CASE 3340: Application of SOCONY-MOBIL for a waterflood project, Lea County, New Mexico. 77

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OIL CONSERVATION COMPLISSION SANTA FE, NEW MEXICO 11/24/65 Date 9am 3340 - 77 Hearing Date_ CASE ISN € SF My recommendations for an order in the above numbered cases are as follows: Socary Julia an arder anthorny matil Oil Co, Juc to institute a ween flaad project, the trouth Dent Denton north Walfcamp Waen flood Project, by the injection of water into the Walfcamp formation of the Penton harfearp Walfcamp formation of the Penton harfearp Jack through the feelowing 12 weeks Denton north Wolfcamp Unit ita m Rac Twp Sæt Unit Well No area 37 E Lease Z7' P. J.C. Maxwell 2" 41 Y He 6: G.M. Shelton Fr 26 x 3 1 Shell Lee Whitman Hu 6 4 Sinclair N 18-T. D. Pope Socary Hobil 44 PI 24 . " 25 ... G, W.H. Fort AB **]** - r W. H. Fort "A", 10 Jan American 0 1 + .. 34 r H ~ Dickin son "A-34" 1 ~ Atlantic 35 F : 11 -H. T.D. Pope Socomy Mobil 30 🧹 .. 36 ,, G -W.T. Mann "A" 3 ~ Sinclair

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STATE OF NEW MEXICO

STATE ENGINEER OFFICE SANTA FE

November 4, 1965

S. E. REYNOLDS State engineer ADDRESS CORRESPONDENCE TO: State Capitol Santa Fe, New Mexico 87501

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

Dear Mr. Porter:

Reference is made to the application of Socony-Mobil Oil Company, Inc., for authority to institute a waterflood project within the Denton North Wolfcamp Unit Area.

This office offers no objection to the granting of the application, provided each well is constructed and equipped as indicated by the appropriate diagrammatic sketch submitted with the application and the packers are set well below the top of the cement surrounding the production casing in each well.

FEI/ma

CC-Mr. J. E. Sperling Mr. J. C. Gordon, Jr. Mr. F. H. Hennighausen Yours truly,

S. E. Reynolds State Engineer

By: Trank 8, Frank E. Irby Chief

Water Rights Div.

29 JOHN F. SIMMS (1885-1954) 14 1 Y \$65 TELEPHONE 243-451 AREA CODE 505

June 3340

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LAW OFFICES OF MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS SIMMS BUILDING P. O. BOX 466 Albuquerque, New Mexico 87103

October 28, 1965

J. R. MODRALL AUGUSTUS T. SEYMOUR JAMES E. SPERLING JOSEPH E. ROEHL GEORGE T. HARRIS, JR. DANIEL A. SISK LELAND S. SEDBERRY, JR. ALLEN C. DEWEY, JR. FRANK H. ALLEN, JR. JAMES F. SAUNDERS, JR. JAMES A. PARKER HENRY G. COORS JOHN R. COONEY KENNETH L. HARRIGAN

> Commissioner, Oil Conservation Commission State Land Office Building Santa Fe, New Mexico

Dear Sir:

We submit herewith Application of Socony-Mobil Oil Company, Inc. for authority to institute a waterflood pro-ject within the Denton North Wolfcamp Unit Area, containing 2640 acres, more or less, in Lea County, New Mexico, said waterflood project to be operated in accordance with Rule 701 of the Commis-sion: a copy of this Application has been forwarded to the Office sion; a copy of this Application has been forwarded to the Office of the State Engineer.

We also submit herewith Application of Socony-Mobil Oil Company, Inc. for approval of Unit Agreement for the Denton North Wolfcamp Unit, Lea County, New Mexico, with copy of Unit Agreement attached thereto.

Very truly yours, Omes James E. Sperling

JES:fm Office of State Engineer Enclosures Attention: Mr. Frank Irby cc:

DOCKET MAILED Dote 11-10-65 Ge

Docket No. 33-65

DOCKET: EXAMINER HEARING - TUESDAY - NOVEMBER 23, 1965

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

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

CASE 3294 (Continued from the September 22, 1965, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit Harold J. Sechler, dba S. & S. Oil Producers, and all other interested parties to show cause why the Bond Well No. 1 located in the SW/4 NE/4 of Section 17, Township 9 North, Range 14 West, Valencia County, New Mexico, should not be plugged and abandoned in accordance with a Commissionapproved plugging program.

- CASE 3333: Application of William A. and Edward R. Hudson for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Queen formation through six wells in Sections 10, 11, and 15, Township 18 South, Range 31 East, Shugart Yates-Seven Rivers-Queen-Grayburg Pool, Eddy County, New Mexico.
- CASE 3334: Application of Felmont Oil Corporation for an unorthodox location, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Federal 9 Well No. 1 at an unorthodox location 660 feet from the North and East lines of Section 9, Township 8 South, Range 37 East, Bluitt-San Andres Gas Pool, Roosevelt County, New Mexico.
- CASE 3335: Application of Monsanto Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox oil well location 1200 feet from the South line and 660 feet from the West line of Section 32, Township 16 South, Range 33 East, West Kemnitz-Lower Wolfcamp Pool, Lea County, New Mexico.
- CASE 3336: Application of Shell Oil Company for special rules for the East Hightower-Upper Pennsylvanian Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the East Hightower-Upper Pennsylvanian Pool in Section 25, Township 12 South, Range 33 East, Lea County, New Mexico, including a provision for 80-acre proration units.
- CASE 3337: Application of Shell Oil Company for the creation of a new gas pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new gas pool for Morrow production _____ Sections 3 and 4, Township 22 South, Range 34 East, and Section 34, Township 21 South, Range 34 East, Lea County, New Mexico, and the establishment of special pool rules, including a provision for 640-acre spacing units.

November 23, 1965, Examiner Hearing

CASE 3338: Application of Socony-Mobil Oil Company, Inc. for pool-lease commingling, Lea County, New Mexico. Applicant, in the abovestyled cause, seeks authority to commingle Glorieta, Blinebry, Upper-Pennsylvanian, Lower-Pennsylvanian, Devonian, Abo and Wolfcamp production from its State Bridges (Military Institute) Lease in Section 25, Township 17 South, Range 34 East, and from its State Bridges (Common School) Lease in Sections 3, 10 through 15, 22, 23, 24, and 26 and 27, Township 17 South, Range 34 East, Lea County, New Mexico, after separately metering the Military Institute production, allocating production to each lease by means of the subtraction method.

CAGE 3339:

- 2 -

Application of Socony-Mobil Oil Company, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Denton North Wolfcamp Unit Area comprising 2,640 acres, more or less, of Federal and fee lands in Township 14 South, Range 37 East, Lea County, New Mexico.

CASE 3340:

CASE 3341:

Application of Socony-Mobil Oil Company, Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Denton North Wolfcamp Unit by the injection of water into the Wolfcamp formation through twelve wells located in Sections 25, 26, 27, 34, 35, and 36, Township 14 South, Range 37 East, Lea County, New Mexico.

Application of Tenneco Oil Company for an administrative procedure, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks the establishment of an administrative procedure whereby wells presently completed in the Blanco-Mesaverde Pool could, without notice and hearing, be recompleted in the Blanco-Mesaverde and/or Basin-Dakota Gas Pools by means of setting a whipstock above the Mesaverde producing interval and directionally drilling around the old interval of completion which was originally shot. Operators utilizing such administrative procedure would be required to conduct appropriate deviation tests to ensure that no well would be completed nearer than 200 feet to the outer boundary of its provation unit.

CASE 3342:

Application of Sunray DX Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Grayburg-Jackson Pool, Eddy County, New Mexico, by the injection of water into the Keeley zone of the San Andres formation through four wells in Sections 22 and 23, Township 17 South, Range 29 East.

CASE 3343:

Application of Sunray DX Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Grayburg-Jackson Pool, Eddy County, New Mexico, by the injection of water into the Metex zone of the Grayburg formation through four injection wells in Sections 14 and 15, Township 17 South, Range 29 East. - 3 -

November 23, 1965, Examiner Hearing

<u>CASE 3344:</u> Application of Texaco Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Vacuum Unit Area comprising 2000 acres, more or less, of State land in Township 17 South, Range 37 East, Lea County, New Mexico.

