CASE NO.

6374

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
8 November 1978

EXAMINER HEARING

IN THE MATTER OF:

Application of Mesa Petroleum Company for a special oil allowable, Lea County, New Mexico.

CASE 6374

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For Mesa Petroleum Company: Barry F. Cannaday, Esq.
General Counsel
Mesa Petroleum Company
P. O. Box 2009
Amarillo, Texas 79105

I N D E X

L. M. CARNES

Direct Examination by Mr. Cannaday

E X H I B I T S

Applicant Exhibit A

Exhibits One through Three, maps

Exhibits Four through Twelve, performance curves

MR. STAMETS: We will call the next case, 6374.

MS. TESCHENDORF: Application of Mesa Petroleum Company for a special oil allowable, Lea County, New Mexico.

MR. STAMETS: Call for appearances in this case.

MR. CANNADAY: Barry Cannaday for the Applicant, Mesa Petroleum Company. We have one witness to be sworn.

MS. TESCHENDORF: Spell your name, please.

MR. CANNADAY: C-a-n-n-a-d-a-y; first name, B-a-r-r-y.

MS. TESCHENDORF: New Mexico attorney?

MR. CANNADAY: No, I am not.

MS. TESCHENDORF: Do you have a letter of--

MR. CANNADAY: (Interrupting) Mr. Caulfield of the Hinkle firm.

MR. STAMETS: Have the witness stand and be sworn, please.

L. M. CARNES

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

DIRECT EXAMINATION

BY MR. CANNADAY:

Q Would you state your name, please?

A L. M. Carnes.

Q Spell the last name.

A C-a-r-n-e-s.

Q By whom are you employed and in what capacity?

A Mesa Petroleum Company in Amarillo, Texas. I am manager of Reservoir Engineering.

Q Have you ever testified before the Commission before?

A Yes, I have.

Q Have your qualifications as an expert been accepted by the Commission and made a matter of record?

A Yes, sir.

MR. CANNADAY: Mr. Examiner, I tender this witness as an expert witness.

MR. STAMETS: The witness is considered qualified.

BY MR. CANNADAY:

Q Mr. Carnes, in connection with this Application, have you prepared or caused to be prepared a written study?

A Yes, I have.

Q Does this study detail the circumstances which led up to this Application and Mesa Petroleum Company's reasons for asking for the Application?

A Yes, it does.

Q Has this been tendered to the Examiner for his examination?

A Yes, sir.

Q If you would, please, could you go over that study and highlight the circumstances which did lead up to this Application and the reasons why you think the Commission should grant this Application?

A Yes, sir.

MR. STAMETS: Has this study been marked as an Exhibit?

MR. CANNADAY: No, it hasn't, not the actual study. Could we mark that as Exhibit Thirteen? There are twelve exhibits at the back.

MR. STAMETS: You have each of these identified with an Exhibit number on here, but they have not been stamped with the official stamp.

MR. CANNADAY: No, they have not.

MR. STAMETS: Let me suggest before we get started that we mark the booklet itself as your Exhibit A and then each of these Exhibit numbers can just simply be a part of Exhibit A. I think that

would be the simplest thing.

MR. CANNADAY: Okay.

MR. STAMETS: Mr. Cannaday, you may proceed.

MR. CANNADAY: Thank you.

BY MR. CANNADAY:

Q Mr. Carnes, your study has now been marked Exhibit A. If you would please go through and highlight some of the reasons behind the Application and the reasons why you think it should be granted.

A First of all, let me say this. Exhibit A then is a complete report, including testimony and references to twelve exhibits contained therein. As a matter of introduction and nature of this Application, I'd like to state this: That Mesa, during the early stages of a recent water-flood study of the Drinkard Reservoir, determined that there was excess fluid above the bottom hole pumps in three Mesa operated wells.

As you know, in a water-flood operation, it's very important to keep the fluid levels pumped down in the producing wells. In order to determine if this could be accomplished in these three Drinkard wells, Mesa installed a new prime mover and made

certain beam pumping equipment changes in their West Knowles No. 5 well, located in this field.

With these changes, we anticipated that we would increase our production to about 200 barrels of oil per day, up from 100 barrels a day.

But instead, the production increased dramatically to some 500 barrels of oil per day, which exceeded the 310-barrel-a-day top allowable by about 200 barrels per day.

Also, the Drinkard porocity and permeability development within this field from well to well varies significantly. And, in addition, we have had some difficulty in correlating the various porous zones within the Drinkard Reservoir between wells.

Therefore, we felt that it was desireable to determine the extent of fluid movement and pressure communication between the wells in this field before making a decision to water-flood the Reservoir. Such information could be very helpful in determining the location and number of injection wells.

In view of this, then, Mesa desires to produce this well at capacity production, which may be between 420 and 500 barrels of oil per day

for the three-month period October 1 through December 31, 1978. We will request a special allowable of about 500 barrels of oil per day for West Knowles No. 5, in order to obtain critical water flood data.

As I said, we have twelve exhibits that are a part of this report. Exhibits One through Three are maps and Exhibits Four through Twelve are various performance curves on the total field, as well as individual well-performance curves. And finally, the last two exhibits of these performance curves simply are daily production data on the West Knowles No. 5 Well since September 1 and going through the latest day in October that we had production data for it.

The Drinkard-Knowles west field was discovered in February of 1975 with the completion of Mesa's West Knowles' No. 1 Well, which had initial flow and potential of 600 barrels a day, with a gas-oil ratio of just over 600 cubic feet per barrel from Drinkard perforations at around 8,300 feet.

The first exhibit is simply a location plat showing the Drinkard wells in light green. There are six of them currently producing. It also shows wells completed in other horizons. The Straun

is shown in pink. That's the Casey-Straun field. The dark green represents paddock wells and the light brown or orange color represents a tub completion. Mesa's acreage is colored in yellow.

MR. STAMETS: Let me check. The well located in the southest southeast of 34 is the discovery well?

MR. CARNES: Yes, that's true. And then -- I should have pointed that out. And then the well located in the southeast of the northeast of 34 is the well in question, West Knowles No. 5; the well that we have applied for the special allowable on.

A total of eight wells have produced Drinkard oil from this Reservoir. However, now there are only six wells, because two wells have since been plugged and abandoned, or recompleted to a different productive horizon.

MR. STAMETS: Which were the other two wells that are produced from the Drinkard?

MR. CARNES: Okay. West Knowles No. 2, located in the northwest of the southwest, Section 35, was a Mesa operated well that produced just over 50,000 barrels of oil from the Drinkard before we had to plug it because of a casing failure and loss of a tubing fish in the hole.

The other well is Mesa's Meyer's No. 1, located in the northwest of the northwest of Section 3. It's shown to be at this point a paddock producer. It's still producing commercial oil from the paddock, so therefore it does not show the symbol for a plugged well at this time.

MR. STAMETS: Did you deplete the Drinkard in that well?

MR. CARNES: No, we did not. We set a bridge plug above it. We plan to go back and remove the bridge plug and produce Drinkard oil eventually from that well again. It produced just over 1,600 barrels of oil in less than three months in 1975 before it was recompleted in the paddock formation in November of that year.

MR. STAMETS: You say it's a marginal well?

MR. CARNES: At the time, it was producing, as I recall, about 15 to 20 barrels of oil per day, and we were able to produce 50 to 60 barrels a day from the paddock. So we produced the higher productivity well.

MR. STAMETS: Thank you.

MR. CARNES: Mesa operates four of these six active producers and C&K Petroleum the

other two. The C&K wells are located in the southwest quarter of Section 34. As of October 1, 1978, these six wells were producing about 600 barrels of oil per day at a gas-oil ratio of 750 cubic feet per barrel.

At that time, the cumulative oil production had been right at 900,000 barrels, with accumulated gas of about 550,000 MCF. This Drinkard Reservoir is a tilted, porous carbonate bank with up-dip and lateral porocity pinch-outs occurring on the west, the north and the east sides, while the presence of water down-dipped to the south defines the limit of production in that direction.

It's a dolomite formation. Porocity development is intercrystaline with some fractioning. Exhibit Two is a structure map which shows the nature of this Drinkard Reservoir; indicates it to be dipping about 500 feet per mile to the south, southeast, and also shows that there is an oil-water contact at a sub-sea depth of 4,632 feet.

Exhibit Three is an isopac map showing the net pay of the various Drinkard wells and indicates that the productive area is just over 700 acres and that 15 wells have penetrated the Drinkard in this field.

As I mentioned at the out-set, there's a wide variation in the rock properties of the Drinkard within these eight wells that have produced oil. Six of these wells we have pretty detailed information on, and we have estimated porocities from log calculations; permeability from either core or pressure build-up; and net pay from logs.

Also, we have determined the productivity index on six of these wells. I will just highlight the variations. The porocity varies from 3.6 percent to 7.4 percent, while the permeability can vary from as little as 2 millidarces to over 20 millidarces.

Net pay varies from 19 feet to over 100 feet. So there is considerable variation among these wells of these key rock properties and this variation of rock properties from well to well demonstrates the need for determining the communication between wells prior to water-flooding the Reservoir.

In the report, we have also tabulated the Reservoir fluid data. An oil sample was taken from the discovery well, the West Knowles No. 1 in May of 1975 by Teftel, Incorporated, and we had Coor Lab analyze these samples and perform the fluid

study. As a result, they determined that some of the key properties are as follows: the gravity is 37.6; the saturation or bubble-point pressure is 1,584 PSIG; formation volume factor initially at original pressure, 1.358, reservoir barrels per stock-tank barrels; original viscocity, .63 and original solution gas-oil ratio, 648 cubic feet per barrel.

The original bottom hole pressure at a subsea depth of 4591 feet was 3,223 PSIG as determined from extrapolated drill stem test data from the discovery well. The bottom hole temperature was 135 degrees Farenheit.

Since the saturation pressure is at 1584 compared to original pressure of 3223, we can see that this Drinkard oil accumulation was originally undersaturated. Recent fluid level and dynomometer surveys completed in August and September of '78 on four of the wells that Mesa operates indicated that bottom hole pressure is around 1150 PSIG at this time.

Now, Exhibit Number Four is a complete performance history of the West Knowles - Drinkard field. It shows the bottom hole pressure, oil production, water production and gas-oil ratio

behavior. From this Exhibit, we can see that the pressure has declined to about one-third of original pressure. Oil production has been declining at about 20 percent a year with a gradual increase -- very slight increase in producing gas-oil ratio.

