.

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

December 13, 1976

The Honourable Mr. Sidney Green
Minister of The
Department of Mines, Resources
and Environmental Management
993 Century Street
Winnipeg, Manitoba R3H 0W4

Dear Sir:

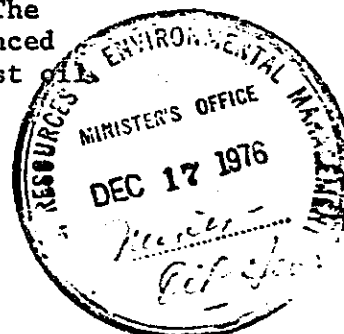
Re: Secondary Recovery of Oil in The
Province of Manitoba



Omega Hydrocarbons Ltd. is a small independent Canadian Company currently participating in the recovery of oil by secondary recovery in the Province of Manitoba. It has become apparent in our effort to encourage our neighbouring operator to join in a waterflood scheme and discussions with other operators in similar circumstances that the Manitoba incremental tax on oil produced from Old Wells is having a detrimental effect on secondary recovery in Manitoba. It is in this context that I am appealing to you, not necessarily to Omega's advantage but for conservation and economic reasons of all concerned.

For your benefit, Omega has made several attempts to encourage Copperhead Oil Company to join Omega's waterflood program in the Waskada Field and we have just now requested that The Oil and Gas Conservation Board call a Show Cause Hearing to allow Copperhead to present it's case. I feel confident that the issue of Manitoba incremental oil tax will be the major issue. It is for this reason that I am appealing to you to do whatever you are able to do to make it economically more attractive to affect conservation measures that will benefit all concerned.

Other provinces have realized the necessity to encourage wherever possible the maximum recovery of oil and gas in their respective jurisdictions and we believe that the Province of Manitoba should do likewise. From a brief review of areas in and around Virden and Daly, a change in the legislation to designate all enhanced recovery schemes to New Oil Status should be pursued with great haste. The New Well tax schedule should apply to all new oil. Surely enhanced recovery should be regarded as new oil and if not, it may be lost.



cc: Dr. Haugh ✓
C. Moster

/ie 76 12 20

In conceiving this appeal to you for conservation purposes and ultimately economic reasons, it is my belief that the Province of Manitoba would benefit from more revenue over the long term if legislation was changed to allow and encourage an operator to initiate conservation schemes.

Benefits to the Province would accrue from the following:

1. Enhanced recovery has the effect of increasing recovery of oil and gas and thus tax benefits.
2. Enhanced recovery extends the life of a field which has the effect of improving the long term employment roll.
3. Enhanced recovery would increase the total tax to be recovered through higher rates of production and longer life of a field.
4. Enhanced recovery schemes require large capital expenditures thus increasing labour, goods and services to the Province.
5. The extended life of a field will increase the ultimate tax to be recovered through projected high oil prices.

Considering the stage of depletion of Manitoba Fields, we believe that action should be initiated at an early date. While I am on the subject of conservation, I would like to make one more point.

In many cases, operators or abandonment crews have been allowed to recover casing from wells subject to abandonment. This, in our state of rapidly depleting resources should be discontinued because someday, it may be economic to re-enter these wells for any one of a number of reasons. Our reasoning is based on the fact that the economic benefits from pulling casing is not justified. In fact, many oil companies choose to leave the casing in the hole following which small scavaging casing pullers appear on the scene to salvage casing in a very marginal operation.

Where casing is left in the well bore, there will be opportunities at some future date for small independent operators, such as Omega, to re-enter and recover through secondary and tertiary recovery mechanisms many barrels of oil that will otherwise be unrecoverable because of the economics of a project.

Therefore, it is our suggestion that The Oil and Gas Conservation Board make every effort to see that casing is left in place where there is some potential for future recovery of oil and gas.

I trust that these suggestions will be of benefit to the Province and surely the whole of Canada.

Yours very truly,
OMEGA HYDROCARBONS LTD.



T. J. Hall
President

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

TO

Mr I HAUGH

FROM

JH Morte

TO

FROM

- | | | |
|--|--|--|
| <input type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input checked="" type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input type="checkbox"/> Please draft reply for signature of | | |

Date

76 12 08

Subject

OMEGA/
MMR

Message

inter-departmental memo

Mr. J. S. Roper,
Policy Advisor

Date 76 12 08

From H. C. Moster, Director
Petroleum Branch
993 Century Street

Subject:

Please find enclosed:

1. "Notice" on Omega application for allowable exemption for Waskada Unit No. 1.
Please phone when Notice signed in order that we might catch Queen's Printer deadline.

2. Draft reply to Omega (re: Omega's letter of November 22, 1976 on Waskada Commingling Application).

3. List of proposed changes to draft Omega - Manitoba Mineral Resources joint agreement.

* Hall's estimates for total 77/78 anticipated expenses under the Agreement:

Dry Hole - \$75,000.

Completed Well (tied in to battery) - \$125,000.

Maximum expected expenditures in 77/78:

1 completed well - \$125,000.

1 dry hole - 75,000.

\$200,000.

Original Signed by H. C. Moster

H. C. Moster

HUM/cf
Enclosure

→ c.c. I. Haugh

First | Fold

inter-departmental memo

To

J. S. Roper
Policy Advisor

AND

C. M. Wright, M.M.R.

Date 76 12 108

From H. C. Moster
Director
Petroleum Branch

Subject: Proposed Changes to MMR - Omega Agreement (Final Draft)

- (Page 1) 1. - "acquire Crown leases covering drilled spacing units within the"
2. - "AND WHEREAS Manitoba Mineral and Omega wish to carry out joint oil and gas exploration operations on the Crown lands;"
- (Page 3) 3. - "except as noted in Clause 2(b) in the"
- (Page 4) 4. - delete 2(b) - "All costs . . . Mineral 25%."
5. - change "2(c)" to "2(b)"
6. - change "2(d)" to "2(c)"
7. - change "2(e)" to "2(d)"
- (Page 5) 8. - "4(a) Prior to January 1, 1978 Omega shall have drilled a test well to contract depth within the Crown lands, and
- (b) Prior to January 1, 1979 Omega shall have drilled a test well to contract depth on an undrilled quarter section within the Crown lands.
- (c) In the event that the test well referred to in (a) above or any subsequent well drilled within the same quarter section produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on that quarter section as warranted in accordance with Clause 3.
- (d) In the event that the test well referred to in (b) above or any subsequent well drilled within the Crown lands produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the quarter section on which the well is located as warranted in accordance with Clause 3.
- (e) In the event that a well is drilled to contract depth within the Crown lands and does not produce oil in paying quantities and is not completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the quarter section on which the well is located. Such lease shall be for a minimum primary term of three (3) years and may be further renewed at the discretion of the Minister.

- (Page 6) 9. - "6(a) This Agreement shall terminate in the event that the test well referred to in 4(a) has not been drilled by January 1, 1978.
- (b) This Agreement shall terminate twelve (12) months from the date of rig release of the last well drilled under this Agreement with respect to any of the Crown lands not under lease.
- (c) This Agreement shall not terminate with respect to y of the Crown lands held under lease.
- (d) "Notwithstanding (a), (b) and (c) this Agreement shall terminate if both parties to this Agreement agree in writing to the termination thereof."

(Page 7) 10. - "7(b) . . . in Clause 4 in accordance with the terms and conditions as set out in the Operating Procedure."

11. - "7(d) Omega shall supply Manitoba Mineral with copies of original invoices.

(Page 8) 12. - "11. Omega shall keep Manitoba Mineral informed in writing as to all operations conducted under this Agreement and shall supply Manitoba Mineral with any additional information it may specifically request pertaining to operations under this Agreement."

Accounting Procedure (Page 4) 314 (b) (1) (iii)

"which is less than \$5,000.00"

Note: Manitoba Mineral has expressed concern to have the costs of use of "Operators Facilities" spelled out in the Agreement:

eg. - Battery charges for processing oil = \$. /bbl. oil

Agreed by H. C. Mosier

H. C. Mosier

HCH/et

inter-departmental memo

To:

The Oil and Natural Gas
Conservation Board:
Jas. T. Cawley, P. Eng., Chairman,
✓ J. S. Roper, Deputy Chairman,
Dr. I. Haugh, Member.

Date 76 12 08

From H. C. Moster,
Director,
Petroleum Branch.

Subject: Exemption from Allowable Restrictions

Waskada Unit No. 1 - Omega Hydrocarbons Ltd.
Manitoba Revised Regulation M160 - R4P (Section 11)

Attached is a copy of an application from Omega Hydrocarbons Ltd.
for allowable exemption for the wells in Waskada Unit No. 1.

Board Order No. 47A (Manitoba Regulation 28/69) replaced by
Section 11 of Manitoba Revised Regulation M160 - R4P restricts the pro-
duction rate of the wells in the Waskada Field to an average of 50 BOPD.

On application, the Board granted Omega temporary exemption
from this restriction pending further evaluation of the waterflood (copy
of letter 76 07 19 attached).

Recommendation:

The attached Notice be signed and returned to the Branch for
publishing in The Manitoba Gazette and Milita New Era plus a copy will
be sent directly to Copperhead Oil Company Limited (the other operating
company in the Waskada Field, "non-unit").

HCM/et
Attachs.

H. C. Moster



DEPARTMENT OF MINES, RESOURCES
& ENVIRONMENTAL MANAGEMENT
THE OIL AND NATURAL GAS CONSERVATION BOARD
993 Century Street
Winnipeg
R3H 0W4

Jas. T. Cawley, P. Eng.
CHAIRMAN 946-7438
J. S. ROPER
DEPUTY CHAIRMAN 946-7859
Dr. I. Haugh
MEMBER 633-9543

NOTICE

WASKADA FIELD

Omega Hydrocarbons Ltd., as Unit Operator of Waskada Unit No. 1, has made application to The Oil and Natural Gas Conservation Board to exempt wells in the Unit from maximum permissible rate of production restrictions.

Any interested party wishing to file a valid objection in this matter may do so within 14 days of the publishing of this notice, to:

Petroleum Branch,
993 Century Street,
Winnipeg, Manitoba.
R3H 0W4

DATED at Winnipeg, Manitoba, this day of

J. S. Roper,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board.

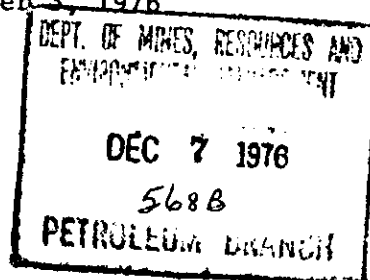


TELEPHONE: (403)261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

Department of Mines, Resources
and Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

December 3, 1976



Attention: Mr. H. C. Moster, Director Petroleum Branch

Dear Sir:

Re: Waskada Unit No. 1 Order No. 47A

Pursuant to the Oil and Natural Gas Conservation Board approval dated July 19, 1976 as per Condition 4, Omega herein submits an application for exemption from allowable restriction under Section II of the Manitoba Revised Regulations M160 - R4P.


In support of this application, Omega submits the following:

1. Management has sufficient evidence of waterflood response in all wells except in Lsd. 12-30-1-25 and this may have been caused by mechanical down hole problems. A recent bottom hole pump replacement has given some encouragement that flood response is imminent.
2. Breakthrough has occurred at Lsd. 5-30-1-25 following good early response. Water production is being handled without difficulty and it is being reinjected into the water injection system which is functioning favourably.
3. The wells located at Lsd. 3, 4 and 11-30-1-25 are responding favourably to the flood program and this is expected to continue.
4. Omega has taken steps to increase treating facilities and enlarge tankage in order that maximum fluid pumping capacity can be handled at the battery site.
5. All leases and the water injection station are being converted to electrical power and this should be completed by the end of the first week of December.

In view of the above mentioned flood response, improved battery facilities and wellsite equipment, Omega believes that this application for exemption from allowable restriction is reasonable. It will facilitate loss of oil from the unit area, improve recovery of oil to the unit and provide for flexibility of operation.

Your early approval will be appreciated.

Yours very truly,
OMEGA HYDROCARBONS LTD.


T. Jack Hall
President

TJH:bcf



MANITOBA

DEPARTMENT OF MINES, RESOURCES
& ENVIRONMENTAL MANAGEMENT

THE OIL AND NATURAL GAS CONSERVATION BOARD

993 Century Street-
Winnipeg, Manitoba.
R3H 0W4

Jas. T. Cawley 946-7438
CHAIRMAN
J. S. ROPER 946-7859
DEPUTY CHAIRMAN
Dr. I. Haugh 633-9543
MEMBER

Omega Hydrocarbons Limited,
574 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

76 07 19.

Attention: Mr. T. J. Hall,
President.

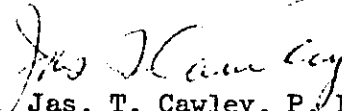
Dear Sir:

Re: Waskada Unit No. 1
Order No. 47A.

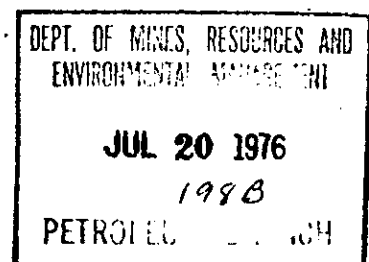
Pursuant to your application dated June 30, 1976, and in accordance with Subsection 62(9) of The Mines Act, and notwithstanding Section 11 of Manitoba Revised Regulation M160-R4P, Omega Hydrocarbons Ltd., as Unit Operator of Waskada Unit No. 1, is hereby granted permission to operate the Unit under a "Unit Maximum Permissible Rate" of 300 barrels of oil per day. The permission is granted subject to the following conditions:

1. Unit operations are carried out in accordance with good engineering practice.
2. Gas production rates shall be continuously monitored and the results submitted to the Petroleum Branch.
3. The annual pressure survey required under PM Order No. 30 shall be completed prior to November 1, 1976.
4. This approval expires November 1, 1976, and may be terminated by the Board at any time. An extension may be granted if sufficient evidence supporting such a request is presented.

Yours sincerely,


Jas. T. Cawley, P. Eng.,
Chairman.

c.c.: J. S. Roper, Deputy Chairman.
Dr. I. Haugh, Member.
Petroleum Branch. ✓



D R A F T O N L Y

December 8, 1976

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S. W.,
Calgary, Alberta.
T2P 0L4

Attention: Mr. T. J. Hall,
President.

Dear Sir:

Re: Waskada Commingling Application

Further to our letter of '76 11 15 and your reply dated November 22, 1976 stating that 3 - 4 days per month are required to reasonably test a well, please be advised that Condition 2 is amended as follows:

Delete: ", and provided that production from the said well
be monitored no less than twenty days each month
commencing December 1, 1976."

Condition 3. in the subject letter was not designed to create additional paperwork for you as Operator. New monthly production report forms are currently being printed by the Petroleum Branch which will permit an operator to include test data on the normal required monthly production report. Therefore this condition remains unchanged and a supply of the new forms will be sent to Omega as soon as they are available.

Yours sincerely,

J. S. Roper,
Deputy Chairman.

HCM/et

c.c. Petroleum Branch
Virden Office

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

| | |
|-------------------------------------|---------------------------------------|
| TO <i>D. San Raugh</i> | FROM <i>A. L. Hester, jr.</i> |
| TO <i>Assistant Deputy Minister</i> | FROM <i>Director Petroleum Branch</i> |

- | | | |
|--|--|--|
| <input type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input checked="" type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input type="checkbox"/> Please draft reply for signature of | | |

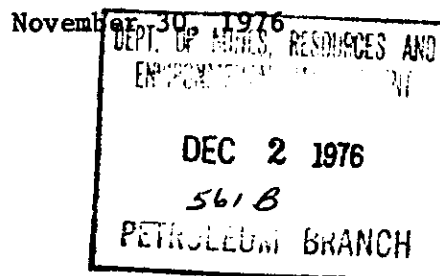
Date *76 12 13* Subject *Letter from*

Message *Amesys dated Nov 30/76*
re. Joint Interest Agreement



TELEPHONE: (403)261-0743

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4



Department of Mines, Resources
and Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster

Dear Sir:

Re: Joint Interest Agreement
Section 29 - 1 - 25 - WPM

Pursuant to your letter of November 18, 1976 in which you enclosed a draft agreement for review, we submit the following comments:

1. Page 4, Clause 2(b): It was our understanding that Manitoba Minerals would elect to take up a maximum of 25% interest and share all costs except the initial geological and geophysical cost to qualify drilling the test well. Therefore, the cost sharing arrangement should be changed to either 80 - 20 or 75 - 25; that being the same as participating interest.
2. Page 5, Clause 4: It is suggested that the dates be changed to February or March of 1978 and 1979 respectively. This will provide one full year for drilling the first test well and subsequent well. Also, the first test well should be defined to coincide with the quarter section drilled. Somehow, it appears that we have already selected the SW $\frac{1}{4}$ of 29 as the site of the first well. We're not too concerned about this point, but it would provide more flexibility in choosing our first location if the quarter section was not specified.
3. Page 6, Clause 5(a) and (b): The dates here should correspond to the dates referred to above.
4. Page 7, Clause 7(b): (first line). After the words "Omega shall pay all accounts", add "in accordance with the terms and conditions as set out in Exhibit "A" attached hereto, -----". This should clarify on whose behalf Omega pays all accounts.

XCC : JAS. T. CAWLEY

MANITOBA MINERALS

J. S. ROPER

I. HAUGH

5. Page 4, Clause 7(b), 1(iii) of the Accounting Procedure: Omega should be allowed to charge a construction overhead on anything over \$5,000.00. The reason for this suggestion is that overhead attributed to capital costs should be allowed in this instance, in view of having a battery already built and in operation. The pipeline to the battery should be allowed as an overhead item and it would very likely cost somewhere between \$5,000.00 and \$10,000.00.
6. An overall suggestion is that the time frame for drilling should be expanded as much as possible and where a dry hole is drilled, the lease should be issued and remain in good standing during the primary term. Otherwise the write-off takes place on the same year as the year of abandonment. Somehow this situation must be overcome in order that an operator can qualify investing in the Province of Manitoba.

If these suggestions are acceptable, we will look forward to seeing the execution document. Otherwise, you could discuss them on the telephone.

Yours very truly,
OMEGA HYDROCARBONS LTD.



T. J. Hall
President

TJH:bef



Province of Manitoba

Department of Mines, Resources and Environmental Management
Mineral Resources Division

Petroleum Branch
993 Century Street
Winnipeg, Manitoba
R3H 0W4

November 18, 1976

Omega Hydrocarbons Ltd.
630 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: Mr. T. J. Hall
President

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

NOV 18 1976

ASSISTANT DEPUTY MINISTER

Dear Sir:

Re: Section 29-1-25 WPM

In accordance with discussions and in reply to your letter of 76 11 08 attached please find a draft agreement for discussion purposes regarding the exploration and development of the subject section.

Your comments would be appreciated at an early date.

Also enclosed is a list of non-confidential geophysical data available through this office.

Yours sincerely,

Original Signed by H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch.

HCM/et
Attach.

c.c. Jas. T. Cawley
Manitoba Mineral Resources Ltd.

b.c.c. I. Haug ✓
J. S. Roper
J. I. Redgewell

B E T W E E N:

OMEGA HYDROCARBONS LTD., a body corporate,
with a registered office in the City of
Calgary, in the Province of Alberta and
duly licensed to carry on business in the
Province of Manitoba
(hereinafter called "Omega")

PARTY OF THE FIRST PART

A N D

MANITOBA MINERAL RESOURCES LTD., a body
corporate, incorporated under the laws
of the Province of Manitoba
(hereinafter called "Manitoba Mineral")

PARTY OF THE SECOND PART.

WHEREAS Manitoba Mineral wishes to expedite the further exploration
and development of oil and gas opportunities in the Province of Manitoba;

AND WHEREAS Manitoba Mineral is entitled to work the Crown oil and
gas mining rights within the Crown lands as hereinafter described and to
acquire Crown leases covering the productive spacing units within the Crown
lands;

AND WHEREAS Manitoba Mineral and Omega wish to integrate and combine
their respective interests in the Crown lands and carry out joint oil and gas
exploratory operations thereon;

AND WHEREAS Omega is prepared to provide the operational management
of the program as hereinafter described;

NOW THEREFORE THIS AGREEMENT WITNESSETH THAT in consideration of
the premises and of the mutual covenants and agreements hereinafter set
forth and contained the parties hereto agree as follows:

1. DEFINITIONS

In this Agreement, including this Clause and the recitals hereof,
unless the context otherwise requires:

- (a) "Accounting Procedure" means the Accounting Procedure attached
to the Operating Procedure.
- (b) "complete", "completion" or "completed" means:
 - (i) in the case of a gas well, to set in the well
production casing and to place in the well all
equipment necessary for the taking of production

up to and including the outlet valve of the well-head and running an adequate back pressure test, or

- (ii) in the case of an oil well, equipping such well for taking production up to and including the outlet valve of the wellhead or pump if initially required and supplying sufficient tankage and other equipment required for the taking of production, or
 - (iii) in the case of a well which, according to good oilfield practice, should be abandoned, to abandon;
- (c) "contract depth" means with respect to the drilling of any well hereunder, the drilling thereof to a depth sufficient to test the Mission Canyon formation or to the projected subsurface depth as determined by Omega in its capacity as Operator;
- (d) "Crown lands" means the Crown oil and gas mining rights in the geological formations under Section 29-1-25 WPM or such other lands as may be added from time to time and includes all petroleum substances;
- (e) "Crown leases" means the grants or dispositions of petroleum substances arising out of this Agreement which Manitoba Mineral is entitled to acquire from the Manitoba Crown in accordance with the Oil and Gas Regulations;
- (f) "oil and gas mining rights" means the rights granted under Section 6 of The Mines Act, Cap. M160;
- (g) "Operating Procedure" means the attached Schedule "A";
- (h) "paying quantities" means the output from a well of such quantity of petroleum substances, or any of them, as considering the cost of completing and operating a well and the price, kind and quality of such production would warrant and justify the drilling and completion of a like well;
- (i) "petroleum substances" means petroleum, natural gas and related hydrocarbons, all gases and all minerals and substances (whether liquid or solid and whether hydrocarbons or not) produced in association with one another;

- (j) "spacing unit" means the area designated under the Oil and Gas Regulations for the purpose of drilling for or producing petroleum substances;
- (k) "the Lands" means the Crown lands;
- (l) "the Leases" means the Crown leases;

Words and expressions used in this Agreement, unless otherwise specified or necessarily required by the context, shall have the same meaning as in The Mines Act, R.S.M. 1970, Cap. M160, as amended from time to time and the Regulations thereunder ("Oil and Gas Regulations"), as amended from time to time.

The headings of the Clauses of this Agreement are inserted for convenience of reference only and shall not affect the meaning or construction thereof.

Whenever the plural or masculine or neuter is used in this Agreement, the same shall be construed as meaning singular or feminine or body politic or corporate and vice versa where the context so requires.

The provisions of The Mines Act and the Oil and Gas Regulations, as amended from time to time shall apply to all operations under this Agreement.

2. INTEGRATION OF INTERESTS

- (a) Manitoba Mineral and Omega hereby combine and integrate their respective interests in the Lands for the purposes of conducting the joint operations hereinafter set forth and described. For so long as this Agreement is in effect the parties hereto shall subject to Clause 4 hereof own the production of petroleum substances from the Lands and any jointly owned property relating thereto and shall share all costs and expenses incurred after the signing of this Agreement except as noted in Clause 2 (b) and (c) in the following undivided percentages of interest (hereinafter called "participating interests")

Omega - 75%

Manitoba Mineral - 25%

- (b) All costs and expenses for the drilling and completion of the test well referred to in Clause 4(a) shall be shared Omega 80%, Manitoba Mineral 20% and the resulting participating interests shall be Omega 75%, Manitoba Mineral 25%. For each well drilled after the test well referred to in Clause 4(a) all costs and expenses shall be shared Omega 75%, Manitoba Mineral 25% and the resulting participating interests shall be Omega 75%, Manitoba Mineral 25%.
- (c) Omega shall conduct and bear the costs of such geological and/or geophysical studies as are required for locating the test well referred to in Clause 4(a).
- (d) Until production of petroleum substances in paying quantities commences, Manitoba Mineral shall be solely responsible for all costs of maintaining the Crown lands in good standing and in full force and effect for so long as is required by this Agreement provided that after commencement of production of petroleum substances, all costs of maintaining productive Crown leases in good standing and in full force and effect shall be for the Joint Account.
- (e) The terms of the Operating Procedure shall apply provided that if any conflict arises between the provisions of the Operating Procedure and the provisions of this Agreement, the latter shall prevail.

3. WARRANTY OF TITLE

Subject to the terms of any lease which may be issued pursuant to Clause 4, Manitoba Mineral covenants that it has the right or is entitled to acquire the right to explore for and produce petroleum substances from the Crown lands, and that with the exception of the Crown royalty such right is unencumbered and that it has not entered into any agreement under which any other person, firm or corporation may acquire an interest therein. Other than the aforesaid Manitoba Mineral makes no warranty of its respective rights.

4. WELL OBLIGATIONS - PROGRAM

The parties agree to conduct the following program:

- (a) Prior to November 1, 1977 Omega shall have drilled a test well to contract depth within SW 29-1-25 WPM, and
- (b) Prior to November 1, 1978 Omega shall have drilled a test well to contract depth within the NW, NE or SE 29-1-25 WPM.
- (c) In the event that the test well referred to in (a) above or any subsequent well drilled within the SW 29-1-25 WPM produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the SW 29-1-25 WPM as warranted in accordance with Clause 3.
- (d) In the event that the test well referred to in (b) above or any subsequent well drilled within the NW, NE or SE 29-1-25 WPM produces oil in paying quantities and is completed as a producer, Manitoba Mineral shall apply for and obtain a lease on the NW, NE or SE 29-1-25 WPM as warranted in accordance with Clause 3.

5. ASSIGNMENTS - PRODUCING SPACING UNITS

In the event that any well drilled hereunder is capable of producing petroleum substances in paying quantities, Manitoba Mineral shall deliver to Omega such assignment or assignments or other instruments as may be necessary or proper in order to vest that portion of the Leases and the Lands comprising such spacing units in Omega in accordance with its respective participating interest.

6. TERMINATION

- (a) This Agreement shall terminate with respect to the SW 29-1-25 WPM in the event that the test well referred to in 4(a) has not been drilled by November 1, 1977, or twelve (12) months from the date of rig release of the last well producing in paying quantities or abandoned whichever is the later.
- (b) This Agreement shall terminate with respect to the NW, NE and SE 29-1-25 WPM in the event that the test well referred to in 4(b) has not been drilled by November 1, 1978 or twelve (12) months from the date of rig release of the last well producing in paying quantities or abandoned whichever is the later.
- (c) Notwithstanding the provisions of (a) and (b) this Agreement shall terminate if both parties to this Agreement agree in writing to the termination thereof.

7. CONDUCT OF OPERATIONS

- (a) In carrying out all operations hereunder Omega shall use only approved and accepted methods and scientific instruments and will carry out the operations with all reasonable diligence and to the best of its skill and ability, and will at intervals of three (3) months, if required in writing by Manitoba Mineral, meet with Manitoba Mineral or such servants or agents as shall be designated to confer and discuss the operations being carried on by Omega, said meeting to be held at the time and place designated by Manitoba Mineral;
- (b) Omega shall pay all accounts for labour, wages, salaries, materials, fees and other services supplied for the carrying out of the program as set out in Clause 4;
- (c) Omega shall not allow any liens or other encumbrances to arise or accumulate on or against the Lands resulting from its operations hereunder except such as may be contested in good faith and shall take such steps as may be necessary to have any lien or other encumbrance removed from the Lands forthwith.

8. TIME

Time is of the essence.

9. CONFORM TO LEGISLATION

Omega shall conform to all applicable statutes, regulations and other legislation, as amended from time to time, including, without limitation, the taking out of insurance.

10. FORCE MAJEURE

A party to this Agreement shall not be liable for damages to the extent that such party is prevented from complying with its obligations under this Agreement in whole or in part by strikes, lockouts, acts of God

or the Queen's enemies, war, laws, orders or regulations of governmental bodies or agencies, unavoidable accidents, delays in transportation, inability to obtain necessary materials in the open market, or any other cause, except lack of finances, whether similar or dissimilar to those specifically enumerated, beyond the reasonable control of the party affected, but such party shall, as far as possible, remedy the cause of such non-compliance with all reasonable dispatch, provided that this requirement does not impose upon such party the necessity to settle strikes, lockouts or other labour difficulties to its detriment, and provided further that the force majeure exoneration as contained in this paragraph shall not operate as a suspension or relief of obligations mentioned in agreements with the respective owner or lessor of mineral rights.

11. REPORTS OF WORK

Omega shall, on or before the 1st day of March, 1978, and on the 1st day of April of each subsequent year in each year this Agreement is in force, furnish to Manitoba Mineral a report setting out in detail all work and operations carried out in or upon the Lands during the immediately preceding calendar year, together with a map or maps showing the locations of such work and operations and a description of all the potentially useful substances encountered during such work and operations.

12. NO USE OF NAME OF DEPARTMENT

To the extent that the professional, managerial and technical decisions hereunder are the sole responsibility of Omega, Omega covenants and agrees that it will not use, suffer or permit to be used, directly or indirectly, the names of either Manitoba Mineral or the Province of Manitoba (including the name of any department of the Government of Manitoba) for the purposes of or in connection with the financing of or obtaining financial assistance for any of the operations under this Agreement or the promotion of any corporate enterprise, syndicate, partnership or other association designed, intended or purporting to control, direct or finance, directly or indirectly, such operations.

13. ADDRESSES FOR SERVICE

The addresses for service of or notice to the parties are:

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

Manitoba Mineral Resources Ltd.,
603 - 491 Portage Avenue,
Winnipeg, Manitoba.
R3B 2E4

A party may from time to time change its foregoing address by written notice to the other. Any notice may be served by mailing the same, postage prepaid, in a properly addressed envelope addressed to the party to whom the notice is to be given at its stated address for service and such notice shall be deemed to be received seventy-two (72) hours after the mailing thereof.

14. PUBLIC INFORMATION RELEASES

All public information releases shall prior to release, be first approved by both parties.

15. RELATIONSHIP OF PARTIES

Where the parties incur a liability to any other person, such liability shall not be joint or several, but each party shall be separately liable to the other person for a portion of the total liability calculated in accordance with its participating interest. It is not the purpose of this Agreement to create any partnership or joint venture relationship, and neither this Agreement nor the program nor any operation conducted under it shall be construed and considered as creating any such relationship.

16. FURTHER DOCUMENTS

Each of the parties shall at all times do all such further acts and execute and deliver all such further deeds and documents as shall be reasonably required in order fully to perform and carry out the terms and intent of this Agreement.

17. CONFIDENTIAL INFORMATION

Subject to the Oil and Gas Regulations, all data and information of whatsoever nature acquired by the parties from any operation pursuant to this Agreement or supplied by one party to the other pursuant to this Agreement shall be for the sole and exclusive use and benefit of the parties unless the parties agree to the dissemination of such information, or unless a party is required to give such information to any recognized association within the petroleum industry, of which it is a member, that engages in the exchange of factual information relating to the type of operations contemplated by this Agreement. In no event shall information relating to wells drilled on a confidential basis to the parties, or any of them, be disclosed. For greater certainty, upon the termination of this Agreement, any relationship of a fiduciary nature among the parties, or any of them, that may have been created with respect to any information as described above shall also terminate.

18. ENUREMENT

This Agreement and everything therein contained shall enure to the benefit of and be binding upon the parties hereto and the successors and assigns of the parties hereto.

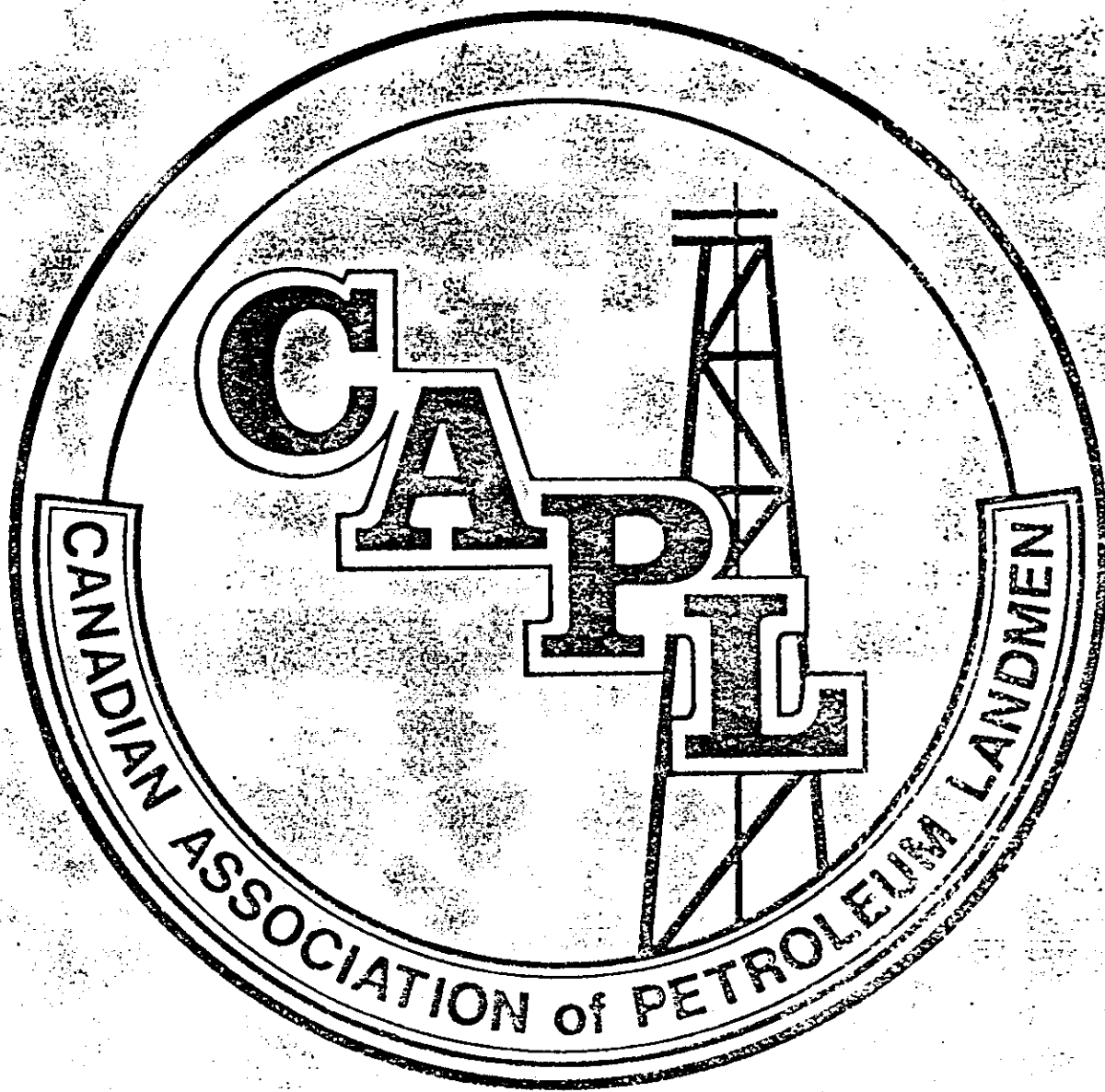
IN WITNESS WHEREOF the parties hereto have duly executed this Agreement as of the day and year first above written.

OMEGA HYDROCARBONS LTD.

MANITOBA MINERAL RESOURCES LTD.

THIS IS SCHEDULE " " ATTACHED TO AND MADE A PART OF THAT
CERTAIN AGREEMENT DATED THE DAY OF , A.D.,
19 , AND MADE BETWEEN OMEGA HYDROCARBONS LTD. AND MANITOBA
MINERAL RESOURCES LTD.

OPERATING PROCEDURE



CANADIAN ASSOCIATION OF PETROLEUM LANDMEN

1974

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CAPL 1974

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OPERATING PROCEDURE

Attached to and forming part of the Agreement DATED the

day of

A.D. 19

BETWEEN: (AMONG)

OMEGA HYDROCARBONS LTD., a body corporate, with a registered office at the City of Calgary, in the Province of Alberta and duly licensed to carry on business in the Province of Manitoba

- and -

MANITOBA MINERAL RESOURCES LTD., a body corporate, incorporated under the laws of the Province of Manitoba

ARTICLE I

DEFINITIONS, HEADINGS AND REFERENCES

101 DEFINITIONS — In this Operating Procedure, including this Article I, the following words and phrases shall have the following respective meanings, namely:

- (a) "Accounting Procedure" shall mean the schedule so entitled which is attached hereto and is hereby made a part hereof.
- (b) "Affiliate" shall mean, with respect to the relationship between corporations, that one of them is controlled by the other or both of them are controlled by the same person or corporation; and for this purpose a corporation shall be deemed controlled by those persons or corporations who hold or control sufficient voting shares of the corporation to elect the majority of its board of directors.
- (c) "the Agreement" shall mean that Agreement to which this Operating Procedure is attached and made a part.
- (d) "completion costs" shall mean, with respect to a well, all moneys expended for acquiring and installing casing left in the hole (except surface and intermediate casing) and the costs of equipping the well to and including:
 - (i) in the case of a gas well, the wellhead and the cost of running adequate back pressure tests;
 - (ii) in the case of an oil well, the wellhead.
- (e) "drilling costs" shall mean all moneys expended (exclusive of completion costs and equipping costs) for drilling, coring, logging and testing a well for the recovery of petroleum substances; and in the case of a well which is not completed for the taking of production, includes the costs of abandoning the well pursuant to the Regulations and costs of restoring the drilling site.

- (f) "equipping costs" shall mean all costs incurred in equipping a well beyond the wellhead including, without limiting the generality of the foregoing, the pump, the acquisition and installation of flow lines and production tankage and, in the case of a gas well, a heater or dehydrator or other hydrate control facility.
- (g) "for the joint account" shall mean for the benefit, interest, ownership, risk, cost, expense and obligation of the parties hereto in proportion to their participating interests; and "to the joint account" and "joint account" shall have corresponding meanings.
- (h) "joint lands" shall mean those lands or interests therein which by the Agreement have been made subject hereto and, except where the context necessarily otherwise requires, shall include the petroleum substances within, upon or under those lands or interests.
- (i) "Joint-Operator" shall mean a party to the Agreement having an interest in the joint lands.
- (j) "operating costs" shall mean all moneys expended, exclusive of drilling costs, completion costs and equipping costs, to operate a well or wells for the recovery of petroleum substances, as more particularly set forth in the Accounting Procedure.
- (k) "the Operator" shall mean the party hereto appointed by the Joint-Operators to carry out operations hereunder for the joint account.
- (l) "participating interest" shall mean the percentage of undivided interest in the joint lands (or the respective parcels thereof) held by a party hereto as provided in the Agreement.
- (m) "paying quantities" shall mean:
- (i) in the case of a well not completed and equipped: the anticipated output from the well of that quantity of petroleum substances which, considering the completion costs, equipping costs, operating costs, kind and quality of production, the availability of markets, the price to be received therefor, and the royalties and other burdens payable with respect thereto, would warrant incurring the completion costs and equipping costs of the well;
 - and
 - (ii) in the case of a well completed and equipped for production: the output from the well of that quantity of petroleum substances which, considering the same factors as in (i) except completion costs and equipping costs, would warrant the continued taking of production from the well.
- (n) "petroleum substances" shall mean petroleum and natural gas and every other mineral or substance, or any of them, an interest in which is granted or acquired under the title documents.
- (o) "proportionate share" shall mean, with respect to a party hereto, a percentage share equal to that party's participating interest.
- (p) "the Regulations" shall mean all statutes, laws, rules, orders and regulations in effect from time to time and made by governmental authorities having jurisdiction over the joint lands and over the operations to be conducted thereon.
- (q) "spacing unit" shall mean (at the relevant time with respect to which the term is used herein):
- (i) with respect to a well which has not been completed for production of petroleum substances: the area allocated to the well by the Regulations for the purpose of drilling that well; and
 - (ii) in every other case: the area allocated to the well pursuant to the Regulations for the purpose of producing petroleum substances.
- (r) "title documents" shall mean the documents of title by virtue of which the parties hereto are entitled to drill for, win, take or remove petroleum substances underlying all or any part of the joint lands and all renewals or extensions thereof or further documents of title issued pursuant thereto.

102 HEADINGS — The Article headings and any other headings or captions or index hereto shall not be used in any way in construing or interpreting any provision hereof.

103 REFERENCES — Unless otherwise expressly stated, references to articles, clauses or subclauses herein shall mean articles, clauses or subclauses of this Operating Procedure.

104 OPTIONAL AND ALTERNATE PROVISIONS — Where alternate or optional provisions are provided for herein but the parties have failed to designate which alternate shall apply or whether a respective optional provision shall be included, the first alternate provision in each such case shall apply, and the undesignated optional provision shall be deemed not to form part hereof.

ARTICLE II

APPOINTMENT AND REPLACEMENT OF OPERATOR

201 ASSUMPTION OF DUTIES OF OPERATOR — The Operator of the joint lands named in the Agreement hereby assumes the duties and obligations of the Operator hereunder and shall have all the rights of the Operator hereunder.

202 REPLACEMENT OF OPERATOR — The Operator shall be replaced in any one of the following circumstances:

(a) If the Operator becomes bankrupt or insolvent or commits or suffers any act of bankruptcy or insolvency, or makes any assignment for the benefit of creditors, or causes any judgement to be registered against its participating interest.

(b) If the Operator assigns or purports to assign its general powers and responsibilities of supervision and management as Operator hereunder.

(c) If the Operator is also a Joint-Operator and as such ceases to hold or represent at least 10% of the participating interests.

(d) If the Operator defaults in its duties or obligations or any of them hereunder and does not commence to rectify the default within 30 days after written notice from a majority in interest of the Joint-Operators (excluding the Operator), specifying the default and requiring the Operator to remedy the same.

203 CHALLENGE OF OPERATOR — At any time after an Operator has been Operator for at least two (2) years, any Joint-Operator, other than the Operator, may give notice ("the challenge notice") to all other parties hereto that it is ready, able and willing to conduct operations for the joint account on more favourable terms and conditions. The challenge notice shall contain sufficient detail to enable the receiving parties to evaluate the nature of the challenge notice and to measure the effect the revised terms and conditions would have on the joint operations. The Operator shall within Sixty (60) days after receipt of the challenge notice advise the Joint-Operators whether it is prepared to operate on the terms and conditions set out in the challenge notice, and, if so, it shall forthwith proceed to do so. If the Operator is unable or unwilling to do so, the Operator shall resign from the position of Operator within Ninety (90) days after it so advises the Joint-Operators and, subject to Clause 206, the Joint-Operator giving the challenge notice shall become the new Operator and shall thereafter conduct operations pursuant to the undertakings made by it in the challenge notice and any costs in excess thereof shall be for the new Operator's sole account. The new Operator shall not resign from the position of Operator until it has acted as Operator for a period of at least Two (2) years.

A Joint-Operator may not issue a challenge notice or become Operator pursuant thereto if at the time of issuing the challenge notice or assuming its duties as Operator it would be disqualified to act as Operator by reason of Subclause (a) or (c) of Clause 202.

204 RESIGNATION OF OPERATOR — Except as provided in Clause 203, at any time after an Operator has been Operator for a year it may resign as Operator on giving each of the Joint-Operators 90 days' notice of its intention to do so.

205 MODIFICATION OF TERMS AND CONDITIONS BY OPERATOR — At any time after an Operator has been Operator for a continuous period of two years, it may give notice ("the Operator's notice") to all other parties hereto of the revised terms and conditions on which it is prepared to continue to conduct operations for the joint account. Within 60 days of receipt of the Operator's notice, each Joint-Operator shall advise the Operator whether it agrees to the Operator continuing as Operator and to conduct operations for the joint account on the terms and conditions contained in the Operator's

notice, and failure to respond shall be deemed to be agreement. If any Joint-Operator does not so agree, it shall give notice ("counter proposal") to all parties hereto of the terms and conditions upon which it would conduct operations for the joint account. Any such counter proposal shall be deemed to be a challenge of Operator and shall be subject to all of the terms and conditions of Clause 203 as though such counter proposal was "the challenge notice" provided therein, except that in determining the merits of the counter proposal it shall be compared to the terms and conditions contained in the Operator's notice rather than to existing operating terms and conditions only.

206 APPOINTMENT OF NEW OPERATOR

(a) If an Operator resigns or is to be replaced, an Operator shall be appointed by the affirmative vote of two or more parties representing a majority of the participating interests.

(b) No party shall be appointed Operator hereunder unless it has given its written consent to the appointment; provided that if the parties fail to appoint a replacing Operator or if any appointed Operator fails to carry out its duties hereunder, the party having the greatest participating interest shall act as Operator pro tem, with the right, should a similar situation re-occur after a new Operator has been appointed, to require the party hereto having the next greatest participating interest to act as Operator pro tem and so on as occasion demands.

(c) No provision of this Article shall be construed to re-appoint as next-succeeding Operator an Operator who has been replaced under Clause 202, except with the unanimous consent of the parties hereto.

(d) Except as provided in subclauses (a), (b) and (c) of Clause 202 (in which cases the Operator shall be replaced immediately), every replacement of Operator shall take effect at 8:00 a.m. on the first day of the calendar month following the expiration of any period of notice effecting a change of Operator, notwithstanding anything hereinbefore contained.

207 TRANSFER OF PROPERTY ON CHANGE OF OPERATOR — At the effective date of the resignation or replacement of the previous Operator as hereinbefore provided, the preceding Operator shall deliver to the successor Operator possession of the wells being drilled or operated by the Operator pursuant to this Operating Procedure (except any wells in respect of which the succeeding Operator is not entitled to information, which shall be operated by a party hereto determined pursuant to subclause (b) of Clause 206 until the successor Operator becomes entitled to such information)) and of all other facilities and all funds held for the joint account, together with all production, if any, which has not theretofore been delivered in kind, and copies of books of account and records kept for the joint account and wells delivered and all documents, agreements and other papers relating thereto. Upon delivery of the said property, books and records, the Operator shall be released and discharged and the successor Operator shall assume all duties and obligations of the Operator, except the unsatisfied duties and obligations of the Operator accrued prior to the effective date of the change of Operator and for which the Operator shall, notwithstanding its release or discharge, continue to remain liable.

208 AUDIT OF ACCOUNTS ON CHANGE OF OPERATOR — Upon every change of Operator and by not later than 60 days after the new Operator commences to act as Operator the parties shall cause an audit to be made of the books of account and records kept for the joint account. The cost of the audit shall be charged to the joint account.

ARTICLE III

FUNCTIONS AND DUTIES OF OPERATOR

301 CONTROL AND MANAGEMENT OF OPERATIONS — The Operator is hereby delegated the exclusive control and management of the exploration, development and operation of the joint lands for the joint account.

The Operator shall not make an expenditure for any single undertaking the total estimated cost of which is in excess of Ten Thousand Dollars (\$10,000) without a written authority for expenditure from Joint-Operators, unless the expenditure is considered by Operator to be necessary by reason of an event endangering life or property. Particulars of each such event shall be reported promptly to the Joint-Operators.

302 OPERATOR AS JOINT-OPERATOR — The Operator shall also have all the rights and obligations of a Joint-Operator with respect to its participating interest.

303 INDEPENDENT STATUS OF OPERATOR — The Operator in its operations hereunder is an Independent Contractor. The Operator shall furnish or cause to be furnished all material, labor and services necessary for the exploration, development and operation of the joint lands. The Operator shall determine the number of employees, their selection and the hours of labor and the compensation for services to be paid them in connection with its operations hereunder. All employees and contractors used in its operations hereunder shall be the employees and contractors of the Operator.

- 304 **PROPER PRACTICES IN OPERATIONS** — The Operator shall carry on all operations diligently, in a good and workmanlike manner, in accordance with good oilfield practices, and in accordance with the Regulations.
- 305 **BOOKS AND RECORDS** — The Operator shall with respect to all operations conducted by it hereunder keep and maintain true and correct books, records and accounts showing the development and progress made, drilling done, other operations carried out, the quantity of the petroleum substances taken out of each well, and the disposition thereof; and shall, upon request of a Joint-Operator, make available in Alberta and there permit each Joint-Operator during normal business hours to inspect the said books, records and accounts and to make extracts or copies therefrom and thereof, and to audit the Operator's accounts and records as provided in the Accounting Procedure; provided that a Joint-Operator while not entitled to information with respect to a well shall not have the rights granted under this Clause with respect to that well.
- 306 **PROTECTION FROM LIENS** — The Operator shall pay, or cause to be paid, as and when they become due and payable all accounts of contractors and claims for wages and salaries for services rendered or performed and for materials supplied on, to or in respect of the joint lands or any operations for the joint account thereon, and keep the joint lands free from liens and encumbrances resulting therefrom, unless there be a bona fide dispute with respect thereto; and not suffer any claims of, or dues to or on behalf of the Workmen's Compensation Board to become in arrears.
- 307 **JOINT-OPERATOR'S RIGHTS OF ACCESS** — The Operator shall, except as otherwise herein provided, permit each Joint-Operator or its duly authorized representative, at the Joint-Operator's sole risk, cost and expense full and free access at all reasonable times for the purpose of inspection and observation to all operations of every kind and character being conducted for the joint account upon the joint lands and to the records of operations conducted thereon.
- 308 **SURFACE RIGHTS** — The Operator shall acquire for the joint account all necessary surface rights for purposes of joint operations hereunder.
- 309 **MAINTENANCE OF LEASES** — Except as otherwise provided herein or in the Agreement, the Operator shall on behalf of the parties and for the joint account comply with all the terms and conditions of the title documents, including: (i) the payment of rentals, and (ii) other encumbrances agreed to be borne for the joint account; and shall do all the things necessary to maintain the title documents in good standing and in full force and effect; provided that this Clause shall not require or permit the Operator to drill a well for the joint account.
- 310 **PRODUCTION STATEMENTS AND REPORTS** — The Operator shall furnish each Joint-Operator before the 25th day of each month with a statement showing production, inventories, sales and deliveries in kind to the parties of petroleum substances during the preceding month.
- The Operator shall also make all necessary reports relating to operations for the joint account on the joint lands as required by the Regulations and shall upon request of a Joint-Operator provide it with a copy of each production report filed by Operator with any governmental agency.
- 311 **INSURANCE**
- (a) In respect of operations hereunder for the joint account, the Operator shall comply with the requirements of all Unemployment Insurance and Worker's Compensation legislation and shall, prior to the commencement of operations hereunder, hold or cause to be held with a reputable insurance company or companies, and thereafter maintain or cause to be maintained for the joint account and benefit of the parties hereto, the insurance hereinafter set forth, and the cost thereof shall be charged to the joint account. The insurance referred to in this Subclause is as follows:
- (i) Employer's Liability Insurance covering each employee engaged in the operations hereunder to the extent of One Hundred Thousand (\$100,000.00) Dollars where such employee is not covered by Worker's Compensation.
 - (ii) Automobile Insurance covering all motor vehicles, owned or non-owned, operated and/or licensed by the Operator, with a bodily injury, death and property damage limit of Five Hundred Thousand (\$500,000.00) Dollars inclusive.

