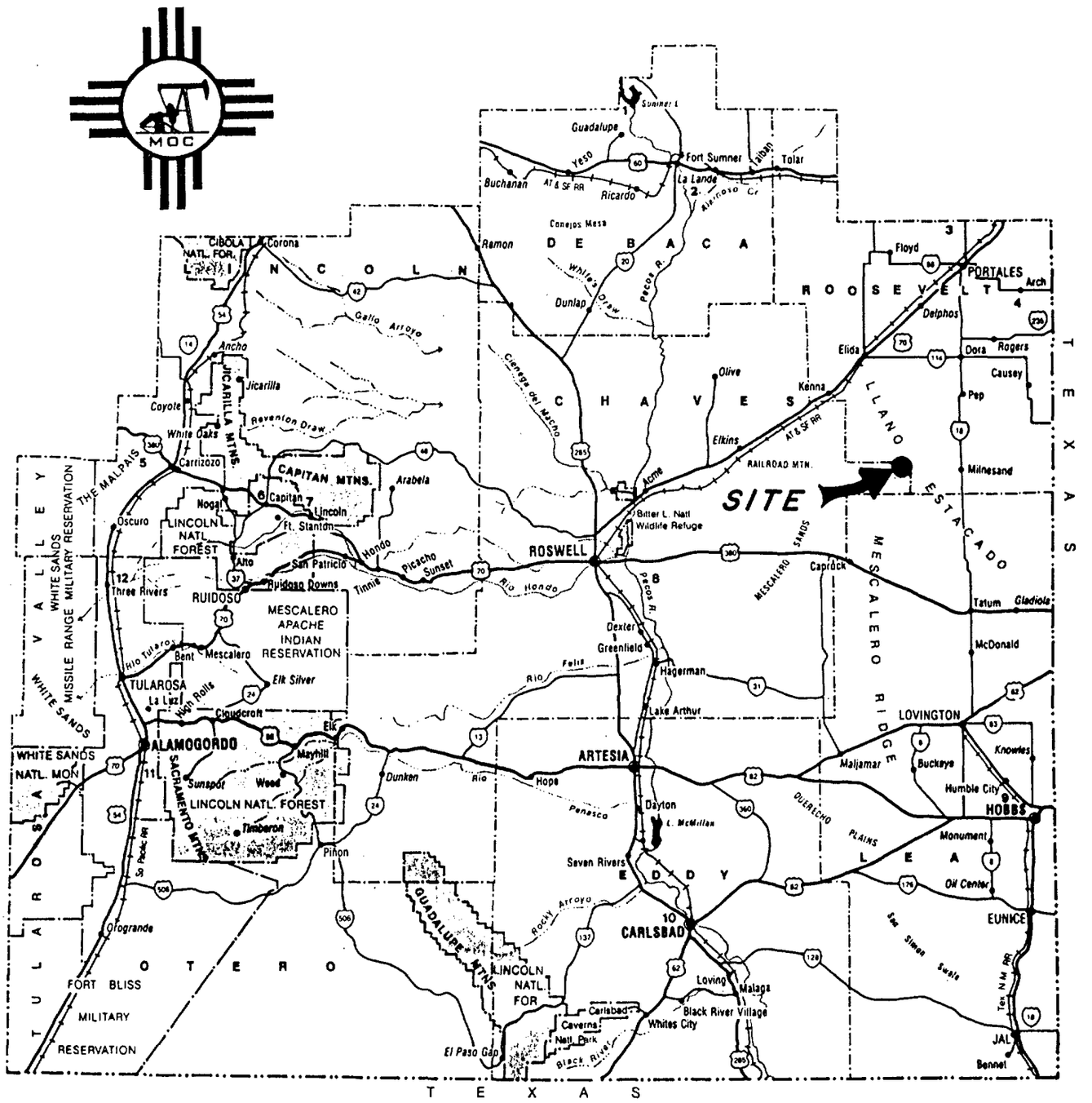


GENERAL LOCATION MAP

WATER FLOOD STUDY

MURPHY OPERATING CORPORATION

CHAVEROO SAN ANDRES FIELD

PROPOSED HALEY CHAVEROO SAN ANDRES UNIT

ROOSEVELT & CHAVES COUNTIES, NEW MEXICO

20 0 20 40 60 Miles

EXHIBIT VIII.A.

ROSWELL GEOLOGICAL SOCIETY SYMPOSIUM

Author: George L. Scott, Jr.
Affiliation: Consulting Geologist
Date: November 1966

Field Name: Chaveroo
Location: T-7,8-S, R-33, 34-E
County & State: Chaves & Roosevelt Counties, New Mexico

Discovery Well: Champlin Pet. Co. & Warren American Oil Co. #1 Hondo State, SE/4 NE/4 Section 32, T-7-S, R-33-E. Completed 3/20/65 IPP 148 BOPD + 2 BWPD, GOR 810.

Exploration Method Leading to Discovery: 80% subsurface 20% seismic

Pay Zone: Top of field pay is at 4184 (+255)

Formation Name: San Andres Depth & Datum Discovery Well: Top perf in disc. well 4299.

Lithology Description: Tan to brown, fine to medium crystalline dolomite with scattered anhydrite inclusions, and vugular, inter-crystalline and fracture porosity. Most wells complete from 1st to 2nd porosities; scattered wells also perf 3rd porosity. The net porosity is based on a cut-off of 4% and covers only 1st and 2nd porosities. (Cont. under Type Trap)

Approximate average pay: 210 gross 40 net Productive Area 11,000 acres (on Nov. 1, 1966)

Type Trap: Stratigraphic. Porosity and permeability fails up dip along the north and west margin of the field to provide the trap.

