

CASE 2635: Application of L.R.
FRENCH FOR CREATION OF NEW POOL
AND RULES FOR INBE-PENN. OIL POOL,

CASE 2635:
RULES FOR INBE-PENNSYLVANIAN POOL



2635

Index, Transcript,

// Exhib. Etc.

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. 2635
Order No. R-2325-A

APPLICATION OF L. R. FRENCH, JR.,
FOR THE CREATION OF A NEW OIL POOL
AND FOR THE ESTABLISHMENT OF TEMPO-
RARY 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 7, 1963, at Santa Fe, New Mexico, before Elvis A. Utz, 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 2/21 day of August, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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-2325 entered in this case on October 3, 1962, temporary special rules and regulations were promulgated for the Inbe-Pennsylvanian Oil Pool.

(3) That pursuant to Order No. R-2325, this case was reopened to allow the operators in the subject pool to appear and show cause why the Inbe-Pennsylvanian Oil Pool should not be developed on 40-acre proration units.

(4) That the evidence presented at this hearing concerning the reservoir characteristics of the Inbe-Pennsylvanian Oil Pool establishes that one well in said 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

-2-

CASE No. 2635
Order No. R-2325-A

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-2325 should be continued in effect until further order of the Commission.

(6) That the special rules and regulations promulgated by Order No. R-2325 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 temporary special rules and regulations promulgated for the Inbe-Pennsylvanian Oil Pool by Order No. R-2325 entered in this case on October 3, 1962, are hereby continued in 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.

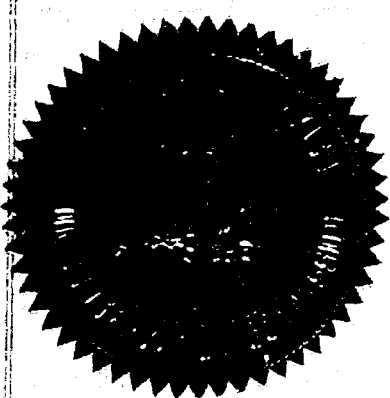
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


JACK M. CAMPBELL, Chairman


E. S. WALKER, Member


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



esr/

EXHIBITS FOR CASE NO. 2635 (REOPENED)

CASE NO. 2635 REOPENED PURSUANT TO PROVISIONS
OF ORDER NO. R-2325, WHICH ORDER
ESTABLISHED TEMPORARY 80-ACRE PRORATION
UNITS FOR PERIOD OF ONE YEAR.

INBE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

AUGUST 7, 1963

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
<i>Appl</i>	EXHIBIT NO. <u>1</u>
CASE NO.	<u>2635</u>

R-34-E

4

5

T II S

INBE PENNSYLVANIAN FIELD
(Bough "C")

DATUM: Top Bough "C"

C.I.: 25'

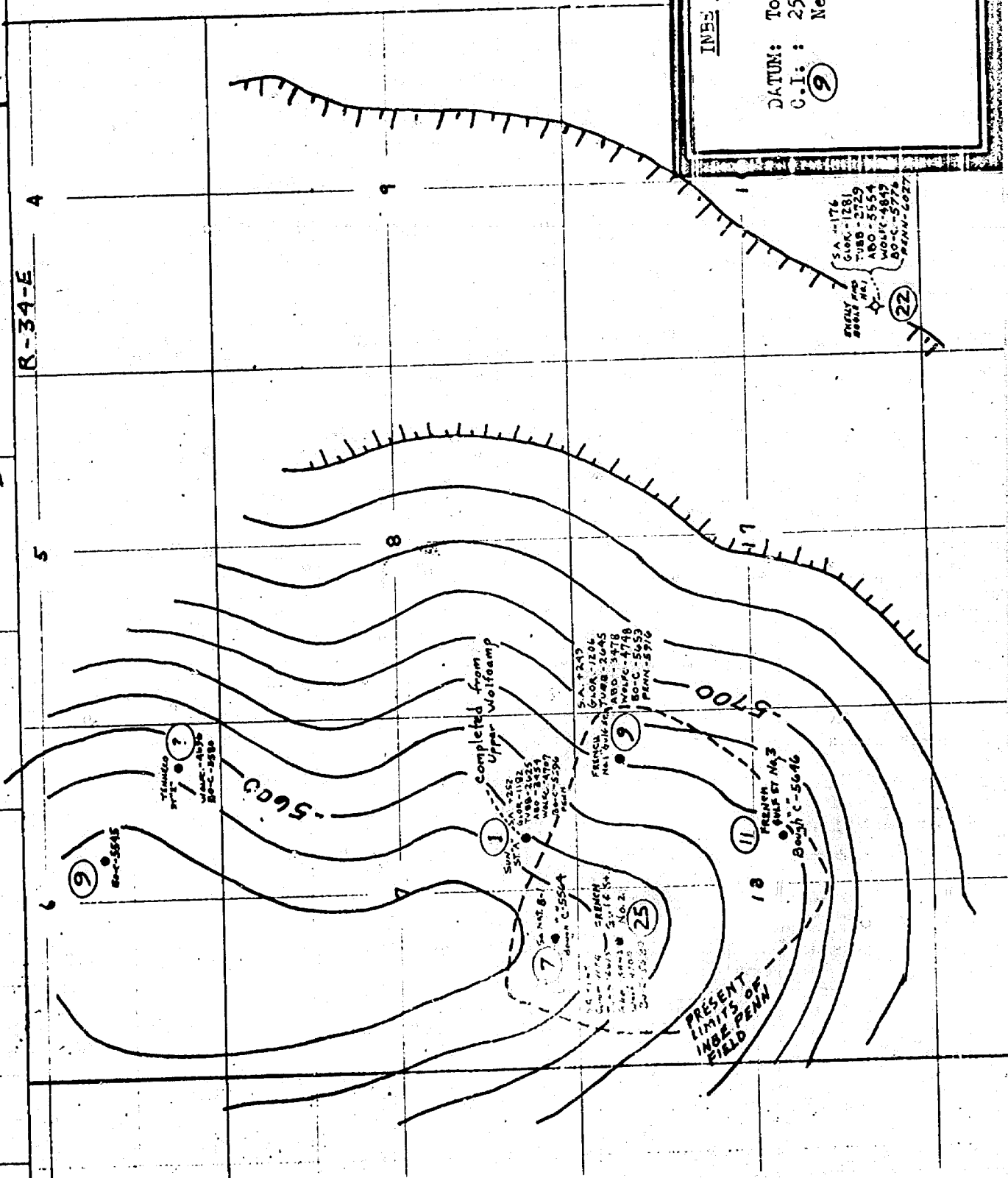
Net Bough "C" Porosity

William J. May
Geologist

9

22

SA-1174
COR-1281
COR-2729
ABO-3554
ABO-3554
BOC-5574
PEN-6077



FIELD HISTORY
INBE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

LOCATION: Sections 7 and 18, T-11-S, R-34-E
Lea County, New Mexico

PRODUCING FORMATION: Bough "C" Zone of Pennsylvanian Formation

DEPTH: Approximately 9800 Feet

DATE OF DISCOVERY: September 19, 1962

PRODUCTION DATA: Cumulative oil production is 49,340 barrels
on May 1, 1963. Monthly rate of oil
production for May, 1963 was 11,344 barrels.

NUMBER OF WELLS: 4

PRODUCING MECHANISM: Solution gas drive with possible partial
water drive.

EX 2

WELL COMPLETION DATA

INEE PENNSYLVANIAN POOL

LEA COUNTY, NEW MEXICO

OPERATOR	LEASE	WELL NO.	DATE OF COMPLETION	PERFORATIONS	TREATMENT	P/F	INITIAL POTENTIAL	
							OIL BBLs.	WATER BBLs.
L. R. French, Jr.	Gulf-State	1	8-19-62	9867-75	500 Gals.	F	322	198
L. R. French, Jr.	Gulf-State	2	12-28-62	9794-9810	1000 Gals.	F	187	110
L. R. French, Jr.	Gulf-State	3	5-10-63	9862-78	1000 Gals.	F	210	225
Southern Natural Gas Company	State "B"	1	3-23-63	9784-92	1000 Gals.	F	72	38

64 3

OIL PRODUCTION DATA

INBE PENNSYLVANIAN POOL

LEA COUNTY, NEW MEXICO

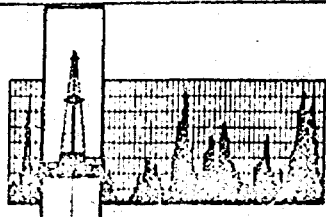
<u>MONTH</u> <u>YEAR</u>		L. R. FRENCH, JR. Gulf-State #1	L. R. FRENCH, JR. Gulf-State #2	L. R. FRENCH, JR. Gulf-State #3	SOUTHERN NAT. State "B"	FIELD TOTAL	CUM.
Sept.	1962	2899				2,899	2,899
Oct.	1962	3045				3,045	5,944
Nov.	1962	3048				3,048	8,992
Dec.	1962	2359				2,359	11,351
Jan.	1963	2590	864			3,458	14,809
Feb.	1963	5541	1347			7,388	22,197
March	1963	5759	1923		224	7,906	30,103
April	1963	4175	1392		2326	7,893	37,996
May	1963	2956	3135	2867	2386	11,344	49,340

Ex 4-

GAS & WATER PRODUCTION
INBE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

MONTH	YEAR	MONTHLY GAS PRODUCTION (MCF)	CUMMULATIVE GAS PRODUCTION (MCF)	MONTHLY WATER PRODUCTION (BBLs.)	CUMMULATIVE WATER PRODUCTION (BBLs.)
Sept.	1962	-	-	-	-
Oct.	1962	-	-	-	-
Nov.	1962	-	-	-	-
Dec.	1962	2,075	2,075	-	-
Jan.	1963	4,102	6,177	17,050	17,050
Feb.	1963	7,705	13,882	15,400	32,450
March	1963	7,241	21,123	17,386	49,836
April	1963	7,199	28,322	17,393	67,229
May	1963	10,003	38,325	28,558	95,787

6X 5



Barrell M. Smith Co.

