CASE 4930: Application of YATES PETROLEUM FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, N.M.

CASE No. 4930

Application,

Transcripts,

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
March 28, 1973

EXAMINER HEARING

Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico.	Case No. 4930

BEFORE: Daniel S. Nutter
Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE , NEW MEXICO

Hearing Date MARCH 28, 1973 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
H.K. Huey	Sun Oil	Dallas
D.R. Autry	Sun Oil Co.	Midland, Tx.
J.C. Raney	Pennzoil Co.	Midland, Tex.
J. E. Sperling	Modrall, Sperling et al	Alb.
John Seerey	Mobil	Midland
Bruce Barthel	"	"
Victor T. Lyon	Continental Oil Co	Hobbs
Clarence Hinkle	Atlantic Richfield	Roswell
[illegible] Jennings	[illegible]	"
Neil [illegible] Toler	Shenandoah Oil Corp	Ft. Worth
Jerry [illegible]	Atlantic Richfield	Midland
Kenneth L Peters	Texaco Inc	Hobbs
Booker Kelly	White Koch Kelly & McCarthy	SF
Nina [illegible]	J W Bynum	SF Austin
[illegible] Losee	Losee & Carson	Artesia
Eddie Mahfood	Yates Petroleum	Artesia

MR. NUTTER: Case 4930: Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico.

MR. LOSEE: A. J. Losee, Artesia, New Mexico, appearing on behalf of the Applicant. We have one witness to be sworn.

EDWARD MAHFOOD

was called as a witness and after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q. Will you state your name, please.

A. Eddie Mahfood.

Q. Where do you leave, Mr. Mahfood?

A. Artesia, New Mexico.

Q. What is your occupation?

A. Petroleum engineer.

Q. Are you employed by Yates Petroleum Corporation?

A. Yes, I am.

Q. Mr. Mahfood, you have presented testimony before the Commission and have had your qualifications accepted, have you not?

A. Yes.

MR. LOSEE: Are Mr. Mahfood's qualifications acceptable, Mr. Examiner?

MR. NUTTER: Yes, they are.

Q. (By Mr. Losee) What is the purpose of this application in Case 4930, Mr. Mahfood?

A. Yates Petroleum seeks permission to drill a well in an unorthodox location. This location would be 1650 feet from the north line and 660 feet from the west line of Section 18, Township 18 South, Range 26 East.

Q. Is this in the West Atoka-Morrow Gas Pool?

A. Yes, this would be in the West Atoka-Morrow Gas Pool.

Q. What acreage do you propose to dedicate to this well?

A. The north half of Section 18 which would be 320 acres.

Q. Would you please refer to what has been marked as Exhibit 1 and explain briefly what is shown.

A. Exhibit 1 is a land map of the area in question and the triangles circled in red are the 320 acres proposed for this dedication and the little red dot would be the location of the proposed well.

Q. And it shows the offset wells and leases?

A. Yes, sir.

Q. Please refer to what has been marked as Exhibit 2 and explain what that is.

A. Exhibit 2 is an isopack prepared on the top of the morrow. The West Atoka would be in the red contour and this blue contour would be the Atoka-Pennsylvanian fields. The yellow contour indicates a channel. This is a general description for a contiguous sand body that cuts the

land sand.

Q. How long has that Atoka-Pennsylvanian field been producing approximately?

A. Since about February 1970.

Q. I mean the older depleted field?

A. Since the early Sixties.

Q. And the West Atoka, when was that discovered?

A. In 1969. That commercially went on production in February, 1970.

Q. Do you know what the discovery well was?

A. I beg your pardon, it was February of 1972. I have my dates mixed up there. I'm sorry. What was the question?

Q. What was the discovery well in the West Atoka-Morrow field?

A. The Mountain States Federal Well completed in October, 1970.

Q. Are the characteristics of the morrow in the two fields similar as to both sands and channel?

A. Yes.

Q. And your yellow lines in the West Atoka field portray the channel running through that field?

A. Correct.

Q. Would you point out on this exhibit the producing wells, first in the channel.

A. The Brown-Yates was the first well produced from the channel and it is located in the southwest quarter of Section 24.

MR. NUTTER: The southeast quarter of Section 24.

THE WITNESS: I beg your pardon. It's the Fasken No. 1 Brown-Yates.

Q. (By Mr. Losee) While you are doing that, how much gas has been produced from that well?

A. The Brown-Yates has produced two billion nine hundred eighty-one million through January.

Q. That's approximately a year's production?

A. That's correct.

Q. Go ahead and point out any other channel wells in this field.

A. I beg your pardon, that's two years' production. We had some production prior to that.

Q. So that's two years' production?

A. Yes.

Q. Go ahead and point out any other producing wells in the channel.

A. The C & K No. 1 has just now been completed in the channel and the Kincaid No. 2 well is drilled into the channel, but not yet completed.

Q. All right. The C & K well is in the southwest quarter of Section 18, is that correct?

A. That's correct.

Q. And the Yates-Kincaid BI is in the northeast quarter of Section 25?

A. Correct.
Q. So there is no production history on those wells?
A. No. The C & K was potentialed at 15.4 million per day.
Q. Point out the producing wells in the West Atoka.
A. The Mountain States McCaw No. 1 in Section 19 has produced 1.8 billion cubic feet of gas.
Q. Since it was placed on production?
A. Yes.
Q. What other wells are there?
A. The Fundamental Thorne No. 1 was drilled in November, 1968, but was non-commercial. The Faskin-Pennzoil 13 is completed in the bet sand and it has accumulated 65 million cubic feet of gas.
Q. That is in the southeast quarter of Section 13?
A. Correct. And also in Section 13, the Pennzoil-Vandiver is a gas well and has produced 41 million cubic feet of gas. This goes to show that the sand does have gas in place and will give up gas. The channel completions, however, are far superior in permeability, therefore, they are much more efficient producers, much more desirable.
Q. And the purpose for this unorthodox location then is to get into this channel?
A. Yes, sir.
Q. Refer to what has been marked as Exhibit 3A and explain what is shown on this log.

A. Exhibit 3A is an electric log of the C & K Vandiver No. 1 well. The top of the morrow is indicated with an orange line at 8,696 feet. The top of the channel is indicated with a green line at 8,729 feet. The green gamma ray indicates the nature, the clean nature of this channel sand.

Q. And this is a well that is just being placed on production now?

A. That's correct.

Q. Refer to Exhibit 3B and explain what that is.

A. Exhibit 3B is an electric log of the Faskin-Yates No. 1 well in Section 24 of Township 18, Range 25. Again the top of the morrow is indicated with the orange line and the top of the channel is indicated with the green line. We see the clean channel sand indicated by that continuous green gamma ray.

Q. And this is a well that has produced in something over a year 2.9 billion cubic feet of gas?

A. This is correct.

Q. Return to Exhibit 3C and explain what that is.

A. Exhibit 3C is an electric log of the Yates-Kincaid No. 2. The top of the morrow is indicated by the orange line again and it is at 8,838 feet. The top of the channel is at 8,888 feet.

Q. Did you have any water when you drill stemmed this well?

A. Yes, at both the top of the hole where we drill stemmed three times and at the bottom part.

Q. Exhibit 3D is an electric log of the Mountain States-McCaw No. 1, is it not?

A. Yes. The top of the morrow again is indicated in orange. Here we do not have any continuous green gamma ray. This means that the channel is absent in this well. The parts marked in green would be beach sands which are interconnected with the channel.

