

go CASE 6231: YATES PET. CORP. FOR
AN UNORTHODOX GAS WELL LOCATION, in
EDDY COUNTY, NEW MEXICO

CASE NO.

6231

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

DOCKET: COMMISSION HEARING - WEDNESDAY - FEBRUARY 7, 1979

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases are continued from the January 24, 1979, Commission Hearing.

CASE 6231: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1; a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6232: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JC" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
YATES PETROLEUM CORPORATION FOR AN
UNORTHODOX GAS WELL LOCATION, EDDY
COUNTY, NEW MEXICO

CASE NO. 6231

APPLICATION

COMES NOW YATES PETROLEUM CORPORATION, by its attorneys,
and in support hereof, respectfully states:

1. Applicant is the operator of the Morrow formation
underlying:

Township 18 South, Range 24 East, N.M.P.M.

Section 25: N/2

and proposes to drill its State "JM" No. 1 Well at a point
located 660 feet from the North line and 660 feet from the
East line of said Section 25.

2. The applicant seeks an exception to the well loca-
tion requirements of Rule 104-C.2(a) of the Oil Conservation
Division to permit the drilling of the well at the above men-
tioned unorthodox location to a depth sufficient to adequately
test the Morrow formation.

3. A standard 320-acre gas proration unit comprising
the N/2 of said Section 25 should be dedicated to such well or
to such lesser portion thereof as is reasonably shown to be
reasonably productive of gas.

4. The approval of this application will afford
applicant the opportunity to produce its just and equitable

6231

share of gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North line and 660 feet from the East line of said Section 25 and to dedicate the N/2 of Section 25, which is reasonably presumed to be protective of gas from the Morrow formation.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By: 

Joel E. Carson

LOSBE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR
NICK FRANKLIN
SECRETARY

September 29, 1978

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Mr. A. J. Losee
Losee & Carson
Attorneys at Law
Post Office Box 239
Artesia, New Mexico 88210

Re: CASE NO. 6231
ORDER NO. R 5831

Applicant:

Yates Petroleum Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC X
Artesia OCC X
Aztec OCC

Other Jack M. Campbell, Terry Cross, Don Dent, William F. Carr

Dockets Nos. 19-78 and 20-78 are tentatively set for hearing on June 7 and 21, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 17, 1978

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

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

- Cont'd June 7*
- CASE 6225: ✓ Application of Petroleum Development Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Sun McKay Federal Well No. 2 located in Unit G of Section 10, Township 19 South, Range 32 East, Lea County, New Mexico, in such a manner as to produce oil from the Wolfcamp formation thru tubing and gas from the Morrow formation thru the casing tubing annulus by means of a cross-over assembly.
- CASE 6226: Application of Barber Oil, Inc. for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Saladar Unit, by the injection of water into the Yates formation through five wells located in Units K, L, N and O of Section 33, Township 20 South, Range 28 East, Saladar-Yates Pool, Eddy County, New Mexico.
- CASE 6227: ✓ Application of Union Texas Petroleum for a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 209.5-acre non-standard gas proration unit comprising the W/2 of Section 7, Township 31 North, Range 9 West, Blanco Pictured Cliffs Pool, San Juan County, New Mexico, to be dedicated to a well drilled at a standard location thereon.
- CASE 6228: ✓ Application of Depco, Inc., for an unorthodox location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its R&S Federal Com Well No. 1 to be located 1980 feet from the South line and 990 feet from the West line of Section 17, Township 15 South, Range 28 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, the S/2 of said Section 17 to be dedicated to the well.
- CASE 6229: ✓ Application of Texas Oil & Gas Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for its South Wilson State Unit Area comprising 3,200 acres, more or less, of State land in Township 21 South, Range 34 East, Lea County, New Mexico.
- CASE 6230: ✓ Application of Texas Oil & Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for its Duffield Fed. Com Well No. 1, a Wolfcamp-Pennsylvanian test to be located 1980 feet from the South line and 660 feet from the West line of Section 28, Township 16 South, Range 27 East, Eddy County, New Mexico, the S/2 of said Section 28 to be dedicated to the well.
- CASE 6215: (Continued from May 3, 1978, Examiner Hearing)
- ✓ Application of Texas Oil & Gas Corporation for a non-standard unit and an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 320-acre non-standard proration unit comprising the N/2 of Section 29, Township 20 South, Range 36 East, North Osudo-Morrow Gas Pool, Lea County, New Mexico, to be dedicated to a well to be located at an unorthodox location 660 feet from the North and West lines of said Section 29.
- CASE 6231: ✓ Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1, a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.
- CASE 6232: ✓ Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JG" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.
- CASE 6233: ✓ Application of Amoco Production Company for salt water disposal, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Ojo Alamo formation through the perforated interval from 1175 feet to 1230 feet in its Cahn Gas Com Well No. 3 located in Unit F of Section 33, and from 1104 feet to 1122 feet in its Keys Gas Com "F" Well No. 1, located in Unit K of Section 27, all in Township 32 North, Range 10 West, Mt. Nebo-Fruitland Pool, San Juan County, New Mexico.

CASE 6214: (Continued from May 3, 1978, Examiner Hearing)

✓ Application of Morris R. Antweil for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Morrow test well to be drilled at a point 660 feet from the North line and 1980 feet from the East line of Section 8, Township 12 South, Range 32 East, Lea County, New Mexico, the E/2 of said Section 8 to be dedicated to the well.

CASE 6213: (Continued & Readvertised)

✓ Application of Morris R. Antweil for an unorthodox location and simultaneous dedication, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Rio Well No. 2, a Morrow test to be drilled at a point 660 feet from the North and West lines of Section 29, Township 18 South, Range 25 East, Eddy County, New Mexico, the N/2 of said Section 29 to be simultaneously dedicated to the aforesaid well and to applicant's Rio Well No. 1 located in Unit G of Section 29.

[Handwritten signature]

403 Wall Towers West
Midland, Texas 79701
Telephone 915-682-3711



C. F. Keller, Manager
Midland District

May 15, 1978

Oil Conservation Division
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. D. S. Nutter, Chief Engineer

Gentlemen:

We wish to refer you to the following requests for approval of unorthodox locations:

Case #6231 - Application of Yates Petroleum for their #1 State JM Well to be located 660' FN&EL of Section 25, 18S, 24E, on a proration unit covering the N/2 of Section 25, 18S, 24E.


Case #6232 - Application of Yates Petroleum for their Cities JG #1 Well to be located 660' FS&EL of Section 13, 18S, 24E, on a proration unit covering the E/2 of Section 13, 18S, 24E.

Case #6213 - Application of Morris R. Antweil for their #2 Rio Well to be located 660' FN&WL of Section 29, 18S, 25E, on a proration unit covering the N/2 of Section 29, 18S, 25E.

Northern Natural Gas Company is the owner of a 1/2 interest in leases covering part of Section 30, 18S, 25E and part of Section 24, 18S, 24E, and we wish to advise that we are opposed to the above applications for approval of unorthodox locations.

Very truly yours,

NORTHERN NATURAL GAS COMPANY


C. F. Keller
Exploration and Production Manager

CFK/sc

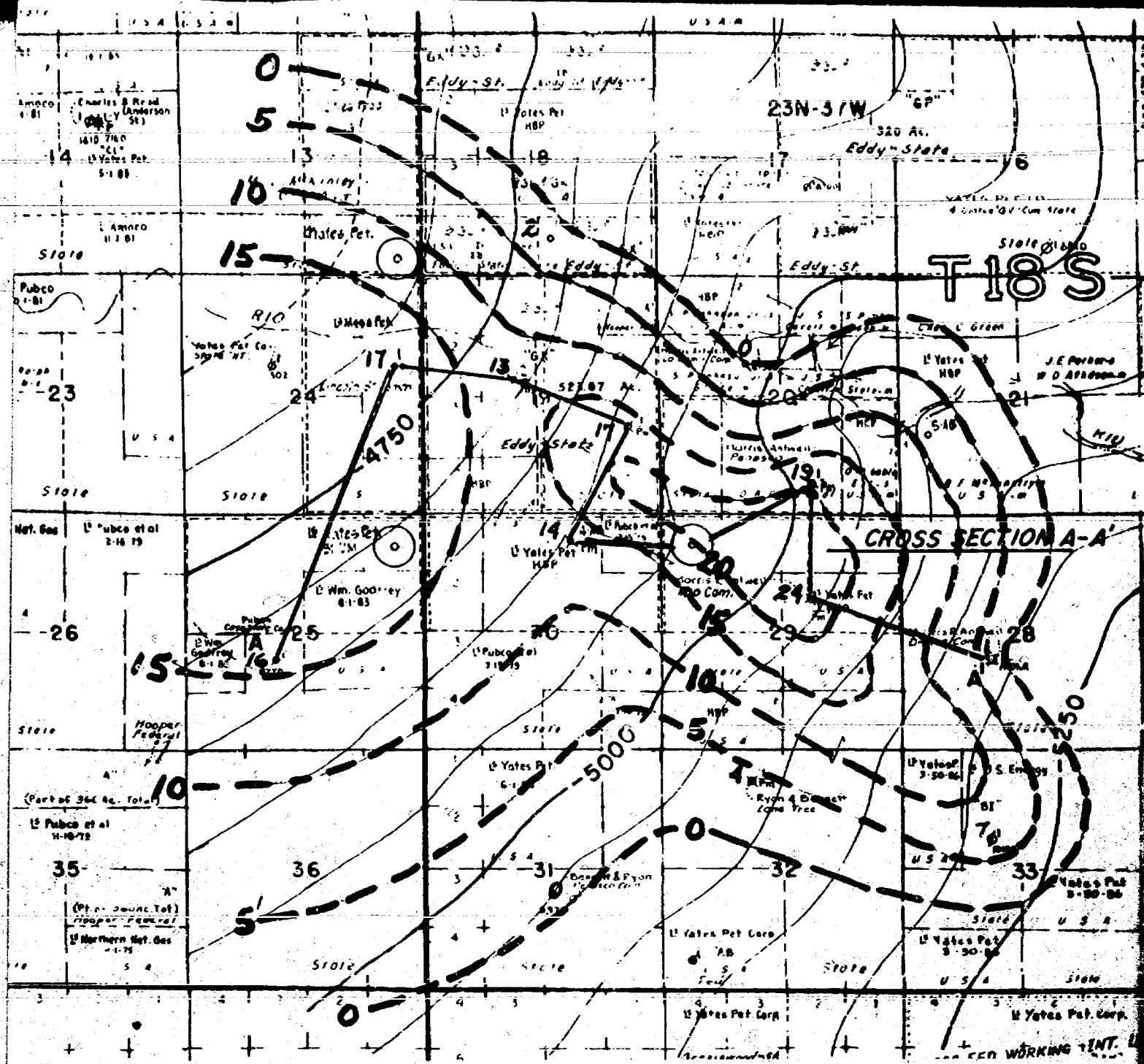


EXHIBIT NO. 1
CASE
DATE 5-17-78

UNDESIGNATED MORROW
EDDY CO., NEW MEXICO

ISOPACH OF MORROW
SAND \geq 5% POROSITY
CONTOUR INTERVAL 5'

PROPOSED LOCATION
STRUCTURE-TOP MORROW MARKER

CONTOUR INTERVAL 50'
SCALE: 1"=3000'

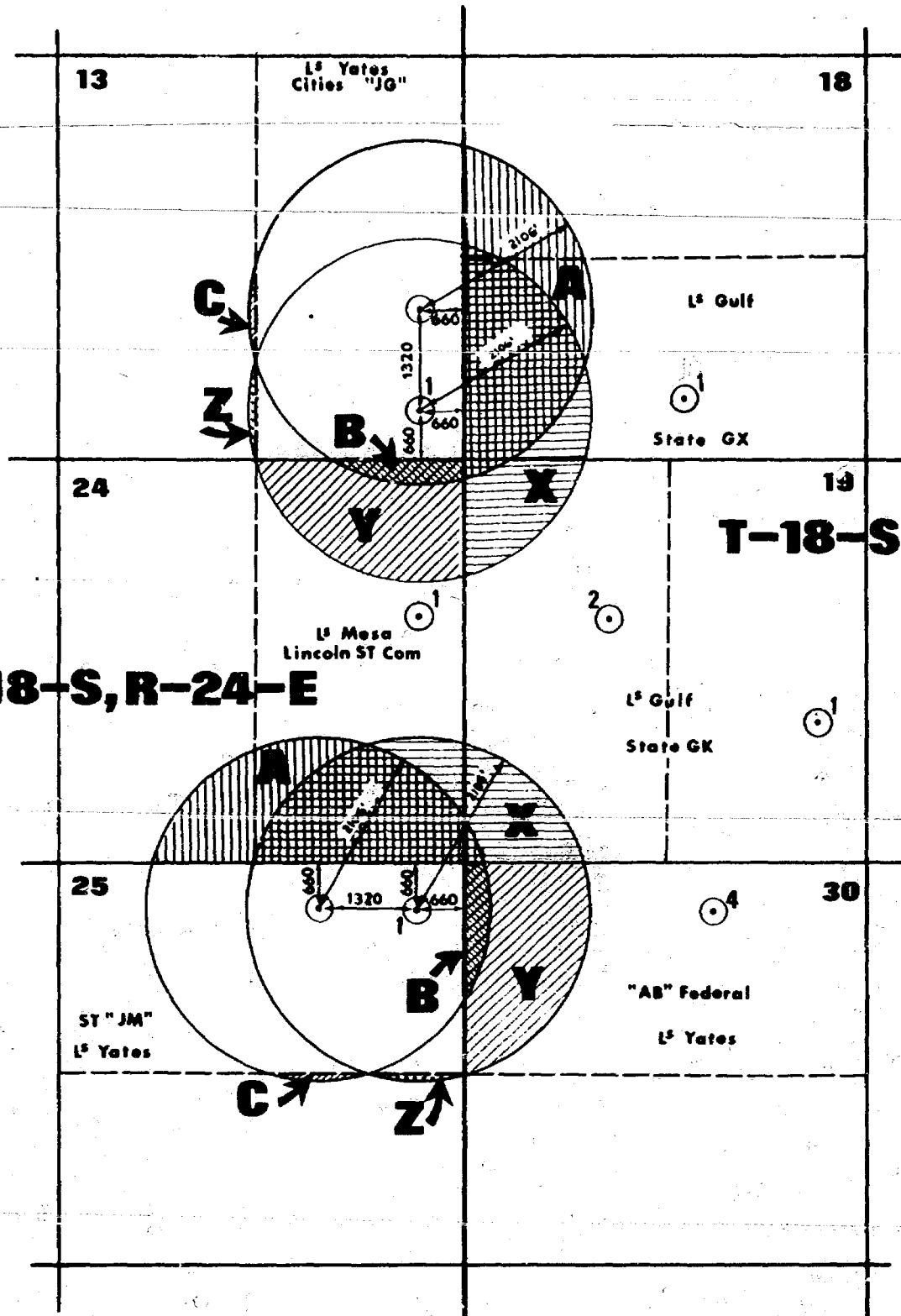
GULF OIL CORPORATION

SOUTHWEST DISTRICT
MIDLAND, TEXAS

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
GULF'S EXHIBIT NO. 1
CASE NO. 6231 & 6232
S. GULF
Hearing Date 5-17-78

T-18-S,R-24-E

T-18-S,R-25-E



BEFORE EXAMINER STAMETS
EDDY COUNTY, NEW MEXICO
 OIL CONSERVATION
 GULF
 CASE NO. 6231 + 6232
 Submitted by GULF
 Hearing Date 5-17-78

Scale: 1" = 2000'

EXHIBIT 3
 CASE 6231
 DATE 5-17-78

Gulf Oil Corporation

RADIUS OF DRAINAGE

Pseudosteady-State Flow of Circular Gas System
SPE Monograph Volume V

$$r_d = 0.029 \left[\frac{kt}{\phi \mu C_t} \right]^{.5}$$

$$t = \frac{r_d^2 (\phi \mu C_t)}{8.41 \times 10^{-4} k}$$

t = Time in hours
r = Radius of drainage
 ϕ = Porosity
 μ = Viscosity
C = Compressibility
k = Permeability

$$t = \frac{r^2 (.10)(.019975)(.2204 \times 10^{-3})}{(8.41 \times 10^{-4}) (1)}$$

RADIUS (FEET)	TIME (HOURS)	TIME (DAYS)
660	228	9.5
1320	912	38.0
1980	2052	85.5
2100	2322	96.8

BEFORE EXAMINER'S TESTIMONY
OIL CONSERVATION COMMISSION
GULF EXHIBIT 4
CASE NO. 6231 + 6232
Submitted by GULF
Hearing Date 5-17-78

EXHIBIT 4
CASE NO. 6231
DATE: May 17, 1978
GULF OIL CORPORATION

RATEABLE TAKE FACTOR

- 1) Drainage Encroachment Outside of 320 Acre Unit
By Well at Orthodox Location

A. 97.22 Acres
B. 2.79 Acres
C. 2.80 Acres
102.81 Acres

- 2) Drainage Encroachment Outside of 320 Acre Unit
By Well at Unorthodox Location

X. 97.22 Acres
Y. 70.00 Acres
Z. 2.79 Acres
170.01 Acres

- 3) Extra Drainage Encroachment of Well at Unorthodox Location

Unorthodox Well	170.01 Acres
Orthodox Well	<u>-102.81 Acres</u>
	67.20 Acres

- 4) Rateable Take Factor

$$RTF = \frac{(\text{Standard Unit Acres}) - (\text{Extra Drainage Encroachment Acres})}{\text{Standard Unit Acres}}$$

$$= \frac{320.00 - 67.20}{320.00}$$

$$= \frac{252.80}{320}$$

$$= .79$$

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

GULF EXHIBIT NO. 5

CASE NO. 6231 + 6232

Submitted by GULF

Hearing Date 5-17-78

SIPES, WILLIAMSON & AYCOCK, INC.

CONSULTING ENGINEERS

Midland

1100 GIBBS TOWER WEST
MIDLAND, TEXAS 79701
915 683-1841

May 17, 1978

1212 THE MAIN BUILDING
SUITE 902
HOUSTON, TEXAS 77002
713 658-8278

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Attention Mr. D. S. Nutter
Chief Engineer

Gentlemen:

Subject: Case No. 6231 ✓
Case No. 6232
Case No. 6213

This letter will serve to introduce the exhibits and present related testimony on the behalf of Mesa Petroleum Co.

Exhibit No. 1 is a combination structure and isopach map for the Morrow formation. A cross section trace is also shown on the map.

Exhibit No. 2 is a cross section of seven wells showing a correlation of the Morrow Conglomerate section between wells. The Mesa Lincoln State Comm. No. 1 has a fine grained sand section in the Morrow above the Conglomerate section. This section has not been included in the isopach or reserve calculations but should contribute to production.

Exhibit No. 3 shows available production from wells in the Cass Ranch area.

Exhibit No. 4 shows well locations, perforations, drill stem test information and test data for wells on the cross section (Exhibit No. 2).

Exhibit No. 5 shows 320-acre circular drainage areas for the requested unorthodox location and an orthodox location. Note the increase in the drainage encroachment on acreage outside the 320 unit assigned to the well.

Exhibit No. 6 calculates the ratable take factor that should be applied to a well's producing rate to account for the additional drainage encroachment acres that would result from drilling a well at an unorthodox location.

BEFORE EXAMINER STAMETS	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	A
CASE NO.	6231
Submitted by	MESSA PET
Hearing Date	

New Mexico Oil Conservation Commission
Mr. D. S. Nutter
May 17, 1978
Page 2

Exhibit No. 7 calculates the expected ultimate recovery from orthodox and unorthodox locations utilizing the isopach map (Exhibit No. 1). Case 6232 and 6213 show an increase in reserves for a well drilled at the orthodox location. Case 6231 shows a slight reduction in reserves for the orthodox location over the unorthodox location.

Summary and Requests:

1. Orthodox locations will not result in inferior recovery as compared to the unorthodox locations requested in Cases 6231, 6232 and 6213.
2. The field has been developed to date on orthodox locations and there is no reason to change now.
3. Continued development of this field on orthodox locations will prevent underground waste and protect correlative rights.
4. Mesa will farm in all three standard locations that are counterparts to the unorthodox locations requested in Cases 6231, 6232 and 6213.

Respectfully submitted,

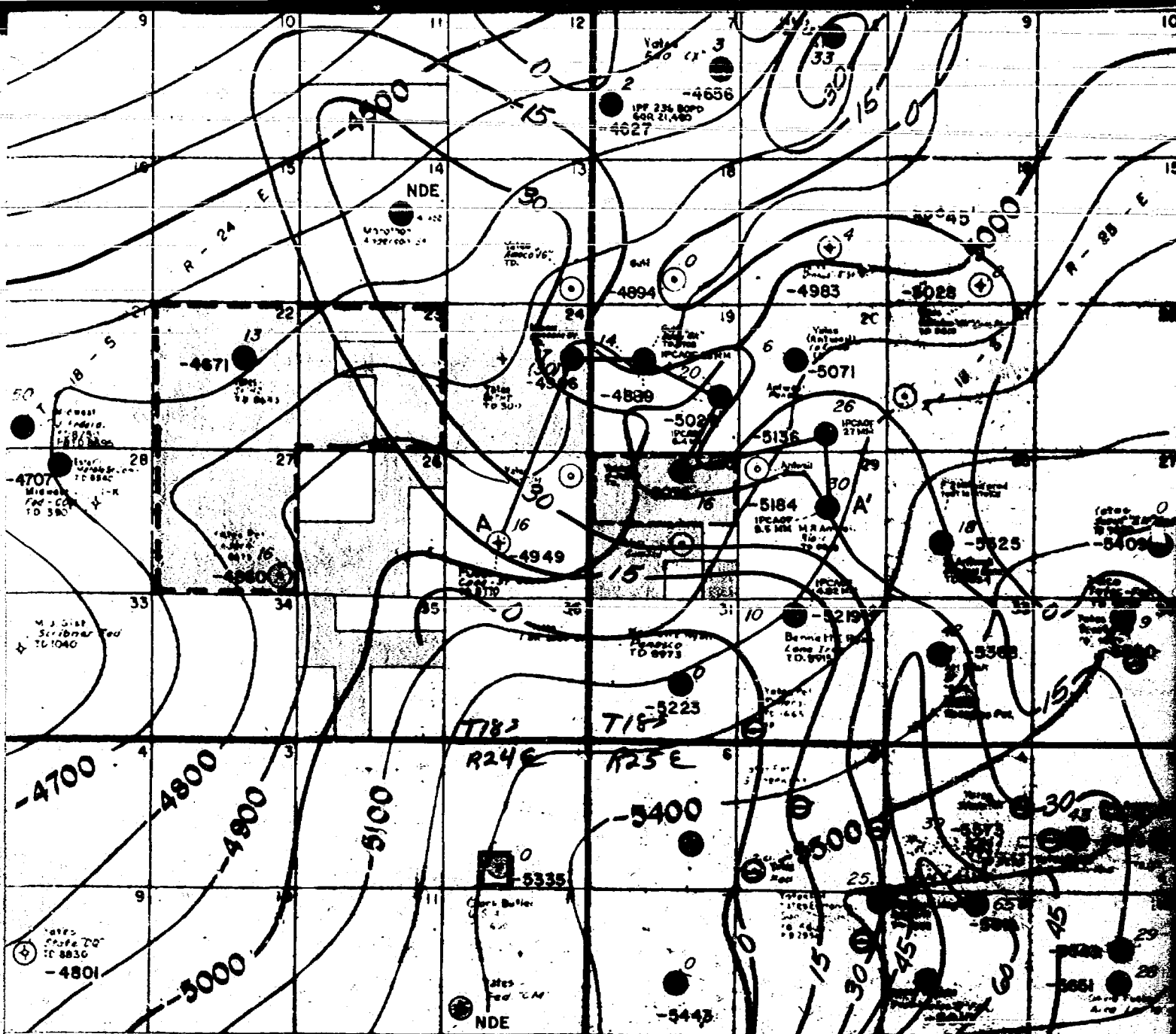
SIPES, WILLIAMSON & AYCOCK, INC.

Roy C. Williamson, Jr.

Roy C. Williamson, Jr., P.E.
Consultant for Mesa Petroleum Co.

/pw

attachments



PRODUCTION CODE	
●	San Andres
●	Yeso
●	Wolfcamp
●	Cisco-Canyon
●	Atoka
●	Morrow A-I
●	Morrow B-II
●	Morrow B-III

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. 6231

CASE NO. 6231

Submitted by MESA PET

Hearing Date _____

MAY 17, 1978
CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 1

MESA
PETROLEUM CO.
PERMIAN BASIN DIVISION

CASS RANCH PROSPECT
Eddy County, New Mexico

STRUCTURE
Top/Mississippian
C.I. = 100
ISOPACH
Morrow A-I
C.I. = 15'

BY J.W.J.
DATE 4-10-78

DRAWN BY Y.D.M.
SCALE: 1" = 5000'

PRODUCTION DATA
UNDESIGNATED MORROW POOL - CASS RANCH AREA
T-18-S, R-25-E
EDDY COUNTY, NEW MEXICO

	ANTIWEIL, MORRIS R.				BENNETT & RYAN				GULF OIL CORPORATION			
	Penasco		Rio Com.		Lonetree		Eddy GK State Com.		Eddy GK State Com.		Eddy GK State Com.	
	1 0 20 18S 25E		1 G 29 18S 25E		1 C 32 18S 25E		1 I 19 18S 25E		2 F 19 18S 25E			
	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>	<u>GAS</u> <u>MCF</u>	<u>COND</u> <u>BBL</u>
1977												
September	69,733	224	27,226	131	---	---	---	---	---	---	---	---
October	183,897	557	47,260	93	---	---	---	---	---	---	---	---
November	159,355	464	33,089	52	13,419	---	---	---	---	---	---	---
December	151,703	428	29,460	45	11,055	---	---	---	---	---	---	---
1978												
January	150,037	428	25,653	37	6,225	---	29,835	105	---	---	---	---
February	126,387	346	19,708	31	4,397	---	62,867	170	---	---	---	---
March	141,973	350	21,467	31	2,882	---	47,087	99	---	---	---	---
TOTALS	983,085	2,797	203,863	420	37,978		139,789	374				

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 3

ROY C. WILLIAMSON, JR., P.E./cn MAY 17, 1978
1100 GIBBS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 6231
Submitted by MESA PET.
Hearing Date

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 3

CASS RANCH AREA
EDDY COUNTY, NEW MEXICO
X-SECTION WELL INFORMATION

OPERATOR LEASE WELL NO.	WELL LOCATION	PERFORATIONS	DST INFO.	TEST DATA	CAOF
Morris R. Antwell Rio No. 1	Sec. 29-18S-25E 1980' FN & E	8685'-93'; 8694'-98'; 8700'-13' (Morrow)	8640'-8738' (Morrow) Rec. 500' O&GCM FSIP 3252#	F/919 MCFGPD, 1/8" ch., 60 min., TP2412# F/2007 MCFGPD, 3/16" ch., 60 min., TP2260# F/3268 MCFGPD, 1/4" ch., 60 min., TP2025# F/5073 MCFGPD, 5/16" ch., 60 min., TP1989#	6,516 MCFGPD Dry; Gas Grav. .626 SIWHP 2447# WHP
Morris R. Antwell Penasco No. 1	Sec. 20-18S-25E 660' FS & 1980' FE	8634'-62' (Morrow)	8610'-8705' (Morrow) Rec. 180' cond. & 120' DM FSIP 3356#	F/1049 MCFGPD, Orifice, 60 min., TP2639# F/1500 MCFGPD, Orifice, 60 min., TP2609# F/2295 MCFGPD, Orifice, 60 min., TP2558# F/3143 MCFGPD, Orifice, 60 min., TP2489#	27,143 MCFGPD GOR 382,000/1 Gas Grav. .614 SIWHP 2703#
Yates Petr. Corp. Federal "AB" No. 4	Sec. 30-18S-25E 660' FN & 1980' FE	8570'-90' (Morrow)	8545'-8642' (Morrow) Rec. 60' oil, 90' O&GCM FSIP 3269# (Also DST in Wifcp.)	F/13,300 MCFGPD, 3/4" ch., 24 hr., TP918#	-
Gulf Oil Corp. Eddy "GK" St. Com. No. 1	Sec. 19-18S-25E 1980' FS & 660' FE	8603'-07'; 8618'-27'; 8634'-41' (Morrow)	NO DST	F/1062 MCFGPD, 1.5" Orif., 60 min., TP2320# F/1528 MCFGPD, 1.5" Orif., 60 min., TP2240# F/2099 MCFGPD, 1.5" Orif., 60 min., TP2130# F/2992 MCFGPD, 1.5" Orif., 60 min., TP1902#	6,424 MCFGPD Dry SIWHP 2425#
Gulf Oil Corp. Eddy "GK" St. Com. No. 2	Sec. 19-18S-25E 2310' FN & 1980' FW	8478'-80'; 8486'-98' (Morrow)	NO DST	F/3310 MCFGPD, 15/64" ch., 60 min., TP2450# F/4642 MCFGPD, 19/64" ch., 60 min., TP2330# F/5626 MCFGPD, 25/64" ch., 60 min., TP2095# F/9022 MCFGPD, 28/64" ch., 60 min., TP1645#	22,869 MCFGPD
Mesa Petr. Co. Lincoln St. Com. No. 1	Sec. 24-18S-24E 2030' FN & 660' FE	8497'-8513' (Morrow)	8402'-8552' (Morrow) Rec. 350' GCDM FSIP 3282#		
Pubco Petr. Corp. Cass St. Com. No. 1	Sec. 25-18S-24E 1980' FS & W	None Reported	8245'-8475' Rec. 420' GCM FSIP 3111# (Also DST in Wifcp.)		P&A

ROY C. WILLIAMSON, JR., P.E./cn MAY 17, 1978
1100 GHLS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 6231
Submitted by MESA PET.
Hearing Date

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 4

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 4

DRAWN BY T.D.M.
SCALE 1" = 5000

CASS RANCH AREA
EDDY COUNTY, NEW MEXICO

RATABLE TAKE FACTOR

AREA II & II-A

Orthodox Location - Drainage Encroachment Outside of 320 Unit = 86.78 ac.

Unorthodox Location - Drainage Encroachment Outside of 320 Unit = 151.86 ac.

Additional Drainage Encroachment of Well at Unorthodox Location = 65.08 ac.

Ratable Take Factor = $\frac{(\text{STD Unit, ac.}) - (\text{Additional Drainage Encroachment, ac.})}{\text{STD Unit, ac.}}$

$$= \frac{(320 \text{ ac.}) - (65.08 \text{ ac.})}{(320 \text{ ac.})}$$

$$= .7966^*$$

* To Be Applied to Well Allowable for Standard 320 Acre Unit.

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. 6

CASE NO. 6231

Submitted by MESA PET.

Hearing Date _____

ROY C. WILLIAMSON, JR., P.E./cn MAY 17, 1978
1100 GIBBS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

CASE NO. 6231
EXHIBIT 6

CASE NO. 6231
EXHIBIT 6

CASS RANCH AREA
EDDY COUNTY, NEW MEXICO

RESERVE CALCULATIONS FOR
ORTHODOX AND UNORTHODOX LOCATIONS

AREA II & II-A

Section 25

Porosity, percent 14
Bottom-hole Pressure, psig 3290
Water Saturation, percent 15
Gas Gravity .63
Drainage Area, acres 320

Gas Formation
Volume Factor, $B_g = \frac{(35.35)(3305 \text{ psia})}{(0.86)(6000R)} = 226.4 \frac{\text{SCF}}{\text{RCF}}$

$(43,560 \frac{\text{Ft}^3}{\text{AF}})(\text{Porosity } 0.14)(\text{Gas Saturation } 1-.15) = 5,183.6 \frac{\text{RCF}}{\text{AF}} (226.4 \frac{\text{SCF}}{\text{RCF}})$
 $= 1,174 \frac{\text{MCF}}{\text{AF}} (0.80 \text{ Rec.}) = 939 \frac{\text{MCF}}{\text{AF}}$

Orthodox Location:

$(320 \text{ Ac}) [(0.6)(30) + (0.4)(25)] (939 \frac{\text{MCF}}{\text{AF}}) = 8,413 \text{ MMCF}$

Unorthodox Location:

$(320 \text{ Ac}) [(0.9)(30) + (0.1)(28)] (939 \frac{\text{MCF}}{\text{AF}}) = 8,954 \text{ MMCF}$

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 6231
Submitted by MESA PET.
Hearing Date _____

ROY C. WILLIAMSON, JR., P.E./pw MAY 17, 1978
1100 GIRLS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

CASE NO. 6231
EXHIBIT 7

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form O-122
 Revised 9-1-65

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special		Spud Date: 6-2-77		RECEIVED	
Company Morris R. Antweil		Test Date 8-23-77			
Pool Undesignated <i>Monroe</i>		Formation Tul. Co. Morrow		SEP 2 1977	
Completion Date 7-15-77		Total Depth 8868	Plug Back TD 8765	Elevation 3581 GL	Unit D. C. C.
Cng. Size 5 1/2	Wt. 17#	Set At 8868	Perforations: From 8685 To 8714	Farm or Lease Name Rio <i>Com.</i>	
Teg. Size 2 3/8	Wt. 4.7#	Set At 8633	Perforations: From open To ended	Well No. 1	Unit Sec. Twp. Rge. 6 29 18S 25E
Type Well - Single - Bradenhead - G.C. or G.O. Multiple			Packer Set At 8631	County Eddy	
Producing Tisu Tbg.		Reservoir Temp. °F 160	Mean Annual Temp. °F 8633	Boro. Press. - P ₀ 13.2	State New Mexico
L 8633	H 8633	Gg .626	% CO ₂	% N ₂	% H ₂ S
			Prover	Meter Run	Tops
6" Positive Chokes					

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
51	6" Positive Ch.										72 hrs.
1.			1/8	2412		72	2412				1 hr.
2.			3/16	2260		73	2260				1 hr.
3.			1/4	2025		73	2025				1 hr.
4.			5/16	1989		76	1989				1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super. Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	.2618		2425.2	.9887	1.264	1.158	919
2	.6101		2273.2	.9877	1.264	1.159	2007
3	1.112		2038.2	.9877	1.264	1.155	3268
4	1.771		2002.2	.9850	1.264	1.149	5073
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1.	3.61	532	1.46	.746	A.P.I. Gravity of Liquid Hydrocarbons	Deg.
2.	3.39	533	1.46	.745	Specific Gravity Separator Gas .626	XXXXXXX
3.	3.04	533	1.46	.750	Specific Gravity Flowing Fluid XXXXX	
4.	2.98	536	1.47	.758	Critical Pressure 671	
5.					Critical Temperature 365	

P₁ 2460.2 P₂ 6052.6

NO.	P ₁ ²	P _w	P ₂ ²	P ₂ ² - P _w ²
1	2430.1	5905.4	147.2	
2	2295.8	5270.7	781.9	
3	2103.0	4122.6	1630.0	
4	2157.0	4652.6	1400.0	
5				

(1) $\frac{P_c^2}{P_2^2 - P_w^2} = 3.713$ (2) EXHIBIT NO. 8

CASE NO. 8231-6232

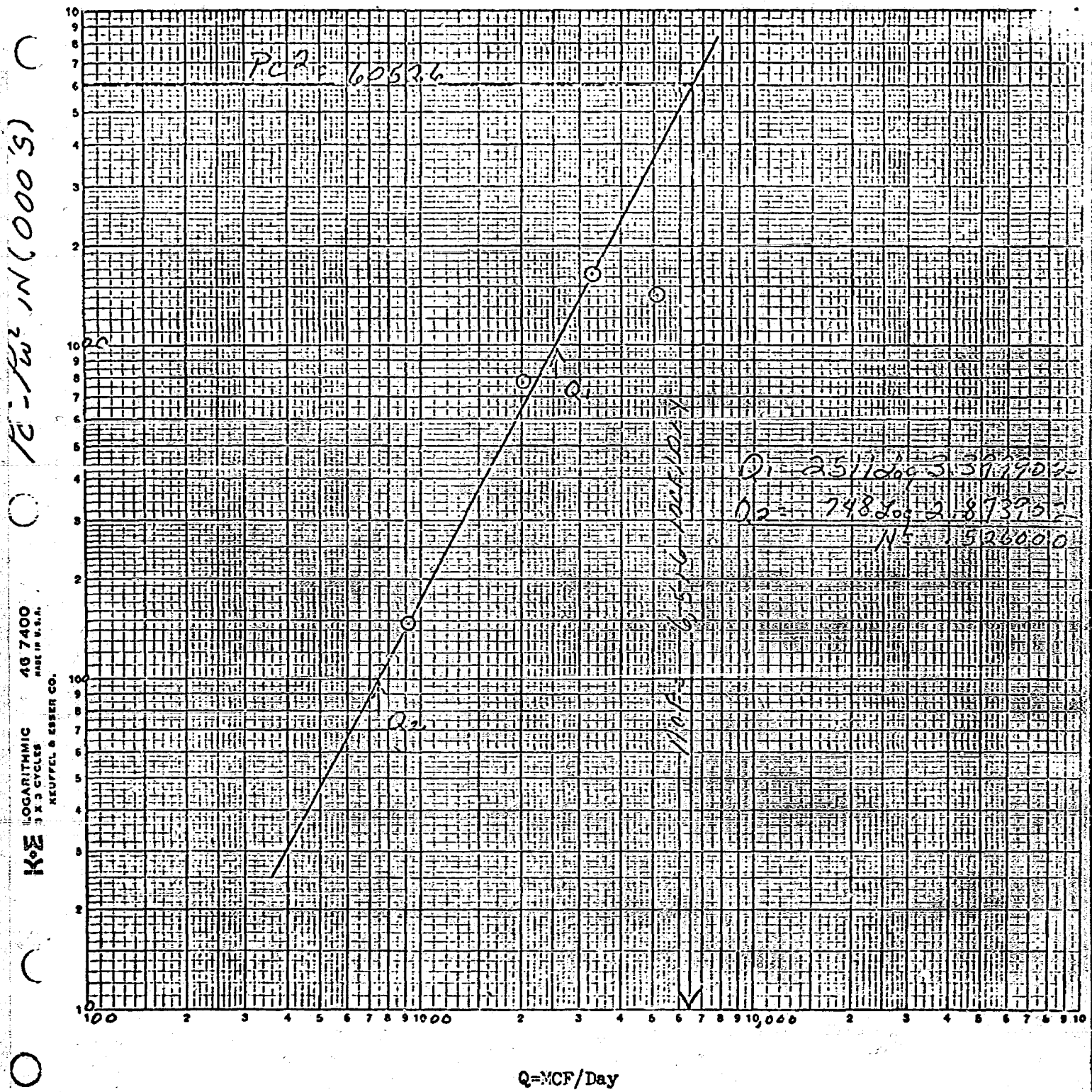
Submitted by MESA P & G

Hearing Date

Absolute Open Flow	6.516	Mcf/d @ 15.025	Angle of Slope @	62.25	Slope, n	526
Remarks: Made small amount of fluid, no way to get a measurement.						
Approved By Commission	Conducted By	Calculated By	Checked By			
	Reggie Boston	Reggie Boston				

MORRIS R. ANTWEY.

Rio No. 1
G-29-18-25
Eddy County, New Mexico
August 23, 1977



To: Richard L. Starnes

Re: Cases 6231, 6232 and 6213

I would like to enter appearances of Don Dent and myself as attorneys for Mesa Petroleum Co. Mr. Dent is a licensed Texas attorney and is counsel for Mesa and has previously appeared before the Oil Conservation Division as attorney for Mesa. He will participate in the above cases

Paul Hatcher

CAMPBELL, BINGAMAN AND BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
JEFF BINGAMAN
BRUCE D. BLACK
MICHAEL B. CAMPBELL

RECEIVED
MAY 15 1978
Oil Conservation Commission

POST OFFICE BOX 2208

JEFFERSON PLACE

SANTA FE, NEW MEXICO 87501

TELEPHONE (505) 988-4421

May 15, 1978

New Mexico Oil Conservation Division
State Land Office Building
Santa Fe, New Mexico 87501

Re: Examiner Hearing - May 17, 1978

Gentlemen:

This is to advise you that Gulf Oil Corporation, through Jack M. Campbell, will make an appearance in Cases No. 6231 and 6232 now set for Examiner Hearing on Wednesday, May 17, 1978. In addition to Jack M. Campbell, Terry I. Cross, member of the Texas Bar, will be introduced by Mr. Campbell and will participate in the matter.

Very truly yours,

CAMPBELL, BINGAMAN & BLACK

Jack M. Campbell

JMC:ama

Dockets Nos. 19-78 and 20-78 are tentatively set for hearing on June 7 and 21, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 17, 1978

9 A.M. - OIL CONSERVATION DIVISION 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 6225: Application of Petroleum Development Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Sun McKay Federal Well No. 2 located in Unit G of Section 10, Township 19 South, Range 32 East, Lea County, New Mexico, in such a manner as to produce oil from the Wolfcamp formation thru tubing and gas from the Morrow formation thru the casing tubing annulus by means of a cross-over assembly.
- CASE 6226: Application of Barber Oil, Inc. for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Saladar Unit, by the injection of water into the Yates formation through five wells located in Units K, L, N and O of Section 33, Township 20 South, Range 28 East, Saladar-Yates Pool, Eddy County, New Mexico.
- CASE 6227: Application of Union Texas Petroleum for a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 209.5-acre non-standard gas proration unit comprising the W/2 of Section 7, Township 31 North, Range 9 West, Blanco Pictured Cliffs Pool, San Juan County, New Mexico, to be dedicated to a well drilled at a standard location thereon.
- CASE 6228: Application of Depeco, Inc., for an unorthodox location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its R&S Federal Com Well No. 1 to be located 1980 feet from the South line and 990 feet from the West line of Section 17, Township 15 South, Range 28 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, the S/2 of said Section 17 to be dedicated to the well.
- CASE 6229: Application of Texas Oil & Gas Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for its South Wilson State Unit Area comprising 3,200 acres, more or less, of State land in Township 21 South, Range 34 East, Lea County, New Mexico.
- CASE 6230: Application of Texas Oil & Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for its Duffield Fed. Com Well No. 1, a Wolfcamp-Pennsylvanian test to be located 1980 feet from the South line and 660 feet from the West line of Section 28, Township 16 South, Range 27 East, Eddy County, New Mexico, the S/2 of said Section 28 to be dedicated to the well.
- CASE 6215: (Continued from May 3, 1978, Examiner Hearing)
Application of Texas Oil & Gas Corporation for a non-standard unit and an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 320-acre non-standard proration unit comprising the N/2 of Section 29, Township 20 South, Range 36 East, North Osudo-Morrow Gas Pool, Lea County, New Mexico, to be dedicated to a well to be located at an unorthodox location 660 feet from the North and West lines of said Section 29.
- CASE 6231: Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1, a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.
- CASE 6232: Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JG" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.
- CASE 6233: Application of Amoco Production Company for salt water disposal, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Ojo Alamo formation through the perforated interval from 1175 feet to 1230 feet in its Cahn Gas Com Well No. 3 located in Unit F of Section 33, and from 1104 feet to 1122 feet in its Keys Gas Com "F" Well No. 1, located in Unit K of Section 27, all in Township 32 North, Range 10 West, Mt. Nebo-Fruitland Pool, San Juan County, New Mexico.

DRAFT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

7446
3558

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6231

ORDER NO. R- 5831

APPLICATION OF YATES PETROLEUM CORPORATION

FOR AN UNORTHODOX GAS WELL LOCATION,

EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on May 17,
19 78, at Santa Fe, New Mexico, before Examiner Richard L. Stamets

NOW, on this day of May, 19 78, the Division
Director, 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 Division has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Yates Petroleum Corporation,
for its State "JM" Well No. 1 to be located
seeks approval of an unorthodox gas well location/ 660

feet from the North line and 660 feet from the

East line of Section 25, Township 18 South

Range 24 East, NMPM, to test the Morrow

formation, Undesignated Morrow Gas Pool, Eddy

County, New Mexico.

(3) That the N/2 of said Section 25 is to be
dedicated to the well.

(4) That a well at said unorthodox location will better
enable applicant to produce the gas underlying the proration unit.

(5) That ~~no~~ offset operator objected to the proposed unorthodox
location.

(5) That the offset operators have objected to the proposed location.

(6) That a well at the proposed location is at a standard location relative to the North and South lines of said Section 25.

(7) That a well at the proposed location is 67 percent closer to the East line of said Section 25 than permitted by Division Rules and Regulations.

(8) That a well at the proposed location will have an area of drainage in the Morrow formation which extends 67.2 net acres outside Section 25, an amount of acreage equivalent to 21 percent of a standard proration unit in said pool.

(9) That to offset the advantage gained over the protesting offset operators, production from the well at the proposed unorthodox location should be limited from the Morrow formation.

(10) That such limitation should be based upon the variation of the location from a standard location and the 67.2 net-acre encroachment described in Finding No. (9) above, and may best be accomplished by assigning a well at the proposed location an ~~allowable limitation~~ ^{acreage} factor of 0.71 (100 percent North/South factor plus 33 percent East/West factor plus 79 percent net-acre factor divided by 3).

(11) That in the absence of any special rules and regulations for the prorationing of production from said Undesignated Morrow Gas Pool, ~~the aforesaid production limitation~~ ^{the aforesaid} ~~said acreage~~ factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests, and average pipeline pressure data.

(12) That the minimum allowable ~~allowable~~ ^{allowable} for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.

(13) That approval of the subject application subject to the above ^{provisional} limitation, will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox gas well location for the Morrow formation is hereby approved for the Yates Petroleum Corporation's State "JM" Well No. 1 to be located at a point 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

(2) That the N/2 of said Section 25 shall be dedicated to the above-described well.

(3) That said well is hereby assigned ^{a Production Limitation} ~~an acreage~~ Factor of 0.71 in the Morrow formation.

(4) That in the absence of any Special Rules and Regulations prorating gas production in said Undesignated Morrow Gas Pool, the special rules hereinafter promulgated shall apply.

(5) That ^{the following} Special Rules and Regulations for ^a ~~the application~~ ^{at an unorthodox} ~~of production limitations on non-prorated gas wells in Southeast~~ ^{location} shall apply to the subject well. ~~New Mexico are hereby promulgated as follows:~~

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PRORATED GAS WELL

APPLICATION OF RULES

RULE 1. These rules shall apply to the Yates Petroleum Corporation State "JM" Well No. 1, located 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, Eddy County, New Mexico, which well's Production Limitation Factor of 0.71 shall be applied ^{to} the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

ALLOWABLE PERIOD

RULE 2. The allowable period for ^{the subject well} ~~all wells~~ subject to these rules shall be six months.

RULE 3. ~~That~~ The year shall be divided into two ^{allowable} ~~proration~~ periods commencing at 7:00 o'clock a.m. on January 1 and July 1.

DETERMINATION OF DELIVERY CAPACITY

RULE 4. ~~That~~ Immediately upon connection of ^{the} ~~any~~ well ~~subject~~ ~~to these rules~~ the operator shall determine the open flow capacity of ^{the} ~~such~~ well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline pressure.

RULE 5. The well's ~~subsequent~~ deliverability shall be determined twice a year, and shall be equal to the ~~the~~ highest single day's production during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.

RULE 6. ~~That~~ The Division Director may authorize special deliverability tests to be conducted upon a showing that ^{the} ~~a~~ well has been worked over or that the ^{subsequent} ~~subsequent~~ deliverability determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.

RULE 7. The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness such tests.

CALCULATION AND ASSIGNMENT OF ALLOWABLES

RULE 8. ^{The well's} ~~allowables to newly completed wells~~ ^{for the} shall commence upon the date of connection of ~~the well~~ to a pipeline and when

the operator has complied with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

RULE 9. The ^{well's} allowable ~~for the well~~ during its first ~~allowable~~ ^{proration} period shall be determined by multiplying ~~the well's~~ ^{its} initial deliverability by its ^{production limitation} ~~acreage~~ factor.

RULE 10. The ^{well's} allowable ~~for any well during~~ during the ~~all ensuing allowable~~ ^{second proration} periods shall be determined by multiplying ~~the~~ ^{its} latest subsequent deliverability, ^{as} determined under provisions of Rule 5, by ~~the~~ ^{its} ~~acreage~~ ^{production limitation} factor. If ~~any~~ ^{the} well shall not have been producing ~~for a period sufficient to have obtained a subsequent deliverability,~~ ^{at least 60 days prior to the end of its first allowable period,} the allowable for the second ^{allowable} ~~proration~~ period shall be determined in accordance with Rule 8. 9.

RULE 11. ~~That allowable for the~~ ^{The} ~~for the~~ ^{well} following its second proration period shall be determined by multiplying the subsequent deliverability filed in accordance with Rule 5 by its acreage factor.

RULE 12. Revision of allowables based upon special well tests shall ^{become} ~~be~~ effective upon the date of such test provided the results of such test are filed with the ~~appropriate Division~~ ^{Division's} district office within 30 days after the date of the test; otherwise the date shall be the date ~~the~~ test report is received in ~~said~~ office.

RULE 12. ~~That~~ ^{Revised} allowables based on special well tests shall ^{remain} ~~be~~ effective until the beginning of the next ^{allowable} ~~proration~~ period, ~~following receipt of the first subsequent deliverability following the special well test.~~

RULE 13. ~~That no well~~ ^{In no event} shall ~~the well~~ ^{subject to these rules} receive an allowable of less than ^{one million cubic feet of gas per day.}

BALANCING OF PRODUCTION

RULE 14. ~~That~~ January 1 and July 1 of each year shall be known as the balancing dates.

^{if the well has}
RULE 15. ~~That any well which has~~ an underproduced status ^{a six-month allowable} ~~at the end of a proration period~~, shall be allowed to carry such underproduction forward into the next ~~proration~~ period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any ~~proration~~ ^{allowable} period ~~remaining~~ ^{which remains} unproduced at the end of ~~the~~ period shall be cancelled.

RULE 16. Production during any one month of ^{an allowable} ~~a gas proration~~ period in excess of the ^{monthly} allowable assigned to ~~a~~ ^{the} well ~~for each month~~ shall be applied against the underproduction carried into ~~the~~ period in determining the amount of allowable, if any, to be cancelled.

^{If the}
RULE 17. ~~Overproduction. Any well which has an overproduced~~ ^{a six-month allowable} ~~status at the end of a gas proration period~~, shall be shut in until such overproduction is made up.

RULE 18. If, during any month, it is discovered that ~~the~~ well is overproduced in an amount exceeding three times its average monthly allowable, it shall be shut in during that month and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinabove.

RULE 19. The Director of the Division shall have authority to permit ~~a well, which~~ ^{the} ~~is~~ ^{if it} subject to shut-in, pursuant to Rules ~~17 and 18~~ ^{18, 19, and 20} above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut-in would cause undue hardship, provided however, such permission shall be rescinded for ~~any well~~ ^{the} ~~produced~~ ^{if it has} in excess of the monthly rate ^A authorized by the Director.

RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules ~~18, 19, or 20~~ ^{17, 18, or 19} above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

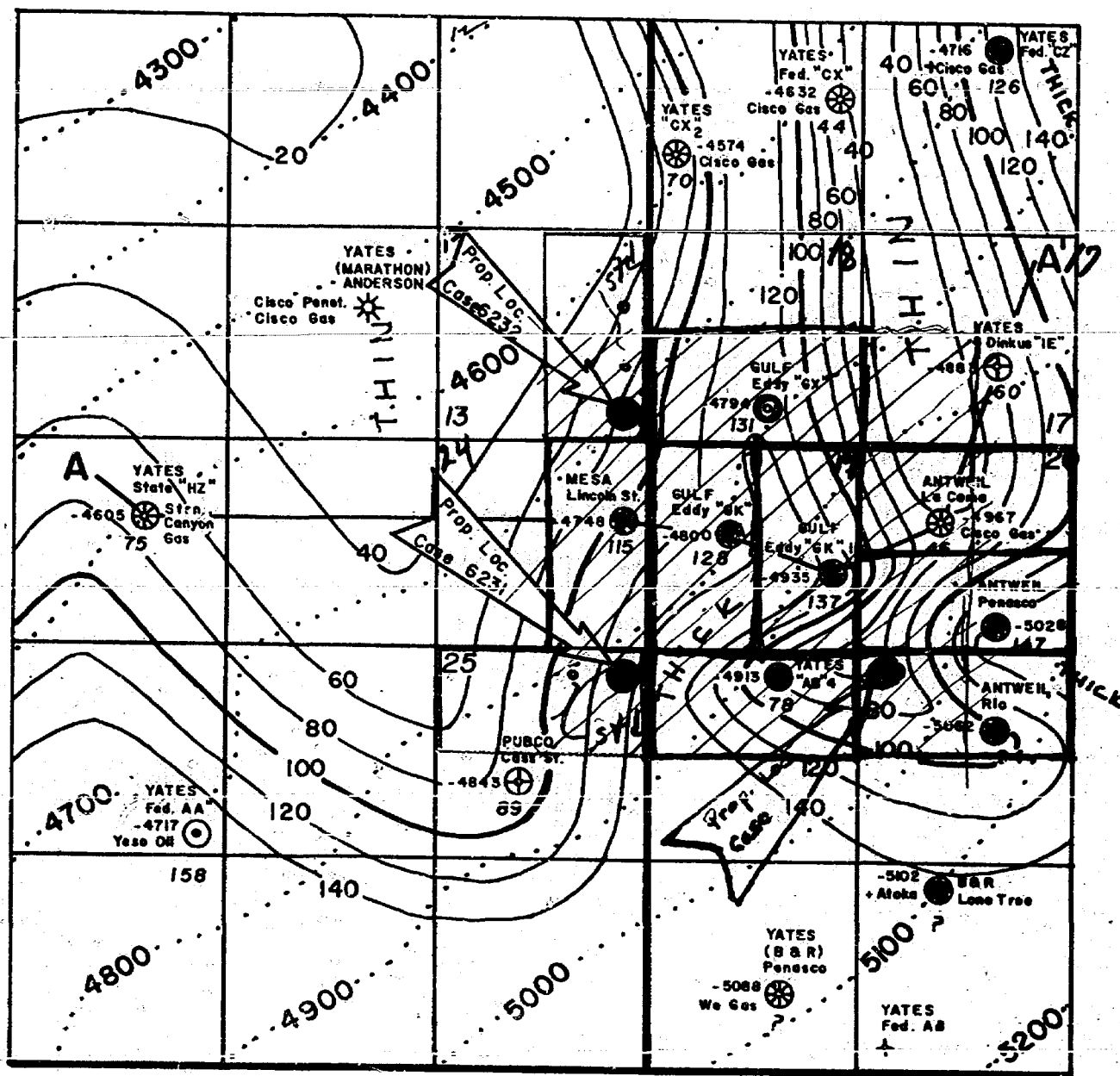
GENERAL

RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the ~~affected~~ well. No further allowable shall be assigned to the ~~affected~~ well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.

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

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

T
18
S



R24E

R25E

LEGEND

- 4605 Morrow Penetrations
- 75 --- Morrow Clastics Thickness
- Subsea Top Morrow Clastics

Morrow Gas Well

Solid Contours: Morrow Clastics Thickness; C.I. = 20 Ft.

Dotted Contours: Structure on Top Morrow Clastics; C.I. = 100 Ft.

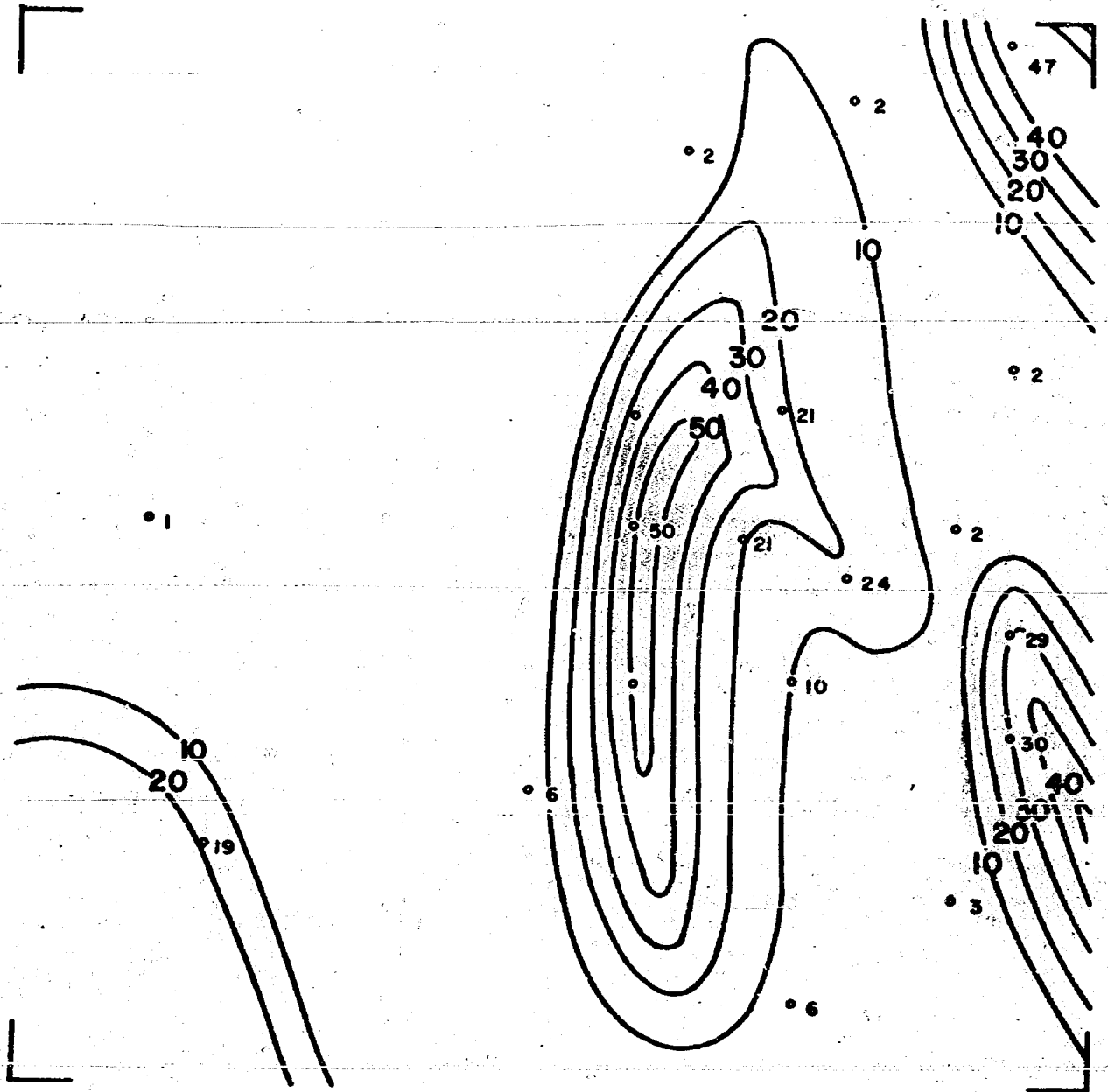
BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. 2

CASE NO. 6231 & 6232

Submitted by Yates

Hearing Date 5-17



OVERLAY
Isolith of Clean Morrow Sand

• 6 Cumulative Ft. of Clean
Morrow Sand <50 API

BEFORE EXAMINER STAMETS	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	3
CASE NO.	6231 & 6232
Submitted by	Yates
Hearing Date	5-17

BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
YATES PETROLEUM CORPORATION FOR AN
UNORTHODOX GAS WELL LOCATION, EDDY
COUNTY, NEW MEXICO

CASE NO. 6231

APPLICATION

COMES NOW YATES PETROLEUM CORPORATION, by its attorneys,
and in support hereof, respectfully states:

1. Applicant is the operator of the Morrow formation
underlying:

Township 18 South, Range 24 East, N.M.P.M.

Section 25: N/2

and proposes to drill its State "JM" No. 1 Well at a point
located 660 feet from the North line and 660 feet from the
East line of said Section 25.

2. The applicant seeks an exception to the well loca-
tion requirements of Rule 104-C.2(a) of the Oil Conservation
Division to permit the drilling of the well at the above men-
tioned unorthodox location to a depth sufficient to adequately
test the Morrow formation.

3. A standard 320-acre gas proration unit comprising
the N/2 of said Section 25 should be dedicated to such well or
to such lesser portion thereof as is reasonably shown to be
reasonably productive of gas.

4. The approval of this application will afford
applicant the opportunity to produce its just and equitable

share of gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North line and 660 feet from the East line of said Section 25 and to dedicate the N/2 of Section 25, which is reasonably presumed to be productive of gas from the Morrow formation.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By:

Joel M. Carson

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

MAY 17, 1978

COMMISSION HEARING

IN THE MATTER OF:

Application of Yates Petroleum
Corporation for an unorthodox
gas well location, Eddy County,
New Mexico

Case 6231

Application of Yates Petroleum
Corporation for an unorthodox
location, Eddy County, New Mexico.)

Case 6232

BEFORE: Richard L. Stamets, Staff Member

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission:

Joe Ramey, Chairman
Emery Arnold, Commissioner
Phil Lucero, Commissioner
Richard L. Stamets, Staff Member

Lynn Teschendorf, Esq., Legal Counsel

LANPHERE REPORTING SERVICE

P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

FOR YATES PETROLEUM CORPORATION:

LOSEE, CARSON & DICKERSON
Attorneys at Law
American Home Building
Artesia, New Mexico 88210
BY: A. J. Losee, Esquire

FOR GULF OIL CORPORATION:

CAMPBELL, BINGAMAN & BLACK
Attorneys at Law
San Francisco & N. Guadalupe
Santa Fe, New Mexico 87501
By: Jack M. Campbell, Esquire

Also Appearing:
TERRY CROSS
Attorney at Law
Midland, Texas

FOR MARATHON OIL COMPANY:

CATRON, CATRON & SAWTELL
Attorneys at Law
53 Old Santa Fe Trail
Santa Fe, New Mexico 87501
By: William F. Carr, Esquire

FOR MESA PETROLEUM COMPANY:

DON D. DENT
Attorney at Law
Box 2009
Amarillo, Texas 79105

LANPHERE REPORTING SERVICE

P.O. BOX 449
54 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

MR. STAMETS: At this time we'll call Case 6231.

MS. TESCHENDORF: Case 6231. Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico.

MR. LOSEE: A. J. Losee appearing on behalf of the Applicant. I have one witness.

MR. STAMETS: Call for other appearances.

MR. CAMPBELL: Jack M. Campbell, Campbell Bingaman & Black, Santa Fe, New Mexico appearing on behalf of Gulf Oil Corporation. I'd like to introduce Terry Cross from Midland, Texas, a member of the Texas bar will be participating in our presentation.

MR. STAMETS: Any other appearances?

MR. DENT: Don Dent, Mesa Petroleum. Associated with me Mr. Dale Gillette, a member of the bar of Texas. I think Mr. Paul Eaton has entered an appearance for us. We will have one witness.

MR. CAMPBELL: We have two witnesses.

MR. STAMETS: Any other appearances in this case?

MR. CARR: William F. Carr, Catron, Catron & Sawtell, Santa Fe, appearing on behalf of Marathon Oil Company and do not intend to call a witness.

MR. STAMETS: Any other appearances?

LANPHERE REPORTING SERVICE

P.O. BOX 449
58 SOUTH FEDERAL PLACE
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(No other appearances.)

MR. STAMETS: Let's have all the potential witnesses or all the witnesses stand and be sworn at this time please.

(WHEREUPON, the witnesses were duly sworn.)

MR. LOSEE: Mr. Examiner, before I pass out my witnesses or my exhibits, the testimony in this case, 6231, will be identical from the Applicant's position as to 6232. Each of the unorthodox locations is a mile away, and we'd like to consolidate the two cases.

MR. STAMETS: Any objections to consolidation of these two cases?

MR. DENT: We have no objections.

MR. CAMPBELL: No objections.

MR. STAMETS: At this time we will call Case 6232 and consolidate these two cases for purposes of testimony.

MS. TESCHENDORF: Case 6232. Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico.

MR. LOSEE: Same A. J. Losee appearing on behalf of the Applicant.

MR. STAMETS: We register the appearances of all in both cases.

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P. O. BOX 449
54 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

RAY BECK

the witness herein, having been previously sworn upon his oath was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q Will you state your name please?

A Ray Beck.

Q Where do you live?

A Artesia, New Mexico.

Q By whom are you employed and in what capacity?

A I'm employed by Yates Petroleum as a geologist.

Q You previously testified before this Commission as an expert witness?

A Yes, sir.

MR. LOSEE: Mr. Beck's qualification and his job acceptable?

MR. STAMETS: They are.

Q (Mr. Losee) Will you state the purpose of the applications in Case 6231 and 6232 please.

A Yates Petroleum Corporation requests approval for the unorthodox location of two proposed gas wells in Township 18 South, Range 24 East, one in Section 25 and one in Section 13.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

The Case 6231 location called the Yates No. 1 State IM would be located 660 from the north and east lines of Section 25, and the north half would be dedicated to the well.

The Case 6232 location called the Yates No. 1 Cities JG will be located 660 from the south and east lines of Section 13, and the east half would be dedicated to the well.

Q Would you turn to what has been marked as Exhibit 1 and explain what is shown on this exhibit?

A Exhibit 1 is a Land Plat. It shows the proposed locations and their proration units outlined in red. Acreage in which Yates owned 100% or lesser working interest is shown in yellow.

Q Does this also show the offset operators and the wells located within the area?

A Yes, sir.

Q Is there any significance as far as the relationship of these two unorthodox locations and the Yates acreage in this area?

A Considering the attitude of the proration unit, it may be noted in case of both proposed locations the "unorthodox movement" is toward the short leg or the in-line

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

of the proration unit rectangle toward proration unit in which Yates has an interest.

Q Please turn to Isopach Map marked as Exhibit 2 and explain what is shown on this exhibit?

A Exhibit Number 2 is the Isopach map showing with solid contours the varying thickness of the Morrow classic interval. That is the interval from the top of the Morrow classic to the top of the eroded chester and osten cycle which is present in this area.

The dotted contours show the structural configuration on the top of the Morrow classics.

Also marked on the map is cross-section A and A prime which will be presented as Exhibit 4. If the examiner would note the Morrow classics thick especially the one which runs generally north and south along or just to the east of the line between ranges 24 East and 25 East. It is within or along the flanks of these thicks that the indicated commercial Morrow gas well, which are colored in red, have been found.

At this time maybe I should say something about the well history in the general area here.

Q Yes, if you have the history of those wells along that thick.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A Just in general, the Antweil Penasco well which was one of the first wells drilled in this four Dinkus area was drill stint tested and had a stabilized flow of 8200 Mcf on 3/8 inch choke. I believe the Penasco well was completed June 1, 1977 according to the completion card.

The current production is 4,530 Mcf per day. Looks like a pretty good well.

The second well completed is Antweil Rio well just to the south of the Penasco well. It was drill stint tested for 9500 Mcf. It was completed in October, no excuse me, in August 23, 1977; and since that time it is depleted to the point, I mean it is dropped down to 566 Mcf per day. Not performing nearly as well as its neighbor to the north or as the drill stint test would've initially indicated.

The next well was the Gulf GK Number 1 which was not tested but flowed at the rate during initial completion flowed at one time at 2500 Mcf at a 1/2 inch choke. Currently-- Let's see that well was completed in November 8, 1977. Now it's down to 674 Mcf per day.

Gulf GK Number 2 was, flowed--it was completed January 2, 1978, flowed on 25/54 inch choke initially at 6626 Mcf. Since that time the well is now still making 2680 Mcf per day. Pretty good well.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

The next well was the Yates AB number 4. It was completed on March 13, 1978. Drill stint test, it flowed 10,736 Mcf on 1/2 inch choke. The well had been on production for 60 days, and at the end of that time it was producing 7410 Mcf per day, pretty good well.

That is brought up to date, the wells that have been completed. Since that time, Gulf has drilled a well in Section 18, but they're still in the process of completing it. And Mesa has drilled a well in Section 24, and they are still in the process of completing it.

Q Now does the production history, Mr. Beck, that you've just recited for the examiner support your conclusion that the best wells are along the so called thick area of the Morrow?

A Well, the Penasco and the Rio commercial wells, both of them, are in the thick or on the flank of it. However the Penasco does have a thicker Morrow classic section than the Rio and is a better well.

The AB 4, GK 1 and GK 2 are either in or along the flanks of the thick.

Q What about wells that have been drilled out on the ridges?

A Well, the Pubco Cass State in Section 25 drilled

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P. O. BOX 449

58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

on the ridge and is a dry hole. That's in Section 25 1824. The Antweil LaCama was drilled on thin Section 20 1825. It was dry in the Morrow. They did make a gas well out of it. Yates drilled a well in Section 17 on the thin, and it was a dry hole.

Q That was the Four Dinkus?

A Four Dinkus in Section 18. Would you like for me to return to the map?

Q Yes, if you would please.

A To go back to the Isopach Map. Considering the relationship between the Morrow classic thicks and indicate the commercial Morrow wells, one can see that both proposed 660 locations are prudently placed within a respective designated proration. This and following the exhibit will show that in this area near the sub crop of the Morrow classics Yates in the drilling of extensive 8800 foot Morrow tests would like to have the flexibility of 660 foot locations drilling unnecessary wells to protect correlative rights.

Q Mr. Beck, you mentioned that these two 660 locations were prudently placed. Would you elaborate on the word "prudent"?

A Well, a prudent operator would drill a well in the best place he could in his proration.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q And in your opinion those two locations are the best places in your proration unit?

A Yes, sir.

Q Are they the locations most likely to encounter commercial production in the Morrow?

A According to the data, as I understand it, I would say that they would.

Q You have any footage locations or footage distances between your two locations and your offset wells?

A Yes, sir. A few just between prospective shear footage standpoint, the northerly location, the City's well Case 6232 is 3600 feet from Gulf GX well, 4,000 feet from Gulf GK #2, 2690 feet from the Mesa Lincoln State. The Mesa Lincoln State itself is 2700 feet away from the GK 2.

Q The Gulf well?

A The Gulf GK 2. The southerly location in Case 6231, the State GM is 3900 feet from the Mesa Lincoln well, 4500 feet from the Gulf GK #2, 3900 feet from the Yates AB4.

Q So with the exception of your northerly unorthodox location and the Mesa Lincoln well, which you said was 2690 feet, your two locations are all over 3600 feet away from the nearest wells?

A Except for that one, yes.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q Would you please turn to what has been marked as Exhibit 3, your overlay, and explain what is shown by this?

A Exhibit Number 3 is an overlay which can be placed on top of the previous exhibit is an Isolith Map showing the varying footage of clean Morrow sand, Morrow sand cleaner than 50 api gamma radiated units was counted within the whole Morrow classic interval for each well regardless of the position or incline of deposition of the sand. However, the map is useful in showing where the concentration of the clean sand are and the relationship between such sand concentration and other data. The overlay shows that the clean Morrow sand are concentrated in or along the flank of the Morrow classic thick of the previous exhibit.

The overlay also shows both proposed 660 locations are placed within the respective proration units to encounter the projected greatest amount of clean sand. Here again the need for the flexibility of the 660 location is seen.

Q Please turn to what's been marked as Exhibit 4, which is your cross-section and point out the important data on this exhibit?

A I apologize for the size. Exhibit number 4 is west and east cross-section transversed is the main Morrow classic thick previously discussed. The cross-section shows

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

the Mesa Lincoln State, the Gulf GK #2, the Gulf CK #1 with the Morrow gas well lined in the Morrow classic thick between the top of the Morrow classic and then conform to the line drawn on across there. The Yates AB to the left and Antweil LaCama and Yates 4 Dinkus to the right lie in thin, and I'm saying they contain only thin non-commercial Morrow sand.

This cross-section also shows the stratigraphic non continuity of the Morrow and channel sands, a relatively close spaced well. Such noncontinuity of reservoirs of wells in this cross section as well as reservoirs or wells in this area not on the cross-section is borne in and corroborated by pressure information and well performance history.

That's all I have to offer.

Q Okay. Does-- What support does your statement of the noncontinuity of the channel have to do for your un-orthodox locations?

A Well, in order to explore for relatively small but what appear to be commercial channels sands, operators are required a reasonable flexibility in hindsight. It's nice to be able to drill on orthodox locations if it fits your geology, but if your geologist doesn't support it then I think you should be able to go to 660 foot locations.

Q Have you made a study of the Pennsylvanian well

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

included in the out-cropping area of Eddy County and several surrounding townships to this field, the 4 Dinkus field?

A Well, yes I have.

Q And you determined for those wells how many were at orthodox locations and how many were at unorthodox locations?

A Yes, sir.

Q What number were unorthodox locations?

A Well, I counted six townships more or less straddling the Morrow sub-crop area from the 4 Dinkus area on the west to the Kennedy Farms area on the east. And there were 27.2% of the Morrow wells on unorthodox locations.

Q What was that number?

A Thirty-three total unorthodox wells.

Q Out of how many total wells?

A 121.

Q Do you have those townships for the examiner in which you determined the unorthodox or orthodox location of wells?

A I took them by range of 1724 and 1824, moved over to 1725 and 1825 and over to 1626 and 1726.

Q Are the Morrow pools in those townships which you

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P. O. BOX 449
59 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

just testified to similar in your opinion to the 4 Dinkus Morrow Pennsylvania gas pools?

A Yes, sir.

Q Do you know whether or not any of those wells were penalized for their unorthodox, of the 33 wells were penalized for the unorthodox locations?

A To the best of my knowledge, no 660 foot location has ever been penalized. However, in one case a well was drilled on 330 location, and it was penalized 6%.

Q Do you know the name of the company that drilled the well, well name?

A Western Oil produces Plant number 2.

Q And that is in the township right north of the 4 Dinkus pool?

A It's in 1825.

Q And that's the only well that you know that incurred any penalty by reason of an unorthodox location?

A That's the only one I know of in these townships.

Q And that was at 330 and 660?

A Yes, sir.

Q Do you have an opinion as to whether or not the proposed wells located at these 660 locations are best located to obtain commercial production from the Morrow?

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A I think that the way that I and the people I work with view the data, we think that these are the best locations to drill within their respective proration unit.

Q Do you feel that approval of this application will employ the drilling of unnecessary wells?

A Yes, sir.

Q Were Exhibits 1 through 6 prepared by you or under your supervision?

A I prepared them.

MR. LOSEE: I move the introduction of the exhibits 1 through 4.

MR. STAMETS: These exhibits will be admitted

MR. LOSEE: I have no further testimony of this witness at this time.

MR. STAMETS: Are there questions of the witness?

MR. DENT: I'm Don Dent of Mesa Petroleum.

CROSS-EXAMINATION

BY MR. DENT:

Q I believe-- Is it a fair statement to say that in a sense have given about three reasons why you think these applications are necessary? One, that prudently placed within designated unit bars any unnecessary wells, and that your geologist would not support the orthodox location. Is that

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

your testimony?

A Well, I don't know whether I can answer that.

Q Is that a fair statement?

A Why don't you say that again, let me be clear on that.

Q I believe-- Did you state that it was your recommended location because of your opinion, the locations are prudently placed within the designated unit?

A That is one reason why.

Q Did you further state that these locations are necessary because, to avoid the drilling of unnecessary wells?

A Yes, sir.

Q Did you further state that an operator may, if it's necessary in order to drill these wells, you must explore throughout the unit and therefore the geology did not support the drilling of a well at an orthodox location on these units?

A Well, I would say that on those units that the drilling on orthodox locations would not have a good chance of making a commercial well as these unorthodox proposed locations.

Q Well, let's take the last point that you made further. Looking at your Case 6231 in Section 25, where would

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

the standard or orthodox location be if you placed it as provided for in your proposal?

A It'd be 660 from the north, 1980 from the east.

Q Where would that you that location on your map that you showed, about the contour that you show on the Isopach on Exhibit 2?

A Put on contour about, oh, near 100 contour, maybe a little over it.

Q At about 100 contour?

A Yes, sir.

Q If we put an X there, it comes about 100. Now, according to your proposed location on Case 6232, Section 13, what contour does it appear?

A You mean for orthodox?

Q No, for your proposed unorthodox where you dedicated what contour?

A About 80, a little more than 82.

Q So it is your testimony then that the geology will support the drilling of an unorthodox location at about 83 feet but will not support the drilling of the orthodox location of over 100 feet?

A No, that's not the testimony. You have to take it all into consideration. And the one to the south, for

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

instance, by moving it over to 660 to the north, 1980 to the east Section 25, you're losing a lot on the sand count depending on the over rate on that. And you're also becoming closer to the Pubco Cass well. In the northerly location-- Well, we haven't got to that yet, but it would be, we had a sand count of about 30 feet.

Q Okay, referring to what you refer to sand count explain just what you mean.

A The standard clay to clean Morrow sand.

Q Okay, referring to exhibit 3 which is an Isolith That's your proposed location at 13, Section 13. Where does it appear on that contour? Is it fair to say at about 35, 35 feet?

A Section 13, the proposed location would be 35 feet.

Q Okay, where would the standard orthodox location in Section 25 be placed if you take the 660 and 1980?

A Well, as previously stated it would be 660 north 1980 from the east.

Q About where on the Isolith map is that, it would be between which contour?

A It would be right around 20 feet.

Q Would it be closer to 30? Your testimony is

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

between 20 and 30?

MR. STAMETS: Don, are you asking him about Section 25?

MR. DENT: Yes, I'm asking about Section 25, a standard orthodox location.

Q (Mr. Dent) What contour?

A Section 25, 660 from the north, 1980 from the east location, so closer to 20 than any other contour.

Q Is it your testimony then that a commercial well would not be drilled at that point, 20 feet between the Morrow sand?

A No, that's not my testimony. My testimony is that you got a proration there, the north half of 25; and the best place to locate that well is 660 from the north in that section.

Q I believe based on your map the best place to drill would be one foot from the line.

A Well, I'm talking about general tested locations.

Q If you could try the corner-- The corner, that corner would be the best place to drill.

A Yes, it would; but no one is asking for that.

Q What risk from the geological standpoint would be involved as compared to wells proposed location Section

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

13 as compared to an orthodox location Section 25 where you have approximately 10 or 15 feet difference in what you call the clean sand? Yet you have about the same Morrow, footage of Morrow classic.

A Yates and I don't look at it from that standpoint. I'm looking at it from the standpoint that we got a lease and we got proration units, where's the best place within that proration unit to drill it regarding the jobs are right there and without having any, not necessarily having any relationship to a well drilled in some other section, just because they utilize the same contours.

Q Do you take into consideration correlative rights of those offset operators?

A Correlative rights?

Q Um-hum.

A Correlative rights. Well, I'm not sure how to answer that question.

Q I understand as far as Yates is concerned your your location is the best place. When you consider the rights of others, the offset operators--

A Well, as it's been sort of inclusive in direct testimony. There's a big chance that-- There's a chance anyway and possibly a good chance that drilling of either

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

one of these wells will not affect any of the other previously drilled wells. It's possible, we're not digging out of the blanket sand left overnight. It would be a highly complex classic deposition in this area. I think-- It's been my opinion that there are more single reservoir wells than there are wells that are all connected within one reservoir.

Q I'm referring to the docket. Would you please clarify what is the application for unorthodox location in the 4 Dinkus field, and you have requested unorthodox location for the Morrow testing. Yet you've consolidated these two cases. Are you requesting that you be granted a permit to drill two wells to test the Morrow sand?

MR. LOSEE: I believe the application is two separate applications to drill two Morrow wells. They're consolidated solely for the purpose of hearing testimony.

Q (Mr. Dent) Where it says 4 Dinkus field, it is a Morrow test?

A Yes, it is.

Q What do you intend, Mr. Beck, to do with the application assuming that it's already been approved and is on file for drilling and testing the Morrow in Section 13 of an orthodox location?

A I believe we probably will not drill that well.

LANPHERE REPORTING SERVICE

P. O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q What do you mean "probably will not drill"?

A Well, you know, wells are drilled and data comes in, these maps change and sometimes previous locations drilled before certain data was available and don't look as good as they did previously.

Q What data are you referring to, any specific data?

A Data that you get from building of a well, electric loads, test data.

Q I can't understand why you made two separate designations in your notice of hearing. If you intended at all times to drill two more test wells.

A I have no answer for that. I don't know why it was stated in that way.

MR. STAMETS: I'm getting a little confused here. I think first off I need to know, Mr. Dent, what well what other well you're referring in Section 13, standard location. Do you have the name?

MR. DENT: I have what has been approved. It's an application by Yates Petroleum Company. It is dated-- It's called, the field is a wild cat Morrow. It was approved as of March 22, 1978. It states that the approximate date the work had started was 3-17-78. It was request for an

LANPHERE REPORTING SERVICE

P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

application to drill and test the Morrow and intermediate formation. Approximately 300 feet of surface casing will be used to set off the gravel. Casing and intermediate casing will be set 100 feet below the Artesian water zone. This is the location 1980 to the north, 660 to the east in Section 13, 18 South 24 East.

MR. STAMETS: What's the name of that well?

MR. DENT: That would be the Unit 8, Section 13, Amoco JG7.

MR. STAMETS: And the same in East half of Section 13 is dedicated to that well?

The 102 attached to that does show East half of Section 13. Now, you were a minute ago referring to-- You asked the witness Mr. Beck a question about two wells, and this is a consolidated case. It has a well in Section 25 and a well in Section 13, and I'm confused about whether you're talking about those two wells or whether two wells in Section 13.

MR. DENT: I'm talking about the-- It's my understanding, based on consolidation of these two cases and their testimony, that it is a request to drill a Morrow test at the same location 660 in Section 13 and dedicated to the east half and they confirmed that.

LANPHERE REPORTING SERVICE

P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

I'm asking him what does he intend to do with the application which has been approved, that is now on file and approved in the event the Commission should grant this application.

A We would let the previous one expire.

Q (Mr. Dent) Well, what information, Mr. Beck, do you have that caused you to file a request for an unorthodox location subsequent to the date that you filed and received this approval of a standard orthodox location in Section 13?

A You're asking what caused us to change our mind after an unorthodox location?

Q I'm asking you if you have any data or information, geological data or information that came into your hands that caused you to do this.

A The electric logs and the chronological history in the Mesa Lincoln State produced new data.

Q Did that data cause you to conclude that a well at 1980 to the north, 660 to the east as a regular location would be a non-commercial well?

A No, it merely shows that the-- It calls for reinterpretation and reevaluation of the maps and showed us that 660 location would be more prudent than the original,

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

originally located well.

Q When did you get those data?

A Oh, I couldn't answer that at any specific--
I don't have that data in front of me.

Q Is it your testimony that if the Commission desires these requests that Yates will not likely drill the proposed wells at the orthodox location?

A Yates would have to evaluate whatever decision Examiners issue. What that decision would be depends on the order given.

Q What negative information did you receive on the Mesa Lincoln State well that caused you to move the well to the south, proposed location to the south?

A No negative information as such. We just plugged in the Mesa information to the map and recontoured the maps and came up with the best location we got for that proration unit.

Q You had planned to commence a well on March 17, 1978 at an approved orthodox location, had you not?

A Yes.

Q And is it your testimony then that you received no information that would negate the drilling of that well by, because of the Mesa Lincoln State completion or drilling

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

if the well had been drilled there?

A I'm not sure I understand your question if I haven't already answered it.

Q Well, you said you've received no negative information by the drilling of the additional well.

A I saw no negative information--

Q But I believe--

A --as such. The information of information, you plug it in and you reevaluate your maps and pick the best location.

Q I'm going back to your testimony-- First of all, that the geology did not support unorthodox location. And that it proved the place was in the designated unit. Now, I tie that to the decision by Yates back in March of 1978 to drill a well at an orthodox location.

MR. LOSEE: Mr. Dent, I don't believe that's what his testimony has been. I think his testimony has been with respect to that unorthodox location, that that's the best location that Yates can pick on this unit. I don't believe he's testified that he thinks it's better than the orthodox location, but I don't believe he's testified as to whether the orthodox location will or will not produce.

Q (Mr. Dent) Do you have with you, Mr. Beck, an

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P.O. BOX 449
50 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Isopach which you or someone in your company based the decision to drill a well on Section 13 on a standard orthodox location?

A No, sir.

Q Do you recall from the geological work and data and information that you used in making that decision whether or not it differed greatly from your Isopach map which you presented here today?

A The previous map didn't show a lot of hope for Section 13, however, we did have a short period lease and we attempted to locate the other one primarily on the bases of possible reservoir in the Cisco, as I recall.

Q Is that why the application today may have stated that if, requested to drill a well in the field rather than the Morrow Sand since it was going to be a Cisco test?

A Well, we were going to drill a well in Section 13, and before all the other wells were drilled up to the south, we had to come up with some sort of reason. We thought we had a better shot at the Cisco probably, but as long as we were going to drill as far as Cisco we were also going to take it to the Morrow because you never can tell what's going to happen.

MR. STAMETS: Mr. Dent, I would like to point

LANPHERE REPORTING SERVICE

P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

out that this is a standard procedure for the Commission when it advertises on the basis of an application from an operator, we will tack an appropriate field name on there if one is not supplied, and that was the case here. So the 4 Dinkus field is terminology added by the Commission for the ad.

MR. DENT: Why was it not added to the one, the request from the Morrow Sand?

MR. STAMETS: I don't know. If I had written it in I could tell you, but I didn't.

MR. DENT: Well, I had assumed, Mr. Examiner, that these were taken, these data and information contained on document were taken directly from information furnished by the operator in his request. That's what I had concluded.

MR. STAMETS: I theorize, Mr. Dent, that there may be other fields in the area and this particular location is not close enough to either one of them to tack a field name onto it.

MR. DENT: Thank you very much. I pass the witness.

MR. STAMETS: Mr. Campbell?

MR. CAMPBELL: I have a few questions. Mr. Dent, I didn't know Mr. Carr was entering an appearance here. We had a gentlemen's agreement that we won't duplicate the

LANPHERE REPORTING SERVICE

P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

case anymore than necessary. He has covered a number of the matters I had intended to interrogate the witness about.

CROSS-EXAMINATION

BY MR. CAMPBELL:

Q Mr. Beck, would you state for me one more time how it is that Yates determines where it proposes to drill a well in a drilling unit?

A They utilize all the data that's accent, make up certain maps and pick the best location they can within the proration unit.

Q What do you mean by the best location, the one nearest to the best well or where it falls on the contour? What do you mean?

A No, sir, not exactly. Just for a matter of discussion in case of Section 25 of 18-24, if that proration unit was the East half stand-up 320 we would drill that same as 660 of the east and 1980 from the north because it fit the geology the same, almost the same as the 660 location; but the north half is the proration unit, and 1980 from the north and 660 from the east would be unorthodox just like the 660 from the north and east.

Q Well, when you do that, do you automatically make application for an unorthodox unit if your spot on the

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contour, the best spot on the contour happened to be on an unorthodox location? Is that the practice of your company?

A It's not a fast hard rule.

Q You stated that there was some 88 orthodox locations and 33 unorthodox locations in the Morrow and this general area. Do you know how many of those 33 unorthodox locations are Yates' locations or in which Yates has an interest?

A I've got that here. Out of the-- There's 20 Yates unorthodox locations, however, that we must keep in mind that, I don't know for sure, but Yates has probably the bulk of the acreage in the country. So they would be drilling more wells than anyone else.

Q Do you believe, Mr. Beck, that a well drilled at an orthodox location on this unit would adequately drain 320 acres?

MR. LOSEE: Mr. Campbell, which unit are you referring to?

MR. CAMPBELL: I'm talking about the first unit, the south unit on Section 25.

A You're asking if on orthodox and unorthodox--

Q Yes.

A --location would drain it? I really don't know

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

I'd say that-- I just couldn't answer for sure.

Q Well, do you think unorthodox location you're proposing will adequately drain 320 acres?

A Well, there again I don't really know total gallons or anything. I just couldn't answer that with any sureness.

Q Well, have you made any calculations of the potential reserve under Section 25 at all?

A No, sir, I haven't.

Q Or where those might be located?

A No, sir, I haven't.

MR. CAMPBELL: Do you have a witness who has?

MR. LOSEE: No, sir.

Q (Mr. Campbell) Well, is it a fair statement to say that when you refer to locating wells or recommending location of wells so that they're prudently placed, that prudently placed from your point of view as a geologist in recommendation to your management means the place where that well will gain the greatest production irrespective of the rules with regard to spacing?

A Considering the data we have and the nature of principal reservoir we're after, we would locate at the best possible place according to geology.

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SANTA FE, NEW MEXICO 87501

Q When you refer to-- When you answered Mr. Losee's question that you felt that these two unorthodox locations would protect correlative rights, whose correlative rights were you referring to, Yates'?

A We protect the correlative rights of the people in the proration unit as described.

Q Just within the unit? You weren't referring to other people's correlative rights in the area?

A I'm talking just about the people in the proration unit.

MR. CAMPBELL: I think that's all.

MR. STAMETS: Are there any other questions of this witness?

MR. LOSEE: Mr. Examiner, while they're referring--

May I make certain I'm clear on status of these applications. It's my understanding that with regard to the proposed locations in Section 13 that the applicant here did file and obtain approval for an orthodox location for a well to the Morrow, through the Morrow. That was on the Commission's Form C102, and it was on USGS Form 9331C. That's as to the location in Section 13. The application which was filed with the Commission, and I would like to ask

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

what date that was filed, please, on this same section in Case No. 6232?

MR. STAMETS: As received on May 1, 1978.

MR. LOSEE: That on May 1, 1978, the applicant filed his application for unorthodox location for the Cities JG No. 1 well and sought to use that location drilled to a depth sufficient to adequately test the Wolfcamp and Pennsylvania formations. That's what the application copy I have indicates. The file reflects that does it?

MR. STAMETS: Yes, and also, looking further back, I see here that that was phoned in to me on April 27 by Joe Carson. And I also see that I'm the one who wrote 4 Dinkus on this application, and so I'm responsible--

MR. LOSEE: That is my observation, just so the record will be straight, that when the notice was prepared the notice contained the statement that the proposes unorthodox location for the Cities JG well number 1 was in the 4 Dinkus field, Eddy County, New Mexico. Is that record right on that whole transaction now?

MR. STAMETS: That's how it got in there, and I'm certain that that's the way it's advertised although I don't have a copy of the ad with me. The docket is taken directly from that. I'm sure that's the way it is.

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P.O. BOX 449
54 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

MR. LOSEE: Thank you. What I-- I guess, Mr. Examiner, there's nothing that I saw in the application that indicates 4 Dinkus field. That's what the Commission added when they prepared at the least the circular and probably that.

MS. TESCHENDORF: May I clarify that? Our statutes require that when we advertise that when we advertise we have to name the common source of supply, give notice to the people, and I think probably this was so close to the 4 Dinkus field that that's why it was included.

MR. LOSEE: And the area to which it is as close is not designated as I understand it; is that correct?

MS. TESCHENDORF: Where actually it's not designated--

MR. LOSEE: To the northeast of that, toward the east of that.

MR. STAMETS: Let's go off the record a minute.

(WHEREUPON, a discussion held off the record.)

MR. STAMETS: Let's go back on the record.

Do you have anything further, Mr. Campbell?

MR. CAMPBELL: No, not at this time.

MR. STAMETS: Any other questions of this witness?

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

He may be excused.

MR. LOSEE: I think that's the applicant's case.

MR. DENT. Mr. Examiner, my name is Don Dent.

I have one witness appearing on behalf of Mesa.

We have handed you a packet of exhibits, and it has a cover letter marked Exhibit A. These exhibits are the same for Cases 6231, 6232 and 6213 with the exception of Exhibit 7 of each of the packets. I think you'll find-- The others will be the same exhibits in each case. We made separate packets in the event 6231 and 6232 were not consolidated.

ROY WILLIAMSON, JR.

the witness herein, having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. DENT:

Q At this time I'd like to have the witness state his name, please.

A My name is Roy Williamson, Jr. and I'm President of the consultant firm of Sipes, Williamson & Aycock with offices in Midland and Houston, Texas.

Q Mr. Williamson, are you appearing here today at the request and on behalf of Mesa Petroleum Company of

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58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Amarillo, Texas?

A That is correct.

Q In preparation for this hearing, have you made a study of what Mesa categorizes as its Cass Ranch prospect which includes the lands and wells situated and involved in Cases 6231 and 6232?

A That is correct.

Q And further in preparation of this hearing, did you prepare certain exhibits?

A Yes, I did.

Q Also as you prepared for this hearing, did you find that Mesa geologists had prepared certain exhibits for this hearing?

A That is correct also.

Q Because of commitments of these geologists in Midland who are unable to attend that hearing today, did you review the data and the exhibits and map prepared by the geologists?

A That's correct and in some cases where I had a different opinion we changed the map to reflect my opinion.

Q So in your testimony today although Exhibits 1 through 5 were not prepared by you and particularly at all times under your supervision, they have been approved, looked

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P. O. BOX 449

58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

at and approved by you and you concur in what they show; is that correct?

A Well, I'd like to correct that slightly. One and 2 were the exhibits prepared by Mesa in which I concurred after some changes. The other exhibits were prepared under my direction with the exception again of exhibit 5 which uses the Mesa map as a base with my interpretation which I get into later today.

MR. DENT: With those qualifications on Exhibits 1 and 2, Mr. Examiner, do you have any problems with this witness presenting these exhibits?

MR. STAMETS: No. The witness is considered qualified.

MR. DENT: Thank you.

Q (Mr. Dent) Mr. Williamson, will you refer to what has been marked as Exhibit No. 1 and explain to the Examiner what its intent to show on that exhibit?

A All right, Exhibit No. 1 depicts with the black contour the structure map on the top of the Mississippian. And the red lines indicate our interpretation of the Isopach in the Morrow zone. I will further define this net thickness in the Morrow as being clean sand, it exhibited cross-over between the neutron and density logs which indicate the gas

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58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

bearing sand. Also on this map outlined in blue is a cross-section AA prime which will be discussed in Exhibit 2 in a moment.

Q What does the orange acreage indicate on this map?

A The orange acreage indicates that acreage in which the Mesa Petroleum has an interest.

Q Mr. Williamson, what is the difference in nomenclature between an Isolith of clean Morrow sand and Isopach map as you have just explained?

A Well, the way I understand the previous witnesses explanation of his Isolith, it is a clean Morrow sand as depicted by anything cleaner than 15 units on a gamma ray curve. I may stand to be corrected on that, but I believe that's what the witness testified.

I have further defined that pay as being that pay which exhibits cross-over between a neutron and density log which normally indicates gas bearing sand.

Q I noticed that on this exhibit you've noted that a line AA prime. What does this indicate?

A AA prime is a cross-section that will be presented as Exhibit 2.

Q Do you have anything further on this exhibit?

A No.

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Q Refer to Exhibit 2 and explain it to the Commission.

A It is a cross-section denoted AA Prime. It is an east-west cross-section as shown on the trace AA Prime with Exhibit 1. And on this map we have various horizons identified such as the top of the Morrow, the Upper Morrow Sandstone, the Lower Morrow, the top of the Mississippian Shale, and the top of the Mississippian Limestone. I'll call your attention to the colors on each of the wells. The yellow color being that about a pay that is indicated to be clean on the gamma ray curve, and the red being that portion of the pay that exhibit cross-over between the neutron and density logs. I'll call your particular attention to the Mesa Petroleum Lincoln State Common #1 which is the second well from the left. We have correlated a zone in here that we believe to be correlible with the producing zones in the other six wells or other five wells plus the dry hole, and we think that this is and we know it is from sample calls a conglomerate section in the Morrow. You will also observe above what we say the Upper Morrow Sandstone, there is additional yellow and additional red coloring. This is a Morrow Sand. It is a fine grain sand and it is completely different type of reservoir rock than we have in the

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P. O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

conglomerate section. I have shown this merely to show that we are picking out the additional zone that has not been tested. Log analysis indicates that it should be productive, but it has not been included in any of our reserve estimates, Isopach calls or any calculations.

Now referring back to Exhibit 1, and in Section 24 we have the Lincoln State well there. You'll notice there the figure 17. That is the net pay that is in the conglomerate zone as previously described. The figure below it in parenthesis is 30 feet, and that is the pay zone that would be counted in the fine grain sand above the conglomerate zone. And that's merely put in there for information. It is not in any of our calculations other than it indicates in our opinion that in this section we're beginning to see an additional build-up of possibly productive sand in the Morrow.

That's about all I have on Exhibit 2.

Q What have you shown on Exhibit 3?

A Exhibit 3 is merely the available production through March of 1978 on Morrow wells that are in the area of interest at this time. We have the Antweil, Penasco well, the Rio Common well, the Bennett & Ryan Lonetree and the Gulf Oil Corporation Eddy GK State No. 1. Our records do not

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

show any production from the number 2 through March, however, I'm sure this well is being tested as previously indicated by another witness.

Q Have you shown additional data and information on Exhibit 4?

A All right, Exhibit 4 can be called a Well Data Sheet for the wells that appear on the cross-section, Exhibit 2. Listed on the left-handed column is operators, lease, well number, the well location, perforations, drillstint testing information. And I might point out, while we're on that column, that the final shut-in pressure as exhibited by the DST data indicates very good correlation in pressure which correlates with my opinion that this conglomerate section in the Morrow is a continuous sand.

In the Morris Antweil No. 1 well, we had 3252 pounds, the Antweil Penasco 3356, the Yates Petroleum Federal AB 3269, no DST on the Gulf GK 1 or 2, the Mesa Lincoln State Common was 3282, and in the Cass State Common 3111.

The next column shows test data. If a well was subjected to a single point or four point test, we have the prorates denoted, with the final column being the Calculated Absolute Open Flow if it was prepared for the well.

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58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q Mr. Williamson, refer to Exhibit 1 before we pass to Exhibits 5, 6 and 7.

As depicted on this Isopach, does the geology support the drilling of a well in Section 13 and Section 25 at an orthodox location?

A Yes, sir, it does.

Q Do you have an opinion as to whether or not there will be any loss to Yates that is through recoverable hydrocarbons by the movement of the proposed location to an orthodox in each of those sections?

A In the case of Section 13, my calculations will show as I will testify to later that an orthodox location will generate more reserves than unorthodox locations. In Section 25, the orthodox location will generate slightly less reserves than the unorthodox locations.

Q Is it your opinion that based upon this Isopach and your study that an operator would prudently place his wells at orthodox locations in both of these sections?

A That is correct.

The Morrow field has been developed to date on orthodox locations, and I see nothing in evidence at this time that would say that the operator should depart from this practice.

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
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Q In preparing for this hearing, did management of Mesa instruct you in any way as to its desires or intentions of Yates if they would not drill such wells at an orthodox location?

A Right, I was instructed to read into the record that the Mesa Petroleum will farm out from Yates Petroleum an orthodox location in either Section 13 or 25 under standard industry terms for the area.

Q If you were asked to pick a location and support it at this Commission, do you have an opinion as to whether you would support an orthodox location at each section?

A Yes, sir, I do. I think Exhibit 5 and 7 will support that, and I would like to discuss the way I arrived at both of those conclusions.

Q Okay. Pass then to Exhibit 5 and explain what you've shown on this exhibit.

A Okay, Exhibit 5 we have shown in Section 13 at the unorthodox location a circle that represents 320 acres of drainage, and that circle is partially colored orange, the intent meaning that if that well were drilled there and if we did have a homogeneous isotropic reservoir that we would have a circular drainage radius and it would cover the area as shown on this map. I have shown also in Section

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P.O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

13 an orthodox location which would be 660 from the south line and 1980 from the east line of Section 13, a circle also depicting 320 acres of drainage and partially colored green. Now, I can also say that that orthodox location could be moved north of the unorthodox location or north and west of the orthodox location; and if it were moved north of the unorthodox location, that is to a 660 from the east and 1980 from the south the green circle then would just be moved up and would have the same relationship to offsetting acreage as this one does.

Now down in Section 25, I've shown the same thing. The unorthodox location is 660 out of the corner with the orange circle, the orthodox with the green.

Now the purpose of this was to show what drainage would occur outside of the 320 acre units that would be assigned to the Yates well in either case, this drainage occurring from the offsetting leases.

In order to explain the further calculations, I'd like now to refer to Exhibit 6. And I've entitled Exhibit 6 as Ratable Take Factor. Now I'd like to preface this by saying that in our opinion an unorthodox location either in Section 13 or 25 would not harm recoveries by Yates Petroleum. In our opinion, it would more adequately protect

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P. O. BOX 449
38 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

correlative rights. However, in the case of an unorthodox location is approved, and we are not recommending that at all, I have calculated what a penalty would be based on acres of drainage that would occur from the unorthodox location.

I'll read now from Exhibit 6 saying your orthodox location has drainage encroachment outside of the 320 acre unit which is allowed by the current rules of 86.78 acres. That would be the green portion within the 320 acre circle.

The unorthodox location has drainage encroachment outside of 320 acre unit which would be the solid orange and then the orange and green hazard (sic) would be 151.86 acres.

The additional drainage encroachment of a well at the unorthodox location then is 65.08 acres.

A ratable take factor then could be calculated as follows: Standard Unit acres which is 320 minus additional drainage encroachment acreage which is 65.08 divided by the standard unit acreage of 320 acres which is a factor of .7966. And it would be my opinion that if the unorthodox location were approved, that the minimum ratable take factor would be this .7966 to be applied to that well to protect correlative rights of the offsetting acreage.

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

MR. DENT: Mr. Examiner, we'd like-- It's Mesa's position that Exhibit 6 has been offered to show or quantify the additional drainage encroachment caused by the unorthodox locations if any. It is not our intentions to offer this as a compromise or a solution to this problem.

We feel that these types of data and testimony is required in a field rule hearing, and it should be taken up in that hearing in the event these applications are granted. We're not offering it for any reason other than to quantify the extent of encroachment.

A I'd like to further clarify the reserve number that I mentioned earlier by referring to Exhibit No. 7 in Case 6231 and to Exhibit No. 7 in 6232. What I have done in each case is calculate, based on the Isopach data from Exhibit No. 1, what the expected ultimate recovery would be from a 320 acre drainage circle at an unorthodox and an orthodox location for both sections 13 and section 25. And I realize that if you move the orthodox location into another orthodox location we might have slightly different numbers, but in my opinion the adequate positions at unorthodox locations exist to adequately drain the gas reserves under the Section 13 and Section 25 unit.

I refer first to Case 6232, Exhibit 7. I've

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

determined an average porosity, an average bottom hole pressure, a water saturation, a gas gravity and assumed drainage area, a gas formation volume factor, a volumetric calculation of available space in which gas can be stored. I have assumed a recovery factor of 80%, and if somebody wants to argue about those recoveries that's fine. Whatever you do to one you do to the other for the ratios are the same.

For the orthodox location then using the isopach data on Exhibit 1, I calculate a potential recovery of 8,451 MMCF. If you drill at the unorthodox location, based on the mapping from Exhibit No. 1, the well would recover 6,761 MMCF.

I'll be the first to admit that we're not dealing with perfectly radial drainage from each of these wells. I think the data exists to show that either location is roughly the same as far as recovery.

Now, I refer you to Exhibit 7 for Case 6231. I've gone through the same approach. The orthodox location would recover 8,413 MM. The unorthodox location would recover 8,954. So the unorthodox drainer, ignoring drainage from the offset leases would gain approximately a half a billion Mcf in reserves; but it is my contention that the mapping

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

that we have available, the interpretation of the data that we have available bears that either location would be adequate and that the orthodox location would present unnecessary drainage of the offset operators and therefore would better protect correlative rights, and I can see no reason that it would create underground waste.

Q Is it your recommendation that these applications be denied?

A That is correct.

MR. DENT: We have no further testimony.

MR. STAMETS: Any further questions, Mr. Losee?

CROSS-EXAMINATION

BY MR. LOSEE:

Q Mr. Williamson, you're an engineer, I take it.

A I have a petroleum engineering degree and a geology engineering degree from the University of Oklahoma.

Q I believe your testimony was that Exhibit 1 and 2 were prepared by Mesa geologists and you reviewed the data; is that correct?

A That is correct. And I made some changes which they're made at my direction.

Q What is the name of the geologist that prepared it?

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A Mr. Joe Jeffers.