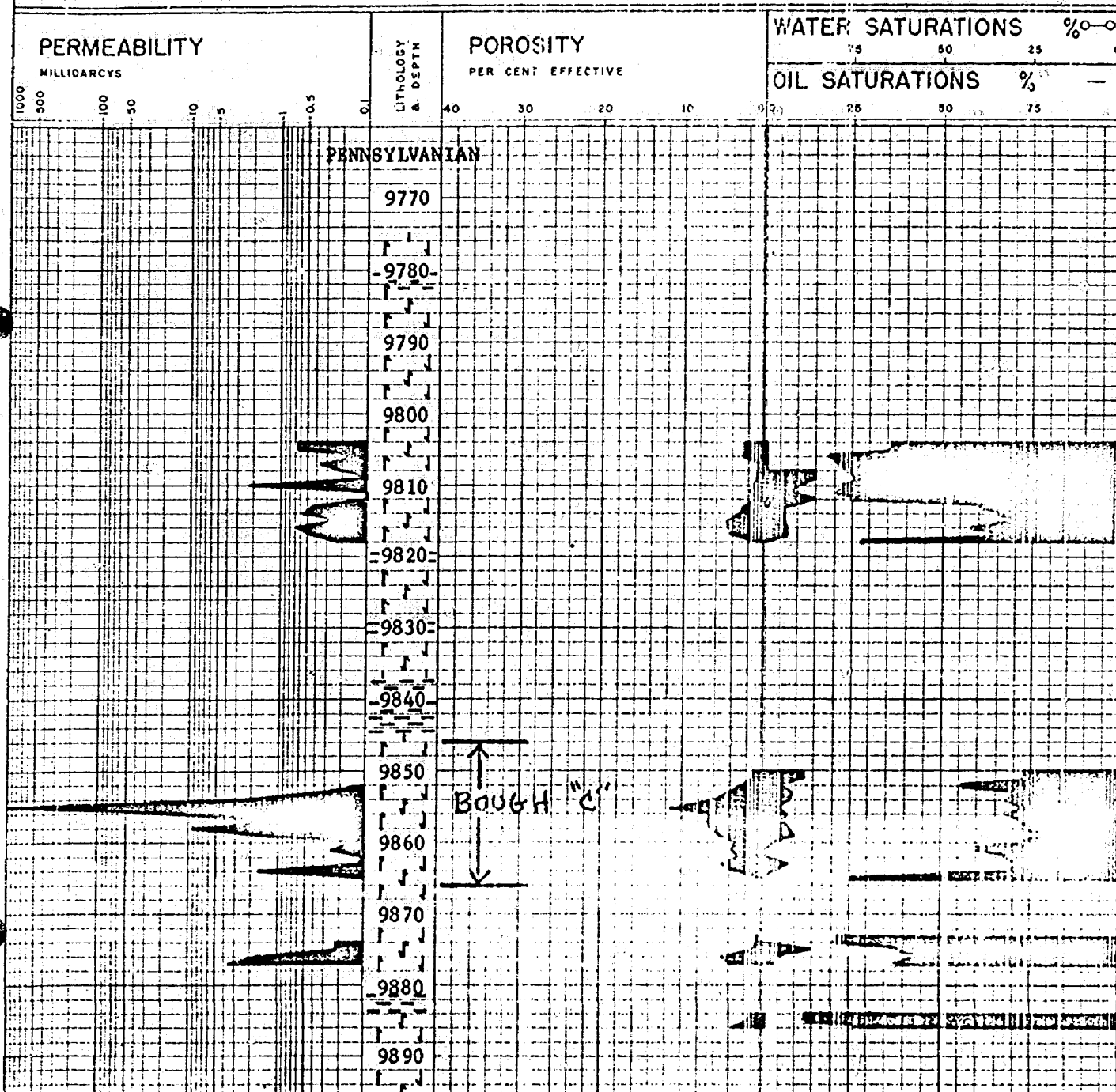
OPERATOR L. R. French, Jr.

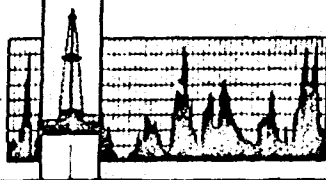
WELL NO 1 Gulf State

FIELD Wildcat

COUNTY Lea

STATE New Mexico





Darrell W. Smith Co.

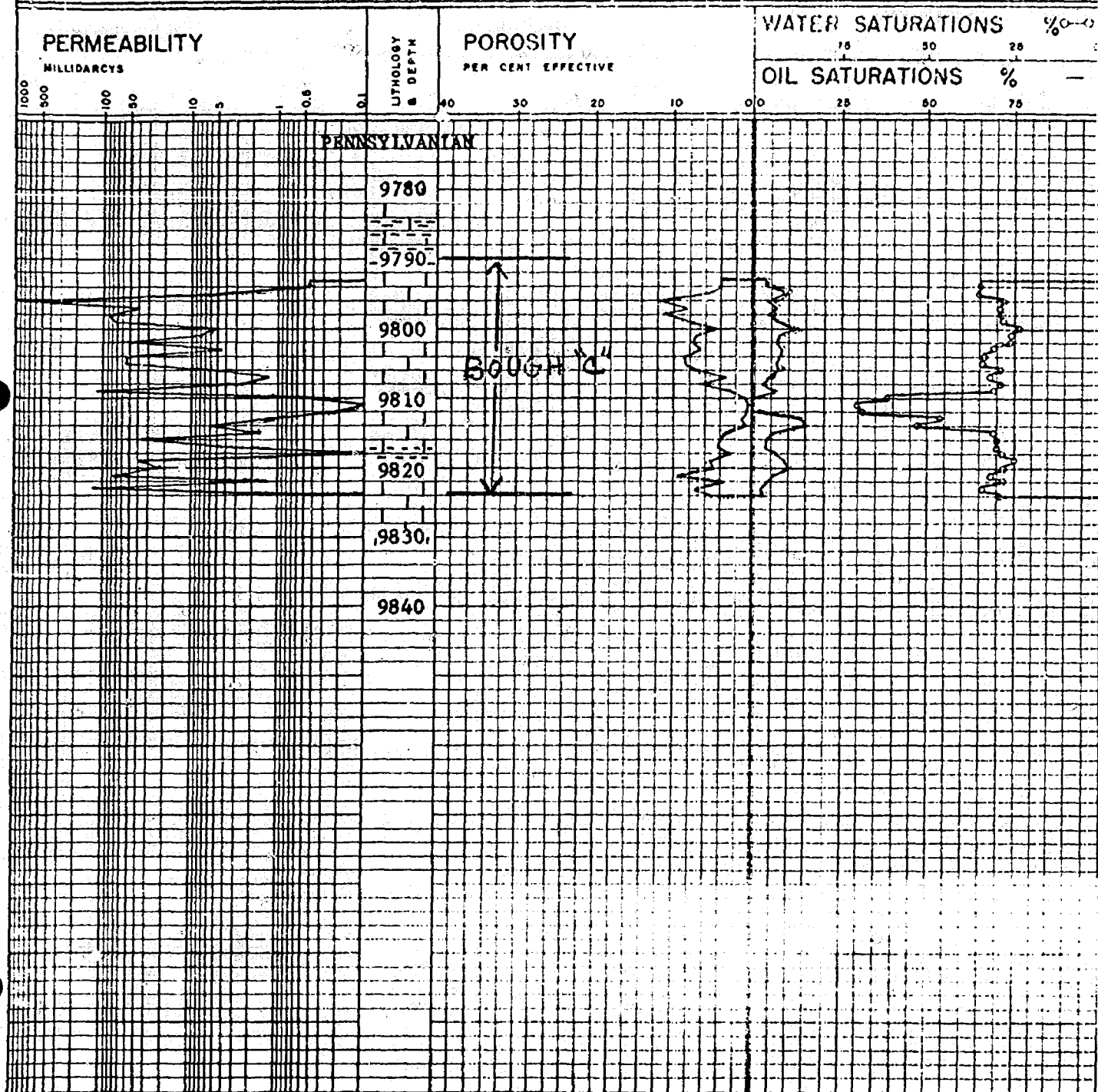
OPERATOR L. R. FRENCH, JR.

WELL NO. 2 GULF STATE

FIELD INBE PENNSYLVANIAN

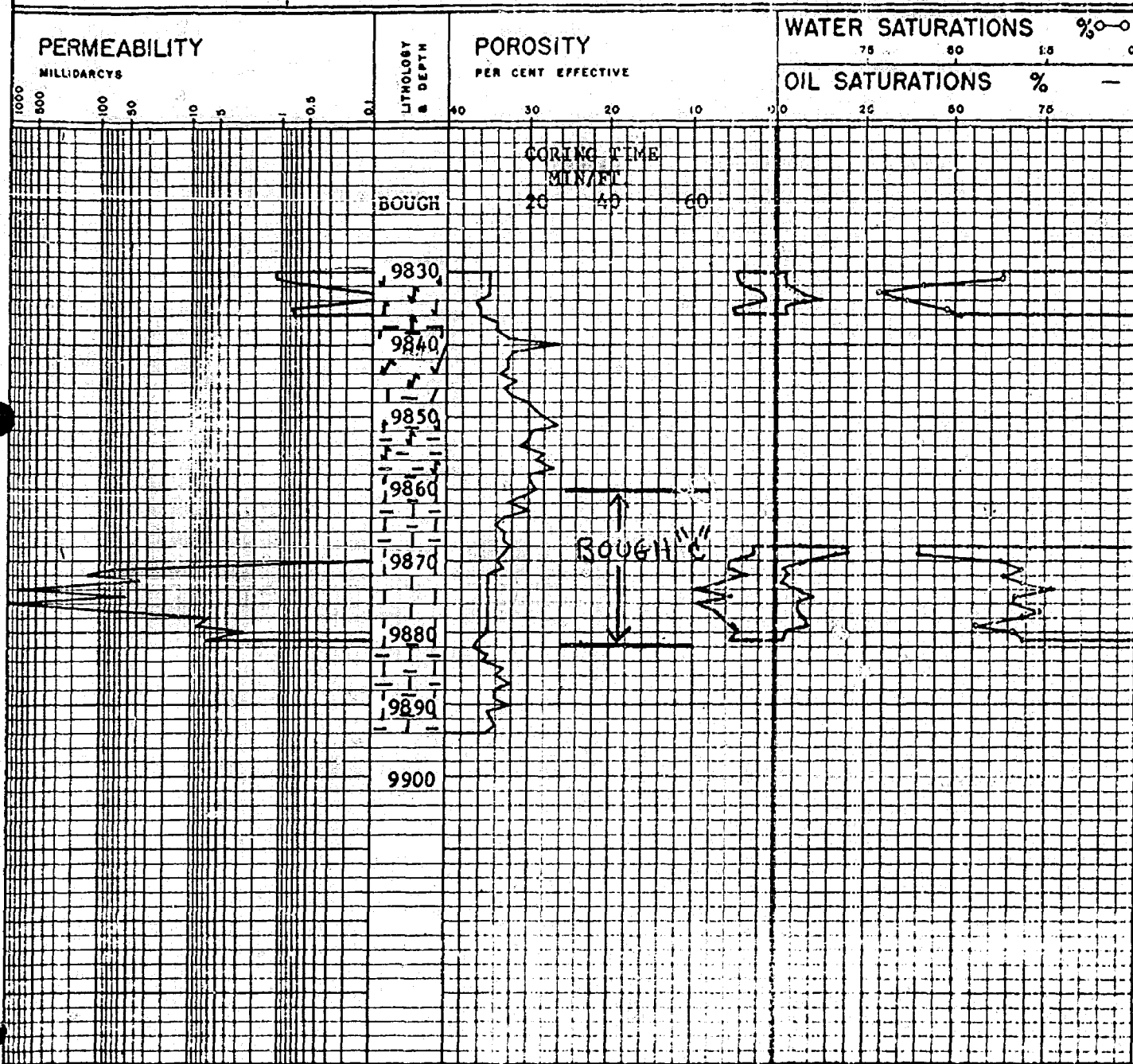
COUNTY LEA

STATE NEW MEXICO



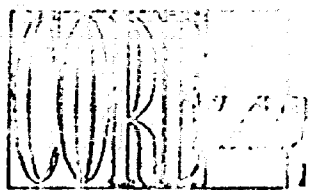
OPERATOR L. R. FRENCH, Jr. WELL NO. 3 GULF STATE

FIELD LANE COUNTY LEA STATE NEW MEXICO



PRELIMINARY PRINT

CORE LABORATORIES, INC.