CASE 3345:

Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its West Vacuum Unit by the injection of water into the Grayburg-San Andres formations through six injection wells located in Sections 3 and 4, Township 18 South, Range 34 East, and Sections 33 and 34, Township 17 South, Range 34 East, Vacuum Pool, Lea County, New Mexico.

CASE 3346: Application of Sinclair Oil & Gas Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Maljamar Pool by the injection of water into the Grayburg-San Andres formations through eight wells in Section 24, Township 17 South, Range 32 East, Lea County, New Mexico. OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO

December 17, 1965

Mr. James E. Sperling Modrall, Seymour, Sperling, Roehl & Harris Attorneys at Law Post Office Box 466 Albuquerque, New Maxico

Dear Mr. Sperling:

Reference is made to Commission Order No. R-3301, recently entered in Case No. 3340, approving the Socony Mobil's Denton North Wolfcamp Waterflood Project.

Injection is to be through the 12 authorized water injection wells, which shall be equipped with cement-lined tubing and packers, with the casing-tubing annulus loaded with corrosion-inhibited water.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, and when all of the Wolfcamp wells in the waterflood project area have been returned to production, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 6809 barrels per day.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the

OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO

December 17, 1965

Mr. James E. Sperling Modrall, Seymour, Sperling, Roehl & Harris Attorneys at Law Post Office Box 466 Albuquerque, New Mexico

allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr. Secretary-Director

ALP/DSN/esr

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cc: Mr. Joe Gordon Mr. Frank Irby OCC - Hobbs

19.57

GOVERNOR JACK M. CAMPBELL CHAIRMAN

State of New Mexico Oil Conservation Commission

LAND COMMISSIONER GUYTON B. HAYS MEMBER



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

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November 29, 1965

SANTA FE

Re: Mr. James E. Sperling Modrall, Seymour, Sperling, Roehl & Harris Attorneys at Law Post Office Box 466

Albuquerque, New Mexico

Socony Mobil Oil Company, Inc.

3340

R-3001

Dear Sir:

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

Very truly yours,

an

Case No.

Order No.

Applicant:

A. L. PORTER, Jr. Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC × Artesia OCC Aztec OCC

Other Mr. Joe Gordon - Mr. Frank Irby

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. 3340 Order No. R-3001

APPLICATION OF SOCONY MOBIL OIL COMPANY, INC., FOR A WATERFLOOD FROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 23, 1965, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 29th day of November, 1965, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, 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, Socony Mobil Oil Company, Inc., seeks permission to institute a waterflood project in its Denton North Wolfcamp Unit Area, Denton-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through twelve injection wells in Sections 25, 26, 27, 34, 35, and 36, Township 14 South, Range 37 Rast, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations

-2-CASE No. 3340 Order No. R-3001

IT IS THEREFORE ORDERED:

(1) That the applicant, Socony Mobil Oil Company, Inc., is hereby authorized to institute a waterflood project in its Denton North Wolfcamp Unit Area, Denton-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through the following-described wells in Township 14 South, Range 37 East, NMPM, Lea County, New Mexico:

OPERATOR		LEASE			WELL NO.	UNIT	SECTION
Socony Mobil	Denton North	Wolfcamp	Unit	13	2	P	27
Socony Mobil	Denton North	Wolfcamp	Unit	13	6	H	27
Socony Mobil	Denton North	Wolfcamp	Unit	14	3	F	26
Socony Mobil	Denton North	Wolfcamp	Unit	15	6	H	26
Socony Mobil	Denton North	Wolfcamp	Unit	6	18	N	26
Socony Mobil	Denton North	Wolfcamp	Unit	6	24	P	26
Socony Mobil	Denton North	Wolfcamp	Unit	17	1	G	25
Socony Mobil	Denton North	Wolfcamp	Unit	10	1	0	25
Socony Mobil	Denton North	Wolfcamp	Unit	2	1.	H	34
Socony Mobil	Denton North	Wolfcamp	Unit	5	11	F	35
Socony Mobil	Denton North	Wolfcamp	Unit	6	30	H	35
Socony Mobil	Denton North	-			3	G	36

(2) That the subject waterflood project is hereby designated the Denton North Wolfcamp Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) 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 Marico, on the day and year hereinabove designated.



STATE OF NEW MEXICO CONSERVATION COMMISSION CAMFBELL. Thairean CHYTON B. BAYS, Manaber

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

BEFORE THE OIL CONSERVATION COMMISSION OF

NEW MEXICO

IN THE MATTER OF THE APPLICATION OF SOCONY-MOBIL OIL COMPANY, INC. FOR AUTHORITY TO INSTITUTE A WATERFLOOD PROJECT WITHIN THE DENTON NORTH WOLFCAMP UNIT AREA, CONTAINING 2,640 ACRES, MORE OR LESS, IN LEA COUNTY, NEW MEXICO, SAID WATERFLOOD PROJECT TO BE OPERATED IN ACCORDANCE WITH RULE 701 OF THE COMMISSION.

APPLICATION

1. Socony-Mobil Oil Company, Inc. hereby makes application for authority for the injection of water into the Wolfcamp formation underlying the Denton North Wolfcamp Unit Area in Lea County, New Mexico. Attached to this Application as Exhibit 1 is a plat showing the location of proposed injection wells and the location of all other wells within a radius of two (2) miles of the proposed injection wells and the formation from which said wells are producing. The plat also shows lessees within said two-mile radius.

2. There is attached as Exhibit 3 to this Application a typical log of proposed injection wells. Also attached as Exhibits 4, A through L, are diagrammatic sketches of proposed injection wells showing casing strings and other pertinent information as required by Rule 701 of this Commission.

3. It is proposed that the interval to be effected by the proposed water injection is that found between the top of the Wolfcamp formation at 9,180 feet subsurface and the base of that formation found at 9,860 feet subsurface, as shown on the electric log dated July 29, 1953 of applicant's T. D. Pope #10 Well, located

Case No. <u>3340</u>

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660 feet from the East line and 660 feet from the South line of Section 26, Township 14 South, Range 37 East, Lea County, New Mexico.

4. Water will be obtained from the Denton Salt Water Disposal System, which presently disposes of produced salt water from the Devonian and the Denton Wolfcamp Reservoirs. Initial injection rate is proposed at a total volume of 18,000 barrels of water per day.

5. It is contemplated that additional wells will be converted along the North and the South portion of the Unit area at a later date, for which administrative approval and authorization is requested pursuant to Rule No. 701 E 5 of the Commission.

6. A copy of this Application, complete with Exhibits, has been sent to the Office of the State Engineer, Santa Fe, New Mexico.

Applicant respectfully requests that the Commission issue its Order granting approval to the institution of the waterflood project proposed above.

