December 27, 1962

M.J.Gobert

J. G.Cowan,Q.C., Chairman

The Oil & Natural Gas Conservation Board

The North Virden Scallion Unit No. 1

At the Public Hearing, July 13, 1962, Mr. S.A. McRae, Chairman of the Legal Committee, stated that they expected to secure more consents to the Plan and subsequently, I believe that they were able to do so.

I would suggest that Mr. MacRae be requested to file these additional consents with the Board.

c.c. J. S. Richards

Registered

December 17, 1962.

Mr. J.G.Trowell,
District Production Superintendent,
The California Standard Company,
Box 100,
Virden, Manitoba.

Re: North Virden Scallion Unit No. 1
Injection Plant No. 1 and System
Pipe Line Construction Permit No. 9
Your file 662.3

Dear Sir:

With reference to your letter of November 29, 1962, we are returning herewith copies of documents Nos. 9579, 21390, 21517, 11,625, 21296, 21400-7694 and 21297.

These documents were accepted as options to secure grants of "right-of-user" for the purpose of the issuing of a partial operating licence on an interim basis.

Yours very truly,

M.J.Gobert,
Senior Petroleum Engineer.

MJG/h

November 28, 1962

M. J.Gobert

J. S. Richards

North Virden Scallion Unit No. 1

Calstan Scallion Prov. SWD 9-16-11-26
P & N.G. Lease No. 261

Attached herewith are 5 copies of a Water Supply well Agreement which conveys to The California Standard Company as Operator of the North Virden Scallion Unit No. 1, the right to use the above well as a water supply well and to produce and use Crown owned waters contained within the Devonian Formation underlying the lands described in P & N. G. Lease No. 261.

I would recommend that this agreement be forwarded to the Minister for approval.

Kindly arrange to have letter and all copies of the documents returned to this office.

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

November 26, 1962.

Mr. F.S. Gamey,
Reservoir Geologist,
Mines Branch,
Petroleum Engineering Division,
911 Norquay Building,
401 York Avenue,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: October Production - North Virden Scallion Unit No. 1 -- Lands Scallion 16-5-10-26

Corrected production figures on the above mentioned well are shown on the attached corrected sheet as follows:

Petroleum	Water	Oil
31 days	113	126

Note that the decrease change will be effective for the balance of the month.

Yours very truly,

J. G. FORBES,
District Production Superintendent.

RAP/jp

Attach

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA
MAILING ADDRESS: P.O. BOX 100

November 16, 1962.

File: 662.17.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: Battery Consolidations in North Virden Scallion Unit No. 1 to November 6, 1962

Further to the battery consolidations outlined in the letter of September 26, 1962 the following consolidations have also been incorporated.

1. Wells formerly producing into Calahan Battery Cuthill 23 are now being produced into the Fargo Battery located on 2-26. Flow lines were laid to bring this about on September 27, 1962.

2. Sun Battery 5-23 wells are now being produced into Fargo Battery 2-26. This was brought about through use of a 2PPL line and a flowline on September 28, 1962.

3. The Imperial wells that produced into the battery on 7-33 now produce into the Shell 6-33 Battery through double flowlines that were laid on October 6, 1962.

4. Landa 16-5 Battery well has been consolidated into Calstan Battery Prudential 4 through a newly laid flowline on October 10, 1962.

5. On October 10, 1962 the wells formerly producing into Home Battery 2-4 were consolidated into Calstan Battery Prudential 4 through a "PPI" line and an installed flowline.

6. On October 17, 1962, through use of a flowline, wells formerly producing into Sun Battery 12-14 were consolidated into Calstan Battery Schmidt 1F.

7. Wells producing to Sun Battery 4-14 were consolidated to Calstan Battery Schmidt 1F on October 19 through a flowline.

8. Well producing to Calstan Battery Brubbrook 1F were consolidated into Calstan Battery Provincial 11 on October 20 through use of a "PPI" line and a flowline.

9. On October 24, 1962 Calstan Battery Vinck 2 wells were consolidated into Calstan Battery Provincial 16 through a "PPI" line.

10. Wells formerly producing into Canadian Superior Battery 1-14 now produce into Calstan Battery Provincial 16. This consolidation took place on October 24 through a "PPI" line.

11. On October 25, through use of a "PPI" line, Canadian Superior Battery 7-23 wells were consolidated into Calstan Battery Cain 22.

12. Sun Battery 15-22 wells have been consolidated into Calstan Battery Cain 22 as of October 28 through a "PPI" line.

13. Wells formerly producing into Canadian Superior Battery 8-28 now produce into Sultan Battery Campbell 27 through a THT line. This change occurred on October 31, 1962.

14. On November 3, 1962, through a THT line the wells formerly producing into C.S. Battery 3-28 were consolidated into Shell Battery 14-21.

15. On November 6, 1962 the wells formerly producing into Sun Battery 13-26 were consolidated into Sun Battery 6-26, through a THT line.

In summary this means that of the 43 batteries initially in operation, at the start of Unit operations, 24 have been consolidated into other batteries leaving a total of 19 batteries remaining in the Unit operations.

Yours very truly,

J. S. BROWN,
District Production Superintendent.

JSB/jp

November 22, 1962

M.J.Gobert

J. S.Richards

North Virden Scallion Unit No. 1

At your convenience, kindly arrange to have a requisition prepared for the printing of:

100 copies each of pages 976, 977 and 978 of Manitoba Gazette
July 28, 1962 issue

N.B. Correction required on page 977 tract number 1-28, Western Naco Petroleums Limited, Percentage Working Interest ownership should be 20 - not 10 as shown.

PS-f-53

COPY

172 ---

November 16, 1962.

Mr. T.M. Dougall,
Manager,
Land Administration Division,
Medical Arts Building,
329A-6th Avenue S.W.,
Calgary, Alberta.

Dear Mr. Dougall:

Re: North Virden Scallion Unit No. 1
Calstan Scallion Prov. SWD 9-16-11-26 W.1
Our File No. 14353

Mr. M.J. Gobert has referred to me your letter to him of November 8. In your letter you stated in part as follows: "We wish to advise that it was our belief that the water underlying the surface of the land was the property of the surface owner." While we frankly admit that surface water, i.e.; sloughs, stock watering wells, etc., is no doubt the property of the surface owner, different considerations I suggest apply to the ownership of other waters underlying the surface.

I suggest, therefore, that an agreement is necessary conveying to the North Virden Scallion Unit No. 1 the right to and use of waters contained within the Devonian formation underlying the lands described in P. & N. G. Lease No. 261.

The underrights on this particular parcel are Crown, and I take it that in such circumstances there would be little if any difficulty in carrying out the arrangements above suggested, which would in my opinion put the matter beyond question.

Yours very truly,

J.G. Cowan,
Chairman.

JGC/ms
cc. Mr. M.J. Gobert.

November 12, 1962

M.J.Gobert

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

North Virden Scallion Unit No. 1

Calstan Scallion Prov. SWD 9-11-26 (W1)

In reply to Mr. Dougall's letter of October 31, 1962, I advised him, November 5, 1962, that an agreement would be required which "conveyed to the North Virden Scallion Unit No. 1 the right to and the use of waters contained within the Devonian Formation underlying those lands described in P. & N.G. Lease No. 261".

I would suggest that you as Chairman might wish to reply to Mr. Dougall's letter of November 8, 1962.

The Board has on several occasions informed the Operators' Committee that the Plan did not convey such rights and that a separate agreement would be required.

At the September 24, 1962, Public Hearing, Sun Oil Company were requested to forward such a document in support of their application for a Pilot Water Flood in the Ebor Field. Their compliance with this request was in the form of a mineral lease and a separate surface lease from a common owner, the McDougalls. Both leases conveyed the right to the use of any waters other than surface wells and dugouts.

However, in this case Mr. Dougall suggests that a freehold surface right conveys Crown minerals, namely, water.

THE CALIFORNIA STANDARD COMPANY

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

T. M. DOUGALL
MANAGER
LAND ADMINISTRATION DIVISION

November 8, 1962

The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Province of Manitoba,
Box 42, Legislative Building,
WINNIPEG 1, Manitoba.

Attention: Mr. M.J. Gobert

Gentlemen:

Re: North Virden Scallion Unit No. 1
Calstan Scallion Prov. SWD 9-16-11-26 W.1
Our File No. 14353

We thank you for your letter of November 5, 1962, advising that an assignment of the Salt Water Disposal Agreement, dated October 4, 1957, to the North Virden Scallion Unit would be necessary before the Salt Water Disposal well can be converted to a water producing well.

We wish to advise that it was our belief that the water underlying the surface of the land was the property of the surface owner and that the mineral owners consent was not required unless his mineral rights were interfered with. The Devonian underlying the North Virden Scallion Field is not productive of oil and consequently production of water from this zone would not, in the present case, interfere with the mineral owners interest.

In 1954, when the application was made for the drilling license, the consent of the mineral owners was required because the well was going to penetrate, and possibly interfere with, a producing horizon.

The right to drill for and produce water from the land is included in our form of surface lease. This document is being held by us as Operators of the Unit, and all rentals payable thereunder are being invoiced to the Unit. We, therefore, believe that we have the right to produce water from these lands.

Please advise if you concur with these suggestions.

Yours very truly,

T. M. DOUGALL

AVComeau/vl

PS-f-53

COPY

November 5, 1962.

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

Attention: Mr. T. M. Dougall
Manager, Land Administration Division

Re: North Virden Scallion Unit No. 1
Calstan Scallion Prov. SW D 9-16-11-26 (W1)
Your File No. 14,353

Dear Sir:

With reference to your letter of October 31, 1962, it will be necessary to replace Doc. No. 14,353, being an Agreement for Water Disposal, dated October 4, 1957, by and between The Minister of Mines and Natural Resources and The California Standard Company, with a document which will convey to the North Virden Scallion Unit No. 1 the right to and the use of waters contained within the Devonian Formation underlying those lands described in P.& N.G. Lease No. 261.

Yours very truly,

A. J.Gobert,
Member.

JG/h

c.c. J.C. Cowan, Q.C.
Chairman

J. G.Trowell

J.S.Richards

THE CALIFORNIA STANDARD COMPANY

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

T. M. DOUGALL
MANAGER
LAND ADMINISTRATION DIVISION

October 31, 1962.

Mr. M. J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Department of Mines and Natural Resources,
911 Norquay Building,
401 York Avenue,
WINNIPEG, Manitoba.

Dear Sir:

Re: Calstan Prov. S.W.D. 9-16-11-26
in Lsd. 9 - 16 - 11 - 26 W. 1
Our File No. 14,353

In 1957 our Company drilled a well in Lsd. 9-16-11-26 W. 1 M. for the purpose of disposing salt water from the wells in a portion of the Scallion Field into the Devonian Formation. This well is licenced as C.S. Prov. S.W.D. 9-16-11-26 and was drilled under Licence No. 1541 .

It is now the intention of The California Standard Company as Operator of the North Virden Scallion Unit No. 1 to convert this salt water injection well to a salt water producing well. The water produced from the Devonian Formation in this well will be used for the water flood program of the Unit.

It is our understanding that the conversion of this well would terminate the agreement for water disposal, dated October 4, 1957, and made between the Minister of Mines and Minerals and The California Standard Company.

Would you please advise if your Department will require any amending documents to change the status of the well licence.

Yours very truly,

T. M. DOUGALL

AWComeau/ek

October 15, 1962

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

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

Re: North Virden Scallion Unit No. 1
Your file 662.14

Dear Sir:

With reference to your letter of October 9, 1962, the report from Sun Oil Company for 6-23 shows 522 barrels for November 1961, as we have reported.

However, we are in error with respect to 10-27 and the company figure of 425 barrels for May 1962 is correct. This will be corrected in the September issue.

I do not agree with your inference that Mr. Dutka will have to recalculate all tract participation factors, that a public hearing for an amendment to the Plan and that all parties will have to consent to the amended plan will be necessary.

Yours very truly,

M. J.Gobert,
Senior Petroleum Engineer.

MJG/h

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

October 9, 1962.

File: 662.14.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

North Virden Scallion Unit No. 1

We have been checking all cumulatives as of July 31, 1962 to ensure agreement between data reported by the participating companies and that published in your monthly report.

At present two minor discrepancies remain as follows:

			Sun	Gov't
6-23	Water	Cumulative through December 31/61	19287	19282
		January through July 1962	2993	2993
			22280	22275

Difference is in November 1961 - Sun 527, Government 522

10-27	Water	Cumulative through December 31/61	13415	13415
		January through July 1962	2701	2699
			16116	16114

Difference is in May 1962 - Sun 425, Government 423

Sun "feels" its figures are correct. Can you help us resolve these earth shaking discrepancies?

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

JGT/jp

Plant #1 Sales Records

	March	September	Monthly Sales Average	July Sales, Aug. + Sept.	Total March, Aug. + Sept.
Gasoline	—	21652			
Production	50360	85503			
Steam Oil	21652	7828			
	72708	92717			
Gas	1.39	2205	3934	1181	5115
Shell	7431	5126	9235		12357
Sun	5213	5115	12085	2976	15061
Texas	6235	16811	13006	20349	57395
	72708	92717	185,425	24506	189,931

California Std Natural Sales -

	Aug.	September	Total Aug. + Sept.
Amerada	80537	76854	157,391
Shell	7262	5095	12357
72 Ft.	2312	2805	5117
Sun	7103	7963	15066
	97214	92717	189,931

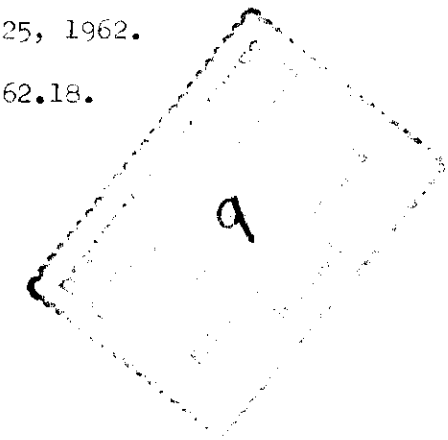
THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

October 25, 1962.

File: 662.18.



Miss G. Dennehy,
Petroleum Engineering Division,
Mines Branch,
P.O. Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Miss Denneny:

North Virden Scallion Unit #1
September, 1962, Oil Production
and Disposition

The problem referred to in your letter of October 22, 1962, arises from an adjustment made to correct for August 1 opening inventory and for allocated overproduction - both of which can be referred to as pre-Unit crude.

You will recall my mentioning on October 19, 1962, while at your office that these adjustments had not been made in the August figures. The reason for this was that IPPL made a prompt allocation of all sales at the end of August based on Unit participation factors, when in fact the allocation should have been performed on net sales after disposition of pre-Unit crude. (See August statement attached).

In September the matter was righted (see September statement attached) - and the final "Sales" figures arrived at cannot be checked by multiplying Total Sales by the appropriate participation factors. A further correction was necessary because Shell's pre-Unit crude (958 Opening Inventory plus ⅜ Alloc. of Overproduction) was purchased by Imperial, whereas their Unit crude is purchased by Shell itself.

Now that the correction for pre-Unit crude has been made, all future monthly summaries should reflect simple calculations based on participation. To assist you in the check you perform each month, I have asked our Calgary office to forward to you on a routine basis, our "Statement of Crude Production and Disposition" for North Virden Scallion Unit #1.

Finally, since the August and September figures are confusing to say the least, I am attaching a calculation sheet that gives an example of how the figures were derived, and how they could have been handled had the pre-Unit crude adjustment been made in August.

I hope this resolves the matter for you. I can go through it again with you when next I visit your office about mid-November.

Yours very truly,

J. J. Fromell

J. J. Fromell,
District Production Superintendent.

JJF/ck

Attach 3.

NVS UNIT #1

CRUDE PRODUCTION & DISPOSITION

EXAMPLE CALCULATIONS - AUG & SEPT 1962

SUNI OIL - PARTIC 7.30682

AS REPORTED) - Adjustment for pre Unit crude made in Sept.			
August -	Opening inventory (pre-Unit) - actual		2976 ^ adj
	Production 7.30682 x 94360		6895 ^
	Sales 7.30682 x 97214		7103 ↓
	Closing inventory -	CALC	2768 ^
September	Opening inventory -		2768 ^
	Production 7.30682 x 88893		6495 ^
	Alloc of overprod (pre-Unit) 7.30682 x 40		3 ^
	Closing inventory 7.30682 x 17828		1303 ^
	Sales -	CALC	7963
	2 month sales 15066		
ALTERNATIVE CALC - Adjustment made in Aug.			
August -	Opening inventory (pre-Unit) - actual		2976 ^ adj
	Production 7.30682 x 94360		6895 ^
	Alloc. of overprod (pre-Unit) 7.30682 x 40		+ 3
	Closing inventory 7.30682 x 21652		1582 ^
	Sales	CALC	8292
September -	Opening inventory 7.30681 x 21652		1582 ^
	Production 7.30682 x 88893		6495 ^
	Closing inventory 7.30682 x 17828		1303 ^
	Sales 7.30681 x 92717		6774
	2 month sales 15066		

X

Regardless of the type of calculation, data thru September reflect the sale of each Working Interest owners pro-Unit Crude, plus its participation share of Unit crude as shown below:

	TOTAL UNIT		EXAMPLE SCOTT
Gross sales	189 931		15066
pr-Unit crude sales	24 506		2979
Unit crude sales	165 425	x 7.30682 =	12087 ✓
			12,066
Unit crude production	183 253	x 7.30682 =	13390
Unit Crude sales	165 425	x 7.30682 =	12087
Unit Crude inventory Sept 30	17828	x 7.30682 =	1303 ✓

Kit

10/25/62.

THE CALIFORNIA STANDARD COMPANY
PRODUCTION ACCOUNTING

NORTH VIRDEN SCALLION UNIT #1
STATEMENT OF CRUDE PRODUCTION & DISPOSITION

SEPTEMBER 1962

WORKING INTEREST OWNERS	TRACT PERCENTAGE	OPENING INVENTORY	PRODUCTION	OVER PROD. AT JULY 31 CALSTAN 1-21	ALLOC OF OVER PROD	CLOSING INVENTORY	SALES BARRELS **	SALES VALUE @ 2.485
WELTON BECKET	.27578	(8)	245	-	-	49	188	$ 467.18
THE CALIFORNIA STANDARD COMPANY	60.52961	10,422	53,807	(40)	24	10,791	53,422	132,753.67
CANADIAN EXPORT GAS & OIL LTD	1.06332	328	945	-	-	190	1,083	2,691.26
CANADIAN SUPERIOR OIL LTD	4.25843	1,009	3,786	-	2	759	4,038	10,034.43
DOME PETROLEUM LTD	5.01238	1,731	4,456	-	2	894	5,295	13,158.07
FARGO OILS LTD	2.82284	1,684	2,509	-	1	503	3,691	9,172.14
IMPERIAL OIL LTD	2.13881	420	1,901	-	1	381	1,941	4,823.38
LANDA OIL COMPANY	.29963	604	266	-	-	53	817	2,030.25
PACIFIC PETROLEUMS LTD	1.04094	(30)	925	-	-	186	709	1,761.86
PIUTE PETROLEUMS LTD	.07396	(2)	66	-	-	13	51	126.74
PROVO GAS (SASK) LTD	1.21359	(35)	1,079	-	1	216	829	2,060.06
H.J. SCHLAFLY	.60466	(17)	538	-	-	108	413	1,026.31
SECURITY FREEHOLD PET LTD	.11635	(3)	103	-	-	21	79	196.31
E.H. VALLAT LTD	2.95169	936	2,624	-	1	526	3,035	7,541.98
WESTERN NACO PETROLEUMS LTD	.44315	(13)	394	-	-	79	302	750.47
TOTAL CRUDE PURCHASED BY IMPERIAL OIL LIMITED SHELL OIL CO OF CANADA LTD	82.84514						75,893	$188,594.11
							961 *	2,388.08
							76,854	$190,982.19
BRITISH AMERICAN OIL CO LTD	1.18893	1,147	1,057	-	1	212	1,993	$ 4,952.61
UNION OIL COMPANY OF CAN LTD	1.18892	(34)	1,057	-	1	212	812	2,017.82
TOTAL CRUDE PURCHASED BY BRITISH AMERICAN OIL CO LTD	2.37785						2,805	$ 6,970.43
SHELL OIL CO OF CANADA LTD	7.47019	745	6,640	-	3	1,332	6,056	$ 15,049.16
							6,056	15,049.16
TOTAL CRUDE PURCHASED BY SHELL OIL CO OF CANADA LTD	7.47019							
SEE IMPERIAL OIL LTD							(961) *	(2,388.08)
							5,095	$ 12,661.08
SUN OIL COMPANY	7.30682	2,768	6,495	-	3	1,303	7,963	$ 19,788.05
TOTAL CRUDE PURCHASED BY SUN OIL COMPANY	7.30682						7,963	$ 19,788.05
TOTAL UNIT	100.00000	21,652	88,893	(40)	40	17,828	92,717	$230,401.75

** NOTES: THIS COLUMN INCLUDES ADJUSTMENT FOR AUGUST 1 INVENTORY & OVER-PRODUCTION.

THE CALIFORNIA STANDARD COMPANY
PRODUCTION ACCOUNTING

NORTH VIRDEN SCALLION UNIT #1
STATEMENT OF CRUDE PRODUCTION & DISPOSITION

AUGUST 1962

WORKING INTEREST OWNERS	TRACT %	(NON UNIT) OPENING INVENTORY	PRODUCTION	CLOSING INVENTORY	SALES BARRELS	SALES VALUE @ $2.485
WELTON BECKET	.27578	-	260	(8)	268	$ 665.98
THE CALIFORNIA STANDARD COMPANY	60.52961	12,150	57,115	10,422	58,843	146,224.85
CANADIAN EXPORT GAS & OIL LTD	1.06332	359	1,003	328	1,034	2,569.49
CANADIAN SUPERIOR OIL LTD	4.25843	1,131	4,018	1,009	4,140	10,287.90
DOME PETROLEUM LTD	5.01238	1,874	4,730	1,731	4,873	12,109.41
FARGO OILS LTD	2.82284	1,764	2,664	1,684	2,744	6,818.84
IMPERIAL OIL LIMITED	2.13881	481	2,018	420	2,079	5,166.31
LANDA OIL COMPANY	.29963	612	283	604	291	723.13
PACIFIC PETROLEUMS LTD	1.04094	-	982	(30)	1,012	2,514.82
PIUTE PETROLEUMS LTD	.07396	-	70	(2)	72	178.92
PROVO GAS (SASKATCHEWAN) LTD	1.21359	-	1,145	(35)	1,180	2,932.30
H.J. SCHLAFLY	.60466	-	571	(17)	588	1,461.18
SECURITY FREEHOLD PETROLEUMS LTD	.11635	-	110	(3)	113	280.81
E.H. VALLAT LTD	2.95169	1,020	2,785	936	2,869	7,129.47
WESTERN NASCO PETROLEUMS LTD	.44315	-	418	(13)	431	1,071.04
TOTAL CRUDE PURCHASED BY IMPERIAL OIL LIMITED	82.84514				80,537	$200,134.45
THE BRITISH AMERICAN OIL COMPANY LIMITED	1.18893	1,181	1,122	1,147	1,156	2,872.66
UNION OIL COMPANY OF CANADA LTD	1.18892	-	1,122	(34)	1,156	2,872.66
TOTAL CRUDE PURCHASED BY BRITISH AMERICAN OIL CO LTD	2.37785				2,312	$ 5,745.32
SHELL OIL COMPANY OF CANADA LTD	7.47019	958	7,049	745	7,262	18,046.07
TOTAL CRUDE PURCHASED BY SHELL OIL CO OF CANADA LTD	7.47019				7,262	$ 18,046.07
SUN OIL COMPANY	7.30682	2,976	6,895	2,768	7,103	17,650.95
TOTAL CRUDE PURCHASED BY SUN OIL COMPANY	7.30682				7,103	$ 17,650.95
TOTAL UNIT	100.00000	24,506	94,360	21,652	97,214	$241,576.79

NOTE: ADJUSTMENTS REGARDING OPENING INVENTORY AND OVER-PRODUCTION WILL BE MADE IN SEPTEMBER 1962.