Pay Zone (cont. from above). Net porosity map is not a strict net pay map as there are wells where extensive fracturing has lowered the porosity cut-off to 2 1/2%. It also includes porosity in the 2nd porosity interval at the south and southeast field margin that is below the irregular oil-water contact.

Reservoir Data: 6 % Porosity, .7 Md Permeability, 25 % Sw, 16 % So

Oil: 26° API, black, sour

Gas: GOR 400 to 1000

Water: 66,600 Na+K, 27,680 Ca, 4860 Mg, 165,600 Cl, 200 SO_4, 240 HCO_3, ____ Fe

Specific Gravity 1.174 Resistivity .035 ohms @ 110 °F

Initial Field Pressure: 1340 psi @ +140 datum Reservoir Temp. 110°F

Type of Drive: Solution gas

Normal Completion Practices: Set casing through pay and selectively perforate with one shot per interval. Acidize with 2000 gallons of acid, and sand fracture with 30,000 gallons of oil and 30,000 pounds of sand.

Type completion: Both flowing and pumping Normal Well Spacing 40 Acres

Deepest Horizon Penetrated & Depth: Bough "C" at 9100' in the discovery well. At the south end of the field several abandoned Bough "C" wells have been plugged back to the San Andres

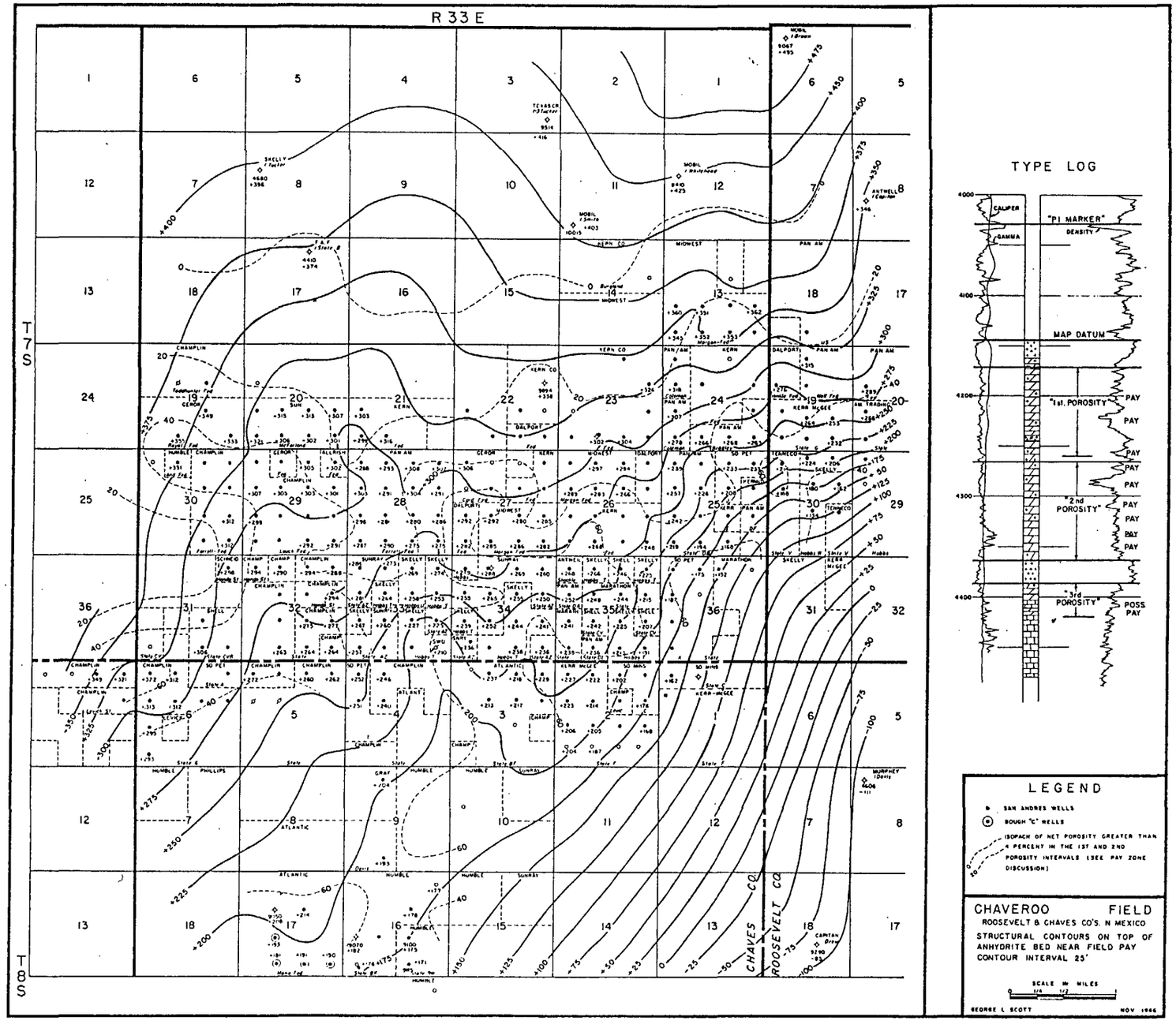
Other Producing Formations in Field: None within the area of San Andres production, however, Bough "C" production in the Tobac field adjoins the Chaveroo San Andres field on the south.

Production Data:

YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF		YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF	
		Prod.	S.I.or Abd.	ANNUAL	CUMULATIVE			Prod.	S.I.or Abd.	ANNUAL	CUMULATIVE
1965	OIL	45		166,896	166,896		OIL				
	GAS			179,400	179,400		GAS				
1966	*OIL	241		1,474,705	1,641,601		OIL				
	GAS			1,084,527	1,263,927		GAS				
	OIL						OIL				
	GAS						GAS				
	OIL						OIL				
	GAS						GAS				

* 1966 production to September 30, 1966.

