

- a sa / / o.

2557

Application, Transcript,
and Exhibits, Etc.

SUMMARY OF OPERATIONS
WEST DOLLARIDE DEVONIAN UNIT
GULF OIL CORPORATION - UNIT OPERATOR
POST OFFICE BOX 670, HOBBS, NEW MEXICO 88240

YEAR: 1972

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
PRODUCTION												
Monthly Allowable, Bbls.	27,125	25,375	27,125	30,700	30,690	29,714	30,690					
Monthly Production, Bbls.	23,434	23,923	27,803	26,689	26,168	26,406	27,461					
Monthly Pipeline Runs	23,408	24,025	27,776	26,776	26,266	26,346	27,351					
Daily Ave. Production	756	825	927	890	844	880	866					
Cum. Prod. Since Discovery	3,676,594	3,700,517	3,728,320	3,755,069	3,781,177	3,807,583	3,835,044					
Cum. Prod. Since Unit. 1/24.	1,086,054	1,109,997	1,137,800	1,164,489	1,190,657	1,217,063	1,244,524					
Cum. Primary Oil	2,735,384	2,735,384	2,735,384	2,735,384	2,735,384	2,735,384	2,735,384					
Cum. Secondary Oil	941,209	965,132	992,935	1,019,624	1,045,792	1,072,198	1,099,659					
GAS PRODUCTION												
Monthly Gas Prod., MCF	12,440	11,010	12,092	12,820	11,384	12,299	13,263					
Total Gas Used On Lease	2,035	2,035	2,035	2,079	2,079	2,079	1,782					
Total Gas Sold	10,405	8,975	11,057	10,741	9,305	10,220	11,481					
Producing GOR, CF/B	531	460	471	480	435	466	483					
WATER PRODUCTION												
Monthly Production, Bbls.	750	700	800	800	430	450	450					
Daily Ave. Prod., Bbls.	24	24	27	27	14	15	15					
Water Percentage	3.1	2.8	2.8	2.9	1.6	1.7	1.6					
WATER INJECTION												
Water Inject. Volume, Bbls.	82,652	84,339	85,175	85,710	87,910	92,911	95,760					
Prod. Wtr Vol. Re-Injected	750	700	800	800	430	450	485					
Wtr. Supply Wells, Vol.	0	0	0	0	0	0	0					
Skelly Water Line Vol. In	81,902	83,639	84,375	84,910	87,480	92,461	95,275					
Daily Ave. Injected, Bbls.	2,666	2,908	2,839	2,857	2,836	3,097	3,089					
Cum. Injected, Bbls.	8,903,433	8,987,772	9,072,947	9,158,657	9,246,567	9,339,478	9,433,490					
Avg. Wellhead Press, PSI	1,972	2,038	2,019	2,019	2,006	2,100	2,150					
WELL STATUS												
Producing - Active	8	8	8	8	8	8	8					
- Inactive	2	2	2	2	2	2	2					
Injection - Active	8	8	8	8	8	8	8					
Injection - Inactive	0	0	0	0	0	0	0					
Water Supply - Active	0	0	0	0	0	0	0					
- Inactive	7	7	7	7	7	7	7					

Remarks: Shot fluid levels on Wells No. 100, 106, 110, 113 & 115 in July, 1972

2507

AUG 3 1972

NEW MEXICO OIL CONSERVATION COMMISSION
BOX 871 SANTA FE, NEW MEXICO
OPERATOR'S MONTHLY REPORT

STATEWIDE FORM C-115 REV.
SUBMIT: ORIGINAL TO OCC SANTA FE
ONE COPY TO OCC DIST. OFFICE
ONE COPY TO TRANSPORTER

OIL CORPORATION
(COMPANY OR OPERATOR)
P. O. DRAWER 2100, HOUSTON, TEXAS
JULY , 1972 138
(DATE) (PAGE)

LEASE DETAIL SEE	WELL NO., UNIT LETTER, SEC., TWP., RANG. AND WELL STATUS	POOL NAME LEASE NAME	TOTAL LIQUIDS PRODUCED				GAS PRODUCED MCF	OIL ON HAND END OF MONTH	DISPOSITION OF GAS				DISPOSITION OF OIL					
			MONTHLY OR ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED	PRODUCED MCF			VENTED	GAS LIFT	USED ON LEASE	SOLD	PURCH.	OTHER	OIL ON HAND END OF MONTH	BARRELS TO PIPELINE	BARRELS TO TRUCKS	OTHER
DOLLARHIDE CEYONIAN			COUNTY OF LEA															
WEST DOLLARHIDE UNIT																		
100	C 33	24S 38E	P	4650	4699		621431											
101	F 33	24S 38E	I				31											
102	E 33	24S 38E	P	13175	12351		161831											
103	H 32	24S 38E	I				31											
104	I 32	24S 38E	P	310	311		102931											
105	L 33	24S 38E	I				31											
106	K 33	24S 38E	P	124	124		63631											
107	N 33	24S 38E	I				31											
108	M 33	24S 38E	P				0											
109	P 32	24S 38E	I				31											
110	B 5	24S 38E	P	682	312		151M23											
111	A 5	25S 38E	P	1550	1506		42731											
112	D 4	25S 38E	I				31											
113	C 14	25S 38E	P	7905	5948		254831											
114	E 4	25S 38E	I				31											
115	E 4	25S 38E	P	2254	2210		79131											
116	I 5	25S 38E	P				0											
117	L 4	25S 38E	I				31											
LEASE TOTAL			30690	27461	450	13263			1782	11481	EPG		1277	27351			TNM	1387

RECEIVED
AUG 31 1972
OIL CONSERVATION COMMISSION

NEW MEXICO
OIL CONSERVATION COMMISSION
MONTHLY INJECTION REPORT

Submit this report in triplicate to the District Office, Oil Conservation Commission.
POOL DOLLARHIDE DEVONIAN 19
MONTH
COMPANY GULF OIL CORPORATION
COUNTY LEA

Lease	Well No.	Location				MCF Gas Injected	Cumulative Gas Inj.	Bbls. Water Injected	Cumulative Water Inj.	Ave. Inj. Pressure
		UI	S	T	R					
West Dollarhide Devonian Unit	101	F	33	24	38	-	-	12,850	1,415,834	2150
	103	H	32	24	38	-	-	22,200	1,267,499	2150
	105	L	33	24	38	-	-	15,050	1,451,456	2150
	107	N	33	24	38	-	-	8,850	520,871	2150
	109	P	32	24	38	-	-	11,940	1,128,854	2150
	110	B	5	25	38	-	-	-	843,585	-
	112	D	4	25	38	-	-	10,030	1,047,291	2150
	114	F	4	25	38	-	-	9,860	1,093,208	2150
	117	L	4	25	38	-	-	4,980	1,64,892	2150
TOTAL								95,760	9,433,490	2150

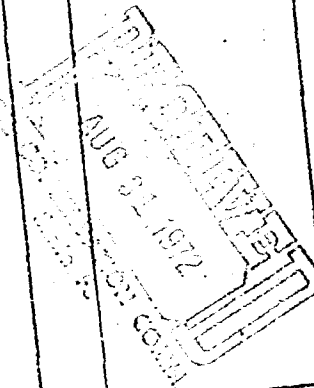
NOTE: Individual injection well cumulatives and total cumulative for injection wells corrected result of error in change over from old unit well numbers to new numbers for unit in July, 1965

Lease	Well No.	Location				Bbls. Oil Produced	MCF Gas Produced	GOR	Bbls. Water Produced	% Water Produced
		UI	S	T	R					
West Dollarhide Devonian Unit	100	C	33	24	38	4699	6214	-	0	-
	102	E	33	24	38	12,351	1618	-	0	-
	104	I	32	24	38	311	1029	-	0	-
	106	K	33	24	38	137	636	-	0	-
	108	M	33	24	38	0	0	-	450	-
	111	A	5	25	38	1,506	427	-	0	-
	113	C	4	25	38	3,948	2,548	-	0	-
	115	E	4	25	38	2,210	791	-	0	-
	116	I	5	25	38	0	0	-	0	-
	110	B	5	25	38	312	TST/M	-	0	-
TOTAL								-	450	-

PRODUCING WELLS OUTSIDE A PRORATED WATERFLOOD PROJECT AREA WHICH ARE PRODUCING INTO COMMON FACILITIES WITH WELLS INSIDE A PRORATED WATERFLOOD PROJECT AREA

Lease	Well No.	UI	S	T	R	Date of Test	Length of Test	Barrels Produced	Barrel Per Day

I hereby certify that the above information is true and complete to the best of my knowledge
REMARKS:
NAME
BY C. F. KATTEYER
TITLE C. F. KATTEYER, Area Engineer
GULF OIL CORPORATION



2557
June 4, 1962

**Gulf Oil Corporation
P. O. Box 1938
Roswell, New Mexico**

**Re: West Hollaishide
Devonian Unit,
Los County, New Mexico**

Attention: Mr. W. A. Shalshour

Gentlemen:

The Commissioner of Public Lands has approved as of June 4, 1962 the West Hollaishide Devonian Unit, Los County, New Mexico. We are enclosing three originally signed Certificates of Approval.

This office received a copy of Oil Conservation Commission Order No. L-2248 dated June 4, 1962 approving the West Hollaishide Devonian Unit and Waterflood Project.

Also enclosed is Official Receipt No. 88817 in the amount of Twenty Dollars (\$20.00) which covers the filing fee for this Unit.

Please furnish us a copy of the U. S. Geological Survey Certificate of Determination at such time as they approve or notification if they should disapprove. Also state the effective date of this Unit.

Gulf Oil Corporation
P. O. Box 1938
Roswell, New Mexico
June 4, 1962
Page 2

Very truly yours,

E. S. JOHNNY WALKER
COMMISSIONER OF PUBLIC LANDS

BY:
(Mrs.) Marian M. Rhea, Supervisor
Unit Division

ESW/mmr/v
cc:

U. S. Geological Survey
P. O. Drawer 1857
Roswell, New Mexico
Attention: Mr. John Anderson

Oil Conservation Commission
Santa Fe, New Mexico

C
O
P
Y

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2557
Order No. R-2248

APPLICATION OF GULF OIL CORPORATION
FOR APPROVAL OF A UNIT AGREEMENT AND
A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 10, 1962, at Santa Fe, New Mexico, before Daniel S. Mutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 4th day of June, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Mutter, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Gulf Oil Corporation, seeks approval of the West Dallarhide Devonian Unit Agreement, embracing 765 acres, more or less, of Federal and State lands in Townships 24 and 25 South, Range 38 E. st, NEPM, Lea County, New Mexico.
- (3) That the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste.
- (4) That the applicant further seeks permission to institute a waterflood project in the proposed West Dallarhide Devonian Unit Area by the injection of water into the Devonian formation through 9 wells located therein; applicant proposes to operate the waterflood project under the provisions of Rule 701.
- (5) That the wells in the proposed waterflood project have reached an advanced stage of depletion and should be classified as "stripper" wells.

CASE No. 2557
Order No. R-2248

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the West Dolarhide Devonian Unit Agreement is hereby approved.

RESERVED HOWEVER. That notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the New Mexico Oil Conservation Commission by law relative to the supervision and control of operations for exploration and development of any lands committed to said West Dolarhide Devonian Unit Agreement, or relative to the production of oil and gas therefrom.

(2) That the unit area shall be:

TOWNSHIP 24 SOUTH, RANGE 38 EAST, NMPM

LEA COUNTY, NEW MEXICO

Section 32: SE/4 NE/4 and E/2 SE/4

Section 33: Lots 1, 2, 3 and 4, E/2 NW/4,
SW/4 NW/4, and SW/4

TOWNSHIP 25 SOUTH, RANGE 38 EAST, NMPM

LEA COUNTY, NEW MEXICO

Section 4: Lots 1 and 4, SE/4 and NW/4 SW/4

Section 5: E/2 NE/4 and NE/4 SE/4

containing 765 acres, more or less.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof. In the event of subsequent joinder by any party, the unit operator shall file with the Commission within 30 days after such action counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey, and shall terminate ipso facto upon the termination of said unit agreement. The last unit operator shall notify the Commission in writing of such termination.

(5) That Gulf Oil Corporation is hereby authorized to institute a waterflood project in the West Dolarhide Devonian Unit Area

-3-
CASE No. 2557
Order No. A-2248

by the injection of water into the Devonian Formation through the following-described wells:

Harry Leonard (NCT-G) Well No. 2, located in Unit D, Section 4, Township 25 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 3, located in Unit H, Section 33, Township 24 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 7, located in Unit L, Section 33, Township 24 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 9, located in Unit F, Section 4, Township 25 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 1, located in Unit C, Section 33, Township 24 South, Range 38 East;

State T Well No. 1, located in Unit H, Section 32, Township 24 South, Range 38 East;

Mexico J Well No. 24, located in Unit P, Section 32, Township 24 South, Range 38 East;

Mexico L Well No. 22, located in Unit B, Section 3, Township 25 South, Range 38 East; and

Penny Federal Well No. 2, located in Unit L, Section 4, Township 25 South, Range 38 East.

(6) That the subject waterflood project shall be governed by the provisions of Rule 701.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

Done at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

asr/

ADD
MAIN OFFICE OCC

1962 MAY 10 AM 8:26

Mr. A. L. Porter, Jr. Secretary-Director
New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

This is to inform you that the undersigned, being an operator in the Dollarhide Devonian Pool, Lea County, New Mexico, has no objection to the granting of approval of the Unit Agreement and authorization to subsequently water flood the Dollarhide Devonian formation under lands to be included in the West Dollarhide Devonian Unit. The request for approval will be made during the May 10, 1962 Examiner Hearing in Case 2557 by the Gulf Oil Corporation, the proposed Unit Operator.

Yours very truly,

ELLIOTT, INC.

By Edna Jane Hall asst secy

Address Box 1355

Reswell MM

Date 5-8-62



MAIN OFFICE OCC

1962 MAY

SKELLY OIL COMPANY

P. O. Box 1650
TULSA 2, OKLAHOMA

PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT
W. P. WHITMORE, MGR. PRODUCTION
W. D. CARSON, MGR. TECHNICAL SERVICES
ROBERT G. HILTZ, MGR. JOINT OPERATIONS
GEORGE W. SELINGER, MGR. CONSERVATION

May 2, 1962

Re: Case 2557

Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

Application of Gulf Oil Corporation for a unit agreement and secondary recovery project of the West Dollarhide Devonian Unit is to be heard by the Commission at an Examiner's Hearing Thursday, May 10, 1962.

As an interested party, we wish to concur in the request of the applicant.

Very truly yours,

GWS:br

cc: Gulf Oil Corporation
P. O. Box 1938
Roswell, New Mexico Attn: Mr. M. I. Taylor

2537

Gulf Oil Corporation
MAIN OFFICE OCC
ROSWELL PRODUCTION DISTRICT

W. A. Shellshear
DISTRICT MANAGER
F. O. Mortlock
DISTRICT EXPLORATION
MANAGER
M. I. Taylor
DISTRICT PRODUCTION
MANAGER
H. C. Vivian
DISTRICT SERVICES MANAGER

1962 MAR 27 PM 4:45 Drawer 1938
Roswell, New Mexico

March 27, 1962

Secretary Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Application of Gulf Oil Corporation for the
Approval of the West Dollarhide Devonian
Unit Agreement providing for secondary re-
covery operations in the West Dollarhide
Devonian Oil Pool, Lea County, New Mexico.

Dear Sir:

Gulf Oil Corporation respectfully herein requests the Commission's approval of the West Dollarhide Devonian Unit Agreement, 3 copies of which are attached hereto, on the grounds that the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste. In support of its application, Gulf states as follows:

1. That the Unit Area shall be

T. 24 S., R. 38 E.,
Sec. 32: E/2 SE/4 & SE/4 NE/4
Sec. 33: Lots 1, 2, 3, 4, NE/4
NW/4, S/2 NW/4 & SW/4

T. 25 S., R. 38 E.,
Sec. 4: Lots 1, 2, 3, 4, S/2
NW/4 & NW/4 SW/4
Sec. 5: Lots 1, 2 & NE/4 SE/4

containing 765.25 acres, more or less.

2. That the project area described above includes all producing oil wells in the West Dollarhide Devonian Oil Pool which are presently situated in the State of New Mexico. Prior to expanding the Unit, Applicant will request that the expansion be authorized by administrative approval in accordance with the procedure outlined in paragraph 5 of N.M.O.C.C. Rule 701 (E).

3. Applicant proposes to inject approximately 1000 barrels of water per well per day into the oil producing intervals of the Devonian Age formation which are encountered in the Unit Area at an average depth of 7,600 feet beneath the surface.

4. That the Unit Operator shall file with the Commission an executed original or an executed counterpart of the West Dollarhide Devonian Unit Agreement within 30 days after the effective date thereof.



Secretary Director
New Mexico Oil Conservation Commission
March 27, 1962
Page 2

5. That any party owning rights in the unitized substances who does not commit such rights to said Unit Agreement before the effective date thereof may thereafter become a party thereto by subscribing to such agreement or counterpart thereof or by ratifying the same. The Unit Operator shall file with the Commission within 30 days an original of any such counterpart or ratification.

6. That the order of the Commission should become effective upon the approval of said Unit Agreement by the Director of the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico and shall terminate ipso facto upon the termination of said Unit Agreement. The last Unit Operator shall immediately notify the Commission in writing of such termination.

Gulf Oil Corporation has previously obtained a preliminary designation of the Unit Area from the Acting Director of the United States Geological Survey, a verifax copy of which is attached hereto.

It is requested that this matter be set for hearing before an examiner at the earliest hearing in May, 1962.

Respectfully submitted,

GULF OIL CORPORATION

By

W. A. Shellshear
W. A. Shellshear

WVK:ejl
Enclosures

Gulf Oil Corporation

MAIN OFFICE OCC
ROSWELL PRODUCTION DISTRICT

W. A. Shellishear
DISTRICT MANAGER

F. O. Mortlock
DISTRICT EXPLORATION
MANAGER

M. I. Taylor
DISTRICT PRODUCTION
MANAGER

H. C. Vivian
DISTRICT SERVICES MANAGER

1962 MAR 27 PM 4:46

P. O. Drawer 1938
Roswell, New Mexico

March 27, 1962

Secretary Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Application of Gulf Oil Corporation for the
Approval of the West Dollarhide Devonian
Unit Agreement providing for secondary re-
covery operations in the West Dollarhide
Devonian Oil Pool, Lea County, New Mexico.

Dear Sir:

Gulf Oil Corporation respectfully herein requests the Commission's approval of the West Dollarhide Devonian Unit Agreement, 3 copies of which are attached hereto, on the grounds that the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste. In support of its application, Gulf states as follows:

1. That the Unit Area shall be

T. 24 S., R. 38 E.,

Sec. 32: E/2 SE/4 & SE/4 NE/4

Sec. 33: Lots 1, 2, 3, 4, NE/4
NW/4, S/2 NW/4 & SW/4

T. 25 S., R. 38 E.,

Sec. 4: Lots 1, 2, 3, 4, S/2
NW/4 & NW/4 SW/4

Sec. 5: Lots 1, 2 & NE/4 SE/4

containing 765.25 acres, more or less

2. That the project area described above includes all producing oil wells in the West Dollarhide Devonian Oil Pool which are presently situated in the State of New Mexico. Prior to expanding the Unit, Applicant will request that the expansion be authorized by administrative approval in accordance with the procedure outlined in paragraph 5 of N.M.O.C.C. Rule 701 (E).

3. Applicant proposes to inject approximately 1000 barrels of water per well per day into the oil producing intervals of the Devonian Age formation which are encountered in the Unit Area at an average depth of 7,600 feet beneath the surface.

4. That the Unit Operator shall file with the Commission an executed original or an executed counterpart of the West Dollarhide Devonian Unit Agreement within 30 days after the effective date thereof.



Secretary Director
New Mexico Oil Conservation Commission
March 27, 1962
Page 2

5. That any party owning rights in the unitized substances who does not commit such rights to said Unit Agreement before the effective date thereof may thereafter become a party thereto by subscribing to such agreement or counterpart thereof or by ratifying the same. The Unit Operator shall file with the Commission within 30 days an original of any such counterpart or ratification.

6. That the order of the Commission should become effective upon the approval of said Unit Agreement by the Director of the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico and shall terminate ipso facto upon the termination of said Unit Agreement. The last Unit Operator shall immediately notify the Commission in writing of such termination.

Gulf Oil Corporation has previously obtained a preliminary designation of the Unit Area from the Acting Director of the United States Geological Survey, a verifax copy of which is attached hereto.

It is requested that this matter be set for hearing before an examiner at the earliest hearing in May, 1962.

