

CASE 2887: Application of APACHE
CORP. for creation of the WEST
KENNITZ WOLFCAMP POOL & RULES.

Dear Mr. [unclear]
 I have just received
 your letter of the 10th inst.
 and am glad to hear
 that you are well.
 I am also well and hope
 to hear from you again
 soon.
 Yours truly,
 [unclear]

1952/10
288

Index, Transcript,
all Exhibits, etc.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 21, 1963

9:00 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, as alternate examiner:

- CASE 2355: (Reopened and continued from August 7, 1963 examiner hearing)
In the matter of Case 2355 being reopened pursuant to the provisions of Order No. R-2051-A, which order extended the temporary 320-acre proration units for the Bluit-Wolfcamp Gas Pool, Roosevelt County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 160-acre proration units.
- CASE 2883: Application of Pan American Petroleum Corporation for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a Tubb gas, Blinebry oil and Paddock gas triple completion, Fowler Field, at an unorthodox location for the Fowler Blinebry Oil Pool 990 feet from the South and West lines of Section 15, Township 24 South, Range 37 East, Lea County, New Mexico.
- CASE 2884: Application of Continental Oil Company for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Dakota formation through its Table Mesa Well No. 25, located in Unit K, Section 34, Township 28 North, Range 17 West, Table Mesa Pool, San Juan County, New Mexico.
- CASE 2885: Application of John H. Trigg for four unorthodox locations, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the following four unorthodox oil well locations in his waterflood project, Caprock Queen Pool, Chaves County, New Mexico, all in Section 4, Township 14 South, Range 31 East:
- 1320 feet from the North line and 2475 feet from the East line;
- 2764 feet from the North line and 2557 feet from the East line;
- 1320 feet from the North line and 1320 feet from the East line;
- 1320 feet from the North line and 1485 feet from the West line.
- CASE 2886: Application of Ambassador Oil Corporation for a capacity waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a capacity allowable waterflood project on its Federal "Q" lease comprising the NW/4 of Section 3, Township 17 South, Range 30 East, Eddy County, New Mexico, by the injection of water into the Square Lake Pool through 2 wells located in the NW/4 of said Section 3.

CASE 2887:

Application of Apache Corporation for the creation of the West Kemnitz Wolfcamp Oil Pool, and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production in Section 31, Township 16 South, Range 33 East, and the establishment of temporary rules therefor, including provisions for 80-acre spacing and restricted well locations.

CASE 2888:

Application of the British American Oil Producing Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Jalmat Deep Unit Area comprising 10,568.81 acres of State land in Townships 21 and 22 South, Range 35 East, Lea County, New Mexico.

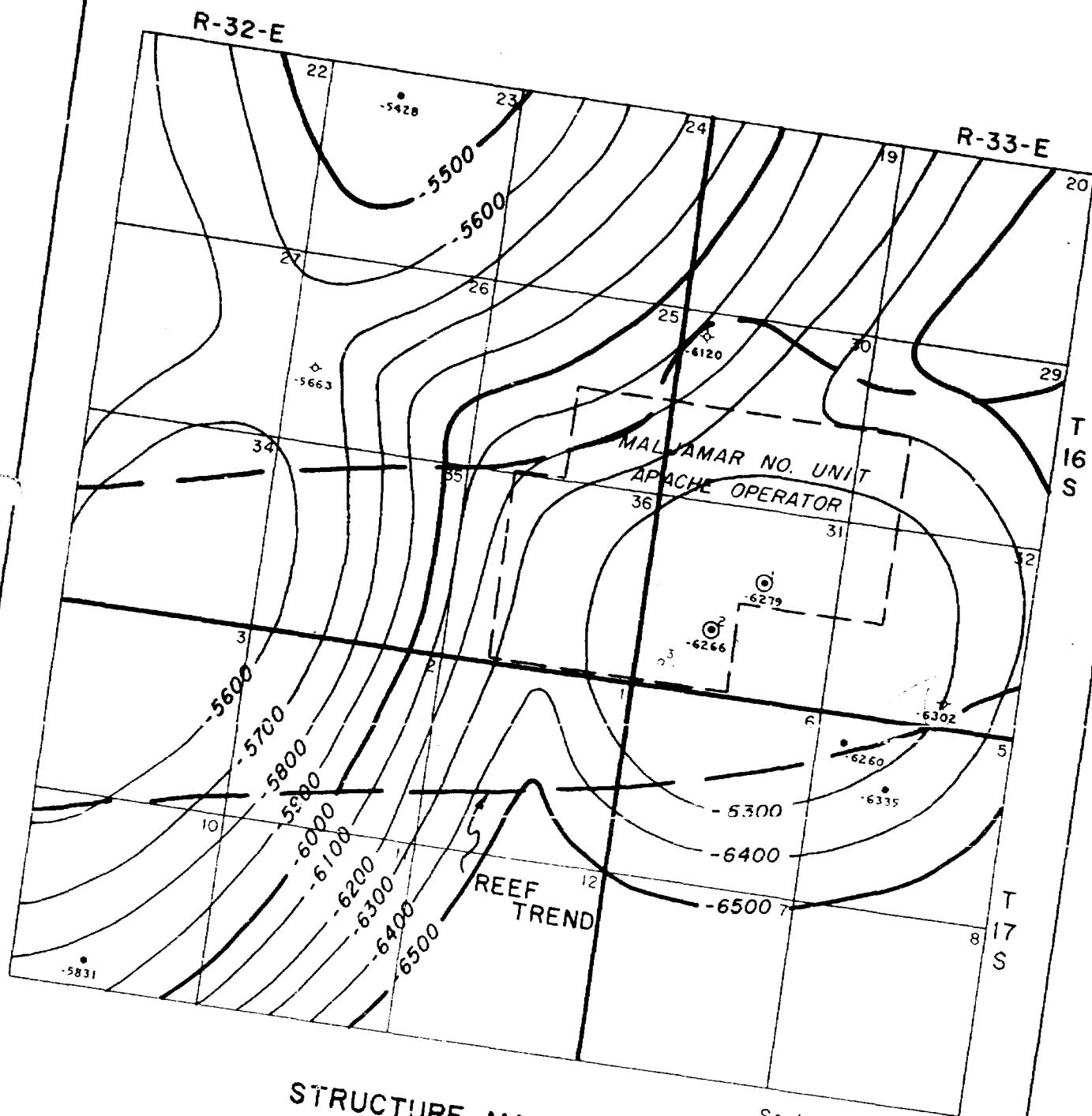
CASE 2889:

Application of A. O. Wooden for the creation of a gas pool, 80-acre spacing therefor, and a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a Queen gas pool for his Harbold Well No. 16 located in Unit N of Section 26, Township 17 South, Range 27 East, Eddy County, New Mexico. Applicant also seeks the establishment of 80-acre spacing for said pool. Applicant further seeks approval of the dual completion (conventional) of the said Harbold Well No. 16 to produce oil from the Premier Sand of the Grayburg formation, Red Lake Pool, through the tubing, and to produce gas from the Penrose sand of the Queen formation through the casing-tubing annulus.

CASE 2876:

(Continued from August 7, 1963 Examiner Hearing)
Application of Consolidated Oil & Gas, Inc. for an unorthodox location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks permission to recomplate its Jicarilla No. 4-8 at an unorthodox Blanco-Mesaverde Pool location 1550 feet from the North line and 890 feet from the West line of Section 8, Township 26 North, Range 5 West, Rio Arriba County, New Mexico.

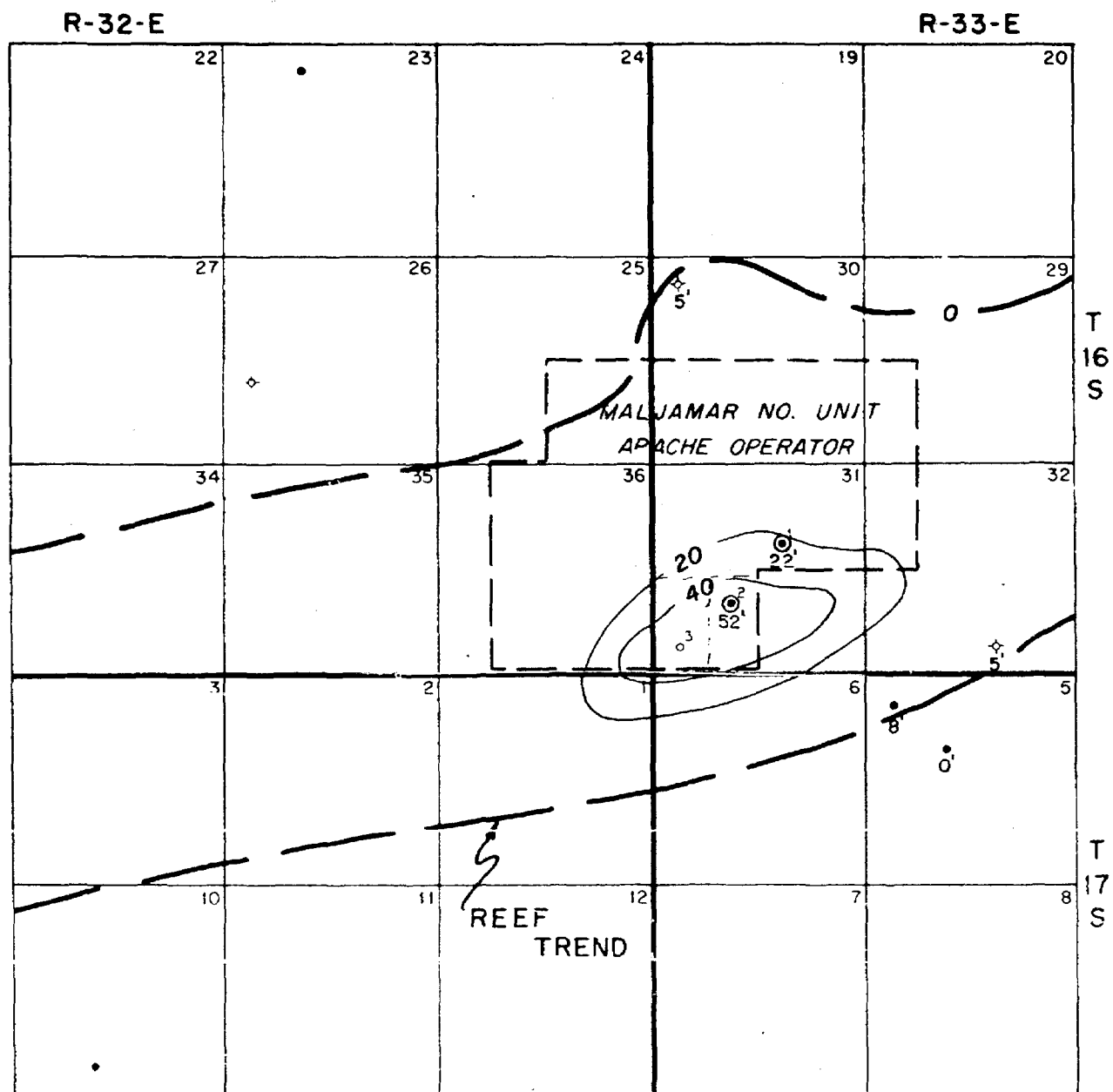
EXHIBIT / "A"



STRUCTURE MAP DRAWN
ON WOLFCAMP MARKER

CONTOUR INTERVAL: 100'
● LOWER WOLFCAMP PRODUCERS

EXHIBIT / "B"



Scale: 1" = 4,000'

ISOPACH MAP OF NET WOLFCAMP POROSITY

ISOPACH INTERVAL 20'

⊙ LOWER WOLFCAMP PRODUCERS

EXHIBIT "D"

WALTONA POWER STATE UNIT

DELAWARE-APACHE CORPORATION, OPERATOR

	<u>WELL #1</u>	<u>WELL #2</u>
Completion Date	7-2-63	6-30-64
Cumulative Production to 7-1-64	35,051 Barrels	None
Original Bottom Hole Pressure of Lower Wolfcamp from Drill Stem Tests (Initial Shut-in Pressure)	37610/30 minutes	32140/30 minutes
Pressure Drop		547 psi
Distance between wells	2000+ feet	
$\sqrt{(1320)^2 + (1320)^2}$		
Gas/Oil Ratio	1004:1	1325:1
API Gravity	40°	39.5°
Top of L. Wolfcamp	10,678 feet	10,690 feet

EXHIBIT "E"

OIL RECOVERY CALCULATIONS

NALJANAR, NORTH STATE UNIT NO. 2

L. WOLFCAMP - 10,690'

RESERVOIR DATA

Gross Pay Thickness in well	190 feet
Net Pay Thickness at well	52 feet
Porosity	8.6 %
Water Saturation	30 %
Formation volume factor	1.3
Recovery factor	20 %

OIL IN PLACE

$(7758) (.086) (1-.30) (1/1.3) =$	360 B/AF
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RECOVERABLE OIL

$(360) (.20)$	72 B/AF
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DRAINAGE VOLUME

33' Net x 80 acres	2640 AF
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RECOVERABLE OIL PER 80-ACRE UNIT

$(72) (2640)$	190,000 Barrels
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EXHIBIT "F"
ECONOMICS OF WELL SPACING

	<u>80 ACRES</u>	<u>40 ACRES</u>
Estimated Recovery of Well No. 1 (From production decline curve)	110,000 bbls.	55,000 bbls.
Estimated Recovery of Well No. 2 (By volumetric calculation)	190,000 bbls	95,000 bbls.
Average Recovery of Wells in Field	150,000 bbls	75,000 bbls.
Net Income to Operators:		
Sale Price of 40° API Oil	\$3.01/bbl.	
Less Taxes and transportation	<u>.37</u>	
	\$2.64	
	\$396,000	\$198,000
Less Operating Costs	<u>46,000</u>	<u>30,000</u>
Net Operating Income	\$350,000	\$168,000
Cost of Completed Well	<u>200,000</u>	<u>200,000</u>
Net Profit to Operators on 80 acres	\$150,000	
Net Loss to Operators on 40 acres		\$32,000

DRAFT
JMD/esr

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:

CF Subj. _____

CASE No. 2887

Order No. R-2559-A

APPLICATION OF APACHE CORPORATION
FOR THE CREATION OF THE WEST KEMNITZ-
LOWER WOLFCAMP OIL POOL, AND FOR
SPECIAL POOL RULES, LEA COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
August 5, 1964, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this _____ day of August, 1964, 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 by Order No. R-2559 dated September 4, 1963, tem-
porary Special Rules and Regulations were promulgated for the
West Kemnitz-Lower Wolfcamp Oil Pool.

