CASE 3727: Appli. of MONSANTO CO. for unorth. gas well location, non-stnd. unit, dual & rules.

Case No.

3127

Application, Transcript,
Small Exhibits, Etc.

Monsanto
COMPANY

HYDROCARBONS DIVISION

101 North Marienfeld
Midland, Texas 79704
(915) MUtual 3-3306

April 11, 1968

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention Mr. A. L. Porter, Jr.

'68 APR 12 AM 8 48

Reservoir Limits Test
Rock Tank Unit Well No. 1
Eddy County, New Mexico

Gentlemen:

Attached are the results of reservoir pressure draw down and build-up tests of the Upper and Lower Morrow zones in the subject well. These tests were approved by your letters of March 13 and April 3, 1968. Tabulated below is a chronological sequence of events:

Date	Zone	Time (CST)	Well Status	Production (MCF)	Rate (MCFPD)
3-21-68	Lower	1:00 p.m.	flwd 75 hrs.	18,240	5836
3-24-68	Lower	4:00 p.m.	shut-in		
3-28-68	Upper	3:20 p.m.	flwd 95 hrs.	10,061	2542
4-1-68	Upper	2:30 p.m.	shut-in		
4-5-68	Lower	11:00 a.m.	flwd 75 hrs.	18,731	5993
4-8-68	Lower	2:00 p.m.	shut-in		

LOWER MORROW ZONE

Results of the first test on the Lower Morrow zone was furnished you by letter of March 29, 1968. The bottom hole pressure data recorded by Coleman Petroleum Engineering Company of Hobbs, N.M., for this first test are attached.

The well was flowed for 75 hours on a second test which began April 5 and produced a total of 18,731 MCF gas at an average rate of 5993 MCFPD during this period. The well was then shut-in for a 26-hour build-up on March 8. The bottom hole pressure measured at 10,307' stabilized at 4226 psig in 9 minutes after shut-in and remained at this pressure for two hours while the Amerada RPG3 BHP instrument was in the well.

UPPER MORROW ZONE

The Upper Morrow zone was flowed for 95 hours beginning on March 28 and produced 10,061 MCF gas at an average rate of 2542 MCFPD during the flow period. Well was shut-in on April 1 for a 193.5-hour build-up. This zone is produced from the well annulus; therefore, a BHP instrument could not be used on the the test.

We hope this data will assist you in arriving at a decision on Case No. 3727 with regard to this well. If additional information is required, please contact our office.

Yours very truly,

MONSANTO COMPANY

P. G. Anderson
District Engineer

PDH:bw
Encl.

cc - USGS, Roswell

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 28, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Monsanto Company for an unorthodox gas well location, a non-standard proration unit, a dual completion, and temporary special pool rules, Eddy County, New Mexico.

CASE No. 3727

BEFORE: DANIEL A. NUTTER, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case Number 3727.

MR. HATCH: Application of Monsanto Company for an unorthodox gas well location, a non-standard proration unit, a dual completion, and temporary special pool rules, Eddy County, New Mexico.

MR. HINKLE: If the Examiner please, Clarence Hinkle, Hinkle, Bondurant, and Christy, representing Monsanto. We have two witnesses and about seven or eight exhibits that we would like to have identified and the witnesses sworn.

(Witnesses sworn.)

(Whereupon, Applicant's Exhibits 1 through 12 were marked for identification.)

MR. NUTTER: Has Monsanto been apprised of the situation here as stated in Gulf's letter.

MR. HATCH: Mr. Hinkle, did you get a copy of the letter?

MR. HINKLE: Yes, we did.

MR. NUTTER: I will read it into the record here. The letter is addressed to Mr. Porter. "Gulf Oil Corporation, as a Working Interest Owner in the Rock Tank Unit, Eddy County, New Mexico, concurs in the application of the Unit Operator, Monsanto Company, for the approval of the non-standard location and for 640-acre spacing. However, it is the opinion of Gulf

that the proration unit should be confined to the governmental section in which the well is located; otherwise if the proration unit is approved in parts of two sections, additional non-standard unit exceptions will be proposed in this pool and elsewhere throughout the State, each of which would require separate notice and hearings.

"Gulf is not in complete accord with the dual completion; however, Gulf is not objecting to this portion of the application. Gulf requests that an operator with acreage outside the unit be given the option to single complete these two Morrow zones, if he so elects. This method of completion would be more conformable with other Morrow pools within the State, where these lenticular deposits of sand are considered to be within a single pool. Yours very truly, signed M. I. Taylor."

M. I. Taylor is district production manager at Roswell for Gulf.

MR. HINKLE: Let the record show that we have received a copy of it and Monsanto has been advised.

MR. NUTTER: Very good.

JAMES D. WEBB,

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, your residence, and by whom you are employed.

A My name is James D. Webb, and I live in Midland, Texas. I am employed by Monsanto as district geologist for West Texas and New Mexico.

Q Are you a graduate geologist?

A Yes, I am.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A Yes, I have.

Q Your qualifications as a geologist are a matter of record before the Commission?

A Yes, they are.

Q Have you made a study of the Rock Tank Unit area?

A Yes, I have.

Q Are you familiar with the well, the initial test well that has been drilled?

A I am familiar with it.

Q Are you familiar with the application of Monsanto in this case?

A Yes, I am familiar with it.

Q What is Monsanto seeking by this application?

A The purpose of our application is for an unorthodox gas well location, a non-standard proration unit for dual completion, and temporary special pool rules.

Q Refer to the Exhibit which has been identified as Monsanto's Exhibit No. 1 and explain to the Commission what it shows.

A Exhibit No. 1 is a plat which shows the Rock Tank Unit area and the ownership of the leases within the unit and surrounding the unit, and also the location of the initial test well which is 920 feet from the West line and 660 feet from the North line of Section 7, Township 23 South, Range 25 East, Eddy County, New Mexico.

Q That location is an unorthodox location under the rules of the Commission for a gas well, is it not?

A It is.

Q Why was the well located where it is initially?

A Well, it was drilled as a wildcat oil well, proposed to test the Devonian formation.

Q Was it drilled to a depth sufficient to test the Devonian formation?

A That is right, it did test the formation and was staked at the location, most favorable location from our

geological geophysical data.

Q Can you give a brief history of the well, when it was started and when it was completed, the depth and so forth?

A The well was spudded November 11, 1967, and was completed January the 23rd, 1968, at a total depth of 11,026 in the Devonian formation. The well was non-productive in the Devonian formation and was plugged back and completed as a gas well in the upper and lower zones of the Morrow formation.

Q What were the results of your tests in connection with your completion of the well?

A The Upper Morrow sand was completed for 6,698,000 cubic feet of gas a day, and the Lower Morrow sand was completed for 52,351,000 cubic feet per day. Those are both calculated absolute open flow.

Q Has the well been completed as of now?

A It is completed.

Q In what manner was it completed?

A The Lower Morrow sand is completed through the tubing and the Upper Morrow is completed in the annulus between the tubing and the casing.

Q As a multi-completion?

A Right.

Q In that connection, has Monsanto filed with the Oil Conservation Commission Form C-107 in accordance with the Oil Conservation Commission regulations?

A That is right, true, they have, and Mr. Percy Anderson, district engineer, will testify as to the details of completion of the well.

