

## inter-departmental memo

To 8

SAM <sup>PS-F-25</sup>  
UNIT Files

To:

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

Date 77 03 11.

From J. S. Roper,  
Policy Advisor,  
302 Legislative Building.

Subject: APPROVAL OF PRESSURE MAINTENANCE ORDER NO. 31 -  
DALY UNIT NO. 3.

Further to your memorandum of 77 02 09 on the above subject  
and with reference to the recommendations therein:

1. Order No. PM 31 was signed, and the original and copies  
returned to the Branch on March 9th.

2. It is acceptable to the Board for the Branch to grant  
the Unit Operator approval to permit suspension of injection for a  
further period of three years through the current six suspended  
injection wells, in accordance with your recommendation.

Sam  
Take charge

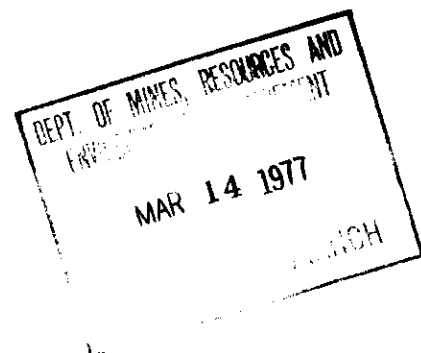
*JSR*  
J. S. Roper.

JSR/dw

c.c.: Jas. T. Cawley.  
I. Haugh.

Signed Order sent to  
Balkaren for filing and  
gazetting on 77 03 11.  
*JSR*

Gazetted March 26/77  
Reg. No. 51/77



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

77 02 09

H. G. Moster,  
Director,  
Petroleum Branch.

Subject:

Approval of Pressure Maintenance Order No. 31  
Daly Unit No. 3

Background:

The Daly Field is located approximately 10 miles SW of the Town of Virden. A pilot waterflood project was commenced by California Standard Company (now Chevron) in July 1953 on an 80 acre spacing, 5 spot pattern using four injection wells surrounding a central oil well located on Lot. 15-1-10-28 WM. Response to water injection was experienced in the central well and consequently led to the expansion of the project in December 1954 by adding 3 injection wells. Subsequent expansions to the project in 1955 (3 wells), 1956 (6 wells), 1959 (4 wells) and 1961 (2 wells) have increased the area under flood to cover 1960 acres using 22 injection wells. Individual "Water Flooding Unitization Agreements" were executed by the parties with interests in each area providing for the allocation of production within the area.

From the available data on our files, we gather that approvals were granted by the Board in April 1953, August 1955, November 1958 and August 1961 for California Standard to convert the above 22 wells to water injection for the waterflood project.

Surface injection pressure, from 1953 to 1971, was kept at or under 1080 psig which was considered a maximum pressure to keep reservoir pressures below the formation over-burden pressures.

In 1970, Chevron Standard Limited applied to the Board to allow them to conduct a pilot high pressure injection scheme for the waterflood project. This application was mainly presented in an attempt to increase the ultimate recovery in the area from 17% to 23% as a result of increasing the injection pressures, hence volumes of injected water (low permeability in the field). The well Chevron Daly WM 14-1-10-28 was selected to test the feasibility of the project. The application was approved in 1971 and Order No. PM 15 was issued for one year period allowing the maximum surface injection pressure of water in the subject well to reach 1300 psig during the first month, and granting permission for Chevron to increase the injection pressure by increments of 100 psig during succeeding periods of one month duration. High injection pressure was commenced in February 1971 (1250 psig). Pressure was increased to 1275 psig in April and May 1971 and later it became evident that the results of such a scheme were

minimal. The injection pressure was gradually decreased to 1065 psig in October 1971.

Chevron Standard Limited, made an application to the Board dated November 7, 1975 to unitize an area of 3200 acres in the Daly Field (Daly Unit No. 3) including the 1960 acres presently under waterflood. Chevron also applied to remove all production restrictions for all the wells in the Unit area. Both applications were considered in a Public Hearing dated March 12, 1976 and later approved by the Board (Unitization Order No. 23, Order No. 64A).

### Discussion:

Chevron Standard Limited, as Unit Operator of Daly Unit No. 3, requested in a letter dated September 2, 1976 that the Board issue an Order pertaining to Pressure Maintenance by Waterflooding within the Unit area of Daly Unit No. 3.

The proposed Pressure Maintenance Order would replace the existing Waterflood Permits and approvals granted by the Board for waterflooding in Daly Unit No. 3.

A number of provisions to the proposed Order were requested by Chevron. They are as follows:

1. A request that the Pressure Maintenance Rules of the subject Order permit the continuance of injection of water in only the presently 16 active wells, and that the Order allows for possible re-institution of injection of water in the 6 injection wells presently suspended in Daly Unit No. 3. Subsequent letter dated September 13, 1976 by this Branch to Chevron requesting them to state the reasons for the suspended status of the six injection wells and approximate date Chevron is planning to re-institute water injection. According to Chevron's reply, five of these wells were suspended due to low injectivity and lack of response in offsetting producers, while the sixth well was suspended because of ineffective injection. This Branch received and is holding applications to suspend injection on the subject six wells. We are prepared to approve these applications for a three year period, after which the Unit Operator shall be requested to submit its future plans on these wells along with projected timetable. All twenty-two injection wells are included in the list of injection wells under Clause 1. (1) of the Pressure Maintenance Rules of the proposed Order.
2. A request not to impose a maximum pressure, or a maximum or minimum rate, at which water shall be injected in any well in the Unit. This request was made with a view of giving Chevron the flexibility in increasing the surface injection pressure, should they decide so to do, without having to submit formal application to modify the proposed Order.

In 1953, the rate of injected water was 500 barrels per day per well. This rate decreased to approximately 89 barrels per day per well (16 active wells) in December 1976 with a maximum injection pressure of 1070 psig. The following is a brief history of injection pressure in Daly Unit No. 3 and neighboring Units in the area (see attached map):

<u>Unit Name</u>	<u>PM Order No.</u>	<u>Max. Injection Pressure Imposed Psig</u>	<u>Average Present Injection Pressure Psig (Dec. 76)</u>
Daly Unit No. 1	17	None	1200 (including one well with 1330 psig)
Proposed Daly # 2	24 29	1500 1500	1100
Daly Unit No. 3	—	—	1070
High Pressure Pilot Waterflood (Daly # 3, effective for 1 year, terminated in 1972)	15	1500	1300 (with possible increments of 100 psig every month)

Total cumulative water injection to the end of 1976 in Daly Unit No. 3 is 18,908,492 barrels.

High injection pressure may be required in Daly Unit No. 3 to increase volumes of injected water, hence obtain more conclusive results. Permeability in the field is generally poor and oil saturation is not uniform. Fluid recoveries on drillstem tests were usually small. It should be noted that packers are present on all active water injection wells (i.e. minimum requirements for high injection pressure). For the preceding reasons we recommend that no maximum injection pressure be imposed in the PM Order, however, Unit Operator shall report to the Board should the surface injection pressure exceeds 1300 psig. Please refer to Clause 4 under the Pressure Maintenance Rules of the attached order.

3. A request to waive having to run annual subsurface pressure surveys in the Unit area because of the maturity of the field and waterflood. This is a normal requirement in all previous permanent PM orders by the Board (orders that have no expiry dates), except for Routledge Unit No. 1. Chevron further submitted that if subsurface pressure surveys are required by the Board, that they be undertaken every second or third year.

This Branch recommends that subsurface pressure surveys be taken every second year starting 1978. The waterflood project has been in effect for some 23 years. To a great extent, voidage balance is achieved and maintained between water injected to, and fluids withdrawn from, the Unitized Strata. This Branch believes that subsurface pressure surveys are still essential in evaluating the

performance and behaviour of the reservoir, especially in the areas of the Unit not presently under the influence of artificial water-flooding (eg. northern part, most of Section 13-10-28 WPM). In the event Unit Operator increases the injection pressure above 1300 psig, and to keep closer observation of the effects of such high injection pressure, subsurface pressure surveys on an annual basis shall be required. Please refer to Clause 5 under the Pressure Maintenance Rules of the attached Order.

Conclusions:

1. The proposed Pressure Maintenance Order is required for Daly Unit No. 3 to ensure that operations in the Unit Area are carried out according to good engineering practices, and that maximum recovery of oil is achieved.
2. Certain provisions in the proposed Order were changed or amended, from the previous PM Orders by the Board, to suit Unit operations and circumstances at present. Enclosed is a copy of Order No. PM 30 (Waskada Unit No. 1) for reference.

Recommendations:

1. The attached Order No. PM 31 pertaining to Daly Unit No. 3 be approved by the Board and presented to the Minister for signing. Please return the signed original and copies to this Branch for final disposition.
2. Pursuant to subclause (3) of Clause 1 of the Pressure Maintenance Rules of the attached Order, please advise if it is acceptable to the Board for the Branch to grant the Unit Operator approval to permit suspension of injection for a further period of three years through the current and suspended injection wells.

H. C. Moster

HCM/et  
Attachs.