EXHIBIT VIII. B.


R 33 E
T 7 S
T 8 S
CHAVES CO.
ROOSEVELT CO.
TYPE LOG
CALIPER
GAMMA
"PI MARKER"
DENSITY
MAP DATUM
"1st POROSITY"
PAY
"2nd POROSITY"
"3rd POROSITY"
POSS PAY
LEGEND
SAN ANDRES WELLS
BOUGH "C" WELLS
ISOPACH OF NET POROSITY GREATER THAN 4 PERCENT IN THE 1ST AND 2ND POROSITY INTERVALS (SEE PAY ZONE DISCUSSION)
CHAVEROO FIELD
ROOSEVELT & CHAVES CO'S. N MEXICO
STRUCTURAL CONTOURS ON TOP OF ANHYDRITE BED NEAR FIELD PAY
CONTOUR INTERVAL 25'
SCALE IN MILES
GEORGE L SCOTT
NOV 1946

Well #33-11

Completion Date: 06/27/65

Completion Interval: 4218-4419

Perfs: 4408, 4413, 4419, 4218, 4246, 4251, 4276, 4295, 4307, 4314, 4223, 4330, 4338, 4369

Initial Treatment:
Acid 2000 G
Frac 30000 #

Initial Potential:
F 288 BOPD
334 MCFGPD
N/A BWPD

Cumulative Recovery to January 1, 1988:

Oil 67,376 BBL
Gas 68,549 MCF
Wat 96,555 BBL

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY SUNRAY D-X OIL COMPANY — FILE NO. WP-3-2535
WELL STATE "AZ" NO. 2 — DATE 6-15-65 — ENGRS. BOONE
FIELD CHAVEROO — FORMATION SAN ANDRES — ELEV. 4426' KB
COUNTY ROOSEVELT — STATE NEW MEXICO — DRLG. FLD. WATER BASE MUD — CORES DIAMOND 3 1/2"
LOCATION 1980' FS & 1940 FWL SEC 33-T7S-R33E — REMARKS SAMPLED AS DIRECTED BY CLIENT

COMPLETION COREGRAPH

SAND, SHALE, LIMESTONE, DOLOMITE, CONGLOMERATE, OOLITES, CHERT, ANHYDRITE

SAMPLE CHARACTERISTICS F:Fractured L:Laminated FG; MG; CG:Type Grain Size S:Stylolitic V:Vuggy — PROBABLE PRODUCTION O:Oil W:Water G:Gas T:Transitional

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY, MD * = Horizontal Perm Plug HORIZONTAL MAX.	90	POROSITY %	RESIDUAL SATURATION % PORE SPACE OIL	TOTAL WATER	
		WHOLE CORE ANALYSIS					
1	4301.0-02.0	<0.1	<0.1	4.3	15.9	58.0	
2	02.0-05.5	<0.1	<0.1	4.7	17.7	40.0	F
3	4305.5-07.0	0.2	0.2	8.2	16.1	43.8	F
4	07.0-08.5	0.4	0.3	10.5	9.6	44.6	
5	4308.5-10.0	0.1	<0.1	7.9	12.2	36.8	F
6	10.0-11.5	1.2	0.9	14.5	14.6	34.0	
7	4311.5-13.0	0.8	0.4	9.1	17.6	44.0	F
8	13.0-14.6	<0.1	<0.1	6.6	1.1	92.3	
9	4314.6-16.0	<0.1	<0.1	6.9	18.2	51.7	F
10	16.0-17.6	0.1	0.1	8.3	16.8	35.0	F
11	4317.6-19.0	0.1	<0.1	6.3	15.3	35.2	F
12	19.0-20.6	0.1	0.1	7.0	15.3	32.2	F
13	4320.6-22.0	0.1	<0.1	5.9	15.5	39.2	F
14	22.0-23.0	0.1	<0.1	6.7	11.3	40.0	F
15	23.0-24.0	<0.1	<0.1	3.8	18.0	63.7	F
16	4325.0-26.6	0.1	<0.1	6.8	13.3	38.6	F
17	4326.6-28.0	<0.1	<0.1	4.7	5.6	66.3	
18	28.0-29.0	<0.1	<0.1	5.1	0.6	73.5	
19	4339.0-40.6	0.3	0.2	5.3	13.3	39.6	
20	4340.6-42.5	<0.1	<0.1	6.1	9.2	54.2	F
21	4351.0-52.4	0.2	0.2	3.1	16.4	41.6	
22	4352.4-53.8	0.2	<0.1	3.2	6.0	39.3	
23	53.8-55.2	<0.1	<0.1	2.2	12.8	32.2	
24	55.2-56.6	<0.1	<0.1	2.4	17.3	41.3	F

PERMEABILITY MILLIDARCYS 10 5 — POROSITY PERCENT 10 5 — TOTAL WATER PERCENT PORE SPACE 75 50 25 — OIL SATURATION PERCENT PORE SPACE 25 50 75

4301 4305 4310 4315 4320 4325 4330 4335 4340 4345 4350 4355

Proposed Haley Chaveroo San Andres Unit (HCSAU)
Form C-108 Exhibit VIII.C. - Core Data - "Completion Coregraph"
for State "AZ" Well #2 (#33-11) located within Unit boundary.

EXHIBIT VIII. C.