This would indicate that the reservoir is a solution gas drive type of reservoir. Individual well performance is shown on Exhibits Five through Ten. This is on similog scale, shows the oil production monthly, but tabulated on an average daily rate with accompanying gas-oil ratio curve and water.

I think the key thing to point out there would be that you have got essentially flat production for over two years on Mesa's West Knowles Nos. 1, 3 and 5, shown as Exhibits Five, Seven and Eight.

At the outset, we also mentioned that we had determined there was excess fluid over the bottom hole pump in three of the Mesa operated wells. This is shown on page five of the report. I will just briefly point out the fluid levels.

On West Knowles No. 1, 1,422 feet of fluid over the pump. West Knowles No. 3, 463 feet. West Knowles No. 5, 3,048 feet at fluid over the pump. West Knowles No. 6, we are pumping it off

and, therefore, you will notice that it has been declining steadily as shown on the performance curve Exhibit Number Nine.

Now, in view of these high fluid levels, on September 20, '78, a new high-slip electric motor was installed on West Knowles No. 5. In addition, we increased the stroke length to 120 inches from 96, and we speeded up the pumping unit to 12 strokes per minute from 8.

As I said before, these changes caused the production of some 500 barrels of oil per day. We estimated that 200 barrels a day. We have produced up the tubing while the other 300 barrels per day, we estimate, are flowing up the tubing casing annulus due to the reduced fluid load and back pressure on the formation.

The daily production performance on West Knowles No. 5 is shown on Exhibit Eleven and Twelve. Exhibit Eleven is a tabulation of this data and Exhibit Twelve is a graphical presentation. Since August 1st -- it runs through approximately October 31st.

From that, you can see that the production was fluctuating between 100 and 110 or 112 barrels a day up until the time we made the

equipment changes on September 20th. From that time, it has averaged some 500 barrels a day during the last week or so of September and has been gradually declining in the month of October. The last day we had production on was October 30th and it was 415 barrels of oil per day.

The gas production has also increased from 60 or 70 MCF's per day to about 700 MCF's per day at the present time.

Now, by producing No. 5 at this current rate, we will observe the behavior of West Knowles No. 1 and 3. No changes will be made in these two wells. They have excess fluid over the pumps, so any sudden decline in oil production with accompanying increase in gas-oil ratio could indicate the presence of either fracture communication, or just fluid and pressure communication throughout the reservoir through the matrix. Or it even might tell us something about directional permeability.

If one well could be shown to be in communication while another one didn't during this phase of the test. No interference at all over the three-month period could possibly indicate separate reservoirs. We plan to take complete fluid level, dynomometer and bottom hole pressure surveys at the

end of the three-month test period.

Mesa sells the casing head gas produced from West Knowles No. 5 to Phillips Petroleum Company. Phillips needs the gas. They have been taking the increased volume up to 700 a day, and we have had no problems of curtailments on other wells. There's no flaring of gas.

The information gained from this test program in West Knowles No. 5 could provide, we think, essential water-flood data from which injection wells and sweep efficiency could be maximized, or optimized if we undertake a water flood.

This would prevent possible waste of capital investment and reservoir energy if we know where to put these injection wells.

We think the correlative rights or the work and interest of royalty owners will be protected because the program could lead to improved recovery of the remaining oil in the Drinkard reservoir.

That is pretty well the summary of the report that you have and the description of each of the Exhibits.

MR. CANNADAY: Mr. Examiner, at this time we would formally offer this report, Exhibit A,

into evidence.

MR. STAMETS: Exhibit A will be admitted.

MR. CANNADAY: I might state briefly that this application is made under that provision of Rule 502 which allows for increased allowable for test purposes for obtaining scientific data.

MR. STAMETS: Mr. Carnes, looking at Exhibit Twelve of Exhibit A, I see a couple of things. It looks as though your gas-oil ratio, while it did increase, never exceeded 2,000-to-one.

MR. CARNES: That's right.

MR. STAMETS: And that gas-oil ratio seems to be declining.

MR. CARNES: That's right. Just ever so slightly. We will know more if we're allowed to continue to produce the well for another couple of months, possibly to see what is happening in the reservoir and take additional pressure surveys on it.

MR. STAMETS: It would also appear that if you get this special allowable for 90 days that the rate of decline of this well -- that by the end of the 90 days, you won't need it anymore.

MR. CARNES: That's possible. However, we have a problem during October.

MR. STAMETS: Mr. Carnes, do you have people in the Hobbs District area who can come in at the end of each month, or at least the first two months of this test, and advise our District Supervisor there what's going on: rates production, the gas-oil ratio, any water production?

MR. CARNES: Yes, we do have. You're talking about your office in Hobbs?

MR. STAMETS: Yes.

MR. CARNES: That's right. They could certainly keep them abreast of what's happening, both on this well as well as the other three Mesa operated wells.

MR. STAMETS: It would appear to me that that might be something good to do and then if any production records were observed, it would seem to indicate that waste was being caused by this test, the District Supervisor could recommend to the Division Director that the test be terminated.

MR. CARNES: Right. We understand that. Would it be advisable then to make a copy of this report available, or will you do so, with the Commission office in Hobbs?

MR. STAMETS: I think we have enough copies. I think we can do that. We can just give

Mr. Sexton a copy. He should be here sometime today.

Mesa would be willing to notify them and to terminate the test if it did appear waste was occurring?

MR. CARNES: Yes, we would. We don't want to cause any waste in the reservoir.

MR. STAMETS: Have you asked for a water flood project yet?

MR. CARNES: No, sir, we have not. As I said, we were in the initial stages of a water flood study. We haven't completed the study. This will be important data to us to aid in the completion of that study.

MR. STAMETS: It would appear, looking at Exhibits Four through Ten, that the water production is not a problem, except for perhaps Well No. 2, which you have shut in.

MR. CARNES: That's right. I should have mentioned that during the brief summary of these Exhibits. In the report proper, we state that most of the water produced from this reservoir has been from the No. 2 Well. Since it is now plugged, there is a reduction significantly in May of '77 in the water production from the reservoir. That well

probably contributed about 90 percent or more of the water production.

MR. STAMETS: While at least part of the production -- looks like the majority of the production is coming up the casing tubing annulus. Would you say that your gas-oil ratio indicates that you have inefficient flow, or are you having efficient flow up the annulus?

MR. CARNES: Well, I think it indicates fairly efficient flow. I think by just lowering the fluid level a few hundred feet, by speeding up the pumping unit and lengthening the stroke, that gas came into the tubing casing annulus, causing a lighter column and actual flowing conditions to commence up that tubing casing annulus.

But because the gas-oil ratio has not increased rapidly -- in fact, it's been slightly declining, as you pointed out -- we think it's fairly efficient. It's kind of like a gas lift operation.

MR. STAMETS: I presume you're not proposing flowing oil wells up the casing tubing annulus on a permanent basis?

MR. CARNES: That's right. We're not proposing that.

MR. STAMETS: Any other questions of

the witness? He may be excused. Anything further in this case? The case will be taken under advisement

(Hearing concluded.)

REPORTER'S CERTIFICATE

I, STEFANIE XANTHULL, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached 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, knowledge, and skill, from my notes taken at the time of the Hearing.

Stefanie Xanthull, CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6371, heard by me on 11-8, 1976.

Richard L. Stamets, Examiner
Oil Conservation Division

Copy
R-5889

MESA PETROLEUM CO.

RECEIVED
JUN 11 1979
OIL CONSERVATION DIVISION
SANTA FE

June 5, 1979

File
Case No. 6374

New Mexico Oil Conservation Commission
P.O. Box 127
Hobbs, New Mexico
88240
Attn: Jerry Sexton

Subject: West Knowles No. 5

Dear Jerry,

Shown below is a tabulated account of actual production on the subject well versus allowable production.

Month and Year	Days	Actual Oil Production (BBLS.)	Allowable Oil Production (BBLS.) 310 BBLS/DAY
Oct. 1978	31	14,180	9610
Nov. 1978	30	12,941	9300
Dec. 1978	31	12,948	9610
Jan. 1979	31	12,576	9610
Feb. 1979	28	11,031	8680
March 1979	31	11,708	9610
April 1979	8	2,237	2480
	190	77,621	58900

77,621
58,900
18,721 Total over produced (BBLS.)

18,721 ÷ 310 -- 60.39 Days shut down to make up over produced status

April 1979	22 days
May 1979	31 days
June 1979	7 days
	60 days actual shut in time.

With the above accountability, Mesa Petroleum Company requests permission to place the West Knowles No. 5 back on producing status starting June 8, 1979.

Very truly yours,

James W. Hart

Mesa Petroleum Company
James W. Hart

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

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

January 2, 1979

Re: CASE NO. 6374
ORDER NO. R-5889

Mr. Barry Cannaday
Mesa Petroleum Company
Box 2009
Amarillo, Texas 79105

Applicant:

Mesa 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 OCC x
Artesia OCC x
Aztec OCC

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. 6374
Order No. R-5889

APPLICATION OF MESA PETROLEUM COMPANY
FOR A SPECIAL ALLOWABLE, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 8, 1978, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 29th day of December, 1978, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Mesa Petroleum Company, seeks a temporary increase in the oil allowable for its West Knowles Well No. 5 located in Unit H of Section 34, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, from 310 barrels to 500 barrels for the 90-day period extending from October 1, 1978 to December 31, 1978.

(3) That the applicant seeks said special allowable for the purpose of obtaining scientific data.

(4) That the evidence presented indicates that such special allowable may be produced without waste.

(5) That the applicant should submit data resulting from production at such special allowable to the Hobbs district office of the Division.

(6) That the overproduction from said West Knowles Well No. 5, that volume produced in excess of 310 barrels per day during the period from October 1, 1978, to December 31, 1978, should be made up by underproduction before July 1, 1979.

(7) That approval of the subject application will not violate correlative rights or cause waste.

IT IS THEREFORE ORDERED:

(1) That a temporary special oil allowable of 500 barrels per day is hereby authorized for the Mesa Petroleum Company West Knowles Well No. 5 located in Unit H of Section 34, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, for the period from October 1, 1978, through December 31, 1978.

(2) That the applicant shall submit production, GOR, and other significant test data obtained during the special allowable period to the supervisor of the Division's district office at Hobbs.