(3) That pursuant to the provisions of Order No. R-2559,
this case was reopened to allow the operators in the subject pool
to appear and show cause why the West Kemnitz-Lower Wolfcamp
Oil Pool should not be developed on 40-acre spacing units.

(4) That the evidence establishes that one well in the West Kemnitz-Lower Wolfcamp Oil Pool can efficiently and economically drain and develop 80 acres.

(5) That to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-2559 should be continued in full force and effect until further order of the Commission.

(6) That the Special Rules and Regulations promulgated by Order No. R-2559 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the West Kemnitz-Lower Wolfcamp Oil Pool promulgated by Order No. R-2559 are hereby continued in full force and effect until further order of the Commission.

(2) 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.

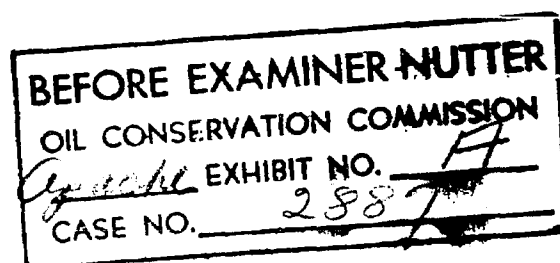
EXHIBITS FOR CASE NO. 2887

APACHE CORPORATION'S APPLICATION

FOR ORDER CREATING

NEW POOL AND 80-ACRE SPACING

MALJAMAR NORTH STATE UNIT NO. 1



UNIT OPERATING INTERESTS

MALJAMAR NORTH UNIT

LEA COUNTY, NEW MEXICO

<u>Working Interest Owner</u>	<u>Number of Acres Committed to Unit</u>	<u>Percentage of Working Interest</u>
Tidewater Oil Company	160.00	5.257275
Texas Gulf Producing Company	240.00	7.885915
The Superior Oil Company	160.00	5.257275
The Atlantic Refining Company	160.00	5.257275
Samedan Oil Corporation	240.59	7.905330
Samedan Associates, Inc.	80.29	2.638150
Gulf Oil Corporation	160.00	---
The Pure Oil Company	160.52	5.274365
Socony Mobil Oil Company, Inc.	160.30	5.267140
Apache Corporation	---	55.257275*

*Subject to overriding royalty payable to
Gulf Oil Corporation

WELL HISTORY
LOWER WOLFCAMP FORMATION
MALJAMAR NORTH STATE UNIT NO. 1

Location: 1980' FNL and 1980' FEL of Section 31,
T-16-S, R-33-E, Lea County, New Mexico.

Total Depth: 11,000 feet.

Production String: 5-1/2 inch casing set at 11,000 feet.

Drill Stem Test: Lower Wolfcamp formation 10,745'-10,810',
tool open 2 hours, gas to surface in 5
minutes, reversed out 25 barrels of free
oil plus 160 feet of gas cut drilling mud.

ISIP (30")	3761	IFP	493
FSIP (90")	3560	FFP	893

Perforations: One jet shot at each of the following
intervals: 10,678; 10,679; 10,680; 10,724;
10,726; 10,728; 10,760; 10,763; 10,765;
10,782; 10,784; 10,787; 10,802; 10,804;
10,805, a total of 15 holes.

Stimulation Treatment: 1000 gallons of clean up acid, followed
later with 3200 gallons of acid with 15
rubber coated nylon ball sealers.

Potential Test: On July 3, 1963 well flowed 298 barrels of
oil, no water, in 24 hours, 16/64-inch choke,
tubing pressure 470 psig, GOR 520, oil gravity
34.6 @ 60°F.

On July 15, 1963, after 3200 gallon acid
treatment, well flowed 239 barrels of oil,
no water, in 24 hours, 20/64-inch choke,
tubing pressure 410 psig, GOR 1004, oil
gravity 34.6 @ 60°F.

± 16

OIL RECOVERY CALCULATIONS

LOWER WOLFCAMP FORMATION

MALJAMAR NORTH STATE UNIT NO. 1

Reservoir Volume Calculations

Assumed Porosity	9.4%
Water Saturation	22%
Net Effective Pay	23 feet
Recovery Factor	20% of oil in place
Estimated Formation Volume Factor	1.55 Bbl/Bbl

Oil in Place, Bbls per acre-foot
 (7758) (0.094) (1-0.22) 1/1.55 = 367 Bbls/ac-ft

Recoverable Oil, Bbls per acre-foot
 (367) x (0.2) = 73.4 Bbls/ac-ft

Oil in Place, Bbls per acre
 (367) x (23) = 8440 Bbls/acre

Recoverable Oil, Bbls per acre
 (8440) x (.20) = 1688 Bbls/acre

	<u>40 Acres</u>	<u>80 Acres</u>
Oil in Place, Bbls	337,500	675,000
Recoverable Oil, Bbls	67,500	135,000

#7

RESERVOIR ROCK AND FLUID PROPERTIES

LOWER WOLFCAMP FORMATION

MALJAMAR NORTH STATE UNIT NO. 1

Depth of Formation, feet	10,678
Gross Pay, feet	137
Net Effective Pay, feet	23
Porosity, percent (from Sonic Log)	9.4
Water Saturation, percent (assumed)	22
Original Reservoir Pressure, psig	3761
Saturation Pressure, psig	3100
Reservoir Temperature, °F	142
Gas in Solution, cubic feet per barrel	1000
Formation Volume Factor, bbl/bbl	1.55
Oil Gravity, °API	38.1

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COMPARISON OF ROCK AND FLUID PROPERTIES
KEMNITZ POOL VERSUS MALJAMAR NORTH STATE UNIT NO. 1

<u>Type Data</u>	<u>Kemnitz Pool</u>	<u>Maljamar Unit No. 1</u>
Depth of Producing Formation	10,700	10,678
Gross Pay, feet	150	137
Net Pay, feet	13-65	23
Porosity, percent	8	9.4
Water Saturation, percent	25	22
Permeability, md	50-100	5
Original Reservoir Pressure, psig	3788	3761
Saturation Pressure, psig	3188	3100
Original Gas in Solution, cu-ft/bbl	1492	1000
Reservoir Temperature, °F	140	142
Formation Volume Factor, Bbl/Bbl	1.768	1.55
Oil Gravity, °API	39°	38°

#17

DRILLING ECONOMICS

LOWER WOLFCAMP FORMATION

MALJAMAR NORTH STATE UNIT NO. 1

<u>Income</u>	<u>40 Acres</u>	<u>80 Acres</u>
Recoverable Oil, Bbls	67,500	135,000
Unit Operator's Net Recoverable Oil, Bbls (87.5%)	59,060	118,125
Unit Operator's Gross Income* (\$2.84 per barrel)	\$167,730	\$335,475

Drilling and Completion Expenses

Costs of First Well Including Tank Battery	\$194,000
Costs of Additional Wells Producing into Common Tank Battery	\$182,000

*Does not include future gas sales, operating costs,
state and federal taxes.

DRAFT

DSN/esr
August 28, 1963

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. 2887

Order No. R-2559
NOMENCLATURE

APPLICATION OF APACHE CORPORATION
FOR THE CREATION OF THE WEST KEMNITZ-LOWER
WOLFCAMP OIL POOL, AND FOR SPECIAL
POOL RULES, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 21, 1963, 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 Sept day of August, 1963, 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, Apache Corporation, seeks the creation of a new pool for Lower Wolfcamp production and the promulgation of temporary special rules and regulations governing said pool, including a provision for 80-acre spacing units.

(3) That a new oil pool for Lower Wolfcamp production should be created and designated the West Kemnitz-Lower Wolfcamp Oil Pool. This pool was discovered on July 3, 1963, by the Apache Corporation Maljamar North State Unit Well No. 1, located in Unit G of Section 31, Township 16 South, Range 33 East, NMPM, Lea County, New Mexico. The top of the perforations is at 10,678 feet.

(4) That temporary special rules and regulations establishing 80-acre spacing should be promulgated for the subject pool in order to prevent the possibility of economic loss resulting from the drilling of unnecessary wells and in order to allow the operators in the subject pool to gather information concerning the reservoir characteristics of the pool.

(5) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the temporary special rules and regulations should be established for a one-year period and that during this one-year period all operators in the subject pool should gather all available information relative to drainage and recoverable reserves.

(7) That this case should be reopened at an examiner hearing in August, 1964, at which time the operators in the subject pool should appear and show cause why the West Kemnitz-Lower Wolfcamp Oil Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That a new pool in Lea County, New Mexico, classified as an oil pool for Lower Wolfcamp production is hereby created and designated the West Kemnitz-Lower Wolfcamp Oil Pool, consisting of the following-described area:

TOWNSHIP 16 SOUTH, RANGE 33 EAST, NMPM
Section 31: NE/4, E/2 NW/4, NE/4 SW/4,
and N/2 SE/4

(2) That the vertical limits of said pool shall be the Lower Wolfcamp formation as depicted on the log of the Apache Corporation Maljamar North State Unit Well No. 1, located in Unit G of Section 31, Township 16 South, Range 33 East, NMPM, Lea County, New Mexico, from a point 10,675 feet to 10,820 feet.

(3) That Special Rules and Regulations for the West Kemnitz-Lower Wolfcamp Oil Pool are hereby promulgated as follows, effective September 10, 1963.

SPECIAL RULES AND REGULATIONS
FOR THE
WEST KEMNITZ-LOWER WOLFCAMP OIL POOL

RULE 1. Each well completed or recompleted in the West Kemnitz-Lower Wolfcamp Oil Pool or in the Lower Wolfcamp formation within one mile of the West Kemnitz-Lower Wolfcamp Oil Pool, and not nearer to or within the limits of another designated Lower Wolfcamp pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. (a) Each well completed or recompleted in the West Kemnitz-Lower Wolfcamp Oil Pool shall be located on a standard unit containing 80 acres, more or less, consisting of the E/2 or the W/2 of a governmental quarter section.

(b) The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 (a) without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 3. (a) Each well projected to or completed in the West Kemnitz-Lower Wolfcamp Oil Pool shall be located within 200 feet of the center of either the NE/4 or the SW/4 of a governmental quarter section.

(b) The Secretary-Director ~~of the Commission~~ shall have authority to grant ^{an} exception to the requirements of Rule 3 (a) ^{above} without notice and hearing where application has been filed in due

form and the necessity for the unorthodox location is based on topographical conditions.

Applicant: shall furnish all operators within a 1320-foot radius of the subject well a copy of the application to the Commission, and applicant shall include with his application a list of names and addresses of all operators within such radius, together with a stipulation that proper notice has been given said operators at the addresses given. The Secretary-

may approve the application upon receipt of written
~~Director of the Commission shall wait at least 20 days after~~
~~wavers from all operators within such radius, or if no such~~
~~receipt of application before approving any such unorthodox loca-~~
~~tion, and shall approve such unorthodox location only in the~~
~~operator has entered an objection to the unorthodox location~~
~~within 20 days after the Secretary-Director has received the~~
~~absence of objection by any offset operator. In the event an~~
~~application.~~

operator objects to the unorthodox location, the Commission shall consider the matter only after proper notice and hearing.