Shell "CVB" #1

Completion Date: 06/16/66

Completion Interval: 4246-4313

Perfs: 4246, 4251, 4285, 4288, 4291, 4292, 4293, 4303, 4304, 4307, 4310, 4313

Initial Treatment:
Acid 2500 G
Frac 20000 #

Initial Potential:
P 54 BOPD
22 MCFGPD
50 BWPD

Cumulative Recovery to January 1, 1988:

Oil 41,569 BBL
Gas 19,482 MCF
Wat 35,804 BBL

COMPANY SHELL OIL COMPANY — FILE NO. WP-3-2708
WELL STATE "CVB" NO. 1 — DATE 6-12-66 — ENGRS NEFF
FIELD CHAVEROO — FORMATION SAN ANDRES — ELEV. 4456' DF
COUNTY ROOSEVELT — STATE NEW MEXICO — DRLG. FLD. WATER BASE MUD — CORES DIAMOND 4"
LOCATION 660 FS & FL SEC 31-T7S-R33E — REMARKS SAMPLED AS DIRECTED BY CLIENT

COMPLETION COREGRAPH

SAND · SHALE · LIMESTONE · DOLOMITE · CONGLOMERATE · OOLITES · CHERT · ANHYDRITE

SAMPLE CHARACTERISTICS — F:Fractured L:Laminated FG; MG; CG:Type Grain Size S:Stylolitic V:Vuggy
PROBABLE PRODUCTION — O:Oil W:Water G:Gas T:Transitional

SAMPLE	DEPTH FEET	PERMEABILITY, MD (* = Horizontal Perm Plug) HORIZONTAL MAX	90°	POROSITY %	RESIDUAL SATURATION % PORE SPACE OIL	TOTAL WATER	PROBABLE PRODUCTION
		WHOLE CORE ANALYSIS					
1	4280.0-81.8	<0.1	<0.1	1.3	12.9	63.7	
2	4281.8-83.2	<0.1	<0.1	0.4	0.0	74.0	
3	83.2-84.7	0.1	<0.1	3.5	10.7	64.2	F
4	4284.7-86.1	0.3	0.2	8.1	7.4	58.5	F
5	86.1-87.8	0.1	<0.1	6.8	8.2	76.7	F
6	4287.8-89.6	0.6	0.5	6.1	14.3	50.7	
7	4289.6-91.0	<0.1	<0.1	5.2	12.2	55.0	
8	91.0-92.7	0.9	0.6	9.7	15.2	34.6	F
9	4292.7-94.2	2.3	1.6	8.4	12.1	62.2	F
	94.2-95.8	6.4	1.1	9.6	14.6	21.2	F
11	4295.8-97.3	<0.1	<0.1	2.8	4.3	65.7	
12	97.3-98.7	<0.1	<0.1	1.4	7.0	77.0	
13	4298.7-99.8	<0.1	<0.1	1.4	5.1	57.0	
14	4299.8-01.4	<0.1	<0.1	5.2	10.9	40.1	F
15	4301.4-03.1	1.1	1.0	10.5	14.8	21.3	
16	03.1-04.6	3.5	3.0	11.4	10.8	33.7	F
	4304.6-06.1	<0.1	<0.1	4.8	9.9	47.3	
18	06.1-07.5	0.1	<0.1	8.0	6.2	56.3	
19	4307.5-09.0	<0.1	<0.1	5.8	7.7	60.3	
20	09.0-10.4	0.4	0.4	9.1	9.7	44.3	
21	4310.4-11.8	0.6	0.4	8.0	15.2	50.7	
22	11.8-13.0	<0.1	<0.1	5.2	7.0	42.0	F
23	13.0-14.4	0.5	0.4	8.5	10.0	32.4	
24	4314.4-16.0	0.8	0.6	6.7	17.0	35.7	
25	16.0-17.7	0.1	<0.1	5.1	11.3	30.9	
26	4317.7-19.5	0.1	0.1	4.2	12.8	31.7	
27	4319.5-21.2	<0.1	<0.1	4.8	6.9	62.3	
28	21.2-22.8	<0.1	<0.1	4.4	7.1	42.2	
29	4322.8-24.4	0.3	0.2	8.5	12.2	29.2	
30	4324.4-26.0	0.6	0.4	8.5	13.1	34.1	
	26.0-27.5	<0.1	<0.1	5.6	9.8	40.6	
32	4327.5-29.0	0.5	0.5	7.7	10.4	35.4	
33	29.0-30.5	0.3	0.2	7.6	13.7	24.1	S
34	4330.5-32.2	<0.1	<0.1	5.4	3.7	59.8	
35	32.2-33.7	<0.1	<0.1	2.2	5.6	69.4	
36	4333.7-35.6	<0.1	<0.1	3.1	7.4	68.7	F
37	4335.6-36.8	<0.1	<0.1	2.0	8.5	69.5	F
38	36.8-38.5	<0.1	<0.1	2.2	6.8	80.3	
39	4338.5-40.2	<0.1	<0.1	3.3	10.8	60.9	
40	40.2-41.6	0.1	<0.1	6.0	3.7	63.7	
41	4341.6-42.7	0.4	<0.1	1.6	12.1	61.4	F
42	42.7-43.6	<0.1	<0.1	1.0	16.2	62.7	
43	43.6-45.0	<0.1	<0.1	1.5	11.7	61.3	
44	45.0-46.4	0.2	<0.1	3.0	13.7	52.1	F
45	4346.4-48.0	0.2	0.1	4.4	11.3	44.3	VF
	48.0-49.7	<0.1	<0.1	1.2	4.8	67.3	F
47	4349.7-51.1	<0.1	<0.1	0.9	13.5	70.8	
48	51.1-52.7	<0.1	<0.1	2.0	4.0	51.5	
49	4352.7-54.2	<0.1	<0.1	1.3	2.3	51.1	
50	54.2-55.5	<0.1	<0.1	2.1	1.0	49.5	F
51	4355.5-57.1	10	2.5	3.6	2.0	54.6	F
52	57.1-58.8	<0.1	<0.1	0.5	4.4	52.2	F
53	4358.8-60.5	0.1	<0.1	2.5	7.1	57.6	F
	4360.5-62.0	1.0	0.1	2.8	8.0	44.2	F
55	62.0-63.8	<0.1	<0.1	0.9	0.0	86.3	
56	4363.8-65.3	<0.1	<0.1	0.7	0.0	59.5	
57	4365.3-66.8	<0.1	<0.1	2.1	7.7	60.3	F
58	66.8-68.5	0.4	<0.1	2.2	8.3	67.7	F
59	4368.5-70.0	0.5	<0.1	2.7	7.9	63.2	F
60	70.0-71.7	2.4	1.6	7.8	2.8	42.8	
61	4371.7-73.5	1.3	0.9	9.1	1.9	43.1	F
62	4373.5-75.2	<0.1	<0.1	2.3	3.9	67.9	F
63	4375.2-77.0	<0.1	<0.1	4.2	0.5	63.4	F
64	77.0-78.6	<0.1	<0.1	4.3	3.3	57.2	F
65	4378.6-80.3	0.1	<0.1	5.2	3.2	56.6	F
66	4380.3-82.0	<0.1	<0.1	6.0	4.7	63.6	F