- (iii) Comprehensive General Liability Insurance with a bodily injury, death, and property damage limit of Five Hundred Thousand Dollars (\$500,000.00) inclusive; and, without restricting the generality of the foregoing provisions of this Subclause, such coverage shall include Contractual Liability, Tortious Liability, Contractor's Protective Liability, Products and Completed Operations Liability.
- (iv) Aircraft Liability Insurance, if aircraft are to be used in the operation, covering all aircraft, owned or non-owned, operated and/or licensed by the Operator, with a bodily injury, death and property damage limit of One Million (\$1,000,000.00) Dollars inclusive.

(b) The Operator shall use every reasonable effort to have its contractors and sub-contractors comply with applicable Unemployment Insurance and Worker's Compensation legislation and carry such insurance (if any) in such amounts as the Operator deems necessary.

(c) Each party hereto shall be responsible for insuring its own interest in the joint lands with respect to physical damage to property, loss of income and any insurance other than that referred to in Subclause (a) of this Clause.

(d) If so requested by any party, the Operator shall furnish evidence of compliance with the foregoing insurance provisions.

312 TAXES — Except as otherwise provided herein or in the Agreement, the Operator shall initially pay for the joint account all taxes (except income taxes) with respect to property held for the joint account.

ARTICLE IV

INDEMNITY OF OPERATOR

401 LIMIT OF LIABILITY — The Operator shall not be liable to the Joint-Operators for any loss or damage except for loss or damage resulting from the gross negligence or wilful misconduct of the Operator, its agents and employees.

402 INDEMNIFICATION OF OPERATOR — Each of the Joint-Operators, proportionate to its participating interest, hereby indemnifies and agrees to hold harmless the Operator against any claim of or liability to any third person resulting from any act or omission of the Operator or its agents and employees in conducting operations for the joint account; provided, however, that the Operator shall not be indemnified or held harmless by the parties for any loss, damage, claim or liability, resulting from the gross negligence or wilful misconduct of the Operator, its agents or employees, but no act or omission of the Operator, its agents or employees, shall of itself be deemed gross negligence or wilful misconduct if it is done or omitted at the instruction of, or with the concurrence of, the Joint-Operators.

ARTICLE V

COSTS AND EXPENSES

501 ACCOUNTING PROCEDURE AS BASIS — The Accounting Procedure shall be the basis for all charges and credits to the joint account except as the Accounting Procedure may be in conflict herewith or with the Agreement.

502 OPERATOR TO PAY AND RECOVER FROM PARTIES — Subject to the provisions of Clause 503, the Operator in its operations for the joint account shall initially advance and pay all costs and expenses of operations conducted for the joint account. The Operator shall charge to each Joint-Operator its proportionate share of the said costs and expenses, and each respective Joint-Operator shall pay the same to the Operator within 15 days after receipt of the Operator's statement thereof. Failing payment when due, the amount unpaid may, at the Operator's option, bear interest from the day such payment is due for the account of the Operator at a rate two (2%) percentage point higher than the then prevailing prime bank interest rate charged by the chartered bank in Canada used by the Operator with respect to operations hereunder, until the amount is paid.

503 ADVANCE OF COSTS AND EXPENSES — The Operator may, at its election, require each Joint-Operator to advance its proportionate share of all costs and expenses to be incurred for the joint account. If the Operator so elects, it may, not earlier than 30 days prior to the first day of each calendar month, submit to each Joint-Operator an itemized estimate of the costs and expenses proposed to be a charge for the joint account in that calendar month, with a request for payment by

each Joint-Operator of its proportionate share thereof. Each Joint-Operator shall pay the Operator its proportionate share of the costs and expenses so estimated or secure the payment thereof in a manner satisfactory to the Operator on or before the 15th day after receipt by it of such estimate or by the first day of the calendar month to which the estimate relates, whichever is the later, and if any Joint-Operator fails so to make or secure such payment, the unpaid amount may, at the Operator's option, bear interest (payable by that Joint-Operator) for the account of the Operator at the rate of interest provided for in Clause 502 from the day such payment is due until it is paid. Adjustments between estimated and actual costs shall be made by the Operator at the close of each calendar month, and the accounts of the parties shall be adjusted accordingly.

504 FORECAST OF OPERATIONS — The Operator shall from time to time at the request of a Joint-Operator, furnish the Joint-Operators with a written forecast outlining all operations which it proposes to carry out on the joint lands for the joint account during the forecast period (which shall be no less than three months and no more than twelve months) together with the estimated costs thereof. It is specifically understood that such forecasts are for informational purposes only and shall not bind any of the parties.

505 OPERATOR'S LIEN

(a) The Operator shall have a lien on the interest of each Joint-Operator in the joint lands and in production, wells and equipment therefrom and thereon to secure payment of each Joint-Operator's proportionate share of the cost and expense of all operations carried on by the Operator for the joint account.

(b) If a Joint-Operator fails to pay or advance any of the costs hereby agreed to be paid or advanced by it, and the default continues for 30 days after the Operator has served notice upon the Joint-Operator specifying the default and requiring the same to be remedied, the Operator may, without limiting the Operator's other rights at law:

- (i) withhold from such Joint-Operator any further information and privileges with respect to operations;
- (ii) treat the default as an immediate and automatic assignment to the Operator of the proceeds of the sale of such Joint-Operator's share of the petroleum substances; and from and after the Operator making such election, the Operator may require the purchaser of such Joint-Operator's share of the petroleum substances to make payment therefor to the Operator while the default continues, and
- (iii) enforce the lien created by the default in payment by taking possession of all or any part of the interest of the defaulting Joint-Operator in the joint lands or in all or any part of the production therefrom and equipment thereon; and the Operator may sell and dispose of any interest, production or equipment of which it has so taken possession either in whole or in part or in separate parcels at public auction or by private tender at a time and on whatever terms it shall arrange, having first given notice to the defaulting Joint-Operator of the time and place of the sale. The proceeds of the sale shall be first applied by the Operator in payment of any costs to be paid by the defaulting Joint-Operator and not paid by it and any balance remaining shall be paid to the defaulting Joint-Operator after deducting reasonable costs of the sale. Any sale made as aforesaid shall be a perpetual bar both at law and in equity against the defaulting Joint-Operator and its assigns and against all other persons claiming the property or any part or parcel thereof sold as aforesaid by, from, through or under the defaulting Joint-Operator or its assigns.

506 REIMBURSEMENT OF OPERATOR — If the Operator has not received full payment of a Joint-Operator's share of the costs and expenses of operations hereunder within three (3) months following the date the payment was due, each Joint-Operator, upon being billed therefor by the Operator, shall contribute a fraction of the unpaid amount, excluding interest thereon, which fraction shall have:

- (i) as its numerator — the participating interest of that Joint-Operator, and
- (ii) as its denominator — the aggregate participating interests of all parties hereto except the defaulting Joint-Operator,

and thereupon each contributor shall be proportionately subrogated to the Operator's rights pursuant to Clause 505, and to the interest thereafter payable under Clauses 502 and 503 on the unrecovered portion of its contribution.

507 **COMMINGLING OF FUNDS** — The Operator may commingle with its own funds the moneys which it receives from or for the account of the Joint-Operators pursuant to this Operating Procedure.

ARTICLE VI

OWNERSHIP AND DISPOSITION OF PRODUCTION

601 **EACH PARTY TO OWN AND TAKE ITS SHARE** — Each of the parties hereto shall own its proportionate share of the petroleum substances produced from wells operated for the joint account and shall, at its own expense, take in kind and separately dispose of its proportionate share of production exclusive of the production which may be used by the Operator in developing and producing operations and of production unavoidably lost.

602 **FAILURE TO TAKE IN KIND** — When, and so often as a Joint-Operator shall fail or refuse to take in kind and separately dispose of its proportionate share of any production, the Operator shall have the authority, revocable by that Joint-Operator at will (subject to existing sales contracts), to sell for the account of that Joint-Operator its proportionate share of production to others at the same price which the Operator receives for its own portion of the production or to purchase the same for its own account at the field price prevailing in the area. All sales made by the Operator of a Joint-Operator's share of production as aforesaid shall be for such periods of time only as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any contract for the sale of the Joint-Operator's share of production be made for a period in excess of one year.

603 **OPERATOR'S FAILURE TO TAKE IN KIND** — If the Operator is the party who fails or refuses to take in kind and separately dispose of its proportionate share of production, the Joint-Operators or any one or more of them shall have the same rights mutatis mutandis with respect to production, including the Operator's share thereof, as the Operator has with respect to a Joint-Operator's share of production under the foregoing provisions of this Article; and in that case the Operator shall follow the instructions with respect to production and marketing given by the Joint-Operators who wish to market and/or take in kind their respective shares of production and to market the Operator's and other Joint-Operators' shares of production as aforesaid. Two or more Joint-Operators exercising their rights under this Clause shall do so in proportion to their participating interests.

604 **PAYMENT OF LESSOR'S ROYALTY** — Each of the parties hereto shall pay or cause to be paid the Lessor's royalty and all other payments required pursuant to the title documents attributable to its proportionate share of petroleum substances.

ARTICLE VII

OPERATOR'S DUTIES RE DRILLING WELLS FOR JOINT ACCOUNT

701 **PRE-COMMENCEMENT INFORMATION** — Prior to commencing any well for the joint account, the Operator shall submit to each Joint-Operator:

- (a) an Authority for Expenditure summarizing the anticipated drilling costs and completion costs of the well. Submission or approval of the Authority for Expenditure shall not preclude any party from giving an operation notice under Clause 1002 with respect to the well, provided that approval of the Authority for Expenditure by all parties hereto before expiration of the notice period under the operation notice shall nullify the said operation notice; and
- (b) the Operator's proposed program of drilling, coring, logging and testing the well.

702 **DRILLING INFORMATION AND PRIVILEGES OF JOINT-OPERATORS** — During the drilling of the well, the Operator shall provide to each Joint-Operator:

- (a) prompt notice of the date of spudding in of the well;
- (b) daily drilling and geological reports;

- (c) if requested, a complete set of washed samples of the cuttings of the formations penetrated;
- (d) access to all cores taken;
- (e) immediate advice of any porous zones with showings of petroleum substances encountered and the proposed tests, if any, to be run on those porous zones, and a reasonable opportunity to each Joint-Operator to have a representative present to witness and observe any such tests; and
- (f) derrick floor privileges as set forth in Clause 307.

703 TESTING INFORMATION TO JOINT-OPERATORS — During the drilling of the well, the Operator shall:

- (a) test it in accordance with the proposed program;
- (b) make such further tests, as are warranted in the circumstances, of any porous zones with showings of petroleum substances encountered or indicated by any survey;
- (c) take representative mud samples and drillstem test fluid samples in order to obtain accurate resistivity mud filtrate and formation water readings and supply each Joint-Operator with all information relative thereto;
- (d) supply each Joint-Operator with copies of the drillstem test and service report on each drillstem test run, including copies of pressure charts.

704 LOGGING INFORMATION TO JOINT-OPERATORS — During the drilling of the well and upon the well reaching the proposed depth, the Operator shall run all log surveys agreed upon among the parties and shall supply each Joint-Operator with copies as requested of each log so run.

ARTICLE VIII

VELOCITY SURVEYS OR OTHER TESTS

801 VELOCITY SURVEYS AND OTHER TESTS — A Joint-Operator after giving written notice to each of the other Joint-Operators of its intention to do so, may at its sole risk and expense (including rig costs) conduct a velocity survey or other survey or test in a well to which it is entitled to have access, unless the Operator advises such Joint-Operator that in the Operator's opinion the hole is not in satisfactory condition for that purpose. Each Joint-Operator entitled to information from the well shall have the right to receive one copy of the results of any velocity survey so run upon paying to the Joint-Operator that conducted the velocity survey one-eighth of the cost thereof; otherwise a Joint-Operator conducting a survey or test shall not be required to make the results thereof available to any other Joint-Operator. Subject to clause 1801, the Joint-Operator so conducting a velocity survey or other survey or test shall retain all trading rights with respect thereto.

Any Joint-Operator which runs a velocity survey or other survey or test shall indemnify the other Joint-Operators from and against all actions, causes of action, claims and demands for all loss, injury or damages such other Joint-Operators may incur or suffer by reason of the exercise of the rights granted by this Clause.

ARTICLE IX

CASING POINT ELECTION

901 AGREEMENT TO DRILL NOT AUTHORITY TO COMPLETE — Agreement by the parties to drill or deepen a well for the joint account shall be deemed not to include agreement to the setting of production casing and to attempting completion of the well.

902 ELECTION BY JOINT-OPERATORS RE CASING AND COMPLETION — The Operator shall immediately notify the Joint-Operators when the well has reached the authorized depth and the logs and tests preliminary to completion have been run. Subject to Clause 1015, each Joint-Operator shall have a period of 24 hours after the logs and results of the tests have been made available to it to inform the Operator whether it wishes to participate in the cost of setting casing and making a completion attempt. Failure to reply to the notice from the Operator shall be deemed an election to participate provided at least one Joint-Operator has actually communicated to the Operator its election to participate. If no party elects to participate, the Operator shall plug and abandon the hole.

903 LESS THAN ALL PARTIES PARTICIPATE — If one or more, but not all, of the parties elect to set casing and attempt to complete the well and the well is completed for the taking of petroleum substances, then paragraph A (indicate A or B) below shall apply, namely:

A. The setting of casing and the completion shall be considered an independent operation under the provisions of Article X (including the provisions of Clause 1009 if the well is abandoned before the penalty is recovered) as if the independent operation were with respect to a development well;

or

B. The parties not participating in the setting of casing and the completion shall assign to the parties participating therein all the assignor's interest in the spacing unit of the well in so far only as it relates to the zone or zones in which the well is so completed, and the assignees shall forthwith pay to the assignors the latter's share of the estimated salvage value of the material and equipment placed in or on the well prior to commencement of the completion attempt; provided, if the well is abandoned within six months of the expiry of the 24 hour period provided in Clause 902, such abandonment shall be for the joint account except that the participants in the completion attempt shall bear all extra costs of the abandonment incurred by reason of the completion attempt. If the well is not abandoned within the said six months, the cost of abandonment shall be the responsibility of the participants in the completion attempt only.

ARTICLE X

INDEPENDENT OPERATIONS

1001 DEFINITIONS USED IN THIS ARTICLE — For the purpose of this Article X, the "*proposing party*" shall mean the party hereto (whether one or more) giving notice of its intention to conduct independently an operation on the joint lands (hereinafter called "*the operation*"); "*operation notice*" shall mean such notice of intention; "*receiving parties*" shall mean the parties (whether one or more) other than the proposing party; "*participating parties*" shall mean the parties (whether one or more) participating in the operation, and shall include the proposing party; "*non-participating parties*" shall mean the parties hereto (whether one or more) not participating in the operation; "*development well*" shall mean a well in so far as the geological horizons proposed to be penetrated in the drilling thereof as provided in the operation notice are not deeper than the deepest geological horizon in which another well within two miles of the proposed well is or has been capable of production of petroleum substances in commercial quantities (that is, such quantities as would warrant the drilling of a like well in the vicinity thereof); and "*exploratory well*" shall mean a well in so far as it is not a development well.

1002 PROPOSAL OF INDEPENDENT OPERATION — The parties normally shall consult with respect to decisions to be made for the further exploration and development of the joint lands. Whether or not such consultation has occurred or has been requested, a proposing party may at any time give to the receiving parties an operation notice for an operation on the joint lands, stating in the operation notice the nature of the operation, the proposed location, purpose and estimated cost of the operation and, if applicable, indicating whether it is a development well, an exploratory well or the extent to which it is both. Each receiving party shall give notice to the proposing party within 30 days after receipt of the operation notice whether that receiving party will participate in the operation, provided if the operation notice relates to the drilling of a well for the purpose of evaluating lands which have been posted for public tender by a governmental authority (hereinafter called a "Crown Sale") or which it is known will be posted for a Crown Sale to be held not later than 60 days after the date of the operation notice (which information shall be contained in the operation notice), the said 30 day period within which the receiving party shall give notice to the proposing party shall be reduced to 15 days. No well shall be considered as being drilled for such evaluation if the lands proposed to be evaluated are all at a greater distance than one mile from the location of the proposed well. If the receiving party fails to give notice to the proposing party within the time provided, that receiving party shall be deemed to have given notice to the proposing party that it will not participate in the operation. As soon as the said 30 or 15 day period (as the case may be) has expired, or as soon as all receiving parties have replied to the operation notice if such occurs earlier, the proposing party shall forthwith give notice to all the participating parties how the costs, risks and benefits of the operation will be shared, having regard to Clause 1015.

1003 TIME FOR COMMENCING OPERATION — The proposing party may begin the operation without waiting for the 30 or 15 day period of notice under Clause 1002 to lapse, but shall not commence the operation more than 60 days after giving the operation notice, although, in that case, an operation notice may again be given for the same operation within or after the expiration of the said 60 day period.

1004 OPERATOR FOR INDEPENDENT OPERATIONS — If the Operator is a participating party, it shall carry out the operation for the account of the participating parties. If the Operator is not a participating party, the participating parties shall appoint an Operator for the operation. If the operation is commenced prior to the time the Operator becomes a participating party (and it is specifically understood that nothing in this Clause shall restrict or prohibit the proposing party from actually commencing operations as provided in Clause 1003) the operator, upon becoming a participating party, shall take over and carry out the operation for the participating parties.

1005 SEPARATE ELECTION WHERE WELL STATUS DIVIDED — If the operation is the drilling of a well which is in part a development well and in part an exploratory well, each receiving party electing to participate in the well shall elect:

- (i) to the extent only that it is a development well; or
- (ii) to the extent that it is both a development well and an exploratory well.

If the participation in the well varies between the well as a development well and the well as an exploratory well, the drilling costs and completion costs of the well shall be allocated between the well as a development well and the well as an exploratory well as nearly as they can be determined. For the purpose of this Article X, development well costs shall be only those costs which would have been incurred had the well been drilled as a development well only; all costs of the well additional to those designated as development well costs shall be deemed to be exploratory well costs.

1006 ABANDONMENT OF INDEPENDENT WELL — If the operation is the drilling of a well, and the well is not capable of production of petroleum substances in paying quantities, the participating parties shall abandon the well in accordance with the Regulations.

1007 PENALTY WHERE INDEPENDENT WELL RESULTS IN PRODUCTION

(a) If the operation is the drilling of a well and the well is completed for the production of petroleum substances from one or more formations in which the well is a development well, then, with respect only to those formations, the participating parties shall be entitled to retain possession of the well and to all production therefrom until the gross proceeds of production, less lessor's royalty and any overriding royalties or other encumbrances thereon which otherwise would have been borne by the joint account and less the equipping costs and operating costs of the well as a development well, shall equal:

300 % of the drilling costs and completion costs of the well as a development well,

after which the well shall be held for the joint account and operated by the Operator.

(b) If the operation is the drilling of a well and the well is completed for the production of petroleum substances from one or more formations in which the well is an exploratory well, then, with respect only to those formations, the participating parties shall be entitled to retain possession of the well and to all production therefrom until the gross proceeds of production, less lessor's royalty and any overriding royalties or other encumbrances thereon which otherwise would have been borne by the joint account and less the equipping costs and operating costs of the well as an exploratory well, shall equal:

(i) 400 % of the drilling costs and completion costs of the well as an exploratory well; plus

(ii) the same percentage as that specified in subclause (a) above of the drilling costs of the well as a development well if no production is obtained from any formation in which the well is a development well;

after which the well shall be held for the joint account and operated by the Operator.

1008 INDEPENDENT DEEPENING, PLUGGING BACK OR REWORKING

(a) No operation notice for a deepening, plugging back or reworking operation may be given with respect to a well producing or capable of producing petroleum substance in paying quantities, nor shall any drilling well be deepened if one or more parties wish to attempt to complete the well pursuant to Article IX.

(b) A non-participating party in a well may not propose any further operation in the well unless and until (and only to the extent that) it has regained the right to participate in production from the well.

(c) Where a drilling rig is on location, the period for response to the operation notice under Clause 1002 with respect to a deepening, plugging back or reworking operation shall be reduced to 48 hours, after which rig time shall be at the expense of the parties agreeing to participate in the operation, whether or not the operation is carried out.

(d) If a deepening, plugging back or reworking operation results in the production of petroleum substances in paying quantities from one or more formations in which the well is:

- (i) a development well — then with respect to those formations and the petroleum substances produced therefrom, the provisions of subclause 1007 (a) shall apply, mutatis mutandis, to the recovery of costs of the operation (including the penalty provided therein) to the extent that such operation and production relates to the well as a development well.
- (ii) an exploratory well — then with respect to those formations and the petroleum substances produced therefrom, the provisions of subclause 1007 (b) shall apply, mutatis mutandis, to the recovery of costs of the operation (including the penalty provided therein) to the extent that such operation and production relates to the well as an exploratory well.

1009 WHERE WELL ABANDONED BEFORE PENALTY RECOVERED — If the operation involves the drilling of a well (or a well which has been drilled) and the well is abandoned before it is due to be turned over to the Operator for the joint account under Clauses 1007 and 1008, each party who did not participate in the independent operation but who would have been responsible for a proportionate share of the costs of abandoning the well prior to the conduct of the independent operation, shall pay upon abandonment thereof its said share of such costs and the participating parties shall bear the balance of the costs of abandonment and shall be entitled to the salvable equipment used in connection with the independent operation and resulting from the abandonment; provided that if the proceeds from the salvage of equipment used in connection with the independent operation as determined under the Accounting Procedure exceeds the amount remaining to be recovered before the well would have been turned over to the Operator for the joint account, the excess proceeds shall be credited to the joint account. Any proceeds from salvable equipment owned by the parties prior to the independent operation shall be credited to the joint account.

1010 EXCEPTION TO CLAUSE 1007 WHERE WELL PRESERVES TITLE — Notwithstanding Clause 1007, if the operation is the drilling of a well required to preserve title, the drilling of which is commenced later than 45 days before the title document covering the lands upon which the well is drilled is due to terminate as to all or part of those lands unless a well similar to the proposed well is sooner drilled thereon, the non-participating parties shall, effective upon the well reaching sufficient depth to prevent such termination, assign to the participating parties (in proportion to their percentages of participation in the operation) all the non-participating parties' interest in and under that title document in so far as it relates to the lands with respect to which such termination would otherwise have occurred, unless the non-participating parties have, prior to the date upon which such termination would have occurred, drilled (or are in course of drilling) another well which also has prevented or will prevent such termination. The non-participating parties' rights with respect to access to the wellsite and information with respect to a well subject to this Clause shall be as provided in Clause 1018 hereof.

1011 INDEPENDENT GEOLOGICAL OR GEOPHYSICAL OPERATION — Nothing in this Operating Procedure shall preclude a party from conducting a geological or geophysical operation provided that the participating parties shall not interfere with other operations being conducted on the joint lands for the joint account. The non-participating parties shall not be entitled to any information or data with respect to such operations except that upon paying to the participating parties 150% of what its share of any such operation would have been had all the parties hereto participated therein, a non-participating party shall be entitled to a copy for its own use of all data obtained from the operation, other than interpretations of such data made by the participating parties or any of them. The right to so acquire information and data from any such operation shall cease at the end of the second calendar year following the calendar year in which the operation was completed.

1012 USE OF BATTERY AND OTHER EQUIPMENT FOR INDEPENDENT WELL — To the extent that battery, gathering or processing facilities, or any of them, are available on the joint lands, the participating parties in an operation shall be permitted to make use of and to share them in the same manner as if the operation had been carried out for the joint account; provided (i) operations for the joint account shall have priority in all cases where any such facilities may be inadequate and (ii) an equitable division of capital and operating costs is made with respect to all such joint facilities.

1013 ACCOUNTS AND AUDIT DURING PENALTY RECOVERY — During the period of recovery of costs and penalties under any preceding Clause of this Article, the operator for the operation shall supply all parties with a monthly statement showing the status of the recovery of such costs and penalties. The provisions of the Accounting Procedure relating to audit of accounts shall apply mutatis mutandis to the audit of accounts with respect to recovery of costs and penalties by participating parties under this Article.

1014 PARTICIPANT'S RIGHTS AND DUTIES RE INDEPENDENT OPERATION — As among the participating parties in any independent operation, the provisions of this Operating Procedure relating to the rights, duties and obligations of the Operator and the Joint-Operators including the provisions of Article IX, shall apply, mutatis mutandis, to the conduct of the operation and to the operation of any well during the recovery of costs and penalties with respect thereto under this Article.

1015 PARTICIPATION IN INDEPENDENT OPERATION — The parties participating in an independent operation hereunder shall have the right to do so in the proportions that their respective participating interests, bear one to the other, except that a party may in its election to participate in the operation specify that it will participate only to the same percentage as its participating interest. In the latter case the proposing party shall promptly determine from the other participants whether they wish to assume, with the proposing party, their respective proportionate shares of the percentage not assumed by the party so limiting its participation.

1016 ASSIGNMENTS AND FORFEITURES TO BE PROPORTIONAL — Any assignment or forfeiture of any interest in the joint lands hereinbefore provided shall be made to the assignees or receiving parties, as the case may be, in the proportions that their respective participating interests bear one to the other, unless the contrary is expressly otherwise provided herein.

1017 INDEMNIFICATION OF NON-PARTICIPATING PARTIES — The participating parties in any independent operation shall, in proportion to their respective interests in the operation, indemnify and hold harmless the non-participating parties from all costs, expenses, suits, claims, liens, liabilities and losses resulting from the carrying out of the operation.

During recovery of costs and penalties out of production resulting from an operation under this Article X, the participating parties in proportion to their respective interests in the operation, shall pay the Lessor's royalties and all other payments and encumbrances relative thereto which otherwise would be borne for the joint account and shall save harmless the non-participating parties from and against all such payments.

1018 NON-PARTICIPATING PARTY DENIED INFORMATION — If the operation involves the drilling of a well (or a well which has been drilled) the non-participating parties shall not be entitled to access to the wellsite or any information with respect to the well until the expiration of 90 days after the date of the release of the rig used to conduct the operation, provided if a party is required to make an assignment pursuant to Clause 1010, such party shall not be entitled to access to the wellsite or any information with respect to the well pursuant to this Operating Procedure at any time.

1019 NO JOINT OPERATIONS UNTIL INFORMATION RELEASED — Any party withholding well information within the 90 day period provided in Clause 1018, shall not propose or conduct any further operation on the joint lands within 4½ miles of such well until it has released such information to the non-participating parties.

1020 CONTRIBUTION TO INDEPENDENT OPERATIONS — If any party receives a cash contribution towards the cost of the operation, the contribution will be shared by the participating parties only, but the cost of the operation shall be reduced by the amount of the contribution for the purpose of determining the recovery of costs and expenses under this Article X.

If the contribution is an acreage contribution, the party offered the contribution shall give each other participating party the right to participate therein to the extent of its share of the cost of the operation at the time the operation was conducted.

1021 UNITIZATION PRIOR TO RECOVERY — If the operation involves the drilling of a well (or a well which has been drilled) and the well and its spacing unit becomes subject to a unit operation, the participating parties shall receive the production allocated to the spacing unit until they have recovered all costs and penalties to which they are entitled pursuant to this Article X. The credits under any adjustment of investment accruing to the participating parties for well costs paid and equipment supplied by them, shall be deemed to be proceeds from production and the debits under any adjustment of investment shall be deemed to be operating costs and such credits or debits shall be applied to the well by the participating parties consistent with the terms of Clauses 1007 and 1008 and shall be recorded in the monthly statement. If the adjustment credit applicable at any time is in excess of the amount required by the participating parties to fulfill the recovery of costs and penalties, such excess shall be reported to the Operator and credited by the Operator to the joint account.

ARTICLE XI

SURRENDER OF JOINT LANDS

1101 INITIATION OF SURRENDER PROPOSAL — Not later than 60 days before the next ensuing rental date or other obligation date with respect to the joint lands affected (except an obligation to pay royalty or a drilling obligation not being enforced under the title documents) a party hereto may give notice to the other parties proposing that some or all of the joint lands be surrendered to the grantor under the title documents. Not later than 30 days before the next ensuing rental date or

other obligation date, the parties receiving the notice shall each give notice to all other parties stating whether or not they wish to join in the proposed surrender. Failure to respond to the said notice shall be deemed to be an election not to join in the surrender. Any party giving notice of the proposed surrender or giving notice of its intention to join in the proposed surrender may by notice to the other parties at any time up to but not later than 30 days before the next ensuing rental date or other obligation date, revoke its notice of intention to surrender.

The size of and interest in the joint lands affected under this Clause must be such that the said grantor would be obliged to accept a surrender thereof pursuant to the title documents.

1102 SURRENDER BY ALL PARTIES — If all parties duly elect to surrender under Clause 1101, the Operator shall proceed forthwith to salvage for the joint account all salvable material and equipment upon the lands and interests to be so surrendered, and all parties hereto shall execute and deliver all documents which may be necessary to effect the surrender.

1103 SURRENDER BY LESS THAN ALL PARTIES — If all the parties do not join in the surrender, the parties not joining in the surrender shall (unless the Operator be one of them) promptly appoint an Operator pro-tem for the parties retaining the said lands and interests, and shall be responsible for taking the necessary steps to ensure payment of rentals or the meeting of any other obligation to maintain the said lands and interests for the benefit of the retaining parties.

1104 ASSIGNMENT OF INTEREST SURRENDERED — Effective on the thirtieth day before the rental or other obligation referred to in Clause 1101 is required to be paid or met, the parties which elected to surrender shall assign to the retaining parties all their interest in the lands and interests which were the subject of the proposed surrender. The parties receiving the assignment shall within 30 days after receipt of the assignment pay to the assignors the assignors' participating interest share (prior to such surrender) in the salvage value of the recoverable material and equipment on the lands so assigned, the amount to be determined by the Operator in accordance with the Accounting Procedure and billed by the Operator to the assignees.

1105 RETAINING PARTIES TO MEET OBLIGATIONS — Where failure by the retaining parties to meet any obligation which prompted the surrender proposal would prejudice the title of the parties in any other portion of the joint lands, the retaining parties shall be deemed to have covenanted to meet that obligation in accepting the interests of the surrendering parties.

1106 FAILURE TO SURRENDER AS AGREED — Where all the parties have agreed to effect surrender under this Article, and whether or not some or all of them have taken any action by way of release or assignment pursuant to an intention to join in the surrender, the lands and interests which are the subject of the surrender notice shall be deemed to be held for the joint account until the surrender has been irrevocably effected, including the termination of any right to reinstate any title document, so that all the parties shall receive or have the right to participate in any benefits which might accrue during the period before the surrender is irrevocably effected. If, however, any party to whom any interest is conveyed or released for the purpose of effecting the surrender should not duly proceed with the surrender and thereby causes any further obligation to arise, that party shall be solely responsible for meeting the obligation and shall indemnify the other parties with respect thereto.

ARTICLE XII ABANDONMENT OF WELLS

1201 PROCEDURE FOR ABANDONMENT — If a party proposes to abandon a well on the joint lands (except at casing point, when Article IX shall apply) it shall give notice of proposed abandonment to the other parties who may, within 30 days of receipt of the notice elect by notice to the other parties to take over the well. The party or parties taking over the well shall be entitled to an assignment without consideration or warranty of the abandoning parties' interest in the spacing unit of the well in so far as it relates to the producing zone of the well. If all parties elect to join in the abandonment, the well shall be abandoned for the joint account.

1202 ASSIGNMENT OF EQUIPMENT AND SURFACE RIGHTS — If less than all parties elect to abandon a well under Clause 1201, the abandoning parties shall without warranty transfer to the other parties the materials and equipment appurtenant to the well, in consideration of the payment by the transferees to the transferors of the latter's share of the fair salvage value of the said materials and equipment, less the transferors' shares of the estimated salvage costs, all determined by the Operator in accordance with the Accounting Procedure and billed to the transferees. The abandoning parties shall also transfer to the other parties without warranty or consideration the surface rights appurtenant to the well.

ARTICLE XIII**OPERATION OF LANDS SEGREGATED FROM JOINT LANDS**

1301 **OPERATING PROCEDURE TO APPLY** — Where by reason of the operation of any provision hereof any portion of the joint lands ceases to be owned by the parties hereto in the same percentages of interest as their participating interests hereunder or ceases to be owned by all the parties hereto, the parties hereto acquiring the different percentages of interest in any portion of the former joint lands shall thereafter hold the same as if they are parties to a separate Operating Procedure, the terms of which are identical to the terms hereof, having regard only to the different owners and percentages of ownership interest, and the said portion of the joint lands shall cease to be "joint lands" hereunder. If the Operator is a party participating in the lands ceasing to be joint lands under this Clause, it shall be the initial Operator of those lands.

ARTICLE XIV**LITIGATION**

1401 **CONDUCT OF LITIGATION** — All litigation in connection with the title documents and the joint lands shall be conducted for and on behalf of all parties. Each party shall notify the other party or parties of any process served upon it, or of any process it intends to serve, in any action involving the title documents and/or the joint lands and thereupon the parties shall decide whether the action shall be handled exclusively by the solicitors of the parties or by joint counsel mutually selected by the parties for the joint account.

ARTICLE XV**RELATIONSHIP OF PARTIES**

1501 **PARTIES TENANTS IN COMMON** — The rights, duties, obligations and liabilities of the parties hereto shall be several and not joint or collective, it being the express purpose and intention of the parties hereto that their interest in the joint lands and in the wells, equipment and property thereon held for the joint account shall be as tenants in common. Nothing herein contained shall be construed as creating a partnership of any kind, joint venture or association or as imposing upon any party hereto any partnership duty, obligation or liability to any other party hereto.

ARTICLE XVI**FORCE MAJEURE**

1601 **DEFINITION OF FORCE MAJEURE** — "force majeure" shall mean any one or more of the following events:

- (a) an act of God
- (b) a war, revolution, insurrection, riot, blockade, or any other unlawful act against public order or authority,
- (c) a strike, lockout, or other industrial disturbance,
- (d) a storm, fire, flood, explosion or lightning,
- (e) a governmental restraint,
- (f) any other event (whether or not of the kind enumerated in (a) to (e) of this Clause) which is not reasonably within the control of the party hereto claiming suspension of its obligations hereunder due to force majeure.

1602 **SUSPENSION OF OBLIGATIONS DUE TO FORCE MAJEURE** — If any party hereto is prevented by force majeure from carrying out any obligation hereunder, the obligations of the party in so far as its obligations are affected by the force majeure shall be suspended while (but only so long as) the force majeure continues to prevent the performance of the said obligations. Any party prevented from carrying out any obligation by force majeure shall promptly give the other parties notice of the force majeure including reasonably full particulars in respect thereof.

1603 **OBLIGATION TO REMEDY** — The party hereto claiming suspension of its obligations as aforesaid shall promptly remedy the cause and effect of the force majeure described in the said notice in so far as it is reasonably able so to do; provided that the terms of settlement of any strike, lockout or other industrial disturbance shall be wholly in the discretion of the party hereto claiming suspension of its obligations hereunder by reason thereof; and that party shall not be required to accede to the demands of its opponents in any strike, lockout or industrial disturbance solely to remedy promptly the force majeure thereby constituted.

1604 **EXCEPTION FOR LACK OF FINANCES** — Notwithstanding anything contained in this Article, lack of finances shall not be considered a force majeure nor shall any force majeure suspend any obligation for the payment of money due hereunder.

ARTICLE XVII

CASH AND ACREAGE CONTRIBUTIONS

1701 **CONTRIBUTIONS TO JOINT OPERATIONS TO BE SHARED** —

- (i) **Cash** — If any party receives a cash contribution towards the cost of any operation to be carried out for the joint account, that party shall pay the cash contribution so received to the joint account.
- (ii) **Acreage** — If any party is offered an acreage contribution in support of any operation to be carried out for the joint account, that party shall give each other party hereto the right to participate in such acreage contribution to the extent of its participating interest hereunder.

1702 **NO WAIVER OF CONFIDENTIAL INFORMATION** — Clause 1701 shall not permit a party to accept a contribution from a third party in return for information from an operation hereunder.

ARTICLE XVIII

CONFIDENTIAL INFORMATION

1801 **INFORMATION TO BE KEPT CONFIDENTIAL** — The parties shall keep confidential from third parties all information obtained in the course of or as a result of operations on the joint lands, except information which the parties have expressly agreed to release, and shall take such measure in connection with operations and internal security as shall be advisable in the circumstances.

ARTICLE XIX

DELINQUENT PARTY

1901 **CLASSIFICATION AS DELINQUENT PARTY** — If any party hereto moves its location and does not provide the other parties hereto with notice of its change of address and subsequently cannot readily be located, or if any party becomes inactive or is struck off the register or otherwise refuses or neglects to answer communications addressed to it at its address for service, the Operator may send notice by registered mail to that party at its last address for service hereunder, advising the party that it shall thereafter be considered a delinquent party within the meaning of this Article.

1902 **EFFECT OF CLASSIFICATION AS DELINQUENT PARTY** — From the 15th day after the registered notice has been mailed to the delinquent party under Clause 1901, the delinquent party shall thereafter:

- (i) not be entitled to any further notices or communications from the Operator or any other party hereto with respect to any matter hereunder;

- (ii) be deemed to have elected not to participate in any operations thereafter carried out on the joint lands;
- (iii) be deemed to have elected to join in all surrenders and abandonments proposed and effected hereunder, notwithstanding that it may be named a registered party under the title documents;

provided that the proceeds of the sale of the delinquent party's share of petroleum substances shall be retained in trust by the Operator for the account and benefit of the delinquent party after deducting the delinquent party's proportionate share of operating costs and all other relevant costs incurred for the joint account.

1903 RESTORATION OF STATUS — If a delinquent party subsequently communicates with the Operator, pays all arrears of moneys due the joint account, and undertakes in writing to comply from that time with the provisions of this Operating Procedure, the delinquent party thereafter shall be restored to the normal status of a party hereto.

1904 LIEN NOT AFFECTED — Nothing in this Article shall derogate from the enforcement of the lien of the Operator and the other parties pursuant to Clauses 505 and 506.

ARTICLE XX

WAIVER

2001 WAIVER MUST BE IN WRITING — No waiver by any party hereto of any breach of any of the covenants, provisos, conditions, restrictions or stipulations herein contained shall take effect or be binding upon that party unless the same be expressed in writing under the authority of that party and any waiver so given shall extend only to the particular breach so waived and shall not limit or affect any rights with respect to any other or future breach.

ARTICLE XXI

FURTHER ASSURANCES

2101 PARTIES TO SUPPLY — Each of the parties hereto shall from time to time and at all times do all such further acts and execute and deliver all further deeds and documents as shall be reasonably required in order fully to perform and carry out the terms of this Operating Procedure.

ARTICLE XXII

NOTICE

2201 SERVICE OF NOTICE — Whether or not so stipulated herein, all notices, communications and statements (hereinafter called "notices") required or permitted hereunder shall be in writing. Notices may be served:

- (a) Personally by leaving them with the party on whom they are to be served at that party's address hereinafter given. Personally served notices shall be deemed received by the addressees when actually delivered provided such delivery shall be during normal business hours; or
- (b) by telegraph (or by any other like method by which a written and recorded message may be sent) directed to the party on whom they are to be served at that party's address hereinafter given. Notices so served shall be deemed received by the addressees thereof eight hours after the time of transmission or at the commencement of the next ensuing normal business day, whichever is the later; or
- (c) by mailing them first class (air mail if to or from the United States of America) registered post, postage prepaid, to the party on whom they are to be served. Notices so served shall be deemed to be received by the addressees on the second day (excluding as the second day, Saturdays, Sundays and Statutory Holidays) following the mailing thereof in Canada or the United States of America.

2202 ADDRESSES FOR NOTICES — The address of each of the respective parties hereto shall be as follows:

OMEGA HYDROCARBONS LTD.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

MANITOBA MINERAL RESOURCES LTD.
603 - 491 Portage Avenue
WINNIPEG, Manitoba R3B 2E4

2203 RIGHT TO CHANGE ADDRESS — Any party hereto may change its said address by notice served as aforesaid.

ARTICLE XXIII

NO PARTITION

2301 WAIVER OF PARTITION OR SALE — No party hereto shall during the term of this Operating Procedure exercise any right to apply for any partition of the joint lands or sale thereof in lieu of partition.

ARTICLE XXIV

DISPOSITIONS OF INTERESTS

2401 RIGHT TO ASSIGN, SELL OR DISPOSE — Subject to Clause 2402, a party hereto shall not assign, sell or dispose of any interest in the joint lands (other than as required and allowed one party to the other elsewhere in this Operating Procedure) without first complying with the provisions of paragraph B below (specify A or B):

- A. The party wishing to make the assignment, sale or disposition shall first notify the other parties and obtain their written consent, which shall not be unreasonably withheld;

or

- B. If a party (in this paragraph called "the selling party") wishes to assign, sell or dispose of, or has received an offer which it is willing to accept for the assignment, sale or disposition of, all or part of its interest in all or part of the joint lands (in this paragraph called "the subject interest"), the selling party shall give notice thereof to the other parties (in this paragraph called "the offerees"). The selling party's notice shall contain the terms and conditions of the proposed assignment, sale or disposition, including the consideration to be received for the subject interest and, if applicable, the name of the offering party. The offerees shall have the right for a period of 20 days after receipt of the notice from the selling party (in this paragraph called "the notice period"), to elect in writing to acquire the subject interest from the selling party on the terms and conditions contained in the notice. The offerees so electing to acquire the subject interest (in this paragraph called "the buying parties") shall be obligated to acquire the subject interest in its entirety. The buying parties

shall have the right to acquire the subject interest in the proportions that their respective participating interests bear one to the other. If all the offerees decline or fail to elect within the notice period to acquire the subject interest, the selling party shall be free for a period of 60 days next following the expiry of the notice period, to assign, sell or dispose of the subject interest on the terms and conditions and to the offering party (if applicable) stipulated in its offer, but not after the said 60-day period, nor otherwise than as so stipulated, without again complying with this paragraph B.

If the consideration stipulated in the offer for the subject interest is one which cannot be matched in kind by the offerees, the selling party may set out in its notice its bona fide estimate of the value in cash of the said consideration. If the selling party's notice did not include its bona fide estimate as aforesaid, the offerees, or any of them, may request such estimate, in which event the notice period shall be suspended until such estimate is received by all of the offerees. In case of dispute as to the reasonableness of the estimate, the matter shall be referred to arbitration under the provisions of the Arbitration Act or Ordinance of the province, state or territory where the joint lands are situated, but the notice period shall not be extended by such referral of the dispute to arbitration. If the equivalent cash consideration determined by the arbitration is lower than the estimate submitted by the selling party, the cash consideration determined by arbitration shall be the sale price for the subject interest and the accounts of the selling party and the buying parties shall be adjusted accordingly; if the equivalent cash consideration determined by arbitration is higher than the estimate submitted by the selling party, the estimate submitted by the selling party shall be the sale price for the subject interest.

2402 EXCEPTIONS TO CLAUSE 2401 — Clause 2401 shall not apply in the following instances, namely:

- (a) An assignment made by way of security for the assignor's indebtedness;
- (b) An assignment, sale or disposition to an affiliate of the assignor, or in consequence of a merger or amalgamation of the assignor with another company;
- (c) An assignment, sale or disposition made by the assignor of all, or substantially all, or of an undivided interest in all, or substantially all of its petroleum and natural gas rights in the province, state or territory where the joint lands are situated.

2403 MULTIPLE ASSIGNMENT NOT TO INCREASE COSTS — If any assignment of an interest in the joint lands or any part thereof is made to multiple parties so that the expenses or duties of the Operator are thereby increased, the Operator may require the assignees (and the assignor if it retains an interest) to appoint one of their number as representing all of them for the purposes of this Operating Procedure, unless arrangements satisfactory to the Operator are made to compensate the Operator for the increased expenses or duties.

2404 NOVATION UPON ASSIGNMENT — No assignment of an interest in the joint lands (except pursuant to the abandonment, surrender and forfeiture provisions of this Operating Procedure) shall be effective against the parties hereto who are not parties to the assignment until the first day of the month next following the date upon which an executed copy of the assignment has been lodged with each party hereto who is not a party to the assignment; provided, the other parties may require the assignor and assignee to enter into a novation agreement with and satisfactory to them under which the assignee will undertake to assume the obligations of the assignor hereto with respect to the interest assigned to the assignee.

ARTICLE XXV

PERPETUITIES

2501 LIMITATION ON RIGHT OF ACQUISITION — Notwithstanding anything elsewhere herein contained, the right of any party hereto to acquire any interest in the joint lands from any other party hereto shall not extend beyond twenty-one years after the lifetime of the last survivor of the lawful descendants now living of Her Majesty Queen Elizabeth II.

ARTICLE XXVI**UNITED STATES TAXES**

2601 **UNITED STATES TAXES** — The parties hereto agree that if for purposes of the United States Internal Revenue Code of 1954 this agreement or the relationship established thereby constitutes a partnership, as defined in section 761(a) of the said Code, each of the parties hereto who are entitled under the said section 761(a) to elect, hereby elects to have the said partnership excluded from the application of subchapter K of chapter 1 of subtitle A of the said Code, or such portion thereof as the Secretary of the Treasury of the United States or his delegate shall permit by election to be excluded therefrom. The Operator is authorized to execute such election on behalf of the parties who are entitled to make such election and to file the election with the proper United States government office or agency, and the Operator is further authorized and directed to execute and file such additional and further evidence of such election as may be required; provided that if the Operator is not subject to the said Code with respect to the joint lands, the obligations of the Operator under this Clause shall be carried out by the party hereto who is subject to the said Code with respect to the joint lands and who holds the greatest participating interest.

ARTICLE XXVII**MISCELLANEOUS**

2701 **SUPERSEDES PREVIOUS AGREEMENTS** — Except for the Agreement (other than to the extent that the Agreement by its terms becomes ineffective when this Operating Procedure is made effective), this Operating Procedure supersedes all other agreements, documents, writings and verbal understandings among the parties relating to the joint lands.

2702 **TIME OF ESSENCE** — Time shall be of the essence of this Operating Procedure.

2703 **NO AMENDMENT EXCEPT IN WRITING** — No amendment or variation of the provisions of this Operating Procedure shall be binding upon any party unless it is evidenced in writing executed by the party.

2704 **BINDS SUCCESSORS AND ASSIGNS** — Subject to the provisions of Article XXIV, this Operating Procedure shall enure to the benefit of and shall bind the parties hereto and their respective successors and assigns, and the heirs, executors, administrators and assigns of natural persons who are or become parties hereto.

ARTICLE XXVIII**TERM**

2801 **TO CONTINUE DURING ANY JOINT OWNERSHIP** — This Operating Procedure shall terminate when no portion of the joint lands is owned jointly by two or more parties hereto or at that later date upon which (joint ownership continuing) all documents of title (and all renewals and extensions thereof) to the joint lands have terminated and all wells on the joint lands have been plugged or abandoned, all equipment thereon salvaged, and final settlement of accounts had among the parties hereto.

SCHEDULE

Petroleum Accountants
Society of Western
Canada - 1969

Attached to and made a part of that certain Agreement dated the day of , A.D.
19 , and made between Omega Hydrocarbons Ltd. and Manitoba Mineral Resources Ltd.

ACCOUNTING PROCEDURE

PART I

GENERAL

101. Definitions

In this Accounting Procedure:

- (a) "Agreement" means the agreement to which this Schedule is attached.
- (b) "Controllable Material" means Material classified as controllable in the Controllable Material Price Catalogue, as revised from time to time, of the Petroleum Accountants Society of Western Canada.
- (c) "for the Joint Account" means for the benefit and risk and at the expense of the Parties, in accordance with their respective interests in the Joint Property.
- (d) "Joint Operations" means all operations for the Joint Account.
- (e) "Joint Property" means property held for the Joint Account.
- (f) "Material" means the equipment, machinery and supplies acquired for the Joint Account and classified as follows:
 - (1) Condition "A" means that which is new;
 - (2) Condition "B" means that which has been used but is sound and is suitable for its original function without reconditioning;
 - (3) Condition "C" means that which has been used and would be suitable for its original function after reconditioning or that which cannot be reconditioned for, but has a limited service in, its original function;
 - (4) Condition "D" means that which is not suitable for its original function but is usable for another function; and
 - (5) Condition "E" means that which is junk.
- (g) "New Price" means the cost of Condition "A" Material at the reputable supply store where such Material is available or at the carrier-receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. Tubular goods 2 inches in diameter and over shall be priced on a carload basis. Any cash discount that may be allowed by a dealer shall not be deducted in determining the New Price.
- (h) "Non-Operators" means the Parties, whether one or more, other than Operator.
- (i) "Operator" means the person, firm or corporation designated in the Agreement to conduct the Joint Operations.
- (j) "Parties" means the persons, firms and corporations who are bound by the Agreement.

102. Approvals

- (a) Approvals required under Clauses 204, 306, 316, 318, 405, and 501 shall be obtained by Operator in writing from the ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.
- (b) Approvals required under Clauses 303(c) and 314(b)(2) shall be obtained by Operator in writing from the ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.

PART II

RECORDS, BILLINGS AND RELATED MATTERS

201. Records

Operator shall maintain records of Controllable Material (excluding replacements) showing the date of acquisition, description, cost for the Joint Account and details of retirement of each item of Controllable Material. Operator may maintain records of replacements of Controllable Material.

202. Bills

Operator shall bill Non-Operators on or before the last day of each month for their share of charges recorded during the next preceding calendar month. Bills shall be accompanied by statements as set forth under paragraph b below:

- (a) statements of all charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof.
- (b) statements, as follows:
 - (1) Controllable Material, in detail; and
 - (2) ordinary charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof; and
 - (3) other charges and credits, in detail.

203. Payments and Refunds

Bills shall be paid within 15 days after receipt thereof. Credits shall be refunded within 15 days after bills are rendered.

204. Right to Protest or Question Bills

Any of Non-Operators may protest or question the correctness of a bill, notwithstanding the payment of it, if such protest or question is made in writing to Operator within the 26 months next following the end of the calendar year in which the bill was presented, otherwise the bill shall be deemed conclusively to be correct for all purposes. No adjustment favourable to Operator shall be made after such period except with approval pursuant to Clause 102(a).

205. Audits

Any of Non-Operators, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records maintained for the Joint Account for any calendar year within the 24 month period next following the end of such calendar year. Any claims of discrepancies disclosed by such audit shall be made in writing to Operator within the 26 month period next following the end of such calendar year. Where two or more Non-Operators desire to conduct audits, they shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to Operator. Costs of audits shall be borne by all Non-Operators.

PART III CHARGES

Operator may incur for the Joint Account and charge under this Part III the following:

301. Rentals, Royalties and Other Payments

Rentals, royalties and other payments required to maintain the interest of the Parties in the Joint Property.

302. Labour

- (a) Salaries and wages of Operator's employees while directly engaged in work, other than operation and maintenance, on the Joint Property.
- (b) Salaries and wages of Operator's employees (up to and including) (below) the first level of field supervision while directly engaged in operation and maintenance on the Joint Property, and salaries and wages of Operator's technical employees while directly engaged in operation and maintenance on the Joint Property.
- (c) In this Clause, "operation and maintenance" means all operations associated with the Joint Property exclusive of exploration operations, Construction Projects and Drilling, as defined in Clauses 314(a)(1) and 314(a)(4).

303. Employee Benefits

Operator's costs with respect to employees whose salaries and wages are chargeable under Clause 302:

- (a) for holiday, vacation, sickness and disability benefits and other customary allowances, which may be charged as a percentage of the said salaries and wages in accordance with Operator's cost experience; and
- (b) for any payments made and borne by Operator pursuant to any law applicable to it as an employer other than any law relating to benefits chargeable under Clause 303(a); and
- (c) for its established employee benefit plans, but not in excess of 15 percent of the total charges under Clauses 302 and 303(a). The said rate may be adjusted from time to time upon approval pursuant to Clause 102(b).