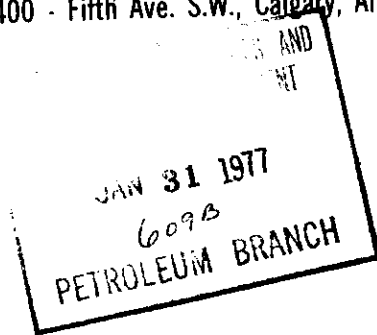


## Chevron Standard Limited

400 - Fifth Ave. S.W., Calgary, Alberta T2P 0L7

R. L. Bailey  
Chief Engineer

January 27, 1977



Request for Pressure Maintenance Order  
Daly Unit No. 3

The Oil and Gas Conservation Board  
310 Legislative Building  
Winnipeg, Manitoba  
R3C 0V8

Attention: Mr. H. C. Moster

Gentlemen:

In response to your letter of September 13, 1976 regarding our application for a Pressure Maintenance Order in Daly Unit No. 3, the following information is provided:

1. (a) The reasons for the suspended status of the six injection wells in Daly Unit No. 3 are outlined on Table 1 attached. In summary, five of the wells were suspended due to low injectivity and lack of response in offsetting producers; one well was suspended because of ineffective injection. The production response in offsetting producers is shown on Table 2. The response is based upon a review of the production curves for each of the offsetting wells.

Table 1 summarizes additional data on the suspended wells. Initial injection rates varied from 100 to 600 BWPd. When the injection of water was suspended, the injection rates varied from 2 to 30 BWPd with the exception of the well 8-14-10-28 which was capable of taking 2000 BWPd at low wellhead pressures. Injected water in a number of wells did not increase the production rate in offsetting producers. It was suspected that the injected water entered the underlying aquifer through vertical fractures instead of entering the production zone. Reworks on wells such as 6-11, 14-11 and 2-14-10-28 to plug the vertical fractures were successful in shutting off flow to the fractures but resulted in very low injection rates into the producing zones. A rework on the well 8-14-10-28 to plug the vertical fractures was unsuccessful. Injection in the wells 10A-1 and 16-11-10-28 declined slowly. Injection into the wells was subsequently suspended when it became apparent that continued injection at low rates was ineffective. The injection water was redirected into the remaining active injectors where effective production response was apparent in offsetting producers.

- (b) At present, no firm plans have been formulated for the reinstitution of injection in the six suspended injection wells. No possible benefits can be foreseen in reinstituting injection in five of the wells at the low rates of injection that were experienced before suspension of the wells. However, retention of the wells is recommended for possible high pressure waterflooding in the future. In this regard, Chevron is monitoring with interest the high pressure flooding operations being carried out in Daly Unit No. 1 and proposed Daly Unit No. 2. If the technical and economic success of these operations can be demonstrated, then consideration will be given to instituting a pilot high pressure injection project in Daly Unit No. 3. The results of a previous high pressure injection pilot carried out in 1971 utilizing the injection well 14-1-10-28 were inconclusive.
- (c) Chevron believes that the effect of suspension of injection in the six injection wells has been negligible. As noted on Table 1, the previous production from the subject wells before they were converted to injection was minimal. Cumulative injection in each well of between 93,000 and 3,400,000 barrels is considered sufficient to satisfy fill-up requirements and evaluate response in offsetting producing wells. As noted on Table 2, little or no production response was evident in offsetting producing wells after injection commenced in each of the injectors. Similarly no change in production in offsetting producing wells was evident when the injection wells were suspended. In many of the offsetting producers, the only response has been a possible reduction in the production decline rate which is probably due to continuing injection in the remaining active injectors. Based on the lack of response when injection commenced and when injection was suspended in the subject wells, it is concluded that the effect of suspension of injection on waterflood efficiency was negligible.
2. (a) Chevron requests that a maximum injection pressure not be imposed on the Unit in order that the present injectivity might be increased in some low injectivity wells by increasing injection pressure. For example, the low injection rates in the wells 6-12 and 12-12-10-28 could be increased by increasing wellhead injection pressures. This would provide flexibility in allocating injection to the wells where the greatest benefit can be derived. In addition, if high pressure injection appears feasible, then injection pressures could be increased throughout the Unit without formal application to modify the proposed Pressure Maintenance Order. It is noted that Pressure Maintenance Order No. 17 concerning Daly Unit No. 1 does not impose a maximum pressure restriction, but contains a clause in which the Board may prescribe a maximum pressure if it is found to be necessary. High pressure waterflooding has been successful in Daly Unit No. 1 with no apparent detrimental effects as a result of high injection pressures. We would suggest that a similar clause could be included in the proposed Pressure Maintenance Order.

(b) If a maximum surface injection pressure were to be set, Chevron would propose a pressure of 1300 psig. From injection tests conducted upon the well 14-1-10-28 in 1971, it was found that the injection rate was increased from 50 BWPD @ 1080 psig to 502 BWPD @ 1240 psig wellhead injection pressure. Therefore, a maximum injection pressure of 1300 psig should provide a sufficiently large range of well injectivities to accommodate high pressure waterflooding. \*

3. Chevron believes that annual subsurface pressure surveys are of limited value in evaluating the performance and behavior of the reservoir. The active injection wells have been on injection for periods of 15 to 23 years and the waterflood is considered in a late stage of maturity. As a result, production and injection rates are relatively stable and little change in reservoir pressure is anticipated. As the main waterflood area was developed on a five spot injection pattern, the effectiveness of the waterflood can best be determined by the degree of production response and production decline. In a five spot pattern, individual well pressures reflect only the pattern pressure and bear little relationship to pressures in offsetting patterns. As the reservoir has very low permeability, long shutin times are required for meaningful bottom-hole pressures. Because bottom-hole pumps must be pulled, there is a resultant loss in production that becomes increasingly larger as the shutin time is increased. The questionable results of bottom-hole surveys makes it difficult to define trends in the reservoir pressure. A few selected wells do not adequately reflect the reservoir pressure throughout the pool, and the lost production and bottom-hole pump pulling expense precludes surveying more than a few selected wells. Chevron believes that accurate monitoring of voidage on a pattern basis with regard to response and voidage replacement is a more accurate and practical method of evaluating the performance and behaviour of the reservoir. If subsurface pressure surveys are required by the Oil and Natural Gas Conservation Board, then Chevron suggests that they be undertaken every second or third year. \*

Any enquiries regarding this letter should be directed to Mr. J. D. Scott at the above letterhead address.

Yours very truly,

*John D. Scott P. Eng.*  
for A. HAMBERG  
Supervising Engineer  
Reservoir

JDS/ws  
Attach.



TABLE 1

SUSPENDED INJECTION WELL DATADAILY UNIT NO. 3

<u>Injection Well</u>	<u>Initial Injection Date</u>	<u>Initial Injection Rate BHPD</u>	<u>Suspension Date</u>	<u>Last Injection Rate BHPD</u>	<u>Last Injection Wellhead Pressure PSIG</u>	<u>Previous</u>		<u>Reason for Suspension</u>
						<u>Oil Production Bbls</u>	<u>Previous Water Production Bbls</u>	
10A-1-10-28	1953	400	1966	20	1080	3441	477	Low injectivity, no production response in offsetting producers.
6-11-10-28	1955	600	1965	5	1080	0	0	Low injectivity, no production response in offsetting producers.
14-11-10-28	1956	550	1971	20	1080	50	0	Low injectivity, no response in offsetting producers.
16-11-10-28	1956	100	1967	30	1080	32	0	Low injectivity, no production response in offsetting producers, junk left in hole.
2-14-10-28	1956	500	1963	2	1080	10	0	Low injectivity after plug-back in 1957, little production response in offsetting producers.
8-14-10-28	1956	350	1968	2000	750	2340	401	Ineffective water injection, no production response in offsetting producers.

TABLE 2

PRODUCTION RESPONSE IN WELLS OFFSETTING SUSPENDED INJECTORSDAILY UNIT NO. 3

<u>Injection Well</u>	<u>Date of Injection</u>	<u>Date of Last Injection</u>	<u>Cumulative Injection Bbls</u>	<u>Surrounding Wells</u>	<u>Remarks</u>
10-1-10-28	1953	1964	153633	7-1 9-1 11-1 15-1	Undrilled Undrilled No production response-well suspended in 1967. Production rate remained steady until 1962, declined slowly until 1972, constant since 1972.
6-11-10-28	1955	1965	159545	3-11 5-11 7-11 11-11	No production response-rate of production decline may have been reduced. No production response-well suspended in 1966. No production response-rate of production decline may have been reduced. No production response-rate of production decline may have been reduced.
14-11-10-28	1956	1970	255826	11-11 13-11 15-11 3-14	No production response-rate of production decline may have been reduced. No production response-rate of production decline may have been reduced. Some production response in 1957 to 1959-response about 10 BOPD. Production response due to rework in 1959-production rate has stabilized.
16-11-10-28	1956	1963	93333	9-11 15-11 13-12 1-14	No production response-rate of production decline may have been reduced. Some production response in 1957 to 1959-response about 10 BOPD. No production response-rate of production decline may have been reduced. Well suspended in 1960 due to low production-abandoned June 19, 1961.

