

July 5, 1980

July 5, 1980

THE MANITOBA GAZETTE

Vol. 109, No. 27

Manitoba Regulation 104/80

V.R. #1

Being

THE OIL AND NATURAL GAS CONSERVATION BOARD

ORDER NO. PM 37

An Order Pertaining to Pressure Maintenance by Water Flooding

*Made and Passed Pursuant to "The Mines Act", Cap. M160 of the
Continuing Consolidation of the Statutes of Manitoba, and
Amendments Thereto, by The Oil and Natural Gas
Conservation Board of Manitoba*

(Filed June 20, 1980)

1. Sections 2, 8 and 9 of Manitoba Revised Regulation M160—R8P are repealed.
2. Subsection 1(1) of Schedule A of the regulation is repealed and the following subsection is substituted therefor:
1(1) Water shall be injected to the Lodgepole Formation of the Mississippian Age in the wells

Chevron Scallion WIW 2-10-11-26
Chevron Scallion WIW 10-10-11-26
Chevron Scallion WIW 12-10-11-26
Chevron Scallion Prov. WIW 2-11-11-26
Chevron Scallion Prov. WIW 4-11-11-26
Chevron Scallion Prov. WIW 6-11-11-26
Chevron Scallion Prov. WIW 12-11-11-26
Chevron Scallion WIW 6-13-11-26
Chevron Scallion WIW 10-13-11-26
Chevron Scallion WIW 12-13-11-26
Chevron Scallion WIW 14-13-11-26
Dome Cdn. Sup. Scallion WIW 8-14-11-26
Cdn. Res. et al Scallion WIW 10-14-11-26
Sun G. Braybrook Scallion WIW 12-14-11-26
Chevron Scallion WIW 2-15-11-26
Chevron Scallion WIW 10-15-11-26
Cdn.-Sup. Veldhouse Scallion WIW 7-16-11-26
Shell Moir South Scallion WIW 10-21-11-26
Chevron Scallion WIW 2A-22-11-26
Chevron Scallion WIW 4-22-11-26
Sun T.L. Tapp Scallion WIW 10-22-11-26
Chevron Scallion WIW 12-22-11-26
Chevron Scallion WIW 12-23-11-26
Chevron Scallion WIW 14-23-11-26
Chevron Scallion WIW 16-23-11-26
Dome Cdn. Sup. Scallion WIW 6-24-11-26
Chevron Scallion Prov. WIW 12-24-11-26
Sun P.J. Tapp Scallion WIW 6-26-11-26
Cdn. Res. et al Scallion WIW 8-26-11-26
Chevron Scallion WIW 6-27-11-26
Sun W.C. Tapp Scallion WIW 8-27-11-26
Chevron Scallion WIW 14-27-11-26
Gulf Union Tapp Scallion WIW 6-28-11-26

Cdn.-Sup. Whiteford Scallion WIW 6-28-11-26
Gulf Union Tapp Scallion WIW 14-28-11-26
Cdn.-Sup. Whiteford Scallion WIW 16-28-11-26
Shell Moir North Scallion WIW 6-33-11-26
Chevron Scallion WIW 8-33-11-26
Shell Moir North Scallion WIW 14-33-11-26
Vallat et al Scallion WIW 16-33-11-26
Cdn. Res. et al Scallion WIW 6-34-11-26
Dome Scallion WIW 4-3-12-26
Dome Cdn. Sup. Scallion WIW 2-4-12-26
Chevron North Scallion WIW 4-4-12-26
Chevron North Scallion WIW 6-4-12-26
Vallat Scallion WIW 10-4-12-26
Chevron North Scallion WIW 12A-4-12-26

and, from time to time, in such other wells as the board may direct, or, upon application of the unit operator, may approve.