(3) That the applicant shall underproduce said West Knowles Well No. 5 during the period from January 1, 1979, to July 1, 1979, by an amount sufficient to offset the overproduction accrued during the special allowable period (all production in excess of 310 barrels per day).

(4) That on or before July 31, 1979, the applicant shall furnish the Director of the Division an accounting of production from said West Knowles Well No. 5 for the period from October 1, 1978, through June 30, 1979.

(5) 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 herein-
nated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

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Hearing Da.e

BEFORE EXAMINER STATTETS
OIL CONSE VATION DIVISION
EXHIBIT NO. A
CASE NO. 6374
Submitted by MESA PETR CO.
Hearing Date 11-8-78

DATA FOR SPECIAL OIL ALLOWABLE
WEST KNOWLES NO. 5
KNOWLES DRINKARD WEST FIELD
LEA COUNTY, NEW MEXICO

NOVEMBER 8, 1978

1. INTRODUCTION AND NATURE OF APPLICATION

Mesa has recently undertaken a waterflood feasibility study of the Drinkard reservoir. During such study it was determined that three Mesa operated wells in this field had excess fluid over the bottom-hole pump. In waterflood operations it is important to keep the fluid level pumped down in the producing wells. In order to determine if this could be accomplished in West Knowles, a new prime mover was installed and certain changes were made in the existing beam-pumping equipment on West Knowles No. 5. With these equipment changes, production from this well was expected to increase to 200 barrels of oil per day (BOPD) from 107 BOPD. Instead, production soared dramatically to over 500 BOPD, exceeding the 310 BOPD top allowable for this well by a substantial margin.

The Drinkard porosity and permeability in this field varies significantly from well to well. In addition, there is difficulty in correlating some of the porous Drinkard intervals between wells. Therefore, it is desirable to determine the extent of fluid movement and pressure communication between wells before making a decision to waterflood this reservoir. This information would be very important in determining the number of injection wells needed, i.e. drill new wells or convert existing producers.

In view of the above, Mesa desires to produce this well at capacity production of 420 to 500 BOPD for the 90-day period, October 1 through December 31, 1978, and requests a temporary test allowable of 500 BOPD for West Knowles No. 5 in order to obtain critical waterflood data.

2. FIELD HISTORY

The Knowles Drinkard West Field was discovered in February of 1975 with the completion of Mesa's West Knowles No. 1. This well had an initial flowing potential of 606 BOPD with a gas-oil ratio (GOR) of 612 cubic feet per barrel from Drinkard perforations 8330-8412 ft.

As shown on the attached plat, there are currently six producing wells in this field. A total of eight wells, developed on 80-acre spacing, have produced Drinkard oil, however, one producing well, Mesa's West Knowles No. 2, was plugged and abandoned during October, 1977 due to a casing failure and parted tubing in the hole after it had produced 51,037 barrels of oil. Another well, Mesa's Meyer No. 1, produced only 1,618 barrels of oil from the Drinkard during a three-month period before it was recompleted to the Paddock formation in November, 1975.

Mesa operates four of the six active producing wells in this field while C&K Petroleum operates the other two. As of October 1, 1978, these wells were pumping 600 BOPD at a GOR of 750 cu. ft./STB and the cumulative oil and gas production from this Drinkard reservoir was 891,035 barrels and 556,100 MCF, respectively.

3. GEOLOGICAL AND STRUCTURAL FEATURES

The Drinkard reservoir is a tilted, porous, carbonate bank with up dip and lateral porosity pinchouts occurring to the west, north, and east. The presence of water down dip defines the southern limit of oil production, creating a combination stratigraphic and structural trap. This dolomitic formation contains intercrystalline and vuggy porosity with some fracturing. As shown on the attached structural map, Exhibit No. 2, the Drinkard producing zone has a dip of about 500 feet per mile

to the south-southeast with an original oil-water contact at 4,632 sub-sea depth. There was no gas cap present originally.

As shown on Exhibit No. 3, the productive area of the Drinkard reservoir in the Knowles Drinkard West Field is about 700 acres and 15 wells have been drilled through the Drinkard formation.

4. PHYSICAL PROPERTIES OF THE DRINKARD FORMATION

The tabulation below is a comparison of the key rock properties of six wells which have produced oil from the Drinkard reservoir:

WELL	AVERAGE POROSITY-%	AVERAGE PERMEABILITY-md	PRODUCTIVITY INDEX-BOPD/psi	NET PAY-ft.
W. KNOWLES NO. 1	5.9	11.8*	0.62	46
W. KNOWLES NO. 2	3.6	4.1**	NA	19
W. KNOWLES NO. 3	7.2	2.6*	0.32	102
W. KNOWLES NO. 5	7.4	20.0*	2.08	53
W. KNOWLES NO. 6	6.7	2.1*	0.26	66
SHIPP 34 NO. 1	5.1	5.0*	0.64	80

* Permeability to oil from pressure buildup analysis.
** Air permeability from core analysis.

This comparison shows the variation of formation properties from well to well and demonstrates the need for determining communication between the wells prior to waterflooding.

5. RESERVOIR FLUID CHARACTERISTICS

Subsurface oil samples were taken from West Knowles No. 1 on May 18, 1975 by Tefteller, Inc. Core Laboratories, Inc. performed the reservoir fluid study on these samples and the tabulation below shows the results of these studies:

a. Oil Gravity at 60°F ——— 37.6° API

b. Saturation Pressure ——— 1584 psig

c. Formation Volume Factor

At Original Pressure	1.358 RB/STB
At Saturation Pressure	1.383 RB/STB
At 100 psig	1.160 RB/STB

d. Viscosity of Reservoir Oil

At Original Pressure	.63 cp
At Saturation Pressure	.35 cp
At 100 psig	1.06 cp

e. Dissolved Gas In Solution

At Original Pressure	648 cu. ft. per STB
At Saturation Pressure	648 cu. ft. per STB
At 100 psig	168 cu. ft. per STB

6. OTHER DRINKARD RESERVOIR DATA

The original bottom-hole pressure (BHP) at a sub-sea depth of 4591 ft. was 3,223 psig, as determined from extrapolated DST data from West Knowles No. 1 taken on December 19, 1974, at an original reservoir temperature of 135°F. Since the saturation pressure was 1,584 psig, this Drinkard oil accumulation originally was undersaturated. Fluid level and dynamometer surveys were completed during August and September, 1978 on four wells and indicated a BHP of 1,150 psig. The complete BHP history for the field is shown on Exhibit No. 4.

7. PRODUCTION PERFORMANCE AND RESERVOIR MECHANICS

Based on the production-pressure behavior shown on Exhibit No. 4, it is concluded that oil and associated gas production from this Drinkard reservoir is obtained by a depletion or solution gas drive mechanism. Oil production has been declining at about 20% per year since late 1975 with a gradual increase in the produced GOR. Individual well performance can be seen on Exhibit Nos. 5 through 10.

A comparison of these performance curves with the total field performance indicates that most of the water from this Drinkard reservoir was produced from West Knowles No. 2.

8. FLUID LEVELS AND EQUIPMENT CHANGES ON WEST KNOWLES NO. 5

Fluid level and dynamometer surveys taken in August and September of 1978 on Mesa operated wells provided the following information:

WELL	FLUID OVER PUMP - Ft.
W. Knowles No. 1	1,422
W. Knowles No. 3	463
W. Knowles No. 5	3,048
W. Knowles No. 6	0

On September 20, 1978, a new high-slip, electric motor was installed on West Knowles No. 5. In addition, the stroke was lengthened to 120 from 96 inches and the pumping speed increased to 12 from 8 strokes per minute. As a result of these changes, total oil production was boosted to over 500 BPD. An estimated 200 BPD was pumped up the tubing while the remaining 300 BPD flowed up the tubing-casing annulus due to the reduced fluid load and back pressure on the formation. The daily production performance on the No. 5 well from August 1 to October 31, 1978, is shown on Exhibit Nos. 11 and 12.

Since excess fluid is still present over the pump in West Knowles Nos. 1 and 3, these two wells should continue to produce at about the same rates (80 to 100 BOPD) that they have in the past. A sudden drop in oil production with a corresponding increase in producing GOR from Well Nos. 1 and 3 during the time of high withdrawals from Well No. 5 would indicate interference between wells and possibly the presence of fracture communications and directional permeability. No interference would indicate

separate reservoirs. This information is critical in evaluating the merits of waterflooding this Drinkard reservoir.

After the three-month test period, fluid level and pressure data will be taken on all four Mesa operated wells.

9. PREVENTION OF WASTE AND PROTECTION OF CORRELATIVE RIGHTS

Mesa sells the casinghead gas produced from West Knowles No. 5 to Phillips. Since Phillips needs the gas, the increased gas volume (from 75 to 700 MCFPD) poses no problem as to flaring of the gas from Well No. 5 or reduced takes from the other Drinkard producing wells.

The information gained from this test program on West Knowles No. 5 could provide essential waterflood data from which injection wells and sweep efficiency can be optimized, thus preventing waste of capital investment and reservoir energy.

Correlative rights of working interest and royalty owners will be protected because this test program could lead to improved recovery of the remaining Drinkard oil in-place underlying this field.