Respectfully submitted, SOCONY-MOBIL OIL COMPANY, INC. Sperling, Roeni & Harris Seymour, Modrall. Its Attorneys 1200 Simms Building, Post Office Box 466 Albuquerque, New Mexico

EXHIBIT 4 - A INJECTION WELL COMPLETION DATA MOBIL OIL CO JC MAXWELL NO. 6 LOCATION : 330 Ft FEL, 2210 Ft FNL Sec 27 TIAS R 3.7 E Denton North Wolfcamp Unit Lea Co., N:119. cement circulated 103/4 "32 #/ft. Cosing @470ft. cemented with 500 socks of Neat cement cement top @ 645 ft Cement Circulated (Temp Sur) 24 \$ 26.40 75/8" 1 #4t. Casing TOP of Liner @ 11524 Squeezed with 250 socks Neat @4725 ft. Cemented With 1449 sacks of Sloset Gement 636el cement Ŧ cement top@ 645 A Cement top@6568ft (Temp Sur) 5 1/2" 17 # 4. casing f.rom_4524 2-2% "cement Line tubing 9450 20 0 9250 cemented with 150 sacks of 4% Gel cement plus Tension Packer 200 sacks of Neat Comment Wolfcamp perforations from <u>9350</u> overall to 9414 Plug back TD 9446 Ct. 4.7. +: Total Depth 9450 ft. Care 3340

EXHIBIT 4-B INJECTION WELL COMPLETION DATA SHELL OIL CO. Shelton No. 3 LOCATION: 1980 \$+ FNL, 2180 \$+ FWL Sec 24 T14-5 R 37E Denton North Wolfcamp Unit Lea Co., N.M. -cement circulated 133/3 "36 #/ft. Casing @342ft. certiented 2 :3-1714" hole With 350 socks of Neat cement -cement top-Circulated Cement Circulated се U FAN 85/8" 32#/4t. Casing LTED @4720ft. Cemented with 2000 sacks of ລົ 4 0/ gel cement and HN - 11" hole 250 Socks neat Cement phis 200 sacks Neat cement top@ 7,050 ft (Calculated@25%-loss) 51/2 " 1 #/ft. casingfrom_surface 2% "cement Lined tubing 9239 @ 9180 ft to cemented with . 250 sacks of STension Packer 4% Gelcement plus 150 sacks neat 778 hole Wolfcamp perforations trom 9239 overall to 9435 from 923.7 (OPEN HOLE) Plug back TD 9435 Ft -4.7. +: Total Depth 9435 ft Care 3340

EXHIBIT 4-C SINCLAIR OIL AND GAS LEE WHITMAN "A" No. 6 LOCATION: 2310 Ft FNL, 660 Ft FEL Sec 26 T145 R 37E Denton North Wolfcamp Unit. Lea Co., N.M. cement circulated 133/8"35#/ft. Cosing @ 305 ft. cemented 2 with 350 socks of Cement top 1540 ft (Temp 54r) Neat cement Cement Circulated WATER 95/3 "26 #/ft. Casing NHIBITED @4189ft. Cemented with 2480 sacks of Neat cement cement top cement top 8615' (Temp Sor) 23 126 2% " Cement Lined tubing 7 " 1 #AFt. Casingfrom_surface @ 92'37 ft 9.409 七0 cemented with Tension Packer 125 Sacks of Neat cement Wolfcamp perforations from <u>9286</u> overall to <u>9355</u> Plug back TD 9370 ft 1.7.1: Total Depth 9410 ft Caex 3340

. 7 EXHIBIT 4 - D INJECTION WELL COMPLETION DATA PAN AMERICAN PETROLEUM CORP NH. H. Fort "B" #1 LOCATION: 2310 Ft FNL, 2310 Ft. FEL Sec 25 TTHS R37E Denton North Wolfcamp Unit Lea Co., N.M. 13 1/2 " 36#/ft. Casing cement Circulated @ 34Dft. cemented Z With 200 Socks of 2 % Gel Cement plus 100 cement, Circulated cement top-surface (cemented with staging tool) 797 8 5/8 " 32 % t. Casing @ 4750 ft. Cemented INHIBITED with 213 sacks of 8% Gel Cement Plus 100 sacks Neat 2nd stake 150 socks Neat Cement top - 11" hole 51/2 " 15-#42. Casingcement top @ 8500 ft · (Temp Sur) from Surface 9506 to. 2% " cement Lined tubing cemented with @ 9280 Ft. 150 sacks of sto-set cement -Tension Packer - 7 1/8" hoke Wolfcamp perforations from 9368 voverall to <u>9378</u> Plug back TD 9446 ft 17 +: -Total Depth 12790 ft

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EXHIBIT 4-E INJECTION WELL COMPLETION DATA PAN AMERICAN PET CORP WI.H. FORT 'A" NO.1 LOCATION : 330 Ft FSL & 2310 Ft FEL Sec 25 T145 R 37E Denton North Wolfcamp Unit Lea CO., N. M. 13=18" 36 #/At. Cosing 0355ft. cemented 2 scement circulated uith 210 socks of 8% Sel Cement, plus Cement Circulated 1.12-1712 hole 5 Cement top - Surface. (Cemented with staging tool.) WATER 36-40 958" 1 #/++. Casing @4750ft.Cemented IBITED With 213 sacks of 100 sacks Neat 2Nd store 150 sacks Neat Cement top -12/1" hole 17\$20 51/2 " 1 ## casing -Cement top @ 9070 ft (calculated @ 20% /055) from Surface to 12,669 ft 2% "cement Lined tubing cemented with 360 sacks of @ _9260 3% gel cement plus 100-sacks Neat Zension Packer 5.71/8" hole Wolfcamp perforations from 9325 Vierall to <u>9360</u> 2/7 t. Plug back TD 12,330 Ft Total Depth 12,669 ft Cure 3340

EXHIBIT 4 -F INJECTION WELL COMPLETION DATA MOBIL OIL CO T. D. POPE No. 24 LOCATION: 460 Ft FEL, 660 Ft FSL Sec 26 T145 R 37E Denton North Wolfcamp Unit. Lea Co., N.M. 10 1/4" 32#/ft. Cosing scement circulated @446ft. cemented 2 with 450 socks of Neat cement Cement, Circulated cement top@920ft (Temp Survey) Ъ Ш 7 5/3" 1 1/4t. Casing Top of Liner Q 4668 squeezed N P @ 4818 ft. Cemented ß With 200 Sacks 49, Gel With 1850 Sacks of 400 Gel Cement Plus 14) Sacks Signalite and 200 sacks Neat Cement 20 Plus 100 backs Neat Cement 51/2" 11### . casing. cement top 8 7850 ft (Temp Sur) firom_4665 ft 9390 ft てつ 2% "Cement Lined tubing cemented with @ 9150ft 490 Gel Cement plus 200 sacks Neat Coment Tension Packer Wolfcamp perforations from <u>a225</u> overall to <u>93881</u> Plug back TD 9388 ft Total Depth 9390 ft al 5340 10 X 10 YO 10 10 110.11

EXHIBIT 4 - G INJECTION WELL COMPLETION DATE MOBIL OIL CO T.D. POPE NO. 18 LOCATION: 1660 Ft. FSL., 2180 Ft FWL Sec 26 T 145 R 37 E Denton North Wolfcamp Unit Lea CO., N.M. 10.3/4" 35#/ft. Cosing cement circulated @451ft. cemented with 600 socks of Neat Cement Cement, Circulated -cement top-circulated 7 5/8" 1 #14t. Casing Top of Liner @_4474 Squeezed WAT WAT @4692ft. Cemented ÐE With 150 Socks of 4% Gel With 1730 sacks of ស៊ 49. Gel Cement plus 200 Sacks Neat Cement top-Circulated plus 100 sacks Neat Cement ENH. 51/2 "17#ft. casing. cement top 5270 At (Temp Sur) from <u>4474</u> to 9390 2% "cement Lined tubing cemented with @ 9160 Ft 255 SACKS OF 490GelCement plus 200 Sacks Neat Cement Tension Packer Wolfcamp perforations from <u>92106</u> overall overall to <u>9370 ft</u> Plug back TD 9387 44 Total Depth 9390 ft ec 3340 10 K 10 70 HIG 1664

EXHIBIT 4 - HINJECTION WELL COMPLETION DATA MOBIL OIL CO J.C. Maxwell No.2 Location: 560 ft FISL, 660 ft FEL Sec 21 T 145 R 37E Denton North Wolfcomp Unit Lea Co., N.M. 1034 35 #/ft. Casing scement circulated @445ft. cemented 2 With 450 SOCKS of Neat Cement Cement Circulated circulated -cement 7 5/8 "26.4"/ft. Casing Top of Liner. @ 4 145 Squeezed @4280ft. Cemented With 200 Sacks of with 2800sacks of Neat-Cement 6% Gel Cement plus 200 Sacks of Neat Cement 5 1/2" 17 ##ft. Casingcement top@461cft (Temp Sur) f.rom_4145 ft 949864 20 2% "cement Lined tubing cemented with @ 9306 ft <u>500</u> sacks of 626elcement plus 200 sacks Neat Cement Jension Packer Wolfcamp perforations ->overall to <u>9398</u> + : Plug back TD 9496 ft Total Depth 9498 ft