3. Rule 5 of the Pressure Maintenance Rules as set out in Schedule A of the regulation is repealed and the following rule is substituted therefor:
- 5(1) At least once every three years commencing in 1981, unless otherwise directed by the board, the unit operator shall carry out a subsurface pressure survey program to determine the reservoir pressure in the producing wells in the unit.
- 5(2) The unit operator shall submit the details of the pressure survey program to the Director of the Petroleum Branch including the wells to be surveyed, the measurement techniques to be used and the intended shut-in periods for each well, and shall first obtain approval of the program from the Director before it is carried out.
- 5(3) After receiving approval of the pressure survey program and after the program is carried out the unit operator shall submit a report thereon to the Director which shall include
- (a) the pressure data obtained from the program;
 - (b) an isobaric map of the reservoir or unit based on the data obtained; and
 - (c) an analysis of the survey results and pressure distribution in the reservoir.
4. Schedule B of the regulation is repealed.
5. Subsection 1(1) of Schedule C of the regulation is repealed and the following subsection is substituted therefor:
- 1(1) Water shall be injected to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age in the wells
- Chevron Virden WIW 9-20-10-25
Sun M. Welch Virden WIW 13-20-10-25
Chevron Virden WIW 15-20-10-25
Chevron Virden WIW 11-21-10-25
Chevron Virden WIW 13-21-10-25
Chevron East Virden Prov. WIW 5-28-10-25
Chevron East Virden Prov. WIW 5-29-10-25
Chevron East Virden Prov. WIW 7A-29-10-25
Placer Virden WIW 5-30-10-25
Placer Virden WIW 7-30-10-25
Teck Hepburn Virden WIW 15-23-10-26
Chevron Virden WIW 13-24-10-26
Chevron Virden WIW 15-24-10-26
Chevron Virden WIW 5-25-10-26
Chevron Virden CPR WIW 7-25-10-26
Chevron Virden WIW 11-25-10-26
Chevron Virden WIW 13-25-10-26
Chevron Virden CPR WIW 15-25-10-26
Chevron Virden WIW 3-26-10-26

and, from time to time, in such other wells as the board may direct, or, upon application of the unit operator, may approve.

6. Rule 5 of the Pressure Maintenance Rules as set out in Schedule C of the regulation is repealed and the following rule is substituted therefor:

5(1) At least once every three years commencing in 1981, unless otherwise directed by the board, the unit operator shall carry out a subsurface pressure survey program to determine the reservoir pressure in the producing wells in the unit.

5(2) The unit operator shall submit the details of the pressure survey program to the Director of the Petroleum Branch including the wells to be surveyed, the measurement techniques to be used and the intended shut-in periods for each well, and shall first obtain approval of the program from the Director before it is carried out.

5(3) After receiving approval of the pressure survey program and after the program is carried out the unit operator shall submit a report thereon to the Director which shall include

- (a) the pressure data obtained from the program;
- (b) an isobaric map of the reservoir or unit based on the data obtained; and
- (c) an analysis of the survey results and pressure distribution in the reservoir.

7. Subsection 1(1) of Schedule D of the regulation is repealed and the following subsection is substituted therefor:

1(1) Water shall be injected to the Virden and Scallion Member of the Lodgepole Formation of the Mississippian Age in the wells

Continental Virden WIW 12-31-10-25
 Chevron Virden Prov. WIW 10-36-10-26
 Chevron Virden WIW 4-5-11-25
 Chevron Virden WIW 10-5-11-25
 Chevron Virden Prov. WIW 12-5-11-25
 Chevron Virden Prov. WIW 14-5-11-25
 Chevron Virden Prov. WIW 2-6-11-25
 Chevron Virden Prov. WIW 8-6-11-25
 Chevron Virden Prov. WIW 10-6-11-25
 Chevron Virden Prov. WIW 12-6-11-25
 Chevron Virden Prov. WIW 14-6-11-25
 Chevron Virden Prov. WIW 16-6-11-25
 Murphy Virden WIW 2-7-11-25
 Murphy Virden WIW 4-7-11-25
 Chevron Virden WIW 4-8-11-25

and, from time to time, in such other wells as the board may direct, or, upon application of the unit operator, may approve.

8. Rule 5 of the Pressure Maintenance Rules as set out in Schedule D of the regulation is repealed and the following rule is substituted therefor:

5(1) At least once every three years commencing in 1981, unless otherwise directed by the board, the unit operator shall carry out a subsurface pressure survey program to determine the reservoir pressure in the producing wells in the unit.

5(2) The unit operator shall submit the details of the pressure survey program to the Director of the Petroleum Branch including the wells to be surveyed, the measurement techniques to be used and the intended shut-in periods for each well, and shall first obtain approval of the program from the Director before it is carried out.

5(3) After receiving approval of the pressure survey program and after the program is carried out the unit operator shall submit a report thereon to the Director which shall include

- (a) the pressure data obtained from the program;
- (b) an isobaric map of the reservoir or unit based on the data obtained; and
- (c) an analysis of the survey results and pressure distribution in the reservoir.