304. Travel Expenses

Travel expenses of employees whose salaries and wages are chargeable under Clause 302.

305. Material

Costs, as provided in Part IV, of Material purchased or furnished by Operator and of transporting such Material.

306. Services and Utilities

Costs of services and utilities for Joint Operations obtained from persons not Parties, except costs of professional consultants' services which shall be charged only with approval pursuant to Clause 102(a).

307. Operator's Facilities and Equipment

Costs for use of Operator's own facilities and equipment in accordance with Clause 406.

308. Damage or Loss to Joint Property

Costs of replacements or repairs to the Joint Property resulting from damage or loss for which Operator is not liable.

309. Damage Claims

Costs of damage claims arising out of Joint Operations and for which Operator is not liable.

310. Acquisition of Surface Rights and Legal Services

Costs of acquisition of surface rights and of legal services for title work. Fees and related expenses associated with other legal services may be charged only with approval of the Parties.

311. Taxes

Taxes paid for the Joint Account.

312. Insurance

Premiums paid for insurance that Operator is required to carry for the Joint Operations.

313. Camp and Housing Expense

Costs of operating and maintaining all necessary camp and housing facilities for, and boarding of, employees whose salaries and wages are chargeable under Clause 302; provided that the charges for Operator's own facilities shall be commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment, less any revenue therefrom. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year. When operations in addition to the Joint Operations are served by these facilities the charge for such facilities shall be apportioned among all such operations on an equitable basis.

314. Overhead

Overhead as provided in Clause 314(b).

(a) In this Clause 314:

- (1) "Construction Project" means any construction or installation undertaken for the Joint Account, including each subsequent addition thereto or alteration thereof or replacement of Controllable Material thereon, but does not include Development.
- (2) "Cost" means the total direct expenditures (less any credits received thereon) exclusive of expenses of litigation, judgments, settlement of claims, royalties on production, salvage credits for Material retired and the value of injected substances purchased for enhanced recovery.
- (3) "Development" means Drilling, installation or additions of equipment and replacement of Controllable Material on or in wells.
- (4) "Drilling" means the drilling, completing, capping, plugging and abandoning, deepening, plugging back, drilling or reconditioning of a well (except routine cleanout and pump or rod pulling operations) or the conversion of a well to a source, input or producing well.
- (5) "Operation and Maintenance" means all operations associated with the Joint Property exclusive of Development, exploration operations and Construction Projects.
- (6) "Overhead" means an allowance for salaries, wages, employee benefits and expenses of all Operator's employees not chargeable elsewhere in this Part III, and maintaining and operating offices that are not Joint property.

- (7) "Producing Well" means a well for the Joint Account that in a calendar month:
- (i) has an allowable for crude oil attributable to it; or
 - (ii) is connected to a permanent gas sales outlet, source or injection system; or
 - (iii) is used as a disposal well;

provided that a well that is Drilling during the entire month or is permanently shut in and awaiting abandonment shall not be considered a Producing Well, and a well completed in more than one zone shall be considered a separate Producing Well for each such zone.

NOTE: Select either the Combined Rate Basis or the Percentage Rate Basis below.

(b) Combined Rate Basis

- (1) (i) for Drilling with a rig and crew, \$ 55.00 per well per day beginning on the date of commencement of Drilling and terminating on the rig release date, but, if Drilling is suspended for any period of 15 or more consecutive days while a rig is on location, no charge shall be made for any part of such period of suspension.

- (ii) for each Producing Well, \$ 125.00 per month.

- (iii) for each Construction Project,

(a) 5 percent of the first \$ 25,000.00 of Cost, plus

(b) 3 percent of the next \$ 50,000.00 of Cost, plus

(c) 1 percent of Cost exceeding the sum of (a) and (b),

provided that no charge shall be made under this Clause 314(b)(1)(iii) for any Construction Project the total Cost of which is less than \$ 10,000.00

- (iv) for exploration operations the following charges shall begin on the day an exploration crew or party commences work on the site of exploration operations and terminate when it ceases work on the site:

| | Charge Per Operating Crew or Party Day | |
|---|--|----------|
| | Operator Owned | Contract |
| Seismograph Party | | |
| Gravimeter Party (including Aeromagnetic surveys) | | |
| Geological Surface Party | To be negotiated. | |

The rates in this Clause 314(b) (1) (iv) do not cover interpretation of technical data.

- (2) The rates in Clause 314(b)(1), except rates on Construction Projects, shall be adjusted as of the first day of July each year following the year in which the Agreement became effective. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly wages and salaries of the Canadian petroleum and natural gas industry for the last calendar year compared with the calendar year next preceding such last calendar year as reported by the Dominion Bureau of Statistics. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment rounded to the nearest dollar. Notwithstanding the provisions hereof the rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).

- (3) Rates will be negotiated when required for operation of facilities such as, but not limited to, gathering systems and related facilities, gas processing plants, compressor plants, secondary recovery systems, injection systems and salt water disposal facilities other than disposal wells.

~~(c) Percentage Rate Basis~~

- ~~(1) (i) for Development, _____ percent of Cost.~~
- ~~(ii) for Operation and Maintenance, except of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.~~
- ~~(iii) for Operation and Maintenance of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.~~

- ~~(a) for each Construction Project,~~
- ~~(a) _____ percent of the first \$ _____ of Cost, plus~~
- ~~(b) _____ percent of the next \$ _____ of Cost, plus~~
- ~~(c) _____ percent of Cost exceeding the sum of (a) and (b).~~
- ~~(v) for geophysical and geological exploration operations, _____ percent of Cost if a contract crew or party is employed and _____ percent of Cost if Operator utilizes its own crew or party. The rates in this Clause 314(b)(1)(v) do not cover interpretation of technical data.~~
- ~~(2) The rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).~~

315. Interpretation of Technical Data

Costs, as approved by the Parties, of interpreting technical data from exploration operations.

316. Engineering Design

Costs of engineering design with approval pursuant to Clause 102(a).

317. Warehousing Handling

- (a) 2 1/2 percent of the cost of tubular goods 2 inches in diameter and over and each other item of Material having a New Price in excess of \$ 1,000.00 delivered from Operator's warehouse and 5 percent of the cost of all other Material delivered from Operator's warehouse, where Operator's warehouse is not maintained as part of the Joint Property.
- (b) Costs of maintaining warehouses which are part of the Joint Property.

318. Other Costs

Costs, as approved pursuant to Clause 102(a), for which provision is not made elsewhere in this Accounting Procedure.

PART IV

BASIS OF CHARGES

401. Purchases

Operator shall, whenever practicable:

- (a) purchase Material for delivery directly to the Joint Property; and
- (b) purchase for or transfer to the Joint Property only such Material as is required for immediate use and avoid the accumulation of surplus stocks.

402. Charges for Purchases

Material purchased shall be charged at the price paid by Operator. Discounts actually received in respect thereof shall be for the Joint Account.

403. Charges for Material Furnished by Operator

When it is not practicable to purchase Material for delivery directly to the Joint Property, Material may be furnished by Operator from its stocks, in which event Material shall be charged as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B" at 75 percent of New Price;
- (c) Condition "C" at 50 percent of New Price; and
- (d) Condition "D" at a reasonable price based on the use to which it is to be put.

404. Premium Prices

Whenever, in Operator's opinion, Material is not available at reasonable prices, Operator shall in writing notify Non-Operators thereof. Within 2 days after receipt of such notice each Non-Operator may notify Operator in writing that it wishes to deliver to Operator such Material and such notice shall set forth the price and delivery date. Operator shall decide if the price and date for delivery of such Material are reasonable in the circumstances and, if so, shall purchase such Material from such Non-Operators. If more than one Non-Operator wishes to supply such Material, Operator shall decide the quantity of such Material that each such Non-Operator may deliver. If Operator decides such Material is not available from the Non-Operators on reasonable terms, Operator may acquire such Material and make a charge for the Joint Account of the actual cost and expense incurred in purchasing, transporting and preparing such Material for use.

405. Transportation of Material

Operator may charge the actual cost of transporting Material to or from the Joint Property, provided that the charge for transporting Material furnished by Operator shall not exceed the estimated cost of transporting such Material from the reputable supply store where such Material is available or the carrier receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. No charge shall be made for transporting Material from the Joint Property to other properties of Operator except with approval pursuant to Clause 102(a).

406. Operator's Facilities

- (a) Operator may charge for use of Operator's own facilities and equipment at rates, not exceeding those prevailing in the immediate area for available like facilities and equipment, commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year.
- (b) In lieu of rates provided in Clause 406(a), Operator may charge for use of its own facilities and equipment, except automotive equipment, at the commercial rates prevailing in the immediate area, less 20 percent.
- (c) When requested to do so, Operator shall inform Non-Operators in advance of the rates to be charged.

PART V DISPOSAL OF MATERIAL

501. Operator's Authority to Dispose of Material

Operator may dispose of any surplus Material the New Price of which is less than \$ 5,000.00. Operator shall obtain the approval of Non-Operators pursuant to Clause 102(a) to dispose of any other Material.

502. Sales

The proceeds of sales of Material shall be for the Joint Account.

503. Valuation of Material

Material disposed of to the Parties shall be valued as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B"
 - (1) at 75 percent of New Price if the Material was a charge for the Joint Account as Condition "A", or
 - (2) at 65 percent of New Price if the Material was a charge for the Joint Account as Condition "B";
- (c) Condition "C" at 50 percent of New Price; and
- (d) Conditions "D" and "E" at the best price obtainable.

When the use of Material is temporary and the reduced value provided in this Clause is not justified, such Material shall be valued on a basis consistent with its use.

PART VI INVENTORIES

601. Frequency of Inventory and Expense

An inventory of Controllable Material shall be taken at reasonable intervals and the expense of such inventory shall be a charge for the Joint Account.

602. Notice of Inventories

Operator shall give Non-Operators 30 days' notice of any inventory proposed to be taken hereunder and each Party shall be entitled to be represented at the taking of such inventory.

603. Reconciliation

The Parties participating in the inventory shall reconcile the inventory with the records maintained pursuant to Clause 201 and the expense of such reconciliation shall be a charge for the Joint Account.

604. Report of Inventory

Operator shall submit each inventory to Non-Operators, together with a list of overages and shortages, showing the cost for the Joint Account of shortages and the original or estimated cost of overages to each Party.

605. Special Inventory

Operator shall, upon written notice from any Non-Operator, cause the taking of a special inventory of Controllable Material. Such Non-Operator shall be entitled to be represented at the taking of the special inventory. The inventory shall be commenced within 30 days of receipt of the written notice. The expense of such inventory and, if a reconciliation is requested by the Non-Operator, the expense of such reconciliation shall be borne by such Non-Operator.

B E T W E E N:

OMEGA HYDROCARBONS LTD., a body corporate,
with a registered office in the City of
Calgary, in the Province of Alberta and
duly licensed to carry on business in the
Province of Manitoba
(hereinafter called "Omega")

*Draft
for
Discussion
11/16*

OF THE FIRST PART

A N D

MANITOBA MINERAL RESOURCES LTD., a body
corporate, incorporated under the laws
of the Province of Manitoba
(hereinafter called "Manitoba Mineral")

OF THE SECOND PART.

WHEREAS Manitoba Mineral wishes to expedite the further exploration
and development of oil and gas opportunities in the Province of Manitoba;

AND WHEREAS Manitoba Mineral is entitled to work the Crown oil
and gas mining rights within the Crown lands as hereinafter described and
to acquire Crown leases covering the productive spacing units within the
Crown lands;

AND WHEREAS Omega is the holder of the Freehold leases covering
the Freehold lands as hereinafter described;

AND WHEREAS Manitoba Mineral and Omega wish to integrate and
combine their respective interests in the Crown lands and the Freehold
lands and carry out joint oil and gas exploratory operations thereon;

AND WHEREAS Omega is prepared to provide the operational management
of the program as hereinafter described;

NOW THEREFORE THIS AGREEMENT WITNESSETH THAT in consideration
of the premises and of the mutual covenants and agreements hereinafter
set forth and contained the parties hereto agree as follows:

1. DEFINITIONS

In this Agreement, including this Clause and the recitals hereof, unless the context otherwise requires:

- (a) "Accounting Procedure" means the Accounting Procedure attached to the Operating Procedure.
- (b) "complete", "completion" or "completed" means:
 - (i) in the case of a gas well, to set in the well production casing and to place in the well all equipment necessary for the taking of production up to and including the outlet valve of the wellhead and running an adequate back pressure test, or
 - (ii) in the case of an oil well, equipping such well for taking production up to and including the outlet valve of the wellhead or pump if initially required and supplying sufficient tankage and other equipment required for the taking of production, or
 - (iii) in the case of a well which, according to good oilfield practice, should be abandoned, to abandon;
- (c) "contract depth" means with respect to the drilling of any well hereunder, the drilling thereof to a depth sufficient to test the Mission Canyon formation or to the projected subsurface depth as determined by Omega in its capacity as Operator;
- (d) "Crown lands" means the Crown oil and gas mining rights in the geological formations under the lands, set forth and described in Schedule "A" hereto and includes all petroleum substances;
- (e) "Crown leases" means the grants or dispositions of petroleum substances which Manitoba Mineral holds or is entitled to acquire in accordance with the Oil and Gas Regulations from the Manitoba Crown;
- (f) "Freehold lands" means the lands included within the Freehold leases as set forth and described in Schedule "B";

- (g) "Freehold leases" means the petroleum and natural gas leases set forth and described in Schedule "B" hereto and the petroleum substances granted thereby insofar as such leases comprise the Freehold lands;
- (h) "oil and gas mining rights" means the rights granted under Section 6 of The Mines Act, Cap. M160 to the extent that they are conveyed in a Crown lease;
- (i) "Operating Procedure" means the Agreement attached as Schedule "D" to this Agreement which Operating Procedure shall come into force and effect in the manner provided for in this Agreement and shall not require any further execution in order to be effective and Omega shall be the initial Operator;
- (j) "paying quantities" means the output from a well of such quantity of petroleum substances, or any of them, as considering the cost of completing and operating a well and the price, kind and quality of such production would, after a production test, commercially and economically warrant the taking of production therefrom;
- (k) "petroleum substances" means petroleum, natural gas and related hydrocarbons, all gases and all minerals and substances (whether liquid or solid and whether hydrocarbons or not) produced in association with any of the foregoing or found in any water contained in an oil or gas reservoir but only insofar as and to the extent the same are granted by the Leases;
- (l) "prospect areas" means the land areas within the prospect boundaries as shown on the plat attached as Schedule "C" to this Agreement;
- (m) "spacing unit" means the area designated under the Oil and Gas Regulations for the purpose of drilling for or producing petroleum substances or any of them and in any event not less than an area of forty (40) acres in the case of an oil well and six hundred and forth (640) acres in the case of a gas well;

- (n) "the Lands" means the Crown lands and the Freehold lands collectively;
- (o) "the Leases" means the Crown leases and the Freehold leases collectively;

Words and expressions used in this Agreement, unless otherwise specified or necessarily required by the context, shall have the same meaning as in The Mines Act, R.S.M. 1970, Cap. M160, as amended from time to time and the Regulations thereunder ("Oil and Gas Regulations"), as amended from time to time.

The headings of the Clauses of this Agreement are inserted for convenience of reference only and shall not affect the meaning or construction thereof.

Whenever the plural or masculine or neuter is used in this Agreement, the same shall be construed as meaning singular or feminine or body politic or corporate and vice versa where the context so requires.

The provisions of The Mines Act and the Oil and Gas Regulations, as amended from time to time shall apply to all operations under this Agreement.

2. INTEGRATION OF INTERESTS

- (a) Manitoba Mineral and Omega hereby combine and integrate their respective interests in the Lands for the purpose of conducting the joint operations hereinafter set forth and described. For so long as this Agreement is in effect the parties hereto shall subject to Clause 5 hereof own the production of petroleum substances from the Lands and any jointly owned property relating thereto and shall share all costs and expenses incurred after the signing

of this Agreement, except as noted in Clause 2(b), in the following undivided percentages of interest (hereinafter called "participating equities"):

Omega - 75%

Manitoba Mineral - 25%

- (b) Until production of petroleum substances in paying quantities commences, Omega shall be solely responsible for all costs of maintaining the Freehold lands listed in Schedule "B" in good standing and in full force and effect for so long as is required by this Agreement, and Manitoba Mineral shall be solely responsible for all costs of maintaining the Crown lands listed in Schedule "A" in good standing and in full force and effect for so long as is required by this Agreement. Notwithstanding the foregoing responsibility of each party, neither party will be held liable in the event of an honest mistake in judgement. After commencement of production of petroleum substances in at least paying quantities, all costs of maintaining productive freehold and crown leases in good standing and in full force and effect shall be for the Joint Account.
- (c) The terms of the Operating Procedure shall apply and are hereby adopted for all of the Lands as though the Lands were "joint lands" as defined in Clause 101(h) of the said Operating Procedure and as though the term "participating interest" as defined in Clause 101(1) of the said Operating Procedure had the same meaning as the term "participating equities" as defined in this Clause 2, PROVIDED THAT if any conflict arises between the provisions of the Operating Procedure and the provisions of this Agreement, the latter shall prevail.

3. WARRANTY OF TITLE

- (a) Omega covenants that it is the holder of the Freehold leases, that with the exception of the lessor's royalty, they are unencumbered and that Omega has not entered into any agreement under which any other person, firm or corporation may acquire an interest therein. Other than aforesaid Omega makes no warranty of its respective title or the title of its grantor or predecessor in title.
- (b) Manitoba Mineral covenants that it has the right or is entitled to acquire the right to explore for and produce petroleum substances from the Crown lands, and that with the exception of the Crown royalty such right is unencumbered and that it has not entered into any agreement under which any other person, firm or corporation may acquire an interest therein. Other than the aforesaid Manitoba Mineral makes no warranty of its respective rights.

4. AFTER-ACQUIRED LANDS

Within thirty (30) days of full execution of this Agreement and approval or ratification of this Agreement by the Lieutenant Governor in Council of the Province of Manitoba, Omega shall commence a program of acquiring lands and leases which are not included in Schedules "A" and "B" but within the "prospect areas" outlined in blue on the plat attached hereto as Schedule "C". Acquisition costs and the costs of maintaining these lands and leases in good standing and in full force and effect for so long as is required by this Agreement shall be for the Joint Account. Omega shall attempt to obtain only such lands and leases as it, in its sole judgement, deems necessary and prudent.

5. WELL OBLIGATIONS

- (a) Omega shall drill or cause to be drilled for the Joint Account two (2) wells, one in each of the "prospect areas" shown on Schedule "C", such drilling program to be commenced by September 1st, 1977 with a view to completing the program by December 31st, 1977.
- (b) Omega shall with respect to each of the aforesaid wells:
 - (i) cut a minimum of fifty (50) feet of core commencing twenty (20) feet above the expected top of Mississippian to ensure coring the top section of Mississippian;
 - (ii) run a dual induction laterolog plus a bore hole compensated sonic gamma ray caliper log on each of the two (2) test wells from total depth to the shoe of the surface casing; or other suite of logs satisfactory to the Department;
 - (iii) carry out drill stem tests over each section where the presence of petroleum substances is indicated by the log, core or samples.

6. ASSIGNMENTS - PRODUCING SPACING UNITS

In the event that any well drilled hereunder is capable of producing petroleum substances in at least paying quantities:

- (a) if such well is located on Crown lands, or if Crown lands form part of the spacing unit for such well, Manitoba Mineral shall forthwith make application for the Crown leases covering the Crown lands comprised in such spacing unit, and
- (b) Manitoba Mineral and Omega shall deliver, each to the other, such assignment or assignments or other instruments as may be necessary or proper in order to vest that portion of the Leases and the Lands comprising such spacing units in the parties hereto in accordance with their respective participating equities.

7. TERMINATION

- (a) For each one of the "prospect areas" shown in Schedule "C", this Agreement shall terminate with respect to any spacing

unit that does not have located thereon a well capable of producing petroleum substances in paying quantities upon expiration of the later of:

- (i) two (2) years from the date of rig release of the last well drilled in the two (2) well program referred to in Clause 5;
 - (ii) twelve (12) months from the date of rig release of the last well completed or abandoned in such prospect area.
- (b) All Crown lands affected by the termination shall revert to the Crown and the Minister may re-open those lands for prospecting, staking out and for lease, and any interest Manitoba Mineral has in the Freehold lands in Schedule "B" affected by termination shall revert to Omega.
- (c) Notwithstanding Clause 7(a) the joint lands acquired pursuant to Clause 4 shall continue to be joint assets for so long as they have not been surrendered to the grantor under the title documents.

8. CONDUCT OF OPERATIONS

- (a) In carrying out all operations hereunder Omega shall use only approved and accepted methods and scientific instruments and will carry out the operations with all reasonable diligence and to the best of its skill and ability, and will at intervals of three (3) months, at the written request of Manitoba Mineral, meet with Manitoba Mineral or such servants or agents as shall be designated to confer and discuss the operations being carried on by Omega, said conference to be held at the time and place designated by Manitoba Mineral;
- (b) Omega shall pay all accounts for labour, wages, salaries, materials, fees and other services supplied for the carrying out of the program;
- (c) Omega shall not allow any liens or other encumbrances to arise or accumulate on or against the Lands resulting from its operations hereunder, excepting such as may be contested in good faith and shall take such steps as may be necessary to have any lien or other encumbrance removed from the Lands forthwith;

- (d) Omega shall acquire all surface rights and any other rights or privileges necessary for the carrying out of the operations hereunder and shall conduct all operations in accordance with good oilfield practice and with the Oil and Gas Regulations and other relevant legislation.

9. TIME

Time is of the essence.

10. CONFORM TO LEGISLATION

Omega shall conform to all applicable statutes, regulations and other legislation, as amended from time to time, including, without limitation, the taking out of insurance.

11. FORCE MAJEURE

A party to this Agreement shall not be liable for damages to the extent that such party is prevented from complying with its obligations under this Agreement in whole or in part by strikes, lockouts, acts of God or the Queen's enemies, war, laws, orders or regulations of governmental bodies or agencies, unavoidable accidents, delays in transportation, inability to obtain necessary materials in the open market, or any other cause, except lack of finances, whether similar or dissimilar to those specifically enumerated, beyond the reasonable control of the party affected, but such party shall, as far as possible, remedy the cause of such non-compliance with all reasonable dispatch, provided that this requirement does not impose upon such party the necessity to settle strikes, lockouts or other labour difficulties to its detriment, and provided further that the force majeure exoneration as contained in this paragraph shall not operate as a suspension or relief of obligations mentioned in agreements with respective owner or lessor of mineral rights.

12. REPORT OF WORK

Omega shall, on or before the 1st day of April, 1978, and on the 1st day of April of each subsequent year in each year this Agreement is in force, furnish to Manitoba Mineral a written report setting out in detail all work and operations carried out in or upon the Lands during the immediately preceding calendar year, together with a map or maps showing the locations of such work and operations and a description of all the potentially useful substances encountered during such work and operations.

13. NO USE OF NAME OF DEPARTMENT

To the extent that the professional, managerial and technical decisions hereunder are the sole responsibility of Omega, Omega covenants and agrees that it will not use, suffer or permit to be used, directly or indirectly, the names of either Manitoba Mineral or the Province of Manitoba (including the name of any department of the Government of Manitoba) for the purpose of or in connection with the financing of or obtaining financial assistance for any of the operations under this Agreement or the promotion of any corporate enterprise, syndicate, partnership or other association designed, intended or purporting to control, direct or finance, directly or indirectly, such operations.

14. ADDRESSES FOR SERVICE

The addresses for service of or notice to the parties are:

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta. T2P 0L4

Manitoba Mineral Resources Ltd.,
603 - 491 Portage Avenue,
Winnipeg, Manitoba. R3B 2E4

A party may from time to time change its foregoing address by written notice to the other. Any notice may be served by mailing the same, postage prepaid, in a properly addressed envelope addressed to the party to whom the notice is to be given at its stated address for service and such notice shall be deemed to be received seventy-two (72) hours after the mailing thereof.

15. PUBLIC INFORMATION RELEASES

All public information releases shall, prior to release, be first approved by both parties.

16. RELATIONSHIP OF PARTIES

Where the parties incur a liability to any other person, such liability shall not be joint or several, but each party shall be separately liable to the other person for a portion of the total liability calculated in accordance with its participating equity. It is not the purpose of this Agreement to create any partnership or joint venture relationship, and neither this Agreement nor the program nor any operation conducted under it shall be construed and considered as creating any such relationship.

17. FURTHER DOCUMENTS

Each of the parties shall at all times do all such further acts and execute and deliver all such further deeds and documents as shall be reasonably required in order fully to perform and carry out the terms and intent of this Agreement.

18. CONFIDENTIAL INFORMATION

Subject to the Oil and Gas Regulations, all data and information of whatsoever nature acquired by the parties from any operation pursuant to this Agreement or supplied by one party to the other pursuant to this Agreement shall be for the sole and exclusive use and benefit of the parties unless the parties agree to the dissemination of such information, or unless a party is required to give such information to any recognized association within the petroleum industry, of which it is a member, that engages in the exchange of factual information relating to the type of operations contemplated by this Agreement. In no event shall information relating to wells drilled on a confidential basis to the parties, or any of them, be disclosed. For greater certainty, upon the termination of this Agreement, any relationship of a fiduciary nature among the parties, or any of them, that may have been created with respect to any information as described above shall also terminate.

19. ENUREMENT

This Agreement and everything therein contained shall enure to the benefit of and be binding upon the parties hereto and the successors and assigns of the parties hereto.

IN WITNESS WHEREOF the parties hereto have duly executed this Agreement as of the day and year first above written.

OMEGA HYDROCARBONS LTD.

MANITOBA MINERAL RESOURCES LTD.

THIS IS SCHEDULE "A" ATTACHED TO AND MADE PART OF THAT
CERTAIN AGREEMENT DATED THE DAY OF
A.D., 19 , AND MADE BETWEEN OMEGA HYDROCARBONS LTD.
AND MANITOBA MINERAL RESOURCES LTD.

EAST WASKADA PROSPECT

Township 1, Range 25, West of the Principal Meridian

SW $\frac{1}{4}$ Section 28

All Section 29

SOUTH WASKADA PROSPECT

Township 1, Range 25, West of the Principal Meridian

NW $\frac{1}{4}$ Section 18

SW $\frac{1}{4}$ Section 20

THIS IS SCHEDULE "B" ATTACHED TO AND MADE PART OF THAT CERTAIN
AGREEMENT DATED THE DAY OF , A.D., 19 , AND
MADE BETWEEN OMEGA HYDROCARBONS LTD. AND MANITOBA MINERAL
RESOURCES LTD.

EAST WASKADA PROSPECT

| <u>Land</u> <u>Description</u> | <u>Lessor</u> | <u>Net Acres</u> | <u>Lease Date</u> <u>and Term</u> | <u>Royalty</u> |
|-----------------------------------|---------------|------------------|--------------------------------------|----------------|
|-----------------------------------|---------------|------------------|--------------------------------------|----------------|

SOUTH WASKADA PROSPECT

| <u>Land</u> <u>Description</u> | <u>Lessor</u> | <u>Net Acres</u> | <u>Lease Date</u> <u>and Term</u> | <u>Royalty</u> |
|-----------------------------------|---------------|------------------|--------------------------------------|----------------|
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AND

CAPL OPERATING AGREEMENT -- 1974

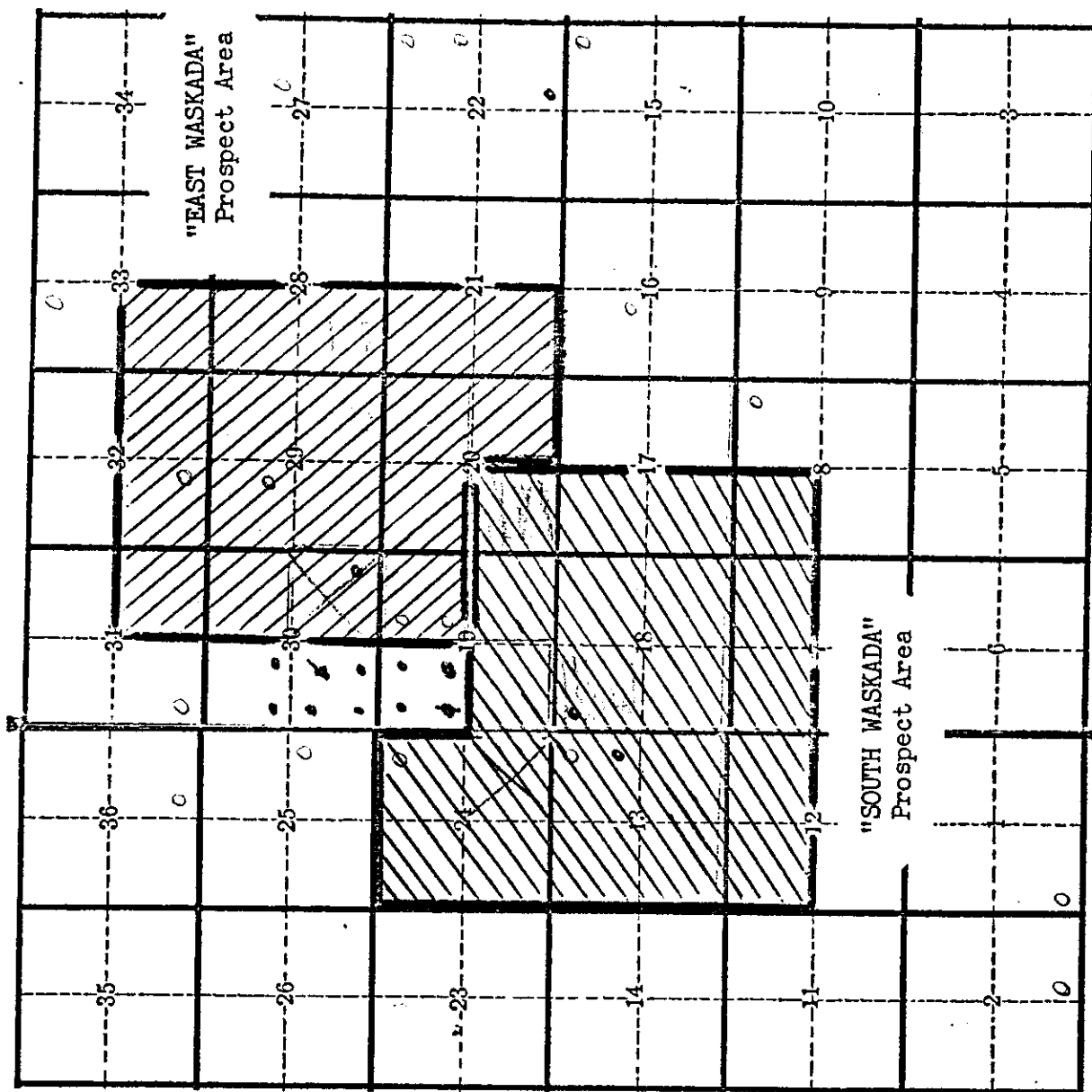
*See D
Operating Agreement*

- I. Casing Point Election (Clause 903): A X B _____
- II. Penalty for Independent Operations (Clause 1007):
1. Development Wells 300 %
 2. Exploratory Wells 400 %
- III. Disposition of Interests (Clause 2401): A _____ B X

PASWC ACCOUNTING PROCEDURE -- 1969

- I. Approvals (Clause 102): (a) the parties totalling 100 %
(b) the parties totalling 100 %
- II. Bills (Clause 202): A _____ B X
- III. Employee Benefits [Clause 303(c)]: 15 %
- IV. Overhead:
1. Clause 314:
 - (b) Combined Rate Basis: (Percentage Rate Basis to be deleted)
 - (1)(i) Drilling with rig and crew \$ 55. per well day.
 - (1)(ii) Producing Well \$ 125. per month.
 - (1)(iii) Construction Projects:
 - (a) 5 % of the first \$ 25,000.
 - (b) 3 % of the next \$ 50,000.
 - (c) 1 % of the cost exceeding (a) and (b)
No charge shall be made for cost less than \$ 10,000.
 - (1)(iv) Crews: To be negotiated _____: Other _____
 2. Clause 317: Warehouse Handling:
 - (a) 2 1/2 % for tubular goods 2" and over and other items have new price over \$ 1,000.; 5 % of the cost of all materials delivered from Operator's warehouse when warehouse is not part of the Joint property.
- V. Disposal of Material (Clause 501):
\$ 5,000. for requiring approval.

THIS IS SCHEDULE "C" ATTACHED TO AND MADE PART OF THAT
 CERTAIN AGREEMENT DATED THE DAY OF
 197 , AND MADE BETWEEN OMEGA HYDROCARBONS LTD. AND
 MANITOBA MINERAL RESOURCES LTD.

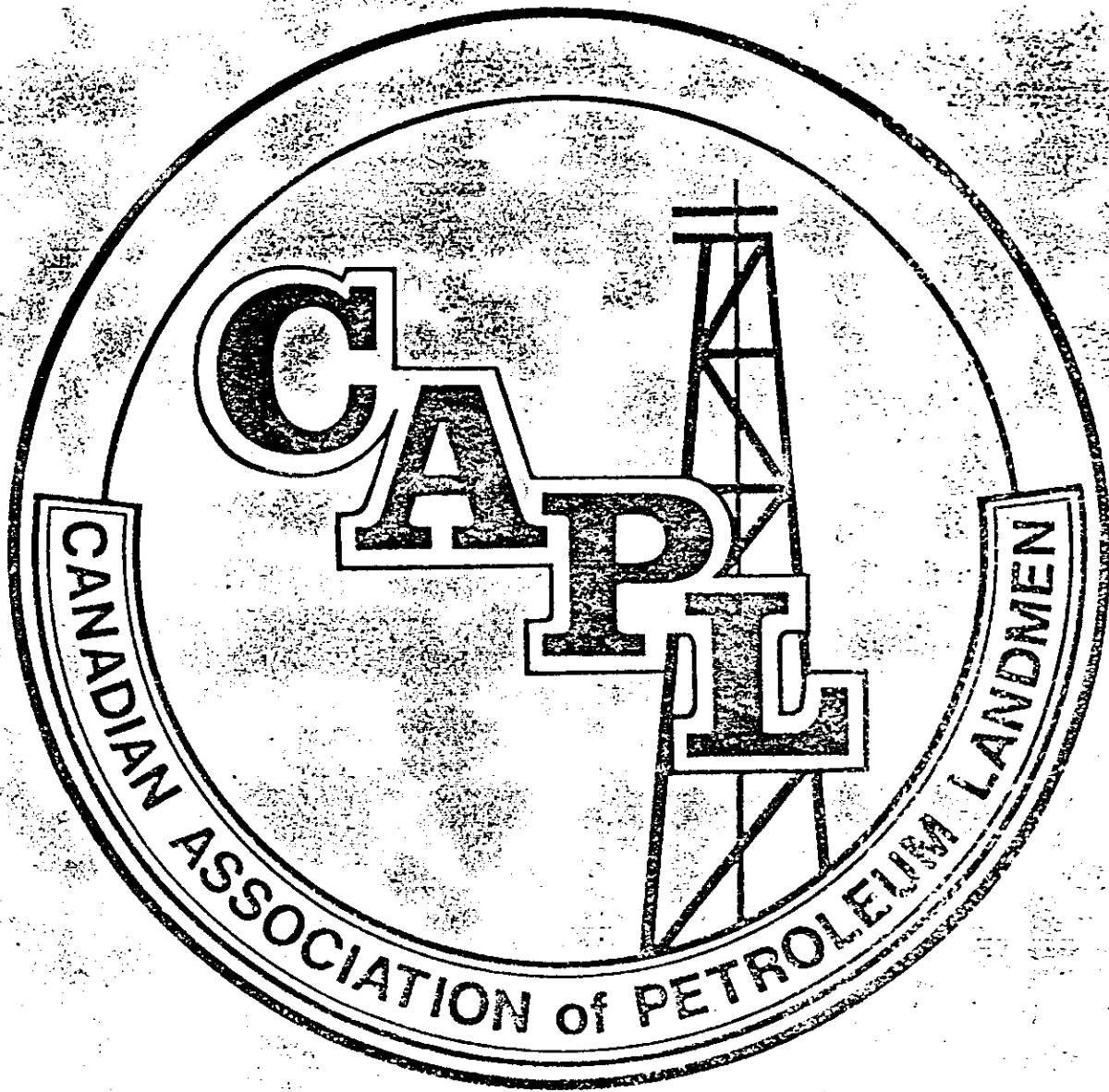


TOWNSHIP 1

RANGE 26 RANGE 25 W OF 1 MERIDIAN

THIS IS SCHEDULE " " ATTACHED TO AND MADE A PART OF THAT
CERTAIN AGREEMENT DATED THE DAY OF , A.D.,
19 , AND MADE BETWEEN OMEGA HYDROCARBONS LTD. AND MANITOBA
MINERAL RESOURCES LTD.

OPERATING PROCEDURE



CANADIAN ASSOCIATION OF PETROLEUM LANDMEN

1974

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CAPL 1974

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OPERATING PROCEDURE

Attached to and forming part of the Agreement DATED the

day of

A.D. 19

BETWEEN: (AMONG)

OMEGA HYDROCARBONS LTD., a body corporate, with a registered office at the City of Calgary, in the Province of Alberta and duly licensed to carry on business in the Province of Manitoba

- and -

MANITOBA MINERAL RESOURCES LTD., a body corporate, incorporated under the laws of the Province of Manitoba

ARTICLE I

DEFINITIONS, HEADINGS AND REFERENCES

101 DEFINITIONS — In this Operating Procedure, including this Article I, the following words and phrases shall have the following respective meanings, namely:

- (a) "Accounting Procedure" shall mean the schedule so entitled which is attached hereto and is hereby made a part hereof.
- (b) "Affiliate" shall mean, with respect to the relationship between corporations, that one of them is controlled by the other or both of them are controlled by the same person or corporation; and for this purpose a corporation shall be deemed controlled by those persons or corporations who hold or control sufficient voting shares of the corporation to elect the majority of its board of directors.
- (c) "the Agreement" shall mean that Agreement to which this Operating Procedure is attached and made a part.
- (d) "completion costs" shall mean, with respect to a well, all moneys expended for acquiring and installing casing left in the hole (except surface and intermediate casing) and the costs of equipping the well to and including:
 - (i) in the case of a gas well, the wellhead and the cost of running adequate back pressure tests;
 - (ii) in the case of an oil well, the wellhead.
- (e) "drilling costs" shall mean all moneys expended (exclusive of completion costs and equipping costs) for drilling, coring, logging and testing a well for the recovery of petroleum substances; and in the case of a well which is not completed for the taking of production, includes the costs of abandoning the well pursuant to the Regulations and costs of restoring the drilling site.

- (f) "equipping costs" shall mean all costs incurred in equipping a well beyond the wellhead including, without limiting the generality of the foregoing, the pump, the acquisition and installation of flow lines and production tankage and, in the case of a gas well, a heater or dehydrator or other hydrate control facility.
- (g) "for the joint account" shall mean for the benefit, interest, ownership, risk, cost, expense and obligation of the parties hereto in proportion to their participating interests; and "to the joint account" and "joint account" shall have corresponding meanings.
- (h) "joint lands" shall mean those lands or interests therein which by the Agreement have been made subject hereto and, except where the context necessarily otherwise requires, shall include the petroleum substances within, upon or under those lands or interests.
- (i) "Joint-Operator" shall mean a party to the Agreement having an interest in the joint lands.
- (j) "operating costs" shall mean all moneys expended, exclusive of drilling costs, completion costs and equipping costs, to operate a well or wells for the recovery of petroleum substances, as more particularly set forth in the Accounting Procedure.
- (k) "the Operator" shall mean the party hereto appointed by the Joint-Operators to carry out operations hereunder for the joint account.
- (l) "participating interest" shall mean the percentage of undivided interest in the joint lands (or the respective parcels thereof) held by a party hereto as provided in the Agreement.
- (m) "paying quantities" shall mean:
- (i) in the case of a well not completed and equipped: the anticipated output from the well of that quantity of petroleum substances which, considering the completion costs, equipping costs, operating costs, kind and quality of production, the availability of markets, the price to be received therefor, and the royalties and other burdens payable with respect thereto, would warrant incurring the completion costs and equipping costs of the well;
 - and
 - (ii) in the case of a well completed and equipped for production: the output from the well of that quantity of petroleum substances which, considering the same factors as in (i) except completion costs and equipping costs, would warrant the continued taking of production from the well.
- (n) "petroleum substances" shall mean petroleum and natural gas and every other mineral or substance, or any of them, an interest in which is granted or acquired under the title documents.
- (o) "proportionate share" shall mean, with respect to a party hereto, a percentage share equal to that party's participating interest.
- (p) "the Regulations" shall mean all statutes, laws, rules, orders and regulations in effect from time to time and made by governmental authorities having jurisdiction over the joint lands and over the operations to be conducted thereon.
- (q) "spacing unit" shall mean (at the relevant time with respect to which the term is used herein):
- (i) with respect to a well which has not been completed for production of petroleum substances, the area allocated to the well by the Regulations for the purpose of drilling that well; and
 - (ii) in every other case: the area allocated to the well pursuant to the Regulations for the purpose of producing petroleum substances.
- (r) "title documents" shall mean the documents of title by virtue of which the parties hereto are entitled to drill for, win, take or remove petroleum substances underlying all or any part of the joint lands and all renewals or extensions thereof or further documents of title issued pursuant thereto.

102 **HEADINGS** — The Article headings and any other headings or captions or index hereto shall not be used in any way in construing or interpreting any provision hereof.

103 **REFERENCES** — Unless otherwise expressly stated, references to articles, clauses or subclauses herein shall mean articles, clauses or subclauses of this Operating Procedure.

104 **OPTIONAL AND ALTERNATE PROVISIONS** — Where alternate or optional provisions are provided for herein but the parties have failed to designate which alternate shall apply or whether a respective optional provision shall be included, the first alternate provision in each such case shall apply, and the undesignated optional provision shall be deemed not to form part hereof.

ARTICLE II

APPOINTMENT AND REPLACEMENT OF OPERATOR

201 **ASSUMPTION OF DUTIES OF OPERATOR** — The Operator of the joint lands named in the Agreement hereby assumes the duties and obligations of the Operator hereunder and shall have all the rights of the Operator hereunder.

202 **REPLACEMENT OF OPERATOR** — The Operator shall be replaced in any one of the following circumstances:

(a) If the Operator becomes bankrupt or insolvent or commits or suffers any act of bankruptcy or insolvency, or makes any assignment for the benefit of creditors, or causes any judgement to be registered against its participating interest.

(b) If the Operator assigns or purports to assign its general powers and responsibilities of supervision and management as Operator hereunder.

(c) If the Operator is also a Joint-Operator and as such ceases to hold or represent at least 10% of the participating interests.

(d) If the Operator defaults in its duties or obligations or any of them hereunder and does not commence to rectify the default within 30 days after written notice from a majority in interest of the Joint-Operators (excluding the Operator), specifying the default and requiring the Operator to remedy the same.

203 **CHALLENGE OF OPERATOR** — At any time after an Operator has been Operator for at least two (2) years, any Joint-Operator, other than the Operator, may give notice ("the challenge notice") to all other parties hereto that it is ready, able and willing to conduct operations for the joint account on more favourable terms and conditions. The challenge notice shall contain sufficient detail to enable the receiving parties to evaluate the nature of the challenge notice and to measure the effect the revised terms and conditions would have on the joint operations. The Operator shall within Sixty (60) days after receipt of the challenge notice advise the Joint-Operators whether it is prepared to operate on the terms and conditions set out in the challenge notice, and, if so, it shall forthwith proceed to do so. If the Operator is unable or unwilling to do so, the Operator shall resign from the position of Operator within Ninety (90) days after it so advises the Joint-Operators and, subject to Clause 206, the Joint-Operator giving the challenge notice shall become the new Operator and shall thereafter conduct operations pursuant to the undertakings made by it in the challenge notice and any costs in excess thereof shall be for the new Operator's sole account. The new Operator shall not resign from the position of Operator until it has acted as Operator for a period of at least Two (2) years.

A Joint-Operator may not issue a challenge notice or become Operator pursuant thereto if at the time of issuing the challenge notice or assuming its duties as Operator it would be disqualified to act as Operator by reason of Subclause (a) or (c) of Clause 202.

204 **RESIGNATION OF OPERATOR** — Except as provided in Clause 203, at any time after an Operator has been Operator for a year it may resign as Operator on giving each of the Joint-Operators 90 days' notice of its intention to do so.

205 **MODIFICATION OF TERMS AND CONDITIONS BY OPERATOR** — At any time after an Operator has been Operator for a continuous period of two years, it may give notice ("the Operator's notice") to all other parties hereto of the revised terms and conditions on which it is prepared to continue to conduct operations for the joint account. Within 60 days of receipt of the Operator's notice, each Joint-Operator shall advise the Operator whether it agrees to the Operator continuing as Operator and to conduct operations for the joint account on the terms and conditions contained in the Operator's

notice, and failure to respond shall be deemed to be agreement. If any Joint-Operator does not so agree, it shall give notice ("counter proposal") to all parties hereto of the terms and conditions upon which it would conduct operations for the joint account. Any such counter proposal shall be deemed to be a challenge of Operator and shall be subject to all of the terms and conditions of Clause 203 as though such counter proposal was "the challenge notice" provided therein, except that in determining the merits of the counter proposal it shall be compared to the terms and conditions contained in the Operator's notice rather than to existing operating terms and conditions only.

206 APPOINTMENT OF NEW OPERATOR

(a) If an Operator resigns or is to be replaced, an Operator shall be appointed by the affirmative vote of two or more parties representing a majority of the participating interests.

(b) No party shall be appointed Operator hereunder unless it has given its written consent to the appointment; provided that if the parties fail to appoint a replacing Operator or if any appointed Operator fails to carry out its duties hereunder, the party having the greatest participating interest shall act as Operator pro tem, with the right, should a similar situation re-occur after a new Operator has been appointed, to require the party hereto having the next greatest participating interest to act as Operator pro tem and so on as occasion demands.

(c) No provision of this Article shall be construed to re-appoint as next-succeeding Operator an Operator who has been replaced under Clause 202, except with the unanimous consent of the parties hereto.

(d) Except as provided in subclauses (a), (b) and (c) of Clause 202 (in which cases the Operator shall be replaced immediately), every replacement of Operator shall take effect at 8:00 a.m. on the first day of the calendar month following the expiration of any period of notice effecting a change of Operator, notwithstanding anything hereinbefore contained.

207 TRANSFER OF PROPERTY ON CHANGE OF OPERATOR — At the effective date of the resignation or replacement of the previous Operator as hereinbefore provided, the preceding Operator shall deliver to the successor Operator possession of the wells being drilled or operated by the Operator pursuant to this Operating Procedure (except any wells in respect of which the succeeding Operator is not entitled to information, which shall be operated by a party hereto determined pursuant to subclause (b) of Clause 206 until the successor Operator becomes entitled to such information)) and of all other facilities and all funds held for the joint account, together with all production, if any, which has not theretofore been delivered in kind, and copies of books of account and records kept for the joint account and wells delivered and all documents, agreements and other papers relating thereto. Upon delivery of the said property, books and records, the Operator shall be released and discharged and the successor Operator shall assume all duties and obligations of the Operator, except the unsatisfied duties and obligations of the Operator accrued prior to the effective date of the change of Operator and for which the Operator shall, notwithstanding its release or discharge, continue to remain liable.

208 AUDIT OF ACCOUNTS ON CHANGE OF OPERATOR — Upon every change of Operator and by not later than 60 days after the new Operator commences to act as Operator the parties shall cause an audit to be made of the books of account and records kept for the joint account. The cost of the audit shall be charged to the joint account.

ARTICLE III

FUNCTIONS AND DUTIES OF OPERATOR

301 CONTROL AND MANAGEMENT OF OPERATIONS — The Operator is hereby delegated the exclusive control and management of the exploration, development and operation of the joint lands for the joint account.

The Operator shall not make an expenditure for any single undertaking the total estimated cost of which is in excess of Ten Thousand Dollars (\$10,000) without a written authority for expenditure from Joint-Operators, unless the expenditure is considered by Operator to be necessary by reason of an event endangering life or property. Particulars of each such event shall be reported promptly to the Joint-Operators.

302 OPERATOR AS JOINT-OPERATOR — The Operator shall also have all the rights and obligations of a Joint-Operator with respect to its participating interest.

303 INDEPENDENT STATUS OF OPERATOR — The Operator in its operations hereunder is an Independent Contractor. The Operator shall furnish or cause to be furnished all material, labor and services necessary for the exploration, development and operation of the joint lands. The Operator shall determine the number of employees, their selection and the hours of labor and the compensation for services to be paid them in connection with its operations hereunder. All employees and contractors used in its operations hereunder shall be the employees and contractors of the Operator.

304 **PROPER PRACTICES IN OPERATIONS** — The Operator shall carry on all operations diligently, in a good and workmanlike manner, in accordance with good oilfield practices, and in accordance with the Regulations.

305 **BOOKS AND RECORDS** — The Operator shall with respect to all operations conducted by it hereunder keep and maintain true and correct books, records and accounts showing the development and progress made, drilling done, other operations carried out, the quantity of the petroleum substances taken out of each well, and the disposition thereof; and shall, upon request of a Joint-Operator, make available in Alberta and there permit each Joint-Operator during normal business hours to inspect the said books, records and accounts and to make extracts or copies therefrom and thereof, and to audit the Operator's accounts and records as provided in the Accounting Procedure; provided that a Joint-Operator while not entitled to information with respect to a well shall not have the rights granted under this Clause with respect to that well.

306 **PROTECTION FROM LIENS** — The Operator shall pay, or cause to be paid, as and when they become due and payable all accounts of contractors and claims for wages and salaries for services rendered or performed and for materials supplied on, to or in respect of the joint lands or any operations for the joint account thereon, and keep the joint lands free from liens and encumbrances resulting therefrom, unless there be a bona fide dispute with respect thereto; and not suffer any claims of, or dues to or on behalf of the Workmen's Compensation Board to become in arrears.

307 **JOINT-OPERATOR'S RIGHTS OF ACCESS** — The Operator shall, except as otherwise herein provided, permit each Joint-Operator or its duly authorized representative, at the Joint-Operator's sole risk, cost and expense full and free access at all reasonable times for the purpose of inspection and observation to all operations of every kind and character being conducted for the joint account upon the joint lands and to the records of operations conducted thereon.

308 **SURFACE RIGHTS** — The Operator shall acquire for the joint account all necessary surface rights for purposes of joint operations hereunder.

309 **MAINTENANCE OF LEASES** — Except as otherwise provided herein or in the Agreement, the Operator shall on behalf of the parties and for the joint account comply with all the terms and conditions of the title documents, including: (i) the payment of rentals, and (ii) other encumbrances agreed to be borne for the joint account; and shall do all the things necessary to maintain the title documents in good standing and in full force and effect; provided that this Clause shall not require or permit the Operator to drill a well for the joint account.

310 **PRODUCTION STATEMENTS AND REPORTS** — The Operator shall furnish each Joint-Operator before the 25th day of each month with a statement showing production, inventories, sales and deliveries in kind to the parties of petroleum substances during the preceding month.