Petroleum Reservoir Engineering

COMPANY SOUTHERN NATURAL GAS COMPANY FIELD INBE FILE WP-3-2075

WELL STATE "B" NO. 1 COUNTY LEA DATE 2-28-63

LOCATION STATE NEW MEXICO ELEV. 4012' KB

CORE-GAMMA CORRELATION

These analyses, opinions or interpretations are based on observations and material provided by the client to whom, and for whose exclusive use and benefit, this report is made. The interpretation of opinions and any report for the use of Core Laboratories, Inc. and its officers and employees, and its subsidiaries and affiliates, is not to be construed as a representation or warranty of the accuracy, reliability, or probability of any oil, gas or other material which is or may be produced from the well, or of the results of any operation, or of the performance of any well, or of the results of any operation, or of the performance of any well, or of the results of any operation.

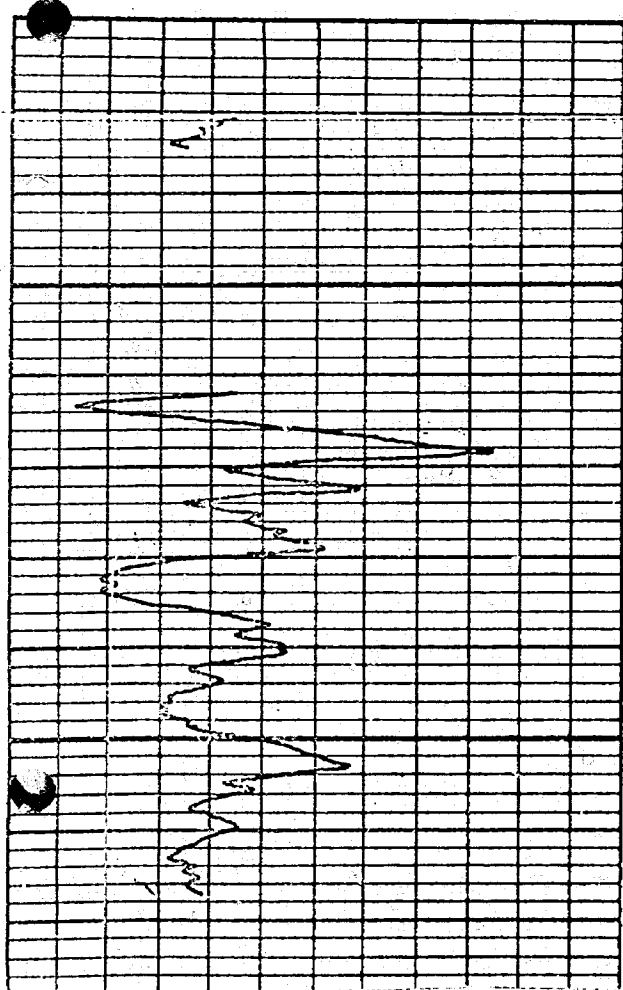
VERTICAL SCALE: 5" = 100'

CORE-GAMMA SURFACE LOG

(PATENT APPLIED FOR)

GAMMA RAY

RADIATION INCREASE



COREGRAPH

TOTAL WATER

PERCENT TOTAL WATER

80 60 40 20 0

PERMEABILITY

MILLIDARCS

20 10

PORE VOLUME

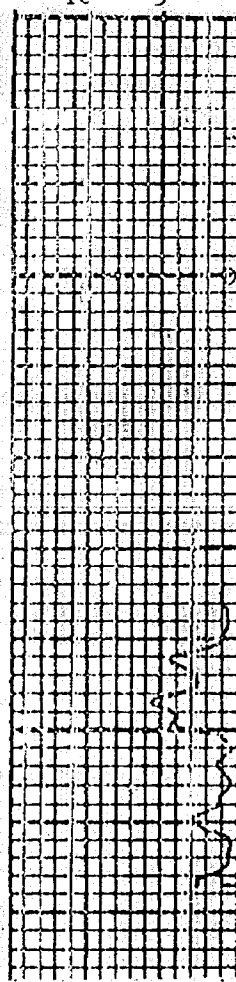
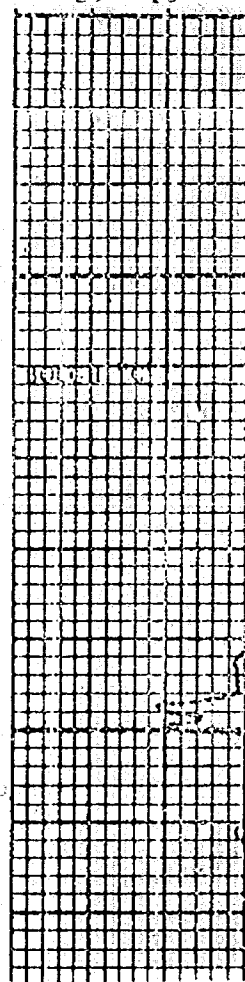
PERCENT

10 5

OIL SATURATION

PERCENT PORE SPACE

0 20 40 60 80



9335

DRILLER

9762

30064

9360

9817

RESERVOIR ROCK AND FLUID PROPERTIES
IN THE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

	FRENCH Gulf-St. #1	FRENCH Gulf-St. #2	FRENCH Gulf-St. #3	SO.NAT.	FIELD AVERAGE
Gross Pay (feet)	21	35	23	25	26.5
Net Pay, (feet)	9	25	11	7	13.0
Porosity, (%)	6.5	6.8	6.5	5.0	6.2
Water Saturation (%)	29				29
Permeability, (md.)	over 1,000	over 1,000	over 1,000	12	over 1,000
Permeability average (md.)	115	81	215	6	104.3
Original Reservoir Pressure (Pounds Per Square Inch)	3384			3333	3358
Reservoir Temperature (°F)	156°				156°
Gas In Solution					950
Formation Volume Factor					1.76
Oil Gravity (°API)					46.2

EX 6

COMPARISON OF ROCK AND FLUID PROPERTIES
INBE PENNSYLVANIAN POOL VS. SOUTH LANE PENNSYLVANIAN POOL
BOUGH "C" FORMATION

<u>Type Data</u>	<u>South Lane Pennsylvanian Pool</u>	<u>Inbe Pennsylvanian Pool</u>
Depth of Producing Formation (Feet)	9,700	9,800
Gross Pay (Feet)	30	25
Net Pay (Feet)	13.5	13.0
Porosity (Percent)	7.95	6.20
Water Saturation (Percent)	25	29
Permeability (md.)	1,069	over 1,000
Original Reservoir Pressure (Pounds Per Square Inch)	3,473	3,384
Original Gas in Solution (Cubic Feet Per Barrel)	1,390	950
Reservoir Temperature (Degrees F)	143	156
Formation Volume Factor	1.76	1.76
Oil Viscosity (cp.)	0.18	0.18
Oil Gravity (Degrees API)	47.5	46.2

Ex 7

OIL RECOVERY CALCULATIONS
INBE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

FLUID AND FORMATION DATA

Porosity = 6.20%
Water Saturation = 29%
Net Pay = 13.0 ft.
Recovery Factor = 40% Oil in Place
FVF = 1.76

OIL IN PLACE (Bbls./Ac. Ft.)

$$\frac{(7758 \text{ Bbls.})}{\text{Ac. Ft.}} (0.0620) (0.71) = 194 \frac{\text{Bbls.}}{\text{Ac. Ft.}}$$

1.76

RECOVERABLE OIL (Bbls./Ac. Ft.)

$$(194 \frac{\text{Bbls.}}{\text{Ac. Ft.}}) (0.40) = 77.6 \frac{\text{Bbls.}}{\text{Ac. Ft.}}$$

OIL IN PLACE (Bbls./Ac.)

$$(194 \frac{\text{Bbls.}}{\text{Ac. Ft.}}) (13.0 \text{ ft.}) = 2522 \frac{\text{Bbls.}}{\text{Ac.}}$$

RECOVERABLE OIL (Bbls./Ac.)

$$(2522 \text{ Bbls./Ac.}) (0.40) = 1008.8 \frac{\text{Bbls.}}{\text{Ac.}}$$

Ex 8

OIL IN PLACE. (Bbls.)
RECOVERABLE OIL (Bbls.)

<u>40 Ac.</u>	<u>80 Ac.</u>
100,880	201,760
40,352	80,704

ECONOMICS OF DRILLING ONE WELL
PER 40 ACRES OR 80 ACRES
IN BE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

INCOME

	<u>40 ACRES</u>	<u>80 ACRES</u>
1. Recoverable Oil-Bbls.	40,352	80,704
2. Operators Net Recoverable Oil, Bbls. (assuming 7/8 interest lease)	35,308	70,616
3. Operators Gross Income (\$2.37 x No. 2)	\$ 83,680	\$167,360

COST

1. Drilling and Completing Cost	\$133,000.00
2. Flow Lines & Tank Battery	2,613.00
3. Pump	<u>19,107.00</u>
	\$154,720.00

Crude Price = \$2.95 + 0.06 gas = \$3.01
 \$3.01 - taxes = \$2.82
 Operating cost (per bbl.) = 45¢
 Net Price = \$2.37