RULE 4. A standard proration unit (79 through 81 acres) in the West Kemnitz-Lower Wolfcamp Oil Pool shall be assigned an 80-acre proportional factor of 5.67 for allowable purposes, and any well to which is dedicated less than 79 acres or more than 81 acres shall be granted an allowable in the proportion to a standard allowable that the total number of acres assigned to the well bears to 80 acres.

RULE 5. No well shall be assigned an 80-acre allowable until Commission Form C-128 has been filed with the Commission indicating that either the E/2 or the W/2 of a governmental quarter section has been dedicated to the well.

(4) That this case shall be reopened at an examiner hearing in August, 1964, at which time the operators in the subject pool may appear and show cause why the West Kemnitz-Lower Wolfcamp Oil Pool should not be developed on 40-acre spacing units.

(5) 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.

August 21st Examiner

7-31-63

Re: TF Howard Bratten

Case no _____

Application of Apache Corp. for the creation of the West Hemnitz Wolfcamp Oil Pool, and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production in Section 31, Township 16 South, Range 33 East, and the establishment of temporary rules therefore, including provisions for 80-acre spacing and restricted well locations.

Howard Bratton set for 21st

Apache Corp designation of new
pool for Lower Wolfcamp, ~~production~~
County, New Mexico.
~~Malheur north~~

Temporary pool rules - 80 acre units
and fixed locations.

Designated West Kemnitz Wolfcamp ~~Pool~~
Want $N/2 \times N/2$ of $SW/4$ of Sec 31
165-33E

Discovery is in SW of NE



THE ATLANTIC REFINING COMPANY
INCORPORATED - 1970
PETROLEUM PRODUCTS

August 15, 1963

DOMESTIC PRODUCING DEPARTMENT
NEW MEXICO DISTRICT

BOONE MACAULAY, DISTRICT MANAGER
R. F. CHAMPION, DISTRICT LANDMAN
W. T. EASTES, DISTRICT GEOPHYSICIST
E. R. DOUGLAS, DISTRICT GEOLOGIST
A. D. KLOXIN, DISTRICT DRUG & PROD. SUP'T.
W. P. TOMLINSON, DISTRICT ENGINEER
B. R. WARE, ADMINISTRATIVE SUPERVISOR

MAILING ADDRESS
P. O. BOX 1978
ROSWELL, NEW MEXICO

New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

ATTENTION: Mr. A. L. Porter

Re: Case No. 2887: Creation
of and Special Pool Rules
for West Kennitz Wolfcamp
Pool

Gentlemen:

In Case No. 2887 to be heard on August 21, 1963, Apache Corporation is applying for the creation of the West Kennitz Wolfcamp Oil Pool. They also are proposing special pool rules providing for 80-acre spacing. We have reviewed the proposal. The Atlantic Refining Company believes these matters to be in the interest of conservation and that correlative rights will be protected. As a working-interest owner in the Maljamar North State Unit, we recommend that the West Kennitz Wolfcamp Pool be created and that the proposed rules be established.

Yours very truly,

W. P. Tomlinson
W. P. Tomlinson VC

pam

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JENNIST WALKER
MEMBER

P. O. BOX 871
SANTA FE

September 4, 1963

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

Mr. Clarence Hinkle
Harvey, Dow & Hinkle
Attorneys at Law
Post Office Box 10
Roswell, New Mexico

Re: Case No. 2882
Order No. R-2559 DOCKET MAILED
Applicant: APACHE CORPORATION Date 7-24-64
JK

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

ix/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Astec OCC

OTHER

Docket No. 21-64

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 5, 1964

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

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

CASE 2355 (Reopened):

In the matter of Case No. 2355 being reopened pursuant to the provisions of Order No. R-2051-B, which order continued for one year the temporary rules set out in Order No. R-2051 establishing 320-acre gas spacing units for the Bluitt-Wolfcamp Gas Pool, Roosevelt County, New Mexico. All interested parties may appear and show cause why said pool should not be developed on 160-acre units.

CASE 2575 (Reopened):

In the matter of Case No. 2575 being reopened pursuant to the provisions of Order No. R-2267-A, which order continued for another year the temporary rules set out in Order No. R-2267 establishing 80-acre oil proration units and 320-acre gas proration units for the Lybrook-Gallup Oil Pool, Rio Arriba County, New Mexico. All interested parties may appear and show cause why said pool should not be developed on 160-acre gas proration units and 40-acre oil proration units.

CASE 2858 (Reopened):

In the matter of Case No. 2858 being reopened pursuant to the provisions of Order No. R-2549, which order established temporary 80-acre spacing units for the La Plata-Gallup Oil Pool, San Juan County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 2887 (Reopened):

In the matter of Case No. 2887 being reopened pursuant to the provisions of Order No. R-2559, which order established temporary 80-acre spacing units for the West Kemnitz-Lower Wolfcamp Oil Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

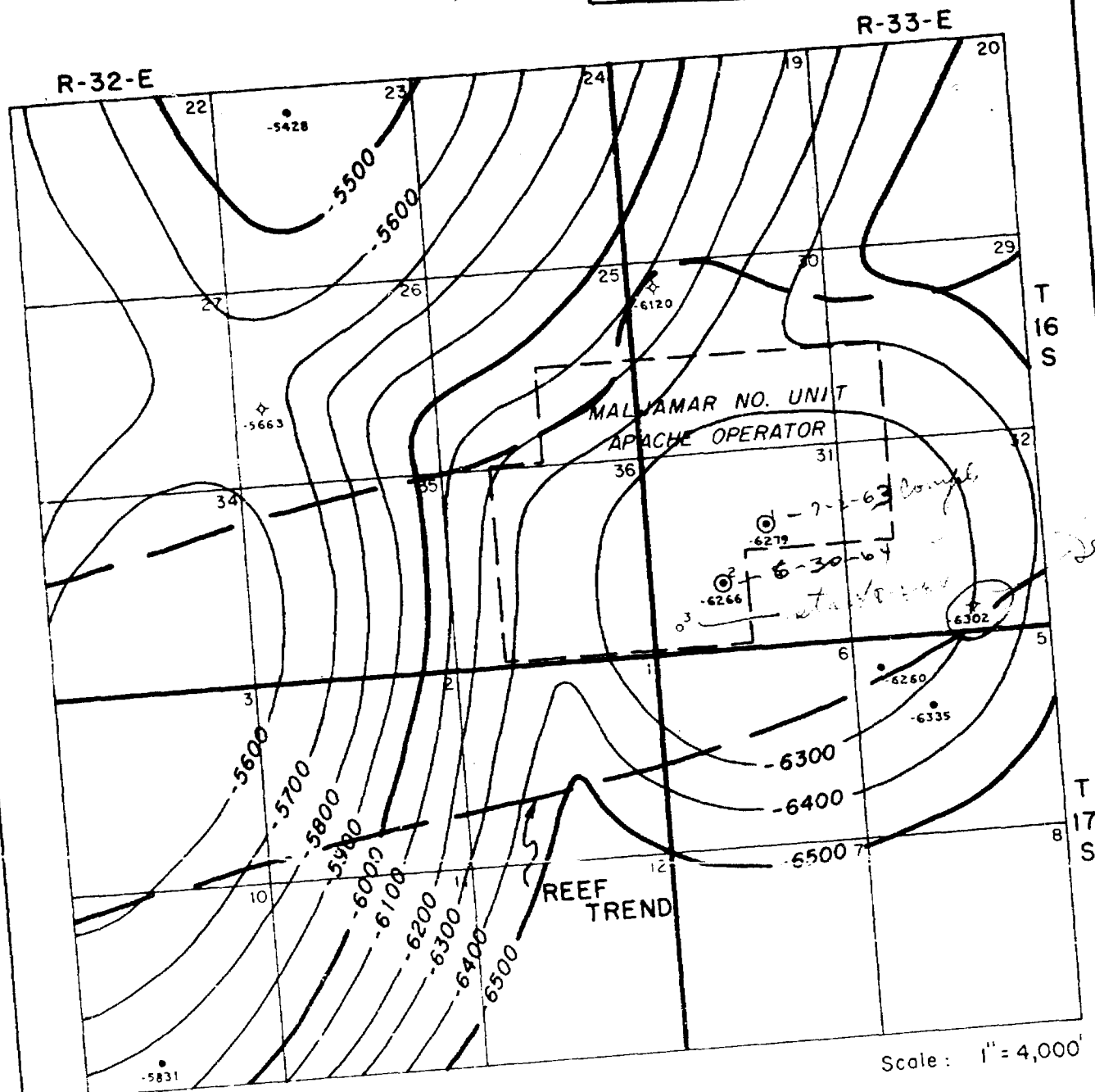
EXHIBIT

BEFORE EXAMINER UTZ

AJIL CONSERVATION COMMISSION

EXHIBIT NO. 2287

CASE NO. 2287

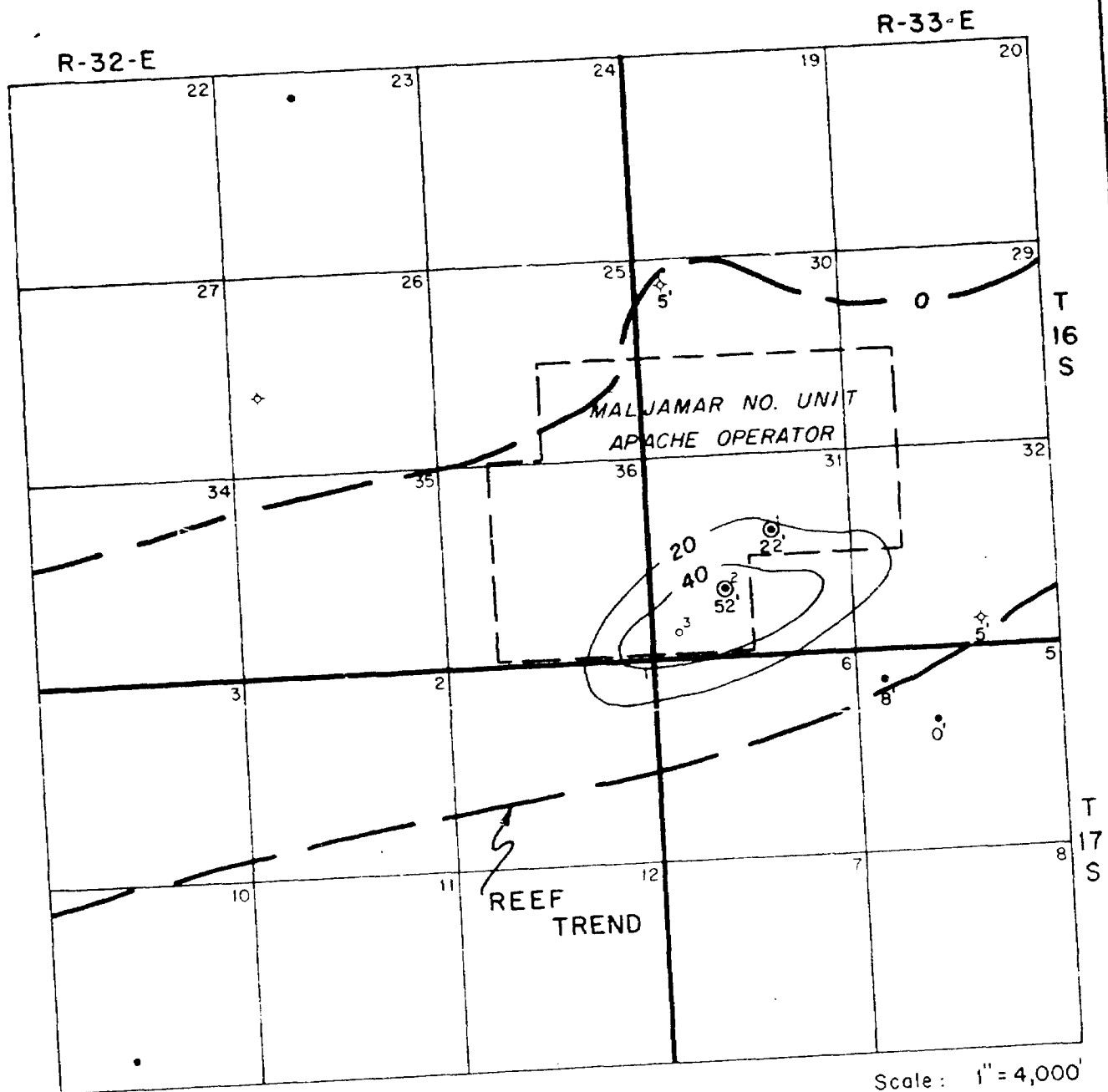


STRUCTURE MAP DRAWN
ON WOLFCAMP MARKER

CONTOUR INTERVAL: 100'