Q Anyone else with Mesa?

A Not to my knowledge. Marion Causey who was the district exploration manager was involved in this, but I do not believe he prepared any of the exhibits or worked on them.

Q I recall your prefact to your discussion on Exhibit 5 which is the circular exhibit that that assumed a homogeneous reservoir?

A Yes, sir. Homogeneous drainage.

Q Well, would that also be a similar reservoir, homogeneous in character?

A I think you can say that it would be, right.

Q Well, is this reservoir or reservoirs that we're dealing with in the Morrow in this area a homogeneous reservoir?

A I'm sure it isn't. I don't think there's a reservoir in existence as it is.

Q Well, isn't it true that the Morrow generally speaking is probably the least homogeneous reservoir in southeast New Mexico?

A I couldn't necessarily say that. I would say that in my opinion, and I've looked at a lot of Morrow, that

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

the Morrow that we can correlate with our cross-section in this area is more homogeneous than most I've seen.

Q Turning to your Exhibit 4, two Morris Antweil wells, one the Rio No. 1 and one the Morris R. Antweil No. 1, would you explain the reason and the difference in the bottom hole pressure of some 300 pounds upon completion of those wells?

A The only way I can explain that is the DST pressure was not projected to a pressure build-up analysis. and unless you do that on a dimetrical time basis and extrapolate it to the metrical time we cannot adequately relate within these numbers of pounds the two pressures. I have not had access to the DST pressure record. If I did I could analyze them and tell you exactly what the pressure difference was, but in my opinion I would estimate that the difference is based upon the degree of buildup that was measured in each of these tests.

Q Well, now, let me ask this on your exhibit.

A Which exhibit, sir?

Q Well, the same one, Exhibit 4. The Morris R. Antweil shows set in BHP, bottom hole pressure, 2447? Isn't that actually the wellhead shut-in wellhead pressure, the four point test?

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A Well, according to the record that we have, that was a measured bottom hole pressure, but I do not have access to the initial data.

Q All right, well, Morris R. Antweil Penasco No. 1 shows SIWHP. Is that shut-in wellhead pressure?

A I would imagine the difference there again is question of buildup time. Again, I have not analyzed those data completely.

Q Well, if you adjusted that shut-in wellhead pressure of 2700 pounds to the bottom hole pressure, the difference would increase dramatically between those two wells?

A Well, it would increase by the weight of the column of fluid in the Penasco well depending on whether it was gas or water, but without a pressure buildup the correlation of those pressures is indefinable.

Q Well, if you adjusted the wellhead pressure to the bottom hole pressure--

A It would be higher, yes, sir. And the difference would be greater, but if those were indeed buildup pressures extrapolated to dimensionless time then you would say that the pressure in the two wells were different; but I cannot state that because I don't have the basic data.

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q Well, what you're saying is that you can, you think you're dealing with the same reservoir in the Rio well of Morris R. Antwell as you are in the Penasco, and you show that the shut-in bottom hole pressure of the Rio well at completion was 2447 pounds and you show that the shut-in wellhead pressure of the Penasco adjoining well was 2703 pounds. You think they are producing out of the same reservoir.

A From all that we can do by interpreting the correlation of the log, I would say they are. I think the difference, and again it's only an opinion bause I don't have the data, I think the difference is function of the buildup time for that pressure in each well. I cannot testify that because I don't know. That is merely an opinion that I have. The Rio well produces inferior to the Penasco well. Whether that's a function of permeability characteristic of the reservoir of which we have no way of really measuring without doing some DST, I mean some pressure buildup work. It's obviously an inferior well. So something has happened, but I do believe from the log work that it is a correlable reservoir.

Q Notwithstanding-- You make that statement notwithstanding the rather dramatic pressure differences and

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

the rather dramatic production history difference between those two wells?

A Yes, sir, from the log they're correlable zones. What happens to the permeability, we don't have a tool as yet that measures that unless we do some buildup pressure work which could be done on the wells to define what the permeability variation is in the two wells.

Q Your exhibits 5 which is the circular exhibit and your Exhibit 6 on your proposed ratable take factor are both based on an assumption that you are dealing with a homogeneous reservoir?

A They're based on the assumption that we have an equal radius drainage area around each well.

Q Do you think that's true?

A Probably not, but I don't think anybody could measure it. There's no way to measure it unless you want to drill a well on every 40 acres and do some very detailed correlation and geologic and pressure work.

Q You say it's probably not true. How would you expect the Commission to rely on this data in responding to this application?

A Well, they rely upon data they have done historically because as reservoir engineers we must make our

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

assumptions and calculate with some data that are measurable, and I think we all know that the fact that you drill a well and log it, that log has a certain radius investigation. You know whether it's going to be the same 50 feet out as it is 20. So we take the data that we have and make the best interpretation that we can and we drill our well on that basis.

Q Well, isn't it true that many of the reservoirs that the Commission deals with are readily susceptible to a radial drainage much more so than the Morrow is in this area?

A I can't make that statement because any reservoir that you're dealing with is going to have a variation in thickness, it's going to have a variation in porosity, it's going to have a variation in permeability. All of these will affect what the actual drainage radius of that well actually is.

Q Well, isn't it true that the Morrow is the least predictable out from the wellboard as to thickness, continuity?

A In some cases it is. As I stated earlier in my opinion this is one of the most predictable Morrow sands that I have seen because you can correlate essentially the

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P.O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

same section from well to well, you have essentially the same pressure originally. I think what we've seen after some time of production is that there's a permeability factor in the reservoir that we can't measure, and I can't make a statement that it is less predictable than the other reservoirs.

Q Well, if you can't pick the permeability, how do you determine that the drainage is in a radial fashion?

A Because that's the only basis upon which we can make that assumption. If you want my real opinion as to what would happen, I think the unorthodox locations in 13 and 25 would drain preferentially from the offset area and probably would drain more when the offset leaves because that is the known reservoir at this time. So if I made a calculation, I would say that would be an egg shaped drainage pattern more on the offset lease than on the 10 and 20 acre units that I have shown on this exhibit, but I have not tried to predict that because I don't know.

Q The oldest well in this field has been in, what seven months? Is that about it between--

A Apparently the Penasco and Rio Common started producing in September of '77 according to State records.

Q And based on that production history, you feel

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

that you can determine the reserves?

A No, sir. I don't think that the trend has been established whereby you can take production history and extrapolate it. At this point you're dealing with a biometric calculation having the same drainage area, thickness and recovery.

Q Which you admit is not present in this reservoir, uniform thickness, uniform permeability?

A Well the thickness we have-- We have printed an Isopach map back in Exhibit 1 which is a contouring of the available data. We take the thickness in each well, extrapolate it off the log, and we assume then that the reservoir between these wells act as we see. It would make a contour. That's a normal approach to a structure map, an isopach map, any kind of map which has scatter data points and you make a correlation or interpretation between those points.

MR. LOSEE: I think that's all.

MR. STAMETS: We'll take about a 15 minute coffee break.

(WHEREUPON, a short recess wastaken.)

MR. STAMETS: Back on the record.

I have a few questions here.

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58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

MR. DENT: Mr. Examiner, before you ask your questions, we would like at this time to have the witness refer to what has been marked as Exhibit 8.

These are data and information which he has obtained from the files of the Commission during the recess.

REDIRECT EXAMINATION

BY MR. DENT:

Q We would like to offer that exhibit, and explain what it is.

A Yes, sir. The prime purpose of Exhibit 8 is to make a correction on our Exhibit No. 4 on which we have shown the Morris R. Antweil Rio No. 1 to have a shut-in bottom hole pressure of 2447, and our scout ticket that we took it off of was in error and we actually have the Form C-122 which shows that to be a tubing pressure. So it is a shut-in tubing pressure which is still different, of course, from the Penasco well but it's not as much as it was before. Twenty-four forty-seven then is a tubing pressure rather than a bottom hole pressure.

MR. DENT: At this time we would like to offer Exhibits 1 through 8 into evidence.

MR. STAMETS: These exhibits will be admitted.

(WHEREUPON, Exhibits 1 thru 8 admitted into evidence.)

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

MR. STAMETS: Are you through now?

MR. DENT: Yes, sir.

EXAMINATION

BY MR. STAMETS:

Q Mr. Williamson, in unprorated Pennsylvanian Wolfcamp gas pools, if the Commission grants-- Well, let me go back. In these unprorated pools, is there any effective way for the Commission to offset an advantage gained by an operator who crowds proration unit lines?

A Well, the only advantage, I mean the only correction that could be made to that advantage would be to restrict the producing rates of that well at the unorthodox location such that correlative rights across these lines would be protected.

Q And in the same prorated pool, is there any effective way for the Commission to do that?

A Well, I understand, and I may stand corrected on this. I understand that these wells are all producing essentially at capacity. And the only thing then you could do is take the capacity of that well, that is trying, of course I think you would have to come with some relative calculation of capacity and then penalize the well that's nearer than an orthodox location. In other words, you would

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P.O. BOX 449
50 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

then say that in this case capacity is allowable. Of course, if we had field rules and had that established which I think obviously has got to be done very shortly in this field, you can handle it with an allowable situation. Until that allowable is set, I think the only way you could do it then is, as in this case you do have capacity production from each well, take the capacity production and reduce it by the ratable take factor.

Q Okay. Your Exhibit No. 6 is an indication of how much encroachment there is on your acreage resulting from the unorthodox locations, and this is calculated for each Case 6231 and 6232 as to the northern well. Now, you have figured this on the basis of a lay down proration unit, and what's proposed as the stand up proration unit would be--

A --it'd be the same calculation.

Q It's the same calculation, but the result would be different?

A No, sir. The result would be the same. Just take what you got and turn it to the side, and you would have the same amount of drainage encroachment from the orthodox location as you do now. In other words, you swing it up to the north of the unorthodox location.

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Q I'm speaking specifically as to Mesa's acreage.
If you move--

A Oh, Yes, sir, as to Mesa's, I'm not specifying Mesa as being encroached. Whoever owns that lease outside the 320 acres assigned to A-12. Now then, if the A-12 moved to take a stand up on the east half and put it 660 from the west and 1980 to the south, then that would reduce encroachment from either case then because most of that proration unit then or the drainage area as we depicted would be in the Section 13, 320 acres to the south.

Q In recent orders where the Commission has assigned ratable take factors to wells which have crowded the line in addition to the net additional drainage encroachment, the Commission has taken into consideration the percentage, well a factor that is a percent derived by taking the standard location and then the unorthodox location and dividing the former into the latter and doing this for both the north-south/east-west standard locations and adding the three together and dividing by three, and you feel this is appropriate formula for determining the penalty factor?

A I must admit I didn't quite follow you.

Q The theory behind this is that if you just strictly go on drainage, you could move clear off of your

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

proration unit and still have some drainage rights.

A I see, okay.

Q But you really don't have any rights to drill over there. So if we assume that in a standard location you have 100% rights to drill and your neighbors probably have 0%. As you move from the standard to the nonstandard your rights diminish so that half way between standard and off to your property you had 50%.

A Oh, I see.

Q The same is true with north-south/east-west. So you add all three of these together, for instance you add your 79% based on encroachment and say 50% based on north-south and 100% based on east-west, divide these by three and that would be the ratable rate factor.

Does that seem a reasonable way to take all these things into account?

A Well, I really, I'd have to sit down and calculate what you're saying there, but I think that the approach that would be the most straightforward would be to take something like this. In other words, you got to take into account where the well will be drilled as opposed to where it should be drilled. And I think that the rules as the State provides now allow for encroachment on the 660 side.

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

Obviously that would be "a standard allowed encroachment" and you move in towards then the 660 location you would be gaining more and more encroachment until you got the maximum encroachment at the 660 location.

So I could see if you want to drill half way in between on a side between a standard and a 660, then there would be some other factor in there, but I think you would need to take into account actually where that well is drilled as opposed to averaging all the possibilities that could be taken that if I understand what you're saying, you're saying that you're averaging all the possibilities of where the standard location could be as opposed to nonstandard.

Q I think you misunderstood me. It's not averaging the possibilities, it's just taking the closest, the nearest standard location and then come up with a percentage of how that varies to the non-standard location.

A Non-standard. Yes, sir, basically that's what I've done here I think on the 1980 versus the 660.

Q You indicated this particular Morrow sand is more predictable than the normal Morrow sand. Why is that?

A Well, the mapping that we have here indicates a channel sand of some kind, and I guess you get a pretty argument of whether it's channel sand; but we see from our

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P. O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

going back to Exhibit 1 that we have some other Morrow wells down in southeastern part of the map in Section 10, Section 4, Section 3; and utilizing all the available data, we see a trend here, sort of a north-west/south-east trend and by looking at least the 7 wells that we looked at that were adjacent to the acreage in the cases under consideration, the zones seemed to be generally correlable, seemed to have more or less the same characteristics and eventhough we see some differing characteristics of the wells I think that's going to always happen, but I've seen many Morrow wells that are only, fields that are only one or two wells in size. I've seen some that look great on DST, you set pipe and perforate them and nothing comes out. They obviously have a very small drainage area. I've seen some Morrow wells that produced outstandingly for a while and then because of limited drainage areas declined in production very rapidly. And by interpreting the correlation between these wells, it seems that this is a more or less correlable zone to a fairly large distance.

Q On Exhibit 1 in Section 14 on northwest part of the exhibit, there's a marathon well showed to be a Wolfcamp producer. Do you know if that well was drilled to the Wolfcamp or Morrow rather?

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A No, sir, that NDE means not deep enough.

Q Okay.

Q So it would not have a Morrow point in that well.

MR. STAMETS: Any other questions of this witness?

Q (By Mr. Losee) Mr. Williamson, does the completion work on the Mesa's Lincoln State indicate that it's going to be a pretty good well?

A I have not analyzed the completion on that well. I understand that it's just been perforated and is on the test now, but I have not seen any data.

Q Has it been isostasized (sic)?

A I don't know.

MR. LOSEE: That's all I have.

MR. STAMETS: If there's nothing further, the witness will be excused.

C. D. STENBERG

the witness herein, having been previously sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CROSS:

Q Would you state your name, employer, position

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P. O. BOX 449
34 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

and location for the record?

A My name is C. D. Stenberg. I work for Gulf Oil Corporation in Midland, Texas.

Q Have you previously testified before the Commission and stated your qualifications as a production geotechnologist?

A Yes, I have.

MR. CROSS: Is the witness qualified?

MR. STAMETS: Yes, witness is considered qualified.

Q (Mr. Cross) Mr. Stenberg, do you have an exhibit which shows the area in which the three Yates unorthodox locations are portrayed?

A Yes, I have, it's labeled Exhibit No. 1.

Q Would you please explain your interpretation of your Exhibit No. 1 to the Examiner?

A Okay, Exhibit No. 1 is a combination structure Contour map and Isopach map of pay thicknesses over 5% porosity. The structural contour are the light colored solid lines which range in values from 40-- about 4650 down to -5250 sea level data. The heavy dash lines are the Isopach thicknesses of porosity 5% or more. Now these 5% porosity figures are based mainly on cross-plot porosity

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P. O. BOX 449
38 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

of neutron density logs two or three wells had only a density or a sonic log but by and large the cross-plot porosity values are pretty good values.

Q What does the red line mark A-A' depict?

A This is the subject of our Exhibit No. 2 which is the cross-section--

Q Before you go any further, would you please explain your appendage on your Exhibit No. 2?

A Oh, yes, that was late data after we went to print with the first part, therefore, they look a little different, right. We don't have-- I don't have the well data, some of the well data and so forth at the bottom of the logs.

Now, these-- The cross-section is hung on a reference, the reference datum is the same point from which the structural contours are drawn on Exhibit No. 1. For ease of correlation purposes, they're colored in blue. There are two lines colored blue which are the correlation markers which are used to construct the cross-section.

Below the reference line is a row of yellow colored zones and this depicts the main Morrow sands through the cross-section interval. This, I believe this correlation here bears out what the Mesa witness said that through this

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P. O. BOX 449
56 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

area there is a very good correlative zone and it is a continuous pay section through several miles that the cross-section covers.

Now, opposite the yellow marks are the red colored porosity which is the, shows the porosity that's 5% or greater in all these wells.

Now, listed down at the bottom in the well data for each well in the cross-section have the perforation zones, completion dates, calculated open flow or initial potentials and the amount of net pay in each well. And the amount of net pays coincide with the Isopach thicknesses of pay on Exhibit No. 1.

I believe some of the wells towards the left-hand side of the cross-section will show why an unorthodox location in the North half of Section 25 18 South, 24 East would not have to be drilled. These are the Yates No. 4AB which is the 5th well from the left-hand side on the cross-section, the Mesa Well on Section 17 which is on one of the second one on the left from the appendages on the end. And the last one on the left-hand side of the cross-section which is the Pubco No. 1 Cass State Comm. Now referring to Exhibit No. 1, these three wells mentioned which are in Section 14, 18 and 25 and the Mesa well in Section 24, 18-24 and in the

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P.O. BOX 449
16 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

section south the Pubco well in Section 25, these three wells form a triangle which appends the northeast quarter of Section 25 where the proposed, the location in question is located.

Now, the values of these wells are respectively 14 feet, 17 feet and I give the Pubco well a value of 16 feet. Now, we have, now, there is a correlation difference on the Mesa Petroleum well. The Mesa Petroleum geologist correlated it and his reference, his point of reference is below my yellow colored lines and is down on the bottom bed which is colored red. Now what this amounts to is is really, as far as I'm concerned, is regardless of which way, which is the correct correlation what we have is a 17 foot pay zone, one of those which will correlate with the rest of the zones in the cross-sections in the other wells, and also we have 17 more feet which is not developed in the other wells. So that the Isopach map is based on 17 feet, however, actually for completion purposes are actually 34 feet of producible porosity in the Mesa wells.

One more, I'd like to mention the drill stint test in the Pubco well which is in the left-hand side of the cross-section. As you notice, there's a drill stint test up in what I believe would normally be called the Atoka part

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P.O. BOX 449
50 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

of the Pennsylvanian and it did not cover the Morrow sands down at the bottom. So therefore, we have what I consider 16 feet of potential pay sand down in the bottom of the Pubco well which was not tested before it was drilled and abandoned.

The Mesa geologist did inform me in Midland that they are attempting to talk their management into going back into the Pubco well which they now own, Mesa now owns and test those things and see if they are productive. From log indications, they look like they could be productive.

Q What does your Exhibit 2 suggest regarding the application in Section 13?

A Okay, now section 13 we're concerned with the east half of the section. In this, from the cross-section we have, as has already been previously established with other testimony, we have a very good sand or this pay sand from the southeast up to the northwest. I think the main wells to be considered here are the Gulf GK 1 and GK 2 wells in Section 13 of 18-25, the Mesa well again in Section 24, and with the thicknesses of pay that are involved it shows a very good trend in the northwest direction. So therefore, it appears that an orthodox location will encounter enough, as much pay section, not as much pay section but it will encounter enough pay section to be commercial versus the

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

unorthodox location.

Q If your company owned these tracts, would you recommend that they drill a well in orthodox locations?

A Yes, I would.

Q If your company owned this acreage, would you request an unorthodox location?

A No, I would not request an unorthodox.

Q If this acreage was available for sublease, would Gulf be interested in it under the premise of drilling at an orthodox location?

A Yes, if it were available for sublease, Gulf would be very interested in an agreement to drill at an orthodox location.

Q You have anything to add?

A Well, yes, I could add a few statements why I believe that I would recommend that if it were available for me to do so. This trend that's established to the west and the northwest without any closer control out to the west to indicate that we're going to come to the end of productive sand with all the proponderance of information that we have up to this point that we have a good trend established in production that with good explortation work instead of prod-
ding locations in toward known producers the best explortation

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

work would be to develop acreage with orthodox locations, therefore, outlining production in a better manner and obviously or evidently we could therefore recover more gas.

Q Were Exhibits 1 and 2 prepared by you or under your supervision?

A Yes, sir.

MR. CROSS: No more testimony.

MR. STAMETS: Questions of this witness?

No questions.

MR. CROSS: I offer Exhibits 1 and 2.

MR. STAMETS: These exhibits will be admitted.

(WHEREUPON, Gulf Exhibits 1 and 2
admitted into the record.)

MR. STAMETS: The witness has not been excused yet.

EXAMINATION

BY MR. STAMETS:

Q Mr. Stenberg, I now have three maps on the Morrow none of which agree as to, general as to thicknesses and how they lie in here and where the thick parts are and where the thin parts are. I will say that they seem to all agree that there is a thin section in the northwest quarter of Section 20 and that's about the extent of their agreement.

LANPHERE REPORTING SERVICE

P. O. BOX 449
54 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

A Section 20, sir, where?

Q Section 20--

A Oh, 18-25. Okay.

Q Yes. You had a chance to look at the Yates Exhibits data interpretation, the geology?

A No, sir, not until just while they were testifying.

Q They seem to show a thick sand body that runs north-south through the area whereas your interpretation seems to show a thick sand body coming into the area from the west. Do you have any information on that?

A Well, from the east-- Well, as far as my Isopach map is concerned?

Q Yes.

A All right. Well, the main difference is-- Well, of course there are several different approaches to looking for in this case the Morrow sands. Now, the-- Mr. Beck said he was working on the premise of the gamma ray which would generally depicted the correlation curve and depicts how thick the bed might be.

Now, there is sometimes some relationship and sometimes not very much at all as to how thick the sand can be and how much net porosity will be contained in it. This

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

map is based on strictly on 5% porosity or greater within the same body, within this one sand body down in the Morrow that is colored in yellow in Exhibit 2.

Now, I could say for instance we have a thick sand in the Gulf No. 1 GS which is in the south, it's 1980, 660 south--no, it isn't, it's 800 and something south and 20, 30 roughly east of Section 18. It has a value of 2 feet on it, 18-25, 18 south, 25 east, Section 18. Now, it has a value of 2 feet. It's contour is just not far from the zero line. All right, now, that sand actually is thick. I mean on the log, it's a thick sand. However, the porosity development in it is very poor. In addition to that 2 feet there are about 4 more feet of porosity which would be up above my reference lying on the logs and they are running, they have run casing on the well and they will try to make a producer out of it, but generally that is quite relative that with that number of feet it will probably make a very poor producer. So therefore this type of map is actually what you might call "Effective Pay". As far as-- Maybe I could clarify that. Here's a sheet from-- Now, Slumber J had a seminar down in Midland May 4 and 5, this month. Now generally from Morrow sand, in the Morrow sand trend we had a pretty good idea of what the water resistivity is of the

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P. O. BOX 449
54 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

formation in most of them, whether there is water measurable they generally do quite well.

Now the porosity will vary from 5 to 20%, 20% is quite high. About the highest I've ever seen is maybe 22%, but 5% is generally considered sort of an arbitrary cut-off number. In fact, usually if you have less than 5% porosity you can't anticipate very much fluid from the formation because the permeability and the porosity are fairly relative and therefore you just won't have permeability to produce and the water saturations run from 8 to 80%. And like I said before, using the cross-plot porosity the neutron density log of which these all are on here I think except the Pubco well which is a sonic log. The neutron density cross-plot is generally a very good accepted porosity figure. There aren't many cores taken in the Morrow, but in a lot of formations where the neutron density log is run and is giving a lot of formations, then it will agree almost 100% with the core analysis measured porosity.

MR. STAMETS: Any other questions of this witness?

He may be excused.

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

CHARLES KALTEYER

a witness herein, having been previously sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CROSS:

Q State your name, employer, position in this case?

A Charles F. Kalteyer, K-A-L-T-E-Y-E-R, employed by Gulf Oil Corporation, Midland, Texas and I'm currently classified as Chief Proration Engineer.

Q Have you previously stated your qualifications as a petroleum engineer before this Commission?

A Yes, I have.

MR. CROSS: The witness qualified?

MR. STAMETS: Witness is considered qualified.

Q (Mr. Cross) Mr. Kalteyer, you have an exhibit showing the proposed location of Yates?

A Yes, sir, I have, Gulf Exhibit No. 3.

Q Would you explain that exhibit?

A We present Exhibit No. 3 to show the proposed location of the Yates State JM 660 out of the northeast corner and their Cities JG 660 feet out of the southeast corner of Section 13, Township 18, Range 24 East.

The purpose of this exhibit is also to show

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

the wells in the immediate vicinity of these two proposed locations. Immediately to the east of the State JM is Yates AB Federal No. 4 completed in March of this year with indicated production in excess of 10,700 Mcf per day. And to the north in Section 19 Gulf State GK well No. 1 completed in October of '77 with forced deliveries to El Paso in January of this year at the rate of 3,000 Mcf per day. And also in Section 19 is Gulf's No. 2 State GK and this is sales to El Paso in January of '7--, completed in January of '78, initial sales to El Paso in April at 3610 Mcf per day. Of course, we discussed the Gulf State GX which has not been completed in Section 18, Township 18, South Range 25E and of course of the Mesa Lincoln State Comm No. 1 in Section 24 of 18-24.

Q Mr. Kalteyer, in your opinion are there orthodox locations available to Yates that would adequately drain reserves under their tract?

A Yes, sir. Normally, there would be four orthodox location areas in each 320 acre as such, and they could be pointed out in each of these sections, Section 25 it'd be 660 from the north and 1980 from the east, 1980 from the north and 660 from the north, and 1980 from the west and 1980 from the north and west for Section 25. And for Section

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P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

13, 660 from the east line and 1980 from the south, 660 from the east line and 1980 from the north, 1980 from the north and 1980 for the east, 1980 from the south and 1980 from the east.

Q Have you made a study regarding the radius of drainage of a well completed in the Morrow in this area?

A Yes, sir, our Exhibit No. 4 is the calculation that we prepared. The radius of drainage, the radius of investigation defines the the circular system with the pseudosteady-state pressure distribution from a well. This form is found in the Society of Petroleum Engineers Monograph Volume V where the radius of drainage is equivalent to a constant times the square root of the permeability times time over porosity, viscosity and compressibility factor.

In principle this equation will give the time required for pressure disturbance or pressure sync created by production of the well to propogate away from the well-board. This radius of drainage, our investigation will move out and will eventually stop increasing when it reaches the reservoir boundary or the drainage regions of an adjacent well.

In this equation on Exhibit 4, the time is in hours, r is radius of drainage in feet, ϕ is porosity in

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

a decimal fraction, μ is viscosity, C is the compressibility factor psi, and k is permeability. By substituting known and reasonable values for the region an average porosity of 10%, viscosity as established from bottom hole pressure, viscosity .019975, a compressibility factor of $.2204 \times 10^{-3}$ and permeability of 1 millidarcy which was established by, as an average of two separate buildup tests that Gulf made on their Eddy GK State well No. 1.

We feel these values are all very representative for that area, possibly are conservative.

You'll note in the table that it takes on the 9-1/2 days for pressure disturbances to be registered at the radius of 660 feet. The significance of this time is that after only 9-1/2 days of withdrawal from a well located 660 from the lease line, it will be drawing reserves across that lease line from the assumption that it's not reached the reservoir boundary or reached the region of the adjacent wells, and so long we've indicated that 1320 feet at 38 days time elapsed, 1980 feet, 85-1/2 day lapse, and for a radius of 2106 feet which is a radius of a 320 acre circular unit the time elapsed will be 96.8 days.

The other significance of this data besides the drainage is that a well completed in the Morrow pay with such

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

permeability can drain a 320 acre drainage pattern.

Q Does your Exhibit 4 lead you to any other conclusions?

A Well, any well that is placed on a 660 feet from the offset operator property line will have a significant advantage in drainage of reserves across the line. In order to protect correlative rights, ideally it would be proper that our sections would be arranged to allow a well to be drilled in the center of a 320 acre circle. Since our sections are not layed out in this manner, the next best approach would be to locate a well at the midpoint of a 320 acre half section, this being 2640 feet from the end boundary and 1320 from the inside boundary. Of course, this would be ideal. The OCD has seen fit to grant considerable flexibility in placing the wells 300 and 320 acre half section allowing them to be drilled only 660 feet from a side boundary and 1980 from the end boundary.

Q In your opinion wells located at 660 feet from the side of Section 13 and 25 were very shortly after completion infringed on the correlative rights of adjoining tracts?

A Yes, sir, that's correct. It's obvious that even with the permeability of only one millidarcy it would

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

not be necessary for a well to be drilled only 660 feet to adequately drain the reserves under either of the sections.

Q Mr. Kalteyer, what are your recommendations regarding this application?

A My recommendation that the applicant request for an unorthodox location in both cases be denied and that they be allowed to drill wells at orthodox locations.

In the event that a permit is granted, it is recommended that a ratable take factor be applied to the reduction from the wells.

Q Have you devised a ratable take factor that would be applicable to this case?

A Yes, sir, Gulf's Exhibit No. 5 contains a ratable take factor determination which we recommend being applied in this case if the Commission so grants this unorthodox location.

By referring to Exhibit 3, you will note that circles have been drawn around the unorthodox requested locations and around orthodox locations. The circles are utilizing radius of 2,106 feet which is a radius of 320 acre circles.

By referring to Exhibit 5, the first part, the drainage encroachment outside of 320 unit by well at orthodox

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

location which has been accepted by the Commission, see sections A, B and C and X, Y and Z. The ABC being those for the drainage encroachment on orthodox locations of 102.81 acres. And in the case of the unorthodox, a total of 170.01 acres outside the 320 acre unit. It shows an extra drainage encroachment of 67.20 acres, and by solving the equation for ratable take factor of a standard unit minus the extra drainage encroachment over a standard unit size is, you come up with a .79 factor which is similar to that presented by Mesa.

Q In your opinion, would granting of these applications prevent either economic waste or the waste of hydrocarbons?

A No, sir, an unorthodox location is not necessary to prevent waste because the well located at a regular location could drain the reserves under that proration unit.

Q Would the granting of this application protect correlative rights?

A No, sir, on the contrary. It would not be in the interest of protecting correlative rights, but rather would infringe on the rights of the offset property owners.

Q Do you believe there should be some method provided for monitoring a division order which includes a

LANPHERE REPORTING SERVICE

P.O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

ratable take factor?

A Yes, sir.

Q Do you have any suggestions regarding what monitoring procedures would be appropriate?

A Well, lacking field rules and an allocation upon it, it would appear that semi annual deliverability tests could be made under normal operating conditions on such unorthodox wells. I think the test should be witnessed by Oil Conservation Division personnel. The ratable take factor should then be applied against deliverability, and the system would necessarily be adopted by the Oil Conservation Division for monthly monitoring of the gas purchaser for ratable take factor.

Q Are there similarly any unorthodox locations in this area of this pool?

A No, sir, there are not. My records indicate there are 6 wells that have been completed in the area, in the Morrow with standard locations. Two have reached total depth, and one other well has been permeated.

Q Have you anything to add in addition to your testimony?

A No, sir.

Q Were Exhibits 3 through 5 prepared by you and

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under your supervision?

A Yes.

MR. CROSS: I move they be admitted.

MR. STAMETS: These exhibits will be admitted.

(WHEREUPON, Gulf Exhibits 3, 4 and 5
admitted into the record.)

MR. CROSS: No further questions.

MR. STAMETS: Any questions of this witness?

MR. LOSEE: I have a couple of questions.

CROSS-EXAMINATION

BY MR. LOSEE:

Q Mr. Kalteyer, with your calculation formula
on the radius of drainage shown on Exhibit 4 apply to Gulf
State GX No. 1 well in the south half of Section 18?

A Would it apply?

Q Yes.

A Yes, sir, this was my whole basis that the average
data and applied from the GK 1.

Q Well, I'm talking about my statement the GX No. 1.

A The GX?

Q No. 1 which is the north well of Gulf.

A Would it apply?

Q Yes.

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A Yes, sir, those calculations would apply on the basis that this would expand until it reached the barrier or the interference pattern of another well.

Q Have you, has Gulf completed this GX No. 1 well in the Morrow?

A No, sir, I'm not up-to-date on whether we have actually perforated the well or not. I understand that we are to set pipe on it. Maybe our other witness could--

Q I think he offered some doubt as to whether that well could be completed in the Morrow.

A That's correct, I recall that; but I believe we're scheduled to set pipe.

Do you know?

MR. STENBERG: That's the last report I got.

Q (Mr. Losee) Does your formula on Exhibit 4, it does does it not, assume the constant uniform permeability and porosity?

A Yes, sir, on those average figures.

Q And if the permeability is not constant throughout the reservoir, the formula would not be adequate?

A No, sir, I think if the very conservative value for permeability was used in this particular--

Q But if it wasn't a constant permeability--

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A That's true.

Q --it wouldn't be applicable?

Under that formula, isn't the, when and if it's completed, this Mesa Lincoln State well will actually be draining the acreage that the GK No. 2 is on in, what 9-1/2 days?

A Yes, sir, that should be draining across that line.

Q Do you think the Morrow in this area is uniform, has uniform constant permeability characteristics?

A I have not be able to study any other than the one, the data from Gulf, 1 GK. I don't know if other pressure buildup tests have been run to establish permeability in the other wells or not. We might have some information based on emperical formula that would be applied by our logging experts on the basis of porosity and water saturation resistivity.

Q Is the porosity uniform throughout the area in the Morrow?

A From the data that I've looked at, it's generally ranges around 10%. The average would be, and of course it varies from no porosity on up.

MR. LOSEE: I think that's all.

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EXAMINATION

BY MR. STAMETS:

Q Mr. Kalteyer, this proposal that you put forth today is new in controlling the effects of crowding unit boundaries, proration unit boundaries by limiting the productions to a percentage of the deliverability of the well based on the ratable take factor. Looking at the practicality of things, is there some point in time when we should stop applying the ratable take factors assuming that we did approve the wells and did apply a ratable take factor?

Obviously when the well has declined to its potential of 100 Mcf per day, no real value would be achieved by applying this ratable take factor. Have you got some kind of cut-off limits that--

A I have no objection to a cut-off if they dropped down to 100 Mcf a day.

Q When in your opinion is that-- Where should that cut-off point be to make-- Do you feel a million a day is an appropriate figure?

A No, sir, I don't believe so. We're proposing that as I see it, it would be an interim until we can get rules and allocations formally adopted. I have not talked to the operators about it nor cleared it with management,

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but I can foresee by the rates of production that just by the time we would apply for it to get geared up, our rules would definitely apply and there's going to be a lot of gas pooled out of there when some of the wells are being pooled at 5,000,000 a day average, some at 10,000,000 a day average, excuse me 7,000,000 a day average that many inequities will be developed by the time pool rules and an allocation formula would be adopted.

Gulf is just trying to protect its Section 19 where we already have three wells 660 from the line, and here where applicant is requesting two additional wells would be crowding our acreage, and then this regular application today will be another well to crowd our Section 19.

Q Just assuming for the moment that we did approve the non-standard locations and we did adopt your proposal now and nothing else happened, this was the end of it with no special pool rules were adopted. Now, you indicated that we would stop applying this ratable take factor 100,000 a day or some figure. What about the situation where the offset wells decline 100,000 a day even though this well might still be capable of a higher rate of production, wouldn't that be indicative that there'd be no need to continue applying the ratable take factor to the wells, non-standard location?

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A I'd say this is still tied to recovery and their advantage. They'd still be getting an advantage even at 100 Mcf per day whether it's a slow rate or not they have an additional advantage of recovering those reserves. Now, I have no recommendation to make at this time. I have to study that phase of it as far as the cut-off.

MR. STAMETS: Any other questions of this witness?

He may be excused.

Does anyone else have any further testimony they would like to present in this case?

Are there any closing statements to be made? Applicant gets to go last.

Mr. Campbell?

MR. CAMPBELL: Mr. Examiner, I'll try to make this as brief as possible and applicable only to these two cases that you've just heard.

I guess I have the good fortune of not being affected by previous hearing and testimony in the Morrow sands. I gather that many people here have, and it's my impression that the Applicant has used the information that has apparently been obtained from other areas in which the Morrow's involved and made assumptions as they exist here.

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Certainly the Applicant offered no evidence with regard to non-homogeneity, to lack of correlation between the wells in the, that are shown in the cross sections of this case. This is a new field. It has thick wells and a couple more that are about to be completed. The first well was drilled about a year ago. None of the wells that have been drilled to this date are unorthodox locations. The present rules provide very lenient and substantial deviations from what would be the center of a 320 acre drilling unit, and we see absolutely no reason why a non-orthodox location should be authorized in this field and certainly not at these two locations because the testimony of both Mesa and Gulf here show that orthodox locations at either of these units would be productive and both Mesa and Gulf have even suggested they would be delighted to farm in this acreage to drill unorthodox locations in the event Yates decided that they didn't want to drill the orthodox location.

It seems to me that the standard rules for spacing should apply unless and until there's clear and convincing evidence, that the recovery from the reservoir cannot be complete or from a particular person's area cannot be complete without unorthodox locations.

The rule for the rights, correlative rights in

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the statutes is not that a person has the right to find a place on his unit which is most likely to produce the most oil or gas. It is that he will be given a reasonable opportunity to recover his fair share of the oil or gas in the reservoir.

Orthodox locations at either of these two units certainly give the Applicant that right. We believe that it would be a serious abuse of our correlative rights to allow either of these unorthodox locations, and they would simply open the door to all out war for snuggling in to the best wells that can be located in this reservoir which is totally contrary to whole concept that proper spacing either for drainage or for protection of correlative rights, and we therefore request that the Application in this case be denied.

MR. STAMETS: Mr. Dent?

MR. DENT: Mr. Examiner, in attempt to be brief, it is Mesa's position that Applicant in these two cases has totally failed to show the location is necessary to prevent waste by recovery of additional hydrocarbons that would not otherwise be recovered at an orthodox location.

The applicant further fails to show that it was necessary that these unorthodox locations be granted

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and special permits be given in order to protect correlative rights. To the contrary, the evidence presented today overwhelmingly has shown that by the granting of this application, damage will result to the correlative rights in the Mesa and thereby confiscation of recoverable hydrocarbons will be permitted.

The Applicant by his own geological interpretation has stated that in Section 25, in Case 6231, that the orthodox location will, based on his geological interpretation, be in as good a location as the one requested in Section 13.

Lastly, much has been said both by the Commission, by the Examiner, and by witnesses by Gulf and Mesa as to a ratable take factor. These determinations and data have been made and presented only to point out that if such application is granted that there is sufficient justification to invoke a restriction will be allowed on a ratable take. Of course, this Commission has authority. It can make such orders as is necessary to prevent the or protect the correlative rights.

When the clear and convincing evidence overwhelmingly shows that these rights are going to be violated, why do we ask is it necessary to grant such exceptions at

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MR. LOSEE: Mr. Examiner, the testimony of both Gulf and Mesa with respect to the area of drainage are all based on circular drainage and they assume the homogeneous nature of the reservoir. These wells have not been on production for a long period of time, but as you look at the Morris Antweil Rio well and the Penasco well located just 1/2 mile apart correlate perfectly on the log, one at 19 feet and one in 25 feet of pay. Similarly, drill stint data, the pressure data, accepted pressure data is 3-- to 400 pounds, and after 5 months of production one of them is making something like seven times the other well is. To our position, reflecting that they are not homogeneous in nature, and there is not, at least in those two wells, any particular cross-drainage and therefore we feel that the utilization of a circular drainage pattern in this Morrow field as is also true in most other Morrow fields in southeast New Mexico is incorrect assumption.

Now obviously as the Examiner pointed out, there are three interpretations of the Morrow. Mesa has theirs and Gulf has theirs and Yates has theirs. Gulf's interpretation of the Morrow as reflected in this Isopach and in Mr. Beck's testimony is that the wells that have made well also have been in the thick portion of the classic or on the

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banks thereof, and when we get down to the thin section they haven't made well in the Morrow. And it appears to Yates in this field and based on its experience in drilling Morrow wells in southeastern New Mexico that the location selected in each of these cases are the most likely to encounter commercial production.

We believe the statutes on waste and protection of our correlative rights, that is to say the rights of the royalty owners, underlying our spacing units permit us to pick such a location. We grant the Commission rule with respect to offsetting any advantage that may be gained by these unorthodox locations, but I am not sure that a circular pattern in trying to figure a penalty feature whether it be on deliverability or in applicable is a correct assumption in the Morrow.

We respectfully ask that the Commission approve the two applications for unorthodox locations.

MR. STAMETS: Mr. Dent, do you have something?

MR. DENT: Mr. Examiner, there was delivered to Mesa a letter from Northern Natural which states that they are opposed to the above application being 6231 and 6232 and request that they be denied.

That's all.

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MR. STAMETS: Okay, if nothing further, these
two cases will be taken under advisement.

(WHEREUPON, the hearing on these
two cases was concluded.)

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REPORTER'S CERTIFICATE

I, BETTY J. LANPHERE, CSR-RPR with offices in Santa Fe, New Mexico, do hereby certify that the foregoing transcript is a complete and accurate record of said proceedings as the same were recorded by me stenographically and reduced to typewritten transcript by me or under my supervision.

DATED at Santa Fe, New Mexico, this 19th day of Sept, 1978.

Betty J. Lanphere
Betty J. Lanphere, Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6231 heard by me on 5-17 1978.

Richard L. Stearns, Examiner
Oil Conservation Division

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SANTA FE, NEW MEXICO 87501

I N D E X

	<u>PAGE</u>
1. Appearances	3
2. The Witness - Ray Beck	
Direct Examination by Mr. Losee	6
Cross-Examination by Mr. Dent	17
Cross-Examination by Mr. Campbell	31
3. The Witness - Roy Williamson, Jr.	
Direct Examination by Mr. Dent	37
Cross-Examination by Mr. Losee	50
Redirect Examination by Mr. Dent	51
Examination by Mr. Stamets	60
4. The Witness - C. D. Stenberg	
Direct Examination by Mr. Cross	66
Examination by Mr. Stamets	73
5. The Witness - Charles F. Kalteyer	
Direct Examination by Mr. Cross	77
Cross-Examination by Mr. Losee	85
Examination by Mr. Stamets	88
6. Exhibits	100
7. Reporter's Certificate	98

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P. O. BOX 449
58 SOUTH FEDERAL PLACE
SANTA FE, NEW MEXICO 87501

E X H I B I T SIDENTIFIED ADMITTED

Applicant's Exhibits:

1. Land Plat	7	17
2. Isopach Map	8	17
3. Overlay	13	17
4. Cross-Section Map	13	17

Mesa's Exhibits:

1. Structure Map	39	59
2. Cross-Section Map	41	59
3. Production Data	42	59
4. Well Data Sheet	43	59
5. Cass Ranch Structures	45	59
6. Ratable Take Factor Chart	46	59
7. Reserve Calculations	48	59
8. Data & Info from OCC files	59	59

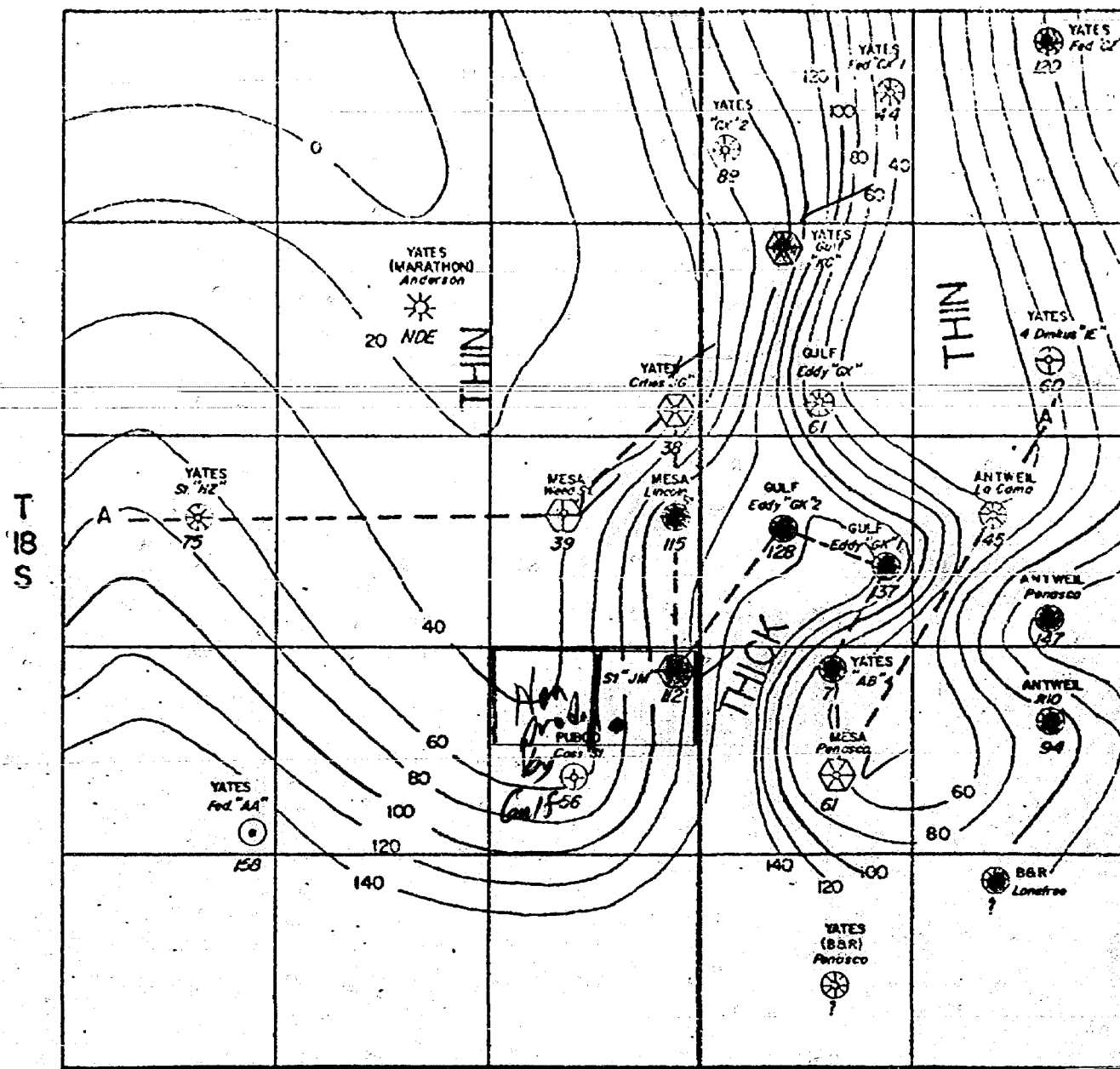
Gulf's Exhibits:

1. Structure Contour & Isopach Map	67	73
2. Cross-Section Map	68	73
3. Map Showing Proposed Locations	77	85
4. Radius of Drainage	79	85
5. Ratable Take Factor	82	85

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[illegible]



R24E

R25E

LEGEND



Morrow Penetrations

75

Morrow Clastics Thickness

40

Solid Contours: Morrow Clastics Thickness: C.I.=20Ft



Morrow Penetrations Drilled After First Hearing

Morrow Gas Wells Colored in Red

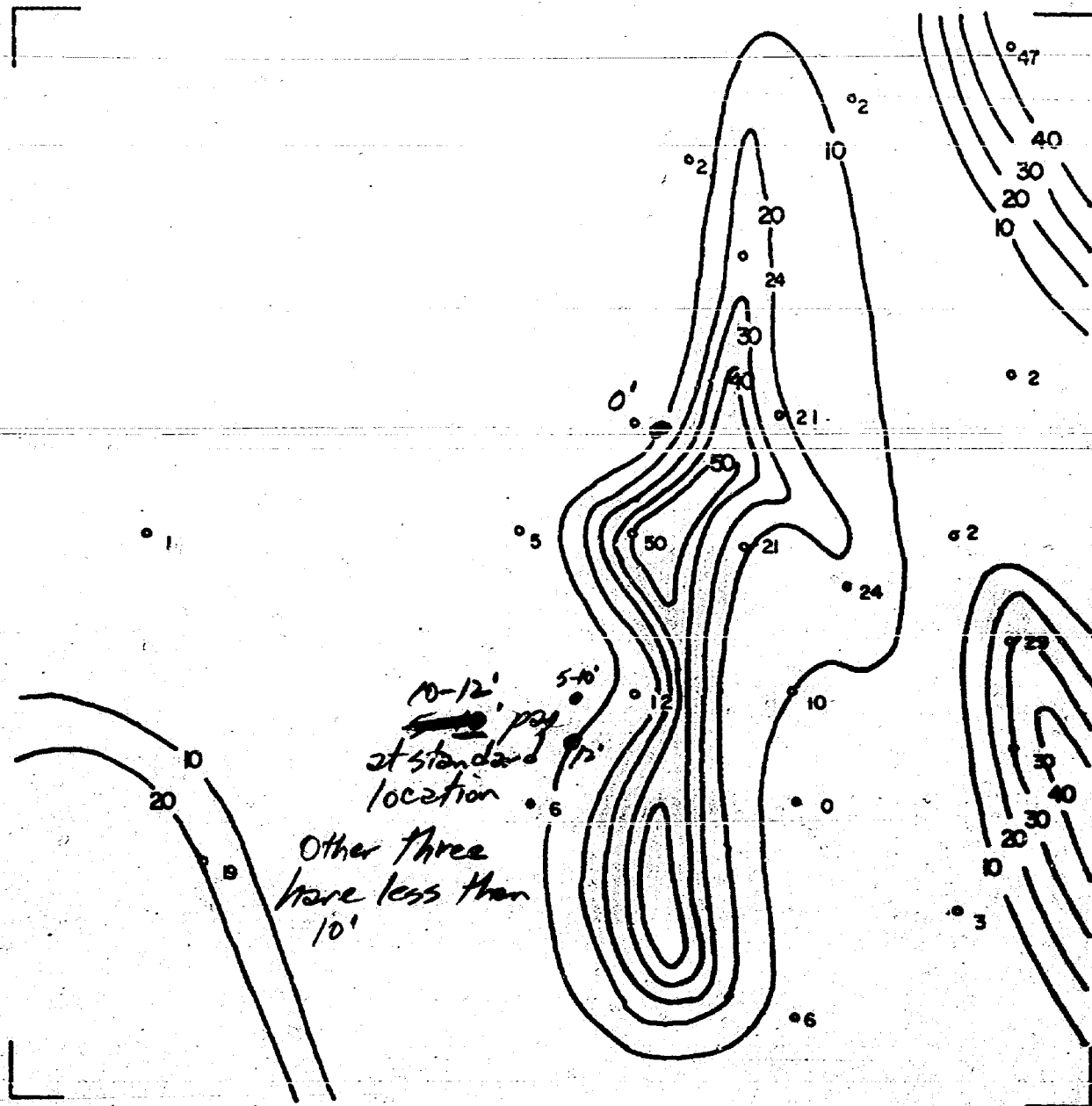
More thick - better chance of encountering Morrow sands.