Q Now, refer to the exhibits which have been identified as Monsanto's Exhibit 2 and 3 and explain to the Commission what they show.

A Exhibit No. 2 and No. 3 are structural contour maps on the base of the Upper Morrow sand pay and the Lower Morrow sand pay. They show easily that the Monsanto No. 1 Rock Tank unit is located on a relatively large anticline bounded on the west by a pronounced down to the west fault. The contour interval of both of the maps are one hundred feet.

Q What information are these two exhibits based on?

A These maps are based on geophysical and sub-surface geological information.

Q Is the fault shown by your seismic survey that is made of the area?

A That is very true.

Q Refer to and explain Exhibit No. 4.

A Exhibit No. 4 is an isopach or thickness map of the

Upper Morrow sand, which is producing in the Monsanto No. 1 Rock Tank unit. It easily defines the productive area, as we see it, of the Rock Tank Unit. As you can see, this fault that is on the west side, will cut off production.

Exhibit No. 5 is also an isopack map of the Lower Morrow sand pay. It also indicates the productive area. There again, it's rather sharply defined by this fault to the west side. You can see that the shape of the Federal Unit conforms with this seismic fault or we laid out the Federal Unit because of the fault.

Q On what information are these isopack maps, Exhibits 4 and 5, based?

A Electric logs.

Q Of several wells?

A Of all the wells in the area.

Q What is Monsanto seeking to accomplish in this application in so far as special field pool rules are concerned?

A Well, we would like to have 640-acre spacing and we would like the rules to make an exception as to the present well location being a non-standard location. We would like to have dedicated to this Well No. 1 Rock Tank the West Half of Section 7, Township 23 South, Range 25 East, and the East Half of Section 12, Township 23 South, Range 24 East.

Q What is the reason why you want to cross section lines and dedicate the West Half of 7 and the East Half of 12 to this particular well?

A Well, it's because of the fault which defines the productive area on the west.

Q The limits, you might say, of the productive area?

A That is right.

Q In the event the Oil Conservation Commission should not see fit to dedicate the acreage which you have dedicated to this initial test well, would it be satisfactory to Monsanto for the rules to provide that Section 7 or governmental section should be dedicated to each well?

A Yes.

Q In this case, it would be Section 7 dedicated to the discovery well?

A Right.

Q Does Monsanto desire any special provisions in connection with the adoption of special field rules?

A No, just the usual rules for 640-acre spacing and to drill subsequent wells no nearer than 1650 feet to the outer boundary of the section line and no nearer than 330 feet to any governmental quarter/quarter section line.

Q In other words, Monsanto would be satisfied with the

rules that have heretofore been adopted in a number of cases where the Morrow zone has been involved for 640-acre spacing?

A Right, exactly.

MR. HINKLE: We might say here that our next witness is an engineer and will go into the matter of drainage. That's all on direct examination of this witness.

MR. NUTTER: Are there any questions of Mr. Webb?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Webb, if we dedicated the West Half of 7 and the East Half of 12, we would be including some acreage which is west of the fault as depicted on your exhibits here?

A That's true; there would be a little of it.

Q There's some acreage in the East Half of 12 which is down dip from the fault?

A That is right.

Q Evidently the thing is non-productive down dip, because we do have a dry hole out here in Section 11?

A That is right. This well was not tested in the zone. It had the lower sand well developed and there was no test and apparently no shows and the electric log calculates water productive.

Q What is the actual separation between these two zones, as far as the bottom of the Upper --

A It's approximately three hundred feet.

Q What kind of rock is that?

A Well, it's sand and shale sequence and there's water tested between the two producing zones. We tested gas and then we tested water and then we tested gas again.

Q You had a drillstem test in the sand shale sequence?

A Right.

Q That made water?

A There were three drillstem tests in the Morrow there. We are dealing with three reservoirs.

Q You have your drillstem test on the Lower Morrow isopack, you have your drillstem test 10,238 to 32 made thirty-four million. Your drillstem test in the Upper Morrow isopack shows 9,950 to 10,025 flowed five million. Do you have the results on that third test and the interval that was tested?

A Yes, sir.

MR. ANDERSON: It's on another exhibit. It's Exhibit 10, I believe.

MR. NUTTER: That's one you are coming to?

MR. HINKLE: Yes.

MR. NUTTER: All right, we'll leave that for now, then. Are there any other questions of Mr. Webb?

CROSS EXAMINATION

BY MR. STAMETS:

Q These are not the only Morrow zones productive in Eddy County generally, are they?

A No, that produces.

Q And the Morrow sands are lenticular discontinuous, so you might find that area that is not productive in this area to be productive of gas at a distance from the well?

A I wouldn't say they were discontinuous. It's a matter of degree. We believe that this lower sand covers quite a large area. I would not call it a discontinuous sand. It's not a blanket sand by any means, but this could be a sizeable sand bar. Only subsequent drilling will prove this for sure.

Q But there are other Morrow zones that do produce in Eddy County?

A There are some that are lenticular and cover a small area and some that covers a large area. One that covers a large area would be in the Atoka Field. So you have both situations.

MR. STAMETZ: That's the questions I have.

MR. NUTTER: Are there any other questions? The witness may be excused.

(Witness excused.)

P. G. ANDERSON,

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, where you reside, and by whom you are employed.

A My name is Percy G. Anderson. I reside in Midland, Texas. I am employed as district engineer for Monsanto Company.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A Yes, I have.

Q Your qualifications as a petroleum engineer are a matter of record?

A Yes, sir.

Q Have you made a study of the Rock Tank unit area and of the well that has been drilled, the discovery well in connection with the unit?

A Yes, I have.

Q Are you familiar with the application of Monsanto in in this case?

A Yes, sir.

Q Refer to Monsanto's Exhibit 6 and explain what this

is and what it shows.

A Exhibit 6 is a diagrammatic sketch of the sub-surface completion of the Rock Tank Unit No. 1. It shows that 8 5/8 surface pipe was set at 2426 feet and was cemented back to the surface. We have 5½-inch casing set at 10,472 feet with five hundred sacks of cement. Top of the cement is at 8920. The well was plugged back in the open hole to 10,300 after being drilled to 11,026. The plug-back inside the 5½ casing is 10,394.

In the completion of this well, we ran 2 7/8 EUE tubing, set it in a Baker Model F packer, at 10,200 feet. The Lower Morrow zone is perforated in two different intervals, 10,290 to 98, 10,308 to 10,324. The Upper Morrow is completed from perforations 9965 to 78. The tubing has an on-off connection right above the packer. It also, we installed a PSI Model L sleeve at 9995. There is also a blast joint opposite the Upper Morrow perforations to prevent any excessive erosion.

Q After the completion, your dual completion, were any tests made?

A Yes.

Q What were those tests?

A Well, we have completed a multi-point back pressure test in accordance with New Mexico Oil Conservation Commission

regulations. They have been submitted to the Commission.

Q Are they shown by Exhibit 7 and 8?

A Yes, Exhibit 7 is the multi-point back pressure test, Form C-122, which illustrates the open flow potential of the Upper Morrow zone from 9965 to 78. This Upper zone, the maximum flow rate was approximately 3.6 million cubic feet a day. The open flow calculated to be 6,698,000 cubic feet per day.

Q In your opinion, will this completion enable you to produce separately the gas from these zones and to measure it separately?

A Yes, sir.

Q I refer to Exhibit 9, and explain what this is and what it shows.