PERMEABILITY O—O MILLIDARCYS 10 5 — POROSITY X---X PERCENT 10 5
TOTAL WATER O—O PERCENT PORE SPACE 75 50 25
OIL SATURATION X---X PERCENT PORE SPACE 25 50 75

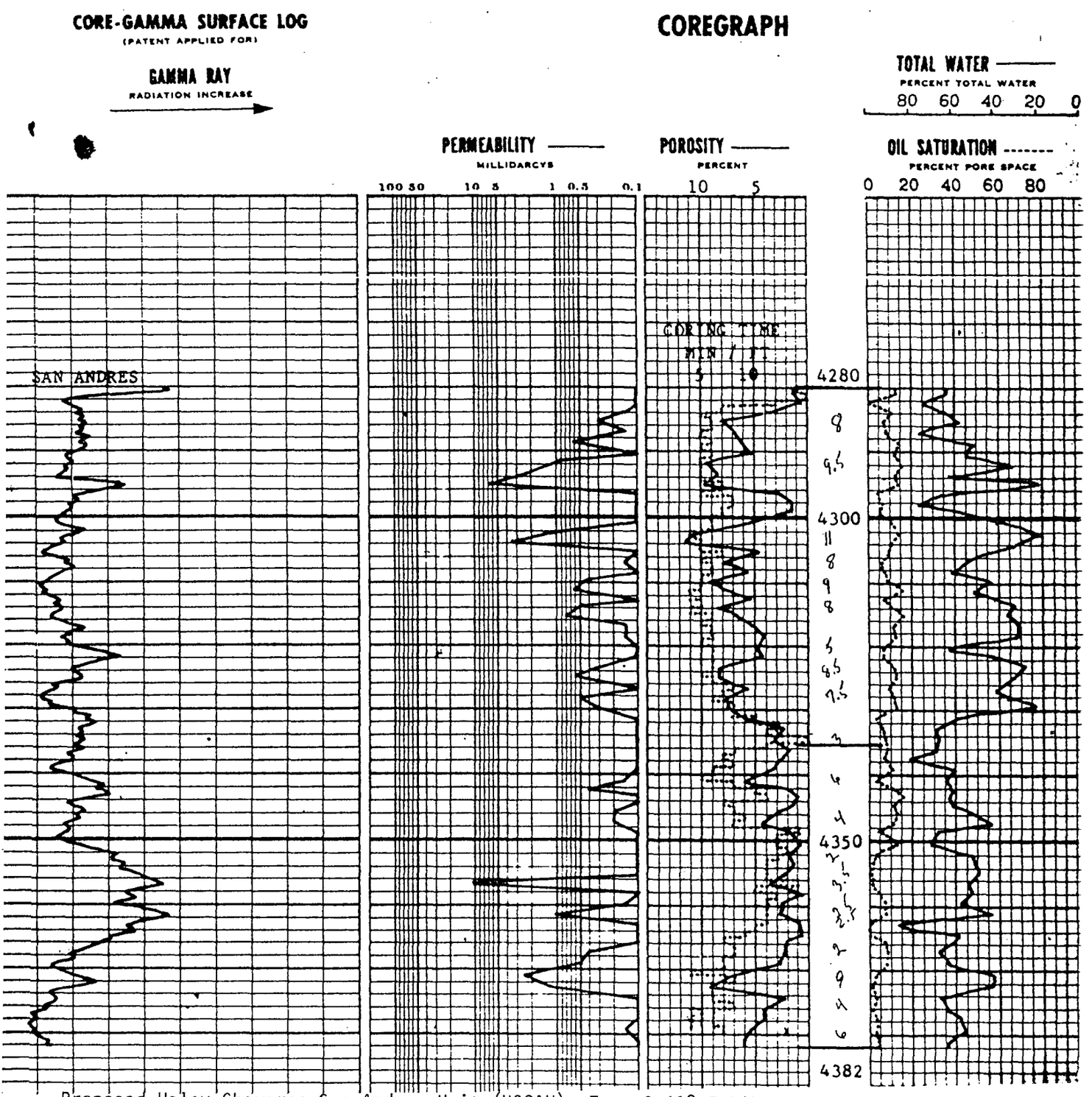
4280 4285 4290 4295 4300 4305 4310 4315 4320 4325 4330 4335 4340 4345 4350 4355 4360 4365 4370 4375 4380 4382

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY	SHELL OIL COMPANY	FIELD	CHAVEROO	FILE	WP-3-2708
WELL	STATE "CVB" NO. 1	COUNTY	ROOSEVELT	DATE	6-12-66
LOCATION	660 FS & EL SEC 31-T7S-R33E	STATE	NEW MEXICO	ELEV.	4456' DF

CORE-GAMMA CORRELATION

VERTICAL SCALE: 5" = 100'



Proposed Haley Chaveroo San Andres Unit (HCSAU), Form C-108 Exhibit VIII.C. - Core Data - "Core-Gamma Correlation" for State "CVB" Well #1 located in near proximity of Unit in Section 31, T-7-S, R-33-E.