OIL COMPANY DIVISION

Case No. 6231 DN

Submitted by Yates

Head



OVERLAY
Isolith of Clean Marrow Sand

21 Cumulative Ft. of
Clean Marrow Sand
<50 API CR Units

OIL CO.	
6231 DN	3
Yates	

PENASCO AREA
EDDY COUNTY, NEW MEXICO
MORROW WELLS

OPERATOR LEASE WELL NO.	WELL LOCATION	COMPLETION DATE	ORIGINAL SIBHP (SITP)	DATE 1st. SALES	CUMULATIVE MCF PRODUCED THRU 9-78	STATUS JAN. 1979 (SITP) (DATE)
Morris R. Antweil Rio #1	Sec. 29-18S-25E 1980' FN & E	8/23/77	3053 psig @ 8633' (2447) 4 pt. bomb	Sept. 1977	254,778	639 MCFD @ 540 psig (625) (1-23-79)
Morris R. Antweil Rio Penasco #1	Sec. 20-18S-25E 660' FS & 1980' FE	6/1/77	3385 psig @ 8648' (2703) 4 pt. bomb	Sept. 1977	1,611,502	4300 MCFD @ 1530 psig (1850) (1-23-79)
Vates Petr. Corp. Fed. AB #4	Sec. 30-18S-25E 660' FN & 1980' FE	3/13/78	3250 psig @ 8500' (2607) 4 pt. bomb	March 1978	1,118,888	406 MCFD @ 535 psig (690) (1-17-79)
Gulf Oil Corp. Eddy "GK" St. Com. No. 1	Sec. 19-18S-25E 1980' FS & 660' FE	11/8/77	3190 psig @ 8615' (2533)	Jan. 1978	292,862	1110 MCFD @ 500 psig (1461) (7-13-78)
Gulf Oil Corp. Eddy "GK" St. Com. No. 2	Sec. 19-18S-25E 2310' FN & 1980' FW	1/2/78	(calculated BHP) 3197 psig @ 8488' (2600)	April 1978	504,952	0-200 MCFD (730) @ 500 psig (1-16-79)
Mesa Petr. Corp. Lincoln St. Com. No. 1	Sec. 24-18S-24E 2030' FN & 660' FE	8/14/78	3174 psig @ 8505' (2537) bomb	NONE	NONE	SI
Vates Petr. Corp. State JM #1	Sec. 25-18S-24E 660' FN & E	10-29-78 spud Completing	3192 psig DST (11-23-78)	NONE	NONE	Completing (1838) (2-6-79)

OIL & GAS COMMISSION
Case No. 6231 ON 5
Subsequent Value
Hearing Date

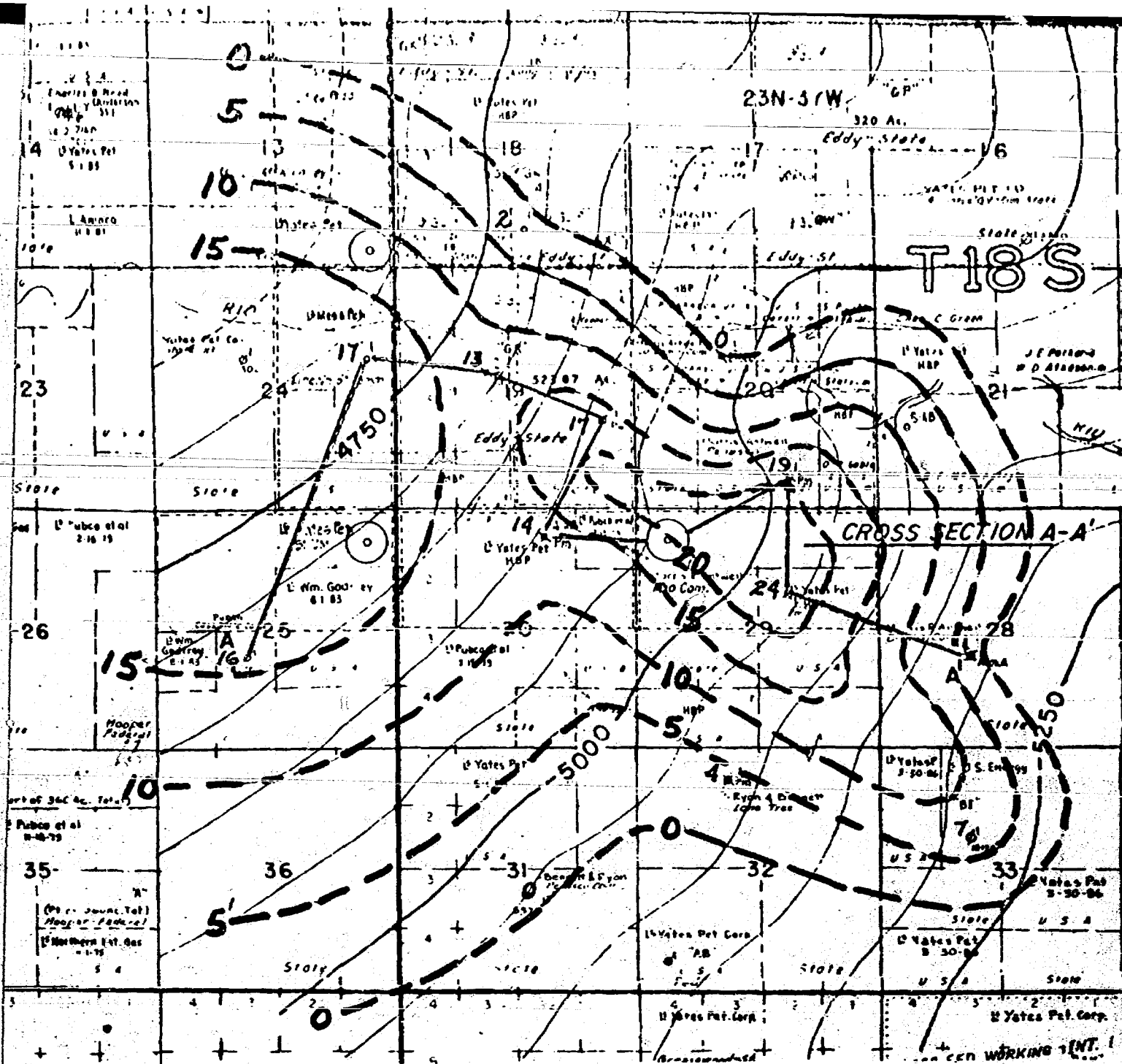


EXHIBIT NO. 1
CASE 6231+6232
DATE 5-17-78

UNDESIGNATED MORROW
EDDY CO., NEW MEXICO

ISOPACH OF MORROW
SAND \geq 5% POROSITY
CONTOUR INTERVAL 5'

PROPOSED LOCATION
STRUCTURE-TOP MORROW MARKER

CONTOUR INTERVAL 50'
SCALE: 1"=3000'

GULF OIL CORPORATION

SOUTHWEST DISTRICT
MIDLAND, TEXAS

FILED THE
OIL COMMISSION COMMISSION
S. H. P. NEW MEXICO
Case No. 6
YPC
Filed Date

DOCKET: COMMISSION HEARING - WEDNESDAY - FEBRUARY 7, 1979

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases are continued from the January 24, 1979, Commission Hearing.

CASE 6231: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1, a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6232: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JG" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

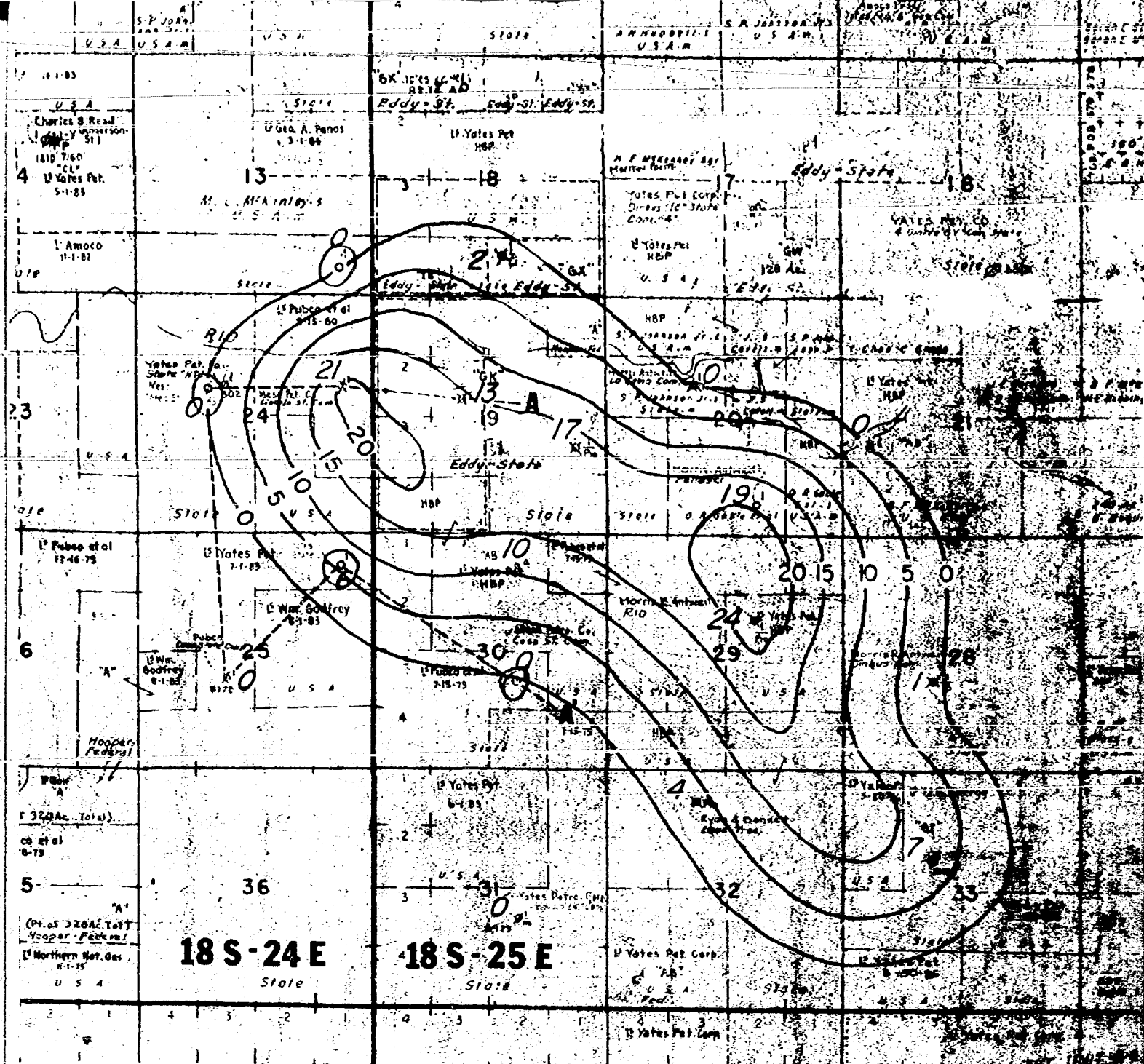


EXHIBIT NO.
CASE
DATE

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 6231 EXHIBIT No. 1

Submitted by Gulf

Hearing Date 2-7-79

UNDESIGNATED MORROW
EDDY CO., NEW MEXICO

ISOPACH OF MORROW SAND
WITH 5% POROSITY OR >

CONTOUR INTERVAL 5'
SCALE: 1"=3000'

---CROSS-SECTION A-A'---

GULF OIL CORPORATION

SOUTHWEST DISTRICT
MIDLAND, TEXAS

PRODUCTION DATA
UNDESIGNATED MORROW POOL
T-18-S, R-25-E
EDDY COUNTY, NEW MEXICO

EXHIBIT 3
CASE NO. 6231-6232 DE NOVO
DATE 1-24-79
GULF OIL CORPORATION

6231-6232
GULF
1-24-79 2-1-79

YATES PETROLEUM				ANTWELL, MORRIS R.				BENNETT & RYAN				GULF OIL CORPORATION			
Federal AB Com.				Penasco				Lonetree				GK State Com.			
4 B 30 18S 25E				1 O 20 18S 25E				1 C 32 18S 25E				1 I 19 18S 25E			
Gas	MCF	MCF/D	Cond. BBLs.	Gas	MCF	MCF/D	Cond. BBLs.	Gas	MCF	MCF/D	Cond. BBLs.	Gas	MCF	MCF/D	Cond. BBLs.

1977	---	---	---	69,733	2,324	224	27,226	907	131	---	---	---	---	---	---
September	---	---	---	183,897	5,932	557	47,260	1,525	93	---	---	---	---	---	---
October	---	---	---	159,355	5,312	464	33,089	1,103	52	13,419	447	---	---	---	---
November	---	---	---	151,703	4,894	428	29,460	950	45	11,055	357	---	---	---	---
December	---	---	---												

1978

January	---	---	---	150,037	4,840	428	25,653	828	37	6,225	201	29,835	962	105	---
February	---	---	---	126,387	4,514	346	19,708	704	31	4,397	157	62,867	2,245	170	---
March	---	---	---	141,973	4,580	350	21,467	692	31	2,882	93	47,087	1,519	99	---
April	239,675	7,989	1,182	134,493	4,483	336	18,483	616	6	3,732	124	24,102	803	61	67,284
May	215,384	6,948	883	130,446	4,208	285	14,511	468	2	3,885	125	22,343	721	68	89,340
June	180,669	6,022	649	129,501	4,317	287	13,117	437	---	3,054	102	33,214	1,107	97	112,284
July	151,983	4,903	476	131,463	4,241	285	14,614	471	---	---	---	25,195	813	48	86,470
August	135,370	4,367	364	137,173	4,425	325	12,076	390	---	5,430	175	24,261	783	52	85,085
September	106,911	3,564	235	124,696	4,166	265	11,203	373	---	9,432	314	23,958	799	65	64,489
October	81,079	2,615	142	132,613	4,278	315	20,643	666	---	6,428	207	25,840	834	31	67,069
November	68,970	2,299	130	131,019	4,367	279	18,623	621	---	6,473	216	28,508	950	75	45,522

Can. -	1,130,044	4,061	2,034,489	5,174	327,133	428	76,412	347,210	871	617,543	1,405
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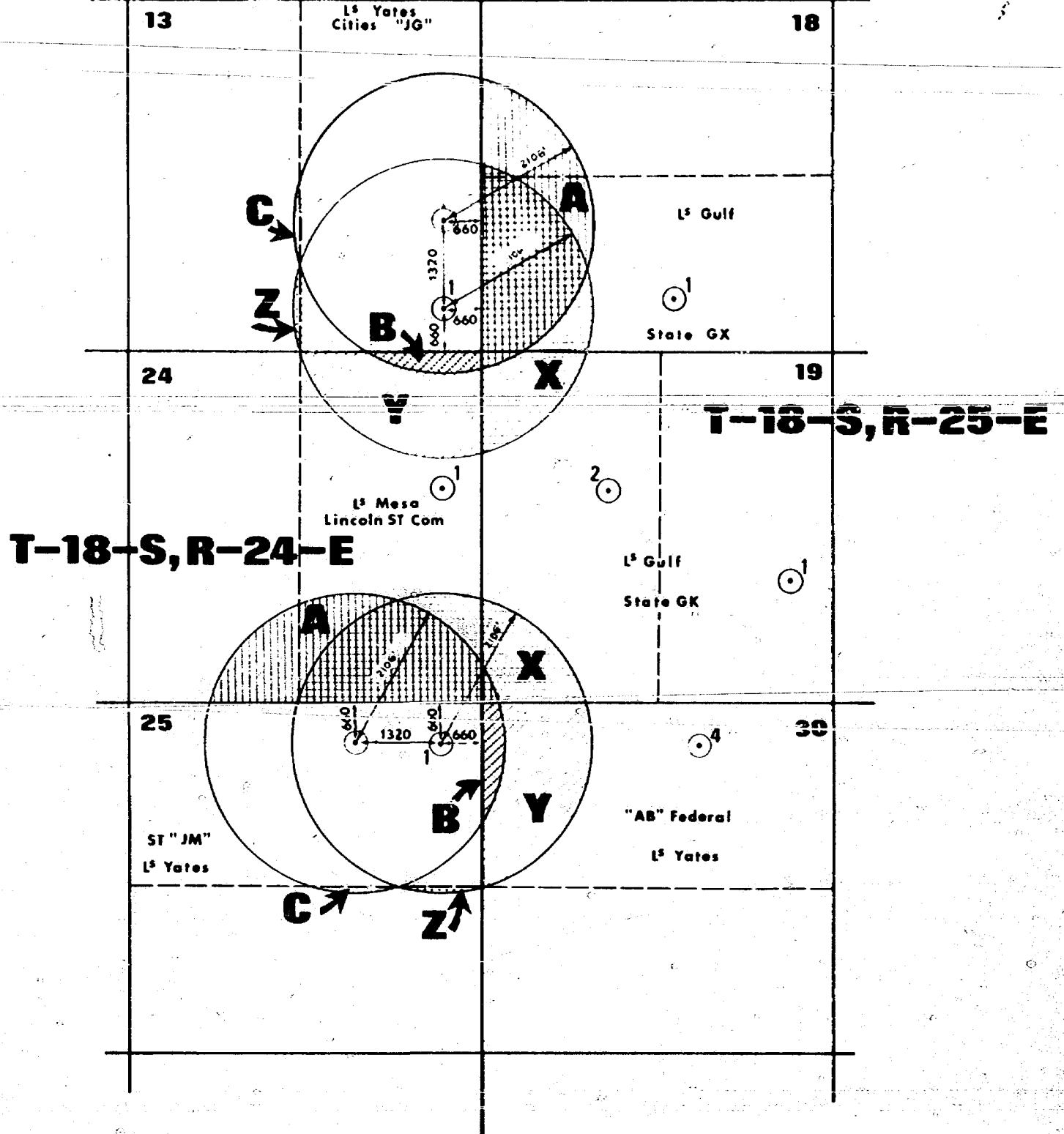
4360

639

200

1110

Jan 79



EBBY COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 6231-0232 Exhibit No. 4

Submitted by GULF

Hearing Date 1-24-79 2-7-79

EXHIBIT 4
CASE 6231 & 6232 D. H. N.
DATE 1-24-79

Gulf Oil Corporation

OIL COMPANY

Case No. 6231-6232

Submitted by

Hearing Date

GULF

1-24-79 2-7-79

EXHIBIT

5

CASE NO. 6231 & 6232

DE NOVO

DATE: 1-24-79

GULF OIL CORPORATION

RATEABLE TAKE FACTOR
PRODUCTIVE ACREAGE FACTOR
ALLOWABLE LIMITATION FACTOR

- 1) Drainage Encroachment Outside of 320 Acre Unit
By Well at Orthodox Location

A. 97.22 Acres
B. 2.79 Acres
C. 2.80 Acres
102.81 Acres

- 2) Drainage Encroachment Outside of 320 Acre Unit
By Well at Unorthodox Location

X. 97.22 Acres
Y. 70.00 Acres
Z. 2.79 Acres
170.01 Acres

- 3) Extra Drainage Encroachment of Well at Unorthodox Location

Unorthodox Well 170.01 Acres
Orthodox Well -102.81 Acres
67.20 Acres

- 4) Rateable Take Factor

$$RTF = \frac{(\text{Standard Unit Acres}) - (\text{Extra Drainage Encroachment Acres})}{\text{Standard Unit Acres}}$$

$$= \frac{320.00 - 67.20}{320.00}$$

$$= \frac{252.80}{320}$$

$$= .79$$

- 5) Productive Acreage Factor

$$PAF = \frac{\text{Unit Productive Acres}}{\text{Standard Unit Acres}}$$

$$= \frac{86}{320} = .27$$

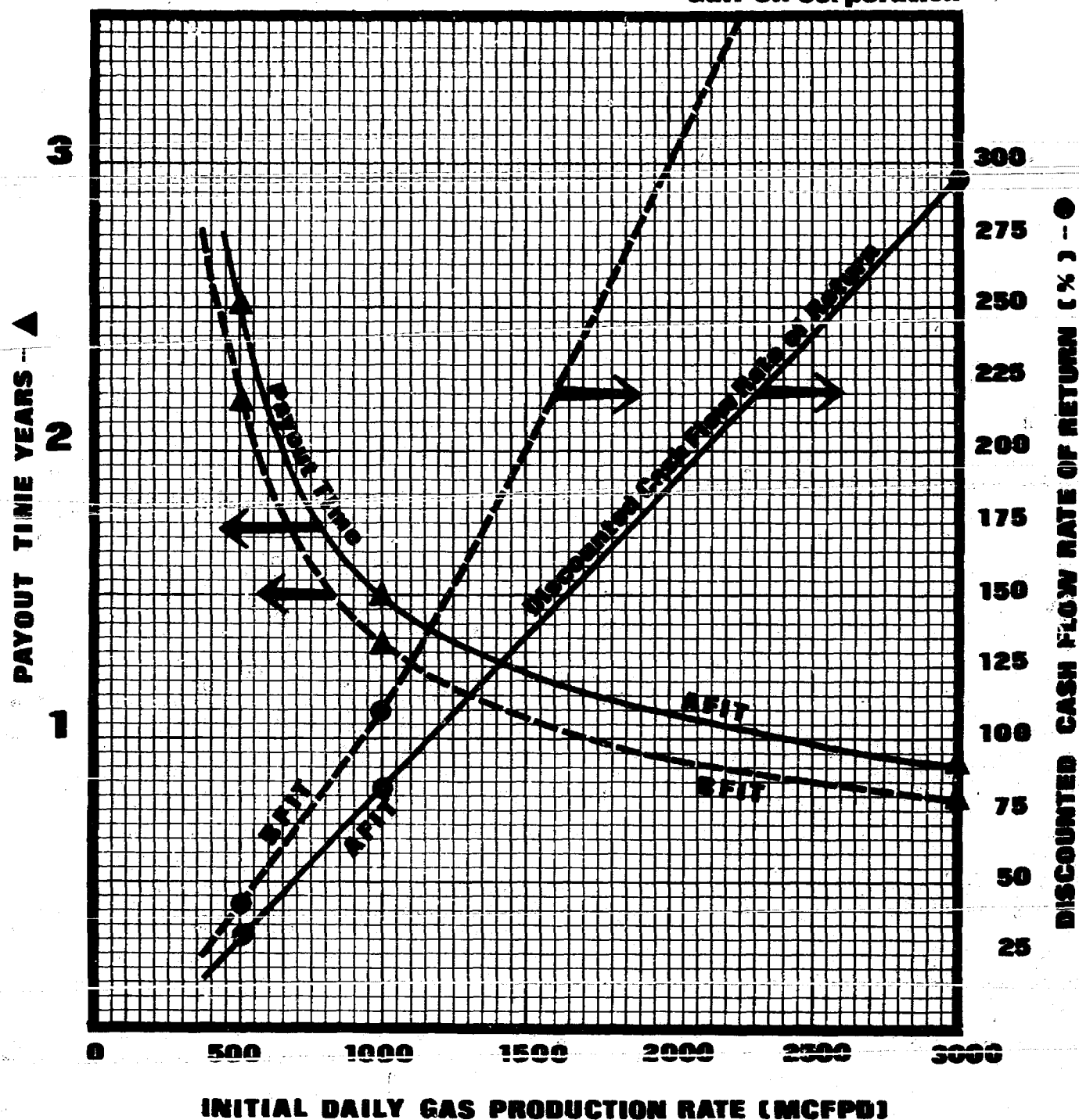
- 6) Allowable Limitation Factor

$$ALF = (\text{Rateable Take Factor}) \times (\text{Productive Acreage Factor})$$

$$= (.79) \times (.27) = .21$$

OIL COMPANY
 Case 6231-6232
 SUBJECT: GULF
 Date: 1-24-79

PROFITABILITY STUDY
EXHIBIT 6
 Case 6231-6232 De Novo
 Date: 1-24-79
 Gulf Oil Corporation



PROFITABILITY STUDY

Investment	\$ 430,000.00
Gas Price Per MCF - Initial	\$ 1.98
Condensate Price Per Barrel - Initial	\$ 12.95
Royalty	1/8
Taxes - Local Ad Valorem & Production	8.2%
Taxes - Federal Income	50.0%
Operating Expense Per Year - Initial	\$ 8,200.00

INITIAL DAILY GAS PRODUCTION RATE MCFPD	BEFORE FEDERAL INCOME TAX		AFTER FEDERAL INCOME TAX	
	Payout Time Years	DCF ROR* %	Payout Time Years	DCF ROR* %
500	2.2	41.2	2.5	30.8
1,000	1.3	113.2	1.5	84.8
3,000	0.8	>400	0.9	295.1

* DCF ROR - Discounted Cash Flow Rate Of Return

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6231-6232 Exhibit No. 7
Submitted by GULF
Hearing Date 1-24-79 2-7-79

EXHIBIT 8
CASE NOS. 6231 & 6232 DE NOVO
DATE: 1-24-79
GULF OIL CORPORATION

PROPOSED REVISION OF RULES

RULE 4: Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current and the well's initial deliverability shall be calculated against average pipeline pressure. Deliverability shall be the daily average of a 72 hour production test.

RULE 5: The well's "subsequent deliverability" shall be determined twice a year and shall be equal to the daily average of its highest 72 hour production rate during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.

RULE 13: Delete

BEFORE THE OIL CONSERVATION COMMISSION Santa Fe, New Mexico	
Case No. <u>6231-6232</u>	Exhibitor No. <u>8</u>
Submitted by <u>GULF</u>	
Hearing Date <u>1-24-79 2-7-79</u>	

NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date

FEBRUARY 7, 1979

Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Ray Bach	Yates	Artesia
Tom Kellahin	Kellahin & Kellahin	Santa Fe
Loosee	Loosee Parson & Dickerson	Artesia
TERRY CROSS	GULF OIL CORP.	Midland
BETHEL STRAUSSER	GULF OIL CORP	MIDLAND.
CHARLES F. KATZNER	" " "	"
Ray Bach	Yates Pet	Artesia
Ed S. Brubaker	Gulf Oil Corp	midland

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
7 February 1979

COMMISSION HEARING

IN THE MATTER OF: Application of Yates

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico.

CASE
6231

BEFORE: Commissioner Ramey
Commissioner Arnold
Commissioner Armijo

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

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Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87503

For the Applicant:

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LOSEE, CARSON & DICKERSON P.A.
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A P P E A R A N C E S C O N T ' D

For Gulf Oil:

Terry I. Cross, Esq.
The Gulf Companies
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I N D E X

RAY BECK

Direct Examination by Mr. Losee	6
Cross Examination by Mr. Kellahin	16
Cross Examination by Mr. Stamets	29
Cross Examination by Mr. Ramey	31
Cross Examination by Mr. Arnold	34
Redirect Examination by Mr. Losee	36
Recross Examination by Mr. Kellahin	38

PEYTON YATES

Direct Examination by Mr. Losee	39
Cross Examination by Mr. Losee	54
Cross Examination by Mr. Stamets	63
Cross Examination by Mr. Ramey	68
Recross Examination by Mr. Stamets	70

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1	Recross Examination by Mr. Kellahin	71
2	Recross Examination by Mr. Stamets	74
3	Recross Examination by Mr. Ramey	78
4	Cross Examination by Ms. Teschendorf	81
5	Recross Examination by Mr. Stamets	83
6	Recross Examination by Mr. Kellahin	94

7

8 C. D. STENBERG

9	Direct Examination by Mr. Cross	86
10	Cross Examination by Mr. Losee	96
11	Cross Examination by Mr. Stamets	110

12

13 CHARLES F. KALTEYER

14	Direct Examination by Mr. Cross	116
15	Cross Examination by Mr. Losee	127
16	Cross Examination by Mr. Stamets	140
17	Cross Examination by Mr. Ramey	144
18	Recross Examination by Mr. Losee	148

19

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E X H I B I T S

1		
2		
3	Applicant Exhibit One, Plat	14
4	Applicant Exhibit Two, Isopach Map	14
5	Applicant Exhibit Three, Overlay	14
6	Applicant Exhibit Four, Cross Section	14
7	Applicant Exhibit Five, Summary	54
8		
9		
10	Gulf Exhibit One, Isopach	96
11	Gulf Exhibit Two, Cross Section	96
12	Gulf Exhibit Three, Summary	127
13	Gulf Exhibit Four, Sketch	127
14	Gulf Exhibit Five, Document	127
15	Gulf Exhibit Six, Curves	127
16	Gulf Exhibit Seven, Table	127
17	Gulf Exhibit Eight, Document	127
18		
19	Applicant Exhibit Six	149
20		
21		
22		
23		
24		
25		

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1 MR. RAMEY: The hearing will come to order.
2 We'll call first Case 6231.

3 MS. TESCHENDORF: Case 6231. Application of
4 Yates Petroleum Corporation for an unorthodox gas well
5 location, Eddy County, New Mexico.

6 Upon the application of Gulf Oil Corporation
7 the case will be heard de novo.

8 MR. RAMEY: Do you wish to consolidate these
9 cases, Mr. Losee?

10 MR. LOSEE: No, sir, they're going to be
11 completely different formations.

12 MR. RAMEY: All right.

13 MR. LOSEE: A. J. Losee, Losee, Carson and
14 Dickerson, Artesia, New Mexico, appearing on behalf of the
15 Applicant. I have two witnesses.

16 MR. KELLAHIN: Tom Kellahin of Santa Fe,
17 New Mexico, appearing on behalf of the Gulf Oil Corporation,
18 and I have two witnesses.

19 I'm also appearing in association with Terry
20 Cross, a member of the Texas Bar.

21 MR. RAMEY: I'll ask that all witnesses
22 stand and be sworn at this time.

23 (Witnesses sworn.)

24 MR. LOSEE: Mr. Commissioner, before com-
25 mencing with the testimony, I'd like to make a brief state-

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1 ment.

2 This is heard de novo at Gulf's application.
3 The original hearing was May 17 and the Commission -- or
4 the Division entered Order P-5831, which was issued on
5 September 29.

6 Now, Yates spudded the well on October 29
7 actually prior to receipt of the application for a de novo,
8 and the well was drilled to the Morrow and the results in
9 that Morrow will be part of our testimony.

10 Although they obtained a favorable DST in
11 the Cisco, it has not been tested, and the advertisement
12 in this hearing was for a Morrow test. We've been advised
13 that counsel for the Commission considers that it's not
14 adequate for a Cisco unorthodox location, and as a result
15 our testimony today will only be directed towards the
16 Morrow, and if the testing of the Cisco results in a com-
17 mercial producer, then we realize we'll have to apply again
18 for an unorthodox in the Cisco.

19
20 RAY BECK

21 being called as a witness and having been duly sworn upon
22 his oath, testified as follows, to-wit:

23
24 DIRECT EXAMINATION

25 BY MR. LOSEE:

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1 Q Would you state your name, please?

2 A Ray Beck.

3 Q Where do you live? And what is your occu-

4 pation?

5 A Artesia, New Mexico. Geologist for Yates

6 Petroleum.

7 Q Have you previously testified as an expert

8 witness before this Commission and had your qualifications

9 accepted?

10 A Yes, I have.

11 MR. LOSEE: Will you accept Mr. Beck's

12 qualifications?

13 MR. RAMEY: He's qualified.

14 Q (Mr. Losee continuing.) Would you please

15 turn, Mr. Beck, to what has been marked as Exhibit One

16 and explain what is shown by this exhibit?

17 A Exhibit Number One is a land plat. It shows

18 the proposed location and the proration unit outlined in

19 red.

20 Q Does it show the offset operators and wells

21 within a two-mile radius?

22 A Yes, it does.

23 Q Please turn to what has been marked as

24 Exhibit Two and explain what is shown by this exhibit.

25 A Exhibit Number Two is an Isopach map showing

1 the varying thickness of the Morrow clastics interval or
2 the sand and shale interval between the overlying Morrow
3 oolitic limestone and the pre-Morrowan erosional uncon-
4 formity. These boundaries will be pointed out on the cross
5 section A-to-A prime, which is on the wall.

6 The thicks are believed to represent the
7 axes of pre-Morrowan erosional valleys and in this country
8 near the Morrow subcrop it is within these valleys that
9 most of the Morrowan sands, namely channels, prograded
10 from the north, hence the greatest likelihood of finding
11 commercial gas-bearing Morrow sand channels is within the
12 thicks.

13 In this area wells that have been drilled
14 on thins have been dry in the Morrow, such as the Pubco
15 Cass State in Section 25 of 18, 24, the same section the
16 subject well is in.

17 Considering the relationship between the
18 Morrow Clastics thicks and the Morrow gas wells on the map,
19 one can see that the State "JM" is prudently located with-
20 in its designated proration unit.

21 Q Please turn to your overlay that is marked
22 as Exhibit Three and explain the relationship of these two
23 exhibits.

24 A Exhibit Number Three is an overlay which
25 can be placed on top of the previous exhibit. The overlay

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1 is an Isolith map showing the varying footage of clean
2 Morrow sand.

3 Morrow sand cleaner than 50 API gamma ray
4 units was counted within the entire Morrow clastic interval
5 for each well regardless of stratigraphic position or en-
6 vironment of deposition of the sand.

7 The map is not to be considered blanketlike
8 and the cross section will help bear this out: however, the
9 map does show where concentration of clean sands are
10 located and the relationship between these concentrations
11 of sand and other data, such as the thick map which under-
12 lies it.

13 The overlay shows that the clean Morrow
14 sands are concentrated in or along the flanks of the
15 Morrow Clastics thicks of the previous exhibit.

16 Q Now, Exhibit Four is on the wall, and would
17 you go up to the exhibit, which is your cross section A-
18 to-A prime.

19 A Exhibit Number Four is a west to east cross
20 section transverse to the main Morrow Clastics thicks on
21 the previous -- on Exhibit Number Two. It's hung on the
22 Morrow Clastics here at the brown line; it's considered a
23 pretty good time marker. The undulating line is an uncon-
24 formity, top of the Mississippian, or it is considered a
25 pre-Morrowan unconformity.

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1 One can see in vertical dimension -- this
2 is the mapped interval that was mapped on Exhibit Two --
3 one can see in vertical dimension that the Morrowan gas
4 sands are concentrated in the thicker intervals of the
5 Morrow clastics. Thin intervals contain only thin, tight,
6 noncommercial sands.

7 The cross section also depicts the strati-
8 graphic noncontinuity of Morrowan channel sands. Some are
9 lower, some are higher, some are considerably lower than
10 the others. Also, the noncontinuity which we show on here
11 will be corroborated by pressure information and well
12 history information that will be supplied by a subsequent
13 Yates witness.

14 Q Mr. Beck, would you point out the Yates "JM"
15 Well, which is the well which is the subject of this appli-
16 cation, and show the interval that you are testing now?

17 A This is the Yates "JM" Well, the fifth well
18 from the left. The interval that's being -- the interval
19 that was tested, tested the entire Morrow Clastics interval,
20 and the perforated interval was better sand, it was 3554
21 8567.

22 Q What kind of sand?

23 A Channel sand.

24 Q Okay. Now, the closest Gulf well to the
25 "JM" is the Gulf "GK" No. 2. Would you point that well out

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1 and compare it to the Yates well?

2 A The "GK" No. 2 Well is the sixth well from
3 the left. It is a channel sand, also. It is hung on the
4 Morrow Clastics, which is a good time line. It appears
5 that the top part of the channels, which are planal on top,
6 convex on the bottom, planal-convex, the upper level of
7 the sand in "GK" No. 2 is at a higher stratigraphic level
8 than the State "JM", which means that the State "JM" was
9 deposited first, and this is a subsequent channel which
10 was deposited later in the Morrowan interval.

11 Q Would you say they are not connected in the
12 same reservoir?

13 A From geological evidence, I would say they
14 are not.

15 Q Okay, would you point out the Gulf "GK"
16 Number One, which is the other Gulf producing well in the
17 field and compare the producing interval in that well with
18 the State "JM"?

19 A The Gulf "GK" No. 1 is the seventh well from
20 the left.

21 MR. STAMETS: What's the location on that,
22 Ray?

23 A It's 1980 from the south and 660 from the
24 east of Section 19. You can probably see it better on this
25 map. Here's the "GK" 2 and there's the "GK" 1. Here's the

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1 cross section.

2 MR. STAMETS: Oh, okay. Okay.

3 Q (Mr. Losee continuing.) Both of those Gulf
4 wells are in Section 19 that lie diagonally northeast of
5 the Yates well, is that correct?

6 A Yes.

7 Q Okay. So proceed with your comparison of
8 the No. 1 and --

9 A No. 1, the "GK" No. 1 Well is even further
10 from the State "JM" and in the same section with the "GK"
11 No. 2, hung again on the same stratigraphic level. It
12 appears that the "GK" No. 1 main channel is considerably
13 lower than the "GK" No. 1 channel and even lower than the
14 State "JM", the Yates State "JM" Well.

15 Q All right. Would you -- let me ask one other
16 question.

17 Is the correlation of those three wells sup-
18 ported by your knowledge of the pressure performance and
19 production history of the wells?

20 A Yes, as far as I've heard and discussed it.
21 with the engineers, the pressure data and the production
22 histories are different enough to corroborate the geological
23 correlations on the cross section.

24 Q Do you have anything further to offer on
25 that cross section?

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1 A No, I haven't.

2 Q Okay. Now, Mr. Beck, you caused a study to
3 be made of the unorthodox locations that the Commission
4 has approved in the area surrounding this location?

5 A Yes.

6 Q What area was covered by your study?

7 A We counted up the wells and the unorthodox
8 locations in six townships more or less straddling the
9 Morrow subcrop from the Penasco Draw area here to the
10 Kennedy Farms area on the east, and we found that there were
11 thirty-three unorthodox locations and 121 total wells, so
12 about 27.2 percent of them were unorthodox.

13 Q Was there -- did you determine whether or
14 not any penalty was assessed against those, any of the
15 thirty-three unorthodox location wells?

16 A As far as I can recall, the only penalty
17 was to a well which was drilled within 330 feet of the line.
18 I can recall none that were 660 from the line that received
19 a penalty.

20 Q Do you recall what penalty was levied in
21 that case?

22 A I'm not completely sure. I think it was on
23 the order of 6 percent.

24 Q In your opinion does the -- or do you have
25 an opinion as to whether or not the State "JM" completed

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1 in the Morrow at its unorthodox location has an advantage
2 over the offsetting wells of Gulf in Section 19?

3 A In this case I do not believe that it does
4 have an advantage. I don't believe we're draining the
5 Gulf wells.

6 Q Do you have an opinion as to whether or not
7 the Gulf wells are in the same connected reservoir?

8 A From the geological evidence and from what
9 I've been able to discuss with the engineers, I would say
10 that they are not in the same reservoir, connected.

11 Q And as a result of that opinion, do you have
12 an opinion as to whether or not the completion of this
13 well in the Morrow at its unorthodox location will protect
14 the correlative rights of Yates and its royalty owners in
15 the north half of Section 25?

16 A Yes.

17 Q And will it also have any adverse effect on
18 the correlative rights of Gulf and its royalty owners in
19 Section 19?

20 A In this case I don't believe so.

21 Q Were Exhibits One through Four prepared by
22 you?

23 A Yes, they were.

24 MR. LOSEE: I move their introduction.

25 MR. RAMEY: They will be admitted.

1 2 (Mr. Losee continuing.) Let me ask you to
2 refer back to Exhibit Two and from your -- the knowledge
3 you've learned of the wells that have been drilled subse-
4 quent to the first hearing in this case, what conclusions
5 do you arrive at with respect to your interpretation of
6 the thicks in the Morrow Clastics?

7 A Well, at the previous Examiner Hearing,
8 Yates, utilizing geological mapping techniques and reasoning
9 discussed today, requested unorthodox locations for the
10 State "JM" Well in Section 25 of 18, 24, and the Yates
11 Cities "JG" Well in Section 13 of 18, 24.

12 Exhibit Number Two is a revised map of the
13 earlier hearing. It may be seen that the Cities "JG" Well
14 in Section 13 did not make a Morrow well, being further up
15 the west flank of the thick than Yates had projected before
16 drilling.

17 The State "JM" did encounter a small gas-
18 bearing channel, the well in Section 25, but it may have
19 had volume problems, as will be attested to later.

20 The Mesa Weed Well in Section 24 of 18, 24,
21 was drilled on a thin subsequent to the first hearing and
22 was found to be dry.

23 The Mesa Penasco Well in Section 30 of 18,
24 25, was drilled on a thin and was dry in the Morrow.

25 The Yates Gulf "KC" Well drilled in the north

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1 half of Section 18 of 18, 25, north of the old Gulf Eddy
2 "GK" Well, was drilled on a thick and encountered a gas-
3 bearing Morrow channel sand.

4 The intent of Yates in drilling these non-
5 standard locations was to encounter commercial Morrow gas
6 in locations predicated on geology and to minimize the risk
7 of drilling dry holes.

8 Q Do you have anything further?

9 That's all of Mr. Beck on direct.

10 MR. RAMEY: Any questions of the witness?

11 Mr. Kellahin?

12

13 CROSS EXAMINATION

14 BY MR. KELLAHIN:

15 Q Mr. Beck, would you look at Exhibit Number
16 One? I believe the copy that you've introduced before the
17 Division has got some yellow coloring on that. What's the
18 significance of the yellow?

19 A The yellow coloring is just to color the
20 Yates acreage.

21 Q I see. All right, what pool are we in?
22 Has the Division named this particular pool where these
23 are located?

24 A I believe it's the Penasco Draw Morrow.

25 Q Now all these Morrow wells, including the

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1 two Gulf wells and the subject well by Yates, are all in the
2 same Penasco Draw Morrow Pool, is that right?

3 A I think they've all been assigned to it;
4 I think the seven of them have.

5 Q And the spacing rules for that particular
6 pool provide for the dedication of 320 acres to each pro-
7 ration unit, do they not?

8 A I believe so.

9 Q And what would be a standard location with-
10 in that proration unit for this particular pool?

11 A For the proration unit in the north half
12 of 25?

13 Q Yes, sir.

14 A It would be 660 from the north, 1980 from
15 the east, or west; 660 from the south, 1980 from the east
16 or west.

17 Q Okay, and your subject "JM" No. 1 Well is
18 located where?

19 A 660 from the north and east.

20 Q Then I understand that you are closer by some
21 1320 feet to the east line of your proration unit --

22 A Yes.

23 Q -- than a standard location would be.

24 A Yes.

25 Q Has the Division separated the different

1 Morrow pay zones in this particular pool in any method, or
2 in any manner?

3 A. Not that I know of.

4 Q. Okay. Let's look at Exhibit Number Two, if
5 you please. In what ways is -- are the Exhibit Number Two
6 in any way different from the Exhibit Number Three you
7 introduced at the Examiner Hearing?

8 A. It has been modified slightly, by the drilling
9 of one, two, three, four wells since the first hearing.

10 Q. Could we again, Mr. Beck, identify those
11 four wells that have been drilled subsequent to the Examiner
12 Hearing?

13 A. The Yates Cities "JG" No. 1 in Section 13;
14 Yates State "JM" in Section 25; the Mesa Weed State in
15 Section 24, all in 18, 24; and the Yates -- I mean, excuse
16 me, the Mesa Penasco Well in Section 30 of 18, 25, and
17 also the Yates Gulf "KC" in Section 18 of 18, 25.

18 I guess that's five wells.

19 Q. I can't find the last well, Mr. Beck.

20 A. In 18, if you'll look on Exhibit Number Two,
21 Section 18 of 18, 25, the Yates Gulf "KC".

22 Q. All right. Looking at Exhibit Number Two,
23 the exhibit indicates, I assume, the gross Morrow thickness
24 in this particular area?

25 A. Yes.

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1 Q All right. What have you determined to be
2 that thickness for the "JM" No. 1 Well?

3 A 112 feet.

4 Q And what was that gross Morrow thickness for
5 the Yates "JG" Well?

6 A 38 feet.

7 Q The "JG" Well is noncommercial in the
8 Morrow?

9 A That's true.

10 Q What was the number of gross Morrow feet for
11 the Mesa Weed State Well?

12 A 39 feet.

13 Q And that also was dry in the Morrow?

14 A Yes, sir.

15 Q At a standard location in the north half of
16 Section 25, what would you determine to be the gross Morrow
17 thickness at that location?

18 A Something above 60 feet.

19 Q Can we conclude from your exhibit, Mr. Beck,
20 that a well drilled at a standard location within the north
21 half of Section 29, which encountered a gross Morrow thick-
22 ness of some 60 feet would not be a sufficient thickness
23 of gross Morrow Sand to result in a commercial Morrow well?

24 A Not absolutely, no.

25 Q But that is one of the factors you've used

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1 in considering your proposed location.

2 A Well, in trying to locate the wells, you
3 would like to have the greater thickness.

4 Q Let's look at Exhibit Number Three, which
5 is the overlay to Exhibit Number Two.

6 Now, if I understand you correctly, this is
7 an Isolith of the clean Morrow Sands. What does that mean,
8 Mr. Beck?

9 A Well, what it means is that you take the
10 compensated neutron formation density log and you find the
11 line that has 50 API gamma ray units on it and you count
12 up the thickness of sand that's to the left of the 50 API
13 GR line. Now, this is just a quick way of doing things.
14 It just -- it's a gross sort of tabulation. There is -- you
15 can even leave out significant sands, because some sands
16 are highly radioactive and you won't get past the -- to
17 the left of the 50 API line.

18 But you can't stop and analyze each case on
19 its own, so you just use the general cutoff.

20 That's all the map really means.

21 Q Does this particular Isolith take into con-
22 sideration effective porosity?

23 A No, it doesn't.

24 Q Would an exhibit prepared that includes the
25 information contained on your Isolith plus effective poro-

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1 sity be a further refinement to your exhibit?

2 A If it's properly done it would be.

3 Q Would that be a better geologic tool from
4 which to determine a proposed location?

5 A Well, you've got effective porosity just
6 applies to the well you're looking at, and it's, unless
7 you're very careful with it, to try to project it in map
8 form, it could be very misleading.

9 Q So for that reason you've not used porosity
10 in putting together your exhibit?

11 A That's right.

12 Q Let's look at the Pubco Cass State Well in
13 the south half of Section 25. On Exhibit Number Two it
14 indicates 56 feet of gross Morrow thickness, does it not?

15 A Yes, sir.

16 Q And on your overlay it indicates what ap-
17 pears to be 6 feet of clean Morrow Sand, is that correct?

18 A Yes, sir.

19 Q That Pubco Cass State Well was dry in the
20 Morrow, was it not?

21 A Yes, it was.

22 Q Okay. The overlay indicates for the Mesa
23 Weed State Well that there is 5 feet of clean Morrow sand,
24 is that correct?

25 A Yes, sir.

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Q And that well was dry in the Morrow?

A Yes, sir.

Q In the Yates "JG" Well in Section 13 your overlay indicates 2 feet of clean Morrow Sand, does it not?

A No, it does not.

Q I'm sorry --

A There was zero feet.

Q Zero, I moved the overlay. I'm sorry. It's zero feet and that was dry in the Morrow.

A Yes.

Q For your proposed location for the "JM" Well your overlay indicates what appears to be 12 feet of clean Morrow sand?

A Yes, sir.

Q In your opinion what would be the thickness of the clean Morrow sand encountered at a standard location?

A If the standard location is 1980 from the south -- I mean from the north and east, it would probably be between 5 and 10 feet off of this map.

Q So if we look at a standard location out of the south and east, how many feet of clean Morrow sand would you estimate?

A From the what?

Q I'm looking out of the south end of the -- out of the south end of the proration unit and out of the

1 east end of the proration unit, there is a standard location
2 1980 from the east line and 660 from the south line of the
3 proration unit.

4 MR. LOSEE: Are you talking about 13 or 18?

5 MR. KELLAHIN: No, sir, I'm talking about
6 Section 25. I'm looking at the north half of Section 25
7 where you've drilled the "JM" No. 1 Well.

8 All right, sir, have you got me?

9 A. Uh-huh.

10 Q. There are some standard locations within
11 that proration unit, are there not, Mr. Beck?

12 A. In the north half, yes.

13 Q. All right, sir. Let's look at each of those
14 standard locations and for each of those locations tell me
15 what the thickness of the clean Morrow sands would be.

16 A. Well, as I have on this map here with the
17 control we have, it would be 1980 from the north -- 660 from
18 the north and 1980 from the west would probably be less than
19 10 feet. The same for the 1980 from the north and west.
20 Approximately the same for the 1980 from the north and
21 east. For the 1980 from the north and east would be probably
22 a little bit more than the other three, closer maybe to 10;
23 I don't know.

24 Q. All right. I think I've got them reversed
25 here, Mr. Beck. The greatest thickness of clean Morrow sand

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1 at a standard location would be for that location 660 from
2 the south line and 1980 from the east line, would it not?

3 A. Of the proration unit.

4 Q. Of the proration unit, that's correct. And
5 what is your estimate as to that thickness?

6 A. Between 5 and 10 feet.

7 Q. Now, let me, for clarification, let me ask
8 you, Mr. Beck --

9 A. Excuse me, I mean 10 or 12 feet, between 10
10 and 12 feet.

11 Q. All right. And for the location 660 from
12 the north line of the proration unit and 1980 from the
13 east line of the proration unit, what would be the thickness
14 of the clean Morrow sand?

15 A. Between 5 and 10 feet.

16 Q. Okay. So there at least one standard loca-
17 tion within the proration unit, Mr. Beck, that will poten-
18 tially encounter as much clean Morrow sand as you have in-
19 dicated will be encountered at the unorthodox location?

20 A. Just about, right.

21 Q. All right, sir.

22 MR. STAMETS: Ray, point of clarification
23 here. Opposite your Yates Cities "JC" you've got a zero
24 on the 10-foot contour line. Was that just an error in
25 drafting?

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1 A Yes, that's supposed to be a 10 there. The
2 zero stands for the amount of clastics found in the "JG".

3 MR. STAMETS: I see.

4 A The line that's marked 10 is up toward the
5 north end of the overlay.

6 Q (Mr. Kellahin continuing.) There's one well
7 on here, Mr. Beck, that I haven't asked you about, and it
8 is that Gulf Eddy "GX" Well, located in I believe that's
9 18, is it not?

10 A Yes.

11 Q All right, south half of Section 18. On
12 your overlay, Mr. Beck, it appears as if that Gulf Eddy
13 "GX" Well has some 21 feet of clean Morrow sand, is that
14 correct?

15 A Yes.

16 Q And that well is also dry in the Morrow, is
17 it not?

18 A That's true. The Gulf perforated the Morrow
19 sand in that well and got a little gas and they acidized
20 it and they got gas, a little bit more gas, but not enough
21 to consider it commercial and they have plugged back up on
22 that well. It did not make it but they did try to attempt
23 it.

24 MR. STAMETS: I'm confused by that, now. Are
25 you talking about the Gulf "GX"?

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1 A No, sir. Yes, sir, the Gulf Eddy "GX" in
2 the south half of Section 18 of 18, 25.

3 MR. STAMETS: Okay, here we go.

4 Q Mr. Beck, it would appear from your overlay
5 that those wells that encountered 6 feet or less of clean
6 Morrow sands are not productive in the Morrow. Is that a
7 fair statement?

8 A Well, in this local area at this particular
9 time with the data we have, that's probably right. But
10 that's not an absolute.

11 Q I understand, but from your exhibit we can
12 also conclude, can we not, Mr. Beck, that some portion of
13 the north half of Section 25 is potentially nonproductive
14 from the Morrow?

15 A Potentially.

16 Q That's right. Do you have an opinion with
17 regards to how many acres would be productive from the north
18 half of Section 25, based upon this Isolith of the clean
19 Morrow sands?

20 A No, sir, I can't. It's just -- the overlay
21 is just, like I said, a gross tool to help us decide on
22 locations, and you can't use it as any sort of a map to
23 decide exactly how much of it is going to be productive.

24 Q I understand it's a gross tool, Mr. Beck,
25 but it appears to be rather reliable in that if you'll look

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1 at all the dry holes drilled to the west flank of the
2 Morrow pool here, those that show less than 6 feet of clean
3 Morrow sands are in fact noncommercial in the Morrow, is
4 that not true?

5 A That is true insofar as it goes.

6 Q It would appear, then, from your exhibit,
7 that something in the neighborhood of 60 to 70 percent of
8 the proration unit is potentially nonproductive from the
9 Morrow.

10 A I don't think that you can make that state-
11 ment using these maps.

12 Q Okay. Is it your opinion that the north
13 half of Section 25 is reasonably productive in the Morrow?

14 A Well, we located a well utilizing the mapping
15 techniques but I would say that, you know, if one drills a
16 well, you can see how the overlay and the thicks bulges in
17 and out from place to place, who's to say that a well
18 drilled in the northwest quarte of 25 would not change the
19 map?

20 Q Now, looking at your cross section, Mr.
21 Beck, I understand you to conclude from that exhibit that
22 the Morrow as present in the Gulf "GK" No. 2 Well and the
23 "GK" No. 1 Well is not the same Morrow Sands as present
24 in your proposed well?

25 A That's true.

1 Q Okay, what are the Morrow Sands present in
2 the "JM" No. 1 Well?

3 A Would you rephrase that?

4 Q Yes, sir. You've indicated that they're
5 not the same sands, or this is not the same reservoir, and
6 I want you to tell me what the difference is in the two
7 Morrow reservoirs.

8 A The Yates Cities -- I mean the Yates "JM"
9 appears to be at a lower, to have been deposited earlier,
10 that is, than the sand in the "GK" No. 2, which is a higher
11 stratigraphic level and it's probably a distributory channel
12 deposited later, prograded at later.

13 Q In fact the Division makes no difference be-
14 tween different zones within the Morrow formation, do they,
15 in establishing pools?