6x9

BEFORE EXAMINER UTZ

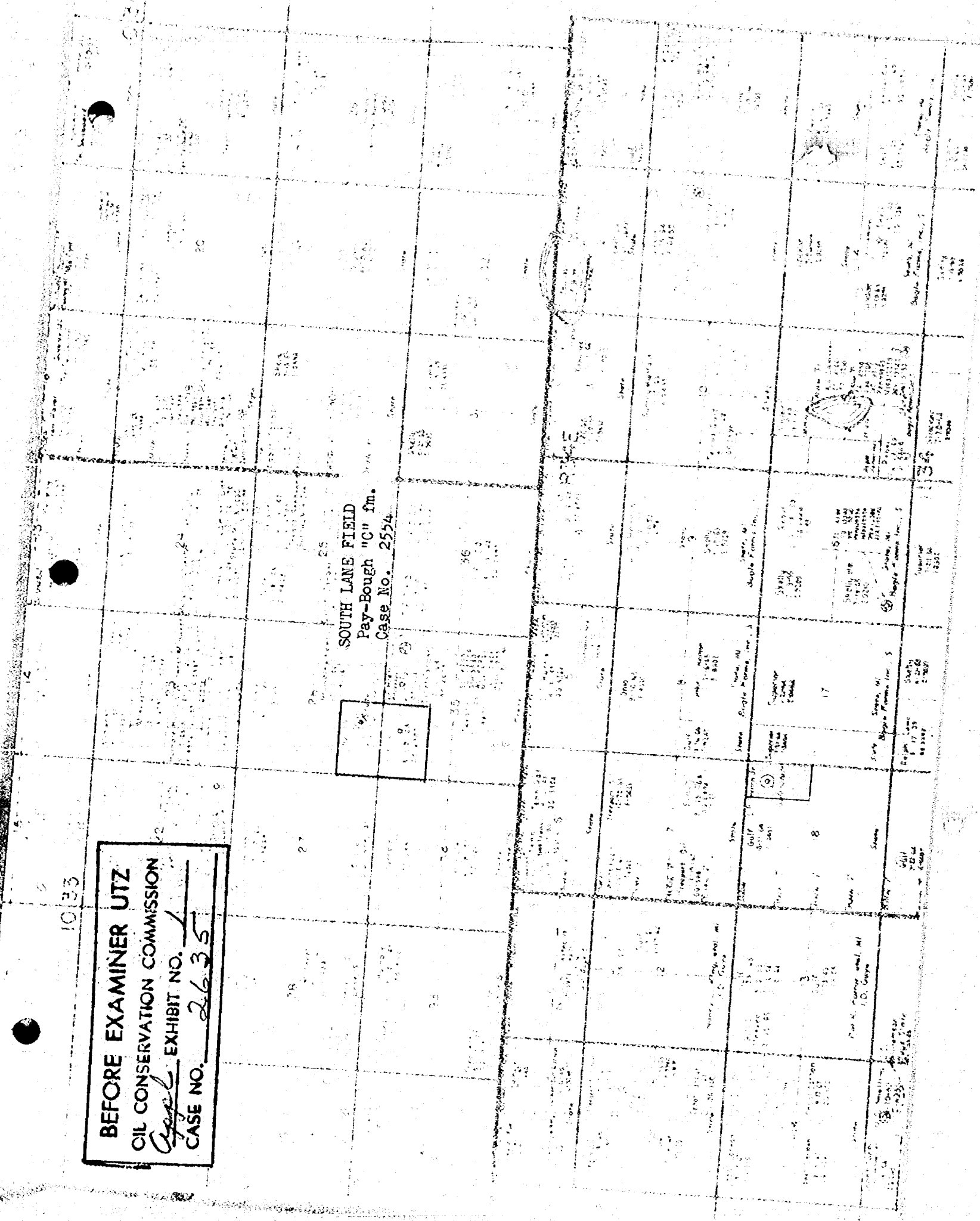
OIL CONSERVATION COMMISSION

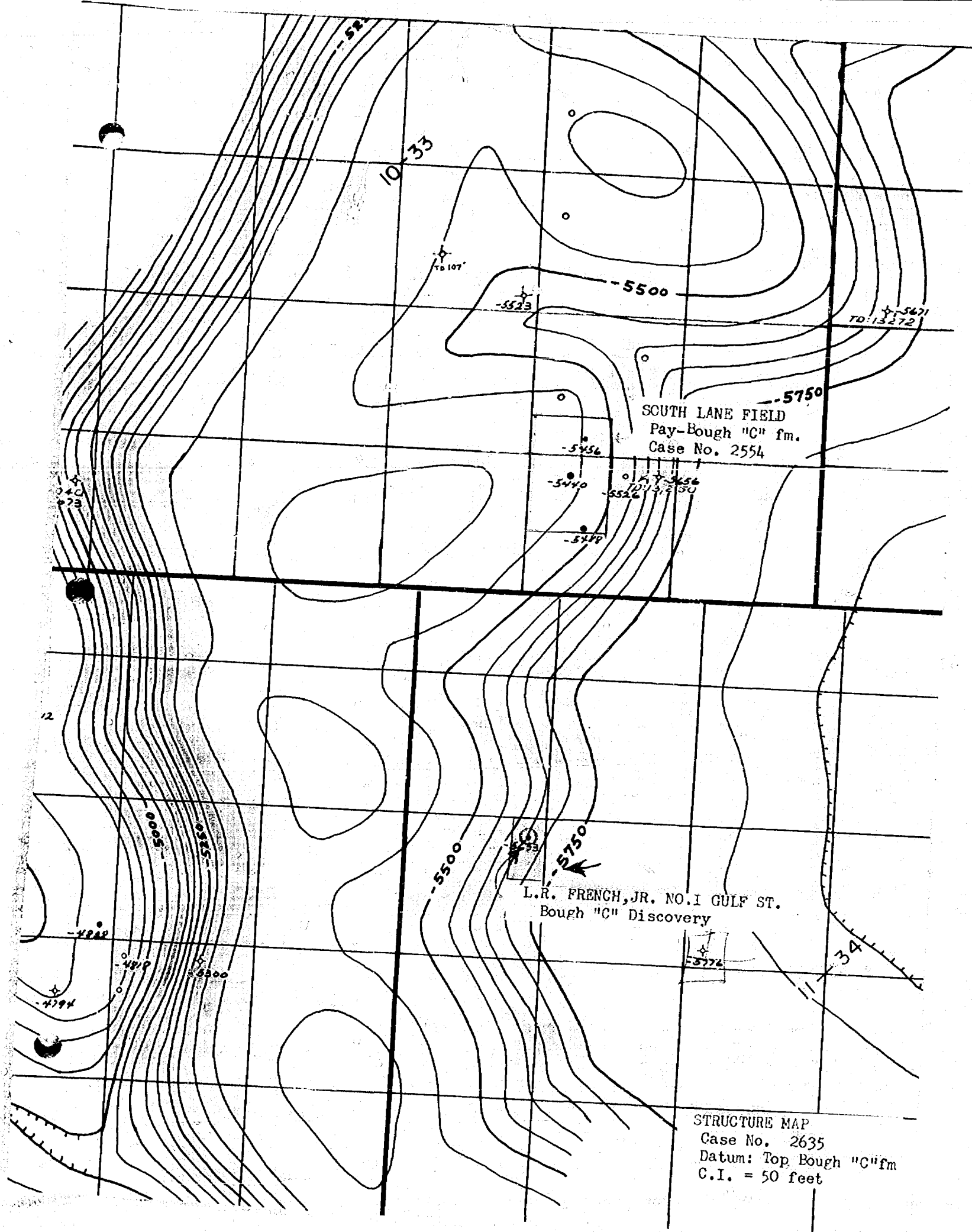
EXHIBIT NO. 1

CASE NO. 2635

1033

SOUTH LANE FIELD
Pay-Bough "C" fm.
Case No. 2554





EXHIBITS FOR CASE NO. 2635

L.R. FRENCH, JR. APPLICATION
FOR ORDER CREATING NEW
POOL AND 80-ACRE SPACING

L.R. FRENCH, JR.
GULF-STATE WELL NO. I

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	6
CASE NO.	2635

WELL HISTORY
BOUGH "C" FORMATION
L.R. FRENCH, JR.
GULF-STATE WELL NO. I

LOCATION:

660' FNL and 660' FEL of Section 18, T.II-S, R.34-E,
Lea County, New Mexico

TOTAL DEPTH:

10,500'

PRODUCTION STRING:

4½" Casing set at 9986'

DRILL STEM TEST:

Bough "C" Formation tested from 9830' to 9920'
Results as follows;

30" Initial shu-in pressure = 3510#
Initial flow pressure = 520#
Final flow pressure = 1870#
1½" Final shut-in pressure = 3310#

Strong blow throughout. Opened 3 hours 20 minutes, gas
in 2 minutes; mud in 2 hours 10 minutes; oil in 2 hours
17 minutes; flowed to pits 15 minutes; to tanks 48 minutes.
(no gauge) Reversed out 15 barrels of fluid (15% water);
Recovered 30' HO&GCM below sub.

PERFORATIONS:

9867' to 9875'

FORMATION TREATMENT:

500 gallons of mud acid.

POTENTIAL TEST:

On August 19, 1962, the well flowed 322 barrels
of oil and 198 barrels of water through a 20/64"
surface choke. (gravity 44)

INITIAL RESERVOIR PRESSURE:

3384#

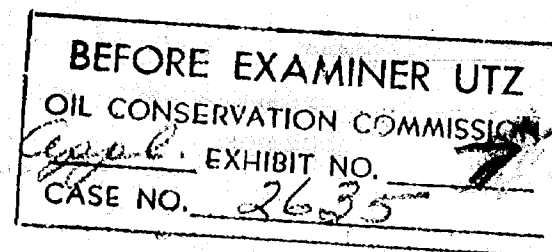
BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
Appr	EXHIBIT NO.
CASE NO.	2635

RESERVOIR ROCK AND FLUID PROPERTIES
BOUGH "C" FORMATION
L.R. FRENCH, JR.
GULF-STATE WELL NO. I

Depth of Formation, (Feet)	9862
Gross Pay, (Feet)	21
Net Pay, (Feet)	9

Porosity, (Weighted Average of Core Analysis)	7.2%
Water Saturation, (Average by log Calculation)	29%
Permeability, (Weighted Average of Core Analysis)	115md.

Original Reservoir Pressure, (Pounds Per Square Inch)	3384
Reservoir Temperature, (F)	156
Formation Volume Factor	1.88
Oil Viscosity (cp.)	0.18
Oil Gravity, (API)	44



OIL RECOVERY CALCULATION
BOUGH "C" FORMATION
L.R. FRENCH, JR.
GULF-STATE WELL NO. I

RESERVOIR VOLUME CALCULATIONS

Average Porosity = 7.2%
Water Saturation = 29.0%
Net Pay = 9 ft.
Recovery Factor = 40% Oil in Place

OIL IN PLACE (Bbls./Ac. Ft.)

$$\frac{\text{Bbls.}}{(7758 \text{ Ac. Ft.})} (0.072) (0.71) = 208 \frac{\text{Bbls.}}{\text{Ac. Ft.}}$$

1.88

RECOVERABLE OIL (Bbls./Ac. Ft.)

$$\frac{\text{Bbls.}}{(208 \text{ Ac. Ft.})} (.40) = 83.2 \frac{\text{Bbls.}}{\text{Ac. Ft.}}$$

OIL IN PLACE (Bbls./Ac.)

$$\frac{\text{Bbls.}}{(208 \text{ Ac. Ft.})} (9 \text{ Ft.}) = 1872 \frac{\text{Bbls.}}{\text{Ac.}}$$

RECOVERABLE OIL (Bbls./Ac.)

$$(1872 \text{ Bbls./Ac.}) (0.40) = 748.8 \text{ Bbls./Ac.}$$

OIL IN PLACE (Bbls.)
RECOVERABLE OIL (Bbls.)

40 Ac.
74,880
29,952

80 Ac.
149,760
59,904

74/270
" 208

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2635-7
CASE NO. 2635-7

COMPARISON OF ROCK AND FLUID PROPERTIES

L.R. FRENCH, JR. GULF-STATE NO. I VS. T.F. HODGE WELL NO. I

BOUGH "C" FORMATION

<u>Type Data</u>	<u>L.R. French, Jr. Penn. Pool</u>	<u>T.F. Hodge Humble-State Well No. I</u>
Depth of Producing Formation (Feet)	9862	9607
Gross Pay (Feet)	21	30
Net Pay (Feet)	9	16
Porosity (Percent)	7.2	7.2
Water Saturation (Percent)	29	15
Permeability (md.)	115	94
Original Reservoir Pressure (Pounds Per Square Inch)	3364	3473
Original Gas in Solution (Cubic feet Per Barrel)	1220 (calculated from DST)	1550
Reservoir Temperature (Degrees F)	156	143
Formation Volume Factor	1.88 (calculated)	1.88
Oil Viscosity (cp.)	0.18	0.18
Oil Gravity (Degrees API)	44	47

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appel EXHIBIT NO. 914
CASE NO. 2635

ECONOMICS OF DRILLING ONE WELL PER 40 ACRES OR 80 ACRES
BOUGH "C" FORMATION
L.R. FRENCH, JR.
GULF-STATE WELL NO. I

<u>INCOME</u>	<u>40 ACRES</u>	<u>80 ACRES</u>
1. Recoverable Oil, Bbls.	29,952	59,904
2. Operators Net Recoverable Oil, (Assuming 7/8 Int. Lease)	26,218	52,436
*3. Operators Gross Income (\$2.71 times No. 2)	\$71,051	\$142,102

COST **

1. Drilling, testing and completing L.R. FRENCH, JR. GULF-STATE NO. I	\$147,986	10,500
2. Tank battery and flow lines	7,840	
3. Pump	19,107	
Total Cost **	\$174,933	
4. Estimated Cost of each additional well	\$134,000	

* Crude Price (per bbl) = \$3.01

Taxes = 0.18

Trucking = .12

Net Price = \$2.71

** Does not include operating costs.

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	10
CASE NO.	2635

CORE

ANALYSIS

PAGE NO. 2

OPERATOR L. R. French, Jr.