A Exhibit 8 is the same information on the lower zone.

Q Yes.

A It's the multi-point back pressure test. Exhibit 9 is a portion of the gamma ray acoustic log of the Rock Tank Unit in the Morrow section. It depicts the pressure rated intervals and also the drillstem test that were taken in the Morrow formations. The first test was from 9950 to 10,025. This covered the Upper Morrow perforations. This well flowed five million cubic feet per day. We had a shut-in pressure of

3948 and this extrapolated to 4,075.

The next test was from 10,080 to 10,224. This particular test we recovered 1350 feet of salt water. Our pressures were, on the final shut-in, were 3989. This was a legitimate test. It was mechanically correct. It illustrates the fact that water does lie below the upper perforations and below the upper Morrow zone.

The next test was from 10,288 to 333. This particular test flowed at the rate of thirty-four million and we had 120 minute final shut-in in 4239. There was no water recovered in this test, nor was there any water recovered in the test of the Upper Morrow.

Q Is Exhibit No. 9 a reproduction, partial reproduction of an electric log of the well?

A Yes, sir.

Q Now, refer to Exhibit 10 and explain what this shows.

A Exhibit 10 is the average reservoir characteristics which we can determine from the drilling of the well. It illustrates the various perameters that are different between the two zones. The porosity of the Upper Morrow is seventeen percent, connate water saturation is calculated to be thirty percent. Also, we might notice that the original pressure of 3971 is approximately 300 pounds less than the pressure

of the Lower Morrow zone. Also, the porosity is somewhat different between the two zones.

Q Have you made a study of the estimated reserves of this area, compiled any economic data with respect to the depth of the area?

A Yes, sir, I have.

Q Refer to Exhibit 11 and explain what this shows.

A Exhibit 11 is an estimate of the reserves which we would attribute to this well based on the information that we presently have available. It illustrates that on the economics of developing this gas reservoir on 320's, 320-acre spacing is not extremely attractive. Also, the caliper of the wells, the caliper of the zones that we have in this well demonstrate, in my opinion, that 640 acres can be effectively drained by this well.

Q Is your opinion influenced by the nature of the discovery, particularly your large discovery in the lower zone?

A Yes, the ability of the well to produce, as is demonstrated by the multipoint back pressure test, definitely illustrates that we have a commercial well in both zones.

Q It is your opinion that one well here will effectively and efficiently drain as much or more than 640 acres at this time?

A Yes, sir.

Q Based upon the information which you have available?

A Yes, sir.

Q Have you made a study of other Morrow wells that have been completed in Eddy and Lea Counties?

A We have some other Morrow wells completed in Eddy County area. I am familiar with several of them. Also with a number of the fields.

Q Have you made a tabulation of the Morrow areas where 640-acre spacing has been permitted?

A Yes, I have.

Q Refer to Exhibit 12. Is this the tabulation which you have made?

A Yes, sir.

Q What does it show?

A Exhibit 12 is a list of the New Mexico Morrow gas pools and their spacing as presently in force. Of the twelve Morrow gas pools in New Mexico, all but two of them are on 640-acre spacing.

Q What are the exceptions?

A An Antelope Ridge Morrow and Cemetary Morrow pool.

Q In this case you are asking for temporary special field rules with 640 acres, are you not?

A Yes, sir.

Q Is it your opinion that the adoption of special field rules, including 640-acre spacing for the Rock Tank area, will be in the interest of conservation and the prevention of waste?

A Yes, I do, and I think it would also prevent the drilling of unnecessary wells.

Q Would it also protect correlative rights?

A Yes, it will.

MR. HINKLE: We would like to offer in evidence Exhibits 1 through 12.

MR. NUTTER: Monsanto's Exhibits 1 through 12 will be admitted in evidence.

(Whereupon Applicant's Exhibits 1 through 12 were offered and admitted in evidence.)

MR. HINKLE: That's all on direct examination of this witness.

MR. NUTTER: Are there any questions of Mr. Anderson?

CROSS EXAMINATION

BY MR. NUTTER:

Q Is it your opinion that these are two separate and distinct reservoirs here, Mr. Anderson?

A Yes.

Q Have any reservoir limit tests been run on either of the zones?

A No, sir.

Q We do know that the sands in the Morrow formation are of lenticular nature and that they are often of limited horizontal size, but inasmuch as you haven't run any reservoir limit tests, we don't know what size these lenses are in this particular case then?

A This is true. I mean the ability of the well to produce does indicate that we are connected with a sizeable source of supply.

Q And pressures build back up pretty rapidly after test?

A Yes, sir.

MR. HINKLE: Excuse me, your answer to the last question was 'yes', was it not? You shook your head.

A Yes, excuse me, I thought I said it.

Q The Upper Morrow is evidently a dry gas?

A Yes, sir, we recovered no liquid hydrocarbons in that zone.

Q In the event that liquid should start coming out here, how would you produce this well? What size is your casing, 5½?

A Five and a half, 2 7/8 tubing.

Q So that doesn't leave much annular room in there. Would you be able to put down a bleed string or anything to draw the liquids off if the water should start watering up above the packer or loading up with liquids?

A If the well did, there are two ways we could accomplish this. If the upper zone did start producing liquids and the lower zone stayed relatively dry; then we, of course, could put another packer and a cross-over in there and bring the upper zone through the tubing.

Q Well, you are already making some liquids in the lower zone?

A Well, the lower zone I consider to be the stronger of the two zones. It has a higher pressure, higher open flow. I would not anticipate the lower zone to have any problem at all lifting liquids.

Q Mr. Anderson, in your opinion, if these two zones were produced together, would there be any danger of any reservoir damage or harm to either of the producing sections?

A Yes, I could anticipate or visualize where this could occur if one of the zones did start producing water; I could see where this could be a detriment to the other zone.

Q Neither one is producing water now but you do have

this water saturation which is in between these two, which is evidenced by that one drillstem test?

A Yes, sir, this indicates to me that there is water in the Morrow and that, of course, we have no evidence at this time as to where the gas-water contact in either reservoir lies and, of course, only subsequent production of the well can tell us this; but this is a problem that I could foresee where, if one of the zones did start making water, that it could be a detriment to the other zone.

Q Do you have any idea how long it will be before the well is connected?

A Well, we would like to make it as soon as possible, but as you may realize, this well is about ten miles from any nearest pipeline connection and we have two or three parties interested in connecting the well; and my estimate at the present time, and this is strictly a real broad estimate, is approximately one year. That is, I hope that we would be able to go on the stream around the first of 1969.

Q Not up there laying any line yet, at any rate?

A No, sir, we right now -- of course, we had to get these tests in and we have to get the pipeline companies interested and have to furnish them the necessary data. As you can see, this well has just recently been completed.

Q As unit operator, have you started the paperwork relating to drilling a second well yet?

A Yes, sir, we have, at least within our own organization we have, and also we intend to immediately file a developmental plan with the U. S. G. S. for subsequent development.

Q Where will the next well be drilled?

A The next well that we would propose from a district is located in Section 6, Township 23 South, Range 25 East. This will be a North offset to the Rock Tank Unit. We would probably locate the well 1650 feet from the South and West lines of Section 6,

Q I believe that's where one of those isopack maps that shows the thickest pay being up there in Section 6, so you will try to get right up there within your 40-foot contour line on this upper sand map, I imagine?

