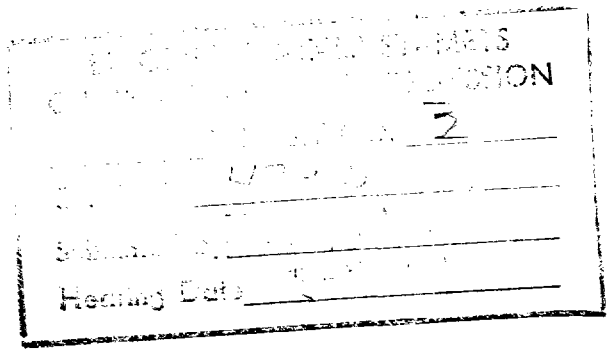
CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75207

March 22, 1972

RESERVOIR FLUID DIVISION



The Petroleum Corporation
3303 Lee Parkway
Dallas, Texas 75219

Attention: Mr. Larry C. Shannon

Subject: Reservoir Fluid Study
Tenneco Federal No. 1 Well
Wildcat
Lea County, New Mexico
Our File Number: RFL 72119

Gentlemen:

Samples of separator liquid and vapor were collected from the subject well during production testing on March 6, 1972. The samples were forwarded to our Dallas laboratory to be used in the performance of a reservoir fluid study. Presented in the following report are the results of this study as requested by The Petroleum Corporation.

After correction for the factors shown on page one, the producing gas-liquid ratio was calculated to be 8774 cubic feet of primary separator gas at 14.65 psia and 60° F. per barrel of stock tank liquid at 60° F. In the laboratory this ratio was determined to be equivalent to 6504 standard cubic feet of primary separator gas per barrel of primary separator liquid at 620 psig and 60° F. The hydrocarbon composition of the well stream material was calculated on the basis of the producing gas-liquid ratio and is given on page two of the report, along with the measured separator liquid and separator vapor compositions.

The separator samples were physically recombined in their producing gas-liquid ratio and the resulting mixture was examined in a visual cell at the reported reservoir temperature of 158° F. During a constant composition expansion at this temperature, the fluid exhibited a retrograde dew point

at 4676 psig. The results of the pressure-volume measurements, as well as the measured deviation factor at the dew point pressure and above, are presented on page three of the report. Given on page four are the data concerning the retrograde liquid accumulation as reservoir pressure declines.

It has been a pleasure to perform these determinations for you. If you have any questions regarding these data or if we may be of further assistance in any manner, please feel free to contact us.

Very truly yours,

Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses (JF)
P. L. Moses
Manager

PLM:JF:dl
7 cc. - Addressee

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 72119

Company	The Petroleum Corporation	Date Sampled	March 6, 1972
Well	Tenneco Federal No. 1	County	Lea
Field	Wildcat	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name	Ellenburger
Date First Well Completed	, 19
Original Reservoir Pressure	PSIG @ Ft.
Original Produced Gas-Liquid Ratio	SCF/Bbl
Production Rate	Bbls/Day
Separator Pressure and Temperature	600 PSIG 82 ° F.
Liquid Gravity at 60° F.	° API
Datum	Ft. Subsea

WELL CHARACTERISTICS

Elevation	Ft.
Total Depth	Ft.
Producing Interval	11634-11828 Ft.
Tubing Size and Depth	2-3/8 In. to 11110 Ft.
Open Flow Potential	MMSCF/Day
Last Reservoir Pressure	4729 PSIG @ * Ft.
Date	, 19
Reservoir Temperature	158 ° F. @ * Ft.
Status of Well	
Pressure Gauge	

SAMPLING CONDITIONS

Flowing Tubing Pressure		2530 PSIG
Flowing Bottom Hole Pressure		PSIG
Primary Separator Pressure		620 PSIG
Primary Separator Temperature		82 ° F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		° F.
Field Stock Tank Liquid Gravity		° API @ 60° F.
Primary Separator Gas Production Rate		985.3 MSCF/Day
Pressure Base	14.65 PSIA	
Temperature Base	60 ° F.	
Compressibility Factor (F_{pv})	1.060	
Gas Gravity (Laboratory)	0.677	
Gas Gravity Factor (F_g)	0.9413	
Stock Tank Liquid Production Rate @ 60° F.		112.3 Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio		8774 SCF/Bbl
	or	113.97 Bbls/MMSCF
Core Laboratories, Inc., Engineer		Tefteller, Inc.

REMARKS:
* DST Depth = 11706-11800 Ft.