16 A I'm not sure I'm qualified to answer that.

17 Q Okay. The reservoir you attribute to the
18 "JM" NO. 1 Well, how far does that extend to the north?

19 A There is no way I could really tell that.
20 It could be -- it could be a couple of hundred feet to the
21 north and extend mainly to the south, or it could go the
22 other way. I just couldn't tell you.

23 Q Could you tell us how far that reservoir for
24 the "JM" No. 1 Well might extend into the Gulf acreage in
25 the adjoining section?

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1 A No, sir, I couldn't. The point is, though,
2 that we don't think that they're draining the Gulf reservoir
3 regardless of where it extends.

4 Q Have you made application to the Division
5 for the creation of a separate pool for this particular well?

6 A No, sir.

7 MR. KELLAHIN: I don't have any further
8 questions. Thank you.

9 MR. RAMEY: Any other questions? Mr. Stamets.

10 CROSS EXAMINATION

11 BY MR. STAMETS:

12 Q Mr. Beck, how do you see the channels that
13 you've drawn in here? Do you feel like they're straight
14 channels or do you expect that they would be meandering
15 channels that might cut each other off, be discontinuous,
16 might overlap in places?

17 A Well, you know, we haven't cored enough
18 wells in the Morrow to really know, you know, really tie
19 down what the environments of deposition are; however, it's
20 my feeling at the time that when you started filling up with
21 sea water the area above the unconformities there, you were
22 laying down more or less the bright shales of the Morrow,
23 but the Pedernal is uplifted in the north and the sands
24 were prograded from the north and prograded into these Mor-
25

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1 rowan re-entrance, and it was probably a distributory chan-
2 nel.

3 Distributary channels in the recent are
4 fairly straight, I mean, or just slightly sinuous, and they
5 are -- one distributary will prograde out and then be aban-
6 doned, and then another one will prograde and be abandoned,
7 and as far as connections, it's just difficult -- I'm pretty
8 sure that you could have channels interconnected with others,
9 but it's possible, and you could also probably have a channel
10 cut through shoreline strike sands, such as B Sands, that
11 this could possibly happen. But I think that you have to
12 more or less, when you are having interconnection you have
13 to be able to corroborate it with pressure information.

14 Q Is it possible that if Gulf drilled 660 from
15 the south and the west of Section 19, where they've already
16 got a couple of wells, that's Section 19, 18, 25, do you
17 think they might encounter the same channel that you've got
18 in the "JM" Well?

19 A If they drill at 660 from the south and west
20 it's possible, but it's not necessarily -- wouldn't have
21 to be. You can see the "JM" itself is fairly thin. We
22 still believe it's a channel so it may be pinching out to
23 the north, northeast.

24 Q So they might get it or they might not.

25 A Gulf might want to drill a well in 19. I

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1 know they will.

2 Q Do you feel that's the only way they could
3 compensate for any drainage that your "JM" Well might have?

4 A Well, depends on how you look at it. They've
5 already got two wells in Section 19. Like I say, I don't --
6 we don't think that we're draining them with the "JM", but
7 if you look at it from an acreage thing, then if we were
8 sticking over into their acreage, you know, even though
9 we weren't being -- we weren't draining them, their wells
10 per se, we might be draining their acreage, well then they
11 would do it, perhaps, but this is all conjecture.

12 Q If that were the case, no matter what the
13 penalty the Division placed on your well, or the Commission
14 placed on your well, Gulf could still not protect their
15 acreage unless they drilled a well that encountered this
16 same channel, is that not correct?

17 A If the channel's over there, but I don't know
18 that it would be. There isn't any evidence right now that
19 it is.

20 Q Okay. That's all.

21
22 CROSS EXAMINATION

23 BY MR. RAMEY:

24 Q Well, Mr. Beck, I'm having -- it looks to
25 me like, looking at your cross section, at least some of

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1 those sands ought to be correlatable over the -- the whole
2 interval. They're all, you know, you've got some sands
3 that are all within an inch of your brown line, but you
4 don't feel any of these are connected?

5 A Well, the way that I -- I think that most
6 of the sands that are the producing sands in there, I believe
7 they are channel sands. Channel sands are long and they
8 are narrow and they vary in thickness where you drill into
9 them; just a few feet, maybe ten feet on the edge, to maybe
10 we've seen channels up as high as 90 feet.

11 They are planal on top and they are convex
12 on the bottom, where we've seen enough of them, like in
13 West Atoka, just looking at the Morrow. And also in the
14 recent sands, they're the same way. They are planal on
15 top and they are convex on the bottom, so I correlate the
16 planal top part. If they don't correlate pretty exactly,
17 then you can say, well, maybe one is a little older than
18 the other or -- but I've even seen things in this very area,
19 the Antweil Penasco and the Antweil Rio Well look like they
20 should be the same thing, but we don't believe by pressure
21 dope that they are.

22 So, yes, a person could get up there and
23 draw lines clear across that and we could argue all day
24 about it, but that's just the way I look at it and I do it.

25 Q Then how much -- how much pay, say you have

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1 a well that has 12 feet of pay and that grades off to zero,
2 say, some place on the proration unit, now how much -- how
3 much pay do you think would actually contribute? How much
4 pay would you have to have to actually contribute gas to
5 the well?

6 Is there some magic break-off point or zero,
7 or is it 5 or what? You may be able to drill a well and
8 get 5 feet of pay and not make a commercial producer out of
9 it, or if you get a well that had 12 feet of pay, perhaps
10 some of this 5 feet of pay would contribute gas to the well.

11 A That's awful hard for me to say. I don't
12 know, I've seen wells that had just 10 feet of pay that
13 made 10-billion cubic feet, so I don't know what point be-
14 low -- between 10 and zero that you would cut it off. It
15 would depend, really, on permeability of sand. 1 or 2 feet
16 if it was connected in permeably with a larger, thicker
17 channel sand, would be very good. I just don't know.

18 Q So would you -- would you say any portion of
19 the north half of Section 25 is nonproductive?

20 A Utilizing the map as it stands and the data
21 as it stands, that would be potentially right, but if another
22 well was -- I just don't know. If another well were drilled
23 it might change the map.

24 Q How much, based on what you've seen here,
25 and assuming another well would not be drilled which would

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1 not change your map, how much -- how much of the north half
2 of 25 do you think is productive, would contribute gas to
3 the well in the northeast of the northeast of Section 25?

4 A I just, like I say, channels that cut in
5 could be connected up with shoreline strike sand. It could
6 possibly be present, like at the very left end of the cross
7 section, there's a small shoreline strike sand, or the
8 extreme right side over here shows a thin, tight sand. If
9 the channel in the "JM" was connected in with the shoreline
10 strike sand and the shoreline strike sand did have some
11 porosity and permeability, it is possible that you could
12 make some sort of a well, a marginal, maybe, in the entire
13 north half of 25. But utilizing data we have now, we would
14 prefer to drill a well where the data indicates would be
15 a better location.

16 Q But you can't or won't say that none of the
17 acreage is nonproductive.

18 A I just can't say that.

19 Q Okay.

20 MR. RAMEY: Any other questions? Mr. Arnold?

21

22

CROSS EXAMINATION

23 BY MR. ARNOLD:

24

25

Q I just wanted to ask from the cross section,
are you postulating that every one of those wells in the

1 middle section which shows Morrow sand is in a separate de-
2 positional channel altogether?

3 A Yes, sir, a separate depositional event, I
4 believe.

5 Q What's the basis for that conclusion insofar
6 as the sands in the upper part of the Morrow section are,
7 or they seem to be in the same stratigraphic position?

8 A Well, as I said, if you take the sands up
9 there that are -- that look like they're bathtub shape,
10 those are what I consider channel sands, and if you take
11 the top, or lip of the bathtub, if they're not the same
12 stratigraphic level, they're different depositional events.

13 Q And wouldn't you think that insofar as that
14 depositional environment is concerned, that the -- presume
15 that there were that many depositional channels within
16 that narrow a geographic area would be somewhat unusual?

17 A No, sir, not if that's what it looks like
18 from the standpoint of correlation and from the standpoint
19 of pressure information.

20 Q Okay.

21 MR. RAMEY: Any other questions of the wit-
22 ness?

23 MR. LOSEE: I have a few.

24 MR. RAMEY: Mr. Losee.
25

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REDIRECT EXAMINATION

BY MR. LOSEE:

Q The question was asked by Mr. Kellahin as to whether or not effective porosity in the Morrow would not be a better tool to determine where to locate a well.

My question is, is there, and I think you've really been testifying to it, is there some factor present in the Morrow which makes a map based solely on effective porosity not a complete tool to determine the location of a well?

A No, it's not a complete tool.

Q What is, what fact is present in the Morrow that makes it not a complete tool?

A The thing that makes it not a good tool is the fact that we do believe that you're dealing with many separate reservoirs. If you were dealing with a blanket sand, like a dune sand, like the Nugget they have in the Rockies, --

Q Or the Dakota in the northwest?

A Something like that, then you can start applying effective porosity, but if you don't believe that the sands correlate, or they're the same depositional body, then what's the point in doing it.

Q Now, isn't it true that although a particular

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1 location may not make a commercially productive Morrow well,
2 if in the same spacing unit a commercial well is obtained,
3 that the sand, beach and depositional, beach sand, could
4 contribute, if the permeability were there and the porosity,
5 to the wellbore of the commercially productive well?

6 A Yes, it's possible.

7 Q Isn't that possible as far as the north half
8 of Section 25 is concerned?

9 A It is possible.

10 Q Now, Mr. Kellahin pointed out that the loca-
11 tion 660 feet from the south line of this spacing unit on
12 the north half of Section 25 and 1980 feet from the east
13 line, would have, according to your Isolith, Exhibit Three,
14 some 10 to 12 feet of clean sand.

15 Where would that location fall with respect
16 to your Exhibit Two Isopach on the Morrow Clastics thicks?

17 A Probably about -- about 80 feet thickness.

18 Q And that's not, your "JM" is on 112 feet of
19 thickness?

20 A Yes, sir.

21 Q So as far as your map of the clastic thicks
22 are concerned, it would not be as desireable a location as
23 your present unorthodox location.

24 A That's true.

25 MR. LOSEE: I think that's all.

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1 MR. RAMEY: Mr. Kellahin, do you have a
2 question?

3 MR. KELLAHIN: Yes, sir.
4

5 RECORSS EXAMINATION

6 BY MR. KELLAHIN:

7 Q Mr. Beck, I'm confused by some of the state-
8 ments you've indicated in response to the last question asked
9 by Mr. Losee.

10 You indicated on one hand that effective
11 porosity is not a good tool to use in the Morrow because
12 of the particular Morrow characteristics of the sands here,
13 yet Mr. Losee then asked you a question about the potential
14 productive sands in the north half of this particular sec-
15 tion, and he asked you if the permeability and porosity
16 were present, and your answer to him at that point was yes,
17 indicating that porosity was an important factor.

18 Which statement should we regard, Mr. Beck,
19 as being important to this case?

20 A Well, it's just loss of communication.

21 If we were dealing with a blanket sand, then
22 effective porosity would be a very good tool to map. But
23 if you're dealing with isolated pods, then an effective
24 porosity map really doesn't tell you a lot. But if you
25 drill a well somewhere in the northwest quarter, say, of

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1 Section 25, which according to the way our maps look would
2 not be the best place to start to drill a Morrow well,
3 you might encounter shoreline strike sand, which might con-
4 tribute some gas even to a well that was drilled over in
5 the east half of the proration unit.

6 That's all I was saying.

7 Q Okay.

8 MR. KELLAHIN: No further questions.

9 MR. RAMEY: Any other questions? The wit-
10 ness may be excused.

11
12 PEYTON YATES

13 being called as a witness and having been duly sworn upon
14 his oath, testified as follows, to-wit:

15
16 DIRECT EXAMINATION

17 BY MR. LOSEE:

18 Q Will you state your name, address, and occu-
19 pation?

20 A Peyton Yates. I live in Artesia, New Mexico.
21 I'm a petroleum engineer.

22 Q For Yates Petroleum Corporation?

23 A Yes, sir.

24 Q Have you previously testified before this
25 Commission as an expert witness and had your qualifications

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1 made a part of the record?

2 A Yes, sir.

3 MR. LOSEE: Are Mr. Yates' qualifications
4 acceptable?

5 MR. RAMEY: He's considered qualified.

6 Q (Mr. Losee continuing.) Mr. Yates, would
7 you explain the relationship between your testimony and
8 that given by Mr. Beck?

9 A As you can see by looking at the cross sec-
10 tion and from the discussion that occurred with Mr. Beck's
11 testimony, it is often very difficult to ascertain whether
12 or not two wells have penetrated the same reservoir simply
13 by electrical log correlation.

14 Reservoirs can often be proved to be dis-
15 connected by electrical log correlation but a smiliarity
16 of correlation in the Morrow off of electrical logs alone
17 we believe not to be sufficient information to say that
18 the two reservoirs are connected.

19 Q Now, Mr. Yates, you're familiar with Rule
20 102 of the Commission which provides that in approving
21 unorthodox locations the Commission may take such action
22 as will offset any advantage obtained, and before you
23 start your testimony, I'd like to know whether or not you
24 have an opinion as to whether the "JM" No. 1 Well at its
25 location has an advantage over the Gulf wells at their

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1 orthodox locations in Section 19, diagonally to the north-
2 east?

3 A No, sir, I don't believe that we have gained
4 an advantage at all from our location over the Gulf wells.

5 Q Do you think your well is in communication
6 with either of those wells?

7 A No, sir, I do not.

8 Q Would you please relate to the Commission
9 the history of the drilling and presently attempted com-
10 pletion on the Yates "JM"?

11 A Yes, sir. I would like to first of all note
12 Exhibit Number Five, which is a brief summary by well in
13 the Penasco Field, showing the wells, the operators, the
14 locations, completion dates, original shut-in bottom hole
15 pressure, or shut-in tubing data, if available, date of
16 first sales, as far as we could ascertain from public re-
17 cords, cumulative gas produced through September of '78,
18 and the status of the well as from our own observation of
19 the well, or reports from operators to us in January of '79,
20 and the most recent shut-in tubing pressure data that we
21 had made available to us, either by the operator or gained
22 from our own observation on wells.

23 If I may now refer to the Yates "JM" Well
24 and its present situation, the Yates State "JM" No. 1 was
25 spudded on October the 29th, 1978.

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1 The completion in the Morrow is presently
2 being attempted. The well was drill stem tested in the
3 Morrow interval from 8515 to 8630, as shown on the cross
4 section.

5 The zone produced on drill stem test appro-
6 ximately a million cubic feet a day at 300 pounds on a
7 3/8ths inch choke.

8 The initial shut-in pressure was 3,192
9 pounds. The final shut-in pressure was 2,976. The extra-
10 polated pressures indicated approximately the same drop in
11 pressure of around 200 psi.

12 The well was perforated on December 5th,
13 1978, from 8554 to 67 in the only Morrow zone we believe
14 to be productive in that well. The well flowed 1250 Mcf
15 per day. After flowing 30 minutes the well was shut-in.
16 In two days time, the shut-in tubing pressure was 2330
17 psig. In one month, still shut-in, the shut-in tubing
18 pressure was 2536 psig. The shut-in bottom hole pressure
19 was 3114 psig at 8540 feet.

20 As you will note, the shut-in bottom hole
21 pressure has still not risen to initial drill stem test
22 pressure.

23 On January the 10th the well was acidized
24 with 2000 gallons of acid. During 22 hours of flow the
25 well declined from a peak of 1250 Mcf per day to 460 Mcf

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1 per day on a 1/2 inch choke.

2 The well was shut-in and blown down in
3 cycles regularly from the date of acidation -- acidizing
4 on January 10th until January the 17th, one week, in effect.
5 Each blowdown period during that time experienced a drop
6 in flow rate during the blowdown. The well was last flowed
7 at 950 dropping to 810 Mcf on a 3/8ths inch choke.

8 It was shut-in on January the 17th and 120-
9 hour shut-in bottom hole pressure on the 22nd of January,
10 which was a 5-day shut-in, recorded 1327 psig shut-in
11 tubing pressure and 1626 shut-in bottom hole pressure at
12 8540. We ran a bomb in the well to get that; indicated
13 no fluid in the well.

14 22 hours later the shut-in tubing pressure
15 had risen to only 1392 psig and since that time the well
16 has not been flowed. We've kept it shut-in and yesterday
17 on February the 6th after a shut-in period of 20 days, the
18 shut-in tubing pressure had risen to only 1838 psig, which
19 is a dead weight test figure.

20 The well is obviously quite limited in re-
21 serves. We do not know if we'll be able to complete the
22 well in the Morrow formation at this time.

23 If we can now compare the State "JM" to the
24 offset wells completed in the Morrow, we will refer both
25 to the cross section and to Exhibit Number Five.

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1 Q Let's look at the Mesa Lincoln State No. 1,
2 which is located right north of your "JM".

3 A The Mesa --

4 Q And compare that.

5 A Oh, I'm -- excuse me.

6 Q Go ahead.

7 A The Mesa Lincoln State No. 1 in the east half
8 of Section 24 of 18, 24, is completed in one of the three
9 zones penetrated in the Morrow.

10 As shown on the cross section, the Mesa well
11 was drill stem tested in the Morrow across all three zones.

12 The initial shut-in pressure and final
13 shut-in pressure were approximately equal within two or
14 three pounds of each other at 3285 psig.

15 The well was perforated in the lowermost
16 Morrow zone for an absolute open flow -- calculated open
17 flow of 2145 Mcfd.

18 On June the 2nd, 1978, the 72-hour shut-in
19 tubing pressure for that lowermost zone was 2537 pounds.
20 The shut-in bottom hole pressure was 3174 pounds.

21 The surface pressure on the 22nd of January,
22 1978, was 2479 psig and in fact, that surface pressure, I
23 checked again this morning, is still the same and the sur-
24 face pressure has been the same -- they have, if I may note,
25 they have attempted to acidize and flow the well several

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1 times. The surface pressure has been the same since Sep-
2 tember and the well is awaiting hookup and should be put on
3 stream in a very short period of time.

4 The difference in pressure between the per-
5 forated zone in the Mesa well and our zone in the State
6 "JM", when you regard the performance of our State "JM",
7 we just believe that we have no communication between these
8 wells.

9 We further believe we have no communication
10 with the perforated well -- perforated zone, excuse me,
11 in the Mesa because it obviously does not correlate with
12 our State "JM".

13 Again, the drill stem test tested, which
14 got a 3285 bottom hole pressure, tested all three zones
15 in the Mesa well, and our performance at our well at this --
16 at this point, indicates to us that we are draining -- are
17 not draining the Mesa well.

18 Q And that's because of the present material
19 difference in the pressure.

20 A That's right, because we have been only able
21 to recoup -- we have withdrawn in our testing period over --
22 somewhat around a million cubic feet of gas total in our
23 entire testing period, and have only been able to recoup
24 1800 pounds of shut-in tubing pressure after all -- that
25 very small amount of withdrawal, and we think that our well

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1 is behaving very much like a limited reservoir at this
2 point.

3 Q And the Mesa well is retaining its original
4 pressure.

5 A Yes, it's retaining its original pressure
6 and -- however, it is completed in the lower zone, but we
7 see no evidence because of the fact that we have withdrawn
8 such a small quantity of gas from ours to indicate that we
9 would be draining any area outside of our own proration
10 unit.

11 Q Let me ask you to compare the pressure data
12 on the Gulf Eddy "GK" State No. 2 with your "JM" Well to
13 determine whether or not that indicates communication.

14 A The Gulf Eddy "GK" State No. 2, which is in
15 the west half of Section 19 of 18, 25, was completed in
16 January -- on January the 2nd, 1978.

17 The original shut-in tubing pressure was
18 approximately 2600 pounds, which computes to about a 3197
19 psig at 8488.

20 The well went on production in April, 1978,
21 and has produced a cumulative of over 500-million cubic
22 feet; however, the well is now incapable of producing any
23 significant quantities of gas against existing line pressure.
24 We frequently observe the well; we have a small interest
25 in it, and we have observed several days it's floating on

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1 line pressure of about 550 pounds, and there were several
2 days when it will not make anything and yesterday's or
3 Monday's production, I believe, was about 83 Mcf rate at
4 the time that our pumper went by the well.

5 A recent 96-hour shut-in, as reported to us
6 by Gulf, resulted in a shut-in tubing pressure of only
7 730 psig.

8 The well was initially open flow potential,
9 I believe, for around 22-million. It's got some very high
10 permeability around the wellbore.

11 True that Gulf Eddy "GK" State No. 2 is --
12 it's nearing a state of final depletion. It can be put
13 on compression and will make a little, small amount of
14 additional gas, but it is essentially depleting.

15 We can make a comparison, too, between the
16 Mesa well and the Gulf well. The Mesa well at the time
17 that it registered a shut-in bottom hole pressure across
18 all three zones, was 3280 psig on the drill stem test. At
19 that time, which was in approximately -- it was in the
20 summertime. I believe it was around June, the -- at that
21 time that the Mesa well had that drill stem test pressure
22 of 3282, the Gulf Eddy "GK" 2 had a shut-in tubing pressure
23 of 1547 psig and calculated a shut-in bottom hole pressure
24 of 1916 psig. Thus, it would appear that the production
25 from the Gulf well had not drained from -- from the data

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1 accumulated on the drill stem test on the Mesa, that it,
2 the Gulf well had not even drained the Mesa well, which is
3 only 660 feet from the Gulf lease, and at a standard loca-
4 tion.

5 Q Now, how do you compare that Gulf Eddy "GK"
6 State No. 2 with the pressures on your "JM" well?

7 A Our State "JM" Well behavior is very typical
8 of a small, relatively limited reservoir in the Morrow.
9 Our drill stem test initial shut-in pressure was 3192.
10 The final shut-in pressure was approximately 200 pounds
11 lower. The evidence would indicate that there probably was
12 some depletion during the test itself, and that the initial
13 shut-in pressure could have even been lower than the ini-
14 tial -- excuse me, the initial shut-in pressure as recorded
15 on the gauges, could have been even lower than the actual
16 shut-in pressure at the time that the well was drilled to
17 the reservoir. In other words, there could have been some
18 depletion even during the first flow period of the well.

19 At any rate, we believe that we encountered
20 virgin pressures at the time we drilled into the Gulf --
21 into the Yates State "JM" reservoir.

22 The performance and the drainage, or the
23 production in the Gulf "GK" to us, when considered in re-
24 lationship to the pressures that we encountered initially
25 in the State "JM", would indicate that there was no drainage

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1 no drainage had occurred at the State "JM", so that in
2 order for the State "JM" to drain the Gulf well, the re-
3 verse has to be true. The Gulf has to be able to drain
4 the State "JM", and we see no signs of that.

5 In addition, we know that during the 20-day
6 shut-in our pressure had climbed from 1327 psi tubing pres-
7 sure to 18 -- over 1800 pounds. There is obviously a low
8 pressure sink at the Gulf "GK" No. 2. There has been a
9 depletion there of production of over 500-million cubic
10 feet of gas. The shut-in tubing pressure after 96 hours
11 on a prolific well was only 750 psig. We believe that if
12 the "JM" were actually to be in communication with the
13 Gulf well, that our acreage -- our pressure would not have
14 continued to climb but would actually decrease if, for
15 example, as a result of our acid job, we had gotten into
16 their formation, or into the same formation that their
17 well is in -- same reservoir, excuse me.

18 We do not see any signs from the evidence
19 that we have that there is any communication from our well
20 to the Gulf well, or vice versa.

21 Q Mr. Yates, let me ask you to compare what,
22 and determine from pressure data, whether or not you think
23 there's any communication between the Yates Petroleum Cor-
24 poration's Federal "AB" No. 4, which is located in the
25 north half of Section 30 in the spacing unit just to the

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1 east of your "JM", and compare that with the "JM".

2 A. The Yates "AB" No. 4 was an excellent well.
3 It's probably the second best well in this particular pool.
4 The Morris Antweil Rio Penasco being the best of the wells.

5 We have produced over a billion cubic feet,
6 probably at this point a billion two. In September it was
7 1.1-billion cubic feet.

8 That well, by the way, is located in the
9 north half of Section 30, 18, 25. It was completed March
10 13th, 1978, with the original shut-in bottom hole pressure
11 of 3250 psig. It is -- the flow rate is now down to 406
12 Mcf per day, or less. Its most recent 72-hour shut-in
13 tubing pressure on the 17th of January of this year was
14 690 psig. Again, it's a very prolific well a short shut-in
15 period should be representative -- good indicator of actual
16 reservoir pressure.

17 The lack of communication, again, is evident
18 with the Yates State "JM". The fact that a billion cubic
19 feet have been pulled out of that "AB" No. 4 and yet we
20 encounter at virgin pressures on the Gulf -- excuse me, on
21 the Yates "JM" at the time of the drill stem test and we
22 still see no signs of drainage from our -- from the "JM"
23 toward the "AB" No. 4.

24 Q. Does this pressure data confirm your earlier
25 expressed opinion that the State "JM" located at an unortho-

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1 dox location, does not have an advantage over the Gulf wells
2 offsetting it to the northeast?

3 A Yes, sir. We definitely believe that we do
4 not have an advantage over the Gulf wells and that we should
5 not be penalized because we do not have an advantage.

6 Q Mr. Yates, is the Morrow, or are the Morrow
7 sands that are encountered in this area typical of Morrow
8 sands that in your experience you've found in -- producing
9 Morrow sands in southeastern New Mexico?

10 A Yes, sir. We have found the history of
11 development of this Morrow Pool not to be much different
12 from all the other Morrow pools that we've been involved in
13 in southeast New Mexico.

14 The erratic nature of the Morrow sand almost
15 belies any principals of uniformity across very large areas.
16 This makes it extremely difficult to drill for wells, to
17 find the sands, and it makes it extremely difficult to apply
18 uniform principals of law across lease boundary lines.

19 We think it's interesting that the Mesa well
20 in Section 24 is allowed to be 660 from the offsetting pro-
21 ration unit. Apparently encountered virgin pressures in
22 its drill stem test.

23 The Yates State "JM" is also 660 but is under
24 threat of penalty. The results of the two wells apparently
25 are different completely from the Gulf "GK" No. 2 with re-

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1 spect to pressures.

2 We have encountered this frequently through-
3 out the Morrow and we find it difficult to reconcile the
4 reality of the Morrow production, the risk involved in
5 drilling, the necessity of an operator of a lease to mini-
6 mize his risk on drilling and to protect his correlative
7 rights, with the existing rules as set out on the 320-acre
8 spacing with respect to having to drill 1980 feet from an
9 in line from one lease, if you arrange your 320 one way and
10 only 660 feet if you arrange your lease another way, and
11 we think that penalty devices tend to discourage exploration
12 where there should be exploration.

13 I think that we will see in the future,
14 particularly with the passage of the Natural Gas Policy
15 Act, a more and more consideration by companies to go into
16 320-acre spacing units that are presently existing and
17 drill or attempt to have drilled a second well in a pro-
18 ration unit, and we will see brand new reservoirs discovered.
19 We will see gas produced that would never have been produced
20 were there not wells drilled, second wells drilled in the
21 proration units, and this is the problem that we see in
22 this very issue here, that just because of the realities
23 of the geology that we're facing, that we think that the
24 State has possibly gotten itself into a position that -- of
25 having to reconsider whether or not they want to continue

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1 the present rules.

2 Q Mr. Yates, are you concerned about the pre-
3 cedent established by the original order in this application
4 of establishing a penalty in a nonprorated gas pool?

5 A Yes, sir, we are concerned about the precedent.
6 We think the precedent will not serve to protect the corre-
7 lative rights. We do not think it will serve to -- serve
8 the purpose of conservation, of maximum utilization of
9 the State's resources.

10 Q And that by application of this rule as a
11 deterrent to drilling at unorthodox locations, would there
12 be waste of oil or gas?

13 A Yes, sir, there could be. If a decision
14 were made not to drill because of the concern of being
15 penalized at 70 percent of production as proposed.

16 Q One final question. Mr. Kellahin has pointed
17 out that the Commission in the past has made a determination
18 that the -- in every case or substantially all cases -- that
19 the Morrow was one pool. Is there some indication now in
20 view of the passage of the Natural Gas Policy Act that the
21 Commission may consider applications for separate reservoirs
22 within the Morrow?

23 A Yes, sir. To my knowledge the general de-
24 signation of pool is not an attempt by the Commission to
25 state that separate reservoirs cannot exist within the

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1 pool. The pool concept, as I understand it, is an admini-
2 strative procedure kept as simple as possible in order to
3 avoid having a separate hearing for every time -- of com-
4 plex nature, every time you intend to put a well in a pool.

5 The Natural Gas Policy Act and the actions
6 of the Commission with respect to that, are necessarily
7 going to recognize the existance of existing reservoirs
8 within -- separate existing reservoirs within one pool.

9 Q Mr. Yates, was Exhibit Five prepared by you
10 or under your direction?

11 A Yes, sir.

12 MR. LOSEE: We move its introduction.

13 MR. RAMEY: Exhibit Five will be admitted.

14 MR. LOSEE: That's all the direct.

15 MR. RAMEY: Fifteen minute recess.

16 (Thereupon a recess was taken.)

17
18 MR. RAMEY: Any questions of Mr. Yates?

19 MR. KELLAHIN: If the Chairman please.

20
21 CROSS EXAMINATION

22 BY MR. KELLAHIN:

23 Q Mr. Yates, you indicated that under the
24 current Examiner Order which provides a method for deter-
25 mining the allowable for this particular well and then sets

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1 a penalty based upon the allowable, that you were dissatis-
2 fied with that in a nonprorated gas pool. Are you aware of
3 any other way to establish a penalty for a nonprorated gas
4 pool that would be very meaningful?

5 A. There are two questions that come up in inten-
6 tion to answer that, Mr. Kellahin.

7 One is at what point do you attempt to set
8 a penalty, where -- where -- if you didn't decide at some
9 arbitrary point that you do want to attempt to set a penalty,
10 how would you do it.

11 It's our contention here that the 660 dis-
12 tance from an offsetting lease has been accepted, in fact,
13 by the Commission. Whenever you happen to have a 320-acre
14 spacing unit that lies the right way, and that may be often
15 out of your control.

16 We contend that the 660 spacing should have
17 no penalty.

18 Q Well, let me -- do I understand you to say
19 because of your belief of the limited Morrow reservoirs
20 involved here that you're really in effect advocating some-
21 thing other than 320-acre spacing; that perhaps 160 acres,
22 or something like that, might be more appropriate for the
23 Morrow?

24 A. Not necessarily. In time in certain areas
25 it may come to be the case that people would come in for

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1 additional spacing. The complexity of the thing, I think,
2 is probably best handled by 320 acres. It may come to be
3 that we'll have to allow more than one well to be drilled
4 on that 320 acres, which has in fact happened occasionally,
5 and I think you'll have more in the future.

6 So I don't think that going to 160-acre spacing
7 is necessarily the answer. I think that flexibility should
8 be allowed in other units.

9 There are occasions when reservoirs indeed
10 will cross that entire 320.

11 Q Mr. Beck indicated that there has been a
12 number of unorthodox locations established in Morrow forma-
13 tions. How many of those cases, Mr. Yates, was Yates the
14 applicant?

15 A Could you repeat to me how many he said that
16 there were? I believe there were thirty something?

17 A His testimony indicated that of the 121 wells
18 he examined in a six area township involving the Morrow
19 formation, that he had discovered some 33 unorthodox loca-
20 tions for 121 wells, attributing some 27.2 percent to un-
21 orthodox locations.

22 My question is how many of those cases was
23 Yates involved with?

24 A We were involved as an operator.

25 Q Yes.

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1 A As an operator, not 100 percent owner, in
2 23 cases out of the 30.

3 I'd like to point out that in that township
4 area, six township area that Mr. Beck got his figures from,
5 that Yates Petroleum is operator of 45 percent of the
6 leased acreage in that same area, and that I believe Gulf
7 has 2.3 percent of the acreage in the area.

8 Q Of the 33 unorthodox locations, Mr. Yates,
9 how many of those were contested cases?

10 A Of ours? I don't remember if we had a con-
11 tested case. I honestly -- I personally do not remember
12 being contested.

13 Q So to the best of your knowledge, of the
14 23 cases in which Yates was the operator there was no ob-
15 jection by offsetting operators?

16 A I believe that to be the case. There could
17 be one, but I personally cannot remember.

18 Q You indicated some dissatisfaction in the
19 fact that because we have 320-acre proration units, that
20 depending upon how you orient the proration unit within
21 the section, it's possible to be as close as 660 feet to
22 some particular line.

23 The proration involved in this particular
24 application is the north half of 25. There would have been
25 nothing to preclude you from turning this to an east half

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1 proration unit, would it not, Mr. --

2 A Could I see a map, a land map, please?
3 I've got to look at a colored map.

4 In answer to your question, I do not know
5 if an event could have occurred which precluded that drilling
6 in the east half. Obviously, the acreage in the south half,
7 or let's put it that way, in the southeast quarter, is owned
8 by -- part of that acreage is owned by a different party,
9 and I was not involved in the land negotiations, Mr. Kellahin,
10 as to what kind of a deal was made as to whether we would
11 drill a north half or an east half location.

12 Oftentimes you do not make a deal unless
13 you agree ahead of time to drill on a certain spacing. I
14 do not know what arrangements were made, so I cannot an-
15 swer that question.

16 Q With specific reference to the subject well,
17 the "JM" No. 1 Well, it's 660 out of the north and east
18 lines of the proration unit, is that correct, Mr. Yates?

19 A Yes, sir.

20 Q Now, in completing the well, Mr. Yates, do
21 you attribute the relative poor performance of the Morrow
22 in this well to any kind of mechanical difficulties with
23 the well itself?

24 A No, sir. We have not been able to. We have --
25 we did a lot of wishful thinking when we ran the drill stem

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1 test. We did a lot of calculating, hoping that we would
2 be able to determine a damage ratio. We did not determine
3 a damage ratio of any greater than one on the drill stem
4 test. In our experience thus far, we had no mechanical
5 problems, and we have no immediate wellbore damage problems
6 in the vicinity of the wellbore.

7 Q So we attribute the limited reservoir to
8 the reservoir characteristics itself in the Morrow and not
9 to anything mechanically wrong with the well?

10 A At this point. As far as we can tell, yes,
11 sir.

12 Q You indicated in your direct testimony that
13 not only did you believe the "JM" No. 1 Well not to be in
14 communication with the production from either one of the
15 Gulf wells in Section 19, but that it was your belief that
16 this particular well was not draining any area outside of
17 its proration unit, is that correct?

18 A It's my belief that with the fact that we've
19 only drawn a million cubic feet of gas, total, now that's
20 approximate, you know, figure it flowing at so many hundred
21 Mcf for so many hours, and doing it once a day for a week,
22 and whatever, that having withdrawn that very small amount
23 of gas and experiencing the pressure drop that we have ex-
24 perience, that we have not drained any of the offset
25 acreage at all, and that's the point that I made.

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1 Q If you assume a drainage radius of 660 feet,
2 which would be the closest distance from the subject well
3 to the nearest offsetting lease line, it would appear, then,
4 that you are draining a limited reservoir with this parti-
5 cular well that encompasses probably not more than 31 acres,
6 is that not true?

7 A I have not applied a porosity foot factor,
8 which apparently was done to come up with 31 acres. I
9 don't know. Maybe you could tell me how you got the 31
10 acres. I didn't work it up.

11 Q Well, I was simply assuming a drainage
12 radius of 660 feet, a circular drainage radius, and that
13 would encompass some 31 acres, I'd assume.

14 A That's 31 acres at 100 percent porosity, is
15 that what you're saying?

16 Q Yes, that's correct.

17 A I don't understand.

18 Q Yes, that's correct.

19 A Okay.

20 Q Have you made any calculations to determine
21 the actual extent of acreage attributed to this particular
22 reservoir?

23 A No, Sir, I haven't.

24 Q From the information currently in the record
25 presented by Yates, could that calculation be made?

1 A Which calculation, the extent of the drainage
2 that occurred?

3 Q The number of acres within this reservoir
4 to be drained by this well.

5 A It might be possible to say, okay, if we
6 took a million cubic feet and withdrew it from a well which
7 had a certain porosity and a certain thickness, --

8 Q Okay.

9 A And if we assume that it is constant porosity
10 and thickness for whatever distance we went out from the
11 wellbore, we could compute how much rock that that million
12 cubic feet could have come from. It probably wouldn't
13 mean a darned thing.

14 I don't know that we've presented any evi-
15 dence, however, as to what the porosity actually is.
16 There's a log that someone might calculate it from but I
17 don't think we've put anything in.

18 Q The log in your cross section would show
19 the porosity for this particular well, would it not?

20 A Yes, you'd have a hard time getting a good
21 number from that log, but you could get a number.

22 Q Do you have an opinion as to how many acres
23 within this proration unit will be drained by this parti-
24 cular well in the Morrow?

25 A No, sir, I don't. We're going to have to,

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1 of course, observe its pressure performance. The important
2 thing, it appears to me, is that whether or not we can
3 economically continue to drain the 320 acres. We may be
4 able to do so but we don't know. The gas, of course, would
5 have to migrate from whatever parts of the 320 that it
6 might be able to migrate from and I suppose if only one
7 molecule were to move, that is drainage, but I don't know
8 whether it would be economic or not.

9 Q I don't want to belabor the point, but what
10 I'm trying to establish is you indicated that this well
11 will not drain the offsetting acreage and I want to know
12 why it will not.

13 A Why? Because we say we see no evidence thus
14 far, Mr. Kellahin, in the -- and we only have wells to go
15 by -- no evidence in the wells in the Gulf lease that
16 show that those wells are connected with our well, and that
17 they are in communication.

18 Q But you've not made the calculations that
19 show how much of the north half of this particular section
20 you can drain by this well?

21 A No, sir.

22 MR. KELLAHIN: I have nothing further, thank
23 you.

24 MR. RAMEY: Any other questions of the wit-
25 ness? Mr. Stamets.

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CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Yates, you indicated that the penalty, such as is imposed by the order authorizing this nonstandard location might deter drilling. Did it deter Yates from drilling this well?

A No, sir, it did not. In fact, we drilled both the "JG" and the "JM". If I had known how much trouble the hearing was going to be, I probably would have recommended not to drill the wells, but I -- it did not deter us in this particular case, and I said that it could cause economic waste if it deterred someone, and it may indeed deter us in the future when we look at our economics and the fact that -- if we think the risk is great enough, and we can only produce it at 70 percent of what we expect to get out, what we would hope to get out of the well. We may not think the rate of return is high enough when we weight that with a risk factor to justify the drilling of a well, but it did not do so in this case. I don't want to imply that it did. Obviously it didn't.

Q Mr. Yates, your evidence I'm sure satisfies you now that the "JM", that your "JM" well has no advantage over any offset operator, is that correct?

A Yes, sir.

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1 Q Now, this evidence was essentially all de-
2 veloped after the hearing and after the wells were drilled,
3 is that correct?

4 A Yes, sir, it was.

5 Q Okay. Now, in the absence of any conclusive
6 data, and I'm talking about going in, now, drilling a non-
7 standard location, having the original hearing, in the ab-
8 sence of any conclusive data that there's not going to be
9 an advantage, do you feel that it's improper to set out an
10 advantage penalty in a protested application before the
11 well is drilled and before any data is available to say
12 that you don't have an advantage?

13 A I think it's important, if you want to get
14 into philosophy about it, I think it's important that there
15 be some consistency. I do not believe that the 1980 from
16 the in line rule versus 660 from the side is consistent
17 with the realities that we face looking at the Morrow.

18 However, I fully realize that -- the possi-
19 bility that there is some point which is too close. The
20 Commission has accepted 660's on side lines, what if indeed
21 someone wanted to get closer than 660 on a side location.
22 And if that point is too close, if some point arbitrarily
23 becomes too close, there must be some method to either,
24 number one, cease the drilling altogether any closer than
25 allowed, or if you're forced by law to allow drilling, to

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1 it has to be treated differently from the normal location.

2 Does that sort of answer your question?

3 Q Somewhere in there I'm sure there's an answer.

4 A I hate to get philosophical.

5 Q I would point out that Yates could always
6 file an application to change the rule and come in and pre-
7 sent evidence to that end.

8 Do you feel at this point that there's any
9 way for -- any other way for Gulf to protect its interest
10 in the reservoir that the "JM" -- the separate reservoir
11 that you have described, other than go in and try and drill
12 a well on their acreage and encounter this reservoir?

13 A This is if the reservoir that the Yates well
14 got into was on the Gulf acreage, is that what you're
15 asking, or if the reservoir, say, that the Mesa Lincoln
16 got into was on the Gulf acreage?

17 Is this your question?

18 Q Yes, I'm primarily concerned with your "JM"
19 Well.

20 A Uh-huh.

21 Q Assuming that that reservoir does cross the
22 line and goes on the Gulf acreage, is there any way for
23 them to protect their interest in that reservoir other
24 than to drill a well into it?

25 A If any reservoir crosses the Gulf acreage

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1 that they did not penetrate in their well, there is no other
2 way for them, regardless of any penalties involved, or non-
3 penalties, there's no other way for them to produce the
4 gas that's presently sitting under their acreage than to
5 drill into that reservoir.

6 Q No matter what penalty the Commission, or
7 Division, placed on your well, Gulf would still not be pro-
8 tected until they drilled their well.

9 A Yes, sir, that is correct. In that example,
10 yes, sir.

11 Q Okay. Now, you got a completion here that
12 apparently is going to potential for a million or less.

13 A Yes, sir, if we can ever get a stabilized
14 pressure to potential it.

15 Q Now, do you feel at that rate it's going to
16 have any effect on the offset operators?

17 A No, sir, from the evidence that I've seen,
18 it just won't have any effect whatsoever.

19 Q Do you feel that this shows the wisdom of
20 the million a day minimum allowable provided in the original
21 order in this case?

22 A I think it shows the stupidity in drilling
23 at the location we drilled at.

24 No, that should probably be off the record.

25 Q Well, let me ask this question and try and

1 make everybody happy.

2 Do you feel that if the Commission, or Divi-
3 sion, enters orders, such as we did in your two applications
4 for nonstandard locations, that there should be some minimum
5 allowable established which is not subject to the production
6 minimum?

7 A Yes, I do, for various reasons. It tends to
8 compensate for differences in flow line pressures, different
9 buyers, and there is a possibility, and the Commission may
10 want to address this, I personally have not thoroughly in-
11 vestigated it, but there is very much a possibility that
12 in some occasions it could arise that if a well made a con-
13 siderable amount of fluid, for example, that a certain
14 flow rate which was imposed to be 70 percent lower than
15 what the well actually could produce, could actually create
16 a situation where you could not produce that well.

17 Q Excuse me, would this be especially true in
18 the later life of the well when pressures did decline?

19 A Yes, sir, it would be critical in the later
20 life of the well when the pressure, bottom hole pressure,
21 say, declined in the neighborhood of 7 to 800 pounds, or
22 a 1000 pounds, whatever, very near your abandonment. It
23 would be critical. If the well made a considerable amount
24 of fluid, and again, it would depend entirely on the char-
25 acteristics of the well, the tubing pressure, the tubing

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1 size, et cetera, and I have not personally come up with,
2 you know, investigated it to any degree to give you an
3 example, but, as I say, it sure could be worthwhile considering;
4 that the minimum of a million a day tends to avoid some
5 inequities that might occur along there. Again, I realize
6 that a million a day is an arbitrary number.

7 MR. STAMETS: I think that's all.

8 MR. RAMEY: All right.

9
10 CROSS EXAMINATION

11 BY MR. RAMEY:

12 Q Mr. Yates, at the hearing two weeks ago in
13 the Antweil case, why, Mr. Williams stated that he thought
14 the million a day offered a reasonable payout in a little
15 under a year, or something. Now, what -- what does Yates
16 consider to be a reasonable payout for a Morrow well?

17 A Other than 19 days?

18 Q Other than 19 days.

19 A I don't know if we even have one, we're so
20 enamored with the game, but the thing I'd like to point
21 out about the Antweil consideration is that that's if you
22 get a well. Now, you have to apply a risk factor to that,
23 and saying that a million a day might pay out in a year,
24 only tells you that that is what happens when you've got it
25 coming in the bank. What happens before you drill the well,

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1 I wouldn't say that a million a day paying out in a year
2 is adequate at all to drill a well. Now, it may make you
3 run casing and you may be glad that you drilled the well
4 when you got through, but to make that initial decision,
5 when you might take that investment dollar and put it in
6 another alternative where the risk might be better to get
7 five or six million a day with maybe reserves, but then to
8 solely look at a million a day in terms of a year's payout,
9 or how many months payout, is inadequate.

10 You know, you could -- I don't know that the
11 million a day figure, when you figure that Morrow wells de-
12 cline at a fairly high rate, this may be what you start out
13 at but it won't be what you have at the end of a year either.
14 I don't know if that was taken into consideration in their
15 calculation. So I'd be very concerned about saying that
16 I'm going to expect a payout, hit a million a day and expect
17 a payout in a year.

18 Q Well, but if you could be assured of getting
19 a million a day from every well you drilled in a potential
20 Morrow area, why you might be happy with that.

21 A That's right, we'd go to the bank with that,
22 yes.

23 MR. RAMEY: Any other questions of Mr. Yates?

24 MR. STAMETS: One more, Mr. Yates.
25

RECROSS EXAMINATION

BY MR. STAMETS:

Q In response to Mr. Ramey's question, I gather than you would look at the one million a day minimum allowable as an incentive to go out and drill wells, comparative incentive, considering that you're having restricted well.

A Yes, sir.

Q And that you would consider a penalty that would apply to the well's potential all the way down to zero would be a deterrent to exploration.

A Yes, sir. I think I can honestly say that the million a day cutoff in this case was probably the -- the little straw on the camel's back; that a lot of other factors, including use of rigs and acreage timing commitments with partners, et cetera, that made us go ahead and drill these two wells, but the million a day proved to be -- I can honestly say was an incentive to drill this as opposed to if we didn't have -- we had the penalty straight across the board all the way down. I don't know what the attitude would have been.

MR. RAMEY: You might have farmed it out to Gulf and let them drill on a standard location?

A Well, as I remember during -- during the May hearing, Mesa offered at the hearing to drill at the standard

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1 location, and we've been lamenting that we didn't take
2 their offer.

3 MR. KELLAHIN: You've not contacted Mesa
4 with regards to that, have you?

5 A. No.

6 MR. KELLAHIN: I have a couple of questions.

7 MR. RAMEY: Go ahead.

8 MR. KELLAHIN: Mr. Stamets always creates
9 problems for me.

10
11 RE CROSS EXAMINATION

12 BY MR. KELLAHIN:

13 Q Mr. Yates, Mr. Stamets posed a situation for
14 you whereby it was presumed that the reservoir encountered
15 in the subject well extended over into the Gulf acreage,
16 and that you concluded their Gulf acreage would not be
17 protected in such time until they actually drilled the
18 second well. And I believe you concluded that regardless
19 of whether there was a penalty involved, that Gulf would
20 still have to drill a second well to recover the gas under
21 that particular portion of the -- is that not what trans-
22 pired?

23 A Yes. If there were a reservoir on the Gulf
24 acreage that was not encountered in their well, is what it
25 basically boils down to. That's correct, they'd have to

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1 drill to find -- to get into that reservoir they'd have to
2 drill another well.

3 Q Regardless of whether there's a penalty on
4 it.

5 A That's right, yes, sir.

6 Q Now, if there is not a penalty, then Gulf --
7 then Yates will be able to recover the gas that potentially
8 extends into the Gulf acreage, perhaps prior to the time
9 Gulf could get a well, second well, down to recover their
10 gas.

11 Well, if we can go back to this specific
12 case, I don't believe so. Okay? From the performance of
13 our well, there's no evidence that shows that that's going
14 to happen.

15 Q Mr. Stamets' hypothetical assumed --

16 A If you're talking about --

17 Q -- it extended into the Gulf unit.

18 A That's right. That is true whether you assume
19 blanket sands or if you're talking about this particular
20 case. That's always true, that the first person there has
21 the possibility of creating a drainage pattern across some-
22 body else's lease. That is -- the law has to allow for that
23 in every case.

24 Q Okay. Now, with regards to the 1000 Mcf
25 per day minimum allowable, you indicated initially that you

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1 thought that was a rather arbitrary number.

2 A. Yes, sir.

3 Q That is still your opinion, is it not?

4 A. Obviously it has to be.

5 Q There is nothing in the record so far as you
6 know that establishes that a 1000 Mcf per day is anything
7 other than an arbitrary figure.

8 A. As I heard something that -- the only thing
9 that might contradict that is that there was some discussion
10 in the previous hearing as to whether or not there was some
11 precedent set by previous -- in prorated fields, but to my
12 knowledge, the million a day is an arbitrary number.

13 Q You did indicate that that was something of
14 an incentive for you to drill this particular well.

15 A. Yes. I think that the fact that -- that
16 was considered, that there at least was no penalty below
17 a million day.

18 Q And it would have been a greater incentive
19 to you had the minimum allowable been, say, 2000 Mcf per
20 day.

21 A. Certainly.

22 Q And it would have been less of an incentive
23 if it had been set at 500 Mcf per day.

24 A. Yes, sir.

25 Q So, as far as you know, there is nothing to

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1 establish what that particular minimum allowable ought to
2 be.

3 A As far as I know, sir.

4 MR. KELLAHIN: No further questions.

5 MR. RAMEY: Any other questions? Mr. Stamets?

7 RECROSS EXAMINATION

8 BY MR. STAMETS:

9 Q Mr. Yates, I really think this is a relatively
10 important point, because if any Morrow orders or this type
11 should be issued and a floor is put in there, it needs to
12 have some basis.

13 A Yes, sir.

14 Q And it needs to be an appropriate floor.
15 And I think there are two things that should be considered
16 here, is whether or not a Morrow well with a potential of
17 a million a day or less, whether it's a brand new well or
18 later in its life, whether that well really has an effect
19 across leaselines of 660 feet away; whether it has any sig-
20 nificant effect.

21 And in the second case, whether or not if
22 we dropped below the one million per day figure, if we
23 create a dis-incentive to drill.

24 Could you respond to those two issues?

25 A With respect to the last question, yes, you

1 would have a greater dis-incentive. By any penalty at all,
2 you have a dis-incentive to drill. You would have a much
3 greater dis-incentive to drill with a penalty applied across
4 the board, as pointed out by Mr. Kellahin.

5 Would you repeat that first question now?
6 I want to make sure that I respond properly.

7 Q Okay. Do you feel that any Morrow well
8 which is located 660 from leaselines, which has a potential,
9 either as a new well or which has declined to a million a
10 day, if that well is going to have any significant effect
11 on offsetting acreage.

12 A Let's look -- the only thing that I know --
13 the only way I know how to respond to that, generally, I
14 feel like probably not, probably not a significant effect.
15 The difficulty is in what is the relative production capa-
16 bilities of offsetting wells, where are they positioned,
17 et cetera. If we could assume uniform positioning of all
18 wells, uniform -- and then evaluate relative flow rates,
19 based on experience the calculated open flow of the Rio was
20 6-1/2 million; the Penasco was 27 million; the Gulf "GK" 1
21 was 6.4 million; the Gulf "GK" 2 was 22 million; the "AB" 4
22 I don't know what the open flow was, but it seems like we
23 sold 6 million a day out of that, about 6 million a day,
24 very good well; the Mesa Lincoln State is a 2.2 million
25 open flow, basically in a zone that was tight and has been

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1 treated. It still isn't completed up into the main zones
2 that are in dispute.

3 These wells all have a very good capability
4 of competing very well with a million a day well. In fact,
5 they were all opened up, as far as I know, at rates much
6 higher than that. And in this particular situation I don't
7 think that a million a day is going to gain any advantage.

8 The operator, let's say that the penalty
9 were imposed on Yates and if we did indeed have a good well
10 that were capable of making it, we wouldn't restrict our --
11 well, let's see, I don't know, that probably isn't the
12 proper way to say it -- we wouldn't feel that a million a
13 day would adequately balance production from, if we were
14 in communication, and we are not, that if we were in com-
15 munication with offset wells, we wouldn't feel that a million
16 a day would adequately balance their two, three, four
17 million a day, or six million a day, wells.