The Operator shall also make all necessary reports relating to operations for the joint account on the joint lands as required by the Regulations and shall upon request of a Joint-Operator provide it with a copy of each production report filed by Operator with any governmental agency.

311 **INSURANCE**

(a) In respect of operations hereunder for the joint account, the Operator shall comply with the requirements of all Unemployment Insurance and Worker's Compensation legislation and shall, prior to the commencement of operations hereunder, hold or cause to be held with a reputable insurance company or companies, and thereafter maintain or cause to be maintained for the joint account and benefit of the parties hereto, the insurance hereinafter set forth, and the cost thereof shall be charged to the joint account. The insurance referred to in this Subclause is as follows:

- (i) Employer's Liability Insurance covering each employee engaged in the operations hereunder to the extent of One Hundred Thousand (\$100,000.00) Dollars where such employee is not covered by Worker's Compensation.
- (ii) Automobile Insurance covering all motor vehicles, owned or non-owned, operated and/or licensed by the Operator, with a bodily injury, death and property damage limit of Five Hundred Thousand (\$500,000.00) Dollars inclusive.

- (iii) Comprehensive General Liability Insurance with a bodily injury, death, and property damage limit of Five Hundred Thousand Dollars (\$500,000.00) inclusive; and, without restricting the generality of the foregoing provisions of this Subclause, such coverage shall include Contractual Liability, Tortious Liability, Contractor's Protective Liability, Products and Completed Operations Liability.
- (iv) Aircraft Liability Insurance, if aircraft are to be used in the operation, covering all aircraft, owned or non-owned, operated and/or licensed by the Operator, with a bodily injury, death and property damage limit of One Million (\$1,000,000.00) Dollars inclusive.

(b) The Operator shall use every reasonable effort to have its contractors and sub-contractors comply with applicable Unemployment Insurance and Worker's Compensation legislation and carry such insurance (if any) in such amounts as the Operator deems necessary.

(c) Each party hereto shall be responsible for insuring its own interest in the joint lands with respect to physical damage to property, loss of income and any insurance other than that referred to in Subclause (a) of this Clause.

(d) If so requested by any party, the Operator shall furnish evidence of compliance with the foregoing insurance provisions.

312 **TAXES** — Except as otherwise provided herein or in the Agreement, the Operator shall initially pay for the joint account all taxes (except income taxes) with respect to property held for the joint account.

ARTICLE IV

INDEMNITY OF OPERATOR

401 **LIMIT OF LIABILITY** — The Operator shall not be liable to the Joint-Operators for any loss or damage except for loss or damage resulting from the gross negligence or wilful misconduct of the Operator, its agents and employees.

402 **INDEMNIFICATION OF OPERATOR** — Each of the Joint-Operators, proportionate to its participating interest, hereby indemnifies and agrees to hold harmless the Operator against any claim of or liability to any third person resulting from any act or omission of the Operator or its agents and employees in conducting operations for the joint account; provided, however, that the Operator shall not be indemnified or held harmless by the parties for any loss, damage, claim or liability, resulting from the gross negligence or wilful misconduct of the Operator, its agents or employees, but no act or omission of the Operator, its agents or employees, shall of itself be deemed gross negligence or wilful misconduct if it is done or omitted at the instruction of, or with the concurrence of, the Joint-Operators.

ARTICLE V

COSTS AND EXPENSES

501 **ACCOUNTING PROCEDURE AS BASIS** — The Accounting Procedure shall be the basis for all charges and credits to the joint account except as the Accounting Procedure may be in conflict herewith or with the Agreement.

502 **OPERATOR TO PAY AND RECOVER FROM PARTIES** — Subject to the provisions of Clause 503, the Operator in its operations for the joint account shall initially advance and pay all costs and expenses of operations conducted for the joint account. The Operator shall charge to each Joint-Operator its proportionate share of the said costs and expenses, and each respective Joint-Operator shall pay the same to the Operator within 15 days after receipt of the Operator's statement thereof. Failing payment when due, the amount unpaid may, at the Operator's option, bear interest from the day such payment is due for the account of the Operator at a rate two (2%) percentage point higher than the then prevailing prime bank interest rate charged by the chartered bank in Canada used by the Operator with respect to operations hereunder, until the amount is paid.

503 **ADVANCE OF COSTS AND EXPENSES** — The Operator may, at its election, require each Joint-Operator to advance its proportionate share of all costs and expenses to be incurred for the joint account. If the Operator so elects, it may, not earlier than 30 days prior to the first day of each calendar month, submit to each Joint-Operator an itemized estimate of the costs and expenses proposed to be a charge for the joint account in that calendar month, with a request for payment by

each Joint-Operator of its proportionate share thereof. Each Joint-Operator shall pay the Operator its proportionate share of the costs and expenses so estimated or secure the payment thereof in a manner satisfactory to the Operator on or before the 15th day after receipt by it of such estimate or by the first day of the calendar month to which the estimate relates, whichever is the later, and if any Joint-Operator fails so to make or secure such payment, the unpaid amount may, at the Operator's option, bear interest (payable by that Joint-Operator) for the account of the Operator at the rate of interest provided for in Clause 502 from the day such payment is due until it is paid. Adjustments between estimated and actual costs shall be made by the Operator at the close of each calendar month, and the accounts of the parties shall be adjusted accordingly.

504 FORECAST OF OPERATIONS — The Operator shall from time to time at the request of a Joint-Operator, furnish the Joint-Operators with a written forecast outlining all operations which it proposes to carry out on the joint lands for the joint account during the forecast period (which shall be no less than three months and no more than twelve months) together with the estimated costs thereof. It is specifically understood that such forecasts are for informational purposes only and shall not bind any of the parties.

505 OPERATOR'S LIEN

(a) The Operator shall have a lien on the interest of each Joint-Operator in the joint lands and in production, wells and equipment therefrom and thereon to secure payment of each Joint-Operator's proportionate share of the cost and expense of all operations carried on by the Operator for the joint account.

(b) If a Joint-Operator fails to pay or advance any of the costs hereby agreed to be paid or advanced by it, and the default continues for 30 days after the Operator has served notice upon the Joint-Operator specifying the default and requiring the same to be remedied, the Operator may, without limiting the Operator's other rights at law:

- (i) withhold from such Joint-Operator any further information and privileges with respect to operations;
- (ii) treat the default as an immediate and automatic assignment to the Operator of the proceeds of the sale of such Joint-Operator's share of the petroleum substances; and from and after the Operator making such election, the Operator may require the purchaser of such Joint-Operator's share of the petroleum substances to make payment therefor to the Operator while the default continues, and
- (iii) enforce the lien created by the default in payment by taking possession of all or any part of the interest of the defaulting Joint-Operator in the joint lands or in all or any part of the production therefrom and equipment thereon; and the Operator may sell and dispose of any interest, production or equipment of which it has so taken possession either in whole or in part or in separate parcels at public auction or by private tender at a time and on whatever terms it shall arrange, having first given notice to the defaulting Joint-Operator of the time and place of the sale. The proceeds of the sale shall be first applied by the Operator in payment of any costs to be paid by the defaulting Joint-Operator and not paid by it and any balance remaining shall be paid to the defaulting Joint-Operator after deducting reasonable costs of the sale. Any sale made as aforesaid shall be a perpetual bar both at law and in equity against the defaulting Joint-Operator and its assigns and against all other persons claiming the property or any part or parcel thereof sold as aforesaid by, from, through or under the defaulting Joint-Operator or its assigns.

506 REIMBURSEMENT OF OPERATOR — If the Operator has not received full payment of a Joint-Operator's share of the costs and expenses of operations hereunder within three (3) months following the date the payment was due, each Joint-Operator, upon being billed therefor by the Operator, shall contribute a fraction of the unpaid amount, excluding interest thereon, which fraction shall have:

- (i) as its numerator — the participating interest of that Joint-Operator, and
- (ii) as its denominator — the aggregate participating interests of all parties hereto except the defaulting Joint-Operator.

and thereupon each contributor shall be proportionately subrogated to the Operator's rights pursuant to Clause 505, and to the interest thereafter payable under Clauses 502 and 503 on the unrecovered portion of its contribution.

507 **COMMINGLING OF FUNDS** — The Operator may commingle with its own funds the moneys which it receives from or for the account of the Joint-Operators pursuant to this Operating Procedure.

ARTICLE VI

OWNERSHIP AND DISPOSITION OF PRODUCTION

601 **EACH PARTY TO OWN AND TAKE ITS SHARE** — Each of the parties hereto shall own its proportionate share of the petroleum substances produced from wells operated for the joint account and shall, at its own expense, take in kind and separately dispose of its proportionate share of production exclusive of the production which may be used by the Operator in developing and producing operations and of production unavoidably lost.

602 **FAILURE TO TAKE IN KIND** — When, and so often as a Joint-Operator shall fail or refuse to take in kind and separately dispose of its proportionate share of any production, the Operator shall have the authority, revocable by that Joint-Operator at will (subject to existing sales contracts), to sell for the account of that Joint-Operator its proportionate share of production to others at the same price which the Operator receives for its own portion of the production or to purchase the same for its own account at the field price prevailing, in the area. All sales made by the Operator of a Joint-Operator's share of production as aforesaid shall be for such periods of time only as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any contract for the sale of the Joint-Operator's share of production be made for a period in excess of one year.

603 **OPERATOR'S FAILURE TO TAKE IN KIND** — If the Operator is the party who fails or refuses to take in kind and separately dispose of its proportionate share of production, the Joint-Operators or any one or more of them shall have the same rights mutatis mutandis with respect to production, including the Operator's share thereof, as the Operator has with respect to a Joint-Operator's share of production under the foregoing provisions of this Article; and in that case the Operator shall follow the instructions with respect to production and marketing given by the Joint-Operators who wish to market and/or take in kind their respective shares of production and to market the Operator's and other Joint-Operators' shares of production as aforesaid. Two or more Joint-Operators exercising their rights under this Clause shall do so in proportion to their participating interests.

604 **PAYMENT OF LESSOR'S ROYALTY** — Each of the parties hereto shall pay or cause to be paid the Lessor's royalty and all other payments required pursuant to the title documents attributable to its proportionate share of petroleum substances.

ARTICLE VII

OPERATOR'S DUTIES RE DRILLING WELLS FOR JOINT ACCOUNT

701 **PRE-COMMENCEMENT INFORMATION** — Prior to commencing any well for the joint account, the Operator shall submit to each Joint-Operator:

- (a) an Authority for Expenditure summarizing the anticipated drilling costs and completion costs of the well. Submission or approval of the Authority for Expenditure shall not preclude any party from giving an operation notice under Clause 1002 with respect to the well, provided that approval of the Authority for Expenditure by all parties hereto before expiration of the notice period under the operation notice shall nullify the said operation notice; and
- (b) the Operator's proposed program of drilling, coring, logging and testing the well.

702 **DRILLING INFORMATION AND PRIVILEGES OF JOINT-OPERATORS** — During the drilling of the well, the Operator shall provide to each Joint-Operator:

- (a) prompt notice of the date of spudding in of the well;
- (b) daily drilling and geological reports;

- (c) if requested, a complete set of washed samples of the cuttings of the formations penetrated;
- (d) access to all cores taken;
- (e) immediate advice of any porous zones with showings of petroleum substances encountered and the proposed tests, if any, to be run on those porous zones, and a reasonable opportunity to each Joint-Operator to have a representative present to witness and observe any such tests; and
- (f) derrick floor privileges as set forth in Clause 307.

703 TESTING INFORMATION TO JOINT-OPERATORS — During the drilling of the well, the Operator shall:

- (a) test it in accordance with the proposed program;
- (b) make such further tests, as are warranted in the circumstances, of any porous zones with showings of petroleum substances encountered or indicated by any survey;
- (c) take representative mud samples and drillstem test fluid samples in order to obtain accurate resistivity mud filtrate and formation water readings and supply each Joint-Operator with all information relative thereto;
- (d) supply each Joint-Operator with copies of the drillstem test and service report on each drillstem test run, including copies of pressure charts.

704 LOGGING INFORMATION TO JOINT-OPERATORS — During the drilling of the well and upon the well reaching the proposed depth, the Operator shall run all log surveys agreed upon among the parties and shall supply each Joint-Operator with copies as requested of each log so run.

ARTICLE VIII

VELOCITY SURVEYS OR OTHER TESTS

801 VELOCITY SURVEYS AND OTHER TESTS — A Joint-Operator after giving written notice to each of the other Joint-Operators of its intention to do so, may at its sole risk and expense (including rig costs) conduct a velocity survey or other survey or test in a well to which it is entitled to have access, unless the Operator advises such Joint-Operator that in the Operator's opinion the hole is not in satisfactory condition for that purpose. Each Joint-Operator entitled to information from the well shall have the right to receive one copy of the results of any velocity survey so run upon paying to the Joint-Operator that conducted the velocity survey one-eighth of the cost thereof; otherwise a Joint-Operator conducting a survey or test shall not be required to make the results thereof available to any other Joint-Operator. Subject to clause 1801, the Joint-Operator so conducting a velocity survey or other survey or test shall retain all trading rights with respect thereto.

Any Joint-Operator which runs a velocity survey or other survey or test shall indemnify the other Joint-Operators from and against all actions, causes of action, claims and demands for all loss, injury or damages such other Joint-Operators may incur or suffer by reason of the exercise of the rights granted by this Clause.

ARTICLE IX

CASING POINT ELECTION

901 AGREEMENT TO DRILL NOT AUTHORITY TO COMPLETE — Agreement by the parties to drill or deepen a well for the joint account shall be deemed not to include agreement to the setting of production casing and to attempting completion of the well.

902 ELECTION BY JOINT-OPERATORS RE CASING AND COMPLETION — The Operator shall immediately notify the Joint-Operators when the well has reached the authorized depth and the logs and tests preliminary to completion have been run. Subject to Clause 1015, each Joint-Operator shall have a period of 24 hours after the logs and results of the tests have been made available to it to inform the Operator whether it wishes to participate in the cost of setting casing and making a completion attempt. Failure to reply to the notice from the Operator shall be deemed an election to participate provided at least one Joint-Operator has actually communicated to the Operator its election to participate. If no party elects to participate, the Operator shall plug and abandon the hole.

903 LESS THAN ALL PARTIES PARTICIPATE — If one or more, but not all, of the parties elect to set casing and attempt to complete the well and the well is completed for the taking of petroleum substances, then paragraph A (indicate A or B) below shall apply, namely:

A. The setting of casing and the completion shall be considered an independent operation under the provisions of Article X (including the provisions of Clause 1009 if the well is abandoned before the penalty is recovered) as if the independent operation were with respect to a development well;

or

B. The parties not participating in the setting of casing and the completion shall assign to the parties participating therein all the assignor's interest in the spacing unit of the well in so far only as it relates to the zone or zones in which the well is so completed, and the assignees shall forthwith pay to the assignors the latter's share of the estimated salvage value of the material and equipment placed in or on the well prior to commencement of the completion attempt; provided, if the well is abandoned within six months of the expiry of the 24 hour period provided in Clause 902, such abandonment shall be for the joint account except that the participants in the completion attempt shall bear all extra costs of the abandonment incurred by reason of the completion attempt. If the well is not abandoned within the said six months, the cost of abandonment shall be the responsibility of the participants in the completion attempt only.

ARTICLE X

INDEPENDENT OPERATIONS

1001 DEFINITIONS USED IN THIS ARTICLE — For the purpose of this Article X, the "*proposing party*" shall mean the party hereto (whether one or more) giving notice of its intention to conduct independently an operation on the joint lands (hereinafter called "*the operation*"); "*operation notice*" shall mean such notice of intention; "*receiving parties*" shall mean the parties (whether one or more) other than the proposing party; "*participating parties*" shall mean the parties (whether one or more) participating in the operation, and shall include the proposing party; "*non-participating parties*" shall mean the parties hereto (whether one or more) not participating in the operation; "*development well*" shall mean a well in so far as the geological horizons proposed to be penetrated in the drilling thereof as provided in the operation notice are not deeper than the deepest geological horizon in which another well within two miles of the proposed well is or has been capable of production of petroleum substances in commercial quantities (that is, such quantities as would warrant the drilling of a like well in the vicinity thereof); and "*exploratory well*" shall mean a well in so far as it is not a development well.

1002 PROPOSAL OF INDEPENDENT OPERATION — The parties normally shall consult with respect to decisions to be made for the further exploration and development of the joint lands. Whether or not such consultation has occurred or has been requested, a proposing party may at any time give to the receiving parties an operation notice for an operation on the joint lands, stating in the operation notice the nature of the operation, the proposed location, purpose and estimated cost of the operation and, if applicable, indicating whether it is a development well, an exploratory well or the extent to which it is both. Each receiving party shall give notice to the proposing party within 30 days after receipt of the operation notice whether that receiving party will participate in the operation, provided if the operation notice relates to the drilling of a well for the purpose of evaluating lands which have been posted for public tender by a governmental authority (hereinafter called a "Crown Sale") or which it is known will be posted for a Crown Sale to be held not later than 60 days after the date of the operation notice (which information shall be contained in the operation notice), the said 30 day period within which the receiving party shall give notice to the proposing party shall be reduced to 15 days. No well shall be considered as being drilled for such evaluation if the lands proposed to be evaluated are all at a greater distance than one mile from the location of the proposed well. If the receiving party fails to give notice to the proposing party within the time provided, that receiving party shall be deemed to have given notice to the proposing party that it will not participate in the operation. As soon as the said 30 or 15 day period (as the case may be) has expired, or as soon as all receiving parties have replied to the operation notice if such occurs earlier, the proposing party shall forthwith give notice to all the participating parties how the costs, risks and benefits of the operation will be shared, having regard to Clause 1015.

1003 TIME FOR COMMENCING OPERATION — The proposing party may begin the operation without waiting for the 30 or 15 day period of notice under Clause 1002 to lapse, but shall not commence the operation more than 60 days after giving the operation notice, although, in that case, an operation notice may again be given for the same operation within or after the expiration of the said 60 day period.

1004 OPERATOR FOR INDEPENDENT OPERATIONS — If the Operator is a participating party, it shall carry out the operation for the account of the participating parties. If the Operator is not a participating party, the participating parties shall appoint an Operator for the operation. If the operation is commenced prior to the time the Operator becomes a participating party (and it is specifically understood that nothing in this Clause shall restrict or prohibit the proposing party from actually commencing operations as provided in Clause 1003) the operator, upon becoming a participating party, shall take over and carry out the operation for the participating parties.

1005 SEPARATE ELECTION WHERE WELL STATUS DIVIDED — If the operation is the drilling of a well which is in part a development well and in part an exploratory well, each receiving party electing to participate in the well shall elect:

- (i) to the extent only that it is a development well; or
- (ii) to the extent that it is both a development well and an exploratory well.

If the participation in the well varies between the well as a development well and the well as an exploratory well, the drilling costs and completion costs of the well shall be allocated between the well as a development well and the well as an exploratory well as nearly as they can be determined. For the purpose of this Article X, development well costs shall be only those costs which would have been incurred had the well been drilled as a development well only; all costs of the well additional to those designated as development well costs shall be deemed to be exploratory well costs.

1006 ABANDONMENT OF INDEPENDENT WELL — If the operation is the drilling of a well, and the well is not capable of production of petroleum substances in paying quantities, the participating parties shall abandon the well in accordance with the Regulations.

1007 PENALTY WHERE INDEPENDENT WELL RESULTS IN PRODUCTION

(a) If the operation is the drilling of a well and the well is completed for the production of petroleum substances from one or more formations in which the well is a development well, then, with respect only to those formations, the participating parties shall be entitled to retain possession of the well and to all production therefrom until the gross proceeds of production, less lessor's royalty and any overriding royalties or other encumbrances thereon which otherwise would have been borne by the joint account and less the equipping costs and operating costs of the well as a development well, shall equal:

300 % of the drilling costs and completion costs of the well as a development well,

after which the well shall be held for the joint account and operated by the Operator.

(b) If the operation is the drilling of a well and the well is completed for the production of petroleum substances from one or more formations in which the well is an exploratory well, then, with respect only to those formations, the participating parties shall be entitled to retain possession of the well and to all production therefrom until the gross proceeds of production, less lessor's royalty and any overriding royalties or other encumbrances thereon which otherwise would have been borne by the joint account and less the equipping costs and operating costs of the well as an exploratory well, shall equal:

(i) 400 % of the drilling costs and completion costs of the well as an exploratory well; plus

(ii) the same percentage as that specified in subclause (a) above of the drilling costs of the well as a development well if no production is obtained from any formation in which the well is a development well;

after which the well shall be held for the joint account and operated by the Operator.

1008 INDEPENDENT DEEPENING, PLUGGING BACK OR REWORKING

(a) No operation notice for a deepening, plugging back or reworking operation may be given with respect to a well producing or capable of producing petroleum substance in paying quantities, nor shall any drilling well be deepened if one or more parties wish to attempt to complete the well pursuant to Article IX.

(b) A non-participating party in a well may not propose any further operation in the well unless and until (and only to the extent that) it has regained the right to participate in production from the well.

(c) Where a drilling rig is on location, the period for response to the operation notice under Clause 1002 with respect to a deepening, plugging back or reworking operation shall be reduced to 48 hours, after which rig time shall be at the expense of the parties agreeing to participate in the operation, whether or not the operation is carried out.

(d) If a deepening, plugging back or reworking operation results in the production of petroleum substances in paying quantities from one or more formations in which the well is:

- (i) a development well — then with respect to those formations and the petroleum substances produced therefrom, the provisions of subclause 1007 (a) shall apply, mutatis mutandis, to the recovery of costs of the operation (including the penalty provided therein) to the extent that such operation and production relates to the well as a development well.
- (ii) an exploratory well — then with respect to those formations and the petroleum substances produced therefrom, the provisions of subclause 1007 (b) shall apply, mutatis mutandis, to the recovery of costs of the operation (including the penalty provided therein) to the extent that such operation and production relates to the well as an exploratory well.

1009 WHERE WELL ABANDONED BEFORE PENALTY RECOVERED — If the operation involves the drilling of a well (or a well which has been drilled) and the well is abandoned before it is due to be turned over to the Operator for the joint account under Clauses 1007 and 1008, each party who did not participate in the independent operation but who would have been responsible for a proportionate share of the costs of abandoning the well prior to the conduct of the independent operation, shall pay upon abandonment thereof its said share of such costs and the participating parties shall bear the balance of the costs of abandonment and shall be entitled to the salvable equipment used in connection with the independent operation and resulting from the abandonment; provided that if the proceeds from the salvage of equipment used in connection with the independent operation as determined under the Accounting Procedure exceeds the amount remaining to be recovered before the well would have been turned over to the Operator for the joint account, the excess proceeds shall be credited to the joint account. Any proceeds from salvable equipment owned by the parties prior to the independent operation shall be credited to the joint account.

1010 EXCEPTION TO CLAUSE 1007 WHERE WELL PRESERVES TITLE — Notwithstanding Clause 1007, if the operation is the drilling of a well required to preserve title, the drilling of which is commenced later than 45 days before the title document covering the lands upon which the well is drilled is due to terminate as to all or part of those lands unless a well similar to the proposed well is sooner drilled thereon, the non-participating parties shall, effective upon the well reaching sufficient depth to prevent such termination, assign to the participating parties (in proportion to their percentages of participation in the operation) all the non-participating parties' interest in and under that title document in so far as it relates to the lands with respect to which such termination would otherwise have occurred, unless the non-participating parties have, prior to the date upon which such termination would have occurred, drilled (or are in course of drilling) another well which also has prevented or will prevent such termination. The non-participating parties' rights with respect to access to the wellsite and information with respect to a well subject to this Clause shall be as provided in Clause 1018 hereof.

1011 INDEPENDENT GEOLOGICAL OR GEOPHYSICAL OPERATION — Nothing in this Operating Procedure shall preclude a party from conducting a geological or geophysical operation provided that the participating parties shall not interfere with other operations being conducted on the joint lands for the joint account. The non-participating parties shall not be entitled to any information or data with respect to such operations except that upon paying to the participating parties 150% of what its share of any such operation would have been had all the parties hereto participated therein, a non-participating party shall be entitled to a copy for its own use of all data obtained from the operation, other than interpretations of such data made by the participating parties or any of them. The right to so acquire information and data from any such operation shall cease at the end of the second calendar year following the calendar year in which the operation was completed.

1012 USE OF BATTERY AND OTHER EQUIPMENT FOR INDEPENDENT WELL — To the extent that battery, gathering or processing facilities, or any of them, are available on the joint lands, the participating parties in an operation shall be permitted to make use of and to share them in the same manner as if the operation had been carried out for the joint account; provided (i) operations for the joint account shall have priority in all cases where any such facilities may be inadequate and (ii) an equitable division of capital and operating costs is made with respect to all such joint facilities.

1013 ACCOUNTS AND AUDIT DURING PENALTY RECOVERY — During the period of recovery of costs and penalties under any preceding Clause of this Article, the operator for the operation shall supply all parties with a monthly statement showing the status of the recovery of such costs and penalties. The provisions of the Accounting Procedure relating to audit of accounts shall apply mutatis mutandis to the audit of accounts with respect to recovery of costs and penalties by participating parties under this Article.

1014 PARTICIPANT'S RIGHTS AND DUTIES RE INDEPENDENT OPERATION — As among the participating parties in any independent operation, the provisions of this Operating Procedure relating to the rights, duties and obligations of the Operator and the Joint-Operators including the provisions of Article IX, shall apply, mutatis mutandis, to the conduct of the operation and to the operation of any well during the recovery of costs and penalties with respect thereto under this Article.

1015 PARTICIPATION IN INDEPENDENT OPERATION — The parties participating in an independent operation hereunder shall have the right to do so in the proportions that their respective participating interests, bear one to the other, except that a party may in its election to participate in the operation specify that it will participate only to the same percentage as its participating interest. In the latter case the proposing party shall promptly determine from the other participants whether they wish to assume, with the proposing party, their respective proportionate shares of the percentage not assumed by the party so limiting its participation.

1016 ASSIGNMENTS AND FORFEITURES TO BE PROPORTIONAL — Any assignment or forfeiture of any interest in the joint lands hereinbefore provided shall be made to the assignees or receiving parties, as the case may be, in the proportions that their respective participating interests bear one to the other, unless the contrary is expressly otherwise provided herein.

1017 INDEMNIFICATION OF NON-PARTICIPATING PARTIES — The participating parties in any independent operation shall, in proportion to their respective interests in the operation, indemnify and hold harmless the non-participating parties from all costs, expenses, suits, claims, liens, liabilities and losses resulting from the carrying out of the operation.

During recovery of costs and penalties out of production resulting from an operation under this Article X, the participating parties in proportion to their respective interests in the operation, shall pay the Lessor's royalties and all other payments and encumbrances relative thereto which otherwise would be borne for the joint account and shall save harmless the non-participating parties from and against all such payments.

1018 NON-PARTICIPATING PARTY DENIED INFORMATION — If the operation involves the drilling of a well (or a well which has been drilled) the non-participating parties shall not be entitled to access to the wellsite or any information with respect to the well until the expiration of 90 days after the date of the release of the rig used to conduct the operation, provided if a party is required to make an assignment pursuant to Clause 1010, such party shall not be entitled to access to the wellsite or any information with respect to the well pursuant to this Operating Procedure at any time.

1019 NO JOINT OPERATIONS UNTIL INFORMATION RELEASED — Any party withholding well information within the 90 day period provided in Clause 1018, shall not propose or conduct any further operation on the joint lands within 4½ miles of such well until it has released such information to the non-participating parties.

1020 CONTRIBUTION TO INDEPENDENT OPERATIONS — If any party receives a cash contribution towards the cost of the operation, the contribution will be shared by the participating parties only, but the cost of the operation shall be reduced by the amount of the contribution for the purpose of determining the recovery of costs and expenses under this Article X.

If the contribution is an acreage contribution, the party offered the contribution shall give each other participating party the right to participate therein to the extent of its share of the cost of the operation at the time the operation was conducted.

1021 UNITIZATION PRIOR TO RECOVERY — If the operation involves the drilling of a well (or a well which has been drilled) and the well and its spacing unit becomes subject to a unit operation, the participating parties shall receive the production allocated to the spacing unit until they have recovered all costs and penalties to which they are entitled pursuant to this Article X. The credits under any adjustment of investment accruing to the participating parties for well costs paid and equipment supplied by them, shall be deemed to be proceeds from production and the debits under any adjustment of investment shall be deemed to be operating costs and such credits or debits shall be applied to the well by the participating parties consistent with the terms of Clauses 1007 and 1008 and shall be recorded in the monthly statement. If the adjustment credit applicable at any time is in excess of the amount required by the participating parties to fulfill the recovery of costs and penalties, such excess shall be reported to the Operator and credited by the Operator to the joint account.

ARTICLE XI

SURRENDER OF JOINT LANDS

1101 INITIATION OF SURRENDER PROPOSAL — Not later than 60 days before the next ensuing rental date or other obligation date with respect to the joint lands affected (except an obligation to pay royalty or a drilling obligation not being enforced under the title documents) a party hereto may give notice to the other parties proposing that some or all of the joint lands be surrendered to the grantor under the title documents. Not later than 30 days before the next ensuing rental date or

other obligation date, the parties receiving the notice shall each give notice to all other parties stating whether or not they wish to join in the proposed surrender. Failure to respond to the said notice shall be deemed to be an election not to join in the surrender. Any party giving notice of the proposed surrender or giving notice of its intention to join in the proposed surrender may by notice to the other parties at any time up to but not later than 30 days before the next ensuing rental date or other obligation date, revoke its notice of intention to surrender.

The size of and interest in the joint lands affected under this Clause must be such that the said grantor would be obliged to accept a surrender thereof pursuant to the title documents.

1102 SURRENDER BY ALL PARTIES — If all parties duly elect to surrender under Clause 1101, the Operator shall proceed forthwith to salvage for the joint account all salvable material and equipment upon the lands and interests to be so surrendered, and all parties hereto shall execute and deliver all documents which may be necessary to effect the surrender.

1103 SURRENDER BY LESS THAN ALL PARTIES — If all the parties do not join in the surrender, the parties not joining in the surrender shall (unless the Operator be one of them) promptly appoint an Operator pro-tem for the parties retaining the said lands and interests, and shall be responsible for taking the necessary steps to ensure payment of rentals or the meeting of any other obligation to maintain the said lands and interests for the benefit of the retaining parties.

1104 ASSIGNMENT OF INTEREST SURRENDERED — Effective on the thirtieth day before the rental or other obligation referred to in Clause 1101 is required to be paid or met, the parties which elected to surrender shall assign to the retaining parties all their interest in the lands and interests which were the subject of the proposed surrender. The parties receiving the assignment shall within 30 days after receipt of the assignment pay to the assignors the assignors' participating interest share (prior to such surrender) in the salvage value of the recoverable material and equipment on the lands so assigned, the amount to be determined by the Operator in accordance with the Accounting Procedure and billed by the Operator to the assignees.

1105 RETAINING PARTIES TO MEET OBLIGATIONS — Where failure by the retaining parties to meet any obligation which prompted the surrender proposal would prejudice the title of the parties in any other portion of the joint lands, the retaining parties shall be deemed to have covenanted to meet that obligation in accepting the interests of the surrendering parties.

1106 FAILURE TO SURRENDER AS AGREED — Where all the parties have agreed to effect surrender under this Article, and whether or not some or all of them have taken any action by way of release or assignment pursuant to an intention to join in the surrender, the lands and interests which are the subject of the surrender notice shall be deemed to be held for the joint account until the surrender has been irrevocably effected, including the termination of any right to reinstate any title document, so that all the parties shall receive or have the right to participate in any benefits which might accrue during the period before the surrender is irrevocably effected. If, however, any party to whom any interest is conveyed or released for the purpose of effecting the surrender should not duly proceed with the surrender and thereby causes any further obligation to arise, that party shall be solely responsible for meeting the obligation and shall indemnify the other parties with respect thereto.

ARTICLE XII

ABANDONMENT OF WELLS

1201 PROCEDURE FOR ABANDONMENT — If a party proposes to abandon a well on the joint lands (except at casing point, when Article IX shall apply) it shall give notice of proposed abandonment to the other parties who may, within 30 days of receipt of the notice elect by notice to the other parties to take over the well. The party or parties taking over the well shall be entitled to an assignment without consideration or warranty of the abandoning parties' interest in the spacing unit of the well in so far as it relates to the producing zone of the well. If all parties elect to join in the abandonment, the well shall be abandoned for the joint account.

1202 ASSIGNMENT OF EQUIPMENT AND SURFACE RIGHTS — If less than all parties elect to abandon a well under Clause 1201, the abandoning parties shall without warranty transfer to the other parties the materials and equipment appurtenant to the well, in consideration of the payment by the transferees to the transferors of the latter's share of the fair salvage value of the said materials and equipment, less the transferors' shares of the estimated salvage costs, all determined by the Operator in accordance with the Accounting Procedure and billed to the transferees. The abandoning parties shall also transfer to the other parties without warranty or consideration the surface rights appurtenant to the well.

ARTICLE XIII**OPERATION OF LANDS SEGREGATED FROM JOINT LANDS**

1301 **OPERATING PROCEDURE TO APPLY** — Where by reason of the operation of any provision hereof any portion of the joint lands ceases to be owned by the parties hereto in the same percentages of interest as their participating interests hereunder or ceases to be owned by all the parties hereto, the parties hereto acquiring the different percentages of interest in any portion of the former joint lands shall thereafter hold the same as if they are parties to a separate Operating Procedure, the terms of which are identical to the terms hereof, having regard only to the different owners and percentages of ownership interest, and the said portion of the joint lands shall cease to be "joint lands" hereunder. If the Operator is a party participating in the lands ceasing to be joint lands under this Clause, it shall be the initial Operator of those lands.

ARTICLE XIV**LITIGATION**

1401 **CONDUCT OF LITIGATION** — All litigation in connection with the title documents and the joint lands shall be conducted for and on behalf of all parties. Each party shall notify the other party or parties of any process served upon it, or of any process it intends to serve, in any action involving the title documents and/or the joint lands and thereupon the parties shall decide whether the action shall be handled exclusively by the solicitors of the parties or by joint counsel mutually selected by the parties for the joint account.

ARTICLE XV**RELATIONSHIP OF PARTIES**

1501 **PARTIES TENANTS IN COMMON** — The rights, duties, obligations and liabilities of the parties hereto shall be several and not joint or collective, it being the express purpose and intention of the parties hereto that their interest in the joint lands and in the wells, equipment and property thereon held for the joint account shall be as tenants in common. Nothing herein contained shall be construed as creating a partnership of any kind, joint venture or association or as imposing upon any party hereto any partnership duty, obligation or liability to any other party hereto.

ARTICLE XVI**FORCE MAJEURE**

1601 **DEFINITION OF FORCE MAJEURE** — "force majeure" shall mean any one or more of the following events:

- (a) an act of God
- (b) a war, revolution, insurrection, riot, blockade, or any other unlawful act against public order or authority,
- (c) a strike, lockout, or other industrial disturbance,
- (d) a storm, fire, flood, explosion or lightning,
- (e) a governmental restraint,
- (f) any other event (whether or not of the kind enumerated in (a) to (e) of this Clause) which is not reasonably within the control of the party hereto claiming suspension of its obligations hereunder due to force majeure.

1602 **SUSPENSION OF OBLIGATIONS DUE TO FORCE MAJEURE** — If any party hereto is prevented by force majeure from carrying out any obligation hereunder, the obligations of the party in so far as its obligations are affected by the force majeure shall be suspended while (but only so long as) the force majeure continues to prevent the performance of the said obligations. Any party prevented from carrying out any obligation by force majeure shall promptly give the other parties notice of the force majeure including reasonably full particulars in respect thereof.

1603 **OBLIGATION TO REMEDY** — The party hereto claiming suspension of its obligations as aforesaid shall promptly remedy the cause and effect of the force majeure described in the said notice in so far as it is reasonably able so to do; provided that the terms of settlement of any strike, lockout or other industrial disturbance shall be wholly in the discretion of the party hereto claiming suspension of its obligations hereunder by reason thereof; and that party shall not be required to accede to the demands of its opponents in any strike, lockout or industrial disturbance solely to remedy promptly the force majeure thereby constituted.

1604 **EXCEPTION FOR LACK OF FINANCES** — Notwithstanding anything contained in this Article, lack of finances shall not be considered a force majeure nor shall any force majeure suspend any obligation for the payment of money due hereunder.

ARTICLE XVII

CASH AND ACREAGE CONTRIBUTIONS

1701 CONTRIBUTIONS TO JOINT OPERATIONS TO BE SHARED —

- (i) **Cash** — If any party receives a cash contribution towards the cost of any operation to be carried out for the joint account, that party shall pay the cash contribution so received to the joint account.
- (ii) **Acreage** — If any party is offered an acreage contribution in support of any operation to be carried out for the joint account, that party shall give each other party hereto the right to participate in such acreage contribution to the extent of its participating interest hereunder.

1702 **NO WAIVER OF CONFIDENTIAL INFORMATION** — Clause 1701 shall not permit a party to accept a contribution from a third party in return for information from an operation hereunder.

ARTICLE XVIII

CONFIDENTIAL INFORMATION

1801 **INFORMATION TO BE KEPT CONFIDENTIAL** — The parties shall keep confidential from third parties all information obtained in the course of or as a result of operations on the joint lands, except information which the parties have expressly agreed to release, and shall take such measure in connection with operations and internal security as shall be advisable in the circumstances.

ARTICLE XIX

DELINQUENT PARTY

1901 **CLASSIFICATION AS DELINQUENT PARTY** — If any party hereto moves its location and does not provide the other parties hereto with notice of its change of address and subsequently cannot readily be located, or if any party becomes inactive or is struck off the register or otherwise refuses or neglects to answer communications addressed to it at its address for service, the Operator may send notice by registered mail to that party at its last address for service hereunder, advising the party that it shall thereafter be considered a delinquent party within the meaning of this Article.

1902 **EFFECT OF CLASSIFICATION AS DELINQUENT PARTY** — From the 15th day after the registered notice has been mailed to the delinquent party under Clause 1901, the delinquent party shall thereafter:

- (i) not be entitled to any further notices or communications from the Operator or any other party hereto with respect to any matter hereunder;

- (ii) be deemed to have elected not to participate in any operations thereafter carried out on the joint lands;
- (iii) be deemed to have elected to join in all surrenders and abandonments proposed and effected hereunder, notwithstanding that it may be named a registered party under the title documents;

provided that the proceeds of the sale of the delinquent party's share of petroleum substances shall be retained in trust by the Operator for the account and benefit of the delinquent party after deducting the delinquent party's proportionate share of operating costs and all other relevant costs incurred for the joint account.

1903 RESTORATION OF STATUS — If a delinquent party subsequently communicates with the Operator, pays all arrears of moneys due the joint account, and undertakes in writing to comply from that time with the provisions of this Operating Procedure, the delinquent party thereafter shall be restored to the normal status of a party hereto.

1904 LIEN NOT AFFECTED — Nothing in this Article shall derogate from the enforcement of the lien of the Operator and the other parties pursuant to Clauses 505 and 506.

ARTICLE XX

WAIVER

2001 WAIVER MUST BE IN WRITING — No waiver by any party hereto of any breach of any of the covenants, provisos, conditions, restrictions or stipulations herein contained shall take effect or be binding upon that party unless the same be expressed in writing under the authority of that party and any waiver so given shall extend only to the particular breach so waived and shall not limit or affect any rights with respect to any other or future breach.

ARTICLE XXI

FURTHER ASSURANCES

2101 PARTIES TO SUPPLY — Each of the parties hereto shall from time to time and at all times do all such further acts and execute and deliver all further deeds and documents as shall be reasonably required in order fully to perform and carry out the terms of this Operating Procedure.

ARTICLE XXII

NOTICE

2201 SERVICE OF NOTICE — Whether or not so stipulated herein, all notices, communications and statements (hereinafter called "notices") required or permitted hereunder shall be in writing. Notices may be served:

- (a) Personally by leaving them with the party on whom they are to be served at that party's address hereinafter given. Personally served notices shall be deemed received by the addressees when actually delivered provided such delivery shall be during normal business hours; or
- (b) by telegraph (or by any other like method by which a written and recorded message may be sent) directed to the party on whom they are to be served at that party's address hereinafter given. Notices so served shall be deemed received by the addressees thereof eight hours after the time of transmission or at the commencement of the next ensuing normal business day, whichever is the later; or
- (c) by mailing them first class (air mail if to or from the United States of America) registered post, postage prepaid, to the party on whom they are to be served. Notices so served shall be deemed to be received by the addressees on the second day (excluding as the second day, Saturdays, Sundays and Statutory Holidays) following the mailing thereof in Canada or the United States of America.

2202 ADDRESSES FOR NOTICES — The address of each of the respective parties hereto shall be as follows:

OMEGA HYDROCARBONS LTD.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

MANITOBA MINERAL RESOURCES LTD.
603 - 491 Portage Avenue
WINNIPEG, Manitoba R3B 2E4

2203 RIGHT TO CHANGE ADDRESS — Any party hereto may change its said address by notice served as aforesaid.

ARTICLE XXIII

NO PARTITION

2301 WAIVER OF PARTITION OR SALE — No party hereto shall during the term of this Operating Procedure exercise any right to apply for any partition of the joint lands or sale thereof in lieu of partition.

ARTICLE XXIV

DISPOSITIONS OF INTERESTS

2401 RIGHT TO ASSIGN, SELL OR DISPOSE — Subject to Clause 2402, a party hereto shall not assign, sell or dispose of any interest in the joint lands (other than as required and allowed one party to the other elsewhere in this Operating Procedure) without first complying with the provisions of paragraph B below (specify A or B):

- A. The party wishing to make the assignment, sale or disposition shall first notify the other parties and obtain their written consent, which shall not be unreasonably withheld;

or

- B. If a party (in this paragraph called "the selling party") wishes to assign, sell or dispose of, or has received an offer which it is willing to accept for the assignment, sale or disposition of, all or part of its interest in all or part of the joint lands (in this paragraph called "the subject interest"), the selling party shall give notice thereof to the other parties (in this paragraph called "the offerees"). The selling party's notice shall contain the terms and conditions of the proposed assignment, sale or disposition, including the consideration to be received for the subject interest and, if applicable, the name of the offering party. The offerees shall have the right for a period of 20 days after receipt of the notice from the selling party (in this paragraph called "the notice period"), to elect in writing to acquire the subject interest from the selling party on the terms and conditions contained in the notice. The offerees so electing to acquire the subject interest (in this paragraph called "the buying parties") shall be obligated to acquire the subject interest in its entirety. The buying parties

shall have the right to acquire the subject interest in the proportions that their respective participating interests bear one to the other. If all the offerees decline or fail to elect within the notice period to acquire the subject interest, the selling party shall be free for a period of 60 days next following the expiry of the notice period, to assign, sell or dispose of the subject interest on the terms and conditions and to the offering party (if applicable) stipulated in its offer, but not after the said 60-day period, nor otherwise than as so stipulated, without again complying with this paragraph B.

If the consideration stipulated in the offer for the subject interest is one which cannot be matched in kind by the offerees, the selling party may set out in its notice its bona fide estimate of the value in cash of the said consideration. If the selling party's notice did not include its bona fide estimate as aforesaid, the offerees, or any of them, may request such estimate, in which event the notice period shall be suspended until such estimate is received by all of the offerees. In case of dispute as to the reasonableness of the estimate, the matter shall be referred to arbitration under the provisions of the Arbitration Act or Ordinance of the province, state or territory where the joint lands are situated, but the notice period shall not be extended by such referral of the dispute to arbitration. If the equivalent cash consideration determined by the arbitration is lower than the estimate submitted by the selling party, the cash consideration determined by arbitration shall be the sale price for the subject interest and the accounts of the selling party and the buying parties shall be adjusted accordingly; if the equivalent cash consideration determined by arbitration is higher than the estimate submitted by the selling party, the estimate submitted by the selling party shall be the sale price for the subject interest.

2402 EXCEPTIONS TO CLAUSE 2401 — Clause 2401 shall not apply in the following instances, namely:

- (a) An assignment made by way of security for the assignor's indebtedness;
- (b) An assignment, sale or disposition to an affiliate of the assignor, or in consequence of a merger or amalgamation of the assignor with another company;
- (c) An assignment, sale or disposition made by the assignor of all, or substantially all, or of an undivided interest in all, or substantially all of its petroleum and natural gas rights in the province, state or territory where the joint lands are situated.

2403 MULTIPLE ASSIGNMENT NOT TO INCREASE COSTS — If any assignment of an interest in the joint lands or any part thereof is made to multiple parties so that the expenses or duties of the Operator are thereby increased, the Operator may require the assignees (and the assignor if it retains an interest) to appoint one of their number as representing all of them for the purposes of this Operating Procedure, unless arrangements satisfactory to the Operator are made to compensate the Operator for the increased expenses or duties.

2404 NOVATION UPON ASSIGNMENT — No assignment of an interest in the joint lands (except pursuant to the abandonment, surrender and forfeiture provisions of this Operating Procedure) shall be effective against the parties hereto who are not parties to the assignment until the first day of the month next following the date upon which an executed copy of the assignment has been lodged with each party hereto who is not a party to the assignment; provided, the other parties may require the assignor and assignee to enter into a novation agreement with and satisfactory to them under which the assignee will undertake to assume the obligations of the assignor hereto with respect to the interest assigned to the assignee.

ARTICLE XXV

PERPETUITIES

2501 LIMITATION ON RIGHT OF ACQUISITION — Notwithstanding anything elsewhere herein contained, the right of any party hereto to acquire any interest in the joint lands from any other party hereto shall not extend beyond twenty-one years after the lifetime of the last survivor of the lawful descendants now living of Her Majesty Queen Elizabeth II.

ARTICLE XXVI**UNITED STATES TAXES**

2601 **UNITED STATES TAXES** — The parties hereto agree that if for purposes of the United States Internal Revenue Code of 1954 this agreement or the relationship established thereby constitutes a partnership, as defined in section 761(a) of the said Code, each of the parties hereto who are entitled under the said section 761(a) to elect, hereby elects to have the said partnership excluded from the application of subchapter K of chapter 1 of subtitle A of the said Code, or such portion thereof as the Secretary of the Treasury of the United States or his delegate shall permit by election to be excluded therefrom. The Operator is authorized to execute such election on behalf of the parties who are entitled to make such election and to file the election with the proper United States government office or agency, and the Operator is further authorized and directed to execute and file such additional and further evidence of such election as may be required; provided that if the Operator is not subject to the said Code with respect to the joint lands, the obligations of the Operator under this Clause shall be carried out by the party hereto who is subject to the said Code with respect to the joint lands and who holds the greatest participating interest.

ARTICLE XXVII**MISCELLANEOUS**

2701 **SUPERSEDES PREVIOUS AGREEMENTS** — Except for the Agreement (other than to the extent that the Agreement by its terms becomes ineffective when this Operating Procedure is made effective), this Operating Procedure supersedes all other agreements, documents, writings and verbal understandings among the parties relating to the joint lands.

2702 **TIME OF ESSENCE** — Time shall be of the essence of this Operating Procedure.

2703 **NO AMENDMENT EXCEPT IN WRITING** — No amendment or variation of the provisions of this Operating Procedure shall be binding upon any party unless it is evidenced in writing executed by the party.

2704 **BINDS SUCCESSORS AND ASSIGNS** — Subject to the provisions of Article XXIV, this Operating Procedure shall enure to the benefit of and shall bind the parties hereto and their respective successors and assigns, and the heirs, executors, administrators and assigns of natural persons who are or become parties hereto.

ARTICLE XXVIII**TERM**

2801 **TO CONTINUE DURING ANY JOINT OWNERSHIP** — This Operating Procedure shall terminate when no portion of the joint lands is owned jointly by two or more parties hereto or at that later date upon which (joint ownership continuing) all documents of title (and all renewals and extensions thereof) to the joint lands have terminated and all wells on the joint lands have been plugged or abandoned, all equipment thereon salvaged, and final settlement of accounts had among the parties hereto.

SCHEDULE

Petroleum Accountants
Society of Western
Canada - 1969

Attached to and made a part of that certain Agreement dated the _____ day of _____, A.D. 19____, and made between Omega Hydrocarbons Ltd. and Manitoba Mineral Resources Ltd.

ACCOUNTING PROCEDURE

PART I

GENERAL

101. Definitions

In this Accounting Procedure:

- (a) "Agreement" means the agreement to which this Schedule is attached.
- (b) "Controllable Material" means Material classified as controllable in the Controllable Material Price Catalogue, as revised from time to time, of the Petroleum Accountants Society of Western Canada.
- (c) "For the Joint Account" means for the benefit and risk and at the expense of the Parties, in accordance with their respective interests in the Joint Property.
- (d) "Joint Operations" means all operations for the Joint Account.
- (e) "Joint Property" means property held for the Joint Account.
- (f) "Material" means the equipment, machinery and supplies acquired for the Joint Account and classified as follows.
 - (1) Condition "A" means that which is new;
 - (2) Condition "B" means that which has been used but is sound and is suitable for its original function without reconditioning;
 - (3) Condition "C" means that which has been used and would be suitable for its original function after reconditioning or that which cannot be reconditioned for, but has a limited service in, its original function;
 - (4) Condition "D" means that which is not suitable for its original function but is usable for another function; and
 - (5) Condition "E" means that which is junk.
- (g) "New Price" means the cost of Condition "A" Material at the reputable supply store where such Material is available or at the carrier-receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. Tubular goods 2 inches in diameter and over shall be priced on a carload basis. Any cash discount that may be allowed by a dealer shall not be deducted in determining the New Price.
- (h) "Non-Operators" means the Parties, whether one or more, other than Operator.
- (i) "Operator" means the person, firm or corporation designated in the Agreement to conduct the Joint Operations.
- (j) "Parties" means the persons, firms and corporations who are bound by the Agreement.

102. Approvals

- (a) Approvals required under Clauses 204, 306, 316, 318, 405, and 501 shall be obtained by Operator in writing from the _____ ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.
- (b) Approvals required under Clauses 303(c) and 314(b)(2) shall be obtained by Operator in writing from the ~~or more~~ Parties having interests in the Joint Property totalling 100 percent ~~or more~~.

PART II

RECORDS, BILLINGS AND RELATED MATTERS

201. Records

Operator shall maintain records of Controllable Material (excluding replacements) showing the date of acquisition, description, cost for the Joint Account and details of retirement of each item of Controllable Material. Operator may maintain records of replacements of Controllable Material.

202. Bills

Operator shall bill Non-Operators on or before the last day of each month for their share of charges recorded during the next preceding calendar month. Bills shall be accompanied by statements as set forth under paragraph b below:

- (a) statements of all charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof.
- (b) statements, as follows:
 - (1) Controllable Material, in detail; and
 - (2) ordinary charges and credits for the Joint Account, summarized by appropriate classifications indicative of the nature thereof; and
 - (3) other charges and credits, in detail.

203. Payments and Refunds

Bills shall be paid within 15 days after receipt thereof. Credits shall be refunded within 15 days after bills are rendered.

204. Right to Protest or Question Bills

Any of Non-Operators may protest or question the correctness of a bill, notwithstanding the payment of it, if such protest or question is made in writing to Operator within the 26 months next following the end of the calendar year in which the bill was presented, otherwise the bill shall be deemed conclusively to be correct for all purposes. No adjustment favourable to Operator shall be made after such period except with approval pursuant to Clause 102(a).