File RFL 72119

Well Tenneco Federal No. 1

Hydrocarbon Analyses of Separator Products and Calculated Well Stream

Component	Separator Liquid Mol Per Cent	Separator Gas Mol Per Cent	Separator Gas GPM	Well Stream Mol Per Cent	Well Stream GPM
Hydrogen Sulfide	Nil	Nil		Nil	
Carbon Dioxide	0.06	0.14		0.13	
Nitrogen	0.09	1.64		1.43	
Methane	15.93	83.91		74.63	
Ethane	7.95	8.48		8.41	
Propane	10.24	3.70	1.012	4.59	1.256
iso-Butane	1.58	0.25	0.081	0.43	0.140
n-Butane	8.71	1.07	0.335	2.11	0.661
iso-Pentane	2.10	0.12	0.044	0.39	0.142
n-Pentane	6.74	0.30	0.108	1.18	0.425
Hexanes	6.93	0.13	0.053	1.06	0.430
Heptanes plus	39.67	0.26	0.117	5.64	3.494
	100.00	100.00	1.750	100.00	6.548

Properties of Heptanes plus

API gravity @ 60° F.	52.3			
Specific gravity @ 60/60° F.	0.7698			0.768
Molecular weight	153	103		151

Calculated separator gas gravity (air = 1.000) = 0.677
Calculated gross heating value for separator gas = 1168 BTU
per cubic foot of dry gas @ 14.65 psia and 60° F.

Primary separator gas collected @ 620 psig and 82 °F.
Primary separator liquid collected @ 620 psig and 82 °F.

Primary separator gas/separator liquid ratio	6504	SCF/Bbl @ 60° F.
Primary separator liquid/stock tank liquid ratio	1.349	Bbls @ 60° F./Bbl
Primary separator gas/well stream ratio	863.39	MSCF/MMSCF
Stock tank liquid/well stream ratio	98.40	Bbls/MMSCF

Pressure-Volume Relations of Reservoir Fluid at 158° F.
(Constant Composition Expansion)

Pressure PSIG		Relative Volume	Deviation Factor Z
7000		0.8817	1.253
6400		0.9034	1.174
5900		0.9253	1.108
5500		0.9454	1.056
5200		0.9630	1.017
5000		0.9766	0.992
4900		0.9834	0.979
4800		0.9907	0.966
4729	Reservoir Pressure	0.9961	0.957
4700		0.9982	0.953
4676	Dew Point Pressure	1.0000	0.950
4650		1.0020	
4600		1.0058	
4500		1.0155	
4300		1.0368	
4000		1.0756	
3600		1.1451	
3100		1.2725	
2600		1.4744	
2100		1.8109	
1861		2.0505	
1680		2.2899	
1408		2.7707	
1200		3.3001	
1077		3.7170	
961		4.2027	

Retrograde Condensation During Gas Depletion at 158° F.

Pressure PSIG		Retrograde Liquid Volume Per Cent of Hydrocarbon Pore Space
4676	Dew Point Pressure	0.0
4650		0.2
4600		0.6
4500		2.0
4300		5.5
4000	First Depletion Level	9.5
3100		16.3
2100		17.6
1200		16.3
700		15.0
0		12.6