LMC:td
11-6-78

EXHIBIT NO. 4

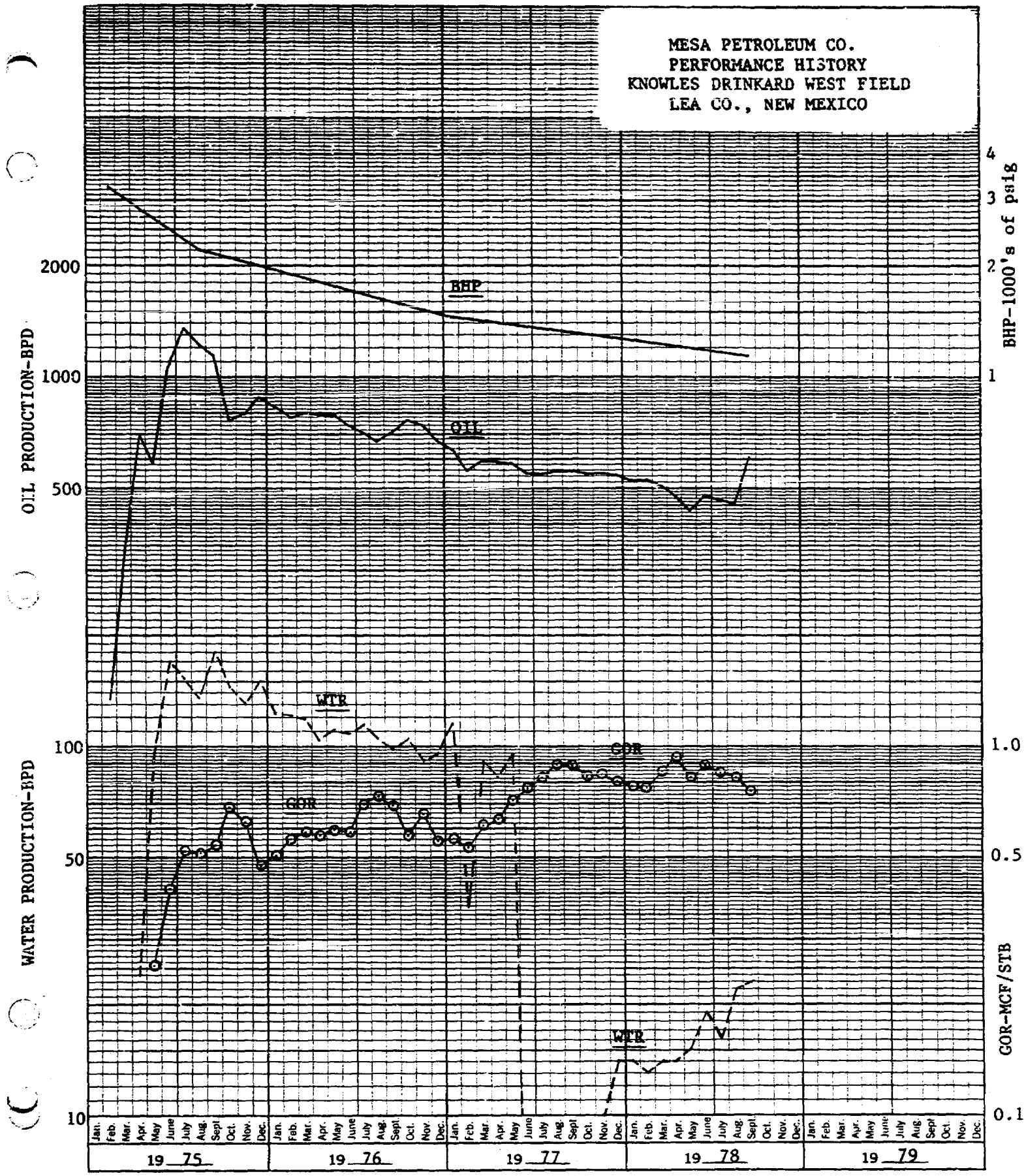

MESA PETROLEUM CO.
PERFORMANCE HISTORY
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
2000
1000
500
BHP
OIL
BHP-1000's of psig
4
3
2
1
WATER PRODUCTION-BPD
100
50
10
WTR
GOR
GOR-MCF/STB
1.0
0.5
0.1
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 5

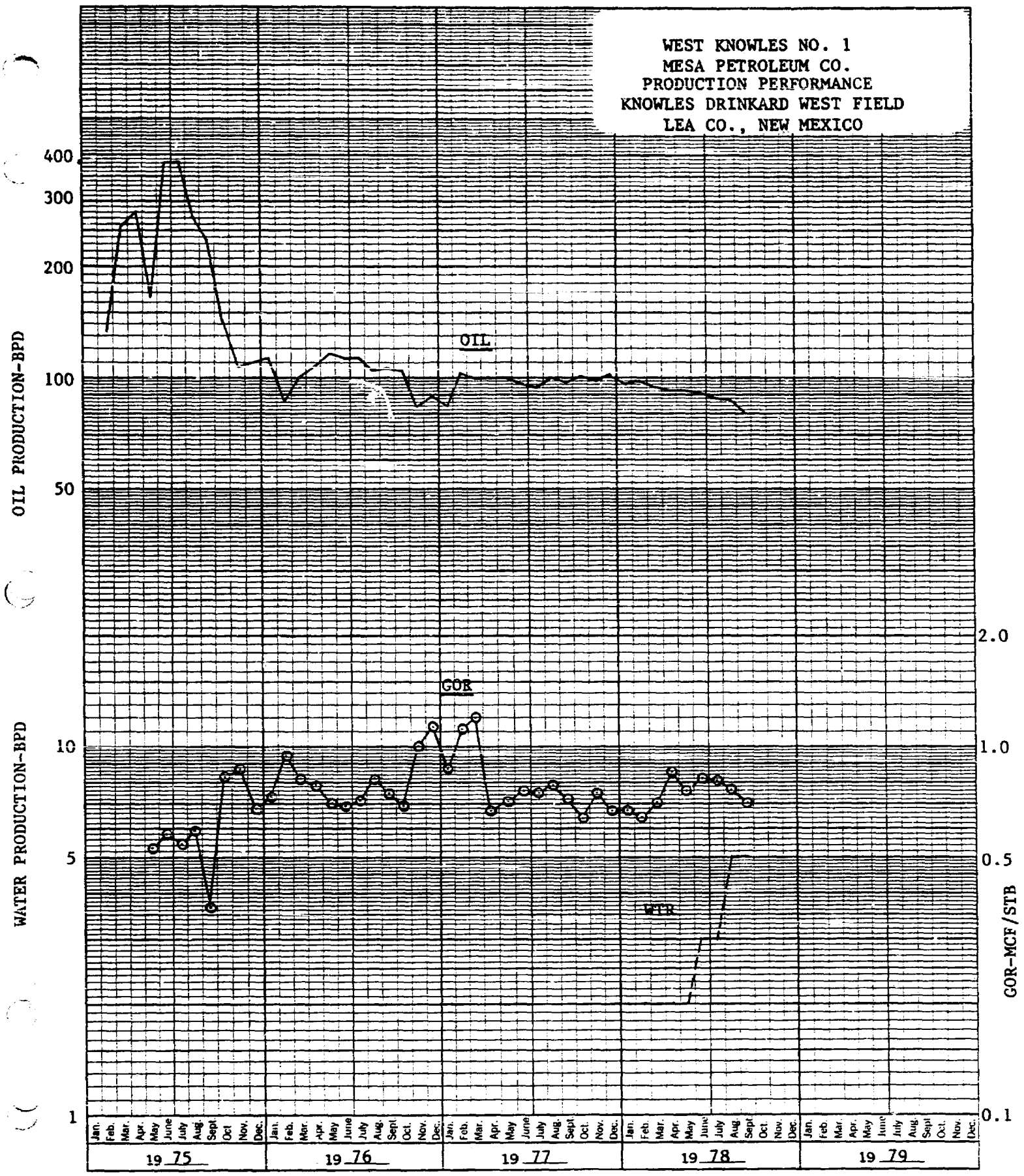

WEST KNOWLES NO. 1
MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
400
300
200
100
50
OIL
2.0
GOR
10
1.0
WATER PRODUCTION-BPD
5
0.5
GOR-MCF/STB
WTR
1
0.1
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 6

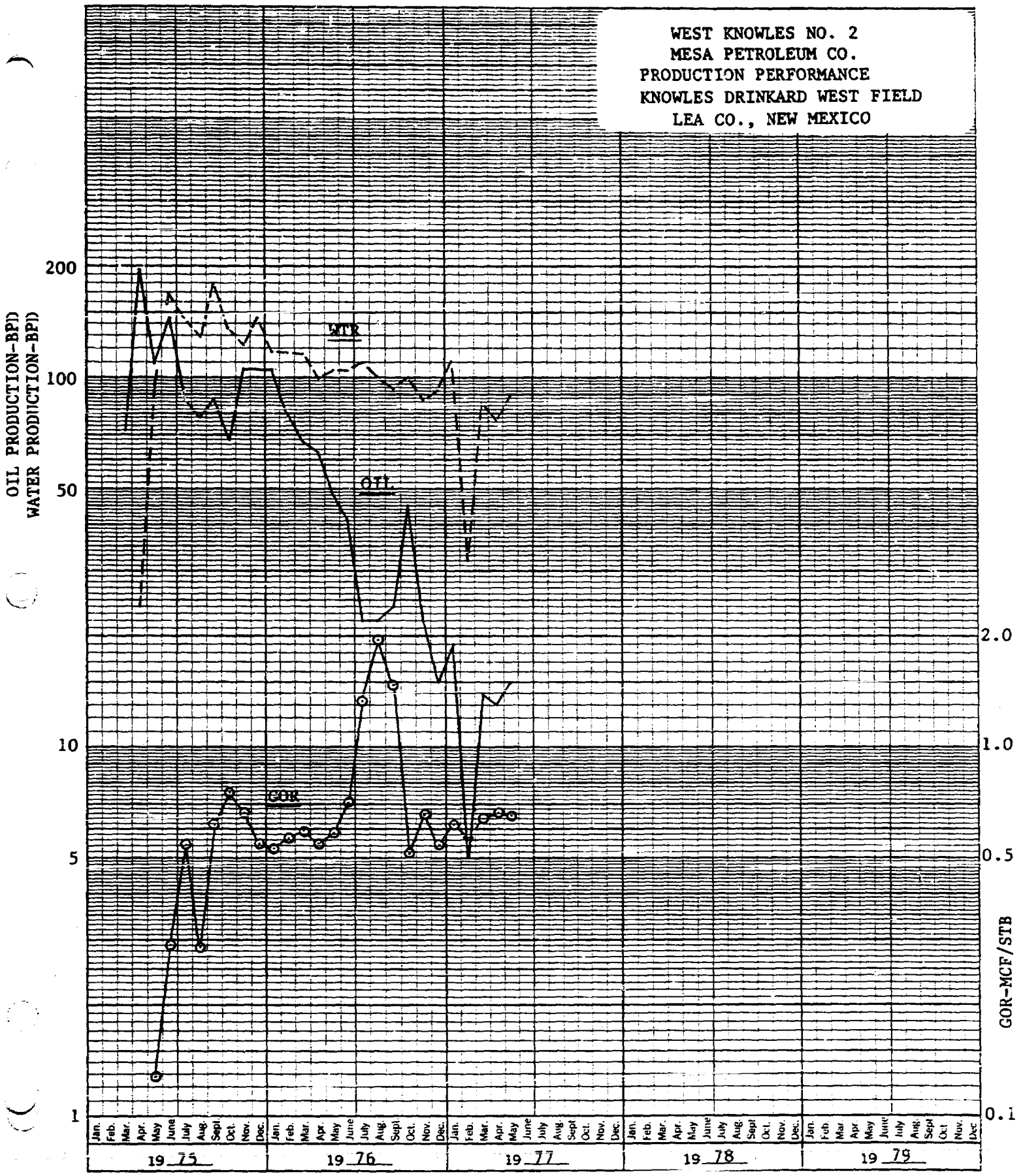

WEST KNOWLES NO. 2
MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
WATER PRODUCTION-BPD
GOR-MCF/STB
200
100
50
10
5
1
2.0
1.0
0.5
0.1
WTR
OIL
GOR
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 7