Respectfully submitted,

GULF OIL CORPORATION

By

W. A. Shellishear
W. A. Shellishear

WVK:ej1
Enclosures

Cover 2557

Gulf Oil Corporation
ROSWELL PRODUCTION DISTRICT MAIN OFFICE OCC

W. A. Shellishear
DISTRICT MANAGER
F. O. Mortlock
DISTRICT EXPLORATION
MANAGER
M. I. Taylor
DISTRICT PRODUCTION
MANAGER
H. C. Vivian
DISTRICT SERVICES MANAGER

1962 MAR 27 PM 4:45
P. O. Drawer 1938
Roswell, New Mexico

March 27, 1962

Secretary Director
New Mexico Oil Conservation Commission
P. O. Box 371
Santa Fe, New Mexico

Re: Application of Gulf Oil Corporation for the
Approval of the West Dollarhide Devonian
Unit Agreement providing for secondary re-
covery operations in the West Dollarhide
Devonian Oil Pool, Lea County, New Mexico.

Dear Sir:

Gulf Oil Corporation respectfully herein requests the Commission's approval of the West Dollarhide Devonian Unit Agreement, 3 copies of which are attached hereto, on the grounds that the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste. In support of its application, Gulf states as follows:

1. That the Unit Area shall be

T. 24 S., R. 38 E.,
Sec. 32: E/2 SE/4 & SE/4 NE/4
Sec. 33: Lots 1, 2, 3, 4, NE/4
NW/4, S/2 NW/4 & SW/4

T. 25 S., R. 38 E.,
Sec. 4: Lots 1, 2, 3, 4, S/2
NW/4 & NW/4 SW/4
Sec. 5: Lots 1, 2 & NE/4 SE/4

containing 765.25 acres, more or less.

2. That the project area described above includes all producing oil wells in the West Dollarhide Devonian Oil Pool which are presently situated in the State of New Mexico. Prior to expanding the Unit, Applicant will request that the expansion be authorized by administrative approval in accordance with the procedure outlined in paragraph 5 of N.M.O.C.C. Rule 701 (E).

3. Applicant proposes to inject approximately 1000 barrels of water per well per day into the oil producing intervals of the Devonian Age formation which are encountered in the Unit Area at an average depth of 7,600 feet beneath the surface.

4. That the Unit Operator shall file with the Commission an executed original or an executed counterpart of the West Dollarhide Devonian Unit Agreement within 30 days after the effective date thereof.



Secretary Director
New Mexico Oil Conservation Commission
March 27, 1962
Page 2

5. That any party owning rights in the unitized substances who does not commit such rights to said Unit Agreement before the effective date thereof may thereafter become a party thereto by subscribing to such agreement or counterpart thereof or by ratifying the same. The Unit Operator shall file with the Commission within 30 days an original of any such counterpart or ratification.

6. That the order of the Commission should become effective upon the approval of said Unit Agreement by the Director of the United States Geological Survey and the Commissioner of Public Lands of the State of New Mexico and shall terminate ipso facto upon the termination of said Unit Agreement. The last Unit Operator shall immediately notify the Commission in writing of such termination.

Gulf Oil Corporation has previously obtained a preliminary designation of the Unit Area from the Acting Director of the United States Geological Survey, a verifax copy of which is attached hereto.

It is requested that this matter be set for hearing before an examiner at the earliest hearing in May, 1962.

Respectfully submitted,

GULF OIL CORPORATION

By

W. A. Shellshear
W. A. Shellshear

WVK:ej1
Enclosures

No. 14-62

DOCKET: EXAMINER HEARING - THURSDAY - MAY 10, 1962

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE
BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, as alternate examiner:

CASE 2547: Application of Pan American Petroleum Corporation for a triple completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing the triple completion (conventional) of its Greenwood Unit Well No. 7, located in Unit H, Section 12, Township 19 South, Range 31 East, Eddy County, New Mexico, in such a manner as to permit the production of oil from undesignated Strawn, Wolfcamp, and Bone Spring pools through parallel strings of tubing.

CASE 2548: Application of Pan American Petroleum Corporation for an exception to Order No. R-660, Caprock-Queen Pool, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the Special Rules and Regulations of the Caprock-Queen Pool, Order No. R-660, for the assignment of a gas allowable equivalent to the total reservoir voidage of a top allowable oil well producing at the limiting GOR of 2000:1 for its State "AK" Well No. 1 located in Unit N, Section 19, Township 15 South, Range 31 East, Chaves County, New Mexico.

CASE 2549: Application of Cities Service Petroleum Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its Hodges B Well No. 4, located in Unit M of Section 1, Township 25 South, Range 37 East, Lea County, New Mexico, as a dual completion (conventional) in the North Justis Tubb-Drinkard Pool and Devonian formation adjacent to the North Justis-Devonian Pool with the production of oil from each zone to be through parallel strings of 2 3/8-inch tubing.

CASE 2550: Application of Texaco Inc., for a quadruple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its G. L. Erwin "B" NCT-2 Well No. 4, located in Unit O of Section 35, Township 24 South, Range 37 East, Lea County, New Mexico, as a quadruple completion (tubingless) in the North Justis-Fusselman, North Justis-Devonian, North Justis Tubb-Drinkard and North Justis-

Blinebry Pools, with the production of oil from all zones to be through parallel strings of small diameter casing cemented in a common well bore.

CASE 2551:

Application of Texaco Inc., for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its G. L. Erwin "A" Well No. 1, located in Unit N of Section 35, Township 24 South, Range 37 East, Lea County, New Mexico, as a triple completion (tubingless) in the North Justis-Devonian, North Justis-Tubb Drinkard and North Justis-Blinebry Pools with the production of oil from all zones to be through parallel strings of small diameter casing cemented in a common well bore.

CASE 2552:

Application of Texaco Inc., for a quadruple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order R-2109 to permit the quadruple completion (tubingless) of its G. L. Erwin "B" NCT-2 Well No. 2, located in Unit J of Section 35, Township 24 South, Range 37 East, Lea County, New Mexico, in the North Justis-Blinebry Pool, North Justis Tubb-Drinkard Pool, an undesignated Paddock pool and an undesignated Devonian pool with the production of oil from all four zones to be through parallel strings of 2 3/8-inch casing cemented in a common well bore.

CASE 2553:

Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order R-2181 to permit the triple completion (conventional) of its C. H. Weir "B" Well No. 5, located in Unit G of Section 11, Township 20 South, Range 37 East, Lea County, New Mexico, in the Skaggs-Glorieta and Skaggs-Drinkard Oil Pools and in an undesignated Blinebry Oil pool with the production of oil from the Glorieta and Drinkard zones to be through parallel strings of 2 1/16-inch tubing and the production of oil from the Blinebry zone to be through a dual zone flow tube and a string of 1-inch tubing.

CASE 2554:

Application of T. F. Hodge for an order creating a new pool and establishing temporary rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order creating a new pool for Pennsylvanian production; the discovery well for said pool is the Humble-State Well No. 1, located in

Unit N of Section 26, Township 10 South, Range 33 East, Lea County, New Mexico, completed in the Bough "C" zone of the Pennsylvanian formation with perforations from 9667 feet to 9671 feet. Applicant further seeks establishment of special rules and regulations governing said pool, including 80-acre proration units.

CASE 2555:

Application of Gulf Oil Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its J. F. Janda (NCT-F) Well No. 6, located in Unit D of Section 4, Township 22 South, Range 36 East, Lea County, New Mexico, as a dual completion (conventional) in the Jalmat Gas Pool and South Eunice Pool with the production of oil from the Jalmat Gas Pool to be through a string of 1 1/4-inch tubing and the production of oil from the South Eunice Pool to be through a parallel string of 2 3/8-inch tubing.

CASE 2556:

Application of Gulf Oil Corporation for an unorthodox oil well location and a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its Lillie Well No. 3, located 2310 feet from the North line and 330 feet from the West line of Section 23, Township 24 South, Range 37 East, Lea County, New Mexico, as a dual completion (conventional) in the Fowler-Fusselman and Fowler-Ellenburger Pools with the production oil from both zones to be through a parallel strings of tubing. Said well is at an unorthodox location under the Fowler-Ellenburger Pool Rules.

CASE 2557:

Application of Gulf Oil Corporation for a unit agreement and a secondary recovery project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Dollarhide Devonian Unit Agreement embracing 765.25 acres, more or less, of Federal and State lands in Townships 24 and 25 South, Range 38 East, Lea County, New Mexico. Applicant further seeks permission to institute a secondary recovery project in the proposed West Dollarhide Devonian Unit Area by injection of water into the Devonian formation into certain wells located in said unit.

TEXACO
MAIN OFFICE OCC INC.

PETROLEUM PRODUCTS

1962 MAY 7 AM 9:02



DOMESTIC PRODUCING DEPARTMENT

MIDLAND DIVISION

B. L. FRANCIS, ASSISTANT DIVISION MANAGER

P. O. BOX 8100
MIDLAND, TEXAS

April 30, 1962

REFERENCE CASE 2557

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

Texaco Inc. will be a working interest owner in the West Dollarhide Devonian Unit as proposed by the Gulf Oil Corporation. Texaco has executed the Unit Agreement and concurs with Gulf's application for approval of the Unit Agreement and secondary recovery project.

Yours very truly,

B. L. Francis

CRB-MM

INTEREST OWNERS LIST
WEST DOLLARHIDE DEVONIAN UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNERS

Mr. Fred J. Brotherton
185 East Palisade Avenue
Englewood, New Jersey

Mr. Leslie B. Gardner
2216 Gorman
Waco, Texas

Gulf Oil Corporation
Post Office Box 1938
Roswell, New Mexico

Mr. W. E. Irvin
3700 Bellaire Drive North
Fort Worth, Texas

Mr. Joseph D. Kennedy
2017 Continental National Bank Building
Fort Worth 2, Texas

Messrs. Joe D. Kennedy, Y. Q. McCammon
and George Thompson, Jr., Trustees of
Marilyn Maxwell Trust
2017 Continental National Bank Building
Fort Worth 2, Texas

Mr. Gus Layton
1505 Oil & Gas Building
309 West Seventh Street
Fort Worth, Texas

Mr. E. L. Lockwood
750 West Fifth Street
Fort Worth, Texas

Mr. J. C. Maxwell
2017 Continental National Bank Building
Fort Worth 2, Texas

Mr. George A. Melhaus, Jr.
c/o Texas Industries, Inc.
Post Office Box 400
Arlington, Texas

Pan American Petroleum Corporation
Post Office Box 1410
Fort Worth, Texas
Atten: Mr. Bruce A. Landis, Jr.

Skelly Oil Company
Post Office Box 1650
Tulsa, Oklahoma
Atten: Mr. Robert G. Hiltz

Mr. James K. Snowden
750 West Fifth Street
Fort Worth, Texas

Texaco Inc.
Post Office Box 3109
Midland, Texas

OVERRIDING ROYALTY INTEREST OWNERS

Selma E. Andrews
c/o Trust Department
Albuquerque National Bank
Albuquerque, New Mexico

Albuquerque National Bank
Testamentary Trustee of
Frank A. Andrews, Deceased
Albuquerque, New Mexico

M. W. Coll
Post Office Box 919
Roswell, New Mexico

L. E. Hults
Sinclair Building
Fort Worth, Texas

Helen Magruder Kolliker
3812 Hillcrest
El Paso, Texas

The First National Bank of Denver
Successor Trustee Under the
Last Will and Testament of
Charles T. Lupton, Deceased
c/o Trust Department
Denver 17, Colorado

John M. Loffland, Jr.
233 Rowan Building
6000 Camp Bowie
Fort Worth, Texas

The Fort Worth National Bank
Trustee for Roy S. Magruder
Post Office Box 2050
Fort Worth, Texas

Roger B. Owings
Fair Building
Fort Worth, Texas

T. A. Pedley, Jr.
4025 East 22nd Avenue
Denver 7, Colorado

Gracean M. Pedley
115 McGoodwin Avenue
Princeton, Kentucky

Neville G. Penrose
Fair Building
Fort Worth, Texas

Skelly Oil Company
Post Office Box 1801
Dallas 21, Texas

The First National Bank of Denver
Successor Trustee Under the Will of
Josephine M. Smith, Deceased
c/o Trust Department
Denver 17, Colorado

Effie E. Valentine
c/o The First National Bank of Denver
Denver, Colorado
Atten: Trust Department

ROYALTY INTEREST OWNERS

Commissioner of Public Lands
Of The State of New Mexico
Santa Fe, New Mexico

United States Geological Survey
Post Office Box 8721
Roswell, New Mexico

C. 1111

INTEREST OWNERS LIST
WEST DOLLARHIDE DEVONIAN UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNERS

Mr. Fred J. Brotherton 185 East Palisade Avenue Englewood, New Jersey	Mr. E. L. Lockwood 750 West Fifth Street Fort Worth, Texas
Mr. Leslie B. Gardner 2216 Gorman Waco, Texas	Mr. J. C. Maxwell 2017 Continental National Bank Building Fort Worth 2, Texas
Gulf Oil Corporation Post Office Box 1938 Roswell, New Mexico	Mr. George A. Meihaus, Jr. c/o Texas Industries, Inc. Post Office Box 400 Arlington, Texas
Mr. W. E. Irvin 3700 Bellaire Drive North Fort Worth, Texas	Pan American Petroleum Corporation Post Office Box 1410 Fort Worth, Texas Atten: Mr. Bruce A. Landis, Jr.
Mr. Joseph D. Kennedy 2017 Continental National Bank Building Fort Worth 2, Texas	Skelly Oil Company Post Office Box 1650 Tulsa, Oklahoma Atten: Mr. Robert G. Hiltz
Messrs. Joe D. Kennedy, Y. Q. McCammon and George Thompson, Jr., Trustees of Marilyn Maxwell Trust 2017 Continental National Bank Building Fort Worth 2, Texas	Mr. James H. Snowden 750 West Fifth Street Fort Worth, Texas
Mr. Gus Layton 1505 Oil & Gas Building 309 West Seventh Street Fort Worth, Texas	Texaco Inc. Post Office Box 3109 Midland, Texas

OVERRIDING ROYALTY INTEREST OWNERS

Selma E. Andrews c/o Trust Department Albuquerque National Bank Albuquerque, New Mexico	The Fort Worth National Bank Trustee for Roy S. Magruder Post Office Box 2050 Fort Worth, Texas
Albuquerque National Bank Testamentary Trustee of Frank A. Andrews, Deceased Albuquerque, New Mexico	Roger B. Owings Fair Building Fort Worth, Texas
M. W. Coll Post Office Box 919 Roswell, New Mexico	T. A. Pedley, Jr. 4025 East 22nd Avenue Denver 7, Colorado
L. E. Hults Sinclair Building Fort Worth, Texas	Gracean M. Pedley 115 McGoodwin Avenue Princeton, Kentucky
Helen Magruder Kolliker 3812 Hillcrest El Paso, Texas	Neville G. Penrose Fair Building Fort Worth, Texas
The First National Bank of Denver Successor Trustee Under the Last Will and Testament of Charles T. Lupton, Deceased c/o Trust Department Denver 17, Colorado	Skelly Oil Company Post Office Box 1801 Dallas 21, Texas
John M. Loffland, Jr. 233 Rowan Building 6000 Camp Bowie Fort Worth, Texas	The First National Bank of Denver Successor Trustee Under the Will of Josephine M. Smith, Deceased c/o Trust Department Denver 17, Colorado
	Effie E. Valentine c/o The First National Bank of Denver Denver, Colorado Atten: Trust Department

ROYALTY INTEREST OWNERS

Commissioner of Public Lands Of The State of New Mexico Santa Fe, New Mexico	United States Geological Survey Post Office Box 8721 Roswell, New Mexico
--	--

Gulf Oil Corporation

26 KERMIT PRODUCTION AREA

J. L. PIKE
AREA PRODUCTION MANAGER

June 19, 1963

P. O. Box 980
Kermit, Texas

Secretary Director
New Mexico Oil Conservation Commission
P.O. Box 871
Santa Fe, N w Mexico

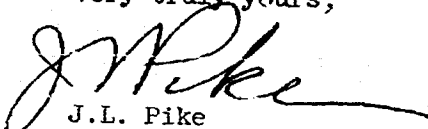
Re: Case No. 2557
Order No. R2248

Dear Sir:

The Gulf Oil Corporation respectfully request an amendment to Order No. R2248, which approves the West Dollarhide Devonian Unit Agreement and authorizes a waterflood project. The proposed water-injection well described on the Commission Order as- Harry Leonard (NCT-G) Well No. 1, located in Unit C, Section 33, Township 24 South, Range 38, East- does not correspond with exhibits presented at the hearing. The well should be described as- Harry Leonard (NCT-I) Well No. 1, located in Unit F, Section 33, Township 24 South, Range 38, East.

Please issue a corrected order changing the description of the well.

Very truly yours,


J.L. Pike

WWW:mlw
cc: OCC-Hobbs, N.M.
M.I. Taylor



BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2557
Order No. R-2248

APPLICATION OF GULF OIL CORPORATION
FOR APPROVAL OF A UNIT AGREEMENT AND
A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 10, 1962, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 4th day of June, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Gulf Oil Corporation, seeks approval of the West Dollarhide Devonian Unit Agreement, embracing 765 acres, more or less, of Federal and State lands in Townships 24 and 25 South, Range 38 East, NMPM, Lea County, New Mexico.

(3) That the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste.

(4) That the applicant further seeks permission to institute a waterflood project in the proposed West Dollarhide Devonian Unit Area by the injection of water into the Devonian formation through 9 wells located therein; applicant proposes to operate the waterflood project under the provisions of Rule 701.

(5) That the wells in the proposed waterflood project have reached an advanced stage of depletion and should be classified as "stripper" wells.

-2-

CASE No. 2557
Order No. R-2248

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the West Dollarhide Devonian Unit Agreement is hereby approved.

PROVIDED HOWEVER, That notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the New Mexico Oil Conservation Commission by law relative to the supervision and control of operations for exploration and development of any lands committed to said West Dollarhide Devonian Unit Agreement, or relative to the production of oil and gas therefrom.

(2) That the unit area shall be:

TOWNSHIP 24 SOUTH, RANGE 38 EAST, NMDM
LEA COUNTY, NEW MEXICO

Section 32: SE/4 NE/4 and E/2 SE/4

Section 33: Lots 1, 2, 3 and 4, E/2 NW/4,
SW/4 NW/4, and SW/4

TOWNSHIP 25 SOUTH, RANGE 38 EAST, NMPM
LEA COUNTY, NEW MEXICO

Section 4: Lots 1 and 4, NW/4 and NW/4 SW/4

Section 5: N/2 NE/4 and NE/4 SE/4

containing 765 acres, more or less.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof. In the event of subsequent joinder by any party, the unit operator shall file with the Commission within 30 days after such action counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey, and shall terminate ipso facto upon the termination of said unit agreement. The last unit operator shall notify the Commission in writing of such termination.

(5) That Gulf Oil Corporation is hereby authorized to institute a waterflood project in the West Dollarhide Devonian Unit Area

-3-

CASE No. 2557
Order No. R-2248

by the injection of water into the Devonian formation through the following-described wells:

- ✓ Harry Leonard (NCT-G) Well No. 2, located in Unit D, Section 4, Township 25 South, Range 38 East;
- ✓ Harry Leonard (NCT-G) Well No. 5, located in Unit N, Section 33, Township 24 South, Range 38 East;
- ✓ Harry Leonard (NCT-G) Well No. 7, located in Unit L, Section 33, Township 24 South, Range 38 East;
- ✓ Harry Leonard (NCT-G) Well No. 9, located in Unit F, Section 4, Township 25 South, Range 38 East;
- ✓ Harry Leonard (NCT-G) Well No. 1, located in Unit C, Section 33, Township 24 South, Range 38 East;
- ✓ State Y Well No. 1, located in Unit H, Section 32, Township 24 South, Range 38 East;
- ✓ Mexico J Well No. 24, located in Unit P, Section 32, Township 24 South, Range 38 East;
- ✓ Mexico L Well No. 22, located in Unit B, Section 5, Township 25 South, Range 38 East; and
- ✓ Penny Federal Well No. 2, located in Unit L, Section 4, Township 25 South, Range 38 East.

*Should be
Harry Leonard
(NCT-G) #1
Unit F*

(6) That the subject waterflood project shall be governed by the provisions of Rule 701.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

S E A L

E. S. WALKER, Member

esr/

A. L. PORTER, Jr., Member & Secretary

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 22 May 62

CASE 2557

Hearing Date 9 am 5/10/62

My recommendations for an order in the above numbered cases are as follows:

Enter an order approving Guley's
West Dallamhide Unit Area as requested and
comprising the following

T 24 S, R 38 E, NM PM

Sec 32: ^{Lee Co NM} SE/4 NE/4 and E/2 SE/4

Sec 33: Lots 1, 2, 3 & 4, ~~SW/4~~ E/2 NW/4, SW/4 NW/4, and SW/4

T 25 S, R 38 E, NM PM

Sec 4: ^{Lee Co NM} Lots 1 & 4, ~~SW/4~~ NW/4 and NW/4 SW/4

Sec 5: N/2 NE/4 and NE/4 SE/4

Also approve Guley's proposed water flood
in the Devonian formation of the Dallamhide
Devonian Pool, subject to Rule 701 in
all respects.