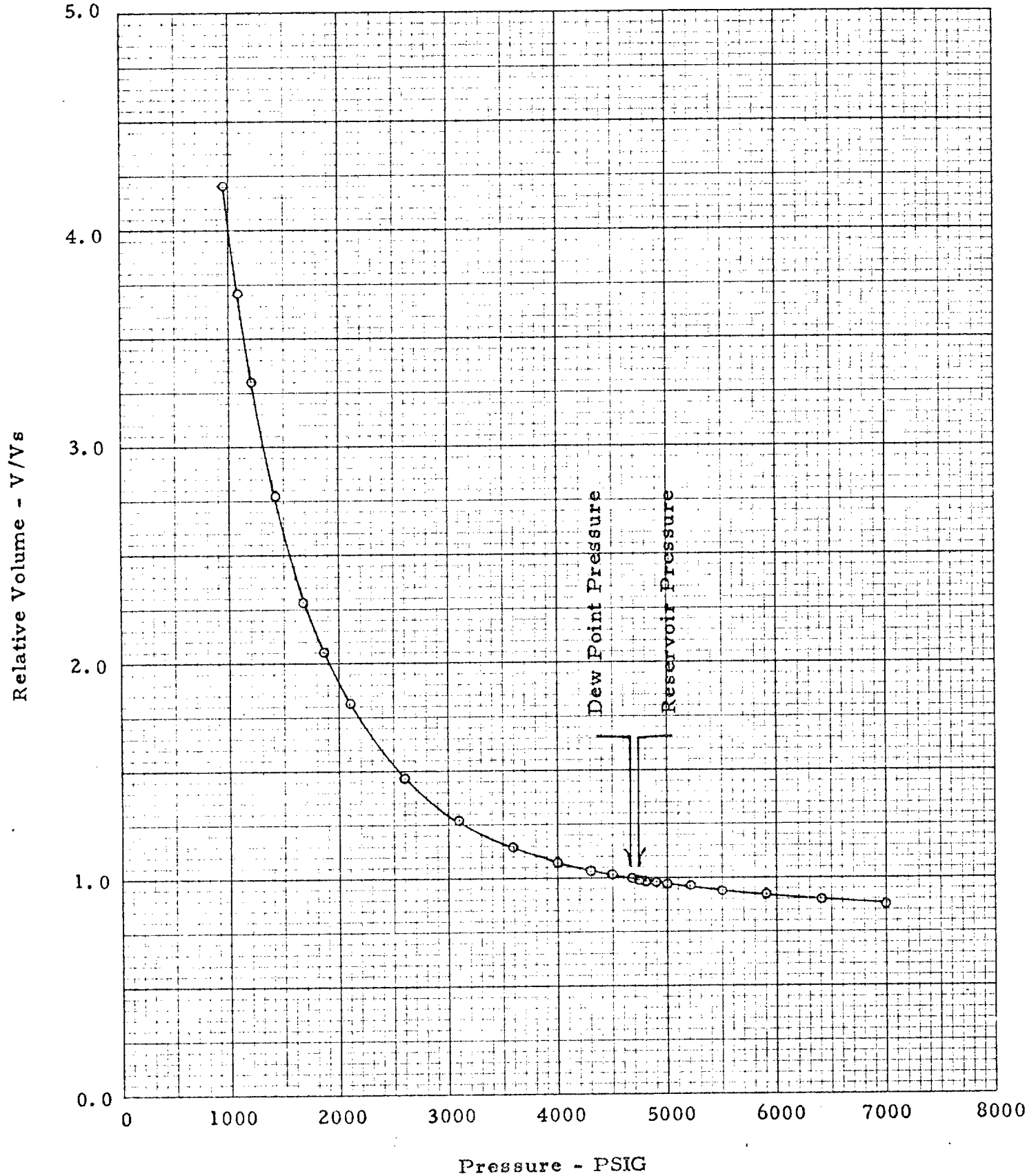
Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses (JF)

P. L. Moses
Manager

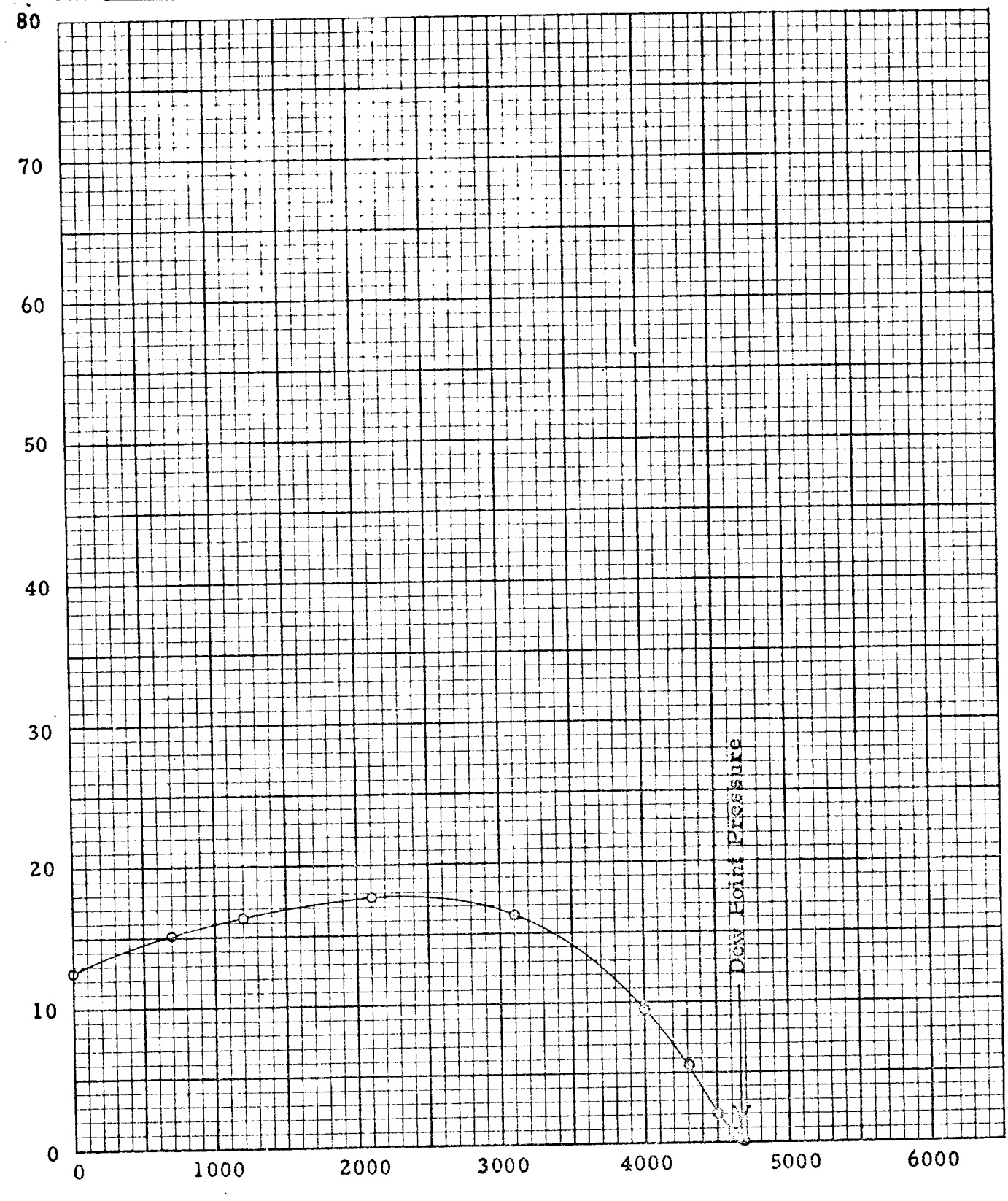
Pressure-Volume Relations of Reservoir Fluid at 158° F.