LAB NO. 610-1

SAMPLE NO.	INITIAL DEPTH	FOOTAGE	PERMEABILITY MD. HORIZONTAL VERTICAL	EFFECTIVE POROSITY %	GRAIN SIZE OF FINEST GRADE	WATER	DESCRIPTION
14	9817 - 18 9818 - 19.5 9819.5 - 21 9821 - 29	1.0 1.5 1.5 8.0	0.22	0.7	Trace	71.8	Ls d dhyd sc Ca x trace PPP Fs HF Ls d sl ahyd Fs CAF Sh black lmy Fs NS LA Ls d sc Ahf incls styo Sh ppgs CRF NS NA Sh gray w/sc Ls stgrs & incls Fs NS NA Ls d-vfx sc Ahf incls slty shy Fs NS NA Sh black lmy Fs NS NA Ls d-vfx sc Ahf incls slty shy Fs NS NA Sh black lmy Fs NS NA Ls d-vfx sc Ahf incls slty shy Fs NS NA Ls d sc Ahf incls styo Sh ppgs NS NA
15	9848 - 50 (16 d-nd)	2.0					Ls vfx sl dolo Ahf incls NS NA
16	9850 - 51	1.0		1.2	12.5	26.7	Ls d sc Ahf incls sty Sh ppgs
17	9851 - 52	1.0	0.08	2.7	5.6	44.1	Ls d-vfx sc Ahf incls sty sc ppg
18	9852 - 53	1.0	0.09	4.3	9.3	30.2	Ls d-vfx sc Ahf incls sc SV ppg Fs
19	9853 - 54	1.0	0.32	6.0	8.3	31.7	Ls d-vfx sc Ahf incls SV ppg Fs
20	9854 - 55	1.0	2.4	11.6	5.2	27.2	Ls d-vfx sc Ahf incls SV ppg Fs
21	9855 - 56	1.0	<1000	6.5	7.7	32.3	Ls d-vfx sc Ahf incls SV ppg Fs
22	9856 - 57	1.0	20.	6.6	7.6	27.1	Ls d-vfx sc Ahf incls SV ppg Fs
23	9857 - 58	1.0	1.4	6.3	7.9	25.9	Ls d-vfx sc Ahf incls SV ppg Fs
24	9858 - 59	1.0	9.6	5.1	9.8	21.6	Ls d-vfx sc Ahf incls SV ppg Fs
25	9859 - 60	1.0	1.7	3.4	4.4	32.4	Ls d-vfx sc Ahf incls SV ppg Fs
26	9860 - 61	1.0	0.14	3.8	Trace	39.5	Ls d-vfx sc Ahf incls SV ppg Fs
27	9861 - 62	1.0	0.27	2.8	Trace	32.1	Ls d-vfx sc Ahf incls SV ppg Fs
28	9862 - 63	1.0	0.07	5.0	8.6	30.3	Ls d sc Ahf incls sc SV sc ppg Fs
29	9863 - 64	1.0	0.11	3.6	4.2	30.6	Ls d-vfx sc Ahf incls SV ppg Fs
	9864 - 65	1.0	1.7	0.5	-0-	73.7	Ls d-vfx sc Ahf incls SV ppg Fs
	9865 - 73	8.0	C.05	-	-	-	Ls d-vfx Dolo Ahf incls shy Sh ppgs NS NA

Core No. 2 9,348 - 9,920 (72 Ft.)
Recovered 9,846 - 9,920 (72 Ft.)

BEFORE EXAMINER UTZ
OIL CONSERVATION COM.

EXHIBIT NO. 112
CASE NO. 2633

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

EXAMINER HEARING

IN THE MATTER OF: (Reopened)

Case 2635 being reopened pursuant to the provisions of Order No. R-2325, which order established temporary 80-acre proration units for the Inbe-Pennsylvanian 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 proration units.

Case No. 2635

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

August 7, 1963

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BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 7, 1963

EXAMINER HEARING

IN THE MATTER OF: (Reopened))

Case 2635 being reopened pursuant to)
the provisions of Order No. R-2325,)
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Pennsylvanian 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 proration units.)

Case 2635

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 2635.

MR. DURRETT: In the matter of Case 2635 being reopened pursuant to the provisions of Order No. R-2325, which order established temporary 80-acre proration units for the Inbe-Pennsylvanian Oil Pool, Lea County, New Mexico, for a period of one year.

MR. BRATTON: Howard Bratton appearing on behalf of the Applicant. We have one witness.

(Witness sworn.)

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WILLIAM J. LEMAY

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, occupation and address?

Q William J. LeMay, geologist, 610 Security Building in Roswell.

Q Have you previously testified before this Commission as an expert witness?

A Yes, I have.

Q In connection with the original application in this matter, as a matter of fact?

A That's correct.

Q And you are appearing on behalf of L. R. French, the Applicant in this matter?

A Yes, sir.

Q In this matter you are seeking to have the temporary pool rules made permanent, is that correct?

A That is correct.

Q Including provisions for 80-acre proration units?

A That's correct.

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

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MR. UTZ: Yes, sir, they are.

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

Q Turn to your Exhibit No. 1, Mr. LeMay, and explain what that is, please.

A This is a map of the Inbe-Pennsylvanian Pool area. I might point out to the north there are two wells which are associated or are within the South Lane Pool, in the hearing on the South Lane Pool which was previously conducted before the Commission, Case 2554.

We have four wells in the Inbe-Pennsylvanian Pools. These are shown on this map and encircled by this dashed line. The figures that I have circled above or beside each well indicate the net porosity within the Bough "C" interval. You'll notice the one well in the general area that is not included in this field is the Sun State "A" well which was at this time in the Bough "C". It is part of the Inbe-Wolfcamp Field.

This map also shows the structural interpretation of the area mapped on the Bough "C" with the contour interval being 25 feet.

Q The dashed line there, those are not the pool limits as delineated by the Commission?

A No, sir, they are not.

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Q That's just your interpretation of the productive limits of this South Lane Pool as known at the present?

A Yes, sir. I just encompassed these three or four wells to differentiate them from the other wells on the map, that dashed line in no way infers a geologic limit or a Commission limit to the pool.

Q And your South Lane Pool immediately to the north, two miles to the north there is also a Bough "C" Pool?

A Correct.

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

Q Turn then to your Exhibit No. 2. Is that the field history of the pool?

A Yes, sir.

Q And states substantially what you've outlined, that there are four producing wells and the cumulative production from the pool is 49,340 barrels to date on May 1?

A Correct.

Q It's a typical Bough "C" formation solution gas drive?

A Correct.

Q Possible partial water drive?

A Correct.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

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Q Turn to your Exhibit No. 3, Mr. LeMay. Does that reflect your well completion data showing your initial potentials on these various wells?

A Yes, sir, they do. This in no way indicates the chronological order of drilling the wells. Actually, the French Gulf-State 1 was drilled first and then the 2 and then the Southern Natural and then the Gulf-State 3. The treatment is indicated as well as the perforated interval. I might indicate that the potential is high as compared with the production history in the pool which will be pointed out in further exhibits.

(Whereupon, Applicant's Exhibit No. 4 was marked for identification.)

Q Your next exhibit, then, on the production data, does that reflect the monthly production by well in the pool?

A Yes, sir. This exhibit reflects both the monthly production per well and the monthly field production, and the final column on the right indicates the cumulative production of oil in the Inbe-Pennsylvanian Pool.

Q Is there anything further you care to point out in connection with that?

A No, sir, except I might point out that all the wells produce at less than top allowable rates, in the neighborhood of 100 barrels of oil per day per well.



(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q Your next exhibit, Mr. Lelay, that's your gas and water production in the pool, is that correct?

A That is correct. The gas production is slightly less than the gas production to the north in the South Lane Pool. The water production is slightly higher. We produce approximately two barrels of water for every barrel of oil in all the wells, although they are indicated to be flowing on potential, they all go on the pump.

Q This water production has remained fairly static, is that correct?

A Yes, sir. Well, within the same ratio there I mentioned previously, two barrels of water to one barrel of oil.

Q Turn now to your core analyses, you have a core analysis of each of these wells, is that correct?

A That is correct. Each well drilled in the Inbe-Pennsylvanian Field was cored.

Q Let's start out with the first one there, our No. 1 Gulf State, and explain what it reflects.

A The first well, the Gulf State No. 1 was cored and analyzed by Darrell Smith Company, and the Bough "C" interval I have delineated on the exhibits. You will notice that there is

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a high streak of permeability which extends beyond the measuring equipment of the core laboratory and is indicated to be over 1,000 millidarcies. The porosity reaches a peak of approximately 12% with an average of about six to seven. Oil saturations and water saturations are not believed to be significant because of the high permeability, in which case the fluids were probably flushed from the core before it was analyzed.

Q Go to the core on the No. 2 well then.

A Our No. 2 well has very excellent permeability as well as porosity, and this again reflects the high permeability within the Bough "C". You can see that there is at least one streak that exceeds 1,000 millidarcies, which is greater than the measuring equipment. The same holds true for porosity and water saturations and oil saturations, as I mentioned in the core in the Gulf State No. 1.

Q You have streaks there that are 100 millidarcies?

A That is correct. We have excellent permeability in this well as well as porosity.

Q Turn to your No. 3 well.

A Our No. 3 well has two streaks which exceed 1,000 millidarcies and a very high average permeability as well as the porosity which is averaging close to 7%.

Q Let's go to the Southern Natural well.



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A The Southern Natural well is the furthest north well in the Inbe-Penn field and is fairly tight both in porosity and permeability compared with the three Gulf State wells. You will notice an indicated permeability of 12 millidarcies maximum as well as lower porosity.

Q Actually in the north part of your pool, referring back to your Exhibit No. 1, your formation has just tightened up completely in the Sun well?

A That is correct.

Q And it's real tight in the Southern Natural well?

A That is correct.

Q So that is the northern edge of the pool that is tightening up and your pool just ends shortly thereafter, doesn't it?

A That is correct. It looks as though as you go to the north we are getting a very tight Bough "C" section and so far to the south we've encountered excellent permeability and porosity.

Q This is typical of your Bough "C", isn't it, that's where your pool ends where it tightens up, isn't it?

A That's correct. Most Bough "C" pools have at least one side of the pool that is a permeability barrier which does not allow fluids to migrate any further.