Injection will be through the following
wells:

Well	No	2	Unit	D	Sec	4	T	R
Harry Leonard (NCT-G)	"	5	"	N	"	33	"	245-38E
"	"	7	"	L	"	33	"	"
"	"	9	"	F	"	4	"	265-38E
"	"	1	"	C	"	33	"	245-38E
State Y	"	1	"	H	"	32	"	"
Mexico J	"	24	"	P	"	32	"	"
Mexico L	"	22	"	B	"	5	"	265-38E
Perry Federal	"	2	Staff	DL	"	4	"	"

Lawrence

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 10, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation for a unit agreement and a secondary recovery project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Dallarhide Devonian Unit Agreement embracing 765.25 acres, more or less, of Federal and State lands in Townships 24 and 25 South, Range 38 East, Lea County, New Mexico. Applicant further seeks permission to institute a secondary recovery project in the proposed West Dallarhide Devonian Unit Area by injection of water into the Devonian formation into certain wells located in said unit.

Case 2557

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The next case will be 2557, application of Gulf Oil Corporation for a unit agreement and a secondary recovery project, Lea County, New Mexico.

MR. KASTLER: Bill Kastler from Roswell, appearing on behalf of Gulf, and our witness is Mr. Vance M. Hendricks.



Will you please stand and be sworn?

(Witness sworn.)

VANCE HENDRICKS

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Please state your name, position and employer.

A Vance Hendricks, Petroleum Engineer for the Gulf Oil Corporation, Roswell, New Mexico.

Q Have you testified before the New Mexico Oil Conservation Commission previously?

A Yes, sir, I have.

MR. KASTLER: Are the witness's qualifications satisfactory, Mr. Nutter?

MR. NUTTER: Yes, sir, they are.

Q Are you familiar with the requests that are being made in connection with this case regarding the West Dollarhide Devonian Unit?

A Yes, sir.

Q Will you please tell us why the properties encompassed by the proposed West Dollarhide Devonian Unit are being unitized and as to the events that prompted the Unit's formation?

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



A Unitization of the New Mexico properties producing in the Dollarhide Devonian Pool and owned by Pan American Petroleum Corporation, Skelly Oil Company, Texaco Inc. and Gulf was prompted by the initiation of water injection into the Devonian formation in September, 1959 on offsetting leases in the Texas portion of the Dollarhide Devonian reservoir. The commencement of water injection followed the successful unitization of the North Dollarhide and Dollarhide Units by Cities Service and The Pure Oil Company, respectively. At the present time, all 136 Devonian wells in the Texas portion of the Devonian reservoir are under unitized operation and 26 of these wells have been converted to water injection wells. In view of these offsetting activities, the New Mexico operators met and through joint effort have formed the West Dollarhide Devonian Unit.

Q Have you prepared or caused to have been prepared a plat showing the boundary of the proposed West Dollarhide Devonian Unit?

A Yes, sir, I have. It is included in Exhibit No. 1 which we would like to submit.

(Whereupon, Gulf's Exhibit No. 1 was marked for identification.)

MR. NUTTER: Has this brochure been marked Gulf's Exhibit No. 1?

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



A Yes, it has.

Q Refer now to Figure 1.

A Figure No. 1 of Exhibit No. 1 is a plat of a portion of Southern Lee County relevant to this hearing. The plat shows all wells that have been drilled in the immediate area of the proposed West Dollarhide Devonian Unit. The proposed Unit boundary has been outlined in yellow. As can be seen, the Dollarhide Field is composed of the Queen, Drinkard, Fusselman, Devonian and Ellenburger reservoirs.

Q Do you have a plat showing only the Dollarhide Devonian Pool wells that are to be unitized?

A Yes. Figure No. 2 is an enlarged plat of the proposed unit and shows only the Devonian wells that are to be unitized. The plat also shows that the West Dollarhide Devonian Unit, when approved, will be contiguous with two existing waterflood units located in Andrews County, Texas. The northernmost of these is the North Dollarhide Unit operated by Cities Service Producing Company. The larger unit, which extends considerably further to the south than is shown on the plat, is operated by Pure and is designated as a Dollarhide Unit. Further explanation of Figure No. 2 will be presented later in the testimony.

Q What are the reservoir and fluid characteristics of the reservoir with particular reference to reservoir name, composition

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 326-1162

ALBUQUERQUE, N. M.
PHONE 243-6691

of producing formation, geological structure, type of producing method, and the original reservoir pressure?

A The reservoir to be water flooded is the Devonian age formation which is comprised of two producing intervals. The Upper Devonian pay is a white to brown, fine to coarse crystalline limestone, having scattered intercrystalline porosity. The Lower Devonian section is a white to light buff weathered chert, having intergranular and solution type porosities. If you will refer to Figure No. 4 of Exhibit No. 1 you'll see a microlog obtained in Gulf's Leonard (NCT-G) No. 6, Unit C Sec. 4, Township 25 South, Range 38 East, which shows the upper and lower Devonian pay development.

The subsurface structure is a northwest-southeast trending anticline which dips about 450 miles on the north and east flanks --

Q 450 miles?

A 450 feet per mile on the north and east flanks of the anticline and approximately 1500 feet per mile on the south and west flanks.

The Devonian reservoir has and is producing by a solution gas drive mechanism. The original reservoir pressure was 3300 pounds.

Q Please describe the proposed project area, giving the number of productive acres in the Unit and the reservoir

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



characteristics.

A The proposed waterflood unit will be comprised of 765 acres, 671 acres of which are State lands and 94 acres are Federal lands. There is no privately owned land in the Unit. Pan American, Skelly, Texaco and Gulf are the only operators of leases that will be unitized. The proposed Unit will include all wells which are producing in the Dollarhide Devonian Pool of Lea County, New Mexico, with the exception of Elliott Federal No. 1, located -- you might turn to Exhibit No. 1, Figure No. 1, the Elliott well is located in Unit H of Section 31, Township 24 South, Range 36 East and is approximately one mile from the Unit boundary.

Q Would you describe Unit H as being within the southeast of the northeast quarter of Section 31?

A That is correct.

Q Thank you. Go on.

A The average depth to the top of the Devonian pay is 7800 feet. The Upper Devonian gross thickness is about 70 feet, while the Lower Devonian has about 40 feet of gross pay. The respective average effective thickness for the Upper and Lower intervals is 15 and 30 feet. The Upper Devonian has an average effective porosity of 8.1 per cent with an average permeability of 3 millidarcys. Similar data for the Lower Devonian are 17.2 per cent and 16 millidarcys. The Devonian crude has an API gravity of

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



about 36.5 degrees.

Q Do you have exhibits which show primary production history and present status of the Dollarkhide Devonian Pool?

A Yes. I invite you to look at Figure No. 3. Figure No. 3 is a family of curves showing the performance of the pool since the first well was completed in April, 1952. The uppermost line is nothing more than a well count showing that most of the Unit's wells were drilled early in the life of the pool. At present, there are 17 producing Devonian wells in the area to be unitized. The next curve is a plot of the average reservoir pressure taken at a datum of 4700 feet subsea. The most recent pressure taken in May, 1961 is 718 pounds per square inch and represents the average pressure recorded in 6 flowing wells.

On the far right side of the figure and above bottom hole pressure curve is a plot of the pool's producing gas-oil ratio for the last three years.

The monthly oil production has been plotted for all the wells in the proposed Unit. This is tabulated in Table No. 1. The curve indicates that the oil production has steadily decreased for the past several years. Current monthly oil production for all the wells to be unitized was 6,267 barrels during February of this year. This monthly figure represents an average daily oil rate of 13.2 barrels per day per well. The reservoir is producing

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

in the late stage of depletion.

MR. NUTTER: Mr. Hendricks, the Elliott well is not included in this curve here?

A That is correct. Those are just the wells to be unitized, yes, sir.

MR. NUTTER: Thank you.

A The cumulative oil production as of March 1, 1962 for all wells in the proposed unit was 2,565,299 barrels. The lowermost plot is that of monthly water production. As can be seen, water production has averaged about 300 barrels per month. The February water production was 183 barrels per month or about 3 barrels per well per day.

Q What will be the source of injection water, type of water to be used, pattern and spacing anticipated, and other relevant matters regarding injection?

A Again, I invite you to look at Figure No. 2. Water to be injected will be obtained from source wells completed in the Santa Rosa formation on State Water Easements No. W-266 and W-267, located in Sections 32 and 33, Township 24 South, Range 38 East.

Q Do those two water leases encompass all of 32 and 33 and the north half of 5?

A That is correct.

Q Thank you.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6631



A Based on capacity tests in nearby Santa Rosa wells, it is believed that 4 and possibly 5 source wells will be needed to provide the estimated 9,000 barrels of water that will be used.

The Santa Rosa water is believed to be brackish so we plan to adequately protect all exposed equipment so that the water system will be as corrosion proof as possible. Based on our knowledge of the Santa Rosa water, no treatment facilities are anticipated; however, if a water analysis subsequently indicates that treatment is needed, appropriate action will be taken at that time.

Referring again to Figure No. 2, it can be seen that the proposed injection pattern is that of an 80-acre five-spot. The proposed New Mexico pattern is merely a continuation of the existing pattern water flood offsetting the proposed Unit to the east. The wells circled in red are existing water injection wells while those circled in yellow are the proposed water injection wells in the West Dollarhide Devonian Unit.

An initial wellhead injection pressure of approximately 500 pounds per square inch is expected while the maximum anticipated will be in the neighborhood of 1500 to 2000 pounds per square inch. The planned rate of water injection is 1,000 barrels per well per day per injection well. Since the Unit consists of only fully developed 40-acre tracts, no further drilling is planned.

Q Do you have an exhibit showing the casing program of the

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6651



injection wells and what conclusions can you make from it?

A Yes, I have. Table No. 2 is the last two pages in the brochure and is a tabulation of the casing program existing in the 9 proposed injection wells. The tabulation shows the size, setting depth, amount of cement used, and the indicated cement top for all casing run.

Based on these data, it appears that all these wells are satisfactory cased and cemented to adequately protect the other producing horizons and shallow fresh water zones.

Q What results do you expect from the project?

A It is expected that the proposed water flood project will effectively result in increased oil recovery from the Devonian Age formation. It is believed that the proposed water flood will recover from 75 to 100 per cent of the reservoir's primary ultimate recovery. In terms of barrels, the increased recovery due to secondary recovery measures should be in the magnitude of 2 to 2.7 million barrels of oil.

Q What are the reasons for the project and what recommendations does Gulf have?

A The Dollarhide Devonian Pool produces by a solution gas drive mechanism and as a result a considerable quantity of oil will remain unrecovered at the end of primary depletion unless some type of fluid injection project is inaugurated to increase

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. J.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



the ultimate oil recovery.

Production from the wells in the proposed Unit Area has declined to an average daily oil production of about 13 barrels per well. At the existing rate of decline these wells have only a few years remaining to produce prior to depletion and abandonment. Therefore, in order to prolong the production life of these wells and to increase the ultimate recovery, some type of secondary recovery project should be inaugurated. The available data indicate that the Devonian formation underlying the proposed West Dollarhide Devonian Unit is susceptible to water flooding operations and that the proposed plan should increase ultimate recovery.

In view of the above considerations, Gulf, in association with Pan American, Skelly and Texaco, has concluded that the best course of action is the unitization of the 18 wells completed in the Dollarhide Devonian Pool as shown on Figure 2, so that a joint water flood project can be undertaken. In so doing, the entire Dollarhide Devonian Pool of New Mexico will be water flooded in conjunction with the full scale water flooding of the Texas properties producing from the same reservoir. Therefore, Gulf Oil Corporation, as the West Dollarhide Devonian Unit Operator, respectfully requests that the Oil Conservation Commission approve the installation of the proposed waterflood facilities.

Q Mr. Hendricks, I want to refer to the Unit Agreement,

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6601



and it's my understanding that at the time the application was made three copies of the Unit Agreement were sent to the Commission. What is the basic form of this Unit Agreement?

A The Unit Agreement is that of a standard federal unit that is used widely in southeastern New Mexico.

Q Is it the same type of Unit Agreement that is used in other secondary recovery water flood projects?

A Yes, sir, that is my opinion, my understanding.

Q Has this Unit Agreement been accepted by the operators?

A It has.

Q Have the operators also accepted a joint operating agreement?

A They have, yes.

Q Do you have a list for introduction here as Exhibit No. 2 which shows the names and addresses of all operators and all other interested parties?

A Yes, we do, and it's Exhibit No. 2.

(Whereupon, Gulf's Exhibit No. 2 was marked for identification.)

Q What does the Unit Agreement provide as to the expansion of the Unit?

A There is a provision, Section 4 of the Unit Agreement, which provides for expansion. Any party that is not in the Unit

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 213-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

at the present time may request being taken into the Unit by contacting the working interest owners, and more specifically, the Unit operator; at which time the Unit operator will circulate a notice to all the working interest owners setting out the basis for the admission, the Unit participation to be assigned, and other pertinent data, and if at least three working interest owners having an aggregate of 80% of Unit participation have agreed that such tract should come in, it will be accepted, a notice will then be prepared of the proposed expansion, and it will be delivered to the working interest owners, the Land Commissioner, and the Oil Conservation Commission.

Q Mr. Hendricks, in the event that there were any expansion, would Gulf, as the Unit operator, also comply with State Oil Conservation Commission rules and regulations?

A Certainly.

Q And particularly Rule 501, I believe it is?

A 701.

Q 701.

A Yes, we would.

Q Isn't it a matter of fact that all the lands contiguous to this Unit area are owned by parties who are otherwise members of the Unit?

A This is a fact.

Q So that the enlargement or expansion of the Unit would not necessarily encompass an expansion of any additional parties?

A That is correct.

Q To your knowledge has Gulf solicited a waiver or consent to this hearing from Mr. Frank Elliott, who owns a Devonian oil producing well which is not presently encompassed in this Unit?

A We did so solicit and, as I understand, it has been directed to the Oil Conservation Commission.

Q Mr. Hendricks, what might you say about the formula that has been adopted, providing for the tract participation?

A Yes. That is provided in the Unit Agreement. There is a split formula that has been adopted by all the working interest owners. There is a primary phase of operation and a secondary phase. The primary phase participation is based on 50% of a ratio of the primary reserves for each tract, all the tracts.

Q Is a tract a producing unit?

A That is correct. The other half of the primary formula is 50% of the ratio of the rate of production of the tract to the total production for the entire unitized area for the period from July 1st, 1960 to June 1st, 1961. The secondary phase participation is that of dedicated to 100% the ultimate primary recovery for each tract as determined by the Engineering Committee and adopted by the working interest owners.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

DEARNLEY-MEYER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 385-1182

ALBUQUERQUE, N. M.
PHONE 243-6697

Q In your opinion, does this formula provide for the protection of correlative rights?

A It does, yes, sir.

Q Mr. Hendricks, has the State Land Commissioner's office indicated that it has examined this Unit Agreement and has preliminarily, at least, approved it?

A Yes, that's true.

Q And the other royalty owner you testified is the United States?

A Yes.

Q Has the United States Geological Survey rendered its preliminary approval?

A They have.

Q Pending final approval upon submission of a fully executed copy of the Unit Agreement?

A That's correct.

Q There are no fee owners, royalty owners, is that correct?

A There are none.

Q Of the overriding royalty owners, how many have accepted?

A All but about three, and that is a very, very small interest.

Q Have any of the overriding royalty operators or owners written back and appeared antagonistic to the Unit?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M. PHONE 243 1351
FAC. WASHINGTON, D. C. PHONE 325-1152

A They have not.

Q Do you expect to get them all in a matter of time?

A Yes.

Q What about the operators owning oil and gas rights in the Unit? How many of them have approved and accepted the Unit?

A One hundred percent of the working interest owners have signed the Unit Agreement.

Q What is your proposed project area? Do you propose a pilot water flood?

A No. We propose, as outlined in our previous testimony, the area outlined in yellow on Figure No. 2 of Exhibit 1. It is described fully on page 3 of the Unit Agreement.

Q How many injection wells do you intend to start off with?

A Nine injection wells.

Q Nine injection wells. Therefore, you intend to have to transfer the allowables covering those nine wells?

A Yes.

Q How long do you calculate the period of fill up will be before you anticipate getting a kick?

A It will be in the vicinity of two years.

Q Was Exhibit No. 1 and all of the figures and tables contained therein prepared by you or at your direction and supervision?



A They were.

Q And Exhibit No. 2 contains a list which is a mailing list and check list and that is correct to the best of your information, knowledge and belief?

A That is correct.

MR. KASTLER: I would like to move for the admission of Exhibits 1 and 2 in evidence in this case.

MR. NUTTER: Gulf's Exhibits 1 and 2 will be admitted in evidence.

(Whereupon, Gulf's Exhibits Nos. 1 and 2 were admitted in evidence.)

MR. NUTTER: Does anyone have any questions of Mr. Hendricks?

MR. MORRIS: Yes.

MR. NUTTER: Mr. Morris.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Hendricks, could you tell me briefly what is transpiring across the line in Texas in the flood going on over there?

A Yes, to the best of my knowledge, as you see, there are two separate units, one, the North Dollarhide Unit and the Dollarhide Unit is operated by Pure. They have converted 22 wells, I speak of Pure, has converted 22 wells, and Cities Service has converted four.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FABRINGTON, N. M.
PHONE 315-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



MR. KASTLER: By converted --

A Producing Devonian wells to water injection wells. The four wells in the North Dollarhide Unit were placed on in September of 1959, and the northernmost, that being the Dollarhide Unit Wells No. Tract 991, Tract 850, Tract 746, Tract 534 and Tract 11, were placed on injection at the same time and continued under that pilot operation for a period of about a year and a half. The remaining wells in the Dollarhide Unit were put on water injection service approximately eight months ago.

Q With respect to the injection wells that are closest to the New Mexico line, are they at the present time injecting water into those wells?

A They are injecting water in the three wells adjacent to the state line, yes.

Q What rates of injection are they using in those wells?

A About 900 barrels per well per day.

Q So that would be fairly comparable to the thousand barrels a day that you estimate for the wells in New Mexico?

A Yes.

Q Do you know approximately the rates of production of oil from the wells in Texas immediately adjacent to the New Mexico line?

A The reports for production for wells in those units are

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6631



published in a C. D. Lockwood report in Texas, and they cumulate all those wells and just give one figure for the entire unit, so I can not specifically answer by well. However, the Texas Railroad Commission proration schedule gives us some indication as to the allowables that these wells have, and in the Cities Service Unit, that is the North Dollardhide Unit, the allowables, I will give you some as representative, if you like.

Q Yes.

A 20 barrels, 28 barrels, 63 barrels, 40 barrels, 25, others 29, 17, 38, 70.

Q Down on the Pure acreage do you have the figure for that well 106 or 110?

A Yes, I believe I do. That's Tract 10-106. That has an allowable of 20 barrels. The No. 12-110 has 17 barrels. This Tract 9-116, which would be one well removed from the state line has a 3-barrel allowable.

Q That's a per day allowable?

A That is a scheduled day allowable.

Q Right. Do you feel that the rates of production of the wells on the New Mexico side of the line, and immediately adjacent to the Texas line, will be sufficiently comparable to the rates of production on the Texas side so that the New Mexico Unit will be protecting its own correlative rights, so-to-speak?

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1192

ALBUQUERQUE, N. M.
PHONE 243-6691

A At the present time or in the immediate future?

Q Both, if you will.

A At the present time, yes. I think that further study is going to have to be made, especially in the area of when a response occurs, so I would rather not speculate as to what might be the case in the future.

Q Have any of the wells on the New Mexico side received any response from the water injection on the Texas side?

A There are no known responses in the New Mexico wells, and the only response that has been shown in the Texas wells are very slight increases in bottom hole pressure. There has been no increase in production.

Q How long have they been injecting water into the injection wells immediately adjacent to the line?

A To my knowledge, it's been about eight months.

Q So you would estimate another year before you would get a fill up?

A At least that, yes.

MR. MORRIS: I believe that's all I have, thank you.

BY MR. NUTTER:

Q What is the total production in this unit area through 1960?

A Through 1960?



Q Through '60. I believe your participation formula is based on primary production through '60.

A Yes.

Q And then remaining primary of January 1st, 1961?

A The cumulative oil production for all the wells in the proposed unit as of 1-1-61, 2,458,809 barrels.

Q I believe your Unit Agreement participation formula determines that there are 276,576 barrels remaining of primary production?

A After that date 1-1-61.

Q Yes, sir. How much has been produced since 1-1-61, do you have any idea?

A May I tell you how much is remaining?

Q Yes.

A 170,000.

Q So, the difference between 170,000 and 276,000 was what was produced in early '61 and the early part of '62?

A Yes, sir.

Q How was the 276,000 barrels of remaining primary arrived at, is that a, was that determined from production decline curves for individual wells?

A It was determined from production decline curves for each operator, extrapolated on log rate versus time curve by the Engineering Committee.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6601



Q That was a decline curve for each operator rather than for each lease or each well?

A That is correct.