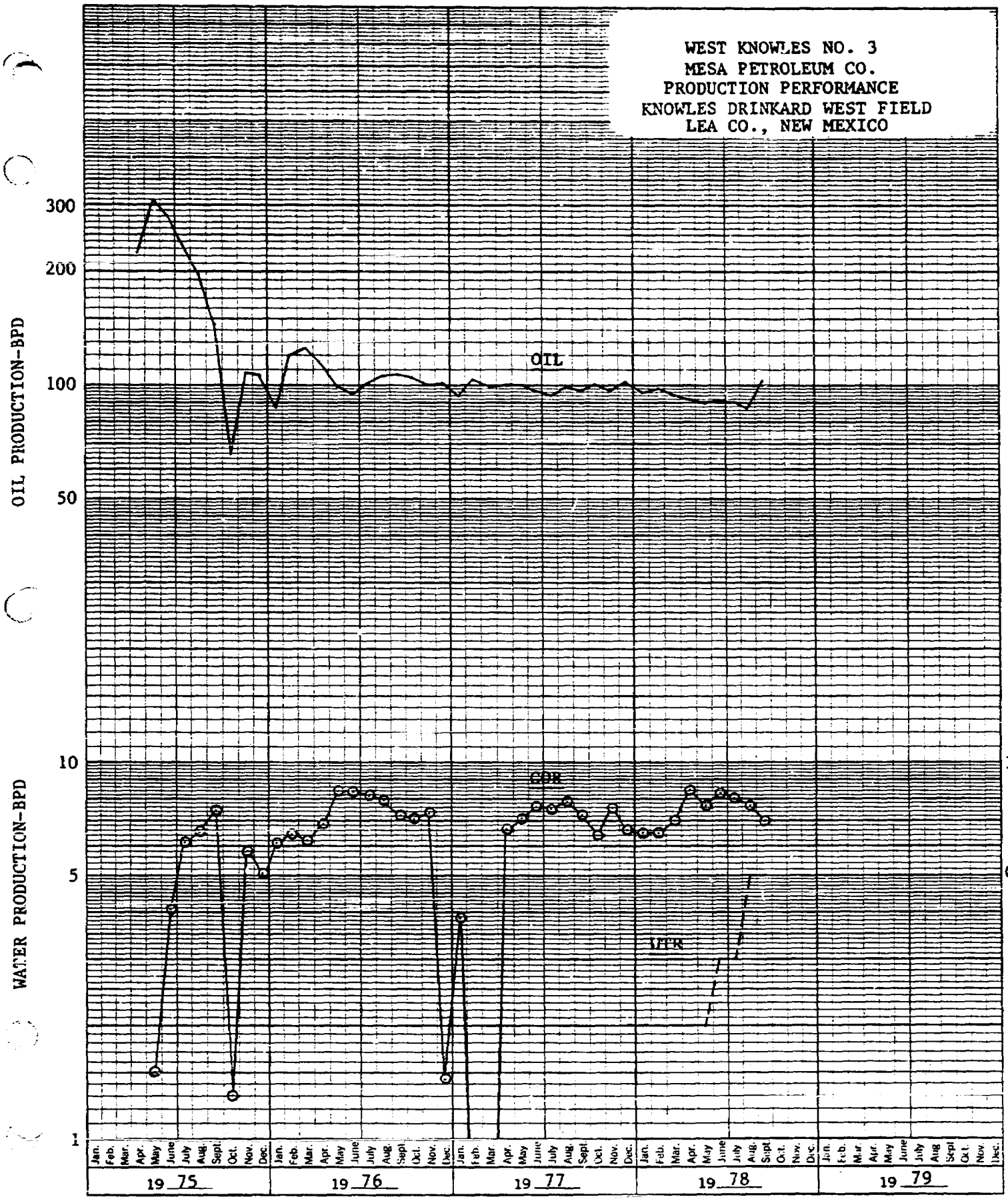

WEST KNOWLES NO. 3
MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
300
200
100
50
OIL
WATER PRODUCTION-BPD
10
5
1
WOR
IFPR
GOR-MCF/STB
1.0
0.5
0.1
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 8

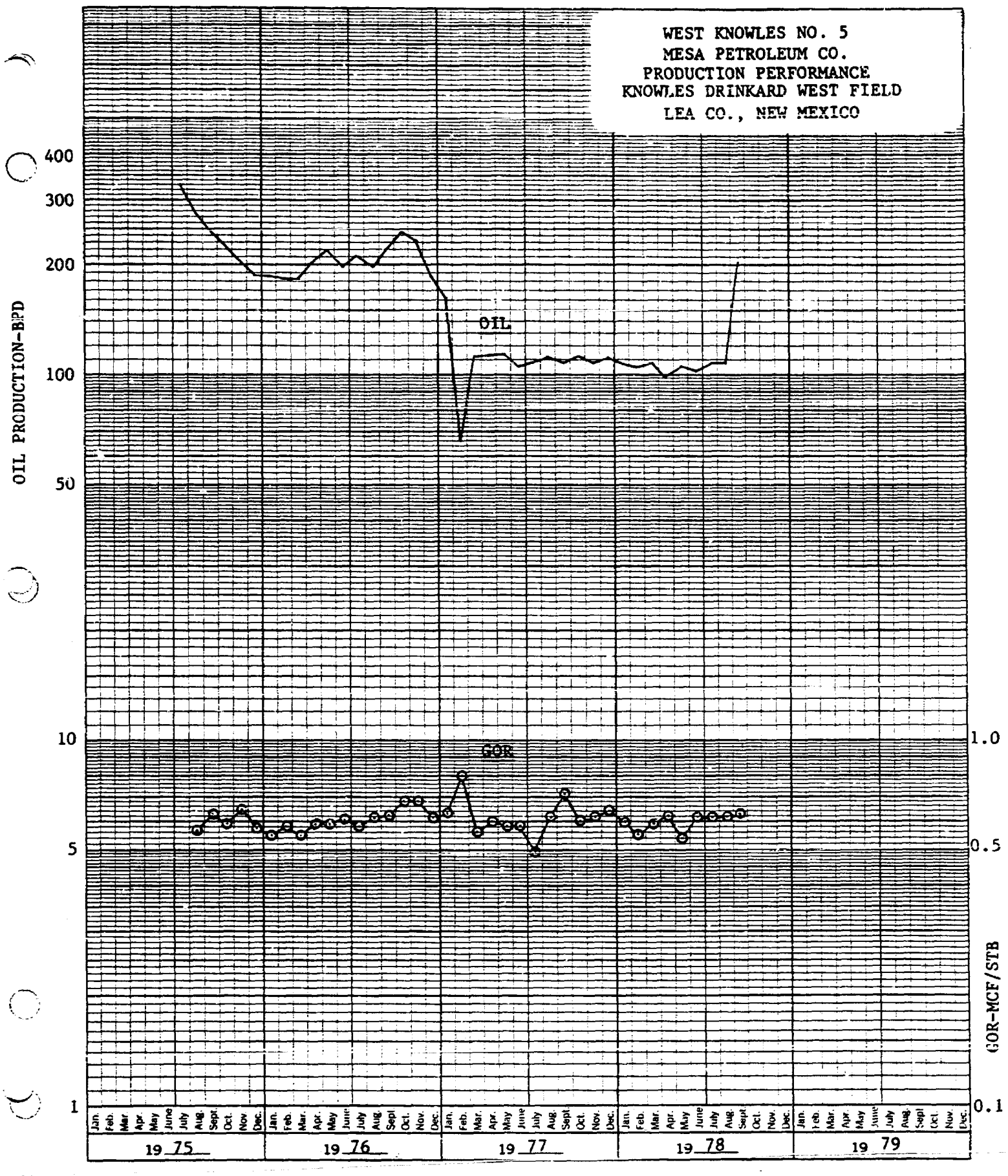

WEST KNOWLES NO. 5
MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
400
300
200
100
50
10
5
1
OIL
GOR
1.0
0.5
0.1
GOR-MCF/STB
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 9