○ LOWER WOLFCAMP PRODUCERS

EXHIBIT "B"



ISOPACH MAP OF NET WOLFCAMP POROSITY

ISOPACH INTERVAL 20'

⊙ LOWER WOLFCAMP PRODUCERS

EXHIBIT "D"

MALJANAR NORTH STATE UNIT

DELANE-APACHE CORPORATION, OPERATOR

	<u>WELL #1</u>	<u>WELL #2</u>
Completion Date	7-2-63	6-30-64
Cumulative Production to 7-1-64	35,051 Barrels	None
Original Bottom Hole Pressure of Lower Wolfcamp from Drill Stem Tests (Initial Shut-in Pressure)	3761#/30 minutes	3214#/30 minutes
Pressure Drop		547 psi
Distance between wells	2000+ feet	
$\sqrt{(1320)^2 + (1520)^2}$		
Gas/Oil Ratio	1004:1	1325:1
API Gravity	40°	39.5°
Top of L. Wolfcamp	10,678 feet	10,690 feet

EXHIBIT "E"

OIL RECOVERY CALCULATIONS

MALJAMAR, NORTH STATE UNIT NO. 2

L. WOLFCAMP - 10,690'

RESERVOIR DATA

Gross Pay Thickness in well	190 feet
Net Pay Thickness at well	52 feet
Porosity	8.6 %
Water Saturation	30 %
Formation volume factor	1.3
Recovery factor	20 %

OIL IN PLACE

$(7758) (.086) (1-.30) (1/1.3) =$	360 B/AF
-----------------------------------	----------

RECOVERABLE OIL

$(360) (.20)$	72 B/AF
---------------	---------

DRAINAGE VOLUME

33' Net x 80 acres	2640 AF
--------------------	---------

RECOVERABLE OIL PER 80-ACRE UNIT

$(72) (2640)$	190,000 Barrels
---------------	-----------------

EXHIBIT "F"

ECONOMICS OF WELL SPACING

	<u>80 ACRES</u>	<u>40 ACRES</u>
Estimated Recovery of Well No. 1 (From production decline curve)	110,000 bbls.	55,000 bbls.
Estimated Recovery of Well No. 2 (By volumetric calculation)	190,000 bbls	95,000 bbls.
Average Recovery of Wells in Field	150,000 bbls	75,000 bbls.
Net Income to Operators:		
Sale Price of 40° API Oil	\$3.01/bbl.	
Less Taxes and transportation	<u>.37</u>	
	\$2.64	
	\$396,000	\$198,000
Less Operating Costs	<u>46,000</u>	<u>30,000</u>
Net Operating Income	\$350,000	\$168,000
Cost of Completed Well	<u>200,000</u>	<u>200,000</u>
Net Profit to Operators on 80 acres	\$150,000	
Net Loss to Operators on 40 acres		\$32,000

**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. 2887
Order No. R-2559
NOMENCLATURE

**APPLICATION OF APACHE CORPORATION
FOR THE CREATION OF THE WEST KEMNITZ-
LOWER WOLFCAMP OIL POOL, AND FOR
SPECIAL POOL RULES, LEA COUNTY, NEW
MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 21, 1963, 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 September, 1963, 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, Apache Corporation, seeks the creation of a new pool for Lower Wolfcamp production and the promulgation of temporary special rules and regulations governing said pool, including a provision for 80-acre spacing units.

(3) That a new oil pool for Lower Wolfcamp production should be created and designated the West Kemnitz-Lower Wolfcamp Oil Pool. This pool was discovered on July 3, 1963, by the Apache Corporation Maljamar North State Unit Well No. 1, located in Unit G of Section 31, Township 16 South, Range 33 East, NMPM, Lea County, New Mexico. The top of the perforations is at 10,678 feet.

(4) That temporary special rules and regulations establishing 80-acre spacing should be promulgated for the subject pool in

-2-

CASE No. 2887
Order No. R-2559

order to prevent the possibility of economic loss resulting from the drilling of unnecessary wells and in order to allow the operators in the subject pool to gather information concerning the reservoir characteristics of the pool.

(5) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(6) That the temporary special rules and regulations should be established for a one-year period and that during this one-year period all operators in the subject pool should gather all available information relative to drainage and recoverable reserves.

(7) That this case should be reopened at an examiner hearing in August, 1964, at which time the operators in the subject pool should appear and show cause why the West Kemnitz-Lower Wolfcamp Oil Pool should not be developed on 40-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That a new pool in Lea County, New Mexico, classified as an oil pool for Lower Wolfcamp production is hereby created and designated the West Kemnitz-Lower Wolfcamp Oil Pool, consisting of the following-described area:

TOWNSHIP 16 SOUTH, RANGE 33 EAST, NMPM
Section 31: NE/4, E/2 NW/4, NE/4 SW/4,
and N/2 SE/4

(2) That the vertical limits of said pool shall be the Lower Wolfcamp formation as depicted on the log of the Apache Corporation Maljamar North State Unit Well No. 1, located in Unit C of Section 31, Township 16 South, Range 33 East, NMPM, Lea County, New Mexico, from a point 10,675 feet to 10,820 feet.

(3) That Special Rules and Regulations for the West Kemnitz-Lower Wolfcamp Oil Pool are hereby promulgated as follows, effective September 10, 1963.

**SPECIAL RULES AND REGULATIONS
FOR THE
WEST KEMNITZ-LOWER WOLFCAMP OIL POOL**

RULE 1. Each well completed or recompleted in the West Kemnitz-Lower Wolfcamp Oil Pool or in the Lower Wolfcamp formation within one mile of the West Kemnitz-Lower Wolfcamp Oil Pool, and not nearer to or within the limits of another designated

Lower Wolfcamp pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. (a) Each well completed or recompleted in the West Kennitz-Lower Wolfcamp Oil Pool shall be located on a standard unit containing 80 acres, more or less, consisting of the E/2 or the W/2 of a governmental quarter section.

(b) The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 (a) without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or when an application has been filed for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 3. (a) Each well projected to or completed in the West Kennitz-Lower Wolfcamp Oil Pool shall be located within 200 feet of the center of either the NE/4 or the SW/4 of a governmental quarter section.

(b) The Secretary-Director shall have authority to grant an exception to the requirements of Rule 3 (a) above without notice and hearing where application has been filed in due form and the necessity for the unorthodox location is based on topographical conditions.

Applicant shall furnish all operators within a 1320-foot radius of the subject well a copy of the application to the Commission, and applicant shall include with his application a list of names and addresses of all operators within such radius, together with a stipulation that proper notice has been given said operators at the addresses given. The Secretary-Director may approve the application upon receipt of written waivers from all operators within such radius, or if no such operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application. In the event an operator objects to the unorthodox location, the Commission shall consider the matter only after proper notice and hearing.

RULE 4. A standard proration unit (79 through 81 acres) in the West Kennitz-Lower Wolfcamp Oil Pool shall be assigned an

-4-
Order No. 2867
Order No. 2-2359

80-acre proportional factor of 5.67 for allowable purposes, and any well to which is dedicated less than 79 acres or more than 81 acres shall be granted an allowable in the proportion to a standard allowable that the total number of acres assigned to the well bears to 80 acres.

RULE 5. No well shall be assigned an 80-acre allowable until Commission Form C-128 has been filed with the Commission indicating that either the E/2 or the W/2 of a governmental quarter section has been dedicated to the well.

(4) That this case shall be reopened at an examiner hearing in August, 1964, at which time the operators in the subject pool may appear and show cause why the West Kamnitz-Lower Wolfcamp Oil Pool should not be developed on 40-acre spacing units.

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

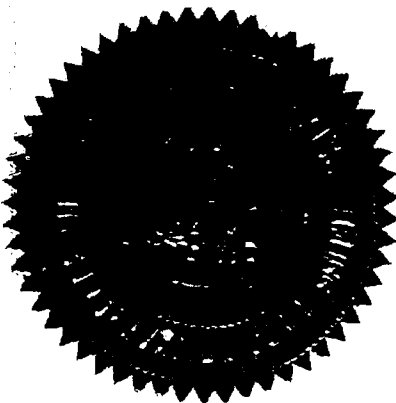
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

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

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



J. M. HERVEY 1874-1953
HIRAH M. DOW
CLARENCE E. HINKLE
W. E. BONDURANT, JR.
GEORGE H. HUNKER, JR.
HOWARD C. BRATTON
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.

LAW OFFICES
HERVEY, DOW & HINKLE

HINKLE BUILDING
ROSWELL, NEW MEXICO

July 31, 1963

2887
TELEPHONE 622-6510
AREA CODE 505
Post Office Box 10

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

Gentlemen:

Comes now Apache Corporation and applies for the following:

1. The designation of a new Oil Pool for production of oil from the Lower Wolfcamp formation to be called the West Kemnitz Wolfcamp Pool; the Pool to consist of the N $\frac{1}{2}$ and the N $\frac{1}{2}$ SW $\frac{1}{4}$ of Section 31, Township 16 South, Range 33 East, N.M.P.M. The Pool is based upon Apache Corporation's discovery well, Maljamar North State Unit No. 1 Well in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ Section 31, Township 16 South, Range 33 East, N.M.P.M., Lea County.
2. Temporary Pool Rules for the above pool, including provisions for eighty acre drilling and proration units, and fixed locations. The eighty acre drilling and proration units to consist of the N $\frac{1}{2}$, S $\frac{1}{2}$, E $\frac{1}{2}$ or W $\frac{1}{2}$ of a single governmental quarter section. The locations to be within two hundred feet of the center of either the NE $\frac{1}{4}$ or the SW $\frac{1}{4}$ of a governmental quarter section.

Please set the above matter for hearing at the Examiner Hearing of August 21.

Very truly yours,

Martin L. Allday

LYNCH & CHAPPELL
919 Midland Savings Bldg.
Midland, Texas

HERVEY, DOW & HINKLE

HCB:jw

DOCKET MAILED

Date

By

Howard C. Bratton
P. O. Box 10

Roswell, New Mexico

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International
Letter Telegram

SYMBOLS

Full Day Letter

Midnight Letter

LT-**Internacional**
Luzer Telegram

1201 (4-00)

W. P. MARSHALL, PRESIDENT

TELEGRAM
W. P. MARSHALL, PRESIDENT
Time of receipt is LOCAL TIME of station

1050 38413

0150 330413
 0157 FROM:000000 NMEX 4 145P NST-
 0158 000000 NMEX 4 145P NST-

1964 AUG 4 PM 1 57

10-50 SBN415
 1964 AUG 4 PM 1:07
 47 FD-HOBBS NMEX 4 145P MST-
 G PORTER JR, NEW MEXICO OIL CONSERVATION COMMISSION-
 BOX 2208 PHONE YU22641 SANTA FE NMEX-
 10-50 SBN415

BOX 2208 PHONE 70222

RE CASE NO 28877 3000TH MODEL ONE COMPANY INC AS PART
INTEREST OWNER IN THE NORTH HAL JAHAR UNIT SUPPORTS
THE REQUEST OF UNIT OPERATION APACHE CORPORATION FOR
A ONE YEAR EXTENSION OF THE PRESENT TEMPORARY FUEL
DECK FOR THE WEST KENNETH LOWER WORKCAMP POOL
G W BARR PRODUCER SUPT

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a Day message unless the different character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, President

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination.

EA046 DA214

1934 AUG 4 AM 9 56

D 22790 PD-MP DALLAS TEX 4 850X CST-

NEW MEXICO OIL CONSERVATION COMMISSION-

HEAD OFFICE BLDG SANTA FE NHEX-

ALICE OIL & GAS COMPANY, AS OPERATOR OF THE NORTHEAST
SANTO JUAN UNIT, WHICH INCLUDES LANDS DESIGNATED AS
PORTIONS OF THE WEST KENNEDY-BROWER WOLF CAMP POOL,
RESPECTFULLY REQUESTS THE CONTINUATION OF 80-ACRE
PRODUCTION UNITS FOR SUCH POOL. THE EVIDENCE AVAILABLE
STRONGLY INDICATES THAT THE KENNEDY FORMATION WILL BE
EFFICIENTLY DRAINED BY A SPACING PATTERN OF ONE WELL
PER 80 ACRES CONFIRMING THE DATA PRESENTED TO THE

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Grade of Service
This is a first message unless its deferred character is indicated by the proper symbol.

WESTERN UNION TELEGRAM

W. P. MARSHALL, PRESIDENT

1901 (4-00)

SYMBOLS
DL=Day Letter
NL=Night Letter
LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

COMMISSION AT THE KENNEDY VOEG CAMP POOL HEARING AS
REQUESTED BY THE COMMISSION'S ORDER RE 10112
KENNETH A SWANSON AZTEC OIL AND GAS CO

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Case 2887

Heard 8-5-64

Rec. 8-5-64

1. Grant Opache Corp. a permit
order for R-2559 in the West Kennitz
Lower Wolfcamp. oil Pool.

operator is developing pool and
has proven 80 A. drainage.