November 1962.

Mr. J. G. Trowell,
District Production Superintendent,
P. O. Box 100,
Virden, Manitoba.

Dear Mr. Trowell;

Thank you very much for your letter of October 25th, together with statement of crude production and Disposition for North Virden Scallion Unit # 1.

All the figures that you submitted have certainly assisted me in making a reconciliation of sales for August and September.

Yours very truly,

G. Dennehy
Petroleum Engineering Division.

GD/

November 5, 1962.

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

Attention: Mr. T. M. Dougall
Manager, Land Administration Division

Re: North Virden Scallion Unit No. 1
Calstan Scallion Prov. SWD 9-16-11-26 (W1)
Your File No. 14,353

Dear Sir:

With reference to your letter of October 31, 1962, it will be necessary to replace Doc. No. 14,353, being an Agreement for Water Disposal, dated October 4, 1957, by and between The Minister of Mines and Natural Resources and The California Standard Company, with a document which will convey to the North Virden Scallion Unit No. 1 the right to and the use of waters contained within the Devonian Formation underlying those lands described in P.& N.G. Lease No. 261.

Yours very truly,

W. J. Gobert,
Member.

JG/h

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

J. G. Trowell

J.S.Richards

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

November 14, 1962.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 40,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: Production Changes for September 1962

Attached are two revised copies of the September Monthly Well Production Report.

The first is for Battery Stewart 14 in the North Virden Scallion Unit No. 1. Wells 10, 15 and 16-14-11-26 were tested in September 1962 and the tests appeared to be satisfactory but a re-test on 15-14-11-26 showed that the September test was not a good test. Therefore the previous allocation was used in the month of September and all the wells will be re-tested.

The other is for a mistake made in the allocation to 5-26-11-26. Because of this mistake the allocation to all three wells was incorrect.

Yours very truly,

for J. S. TROELL,
District Production Superintendent.

RAP/jp

Attach

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

October 25, 1962.

File: 662.1.

Mr. N.M. Bess,
Petroleum Engineering Division,
Oil Norquay Building,
401 York Avenue,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: September Production Allocation for NE 1/4 Section 14-11-26 in North Virden Scallion Unit No. 1

The fact that production allocation seems to have shifted within this lease was previously noticed and checked. It was found that 9-14 was tested in August, 1962, and the remaining three wells, 10, 15, and 16-14, were tested in September, 1962. These were wet tests and changed the allocation quite radically. The production appears to be uniform on the two or three days each well was tested and therefore the tests have been assumed valid. There were no arithmetic errors.

We have no record of the previous tests run by Fargo on these wells and therefore have no comparative data. We cannot tell whether allocation was correct or incorrect in the past.

New tests have been requested and are currently being conducted on 15 and 16-14. On completion of these tests, 9 and 10-14 will be re-tested to check the present allocation within the lease.

The entire lease production is following an estimated decline trend, but the allocations to wells has shifted because of the latest tests. When all four wells have again been tested, we will be able to tell whether or not the September tests were valid.

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

RAP/ck

October 24, 1962.

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

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

Re: September 1962 production
North Virden Scallion Unit #1 wells
Fargo et al Scallion 10-14-11-26
Fargo et al Scallion 15-14-11-26

Dear Sir:

September/62	Days produced	Water	Oil
10-14-11-26	30	580	429
15-14-11-26	30	1,430	732

Kindly check the oil production figures for the above wells to see if by chance they have been interchanged in recording, and return same to this office.

Yours very truly,

N. M. Less,
Petroleum Engineering Division.

NML/h

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE September 25, 1962

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

TO Mr. M.J. Gobert

SUBJECT North Virden Scallion Unit No. 1
The Oil and Natural Gas Conservation Board

I have your memo of September 21, and as the Schedule of Wells, as you state, is published for the information of Working Interest Owners only, it would not appear that any further action is required.

J.G. Cowan.

JGC/ms
cc. Mr. J.S. Richards.

M. J. Gobert

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

file → North Virden Scallion Unit No. 1 1962

September 21, 1962.

The Oil and Natural Gas Conservation Board

It has been drawn to my attention that an error appears in Schedule A on page 977 of the Manitoba Gazette, July 28, 1962 issue with respect to Tract 1-28.

The percentage Working Interest Ownership for Western Naco Petroleums Limited should be 20 per cent rather than the 10 per cent shown.

It is suggested that, since this Schedule was published for information of the Working Interest Owners only, no action by the Board is required.

MJG/lk

c.c. Mr. J.S. Richards.

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

September 5, 1962.

File: 351.1.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: North Virden Scallion Unit No. 1

With reference to your letter of September 4, 1962 re closing inventories for Dome Petroleum Limited and Canadian Superior Oil Limited we wish to advise that we have allocated the 67 barrels to Dome Exploration Western Limited. Canadian Superior Oil Limited prepared the reports for the two batteries and for this reason we had included the amount with their inventory figure in our letter of August 31, 1962.

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

RHR/jp

DEPT. OF MINES & NATURAL RESOURCES
SEP 6 1962
PETROLEUM ENGINEERING DIVISION

September 4, 1962.

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

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

Dear Sir:

Re: North Virden Scallion Unit No. 1
Your File 351.1

With reference to your letters of August 22nd and 31st, 1962 an amended report has been filed for Fargo W.C. Tapp 2-26 battery, a copy of which is attached. This results in a closing inventory of 1,764 bbls. rather than 1,759 bbls. as shown in your August 31st letter.

Further, our records show the following closing inventories:

Dome Petroleum Limited	1,941 bbls.
Canadian Superior Oil Limited	1,064 bbls.

Your attention is drawn to the fact that the total of the two inventories is the same as shown in your tabulation and that Dome Exploration (Western) Limited report closing inventories of 37 and 30 bbls. for Dome Naco Harmsworth 1-28 and Dome Harris Cox North Scallion 1-16 batteries respectively. Have you by chance, allocated this 67 bbls. to Canadian Superior Oil Ltd.

Yours truly,

M. J. Gobert,
Senior Petroleum Engineer.

MJG/lk
Attach.

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

August 31, 1962.

File: 351.1.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: North Virden Scallion Unit No. 1

With reference to our letter of August 22, 1962, following is a listing of July 1962 closing inventories, which we propose to use as opening inventory for our reports for North Virden Scallion Unit No. 1.

Fargo Oils Limited	1,759 Bbls.
British American Oil Co. Ltd.	1,181 Bbls.
Canadian Export Gas & Oil Ltd.	359 Bbls.
Shell Oil Company	958 Bbls.
E.H. Vallat Limited	1,020 Bbls.
Imperial Oil Limited	481 Bbls.
Landa Oil Company	612 Bbls.
Dome Petroleum Limited	1,874 Bbls.
Canadian Superior Oil Limited	1,131 Bbls.
Sun Oil Company	2,976 Bbls.
The California Standard Company	12,150 Bbls.
Total Inventory	24,501 Bbls.

Please confirm.

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

RHR/jp

DEPARTMENT OF MINES & NATURAL RESOURCES
SEP 1 1962
PETROLEUM ... DIVISION

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

August 22, 1962.

File: 351.1.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Re: North Virden Scallion Unit No. 1

It is our intention to show all Working Interest Owners closing inventories as at July 31st, 1962 as a total opening inventory for the North Virden Scallion Unit No. 1 on our August Unit reports and include the disposition of the inventory with our Unit Sales on the same report. Each Working Interest Owner would then not have to prepare an August report to dispose of their individual inventories.

Please confirm.

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

RHR/jp

DEPARTMENT OF MINES & NATURAL RESOURCES
AUG 23 1962
PETROLEUM ENGINEERING DIVISION

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE .....

FROM ... J.G. Cowan ...
Chairman, Oil & Natural Gas Conservation Board

TO ... Mr. M.J. Gobert ...
Member, Oil & Natural Gas Conservation Board

SUBJECT North Virden Scallion Unit No. 1 - [illegible]

Date: July 27, 1962.

I have your memo of today's date enclosing a copy of the Gazette containing the plan, and I note a number of omissions and errors which have to be corrected, and, further, that arrangements have been made with the Queen's Printer to publish an erratum notice in the next issue of the Gazette.

When I first read your memo I was somewhat aghast at the number of errors, etc., but you have already explained to me that with, I believe, one exception the errors occurred in the printing office at Altona.

It would be appreciated if you would in due course let me have a copy of the erratum notice which I will attach to the copy of the Gazette which I now have.

J.G. Cowan.

JGC/ms

PS-f-52

COPY

August 3, 1962

M.J.Gobert

J.G. Cowan, Q.C.
Chairman
Oil & Natural Gas Conservation Board.

The Oil & Natural Gas Conservation Board

Further to our recent memo, enclosed herewith are 2 copies of Regulations under The Regulations Act, together with Erratum Notice which appears on Page 257.

Copy of Order No. 44F is attached for your files.

August 3, 1962.

Mr. R. R. McDaniel, Pres.
McDaniel Consultants Ltd.,
305 Humford Bldg.,
608 - 7th St. S.W.,
Calgary, Alta.

Dear Sir:

Enclosed herewith are 2 copies of "Regulations Under The Regulations Act", together with Erratum Notice which appears on page 257.

Yours very truly,

M.J.Gobert,
Senior Petroleum Engineer.

MJG/h

August 3, 1962.

Mr. S.A. McCrae,
Chairman,
North Virden Legal Committee,
The California Standard Company,
Medical Arts Bldg.,
Calgary, Alta.

Dear Sir:

We are forwarding, under separate cover, 6 copies of "Regulations Under The Regulations Act", together with Erratum Notice which appears on page 257.

Yours very truly,

M.J.Gobert,
Senior Petroleum Engineer.

MJG/h

August 3, 1962.

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

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

Dear Sir:

Enclosed herewith are 3 copies of "Regulations Under The Regulations Act", together with Erratum Notice which appears on page 257.

Yours very truly,

M.J.Gobert,
Senior Petroleum Engineer.

MJG/h

July 27, 1962

M.J.Gobert

J. G. Cowan, Q.C.

Chairman, Oil & Natural Gas Conservation Board

The Oil and Natural Gas Conservation Board

The North Virden Scallion Unit No. 1.

The Plan as published in the July 28, 1962 issue of The Manitoba Gazette has several rather serious omissions and certain minor errors. Arrangements have been made with Messrs. Tallin and Evans to have an Erratum published with the next issue.

July 28, 1962 - Regulations under The Regulation Act - Page 220.

Part 1 Page 220	1.02 (a)	delete - "of the Working Interest Owners under Part X111 hereof", insert - "conditions set forth in Part XXV1 hereof".
Part 1V Page 224	4.05 (a)	9th line - insert "the" after "at".
Part V111 Page 230	8.07	4th line - "Unitized" misspelt.
Part XX Page 240	20.01	10th line - "owing" should read "owning".
	20.04	1st line - delete "and" after Plan and insert a comma.
Part XX11 Page 243		All tracts after14-34 are in Township 12, Range 26 WPM.
Part XX1V Page 245		Tract number 6-2 with a tract participation of .00102 has been omitted.
Part XXV1 Page 246	26.01 (b)	Tubing -"100 feet" should read "1000 feet"

One hundred reprints of Unitization Order No. 1 and Order PM No. 1 will be held in this office until copies have been received of the erratum.

c.c. J.S. Richards

[redacted]
MEDICAL ARTS BUILDING 329A - 8TH AVENUE S.W., CALGARY, ALBERTA.

May 11, 1962

Mr. J. G. Cowan,
Chairman,
The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Box 42, Legislative Building,
WINNIPEG 1, Manitoba.

Dear Sir:

Enclosed are three copies of each of the following:

Exhibit No 3 Substituted

1. Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1 dated May 1, 1962.

2. Schedule "A" - Showing Tract Numbers and the Prima Facie Working Interest Owners of the Tracts in the North Virden Scallion Unit No. 1.

3. Schedule "B" - Showing Prima Facie Working Interest Owners and Their Participating Interest in the North Virden Scallion Unit No. 1.

4. List showing Changes made to "Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1" since The Oil and Gas Conservation Board Hearing at Virden, Manitoba, April 18, 1962, and incorporated in "Plan" dated May 1, 1962.

5. A specimen Consent Form for Working Interest Owners.

6. A specimen Consent Form for Royalty Owners.

We have requested the Working Interest Owners in the North Virden Scallion Field to submit two copies of the executed Consent Form for Working Interest Owners, and two copies of the executed Consent Form for Royalty Owners to the Chairman of the North Virden Scallion Operators' Committee. When we have received these Consent Forms to the proposed Plan of Unit Operation, we will prepare and submit affidavits supported by exhibits listing the Working Interest Owners and Royalty Owners by individual tract to The Oil and Natural Gas Conservation Board.

We have also requested that each Working Interest Owner advise The Oil and Natural Gas Conservation Board by letter designating the name and address of its representative and alternate representative on the Operators' Committee as required by Part 5.02 of the Plan.

We will keep the Chairman of The Oil and Natural Gas Conservation Board advised of the progress of approvals by Working Interest Owners and Royalty Owners.

Please advise the number of additional copies of the "Plan" and Schedules you require.

Yours very truly,

L. A. [redacted],
Chairman,
The North Virden Scallion
Operators' Committee

THE CALIFORNIA STANDARD COMPANY
MEDICAL ARTS BUILDING, 329A - 6TH AVENUE S.W., CALGARY, ALBERTA.

J. F. ROSS

July 5, 1962.

Mr. M. J. Gobert,
Mines Branch,
Room 911,
Norquay Building,
401 York Avenue,
Winnipeg, Manitoba.

Dear Sir:

We have sent via C.P.R. Express 32 copies of the Plan for Unit Operation for the North Virden Scallion Unit No. 1 and 6 copies of Schedule A and Schedule B.

Attached please find a copy of a letter from Sun Oil Company to Mr. J. D. Cowan appointing representative and alternate to the North Virden Scallion Unit No. 1. This letter is dated May 3, 1962.

JFR/mig
Attach.

J. F. ROSS

DEPT. OF MINES & NAT. RESOURCES
JUL 6 1962

PS-1-53

COPY

DIRECTOR OF MINES

May 1, 1962.

Mr. L.A. Swanson,
Chairman,
North Virden Scallion Operators Committee,
Medical Arts Building,
329A - 6th Avenue S.W.,
Calgary, Alberta.

Dear Sir:

This is to advise that the Board approves, in principle, the Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1 as presented at the Public Hearing held in Virden, Manitoba, on April 18, 1962, subject to the amendments subsequently agreed upon.

Further, that when the Working Interest Owners and the Royalty Owners have agreed, in writing, to the proposed plan of unit operation and affidavits supported by exhibits listing the Working Interest Owners and Royalty Owners by individual Tract have been submitted to the Board, the hearing will be reconvened.

Yours very truly,

"J.G. COWAN"

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

SGD AND SENT May 2/62.

July 6/62

M.J.Gobert

J. S.Richards

North Virden Scallion Unit No. 1

Attached herewith is a copy, altered as agreed, of an approval of the Lieutenant-Governor-in-Council for the Board to issue Unitization Order No. 1, and an approved copy of this Order.

Could I suggest that your office prepare the necessary copies for Council and posting as a Manitoba Regulation.

J. F. Ross, yesterday, agreed to ship 32 copies of the Plan, by express.

July 5, 1962

M.J.Gobert

J. G.Cowan, Q.C.

Deputy Minister

North Virden Scallion Unit No. 1

It is suggested that the following steps are required by statute for the implementation of the Plan for unitisation of a part of the North Virden Scallion Field.

1. Determination that 75% of the owners (working interest and royalty), on an area basis, have consented in writing to the Plan, at the continued hearing July 13, 1962.
   Section 74 (a) and (b).

2. Approval of the Lieutenant-Governor-in-Council for the Board to issue such a unitisation order.
   Section 93 (3).

3. Publication of the Order in the Manitoba Gazette, together with Schedules "A" and "B".

4. Posting of this Unitisation Order No. 1 as a Manitoba Regulation.

5. Approval of the Lieutenant-Governor-in-Council authorizing the Minister, on behalf of the Crown, to enter into the unitization agreement. (Discuss).
   Section 72(1).

6. Approval of the Lieutenant-Governor-in-Council authorizing the Minister, on behalf of the Crown, to enter into an agreement for the calculation of royalty payable to the Crown. (Discuss)
   Section 72 (2).

7. Filing of a copy of the order, certified as being a true copy by the Chairman or Deputy Chairman, with the district registrar L.T.O. and the Chief Mining Recorder.
   Section 87 (1) see Part XV of the Plan.

8. Five days prior to the Effective Date, the Chairman of the Conservation Board is to select the representative of a Working Interest Owner to act as chairman pro tem of the organisation meeting of the Operating Committee and shall forthwith forward the name and address of each W.I.O.'s representative to the person so selected.
   Section 5.03 (a) The Plan.

9. Order of the Board approved by the Minister authorizing pressure maintenance by water injection.

Section 59 (8) (d)

10. Posting of the Order referred to in "9" above as a Manitoba Regulation and publication in the Manitoba Gazette.

11. Order of the Board, approved by the Minister, varying Board Order 14A and setting the Maximum Permissible Rate of Production for wells in the Unit Area.

12. Posting of the Order referred to in "11" above as a Manitoba Regulation and publication in the Manitoba Gazette.

On the completion of the above, I propose to retire for 3 weeks to my sylvan retreat at Big Whiteshell Lake.

c.c. J. S. Richards

J.G. Cowan
Deputy Minister

The Honourable J.A. Christianson
Acting Minister

DEPARTMENT OF MINES
& NATURAL RESOURCES
JUN 23 1962
DIRECTOR OF MINES

California Standard Leases -
Renewals.

June 15, 1962.

I have your memo of June 12, and I cannot help but agree that you have used the correct word when you say "renege". I agree with you that having regard to the letter we are under not only a moral but, no doubt, a legal obligation to renew.

Yesterday Mr. L.A. Swanson, Vice President, phoned me in connection with the continuation of their application before the Oil and Natural Gas Conservation Board. The hearing was held at Virden on April 24th and 25th, and was adjourned to enable the companies to obtain the consents of the necessary 75% of the royalty owners. Mr. Swanson called me only to report progress as he was contemplating going on a rather extended holiday.

I took the occasion to point out to Mr. Swanson that he and I had discussed the matter of development, drilling, etc., on our land once the leases were renewed, and that I did not consider that Mr. McCrea's letter enclosing the large cheques was sufficiently specific. In fact it appeared to me to be in such general terms that it meant very little.

Mr. Swanson stated that the matter of the renewal of the leases was handled by a separate department, and that before leaving on his vacation, he would intimate to Mr. McCrea that his arrangement with me covered pretty definite and specific development, drilling, etc.

I also pointed out to Mr. Swanson that I would be leaving the department around the middle of July, and that if the hearing was not completed prior to that time, this might very well create difficulties, and quite possibly a re-hearing. In such circumstances, Mr. Swanson stated definitely that they would set a deadline and that we could advertise the resumption of the hearing on that date, and that they would continue to obtain consents right up until a day or two before the hearing. He indicated that he did not anticipate any difficulty at all in getting 75%, and that in fact they were aiming at over 90%.

J.G. Cowan.

JC/ms
cc. Mr. J.S. Richards, Director of Mines.

DEPARTMENT OF MINES
& NATURAL RESOURCES
JUN 27 1962
PETROLEUM ENGINEERING
DIVISION

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE May 29, 1962.

FROM J. S. Richards, Director of Mines.

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

SUBJECT Virden Scallion Unit No. 1

In accordance with your instructions of May 23rd, the amended Plan, forwarded with Mr. Swanson's letter of May 11th, has been marked "Exhibit No. 3 Substituted", and a copy has been forwarded to Mr. McDaniel for his comments.

It is suggested that Mr. Swanson be requested to supply 5 additional copies of the Plan and Schedules. Mr. Gobert also suggests that the Royalty Owners Consent Form be checked for compliance with the revised provisions of the Dower Act.

J. S. Richards.

JSR:lsm

c.c. Senior Petroleum Engineer

MAY 21 1962
PETROLEUM
DIVISION

registered

May 28, 1962.

Mr. R. R. McDaniel, Pres.
McDaniel Consultants Ltd.,
305 Humford Bldg.,
608 - 7th St. S.W.,
Calgary, Alta.

Dear Sir:

Enclosed herewith for your information, study and comments are:

1. Letter of May 11, 1962, L. A. Swanson to J. G. Cowan.
2. Plan - May 1, 1962
3. Schedule A
4. Schedule B
5. List of changes
6. Specimen Consent Form for Working Interest Owners
7. Specimen Consent Form for Royalty Owners

Working Interest Owners Participating Interests were removed at our request and are to be published as Schedules in the Manitoba Gazette - East Carnduff.