Q I don't know if you gave any estimate or not as to the expected recovery as the result of water injection.

A Yes, sir. We are anticipating 75 to 100% of the Unit primary ultimate, which in terms of barrels would be between 2 and 2.7 million barrels.

Q What was the initial bottom hole pressure, Mr. Hendricks?

A In the Texas portion of the reservoir it was 3300 pounds. The initial pressure in the New Mexico completion was 2,000 pounds.

Q And you stated that you had 15 feet of pay in the upper part of the Devonian and 30 feet of pay in the lower part?

A Yes, sir, these are effective figures.

Q Does each well have perforations or open hole completions in each of these two pays?

A No, some of them are completed in open hole both upper and lower sections, some are completed in perforations upper and lower, and some are completed in just the upper.

Q So all the wells don't have both zones?

A That is correct.

Q How about the injection wells, do they all have both zones open?

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691



A All but one.

Q Is this one well that doesn't have injection perforations in both zones located in a place where it's going to be necessary, is it located in such a position that you can efficiently flood any offsetting well that does have production in both zones?

A Yes. We feel that it is. It's the Penny Federal No. 2, which is located in the Northwest of the Southwest of Section 4.

Q That injection well has only one zone, is that correct?

A Perforated, yes, sir.

Q How about the well to the west of it, does it have both zones?

A It has the upper and lower both perforated, yes, sir.

Q And which does the Penny No. 2 have?

A It has the upper perforations only.

Q So you wouldn't be flooding the lower in the Penny Federal No. 1, will you?

A It is our intent to perforate the lower section and flood the lower section.

Q So that the No. 2 well will have perforations of both sections?

A Yes, it will have.

Q What was the pilot area again in the Dollarhide Unit?

A Yes. That is shown on Figure 2. It is the row of wells



DEARNLEY-MEIER REPORTING SERVICE, Inc.

PERMISSION, N. M.
PHONE 345-1102

ALBUQUERQUE, N. M.
PHONE 243-0511

page 24

in the North Dollarhide Unit, there's just the one row. That it's the northernmost row, or the offsetting row of the Dollarhide Unit. The top two rows where those were placed on injection in 1959.

Q You mean the four wells in the North Dollarhide Unit and the uppermost five wells in the Dollarhide Unit?

A Let me correct that. The uppermost four and the second row starting with No. 50, the state line well was not on injection until approximately eight months ago. In other words, it would be Well No. 50, 46, 34 and 1 in the Dollarhide Unit.

Q And then in the North Dollarhide, the number?

A 5, 1, 1 and 2. They have different tract numbers.

Q And that was the original pilot area?

A Yes, sir.

Q Have wells directly offsetting them been the ones that had the increase in pressure?

A Very slight.

Q But no response as far as production is concerned?

A No response, and the GOR behavior has been erratic, as it was reported to me. The Pure representative stated in a telephone conversation that they are anticipating a response sometime in the summer months.

Q Has the Commissioner of Public Lands for the State of



New Mexico given tentative approval to this Unit Agreement, including the participation formula?

A Yes, sir, it has.

Q One other thing, I missed the permeability in the upper section of the pay.

A Yes. Three millidarcys in the upper.

MR. NUTTER: Any further questions of Mr. Hendricks?

Mr. Gray.

MR. GRAY: Mr. Examiner, I would like to ask Mr. Hendricks about Table 2, injection well program.

BY MR. GRAY:

Q Will the Santa Rosa be injected down the five and a half inch production string, or you mentioned over on page 2 some corrosion-proof injection system?

A Yes, it is our intent to use plastic coated tubing inside the oil string and then inject below a packer into the Devonian.

Q Do you have a detail showing approximately where the packer would be set, or will it just be at the Devonian?

A No, it will be set between the upper section and the lower section, as it is our intent to water flood the lower section and meeting what is being done in Texas, and then if that proves to be satisfactory and response occurs, then we will consider

water flooding the Upper Devonian section.

MR. NUTTER: So you wouldn't be flooding both sections to start with?

A No.

MR. NUTTER: Now, this estimate of secondary recovery, is that for both sections?

A That's for both sections, yes, sir.

MR. NUTTER: But at the present time the injection is in the lower bench in Texas?

A Yes.

MR. NUTTER: And you are going to try that first before trying the upper bench?

A Yes, and cooperate with Pure.

MR. NUTTER: Of course, this primary is both benches?

A Yes.

MR. NUTTER: I am sorry, Mr. Gray.

MR. GRAY: I think that pretty well covers it.

MR. NUTTER: At any rate, for the time being, all injection will be down plastic coated tubing under a packer?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Hendricks?

He may be excused.

(Witness excused.)

DEARNLEY-MEYER REPORTING SERVICE, Inc.

PERMISSION, N. Y.
PHONE 325-1102

ALBUQUERQUE, N. M.
PHONE 243-6651



MR. NUTTER: Do you have anything further, Mr. Kastler?

MR. KASTLER: I was to mention some concurrences, but we only have copies of them. I believe the Commission has received the regular ones, so I yield.

MR. MORRIS: Mr. Examiner, the Commission has received concurrences from Skelly Oil Company and Elliott.

MR. NUTTER: Mr. Buell.

MR. BUELL: May it please the Examiner, Pan American has a working interest over in this Unit, and as such, we have been associated closely with Gulf in the developing of this program. In our opinion it is a significant conservation effort and we urge the Commission to approve, one, the Unit Agreement, as well as the proposed secondary recovery program.

MR. NUTTER: Anything else? We will take the case under advisement. The hearing is adjourned.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. H.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6697



STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 12th day of June, 1962.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2557, heard by me on 5/10, 1962.

James, Examiner
New Mexico Oil Conservation Commission

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

FARMINGTON, N. M.
PHONE 325-1182

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico

Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

STATE ENGINEER
A. L. PORTER, JR.
SECRETARY - DIRECTOR

Mr. J. L. Pike
Gulf Oil Corporation
Post Office Box 980
Kernit, Texas

Re: Case No. 2557
Order No. R-2248-A
Applicant:
Gulf Oil Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

lr/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Astec OCC

OTHER Mr. M. I. Taylor

DATA FOR
PROPOSED WEST DOLLARHIDE DEVONIAN UNIT WATERFLOOD PROJECT
DOLLARHIDE DEVONIAN POOL
LEA COUNTY, NEW MEXICO

OIL CONSERVATION COMMISSION HEARING

MAY 10, 1962

CASE NUMBER 2557

GULF OIL CORPORATION
ROSWELL DISTRICT

WATERFLOOD DATA FOR HEARING BEFORE
OIL CONSERVATION COMMISSION OF NEW MEXICO

Operator Gulf Oil Corporation Date May 10, 1962
Project West Dollarhide Devonian Unit Waterflood
Pool Dollarhide Devonian County Lea
Reservoir Devonian
Other Operators Injecting into this Reservoir (Texas Portion) _____
The Pure Oil Company and Cities Service Producing Company

I. RESERVOIR AND FLUID CHARACTERISTICS

A. Information on Reservoir

1. Name of Reservoir Devonian
2. Composition Upper Devonian: White to brown fine to coarse crystalline limestone with scattered lenses of intercrystalline porosity - Lower Devonian: White to light buff weathered chert having inter-granular and solution type porosities.
3. Structure Northwest-southeast trending anticline which dips about 450 feet per mile on the north and east flanks and approximately 1500 feet per mile on the south and west flanks.
4. Type Drive During Depletion Solution gas drive
5. Original Reservoir Pressure 3300 psig

B. Information on Proposed Project Area

1. Number of Productive Acres In Project Area to be Flooded _____
Unitized area is 765 acres as shown on the project plat, Figure No. 1.
2. Average Depth to Top of Pay 7800 feet
3. Estimated Average Gross Thickness Upper: 70 feet - Lower: 40 feet.
4. Estimated Average Effective Thickness Upper: 15 feet - Lower: 30 feet.

5. Estimated Average Effective Porosity Upper: 8.1% - Lower: 17.2%
6. Average Horizontal Permeability Upper: 3 mds. - Lower: 16 mds.
Range 0-48 mds.
7. Gravity of Oil About 36.5° API

II. PRIMARY PRODUCTION HISTORY AND PRESENT STATUS OF PROJECT AREA

1. Date First Well Completed April 9, 1952
2. Oil and Water Production History by Months Since Date of First Well Completion to Present Time See Table I and Production Performance Curves
3. Stage of Depletion of Project Area Late
4. Number of Wells in Project Area 18, nine of which will be converted to water injection.
5. Average Daily Oil Production Per Well at Present Time 13.2 barrels
6. Cumulative Oil Production as of March 1, 1962 from Area to be Flooded 2,565,299 barrels

III. INJECTION

1. Source of Injected Water Water to be injected will be obtained from source wells to be completed in the Santa Rosa formation on State water easements in Sections 32 and 33, T-24-S, R-38-E. Based on capacity tests in nearby Santa Rosa wells, it is believed that four or possibly five source wells will be needed to provide the estimated 2,000 barrels of water that will be needed.
2. Type of Water Brackish - Injection system will be corrosion-proof.
3. Treatment of Injected Water None is anticipated; however, if water analysis after development indicates treatment is needed, appropriate action will be taken.
4. Pattern and Spacing 80-acre 5-spot patterns as shown on the area plat, Figure No. 2.

5. Initial Injection Pressure to be Used Approximately 500 psig.
Maximum pressure expected will be in the range of 1500 to 2000 psig.
6. Estimated Initial Per Well Rate of Injection 1000 barrels per day.
7. Additional Injection and Producing Wells to be Drilled None

IV. RESULTS EXPECTED

It is expected that the proposed waterflood project will effectively result in increased oil recovery from the Devonian Age formation. It is believed that the proposed waterflood will recover from 75 to 100 per cent of the reservoir's ultimate primary recovery. In terms of barrels, the increased recovery due to waterflooding due to secondary recovery measures should be in the magnitude of 2 to 2.7 million barrels of oil.

V. REASONS AND RECOMMENDATIONS

The Dollarhide Devonian Pool produces by a solution gas drive mechanism and as a result, a considerable quantity of oil will remain unrecovered at the end of primary depletion unless some type of fluid injection project is inaugurated to increase the ultimate oil recovery.

Production from the wells in the proposed unit area has declined to an average daily oil production of about 13 barrels per well per day. At the existing rate of decline, these wells have only a few years remaining to produce prior to depletion and abandonment. Therefore, in order to prolong the productive life of these wells and to increase the ultimate recovery, some type of secondary recovery project should be inaugurated. The available data indicate that the Devonian formation underlying the proposed West Dollarhide Devonian Unit is susceptible to waterflooding operations and that the proposed plan should increase ultimate recovery.

In view of the above considerations, Gulf, in association with Pan American, Skelly and Texaco, has concluded that the best course of action is the unitization of the 18 wells completed in the Dollarhide Devonian

Pool as shown on Figure 2 so that a joint waterflood project can be undertaken. In so doing, the entire Dollarhide Devonian Pool of New Mexico will be waterflooded in conjunction with the full-scale waterflooding of the Texas properties producing from the same reservoir. Therefore, Gulf Oil Corporation, as the West Dollarhide Devonian Unit Operator, respectfully requests that the Oil Conservation Commission approve the installation of the proposed waterflood facilities.

FIGURE NO. 4
GULF OIL CORPORATION
LEONARD (NCT-G) NO. 6
UNIT C SEC 4 T25S R38E
MICROLOG SURVEY

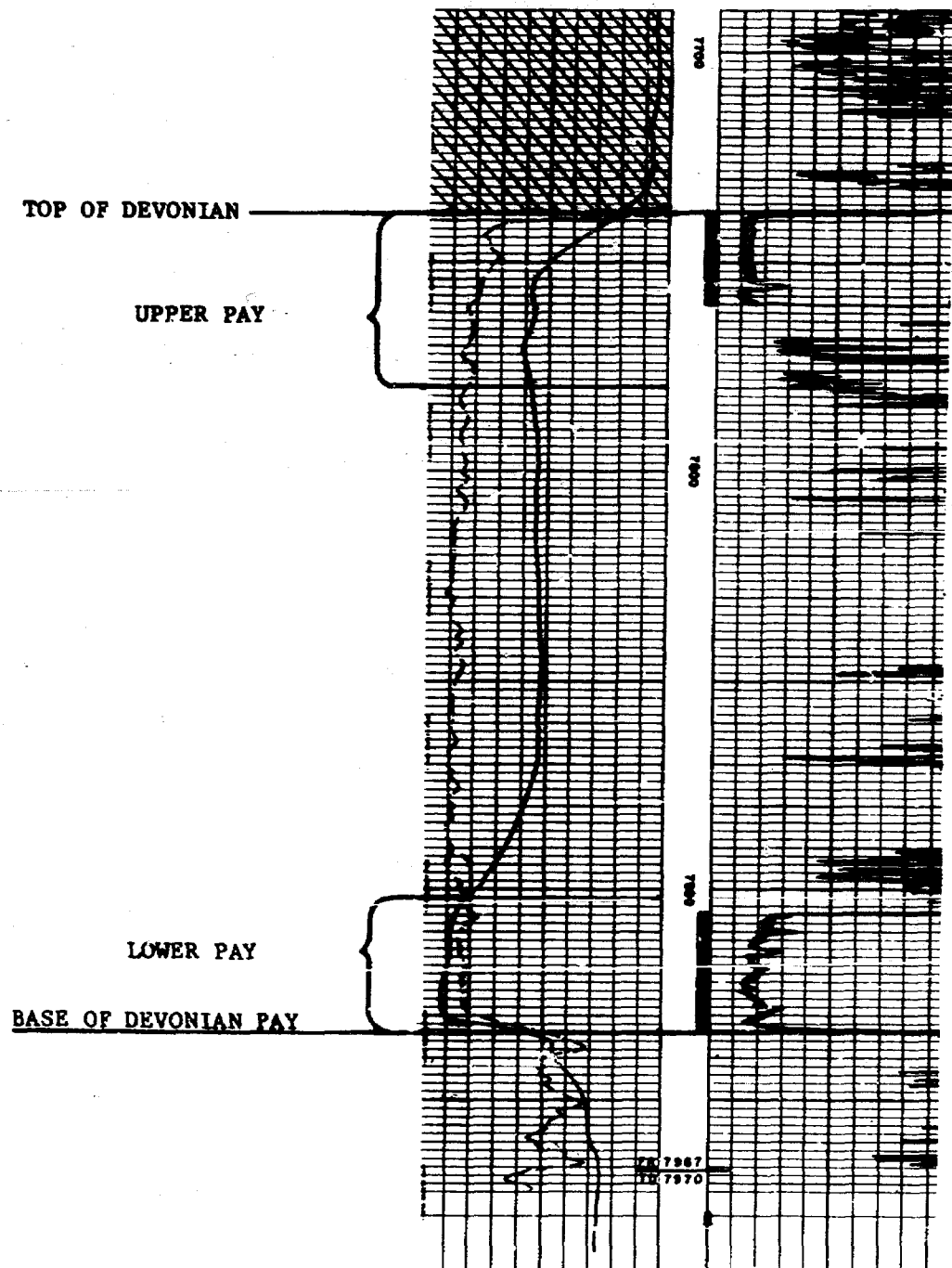


TABLE I
MONTHLY OIL PRODUCTION BY LEASES - PROPOSED WEST DOLLARHIDE DEVONIAN UNIT
DOLLARHIDE DEVONIAN POOL
LEA COUNTY, NEW MEXICO

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
<u>1952</u>										
Jan.										
Feb.										
Mar.										
Apr.									1,297	1,297
May									322	322
June			1,144	1,144					4,827	5,971
July			3,205	3,205	4,035				7,054	14,239
Aug.			2,860	2,860	3,790				8,031	14,681
Sept.		1,592	3,192	4,784	4,056				8,206	17,040
Oct.		4,025	3,976	8,001	4,257				8,557	20,815
Nov.	196	4,844	11,658	16,698	4,121				8,022	28,840
Dec.	3,115	3,678	12,367	19,160	4,348				7,480	30,988
Total	3,311	14,132	38,402	55,852	24,606				53,796	134,254
<u>1953</u>										
Jan.	3,759	3,758	18,165	25,682	4,024				6,620	36,326
Feb.	3,348	3,348	15,786	22,482	2,814				5,441	30,737
Mar.	3,682	3,683	20,331	27,696	3,080				5,467	36,243
Apr.	3,542	3,541	20,331	27,414	3,005				4,715	35,134
May	3,618	3,618	20,784	28,020	3,049				4,462	35,531
June	3,512	3,512	19,943	26,967	2,997				3,995	33,959
July	3,701	3,701	20,663	28,065	3,046				3,831	34,942
Aug.	3,638	3,636	20,812	28,086	3,086				3,626	34,798
Sept.	3,522	3,522	20,404	27,448	2,971				3,591	34,010
Oct.	3,666	3,666	21,019	28,351	3,123				3,550	35,029
Nov.	3,503	3,502	20,207	27,212	2,976				3,327	33,515
Dec.	3,705	3,704	21,059	28,468	3,131				3,366	34,965
Total	43,196	43,191	239,504	325,891	37,307				51,991	415,189

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1954										
Jan.	3,689	3,693	21,109	28,491	3,077				3,158	34,726
Feb.	3,334	3,334	18,997	25,665	2,801				2,834	31,300
Mar.	3,705	3,706	20,996	28,407	3,101				2,939	34,447
Apr.	3,508	3,509	18,747	25,764	2,992				2,640	31,396
May	3,660	3,659	19,447	26,766	3,116				2,612	32,494
June	3,523	3,522	17,402	24,447	1,112				2,449	28,008
July	3,608	3,608	17,982	25,198	2,341				2,410	29,949
Aug.	3,605	3,606	16,813	24,024	2,647				2,354	29,021
Sept.	3,509	3,508	16,465	23,482	2,536				2,218	28,216
Oct.	3,648	3,640	17,103	24,391	2,406				2,273	29,070
Nov.	3,550	3,546	16,614	23,710	2,358				2,019	28,087
Dec.	3,691	3,685	19,558	26,934	2,351				2,207	31,492
Total	43,030	43,016	221,233	307,279	30,838				30,113	368,224
1955										
Jan.	3,677	3,681	20,821	28,179	2,252				2,174	32,603
Feb.	3,306	3,306	20,551	27,163	1,994				1,898	31,055
Mar.	3,715	3,715	20,629	28,259	2,060		995	995	2,002	33,316
Apr.	3,246	1,709	18,101	23,056	1,958		2,430	2,430	1,851	29,295
May	3,172	1,742	18,550	23,464	1,948		2,115	2,115	1,741	29,265
June	3,149	1,692	17,988	22,829	1,827		1,578	1,578	1,684	27,918
July	3,293	1,754	18,841	23,888	1,853		1,233	1,233	1,687	28,661
Aug.	3,243	1,744	18,570	23,557	1,784		941	941	1,455	27,737
Sept.	3,171	1,698	17,984	22,853	1,680		2,839	2,839	1,622	28,994
Oct.	3,409	1,887	19,177	24,473	1,662		3,179	3,179	1,595	30,909
Nov.	3,345	1,872	18,205	23,422	1,664		3,087	3,087	1,603	29,776
Dec.	3,339	1,794	18,877	24,010	1,682		3,116	3,116	1,514	30,322
Total	40,065	26,594	228,494	295,153	22,364		21,513	21,513	20,826	359,856
1956										
Jan.	3,414	1,832	19,303	24,549	1,593		3,256	3,256	1,501	30,899
Feb.	3,177	1,750	15,989	20,916	1,475		2,892	2,892	1,396	26,679
Mar.	3,300	1,775	16,960	22,035	1,465		2,824	2,824	1,390	27,714
Apr.	3,378	1,820	15,544	20,742	1,348		3,427	3,427	1,287	26,804
May	1,972	1,735	12,315	16,022	1,354		2,712	2,712	1,266	21,354
June	1,896	1,729	11,750	15,375	1,200		2,947	2,947	1,116	20,638
July	1,885	1,780	12,366	16,031	1,069	666	3,134	3,800	1,187	22,087
Aug.	1,154	856	11,715	13,725	1,313	3,103	3,103	6,206	1,086	22,330
Sept.	1,839	1,688	11,715	15,242	1,202	3,111	3,112	6,223	1,073	23,740
Oct.	1,898	3,105	12,488	17,491	1,238	3,235	3,235	6,470	1,030	26,229
Nov.	1,826	2,201	12,271	16,298	1,188	2,888	2,888	5,776	607	23,869
Dec.	1,944	2,234	12,714	16,892	1,197	3,024	3,025	6,049	1,254	25,392
Total	27,683	22,505	165,130	215,318	15,642	16,027	36,555	52,582	14,193	297,735