Case 3340

EXHIBIT 4-1 INJECTION WELL COMPLETION DATA ATLANTIC REFINING CO. DICKINSON A-34 No. 1 Location: 1980 Ft FNL & 660 Ft FEL Sec 34 T145 R 37E Denton North Wolfcamp Unit Lea CO., N.M. 133/8" 48#/ft. Casing @296 ft. cemented a uith 400 Socks of cement circulated 4% Gel Cement Cement Circulated -18" hole 95/8" 1 #40 Casing cement top @ 500 ft (Calculated @ 60% loss) @4710ft. Cemented WAT With 3000 Sacks of ILEITED Neat Cement Cement top IHNI - 12.1/4" hole 7 11 23,26,29,32 \$35 7 #### Casing from surface Cement top @ 7,760 Ft (Calculated @2536053) ŻΟ 12,712 cemented with -650 Sacks of 2% "Cement Lined tubing 8 4" hole 4% Gel_Cement Squeezed @ 9,550 ft Stension Packer With 125. sacks of Neat Cement Wolfcamp perforations from 9420 Overall to <u>9480</u> <∖, overall Plug back TD 9,610 ++ Total Depth 12,720 ft Cun 3340

EXHIBIT 4 -J INJECTION WELL COMPLETION DATA ATLANTIC REFINING CO DICKINSON O #11 LOCATION: 1980 Ft F.N.L, 2130 Ft FWL 5ec 35 T 145 R 37 E Denton North Wolfcamp Unit Lea Co., N.M. scement circulated 13 3/8" 50 #/At. Casing @ ft. cemented C With 100 SOCKS of =cement top-Circulated Nat cement Cement, Circulated TOP of Liner @ 4477 ft 85/3 "32#/ft. Casing a @ 4740ft. Cemented with 2100 sacks of ß Neat Cement cement top-Circulated cement top-Circulated 51/2" 11 #ft. casing -25% " cement Lined tubing firom 1/127 @ _9150_£+ 9200 to cemented with . 800 sacks of Stension Packer Neat cement Wolfcamp perforations from 42.00 Duprall 9300 tC Open hote Plug back TD 0300 1.7. Total Depth. 9300 Clece 3340 10 56.4" Carrier Little

EXHIBIT 4 - K INJECTION WELL COMPLETION DATA MOBIL OIL CO T.D. POPE No. 30 LOCATION: 1980 FF FNL, 460 FF FEL Sec 35 T145 R 37E Denton North Wolfcamp Unit. Lea Co., N.M. 10 1/4 "32.7# /4t. Cosing cement circulated @459ft. cemented With 450 Socks of neat cement Cement, Circulated cement top @ 1579 At 3 (Temp Sur) 24\$26.40 WAT 75/8" 1 #/++. Casing TOP OF Liner @_4587 Squeezed @4778 ft. Cemented ET ED With 150 Sacks 4% Gel with 1927 sacks of 5 plus 150 sacks Neat 6 % Gel Cement plus 164 sacks signalile and 200 sacks NeatCement top 5 1/2 " 17 ## casing. cement top @ 6790 ft (Temp Sar) from 4587 9370 to 2% "cement Lines tubing cemented with @ <u>9033</u>++ 125 Sacks of 190 Gel Cement plus 200 Sacks ikat Coment Zension Pecker Wolfcamp perforations from 5179 Joverall to <u>9209</u> Plug back TD 9368 ft Total Depth 9370 ft 10 x 10 10 165 mere

EXHIBIT 4 - L INJECTION WELL COMPLETION DATA SINCLAIR OIL & GAS WI.T. MANN NO. 3 Location: 1980 ft FNL, 2310 ft FEL Sec 36 T145 . R 37E Denton North Wolfcamp Unit Lea Co., N.M. 133/2" 36#/ft. Casing @ 312ft. cemented 2 With 375 SOCKS of cement circulated Net cement Cement Circulated 9 5% " 36 #Ht. Casing cement top@ 1030 fr (Temp Sur) WAT @4791 ft. Cemented With 2500 Sacks of BITED Neat Cement Cement top 7"29 ## Casing from surface Cement top @ soco et to 12,642 cemented with 2% "cement Lined tubing -600 sacks of Nest Cement @ 9200 ft *Tension* Packer Wolfcamp perforations from 9220 NOTE : to 9450 overall The well is currently producing from the Devonian 17.1: Zone @ 12,500 ft. It will be Plug back TD 9800 Fit . plugged back and completed Total Depth 12,642 ft as a wolfcamp Injector in accordance with the diagram.

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EXHIBIT 4 - A INJECTION WELL COMPLETION DATA MOBIL OIL CO JC MAXWELL NO. 6 LOCATION : 330 FT FEL, 2210 FT FNL SEC 27 TIAS R 3.7 E Denton North Wolfcamp Unit Leai Co., N:M. 10 3/4 "32 #/ft. Casing cement Circulated @470ft. cemented 2 with 500 socks of Neat cement Cement Circulated cement top @ 645 Ft 24 \$ 26.40 75/8" 1 #/++. Casing (Temp Sar) 5 TOP OF Liner @ 4524 Squeezed @4725 ft. Cemented 8 with 250 sacks Neat with 1449 sacks of 626-1 Cement Sloset Gement Cement top@ 645 ft 5 1/2" 17#ft. Casirig cement top@6568 ff (Temp.Sur) from_4534 七〇日 9450 2-2% " cement Linel tubing cemented with @ 92,50 150 sacks of 4% Gel Cement plus 200 sacks of Heat Cement Tension Packer Wolfcamp perforations from 9350 overall to 9414 1. Plug back TD 9446 ft. Total Depth 9450 ft. 6353

EXHIBIT 4-B INJECTION WELL COMPLETION DATA SHELL OIL CO. Shelton No. 3 LOCATION: 1980 Ft FNL , 2180 Ft FWL Sec 26 T14-5 R 37E Denton North Wolfcamp Unit Lea Co., N.M. 13 3/8 "36 #/ft. Casing -cement Circulated @342ft. cemented 8-1714" hole with 350 sacks of Neat cement Cement Circulated cement top-Circulated ດະ ພ WAT 8 5/8 " 32 #/4t. Casing @4720ft Cemented 5 with 2000 sacks of ស 4% gel cement and INHI 2-11" hole 250 Sacks negt Cement plus 200 sacks Neat 51/2 " 1 ##ft. casing -Cement top @ 7,050 ft (Calculated @ 257 - loss) from surface to 9239 2% "cement Lined tubing cemented with @ 9180ft 250 Sacks of 4% Gel cement plus Tension Packer 150 sacks neat. .7% hole Wolfcamp perforations overall to <u>9435</u> (OPEN HOLE) *: Plug back TD 9435 ft Total Depth 9435 ft $\mathbf{y} \in \mathbb{N}^{n}$

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EXHIBIT 4-C SINCLAIR OIL AND GAS LEE WHITMAN "A" No. 6 LOCATION: 2310 Ft FNL, 660 Ft FEL SEC 26 T145 R 37E Denton North Wolfcamp Unit. Lea Co., N.M. cement circulated 133/8"35 #/ft. Casing @ 305ft. cemented 2 with 350 socks of cement top 1540 ft Neat cement (Temp Sur) Cement Circulated WATER 95/8 126 #/ft. Casing IBITED @4789ft. Cemented with 2680 sacks of IHNI Neat cement cement top cement top 8615' (Temp Sur) 23126 25/8" Cement Lined tubing 7 "1 ##ft. casingfirom_surface @ <u>9237 ft</u> to 9409cemented with ZTension Packer 125 Sacks of weat cement Wolfcamp perforations from 9286 Joverall to <u>9355</u> Plug back TD 9370 ft ĩ. 7 Total Depth 9410 ft