<u>Injection Well</u>	<u>Date of Injection</u>	<u>Date of Last Injection</u>	<u>Cumulative Injection Bbls</u>	<u>Surrounding Wells</u>	<u>Remarks</u>
2-14-10-28	1956	1963	172411	15-11	Some production response in 1957 to 1959-response about 10 BOPD.
				1-14	Well suspended in 1960 due to low production-abandoned June 19, 1961.
				3-14	Production response due to rework in 1959-production rate has stabilized.
				7-14	Undrilled
8-14-10-28	1956	1967	3415265	5-13	No production response-rate of production decline may have been reduced.
				1-14	Well suspended in 1960 due to low production-abandoned June 19, 1961.
				7-14	Undrilled
				9-14	Undrilled

December 30, 1976

Chevron Standard Limited  
400 Fifth Avenue S. W.  
Calgary, Alberta  
T2P 0L7

Attention: Mr. J. D. Scott, P. Eng.,

Dear Sir:

Re: Request for Pressure Maintenance Order  
Daly Unit No. 3

Further to our letter of September 13, 1976, in which we requested further classification on certain points in your application for a Pressure Maintenance Order for Daly Unit No. 3, please ensure that the material requested is submitted to this office prior to February 1, 1977 in order that processing of your application may be proceeded with.

Yours sincerely,

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

SE/cf

c.c: Oil & Natural Gas  
Conservation Board

*1 copy for Dr. Hough*  
*1 copy for Paper*

SAM

September 13, 1976

Chevron Standard Limited  
100-110th Avenue N. W.,  
Calgary, Alberta,  
T2P 0M7

Attention: Mr. J. D. Smith, P. Eng.

Dear Sirs

Re: Request for Pressure Maintenance Order  
WAB 100-110th Ave. N. W., Calgary, Alberta

On behalf of the Oil and Natural Gas Conservation Board we acknowledge receipt of your letter of 9th August for a Pressure Maintenance Order for WAB 100-110th Ave. N. W., Calgary, Alberta, 2, 1976.

Before proceeding further with your application, more clarification is required on certain points which you requested in your September 2nd letter. Please provide the following:

1. (a) The reasons for the requested status of the six injection wells in May 1976 W. 1.  
(b) Information from your company is planning to re-institute water injection during 1976.  
(c) The effect of such suspension on wellhead efficiency.
2. (a) The reasons for your request not to impose a maximum injection pressure on the well.  
(b) The maximum water injection pressure Chevron would propose, with justification, if a maximum was to be set.
3. In view of the necessity of several subsequent pressure surveys, we believe that they are essential in establishing the performance and behaviour of the reservoir.

Our records indicate that the last pressure survey in this area was carried out during May - June 1969 on six wells with the results being inconclusive on two of them. Any further comments you may wish to provide will be considered.

Yours sincerely,

Original Signed by H. C. Moster

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

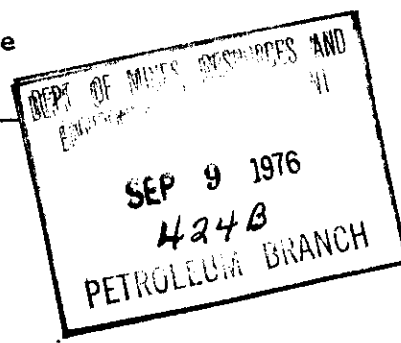
SE/jr  
cc: O&MG Cons. Bd.



**Chevron Standard Limited**  
400 - Fifth Ave. S.W., Calgary, Alberta T2P 0L7

September 2, 1976

Request for Pressure  
Maintenance Order  
Daly Unit No. 3



The Oil and Natural Gas Conservation Board  
310 Legislative Building  
Winnipeg, Manitoba  
R3C 0V8

Attention: Mr. J. T. Cawley, Chairman

Gentlemen:

Chevron Standard Limited, as Operator of Daly Unit No. 3, under and pursuant to the Mines Act, being Chapter M160 of the Revised Statutes of Manitoba, 1970, and amendments thereto, hereby requests that the Board issue an Order pertaining to Pressure Maintenance by Water Flooding within the Unit Area of Daly Unit No. 3. The proposed Pressure Maintenance Order would replace the existing Water Flooding Permits and Approvals under which the waterflood in Daly Unit No. 3 is now operating.

Waterflooding in the area of Daly Unit No. 3 was initiated in 1953 when four wells were placed on injection in an 80-acre, five-spot pilot waterflood project. The waterflood was subsequently expanded in four phases during the period from 1954 to 1961. As shown on Figure 1, the waterflood lies within Daly Unit No. 3 which became effective on July 1, 1976, with Chevron Standard Limited as the Unit Operator. There are currently 22 injection wells in the unit area, six of which are suspended.

Chevron submits that the pressure maintenance by waterflooding in the waterflood area of Daly Unit No. 3, as shown on Figure 1, has and will continue to substantially increase the recovery of oil. Chevron further submits that the waterflood operation has and will continue to result in general advantage to the owners of oil and gas rights within the Unit Area. The evidence of increased oil recovery is substantiated in the progress reports for the waterflood area submitted annually by Chevron Standard Limited.

September 2, 1976

Chevron requests that the Pressure Maintenance Rules of the proposed Pressure Maintenance Order to permit the continuance of injection of water to the Lodgepole Formation of Mississippian Age in the 16 active injection wells, as listed on Table 1 attached. Chevron further requests that the Order allow for possible reinstitution of injection of water in the future in the six suspended injection wells listed on Table 1 attached.

Chevron submits that the source of injection water is produced water from the Daly Field which is compatible with the Lodgepole Formation and Lodgepole formation water. No treatment, other than filtration, is required. The present water supply, treatment and injection system has been operational for over 15 years and has been found to be completely satisfactory.

Chevron submits that there has been no indication or evidence of channelling or rapid breakthrough of injected water to producing wells, or any indication of other detrimental effects that may be attributable to the pressure maintenance operation.

Chevron submits that the imposition of a maximum pressure, or a minimum or a maximum rate, at which water shall be injected in any well in the Unit is not necessary at this time. The injection system will continue to be operated as it has in the past. Any proposed significant change in the operation will be reported to the Board and commenced only upon approval of the Board. X

Chevron submits that annual pressure surveys in the Unit Area are not necessary because of the maturity of the field and waterflood. Production and injection rates are now relatively stable and little change in pressure is anticipated in any area of the Unit. Y

Chevron submits that a suitable balance has been achieved in the waterflood area between water injected to, and fluids withdrawn from the unitized strata, as documented in the annual progress reports.

Any enquiries regarding this application should be directed to Mr. J. D. Scott, P.Eng., at the above letterhead address.

Yours very truly,



R. A. PARK  
Production Manager

JDS/mb  
Attachment

cc: All Working Interest Owners  
Daly Unit No. 3



TABLE 1

LIST OF INJECTION WELLS

DALY UNIT NO. 3

<u>Active Injection Wells</u>	<u>Date of Initial Injection</u>	
12-01-10-28 W1	August 1961	
14-01-10-28	July 1953	
16-01-10-28	July 1953	
16-02-10-28	October 1959	
2-11-10-28	October 1959	
8-11-10-28	December 1954	
10-11-10-28	December 1955	
12-11-10-28	December 1955	
2-12-15-28	July 1953	
4-12-10-28	November 1957	
6-12-10-28	December 1954	
8-12-10-28	October 1961	
10-12-10-28	October 1959	
12-12-10-28	December 1954	
14-12-10-28	October 1959	
4-13-10-28	November 1956	

<u>Suspended Injection Wells</u>	<u>Date of Initial Injection</u>	<u>Date of Suspension</u>
A10-01-10-28 W1	July 1953	January 1966
6-11-10-28	December 1955	July 1965
14-11-10-28	January 1956	March 1971
16-11-10-28	November 1956	April 1967
2-14-10-28	November 1956	June 1963
8-14-10-28	November 1956	January 1968

R. 28

R. 27WP

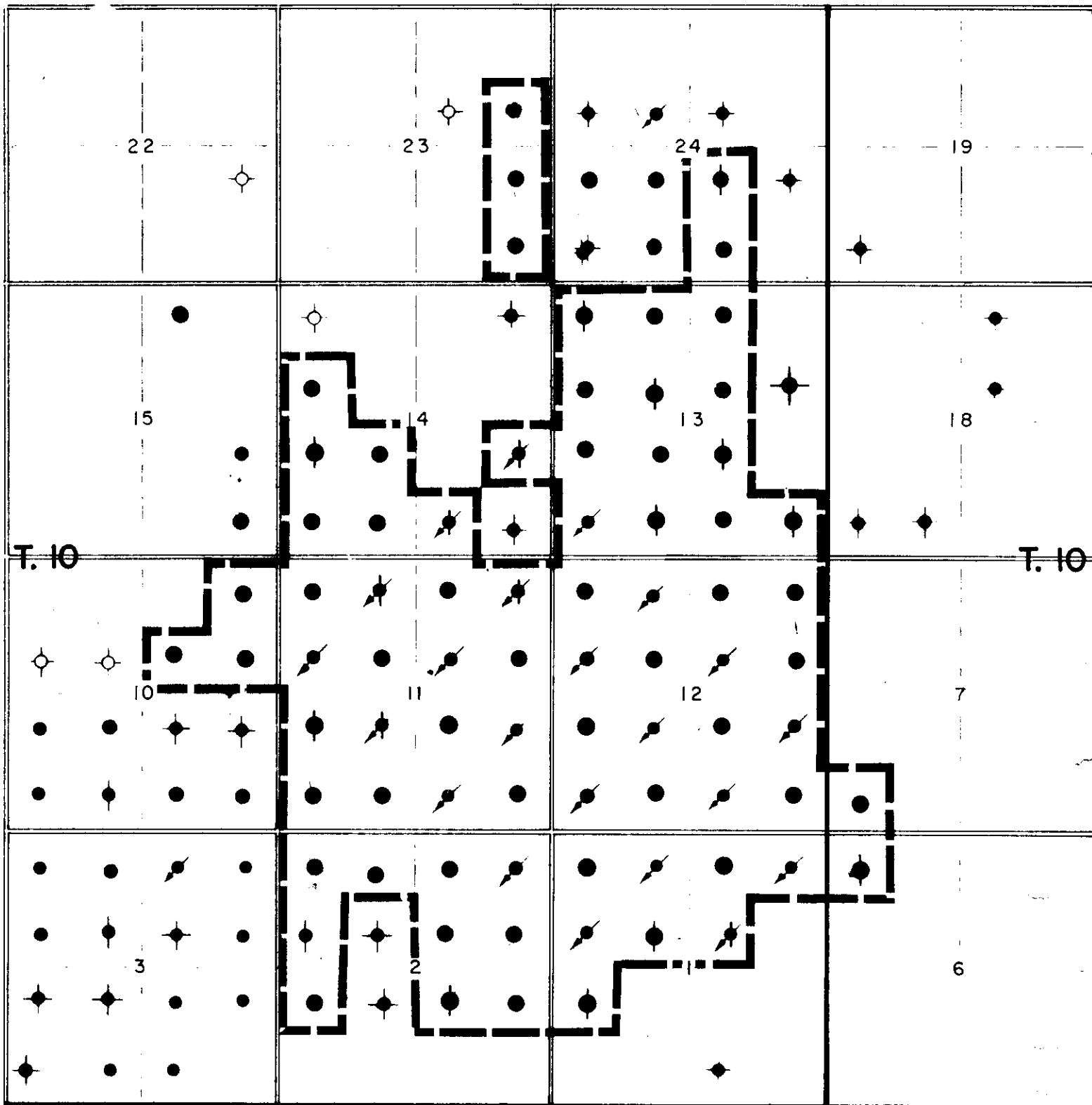


FIGURE 1

LEGEND

- OILWELL
- SUSPENDED OILWELL
- ✕ INJECTION WELL
- ★ ABANDONED OILWELL

DALY UNIT No.3  
MAP OF AREA



Province of Manitoba

**Department of Mines, Resources and Environmental Management**

**Mineral Resources Division**

Petroleum Branch  
993 Century Street  
Winnipeg, Manitoba  
R3H 0W4

December 30, 1976

Chevron Standard Limited  
400 Fifth Avenue S. W.  
Calgary, Alberta  
T2P 0L7

Attention: Mr. J. D. Scott, P. Eng.,

Dear Sir:

Re: Request for ~~Pressure Maintenance Order~~  
Daly Unit No. 3

Further to our letter of September 13, 1976, in which we requested further classification on certain points in your application for a Pressure Maintenance Order for Daly Unit No. 3, please ensure that the material requested is submitted to this office prior to February 1, 1977 in order that processing of your application may be proceeded with.

Yours sincerely,

*for: H.C.*

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

SE/cf

→c.c: Oil & Natural Gas  
Conservation Board

Department of Mines, Resources  
& Environmental Management  
Mineral Resources Division

*JH* JAN 3 1977  
ASSISTANT DEPUTY MINISTER

Government of Canada

Department of Mines, Resources and Environmental Management  
Mineral Resources Division

Petroleum Branch  
993 Century Street  
Winnipeg, Manitoba  
R3H 0W4

September 13, 1976

Chevron Standard Limited  
400-Fifth Avenue S. W.,  
Calgary, Alberta.  
T2P 0L7

Attention: Mr. J. D. Scott, P. Eng.

Dear Sir:

Department of Mines, Resources  
& Environmental Management  
Mineral Resources Division

SEP 14 1976

ASSISTANT DEPUTY MINISTER

Re: Request for Pressure Maintenance Order  
Daly Unit No. 3

On behalf of The Oil and Natural Gas Conservation Board we acknowledge receipt of five copies of your request for a Pressure Maintenance Order for Daly Unit No. 3 dated September 2, 1976.

Before proceeding further with your application, more clarification is required on certain points which you requested in your September 2nd letter. Please provide the following:

1. (a) The reasons for the suspended status of the six injection wells in Daly Unit No. 3.  
(b) Approximate date your company is planning to re-institute water injection through these wells.  
(c) The effect of such suspension on waterflood efficiency.
2. (a) The reasons for your request not to impose a maximum injection pressure on the Unit.  
(b) The maximum surface injection pressure Chevron would propose, with justification, if a maximum were to be set.
3. As for the necessity of annual subsurface pressure surveys, we believe that they are essential in evaluating the performance and behaviour of the reservoir.

Our records indicate that the last pressure survey in this area was carried out during May - June 1969 on six wells with the results being inconclusive on two of them. Any further comments you may wish to provide will be considered.

Yours sincerely,

*to be signed* Signed by H. C. Moster

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

SE/jr

→ cc: O&NG Cons. Bd.

(To be filled in by office of origin)  
(À remplir par le bureau d'origine)

**REGISTERED ARTICLE**

*Article enregistré*

**POSTED AT** **OFFICE OF**  
*déposé au* *bureau de*

**DATE** 11/8/61 **UNDER** No. 955  
*sous le*

**ADDRESSED TO** J.G. Trowell  
*adressé à*

California Standard Company

Box 100

**(Street and number)**  
*(Rue et numéro)*

Virden, Man.

**Place**  
*Lieu*

**Country of destination**  
*Pays de destination*

**(1) The undersigned acknowledges that the registered article described opposite has been duly delivered on the**

*Le soussigné déclare que l'envoi recommandé mentionné ci-contre a été dûment livré le*

19

**Signature**  
**of the addressee:**  
*du destinataire:*

**of addressee's representative**  
*du représentant du destinataire*

**of the Postmaster of the office of destination**  
*de l'agent du bureau destinataire*

**Date stamp**  
**of office of**  
**destination**

*Timbre*  
*du bureau*  
*de destination*

(1) This receipt should be signed by the addressee or if the regulations of the country of destination so provide, by the Postmaster of the delivery office and returned by first mail to the address shown on the receipt.  
*Cet avis de livraison doit être signé par le destinataire ou, si le règlement du pays de destination le comporte, par l'agent du bureau destinataire, et renvoyé par la première courrier à l'expéditeur, dont l'adresse figure au recto.*

(2) When delivery is made to the authorized representative of the addressee, both addressee's name and representative's signature must appear on this receipt.  
*Lorsque la remise est faite à un représentant autorisé du destinataire, le nom du destinataire et la signature de son représentant doivent figurer sur ce reçu.*

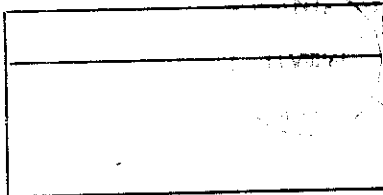
POST OFFICE DEPARTMENT

CANADA

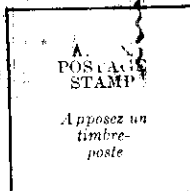
MINISTÈRE DES POSTES

ON POSTAGE SERVICE  
Service des Postes

(1)



Date Stamp  
or Office of Origin  
Timbre du bureau d'origine



**ACKNOWLEDGMENT OF RECEIPT**  
**AVIS DE RÉCEPTION**

(2) **RETURN TO**  
*Remettez à*

M.J.Gobert, Mines Branch

Box 42 Legislative Bldg.

**STREET AND NUMBER** - Rue et numéro

(3)

Winnipeg 1, Manitoba.

**PLACE OF ORIGIN OF REGISTERED ARTICLE**

*Lieu d'origine de l'envoi recommandé*

**CANADA**

(1) If this advice is to be returned by air, it should bear very conspicuously the indication "Return by Air Mail" and the label "By Air Mail".  
*Si le présent avis doit être renvoyé par avion, le revêtir de la mention très apparente "Renvoi par Avion" et de l'étiquette "Par Avion".*

(2) To be filled in by sender, who will indicate his complete address for return of this advice.  
*A remplir par l'expéditeur, qui doit indiquer son adresse complète pour le renvoi du présent avis.*

(3) In printed characters.  
*En lettres imprimées.*

39B-500M-29-7-59

registered

August 11, 1961.

The California Standard Company,  
Box 100,  
Virden, Manitoba.

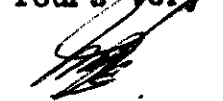
Attention: Mr. J. G. Trowell,  
District Production Superintendent

Re: Daly Water Flood Expansion

Dear Sir:

With reference to your application, dated September 22, 1960, heard by the Board at a Public Hearing on November 8, 1960, enclosed herewith is Approval of the Board under Section 71, dated August 9, 1961.

Yours very truly,



M. J. Gobert,  
Senior Petroleum Engineer.

MJG/h

c.c. Virden





PROVINCE OF MANITOBA  
DEPARTMENT OF  
MINES AND NATURAL RESOURCES  
DEPUTY MINISTERS OFFICE  
WINNIPEG

THE MINES ACT

(Statutes of Manitoba, 1959, (Second Session) Chapter 38

APPROVAL OF THE BOARD UNDER SECTION 71

WHEREAS, Section 71 of The Mines Act, Statutes of Manitoba, 1959, (Second Session), Chapter 38, provides in part:

"71 (1) The board shall encourage efforts initiated by working interest owners in a pool or field or part thereof to consolidate, merge, or otherwise combine their interests for the purpose of accomplishing the more efficient and more economical development and production of the oil and gas resources of that pool or field, or part thereof, irrespective of whether that purpose is accomplished by unit operation under a unitization agreement, co-operative development, or joint participation.

(2) The drilling, production and other field operations provided for in a unitization agreement for the unit operation of a pool or field, or part thereof, shall not be put into effect unless the agreement has been approved by the board.

(3) The board shall not approve a unitization agreement for the unit operation of a pool or field, or part thereof, unless the royalty owners of the tracts within the pool or field, or part thereof, agree to the unit operation thereof, either as parties to the unitization agreement or by separate agreement.

AND WHEREAS, The California Standard Company has made application to expand the Daly Water Flood and convert to water injection the wells known as -

Calstan Daly 12-1-10-28 and  
Calstan Daly Prov. 8-12-10-28

AND WHEREAS, the royalty owners of the tracts within the part of the field affected thereby have agreed to the unit operation as parties to an agreement, as provided by Subsection 3 of Section 71 of the said Act;

AND WHEREAS, The California Standard Company has complied with the provisions governing approval under Subsection 2 of Section 71, and the application by The California Standard Company is considered in other respects to be reasonable.

NOW THEREFORE, approval is given to The California Standard Company to expand the Daly Water Flood and convert to water injection, the wells known as -

Calstan Daly 12-1-10-28 and  
Calstan Daly Prov. 8-12-10-28.

DATED at Winnipeg, Manitoba, this 9<sup>th</sup> day of August A.D. 1961.



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

No. 1071/61

Memorandum of an order of the Lieutenant-Governor-in-Council  
approved and ordered by His Honour the Lieutenant-Governor on

AUG 31 1961

DEPARTMENT OF MINES  
& NATURAL RESOURCES  
SEP 7 1961  
DIRECTOR OF MINES

The Honourable the Minister of Mines and Natural Resources  
having submitted to Council a report setting forth that:

WHEREAS Section 72 of The Mines Act, Statutes of Manitoba, 1959,  
Second Session, Chapter 38, provides as follows:

"72. (1) Where the Crown is a working interest owner or royalty owner of a tract of land, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into a unitization agreement for the unit operation of the pool or field, or part thereof, within which the tract is situated.

(2) Notwithstanding any other provision of this Act or of an agreement or other disposition made under this Act, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into an agreement for the calculation of the royalty payable to the Crown on the oil and gas produced from a unit area that includes a tract that is subject to the payment of a royalty to the Crown.";

AND WHEREAS, The California Standard Company has instituted a water flooding programme with a view to securing the greatest economically practicable recovery of oil and gas from certain lands in the Daly Field;

AND WHEREAS, the said water flooding programme necessitated the entering into "Water Flooding Unitization Agreements" which pooled, consolidated, and merged certain oil and gas leases issued by the Crown, and other owners of oil and gas rights, which were authorized by Orders-in-Council Nos. 411/57 and 78/58;

AND WHEREAS, the Minister of Mines and Natural Resources wishes to enter into a further agreement with the persons who are parties to this agreement;

AND WHEREAS it is considered that the provisions of the said agreement will result in a better recovery of oil and gas from the said lands.

*Refco  
4 Mines  
6/9/61*

- 2 -

1071/61

THEREFORE he, the Minister, recommends:

THAT the Minister of Mines and Natural Resources be authorized to execute the Agreement (commonly known as Document No. 19392-1), respecting the wells described as:

Calstan Daly Prov. WIW 8-12-10-28,  
 Basco Daly 9-12-10-28, and  
 Calstan Daly WIW 10-12-10-28.

And, upon consideration of the said report and recommendation on  
 the <sup>30th</sup> day of <sup>August</sup> A.D. 19 <sup>61</sup> (the Hon. Mr.  
 Roblin in the Chair), Council having advised that it be done  
 as recommended by the Honourable the Minister of Mines and Natural Resources

His Honour the Lieutenant-Governor-in-Council was pleased to approve the said report and recommendation and to order that it be done accordingly.

Certified correct

DEREK BEDSON  
 as Clerk of the  
 Clerk of the Executive Council

This memorandum is furnished

on

SEP 1 1961

**COPY**

August 8, 1961.

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

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

Daly Field Water Flood Expansion.

Further to your correspondence with  
Mr. Gobert, relative to the above subject, attached, hereto,  
the following:

1. Copy of Recommendation-to-Council  
which, if approved, grants authorization to the Minister to  
execute the Agreement (commonly known as Document No. 19392-1).  
You will note that this has been redrafted in accordance with  
your memo of August 3rd.

2. Approval of The Board under Section 71  
(The Mines Act), for your signature as Chairman of the Board.

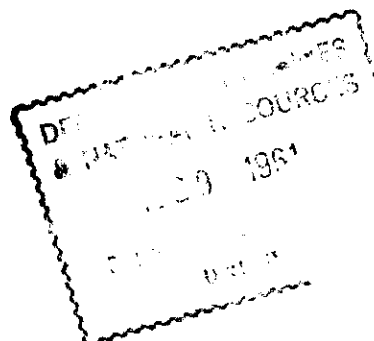
J. S. Richards.

JSR:db

Encs.

c. c. for: Hon. C. H. Witney,  
Minister of Mines and Natural Resources.

Mr. M. J. Gobert,  
Member.



## INTER-DEPARTMENTAL MEMORANDUM



FROM J.G. Cowan  
Deputy Minister

DATE .....

TO Mr. M.J. Gobert  
Senior Petroleum Engineer

SUBJECT California Standard Company  
Daly Water Flood

August 3, 1961.

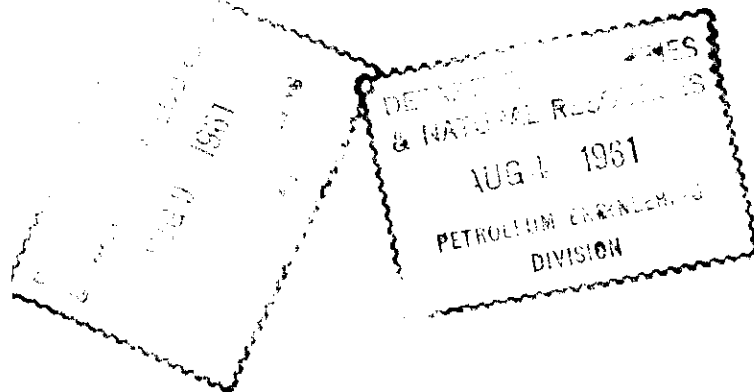
I have your letter of July 18 in connection with the above matter and the suggested form of Order appears to be satisfactory.

In connection with the Recommendation-to-Council, however, I would make one suggestion. As the Recommendation is now worded, it would seem to me that a copy of the agreement would have to be attached to the Recommendation. The agreement is fairly lengthy and complicated and I doubt if this is necessary. I would suggest the following: "That the Minister of Mines and Natural Resources be authorized to execute the agreement (commonly known as Document 19392-1) respecting the wells described as ....."

A handwritten signature in cursive script, reading "J.G. Cowan".

J.G. Cowan.

JGC/rs  
Enc.



I checked with  
Mr. Cowan re last  
para - your memo  
July 18 -  
date of document  
19392 - not important

M. S.



PROVINCE OF MANITOBA



J. B. COWAN, Q. C.      Whitehall 6-7436  
CHAIRMAN  
J. S. RICHARDS      Whitehall 6-7428  
DEPUTY CHAIRMAN  
M. J. GOBERT      SPruce 2-7880  
MEMBER  
R. R. McDANIEL  
CONSULTANT

DEPARTMENT OF MINES AND NATURAL RESOURCES  
THE OIL AND NATURAL GAS CONSERVATION BOARD  
BOX 42 LEGISLATIVE BUILDING  
WINNIPEG 1

*Draft*

THE MINES ACT

(Statutes of Manitoba, 1959, (Second Session) Chapter 38

APPROVAL OF THE BOARD UNDER SECTION 71

WHEREAS, Section 71 of The Mines Act, Statutes of Manitoba, 1959, (Second Session), Chapter 38, provides in part:

"71 (1) The board shall encourage efforts initiated by working interest owners in a pool or field or part thereof to consolidate, merge, or otherwise combine their interests for the purpose of accomplishing the more efficient and more economical development and production of the oil and gas resources of that pool or field, or part thereof, irrespective of whether that purpose is accomplished by unit operation under a unitization agreement, co-operative development, or joint participation.