TABLE 1

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1957										
Jan.	1,910	2,231	12,757	16,898	1,094	3,019	3,019	6,038	1,463	25,493
Feb.	1,713	1,994	11,306	15,013	1,012	2,868	2,869	5,737	1,395	23,157
Mar.	1,890	2,201	12,924	17,015	1,826	3,110	3,111	6,221	1,525	26,587
Apr.	1,852	2,128	12,197	16,177	1,466	3,100	3,100	6,200	1,403	25,246
May	2,341	2,864	8,985	14,190	1,494	2,979	2,979	5,958	1,529	23,171
June	2,260	2,764	8,638	13,662	1,321	2,962	2,961	5,923	1,421	22,327
July	2,318	2,791	8,881	13,990	1,274	3,088	3,088	6,176	1,146	22,580
Aug.	2,342	2,820	8,787	13,949	1,240	3,053	3,052	6,105	1,021	22,315
Sept.	2,252	2,798	8,653	13,703	1,206	3,073	3,074	6,147	1,243	22,293
Oct.	2,340	2,865	8,986	14,191	1,210	3,079	3,079	6,158	1,295	22,852
Nov.	2,229	2,844	8,639	13,712	1,167	3,044	3,043	6,087	1,047	22,013
Dec.	2,304	2,834	8,966	14,104	1,144	3,206	6,308	9,514	1,072	25,834
Total	25,751	31,134	119,719	176,604	15,454	36,581	39,683	76,264	15,560	283,882
1958										
Jan.	2,252	2,780	9,055	14,087	1,071	3,043	6,089	9,132	1,230	25,520
Feb.	2,137	2,263	8,125	12,525	903	2,792	5,583	8,375	1,047	22,850
Mar.	2,344	2,356	9,432	14,132	1,224	3,089	6,177	9,266	1,191	25,813
Apr.	2,247	1,986	9,906	14,139	990	2,952	5,906	8,858	1,077	25,064
May	930	467	9,519	10,916	1,029	3,140	6,278	9,418	838	22,201
June	887	446	8,747	10,080	906	3,097	6,195	9,292	914	21,192
July	924	468	8,587	9,979	894	3,040	6,078	9,118	864	20,855
Aug.	917	460	8,515	9,892	864	3,044	6,088	9,132	849	20,737
Sept.	889	445	7,950	9,284	833	4,172	6,031	10,203	838	21,150
Oct.	924	401	8,029	9,354	819	4,621	6,162	10,783	837	21,793
Nov.	899	391	7,051	8,341	727	4,572	6,094	10,666	879	20,613
Dec.	938	468	7,421	8,827	835	4,660	6,212	10,872	907	21,441
Total	16,288	12,931	102,337	131,556	11,095	42,222	72,893	115,115	11,471	269,237
1959										
Jan.	939	471	7,320	8,730	686	4,837	6,450	11,287	901	21,604
Feb.	1,406	423	6,262	8,091	823	3,907	5,242	9,149	790	18,853
Mar.	1,815	468	6,572	8,855	724	3,952	5,269	9,221	908	19,708
Apr.	1,748	451	5,846	8,045	606	3,482	4,642	8,124	779	17,554
May	1,809	679	4,902	7,390	576	3,430	4,571	8,001	702	16,669
June	1,744	653	4,727	7,124	522	3,218	4,288	7,506	757	15,909
July	1,781	676	4,074	6,531	516	3,077	4,104	7,181	687	14,915
Aug.	1,771	673	3,846	6,290	492	2,960	3,947	6,907	655	14,344
Sept.	1,753	654	4,653	7,060	477	2,791	3,721	6,512	661	14,710
Oct.	1,789	680	4,404	6,873	463	2,821	3,760	6,581	668	14,585
Nov.	1,742	662	4,130	6,534	518	2,648	3,531	6,179	631	13,862
Dec.	1,838	688	4,402	6,928	488	2,642	3,523	6,165	589	14,170
Total	20,135	7,178	61,138	88,451	6,891	39,765	53,048	92,813	8,728	196,883

TABLE I

Page 4

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1960										
Jan.	1,845	690	4,179	6,714	465	2,400	3,199	5,599	687	13,465
Feb.	1,722	645	4,130	6,497	421	2,143	2,856	4,999	644	12,561
Mar.	1,837	687	4,054	6,578	419	2,223	2,964	5,187	779	12,963
Apr.	1,736	659	3,804	6,199	339	2,080	2,799	4,879	771	12,188
May	1,274	795	3,169	5,238	255	2,017	2,705	4,722	632	10,847
June	1,154	769	3,087	5,010	251	1,878	2,505	4,383	665	10,309
July	1,193	795	3,187	5,175	404	1,890	2,519	4,409	543	10,531
Aug.	1,192	786	3,104	5,082	374	1,899	2,530	4,429	655	10,540
Sept.	1,159	772	3,091	5,022	338	1,390	2,713	4,103	504	9,967
Oct.	1,227	816	3,190	5,233	333	3,329	841	4,170	581	10,317
Nov.	1,181	787	3,073	5,041	306	1,864	2,110	3,974	551	9,872
Dec.	1,227	817	2,930	4,974	321	792	2,810	3,602	544	9,441
Total	16,747	9,018	40,998	66,763	4,226	23,905	30,551	54,456	7,556	133,001
1961										
Jan.	1,226	816	2,874	4,916	286	377	3,204	3,581	398	9,181
Feb.	1,099	733	2,293	4,125	265	458	3,063	3,521	352	8,263
Mar.	1,207	804	2,504	4,515	266	519	3,470	3,989	482	9,252
Apr.	1,160	773	2,305	4,238	241	473	3,160	3,633	407	8,519
May	950	736	2,038	3,724	224	444	2,997	3,441	594	7,983
June	955	740	1,519	3,214	208	409	2,761	3,170	649	7,241
July	947	731	1,889	3,567	209	338	2,284	2,622	633	7,031
Aug.	806	755	2,091	3,652	191	394	2,662	3,056	539	7,438
Sept.	869	704	1,840	3,413	189	382	2,580	2,962	450	7,014
Oct.	906	737	2,115	3,758	380	401	2,706	3,107	529	7,774
Nov.	699	843	1,948	3,490	228	339	2,287	2,626	534	6,878
Dec.	889	708	1,961	3,558	263	365	2,467	2,832	574	7,227
Total	11,713	9,080	25,377	46,170	2,950	4,899	33,641	38,540	6,141	93,801
1962										
Jan.	895	758	1,984	3,637	173	322	2,319	2,641	513	6,964
Feb.	747	572	1,578	2,897	127	341	2,455	2,796	447	6,267

Note: Production data obtained from New Mexico Oil and Gas Committee Reports.

TABLE II

INJECTION WELL CASING PROGRAM

WELL NAME	DATE OF COMPLETION	CASING SIZE, INCHES			CASING SETTING, FEET	AMOUNT OF CEMENT USED, SACKS	CEMENT TOP AS INDICATED BY TEMPERATURE SURVEY
		SURFACE	INTERMEDIATE	PRODUCING			
Harry Leonard (NCT-G) No. 2	5-13-52	13-5/8	9-5/8	5-1/2	316'	350	Circulated
					2,905'	1,700	1,825'
					10,299'	1,750	2,895'
Harry Leonard (NCT-G) No. 5	10-20-52	13-3/8	9-5/8	7	305'	330	Circulated
					2,899'	1,100	1,420'
					7,750'	275	5,345'
Harry Leonard (NCT-G) No. 7	3-16-53	13	8-5/8	5-1/2	282'	325	Circulated
					2,900'	1,450	1,335'
					8,779'	500	5,358'
Harry Leonard (NCT-G) No. 9	3- 6-53	13-3/8	9-5/8	7	302'	350	Circulated
					2,899'	1,610	845'
					7,899'	600	3,800'
Harry Leonard (NCT-I) No. 1	9-21-52	13-3/8	9-5/8	7	306'	350	Circulated
					2,899'	1,050	1,450'
					7,842	300	5,300'
State Y No. 1	6-20-52	13-3/8	9-5/8	7	311'	375	Circulated
					4,277'	550	900'
					8,019'	250	6,570'
Mexico J No. 24	7-26-56	None	8-5/8	5-1/2	3,150'	2,000	Circulated
					8,700'	805	3,491'

INJECTION WELL CASING PROGRAM (Continued)

<u>WELL NAME</u>	<u>DATE OF COMPLETION</u>	<u>CASING SIZE, INCHES</u>			<u>CASING SETTING, FEET</u>	<u>AMOUNT OF CEMENT USED, SACKS</u>	<u>CEMENT TOP AS INDICATED BY TEMPERATURE SURVEY</u>
		<u>SURFACE</u>	<u>INTERMEDIATE</u>	<u>PRODUCING</u>			
Mexico L No. 22	3-26-55	None	8-5/8		3,850	2,000	Circulated
				5-1/2	7,660	700	3,404'
Penny-Federal No. 2	6-27-52	13-3/8			324	300	Circulated
			8-5/8		3,404	2,200	Circulated
				5-1/2	8,570	1,698	3,650'

DATA FOR
PROPOSED WEST DOLLARHIDE DEVONIAN UNIT WATERFLOOD PROJECT
DOLLARHIDE DEVONIAN POOL
LEA COUNTY, NEW MEXICO

OIL CONSERVATION COMMISSION HEARING

MAY 10, 1962

CASE NUMBER 2557

GULF OIL CORPORATION
ROSWELL DISTRICT

WATERFLOOD DATA FOR HEARING BEFORE
OIL CONSERVATION COMMISSION OF NEW MEXICO

Operator Gulf Oil Corporation Date May 10, 1962
Project West Dollarhide Devonian Unit Waterflood
Pool Dollarhide Devonian County Lea
Reservoir Devonian
Other Operators Injecting into this Reservoir (Texas Portion) _____
The Pure Oil Company and Cities Service Producing Company

I. RESERVOIR AND FLUID CHARACTERISTICS

A. Information on Reservoir

1. Name of Reservoir Devonian
2. Composition Upper Devonian: White to brown fine to coarse crystalline limestone with scattered lenses of intercrystalline porosity - Lower Devonian: White to light buff weathered chert having inter-granular and solution type porosities.
3. Structure Northwest-southeast trending anticline which dips about 450 feet per mile on the north and east flanks and approximately 1500 feet per mile on the south and west flanks.
4. Type Drive During Depletion Solution gas drive
5. Original Reservoir Pressure 3300 psig

B. Information on Proposed Project Area

1. Number of Productive Acres In Project Area to be Flooded _____
Unitized area is 765 acres as shown on the project plat, Figure No. 1. 671 1/2 94 7-2
2. Average Depth to Top of Pay 7800 feet
3. Estimated Average Gross Thickness Upper: 70 feet - Lower: 40 feet.
4. Estimated Average Effective Thickness Upper: 15 feet - Lower: 30 feet.

5. Estimated Average Effective Porosity Upper: 8.1% - Lower: 17.2%
6. Average Horizontal Permeability Upper: 3 mds. - Lower: 16 mds.
Range 0-48 mds.
7. Gravity of Oil About 36.5° API

II. PRIMARY PRODUCTION HISTORY AND PRESENT STATUS OF PROJECT AREA

1. Date First Well Completed April 9, 1952
2. Oil and Water Production History by Months Since Date of First Well Completion to Present Time See Table I and Production Performance Curves
3. Stage of Depletion of Project Area Late
4. Number of Wells in Project Area 18, nine of which will be converted to water injection.
5. Average Daily Oil Production Per Well at Present Time 13.2 barrels
6. Cumulative Oil Production as of March 1, 1962 from Area to be Flooded 2,565,299 barrels

III. INJECTION

1. Source of Injected Water Water to be injected will be obtained from source wells to be completed in the Santa Rosa formation on State water easements in Sections 32 and 33, T-24-S, R-38-E. Based on capacity tests in nearby Santa Rosa wells, it is believed that four or possibly five source wells will be needed to provide the estimated 9,000 barrels of water that will be needed.
2. Type of Water Brackish - Injection system will be corrosion-proof.
3. Treatment of Injected Water None is anticipated; however, if water analysis after development indicates treatment is needed, appropriate action will be taken.
4. Pattern and Spacing 80-acre 5-spot patterns as shown on the area plat, Figure No. 2.

5. Initial Injection Pressure to be Used Approximately 500 psig.
Maximum pressure expected will be in the range of 1500 to 2000 psig.
6. Estimated Initial Per Well Rate of Injection 1000 barrels per day.
7. Additional Injection and Producing Wells to be Drilled None

IV. RESULTS EXPECTED

It is expected that the proposed waterflood project will effectively result in increased oil recovery from the Devonian Age formation. It is believed that the proposed waterflood will recover from 75 to 100 per cent of the reservoir's ultimate primary recovery. In terms of barrels, the increased recovery due to waterflooding due to secondary recovery measures should be in the magnitude of 2 to 2.7 million barrels of oil.

V. REASONS AND RECOMMENDATIONS

The Dollarhide Devonian Pool produces by a solution gas drive mechanism and as a result, a considerable quantity of oil will remain unrecovered at the end of primary depletion unless some type of fluid injection project is inaugurated to increase the ultimate oil recovery.

Production from the wells in the proposed unit area has declined to an average daily oil production of about 13 barrels per well per day. At the existing rate of decline, these wells have only a few years remaining to produce prior to depletion and abandonment. Therefore, in order to prolong the productive life of these wells and to increase the ultimate recovery, some type of secondary recovery project should be inaugurated. The available data indicate that the Devonian formation underlying the proposed West Dollarhide Devonian Unit is susceptible to waterflooding operations and that the proposed plan should increase ultimate recovery.

In view of the above considerations, Gulf, in association with Pan American, Skelly and Texaco, has concluded that the best course of action is the unitization of the 18 wells completed in the Dollarhide Devonian

Pool as shown on Figure 2 so that a joint waterflood project can be undertaken. In so doing, the entire Dollarhide Devonian Pool of New Mexico will be waterflooded in conjunction with the full-scale waterflooding of the Texas properties producing from the same reservoir. Therefore, Gulf Oil Corporation, as the West Dollarhide Devonian Unit Operator, respectfully requests that the Oil Conservation Commission approve the installation of the proposed waterflood facilities.

FIGURE NO. 4
GULF OIL CORPORATION
LEONARD (NCT-G) NO. 6
UNIT C SEC 4 T25S R38E

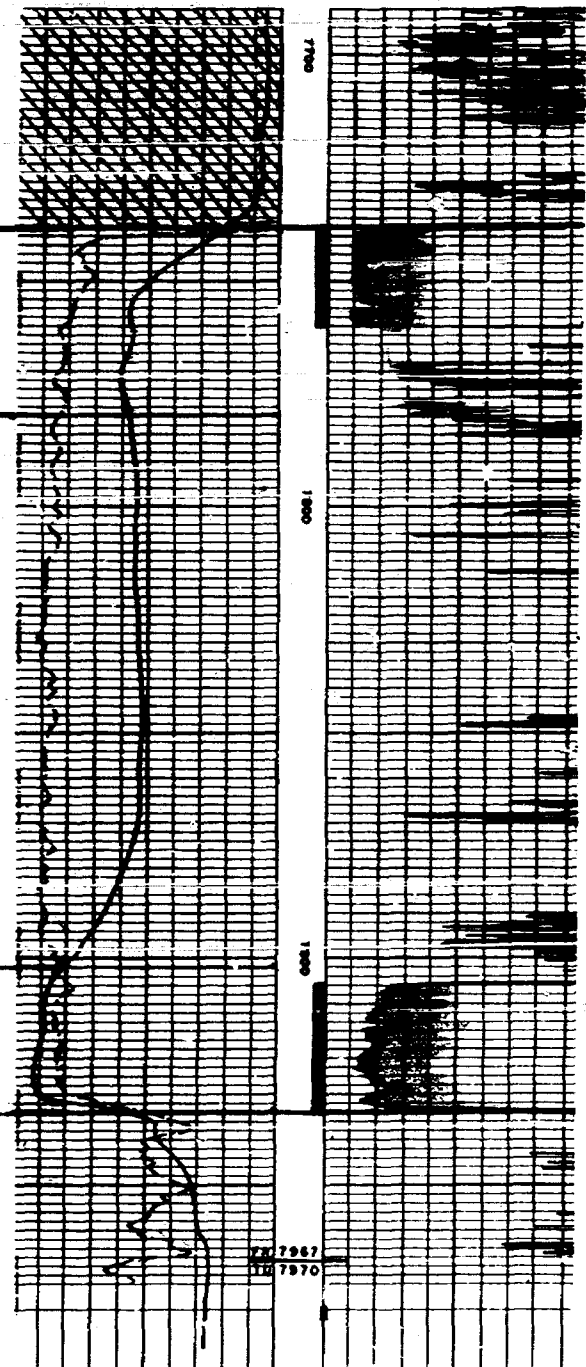
MICROLOG SURVEY

TOP OF DEVONIAN

UPPER PAY

LOWER PAY

BASE OF DEVONIAN PAY



15
8.1%
3 md

30
17.2%
16 md

TABLE I
MONTHLY OIL PRODUCTION BY LEASES - PROPOSED WEST DOLLARHIDE DEVONIAN UNIT
DOLLARHIDE DEVONIAN POOL
LEA COUNTY, NEW MEXICO

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
<u>1952</u>										
Jan.										
Feb.										
Mar.										
Apr.									1,297	1,297
May									322	322
June			1,144	1,144					4,827	5,971
July			3,205	3,205	4,035				7,054	14,294
Aug.			2,860	2,860	3,790				8,031	14,681
Sept.		1,592	3,192	4,784	4,056				8,206	17,046
Oct.		4,025	3,976	8,001	4,257				8,557	20,815
Nov.	196	4,844	11,658	16,698	4,120				8,022	28,840
Dec.	3,115	3,678	12,367	19,160	4,348				7,480	30,988
Total	3,311	14,139	38,402	55,852	24,606				53,796	134,256
<u>1953</u>										
Jan.	3,759	3,758	18,165	25,682	4,024				6,620	36,326
Feb.	3,348	3,348	15,786	22,482	2,814				5,441	30,737
Mar.	3,682	3,683	20,331	27,696	3,080				5,467	36,243
Apr.	3,542	3,541	20,331	27,414	3,005				4,715	35,134
May	3,618	3,618	20,784	28,020	3,049				4,462	35,531
June	3,512	3,512	19,943	26,967	2,997				3,995	33,959
July	3,701	3,701	20,663	28,065	3,046				3,831	34,942
Aug.	3,638	3,636	20,812	28,086	3,086				3,626	34,798
Sept.	3,522	3,522	20,404	27,448	2,971				3,591	34,010
Oct.	3,666	3,666	21,019	28,351	3,128				3,550	35,029
Nov.	3,503	3,502	20,207	27,212	2,976				3,327	33,515
Dec.	3,705	3,704	21,059	28,468	3,131				3,366	34,965
Total	43,196	43,191	239,504	325,891	37,307				51,991	415,189

TABLE I

Page 2

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1954										
Jan.	3,689	3,693	21,109	28,491	3,077					
Feb.	3,334	3,334	18,997	25,665	2,801				3,153	34,726
Mar.	3,705	3,706	20,996	28,407	3,101				2,834	31,300
Apr.	3,508	3,509	18,747	25,764	2,992				2,939	34,447
May	3,660	3,659	19,447	26,766	3,116				2,640	31,396
June	3,523	3,522	17,402	24,447	1,112				2,612	32,494
July	3,608	3,608	17,982	25,198	2,341				2,449	28,008
Aug.	3,605	3,606	16,813	24,024	2,647				2,410	29,949
Sept.	3,509	3,508	16,465	23,482	2,536				2,354	29,025
Oct.	3,648	3,640	17,103	24,391	2,406				2,218	28,236
Nov.	3,550	3,546	16,614	23,710	2,358				2,273	29,070
Dec.	3,691	3,685	19,558	26,934	2,351				2,019	28,087
Total	43,030	43,016	221,233	307,279	30,838				2,207	31,492
1955									30,113	368,230
Jan.	3,677	3,681	20,821	28,179	2,252					
Feb.	3,306	3,306	20,551	27,163	1,994				2,174	32,605
Mar.	3,715	3,715	20,829	28,259	2,060				1,898	31,055
Apr.	3,246	1,709	18,101	23,056	1,958		995	995	2,002	33,316
May	3,172	1,742	18,550	23,464	1,948		2,430	2,430	1,851	29,295
June	3,149	1,692	17,988	22,829	1,827		2,115	2,115	1,741	29,268
July	3,293	1,754	18,841	23,888	1,853		1,578	1,578	1,684	27,918
Aug.	3,243	1,744	18,570	23,557	1,784		1,233	1,233	1,687	28,661
Sept.	3,171	1,698	17,984	22,853	1,680		941	941	1,455	27,737
Oct.	3,409	1,887	19,177	24,473	1,662		2,839	2,839	1,622	28,994
Nov.	3,345	1,872	18,205	23,422	1,664		3,179	3,179	1,595	30,909
Dec.	3,339	1,794	18,877	24,010	1,682		3,087	3,087	1,603	29,776
Total	40,065	26,594	228,494	295,153	22,364		3,116	3,116	1,514	30,322
1956							21,513	21,513	20,826	359,856
Jan.	3,414	1,832	19,303	24,549	1,593					
Feb.	3,177	1,750	15,989	20,916	1,475		3,256	3,256	1,501	30,899
Mar.	3,300	1,775	16,960	22,035	1,465		2,892	2,892	1,396	26,679
Apr.	3,378	1,820	15,544	20,742	1,348		2,824	2,824	1,390	27,714
May	1,972	1,735	12,315	16,022	1,354		3,427	3,427	1,287	26,804
June	1,896	1,729	11,750	15,375	1,200		2,712	2,712	1,266	21,354
July	1,885	1,780	12,366	16,031	1,069		2,947	2,947	1,116	20,638
Aug.	1,154	856	11,715	13,725	1,313	666	3,134	3,800	1,187	22,087
Sept.	1,839	1,688	11,715	15,242	1,202	3,103	3,103	6,206	1,086	22,330
Oct.	1,898	3,105	12,488	17,491	1,238	3,111	3,112	6,223	1,073	23,740
Nov.	1,826	2,201	12,271	16,298	1,188	3,235	3,235	6,470	1,030	26,229
Dec.	1,944	2,234	12,714	16,892	1,197	2,888	2,888	5,776	607	23,869
Total	27,683	22,505	165,130	215,318	15,642	16,027	36,555	52,582	14,193	297,735