EXHIBIT 4 - D INJECTION WELL COMPLETION DATA PAN AMERICAN PETROLEUM CORP N.H. Fort "B" #1 LOCATION: 2310 Ft FNL, 2310 Ft FEL Sec 25 TIMS R 37E Denton North Wolfcamp Unit Lea Co., N.M. Scement circulated 133/8"36#/ft. Casing @ 360ft. cemented C with 200 socks of cement top-surface 8% Gel Cement plus 100 sacks reativelated (cemented with staging tool) ù WAT 8 5/8 " 32 #/ft. Casing INHIBITED @ 4750 ft. Cemented with 213 sacks of 100 sacks Neat 2nd state 150 socks Neat Cement top 211" hole cement top @ 8500 ft (Temp Sur) 51/2" 15#ft. casing-2% "cement Lined tubing firom_surface @ 9280 Ft. 9506 七〇 cemented with 150 sacks of Tension Packer 5/0-set_cement 11/8" hole Wolfcamp perforations to 9378 Plug back TD 9446 ft 1.7. 1: Total Depth 12790 ft

EXHIBIT 4-E INJECTION WELL COMPLETION DATA PAN AMERICAN PET CORP WI. H. FORT "A" NO. 1 LOCATION : 330 Ft FSL & 2310 Ft FEL Sec 25 T145 R 37E Denton North Wolfcamp Unit. Lea CO., N. M. 133/8"36 #/ft. Cosing cement Circulated @355ft. cemented 2 With 210 Socks of 2-1712" hole 8% Gel Cement, plus Toosacks Neat Plus Cement Circulated Cement top- Surface (Cemented with staging tool.) 36-40 948" 1 #/++. Casing @4750ft. Cemented NHIBITED with 213 sacks of 6 100 socks Neat 2 Store 150 sacks Neat Cement top -12/4" hole 17\$20 51/2 " 1 ## ++ . casing. cement top @ 9,070 ft (calculated @ 20% /055) from Sur Pace to 12,669 ft 2% cement Lined tubing cemented with @ 9260 _360_ sacks of 8% gel cement Tension Packer plus 100 sacks Neat - 7 1/8" hole Wolfcamp perforations from 9325 Soverall to <u>9360</u> 17 12 Plug back TD 12,330 ft Total Depth 12,669 ft
EXHIBIT 4 -F INJECTION WELL COMPLETION DATA MOBIL OIL CO T.D. POPE No. 24 LOCATION: 460 FF FEL, 660 FF FSL Sec 26 T 145 R 37E penton North Wolfcamp Unit. Lea Co., NiM. s cement circulated 103/4" 32#/ft. Casing and ft. cemented c with 450 sacks of Neat_Cement cement top@920ft Cement, Circulated (Temp Survey) TOP of Liner @ 4668' Squeezed 24926.4 7518"1#ft. Casing VAT with 200 Sacks 4% Gel @ 4818 ft. Cemented INHIBITED with 1850 sacks of plus 100 packs Neat Cement 49 Gel Cement Plus 141 Sacks Signalite and 200 sacks/ Neat Cement cement top @ 7850 ft 51/2 "17### casing. (Temp Sur) firom _1665 f 2% "cement Lined tubing 9390 ft 七の @ <u>9150</u>\$\$ cemented with _6 & sacks of 4% Gelcement plus Tension Packer 200 sacks Neat Cement Wolfcamp perforations from 9225 overall to <u>93881</u> Plug back TD 9388 ++ V.T. +: Total Depth 9390 ft KEU/FELSENE COL MASSING STREET 10 5645 HILLING 10 X 10 10 THE INCH

EXHIBIT 4 - 6 INJECTION WELL COMPLETION DATA MOBILOILCO T.D. POPE NO. 18 LOCATION: 660 Ft FSL, 2180 Ft FWL Sec 26 T 145 R 37 E penton North Wolfcamp Unit Lea CO., N.M. Scement Circulated 103/4" 35#/ft. Casing @457ft. cemented with 600 sacks of Neat_cement z cement top-circulated Cement, Circulated ц TOP of Liner 24\$26.4 MAT MAT @ 4474 Squeezed with 150 socks of 4% Gel 7 5/8" 1 #/++. Casing IIBITED ٦ł V @4692ft. Cemented with 1730 sacks of plus 100 sacks Neat Cement <u>49. Gel Cement</u> plus 200 Sacks Neat Cement top-Circulated HN Cement top 5270 ft (Temp Syr) 51/2 "17#ft. casing. firom <u>4474</u> 2% "cement Lined tubing 9390 七の @ 9160 ft cemented with 255 sacks of 4% Gel cement plus Jension Packer 200 sacks Weat Coment Wolfcamp perforations from <u>9210ft</u> overall to <u>9370ft</u> overall Plug back TD 9387 ft Total Depth 9390 ft KEUTFEL SUSSEE . -

EXHIBIT 4 - HINJECTION WELL COMPLETION DATA MOBIL OIL CO J.C. Maxwell No.2 Location: 560 ft FISL, 660 ft FEL Sec 27 THS R 37E Denton North Wolfcomp Unit Lea Co., N.M. 1034 35 #/ft. Casing scement circulated @445ft. cemented 2 with 450 socks of Neat Cement circulated Cement Circulated cement TOP OF LINER Q_4 145 Squeezed 7 5/8"26.4"/ft. Casing @4280ft. Cemented â with 200 Sacks of with 2800sacks of Neat Cement 6 % Gel Cement plus 200 Sacks of Neat Cemen Cement top @ 4670 ft (Temp Sur) 5 1/2" 17##ft. casingfrom_ 4145 ft 9498Ft 2% "cement Lined tubing 七の cemented with @ 9306 ft 500 sacks of 626elcement Jension Packer plus 200 sacks Neat Cement Wolfcamp perforations from 9365 overall to 9398 Plug back TD 9496 ft 2.7. +: Total Depth 9498ft K.

EXHIBIT 4-1 INJECTION WELL COMPLETION DATA ATLANTIC REFINING CO. DICKINSON A-34 No. 1 Location: 1980 ft FNL & 660 ft FEL Sec 34 T145 R 37E Denton North Wolfcamp Unit Lea CO., N.M. 13 3/8" 48 #/ft. Casing cement circulated @296 ft. cemented 2 With 400 Sacks of -18" hole 4% Gel cement Cement Circulated cement top @ 500 ft WATER 9 5/8" 1 #14t. Casing (Calculated 6 60% loss) @4710ft. Cemented NHNBITED With 3000 sacks of Neat Cement 2-121/4" hole Cement top 7" + ##ft. Casing. cement top @ 7,760 ft (calculated @25% Loss) from surface to .12,712 2% " cement Lined tubing cemented with @ 9230 FF 650 sacks of 8 34" hole 4% Gel Cement Tension Packer Squeezed @ 9,550 ft With 125 sacks of Wolfcamp perforations from 9420 } overall Neat Cement to <u>9480</u> 17 t. Plug back TD 9,610 ft Total Depth 12,720 ft

Sector Sector EXHIBIT 4 -J INJECTION WELL COMPLETION DATA ATLANTIC REFINING CO DICKINSON D#11 LOCATION: 1980 Ft FNL, 2130Ft FWL 5ec 35 T 145 R 37 E Denton North Wolfcamp Unit . Lea Co., N.M. 13 3/8" 50 #/At. Cosing s-cement Circulated @ 32 ft. cemented 2 with Aco sacks of Neat Cement Cement, Circulated = cement top - Circulated զ Ա WAT TOP OF Liner @ 4477 ft 85/8"32.#4t. Casing @ 4260ft. Cemented NHIBITED with 2100 sacks of Neat Cement cement top-Circulated 51/2" 17 ##ft. casing cement top-Circulated from <u>44177</u> 9200 七の 2% " cement Lined tubing cemented with @ 9150 ft 800 sacks of Neat cement Jension Packer ⊠¦₽ Wolfcamp perforstions from 4200 Voverall 9300 to . Open hole Plug back TD 9300 ÷. Total Depth 9300