Exhibit VIII.D.
Tabulated Summary of Geological Data for Wells within Proposed Unit Area.
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico

Operator / Lease	Original Well#/Unit	New Unit Well #	Elevation GRL	Elevation KB	Top P-1 Meas.	Top P-2 SubSea	Thickness P-1 To P-3
Sec. 33, T7S,R33E							
Skelley Oil Co.							
Hobbs "T"	6A	33-01	4409	4423	4146	+ 277	210
Hobbs "U"	2B	33-02	4419	4431	4159	+ 272	207
Sunray DX Oil Co.							
New Mexico State AZ	3C	33-03	4423	4433	4153	+ 280	211
	5D	33-04	4421	4431	4144	+ 287	207
	1E	33-05	4429	4440	4155	+ 285	213
Skelley Oil Co.							
Hobbs "T"	1F	33-06	4418	4429	4160	+ 269	210
Hobbs "U"	1G	33-07	4415	4425	4165	+ 260	211
Hobbs "T"	5H	33-08	4408	4420	4165	+ 255	209
Sunray DX Oil Co.							
New Mexico State AZ	7I	33-09	4405	4415	4190	+ 225	210
Skelley Oil Co.							
Hobbs "T"	3J	33-10	4415	4426	4197	+ 229	211
Sunray Dx Oil Co.							
New Mexico State AZ	2K	33-11	4417	4427	4167	+ 260	215
Skelley Oil Co.							
Hobbs "T"	2L	33-12	4425	4437	4168	+ 269	214
Sunray Dx Oil Co.							
New Mexico State AZ	4M	33-13	4427	4437	4178	+ 259	210
	6N	33-14	4423	4434	4188	+ 246	217
Skelley Oil Co.							
Hobbs "T"	4O	33-15	4424	4433	4207	+ 226	211
	11P	33-16	4417	4427	4212	+ 215	217
Sec. 34, T7S,R33E							
Sunray DX Oil Co.							
New Mexico State AZ	13A	34-01	4295	4405	4144	+ 261	213
	12B	34-02	4393	4404	4134	+ 270	214
	11YC	34-03	4400	4411	4132	+ 279	211
Skelley Oil Co.							
Hobbs "T"	9D	34-04	4403	4414	4135	+ 279	209
Sunray Dx Oil Co.							
New Mexico State AZ	8E	34-05	4400	4410	4151	+ 259	211
	9F	34-06	4400	4412	4147	+ 265	213
Skelley Oil Co.							
Hobbs "T"	10G	34-07	4389	4400	4143	+ 257	216
Sunray DX Oil Co.							
New Mexico State AZ	14H	34-08	4379	4389	4139	+ 250	217
Skelley Oil Co.							
Hobbs "T"	12I	34-09	4374	4385	4143	+ 242	220
	8J	34-10	4387	4398	4150	+ 248	216
Sunray DX Oil Co.							
New Mexico State AZ	10K	34-11	4395	4407	4151	+ 256	213
Skelley Oil Co.							
Hobbs "T"	7L	34-12	4402	4412	4171	+ 241	219
Sunray DX Oil Co.							
New Mexico State AZ	16M	34-13	4406	4415	4179	+ 236	218
Skelley Oil Co.							
Hobbs "T"	13N	34-14	4398	4408	4168	+ 240	212
	15O	34-15	4387	4399	4158	+ 241	210
Sunray DX Oil Co.							
New Mexico State AZ	15P	34-16	4374	4386	4144	+ 242	213

EXHIBIT VIII. D.

Exhibit VIII.D.
Tabulated Summary of Geological Data for Wells within Proposed Unit Area.
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico

Operator / Lease	Original Well#/Unit	New Unit Well #	Elevation GRL	Elevation KB	Top P-1 Meas.	Top P-2 SubSea	Thickness P-1 To P-3
Sec. 3, T8S,R33E							
The Atlantic Refining Co.							
State "BF"	1A	03-01	4379	4389	4158	+ 231	210
	2B	03-02	4385	4395	4174	+ 221	207
	3C	03-03	4396	4406	4172	+ 234	214
	5D	03-04	4406	4417	4182	+ 235	218
	7F	03-06	4398	4409	4194	+ 215	210
	6G	03-07	4385	4399	4179	+ 220	215
	4H	03-08	4376	4388	4170	+ 218	205
Champlin Petroleum Co.							
State 3	1I	*	4383	4393	4184	+ 209	-
Atlantic Richfield Co.							
State "BF"	8J	03-10	4394	4403	4196	+ 207	208
	11K	03-11	4398	4408	4194	+ 214	200
The Wil-Mc Oil Corp.							
Champlin State	3M	*	4400	4410	4220	+ 190	-
Tierra Exploration Inc.							
Annarco	1N	03-14	4395	4407	4210	+ 197	-
Atlantic Richfield Co.							
State "BF"	10O	03-15	4393	4404	4209	+ 195	197
	9P	03-16	4385	4394	4192	+ 202	216

*Not within Unit Boundary.