Yours very truly,

M. J. Gobert,
Senior Petroleum Engineer.

MJG/h

c.c. J. S. Richards

May 28, 1962.

M.J. Gobert

J. S.Richards

North Virden Scallion Unit No. 1 (May 1, 1962)

With reference to Mr. Cowan's memo of May 23rd, I would suggest that an additional 5 copies of the Plan and Schedules be requested and that the Royalty Owners Consent Form be checked for compliance with the revised provisions of the Dower Act.

A copy of the material submitted with the above memo has been forwarded to Mr. McDaniel for his comments.

The Plan, May 1, 1962, has been marked "Exhibit No. 3 Substituted".

May 17, 1962

J. G. Cowan, Q.C.

Deputy Minister

M.J.Gobert

The Oil & Natural Gas Conservation Board

Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1.

At the April 18th hearing, Mr. Swanson stated that several errors in calculation of tract participations factors were to be corrected together with certain other minor changes and that the pages of the Plan containing these would be reprinted.

It is my understanding that the Board was to be supplied with copies of this final printing as soon as available and prior to any approach to the mineral owners.

On May 14th, Mr. Trowell reported that securing of mineral owners' consents was proceeding very well, using the final form of the Plan, and that he hoped to have a more complete report by the end of this week. A meeting, with all mineral owners, has been set for May 31st in the Court House at Virden.

The applicants also agreed to photo reduce certain exhibits and copies of these have been received. However, the identifying exhibit number has been replaced by one lettered in by the draftsman and since I neglected to keep a diary of the exhibits as they were filed during the hearing, I cannot now vouch for these as being true copies of the exhibits as filed.

I would suggest that the applicants be requested to forward at least 5 copies of the Plan as finally printed.

c.c. J. S. Richards

May 1, 1962.

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

COPY

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

The California Standard Company -

North Virden Scallion Unit No. 1.

DEPARTMENT OF MINES
& NATURAL RESOURCES
MAY 3 - 1962
DIRECTOR OF MINES

In accordance with the instructions contained in your memo of May 1, I am enclosing a suggested draft reply to Mr. L. A. Swanson's telegram and letter of April 27.

J. S. Richards.

JSR:db

Encs.

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

MAY 3 1962

PS 1-53

COPY

May 1, 1962.

Mr. L.A. Swanson,
Chairman,
North Virden Scallion Operators Committee,
Medical Arts Building,
329A - 6th Avenue S.W.,
Calgary, Alberta.

Dear Sir:

This is to advise that the Board approves, in principle, the Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1 as presented at the Public Hearing held in Virden, Manitoba, on April 18, 1962, subject to the amendments subsequently agreed upon.

Further, that when the Working Interest Owners and the Royalty Owners have agreed, in writing, to the proposed plan of unit operation and affidavits supported by exhibits listing the Working Interest Owners and Royalty Owners by individual Tract have been submitted to the Board, the hearing will be reconvened.

Yours very truly,

"J.G. COWAN"

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

SGD AND SENT May 2/62.

c.c. to: Dr. Pet. Eng.

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE .....

FROM J.G. Cowan
Deputy Minister

TO Mr. J.S. Richards
Director of Mines

SUBJECT California Standard-
North Virden Scallion Unit No. 1

MAY 1, 1962.

DEPARTMENT OF MINES & NATURAL RESOURCES
MAY 1 - 1962
DIRECTOR OF MINES

I am enclosing:

1. copy of Mr. Swanson's wire to me of April 27,

2. copy of letter and attachments received from Mr. Swanson yesterday afternoon.

It would be appreciated if you would study the material, etc., and let me have draft reply for my signature at as early a date as possible.

J.G. Cowan.

JGC/ms
Atts.

c.c. to: Sr. Pet. Eng.

[illegible] IN CARE OF [illegible]

[illegible] MAIL STOP=

L A SWANSON CHAIRMAN [illegible]

OPERATORS COMMITTEE=

pc. to: Sr. Pet. Eng.

THE CALIFORNIA STANDARD COMPANY
MEDICAL ARTS BUILDING 329A - 6TH AVENUE S.W., CALGARY, ALBERTA

April 27, 1962

Mr. J. G. Cowan,
Chairman,
The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Box 42, Legislative Building,
WINNIPEG, Manitoba.

Dear Sir:

The North Virden Scallion Operators at a Meeting on April 27, 1962, reviewed the contents of your letter of April 24, and concurred with your suggestions.

We have reviewed the details with Mr. Gobert by phone and the following confirms our discussion:

Part XXIV will contain Tract Numbers and Tract Participations only.

The new Part XXV will state that the Unit Operator, at the discretion of the Operators Committee, will from time to time prepare Schedules setting out any changes in Working Interest Ownership and will cause such Schedules to be published in the Manitoba Gazette. A copy of the proposed new Part XXV is attached.

The remaining information concerning Working Interest ownership breakdown by leases which was previously in Part XXV is no longer required.

Part XXVI will be deleted from the Plan.

Schedule "A" will be patterned after the East Carnduff Unit and will contain the following (e.g.):

Tract Number	Working Interest Owners	Percent Working Interest
3-28	The British American Oil Company Limited Union Oil Company of Canada Limited	[illegible] 0

(cont'd)

Schedule "B" will also be patterned after the East Carnduff Unit and will contain the information formerly shown in Part XIVI.

There will be no other schedules.

It was also determined that The California Standard Company would provide the Board with sworn affidavits showing that 75% or more, by area, of the Royalty Owners and Working Interest Owners have agreed to the Board making a Unitization Order. It is our present intention that the affidavits would include exhibits listing the Working Interest Owners and the Royalty Owners by individual Tract.

Yours very truly,

L. A. SWANSON, CHAIRMAN,
NORTH VIRDEN SCALLION OPERATORS COMMITTEE

Rec to Sr. Pet. Eng

PART XXV

PARTICIPATING INTERESTS

Provision for Schedule of Working Interest Owners and Participating Interests

25.01 The Unit Operator shall as soon after approval of title by the Operating Committee under Part XIII is deemed to have been made, prepare and submit to the Working Interest Owners, Schedules setting out the Working Interest Owners of the Tracts and the Participating Interests in the Unit. Upon the approval of the Operating Committee the Unit Operator shall cause such Schedules to be published in one issue of the Manitoba Gazette.

The Unit Operator shall from time to time at the discretion of the Operating Committee prepare and submit to the Working Interest Owners, revised Schedules setting out any change of ownership in the Tracts or Participating Interests in the Unit, and shall cause such Schedules to be published in one issue of the Manitoba Gazette.

Re to: Sh. Pet. Eng.

YB438 1962 APR 27 PM 5 10

Y RHA[illegible] 29/28 1 EXTRA=CNT RH CALGARY ALTA 27 258PM MST.

[illegible] G COWAN CHAIRMAN=
THE OIL & NATURAL GAS CONSERVATION BOARD
LEGISLATIVE BLDG WPG=

NORTH VIRDEN SCALLION OPERATORS COMMITTEE CONCUR WITH
YOUR SUGGESTIONS IN LETTER DATED APRIL TWENTY=FOUR
STOP HAVE DISCUSSED DETAILS WITH MR GOBERT STOP WILL
CONFIRM BY MAIL STOP=
L A SWANSON CHAIRMAN NORTH VIRDEN SCALLION
OPERATORS COMMITTEE=

THE CALGARY SASKATOON COMPANY LTD.
MEDICAL ARTS BUILDING, 329A - 6TH AVENUE S.W., CALGARY, ALBERTA

A. SWANSON

April 27, 1962

Mr. J. G. Cowan,
Chairman,
The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Box 42, Legislative Building,
WINNIPEG, Manitoba.

Dear Sir:

The North Virden Scallion Operators at a Meeting on April [illegible], 1962, reviewed the contents of your letter of April 24, and concurred with your suggestions.

We have reviewed the details with Mr. Gobert by phone and the following confirms our discussion:

Part XXIV will contain Tract Numbers and Tract Participations only.

The new Part XXV will state that the Unit Operator, at the discretion of the Operators Committee, will from time to time prepare Schedules setting out any changes in Working Interest Ownership and will cause such Schedules to be published in the Manitoba Gazette. A copy of the proposed new Part XXV is attached.

The remaining information concerning Working Interest Ownership breakdown by leases which was previously in Part XXV is no longer required.

Part XXVI will be deleted from the Plan.

Schedule "A" will be patterned after the East Carnduff Unit and will contain the following (e.g.):

Tract Number	Working Interest Owners	Percent Working Interest
3-28	The British American Oil Company Limited	[illegible]
	Union Oil Company of Canada Limited	[illegible]

(cont'd)

Schedule "B" will also be patterned after the East Carnduff Unit and will contain the information formerly shown in Part XXVI.

There will be no other schedules.

It was also determined that The California Standard Company would provide the Board with sworn affidavits showing that 75% or more, by area, of the Royalty Owners and Working Interest Owners have agreed to the Board making a Unitization Order. It is our present intention that the affidavits would include exhibits listing the Working Interest Owners and the Royalty Owners by individual Tract.

Yours very truly,

L. A. SWANSON, CHAIRMAN,
NORTH VIRDEN SCALLION OPERATORS COMMITTEE

PART XIV

PARTICIPATING INTERESTS

Provision for Schedule of Working Interest Owners and Participating Interests

25.01 The Unit Operator shall as soon after approval of title by the Operating Committee under Part XIII is deemed to have been made, prepare and submit to the Working Interest Owners, Schedules setting out the Working Interest Owners of the Tracts and the Participating Interests in the Unit. Upon the approval of the Operating Committee the Unit Operator shall cause such Schedules to be published in one issue of the Manitoba Gazette.

The Unit Operator shall from time to time at the discretion of the Operating Committee prepare and submit to the Working Interest Owners, revised Schedules setting out any change of ownership in the Tracts or Participating Interests in the Unit, and shall cause such Schedules to be published in one issue of the Manitoba Gazette.

April 24, 1962.

M.J.Gobert

J. G. Cowan, Q.C.

North Virden Scallion Unit No. 1

Attached herewith is a suggested draft letter to Mr. L. A. Swanson regarding certain provisions now contained in the Plan.

c.c. J. S. Richards

April 24, 1962

Mr. L. A. Swanson,
Chairman,
North Virden Scallion Operators Committee,
The California Standard Company,
Medical Arts Building,
329 - 6th Avenue S.W.,
Calgary, Alta.

Dear Sir:

It is our understanding that certain changes are required in the "Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1".

These changes involve the re-calculation of Tract Participation factors to correct certain minor errors and further changes in Parts XXIV, XXV and XXVI to reflect changes in the working interests of WELTON BECKET and Hi-Tower Drilling Company Limited.

As the Plan now stands, it is our opinion that any change in working interest subsequent to the Effective Date would constitute an amendment and require a re-hearing.

In view of this, it is suggested that consideration be given to the removal of Working Interest Owners and their Participating Interests from the Parts mentioned above and that provision be made in the Plan for the publication of this information as schedules in the Manitoba Gazette.

Part XXIV would then consist of Tract Numbers and Tract

Participations only, while Parts XXV and XXVI would contain provision for the publication as schedules in the Manitoba Gazette of the information now contained in these three Parts.

After the clarification of these points, the Board will at once advise you as to its decision on your application insofar as it affects the Plan.

Yours very truly,
"J.G. COWAN"

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

sgd and sent 24/4/62.

April 2, 1962.

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

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

Re: Public Hearing April 18, 1962

Dear Sir:

Registered mail addressed to Mrs. Vergie Lee and Vergie Lee has been returned as "Unclaimed".

Have you any suggestions as to how these people could be located?

Yours very truly,

M. J.Gobert,
Senior Petroleum Engineer.

MJG/h

March 21, 1962.

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

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

Re: Your file 662.2

Dear Sir:

Thank you for the information contained in your letter of March 15, 1962.

In the meantime, registered mail addressed to Mabel Elizabeth Saunders at 204 Balfour Apts., Regina, Sask., has been returned. Could Mr. McRae be of any help to us with respect to this?

Yours very truly,

M. J.Gobert,
Senior Petroleum Engineer.

MJG/h

March 28, 1962.

Mr. C. O. Motheral,
Sportshaven Motel,
Oak Lake, Man.

Dear Sir:

This will confirm our request for the following reservations for April 17 and 18, 1962.

Mr. J. G. Cowan	single room
Mr. J. S. Richards	single room
Mr. R. R. McDaniel	single room
Mr. J. Donovan	single room
Mr. F. S. Gamey Mr. M. J. Gobert	double room

Yours very truly,

M. J. Gobert,
Member.

MJG/h

THE CALIFORNIA STANDARD COMPANY

7TH AVENUE & RAGLAN STREET • VIRDEN, MANITOBA

MAILING ADDRESS: P.O. BOX 100

March 15, 1962.

File: 662.2.

Mr. M.J. Gobert,
Senior Petroleum Engineer,
Mines Branch,
Box 42,
Legislative Building,
WINNIPEG 1, Manitoba.

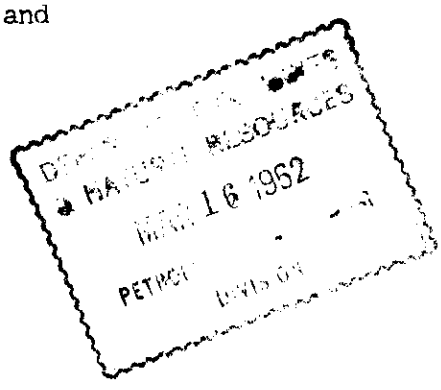
Dear Sir:

With reference to your letter of March 9, 1962 we offer the following comments.

1. Edward Alexander Winkler,
Sarita River, Vancouver Island, B.C.
Via Port Alberni.

Mr. Winkler was apparently at one time a grain elevator operator at Harmsworth and his address is still shown as such on most records. Our Mr. McRae advised that Winkler's royalties were being paid to the Canadian Imperial Bank of Commerce at Virden. The manager of that bank, Mr. K.S. Hughes, was most cooperative in tracking down the above noted address.

2. Regarding Welton Becket, Mr. McRae advises as follows:
"Welton Becket is apparently entitled to an undivided 25% working interest in certain of the Dome and Canadian Superior tracts.



He acquired this interest through a so called participating interest agreement with Dome. We understand that no registrable assignment was ever given him as some of the lands were acquired by farmout and it was unlikely that any farmor would consent to such assignment. If you want further information on him I understand he is an architect by profession and was written up in an edition of Saturday Evening Post last year."

I also have Stan Gamey's letter of March 9, 1962 regarding apparent discrepancies in basic data used to calculate North Virden Scallion Unit #1 tract participations. I haven't checked fully into this yet, but hope to have an answer for Stan in a week or so.

Yours very truly,

J. G. TROWELL,
District Production Superintendent.

JGT/jp

cc: L.A. Swanson
Mahaffey/McRae
Ross/Dutka

PS-f-53

COPY

March 9, 1962.

Mr. J. L. Donovan,
Room 105
Law Courts Bldg.,
Winnipeg 1, Man.

Dear Sir:

This will confirm our understanding that you will attend and transcribe the proceedings at the Public Hearing to be held by the Board in Virden, Manitoba, commencing at 9.00 a.m., April 18, 1962.

We will arrange transportation and accommodation for you.

Yours very truly,

M. J. Gobert,
Member.

MJG/h

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

J. S. Richards

March 9, 1962.

Mr. J. G. Trowell,
The California Standard Company,
Box 100,
Virden, Manitoba.

Dear Sir:

We have been unable to locate an address for Edward Alexander Winkler, lessor as to 4.05 acres in Lsd. 13-33-11-26. The lease shows him as a grain buyer in Harmsworth but since he is not listed in the Virden Telephone Directory, assume that he has moved.

Welton Beckett is believed to hold a working interest with Dome and Canadian Superior, is unknown to us.

Your assistance would be appreciated.

Yours very truly,

M. J. Gobert,
Senior Petroleum Engineer.

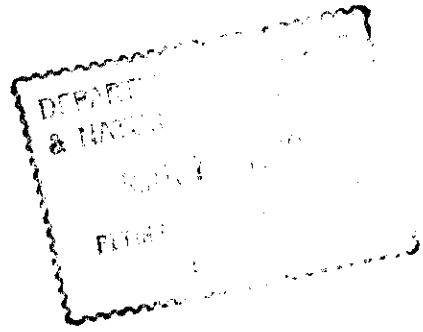
MJG/h

PROVINCE OF MANITOBA

DEPARTMENT OF MINES AND NATURAL RESOURCES, WINNIPEG, CANADA

COPY

February 1, 1962.



Mr. S.A. McCrae,
Chairman,
North Virden Local Committee,
The California Standard Company,
Medical Arts Building,
329A-6th Avenue S.W.,
Calgary, Alberta.

Dear Mr. McCrae:

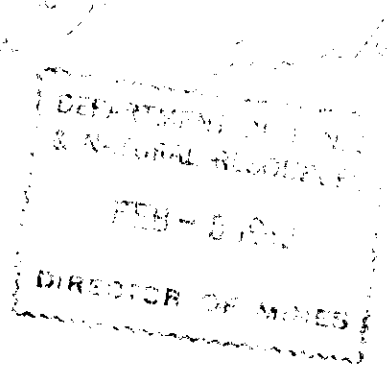
Re: North Virden Scallion Unitization

I have your letter of January 2 enclosing suggested amendment to Section 6.03 (j). It appears to me that the double negative makes the amendment almost meaningless. I would suggest that the proviso be as follows:

"Provided, that no amendment increasing the charges to be made by Unit Operator under Section 28.07 (j) hereof shall become effective until the approval of the Conservation Board to such increase in charges has been obtained."

Yours very truly,

[illegible],
Deputy Minister.



J C/ms

cc: Mr. J.S. Richards, Director of Mines.

cc. Jr. Sr. Pet. Engineer.

DEPARTMENT OF MINES AND NATURAL RESOURCES

PROVINCE OF MANITOBA

THE OIL AND NATURAL GAS CONSERVATION BOARD
BOX 42 LEGISLATIVE BUILDING
WINNIPEG 1

NOTICE OF HEARING

A Public Hearing will be held in the Court House, Town of Virden, Province of Manitoba, on Wednesday, April 18, 1962, commencing at 9.00 a.m., Central Standard Time, for the purpose of hearing representations with respect to:

(1) A Plan for Unit Operation Governing the Unitized Management and Further Development of North Virden Scallion Unit No. 1.

(2) A Proposal for Pressure Maintenance by Water Flooding.

(3) An application for a Unit Maximum Permissible Rate of Production.

Copies of material filed in support of the application are available at the offices of The California Standard Company in Virden, Manitoba, and the Medical Arts Building in Calgary, Alberta.

Written submissions in respect to the subjects of the hearing must be submitted to the Board at Room 901, Norquay Building, Winnipeg, Manitoba, on or before April 6, 1962.

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

Dated at Winnipeg, Manitoba,
this 6th Day of March, 1962.

PS-I-52

COPY

March 6, 1962.

Mr. D. G. Rodger,
Secty-Treasurer,
Town of Virden,
Manitoba.

Dear Sir:

This will confirm that, by telephone, March 5, 1962, the Court Room was reserved for the purpose of a Public Hearing by the Board on April 18th to 20th inclusive.

Your co-operation is appreciated.

Yours very truly,

M. J. Gobert,
Member.

MJG/h

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

PROVINCE OF MANITOBA

J. G. COWAN, Q. C. — CHAIRMAN — WHitehall 6-7438
J. S. RICHARDS — DEPUTY CHAIRMAN — WHitehall 6-7428
M. J. GOBERT — MEMBER — SPruce 2-7880
R. R. McDANIEL — CONSULTANT

DEPARTMENT OF MINES AND NATURAL RESOURCES
THE OIL AND NATURAL GAS CONSERVATION BOARD
BOX 42 LEGISLATIVE BUILDING
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J. G. Cowan,
Chairman,
The Oil and Natural Gas
Conservation Board.

Dated at Winnipeg, Manitoba,
this Day of March, 1962.

THE CALIFORNIA STANDARD COMPANY

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

February 28, 1962.

The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Province of Manitoba,
Winnipeg 1, Manitoba.

ATTN: Mr. J. G. Cowan, Chairman

Dear Sir:

The California Standard Company, under and pursuant to The Mines Act, Revised Statutes of Manitoba 1954, and amendments thereto, hereby, on behalf of itself and other Working Interest Owners in the North Virden Scallion Field, requests the Board to hold a hearing to consider and approve the following:

(1) "PLAN FOR UNIT OPERATION GOVERNING THE UNITIZED MANAGEMENT OPERATION AND FURTHER DEVELOPMENT OF NORTH VIRDEN SCALLION UNIT NO. 1" pursuant to Section 73 of The Mines Act.

(2) "PROPOSAL FOR PRESSURE MAINTENANCE BY WATER FLOODING" pursuant to Section 59 of The Mines Act.

(3) "APPLICATION FOR A UNIT MAXIMUM PERMISSIBLE RATE OF PRODUCTION" pursuant to Section 59 of The Mines Act.

Enclosed please find the following:

10 copies - "PLAN FOR UNIT OPERATION GOVERNING THE UNITIZED MANAGEMENT OPERATION AND DEVELOPMENT OF NORTH VIRDEN SCALLION UNIT NO. 1".

10 copies - "PROPOSAL FOR PRESSURE MAINTENANCE BY WATER FLOODING".

The "PROPOSAL" for water flooding a portion of the pool includes an APPENDIX I relating to the investigation of the feasibility of water flooding the North Virden Scallion Field and APPENDIX II covering the physical details of the proposed water flood program.

10 copies - "APPLICATION FOR A UNIT MAXIMUM PERMISSIBLE RATE OF PRODUCTION".

At the hearing we would also like to refer the Board to the following references which were previously forwarded to the Board:

(1) Reservoir Study - North Virden Scallion Field, August, 1961.

.....Cont'd.

(2) Rate Cumulative Decline Curves - North Virden Scallion Field.

(3) Cherty Zone Cross Sections and Charts.

(4) Oolitic and Crinoidal Zone Cross Sections and Charts.

In addition we are also enclosing the following information which has been requested by the Board:

(1) A list of Royalty Owners in the proposed Unit Area which may assist the Board in sending out notices of the hearing.

(2) 10 copies of the Brochure for Royalty Owners entitled, "North Virden Scallion Field - Unitization and Water Flood Proposal".