TABLE 1

Page 3

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1957										
Jan.	1,910	2,231	12,757	16,898	1,094	3,019	3,019	6,038	1,463	25,493
Feb.	1,713	1,994	11,306	15,013	1,012	2,868	2,869	5,737	1,395	23,157
Mar.	1,890	2,201	12,924	17,015	1,826	3,110	3,111	6,221	1,525	26,587
Apr.	1,852	2,128	12,197	16,177	1,466	3,100	3,100	6,200	1,403	25,246
May	2,341	2,864	8,985	14,190	1,494	2,979	2,979	5,958	1,529	23,171
June	2,260	2,764	8,638	13,662	1,321	2,962	2,961	5,923	1,421	22,327
July	2,318	2,791	8,881	13,990	1,274	3,088	3,088	6,176	1,146	22,586
Aug.	2,342	2,820	8,787	13,949	1,240	3,053	3,052	6,105	1,021	22,315
Sept.	2,252	2,798	8,653	13,703	1,206	3,073	3,074	6,147	1,243	22,299
Oct.	2,340	2,865	8,986	14,191	1,210	3,079	3,079	6,158	1,295	22,854
Nov.	2,229	2,844	8,639	13,712	1,167	3,044	3,043	6,087	1,047	22,013
Dec.	2,304	2,834	8,966	14,104	1,144	3,206	6,308	9,514	1,072	25,834
Total	25,751	31,134	119,719	176,604	15,454	36,581	39,683	76,264	15,560	283,882
1958										
Jan.	2,252	2,780	9,055	14,087	1,071	3,043	6,089	9,132	1,230	25,520
Feb.	2,137	2,263	8,125	12,525	903	2,792	5,583	8,375	1,047	22,850
Mar.	2,344	2,356	9,432	14,132	1,224	3,089	6,177	9,266	1,191	25,813
Apr.	2,247	1,986	9,906	14,139	990	2,952	5,906	8,858	1,077	25,064
May	930	467	9,519	10,916	1,029	3,140	6,278	9,418	838	22,201
June	887	446	8,747	10,080	906	3,097	6,195	9,292	914	21,192
July	924	468	8,587	9,979	894	3,040	6,078	9,118	864	20,855
Aug.	917	460	8,515	9,892	864	3,044	6,088	9,132	849	20,737
Sept.	889	445	7,950	9,284	833	4,172	6,031	10,203	838	21,158
Oct.	924	401	8,029	9,354	819	4,621	6,162	10,783	837	21,793
Nov.	899	391	7,051	8,341	727	4,572	6,094	10,666	879	20,613
Dec.	938	468	7,421	8,827	835	4,660	6,212	10,872	907	21,441
Total	16,288	12,931	102,337	131,556	11,095	42,222	72,893	115,115	11,471	269,237
1959										
Jan.	939	471	7,320	8,730	686	4,837	6,450	11,287	901	21,604
Feb.	1,406	423	6,262	8,091	823	3,907	5,242	9,149	790	18,853
Mar.	1,815	468	6,572	8,855	724	3,952	5,269	9,221	908	19,708
Apr.	1,748	451	5,846	8,045	606	3,482	4,642	8,124	779	17,554
May	1,809	679	4,902	7,390	576	3,430	4,571	8,001	702	16,669
June	1,744	653	4,727	7,124	522	3,218	4,288	7,506	757	15,909
July	1,781	676	4,074	6,531	516	3,077	4,104	7,181	687	14,915
Aug.	1,771	673	3,846	6,290	492	2,960	3,947	6,907	655	14,344
Sept.	1,753	654	4,653	7,060	477	2,791	3,721	6,512	661	14,710
Oct.	1,789	680	4,404	6,873	463	2,821	3,760	6,581	668	14,585
Nov.	1,742	662	4,130	6,534	518	2,648	3,531	6,179	631	13,862
Dec.	1,838	688	4,402	6,928	488	2,642	3,523	6,165	589	14,170
Total	20,135	7,178	61,138	88,451	6,891	39,765	53,048	92,813	8,728	196,883

TABLE I

Page 4

MONTH AND YEAR	GULF SNOWDEN UNIT NO. 1	GULF SNOWDEN UNIT NO. 2	GULF LEONARD (NCT-G)	TOTAL GULF	PAN AMERICAN STATE Y	SKELLY MEXICO J	SKELLY MEXICO L	TOTAL SKELLY	TEXACO PENNY	TOTAL UNIT
1960										
Jan.	1,845	690	4,179	6,714	465	2,400	3,199	5,599	687	13,465
Feb.	1,722	645	4,130	6,497	421	2,143	2,856	4,999	644	12,561
Mar.	1,837	687	4,054	6,578	419	2,223	2,964	5,187	779	12,963
Apr.	1,736	659	3,804	6,199	339	2,080	2,799	4,879	771	12,188
May	1,274	795	3,169	5,238	255	2,017	2,705	4,722	632	10,847
June	1,154	769	3,087	5,010	251	1,878	2,505	4,383	665	10,309
July	1,193	795	3,187	5,175	404	1,890	2,519	4,409	543	10,531
Aug.	1,192	786	3,104	5,082	374	1,899	2,530	4,429	655	10,540
Sept.	1,159	772	3,091	5,022	338	1,390	2,713	4,103	504	9,967
Oct.	1,227	816	3,190	5,233	333	3,329	841	4,170	581	10,317
Nov.	1,181	787	3,073	5,041	306	1,864	2,110	3,974	551	9,872
Dec.	1,227	817	2,930	4,974	321	792	2,810	3,602	544	9,441
Total	16,747	9,018	40,228	66,763	4,226	23,905	30,551	54,456	7,556	133,001
1961										
Jan.	1,226	816	2,874	4,916	286	377	3,204	3,581	398	9,181
Feb.	1,099	733	2,293	4,125	265	458	3,063	3,521	352	8,263
Mar.	1,207	804	2,504	4,515	266	519	3,470	3,989	482	9,252
Apr.	1,160	773	2,305	4,238	241	473	3,160	3,633	407	8,519
May	950	736	2,038	3,724	224	444	2,997	3,441	594	7,983
June	955	740	1,519	3,214	208	409	2,761	3,170	649	7,241
July	947	731	1,889	3,567	209	338	2,284	2,622	633	7,031
Aug.	806	755	2,091	3,652	191	394	2,662	3,056	539	7,438
Sept.	869	704	1,840	3,413	189	382	2,580	2,962	450	7,014
Oct.	906	737	2,115	3,758	380	401	2,706	3,107	529	7,774
Nov.	699	843	1,948	3,490	228	339	2,287	2,626	534	6,878
Dec.	889	708	1,961	3,558	263	365	2,467	2,832	574	7,227
Total	11,713	9,080	25,377	46,170	2,950	4,899	33,641	38,540	6,141	93,801
1962										
Jan.	895	758	1,984	3,637	173	322	2,319	2,641	513	6,964
Feb.	747	572	1,578	2,897	127	341	2,455	2,796	447	6,267

Note: Production data obtained from New Mexico Oil and Gas Committee Reports.

TABLE II

INJECTION WELL CASING PROGRAM

*injection well be
have plastic coated by under a packer*

WELL NAME	DATE OF COMPLETION	CASING SIZE, INCHES			CASING SETTING, FEET	AMOUNT OF CEMENT USED, SACKS	CEMENT TOP AS INDICATED BY TEMPERATURE SURVEY
		SURFACE	INTERMEDIATE	PRODUCING			
Harry Leonard (NCT-G) No. 2	5-13-52	13-5/8			316'	350	Circulated
			9-5/8		2,905'	1,700	1,825'
				5-1/2	10,299'	1,750	2,895'
Harry Leonard (NCT-G) No. 5	10-20-52	13-3/8			305'	330	Circulated
			9-5/8		2,899'	1,100	1,420'
				7	7,750'	275	5,345'
Harry Leonard (NCT-G) No. 7	3-16-53	13			282'	325	Circulated
			8-5/8		2,900'	1,450	1,335'
				5-1/2	8,779'	500	5,358'
Harry Leonard (NCT-G) No. 9	3-6-53	13-3/8			302'	350	Circulated
			9-5/8		2,899'	1,610	845'
				7	7,899'	600	3,800'
Harry Leonard (NCT-I) No. 1	9-21-52	13-3/8			306'	350	Circulated
			9-5/8		2,899'	1,050	1,500'
				7	7,842	300	5,300'
State Y No. 1	6-20-52	13-3/8			311'	375	Circulated
			9-5/8		4,277'	550	900'
				7	8,019'	250	6,570'
Mexico J No. 24	7-26-56	None	8-5/8		3,150'	2,000	Circulated
				5-1/2	8,700'	805	3,491'

INJECTION WELL CASING PROGRAM (Continued)

<u>WELL NAME</u>	<u>DATE OF COMPLETION</u>	<u>CASING SIZE, INCHES</u>			<u>CASING SETTING, FEET</u>	<u>AMOUNT OF CEMENT USED, SACKS</u>	<u>CEMENT TOP AS INDICATED BY TEMPERATURE SURVEY</u>
		<u>SURFACE</u>	<u>INTERMEDIATE</u>	<u>PRODUCING</u>			
Mexico L No. 22	3-26-55	None	8-5/8	5-1/2	3,850 7,660	2,000 700	Circulated 3,404'
Penny-Federal No. 2	6-27-52	13-3/8	8-5/8	5-1/2	324 3,404 8,570	300 2,200 1,698	Circulated Circulated 3,650'

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE No. 2557
Order No. R-2248-A

APPLICATION OF GULF OIL CORPORATION
FOR APPROVAL OF A UNIT AGREEMENT AND
A WATERFLOOD PROJECT, LRA COUNTY,
NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE COMMISSION:

It appearing to the Commission that due to clerical error and inadvertence, Order No. R-2248 dated June 4, 1962, does not correctly state the intended order of the Commission,

IT IS THEREFORE ORDERED:

(1) That the descriptive phrase, "Harry Leonard (NCT-6) Well No. 1, located in Unit C, Section 33, Township 24 South, Range 38 East" is hereby stricken from Paragraph 5 on Page 3 of Order No. R-2248, and the descriptive phrase, "Harry Leonard (NCT-1) Well No. 1, located in Unit F, Section 33, Township 24 South, Range 38 East" is hereby interlinedated in lieu thereof.

(2) That this order shall be effective nunc pro tunc as of June 4, 1962.

DONE at Santa Fe, New Mexico, on this 30th day of July, 1963.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2557
Order No. R-2248

APPLICATION OF GULF OIL CORPORATION
FOR APPROVAL OF A UNIT AGREEMENT AND
A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on May 10, 1962, at Santa Fe, New Mexico, before Daniel S. Matter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 4th day of June, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Matter, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Gulf Oil Corporation, seeks approval of the West Dollarhide Devonian Unit Agreement, embracing 765 acres, more or less, of Federal and State lands in Townships 24 and 25 South, Range 38 East, NMPN, Lea County, New Mexico.

(3) That the proposed unit plan will in principle tend to promote the conservation of oil and gas and the prevention of waste.

(4) That the applicant further seeks permission to institute a waterflood project in the proposed West Dollarhide Devonian Unit Area by the injection of water into the Devonian formation through 9 wells located therein; applicant proposes to operate the waterflood project under the provisions of Rule 701.

(5) That the wells in the proposed waterflood project have reached an advanced stage of depletion and should be classified as "stripper" wells.

-2-

CASE No. 2557
Order No. R-2248

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the West Dollarhide Devonian Unit Agreement is hereby approved.

PROVIDED HOWEVER, That notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or any hereafter be, vested in the New Mexico Oil Conservation Commission by law relative to the supervision and control of operations for exploration and development of any lands committed to said West Dollarhide Devonian Unit Agreement, or relative to the production of oil and gas therefrom.

(2) That the unit area shall be:

TOWNSHIP 24 SOUTH, RANGE 38 EAST, ~~WHEAT~~
LEA COUNTY, NEW MEXICO

Section 32: SE/4 NE/4 and E/2 SE/4

Section 33: Lots 1, 2, 3 and 4, E/2 NW/4,
SW/4 NW/4, and SW/4

TOWNSHIP 25 SOUTH, RANGE 38 EAST, ~~WHEAT~~
LEA COUNTY, NEW MEXICO

Section 4: Lots 1 and 4, NW/4 and NW/4 SW/4

Section 5: E/2 NE/4 and NE/4 SE/4

containing 765 acres, more or less.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof. In the event of subsequent joinder by any party, the unit operator shall file with the Commission within 30 days after such action counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey, and shall terminate ipso facto upon the termination of said unit agreement. The last unit operator shall notify the Commission in writing of such termination.

(5) That Gulf Oil Corporation is hereby authorized to institute a waterflood project in the West Dollarhide Devonian Unit Area

-3-

CASE No. 2557
Order No. R-2248

by the injection of water into the Devonian formation through the following-described wells:

Harry Leonard (NCT-G) Well No. 2, located in Unit D,
Section 4, Township 25 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 5, located in Unit H,
Section 33, Township 24 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 7, located in Unit L,
Section 33, Township 24 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 9, located in Unit F,
Section 4, Township 25 South, Range 38 East;

Harry Leonard (NCT-G) Well No. 1, located in Unit C,
Section 33, Township 24 South, Range 38 East;

State Y Well No. 1, located in Unit H, Section 32,
Township 24 South, Range 38 East;

Mexico J Well No. 24, located in Unit P, Section 32,
Township 24 South, Range 38 East;

Mexico L Well No. 22, located in Unit B, Section 5,
Township 25 South, Range 38 East; and

Penny Federal Well No. 2, located in Unit L, Section
4, Township 25 South, Range 38 East.

(6) That the subject waterflood project shall be governed
by the provisions of Rule 701.


(7) That jurisdiction of this cause is retained for the
entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


EDWIN L. MECHEM, Chairman


E. S. WALKER, Member


A. L. PORTER, Jr., Member & Secretary

esr/

MAIN OFFICE CCC

UNIT AGREEMENT

WEST DOLLARHIDE-DEVONIAN UNIT

LEA COUNTY, NEW MEXICO

1962 MAR 27 PM 4 46

Clerk
2557INDEX

<u>SECTION</u>		<u>PAGE</u>
1	Enabling Act and Regulations	3
2	Unit Area and Definitions	3
3	Exhibits	5
4	Expansion	6
5	Unitized Land and Unitized Substances	7
6	Unit Operator	7
7	Resignation or Removal of Unit Operator	7
8	Successor Unit Operator	9
9	Accounting Provisions and Unit Operating Agreement	9
10	Rights and Obligations of Unit Operator	10
11	Plan of Operations	10
12	Tract Participation	11
13	Tracts Qualified for Unit Participation	12
14	Allocation of Unitized Substances	13
15	Royalty Settlement	16
16	Rental Settlement	17
17	Conservation	18
18	Drainage	18
19	Leases and Contracts Conformed and Extended	18
20	Mathematical Errors	20
21	Covenants Run with Land	20
22	Effective Date and Term	20
23	Rate of Prospecting, Development and Production	22
24	Nondiscrimination	23
25	Appearances	23
26	Notices	23
27	No Waiver of Certain Rights	23
28	Unavoidable Delay	24
29	Loss of Title	24
30	Nonjoinder and Subsequent Joinder	25
31	Counterparts	26
32	Taxes	27
33	Conflict of Supervision	27
34	No Partnership	28
35	Production as of the Effective Date	28

Exhibit "A" (Map of Unit Area)

Exhibit "B" (Schedule of Ownership)

UNIT AGREEMENT
FOR THE DEVELOPMENT AND OPERATION OF THE
WEST DOLLARHIDE-DEVONIAN UNIT
LEA COUNTY, NEW MEXICO

NO. _____

THIS AGREEMENT, entered into as of the _____ day
of _____, 1961, by and between the parties sub-
scribing, ratifying or consenting hereto, and herein referred
to as "Parties hereto",

W I T N E S S E T H :

WHEREAS, the parties hereto are the owners of working,
royalty or other oil or gas interests in the Unit Area subject
to this Agreement; and

WHEREAS, the Commissioner of Public Lands of the
State of New Mexico is authorized by an Act of the Legislature
(Sec. 3, Chap. 88, Laws 1943 as amended by Sec. 1 of Chap. 162,
Laws of 1951, Chap. 7, Art. 11, Sec. 39, N.M.S. 1953 anno) to
consent to or approve this Agreement on behalf of the State of
New Mexico, insofar as it covers and includes lands and mineral
interests of the State of New Mexico; and

WHEREAS, the Commissioner of Public Lands of the
State of New Mexico is authorized by an Act of the Legislature
(Sec. 3, Chap. 88, Laws of 1943, as amended by Sec. 1, Chap. 162,
Laws of 1951, Chap. 7, Art. 11, Sec. 41, N.M.S. 1953 anno) to
amend with the approval of the lessee, any oil and gas lease em-
bracing State lands so that the length of the term of said lease

may coincide with the term of such unitized development and operation of State lands; and

WHEREAS, the Oil Conservation Commission of the State of New Mexico is authorized by law (Chap. 72, Laws of 1935, as amended by Chap. 193, Laws of 1937, Chap. 166, Laws of 1941, and Chap. 168, Laws of 1949) to approve this Agreement, and the conservation provisions hereof; and

WHEREAS, the Mineral Leasing Act of February 25, 1920 (41 Stat. 437, as amended 30 U.S.C. Sections 181 et seq.) authorizes Federal lessees and their representatives to unite with each other or jointly or separately with others in collectively adopting and operating a unit plan of development or operation of any oil or gas pool, field or like area or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the parties hereto hold sufficient interests in the West Dollarhide-Devonian Unit covering the land hereinafter described to give reasonably effective control of operation therein; and

WHEREAS, it is the purpose of the parties hereto, to enable institution and consummation of secondary recovery operations, to conserve natural resources, to prevent waste and secure the other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions and limitations herein set forth.

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their respective interests in the below defined Unit Area, and agree severally among themselves as follows:

SECTION 1. ENABLING ACT AND REGULATIONS. The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder and valid, pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this Agreement.

SECTION 2. UNIT AREA AND DEFINITIONS. For the purpose of this Agreement, the following terms and expressions as used herein shall mean:

(a) "Unit Area" is defined as those lands specified in Exhibit "A" hereof, and such land is hereby designated and recognized as constituting the Unit Area; the lands described in said Exhibit "A" are described as:

LEA COUNTY, NEW MEXICO

T. 24 S., R. 38 E.,

Section 32: E/2 SE/4 and SE/4 NE/4
Section 33: Lots 1, 2, 3, and 4, NE/4 NW/4,
S/2 NW/4 and SW/4

T. 25 S., R. 38 E.,

Section 4: Lots 1, 2, 3 and 4, S/2 NW/4 and NW/4 SW/4
Section 5: Lots 1, 2 and NE/4 SE/4

containing 765.25 acres, more or less.

(b) "Land Commissioner" is defined as the Commissioner of Public Lands of the State of New Mexico.

(c) "Commission" is defined as the Oil Conservation Commission of the State of New Mexico.

(d) "Director" is defined as the Director of the United States Geological Survey.

(e) "Secretary" is defined as the Secretary of the Interior of the United States of America.

(f) "Department" is defined as the Department of the Interior of the United States of America.

(g) "Supervisor" is defined as the Oil and Gas Supervisor of the United States Geological Survey.

(h) "Devonian Age Formation" or "Formation" shall mean that certain stratigraphic interval and reservoir, which was encountered between the depths of 7,694 feet and 7,893 feet as measured from the kelly bushing elevation on that certain Schlumberger Well Surveying Corporation Electrical Log dated January 6, 1953, of Gulf Oil Corporation Harry Leonard (NCT-G) Well No. 7 (formerly Leonard "A" No. 19) located 1,650 feet from the south line and 330 feet from the west line of Section 33, Township 24 South, Range 38 East, Lea County, New Mexico.