Company The Petroleum Corporation Formation Ellenburger
Well Tenneco Federal No. 1 County Lea
Field Wildcat State New Mexico



Retrograde Condensation During Depletion

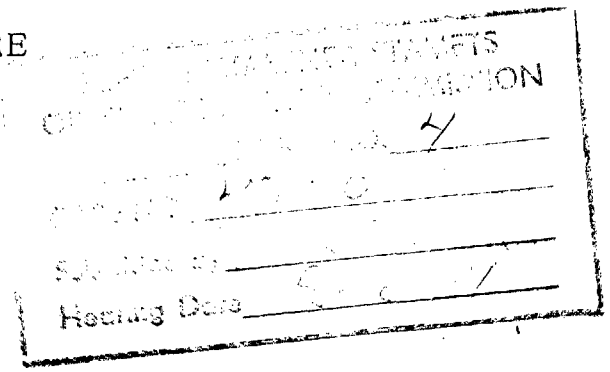
Company The Petroleum Corporation Formation Ellenburger
Well Tenneco Federal No. 1 County Lea
Field Wildcat State New Mexico



REQUEST FOR PERMANENT FIELD RULES
THE PETROLEUM CORPORATION OF DELAWARE

TENNECO FEDERAL WELL NO. 1
DUBLIN ELLENBERGER POOL
LEA COUNTY, NEW MEXICO

May 8, 1974



	Condensate Production	Gas Production	Cond. Yield B/M ^{2}	Static Surface Pressure	Average Flowing Pressure
1973					
January					
February				2,898 (DW)	
March	951	5,918	161		2,400
April	5,204	56,684	92	2,700	2,350
May	5,140	49,106	105		2,325
June	4,426	45,078	98	2,550	2,300
July	4,047	43,698	93	2,500	2,275
August	4,100	45,136	91	2,540 (DW)	2,200
September	4,058	44,353	92	2,500	2,100
October	4,013	44,598	90	2,500	2,100
November	2,202	20,467	108		1,900
December	4,353	37,225	117	2,200	1,800
1973 Total	38,494	392,263			
1974					
January	4,598	35,317	130	2,200	1,800
February	4,099	27,010	152	2,200	1,750
March	4,382	29,070	151	2,200	1,700
1974 Total To Date	51,573	483,660			

MGMABQC ABQ
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3032929920 MGM TDBN DENVER CO 100 05-03 0530P EDT
ZIP 87501

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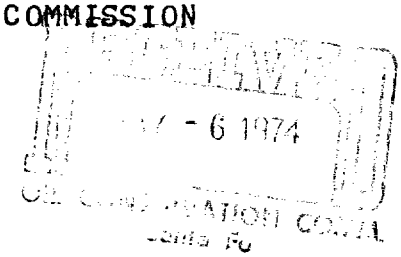

REFERENCE: CASE 4790

PLEASE BE ADVISED THAT TENNECO OIL COMPANY WISHES TO SUPPORT THE POSITION OF THE PETROLEUM CORPORATION IN THAT THE CURRENT TEMPORARY FIELD RULES FOR THE DUBLIN ELLENBURGER GAS POOL, ORDER R-4370, SHOULD BE MADE PERMANENT.