(3) Discussion of North Virden Scallion Unitization and Participation Formula.

An early consideration of our request would be greatly appreciated.

L. A. Swanson

L. A. SWANSON, Chairman,
NORTH VIRDEN SCALLION OPERATORS COMMITTEE.

Encls.

PROPOSAL FOR PRESSURE MAINTENANCE BY WATER FLOODING

The Applicants propose to unitize a portion of the North Virden Scallion Field. The proposed Unit Area is shown in Figure 1 and consists of 217 oil wells. The purpose in unitizing this portion of the North Virden Scallion Field is to facilitate the operation of a water flood in the subject area. An engineering report entitled "Reservoir Study - North Virden Scallion Field" and dated August, 1961 has been included in support of this submission. The report indicates a primary recovery of 25,000,000 barrels from the proposed Unit Area. By comparison, water flood calculations indicate an estimated total ultimate primary and secondary recovery of 55,000,000 barrels from the same area. The details regarding these recovery estimates are provided in the accompanying Reservoir Study whereas Appendix I contains a summary of the investigation of the feasibility of water flooding. A water flood program is planned for the subject area in order to recover the approximate 30,000,000 barrels of additional oil. The type of water flood which is planned for North Virden Scallion is an inverted 160 acre 9 spot pattern. This pattern is to be established in two phases by the conversion of certain wells to water injection. A detailed outline of the proposed water flood program is provided in Appendix II.

Unitization of the area under application will enable all interests in the subject area to be merged so that this portion of the reservoir may be operated as a single property. Under unit operation a maximum recovery efficiency and reduced production costs may be attained when water flooding is systematically applied to a large tract. This will be achieved by selecting injection wells without regard to property lines and by controlling injection and producing rates to obtain a high degree of recovery efficiency.

Certain wells in the proposed North Virden Scallion Water Flood are required for conversion to water injection. A continued income from present wells, including those converted to injection, must be ensured to the owners. Additional production will also be obtained by the water flood and the unit must also provide a fair basis for sharing this benefit. The applicants submit that the participation formula provides a fair and equitable basis for sharing production.

It is noted in Figure 1 that a portion of the North Virden Scallion Field has been excluded from the proposed unit and water flood area. The west flank is already operating under a strong natural water drive. Inclusion of this portion of the field in the proposed Unit Area is therefore not considered necessary. Certain additional acreage has also been excluded because it is not considered productive at this time. Steps have been taken to avoid any water flooding of these excluded lands. A further discussion of the lands which are excluded from the proposed unit area is provided in Appendix II. Notwithstanding the present exclusion of these lands from the proposed unit area if future development indicates they should be included, the Board, under Section 76 of The Mines Act may, at any time, hold a further hearing to consider adding these or any other lands to the unit area. Therefore, should any outside acreage be subsequently developed and proven productive, it could enter and participate in the unit by order of the Board. Similarly, should any of the west flank acreage which is presently excluded be shown to warrant water flooding, it could also enter and participate in the unit.

APPENDIX I

Investigation of the Feasibility of Water Flooding

The North Virden Scallion Field was discovered in December, 1953 and by the end of 1956 there were 167 wells on production. Production decline of individual wells indicated that some form of secondary recovery was necessary to increase the ultimate oil recovery from the field. Both geological and reservoir studies were therefore initiated to properly evaluate methods of secondary recovery.

During 1957, in conjunction with these studies, special laboratory water flood tests were run. The laboratory tests indicated that substantial additional oil could be recovered by water flooding. The "Reservoir Study - North Virden Scallion Field, Manitoba" dated August, 1961 may be briefly summarized as follows:

(1) The size and structure of the reservoir was studied to obtain an estimate of oil in place.

(2) The estimate of oil in place was compared with indicated primary performance from decline curves to arrive at an approximate estimate of primary oil reserves as a percentage of estimated original oil in place.

(3) The laboratory water flood test data was used in calculating the approximate amount of oil that could be obtained by water flooding the field.

(4) The primary reserve estimate and the water flood reserve estimate was compared to obtain an order of magnitude number which represents the possible gain which may result from water flooding.

SUMMARY OF PRIMARY RESERVE ESTIMATE

	Cherty Zone	Oolitic Zone	Crinoidal Zone	Total
Est. surface area - acres	8,410	7,290	4,130	
Est. average pay thickness - ft.	25.6	6.8	9.5	
Est. average porosity - %	13.4	10.7	9.8	
Est. average water saturation - %	29	29	52	
Est. average initial oil sat. - %	71	71	48	
Formation volume factor res.bbls/ S.T. bbl.	1.05	1.05	1.05	
Est.oil-in-place - bbls/acre ft.	705	568	348	
Total est. oil-in-place - bbls.	152,000,000	28,000,000	14,000,000	194,000,000
Total est. Primary Rec.Oil - bbls.				25,000,000
Est. Primary Rec. % of oil-in-place				12.9

SUMMARY OF ESTIMATE OF WATER FLOOD RESERVES

Twenty-five core plugs were selected on the basis of permeability distribution plots. The distribution of plugs by zones is as follows:

Zone	Number of Samples Selected	Number of Samples Water Flooded by CRC
Cherty	17	7
Colitic	5	3
Crinoidal	3	2
Total	25	12

In the laboratory one inch diameter plugs were cut and re-saturated to simulate reservoir oil and water saturations and viscosities. The plugs were then flooded with brine solution until production of oil had practically ceased. The results are tabulated below:

	Cherty Zone	Oolitic Zone	Crinoidal Zone
Initial oil saturation - fraction of pore volume	0.76	0.79	0.67
Average oil saturation at breakthrough - fraction of pore volume	0.48	0.62	0.42
Average oil saturation at infinite WOR - fraction of pore volume	0.34	0.40	0.25
Average oil recoveries at breakthrough as % of original oil-in-place	36%	20%	38%

Using the above mentioned laboratory data and calculation procedures, which take into account such factors as areal and vertical sweep efficiencies and are described more fully in the Reservoir Study, it has been estimated that a properly engineered water flood might increase the ultimate recovery for the proposed Unit Area to 28.4% or 55,000,000 barrels. This is more than double the presently estimated 25,000,000 barrels which is expected under natural depletion.

APPENDIX II

DETAILS OF OPERATION TO BE CONDUCTED IN UNIT AREA

Introduction

The basic objective of the North Virden Scallion Water Flood proposal is to recover the greatest amount of oil consistant with sound economics. Injectivity to a large degree controls the choice of flood pattern which is desirable in initiating a water flood. Injectivity calculations have been made which indicate an average zone capacity of 1.84 B/D/md.ft. This suggests injection rates ranging up to 850 barrels per day with an average of about 250 barrels per day. These rates should be considered as illustrating the anticipated order of magnitude rather than the absolute values. The injectivity calculations indicate that North Virden Scallion can be flooded using an inverted 9 spot pattern. The applicants propose to water flood each of the Crinoidal, Oolitic and Cherty zones simultaneously. Completions are to be conducted in both injectors and producers with this in mind.

It is planned to initiate the North Virden Scallion water flood in two phases. Dependent on the degree of flood response a third phase could be introduced at some later date.

Initially 3,300 barrels per day of produced water will be injected into the reservoir contained in the Unit Area. It is estimated that approximately six wells will be converted to water injectors. The exact number of injection wells included in phase one will depend upon individual well injectivity and evaluation of subsurface water sources.

The advantages of instituting the water flood in two stages are as follows:

(1) The performance of phase one injection and producing wells will assist in selecting the optimum water injection pattern and injection line system for phase two.

(2) During construction and initial performance of phase one, additional subsurface water sources will be evaluated. It is proposed that the Duperow and Dawson Bay members of the Upper Devonian and the Ashville Sand be tested as potential water sources for phase two of the water flood scheme.

Figure 1 shows the proposed unit outline and the proposed injection wells in phase one and two. The number of injection wells has been determined by injectivity calculations with certain modifications as a result of consideration of fringe and window acreage.

It may be noted that all injection wells are located on even numbered legal subdivisions. An advantage of the inverted 160 acre 9 spot pattern is that the pattern can be converted to a complete 80

.....Cont'd.

acre 5 spot pattern if injectivity should prove to be much lower than anticipated.

The west flank of the North Virden Scallion Field has been excluded from the proposed unit area. The west flank is already influenced by a strong natural water drive and reservoir pressure is being maintained. Water oil ratios have increased pronouncedly due to water encroachment and are currently averaging approximately 80 percent. Consequently, it is not considered necessary or desirable to include the west flank.

Certain acreage which is encompassed by the unit boundary has also been excluded from the proposed unit area. This "window" acreage has no producing wells and is considered unproductive. On this basis, the "window" acreage has been excluded from the proposed unit area. Modifications have been made to the flood pattern to prevent any flooding of the "window" acreage. This has been done to provide the maximum degree of protection against flooding in any undeveloped areas where there appears to be any possibility of future development.

Some of the details related to the program of operations proposed under Phase I and Phase II are described in the following sections:

PHASE I

A. Source of Water for Injection

The source of water, for the Phase I nine spots, will be produced salt water. This salt water is presently being gathered in Calstan's North Virden Salt Water Gathering System No. 1 and disposed of in a well drilled down to the Dawson Bay formation and located on Lsd. 9-16-11-26. Five Calstan Batteries are connected to the plant on 9-16-11-26 by 4" and 6" Class 150 asbestos cement pipe, respectively as shown in Figure 2. The water gravity feeds, from boots located at each battery, to a tank on 9-16.

At present, approximately 3,100 barrels per day are being transported through the above lines. In addition, a line has been laid from the Dome-Canadian Superior Veldhouse Battery, located on 1-16-11-26, to the plant. This 2" Schedule 40 PVC plastic line is currently carrying approximately 200 BWPD. This makes the total amount of produced salt water available for flooding approximately 3,300 barrels per day which should be sufficient for the calculated stabilized injectivity rates for the six wells.

B. Expansion of the Plant #1 Facilities Located at 9-16-11-26 WPM.

A Salt Water Disposal plant is presently located at 9-16. It consists of a collection pit and high pressure pump for disposal of produced water in the area. This plant could be revised and expanded as required to handle additional water for injection purposes. Figure 3 shows a schematic diagram of the present plant.

C. High Pressure Injection System

It is proposed that all injection lines shall be cement

.....Cont'd.

lined steel, coated and wrapped. Injection lines in Phase I will be transporting produced salt water and will be buried 5 feet deep. The location of injection wells and a preliminary design showing the positioning of lines is shown on Figure 4.

Line losses were obtained from a set of flow curves for water based on the Hazen and Williams formula. A coefficient of friction of 100 was used for all steel and cement lined steel pipe. The interior diameter of all steel pipe was reduced by 0.4 inches to allow for cement lining. In general, pipe sizes were selected to maintain line losses below 2 psi/1,000 feet. Line sizes and calculated injection rates are also shown in Figure 4. Line sizing has been selected to provide for increased capacity should it be required.

D. Conversion of Wells to Water Injection

It is the intention of the operator to flood the three oil bearing horizons (Crinoidal, Oolitic & Cherty) simultaneously. A schematic diagram of a typical injection well is shown in figure 6. The following procedure outlines the program to be carried out in converting the wells to water injection. Additional work on the injection wells (i.e. spinner surveys, additions of plugging material, restimulating, etc.) may be required at a later date to remedy difficulties which cannot presently be anticipated.

(1) Remove pump jack.

(2) Pull pump, rods and tubing.

(3) Run casing scraper.

(4) Re-run open-end tubing.

(5) Reverse circulate hole to T.D.

(6) Perform salt water injection test at maximum surface pressure of 1000 psi.

(7) Acidize well-bore if indicated necessary in (6).

(8) Pull tubing.

(9) Place well on injection down the casing until such time as well is "Pressured Up".

(10) Run plastic-lined tubing injection string.

(11) Fill casing annulus with oil.

(12) Place well back on injection.

PHASE II

A. Source of Water for Injection

Alternative #1 - Subsurface Water Sources

It is planned to investigate the productivity of the Upper

....Cont'd.

Devonian section at Calstan Scallion Prov. SWD 9-16-11-26 and Cdn. Sup. Whiteford Scallion SWD 8-28-11-26. These two wells are currently disposing of salt water production to the Upper Devonian. The 9-16 well has the entire Upper Devonian section open and is taking water on injection at rates up to 4,000 barrels per day. A drill stem test of the Dawson Bay formation of the Upper Devonian section at Calstan South Virden Prov. SWD 3-11-10-26 in the Virden Roselea Field gave a salt water rise of 50 bbls. in 37 minutes. The recovery, together with chart analysis indicates a formation of high permeability. Regional geology suggests that porous and permeable Dawson Bay and Duperow formations exist over a large general area. It is therefore expected that these Upper Devonian formations will provide an abundant source of injection water.

Ashville salt water disposal wells and high water cut Mississippian oil wells are two additional possible water sources which will be investigated.

Alternative #2 - Fresh Water Sources

If the investigation of possible subsurface water sources does not indicate an adequate water supply it would then be necessary to resort to fresh water sources.

A supply of fresh water could be obtained from the Assiniboine River Valley approximately two miles east of the North Virden Scallion Field. This would require drilling a supply well or wells in the valley and installing a pipeline to transport the water to the field area. Since this appears to be the most expensive alternative the project costs are based on a line to the river.

B. Injection Plants

Preliminary design indicates that injection plants could be located as follows:

Plant at 9-16

This plant was located at this point because of the existance of the SWD facilities which might be incorporated directly into the proposed waterflood. A concrete pit with skimming, settling, and clear-well is now in use along with overflow pit and pump house. Minor additions and changes to the present plant may allow its use as plant #1 in the water flood. The Devonian disposal well could be used as a water supply well initially and a water disposal well in the final stages of the water flood.

Plants at 2-26 and 7-33

These plants are so located because:

(1) The line sizes in the high pressure system are substantially reduced by having two plants rather than one.

(2) The plants are located roughly in the center of their respective injection areas.

.....Cont'd.

(3) The proximity of Ashville wells or disposal lines are such that produced salt water may be utilized in the flood or disposed with a minimum of additional lines.

(4) The three plants would be located on fairly high ground and thus have all weather access.

The above described plant locations are shown in Figures 4 and 5.

C. High Pressure Injection System

The high pressure injection system for Phase II will be made up of 6", 4", 3" and 2" line pipe, respectively, as is shown in Figure 5.

All of the above would be nominal sized, Grade A line pipe tested to a pressure greater than the anticipated injection pressures. This pipe will be cement lined, wrapped, and buried to a depth of 5 or 7 feet respectively. Until Alternative #1 above can be investigated, it has been assumed that Plants #2 and #3 will be served by fresh water initially and therefore, that the pipe will be buried 7 feet.

It is the intention of the operator to utilize a computer program to obtain the optimum design and location of the high pressure injection lines for Phase II so that the amounts of pipe could be reduced and the line system could be changed.

D. Capital Cost Estimates

The following capital costs are based on Alternative #2 water source and are estimated to be maximum costs.

Phase I

Plant Costs	$ 18,000
Lines	68,000
Well Conversions	18,000
Miscellaneous (survey, land, eng. etc.)	16,000
	$ 120,000

Phase II

Plant Costs	$ 91,000
Lines	222,000
Well Conversions	95,000
Miscellaneous (surveys, land, eng. etc.)	76,000
	$ 484,000

Line to Assiniboine River

Lines	$ 82,000
Well and Pump	30,000
	$ 112,000

....Cont'd.

Possible Additional Flood Expansion

After the North Virden Scallion Unit #1, water flood has been in operation for three to four years, the performance of injection and producing wells contained in Phases I and II will dictate whether additional water injectors are required.

The addition of further injection wells located on even numbered Lsd's would compliment the existing pattern. This could be carried to an ultimate pattern of 80 acre 5 spots throughout the field. It is not expected that this degree of conversion will ever be required. However, to demonstrate the economic situation which this arrangement provides, a further economic breakdown is included under a complete 80 acre 5 spot flood pattern.

Lines	$ 99,000
Wells	118,000
Miscellaneous (surveys land, eng. etc.)	27,000
	$ 244,000
Estimated Maximum Total Cost	$ 960,000

APPLICATION FOR A UNIT MAXIMUM PERMISSIBLE RATE OF PRODUCTION

The Applicants propose that a degree of production flexibility be provided to the Unit which is consistent with good engineering practice.

At the present time production may be considered to be unrestricted since the majority of the North Virden Scallion wells are being produced at capacity. It is the Applicants contention that no reservoir damage has resulted by producing these wells at capacity.

During Phase I of the proposed water flood program the capacity of certain wells to produce should increase. There is no reason to believe that reservoir damage would result by producing these increased capacity wells at unrestricted rates.

During Phase II of the proposed water flood program, water injection rates will increase to the point where reservoir fluid withdrawals may be completely replaced. It is anticipated that the productive capacity of additional wells will be significantly increased. The Applicants contend that no reservoir damage will result by producing all remaining producing wells at capacity.

The Applicants would suggest that Unit producing wells, where offset by non-unit wells, be restricted to oil producing rates not in excess of the present top allowable of 70 bbls. of oil per day.

The North Virden Scallion Operators respectfully request that, on and after the first day the North Virden Scallion Unit becomes effective, the Unit be excluded from any provisions governing the limitations and allocation of production of oil.