Q Let's go back, then, to your next exhibit after your cores, Mr. Lemay. This is your tabulation of your rock and fluid



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characteristics of the four wells and the average, is that correct?

A That is correct.

(Whereupon, Applicant's Exhibit No. 6 was marked for identification.)

Q Without going through each individual one, your averages show what?

A Our averages show that we have a sufficient net pay to compare with an average Bough "C" pool excellent permeabilities, and the typical Bough "C" drive mechanism which is gas solution, possible partial water drive.

Q You've shown on your permeabilities, Mr. LeMay, that in each of your three wells you have some portion of it where it runs over a thousand, and taking the averages and even throwing in the Southern Natural well you still have an average of 104.3 millidarcies for the pool as a whole?

A That is correct, which is considered excellent.

Q Is there anything else you wish to point out in connection with this?

A No, sir. I think the next exhibit will reflect certain things.

Q Let's to to your next exhibit.

(Whereupon, Applicant's Exhibit 7 was marked for identification.)



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A This next exhibit is a comparison of the rock and fluid properties of the Inbe-Pennsylvanian Pool versus the South Lane-Pennsylvanian Pool. The producing formations in both instances is the Bough "C" formation. However, the Bough "C" in the Inbe area is approximately 100 feet deeper than in the South Lane area. We have slightly less gross feet of pay, but approximately the same average net feet. Our porosities are close.

I might point out we calculated our porosities and permeabilities on the basis of core analyses and not on the basis of log analyses, and this would be considered more conservative than the log analysis.

Our water saturation is higher, this is reflected by a higher rate of water production in the Inbe field, our permeabilities compare favorably, both fields have excellent permeability.

Q In there I believe you show in the South Lane that they have 1,069 permeability and you are reflecting yours over a thousand?

A That is correct.

Q Now, those have the big stringers of permeability that you have in each of your three wells?

A That is correct.

Q Your average is over a hundred, taking the whole Bough "C" section?



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A That is true, taking the entire net pay section it averages over 100 millidarcies. The original pressures are close. We have less pressure but we have less gas in solution. The gas in solution, as I mentioned previously, we have less gas in solution and this is reflected through gas production figures. The other factors mentioned here are very close if not identical, the formation volume factor and oil viscosity is the same. The gravity of the oil is very close to the gravity in the South Lane Pool, 47.5 to 46.2.

Q Turn to your recovery calculations which you made, Mr. LeMay. Using the factors you've outlined, you come up with a figure of 77.6 barrels per acre feet in place, is that correct?

A That is correct. Recoverable.

(Whereupon, Applicant's Exhibit No. 8 was marked for identification.)

Q Recoverable, excuse me. 194 in place, 77.6 recoverable?

A Correct, that is per acre foot.

Q Which goes down to the 40-acre and 80-acre calculations at the end there, which are what?

A The oil in place under 40 acres are calculated to be 100,880 barrels; under 80 acres, 201,760 barrels; using a 40% recovery factor, which is considered quite generous in this case because I'm assuming a partial water drive, by using that figure



we come up with recoverable oil under 40 acres would be 40,352, and under 80 acres, 80,704 barrels.

Q If you don't have that water drive it's going to be pretty disastrous, isn't it?

A Very disastrous.

(Whereupon, Applicant's Exhibit No. 9 was marked for identification.)

Q Let's go over to your economics then.

A My final exhibit shows the marginal character of this pool. The cost of drilling, completing and operating these wells is quite high because of the fact they have to be pumped from the start, and Kobe pumps have been used, which are expensive pumps, but they will move the fluid.

I have shown through my calculations that the operating cost per barrel figures close to 45¢ per barrel, the price of crude minus taxes and incorporating the operating cost nets us a price of \$2.37 per barrel. This times the operators net recoverable barrels of oil, and this is assuming a 7/8ths interest lease, this would equal \$83,680 recovered under 40 acres and under 80 acres, the operator could recover \$167,360 under an 80-acre tract. This figure compares with the cost of drilling, completing, equipping and pumping a well which is figured at \$154,720.00. So you can see that the margin of profit involved even under 80 acres

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is very slim.

Q Now, Mr. LeMay, is there any possible way that this pool can be economically drained on 40 acres?

A There is no way.

Q The information which you have available as to drainage is based on the permeabilities of the wells, and does that indicate to you that a well will drain 80 acres in this area?

A Yes, sir, it does.

Q And does this pool compare in its drainage characteristics favorably with the other Bough "C" pools in the area --

A Yes, sir.

Q -- which are on 80-acre spacing?

A Yes, sir, it does.

Q Does that lead you to conclude that one well in this pool will efficiently and economically drain 80 acres?

A Yes, sir.

Q Is it your recommendation that the temporary pool rules for the Inbe-Pennsylvanian Pool be made permanent?

A Yes, sir.

Q Were all exhibits presented here prepared by you, Mr. LeMay?

A Yes, sir.

MR. BRATTON: We would offer in evidence all of

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Applicant's exhibits.

(Whereupon, the Applicant's exhibits were offered in evidence.)

Q (By Mr. Bratton) Do you have anything further you care to state in connection with this matter?

A I might mention that the Case No. 2554 which was heard by the Commission June 5th and granted on the Commission Order No. 2554 is very similar in every respect to our Inbe-Pennsylvanian Pool and it looks as though the pools will be separated only by a possible permeability barrier which is starting to be reflected in the north end of our pool. Besides this the conditions and operation in both pools are almost identical.

Q That's the South Lane Pool and this one?

A The South Lane and Inbe-Penn, yes, sir.

MR. BRATTON: We have nothing further at this time.

CROSS EXAMINATION

BY MR. UTZ:

Q Do French or anyone that you know of have any more plans for drilling any more wells in this area?

A Yes, sir, we have plans for starting the No. 4 well.

Q Where would it be?

A Approximately 1980 from the south and 660 from the west line of Section 18. This well will probably be started around the

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first of October.

Q You feel that the pool extends to the south?

A Yes, sir, I do.

Q How deep are these wells?

A They vary between 9800 and 9900, approximately.

Q That was 660 from the west of Section 18, 1980 from the south?

A That is correct. We have a checkerboard 80 pattern in the field with Gulf. Gulf owns the non-drilled 80 acres.

Q You feel that you have a partial water drive here?

A Yes, sir, I do.

Q So you haven't attempted any interference tests?

A No, we have not.

Q Is that the reason?

A That and the economical aspect of the pool itself. We are hesitantly drilling wells because of the economic recoveries this far.

Q What would economics have to do with running of the interference test?

A Possibly the cost of the interference test and the possible loss of production.

Q You realize in other pools we have granted transfer of allowables as far as loss of production is concerned?



A Yes, sir. All wells currently in the pool are producing at less than top allowable rate and there can be no recovery of production from other wells.

Q I see. They're all marginal wells then?

A That is correct.

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

MR. DURRETT: None.

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. UTZ: Any statements to be made in this case?

The case will be taken under advisement. We'll take a recess.

(Whereupon, a recess was taken.)

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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 21st day of August, 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 in the Examiner hearing of Case No. 7035, heard by me on *Aug 3* 1963.
[Signature], Examiner
New Mexico Oil Conservation Commission.

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BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 11, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of L. R. French, Jr. for an order creating a new pool and establishing temporary rules or extension of the South Lane Pennsylvanian Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order creating a new pool for Pennsylvanian production; the discovery well for said pool is the Gulf-State Well No. 1, located in Unit A of Section 18, Township 11 South, Range 34 East, Lea County, New Mexico, completed in the Bough "C" zone of the Pennsylvanian formation. Applicant further seeks establishment of special rules and regulations governing said pool, including 80-acre pro-ration units. As an alternative, applicant seeks extension of the South Lane Pennsylvanian Pool to include said Gulf-State Well No. 1.

Case 2635

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 2635.

MR. DURRETT: Application of L. R. French, Jr. for an order creating a new pool and establishing temporary rules or extension of the South Lane Pennsylvanian Pool, Lea County,

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New Mexico.

MR. BRATTON: Howard Bratton appearing on behalf of the applicant. We have one witness, Mr. LeMay.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 11 were marked for identification.)

WILLIAM J. LEMAY

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name and occupation?

A William J. LeMay, consulting geologist.

Q You consulted Mr. French in connection with the matters under consideration in this application?

A Yes, sir.

Q Have you testified before this Commission previously?

A No, I have not.

Q Please state briefly your professional and educational background.

A Bachelor of Arts degree from Carlton College in 1955, major in geology, a Master of Science degree from the University



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of Michigan in 1956. I have worked three years for Pan American in Roswell and Lubbock and three years for Hondo Oil and Gas Company in Roswell, New Mexico, and four months as a consulting geologist.

Q And you have been consulting on the well in question and the area in question in this application?

A Yes, sir, I have.

MR. BRATTON: Are the witness's qualifications acceptable, Mr. Examiner?

MR. UTZ: Yes, sir.

Q Mr. LeMay, what is Mr. French seeking in this application?

A We would like to have temporary rules for 80-acre spacing and 80-acre allowable with a flexible spacing in this one well field, which is producing from the Bough C formation of the Pennsylvanian.

Q This is another Bough C Pennsylvanian discovery and it's approximately two miles south of the South Lane Pool, is that correct?

A That is correct.

Q And that's another of the Bough C Pennsylvanian pools?

A That is correct.

Q Identifying the area in question and the well specifically,



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refer to your Exhibit No. 1, Mr. LeMay.

A Our well is located in Section 18 of Township 11 South, Range 34 East, 660 feet from the north and the east line. It was a wildcat location and it flowed oil from the Bough C formation.

Q That's the area colored in yellow?

A That is correct.

Q And the area circled in green to the north of it is the South Lane Pennsylvanian Pool?

A That is correct.

Q The Bough C Pool likewise? A That's right.

Q What else do you care to state about that exhibit, Mr. LeMay?

A It shows the ownership in the surrounding areas as well as the 80 acres allocated to the discovery well.

Q That's the 80 acres that we would like to allocate to it?

A Correct, that we would like to allocate.

Q Turn to your Exhibit No. 2 and explain what that is.

A Exhibit 2 is a structure map contoured on top of the Bough C formation, the subject area. The contour interval is 50 feet. The area extends up through the South Lane field, which likewise produces from the Bough C formation, Case No. 2554. Our position and our well is very comparable to the area of the



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South Lane field. A, you can see, the well lies on what I feel is relatively steep dip and pinches out on top of the structure.

Q There's no control, of course, between here and the South Lane Pool and we don't know whether there are permeability barriers in there or not, is that correct?

A That is correct.

Q It's conceivable that the two areas could connect or there could be areas of no permeability in there?

A That is correct. There's no control. There's no way to tell.

Q Is there anything further you care to explain geologically from this structure map, Mr. LeMay?

A I would like to point out the fact that we are at approximately the same structural position on the steep dip as wells to the north. We are 180 feet low to the high wells, but this has been proven to be an area of steep dip. Therefore, our structural position is comparable to the field to the north. The structures run north-south in that area.

Q I don't believe they are included in the folio, but the Examiner has copies of Exhibits 3, 4 and 5 which are logs of this well, is that correct?

A That is correct.

Q What are those logs and what have you marked on that?