205. Audits

Any of Non-Operators, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records maintained for the Joint Account for any calendar year within the 24 month period next following the end of such calendar year. Any claims of discrepancies disclosed by such audit shall be made in writing to Operator within the 26 month period next following the end of such calendar year. Where two or more Non-Operators desire to conduct audits, they shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to Operator. Costs of audits shall be borne by all Non-Operators.

PART III CHARGES

Operator may incur for the Joint Account and charge under this Part III the following:

301. Rentals, Royalties and Other Payments

Rentals, royalties and other payments required to maintain the interest of the Parties in the Joint Property.

302. Labour

- (a) Salaries and wages of Operator's employees while directly engaged in work, other than operation and maintenance, on the Joint Property.
- (b) Salaries and wages of Operator's employees (up to and including) (below) the first level of field supervision while directly engaged in operation and maintenance on the Joint Property, and salaries and wages of Operator's technical employees while directly engaged in operation and maintenance on the Joint Property.
- (c) In this Clause, "operation and maintenance" means all operations associated with the Joint Property exclusive of exploration operations, Construction Projects and Drilling, as defined in Clauses 314(a)(1) and 314(a)(4).

303. Employee Benefits

Operator's costs with respect to employees whose salaries and wages are chargeable under Clause 302:

- (a) for holiday, vacation, sickness and disability benefits and other customary allowances, which may be charged as a percentage of the said salaries and wages in accordance with Operator's cost experience; and
- (b) for any payments made and borne by Operator pursuant to any law applicable to it as an employer other than any law relating to benefits chargeable under Clause 303(a); and
- (c) for its established employee benefit plans, but not in excess of 15 percent of the total charges under Clauses 302 and 303(a). The said rate may be adjusted from time to time upon approval pursuant to Clause 102(b).

304. Travel Expenses

Travel expenses of employees whose salaries and wages are chargeable under Clause 302.

305. Material

Costs, as provided in Part IV, of Material purchased or furnished by Operator and of transporting such Material.

306. Services and Utilities

Costs of services and utilities for Joint Operations obtained from persons not Parties, except costs of professional consultants' services which shall be charged only with approval pursuant to Clause 102(a).

307. Operator's Facilities and Equipment

Costs for use of Operator's own facilities and equipment in accordance with Clause 406.

308. Damage or Loss to Joint Property

Costs of replacements or repairs to the Joint Property resulting from damage or loss for which Operator is not liable.

309. Damage Claims

Costs of damage claims arising out of Joint Operations and for which Operator is not liable.

310. Acquisition of Surface Rights and Legal Services

Costs of acquisition of surface rights and of legal services for title work. Fees and related expenses associated with other legal services may be charged only with approval of the Parties.

311. Taxes

Taxes paid for the Joint Account.

312. Insurance

Premiums paid for insurance that Operator is required to carry for the Joint Operations.

313. Camp and Housing Expense

Costs of operating and maintaining all necessary camp and housing facilities for, and boarding of, employees whose salaries and wages are chargeable under Clause 302; provided that the charges for Operator's own facilities shall be commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment, less any revenue therefrom. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year. When operations in addition to the Joint Operations are served by these facilities the charge for such facilities shall be apportioned among all such operations on an equitable basis.

314. Overhead

Overhead as provided in Clause 314(b).

(a) In this Clause 314:

- (1) "Construction Project" means any construction or installation undertaken for the Joint Account, including each subsequent addition thereto or alteration thereof or replacement of Controllable Material thereon, but does not include Development.
- (2) "Cost" means the total direct expenditures (less any credits received thereon) exclusive of expenses of litigation, judgments, settlement of claims, royalties on production, salvage credits for Material retired and the value of injected substances purchased for enhanced recovery.
- (3) "Development" means Drilling, installation or additions of equipment and replacement of Controllable Material on or in wells.
- (4) "Drilling" means the drilling, completing, capping, plugging and abandoning, deepening, plugging back, drilling or reconditioning of a well (except routine cleanout and pump or rod pulling operations) or the conversion of a well to a source, input or producing well.
- (5) "Operation and Maintenance" means all operations associated with the Joint Property exclusive of Development, exploration operations and Construction Projects.
- (6) "Overhead" means an allowance for salaries, wages, employee benefits and expenses of all Operator's employees not chargeable elsewhere in this Part III, and maintaining and operating offices that are not Joint property.

(7) "Producing Well" means a well for the Joint Account that in a calendar month:

- (i) has an allowable for crude oil attributable to it; or
- (ii) is connected to a permanent gas sales outlet, source or injection system; or
- (iii) is used as a disposal well;

provided that a well that is Drilling during the entire month or is permanently shut in and awaiting abandonment shall not be considered a Producing Well, and a well completed in more than one zone shall be considered a separate Producing Well for each such zone.

NOTE: Select either the Combined Rate Basis or the Percentage Rate Basis below.

(b) Combined Rate Basis

(1) (i) for Drilling with a rig and crew, \$ 55.00 per well per day beginning on the date of commencement of Drilling and terminating on the rig release date, but, if Drilling is suspended for any period of 15 or more consecutive days while a rig is on location, no charge shall be made for any part of such period of suspension.

(ii) for each Producing Well, \$ 125.00 per month.

(iii) for each Construction Project,

(a) 5 percent of the first \$ 25,000.00 of Cost, plus

(b) 3 percent of the next \$ 50,000.00 of Cost, plus

(c) 1 percent of Cost exceeding the sum of (a) and (b),

provided that no charge shall be made under this Clause 314(b)(1)(iii) for any Construction Project the total Cost of which is less than \$ 10,000.00

(iv) for exploration operations the following charges shall begin on the day an exploration crew or party commences work on the site of exploration operations and terminate when it ceases work on the site:

| | Charge Per Operating Crew or Party Day | |
|---|--|-------------------|
| | Operator Owned | Contract |
| Seismograph Party | | |
| Gravimeter Party (including Aeromagnetic surveys) | | |
| Geological Surface Party | | To be negotiated. |

The rates in this Clause 314(b) (1) (iv) do not cover interpretation of technical data.

(2) The rates in Clause 314(b)(1), except rates on Construction Projects, shall be adjusted as of the first day of July each year following the year in which the Agreement became effective. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly wages and salaries of the Canadian petroleum and natural gas industry for the last calendar year compared with the calendar year next preceding such last calendar year as reported by the Dominion Bureau of Statistics. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment rounded to the nearest dollar. Notwithstanding the provisions hereof the rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).

(3) Rates will be negotiated when required for operation of facilities such as, but not limited to, gathering systems and related facilities, gas processing plants, compressor plants, secondary recovery systems, injection systems and salt water disposal facilities other than disposal wells.

~~(b) Percentage Rate Basis~~

~~(1) (i) for Development, _____ percent of Cost.~~

~~(ii) for Operation and Maintenance, except of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.~~

~~(iii) for Operation and Maintenance of gas processing plants, gas gathering systems and related facilities, _____ percent of Cost.~~

- ~~(a) for each Construction Project,~~
- ~~(a) _____ percent of the first \$ _____ of Cost, plus~~
- ~~(b) _____ percent of the next \$ _____ of Cost, plus~~
- ~~(c) _____ percent of Cost exceeding the sum of (a) and (b).~~
- ~~(v) for geophysical and geological exploration operations, _____ percent of Cost if a contract crew or party is employed and _____ percent of Cost if Operator utilizes its own crew or party. The rates in this Clause 314(b)(1)(v) do not cover interpretation of technical data.~~
- ~~(2) The rates in Clause 314(b)(1) may be adjusted from time to time upon approval pursuant to Clause 102(b).~~

315. Interpretation of Technical Data

Costs, as approved by the Parties, of interpreting technical data from exploration operations.

316. Engineering Design

Costs of engineering design with approval pursuant to Clause 102(a).

317. Warehousing Handling

- (a) 2 1/2 percent of the cost of tubular goods 2 inches in diameter and over and each other item of Material having a New Price in excess of \$ 1,000.00 delivered from Operator's warehouse and 5 percent of the cost of all other Material delivered from Operator's warehouse, where Operator's warehouse is not maintained as part of the Joint Property.
- (b) Costs of maintaining warehouses which are part of the Joint Property.

318. Other Costs

Costs, as approved pursuant to Clause 102(a), for which provision is not made elsewhere in this Accounting Procedure.

PART IV

BASIS OF CHARGES

401. Purchases

Operator shall, whenever practicable:

- (a) purchase Material for delivery directly to the Joint Property; and
- (b) purchase for or transfer to the Joint Property only such Material as is required for immediate use and avoid the accumulation of surplus stocks.

402. Charges for Purchases

Material purchased shall be charged at the price paid by Operator. Discounts actually received in respect thereof shall be for the Joint Account.

403. Charges for Material Furnished by Operator

When it is not practicable to purchase Material for delivery directly to the Joint Property, Material may be furnished by Operator from its stocks, in which event Material shall be charged as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B" at 75 percent of New Price;
- (c) Condition "C" at 50 percent of New Price; and
- (d) Condition "D" at a reasonable price based on the use to which it is to be put.

404. Premium Prices

Whenever, in Operator's opinion, Material is not available at reasonable prices, Operator shall in writing notify Non-Operators thereof. Within 2 days after receipt of such notice each Non-Operator may notify Operator in writing that it wishes to deliver to Operator such Material and such notice shall set forth the price and delivery date. Operator shall decide if the price and date for delivery of such Material are reasonable in the circumstances and, if so, shall purchase such Material from such Non-Operators. If more than one Non-Operator wishes to supply such Material, Operator shall decide the quantity of such Material that each such Non-Operator may deliver. If Operator decides such Material is not available from the Non-Operators on reasonable terms, Operator may acquire such Material and make a charge for the Joint Account of the actual cost and expense incurred in purchasing, transporting and preparing such Material for use.

405. Transportation of Material

Operator may charge the actual cost of transporting Material to or from the Joint Property, provided that the charge for transporting Material furnished by Operator shall not exceed the estimated cost of transporting such Material from the regular supply store where such Material is available or the carrier receiving point to which such Material could be delivered, whichever is the closer to the Joint Property. No charge shall be made for transporting Material from the Joint Property to other properties of Operator except with approval pursuant to Clause 102(a).

406. Operator's Facilities

- (a) Operator may charge for use of Operator's own facilities and equipment at rates, not exceeding those prevailing in the immediate area for available like facilities and equipment, commensurate with the costs of ownership and operation thereof, including depreciation and interest on the depreciated investment. The annual interest rate on investment shall not exceed the prime bank rate of the principal chartered bank in Canada used by Operator plus 1 percent, determined at the beginning of each calendar year.
- (b) In lieu of rates provided in Clause 406(a), Operator may charge for use of its own facilities and equipment, except automotive equipment, at the commercial rates prevailing in the immediate area, less 20 percent.
- (c) When requested to do so, Operator shall inform Non-Operators in advance of the rates to be charged.

PART V

DISPOSAL OF MATERIAL

501. Operator's Authority to Dispose of Material

Operator may dispose of any surplus Material the New Price of which is less than \$ 5,000.00. Operator shall obtain the approval of Non-Operators pursuant to Clause 102(a) to dispose of any other Material.

502. Sales

The proceeds of sales of Material shall be for the Joint Account.

503. Valuation of Material

Material disposed of to the Parties shall be valued as follows:

- (a) Condition "A" at New Price;
- (b) Condition "B"
 - (1) at 75 percent of New Price if the Material was a charge for the Joint Account as Condition "A", or
 - (2) at 65 percent of New Price if the Material was a charge for the Joint Account as Condition "B";
- (c) Condition "C" at 50 percent of New Price; and
- (d) Conditions "D" and "E" at the best price obtainable.

When the use of Material is temporary and the reduced value provided in this Clause is not justified, such Material shall be valued on a basis consistent with its use.

PART VI

INVENTORIES

601. Frequency of Inventory and Expense

An inventory of Controllable Material shall be taken at reasonable intervals and the expense of such inventory shall be a charge for the Joint Account.

602. Notice of Inventories

Operator shall give Non-Operators 30 days' notice of any inventory proposed to be taken hereunder and each Party shall be entitled to be represented at the taking of such inventory.

603. Reconciliation

The Parties participating in the inventory shall reconcile the inventory with the records maintained pursuant to Clause 201 and the expense of such reconciliation shall be a charge for the Joint Account.

604. Report of Inventory

Operator shall submit each inventory to Non-Operators, together with a list of overages and shortages, showing the cost for the Joint Account of shortages and the original or estimated cost of overages to each Party.

605. Special Inventory

Operator shall, upon written notice from any Non-Operator, cause the taking of a special inventory of Controllable Material. Such Non-Operator shall be entitled to be represented at the taking of the special inventory. The inventory shall be commenced within 30 days of receipt of the written notice. The expense of such inventory and, if a reconciliation is requested by the Non-Operator, the expense of such reconciliation shall be borne by such Non-Operator.

inter-departmental memo

Ian Haugh,
Assistant Deputy Minister,
Mineral Resources Division.

Date 76 11 02

From H. C. Moster,
Director,
Petroleum Branch.

Subject: Request for Crown Oil and Natural Gas Lease

Omega Hydrocarbons Ltd. (October 27, 1976) - Section 29-1-25 WPM

Section 29-1-25 WPM is Crown minerals directly offsetting Omega's recent re-entry of a well in Lsd. 1 of Section 30-1-25 WPM. Omega's other interests in the area are the 6 wells in the W_{1/2} Section 30-1-25 (Waskada Unit No. 1) plus the water source well (11-29-1-25) and water lease (Swan River Formation) covering Lsd. 11 of Section 29-1-25. See attached plat.

In light of the different approaches made to date in regards to disposition of Crown oil and gas rights, the following list of possible alternative to handle Omega's request has been prepared:

I. Lease:

1. Normal Crown Lease (as per Omega's request).
2. Place parcel up for bid (highest bonus accepted).
3. Place parcel up for bid with drilling commitment.
4. Conditional Crown Lease (drilling commitment).
5. Conditional Crown Lease (drilling commitment and overriding royalty).

II. Agreement:

1. Berry Agreement example
 - no financial contribution
 - Crown land contribution only
 - drilling commitment
 - gross override till payout
 - carried interest after payout
2. CDC or Great Northern example
 - % financial contribution
 - true working interest arrangement

Conclusion:

If the Crown does not have monies available for financial participation under an agreement arrangement (eg. - working interest), then for simplification of administration a conditional lease would be most appropriate. This would negate the need for complicated determinations of payout procedures, etc. as are currently being experienced by Manitoba Mineral Resources Ltd. (Berry Agreement).

Recommendation:

That Omega's request be responded to by a suggestion or counter proposal to add a sliding scale gross overriding royalty provision to our standard lease plus a drilling commitment.

eg. - Standard lease form amended to provide for:

1. Drilling commitment within first year of lease.
2. Lease covering only Oil and Natural Gas down to base of horizon of interest (Mission Canyon).
3. Sliding scale gross override condition:
(0% starting @ 10 BOPD increasing 1/2% for each BOPD increase to a maximum of 10% at 30 BOPD and over).

| Prod. Rate (BOPD) | Total Royalty Rate (%) | | |
|----------------------|------------------------|----------------|-------------------|
| | New Well | Omega Lease | Developed Well |
| 5 | 14.15 | 14.15 | 15.05 |
| 10 | 14.90 | 14.90 | 18.20 |
| 15 | 16.10 | 18.60 | 27.20 |
| 20 | 17.90 | 22.90 | 41.00 |
| 25 | 19.55 | 27.05 | 44.15 |
| 30 | 21.50 | 31.50 | |
| 35 | 23.00 | 33.00 | |
| 40 | 24.50 | 34.50 | |
| 50 | 26.90 | 36.90 | |
| 60 and over | 27.95 | 37.95 | |

(see graphical presentation attached)



H. C. Moster

HCM/et

Attachs.

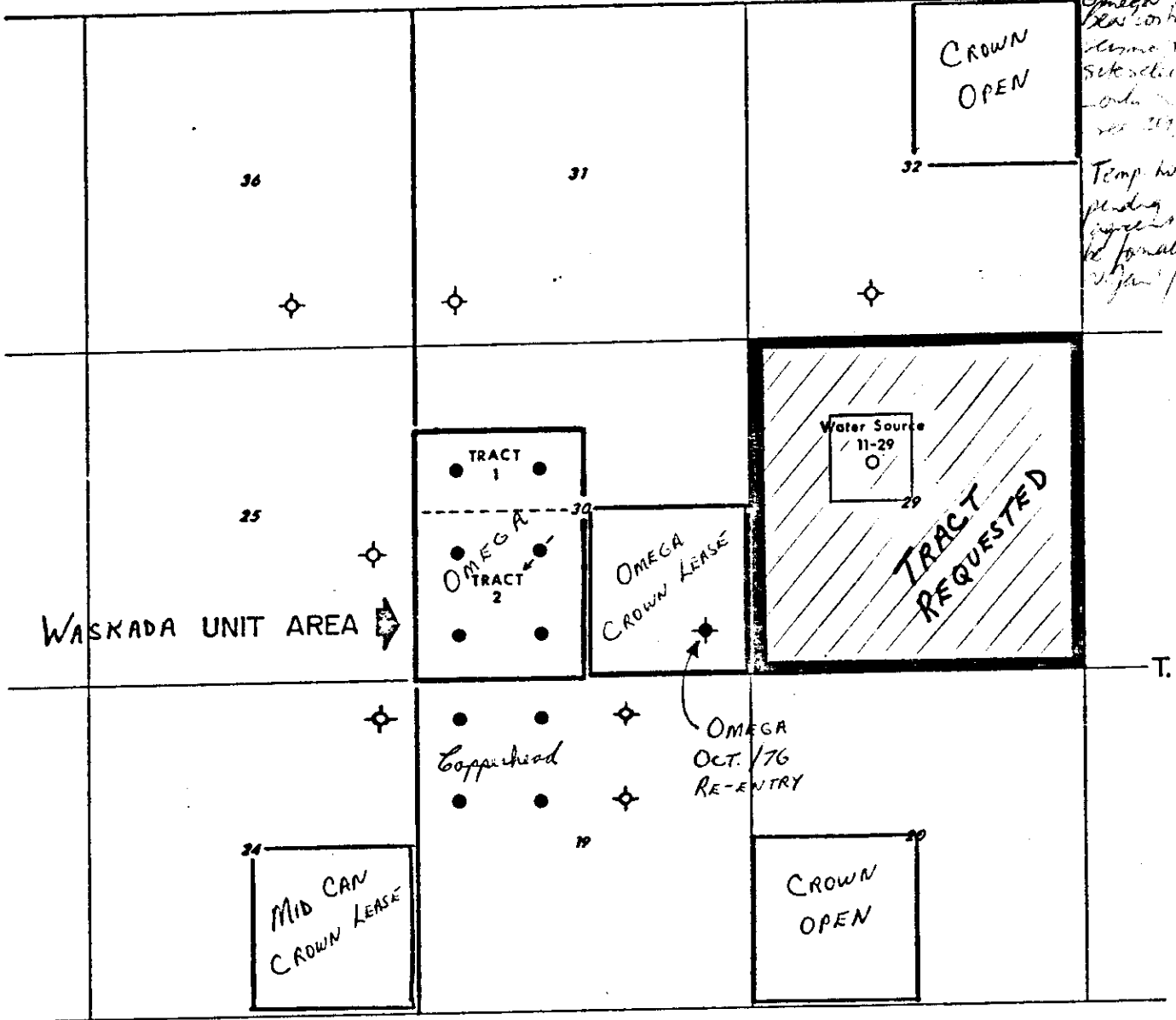
c.c. J. S. Roper

EXHIBIT "B"

ATTACHED TO AND MADE PART OF AN AGREEMENT ENTITLED

"UNIT AGREEMENT - WASKADA UNIT No. 1" ✓ 30 WI

R.25W1



WASKADA UNIT NO. 1

LEGEND

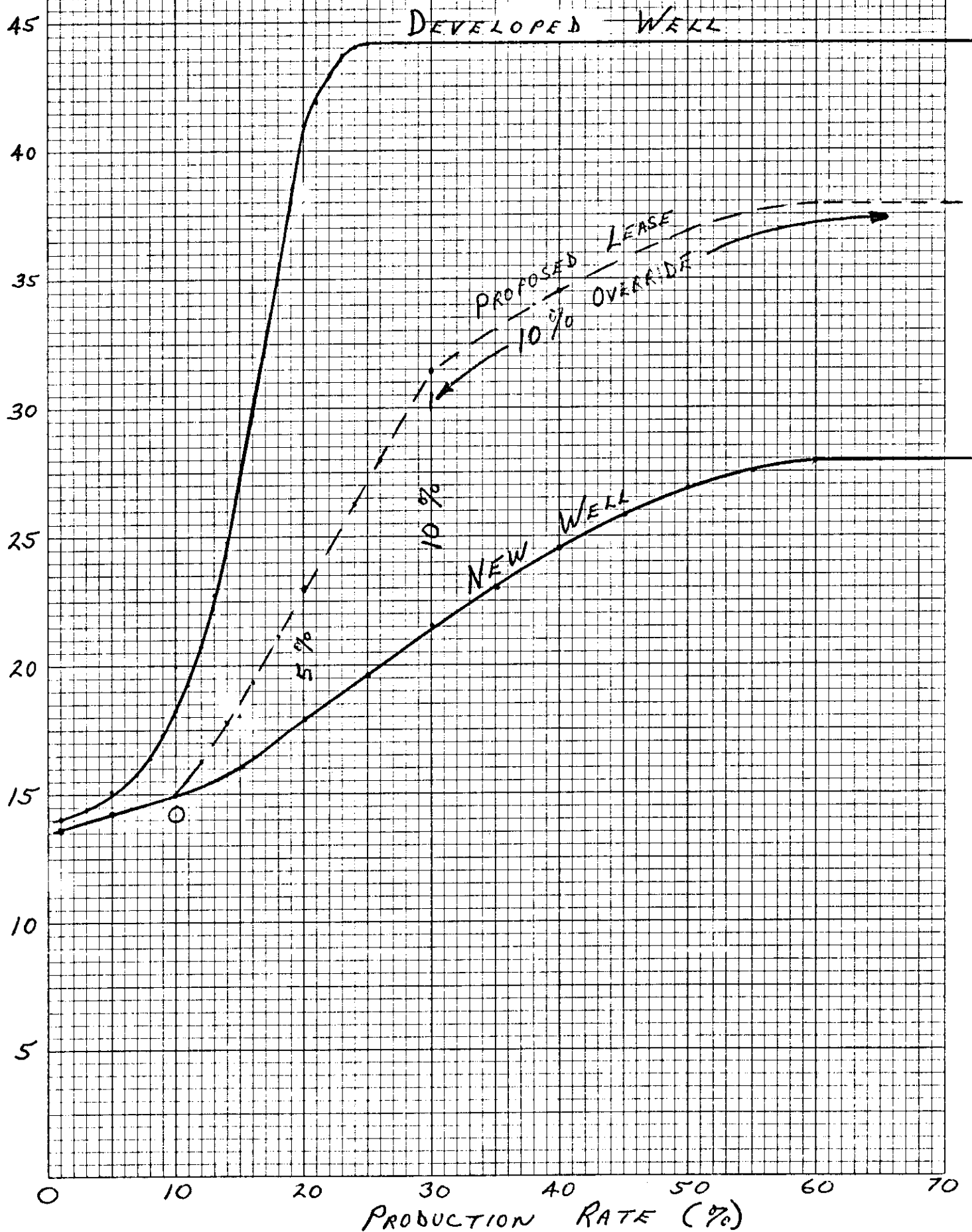
- PROPOSED INJECTION WELL
- WATER SOURCE WELL
- PRODUCING OIL WELLS
- ✧ ABANDONED

SCALE: 2" = 1MILE

DATE: DEC. 1975

DIETZGEN CORPORATION
MADE IN U.S.A.
CROWN ROYALTY (%)

ND. 341-10 DIETZGEN GRAPH PAPER
10 X 10 PER INCH
TOTAL





Province of Manitoba

Department of Mines, Resources and Environmental Management

Mineral Resources Division

Petroleum Branch
993 Century Street
Winnipeg, Manitoba
R3H 0W4

October 29, 1976

C D C Oil & Gas Limited
P.O. Box 1051
Calgary, Alberta
T2P 2K7

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

OCT 29 1976

Attention: Mr. W. Kaufman
Exploration Manager

ASSISTANT DEPUTY MINISTER

Dear Sir:

Re: List of Assessment Data -
Oil and Gas Exploration (Manitoba)

In light of your Company's current activity in Manitoba, we are taking the initiative to inform you about data available through this office which may assist you in evaluating or re-assessing your recent exploration operations as well as future planned activities.

Enclosed is a copy of the List of Assessment Data - Oil and Gas Exploration in Manitoba, together with a list of recently acquired non-confidential seismic contour maps.

Yours sincerely,

H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch

WG/cf
Enclosure

c.c. A. A. Koffman

→ b.c.c. I. Haugh
J. S. Roper



Province of Manitoba

Department of Mines, Resources and Environmental Management

Mineral Resources Division

Petroleum Branch
993 Century Street
Winnipeg, Manitoba
R3H 0W4

October 28, 1976

Omega Hydrocarbons Ltd.
630 - 330 Fifth Avenue S. W.
Calgary, Alberta
T2P 0L4

Attention: T. J. Hall

Dear Sir:

Re: Oil and Natural Gas Lease No. 2395

In light of the apparent success of your re-entry of the well, Omega Waskada Prov. 1-30-1-25, and pursuant to condition 18 of the subject Lease, please provide this office with the following:

1. A detailed listing of the total drilling and equipping costs to the point of the flowline valve for the well.
2. A statement of revenue and expenditures for the well is to be submitted along with each month's production and Crown royalty reports. A "sample" format for such monthly statement is attached.

The five (5) percent overriding royalty shall become effective when the sum of the monthly gross revenues equal the total drilling and equipping costs (constant) plus the sum of the monthly net revenues.

If you have any questions pertaining to the above please give me a call.

Also enclosed are copies of New Well Report forms. Please submit a completed copy of this report in duplicate as soon as possible.

Yours sincerely,

H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch

HCM/cf
Encls.

b.c.c. J. S. Roper

I. Haugh ←

Omega Hydrocarbons Ltd.

Monthly Statement of Revenue and Expenditures

Omega Waskada Prov. 1-30-1-25

Month: _____, 19____

Gross Revenue = _____ Bbl. Prod. x \$ _____ Wellhead price/Bbl.
= \$ _____

Less: Monthly Crown Royalty Paid = \$ _____

Less: Monthly Operating Cost* = \$ _____

Monthly Net Revenue = \$ _____

* Breakdown of Monthly Operating Costs:

eg.: Pumper \$ _____
(etc.) \$ _____

Total \$ _____

Certified Correct : _____

T. J. Hall,
President

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

| | |
|-----------------------|-----------------|
| TO <i>P. I. Haugh</i> | FROM <i>HEM</i> |
| TO | FROM |

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input checked="" type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input checked="" type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input checked="" type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input checked="" type="checkbox"/> Please draft reply for signature of <i>Omega</i> | | |

Date *76 10 28* Subject *Lease Request*

Message *Sec. 29-1-25*

Branch's recommendations will be presented to you prior to Nov. 3/76.

TELEPHONE: (403)261-0743



HYDROCARBONS Ltd.

630 - 330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

September 23, 1976

Assistant Deputy Minister
Mines, Resources and Environmental Management
Mineral Resources Division
993 Century Street
Winnipeg, Manitoba R3H 0W4

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

SEP 24 1976

Attention: Ian Haugh

ASSISTANT DEPUTY MINISTER

Dear Mr. Haugh:

Re: Oil and Natural Gas Lease Application
SE $\frac{1}{4}$, Sec. 30, Twp. 1, Rge. 25 WPM.

Please find enclosed a lease in duplicate with all changes initialled and additions noted as per your September 17, 1976 letter.

Both copies of the lease have been signed, sealed and witnessed as requested. Please return one fully signed copy to our office.

Thank you.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. J. Hall
President

*Lease to 7/10/11
760927*

TJH:bef

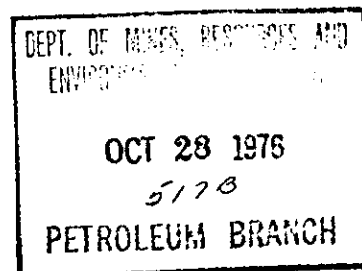


630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

October 27, 1976

Department of Mines, Resources
and Environmental Management
Mineral Resources Division
Petroleum Branch
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: H. C. Moster
Director, Petroleum Branch



Dear Sir:

Pursuant to discussions regarding Omega's desire to acquire additional lands in the Waskada area, Omega submits a request for a nine year petroleum and natural gas lease on the whole of section 29-1-25-W1M.

In support of this request, we are providing you with the current status and results of our tests on the well known as Omega Waskada Prov. 1-30-1-25.

Test Results

1. The well was placed on production at 3:00 P.M. on October 23, 1976.
2. Production testing commenced on Monday, October 25, 1976.
3. Producing rates have varied between 90 and 95 barrels of total fluid per day. Samples taken from the metering separator indicate a water cut of approximately 50%.
4. Total gas measured is reported to be 17,000 cu. ft. per day resulting in a GOR of $17,000/50 = 340$ cu. ft./bbl.
5. Water-oil ratio appears to be reasonably stable but may already be showing slight increase.

In view of the high initial water cut, Omega is not prepared to commit to any development program, but would be interested in having a lease on section 29 so that a program can be initiated if it appears to be economically attractive. Our current assessment of this prospect is that it is a small, thin localized oil accumulation underlain by a massive water saturated reservoir.

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

[Signature] OCT 29 1976

ASSISTANT DEPUTY MINISTER

XCC & I. HAUGH ✓
J.S. ROPLER
W. GHAZAR

- 2 -

If the Department is receptive to granting a lease, Omega would be prepared to agree to visit your office in Winnipeg so that negotiations may be finalized as soon as possible.

Yours very truly,
OMEGA HYDROCARBONS LTD.

A handwritten signature in cursive script, appearing to read 'T. J. Hall', written in dark ink.

T. J. Hall
President

TJH:bef

SEP 17 1976

Mr. T. J. Hall,
President,
Omega Hydrocarbons Limited,
630 - 330 Fifth Avenue S. E.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application
SE 1/4, Sec. 30, Twp. 1, Rge. 25 W.F.M.

Your above referenced lease application of September 2, 1976, and accompanying cheque for \$90.00 are acknowledged.

Enclosed is a lease in duplicate in accordance with your application. Please initial all changes or additions noted on the lease form. Also have both copies of the lease signed, sealed, witnessed, and returned to this office.

Yours sincerely,

ORIGINAL SIGNED BY

IAN HAUGH

Ian Haugh,
Assistant Deputy Minister.

HGM/jr

Enclosure.

c.c.: H. C. Moster.

b.c.: J. S. Roper.

BF - Sept 15

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT
ROUTE SLIP

| | | | |
|----|--------------|------|-----------|
| TO | H. C. Moster | FROM | Ian Haugh |
| TO | | FROM | |

- | | | |
|--|--|--|
| <input type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input type="checkbox"/> Please draft reply for signature of | | |

Date 86 09 07 Subject Omega Hydrocarbons Ltd.

Message

Please draft reply for my signature.

MNR-A-94

Use reverse side if necessary

SEP 7 1976



TELEPHONE: (403)261-0743

630-330 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0A6 ASSISTANT DEPUTY MINISTER

September 2, 1976

Assistant Deputy Minister
Mines, Resources and Environmental Management
Mineral Resources Division
993 Century Street
Winnipeg, Manitoba R3H 0W4

Attention: Ian Haugh

Re: Oil and Natural Gas Lease Application
SE $\frac{1}{4}$, Sec. 30, Twp. 1, Rge. 25 W.P.M.

We are in receipt of your letter dated August 27, 1976 in which you announce a set of terms and conditions upon which a lease will be recommended for approval.

Therefore, Omega Hydrocarbons Ltd. makes application for a petroleum and natural gas lease for rights down to and including the Mississippian horizon containing a term of nine (9) years, under the conditions set out in the above mentioned letter, with one exception. The exception is that you request our agreement that the lease be terminated by the Minister if found to be unproductive.

Omega is unable to agree to such termination provision for the following reasons:

1. Once having completed the work commitment, the lease owner should be in good standing provided he makes his annual rental payment.
2. We do not understand the meaning of a nine (9) year term if the lease is subject to cancellation at any time.
3. Omega may elect to drill a new well and should be free to make that election during the term of the lease.
4. Omega may wish to farmout or encourage another producer to drill a new well at some future date and should be free to do so.
5. Capital expenses resulting from the work commitment would be subject to write-off when the lease is terminated, which becomes an undesirable feature within the Company's accounts.
6. Omega is a producing and exploration type company and has no desire to accumulate land as is the case with land brokers.
7. The lease fee is sufficient disincentive to the owner in assessing the merits of holding a nonproductive entity.

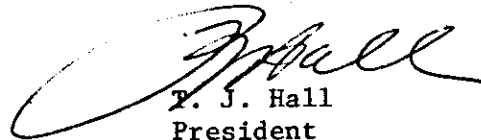
If you are able to waive the termination provision, we are prepared to proceed and herein request that you process our application. If not, we will be obliged to reconsider this prospect.

The proposed program of operation for reentering the well bore of Lsd. 1 - 30 after conditioning the well bore for reentry is to run an R A log over the sand interval immediately above the retainer at 3000 feet. If there is any zone of interest, we would perforate and test that horizon prior to drilling out the retainer. Following this, we would drill out the retainer and swab the well into production. If required, the M C 1 member of the Mississippian will be reperforated, acidized and, if necessary, squeezed and reworked. The programs will be initiated as soon as possible and, if convenient, prior November 1, 1976 and certainly within the first year of the lease. If the work commitment is not initiated in the first year, the leasee will agree to having the Minister terminate the lease.

Assuming that the foregoing is acceptable to the Minister, we are enclosing our cheque in the amount of \$90.00 to cover the lease application fee and first year rental.

Your early handling of this application will accommodate an immediate start on the program.

Yours very truly,


T. J. Hall
President

x.c. - J. S. Roper
76 09 13 - ra

TJH;bcf
Encl.

H. C. Moser,
Director, Petroleum Branch,
Mineral Resources Division,
993 Century Street.

COPY

76 09 14.

J. S. Roper,
Policy Advisor,
302 Legislative Building.

OIL AND NATURAL GAS LEASE APPLICATION - OMEGA HYDROCARBONS LIMITED.

Attached please find revised lease document in duplicate,
together with a suggested draft letter to Mr. T. J. Hall.

The original lease document forwarded to this office is
being returned herewith.



J. S. Roper.

Department of Mines, Resources
& Environmental Management
Mineral Resources Division



SEP 15 1976

ASSISTANT DEPUTY MINISTER

/dv

Attachments.

c.c.: I. Haugh. ✓

Mr. T. J. Hall,
President,
Omega Hydrocarbons Limited,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application
SE¹₄, Sec. 30, Twp. 1, Rge. 25 W.P.M.

Your above referenced lease application of September 2, 1976,
and accompanying cheque for \$90.00 are acknowledged.

Enclosed is a lease in duplicate in accordance with your
application. Please initial all changes or additions noted on the lease
form. Also have both copies of the lease signed, sealed, witnessed,
and returned to this office.

Yours sincerely,

Ian Haugh,
Assistant Deputy Minister.

HCM/cf/JSR/dw

Enclosure.

c.c.: H. C. Moster.

b.c.: J. S. Roper.

Province of Manitoba

inter-departmental memo

I. Haugh,
Assistant Deputy Minister
Mineral Resources Division

Date 76 09 09

From H. C. Moster,
Director
Petroleum Branch

~~Subject~~

RE: OMEGA LEASE APPLICATION
Set, Sec. 30-1-25 (WPM)

Attached is a re-draft of the required lease as per your instructions.

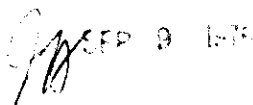
J. S. Roper has been in contact with me and wished to confirm that you would be checking the final draft of the lease with Mr. Cawley before it is sent to Omega for execution.



H. C. Moster

HCM/cf

Department of Mines, Resources
& Environmental Management
Mineral Resources Division



ASSISTANT DEPUTY MINISTER

XXXX 633-9543

August 27, 1976

Mr. T. J. Hall,
President,
Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S. W.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application,
SE $\frac{1}{4}$, Sec. 30, Twp. 1, Rge. 25 W.P.M.

Your letter of July 30, 1976 to the Honourable Sidney Green requesting the above has been passed to this Division for review.

In reference to the lease terms suggested in your letter, we would list the following for your consideration:

1. That the term of the lease consist of a period of nine years (primary term of three years and secondary term of six years) as per existing regulations.
2. An annual lease rental as per the regulations (\$0.50 per acre primary term, \$1.50 per acre secondary term, or \$0.50 per acre if producing), or as amended from time to time. The first year's rental of \$80.00 plus a \$10.00 application fee should be submitted to the Director of the Petroleum Branch along with the lease application.
3. The work commitment should be outlined in detail in your lease application, including a time schedule. Further, a statement in the lease that the lease may be cancelled at any time by the Minister if the lessee has not complied with the work commitment or if the lease is non-productive.
4. Production of petroleum substances from the lease would be subject to normal Crown oil royalties.

T. J. Hall

5. The production of petroleum substances from any well on the lease shall be subject to a 5% overriding royalty after the gross proceeds of production from the well equal the sum of the Crown royalty plus the drilling and equipping costs of the well to the point of the flowline valve at the well plus moneys expended to operate the well for the recovery of petroleum substances.
6. The abandoned well located in L.S.D. 1 of Section 30-1-25 W.P.M. which is to be re-entered shall be classified as a new well under the regulations.

It would be understood that the lease would cover the SE $\frac{1}{4}$ of Sec. 30-1-25 W.P.M.; that is, the oil mining rights down to and including the Mississippian formation. Further, the terms of the lease are subject to compliance with the Act and the regulations thereunder as they may be amended from time to time.

The Division is prepared to recommend that a lease be issued to Omega Hydrocarbons Ltd. subject to the above conditions. Should you wish to apply, please forward your lease application, setting forth the required information and a statement that you concur with the above conditions becoming a part and parcel of any lease that may be issued.

Commingling of produced fluids from the lease with Washada Unit No. 1 production or injected fluids would have to be specifically applied for before such applications could be given consideration.

Yours sincerely,

Ian Haugh,
Assistant Deputy Minister.

cc: Jas. T. Cavley, P. Eng.,
Deputy Minister.

b.c.c. - J. S. Roper
H. C. Mosier

HCM/ra

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

TO

I. HAUGA

FROM

768701

TO

FROM

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input checked="" type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input type="checkbox"/> Please draft reply for signature of | | |

Date

76 08 26

Subject

OMEGA
LEASE APPIN

Message

MNR-A-94

Use reverse side if necessary

inter-departmental memo

TO:

I. Haugh
 Assistant Deputy Minister
 Mineral Resources Division

Date 76 08 26

From H. C. Moster
 Director
 Petroleum Branch

Subject OMEGA HYDROCARBONS LTD., LEASE APPLICATION - SE 30-1-25

Attached is a re-draft of J. S. Roper's proposed reply letter to Omega. The changes made are to:

- Item 1. Explains why we would recommend a 9 year term rather than the suggested 10 years.
- Item 2. Would use the existing rental rates which are spelled out on the lease forms to simplify the amendments which would be required to the lease, if issued (the monies concerned are minimal - eg. \$80.00 per year).
- Item 5. Omega requested "recovery of capital and operating expenses". First draft had "payout of initial capital to drill and complete the well to point of flowline valve at the well". Recommended change is meant to be more explicit and would have a built-in time frame for easier administration.

NOTE - This wording would permit normal production operating costs to be included but excludes flowline and field separation facilities.

GENERAL:

I received a call from Jack Hall today. He was concerned about Copperhead's lack of action in southern portion of pool and the approaching winter which would prevent field construction work if Copperhead decided or was forced to join waterflood. I advised him of Board's letter to Copperhead dated 76 07 09 with the October 1, 1976 deadline.

He was also concerned about an early reply on the subject lease application. I told him of the pending reply and details which he said appeared satisfactory to him.



H. C. Moster

HCM/cf
 Attach.

76 08 26

Mr. T. J. Hall,
President,
Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S. W.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application
SE¹₄, Sec. 30, Twp. 1, Rge. 25 W.P.M.

Your letter of July 30, 1976, to the Honourable Sidney Green requesting the above has been passed to this Division for review.

In reference to the lease terms suggested in your letter, we would list the following for your consideration:

1. That the term of the lease consist of a period of nine years (primary term of three years and secondary term of six years) as per existing regulations.

2. An annual lease rental as per the regulations(\$0.50 per acre primary term, \$1.50 per acre secondary term, or \$0.50 per acre if producing), or as amended from time to time. The first year's rental of \$80.00 plus a \$10.00 application fee should be submitted to the Director of the Petroleum Branch along with the lease application.

3. The work commitment should be outlined in detail in your lease application, including a time schedule. Further, a statement in the lease that the lease may be cancelled at any time by the Minister if the lessee has not complied with the work commitment or if the lease is non-productive.

4. Production of petroleum substances from the lease would be subject to normal Crown oil royalties.

5. The production of petroleum substances from any well on the lease shall be subject to a 5% overriding royalty after the gross proceeds of production from the well equal the sum of the Crown royalty plus the drilling and equipping costs of the well to the point of the flowline valve at the well plus moneys expended to operate the well for the recovery of petroleum substances.

6. The abandoned well located in L.S.D. 1 of Section 30-1-25 W.P.M. which is to be re-entered shall be classified as a new well under the regulations.

It would be understood that the lease would cover the SE $\frac{1}{4}$ of Sec. 30-1-25 W.P.M.; that is, the oil mining rights down to and including the Mississippian formation. Further, the terms of the lease are subject to compliance with the Act and the regulations thereunder as they may be amended from time to time.

The Division is prepared to recommend that a lease be issued to Omega Hydrocarbons Ltd. subject to the above conditions. Should you wish to apply, please forward your lease application, setting forth the required information and a statement that you concur with the above conditions becoming a part and parcel of any lease that may be issued.

Commingling of produced fluids from the lease with Waskada Unit No. 1 production or injected fluids would have to be specifically applied for before such applications could be given consideration.

Yours sincerely,

Ian Haugh,
Assistant Deputy Minister.

HCM/cf
c.c.: Jas T. Cawley

b.c.: J. S. Roper
H. C. Moster

Province of Manitoba

inter-departmental memo

Dr. Ian Haugh,
Assistant Deputy Minister,
Mineral Resources Division,
993 Century Street.

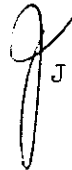
Date 76 08 24.

From J. S. Roper,
Policy Advisor,
302 Legislative Building.

Subject OMEGA HYDROCARBONS LTD., LEASE APPLICATION - SE¹/₄ 30-1-25 W.P.M.

Further to your memorandum of 76 08 19 to Mr. Cawley, copy of which was forwarded to me, it is suggested that the proposed letter to Mr. Hall be revised to include the points outlined in the attached draft and forwarded from your office. It is also suggested that the conditions of the lease be discussed informally with Mr. Hall and a statement that they are acceptable be included with his application for lease.

Please ensure that bonding requirements are complied with.

 J. S. Roper.

JSR/dw.

Attachment.

c.c.: Jas. T. Cawley.
H. C. Moster.

RUST 11-10-83

Mr. T. J. Hall,
President,
Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application,
SE $\frac{1}{4}$, Sec. 30, Twp. 1, Rge. 25 W.P.M.

Your letter of July 30, 1976, to the Honourable Sidney Green requesting the above has been passed to this Division for review.

In reference to the lease terms suggested in your letter, we would list the following for your consideration:

1. That the term of the lease consist of a period of nine years (primary term of three years and secondary term of six years).

This would relate with the lease form presently being used.

2. An annual rental of \$1.00 per acre per year for the term of the lease would appear satisfactory. The first year's rental of \$160.00 plus a \$10.00 application fee should be submitted to the Director of the Petroleum Branch along with the lease application.

3. The work commitment should be outlined in detail in your lease application, including a time schedule. Further, a statement in the lease that the lease may be cancelled at any time by the Minister if the lessee has not complied with the work commitment.

4. Production of petroleum substances from the lease would be subject to normal Crown oil royalties.

5. The production of petroleum substances from the lease shall be subject to a 5% overriding royalty after payout of initial capital to drill and complete the well to the point of the flowline valve at the well.

6. The abandoned well located in L.S.D. 1 of Section 30-1-25 W.P.M. which is to be re-entered shall be ~~re~~classified as a new well under the regulations.

It would be understood that the lease would cover the SE $\frac{1}{4}$ of Sec. 30-1-25 W.P.M.; that is, the oil mining rights down to and including the Mississippian formation. Further, the terms of the lease are subject to compliance with the Act and the regulations thereunder as they may be amended from time to time.

The Division is prepared to recommend that a lease be issued to Omega Hydrocarbons Ltd. subject to the above conditions. Should you wish to apply, please forward your lease application, setting forth the required information and a statement that you concur with the above conditions becoming a part and parcel of any lease that may be issued.

Yours sincerely,

Ian Haugh,
Assistant Deputy Minister.

JSR/dw.

c.c.: Jas. T. Cawley.

b.c.: J. S. Roper.
H. C. Moster.

P.S. Ian and Clare - No mention made re commingling and disposal to WIW 6-30. Why? I imagine that Hall wants some assurance that he won't have to drill a separate WIW or be required to set up a separate salt water disposal system for one well. Should reference be made to this item in the letter?

C
1

76 08 19

Mr. Jas. T. Cawley, P. Eng.,
Deputy Minister.

Dr. Ian Haugh,
Assistant Deputy Minister,
Mineral Resources Division.

OMEGA HYDROCARBONS LTD., Lease Application - SE $\frac{1}{2}$ 30-1-25 W.P.M.

Attached and recommended for signature is a letter to the above Company indicating the Department's willingness to issue an Oil and Natural Gas Lease, subject to several conditions.

This recommended procedure is based primarily on the fact that Omega is in the best position to carry out this re-entry because of the nearby facilities. The Petroleum Branch have examined the possibility of deepening this well to test formations below the Mississippian, but because of the small size of the casing, it is considered that this would not be feasible.

Ian Haugh.

IH/ra
Attach.

cc: J. S. Roper
H. C. Mosier

COPY

Mr. T. J. Hall,
President,
Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S. W.,
Calgary, Alberta.
T2P 0L4

Dear Mr. Hall:

Re: Oil and Natural Gas Lease Application,
SE $\frac{1}{4}$, Sec. 30, Twp. 1, Rge. 25 W.P.M.

Your letter of July 30th, 1976 requesting an Oil and Natural Gas Lease covering the SE $\frac{1}{4}$ of Section 30-1-25 W.P.M. is acknowledged.

In accordance with Section 205 of Manitoba Revised Regulation M160-R1P, you are hereby advised that issuance of such a lease will be subject to the following conditions:

1. Application for said lease to be submitted to the Director of the Petroleum Branch together with the first years rental of \$80.00 (50¢ per acre) plus a \$10.00 application fee.
2. The lease shall cover the SE $\frac{1}{4}$ of Section 30-1-25W.P.M. down to and including the Mississippian formation.
3. The application shall include in detail the work commitment to be undertaken by the Lessee including a time schedule.
4. The lease may be cancelled in whole or in part at any time by the Minister if the Lessee has not complied with the work commitment or the lease is not productive.
5. The Lessee shall be subject to the normal Crown oil royalties provisions under the regulations.

..... 2

Omega Hydrocarbons Ltd.

COPY

6. The abandoned well located in Lad. 1 of Section 30-1-25 W.P.M. which is to be re-entered shall be classified as a "new well" under the regulations.
7. Any well producing from the lease shall be subject to a 5% overriding royalty on production obtained from that well after payout of initial capital to drill and complete the well to the point of the flowline valve at the well. Such monies to be paid to the Minister or such other party as he may designate.

If the above conditions are acceptable to Omega, kindly forward appropriate application for said lease as per items 1, 2 and 3.

Yours sincerely,

Sidney Green,
Minister.

cc: Mr. A. A. Koffman

HCM/IH/ra

b.c.c. - Jas. T. Cawley
J. S. Roper
Ian Haugh
H. C. Moster

Omega Hydrocarbons Ltd.,
630 - 330 Fifth Avenue S. W.,
Calgary, Alberta.
T2P OL4

Attention: Mr. T. J. Hall,
President.

Dear Sir:

Re: Oil and Natural Gas Lease Application
SE $\frac{1}{4}$, Section 30, Twp. 1, Rge. 25 W.P.M.

~~We acknowledge receipt of~~ ^{of} your letter ~~dated~~ July 30th, 1976
requesting an Oil and Natural Gas Lease covering the SE $\frac{1}{4}$ of Section
30-1-25 W.P.M. *is acknowledged*

In accordance with Section 205 of Manitoba Revised Regulation
M160-R1P, you are hereby advised that ~~we are prepared to issue an Oil~~ *issuance of such a*
~~and Natural Gas Lease to Omega Hydrocarbons Ltd.~~ *to be* subject to the following
conditions:

1. ~~An~~ ^{said} application for ~~such~~ ^{to} lease be submitted to the Director of the
Petroleum Branch together with the first years rental of \$80.00
(50¢ per acre) plus a \$10.00 application fee.
2. The lease shall cover the SE $\frac{1}{4}$ of Section 30-1-25 W.P.M. down to and
including the Mississippian formation.
3. The application shall include in detail the work commitment to be
undertaken by the Lessee including a time schedule.
4. The lease may be cancelled in whole or in part at any time by the
Minister if the Lessee has not complied with the work commitment
or the lease is not productive.
5. The Lessee shall be subject to the normal Crown oil royalties provisions
under the regulations.
6. The abandoned well located in Lsd. 1 of Section 30-1-25 W.P.M. which
is to be re-entered shall be classified as a "new well" under the
regulations.

(2)

7. Any well producing from the lease shall be subject to a 5% overriding royalty on production obtained from that well after payout of initial capital to drill and complete the well to the point of the flowline valve at the well. Such monies to be paid to the Minister or such other party as he may designate.

If the above conditions are acceptable to Omega, ^{kindly forward} ~~please make~~ appropriate application for ^{such} ~~such~~ lease as per items 1, 2, and 3. ~~Upon receipt of such application, an appropriate lease shall be drawn up together with the above conditions and returned to you for execution.~~

Yours sincerely,

Sidney Green,
Minister.

c.c: A. A. Koffman
b.c.c: Jas. T. Cawley
b.c.c: I. Haugh
b.c.c: H. C. Moster

7-18

BF Aug. 13

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT
ROUTE SLIP

| | |
|-----------------|----------------|
| TO H. C. Moster | FROM Ian Haugh |
| TO | FROM |

- | | | |
|--|--|--|
| <input type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |
| <input type="checkbox"/> Please draft reply for signature of MINISTER | | |

Date 76 08 09 Subject Lease Application
- T. J. Hall

Message

DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT

ROUTE SLIP

| | | | |
|----|------------------|------|----------------|
| TO | Mr. J. T. Cawley | FROM | Irma Kelm |
| TO | Dr. I. Haugh | FROM | Jas. T. Cawley |

- | | | |
|--|--|--|
| <input type="checkbox"/> For your approval or revision | <input type="checkbox"/> Reply direct with copy to me | <input type="checkbox"/> Please sign |
| <input type="checkbox"/> For your information | <input type="checkbox"/> Please supply data for my reply | <input type="checkbox"/> Please return |
| <input type="checkbox"/> Please take action | <input type="checkbox"/> Return with comments and/or recommendations | <input type="checkbox"/> Please see me |
| <input type="checkbox"/> Extracts of minutes for your information and action | <input type="checkbox"/> Investigate and report | <input type="checkbox"/> Please phone |

☒ Please draft reply for signature of **Minister.**

Date 76 08 03.