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EXHIBIT 4 - K INJECTION WELL COMPLETION DATA MOBIL OIL CO T.D. POPE No. 30 LOCATION: 1980 Ft FNL, 460 Ft FEL Sec 35 T145 R 37E Denton North Wolfcamp Unit. Lea Co., N.M. 10 3/4 "32.7#/ft. Casing cement Circulated 0459ft. cemented with 450 socks of neat cement Cement top @ 1579 ft (Temp Sur) Cement, Circulated 24\$26.40 top of Liner WAT 75/8" 1 #/ft. Casing @ 4587 squeezed @4778 ft. Cemented e E with 150 Sacks 4% Gel with 1927 sacks of INHIBI plus 150 sacks Neat 6% Gel Cement plus 164 sacks signalite and 200 sacks NeatCement top 5 51/2" 17##ft. Casing. cement top@ 6790 ft (Temp Sur) from_4587 9370 to 2% "cement Lined tubing cemented with @ <u>9033ft</u> <u>125</u> sacks of 190 Gel cement phis Jension Packer 200 Sacks ikat Cement Wolfcamp perforations from 9179 Voverall to <u>9209</u> Plug back TD 9368 ft 54.7.1 +: Total Depth 9370 ft REUPFELLA LASH & CLT na tokola (k.t.) je pozobal datelo Romana Netec (d. jedana 12. – Na

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EXHIBIT 4 - L INJECTION WELL COMPLETION DATA SINCLAIR ON JGAS WI.T. MANN NO. 3 Location: 1980 ft FNL, 2310 ft FEL Sec 36 T145 . R 37E Denton North Wolfcamp Unit Lea Co., N.M. 13%" 36#/ft. Cosing cement Circulated @ 312 ft. cemented with 375 socks of Next_Cement Cement Circulated cement top@ 1030 ft WATER (Temp Sur) 9 5%" 36 #/++. Casing @4791 ft. Cemented â with 2.500 sacks of Neat Cement ស៊ Cement top 7"29### . casing cement top@ 8060 ft (Temp sur) from surface to 12,442 2% "cement Lined tubing cemented with -400 Sacks of @ 9200 ft Neat Cement *Tension* Packer Wolfcamp perforations from <u>9210</u> overall to 9450 NOTE : The well is currently 17 +. Plug back TD 9800 ft . producing from the Devonian Zone @ 12,500 Ft. It will be Total Depth 12,642 ft plugged back and completed as a Wolfcamp Injector in accordance with the diagram.

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PAGE 2 MR. NUTTER: The Hearing will come to order, please. CONVEN The next Case will be number 3339. MR. DURRETT: Application of Socony-Mobil Company, DAILY for a unit agreement, Lea County, New Mexico. V MEXICO TESTIMONY, 1 • ALBUQUERQUE, N ALBUQUERQUE, NEV MR. SPERLING: I'm J. E. Sperling of Modrall, Seymour, dearnley-meier reporting service, EXPERT Sperling, Roehl and Harris in Albuquerque and I'm appearing for STATE MENTS. the Applicant. I would like to request, Mr. Examiner, that 243-6691 Cases 3339 and 3340 be combined for testimony purposes. HEARINGS, PHONE 256. 256 MR. NUTTER: We will call the next case, 3340. DEPOSITIONS, • 032 MR. DURRETT: Application of Socony-Mobil Oil Company P.O. BOX 10 for a waterflood project, Lea County, New Mexico. S BLDC. . ž MR. NUTTER: Cases 3339 and 3340 will be consolidated SPECIALIZING 1120 SIMMS 1213 FIRST N for testimony. MR. SPERLING: In these two Cases, Mr. Examiner, we have two witnesses: Mr. White and Mr. White. (Witnesses sworn.) (Whereupon, Applicant Exhibit 1, Case 3339 and Exhibits 1, 2, 3, 3-A and 4-A through 4-L marked for identification.) W H I T E, having been first duly sworn, was examined J. L. and testified as follows: DIRECT EXAMINATION BY MR. SPERLING: Would you state your name, please? Q

A J. L. White.

Q By whom are you employed and in what capacity, Mr. White?

A I'm employed by Mobil Oil Company in the capacity of Joint Interests Coordinator in the Division office located in Midland, Texas.

Q Now, in connection with the performance of your duties, are you familiar with the application of Socony-Mobil Oil Company in Case 3339 for approval of a unit agreement in Denton North Wolfcamp area?

A Yes, I am.

Q I believe that attached to the application, Mr. White, is a copy of the proposed form of unit agreement. Can you tell us a little bit about the form of that agreement and its present status?

A Yes. The unit agreement generally follows the standard API model form for unit agreement and has been modified to fit the laws of the State of New Mexico and certain requirements of the U.S.G.S. The unitized reservoir is the Wolfcamp occuring at 9180 to 9860 in Mobil's T. D. Pope Number 10 located in Section 26, Township 14 South, Range 37 East, U. S. Public Land Survey, Lea County, New Mexico. The area unitized comprises about 2640 acres in Township 14 South, Range 37 East, in Lea County and is indicated on Exhibit A of



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unit agreement, a copy of which I understand, has been submitted in evidence. Exhibit A has been further separated into appropriate tracts. 99.33 per cent of the working interests ownership and 86.52 per cent of the royalty ownership has ratified this agreement as of November 22, 1965. Only significant working interest owner not signed is designated at the "TEC Corporation" who owns 40 acres, being the southeast of southwest of Section 25 and contains one well.

Q In connection with the present status of sign-up insofar as the unit agreement is concerned, I will call your attention to what has been marked as Exhibit 1 in case 3339 and ask you if this was prepared by you or under your supervision reflecting the tract numbers, the tract participation, working interests and royalty interests, percentage of sign-up?

A That is correct. It was prepared under my supervision. I might state that in addition to the one mentioned working interest owner who has not ratified the agreement, the U.S. Government has not ratified as royalty owner under tract number 1. They have locally recommended this and have submitted it for approval to Washington and we do anticipate their approval.

Q Other than the Federal tract which you mentioned, what is the nature of the basic royalty ownership as to the unit area?

A These are fee lands in which we have included a zero



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percentage for the government tract, we have 86.52 per cent of the royalties signed.

Q I see. Is there any lands of the State of New Mexico involved in the unit area?

A No, sir.

Q It's on all fee land or in the case of the one a Federal tract?

A Correct.

Q Federal lands?

A I might say that the TEC Corporation at this time has indicated a favorable response.

MR. NUTTER: They may yet?

THE WITNESS: I actually believe they will sign an agreement although we have stated to the U.S.G.S. and will state here that we feel sufficient control can be had over the secondary recovery method that we can effectively flood this area without their participation.

Q (By Mr. Sperling) Now, you indicated to me prior to the Hearing, Mr. White, that there was some urgency in connection with the approval of this unit agreement by this Commission?

A Yes, sir. This agreement has an ipso facto termination date of 1-1-66 and, therefore, it's important for us that we obtain as expeditiously as possible Commission



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action. We have been working on this unit approximately six
years.
Q Is there anything further you would like to add in
connection with the unit agreement or any provisions in it?
A I have nothing further unless there is some questions.
Q MR. SPERLING: I would like to submit in case 3339
the tract participation sign-up as distinguished as between the
working interests and royalty interests. This will be Exhibit
1 in 3339.

MR. NUTTER: Mobil's Exhibit 1 will be admitted.

(Whereupon, Applicant's Exhibit 1 was offered and admitted into evidence.)

THE WITNESS: Perhaps I should say that one of the provisions of the agreement requires 100 per cent working interests' signature for a tract to be qualified. We do anticipate those tracts which are indicated as not having 100 per cent signature to be indemnified into the unit prior to the effective date.

> MR. NUTTER: Are there any questions of Mr. White? CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. White, I wonder if you would go into the participation formula for the various tracts and explain how that operates, please?