— Thistle. W.

**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. 2887
Order No. R-2559-A**

**APPLICATION OF APACHE CORPORATION
FOR THE CREATION OF THE WEST KEMNITZ-
LOWER WOLFCAMP OIL POOL, AND FOR
SPECIAL POOL RULES, LEA COUNTY, NEW
MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 5, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 11th day of August, 1964, 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 by Order No. R-2559, dated September 4, 1963, temporary Special Rules and Regulations were promulgated for the West Kemnitz-Lower Wolfcamp Oil Pool.

(3) That pursuant to the provisions of Order No. R-2559, this case was reopened to allow the operators in the subject pool to appear and show cause why the West Kemnitz-Lower Wolfcamp Oil Pool should not be developed on 40-acre spacing units.

(4) That the evidence establishes that one well in the West Kemnitz-Lower Wolfcamp Oil Pool can efficiently and economically drain and develop 80 acres.

-2-

CASE No. 2887
Order No. R-2559-A

(5) That to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-2559 should be continued in full force and effect until further order of the Commission.

(6) That the Special Rules and Regulations promulgated by Order No. R-2559 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the West Kennits-Lower Wolfcamp Oil Pool promulgated by Order No. R-2559 are hereby continued in full force and effect until further order of the Commission.

(2) 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


Jack M. Campbell
JACK M. CAMPBELL, Chairman

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

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

esr/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. B. JOHNNY WALKER
MEMBER

P. O. BOX 2088
SANTA FE

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

August 11, 1964

Mr. Clarence Hinkle
Hinkle, Bondurant, & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico

Re: CASE NO. 2887
ORDER NO. R-2559-A
APPLICANT Apache 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

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC

OTHER

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 5, 1964

EXAMINER HEARING

IN THE MATTER OF: (Reopened)

In the matter of Case No. 2887 being re-opened pursuant to the provisions of Order No. R-2559, which order established temporary 80-acre spacing units for the West Kemnitz-Lower Wolfcamp Oil Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

Case No. 2887

BEFORE: ELVIS A. UTZ, Examiner.

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-4491 • ALBUQUERQUE, NEW MEXICO

MR. UTZ: Case 2887.

MR. DURRETT: In the matter of Case No. 2887 being reopened pursuant to the provisions of Order No. R-2559, which order established temporary 80-acre spacing units for the West Kemnitz-Lower Wolfcamp Oil Pool, Lea County, New Mexico, for a period of one year.

MR. HINKLE: Clarence Hinkle, representing Apache Oil Corporation. We have two witnesses.

(Witnesses sworn.)

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

JOHN BLACK

called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is John Black?

A Right.

Q By whom are you employed, Mr. Black?

A Apache Corporation.

Q What capacity?

A District Geologist, Midland, Texas.

Q Have you previously testified in the original of this

hearing, the original case?

A Yes.

Q Your qualifications are a matter of record?

A Yes, sir.

Q Refer to Applicant's Exhibit, or Apache's Exhibit No. 1-a and explain to the Commission what they show.

A Exhibit 1-a shows the structural attitude of the Wolfcamp rocks, and it also shows the trend of the Kemnitz-Wolfcamp reef which we previously talked about in other cases, and we didn't show the continuation on over to the Kemnitz-Wolfcamp reef.

This is, of course, the West Kemnitz-Lower Wolfcamp Pool. The reef trend is shown there and the structural attitude is shown, and since our last testimony there have been two additional wells drilled in this area. One is in Section 31, which is the No. 2 North Maljamar Unit, drilled by Apache, and the second well that was drilled was drilled by Tenneco in Section 32 just to the east of it.

Actually we are not able at this time to delineate what we think will be the extent of the field. There has been no known water level established in an easterly direction, and we just continue to get higher going to the west. So this will just bring you up-to-date as to the structural attitude.

Q The contours are drawn on the top of the Wolfcamp or the Lower Wolfcamp?

A The structure map is drawn on a marker within the Wolfcamp, just as a mapping data.

MR. UTZ: Where was the well that Tenneco drilled?

A 1980 from the east and 60 from the south.

MR. UTZ: Is that a dry hole?

A It's a dry hole.

Q (By Mr. Hinkle) The two other wells shown in 5, were there at the time that the original test well was drilled and were previously completed?

A Yes.

Q What are those wells? Are they in a unit?

A They are in the northeast Maljamar Unit, and as we testified earlier, the most southeasterly well is producing from the Pennsylvanian where the well in the 660 from the north and west line of 5 is producing from an Upper Wolfcamp zone.

Q Exhibit 1-a also shows the outlines of the Maljamar State Unit, does it?

A Right.

Q And the jog that's indicated there is by reason of the fact that your north Maljamar Unit fits in there?

A Actually it's a northeast Maljamar Unit, is the one

that fits to our north Maljamar Unit.

Q Does this show any projected wells to be drilled?

A Yes. We have approval from our partners to commence a second or a third test which will be located 660 from the southwest lines of Section 31. That location is prepared and they'll probably be moving a rig on that thing about Thursday.

Q When you refer to partners, you mean those who are within the unit agreement with you?

A Right.

Q Parties to the unit agreement. When was the No. 2 well completed?

A That well was completed June 30th of this year.

Q When was the original well completed, do you recall?

A It was completed July 2nd, 1963.

Q Just about a year from the time of the completion of the original well to the completion of the second well?

A Just about a year has elapsed.

Q Was there any particular reason the drilling of the No. 2 well was deferred as long as it was?

A Well, the production on our No. 1 well decreased rapidly initially and has leveled out at about a hundred barrels a day, and both Apache and our partners thought we should observe this production because it did appear at first it would be

uneconomical and that's why the long delay in drilling the second well.

Q Did you state then when you expected to commence the No. 3 well?

A It should start tomorrow, the 6th.

Q Is there anything else concerning Exhibit 1 that you would like to state?

A No, I don't believe so.

Q Now, refer to Apache's Exhibit 1-b and explain what that shows.

A 1-b is an isopach map of the net porosity taken from micrologs on our No. 1 and 2 wells, and it also again shows the reef trend and shows the porosity in the marginal wells along the reef, which you can see are 5 and 8 on the south and five feet on the north. This just shows the variation in porosity that we've encountered in the two wells that we've drilled.

Q Does it indicate the pay thickness or the porosity zone on the No. 1 and No. 2 wells?

A That is correct, all 22 feet of the No. 1 and all 52 feet of the No. 2 well are above water and are productive.

Q Now, refer to Apache Exhibit No. 1-c and explain what that shows.

A This is a cross section that is lined up on the Upper Wolfcamp zone, which is the zone in our No. 2 well on the left at about 10,425.

Q You might explain where the cross section goes through.

A The well on the right is our No. 1 unit well, the well on your left is the No. 2 unit well.

Q Just a cross section between the two wells?

A Right. What we tried to exhibit here is the fact that we are definitely producing from the same reservoir, although you will notice the No. 2 well on the left, the thickness has increased in the effective producing zone, and also we've designated the drill stem test interval and recovery on each individual well, and also the perforations on each individual well.

Q How did the drill stem tests on No. 1 and 2 compare?

A The drill stem test on our No. 1 well, which is drill stem test No. 2, had decreased drill test interval of a 745 to 810. The tool was open two hours and gas to surface in five minutes at a maximum rate of 133,000 cubic feet of gas a day.

We reversed out the recovery of 25 barrels of oil and 160 feet of oil cut mud below the surface. The initial shut-in bottom hole pressure on this well was 3761, thirty minutes, flow pressures, 493 to 393, and final shut-in bottom hole pressure, 3560 in an hour, the gravity of that oil was 40 degrees.

The test on the No. 2 well covering the same, approximately the same interval was 10,692 to 864, tool open three hours, gas to surface in nine minutes, no estimate on the volume, fluid to the surface in 56 minutes, and the well was cleaned to the pits for ten minutes, returned to the tanks on a half-inch choke, flowed 26 barrels of oil in 145 minutes with surface flow pressure 210 pounds.

Reversed out estimated 110 barrels of oil. Gravity, 39.8, and initial shut-in bottom hole pressure on this well, 3214, 30 minutes. Initial flow pressure, 789, final flow, 2,045, and final shut-in, 3214 in an hour and a half.

Q Does this Exhibit 1-b also show the interval that's been perforated in the two wells?

A That is correct.

Q Would you conclude from this exhibit that both wells are producing from the same reservoir?

A That is correct.

Q Is there anything else you would like to state with respect to this exhibit?

A No, I believe that would be all.

MR. HINKLE: That's all with this witness. We have an engineering witness who will go into the reservoir aspect of the case.

MR. UTZ: Are there questions of the witness? He may be excused.

(Witness excused.)

ALAN B. IRWIN

called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is Allen B. Irwin?

A Yes.

Q Where do you reside, Mr. Irwin?

A Tulsa, Oklahoma.

Q By whom are you employed?

A Apache Corporation.

Q Have you previously testified before the Oil Conservation Commission?

A No, I have not.

Q Are you a graduate engineer?

A Yes, I am.

Q What school?

A University of Tulsa.

Q What year?

A 1953.

Q What is your degree?

A In Bachelor of Science and petroleum engineering.

Q Immediately following your graduation were you employed as a petroleum engineer?

A I was, by Gulf Oil Corporation.

Q For what period of time?

A Until 1958, at which time I was employed by Apache Corporation.

Q In other words, you were with them from 1953 to 1958?

A Yes.

Q What was the nature of your work during the time you were with Gulf?

A Various petroleum production engineering and reservoir engineering duties.

Q And you have been employed by Apache since 1958?

A Yes.

Q What has been the principal duty that you've performed for Apache?

A Production engineering and reservoir engineering.

Q Have you made a study of the Kemnitz area of the Lower Wolfcamp area that is the subject of this hearing?

A Yes, I have.

Q What does this study consist of?

A It consists of examining the maps of the area prepared by our geologist and the logs of some of the wells in the area, the drill stem test charts of the test taken on the wells, and examining the completion information and the production history of the wells in the area.

Q Have you also made a study incidental to this in connection with the Kemnitz-Wolfcamp Pool?

A Yes, I have examined the API published data on the Kemnitz field, which is a very similar field to the West Kemnitz field.

Q You are familiar with the evidence that was introduced in the original case, this case?

A Yes.

MR. HINKLE: Are the qualifications satisfactory?

MR. UTZ: Yes, sir.

Q Now, Mr. Irwin, refer to Exhibit 1-d, Apache, and explain what that shows.

A This exhibit is designed to show proof of the existence of the drainage from a well of the Lower Wolfcamp in the West Kemnitz field in excess of 30 acres. It shows the completion dates of the No. 1 and 2 wells, the cumulative production of the No. 1 well, it's original bottom hole pressure taken from an initial shut-in pressure or drill stem test, and the distance

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between the two wells and the gas-oil ratios and gravities and tops of the formation. The main thing to note in this exhibit is that the No. 1 well produced approximately 35 barrels in one year's time and it originally had a bottom hole pressure which was very similar to the original bottom hole pressure of the Kemnitz field. At the time the No. 2 well --

Q Let me interrupt you. In the original testimony were those pressures introduced in evidence?

A Yes, they were. They were within a few pounds of the 3761. After producing the 35,000 barrels from the No. 1 well, the initial pressure in the No. 2 well was found to be 3214 PSI or a drop of 547 PSI. These wells are in a distance in excess of 2,000 feet apart, and to me this is proof of drainage over a very large area due to the production from the No. 1 well.

Q Is there anything else you would like to say with respect to this exhibit?

A No.

Q Now, turn to Apache No. 1-e and explain what that shows.

A This is an exhibit showing the volumetric calculations of recoverable oil found in the No. 2 State Unit. It shows the gross net pay thickness, the porosity, and water saturation, the formation volume factor, estimated recovery factor, and the

drainage volume of the reservoir and the recoverable oil of 190,000 barrels per 80-acre unit.

Q This only relates to the No. 2 well?

A Yes, that is correct. The No. 1 well we had originally had volumetric calculations on now, but now we have production decline information which is more accurate at this time. That is Exhibit E-1 which is part of the exhibit as the production decline curve of the No. 1 well.

Q Now, refer to Apache Exhibit E-1, which is your decline curve.

A This is a production decline curve of the No. 1 State Unit well which shows the decline in production of approximately 30 percent per year during the first year's production of the 35,000 barrels. I have extrapolated this decline to an ultimate recovery of 110,000 barrels to five, economic limit.

Q Now, the months, the dates are hidden there in binding this. They're indicated on the edge of your exhibit there.

A The first production was in July of 1963, the last information shown was in June of '64. This last year is 1972.