Subject

Lease Application

Message

T. J. Hall

C. L. Raper

MNR-A-94

Use reverse side if necessary

AUG 5 1976



July 30, 1976

Honorable Minister Mr. Sidney Green
Department of Mines, Resources and
Environmental Management,
Government of Manitoba,
Winnipeg, Manitoba.

Dear Sir:

Re: Lease Application
SE $\frac{1}{4}$, Section 30, Twp. 1, Rge. 25WPM

Omega Hydrocarbons Ltd., is the owner and operator of a waterflood scheme covering the W $\frac{1}{2}$, Sec. 30-1-25 and would like to acquire a Petroleum and Natural Gas Lease on the SE $\frac{1}{4}$, Sec. 30-1-25.

This parcel contains an abandoned well located on Lsd. 1-30. The well was completed and had been produced for a brief period, recovering some 2000 barrels of oil combined with formation water, following which it was abandoned in July, 1957, because of economic conditions.

It is proposed that the well be re-entered for the purpose of establishing production in the Tilson member of the Mississippian formation, which was the former producing horizon referred to above. This is the lower member of the Mississippian horizon and will not be effected by the waterflood.

Considering the limited economic prospects of the project we propose the following terms:

1. A primary lease term of ten years providing for an extension if held by production.
2. Annual rental of one (1) dollar per acre per year.
3. A work commitment as outlined above in lieu of a bonus payment.

..... 2



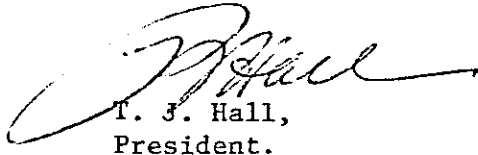
4. The standard royalty of 12½%, plus a 5% overriding royalty to Manitoba Minerals Ltd., to be effective after recovery of capital and operating expenses.
5. Designate this well as a new well for Mineral Tax purposes.
6. Allow Tilson produced water to be commingled and disposed into the water injection well in Lsd. 6-30.

If the above proposal is of interest to the government of Manitoba, Omega would be prepared to enter into a lease agreement along the lines described.

An early reply would be appreciated.

Yours very truly,

OMEGA HYDROCARBONS LTD.


T. J. Hall,
President.

TJH;jw

c.c. Mr. Albert Hoffman

cc. H.C. Mester

Province of Manitoba

inter-departmental memo

Dr. I. Haugh,
Assistant Deputy Minister
Mineral Resources Division

Date 76 08 11

From H. C. Moster,
Director
Petroleum Branch

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

~~SECRET~~

AUG 13 1976

ASSISTANT DEPUTY MINISTER

Re: Lease Application
SE¹₄-30-1-25 W.P.M.
Omega Hydrocarbons Ltd.

Attached is a memo to J. S. Roper dated May 28th, 1976 outlining general information pertaining to the subject area.

With respect to the recent application by Omega for a lease on the subject area the following comments are presented:

1. There is a good possibility the abandoned Imperial California Standard Hernfield 1-30-1-25 well can be successfully re-entered and made an economic Mississippian producer under the right conditions.
2. With Omega being the operator of the offsetting lease with existing field processing facilities, they would be the most likely party to be able to carry out such an operation economically (No need for additional battery costs or water handling and disposal facilities).
3. The estimated capitol cost of such re-entry would be approximately:

| | | |
|--------------------------------------|-----|-----------|
| Surface Lease, Survey, Lease Prep. = | \$ | 3,000. |
| Drilling Costs = | 5 - | 10,000. |
| Wellhead Equipment & Pipeline = | | 10,000. |
| | | \$20,000. |
4. It is expected the well could be re-worked (perforated and small acid job) to increase initial oil production to 10 to 20 B.O.P.D.
5. Depending on water compatibility, the produced water from 1-30 could be used in the waterflood project in Waskada Unit No. 1 (W¹₂-30-1-25).
6. The well would qualify to be classified as a "new well" under our Regulations (identical to Berry Pierson 5-15-3-29 re-entry) (i.e. - recovering oil which would otherwise not be re-covered).

(2)

7. The 5% overriding royalty after recovery of capital and operating costs to that date appears reasonable. Such holiday period would compensate for the risk taken by the company.

Note - The recipient of such overriding royalty (Dept. or M.M.R.) should insure such monies are earmarked for future PETROLEUM expenditures.

8. This 1-30 location is situated on the crest of one of the most pronounced structural highs in the area. The initial well was drilled to 4300 ft. or 347 ft. into the Duperow. This well would be an ideal candidate to be deepened to the base of the Devonian (Ashern) at approximately 5000 ft. to determine what is supporting the structure (is it a Winnipegosis reef or is structure the result of differential salt solution).

The additional work required to perform such a test would be to drill out the two lower cement plugs in the open hole section below the base of the production casing (at 3220 ft.) and drill the additional 700 ft. This would require a large rotary rig with adequate depth rating and is estimated it could cost in the neighbourhood of \$50,000. A brief inquiry to Omega as to its interest in such a test was that for the additional high capital cost and risk, without a large land play to protect it (approx. one township), they certainly could not justify such a prospect.

Note - A deep test in 9-13-1-26 (approx. 2 miles to the SSW) tested 240 ft. of gassy salt water on a DST of the Winnipegosis on the flank of a Devonian structural high.

9. Our present leases are for a primary term of 3 years plus a secondary term of 6 years, with 6 year renewals if held by production.
10. Lease rentals are 50¢/acre/year primary term, \$1.50/acre/year secondary term or 50¢/acre/year if producing or \$1.00/acre/year under renewal periods (not producing).

. . . 3

* Based on technical problems associated with conventional drilling at such depths inside such small casing (5½"), the risk and costs involved would not warrant forcing the deepening of this well under these circumstances.

HGM

(3)

11. As this land is Crown minerals it would be subject to normal Crown royalties, not Mineral Tax as referred to by Omega.

RECOMMENDATIONS:

That the attached draft letter be presented to the Minister which would indicate the Department's intent to issue a lease subject to the conditions listed.

A handwritten signature in cursive script, appearing to read 'H.C. Moster'.

H. C. Moster

HCM/cf
Attach.

76 05 28

J. S. Roper,
Policy Advisor,
Dept. of M., R. & L. H.

H. C. Moster,
Director,
Petroleum Branch.

General Information Pertaining to the SE $\frac{1}{4}$ -30-1-25 WPM

1. History of lease ownership and activity:

June 19/47 Tract part of G. & G. Reservation No. 4 held by The California Standard Company.

July 1/54 Lease # 623 was issued to California Standard Limited covering SE $\frac{1}{4}$ -30-1-25 WPM.

June 21/57 Lease # 623 reduced to 60 acres covering Lsd. 7 and 8 in Section 30 and new Lease # 1587 covering Lsd. 1 and 2 assigned to Imperial Oil Limited (1956).

July 3/62 Lease # 1587 was cancelled.

June 19/63 Lease # 623 was cancelled.

July 27/64 Lease # 2080 was issued to Bison Petroleum and Minerals Ltd. covering SE $\frac{1}{4}$ -30-1-25 WPM and SE $\frac{1}{4}$ -24-1-26 WPM.

Oct. 8/68 Bison Petroleum and Minerals Ltd. assigned all interest to Mid-Can Exploration Ltd. (under Document # 748-0).

July 27/73 Lease # 2080 (covering the same area) was renewed in the name of Mid-Can Exploration Ltd.

July 23/75 Mid-Can Exploration Ltd. assigned part of the Lease (SE $\frac{1}{4}$ -30-1-25 WPM) in the name of Troy Oils Ltd. (under Document # 927-0). *Troy acting on behalf of M.C.E. under Waskada Agreement.

Apr. 13/76 Troy Oils Ltd. cancelled their portion of the Lease (SE $\frac{1}{4}$ Section 30-1-25 WPM) (under Document # 76-3 effective April 13, 1976).

At Present Oil and Natural Gas Lease # 2080 consists of SE $\frac{1}{4}$ -24-1-26 WPM in the Name of Mid-Can Exploration Ltd.

SE $\frac{1}{4}$ -30-1-25 WPM is now NOT UNDER LEASE.

2. Details of well history on 1-30-1-25 HL.

- Well name — Imperial California Standard Kernfield 1-30-1-25 (License No. 1183).
- The well was spudded on July 10, 1956 and completed on August 1, 1956.
- Well was drilled by Imperial Oil Limited.
- Well details:

(a) The well was expected to produce from the Mississippian and Devonian Woodland Group (equivalent to Duperow Formation).

(b) The well was drilled 347 feet below top of Duperow formation (3,953') to total depth 4,300 feet.

(c) Took core 3,010' - 3,060' (50') in the Mississippian.

(d) Mississippian rocks were truncated by post Mississippian orogeny down to Mission Canyon No-1 beds. Top No-1 = 3,014' (-1,560'); K. B. = 1,550'; DST = 3,014' - 3,035'; recovered 300' oil (25" API), 300' salt water and 30' mud.

(e) Devonian formations were drill stem tested in Hisku formation, recovered 1,980' salt water. Drill stem test of Duperow recovered 270' salt water.

(f) Well was plugged back to 3,220' and perforated in the Mississippian No-1 beds at 3,013' - 3,017'; 4 shots one foot, and completed as Mississippian oil well. 5 1/2" casing set @ 3,220'.

(g) Production results —

Well on production: August 14, 1956
Production: Till November 1956
Cumulative oil produced: 2,290 barrels
Cumulative Water produced: 2,244 barrels
Days on production: 99 days
Well was suspended on November 1956 and abandoned by Imperial Oil on July 19, 1957
Initial production: 1.0 barrel/day
B.S. & W. 28%, 32.2" API, 6 day test

(h) Present status: Abandoned oil well

PRODUCTION HISTORY

| <u>1956</u> | <u>Days</u> | <u>Oil</u> <u>Prod.</u> | <u>Daily</u> | <u>Water</u> <u>Prod.</u> | <u>Daily</u> | <u>Oil</u> <u>4</u> | <u>Water</u> <u>1</u> |
|-------------|-------------|----------------------------|--------------|------------------------------|--------------|---------------------|-----------------------|
| Aug. | 18 | 543 | 30.1 | 199 | 11.0 | 73 | 27 |
| Sept. | 30 | 759 | 25.3 | 684 | 22.8 | 53 | 47 |
| Oct. | 31 | 679 | 21.9 | 694 | 22.3 | 50 | 50 |
| Nov. | 20 | 237 | 11.8 | 667 | 33.3 | 26 | 74 |

(Abandonment application stated production dropped to 6 BOFD with 20 BWPL or 77% water cut.)

3. Assessment of Petroleum Potential of SE $\frac{1}{4}$

Well 1-30-1-25 WPM was drilled in 1956 on the crest of a seismic structure high mapped on top of the Devonian System. This anomaly, as shown on the attached map, occupies the area cornered by Sections 19, 20, 29 and 30 Twp. 1, Rge. 20 WPM.

Top of Devonian System, being the first mappable horizon not affected by the post Mississippian orogenic movement, is taken to represent the true structural configuration in the area.

As shown from the production history table, the well was abandoned at a daily oil production of approximately 6 - 12 barrels/day. This production rate at that time was quite low (in 1956) compared to then discovered fields, Daly and North Virden Scallion. The casing was left in the hole but cut off 3 feet below ground level, Baker cast iron bridge plug set at 3,000' K. B., ran 5 sacks cement surface plug and welded on steel plates.

As shown by electric log interpretation, the top of Mississippian Mc-1 beds is at 3,010'. There are 3 feet of dense (3,010 - 3,013) non-porous section, the well was perforated at 3,013' - 3,017'. Porosity of this section is calculated to be about 4%. Oil-water contact is interpreted at 3,020'. Porosity in the water section increases to 12%.

Oil production was from a 7' section, perforated in the top 4', with a porosity of 4%.

As it appears from the seismic map that 1-30 was drilled on the highest location on the structure, where there are only 6' of carbonate section with 4% porosity. This fact does not encourage any further activity in the SE quarter of Section 20 Twp. 1, Rge. 20 WPM.

There was no further drilling in SE $\frac{1}{4}$ -30 for the twenty years following the drilling of 1-30 in 1956. The Luskada field wells were drilled in 1967, but they are producing from completely different beds (Mc-3b).

Conclusion

The zone Mo-1 production in the 1-30 well will be wet to the southwest due to the downdip in that direction while the zone of Mo-3 production in the Maskada Field will be eroded (truncated) to the east.

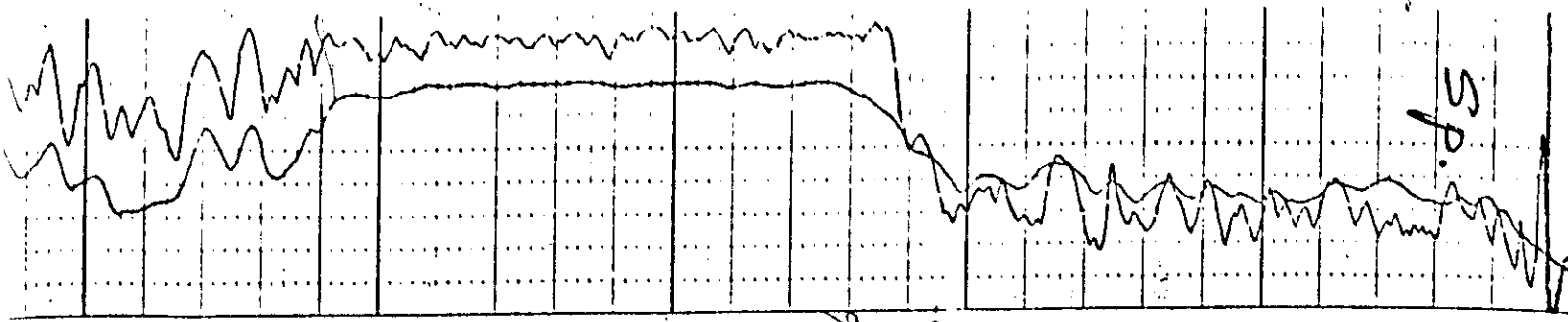
Therefore, no further drilling is recommended in SE₄ Section 30-1-2, NPH.

There is the possibility of 1 - 2 marginal wells in the SE₄-29-1-25 but such small accumulation would not warrant drilling.

HGM

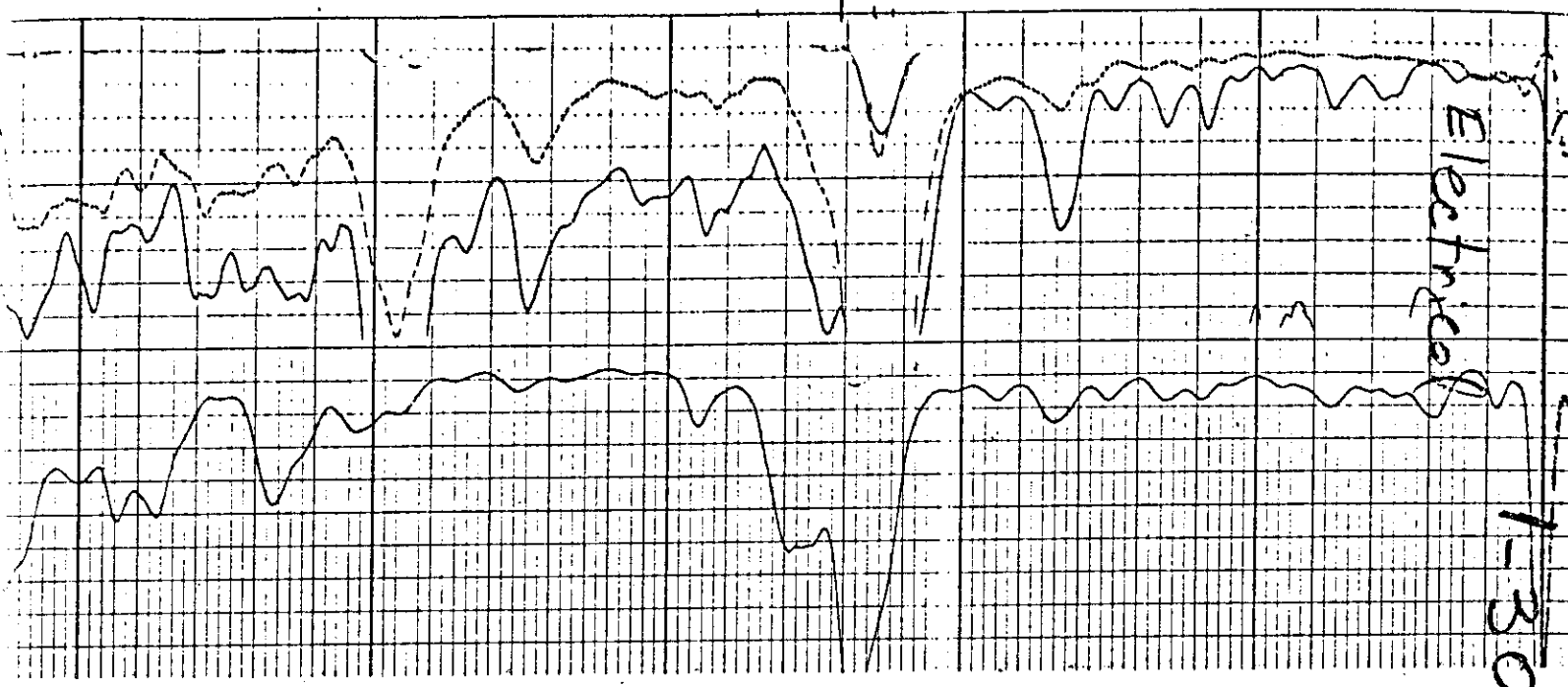
H. G. Moser

HG/HGM/et
Attachs.



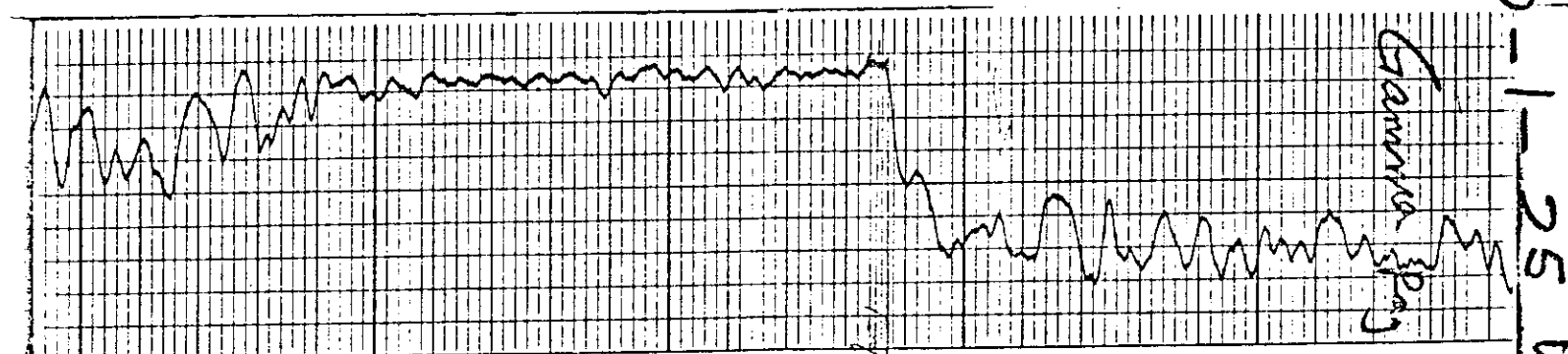
3000
3100

Sp.



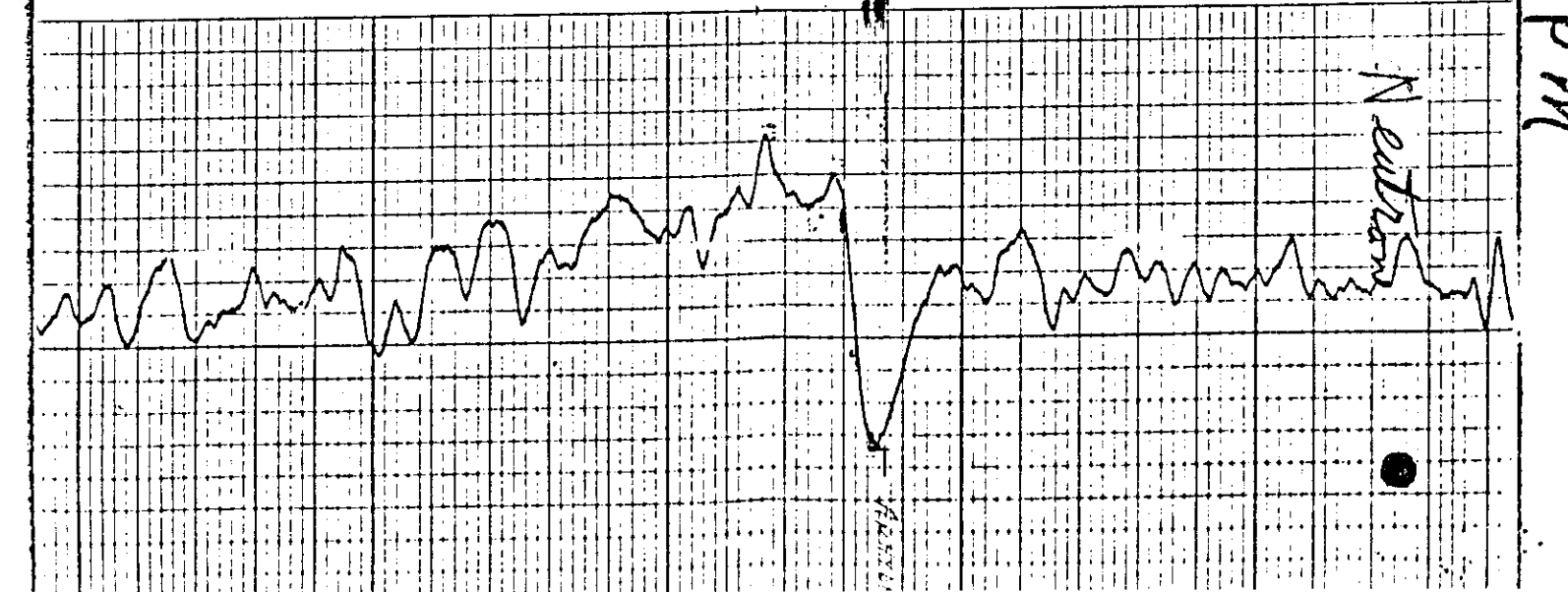
Electrical

1-30-1-25 WPM



Gamma Ray

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3100



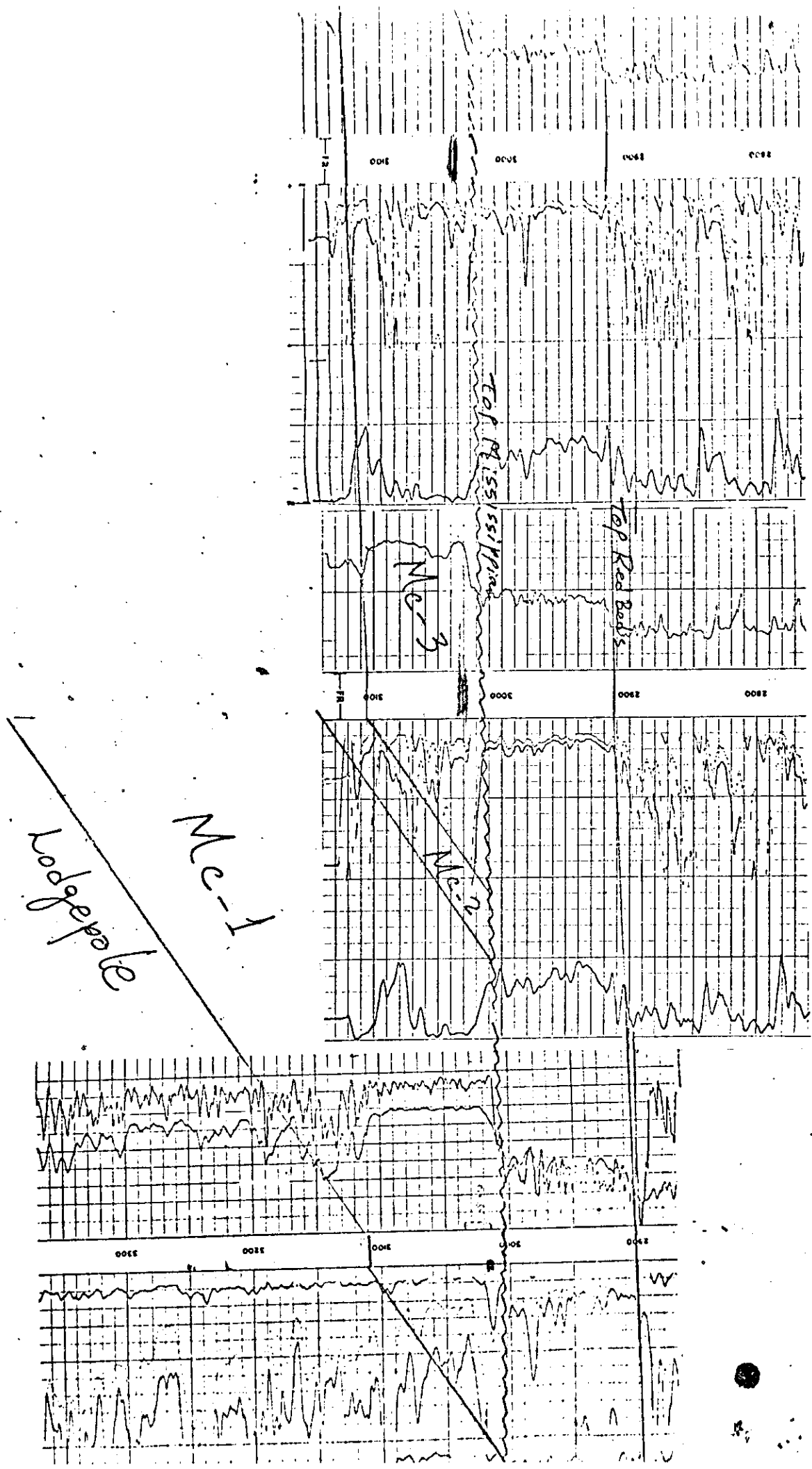
Neutrons

4-30-1-25 W1

3-30-1-25 W1

1-30-1-25 W1 PM

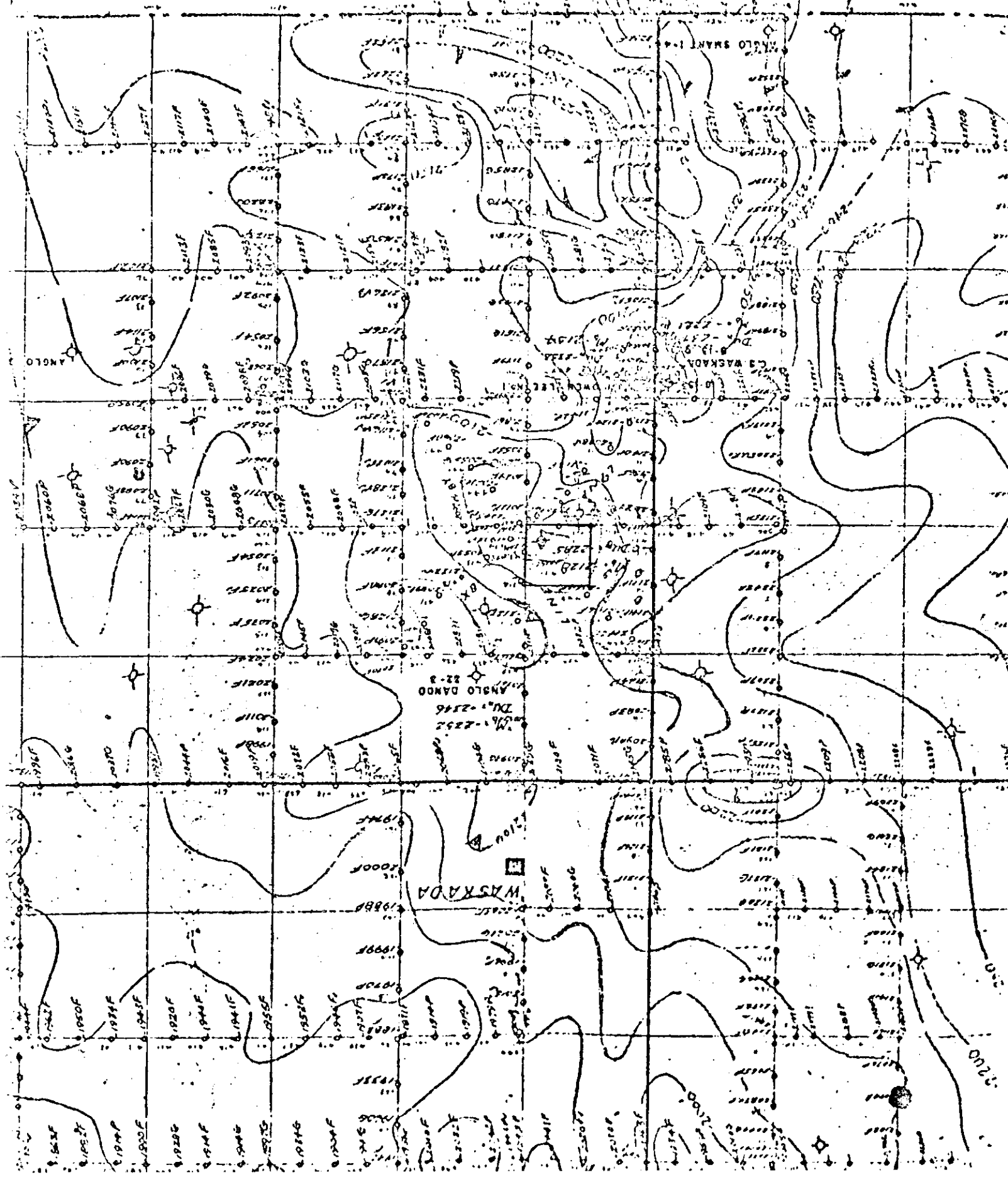
Structural Cross Section



U.S. R. 78W

Twp. 1 Rge. 23

SEISMIC STRUCTURE CONTOUR MAP ON TOP OF DEVONIAN





Province of Manitoba
Department of Mines, Resources and Environmental Management
Mineral Resources Division

Petroleum Branch
993 Century Street
Winnipeg, Manitoba
R3H 0W4

March 30, 1976

Omega Hydrocarbons Ltd.,
574 - 330 Fifth Avenue S.W.,
Calgary, Alberta.
T2P 0L4

Attention: Mr. T. Jack Hall,
President

Department of Mines, Resources
& Environmental Management
Mineral Resources Division

JAK MAR 29 1976

ASSISTANT DEPUTY MINISTER

Dear Sir:

Re: Temporary Approval for Water Injection
Omega Waskada 6-30-1-25 WPM

At the Oil and Natural Gas Board hearing March 12th you stated that the Waskada reservoir was severely underpressured and you requested commencement of repressuring by water injection as soon as possible. Therefore, in the best interests of conservation and good oil field practice, the Board not having received any official objections to your proposal has instructed me to advise you that you may initiate injection of water into the Mission Canyon formation through Omega Waskada 6-30-1-25 on April 1st, 1976. An official Board confirmation will be forwarded shortly.

Please contact our Virden office prior to commencement of injection operations.

Yours sincerely,

H. C. Moster

H. C. Moster, P. Eng.,
Director, Petroleum Branch

HCM/cf

c.c. The Oil and Natural Gas
Conservation Board,
c.c. Virden Office

W. J. ...

Province of Manitoba

inter-departmental memo

To

The Oil and Natural Gas
Conservation Board:
Jas. T. Cawley, P. Eng., Chairman
J. S. Roper, Deputy Chairman
✓ I. Haugh, Member

Date 76 01 29

From H. C. Moster
Director
Petroleum Branch

~~Subject~~Subject:

Unitization and Pilot Waterflood Application
Omega Hydrocarbons Ltd.
Waskada Field

Background:

The Waskada Field is located approximately 55 - 60 miles south of Virden and 4 miles north of the Canada - U.S. border. It was discovered in 1967 and to date contains 10 oil wells (Presently 7 producing and 3 suspended wells). The field produces light gravity crude (37 API) from the Mississippian Mission Canyon (MC-3b) formation. No water has been produced from the 6 Northern wells, whereas small amounts of water have been produced from the 4 southern wells. Attachment 1 shows the layout of the wells, their ownership, the portion of the field proposed for unitization and the initial proposed injection well for the pilot waterflood.

The initial pressure of the pool was 1,358 psi (original pressure on the discovery well 11-30-1-25). The present pressure within the pool, or at least in the northern portion, is very low (approximately 50 psi). The estimated bubble point pressure is 1,535 psig indicating that since discovery, the pool has always been saturated and possibly has a small gas cap. The following are reserve estimates:

| | Total Area | | Proposed Unitized Area | |
|---|-------------|-----------|------------------------|-----------|
| | D & S Study | Branch | Omega | Branch |
| Original Oil-in-Place (bbl.) | 2,876,000 | 2,786,000 | 1,597,000 | 1,974,000 |
| Cum. Prod. (Dec. 1/75) (bbl.) | 502,422 | 502,422 | 325,311 | 325,311 |
| Recovery to Dec. 1/75 (%) | 17.5 | 18.0 | 20.4 | 16.5 |
| Primary Recoverable (bbl.) | 719,000 | 985,500 | 399,250 | 664,500 |
| Primary Recovery Factor (%) | 25 | 35 | 25 | 33.7 |
| Total Recoverable (Prim. & Waterflood) (bbl.) | 1,438,000 | 1,504,000 | 798,500 | 1,085,000 |
| Total Recovery Factor (%) | 50 | 54 | 50 | 55 |

Discussion:

A. Factors pertaining to the unitization application:

1. Omega in a letter dated October 6, 1975 submitted a draft of a proposed Unitization Agreement for comments as to its acceptability. Because Omega is the only working interest owner in the proposed unitization area, it presented an agreement which did not provide for the normal operating provisions of the plans presently in effect in Manitoba (i.e. excluding organization of the operating committee, powers and duties of unit operator, individual rights and privileges of working interest owners). The Agreement was modelled after the standard model agreement presently used in Alberta. The proposed Agreement was reviewed and suggestions (approved by J. S. Roper) were made to Omega with respect to changes which would provide similar Board controls on operations under this Agreement as are presently contained in existing unitization agreements in Manitoba.

Omega amended the proposed Agreement as suggested by the Branch and submitted the amended agreement entitled "Unit Agreement - Waskada Unit No. 1 Manitoba, Canada" as an application on December 11, 1975. A review of this final draft Agreement has indicated the following changes are required:

(a) The title under Article VIII on Page 12 should read "USE, LOSS AND REINJECTION OF UNITIZED SUBSTANCES".

(b) The heading for 801. on Pg. 12 should read "Use or Loss".

(c) In Exhibit "A" of the Agreement the applicant has divided the proposed unit area into 2 multiwell tracts with a tract participation factor for each tract (not each well). The basis for this is the common royalty ownership in each tract. Because of the method of calculating provincial "Mineral Tax" (on production from or allocated to individual wells), it is required that the tract participation factors for the two (2) wells on freehold minerals be shown individually (namely 11-30 and 12-30). To allow for future similar problems on other wells in or to be included in the Unit, it is suggested that this requirement be placed on all wells (i.e. - single well tracts only).

(d) Exhibit "C" should also indicate the following "Omega Waskada 4-30-1-25 (WPM) - K. B. 1552.4".

2. The method of calculating Interim tract participation factors has required clarification and is presently being checked by the Branch.

3. The Mines Act [Section 74(2)] allows for voluntary unitization without a Board hearing or unitization order (unitization agreement requires Board approval). This alternative is not recommended as it provides little Board control once initiated.

4. This unitization application is for only a portion of the Waskada Field. We believe the D & S Study conducted in 1974 covering the whole pool was jointly financed by both Omega and Copperhead. The overall recommendation of the study was "that the pool should be waterflooded as soon as possible". The application states that Omega "have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood". A major factor therefore in this application is to whether the Board should attempt to exercise its power under Section 76 and 77 of The Mines Act with respect to holding a hearing upon its own motion to consider the advisability or necessity for the operation of a part of a pool or field as a unit (namely the southern 4 wells). Section 77 requires the Board to have consent from 75% of both the working interest owners and the royalty owners before a unitization order may be made. As the present application only covers 6 of 10 wells or 60%, the above requirement would not be met. As the flood is only a pilot at this time, the Board if desirable could act under Section 79(3) at some future date to force enlargement of the new unit.

Copperhead's reasons for not wishing to be part of the unitization and waterflood at this time are not presently known. However, a letter has been sent to Copperhead, dated January 23, 1976, requesting them to state the reasons behind their decision not to participate in this project. It is believed that Copperhead's refusal is mainly due to economic reasons (Attached hereto is a copy of a letter dated January 21, 1976 from Copperhead with respect to other concerns the Branch has with the company). At present there is no royalty or mineral tax reduction on additional production due to secondary recovery. This may be the point on which Copperhead would attempt to justify its not entering the project at this time. Omega has stated verbally that it has considered, and may make, a request for such treatment, but is proceeding with its application, mainly due to the fact that 4 of its 6 wells are situated on Federal minerals and therefore only subject to a straight 12½% royalty. These 4 wells therefore are not affected by neither the provincial Crown incremental royalty nor the freehold mineral tax. The difference between Federal royalty rates and total freehold royalty and mineral tax rates in Manitoba can amount to as much as an additional 31.65% (off the top) at production rates over 25 BOPD. The maximum provincial crown royalty is 44.2%. Production from freehold minerals is subject to a similar maximum reduction at production rates over 25 BOPD.

The proposed Unitization Agreement provides for enlargement at a future date.

A list of questions regarding the unitization application shall be prepared prior to the hearing.

B. Factors pertaining to the pilot waterflood application:

The immediate need for commencement of a waterflood scheme in this pool is supported by the extremely low apparent pressure in the reservoir. The reservoir should respond favourably under waterflood with the major potential problem being the free gas saturation expected in the reservoir due to the major pressure drop below the saturation point.

No reasons are evident at this time as to why a pilot waterflood should not be approved.

The D & S Study did not indicate that there was no need for a flood in the southern portion of the pool. An enlargement of the waterflood project to cover the entire pool will be dependent on the results of the proposed pilot. The power given to the Board under Section 62(9)(d) of The Mines Act could be exercised, if required at some future date, once the initial pilot's results are known. The pressure maintenance order covering the pilot could contain a condition requiring a pool wide waterflood scheme be implemented at a future date if in the Board's opinion it was warranted.

The proposed pilot injector is one of the wells proposed by the D & S Study as an injector under a 5 spot pattern. This location appears suitable with respect to this application (an Omega pilot waterflood) and should not create any lease line migration out of the proposed unitized area.

The Branch is continuing to receive and process additional data from the Applicant on the technical items relevant to the application.

A comprehensive list of questions regarding the pilot waterflood shall be compiled for the hearing.

Recommendation:

It is recommended that this dual application be heard at a public hearing.

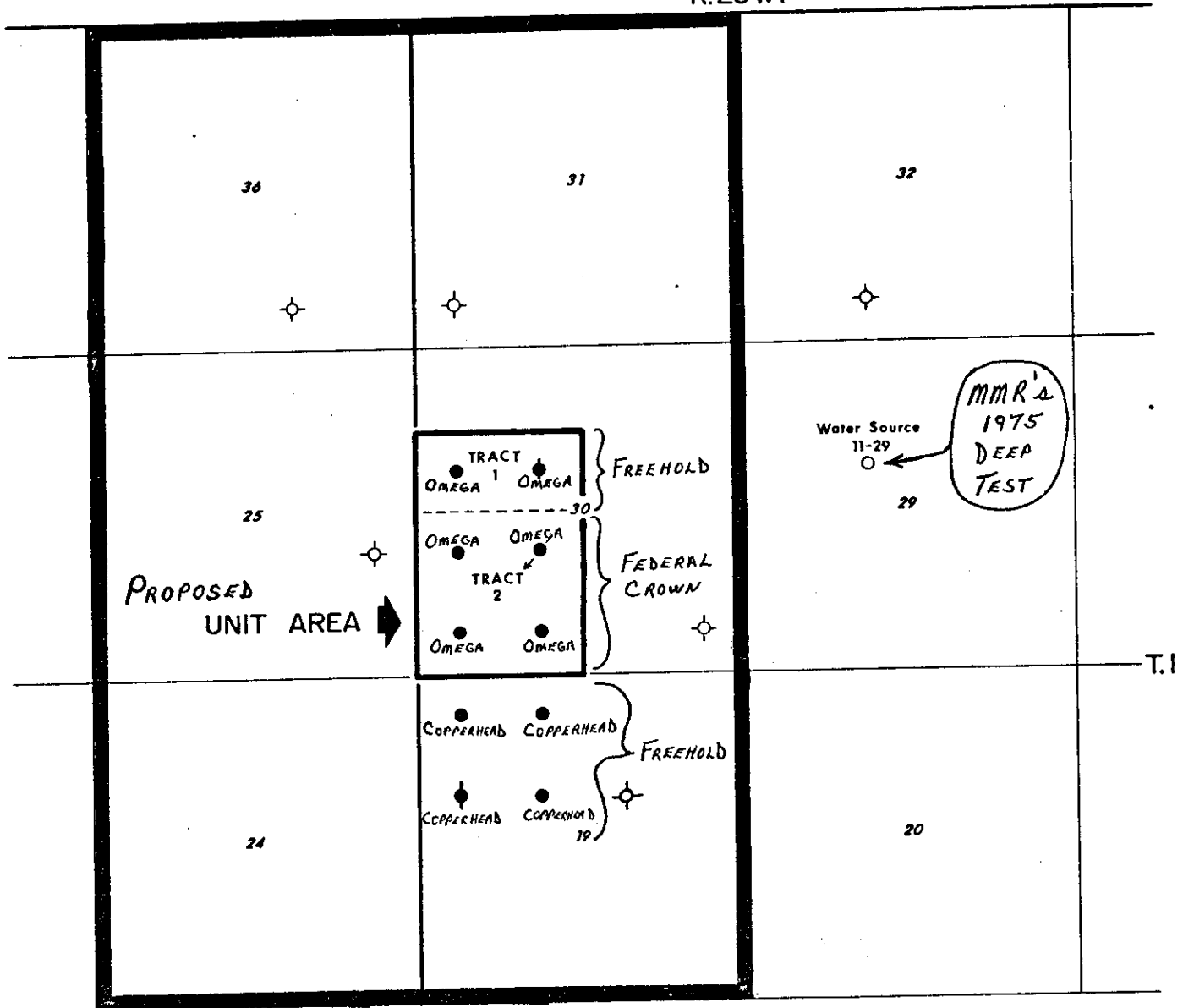


H. C. Moster

EXHIBIT "B"

ATTACHED TO AND MADE PART OF AN AGREEMENT ENTITLED
" UNIT AGREEMENT - WASKADA UNIT No. 1 "

R.25W1



WASKADA
FIELD BOUNDARY

WASKADA UNIT NO. 1

LEGEND

- PROPOSED INJECTION WELL
- WATER SOURCE WELL
- PRODUCING OIL WELLS
- ⊙ ABANDONED

SCALE: 2" = 1 MILE

DATE: DEC. 1975

Copperhead Oil Company Limited

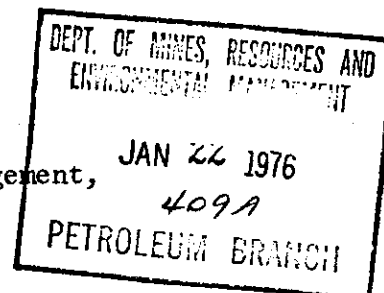
P. O. BOX 1027
415 SEVENTH AVENUE SOUTH
VIRIDEN, MANITOBA
R0M 2C0

OFFICE OF
THE PRESIDENT

TEL: 204 - 748-2624

January 21st, 1976

Petroleum Branch,
Dept. of Mines, Resources and Environmental Management,
993 Century Street,
Winnipeg, Manitoba



Attention: H. C. Moster, P.Eng.

Dear Sir:

RE: Suspended Well Operations

We enclose herewith applications to
suspend production as per your letter of December 18, 1975 with
respect to the following:

| | | |
|----------------------|-------------|---|
| Copperhead - Tilston | #9-31-5-29 | / |
| " | #10-31-5-29 | / |
| " | #11-31-5-29 | / |
| " | #15-31-5-29 | / |
| Copperhead-So.Regent | #6-7-4-21 | / |
| Copperhead-Waskada | #12-19-1-25 | / |

The Tilston wells have not been
producing for some time and for reasons given. It is hoped that,
as our Company's economic position improves, these wells will again
be placed on production by methods and with equipment that will be
less costly than the methods used to date, and it is for this reason
that we do not wish to permanently abandon the wells. Also, with the
high cost of abandonment, at least \$3000.00 for each well, our company
cannot afford to abandon the wells at this time.

The South-Regent well can only be produced
during the summer months, due to the lack of natural gas required for
treating purposes, and to overcome severe freezing conditions.

The Waskada well, although it cannot
produce on a commercial basis, due to the problem and cost of disposing
of the salt water, might be able to produce when a disposal facility
becomes available in the immediate area. Another possibility would be
to convert this #12-19-1-25 well in to a disposal well to accommodate
our own water production if this situation should arise as time goes on.

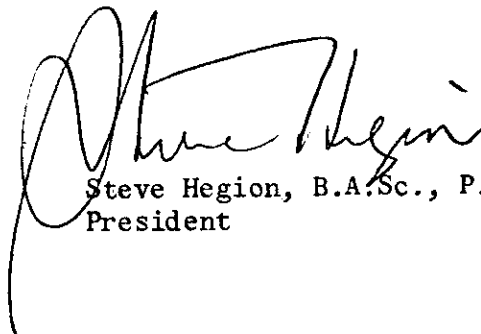
continued..

With regard to the South-Regent #7-7-4-21 well, we propose to abandon this well as soon as our economic position permits, and an application to abandon will be submitted, hopefully, before October 1, 1976.

We trust the foregoing will meet your requirements.

Very truly yours,

COPPERHEAD OIL COMPANY LIMITED

A handwritten signature in dark ink, appearing to read "Steve Hegion". The signature is fluid and cursive, with a large initial "S" and "H".

Steve Hegion, B.A.Sc., P.Eng.,
President

SH/G
encl.

(Proposed Questions for Hearing)

Omega Hydrocarbons Ltd.

Waskada Field

Pilot Waterflood & Unitization Application

PILOT WATERFLOOD APPLICATION

"Exhibit No. 1 - Unit Proposal & Waterflood Plan"

JSR — 1. The five typographical errors in Exhibit No. 1 have been corrected in accordance with your letter dated February 17, 1976. They are:

- (1) Table of Contents
Delete the word "Discussion" and add the word "Introduction".
- (2) Page 4, line 2 - Water Injection Facilities
Delete the Words "Figure No. 5" and add "Figure No. 3".
- (3) Page 4 the third last line after the word production
Add "(438 barrels)" including brackets.
- (4). Page 5 - Second last line of the second paragraph
After the words - A typical - delete the word "well"
and add the word "water".
- (5) Page 6 - line number 7
Add the word "Initially" to the sentence so as to read
"Initially, the only change anticipated"

Are there any further corrections the Applicant wishes to make to this or the other exhibits at this time?

JSR — 2. On Page 1 (Exhibit No. 1) the Applicant has stated that both Copperhead Oil Company Limited and Whistler Petroleum Ltd. were requested to subscribed to the D & S study (Exhibit No. 2) and organize a Steering Committee. Could the Applicant please explain what interest Whistler Petroleum Ltd. has in the Waskada Field? (none known to Petroleum Branch, four southern wells owned/operated by Copperhead).

*25% int in
Copperhead wells*

JSR — 3. On Page 2 (Exhibit No. 1) under Interim Period. Should the description of Interim Period in the last line also include the phrase "but no later than Sept. 1, 1977" as is stated in the proposed Unit Agreement (Exhibit No. 5, Section 601)

yes

JSR — 4. On Page 5 (Exhibit No. 1), line 4, the applicant has stated the "injection rates indicated that the well (6-30-1-25) would accept water in the range of 1,000 barrels per day with zero wellhead pressure." On what basis is this statement predicated? (our records for Oct./75 indicate the well took a feed rate of 1 bbl./min. (1,440 bbl./day) under 1000 psi. pressure and 1/4 bbl./min. (360 bbl./day) under 0 psi pressure).

- JSR — 5. What are the initial and final expected wellhead injection pressures for 6-30 and the corresponding injection rates?
- JSR — 6. What steps are going to be taken to insure proper measurement of injected water (volumes and pressures)?
- JSR — 7. What safety features will the injection system contain to prevent pollution (SW spills)?
- JSR — 8. Has the applicant carried out, or have plans to carry out, compatibility tests between the source water (Blairmore Formation - Lower Cretaceous) and the produced water (Mission Canyon - Mississippian)?
- JSR — 9. What is the expected "fill-up" time?
- JSR — 10. At what injection rates? (Volumes and pressures)
- JSR — 11. Explain measures to be used to prevent corrosion problems?
- JSR — 12. Does the Applicant expect the production capacity of any of the wells to exceed the Field allowable (60 BOPD)?
- JSR — 13. What is the handling capacity of the proposed Unit battery facilities?
- JSR — 14. What steps does the Applicant propose to take to monitor the response of the pilot waterflood with respect to:
- (1) injection profiles and waterflood fronts
 - (2) reservoir pressures
 - (3) water breakthrough

"Exhibit No. 2 - Waterflood Potential - D & S Consultants"

- IH — 1. What is the Applicant's feeling as to whether or not a "small gas cap" was present initially in the pool?
- IH — 2. What was the initial pressure of the pool? (1358 psi.)
- IH — 3. What is the present pressure of the pool? (50 psi.)
- IH — 4. Is this low pressure representative of the entire pool? (southern area)
- IH — 5. What is the producing drive in the pool?
- IH — 6. Are the ten oil wells producing from the same pool? (MC-3b)
- IH — 7. Is there any evidence of an active aquifer?
- IH — 8. What, if any, is the response of such natural aquifer?