Exhibit VIII.D.
Tabulated Summary of Geological Data for Wells Outside Proposed Unit Area but within Area of Review.*
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico

Operator / Lease	Original Well#/Unit	Elevation GRL	Elevation KB	Top P-1 Meas.	Top P-2 SubSea	Thickness P-1 To P-3
Sec. 26, T7S,R33E						
Kern County Land Co.						
Federal 26	3K	4366	4378	4096	+ 282	208
	2L	4373	4385	4096	+ 289	214
	1M	4381	4388	4114	+ 274	216
	4N	4365	4374	4102	+ 272	216
Sec. 27, T7S,R33E						
Midwest Oil Corp.						
Morgan Federal	6I	4378	4389	4100	+ 289	210
Tract 1	5J	4388	4399	4106	+ 293	214
	4K	-	4408	4114	+ 294	209
Dalport Oil Corp.						
Federal	2L	4409	4420	4123	+ 297	209
	1M	4400	4412	4116	+ 296	212
Midwest Oil Corp.						
Morgan Federal	1N	4395	4407	4418	+ 289	212
Tract 1	2O	4400	4412	4120	+ 292	212
	3P	4420	4431	4121	+ 310	214
Sec. 28, T7S,R33E						
Pan American Petroleum Corp.						
U.S.A. Farrell	9I	4415	4426	4136	+ 290	194
	7J	4416	4427	4142	+ 285	208
	5K	4421	4431	4152	+ 279	198
	2L	-	4451	4142	+ 309	202
	1M	4422	4432	4140	+ 293	211
	3N	4416	4428	4142	+ 286	204
U.S.A. Federal	4O	4415	4427	4149	+ 278	206
	6P	-	4430	4122	+ 308	-
Chaveroo Operating						
Farrell Federal	23	4415	-	4133	+ 292	-
	24	4412	4422	41	+ 297	213
Sec. 29, T7S,R33E						
Champlin Oil Co. & Warren American Oil Co.						
Lauck Federal	2I	4427	4439	4142	+ 297	194
	12J	4436	4448	4150	+ 298	208
	4O	4437	4449	4156	+ 293	209
	1P	4432	4444	4153	+ 291	199
Sec. 32, T7S,R33E						
Champlin Oil Co. & Warren American Oil Co.						
Hondo State	2G	4433	4443	4156	+ 287	-
	2H	4433	4443	4147	+ 296	-
State 32-7-33	3I	4429	4440	4154	+ 286	-
	5J	4432	4444	4167	+ 277	-
	6O	4435	4444	4184	+ 260	-
	4P	4425	4437	4163	+ 274	-
	2A	4427	4436	4148	+ 288	196
	1B	4428	4439	4145	+ 294	-

*Within one-half (½) mile of Unit Boundary.

Exhibit VIII.D.
Tabulated Summary of Geological Data for Wells Outside Proposed Unit Area
but within Area of Review.*
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico

Operator / Lease	Original Well#/Unit	Elevation GRL	Elevation KB	Top P-1 Meas.	Top P-2 SubSea	Thickness P-1 To P-3
Sec. 35, T7S,R33E						
Kelly Oil Co.						
Hobbs "T"	16C	4366	4378	4108	+ 270	216
Morris R. Antweil Shackelford						
	1D	4380	4391	4120	+ 271	220
Pan American Petroleum Corp.						
State "DA"	1E	4368	4378	4126	+ 252	206
Marathon Oil Co.						
State	3F	4369	4379	4130	+ 249	210
Shell Oil Co.						
State "CV"	1K	4358	4367	4118	+ 249	212
Marathon Oil Co.						
State	1L	-	4378	4133	+ 245	211
	2M	4363	4374	4131	+ 243	212
Pan American Petroleum Corp.						
State "DE"	1N	4360	4370	4134	+ 236	216
Sec. 2, T8S,R33E						
Kerr McGee Corp.						
State "F"	2C	4356	4366	4157	+ 209	-
	6D	4371	4381	4153	+ 228	-
	3E	4367	4377	4154	+ 223	205
	4F	4362	4371	4159	+ 212	204
	6K	4367	4376	4170	+ 206	-
	5L	4377	4387	4182	+ 205	-
	11M	4376	4386	4182	+ 204	-
	10N	4365	4375	4186	+ 189	-
	14	4366	4377	4150	+ 227	204
Sec. 4, T8S,R33E						
Southwestern Natural Gas Inc.						
Champlin State	1B	4426	4437	4206	+ 231	-
Champlin Petroleum Co.						
State 8-33	1C	4427	4438	4192	+ 246	213
Southern Petroleum Co.						
State "1"	1D	4411	4423	4184	+ 239	-
Southwestern Petroleum Exploration Inc.						
State "1"	2E	4417	4427	4187	+ 240	-
Southwestern Natural Gas Inc.						
Arco	1F	4416	4426	4186	+ 240	-
	1G	-	4415	4195	+ 220	-
Champlin Petroleum Co.						
State "4"	4H	4408	4419	4196	+ 223	213
Chambers & Kennedy						
Arco State	1J	4418	4428	4200	+ 228	-
	2O	4420	4431	4218	+ 213	202
Sec. 5, T8S,R33E						
Champlin Petroleum Co. & Warren American Oil Co.						
State 5-8-33	2A	4333	4445	4184	+ 261	211
	1B	4439	4450	4189	+ 261	211
Champlin Petroleum Co.						
State "5"	5G	4425	4440	4196	+ 244	214
	6H	4434	4445	4188	+ 247	208

*Within one-half (½) mile of Unit Boundary.

Exhibit VIII.D.
Tabulated Summary of Geological Data for Wells Outside Proposed Unit Area but within Area of Review.*
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico

Operator / Lease	Original Well#/Unit	Elevation GRL	Elevation KB	Top P-1 Meas.	Top P-2 SubSea	Thickness P-1 To P-3
Sec. 9, T8S,R33E						
Wil-Mc Oil Corp.						
Federal "9"	1B	4416	4426	4226	+ 200	-
NRM Petroleum Corp.						
Davis Federal	1G	4409	4413	4234	+ 179	152
Sec. 10, T8S,R33E						
Yates Petroleum Corp.						
Sun "UN" Federal	3A	4374	-	4166	+ 208	-
Sunray DX Oil Co.						
New Mexico "X" Fed.	1A	-	4396	4213	+ 183	199
	3B	4385	4395	4212	+ 183	202
Humble Oil & Refining Co.						
Bundy Federal	1E	4405	4415	4222	+ 193	-
Sunray DX Oil Co.						
New Mexico "X" Fed.	5G	4390	4401	4220	+ 181	220
	2H	4373	4383	4221	+ 162	207
Yates Petroleum Corp.						
Sun "UN" Federal	2H	4367	4376	4232	+ 144	-
Sec. 11, T8S,R33						
American Trading & Production Corp.						
Hale	1B	4361	4372	4210	+ 162	-
Robert Enfield						
Hale	1C	4376	4385	4210	+ 175	-
	1D	NO LOG IN FILES				

*Within one-half (½) mile of Unit Boundary.

Exhibit VIII.H.
PROPOSED HALEY CHAVEROO SAN ANDRES UNIT
Chaves and Roosevelt Counties, New Mexico
Derivation of Tract Participation Factors

Tract	Original Well #	Well Location	Status	New Unit Well #	A Useable Wells #	A Useable Wells % x 20%	B Total Primary Recovery to January 1, 1988 Bbls*	B Total Primary Recovery to January 1, 1988 100% x 80%	Tract Participation Factor
1 Hobbs U	1G	33 7S 33E	P	33-07	1		100275		
	2B	33 7S 33E	S	33-02	1		66487		
					2	04.761905 0.952381	166762	05.422259 04.337807	05.290188
2 Hobbs T	1F	33 7S 33E	P	33-06	1		82021		
	2L	33 7S 33E	P	33-12	1		76911		
	3J	33 7S 33E	P	33-10	1		73511		
	4O	33 7S 33E	P	33-15	1		72522		
	5H	33 7S 33E	P	33-08	1		84659		
	7L	34 7S 33E	S	34-12	1		84303		
	8J	34 7S 33E	P	34-10	1		79943		
	9D	34 7S 33E	P	34-04	1		139994		
	10G	34 7S 33E	P	34-07	1		84118		
	11P	33 7S 33E	I	33-16	1		0		
	12I	34 7S 33E	S	34-09	1		69872		
	13N	34 7S 33E	P	34-14	1		79392		
	15O	34 7S 33E	P	34-15	1		107021		
					14	33.333333 06.666667	1133192	36.845685 09.476548	36.143215
3 State A Z	1E	33 7S 33E	P	33-05	1		86381		
	2K	33 7S 33E	T	33-11	1		67376		
	3C	33 7S 33E	T	33-03	1		59822		
	4M	33 7S 33E	T	33-13	1		47936		
	5D	33 7S 33E	I	33-04	1		40372		
	6N	33 7S 33E	T	33-14	1		56354		
	7I	33 7S 33E	T	33-09	1		20110		
	8E	34 7S 33E	S	34-05	1		94747		
	9F	34 7S 33E	S	34-06	1		103085		
	10K	34 7S 33E	S	34-11	1		48196		
	Y 11C	34 7S 33E	S	34-03	1		87215		
	12B	34 7S 33E	S	34-02	1		63375		
	13A	34 7S 33E	T	34-01	1		65803		
	14H	34 7S 33E	S	34-08	1		60623		
	15P	34 7S 33E	T	34-16	1		50591		
	16M	34 7S 33E	T	34-13	1		72257		
					16	38.095238 07.619047	1024243	33.303214 26.642571	34.261618
4 State B F	1A	3 8S 33E	S	03-01	1		104982		
	2B	3 8S 33E	P	03-02	1		54716		
	3C	3 8S 33E	P	03-03	1		39794		
	4H	3 8S 33E	F	03-08	1		92213		
(Atlantic Rich-field)	5D	3 8S 33E	?	03-04	0		111		
	6G	3 8S 33E	F	03-07	1		88977		
	7F	3 8S 33E	P	03-06	1		51880		
	8J	3 8S 33E	P	03-10	1		98505		
	9P	3 8S 33E	P	03-16	1		93017		
	10O	3 8S 33E	P	03-15	1		123713		
	11K	3 8S 33E	P	03-11	1		3403		
(Tierra Ex/ Annarco)	N	3 8S 33E	A		0		0		
	E	3 8S 33E	Undrilled		0		0		
	L	3 8S 33E	Undrilled		0		0		
					10	23.809524 04.761905	751311	24.428842 19.543074	24.304979
		Totals			42	100.000000% 20.000000%	3075508	100.000000% 80.000000%	100.000000%

*Based upon the 1987 Annual Report of the New Mexico Oil and Gas Engineering Committee.

Tract Participation Formula

Tract Participation = 20% A + 80% B
Where A = Percent of Total Useable Wells in Unit Area.
Where B = Percent of Total Primary Oil Recovery in Unit Area as of January 1, 1988.

Legend

A Abandoned
F Flowing
I Injection
P Producing
S Shut In
T Temporarily Abandoned

EXHIBIT VIII. H.