A Yes, sir, we would, of course, intend to drill a well in the most favorable position for recovery of the hydrocarbons.

MR. NUTTER: Are there any other questions of Mr. Anderson?

MR. STAMETZ: Yes, sir.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Anderson, could you visualize any situation in which

this requirement for dual completion would work a hardship on an operator in this area?

A Frankly, as far as Monsanto was concerned, the way we completed this well, we would have had to complete the well in the fashion we did, whether we completed it singly or dually almost except for the location of the packer, but we had to stimulate that upper zone and the lower zone was completed naturally. We, in order to separate the zones for stimulation, we had to install a packer between the two zones and complete -- actually, we ended up completing the well probably simpler this way than we would have singly. If a person had to stimulate one zone and not the other and he commingled them, I could see where you would get actually into more difficult completion procedure than was done on the Rock Tank.

MR. NUTTER: One other question I happened to think of: We haven't created pools yet. Do you have a suggested name or is it obvious that it would be Rock Tank Morrow?

A The name we would propose would be Rock Tank Upper Morrow and Lower Morrow Pools.

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

Q (by Mr. Stamets) Yes. Is there any likelihood that you could sell more gas by having two pools than one pool?

A Frankly, no, the way the gas companies, the gas pipelines, since they nominate strictly on reserves and they would await the reserves of both zones, and as far as the takes from one zone, they would, of course, nominate takes to the whole well. The only economic advantage would be if one zone tended to retard or restrict the production from the other zone if they were commingled.

Q One thing on Exhibit 12 here, I believe that the Atoka-Pennsylvanian Pool was left off. I believe it is Morrow Pool and it is 320-acre spacing?

A I kind of overlooked it.

Q It was kind of sneaky because it didn't have Morrow tacked on it.

A I went through the list.

MR. STAMETS: That's all the questions I have.

MR. NUTTER: If there are no further questions of Mr. Anderson, he may be excused. Do you have anything further, Mr. Hinkle?

MR. HINKLE: That's all I have.

MR. NUTTER: Does anyone have anything else to take up in this case? We have already read the letter. We will take the case under advisement.

* * *

I N D E X

E X H I B I T S

EXHIBIT	MARKED	OFFERED AND ADMITTED
Applicant's 1 through 12	2	19

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

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 14 day of March, 1968.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1971.

2/28

3727
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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 13, 1970

EXAMINER HEARING

IN THE MATTER OF:

Case 3727 being reopened pursuant to the provisions of Order No. R-3428, which order established 640-acre spacing units for the Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools, Eddy County, New Mexico, for a period of one year after first pipeline connection in either of the pools. Case No. 3727

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 3727.

MR. HATCH: Case 3727. Reopened. In the matter of Case 3727 being reopened pursuant to the provisions of Order No. R-3428, which order established 640-acre spacing units for the Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools, Eddy County, New Mexico, for a period of one year after first pipeline connection in either of the pools.

MR. HINKLE: If the Commission please, Clarence Hinkle, Hinkle, Bondurant, Cox and Eaton, appearing on behalf of Monsanto. We have two witnesses we would like to have sworn.

(Whereupon, Applicant's Exhibits 1 through 14 were marked for identification.)

(Witnesses sworn.)

RICHARD D. JONS

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, by whom you are employed.

A Richard D. Jons, Geologist, Monsanto.

Q You reside in Midland?

A Yes, sir.

Q Did you testify originally in this case a year ago?

A Yes, sir, I did.

Q At that time, you qualified as a Petroleum Geologist --

A Yes, sir.

Q -- and your qualifications were shown as a matter of record?

A Yes, sir.

Q Have you continued to make a study of the Rock Tank Unit area for the last year?

A Yes, sir, I have.

Q You are familiar with all the development that has taken place?

A Yes, sir.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A Yes, sir. The first six exhibits were prepared under my direction.

Q Refer to Exhibit No. 1 and explain what this is and what it shows.

A Exhibit No. 1 is a land plat of the Rock Tank Unit showing the unit outline and a small area surrounding the unit to show all of the wells and lease ownership.

Q The unit is outlined in red, is it not?

A Yes, sir.

Q Do you have any further comments?

A I have no further comments.

Q Refer to Exhibit No. 2 and explain that to the Examiner.

A Exhibit No. 2 is a structural map on the base of the Morrow Lower zone as defined by the field rules. This map is essentially the map that was presented a year ago.

It does include the new wells since that time. The only significant change in this map is the location of the fault located on the west side of the unit.

The Gulf Booth Federal Well, as shown on our earlier exhibits, was located on the downthrown side of the fault. This corrects this error.

Q Now, refer to Exhibit No. 3 and explain that to the Examiner.

A Exhibit No. 3 is an isopach of the Lower Morrow Sand as defined by the field rules. It shows the net sand development under the Rock Tank Unit and the surrounding areas.

The productive area on this sand, of course, is controlled by the structural configurations as shown on the previous exhibit. This map also shows the calculated open flow potentials for the Morrow in the Rock Tank Unit.

Q That's on the Lower Morrow zone?

A Yes, on the Lower Morrow zone.

Q Any further comments with respect to this exhibit?

A I would like to point out that the Rock Tank 3 shown on this well recovered salt water and it's because it's structurally low.

Q Now, refer to Exhibit No. 4 and explain this.

A Exhibit No. 4 is a structure of the Morrow Upper "B" Zone. It is not the base of the Upper zone as defined by the field rules, but it is the base of the zone that is producing in the Rock Tank Unit No. 1 Upper Morrow Zone.

Q Is this essentially the same plat as was introduced at the original hearing?

A Yes, sir, it is. It has been corrected for utilizing the new information.

Q That's the --

A The Gulf Well and Rock Tank Unit No. 3.

Q Only with respect to the fault line?

A The fault has been changed. That is the only significant change.

Q Now, refer to Exhibit No. 5 and explain that.

A Exhibit No. 5 is an isopach of the net effective porosity occurring in the Morrow Upper Zone and again this is our nomenclature that is defined as "B" Zone and this will be demonstrated on Exhibit No. 6, the cross section through here.

It shows the net effective pay of the zone that's

producing in the Rock Tank Unit No. 1. The Monsanto Rock Tank No. 3 had twenty-five feet of sand in it but it was wet because of its low, structural position.

MR. NUTTER: Now, you gave a drill stem in the Upper Sand. Did you have a test in the Lower Sand in this zone also?

THE WITNESS: It is shown on the next exhibit, sir.

Q (By Mr. Hinkle) Now, refer to Exhibit 6 and explain that.

A Exhibit 6 is a stratigraphic cross section that shows the correlation of the Morrow and the Rock Tank area. This shows six distinct correlative zones in the Morrow Plastic Interval.

Q Now, is an index map shown in connection with this exhibit that shows the cross section?

A Yes, sir. It is shown in the upper right-hand corner of the cross section plat. I think at this time it would be well to point out the development history of the Rock Tank Unit and the surrounding wells.

The first well drilled in this area was the Gulf North Caverns Unit. It encountered a plain Lower Morrow Sand but it was wet and was untested.

The next well to be drilled was the Union Dark Canyon Well. This well did not have any effective, clean Morrow Sand in it in the Lower zone and was subsequently

completed opposite the Atoka Sand. This well, to my knowledge, is not producing; does not have a connection to a gas line.

The next well was Monsanto's Rock Tank Unit which was completed in February of 1968.

Q Is that the No. 1 Well?

A Yes, sir, No. 1 Rock Tank Unit. It was completed in February of 1968 as a dual completion in the Morrow Lower zone and the Morrow Upper zone. Those perforations and completions are shown on this cross section.

Subsequently, the No. 2 Rock Tank was drilled and completed in July of '68 from the Lower Morrow zone only. The Upper zone tested tight.

The next well was Monsanto's No. 3 Rock Tank Unit which was structurally low. We knew it would be low, but at that time, we did not know where the gas-water contact might be and this is one of the risks inherent in developing a feature such as the Rock Tank Unit structure.

Gulf completed, in March of this year, their No. 1 "BO" Booth Federal. This well was completed in the Lower Morrow zone for a calculated open flow of 4.3 million cubic feet per day. They also had a flowing drill stem test from the Morrow Upper zone. However, I should like to point out to the Examiner that there was two zones perforated in this well, Upper zone, one of which is in what we call the "C"

zone on the cross section.

We do not have a map of this Lower Sand because it is difficult to correlate that sand with any reliability into the other wells. The extent of that sand is questionable.

Q I don't believe that you mentioned the potential of the Rock Tank Nos. 1 and 2.

A Okay, sir. The Rock Tank Unit No. 1, the Lower Morrow zone was potentialed for calculated absolute open flow of 52,351,000 Mcf per day. The Upper zone potentialed for calculated open flow of 6.7 million cubic feet per day.

The Rock Tank 2 completed from the Lower Morrow zone had a calculated absolute open flow of 24.5 million cubic feet per day.

Q Have either one of the Gulf Wells been communitized with any acreage within the Unit?

A Yes, sir. The Gulf Well drilled in Section 12 was communitized with the east half of Section 12, which was in the Unit.

Q That's the normal standard 640 acres?

A Yes, sir.

Q Do you have any further comments with respect to Exhibit No. 6?

A No, sir. That concludes my comments unless the Examiner --

MR. HINKLE: This is all the direct with respect

to this witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q Now, Mr. Jons, what does the Commission Order define as being the upper and the lower vertical limits of this pool?

A They are defined -- I don't have a copy of the field rules with me, sir, but they are defined -- the separation between the two zones is a marker found at 10,155 in Monsanto's Rock Tank Unit No. 1 and you will note at that point a correlative shale that goes completely across the cross section which we feel is an effective permeability barrier between the Upper and Lower Morrow zone.

Q Would that be at the bottom of the "D" zone depicted on your cross section?

A Yes, sir.

Q So the "A" zone, "B" zone, "C" zone and "D" zone are in the Upper pool and the "E" and "F" zones would be in the Lower pool?

A Yes, sir.

Q Now, your No. 1 Rock Tank Unit is a dual completion of the two pools?

A Yes, sir.

Q Your No. 2 tested tight in the Upper and potentialed

for some twenty-five million in the Lower?

A Yes, sir.

Q No. 3 was wet in both zones, was it?

A Yes, sir.

Q And the Gulf Well is completed in the Upper and Lower both, also?

A Yes, sir.

Q It's a dual completion?

A Yes.

MR. NUTTER: I see. Are there any further questions of Mr. Jons?

MR. HINKLE: We would like to offer Exhibits 1 through 6.

MR. NUTTER: Monsanto's Exhibits 1 through 6 will be admitted into evidence.

(Whereupon, Applicant's Exhibits 1 through 6 were offered and admitted in evidence.)

MR. HINKLE: I would like to call Mr. Harryman.

MR. NUTTER: If there are no further questions, the witness may be excused.

PAUL HARRYMAN

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, your residence and by whom you are employed.

A Paul Harryman, Petroleum Engineer with Monsanto Company, Midland, Texas.

Q Have you previously testified before this Oil Conservation Commission?

A I have.

Q And your qualifications as a Petroleum Engineer are a matter of record with the Commission?

A Yes, sir, they are.

Q Have you made a study of the Rock Tank Upper and Lower Morrow Gas Pools?

A Yes, I have.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A Yes, sir, Exhibits 7 through 14 have been prepared.

Q Refer to Exhibit No. 7 and explain this to the Commission.

A Exhibit No. 7 shows the production from both the Upper Morrow and Lower Morrow Gas Pools in the Rock Tank area.

The Upper Morrow is producing from or has been producing from only one well; Gulf's Well was completed in

March of this year, but it has not been connected to a pipeline.

The Lower Morrow has been producing from two wells, the Rock Tank Unit No. 1 and No. 2. This shows the production by months, since pipeline connections in March of '69.

The cumulative production from the Upper Morrow Pool through March of '70 is 743,230 Mcf of gas. The production from the Lower Morrow Rock Tank Unit No. 1 has been 1,590,000 Mcf; from the Rock Tank 2, 1,973,000 Mcf, for a total production from the Lower Morrow Gas Pool of about three and a half billion cubic feet.

This exhibit also indicates the productivity of both zones. The Upper zone has consistently produced in the order of 2,000,000 cubic feet a day and in January of 1970 we see that the Upper Morrow zone produced in excess of 2,000,000 cubic feet a day.

The Lower Morrow zone -- actually, in October of '69, the Rock Tank Unit No. 1 produced 8.9 million cubic feet a day. The Rock Tank 2 produced 8.2 million cubic feet a day and they have consistently produced in the order of four to five million cubic feet a day.

Q Now, refer to Exhibit No. 8 and explain that to the Examiner.

A Exhibit No. 8 is the average reservoir characteristics of both pools.

For the Upper Morrow, the depth is approximately 9,965 feet with a reservoir temperature of 170 degrees Fahrenheit; average porosity of 15 percent; water saturation of 35 percent; permeability of 20 millidarcies; original reservoir pressure was measured at 3971 PSIG on drill stem test; gas gravity is .589; condensate gravity, 52.9 degrees API and producing gas-condensate ratio is 2,040 Mcf per barrel.

On the Lower zone, the producing depth is about 10,290 feet; temperature is 172 degrees Fahrenheit; porosity, 9 percent; connate water saturation, 30 percent; permeability, 324 millidarcies; original reservoir pressure, 4300 PSIG on drill stem test; gas gravity, .585; condensate gravity, 62.9 degrees API; gas-condensate ratio of 1,509 Mcf per barrel.

Q Now, refer to Exhibit No. 9.

A Exhibit No. 9 is reservoir pressures, either measured or calculated, on both the Upper and Lower Morrow zone. The only measured pressure on the Upper Morrow zone was by drill stem test in the Rock Tank Unit No. 1.

Then, in January of '68, took multi-point back pressure test and from the shut-in wellhead pressure, I calculated a bottom hole pressure of 3809.

In May of '69, we took another multi-point back pressure test and from the wellhead pressure, calculated a bottom hole pressure of 3640.

In September of '69, shut-in pressures were taken as required by C125 and from the wellhead pressure, I calculated a bottom hole pressure of 2960. This is after a cumulative production of 317,365 Mcf of gas.

Then, in May of '70, we shut in the well; it had been shut in for 144 hours when the shut-in wellhead pressure was measured and from this shut-in wellhead pressure, I calculated a bottom hole pressure of 3392.