- IH — 9. Under Geology on Page 4 (D & S) it states "The pay zone is impermeable to the west due to a facies change." Is it not true that the beds dip to the west and are water wet (porous), not impermeable as stated?
- JSR — 10. Why was pressure maintenance not studied years ago?
- JSR — 11. Have reserves been lost due to the pressure being permitted to drop so low?
- JSR — 12. Does the Applicant anticipate having to repressure the entire pool (10 wells) before response is felt in the northern area (6 wells)? If not, why? (same pool)
- JSR — 13. Will the southern area of the pool feel any response (pressure) from the pilot waterflood?
- JSR — 14. What is the present gas saturation in the pool? (D & S estimate slightly less than 30 percent)
- JSR — 15. What are the anticipated problems such gas saturation may have on the success of the waterflood?
- JSR — 16. By what mechanism shall the free gas saturation be reduced? (2nd paragraph, Page 6, D & S) (re-dissolved or produced)
- JTC — 17. Was there a significant reduction in the initially expected costs of the scheme when the need to drill a water source well (Page 7) was precluded with takeover of the 11-29 well from Manitoba Mineral Resources Ltd.?
- JTC — 18. If the pilot waterflood proves successful, what will be the next steps? (enlarged waterflood)
- JTC — 19. Will Omega continue the expansion of the waterflood without the inclusion of the 4 southern wells (Copperheads) in the program?
- JTC — 20. Has Omega plans to drill on 13-30 as per the recommendation of the D & S study?
- JTC — 21. How well are the pool's limits delineated?
- JTC — 22. If the pilot fails have you any alternative plans with respect to enhanced recovery?
- JTC — 23. Due to the present low pressure in the pool does the Applicant feel that a complete waterflood scheme for the entire pool might be the proper step at this time? (if not, why).
- JTC — 24. Does the Applicant have any knowledge of why the southern portion of the pool does not also require water flooding at this time?

- JTC — 25. Is the Applicant aware of Copperhead's reasons for not joining the scheme at this time?
- JTC — 26. What are the estimated remaining primary and ultimate recoverable reserves for the Omega portion of the pool with and without water-flooding? (167,480 bbl. and 803,600 bbl.)
- JTC — 27. Has the recent gas production measurements revealed anything new with regards to the reservoir?

"Exhibit No. 5 - Unit Agreement - Waskada"

Amendments Required:

- JSR — 1. Should the title under Article VIII on Page 12 read "Use, Loss and Reinjection of Unitized Substances" instead of "Use, Loss and Storage of Unitized Substances".
- JSR — 2. Should not the heading of 801 on Page 12 read "Use or Loss" instead of "Use of Loss".
- JSR — 3. The present mechanism for calculating Freehold mineral tax in Manitoba requires the actual production from, or allocated to, individual wells. For this reason it is required that an amended Exhibit "A" be filed that indicates tract participation factors for individual wells. (Such values can be easily calculated from the data on Table 1 and 2 of Exhibit No. 1).
- JSR — 4. Exhibit "C" requires identification as to the well it represents. (Omega Waskada 4-30-1-25 (WPM), KB = 1552.4').
- JSR — 5. Request that an additional clause (1505) be added which would read as follows:

"1505 All operations conducted under this agreement shall conform to all applicable statutes, regulations and other legislation in effect at that time."

(This will clarify the operator's powers under such sections as 401).

Questions:

- JSR — 1. (a) Could the Applicant please explain or clarify the meaning or intent of Section 502(b) on Page 7? (who has final decision?, the Board under Section 1312?)
- (b) Similar for Section 901?

JSR — 2. Under 601(a) on Page 9 it states that in the determination of the Interim Tract Participation for a tract an adjustment for "down time" was made.

(a) What is meant by, or the definition of, "down time"?

(b) Does "mechanical down time" include circumstances of nature such as spring flooding?

(c) Do operations such down due to government road ban restrictions fall under "down time"?

(d) What all are included under "mechanical down time"?

JSR — 3. Would the Applicant please explain how and why the "Correction for down time" values indicated on Table to Exhibit No. 1 were determined? (what caused down time?, how correction derived?, validity?) (see attached Table A and xeroxed production cards)

JSR — 4. Why was no "down time" correction made for:

(a) 6-30-1-25, 6 month period (March - August 1975)?

(b) 11-30-1-25, 6 month period (March - August, 1975)?

JSR — 5. For the well 12-30-1-25 would not a correction of "400 barrels" (May, June 2/3 July 1975) been more appropriate than the "250 barrels" given?

IH — 6. In determining the Final Tract Participations for tracts it appears that a constant 50% ultimate recovery factor was used. Is this correct?

IH — 7. If so does the Applicant believe that using such a constant recovery factor for all tracts, irregardless of individual tract reservoir parameters (pay thicknesses, porosities, permeabilities, etc.) is appropriate?

JTC — 8. In Exhibit No. 4 to your application you have stated that you "have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood".

(a) What steps did Omega take to "persuade" Copperhead?

(b) What was Copperhead's reaction?

(c) Do Copperhead own 3 wells, or 4 wells in the south end of the pool? (4 according to Branch)

JTC — 9. What would be Omega's opinion of the Board requesting Copperhead to join the proposed unit at this time opposed to some future date? (appears Board could not order Copperhead to join now due to Section 77(a) of The Mines Act, but could do so at future date under Section 79(3) of The Mines Act)

TABLE "A"

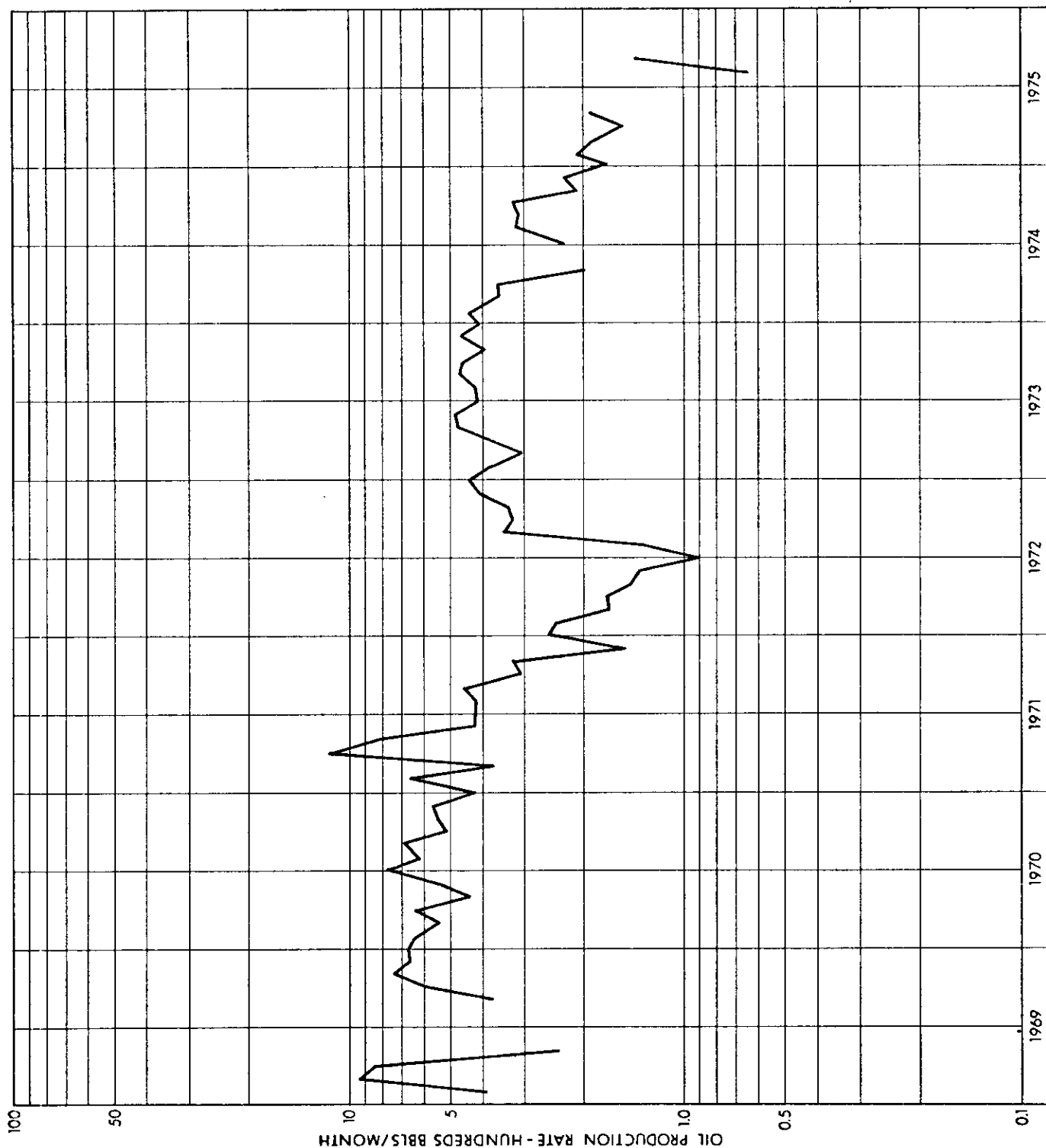
INTERIM TRACT PARTICIPATION CALCULATIONS
(using "down time" corrections)

| Well | Omega (Applicant) | | | Petroleum Branch Staff | | |
|-------|--------------------------------------|--------------------|----------------------------|--------------------------------------|----------------------------|--|
| | Down Time Correction (barrels) | Period | Reason | Down Time Correction (barrels) | Period | Reason |
| 3-30 | 650 | May and June/75 | Spring flooding | 650 | (same) | Is "spring flooding" mechanical! |
| 4-30 | (No correction) | | | (agreed) | | |
| 5-30 | (No correction) | | | (agreed) | | |
| 6-30 | 150 | Jan./75 | Gas locking | 150 | Jan./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 11-30 | 75 | Sept./74 | Down hole pump problems | 75 | Sept./75 Mar. - Aug./75 | Mechanical (OK) Why no correction? |
| 12-30 | 250 | May and June/75 | Spring flooding | 400 | May, June, 2/3 July/75 | "Spring flooding"? |

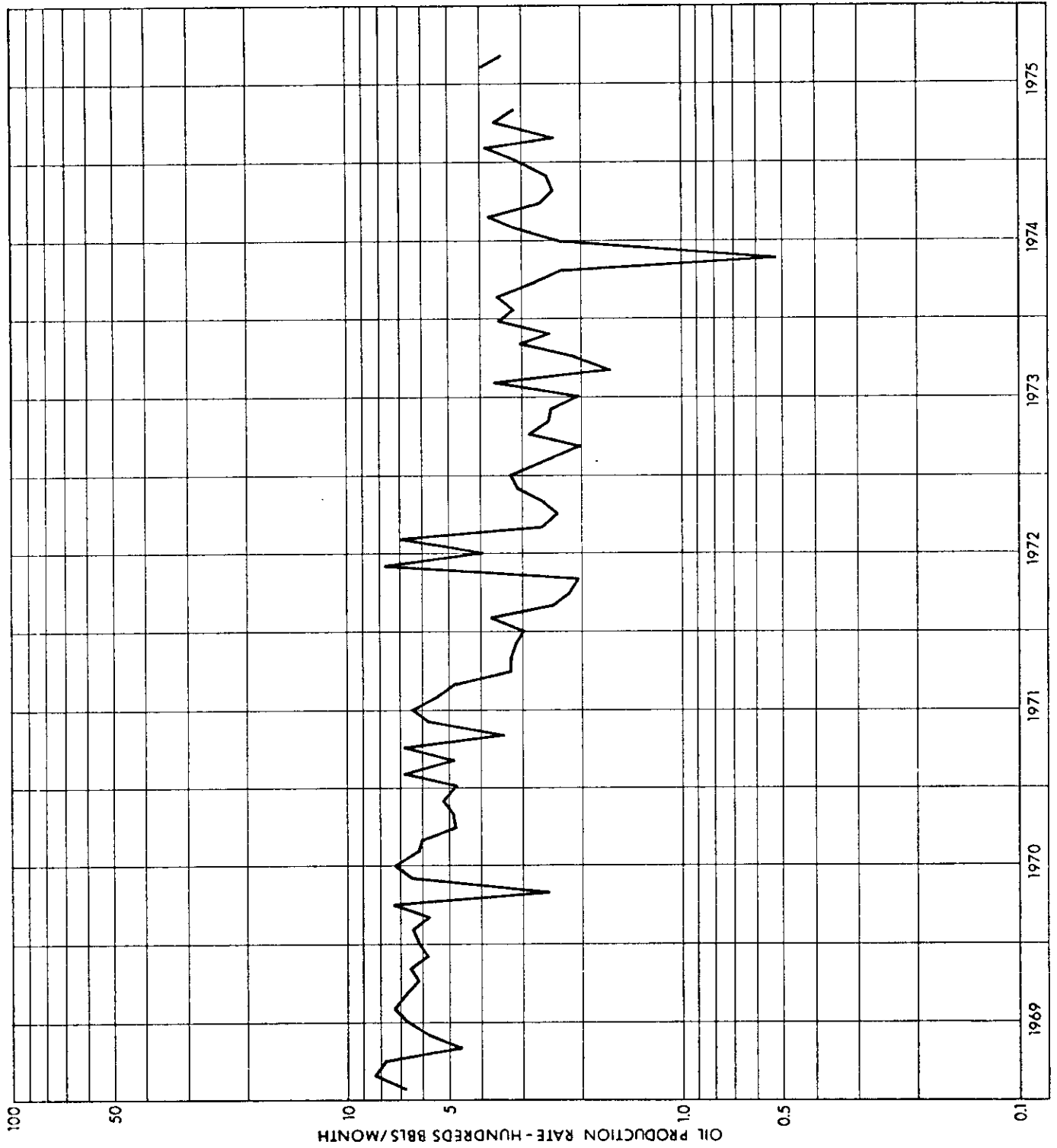
EXHIBIT No. 3

WASKADA POOL
WELL PRODUCTION PERFORMANCE

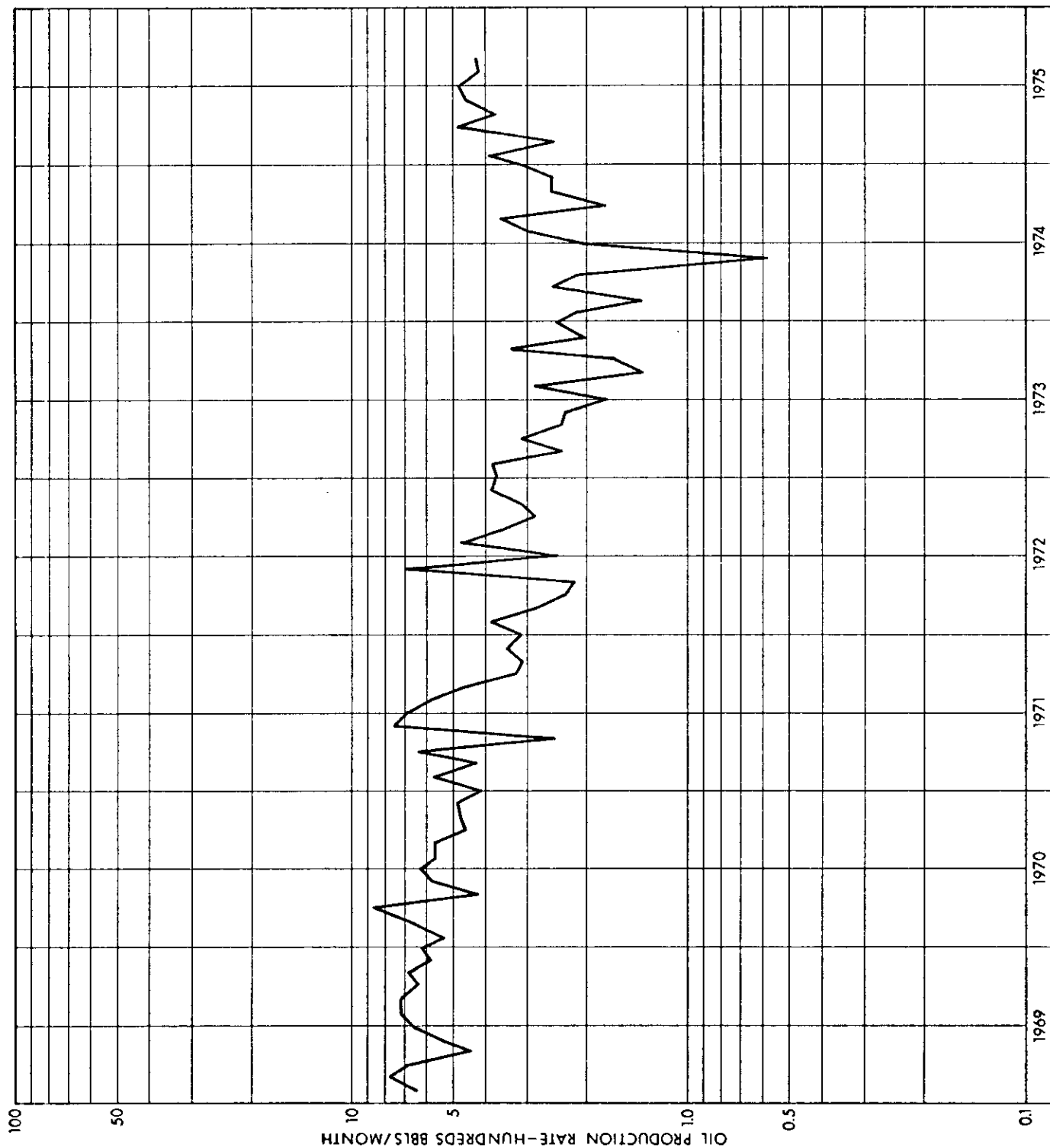
12-30-1-25WPM
PRODUCTION HISTORY
WASKADA



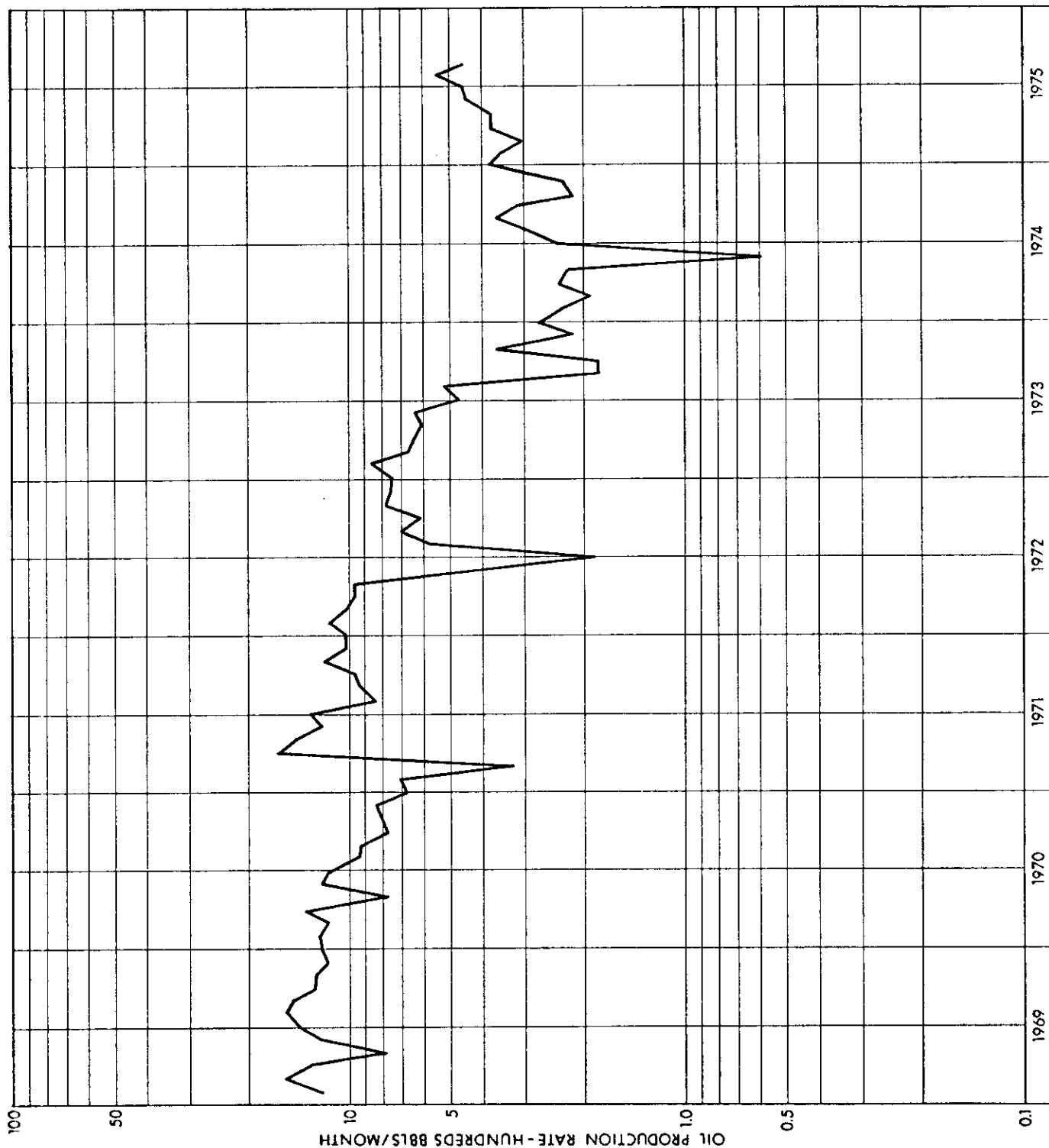
3-30-1-25WPM
PRODUCTION HISTORY
WASKADA



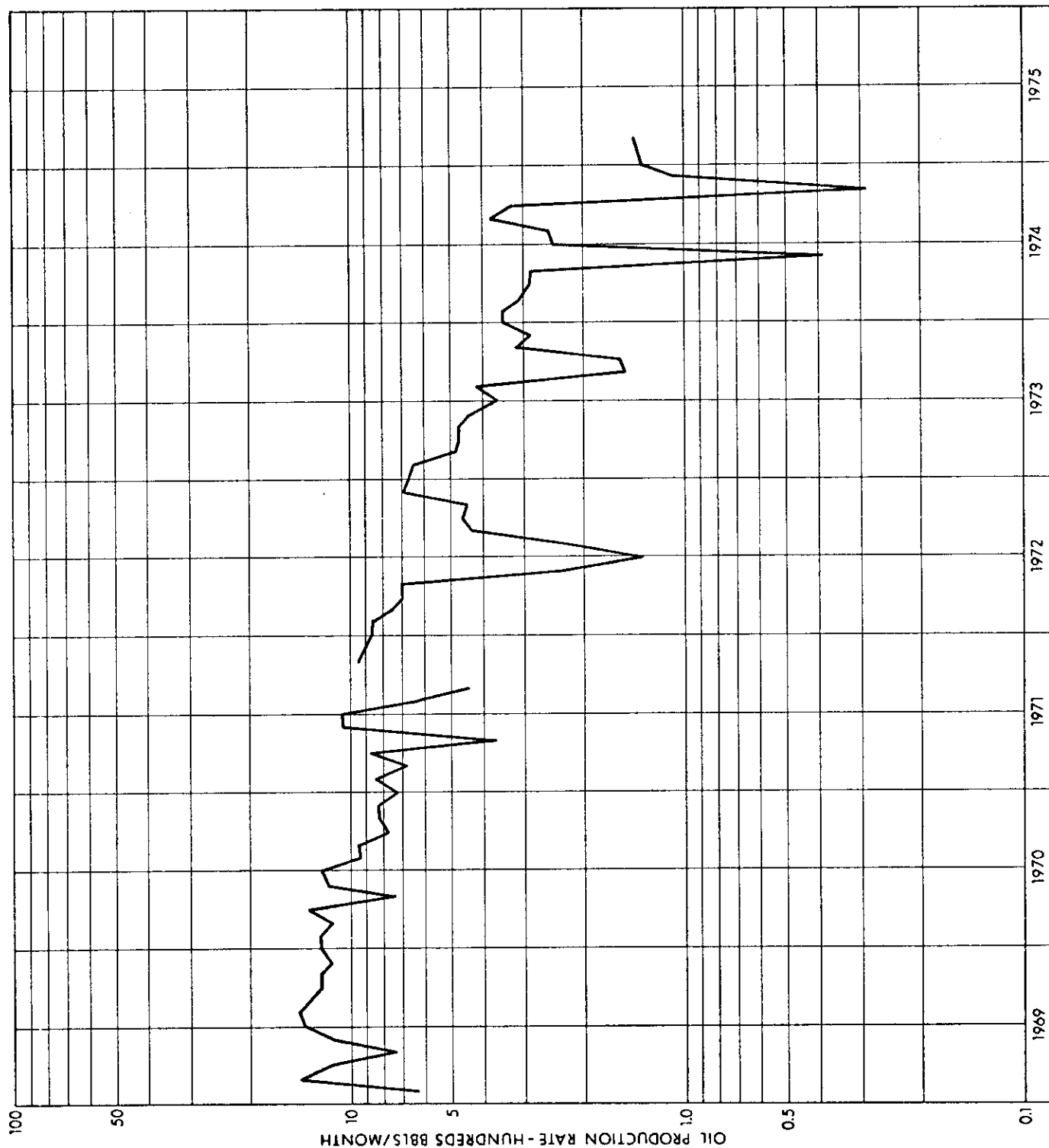
4-30-1-25WPM
PRODUCTION HISTORY
WASKADA



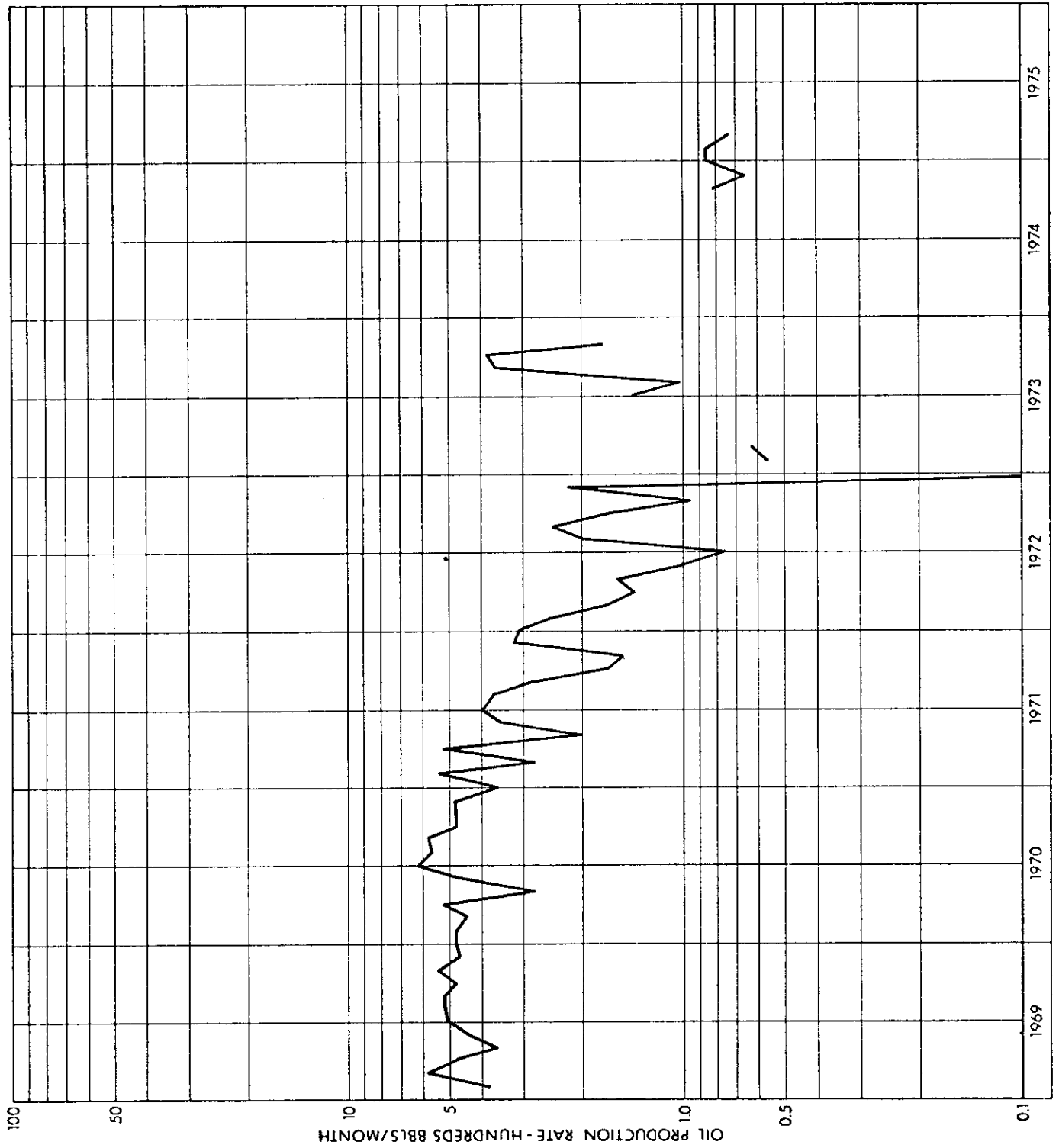
5-30-1-25WPM
PRODUCTION HISTORY
WASKADA



6-30-1-25 WPM
PRODUCTION HISTORY
WASKADA



11-30-1-25 WPM
 PRODUCTION HISTORY
 WASKADA



WASKADA

INDIVIDUAL WELL PRODUCTION CARDS

("DOWN TIME" DETERMINATION - INTERIM PARTICIPATION FACTORS)

1973

PRODUCTION RECORD

1974

WELL LICENSE NO. 2267

OPERATOR

Omega Waskada

BATTERY NO.

WELL NAME

FIRST PRODUCTION

LOCATION

12-80-1-25

TEST PRODUCTION

FIELD

ALLOWABLE

BBL.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBL. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE | MONTH | DAYS PROD. USED | TOTAL OIL PRODUCED BBL. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE |
|--------------------|-----------------------|-------------------------------|-------------------------------|---------------------------------|------------------------|------------------------|-----------|--------------------|-----------------------|-------------------------------|-------------------------------|---------------------------------|------------------------|------------------------|-----------|
| CARR'D FWD. | | | | 36,333 | | | 6/10 | CARR'D FWD. | | | | 41,432 | | | 8/10 |
| Jan 30 | 12.4 | 387 | | | | | 12.9 | Jan 31 | 13.9 | 433 | | | | | 13.96 |
| Feb 28 | 11.1 | 309 | 696 | | | | 11.0 | Feb 27 | 12.1 | 364 | 797 | | | | 13.5 |
| Mar 27 | 16.4 | 389 | 1085 | | | | 14.4 | Mar 30 | 12.2 | 369 | 1166 | | | | 12.3 |
| Apr 30 | 13.2 | 486 | 1571 | | | | 16.2 | Apr 21 | 19.9 | 199 | 1365 | | | | 9.5 |
| May 25 | 13.5 | 195 | 2066 | | | | 19.8 | May 1 | - | - | 1365 | | | | - |
| Jun 23 | 15.1 | 414 | 2480 | | | | 18.0 | Jun 12 | 12 | 235 | 1600 | | | | 196 |
| Jul 28 | 15.2 | 421 | 2901 | | | | 15.0 | Jul 30 | 319 | 319 | 1919 | | | | 10.6 |
| Aug 31 | 15.2 | 472 | 3373 | | | | 15.2 | Aug 30 | 310 | 310 | 2229 | | | | 10.3 |
| Sep 30 | 15.5 | 465 | 3838 | | | | 15.5 | Sep 30 | 323 | 323 | 2552 | | | | 10.8 |
| Oct 25 | 15.7 | 394 | 4232 | | | | 15.8 | Oct 27 | 215 | 215 | 2767 | | | | 7.96 |
| Nov 27 | 17.0 | 461 | 4693 | | | | 17.1 | Nov 29 | 234 | 234 | 3001 | | | | 8.1 |
| Dec 26 | 15.1 | 406 | 5099 | | | | 15.6 | Dec 25 | 296 | 296 | 3063 | | | | 7.0 |
| CUM. TC DATE | | | 41,432 | | | | | CUM. TC DATE | | | 44,608 | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

OPERATOR

Well Name Omega WashkadeaWELL LICENSE NO. 2267

LOCATION

12-30-1-25

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBL'S.

NORMAL PRODUCTION

| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBL'S. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE | MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBL'S. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|----------------|---------------------------|-------------------------|-----------------------------|---------------------|---------------------|-----------|--------------|----------------|---------------------------|-------------------------|-----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 44,608 | | 1 - | 8.10 | CARR'D FWD. | | | | 46,198 | | - |
| Jan | 8 | 216 | | | - | | 6.96 | Jan | 28 | 74 | | | - | |
| Feb | 23 | 185 | 401 | | | | 9.0 | | | | | | | |
| Mar | 29 | 160 | 561 | | - | | 5.5 | | | | | | | |
| Apr | 29 | 187 | 748 | | | | 6.4 | | | | | | | |
| May | - ? | - ? | 748 | | | | | | | | | | | |
| Jun | - ? | - ? | 748 | | | | | | | | | | | |
| July | 11 | 66 | 814 | | | | 6.0 | | | | | | | |
| Aug | 31 | 145 | 959 | | | | 4.7 | | | | | | | |
| Sept | 27 | 188 | 1147 | | | | 7.0 | | | | | | | |
| Oct | 30 | 122 | 1269 | | | | 4.1 | | | | | | | |
| Nov | 27 | 155 | 1424 | | | | 5.7 | | | | | | | |
| Dec | 31 | 166 | 1590 | | | | | CUM. TO DATE | | | | | | |
| CUM. TO DATE | | | | | | | | | | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1973

PRODUCTION RECORD

1974

WELL LICENSE NO. 2194

OPERATOR

Omega Washburn

BATTERY NO.

WELL NAME

FIRST PRODUCTION

LOCATION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| DAYS MONTH PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|-----------------------------|--------------------------------|-------------------------------|---------------------------------|------------------------|------------------------|-----------------------|--------------------------------|-------------------------------|---------------------------------|------------------------|------------------------|
| CARR'D FWD. | | | 30855 | | | | | | 32,161 | | 8 1/2 |
| Jan 8 | 9.2 66 | | | | | Jan | 8.3 | | | | |
| Feb 11 | 6.7 74 | 140 | | | | Feb | 6.7 | | | | |
| Mar | - | 140 | | | | Mar | | | | | |
| Apr | | 140 | | | | Apr | | | | | |
| May | | 140 | | | | May | | | | | |
| Jun 16 | 140 | 280 | | | | | 8.8 | | | | |
| Jul 29 | 107 | 387 | | | | | 3.7 | | | | |
| Aug 29 | 368 | 755 | | | | | 12.7 | | | | |
| Sep 30 | 384 | 1139 | | | | | 12.8 | | | | |
| Oct 14 | 167 | 1306 | | | | Oct 9 | 11.9 | | | | |
| Nov 2 | - | 1306 | | | | Nov 29 | | | | | |
| Dec | | 1306 | | | | Dec 25 | | | | | |
| CUM. TO DATE | | 32,161 | | | | CUM. TO DATE | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

OPERATOR

WELL NAME *Omega Washburn*

LOCATION

11-30-1-25

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE _____ BBL.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. BBL. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. | MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. BBL. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. |
|--------------|-----------------|----------------------|---------------------------|---------------------------|---------------------|------------------|--------------|-----------------|----------------------|---------------------------|---------------------------|---------------------|------------------|
| CARR'D FWD. | | | | 32,395 | | | CARR'D FWD. | | | | 32,555 | | |
| <i>Jan</i> | 30 | 86 | | | - | | <i>Jan</i> | | | | | - | |
| <i>Feb</i> | 6 | 74 | 160 | | - | | | | | | | | |
| <i>Mar</i> | | -? | 160 | | - | | | | | | | | |
| <i>Apr</i> | | -? | 160 | | - | | | | | | | | |
| <i>May</i> | | -? | 160 | | | | | | | | | | |
| <i>Jun</i> | | -? | 160 | | | | | | | | | | |
| <i>Jul</i> | | -? | 160 | | | | | | | | | | |
| <i>Aug</i> | | -? | 160 | | | | | | | | | | |
| <i>Sep</i> | | - | 162 | | | | | | | | | | |
| <i>Oct</i> | | - | 160 | | | | | | | | | | |
| <i>Nov</i> | | - | 160 | | | | | | | | | | |
| <i>Dec</i> | | - | 160 | | | | | | | | | | |
| CUM. TO DATE | | | | | | | CUM. TO DATE | | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-N-123

1973

PRODUCTION RECORD

1974

WELL LICENSE NO. 2266

OPERATOR

Omega Washakie

WELL NAME

BATTERY NO

LOCATION

FIRST PRODUCTION

FIELD

TEST PRODUCTION

CARR'D
FWD

ALLOWABLE

BBL'S

NORMAL PRODUCTION

| DAYS PROD- UCED | TOTAL OIL PRODUCED BBL'S | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S | * TOTAL WATER PROD. | CUM. WATER PRODUCED | DAYS PROD- UCED | TOTAL OIL PRODUCED BBL'S | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|
| Jan 29 | 647 | | 57,238 | | — | 8/10 | | | 61,812 | | 8/10 |
| Feb 28 | 478 | 1125 | | | | 30 | 350 | | | | 11.7 |
| Mar 29 | 484 | 1609 | | | | 27 | 310 | 660 | | | 11.5 |
| Apr 28 | 477 | 2086 | | | | 30 | 288 | 948 | | | 9.6 |
| May 30 | 450 | 2536 | | | | 18 | 280 | 1228 | | | 15.6 |
| Jun 24 | 365 | 2901 | | | | 2 | 40 | 1268 | | | 20.0 |
| Jul 23 | 416 | 3317 | | | | 21 | 248 | 1516 | | | 11.8 |
| Aug 30 | 150 | 3467 | | | | 16 | 259 | 1775 | | | 16.2 |
| Sep 22 | 155 | 3622 | | | | 27 | 381 | 2156 | | | 14.1 |
| Oct 27 | 314 | 3936 | | | | 30 | 325 | 2481 | | | 10.8 |
| Nov 30 | 287 | 4223 | | | | 14 | 30 | 2511 | | | 2.1 |
| Dec 31 | 351 | 4574 | | | | 29 | 114 | 2625 | | | 3.9 |
| CUM TO DATE | | 61,812 | | | | 24 | 140 | 2765 | | | 5.8 |
| | | 61,812 | | | | CUM. TO DATE | | 64,577 | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

OPERATOR

Omega Washburn

WELL NAME

LOCATION

6-30-1-25

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBLs. | CUMULATIVE OIL PROD. BBLs. | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PROD. | DAYS PROD. USED | TOTAL OIL PROD. BBLs. | CUMULATIVE OIL PROD. BBLs. | TOTAL CUM. OIL PROD. BBLs. | # TOTAL WATER PROD. | CUM. WATER PROD. |
|--------------|-----------------|-----------------------|----------------------------|----------------------------|---------------------|------------------|-----------------|-----------------------|----------------------------|----------------------------|---------------------|------------------|
| CARR'D FWD | | | | 64,577 | | | | 8/10 | | 64,731 | | |
| Jan | | * | | | - | | | | | | - | |
| Feb 19 | | 154 | 154 | | - | | | 8.1 | | | | |
| Mar | - | ? | 154 | | - | | | | | | | |
| Apr | | ? | 154 | | - | | | | | | | |
| May | | ? | 154 | | | | | | | | | |
| June | | ? | 154 | | | | | | | | | |
| July | | ? | 154 | | | | | | | | | |
| Aug | | | 154 | | | | | | | | | |
| Sept | | - | 154 | | | | | | | | | |
| Oct | | - | 154 | | | | | | | | | |
| Nov | | - | 154 | | | | | | | | | |
| Dec | | | | | | | | | | | | |
| CUM. TO DATE | | | | | | | CUM. TO DATE | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1973

PRODUCTION RECORD

1974

OPERATOR

Well Name *Omega Washkade*

BATTERY NO

WELL NAME

FIRST PRODUCTION

LOCATION

TEST PRODUCTION

FIELD

ALLOWABLE BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PRODUCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE BBLs. | MONTH | DAYS PRODUCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|---------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|-----------------|--------------|---------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 77928 | | — | 610 | CARR'D FWD. | | | | 83,593 | | 810 |
| Jan 29 | 29 | 869 | | | - | | 30.0 | Jan 31 | 31 | 239 | | | | 7.7 |
| Feb 27 | 27 | 661 | 1530 | | | | 24.5 | Feb 27 | 27 | 193 | 432 | | | 7.2 |
| Mar 29 | 29 | 659 | 2189 | | | | 22.7 | Mar 27 | 27 | 240 | 672 | | | 2.1 |
| Apr 28 | 28 | 606 | 2795 | | | | 21.6 | Apr 25 | 25 | 228 | 900 | | | 9.1 |
| May 31 | 31 | 617 | 3412 | | | | 19.9 | May 4 | 4 | 61 | 961 | | | 15.3 |
| Jun 25 | 25 | 497 | 3909 | | | | 19.9 | Jun 21 | 21 | 242 | 1203 | | | 11.5 |
| Jul 31 | 31 | 524 | 4433 | | | | 16.9 | Jul 28 | 28 | 297 | 1500 | | | 10.6 |
| Aug 28 | 28 | 184 | 4617 | | | | 6.6 | Aug 29 | 29 | 365 | 1865 | | | 12.6 |
| Sep 27 | 27 | 178 | 4795 | | | | 6.6 | Sep 30 | 30 | 310 | 2175 | | | 10.3 |
| Oct 31 | 31 | 375 | 5170 | | | | 12.1 | Oct 27 | 27 | 219 | 2394 | | | 8.1 |
| Nov 30 | 30 | 221 | 5391 | | | | 7.4 | Nov 29 | 29 | 234 | 2628 | | | 8.1 |
| Dec 31 | 31 | 374 | 5665 | | | | 8.0 | Dec 28 | 28 | 388 | 3016 | | | 13.9 |
| CUM. TO DATE | | | 83,593 | | | | | CUM. TO DATE | | | 86,609 | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1975

PRODUCTION RECORD

1976

WELL LICENSE NO. 2207

OPERATOR

WELL NAME *Omega Washburn*

BATTERY NO.

FIRST PRODUCTION

TEST PRODUCTION

LOCATION *5-30-1-25*

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | DAYS PROD-UCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|--------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|----------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 86,609 | | — | | 610 | | 91,652 | | — |
| <i>Jan</i> | 21 | 359 | | | — | | <i>Jan</i> 30 | 510 | | | — | |
| <i>Feb</i> | 28 | 307 | 666 | | | | | | | | | |
| <i>Mar</i> | 28 | 377 | 1043 | | — | | | | | | | |
| <i>Apr</i> | 29 | 378 | 1421 | | — | | | | | | | |
| <i>May</i> | 26 | 444 | 1865 | | — | | | | | | | |
| <i>Jun</i> | 19 | 459 | 2324 | | — | | | 242 | | | | |
| <i>Jul</i> | 27 | 548 | 2872 | | — | | | 203 | | | | |
| <i>Aug</i> | 28 | 465 | 3337 | | | | | 166 | | | | |
| <i>Sep</i> | 25 | 400 | 3737 | | — | | | 160 | | | | |
| <i>Oct</i> | 31 | 465 | 4202 | | — | | | 150 | | | | |
| <i>Nov</i> | 28 | 405 | 4607 | | — | | | 145 | | | | |
| <i>Dec</i> | 30 | 436 | 5043 | | — | | | | | | | |
| CUM. TO DATE | | | | | | | CUM. TO DATE | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1973

PRODUCTION RECORD

1974

OPERATOR

WELL NAME *Omega Washburn*

BATTERY NO

FIRST PRODUCTION

TEST PRODUCTION

LOCATION *4-630-1-25*WELL LICENSE NO. *2274*

FIELD

ALLOWABLE

BBL.

NORMAL PRODUCTION

| MONTH | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. BBL. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. | MONTH | CARR'D FWD. | DAYS PROD. USED | TOTAL OIL PROD. BBL. | CUMULATIVE OIL PROD. BBL. | TOTAL CUM. OIL PROD. BBL. | * TOTAL WATER PROD. | CUM. WATER PROD. |
|--------------|-----------------|----------------------|---------------------------|---------------------------|---------------------|------------------|-------|-------------|-----------------|----------------------|---------------------------|---------------------------|---------------------|------------------|
| CARR'D FWD. | | | | 35,394 | | — | | 6/10 | | | | 38,332 | | 8/10 |
| Jan 29 | | 382 | | | — | | | 13.2 | 29 | 216 | | | | 7.4 |
| Feb 27 | | 233 | 615 | | | | | 8.6 | 27 | 148 | 364 | | | 5.5 |
| Mar 31 | | 313 | 928 | | | | | 10.1 | 29 | 255 | 619 | | | 8.9 |
| Apr 29 | | 240 | 1168 | | | | | 8.3 | 26 | 220 | 839 | | | 8.5 |
| May 31 | | 235 | 1403 | | — | | | 7.6 | 4 | 59 | 898 | | | 148 |
| Jun 28 | | 172 | 1575 | | | | | 6.1 | 27 | 200 | 1098 | | | 74 |
| Jul 31 | | 289 | 1864 | | | | | 9.3 | 31 | 299 | 1397 | | | 96 |
| Aug 30 | | 133 | 1997 | | | | | 4.4 | 18 | 357 | 1754 | | | 198 |
| Sep 22 | | 157 | 2154 | | | | | 7.1 | 16 | 180 | 1934 | | | 113 |
| Oct 30 | | 332 | 2486 | | | | | 11.1 | 29 | 255 | 2189 | | | 8.8 |
| Nov 30 | | 205 | 2691 | | | | | 6.8 | 26 | 258 | 2447 | | | 99 |
| Dec 29 | | 247 | 2938 | | | | | 8.5 | 29 | 311 | 2758 | | | 10.7 |
| CUM. TO DATE | | | 38,332 | | | | | | | | 41,090 | | | |

* INCLUDES BOTTOM SEC. RENT

N14793

MNR M-123

1975

PRODUCTION RECORD

1976

WELL LICENSE NO. 2274

OPERATOR

WELL NAME *Omega Washburn*

BATTERY NO.

LOCATION

FIRST PRODUCTION

CUM. TO DATE

4-30-1-25

TEST PRODUCTION

FIELD

ALLOWABLE

BBL'S

NORMAL PRODUCTION

| MONTH | DAYS PRODUCED | TOTAL OIL PRODUCED BBL'S | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S | * TOTAL WATER PROD. | CUM. WATER PRODUCED | ALLOWABLE | MONTH | DAYS PRODUCED | TOTAL OIL PRODUCED BBL'S | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBL'S | * TOTAL WATER PROD. | CUM. WATER PRODUCED |
|-------------|---------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|-----------|--------------|---------------|--------------------------|-------------------------|----------------------------|---------------------|---------------------|
| CARR'D FWD. | | | | 41,090 | | - | 6 1/2 | CARR'D FWD. | | | | 45,867 | | - |
| Jan | 30 | 388 | | | - | | 12.9 | Jan | 33 | 675 | | | - | |
| Feb | 27 | 254 | 642 | | - | | 9.4 | | | | | | | |
| Mar | 31 | 481 | 1123 | | - | | 15.5 | | | | | | | |
| Apr | 30 | 378 | 1501 | | - | | 12.6 | | | | | | | |
| May | 27 | 461 | 1962 | | - | | 17.1 | | | | | | | |
| Jun | 20 | 483 | 2445 | | - | | 24.2 | | | | | | | |
| Jul | 24 | 413 | 2858 | | - | | 17.2 | | | | | | | |
| Aug | 30 | 420 | 3278 | | - | | 14.0 | | | | | | | |
| Sep | 27 | 378 | 3656 | | - | | 14.0 | | | | | | | |
| Oct | 31 | 403 | 4059 | | - | | 13.0 | | | | | | | |
| Nov | 27 | 346 | 4405 | | - | | 12.8 | | | | | | | |
| Dec | 24 | 372 | 4777 | | - | | | CUM. TO DATE | | | | | | |

* INCLUDES BOTTOM SEDIMENT

N14793

MNR-M-123

1973

PRODUCTION RECORD
WELL LICENSE NO. 2273

1974

OPERATOR

Omega Washakie

BATTERY NO.

WELL NAME

FIRST PRODUCTION

LOCATION

3-3021-25

TEST PRODUCTION

FIELD

ALLOWABLE

BBLs.

NORMAL PRODUCTION

| MONTH PROD. USED | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | MONTH | CARR'D FWD. | DAYS PROD. USED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM. OIL PROD. BBLs. | * TOTAL WATER PROD. | CUM. WATER PRODUCED | MONTH | CARR'D FWD. |
|------------------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|-------|----------------|-----------------------|--------------------------------|-------------------------------|----------------------------------|------------------------|------------------------|-------|----------------|
| | | | | 35,947 | | | | 8/10 | | | | 39,045 | | | | 8/10 |
| Jan 26 | 26 | 264 | | | - | | Jan | | 30 | 313 | | | | | | 10.4 |
| Feb 26 | 26 | 202 | 466 | | | | Feb | | 27 | 354 | 667 | | | | | 13.1 |
| Mar 31 | 31 | 293 | 759 | | | | Mar | | 31 | 278 | 945 | | | | | 7.0 |
| Apr 28 | 28 | 247 | 1006 | | | | Apr | | 26 | 232 | 1177 | | | | | 8.9 |
| May 31 | 31 | 252 | 1258 | | - | | May | | 4 | 54 | 1231 | | | | | 13.5 |
| Jun 28 | 28 | 208 | 1466 | | | | Jun | | 20 | 235 | 1466 | | | | | 11.8 |
| Jul 29 | 29 | 366 | 1832 | | - | | Jul | | 30 | 317 | 1783 | | | | | 10.6 |
| Aug 27 | 27 | 169 | 2001 | | - | | Aug | | 30 | 370 | 2153 | | | | | 12.3 |
| Sep 30 | 30 | 214 | 2215 | | - | | Sep | | 30 | 266 | 2419 | | | | | 8.9 |
| Oct 29 | 29 | 308 | 2523 | | - | | Oct | | 29 | 250 | 2669 | | | | | 8.6 |
| Nov 30 | 30 | 256 | 2779 | | - | | Nov | | 26 | 258 | 2927 | | | | | 9.9 |
| Dec 25 | 25 | 319 | 3098 | | | | Dec | | 30 | 311 | 3238 | | | | | 10.4 |
| | | | 39,045 | | - | | | | | | 42,283 | | | | | |
| | | | 39,044 | | | | | | | | | | | | | |

* INCLUDES BOTTOMHOLE WATER

N14783

NMR-M-123

425 28

1977

PRODUCTION RECORD

1975

WELL LICENSE NO. 2273

OPERATOR *Omegawaska*
WELL NAME
LOCATION 3-30-1-25

BATTERY NO.
FIRST PRODUCTION
TEST PRODUCTION

FIELD ALLOWABLE BBLs. NORMAL PRODUCTION

| MONTH | DAYS PRODUCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM OIL PROD. BBLs. | # TOTAL WATER PROD | CUM. WATER PRODUCED | # TOTAL WATER PROD | CUM. WATER PRODUCED | TOTAL OIL PRODUCED BBLs. | DAYS PRODUCED | TOTAL OIL PRODUCED BBLs. | CUMULATIVE OIL PRODUCED | TOTAL CUM OIL PROD. BBLs. | # TOTAL WATER PROD | CUM. WATER PRODUCED |
|--------------|---------------|--------------------------|-------------------------|---------------------------|--------------------|---------------------|--------------------|---------------------|--------------------------|---------------|--------------------------|-------------------------|---------------------------|--------------------|---------------------|
| CARR'D FWD | | | | 42,253 | | - | | - | | | | | 42,253 | | - |
| Jan 25 | | 388 | | | - | - | | - | | 25 | 340 | | 45,590 | - | - |
| Feb 27 | | 254 | 642 | | - | - | | - | | | | | | | |
| Mar 29 | | 372 | 1014 | | - | - | | - | | | | | | | |
| Apr 29 | | 400 | 1414 | | - | - | | - | | | | | | | |
| May 31 | | 314 | 1728 | | - | - | | - | | | | | | | |
| Jun 30 | | * | 1328 | | - | - | | - | | | | | | | |
| Jul 31 | | * | 1328 | | - | - | | - | | | | | | | |
| Aug 31 | | 393 | 1721 | | - | - | | - | | | | | | | |
| Sep 29 | | 349 | 2070 | | - | - | | - | | | | | | | |
| Oct 27 | | 324 | 2394 | | - | - | | - | | | | | | | |
| Nov 27 | | 319 | 2713 | | - | - | | - | | | | | | | |
| Dec 28 | | 286 | 2999 | | - | - | | - | | | | | | | |
| Jan 30 | | 308 | 3307 | | - | - | | - | | | | | | | |
| CUM. TO DATE | | | | | | | | | | | | | | | |

inter-departmental memo

To:

Jas. T. Cawley, P. Eng.,
Deputy Minister,
Dept. of M., R. & E. M.