Q In the original testimony the estimated recovery at that time when the No. 1 well was new was indicated to be about 135,000?

A Yes, that is correct.

Q Now, you've extrapolated to indicate a total recovery of about 110,000, is that correct?

A Yes.

Q Now, refer to Exhibit 1-f.

A This is an exhibit showing the economics of development on 40-acre spacing versus 80-acre spacing. Taking the 110,000 barrels from the No. 1 well and the 190,000 barrels from the No. 2 well, and we have an average on 80-acre spacing as the field has been developed under the temporary order of the Commission of 150,000 barrels recoverable oil per well. On 80-acre spacing it would be 75,000 barrels.

Q 40-acre, you mean?

A Excuse me, 40-acre, it would be 75,000 barrels. Using the price of oil \$3.01 per barrel, deducting \$0.37 for taxes and transportation, the income to the operators on an 80-acre well would be \$396,000, and on 40 acres would be \$193,000.

Deducting estimated operating costs, the net operating income on 80 acres would be \$350,000 and on 40 acres would be \$163,000, so a cost of a completed well is approximately \$200,000. Development on 80-acre would yield a net profit of \$150,000, whereas development on 40-acre spacing would yield a loss of \$32,000.

Q In your opinion, from the information now available, including the production history of the No. 1 well and the information obtained in connection with the completion of the No. 1 well, and from your knowledge of the production history in the Kemnitz-Wolfcamp Pool which is in the vicinity, have you formed an opinion as to whether one well will effectively and efficiently drain as much as 80 acres?

A Yes, I have. The West Kemnitz is on permanent 80-acre spacing, and from the information that I have, I feel that one well will adequately and efficiently drain 80 acres.

Q In your opinion does the Lower Wolfcamp Pool that we're talking about here have the same characteristics as the Kemnitz-Wolfcamp?

A Almost identical reservoir characteristics.

Q Their initial pressures are the same and the rate of decline is the same?

A The pressure, gravity, porosities, all the reservoir characteristics are almost identical.

Q You are familiar with the temporary rules which have been adopted in this case?

A Yes.

Q Have they proved to be satisfactory?

A Yes.

Q Is it your recommendation to the Commission that these rules be continued on a permanent basis?

A Yes.

Q Now, in the event the Commission should determine that the evidence which has been introduced here is not sufficient to establish 80-acre spacing on a permanent basis, do you have any alternate proposal to make to the Commission?

A Yes. I would recommend that in that event that the temporary spacing be continued in effect as it is now.

Q For another year?

A Yes.

Q Why do you say that, in view of the contemplated development that is apt to take place in the next year?

A Yes, the field has been developed under the temporary order of 80-acre spacing and the field is not yet fully developed, and further development will take place and it will be on the 80-acre spacing set out in the temporary order, and I recommend that the temporary order be made permanent.

Q Is it your opinion that 80-acre spacing in this case is in the interest of conservation and prevention of waste?

A Yes, it is.

Q Also that it would protect correlative rights?

A Yes.

Q Do you have any further comments or recommendations to the Commission with respect to this matter?

A No, not this matter.

MR. HINKLE: I believe that's all of this witness.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Irwin, referring back to your Exhibit 1-d, this interference that you suggested between No. 1 and 2 wells after the production of 35,051 barrels for the No. 1, the No. 2 was not actually shut in, it just wasn't drilled until this time?

A That's correct.

Q So you are assuming that the pressure at the No. 2 location was the same as the initial pressure on the No. 1 well?

A I would expect it to be the same had not it been affected by production from the No. 1 well. Yes, sir, assuming that they're in the same reservoir and our geologist has previously testified to that.

Q What kind of permeability did you have in this reservoir?

A In the No. 1 well, I believe the previous testimony indicated a permeability on the order of five millidarcies. It's a little higher in the No. 2 well, I would judge, from the performance on the drill stem test.

Q That's really not a lot of permeability, is it?

A No, sir, that's not a whole lot of permeability.

Q Is this an average?

A I would say that's not unusual for a reservoir of this type.

Q I mean average in this pay zone. Is that an average figure?

A Yes, that's probably average for the entire interval; there are certain sections that would be much higher, some sections as high as 100 millidarcies permeability.

Q Could you, in the future, run interference tests to more clearly show the drainage radius in this pool?

A Yes. Future interference tests could be run in the future, yes, if the Commission didn't feel that this data was sufficient.

Q Were these wells good enough wells to make up the allowable that would be lost by shut-in time?

A The No. 1 could not, the No. 2 can.

MR. UTZ: Are there any other questions of the witness?

MR. PORTER: I have one.

BY MR. PORTER:

Q Do you have a pressure for your No. 1 well on 6-30-64?

A No, sir, we don't. We haven't taken pressure lately on that other well.

Q You don't know whether it would be about the same as the No. 2 right now or not?

A No. I don't know what it would be, and actually the reason we don't have it is due to the low permeability of the well and its low productivity, it would have to be shut in for a long period of time at the lower pressure it has now to build up, and it would just result in loss of income, so this is the reason I haven't done it.

MR. PORTER: That's all I have.

MR. HINKLE: Just one.

REDIRECT EXAMINATION

BY MR. HINKLE:

Q The No. 2 well is a considerably better well than the No. 1?

A Yes, it is, we have a thicker pay section.

Q Do you have any indication of better porosity and permeability?

A The porosity is about the same, the permeability is definitely a little better, I would say, in the No. 2 well.

MR. PORTER: I do have one more question.

RECROSS EXAMINATION

BY MR. PORTER:

Q Did the pool rules prescribe rigid spacing?

A Yes, they did. The field has been developed in accordance with the rigid spacing and the well location was the southwest and northeast 40's of each quarter section.

Q I notice that your well which you are planning to begin right away is on an opposite end of the quarter section.

A Right. We feel that's the best way to develop the field and results in true 80-acre spacing.

MR. PORTER: That's all I have.

REDIRECT EXAMINATION

BY MR. HINKLE:

Q In the event your No. 3 well turns out to be as good or better than your No. 2, is it the intention of the parties to the unit agreement to go ahead with additional development?

A I would assume that if the No. 3 would turn out as good as No. 2, that we would proceed with development, yes.

Q So there is a possibility that there will be more than one well drilled within the next year?

A Yes. See, our No. 1 well is pretty much of the marginal well, but the No. 2 is not, it's a better well.

RECROSS EXAMINATION

BY MR. PORTER:

Q As long as each one produces over the other one, why you will continue to develop?

A I am sure we would.

MR. HINKLE: I would like to offer in evidence Apache's Exhibit No. 1.

MR. UTZ: Without objection, Exhibit 1 and pertinent parts thereof will be entered in this case.

(Whereupon, Applicant's Exhibit No. 1 was offered and admitted in evidence.)

RECROSS EXAMINATION

BY MR. UTZ:

Q I just happened to notice on your first page of your Exhibit 1 the outline of what is this Maljamar North Unit Apache, is that the outline of the unit?

A Yes, sir, that's the unit.

Q You are drilling kind of on the edge of the unit?

MR. HINKLE: Well, the reason for that, if I may testify -- go ahead, you can explain it.

A Well, the reason is this northeast Maljamar Unit which abuts the unit to the southeast.

MR. HINKLE: I think the original testimony in the case was that the location of the No. 1 well was they wanted to get it located as close to these producing wells which were in

the adjoining unit, that's the object of it.

MR. PORTER: Right. It's a good reason.

MR. UTZ: It appears we have two units on one structure then?

MR. HINKLE: That's right.

MR. UTZ: That's rather an unusual situation.

Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. UTZ: Any statements in this case?

MR. DURRETT: I would like to state for the record that we have received a telegram from Socony Mobil supporting extension of the present rules, and that we have received a telegram from Aztec Oil and Gas Company supporting continuation of the present rules.

MR. PORTER: Are they participants in the unit, Mr. Durrett?

MR. DURRETT: I don't know, Mr. Porter.

MR. BLACK: Aztec Oil and Gas is an operator of the unit adjoining us. Mobil is in the North Maljamar Unit.

MR. PORTER: Is there a possibility here that you could have two units within this one pool?

MR. BLACK: Yes, it's my understanding that Aztec is getting ready to drill a well.

MR. UTZ: Any other statements in this case? The case will be taken under advisement, and the hearing is adjourned.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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 13th day of August, 1964.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Bernalillo hearing of Case No. 2587, heard by me on Aug 5, 1964.
James A. [Signature], Examiner
New Mexico Oil Conservation Commission

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

EXAMINER HEARING

IN THE MATTER OF:

Application of Apache Corporation for the creation of the West Kemnitz Wolfcamp Oil Pool, and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production in Section 31, Township 16 South, Range 33 East, and the establishment of temporary rules therefor, including provisions for 80-acre spacing and restricted well locations.

Case No. 2887

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

August 21, 1963.

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MR. NUTTER: We will call next Case 2887.

MR. PAYNE: Application of Apache Corporation for the creation of the West Kemnitz Wolfcamp Oil Pool, and for special pool rules, Lea County, New Mexico.

Let's take a fifteen-minute recess.

(Whereupon, a recess was taken.)

MR. NUTTER: The hearing will come to order. Will you proceed, Mr. Hinkle.

MR. HINKLE: Clarence Hinkle, Hervey, Dow and Hinkle, Roswell, appearing for the Apache Corporation in connection with Case 2887. We have two witnesses and one exhibit, the Exhibit A, which contains Exhibits A, 1 to 9 inclusive.

(Whereupon, Applicant's Exhibit A, 1 to 9, was marked for identification.)

MR. NUTTER: Would you have both witnesses stand to be sworn, please?

(Witnesses sworn.)

JOHN BLACK

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is John Black?

A That's correct.



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Q You live in Midland, Texas?

A That's correct.

Q You are employed by the Apache Corporation?

A Yes, sir.

Q In what capacity?

A District Geologist.

Q How long have you been with Apache?

A Six and a half years.

Q Are you in charge of the New Mexico area?

A Yes, sir.

Q Have you previously testified before the Oil Conservation Commission?

A Yes, sir.

Q Did you testify as an expert witness for the Apache in connection with the formation of the Maljamar North Unit?

A Yes, sir, I did.

MR. HINKLE: Are the witness's qualifications acceptable?

MR. NUTTER: Yes, sir.

Q Are you familiar with the well which was drilled by the Apache Corporation in connection, or on the Maljamar North Unit?

A Yes, sir.



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PAGE 4

Q What was that, Maljamar North State No. 1?

A Maljamar North State Unit No. 1.

Q Refer to Apache's Exhibit A and A-1, does that represent the companies who have joined the unit and have acreage committed to the Unit?

A Yes, sir, it shows the number of acres each company committed and what percentage of the working interest that each of them have, and also that Apache Corporation is the operator with 55%.

Q Now, Mr. Black, refer to Exhibit A-2 and explain what that shows.

A Exhibit 2 is a map which delineates the unit that was formed by Apache. I would like to correct what I designate a unit outline, actually should not include the two 40-acre tracts.

Q That is in Section 36?

A In Section 36 of 16, 32. The reason I have shown them excluded there is that they are not committed to the unit, although they are within the unit outline.

Q All the rest of the acreage as shown has been committed to the unit?

A That is correct.

Q We might go briefly into the history of this particular area. Our primary objectives when we drilled the well was the



zone that produces in the No. 1 Northeast Maljamar Unit, which is the Northwest, Northwest of Section 5, plus the lower Wolfcamp Reef which produces in the Kemnitz Wolfcamp field to the east. We are attempting to get a new field designation for our completed well in Section 31. You might turn to --

Q May I interrupt you there? What else does this Exhibit A-2 show? Does it show the relative location of the unit with reference to the other producing areas?

A Yes, sir. It shows the producing field surrounding it, and also designated on there are the zones which they produce from.

Q Any other comments with respect to Exhibit A-2?

A No, sir. Exhibit 3, A-3, shows the well history of our No. 1 Maljamar North State Unit was drilled to a depth of 11,000 feet, and completed in the Lower Wolfcamp shown, which we'll discuss in just a second on the log. This was the only commercial production indicated in the well in this zone.

Q When was the well completed?

A Actually our completion that we filed this completion date was July 3 on which the potential was taken.

Q Does Exhibit A-3 show all the essential facts with respect to the well, the depth, the production string drill stem test?



A Yes, sir.

Q Where the perforations were made and how it was stimulated and the potential test?

A Right.

Q Do you have any further comments with respect to A-3?

A No, sir. Exhibit 4 is an induction electric log of a portion of the subject well and has the drill stem test on the left-hand side delineated, and on the right-hand side of the log shows the perforated intervals. The well was perforated from a zone in the lower Wolfcamp at 10,678, which is the top of it selectively, was perforated down to the base of the Wolfcamp Reef, which is about 10,810 on the log. We attempted, after perforating that zone and treating it, we attempted a dual completion in the upper Wolfcamp zone which recovered water on that set of perforations.

Q You recovered water in the upper Wolfcamp?

A Right. Those were perforations at about 10,442 to about 54.

Q Were those perforations squeezed off after you got water?

A Yes, sir, they were squeezed. The next exhibit is a cross section, if we turn back to exhibit -- or the, maybe Exhibit No. 2 will show the line of this cross section that we're



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going to speak about.

Q Is that the line shown in red?

A Yes, sir. Well No. C is the Apache well.

Q You might explain the other wells A, B and D.

A Well No. B was the discovery well for the Northeast Maljamar Unit drilled by Ralph Lowe. Incidentally, Well B was completed from the upper Wolfcamp. Well A, as the second well in the unit, was drilled by the Aztec Oil and Gas, and completed from the Pennsylvanian section, and of course Well C is our well and Well D is a dry hole drilled by Samadan Oil Corporation.

Q Those are the wells which are shown on the cross section. Now, referring to A-4, which is the cross section, go ahead and explain that.

A The purpose of this cross section is to demonstrate a separate source of supply for the oil that produced in the Apache No. 1 State.

Q That is the second well that is shown?

A No, that is No. C.

Q C?

A The No. A well shows the Aztec No. 2 Maljamar North Unit, Northeast Unit, and it is completed through perforations, you can hardly read them, it's down at 11,600, right at the base or at the bottom of the well. That is a Pennsylvanian completion.



Q The Apache well shown off was not drilled down to the Pennsylvanian?

A That's right. It was drilled to the total depth there of 11,000 feet.

Q Well B on the cross section is completed from the upper Wolfcamp perforations at 10,390 to 400, completed flowing 377 barrels of oil per day. The Apache well, Well C, was completed from the series of perforations from 10,678 to 10,805. We think that this cross section can demonstrate that a separate source of oil is being derived from our well and actually could be delineated as a separate field. On this basis, although both the Wells B and C are producing from the Wolfcamp, the one is upper Wolfcamp and the Apache well is the lower Wolfcamp.

Q It is your opinion that it is a separate reservoir?

A Yes, sir.

Q Any further comment with respect to A-4?

A No.

Q Now, Mr. Black, in your application you have requested the Commission to designate as the lower Kemnitz?

A The name requested is West Kemnitz Wolfcamp.

Q The West Kemnitz Wolfcamp, consisting of the North Half and the North Half of the Southwest Quarter of Section 31?

A That is correct.



Q In your opinion is that all of the land that should be included in the designation of the field?

A We have studied this and found that the Maljamar Wolfcamp field, looking at our map area, does not include any of the Southeast Quarter of Section 31, and for the area around our well to be consistent we would not object to the North Half of the Southeast of Section 31 being included in that area.

Q In your opinion the acreage you have referred to which would consist of the North Half and the North Half of the North Half of the South Half of Section 31 are reasonably productive of oil in paying quantities by your discovery here?

A We believe so, yes.

Q Do you have any further comments with respect to any of the exhibits?

A No, sir.

MR. HINKLE: I would like to offer in evidence Exhibit A through 5 inclusive.

MR. NUTTER: Applicant's Exhibits A through 5 will be admitted in evidence.

(Whereupon, Applicant's Exhibits A through 5 were offered and admitted in evidence.)

MR. HINKLE: That's all I have of this witness.

MR. NUTTER: Are there any questions of Mr. Black?



CROSS EXAMINATION

BY MR. NUTTER:

Q As I understand it from the cross section here, the well which is directly to the Southeast is Ralph Lowe's well and it's perforated in a very small interval way up at the top of the Wolfcamp?

A Yes, sir.

Q This is the same interval which you perforated and then squeezed in your well because it was water productive?

A Yes, sir. This is lined up on a subsea datum and we ran structurally lower and did get water from this.

Q Do you know whether Ralph Lowe made any test from the lower Wolfcamp, which is a producing interval in your well?

A Yes, sir, he did. And actually had shows of oil there.

Q There's a little bit of development there on the log of the well it appears?

A Yes, sir. This was primarily the basis of our prospect, they tested 2,000 feet off from the oil from that interval, but it wasn't commercial.

Q No completion in the Ralph Lowe well?

A No. The packer was set. Actually the perforations were not squeezed and we went back up.

Q The Aztec well, did they attempt any completion or



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did they have any drill stem test of anything in the upper or lower Wolfcamp formation?

A Yes, sir, they drill stem tested the upper Wolfcamp and got water, and drill stem tested the lower Wolfcamp and recovered mud.

Q So it appears, then, that structurally the upper Wolfcamp in your well and the Aztec well is slightly lower than Lowe's?

A Right.

Q And the upper Wolfcamp produced water in both of those wells whereas his was productive there?

A Yes.

Q And the Samadan well had a drill stem test recovering 840 feet of gas-cut mud in the interval that's correlative with your producing well?

A Yes, sir.

Q To the east of here we have the Kemnitz Wolfcamp Pool. Were you acquainted with that pool, Mr. Black?

A Quite well.

Q I notice in the Kemnitz Wolfcamp Pool rules that there's a provision that no well shall be opened to any other zone of the Wolfcamp formation simultaneously with the productive zone in the lower portion of the formation from which the Tennessee Gas Transmission Company State "A" Kemnitz Well No. 1



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is producing until it has been established after notice and hearing that the same can be accomplished without causing underground waste. What zone is the Kemnitz Wolfcamp producing from in relation to the zones you have on your cross section?

A It is the lower Wolfcamp zone that we are producing from.

Q It's the main pay there?

A Yes, sir.

Q I think if I can recall correctly and can testify here, that at the time of the Kemnitz Wolfcamp rules there was an upper stringer that was regarded as productive, but it was of lower pressure, and for that reason the Commission entered this rule here?

A I believe it was the same zone that Ralph Lowe was producing from in his well.

Q And it was regarded as a possible theft zone, being of such a low pressure zone at the time the Kemnitz pool rules were written?

A Yes.

Q So the one they don't want produced in the Kemnitz would be the same as the low zone here?

A I believe that is correct.

Q As I understand, you are seeking that this pool be



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designated as comprising the North Half of Section 31 and the North Half of the Southwest Quarter, but you wouldn't have any objection to also including the North Half of the Southeast Quarter, do I understand you correctly?

A That's correct.

Q Is Apache at this time contemplating drilling any other wells in this area that you've requested be defined in the pool?

A Yes, sir, we are planning to drill one, probably it will start before September 15.

Q What will be the location of that well?

A Well, there's a little conjecture over that. We may step out and drill it in the Southwest, Southwest of Section 31.

Q Southwest, Southwest of Section 31?

A Right.

Q In your opinion is the entire North Half and the North Half of the South Half productive here?

A Yes, sir.

Q Was a seismograph structure map or some other type of map offered at the State's unitization hearing?

A Yes, sir.

Q How did you find the well?

A We actually ran lower than we had predicted. This is



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a stratigraphic type trap where structure was not that important to us.

Q To what do you attribute the fact that your initial potential on July 3rd made 298 barrels through a 16/64" choke of 470 pounds, and 12 days later after 200 gallons of acid the well only produced 209 barrels with a larger choke and 410 pounds of pressure.

Q Had the production in the interval between those dates drawn the well down that much?

A I believe, sir, that would be the case, the well has stabilized at about 260 barrels a day. This 239 was a figure that is actually lower than the capabilities of the well.

Q So after the acid treatment it improved from this test right here?

A Yes.

Q Is this the flowing tubing pressure?

A Yes, sir.

Q What's the present flowing tubing pressure?

A May I ask the engineer?

MR. NUTTER: He can go into that later relating to gas-oil ratios and pressures and so forth. Are there any other questions of Mr. Black?

MR. HINKLE: I would like, in view of your question,



I would like to ask Mr. Black another question or two.

REDIRECT EXAMINATION

BY MR. HINKLE:

Q Refer to Exhibit A-2 again. You've stated that you were familiar with the wells in the Kemnitz Wolfcamp field. Geologically and from your analysis of the samples and electric logs and so forth, is it your opinion that the zone, the producing zone found in the Apache well has similar characteristics to the wells in the Kemnitz Wolfcamp Pool?

A Yes, sir. It's based on primarily several factors, bottom hole pressure, gravity to the oil and in the reef nature of the development.

Q Of the Kemnitz producing reef-type formation?

A I, as a geologist, would term it that. I don't know if everybody would or not.

Q How about the Apache well?

A Yes, sir.

Q You characterize that as also reef by formation?

A Yes, sir.

Q Is there any particular trend of a reef in this area established?

A Yes, sir. As we presented in our unitization hearing, actually the Kemnitz Wolfcamp and the Townsend Edison.

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Q Where is the Townsend Edison with reference to the Kennitz?

A It would be in Township 16, 35, right off the east edge of this map.

Q It would be kind of a northeast extension then--

A Yes, sir.

Q -- of a trend?

A Yes.

Q Then you have a trend through the Townsend and the Kennitz Wolfcamp and through the area which you want to designate as the lower Wolfcamp?

A Right.

MR. HINKLE: That's all I have.

MR. NUTTER: Any other questions of Mr. Black? He may be excused.

(Witness excused.)

LARRY SHANNON

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is Larry Shannon?

A Yes, sir.



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Q You are employed by Apache?

A Yes, sir.

Q What capacity?

A Division Engineer.

Q How long have you been with Apache?

A Five months.

Q What company were you with prior to coming with Apache?

A I was with Soceny-Mobil Oil Company, and prior to that Magnolia Petroleum Company.

Q How long were you with them?

A I went to work with them after graduating from the University of Oklahoma in January, '54, two months, and then three years in the United States Air Force and back with Mangolia in '57.

Q Are you a graduate petroleum engineer?

A Yes, sir.

Q When did you graduate?

A January, 1954.

Q What college?

A University of Oklahoma.

Q What degree?

A Bachelor of Science in petroleum engineering.

Q Have you followed your profession since graduation?



A Yes, sir, I have, except for the small respite of three years with Uncle Sam.

Q Are you familiar with the Maljamar North Unit area in which the Apache has drilled the Apache Maljamar North State No. 1 well?

A Yes, sir. We handled the operations of the drilling of this well.

Q Have you made a study of this area from an engineering standpoint?

A Yes, sir, a basic study, with one well, and we have just strictly basic information to go on at this time, but we have, to the best of my ability, made a study on this well.

Q Refer to Applicant's Exhibit A-6. Explain what that shows.

A This is our calculations of the amount of oil in place and the anticipated recovery from the factors that we know at this time that we anticipate on the subject well. Our porosity, which is actually shown in Exhibit 7, comes from the sonic log. The water saturations we assumed through the use of induction log.

Q That's Exhibit 6, did you say?

A Yes, sir. We are on 6, is that right?

Q Yes.

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A And the net effective pay from our microlog and the recovery factor is based on past experience of a solution gas reservoir, which we feel this is, and the estimated formation volume factor was derived from Stanley's correlation chart from the known information that we have on this well.

We then calculated the oil in place in barrels per acre foot in the standard formula and came up with 367 barrels per acre foot, an assumed recovery factor of 20%, gave us 73.4 barrels per acre feet recovery, and then we converted also in barrels per acre, which is shown as 8,440, and recoverable part of that is 1688.

Then at the bottom of the exhibit we show oil in place on 40-acre spacing and 80-acre spacing, showing the anticipated amount of recovery in each spacing.

Q Have you made any comparison with your figures as shown for the Maljamar North State No. 1 and the wells in the Kemnitz field?

A Yes, sir. There is one other exhibit before we get to that.

Q Go ahead and refer to it.

A We can go to Exhibit 7 first. This shows a little more in detail how we arrived at our recovery factors and some of the characteristics that we know of this reservoir at this



time. It's listed in a column order. Some were assumed, and which we show, others were based on correlation charts or from our logs. We have not run any PBT analysis or any other refined studies. Do you think it's necessary to go through each one?

Q Yes, you might explain what the Exhibit No. 7 shows.

A Well, the depth of the formation is the top of the lower Wolfcamp. The gross pay is the pay we feel is in the reef itself, 137 feet, which the logs clearly show. Our net effective pay based on microlog from permeability shown of 23 feet. We took the 23 feet, which is subdivided throughout the 137, it's not one continuous 23 feet, and came up with an average porosity from our sonic of 9.4%.

The water saturation in this same interval assumed through our index logs and sonic log correlations and calculations. Original reservoir pressure psig is based on drill stem test made in this zone originally. The saturation pressure is from a Stanley correlation chart. The reservoir temperature from the drill stem test of 142 degrees. Gas in solution, this is a debatable item right now, we're as surprised that it's as low as it is.