TENNECO OIL COMPANY D D MYERS 1860 LINCOLN ST SUITE 1200 DENVER CO 80203

1732 EDT

MGMABQC ABQ

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 8, 1974

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 4790: (Reopened) (Continued from April 10, 1974, Examiner Hearing)

In the matter of Case No. 4790 being reopened pursuant to the provisions of Order No. R-4370, which order established temporary rules for the Dublin-Ellenburger Gas Pool, Lea County, New Mexico, including a provision for 640-acre spacing. All interested parties may appear and show cause why said pool should not be developed on 320-acre spacing units.

CASE 5220: (Continued from the April 25, 1974, Examiner Hearing)

Application of Atlantic Richfield Company for an unorthodox gas well location and non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its McDonald State WN Well No. 24 located 1780 feet from the North line and 660 feet from the West line of Section 25, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to a 320-acre non-standard gas proration unit comprising the N/2 of said Section 25.

CASE 5229: Application of Texas International Petroleum Corporation for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Lowe-Federal Well No. 1 located in Unit H of Section 31, Township 20 South, Range 30 East, Golden Lane Field, Eddy County, New Mexico, in such a manner as to produce Strawn and Morrow gas through parallel strings of tubing.

CASE 5230: Application of Gulf Oil Corporation for the amendment of Order No. R-4079, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-4079 which authorized the commingling of Hobbs Grayburg-San Andres and Hobbs-Blinebry production from its W. D. Grimes "A" and "B" leases in Sections 32 and 33, Township 18 South, Range 38 East, Lea County, New Mexico, to include in said commingling authority Bowers-Seven Rivers production.

CASE 5231: Application of Mesa Petroleum Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Nash Unit Area comprising 5,124 acres, more or less, of State, Federal and fee lands in Township 23 South, Ranges 29 and 30 East, Eddy County, New Mexico.

CASE 5232: Application of Texas Pacific Oil Company, Inc. for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Phantom Draw Unit Area comprising 8,465 acres, more or less, of Federal, State and fee lands in Township 26 South, Range 31 East, Eddy County, New Mexico.

CASE 5233: Application of Burleson & Huff for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests down to and including the Queen formation underlying the SW/4 of Section 29, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico, to be dedicated to its Jenkins Well No. 3 located 760 feet from the South line and 1980 feet from the West line of said Section 29. Also to be considered will be the cost of recompleting and equipping said well and the allocation of such costs, as well as actual operating costs and charges for supervision. Also to be considered is the designation of applicant as operator of the well and a charge for risk involved in recompleting and equipping said well.

CASE 5234: Application of Atlantic Richfield for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 320-acre non-standard gas proration unit comprising the S/2 of Section 14, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be simultaneously dedicated to its McDonald WN State Wells Nos. 1 and 27 located in Units L and O, respectively, of said Section 14.

CASE 5235: Application of Atlantic Richfield Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the N/2 of Section 9, Township 21 South, Range 26 East, Eddy County, New Mexico, to form a standard 320-acre unit to be dedicated to a well to be drilled at a standard location for said unit, and pooling all mineral interests in the Pennsylvanian formation underlying the S/2 of said Section 9 to form a standard 320-acre unit to be dedicated to a well to be drilled at a standard location for said unit, if it is determined that said Section 9 should be developed on 320-acre spacing. Applicant further seeks a provision in said order that would pool all mineral interests in the Pennsylvanian formation underlying all of said Section 9 to form a standard 640-acre unit to be dedicated to a well to be drilled at a standard location for said unit if it is determined that said Section 9 should be developed on 640-acre spacing. Also to be considered will be the cost of drilling and completing said well, or wells, and the allocation of such costs, as well as actual operating costs and charges for supervision. Also to be considered is the designation of applicant as operator of the well, or wells, and a charge for risk involved in drilling said well, or wells.

CASE 5236: Application of Atlantic Richfield Company for five unorthodox oil well locations and an administrative procedure, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of five oil wells in the Horseshoe-Gallup Oil Pool in Township 31 North, Range 16 West, San Juan County, New Mexico, to be drilled at the following points: