CASE 4756: Application of BLACK-ROCK OIL COMPANY FOR CREATION OF A NEW GAS POOL, LEA COUNTY.

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Case Number 4756 Application Trascripts Small Exhibits ETC.



## **OIL CONSERVATION COMMISSION**

STATE OF NEW MEXICO P. O. BOX 2088 - SANTA FE 87501 GOVERNOR BRUCE KING CHAIRMAN

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LAND COMMISSIONER ALEX J. ARMIJO MEMBER

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

### August 8, 1972

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

Re:	Case No	4756
	Order No.	R-4359
- -	Applicant:	
	Blackrock	Oil Company

Dear Sir:

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

Very truly yours, a.L.C P

A. L. PORTER, Jr. Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC X

Artesia OCC Aztec OCC

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Other\_

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Mr. Sumner Buell

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

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

> CASE NO. 4756 Order No. R-4359

APPLICATION OF BLACKROCK OIL COMPANY FOR THE CREATION OF A NEW GAS POOL, LEA COUNTY, NEW MEXICO.

#### ORDER OF THE COMMISSION

#### BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on July 12, 1972, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 7th day of August, 1972, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Blackrock Oil Company, seeks the creation of a new pool for the production of gas from the Delaware formation for its Jennings Federal Well No. 1, located in Unit O of Section 33, Township 25 South, Range 32 East, NMPM, Lea County, New Mexico.

(3) That said well is currently classified as a gas well in the Jennings-Delaware Oil Pool.

(4) That the evidence presently available establishes that the subject well is a gas-cap well in the Jennings-Delaware Pool.

(5) That the evidence presently available further establishes that the Jennings-Delaware Pool should be reclassified as an associated pool and that Special Rules and Regulations should be promulgated therefor.

(6) That the reservoir characteristics of the subject pool indicate that the gas area can be efficiently and economically drained and developed on 160-acre spacing, and that the oil area can be efficiently and economically drained and developed on 40-acre spacing. -2-Case No. 4756 Order No. R-4359

(7) That the reservoir characteristics of the subject pool presently available justify the definition of a gas well as a well producing with a gas-liquid ratio of 100,000 or more cubic feet of gas per barrel of liquid hydrocarbons.

(8) That the reservoir characteristics of the subject pool presently available justify the establishment of a gas-liquid ratio limitation of 2000 cubic feet of gas per barrel of liquid hydrocarbons.

(9) That special rules and regulations providing for 160acre gas well spacing and 40-acre oil well spacing should be promulgated for the subject pool in order to prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, prevent reduced recovery which might result from the drilling of too few wells, and otherwise prevent waste and protect correlative rights.

(10) That the special rules and regulations should provide for the classification of a gas well as a well producing with a gas-liquid ratio of 100,000 or more cubic feet of gas per barrel of liquid hydrocarbons and should provide for a gasliquid ratio of 2000 cubic feet of gas per barrel of liquid hydrocarbons in order to afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil or gas, or both, and for this purpose to use his just and equitable share of the reservoir energy.

(11) That the special rules and regulations should establish proration rules for gas wells in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

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(1) That effective August 1, 1972, the Jennings-Delaware Pool, as previously defined and described, is hereby reclassified as the Jennings-Delaware Associated Pool, Lea County, New Mexico.

(2) That, effective August 1, 1972, Special Rules and Regulations for the Jennings-Delaware Associated Pool, Lea County, New Mexico, are hereby promulgated as follows:

> SPECIAL RULES AND REGULATIONS FOR THE JENNINGS DELAWARE ASSOCIATED POOL

RULE 1. Each well completed or recompleted in the Jennings Delaware Pool or in the Delaware formation within one mile thereof, and not nearer to or within the limits of another designated Delaware pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth. -3-Case No. 4756 Order No. R-4359

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RULE 2. (a) Each gas well shall be located on a standard unit containing 160 acres, more or less, substantially in the form of a square, which is a quarter section being a legal subdivision of the United States Public Land Surveys.

(b) Each oil well shall be located on a standard unit containing 40 acres, more or less, consisting of a governmental quarter-quarter section.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 (a) without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Land Surveys, or the following facts exist and the following provisions are complied with:

- (a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.
- (b) The non-standard unit lies wholly within a governmental quarter section and contains less acreage than a standard unit.
- (c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the quarter section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.
- (d) In lieu of paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well, oil or gas, shall be located no nearer than 330 feet to any quarter-quarter section line, except that any well drilled in a known gas productive area shall be located within 150 feet of the center of a quarter-quarter section.

RULE 5. A well shall be classified as a gas well if it has a gas-liquid ratio of 100,000 or more cubic feet of gas per barrel of liquid hydrocarbons. A well shall be classified as an oil well if it has a gas-liquid ratio of less than 100,000 cubic -4-Case No. 4756 Order No. B-4250

feet of gas per barrel of liquid hydrocarbons. The simultaneous dedication of any acreage to an oil well and a gas well is prohibited.

RULE 6. That the limiting gas-oil ratio shall be 2000 cubic feet of gas for each barrel of oil produced.

RULE 7. An oil well which has 40 acres dedicated to it shall be permitted to produce only that amount of gas determined by multiplying the top unit oil allowable for the pool by the limiting gas-liquid ratio for the pool. In the event there is more than one oil well on a 40-acre oil proration unit, the operator may produce the allowable assigned to the 40-acre unit from the wells on the unit in any proportion.

A gas well shall be permitted to produce that amount of gas obtained by multiplying the top unit oil allowable for the pool by the limiting gas-liquid ratio for the pool and by a fraction, the numerator of which is the number of acres dedicated to the particular gas well and the denominator of which is 40. In the event there is more than one gas well on a 160-acre gas proration unit, the operator may produce the amount of gas assigned to the unit from the wells on the unit in any proportion.

RULE 8. The operator of each newly completed well shall cause a gas-liquid ratio test to be taken on the well upon recovery of all load oil from the well, provided however, that in no event shall the test be commenced later than 30 days from the date of first production unless the well is connected to a gas-gathering facility and is producing under a temporary gas allowable assigned in accordance with Rule 11. Any well which is shut in shall be exempted from the gas-liquid ratio test requirement so long as it remains shut in. The initial gasliquid ratio test shall be taken in the manner prescribed by Rule 9. If the gas-liquid ratio is 100,000 cubic feet of gas per barrel of liquid hydrocarbons, or more, the operator shall not produce the well until beneficial use can be made of the gas.

RULE 9. Gas-liquid ratio tests shall be taken on all wells during the month of November of each year. The initial gas-liquid ratio test shall suffice as the first annual test. Tests shall be 24-hour tests, being the final 24 hours of a 72-hour period during which the well shall be produced at a constant normal rate of production. Results of such tests shall be filed on Commission Form C-116 on or before the 10th day of the following month. At least 72 hours prior to commencement of any such gasliquid ratio tests, each operator shall file with the appropriate district office of the Commission a test schedule for its wells specifying the time each of its wells is to be tested. Copies of the test schedule shall also be furnished to all offset operators. Commission District supervisors may grant exceptions to the above test requirements where it is demonstrated that wells produce no liquids. -5-Case No. 4756 Order No. R-4359

Special tests shall also be taken at the request of the Secretary-Director and may also be taken at the option of the operator. Such special tests shall be taken in accordance with the procedures outlined hereinabove, including notification to the Commission and offset operators.

RULE 10. An initial shut-in pressure test shall be taken on each gas well and shall be reported to the Commission on Form C-125.

RULE 11. Any well completed after the effective date of these rules shall receive an allowable only upon receipt by the appropriate Commission district office of Commission Forms C-104 and C-116, properly executed. The District Supervisor of the Commission's district office is hereby authorized to assign a temporary gas allowable to wells connected to a gas transportation facility during the recovery of load oil, which allowable shall not exceed the number of cubic feet of gas obtained by multiplying the daily top unit allowable for the pool by the limiting gas-liquid ratio for the pool.

RULE 12. That the initial gas provation period shall be from 7:00 a.m. August 1, 1972, to 7:00 a.m. January 1, 1974. Subsequently, the date 7:00 a.m. January 1 of each year shall be known as the balancing date, and the twelve months following this date shall be known as the gas provation period.

RULE 13. Any gas well which has an underproduced status as of the end of a gas proration period shall be allowed to carry such underproduction forward into the next gas proration period and may produce such underproduction in addition to the allowable assigned during such succeeding period. Any allowable carried forward into a gas proration period and remaining unproduced at the end of such gas proration period shall be cancelled.

RULE 14. Production during any one month of a gas proration period in excess of the allowable assigned to a well for such month shall be applied against the underproduction carried into such period in determining the amount of allowable, if any, to be cancelled.

RULE 15. Any well which has an overproduced status as of the end of a gas proration period shall carry such overproduction forward into the next gas proration period, provided that such overproduction shall be compensated for during such succeeding period. Any well which has not compensated for the overproduction carried into a gas proration period by the end of such proration period shall be shut in until such overproduction is compensated for. If, at any time, a well is overproduced an amount equalling three times its current monthly allowable, it shall be shut in during that month and each succeeding month until the well is overproduced less than three times its current monthly allowable. Case No. 4756 Order No. R-4359

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RULE 16. The allowable assigned to a well during any one month of a gas proration period in excess of the production for the same month shall be applied against the overproduction carried into such period in determining the amount of overproduction, if any, which has not been compensated for.

RULE 17. The Commission may allow overproduction to be compensated for at a lesser rate than would be the case if the well were completely shut in upon a showing after notice and hearing that complete shut in of the well would result in material damage to the well or reservoir.

RULE 18. The monthly gas production from each gas well shall be metered separately and the gas production therefrom shall be reported to the Commission on Form C-115 so as to reach the Commission on or before the 24th day of the month next succeeding the month in which the gas was produced. The operator shall show on such report what disposition has been made of the produced gas.

RULE 19. Each purchaser or taker of gas shall submit a report to the Commission so as to reach the Commission on or before the 15th day of the month next succeeding the month in which the gas was purchased or taken. Such report shall be filed on Form C-111 with the wells being listed in the same order as they are listed on the appropriate proration schedule.

RULE 20. Failure to comply with any provision of these rules shall result in the immediate cancellation of allowable assigned to the affected well. No further allowable shall be assigned until all rules and regulations have been complied with. The Secretary-Director shall notify the operator of the well and purchaser in writing of the date of allowable cancellation and the reason therefor.

RULE 21. All transporters or users of gas shall file gas well-connection notices with the Commission as soon as possible after the date of connection.

<u>RULE 22.</u> Allowables to wells whose classification has changed from oil to gas or from gas to oil as the result of a gas-liquid ratio test shall commence on the first day of the month following the month in which such test was reported, provided that a plat (Form C-102) showing the acreage dedicated to the well and the location of all wells on the dedicated acreage has been filed.

#### IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the Jennings-Delaware Associated Pool or in -7-Case No. 4756 Order No. R-4359

the Delaware formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the appropriate district office of the Commission in writing of the name and location of the well on or before August 15, 1972.

(2) That all operators shall, prior to August 15, 1972, file with the Commission Form C-102 for each well showing the acreage dedicated to the well.

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



STATE OF NEW MEXICO OIL CONSERVATION COMMISSION

Ince ino BRUCE\_KING, Chairman

ALEX J. ARMINO, Member

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

SEAL

dr/

#### EXAMINER HEARING - WEDNESDAY - JULY 12, 1972 DOCKET:

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

The following cases will be heard before Richard L. Stamets, Examiner, or Elvis A. Utz, Alternate Examiner:

CASE 4753: Application of Roger C. Hanks for a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an 80-acre non-standard oil proration unit in the East Shoe Bar-Devonian Pool comprising the NW/4 SW/4 and the SW/4 NW/4 of Section 29, Township 16 South, Range 36 East, Lea County, New Mexico, to be dedicated to a well to be drilled 1980 feet from the South line and 660 feet from the West line of said Section 29.

CASE 4754:

Application of Texaco Inc. for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its C. H. Lockhart (NCT-1) Well No. 3 located in Unit O of Section 18, Township 22 South, Range 38 East, Lea County, New Mexico, in such a manner as to produce oil from the Paddock and Blinebry Pools through one string of tubing and the Tubb Pool through a parallel string of tubing.

Application of Texaco Inc. for downhole commingling, Lea County, New Mexico. CASE 4755: Applicant, in the above-scyled cause, seeks as an exception to Rule 303 of the Commission Rules and Regulations, authority to commingle production from the Skaggs-Drinkard, Skaggs-Glorieta, and East Weir-Blinebry Pools in the wellbore of its C. H. Weir "B" Well No. 5 located in Unit G of Section 11, Township 20 South, Range 37 East, Lea County, New Mexico.

> Application of Blackrock Oil Company for the creation of a new gas pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new pool for the production of gas from the Delaware formation for its Jennings Federal Well No. 1 located in Unit 0 of Section 33, Township 25 South, Range 32 East, Lea County, New Mexico. The Commission will also consider whether or not an associated pool should be created for the above-described well.

Application of Beard Oil Company for a unit agreement, Sierra County, CASE 4757: New Mexico. Applicant, in the above-styled cause, seeks approval of the Jornada Del Muerto Unit Area comprising 115,180 acres, more or less, of Federal, State, and Fee lands in Townships 13, 14, and 15 South, Ranges 1 East and 1 West, Sierra County, New Mexico.

Application of Amoco Production Company for allowable transfer, San Juan County, New Mexico. Applicant, in the above-styled cause, proposes to conduct 90-day shut-in and pressure build-up tests on its Gallegos Canyon Unit Com "H" Well No. 180 and its Unit Com "E" Well No. 161 located, respectively, in Unit J of Section 28, Township 29 North, Range 12 West, and Unit O of Section 23, Township 29 North, Range 13 West, Basin-Dakota Pool, San Juan County, New Mexico. Applicant seeks authority to transfer the allowable from the two wells during said period to its Unit Well No. 202 located in Unit B of Section 33, Township 29 North, Range 12 West, during said test period or to some other well or wells suitable to the Commission.

CASE 4756:

CASE 4758:

#### OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

Jant

June 19, 1972

Re:

Blackwort Oil Gospany 1000 V & J Tower Midland, Texas 79701

Case 4156

Attention: Mr. O. Doyle Butler

DOCKET MARED ----

6-20-12 Dote

Request of June 13, 1972, for the assignment of a temporary gas well allowable for the Blackrock Oil Company's Jennings Federal Well No. 1, located in Unit O, Section 33, Township 25 South, Range 32 East, Lea County, New Mexico

#### Gentlemen:

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As the above-described well is located within the horizontal limits of a pool that is presently designated as an oil pool and that prior to the hearing to be conducted on July 12, 1972, it cannot be determined that the well is producing from a new gas pool, I believe it would be improper to assign the well a temporary gas well allowable.

Very truly yours, 1. Borter

A. L. PORTER, Jr. Secretary-Director

ALP/GMH/dr

# Blackrock Gil-Company

1000 V & J TOWER -- MIDLAND, TEXAS 79701 -- 915 683-8691

O. DOYLE BUTLER President

**PEGGY L. HOLDEN** Office Manager

July 25, 1972

<u>711</u> OIL CONSERVATION COMM. Santa Fa

Mr. R. L. Stamets NEW MEXICO OIL CONSERVATION COMMISSION P. O. Box 2088 Santa Fe, New Mexico 87501

Dear Mr. Stamets:

Please be advised that on our Reservoir Pressure Report, Form C-124, filed July 16, 1972 as requested in our recent hearing for gas pool rules on the Jennings Federal Well No. 1, Lea County, New Mexico, the decimal was dropped in the wrong place on the pressure and it should read 1906. psi rather than 190.6 psi.

Should any further information be requested, please advise.

Yours very truly,

BLACKBOCK OT COMPANY

ODB:jh

`In

cc: John West Engineering Company 412 North Dal Paso Hobbs, New Mexico 88240

Petroleum Engineering, Land and Management Consultants

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		1	MR. STAMETS: Case No. 4756.
		2	MR. HATCH: Case 4756: Application of Blackrock
	а С. 1. 4 С. 2. 4 С. 4 С. 4 С. 4 С. 4 С. 4 С. 4 С. 4 С	<b>.</b> 3	Oil Company for the creation of a new gas pool, Lea County
		4	New Mexico.
		5	MR. KELLAHIN: Jason Kellahin of Kellahin & Fox,
		6	Santa Fe, appearing on behalf of the Applicant and we have
	Ë	7	two witnesses.
		8	MR. STAMETS: Are there other appearances in
	В В	9	this Case?
	dearnley, meier & mc cormick	10	MR. BUELL: Sumner Buell of Montgomery, Federici,
	ш <del>Х</del>	11	Andrews, Hannahs & Morris, appearing on behalf of Union
		12	Oil Company in opposition to the Application.
	dearn	13	MR. STAMETS: Would you have any witnesses,
		14	Mr. Buell?
		15	MR. BUELL: Yes, one witness.
		16	MR. STAMETS: You may proceed, Mr. Kellahin.
		17	
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	200 1	<sup>~~</sup> 19	was called as a witness and, after being duly sworn, testified
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20	as follows:
	01 LO V 01 V	21	DIRECT EXAMINATION
	0.01 	22	BY MR. KELLAHIN:
	2 C F	23	Q Would you state your name, please?
	208 SIM	24	A Doyle Butler.
-		25	Q By whom are you employed?

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· · · · · · · · · · · · · · · · · · ·		PAGE 4
	1 A	I am President of Blackrock Oil Company.
	<b>2</b> Q	Have you testified before the Oil Conservation
ő.	3	Commission and made your qualifications as a petroleum
	4	engineer a matter of record?
	5 A	Yes, I have.
· · · · · · · · · · · · · · · · · · ·	6	MR. KELLAHIN: Are the witness' qualifications
, <b>E</b>	7 acc	eptable?
dearnley, meier & mc cormick	8	MR. STAMETS: They are.
	<b>9</b> Q	(By Mr. Kellahin) Are you familiar with the Application
	10	of Blackrock Oil Company in Case 4756?
	11 A	I am.
	12 Q	What is proposed by the Applicant in this Case?
<b>Geo</b>	0 13 A	A separate field and gas pool rules for the Jennings
		Federal Well Number 1 separating it from the Jennings-
	15 D z	Delaware oil field.
	кы Бола <b>16</b> Q	Referring you to Exhibit Number 1, consisting of
		several pages, would you discuss the information shown
	18 15 55 560 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	by that?
	z i 19 A	It is the general completion record on the Jennings
	N X 20	Federal Number 1 which is a completed gas well. The
		well was completed October 6, 1971, however, it did
		not go into production until April, 1972. This delay
	a 2 s L 23 y c	was due to the laying of approximately four miles of
	3 24	pipeline and negotiating a gas contract. This well was
	25	completed in the Delaware zone to 4,571 feet. It was

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stimulated with 500 gallons of acid and very high permeability was established. The total treating of this well was 500 gallons of acid.