If you'll also notice in the two tests we had one at 520 and the next one at 1,000. We can not explain this completely. We feel that the first acid job acidized only the lower part



of our perforations. The next time we did get more of the top part opened up, which contributed to an increase in GOR. We still think this may possibly be low for the field in general, but this is all we have to go on at this time. Then taking our GOR's and gravities of oil through another correlation chart we can arrive at a formal volume figure of -- the oil gravity which rose, if you will notice, according to the original potential. We feel this was a load oil plus water gave us the low gravity to begin with. This is the gravity we are selling to the Permian Corporation of 38.1.

Q Refer to Applicant's Exhibit A-8.

A To begin with, the original project was based strictly upon finding a similar zone with the Kemnitz. This is why geologically we formed the unit and why we now feel that we have discovered another pool similar to Kemnitz. The Kemnitz Pool data that I have was a Kemnitz Pool Engineering Committee report in 1960 of the overall Kemnitz Pool. It is average figures throughout.

As you will notice, the similarity in most items average, but we come down to the biggest item that is, I think is the permeability in millidarcies of 50 to 100, and what the Kemnitz Pool did in their engineering report, they ignored the north wells as far as the permeability, and we feel now through the



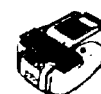
bottom hole pressure data that we have buildups, and this permeability of ours was arrived from a bottom hole pressure buildup that we are possibly in the north edge of the field. We didn't hit the field in the center we don't feel, and we feel maybe now that it is in the north edge and for that reason our permeability is low definitely.

As the Engineering Committee did not include all of the wells in the north edge, it is a bad comparison, but it is all we have to go with right now. The original reservoir pressures are very close. The saturation pressures I'm sure there was from APC the names where ours is strictly a correlation chart interpretation. The original gas in solution, as stated earlier, is a little low, and like I say, we are not sure of this data at this time.

The reservoir temperatures are very close, the formation volume factors are very close, ours is lower because of the solution gas and our oil gravities are very close. We feel that overall the picture is that we do definitely have similarity between the two pools.

Q That's the Kemnitz --

A The Kemnitz Wolfcamp and our well. I talked to Tenneco's engineers and they tell me they classify the wells in the Kemnitz Pool as three different kinds, real good, medium and



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rather poor. He thought we were kind of on the low side of the medium, what information we have now. Of course, now, this is strictly an opinion, it's not conclusive proof.

Q That could vary in another location?

A Yes. One location away in the Kemnitz field you have a tremendous change in net effective pay, permeability and all.

Q From the information available, and your comparison with the Kemnitz Wolfcamp field, is it your opinion that one well will effectively and efficiently drain as much as 80 acres?

A Yes. This is the only, we have no way of running interference tests or continuity tests at this time to definitely prove 80-acre drainage. The only way we can state in any reasonable sound form that we do feel that it is the comparison of the two fields, the Kemnitz is on 80 acre and has been proven to effectively drain 80 acres. Our comparison of the rock and fluid properties show a similarity, and for this reason at this time is all that we can show on the 80-acre drainage.

Q You feel that as drilling progresses and further development, it will show up more and more the characteristics of the Kemnitz field?

A Yes, sir, we certainly do. This is the reason for our next well. I would like to make another note at this time, I guess this may be proper. We designed, of course, I went to



work with Apache right after the unit was formed, but the original idea of the unit was pressure maintenance should we find a field here. There is a real good comparison how pressure maintenance helps between the Kemnitz Pool and the Townsend Pool, and we want to start from the beginning in making every effort possible for the ideal approach to pressure maintenance as the reservoir like this for a small company as Apache it means a good deal to us for the conservation of oil, and the maximum recovery of oil. For that reason we are attempting right now to go at it in the most logical and prudent means that we know at this time.

Q What is the comparison you referred to between the Townsend and the Kemnitz Wolfcamp field?

A I don't have the exact data, but it's something like this, I think the Kemnitz field has recovered something like 230 or 40,000 barrels per well, where the Townsend, and I believe 160 to 80,000. They are almost completely depleted at this time.

Q They did go ahead with pressure maintenance at an early stage of development in the Kemnitz?

A And they did not in the Townsend. This, we feel, is the same reef trend that we have in our well.

Q Do you feel that it would be in the interest of conservation and carrying on that sort of program later on to now

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start your drilling pattern on 80 acres rather than on some other pattern which would later prevent you from drilling on 80 acres?

A That's right, that is exactly correct. The sooner you can start on the pressure maintenance program the more effective the pressure maintenance will be. Likewise, this is real important to us and we want to do all we can to have the best pressure maintenance program available.

Q Refer to Exhibit A-9 and explain what that shows.

A This is drilling economics. We would also like to plead between 40 and 80-acre spacing. We took the figures that we had shown in Exhibit 6 and show our unit operators' net recoverable oil versus 40 and 80-acre spacing, which is 59,060 barrels on 40 and 118,128 on the 80. This is deducting the state's royalty of the oil.

Then we take an average price of \$2.84, which we're receiving for the oil, times the total barrels, which gives \$157,730.00 gross income on 40-acre spacing versus \$335,475 on 80-acre spacing.

I would like to show at this time the asterisk helps to explain this future gas sales are not included in our gross income. Neither is --

Q You mean casinghead gas?



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A Yes, casinghead gas. Neither is the deduction for operating costs and state and federal taxes, which as a rule of thumb will pretty well offset either on there may be not quite as good. Usually your casinghead gas wouldn't cover this expense. Then our drilling and completion expense, the cost of the first well drilled was \$194,000.00.

Additional wells into the tank battery we feel we can drill for \$182,000.00, which shows in the comparison that on 40-acre spacing we will not even be able to receive our money back on a well. It's not exceptional economics on an 80-acre spacing, but there's one thing, of course, our hope is primarily on pressure maintenance, and that's when our real recovery factors come in. We can't show this on one well.

Q By pressure maintenance you hope to cover a great deal more?

A About 2.5% above the 80-acre spacing. This is based on anticipated recovery in the Kemnitz Pool.

Q Do you feel that development on 80-acre spacing basis at this time would be in the interest of conservation and prevention of waste and protection of correlative rights?

A Very definitely.

Q Do you have any suggestion to the Commission with respect to the special field rules that you propose to have



adopted in this case?

A We would like to follow as closely as possible the Kemnitz Pool field rules. There is one objection we have, and that is the 150 feet tolerance on the center of the quarter of the quarter section. We would like to have this changed to 200 rather than 150 feet because if the pool extends as far as we think it does we'll be going off the Caprock and topography will be a big factor in establishing the location, and there's a highway that comes through our unit that also affects some of our locations. For this reason we would like to have 200 rather than 150.

Q What is it you are asking for in the way of definite well locations as far as 80 acre?

A We want the staggered spacing on the northeast and southwest of each quarter section and we would like to have acreage allocated the East Half and the West Half of each quarter section. This is in the same as the Kemnitz Pool. We feel this is fair and is necessary for good development, prudent development.

Q Have you had any objections from any of the operators in the area with respect to establishing temporary 80-acre spacing in this area?

A No, sir. In fact, Atlantic has written a letter to



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the Commission, and I don't know who else, in concurrence with this.

Q You have had no objection to any of the working interest owners who have committed acreage to the Maljamar North Unit?

A No, sir. We notified them before we sent the request to the hearing and none of them sent any objections to us.

Q Do you have any further comments?

A No, sir, I do not.

MR. HINKLE: That's all.

MR. NUTTER: Are there any questions of Mr. Shannon?

CROSS EXAMINATION

BY MR. NUTTER:

Q You heard the question I directed to Mr. Black a while ago regarding the pressure. Now, I realize that you explained that you thought the high gas-oil ratio on the second test was probably because you had cleaned out the upper perforations. How come the lower pressure July 15 compared to the 3rd?

A I feel this is mainly permeability. We have very low permeability shown from the pressure buildup. This is an indication of a low permeability shown in this particular well.

Q Have you taken any shut-in pressures on wells?

A Yes, sir, we have.



Q How does it build up?

A It builds up slow, very slow. Compared to the edge wells of the Kemnitz, very similar.

Q Just explain what happens when you shut the well in.

A We shut the well in for 48 hours and it had twenty-one hundred, and I believe twenty-five pounds, bottom hole pressure at the end of 48 hours, and this is slow, and some of the Kemnitz wells even build up slower than this.

Q You didn't have any intermediate pressures to compare that final 2125?

A It was building up at the time we quit our 48 hours. It was building up at the rate of four pounds per hour at the end of 48 hours. We hope to take another test. In a year's time we'll have more bottom hole pressure data to substantiate this request. It's early in the life of the field right now we know. We feel definitely that there is a need for 80-acre spacing and we feel that we can show in another year with future development more conclusive proof of 80 acre.

Q Do you attribute the fact that on the 15th it made 239 barrels and on the 3rd it made 298 barrels to a matter of permeability also?

A There's another factor involved also. One of them was going to a test tank adjacent to the well and the next test was



going through about 2500 feet of flow line to a tank battery.

Q So you think that maybe the back pressure of the flow line--

A Yes, the back pressure of the flow line also. And our choke could have been washed out a little bit. The choke sizes, you know, sometimes are erroneous. It's hard to say how bad they are washed out.

Q You stated that in your conference with the Tenneco engineer led him to believe that possibly you were bordering on the low side of the medium zone--

A Yes.

Q -- in the Kemnitz area? Do you feel that the north side of the Kemnitz, which is an area of poor permeability, do you think that those wells there are efficiently draining 80 acres?

A This, I'm not in a position to state. I have never run any engineering studies on the Kemnitz field myself.

Q Apache doesn't have any wells in the Kemnitz Pool?

A No, sir, we do not.

Q Do you know what the per cent recovery has been in the north area as compared to the south area in the Kemnitz Pool?

A No, sir, I'm afraid I don't know that. I do know the overall average is above 20% in place.



Q Is the north side of the pool under pressure maintenance?

A I'm not sure. I wouldn't know positively. I assume that the whole field was, but I am not positive of their pressure maintenance program.

MR. BLACK: It is all within the Kemnitz Unit.

Q That's a gas pressure maintenance program in that pool?

A Yes.

Q It was instituted at an intermediate life of the pool?

A Yes, rather late in the field. Better recoveries could have been derived had it started earlier.

Q You made a comparison of the recoveries in the Kemnitz with the Townsend. Isn't the pressure maintenance project in the Townsend still a one-well water injection project?

A That's all I know of.

Q It's still in the pilot and has not been expanded?

A As far as I know.

Q And your five millidarcies permeability on page 8 of your exhibit is derived from what?

A Pressure buildup. This 48-hour pressure buildup plotted on log paper.

Q And the 50 to 100 millidarcies permeability is taken from the record of the Engineering Committee for that pool?



A Yes, it is.

MR. NUTTER: Are there any other questions?

MR. PORTER: I have one.

BY MR. PORTER:

Q Mr. Shannon, I notice you made a comparison, as Mr. Nutter indicated, between the recovery in the Townsend and the Kemnitz. Are you familiar with the reasonable recoverable reserves in the two pools? In other words, would you be able to make a comparison of the reasonable recoverable reserves?

A Not of the Townsend. I know what they anticipate the recovery of the Kemnitz. The Townsend, I believe right now, is almost depleted the best I understand.

Q Yes, it is.

A Secondary recovery, I don't know what estimates they have derived from this.

Q What type of pressure maintenance were you thinking of?

A Gas injection.

Q You would reinject the gas here?

A Yes, sir, we will. There's edge water on this field and the Kemnitz field a study was made and they could show no encroachment of the water, and so they feel that their field is definitely a solution gas drive, and for that reason pressure maintenance through gas injection would probably be best. We



haven't actually made a refined study on this.

Q But you would like to start your maintenance project early?

A Early, we would. And everything that we can do directed toward this is important to us.

MR. NUTTER: Isn't there some water encroachment on the west side of the Kemnitz?

A Maybe on the west side, but overall in the engineering report I read showed very little. You are possibly right there is some on the west side. I think it's very minor the way I interpreted the report.

MR. NUTTER: I don't recall the exact percentage.

MR. HINKLE: I would like to offer Applicant's Exhibits A-6 through 9.

MR. NUTTER: Exhibits 6 through 9 will be admitted in evidence.

(Whereupon, Applicant's Exhibits A-6 through 9 were offered and admitted in evidence.)

MR. NUTTER: If there's no further questions of the witness, he may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further you wish to offer, Mr. Hinkle?

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MR. HINKLE: That's all I have.

MR. NUTTER: Does anyone have anything further to offer in Case 2887?

MR. PAYNE: Mr. Examiner, the Atlantic Refining has written a letter saying that they concur with the Applicant.

MR. NUTTER: Thank you. Does anyone else have anything they wish to offer in this case? We will take the case under advisement.

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

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 15th day of September, 1963.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings before the New Mexico Oil Conservation Commission, Case No. 2887, heard by me on 8/2/63.

Ada Dearnley
New Mexico Oil Conservation Commission