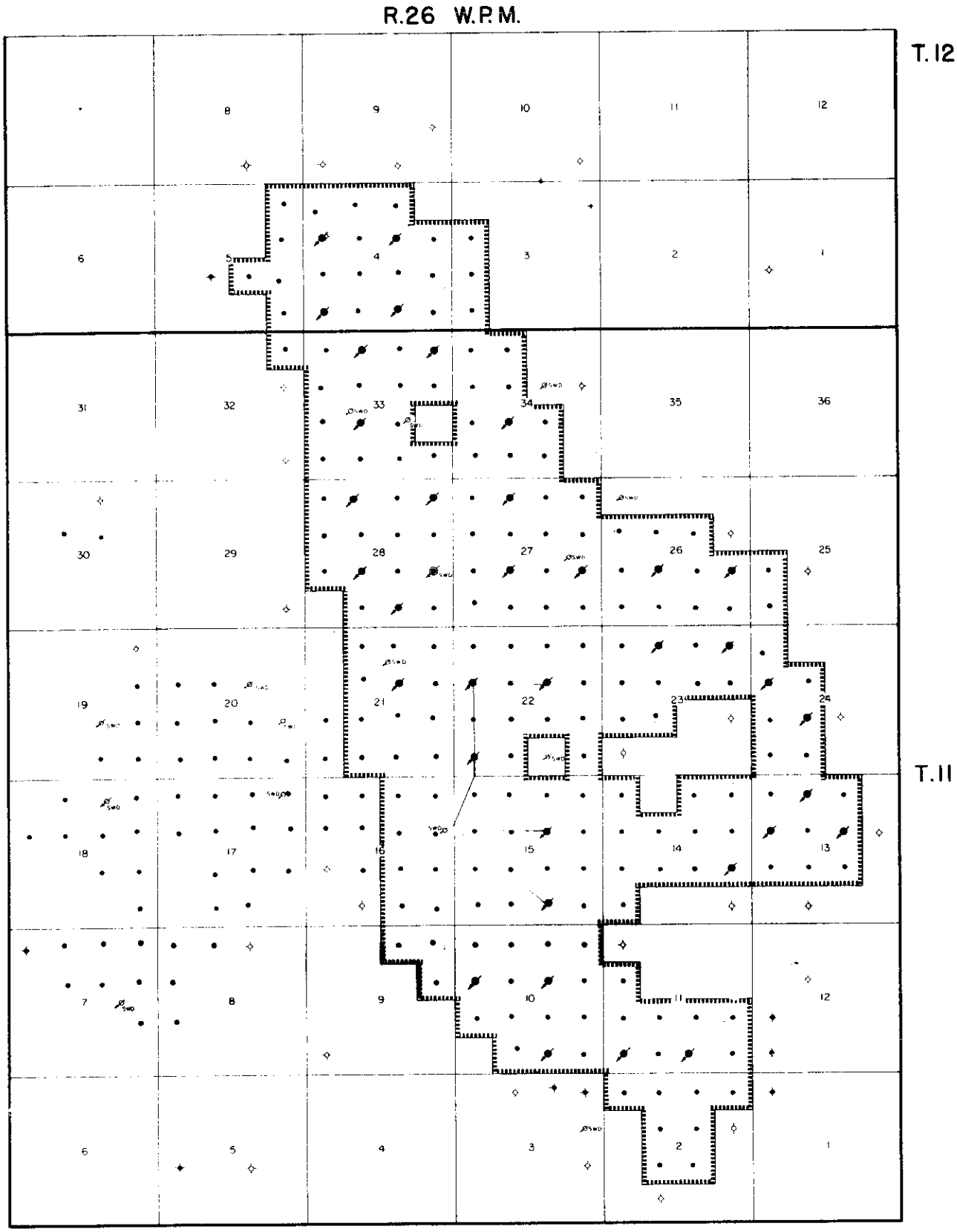


FIGURE 1

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PATTERN

UNIT BOUNDARY

INJECTION WELL

SCALE IN MILES

0 2

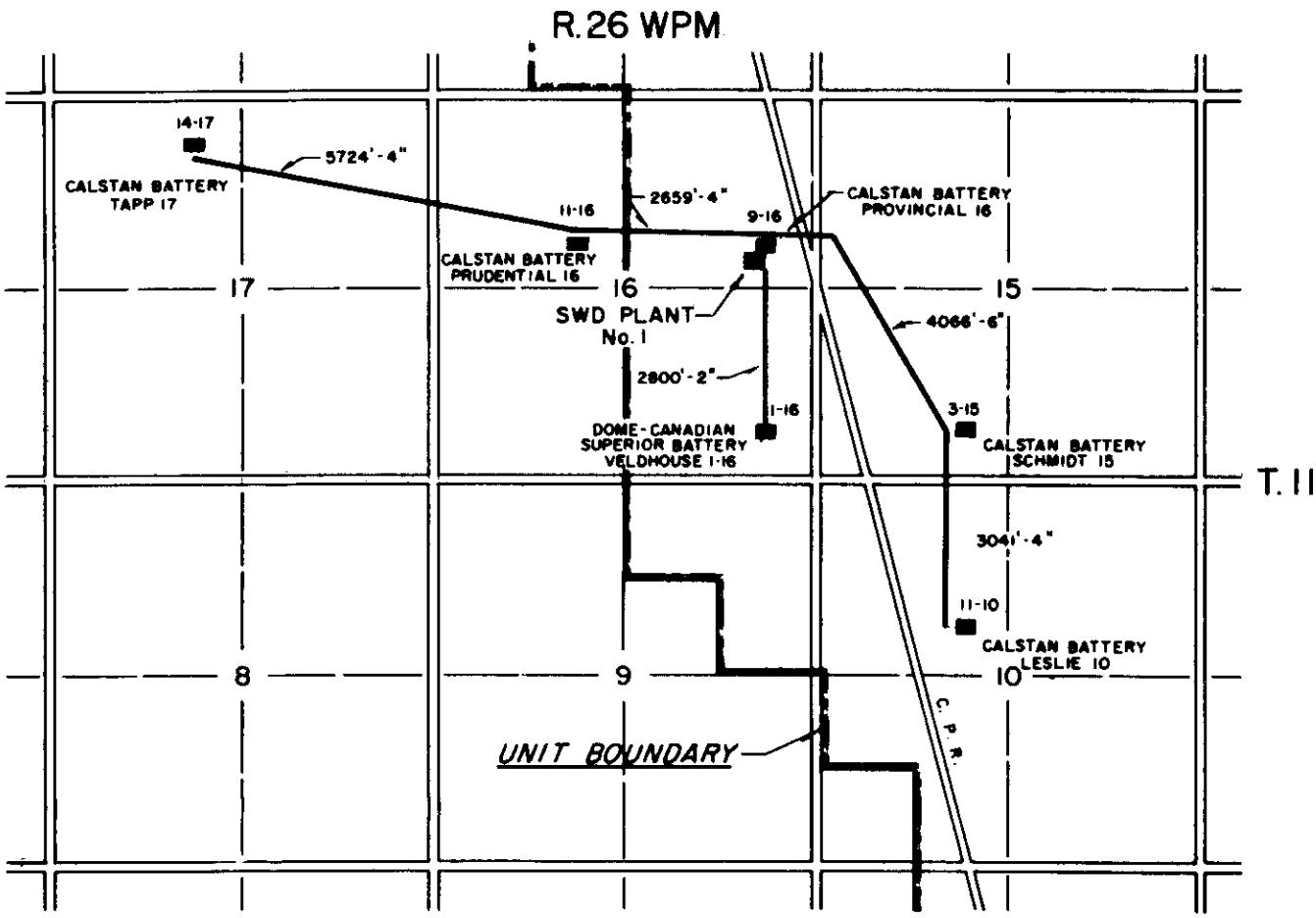


FIGURE 2

NORTH VIRDEN SCALLION FIELD

PLAN OF SALT WATER GATHERING SYSTEM

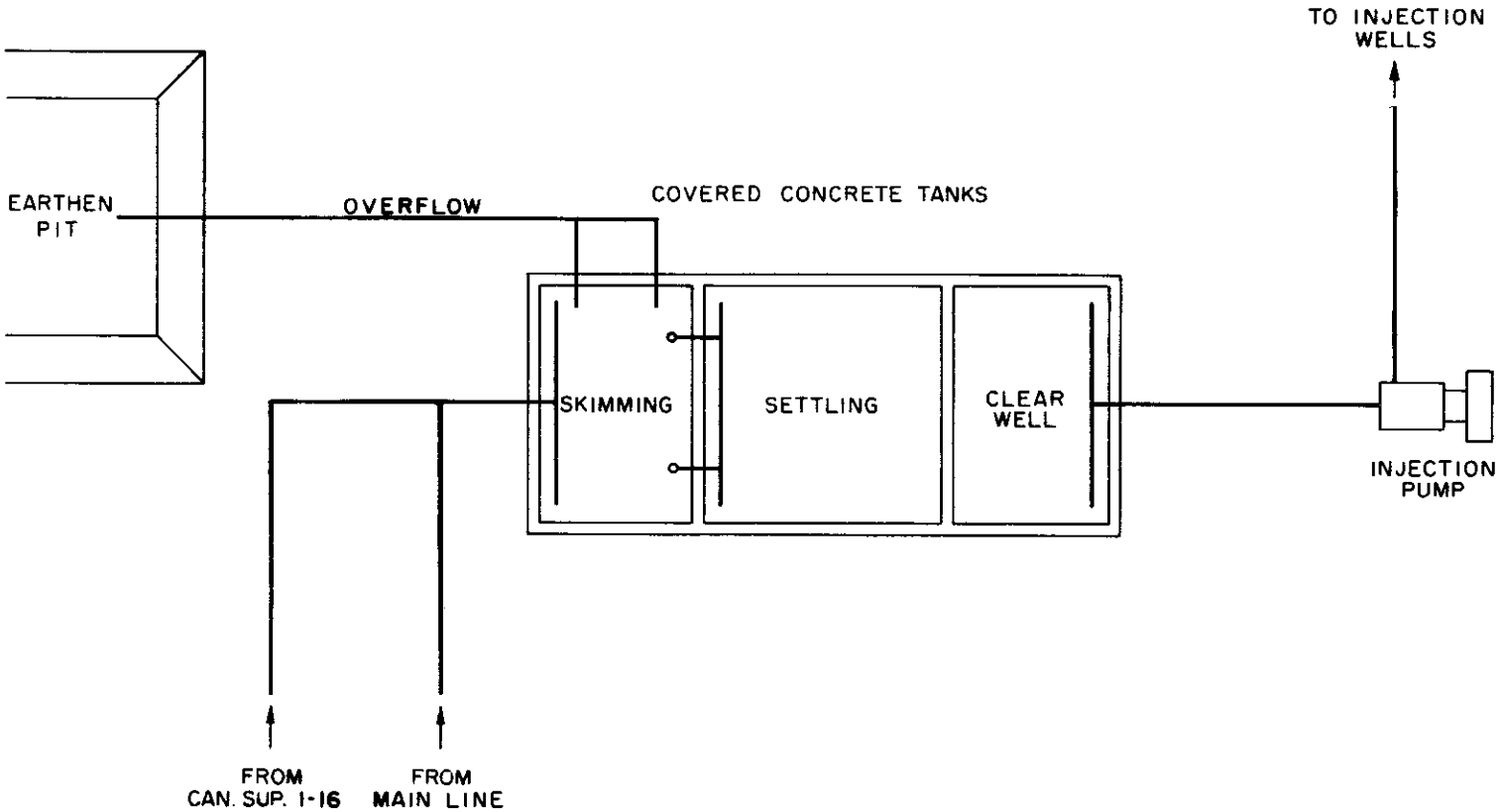


FIGURE 3

NORTH VIRDEN SCALLION FIELD

SCHEMATIC DIAGRAM

OF

EXISTING FACILITIES

NORTH VIRDEN PLANT No. 1

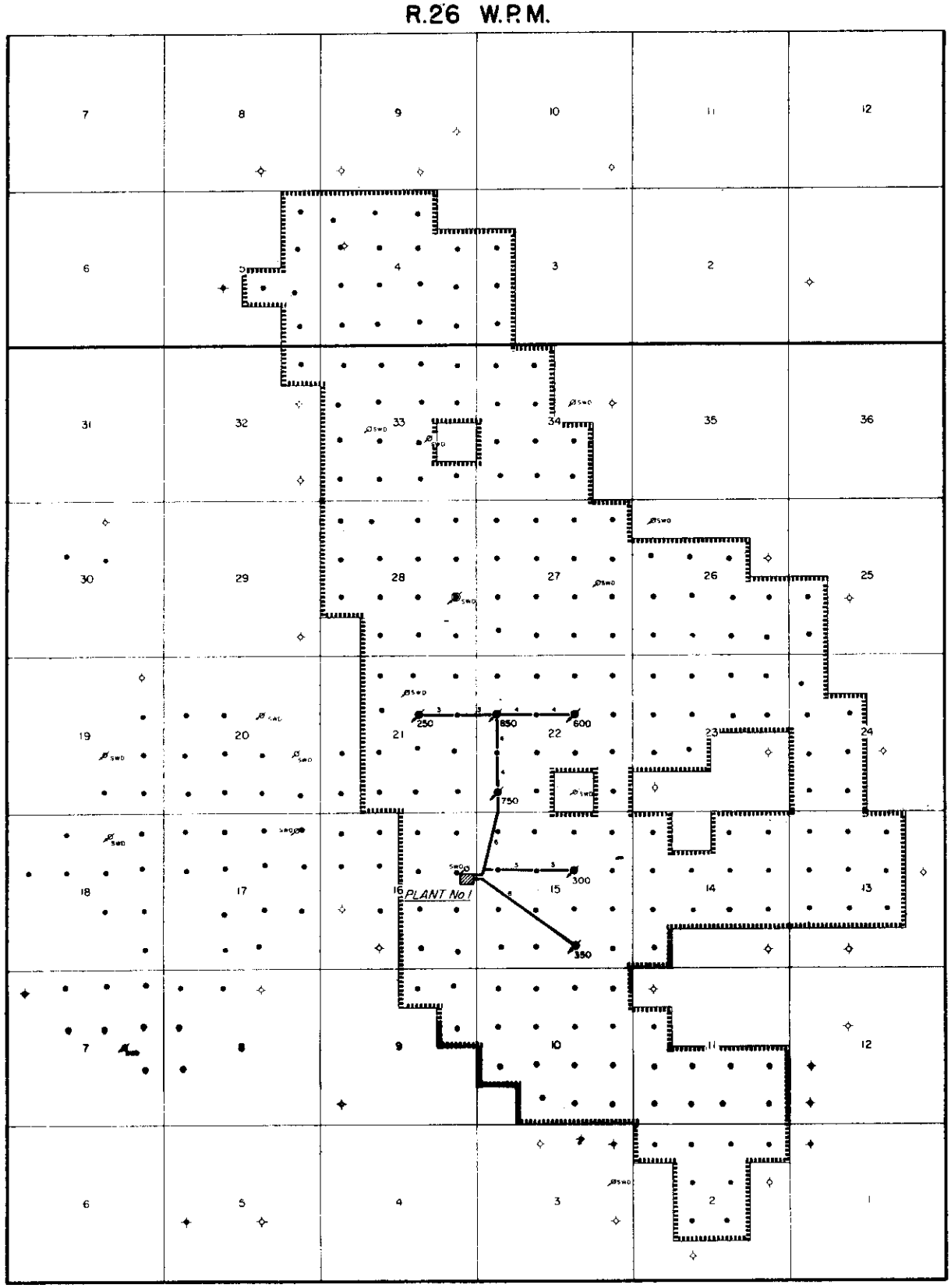


FIGURE 4

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PROGRAM - PHASE I Maximum

UNIT BOUNDARY

INJECTION WELL

INJECTION LINE, SIZE

250 INJECTIVITY RATE, B/D

OCT., 1961

SCALE IN MILES

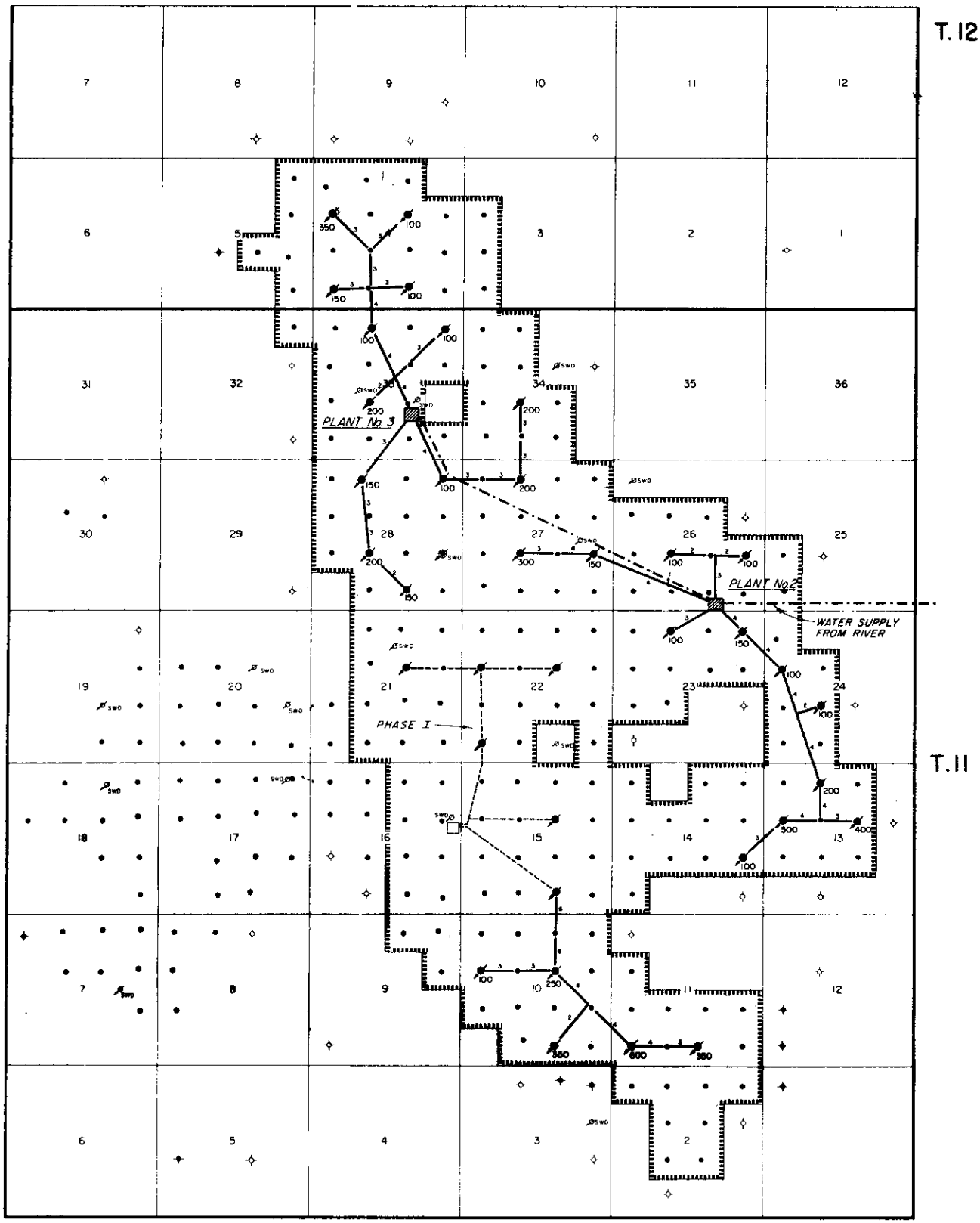


FIGURE 5

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PROGRAM - PHASE II

UNIT BOUNDARY

INJECTION WELL

INJECTION LINE, SIZE

250 INJECTIVITY RATE, B/D

OCT, 1961

SCALE IN MILES

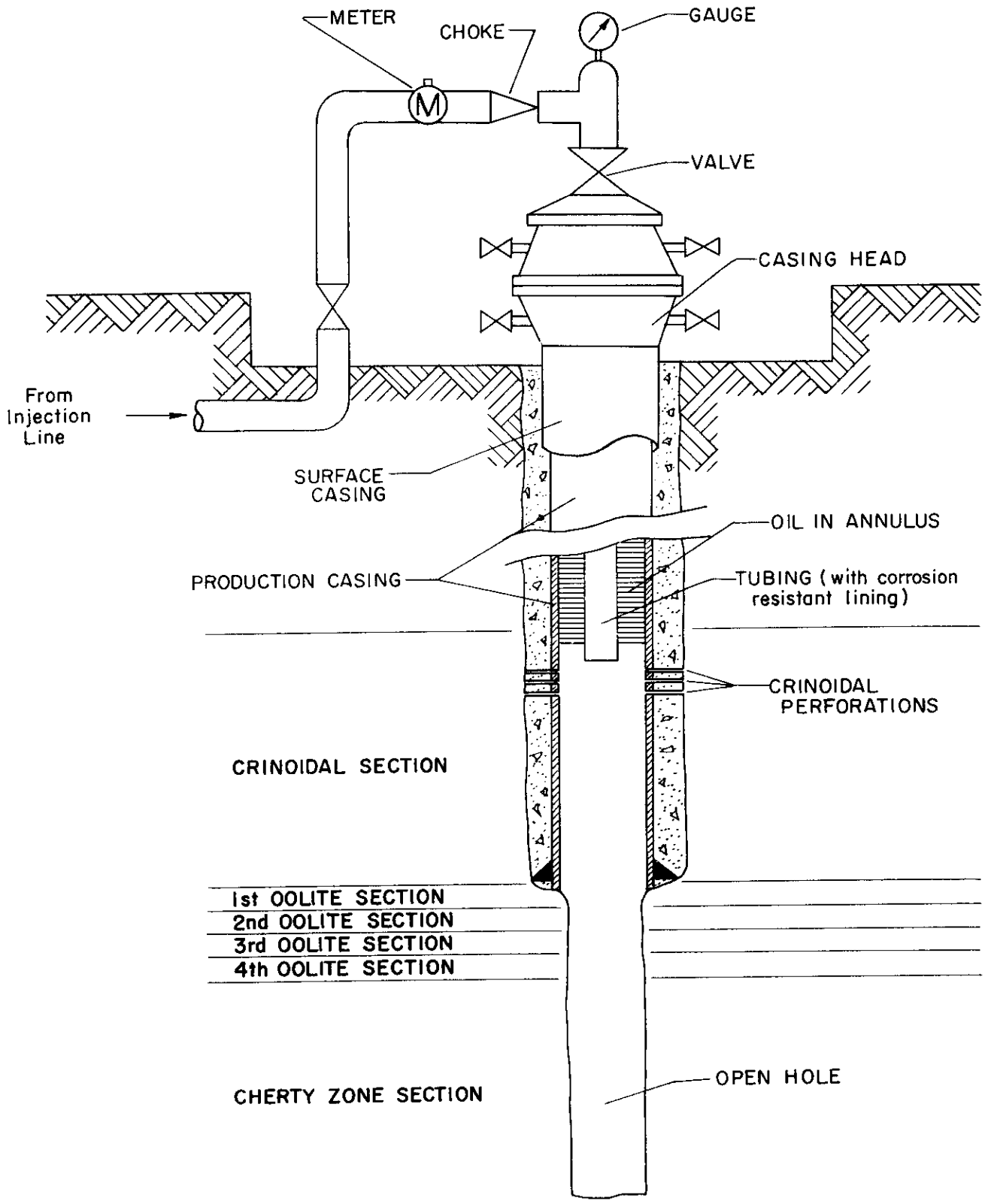


FIGURE 6

PROPOSED NORTH VIRDEN SCALLION UNIT
TYPICAL INJECTION WELL

DISCUSSION OF NORTH VIRDEN SCALLION UNITIZATION AND PARTICIPATION FORMULA

Previous reports have demonstrated the increase in oil production rate and ultimate recovery which is to be achieved under water flooding. An efficient water flood program requires the selection of injection wells without regard to property lines and with a control of injection and production rates to obtain maximum recovery from the reservoir. In order to institute the most efficient water flood, it is therefore necessary that the field be unitized.

Unitization of any field or portion of a field requires incentive. We believe there is a great deal of incentive for the owners to unitize their producing properties in North Virden Scallion. The incentive is provided in the form of increased producing rates, additional oil recovery, lower capital costs, lower producing costs and as a result, a substantial increase in income.

A major problem in accomplishing the unitization of a producing area is to determine the most suitable basis for participation. Every possible attempt should be made to ensure a minimum dislocation of current income for all owners. The present producing wells in the field cover a wide range of productivities. There is a certain amount of month to month variation in the production from specific wells due to several contingencies. A stipulated six month test period has therefore been selected by the operators in arriving at a representative current producing rate for each well. This has been expressed as a current production factor and is the percentage calculated by dividing the oil production for each tract during the test interval by the total oil production of all tracts during the test interval and multiplied by one hundred.

A further consideration in determining participation is to provide a fair basis for sharing the additional oil which will be recovered by the water flood. This has been the subject of considerable thought and discussion between members of the North Virden Scallion Operators' Committee. One of the conventional procedures for estimating oil reserves, which may be attributable to water flooding, is to prepare a volumetric estimate of the oil saturated reservoir which may be effectively flushed and apply an appropriate flushing efficiency. However, certain conditions exist in the North Virden Scallion Field which render it difficult to calculate, with any degree of accuracy, the water flood reserves that can be attributed to individual leases or tracts of land. The drilling and completion procedures were such that a large percentage (72%) of the total wells did not penetrate the entire Cherty Zone which is deepest and the main producing horizon. Those wells which were drilled through the entire producing interval show that there is no uniformity to the base of effective oil saturation. In addition, the logs and core analyses available indicate considerable lateral variation in the hydrocarbon pore volume of the many producing zones throughout the field. A program of deepening these wells including extensive coring, logging and testing procedures would provide a great deal of engineering data to enable making more reliable estimates of the water flood reserves attributable to individual leases or tracts of land. However, the cost would be prohibitive and the expenditure cannot be justified. In consideration of these circumstances, the Operators' Committee proposed that alternative procedures for estimating water flood reserves attributable to individual leases should be pursued.

Where wells are produced at capacity, production history is, for the most part, a measure of the effective reserves and may be used as a general guide in estimating water flood potential. Porosity, permeability and effective oil saturation are all factors which contribute to well performance. Where porosity, permeability and oil saturation are high they should generally be reflected by a good producing rate and low water cut. These same conditions will generally afford a high potential for water flood recovery. Conversely low producing rate and high water cut would be indicative of a lower water flood potential. For two wells having the same initial producing characteristics, the one which has produced for the longer time will have reached the more advanced stage of primary depletion and will have exhibited the greater production decline. Consequently this well could not be expected to have as much oil left to produce under water flood. It is therefore recognized that the length of time during which a well has been on production and the decline rate it has established are also factors in such an analysis. A parameter which is readily calculable and generally recognizes all of these considerations is a cumulative average producing rate which includes a water production penalty. This factor is referred to as the average monthly oil production factor penalized for water production. A detailed description of the method followed in arriving at this factor is outlined in the "Plan for Unit Operation".