You can see that the bottom hole pressure and also the shut-in wellhead pressure increased from September of '69 to May of '70, even though our cumulative production is about twice what it was in September.

I attribute this increase in pressures from inadequate buildup in September of '69 and possibly some fluid in the hole, which would effect both pressures.

MR. NUTTER: Well, Mr. Harryman, you mentioned there that you had 144 hours shut-in on this May test. What about September and May of last year?

THE WITNESS: September was 75 hours; in May it was 97 hours, but, I would like to point out that in September of '69 the well was producing at 2,000,000 cubic feet a day with a flowing tubing pressure of 1300 pounds prior to being shut-in, whereas in May of '70, the well was producing at one and a half million cubic feet per day with a flowing tubing pressure of 2,027 pounds, so you see there, we have

approximately a 700 pound buildup before it's even shut-in.

And, I believe now, I would like to go to the next exhibit and show the --

Q (By Mr. Hinkle) Exhibit No. 10?

A Exhibit No. 10 and show the plot of pressure versus cumulative production. I might point out that Gulf's Well, even though it has been completed, they have not to my knowledge, and I called them for pressure data, they said that they had not taken a multi-point back pressure test on the Upper zone, so I did not have any pressure data from this well.

Even if we had had some pressure data, I don't think it would have been of any value because, as you saw on the cross section, their well is perforated from one additional -- at least one additional zone to what our Rock Tank 1C is perforated in, so we wouldn't expect -- actually would expect an original pressure of probably this new zone in their well.

In Exhibit 10 we can see the scattering of the pressure points plotted on our pressure versus cumulative production curve and as I say, the September, 1969 point is way low due to inadequate buildup, I'm sure is the main reason for this.

In May of '69, this point is also below the predicted curve, even though it was shut-in 97 hours;

apparently, the buildup was not quite complete. From this pressure-cumulative curve on the Upper Morrow Gas Pool, I have estimated an ultimate recovery of six billion cubic feet of gas.

Q What are your conclusions from the curve shown by Exhibit No. 10?

A The pressure data -- actually, I believe we only have probably two good pressure points here for predicting ultimate recovery, so, like I say, I have estimated it to be six billion.

From volumetric calculations, you would expect an ultimate recovery in the order of 7.6 billion cubic feet for 640-acre spacing. Based on the limited amount of data that we have from this zone, I believe that these two recoveries are in close agreement.

The pressure recovery is about 80 percent lower than the volumetric calculation, but I would conclude from this data that the Rock Tank 1C is draining 640 acres.

Q Or more?

A Or more.

Q Now, do you want to refer back to Exhibit No. 9 and refer to the Lower Morrow part of it?

A Yes, sir. Exhibit No. 9, the first eight pressures recorded were taken from the Rock Tank Unit No. 1 tubing zone; the next four was from the Rock Tank 2 and the last one

was from the Gulf Booth "BO" Federal No. 1.

Most of these pressures on the Rock Tank 1 and 2 were measured bottom hole pressures. The last two pressures were calculated as indicated by the asterisk. The original pressure in the Rock Tank 1 was 4313 PSIA; then, in April of '68, we measured a bottom hole pressure of 4256 after producing 18,000 Mcf of gas.

The same month we measured another bottom hole pressure of 4239 after producing approximately 37,000 Mcf of gas. Then, in July of '68 on the Rock Tank 1, we measured a bottom hole pressure of 4223 pounds after producing 64,000 Mcf of gas. This same date in July of '68, we measured a bottom hole pressure of 4210 in the Rock Tank 2.

These two pressures are within 13 pounds of each other, indicating excellent reservoir continuity between the two wells which are located in excess of a half a mile apart.

Then, in May of '69, we measured bottom hole pressures in both wells; Rock Tank 1 had a bottom hole pressure of 4181 after producing 347,000 cubic feet of gas. The Rock Tank 2 had a bottom hole pressure of 4151 after producing 293,000 cubic feet of gas, and again the pressures are within 30 pounds of each other on the two wells.

In September of '69, we had a shut-in pressure for C125 and from these shut-in wellhead pressures, I calculated bottom hole pressures of 4,090 pounds for the

Rock Tank 1, 4,063 pounds for the Rock Tank 2, after producing 798,000 and 907,000 Mcf respectively from the two wells.

On February 23, 1970, the Gulf Booth "BO" Federal Well was potentialed and shut-in wellhead pressure was 3118 pounds, which is lower than the pressures measured -- the pressures taken in the Rock Tank 1 and 2 in September of '69.

The calculated bottom hole pressure for the Gulf Booth "BO" Federal 1 was 3,917 pounds.

Q Now, refer to Exhibit No. 11 and explain that.

A Exhibit No. 11 is a plot of bottom hole pressure versus cumulative production and the first six points on the curve is the average bottom hole pressure of the Rock Tank Units 1 and 2, plotted against the cumulative production from both wells.

Then, the last point on the curve is the pressure measured from the Gulf Booth "BO" Federal 1 and this is plotted at a cumulative production of 3,000,277,000 cubic feet of gas which was produced from the Rock Tank --

MR. NUTTER: Wait a minute. How can it be the Booth? The Booth pressure was 3917, wasn't it?

THE WITNESS: Well, excuse me. These are BHP over Z. I corrected them. On the right at the top of the graph there is another column which is the --

MR. NUTTER: So your 3917 converts to 4163?

THE WITNESS: Right, bottom hole pressure over Z.

MR. NUTTER: I wondered why it was above the 4,000 pounds.

THE WITNESS: Yes, I should have pointed that out. So, this point from the Gulf Well falls right on our BHP over Z curve, indicating excellent drainage to a point that this well is completed, which is 4500 feet from the closest producing well, the Rock Tank Unit No. 1.

This pressure data indicates good communication and drainage of in excess of 640 acres. From this pressure data I have estimated ultimate recovery of about fifty million cubic feet of gas.

Volumetric calculations for 640 acres, you would expect to recover ten billion cubic feet of gas, so this also shows that these two wells, the Rock Tank Unit 1 and 2, have been draining considerably in excess of 640 acres.

Q (By Mr. Hinkle) Now, refer to Exhibit No. 12 and explain this.

A Exhibit No. 12 is a comparison of economics of developing on 640 acres or 320 acres for the Rock Tank Upper Morrow Gas Pool.

I have concluded that the one well in the Upper Morrow will drain 640 acres, so if we develop on -- should have to develop on 320, assuming that two wells would be

competing for the same reserves that one well would be draining for 640, so the 320 acre reserves or ultimate recovery is half of what would be for 640-acre spacing.

Q Now, refer to Exhibit No. 13.

A Maybe I should go ahead and point out the difference in the economics on this development of 640 - 320.

On 640, our income from sales for six billion cubic feet of gas would be $817,000; direct operating expense and severance tax would be $165,000, giving an operating income of $651,000.

Our investment for well cost which does not consider any risk involved is $215,000; federal income tax of $106,000, so our profit would be $330,000 on a $215,000 investment. This is a ratio of profit to investment of 1.54.

Pay out, 6.7 years, for an estimated life of 20 years. This economics for drilling on 640-acre spacing is attractive if you do not consider risk. Of course, we know there is some risk involved because we drilled a dry hole, the Rock Tank Unit 3, but 640-acre spacing is economical.

However, we go to 320-acre spacing, our income from sales would be $408,000; direct operating expense and severance tax would be $142,000, for an operating income of $266,000.