Date January 12, 1976.

From Ian Haugh,
Assistant Deputy Minister,
Mineral Resources Division.

Subject: SALT WATER PRODUCTION LEASE NO. 1 — OMEGA HYDROCARBONS LTD.

Under an Agreement dated February 14, 1975 Manitoba Mineral Resources Ltd. in September 1975 drilled the well, Waskada MMR Prov. 11-29-1-25 to basement. In a letter dated August 15, 1975 (copy attached) the Minister approved a proposed agreement between Manitoba Minerals and Omega Hydrocarbons which would allow Manitoba Minerals to assign the subject well to Omega if the well were to be dry. The well was dry and in accordance with the terms of the Agreement dated August 19, 1975 (copy attached) Manitoba Minerals assigned the well to Omega.

Omega completed the well as a Swan River water source well and in a letter to the Minister dated September 10, 1975 (copy attached) requested a permit for the purpose of producing water from the above well from the Swan River formation for a future waterflood in the adjacent Waskada Field.

The attached Salt Water Production Lease No. 1 was drafted and sent to Omega for signing. The signed lease has been returned along with appropriate fee and rental payments.

Recommendation:

It is recommended the attached Salt Water Production Lease No. 1 be signed on behalf of the Minister.

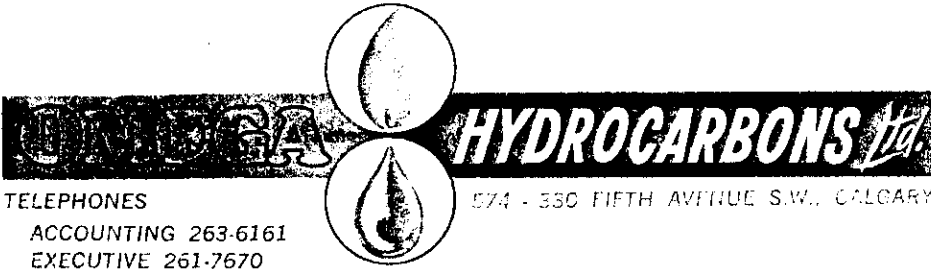
Note: Upon signing, please return both copies to the Petroleum Branch for fixation of the Minister's seal and disposition.

ORIGINAL SIGNED BY
IAN HAUGH

Ian Haugh

HCM/et
Attachs.
c.c. Petroleum Branch ✓

First Fold



574 - 350 FIFTH AVENUE S.W., CALGARY, ALBERTA T2P 0L4

November 19, 1975

Oil and Gas Conservation Board
Petroleum Branch
Department of Mines, Resources and Environmental Management
Province of Manitoba
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4

Attention: Mr. H. C. Moster, Director

Dear Sir:

Re: Unitization and Waterflood Application

Pursuant to Section 74 Part III of the Mines Act and Revised Regulation, Omega Hydrocarbons Ltd. herein submits on behalf of itself an application to Unitize its segment of the Waskada Oil Field and to initiate a pilot waterflood scheme covering the area (Lsd. 11, 12 and the SW $\frac{1}{4}$ of Section 30, Township 1, Range 25, West of the First Meridian) as more particularly described in the enclosed and accompanying material.

In support of the application we submit twelve (12) copies of each of this letter and the following Exhibits:

Exhibit No. 1

Unit Proposal and Waterflood Plan dated October, 1975;

Exhibit No. 2

Waterflood Report prepared by D. & S. Consultants Ltd.
entitled Waskada Alida Beds Oil Pool Waterflood Potential;

Exhibit No. 3

A set of updated production decline curves which incorporates production information subsequent to the date of preparation of the D. & S. Consultants report;

With regard to the Unit Agreement we have already provided your Department with draft copies of our proposed form of Agreement. It is proposed that once having your direction as to the preferred form of Unit Agreement we would then submit the required number of copies of such Agreement and in further support of the application proof of Royalty Owner approval.

November 19, 1975

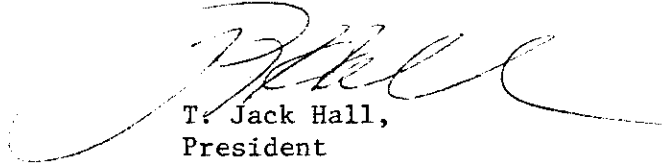
Exhibit No. 4

A draft copy of the letter which is intended to be forwarded to all Royalty Owners.

It would be appreciated if you could advise this office of any additional requirements or deficiencies which would be instrumental in your approval.

Yours very truly,

OMEGA HYDROCARBONS LTD.



T. Jack Hall,
President

TJH*vs



EXHIBIT No. 4

November , 1975

()
(Royalty Owner)
()

Dear Sir:

Omega Hydrocarbons Ltd. has completed its studies on the potential of waterflooding the Waskada Oil Field in the Province of Manitoba and has concluded that the flood would benefit the Working Interest Owners and Royalty Interest Owners alike. However, we have not been successful in persuading Copperhead Oil Co. and its partners who own three adjoining wells on the south end of the pool to participate in the proposed flood, so we now plan to proceed with an independent Unit. Omega's proposal is to install a pilot waterflood project and a unitized operation. To accomplish this program we have prepared a Unit Agreement which is intended to maintain equity among Royalty Owners.

The pilot waterflood will involve the conversion of the well located in Lsd. 6-30-1-25 to a water injection well. This location will accommodate the expansion of the plan to a five spot waterflood pattern if and when it is recognized that the flood is in fact accomplishing our objectives which are designed to increase current producing rates and ultimate oil recovery.

To assist you in your deliberations concerning your approval of the scheme we enclose one copy of the proposal entitled "Unit Proposal and Waterflood Plan" dated October, 1975 which forms part of our application to the Manitoba Oil and Gas Conservation Board.

Please sign and return one copy of the Unit Agreement at your earliest possible convenience thus providing approval of Unitization and the waterflood plan.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T. Jack Hall,
President

TJH*vs
Encl.

inter-departmental memo

To

The Oil & Natural Gas
Conservation Board:
Jas. T. Cawley, P. Eng., Chairman
J. S. Roper, Deputy Chairman
I. Haugh, Member

Date November 20, 1975

From H. C. Moster
Director
Petroleum Branch

Subject: Draft Unit Agreement — Proposed Waskada Unit No. 1 — Omega Hydrocarbons Ltd.

Via letter dated October 6, 1975, Omega Hydrocarbons submitted a draft copy of a proposed Unit Agreement covering a portion of the Waskada Field requesting an answer as to the acceptability of the draft.

Sec. 74(2) of The Mines Act states that a unitization agreement "shall not be put into effect unless the agreement has been approved by the board."

Sec. 74(3) states "The board shall not approve a unitization agreement . . . unless the royalty owners . . . agree to the unit operation thereof, either as parties to the unitization agreement or by separate agreement."

In light of the above it appears that only an opinion or suggestion should be given as to the draft agreement prior to it being finalized, approved by the royalty owners and submitted to the Board for official approval.

The draft was checked by comparing it with the "Normal" unitization agreements used to date in Manitoba (Chevron's standard format). Although the essential ingredients appeared to be included, the wording in the draft varied significantly. The draft and a copy of the unit agreement for West Butler Unit No. 1 were submitted to the Departmental Solicitor for comment. These comments were received via memo dated November 19, 1975 (copy attached).

A check on the standard unitization agreement presently being used in Alberta and recommended by the Minister of Energy and Natural Resources indicated the draft to be almost identical (copy of North Kitscoty attached).

Recommendations:

With the concurrence of the Board, I propose to contact Omega with the following suggested amendments to the proposed agreement:

1. Add the following to clause 302:

"subject to the Working Interest Owner's rights and interests therein as may be set forth in a Unit Operating Agreement."

2. Add the following clause after clause 502:

"503. Unit Operating Agreement

If more than one person executes this agreement as a Working Interest Owner, then the Working Interest Owners shall negotiate and execute a Unit Operating Agreement, providing among other things, for the conduct of the operations hereunder and the distribution of costs among the Working Interest Owners. Until such Unit Operating Agreement has been executed by the Working Interest Owners, only those Tracts in which the Working Interest is held by the person holding the Working Interest in the majority of the Tracts may be qualified for inclusion in the Unit Area. Subject to the other provisions of this Agreement, the cost of all operations conducted hereunder by the Working Interest Owners shall be borne by the Working Interest Owners."

3. The storage rights granted under clause 802 are quite liberal. Should this clause possibly be re-worded to only allow for re-injection for enhanced recovery purposes?
4. Change clauses 901 and 1501 to read "two" counterparts of agreement to enable Unit Operator to keep one and have one available to submit to the Board.
5. To comply with Section 74(2) of the Act, clause 1401 with respect to Effective Date be amended to read as follows:

"The unitization provided for herein shall become effective at 8:00 a.m. on the first day of the month following the date on which the Conservation Board has approved this agreement."

6. The following clause be added after clause 1311:

"1312. Approval of Conservation Board

This agreement is subject, in its entirety, to the approval of the Conservation Board."

7. The "Tract Participation" figures have not been included in the draft nor is there any indication as to how such interests will be determined. Also the tracts have been determined according to common royalty ownership. Such would indicate that individual past well performance may not be used in determining tract participation. This is not known at this time.
8. Omega be requested to improve the general presentation shown on "Exhibit B" to better illustrate Lsd. layout and general unit location, Unit boundary and tract boundaries.

Note:

Section 74 of the Act permits the Board to approve a unitization agreement without holding a public hearing provided 100% of the royalty owners affected agree to the agreement (i.e. - voluntary unitization).

Section 76 of the Act states the Board may hold a hearing upon its own motion to consider unitization and may order (with the approval of the Lieutenant Governor in Council) the unitization within certain conditions.

Therefore the Board has 2 means of effecting the proposed unitization:

1. Approve final agreement when submitted by applicant.
2. Call a hearing and make a Unitization Order.

Nine of the present ten units had hearings and are covered by Unit Orders.

Units covered by Unit Orders require hearings or re-hearings for any amendments, enlargements, etc. to the Unit Order.

The Applicant has stated he would like to avoid the expense of attending a hearing if possible. A hearing would allow the parties outside the proposed unit to see and express their views on the agreement, especially with respect to possible future enlargements. Also it appears that a "pilot" waterflood application for within the proposed unit will also be submitted prior to approval of the final agreement, which may require a hearing.

The present unitization application being processed for Daly Unit No. 3 shall require a hearing to be held.

In light of the above points, it is recommended the final unitization agreement be heard at a hearing. Arrangements to cover all, or as many of the above matters as possible, at such hearing could be arranged.

The Board's views on the items discussed herein are requested on or before November 25, 1975.



H. C. Moster

HCM/et
Attachs.

UNIT AGREEMENT

WASKADA UNIT No. 1

MANITOBA, CANADA

UNIT AGREEMENT

WASKADA UNIT No. 1

WHEREAS the Parties own Royalty Interests and Working Interests,
or either of them in the Unitized Zone;

AND WHEREAS the Parties desire that the Unitized Zone be
developed, produced and operated as a unit, all as hereinafter provided;

NOW, THEREFORE, in consideration of the covenants herein con-
tained, the Parties agree as follows:

ARTICLE 1

DEFINITIONS

101. Definitions

In this agreement:

- (a) "Conservation Board" means the Oil and Natural Gas Conservation Board;
- (b) "Effective Date" means the time and date referred to in Article XIV;
- (c) "Lease" means an instrument granting a Working Interest in the Unitized Zone;
- (d) "Outside Substances" means any substances initially obtained from any source other than the Unitized Zone or any Unitized Substances with respect to which royalty has been paid;

- (e) "Party" means a person who is bound by this agreement;
- (f) "Petroleum Substances" means petroleum, natural gas and other hydrocarbons (except coal) or any of them and all substances associated therewith;
- (g) "Royalty Interest" means any interest other than a Working Interest in Petroleum Substances, or the proceeds from the sale thereof, produced from the Unitized Zone but does not include the interest of a person as a purchaser of Petroleum Substances after production;
- (h) "Royalty Owner" means a Party owning a Royalty Interest;
- (i) "Spacing Unit" means the area allocated to a well by any government body having jurisdiction with respect thereto for each well drilled for the purpose of producing Petroleum Substances from the Unitized Zone;
- (j) "Tract" means a parcel of land described and given a Tract number in Exhibit "A";
- (k) "Tract Participation" means the percentage allotted to a Tract and set forth in Exhibit "A";
- (l) "Unit Area" means the lands described in Exhibit "A" and shown outlined on Exhibit "B";
- (m) "Unit Operator" means Omega Hydrocarbons Ltd., or any Party designated from time to time by the Working Interest Owners pursuant to any applicable Unit Operating Agreement;
- (n) "Unit Operating Agreement" means any agreement hereafter entered into by all of the Working Interest Owners in respect to the operation and development of the Waskada Unit No. 1;

- (o) "Unitized Zone" means the Mission Canyon Formation (Alida Beds) of the Mississippian Age within the Unit Area;
- (p) "Unitized Substances" means Petroleum Substances in or obtained from the Unitized Zone;
- (q) "Working Interest" means any right to produce and dispose of Petroleum Substances from the Unitized Zone, including an interest chargeable with any costs of drilling for, recovery of and disposal of Petroleum Substances therefrom;
- (r) "Working Interest Owner" means a Party owning a Working Interest;
- (s) "Mission Canyon Formation" means the Mission Canyon Formation (Alida Beds) of the Mississippian Age underlying lands outlined on Exhibit "B", as exemplified by the geological section occurring between the electric log depths of 3,033 and 3,124, as measured from the Kelly Bushing, in the Omega Waskada 4-30-1-25 well as identified in Exhibit "C".

ARTICLE 11

EXHIBITS

201. Exhibits

The following exhibits are attached to and incorporated in this agreement:

(a) Exhibit "A" which numbers and describes each Tract and sets forth its Tract Participation, the names of the owners of the Working Interest and their respective shares of the Working Interest, together with the names of the persons believed to be the owners of the Royalty Interests;

(b) Exhibit "B" which is a plan of the Unit Area;

(c) Exhibit "C" which is a copy of a portion of the electric log referred to in sub-clause 101 (s) hereof;

202. Exhibits Correct

Each exhibit shall be deemed conclusively to be correct to the effective time of a revision or correction thereof as herein provided.

203. Correction of Exhibits

If any mistake or mechanical error occurs in an exhibit, Unit Operator may, or upon request of the Working Interest Owners shall, prepare a corrected exhibit but the data used in establishing Tract Participation shall not be re-evaluated.

204. Effective Time

Any corrected exhibit prepared on or before the Effective Date or within 90 days thereafter shall be effective on the Effective Date. Any corrected exhibit prepared after the said 90 days shall be effective at 8:00 a.m. on the first day of the calendar month next following its preparation or on such other date as is determined by the Working Interest Owners.

205. Supplying of Exhibits

Each time that an exhibit is revised or corrected pursuant to this agreement, Unit Operator shall supply the Conservation Board and the Department of Mines, Resources and Environmental Management with copies thereof as may be required and shall supply each Working Interest Owner with the number of copies of the exhibit it requests. Each Working Interest Owner shall supply each of its Royalty Owners, excepting the Crown, with a copy thereof.

206. Form of Revised or Corrected Exhibits

Exhibits that are revised or corrected shall show the effective time of the revision or correction and shall be numbered consecutively.

ARTICLE III

UNITIZATION AND EFFECT

301. Unitization

On and after the Effective Date the interests of each Royalty Owner and of each Working Interest Owner in the Unitized Substances and in the Unitized Zone are hereby unitized, as if the Unitized Zone had been included in a single lease executed by the Royalty Owners, as lessors, in favour of the Working Interest Owners, as lessees, and as if the lease had been subject to this agreement.

302. Personal Property Excepted

All lease and well equipment heretofore or hereafter placed by any of the Working Interest Owners on lands comprised in the Unit Area shall be deemed conclusively to be and shall remain personal property belonging to and may be removed by the Working Interest Owners ①

303. Continuation of Leases

All operations conducted with respect to the Unitized Zone or production of Unitized Substances shall, except for the purpose of calculating payments to Royalty Owners, be deemed conclusively to be operations upon or production from all of the Unitized Zone in each Tract, and such operations or production shall continue in force and effect each Lease and any other agreement or instrument relating to the Unitized Zone or Unitized Substances as if such operations had been conducted on and a well was producing from each Tract or Spacing Unit, or portion thereof, in the Unit Area.

304. Leases Amended

Each Lease and any other agreement or instrument relating to the Unitized Zone or Unitized Substances is hereby amended only to the extent necessary to make it conform to this agreement.

305. Ratification of Leases

Except for a Lease in respect of which a court action has been commenced and is pending on the Effective Date, each Royalty Owner hereby ratifies and confirms any Lease, as amended by this agreement, to which it is a party and agrees that no default exists with respect thereto and that any such Lease is in effect as of the Effective Date.

306. Effect of Unitization on Titles

Nothing herein shall be construed as a transfer or exchange of any interest in the Leases, Tract or Unitized Zone, or in the Unitized Substances before production thereof.

307. Name

The name of the unit hereby constituted is "Waskada Unit No. 1".

ARTICLE IV

AUTHORITY TO WORKING INTEREST OWNERS

401. Operations

The Working Interest Owners are hereby granted the right to develop and operate the Unitized Zone without regard to the provisions of the Leases or the boundary lines of the Tracts or Spacing Units in such manner and by such means and methods as the Working Interest Owners consider necessary and proper and, without limiting the generality of the foregoing, the right to inject any substance or combination of substances into the Unitized Zone and convert and use as injection wells any wells now existing or hereafter drilled into the Unitized Zone.

402. Delegation

The Working Interest Owners may delegate to Unit Operator any of the rights and powers herein or otherwise granted to them.

403. Vote of Working Interest Owners

Any matter to be determined under this agreement by the Working Interest Owners may be determined by vote of the Working Interest Owners.

ARTICLE V

INCLUSION AND QUALIFICATION OF TRACTS

501. Tracts Included on Effective Date

The Tracts included in the Unit Area as of the Effective Date are those Tracts which are qualified under Clause 502 before the Effective Date.

502. Qualification of Tracts

A Tract is qualified for inclusion in the Unit Area when:

- (a) owners of 100 per cent of the Working Interest therein have become Parties and parties to any applicable Unit Operating

Agreement and owners of 100 per cent of the Royalty Interest therein have become Parties, or

- (b) owners of Working Interests therein have agreed with the owners of Working Interests then Parties and parties to any applicable Unit Operating Agreement as to the basis on which the Tract shall become qualified, where the Tract cannot be qualified pursuant to sub-clause (a) of this clause.

②

ARTICLE VI

TRACT PARTICIPATION

601. Tract Participation

Each Tract has a Tract Participation as shown on Exhibit "A".

ARTICLE VII

ALLOCATION OF UNITIZED SUBSTANCES PRODUCED

701. Allocation to Tracts

Subject to clauses 801 and 802 the Unitized Substances when produced shall be allocated to the Tracts in accordance with their Tract Participations. The amount of Unitized Substances allocated to each Tract, and only that amount, regardless of whether it be more or less than the amount of actual production of Unitized Substances from the well or wells, if any, on the Tract, shall be deemed conclusively to have been produced from the Tract.

701. Distribution Within Tracts

The Unitized Substances allocated to a Tract shall be distributed by the Working Interest Owners thereof among, or accounted for to, the Parties

entitled to share in production from the Tract in the same manner, the same proportions, and upon the same conditions as they would have participated and shared in the production from the Tract, or in the proceeds from the sale thereof, had the Unitized Substances allocated to the Tract been actually produced therefrom by the Working Interest Owners.

703. Calculation of Royalty

The Working Interest Owners of each Tract shall calculate royalty on the Unitized Substances allocated to the Tract at the applicable rate under the Lease, other agreement or instrument relating to the Tract. The Royalty Owners of each Tract agree to accept payment of royalty so calculated in satisfaction of the obligation of a Working Interest Owner to make royalty payments on Unitized Substances under the Lease, agreement or other instrument covering such Tract; but a lessee under a Lease shall not be relieved from making payment of royalty to its lessor if payment is not made by the Working Interest Owner as aforesaid.

704. Taking Unitized Substances in Kind

The Unitized Substances allocated to a Tract shall be delivered in kind at the time and place of production to the Working Interest Owners entitled thereto who may, if there is no interference with unit operations, construct, maintain and operate in the Unit Area all necessary facilities for taking delivery in kind.

705. Failure to Take in Kind

To the extent that a Party entitled to take in kind any of the Unitized Substances fails to take or otherwise dispose of them at the time

and place of production, then so long as such failure continues, Unit Operator, as agent and for the account and at the expense of such Party may sell, store, inject or otherwise dispose of them. Where there is a sale the net proceeds remaining from the sale shall be paid to the Party. Unit Operator may contract for the sale thereof only for the minimum term obtainable which in no event shall exceed one year. When Unit Operator has so contracted, the Party may take its share of the Unitized Substances in kind upon the expiration of the current sales contract. Any Party not taking its share of the Unitized Substances in kind may revoke at will Unit Operator's authority hereunder by taking in kind all of its share of Unitized Substances not previously contracted for sale by Unit Operator.

706. Royalty on Outside Substances

If an Outside Substance is injected into the Unitized Zone, the first like substance contained in the Unitized Substances subsequently produced and sold or used other than for operations hereunder shall be deemed conclusively to be an Outside Substance until a quantity equal to the quantity of the Outside Substance injected into the Unitized Zone is recovered. No royalty shall be payable on any substance which is deemed conclusively to be an Outside Substance.

ARTICLE VIII

USE, LOSS AND STORAGE OF UNITIZED SUBSTANCES

801. Use of Loss

The Working Interest Owners may use as much of the Unitized Substances as they deem necessary for the operation and development of the Unitized Zone

including, but not limited to, the injection thereof into the Unitized Zone and in the operation of any plant or plants handling Unitized Substances. Unitized Substances so used or injected and Unitized Substances lost shall be excluded in allocating Unitized Substances to Tracts, and no royalty or other payment shall be payable in respect thereof.

③

802. Re-INJECTION
Storage

The Working Interest Owners are hereby granted the right to inject Unitized Substances into the Unitized Zone for storage. ^{ENHANCED RECOVERY PURPOSES.} Unitized Substances so injected shall be excluded in allocating Unitized Substances to Tracts; and no royalty or other payment shall be payable in respect thereof until they are recovered from ^{the Unitized Zone} storage and sold or used for operations other than operations hereunder.

ARTICLE IX

ENLARGEMENT OF UNIT AREA

901. Application for Enlargement

After the expiry of 90 days from the Effective Date, if an Owner of a Working Interest in lands in the vicinity of the Unit Area indicated to be potentially productive of Petroleum Substances from the Mission Canyon Formation makes application therefore, the Working Interest Owners may, upon such terms and conditions as they may determine, approve the admission of the lands into the Unit Area. If the lands qualify under clause 502, the Unit Area shall be enlarged to include them. Even though an owner of a Royalty Interest or a Working Interest in lands approved hereunder for admission into the Unit Area is a Party, the lands shall not qualify unless the owner again executes and delivers ² ~~one~~ counterpart_s of this agreement to Unit Operator, or the lands otherwise qualify pursuant to sub-clause (b) of clause 502.

④

902. Adjustment of Tract Participation

The Tract Participation of each Tract added pursuant to clause 901 shall be determined by the Working Interest Owners. The Tract Participations shall then be adjusted so that:

- (a) the ratios of the Tract Participations of Tracts shown on Exhibit "A" immediately prior to the enlargement remain the same to each other; and
- (b) the total of the Tract Participations for all Tracts of the enlarged Unit Area and Unitized Zone is 100 per cent.

903. Exhibits

Unit Operator shall revise Exhibits "A" and "B" as required by the enlargement.

904. Effective Time of Enlargement

An enlargement pursuant to clause 901 and an adjustment of Tract Participations under this Article shall become effective at 8:00 a.m. on the first day of the first calendar month following approval of admission under clause 901 and Tract qualification under clause 502.

905. No Retroactive Adjustment

There shall never be any retroactive adjustment of the allocation of Unitized Substances by reason of an enlargement under this Article.

ARTICLE X

DISPUTES

1001. Disputes

If the title or right of a Party to receive in kind all or any portion of the Unitized Substances allocated to a Tract, or any share of

the proceeds from the sale thereof, is in dispute, the Party concerned shall forthwith give notice thereof to Unit Operator. If Unit Operator is so notified or if Unit Operator is directed to do so by the Working Interest Owners in the event that it is otherwise informed of the dispute, Unit Operator shall withhold and sell the portion of Unitized Substances the title or right to which is in dispute, and hold in trust the proceeds from the sale thereof until:

- (a) the Party concerned furnishes security in a form and manner satisfactory to the Working Interest Owners for the proper accounting thereof to the rightful owner or owners if the title or right of the Party shall fail in whole or in part, whereupon the proceeds shall be paid to the Party; or
- (b) the title or right thereto is established by a final judgment of a Court or otherwise to the satisfaction of the Working Interest Owners, whereupon such proceeds shall be paid to the person rightfully entitled.

If Unit Operator does not comply with this clause because it is not notified of a dispute by a Party concerned, that Party hereby agrees to indemnify and save harmless Unit Operator from any loss or damage suffered because of anything done or omitted to be done by Unit Operator because it was not notified.

ARTICLE XI

TITLES

1101. Warranty of Title

Each Working Interest Owner represents and warrants that it is the

owner of the Working Interests claimed by it in the Tracts, as set forth in Exhibit "A", and hereby covenants to indemnify and hold the other Parties harmless from any loss due to failure in whole or in part of its title to any such Working Interest. A Working Interest Owner whose title to the Working Interest in a Tract has so failed, shall be responsible for making at its own cost, with the person entitled to such Working Interest, any adjustment for investment and for development and operating expenses and of Unitized Substances or the proceeds thereof, resulting from such title failure. Notwithstanding the other provisions of this Clause, an indemnification of the other Working Interest Owners by a Working Interest Owner whose title to the Working Interest in a Tract fails shall, with respect to Unitized Substances, be limited to an amount equal to the cumulative value of Unitized Substances allocated to such Tract.

1102. Subsequent Failure of Title

If the title of a Working Interest Owner to a Tract fails, the Tract shall be excluded from this agreement and any applicable Unit Operating Agreement as of 8:00 a.m. on the first day of the calendar month in which the failure of title is finally determined unless:

- (a) any other Party is held or declared to own the title in which event that Party shall be bound by this agreement and any applicable Unit Operating Agreement in respect of the tract; or

(b) by the last day of the next following calendar month the Tract qualifies for inclusion in the Unit Area pursuant to clause 502.

1103. Revision of Exhibits

Unit Operator shall revise the exhibits to reflect any change in ownership in or exclusion from this agreement of a Tract pursuant to clause 1102. Where a Tract is excluded, the Tract Participation of the other Tracts shall each be increased, without changing their ratios to each other, so that their summation is 100 per cent. The revised exhibits shall be effective as of 8:00 a.m. on the first day of the calendar month in which the failure of title referred to in clause 1102 is finally determined.

ARTICLE XII

TRANSFER OF INTEREST

1201. Disposition

In this clause "disposition" means a sale, assignment, transfer, lease, sublease, conveyance, parting with possession, or any transaction of a similar nature, whether by trust or otherwise. A disposition of an interest owned by a Party in a Tract shall cover the whole or an undivided interest in the Party's interest in such Tract. A disposition shall not be binding on Unit Operator until at least one of the parties to such disposition has given notice thereof to Unit Operator by a copy of the instrument evidencing such disposition, and the acquiring party, if not a Party hereto, has executed and delivered to Unit Operator a counterpart of this agreement. Unit Operator shall revise the exhibits to reflect each disposition of an interest in a Tract and the revised exhibits shall

be effective as of 8:00 a.m. on the first day of the calendar month next following the calendar month in which the notice is received by Unit Operator.

ARTICLE XIII

IN GENERAL

1301. Execution in Counterpart

This agreement may be executed in separate counterparts and all the executed counterparts together shall constitute one agreement.

1302. Dual Capacity

If a Party owns a Working Interest and a Royalty Interest, its execution of this agreement shall constitute execution in both capacities.

1303. Subsequent Execution

An owner of an interest in a Tract who has not become a Party as of the date the Tract was included in the Unit Area under Article V or IX, may become a Party with respect to that interest only on such terms and conditions as may be prescribed by the Working Interest Owners.

1304. No Partnership

The duties and obligations of the Parties shall be separate and not joint or collective. Nothing contained in this agreement shall be construed to create a partnership or association.

1305. Force Majeure

Neither Unit Operator nor any Party shall be deemed to be in default with respect to non-performance of its obligations hereunder, other than financial, if and so long as its non-performance is due, in

whole or in part, to any cause beyond its reasonable control, but lack of funds shall not be a cause beyond a Party's reasonable control. The performance of such obligations shall begin or be resumed within a reasonable time after such cause has been removed. Neither this agreement nor any Lease or any other agreement or instrument relating to the Unitized Zone or Unitized Substances shall terminate by reason of suspension of Unit operations for the cause set forth in this clause.

1306. Taxes

Each Party shall be separately liable to the extent of its ownership for all taxes on Unitized Substances and with respect to the production or sale of Unitized Substances. A Working Interest Owner may, at any time and from time to time, pay said taxes on behalf of its Royalty Owner and deduct the amount of the payment from the Royalty Owner's royalty. Those taxes with respect to the production or sale of Unitized Substances shall be adjusted so that they are borne as if the basis of taxation was the allocation of Unitized Substances hereunder.

1307. Right of Redemption

A Working Interest Owner may, at any time and from time to time, with full rights of subrogation, redeem for its Royalty Owner any agreement for sale, mortgage, or other lien or encumbrance of any kind or nature affecting any interest in the Unit Area in the event of default of payment by the Royalty Owner and deduct the amount of any payment made hereunder from the Royalty Owner's royalty.

1308. Interpretation

The clause headings in this agreement shall not be considered in interpreting the text.

1309. Number and Gender

In this agreement words importing the singular include the plural and vice versa; words importing the masculine gender include the feminine and vice versa; and words importing persons include firms or corporations and vice versa.

1310. Time

In this agreement all times are Central Standard Time.

1311. Time of the Essence

Time is of the essence in this agreement.

⑥

ARTICLE XIV

EFFECTIVE DATE

1401. Effective Date

⑤

The unitization provided for herein shall become effective at 8:00 a.m. on the first day following the date of the qualification under clause 502 of Tracts having a combined Tract Participation of 100 per cent of the total Tract Participation as originally set out in Exhibit "A".

1402. Notice of Effective Date

As soon as possible after the Effective Date, Unit Operator shall notify all Royalty Interest Owners, the Conservation Board and the Department of Mines, Resources and Environmental Management of the Effective Date.

1403. Release of Parties

This agreement shall cease to bind the Parties if the unitization provided for herein has not become effective on or before the 1st day of June, 1976.

ARTICLE XV

TERM

1501. Effect of Execution and Delivery

④ Subject to clause 1403, this agreement is binding upon a person who executes and delivers ²one counterpart thereof to Unit Operator, and that person is bound by this agreement as of the time of such delivery. This agreement inures to the benefit of and is binding upon the heirs, executors, administrators, successors and assigns of the Parties.

1502. Termination

This agreement terminates 90 days after all wells for the production of Unitized Substances in the Unit Area have been abandoned, plugged or disposed of or upon the termination of any applicable Unit Operating Agreement, and thereafter the Parties shall be governed by the terms and provisions of their Leases and other agreements or instruments relating to the Unitized Zone or Unitized Substances.

1503. Salvaging Equipment Upon Termination

The Royalty Owners grant the Working Interest Owners the right for a period of six months after termination of this agreement to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with unit operations.

1504. Notice to Royalty Owners

The Working Interest Owners shall give notice in accordance with their Leases to their respective Royalty Owners of the termination of this agreement within 30 days thereafter.

IN WITNESS WHEREOF the parties have executed this agreement each on the date shown opposite its execution hereof.

Date:

EXHIBIT "A"

Attached to and made part of an agreement entitled

"Unit Agreement - Waskada Unit No. 1"

| Tract Number | Land Description | | Rge. WPM | Twp. | Royalty Owner | Tract Participation % | Working Interest Owners & Share In Tract | | Working Interest Owners Share of Tract Participation |
|-----------------|------------------|---|-------------|------|------------------------------------|--------------------------------|--|------|--|
| | Section 30 | | | | | | | | |
| 1 | Lsd. 11 & 12 | 1 | 25 | | Canada Trust Hunter Masai | ? | Omega | 100% | |
| 2 | Lsd. 3, 4, 5 & 6 | 1 | 25 | | Crown Hunter Masai P.C.P. | (how to be determined) ⑦ | Omega | 100% | |

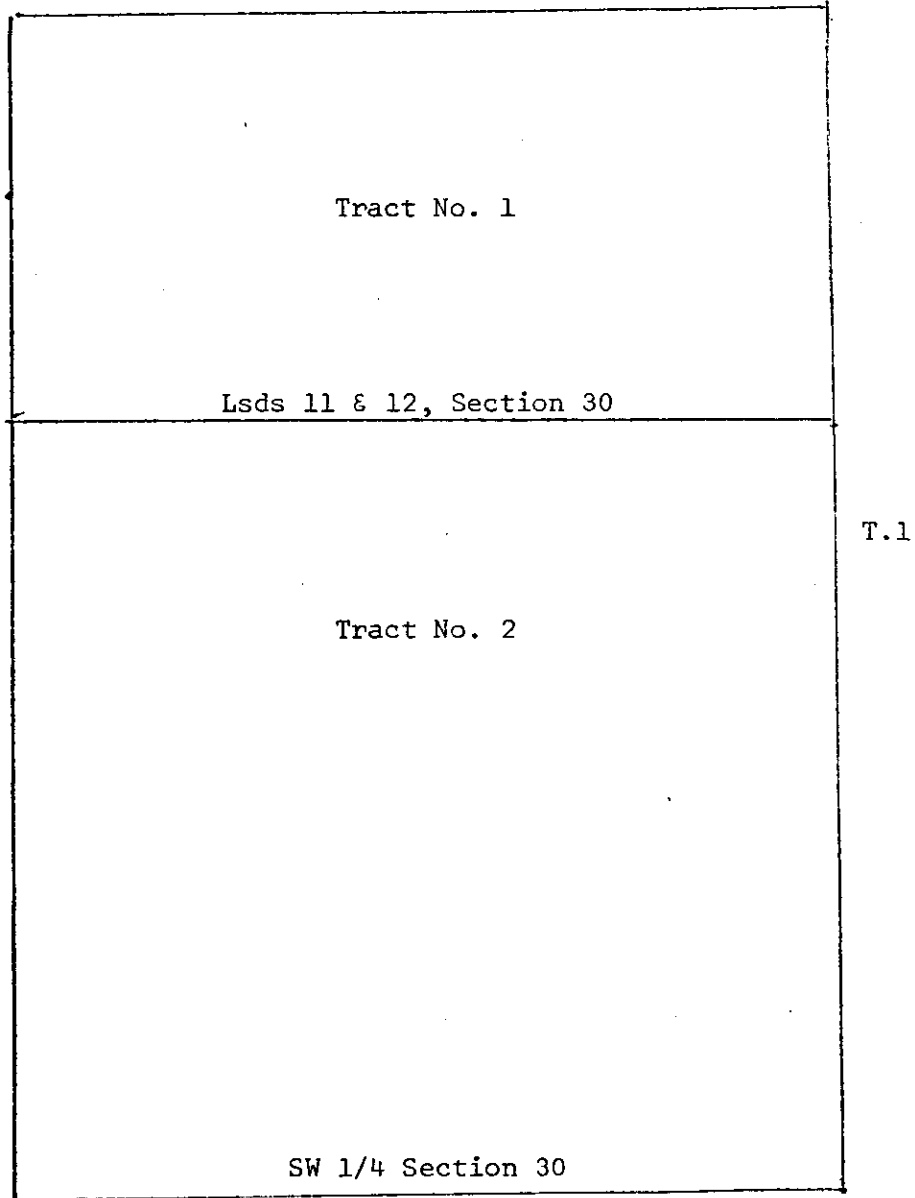
IN THIS AGREEMENT

| | | |
|--------------|------------|---|
| Canada Trust | shall mean | The Canada Trust Company |
| Crown | shall mean | Her Majesty the Queen in the name of Canada |
| Hunter | shall mean | H. D. Hunter & Associates Ltd. |
| Masai | shall mean | Masai Minerals Ltd. |
| Omega | shall mean | Omega Hydrocarbons Ltd. |
| P.C.P. | shall mean | PanCanadian Petroleum Limited |

EXHIBIT "B"

Attached to and made part of an agreement entitled

"Unit Agreement - Waskada Unit No. 1"



R.25, WPM

⑧ IMPROVE
PRESENTATION!

SPONTANEOUS-POTENTIAL
millivolts

DEPTHS

CONDUCTIVITY
 $\text{millimhos/m} = \frac{1000}{\text{ohms m}^2/\text{m}}$

INDUCTION
1000

2000

3000

20

10
- I +

RESISTIVITY
ohms m²/m

16" NORMAL

0

20

0

200

INDUCTION

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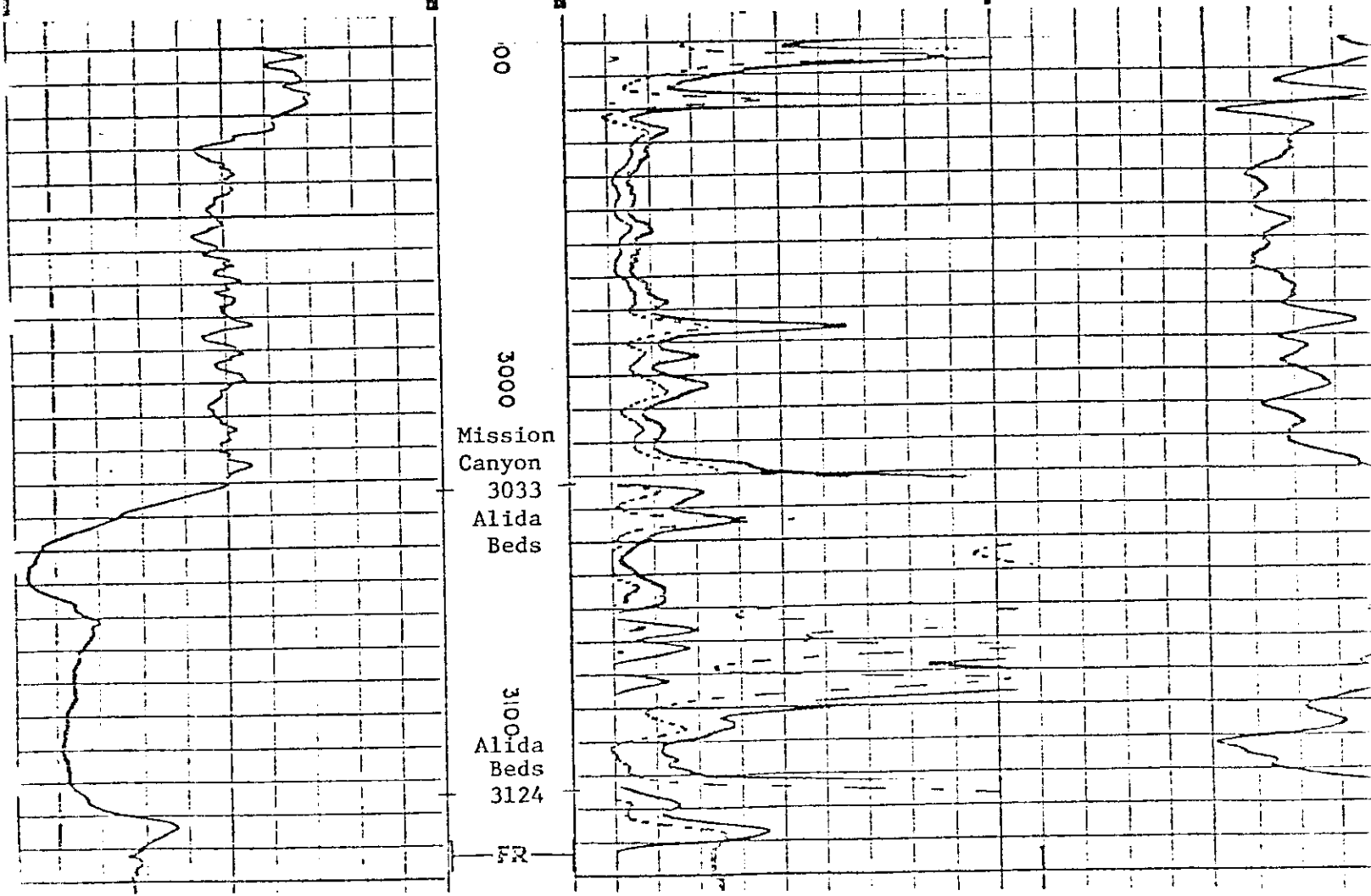
3000

Mission
Canyon
3033
Alida
Beds

3100

Alida
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3124

FR



Province of Manitoba

inter-departmental memo

To:

Mr. H. C. Moster, Director
Petroleum Branch
Mines, Resources and
Environmental Management
Century Plaza

Date November 19, 1975

From J. F. Redgwell
Departmental Solicitor

Subject: UNIT AGREEMENT - WASKADA UNIT NO. 1 - OMEGA HYDRO CARBON LTD.

Confirming our telephone conversation of the 17th, the Waskada Agreement runs somewhat parallel to the West Butler Agreement, however there are some important distinctions.

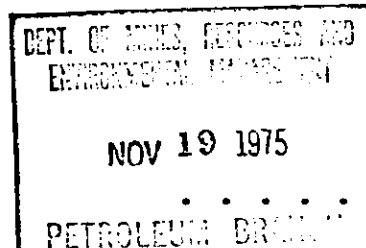
In the Waskada Agreement, the operations of the Unit Operator are not controlled at all, whereas the West Butler Agreement contains a number of provisions.

The Waskada Agreement omits many portions of the West Butler Agreement which pertain to the relationship between the working interest owners.

Whether or not these omissions should be included in the Waskada Agreement probably depends on whether or not the Board will allow the Waskada Agreement to operate so as to allow for enlargement at a later date. I think that any enlargement (section 901) really requires further approval of the Board, and that Omega should really be looking to the execution of a new agreement at such time as enlargement takes place.

Perhaps the agreement should contain a provision that it is subject, in its entirety, to the approval of the Board. The "effective date" of the agreement, at least, cannot be a date prior to the approval given by the Board pursuant to section 74(2).

Exhibit "A" does not have a percentage figure for Tract participation.




H. C. Moster

- 2 -

Nov. 19, 1975

Whether or not the Board decides to proceed to a hearing is entirely up to it, as it is not necessary to do so.

Both agreements are attached.



.....
J. F. Redgwell
Departmental Solicitor

/gs
Encs.

delivered to J & B Oct 16

OMEGA

TELEPHONES

ACCOUNTING 263-6161

EXECUTIVE 261-7670



HYDROCARBONS LTD.

574-555 FIFTH AVENUE SW, CALGARY, ALBERTA T2P 0L4

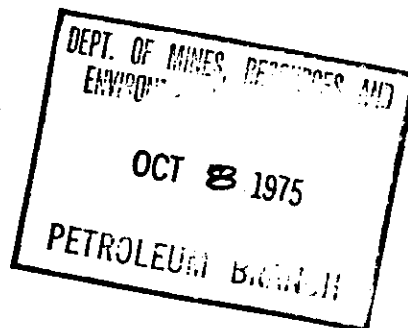
October 6, 1975

Province of Manitoba
Department of Mines, Resources and
Environmental Management
Petroleum Branch
993 Century Street
Box 12
Winnipeg, Manitoba R3H 0W4

Attention: Mr. M. Less

Dear Sirs:

Re: Waskada Oil Field, Manitoba



Pursuant to our interest in installing a water flood scheme in the North end of the Waskada Field we enclose four (4) copies of a draft Unit Agreement which if acceptable to the Department will be prepared in execution form.

We wish to draw your attention to a number of items which we consider unique to this Agreement.

Firstly ~~Omega is the only working interest owner~~ and therefore should not require the ~~normal operating provisions~~ of the Plans now in effect. We have ~~provided~~ for the situation where enlargement would bring in at least one additional ~~working interest owner~~. At that time we would propose entering into an Operating Agreement with the new Parties which would be negotiated with such parties. The Unit Agreement is ~~based on the model~~ and revised to incorporate the single Working Interest Owner but of course ~~providing for the possibility of enlargement~~.

* As mentioned, we would appreciate having an answer on the draft as to its acceptability as soon as possible as we are taking every avenue in our attempt to place the flood into operation.

Incidentally initial tests on our 11-29 water wells is an available supply of some 1500 barrels per day flowing. This volume

.... 2

would provide reservoir fill up in approximately one year. The sooner we get it under way the sooner the response.

If you have any problems with the Agreement please call by telephone because the mail has been very slow in recent weeks.

Yours very truly,

OMEGA HYDROCARBONS LTD.

T. Jack Hall,
President

TJH*vs

Encl.



MINISTER
MINISTRY OF RESOURCES AND ENVIRONMENTAL MANAGEMENT

THE PIPE LINE ACT

(Revised Statutes of Manitoba, 1970, Cap. P70)

ORDER OF THE MINISTER UNDER SECTION 23

WHEREAS, Section 5 of The Pipe Line Act, (Revised Statutes of Manitoba, 1970, Cap. P70), provides as follows:

"5 Except as otherwise provided in this Act, no person shall begin the construction of a pipe line, or any section thereof, unless the minister has granted a construction permit as hereinafter provided, authorizing the construction.";

AND WHEREAS, Section 23 of the said Act provides as follows:

"23(1) The minister may make an order exempting a pipe line or parts of a pipe line, not exceeding in any case five miles in length, from any or all of the provisions of this Act other than section 13, subsection (5) of section 16, and sections 26 and 27.

23(2) In any order made under this section the minister may impose such terms and conditions as he may deem advisable.";

AND WHEREAS, Omega Hydrocarbons Ltd. has made application to have a pipe line to be located in Legal Subdivisions 11 and 12 of Section 29 and in Legal Subdivisions 6, 9, 10 and 11 of Section 30, all in Township 1, Range 25, West of the Principal Meridian, for the transport of salt water from the well located in Legal Subdivision 11 of Section 29 to the well located in Legal Subdivision 6 of Section 30, all in Township 1, Range 25, West of the Principal Meridian, made exempt from certain provisions of the said Act;

2--Order of the Minister under Section 23

AND WHEREAS, the said pipe line does not exceed five miles in length, as provided by Section 23 of the said Act;

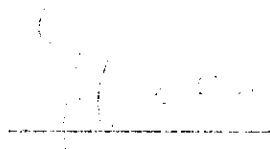
AND WHEREAS, Omega Hydrocarbons Ltd. has complied with the provisions governing exemption under the said section, and the application by Omega Hydrocarbons Ltd. is considered in other respects to be reasonable;

NOW, THEREFORE, I, the Minister of Mines, Resources and Environmental Management, order:

That the pipe line to be constructed by Omega Hydrocarbons Ltd., and to be located in Legal Subdivisions 11 and 12 of Section 29 and in Legal Subdivisions 6, 9, 10, and 11 of Section 30, all in Township 1, Range 25, West of the Principal Meridian, for the transport of salt water from the well located in Legal Subdivision 11 of Section 29 to the well located in Legal Subdivision 6 of Section 30, all in Township 1, Range 25, West of the Principal Meridian, be exempt from the provisions of Section 5, Section 9, Section 16 except subsection (5) thereof, and all of Part III of The Pipe Line Act.

That any surface leases acquired for this pipe line shall be deemed to contain a rental review clause by which they are subject to review a minimum of once every five years upon the request of either party to the lease.

DATED at Winnipeg, Manitoba, this 10th day of November, 1975.



Sidney Green,
Minister of Mines, Resources
and Environmental Management.

MOV 6 1975

Honourable Sidney Green, Q.C.,
Minister.

Jas. T. Cawley, P. Eng.,
Deputy Minister.

EXEMPTION UNDER SECTION 23 OF THE PIPE LINE ACT.

Omega Hydrocarbons Ltd. has applied for exemption under Section 23 of The Pipe Line Act for a salt water line to be constructed in the Waskada area to transport water to a future pilot water flooding injection project.

The pipeline is under five miles in length, thus may be constructed under Minister's order rather than under a construction permit.

The applicant has complied with all requirements and provided evidence of the approval of the surface owners who will be affected. The Highways Department has approved the proposed construction details where the pipeline crosses a municipal road.

This order varies from previous orders in that it contains a rental review requirement i.e., all surface leases acquired for the pipeline shall be deemed to contain a clause to provide that rentals are subject to periodic review (a minimum of once every five years) upon request of either party to the lease.

Original Signed by
JAS. T. CAWLEY.

Jas. T. Cawley, P. Eng.

JSR/dw

b.c.: I. Haugh ✓
J. S. Roper

Department of Mines, Resources
& Environmental Management
Minister's Personal Secretary

NOV 7 1975
6578
ASSISTANT DEPUTY MINISTER

January 12, 1976.

Jas. T. Cawley, P. Eng.,
Deputy Minister,
Dept. of M., R. & L. N.

Ian Haugh,
Assistant Deputy Minister,
Mineral Resources Division.

SALT WATER PRODUCTION LEASE NO. 1 — OMEGA HYDROCARBONS LTD.

Under an Agreement dated February 14, 1975 Manitoba Mineral Resources Ltd. in September 1975 drilled the well, Waskadee MMR Prov. 11-29-1-25 to basement. In a letter dated August 15, 1975 (copy attached) the Minister approved a proposed agreement between Manitoba Minerals and Omega Hydrocarbons which would allow Manitoba Minerals to assign the subject well to Omega if the well were to be dry. The well was dry and in accordance with the terms of the Agreement dated August 19, 1975 (copy attached) Manitoba Minerals assigned the well to Omega.

Omega completed the well as a Swan River water source well and in a letter to the Minister dated September 10, 1975 (copy attached) requested a permit for the purpose of producing water from the above well from the Swan River formation for a future waterflood in the adjacent Waskadee Field.

The attached Salt Water Production Lease No. 1 was drafted and sent to Omega for signing. The signed lease has been returned along with appropriate fee and rental payments.

Recommendation:

It is recommended the attached Salt Water Production Lease No. 1 be signed on behalf of the Minister.

Note: Upon signing, please return both copies to the Petroleum Branch for fixation of the Minister's seal and disposition.

ORIGINAL SIGNED BY
IAN HAUGH

Ian Haugh

HCM/et
Attachs.
c.c. Petroleum Branch