The majority of members of the North Virden Scallion Operators Committee have agreed that the two factors, namely current production factor and average monthly oil production factor penalized for water production provide a satisfactory basis for unitization and sharing of remaining primary and water flood reserves. These two factors have the advantage of being readily and precisely determinable. A further consideration then becomes the relative weighting to give to each factor in providing a participation formula. The report entitled "Reservoir Study - North Virden Scallion Field, Manitoba" and dated August, 1961, indicates a primary reserve of 25,000,000 barrels in the proposed Unit Area of which there were approximately 14.9 million barrels remaining as of May 1, 1961. The report further estimates an additional 30,000,000 barrels will be recovered by water flooding. However, the Operators' Committee believe that greater emphasis must be placed on the production which is immediately recoverable than the production which will be obtained towards the termination of the water flood project life. This is considered necessary to prevent any abrupt and significant changes in production and income allocated to individual tracts as a result of unitization. The Operators' Committee has therefore recommended that each of the two factors previously discussed be given equal weighting of 50 percent in arriving at the participation formula. This in summary, outlines the development of the participation formula which is being presented and the reasoning behind the recommendation that it is an equitable basis for unitization.

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

February 16, 1962.

Mr. J. G. Cowan,
Deputy Minister,
Department of Mines and Natural Resources,
Province of Manitoba,
WINNIPEG 1., Manitoba.

Dear Mr. Cowan:

North Virden Scallion Unit No.1.

In your letter of February 2, 1962. you commented with respect to certain draft documents left with the Department on January 26, 1962.

The following explanations are offered with respect to your comments on these documents:

1. **Draft letter to all North Virden Scallion Royalty Owners**

It was our intention that this letter would be sent by each Oil Company supporting the Plan. The letter would not be addressed as indicated in the draft but would be addressed to an individual or Company receiving a royalty cheque. A copy of the modified letter is attached.

2. **North Virden Scallion Field Unitization and Water Flood Proposal**

We would have no objection to filing this booklet as an Exhibit. The statement contained in the last four lines on Page 2 was not intended to convey any guarantee of increased recovery. If we file this booklet as an Exhibit, I would intend to clarify in my opening remarks the contents of the booklet. This would include an explanation of the chart "Predicted Water Flood Performance". The chart was included to reflect anticipated performance in a schematic manner only.

3. **Letter to Oil and Natural Gas Conservation Board.**

This letter is being redrafted and will list the purposes for which the Hearing is requested.

(Continued.....2

4. Proposal for Pressure Maintenance.

It is our intention to have available details, data or explanations for the points raised in your letter.

5. Appendix I.

Details such as you suggested will be available, as well as a brief economic comparison of primary and water flood operations.

6. Plan.

We feel that the Plan should only convey an interest with respect to those formations comprising the Unitized Strata. Any interests to other formations would, presumably, be by separate negotiation.

It was our intention that certain rights associated with Salt Water Disposal Wells located outside the Unit Area would be assigned to the Unit Operator. This would include equipment, surface leases etc. Abandonment and distribution of costs associated with this would be handled in the same manner as other unit costs. To clarify this matter with respect to surface rights, we propose making the following amendment to Sec.11.01 of the Plan: Delete the following words from lines 5 and 6 "in connection with its operations in the Unit Area" and substituting therefore "and which are required in connection with unit operations". With respect to Sub-Surface rights it is our opinion that the words "the exclusive use for all purposes of all of its Salt Water Disposal Wells etc." appearing in lines 4 and 5 of Sec.10.01 of the Plan would afford us sufficient protection.

A summary of the pre-unit expenses will be available for discussion at the Hearing, if necessary.

Data used in the calculation of Tract Participations will also be available at Hearing.

We would like the Board to include a statement such as contained in Section 19.03 of the Plan in any Order which it might issue for what the statement is worth in avoiding conflict with any Canadian Combines Legislation and to assist any American Companies in avoiding any disadvantageous tax position under the United States Internal Revenue Code.

(Continued.....3

Mr. J. C. Cowan. February 16, 1962.

Our suggested Working Interest Owners and Royalty Interest Owners Consent form is attached.

Your comments regarding typographical and other errors in the Plan have been noted.

We would like to thank you for your February 7th letter and anticipate filing our application for a Hearing in the very near future.

Yours very truly,

L. A. SWANSON.

/ojh.

Encls.

LETTER # 1.

The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
WINNIPEG 1, Manitoba.

Gentlemen:

Re: North Virden Scallion Unitization

Please be advised that XY Company supports the application of The California Standard Company under Subsection A of Section 73 of the Mines Act, Revised Statutes of Manitoba 1954 and amendments thereto, for an Order for the unitization of a part of the North Virden Scallion Field.

Please be further advised that XY Company also supports The California Standard Company's proposal for Pressure Maintenance By Water Flooding and their application for the establishment of a Unit M.P.R.

Yours very truly,

INSTRUCTIONS FOR USE.

We would request that each working interest owner send a facsimile of this draft to The Oil and Natural Gas Conservation Board, Province of Manitoba, c/o, The California Standard Company by return mail or as soon thereafter as possible.

Our submission will be filed on our behalf and on behalf of those Companies signing a copy of this letter prior to our filing of the submission.

LETTER #2.

ADDRESSED TO: INDIVIDUALS OR COMPANIES RECEIVING ROYALTY CHEQUES.

Gentlemen:

As you may have noticed from your local newspaper or radio and television advertising a hearing of the Oil and Natural Gas Conservation Board for Manitoba is slated for _____A.M. on March _____, 1962, at the Court House in Winnipeg to consider a proposal for the unitization of part of the North Virden Scallion Field.

The hearing is being held at the request of this Company and others hav ing leases in the North Virden Scallion Field and in this connection, we enclose a booklet entitled "North Virden Scallion Field - Unitization and Water Flood Proposal" which explains and gives an overall picture of what the companies would expect to accomplish through unitization.

If the Oil and Natural Gas Conservation Board indicates its preparedness to recommend approval of our unitization proposal, we will be calling on you shortly thereafter to ask you to indicate in writing your approval of the Plan of Unitization.

Filed with the Oil and Natural Gas Conservation Board in support of the unitization proposal were the following documents:

1. Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1.

2. Proposal for Pressure Maintenance By Water Flooding.

Copies of any or all of these documents are available at the offices of The California Standard Company in Virden, Manitoba, and at the offices of this Company at Calgary, Alberta.

Yours very truly,

INSTRUCTIONS FOR USE.

It is suggested that each working interest owner address a facsimile of this draft to each of his royalty owners immediately a date for the hearing has been set by the Conservation Board. In this connection, the California Standard Company will advise you in due course as to the date of the hearing.

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE February 2, 1962.

FROM J. S. Richards, Director of Mines.

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

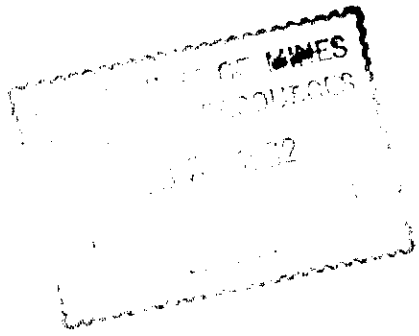
SUBJECT North Virden Scallion Unit No. 1

In accordance with our verbal understanding, I am attaching hereto suggested draft letter, for your signature, to Mr. L. A. Swanson, Chairman, North Virden Scallion Operators Committee, in respect to North Virden Scallion Unit No. 1.

J. S. Richards.

JSR:lsm
Encs.

√ c.c. Senior Petroleum Engineer.



February 2, 1962.

Mr. L. A. Summers, Chairman,
North Virden Scallion Operators Committee,
c/o The California Standard Company,
329A - 6th Avenue, S.W.,
Calgary, Alberta.

Dear Mr. Summers:

Re: North Virden Scallion Unit No. 1

On January 25th and 26th, 1962, procedures to be adopted and certain documents were discussed with you and your staff.

It was agreed that thirty-days notice of a Public Hearing would be given and that opposing briefs or alternative plans be filed with the Board ten days prior to the hearing.

The following comments are offered with respect to the draft documents left with the Department.

1. To: All North Virden Scallion Royalty Owners.

(a) would the use of "Royalty Owners" in the above title create some confusion as to the consents the Board requires.

(b) Para. 1, 5th line - the unitization of part of the North Virden Scallion Field.

(c) Para. 2, 2nd line - North Virden Scallion Field.

(d) Para. 3, 1st line - delete phrase, "It is anticipated that".

(e) Para. 4, 2. Should this not read "Proposal for Pressure Maintenance by Water Flooding".

(f) Para. 5 - delete, "or at the offices of the Oil and Natural Gas Conservation Board, Department of Mines and Natural Resources, Winnipeg 1."

2. North Viking Coalilon Field
Unitization and Water Flood Proposal January 1962

This booklet will form part of the presentation to the mineral owners in securing their consents and should be filed as an exhibit.

The statement contained in the last four lines of Page 2 might be considered by some as a guaranteed increase rather than an indication of the increase which might be expected.

The chart "Predicted Water Flood Performance" does not appear to reflect the anticipated performance of a water flood instituted in stages but rather the performance of a producing well offset by four injection wells.

3. Letter to

Oil and Natural Gas Conservation Board January 15, 1962.

The formal application should list the purposes for which the Hearing is requested. These are for the consideration of:

1. Plan for Unit Operation, etc.

2. A Proposal for Pressure Maintenance by Water Flooding.

3. An application for a Unit M.P.R.

4. Proposal for Pressure Maintenance

It is assumed that further details as to the methods used in the delineation of the Unit Area, fringe acreage and other excluded lands, together with the methods adopted to protect these excluded lands, will be made available at the Hearing.

In addition to the above, details and data to support applications for water flooding and for a Unit M.P.R. will be expected.

5. Appendix 1

It is suggested that detailed information on fracture pressures, proposed injection pressures, maximum rate of injection on an area basis, data on wells and areas where natural water drive has affected the performance and data on similar type projects (i.e., the Daly Flood) should be available at the Hearing.

Further, a comparison of the economics under primary as compared to water flood operations should be available so that full justification of the project would be evident at the hearing.

6. Plan

It is noted that the Plan does not appear to convey the right to nor does it appear to make provision for the acquisition of, or the use of water from formations within the Unit Area. Omission of provisions of this nature could lead to difficulties.

Similarly, the Plan does not appear to deal adequately with certain Salt Water Disposal Wells located outside the Unit Area with respect to surface leases, mineral leases, access to, abandonment and distribution of costs.

It is suggested that details of the pre-unit expenses should be presented at the hearing.

In addition, all back-up data used in the calculation of tract participation factors should be available.

Is it the intention that the Board would include a statement such as contained in Section 19.03 in any order which it might issue?

The form of Working Interest Owners and Royalty Interest Owners Consents is to be discussed further and the place of the hearing decided later.

In the meantime it was agreed that Part XXVI would be made available to the Board but would not be embodied in the Plan.

It is our understanding that the Plan is essentially ready for final printing. In view of this, we would suggest that wherever the company name "Canmex Oil Ltd." appears in the Plan, "Canadian Export Gas & Oil Ltd." should be substituted.

Your attention is also drawn to several minor typographical errors previously mentioned and the suggestion that Part XIV Filing might logically follow the present Part XV Disputes.

Yours very truly,

J. G. Cowan,
Deputy Minister.

Judgment
Feb 2/62

February 1, 1962.

Dome Petroleum Limited,
706 - 7th Avenue, S.W.
Calgary, Alta.

Attention: Mr. E. R. Tovell

Dear Sir:

Returned herewith, duly approved, is your Application to Suspend Production on the following wells -

Dome Cdn Sup Scallion 4-24-11-26

Dome Cdn Sup Scallion 5-24-11-26

Yours very truly,

M. J. Gobert,
Senior Petroleum Engineer.

MJG/h

SEND TO Bert

APPROVE		REMARKS I hope this
COMMENT		clarifies the
FILE		situation.
HANDLE		
NOTE		
SEE ME		
TRACE		

GO-24-CS

FROM Rudy

Calgary, Alberta.

January 31, 1962.

R. R. MACAFFREY:

W. A. BAILEY:

T. M. MCDOUGALL:

J. C. MCNEILL:

Re: Joffre Unit and
North Virden Scallion Unit

Some confusion has arisen regarding name changes concerning Canadian Export Gas and Oil Ltd. This is the explanation as provided by Mr. Hall of Canadian Export Gas and Oil Ltd.

Properties which were formerly held in the name of Canadian Prospect Ltd. are now held in the name of Canadian Export Gas and Oil Ltd.

Properties which were formerly held in the name of Canadian Export Gas Ltd. are now held in the name of Canex Gas Ltd.

Since the Joffre properties were originally Canadian Export Gas Ltd., they should now be changed to Canex Gas Ltd.

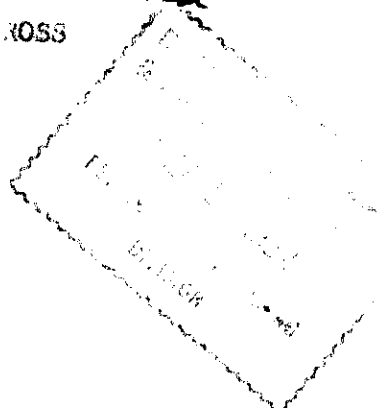
Regarding the North Virden Scallion Unit, the Working Interest Owner name should remain as Canadian Export Gas and Oil Ltd.

RRD/mig

c.c. M. J. Gobert

R R Dutka

J. P. ROSS



THE CALIFORNIA STANDARD COMPANY
MEDICAL ARTS BUILDING, 329A - 6TH AVENUE S.W., CALGARY, ALBERTA.

J. F. ROSS

January 29th, 1962.

Department of Mines and Natural Resources,
P. O. Box 42,
Legislative Buildings,
WINNIPEG 1, Manitoba.

Attention: Mr. M. J. Gobert,
Senior Petroleum Engineer

Dear Sir:

In reply to your verbal request of January 25th, 1962, I am enclosing two additional copies of the "Reservoir Study, North Virden Scallion Field, Manitoba".

The decline curves are being updated in Virden and copies should be forwarded to you as soon as they become available.

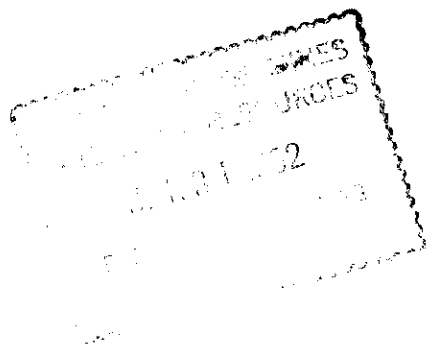
Yours truly,

R. R. Dutka

J. F. ROSS

RRD:jka
Enclosures (2)

c.c. J. G. Trowell



February 1, 1962.

The California Standard Company,
Medical Arts Building,
329A - 6th Avenue S.W.,
Calgary, Alta.

Attention: Mr. R. R. Dutka

Dear Sir:

This acknowledges, with thanks, receipt of 2 copies of the "Reservoir Study, North Virden Scallion Field, Manitoba", August 1961.

Yours very truly,

M. J. Gobert,
Senior Petroleum Engineer.

MJG/h

Canadian Export Gas & Oil Ltd.
203 Oil Exchange Building
Calgary, Alberta

A. F. Beck
President

Telephone AMherst 6-4651

January 29, 1962

Department of Mines and Natural Resources
Mines Branch
911 Norquay Building
401 York Avenue
Winnipeg 1, Manitoba

Attention: Mr. M.J. Gobert

Dear Sirs:

Reference is made to your letter of January 26, 1962 and it is difficult for me to understand the problem. All of our properties in Manitoba are held and operated by Canadian Export Gas & Oil Ltd. and our abbreviation should be CEGO. The Official Well Name Register should read "CEGO".

All of the drafts of the Plan for Unit Operation Covering the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1 has shown the name of this Company as Canadian Export Gas & Oil Ltd. I am sending The California Standard Company a copy of your letter and my reply.

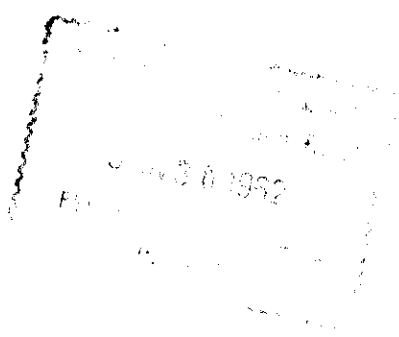
I am terribly sorry for any inconvenience this has caused you.

Very truly yours,

CANADIAN EXPORT GAS & OIL LTD.

Paul C. Evans
Vice-President i/c Production

PCE:id
cc California Standard Company
Att: Mr. R. Mahaffey



January 26, 1962.

Mr. Paul C. Evans,
Canadian Export Gas & Oil Ltd.,
203 Oil Exchange Bldg.,
Calgary, Alta.

Dear Sir:

The latest draft of the Plan for Unit Operation Covering the Unitized Management Operation and Further Development of North Virden Scallion Unit No. 1 indicates that there has been a change of company name to Canex Oil Ltd.

If this is the case, we propose amending the Official Well Name Register by substituting "Canex" for "CEGO" in the names of all your wells in this Province.

Kindly advise, at your earliest convenience, so that the above plan may be prepared for final printing.

Yours very truly,

M. J. Gobert,
Senior Petroleum Engineer.

MJG/h

D R A F T

January 15, 1962.

The Oil and Natural Gas Conservation Board,
Department of Mines and Natural Resources,
Province of Manitoba.

ATTN: Mr. J. G. Cowan, Chairman

The California Standard Company, under and pursuant to Subsection 1, of Section 73 of The Mines Act, Revised Statutes of Manitoba 1954, and amendments thereto, hereby, on behalf of itself and other Working Interest Owners in the North Virden Scallion Field, requests the Board to hold a hearing to consider the advisability or necessity for the operation of a part of the North Virden Scallion Field as a unit.

We are enclosing a Plan for Unit Operation of the proposed unit area containing the terms and conditions that The California Standard Company and certain other Working Interest Owners desire to be approved pursuant to the said Section 73 of The Mines Act. The plan is entitled: "PLAN FOR UNIT OPERATION GOVERNING THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF NORTH VIRDEN SCALLION UNIT NO. 1."

In support of the above we enclose a Proposal for Pressure Maintenance by injection of water into a portion of the pool. The proposal includes an Appendix I relating to details of the proposed water flood program and an Appendix II discussing the basis for the proposed unit participation formula.

At the hearing we would also like to refer the Board to the following references which were previously forwarded to the Board:

(1) Reservoir Study - North Virden Scallion Field, August, 1961.

(2) Rate Cumulative Decline Curves - North Virden Scallion Field.

(3) Cherty Zone Cross Sections and Charts.

(4) Oolitic and Crinoidal Zones Cross Sections and Charts.

L. A. SWANSON, Chairman,
NORTH VIRDEN SCALLION OPERATORS COMMITTEE.

Submitted on behalf of
the following Operators:

PROPOSAL FOR PRESSURE MAINTENANCE

The applicants propose to unitize a portion of the North Virden Scallion Field. The proposed unit area is shown in Figure 1 and consists of 217 oil wells. The purpose in unitizing this portion of the North Virden Scallion Field is to facilitate the operation of a water flood in the subject area. An engineering report entitled 'Reservoir Study - North Virden Scallion Field' and dated August, 1961 has been included in support of this submission. The report indicates a primary recovery of 25,000,000 barrels from the proposed Unit Area. By comparison, water flood calculations indicate a total ultimate primary and secondary recovery of 55,000,000 barrels from the same area. The details regarding these recovery estimates are provided in the accompanying Reservoir Study. A water flood program is planned for the subject area in order to recover the 30,000,000 barrels of additional oil. The type of water flood which is planned for North Virden Scallion is an inverted 160 acre 9 spot pattern. This pattern is to be established in two phases by the conversion of certain wells to water injection. A detailed outline of the proposed water flood program is provided in Appendix I.

Unitization of the area under application will enable all interests in the subject area to be merged so that this portion of the reservoir may be operated as a single property. Under unit operation a maximum recovery efficiency and reduced production costs may be attained when water flooding is systematically applied to a large tract. This will be achieved by selecting injection wells without regard to property lines and by controlling injection and producing rates to obtain a high degree of recovery efficiency.

Certain wells in the proposed North Virden Scallion Water Flood are required for conversion to water injection. A continued income from present wells, including those converted to injection, must be ensured to the owners. Additional production will also be obtained by the water flood and the unit must also provide a fair basis for sharing this benefit. A detailed explanation of the participation formula for the proposed North Virden Scallion Unit No. 1 is provided in Appendix II. The applicants submit that the participation formula provides a fair and equitable basis for sharing production.

It is noted in Figure 1 that a portion of the North Virden Scallion Field has been excluded from the proposed unit and water flood area. The west flank is already operating under a strong natural water drive. Inclusion of this portion of the field in the proposed Unit Area is therefore not considered necessary. Certain additional acreage has also been excluded because it is not considered productive. Steps have been taken to avoid any water flooding of these excluded lands. A further discussion of the lands which are excluded from the proposed unit area is provided in Appendix I. Notwithstanding the present exclusion of these lands from the proposed unit area if future development indicates they should be included, the Board, under Section 76 of The Mines Act may, at any time, hold a further hearing to consider adding these or any other lands to the unit area. Therefore, should any outside acreage be subsequently developed and proven productive, it could enter and participate in the unit by order of the Board. Similarly, should any of the west flank acreage which is presently excluded be shown to warrant water flooding, it could also enter and participate in the unit.

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The applicants propose that a degree of production flexibility be provided to the unit which is considered with good engineering practice. It is requested that a Unit MPR be approved which is equivalent to the current individual well MPR multiplied by the number of wells in the Unit. This request is based on the premise that any producer which is converted to water injection is contributing to the ultimate benefit of the water flood. It is also proposed by the applicants that unit boundary wells, where offset by non-unit wells, be restricted to producing rates which are no greater than the individual MPRs assigned to the non-unit wells.

It is recommended that the unit operator submit periodic reports of the operation including the procedure followed in taking production and the resulting reservoir performance. These reports would also include such details as well performance, water cuts, injection rates, water treatment and well workover results.

APPENDIX I

DETAILS OF OPERATION TO BE CONDUCTED IN UNIT AREA

Introduction

The basic objective of the North Virden Scallion Water Flood proposal is to recover the greatest amount of oil consistant with sound economics. Injectivity to a large degree controls the choice of flood pattern which is desirable in initiating a water flood. Injectivity calculations have been made which indicate an average zone capacity of 1.84 B/D/md.ft. This suggests injection rates ranging up to 850 barrels per day with an average of about 250 barrels per day. These rates should be considered as illustrating the anticipated order of magnitude rather than the absolute values. The injectivity calculations indicate that North Virden Scallion can be flooded using an inverted 9 spot pattern. The applicants propose to water flood each of the Crinoidal, Oolitic and Cherty zones simultaneously. Completions are to be conducted in both injectors and producers with this in mind.