Investment well cost is $215,000, again assuming no risk, which would give us a profit of $51,000. Of course,

take a $30,000 income tax credit and we would have a profit of $81,000, for a profit to investment ratio of .38.

MR. NUTTER: Mr. Harryman, I believe there is an error on this exhibit. Up here under the item labeled "ultimate recovery" shouldn't that say Upper Morrow?

THE WITNESS: Yes, sir, it should. It is labeled at the top, isn't it?

MR. NUTTER: Right.

THE WITNESS: But, it is uneconomical to develop reserves of this type on 320-acre spacing and even without considering risk and we know as we would drill more wells or more wells would be required if it was developed on 320-acre spacing, our risks would even increase more because of the drilling of an excessive number of wells, so we definitely could not justify economically developing this reservoir on 320-acre spacing.

Q (By Mr. Hinkle) Now, refer to Exhibit No. 13 and explain that.

A Exhibit No. 13 is, again, a comparison of economics for developing on 640 acre to 320 acre-spacing in the Lower Morrow Gas Pool. As I mentioned earlier, our volumetric calculations indicate an ultimate recovery of ten billion cubic feet of gas from the Lower Morrow Pool, and our pressure data indicates strongly that one well will drill considerably in excess of 640 acres, so any drilling on 320 would be just

two wells competing for the same reserves as one on 640.

So, the income from sales on 640-acre spacing would be $1,365,000; direct operating expense and severance tax is $195,000, giving an operating income of $1,170,000. Investment well cost is $215,000; federal income tax, $240,000, for a profit of $715,000. This gives you a profit investment ratio of 3.32.

This is excellent economics and provides an incentive for exploring and developing reserves of this type.

Now, we go to 320-acre spacing and we have ultimate recovery of five billion cubic feet of gas; income from sales, $683,000; direct operating expense and severance tax, $158,000, for an operating income of $525,000.

Investment well cost, $215,000, considering no risk and, again, there is some risk involved and it would increase as you drill more wells. Federal income tax would be $61,000, for a profit of $249,000.

This is a profit-investment ratio of 1.16, and, of course, our pay out increases considerably from 3.7 years on a 640-acre spacing to 8 years on 320. This is marginal economics, especially if you consider risk.

I conclude that developing on 320-acre spacing would cause an economic loss from drilling unnecessary wells and also it would increase the risk of drilling because of drilling more wells than you would on a 640.

Q Now, refer to Exhibit No. 14 and explain that.

A Exhibit No. 14 shows 12 Morrow Gas Pools with field rules in Lea and Eddy County, New Mexico. Only 3 out of the 12 pools have 320-acre spacing. The remaining 9 pools have 640-acre spacing, so we are asking for 640 and we are not setting precedent. In fact, this data indicates that the Morrow Pools usually justify wide spacing and the economics has so concluded that apparently in 9 cases out of 12.

Q What are your recommendations to the Commission?

A My recommendations are that the temporary rules allowing for 640-acre spacing in both the Rock Tank Upper Morrow and Rock Tank Lower Morrow would be made permanent. I believe that 640-acre spacing of both pools will serve in the interest of conservation and prevention of waste and also protect correlative rights.

I believe that developing on 640-acre spacing will prevent the economic loss that would be caused from drilling unnecessary wells if developed on 320-acre spacing. I also believe that developing on 640-acre spacing would avoid the increase of risk from drilling an excessive number of wells in this pool.

MR. HINKLE: We would like to offer Exhibits 7 through 14 in evidence.

MR. NUTTER: Monsanto's Exhibits 7 through 14 will

be admitted in evidence.

(Whereupon, Applicant's Exhibits 7 through 14 were offered and admitted in evidence.)

MR. HINKLE: That's all we have.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Harryman, referring to your Exhibits 12 and 13, you have used $215,000 as development cost. Is that the cost of a single completion or is that the cost of a dual?

A No, sir, this is the cost of single completions.

Q All right. Now, with your income from sales, what value have you given to an Mcf of gas there?

A Sixteen and a half cents.

Q And to a barrel of condensate?

A $3.05.

Q Now, you gave me the shut-in times on the pressures for the Upper Pool, but you didn't give me the shut-in times on the Lower Pool. Would you run through those, please?

That would be Exhibit No. 9, I believe, the lower portion of Exhibit No. 9.

A I have here the shut-in time of the pressures on September of '69. On the Rock Tank Unit 1 it was 75 hours.

Q That's when you had a measured pressure of 3265?

A Yes, sir.

Q That's 75 hours?

A Seventy-five hours. On the Rock Tank 2 for a measured pressure of 3118 it was 24 hours.

Q You had a pressure of what?

A 3248.

Q Okay. How many hours?

A Twenty-four hours. I might have the shut-in times on these others here with me, but from my experience in measuring these bottom hole pressures, the Rock Tank 1 usually builds up to static level in about two hours. When you shut it in it will be built up to static pressure in about two hours.

The Rock Tank 2, I don't recall that it builds up that fast, but it again has very good permeability and it builds up.

4-5-68, the Rock Tank 1 had a measured pressure of 3394 wellhead pressure. That was on a buildup of 283 hours.

Q Okay.

A 4-9-68, that was a buildup of two hours and we had observed complete buildup. 7-23-68, 216 hours. Now, these, of course, like that 216 hours, that was not a buildup. That was just a pressure taken after it had been shut-in because it was not flowing through a pipeline.

In May of '69 that was 97 hours shut-in; in September of '69 it was 75. In the Rock Tank 2, 7-23-68, that was 91 hours; May of '69, 102 hours; in September of '69 it

was 24 hours.

Q Do you have any idea of when Gulf took this pressure on their well?

A On their C122 it is reported as being February 23.

Q Had the well been produced at that time?

A Gulf's Well? No, sir. It is not connected to the pipeline.

Q So, this should be a reservoir pressure in that well?

A Yes, sir, it is. It has not been connected to a pipeline to date, I don't believe.

Q I see. You think then that the rate of flow up here in this Upper Morrow affected that increased pressure measured in May of 1970 more than the time shut-in or has it been produced at a lesser rate than it had when you took that pressure back in September of '69?

A Has it been produced at a lesser rate? September it produced forty-eight million. The only month that it produced a lesser rate was in March when it was first put on pipeline; it produced twenty million. Actually, in November it produced forty-five million, November of '68.

Q How about in May of '70? What's been the rate of production?

A May of '70 is when we cut the production back, I believe around the 4th of May, just recollecting. The rate

was 24 hours.

Q Do you have any idea of when Gulf took this pressure on their well?

A On their C122 it is reported as being February 23.

Q Had the well been produced at that time?

A Gulf's Well? No, sir. It is not connected to the pipeline.

Q So, this should be a reservoir pressure in that well?

A Yes, sir, it is. It has not been connected to a pipeline to date, I don't believe.

Q I see. You think then that the rate of flow up here in this Upper Morrow affected that increased pressure measured in May of 1970 more than the time shut-in or has it been produced at a lesser rate than it had when you took that pressure back in September of '69?

A Has it been produced at a lesser rate? September it produced forty-eight million. The only month that it produced a lesser rate was in March when it was first put on pipeline; it produced twenty million. Actually, in November it produced forty-five million, November of '68.

Q How about in May of '70? What's been the rate of production?