18 So in this particular situation a million a
19 day seems to be, in answer to your question, would be a
20 reasonable number; you could not expect it to unfairly --
21 put an unfair advantage on that particular well if we didn't
22 have a penalty of a million a day.

23 Q Looking at a Morrow well as a whole, and not
24 just this area, but in southeast New Mexico, would you class-
25 fy a well that could produce a million a day as a good pro-

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1 ducer, a medium producer, or a poor producer?

2 Not thinking about reserves but just pro-
3 duction capacity?

4 A. Right. It depends on the price.

5 Q. Let's assume the same price for everything.

6 A. Okay, but a few years ago a million a day
7 was totally inadequate. Well, not totally, but was an in-
8 adequate Morrow well. It's more of an adequate well now
9 with higher prices. Whether or not it will be retained to
10 be an adequate well -- I still regard it as an adequate
11 well, one that you're glad to bail out with. It's more
12 adequate than it was a few years ago because of price.
13 As our drilling costs will accelerate up under that price
14 ceiling, it will become less adequate and it might be right
15 today, you know, with the price controls. It might within
16 two or three years return to its former status of being
17 just an adequate well. It's certainly not a good Morrow
18 well or an excellent Morrow well, but just a fair Morrow
19 well.

20 Q. Though you said early on in your testimony
21 that the one million a day was strictly an arbitrary figure,
22 having listened to your own testimony, now, do you feel
23 that it's as arbitrary as it was before? Do you feel that
24 there's some good reasons for the one million a day?

25 A. A million a day opposed to 900 or 1.1 million.

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1 is arbitrary. I understand the Commission's intent to set
2 a minimum number and not penalize below that. A million
3 a day is as reasonable a number as you might pick, but
4 again, it is arbitrary as to whether you pick 900 or 1.1.
5 That's the way I would tend to look at it, based on the
6 testimony I've just given you.

7 Q Thank you.

8
9 RECROSS EXAMINATION

10 BY MR. RAMEY:

11 Q What if we set a figure of 750 Mcf a day?

12 A Well, again, there's less incentive to drill
13 because then if you had a well capable of making a million,
14 you could only produce it at 700, or maybe the order read
15 you'd leave it at 750, your economics, considering your
16 risk, are much less attractive.

17 Another thing, too, I hadn't really thought
18 about until right now, but your percentage, you know, every
19 time if you jump down 100 Mcf and take 100 Mcf off of
20 three million a day, your percent change isn't very great,
21 but you take 100 Mcf -- or 250 as 750 would be less than
22 a million, you're talking about a pretty good percent change,
23 and every 100 Mcf that you lower that minimum below a million
24 becomes more and more critical in terms of economics.

25 Q Is there some figure where you would not drill

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1 a well, Mr. Yates?

2 A I would really think seriously about, if you
3 had no penalty at all, not drilling the well. I mean if
4 you had a penalty straight across the board, excuse me,
5 down to zero. I have no number that I could give you, say,
6 whether it be 750 or 600, it would again be a function of
7 the risk that we thought we might encounter.

8 Q Okay.

9 A In drilling or geology, and I'd have to
10 analyze that case by case. I do not have a number.

11 Q Now, you've drilled, or your company has
12 drilled a number of Morrow wells, I take it.

13 A Yes, sir.

14 Q In Eddy County. Have you had any wells that
15 have potentialized for a million a day?

16 A Yes, sir. Oh, now wait, potentialized?

17 Q That would produce a million a day.

18 A That would produce against pipeline pressure?

19 Q Yeah, right. Right around a million a day.

20 A Yes, I'm sure that we've had some. I can't
21 name one.

22 Q Okay, do you -- do you recall how long this
23 well was able to produce at this rate?

24 A In nearly every case that well depleted
25 very rapidly.

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1 Q So you, chances are if you got a well that
2 potentialed for a million a day there would be a risk in-
3 volved in even paying out the well.

4 A Yes, sir. Yes, sir. I'd be concerned
5 about it, and as I say, it's an adequate well at best, a
6 fair Morrow well at best, but that you'd welcome to get if
7 that's all you're going to get, and you would make a deci-
8 sion to run casing on it, probably, but it's not something
9 that you would go drilling for unless you could be assured
10 that that million a day would last a long time. Then you
11 might go and drill for it, but just something that's going
12 to potential a million a day, it usually means it doesn't
13 hold up very well at all.

14 Q Well, conversely, then, or whatever, if you
15 get a well that potentials for six million a day, then it
16 declines to a million a day, how long does it last after
17 that?

18 A How fast would it -- give me a decline rate.

19 Q Well, say, you start out the well produces
20 six million a day.

21 A Uh-huh.

22 Q But eventually it works off to where it only
23 produces a million a day.

24 A Right.

25 Q Now does it keep on declining or does it --

1 A It declines but not as rapidly a rate. It
2 depends on offset production, et cetera, but it will not
3 decline as at rapid a rate.

4 You'll get 30 percent decline is a good
5 number for a good Morrow well initially, and -- but the
6 production will tend to taper off like this, and if that
7 well you mentioned, say, had four or five billion cubic
8 feet, your performance would be maybe 25 or 30 percent de-
9 cline a year, dropping to a much less percent per year when
10 you hit a million a day.

11 Q So if we applied a penalty to a well, you
12 know, for that production over a million a day, when the
13 well got to where it was going to produce a million a day,
14 it probably wouldn't last very long anyway.

15 A That's right, and there will be exceptions.
16 It will depend on the nature of the well, but it could last
17 several more years, though, you know. There are exceptions
18 to that. It depends on the quality of the reserves.

19 MR. RAMEY: Ms. Teschendorf.

20
21 CROSS EXAMINATION

22 BY MS. TESCHENDORF:

23 Q Mr. Yates, if the Commission were to set a
24 minimum allowable, continue to set a minimum allowable,
25 what kind of factors do you think the Commission should

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1 consider in setting that allowable?

2 Now, I'm not really sure who started talking
3 about the million cubic feet first, but what kind of factors
4 are important to setting that kind of allowable? Is rate
5 of decline important, or potential is important, the econ-
6 omic reservoir calculations, what kind of factors would
7 you consider relevant for setting that?

8 A. I don't want to get into an FPC proceeding
9 here, but the factors that you're going to have to consider
10 are risk, what chance do you have of succeeding in a well
11 and what will be the success. You have different risks for
12 different successes, success possibilities.

13 The payout of the well with a risk factor
14 applied to it; the rate of return is a criteria that people
15 use; and this gets very tough. I don't want to imply that
16 this is all simple, and it's the reason that we're all here
17 at the hearing in the first place, because it isn't very
18 simple.

19 The geology itself would have to be considered,
20 I think. I think it's the thing that drives you in the
21 direction of having to consider these problems, anyway, and
22 I don't know how you apply a mathematical number to that
23 geology.

24 If you're talking about penalizing somebody
25 for being too close to something, I suppose that something,

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1 some how, somewhere, you'd have to introduce a closeness
2 factor, just sheer distance.

3 But trying to analyze the geology you would
4 get involved in drainage patterns, et cetera, and those
5 should probably be considered.

6 So it will not be easy at all because of
7 the complexity of geology.

8 Q And you do not have a figure to recommend
9 to the Commission?

10 A No, sir. No, ma'am, I don't.

11 MR. RAMEY: Mr. Stamets?

12
13 RE CROSS EXAMINATION

14 BY MR. STAMETS:

15 Q You talked about factors in determining a
16 minimum allowable. You talked about risk, payout, rate of
17 return, geology. How many of these things will be known
18 absolutely before the well's drilled?

19 A With respect to that location, you probably
20 wouldn't know any of them until you got through drilling
21 the well. You could, however, use a statistical approach
22 for the Morrow and possibly come up with some pretty good
23 numbers, on risks, rates of return, and overall geologic
24 variances that have been observed here, because there is
25 a considerable history of the Morrow drilling in southeast

1 New Mexico, particularly in some areas, and so it would
2 have to be a statistical approach applied to that particular
3 situation.

4 MR. STAMETS: That's all.

5 MR. RAMEY: Mr. Kellahin, do you have a
6 question?

7 MR. KELLAHIN: Well, I think Mr. Stamets
8 got the answer I wanted.

9
10 RECROSS EXAMINATION

11 BY MR. KELLAHIN:

12 Q What we're talking about is being able to
13 look at this particular well from the vantage point of
14 hindsight. We've already got the well. We've already
15 tested this particular well. But most of these cases with
16 regards to a minimum allowable are going to be contested
17 cases prior to drilling the well.

18 A Yes, sir.

19 Q This particular order sets a 1000 Mcf per
20 day as a minimum allowable. If I understood you correctly,
21 those factors that would help you in your own mind determine
22 what that allowable ought to be would not be present until
23 the actual well was drilled.

24 A They would not be present, the exact numbers
25 would not be present until you completed that well. And

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1 here we are attempting to complete it and we still don't
2 know, even on our well completely what all those factors
3 are.

4 However, you could obtain from a reasonable
5 statistical approach on an area basis that we now have more
6 information than we had maybe at the time that the original
7 1980 from the in line rule was set, you know, that's --

8 Q You got very general here, Mr. Yates. Let
9 me toss in some more generalities for you.

10 A solution could be this, could it not, that
11 no minimum allowable be allowed that operator until such
12 time as he's actually completed the well, and then at that
13 point under the Commission rules as they now exist, he
14 could come in with additional facts and ask for another
15 hearing to determine what the actual minimum allowable
16 ought to be for his particular case.

17 Now, would you not agree that that might
18 be an equitable and appropriate way to solve these parti-
19 cular problems?

20 A No, I wouldn't agree because of the un-
21 knowns an operator faces when he drills a well. He's going
22 to have to know ahead of time in most cases.

23 Q That he is guaranteed some minimum allowable.

24 A That the rules are.

25 Q And as far as you're concerned, when you

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1 drilled this particular well the 1000 Mcf per day was
2 simply an arbitrary figure for you.

3 A Well, as far as I knew at the time it was
4 an arbitrary number. Arbitrary numbers in themselves
5 aren't bad if they've got some judgment behind them, but
6 as far as calculating 1000 Mcf a day versus 1100 or 900,
7 you see, I can't see that they did that.

8 MR. KELLAHIN: Thank you. I have nothing
9 else.

10 MR. RAMEY: Any other questions of the wit-
11 ness? He may be excused, and we'll recess the hearing
12 until 1:30.

13 (Thereupon the noon recess
14 was taken.)

15 (Following the noon recess Mr.
16 Arnold was no longer present and
17 Mr. Armijo was present.)

18 MR. RAMEY: Are you ready to proceed, Mr.
19 Cross?

20 MR. CROSS: Yes, sir, I am.

21
22 C. D. STENBERG

23 Being called as a witness and having been duly sworn upon
24 his oath, testified as follows, to-wit:
25

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DIRECT EXAMINATION

BY MR. CROSS:

Q Would you please state your name for the record?

A C. D. Stenberg.

Q By whom are you employed and in what capacity?

A Gulf Oil Corporation in Midland, Texas, Production Geotechnologist.

Q Would you briefly summarize your educational background?

A Bachelor of Science degree in geology, University of Kansas; Master of Science in geology from the University of Iowa.

Q And briefly summarize your work experience, as a petroleum geologist.

MR. RAMEY: Mr. Cross, I think we'll not go through all this. I'll --

MR. CROSS: The witness is qualified then?

MR. RAMEY: I'll qualify Mr. Stenberg.

Q (Mr. Cross continuing.) Mr. Stenberg, referring to the Isopach map, which is designated as Gulf's Exhibit Number One, would you please explain precisely what you are measuring when you assign a number to a contour line?

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1 A. Yes. Exhibit Number One is an Isopach of
2 Morrow sands with five percent porosity or better, with
3 a contour interval of five feet.

4 Now, the interval, or the values for the
5 various wells on which the contours are based satisfy two
6 parameters.

7 First, it's clean sand, which registers on
8 the gamma ray side of the log at 50 or less API units
9 gamma ray, and on the neutron density side of the log it's
10 a cross plot porosity with a five percent cutoff.

11 There is one well in the area, the Pubco
12 Cass, which was sonic -- gamma ray sonic, while the others
13 are the neutron densities.

14 Now, the five percent porosity cutoff has
15 a net basis of -- I believe constitutes a map which actually
16 shows net pay, which is the final analysis of the -- of
17 the value of the wells that have been drilled or ones which
18 are proposed to be drilled.

19 I'd like to throw in a couple sentences from
20 a Schlumberger article, which was in their symposium they
21 gave in Midland and Hobbs last May in which they say the
22 Morrow generally production rates increase as permeability
23 increases and generally speaking the permeability will in-
24 crease as porosity increases. And usually the minimum
25 porosity for production is five porosity units and this

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1 is based on a good log, like a neutron density log in which
2 you can cross plot and get a five percent porosity.

3 Of course, like they say, there are excep-
4 tions to any guideline, but the Morrow in southeast New
5 Mexico, these are the general rules which are followed and
6 the porosity ranges are five to twenty percent and the
7 associated permeability will be from .1 to 100 milledarces.

8 Q Have you contoured all the Morrow wells in
9 the immediate vicinity of the Yates "JM" No. 1?

10 A Yes, I have.

11 Q Would you please point out any wells which
12 have been drilled in this area since the Examiner Hearing
13 in this case in May of 1978?

14 A Yes. We have four wells which I think are
15 pertinent to the -- to the case today. The -- starting at
16 the top in Section -- in the southeast corner of Section 13
17 of 18 South, 24 East, we have the Yates No. 1 "JG". In
18 Section 24 right below it we have the Mesa No. 1 Weed State.
19 The northeast corner of Section 25 we have the Yates No. 1
20 "JM" and to the right in Section 30 of 18, 25, we have the
21 Mesa No. 1 Penasco, which is 1980 feet from the south and
22 east lines.

23 Q Referring to Exhibit Number One, would you
24 please explain your line designated A to A-prime?

25 A A to A-prime is the line of section which

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1 is shown on Exhibit Two.

2 Q Would you please explain your Exhibit Number
3 Two?

4 A Exhibit Number Two is a line of section
5 shown on A to A-prime on Exhibit Number One.

6 The reference datum on which the logs are
7 placed is the correlation point near the top of the Morrow,
8 which pretty well agrees with the Yates display except the
9 marker is right below the marker I'm using.

10 I colored that blue so you can follow it a-
11 cross with the marker which is the reference line.

12 MR. RAMEY: This is the -- excuse me, Mr.
13 Stenberg, this is the brown line on their cross section
14 only theirs is the base of it and yours is at the top, is
15 that correct?

16 A The one that's hanging on the board there
17 would be the -- it would be the top -- topmost line he has
18 as a straight line for a reference line.

19 MR. RAMEY: Thank you.

20 A The line on that cross section is right be-
21 low the -- essentially the same marker as I'm on the top
22 of on here that's colored in blue. Okay.

23 Now, the logs on the cross section show the
24 basis for the Isopach nets which are shown on Exhibit Number
25 One.

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1 On the lefthand side of the logs, on the
2 gamma ray side, we have colored in yellow is the amount of
3 feet -- they are the feet of sand which is shown as having
4 50 API units gravity or less, and the red on the righthand
5 side is the 5 percent porosity cutoff line on the basis of
6 which the net pay thicknesses were picked.

7 Now, the only different log on this cross
8 section, which does not follow the -- roughly the same
9 pattern, would be that Pubco No. 1 Cass, which is the
10 fourth well from the left. This, as I said, is a gamma
11 ray sonic log, so therefore the line represents, actually
12 represents a slightly different thing. It's not a cross
13 plot porosity. The line I've drawn on there actually is
14 a 5 percent line, which is shale corrected on the basis
15 of the gamma ray, and therefore the 5 percent line shown
16 there will therefore be 5 percent; it would be called the
17 5 percent shale corrected.

18 Now there's one other part which relates
19 from the cross section back to the map. It's the second
20 well from the left, which is the Lincoln No. 1 or Mesa No.
21 1 Lincoln. There are two definite sand bodies, the top
22 part which they have not perforated, I agree with the other
23 cross section, and that is the part that is represented on
24 my Isopachous map as having 21 feet of 5 percent or greater
25 porosity.

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1 Their perforations are in another 17 feet
2 of net sand, which is not added in on the Isopach map be-
3 cause it is not part of the same equivalent section.

4 Q I take it it is your conclusion that these
5 wells on your Exhibit Two all show the same sand body?

6 A I believe from my correlation logs that
7 they do represent the same body of sand.

8 Q Can you conclude that the productive sand
9 in the Gulf "GK" No. 2 is the same sand which the Yates
10 "JM" No. 1 will drain?

11 A Yes, I believe it will. I think it's ac-
12 tually difficult to -- in stratigraphic lenses, to -- and
13 we have varying thicknesses of the clastic beds, and on
14 320-acre spacing I believe they correlate as well as any-
15 where that we have a stratigraphic situation such as we
16 do in the Morrow.

17 Now we have, actually to prove, I think, to
18 prove that these are not more or less the same sands, I
19 believe we'd have to have more information than actually
20 can be shown on these logs. I think we'd have to have
21 such things as a study in sedimentology, thin section
22 studies, such as for grain size and for composition of
23 the sands, or paleontology data, or maybe other types of
24 wire line logs which may be available, such as in fresh
25 muds and SP's and dipmeters. There are studies which have

1 been done with dipmeters and SP's to show characteristics
2 of deposition, such as transgressive or regressive depo-
3 sition. And there are such things as pulse testing which
4 has not been done in an area like this to show whether or
5 not there is continuity from one -- from one well to the
6 other in the same sand body.

7 And along this line, I'd also like to mention
8 that reservoir pressure data has also been mentioned but
9 that could also have a definite relationship to deposition.

10 The porosity and the permeabilities are going
11 to vary from well to well on 320-acre spacing when we have
12 clastic deposition, and these wells, I only have two wells,
13 see, the first two wells on the lefthand side and the Yates
14 "JM" which actually have a pay section on this cross sec-
15 tion; however, the porosity, the magnitude of porosities
16 do vary. This can be shown by the red colored, the maximum,
17 the maximum curve there on the density log, which is colored.
18 You can see they have a different, a different amount of
19 deflection and therefore quite a difference in porosity.
20 And along with the porosity there should be quite a difference
21 therefore in permeability. So therefore, from well to well
22 we are going to have differences in pressure and production,
23 possibly due to the -- we should have, because of the magni-
24 tude of the porosity, and of course some of it would be a
25 function of the thickness of the sands, but moreso I believe

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1 it would be the magnitude of the porosity and therefore
2 accompanying permeability.

3 I believe the Yates "JM" and the Gulf "GK" 2
4 are the same sand body as I've correlated them on the cross
5 section and the Mesa Lincoln in the unperforated zone, as
6 was agreed upon, that is a zone unperforated which corre-
7 lates with the other sections and really has nothing to do
8 with the -- with the section that they have perforated.

9 Also, as far as permeability connection be-
10 tween these wells is concerned, it was testified that, I
11 believe it was said this morning, there may be only two or
12 three feet connecting in some places, because of the dep-
13 ositional environment, to connect one well with another,
14 even if some of this might be partially channel sand.

15 However, I believe it's fairly well a blanket deposition
16 with minor variations in clay and shale content.

17 It was also testified in the Antweil hearing
18 even though there may be a partly a permeability barrier
19 around some of these wells, they also said that it was --
20 even though -- and might be due to a slightly shaly con-
21 dition, there still may be some communication over time,
22 although the permeability would be less and it would pro-
23 bably take a lot more time for fluids to travel.

24 And also, the Yates "AB" 4, which was men-
25 tioned, in Section 30 of 18 South, 25 East, I do not have

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1 that on this cross section; however, I have had it on
2 other cross sections and it was on cross section A of the
3 Antweil hearing, if anyone would like to refer to it, it's
4 cross section A to A-prime, and I believe that log on that
5 cross section applied to the -- or put alongside of these
6 logs would show that the same relationship, that it is a
7 continuous clastic sand body with varying porosities and
8 permeabilities.

9 Q Referring back to your Exhibit Number One,
10 your contour map, I take it it is your opinion that the
11 location requested by Yates in this case has five to six
12 feet of clean Morrow sand with 5 percent or more porosity?

13 A Yes. I believe from the gamma ray side it
14 would be a maximum of about six feet. I think there's a
15 slight depth variation there on that log between the gamma
16 ray side and the neutron density side.

17 My print there didn't come out too well to
18 show the neutron -- the dotted neutron side on that, but
19 the density magnitude is shown quite well.

20 But I believe from the basis of looking at
21 both sides of the log, I would attribute about six feet
22 of net, net pay sand to that well.

23 Q And according to your Isopach map, how many
24 productive acres are there in the north half of Section
25 25?

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1 A. This contour map in the northeast corner of
2 Section 25 was planimetered by personnel in our computer
3 group down in Midland who are -- who do this type of work,
4 and they came up with an answer of 86 acres.

5 Q Were Exhibits One and Two prepared by you
6 or under your supervision?

7 A. Yes, sir,

8 MR. CROSS: I move their admission.

9 MR. RAMEY: The Exhibits One and Two will be
10 admitted in evidence.

11 MR. CROSS: I have no more direct.

12 MR. RAMEY: Any questions of the witness?

13 Mr. Losee?

14

15

CROSS EXAMINATION

16 BY MR. LOSEE:

17 Q You are the Mr. Stenberg who testified at
18 the May 17, 1978 hearing before Examiner Stamets, are you
19 not?

20 A. Yes, sir,

21 Q And were you asked these questions at that
22 hearing by Mr. Cross and did you make these responses:

23 "QUESTION: If your company owned these
24 tracts, referring to, among others, to the tract in the
25 north half of 25, would you recommend that they drill a well

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1 in orthodox locations?

2 ANSWER: Yes, I would.

3 QUESTION: If your company owned this acreage
4 would you request an unorthodox location?

5 ANSWER: No, I would not request an unortho-
6 dox.

7 QUESTION: If this acreage was available for
8 sublease, would Gulf be interested in it under the premise
9 of drilling at an orthodox location?

10 ANSWER: Yes, if it were available for sub-
11 lease, Gulf would be interested in an agreement to drill
12 at an orthodox location."

13 Were those questions asked of you and did
14 you give those answers?

15 A. Yes, sir, they sound right.

16 Q. Anything happen since then that would make
17 you change your answers to those questions?

18 A. Well, the four wells that I listed as -- as
19 having occurred since the hearing.

20 Q. Would you recommend to Gulf that they drill
21 a well on the north half of Section 25 at an orthodox loca-
22 tion?

23 A. You are now referring to the information
24 that we have at hand at this time?

25 Q. Yes, sir.

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1 A. Would I drill a well at an orthodox location?

2 Q. Would you recommend that Gulf drill a well?

3 A. Recommend we drill a well at an orthodox
4 location. Well, we have, like -- like Mr. Yates said, we
5 also have a lot of information, or a lot of acreage with
6 Morrow possibilities on it, and I'm sure that would partly
7 depend on the drilling budget and the drilling money avail-
8 able.

9 Now, with the evidence at hand, obviously
10 it would -- it would be a very thin zone.

11 Q. And you would not recommend that it be drilled
12 at the orthodox location?

13 A. I probably wouldn't recommend drilling the
14 well there at all.

15 Q. Would you recommend to Gulf that they take
16 a sublease on the north half of Section 25 to drill the
17 well?

18 A. Not with the present information, no.

19 Q. And at that same hearing on May the 18th,
20 Mr. Stenberg, when testifying with respect to an Isopach
21 map of the Morrow sand with 5 percent porosity or more,
22 you referred to the Mesa well in Section 17, the Yates "AB"
23 Well, the Pubco Cass No. Well, and did you make this state-
24 ment:

25 "I give the Pubco Well a value of 16 feet."

1 And further on in your testimony:

2 "So therefore we have what I consider 16
3 feet of potential pay sand down in the bottom of the Pubco
4 Well which was not tested before it was drilled and aban-
5 doned."

6 Were those your statements at that hearing
7 on May 17th?

8 A That's probably close. I don't remember
9 it verbatim, but that sounds close.

10 Do you require an answer to that or is that
11 just a statement?

12 Q No, I Just want to know if those were your
13 statements at that hearing.

14 A All right.

15 Q And is your answer, yes, they were my
16 statements?

17 A Well, I would very well like to say yes,
18 but I'd like to have a couple of qualifying statements.

19 Q Make your qualifying statements, sir.

20 A All right.

21 Also at the same hearing, Mesa presented a
22 map which is Exhibit Number One in Case 6213, and do you
23 happen to have one of those?

24 Q I do in my briefcase, yes.

25 A All right. Do you want to get it?

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1 Q Well, no, you go ahead and make your quali-
2 fying statements.

3 A All right. Now, I believe you mentioned in
4 there a probable -- did you mention a probable place to
5 attempt Morrow production?

6 Q No, you just said as far as the values of
7 the wells which had 5 percent porosity or greater, and
8 your testimony was of effective pay, I give the Pubco Well
9 a value of 16 feet.

10 A Oh, well, there's one other sentence there,
11 or there was another part.

12 Q The second sentence, on page 71 of the tran-
13 script, "So therefore we have what I consider 16 feet of
14 potential pay sand down in the bottom of the Pubco Well
15 that was not tested before it was drilled and abandoned."

16 A All right. Well, potential will cover a
17 lot of territory, because it was not qualified as to the
18 quality of the sand in the well per se.

19 Now, I want to point out on Exhibit One of
20 Mesa, Mesa Petroleum, which at that time owned that acreage,
21 that on their Isopach map they had given it exactly the
22 same number and their net -- and their map is a net pay
23 map with a 5 percent porosity cutoff applied to it that I
24 used on my map in all cases at these hearings.

25 Now, at that time Mesa did say they would --

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1 they considered it a possibility of re-entering the well
2 and testing the sand.

3 Q Well, now --

4 A And the Mesa, wait a minute, and the Mesa
5 people also said that. Now, however, now this is from the
6 standpoint that there's quite a difference from having a
7 hole down there and a possible -- economically a possible
8 re-entry and testing untested sands versus going down there
9 and drilling a new hole, because that sand was not drill
10 stem tested. There was a drill stem test above the Morrow
11 sand; there was none in the Morrow; the hole was drilled
12 and it was abandoned without ever testing the sand.

13 Now, also Mr. Beck said this morning, he
14 said it looked to him like it was a dry hole and therefore
15 there probably would be no one who would probably have
16 interest in going down there now on the basis of the new
17 information, and he also stated that there are some sands,
18 there can be a possibility of slightly radioactive, more
19 radioactive sands -- there can be a possibility of slightly
20 more radioactive sands than -- I mean, well, to which you
21 probably shouldn't apply the 50 API gravity, API unit gamma
22 ray cutoff.

23 However, if all the wells -- if all the logs
24 were treated the same from the information we have, and it
25 actually is analyzed real thoroughly, especially with the

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1 new information we have, I don't believe an operator would
2 like to go down there at this time and look at -- and look
3 at that sand, go to the expense.

4 Now the Mesa map and the Gulf map originally
5 showed the west side of this trend fairly open-ended, which
6 it was, because at that time our newest well was the Mesa
7 No. 1 Lincoln State, which as we pointed out on both of
8 our cross sections, we have 21 feet of untested sand except
9 for a gross DST over the whole works. We have -- it has
10 not been tested individually and they have a well which
11 they are waiting to hook up and they have quite a good well,
12 they believe, in what is perforated.

13 So therefore, with all of the changing events
14 and the new information, it would make quite a difference
15 as to what one would thought about that old well.

16 Q Have you qualified that answer enough?

17 A Well, I believe that's all the qualification
18 I have, yes.

19 Q I'll ask you to look at what's been marked
20 as Yates Exhibit Six, and ask if that's a copy of Gulf's
21 Exhibit One in the Examiner Hearing of May 17, 1978?

22 A Yes, it is.

23 Q And that's an Isopach of the Morrow sands
24 with 5 percent porosity or greater?

25 A The dotted lines are, the solid ones are

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1 structure.

2 Q Would you look at the Pubco Cass Well and
3 see how many feet of Isopach Morrow sand you credited at
4 that time to that well?

5 A Exactly the same as Mesa Petroleum did, 16
6 feet.

7 Q Has anything happened to that Pubco Well,
8 has there been a re-entry, has there been a new log run on
9 it, to make you change your opinion from that May 17th
10 hearing?

11 A No, there's been nothing done in the Mesa
12 Well, or in the Pubco Cass.

13 Q Well, would you explain to me why on May 17
14 you testified and your exhibit portrayed 16 feet of effective
15 pay, and today your Isopach accords it zero feet of effective
16 pay?

17 A Well, look at the south end of the map, the
18 zero line which comes up through Section 32, and then goes
19 down in a southwest direction through 31. All right, sub-
20 sequent to this map, 1980 from the south and east of Section
21 30 Mesa drilled their No. 1 Penasco, which has zero feet,
22 which is shown on the cross section, the last well on my
23 cross section, Exhibit Two, today.

24 And also the net feet we have in Section 25
25 on the Yates "JM" and all the way around, and also up through

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1 a zero in the southeast corner of Section 13; all the way
2 around this end of the open-ended contours. Now these
3 contours are all open-ended. They're showing no closure
4 out there, in other words coming out there, and they have
5 no --

6 Q Let me stop you. The witness is referring
7 to Exhibit Six at this point, which the Commission does not
8 have a copy of.

9 A Oh, they don't have one? Oh, all right, do
10 you want one?

11 MR. RAMEY: Go ahead. If you have one, I
12 guess.

13 (There followed a discussion
14 off the record.)

15 A One other thing about the Pubco Cass Well.
16 To try to help resolve all of, some, a lot of the information
17 we have, I also have adopted Mr. Beck's 50 API gravity cut-
18 off to help qualify clean sand.

19 Now if you'll look at the cross section at
20 the Pubco Cass Well on Exhibit Two, we have what may be a
21 body of gross sand; on your gross sand map I believe you have
22 six feet; I'm calling it twelve feet.

23 Also because this is a sonic log there might
24 be a slight difference in opinion, but I believe there's
25 one body of sand there 12 feet thick, which can be dross.

1 All right, now, on the basis of that 50,
2 that 50 gamma ray cutoff, 50 API units, whether it's six
3 feet or twelve feet on that basis there is no net.

4 Q Mr. Stenberg, I don't know that I got an
5 answer to my question. I'm trying to determine whether you
6 have changed your opinion as to this map by affording zero
7 feet of net effective pay to this dry Pubco gas well today
8 from your map presented on May 17, which afforded that well
9 16 feet of net effective pay.

10 A Yes, sir, I believe I did. I said I had
11 adopted the 50 API gravity units, units cutoff on the gamma
12 ray, as to be consistent with the other logs, and if that's
13 a good arbitrary number, as was said before, so therefore
14 if we apply a correction like that it would be -- it would
15 naturally make quite a difference, which it does. It goes
16 from 16 to zero.

17 We're going to have abrupt changes in any
18 area when we go like on the Pubco -- or like on the Mesa
19 No. 1 Lincoln State from 17 plus, 17 plus what, 14, 31 feet,
20 actually in that well. 31 feet of net pay, which satisfies
21 all requirements and in a half a mile they drilled one which
22 is zero.

23 Q The Gulf "GX" Well which you have attempted
24 completing in the Morrow in the south half of Section 18 is
25 not on your A to A-prime cross section today, but I notice

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1 it was on your C/C-prime cross section of two weeks ago,
2 and it's also on Yates' cross section. Would you --

3 A. Pardon me, C/C-prime last week, two weeks
4 ago, was not admitted as an exhibit.

5 Q. Oh, I realize it wasn't. I realize it wasn't,
6 and you had an A/A-prime that was introduced as an exhibit.

7 A. Introduced, right.

8 Q. What I'd like for you to do is correlate, if
9 you would, or compare the log on your Gulf "GX" Well, which
10 is up here on the board, with the Yates "JM" Well in Section
11 25.

12 You can go to the board; they're both hung
13 on the board.

14 Mr. Stenberg, why don't you go to the Yates
15 Exhibit? They're both already hung up there.

16 A. You wanted "GX", Mr. Losee? It's not --
17 it's up in the Section 18.

18 Q. Why don't you pull your log and compare it.
19 I want to know if they're the same, in your opinion, whether
20 or not in the same correlative sands of the Morrow.

21 A. Well, I remember where it's perforated. It's
22 perforated well up high in the section.

23 Oh, that was on our cross section B last
24 time. Well, I had a cross section B.

25 Okay, we want to compare it to what?

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1 Q To the State "JM", which is the well that
2 is the subject of this application.

3 A Okay. Now, the question is do I think it's
4 in the same stratigraphic --

5 Q Stratigraphic --

6 A -- place?

7 Q Yes.

8 A Well, I believe that correlating that far,
9 two miles, that's pretty close to two miles, a mile and a
10 half, is probably going quite aways.

11 If we're going to trace stratigraphic
12 stringers, I think we have to take them pretty -- more in
13 order than that. That might be a little higher in the
14 section, however, there are -- there are indications, for
15 instance, on the gamma ray log, on the gamma ray side of
16 the Yates "JM", approximately -- what scale have we got
17 here -- approximately 20 feet above what I've marked as
18 the yellow on the -- on the "JM" log on Exhibit Two.

19 Okay, right above that is one which is not
20 colored yellow. Now, it goes over the 50 API unit line;
21 however, it's not a sand, or it's a tight sand, or it's
22 probably limey, but there's a possibility that there are
23 small -- there are very small stringers which in a strati-
24 graphic deposition are going to vary as you go across an
25 area. All the wells on this section have a variation in

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1 them as you go from well to well.

2 Q Well, what you're saying, though, is it's
3 not, when you look that far away, it doesn't appear to be
4 on the same stratigraphic level as the State "JM", where
5 you attempted completion in the Gulf "GX" Well.

6 A Well, it's possible it might be in a different
7 one.

8 Q Do you think those two wells are in the
9 same reservoir?

10 A Well, actually the "GX" is not in a reservoir.
11 We didn't make a well out of it; therefore there's no pro-
12 duction; therefore it's a -- it's just a small isolated
13 stringer which has nothing to do with production because we
14 don't have production.

15 Q Well, isn't it true, though, that all of the
16 wells within your zero line on your Isopach are not pro-
17 ducing from the same stratigraphic level?

18 A I believe the ones that are producing are
19 pretty much from the same stratigraphic level.

20 Q Well, are they from the same stratigraphic
21 level? Or not? Not pretty much but yes or no.

22 A I think they're all the same except the
23 Lincoln State which we qualified, which is open in a lower
24 stringer.

25 Q You heard your counsel this morning ask a

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1 question of Mr. Yates as to the treatment by the Commission
2 of different pay zones in the Morrow as one pool. Do you
3 believe the Morrow sands, productive sands, and generally
4 speaking in southeast New Mexico, all of the wells within
5 a particular pool are producing from the same pay zone?

6 No, I've seen places where they can -- where you
7 may correlate different stringers. They may only go for
8 a short distance and then in another well there will be
9 another pay. That is very possible.

10 Q And you think that's not present in this
11 reservoir?

12 A On my Exhibit Two I believe I have colored
13 yellow sands except for the Lincoln State in the same -- in
14 the same reservoir.

15 Q And you believe they're all producing from
16 the same reservoir?

17 A Yes, sir.

18 Q Do you believe there's communication between
19 all of those wells except the Lincoln State within your
20 zero contour line?

21 A Yeah, I believe there is.

22 Q How do you reconcile that statement with the
23 testimony of Mr. Yates showing non-uniformity of pressures
24 and production histories of those wells? Or of some of the
25 wells?

1 A Well, there could be minor variations within
2 a stratigraphic body.

3 Q Minor variations of what?

4 A Well, slight shale clay contents, because
5 I pointed out -- now, even though the sands, the clean
6 sands, which only have, well, a couple, two, three, have
7 about the same amount of deflection. Relatively clean sand
8 comes out to about 20, 20 API units on the gamma ray. Okay,
9 but the porosity side has a variation.

10 Q And you think that variation in porosity
11 results in those extreme pressure differentials and pro-
12 duction histories of the wells in this pool?

13 A Well, I don't know. I haven't studied the
14 pressures exactly per se along well to well, but I -- but
15 I will certainly say that I would think that the pressures
16 would vary along with the porosity permeability as indicated
17 on the logs.

18 MR. LOSEE: I believe that's all.

19 MR. RAMEY: Any other questions of the wit-
20 ness? Mr. Stamets.

21
22 CROSS EXAMINATION

23 BY MR. STAMETS:

24 Q Mr. Stenberg, has your testimony as to the
25 correlation for the zones, the continuity of the zones, is

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1 that based on geology only and not on engineering -- such
2 engineering data as was presented by Mr. Yates?

3 A Well, mainly it's on interval and on correlating
4 logs, right.

5 Q Okay. Now, I note some differences between
6 the shape of the contours on your Isopach map and the shape
7 of the contours on the Yates Isopach map, and would you
8 agree that given the same points two geologists could con-
9 tour an interval somewhat differently; two competent geolo-
10 gists?

11 A What do you mean, with all of -- with the
12 values of each well the same, obviously?

13 Q Yes.

14 A I think they would come out pretty much the
15 same, right.

16 Q Well, I'm not sure what --

17 A Well, it depends on the spacing of the in-
18 formation. Now if there's a lot of room for latitude in
19 there, somebody might put in more -- a different type of
20 interpretation.

21 Q If an area is subject to interpretation,
22 you could take the same data and wind up with significantly
23 different a look to the contour map?

24 A Yes. You'd have to have -- you'd have to
25 have fairly widely scattered points. I mean when you have

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1 fairly close control, they should come out pretty much
2 alike.

3 Q Okay, now what do you feel is the significant
4 difference on your map, not just what it looks like, but
5 what does your map show that's important to this case?

6 A Well, on net -- first, on the Yates Exhibit
7 we have gross clastics, which includes sand, shaly sand,
8 and so forth, that is gross. I mean it's gross sand.

9 Okay, now the next step is to take clean
10 sand, okay. That's the next step, you have to have clean
11 sand to find production. That's the Isolith overlay map.
12 All right, now my map goes one step farther, which I think
13 combines two parameters, the clean sand and the porosity
14 cutoff. Now you have to have -- you actually have to have
15 both parameters to qualify if you want to call it -- ac-
16 tually call it net pay, a net pay Isopach, because like I
17 quoted on the -- like on the Schlumberger, from the
18 Schlumberger symposium, and so on, and from general informa-
19 tion, people that work with the Morrow, the 5 percent is
20 a fairly good cutoff because there are a lot of wells which
21 actually barely -- for instance, on the cutoff on the poro-
22 sity map, barely get on the log; barely get 5 percent, and
23 they seldom produce very much.

24 The Gulf "GK" was actually right at 5 per-
25 cent, which did not produce except very little gas.

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1 Q Is it fair to say that these two maps are
2 like apples and oranges, they don't exactly represent the
3 same thing?

4 A Well, that's a little difficult to say. The
5 Isopach of clean sand is the same start only it does not
6 have applied to it the 5 percent porosity cutoff. In other
7 words, the clean sand Isopach is from the gamma ray side
8 of the logs, the lefthand side. Okay. My net map combines
9 that side along with the porosity cutoff on the neutron
10 density on the righthand side.

11 You can have clean -- in other words, you can
12 have clean sand, or so-called clean sand, whatever you want
13 to call it, but you see you might not -- you can have low
14 porosity.

15 Now we have a well in -- which I think I
16 have a small scale log of -- there is a La Cama well in
17 northwest quarter of Section 20, 18, 25. It actually has
18 I think it was around 20 feet of sand, which would satisfy
19 the clean gamma ray side; however, the maximum porosity
20 cross plotted is 3-1/2 percent peak.

21 That's why you have to have both sides to
22 actually make a net pay map, you should have both sides,
23 both parameters, the gamma ray and the cross plot porosity.

24 Q That's one of the wells that's somewhat
25 different, or represents the difference between the two maps.

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1 The Yates has supposed a relatively barren area between the
2 La Cama Well in Section 20 and the Mesa Penasco Well in
3 the south half of Section 29 -- no, Section 30.

4 Do you feel that that's -- that difference
5 between these two maps is significant at all for the purpose
6 of this hearing?

7 A. Let's see, I'd better get a map. There you
8 go, thank you, okay.

9 Okay, now it's between the La Cama and --

10 Q. The Mesa Penasco in the south half of Sec-
11 tion 30, southeast corner.

12 A. Okay, the Mesa Penasco I agree with has
13 zero -- has zero feet of sand, which is on the end of my
14 cross section, but the La Cama in Section -- let's see,
15 where's the section number?

16 Q. Section 20.

17 A. Well, now, the La Cama Well in Section 20,
18 according to my log has 22 feet of clean sand.

19 Q. Doesn't it show that as zero on your -- on
20 your Isopach map?

21 A. Yes, sir, it has 22 feet of clean sand --
22 there's the log if you'll pass it to Mr. Stamets, please --
23 there's 22 feet of clean sand on the gamma ray side but
24 you see the porosity on the neutron density porosity plot,
25 the maximum is 3-1/2 percent; therefore it does not satisfy

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1 both parameters to get a value for the well on the Isopach
2 map. In other words, you have to have both to make a well.

3 Q I think the significant thing I was trying
4 to get at is that Yates shows essentially a barren area
5 between those two wells where you would not expect to get
6 a good Morrow completion, whereas your map seems to show
7 that the sands run across there and you should get a good
8 Morrow completion in that area.

9 A In the La Cama Well?

10 Q No, not in the La Cama Well, between the two
11 wells, between the La Cama and the Mesa.

12 A Oh, well, between the two wells, yes, some-
13 where in there you should --yes, you certainly should. You
14 should be able to drill a well after you get away away
15 from the La Cama Well and into some what should bring you
16 into porosity, you ought to be able to drill a hole anywhere
17 on that line across there and find -- find net pay, according
18 to that map. Definitely.

19 MR. STAMETS: That's all.

20 MR. RAMEY: Any other questions of the wit-
21 ness?

22 MR. LOSEE: No further questions.

23 MR. RAMEY: He may be excused,
24
25

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CHARLES F. KALTEYER

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CROSS:

Q Would you please state your name for the record?

A Charles F. Kalteyer.

Q By whom are you employed and in what capacity?

A Gulf Oil Corporation as Chief Proration Engineer for the Southwest District, Midland, Texas.

Q Have you previously testified before the Oil Conservation Division and had your qualifications --

A Yes, sir, I have.

MR. CROSS: Is the witness qualified?

MR. RAMEY: The witness is familiar to the Commission and considered qualified.

Q (Mr. Cross continuing.) Mr. Kalteyer, have you prepared an exhibit which contains the production data for the wells in the area of the location proposed by Yates in this case?

A Yes, sir, I have.

Q Would you please summarize the information

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1 contained on that exhibit for the Commission?

2 That's Exhibit Number Three.

3 A. Our Exhibit Number Three is a table of pro-
4 duction data of the wells which have produced in what the
5 Commission has now proposed as the Penasco Draw Morrow Gas
6 Pool.

7 I have indicated the monthly production, the
8 daily rate of production in Mcf per day, condensate pro-
9 duction, and the cumulative production for each of the six
10 wells; the Mesa Lincoln Well is not included, since it has
11 not been placed on production as of the preparation for
12 this hearing.

13 This -- the significance of this exhibit
14 is to familiarize those present with the wells involved in
15 the area and to show the rates of production, in particular,
16 the rates of production in the early life of each well.

17 Referring to the No. 4 Federal "AB" Yates
18 Well, in its first month of production it produced at an
19 average daily rate of 7,989 Mcf per day, and its cumulative
20 production through the end of November was 1.1 billion feet,
21 or 1.1,180,000 Mcf.

22 The Morris Antweil Wells, the Penasco No. 1
23 showed a maximum initial daily average rate for its best
24 month of 5,932 Mcf per day, and its cumulative production
25 in excess of 2 million Mcf.

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1 The Rio Com Well shows a maximum initial
2 rate of production for one month's average of 1,525 Mcf
3 per day with a cumulative production of 327,000 plus Mcf.

4 The Bennett and Ryan Lonetree shows a high,
5 its highest monthly rate of production of 447 Mcf per day
6 and it produced some 76,000 Mcf.

7 Gulf's "GK" State No. 1 shows a maximum
8 production rate of 2,245 Mcf per day and a cumulative pro-
9 duction of 347,000 plus Mcf.

10 The "GK" 2 shows a maximum producing rate
11 of 3,746 Mcf per day with a cumulative production of 617,000
12 plus Mcf per day.

13 The overall average of these wells is in
14 excess of 3,650 Mcf per day.

15 Based on a general cost figure and price of
16 gas in this area, a well would normally pay out with the
17 production of 350 to 450,000 Mcf cumulative production.

18 Q Mr. Kalteyer, did you testify at the Examiner
19 Hearing in this case in May of 1978?

20 A Yes, sir, I did.

21 Q Did you hear the testimony of all witnesses
22 at that time?

23 A Yes, sir.

24 Q And are you familiar with Order R-5831, the
25 order entered in that case?

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1 A. Yes, sir.

2 Q. Basically what is Gulf's position regarding
3 an order of this type which applies an allowable limitation
4 factor to a well drilled at an unorthodox location in a
5 non-prorated gas pool?

6 A. Well, I think our position is that it is
7 a step in the right direction. It does take into account
8 drainage encroachment advantage and applies an allowable
9 limit. This is a step that should be considered very
10 carefully because it will be a precedent for future appli-
11 cations for unorthodox locations.

12 Q. In your opinion what items should an allowable
13 limitation factor take into account?

14 A. I think they should take into account the
15 drainage encroachment advantage and the productive acreage
16 under the unit.

17 Q. Referring to Order R-5831, does this order
18 take net drainage encroachment and nonproductive acreage
19 into account?

20 A. It does take itself -- it does address it-
21 self to drainage encroachment. It does not address itself
22 to productive acreage.

23 Q. How do you propose to determine the net
24 drainage encroachment of a well drilled at an unorthodox
25 location?

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1 A. We propose a -- we think a simpler approach,
2 our Exhibit Number Four is a diagrammatic sketch of a
3 theoretical circular drainage area for 320-acre units.
4 We've compared this 320 theoretical drainage circle with
5 a regular location and the unorthodox location as applied
6 for.

7 Exhibit Five is our approach to the allowable
8 limitation factor, items one through four relate to the
9 drainage encroachment where we have attempted to show the
10 ratable take factor as the standard unit acreage less the
11 extra drainage encroachment divided by a standard unit of
12 320, and we have come up with a ratable take factor .79.

13 Then items five and six relate to the pro-
14 ductive acreage factor and finally the allowable limitation
15 factor. The productive acreage factor, of course, is a
16 fraction of Mr. Stenberg's interpretation of the productive
17 area of the proration unit divided by 320, of 27 percent,
18 .27, and then the allowable limitation factor is the ratable
19 take factor times the productive acreage.

20 Q. In your opinion would an allowable limitation
21 factor which does not take into account the net drainage
22 encroachment protect the correlative rights of offset
23 operators?

24 A. No.

25 Q. In your opinion would an allowable limitation

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1 factor which does not take into account the nonproductive
2 acreage within a proration unit protect the correlative
3 rights of offset operators?

4 A. No, sir.

5 Q. And I take it, it is your recommendation that
6 your allowable limitation factor of .21 be substituted for
7 the allowable limitation factor of .71, which is contained
8 in finding ten of Order R-5831?

9 A. Yes, sir.

10 Q. Referring again to the order, I call your
11 attention to finding twelve, which reads as follows:

12 The Division finds that the minimum calcu-
13 lated allowable for the subject well should be reasonable
14 and 1-million cubic feet of gas per day is a reasonable
15 figure for such minimum allowable.

16 Mr. Kalteyer, in your opinion does a limita-
17 tion factor which applies only to allowables exceeding
18 1,000 Mcf per day protect correlative rights?

19 A. No, sir.

20 Q. If a well located at the proposed unorthodox
21 location is producing 1,000 Mcf per day, is it draining
22 from offsetting tracts?

23 A. Yes, it could very well be.

24 Q. And what if this well is making 500 Mcf
25 per day, could it then be?

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1 A Yes, sir, it could.

2 Q And even if the production reached the point
3 of only 200 Mcf per day, could it still be draining from
4 offsetting tracts?

5 A Yes, sir, it could.

6 Q What is your recommendation regarding finding
7 twelve?

8 A We recommend that the minimum of productive
9 limitation be stricken. We have not seen the evidence to
10 support it and we think it is an arbitrary limitation.

11 Q What has been the daily average production
12 rate of the six wells in the Penasco Draw Pool, based on
13 their initial monthly production?

14 A As stated before, approximately 3650 Mcf
15 per day.

16 Q Have you made a study or caused a study to
17 be made of the profitability of wells drilled in the Morrow
18 in this area?

19 A Yes, sir, I have.

20 Gulf's Exhibit Number Six is a series of
21 curves depicting the two principal criteria for evaluating
22 oil and gas prospects.

23 Exhibit Seven is a table of this data that's
24 plotted as well as the basic conditions which were used in
25 this analysis.

1 The two criteria are payout time in years,
2 and the other factor is the discounted cash flow rate of
3 return, which are two of the measure guidelines most oper-
4 ators in the industry would utilize.

5 Let me read you a definition of payout period.
6 Naturally, it's the payout time that measures the elapsed
7 time from date of first disbursement of funds until the
8 cumulative cash flow becomes positive and remains positive.

9 The discounted cash flow rate of return is
10 calculated for each project to take into account the time
11 value of money. The discounted cash flow rate is defined
12 as that interest rate which discounts the estimated cash
13 inflows of a project to a present value equal to the present
14 value of estimated cash outflow of a project.

15 The discounted cash flow, in effect, would
16 tell you what rate of interest you could afford to pay to
17 balance out the expense of your project.

18 For this study I have chosen three initial
19 daily rates of production of 3000 Mcf per day, 1000 Mcf per
20 day and 500 Mcf per day. This is the initial rate of the
21 well. Based on a 30 percent rate of decline, annual rate
22 of decline, and utilizing an investment of \$430,000 for an
23 average well; initial gas price of \$1.98, which be based
24 on the new NGPA price standard. Condensate at \$12.95 a
25 barrel initially, royalty 1/8th, taxes of 8.2 percent,

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1 Federal income tax of 50 percent, which of course will vary
2 from company to company, and operating expense per year
3 initially of \$8200.

4 We have calculated these figures, both before
5 Federal income tax and after Federal income tax, and we see
6 that if a well is brought in at 3000 Mcf per day, before
7 Federal income tax it would payout in 8/10ths of a year,
8 which is a very excellent payout period.

9 Discounted cash rate of flow, rate of return,
10 is in excess of 400 percent, which is -- just went off of
11 our curve here.

12 After Federal income tax the payout time
13 would be 9/10ths of a year and a discounted cash flow rate
14 of return would be 295.1 percent.

15 Likewise, if a well came in at 1000 Mcf per
16 day, payout time would be -- was calculated to be 1.3 years;
17 discounted cash flow rate of return, 113.2 percent.

18 After Federal income tax the payout time was
19 calculated to be 1.5 years with a discounted cash flow
20 rate of return of 84.8.

21 With an initial daily rate of production of
22 500 Mcf we show payout time of 2.2 years. The discounted
23 cash flow rate of return of 41.2 percent.

24 After Federal income tax the payout time
25 was 2-1/2 years and a 30.8 percent.

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1 Generally speaking, I think the industry
2 naturally would like to have a very fast payout time, but
3 each company has its own guidelines and this curve shows
4 the general range here up to 2-1/2 years payout.

5 As far as discounted cash flow lower limits,
6 I might refer to a recent finding of the Department of
7 Energy where they changed the rules to allow a 23 percent
8 instead of a 15 percent pre-tax rate of return on investment
9 in a case involving a Phillips Company. This was on a
10 emissable gas injection investment in Utah.

11 Just to give you a feel for what the lower
12 limit of the discounted cash flow rate of return might be,
13 which would be under the 41.2 percent before Federal income
14 tax, indicated by a 500 Mcf per day well.

15 Q What conclusions do you draw from your Ex-
16 hibits Six and Seven with respect to the minimum calculated
17 allowable of 1000 Mcf per day?