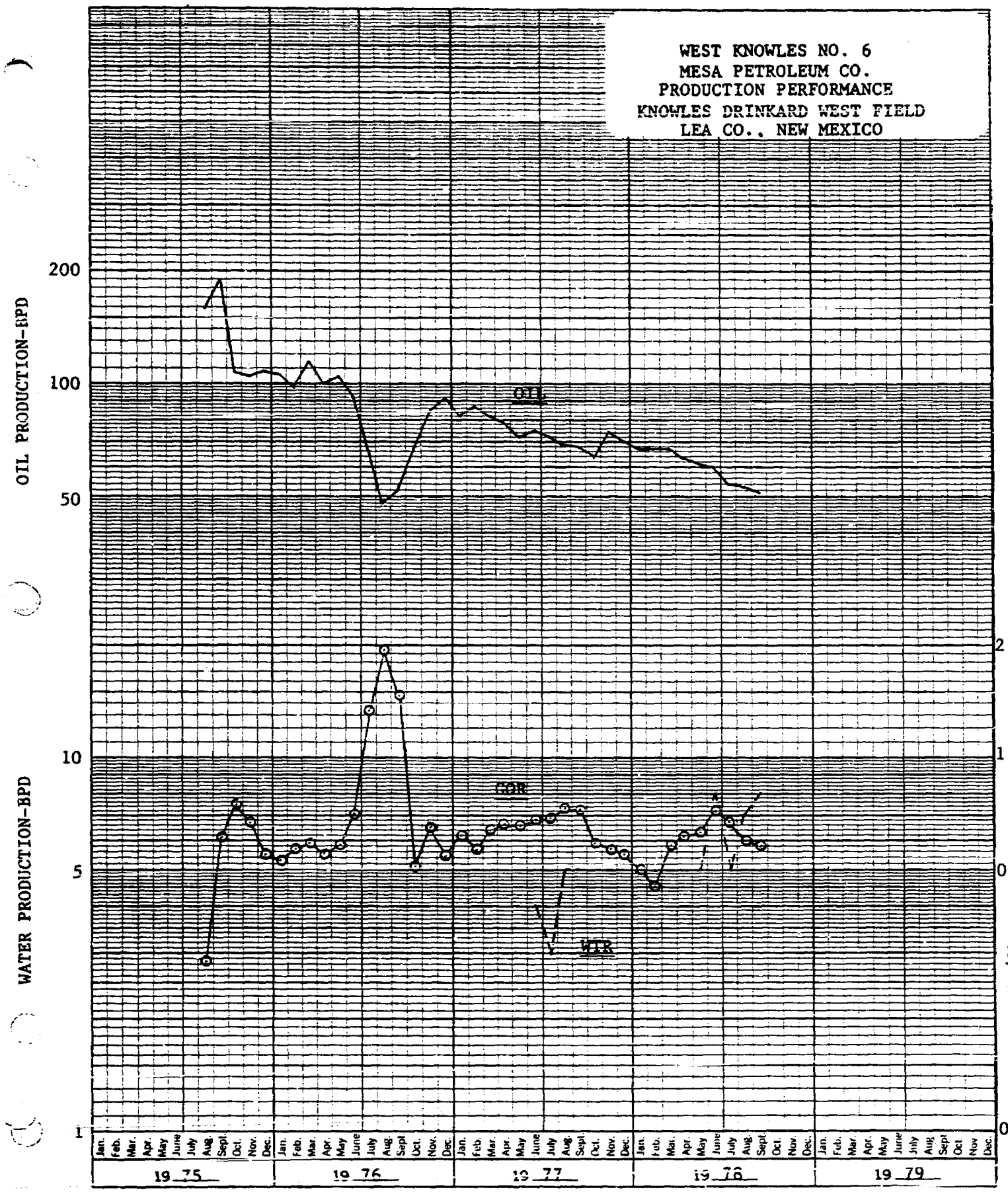

WEST KNOWLES NO. 6
MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO
OIL PRODUCTION-BPD
WATER PRODUCTION-BPD
GOR-MCF/STB
200
100
50
10
5
1
2.0
1.0
0.5
0.1
OIL
GOR
WTR
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
19 75
19 76
19 77
19 78
19 79