Q. Turn to Exhibit 3E and explain what that shows.

A. This is a log of the David Faskin-Penns Oil No. 13 in Section 13, Township 18, Range 25. Again the top of the morrow is indicated in orange and we see several broken pieces of green on the gamma ray. It is not continuous, so we have concluded that this well is not in the channel.

Q. Would you turn to Exhibit 3F and explain what that is.

A. This is a log of the Penns Oil-Vandiver No. 1 well. Again we have the top of the morrow in orange and we see several stringers coated green on the gamma ray. Again the green is not continuous, so we have concluded it is not in the channel, but that these green horizons are beach sands interconnected with the channel.

Q. Mr. Mahfood, do you have an opinion as to whether the entire north half of Section 18 will contribute gas from the morrow to the well drilled at the proposed unorthodox

location?

A. Yes, sir. The map as we have drawn it shows the sand to be beach sand and that it is continued in the north half of Section 18 and the channel penetrates this beach sand and affords sufficient drainage of the north half of Section 18.

Q. And the purpose for your location is to penetrate the channel which is the more productive portion of the morrow in Section 18?

A. Correct.

Q. And is it your opinion that a well at this location would drain the entire north half of Section 18 efficiently and economically?

A. Yes, sir.

Q. Now, the C & K No. 1 was drilled at an unorthodox location, was it not?

A. This is correct.

Q. And that was pursuant to Commission Order No. R-4455?

A. This is correct, I believe.

Q. And that order did not provide any penalty for that unorthodox location, is that correct?

A. That's correct.

MR. LOSEE: At this time we would like to ask the Examiner to take administrative notice of the testimony and exhibits in Case No. 4863 supporting Order R-4455.

MR. NUTTER: We will take administrative notice of the contents of Case No. 4863.

Q. (By Mr. Losee) Do you feel it is necessary for the well to be drilled at this location, Mr. Mahfood, to protect the correlative rights of the interest owners in the north half of Section 18?

A. Yes, I think so because the south half is being drained from the well in the channel in the north half.

Q. Were Exhibits 1 through 3 and 3A through 3F prepared by you or under your supervision?

A. Yes, they were prepared under my supervision.

MR. LOSEE: We move for the introduction of Exhibits 1 through 3F.

MR. NUTTER: Without objection Applicant's Exhibits 1 through 3F will be admitted.

(Whereupon Applicant's Exhibits 1 through 3F were admitted in evidence.)

CROSS EXAMINATION

BY MR. NUTTER:

Q. You mentioned the Fundamental well as not being commercial. Did it encounter the morrow?

A. Yes, it tested, if I remember correctly, 400,000. This was before I joined the company though.

Q. Do you know when that well was drilled?

A. I believe November, 1968.

Q. You show a dry hole in the northwest of the southwest of Section 18, where is that well?
A. I believe that's a San Andres completion.
Q. What is this little "6" that you have indicated there by the Fundamental-Thorne well?
A. This is feet of pay.
Q. Feet of pay?
A. Yes.
Q. So according to your interpretation, the 6-foot contour line would cross the extreme southeast corner of your proposed proration unit?
A. The north half is what we are dedicating.
Q. The 6-foot line would just be across the corner there (indicating)?
A. Almost, yes.
Q. So you feel that the entire 320 acres would be productive?
A. Yes, sir.
MR. NUTTER: Are there any questions of Mr. Mahfood?
(No response)
MR. NUTTER: He may be excused.
(Witness excused.)
MR. NUTTER: Do you have anything further, Mr. Losee?
MR. LOSEE: No, sir.
MR. NUTTER: Does anyone wish to offer any testimony in Case 4930?

(No response)

MR. NUTTER: Case 4930 will be taken under advisement and the hearing is adjourned.

* * * *

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, RICHARD E. McCORMICK, a Certified Shorthand Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Richard E. McCormick
Certified Shorthand Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4930, heard by me on 3/28, 1973.

....., Examiner
New Mexico Oil Conservation Commission

I N D E X

E X H I B I T S

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

April 19, 1973

Re: Case No. 4930
Order No. R-4508
Applicant:

Yates Petroleum Corporation

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

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

OTHER

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 4930
Order No. R-4508

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 March 28, 1973, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 19th day of April, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks approval of an unorthodox gas well location for a proposed well to be located 1650 feet from the North line and 660 feet from the West line of Section 18, Township 18 South, Range 26 East, NMPM, West Atoka-Morrow gas pool, Eddy County, New Mexico.

(3) That a well drilled at the proposed non-standard location should encounter additional pay in the Morrow which would not be encountered in a well drilled at a standard location and should, therefore, result in greater ultimate recovery of gas, thereby preventing waste.

(4) That the N/2 of said Section 18 is to be dedicated to the well.

(5) That a well drilled at the proposed unorthodox location can efficiently and economically drain the N/2 of said Section 18.

(6) That approval of the subject application will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject West Atoka-Morrow gas 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 is hereby approved for Yates Petroleum Corporation's proposed well in the West Atoka-Morrow gas pool at a point 1650 feet from the North line and 660 feet from the West line of Section 18, Township 18 South, Range 26 East, NMPM, Eddy County, New Mexico.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

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

S E A L

dr/

CASE 4929: Application of Atlantic Richfield Company for simultaneous well dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the simultaneous dedication of four wells to a standard 640-acre gas proration unit comprising all of Section 36, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, said wells being the McDonald State Nos. 3, 4, 5, and 6 located in Units P, M, D, and B, respectively, of said Section 36, with unit production to be taken from said wells in any proportion.

CASE 4930: 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 a proposed gas well at a point 1650 feet from the North line and 660 feet from the West line of Section 18, Township 18 South, Range 26 East, West Atoka-Morrow Gas Pool, Eddy County, New Mexico.

CASE 4931: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea County, New Mexico:

(a) Create a new pool in Lea County, New Mexico, classified as an oil pool for Abo production and designated as the Townsend-Abo Pool. The discovery well is the Remunda Oil and Gas Company Eidson Ranch No. 1 located in Unit E of Section 26, Township 16 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 26: NW/4

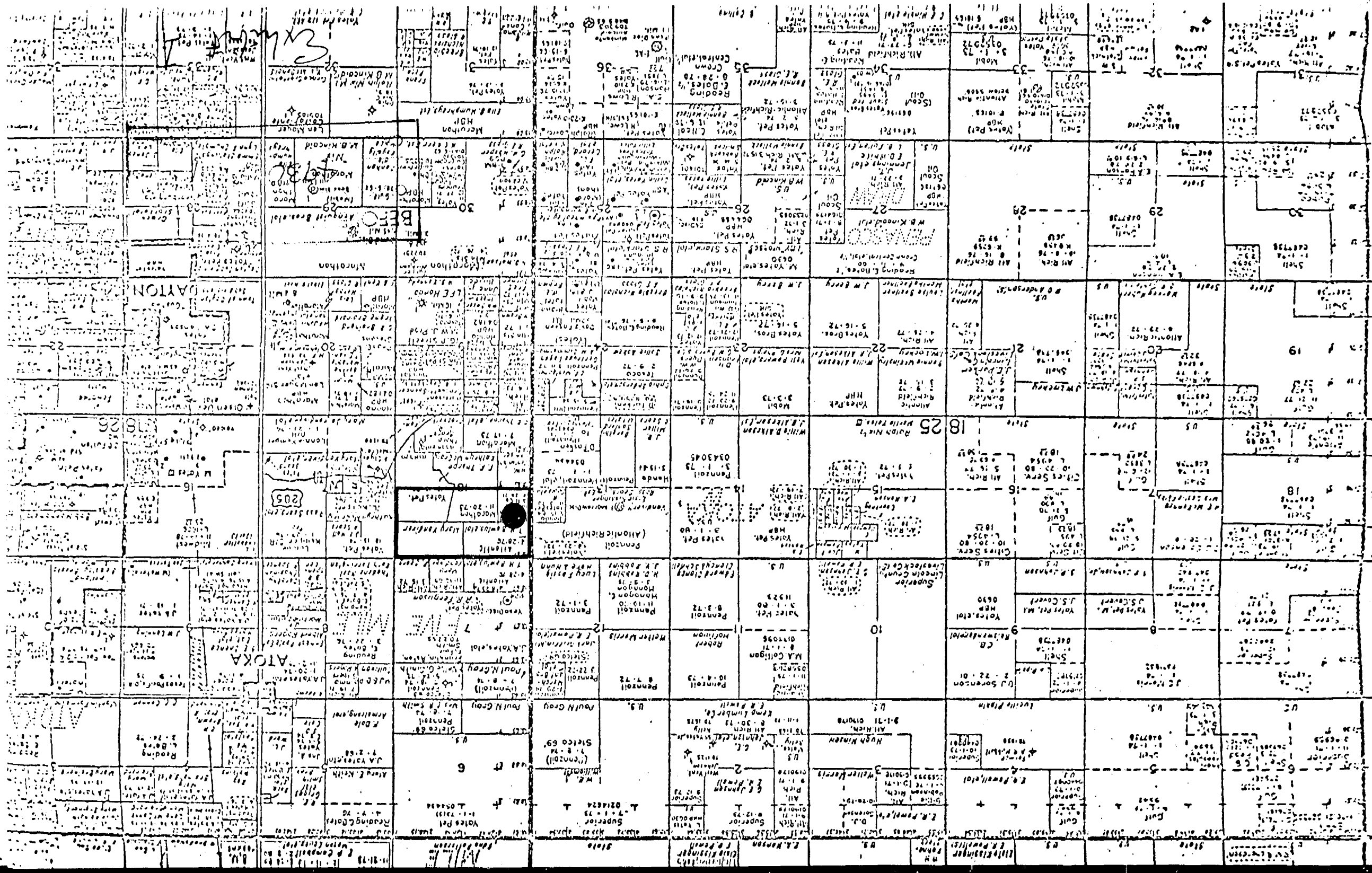
(b) Create a new pool in Lea County, New Mexico, classified as an oil pool for Pennsylvanian production and designated as the Townsend-Pennsylvanian Pool. The discovery well is the R. Williamson and J. Williamson Harrod State No. 1 located in Unit U of Section 4, Township 16 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 4: SW/4

(c) Extend the vertical limits of the Tubb Gas Pool in Lea County, New Mexico, to include the entire interval from 100 feet above the Tubb marker to the top of the Drinkard formation.

(d) Extend the Crosby Fusselman Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 33: NE/4



C & K #1

VANDIVER 18 18-26

9678

TOP MOD-ROCK SAND SHALE INTERVAL

8700

9722

TOP "B" ZONE CHANN.

8750

GAMMA RAY

CALIPER

100 CU. FT. INTEGRATOR

8800

8850

8900

26'

18'

Exhibit 3a

FASKEN #1

BROWN-YATES 24 18-25

8800

8900

9000

Caliper

GR

F. R. (GR)

F. R. (CALIPER)

Porosity

SONIC

F. R. (SONIC)

Exhibit 36

YATES #2
RINCAID BI COM
(SIDETRACKED) 25 18-25

90
8700
10
20
30
40
8750
60
70
80
90
8800
10
20
30
6814 T.V.D.
6838 M.D.
TOP 40
MORROW SAND-
UNIT E
CHANNEL
8850
60
70
80
8902
8926
T.V.D. PLUG BACK
M.D. SX CMT
TOP 90
MORROW
UNIT E
CHANNEL
8900
10
52
T.V.D.
CORR TOPS
20
30
6914
6938
T.V.D.
M.D.
40
GRRD 8917
8950

4930

Exhibit 3.c

MT. STATES #1
McCAW 19 18-26

8700
ONE MINUTE INTERVAL MARKER
8750
8780
TOP MORROW SAND-SHALE INTERVAL
8800
8850
GAMMA RAY
8900
NEUTRON
POROSITY
4G 3C
TDGR 8937
16
8950
CALIPER
TD DLD 8953

Exhibit 3d

FASKEN #1
PENNZOIL "13"
13 18-25

8700

8800

8900

Caliper

GR

F. R. (GR)

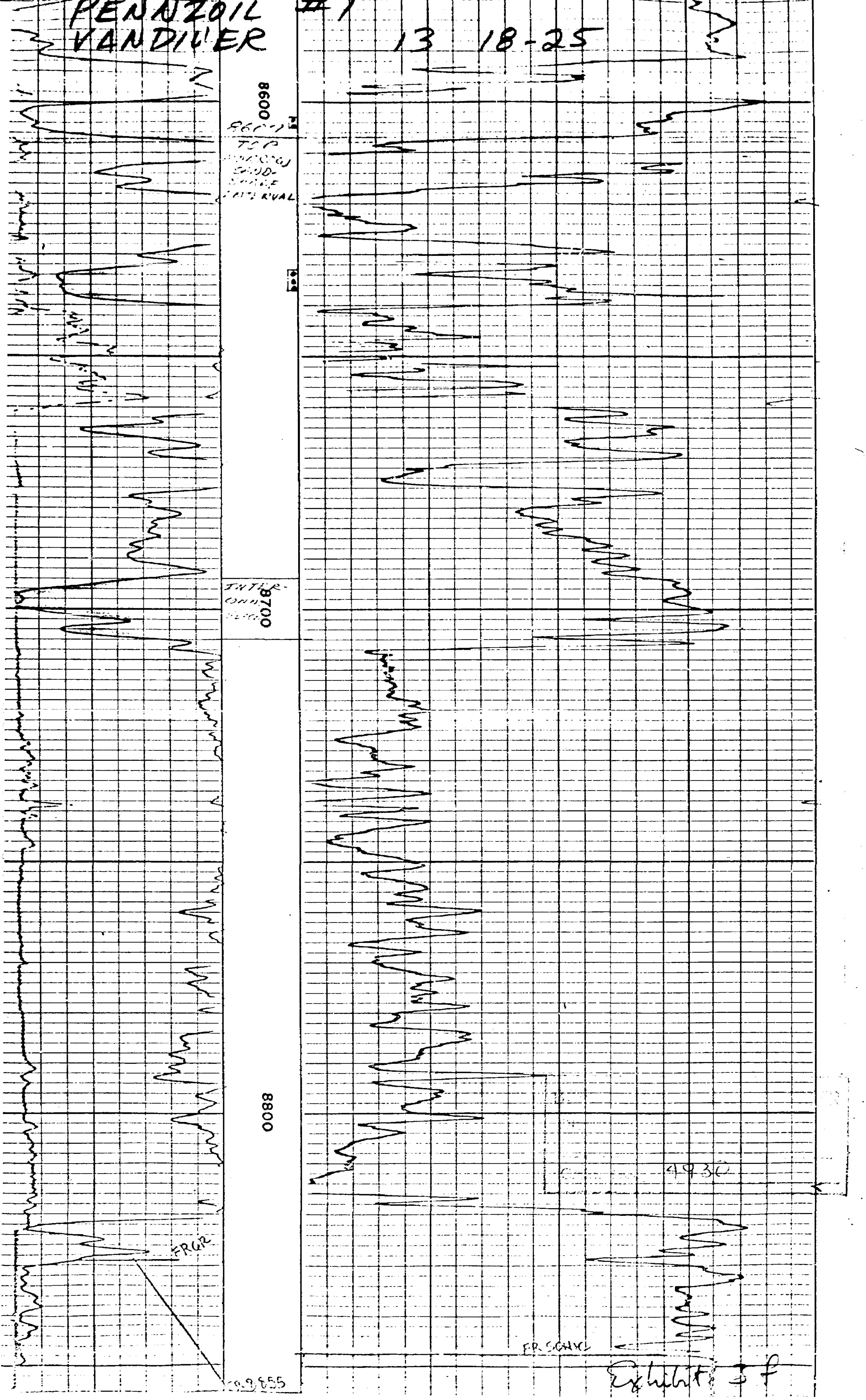
F. R. (CALIPER)

Porosity

SONIC

F. R. (SONIC)

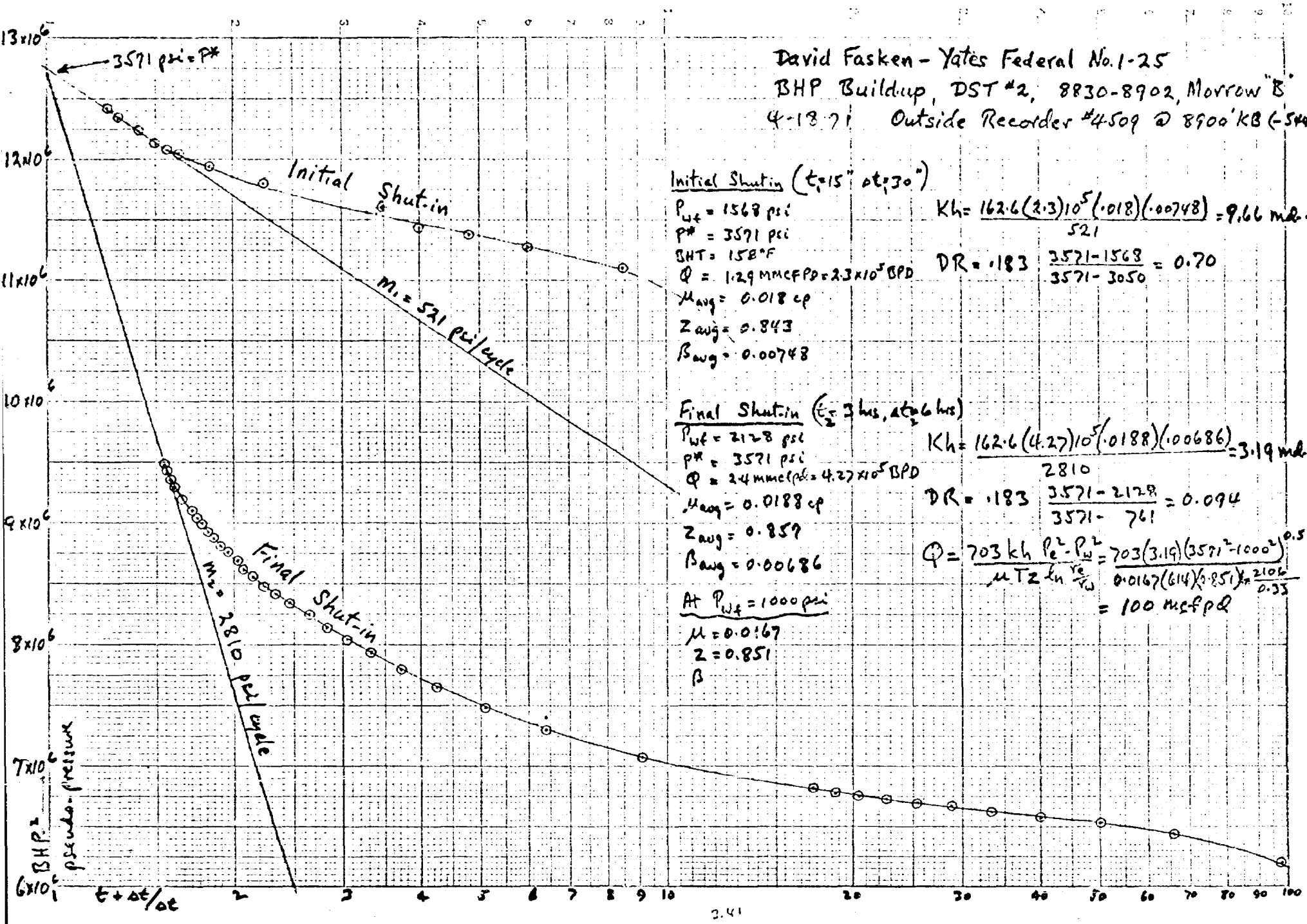
Exhibit 3e



PENNZOIL #1
VANDIVER
13 18-25
8600
TOP
INTERVAL
8700
8800
4930
FRGR
FR SONIC
Exhibit 3 f

Exhibit #4

David Fasken - Yates Federal No. 1-25
BHP Buildup, DST #2, 8830-8902, Morrow "B"
4-18-71 Outside Recorder #4509 @ 8900' KB (-5441)



Initial Shut-in (t_1 = 15", Δt_1 = 30")

P_{wf} = 1568 psi
P^* = 3571 psi
BHT = 158°F
Q = 1.29 MMCFPD = 2.3×10^5 BPD
μ_{avg} = 0.018 cp
Z_{avg} = 0.843
β_{avg} = 0.00748

$$Kh = \frac{162.6(2.3)10^5(.018)(.00748)}{521} = 9.66 \text{ md-ft}$$

$$DR = .183\ \frac{3571-1568}{3571-3050} = 0.70$$

Final Shut-in (t_2 = 3 hrs, Δt_2 = 6 hrs)

P_{wf} = 2128 psi
P^* = 3571 psi
Q = 2.4 MMCFPD = 4.27×10^5 BPD
μ_{avg} = 0.0188 cp
Z_{avg} = 0.859
β_{avg} = 0.00686

$$Kh = \frac{162.6(4.27)10^5(.0188)(.00686)}{2810} = 3.19 \text{ md-ft}$$

$$DR = .183\ \frac{3571-2128}{3571-761} = 0.094$$

At P_{wf} = 1000 psi

μ = 0.0167
Z = 0.851
β

$$Q = \frac{703\,kh\,P_e^2 - P_w^2}{\mu T z \ln \frac{r_e}{r_w}} = \frac{703(3.19)(3571^2-1000^2)}{0.0167(614)(0.851)\ln\frac{2106}{0.33}} = 100 \text{ mcfpd}$$

4-18-71

Yates Fed #1-25

Job No. 43-DST-174

Customer's Representative
Lynes' Representative

No. Reports To: [illegible]

TESTING TIME

Started in hole at [illegible]
Initial flow [illegible] Mins. Initial shut-in 60 Mins.
Final flow [illegible] Mins. Final shut-in [illegible] Mins.

TEST DESCRIPTION	TIME
Opened tool for Initial First Flow	9:[illegible]
Closed tool for First Shut-in	9:[illegible]
Reopened tool	10:[illegible]
-Closed tool for final shut-in	[illegible] p
Onset	

REMARKS

Blow: [illegible] immediately, [illegible] PSI in 10 minutes. Gas to surface [illegible] minutes, 320 PSI, increased 950 PSI [illegible] 15 minutes.

Sampler: [illegible] cc
7 cub. feet gas
[illegible] cc mud

MUD AND HOLE DATA

Mud Type	[illegible]		
Weight	[illegible]		
Viscosity	[illegible]		
Water Loss	[illegible]		
Filter Cake	[illegible]		
Hole Size	[illegible]		
Casing Size	[illegible]	Set at	[illegible]
Drill Pipe Size	[illegible]		
Drill Collar Size	[illegible]	Feet Run	[illegible]
Cushion	[illegible]	Amount	[illegible]

TEST RECOVERY DATA

Flow

TIME	SURF. CHOKE	PSIG/INCHES	
10:[illegible]	[illegible]	[illegible]	[illegible]
10:[illegible]	"	[illegible]	[illegible]
10:[illegible]	"	[illegible]	[illegible]
11:[illegible]	"	[illegible]	[illegible]
11:30	"	[illegible]	[illegible]
11:[illegible]	"	[illegible]	[illegible]
12:[illegible]	"	[illegible]	[illegible]
12:[illegible]	"	[illegible]	[illegible]
12:[illegible]	"	[illegible]	[illegible]
12:[illegible]	"	[illegible]	[illegible]

RECOVERY Test was not reversed out

[illegible] Ft. of [illegible]
[illegible] Ft. of [illegible]
Ft. of
Ft. of
Ft. of

Oil recovery °API [illegible] Resistivity
Pit Chlorides [illegible] Test Chlorides

PRESSURE READINGS

DESCRIPTION	Inside # 9[illegible]2 Cap. 7700 Hrs. Depth [illegible]		Outside # [illegible] Cap. 9000 Hrs. Depth [illegible]		Cap. Hrs. Depth		Cap. Depth	
1. Initial Hydrostatic	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
2. Initial First Flow	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
3. Final First Flow	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
4. First Shut-In	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
5. Initial Final Flow	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
6. Final Flow	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
7. Final Shut-In	2917	p.s.i.	3076	p.s.i.		p.s.i.		p.s.i.
8. Final Hydrostatic	[illegible]	p.s.i.	[illegible]	p.s.i.		p.s.i.		p.s.i.
		p.s.i.		p.s.i.		p.s.i.		p.s.i.
		p.s.i.		p.s.i.		p.s.i.		p.s.i.

FORM 13

#4

YATES FEDERAL # 1 - 25
Test No. 2

Job No. 13-DST-174 hyne 4-18-71

t_1=15 min, Q= 1.3 mmcfpd, increasing — OPERATIONAL SEQUENCE — t_2=180 min, Q= 2.4 mmcfpd (t = 15+180=195)

60 MIN. INITIAL SHUT IN — 360 MIN. FINAL SHUT IN

PSI	TIME	$\frac{t+\Delta t}{\Delta t}$	psi^2	PSI	TIME	$\frac{t+\Delta t}{\Delta t}$
1568	0	∞		2128	0	∞
1783	1	16	5.0×10^6	2233	1	196
3332	2	8.5	6.20	2489	2	98
3356	3	6.0	6.44	2538	3	66
3372	4	4.8	6.53	2556	4	50
3391	5	4.0	6.58	2565	5	40
3408	6	3.5	6.62	2574	6	33.5
3435	12	2.25	6.67	2582	7	28.9
3455	18	1.83	6.69	2587	8	25.4
3471	24	1.63	6.73	2594	9	22.7
3484	30	1.50	6.75	2598	10	20.5
3498	36	1.42	6.78	2604	11	18.7
3504	42	1.36	6.82	2612	12	17.3
3513	48	1.31	7.07	2659	24	9.1
3520	54	1.28	7.30	2702	36	6.4
3525	60	1.25	7.49	2737	48	5.1
			7.67	2769	60	4.25
			7.80	2794	72	3.71
			7.93	2816	84	3.32
			8.04	2836	96	3.03
			8.14	2854	108	2.81
			8.25	2872	120	2.63
			8.34	2888	132	2.48
			8.41	2901	144	2.35
			8.48	2912	156	2.25
			8.55	2924	168	2.16
			8.61	2935	180	2.08
			8.69	2948	192	2.02
			8.76	2960	204	1.96
			8.81	2969	216	1.90
			8.89	2978	228	1.85

FINAL SHUT IN - CONTINUED

psi^2	PSI	TIME	$\frac{t+\Delta t}{\Delta t}$
8.93×10^6	2989	240	1.81
9.00	3000	252	1.77
9.04	3006	264	1.74
9.11	3018	276	1.71
9.16	3027	288	1.68
9.20	3033	300	1.65
9.25	3042	310	1.625
9.30	3049	324	1.60
9.35	3058	336	1.58
9.41	3067	348	1.56
9.47	3078	360	1.54

#4

Devil's Fastkin - Yates Petroleum Corp. #1-25
1650/W 1480/N Sec 25-18S-25E
Atoka Penn, Eddy County, N.M. Elev-3459' KB
4-22-71
7⅞ Cl

Morrow "A" Sd

"A" Shale

Morrow "B" Sd

"B" Shale

Morrow "C" Sd

Caliper

GR

F. R. (GR)

8000

20 18 16 14 12 10

DST #2

8900

9000

SONIC

Porosity

DAVID PACKER DRILLING

YATES FEDERAL # 1 - 25
Test No. 2

Job No. 43-DST-174 Lynes 4-18-71

INSIDE RECORDER #12

60 MIN. INITIAL SHUT IN		360 MIN. FINAL SHUT IN	
PSI	TIME	PSI	TIME
1577	0	2116	0
1788	1	2228	1
3364	2	2388	2
3374	3	2517	3
3381	4	2535	4
3389	5	2542	5
3397	6	2550	6
3420	12	2554	7
3441	18	2559	8
3455	24	2564	9
3467	30	2567	10
3480	36	2568	11
3490	42	2569	12
3498	48	2606	24
3504	54	2633	36
3510	60	2660	48
		2681	60
FINAL SHUT IN - CONTINUED		2699	72
2867	252	2718	84
2873	264	2735	96
2880	276	2753	108
2888	288	2764	120
2892	300	2776	132
2896	312	2788	144
2901	324	2799	156
2907	336	2811	168
2913	348	2820	180
2917	360	2830	192
		2836	204
		2851	228
		2859	240

#4

David Faskins – Yates Hornbaker No. 1
BHP Build-ups, Morrow "B" Sd.

3579 psi

3581 psi

DST #5, Deviated Hole, 8954-8982'
GTS – 6 min.
Q = 20 BWPH + 144 mcfpd
BHFP = 1491 psi

m = 83 psi/cycle

DST #1, Original Hole, 8816-8948
GTS – 18 min.
Q = 90 mcfpd, no fluid
BHFP = 137 psi

$kh = \frac{162.6(16.03)10^3(.018)(.0080)}{3485} = 0.1$ md-ft

$DR = .183\frac{3579-161}{3579-94} = 0.18$

BHP Squared, psi² → (millions)

BHP, psi →

Dimensionless Time, $t+\Delta t/\Delta t$ →

DRILL STEM TEST SERVICE REPORT

Lynes, Inc. — Job No. 63-[illegible] — Test No. 1 — Customer Test No. 1

Location — Net Feet of Pay — Elevation

County — Test Interval 8615 To 8948 T.D. 8948

Division — Type Test Conventional DST

Address — Customer's Representative Bob Agevine

807 First Natl. Bank Bldg., Midland — Lynes' Representative Travis Webb

No. Reports To: 5 copies to above

COMPANY: EXXON FASKEN ESTATE | LEASE AND WELL NO.: YATES HORNBAKER #1 | TEST NO.: 1 | DEPTH: 8616 - 8948 | DATE OF TEST: April 5, 1972

TESTING TIME

Started in hole at 1:00 AM

Initial flow 15 Mins. Initial shut-in 60 Mins.

Second flow 60 Mins. Second shut-in 120 Mins.

Third flow ____ Mins. Third shut-in ____ Mins.

TEST DESCRIPTION	TIME
Opened tool for Initial First Flow	5:40 a
Closed tool for First Shut-In	5:55 a
Re-opened tool for Second Flow	6:55 a
Closed tool for Second Shut-In	7:55 a
Opened for Third Flow	
Closed for Third Shut-In	
Unset	

REMARKS

BLOW: Good blow of air to surface on first opening. Gas to surface in 18 minutes.

12.5 cu. ft. of gas in Sampler
2500 PSI No fluid

MUD AND HOLE DATA

Mud Type		Top Packer OD	6 7/8
Weight	8.7	Bot Packer OD	6 7/8
Viscosity	77	Bot Hole Choke Size	3/4
Water Loss	10.2	Bot Hole Temp.	154°
Filter Cake	2/32	Caliper Hole Size	
Hole Size	7 7/8	Rat Hole Size	
Casing Size	8 5/8	Set At	1208
Drill Pipe Size	4 1/2 EX	Weight	16.60 I.D.
Drill Collar Size	4 1/2 EX 5H90	Feet Run	508 I.D. 2 1/2
Cushion	None	Amount	Feet

TEST RECOVERY DATA

Flow

TIME	SURF. CHOKE	PSIG/INCHES	AMOUNT
	1/4	3 PSI	90 mcfpd
	1/2	3 PSI	90 mcfpd

RECOVERY Test was not reversed out

180 Ft. of Drilling mud

Ft. of

Ft. of

Ft. of

Oil recovery °API Resistivity

Pit Chlorides 18,000 PPM Test Chlorides

PRESSURE READINGS

DESCRIPTION	Inside # 942 Cap. 7700 Hrs. 24 Depth 8942	Outside # 705 Cap. 8400 Hrs. 24 Depth 8945	Cap. Hrs. Depth	Cap. Hrs. Depth
1. Initial Hydrostatic	4359 p.s.i.	4382 p.s.i.	p.s.i.	p.s.i.
2. Initial First Flow	117 p.s.i.	133 p.s.i.	p.s.i.	p.s.i.
3. Final First Flow	144 p.s.i.	161 p.s.i.	p.s.i.	p.s.i.
4. First Shut-In	3212 p.s.i.	3260 p.s.i.	p.s.i.	p.s.i.
5. Second Initial Flow	129 p.s.i.	142 p.s.i.	p.s.i.	p.s.i.
6. Second Final Flow	119 p.s.i.	137 p.s.i.	p.s.i.	p.s.i.
7. Second Shut-In	2950 p.s.i.	3006 p.s.i.	p.s.i.	p.s.i.
8. Final Hydrostatic	4303 p.s.i.	4335 p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.

FORM 13

#5

DAVID FASKEN ESTATE

YATES HORNBAKER #1
Test No. 1

Job No. 43-DST-206 hynes 4-5-72

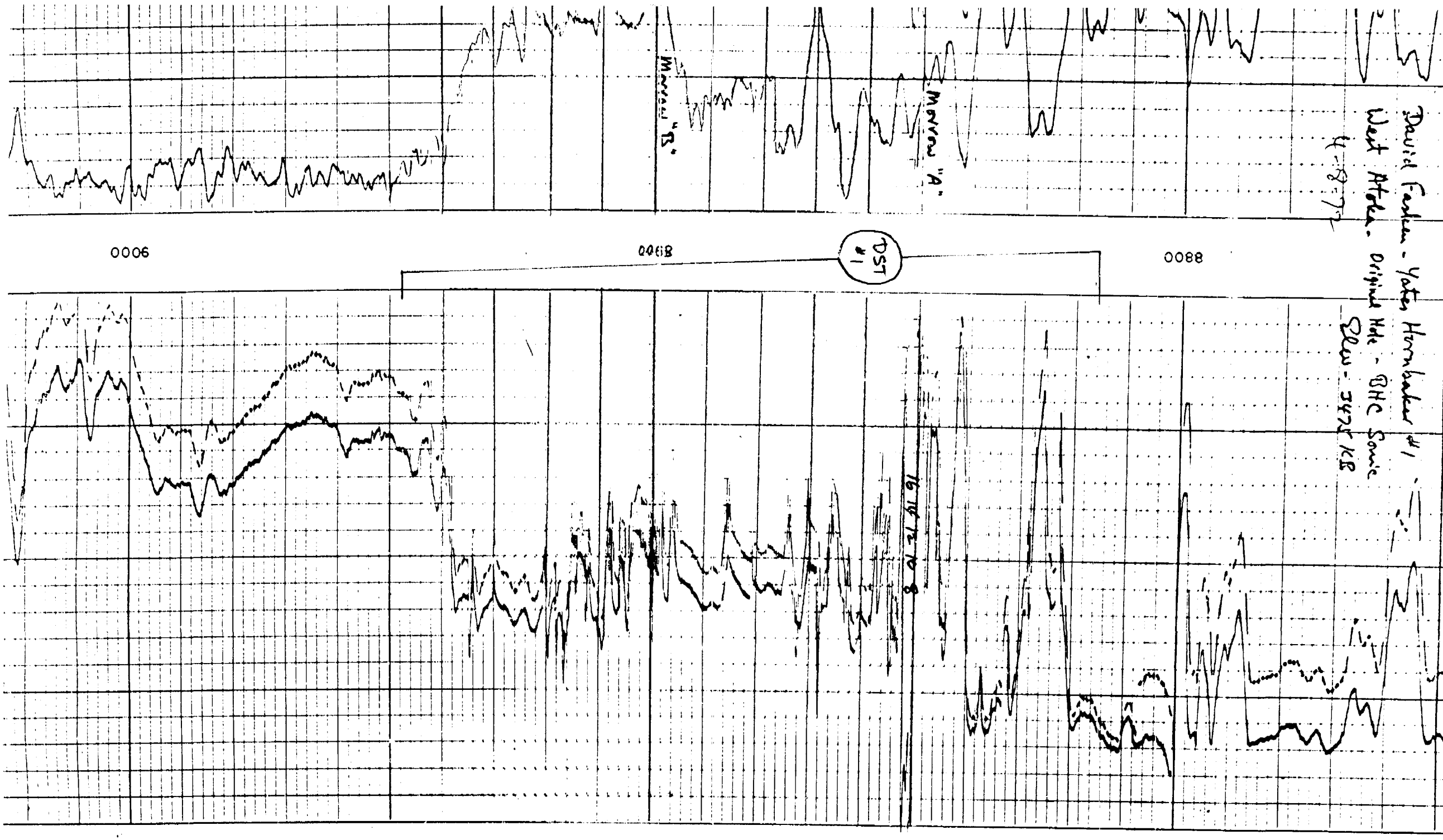
OUTSIDE RECORDER # 705

60 MIN. INITIAL SHUT IN

Psi²	PSI	t+Δt	TIME
	161	∞	0
	202	16	1
	268	8.5	2
	363	6.0	3
	459	4.75	4
	562	4.0	5
	654	3.5	6
	755	3.14	7
.78	886	2.88	8
.95	976	2.67	9
1.18	1086	2.50	10
2.35	1532	2.00	15
4.45	2109	1.75	20
7.81	2794	1.50	30
9.70	3115	1.37	40
10.34	3215	1.30	50
10.63	3260	1.25	60
			70
			80
			90
			100
			110
			120

120 MIN. FINAL SHUT IN

Psi²	PSI	t+Δt / Δt
	137	∞
	259	76
	401	38.5
	502	26.0
	618	19.75
	751	16.0
0.719	848	15.17
0.904	951	11.71
1.107	1052	10.37
1.37	1170	9.33
1.70	1303	8.50
3.16	1777	6.00
4.31	2076	4.75
5.57	2361	3.50
6.22	2494	2.87
6.71	2590	2.50
7.11	2666	2.25
7.47	2733	2.07
7.78	2790	1.94
8.13	2851	1.83
8.44	2905	1.75
8.75	2950	1.68
9.04	3006	1.625


Morrow "B"
Morrow "A"
0006
8100
DST #1
0088
David Fankun - Yates Hornbaker #1
West Attoka - DHC Sonic
4-8-72
Elev - 3427' KB

Drill Stem Test Report

Field [illegible] Formation [illegible] Test No. 5 Customer Test No. 5

Location [illegible] Net Feet of Pay [illegible] Elevation [illegible]

County [illegible] State New Mexico Test Interval [illegible] To [illegible] T.D. 9070

Division [illegible] District Midland Type Test Inflatable Straddle DST

Address [illegible] Customer's Representative [illegible]

807 First Nat. Bank Bldg. Midland Lynes' Representative Don Johnston

No. Reports To: 5 copies to above

COMPANY DAVID FASKEN ESTATES | LEASE AND WELL NO. YATES HORNBAKER #1 | TEST NO. 5 | DEPTH 8954 - 8982 | DATE OF TEST May 4, 1972

TESTING TIME

Started in hole at 12:30 AM

Initial flow 360 Mins. Initial shut-in 120 Mins.

Second flow _____ Mins. Second shut-in _____ Mins.

Third flow _____ Mins. Third shut-in _____ Mins.

TEST DESCRIPTION	TIME
Opened tool for Initial First Flow	4:28 a
Closed tool for First Shut-In	10:28 a
Re-opened tool for Second Flow	
Closed tool for Second Shut-In	
Opened for Third Flow	
Closed for Third Shut-In	
Unset	12:28 p

MUD AND HOLE DATA

Mud Type	Salt Gel 2% KCl	Top Packer OD	6 5/8
Weight	9.1	Bot Packer OD	6 5/8
Viscosity	55	Bot Hole Choke Size	3/4
Water Loss	12	Bot Hole Temp.	157°
Filter Cake	3/32	Caliper Hole Size	
Hole Size	7 7/8	Rat Hole Size	
Casing Size	8 5/8	Set At	1208
Drill Pipe Size	4½ XH	Weight	16.60 I.D.
Drill Collar Size	4½ XH	Feet Run	720 I.D. 2¼
Cushion	None	Amount	Feet

REMARKS

BLOW: Strong gas to surface in 6 minutes.

Mud to surface in 2 hours & 2 minutes.

710 PSI in sampler
2475 cc of water in sample chamber with 304 thousands of 1 cu. ft. of gas.

Sampler capacity 2650 cc

Est. gas and water to flare at 20 BOPH gas 3 1,000 MCF/Day (JBH)

TEST RECOVERY DATA

Flow

TIME	SURF. CHOKE	PSIG/INCHES	AMOUNT
4:34 a	½	70	GTS - Flare
4:38 a	"	70	520 MCF
4:48 a	"	78	570 "
4:58 a	"	75	550 "
5:28 a	"	40	330 "
6:28 a	"	10	144 "
6:33 a	½&1	10	MTS - WTRTS
6:53 a	"	80	Gas & WTR. Est 20BPH
7:28 a	"	60	" "
8:28 a	"	70-120	" "
9:28 a	"	70-100	" "
10:28 a	"	60-180	" "

RECOVERY Test was not reversed out

10 Ft. of Mud cut condensate

2700 Ft. of Gas cut water

Ft. of

Ft. of

Ft. of

Oil recovery °API Resistivity

Pit Chlorides 18,000 PPM Test Chlorides 34,600 PPM

PRESSURE READINGS

DESCRIPTION	Inside # 2477 Cap. 5200 Hrs. 36 Depth 8960	Outside # 6851 Cap. 6200 Hrs. 18 Depth 8960	Cap. Hrs. Depth	Cap. Hrs. Depth
1. Initial Hydrostatic	4379 p.s.i.	4366 p.s.i.	p.s.i.	p.s.i.
2. Initial First Flow	489 p.s.i.	489 p.s.i.	p.s.i.	p.s.i.
3. Final First Flow	1491 p.s.i.	1432 p.s.i.	p.s.i.	p.s.i.
4. First Shut-In	3531 p.s.i.	3548 p.s.i.	p.s.i.	p.s.i.
5. Second Initial Flow	p.s.i.	p.s.i.	p.s.i.	p.s.i.
6. Second Final Flow	p.s.i.	p.s.i.	p.s.i.	p.s.i.
7. Second Shut-In	p.s.i.	p.s.i.	p.s.i.	p.s.i.
8. Final Hydrostatic	4370 p.s.i.	4366 p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.
	p.s.i.	p.s.i.	p.s.i.	p.s.i.

FORM 13

DAVIS PRODUCTION SERVICES

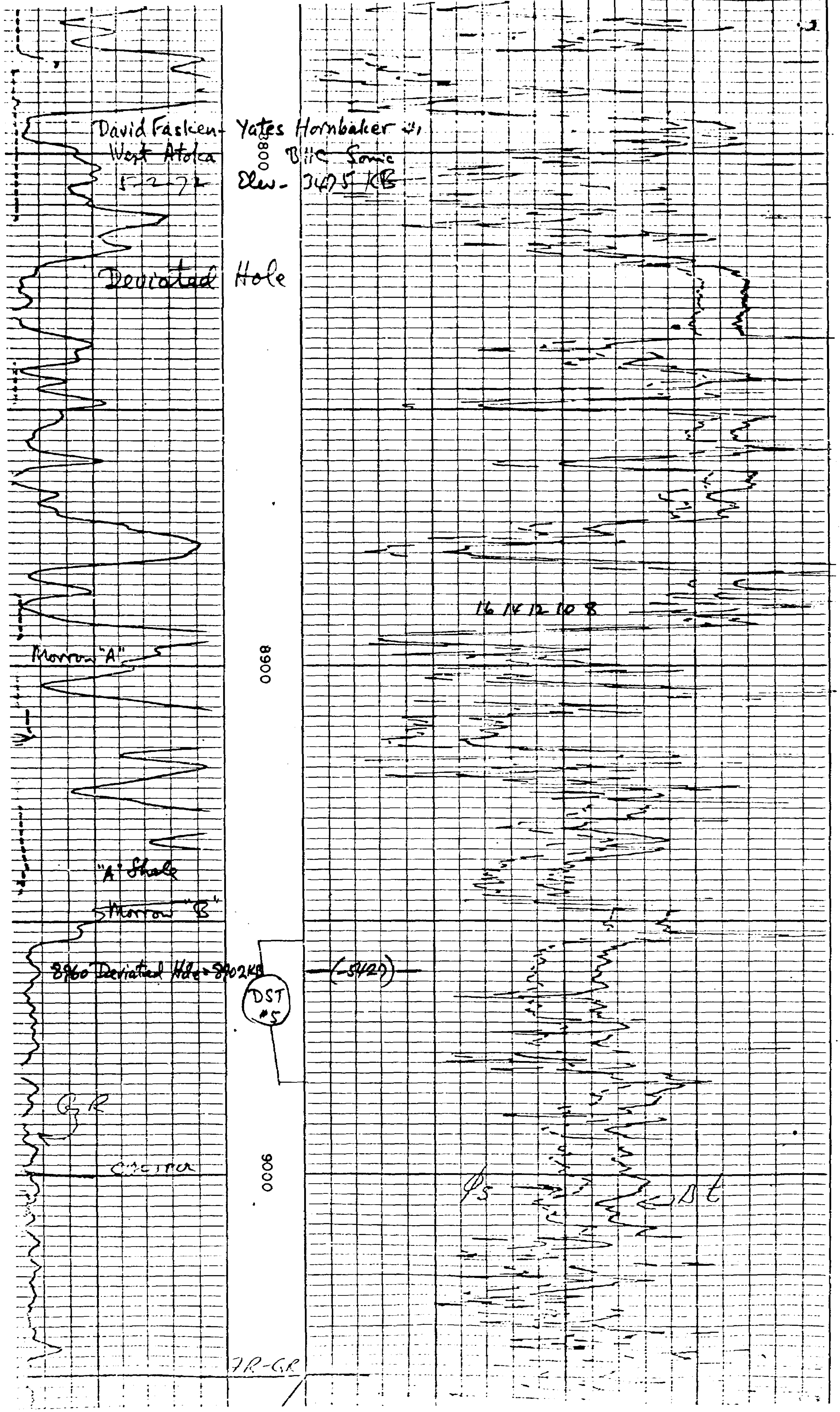
YATES ROSS UNIT #1
Test No. 5

Job No. 41-DST-143

INSIDE RECORDER #2477 Hynes 5-4-72

120 MIN. INITIAL SHUT IN

PSI	TIME	$\frac{t+\Delta t}{\Delta t}$
1491	0	
3452	1	361
3472	2	181
3490	3	121
3506	4	91
3510	5	73
3517	6	61
3526	7	52
3528	8	46.0
3532	9	41.0
3537	10	37.0
3550	15	25.0
3557	20	19.0
3563	30	13.0
3568	40	10.0
3572	50	8.2
3575	60	7.0
3577	70	6.14
3579	80	5.5
3579	90	5.0
3579	100	4.6
3579	110	4.27
3581	120	4.0


David Fasken - Yates Hornbaker #1
West Atoka
5-2-72
8800
BHC Sonic
Elev - 3475 KB
Deviated Hole
16 14 12 10 8
Morrow "A"
8900
"A" Shale
Morrow "B"
8960' Deviated Hole = 8902KB
(-5427)
DST #5
GR
9000
Δt
FR-GR

Unit No. 1

Test No. 13-LAT-161 [illegible] 1-21-71

t_1 = 60 MIN. INITIAL SHUT IN t_2 = 360 MIN. FINAL SHUT IN

INSIDE PSI	CUMULATIVE PSI	$t+\Delta t$	Δt TIME	$\frac{t+\Delta t}{\Delta t}$	INSIDE PSI	OUTSIDE PSI $B^1 \times 10^{-6}$
879	897		0		2861	2861
994	1038	61	1	3[illegible]	3185	3108
1500	1275	31	2	16[illegible]	3572	3298
3334	1597	21	3	11[illegible]	3582	3527
3580	2336	16	4	2[illegible]	3588	3561
3597	3004	13	5	67	3591	3572
3602	3527	11	6	56	3593	3578
3605	3565	[illegible]	7	[illegible]	3595	3583
3608	3576	[illegible]	8	[illegible]	3596	3585
3610	3587	[illegible]	9	[illegible]	3597	3587
3611	3592	[illegible]	10	[illegible]	3597 "	3590
3613	3601	[illegible]	20	[illegible]	"	3594
3613 "	3600	[illegible]	30	[illegible]	"	"
3612	3599	[illegible]	40	[illegible]	"	"
3611	3599	[illegible]	50	[illegible]	"	"
3611 "	3599	[illegible]	60	[illegible]	"	"
			70	[illegible]	"	"
			80	[illegible]	"	"
			90	[illegible]	"	3593
			100	[illegible]	3596	3592
			110	[illegible]	3595	"
			120	[illegible]	3594	"
			140	[illegible]	3594	"
			160	[illegible]	3593	3591
			180	[illegible]	3592	3590
			200	[illegible]	3591	"
			220	[illegible]	3590	"
			240	[illegible]	3589	"
			260	[illegible]	3588	"
			280	[illegible]	3588 "	"
			300	[illegible]	3587	"
			320	[illegible]	3587 "	"
			330	[illegible]	3586	"

Exhibit #6

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

Read 3/28/75

IN THE MATTER OF THE APPLICATION OF YATES PETROLEUM CORPORATION FOR AN UNORTHODOX GAS WELL LOCATION, WEST ATOKA-MORROW GAS POOL, EDDY COUNTY, NEW MEXICO	:	Case No. 4930

APPLICATION

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

1. That applicant is the operator of the Pennsylvanian formation underlying all of the N/2 of Section 18, Township 18 South, Range 26 East, N.M.P.M., and proposes to drill a well to said formation at a location 1,650 feet from the North line and 660 feet from the West line of said Section 18.

2. Applicant seeks an exception to the rules and regulations for the West Atoka-Morrow Gas Pool to permit the drilling of the proposed well at an unorthodox location.

3. That a standard 320-acre gas proration unit comprising the N/2 of Section 18 should be dedicated to such well, or such lesser portion of the N/2 of said Section 18 as is reasonably shown to be presumed to be productive of gas from said pool should be dedicated to said well.

4. The approval of this application will afford applicant the opportunity to produce its just and equitable share of the gas in the West Atoka-Morrow Pool and will 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 Commission enter its order granting to applicant an exception to the rules and regulations for the West Atoka-Morrow Gas Pool to permit the drilling of applicant's proposed well at an unorthodox location 1,650 feet from the North line and 660 feet from the West line of said Section 18 and dedicate that portion of the N/2 of said Section 18 which is reasonably presumed to be productive of gas from said pool.

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

YATES PETROLEUM CORPORATION

By: _____

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

Attorneys for Applicant

DRAFT

dr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 4930

Order No. R-4508

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 March 28, 1973 at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of _____, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks approval of an unorthodox gas well location for a proposed well to be located 1650 feet from the North line and 660 feet from the West line of Section 18, Township 18 South, Range 26 East, NMPM, West Atoka-Morrow gas pool, Eddy County, New Mexico.

insert (3) from next page → (4) That the N½ of said Section 18 is to be dedicated to the well.

(5) That a well drilled at the proposed unorthodox location can efficiently and economically drain the N½ of said Section 18.

(6) That approval of the subject application will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject West Atoka-Morrow gas pool, will prevent the ecomonic 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 is hereby approved for Yates Petroleum Corporation's proposed well in the West Atoka-Morrow gas pool at a point 1650 feet from the North line and 660 feet from the West line of Section 18, Township 18 South, Range 26 East, NMPM, Eddy County, New Mexico.

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

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

(3) That a well drilled at the proposed non-standard location should encounter additional pay in the Morrow which would not be encountered in a well drilled at a standard location and should, therefore, result in greater ultimate recovery of gas, thereby preventing waste.

Loser ——

Gulf Pet Corp

Wildcat gas well Loc

1650 FNL
660 FWL

N/2 of Sec

18-18S-26E

W. Atoka-Morrow Gas