(i) "Unitized Formation" is defined as that portion of the Devonian Age Formation effectively committed to this Agreement.

(j) "Unitized Substances" means all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within or produced from the Unitized Formation.

(k) "Unit Participation" as used herein shall mean the percentage of participation, either Primary Phase or Secondary Phase, whichever is pertinent, as is shown for each Working Interest Owner in Exhibit "B" to the Unit Agreement which is in effect at the time the requirement for a specified minimum vote of Working Interest Owners arises.

(l) "Working Interest" is defined as the right to search for, produce and acquire Unitized Substances whether held as an incident of ownership of mineral fee simple title, under an oil and gas lease, or otherwise held.

(m) "Working Interest Owner" is defined as and shall mean any party hereto owning a Working Interest, including a carried working interest owner, holding an interest in Unitized Substances by virtue of a lease, operating agreement, fee title or otherwise, which interest is chargeable with and obligated to pay or bear, either in cash or out of production, or otherwise, all or a portion of the cost of drilling, developing and producing the Unitized Substance from the Unitized Formation and operating thereof hereunder.

(n) "Royalty Interest" or "Royalty" is defined as an interest other than a Working Interest in or right to receive a portion of the Unitized Substances or the proceeds thereof and includes the royalty interest reserved by the lessor by an oil and gas lease and any overriding royalty interest, oil payment interest, net profit contracts, or any other payment or burden which does not carry with it the right to search for and produce Unitized Substances.

(o) "Royalty Owner" is defined as and shall mean the owner of a Royalty Interest.

(p) "Unit Operating Agreement" is defined as and shall mean any agreement or agreements (whether one or more) entered into (separately or collectively) by and between the Unit Operator and the Working Interest Owners as provided in Section 9, infra, and shall be styled "Unit Operating Agreement, West Dollarhide-Devonian Unit, Lea County, New Mexico".

(q) "Unit Manager" is defined as the person or corporation appointed by the Unit Working Interest Owners to perform the duties of the Unit Operator until the selection and qualification of a successor Unit Operator as provided for in Section 8 hereof.

(r) "Paying Quantities" is defined as production of Unitized Substances in quantities sufficient to pay for the cost of producing same from wells on the Unitized Land.

(s) "Primary Phase of Operations" is defined as the status of operations during the period that Unitized Substances are produced from the Unit Area from and after the effective date of this Agreement until 7:00 o'clock a.m. the first day of the calendar month ensuing after 276,576 barrels of oil minus the gross oil production from January 1, 1961 to the effective date of this Agreement have been produced from the Unitized Formation. The Primary Phase, being predicated upon 100% commitment of the Unit Area, shall be subject to correction to coincide with the Primary Phase of the unitized portion of the reservoir in event of the non-commitment of any tract. For the purposes of this definition the Operator's Monthly Reports, Form C-115, filed with the New Mexico Oil Conservation Commission shall be deemed the controlling evidence of the production of 276,576 barrels of oil after January 1, 1961.

(t) "Secondary Phase of Operations" is defined as the status of operations for the remainder of the term of this agreement after the Primary Phase has been completed.

SECTION 3. EXHIBITS: Exhibit "A" attached hereto is a map showing the Unit Area and the boundaries and identity of tracts and leases in said Unit Area to the extent known to the Unit Operator. Exhibit "B" attached hereto is a schedule showing, to the extent known to the Unit Operator, the acreage comprising each tract, percentage ownership of each Working Interest Owner in each tract, and the percentage of participation each tract has in the Unit Area. However, nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedule as owned by such party. Exhibits "A" and "B" shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, and at least two copies of such revision shall be filed with the Land Commissioner, and not less than six copies thereof shall be filed with the Supervisor.

SECTION 4. EXPANSION: The above described Unit Area may when practicable be expanded to include therein any additional tract or tracts regarded as reasonably necessary or advisable for the purposes of this Agreement to conform with the purposes of this Agreement. Such expansion shall be effected in the following manner.

(a) The Working Interest Owner or Owners of a tract or tracts desiring to bring such tract or tracts into this Unit, shall file an application therefor with Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice to each Working Interest Owner of the proposed expansion, setting out the basis for admission, the unit participation to be assigned to such tract or tracts, and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise) if at least three Working Interest Owners having in the aggregate eighty percent (80%) Unit Participation have agreed to such tract or tracts being brought into the Unit, then Unit Operator shall:

(1) Prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional tract or tracts, the Unit Participation to be assigned thereto and the proposed effective date thereof; and

(2) Deliver copies of said notice to the Land Commissioner, the Director, each Working Interest Owner and to the lessee and lessor whose interests are affected, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

(3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above with the Land Commissioner and Director the following: (a) Evidence of mailing or delivering copies of said notice of expansion; (b) An application for such expansion; (c) An instrument containing the appropriate joinders in compliance with the participation requirements of Section 13, infra; and (d) Copy of any objections received.

The expansion shall, after due consideration of all pertinent information and approval by the Land Commissioner and the Director, become effective as of the date prescribed in the notice thereof, preferably the first day of a month subsequent to the date of notice, or on such other date as set by the Land Commissioner and the Director in the order or instrument approving such expansion.

SECTION 5. UNITIZED LAND AND UNITIZED SUBSTANCES: All land committed to this Agreement shall constitute land referred to herein as "Unitized Land" or "Land subject to this Agreement". All oil and gas in the Devonian Age Formation of the unitized land is unitized under the terms of this Agreement and herein are called "Unitized Substances". Nothing herein shall be construed to unitize, pool, or in any way affect the oil, gas and other minerals contained in or that may be produced from any formation other than the Devonian Age Formation as above described.

SECTION 6. UNIT OPERATOR: Gulf Oil Corporation is hereby initially designated the Unit Operator, and by signing this instrument as Unit Operator it agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interests in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to the Unit Operator as the owner of a Working Interest when such an interest is owned by it.

SECTION 7. RESIGNATION OR REMOVAL OF UNIT OPERATOR: Unit Operator shall have the right to resign at any time, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after written notice of intention to resign has been given by Unit Operator to all Working Interest Owners, the Land Commissioner and the Director, unless a new Unit Operator shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by at least two of the committed Working Interest Owners having in the aggregate 75% or more Unit Participation exclusive of the Working Interest Owner who is the Unit Operator. Such removal shall be effective upon notice thereof to the Land Commissioner and the Director.

In all such instances of effective resignation or removal, until a successor to Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for the performance of the duties of the Unit Operator and shall, not later than thirty (30) days before such resignation or removal becomes effective, appoint a Unit Manager to represent them in any action to be taken hereunder.

The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, books, and records, materials, appurtenances and any other assets, used in connection with the Unit operations and owned by the Working Interest Owners to the new duly qualified successor Unit Operator or to the Unit Manager if no such new Unit Operator is elected, to be used for the purpose of conducting Unit operations hereunder. Nothing herein shall be construed as authorizing the removal of any material, equipment or appurtenances needed for the preservation of any wells. Nothing herein contained shall be construed to relieve or discharge any Unit Operator who resigns or is removed hereunder for any liability or duties accruing

or performable by it prior to the effective date of such resignation or removal.

SECTION 8. SUCCESSOR UNIT OPERATOR: Whenever the Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, the Working Interest Owners shall select a successor Unit Operator as herein provided. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall have been approved by the Land Commissioner and the Director. If no successor Unit Operator or Unit Manager is selected and qualified as herein provided, the Land Commissioner and the Director, at their election, may declare this Agreement terminated.

In selecting a successor Unit Operator the majority vote of the Working Interest Owners on the basis of Unit Participation shall prevail, provided that in the event one Working Interest Owner should own more than forty-five percent (45%) voting interest, its vote shall not be regarded as sufficient unless supported by the vote of two or more Working Interest Owners having a combined voting interest of at least six percent (6%). No Working Interest Owner who has been Unit Operator and who has been removed may vote for self-succession.

SECTION 9. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT: Costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid, apportioned among and borne by the Working Interest Owners in accordance with the Unit Operating Agreement. Such Unit Operating Agreement shall also provide the manner in which Working Interest Owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases or other independent contracts and such other rights and obligations as between Unit Operator and the Working Interest Owners as may be agreed upon by the Unit Operator and the Working Interest Owners; however, no such

Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement, and in case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Unit Agreement shall prevail. Two true copies of any Unit Operating Agreement executed pursuant to this Section shall be filed with the Land Commissioner and three true copies thereof shall be filed with the Supervisor, prior to approval of this Agreement.

SECTION 10. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR:

Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Acceptable evidence of title to said rights shall be deposited with said Unit Operator, and together with this Agreement, shall constitute and define the rights, privileges and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

SECTION 11. PLAN OF OPERATIONS. It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances in paying quantities and that the object and purpose of this Agreement is to formulate and to put into effect a secondary recovery project in order to effect additional recovery of Unitized Substances, prevent waste and conserve natural resources. The parties hereto agree that the Unit Operator may, subject to the consent and approval of a plan of operation by the Working Interest

Owners, the Supervisor, and the Land Commissioner, inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil and any one or more other substances or combination of substances whether produced from the Unit Area or not, and that the location of input wells and the rates of injection therein and the rate of production shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. Subject to like approval the Plan of Operation may be revised as conditions may warrant.

The initial plan of operation shall be filed with the Supervisor and the Land Commissioner concurrently with the filing of this Unit Agreement for final approval. Said initial plan of operation and all revisions thereof shall be as complete and adequate as the Supervisor and the Land Commissioner may determine to be necessary for timely operation consistent herewith. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of operation.

SECTION 12. TRACT PARTICIPATION: In Exhibit "B" attached hereto, there are listed and numbered the various tracts within the Unit Area and set forth opposite each tract are figures which represent the percentage of participation allocated to each tract in the Unit Area during the Primary and Secondary Phases of Operations, respectively, as those terms are defined herein.

The percentage of participation of each tract during the Primary Phase of operations shall be based upon the summation of two factors to be weighed as follows, to-wit:

(1) 50 times the ratio of primary reserve from the tract to the total primary reserves from all tracts of unitized land. Primary reserves as used herein are those which were estimated as of January 1, 1961 at 276,576 barrels as to all tracts in the Unit Area.

(2) 50 times the ratio of the rate of production from the tract to the rate of production from all tracts of unitized land. The rate of production as used herein is obtained by measuring the gross oil production from the period July 1, 1960 to January 1, 1961 as shown on the pertinent Operator's Monthly Reports, Form C-115, on file with the New Mexico Oil Conservation Commission.

The percentage of participation to each tract during the Secondary Phase of Operations shall be based upon the ratio of the ultimate primary recovery from the tract to the ultimate primary recovery from all tracts of unitized land. Ultimate primary recovery as used herein is the sum of the accumulated oil production through December 31, 1960 as shown on the pertinent Operators Monthly Reports, Form C-115, on file with the New Mexico Oil Conservation Commission and the 276,576 barrels of estimated remaining primary oil on January 1, 1961 on all tracts in the Unit Area.

After said remaining primary oil has been produced, effective as of 7:00 o'clock a.m. the first day of the following calendar month the tract participations shall be in accordance with the Secondary Phase allocations.

SECTION 13. TRACTS QUALIFIED FOR PARTICIPATION: On and after the effective date hereof the tracts within the Unit Area which shall be entitled to participation in the production of Unitized Substances therefrom shall be those tracts within the Unit Area and more particularly described in said Exhibit "B" that are qualified as follows:

(a) Each and all of those tracts as to which Working Interest Owners owning 100% of the Working Interest in said tract and Royalty Owners owning 100% of the Royalty Interest in said tract have subscribed, ratified or consented to this Agreement; and

(b) Each and all of those tracts as to which Working Interest Owners owning not less than 95% of the Working Interest therein and Royalty Owners owning not less than 75% of the Royalty Interest therein have executed this Agreement, and in which the Working Interest Owners in said tract who have executed this Agreement have agreed to indemnify and hold harmless all other parties hereto, in a manner satisfactory to 85% of the Working Interest Owners qualified under (a), against any and all claims and demands that may be made by the nonjoining Working Interest Owners or Royalty Owners, or both, on account of the commitment and joinder of such tract to the Unit Agreement, and operation thereof under such conditions on the basis herein provided, and as to which 85% of the Working Interest Owners qualified under (a), exclusive of the Working Interest Owner submitting such tract, have approved the commitment of such tract to this Unit Agreement.

If, on the effective date of this Agreement, there is any tract or tracts which have not been effectively committed to or made subject to this Agreement by qualifying as above provided,

then such tract or tracts shall not be entitled to participate hereunder. Unit Operator shall, when submitting this Agreement for final approval by the Land Commissioner and the Director, file therewith a schedule of those tracts which have been committed and made subject to this Agreement and are entitled to participate in the production from the Unit Area hereunder. Said schedule shall set forth opposite each such committed tract the lease number or assignment number, the owner of record of the lease, and the percentage participation of such tract which shall be computed according to the participation formula set out in Section 12 (Tract Participation) above. This schedule of participation shall be a part of Exhibit "B" and upon approval thereof by the Land Commissioner and the Director shall become a part of this Agreement and shall govern the allocation of production of Unitized Substances until a new schedule is filed and approved by the Land Commissioner and the Director.

SECTION 14. ALLOCATION OF UNITIZED SUBSTANCES: All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on unitized land for drilling, operating, camp, and other production or development purposes and for pressure maintenance or unavoidable loss) shall be apportioned among and allocated to the committed tracts within the Unit Area in accordance with the respective tract participation effective hereunder during the respective periods such Unitized Substances were produced, as set forth in the schedule of participation in Exhibit "B". The amount of Unitized Substances so allocated to each tract, and only that amount, (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such tract) shall, for all intents, uses and purposes, be deemed to have been produced from such tract.

The Unitized Substances allocated to each tract shall be distributed among, or accounted for, to the parties executing, consenting to or ratifying this Agreement entitled to share in the production from such tract in the same manner, in the same proportions, and upon the same conditions, as they would have participated and shared in the production from such tracts, or in the proceeds thereof, had this Agreement not been entered into; and with the same legal force and effect.

No tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances, and nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the joinder of any tract.

If the Working Interest and the Royalty Interest in any tract are divided with respect to separate parcels or portions of such tract and owned severally by different persons, the percentage participation assigned to such tract shall, in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of oil and gas rights therein or by purchase from such owners. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on unitized land, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto. Subject to Section 15 hereof, any extra expenditure

incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the party receiving the same in kind. In the event any party hereto shall fail to take or otherwise adequately dispose of its proportionate share of the production from the Unit Area currently as and when produced, then so long as such conditions continue, Unit Operator, for the account and at the expense of such party and in order to avoid curtailing the operation of the Unit Area, may sell or otherwise dispose of such production to itself or others on a day-to-day basis at not less than the prevailing market price in the area for like production, and the account of such party shall be charged therewith as having received such production. The net proceeds, if any, of the Unitized Substances so disposed of by Unit Operator shall be paid to the party entitled thereto. Notwithstanding the foregoing, Unit Operator shall not make a sale into interstate commerce of any other party's share of gas production without first giving such other party sixty (60) days notice of such intended sale.

Any party receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any tract, or receiving the proceeds therefrom if the same is sold or purchased by Unit Operator, shall be responsible for the payment of all Royalty on the lease or leases and tracts contributed by it and received into the Unit, and each such party shall hold each other party hereto harmless against all claims, demands and causes of action for such Royalty on the lease or leases and tracts contributed by it to the Unit Area.

If, after the effective date of this Agreement, there is any tract or tracts that are subsequently committed hereto, as provided in Section 4 (Expansion) hereof, or any tract or tracts within the Unit Area not committed hereto as of the effective date hereof but which are subsequently committed hereto under the provisions of Section 30 (Nonjoinder and Subsequent

Joinder), or if any tract is excluded from the Unit Area as provided for in Section 29 (Loss of Title), the schedule or participation as shown in Exhibit "B", subject to Section 12 (Tract Participation) or Section 30 (Nonjoinder and Subsequent Joinder), whichever is appropriate, shall be revised by the Unit Operator and distributed to the Working Interest Owners, the Land Commissioner, and the Director to show the new percentage participation of all the then effectively committed tracts; and the revised Exhibit "B", upon approval by the Land Commissioner and the Director, shall govern all the allocation of production from and after the effective date thereof until a new schedule is filed and approved by the Land Commissioner and the Director.

SECTION 15. ROYALTY SETTLEMENT: The State of New Mexico and the United States of America and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the substances produced from any tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such tract, and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for Royalty Interest not taken in kind shall be made by Working Interest Owners responsible therefor under existing contracts, laws and regulations, on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any Royalty due under their leases, except that such Royalty shall be computed in accordance with the terms of this Unit Agreement.

If gas obtained from lands not subject to this Agreement is introduced into the Unitized Formation, for use in repressuring, stimulation of production or increasing ultimate recovery in conformity with a plan approved pursuant to Section 11 (Plan of Operations), a like amount of gas, less appropriate deductions for loss

from any cause, may be withdrawn from the Unitized Formation, royalty free as to dry gas but not as to the products extracted therefrom; provided that such right of withdrawal shall terminate as of the effective date of termination of the Unit Agreement.

All royalty due the State of New Mexico and the United States of America and the other Royalty Owners hereunder shall be computed and paid on the basis of all Unitized Substances allocated to the respective tract or tracts committed hereto, in lieu of actual production from such tract or tracts.

Each Royalty Owner (other than the State of New Mexico and the United States of America) that executes this Agreement represents and warrants that it is the owner of a Royalty Interest in a tract or tracts within the Unit Area as its interest appears in Exhibit "B" attached hereto. If any Royalty Interest in a tract or tracts should be lost by title failure or otherwise in whole or in part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interest of all parties shall be adjusted accordingly.

SECTION 16. RENTAL SETTLEMENT: Rentals or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof, due under their leases. Rental for lands of the State of New Mexico subject to this Agreement shall be paid at the rate specified in the respective leases from the State of New Mexico. Rental or minimum royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America,

unless rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary or his duly authorized representative.

SECTION 17. CONSERVATION: Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to Federal and State laws and regulations.

SECTION 18. DRAINAGE: The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from unitized land by wells on land not subject to this Agreement.

SECTION 19. LEASES AND CONTRACTS CONFORMED AND EXTENDED: The terms, conditions and provisions of all leases, subleases and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect, and the parties hereto hereby consent that the Secretary and the Land Commissioner, respectively, shall and by their approval hereof, or by the approval hereof by their duly authorized representatives, do hereby establish, alter, change or revoke the drilling, producing, rental, minimum royalty and royalty requirements of Federal and State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this Agreement.

Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every part or separately owned tract subject to this Agreement, regardless of whether there is any development

of any particular part or tract of the Unit Area, notwithstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling, producing or secondary recovery operations performed hereunder upon any tract of unitized lands shall be accepted and deemed to be performed upon and for the benefit of each and every tract of unitized land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the Land Commissioner and the Supervisor or their duly authorized representatives, shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of unitized lands.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development or operation for oil and gas which by its terms might expire prior to the termination of this Agreement, is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Termination of this Agreement shall not affect any lease which, pursuant to the terms thereof or any applicable laws, shall continue in force and effect thereafter.

(f) Any lease embracing lands of the State of New Mexico, which is made subject to this Agreement, shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(g) Any lease embracing lands of the State of New Mexico having only a portion of its land committed hereto, shall be segregated as to that portion committed and that not committed, and the terms of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. Provided, however, that notwithstanding any of the provisions of this Agreement to the contrary, such lease shall continue in full force and effect beyond the term provided therein as to all lands embraced in such lease if oil or gas is, or has heretofore been discovered in paying quantities on some part of the lands embraced in such lease committed to this Agreement or, so long as a portion of the Unitized Substances produced from the Unit Area is, under the terms of this Agreement, allocated to the portion of the lands covered by such lease committed to this Agreement, or, at any time during the term hereof, as to any lease that is then valid and subsisting and upon which the lessee or the Unit Operator is then engaged in bona fide drilling, reworking, or secondary recovery operations on any part of the lands embraced in such lease, then the same as to all lands embraced therein shall remain in full force and effect so long as such operations are diligently prosecuted, and if they result in the production of oil or gas, said lease shall continue in full force and effect as to all of the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

(h) The segregation of any Federal lease committed to this Agreement is governed by the following provision in the fourth paragraph of Section 17 (j) of the Mineral Leasing Act, as amended by the

Act of September 2, 1960 (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization; Provided, however, that any such lease as to the non-unitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in paying quantities."

SECTION 20. MATHEMATICAL ERRORS: It is hereby agreed by all parties to this Agreement that Unit Operator is empowered to correct any mathematical errors which might exist in the pertinent exhibits to this Agreement upon approval of the Land Commissioner and the Supervisor.