It is planned to initiate the North Virden Scallion water flood in two phases. Dependent on the degree of flood response a third phase could be introduced at some later date.

Initially 3,300 barrels per day of produced water will be injected into the reservoir contained in the Unit Area. It is estimated that approximately six wells will be converted to water injectors. The exact number of injection wells included in phase one will depend upon individual well injectivity and evaluation of subsurface water sources.

The advantages of instituting the water flood in two stages are as follows:

(1) The performance of phase one injection and producing wells will assist in selecting the optimum water injection pattern and injection line system for phase two.

(2) During construction and initial performance of phase one, additional subsurface water sources will be evaluated. It is proposed that the Duperow and Dawson Bay members of the Upper Devonian and the Ashville Sand be tested as potential water sources for phase two of the water flood scheme.

Figure 1 shows the proposed unit outline and the proposed injection wells in phase one and two. The number of injection wells has been determined by injectivity calculations with certain modifications as a result of consideration of fringe and window acreage.

It may be noted that all injection wells are located on even numbered legal subdivisions. An advantage of the inverted 160 acre 9 spot pattern is that the pattern can be converted to a complete 80 acre 5 spot pattern if injectivity should prove to be much lower than anticipated.

The west flank of the North Virden Scallion Field has been excluded from the proposed unit area. The west flank is already

influenced by a strong natural water drive and reservoir pressure is being maintained. Water oil ratios have increased pronouncedly due to water encroachment and are currently averaging approximately 80 percent. Consequently, it is not considered necessary or desirable to include the west flank.

Certain acreage which is encompassed by the unit boundary has also been excluded from the proposed unit area. This "window" acreage has no producing wells and is generally considered unproductive. On this basis, the "window" acreage has been excluded from the proposed unit area. Modifications have been made to the flood pattern to prevent any flooding of the "window" acreage. This has been done to provide the maximum degree of protection against flooding in any undeveloped areas where there appears to be any possibility of future development.

Some of the details related to the program of operations proposed under Phase I and Phase II are described in the following sections:

PHASE I

A. Source of Water for Injection

The source of water, for the Phase I nine spots, will be produced salt water. This salt water is presently being gathered in Calstan's North Virden Salt Water Gathering System No. 1 and disposed of in a well drilled down to the Dawson Bay formation and located on Lsd. 9-16-11-26. Five Calstan Batteries are connected to the plant on 9-16-11-26 by 4" and 6" Class 150 asbestos cement pipe, respectively as shown in Figure 2. The water gravity feeds, from boots located at each battery, to a tank on 9-16.

At present, approximately 3,100 barrels per day are being transported through the above lines. In addition, a line has been laid from the Dome-Canadian Superior Veldhouse Battery, located on 1-16-11-26, to the plant. This 2" Schedule 40 PVC plastic line is currently carrying approximately 200 BWPD. This makes the total amount of produced salt water available for flooding approximately 3,300 barrels per day which should be sufficient for the calculated stabilized injectivity rates for the six wells.

B. Expansion of the Plant #1 Facilities Located at 9-16-11-26 WPM.

A Salt Water Disposal plant is presently located at 9-16. It consists of a collection pit and high pressure pump for disposal of produced water in the area. This plant could be revised and expanded as required to handle additional water for injection purposes. Figure 3 shows a schematic diagram of the present plant.

C. High Pressure Injection System

It is proposed that all injection lines shall be cement lined steel, coated and wrapped. Injection lines in Phase I will be transporting produced salt water and will be buried 5 feet deep. The location of injection wells and a preliminary design showing the positioning of lines is shown on Figure 4.

Line losses were obtained from a set of flow curves for water

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based on the Hazen and Williams formula. A coefficient of friction of 100 was used for all steel and cement lined steel pipe. The interior diameter of all steel pipe was reduced by 0.4 inches to allow for cement lining. In general, pipe sizes were selected to maintain line losses below 2 psi/1,000 feet. Line sizes and calculated injection rates are also shown in Figure 4. Line sizing has been selected to provide for increased capacity should it be required.

D. Conversion of Wells to Water Injection

It is the intention of the operator to flood the three oil bearing horizons (Crinoidal, Oolitic & Cherty) simultaneously. The following procedure outlines the program to be carried out in converting the wells to water injection. Additional work on the injection wells (i.e. spinner surveys, additions of plugging material, restimulating, etc.) may be required at a later date to remedy difficulties which cannot presently be anticipated.

(1) Remove pump jack.

(2) Pull pump, rods and tubing.

(3) Run casing scraper.

(4) Re-run open-end tubing.

(5) Reverse circulate hole to T.D.

(6) Perform salt water injection test at maximum surface pressure of 1000 psi.

(7) Acidize well-bore if indicated necessary in 6.

(8) Pull tubing.

(9) Place well on injection down the casing until such time as well is "Pressured Up".

(10) Run plastic-lined tubing injection string.

(11) Fill casing annulus with oil.

(12) Place well back on injection.

PHASE II

A. Source of Water for Injection

Alternative #1 - Subsurface Water Sources

It is planned to investigate the productivity of the Upper Devonian section at Calstan Scallion Prov. SWD 9-16-11-26 and Cdn. Sup. Whiteford Scallion SWD 8-28-11-26. These two wells are currently disposing of salt water production to the Upper Devonian. The 9-16 well has the entire Upper Devonian section open and is taking water on injection at rates up to 4,000 barrels per day. A

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drill stem test of the Dawson Bay formation of the Upper Devonian section at Calstan South Virden Prov. SWD 3-11-10-26 in the Virden Roselea Field gave a salt water rise of 50 bbls. in 37 minutes. The recovery, together with chart analysis indicates a formation of high permeability. Regional geology suggests that porous and permeable Dawson Bay and Duperow formations exist over a large general area. It is therefore expected that these Upper Devonian formations will provide an abundant source of injection water.

Ashville salt water disposal wells and high water cut Mississippian oilwells are two additional possible water sources which will be investigated.

Alternative #2 - Fresh Water Sources

If the investigation of possible subsurface water sources does not indicate an adequate water supply it would then be necessary to resort to fresh water sources.

A supply of fresh water could be obtained from the Assiniboine River valley approximately two miles east of the North Virden Scallion Field. This would require drilling a supply well or wells in the valley and installing a pipeline to transport the water to the field area. Since this appears to be the most expensive alternative the project costs are based on a line to the river.

B. Injection Plants

Preliminary design indicates that injection plants could be located as follows:

Plant at 9-16

This plant was located at this point because of the existance of the SWD facilities which could be incorporated directly into the proposed waterflood. A concrete pit with skimming, settling, and clearwell is now in use along with overflow pit and pump house. Minor additions and changes to the present plant will allow its use as plant #1 in the water flood. The Devonian disposal well could be used as a water supply well initially and a water disposal well in the final stages of the water flood.

Plants at 2-26 and 7-33

These plants are so located because:

(1) The line sizes in the high pressure system are substantially reduced by having two plants rather than one.

(2) The plants are located roughly in the center of their respective injection areas.

(3) The proximity of Ashville wells or disposal lines are such that produced salt water may be utilized in the flood or disposed with a minimum of additional lines.

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(4) The three plants would be located on fairly high ground and thus have all weather access.

The above-described plant locations are shown in Figures 4 and 5.

C. High Pressure Injection System

The high pressure injection system for Phase II will be made up of 6", 4", 3" and 2" line pipe, respectively, as is shown in Figure 5.

All of the above would be nominal sized, Grade A line pipe tested to a pressure greater than the anticipated injection pressures. This pipe will be cement lined, wrapped, and buried to a depth of 5 or 7 feet respectively. Until Alternative #1 above can be investigated, it has been assumed that Plants #2 and #3 will be served by fresh water initially and therefore, that the pipe will be buried 7 feet.

It is the intention of the operator to utilize a computer program to obtain the optimum design and location of the high pressure injection lines for Phase II so that the amounts of pipe could be reduced and the line system could be changed.

D. Capital Cost Estimates

The following capital costs are based on Alternative #2 water source and are estimated to be maximum costs.

Phase I

Plant Costs	$ 18,000
Lines	68,000
Well Conversions	18,000
Miscellaneous (survey, land, eng. etc.)	16,000
	$ 120,000

Phase II

Plant Costs	$ 91,000
Lines	222,000
Well Conversions	95,000
Miscellaneous (surveys, land, eng. etc.)	76,000
	$ 484,000

Line to Assiniboine River

Lines	$ 82,000
Well and Pump	30,000
	$ 112,000

Possible Additional Flood Expansion

After the North Virden Scallion Unit #1, water flood has been in operation for three to four years, the performance of injection

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and producing wells contained in Phases I and II will dictate whether additional water injectors are required.

The addition of further injection wells located on even numbered Lsd's would compliment the existing pattern. This could be carried to an ultimate pattern of 80 acre 5 spots throughout the field. It is not expected that this degree of conversion will ever be required. However, to demonstrate the economic situation which this arrangement provides, a further economic breakdown is included under a complete 80 acre 5 spot flood pattern.

Lines	$ 99,000
Wells	118,000
Miscellaneous (surveys, land, eng.etc.)	27,000
	$ 244,000
Estimated Maximum Total Cost	$ 960,000

APPENDIX II

NORTH VIRDEN SCALLION UNITIZATION AND PARTICIPATION FORMULA

Previous reports have demonstrated the increase in oil production rate and ultimate recovery which is to be achieved under water flooding. An efficient water flood program requires the selection of injection wells without regard to property lines and with a control of injection and production rates to obtain maximum recovery from the reservoir. In order to institute the most efficient water flood, it is therefore necessary that the field be unitized.

Unitization of any field or portion of a field requires incentive. We believe there is a great deal of incentive for the owners to unitize their producing properties in North Virden Scallion. The incentive is provided in the form of increased producing rates, additional oil recovery, lower capital costs, lower producing costs and as a result, a substantial increase in income.

A major problem in accomplishing the unitization of a producing area is to determine the most suitable basis for participation. Every possible attempt should be made to ensure a minimum dislocation of current income for all owners. The present producing wells in the field cover a wide range of productivities. There is a certain amount of month to month variation in the production from specific wells due to several contingencies. A stipulated six month test period has therefore been selected by the operators in arriving at a representative current producing rate for each well. This has been expressed as a current production factor and is the percentage calculated by dividing the oil production for each tract during the test interval by the total oil production of all tracts during the test interval and multiplied by one hundred.

A further consideration in determining participation is to provide a fair basis for sharing the additional oil which will be recovered by the water flood. This has been the subject of considerable thought and discussion between members of the North Virden Scallion Operators' Committee. One of the conventional procedures for estimating oil reserves, which may be attributable to water flooding, is to prepare a volumetric estimate of the oil saturated reservoir which may be effectively flushed and apply an appropriate flushing efficiency. However, certain conditions exist in the North Virden Scallion Field which render it difficult to calculate, with any degree of accuracy, the water flood reserves that can be attributed to individual leases or tracts of land. The drilling and completion procedures were such that a large percentage (72%) of the total wells did not penetrate the entire Cherty Zone which is deepest and the main producing horizon. Those wells which were drilled through the entire producing interval show that there is no uniformity to the base of effective oil saturation. In addition, the logs and core analyses available indicate considerable lateral variation in the hydrocarbon pore volume of the many producing zones throughout the field. A program of deepening these wells including extensive coring, logging and testing procedures would provide a great deal of engineering data to enable making more reliable estimates of the water flood reserves attributable to individual leases or tracts of land. However, the cost would be prohibitive and the expenditure cannot be justified. In consideration of these circumstances, the Operators' Committee proposed that alternative

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procedures for estimating water flood reserves attributable to individual leases should be pursued.

Where wells are produced at capacity, production history is, for the most part, a measure of the effective reserves and may be used as a general guide in estimating water flood potential. Porosity, permeability and effective oil saturation are all factors which contribute to well performance. Where porosity, permeability and oil saturation are high they should generally be reflected by a good producing rate and low water cut. These same conditions will generally afford a high potential for water flood recovery. Conversely low producing rate and high water cut would be indicative of a lower water flood potential. For two wells having the same initial producing characteristics the one which has produced for the longer time will have reached the more advanced stage of primary depletion and will have exhibited the greater production decline. Consequently this well could not be expected to have as much oil left to produce under water flood. It is therefore recognized that the length of time during which a well has been on production and the decline rate it has established are also factors in such an analysis. A parameter which is readily calculable and generally recognizes all of these considerations is a cumulative average producing rate which includes a water production penalty. This factor is referred to as the average monthly oil production factor penalized for water production. A detailed description of the method followed in arriving at this factor is outlined in the "Plan for Unit Operation".

The majority of members of the North Virden Scallion Operator' Committee have agreed that the two factors, namely current production factor and average monthly oil production factor penalized for water production provide a satisfactory basis for unitization and sharing of remaining primary and water flood reserves. These two factors have the advantage of being readily and precisely determinable. A further consideration then becomes the relative weighting to give to each factor in providing a participation formula. The report entitled "Reservoir Study - North Virden Scallion Field, Manitoba" and dated August, 1961, indicates a primary reserve of 25,000,000 barrels in the proposed Unit Area of which there were approximately 14.9 million barrels remaining as of May 1st, 1961. The report further estimates an additional 30,000,000 barrels will be recovered by water flooding. However, the Operators' Committee believe that greater emphasis must be placed on the production which is immediately recoverable than the production which will be obtained towards the termination of the water flood project life. This is considered necessary to prevent any abrupt and significant changes in production and income allocated to individual tracts as a result of unitization. The Operators' Committee has therefore recommended that each of the two factors previously discussed be given equal weighting of 50 percent in arriving at the participation formula. This in summary, outlines the development of the participation formula which is being presented and the reasoning behind the recommendation that it is an equitable basis for unitization.