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A We have run a gamma ray acoustic log, a lateral log and a microlateral log. The gamma ray acoustic log has the top and the base of the Bough C formation written on them. The reservoir calculations were derived in part from the logs we ran, and in part from a core analysis. We did core the Bough C formation.

Q In part, based off of those logs, you have devised some of your information that you will use later in the case, is that correct?

A That is correct.

Q Is there anything further depicted on those three logs that you care to bring out?

A No, sir, except that the logs do show water saturations which were included in here, as well as the gross Bough C interval.

Q Turn to your Exhibit No. 6, Mr. LeMay, which is your well history of the well in question. Go briefly through the significant parts of that, please.

Q The well was drilled to a depth of 10,500 feet; the Bough C formation was cored and drill stem tested, the results are as follows: There was a strong blow throughout. The test tool was open 3 hours 20 minutes, gas surfaced in 2 minutes, mud in 2 hours 10 minutes, oil in 2 hours 17 minutes. It flowed to the pits for 15 minutes, to the tanks for 48 minutes. However, there was no gauge because the well barely flowed. We reversed out



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15 barrels of fluid, 15% of which was water, and recovered 30 feet of heavy oil and gas cut drilling mud below the sub. The 30 minute shut-in pressure was 3510 pounds. The 1½-hour final shut-in pressure was 3310 pounds; the flow pressures, 520 and 1870 pounds. The pipe was set, 4½" casing was set to a depth of 9986'. The well was perforated between 9867 and 9875. It was washed with 500 gallons of mud acid. Then on August 19, 1962 the wells flowed 322 barrels of oil and 198 barrels of water through a 26/64" choke. Gravity of the oil was 44 gravity. Initial reservoir pressure test was made, a bomb test, the pressure was 3384 pounds.

Q Let's go, then, to your reservoir characteristics of your rock and fluid. That's your Exhibit No. 7, Mr. LeMay. What does that reflect?

A This reflects in general the properties of the Bough C as encountered in our well. The top of the Bough C is at 9862. We have a gross pay thickness of 21 feet, a net pay thickness of 9 feet, porosity averaged out is 7.2%, the average water saturation through the interval is 29%, the average permeability, again a weighted average of core analysis, is 115 md.

The other information consists of the reservoir temperature which was reported at 156 degrees Fahrenheit, formation volume factor of 1.88, oil viscosity of 0.18, gravity of the oil, 44



degrees, and as I mentioned previously, the original reservoir pressure, 3384 pounds.

Q Your core analysis is your last exhibit here off of which you derived your porosity and your permeability, is that correct?

A That is correct.

Q And your net pay?

A I would like to point one thing out at this time. On the core analysis that there was a 16 foot depth correction factor between the depths, the drilling depths as shown on the core analysis and the log depths. This was an error in the drilling.

Q Now, Mr. LeMay, based on that, what recoveries have you calculated for this Bough C Pool?

A Assuming an average porosity of 7.2%, water saturation of 29%, net pay of 9 feet and recovery factor of 40%, because I believe we have water drive although there's still insufficient evidence, other fields in the area producing from the Bough C have shown to be water drive, so that is the assumption in this case. I have calculated 208 barrels per acre foot oil in place, 83.2 barrels per acre foot recoverable oil, 1,872 barrels per acre oil in place, 748.8 barrels per acre recoverable oil.

Oil in place under 40 acres, 74,880 barrels; under 80 acres, 149,760 barrels; recoverable oil, 29,952 barrels under 40 acres;

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59,904 barrels under 80 acres.

Q Turn then to your next exhibit, Mr. LeMay.

A The next exhibit is a comparison of the rock and fluid properties in our L. R. French, Jr. No. 1 Gulf State and the T. F. Hodge well which was a discovery well in the South Lane field, Case No. 2554.

Q That's the pool just immediately to the north that we've depicted on our first exhibit there?

A That is correct.

Q Go ahead.

A The depth of the Bough C formation in our L. R. French well, 9862 feet as compared to 9607 feet in the T. F. Hodge well. Gross pay, we had 21 feet, the Humble State well, 30 feet. Our net pay was 9 feet, theirs was 16 feet. Porosities were the same, 7.2%; water saturations, our calculations 29%, their well 15%, although in the hearing they thought this factor was quite a bit too low. Our permeabilities averaged 115 millidarcies, theirs 94. Original reservoir pressure, 3384 and our well 3473; in the Hodge well, gas in solution, we had this calculated from DST, which is a very estimated calculation, 1220; T. F. Hodge GOR is 1550. Our original reservoir pressure, 156, in the Humble State 143. Formation volume factors are the same, 1.88. Oil viscosity, same, 0.18. Our gravity, 44 degrees API, theirs,

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47 degrees.

Q So, on a comparison of the two areas, this area showed at least as well and probably better from a drainage standpoint, is that correct?

A That's correct. We had a greater average permeability than their well although our net pay thickness was lower.

Q So we should be able to drain as wide an area and probably wider, but our recoveries don't look as good?

A That is correct.

Q So our economics are, to say the least, are not too optimistic?

A No.

Q Let's turn, then, to those, Mr. LeMay, on Exhibit No. 9.

A No. 9 compares the economics of drilling on 40 acres as compared with drilling on 80-acre spacing pattern. Recoverable oil in barrels as given previously under 40 acres, 29,952 barrels. Under 80, 59,904 barrels. Assuming a 7/8 interest lease which is very optimistic because the majority of operators do not have that, it nets out 26,218 barrels under 40 acres and 52,436 barrels under 80 acres. Taking a price of \$3.01 minus the taxes which are figured at .18¢ per barrel and the trucking at .12¢ per barrel, that would leave a net price per barrel of \$2.71. This times the recoverable oil under 40 acres would be \$71,051; under 80 acres,

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\$142,102. The cost of drilling our first well was one hundred -- of drilling, testing and completing the first well was \$147,986. To this we add a cost of tank battery and flow lines, \$7,840, and we were just in the process of installing a pump, a KOBE pump, which will cost \$19,107, which gives a total cost of \$174,933.

Because this well went to 10,500 feet and we did core and test it quite a bit more than we would a field well, we estimate that subsequent development in the area would be in the neighborhood of \$134,000 per well.

Q Mr. LeMay, the way this comes out, even on 80 acres a well would appear to be either no profit or a losing proposition?

A That is correct.

Q But that assumes that all locations in the pool were simultaneously drilled, is that correct?

A That is right.

Q Is it your estimate that this pool, as with the other Bough C Pools, North Lea County and South Roosevelt, drain actually over tremendous areas?

A I think that's been proven in previous Commission hearings, that there is evidence that one Bough C well will drain a very large area.

Q So we do hope to make some profit on the wells. We are

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not going to drill them to lose money, is that correct?

A That is correct. Also I would like to point out that we only had 9 feet of net pay in this well. We do hope subsequent development will produce a larger pay section than 9 feet, which is probably slightly below the average pay in the Bough C as a formation.

Q Most of those Bough C Pools have come closer to 15 feet?

A That is correct, 12 to 15 feet could be considered average.

Q Is there any question in your mind but what one well in this pool will efficiently and economically drain 80 acres?

A No, sir.

Q As a matter of fact, it would drain considerably more than 80 acres, is that not correct?

A That is correct.

Q In your opinion would the drilling of wells in this pool on 40 acres result in economic waste?

A It certainly would.

Q In your opinion, Mr. LeMay, would the granting of this application for temporary 80-acre spacing in this pool result in prevention of waste and the protection of correlative rights?

A Yes, it would.

Q Mr. LeMay, in your judgment, is it advisable to have



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both flexible spacing and locations in this proposed pool?

A Yes. I think it's been proven in the past that flexibility in location is very desirable in developing Bough C Pools.

Q That has been or has become pretty well accepted in the field rules that have been established for subsequent Bough C Pools, is that correct?

A That is correct. It was granted in the South Lane field to the north of us.

Q I believe your last exhibit was just the core analyses we referred to previously, is that correct?

A Yes.

Q Is there anything further you care to state in connection with this application, Mr. LeMay?

A No, sir.

Q I believe you would anticipate the 80-acre proportional depth factor for the nine to ten thousand feet since this was a discovery well and it was topped at approximately 9800 feet, is that correct?

A That's correct.

Q Were each of these exhibits prepared by you or under your supervision?

A They were prepared by me.



MR. BRATTON: We would offer in evidence Applicant's Exhibits 1 through 11, I believe it is, inclusive.

MR. UTZ: Without objection Exhibits 1 through 11 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 11 were entered into evidence.)

MR. BRATTON: We have nothing further at this time, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Would you expect this pool to be very wide from east to west?

A It's hard to say at this time, Mr. Examiner. I wouldn't expect it to be over two miles wide at this time.

Q What type of structure would you classify it as?

A I would call this a stratigraphic trap with the evidence we have to date. I think that there has been one well drilled in Section 22 of 10, 33 in the southeast corner, which was high enough to produce, but which encountered shale in the normally porous Bough C formation. Therefore, on the basis of this well and this well alone, I think the Bough C porosity pinches out to the west and also carries proportionately more water down dip. The Humble well in the South Lane field, the discovery field, was a

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water-free completion. We are currently producing approximately 30% water in our well.

Q And you feel that if there is a water drive, it's from down structure?

A Yes, sir.

Q Is it unusual for stratigraphic traps to also have water drive?

A No, sir. I think the Allison is in part stratigraphic, as a classic example of this type situation.

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

(Witness excused.)

MR. UTZ: Are there other statements in this case?

MR. BRATTON: No, sir. I would make one statement, I believe, we sincerely hope it's a water drive, if it isn't we are in trouble.

MR. UTZ: The case will be taken under advisement.
Let's take a ten-minute recess.

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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 2nd day of October, 1962.

Ada Dearnley
 Notary Public-Court Reporter

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2625 heard by me on *Sept 7*, 19 *62*.
Thos D. [Signature] Examiner
 New Mexico Oil Conservation Commission

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CASE 2355: (Reopened) 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 2635: (Reopened) In the matter of Case 2635 being reopened pursuant to the provisions of Order No. R-2325, which order established temporary 80-acre proration units for the Inbe-Pennsylvanian 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 proration units.

CASE 2878: Application of Humble Oil & Refining Company for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (tubingless) of its New Mexico State "S" Well No. 25, located in Unit N of Section 2, Township 22 South, Range 37 East, Lea County, New Mexico, to produce oil from the Penrose-Skelly and Wantz Abo Pools and an undesignated Granite Wash zone through parallel strings of 2-7/8 inch casing cemented in a common well bore.

CASE 2879: Application of Humble Oil & Refining Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its State "M" lease in Sections 19, 20, 29, 30 and 31, Township 22 South, Range 37 East, Lea County, New Mexico, by the initial injection of water into the Queen formation of the Langlie Mattix and Eumont Pools through six wells located in Sections 20, 29, and 30. Applicant further seeks the contraction of the Eumont Pool by the deletion therefrom of all of Section 19 and the S/2 SW/4 and NE/4 SW/4 of Section 20, Township 22 South, Range 37 East, and the extension of the Langlie-Mattix Pool to include said acreage.