EXHIBIT NO. 10

SHIPP 34 NO. 1 & 2
C&K PETROLEUM INC.
PRODUCTION PERFORMANCE
KNOWLES DRINKARD WEST FIELD
LEA CO., NEW MEXICO

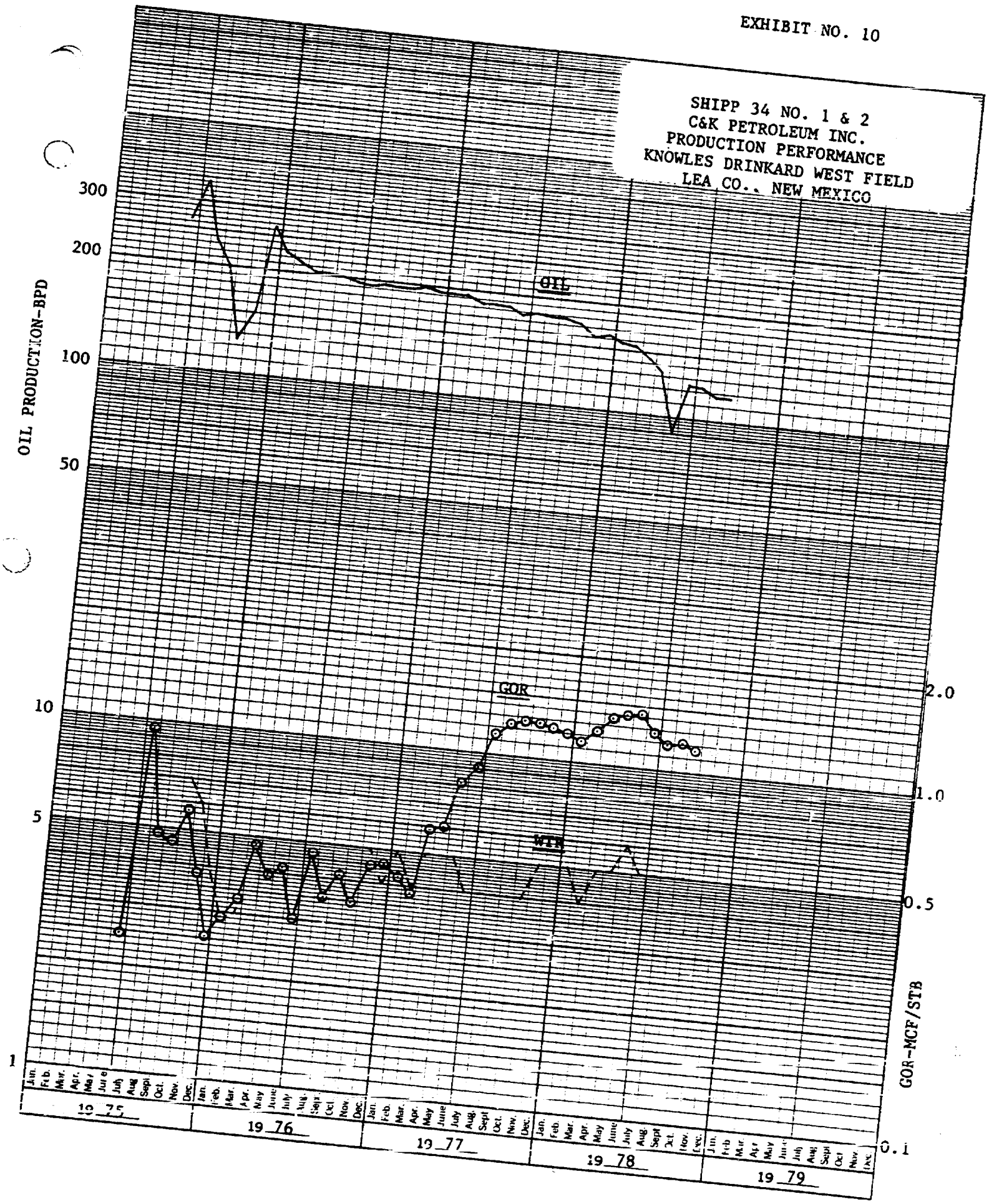


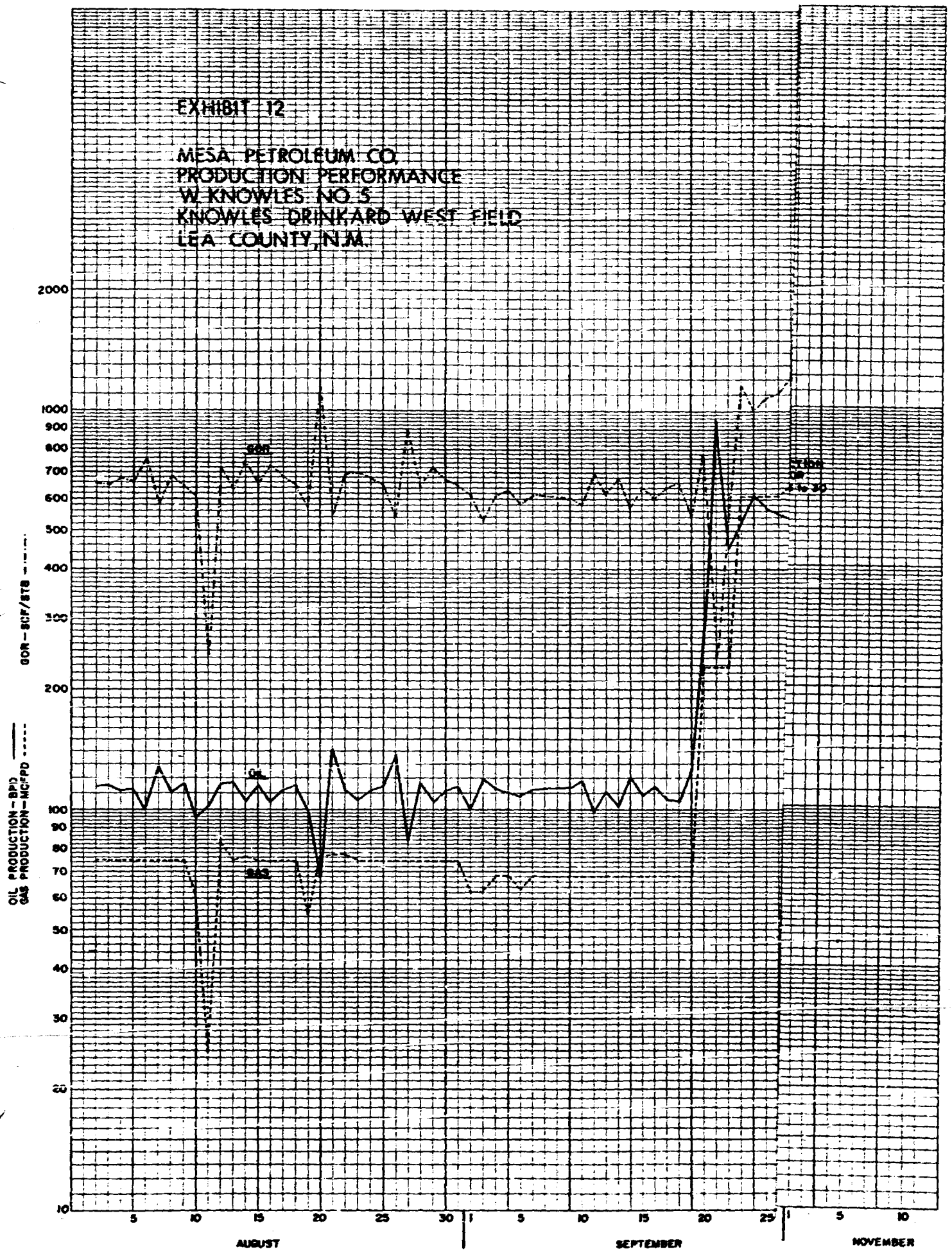
EXHIBIT NO. 11

WEST KNOWLES UNIT NO. 5
KNOWLES DRINKARD, WEST
LEA CO., NEW MEXICO
DAILY PRODUCTION FOR PART OF 1978

DAY	AUGUST			SEPTEMBER			OCTOBER		
	BOPD	MCFPD	GOR	BOPD	MCFPD	GOR	BOPD	MCFPD	GOR
1	-	-	-	101	62.3	617	482	800	1660
2	114	74.8	656	118	62.3	528	417	790	1894
3	115	74.8	650	113	68.5	606	-	-	-
4	111	74.8	674	110	68.5	623	471	780	1656
5	113	74.8	662	109	63.4	582	484	790	1632
6	100	74.8	748	113	68.5	606	453	760	1678
7	128	74.8	584	113	68.5	606	459	740	1612
8	110	74.8	680	113	68.5	606	463	750	1620
9	116	74.8	645	114	68.5	601	475	750	1580
10	96	58.3	607	118	68.5	581	448	720	1607
11	102	24.9	244	99	68.5	692	443	720	1625
12	117	82.6	706	111	68.5	617	464	730	1573
13	118	74.8	634	102	68.5	672	443	720	1625
14	105	77.5	738	121	68.5	566	495	740	1495
15	116	74.8	645	108	68.5	634	442	710	1606
16	104	74.8	719	114	68.5	601	401	710	1771
17	111	74.8	674	107	68.5	640	432	705	1632
18	116	74.8	645	105	68.5	652	456	705	1546
19	97	54.8	565	125	68.5	548	451	705	1563
20	68	77.5	1140	292	228.5	783	437	705	1613
21	142	77.5	546	950	228.5	241	442	705	1595
22	113	77.5	686	454	228.5	503	464	685	1476
23	107	74.8	699	530	609.7	1150	418	685	1639
24	111	74.8	674	611	609.7	998	418	685	1639
25	115	74.8	650	567	609.7	1075	423	685	1619
26	138	74.8	542	549	609.7	1111	451	Gas charts	
27	84	74.8	890	534	647.9	1213	404	not yet	
28	116	74.8	645	529	647.9	1225	462	integrated	
29	104	74.8	719	570	777.9	1365	426		
30	111	74.8	674	503	972.4	1933	415		
31	115	74.8	650	-	-				

EXHIBIT 12

MESA PETROLEUM CO.
PRODUCTION PERFORMANCE
W. KNOWLES NO. 5
KNOWLES DRINKARD WEST FIELD
LEA COUNTY, N.M.



CASE 6342: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Jicarilla J Well No. 10 located in the SE/4 of Section 26, Township 26 North, Range 5 West, Rio Arriba County, New Mexico, to produce gas from the Pictured Cliffs formation through a separate string of tubing and to commingle Tocito and Dakota production in the wellbore of said well.

CASE 6343: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Jicarilla H Well No. 8 located in the SE/4 of Section 11, Township 26 North, Range 4 West, Rio Arriba County, New Mexico, to produce gas from the Pictured Cliffs formation through a separate string of tubing and to commingle Gallup and Dakota production in the wellbore of said well.

CASE 6344: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Jicarilla F Well No. 1 located in the SW/4 of Section 27, Township 26 North, Range 4 West, Rio Arriba County, New Mexico, to produce gas from the Pictured Cliffs formation through a separate string of tubing and to commingle Mesaverde and Dakota production in the wellbore of said well.

CASE 6345: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Gallup and Dakota production in the wellbore of its Jicarilla H Well No. 7 located in the SW/4 of Section 19, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

CASE 6347: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Chacra and Dakota production in the wellbore of its Jicarilla K Well No. 17 located in the SW/4 of Section 12, Township 25 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 6376: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating and extending vertical and horizontal limits of certain pools in Chaves, Eddy, and Lea Counties, New Mexico:

(a) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Pennsylvanian production and designated as the Mescalero Sands-Pennsylvanian Gas Pool. The discovery well is Petroleum Development Corporation Estelle Federal Well No. 1 located in Unit E of Section 34, Township 12 South, Range 30 East, NMPM. Said pool would comprise:

TOWNSHIP 12 SOUTH, RANGE 30 EAST, NMPM
Section 34: W/2

(b) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Yates production and designated as the Sioux-Yates Pool. The discovery well is Tishman Federal Well No. 1 located in Unit N of Section 5, Township 26 South, Range 36 East, NMPM. Said pool would comprise:

TOWNSHIP 25 SOUTH, RANGE 36 EAST, NMPM
Section 31: NE/4
Section 32: W/2

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM
Section 5: W/2

(c) EXTEND the Avalon-Strawn Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 31: N/2
Section 32: N/2
Section 33: All

(d) EXTEND the Elinebry Oil and Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 26: SE/4

(e) EXTEND the vertical limits of the Box-Canyon Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include the Canyon and Wolfcamp formations and redesignate said pool as the Box Canyon-Permo Pennsylvanian Gas Pool and extend the horizontal limits of said pool to include therein:

TOWNSHIP 21 SOUTH, RANGE 21 EAST, NMPM
Section 13: All
Section 23: S/2
Section 26: E/2
Section 35: E/2
Section 36: W/2

TOWNSHIP 22 SOUTH, RANGE 21 EAST, NMPM
Section 1: N/2

(f) EXTEND the North Burton Flats-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM
Section 28: S/2
Section 33: E/2

(g) EXTEND the East Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 27 EAST, NMPM
Section 27: S/2

(h) EXTEND the South Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 26 EAST, NMPM
Section 28: N/2

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 10: N/2
Section 21: S/2

(i) EXTEND the Comanche Stateline Tansill-Yates Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM
Section 33: NW/4

(j) EXTEND the Eagle Creek-Strawn Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 26 EAST, NMPM
Section 29: W/2

(k) EXTEND the East Empire Yates-Seven Rivers Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 22: SW/4 and W/2 SE/4

(l) EXTEND the Forehand Ranch-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 15: NW/4 SE/4

(m) EXTEND the Fowler-Tubb Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM
Section 16: SE/4

(n) EXTEND the Jenkins-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 35 EAST, NMPM
Section 28: S/2

(o) EXTEND the Kemnitz-Cisco Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM
Section 16: W/2

(p) EXTEND the East Lusk-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM
Section 10: N/2 and SW/4
Section 15: NW/4

(q) EXTEND the West Malaga-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 28 EAST, NMPM
Section 9: N/2

(r) EXTEND the Revelation-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 25 EAST, NMPM
Section 3: W/2

(s) EXTEND the Rock Tank-Upper Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM
Section 1: All

(t) EXTEND the South Salt Lake-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 32 EAST, NMPM
Section 25: N/2

(u) EXTEND the Southwest Sulphate-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 26 EAST, NMPM
Section 14: NE/4 NE/4

(v) EXTEND the Wantz-Granite Wash Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM
Section 3: NE/4

(w) EXTEND the Watkins Yates-Seven Rivers-Queen-Grayburg Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM
Section 6: SW/4

(x) EXTEND the White City-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 26 EAST, NMPM
Section 8: All

TOWNSHIP 25 SOUTH, RANGE 26 EAST, NMPM
Section 4: All

(y) EXTEND the Wilson-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM
Section 14: S/2

(z) EXTEND the Winchester-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 24: S/2

(aa) EXTEND the Winchester-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 26: E/2 and SW/4

CASE 6370: Application of Amoco Production Company for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Gilluly B Fed. Well No. 22 to be drilled 2310 feet from the North line and 1980 feet from the West line of Section 33, Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, to be simultaneously dedicated with the current unit Wells No. 3 and 15 located in Units N and H, respectively, to the present 360-acre non-standard proration unit in Section 33.

CASE 6371: Application of Doyle Hartman for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Phillips-Woolworth Well No. 1 located 2310 feet from the North line and 1980 feet from the East line of Section 26, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico.

CASE 6372: Application of Belco Petroleum Corporation for an unorthodox well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 1495 feet from the North line and 330 feet from the West line of Section 6, Township 23 South, Range 31 East, Los Mendanos Atoka Pool, Eddy County, New Mexico, the W/2 of said Section 6 to be dedicated to the well.

CASE 6373: Application of Beard Oil Company for a dual completion, surface commingling, pool creation, and special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the gas-gas dual completion of its Hanlad Well No. 1 located in Unit E of Section 17, Township 17 South, Range 24 East, Eddy County, New Mexico, to produce gas from the Atoka formation through tubing and the Abo formation through the casing-tubing annulus, and to commingle the production at the surface. Applicant further seeks the creation of a new Abo gas pool and the adoption of special pool rules therefor, including a provision for 320-acre spacing and proration units for a temporary period of one year.

CASE 6374: Application of Mesa Petroleum Company for a special oil allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a temporary increase in the oil allowable for its West Knowles Well No. 5 located in Unit H of Section 34, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, from 310 barrels to 500 barrels for the 90-day period extending from October 1, 1978 to December 31, 1978.

CASE 6375: Application of Harper Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of the Wantz-Abo, Drinkard, and Blinebry production within the wellbore of its S. J. Sarkeys Well No. 2 located in Unit H of Section 26, Township 21 South, Range 37 East, Lea County, New Mexico.

CASE 6352: (Continued and Readvertised)

Application of Southland Royalty Company for a dual completion, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Grenier "A" Well No. 1A located in Unit C of Section 26, Township 30 North, Range 10 West, to produce gas from the Blanco-Pictured Cliffs and Blanco Mesaverde Pools, San Juan County, New Mexico, with separation of the zones to be achieved by means of a polished bore receptacle and mandrel.

CASE 6346: (Continued and Readvertised)

Application of Supron Energy Corporation for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Pictured Cliffs and Chacra production in the wellbore of its Jicarilla K Well No. 14 located in the SE/4 of Section 11, Township 25 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 6348: (Continued and Readvertised)

Application of Supron Energy Corporation for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Mesaverde and Dakota production in the wellbore of its Starr Well No. 3 located in the NE/4 of Section 5, Township 26 North, Range 8 West, San Juan County, New Mexico.