9. Subsection 1(1) of Schedule E of the regulation is repealed and the following subsection is substituted therefor:

1(1) Water shall be injected to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age in the wells

Chevron South Virden CPR WIW 10-7-10-25
Chevron South Virden CPR WIW 12-7-10-25
Chevron South Virden CPR WIW 14-7-10-25
Chevron East Virden Prov. WIW 2A-18-10-25
Sun I. Welch Virden WIW 4-18-10-25
Chevron South Virden CPR WIW 6-1-10-26
Chevron South Virden CPR WIW 14-1-10-26
Chevron South Virden Prov. WIW 8-2-10-26
Chevron South Virden WIW 14-2-10-26
Mineraloid Virden WIW 16-2-10-26
Chevron South Virden WIW 16-3-10-26
Gulf Duncan Virden WIW 6-10-10-26
Chevron South Virden Prov. WIW 8-10-10-26
Chevron South Virden Prov. WIW 6-11-10-26
Chevron South Virden Prov. WIW 8-11-10-26
Chevron South Virden Prov. WIW 12-11-10-26
Chevron South Virden Prov. WIW 14-11-10-26
Chevron South Virden Prov. WIW 16-11-10-26
Chevron South Virden WIW 6-12-10-26
Chevron South Virden WIW 14-12-10-26
Placer Virden WIW 6-13-10-26
Gulf Union Welch Virden WIW 9-13-10-26
Mineraloid Virden WIW 14-13-10-26
Rundle Williams Virden WIW 4-14-10-26
Rundle Williams Virden WIW 11-14-10-26
Murphy Virden WIW 1-23-10-26
Esso Virden WIW 3-23-10-26

and, from time to time, in such other wells as the board may direct, or, upon application of the unit operator, may approve.

10. Rule 5 of the Pressure Maintenance Rules as set out in Schedule E of the regulation is repealed and the following rule is substituted therefor:

5(1) At least once every three years commencing in 1981, unless otherwise directed by the board, the unit operator shall carry out a subsurface pressure survey program to determine the reservoir pressure in the producing wells in the unit.

5(2) The unit operator shall submit the details of the pressure survey program to the Director of the Petroleum Branch including the wells to be surveyed, the measurement techniques to be used and the intended shut-in periods for each well, and shall first obtain approval of the program from the Director before it is carried out.

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5(3) After receiving approval of the pressure survey program and after the program is carried out the unit operator shall submit a report thereon to the Director which shall include

- (a) the pressure data obtained from the program;
- (b) an isobaric map of the reservoir or unit based on the data obtained; and
- (c) an analysis of the survey results and pressure distribution to the reservoir.

11. Subsection 1(1) of Schedule G of the regulation is repealed and the following subsection is substituted therefor:

1(1) Water shall be injected to the Whitewater Members of the Lodgepole Formation of the Mississippian Age in the wells

Chevron Whitewater WIW 13-16-3-21

Chevron Whitewater WIW 9-17-3-21

and, from time to time, in such other wells as the board may direct, or, upon application of the unit operator, may approve.

- 12. Schedules A, C, D, E, F and G of the regulation are further amended by striking out the word "Mines" in Rule 7 thereof and substituting therefor the word "Petroleum".
- 13. Schedule A of the regulation is further amended by striking out the word "Mines" in Rule 8(1) thereof and substituting therefor the word "Petroleum".
- 14. Schedules H and I of the regulation are repealed.
- 15. Order Nos. PM 22, 25, 26 and 27 of The Oil and Natural Gas Conservation Board and filed as Manitoba Regulations 206/73, 151/74, 154/74 and 155/74 respectively, are repealed.

Oil and Natural Gas Order No. PM 37
made and passed this 20th day of
June A.D., 1980 at the City
of Winnipeg, in the Province of
Manitoba, by The Oil and Natural
Gas Conservation Board.

"Paul E. Jarvis"

Paul E. Jarvis,
Chairman,
The Oil and Natural Gas
Conservation Board.

"Ian Haugh"

Dr. Ian Haugh,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board.

"James F. Redgwell"

J.F. Redgwell,
Member,
The Oil and Natural Gas
Conservation Board.

APPROVED:


"D.W. Craik"

Donald W. Craik,
Minister of Energy and Mines.

THE REGULATIONS ACT
C E R T I F I C A T E

I, James T. Cawley, Chairman of The Oil and Natural Gas Conservation Board, of Manitoba, hereby certify that the attached Regulation is a true copy of the original Order: —

- (a) entitled The Oil and Natural Gas Conservation Board Order No. PM 26;
- (b) made pursuant to "The Mines Act";
- (c) made by The Oil and Natural Gas Conservation Board, of Manitoba;
- (d) under date of the 19th day of June A.D., 1974;
- (e) which Regulation comes into force on the date of filing with the Registrar of Regulations.



Jas. T. Cawley, P. Eng.,
Chairman,
The Oil and Natural Gas
Conservation Board.

THE OIL AND NATURAL GAS CONSERVATION BOARD

ORDER NO. PM 26

An Order pertaining to Pressure Maintenance by Water Flooding

VIRDEN-ROSELEA UNIT NO. 1

Made and passed pursuant to "The Mines Act", Cap. M160, R.S.M., 1970, and amendments thereto, by The Oil and Natural Gas Conservation Board, of Manitoba.

Order No. PM 8, of The Oil and Natural Gas Conservation Board, made and passed on the 26th day of April, A.D., 1967 and filed as Regulation 52/67, is amended as follows:

1. Subclause (1) of Clause 1 of the Pressure Maintenance Rules of the Order is amended by adding to the list of wells therein set out, the following well:

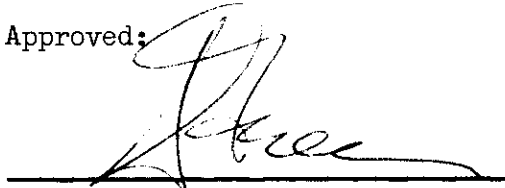
Chevron Virden 11-25-10-26

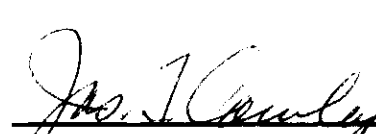
2. Adding the following clause:

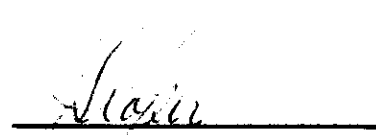
3. This Order rescinds Order No. PM 4, made and passed the 17th day of June, A.D., 1965 and filed as Manitoba Regulation 57/65.

Oil and Natural Gas Order No. PM 26, made and passed this 19th day of June A.D., 1974 at the City of Winnipeg, in the Province of Manitoba, by The Oil and Natural Gas Conservation Board.

Approved:


Sidney Green,
Minister of Mines, Resources and
Environmental Management.



Jas. T. Cawley, P. Eng.,
Chairman,
The Oil and Natural Gas
Conservation Board.

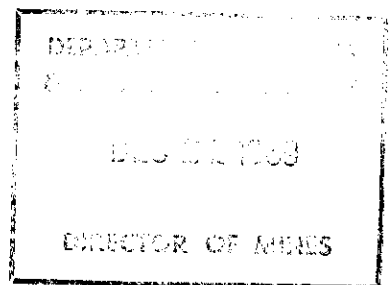

J. S. Roper,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board.

THE REGULATIONS ACT
C E R T I F I C A T E

I. W. Winston Mair, Chairman of The Oil and Natural Gas Conservation Board, of Manitoba, hereby certify that the attached Regulation, marked as Exhibit "A", is a true copy of the original Order:—

- (a) entitled The Oil and Natural Gas Conservation Board Order No. PM 11;
- (b) made pursuant to "The Mines Act";
- (c) made by The Oil and Natural Gas Conservation Board, of Manitoba;
- (d) under date of the *18* day of *December* A. D., 19*69*
- (e) which Regulation comes into force on the date of filing with the Registrar of Regulations.


I. W. Winston Mair,
Chairman,
The Oil and Natural Gas
Conservation Board



THE OIL AND NATURAL GAS CONSERVATION BOARD

ORDER NO. PM 11

An Order pertaining to Pressure Maintenance by Water Flooding

VIRDEN-ROSELEA UNIT NO. 1

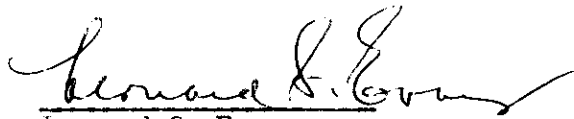
Made and passed pursuant to "The Mines Act", R. S. M., 1954, and amendments thereto, by The Oil and Natural Gas Conservation Board, of Manitoba.

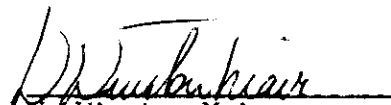
Order No. PM 8 of The Oil and Natural Gas Conservation Board, made and passed on the 26th day of April, 1967, and filed as Manitoba Regulation 52/67, is amended as follows:

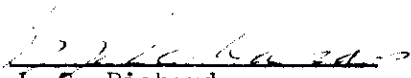
1. Subclause (2) of clause 1 (of the Pressure Maintenance Rules) of the Order is rescinded, and the following subclauses are substituted therefor:
 - (2) After the commencement, the Unit Operator shall, subject to any remedial work required to be performed on the well or wells referred to in this clause, endeavour to maintain continuous injection.
 - (3) Notwithstanding the provisions of subclause (2), the Board may, upon application by the Unit Operator, approve the suspension of water injection, provided the Board is satisfied that the pressure maintenance operation in the Unit area will not be adversely affected.

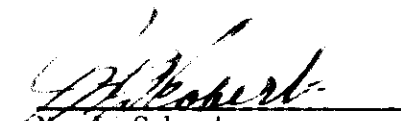
Oil and Natural Gas Order No. PM 11, made and passed this 18 day of December A. D., 1969 at the City of Winnipeg, in the Province of Manitoba, by The Oil and Natural Gas Conservation Board.

Approved:


Leonard S. Evans,
Minister of Mines and
Natural Resources.


W. Winston Mair,
Chairman,
The Oil and Natural Gas
Conservation Board.

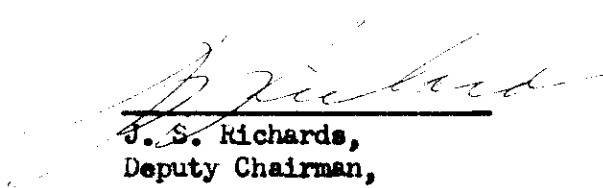

J. S. Richards,
Deputy Chairman,
The Oil and Natural Gas
Conservation Board.


M. J. Gobert,
Member,
The Oil and Natural Gas
Conservation Board.

THE REGULATIONS ACT
C E R T I F I C A T E

I, J. S. Richards, Deputy Chairman of The Oil and Natural Gas Conservation Board, of Manitoba, hereby certify that the attached Regulation, marked as Exhibit "A", is a true copy of the original Order:--

- (a) entitled The Oil and Natural Gas Conservation Board Order No. PM 8;
- (b) made pursuant to "The Mines Act";
- (c) made by The Oil and Natural Gas Conservation Board, of Manitoba;
- (d) under date of the 26th day of April, A. D., 1967;
- (e) which Regulation comes into force on the date of filing with the Registrar of Regulations.



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

THE OIL AND NATURAL GAS CONSERVATION BOARD

ORDER NO. PM 8

An Order pertaining to Pressure Maintenance by Water Flooding

VIRDEN-ROSELEA UNIT NO. 1

Made and passed pursuant to "The Mines Act", R. S. M., 1954, and amendments thereto, by The Oil and Natural Gas Conservation Board.

WHEREAS, subsection (8)(d) of Section 59 of "The Mines Act", as enacted by Chapter 45, Statutes of Manitoba, 1955, provides as follows:

"59. (8) Without restricting the generality of subsection (7) the board, with the approval of the minister, may make orders

(d) requiring the repressuring, recycling, or pressure maintenance, of any pool or portion thereof where it is economical so to do, and for that purpose where necessary requiring the introduction or injection into any pool or portion thereof of gas, air, water, or other substance;"

AND WHEREAS, the Board, pursuant to Section 59 of "The Mines Act", held a public hearing on March 10, 1967, for the purpose of considering a Proposal for Expansion of the Water Injection System for Pressure Maintenance within the Unit Area of the Virden-Roselea Unit No. 1, by Chevron Standard Limited, on its own behalf and other working interest owners, in the Virden-Roselea Field in Manitoba.

AND WHEREAS, upon due consideration of the submissions and testimony at the hearing, the Board has found:

(a) That the pressure maintenance by water flooding of a certain part of the Virden-Roselea Field in Manitoba, comprising the Unit Area of the Virden-Roselea Unit No. 1, is reasonably necessary to prevent waste, and to increase substantially the recovery of oil;

(b) That the value of the estimated additional recovery of oil and gas resulting from such operation will exceed the estimated additional cost incidental to the conduct of such operation; and

(c) That such operation will result in general advantage to the owners of oil and gas rights within the Unit Area.

AND WHEREAS, Unitization Order No. 3 provides for the appointment of The California Standard Company (Chevron Standard Limited) as Unit Operator.

NOW, THEREFORE, the Board orders:

1. (a) The Unit Operator shall conduct pressure maintenance operations by the injection of water to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age underlying the Unit Area;
- (b) The pressure maintenance operations shall be in accordance with, and subject to, the following rules:

PRESSURE MAINTENANCE RULES

1. (1) Water shall be injected to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age in the wells

Chevron Virden 9-20-10-25
Sun M. Welch Virden 13-20-10-25
Chevron Virden 15-20-10-25
Chevron Virden 11-21-10-25
Chevron Virden 13-21-10-25
Chevron East Virden Prov. SWD 5-28-10-25
Chevron East Virden Prov. 5-29-10-25
Chevron East Virden Prov. 7A-29-10-25
CEGO Virden 5-30-10-25
CEGO Virden 7-30-10-25
Teck Hepburn Virden 15-23-10-26
Chevron Virden 13-24-10-26
Chevron Virden 15-24-10-26
Chevron Virden 5-25-10-26
Chevron Virden CPR 7-25-10-26
Chevron Virden 13-25-10-26
Chevron Virden CPR 15-25-10-26
Chevron Virden 3-26-10-26

and, from time to time, in such other wells as the Board may direct, or, upon application of the Unit Operator, may approve;

- (2) The injection in the wells referred to in this clause shall continue after the commencement.
2. (1) Before the injection of water is commenced, and from time to time after the commencement of injection, and upon the request of the Board, the Unit Operator shall satisfy the Board as to the source, suitability, and method of treatment of the water to be injected;
- (2) Before any change is made in the source of water being injected, the Unit Operator shall satisfy the Board as to the suitability of the water to be injected.
3. The Unit Operator shall immediately report to the Board any indication of channelling or break-through of injected water to producing wells, or any indication of other detrimental effects that may be attributable to the pressure maintenance operations.
4. In the interest of equity and good engineering practice the Board may prescribe from time to time a maximum pressure, or a minimum or a maximum rate, at which water shall be injected in any well in the Unit.

5. At least annually, unless otherwise directed by the Board, the Unit Operator shall determine the reservoir pressure in the producing wells in the Unit to the satisfaction of the Board.
6. The Unit Operator shall inject water to each well referred to in clause 1 hereof in a manner such that, within five years of the effective date of the order, a suitable balance is achieved and maintained between water injected to, and fluids withdrawn from, the Unitized Strata.
7. The Unit Operator shall, not later than the twenty-fifth day of each month, file with the Mines Branch a report of the quantity and source of water injected during the preceding month to each well referred to in clause 1 hereof.
8. (1) Unless otherwise authorized in writing by the Board, the Unit Operator shall, within six weeks of the expiration of each yearly period commencing on the first day of January, 1968, file with the Board a report of the progress, performance, and efficacy of the pressure maintenance program during the period.

(2) Subject to any direction in writing of the Board to the contrary, a report required by this clause may, at the discretion of the Unit Operator, be in two parts, the first of which parts shall set out graphically and from the commencement of the operation of the pressure maintenance program;
 - (a) the daily average rate during each month of oil production of each producing well,
 - (b) the average water-oil ratio during each month of each producing well,
 - (c) the monthly cumulative oil and water production from each producing well,
 - (d) the daily average rate during each month of water injection to each injection well,
 - (e) the daily average water injection pressure during each month at each injection well,
 - (f) the monthly cumulative volume of water injected to each injection well,
 - (g) the average injectivity index during each month, for each water injection well, which index, at the discretion of the Unit Operator, may be determined as
 - (i) the daily injection rate divided by the average injection well head pressure, or
 - (ii) any similar index that the Board, on the application of the Unit Operator, may approve, and

(h) the date and type of any well treatment or work-over which shall be indicated on the graph, and the second of which parts shall contain

(a) calculations of the balance during each month between water injected to, and fluids withdrawn from, the Unitized Strata,

(b) such other interpretative information as the Unit Operator considers necessary to evaluate adequately the progress, performance, and efficacy of the pressure maintenance program, and

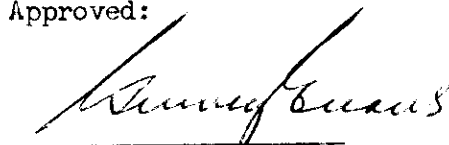
(c) an outline of the method actually in use for the quality, control, and treatment of the water, or, where there has been no change in the control or treatment from that outlined in a previous report, a statement to that effect.

(3) If a report required by this clause is in the form provided for in subclause (2), the Board, at any time, may make the first part of the report available to the public, and, after one year from the end of the period for which the report is made, may make the second part of the report available to the public, and, if the report is not in the form provided for in subclause (2), the Board may make the whole of the report available to the public at any time.

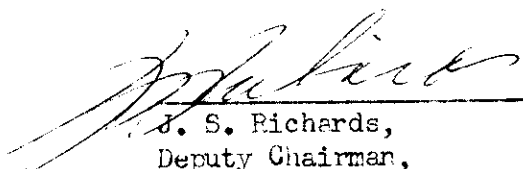
2. This Order shall be effective at the hour of seven o'clock in the forenoon, Central Standard Time, on the first day of June, A. D., 1967.

Oil and Natural Gas Order No. PM 8, made and passed this 26th day of April, A. D., 1967, at the City of Winnipeg, in the Province of Manitoba, by The Oil and Natural Gas Conservation Board.

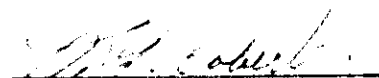
Approved:



Gurney Evans,
Minister of Mines and
Natural Resources



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




M. J. Gobert,
Member,
The Oil and Natural Gas
Conservation Board

THE REGULATIONS ACT

C E R T I F I C A T E

I, John G. Cowan, Chairman of The Oil and Natural Gas Conservation Board, of Manitoba, hereby certify that the attached Regulation, marked as Exhibit "A", is a true copy of the original Order:—

- (a) entitled The Oil and Natural Gas Conservation Board Order No. PM 4;
- (b) made pursuant to "The Mines Act";
- (c) made by The Oil and Natural Gas Conservation Board, of Manitoba;
- (d) under date of the 17th day of June, A.D., 1965;
- (e) which Regulation comes into force on the date of filing with the Registrar of Regulations.


Chairman,
The Oil and Natural Gas
Conservation Board

THE OIL AND NATURAL GAS CONSERVATION BOARD

ORDER NO. PM 4

An Order pertaining to Pressure Maintenance by Water Flooding

VIRDEN-ROSELEA UNIT NO. 1

Made and passed pursuant to "The Mines Act", by The Oil and Natural Gas Conservation Board.

WHEREAS, subsection (8) (d) of Section 59 of "The Mines Act", as enacted by Chapter 45, Statutes of Manitoba, 1955, provides as follows:

"59. (8) Without restricting the generality of subsection (7) the board, with the approval of the minister, may make orders

(d) requiring the repressuring, recycling, or pressure maintenance, of any pool or portion thereof where it is economical so to do, and for that purpose where necessary requiring the introduction or injection into any pool or portion thereof of gas, air, water, or other substance;"

AND WHEREAS, the Board, pursuant to Section 59 of "The Mines Act", held a public hearing on February 18, 1965, for the purpose of considering a Proposal for Pressure Maintenance by Water Flooding within the Unit Area of the Virden-Roselea Unit No. 1, by The California Standard Company, on its own behalf and other working interest owners, in the Virden-Roselea Field in Manitoba.

AND WHEREAS, upon due consideration of the submissions and testimony at the hearing, the Board has found:

(a) that the pressure maintenance by water flooding of a certain part of the Virden-Roselea Field in Manitoba, comprising the Unit Area of the Virden-Roselea Unit No. 1, is reasonably necessary to prevent waste, and to increase substantially the recovery of oil;

(b) that the value of the estimated additional recovery of oil and gas resulting from such operation will exceed the estimated additional cost incidental to the conduct of such operation; and

(c) that such operation will result in general advantage to the owners of oil and gas rights within the Unit Area.

2--ORDER NO. PM 4

AND WHEREAS, Unitization Order No. 3 provides for the appointment of The California Standard Company as Unit Operator.

NOW, THEREFORE, the Board orders:

1. (a) The Unit Operator shall conduct pressure maintenance operations by the injection of water to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age underlying the Unit Area;

(b) The pressure maintenance operations shall be in accordance with, and subject to, the following rules:

PRESSURE MAINTENANCE RULES

1. (1) Water shall be injected to the Virden and Scallion Members of the Lodgepole Formation of the Mississippian Age in the wells

Kranz Virden 9-20-10-25
Sun M. Welch Virden 13-20-10-25
Kranz Virden 15-20-10-25
Continental et al Virden 11-21-10-25
Continental et al Virden 13-21-10-25
Calstan East Virden Prov. SWD 5-28-10-25
Calstan East Virden Prov. 5-29-10-25
Calstan East Virden Prov. 7A-29-10-25
CEGC Virden 5-30-10-25
CEGC Virden 7-30-10-25
Calstan Virden 13-24-10-26
Calstan Virden 15-24-10-26
Calstan Virden 5-25-10-26
Calstan Virden CPR 7-25-10-26
Calstan Virden 13-25-10-26
Calstan Virden CPR 15-25-10-26

and, from time to time, in such other wells as the Board may direct, or, upon application of the Unit Operator, may approve;

(2) The injection in the wells referred to in this clause shall continue after the commencement.