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Yes, sir. The participation formula is a two-phase Α formula: Phase one being calculated or being made up of 50 per cent of the each tracts remaining primary reserve percentage and W MEXICO 50 per cent of the tracts current production percentage. And when is the remaining primary reserve completed Q Albuquérqué, I Albuquérqué, New from? The primary reserves as of June 1, 1964. А So that was phase one? Q 243-6 PHONE 256-1 Correct. And phase one is in effect until the sum of Ά the all tracts production is 3,196,000 barrels as of June 1, • 002 BOX 1 EAST 1964. P.O. B AS BLDG. . Phase one is in effect until what, until the sum of Q the production of all tracts equals 3,196,000 barrels? SIMMS FIRST N 1120 As of June 1, 1964, so that you have a tract one А volume of this many barrels. Oh, I see. Q

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A Starting June 1, 1964.

Q And what about phase two then?



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A Well, phase two then is also a split formula being 90 per cent of a tract primary ultimate recovery percentage and 10 per cent of the tracts' total acre percentage and it will be in effect as long as the unit is effective immediately following the termination of phase one.

Q And the tract participation is a part of the unit

	PAGE 8
SNOL	agreement and has been ratified by 99.39 per cent of the
CONVENTIONS	working interests?
COPY,	A Yes, sir.
II.C. MEXICO	MR. NUTTER: Thank you. Any further questions? Mr.
CTVICC, IDC. Expert testimony, daliy (BUQUEROUE, NEW MEXICO	White may be excused.
S B F V I C B ,	MR. SPERLING: Mr. Robert White.
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s, stat	examined and testified as follows:
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ICL I SITIONS, H BOX 1092 FAST • 2	BY MR. SPERLING.
MBIBI PEPOSITIONS. P.O. BOX 1002 BANK FAST	Q Would you state your name, pleases
nley-	A Robert W. White.
	Q By whom are you employed and in what
10 SPEC	White?
n den de la composition de la	A I'm employed by Mobil Oil Company in Hobbs as
	production engineer.
	Q Have you on a prior occasion testified before the
- N -	Commission?
	A No, sir, I have not.
	Q Would you, for the record, please give us your
69	educational and experience background with reference to the
	duties that you perform for Mobil?
	A I graduated from the University of Texas, Bachelor of
а	Science in Petroleum Engineering, in 1958. For the past year and
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a half I have been employed by Mobil in the reservoir group working the north part of Lea County, New Mexico. Prior to that I was employed with Irving Secondary Recovery Company, a consulting firm, in Abilene, Texas.

Q In the performance of your duties have you had occasion to make a study of the Wolfcamp reservoir in the proposed Denton North Wolfcamp area?

Α Yes; I have.

And with reference to the unit area and the state of Q development that has occurred in that area, would you please refer to what has been marked as Exhibit 1 and describe what that is, please?

Α Exhibit 1 is a lease map which shows the lease ownership within a two-mile radius of the proposed injection wells. The proposed unit boundary is shown in a dashed line on the plat. The proposed Wolfcamp injection wells are shown in red. Devonian wells which are also on the structure are designated separately by triangles. There are no dual completion wells. All wells are single completions.

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Now, would you describe for us the proposed unitized interval for this Wolfcamp production?

The unitized interval is from the interval from the top of the Wolfcamp at 9,180 feet subsurface and the base which is found at 9,860 feet subsurface on Schlumberger electric log



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dated July 29, 1953, for the Socony-Mobil T. D. Pope #10. Now you have explained that Exhibit 1 indicates the 0 unit area and the leasehold ownership within the required two mile radius. Would you now please refer to the Exhibit 2 and explain what this portrays?

Exhibit 2 is an enlargement of Exhibit 1 which is Α designated "Proposed injection pattern." Only Wolfcamp wells are shown in this exhibit.

Are these presently producing wells or do you propose Q to convert to injection wells in connection with the operation of the project?

Yes, they are. They all presently are completed in Α the Wolfcamp formation with the exception of the Sinclair Mann A-3 well which is presently a Devonian completion which will be completed in the Wolfcamp interval as a Wolfcamp injector. Now, would you please refer to what has been marked 0 Exhibit 3 and also Exhibit 3-A and advise the Examiner what these exhibits consist of?

Exhibit 3 is a typical log of the injection wells Δ which depicts the pay zone in the perforated interval. Exhibit 3-A is the type log defining the unitized

interval which shows the complete unitized interval.

These two logs are not of the same well as I Q understand it?



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No, sir, they are not. And Exhibit 3-A is a log of a well which is defined Α in the unit agreement as the well or the typical well upon which the unitized vertical area is based? SPECIALIZING IN. DEPOSITIONS, HEARINGS, STATE MENTS. EXPERT TESTIMONY, DAILY COPY, Albuquerque, New Mexico Albuquerque, New Mexico Yes, sir, it is. Now, would you please explain for the record what your A study of the reservoir characteristics of this reservoir has SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 FIRST NATIONAL BANK EAST • PHONE 256-1294 • revealed? Cumulative production from the proposed unit area August 1, 1955, was 7,500,000 barrels. The remaining primary for the unit area as of the first, 1-1-66, is estimated at approximately 2.7 million barrels which might be recovered over the remaining life of 20 years. The additional recovery over continued primary to be gained by waterflooding the unit 1120 5 area is estimated at approximately two and a half million barrels. The productive life required to recover the remaining primary and the additional waterflood reserves is estimated to be about 12 years. So that as of 1-1-66, continued primary and waterflood reserves are estimated at approximately 5.2 million Q What is the current cumulative production from the barrels. wells in the unit area? Current cumulative to August 1, 1965, was 7,510,000 The unit area for July, 1965, the unit area production Α

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barrels.

during that month was 2,287 barrels of oil from 41 producing wells which is an average daily oil production of 17 barrels per well per day. There are also 9 shutin wells within the unit area.

Q Can you state whether or not the Wolfcamp formation within the unit area is in an advanced stage of depletion as of the present time?

A Yes, sir, it is. The original bottom hole pressure was approximately 3,680 pounds per square inch. The current bottom hole pressure is estimated at 400 to 500 pounds per square inch.

Q Now, what do you propose to inject, that is, rate-wise on a daily basis into the reservoir under the program that you have outlined?

A It is proposed to initiate injection at a total unit rate of 18,000 barrels per day which will be into an inverted nine-spot pattern as shown on Exhibit 2. The wellhead pressure after a 50 per cent fillup is anticipated to be approximately 2,000 pounds. Injection equipment will be designed for a wellhead with a pressure up to 2,500 pounds. All water injected facilities will be externally coated. Injection will be through corrosion protective tubing below tension packers. The angular spacing in the injection wells will be filled with corrosion inhibited water.



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Q What is the source of the water which you propose to inject?

Α Water will be obtained from Denton Water Disposal System which disposes of salt-produced water from the Denton Devonian Reservoir in the south portion of the Devonian Wolfcamp which are active water drive reservoirs. They are currently disposing of about 22,000 barrels of water per day by injection into the Devonian formation.

And all of this water will be available for use in 0 the project under discussion?

Yes, sir, it will.

Now, would you review for the record the basic Q reservoir data of the area?

The basic reservoir data in volumetric numbers might Α be summarized as follows: Productive area is approximately 2,640 acres within the unit boundary. The average pay thickness is 48 feet. The average porosity is 6.8 per cent. The original conic water saturation, 21.5 per cent. Original formation pressure approximately 1.235 pounds per barrel. The original saturation pressure is estimated at approximately 896 pounds per square inch.

It is contemplated that at a future date it will be Q necessary to convert additional wells to injection wells or to drill additional injection wells? What are the plans?