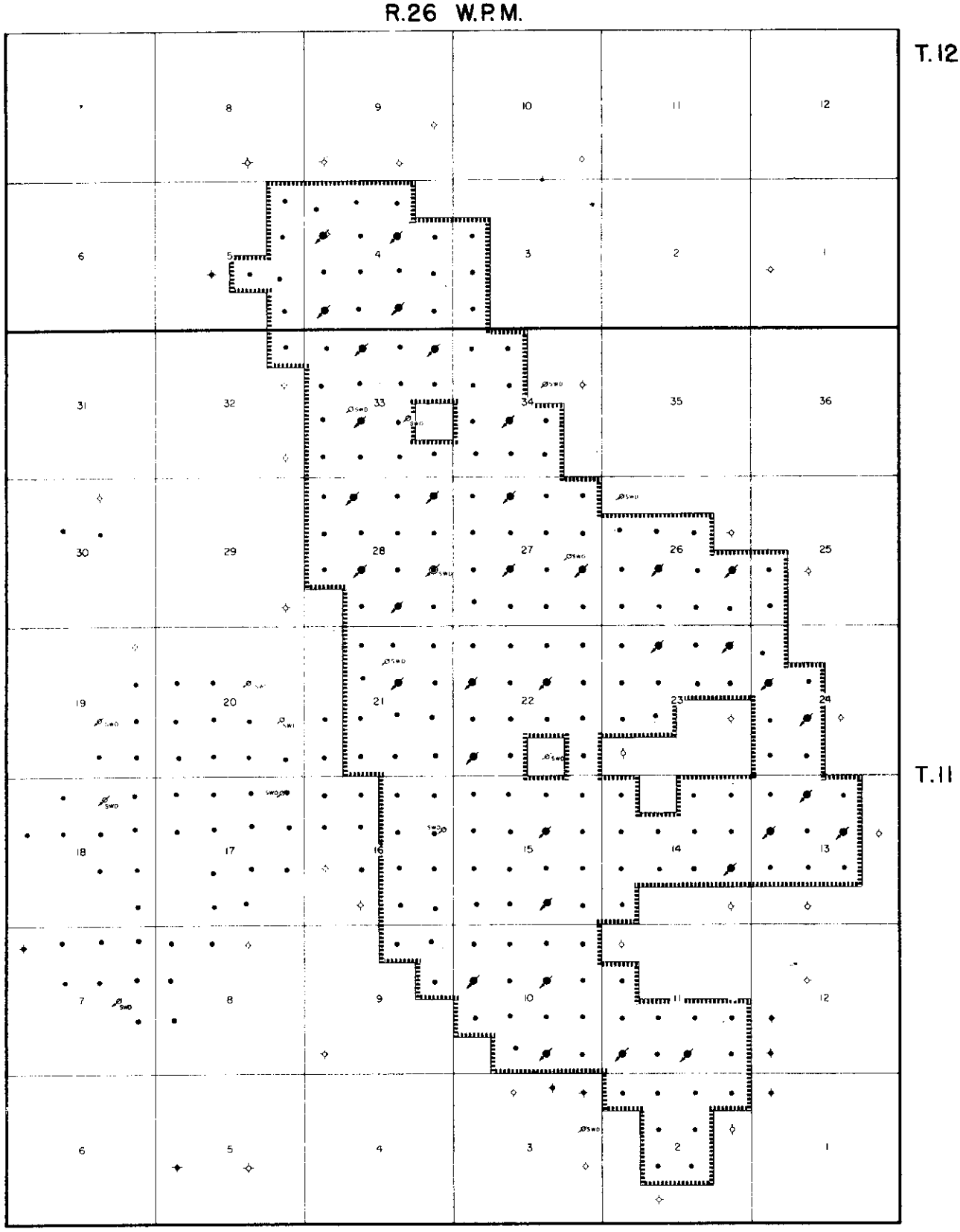

FIGURE 1

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PATTERN

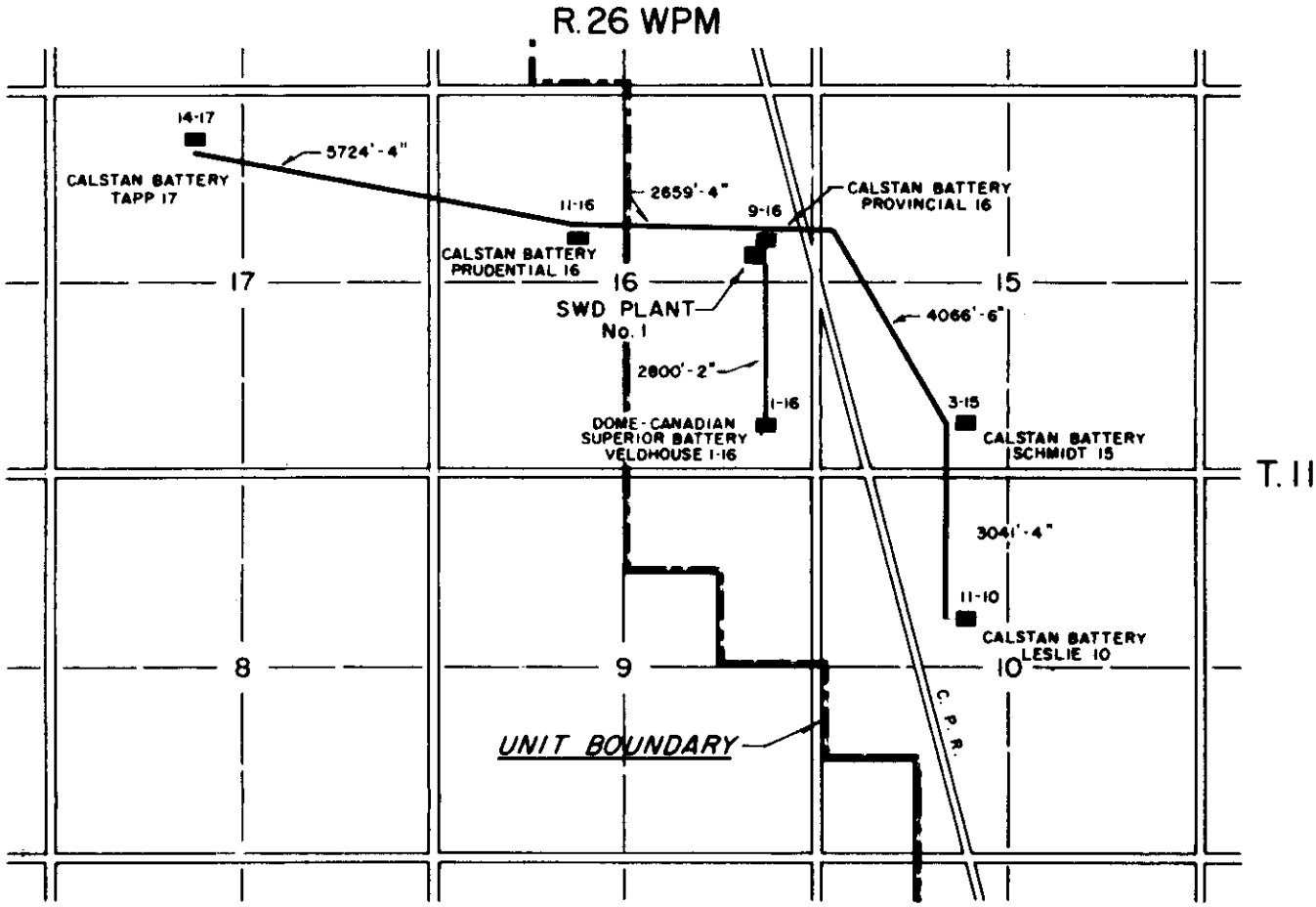

FIGURE 2

NORTH VIRDEN SCALLION FIELD

PLAN OF SALT WATER GATHERING SYSTEM

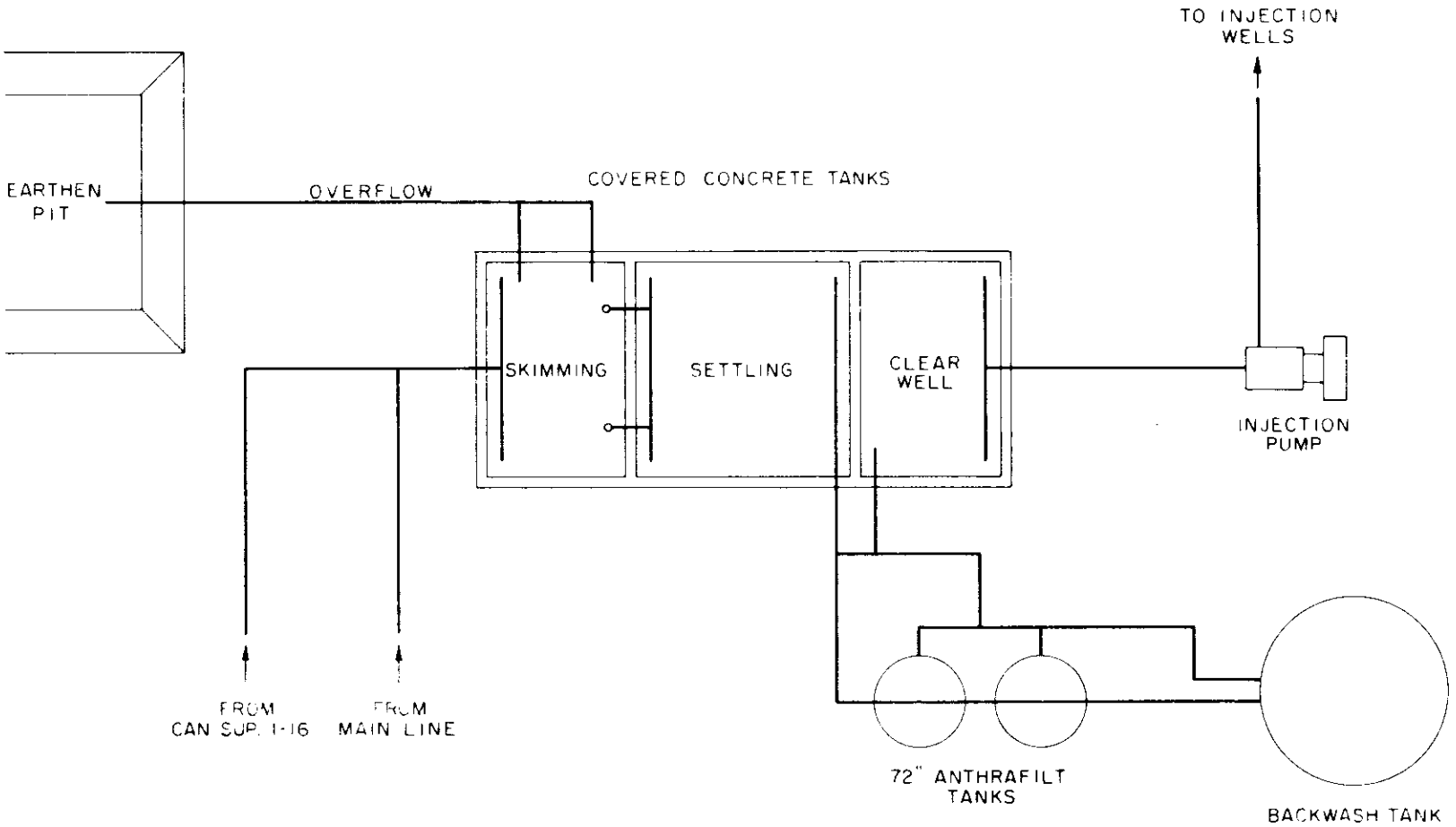

FIGURE 3

NORTH VIRDEN SCALLION FIELD

SCHEMATIC DIAGRAM

OF

EXISTING FACILITIES

NORTH VIRDEN PLANT No. 1

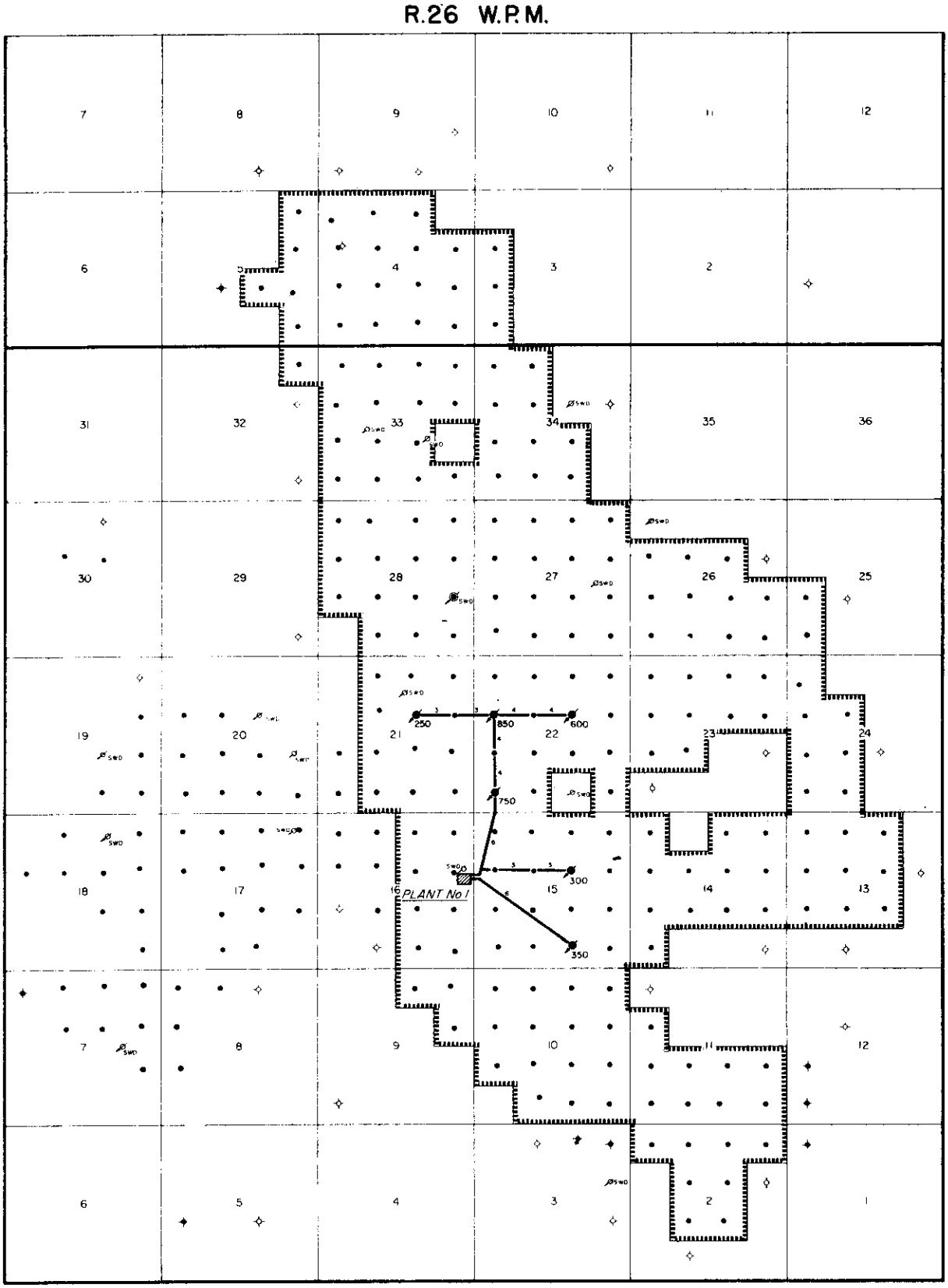

FIGURE 4

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PROGRAM - PHASE I

UNIT BOUNDARY

INJECTION WELL

3 INJECTION LINE, SIZE

250 INJECTIVITY RATE, B/D

OCT, 1961

SCALE IN MILES

0 1 2

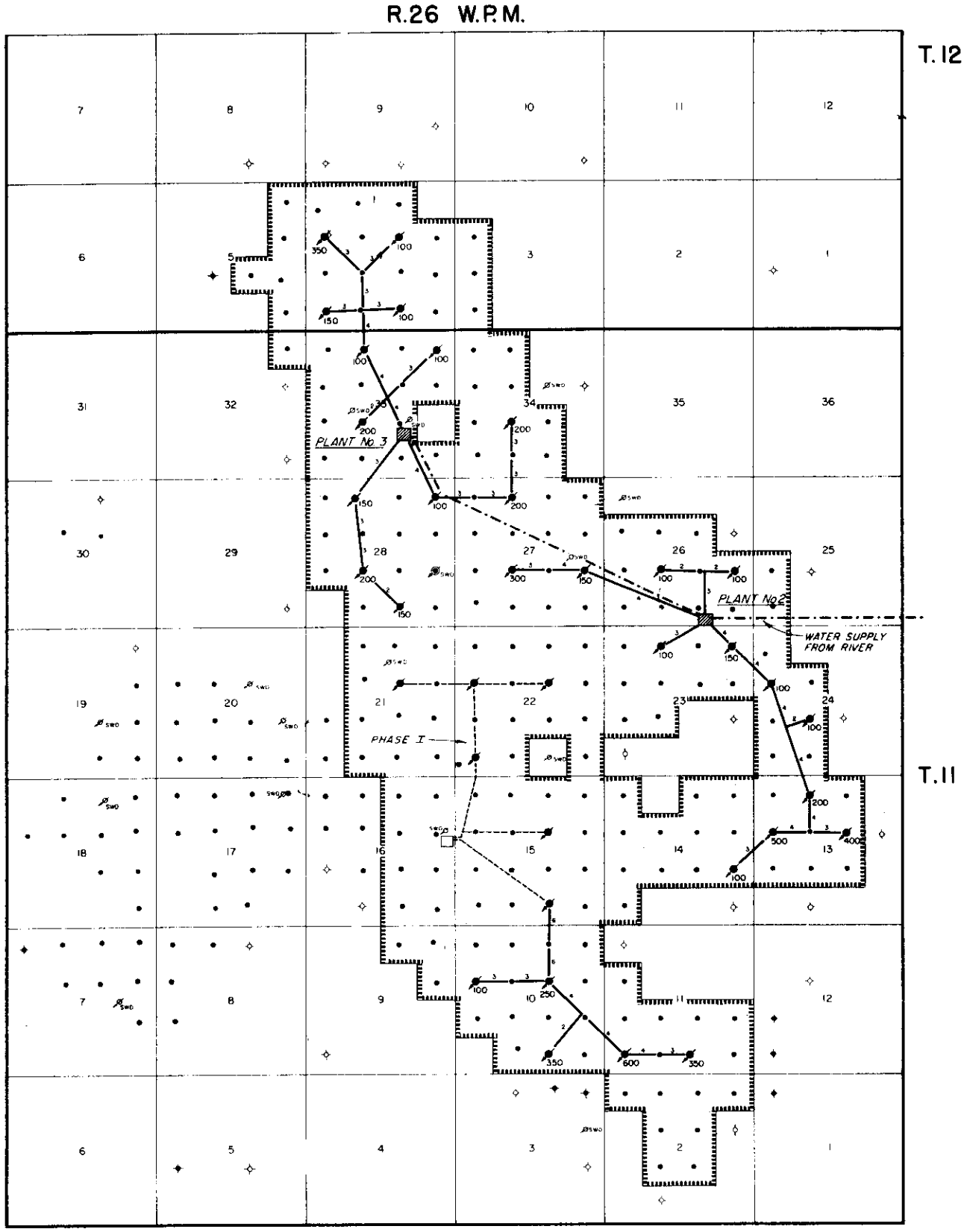

FIGURE 5

PROPOSED NORTH VIRDEN SCALLION UNIT

WATER FLOOD PROGRAM - PHASE II

January 24, 1962.

Mr. Chairman, members of the Board, the applicants, The California Standard Company, Shell Oil Company of Canada Limited, British American Oil Company Limited, Canadian Export Gas and Oil Limited, -----, under and pursuant to Subsection 1, of Section 73 of the Mines Act, Revised Statutes of Manitoba 1954 and Amendments thereto, request the Board to consider and approve The Plan for Unit Operation Governing The Unitized Management Operation and Further Development of North Virden Scallion Unit #1. (Exhibit I) It is further requested that the Board approve the proposal for pressure maintenance by the injection of water into a portion of the pool.

The applicants propose to unitize that portion of the North Virden Scallion Field shown in Part XXIII of "The Plan -----" to facilitate the operation of a water flood in the subject area.

Detailed engineering studies by the applicants indicate that the primary recovery from the subject area will be approximately 25,000,000 barrels. These same studies indicate that a properly engineered water flood will increase the total ultimate recovery to approximately 55,000,000 barrels, an increase of 30,000,000 barrels over the present method of operation.

In order to obtain this additional recovery and to protect equity, it is necessary to unitize the subject area and operate the area as a single property.

The applicants submit that "The Plan -----" is fair and equitable and will protect the correlative rights of the Working Interest

Owners and Royalty Owners and that the proposal for pressure maintenance by water injection under unitized operations will prevent waste and increase the ultimate recovery from the North Virden Scallion Field.

In further support of our request, the applicants will present additional witnesses to elaborate on the "Plan" and Water Flood proposal.

We would now like to introduce Mr. S. A. McCrae who will review in some detail the provision included in "The Plan -----".

Following McCrae's presentation, Mr. R. R. Dutka will be introduced and will present details on the (1) proposal for water injection and (2) development of participation formula.

D R A F T

TO: ALL NORTH VIRDEN SCALLION ROYALTY OWNERS

Gentlemen:

As you may have noticed from your local newspaper or radio and television advertising a hearing of the Oil and Natural Gas Conservation Board for Manitoba is slated for _____A.M. on March ___,1962, at the Court House in Winnipeg to consider a proposal for the unitization of the North Virden Scallion Field.

The hearing is being held at the request of this Company and others having leases in the Virden Scallion Field and in this connection, we enclose a booklet entitled "North Virden Scallion Field - Unitization and Water Flood Proposal" which explains and gives an overall picture of what the companies would expect to accomplish through unitization.

~~It is anticipated that~~ If the Oil and Natural Gas Conservation Board indicates its preparedness to recommend approval of our unitization proposal, ~~that~~ we will be calling on you shortly after the March ___ hearing to ask you to indicate in writing your approval of the Plan of Unitization.

Filed with the Oil and Natural Gas Conservation Board in support of the unitization proposal were the following documents:

1. Plan for Unit Operation Governing the Unitized Management Operation and Further Development of North Virden Scallion Unit No.1.

2. Proposal to the Oil and Natural Gas Conservation Board.

Copies of any or all of these documents are available at the offices of The California Standard Company in Virden, or at the offices of the Oil and Natural Gas Conservation Board, Department of Mines and Natural Resources, Winnipeg 1, Manitoba, and at the offices of this Company at Calgary, Alberta.

Yours very truly,

AGENDA FOR DISCUSSION

JANUARY 25, 1962

I. STATUS OF DOCUMENTS

A. Unit Plan (Agreement) - Draft #5. Final copy to be printed.

B. Proposal

1. Details of operations to be conducted in Unit area

2. North Virden Scallion unitization and participation formula

C. Royalty booklet

D. Reservoir study, cross sections and production curves

II. RECOMMENDED PROCEDURE

A. Calstan will, on behalf of the operators supporting the plan, submit to the Conservation Board the Unit Plan and Proposal substantially in its present form on or before March 1, 1962.

B. Conservation Board will be asked to set date of hearing on , 1962 and will arrange to advertise the date of the hearing and the necessary documents.

C. Immediately a date is set, the operators will advise their royalty owners by letter of the hearing enclosing a copy of the booklet.

D. Procedure at the hearing:

Calstan, acting on behalf of the operators supporting the plan, would coordinate and present the case as follows:

1. Mr. Swanson, at the request of the Chairman of the Conservation Board, would present or read into the record an opening statement, and file any necessary documentation.

2. Mr. McCrae would review in some detail the provisions of the Unit Plan.

3. Mr. Dutka would be introduced and would present:

   (a) Unitization and participation formula

   (b) Proposal

   (c) Details of operations to be conducted

4. At the conclusion of 3 (or 2 and 3) above the Chairman of the Board would solicit questions from (1) members of the Board and (2) from others present at the hearing.

5. Mr. Swanson would be prepared to act as principal witness and would request that he be permitted to call upon further witness as required. (Mr. McCrae, Mr. Dutka and Mr. Trowell would be available to answer such questions as may be asked.) Depending upon the nature and complexity of the questions, additional witnesses and exhibits may be called upon in order to properly answer any question.

6. The Chairman would, at the conclusion of the questions, solicit any other presentation, statements, comments, etc. either in support or in opposition to the Plan.

7. At the conclusion of 6 above, the Chairman would:

   (a) close the hearing, or,

   (b) adjourn or postpone the hearing to some future date.

E. Procedure following the hearing:

Depending on the nature of the hearing and the Board evaluation of the Proposal and Plan one of the following courses of action could be taken:

1. Approve the Plan subject to the operators obtaining the support of % or more of the royalty owners.

2. Indicate support of the Plan and adjourn the hearing until such time as operators are prepared to submit evidence of % or more royalty owners' support at which time the

hearing would be reconvened.

3. Suggest amendments to the Plan in order to provide for objections to the Plan by the Board, other operators or royalty owners and reschedule the hearing.

4. Deny the Plan in its entirety.

Province of Saskatchewan

DEPUTY MINISTER
OF
MINERAL RESOURCES

REGINA, Saskatchewan,
January 17, 1962.

Mr. M. J. Gobert,
Senior Petroleum Engineer,
Petroleum Engineering Division,
Mines Branch,
Department of Mines and Natural Resources,
Box 42 Legislative Building,
Winnipeg, Manitoba.

Dear Bert:

Thanks for the copy of Herman's dissertation on protection of correlative rights. I think we do go along with him on most of his statements, but thought I should mention that we cannot, as a rule, accept the idea of unitization of only developed drainage units. This was accepted in West Carnduff because of unanimity of opinion among the operators, but in most sharply defined structural traps, unitization appears to be the only logical way for owners of certain edge properties to obtain their equitable share of the reservoir fluids.

Best regards,

Yours sincerely,

A. J. Williams
Acting Deputy Minister

AJW:MH

JAN 19 1962

INTER-DEPARTMENTAL MEMORANDUM

PROVINCE OF MANITOBA

DATE January 8, 1962.

FROM J. S. Richards, Director of Mines.

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

SUBJECT The Oil and Natural Gas Conservation Board -
North Virden Scallion Unit No. 1 -
Public Hearing.

Mr. Gobert has drawn to my attention his memo of December 22nd to you and your reply of December 29th, relative to the above-anticipated hearing. I would like to offer the following comments.

Mr. Gobert's intention in suggesting that "the exact questions should be decided upon by the Board in advance of the hearing" was to ensure that no essential points would be overlooked. This is necessary in order that the Board does not merely give a "rubber-stamp" approval to the Plan proposed by the operators. This should not give the impression that the hearing is a "cut and dried" affair but rather the converse. From the operators' point of view it is essential that they know what material will be requested by the Board in order that this material will be prepared in advance. Should the Board request information which is not available, there would appear no alternative but to adjourn the hearing until it has been prepared.

Attached hereto a letter from Mr. McDaniel giving his views on this matter. You will note that his thoughts on the "Feasibility of Project" and the "Plan of Operation" will require the compilation of a large amount of material by the operators.

I would suggest that you, Mr. Gobert, and I get together to discuss this matter at your earliest convenience.

J. S. Richards.

JSR:lsm
Enc.

c.c. Senior Petroleum Engineer.

McDANIEL CONSULTANTS LTD.
Oil and Gas Reservoir Evaluations

January 2, 1962

COPY

Oil & Natural Gas Conservation Board
Department of Mineral Resources
Box 42
Legislative Building
Winnipeg 1, Manitoba

Attention Mr. M.J. Gobert

Dear Sir,

Pursuant to our telephone conversation with respect to the procedure to be followed at the ensuing hearing on the North Virdon-Scallion Field, we have given the matter some consideration. We would agree that some organized manner for the presentation of the data would result in a much more orderly hearing. In order to obtain a basis for further discussions, we have set out a tentative type procedure.

In general, we would suggest that the hearing be divided into the following four main subjects:

1. Feasibility of Project.
2. Plan of Operation.
3. Division of Equity.
4. Review of Unit Order.

A brief discussion of the various points which may be raised under these headings has been given hereinafter in this letter.

COPY

Feasibility of Project

We would suggest that the feasibility aspects of the hearing could be broken down into two main subjects, "theoretical data" and "actual performance data". We believe that the operators should provide data on the anticipated primary recovery from this reservoir, both on the basis of theoretical and actual performance analyses. Secondly, detailed information should be given as to the methods employed and results of, the water flood predictions. This information should include the basic water flooding tests, the over-all field reservoir study and data as to the reliability of the methods employed. Thirdly, we believe that data should be provided on wells and areas where the natural water has actually effected the performance characteristics, and also data on similar type projects, (i. e. the Daly flood) so that some practical information would be in evidence as to the reliability of the predictions employed. Fourthly, we would recommend that a comparison of the economics under primary as compared to water flood operations be given so that full justification of the project would be evident at the hearing.

Plan of Operation

We believe that under this heading, a number of points should be covered such as the physical plan (including such items as the volumes and source of water); the injection well pattern; the volumes of water to be injected (both on an area and well basis); the reliability of injection estimates; a review of the possibilities of corrosion; the protection of other horizons in the area to be unitized; the manner in which development of other horizons would be carried out; the basis for qualifying the wells; the production data on the wells and all other physical data relating to the participation in the unit, including a resume as to how the unit area was established. We also believe that some data should be given with respect to the qualification of the operator or operators with respect to operating such a scheme. We would also suggest that under this heading the necessity of having an operating agreement be justified on a generalized basis.

Discussion of Unit Order

There are a number of points under this heading which we believe should be given detailed attention at the hearing. It is evident that the wording and meaning of the unit order, as proposed by the operators, should at least in part be reviewed. It is evident that factors such as voting procedures and percentages as set out in the operating agreement should be justified by the operators at this hearing. We also believe that careful consideration should be given to the effect on royalty interests or the inferred effect on these interests as set out in the unit order. It is evident also that detailed information should be given as to the percent of the working interest and royalty interest owners who have agreed to the plan. Furthermore, we believe that information should be given as to the dissenting parties and to the reasons for dissension even if such information is given in an indirect manner. In this regard it is believed that any dissenting working interest or royalty owner must also present his case and give just cause for such dissension. It would be helpful if such points were handled according to the over-all groupings suggested in this review.

C O P Y

General

We wish to stress that this proposed procedure is of a very preliminary nature and was prepared primarily so that more detailed discussions could be held. There will no doubt be numerous other suggestions which we will be pleased to discuss at your convenience.

Sincerely yours,

McDANIEL CONSULTANTS LTD.

Copy (Original Signed) R. R. McDaniel

Per: R. R. McDaniel, P. Eng.

RRM/jes