CASE 2880: Application of Marathon Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Box Canyon Unit Area comprising 10,560.48 acres of State, Federal and Fee lands in Townships 21 and 22 South, Range 21 East, Eddy County, New Mexico.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 7, 1963

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, as alternate examiner:

- CASE 2871: Application of Bolack-Greer, Inc. for a unit agreement, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Canada Ojitos Unit Area comprising 35,829.84 acres of Federal and Fee lands in Townships 25 and 26 North, Ranges 1 East and 1 West, Rio Arriba County, New Mexico.
- CASE 2872: Application of Texaco Inc. for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Woolley Unit Area comprising 2,080 acres of State and Federal lands in Township 17 South, Range 30 East, Eddy County, New Mexico.
- CASE 2873: Application of Texaco Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Barry Unit Area comprising 2427.24 acres of State land in Township 21 South, Ranges 33 and 34 East, Lea County, New Mexico.
- CASE 2874: Application of Murphy H. Baxter for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Rocky Arroyo Unit Area comprising 2560 acres of Federal, State and Fee lands in Township 21 South, Range 25 East, Eddy County, New Mexico.
- CASE 2875: Application of Perry R. Bass for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to drill a gas well at an unorthodox location 1980 feet from the South line and 660 feet from the West line of Section 21, Township 19 South, Range 32 East, Lusk Morrow Gas Pool, Lea County, New Mexico.
- CASE 2876: Application of Consolidated Oil & Gas, Inc. for an unorthodox location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks permission to recomplete 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.
- CASE 2877: Application of Continental Oil Company for an extension of the provisions of Order R-2476, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an extension of the provisions of Order R-2476 which authorized certain interference tests and transfer of allowables between wells during the tests in the Oil Center Blinbry Pool.

Case 2635

Heard 8-7-63

Rec. 8-16-63,

1. Grant L.R. French, Jr. a permanent 80 ac. order for the Duke-Penn. Oil Pool. In effect simply make Order R-2325 a permanent order.

Therrell

State of New Mexico
Oil Conservation Commission



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

Mr. Howard Bratton
c/o Hervey, Dow & Hinkle
Box 10
Roswell, New Mexico

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 y

Artesia OCC

Astec OCC _____

OTHER _____

DOCKET: EXAMINER HEARING - TUESDAY - SEPTEMBER 11, 1962

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 2612 (Continued)

Application of Texaco Inc. for a tubing exception, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to produce its C. C. Fristoe (b) NCT-2 Well No. 6, located in Unit H of Section 35, Township 25 South, Range 37 East, Lea County, New Mexico, North Justis-Devonian Pool, through a string of 1 1/2-inch OD tubing run with a packer inside of a 2 7/8-inch OD casing.

CASE 2626: Application of La Plata Gathering System, Inc., for a dual completion at an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of a Basin Dakota-Blanco Mesaverde dual completion at an unorthodox location 1680 feet from the South line and 734 feet from the East line of Section 19, Township 32 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 2627: Application of La Plata Gathering System, Inc., for an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox Blanco Mesaverde well location 1,790 feet from the North line and 790 feet from the East line of Section 24, Township 32 North, Range 6 West, Rio Arriba County, New Mexico.

CASE 2628: Application of Marathon Oil Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox gas well location in the Atoka-Pennsylvanian Gas Pool at a point 990 feet from the North line and 990 feet from the East line of Section 30, Township 18 South, Range 26 East, Eddy County, New Mexico.

CASE 2629: Application of S. P. Yates Drilling Company for approval of a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Pecos River Deep Unit Agreement comprising 17,257.82 acres, more or less, of State, Federal and Fee lands in Township 19 South, Ranges 26 and 27 East, and Township 20 South, Range 26 East, Eddy County, New Mexico.

PAGE -3-

Docket No. 26-62

Examiner Hearing September 11, 1962

CASE 2635: Application of L. R. French, Jr. for an order creating a new pool and establishing temporary rules or extension of the South Lane Pennsylvanian Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order creating a new pool for Pennsylvanian production; the discovery well for said pool is the Gulf-State Well No. 1, located in Unit A of Section 18, Township 11 South, Range 34 East, Lea County, New Mexico, completed in the Bough "C" zone of the Pennsylvanian formation. Applicant further seeks establishment of special rules and regulations governing said pool, including 80-acre proration units. As an alternative, applicant seeks extension of the South Lane Pennsylvanian Pool to include said Gulf-State Well No. 1.

CASE 2639: Application of General American Oil Company of Texas for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a pilot waterflood project in the Upper San Andres formation, Grayburg-Jackson Pool, Eddy County, New Mexico, by the injection of water into its Keeley "B" Well No. 13, located in Unit H, Section 26, Township 17 South, Range 29 East.

CASE 2640: Application of General American Oil Company of Texas for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a pilot waterflood project in the Grayburg zone of the San Andres formation, Grayburg-Jackson Pool, Eddy County, New Mexico, by the injection of water into its Keeley "C" Well No. 25, located in Unit O, Section 25, Township 17 South, Range 29 East.

CASE 2641: Application of Continental Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard 80-acre gas proration unit, Blinbry Gas Pool, Lea County, New Mexico, said unit to comprise the NW/4 NW/4 and SE/4 NW/4 of Section 10, Township 21 South, Range 37 East, and be dedicated to applicant's State 10 Well No. 1, located in the NW/4 NW/4 of said Section 10.

ir/

Close 2635
L. R. FRENCH, JR.
WILLIAM J. LE MAY, GEOLOGIST
610 SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO

AREA CODE 505 623-1474

AUG 24 1962

August 24, 1962

Mr. A. L. Porter
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter,

We would like to appear before the Commission on September 11, 1962, to apply for 80 acre spacing for our recent Bough "C" discovery well, the L.R. French, Jr. No. 1 Gulf State, located 660' from the North and East lines of Section 18, T.11-S., R.34-E, Lea County, New Mexico

Very Truly Yours,

William J. LeMay
William J. LeMay

*Decker
Noted
8/31/62*

DOCKET FILED

Date 7-29-63

GOVERNOR
EDWIN L. MECHAM
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER



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

P. O. BOX 871
SANTA FE

October 3, 1962

Mr. Howard Bratton
Harvey, Dow & Hinkie
Attorneys at Law
Box 10
Roswell, New Mexico

Re: CASE NO. 2632 and 2635
ORDER NO. R-2326 and R-2325
APPLICANT:
Humble Oil & Refining Company and
R. L. French, Jr.

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

DOCKET MAILED

Date 7-29-63

2:00
Case 2635
Heard 9-4-62
Rec. 9-24-62

Grant L. R. French, Jr. 80 A.C.
spacing, temporary for 1 yr. in the
~~S. Lane~~ ~~at~~ Penn Oil Pool.

Grant separable spacing using
order for S. Lane - Penn R-225B
page 128 Byrums.

Grant a new pool to be called
the Inbe - Penn Oil Pool. Horizontal
limits to be E 1/2 NE 1/4 sec 18 - 115 - 34 E.

Discovery well is French - Gulf St.

#1 A 18 - 11 - 24. Top perf are 9867.

Grant an 80 A.C. Acres of 4.77 for pool.
9-10 M ft.

Thos. W. F.

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. 2635
Order No. R-2325

APPLICATION OF L. R. FRENCH, JR.,
FOR THE CREATION OF A NEW OIL POOL
AND FOR THE ESTABLISHMENT OF TEMPO-
RARY 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 September 11, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, 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 3rd day of October, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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 a new oil pool for Pennsylvanian production should be created and designated the Inbe-Pennsylvanian Oil Pool. This pool was discovered by the L. R. French, Jr., Gulf-State Well No. 1, located in Unit A of Section 18, Township 11 South, Range 34 East, NMPM, Lea County, New Mexico. Said well was completed in the Bough "C" zone of the Pennsylvanian formation August 19, 1962, and the top of the perforations is at 9867 feet.
- (3) That L. R. French, Jr., seeks promulgation of temporary special rules and regulations for the Inbe-Pennsylvanian Oil Pool to provide for 80-acre proration units therein.
- (4) That the evidence concerning the reservoir characteristics of the Inbe-Pennsylvanian Oil Pool justifies the establishment of 80-acre proration units for said pool for a temporary one-year period.
- (5) That the evidence establishes that the Inbe-Pennsylvanian Oil Pool can presently be efficiently and economically drained on 80-acre proration units.

-2-

CASE No. 2635
Order No. R-2323

(6) That during the one-year period in which this order will be in effect, the applicant should gather all available information relative to drainage and recoverable reserves in the subject pool.

(7) That this case should be reopened at an examiner hearing in August, 1963, at which time the operators in the subject pool should be prepared to appear and show cause why the Inbe-Pennsylvanian Oil Pool should not be developed on 40-acre proration units.

IT IS THEREFORE ORDERED:

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

TOWNSHIP 11 SOUTH, RANGE 34 EAST, NMPM
Section 18: E/2 NE/4

(2) That Special Rules and Regulations for the Inbe-Pennsylvanian Oil Pool are hereby promulgated as follows, effective October 1, 1962.

SPECIAL RULES AND REGULATIONS
FOR THE
INBE-PENNSYLVANIAN OIL POOL

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

RULE 2. Each well completed or recompleted in the Inbe-Pennsylvanian Oil Pool shall be located on a unit containing 80 acres, more or less, which consists of the N/2, S/2, E/2, or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

RULE 3. For good cause shown, the Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when the application is 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

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application shall state that such notice has been furnished. The Secretary-Director may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the Inbe-Pennsylvanian Oil Pool as the acreage in such non-standard unit bears to 80 acres.

RULE 4. The initial well on any 80-acre unit in said pool shall be located within 150 feet of the center of either quarter-quarter section or lot in the 80-acre unit. Any subsequent additional well on the 80-acre unit shall be located within 150 feet of the center of the other quarter-quarter section or lot in the unit.

RULE 5. An 80-acre proration unit (79 through 81 acres) in the Inbe-Pennsylvanian Oil Pool shall be assigned an 80-acre proportional factor of 4.77 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

(3) That this case shall be reopened at an examiner hearing in August, 1963, at which time the operators in the subject pool may appear and show cause why the Inbe-Pennsylvanian Oil Pool should not be developed on 40-acre proration units.

IT IS FURTHER ORDERED:

That applicant's well, the L. R. French, Jr., Gulf-State No. 1, located in Unit A of Section 18, Township 11 South, Range 34 East, NMPM, Lea County, New Mexico, shall receive an 80-acre allowable effective on October 1, 1962, or on the date Form C-128 is filed, showing thereon 80-acres dedicated to said well and accompanied by a substantiating well test on Form C-116, Gas-Oil Ratio Test, whichever date is later.

IT IS FURTHER ORDERED:

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



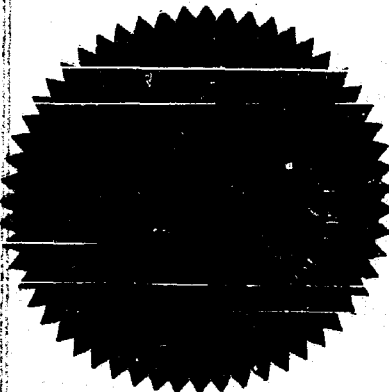
EDWIN L. MECHEM, Chairman



E. S. WALKER, Member



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



ear/

CASE 2636: Application of the OCC to
change the 1962 REGULAR HEARING DATES
FOR OCTOBER AND DECEMBER.