CASE 7313: PHILLIPS PETROLEUM COMPANY FOR DOWNHOLE COMMINGLING, EDDY COUNTY, NEW MEXICO

Case No.

7313

Application

Transcripts

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
29 July 1981

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for downhole commingling, Eddy County, New Mexico. CASE 7313

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. STAMETS: We'll call next Case 7313.

MR. PADILLA: Application of Phillips Petroleum Company for downhole commingling, Eddy County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant.

I'd like the record to reflect that Mr. Blevins has previously been sworn and qualified as an expert engineer in the previous case and is so tendered as an expert in this case.

MR. STAMETS: The record will so show.

JERRY L. BLEVINS

being called as a witness and being previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Blevins, let me direct your attention to Phillips' Exhibit Number One and have you identify that for us and tell us what you're seeking to accomplish in this application.

A. This is a lease plat showing our Drag A No. 1 Well with the yellow arrow in Carlsbad South Field. We

plan to commingle the Morrow and Atoka zones in this well.

We have the cumulative productions listed for each zone, designated by colors as far as what they have produced in, not necessarily producing in that formation right now.

Q. All right, what's the proration unit assigned to the Atoka and the Morrow for this well?

A. It's the north half of Section 18.

Q. And is the ownership common between those two formations?

A. Yes, sir, it is.

Q. Let me ask you if there are any other wells in the area that have been approved as Atoka/Morrow downhole commingled wells?

A. Yes, sir. In Section 8 you'll notice the Tidwell "A" No. 1 is a strange orange color. It was by Order No. R-5027, dated May 22nd, 1975, that this well was approved for downhole commingling.

Q. How does the cumulative production compare to the well that has been approved with your proposed well?

A. Overall the cumulative production is basically the same. You'll see that the Morrow in both zones has 1.9 Bcf and the Atoka has .8 in our Drag "A" and the Tid-

well has .9 Bcf.

Q. In your opinion is the production from both formations in the proposed well significantly low enough to justify downhole commingling?

A. Yes, sir, it is.

Q. In your opinion will the downhole commingling result in the production of gas that would not otherwise be recovered?

A. Yes, sir.

Q. Anything else about Exhibit Number One?

A. No, sir.

Q. Let's go to Exhibit Number Two. Would you identify that for us?

A. Exhibit Number Two is a lease name and location of our well. It has the completion intervals of the Atoka zone and of the Morrow zone. The dual completion was authorized by Commission Order No. MC-1993. It has our latest well test from the wells. You'll see that the latest well test was November of 1972 for the Atoka, which at that time we shut-in the casing due to the inability of the well to flow up the casing, and the Morrow in June was making about 6 Mcf a day.

We calculated the bottom hole pressures again from both zones from shut-in wellhead pressures.

We also took a fluid level on the casing side and estimated, based on the fluid, what the actual bottom hole pressure of that zone would be, which was 887 pounds. The bottom hole pressure of the Morrow was about 520 pounds.

Q. Do either one of these formations make water or oil?

A. No, sir.

Q. All right, both of them are dry gas wells?

A. Yes, sir.

MR. STAMETS: Well, while we're on that, then, this fluid level, what is the fluid that makes the fluid level?

A. Well, the fluid, it will fall out of the gas. It will not produce it but it's just accumulated down there over the years.

Q. Gas condensate is what you're talking about?

A. I don't know. I didn't catch a sample of it. I won't say whether it's water. I won't say whether it's condensate. But it falls out with it -- the gas will hold so much water when it's flowing. Temperature differential and pressure differential, it will come out and with this shut-in, I'm not for sure whether that fluid was down there all the time or -- and the gas just bubbled up through

it, or if it's coming out of the formation.

Q. Now explain to me this, out of what formation do you think -- or what formation do you encounter the liquid production in? This is the Atoka?

A. Well --

Q. That you're talking about?

A. There's no production of liquids but --

Q. I understand. The liquids are not produced at the surface, are they?

A. No, they're not produced at the surface.

Q. All right. In what formation are you encountering liquid?

A. It's in the Atoka zone.

Q. It's in the Atoka, and you're trying to lift the Atoka now up through the casing?

A. Yes, sir.

Q. All right.

Your proposed downhole commingling will produce the gases how?

A. Through the tubing --

Q. All right.

A. -- jointly.

Q. What, if any, affect will that have upon the liquid?

A. We still probably won't produce liquids. We would be able to flow greater amounts of gas due to the reduced diameters.

Q. Are you able to measure the volume of the liquid? How much are we talking about?

A. There's no -- there's no liquid production that we -- that we have, so we don't measure the liquid after the fluid level measurements sonic log that they shoot in the wells. It's just build-up of fluid. It not necessarily would be produced. It would more than likely fall to the bottom of the hole and with the production we wouldn't ever see it again.

Q. I understand. Let's go on to Exhibit Number Three.

A. Exhibit Number Three is a well schematic of what the proposed completion would be. We would hang our tubing in. Again, this is if the current completion, the sliding sleeve wouldn't open or we determine that stimulation is needed. Currently there's a packer that separates the two zones from each other. This shows our Morrow perforations, where we would hang our tubing at. It shows our Atoka perforations and the casing and how they were cemented in.

Q. You propose to have the bottom of the tubing string below the lowest perforations in the Morrow?

A. Yes, sir.

Q. Is that the way this is drawn?

A. Essentially, yes, sir.

Q. Why have you done that?

A. To get a siphon effect. It will lift more gas below -- if we set our tubing below the perforations. We have less back pressure, therefor, more gas will flow into the tubing.

Q. Okay, Exhibit Number Four.

A. Exhibit Four is a log of the subject well. I included this for their benefit.

Q. All right, sir, and Exhibit Number Five.

A. Exhibit Five is a production graph on the Morrow zone of the production since we began in November of 1972 through June -- no, through May of 1981. This is what the production that we've recorded and sent into the State.

Q. Six?

A. Exhibit Six is a listing by month of the well and the cumulative. You'll notice we produced the Atoka zone for two months in November and December of 1972, then shut the well in. It was unable to flow up the casing any more.

Q. This is when you attempted production as a dual completion?

A. It was as a dual completion from its beginning and we had to shut her in.

Q. All right, sir, and Exhibit Number Seven.

A. Exhibit Seven is the Atoka 4-point test sent in to the State in 1972 and a graphic computation of it on the second page.

Q. All right, Exhibit Number Eight.

A. The other test. Again, the initial 4-point test for the Morrow zone that was sent in to the State back in 1972. Anything, the absolute open flows and the actual rating of the gas well itself.

Q. Is information from Exhibits Seven and Eight the information you used to make the calculated bottom hole pressure --

A. No, sir --

Q. -- calculations?

A. -- it's not. We measured these pressures earlier this month. We shut the wells in and got a pressure measurement.

Q. For purposes of Exhibit Two and the bottom hole pressures you calculated for that exhibit, you've taken other pressure information?

A. Other pressure information, yes, sir.

Q. All right. Exhibit Number Nine.

Nine and Ten.

A. Nine and Ten are gas analyses of the wells to show that the Morrow and the Atoka are essentially the same compatible fluids. You'll see most of it is methane. It's 96.4 in the Morrow; 95.3 in the Atoka.

Q. What's the BTU content?

A. On the Morrow --

Q. It's compatible, also, isn't it?

A. Yes, sir, it sure is.

Q. All right, sir, Exhibit Eleven.

A. Eleven is the economics of our commingling for the Morrow. Page one is the commingled production which would last for seven years. Page two shows the individual production for twelve years. The difference is increase in reserves. We'd increase it by about 4MMCF and increase in cash flow would be about $20,700.

Q. Exhibit Number Twelve.

A. Twelve is a well history of what has happened to the well during its life with all our treatments in the Atoka and in the Morrow.

Q. All right, sir, and Exhibit Number Thirteen.

A. Thirteen is the estimated production for the Atoka and for the Morrow and Atoka, with the recom-

mended allotment of 25 percent to the Morrow and 75 percent allotted to the Atoka.

Q. All right, what is your proposed allocation percentages again?

A. 25 percent for the Morrow and 75 percent for the Atoka.

Q. And you propose those as percentages for allocation on the production based upon the estimated recoverable reserves?

A. Yes, sir.

Q. All right. Were Exhibits One through Thirteen prepared or compiled under your direction and supervision, Mr. Blevins?

A. Yes, sir.

Q. And in your opinion will approval of this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

MR. KELLAHIN: We move the introduction of Exhibits One through Thirteen.

MR. STAMETS: These exhibits will be admitted.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Blevins, you indicated that it may be necessary to pull the existing tubular goods out of the hole.

A. Yes, sir.

Q. And you also might stimulate one or both of these zones.

A. Yes, sir.

Q. Would you anticipate attempting to open up any zones which are not currently open in this well?

A. I don't believe so, sir.

Q. Okay. The evidence is a little unclear relative to Atoka liquids, exactly what may be produced. Would Phillips have any problem with testing this well for a 90-day period, reporting any liquid production to the Division so we can evaluate that, whether there ought to be some sort of separation between the two zones?

A. I don't think we'd have a problem with that.

Q. Okay.

Any other questions of this witness?

MR. KELLAHIN: No, sir.

MR. STAMETS: He may be excused. If

there is nothing further, we'll take the case under advisement.

(Hearing concluded.)

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7313, heard by me on 7-29 19 81.

Richard L. Stamm, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
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MR. KELLAHIN: No, sir.

MR. STAMETS: He may be excused. If

there is nothing further, we'll take the case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____, heard by me on _____ 19____.

_____, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

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

August 7, 1981

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: CASE NO. 7313
ORDER NO. R-6755

Applicant:

Phillips Petroleum Company

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 OCD x
Artesia OCD x
Aztec OCD

Other

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. 7313
Order No. R-6755

APPLICATION OF PHILLIPS PETROLEUM
COMPANY FOR DOWNHOLE COMMINGLING,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 29, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 7th day of August, 1981, 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, Phillips Petroleum Company, is the owner and operator of the Drag A Well No. 1, located in Unit C of Section 18, Township 23 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(3) That the applicant seeks authority to commingle Atoka and Morrow production within the wellbore of the above-described well.

(4) That from the Atoka zone, the subject well is capable of low marginal production only.

(5) That from the Morrow zone, the subject well is capable of low marginal production only.

(6) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(7) That the reservoir characteristics of each of the subject zones appear to be such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(8) That the applicant should determine the rate of liquids production 90 days after commingling.

(9) That the Director of the Division should require the installation of a standing valve or other zone separation equipment if the rate of liquids production should appear excessive.

(10) That to afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Artesia district office of the Division any time the subject well is shut-in for 7 consecutive days.

(11) That in order to allocate the commingled production to each of the commingled zones in the well, applicant should consult with the supervisor of the Artesia district office of the Division and determine an allocation formula for each of the production zones.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to commingle Atoka and Morrow production within the wellbore of the Drag A Well No. 1, located in Unit C of Section 18, Township 23 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(2) That the applicant shall consult with the Supervisor of the Artesia district office of the Division and determine an allocation formula for the allocation of production to each zone in the subject well.

(3) That approximately 90 days following the date of downhole commingling the applicant shall conduct a production test on said well to determine its volume of liquids production.

(4) That the applicant shall notify the Artesia district office of the Division of the date and time of such test in order that it may, at the option of the Division, be witnessed.

(5) That the results of such test shall be reported to the Director of the Division within 15 days following the date thereof.

(6) That based upon the evidence from such test the Director of the Division may require the installation of a standing valve or other zone separation equipment in said well.

(7) That the operator of the subject well shall immediately notify the Division's Artesia district office any time the well has been shut-in for 7 consecutive days and shall concurrently present, to the Division, a plan for remedial action.

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

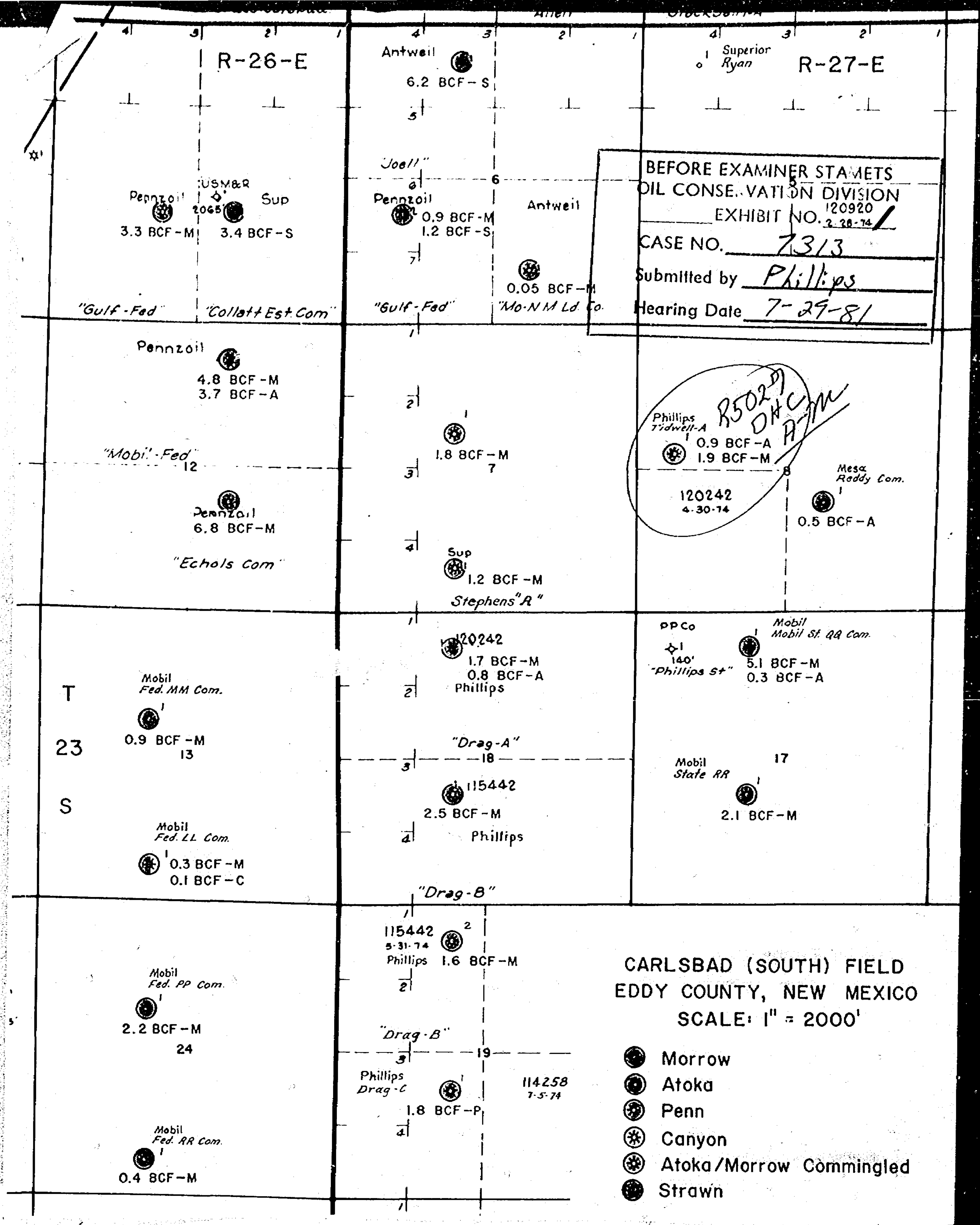
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

SEAL

fd/


R-26-E
R-27-E
Antweil
6.2 BCF-S
Superior
Ryan
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81
120920
2-28-74
"Joell"
Pennzoil
USM&R
2065'
Sup
3.3 BCF-M
3.4 BCF-S
0.9 BCF-M
1.2 BCF-S
Antweil
0.05 BCF-M
"Gulf-Fed"
"Collatt Est Com"
"Mo-N M Ld Co
4.8 BCF-M
3.7 BCF-A
1.8 BCF-M
"Mobil-Fed"
12
7
Phillips
Tidwell-A
0.9 BCF-A
1.9 BCF-M
R5029
DHC
A-M
120242
4-30-74
Mesa
Reddy Com.
0.5 BCF-A
6.8 BCF-M
"Echols Com"
1.2 BCF-M
Stephens "A"
120242
1.7 BCF-M
0.8 BCF-A
Phillips
PPCo
140'
"Phillips St"
Mobil
Mobil St. QQ Com.
5.1 BCF-M
0.3 BCF-A
T
23
S
Mobil
Fed. MM Com.
0.9 BCF-M
13
"Drag-A"
18
115442
2.5 BCF-M
Phillips
Mobil
State RR
17
2.1 BCF-M
Mobil
Fed. LL Com.
0.3 BCF-M
0.1 BCF-C
"Drag-B"
115442
5-31-74
Phillips
1.6 BCF-M
Mobil
Fed. PP Com.
2.2 BCF-M
24
"Drag-B"
19
Phillips
Drag-C
1.8 BCF-P
114258
7-5-74
Mobil
Fed. RR Com.
0.4 BCF-M

CARLSBAD (SOUTH) FIELD
EDDY COUNTY, NEW MEXICO
SCALE: 1" = 2000'

- Morrow
- Atoka
- Penn
- Canyon
- Atoka/Morrow Commingled
- Strawn

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

1. Lease Name: Drag-A
2. Well No.: 1
3. Well Location: Unit C, 660 feet from North line, 1980 feet from West line of Section 18, Township 23-S Range 27-E, Eddy County, New Mexico.
4. Upper Zone: Carlsbad, South (Atoka)
5. Completion Interval: 10,688'-10,799'.
6. Lower Zone: Carlsbad, South (Morrow).
7. Completion Interval: 11,550'-11,676'.
8. Dual Completion Authorized by Commision Order No. MC-1993.
9. Latest Well Test Summary

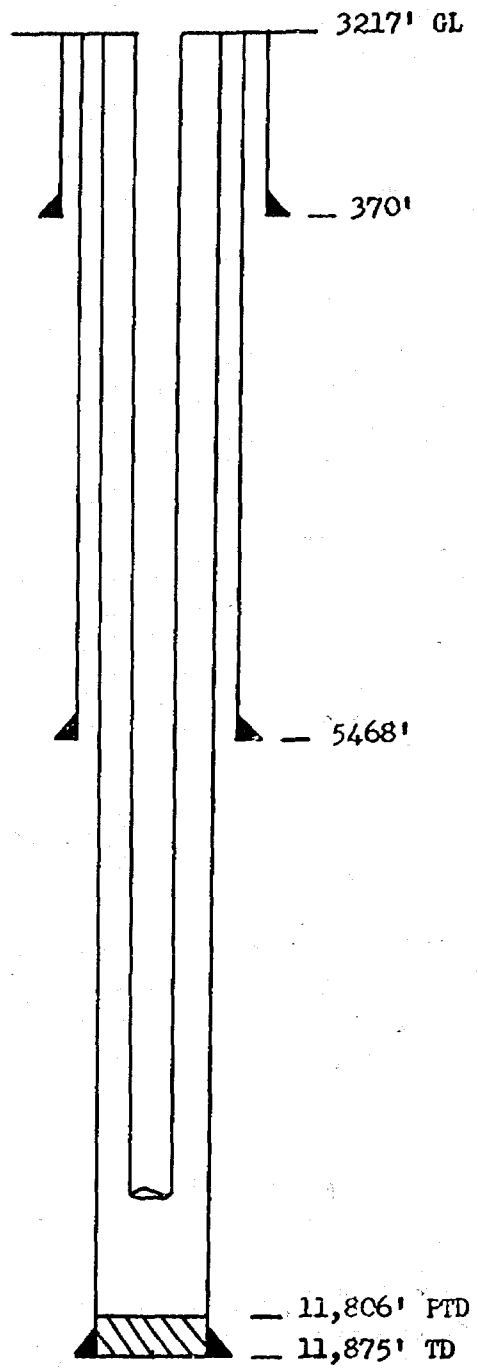
	Carlsbad, South (Atoka) (Upper Zone)	Carlsbad, South (Morrow) (Lower Zone)
Current Status	SI	Flowing
Gas Mcf/day	104	6
Cond. Bbls/day	0	0
Water Bbls/day	0	0
Date	November, 1972	June 6, 1981

10. Calculated Bottom-hole Pressure from SIWHP of Upper Zone: 637 psi. Fl @ 10111' (887 psi).
11. Calculated Bottom-hole Pressure from SIWHP of Lower Zone: 519 psi.

By: J. L. Blevins

Date: 7-22-81

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 2
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81



13-3/8" Csg set @ 370' W/450 sx class H cement W/2% CaCl2. Circulated 30 sx.

8-5/8" Csg set @ 5468' W/1,000 sx Tr. LW and 250 sx Class H cement, casing rotated. TOC @ 2150' by temperature survey.

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81

5-1/2" Csg set @ 11,875' W/550 sx Class H W/3/4% CFR2 W/8# salt/sack, casing rotated. TOC @ 7950' by temperature survey.

Atoka Zone is perforated with 42 holes, 10,688-10,799 feet.

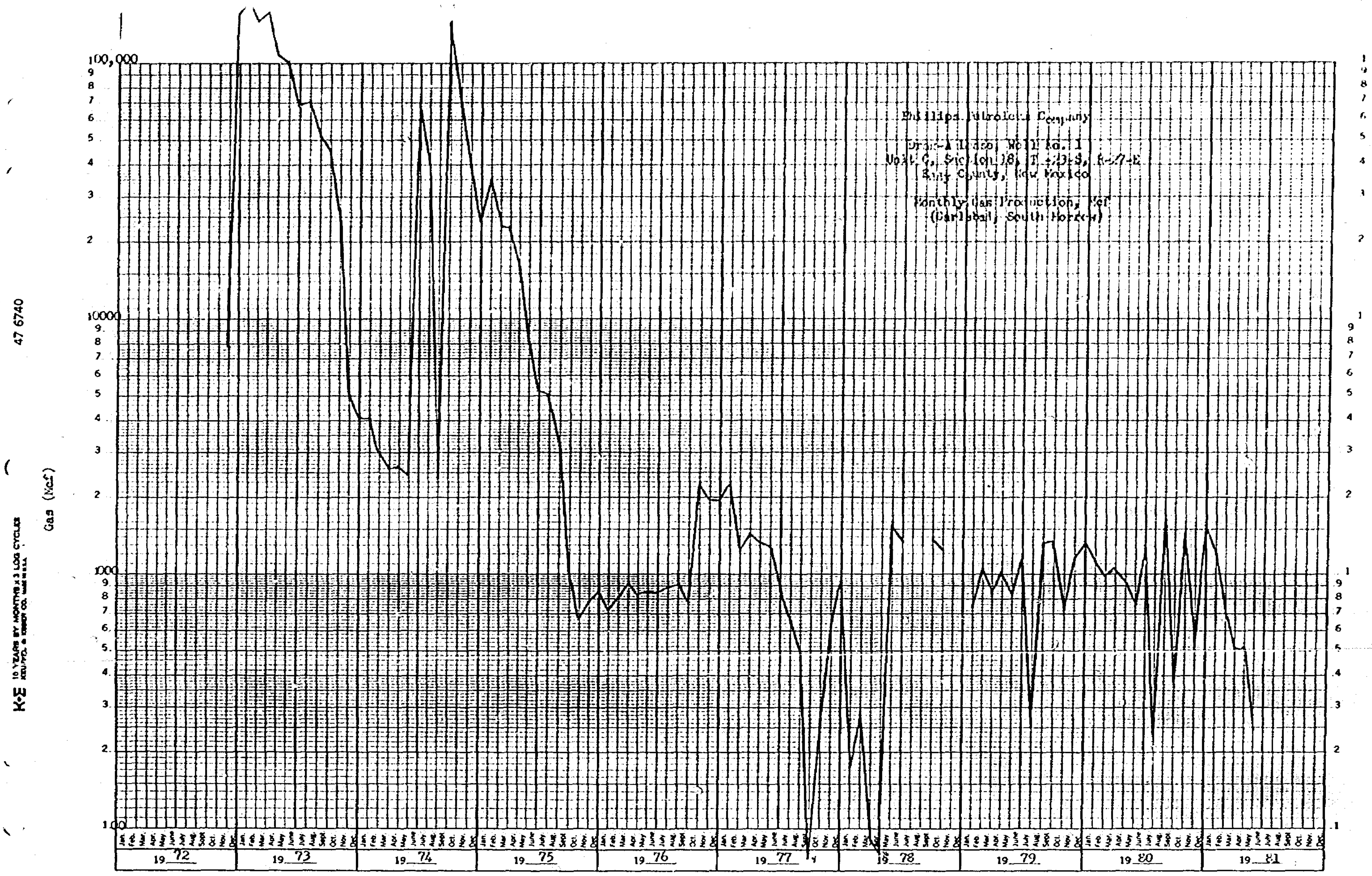
Morrow Zone is perforated with 50 holes, 11,550-11,676 feet.

2-7/8" tubing to be set at about 11,670'

NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	AFE NO. / FILE CODE
FOR APPR		
FOR CONST	Drag-A No. 1 660' FNL & 1980' FWL, Section 18, T23S, R27E Eddy County, New Mexico PROPOSED COMPLETION	SCALE None UNLESS OTHERWISE NOTED
DRAWN 7-21-81		DWG NO.
CHECKED		SH NO.
APP'D		

FORM 1779 6-76 PRINTED IN U.S.A.



Gas (Mcf)
100,000
10000
1000
100
19 72
19 73
19 74
19 75
19 76
19 77
19 78
19 79
19 80
19 81
County, New Mexico
(Carlsbad, South Morrow)
47 6740
K-E

PHILLIPS PETROLEUM COMPANY

DRAG-A LEASE, WELL NO. 1
UNIT C, SECTION 18, T-23-S, R-35-E
EDDY COUNTY, NEW MEXICO

PRODUCTION HISTORY
CARLSBAD, SOUTH FIELD

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1972		
JAN		
FEB		
MAR		
APR		
MAY	600	233
JUN	0	0
JUL	0	0
AUG	0	0
SEP	0	0
OCT	0	0
NOV	7,828	978
DEC	155,384	8,280
TOTAL YR.	163,812	9,491
ACCUM.	163,812	9,491
1973		
JAN	182,892	0
FEB	141,641	0
MAR	156,274	0
APR	117,260	0
MAY	102,748	0
JUN	70,615	0
JUL	71,094	0
AUG	53,146	0
SEP	46,774	0
OCT	24,983	0
NOV	5,001	0
DEC	4,103	0
TOTAL YR.	976,531	0
ACCUM.	1,140,343	9,491
1974		
JAN	4,022	ZONE
FEB	3,046	SHUT-IN
MAR	2,639	01-74
APR	2,655	0
MAY	2,467	0
JUN	71,422	0
JUL	41,314	0
AUG	2,437	0
SEP	143,392	0
OCT	77,341	0
NOV	41,265	0
DEC	24,835	0
TOTAL YR.	416,835	0
ACCUM.	1,557,178	9,491
1975		
JAN	36,914	0
FEB	23,891	0
MAR	22,954	0
APR	16,305	0
MAY	8,300	0
JUN	5,374	0
JUL	5,112	0
AUG	3,350	0
SEP	1,044	0
OCT	685	0
NOV	781	0
DEC	872	0
TOTAL YR.	125,582	0
ACCUM.	1,682,760	9,491

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 6
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1976		
JAN	733	0
FEB	808	0
MAR	924	0
APR	830	0
MAY	849	0
JUN	852	0
JUL	887	0
AUG	914	0
SEP	779	0
OCT	2,238	0
NOV	1,984	0
DEC	1,976	0
TOTAL YR.	13,814	0
ACCUM.	1,696,574	9,491
1977		
JAN	2,214	0
FEB	1,226	0
MAR	1,436	0
APR	1,343	0
MAY	1,291	0
JUN	858	0
JUL	655	0
AUG	489	0
SEP	4	0
OCT	257	0
NOV	587	0
DEC	932	0
TOTAL YR.	11,292	0
ACCUM.	1,707,866	9,491

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1978		
JAN	175	0
FEB	285	0
MAR	72	0
APR	36	0
MAY	1,598	0
JUN	1,358	0
JUL		0
AUG		0
SEP	1,384	0
OCT	1,261	0
NOV		0
DEC		0
TOTAL YR.	6,169	0
ACCUM.	1,714,035	9,491
1979		
JAN	758	0
FEB	1,050	0
MAR	851	0
APR	1,029	0
MAY	829	0
JUN	1,141	0
JUL	254	0
AUG	1,316	0
SEP	1,324	0
OCT	728	0
NOV	1,172	0
DEC	1,338	0
TOTAL YR.	11,790	0
ACCUM.	1,725,825	9,491

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1980		
JAN	1,103	0
FEB	997	0
MAR	1,055	0
APR	959	0
MAY	771	0
JUN	1,293	0
JUL	238	0
AUG	1,647	0
SEP	387	0
OCT	1,482	0
NOV	648	0
DEC	1,547	0
TOTAL YR.	12,127	0
ACCUM.	1,737,952	9,491
1981		
JAN	1,245	0
FEB	749	0
MAR	513	0
APR	512	0
MAY	249	0
TOTAL YR.	3,268	0
ACCUM.	1,741,220	9,491

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 5-25-72	Fed. Lse. #NM0540701-A
Company: Phillips Petroleum Company			Connection: Shut in pending connection		--
Pool: Carsbad, South (Atoka) Gas			Formation: Atoka		Unit: --
Completion Date: 5-16-72	Total Depth: 11875		Plug Back TD: 11806	Elevation: 3217' Gr. 3237' DF	Farm or Lease Name: Drag-A
* Csg. Size: 5-1/2" / Wt.: 17#, 20# / d: 3.434 / Set At: 11875			Perforations: From 10686 To 10799		Well No.: 1
Tbg. Size: -- / Wt.: -- / d: -- / Set At: --			Perforations: From -- To --		Unit: C / Sec.: 18 / Twp.: 23-S / Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple			Packer Set At: 11470		County: Eddy
* Producing Thru: annulus	Reservoir Temp. °F: 176 @ 11800	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
10688	10688	.6003	.0147	.007	--		3"	Flange

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098		4085	81	
1.	3.068	1.00	160	50	92	Morrow		3676	81	1 hr.
2.	"	1.75	450	10	84	Completion		2295	82	"
3.	"	1.75	410	17	80	Shut-In		1962	82	"
4.	"	1.75	410	22	86			1514	83	"
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	4.789	93.06	173.2	.9706	1.280	1.013	561
2.	15.61	68.06	463.2	.9777	"	1.035	1376
3.	"	84.82	423.2	.9813	"	1.033	1718
4.	"	96.49	423.2	.9759	"	1.033	1944
5.							

NO.	P_t	Temp. °R	T_t	Z
1.	Calculations made by Electronic			
2.	Calculator. Program based on			
3.	New Mexico Manual for Back-			
4.	Pressure testing of gas wells,			
5.				

Gas Liquid Hydrocarbon Ratio -- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons -- Deg.
Specific Gravity Separator Gas .6003 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 671 P.S.I.A. ____ P.S.I.A.
Critical Temperature 358 R ____ R

P_c 4098.2 P_c^2 16795

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	13,610	3689.3	13,611	3184
2	53,278	2308.7	5,331	11,464
3	39,014	1976.3	3,906	12,889
4	23,323	1529.2	2,338	14,457
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16795}{14457}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1364$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2209$

Absolute Open Flow 2209 Mcfd @ 15.025 | Angle of Slope θ 49.5 | Slope, n .853

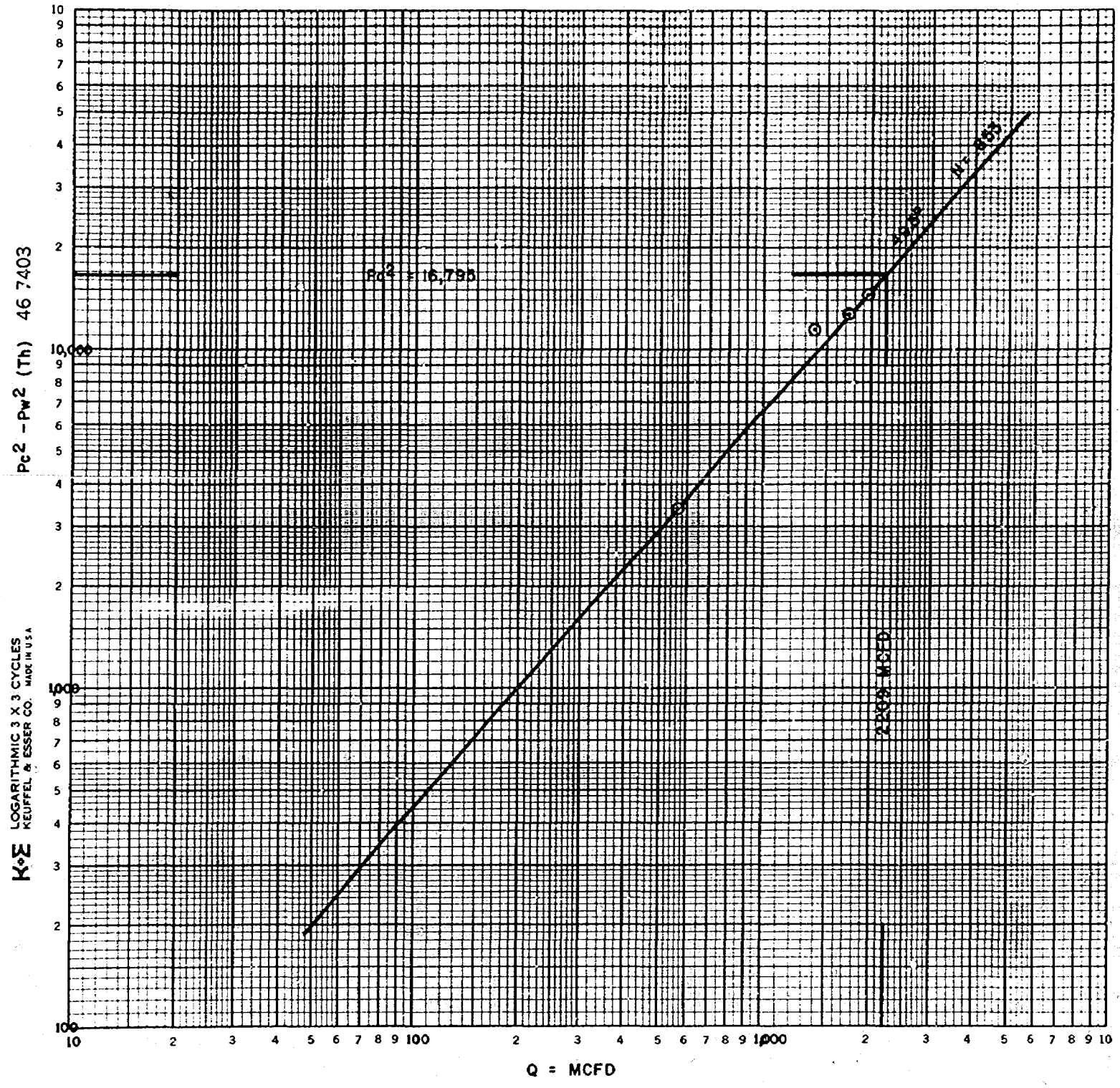
Remarks: Equipment trouble between first and second rates.
* To be produced through casing/tubing annulus.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Atoka) -- Gas



NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special						Test Date: 5-25-72			Fed. Lse. NM0540701-A
Company: Phillips Petroleum Company				Connection: Shut in pending connection					---
Pool: Carlsbad, South (Morrow) Gas				Formation: Morrow					Unit: ---
Completion Date: 5-21-72		Total Depth: 11,875'			Plug Back TD: 11,806'		Elevation: 3217' Gr, 3237' DF		Farm or Lease Name: Drag-A
Csg. Size: 5-1/2"	Wt.: 17#, 20#	d: 3.434	Set At: 11,875'		Perforations: From 11,550' To 11,676'				Well No.: 1
Tbg. Size: 2-7/8"	Wt.: 6.5#	d: 2.441	Set At: 11,470'		Perforations: From --- To ---				Unit: C Sec.: 18 Twp.: 23-S Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple					Packer Set At: 11,470'				County: Eddy
Producing Thru: Tubing		Reservoir Temp. °F: 176 @ 11800		Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2				State: New Mexico
L: 11550	H: 11550	Gg: .5782	% CO_2: .0102	% N_2: .0026	% H_2S: ---	Prover: ---	Meter Run: 3"	Taps: Flange	

FLOW DATA						TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098	81	4085		
1.	3.068	2.00	800	10	76	2788	85	Atoka		1 hour
2.	"	"	780	17	72	2252	83	Completion		1 hour
3.	"	"	780	24	77	1731	85	Shut-In		1 hour
4.			780	28	74	1362	83	(tubing/casing		1 hour
5.								annulus)		

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	21.32	90.18	813.2	.9850	1.311	1.058	2627
2.	"	116.12	793.2	.9887	"	1.059	3398
3.	"	137.98	"	.9840	"	1.058	4015
4.	"	149.03	"	.9868	"	1.059	4353
5.							

NO.	P_t	Temp. °R	T_f	Z
1.	Calculations made by electronic			
2.	calculator. Program based on			
3.	New Mexico - manual for back-			
4.	pressure testing of gas wells.			
5.				

Gas Liquid Hydrocarbon Ratio --- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons --- Deg.
Specific Gravity Separator Gas .578 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 672 P.S.I.A. ____ P.S.I.A.
Critical Temperature 349 R ____ R

P_c 4111.2 P_c^2 16902

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	7847	2815.9	7929	8973
2	5131	2291.7	5252	11650
3	3042	1792.0	3211	13691
4	1891	1447.7	2096	14806
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16902}{14806}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1415$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4968$

Absolute Open Flow 4,968 Mcfd @ 15.025 Angle of Slope θ 45 Slope, n 1.00

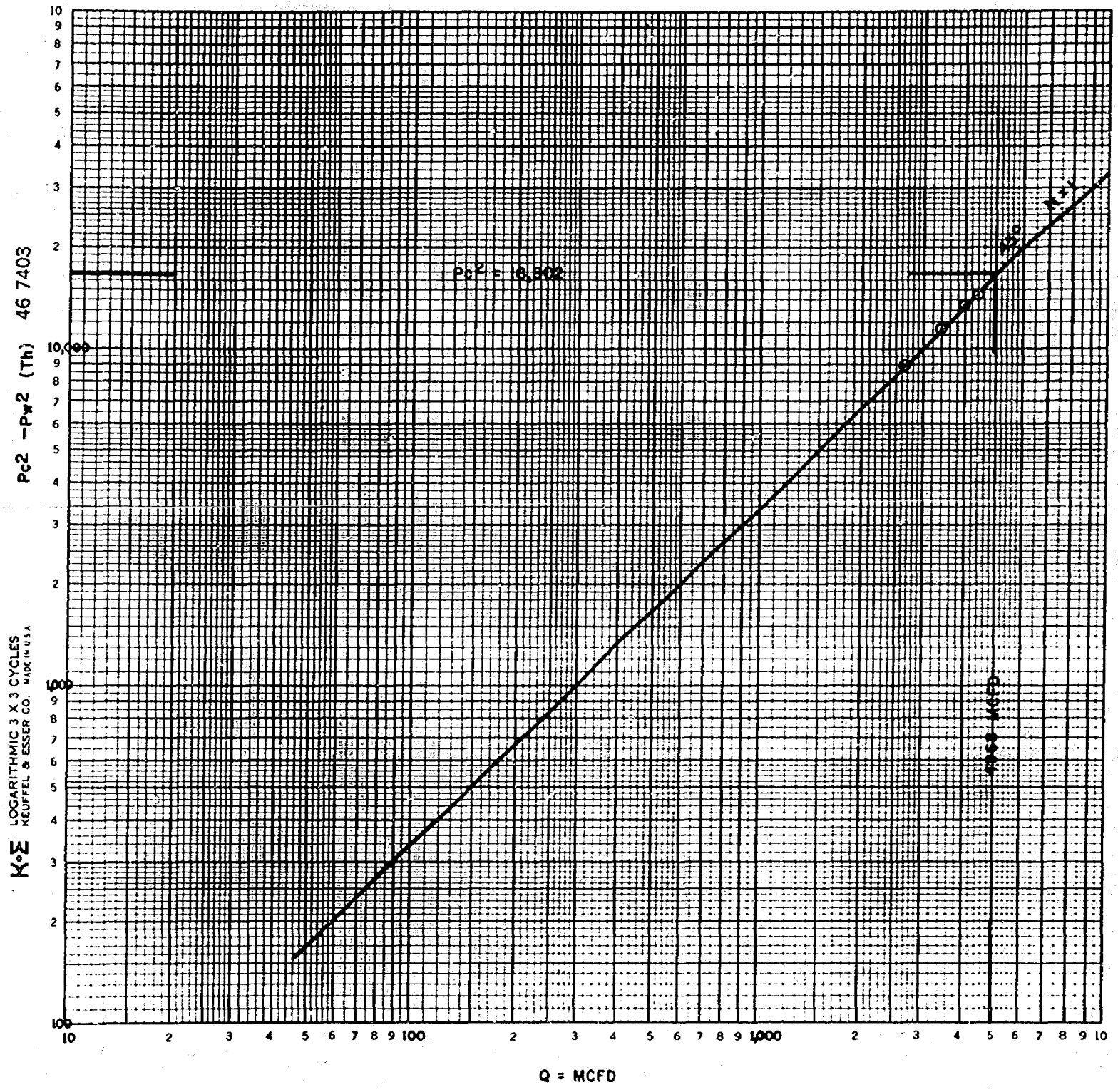
Remarks:

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Morrow) -- Gas



PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY

CO. Phillips Petroleum Co. .... LEASE Drag A .... WELL 1 ... TYPE GAS Gas Well

LOCATION 660'N + 1980'W. 18-22-27 .... COUNTY. Eddy ..... STATE N.M.

FIELD South Carlsbad .... FORM. Atoka ...... CHOKE. — .TYPE TRAP Wellhead

TRAP TEMP. — .TRAP PRESS 405 FTP. — ....ATMOS TEMP. 88 GAS TEMP. 94. BARO 681.

DATE SEC 6/24/81. DATE RUN. 7/1/81. SEC BY Jetton RUN BY A.R. BOMB PRESS. 405

H2S GR.(CORR). STLA. CO2 ON TAG 0.40%. MISC.. [illegible] only

INST 1 METH 1 FILE 28

RUN 1 G-434 8 : 57.3 7 / 1 / 81

COMPONENT	FINAL MOL %
* C6 PLUS	.3
N2	.73
C1	95.27
CO2	.45
ETHANE	2.46
C3	.46
IC4	.13
NC4	.1
IC5	.07
NC5	.03
TOTAL	100

* Possible Bomb Contaminant

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.1291	.1287
ETHANE	GPM	.656	.6539
C3	GPM	.1262	.1258
IC4	GPM	.0424	.0422
NC4	GPM	.0314	.0313
IC5	GPM	.0255	.0254
NC5	GPM	.0108	.0108

0.165
0.247

TOTAL GPM	1.0214	1.0181
Z FACTOR=	.997855	
SAT. BASIS BTU	1027.72	1024.51
CAL. SP. GR.	.591	

G-434

Date 6-24-81
Type Gas Gas Well
State New Mexico
County Eddy
Field South Carlsbad
Formation Atoka
Company Phillips Pet. Co.
Wells #1
Lease Drag A 660 N + 1980 W 18-22-27
Sampler Larry Jetton

Baro 681
Atmos. Temp. 88°F
Trap Press. 405#
Gas Temp. 94°F
Type of Trap Wellhead
H2S STLA
CO2 0.40%
Choke —
FTP —
Bomb Press 405#

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 9
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81

PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY

CO. *Phillips Pet. Co.* ....LEASE *Drag A* .....WELL *1* ...TYPE GAS *Gas Well*

LOCATION *660'N & 1980'W* .. *18-22-27* ....COUNTY *Eddy* ....STATE *N.M.*

FIELD *South Carlsbad* .....FORM. *Morrow* ......CHOKE *OPEN* TYPE TRAP *Conv.*

TRAP TEMP *—* .TRAP PRESS. *90* FTP *105* ..ATMOS TEMP *90* .GAS TEMP *104* BARO. *681.*

DATE SEC *6/24/81*.DATE RUN *6/29/81*.SEC BY *Patton* RUN BY *A.B.* .BOMB PRESS. *82*.

H2S GR.(CORR) *STLA* .CO2 ON TAG *0.40%* .MISC. *[illegible]*

INST 1 METH 1 FILE 48

RUN 1 G-429 2 : 10.3 0 / 3 / 0

COMPONENT	FINAL MOL %
C6 PLUS	.09
H2	.72
C1	96.38
CO2	.67
ETHANE	1.67
C3	.28
IC4	.07
NC4	.06
IC5	.04
NC5	.02
TOTAL	100

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.0387	.0386
ETHANE	GPM	.4453	.4439
C3	GPM	.0768	.0766
IC4	GPM	.0228	.0227
NC4	GPM	.0188	.0188
IC5	GPM	.0146	.0145
NC5	GPM	.0072	.0072
			0.060 *0.090*
TOTAL GPM		.6242	.6223
Z FACTOR=		.997966	
SAT. BASIS BTU		1005.2	1002.05
CAL. SP. GR.		.58	

G-429

Date *6-24-81* Baro *681*
Type Gas *Gas Well* Atmos. Temp. *90°F*
State *New Mexico* Trap Press. *90#*
County *Eddy* Gas Temp. *104°F*
Field *South Carlsbad* Type of Trap
Formation *Morrow* Heat ( ) Conv. ( )
Company *Phillips Pet. Co.* H2S *STLA*
Wells *#1* CO2 *0.40%*
Lease *Drag A 660'N & 1980'W 18-22-27* Choke *Open*
FTP *105#*
Sampler *Casey Patton* Bomb Press *82#*

BEFORE EXAMINER S
OIL CONSERVATION D
EXHIBIT NO. *10*
CASE NO. *7313*
Submitted by *Phillips*
Hearing Date *7-29-81*

DRAG 'A' NO. 1

ECONOMICS OF COMMINGLING

MORROW AND ATOKA FORMATIONS

Year	Case 1: Commingled Production		Case 2: Individual Production	
	Gas (MCF)	Cash Flow ($)	Gas (MCF)	Cash Flow ($)
1	65,897	74,477	10,611	10,986
2	38,361	42,729	8,020	7,885
3	22,713	24,629	6,061	5,506
4	13,720	14,166	4,581	3,671
5	8,477	8,000	3,462	2,241
6	5,370	4,277	2,617	1,115
7	3,513	1,979	1,998	240
8			55,286	60,841
9			30,341	31,964
10			16,652	15,988
11			9,139	7,085
12			5,015	2,049
Total	158,051 MCF	$170,257	153,783 MCF	$149,571

Increase in reserves = 4,268 MCF

Increase in Cash Flow = $20,686.

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 11
CASE NO. 7313
Submitted by Phillips
Hearing Date 7-29-81

Drag "A" #1
Sec. 18, T-23-S, R-27-E
Eddy County, New Mexico

March 2, 1972

Location: 660' FNL and 1980' FWL, Sec 18, T-23-S, R-27-E, Eddy County, New Mexico.

Drld 17-1/2" hole to 370'. Cmt'd 13-3/8" at 370' w/ 450 sx Class "H". Circ'd 30 sx cmt.

Cmt'd 8-5/8" csg at 5468' w/ 1000 sx Trinity LW cmt w/ 3# Gilsonite per sx followed by 250 sx Class "H" Neat cmt. Ran temp survey, top cmt outside 8-5/8" csg 2150'.

Ran 360 jts 5-1/2" csg at 11875'. Cmt'd w/ 550 sx Class "H" cmt. Ran temp survey, top cmt outside 5-1/2" csg at 7950'.

Set Baker Model F-1 prod pkr at 11470'. Schlum perf'd Atoka in 5-1/2" csg thru 2-7/8" tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot 10688-10691' 10694-10697', 10744-10750', 10794-10799'. SI 4-1/2 hrs, SICP 600#. Howco treated Atoka w/ 2500 gals 15% acid dwn tbg thru perfs 10686-10799'. Max press 4400#, min 4250#, inst SDP 4200#, 15-min SIP 3800#, 1-hr 2800#. SI 10 hrs, SITP 2200#, SICP 3400#. Flwd tbg to pit 2-3/4 hrs to clean up, FTP 2200# to 100#, rec 150 BLW, CP 3400#-500#. Flowed from csg 2 hrs, 1/4" ch, thru low press separator, gas rate 184 MCFD, FCP 500# to 700#. SI 3 hrs, SICP 700# to 1500#. Flowed thru csg 1 hr to high press separator, 10/64" ch, gas rate 795 MCFD, FCP 1700#, separator press 750# at 86° F. Flowed 2 hrs, 1/4" ch, from csg, gas rate 1400 MCFD, FCP 1150#, separator press 725# at 86° F. Flowed 3 hrs, 13/64" ch thru csg, gas rate 1000 MCFD, FCP 1200#, separator press 725# at 82° F. SI 10 hrs, SITP 3600#, SICP 3800#. SITP 4400#, CP 4600#. Howco treated Atoka down csg thru perfs 10686-10799' w/ 7500 gals 20% CRA acid. Max press 6000#, min 5000#, inj rate 6 BPM, inst SDP 4300#, 15-min 4200#, 90-min 3800#. Flowed 14 hrs thru tbg, 1/2" ch, gas rate 307 MCFD, specific gvty .599, no sulphur, 1.06 MOL CO_2, 7-1/2 BLW, FTP 450#, CP 600#. SI 3 hrs, SITP 1600#, CP 1900#. 22nd, flowed thru csg 8 hrs, 13/64" ch, last 3 hrs on stabilized rate 1,300 MCFD, FCP 1150#, separator 820# at 90° F. SI 16 hrs, SICP 3700#.

May 22, 1972

Closed Baker sleeve at 11,451'. Atoka in csg annulus. Schlum perf'd Morrow in 5-1/2" csg thru tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot, 11649-11653', 11550-11554', 11669-11676', 11604-11610'. SITP 2500#. Flowed 1 hr at stabilized rate 4100 MCFD, 3/8" ch, FTP 2600#, separator 800# at 60° F, 1/2 BLW. SI 9 hrs, SITP 3900#. Atoka zone shut in 49 hrs in csg, SICP 4100#. Morrow zone shut in 43 hrs in tbg, SITP 4300#. Atoka on 4-pt BP test: SICP 4085# first rate 1 hr, 6/64" ch, gas rate 534 MCFD, FCP 3676#; 2nd rate 1 hr, 10/64" ch gas rate 1348 MCFD, FCP 2275#; 3rd rate 1 hr, 12/64" ch, gas rate 1678 MCFD, FCP 1962# 4th rate 1 hr, 15/64" ch, gas rate 1909 MCFD, FCP 1514#. Specific gvty .602, no sulphur. Flowed Morrow thru tbg on 4-pt BP test: SITP 4098#. 1st rate 1 hr, 12/64" ch gas rate 2526 MCFD, FTP 2788#; 2nd rate 1 hr, 16/64" ch, gas rate 3247 MCFD, FTP 2252#, 3rd rate 1 hr, 20/64" ch, gas rate

3937 MCFD, FTP 1731#; 4th rate 1 hr, 24/64" ch, gas rate 4400 MCFD, FTP 1362#, specific gvty .582, no sulphur. Flowed Atoka thru csg on 4-pt BP test, SICP 3887#, 1st 1-hr rate, 8/64" ch, gas rate 1360 MCFD, FCP 2906#; 2nd 1-hr rate, 10/64" ch, gas 1680 MCFD, FCP 2121#; 3rd 1-hr rate, 14/64" ch, gas rate 1580 MCFD, FCP 1496#; 4th 1-hr rate, 17/64" ch, gas 1480 MCFD, FCP 986#. Morrow zone shut in during 4-hr BP test on Atoka in tbg, SITP start test 3919#, end of test 3913#. Calculated absolute open flow pote Morrow zone 4968 MCFD, no liquid, gas gvty .578. Calculated absolute open flow pote Atoka zone 2209 MCFD, no liquid, gas gvty .6003. Morrow perfs 11550-11676'. Atoka perfs 10688-10799'. Dual completion in Atoka and Morrow formations.

May 22, 1974

Atoka zone shut down.

June 10, 1974

Perforated additional section in Morrow 11550-11676'. Treated Morrow 11550-11786' with 3150 gallons 7-1/2% MS acid in 3 stages. Drilled and pushed Baker packer to bottom. Tested Morrow, 1" ch, 2891 MCFD, 1 BW, FTP-500#.

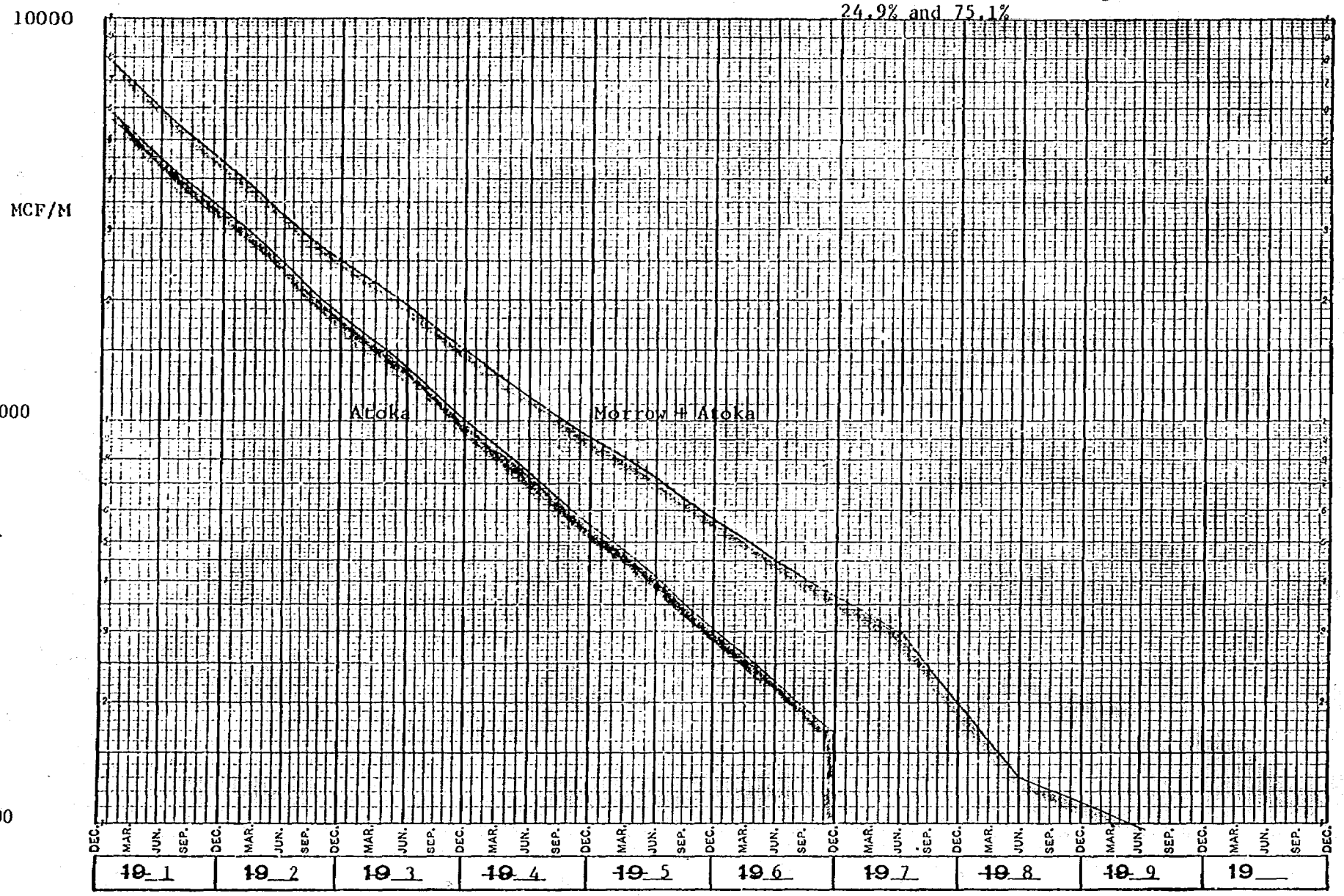
September 6, 1974

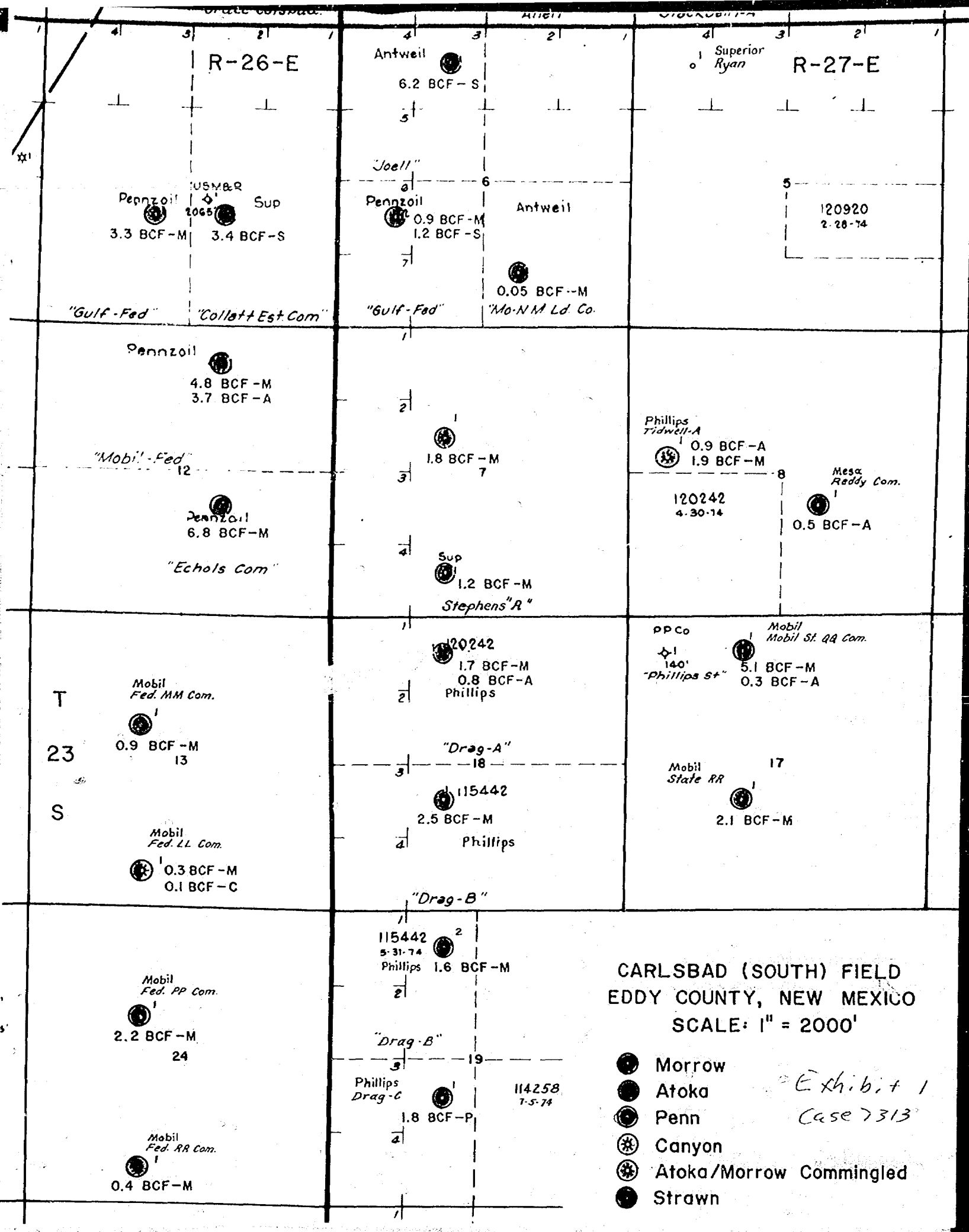
Treated Morrow thru Casing Perforations 11550-11786' with 1000 gallons 7-1/2% HCL acid and 5000 gallons 7-1/2% HCl with nigrogen. Treated thru perforations 11778-11786' with 500 gallons 7-1/2% HCL acid. Set cement retainer 11476' and squeezed perforations 11550-11786' with 40 sacks cement, top cement on retainer 11464', PBTD. Perforated Morrow with 2 jet per foot, 11406-11414, and returned to production. Tested Morrow at 7924 MCFD, 3 BW, FTP 1900# on 28/64" ch.

January 21, 1975

Dowell treated Morrow dwn 2-7/8" tbg thru csg perfs 11406-11414' w/ 500 gals 7-1/2% LST acid w/ F-2 and clay agents. Max press 4100#, min 1500#, final 3750#, inst SDP vacuum. Avg inj rate 1.5 BPM. Flowed 24 hrs, 1" chk, 2550 MCF gas, 3 BSW, FTP 475#, line press 430#, from Morrow perfs 11,406-11,414'.

Drag 'A' No. 1
Eddy County, New Mexico
Morrow and Atoka Commingled Forecast
24.9% and 75.1%





CARLSBAD (SOUTH) FIELD
EDDY COUNTY, NEW MEXICO
SCALE: 1" = 2000'

- Morrow
- Atoka
- Penn
- Canyon
- Atoka/Morrow Commingled
- Strawn

Exhibit 1
Case 7313

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

1. Lease Name: Drag-A
2. Well No.: 1
3. Well Location: Unit C, 660 feet from North line, 1980 feet from West line of Section 18, Township 23-S Range 27-E, Eddy County, New Mexico.
4. Upper Zone: Carlsbad, South (Atoka)
5. Completion Interval: 10,688'-10,799'.
6. Lower Zone: Carlsbad, South (Morrow).
7. Completion Interval: 11,550'-11,676'.
8. Dual Completion Authorized by Commision Order No. MC-1993.
9. Latest Well Test Summary

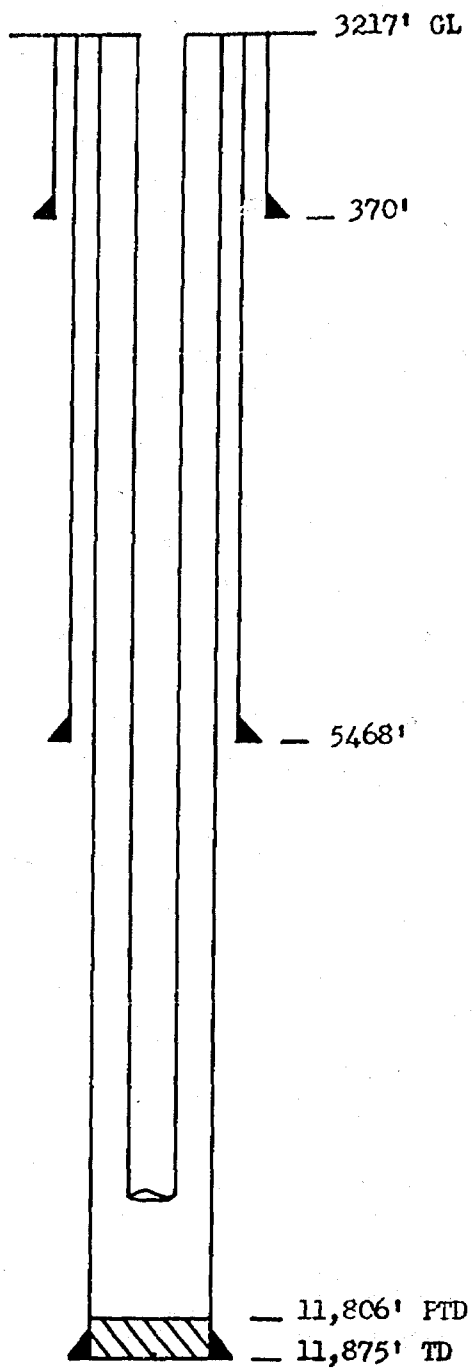
	Carlsbad, South (Atoka) (Upper Zone)	Carlsbad, South (Morrow) (Lower Zone)
Current Status	SI	Flowing
Gas Mcf/day	104	6
Cond. Bbls/day	0	0
Water Bbls/day	0	0
Date	November, 1972	June 6, 1981

10. Calculated Bottom-hole Pressure from SIWHP of Upper Zone: 637 psi. Fl @ 10111' (887 psi).
11. Calculated Bottom-hole Pressure from SIWHP of Lower Zone: 519 psi.

By: J. L. Blevins

Date: 7-22-81

Exhibit 2
Case 7313



13-3/8" Csg set @ 370' W/450 sx class H cement W/2% CaCl2. Circulated 30 sx.

8-5/8" Csg set @ 5468' W/1,000 sx Tr. LW and 250 sx Class H cement, casing rotated. TOC @ 2150' by temperature survey.

5-1/2" Csg set @ 11,875' W/550 sx Class H W/3/4% CFR2 W/8# salt/sack, casing rotated. TOC @ 7950' by temperature survey.

Atoka Zone is perforated with 42 holes, 10,688-10,799 feet.

Morrow Zone is perforated with 50 holes, 11,550-11,676 feet.

2-7/8" tubing to be set at about 11,670'

Exhibit 3
Case 7313

NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY	AFE NO. / FILE CODE
FOR APPR	BARTLESVILLE, OKLAHOMA	
FOR CONST	Drag-A No. 1	SCALE None UNLESS OTHERWISE NOTED
DRAWN 7-21-81	660' FNL & 1980' FWL, Section 18, T23S, R27E	DWG NO.
CHECKED	Eddy County, New Mexico	SH NO.
APP'D	PROPOSED COMPLETION	

FORM 1779 6-76

PRINTED IN U.S.A.

Phillips Petroleum Company

Grace A Lease, Well No. 1
Unit G, Section 18, T-23-S, R-27-E
Eddy County, New Mexico

Monthly Gas Production, MCF
(Carlsbad, South Morrow)

100,000
10000
1000
100

19 72 | 19 73 | 19 74 | 19 75 | 19 76 | 19 77 | 19 78 | 19 79 | 19 80 | 19 81

47 6740

K&E 10 YEARS BY MONTHS 1 LOG CYCLE
KEUFFEL & ESSER CO. MADE IN U.S.A.

Exhibit 5
Case 313

PHILLIPS PETROLEUM COMPANY

DRAG-A LEASE, WELL NO. 1
UNIT C, SECTION 18, T-23-S, R-35-E
EDDY COUNTY, NEW MEXICO

PRODUCTION HISTORY
CARLSBAD, SOUTH FIELD

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1972		
JAN		
FEB		
MAR		
APR		
MAY	600	233
JUN	0	0
JUL	0	0
AUG	0	0
SEP	0	0
OCT	0	0
NOV	7,828	978
DEC	155,384	8,280
TOTAL YR.	163,812	9,491
ACCUM.	163,812	9,491
1973		
JAN	182,892	0
FEB	141,641	0
MAR	156,274	0
APR	117,260	0
MAY	102,748	0
JUN	70,615	0
JUL	71,094	0
AUG	53,146	0
SEP	46,774	0
OCT	24,983	0
NOV	5,001	0
DEC	4,103	0
TOTAL YR.	976,531	0
ACCUM.	1,140,343	9,491

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1974		
JAN	4,022	ZONE
FEB	3,046	SHUT-IN
MAR	2,639	01-74
APR	2,655	0
MAY	2,467	0
JUN	71,422	0
JUL	41,314	0
AUG	2,437	0
SEP	143,392	0
OCT	77,341	0
NOV	41,265	0
DEC	24,835	0
TOTAL YR.	416,835	0
ACCUM.	1,557,178	9,491
1975		
JAN	36,914	0
FEB	23,891	0
MAR	22,954	0
APR	16,305	0
MAY	8,300	0
JUN	5,374	0
JUL	5,112	0
AUG	3,350	0
SEP	1,044	0
OCT	685	0
NOV	781	0
DEC	872	0
TOTAL YR.	125,582	0
ACCUM.	1,682,760	9,491

Exhibit 6
Case 7313

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1976		
JAN	733	0
FEB	808	0
MAR	924	0
APR	830	0
MAY	849	0
JUN	852	0
JUL	887	0
AUG	914	0
SEP	779	0
OCT	2,238	0
NOV	1,984	0
DEC	1,976	0
TOTAL YR.	13,814	0
ACCUM.	1,696,574	9,491
1977		
JAN	2,214	0
FEB	1,226	0
MAR	1,436	0
APR	1,343	0
MAY	1,291	0
JUN	858	0
JUL	655	0
AUG	489	0
SEP	4	0
OCT	257	0
NOV	587	0
DEC	932	0
TOTAL YR.	11,292	0
ACCUM.	1,707,866	9,491

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1978		
JAN	175	0
FEB	285	0
MAR	72	0
APR	36	0
MAY	1,598	0
JUN	1,358	0
JUL		0
AUG		0
SEP	1,384	0
OCT	1,261	0
NOV		0
DEC		0
TOTAL YR.	6,169	0
ACCUM.	1,714,035	9,491
1979		
JAN	758	0
FEB	1,050	0
MAR	851	0
APR	1,029	0
MAY	829	0
JUN	1,141	0
JUL	254	0
AUG	1,316	0
SEP	1,324	0
OCT	728	0
NOV	1,172	0
DEC	1,338	0
TOTAL YR.	11,790	0
ACCUM.	1,725,825	9,491

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1980		
JAN	1,103	0
FEB	997	0
MAR	1,055	0
APR	959	0
MAY	771	0
JUN	1,293	0
JUL	238	0
AUG	1,647	0
SEP	387	0
OCT	1,482	0
NOV	648	0
DEC	1,547	0
TOTAL YR.	12,127	0
ACCUM.	1,737,952	9,491
1981		
JAN	1,245	0
FEB	749	0
MAR	513	0
APR	512	0
MAY	249	0
TOTAL YR.	3,268	0
ACCUM.	1,741,220	9,491

Exhibit 7
Case 7313

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special							Test Date: 5-25-72		Fed. Lse. #NM0540701-A
Company: Phillips Petroleum Company				Connection: Shut in pending connection					--
Pool: Carsbad, South (Atoka) Gas				Formation: Atoka					Unit: --
Completion Date: 5-16-72		Total Depth: 11875			Plug Back TD: 11806		Elevation: 3217' Gr. 3237' DF		Farm or Lease Name: Drag-A
* Csg. Size: 5-1/2"	Wt.: 17#, 20#	d: 3.434	Set At: 11875		Perforations: From 10686 To 10799				Well No.: 1
Tbg. Size: --	Wt.: --	d: --	Set At: --		Perforations: From -- To --				Unit: C Sec.: 18 Twp.: 23-S Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple					Packer Set At: 11470				County: Eddy
* Producing Thru: annulus		Reservoir Temp. °F: 176 @ 11800		Mean Annual Temp. °F: 60		Baro. Press. – P_a: 13.2			State: New Mexico
L: 10688	H: 10688	Gg: .6003	% CO_2: .0147	% N_2: .007	% H_2S: --	Prover:	Meter Run: 3"		Taps: Flange

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098		4085	81	
1.	3.068	1.00	160	50	92	Morrow		3676	81	1 hr.
2.	"	1.75	450	10	84	Completion		2295	82	"
3.	"	1.75	410	17	80	Shut-In		1962	82	"
4.	"	1.75	410	22	86			1514	83	"
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	4.789	93.06	173.2	.9706	1.280	1.013	561
2.	15.61	68.06	463.2	.9777	"	1.035	1376
3.	"	84.82	423.2	.9813	"	1.033	1718
4.	"	96.49	423.2	.9759	"	1.033	1944
5.							

NO.	P_t	Temp. °R	T_r	Z
1.	Calculations made by Electronic			
2.	Calculator. Program based on			
3.	New Mexico Manual for Back-			
4.	Pressure testing of gas wells.			
5.				

Gas Liquid Hydrocarbon Ratio -- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons -- Deg.
Specific Gravity Separator Gas .6003 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 671 P.S.I.A. ____ P.S.I.A.
Critical Temperature 358 R ____ R

P_c 4098.2 P_c^2 16795

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	13,610	3689.3	13,611	3184
2	53,278	2308.7	5,331	11,464
3	39,014	1976.3	3,906	12,889
4	23,323	1529.2	2,338	14,457
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16795}{14457}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1364$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2209$

Absolute Open Flow 2209 Mcfd @ 15.025 | Angle of Slope θ 49.5 | Slope, n .853

Remarks: Equipment trouble between first and second rates.
* To be produced through casing/tubing annulus.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Atoka) -- Gas

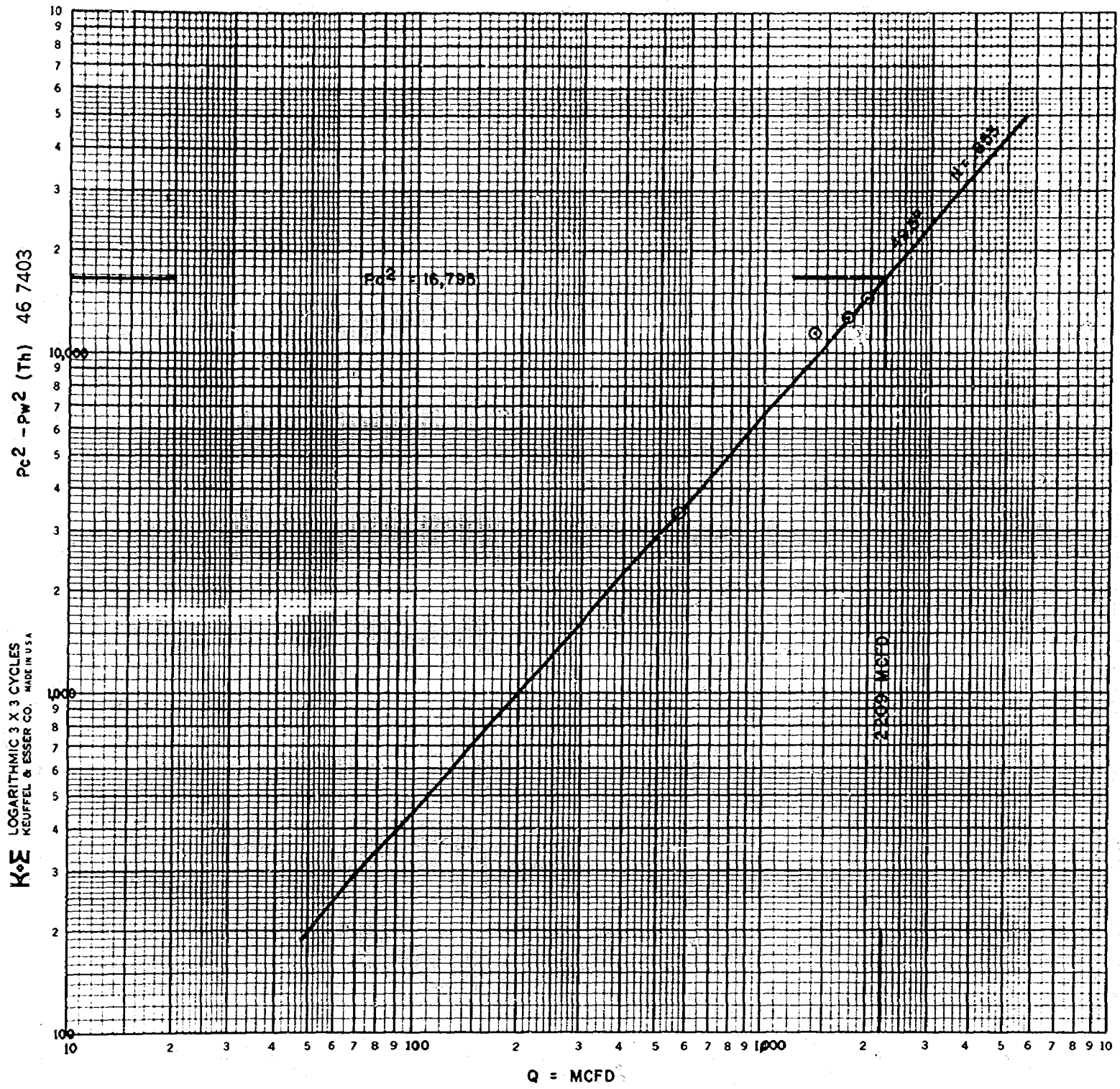


Exhibit 8
Case 5313

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special							Test Date: 5-25-72		Fed. Lse, NM0540701-A
Company: Phillips Petroleum Company				Connection: Shut in pending connection					---
Pool: Carlsbad, South (Morrow) Gas				Formation: Morrow					Unit: ---
Completion Date: 5-21-72		Total Depth: 11,875'			Plug Back TD: 11,806'		Elevation: 3217' Gr, 3237' DF		Farm or Lease Name: Drag-A
Csg. Size: 5-1/2"	Wt.: 17#, 20#	d: 3.434	Set At: 11,875'		Perforations: From 11,550'	To 11,676'			Well No.: 1
Tbg. Size: 2-7/8"	Wt.: 6.5#	d: 2.441	Set At: 11,470'		Perforations: From ---	To ---			Unit: C Sec.: 18 Twp.: 23-S Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple					Packer Set At: 11,470'				County: Eddy
Producing Thru: Tubing		Reservoir Temp. °F: 176 @ 11800		Mean Annual Temp. °F: 60°		Baro. Press. – P_a: 13.2			State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
11550	11550	.5782	.0102	.0026	---	---	3"	Flange

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098	81	4085		
1.	3.068	2.00	800	10	76	2788	85	Atoka		1 hour
2.	"	"	780	17	72	2252	83	Completion		1 hour
3.	"	"	780	24	77	1731	85	Shut-In		1 hour
4.			780	28	74	1362	83	(tubing/casing		1 hour
5.								annulus)		

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	21.32	90.18	813.2	.9850	1.311	1.058	2627
2.	"	116.12	793.2	.9887	"	1.059	3398
3.	"	137.98	"	.9840	"	1.058	4015
4.	"	149.03	"	.9868	"	1.059	4353
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	Calculations made by electronic			
2.	calculator. Program based on			
3.	New Mexico - manual for back-			
4.	pressure testing of gas wells.			
5.				

Gas Liquid Hydrocarbon Ratio --- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons --- Deg.
Specific Gravity Separator Gas .578 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 672 P.S.I.A. ____ P.S.I.A.
Critical Temperature 349 R ____ R

P_c 4111.2 P_c^2 16902

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	7847	2815.9	7929	8973
2	5131	2291.7	5252	11650
3	3042	1792.0	3211	13691
4	1891	1447.7	2096	14806
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16902}{14806}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1415$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4968$

Absolute Open Flow 4,968 Mcfd @ 15.025 Angle of Slope θ 45 Slope, n 1.00

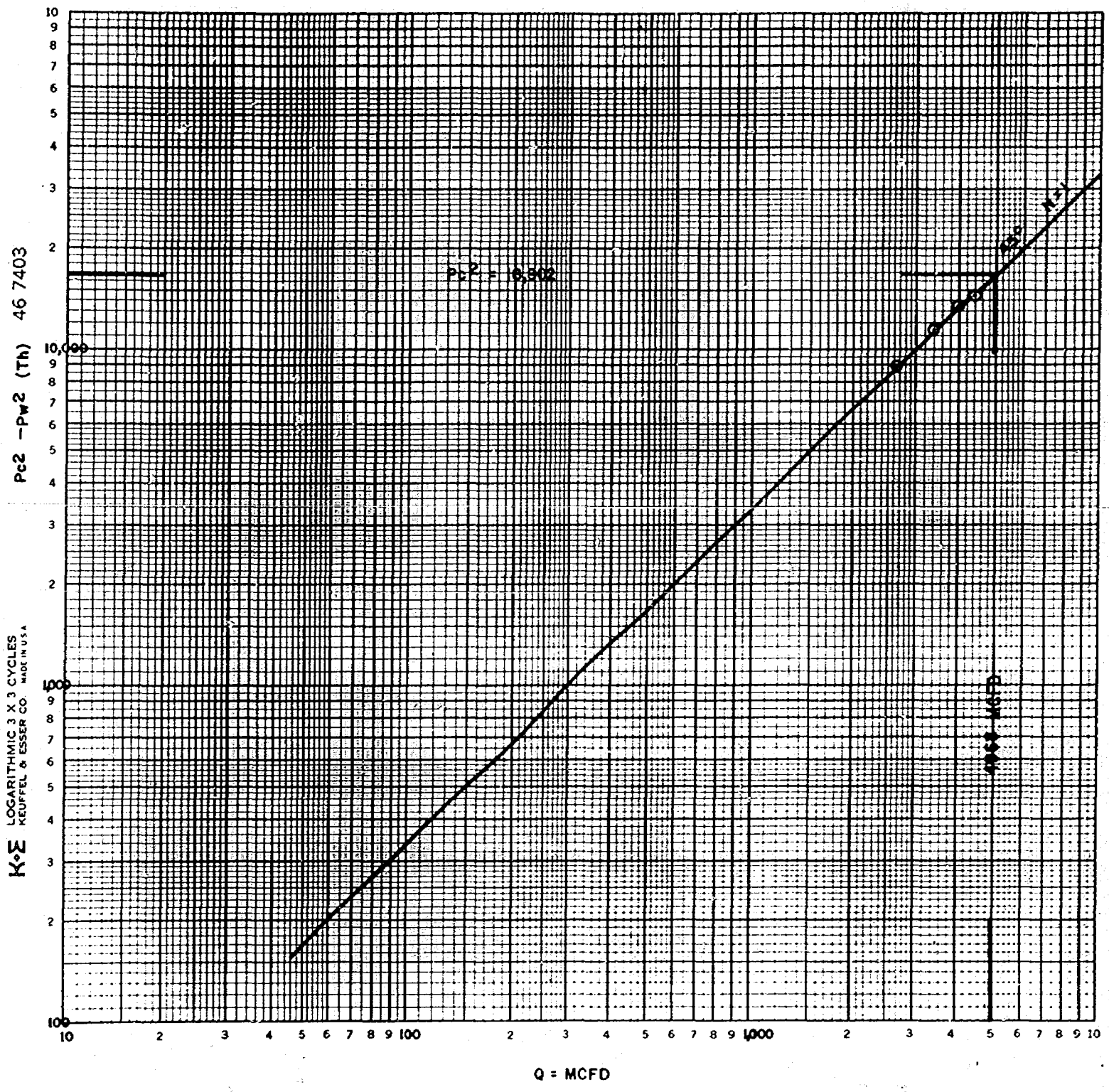
Remarks:

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Morrow) -- Gas



PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY
CO. Phillips Pet. Co. ....LEASE. Drag A .....WELL. 1 ...TYPE GAS. Gas Well
LOCATION 660'N & 1980'W . 18-22-27 .....COUNTY Eddy ....STATE N.M.
FIELD South Carlsbad .....FORM. Morrow .....CHOKE OPEN TYPE TRAP Conv.
TRAP TEMP. ---. TRAP PRESS. 90. FTP. 105. ATMOS TEMP. 90. GAS TEMP 104. BARO. 681.
DATE SEC 6/24/81. DATE RUN 6/29/81. SEC BY Patton RUN BY A.B. BOMB PRESS. 82.
H2S GR. (CORR) STD A. CO2 ON TAG 0.40 % MISC. Fractions only

INST 1 METH 1 FILE 48

RUN 1 G-429 2 : 10.3 0 / 3 / 0

COMPONENT	FINAL MOL %
C6 PLUS	.09
H2	.72
C1	96.38
CO2	.67
ETHANE	1.67
C3	.28
IC4	.07
NC4	.06
IC5	.04
NC5	.02
TOTAL	100

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.0387	.0386
ETHANE	GPM	.4453	.4439
C3	GPM	.0768	.0766
IC4	GPM	.0228	.0227
NC4	GPM	.0188	.0188
IC5	GPM	.0146	.0145
NC5	GPM	.0072	.0072
TOTAL GPM		.5242	.5223
Z FACTOR=		.997966	
SAT. BASIS BTU		1005.2	1002.05
CAL. SP. GR.		.58	

0.060
0.090

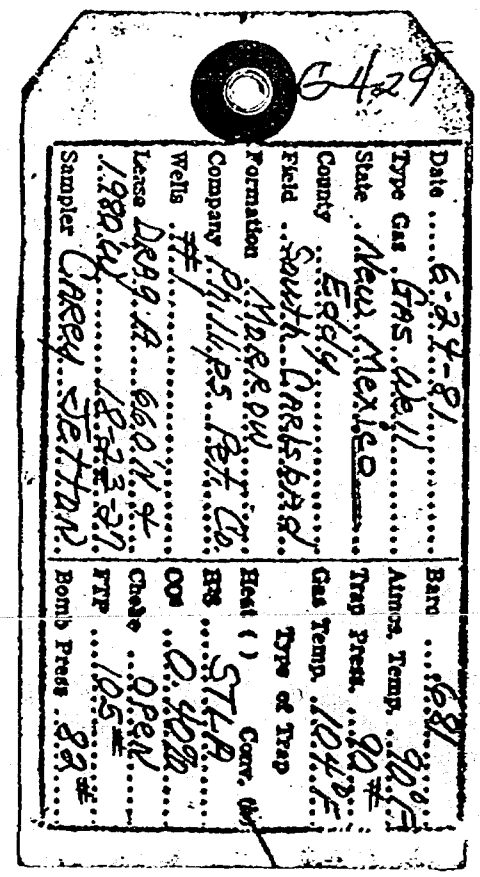


Exhibit 9
Case 7313

PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY

CO. Phillips Petroleum Co. ..... LEASE Drag A ..... WELL 1 ..... TYPE GAS Gas Well
LOCATION 660'N + 1980'W. 18-22-27 ..... COUNTY. Eddy ..... STATE N.M.
FIELD South Carlsbad ..... FORM. Atoka ..... CHOKE. — . TYPE TRAP Wellhead
TRAP TEMP. — . TRAP PRESS 405 FTP. — . ATMOS TEMP. 88 GAS TEMP. 94 . BARO 681.
DATE SEC 6/24/81 . DATE RUN. 7/1/81 . SEC BY Jetton RUN BY A.B. . BOMB PRESS. 405
H2S GR. (CORR) . STLA . CO2 ON TAG 0.40% . MISC. . For Reservoir only

INST 1 METH 1 FILE 23

RUN : G-434 8 : 57.3 7 / 1 / 81

COMPONENT	FINAL MOL %
* C6 PLUS	.3
N2	.73
C1	95.27
CO2	.45
ETHANE	2.46
C3	.46
IC4	.13
NC4	.1
IC5	.37
NC5	.03
TOTAL	100

* Possible Bomb Contaminant

G-434

- Date 6-24-81
- Type Gas Gas Well
- State New Mexico
- County Eddy
- Field South Carlsbad
- Formation Ataka
- Company Phillips Pet. Co.
- Wells #1
- Lease Drag A 660'N + 1980'W 18-22-27
- Sampler Carey Jetton
- Baro 681
- Atmos. Temp. 88°F
- Trap Press. 405#
- Gas Temp. 94°F
- Type of Trap Heat Wellhead Conv. ( )
- H2S STLA
- CO_2 0.40%
- Choke —
- FTP —
- Bomb Press. 405#

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.1291	.1287
ETHANE	GPM	.656	.6539
C3	GPM	.1262	.1258
IC4	GPM	.0424	.0422
NC4	GPM	.0314	.0313
IC5	GPM	.0255	.0254
NC5	GPM	.0103	.0103

0.165
0.247

TOTAL GPM	1.0214	1.0181
Z FACTOR=	.997855	
SAT. BASIS BTU	1027.72	1024.51
CAL. SP. GR.	.591	

Exhibit 10
Case 7313

DRAG 'A' NO. 1

ECONOMICS OF COMMINGLING

MORROW AND ATOKA FORMATIONS

Year	Case 1: Commingled Production		Case 2: Individual Production	
	Gas (MCF)	Cash Flow ($)	Gas (MCF)	Cash Flow ($)
1	65,897	74,477	10,611	10,986
2	38,361	42,729	8,020	7,885
3	22,713	24,629	6,061	5,506
4	13,720	14,166	4,581	3,671
5	8,477	8,000	3,462	2,241
6	5,370	4,277	2,617	1,115
7	3,513	1,979	1,998	240
8			55,286	60,841
9			30,341	31,964
10			16,652	15,988
11			9,139	7,085
12			5,015	2,049
Total	158,051 MCF	$170,257	153,783 MCF	$149,571

Increase in reserves = 4,268 MCF

Increase in Cash Flow = $20,686.

Exhibit 11
Case 7313

Exhibit #2
Case 3173

Drag "A" #1
Sec. 18, T-23-S, R-27-E
Eddy County, New Mexico

March 2, 1972

Location: 660' FNL and 1980' FWL, Sec 18, T-23-S, R-27-E, Eddy County, New Mexico.

Drld 17-1/2" hole to 370'. Cmt'd 13-3/8" at 370' w/ 450 sx Class "H". Circ'd 30 sx cmt.

Cmt'd 8-5/8" csg at 5468' w/ 1000 sx Trinity LW cmt w/ 3# Gilsonite per sx followed by 250 sx Class "H" Neat cmt. Ran temp survey, top cmt outside 8-5/8" csg 2150'.

Ran 360 jts 5-1/2" csg at 11875'. Cmt'd w/ 550 sx Class "H" cmt. Ran temp survey, top cmt outside 5-1/2" csg at 7950'.

Set Baker Model F-1 prod pkr at 11470'. Schlum perf'd Atoka in 5-1/2" csg thru 2-7/8" tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot 10688-10691' 10694-10697', 10744-10750', 10794-10799'. SI 4-1/2 hrs, SICP 600#. Howco treated Atoka w/ 2500 gals 15% acid dwn tbg thru perfs 10686-10799'. Max press 4400#, min 4250#, inst SDP 4200#, 15-min SIP 3800#, 1-hr 2800#. SI 10 hrs, SITP 2200#, SICP 3400#. Flwd tbg to pit 2-3/4 hrs to clean up, FTP 2200# to 100#, rec 150 BLW, CP 3400#-500#. Flowed from csg 2 hrs, 1/4" ch, thru low press separator, gas rate 184 MCFD, FCP 500# to 700#. SI 3 hrs, SICP 700# to 1500#. Flowed thru csg 1 hr to high press separator, 10/64" ch, gas rate 795 MCFD, FCP 1700#, separator press 750# at 86° F. Flowed 2 hrs, 1/4" ch, from csg, gas rate 1400 MCFD, FCP 1150#, separator press 725# at 86° F. Flowed 3 hrs, 13/64" ch thru csg, gas rate 1000 MCFD, FCP 1200#, separator press 725# at 82° F. SI 10 hrs, SITP 3600#, SICP 3800#. SITP 4400#, CP 4600#. Howco treated Atoka down csg thru perfs 10686-10799' w/ 7500 gals 20% CRA acid. Max press 6000#, min 5000#, inj rate 6 BPM, inst SDP 4300#, 15-min 4200#, 90-min 3800#. Flowed 14 hrs thru tbg, 1/2" ch, gas rate 307 MCFD, specific gvty .599, no sulphur, 1.06 MOL CO_2, 7-1/2 BLW, FTP 450#, CP 600#. SI 3 hrs, SITP 1600#, CP 1900#. 22nd, flowed thru csg 8 hrs, 13/64" ch, last 3 hrs on stabilized rate 1,300 MCFD, FCP 1150#, separator 820# at 90° F. SI 16 hrs, SICP 3700#.

May 22, 1972

Closed Baker sleeve at 11,451'. Atoka in csg annulus. Schlum perf'd Morrow in 5-1/2" csg thru tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot, 11649-11653', 11550-11554', 11669-11676', 11604-11610'. SITP 2500#. Flowed 1 hr at stabilized rate 4100 MCFD, 3/8" ch, FTP 2600#, separator 800# at 60° F, 1/2 BLW. SI 9 hrs, SITP 3900#. Atoka zone shut in 49 hrs in csg, SICP 4100#. Morrow zone shut in 43 hrs in tbg, SITP 4300#. Atoka on 4-pt BP test: SICP 4085# first rate 1 hr, 6/64" ch, gas rate 534 MCFD, FCP 3676#; 2nd rate 1 hr, 10/64" ch gas rate 1348 MCFD, FCP 2275#; 3rd rate 1 hr, 12/64" ch, gas rate 1678 MCFD, FCP 1962# 4th rate 1 hr, 15/64" ch, gas rate 1909 MCFD, FCP 1514#. Specific gvty .602, no sulphur. Flowed Morrow thru tbg on 4-pt BP test: SITP 4098#. 1st rate 1 hr, 12/64" ch gas rate 2526 MCFD, FTP 2788#; 2nd rate 1 hr, 16/64" ch, gas rate 3247 MCFD, FTP 2252#, 3rd rate 1 hr, 20/64" ch, gas rate

3937 MCFD, FTP 1731#; 4th rate 1 hr, 24/64" ch, gas rate 4400 MCFD, FTP 1362#, specific gvty .582, no sulphur. Flowed Atoka thru csg on 4-pt BP test, SICP 3887#, 1st 1-hr rate, 8/64" ch, gas rate 1360 MCFD, FCP 2906#; 2nd 1-hr rate, 10/64" ch, gas 1680 MCFD, FCP 2121#; 3rd 1-hr rate, 14/64" ch, gas rate 1580 MCFD, FCP 1496#; 4th 1-hr rate, 17/64" ch, gas 1480 MCFD, FCP 986#. Morrow zone shut in during 4-hr BP test on Atoka in tbg, SITP start test 3919#, end of test 3913#. Calculated absolute open flow pote Morrow zone 4968 MCFD, no liquid, gas gvty .578. Calculated absolute open flow pote Atoka zone 2209 MCFD, no liquid, gas gvty .6003. Morrow perfs 11550-11676'. Atoka perfs 10688-10799'. Dual completion in Atoka and Morrow formations.

May 22, 1974

Atoka zone shut down.

June 10, 1974

Perforated additional section in Morrow 11550-11676'. Treated Morrow 11550-11786' with 3150 gallons 7-1/2% MS acid in 3 stages. Drilled and pushed Baker packer to bottom. Tested Morrow, 1" ch, 2891 MCFD, 1 BW, FTP-500#.

September 6, 1974

Treated Morrow thru Casing Perforations 11550-11786' with 1000 gallons 7-1/2% HCL acid and 5000 gallons 7-1/2% HCl with nigrogen. Treated thru perforations 11778-11786' with 500 gallons 7-1/2% HCL acid. Set cement retainer 11476' and squeezed perforations 11550-11786' with 40 sacks cement, top cement on retainer 11464', PBTD. Perforated Morrow with 2 jet per foot, 11406-11414, and returned to production. Tested Morrow at 7924 MCFD, 3 BW, FTP 1900# on 28/64" ch.

January 21, 1975

Dowell treated Morrow dwn 2-7/8" tbg thru csg perfs 11406-11414' w/ 500 gals 7-1/2% LST acid w/ F-2 and clay agents. Max press 4100#, min 1500#, final 3750#, inst SDP vacuum. Avg inj rate 1.5 BPM. Flowed 24 hrs, 1" chk, 2550 MCF gas, 3 BSW, FTP 475#, line press 430#, from Morrow perfs 11,406-11,414'.

Drag 'A' No. 1
Eddy County, New Mexico
Morrow and Atoka Commingled Forecast
24.9% and 75.1%

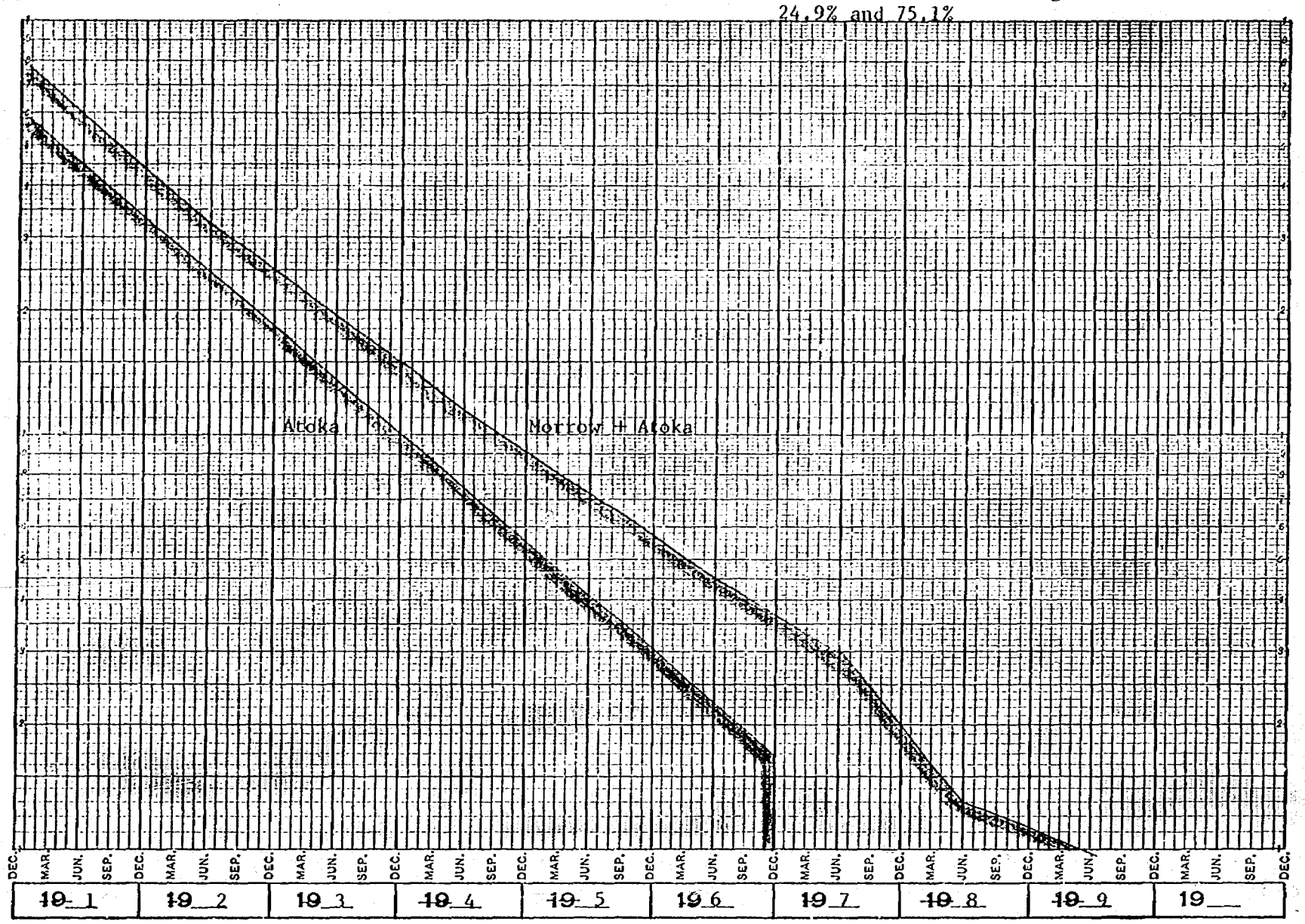


Exhibit 12
Case 7315

R-26-E

R-27-E

Antwell
6.2 BCF-S

Superior
Ryan

Joell"

USM&R
2065
Sup

Pennzoil
3.3 BCF-M
3.4 BCF-S

Pennzoil
0.9 BCF-M
1.2 BCF-S

Antwell
0.05 BCF-M
"Mo-N M Ld. Co.

120920
2-28-74

"Gulf-Fed"
"Collatt Est Com"
"Gulf-Fed"

Pennzoil
4.8 BCF-M
3.7 BCF-A

"Mobil-Fed"
12

Pennzoil
6.8 BCF-M

"Echols Com"

1.8 BCF-M
7

Phillips
Tidwell-A
0.9 BCF-A
1.9 BCF-M

Mesa
Reddy Com.
0.5 BCF-A

120242
4-30-74

Sup
1.2 BCF-M
Stephens"R"

T
23
S

Mobil
Fed. MM Com.
0.9 BCF-M
13

120242
1.7 BCF-M
0.8 BCF-A
Phillips

PP Co
140'
"Phillips St"

Mobil
Mobil St. QQ Com.
5.1 BCF-M
0.3 BCF-A

"Drag-A"
18

115442
2.5 BCF-M
Phillips

Mobil
State RR
17
2.1 BCF-M

Mobil
Fed. LL Com.
0.3 BCF-M
0.1 BCF-C

"Drag-B"

115442
5-31-74
Phillips
1.6 BCF-M

Mobil
Fed. PP Com.
2.2 BCF-M
24

"Drag-B"
19

Phillips
Drag-C
1.8 BCF-P

114258
7-5-74

Mobil
Fed. AR Com.
0.4 BCF-M

CARLSBAD (SOUTH) FIELD
EDDY COUNTY, NEW MEXICO
SCALE: 1" = 2000'

- Morrow
- Atoka
- Penn
- Canyon
- Atoka/Morrow Commingled
- Strawn

Exhibit 1
Case 5313

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

1. Lease Name: Drag-A
2. Well No.: 1
3. Well Location: Unit C, 660 feet from North line, 1980 feet from West line of Section 18, Township 23-S Range 27-E, Eddy County, New Mexico.
4. Upper Zone: Carlsbad, South (Atoka)
5. Completion Interval: 10,688'-10,799'.
6. Lower Zone: Carlsbad, South (Morrow).
7. Completion Interval: 11,550'-11,676'.
8. Dual Completion Authorized by Commision Order No. MC-1993.
9. Latest Well Test Summary

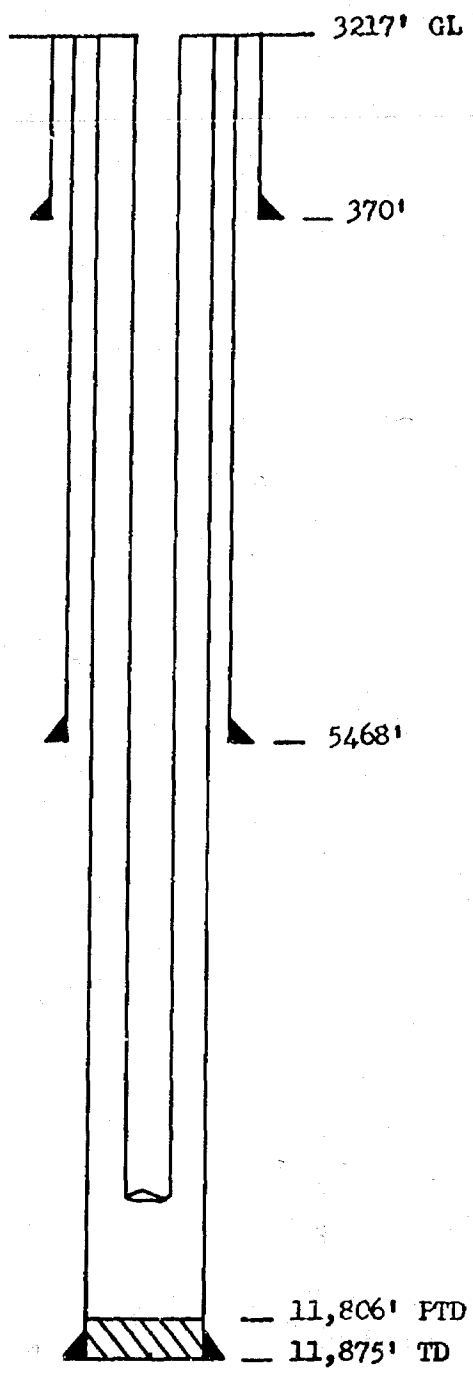
	Carlsbad, South (Atoka) (Upper Zone)	Carlsbad, South (Morrow) (Lower Zone)
Current Status	SI	Flowing
Gas Mcf/day	104	6
Cond. Bbls/day	0	0
Water Bbls/day	0	0
Date	November, 1972	June 6, 1981

10. Calculated Bottom-hole Pressure from SIWHP of Upper Zone: 637 psi. Fl @ 10111' (887 psi).
11. Calculated Bottom-hole Pressure from SIWHP of Lower Zone: 519 psi.

By: J. L. Blevins

Date: 7-22-81

Exhibit 2
Case 7313



13-3/8" Csg set @ 370' W/450 sx class H cement W/2% CaCl2. Circulated 30 sx.

8-5/8" Csg set @ 5468' W/1,000 sx Tr. LW and 250 sx Class H cement, casing rotated. TOC @ 2150' by temperature survey.

5-1/2" Csg set @ 11,875' W/550 sx Class H W/3/4% CFR2 W/8# salt/sack, casing rotated. TOC @ 7950' by temperature survey.

Atoka Zone is perforated with 42 holes, 10,688-10,799 feet.

Morrow Zone is perforated with 50 holes, 11,550-11,676 feet.

2-7/8" tubing to be set at about 11,670'

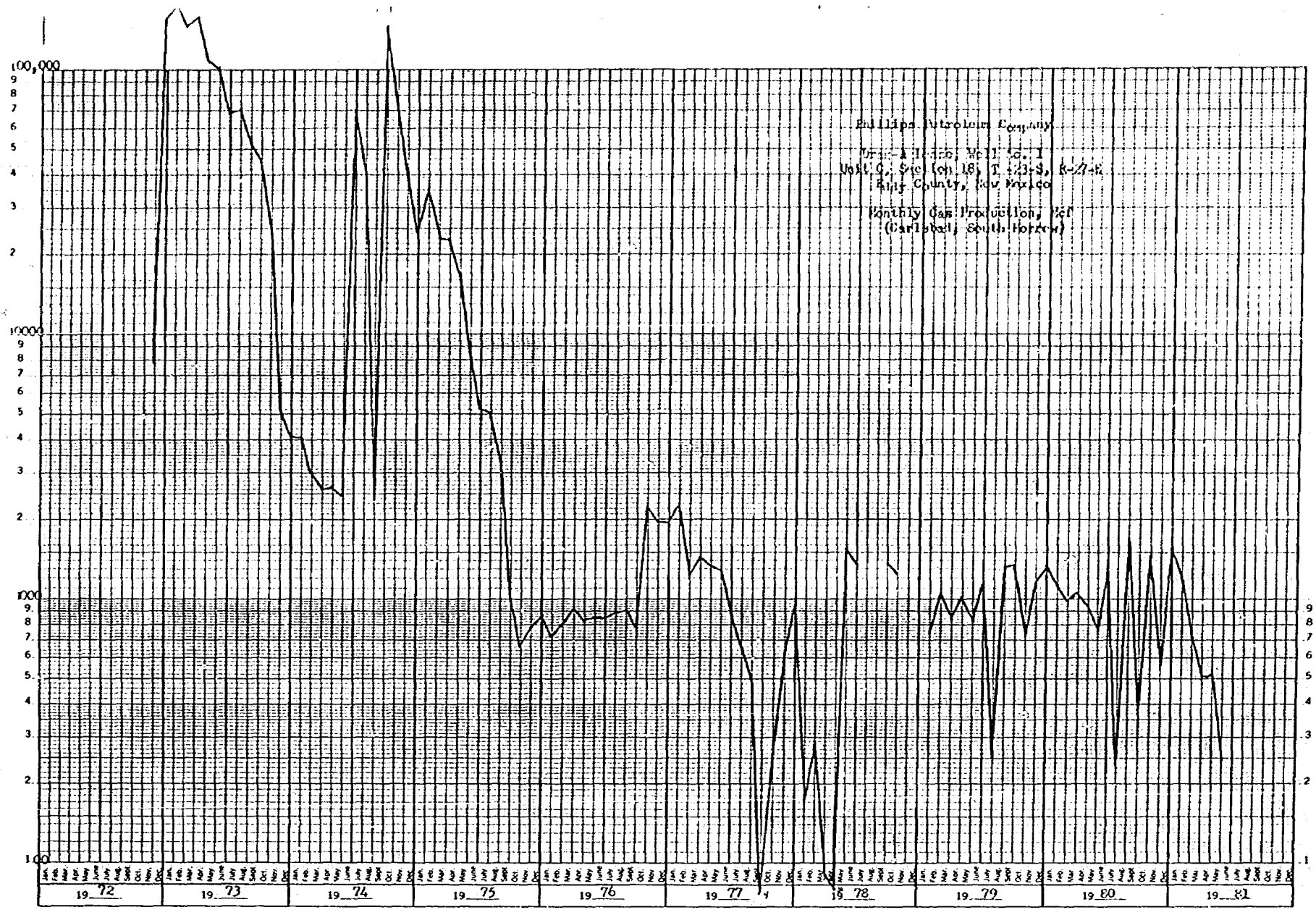
Exhibit 3
Case 7313

NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	AFE NO. / FILE CODE
FOR APPR		
FOR CONST	Drag-A No. 1 660' FNL & 1980' FWL, Section 18, T23S, R27E Eddy County, New Mexico PROPOSED COMPLETION	SCALE None UNLESS OTHERWISE NOTED
DRAWN 7-21-81		DWG NO.
CHECKED		SH NO.
APP'D		

FORM 1779 8-76

PRINTED IN U.S.A.



47 6740

K+E 10 YEARS BY MONTHS X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

Exhibit 5
Case 7313

PHILLIPS PETROLEUM COMPANY

DRAG-A LEASE, WELL NO. 1
UNIT C, SECTION 18, T-23-S, R-35-E
EDDY COUNTY, NEW MEXICO

PRODUCTION HISTORY
CARLSBAD, SOUTH FIELD

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1972		
JAN		
FEB		
MAR		
APR		
MAY	600	233
JUN	0	0
JUL	0	0
AUG	0	0
SEP	0	0
OCT	0	0
NOV	7,828	978
DEC	155,384	8,280
TOTAL YR.	163,812	9,491
ACCUM.	163,812	9,491
1973		
JAN	182,892	0
FEB	141,641	0
MAR	156,274	0
APR	117,260	0
MAY	102,748	0
JUN	70,615	0
JUL	71,094	0
AUG	53,146	0
SEP	46,774	0
OCT	24,983	0
NOV	5,001	0
DEC	4,103	0
TOTAL YR.	976,531	0
ACCUM.	1,140,343	9,491

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1974		
JAN	4,022	ZONE
FEB	3,046	SHUT-IN
MAR	2,639	01-74
APR	2,655	0
MAY	2,467	0
JUN	71,422	0
JUL	41,314	0
AUG	2,437	0
SEP	143,392	0
OCT	77,341	0
NOV	41,265	0
DEC	24,835	0
TOTAL YR.	416,835	0
ACCUM.	1,557,178	9,491
1975		
JAN	36,914	0
FEB	23,891	0
MAR	22,954	0
APR	16,305	0
MAY	8,300	0
JUN	5,374	0
JUL	5,112	0
AUG	3,350	0
SEP	1,044	0
OCT	685	0
NOV	781	0
DEC	872	0
TOTAL YR.	125,582	0
ACCUM.	1,682,760	9,491

Exhibit 6
Case 7313

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1976		
JAN	733	0
FEB	808	0
MAR	924	0
APR	830	0
MAY	849	0
JUN	852	0
JUL	887	0
AUG	914	0
SEP	779	0
OCT	2,238	0
NOV	1,984	0
DEC	1,976	0
TOTAL YR.	13,814	0
ACCUM.	1,696,574	9,491
1977		
JAN	2,214	0
FEB	1,226	0
MAR	1,436	0
APR	1,343	0
MAY	1,291	0
JUN	858	0
JUL	655	0
AUG	489	0
SEP	4	0
OCT	257	0
NOV	587	0
DEC	932	0
TOTAL YR.	11,292	0
ACCUM.	1,707,866	9,491

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1978		
JAN	175	0
FEB	285	0
MAR	72	0
APR	36	0
MAY	1,598	0
JUN	1,358	0
JUL		0
AUG		0
SEP	1,384	0
OCT	1,261	0
NOV		0
DEC		0
TOTAL YR.	6,169	0
ACCUM.	1,714,035	9,491
1979		
JAN	758	0
FEB	1,050	0
MAR	851	0
APR	1,029	0
MAY	829	0
JUN	1,141	0
JUL	254	0
AUG	1,316	0
SEP	1,324	0
OCT	728	0
NOV	1,172	0
DEC	1,338	0
TOTAL YR.	11,790	0
ACCUM.	1,725,825	9,491

DRAG-A LEASE, WELL NO. 1

PRODUCTION HISTORY, CONTINUED

YEAR & MONTH	MORROW GAS, Mcf	ATOKA GAS, Mcf
1980		
JAN	1,103	0
FEB	997	0
MAR	1,055	0
APR	959	0
MAY	771	0
JUN	1,293	0
JUL	238	0
AUG	1,647	0
SEP	387	0
OCT	1,482	0
NOV	648	0
DEC	1,547	0
TOTAL YR.	12,127	0
ACCUM.	1,737,952	9,491
1981		
JAN	1,245	0
FEB	749	0
MAR	513	0
APR	512	0
MAY	249	0
TOTAL YR.	3,268	0
ACCUM.	1,741,220	9,491

Exhibit 7
Case 7313

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: ☒ Initial ☐ Annual ☐ Special				Test Date: 5-25-72	Fed. Lse. #NM0540701-A
Company: Phillips Petroleum Company			Connection: Shut in pending connection		--
Pool: Carsbad, South (Atoka) Gas			Formation: Atoka		Unit: --
Completion Date: 5-16-72	Total Depth: 11875		Plug Back TD: 11806	Elevation: 3217' Gr. 3237' DF	Farm or Lease Name: Drag-A
* Csg. Size: 5-1/2" / Wt.: 17#, 20# / d: 3.434 / Set At: 11875			Perforations: From 10686 To 10799		Well No.: 1
Tbg. Size: -- / Wt.: -- / d: -- / Set At: --			Perforations: From -- To --		Unit: C / Sec.: 18 / Twp.: 23-S / Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple			Packer Set At: 11470		County: Eddy
* Producing Thru: annulus	Reservoir Temp. °F: 176 @ 11800	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
10688	10688	.6003	.0147	.007	--		3"	Flange

NO.	FLOW DATA: Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098		4085	81	
1.	3.068	1.00	160	50	92	Morrow		3676	81	1 hr.
2.	"	1.75	450	10	84	Completion		2295	82	"
3.	"	1.75	410	17	80	Shut-In		1962	82	"
4.	"	1.75	410	22	86			1514	83	"
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	4.789	93.06	173.2	.9706	1.280	1.013	561
2.	15.61	68.06	463.2	.9777	"	1.035	1376
3.	"	84.82	423.2	.9813	"	1.033	1718
4.	"	96.49	423.2	.9759	"	1.033	1944
5.							

NO.	P_t	Temp. °R	T_t	Z
1.	Calculations made by Electronic			
2.	Calculator. Program based on			
3.	New Mexico Manual for Back-			
4.	Pressure testing of gas wells.			
5.				

Gas Liquid Hydrocarbon Ratio -- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons -- Deg.
Specific Gravity Separator Gas .6003 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 671 P.S.I.A. ____ P.S.I.A.
Critical Temperature 358 R ____ R

P_c 4098.2 P_c^2 16795

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	13,610	3689.3	13,611	3184
2	53,278	2308.7	5,331	11,464
3	39,014	1976.3	3,906	12,889
4	23,323	1529.2	2,338	14,457
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16795}{14457}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1364$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2209$

Absolute Open Flow 2209 Mcfd @ 15.025 | Angle of Slope θ 49.5 | Slope, n .853

Remarks: Equipment trouble between first and second rates.
* To be produced through casing/tubing annulus.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Atoka) -- Gas

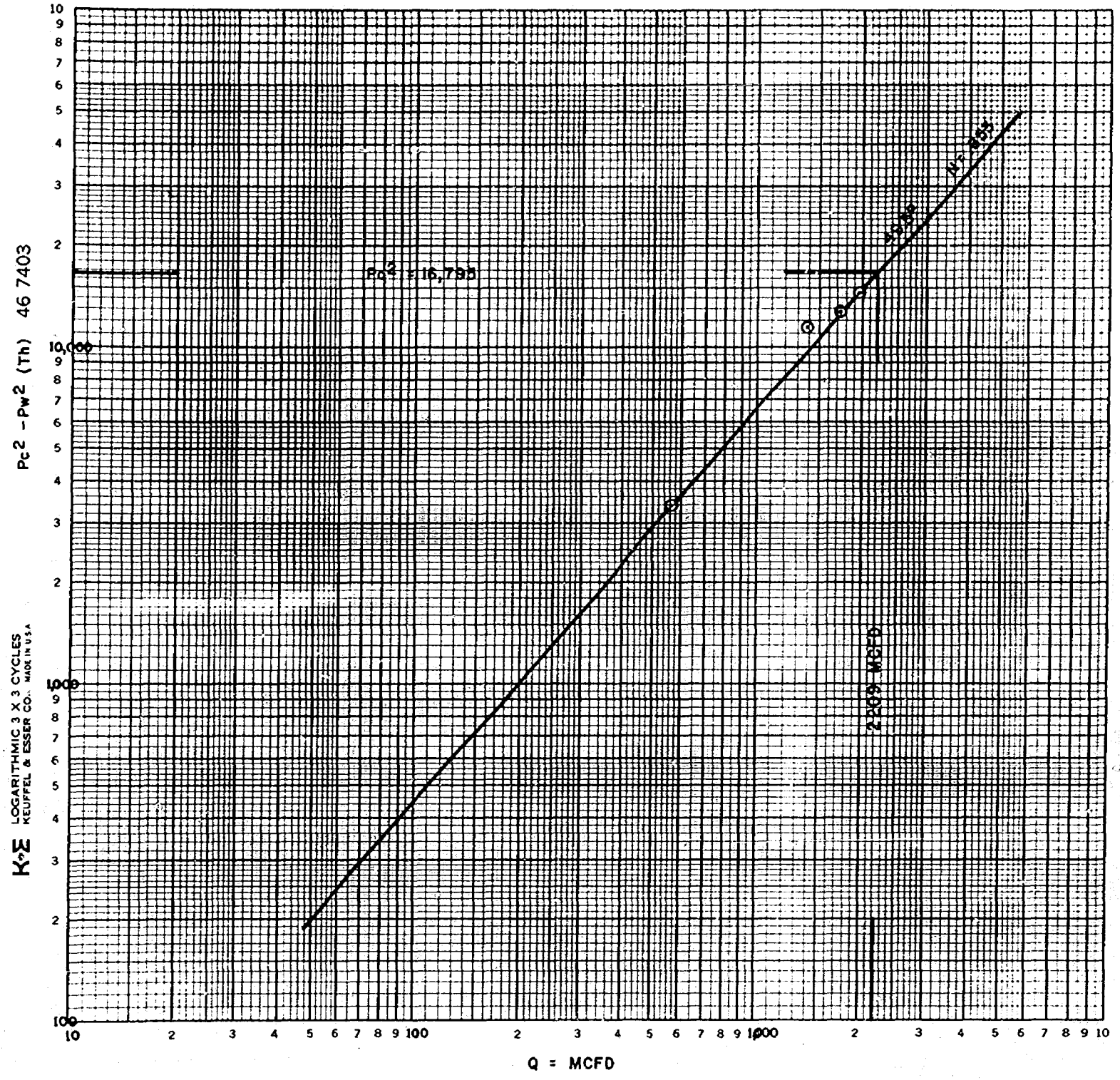


Exhibit 8
Case 7313

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 5-25-72	Fed. Lse. NM0540701-A
Company: Phillips Petroleum Company			Connection: Shut in pending connection		---
Pool: Carlsbad, South (Morrow) Gas			Formation: Morrow		Unit: ---
Completion Date: 5-21-72	Total Depth: 11,875'		Plug Back TD: 11,806'	Elevation: 3217' Gr, 3237' DF	Farm or Lease Name: Drag-A
Csg. Size: 5-1/2" / Wt.: 17#, 20# / d: 3.434 / Set At: 11,875'				Perforations: From 11,550' To 11,676'	Well No.: 1
Tbg. Size: 2-7/8" / Wt.: 6.5# / d: 2.441 / Set At: 11,470'				Perforations: From --- To ---	Unit: C / Sec.: 18 / Twp.: 23-S / Rge.: 27-E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G. Multiple			Packer Set At: 11,470'		County: Eddy
Producing Thru: Tubing	Reservoir Temp. °F: 176 @ 11800	Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2		State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
11550	11550	.5782	.0102	.0026	---	---	3"	Flange

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						4098	81	4085		
1.	3.068	2.00	800	10	76	2788	85	Atoka		1 hour
2.	"	"	780	17	72	2252	83	Completion		1 hour
3.	"	"	780	24	77	1731	85	Shut-In		1 hour
4.			780	28	74	1362	83	(tubing/casing		1 hour
5.								annulus)		

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	21.32	90.18	813.2	.9850	1.311	1.058	2627
2.	"	116.12	793.2	.9887	"	1.059	3398
3.	"	137.98	"	.9840	"	1.058	4015
4.	"	149.03	"	.9868	"	1.059	4353
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	Calculations made by electronic			
2.	calculator. Program based on			
3.	New Mexico - manual for back-			
4.	pressure testing of gas wells.			
5.				

Gas Liquid Hydrocarbon Ratio --- Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons --- Deg.
Specific Gravity Separator Gas .578 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 672 P.S.I.A. ___ P.S.I.A.
Critical Temperature 349 R ___ R

P_c 4111.2 P_c^2 16902

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	7847	2815.9	7929	8973
2	5131	2291.7	5252	11650
3	3042	1792.0	3211	13691
4	1891	1447.7	2096	14806
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{16902}{14806}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.1415$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4968$

Absolute Open Flow 4,968 Mcfd @ 15.025 Angle of Slope θ 45 Slope, n 1.00

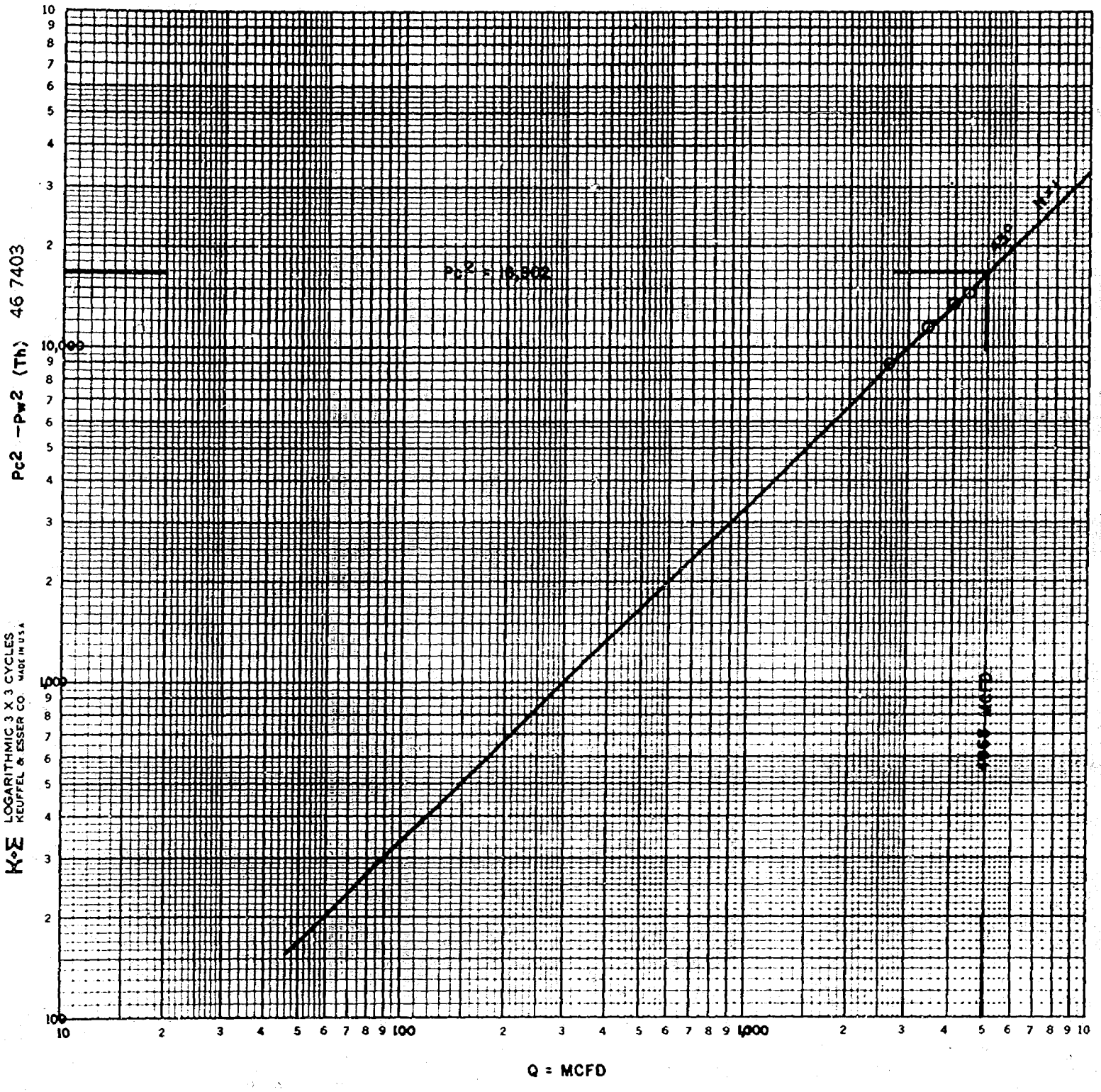
Remarks:

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. E. Simpson	D. E. Simpson	W. J. Mueller

Phillips Petroleum Company
Drag-A No. 1
18, 23-S, 27-E
Eddy County, New Mexico

May 25, 1972

Carlsbad, South (Morrow) -- Gas



PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY
CO. Phillips Pet. Co. ....LEASE. Drag A ....WELL. 1 ....TYPE GAS. Gas Well
LOCATION 660'N & 1980'W . 18-22-27 .....COUNTY Eddy ....STATE N.M.
FIELD South Carlsbad .....FORM. Morrow .....CHOKE OPEN TYPE TRAP Conv.
TRAP TEMP. ---. TRAP PRESS. 90. FTP. 105. ATMOS TEMP. 90. GAS TEMP 104. BARO. 6.81.
DATE SEC 6/24/81. DATE RUN 6/29/81. SEC BY ~~Patton~~ RUN BY A.B. BOMB PRESS. 82.
H2S GR. (CORR) STLA. CO2 ON TAG 0.40 %. MISC. Pressures only

INST 1 METH 1 FILE 48

RUN 1 G-429 2 : 10.3 0 / 3 / 0

COMPONENT	FINAL MOL %
C6 PLUS	.99
H2	.72
C1	96.38
CO2	.67
ETHANE	1.67
C3	.28
IC4	.07
NC4	.06
IC5	.04
NC5	.02
TOTAL	100

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.0387	.0386
ETHANE	GPM	.4453	.4439
C3	GPM	.0768	.0766
IC4	GPM	.0228	.0227
NC4	GPM	.0188	.0188
IC5	GPM	.0146	.0145
NC5	GPM	.0072	.0072
			0.060
			0.090
TOTAL GPM		.5242	.5223
Z FACTOR=		.997966	
SAT. BASIS BTU		1005.2	1002.05
CAL. SP. GR.		.58	

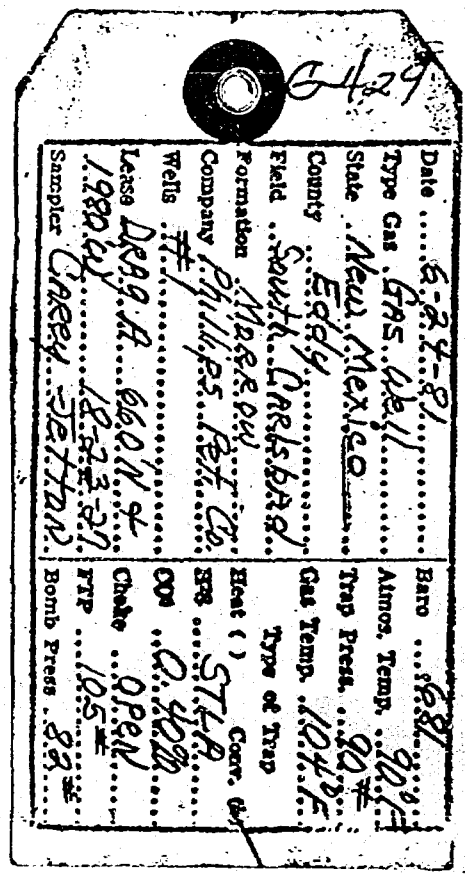


Exhibit 9
Case 7313

PHILLIPS PETROLEUM CO.-GAS CHROMATOGRAPH ANALYSIS-G & GL SURVEY

CO. Phillips Petroleum Co. ..... LEASE Drag A ..... WELL 1 ..... TYPE GAS Gas Well

LOCATION 660'N + 1980'W. 18-22-27 ..... COUNTY. Eddy ..... STATE N.M.

FIELD South Carlsbad ..... FORM. Atoka ..... CHOKE. — . TYPE TRAP Wellhead

TRAP TEMP. — . TRAP PRESS 405 . FTP. — . ATMOS TEMP. 88 . GAS TEMP. 94 . BARO 681.

DATE SEC 6/24/81. DATE RUN. 7/1/81. SEC BY Jetton RUN BY A.A. BOMB PRESS. 405

H2S GR. (CORR). STLA. CO2 ON TAG 0.40%. MISC.. For Rect. records only

INST 1 METH 1 FILE 28

RUN 1 G-434 8 : 57.3 7 / 1 / 81

COMPONENT	FINAL MOL %
* C6 PLUS	.3
N2	.73
C1	95.27
CO2	.45
ETHANE	2.46
C3	.46
IC4	.13
NC4	.1
IC5	.07
NC5	.03
TOTAL	100

* Possible Bomb Contaminant

Date 6-24-81 | Type Gas Gas Well | State New Mexico | County Eddy | Field South Carlsbad | Formation Atoka | Company Phillips Pet. Co. | Wells #1 | Lease Drag A 660'N + 1980'W 18-22-27 | Sampler Carey Jetton

Baro 681 | Atmos. Temp. 88°F | Trap Press. 405# | Gas Temp. 94°F | Type of Trap Heat Wellhead Conv. ( ) | H2S STLA | CO2 0.40% | Choke — | FTP — | Bomb Press. 405#

G-434

PRESSURE BASE AT 60 DEG. F.

		14.696	14.65
C6 PLUS	GPM	.1291	.1287
ETHANE	GPM	.656	.6539
C3	GPM	.1262	.1258
IC4	GPM	.0424	.0422
NC4	GPM	.0314	.0313
IC5	GPM	.0255	.0254
NC5	GPM	.0108	.0103
			0.165
			0.247
TOTAL GPM		1.0214	1.0181
Z FACTOR=		.997855	
SAT. BASIS BTU		1027.72	1024.51
CAL. SP. GR.		.591	

Exhibit 10

Case 7313

DRAG 'A' NO. 1

ECONOMICS OF COMMINGLING

MORROW AND ATOKA FORMATIONS

Year	Case 1: Commingled Production		Case 2: Individual Production	
	Gas (MCF)	Cash Flow ($)	Gas (MCF)	Cash Flow ($)
1	65,897	74,477	10,611	10,986
2	38,361	42,729	8,020	7,885
3	22,713	24,629	6,061	5,506
4	13,720	14,166	4,581	3,671
5	8,477	8,000	3,462	2,241
6	5,370	4,277	2,617	1,115
7	3,513	1,979	1,998	240
8			55,286	60,842
9			30,341	31,964
10			16,652	15,988
11			9,139	7,085
12			5,015	2,049
Total	158,051 MCF	$170,257	153,783 MCF	$149,571

Increase in reserves = 4,268 MCF

Increase in Cash Flow = $20,686.

Exhibit 11
Case 7313

Drag "A" #1
Sec. 18, T-23-S, R-27-E
Eddy County, New Mexico

Exhibit 12
case 7313

March 2, 1972

Location: 660' FNL and 1980' FWL, Sec 18, T-23-S, R-27-E, Eddy County, New Mexico.

Drld 17-1/2" hole to 370'. Cmt'd 13-3/8" at 370' w/ 450 sx Class "H". Circ'd 30 sx cmt.

Cmt'd 8-5/8" csg at 5468' w/ 1000 sx Trinity LW cmt w/ 3# Gilsonite per sx followed by 250 sx Class "H" Neat cmt. Ran temp survey, top cmt outside 8-5/8" csg 2150'.

Ran 360 jts 5-1/2" csg at 11875'. Cmt'd w/ 550 sx Class "H" cmt. Ran temp survey, top cmt outside 5-1/2" csg at 7950'.

Set Baker Model F-1 prod pkr at 11470'. Schlum perf'd Atoka in 5-1/2" csg thru 2-7/8" tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot 10688-10691' 10694-10697', 10744-10750', 10794-10799'. SI 4-1/2 hrs, SICP 600#. Howco treated Atoka w/ 2500 gals 15% acid dwn tbg thru perfs 10686-10799'. Max press 4400#, min 4250#, inst SDP 4200#, 15-min SIP 3800#, 1-hr 2800#. SI 10 hrs, SITP 2200#, SICP 3400#. Flwd tbg to pit 2-3/4 hrs to clean up, FTP 2200# to 100#, rec 150 BLW, CP 3400#-500#. Flowed from csg 2 hrs, 1/4" ch, thru low press separator, gas rate 184 MCFD, FCP 500# to 700#. SI 3 hrs, SICP 700# to 1500#. Flowed thru csg 1 hr to high press separator, 10/64" ch, gas rate 795 MCFD, FCP 1700#, separator press 750# at 86° F. Flowed 2 hrs, 1/4" ch, from csg, gas rate 1400 MCFD, FCP 1150#, separator press 725# at 86° F. Flowed 3 hrs, 13/64" ch thru csg, gas rate 1000 MCFD, FCP 1200#, separator press 725# at 82° F. SI 10 hrs, SITP 3600#, SICP 3800#. SITP 4400#, CP 4600#. Howco treated Atoka down csg thru perfs 10686-10799' w/ 7500 gals 20% CRA acid. Max press 6000#, min 5000#, inj rate 6 BPM, inst SDP 4300#, 15-min 4200#, 90-min 3800#. Flowed 14 hrs thru tbg, 1/2" ch, gas rate 307 MCFD, specific gvty .599, no sulphur, 1.06 MOL CO_2, 7-1/2 BLW, FTP 450#, CP 600#. SI 3 hrs, SITP 1600#, CP 1900#. 22nd, flowed thru csg 8 hrs, 13/64" ch, last 3 hrs on stabilized rate 1,300 MCFD, FCP 1150#, separator 820# at 90° F. SI 16 hrs, SICP 3700#.

May 22, 1972

Closed Baker sleeve at 11,451'. Atoka in csg annulus. Schlum perf'd Morrow in 5-1/2" csg thru tbg w/ 2" OD Hyperjet decentralized gun w/ 2 holes per foot, 11649-11653', 11550-11554', 11669-11676', 11604-11610'. SITP 2500#. Flowed 1 hr at stabilized rate 4100 MCFD, 3/8" ch, FTP 2600#, separator 800# at 60° F, 1/2 BLW. SI 9 hrs, SITP 3900#. Atoka zone shut in 49 hrs in csg, SICP 4100#. Morrow zone shut in 43 hrs in tbg, SITP 4300#. Atoka on 4-pt BP test: SICP 4085# first rate 1 hr, 6/64" ch, gas rate 534 MCFD, FCP 3676#; 2nd rate 1 hr, 10/64" ch gas rate 1348 MCFD, FCP 2275#; 3rd rate 1 hr, 12/64" ch, gas rate 1678 MCFD, FCP 1962# 4th rate 1 hr, 15/64" ch, gas rate 1909 MCFD, FCP 1514#. Specific gvty .602, no sulphur. Flowed Morrow thru tbg on 4-pt BP test: SITP 4098#. 1st rate 1 hr, 12/64" ch gas rate 2526 MCFD, FTP 2788#; 2nd rate 1 hr, 16/64" ch, gas rate 3247 MCFD, FTP 2252#, 3rd rate 1 hr, 20/64" ch, gas rate

3937 MCFD, FTP 1731#; 4th rate 1 hr, 24/64" ch, gas rate 4400 MCFD, FTP 1362#, specific gvty .582, no sulphur. Flowed Atoka thru csg on 4-pt BP test, SICP 3887#, 1st 1-hr rate, 8/64" ch, gas rate 1360 MCFD, FCP 2906#; 2nd 1-hr rate, 10/64" ch, gas 1680 MCFD, FCP 2121#; 3rd 1-hr rate, 14/64" ch, gas rate 1580 MCFD, FCP 1496#; 4th 1-hr rate, 17/64" ch, gas 1480 MCFD, FCP 986#. Morrow zone shut in during 4-hr BP test on Atoka in tbg, SITP start test 3919#, end of test 3913#. Calculated absolute open flow pote Morrow zone 4968 MCFD, no liquid, gas gvty .578. Calculated absolute open flow pote Atoka zone 2209 MCFD, no liquid, gas gvty .6003. Morrow perfs 11550-11676'. Atoka perfs 10688-10799'. Dual completion in Atoka and Morrow formations.

May 22, 1974

Atoka zone shut down.

June 10, 1974

Perforated additional section in Morrow 11550-11676'. Treated Morrow 11550-11786' with 3150 gallons 7-1/2% MS acid in 3 stages. Drilled and pushed Baker packer to bottom. Tested Morrow, 1" ch, 2891 MCFD, 1 BW, FTP-500#.

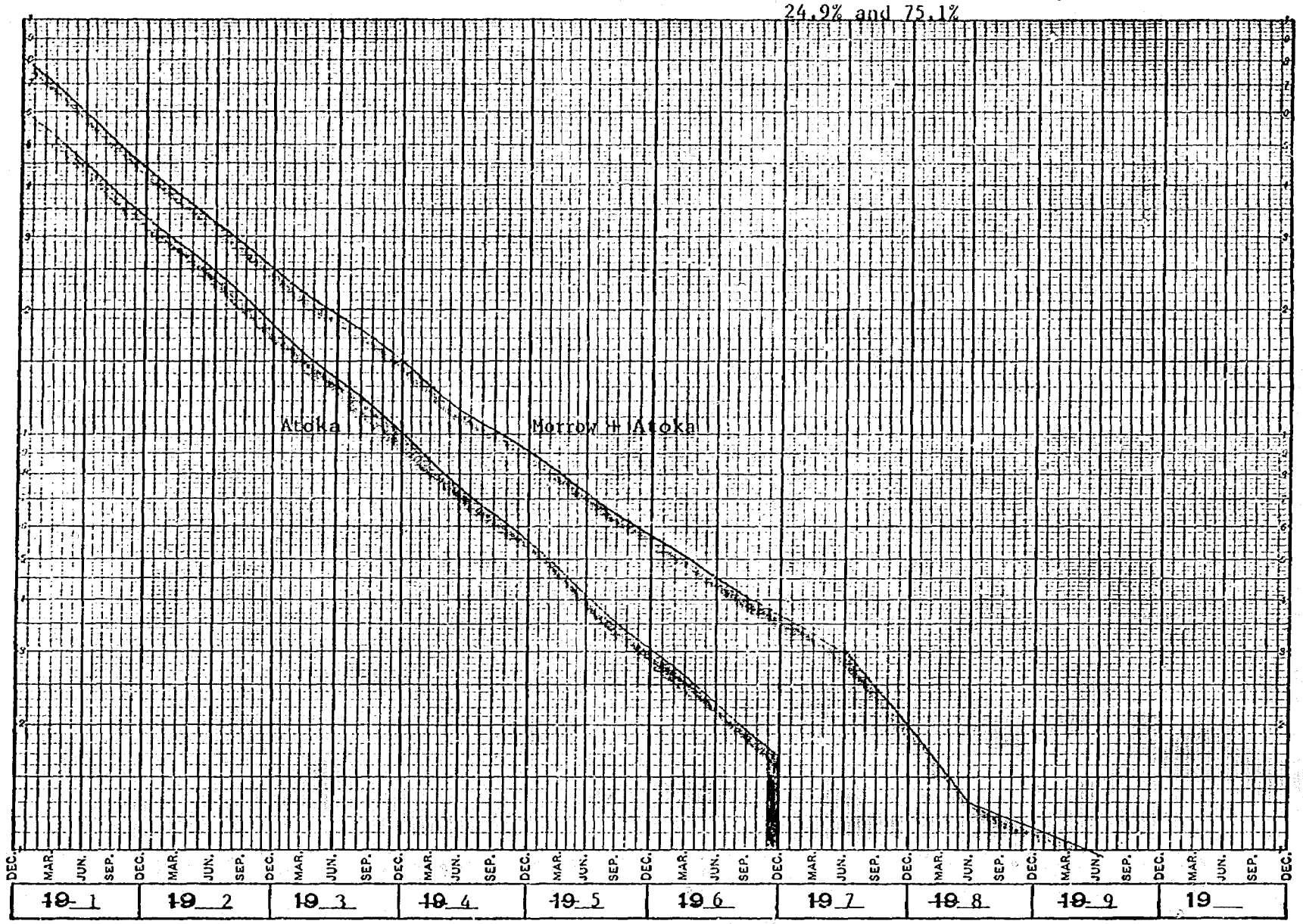
September 6, 1974

Treated Morrow thru Casing Perforations 11550-11786' with 1000 gallons 7-1/2% HCL acid and 5000 gallons 7-1/2% HCl with nigrogen. Treated thru perforations 11778-11786' with 500 gallons 7-1/2% HCL acid. Set cement retainer 11476' and squeezed perforations 11550-11786' with 40 sacks cement, top cement on retainer 11464', PBTD. Perforated Morrow with 2 jet per foot, 11406-11414, and returned to production. Tested Morrow at 7924 MCFD, 3 BW, FTP 1900# on 28/64" ch.

January 21, 1975

Dowell treated Morrow dwn 2-7/8" tbg thru csg perfs 11406-11414' w/ 500 gals 7-1/2% LST acid w/ F-2 and clay agents. Max press 4100#, min 1500#, final 3750#, inst SDP vacuum. Avg inj rate 1.5 BPM. Flowed 24 hrs, 1" chk, 2550 MCF gas, 3 BSW, FTP 475#, line press 430#, from Morrow perfs 11,406-11,414'.

Drag 'A' No. 1
Eddy County, New Mexico
Morrow and Atoka Commingled Forecast
24.9% and 75.1%



Exh. 9, 4-12
Case 7313

Docket No. 23-81

Dockets Nos. 25-81 and 26-81 are tentatively set for August 12 and 26, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - MONDAY - JULY 20, 1981

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

CASE 6892: (DE NOVO)

Application of Merrion & Bayless for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the South Blanco-Pictured Cliffs Pool underlying the SW/4 of Section 27, Township 24 North, Range 2 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

Upon application of Merrion & Bayless, this case will be heard De Novo pursuant to the provisions of Rule 1220.

****

Docket No. 24-81

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 29, 1981

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 7309: Application of Gulf Oil Corporation for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the South Shugart Deep Unit Area, comprising 3,806 acres, more or less, of State and Federal lands in Townships 18 and 19 South, Range 31 East.

CASE 7310: Application of Amoco Production Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the El Alto Grande Unit Area, comprising 2,560 acres, more or less, of Federal lands in Township 22 South, Ranges 33 and 34 East.

CASE 7311: Application of Amoco Production Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Big Sinks Federal Exploratory Unit Area, comprising 3,520 acres, more or less, of State and Federal lands in Townships 25 and 26 South, Range 31 East.

CASE 7280: (Continued from July 15, 1981, Examiner Hearing)

Application of Northwest Pipeline Corporation for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Rosa Unit Well No. 77 located in Unit L of Section 33, Township 31 North, Range 5 West, to produce gas from the Mesaverde formation and commingled Gallup and Dakota production through separate strings of tubing.

CASE 7312: Application of Phillips Petroleum Company for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Morrow production in the wellbore of its Malaga A Well No. 2 located in Unit D of Section 2, Township 24 South, Range 28 East, Malaga Field.

CASE 7313: Application of Phillips Petroleum Company for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Morrow production in the wellbore of its Drag A Well No. 1 located in Unit C of Section 18, Township 23 South, Range 27 East, South Carlsbad Field.

CASE 7314: Application of Elliott Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Gallup, Dakota, and Mesaverde production in the wellbore of its ORA Well No. 1 located in Unit E of Section 21, Township 25 North, Range 3 West.

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

KELLAHIN and KELLAHIN
Attorneys at Law
500 Don Gaspar Avenue
Post Office Box 1769
Santa Fe, New Mexico 87501

Telephone 982-4285
Area Code 505

June 26, 1981

Mr. Joe Ramey
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Phillips Petroleum Company
Drag A No. 1 well
Downhole Commingling

Case 7313

Dear Joe:

Please set the enclosed application for an examiner hearing on July 29, 1981.

Very truly yours,

W. Thomas Kellahin

WTK:jm
Enclosure

cc: Mr. Joe Peacock

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION
OF PHILLIPS PETROLEUM COMPANY FOR
DOWNHOLE COMMINGLING, EDDY COUNTY
NEW MEXICO

Case 7313

A P P L I C A T I O N

COMES NOW PHILLIPS PETROLEUM COMPANY by and through its attorneys and applies to the Oil Conservation Division of New Mexico for approval to downhole commingle production from the Atoka formation and Morrow formation in its Drag A No. 1 well located in Unit C, Section 18, T23S, R27E, NMPM, South Carlsbad Morrow and South Carlsbad Atoka Pool Eddy County New Mexico and in support thereof would show the Division:

1. Applicant is the operator of the Drag A No. 1 Well located in Unit C, Section 18, T23S, R27E, NMPM, Eddy County New Mexico.

2. Applicant seeks permission to downhole commingle production from the Atoka perforations (10,688 feet to 10,799 feet) with production from the Morrow perforations (11,550 feet to 11,786 feet) in the well bore of said well.

3. That approval of said application will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

WHEREFORE, Applicant prays that its application be set for hearing and after notice and hearing, the application be granted as requested.

KELLAHIN & KELLAHIN

By _____
W. Thomas Kellahin
P.O. Box 1769
Santa Fe, New Mexico 87501
(505) 982-4285

dr/

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. 7313

Order No. R-6255

APPLICATION OF PHILLIPS PETROLEUM COMPANY

FOR DOWNHOLE COMMINGLING, EDDY

COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 29, 19 81, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this _____ day of _____, 19 81, 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, Phillips Petroleum Company, is the owner and operator of the Drag A Well No. 1, located in Unit C of Section 18, Township 23 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(3) That the applicant seeks authority to commingle Atoka and Morrow production within the wellbore of the above-described well.

(4) That from the ~~QxxgxAxWxlxxNxxxlx~~ Atoka zone, the subject well is capable of low marginal production only.

(5) That from the ~~xAtoka~~ Morrow zone, the subject well is capable of low marginal production only.

(6) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(7) That the reservoir characteristics of each of the subject zones ~~are~~ appear to be such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(8) That the applicant should determine the rate of liquids production 90 days after commingling.

(9) That the Director of the Division should require the installation of a standing valve or other zone separation equipment if the rate of liquids production should appear excessive.

(10) ~~(8)~~ That to afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Artesia district office of the Division any time the subject well is shut-in for 7 consecutive days.

(9) That in order to allocate the commingled production to each of the commingled zones in the subject well, ______ percent of the commingled ______ production should be allocated to the Atoka zone, and ______ percent of the commingled ______ production to the Morrow zone.

(ALTERNATE)

(11) ~~(9)~~ That in order to allocate the commingled production to each of the commingled zones in the wells, applicant should consult with the supervisor of the Artesia district office of the Division and determine an allocation formula for each of the production zones.

IT IS [illegible]:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to commingle Atoka and Morrow production within the wellbore of the Drag A Well No. 1, located in Unit C of Section 18, Township 23 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(2) That the applicant shall consult with the Supervisor of the Artesia district office of the Division and determine an allocation formula for the allocation of production to each zone in each of the subject wells.

(3) That approximately 90 days following the date of downhole commingling the applicant shall conduct a production test on said well to determine its ~~rate~~ volume of liquids production.

(4) That the applicant shall notify the Artesia district office of the Division of the date and time of such test in order that it may, ~~be witnessed~~ at the option of the Division, be witnessed.

(5) That the results of such test shall be reported to the Director of the Division within 15 days following the date thereof.

(6) That based upon the evidence from such test the Director of the Division may require the installation of a standing valve or other zone separation equipment in said well.

(7) ~~(5)~~ That the operator of the subject well shall immediately notify the Division's Artesia district office any time the well has been shut-in for 7 consecutive days and shall concurrently

hereby authorized to commingle Atoka and Morrow production within the wellbore of the Drag A Well No. 1, located in Unit C of Section 18, Township 23 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(2) That the applicant shall consult with the Supervisor of the Artesia district office of the Division and determine an allocation formula for the allocation of production to each zone in each of the subject wells.

(3) That approximately 90 days following the date of downhole commingling the applicant shall conduct a production test on said well to determine its volume of liquids production.

(4) That the applicant shall notify the Artesia district office of the Division of the date and time of such test in order that it may, ~~be witnessed~~ at the option of the Division, be witnessed.

(5) That the results of such test shall be reported to the Director of the Division within 15 days following the date thereof.

(6) That based upon the evidence from such test the Director of the Division may require the installation of a standing valve or other zone separation equipment in said well.

(7) ~~(5)~~ That the operator of the subject well shall immediately notify the Division's Artesia district office any time the well has been shut-in for 7 consecutive days and shall concurrently present, to the Division, a plan for remedial action.

(8) ~~(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.