The third page shows the back pressure test on the well. This well made a small amount of liquid at the time it was tested, however, after it went on the line it is making no liquid whatsoever.

The third flow rate would be some indication of the deliverability of the well. It shows a flowing tube pressure of 1680 pounds with a corresponding production rate of 1,472,000 cubic feet. At this rate, the well is making no hydrocarbons and only one to two barrels of water per day. The other calculations relate to the back pressure curve and the back pressure curve is from the previous open flow test and indicates an absolute open flow of 3.605 million. It can be seen on this curve that the slope of the line was drawn at the very optimum point and if it had been drawn at a lower angle to the horizontal curve, the calculated open flow test could have gone as high as five million. The open flow test shown is considered to be

conservative.

The last sheet in Exhibit 1 is a gas analysis from the Phillips Petroleum Company. They tested the well immediately after we completed it, or while we were

dearnley, meier & mc cormick

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running our open flow test. We did sign a contract 2 with El Paso Natural Gas Company and not with Phillips to buy the gas, however, Phillips did test both of our wells for us. 5 I would like to hold this sheet back for just one б minute (indicating) and go on to the Union Federal Number 7 2. 8 Referring to what has been marked as Exhibit 2, would Q 9 you discuss that Exhibit? 10 Exhibit 2 shows the Blackrock Oil Company Union Federal Ā 11 Number 2 which is the south offset to the previous gas 12 well located 1320 feet directly south of the Jennings 13 Federal Well Number 1. 14 When we filed this permit to drill the well, it 15 was anticipated it would be a gas well similar to the 16 one we had completed. However, the logs were different and the production characteristics were different and 17 consequently we have wound up with a producing oil well 18 and very little gas. 19 It was completed on January 25th and went on 20 production in March of 1972. So both of these wells have 21 been on production for approximately the same time. 22 The completion interval is 4,565 to 4,573. This 23 again, is in the high permeable Delaware zone. It was 24 treated with 500 pounds of acid and is currently flowing 25

dearnley, meier & mc cormick

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	1		forty barrels of oil and fifty-one barrels of water
a 	2		per day with a GOR of 1,398.
<u>ns</u> C :			Most of the Exhibits attached to this packet are
	4		normal completion records that were filed. I would like
	5		to go to the next to last sheet in the packet. This
- <u>-</u>	6		again is a test performed by Phillips Petroleum Company
mc cormick	7		on this well. We were trying to negotiate a casinghead
20.00	8		gas contract with Phillips Petroleum Company and they
	9	<b>.</b>	tested the well and the gas volume at that time was
eier	10		not sufficient to justify them laying approximately four
۲, m	11		miles of line to the well. You can see the GOR is
dearnley, meier &	12		approximately 1,398 or 51,000 cubic feet of gas per
	13		day. You can compare this rate with the Jennings
NEW ME	14		Federal Number 1 and see that the Jennings Federal
2 2 2 2 2 7	15		Number 1 will deliver better than one million MCF a
が 出 つ ひ よ お つ ひ よ み つ ひ よ み つ ひ よ	16		day at 1,400 pounds of pressure, surface pressure.
	17		I think the comparisons and analyses of the wells
243-6691 AST + AL	18	,	show quite evidently that there is quite a difference,
NON NON NON	19		not a large difference, but they do indicate some
1002 .P	20		difference.
D. BOX	21	Q	Based on the analyses of the two wells, in your opinion,
04.00	22		are these two wells completed as separate, common
239 SIMMS BI.DG., P.O. BOX 1002 PHONE 243- 1216 FIRST NATIONAL BANK BLDC. EAST	23	••	sources of supply?
209 SIM	24	A	Yes, sir.
	25	Q	In your opinion, is there any communication indicated

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	1	between wells?
	2	A No, sir.
	<u>A</u> (***	Would producing the Jennings Federal Well Number 1
	<b>4</b>	in any way damage production from the Union Number 2?
	5	A No, sir.
	<u>ج</u> ہ	Q Are you pumping the Union Number 2?
		A Yes, sir. It did not flow initially and had to be
	mc cormick	on pump.
	8 9 8	Q Is that further indication, in your opinion, that there
	10	is separation?
	dearnley, meier	A That and the amount of water being produced from the
		Union Federal Number 2 indicates we have some type
	COD 13	of water drive in the bottom part of the formation and
	арона мартика	we do not have that water problem in the Jennings
	2 x 3 3 15 3 2	Federal Well Number 1. Also, both wells are exactly
	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	flat structurally.
		Q Were Exhibits 1 and 2 records that were taken from the
	1990-54 18	files kept by the Blackrock Oil Company and filed with
	NO 19	the Commission?
	1022 • PI	A Yes, sir.
	× <sup>©</sup>	MR. KELLAHIN: I would like, at this time, to
	• • • • • • • • • • • • • • • • • • •	offer Exhibits 1 and 2 in evidence.
ة المراجع المر 14 من المراجع ا 14 من من المراجع	<u>6 2</u> 23	MR. STAMETS: Are there objections to these
	WWW 5 602	Exhibits?
	25	(No response.)
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	• • •	1	MR. STAMETS: They will be admitted in evidence.
		2	(Whereupon, Applicant's Exhibits 1 and 2 were
	<u> </u>		admitted in evidence.)
		4	(By Mr. Kellahin) Do you have anything further to
		ธ	add?
· ·		6	A No.
	nicl	. 7	
	s mc cormick	8	MR. KELLAHIN: That completes our examination of
	mc		the witness.
en e	ଷ	9	MR. STAMETS: Are there any questions of this
	leiel	10	witness?
	У, П	11	(No response.)
	learnley, meier	<b>12</b>	* * * *
	deal	13 10 12	CROSS EXAMINATION
		же же ж. 14	BY MR. STAMETS:
		2∞ 	Q What is the current gas rate of production?
		2 2 2 2 2 2 2 2 2 2 2 16	A The well is shut-in now, but when we were first
			producing, it averaged between 900 and 1,200 MCF per
		€ 0 • 1 • 1	
		E 243-0	day.
	er, mile der	хоа <b>19</b>	Q Is that effective capacity at the current line
		××× 20	pressure?
		x J Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	A Definitely not.
		• ₹ 22	Q Did you indicate that there were some liquid
a an		018 8 8 8 23	hydrocarbons in the Number 1 well?
		SWWIS 00 24	$\Lambda$ On our initial four test we did get some out, how much
с.,		~ 25	the guy did not report, he only reported the ratio. I
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		1 2	am not real sure whether it indicated the amount of fluid the well would make at that time. When we did
· · · · · · · · · · · · · · · · · · ·	20. 20. 20. 20. 20.		put it on production, we put separators in because we
		4 r	anticipated fluid, but since we have gone on production,
		6	we haven't gotten any hydrocarbons whatsoever.
	Imic	7 Ω 7 A	Did any representative of Blackrock see these liquids? Not at the time of the four point test. We did have
	mc cormick	8	some prior to completing the well.
	<b>જ</b>	9 Q	So you do know the well made some liquid initially?
	M ·	10 A 11 O	Yes.
	ey,	12 Q	What is the gravity of the liquid from the Number 2 well?
		13 <sub>A</sub>	I believe Exhibit 2 shows 40.6. We run from 40.5 to
	O V V V V V V V V V V V V V	14	40.8.
		15 Q	So there is substantial drive between the gravity of
	ດ ແ ເຊິ່ງ ເຊິ່ງ	17 A	the liquids? Yes, sir, there are, however, we are not producing any
	249-0601 . Asteal	18	substantial amount.
	12 2 0 0 1 0 0 0	19 Q	Is another witness going to talk about pressures?
	2 - A 2 - A 2 - A	20 A 21	I could cover that. We do have bottomhole pressure in the Jennings Federal Number 1, but we do not have
	0 0 4 F	22	pressure on the Union Federal. We ran a drill stem
an an an an an an an an an Araba an Araba Araba an ann an Araba an an ann an Araba Araba an Araba an Araba an Araba	10 F   88   10   10   10   10   10   10   10	23	test, but there was a communication between the packers
	200 St	24	and the final shut-in. There is an explanation on the
		25	drill stem test analyses found in Exhibit 2 indicating

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		1	hydrostatic pressure. So, basically, we do not have
		2	the bottomhole pressure on the Union Federal Number 2.
			Q Would it be a big problem to furnish us with pressure
		4	on the Number 2 well?
		5	A No, sir.
	<u>.</u>	6	MR. STAMETS: I believe that's all the questions
		7	I have. Are there any other questions?
	dearnley, meier & mc cormick	8	(No response.)
	8 II	9	MR. STAMETS: If not, the witness may be excused.
	eier	10	(Witness excused.)
	ш ́х	11	* * * *
	in le	12	WARREN SHAFER,
		13	was called as a witness and after being duly sworn, testified
		14	as follows:
	2 X 	15	DIRECT EXAMINATION
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16	BY MR. KELLAHIN:
	9 6 6 7 6 7 6 6 7 6 6 7 6 7	17	Q Would you state your name, please?
	143-0091 AST AA	18	A Warren Shafer.
	N O U	19	Q What business are you engaged in?
	1022 • P ANK BL	20	A I am a petroleum engineer with the Mid-Texas Oil
	0 L V V V V	21	Corporation.
		22	Q In connection with Mid-Texas, have you done any work
	0 X 0 0 X 0 0 X 0 0 X 1 0 X 1	23	on the case before the Commission, the Application of
	209 SIM	24	Blackrock Oil Company?
and the second		25	A Yes, sir.
	. <u>.</u>		

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		PAGE 12
۵. ۱	<b>1</b> Q	Have you ever testified before the Oil Commission or
	2	one of its Examiners?
ین ۱۹۰۰ ۲۰۰۱ ک	3	No.
200 Transmission (Second Second Second Second Second		
	<b>• •</b>	For the benefit of the Examiner, would you outline your
	5	education and experience as a petroleum engineer?
÷.	6 A	I have a degree from the School of Mines of West
mc cormick	7	Virginia University and have approximately eighteen
	8	years of experience in petroleum production evaluation
E S	9	work.
	<b>10</b> Ω	How long have you worked in the West Texas and New
dearnley, meier	11	Mexico area?
hey here a second se	<b>12</b> A	Off and on for about four years.
	0 <sup>5</sup> 13 Q	Has this been in the capacity of an independent
	ž ·	
	≥0 <b>14</b> *× 14 ⊌⊎ Z ¥	consultant mostly?
		No, I have been with Mid-Texas Oil Corporation.
	50 16 Q	Does Mid-Texas operate in New Mexico?
	A 17 A	Yes, sir. As a matter of fact, we own these wells we
	17 - 18	are talking about.
	N 19 Q	And Blackrock is the operator, is that correct?
		Yes, sir.
		MR. KELLAHIN: Are the witness' qualifications
		eptable?
		MR. STAMETS: I missed his degree. What School
	23 23 23 25 0 1 1 1 1 1 1 1 1 1 1 1 1 1	
	e 24 Of	Mines?
	25	THE WITNESS: West Virginia University School of

eret. Na e

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			PAGE 1.3
	· · · · · · · · · · · · · · · · · · ·	1	Mines,
		2	MR. STAMETS: And you have worked as a petroleum
	<u>a</u> `	3	ongineer since you graduated?
		4	THE WITNESS: Yes, sir.
		5	MR. STAMETS: They are accepted, yes.
- -	З	б	Q (By Mr. Kellahin) Mr. Shafer, I direct your attention
	i i i i i i i i i i i i i i i i i i i	7	to what has been marked as Applicant's Exhibit 3, would
	20 20 20	8	you identify that Exhibit, please?
	& mc cormick	9	A Exhibit 3 is just a plat showing the location of the
r t	ier	10	wells and the acreage involved, the two producing wells
	Ŭ Ľ	11	we are talking about, the Jennings Federal Number 1,
	dearnley, meier	12	which is in the Southwest Quarter of the Southeast
	dear Troe	13	Quarter of Section 33, the well being completed as a
	W MEX	14	gas well and assigned 160 acres; and the Union Federal
		15	Number2, which is in the Northwest Quarter of the
		16	Northwest Quarter of Section 4, and which was completed
		17	as an oil well.
	3-069 1	18	Q Which well was completed first?
	ONE 24 DG. EA	19	A The Jennings Federal Well Number 1.
an a	992 • PHO	20	Q And then the Union Federal Number 2 was projected as
	5 5 5	21	a second gas well?
	001 4 4 X	22	A We anticipated a gas well, but that wasn't what we got.
	S BLOG	23	Q Would you discuss the other wells on the Exhibit?
	00 SIMM	24	A Everything else in the vicinity of the producers were
	<b>×</b>	25	dry holes because they were too far downdip structurally
		X	

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or simply because the sand was too tight to produce. Where are they located?

Immediately to the west of the Jennings Federal Number 1 is the Meeker Hill well which is in the Southwest Quarter or the Southwest Quarter of Section 33. Apparently the sand is too tight to be productive throughout the entire Delaware section.

The well in the Southeast Quarter of the Northwest Quarter of Section 3 is once again, a Meeker Hill well which ran structurally low and the sand appeared to be fairly tight there too.

This would also apply to the well in the Northeast Quarter of the Northeast Quarter of Section 33 and the two wells in the Northwest Quarter of Section 34. These were also low structurally and tight. The well in the Northwest Quarter of the Northwest Quarter of Section 3 that we drilled was too tight to be productive.

Then there were two wells drilled in the Southeast Quarter of the Northwest Quarter of Section 4 and although there apparently was some low oil obtained from those wells, they were also tight according to the drill stem test and the core analysis and the result obtained on the completion.

Now, in your opinion, is the production area, whether it

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	. )	1	be one or two pools, substantially defined in the
		2	area?
		······································	A Oh, yes, I think we pretty much point out where the
	<u>, s</u>	4	limits of production are.
			would you have a location for one more well?
	· · · · · ·	б	A Well, it is possible and I don't know for sure. We
i	, in the second se	7	wouldn't know what we would get, whether we would get
	dearnlev. meier & mc cormick	~ 8	oil or gas or anything.
	8 E	9	Q In what area might this well be drilled?
	eier	10	A I think any further drilling would be done in the
	Ŭ,	11	Northeast of the Northwest of Section 4, that would be
	nle,	s 12	the most logical place to go from here.
	deal	49 00129 13	Q Which is owned by Union Oil Company?
n an an Araba an Araba. An Araba		ж м м м м м м м м м м м м м м м м м м м	A Yes.
аранан сайтар Сталан сайтар Сайтар		z z .≩ 15 ⊃z	Q Do you have a farm-out from Union Oil Company?
		ช. ผู้มี วิช <b>ิ 16</b>	A Yes, we have an agreement to continue production on
		000 100 ∢017	this acreage if we want.
		1990 L 18	Q Would you identify Exhibit Number 4?
		х и	A Exhibit 4 is a structure map drawn to the top of the
			Delaware lime. The lime is overlying the Telaware
			sand and for all practical purposes, it would reflect
			production to the top of the Delaware sand.
n an an an ann an ann an an an an an an	∑ 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	01 12 12 12 12 12 12 12 12 13	O That would indicate that these two wells are
	н 1975 1976 1977 1977 1977 1977 1977 1977 1977	wwis 8 24	structurally the same?
		25	A Right.
	14 15 15	L	

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		1		PAGE 16	
		1	Q	In your opinion are they the same?	
		2	A	Well, the top of the Delaware sands in those two wells	
		3	-	are flat, however, the producing intervals are not;	
	· · · · · · · · · · · · · · · · · · ·	4		what I mean is the top of the structural position. Each	
• • *		5		well is producing structurally flat, however, I think	-
		6		there are different zones of porosity.	
	mic	7		I do think the structure does indicate how accumulatio	n
		8		occurred and the only accumulation is right along the	- F
	dearnley, meier & mc cormick	9		apex of the little structure, if you gc down structure	
	ier a	10		you do not find it, and this is what caused the	
	, me	11		accumulation there in that immediate vicinity.	
-	nley	12	Q	Now, turning to what has been marked Exhibit 5, that is	
	lear	្ទី 13		the cross-section which is shown on the two preceding	
۔ جانب بارچ	)	5 0 2 14		Exhibits?	
	2 	w ⊻ ₩ 15	А	Yes, sir.	
		2 10 7 16	Q	Would you discuss the difference that you found	
1. A 1. A 1. A		8 9 7 17	· · · · · · · · · · · · · · · · · · ·	between the two wells?	
		n ↓ ↓ 18	A	I think that if you look at the various logs and	
		· 19		core analyses of the wells in the vicinity, you can	
	H H S S	y 20		see four different layers of sand. I think it is	1997 - AND
	× X Q	₹ ₹ 21		illustrated here by looking at the Union Federal Number	
	C Q	<sup>z</sup> <sup>+</sup> <sup>4</sup> <sup>2</sup> 22		2 well. The top upper ten feet in this particular well	
<u></u> =		L 23		are tight with low permeable sand which isn't productive.	
		24		The second ten feet are good, permeable sections	
		25		of sand	
:	1	- L			

<u>а</u>.

<u>.</u>	1	MR. STAMETS: Would you identify that ten feet,
	2	please?
	3	THE WITNESS: Yes, sir. The first one would be
	4	4560 to 4570 and then from 4570 to 4581 and then from 4581
	5	to 4594 and then from 4594 on down.
í E	6	A (Continuing) I think you can go through and most of
	7	these wells in this immediate vicinity where you
2	8	actually have section logs, you can actually identify
	9	these four little subsections in the upper Delaware
<b>UGUITINGY, ITAUNI CATILU CONTINUN</b> 100 11103 7108	10	sand.
	11	If we go to the Jennings Federal Number 1 Well,
	12	which is a gas well, we can see the same thing except
100 871	13	there is lateral change in the sand characteristics
THE MEX	14	between one well and the next whereas in the Union
2 X X X V X Z Z Z Z	15	Federal Number 1, the upper ten feet is tight sand which
<b>д</b> и в в в В д и в .	16	is not productive and this is confined to the upper three
• ₹ 0 1 0 1 0 1 0	17	feet in the Jennings Federal Well Number 1.
243-6691 AST ¢ AL	18	If you will notice, there is a profound change in
10 N 10 N 10 N	19	oil saturation at this point (indicating). That well
1032.0 PH	20	was drilled in about 1955 and the operators tested
× ■ 6.0 7.2	21	it for 1.7 million cubic feet of gas. The operator
06.0 P.O	22	actually tried to make an oil well completion at that
MS BLD	23	time so it was perforated to the lower section of sand
2199 SIMMS 1216 F	24	in an attempt to make an oil well. The well records
	25	reflect that it flowed thirty-four barrels of oil per

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day and at that time had 1398 barrels of accumulated production. So I think, in this upper section of sand at the top of the structure, which is the location of the Jonnings Federal Number 1, we have gas production and as we go down structure to the northwest, we run into a thin column of oil at approximately 4621 feet. As you go further on down structure to the northeast, you will encounter water on the south side.

Our producing interval is the second interval of sand running from approximately 4571 to -- rather 4560 to 4571. This is good quality sand and we are producing currently forty barrels of oil and about fifty-one barrels of water per day.

When we move over to the Jennings Federal Number 1 Well on this log, the section of sand occurs from approximately 4585 to 4596 feet and here we find this interval is shaled out and is tight and has low permeable sand. The next interval, in the Union Federal, is good, but when you move over to the Jennings Federal Number 1, we find it is tight, shaley sand also. So I think we just have two different reservoirs there.

Vertically, is the gas coming from the lower zone and then the oil from the Union Federal Number 2 coming vertically without regard to sand?

dearnley, meier a mc cormick NEW MEXICO 87103 MEXICO 87108 BUQUERQUE. KAST + AL PHONE 243-669 BLDG. 1092 Y N Y O XOD ۲ ۲ ZOIFAN ó SIMMS BLDG 1216 FIRST 2

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	3	1	A	I'm not sure I understand you.
		2	Q	Do you have all the zones open on the Jennings Federal
a a a ser a se	2 2 2	3		Number 1?
	1 • • • • • • • • • •	.4	~ A	No. just the upper-
	• • • • • • • • • • • • • • • • • • •	ŧ	Q	All zones open on the Union Number 2?
		6		
· · · ·	mc cormick	7		No, our second interval sand is open there.
	CON	8	Q	In your opinion, these are completed in two separate
4.	<b>MC</b>			reservoirs, is that correct?
a an	<b>જ</b>	9	<u>A</u>	Yes, sir.
	heie	10	Q	Would the production of one well, the gas well,
	и <b>.</b> "К	11		cause any damage to the oil well, in your opinion?
	dearnley, meier	<u> </u>	A	No, sir.
	dea	13 13	Q	Would it cause any damage to any other producing zones
			£.	in the vicinity, say to the south or to the west?
		z 5 	A	No.
2		2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - - - - -	Q	In your opinion is there any possibility this could be
	400 m 400 m	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	• •	a zone reservoir?
			А	I don't think it is.
			Q	Should it be prorated as such?
		1 J 1 J 1 J 1 J 1 J	A	I think we should produce one as a gas well and the
				other one as an oil well because that's what they are.
4		• <b>2</b> 22	<b>Q</b>	Were Exhibits 3, 4 and 5 prepared by you or under your
		8 SMWIS		supervision?
•		51 24	A	Yes, sir.
		25		MR. KELLAHIN: At this time I would like to offer
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			PAGE 20
	· · ·	1	in evidence Exhibits 3, 4 and 5.
		2	MR. STAMETS: Are there any objections to the
		3	introduction of these Exhibits?
		4	(No response.)
		5	MR. STAMETS: They will be admitted.
	Х	6	(Whereupon, Applicant's Exhibits 3, 4 and 5
	mc cormick	7	were admitted in evidence.)
	) C C	8	Q (By Mr. Kellahin) Do you have anything further,
n da serie de la composition de la comp	Š Š	9	Mr. Shafer?
• •	eier	10	A I believe this Union Federal Number 2 does have
	<b>%</b>	11	natural water drive which should assist in the recovery
	dearnley, meiel	12	of oil, that is, if it doesn't completely take over the
	dea	13	well. We have had an increase in water production from
		14	nothing to about fifty barrels of water per day since we
	2 	≥ ≝ 15 z	put it into production, so I don't know where it is
	OU ER C	16	going to stabilize, but I do believe that if it doesn't
		17	get too high, the natural water situation will aid the
	43-660	18	ultimate recovery in the Union Federal Number 2 location.
4 <sup>19</sup>		19	MR. KELLAHIN: That's all the Direct Testimony we
	1002 e P	ž 20	have.
	× O	n √ 21	MR. STAMETS: Are there any questions of this
	0 0 0	vz 22	witness?
an an an Arran an Arra an Arra an Arra Arra an Arra an Arra an Arra an	C. I S S S S S S S S S S S S S S S S S S	23	(No response.)
a Anna an ann an Anna Anna Anna Anna Ann	200 SIM	24	
		25	
	Solo (Solo (		
	ی ۱ ۱۹۹۰ - ۲۰۰۰ ۲۰۰۰ - ۲۰۰۰		
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A.,
				PAGE 21
		1		CROSS-EXAMINATION
		2	BY M	R. STAMETS:
		3	Q	Do you know if there were tests below the gas producing
-		4		horizon in the Jennings Federal Number 1? It would
		5		appear from looking at your Exhibit that those perforations
	а На	6		are all above the oil perforation of the Union Federal
	, mi	7		Number 2.
4		8	A	No, sir, there was never any testing of any kind below
	8 8	9		that section of sand.
	dearnley, meier & mc cormick	10	Q	I believe there is a core that would cover at least
	۰ ۲	11		part of that same zone showing that the residual oil
	irnle	12	t e	is fairly low down in the neighborhood of ten to twelve
and the second secon		13		percent, is that right?
an Angelan an the second s	で し で し し し し し し し し し し し し し	14	A	That's right.
an second sec	Z ≥ 	. 15	Q	Was any attempt ever made to complete the well in this
an a		16		particular zone?
an Carr B. S. B. S. B.		17	A	No. The reason was that because of the well to the
n jihann <b>a ter</b> in	243-6691 AST • AL	18		northeast that was an attempted completion, the West
المعاورة والمحاور	и 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	19	,	State Jennings Number 1 Well located in the Northeast
n hata y∕tar a st	- 002 • F	20		Quarter of the Northeast Quarter of Section 33, there
- Sperior Anna	uk x k Ω v Ω 00	21		was an attempted completion up there and although we do
	00 20 20 20 20 20 20 20 20 20 20 20 20 2	22		not know everything that happened in the well, we
<u>.</u>	۸ ۸ ۵ ۳. ۴ ۳. ۱	23		understood that it eventually went to water.
	209 SIMM	24		So, in this particular sand section, I think we have
		25		gas and we have a thin oil column down structure and

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	<b>i</b>	1		immediately down structure you run into water so we
		2		never made any attempt to test any deeper in the section
	an Geografia	3		because of the result of the Neet State Jennings Number
		4		1 Well. This well was a failure in the lower part of
• •		5		the sand.
	×	6	Q	Is it your opinion that the Union Federal Number 2 and
	Lmic	7.		the Jennings Federal Number 1 are separated laterally
		8		by a permeability barrier or a porosity barrier?
	s mc cormick	9	Α -	Actually, I think they are different sand sections.
		10	Q	So they would be separated vertically and not necessarily
	Ű,	11		horizontally?
ч. 1	dearnley, meier	g 12	A	Yes, sir. I think that the gas well is actually in
	dear	801/28 13		the upper section of permeable sand and the oil production
		x • ₩ 0 ₩ x x 14		comes from this lower section of permeable sand, but you
		มผ ∠⊻ มผ 15		don't find these permeable sands common in both locations.
		ана жила жила ла к 16	Q	Would it be possible if another well was drilled that
		n ₩ n 0 10 17		you might get both zones producing?
		3-0001 12-2/14	А	I don't think you would. If you went between the two
		N W W W W W W W W W W W W W W W W W W W		wells and drilled on a line you might get both zones,
<u>6</u>		н ј • ж бо х 20		but I don't think you would at any other location.
			Q	The wells that you mentioned on Exhibit 3, I presume
		······································		they all penetrated the producing horizons that we are
	2 호 호 전			talking about in this case?
		1 0121 24	A	Would you repeat that question?
		°, 25	Ω	You mentioned a number of wells on Exhibit 3 and you called
landar an the second second	<u>.</u>		<b>i</b>	

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		PAGE 23
	2	1 them low and tight and
· · · · ·		them low and tight and apparently one or two of them
		had a show of oil, and, as I said, I presume all of these
	<u>(,)</u>	3 penetrated the producing horizon we are talking about
		4 here?
		5 A All wells in the vicinity went deep enough to evaluate
	Č.	6 these sections. Most of them went through, clear
	cormick	7 through the entire separation. I don't remember which
	nc ci	8 ones offhand, nor how deep the different wells went, but
	& mc	9 they all went deep enough to evaluate this upper interval
	ee.	10 we are interested in.
	dearnley, meier	11 MR. STAMETS: Are there any other questions of this
		12 witness?
	dea 	13 (No response.)
		14 MR. STAMETS: Mr. Kellahin, I would like to see
2		15 the comparison of pressures.
		MR. KELLAHIN: I imagine you will find them with
		17 the same penetrated interval.
	ана	18 MR. STAMETS: Can you supply the Commission with that
	U U U U U U U U U U U U U U U U U U U	19 information?
		MR. KELLAHIN: No problem.
	8 L 0 Z .	MR. STAMETS: That's all the questions I have.
	0 0 1 + • ₹	The witness may be excused.
	ν τ 	(Witness excused.)
	C 0 5 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1	MR. KELLAHIN: That's all we have.
ی بر این		MR. STAMETS: You may proceed, Mr. Buell.
e de la companya de la		

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-		FAUE Z 4
	1	COYLE SINGLETARY,
	2	was called as a witness and, after being duly sworn, testified
	3	as follows.
	4	DIRECT EXAMINATION
15 a	3	BY MR. BUELL:
-S	6	Q Would you state your name, please?
Imi	7	A Coyle C. Singletary.
00 0	8	Q By whom are you employed and in what capacity?
8 M	9	A Area geologist for Union Oil Company of California.
eier	10	Q Could you spell your last name, please?
dearnley, meier & mc cormick	11	A S-i-n-g-l-e-t-a-r-y.
rnle.	12	Q Have you previously testified before the Commission or
deal	<u> </u>	one of its Examiners?
	001x3	A No, sir.
z ה ג	∑ 3 15 2 15	Q Would you give the Examiner a brief rundown of your
0.88.00	ш од 16	educational background and your work experience?
		-A I received my Bachelors of Science Degree from the
E 243-0091	18	University of Texas in 1948. This was a Bachelor of
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	i 19	Science Degree in geology. I received my Master of Arts
005 002	19 Y 20	Degree from the same school in 1952. That was for a
P.O. BOX 1092	1 21	major in geography and a minor in geology. In 1953
0 4 • •	01 Y 22	I went to work with the Union Oil Company of California
e D D B MW S B S S MW S S S S S S S S S S S S S S S S	23	and have been employed as a geologist since that time.
209 SIM	24	Q Where have you worked during that period of time,

Mr. Singletary?

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				Page 25
	9 9	1	A	West Texas, Oklahoma, and then in New Mexico. I worked
		2		in New Mexico and was stationed in Roswell from 1956 to
		3		1960 from July, 1970, until_the_present time,
				MR. BUELL: Are the witness' qualifications
		13	acce	ptable?
		б		MR. STAMETS: They are.
,	Imic	7	Q	(By Mr. Buell) Mr. Singletary, would you briefly outline
	000	. 8		for the Examiner why Union Oil Company is opposed to
	s ma	9		the granting of this Application?
-	dearnley, meier & mc cormick	10	A	It is our belief that the wells under consideration are
	, me	<b>i</b> 1		all in the same reservoir and this reservoir extends
	nley		4	south to the acreage under lease by our company. We
	lear	14 01 13		believe that a large production of gas from this gas
				cap would deplete the reservoir energy and cause migration
		2Σ μμ 15		of oil from leases to the south toward the Jennings
and a start of the				Federal Well.
and the second secon				Referring you now to what has been marked as opponent's
and the second		• • •		Exhibit 1, would you briefly state what that shows?
i i sa sina si sa si sa si		245		This is a lease-ownership map of which I have colored
a shekara ta shekara t				in yellow the Union Oil Company of California leases.
and the second	· • • •	20 x 200 x 0 x 0		The red outline is the acreage on which the farm-out
ويارونان الالتيانية	• • •			
		• Z 22		option was granted to Blackrock Oil Company for the
	an a	23 SIMMS	алан соностоя 	Blackrock Number 1 Jennings Federal, the gas well
		24		which is just to the north of the central part of the
		25		red outlined area. The Blackrock Number 2 Union Federal

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in a second for

• • 	-			PAGE
			1	is near the center of the outlined red area.
			2	Q Referring you now to what has been marked as Exhibit 2,
		<u>65</u>	3	would you please explain what this Exhibit shows?
	- 5.		- 4	A This is a map contoured to the top of the porous sand.
	-		5	In the case of the three wells which have produced
		<u>н</u>	6	the two wells which have produced, I used the top of
•		Crmi	7	the perforation and in the other cases, the bold-faced
	1	& mc cormick	8	heavy markings represent the top of the porous sand.
		8	9	Beyond the limits of the porous sand, I used an
	en offense and	eier	10	equivalent point to give form to the contours, and these
	entre rette	dearnley, meier	11	are the numbers that are marked lightly (indicating).
	s server a server a	rnle	12	Q What are the perforations or the depths of the perforations
	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	deal	13	in the Jennings Federal Well Number 1 shown on the
		2 2 3	0 x 14	Exhibit?
		2 	™ 15 2	A I have minus the top of the perforation is minus
	en de la companya de		3 <b>16</b>	1,247 and the bottom of the perforation would be minus
e a tradición de la construcción A la construcción de la construcción	Constant of the		17 17	1,250.
			18	Q What is the top of the perforation on the Jennings
	NG ALCONTON	370	i 19	Union Number 2?
		0 0 0 0	a ¥ <b>20</b>	A Minus 1,251.
				Q So the Jennings Number 2 is lower, actually, than the
and and a second se Second second			0 F z 22	Number 1; is that correct?
		C C	н ш 23	A Yes, sir. The topmost perforation of the Blackrock
			24	Union Federal is one foot lower than or lesser than
	14 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -		25	the perforation of the gas well.
			<b>(</b>	

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					PAGE 2.7
		5		<b>1</b> Q	Referring to what has been marked as Exhibit 2, would
				2	you briefly state what this shows Exhibit Number 3,
-	<u></u>	(1) 		3	T-Im-sorry
			4 19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	4 A	Exhibit 3 is a log comparison section of the lines shown
			i	5	on Exhibit 2. The well on the left is the Blackrock
				5	Number 2. The Union Federal log in the center hasn't
		Ĩ		<b>r</b>	been brought out yet. The Blackrock Number 1 Jennings
		mc cormick	1	3	Federal is a reentry of an old hole that was drilled
		8 II			in 1957 as the West State Number 1 Jennings and it was
4 •	n y se se side	eier	10		the discovery well of the Jennings field. The log
-		dearnley, meier	11	L L	shown on this Exhibit is the log on the old well, the
	for the second	rnle	<u>s</u> 12	8	West State log of the same hole.
		dea	10 10 10 10 10 10 10 10 10 10 10 10 10 1		The right log, the right-hand log, is the West
			ษือ ⊻ว: 14 ≋∺	•	State Number 1 Jennings which was, as I stated, the
			z x 	5	discovery well in the Jennings field. It was completed
12		2. <sup>1</sup> .	200 200 200 200 100	5	from the Delaware and produced a total of 1398 barrels
1	nen ander			7	of oil and was abandoned.
	1	×	13-0051 57-96		The central well, which is the log in the center
					of the section, is the log of the reentered Blackrock
			00229P	<b>b</b>	well and it was abandoned.
	, tên tê		ົລ ວ່⊣ 2: ຄ.∀ 2:	ιΩ	Have you marked on this Exhibit the perforations of
		;		2	these three wells?
an Taona an Taona an tao			он в в х и 2	3 A	Yes, they are marked in red with red bars with the
			WWIS 603	•	appropriate depth.
•• • •			~ 2	5 Q	Where were the perforations placed in the structures?
				<b>L</b>	

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			PAGE 28
		1 A 2 3 0	Do you mean the structural relationship of the three wells? Yes.
		4 A	I believe this section seems to indicate I'm not
	2	5	sure of your question.
	ick	<b>6</b> Q	Do the logs reflect common structural characteristics
	cormick	7	in the same wells?
	U U U	8 A	Yes, sir.
	er er	9 <u>0</u> 10 A	Would you go into that a little bit, please?
	l me		I would like to call your attention to something very interesting in these three logs. I lined them up edge
	dearnley,	2	to edge without regard to any sub-C datum to show the
	dea 	3	very remarkable uniformity of the vertical uniformity of
		4	this section in this area. The topmost horizontal line
			is the top of the Delaware lime zone, the second
	20 10 10 10 10 10 10 10 10 10 10 10 10 10	16   . 	horizontal line is the top of the very shaley Delaware sand. The third line is the top of the relatively
		8	clean sand and there is a marker which you can follow
		9	across there. If you do that, you will notice the
	ANK BL	10	left curve on each of these logs is a gammaray curve
	x a 0 J a 4 2 	1	which shows that the sand the top of the shaley sand
		2	in the left-hand well and the top of the clean sand in
ne de la companya de La companya de la comp A companya de la comp	SIMKS 9	23	the left-hand well is at 4,570 which is below the middle
		24	of the perforated interval and the top of the shaley
	4	25	sand in the Jennings Number 1 well, the West State Number
		۰.	

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1, the Jennings Blackrock Number 1. The Jennings Number 1 is 4,560 and the top of the reservoir sand, the clean sand in the West State Number 1 Jonnings, is at 4,670.

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dearnley, meier & mc cormick 👳

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Referring you to Exhibit 4, would you please explain to the Examiner what this Exhibit shows? This is an isopach map of the sand body which we believe to be producing in the Jennings field to the north. It is the Paduca field which occurs at approximately the same place in the section and the sand may or may not be connected. There certainly is no proof of communication with the Paduca field.

The thicknesses of the sands, these are net thicknesses, are indicated with the thickest sand at the Hill and Meeker Number 1 Sun Federal. This is very near the center of the plat in Section 4 and the Blackrock Union Federal has sand which is still a very nice clean sand body when it turns to the north and it has fifteen feet of net sand in the middle shale section within the sand body to the river and then continues to thin northward. The Union leases, the 1 ases we retained after our farm-out, are over a substantial part of this sand body and the portions to the east of the water bed in the western portion, we believe to cover the sand body and we hope there will be oil within our

	-		1	
а. 1	• • •		•	leases which we plan to drill.
			2	From this plat, looking at the gross sand bodies,
		- 	3	there is certainly no reason to suppose any porosity
			·4	separation between the two sands.
			5	The large production of gas from the northern
	×		6	end of this sand body would deplete the reservoir
-	& mc cormick		7	energy over the entire sand body and would cause migration
	CO		8	
i i	) E		9	of oil northward from the Union leases where it probably
5 		····· · · · ·		could be expected to be recovered by the Blackrock Number
	eie		10	2 Federal.
	dearnley, meier		11	Q Do you have any drill stem test information on it
	L L	103	12	when it was when the Number 1 well was the West
	dea	11CO 87	13	State Jennings Federal Number 1?
		N W W	14	A Yes, sir. A drill stem test was run from 4,555 to 4,585.
		2 2 3 4 4	15	Q When was it run?
		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	16	
		20 20 20 20 20 20 20 20 20 20 20 20 20 2		A 1957.
		010 V	17	Q Go ahead.
		243-00 257 + A	18	A This test was open for two hours and in two minutes
		U U U U	19	recovered an estimated 3.39 hundred MCF of gas and they
		4002 • P	20	had mud to the surface that was 3.9 million after
		A L BOX	21	two minutes and they had mud to the surface in thirty-
		0 0 + 4 7	22	eight minutes and oil and water in one hour fourty-five
R F	** **	51MM3	23	minutes and the test tool recovered five feet of oil and
	1	500	24	two feet of salt water.
			25	Q Does this indicate anything to you as far as relationship

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tan na n	1		between the gas and the oil in the well?
		Λ	It seems to further bear out that we are dealing with
an an an ann an an an an an an an an an			a gas cap over an oil recorvoir in the Blackrock Number 1 Jennings.
	5	Q	Were you present here when Mr. Butler testified as to
	<sup>6</sup>		the gas analysis that was made on this well?
	8 mc cormick 8 6	A	Yes.
a Ea Sana ann an Airtean Airtean Airtean Sana Airtean Airtean Airtean Airtean Sana Airtean Ai	8 20 20 20	Q	As compared to the Number 2 Well?
• • •		Α	Yes.
	10 10 11 11 12 13	Q	Would you like to comment on that?
- 2 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	ц, п,	<b>A</b>	The analysis shows a greater percentage of nitrogen and
		· · ·	a lighter constituent of gas. The oil well had a larger
	Ŭ Xe		percentage of heavier hydrocarbons and this would be
			consistent with the comparison of gas cap gas with
		4	solution gas from the oil reservoir. So it is my belief
			that the gas analysis shows oil well gas to be solution gas from an oil well and the gas well analysis of the
			Blackrock Number 1 Jennings is gas cap gas which again,
	κ ω ζυ 19		would be higher in lighter hydrocarbons.
	44 9 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Q	Do you feel that the granting of this Application would
		an se an an	tend to prevent waste and protect correlative rights?
	• • • • • • • • • • • • • • • • • • •	A	No, the production of a large volume of gas from this
	ан со	 	sand would deplote the reservoir energy and would make
	45 C 24		it less likely that oil would flow into the wellbore
	25		of the well which we intend to drill on our portion of

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		PAGE 32
······································	<b>1</b>	the lease. It would also, by reducing the pressure
	2	portion of the reservoir, cause the oil to flow toward
(; ( <u>,</u>	<u>iii</u> 3	the gas well and thus be lost to the Union lease.
	4 No.	Q Were Exhibits 1 through 4 prepared by you or under
	 5	your supervision?
	کے اور	A Yes, sir.
	mc cormick	MR. BUELL: I move for the introduction of
		Exhibits 1 through 4.
	۹ »	MR. STAMETS: Are there any objections to the
· · · · · · · · · · · · · · · · · · ·		introduction of these Exhibits?
	dearnley, meier	(No response.)
		MR. STAMETS: They will be admitted in evidence.
		(Whereupon, Opponent's Exhibits 1 through 4 were
	ו ו ו ו 14	admitted in cvidence.)
	z x v ≝ 15 ⊃ z	MR. STAMETS: Does anyone have any questions of
	16 S	this witness?
		MR. KELLAHIN: Yes.
	18	* * * *
	та и стана и стана и и стана и и и и и и и и и и и и и и и и	CROSS EXAMINATION
	Hd - 260	BY MR. KELLAHIN:
		Q Mr. Singletary, on your Exhibit, I don't have the
	• • z 22	number, but it concerns the isopach of the porous
		Delaware sand; is that based on net pay or is it based
	WW15 0CZ 24	on gross sand interval?
n an	25	A The net pay sand based on my judgment and experience.
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	<b>&gt;</b> 	1		If you will notice the logs there, there is quite a
	• • 2 •	2		large variety of log types and there would be a great
(	C) C	3		deal of judgment involved in formalizing these logs.
		4		I used the judgment factor on the logs and counted
		5		the thickness and what I thought would be the porosity,
	· · · · · · · · · · · · · · · · · · ·	6		based on the thickness. If you used any reasonable
-	i	7		engineering technique, you might come out with a different
		8		interpretation, but with the same shape of the sand body.
	& mc cormick	9		A possible exception would be the east side where I have
	eier	10		fifty-four feet of tight sand and twenty-two feet of
	dearnley, meier	11		tight sand, but in any case, this is a water well and
	<b>nie</b>	12		would not be pertinent.
Ň	deal	° 13	Q	Do you say this is too tight on the east side there for
		00 x 14		production?
		ž 15	Α	Yes, on the west, the sand extends to shale.
$\lambda_{i}$ :		u 3 16	Q	That would be over here in Section 5?
		5 17	Α	Yes.
••••••••••••••••••••••••••••••••••••••		18	Q	So you would say then that a sand interval of say,
	i de la companya de l	v v 19 e		forty feet, should be productive, is that correct?
		y 20 ⊻ 20	A	Of oil, gas, or water, yes. This is an isopach without
· · · · ·		21	τ.	regard to structure.
. * <b>.</b>		z 22	Q	Is your structure the controlling factor in these
		1 23	-	fields?
	200 SIM	2121 24	Δ	To some degree. The structure map is on the top of
•		25		the reservoir, that is, on top of the porosity except in

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·				PAGE 34
	÷.	1		the three wells which have produced, where I used the
		2		top of the perforation.
		3		I believe I think that apparently this is
		4		downdip to the east and your wells which tested sand
		Ę		will recover water to the west with the break-over line
-S		6		being approximately where the Union Number 1 Federal is.
ill i		7		Going west from there, I believe you will get oil and
mc cormick		8		gas depending on the relationship between the pinch
8 M 8		9		out of the sand body and the structural latitude.
learnley, meier &		10	Q	Now, structurally your Union Number 1 Federal and the
۸, m		11		Blackrock Union Federal Number 1 or Number 2, are
rnle	6 6	12		structurally about the same?
deal	11CO 27	13	А	Yes.
	EV MEX	14	Q	And the isopach is also the same?
	2 ¥ 4 × 2 × 2 ×	15	Α	Yes.
	800 80 80 80 80 80 80 80 80 80 80 80 80	16	Q	What were the results on those two wells? What
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	17	5. - 2	happened to them?
		18	Α	Let's start with the Hill and Meeker Sun Federal. It
	710/5 245-669 9106. 5451-47	19		was drill stem tested and recovered oil, gas and water,
		20		and it was unable to be completed. We moved west, I
	. <b>u</b>	21		don't remember the exact dimensions, but they were about
	CO. BO. BO.	22		100 or 200 feet, and we felt this would put us slightly
	SIMMS BLOC	23		updip and it turned out that the Union Number 1 Federal
	209 SIMA 1216	24		was not high to the <u>Hill and Meeker well due</u> to some
	14	25	·.	local variations in the structure which I think were
		•		

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- 1		very localized. This well was drilled, but the logs
2		did not cover the sand and I am unable to give you an
		exact_comparison_between_the_Hill_and_Meeker and the
	2	Union Federal because of the fact the log in the Union
5	-	
		well terminated at the Delaware line.
Ċ	×	But you did attempt to make a completion in the Delaware:
7	A	Yes, it was drilled in and intermittently tested and
8		I do not have the story on that well.
9	Q	They were unable to complete it, is that correct?
10	A	That's right.
11	Q	They did not produce from the Delaware, did they?
12	A	No, and I do not know for sure what the attitude would
13	-	be regarding porosity.
.14	Q	But you say that there is a possibility of production
-15		to the south of the Blackrock well?
16	A	Yes, to the south and to the west. I think there is
17	, <u>.</u> .	very definitely a probability of production to the south
18		and west.
19	Q	Are you familiar with the farm-out agreement with
20		Blackrock?
21	A	In general terms, yes.
22		Blackrock can earn that acreage by drilling it, can it
2:		not?
2:	م	Only the acreage outlined in the west. They have the
~		west offset to their Number 2 Union Federal.

PAGE

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	Q	And that would only give them a forty acre unit to
		the west, is that right?
	λ	Yes.
	Q	Now, Mr. Singletary, you heard the testimony in
	r	regard to the producing characteristics of the gas well,
		did you not?
	A	Yes.
	Q	With a gas well that is producing with a flowing tubing
		pressure of 1,500 pounds, let's say, if that is the
		same reservoir with the oil well, wouldn't the oil well
		be a flowing well?
	A	Not necessarily. If you will look at the cross-section
		I presented, you will notice that the gammaray log on
		the Blackrock Number 1 gas well is deflected far to the
		left, which indicates that that is very clean sand. You
	·	will also notice the right-hand curve of the neutron
	7	log which is I wouldn't say it measures porosity
		but it is related to porosity and it reflects and shows
		porosity. It goes far to the left which would indicate
		that the Jennings Federal is very porous sand in this
		zone. Now, if you will look at the density log which
ļ		is designed specifically to measure porosity most of
		the perforation in the Blackrock Number 2 Unit Federal
		is above 4,570 feet. There are three feet of
		perforation in the Blackrock Number 2 which seemed to be

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37 PAGE 1 in the porous sand, but if you will look at the left 2 density curve instead of angling in very abruptly as 3 would happen in a gas well, it comes in at a slope to () }the Blackrock Number 2 Union Federal and is at a less 5 permeable portion of the sand than the gas well. Aren't you saying there is a shaley zone separating the 6 0 dearnley, meier & mc cormick 7 two? 8 No, I am saying that the sand zone producing in the Α 9 Jennings Federal gas well is less shaley than the same 10 zone producing in the oil well. To put it another way, 11 there are other things that reduce porosity besides 12 shale. I am saying that there is better porosity in 13 the upper portion of the reservoir, in the gas well than 14 in the oil well. MR. KELLAHIN: Thank you, very much. Mr. Singletary. 15 That is all I have, Mr. Examiner. 16 17 CROSS-EXAMINATION 18 BY MR. STAMETS: 19 Mr. Singletary, is gas in the Delaware zone a common Q 20 occurrence or an uncommon occurrence? 21 It occurs in scattered wells in and adjacent to the А 22 oil wells. It is not common, but it is not uncommon. 23 There is one gas well downdip on the edge of the Paduca 24 209 field that I know of, and there are several Delaware 25

fields in Texas where the gas wells are not necessarily high or low to the oil wells, but adjacent to them. Your cross-section, I believe you said, was drawn on the top of the porous sand and the top of the perforation in the three producing wells. Now, does this represent, in your opinion, the same time-line or is this your opinion, the same time-line, or is this the time-line that moves up and down in the section? The sand body time-lines become a little bit uncertain. λ The fact that the limestone bed in the Delaware lime is uniform to the uppermost Delaware sand which is very shaley sand and maintains not a constant thickness, but a near constant thickness, then there is the ten feet of less shaley sand just above the reservoir that seems to maintain a fairly common thickness and there is a good chance these are reasonably close in time. My use of the top of the perforation on the three wells is synonymous to the top of the porosity. I wish now that I used the top of the porous sand in the Union Number 2 Federal because it is considerably, -- nearly ten feet -several feet lower than the top of the porous sand. In other words, if you used the top of the porous sand, Q 22 it would have accentuated the difference between one **23** and two? 24 Yes, that is what I'm trying to say. Ά

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dearnley, meier & mc cormick

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		1	Q	In looking at your Exhibit Number 2, the vertical
•		2	-	difference between the Jennings Federal Number 1 and
<u>دی</u> ۔		-3	1	the Union Federal Number 2 is only about four feet?
		4	A	Yes.
		5	Q	Do you feel that does not seem to be much of a
б	-	6		difference and yet one well makes all gas and the other
E	·	7		well makes all oil?
dearnley, meier & mc cormick		8	A	When you consider where the oil is actually coming
х Г		9		from, where the vertical difference is, it is somewhat
Pier		10 -		different.
Ē,		11	Q	I would appreciate it if you could clarify that point
nle	801	12		for me just a little bit.
deal	100 87	13	A	Well, I would say the top of the porous sand in the
	X O U X I	14		Blackrock Number 2 is at 4,570 or 4,571.
	2 X X H H H H H H H H H H H H H H H H H H	15	Q	You consider that to be the top of the porosity?
	20 20 20 20 20 20 20 20 20 20 20 20 20 2	16	А	Yes, although, as you can see from the density log,
		17		the porosity increases with depth so it is not a positive
	243-0091 • Ast • Al B	18		point. I am looking at the shaliness as well as the
	날 문 :	19	н 1.	porosity and I do not think the shaley portion of that
	1092 # PHON Ank Bldg.	20	-	sand will produce at all. It becomes a matter of
	×	21		judgment and where the slope is shown on the right-hand
	0.0 4 F 4 7 V 4	22		curve, it would indicate porosity that would produce,
	15	23	• •	but at about 4,570 feet. Then the top porosity instead
	200 STMM	24		of being minus 1,251, would have been a minus 1,256.
	Ň	25	Q	This appears to be basically the same zone that is

			PAGE 40
	ž	1	productive of gas in the Tonnings Windows I had
			productive of gas in the Jennings Number 1 by just
7		2	looking at the logs and the way-you-have-them-laid-out
an an an ang di kana ang ang ang ang ang ang ang ang ang	<u>a</u> j	3	on number 37
		4	A Yes, it would appear to be.
		5	2 Yet, there does not seem to be much vertical difference
na Line and a second second		б	between the two wells?
n 17 <u>fer - main</u> da d'ante a seconda de seconda de la seconda persona en en en aparece en esta persona de second 17	cormick	- 7	A Yes, but I don't know how much vertical difference is
	mc ci	8	required.
	S S S S S S S S	9	Now, you mentioned that if this Application were
	meier	10	approved it could injure Union Oil Company because you
	E ×	11	have plans to drill, can you say where and when?
	dearniey,	12	A Well, we have granted a farm-out, an option type farm-out,
	dea ***	13	to Blackrock which gives them the acreage outlined in
	EW ME	0 X 14	red on these Exhibits. They have a continuous drilling
	N. Ve.	x 4 2 15	obligation and I think they have started their next well.
_	QUER C	16 IC	We will wait and see what they get before we start $\mathrm{ou}^{\mathbf{r}}$ ,
	• Ar	no 17	well and this will reduce our risk and we will take
	1000-54	18	advantage of that.
دي. ماريخان ميرين وي شديد با با	N N N N N N N N N N N N N N N N N N N	19 19	Q Any well Union would drill at that time would be outside
	082 e Pt	и Ху 20	of the red area on the Exhibits?
	×	21 - 21	A Yes. I regard them as having the choice location for
	0 0 0	0 F Z <b>22</b>	the next well and we will try to develop ours in an
<u>na na na santa sa sa sa sa sa sa sa sa</u>	5 2 2	1 23	orderly fashion. We have tentative plans to drill test
· · · ·	S S S S S S S S S S S S S S S S S S S	24	and to continue the development in this field, but we
	ň	25	will finalize our plans when we have the data from

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	· · · · · ·			PAGE 41
an Ann		1		Blackrock's next well.
		2	Q	Do you feel there is any significance to the difference
	<u> </u>			in the liquid gravity between the two Wells?
		4	A	The differences are not large and I believe the difference
		5		are the difference between gas cap and solution gas
		6		from producing oil.
	mc cormick	7	Q	I believe you said that the Union Federal Number 1
	<u> </u>	8		ran somewhat low to the Hill and Meeker Number 1 Sun
· · · · · · · · · · · · · · · · · · ·	E S	9		Federal Well?
		10	A	I recall it being one foot on the top of the Delaware
	dearnley, meier	11		line, I do not know how it ran with regard to the other
	<b>nley</b>	12		sand zones.
	dear 	13	Q	Do you have a copy of Applicant's Exhibit 4, it being
	W MEX	14		a structure contour map to the top of the Delaware?
		15	A	Yes.
	DUERQ4 A DUE. 1	16	Q N	If one accepted this interpretation of the structure in
		17		the area, would that tend to explain the slight
	3-6691 e 51 e A L t	18		elevation difference?
	ONE 24 96. EA3	19	A	I don't quite get the point of your question.
	92.0 PH	. 20	Q	Well, referring to your Exhibit Number 2, which is a
	BOX 10	21		structure contour map of the Federal Well, would it
	. • P.O.	22		appear to be somewhat shallower than the Hill and
, ar ar chraite an an air an air air air air air air an air air an air air an air air air air air air air air a Anns an ann an anns an an an an air	5 BLOG Firit 1	23	an di si si an Si si	Meeker well?
	10 SIMM	24	A	Yes.
	Ň	25	Q	On Applicant's Exhibit 4, a structure contour map, it

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1		would appear that the Union Well would be somewhat
2		low to the Hill and Meeker Well?
3	A	Yes. As I said, I do not know the characteristics of
4		the sand, but it is one foot low on the top of the
C-1	1. J.	Delaware line.
6	Q A	Do you feel that this well running low might tend to
7		confirm the Applicant's interpretation of the structure
8		in the area?
9	A	I would not pull the same line that he pulled from the
10		south, I would certainly not pull it nearly as deeply
11		as he has shown it. I feel that it is unlikely that
12		there is any pulling from the northwest of Section 4,
13		at best I would say it pulled east-west across the
14		south part of the pool.
15	Q	If the Commission should decide that this first well
16		is actually drilled in a gas cap, do you have any
17		recommendation as to any special pool rules to permit
18		the well to produce more gas than it normally would on
19		a forty acre basis?
20	A	Our management feels that production should be
21		restricted, but probably not to forty acres. I think
22		that we are perfectly agreeable to eighty acre spacing.
23	Q	Then the gas allowable for the Jennings Federal would
24	6	be the oil allowable times the gas-oil ratio?
25	A	That is the feeling of our company.

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		1	Q	I have one more question. You mentioned earlier the
		2		drill stem test on the Jennings Federal Number 1?
	à	3	. <b>∧</b> . j∘	Yeo;
	-	4	Q	Would you briefly run over that as far as the pressure
		Ē		unat was covered is concerned?
		6	A	I don't think I read the pressures. In 1957, the
i techore	i	7		drill stem test from 4,555 to 4,585 was open for two
a series and the second	0000	8		hours and gas flowed in two minutes at an estimated
	& mc cormick	9		rate of 3.39 hundred MCF per day. There was mud to the
nhal brawnin i Ar		10		surface in thirty-eight minutes and oil and water to
	, me	11		the surface in one hour forty-five minutes.
n an an tha an th	dearnley, meier	12		We pulled the test tool and recovered five feet of
	deal fee •71	13		oil and two feet of salt water. The flowing in pressure
	X M M	14		was 185 to 785 in thirty minutes and the shut-in
	99 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	15		pressure was 2,020.
an an taine	0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	16	Q	Do you feel the current shut-in pressure on these two
and		17		wells would demonstrate whether or not the reservoir
the second second second	3-0091 • 17 • A∟	18		was, indeed, the same reservoir?
	00 EE 24	19	A	Not the initial pressure because they are so near the
	9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20		same depth it would be anticipated that they would have
на 1997 1997 1997 1997 1997 1997 1997 199	20 X 10 7 A L 0 A 10	21		nearly the same pressure. They would be so near to
	. Z 0 0 1 F • 4	22	+ ·	each other that our interpretation would not be adequate
ana at	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	23		to distinguish whether or not this is an associated
i shanna a	05: SIMMS 1210 FI	24	i. W	reservoir?
	0 7	25		MR. STAMETS: Are there any other questions of this

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`**I**,,

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		PAGE 44
¢	1	1 MR. KELLAHIN: Yes.
	с. 1979 г.	2 * * * *
	<u>()</u>	3 RECROSS EXAMINATION
		4 BY MR. KELLAHIN:
		5 Q What well were you discussing the drill stem test on?
	ic K	6 A The West State Number 1 Jennings Federal which was
	mc cormick	7 later completed as the Blackrock Number 1 Jennings.
		8 Q This is the subject well of this Application?
	N N	9 MR. KELLAHIN: That's all I have.
	dearnley, meier &	MR. STAMETS: Any other questions of this witness?
	ey, n	(No response.)
		MR. STAMETS: If not, the witness may be excused.
		3 (Witness excused.)
	) 2 U ス 2 U 2 U 2 U 2 U 2 U 2 U 2 U 2 U	MR. STAMETS: Mr. Kellahin, do you have additional
		5 testimony?
	10 20 1	MR. KELLAHIN: I would like to recall Mr. Shafer,
	961 910 910 910 910 910 910 910 910 910 91	7 if I may.
	11 2 4 5 12 4 5 12 4 5	8 * * * * *
	C L D 0	WARREN SHAFER,
	X A	was recalled as a witness, and having been already duly sworn,
	0.4 10 10 14 10 14	testified as follows:
		MR. STAMETS: Mr. Shafer, you are still under
	510 FI	cath.
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	я. Г	5
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and and a second s		
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	1		REDIRECT EXAMINATION
	2	BY N	AR. KELLAHIN:
	2	Q	Mr. Shafer, referring you back to Exhibit Mumber 5,
	4		would you discuss the completion of the Union Federal
	5		Number 2 Well and what occurred in connection with that
	6		well?
	7	A	This well has actually the thickest clean sand section
	8		of any well in the vicinity and when we drilled it, we
	9		tested it to the top portion, about the top ten feet
	10		of the sand, and then we went ahead and drilled the
	11		well to the depth of the log and found that we had a
6017	12		much cleaner and better sand section than any other well
NEW MEXICO 87103 MEXICO 87108	13		in the vicinity. We wondered where the oil-water zone
IEW ME	. 14		might be and whether we could pin it down and we
Z ≥ .≩ ⊌⊌ D Z 0 .	15		couldn't with the information we had. So we went in
8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	16		and perforated it initially at 4,589 to 4,594 which is
1●Ar8 Louc	17		the bottom part of the Delaware section. We got a
BOX 1092 • PHONE 243-6691•. Al Bank Didg. Rast•alb	18		slight show of oil out of that and a little gas flow
HONE C	19		and eight barrels of water per hour. We concluded that
1082 • F	20		the Delaware sand section was not productive at that
O. BOX	21		location and at that depth in the section so we set a
209 SIMMS BLIDG. P.O. BO 1216 FIRUT NATIONAL	22		plug and when back up and perforated frm 4,565 to
1445 BL	23	=   	4,573 and I think the important point is that this well
209 51A	24		here has continually increased its oil production since
	25		it was put on production to the point that the assumption

dearnley, meier & mc cormick

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<pre>voir is downdip would be very speculative. ervoir is downdip would be very speculative. on we still don't know how much of the ction we don't know how many feet of 1 sand we have. We know we have a thin there because of the water production always made and we think for that reason uction any farther south would be very As far as this well here being affected, fected by the water drive of the well and nothing more than gas expansion and they are related. being pumped?</pre>
on we still don't know how much of the ction we don't know how many feet of 1 sand we have. We know we have a thin there because of the water production always made and we think for that reason uction any farther south would be very As far as this well here being affected, fected by the water drive of the well and nothing more than gas expansion and they are related.
ction we don't know how many feet of I sand we have. We know we have a thin there because of the water production always made and we think for that reason uction any farther south would be very As far as this well here being affected, fected by the water drive of the well and nothing more than gas expansion and they are related.
I sand we have. We know we have a thin there because of the water production always made and we think for that reason uction any farther south would be very As far as this well here being affected, fected by the water drive of the well and nothing more than gas expansion and they are related.
there because of the water production always made and we think for that reason uction any farther south would be very As far as this well here being affected, fected by the water drive of the well and nothing more than gas expansion and they are related.
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and nothing more than gas expansion and they are related.
they are related.
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low?
first like a dollar shotgun going off, real
AHIN: That's all I have
* * * * *
CROSS EXAMINATION
sion should decide this is an associated
es the Applicant have any recommendation
pool rules to permit the Jennings Federal
to produce more than an oil well on
и.

		1 A Well, we would just like to much
-		and we would just like to produce as a gas well up
	3. 3. 7.3	there, we would like whatever allowable we could get for
• • • • • • • • • • • • • • • • • • • •		gas. Actually, we planned to regulate the well to take
		4 approximately one million cubic feet of gas per day,
	: - 	that's what we did on our initial test and we haven't
	×	6 even had a show of oil on that well since it was
	<b>i i</b>	7 completed, all we have had is a little bit of salt water,
	mc cormick	
		that's all the condensate we have had, one and a half
	<b>00</b>	to two vallers of salt water a day.
		MR. STAMETS: That's all the questions I have.
		1 (Witness excused.)
	t t t t t t t t t t t t t t t t t t t	2 MR. STAMETS: Is there any additional testimony in
		지 같은 사람이 있는 것이 같은 것이 같은 것이 같은 것이 같이
		(No response.)
	S S S S S S S S S S S S S S S S S S S	and the there any statements?
		(no response.)
	11 - 12 21 - 21 21 - 21	MR. STAMETS: The Case will be taken under advisement.
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I, RICHARD E. McCORMICK, a Certified Shorthand Reporter, in and for the County of Bernalillo, State of New Mexico, uo nereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

REPORTEI

dearnley, meier & mc cormick SIMMI BL.DG.@P.O. BOX 1092@PHONE 245-6691@ALBUQUERQUE. NEW MEXICO 87103 1210 firitit national bank bldg. East-Albuquerque, new mexico 87108

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	······································	5	Cross-Examination by Mr. Stamets		9	
	×	6	WARREN SHAFER	-		
	rmic.	7	Direct Examination by Mr. Kellahin		11	
	mc cormick	8	Cross-Examination by Mr. Stamets		21	
	S M	9	COYLE SINGLETARY			
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	Form B 192		· .	·	· · · · · · · · · · · · · · · · · · ·	· · · · ·	E	1416	PTT 1	,
•	Form 9-330 (Rev. 5-63)	DEPARTI	UNI LED S MENT OF EOLOGICAI	THE IN	TERIOR	struct	afE* other in- tions on ise side) 5. LEAS	Form Budge SE DESIGNA	approved. 1 Bureau No. 42-1135 ATION AND SERIAL	155,5.
		MPLETION C	or recom	PLETION		AND LOC	6 16 1	-035929 INDIAN, ALL	5-A OTTEN OR TRIBE NA	AME
	1a. TYPE OF WEL	WELL	GAS WELL XX	( DRY []	Other		7. UNI	T AGREEME:	NY NAME	
	NEW WELL	WORK DEEP- OVES EN	PLUG DACK	DIFF.	Other	Re-Entry		M OR LEASI	in class i active com	
, ·	2. NAME OF OPERAT	non DEACUNOC	W-QIL-COM			· · · · · · · · · · · · · · · · · · ·	9. WEL	LL NO.	. Kodowa 1	
		& J Tower,				<u>.</u>	10. FIE	LED AND FOR	OL, OR WH.DCAT	
	4. LOCATION OF WEI	LL (Report location	clearly and in acc		iy State require	cmcute)*	11, \$5	C., T., R., M.,	OR BLOCK AND SURV	NEY
		ierval reported below					OR.	AREA 		
	At total depth	- sawe	• •	1.1.4		470.000		- 	T-25-S, R-	- 3 Z ~ E
			<u> </u>	14. PERMIT NO.		DATE ISSUED	PAI Le	UNTY OR RISH CA	13. STATE New Mex	
	15. DATE SPUDDED 9=14-71	16. DATE T.D. READ 9-17-71		сомрь. ( <i>Ready t</i> LO-6-71	to prod.) 18.	ELEVATIONS (D 3340	OF, RKB, RT, GR, ET		ELEV. CASINGHEAD 3338	
ţ.	-20. TOTAL DEPTH, MD . 4632		BACK T.D., MD & TV		LTIPLE COMPL.,	23. 1NTE		11 TOOLS	CABLE TOOLS	:
	24. PRODUCING INTER		i de la constante en la constan	BOTTOM, NAME (1	MD AND TVD)*				25. WAS DIRECTIONA SURVEY MADE	AL
	Botto	m 4589	Delaware Sa	ınd		1			Ko	
	26. TIPE ELECTRIC A	AND OTHER LOGS BUS		(	Joi High				was well cored ginally Dri	When 111ed
	28. CASINO SIZE	WEIGHT, LB./FT.	CASIN	G RECORD ( <i>Ref</i> (мр)   но	port all strings		MENTING RECORD		AMOUNT PULLER	·
	8-5/8	24	89	35 1	2-1/4	Cement	Circulated	1	None	
	4-1/2	9.5	463	26	7-7/8		125 sx.	•	None	
	29.	**	NER RECORD			30.	TERINO	RECORD		
м.,	<u></u>	TOP (MD) B		ACKS CEMENT*	SCREEN (MD)	) SIZE	DEPTH SI	ET (MD)	PACKER SET (MI	D)
	25	NCNE			[	23/8	453		4555	<u></u> <u>X</u> (1. 11
	31. PERFORATION AEC		una number)		32. DEPTH INTE	ERVAL (MD)		D KIND OF.	MATERIAL USED	
	4577 - 458	30, 4 holes		. <u></u>	4577-45			al. aci		 
									8	
	33.4 DATE FIRST PRODUCT	10N 1	ION MEMORY		DUCTION	nd ture	, ,p)	WEIT	18 i Denterra	
	DATE FIRST PRODUCT			ra C-122 A	ttached			shut-in)	US (Producing or	
	DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL-BBL.	GAS-MC	CF. WATER	8	GAS-OIL RATIO	
	FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR BATE	OIL-BBL.	GAS-Y	; !CF. 1	WATER-BBL.	OIL O	GRAVITY-API (COES.)	)
	34. DISPOSITION OF G.			Teat	<u> </u>	L		VITNESSED I	and the second	
	35. LIST OF ATTACH					······································	<u> rhii</u>	riba Le	troleum Con	_pany
		Inttachments				-	d from all avail-	able record	<del></del>	<u> </u>
	36. I hereby certify.	ginal Signed By D. BUTLER	0.D.Butler	TITLE	Presi	dent		DATE N	s lovember 4,	1971
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NE.	AEXICO (	DIL CO	DNSERVAT	ION COMMISSI	
WELL I	OCATION	AND	ACREAGE	DEDICATION	PLAT

Poins C-102 Supersedes C-128 Etteorive 1-155

	ctual footuae Locatu 660 stound Level Elev: 3240	teet from the S Producing Po Dela acreage dedict	Township 25 SOUTH WHE ated to the	SOUTH	ennings Del	LE LE Laware Gas	Ceditoried Acre- 160	Le
	O (etu il Feetuje Locati 660 (round Level Eler: 3340 1. Outline the 2. If these that	33 teet from the S Producting Fo Dela acreage dedict	25 SOUTH Ware ated to the	SOUTH	32 EAST 983 te annings Del	LE ter min under laware Gas	Ceditoried Acre- 160	
	660 tround Level Elev: 3340 1. Outline the	teet from the S Producing Po Dela acreage dedict	ware ated to the	J	983 te anning <b>s</b> Del	laware Gas	Ceditoried Acre- 160	
G	1. Outline the	Producing Fo Dela acreage dedict	ware ated to the	J	annings Del	laware Cas	Dedicated Acre- 160	
	3340 1. Outline the 2. If these that	Delu acreage dedict	ware ated to the				160	
	2. Hanne Than	une tease is		subject well by a	colored pencil	or hachure m		
	2. If have than interest and	une lease is	. 1				arks on the plat below.	
		royalty).	dedicaleo	to the well, outli	ne each and id	entify the ow	nership thereof (both a	s to worki
C.	3. If more than dated by con	one lease of a	different own unitization, l	ership is dedicat orce-pooling. etc	ed to the well, ?	, have the int	crests of all owners b	een consol
	Yes [	]No Ifa	inswer is "y	es?' type of conso	lidation			-
	If answer is this form if n		owners and	tract description	s which have a	ictually been	consolidated. (Use rev	erse side (
	No allowable	will be assign	ied to the we ) or until a n	ll until all intere on-standard unit,	sts have been eliminating su	consolidated ch interests,	(by communitization, has been approved by	unitization the Commis
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		1		.0	i		I hereby certify that the in	, formation co
		1	<i>k</i>	••	l.		tained herein is true and c	
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				<i>2</i>	1		BLACKROCK OI	l Compan
		1					April 19, 19	72
	Ζ.	f			1		Date	
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	REG	676						· · · · ·
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				660 <del>r</del>		0	md/or Land Surveyor	
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	330 660 '60	1320 1680 191	0 2310 2840	2000 160	0 1000 1	<b>BOQ O</b>		

NEW EXICO OIL CONSERVATION COMMSE 1 MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C+122 -Revised 9+1+65

Туро Теат				· <b>.</b>					Teat Lute				
	] Initial		[	Annual			Spe	cial	10-28-7	1			
Company					etton								
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Jennin					<u>Li Jaki</u>			r-	· · · · · · · · · · · · · · · · · · ·			0	
Completion Date	•		form poly		1	ind Back	TD		Elevation		Latue of	Leone Non	10
10-6-71			4632			4602			3340 G	L.	JENN	INGS FE	DERAL
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4-1/2"	<u>, 5<sup>18</sup></u>	·······	4.09	40.32			577	ڻ:* 	45.80		1		
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2-3/8"	4.6#		1.995	4584		From O			ENDED		0	<u>33 2</u>	<u>58 32E</u>
Type Well - Sing	10 - 19030	հետանութ	- G.G. or G.C	. Muttiplo			Packor Se				County		
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SI			Mercury	)			1781.	0		CHOKI			16 DAYS
1. 4"_OWT		<u>50"</u>	13.0			88	1571.	Q	84	10/64			0,75 HRS
2. 4" OWT		<u>50''</u>	20.0	1		86	-1526	0	- 84	11/64	, II		0.50 HRS
3.   4" OWT	3.	50"	30.0			83	1448.	0	83	13/64	511		0.50 HRS
4. 4" OWT		50"	44.0			78	1340,	0	80	15/64	4**		0.75 HRS
5.													
				RAT	E OF	FLOW	CALCUL	ATIC	DNS				
Coeffic	lont					Flow	v Tump.	1	Gravity		Supor		
			$\sqrt{h_w P_m}$		0100	- I	actor	1	Factor	1	npress,	Re	ite of Flow
NO. (24 Ho	(100			F	m	1	Fu		Fa	Fac	lor, Ppv		Q, McId
1 VOLUME	S OBTA	INEL	FROM GC	R MANUA	L-PA	GES 22	2/23 AN	5				71	1.3
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2 2369.1	1		383.6	835.6	14		76	_					
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COMPANY BLACKROCK	OIL COMPAN	IY LEASE	JERNINGS	FEDERAL	WE	LL NO.	1		DATE	10-28-71·
OCATION: Unit	SW SE "O'	Section	33	Tow	oshin	25~5	Randa	32-E	المراجب والمراجب والمراجب	
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4584					•				-	
		F <sub>1</sub> -	018231 SECOND	GH <u>3415</u>			P <sub>c1</sub>	626	$T_{c_1} - \frac{33}{1}$	9 ABLE IX & X
	i	1			1			1	· · · · · · · · · · · · · · · · · · ·	
1 Q <sub>m</sub>	TRIAL 1	TRIAL 2	TRIAL 1	1	TRIAL 1		TRIAL 1	TRIAL 2		
2 T., (W.H. 9R)	.7113	. 7113	.9135	.9135	1.172	1.172	1.510	1.510		
B T <sub>s</sub> (B.H. °R)	044	544	546	546	543	543	538	538		
$T = (\underline{1}_{w} + \underline{1}_{s})$	556	556	556	556	556	556	556	556	<u> </u>	
2 5 Z (Est.)	550	550	551	551	550	550	547	547	· · · · · · · · · · · · · · · · · · ·	
5 TZ	. 850	.841	.835	.846	.850	.847	.849	.850		
GH/TZ	467.5	462,6	460.1	466.1	467.5	465.9	464.4	465.0		
3 e <sup>s</sup> (Table XIV)	7,305	7.382	7,422	7.327	7.305	7.330	7.354	7.344	· · · · · · · · · · · · · · · · · · ·	
9 1 - e <sup>-\$</sup> (Table XIV)	1.316	1.319	1.321	1.316	1.315	1.316	1.318	1.317		-
$\frac{P_{t}}{P_{t}}$	.240	.242	.243	.240	.240	.240	.241	.241	·	
1 P; 2/1000	1584.2	1548.2	1539.2	1539,2	1461.2	1461.2	1353.2	1353.2		
2 F <sub>1</sub> (Table XV)	2509.7	2509.7	2369.1	2369.1	2135.2	2135.2	1831.2	1831.2	. <u> </u>	
$F_{c} = F_{T} TZ$	.018231	.018231	.018231	.018231	,018231	.018231	.018231	.018231		
$F_{\rm c} Q_{\rm m}$	8,522	8,434	8,388	8.497	8.523	8,494	8,466	_8.477		
51./H (F <sub>c</sub> .Q <sub>m</sub> ) 2	6.062	5.999	7.662	7.762	9.989	9.955	12.78	12.80		
5 F <sub>w</sub> =L/H(F <sub>c</sub> Q <sub>in</sub> ) <sup>2</sup> (1-e <sup>-1</sup>	36.75	35,99	58,71	60.25	99.78	99.10	163.3	163.8		-
$\frac{1}{2} P_{w}^{2} = P_{t}^{2} + F_{w}$		8.710	14.27	14,46	23,95	23.78	39.36	39,48		
$3 P_s^2 = e^s P_w^2$	2518.5	2518.4	2383.4	2383.6	2159.1	2159.0	1870.6	1870.7		
9 P <sub>s</sub>	3314.3	3321,7	3148.4	3136.8	2839.2	2841.2	2465.5	2463.7		
$\frac{1}{2} P = (\frac{P + P}{2})$	1820.5	1.822.6	1774.4	1771.2	1684.9	1685.5	1570.2	1569.6		
1 P <sub>1</sub> =(P/P <sub>c1</sub> )	1702.3	1703.4	1656.8	1655.2	1573.1	1573.4	1461.7	1461.4		
$2 T_{I} = (IVT_{CI})$	2.72	2.72	2.65	2.64	2.51	2,51	2.33	2.33		
(Table XI)	1.62	1.62	1.63.	1.63	1.62	1.62	1.61	1.61		
	.841	.841	.846	.846	.847	.847	.850	.850		

One copy to be filed in District Office (Work copy occeptable)

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				as, Dolararo Gas 1	formation,		••
		Lachrock Oil Co.					•
	Secured from	CUT NT ACCUTOR	10007 <u>81</u> 10007 <u>81</u>		State *	່ານ້ຳການໂຄລ	•
	Purpose S	United a margin H		Sourced by the second sec	en de suite de la companya de la com		-
	- Sampling Conditions: Al	mos. temp. 72	"F; Pressure on	ounly. Loa Bomb ib	s./sq. in.; Bbls oil/da	у	i
	t Volume/day	.015 862	: Weather condition	ons at time of sampling			:
	Field Gas Pressure	P:	SIG: Line Pressure	PSIC	· · · · · · · · · · · · · · · · · · ·		
			(No to be to be				
			Chrozo	Analysis 14.00 r	'SI at 60°F		
		Mol. %	Liq. %	Propane	Colc. G.P.M.		
	Carbon Dioxide			Ico Butono	Calc. G.P.M.		_
	Oxygen			Nor-Bulone	Calc. G.P.M.	257	_
	Nitrogen			Pentane+	Calc. G.P.M.		-
	Hydrogen Sulfide			Propage -1-	Calc. G.P.M.	1.1.75	
					cite cv. ft. W.B.		~`
	Methane		an a	Cala Sanifi	Gravily		
	Ethane						×
	Propane Iso-Bulane			Observed A		· · · · · · · · · · · · · · · · · · ·	
	Nor-Butane						al ann
				$H_2S + CO_2 B$		_Negativo	
	Iso-Pentane	18		H <sub>2</sub> S grains/1		llogetiva	-
	Nor-Pentane	.19		Mercaptans g	jr/100 cu. fl.		-
	l Hauran	· · · · · · · · · · · · · · · · · · ·	·	Calc. Vap. Pr	ess. #7sq. in.	با است است. است الم	_
	Hexanes			Reid Vop. Pro			-
	Heptanes Plus	.12					
	incpicites rites	<b>بالملك ن</b> و		Cu. Ft. gas/G	Sal. Liq.	• • • • • • • • • • • • • • • • • • •	_
	Totol	100.00	100.00	- Starse			
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		and the second second		Excess Butana		0.	
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Form 9-330												
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WELL CO	MPLETION	- OR - RI	ECOM	PLETIC	ON R	EPORT	ANE	D-LOC	3*	6. 18 186L	N/A	TTEL OR TRIBE NAM
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12-30-71	16. DATE T.D. R	· · · · ·	II. DATE C	1-25-	•	prvu.)   18.	ELEV,		F, 268, RT 2 <sup>1</sup> G.L	, GR, ETC.)		DEDI. CASINGHEAD
20. TOTAL DEPTH, MD	1	G, BACK T.D.	., MD & TVI	D 22.	IF MULT	IPLE COMPL.,		23. INTE		ROTARY T	00LS	CABLE TOOLS
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24. PRODUCING INTER	RVAL(S). OF THIS	COMPLETIO	ON-TOP, B	1 201101, N	NAME (MI	D AND TYP		-	<u> </u>	R	2	5. WAS DIRECTIONAL
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26. TYPE ELECTRIC					$\sqrt{1}^{0}$	J Hulk	$\psi_{j\hat{t}}$	): <u>~</u> ~{	<u></u>		27. W	TAS WELL COBED
	AND OTHER LOCS : Guard ~ Den		CASING	G RECOR	D (Repo	MH C	N Ret in	well)	\ <sup>1</sup> 51		27. w	NO NO
25. Casino size	Guard - Den	nsity	PTH JET	(ND)	HOLI	E SIZE		СЕМ	BALL R	ECORD	27. w	NO
25 casino size 8-5/811	Guard - Den	nsity	рти зет 901	(мо) L <sup>1</sup>	HOLI	E SIZE 11"	5	сем 00 sx		ECORD	27. w	NO AMOUNT PULLED NORE
25. Casino size	Guard - Den	nsity	PTH JET	(мо) L <sup>1</sup>	HOLI	E SIZE	5	СЕМ	DI ENTING R	ECORD	27. w	NO
25 casino size 8-5/811	Guard - Den	nsity	рти зет 901	(мо) L <sup>1</sup>	HOLI	E SIZE 11"	5	сем 00 sx	DI	ECORD	27. w	NO AMOUNT PULLED NORE
25 casino size 8-5/811	Guard - Den weight. LB./ 24# 9.5#	nsity	901 901 4620	(мо) L <sup>1</sup>	HOLI	E SIZE 11"	5	сем 00 sx		ECORD		NO AMOUNT PULLED NORE
28. casino size 8-5/8 <sup>11</sup> 4-1/2	Guard - Den weight. LB./ 24# 9.5#	ns1ty /FT. DE	PTH 357 901 4620 ECORD	(мо) L <sup>1</sup>	ноіл 7-	E SIZE 11"	5 ]	сем 00 sx 25 sx	T		CORD	NO AMOUNT PULLED NORE
25. CASINO SIZE 8-5/8" 4-1/2 29.	Guard - Den weight. 18./ 24# 9.5#	ABITY	PTH 3ET 901 462( ECORD (MD) 3.	(яо) L' )'	ноіл 7-	E SIZE 11" 778"	5	сем 600 вх 25 бх 30.	T(	BING RE	CORD	NO
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE	Guard - Den WEIGHT. LB./ 24# 9.5#	LINER RH BOTTON ( N O N	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778"	5 ] ]	CEM 600 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup>		UBING RE EPTH SET 4451	CORD (MD)	NO AMOUNT PULLED NORE NORE PACKEB SET (MD) 4451
25. CASINO SIZE 8-5/8" 4-1/2 29.	Guard - Den WEIGHT. LB./ 24# 9.5#	LINER RH BOTTON ( N O N	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778" SCREEN (MD 3°.	5 ]]	сем 00 вх 25 бх 30. 512р 2-3/8 <sup>1</sup> В, SHOT,	TU TU FRACTU	UBING RE EPTH SET 4451 <sup>1</sup> RE, CEME	CORD (ND) NT SQU	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 EEZE, ETC.
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE	Guard ~ Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st	LINER RH BOTTON ( N O N	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778" SCREEN (MD 3°. DEPTH INT.	5 ]	сем 600 sx 25 sx 30. size 2-3/8 <sup>1</sup> D, shot, (ND)	TU DI FRACTU AMO	UBING RE EPTH SET 4451 <sup>1</sup> RE, CEME UST AND E	CORD (MD) NT SQU IND OF 1	NO AMOUNT PULLED NORE NORE PACKEB SET (MD) 4451
25 CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC	Guard ~ Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st	ISITY	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589"-4	5 ]	сем 600 sx 25 sx 30. size 2-3/8 <sup>1</sup> D, shot, (ND)	FRACTU 43101 250	UBING RE EPTH SET 4451 <sup>1</sup> RE. CEME UNT AND E gal, A	CORD (ND) NT SQU IND OF : cld	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 ' EEZE, ETC. MATERIAL USED
25 CASINO SIZE 8-5/8" 4-1/2 29. 8IZE 31. PERFORATION REC 4589 '-459	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 h	ABITY	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584'	5 ]] ]) ACI ERVAL 4594	сем 00 sx 25 sx 30. size 2-3/8 <sup>1</sup> р, shot, (ND)	TTU FRACTU 250 Bake	UBING RE EPTH SET 4451 <sup>1</sup> RE. CEME UNT AND & gal. Au r Mode	CORD (MD) NT SQU IND OF : c1d 1 N B	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 EEZE, ETC.
25 CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 h	ISITY	PTIL SET 901 4620 ECORD (MD) 3, I E	(яо) L' )'	ноіл 7-	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589"-4	5 ]] ]) ACI ERVAL 4594	сем 00 sx 25 sx 30. size 2-3/8 <sup>1</sup> р, shot, (ND)	TTU FRACTU 250 Bake	UBING RE EPTH SET 4451 <sup>1</sup> RE. CEME UNT AND E gal, A	CORD (MD) NT SQU IND OF : c1d 1 N B	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 ' EEZE, ETC. MATERIAL USED
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC 4589'-45' 4565'-45' 33.*	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st 94 - 5 H 73 <sup>1</sup> - 5 H	ABITY	PTH 327 901 4620 ECORD (MD) 3, 1 E	(XD) L' )' ACRS CEX	PROD	E SIZE 11" 778" SCREEN (MC 3?. DEPTH INT 4589"-4 4584" 4565"-4 UCTION	5 ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ]	СЕМ 600 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (МD) 1	FRACTU AMO 250 Bake 500	UBING RE EPTH SET 4451 <sup>1</sup> RE. CEME UNT AND & gal. Au r Mode	CORD (MD) NT SQU IND OF : c1d 1 N B	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 ' EEZE, ETC. MATERIAL USED
25. CASINO SIZE 8-5/8" 4-1/2 29. 8IZE 31. PERFORATION REC 4589'-459 4565'-455 33.* DATE FIRST PEODUCT	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st 94 - 5 H 73 <sup>1</sup> - 5 H	ABITY	PTH 327 901 462( ECORD (MD) 3. [ E mber]	(MD) L' D' ACKS CEX	PRODI	E SIZE 11" 778" SCREEN (MD 3? DEPTH INT 4589'-4 4584' 4565'-4	5 ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ]	СЕМ 600 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (МD) 1	FRACTU AMO 250 Bake 500	UBING RE EPTH SET 4451 RE. CEME UNT AND E gal. Av r Mode. gal. Av	CORD (MD) NT SQU (MD) IND OF cld I N B cld	NO AMOUNT PULLED NORE NORE PACKER SET (MD) 4451 ' EEZE, ETC. MATERIAL USED
28. CASINO SIZE 8-5/8" 4-1/2 29. 8IZE 31. PERFORATION REC 4589'-45 4565'-45 33.* DATE FIRST PRODUCT 2-2-72	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 H 73 <sup>†</sup> - 5 H	ABITY	PTH SET 901 462( ECORD (MD) 3. I E mber) THOD (Flo F1	(MD) L' D' ACKS CEX	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589"-4 4584" 4565"-4 UCTION mping—size of	5 ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ]	CEM 600 SX 25 SX 30. S12E 2-3/8 <sup>1</sup> D, SHOT, (ND) 1 1 pe of pum	TU PRACTU AMO 250 Bake 500	UBING RE EPTH SET 4451' RE, CEME gal. A gal. A gal. A gal. A SI,	CORD (MD) NT SQU IND OF : cld 1 N B cld L STATU Mul-in) Walt	NO AMOUNT PULLED NONE SET (MD) 4451' SEEZE, ETC. MATERIAL USED S (Producing or Ing on tank
25 CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC 4589 '-459 4565 '-455 33.* DATE FIRST PRODUCT 2-2-72 DATE OF IZET	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 h 73' - 5 h FION PRODUCT	ABILY	PTH SET 901 462( ECORD (MD) 3. I E mber) THOD (Flo F1 E SIZE	(MD) L' D' ACKS CEX	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589"-4 4584" 4565"-4 UCTION mping—size of OIL—BBL.	5 ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ] ]	CEM 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (MD) 1 1 pe of pum GAS-MC	TU FRACTU AMO 250 Bake 500 P)	UBING RE EPTH SET 4451 <sup>1</sup> RE, CEME gal. A gal. A gal. A gal. A SI, WATER-B	CORD (MD) NT SQU IND OF : cld 1 N B cld L STATU Mul-in) Walt	NO AMOUNT PULLED NONE NONE NONE PACKER SET (MD) 4451' EEZE, ETC. MATERIAL USED ridge P!
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC 4589'-459 4565'-457 33.* DATE FIRST PRODUCT 2-2-72 DATE OF LEST 2-3-72	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 h 73' - 5 h NON PRODI HOURS TESTED 24 hrs.	ABILY	PTH SET 901 462( ECORD (MD) 8. IE mber) THOD (Flo F] E BIZE /64''	(MD) L' D' ACKS CEN ACKS CEN AC	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping—size of 011—BBU. 100	5 3 3 0) ACI ERVAL 4594 4573 and ty	CEM 600 SX 25 SX 30. S12E 2-3/8 <sup>1</sup> D, SHOT, (ND) 1 1 pe of pum	TTU PRACTU AMO 250 Bake 500 P) F. 5	UBING RE EPTH SET 4451 RE, CEME UST AND E gal. Av r Mode gal. Av gal. A SI, WATER-B 0	CORD (ND) NT SQU IND OF : CId I N B CId L STATU Huf-in) Wait BL.	NO AMOUNT PULLED NONE NONE PACKER SET (MD) 4451' EEZE, ETC. MATERIAL USED ridge P?
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC 4589'-459 4565'-457 33.* DATE FIRST PRODUCT 2-2-72 DATE OF LEST 2-3-72 FLOW. TUBING PRESS.	Guard - Den         WEIGHT. LB./         24#         9.5#         TOP (MD)         COED (Interval, si         94 - 5 h         73 <sup>†</sup> - 5 h         HOURS TESTED         24 hrs.         CASING PRESSUR	ABILY AFT. PE. AFT. P	PTH SET 901 462( ECORD (MD) 3. I E mber) THOD (Flo F1 E SIZE	(MD) I J ACKS CEN ACKS	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping—size of 011—BBU. 100 GAS—1	5 3 3 0) ACI ERVAL 4594 4573 4573 and ty	CEM 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (MD) 1 1 pe of pum GAS-MC	TTU TTU PRACTU AMO 250 Bake 500 P) F. 5	UBING RE EPTH SET 4451 RE, CEME UST AND E gal. Av r Mode gal. Av gal. A SI, WATER-B 0	CORD (ND) NT SQU IND OF : CId I N B CId L STATU Huf-in) Wait BL.	NO AMOUNT PULLED NONE NONE NONE PACKER SET (MD) 4451' EEZE, ETC. MATERIAL USED ridge P1 5 (Producing or ing on tank MAS-OIL RATIO 1250 REVITY-API (CORR.)
25. CASINO SIZE 8-5/8" 4-1/2 29. SIZE 31. PERFORATION REC 4589'-459 4565'-457 33.* DATE FIRST PRODUCT 2-2-72 DATE OF LEST 2-3-72	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st 94 - 5 H 73 <sup>1</sup> - 5 H RION PRODUCE HOURS TESTED 24 hrs. CASING PRESSUR 950#	ABILY AFT. PE. AFT. P	PTH SET 901 462( ECORD (MD) 3. I E mber) Thod (Flo F1 E SIZE /64'' LATED UCB RATE	(MD) L' D' ACKS CEN ACKS CEN AC	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping—size of 011—BBU. 100 GAS—1	5 3 3 0) ACI ERVAL 4594 4573 and ty	CEM 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (MD) 1 1 pe of pum GAS-MC	F. 5 0	UBING RE EPTH SET 4451 RE, CEME UST AND E gal. Av r Mode gal. Av gal. A SI, WATER-B 0	CORD (MD) NT SQU IND OF T CId I N B CId L STATU Walt BL.	NO AMOUNT PULLED NONE NONE PACKER SET (MD) 4451 EEZE, ETC. MATERIAL USED ridge P1
25. CASINO SIZE 8-5/8" 4-1/2 29. 81ZE 31. PERFORATION REC 4589'-45 4565'-45 33.* DATE FIRST PRODUCT 2-2-72 DATE OF TEST 2-3-72 FLJW. TUBING PRESS. 750#	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, st 94 - 5 H 73 <sup>1</sup> - 5 H RION PRODUCE HOURS TESTED 24 hrs. CASING PRESSUR 950#	ABILY AFT. PE. AFT. P	PTH SET 901 462( ECORD (MD) 3. I E mber) Thod (Flo F1 E SIZE /64'' LATED UCB RATE	(MD) I J ACKS CEN ACKS	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping—size of 011—BBU. 100 GAS—1	5 3 3 0) ACI ERVAL 4594 4573 4573 and ty	CEM 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (MD) 1 1 pe of pum GAS-MC	F. 5 0	ZBING RE EPTH SET 4451 RE. CEME UNT AND E gal. Au r Mode gal. Au gal. Au sl, NATEA-B O DBL.	CORD (MD) NT SQU IND OF 1 CId I N B CId L STATU Mul-in) Walt BL. OIL G (OIL G ESSED B	NO AMOUNT PULLED NONE NONE PACKER SET (MD) 4451 EEZE, ETC. MATERIAL USED ridge P1
25. CASINO SIZE 8-5/8" 4-1/2 29. 81ZE 31. PERFORATION REA 4589'-45! 4565'-45! 4565'-45! 33.* DATE FIRST PRODUCT 2-2-72 DATE OF TEST 2-3-72 FLOW. TUBING PRESS. 750# 34. DISPOSITION OF G	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COED (Interval, si 94 - 5 H 73' - 5 H 73' - 5 H 10N PRODU HOURS TESTED 24 hrs. CASING PRESSUR 950# DAS (Sold, used for	ABILY AFT. PE. AFT. P	PTH SET 901 462( ECORD (MD) 3. I E mber) Thod (Flo F1 E SIZE /64'' LATED UCB RATE	(MD) I J ACKS CEN ACKS	PRODI	E SIZE 11" 778" SCREEN (MC 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping—size of 011—BBU. 100 GAS—1	5 3 3 0) ACI ERVAL 4594 4573 4573 and ty	CEM 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (MD) 1 1 pe of pum GAS-MC	F. 5 0	ZBING RE EPTH SET 4451 RE. CEME UNT AND E gal. Au r Mode gal. Au gal. Au sl, Sl, WATEA-B O DEL.	CORD (MD) NT SQU IND OF T CId I N B CId L STATU Walt BL.	NO AMOUNT PULLED NONE NONE PACKER SET (MD) 4451 EEZE, ETC. MATERIAL USED ridge P1
25. CASINO SIZE 8-5/8" 4-1/2 29. 8IZE 31. PERFORATION REC 4589'-459 4565'-459 33.* DATE FIRST PRODUCT 2-2-72 DATE OF LEST 2-3-72 FLOW. TUBING PRESS. 750# 34. DISPOSITION OF C Vented 35. LIRT OF ATTACE C-123, C-	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COBD (Interval, si 94 - 5 H 73' - 5 H 73' - 5 H 100N PRODU HOURS TESTED 24 hrs. CASING PRESSUR 950# DAS (Sold, used for MONTO 104, Deviat	ABILY AFT. DE. AFT. D	PTH SET 901 462( ECORD (MD) 3. I E mber) THOD (Flo F1 E SIZE /64'' /LATED DUR BATE ed, efc.) STVEY,	(MD) L' D' ACKS CEM ACKS CEM AC	HOLL 7- MENT• PRODI PRODI B lift, pur S FOR ERICD BL. DO Logs	E SIZE 11" 778" SCREEN (ME 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping-eize d OIL-BBL, 100 CAS-5 11	5 3 3 0) ACI ERVAL 4594 4573 and ty 4573 and ty	СЕМ 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (ND) 1 1 pe of pum GAS-MC 12!	TU TU FRACTU AMO 250 Bake 500 F. 5 WATER-B 0	UBING RE EPTH SET 4451 RE. CEME UNT AND E gal. Au gal. Au gal. Au gal. Au sl, NATER-B 0 BEL. TEST WITN Leon	CORD (MD) NT SQU IND OF 5 CId 1 N B CId L STATU Wait BL.   OIL G ESSED B TOOM	NO AMOUNT PULLED NONE NONE PACKEB SET (MD) 4451 EEZE, ETC. MATERIAL USED ridge P1 5 s (Producing or ing on tank UAN-OIL RATIO 1250 REVITY-API (CORR.) 41° T bs
28 CASINO SIZE 8-5/8" 4-1/2 29. 8IZE 31. PERFORATION REC 4589'-459 4565'-459 33.* DATE FIRST PEODUCT 2-2-72 DATE OF TEST 2-3-72 FLOW. TUBING PRESS. 750# 34. DISPOSITION OF C Vented 35. LIBT OF ATTACE	Guard - Den WEIGHT. LB./ 24# 9.5# TOP (MD) COBD (Interval, si 94 - 5 H 73' - 5 H 73' - 5 H 100N PRODU HOURS TESTED 24 hrs. CASING PRESSUR 950# DAS (Sold, used for MONTO 104, Deviat	ABILY AFT. DE. AFT. D	PTH SET 901 462( ECORD (MD) 3. I E mber) THOD (Flo F1 E SIZE /64'' /LATED DUR BATE ed, efc.) STVEY,	(MD) L' D' ACKS CEM ACKS CEM AC	HOLL 7- MENT• PRODI PRODI B lift, pur S FOR ERICD BL. DO Logs	E SIZE 11" 778" SCREEN (ME 3°. DEPTH INT 4589'-4 4584' 4565'-4 UCTION mping-eize d OIL-BBL, 100 CAS-5 11	5 3 3 0) ACI ERVAL 4594 4573 and ty 4573 and ty	СЕМ 00 SX 25 SX 30. SIZE 2-3/8 <sup>1</sup> D, SHOT, (ND) 1 1 pe of pum GAS-MC 12!	TU TU FRACTU AMO 250 Bake 500 F. 5 WATER-B 0	UBING RE EPTH SET 4451 RE. CEME UNT AND E gal. Au gal. Au gal. Au gal. Au sl, NATER-B 0 BEL. TEST WITN Leon	CORD (MD) NT SQU IND OF 5 CId 1 N B CId L STATU Wait BL.   OIL G ESSED B TOOM	NO AMOUNT PULLED NONE NONE PACKEB SET (MD) 4451 EEZE, ETC. MATERIAL USED ridge P1 5 s (Producing or ing on tank UAN-OIL RATIO 1250 REVITY-API (CORR.) 41° T bs
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## NE MEXICO OIL CONSERVATION COMMISSIE

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### RAILROAD COMMISSION OF TEXAS OIL AND GAS DIVISION

Form	W-12
(1-	1.721

No

•	UIL AND GAS DIVISION	6 RRC District
	10N REPORT ed With Each Completion Report.)	7. RRC Lease Number. (Oil completions only)
1. FIELD NAME (as per RRC Records or Wildcat)	2. LEASE NAME	8. Well Number
	Union Federal	2
3. OPERATOR Blackrock Oil Company 4. ADDRESS		9. RRC (dentification Number (Gas completions only)
1000 V & J Tower Midland, Te 5. LOCATION (Section, Block, and Survey)	<u>xas 79701</u>	10. County
NE/4 Sec. 4; T-26-5; K-32-E		Lea, N.M.
REC	ORD OF INCLINATION	
	ale of 14 Displacement per	

*11. Measured Depth (leet)	12. Course Length (Hundreds of feet)	*13. Angle of Inclination (Degrees)	14. Displacement per Hundred Feet (Sine of Angle X100)	15. Course Displacement (feet)	16. Accumulative Displacement (feet)
495	495	1/4	.44	2.18	-2-18
650	155	1/4	.44	.68	2.86
925	275	1/2	.87	2.39	5'.25
1406	481	3/4	1.31	6.30	11.55
1915	509	3/4	1.31	6.67	18.22
2410	495	1 -	1.75	8.66	26.88
2900	490	3/4	1.31	6.42	33.30
3800	900	1 1/2	2.62	23.58	56.88
4620	820	2 -	3.49	28.62	85.50
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If additional space is needed, use the reverse side of this form.

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X no

17. Is any information shown on the reverse side of this form?  $\Box$  yes 18. Accumulative total displacement of well bore at total depth of <u>4620</u> 85.50 feet = \_\_\_\_ \_\_\_ feet.

😧 Drill Pipe \*19. Inclination measurements were made in 🗕 🔲 Tubing Casing Open hole

20. Distance from surface location of well to the nearest lease line

\_ feet. 21. Minimum distance to lease line as proscribed by field rules feet.

22. Was the subject well at any time intentionally deviated from the vertical in any manner whatsoever?

(If the answer to the above question is "yes", attach written explanation of the circumstances.)

Capitan Drilling Company, Inc. Name of Company Telephone: 915 362-2323 Area Code	Operator Tejephone:
Marvin L. Smith - VicePresident Name of Person and Tille (type or print)	Name of Person and Title (type or print)
INCLINATION DATA CERTIFICATION I declare under penalities prescribed in Article 6036c, R.C.S., that I am suthorized to make this certification, that I have personal knowledge of the inclination data and facts placed on both sides of this form and that such data and facts are true, correct, and complete to the best of my knowledge. This certification covers all data as indicated by asteriaks (*) by the item numbers on this form. Signature of Authorized Representative	OFERATOR CERTIFICATION I declare under peraities prescribed in Article 6036C. R.C.S., that I am authorized to make this certification, that I have personal knowledge of all information presented in this report, and that all data presented on both sides of this form are true, correct, and complete to the best of my know- ledge. This certification covers all data and information presented herein except inclination data as indicated by asterisks (*) by the item numbers on this form. Signature of Authorized Representative

\* Designates items certified by company that conducted the inclination surveys.

				TEST TICKET NO. 283	4
		FOSTER TES Odessa	-	ORDER NO.	
		USLIX.			0 1.171
• •		مانه المراجع ا		DATE JANUARY	3, 1972
na da antes a companya da antes	COMPANY BLACKROCK	GIL COMPANY	LEASE UNION FED	ERAL WELL NO	2
	FIELD WILDCAT	COUNTY 1.EA	STATE NEW MEXIC	O TEST NO.	
	MAIL CHARTS TO AS DI	RECTED	· · · · · · · · · · · · · · · · · · ·		
	MAIL INVOICE TO BLAC	KROCK OIL COMPANY. 1	000 V C J TOWER	, HIDLAND, TE	XAS 79701
	FORMATION SESSON DELENIADE	IOTAL DEPTRI	20 MAIN HOLE	/_/.8 RAT HO	
	INTERVAL TESTED FROM 45301				NUMBER 2
	DRILL PIPE SIZE . 4" F.H.				2.25
	TIME PACKER SET 4:15 A.M.				
	INITIAL FLOW	MINS. 2ND FLOW	MINS.	FINAL FLOW	<u>60</u> MINS
	INITIAL SHUT-IN 60	MINS. 2ND SHUT-IN	MINS.	FINAL SHUT-IN	1.20 MINS
	RECORDER TYPE	_ CAPACITYS550#,_6600#	NUMBER: TOP2347		_2755
	TOP RECORDER DEPTH 45654 MAX. TEMP. 95°		BOTTOM RECORDER DEPTH	4570'	r / 0
	MAX. TEMP. 90	TEMP, DEPTH 4000	CHOKE SIZE TOP	1" ADJ. BOTTOM _	5/8
	MUD TYPE BRINE MUD WEIGI				
	FLUID CUSHION TYPE	· · · · · · · · · · · · · · · · · · ·			
	CONVENTIONAL TEST YES				
	SECOND ASSEMBLY YES				
	SAMPLER YES NO				C
	SURFACE ACTION. OPENED TOO	and the second			
an an an an the second	TOOL WITH WEAK INCR				ON 1/4" FO
	45 MINUTES, GAS TO	SURFACE IN 45 MINUTE	<u>S TO SMALL TO M</u>	EASURE.	· · · · · · · · · · · · · · · · · · ·
			and the second		
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	RECOVERY GAS IN DRILL	PIPE, 60' FREE OIL 4	1 GRAVITY @ 50°	52' OIL AN	D WATER CAS
an a		ER OIL AND GAS CUT D		-	
	-		en e		
	PIT SAMPLE= C	HLORIDES 190,000 P.F	M., RESISTIVIT	Y .05 @ 60°.	
	TEST CHLORIDE	S = 177,000 P.P.M., R	EC, .08 @ 60°.		
· · · · · · · · · · · · · · · · · · ·	REMARKS: 15 MINUTES PR	E FLOW TIME.		<b></b>	
		ILI. COLLAR LENGTH.			
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		RECORDER NO. 2755	RECORDER NO.	· · · · · · · · · · · · · · · · · · ·	ORDER NO.
	A INITIAL HYDROSTATIC PRESSURE	<u>2362</u> P.S.I.	·	P.S.I.	P.S.I.
	B INITIAL SHUT IN PRESSURE	<u>2369</u> P.S.I.	B-1	P.S.I.	P.S.I.
	C INITIAL FLOY PRESSURE	<u> </u>	C-1	P.S.I.	P.S.1.
	D FINAL FLOW PRESSURE	<u>265P.S.I.</u>	D-1	P.S.I.	P.S.I.
	E FINAL SHUT IN PRESSURE	<u>2359 -                                   </u>		P.S.I.	P.S.I.
	F TINAL HYDROSTATIC PRESSURE	<u>2382</u> P.S.I.		P.S.I.	P.S.I.
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#### FOSTER TESTERS, INC. Di STEM TEST PRESSURE BREAKDOWN RE. 'S

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## FOSTER JESTERS, RIC., Odessa, Texas DRILL STEM TEST CALCULATIONS AND ANALYSIS OIL RESERVOIR

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	OIL RESERVE				<b>.</b>
COMPANY BLACKROCK OIL COMP	ANY co	UNTY LEA		STATE NEW	MEXICO
EASE UNION FEDERAL WELL	2TEST_NO		n e serve e card		
TEST DEPTHS PRE	SSURE DATA	REC	OVERY AND F	LUID DATA	
ELEVATION	TIC PRESS. IHP $2362$ plig IC PRESS. AIP $2382$ plig RESS. ISIP $2369$ plig PRESS. ISIP $168$ plig DECS. FFP $265$ plig	cc size dc length3 dp size4 surface oil prod oil recovery	3 fi. OIL GRAY TEMP MUD WT bbls. OIL VISC	ECOVERY V. 41 °API @ 95 °F @ 16,0	<u>50</u> F 11 2 # 1901. 4 6CO
RECORDER NO. 2755 FINAL SHUT IN PR	ESS. FSIP 2359 psig	GAS RECOVERY	GOR	bo:537	_11/_0_ v/v.
	CALCULATIONS AND	ANALYSIS			
CALCULATIONS	FORMULA		· .	RESULTS	
1. EXTRAPOLATED STATIC Initial PRESSURE Final	Poi Poi			2175	psig psig
2. RESERVOIR PRESSURE GRADIENT	$G = \frac{Po_i}{l}$			0.475	psi/ft.
3. CALCULATED HYDROSTATIC PRESSURE	$CHP = L \frac{MW}{8.33}(.433)$			2378	psig
4. PRESSURE ELEMENT ACCURACY	$E = \frac{IHP}{CHP} (100)^{\circ}$	-		99.6	%
5. SLOPE OF FSIP (Horner Plot)	м			470	psi/cycle
6. OIL PRODUCTION RATE	$Q_o = 24 \frac{\text{Rec.}}{\text{I}}$			62.7	bopd
7. TRANSMISSABILITY	$\frac{K_{oh}}{\mu} = \frac{162.6  Q_o  B_o}{M}$			2 3.8	md-ft.
8. PERMEABILITY CAPACITY	$K_{oh} = \frac{K_{oh}}{\mu_o} \mu_o$			38.2	md-ft.
9. EFFECTIVE OIL PERMEABILITY	$K_o = \frac{K_o h}{h}$ , $h = -$	40'	····	0.955	md.
10. DAMAGE RATIO	$DR = .183 \frac{Po_i P_f}{M}$			0,74	······································
11. PRODUCTIVITY INDEX	$PI = \frac{Q_o}{Poi - Pi}$	tin di seconda di s	······································	0,033	bopd
12. PRODUCTION WITH DAMAGE REMOVED	$Q_{0}$ , = $Q_{0}$ DR	· · ·	and Restrict one design and an approximation	62.7	bopd
13. APPROX. RADIUS OF. INVESTIGATION	a 🚔 VKoT			8.5	ft.
REMARKS: THIS IS A TEST OF WELL BORE DAMAGE, AS CALC DURING THIS TEST. IT_IS SHUT IN PRESSURES REFLEC AS A RESULT OF BY PASSING NORMAL BUILDUP DURING TH CALCULATIONS ARE APPROXID TO BE REASONABLE. RECOV PROBABLY HIGHER THAN NOU PLETION CHECK CAN BE MAD	CULATED FROM TES BELIEVED THAT I FED HUDROSTATIC G THE PACKERS. E EARLY PORTION MATIONS, BUT CAN ERY, PARTICULARI LD NORMALLY BE F	T DATA, WA DUE TO HOLE PRESSURES THE FINAL OF THE CUR BE USED A Y-OF THE I RECOVERED F	AS SHOWN T CONDITIC AT THE EN SHUT IN C AVE. RESUI AS A GUIDE DRILLING I FRCM THIS	O HAVE E ONS, (eg ND OF EAC CUPVE SHO TS OBTAI E AND ARE FLUID POR ZONE, N	XISTED fillup H PERI WS A NED FR BELIE TION,
· · · · · · · · · · · · · · · · · · ·	<pre></pre>		······································		

NOTICE. These calculations and all remarks are designed to furnish you with the facts of the Drill Stem Test, and as such are

FOSTER TESTERS INC., opinion only





### PHILLIPS PETROLEUM COMPANY

Phillips Building, Room 711 Odessa, Texas 79760

Gas and Gas Liquids Department

April 28, 1972

Field Tests

File: W-1-0'Ne-20-72-G&GL

W

Blackrock Oil Company 1000 V & J Tower Building Midland, Texas 79701

Attention: M. L. Toombs

Dear Sir:

Listed below are results of the gas test that we ran on your lease in the Jennings Delaware Field, Lea County, New Mexico.

Lease	<u>We].1</u>	24-Hr. <u>Oil Prod.</u>	Daily Gas Vol. MCF	Lenght <u>GPM</u> <u><u>GOR</u><u>of</u>Test</u>
Union Federal	#2	36.48	51	1.60 1398 24 hrs.

Attached is a copy of chromatographic results. Thank you for your assist-ance in making it possible for us to test your lease.

Very truly yours,

R. T. O'Neil R. T. O'Neil

RTO 'N:cas Attachments

LIPS PERCEUM COMPAN SS No. 692 rorm 206 11-63 Run No. 692 Analysis Results Summary Date Run 4-31-72 Date Secured 4-13-72 Location Odessa, Texas Time Sampler's Ident.\_ A Somple of: Casinghead Natural Gas, Jennings Delaware Field, Delaware Formation, Blackrock Oil Company Secured from\_ Well #2, Union Federal Lease County -State-Mary Marile NW NE 4-26-32 Locotion\_\_\_\_\_ Sampling Conditions: Atmos. Temp. Secured by C. R. Ellictt lbs./sq. in.; 8bls oil/day °F; Pressure on Bomb 84 ; Weather conditions at time of sampling Volume/day 51 Mcf PSIG; Line Pressure Field Gas Pressure PSIG. Chromo 14.65 PS! at 60°F \_\_\_ Analysis Mol. % Liq. % Calc. G.P.M. Propone 2,611 -,380 Colc. G.P.M. Iso-Butone Carbon Dioxide Nor-Butane Calc. G.P.M. 1,006 Oxygen Calc. G.P.M. Pentane+ 1.142 Nitrogen Calc. G.P.M. 16.00 Propane + 5-139 Hydrogen Sulfide Test Cor (Date B.T.U./\_ \_.cu. ft. W.3. 1250 Methane Calc. Specific Gravity 55.98 .895 Ethane Colc. A.P.I. @ 60°F 11,18 Observed A.P.I. Av. Propone 9.54 **Iso-Butane** 1,17 Nor-Butane  $H_2S + CO_2$  by orsat 3.21 Zarn H<sub>2</sub>S grains/100 cu. ft. Sweet to L.A. Iso-Pentane Mercaptons gr/100 cu. ft. .82 Nor-Pentane .90 Calc. Vap. Press. #/sq. in. Hexones Reid Vop. Press. #/sq. in. .63 Cu.Ft. gas/Gal Liq. **Heptones** Plus -57 100.00 100.00 Total Calc. Gasoline Factors 0 Run by Calculated by 26-70 Gasoline McGee 0. **Excess Butane** 0. **Excess** Propane Checked by Approved by McGee 0. Excess Ethane & Lighter 1.0000 Additional Data and Remarks --- Conventional Trap Pressure 25# **Distribution:** Gas Temp. 85º Well Pumps Oil Production 36.48 ROPD, GOR 1398











# lackrock Gil Company

1000 V & J TOWER - MIDLAND, TEXAS 79701 - 915 683-5691

O. DOYLE BUTLER President

PEGGY L. HOLDEN Office Manager

June 13, 1972 Cocisto Marion

Mr. Géorge M. Hatch, Attorney OIL CONSERVATION COMMISSION P. O. Box 2088 Santa Fe, New Mexico 87501

May wat te admitero Com as an associated pour Case 4756 Re: BLACKROCK OTT Jennings Federal No. 1 Unit 0, Section 33, Township 25 South, Range 32 East, Lea County, New Mexico

Dear Mr. Hatch:

Relative to your letter of June 8, 1972 advising that the Jennings Federal No. 1 can not be placed in a new pool administratively, it is respectfully requested that in view of the facts submitted in our previous letter and the fact that we will submit all pertinent facts at a hearing on July 12, 1972, it is requested that a temporary gas well allowable be granted this well retroactive from May 15th until the final decision of the hearing. We suggest several reasons for this temporary allowable, (1) current allowable has been produced and the well is shut-in, (2) we have a commitment to start another well in this area on or about July 11th, and we need all the production history possible to substantiate further drilling.

Should any further information be required, please advise.

Yours very truly,

BLACKROCK OIL COMPANY

le Butler

ODB:jh cc: Mid Tex Oil Corporation Box 251 Mt. Carmel, Illinois 62863

DOTAL MARKED

-50

Petroleum Engineering, Land and Management Consultants

OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

### June 8, 1972

Blackrock Oil Company 1000 V & J Tower Midland, Texas 79701

Attention: Mr. O. Doyle Butler

Re: Blackrock Oil Company Jennings Federal No. 1 Unit O, Section 33, Township 25 South, Range 32 East, Lea County, New Mexico

Gentlemen:

GMH/dr

. A Statistic Car

> As the above-described well cannot be placed in a new pool administratively, we have set this for hearing before an examiner for July 12, 1972. A copy of the docket will be mailed to you at a later date.

> > 1.3  $^{\circ}$

Very truly yours,

GEORGE M. HATCH Attorney

# Blackrock Gil Company

Care 4756

ON CONSERVATION COMM.

O. DOYLE BUTLER President PEGGY L. HOLDER

Office Manager

In bearing 1972

1000 V & J TOWER - MIDLAND, TEXAS 79701 - 915 683-5691

June 6, 1972

Re:

NEW MEXICO OIL CONSERVATION COMMISSION P. O. Box 2088 Santa Pe, Non Mexico 87501

Attention: Mr. A. L. Porter, Jr.

BLACKROCK OIL COMPANY Jennings Federal No. 1 Unit O, Section 33, T-25-S, R-32-E, Lea County, New Mexico

#### Gentiemen:

In accordance with the attached Form C-123 that was filed April 26, 1972, it is respectfully requested that the Jennings Federal No. 1 be placed in a new pool created as the Jennings Delaware Gas Pool for gas wells only. It is requested this pool be 160 acre spacing, the standard guideline for gas fields, and that the gas allowable be made retroactive to May 15, 1972.

In support of this, we would like to call your attention to the Form C-122 indicating Absolute Open Flow in the Jennings Federal No. 1 as 3605 mcfd and a Gas liquid Hydrocarbon Ratio as 750,000. This is compared to our Union Federal No. 2 in the Jennings Delaware Oil Field which potentialed for 100 BO in 24 hours with GOR 1250.

Should it be necessary to support this request with geological and area cross-sectional mapping, this can be submitted; however, due to the foregoing, it is respectfully requested that a gas field be created as outlined on our Form C-123.

Yours very truly,

BLACKROCK OIL COMPANY

OB:jh cc: Mid Tex Oil Corporation - Mt. Carmel, Illinois El Paso Natural Gas Company - Midland, Texas

Petroleum Engineering, Land and Management Consultants

Care 4756

(Form 0-123) (Revised 7/1/52)

### REQUEST FOR THE EXTENSION OF AN EXISTING POOL

OR

### THE CREATION OF A NEW POOL

514	ie of them mexico		•	Apr11 26
	en e			<i>,</i>
		с. С		
The BLACKROCK OIL COMPANY Name of Operator		***************************************	Jennings Federal Name of Lease	
		perator		
1 T	ocated 660	feet from the	South	line and 1983
Well No.	Jocuroutin		********	
	Raat		25-S	32-E
from the	2406	line of 33	Township	Kange
•				
is outside the bou	undaries of any poo	ol producing from the sam	e formation. On the basis of	the information submitted h
with on form C.	105, we hereby req	uest that the		
	al a tar			
pool be extended	to include the follo	wing described area		
pool be extended	to include the follo			· · · ·
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	****	lude the following describe		n 33, T-25-S, R-32-E
unthat a new poo	ol be created to incl	lude the following describe	d areaSE/4, Sectio	n 33, T-25-S, R-32-E
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Exthat a new poor Suggested name: Name of Produc	ol be created to incl Jen	lude the following describe mings Delaware Gas	ed areaSE/4, Sectio BLACKROCK OIL Open	n 33, T-25-S, R-32-E COMPANY ator 0. D. Butler

٤,



BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

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

APPLICATION OF BLACKROCK OIL COMPANY FOR THE CREATION OF A NEW GAS POOL, LEA COUNTY, NEW MEXICO.

Order No.

4756

CASE WO.

### ORDER OF THE COMMISSION

### BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on July 12 , 1972, at Santa Fe, New Mexico, before Examiner <u>Richard L. Stamets</u>.

NOW, on this <u>day of August</u>, 1972, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

#### FINDS:

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

(2) That the applicant, Blackrock Oil Company, seeks the creation of a new pool for the production of gas from the Delaware formation for its Jennings Federal Well No. 1, located in Unit O of Section 33, Township 25 South, Range 32 East, NMPM, Lea County, New Mexico. -2-CASE NO. 4756

1.

(3) That said well is currently classified as a gas well in the Jennings-Delaware Oil Pool.

(4) That the evidence presently available establishes that the subject well is a gas-cap well in the Jennings-Delaware Pool.

(5) That the evidence presently available further establishes that the Jennings-Delaware Pool should be reclassified as an associated pool and that Special Rules and Regulations should be promulgated therefor. -2-CASE NO. 4352 4756 Order No. R-9981-

the adoption of special rules and regulations to provide for the classification of oil and gas wells, specing and well location requirements for oil and gas wells, and an allocation formula for withdrawals from the gas wells and oil wells.

(5) That the evidence establishes that the Suble-Queen Gas Pool is not a separate dommon source of supply but is an extension of the Double L-Queen Pool.

(6) That while the said Double L-Queen Pool is presently classified as an oil pool, the evidence adduced indicates it is, in fact, an associate pil and gas reservoir.

(7) That the Double L-Queen (0il) Pool and the Suble-Queen Gas Ppol should be abolished.

(8) That a new pool in Chares County, New Mexico, classified as an associated pool for the production of oil and gas from the Queen formation and designated the Double L-Queen Associated Pool should be created and Special Rules and Regulations should be promulgated therefor.

(a) That the reservoir characteristics of the subject pool indicate that the gas area can be efficiently and economically drained and developed on 160-acre spacing, and that the oil area can be efficiently and economically drained and developed on 40-acre spacing.

(10) That the reservoir characteristics of the subject pool presently available justify the definition of a gas well as a well producing with a gas-liquid ratio of 30,000 or more cubic feet of gas per barrel of liquid hydrocarbons.

(1) That the reservoir characterisitcs of the subject pool presently available justify the establishment of a gas liquid ratio limitation of 2000 cubic feet of gas per barrel of liquid hydrocarbons.

(12) That special rules and regulations providing for 160acre gas well spacing and 40-acre oil well spacing should be promulgated for the subject pool in order to prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, prevent reduced recovery which might result from the drilling of too few wells, and otherwise prevent waste and protect correlative rights. -3-CASE NO. 4952 4756 Order No. R-3901-A

(13) That the special rules and regulations should provide for the classification of a gas well as a well producing with a gas-liquid ratio of 30,000 or more cubic feet of gas per barrel of liquid hydrocarbons and should provide for a gasliquid ratio of 2000 cubic feet of gas per barrel of liquid hydrocarbons in order to afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil or gas, or both, and for this purpose to use his just and equitable share of the reservoir energy.

// (24) That the tangent provide special rules and regulations should establish proration rules for gas wells in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That we offective September 1,1972, The Jennings - Delaware Pool, as previously defined and described, is hereby reclassified as The Jennings-Delaware Associated Pool, Lea County New Marico. Section 31: S/2 NW/4 and S/A TOWNSHIP 15 SOUTH, RANGE 29 EAST, NMPM Section 1: E/2 E/2Section 12: E/2 and SW/4 Section 13: NW/4 TOWNSHIP 15 SOUTH RANGE 30 EAST, **NMPM** Section 6: N/2 and SW/4 Section 7: W/2

-4-CASE NO. 4<del>352</del> 4756 Order No. R-3981

Regulations for the **House A provided** Action of the Actio

SPECIAL RULES AND REGULATIONS FOR THE Jennings Delawar Double L-QUEEN ASSOCIATED POOL

RULE 1. Each well completed or recompleted in the **Double I** Delawere Queen Pool or in the **Dicon** formation within one mile thereof, and not nearer to or within the limits of another designated Delawere Queen pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

> <u>RULE 2.</u> (a) Each gas well shall be located on a standard unit containing 160 acres, more or less, substantially in the form of a square, which is a quarter section being a legal subdivision of the United States Public Land Surveys.

> (b) Each oil well shall be located on a standard unit containing 40 acres, more or less, consisting of a governmental quarter-quarter section.

<u>RULE 3.</u> The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 (a) without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Land Surveys, or the following facts exist and the following provisions are complied with:

- (a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.
- (b) The non-standard unit ties wholly within a governmental quarter section and contains less acreage than a standard unit.
- (c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the quarter section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.

CASE NO. 4352 4.756 Order No. R-2991-A

> (d) In lieu of paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

<u>RULE 4.</u> Each well, oil or gas, shall be located no nearer than 330 feet to any quarter-quarter section line, except that any well drilled in a known gas productive area shall be located within 150 feet of the center of a quarter-quarter section.

<u>RULE 5.</u> A well shall be classified as a gas well if it has a gas-liquid ratio of **30,000** or more cubic feet of gas per barrel of liquid hydrocarbons. A well shall be classified as an oil well if it has a gas-liquid ratio of less than **30,000** cubic feet of gas per barrel of liquid hydrocarbons. The simultaneous dedication of any acreage to an oil well and a gas well is prohibited.

<u>RULE 6.</u> That the limiting gas-oil ratio shall be 2000 cubic feet of gas for each barrel of oil produced.

RULE 7. An oil well which has 40 acres dedicated to it shall be permitted to produce only that amount of gas determined by multiplying the top unit oil allowable for the pool by the limiting gas-liquid ratio for the pool. In the event there is more than one oil well on a 40-acre oil proration unit, the operator may produce the allowable assigned to the 40-acre unit from the wells on the unit in any proportion.

A gas well shall be permitted to produce that amount of gas obtained by multiplying the top unit oil allowable for the pool by the limiting gas-liquid ratio for the pool and by a fraction, the numerator of which is the number of acres dedicated to the particular gas well and the denominator of which is 40. In the event there is more than one gas well on a 160-acre gas provation unit, the operator may produce the amount of gas assigned to the unit from the wells on the unit in any proportion. -6-CASE NO. 4<del>352</del> 4756 Order No. R-3081-A

<u>RULE 8</u>. The operator of each newly completed well shall cause a gas-liquid ratio test to be taken on the well upon recovery of all load oil from the well, provided however, that in no event shall the test be commenced later than 30 days from the date of first production unless the well is connected to a gas-gathering facility and is producing under a temporary gas allowable assigned in accordance with Rule 11. Any well which is shut in shall be exempted from the gas-liquid ratio test requirement so long as it remains shut in. The initial gasliquid ratio test shall be taken in the manner prescribed by Rule 9. If the gas-liquid ratio is **50,000** cubic feet of gas per barrel of liquid hydrocarbons, or more, the operator shall not produce the well until beneficial use can be made of the gas.

<u>RULE 9.</u> Gas-liquid ratio tests shall be taken on all wells during the months of **Barger Oxt-Deptember** of each year. The initial gas-liquid ratio test shall suffice as the first **Series** annual test. Tests shall be 24-hour tests, being the final 24 hours of a 72-hour period during which the well shall be produced at a constant normal rate of production. Results of such tests shall be filed on Commission Form C-116 on or before the 10th day of the following month. At least 72 hours prior to commencement of any such gas-liquid ratio tests, each operator shall file with the appropriate district office of the Commission a test schedule for its wells specifying the time each of its wells is to be tested. Copies of the test schedule shall also be furnished to all offset operators. Commission District supervisors may grant exceptions to the above test requirements where it is demonstrated that wells produce no liquids.

Special tests shall also be taken at the request of the Secretary-Director and may also be taken at the option of the operator. Such special tests shall be taken in accordance with the procedures outlined hereinabove, including notification to the Commission and offset operators.

<u>RULE 10</u>. An initial shut-in pressure test shall be taken on each gas well and shall be reported to the Commission on Form C-125.

<u>RULE 11.</u> Any well completed after the effective date of these rules shall receive an allowable only upon receipt by the appropriate Commission district office of Commission Forms C-104 and C-116, properly executed. The District Supervisor of the Commission's district office is hereby authorized -7-CASE NO. 4352 4756 Order No. 2309192

to assign a temporary gas allowable to wells connected to a gas transportation facility during the recovery of load oil, which allowable shall not exceed the number of cubic feet of gas obtained by multiplying the daily top unit allowable for the pool by the limiting gas-liquid ratio for the pool.

Rule 12. That the initial gos promision period chall be from 7:00 2. m. August 1, 1972, & 7:00 2. m. Jonuary 1. 1974. Subsequently, Ho date 7:00 2. m. Jonuary 1 og lack year shall be known as the balancing date, and the twelve santhe following this date shall be because as the gos prosation period under)

be cancelled.

<u>RULE 15.</u> Any well which has an overproduced status as of the end of a gas proration period shall carry such overproduction forward into the next gas proration period, provided that such overproduction shall be compensated for during such succeeding period. Any well which has not compensated for the overproduction carried into a gas proration period by the end of such proration period shall be shut in until such overproduction is compensated for. If, at any time, a well is overproduced an amount equalling <u>three</u> times its current monthly allowable, it shall be shut in during that month and each succeeding month until the well is overproduced less than <u>three</u> times its current monthly allowable.

<u>RULE 16.</u> The allowable assigned to a well during any one month of a gas proration period in excess of the production for the same month shall be applied against the overproduction carried into such period in determining the amount of overproduction, if any, which has not been compensated for.

RULE 17. The Commission may allow overproduction to be compensated for at a lesser rate than would be the case if the -8-CASE NO. 4952 4.75 Order No. R=3981-A

well were completely shut in upon a showing after notice and hearing that complete shut in of the well would result in material damage to the well or reservoir.

<u>RULE 18</u>. The monthly gas production from each gas well shall be metered separately and the gas production therefrom shall be reported to the Commission on Form C-115 so as to reach the Commission on or before the 24th day of the month next succeeding the month in which the gas was produced. The operator shall show on such report what disposition has been made of the produced gas.

<u>RULE 19.</u> Each purchaser or taker of gas shall submit a report to the Commission so as to reach the Commission on or before the 15th day of the month next succeeding the month in which the gas was purchased or taken. Such report shall be filed on Form C-111 with the wells being listed in the same order as they are listed on the appropriate proration schedule.

<u>RULE 20</u>. Failure to comply with any provision of these rules shall result in the immediate cancellation of allowable assigned to the affected well. No further allowable shall be assigned until all rules and regulations have been complied with. The Secretary-Director shall notify the operator of the well and purchaser in writing of the date of allowable cancellation and the reason therefor.

RULE 21. All transporters or users of gas shall file gas well-connection notices with the Commission as soon as possible after the date of connection.

RULE 22. Allowables to wells whose classification has changed from oil to gas or from gas to oil as the result of a gas-liquid ratio test shall commence on the first day of the month following the month in which such test was reported, provided that a plat (Form C-102) showing the acreage dedicated to the well and the location of all wells on the dedicated acreage has been filed.

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the **Double-L Queen** Associated Pool or in the **Queen** formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location -9-CASE NO. 4352 4756 Order No. R-3981-A-

shall notify the appropriate district office of the Commission in writing of the name and location of the well on or before September 1, 1971. 1972. Current 15, 1972. (2) That all operators shall, prior to September 1, 1971,

(2) That all operators shall, prior to September 1, 1971 file with the Commission Form C-102 for each well showing the acreage dedicated to the well.

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

> STATE OF NEW MEXICO OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

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

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بالأجرز فيتريده

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