18 A With the average initial rate of the wells
19 in this area being greater than 3000, the profitability
20 is excellent. By the time the average well has reached
21 500 or even 1000 Mcf per day, it has paid out handsomely.

22 Even if it came in at only 500 Mcf per day,
23 it would probably have a favorable payout and discounted
24 cash flow.

25 The other conclusion that I have is that

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1 even with this data, is that the OCD is under no obligation
2 to guarantee a satisfactory payout of any operator's in-
3 vestment, whether it be an unorthodox or an orthodox loca-
4 tion.

5 We have been unable to establish any precedent
6 where the OCD has set a minimum allowable. We consider that
7 a ruling in this case is very important in that it will be
8 a precedent setting decision. These orders normally will
9 be prospective in nature. They will cover a very wide
10 range of deliverabilities, as you can see from our table
11 of production rates for this particular area, where the
12 initial production rates range from 7,989 Mcf per day to
13 something on the order of 447 Mcf per day initially.

14 If a well comes in as good as the average
15 well, it will have excellent payout. If it is a poor well,
16 we believe that this should be a matter of an additional
17 hearing, that the operator should come before the Commission
18 to set forth in detail why they -- why no -- why a limita-
19 tion should be made on the allowable limitation factor.

20 Q In your opinion should the Commission's
21 order in this case provide for any minimum calculated
22 allowable?

23 A No, sir, it should not.

24 Q Referring to the Order R-5831, do you have
25 any proposed changes regarding the special rules and regu-

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lations for the application of the production limitation factor?

A. Yes, sir, we recommend that they substitute the .21 for the .71 as the production limitation factor to be applied to the well's deliverability.

And our Exhibit Eight proposes a slight addition or expansion to Rule Four, which provides that a deliverability test should be the daily average of a 72-hour production test, and also that Rule Five in establishing a well's subsequent delivery, it should specify the daily average of a highest 72-hour continuous production rate.

And we recommend that Rule Thirteen be deleted.

Q Were Exhibits Three through Eight prepared by you or under your supervision?

A. Yes, sir.

MR. CROSS: I move they be admitted.

MR. RAMEY: Exhibits One through Eight will be admitted. Did we admit the first two previously? All right, Three through Eight will be admitted.

MR. CROSS: No more questions.

MR. RAMEY: Any questions of the witness?

CROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Kalteyer, since the May 15, 1978 hearing,

1 isn't it true you've changed your recommendations to the
2 Commission as to the allowable factor to be assigned to
3 this well?

4 A. Yes, sir.

5 Q. And isn't it true in your May 18 request to
6 the Examiner you asked that they take into consideration
7 only the radial drainage area or to-wit, the ratable take
8 factor?

9 A. Yes, sir.

10 Q. And now you have added in your recommendations
11 to the Commission that that ratable take factor be multi-
12 plied by the acreage, productive acreage, as you have
13 determined it within the spacing unit.

14 A. The factor, yes, a productive acreage factor.

15 Q. Would you explain to me why your recommenda-
16 tion has changed?

17 A. At the time of the first hearing based on
18 our geological interpretation, we thought that entire area
19 was productive, and due to subsequent drilling and new in-
20 terpretation based on our geologic study it is not entirely
21 productive within the proration unit.

22 Q. And you say this is a precedent making case.
23 Would you propose to apply that in all the cases?

24 A. If we had sufficient data that could be
25 applied. This was an open-ended, at the time of the last

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1 hearing was open-ended control and it appeared to be pro-
2 ductive.

3 Q Do you know of any instances in a prorated
4 gas field where the Commission has taken into account not
5 only both the ratable take based upon a radial drainage
6 pattern, but the number of productive acres in establishing
7 the allowable?

8 A In a final decision, as far as I know, they
9 have just gotten to the productive acreage.

10 Q That's been the formula the Commission has
11 used in prorated gas pools?

12 A Yes, sir, the Examiners, I believe, have
13 recommended a combination, but I think in the last ruling.
14 It slips my mind as to which one it is, they applied only
15 a single factor, which related to productive acreage.

16 Q Is there some reason why an unorthodox
17 location in a non-prorated gas field ought to be treated
18 different than an unorthodox location in a prorated pool?

19 A We are trying to protect in two different
20 types of operation; however, it's open to -- open to further
21 scrutiny.

22 Q Well, by applying your suggestion to the
23 Commission, would you not be discriminating against an un-
24 orthodox location in a non-prorated field?

25 A Well, I don't know. I wasn't a party to the

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1 decisions made by the Commission in the past, and this would
2 be a recommendation that productive acreage should be --

3 Q Well, my question is, really, if the Commission
4 adopted your recommendation in this non-prorated field,
5 would that not discriminate against unorthodox locations,
6 the practice the Commission has followed in prorated gas
7 fields?

8 A If the --

9 MR. KELLAHIN: If the Chairman please, I'll
10 object to the question. It calls for a legal conclusion
11 on behalf of the witness and that's something within the
12 province of the Commission to determine the answer to the
13 particular question that Mr. Losee has asked.

14 MR. LOSEE: I think whether it treats them
15 differently is a germane question, Mr. Commissioner.

16 MR. RAMEY: Can you reword that question,
17 Mr. Losee?

18 Q Does not your recommendation to the Commission
19 propose that they treat differently unorthodox locations
20 within and without prorated gas fields?

21 A It is different from what they have done in
22 the past. It says nothing of the future.

23 Q While we're talking about prorated and non-
24 prorated gas fields, your recommendation to the Commission
25 here is that they delete the 1-million cubic feet per day

1 minimum from the formula.

2 A. Yes, sir.

3 Q. Are you aware that in prorated gas fields
4 marginal gas wells are allowed to produce at capacity and
5 so that they in effect have a minimum deliverability?

6 A. Yes, sir.

7 Q. And is not your proposal here to delete the
8 minimum, would it not treat differently unorthodox -- or
9 penalty wells in a non-prorated field from penalty wells
10 in a prorated field?

11 A. Would you restate it, so I'll get the right --

12 Q. Okay. Your proposal here, as I understand
13 it, is to delete the minimum to which a well can produce,
14 and does not that proposal suggest to the Commission that
15 they treat differently the gas wells in a non-prorated field,
16 or penalty gas wells in a non-prorated field with penalty
17 gas wells in a prorated field?

18 A. Well, I think we're trying to compare some-
19 thing different. You're trying to compare a nonmarginal
20 well that is not producing at its full capacity with a well
21 that is at its -- with a marginal well that's at its capa-
22 city versus in this non-prorated field where all wells are
23 flowing at capacity, or whatever the operator chooses to
24 produce his wells at.

25 Q. Well, this is a question that Mr. Stamets in-

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1 terrogated you on back in May 18, and under the applicable
2 rules of the Commission when a well becomes classified mar-
3 ginal it's able to, in effect, produce all it can produce.

4 A That's correct.

5 Q And your proposal here is that once there
6 be no minimum allowable to which a well can produce, and it
7 will continue to be restricted --

8 A Yes, sir.

9 Q -- by in this case 21 percent of whatever
10 it's capable of making.

11 A Yes, sir.

12 Q And isn't that treating a well in a non-
13 prorated field different than a well in a prorated field?

14 A Well, are we talking about an unorthodox
15 location?

16 Q Yes.

17 A Or are we talking about --

18 Q We're talking about an unorthodox location.

19 A Yes, it probably would. I don't think
20 they've applied a factor that I know of to unorthodox
21 locations, in prorated fields.

22 Q Well, let me --

23 A Separated out.

24 Q So that they are treated differently in pro-
25 rated and non-prorated fields by virtue of, if you were to

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1 delete the million cubic feet minimum.

2 A. Yes.

3 Q. Turning now, Mr. Kalteyer, to your profit-
4 ability study, when this well was -- when this case was
5 heard, what was the price of gas?

6 A. Something on the order of \$1.65, if I under-
7 stood, in that area.

8 Q. So do you think the \$1.93 ought to be applied
9 to this well? Applied in the profitability study?

10 A. I believe we based this calculation based on
11 the theory that these would be classified by the Natural
12 Gas Policy Act; they'd be entitled to the \$1.93 as of
13 January 1st, which for wells completed after February, '77,
14 I believe.

15 Q. What was the decline that you assumed in
16 preparing this study, the rate of decline?

17 A. Our reservoir unit used the 30 percent, which
18 is the same as Mr. Yates said he used as a normal for his.

19 Q. In preparing this profitability study did
20 you take into account the fact that all Morrow wells are
21 not completed --

22 A. Did I what?

23 Q. Did you take into account that all Morrow
24 wells are not completed as producers?

25 A. No, sir.

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1 Q That -- that's just overlooked from this
2 study.

3 Does this study also overlook the fact that
4 all Morrow wells that are completed do not payout?

5 A That's correct.

6 Q And this study does not take that into
7 account.

8 A That is correct.

9 Q Now, with this 30 percent decline are you
10 assuming a line pressure of zero?

11 A No, this was an abandoned -- let's see. I
12 believe they took it on down to compression.

13 Q To zero?

14 A No, not to zero. The zero bottom hole pres-
15 sure?

16 Q Yes.

17 A Oh, no.

18 Q Well, what pressure did they take it to?

19 A I don't have that figure with me, I don't
20 believe, but I can establish that and would be glad to
21 supply it to you.

22 Q Wouldn't that materially effect how long the
23 well could produce? Whether it was bucking a line pressure
24 of 100 pounds or 700 pounds?

25 A Very definitely.

1 Q Well, and you don't know what this --

2 A I don't have that figure in front of me, Mr.
3 Losee. I would have to dig through my files to find it,
4 and I believe it probably is in Midland.

5 Q In your experience with Gulf looking at
6 Morrow gas wells, do you find many of them that start out
7 producing at initial rates of 500 Mcf and are still bucking
8 line pressure in two and a half years?

9 A Probably not.

10 Q So that actually the payout time of two and
11 a half years for 500 initial deliverability, a 500 Mcf well
12 is not realistic?

13 A Well, it might be realistic but it is at the
14 lower end of the profitability -- positive profitability
15 study. If we are getting into the two and half to three
16 year payout on a well, then we would have to weigh it very
17 carefully as to whether we want to drill it and to whether
18 it's outpost or infill or what.

19 Q Well, as a practical matter, you don't see
20 many Morrow wells that come in at only 500 Mcf that ever
21 do pay out, do you?

22 A Well, I have not made a particular study of
23 all the Morrow wells and whether they were paid out or not.

24 Q Do you think they will produce two and a
25 half years?

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- 1 A. Based on this study and a 30 percent rate of
2 decline, this is -- they would produce that time.
- 3 Q. But have you seen in your --
- 4 A. No.
- 5 Q. -- experience any of those wells?
- 6 A. I have not made a study of it, no.
- 7 Q. But have you seen any wells that came in at
8 500 Mcf that produced for two and a half years, Morrow
9 wells?
- 10 A. No, all I -- as far as detail, all I can see
11 is this data right here as to what I have seen a study of.
- 12 Q. You're familiar with more Morrow wells than
13 just in this field, aren't you?
- 14 A. I have not made a study of all the Morrow
15 fields -- Morrow wells in Eddy County, and I have not
16 professed to have done it.
- 17 Q. I believe the testimony two weeks ago with
18 respect to Mr. Antweil's Rio Com was that the well was sub-
19 stantially depleted now, is that not correct?
- 20 A. The Rio Well?
- 21 Q. Yes, the Rio Com.
- 22 A. Yes, sir, it appeared to be from the tests
23 they had made.
- 24 Q. Turning to your Exhibit Three, I notice that
25 that well was put on production in September of 1977, pro-

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1 duced at the rate of 907 Mcf.

2 A Yes, sir.

3 Q Per day.

4 A Yes, sir.

5 Q And that well has been on production approx-
6 ximately 16 months, has it not?

7 A Yes, sir.

8 Q According to your exhibit.

9 A Yes, sir.

10 Q And it's substantially depleted, according
11 to the testimony in the other case.

12 A Yes, sir, I believe it's on compression.

13 Q And so that is an example in this field of
14 a well that came in at nearly a million Mcf and depleted
15 in less than two and a half years.

16 A Well, I wouldn't say that it was depleted.

17 Q Well, that's what the testimony was, Mr.

18 Kalteyer, at the hearing.

19 A That it was depleted?

20 Q Yes, substantially depleted.

21 A Well, substantially, not depleted.

22 Q And would that be an example of a well that
23 did not pay out?

24 A It would be approaching payout. I don't
25 know what their costs were. I've not made an analysis of

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1 their particular well, but generally speaking, as I testified
2 earlier, on the order of 350 to 450,000 Mcf cum would pro-
3 bably pay out a well.

4 Q Well, of course they didn't get \$1.98 per
5 Mcf for their gas?

6 A No, I'm figuring on \$1.65, though, on that
7 rough figure.

8 Q If I look at your Exhibit Three, it appears
9 that the rate of decline in this Rio Com Well in the first
10 twelve months of production was 56 percent, from 1525 Mcf
11 per day down to 3 -- down to 666, that's a 56 percent de-
12 cline.

13 A It could very well be, that's right.

14 Q So to that extent your assumption of only
15 a 30 percent rate of decline is not enough in the case of
16 the Rio Com.

17 A Not that, no, sir. We're basing this on
18 supposed average data which corresponded to your own wit-
19 ness' testimony, this average.

20 Q Well, my question has to do with the only
21 wells with which you testify you -- Morrow wells you're
22 familiar. and that's the wells on your Exhibit Three.

23 A That's right.

24 Q And so there's one example of one well that
25 declined at a greater rate.

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1 A Oh, definitely. There are wells that don't
2 pay out, we've agreed on that. We know there are some that
3 don't decline at the same rate; there are others that de-
4 cline at a greater rate.

5 Q Mr. Kalteyer, what -- well, let me back up.
6 You're aware that Rule 102 of the Commission requires that
7 if they approve an unorthodox location, they take such ac-
8 tion as is necessary to offset the advantage gained by that
9 unorthodox location, are you not?

10 A Yes, sir.

11 Q Would you tell me what evidence you have
12 offered which shows that the Yates State "JM" Well, at its
13 unorthodox location, has gained an advantage over the Gulf
14 wells in Section 19?

15 A Well, I have made no study of the pressure
16 difference between the wells, your completed well and our
17 wells, as far as attempting to tie them together in the
18 same reservoir. I have not had access to your data nor
19 applied to it, the data which was presented today.

20 Q So your answer to my question is, no, I have
21 not given any evidence that shows the Gulf wells obtain an
22 advantage -- or the Yates location obtains an advantage
23 over Gulfs' wells.

24 A I have no pressure data to establish that.
25 I have a theoretical approach based on encroachment, which

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1 has been used -- similar to this, has been used by the
2 Commission, and also the basis of the productive acreage
3 percentage which was presented by the geological witness.
4 I have not presented it.

5 Q Well, now. Mr. Kaltever. you had pressure
6 data on the Gulf "GK" 1 and "GK" 2, did you not, and you
7 had the drill stem test data on the Yates State "JH", did
8 you not?

9 A I did not have it, no, somebody just handed
10 it to me awhile ago.

11 Q Was it made available to Gulf?

12 A I don't know.

13 MR. LOSEE: I think that's all.

14 MR. RAMEY: Any other questions of the wit-
15 ness? Mr. Stamets?

16
17 CROSS EXAMINATION

18 BY MR. STAMETS:

19 Q Mr. Kalteyer, if the Yates State "JH" well
20 is not completed in the same zone that the two Gulf wells
21 are, is there any way that production of that Yates well
22 can hurt the Gulf correlative rights?

23 A Yes, it can be draining gas from under our
24 part of the lease.

25 Q Okay, then how -- is there any way Gulf can

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1 protect their correlative rights no matter what penalty
2 factor the Commission puts on?

3 Is there any way Gulf can protect its cor-
4 relative rights except by drilling a well to that reservoir
5 on Gulf's acreage?

6 A. No, we'd have to try to drill a well there
7 and Yates would be our partner in the thing. As to whether
8 they would approve it, go nonconsent, or what, that would
9 be another matter.

10 Q. All right, now --

11 A. It would get close to their well.

12 Q. All right, now, if the "JM" Well is indeed
13 completed in the same reservoir as either one of the Gulf
14 wells, or both, how do you explain the near virgin reservoir
15 pressures that Yates encountered in their drill stem tests
16 of the "JM" Well?

17 A. Well, I believe that we'd probably find that
18 every well that's been completed over the period -- I would
19 look at the table of data that was presented by Mr. Yates --
20 if they all seem to come in about virgin pressure.

21 Q. And how do you explain that?

22 A. Due to permeability irregularities or lenti-
23 cularity or just lack of good continuity between the wells.

24 Q. How about lack of any continuity at all?

25 A. Could very well be.

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1 Q Okay. Does the rapid decline in the pressure
2 that Yates has experienced in their "JM" Well with very
3 little production indicate to you that that's a rather
4 limited reservoir.

5 A Yes, it would on the face of it, definitely.

6 Q Okay, and if it is a limited reservoir will
7 it have any effect on Gulf's correlative rights?

8 A Probably -- well, it would depend on how
9 large an area it's draining, but if it's indicative of
10 what the performance has now shown, or that they have pro-
11 duced at this hearing, it may not do great harm to our
12 protecting correlative rights.

13 But it still may.

14 Q Does your Exhibit Number Six take into ac-
15 count application of a 21 percent allowable limitation
16 factor?

17 A Yes, sir.

18 Q In other words, let's take the well that
19 potentials at 1-million a day and you show the payout time
20 in a year and a half, now is that taking into consideration
21 that the well would only be allowed to produce 210,000 a
22 day?

23 A Yes, sir.

24 Q Okay.

25 MR. RAMEY: That well would still pay out in

1 a year and a half?

2 A. No, sir. No, this is production average,
3 actual production rate that we're basing this on, not --

4 Q. Okay, well, let's go back then and apply the
5 21 percent allowable limitation factor at that 1-million a
6 day initial potential.

7 How far in the future would that make the
8 payout date?

9 A. I couldn't tell you; just have to run it back
10 through the computer on it on 200 Mcf per day.

11 Q. If you're talking about 20 percent, it would
12 be five times what you show there.

13 A. All right, sir.

14 Q. Instead of a year and a half you'd be looking
15 at six years, seven and a half years; seven and a half
16 years.

17 A. Could well be.

18 Q. Okay, would Gulf consider that an economic
19 prospect to drill?

20 A. No, sir, we would not ask for an unorthodox
21 location on that basis, with the penalty facing us like
22 that.

23 Q. Okay, what do you feel is an appropriate
24 payout time?

25 A. What would we feel?

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1 Q Yes, average.

2 A Well, I'd say -- of course, like I've said
3 before, we would prefer to drill those that are less than
4 a year, but we do invest in projects that go into two and
5 three years and farther, depending on the situation and the
6 risk. We don't have any finite cutoff line. Each manager
7 will have to make his own decision on it.

8 MR. STAMETS: That's all the questions I
9 have.

10 CROSS EXAMINATION

11 BY MR. RAMEY:

12 Q Now, Mr. Kalteyer, I think you said somewhere
13 back, you were referring to your 500 Mcf initial production
14 rate.

15 A Yes, sir.

16 Q Now, if you had a well like that, why, you
17 would question recommending that management drill this well,
18 is that right?

19 A If that was the prospect?

20 Q Yes.

21 A It would be in the lower range, yes, sir.
22 We would have to look at it very carefully. If we had
23 sufficient data by other wells that would indicate it would
24 only be a 500 Mcf a day well.
25

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1 Q So that's getting close to your bottom line,
2 then.

3 A Yes, sir.

4 I would like to point out that this payout
5 data was based on the initial rate of production, where the
6 average well here has probably paid out in a year or so,
7 and would not be based on the 500, the anticipation of a well
8 that came in at 500 Mcf.

9 Q Let's take the area here on your Exhibit One,
10 just the area. Say that Gulf had all that acreage and
11 Gulf had drilled all the wells in there, what -- what would
12 be your economic history there? It looks to me like you've
13 got six or seven producers and ten dry holes. Would you
14 think it a good prospect?

15 A Well, we may have slightly more dry holes
16 than average in that area, or I don't mean slightly, we'd
17 have to say we'd probably have above average number of dry
18 holes in the field.

19 Q Would you think a risk factor should be ap-
20 plied to maybe all wells drilled to the Morrow?

21 A We do apply a risk factor in our decisions
22 as to whether to drill them or not, very definitely.

23 Q Or maybe an incentive of some kind, such as
24 a minimum allowable that a well could be expected to pro-
25 duce?

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1 A Well, we're still going back to an exception
2 that's being asked for from these standard rules that have
3 been adopted by the Commission, been in effect for many
4 years, which does give them the advantage on the side
5 boundary of possible uncompensated drainage, and this was
6 a means to discourage the random application of unorthodox
7 locations in those cases. Now there are many cases where
8 we don't oppose those things, but when we have two pro-
9 ducers adjoining the property, and they are crowding up to
10 those properties in anticipation of getting a well similar
11 to that, then that's why we recommended the penalty. If
12 they want that extra advantage to get over closer to pro-
13 duction, then it should be applied.

14 Q Do you agree with Mr. Stenberg, I think he
15 stated, or he testified, that he thought it was a blanket
16 sand over this area? Do you agree with this?

17 A No, I wouldn't hazard a comment on that.
18 Just -- I have not made the study. I would not try to be
19 an expert in that Morrow sand; it's too complicated for me.

20 Q You think there are -- I don't want to put
21 any words in your mouth, but do you think there are any
22 permeability barriers or differences in here?

23 A Yes, I do.

24 Q And these could be just separate little pods
25 of sorts?

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A. Yes, sir, they could very well be.

Q So you could have just a whole mess of separate reservoirs in this unit, then?

A. Yes, sir.

Q Do you -- do you not disagree with Mr. Yates' testimony on the pressures? Are you in agreement with his testimony on pressures he put on this morning?

A. In what way?

Q I was kind of the opinion that he indicated there may be several different reservoirs indicated by pressure.

A. Well, there could very well be, yes.

Q There certainly seems to be some difference between the two Antweil wells, of course, where the logs correlate very well, showing good pay in both wells and yet one well is a real humdinger and the other is a questionable payout well.

A. Yes, sir.

MR. RAMEY: Any other questions of the witness?

MR. LOSEE: I have one last question.

RECROSS EXAMINATION

BY MR. LOSEE:

Q Mr. Kalteyer, in truth Gulf doesn't believe

1 the Commission should approve any orthodox locations, does
2 it?

3 MR. RAMEY: Any orthodox ---

4 Q Any unorthodox locations.

5 A No, I wouldn't say that at all.

6 Q You think they should approve them but make
7 the penalty so tough that it couldn't be drilled?

8 A No, sir, I think each one should be taken
9 on its own merits, evaluated on its own merits.

10 Q Well, under the -- in connection with this
11 Rio Well that's drilled, if I summarize your testimony and
12 your geological testimony, it is that the well probably,
13 a well at an orthodox location on the north half of Section
14 15, probably would not have made a producer; that the well
15 with its pressure history, is not draining a very large
16 area, and you wouldn't -- nobody could have obtained payout
17 at 21 percent; wouldn't the end result of that be that this
18 limited reservoir of gas would go unproduced and be wasted?

19 A It would go unproduced but there was a lot
20 of energy wasted going to find it and a lot of money wasted
21 to go to find it, to find out whether it was productive or
22 not. There may have been more energy wasted to find it
23 than you're going to get out of it. So does it balance out?

24 Q Well, you're saying an economic waste?

25 A No, it could be BTU waste.

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1 MR. LOSEE: I think that's all.

2 MR. RAMEY: Any other questions of the witness?

3 He may be excused.

4 Do you have anything further, Mr. Cross?

5 MR. CROSS: No, sir.

6 MR. RAMEY: Mr. Losee?

7 MR. LOSEE: I just have a short statement.

8 I'd like to make three short points.

9 MR. RAMEY: Before you start, did you offer

10 your Exhibit Six? Do you wish to offer it?

11 MR. LOSEE: Yes, Yates move admission of its

12 Exhibit Six.

13 MR. RAMEY: It will be admitted without ob-

14 jection.

15 MR. LOSEE: Three short points.

16 The first, if you assume in an unorthodox
17 location -- application for an unorthodox location in a
18 nonprorated field you should apply a penalty, enforce it by
19 deliverability, if some minimum is not established and
20 we believe however it's arrived at, whatever good judgment,
21 that 1-million Mcf is reasonable, but we do point out to
22 the Commission clearly that without some reasonable minimum
23 an unorthodox location in a nonprorated field is clearly
24 being discriminated against an unorthodox location in a
25 prorated field.

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1 Secondly, Yates believes that the complexities
2 of the Morrow and its separate producing sands make the
3 application of a reasonable penalty difficult at the best.

4 We think the rule of the Commission, that
5 before any action is taken in applying the penalty, a pro-
6 testant must show that some advantage was obtained from the
7 unorthodox location, and clearly in a reservoir, and if I
8 can borrow the language of Mr. Kalteyer, very well could
9 be lack of continuity in the reservoir.

10 Surely you can't assume a radial drainage
11 pattern, and if so, the only evidence offered by Gulf in
12 this case with respect to advantage is geological testimony
13 by Mr. Stenberg, part of which I think goes to the point
14 of saying that this is a blanket sand, although he has not
15 correlated the geology with the pressure data and the pro-
16 duction history of the wells.

17 Mr. Kalteyer admits to Mr. Ramey that there
18 may well be a number of separate reservoirs, and we just
19 don't think Gulf has shown that there's going to be any
20 advantage obtained over them by this location, and that is
21 a prerequisite of the rule before any penalty is assessed.

22 Thank you.

23 MR. RAMEY: Mr. Kellahin.

24 MR. KELLAHIN: If the Commission please.

25 The Commission has been considering these

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1 very same problems about the complexity of the Morrow forma-
2 tion in many different types of cases long before I ever
3 got out of law school, and we're talking about those same
4 problems again today.

5 I think as a practical matter the Commission
6 has long ago concluded that it is virtually impossible to
7 establish separate Morrow reservoirs for each of the three
8 or four different Morrow sand members that may be contained
9 within the Morrow as established for this particular pool.

10 We've attempted to prorate the Catclaw Draw
11 on something other than a straight acreage formula and
12 after hours and days of hearings in a lot of cases, it's
13 evident that it's virtually impossible to do anything else
14 but establish it on a straight acreage basis.

15 That, in fact, is what the Examiner did in
16 the Examiner order for this particular case. He set forth
17 an order based upon the testimony available at that time.
18 The consensus of the expert witnesses was that the north
19 half of this particular section was reasonably productive,
20 and that the only way to offset the advantage gained by
21 the unorthodox location would be a drainage encroachment
22 factor based upon an acreage calculation, which he is making
23 in his order.

24 You'll note that the testimony of Gulf on
25 that percentage is different than the one found in the order.

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1 I believe the Gulf testimony would allow Yates to not be as
2 severely penalized. I think the Gulf percentage was some-
3 thing like 79 percent and the one in the order, under Mr.
4 Stamets' calculation, was 71 percent.

5 Be that as it may, we believe that that is
6 an integral part of any formula for the Morrow formation,
7 but that in addition, because of the four additional wells
8 that have been drilled after the order was entered, the new
9 testimony developed and introduced today, it is also now
10 necessary to modify that order to take into consideration
11 the nonproductive acreage. That's not new to the Commission.
12 In fact, you've just recently done it in a de novo case for
13 Harvey E. Yates Company, in Order Number R-5802-A, Case
14 6266. The penalty factor against Harvey E. Yates Company
15 was one simply based strictly on nonproductive acreage. It
16 showed an allowable of some .30.

17 Now, if the Commission believes that for
18 this particular case they ought to do that here and apply
19 it only on the nonproductive basis, then the allowable for
20 this particular well would be .24.

21 With regards to the nonproductive acreage,
22 I think that's been established, although we asked Mr. Beck
23 in several different ways to give an opinion as to the
24 number of nonproductive acreage in this particular pro-
25 duction unit, he would not do so. I think his Exhibits Two

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1 and Three speak for themselves.

2 If you look at those exhibits, and I conclude
3 from those exhibits that there are, perhaps, only 30 per-
4 cent of that proration unit, as implied by his clean Morrow
5 sand on Exhibit Three, that would contribute productive
6 gas to this particular well. I think that would be a fair
7 analysis of the evidence and it would support a finding
8 by the Commission that there is a substantial portion of
9 this unit that's not going to be produced by this well.

10 Again, the testimony of Mr. Stenberg, he
11 indicated in his own testimony that he believed only 86
12 acres were productive. I think the Commission has to ad-
13 dress that particular problem in this order.

14 There is difference of opinion between the
15 geologists as to whether the Gulf wells and Yates well are
16 in communication. I think the Commission can find that
17 there's substantial evidence based upon Mr. Stenberg's
18 testimony that the Morrow interval here is producing or
19 capable of being produced by the Gulf wells.

20 The testimony of Mr. Peyton Yates, I think
21 is also important when you talk about the productive acreage.
22 You know that he very specifically indicated that he be-
23 lieved this well not to have been damaged in a mechanical
24 was; that it was producing from a very limited reservoir;
25 that it was his opinion that the extent of the reservoir

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1 did not go beyond the boundaries of this particular proration
2 unit, and if you assume that that distance would be a radius
3 of 660 feet, and apply an acreage factor to it, we're looking
4 at about 31 acres.

5 So regardless of whether you use a drainage
6 encroachment factor, we believe that the Commission ought
7 to use a nonproductive acreage factor for this particular
8 well. There is no reason that this well, having gained
9 its advantage in location, should be allowed to produce
10 at an unrestricted rate in competition with any of the other
11 wells in the pool that are spaced at a standard location.
12 The Commission has no obligation here to insure that an
13 offset operator has a profitable well. The spacing rules
14 are here for a particular purpose, and that purpose is to
15 avoid the unnecessary drainage from offsetting acreage.

16 And to seek an advantage, the burden is not
17 upon Gulf to establish that we are not being drained; that's
18 an affirmative burden on behalf of Yates, and Mr. Losee
19 would have you believe that the burden was otherwise, and
20 that's not so. It's their burden to establish that they're
21 not going to some how seek an unfair advantage over us,
22 and the Commission has traditionally held that the Morrow
23 production, that that acreage be penalized on a formula
24 assuming a homogeneous reservoir, and I don't believe that
25 you can do otherwise.

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1 The point we're here on is the one that's
2 of very substantial concern to us, and that's the one that
3 sets forth a minimum allowable. There is an attempt to
4 equate the nonprorated gas pool with what is done in a pro-
5 rated gas pool. I think you have to resolve that for your-
6 selves. I'm not sure that that equates. The fact that a
7 well may be marginal or nonmarginal in a prorated gas pool,
8 I'm not certain that that 1000 Mcf per day for an unorthodox
9 location puts those on an equal basis. But regardless of
10 what it is, I don't believe there are indications in the
11 record of substantial evidence to support a finding of a
12 1000 Mcf per day.

13 Mr. Yates testified in several ways with
14 regards to what that minimum allowable ought to be and it's
15 my recollection that he on two different occasions responded
16 that a 1000 Mcf he though was arbitrary.

17 We believe that the preferable solution to
18 this, Mr. Ramey, would be to penalize the operator based
19 upon the drainage encroachment and the nonproductive acreage
20 prior to his drilling the well; that that be his penalty,
21 and that if he undertakes that risk at that penalty, and
22 afterwards is able to come in and establish that his well
23 is not encroaching on the other acreage, then by basis of
24 the new information, we ought perhaps to give him a minimum
25 allowable. But to establish a minimum allowable prior to

1 drilling a well, in our opinion would be arbitrary, and that
2 whatever the number is, it will be nothing but arbitrary
3 until after the well is completed.

4 Thank you.

5 MR. RAMEY: Thank you, Mr. Kellahin.

6 Anything further in the case?

7 The Commission will take the case under ad-
8 visement.

9 (Hearing concluded.)

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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd CSR
Sally W. Boyd, C.S.R.

SALLY WALTON BOYD
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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6231 DE NOVO
Order No. R-5831-A

APPLICATION OF YATES PETROLEUM
CORPORATION FOR AN UNORTHODOX GAS
WELL LOCATION, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on February 7, 1979, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 7th day of March, 1979, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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, Yates Petroleum Corporation, seeks approval of an unorthodox gas well location for his State JM Well No. 1 to be located 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, to test the Morrow formation, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

(3) That the N/2 of said Section 25 is to be dedicated to the well.

(4) That upon receipt of the application of Yates Petroleum Corporation in this matter, the same was set for hearing on May 17, 1978, before Examiner Richard L. Stamets.

-2-

Case No. 6231 De Novo
Order No. R-5831-A

(5) That subsequent to said hearing the Oil Conservation Division entered Order No. R-5831 approving the unorthodox location of said well for the Morrow formation and providing for special rules and regulations limiting production therefrom.

(6) That subsequent to the entry of said Order No. R-5831, Gulf Oil Corporation, an offset operator, filed timely application for hearing De Novo of Case No. 6231, and the matter was set for hearing before the Commission.

(7) That the matter came on for hearing De Novo on February 7, 1979.

(8) That a well at said unorthodox location will better enable applicant to produce the gas underlying the proration unit.

(9) That an offset operator has objected to the proposed location.

(10) That a well at the proposed location is at a standard location relative to the North and South lines of said Section 25.

(11) That a well at the proposed location is 67 percent closer to the West line of said Section 25 than permitted by Division Rules and Regulations.

(12) That a well at the proposed location will have an area of drainage in the Morrow formation which extends 67.2 net acres outside Section 25, an amount of acreage equivalent to 21 percent of a standard proration unit in said pool.

(13) That to offset the advantage gained over the protesting offset operator resulting from the drilling of a well at the proposed unorthodox location, production from the N/2 of said Section 25 should be limited from the Morrow formation.

(14) That such limitation should be based upon the variation of the location from a standard location and the 67.2 net-acre encroachment described in Finding No. (12) above, and may best be accomplished by assigning the proration unit a production limitation factor of 0.71 (100 percent North/South factor plus 33 percent East/West factor plus 79 percent net-acre factor, divided by 3).

-3-

Case No. 6231 De Novo
Order No. R-5831-A

(15) That in the absence of any special rules and regulations for the prorationing of production from said undesignated Morrow Gas Pool, the aforesaid production limitation factor should be applied against said well's or wells' ability to produce into the pipeline as determined by periodic well tests.

(16) That the Special Rules and Regulations for the Application of a "Production Limitation Factor" to a non-prorated gas well or wells set out in Division Order No. R-5831 entered September 29, 1978, provide the proper framework for application of the aforesaid production limitation factor.

(17) That said Special Rules and Regulations should be adopted and made a part of this order by reference.

(18) That considering the risks involved in drilling to the Morrow formation, each proration unit should have a reasonable, minimum calculated allowable.

(19) That at a sustained flowing rate of 500,000 cubic feet per day, a Morrow well in this area would pay-out in approximately 2.5 years.

(20) That 2.5 years is a reasonable pay-out period for a Morrow well in this area.

(21) That Rule 13 of said Special Rules and Regulations should be amended to provide for a minimum allowable of one-half million cubic feet of gas per day rather than one million cubic feet.

(22) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox gas well location for the Morrow formation is hereby approved for the Yates Petroleum Corporation State JM Well No. 1 to be located at a point 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

-4-

Case No. 6231 De Novo
Order No. R-5831-A

(2) That a 320-acre proration unit consisting of the N/2 of said Section 25 shall be dedicated to the above-described well.

(3) That said proration unit is hereby assigned a Production Limitation Factor of 0.71 in the Morrow formation.

(4) That in the absence of any Special Rules and Regulations prorating gas production in said undesignated Morrow Gas Pool, the Special Rules and Regulations for the Application of a "Production Limitation Factor" to a Non-Prorated Gas Well or Wells set out in Division Order No. R-5831, and hereby adopted by reference, shall apply.

(5) That Rule 13 of said Special Rules and Regulations is hereby amended to read in its entirety as follows:

"RULE 13. In no event shall the unit receive an allowable of less than one-half million cubic feet of gas per day."

(6) 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

ALEX J. ARMIJO, Member


EMERY C. ARNOLD, Member


JOE D. RAMEY, Member & Secretary

S E A L

dr/



OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501



DIRECTOR
JOE D. RAMEY

LAND COMMISSIONER
PHIL R. LUCERO
March 9, 1979

STATE GEOLOGIST
EMERY C. ARNOLD

Mr. A. J. Losee
Losee, Carson & Dickerson
Attorneys at Law
Post Office Box 239
Artesia, New Mexico 88210

Re: CASE NO. 6231
ORDER NO. R-5831-A

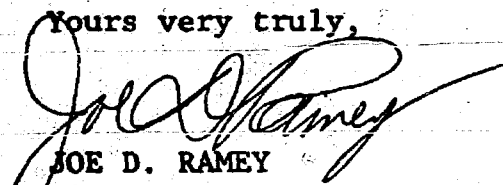
Applicant:

Yates Petroleum Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other Tom Kellahin, Terry Cross

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6213 - *DE NOVO*
Order No. R-5856 - *A*

RHS
APPLICATION OF MORRIS R. ANTWEIL
FOR AN UNORTHODOX GAS WELL LOCATION
AND SIMULTANEOUS DEDICATION, EDDY
COUNTY, NEW MEXICO. *WJC*

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on *January 24* ~~February 7~~, 1979, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this *March* ~~24~~ day of ~~February~~, 1979, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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, Morris R. Antweil, seeks approval of an unorthodox gas well location for his Rio Well No. 2 to be located 660 feet from the North line and 660 feet from the West line of Section 29, Township 18 South, Range 25 East, NMPM, to test the Morrow formation, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

(3) That the N/2 of said Section 29 is to be dedicated to the well.

(4) That said Rio Well No. 2 would be the second well drilled on the N/2 of said Section 29, applicant's Rio Well No. 1, located in Unit G of Section 29, having been completed for Morrow formation gas production on August 23, 1977.

(5) That upon receipt of the application of *Morris R. Antweil* ~~Fates Petroleum~~ Corporation in this matter, the same was set for hearing on May 17, 1978, before Examiner Richard L. Stamets.

(6) That subsequent to said hearing the *Oil Conservation Division* ~~Commission~~ entered Order No. R-5856 approving the unorthodox location of said well for the Morrow formation and providing for special rules and regulations limiting production therefrom.

(7) That subsequent to the entry of said Order No. R-5858, Gulf Oil Corporation, an offset operator, filed timely application for hearing De Novo of Case No. 6212, and the matter was set for hearing before the Commission.

(8) That the matter came on for hearing De Novo on February 7, 1979. January 24, 1979.

(9)(9) That the Morrow interval encountered in said Rio Well No. 1 is less productive than said interval in offsetting wells, *it will not adequately drain the N/2 of said Section 29.*

(10)(10) That the applicant seeks to drill a second well on the proration unit (Rio Well No. 2) to permit better drainage of said unit and to protect his correlative rights.

(11)(11) That a well at said unorthodox location will better enable applicant to produce the gas underlying the proration unit.

(12)(12) That ~~the~~ offset operators ~~have~~ objected to the proposed location.

(13)(9) That a well at the proposed location is at a standard location relative to the North and South lines of said Section 29.

(14)(10) That a well at the proposed location is 67 percent closer to the West line of said Section 29 than permitted by Division Rules and Regulations.

(15)(11) That a well at the proposed location will have an area of drainage in the Morrow formation which extends 67.2 net acres outside Section 29, an amount of acreage equivalent to 21 percent of a standard proration unit in said pool.

(16)(12) That if both said Rio Well No. 1 and Rio Well No. 2 are permitted to produce, it will result in the proration unit having an additional net 192.8 drainage acres' advantage over offsetting proration units, an amount of acres equivalent to 60 percent of a standard proration unit.

(17)(13) That to offset the advantage gained over the protesting offset operator, resulting from the drilling of a well at the proposed unorthodox location, and the production of two wells on the proration unit, production from the N/2 of said Section 29 should be limited from the Morrow formation.

(18)(14) That in the case where only said Rio Well No. 2 is produced, such limitation should be based upon the variation of the location from a standard location and the 67.2 net-acre encroachment described in Finding No. (10) above, and may best be accomplished by assigning the proration unit an ~~allowable~~ ^{production} limitation factor of 0.71 (100 percent North/South factor plus 33 percent East/West factor plus 79 percent net-acre factor, divided by 3).

(19)(15) That in the case where both said Rio Well No. 1 and Rio Well No. 2 are produced, such limitation should be based upon all the factors set out in Finding No. (14) above plus the 192.8 net additional drainage acres described in Finding No. (12) above, and may best be accomplished by assigning the

^{4. production} proration unit an allowable limitation factor of 0.63 (100 percent North/South factor plus 33 percent East/West factor plus 79 percent net-acre factor plus 40 percent net additional drainage factor, divided by 4).

(20)(16) That in the absence of any special rules and regulations for the prorationing of production from said undesignated Morrow Gas Pool, the aforesaid production limitation factor should be applied against said well's or wells' ability to produce into the pipeline as determined by periodic well tests.

(21) That the Special Rules and Regulations for the Application of a "Production Limitation Factor" To A Non-Permitted Gas Well Or Wells set out in Division Order No R-5856 ~~entered~~ entered November 9, ~~1978~~ 1978, provide the proper framework for application of the afore said production limitation factor.

(22) That said Special Rules and Regulations should be adopted and made a part of this order by reference.

(23) (17) That considering the risks involved in drilling to the Morrow formation, each ^{reasonable} ~~production unit~~ should have a minimum calculated allowable.

(24) (18) That at a sustained flowing rate of 500,000 cubic feet per day, a Morrow well in this area would pay-out in approximately 2.5 years.

(25) (19) That 2.5 years is a reasonable pay-out period for a Morrow well in this area.

See
under

(26) That Rule 13 of said Special Rules and Regulations should be amended to provide for a minimum allowable of ~~one million~~ ^{one-half} million cubic feet of gas per day rather than one million cubic feet.

(27)

insert ~~(26)~~ That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox gas well location for the Morrow formation is hereby approved for the Morris R. Antweil Rio Well No. 2 to be located at a point 660 feet from the North line and 660 feet from the West line of Section 29, Township 18 South, Range 25 East, NMPM, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

(2) That a 320-acre proration unit consisting of the N/2 of said Section 29 shall be simultaneously dedicated to the above-described well and to the Rio Well No. 1 located in Unit G of said Section 29.

(3) That said proration unit is hereby assigned a Production Limitation Factor in the Morrow Formation of 0.71 if only said Rio Well No. 2 is produced, and 0.63 if both said Rio Well No. 2 and applicant's Rio Well No. 1 located in Unit G of said Section 29 are produced.

(4) That in the absence of any Special Rules and Regulations prorating gas production in said undesignated Morrow Gas Pool, the ~~Special rules hereinafter promulgated shall apply.~~ Special Rules and Regulations for the Application of a "Production Limitation Factor" to a Non-Prorated Gas Well or Wells set out in Division Order No. R-5856, and hereby adopted by reference, shall apply.

(5) That Rule 13 of said Special Rules and Regulations is hereby amended to read in its entirety as follows:

~~"RULE 13. In no event shall the unit receive an allowable of less than one million cubic feet of gas per day."~~
one-half million cubic

(6) That jurisdiction of this cause is retained for the entry of such further orders as the ^{Commission} Division may deem necessary.

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

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6231
Order No. R-5831

APPLICATION OF YATES PETROLEUM
CORPORATION FOR AN UNORTHODOX GAS
WELL LOCATION, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on May 17, 1978,
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 29th day of September, 1978, the Division
Director, 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 Division has jurisdiction of this cause and the
subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks
approval of an unorthodox gas well location for its State "JM"
Well No. 1 to be located 660 feet from the North line and 660
feet from the East line of Section 25, Township 18 South, Range
24 East, NMPM, to test the Morrow formation, Undesignated Morrow
Gas Pool, Eddy County, New Mexico.

(3) That the N/2 of said Section 25 is to be dedicated to
the well.

(4) That a well at said unorthodox location will better
enable applicant to produce the gas underlying the proration unit.

(5) That the offset operators have objected to the proposed
location.

(6) That a well at the proposed location is at a standard
location relative to the North and South lines of said Section 25.

-2-

Case No. 6231

Order No. R-5831

(7) That a well at the proposed location is 67 percent closer to the East line of said Section 25 than permitted by Division Rules and Regulations.

(8) That a well at the proposed location will have an area of drainage in the Morrow formation which extends 67.2 net acres outside Section 25, an amount of acreage equivalent to 21 percent of a standard proration unit in said pool.

(9) That to offset the advantage gained over the protesting offset operators, production from the well at the proposed unorthodox location should be limited from the Morrow formation.

(10) That such limitation should be based upon the variation of the location from a standard location and the 67.2 net-acre encroachment described in Finding No. (9) above, and may best be accomplished by assigning a well at the proposed location an allowable limitation factor of 0.71 (100 percent North/South factor plus 33 percent East/West factor plus 79 percent net-acre factor divided by 3).

(11) That in the absence of any special rules and regulations for the prorationing of production from said Undesignated Morrow Gas Pool, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests.

(12) That the minimum calculated allowable for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.

(13) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox gas well location for the Morrow formation is hereby approved for the Yates Petroleum Corporation's State "JM" Well No. 1 to be located at a point 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, Undesignated Morrow Gas Pool, Eddy County, New Mexico.

(2) That the N/2 of said Section 25 shall be dedicated to the above-described well.

Case No. 6231
Order No. R-5831

(3) That said well is hereby assigned a Production Limitation Factor of 0.71 in the Morrow formation.

(4) That in the absence of any Special Rules and Regulations prorating gas production in said Undesignated Morrow Gas Pool, the Special rules hereinafter promulgated shall apply.

(5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shall apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PRORATED GAS WELL

APPLICATION OF RULES

RULE 1. These rules shall apply to the Yates Petroleum Corporation State "JM" Well No. 1, located 660 feet from the North line and 660 feet from the East line of Section 25, Township 18 South, Range 24 East, NMPM, Eddy County, New Mexico, which well's Production Limitation Factor of 0.71 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

ALLOWABLE PERIOD

RULE 2. The allowable period for the subject well shall be six months.

RULE 3. The year shall be divided into two allowable periods commencing at 7:00 o'clock a.m. on January 1 and July 1.

DETERMINATION OF DELIVERY CAPACITY

RULE 4. Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline pressure.

RULE 5. The well's "subsequent deliverability" shall be determined twice a year, and shall be equal to its highest single day's production during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.

-4-
Case No. 6231
Order No. R-5831

RULE 6. The Division Director may authorize special deliverability tests to be conducted upon a showing that the well has been worked over or that the subsequent deliverability determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.

RULE 7. The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness such tests.

CALCULATION AND ASSIGNMENT OF ALLOWABLES

RULE 8. The well's allowable shall commence upon the date of connection to a pipeline and when the operator has complied with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

RULE 9. The well's allowable during its first allowable period shall be determined by multiplying its initial deliverability by its production limitation factor.

RULE 10. The well's allowable during all ensuing allowable periods shall be determined by multiplying its latest subsequent deliverability, as determined under provisions of Rule 5, by its production limitation factor. If the well shall not have been producing for at least 60 days prior to the end of its first allowable period, the allowable for the second allowable period shall be determined in accordance with Rule 9.

RULE 11. Revision of allowable based upon special well tests shall become effective upon the date of such test provided the results of such test are filed with the Division's district office within 30 days after the date of the test; otherwise the date shall be the date the test report is received in said office.

RULE 12. Revised allowables based on special well tests shall remain effective until the beginning of the next allowable period.

RULE 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day.

BALANCING OF PRODUCTION

RULE 14. January 1 and July 1 of each year shall be known as the balancing dates.

Case No. 6231

Order No. R-5631

RULE 15. If the well has an underproduced status at the end of a six-month allowable period, it shall be allowed to carry such underproduction forward into the next period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any allowable period which remains unproduced at the end of the period shall be cancelled.

RULE 16. Production during any one month of an allowable period in excess of the monthly allowable assigned to the well shall be applied against the underproduction carried into the period in determining the amount of allowable, if any, to be cancelled.

RULE 17. If the well has an overproduced status at the end of a six-month allowable period, it shall be shut in until such overproduction is made up.

RULE 18. If, during any month, it is discovered that the well is overproduced in an amount exceeding three times its average monthly allowable, it shall be shut in during that month and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinabove.

RULE 19. The Director of the Division shall have authority to permit the well, if it is subject to shut-in pursuant to Rules 17 and 18 above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut-in would cause undue hardship, provided however, such permission shall be rescinded for the well if it has produced in excess of the monthly rate authorized by the Director.

RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules 17, 18, or 19 above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

GENERAL

RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the well. No further allowable shall be assigned to the well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.

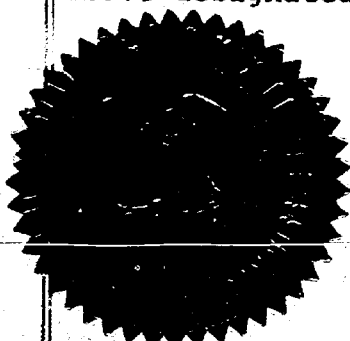
-6-

Case No. 6231

Order No. R-5831

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

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



S E A L

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
24 January 1979

COMMISSION HEARING

IN THE MATTER OF:

Application of Yates Petroleum
Corporation for an unorthodox gas
well location, Eddy County, New
Mexico.

CASE
6231
and
CASE
6232

BEFORE: Commissioner Ramey
Commissioner Arnold

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
308 Plaza Blanca (S.E.) 411-2462
Santa Fe, New Mexico 87501

1 MR. RAMEY: Call next Case 6231.

2 MS. TESCHENDORF: Case 6231. Application of
3 Yates Petroleum Corporation for an unorthodox gas well
4 location. Eddy County, New Mexico.

5 Upon application of Gulf Oil Corporation this
6 case will be heard de novo.

7 (There followed a brief recess.)

8 MR. RAMEY: We'll call also Case 6232.

9 MS. TESCHENDORF: Case 6232. Application of
10 Yates Petroleum Corporation for an unorthodox gas well
11 location, Eddy County, New Mexico.

12 Upon application of Gulf Oil Corporation this
13 case will be heard de novo.

14 MR. RAMEY: We have indications from the
15 parties concerned that the case should be continued until
16 February 7 at 9:00 a. m. in this same room.