W MEXICO dearnley-meier reporting service, inc TESTIMONY, Albuquerque, N Albuquerque, New 243-6691 PHONE 2 HEARI • 1092 DEPOSITIONS, BOX 10 EAST P.O. B BANK 1120 SIMMS BLDC. . SPECIALIZING IN

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PAGE 14 Yes, sir. It is. We contemplate adding additional injection wells along the north portion of the reservoir in the spaces where there are no Wolfcamp wells indicated on Exhibit 2. There are Devonian wells which are now at those locations which SPECIALIZING IN DEPOSITIONS, HEARINGS, STATE MENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS are nearing abandonment or nearing the economic limit. As they are abandoned they will be converted or recompleted in the 2 · PHONE 243-0691 · AIBUQUERQUE, NEW MEXICO Some will be injectors and some will be producers. dearnley-meier reporting service, inc. And under the application, you are seeking administrative authority for the conversion of those additional Wolfcamp. wells in the future as required? And, in addition, you are seeking assignment of allowables insofar as this unit is concerned on the basis of the 11.00 SIMMS BLDC. - P.O. BOX 1092 + present provision of the Rule 701 of the Commission? NOW, I would like to call your attention to Exhibits Yes, sir. 4-A through 4-L and ask you to explain what they show? The exhibits show pertinent completion data of the proposed injection wells, the casing size and depth, volumes of cement, cement tops are shown on all the casing strings, the Wolfcamp perforation interval is shown for the individual injection wells, the total depth and the plugback total depths Is there any substantial difference in these exhibits are shown for each proposed injection well. Q

A through L which should be called to the attention of the Examiner or are they basically the same or if there are differences, what are they?

PAGE 15

They are basically the same. The only difference is A in the long string of the oil string. In some cases it goes all the way to the surface from 9,000 feet while in others it is set as a liner with the top being at approximately 4,800 feet. Exhibit 4-F is an example of the wells with liners.

Is the proposed well completion program including the exhibits to which we have been referring as well as all other other exhibits concerning which you have testified here in the application been submitted to the Office of the State Engineer for the State of New Mexico?

Yes, sir, it has. Á

And have you been advised of the approval of that Q agency insofar as the proposed program is concerned assuming that the program which we have outlined here as a part of the application is carried out?

Yes, sir, I have. Å

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I believe that there is included in the file a letter 0 addressed to Mr. Porter from the State Engineer indicating what I've just stated?

MR. EXAMINER: That will be made a part of the record later.

Is there anything else you would like to add, Mr. Q White, with reference to this reservoir and proposed plans for it? No, sir. Α Q Were these exhibits 1 through 4 and all the letters prepared by you or under your supervision? Yes, they were. Α MR SPERLING: At this time I would like to offer Exhibits 1 through 4A-L. MR. NUTTER: Socony's Exhibits 1, 2, 3, 3-A and 4-A through L will be admitted into evidence. (Whereupon, Applicant's Exhibits, 1 2, 3, 3-A, and 4-A through L were offered and admitted into evidence) MR. SPERLING: That's all I have. MR. NUTTER: Any questions of Mr. White? MR. DURRETT: I have one question. CROSS EXAMINATION

BY MR. DURRETT:

Q Mr. White, as far as placing the additional wells on injection, I think you mentioned something about administrative

procedure?

A Yes, sir.

Q Am I correct that you propose to use the

administrative procedure that is presently set out in Rule 701?



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	A Yes.
	A Yes. Q You are not seeking special administrative procedure?
	NO.
	MR. DURRETT: Thank you.
NIS. HEARINGS. STATE MENTS. EXPERT TESTIMONY. 1092 • PHONE 242-6691 • Albucuercue. NEW MEX ST • PHONE 245-1294 • Albucuercue. NEW MEX ST • PHONE 245-1294 • Albucuercue. NEW MEX	MR. PORTER: Q I have one question. You gave us the cumulative ligure for the wells in this proposed unit. Do you recall oughly some of the individual recovery figures for some of the oughly some of the individual recovery figures for some of the out there? A They range substantially from the age periphery well to, oh, on the order of 50,000 to some of the better wells with half a million barrels individual recoveries. Q Do you recall about when this pool was discovered? A The Denton field, the south portion, was originally discovered in 1949. The first well in the north area was completed in 1952
	T COP.
	Q I seen A in the Wolfcamp interval. A MR. PORTER: That's all I have.
	BY MR. NUTTER: Q Mr. White, does Mobil have any acreage in the so part of the field? A No, sir, we don't. Q Do you know whether negotiations are under way

1 :

с. С unitize that end of the field for waterflood operations? A No, sir, I don't know of any active procedures at this time. Both the Wolfcamp and Devonian are under active waterdrive in the south portion.

PAGE 18

Q Your Wolfcamp is, too, then?

A Yes.

Q Is it contemplated that at any time it will be necessary to put additional injection wells along this bottom tier of wells in this north unit?

A Yes, sir, it may be in the later stages of the waterflood development. There is some evidence of active water coming in across that boundary at this time.

Q So the waterdrive that is in the south may be affected in this lower portion of your unit here?

A It may be, yes.

Q I see. Now, I just happened to notice on this Exhibit 3, Mr. White, that this well has two sets of perforations. How many different intervals of pay have been accounted for through the Wolfcamp?



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A There are three intervals or zones that have in some well or another produced. Predominately they are producing in these two intervals shown on this exhibit. A major portion of the oil in this north portion of the Wolfcamp reservoir has come from these two intervals.

Q These two shown on Exhibit 3? Α Yes, sir. Now, I haven't had time to look at your diagramatic Q ALBUQUERQUE, NEW MEXICO ALBUQUERQUE, NEW MEXICO sketches on your injection wells but do all of these injection wells have these two zones open in them? Α On the edge of the field the second zone interval is not developed. The porosity permeability is not developed as 243-6691 1294 • well as it is in the center and some of these wells do not have PHONE 2 the second interval open. The interior wells in the pattern do • 003 have both zones open. BOX 10 EAST Q Now, that would apply to the injection wells as well 1120 SIMMS BLDG. • P.O. as the producing wells?

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Α Yes, it does.

MR. NUTTER: Are there any further questions of Mr. White? You may be excused.

MR. SPERLING: I would like to recall Mr. J. L. White. He's made a mistake he's called to my attention.

REDIRECT EXAMINATION

BY MR. SPERLING:



THE WITNESS: I will apologize for the misstatement. I was hurriedly looking for the answer to your question regarding the volume of oil produced as to phase one and the correct number is 3,000,000 barrels rather than the, as I recall I gave you number of, 3,000,194.

HEARINGS, STATE MENTS, EXPERT TESTIMONY, DAILY COPY, dearnley-meier reporting service, inc. DEPOSITIONS, ž SPECIALIZING

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THE WITNESS: Around 3,000,000. Even 3,000,000. MR. NUTTER: Thank you. THE WITNESS: I'm sorry. Q (By Mr. Sperling) Anything else? A No. MR. SPERLING: That's all we have, Mr. Examiner. MR. NUTTER: Does anyone have anything they wish to offer in Case 3339 and 3340. MR. DURRETT: I would like to state for the record that we do have a letter from the State Engineer dated November 4, 1965, that Mr. Sperling has been referring to. MR. NUTTER: Thank you. If there is nothing further we will take the cases under advisement and call case 3341.		
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 Albuquerque, New MEXICO dearnley-meier reporting service, inc. Direct Examination by Mr. Sperling Cross Examination by Mr. Nutter 2 6 ROBERT W. WHITE Direct Examination by Mr. Sperling 1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • Cross Examination by Mr. Durrett 8 Cross Examination by Mr. Porter 16 Cross Examination by Mr. Nutter 17 Redirect Examination by Mr. Sperling 17 19 EXHIBITS MARKED FOR EXHIBIT IDENTIFICATION OFFERED ADMITTED Case 3339 App's. 1 2 6 б Case 3340 App's. 1 App's. 2 App's. 3 App's. 3-A App's. 4-A 2 16 16 2 16 16 2 16 16 2 <u>16</u> 16 2 16 through L 16

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STATE OF NEW MEXICO COUNTY OF BERNALILLO)

I, DEAN A. ROBINSON, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability. Witness my Hand and Seal this 30th day of December,

1965.

NOTARY PUBLIC

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My Commission Expires: October 16, 1969.



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1120, SIMMS 81DG. • P.O. 90X 1092 • PHONE 243-6691 1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 •

I do hereby certify that the foregoing is a company i se tio proceedinge the East. AK, Cand Ho. 33398 headed by 396

New Mexico Gli ishservation Complexion