CASE 6341: (Continued from October 11, 1978, Examiner Hearing)

Application of Supron Energy Corporation for dual completions and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks the dual completion of its Jicarilla A Well No. 8 located in the NW/4 of Section 23; its Jicarilla E Well No. 7 located in the SE/4 of Section 15; and its Jicarilla E Well No. 8 located in the NW/4 of Section 15, all in Township 26 North, Range 4 West, Rio Arriba County, New Mexico, to produce gas from the Mesaverde formation through a separate string of tubing and to commingle Gallup and Dakota production in the wellbores of said wells.

Docket No. 35-78

tets Nos. 37-78 and 38-78 are tentatively set for hearing on November 21 and December 6, 1978. Applications hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - NOVEMBER 7, 1978

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

CASE 6146: (DE NOVO) (Continued and Readvertised)

Application of Jerome P. McHugh for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Tapacito-Gallup and Basin-Dakota production within the wellbore of his Jicarilla Well No. 5 located in Unit D of Section 29, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

Upon application of Jerome P. McHugh this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6266: (DE NOVO)

Application of Harvey E. Yates Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of an Upper Pennsylvanian test well to be located 660 feet from the North and East lines or, in the alternative, 990 feet from the North and East lines of Section 23, Township 22 South, Range 23 East, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, all of said Section 23 to be dedicated to the well.

Upon application of Harvey E. Yates Company this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6377: Application of Durham, Inc., for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying Section 8, Township 21 South, Range 24 East, Indian Basin-Morrow Gas Pool, Eddy County, New Mexico, to be dedicated to a well to be drilled 1650 feet from the North and East lines of said Section 8. 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.

CASE 6378: In the matter of the hearing called by the Oil Conservation Division on the motion of Shell Oil Company to permit Corinne Grace and all other interested parties to appear and show cause why Division Order No. R-3713, which pooled all of Section 8, Township 21 South, Range 24 East, Eddy County, New Mexico, should not be declared null and void, if said pooling order has not already automatically expired due to non-production.

CASE 6379: Application of Shell Oil Company for pool contraction and pool extension, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the contraction of the Indian Basin-Morrow Gas Pool by the deletion therefrom of the N/2 of Section 8, Township 21 South, Range 24 East, Eddy County, New Mexico, or in the alternative, all of said Section 8, and the extension of the Cemetery-Morrow Gas Pool to include the aforesaid N/2 or all of said Section 8.

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Docket No. 36-78

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 8, 1978

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

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

CASE 6369: Application of Amoco Production Company for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its DR Well No. 3 to be drilled 660 feet from the North and East lines of Section 16, Township 19 South, Range 32 East, Lea County, New Mexico, to be simultaneously dedicated with its Well No. 1 located in Unit E to the present 320-acre unit comprising the N/2 of said Section 16.

LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
STUART D. SHANOR
C. D. MARTIN
PAUL J. KELLY, JR.
JAMES H. BOZARTH

DOUGLAS L. LUNSFORD
PAUL M. BOHANNON
J. DOUGLAS FOSTER
K. DOUGLAS FERRIN
C. RAY ALLEN
JACQUELINE W. ALLEN
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OF COUNSEL
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600 HINKLE BUILDING
(505) 622-6510

ONLY ATTYS. COFFIELD, MARTIN, BOZARTH, BOHANNON, FOSTER, ALLEN & ALLEN LICENSED IN TEXAS

November 2, 1978

Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: Case No. 6374
November 8, 1978 Docket

Gentlemen:

This letter will provide written evidence that I have entered an appearance on behalf of Mesa Petroleum Co. in the above case and should be noted as New Mexico counsel on this matter.

It is my understanding that Mr. Barry Cannaday will be appearing in the above referenced case to present the witnesses and introduce exhibits, etc. Mr. Cannaday is an attorney with Mesa Petroleum Co. in Amarillo and is admitted to practice law in Texas, but not in New Mexico.

If you have any questions with respect to Mr. Cannaday's appearance or with respect to my position as New Mexico counsel on behalf of Mesa in this case, please let me know.

Very truly yours,

HINKLE, COX, EATON,
COFFIELD & HENSLEY

Conrad E. Coffield

CEC:rf
xc: Mr. Barry Cannaday
Mesa Petroleum Co.
Post Office Box 2009
Amarillo, Texas 79105
xc: Mr. Les Carnes
Mesa Petroleum Co.
Post Office Box 2009
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xc: Mr. T. Calder Ezzell, Jr.
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ONLY ATTYS. COFFIELD, MARTIN, BOZARTH, BOHANNON, FOSTER, ALLEN & ALLEN LICENSED IN TEXAS

October 18, 1978

Mr. Dan Nutter
Chief Engineer
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: Mesa Petroleum Co. -
Application for Increased
Allowable for Scientific and
Technical Study

Dear Dan:

On Monday, October 16, 1978, I talked by telephone with Lynn Teschendorf in connection with the above referenced matter, and advised her of the various items of information to include in the advertisement for the docket for November 8 as to the above Application.

Submitted herewith you will find three executed copies of the formal Application in connection with this matter. I trust that this is all that will be necessary in order to complete the preliminary paperwork on this matter for consideration by the Division, but if anything further is needed, please let me know.

Very truly yours,

HINKLE, COX, EATON,
COFFIELD & HENSLEY

Conrad E. Coffield

CEC:rf
Enclosures

xc/enc: Mr. Les Carnes
Mesa Petroleum Co.
Post Office Box 2009
Amarillo, Texas 79105

xc/enc: Mr. T. Calder Ezzell, Jr.
Hinkle, Cox, Eaton, Coffield & Hensley
Post Office Box 10
Roswell, New Mexico 88201

BEFORE THE OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

Case 6374

APPLICATION OF MESA PETROLEUM)
CO. FOR TEMPORARY INCREASE)
IN ALLOWABLE, WEST KNOWLES)
DRINKARD AREA, LEA COUNTY,)
NEW MEXICO)

Mesa Petroleum Co., by its undersigned attorneys, hereby makes application for an Order authorizing a temporary increase in the allowable production in connection with one of its wells located in Lea County, New Mexico and in support thereof would show:

1. Applicant is the Operator of the West Knowles No. 5 Well located in the SE¼NE¼ of Section 34, Township 16 South, Range 37 East, N.M.P.M., Lea County, New Mexico. Said well produces from the Drinkard formation.

2. As of the date of this Application, the allowable production from said well is 310 barrels per day. By virtue of Applicant's having installed certain new well equipment in said well, Applicant has been able to increase the production from said well to as much as 480 barrels of oil per day.

3. Because of the ability to increase the production from the said West Knowles No. 5 Well as specified above, Applicant believes that the area may be a good prospect for a possible future waterflood project.

4. Applicant seeks an Order from the Oil Conservation Division authorizing a temporary increase in the allowable assigned to said above described well to 500 barrels per day for the months of October, November and December, 1978, with the purpose being to secure certain scientific and technical data in order to help determine the feasibility of a waterflood project in this area.

5. Subsequent to the period during which Applicant would have the allowable increased as specified above, Applicant proposes to take measurements of bottomhole pressure and

assemble other scientific and technical data and information and thereafter, if the data and information warrants same, to make appropriate recommendations and requests of the Oil Conservation Division as to further operational procedures for the West Knowles Drinkard Area.

6. Applicant requests that this matter be heard at the November 8, 1978 Examiner's hearing.

HINKLE, COX, EATON,
COFFIELD & HENSLEY

By: _____
Conrad E. Coffield
Attorneys for Mesa Petroleum Co.

Application of Mesa Petroleum Company for a special oil allowable, Lea County, N.M.

Applicant in the above-styled cause seeks a temporary increase in the oil allowable for its West Knowles Well No. 5 located in Unit H of Sec 34, T.16S, R37E, West Knowles-Drinkard Pool, Lea County, NM from 310 barrels to 500 barrels for the 90 day period extending from Oct 1, 1978 to Dec 31, 1978.

Called in by Conrad Coffield
10-16-78
915-683-4691

Jed ~~to release~~ special oil allowable, Lea County

Nov. 8

Conrad Coffield 915-683-4691

Mesa Pet. Co.

West Knowles #5

West Knowles #5 — West Knowles - Drinkard Pool

SE NE. 34 16S 37E Lea

Drinkard formation

310 bbls. is current allowable

Capacity is 400 bbls.

90 days Want temp. > 500 bbls.

Purpose - get scientific data to get waterflood. Oct. - Dec.

ROUGH

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. 6374

Order No. R-5884

Application of Mesa Petroleum Company for a Special Allowable, Lea County, New Mexico

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 8, 19 78, at Santa Fe, New Mexico, before Examiner RLS.

NOW, on this _____ day of _____, 19_____, 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, Mesa Petroleum Company,

seeks a temporary increase in the oil allowable for its West Knowles Well No. 5 located in Unit H of Section 34, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, from 310 barrels to 500 barrels for the 90-day period extending from October 1, 1978 to December 31, 1978.

(3) That the applicant seeks said special allowable for the purpose of obtaining scientific data.

(4) That the evidence presented indicates that such special allowable may be produced without waste.

(5) That the applicant should submit data resulting from production at such special allowable to the Hobbs district office of the Division.

(6) That the overproduction from said West Knowles Well No 5, that volume produced in excess of 310 barrels per day during the period from October 1, 1978, to December 31, 1978 should be made up by underproduction before July 1, 1979.

(7) That approval of the subject application will not violate correlative rights or cause waste.

IT IS THEREFORE ORDERED:

OK →

(1) That a temporary special oil allowable of 500 barrels per day is hereby authorized for the Mesa Petroleum Company Unit Knowles Well No. 1 located in Unit H of Section 34, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, for the period from October 1, 1978, through December 31, 1978.

(2) That the applicant shall submit production, GOR, and other significant test data obtained during the special allowable period to the supervisor of the Division's district office at Hobbs.

(3) That the applicant shall underproduce said West Knowles Well No. 1 during the period from January 1, 1979, to July 1, 1979, by an amount sufficient to offset the overproduction accrued during the special allowable period (all production in excess of 310 barrels per day).

(4) That on or before July 31, 1979, the applicant shall furnish the Director of the Division an accounting of production from said West Knowles Well No. 1 for the period from October 1, 1978, thru June 30, 1979.

~~(5) Failure to make up~~

(5) Jurisdiction

CASE 6375: HARPER OIL COMPANY FOR DOWN-HOLE COMMINGLING, LEA COUNTY, NEW MEXICO

Aubery

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