17 With that the hearing is adjourned.

18 (Hearing concluded.)
19
20
21
22
23
24
25

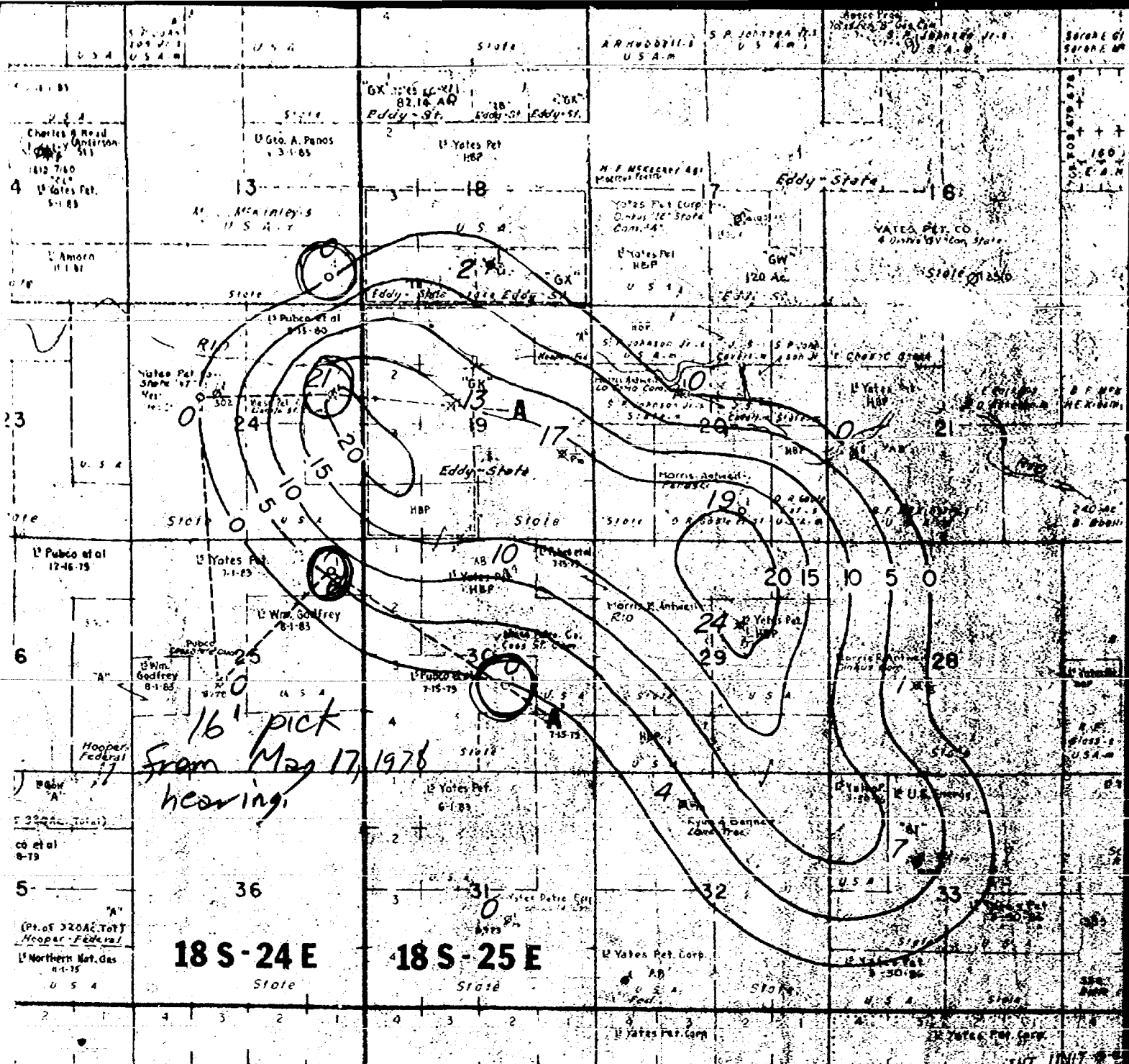
SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
2010 Plaza Blanca (806) 471-4442
Irving, Texas 75039

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Court Reporter, DO HEREBY
CERTIFY that the foregoing and attached Transcript of
Hearing before the Oil Conservation Division was reported
by me; that said transcript is a full, true, and correct
record of the hearing, prepared by me to the best of my
ability, knowledge, and skill, from my notes taken at the
time of the hearing.

Sally W. Boyd CSR
Sally W. Boyd, C.S.R.

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
8080 Plaza Blanca (665) 471-2482
Santa Fe, New Mexico 87501



BEFORE THE

OIL CONSERVATION COMMISSION

State of New Mexico

Case No. 6231

Subscribed by Gulf

Filed 2-7-79

EXHIBIT NO.

CASE

DATE

UNDERSIGNED MORROW EDDY CO., NEW MEXICO

ISOPACH OF MORROW SAND WITH 5% POROSITY OR >

CONTOUR INTERVAL 5'

SCALE: 1"=3000'

---CROSS-SECTION A-A'---

EXHIBIT 3
OIL CONSERVATION COMMISSION
SOME FIELD INFORMATION

Case No. 6231
Submitted by Cyuf
Hearing Date 4-24-74 2-7-79

PRODUCTION DATA
UNDESIGNATED MORROW POOL
T-18-S, R-25-E
EDDY COUNTY, NEW MEXICO

EXHIBIT 3
CASE NO. 6231 - 6232 DE NOVO
DATE 1-24-79
GULF OIL CORPORATION

YATES PETROLEUM				ANTRELL, MORRIS R.				BENNETT & RYAN				GULF OIL CORPORATION			
Federal AB Com.				Penasco				Rio Com.				Lonetree			
4 B 30	18S 25E	Cond.	BLS.	1 O 20	18S 25E	Cond.	BLS.	1 G 29	18S 25E	Cond.	BLS.	1 C 32	18S 25E	Cond.	BLS.
Gas	MCF/D	MCF	BLS.	Gas	MCF/D	MCF	BLS.	Gas	MCF/D	MCF	BLS.	Gas	MCF/D	MCF	BLS.

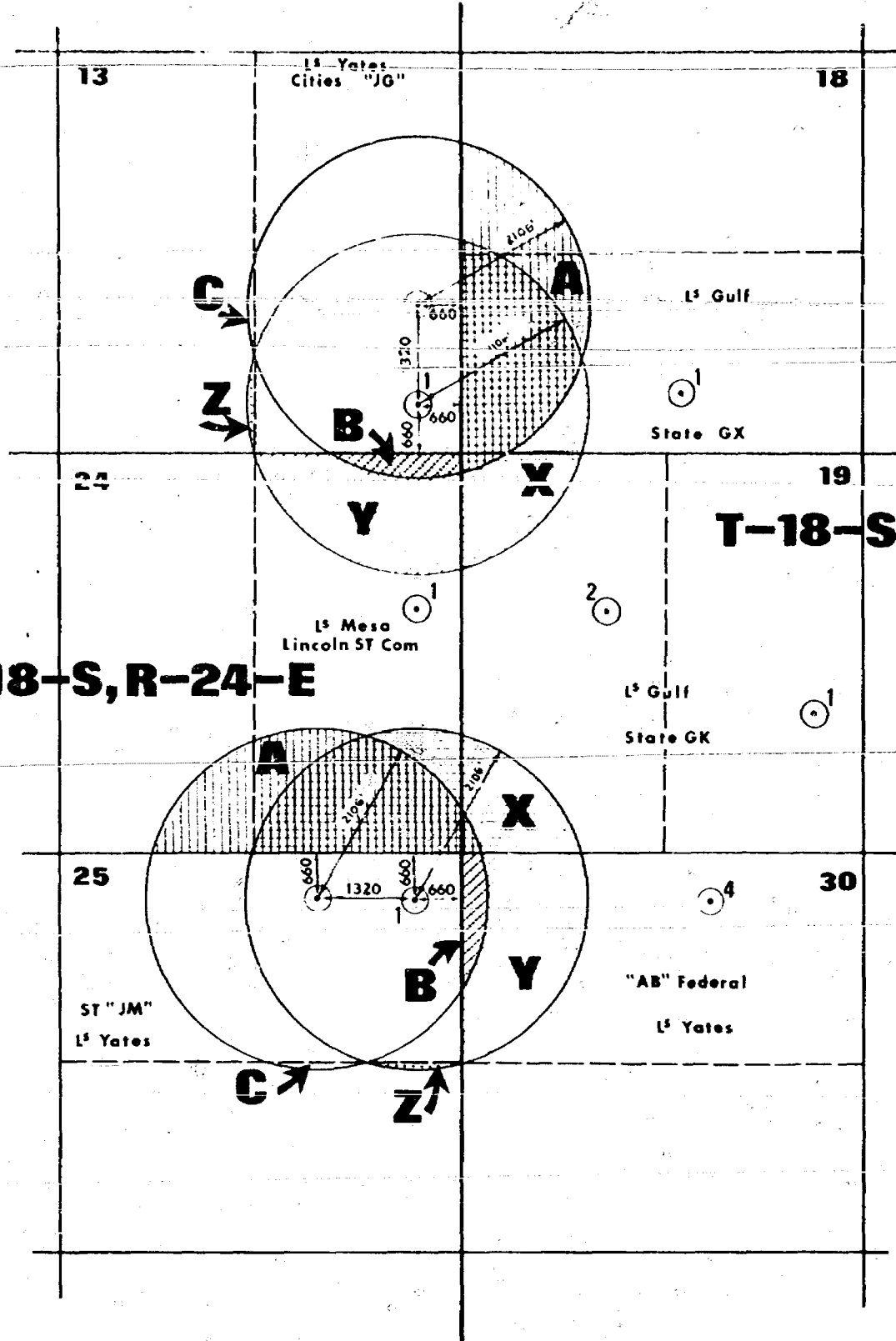
1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
September	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
October	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
November	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
December	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
January	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
February	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
March	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
April	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
May	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
June	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
July	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
August	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
September	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
October	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
November	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cum.	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Payout 350-450,000

T-18-S, R-24-E

T-18-S, R-25-E



EDDY COUNTY, NEW MEXICO

Scale: 1" = 2000'

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6231-6232 Exhibit No. 4
Submitted by Gulf
Hearing Date 1-24-79 2-7-79

EXHIBIT 4
CASE 6231 & 6232 De Novo
DATE 1-24-79

Gulf Oil Corporation

OIL COMPANY

6231-6232

Case No.

Subject

Hearing Date

GULF

1-24-79 2-7-79

EXHIBIT

5

CASE NO. 6231 & 6232

DE NOVO

DATE: 1-24-79

GULF OIL CORPORATION

RATEABLE TAKE FACTOR
PRODUCTIVE ACREAGE FACTOR
ALLOWABLE LIMITATION FACTOR

- 1) Drainage Encroachment Outside of 320 Acre Unit
By Well at Orthodox Location
- | | |
|----|---------------------|
| A. | 97.22 Acres |
| B. | 2.79 Acres |
| C. | 2.80 Acres |
| | <u>102.81 Acres</u> |

- 2) Drainage Encroachment Outside of 320 Acre Unit
By Well at Unorthodox Location
- | | |
|----|---------------------|
| X. | 97.22 Acres |
| Y. | 70.00 Acres |
| Z. | 2.79 Acres |
| | <u>170.01 Acres</u> |

- 3) Extra Drainage Encroachment of Well at Unorthodox Location
- | | |
|-----------------|----------------------|
| Unorthodox Well | 170.01 Acres |
| Orthodox Well | <u>-102.81 Acres</u> |
| | 67.20 Acres |

- 4) Rateable Take Factor

$$\begin{aligned} \text{RTF} &= \frac{(\text{Standard Unit Acres}) - (\text{Extra Drainage Encroachment Acres})}{\text{Standard Unit Acres}} \\ &= \frac{320.00 - 67.20}{320.00} \\ &= \frac{252.80}{320} \\ &= .79 \end{aligned}$$

- 5) Productive Acreage Factor

$$\begin{aligned} \text{PAF} &= \frac{\text{Unit Productive Acres}}{\text{Standard Unit Acres}} \\ &= \frac{86}{320} = .27 \end{aligned}$$

- 6) Allowable Limitation Factor

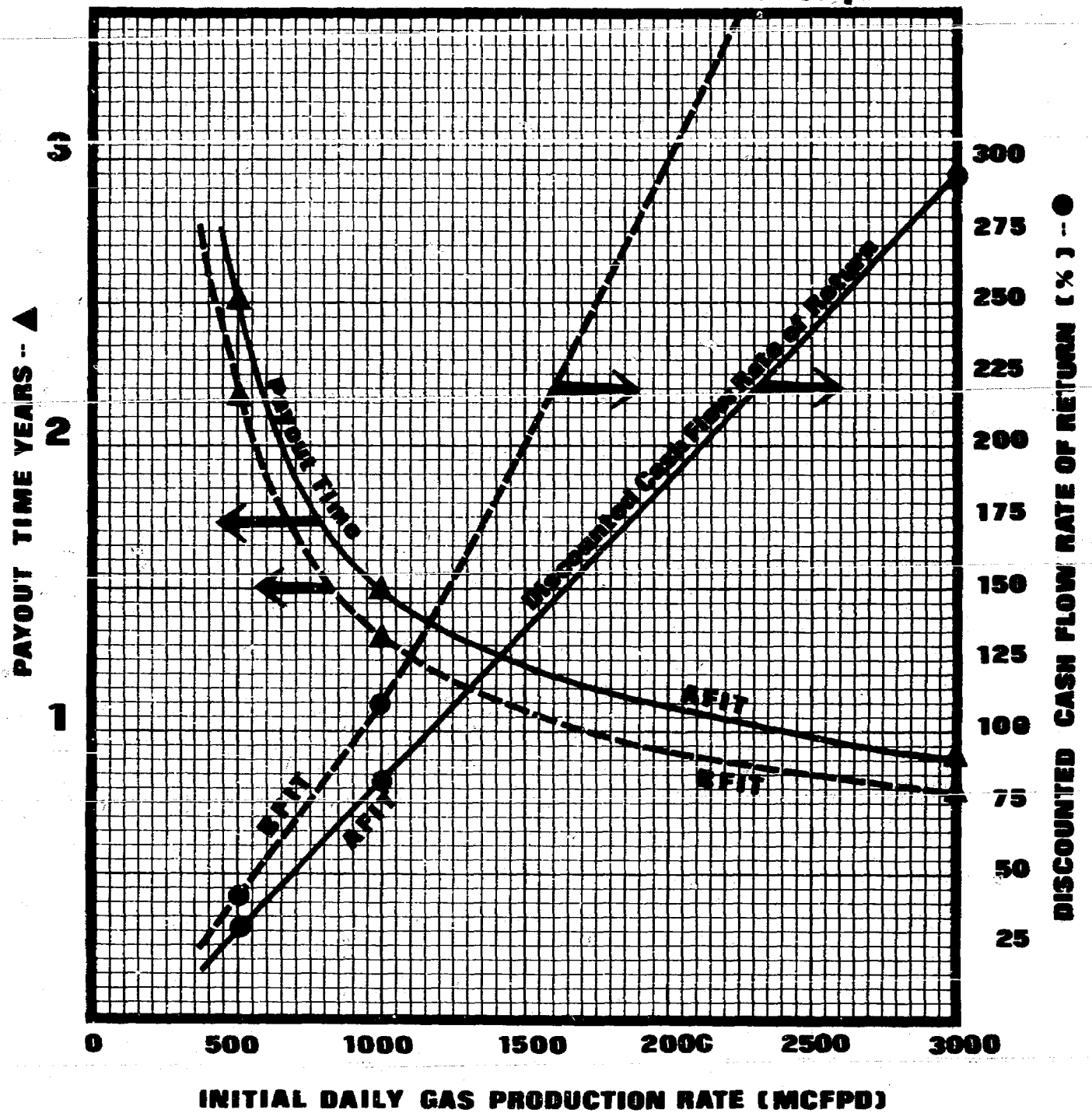
$$\begin{aligned} \text{ALF} &= (\text{Rateable Take Factor}) \times (\text{Productive Acreage Factor}) \\ &= (.79) \times (.27) = .21 \end{aligned}$$

6231-6232

GULF

1-24-79 2-7-79

PROFITABILITY STUDY
EXHIBIT 6
Case 6231-6232 De Novo
Date: 1-24-79
Gulf Oil Corporation



PROFITABILITY STUDY

Investment	\$ 430,000.00
Gas Price Per MCF - Initial	\$ 1.98
Condensate Price Per Barrel - Initial	\$ 12.95
Royalty	1/8
Taxes - Local Ad Valorem & Production	8.2%
Taxes - Federal Income	50.0%
Operating Expense Per Year - Initial	\$ 8,200.00

INITIAL DAILY GAS PRODUCTION RATE MCFPD	BEFORE FEDERAL INCOME TAX		AFTER FEDERAL INCOME TAX	
	Payout Time Years	DCF ROR* %	Payout Time Years	DCF ROR* %
500	2.2	41.2	2.5	30.8
1,000	1.3	113.2	1.5	84.8
3,000	0.8	>400	0.9	295.1

* DCF ROR - Discounted Cash Flow Rate Of Return

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 6231-6132
Submitted by GULF
Hearing Date 1-24-79

EXHIBIT

CASE NOS. 6231 & 6232

DE NOVO

DATE: 1-24-79 2-7-79

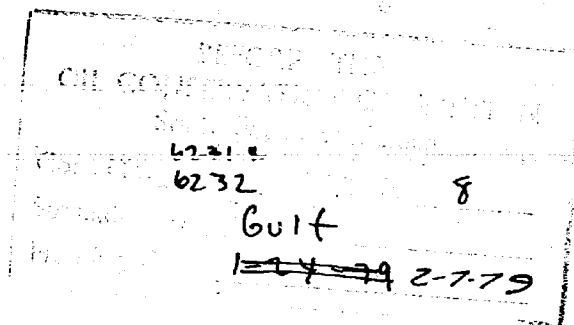
GULF OIL CORPORATION

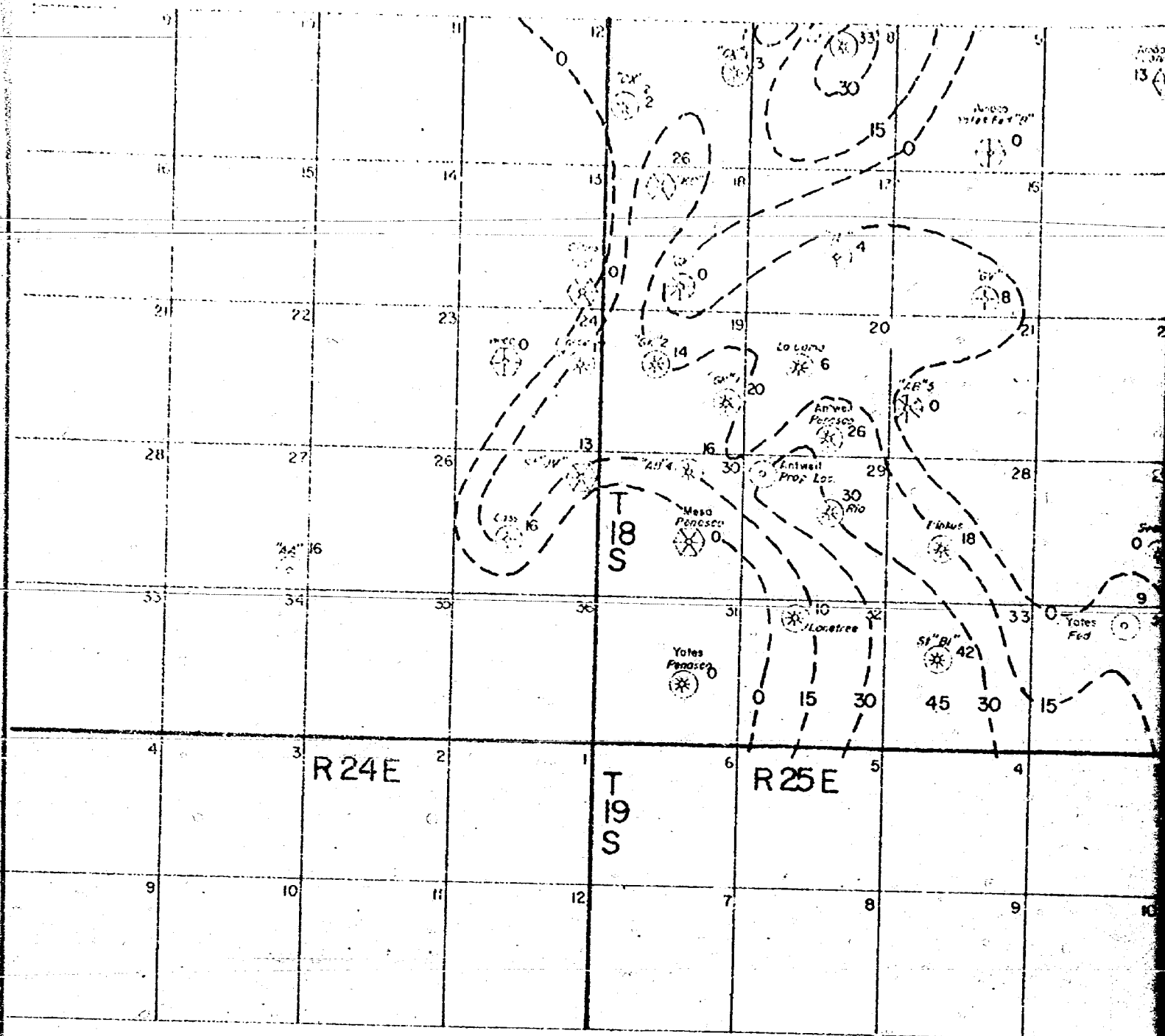
PROPOSED REVISION OF RULES

RULE 4: Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current and the well's initial deliverability shall be calculated against average pipeline pressure. Deliverability shall be the daily average of a 72 hour production test.

RULE 5: The well's "subsequent deliverability" shall be determined twice a year and shall be equal to the daily average of its highest 72 hour production rate during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.

RULE 13: Delete





MESA
PETROLEUM CO.


AFTER

CASS RANCH PROSPECT

STRUCTURE
Top/Mississippian
C.I. = 100'

ISOPACH
Morrow A-1
C.I. = 15'

DATE 4-10-78
SCALE 1" = 5000'

 Morrow Penetrations Drilled
After First Hearing

Morrow Gas Wells
Colored In Red

MAY 17, 1978
CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 1.

SIPES, WILLIAMSON & AYCOCK, INC.

CONSULTING ENGINEERS

Midland

1100 OHLS TOWER WEST
MIDLAND, TEXAS 79701
915 683-1841

May 17, 1978

1212 THE MAIN BUILDING
SUITE 902
HOUSTON, TEXAS 77002
713 658-8278

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Attention Mr. D. S. Nutter
Chief Engineer

Gentlemen:

Subject: Case No. 6231
Case No. 6232 ✓
Case No. 6213

This letter will serve to introduce the exhibits and present related testimony on the behalf of Mesa Petroleum Co.

Exhibit No. 1 is a combination structure and isopach map for the Morrow formation. A cross section trace is also shown on the map.

Exhibit No. 2 is a cross section of seven wells showing a correlation of the Morrow Conglomerate section between wells. The Mesa Lincoln State Comm. No. 1 has a fine grained sand section in the Morrow above the Conglomerate section. This section has not been included in the isopach or reserve calculations but should contribute to production.

Exhibit No. 3 shows available production from wells in the Cass Ranch area.

Exhibit No. 4 shows well locations, perforations, drill stem test information and test data for wells on the cross section (Exhibit No. 2).

Exhibit No. 5 shows 320-acre circular drainage areas for the requested unorthodox location and an orthodox location. Note the increase in the drainage encroachment on acreage outside the 320 unit assigned to the well.

Exhibit No. 6 calculates the ratable take factor that should be applied to a well's producing rate to account for the additional drainage encroachment acres that would result from drilling a well at an unorthodox location.

Joe Jeffries
Murray
Boaz

New Mexico Oil Conservation Commission
Mr. D. S. Nutter
May 17, 1978
Page 2

Exhibit No. 7 calculates the expected ultimate recovery from orthodox and unorthodox locations utilizing the isopach map (Exhibit No. 1). Case 6232 and 6213 show an increase in reserves for a well drilled at the orthodox location. Case 6231 shows a slight reduction in reserves for the orthodox location over the unorthodox location.

Summary and Requests:

1. Orthodox locations will not result in inferior recovery as compared to the unorthodox locations requested in Cases 6231, 6232 and 6213.
2. The field has been developed to date on orthodox locations and there is no reason to change now.
3. Continued development of this field on orthodox locations will prevent underground waste and protect correlative rights.
4. Mesa will farm in all three standard locations that are counterparts to the unorthodox locations requested in Cases 6231, 6232 and 6213.

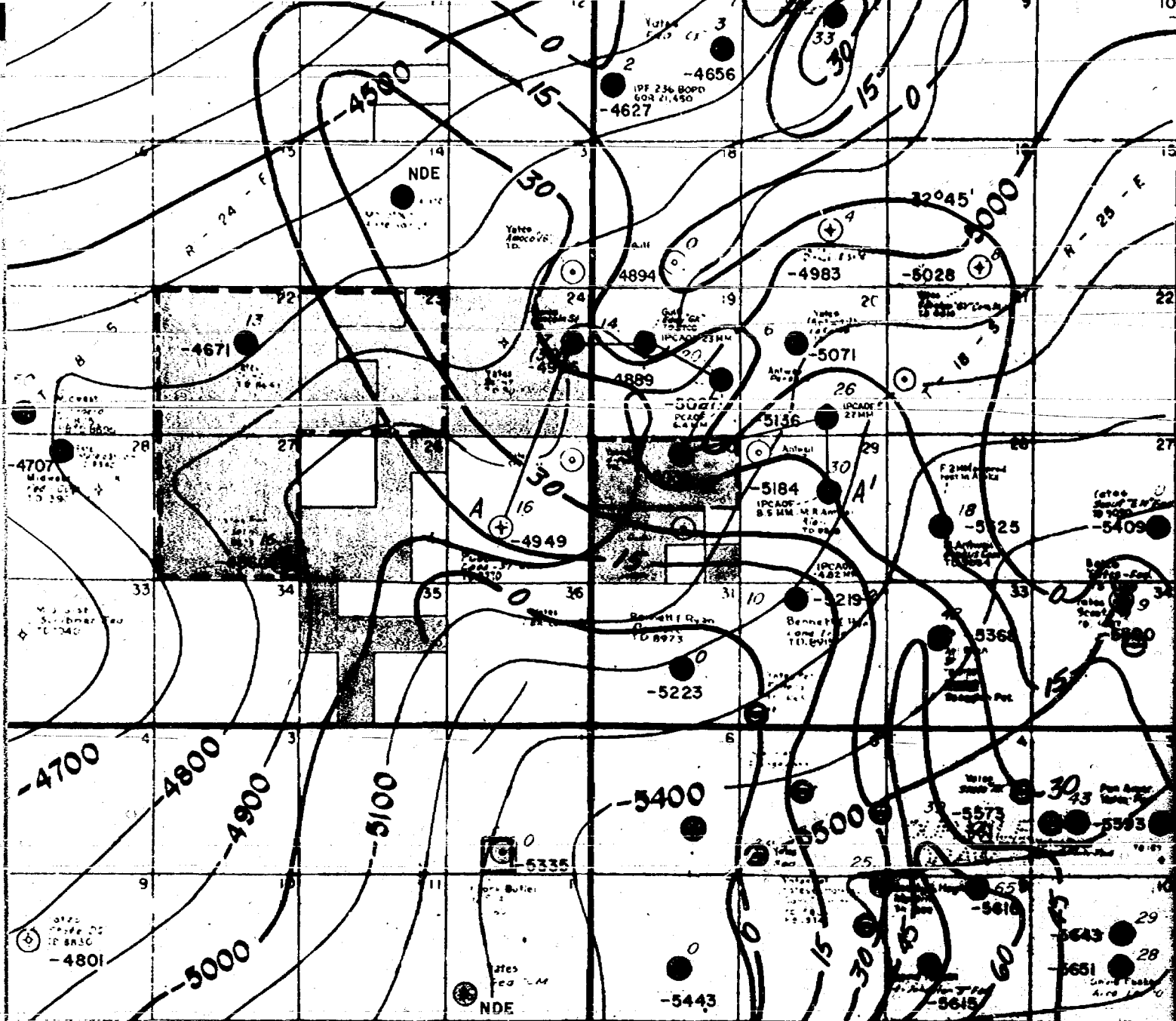
Respectfully submitted,

SIPES, WILLIAMSON & AYCOCK, INC.

Roy C. Williamson, Jr.
Roy C. Williamson, Jr., P.E.
Consultant for Mesa Petroleum Co.

/pw

attachments



PRODUCTION CODE

- San Andres
- Yeso
- Wolfcamp
- Cisco-Canyon
- Atoka
- Morrow A-I
- Morrow B-II
- Morrow B-III

MAY 17, 1978

CASE NO. 6231

CASE NO. 6232

CASE NO. 6213

EXHIBIT 1



MESA

PETROLEUM CO.

PERMIAN BASIN DIVISION



CASS RANCH PROSPECT

Eddy County, New Mexico

STRUCTURE

Top/Mississippian

C.I. = 100

ISOPACH

Morrow A-I

C.I. = 15

By J.W.J.
DATE 4-10-78

DRAWN BY T.D.M.
SCALE 1" = 5000'

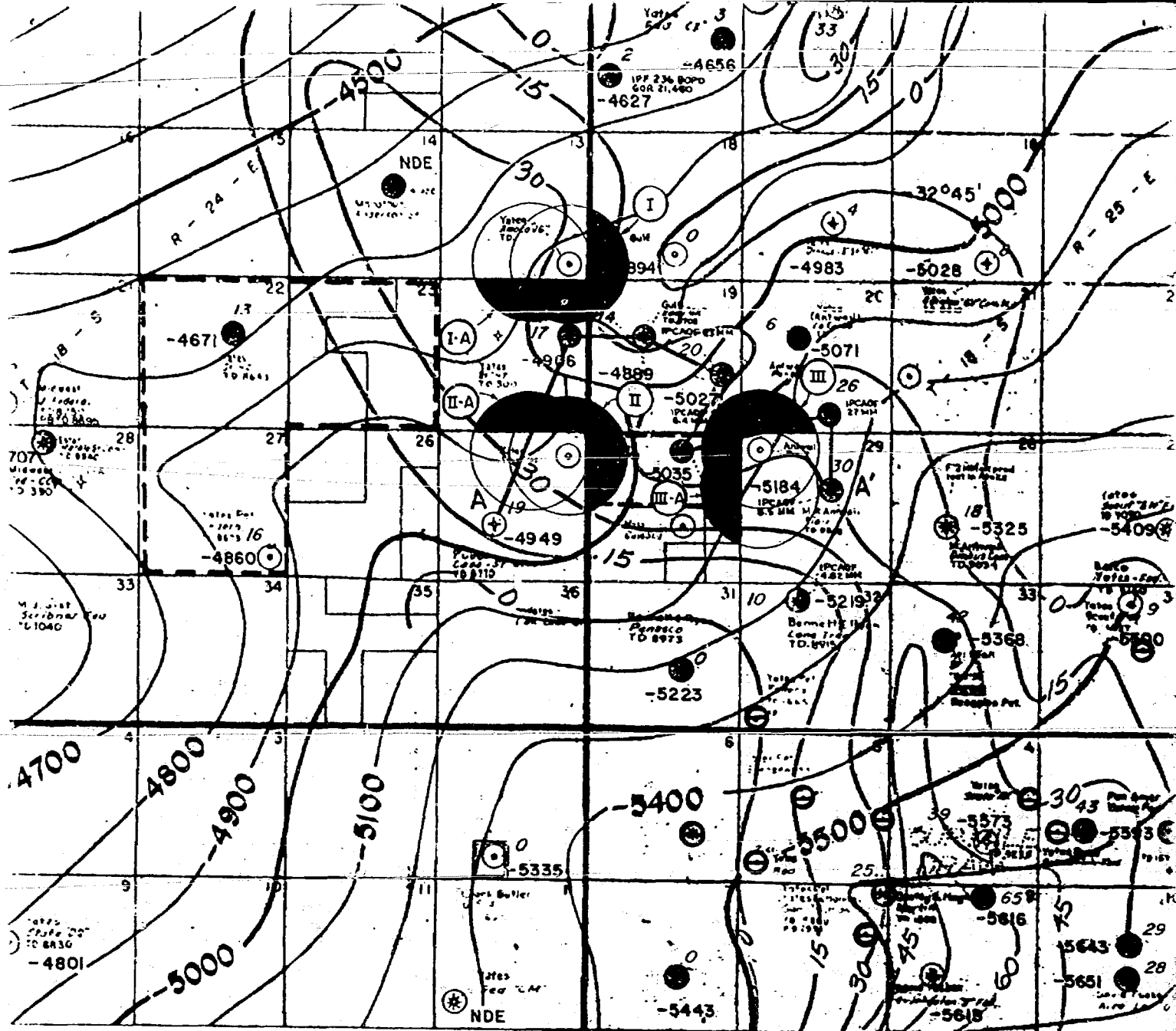
PRODUCTION DATA
UNDESIGNATED MORROW POOL - CASS RANCH AREA
T-18-S, R-25-E
EDDY COUNTY, NEW MEXICO

	ANTIWEIL, MORRIS R.				BENNETT & RYAN				GULF OIL CORPORATION			
	Penasco		Rio Com.		Lonetree		Eddy GK State Com.					
	1 O 20 18S 25E		1 G 29 18S 25E		1 C 32 18S 25E		1 I 19 18S 25E		2 F 19 18S 25E			
	GAS MCF	COND BBL	GAS MCF	COND BBL	GAS MCF	COND BBL	GAS MCF	COND BBL	GAS MCF	COND BBL	GAS MCF	COND BBL
1977												
September	69,733	224	27,226	131	---	---	---	---	---	---	---	---
October	183,897	557	47,260	93	---	---	---	---	---	---	---	---
November	159,355	464	33,089	52	13,419	---	---	---	---	---	---	---
December	151,703	428	29,460	45	11,055	---	---	---	---	---	---	---
1978												
January	150,037	428	25,653	37	6,225	---	29,835	105	---	---	---	---
February	126,387	346	19,708	31	4,397	---	62,867	170	---	---	---	---
March	141,973	350	21,467	31	2,882	---	47,087	99	---	---	---	---
TOTALS	983,085	2,797	203,863	420	37,978		139,789	374				

ROY C. WILLIAMSON, JR., P.E./cn MAY 17, 1978
1100 GIHLS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 3

CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 3



PRODUCTION CODE

- ⊖ San Andres
- Yeso
- Wolfcamp
- Cisco Canyon
- Atoka
- Morrow A-I
- Morrow B-II
- Morrow B-III

MAY 17, 1978
CASE NO. 6231
CASE NO. 6232
CASE NO. 6213
EXHIBIT 5



CASS RANCH PROSPECT

Eddy County, New Mexico

STRUCTURE
Top/Mississippian

C.I. = 100

ISOPACH

Morrow A-I

C.I. = 15

BY J.W.J. DRAWN BY Y.H.M.
DATE 4-10-78 SCALE 1" = 5000'

CASS RANCH AREA
EDDY COUNTY, NEW MEXICO
RATABLE TAKE FACTOR
AREA I & I-A

Orthodox Location - Drainage Encroachment Outside of 320 Unit = 86.78 ac.

Unorthodox Location - Drainage Encroachment Outside of 320 Unit = 151.86 ac.

Additional Drainage Encroachment of Well at Unorthodox Location = 65.08 ac.

Ratable Take Factor = $\frac{(\text{STD Unit, ac.}) - (\text{Additional Drainage Encroachment, ac.})}{\text{STD Unit, ac.}}$

$$= \frac{(320 \text{ ac.}) - (65.08 \text{ ac.})}{(320 \text{ ac.})}$$

$$= .7966*$$

* To Be Applied to Well Allowable for Standard 320 Acre Unit.

ROY C. WILLIAMSON, JR., P.E./cn MAY 17, 1978
1100 GIHLS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

CASE NO. 6232
EXHIBIT 6

CASE NO. 6232
EXHIBIT 6

CASS RANCH AREA
EDDY COUNTY, NEW MEXICO

RESERVE CALCULATIONS FOR
ORTHODOX AND UNORTHODOX LOCATIONS

AREA I & I-A

Section 13

Porosity, percent	14
Bottom-hole Pressure, psig	3290
Water Saturation, percent	15
Gas Gravity	.63
Drainage Area, acres	320
Gas Formation	
Volume Factor, $B_g = \frac{(35.35)(3305 \text{ psia})}{(0.86)(600^\circ R)} =$	226.4 $\frac{\text{SCF}}{\text{RCF}}$
$(43,560 \frac{\text{Ft}^3}{\text{AF}})(\text{Porosity } 0.14)(\text{Gas Saturation } 1-.15) = 5,183.6 \frac{\text{RCF}}{\text{AF}} (226.4 \frac{\text{SCF}}{\text{RCF}})$	
$= 1,174 \frac{\text{MCF}}{\text{AF}} (0.80 \text{ Rec.}) = 939 \frac{\text{MCF}}{\text{AF}}$	

Orthodox Location:

$$(320 \text{ Ac}) [(0.625)(30) + (0.375)(25)] (939 \frac{\text{MCF}}{\text{AF}}) = 8,451 \text{ MMCF}$$

Unorthodox Location:

$$(320 \text{ Ac})(22.5)(939 \frac{\text{MCF}}{\text{AF}}) = 6,761 \text{ MMCF}$$

Assumes (1) uniform porosity across entire 320 acres.

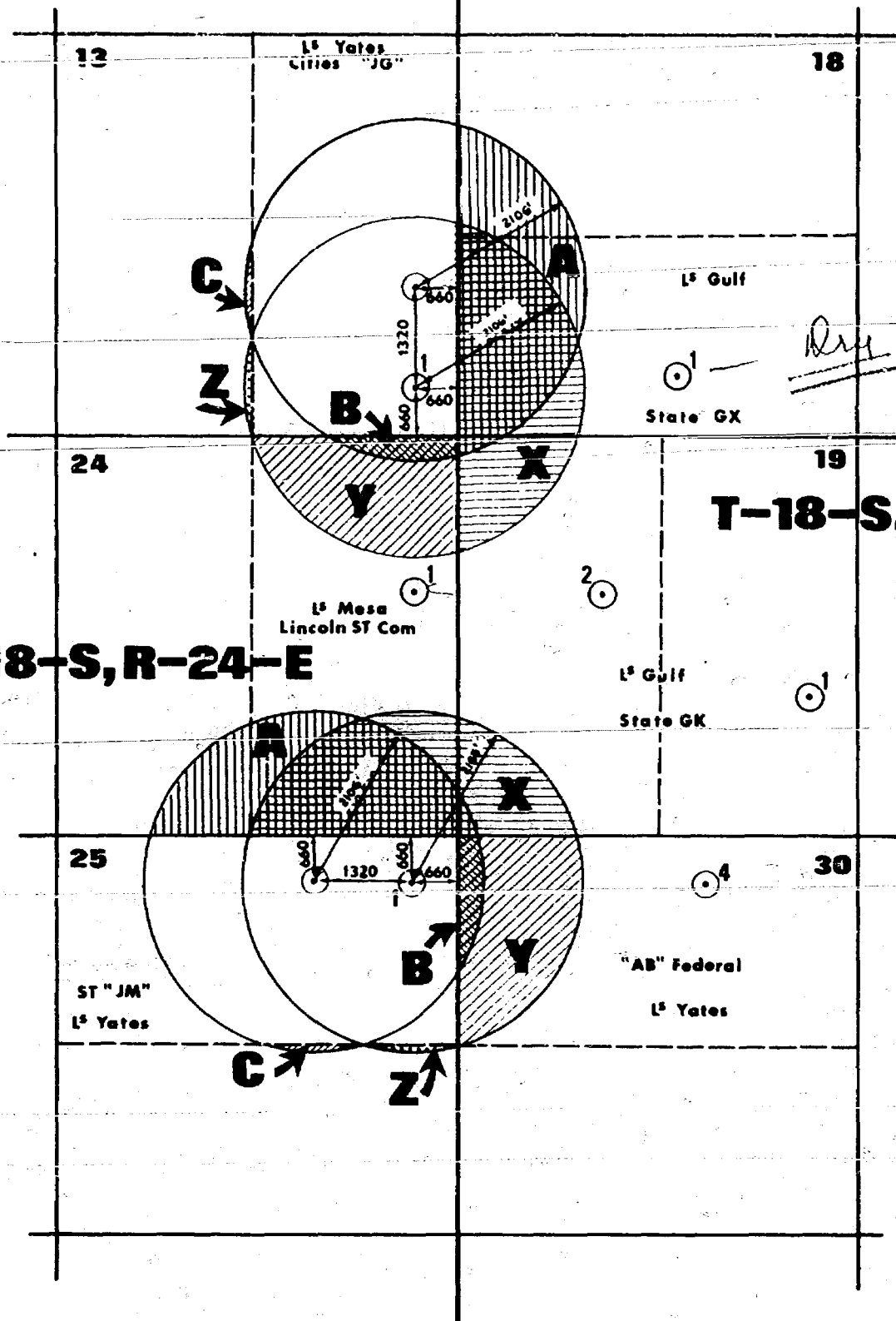
(2) Existence of sand across entire 320 acres. What is his experience in Morrow? Can he rely on volumetric calculations?

ROY C. WILLIAMSON, JR., P.E. MAY 17, 1978
1100 GIRLS TOWER WEST MIDLAND, TEXAS 79701
SIPES, WILLIAMSON & AYCOCK, INC.
for MESA PETROLEUM CO.

CASE NO. 6232
EXHIBIT 7

T-18-S, R-24-E

T-18-S, R-25-E



EDDY COUNTY, NEW MEXICO

Scale: 1" = 2000'

EXHIBIT 3
CASE 6231-C232
DATE 5-17-78

Gulf Oil Corporation

DOCKET: COMMISSION HEARING - WEDNESDAY - JANUARY 24, 1979

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases are continued from the December 12, 1978, Commission Hearing.

CASE 6231: (DE NOVO) (Continued and Readvertised)

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1, a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6232: (DE NOVO) (Continued and Readvertised)

Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JG" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6213: (DE NOVO) (Continued and Readvertised)

Application of Morris R. Antweil for an unorthodox location and simultaneous dedication, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Rio Well No. 2, a Morrow test to be drilled at a point 660 feet from the North and West lines of Section 29, Township 18 South, Range 25 East, Eddy County, New Mexico, the N/2 of said Section 29 to be simultaneously dedicated to the aforesaid well and to applicant's Rio Well No. 1 located in Unit G of Section 29.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico

IN THE MATTER OF:
Application of Yates Petroleum
Corporation for an unorthodox
well location, Eddy County, N.M.

Cases 6231 and
6232 DeNovo

SUBPOENA DUCES TECUM

TO: Yates Petroleum Corporation
Artesia, New Mexico

You are hereby commanded to appear before the Oil
Conservation Division, State Land Office, Santa Fe, New
Mexico on January 24, 1979 at the hour of 9:00 A.M. and
bring with you and produce the following documents:

- (a) Yates Petroleum Corporation State "JM" Well No. 1,
Section 25, T18S, R24E, Eddy County, New Mexico:
 - (1) Any and all logs including electric logs and
Gamma Ray Neutron Density Logs for subject well.
 - (2) Any and all tests, data, documents and infor-
mation including but not limited to open-hole
drill stem tests and production tests through
perforations conducted on said well.
- (b) Yates Petroleum Corporation Cities "JG" Well No. 1,
Section 13, T18S, R24E, Eddy County, New Mexico:
 - (1) Any and all logs including electric logs and
Gamma Ray Neutron Density Logs for subject well.
 - (2) Any and all tests, data, documents and informa-
tion including but not limited to open-hole
drill-stem tests and production tests through
performations conducted on said well.
- (c) Yates Petroleum Corporation "AB" Well No. 5, Section
21, T18S, R25E, Eddy County, New Mexico:
 - (1) Any and all logs including electric logs and
Gamma Ray Neutron Density Logs for subject well.

- (2) Any and all tests, data, documents and information including but not limited to open-hole drill-stem tests and production tests through perforations conducted on said well.

And this do you under penalty of law.

Done this 27th day of December, 1978 at Santa Fe,
New Mexico.

State of New Mexico
Oil Conservation Division

(SEAL)

Joe D. Ramey
Director

(Sheriff's return when service is made personally.)

STATE OF NEW MEXICO)
COUNTY OF _____) ss.

I, _____, Sheriff of _____
County, State of New Mexico, do hereby certify, that I served
the within subpoena by delivering a copy thereof, in the county
aforesaid, in person to _____
on _____.

Dated: _____

Fees: _____

Sheriff

By _____
Deputy

(Return when service is made personally
by other than sheriff.)

STATE OF NEW MEXICO)
COUNTY OF _____) ss.

_____ being duly sworn, upon
his oath says, I am over the age of eighteen years, I served
the within subpoena by delivering a copy thereof, in the county
aforesaid, in person to _____
on _____.

Fees: _____

Subscribed and sworn to before me this _____ day of
_____, 1978.

My Commission Expires: _____ Notary Public

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 12, 1978

COMMISSION HEARING

IN THE MATTER OF:

Application of Morris R. Antweil
for an unorthodox location and
simultaneous dedication, Eddy County
New Mexico.

CASE 6213
(DE NOVO)

Application of Yates Petroleum
Corporation for an unorthodox gas
well location, Eddy County, New
Mexico.

CASE 6231
(DE NOVO)

Application of Yates Petroleum
Corporation for an unorthodox
location, Eddy County, New Mexico.

CASE 6232
(DE NOVO)

BEFORE: Joe D. Ramey, Director

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil
Conservation Commission:

Lynn Teschendorf
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

MR. RAMEY: Call Cases 6213, 6231, and 6232.

MS. TESCHENDORF: Case 6213, application of Morris R. Antweil for an unorthodox location and simultaneous dedication, Eddy County, New Mexico. Upon application of Gulf Oil Corporation this case will be heard De Novo.

Case 6231, application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Upon application of Gulf Oil Corporation this case will be heard De Novo.

Case 6232, application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Upon application of Gulf Oil Corporation this case will be heard De Novo. It is requested that these cases be continued.

MR. RAMEY: This hearing is hereby continued indefinitely. The hearing is adjourned.

Dockets Nos. 41-78 and 42-78 are tentatively set for hearing on December 20, 1978 and January 3, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - DECEMBER 12, 1978

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 6213: (DE NOVO)

Application of Morris R. Antweil for an unorthodox location and simultaneous dedication, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Rio Well No. 2, a Morrow test to be drilled at a point 660 feet from the North and West lines of Section 29, Township 18 South, Range 25 East, Eddy County, New Mexico, the N/2 of said Section 29 to be simultaneously dedicated to the aforesaid well and to applicant's Rio Well No. 1 located in Unit G of Section 29.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6231: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "JM" Well No. 1, a Morrow test to be located 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, Eddy County, New Mexico, the N/2 of said Section 25 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6232: (DE NOVO)

Application of Yates Petroleum Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Cities "JC" Well No. 1 to be located 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, Fordinkus Field, Eddy County, New Mexico, the E/2 of said Section 13 to be dedicated to the well.

Upon application of Gulf Oil Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

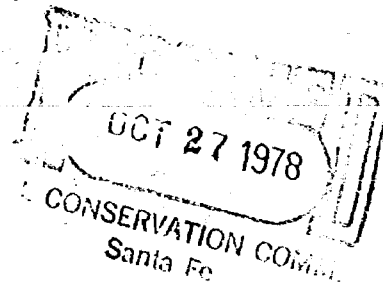
CAMPBELL, BINGAMAN AND BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
JEFF BINGAMAN
BRUCE D. BLACK
MICHAEL B. CAMPBELL

POST OFFICE BOX 2208
JEFFERSON PLACE
SANTA FE, NEW MEXICO 87501
TELEPHONE (505) 966-4421

October 27, 1978



Mr. Joe D. Ramey, Director
Oil Conservation Division
Department of Energy and Minerals
State of New Mexico
State Land Office Building
Santa Fe, New Mexico 87503

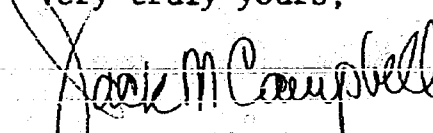
Re: Application of Yates Petroleum Company For An
Unorthodox Gas Well Location, Eddy County, New
Mexico, Case No. 6231.

Dear Mr. Ramey:

We are enclosing for filing Applications for De Novo hearing
in the captioned matter.

We would appreciate your taking the necessary steps to set
this matter down for hearing before the Oil Conservation
Commission.

Very truly yours,


Jack M. Campbell

JMC:ama
Enclosures

cc: Mr. A. J. Losee

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Application of Yates Petroleum)
Company for an unorthodox gas) Case No. 6231
well location, Eddy County,)
New Mexico.)

APPLICATION FOR DE NOVO HEARING

COMES NOW Gulf Oil Corporation (Gulf), a party to the above-styled matter and, pursuant to Chapter 255, Section 48, Laws of 1977 and Rule 1220 of the Oil Conservation Division, applies for a de novo hearing before the Commission in this matter, and as its grounds therefor states:

1. Order No. R-5831 issued in this matter on 29 September 1978 provides, among other things, under Rule 13 therein as follows:

"Rule 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day."

2. Said Rule 13 adversely affects applicant's correlative rights and has the effect of nullifying other provisions of said Order limiting Yates Petroleum Company's production from the proposed well.

WHEREFORE, Gulf seeks a hearing de novo in this matter before the New Mexico Oil Conservation Commission and, following such hearing, for an order modifying said proposed Rule 13, in such a manner that the correlative rights of Gulf shall be protected as provided by law.

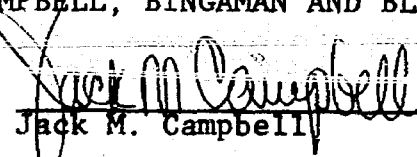
Respectfully submitted,

GULF OIL COMPANY

CAMPBELL, BINGAMAN AND BLACK, P.A.

Dated: October 27, 1978.

By


Jack M. Campbell

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Application of Yates Petroleum
Company for an unorthodox gas
well location, Eddy County,
New Mexico.)

) Case No. 6231
)

APPLICATION FOR DE NOVO HEARING

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Respectfully submitted,

GULF OIL COMPANY

CAMPBELL, BINGAMAN AND BLACK, P.A.

Dated: October 27, 1978.

By


Jack M. Campbell

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Application of Yates Petroleum
Company for an unorthodox gas
well location, Eddy County,
New Mexico.)

) Case No. 6231
)

APPLICATION FOR DE NOVO HEARING

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Respectfully submitted,

GULF OIL COMPANY

CAMPBELL, BINGAMAN AND BLACK. P A

Dated: October 27, 1978.

By


Jack M. Campbell

Case 6237

LAW OFFICES

LOSEE & CARSON, P.A.

A.J. LOSEE

JOEL M. CARSON

CHAD DICKERSON

300 AMERICAN HOME BUILDING

P. O. DRAWER 239

ARTESIA, NEW MEXICO 88210

AREA CODE 505

746-3508

21 April 1978

Mr. Joe D. Ramey, Director
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

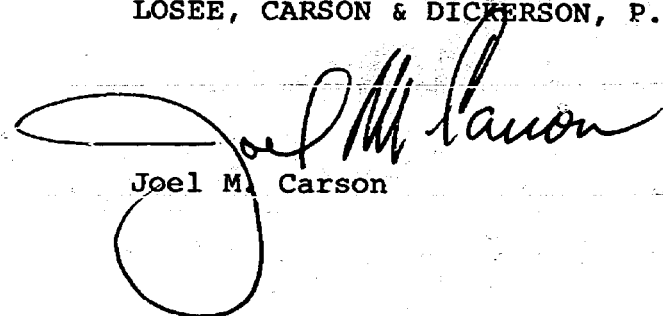
Dear Mr. Ramey:

Enclosed for filing, please find three copies of Application of Yates Petroleum Corporation for an unorthodox gas well location for its State "JM" No. 1 Well in Eddy County, New Mexico.

We ask that this case be set for hearing before an examiner and that we be furnished with a copy of the docket for said hearing.

Yours truly,

LOSEE, CARSON & DICKERSON, P.A.



Joel M. Carson

JMC:bjm
Enclosures

cc w/enclosure: Mr. Randy Patterson

BEFORE THE OIL CONSERVATION DIVISION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
YATES PETROLEUM CORPORATION FOR AN
UNORTHODOX GAS WELL LOCATION, EDDY
COUNTY, NEW MEXICO

CASE NO. 6231

APPLICATION

COMES NOW YATES PETROLEUM CORPORATION, by its attorneys,
and in support hereof, respectfully states:

1. Applicant is the operator of the Morrow formation
underlying:

Township 18 South, Range 24 East, N.M.P.M.

Section 25: N/2

and proposes to drill its State "JM" No. 1 Well at a point
located 660 feet from the North line and 660 feet from the
East line of said Section 25.

2. The applicant seeks an exception to the well loca-
tion requirements of Rule 104-C.2(a) of the Oil Conservation
Division to permit the drilling of the well at the above men-
tioned unorthodox location to a depth sufficient to adequately
test the Morrow formation.

3. A standard 320-acre gas proration unit comprising
the N/2 of said Section 25 should be dedicated to such well or
to such lesser portion thereof as is reasonably shown to be
reasonably productive of gas.

4. The approval of this application will afford
applicant the opportunity to produce its just and equitable

share of gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, applicant prays:

A. That this application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That upon hearing the Division enter its order granting applicant permission to drill a well 660 feet from the North line and 660 feet from the East line of said Section 25 and to dedicate the N/2 of Section 25, which is reasonably presumed to be productive of gas from the Morrow formation.

C. And for such other relief as may be just in the premises.

YATES PETROLEUM CORPORATION

By: 

Joel M. Carson

LOSEE, CARSON & DICKERSON, P.A.
P. O. Drawer 239
Artesia, New Mexico 88210

Attorneys for Applicant