(2) The drilling, production and other field operations provided for in a unitization agreement for the unit operation of a pool or field, or part thereof, shall not be put into effect unless the agreement has been approved by the board.

(3) The board shall not approve a unitization agreement for the unit operation of a pool or field, or part thereof, unless the royalty owners of the tracts within the pool or field, or part thereof, agree to the unit operation thereof, either as parties to the unitization agreement or by separate agreement.

AND WHEREAS, The California Standard Company has made application to expand the Daly Water Flood and convert to water injection the wells known as -

Calstan Daly 12-1-10-28      and  
Calstan Daly Prov. 8-12-10-28

AND WHEREAS, the royalty owners of the tracts within the part of the field affected thereby have agreed to the unit operation as parties to an agreement, as provided by Subsection 3 of Section 71 of the said Act;

AND WHEREAS, The California Standard Company has complied with the provisions governing approval under Subsection 2 of Section 71, and the application by The California Standard Company is considered in other respects to be reasonable.

NOW THEREFORE, approval is given to The California Standard Company to expand the Daly Water Flood and convert to water injection, the wells known as -

Calstan Daly 12-1-10-28 and  
Calstan Daly Prov. 8-12-10-28.

DATED at Winnipeg, Manitoba, this

*August.*  
day of ~~July~~ A.D. 1961

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



M. J. Gobert

J. G. Cowan, Q.C.

Deputy Minister

The California Standard Company

July 18, 1961

Daly Water Flood

On November 8, 1960, an application by the above company to expand the Daly Water Flood was heard at a Public Inquiry. The Board indicated to the company that the principles involved were approved subject to the royalty owners involved becoming parties to the agreement. This has now been done and the various documents filed in this office.

As you are aware, since the previous expansion to the Daly Water Flood, "The Mines Act" has been amended. In my opinion, it now becomes necessary for the Board to approve the unitisation agreement in accordance with Section 71 and in addition, for the Lieutenant-Governor-in-Council to give the minister certain authority as provided for in Subsections 1 and 2 of Section 72.

If you agree with this procedure, would ask that you review the attached proposed drafts of "Approval of the Board" and "Order-in-Council" for errors and omissions and return both to this office for preparation in the final form.

You will note that in the draft Order-in-Council Document No. 19392 is undated. Is this omission important enough that we should request the company to call in all copies of the agreement for dating.



WHEREAS, Section 72 of The Mines Act, Statutes of Manitoba, 1959, Second Session, Chapter 38, provides as follows:

"72. (1) Where the Crown is a working interest owner or royalty owner of a tract of land, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into a unitization agreement for the unit operation of the pool or field, or part thereof, within which the tract is situated.

(2) Notwithstanding any other provision of this Act or of an agreement or other disposition made under this Act, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into an agreement for the calculation of the royalty payable to the Crown on the oil and gas produced from a unit area that includes a tract that is subject to the payment of a royalty to the Crown.";

AND WHEREAS, The California Standard Company has instituted a water flooding programme with a view to securing the greatest economically practicable recovery of oil and gas from certain lands in the Daly Field;

AND WHEREAS, the said water flooding programme necessitated the entering into "Water Flooding Unitization Agreements" which pooled, consolidated, and merged certain oil and gas leases issued by the Crown, and other owners of oil and gas rights, which were authorized by Orders-in-Council Nos. 411/57 and 78/58;

AND WHEREAS, the Minister of Mines and Natural Resources wishes to enter into a further agreement with the persons who are parties to this agreement;

AND WHEREAS, it is considered that the provisions of the said agreement will result in a better recovery of oil and gas from the said lands.

Therefore he, the Minister, recommends:

THAT, the Minister of Mines and Natural Resources be authorized to enter into an Agreement, marked Document No. 19392-1, respecting the wells described as:

Calstan Daly Prov. WIW 8-12-10-28,  
Basco Daly 9-12-10-28, and  
Calstan Daly WIW 10-12-10-28.

Director of Mines

COPY

June 26, 1961.

Mr. J. G. Cowan, Q.C.,  
Deputy Minister.

Daly Water Flood Expansion -

Basco Daly 9-12-10-28.

Document No. 19392-1.

Enclosed, herewith, eleven copies of an equity adjustment agreement, allocating production from Basco Daly 9-12-10-28 well, signed by all interested parties except the Crown. This document has been checked, and found to be in order and, consequently, it is suggested that all copies be signed by the Minister on behalf of the Crown.

It is assumed that when they have been executed, all copies will be returned to this office for transmittal to the company.

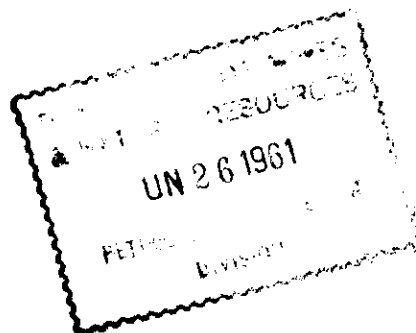
We have been waiting for this document since the Conservation Board Hearing on the flood expansion. A Board Order in respect to the expansion will now be prepared.

JSR:db

Encs.

c. c. for: Mr. M. J. Gobert,  
Senior Petroleum Engineer.

  
J. S. Richards.



December 2, 1960.

The California Standard Company,  
Medical Arts Bldg.,  
Calgary, Alberta.

Attention: Mr. C. H. Young

Re: Daly Water Flood Expansion

Dear Sir:

Since the Public Hearing on November 8, 1960, it has been drawn to my attention that my statement to you in regards to the issuance of an order of the Board, effective only on the subsequent filing of the necessary agreements, is contrary to the stipulations of "The Mines Act" as amended subsequent to the previous expansion.

In view of this, I have been instructed to request the filing of the required agreements, at your convenience.

Should it serve your purpose, I believe that the Board could consider the proposed expansion as consisting of two separate units.

Yours very truly,

  
M. J. Gobert,  
Senior Petroleum Engineer.

MJG/h

c.c. J. G. Cowan, Q.C.  
J. S. Richards



# THE CALIFORNIA STANDARD COMPANY

MEDICAL ARTS BUILDING, 329A - 6TH AVENUE S.W., CALGARY, ALBERTA.

T. M. DOUGALL  
MANAGER  
LAND ADMINISTRATION DIVISION

November 10, 1960.

Mr. J. S. Richards,  
Director of Mines,  
Department of Mines and Natural Resources,  
Mines Branch,  
Room 21,  
469 Broadway Avenue,  
WINNIPEG 1, Manitoba.

DEPARTMENT OF MINES  
& NATURAL RESOURCES

NOV 14 1960

DIRECTOR OF MINES

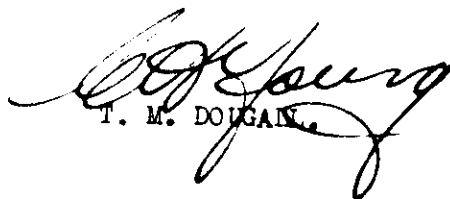
Dear Sir:

RE: Equity Adjustment Agreements  
Our Files: 18,634 and 18,635

Enclosed herewith are photostatic copies of Equity Adjustment Agreements with respect to the allocation of production from Haskett 9-2 and Canadian Pipeline Jones 15-12.

Please accept our apologies for not supplying you with these sooner.

Yours very truly,

  
T. M. DOUGALL

Encls.  
CHY/ra

M. J. Gobert

J. S. Richards

The Oil & Natural Gas Conservation Board

November 17/60

Daly Water Flood Expansion

The latest flood expansion prior to this application was approved in November, 1958. In August 1959, "The Mines Act" was amended to provide specifically for Pooling and Unitisation.

In my opinion, the procedures adopted in approving the presently proposed expansion should and will establish a precedent for the unitisation of the North Virden Scallion Field. This opinion is contrary to my reply to Mr. Young's suggestion appearing in the last paragraph on page 36 of the attached Proceedings - November 8, 1960, Public Hearing.

The Saskatchewan Oil and Natural Gas Conservation Board operate under statutes with provisions very similar to The Mines Act.

Saskatchewan  
Manitoba

Order-in-Council approving plan  
Section 73 3 (e) The Mines Act

Order-in-Council approving change in  
Royalty Section 72 (2)

Ministers Order removing allowables  
Manitoba Board Powers

We appear to have a further provision whereby in Section 72 the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into a unitisation agreement.

A summary containing certain pertinent Sections of The Mines Act is attached.

c.c. J. G. Cowan, Q.C.

*Request filing of comments*  
*Order under Section 76(3)*  
*Filing no. court*  
*C-in-C re participation & change in royalty. Am-B.R.*  
*H.V. Scallion J.S.R. request full info.*

Summary of statutory provisions dealing with approval by the Lieutenant-Governor-in-Council, the Minister and the board, of unitisation agreements, entering into such agreements, calculation of royalty, conversion of wells, injection of substances and plan of operations.

Existing agreements re Daly Water Flood refer to Section 196 of the Regulations under "The Mines Act" or any regulation which may hereafter be passed in substitution therefore:

- "196 (2) No mutual agreement for the consolidation, combination or co-operation of the owners of oil and gas interests of a Pool shall be put into effect without the consent in writing of the minister being first had and obtained."

Previously executed agreements were ratified by Orders-in-Council Nos. 411/57 and 78/58 under authority of subsection (1) of Section 68 of "The Mines Act" being chapter 166 of the Revised Statutes, as the section was enacted by Chapter 45 of the Statutes of Manitoba, 1955:

- "68 (1) The Lieutenant-Governor-in-Council may authorize the minister to enter into an agreement for the injection, storage recycling, or reproduction, in or from an underground formation of any mineral substance or water."

It does not appear that any agreements, subsequent to those approved by Order-in-Council No. 78/58 were so ratified.

Section 60 (1) states in part, the Lieutenant-Governor-in-Council may make regulations and orders, not inconsistent with any other provision of this Part or Part III.

(e) respecting voluntary pooling and voluntary unitisation of mineral rights in individual fields for purposes of conservation and elimination of waste.

(x) providing for the approval by the board of any scheme initiated by owners for re-pressuring, recycling, or pressure maintenance . . .

- (2) The board may make all necessary orders to enforce any regulation made under subsection (1), or that may be necessary to carry out the intent, purpose, and object of any such regulation.

Section 71 (3) The board shall not approve a unitization agreement for the unit operation of a pool or field, or part thereof, unless the royalty owners of the tracts within the pool or field, or part thereof, agree to the unit operation, either as parties to the unitisation agreement or by separate agreement,

Section 72 Where the Crown is a working interest owner or royalty owner of a tract of land, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into a unitisation agreement for the unit operation of the pool or

field, or part thereof, within which the tract is situated.

- 72.(2) Notwithstanding any other provision of this Act or of an agreement or other disposition made under this Act, the Lieutenant-Governor-in-Council may authorize the minister, on behalf of the Crown, to enter into an agreement for the calculation of the royalty payable to the Crown on the oil and gas produced from a unit area that includes a tract that is subject to the payment of a royalty to the Crown.
- 73.3 (e) . . the board may, with the approval of the Lieutenant-Governor-in-Council, order that the pool, field or part thereof, be operated as a unit.
76. (3) Upon holding a hearing under subsection (2), the board may, with the approval of the Lieutenant-Governor-in-Council, order that tracts that adjoin a unit area and that, in the opinion of the board, are within the same pool or field, be added to the unit area.
88. The Lieutenant-Governor-in-Council may authorize the minister to enter into an agreement for the injection, storage, recycling, or reproduction, in or from an underground formation of any mineral substance or water.



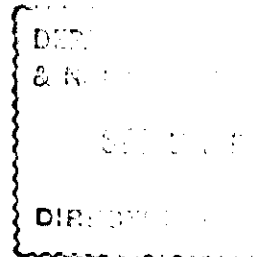


# THE CALIFORNIA STANDARD COMPANY

MEDICAL ARTS BUILDING, 329A 6TH AVENUE S.W., CALGARY, ALBERTA.

September 22, 1960.

The Oil and Natural Gas Conservation Board,  
Department of Mines & Natural Resources,  
Mines Branch,  
Box 42, Legislative Building,  
Winnipeg 1, Manitoba.



Gentlemen:

The California Standard Company hereby submits an application for permission to expand the Daly Water Flood by the conversion of the following producing oil wells to water injection wells:

Calstan Daly 12-1-10-28  
Calstan Daly Prov. 8-12-10-28

The wells will be serviced by extending the existing injection lines from Calstan Daly W.I.W. 14-1-10-28 and Calstan Daly Prov. W.I.W. 2-12-10-28, respectively (see Figure 1). Sufficient water is available at the injection plant located at Calstan Daly 15-1-10-28 to supply the additional injection wells.

The proposed injection wells are contained in leases already included in the pooled area under existing water flood agreements. Individual Water Flood Units No.'s 14 and 15 will be completed and No. 8 extended (see Figure 2). None of these involve the exchange of production between mineral owners. A nominal Water Flood Unit No. 26 will be formed with the drilling of Calstan Daly 11-1-10-28, which again involves no exchange of production between mineral owners. Flood Unit No. 23, which is an agreement between Scurry-Rainbow Oil Limited and The California Standard Company, and their respective mineral owners, will be extended. Negotiations will be continued to conclude an agreement covering Flood Unit No. 24 which will concern Basco Oil & Gas Co. Ltd., The California Standard Company and their respective mineral owners.

The performance of the Daly Water Flood has been quite satisfactory since its inception in 1953 and throughout the subsequent extensions. The latest expansion, which was approved November 20, 1958, involved the addition of four injection wells which are performing satisfactorily as indicated in Table 1, part (A). The performance of offsetting producing wells has been encouraging as shown in Table 1, part (B). The first four oil wells listed became completed five-spot producers, and the remaining two wells, 3-sided five-spots, with this last extension to the water flood. Performance data on the remainder of the water flood area are contained in the Daly Water Flood Progress Report as of June 30, 1960 which was submitted earlier to the Board.

.....Cont'd.

-2-

The proposed expansion of the Daly Water Flood compliments the existing flood and is expected to increase production and reserves by the creation of additional completely enclosed and three-sided five-spots.

Respectfully submitted,

*Arthur L. Wood*  
for

Attachs.

The California Standard Company.

TABLE I

WATER FLOOD EXPANSION NO. 3

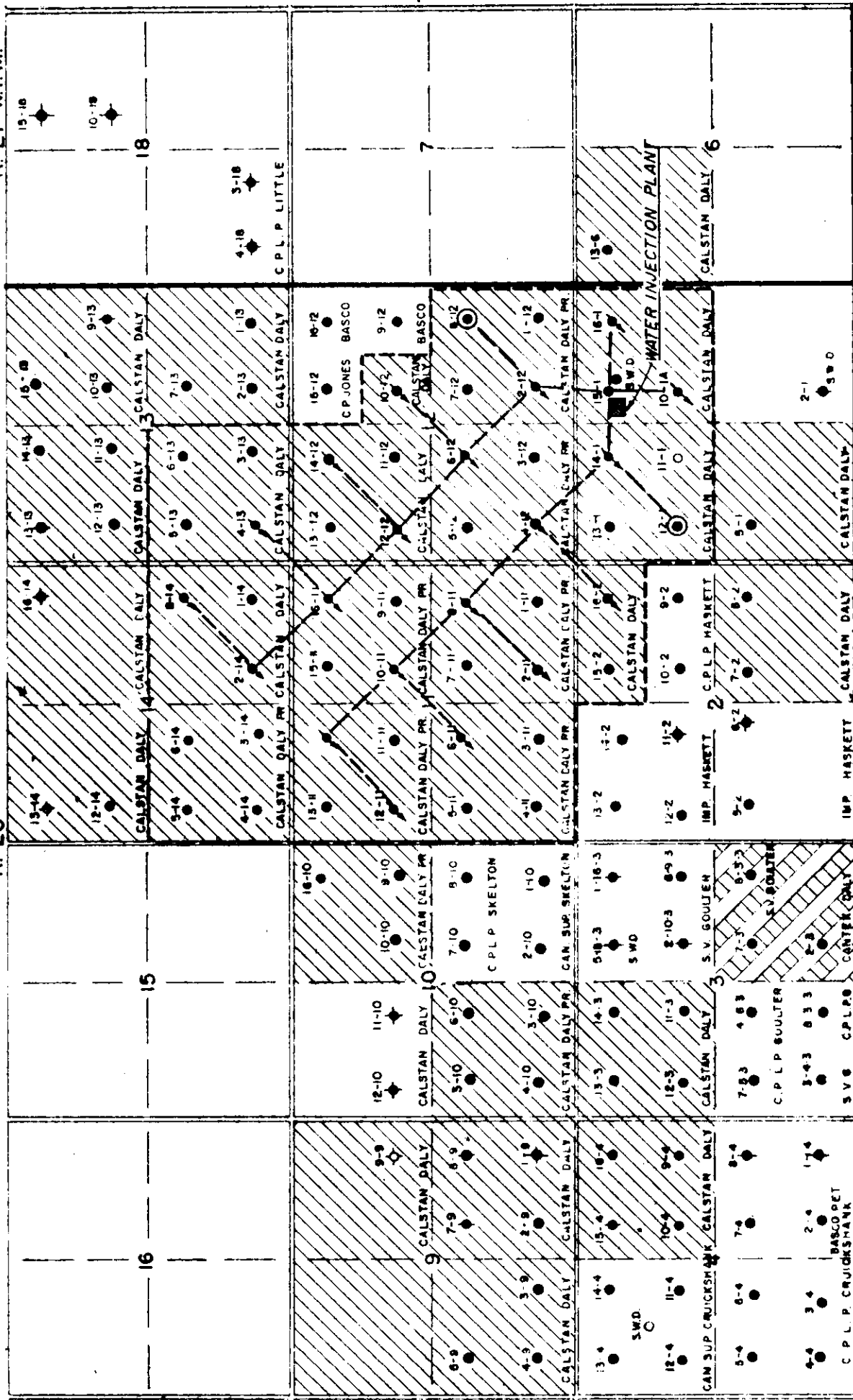
A. Injection Well Performance:

<u>Injection Well</u>	<u>Date On Injection</u>	<u>Current Injection Rate August, 1960 bbls/day</u>	<u>Cumulative Injection to Aug.31, 1960 bbls.</u>
Calstan Daly Prov. WIW 2-11-10-28	Oct. 5/59	123	80,627
Calstan Daly WIW 16-2-10-28	Oct. 6/59	227	140,595
Calstan Daly WIW 14-12-10-28	Oct.16/59	221	100,842
Calstan Daly WIW 10-12-10-28	Oct.19/59	176	96,861

B. Producing Well Performance:

<u>Producing Well</u>	<u>Oil Production Rate</u>		<u>Increase due to Expansion bbls/day</u>
	<u>Before Expansion Sept./59 bbls/day</u>	<u>Current Rate Aug./60 bbls/day</u>	
Calstan Daly Prov. 1-11-10-28	59	76	17
Calstan Daly Prov. 7-11-10-28	17	21	4
Calstan Daly 11-12-10-28	25	40	15
Calstan Daly 13-12-10-28	9	10	1
Calstan Daly 13-1-10-28	38	42	4
Calstan Daly Prov. 7-12-10-28	13	18	<u>5</u>
Total			46
			—

R. 27 W.P.M.



**- 7 -**

- INJECTION WELL  
INJECTION LINES  
WATER FLOOD AREA  
PROPOSED INJECTION WELL  
PROPOSED LOCATION  
CAL. STD. LAND

DALY FIELD  
WATER FLOOD AREA

Fig. 1

R.28 W.P.M.



DALY FIELD

COMPLETE UNITS IN OPERATION

PARTIAL UNITS IN OPERATION

### PARTIAL UNITS UNDER NEGOTIATION

W.I.W. WATER INJECTION WELL

③ FLOODING UNIT  
NUMBER

— — — BOUNDARY OF  
POOLED LANDS

DATE : SEPT. 21 , 1960

4-12-10-28 well is  
included as part of expansion  
2// by Chevron in their Progress  
Report for Daby, 1975.

But this well is not  
included in the Board  
order (attached.)

Sept 2, 76

S.E.



# Chevron Standard Limited

400 - Fifth Ave. S.W., Calgary, Alberta T2P 0L7

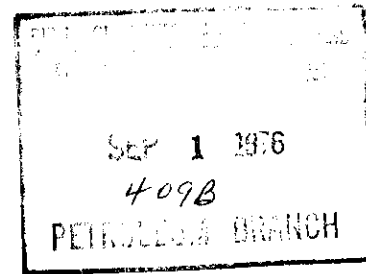
R. L. Bailey  
Chief Engineer

August 31, 1976

Copy of Water Flood Permit No. 3  
Daly Waterflood Area

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

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



Gentlemen:

Attached is a copy of Water Flood Permit No. 3 pertaining to the drilling of six injection wells and the conversion of two wells to water injection in the Daly field.

We sincerely appreciate your assistance in completing our records of the Daly field.

Yours very truly,

*for John D. Scott*  
A. HAMBERG  
Supervising Engineer, Reservoir

JDSScott/rjc

Enclosure



Province of Manitoba

**MINES BRANCH**

August 10, 1955.

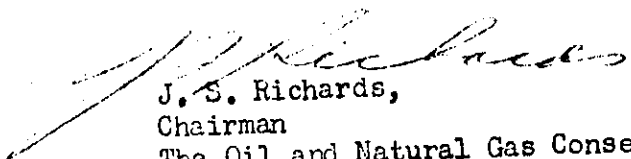
Dear Sirs:

This is to advise that a permit has been issued to -

The California Standard Company, to:

- (a) Drill water injection wells located in
  - L.S. 6 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - L.S. 10 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - L.S. 12 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - L.S. 14 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - L.S. 16 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - L.S. 2 - Sec. 14 - Twp. 10 - Rge. 28 W.P.M.
- (b) Convert to water injection wells the Calstan Daly 4-13 and Calstan Daly 8-14 wells,
- (c) Install such pipelines as are necessary to service the above described wells, and subject to the pertinent requirements of "The Pipe Line Act".
- (d) Enlarge the existing injection plant located on L.S. 15 - Sec. 1 - Twp. 10 - Rge. 28 W.P.M., to handle approximately 3,000 bbls. per day of water.

Yours very truly,

  
J. S. Richards,  
Chairman

The Oil and Natural Gas Conservation Board.



8591

Division of Land and  
Department of Water and Natural Resources  
Ministry  
Water Branch

August 10, 1955.

Mr. J. F. Ross,  
Chief Engineer,  
The California Standard Company,  
Medical Arts Bldg.,  
CALGARY, Alberta.

Dear Mr. Ross:

Enclosed herewith Water Flooding Permit No. 3  
for The California Standard Company Water Flood Expansion No. 2,  
Daly Field, application in respect of which was heard at the Public  
Hearing conducted by the Board on July 29th, 1955.

Yours very truly,

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

JCR/h

registered

✓

Province of Manitoba  
Department of Mines and Natural Resources  
Winnipeg  
Water Flooding

Permit No. 3

THE OIL AND NATURAL GAS CONSERVATION BOARD

P E R M I T

SUBJECT to the provisions of "The Mines Act", permission is hereby granted to:

The California Standard Company, to:

- (a) Drill water injection wells located in
  - Is. 6 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - Is. 10 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - Is. 12 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - Is. 14 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - Is. 16 - Sec. 11 - Twp. 10 - Rge. 28 W.P.M.
  - Is. 2 - Sec. 14 - Twp. 10 - Rge. 28 W.P.M.,
- (b) Convert to water injection wells the Calstan Daly 4-13 and Calstan Daly 8-14 wells,
- (c) Install such pipelines as are necessary to service the above described wells, and subject to the pertinent requirements of "The Pipe Line Act",
- (d) Enlarge the existing injection plant located on L.S. 15 - Sec. 1 Twp. 10 - Rge. 28 W.P.M., to handle approximately 3,000 bbls. per day of water;

subject to the following conditions:

- (1) That plans and full details of any modifications to the above program be submitted to the Board,
- (2) That evidence be submitted to the Board in support of the company's contention that "the maximum efficient rate of production shall be considered the amount the well will produce",
- (3) That progress reports be submitted, monthly, to the Board in respect to the proposed program.

(sg'd)

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

DATED: August 10th, 1955.  
Winnipeg, Manitoba.



PROVINCE OF MANITOBA

## MINES BRANCH

November 26, 1958.

Dear Sir(s):

*Notes of Production*

As a result of the Public Inquiry, held in Winnipeg, Manitoba, on November 13, 1958, the Board has:

1. Approved the application of The California Standard Company, to convert the well known as Calstan Pierson Prov. 10-11-3-29, in the Pierson Field, to salt water disposal in the Mississippian Mission Canyon Formation, subject to certain conditions;
2. Decided that present Board Order No. 33A, in respect to the maximum permissible rate of production in the West Routledge Field, shall remain in effect, including the application of all Water-Oil penalties as of January 1, 1959, until additional production history has indicated a need for further review at a Public Inquiry;
3. Approved the application of The California Standard Company to continue the use of its present facilities outside the West Routledge Field for the disposal of produced salt water;
4. Approved the application by The California Standard Company to expand the Daly Pilot Water Flood, subject to certain conditions.

With respect to Item (5) of the agenda of the said meeting, an application to unitize a portion of the North Virden Scallion Field was not received, and The California Standard Company requested that its application for a Pilot Water Flood be postponed.

Yours very truly,

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

DEPARTMENT OF MINES AND NATURAL RESOURCES

PROVINCE OF MANITOBA

**MINES BRANCH**

THE OIL AND NATURAL GAS CONSERVATION BOARD

NOTICE OF INQUIRY

*Rate of Production*

A Public Inquiry will be held in Room 352, Legislative Building, in the City of Winnipeg, Manitoba, on Thursday, November 13, 1958, commencing at 9:30 a.m., Central Standard Time, for the purpose of hearing representations with respect to:

- (1) An application by The California Standard Company, to convert the well known as-  
Calstan Pierson Prov. 10-11-3-29 in the Pierson Field, to salt-water disposal in the Mississippian Mission Canyon Formation.
- (2) The maximum permissible rate of production in the West-Routledge Field.
- (3) The disposal of salt-water produced in the West-Routledge Field.
- (4) An application by The California Standard Company to expand the Daly Water Flood and to convert to water injection, the wells known as-  
  
Calstan Daly 16-2-10-28  
Calstan Daly 2-11-10-28  
Calstan Daly 10-12-10-28  
Calstan Daly 14-12-10-28
- (5) An application by The California Standard Company to unitize a portion of the North Virden Scallion Field for the purpose of a Pilot Water Flood.

DATED at Winnipeg, Manitoba, this  
Fourteenth Day of October, 1958.

*J. G. Cowan*

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

No.

DEPARTMENT OF MINES



AND NATURAL RESOURCES

PROVINCE OF MANITOBA

SUBJECT:

Daly Unit No. 3

~~Wabigoon Island Quarantine~~~~1968~~

Waterflocking

Permits, Board approvals

O-I-C.

Do not remove  
from office. JS

MINES BRANCH