SECTION 21. COVENANTS RUN WITH LAND: The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

SECTION 22. EFFECTIVE DATE AND TERM: This Agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall

become effective as of 7:00 o'clock a.m. of the first day of the calendar month next following:

(a) The execution or ratification of this Agreement and the Unit Operating Agreement by Working Interest Owners owning a combined Primary Phase Unit Participation of at least 95 percent, and the execution or ratification of the Agreement by Royalty Owners owning a combined interest of at least 75 percent of the Royalty Interest, in said Unit Area; and

(b) The approval of this Agreement by the Land Commissioner, the Secretary or his duly authorized representative, and the Commission; and

(c) The filing of at least one counterpart of this Agreement for record in the office of the County Clerk of Lea County, New Mexico, by the Unit Operator; and provided, further, that if (a), (b) and (c) above are not accomplished on or before July 1, 1962, this Agreement shall ipso facto terminate on said date (hereinafter called "termination date") and thereafter be of no further force or effect, unless prior thereto this Agreement has been executed or ratified by Working Interest Owners owning a combined Primary Phase Unit Participation of at least 90 percent, and the Working Interest Owners owning a combined unit participation of at least 90 percent committed to this Agreement have decided to extend said termination date for a period not to exceed six months (hereinafter called "extended termination date"). If said termination date is so extended and (a), (b) and (c) are not accomplished on or before said extended termination date, this Agreement shall ipso facto terminate on said extended termination date and thereafter be of no further force or effect.

Unit Operator shall, within thirty (30) days after the effective date of this Agreement, file for record in the office where a counterpart of this Agreement is recorded, a certificate to the effect that this Agreement has become effective according to its terms and stating further the effective date.

The term of this Agreement shall be for and during the time that Unitized Substances are produced in paying quantities from the Unit Area and so long thereafter as drilling, reworking or other operations (including secondary recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days, unless sooner terminated by Working Interest Owners in the manner hereinafter provided.

This Agreement may be terminated with the approval of the Land Commissioner and the Director by Working Interest Owners

owning 90 percent Unit Participation whenever such Working Interest Owners determine that Unit operations are no longer profitable, feasible or in the interest of conservation. Notice of any such termination shall be given by Unit Operator to all parties hereto.

Upon termination of this Agreement, the further development and operation of the Unit Area as a Unit shall be abandoned, Unit operations shall cease, and thereafter the parties hereto shall be governed by the terms and provisions of the leases and contracts affecting the separate tracts just as if this Agreement had never been entered into.

If not otherwise covered by the leases unitized under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit operations.

SECTION 23. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION: All production and the disposal thereof shall be in conformity with allocations and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and within the limits made or fixed by the Commission to alter or modify the quantity and rate of production under this Agreement, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification; provided, further, that no such alteration or modification shall be effective as to any land of the State of New Mexico as to the rate of prospecting and

development in the absence of the specific written approval thereof by the Land Commissioner and as to any lands of the State of New Mexico or privately-owned lands subject to this Agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Commission.

Powers in this Section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen days from notice, and thereafter subject to administrative appeal before becoming final.

SECTION 24. NONDISCRIMINATION: In the performance of work under this agreement Unit Operator agrees to comply with the nondiscrimination provisions of Executive Order 10925 (26 F.R. 1977).

SECTION 25. APPEARANCES: Unit Operator shall have the right to appear for or on behalf of any and all interests affected hereby before the Land Commissioner, the Department, and the Commission, and to appeal from any order issued under the rules and regulations of the Land Commissioner, the Department, or the Commission, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Land Commissioner, the Department, or the Commission, or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

SECTION 26. NOTICES: All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 27. NO WAIVER OF CERTAIN RIGHTS: Nothing in this Agreement contained shall be construed as a waiver by any

development in the absence of the specific written approval thereof by the Land Commissioner and as to any lands of the State of New Mexico or privately-owned lands subject to this Agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Commission.

Powers in this Section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen days from notice, and thereafter subject to administrative appeal before becoming final.

SECTION 24. NONDISCRIMINATION: In connection with the performance of work under this agreement, the Unit Operator agrees to comply with all of the provisions of section 301 (1) to (7) inclusive, of Executive Order 10925 (26 F.R. 1977), which are hereby incorporated by reference in this agreement.

SECTION 25. APPEARANCES: Unit Operator shall have the right to appear for or on behalf of any and all interests affected hereby before the Land Commissioner, the Department, and the Commission, and to appeal from any order issued under the rules and regulations of the Land Commissioner, the Department, or the Commission, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Land Commissioner, the Department, or the Commission, or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

SECTION 26. NOTICES: All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 27. NO WAIVER OF CERTAIN RIGHTS: Nothing in this Agreement contained shall be construed as a waiver by any

party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State wherein said unitized lands are located, or rules or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive.

SECTION 28. UNAVOIDABLE DELAY: All obligations under this Agreement requiring the Unit Operator to commence or continue secondary recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this Agreement shall be suspended while, but only so long as the Unit Operator despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State or municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

SECTION 29. LOSS OF TITLE: In the event title to any tract of unitized land shall fail so as to render the tract inoperable under this Agreement and the true owner cannot be induced to join this Unit Agreement, such tract shall be automatically regarded as not committed hereto and there shall be such re-adjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any Royalty, Working Interest or other interest subject thereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided, that as to State or Federal land or leases, no

payments of funds due the State of New Mexico or the United States of America shall be withheld, but such funds shall be deposited as directed by the Land Commissioner or the Supervisor (as the case may be), to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

SECTION 30. NONJOINDER AND SUBSEQUENT JOINDER: If the owner of any substantial interest in a tract within the Unit Area fails or refuses to subscribe, ratify, or consent in writing to this Agreement, the Working Interest Owner in that tract who has executed or ratified this Agreement may withdraw said tract from this Agreement by written notice to the Director, the Land Commissioner, and Unit Operator prior to the effective date of this Agreement. Joinder by any Royalty Owner, at any time, must be accompanied by appropriate joinder of the corresponding Working Interest Owner in order for the interest of such Royalty Owner to be regarded as effectively committed. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement in order for such interest to be regarded as effectively committed to this Unit Agreement.

Any oil or gas interest in the Devonian Age Formation not committed hereto prior to submission of this Agreement to the Land Commissioner and the Director for final approval may thereafter be committed hereto upon compliance with the applicable provisions of this Section and of Section 13 (Tracts Qualified for Unit Participation) hereof, at any time up to the effective date hereof and for a period to and including six months thereafter, on the same basis of participation as provided in said Section 13, by the owner or owners thereof subscribing, ratifying, or consenting in writing to this Agreement and, if the interest is a Working Interest, by the

owner of such interest subscribing also to the Unit Operating Agreement.

It is understood and agreed, however, that from and after six months from the effective date hereof the right of subsequent joinder as provided in this Section shall be subject to such requirements or approvals and on such basis as may be agreed upon by 90 percent Unit Participation. Such joinder by a proposed Working Interest Owner must be evidenced by his execution or ratification of this Agreement and the Unit Operating Agreement. Such joinder by a proposed Royalty Owner must be evidenced by his execution, ratification or consent of this Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder in behalf of such proposed Royalty Owner. Except as may be otherwise herein provided, subsequent joinder to this Agreement shall be effective at 7:00 o'clock a.m. as of the first day of the month following the filing with the Land Commissioner and the Supervisor of duly executed counterparts of any and all documents necessary to establish effective commitment of any tract or interest to this Agreement, unless objection to such joinder by the Land Commissioner or the Director is duly made within sixty (60) days after such filing.

SECTION 31. COUNTERPARTS: This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the above described Unit Area.

SECTION 32. TAXES: Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the unitized land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No such taxes shall be charged to the United States or to the State of New Mexico, nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

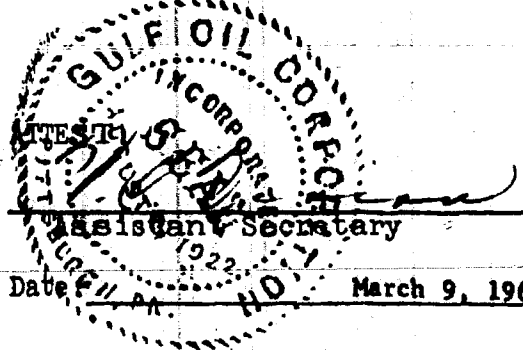
SECTION 33. CONFLICT OF SUPERVISION: Neither the Unit Operator nor the Working Interest Owners, nor any of them, shall be subject to any forfeiture, termination or expiration of any rights hereunder or under any leases or contracts subject hereto, or to any penalty or liability on account of delay or failure in whole or in part to comply with any applicable provisions thereof to the extent that the said Unit Operator or the Working Interest Owners, or any of them, are hindered, delayed or prevented from complying therewith by reason of failure of the Unit Operator to obtain, in the exercise of due diligence, the concurrence of proper representatives of the United States and proper representatives of the State of New Mexico in and about any matters or things concerning which it is required herein that such concurrence be obtained. The parties hereto, including the Commission, agree that all powers and authority vested in the Commission in and by any provisions of this Agreement are vested in the Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico.

SECTION 34. NO PARTNERSHIP. The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

SECTION 35. PRODUCTION AS OF THE EFFECTIVE DATE. Unit Operator shall make a proper and timely gauge of all lease and other tanks within the Unit Area in order to ascertain the amount of merchantable oil above the pipe line connection in such tanks as of 7:00 a.m. on the effective date hereof. All such oil which has then been produced legally shall be and remain the property of the Working Interest Owner entitled thereto, the same as if the Unit had not been formed; and such Working Interest Owner shall promptly remove said oil from the Unit Area. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owner, subject to the payment of all Royalty to Royalty Owners under the terms hereof. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after effective date hereof.

If, as of the effective date hereof, any Tract is overproduced with respect to the allowable of the wells on that Tract and the amount of overproduction has been sold or otherwise disposed of, such overproduction shall be regarded as a part of the Unitized Substances produced after the effective date hereof and shall be charged to such Tract as having been delivered to the parties entitled to Unitized Substances allocated to such Tract.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.



GULF OIL CORPORATION

Inw	<i>W.A.</i>
Comp	<i>W.A.</i>
Leg	
Prod	<i>M.H.</i>

By *W.A. Shellshear*
Attorney-in-Fact

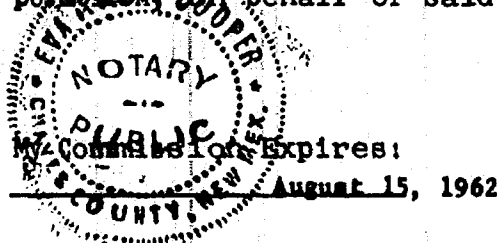
Date March 9, 1962

UNIT OPERATOR AND WORKING INTEREST OWNER

THE STATE OF NEW MEXICO

COUNTY OF CHAVES

The foregoing instrument was acknowledged before me this 9th day of March, 1962, by W. A. SHELLSHEAR Attorney-in-Fact for GULF OIL CORPORATION, a Pennsylvania corporation, on behalf of said corporation.



Emma Marie Cooper
Notary Public

R 38 E

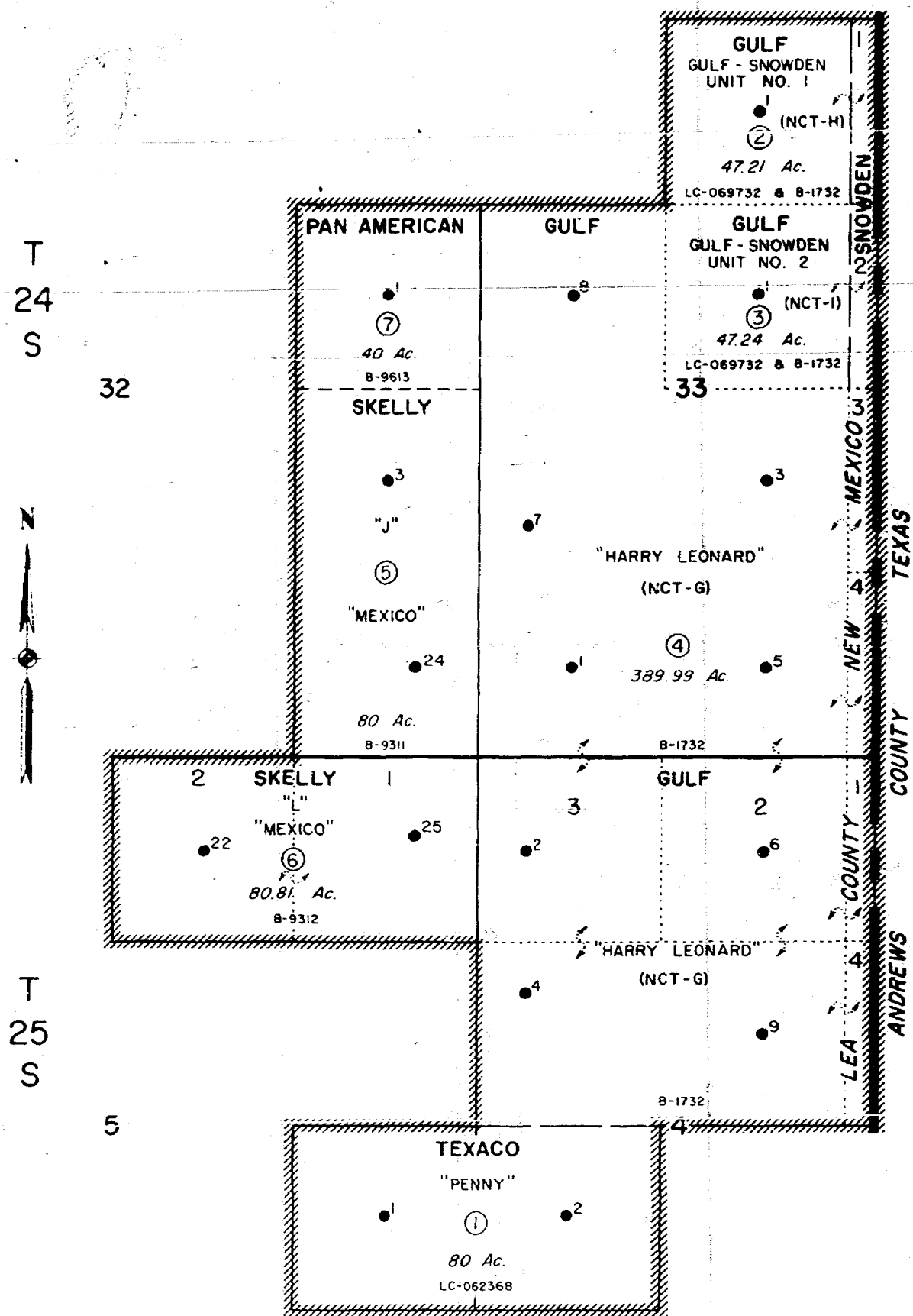


EXHIBIT A
WEST DOLLARHIDE DEVONIAN UNIT
LEA COUNTY, NEW MEXICO

Unit Area Boundary

Tract Number

Scale: 1" = 1000'

EXHIBIT "B"
WEST DOLLARHIDE - DEVONIAN UNIT
LEA COUNTY, NEW MEXICO

TRACT NO.	DESCRIPTION OF LAND	NO. OF ACRES	UNIT NO. LEASE AND/OR ASSIGN. NO.	BASIC ROYALTY	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND AMOUNT	WORKING INTEREST OWNER AND AMOUNT	PER CENT PARTICIPATION OF TRACT IN UNIT PRIMARYSECONDARY
1	NW/4 SW/4 Sec. 4 and NE/4 SE/4 Sec. 5, T-25-S, R-38-E	80	LC-062368	12.5%	Texaco Inc.	John M. Loffland, Jr. 0.12500% Selma E. Andrews 0.26853% Albuquerque Nat'l Bank, Testamentary Trustee of Frank A. Andrews, Deceased 0.23147% Skelly Oil Company 0.62500% M. W. Coll 0.05859% Roger B. Owings 0.12500% Neville G. Penrose 0.12500% Effie E. Valentine 0.00781% The First Nat'l Bank of Denver, Successor Trustee Under the Last Will and Testament of Charles T. Lupton, Deceased 0.06250% T. A. Pedley, Jr. 0.01563% The First Nat'l Bank of Denver, Successor Trustee Under the Will of Josephine M. Smith, Deceased 0.21484% Gracean M. Pedley 0.01563%	Texaco Inc. 100.00000%	5.21082428.3227041

TRACT NO.	DESCRIPTION OF LAND	NO. OF ACRES	UNIT NO. LEASE AND/OR ASSIGN. NO.	BASIC ROYALTY	LESSEE OF RECORD	OVERRIDING ROYALTY		WORKING INTEREST		PER CENT PARTICIPATION	
						OWNER	AMOUNT	OWNER	AMOUNT	OF TRACT IN UNIT	
										PRIMARY	SECONDARY
2	Lot 1 and NE/4 NW/4 Sec. 33, T-24-S, R-38-E	47.21	14-08-001-931 (LC-069732 & B-1732)	12.5% (United States of America 1.90900% James H. Snowden State of New Mexico 10.59100%)	Gulf Oil Corp. Fred J. Brotherton George A. Miehaus, Jr. James H. Snowden E. L. Lockwood W. E. Irvin	L. E. Hults * 0.40677% The Fort Worth Nat'l. Bank, Trustee for Roy S. Magruder 0.37250% Helen Magruder Kolliker 0.37250%		Gulf Oil Corp. 85.10000% Fred J. Brotherton 1.86250% Leslie B. Gardner 1.86250% George A. Miehaus, Jr. 0.93125% The First Nat'l. Bank of Fort Worth, Accounts of: James H. Snowden 3.72500% Gus Layton 3.72500% E. L. Lockwood 1.86250% W. E. Irvin 0.93125%		14.3645100	9.2338392
3	Lot 2 and SE/4 NW/4 Sec. 33, T-24-S, R-38-E	47.24	14-08-001-932 (LC-069732 & B-1732)	12.5% (United States of America 1.91570% James H. Snowden State of New Mexico 10.58430%)	Gulf Oil Corp. Fred J. Brotherton George A. Miehaus, Jr. James H. Snowden E. L. Lockwood W. E. Irvin	L. E. Hults * 0.40677% The Fort Worth Nat'l. Bank, Trustee for Roy S. Magruder 0.37250% Helen Magruder Kolliker 0.37250%		Gulf Oil Corp. 85.10000% Fred J. Brotherton 1.86250% Leslie B. Gardner 1.86250% George A. Miehaus, Jr. 0.93125% The First Nat'l. Bank of Fort Worth, Accounts of: James H. Snowden 3.72500% Gus Layton 3.72500% E. L. Lockwood 1.86250% W. E. Irvin 0.93125%		9.5736371	7.7812763
4	SW/4 NW/4, Lots 3, 4 & SW/4 Sec. 33, T-24-S, R-38-E, and Lots 1, 2, 3 & 4, and S/2 NW/4 Sec. 4, T-25-S, R-38-E	389.99	B-1732	12.5% Gulf Oil Corp.	None			Gulf Oil Corp. 100.00000%		0.1047644	0.0851506
										11.2498675	9.1436854
										23.8884315	46.2278253

* Production Payment to be retired upon the receipt of \$14,450.

TRACT NO.	DESCRIPTION OF LAND	UNIT NO. NO. OF ACRES	LEASE AND/OR ASSIGN. NO.	BASIC ROYALTY	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND AMOUNT	WORKING INTEREST OWNER AND AMOUNT	PER CENT PARTICIPATION OF TRACT IN UNIT	
								PRIMARY	SECONDARY
5	E/2 SE/4 Sec. 32 T-24-S, R-38-E	80	B-9311	12.5%	Skelly Oil Company	None	Skelly Oil Co. 50.00000%	5.8766799	3.1552963
							Joe D. Kennedy, Y.Q. McClammon and George Thompson, Jr., Trustees of Marilyn Maxwell Trust		
							5.00000%	0.5876680	0.3155296
							Texaco Inc.		
							25.00000%	2.9383399	1.5776481
							J. C. Maxwell		
							17.50000%	2.0568379	1.1043537
							Joseph D. Kennedy		
							2.50000%	0.2938340	0.1577648
								11.7533597	6.3105925
6	Lots 1 and 2, Sec. 5, T-25-S, R-38-E	80.81	B-9312	12.5%	Skelly Oil Company	None	Skelly Oil Co. 50.00000%	14.1133232	6.3715711
							Joe D. Kennedy, Y.Q. McClammon and George Thompson, Jr., Trustees of Marilyn Maxwell Trust		
							5.00000%	1.4113323	0.6371571
							Texaco Inc.		
							25.00000%	7.0566616	3.1857855
							J. C. Maxwell		
							17.50000%	4.9396631	2.2300499
							Joseph D. Kennedy		
							2.50000%	0.7056661	0.3185786
								28.2266463	12.7431422
7	SE/4 NE/4 Sec. 32, T-24-S, R-38-E	40	B-9613	12.5%	Pan American Petroleum Corp.	None	Pan American Petroleum Corp. 100.00000%	2.7913055	6.4014755
TOTALS								100.0000000	100.0000000
							Federal Lands State Lands Privately Owned Lands		
							94.45 Acres 670.80 Acres None 765.25 Acres		
							12.342% of Unit Area 87.658% of Unit Area 100.000% of Unit Area		