2. (1) Before the injection of water is commenced, and from time to time after the commencement of injection, and upon the request of the Board, the Unit Operator shall satisfy the Board as to the source, suitability, and method of treatment of the water to be injected;

(2) Before any change is made in the source of water being injected, the Unit Operator shall satisfy the Board as to the suitability of the water to be injected.

3. The Unit Operator shall immediately report to the Board any indication of channelling or break-through of injected water to producing wells, or any indication of other detrimental effects that may be attributable to the pressure maintenance operations.

4. In the interest of equity and good engineering practice the board may prescribe from time to time a maximum pressure, or a minimum or a maximum rate, at which water shall be injected in any well in the Unit.

5. At least annually, unless otherwise directed by the Board, the Unit Operator shall determine the reservoir pressure in the producing wells in the Unit to the satisfaction of the Board.
6. The Unit Operator shall inject water to each well referred to in clause 1 hereof in a manner such that, within five years of the effective date of the order, a suitable balance is achieved and maintained between water injected to, and fluids withdrawn from, the Unitized Strata.
7. The Unit Operator shall, not later than the twenty-fifth day of each month, file with the Mines Branch a report of the quantity and source of water injected during the preceding month to each well referred to in clause 1 hereof.
8. (1) Effective July 1, 1965, and during the initial period of operation of the pressure maintenance program, unless otherwise authorized in writing by the Board, the Unit Operator shall, within six weeks of the expiration of each half of the calendar year, file with the Mines Branch a report of the progress, performance, and efficacy of the pressure maintenance program during the half, the first of which reports shall be for the half ending on December 31, 1965, and the last of which reports shall be for the half ending on June 30, 1968;

(2) After the period referred to in subclause (1), unless otherwise authorized in writing by the Board, the Unit Operator shall, within six weeks of the expiration of each yearly period commencing on the first day of July, file with the Board a report of the progress, performance, and efficacy of the pressure maintenance program during the period;

(3) Subject to any direction in writing of the Board to the contrary, a report required by this clause may, at the discretion of the Unit Operator, be in two parts, the first of which parts shall set out graphically and from the commencement of the operation of the pressure maintenance program;
 - (a) the daily average rate during each month of oil production of each producing well,
 - (b) the average water-oil ratio during each month of each producing well,
 - (c) the monthly cumulative oil and water production from each producing well,
 - (d) the daily average rate during each month of water injection to each injection well,
 - (e) the daily average water injection pressure during each month at each injection well,
 - (f) the monthly cumulative volume of water injected to each injection well,
 - (g) the average injectivity index during each month, for each water injection well, which index, at the discretion of the Unit Operator, may be determined as
 - (i) the daily injection rate divided by the average injection well head pressure, or
 - (ii) any similar index that the Board, on the application of the Unit Operator, may approve, and
 - (h) the date and type of any well treatment or work-over which shall be indicated on the graph, and the second of which parts shall contain

(a) calculations of the balance during each month between water injected to, and fluids withdrawn from, the Unitized Strata,

(b) such other interpretative information as the Unit Operator considers necessary to evaluate adequately the progress, performance, and efficacy of the pressure maintenance program, and

(c) an outline of the method actually in use for the quality, control, and treatment of the water, or, where there has been no change in the control or treatment from that outlined in a previous report, a statement to that effect.

(4) If a report required by this clause is in the form provided for in subclause (3), the Board, at any time, may make the first part of the report available to the public, and, after one year from the end of the period for which the report is made, may make the second part of the report available to the public, and, if the report is not in the form provided for in subclause (3), the Board may make the whole of the report available to the public at any time.

2. This Order shall be effective at the hour of seven o'clock in the forenoon, Central Standard Time, on the first day of July, A.D., 1965.

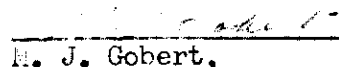
Oil and Natural Gas Order No. PM 4, made and passed this 17th day of June, 1965, at the City of Winnipeg, in the Province of Manitoba, by The Oil and Natural Gas Conservation Board.



J. G. Cowan,
Chairman,
The Oil and Natural Gas
Conservation Board



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



H. J. Gobert,
Member,
The Oil and Natural Gas
Conservation Board

APPROVED:



Sterling R. Lyon,
Minister of Mines and
Natural Resources