A May of '70 is when we cut the production back, I believe around the 4th of May, just recollecting. The rate

was cut back from two million to a million and a half. At two million a day rate, this well was flowing on May 5th of '70, the well was flowing -- no, excuse me, on May 4th, it was flowing at two million a day rate with 1,225 pound flowing tubing pressure, so then he cut it back to -- our pumper cut it back to a million and a half.

We can make up -- sell all we need from the Lower Zone, so he just cut this one back and he took another flowing tubing pressure on May the 18th and it was flowing at 2,025 pounds on the 18th at a million and a half rate; then, on May the 5th, prior to shutting in the well, it was still flowing at 2,027 pounds at a million and a half a day rate, so if we had shut it in at say it had been flowing at two million a day rate, our pressure would have been at 1,225 instead of 2,050, so we would have another 800 pounds pressure to build up, say, in this 144 hours rather than just going from 2,027 to our shut-in pressure of 2702, we would have started at 1225 pounds.

So, what I am saying is actually we took part of our buildup by cutting our well production back and we certainly intend to do this in the future in all of our pressure measurements to be sure that we can get a complete buildup on this zone.

MR. NUTTER: Are there any other questions of Mr. Harryman?

REDIRECT EXAMINATION

BY MR. HINKLE:

Q What is the attitude of the owners of working interests in the Unit that have committed their interests to the Unit with respect to the continuation of these rules?

A In talking with the other working interest owners, they are all in favor of it, all that I have talked to. I did not talk to all of them, but I did send word out to all of them that we were going to request the 640-acre spacing be made permanent and they are all in favor of it.

Q Have you had any objections from anybody to the continuation of these field rules?

A I know of no objections.

Q Have you had any favorable from anybody that you know of that --

A We have a letter from -- we have received a copy of a letter from Mobil that was sent to the Commission. I talked with Mr. Henry, representing Baskin, and he said they were certainly in favor of it and indicated that when Mr. Baskin returned, they would send a letter to the Commission.

I believe Gulf is in favor of it.

MR. HINKLE: That's all we have.

MR. NUTTER: That's all you have, Mr. Hinkle?

MR. HINKLE: Yes.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3727 reopened?

UNKNOWN: I wonder if Mr. Harryman would repeat the figures on the recovery estimates by pressure decline, the volumetric estimates on those two zones?

THE WITNESS: On the Upper Morrow Gas Pool I estimate from pressure decline 6 billion cubic feet of gas; from volumetric calculations, 7.6. For the Lower Morrow Gas Pool the ultimate recovery that we see from producing of these two wells, Rock Tank 1 and 2, is approximately 50 billion; volumetric calculations for 640-acre spacing is ten billion cubic feet.

MR. NUTTER: The witness may be excused. Does anyone have anything in this case?

MR. HATCH: The Commission has received a letter from Mobil and telegrams from Jake Hammond and Atlantic Richfield urging continuation of 640-acre spacing in the two pools.

MR. NUTTER: Thank you. Mr. Hoover.

MR. HOOVER: John Hoover, Gulf. Gulf is also a working interest owner in the Rock Tank Unit and we are operators of the Gulf "BO" Federal Well. We support Monsanto and we recommend permanent 640-acre spacing rules.

MR. NUTTER: Thank you. Anyone else?

MR. RALPH: J. L. Ralph with Cities Service, and

we are a working interest owner in the Rock Tank Pool and we support Monsanto's application.

MR. NUTTER: Anyone else? We will take the case under advisement.

I N D E X

STATE OF NEW MEXICO)
}ss
COUNTY OF BERNALILLO)

I, GLENDA BURKS, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

NOTARY PUBLIC

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3227 heard by me on 5/13/70, 19..

..... Examiner
New Mexico Oil Conservation Commission

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. 3727
Order No. R-3428-A

APPLICATION OF MONSANTO COMPANY
FOR CREATION OF TWO GAS POOLS
AND TEMPORARY SPECIAL POOL RULES,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 13, 1970, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 20th day of May, 1970, the Commission, a quorum being present, having consdered 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 by Order No. R-3428, dated June 6, 1968, temporary Special Rules and Regulations were promulgated for the Rock Tank-Upper Morrow Gas Pool and for the Rock Tank-Lower Morrow Gas Pool, Eddy County, New Mexico, establishing 640-acre spacing units for a period of one year after first pipeline connection in either of said pools.

(3) That pursuant to the provisions of Order No. R-3428, this case was reopened to allow the operators in the subject pools to appear and show cause why the Rock Tank-Upper Morrow Gas Pool and the Rock Tank-Lower Morrow Gas Pool should not be developed on 320-acre spacing units.

(4) That the Special Rules and Regulations promulgated by Order No. R-3428 have afforded and will afford to the owner of each property in said pools the opportunity to produce his just and equitable share of the gas in said pools.

(5) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-3428 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the Rock Tank-Upper Morrow Gas Pool and the Rock Tank-Lower Morrow Gas Pool, Eddy County, New Mexico, promulgated by Order No. R-3428, are hereby continued in full force and effect until further order of the Commission.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

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

esr/

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. 3727
Order No. R-3428
NOMENCLATURE

APPLICATION OF MONSANTO COMPANY
FOR AN UNORTHODOX GAS WELL LOCATION,
A NON-STANDARD PRORATION UNIT, A DUAL
COMPLETION, CREATION OF TWO GAS POOLS,
AND TEMPORARY SPECIAL POOL RULES,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on February 28, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 6th day of June, 1968, 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, Monsanto Company, seeks approval for the unorthodox gas well location of its Rock Tank Unit Well No. 1, located 660 feet from the North line and 920 feet from the West line of Section 7, Township 23 South, Range 25 East, NMPM, Eddy County, New Mexico, said well to be dedicated to the proposed non-standard proration unit comprising the W/2 of said Section 7 and the E/2 of Section 12, Township 23 South, Range 24 East.

(3) That the applicant also seeks authority to complete the subject well as a dual completion (conventional) to produce

gas from the Upper Morrow formation through the casing-tubing annulus and from the Lower Morrow formation through 2 7/8-inch tubing, with separation of zones by a packer set at approximately 10,200 feet.

(4) That the applicant further seeks the creation of Upper Morrow and Lower Morrow gas pools for said well and the promulgation of temporary special rules therefor, including provisions for 640-acre spacing.

(5) That the subject well was drilled as a wildcat oil well at a standard location to test the Devonian formation and was subsequently plugged back and completed in the Upper and Lower zones of the Morrow formation.

(6) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(7) That the said Monsanto Company Rock Tank Unit Well No. 1 has discovered a separate common source of supply which should be designated the Rock Tank-Upper Morrow Gas Pool; that the vertical limits of said pool should be that portion of the Morrow formation above the marker found at 10,155 feet in said discovery well; and that the horizontal limits of said pool should be all of the aforesaid Section 7.

(8) That the said Monsanto Company Rock Tank Unit Well No. 1 has discovered a separate common source of supply which should be designated the Rock Tank-Lower Morrow Gas Pool; that the vertical limits of said pool should be that portion of the Morrow formation from the marker found at 10,155 feet in said discovery well to the base of the Morrow formation; and that the horizontal limits of said pool should be all of the aforesaid Section 7.

(9) That approval of the unorthodox location, dual completion, and promulgation of temporary special rules and regulations providing for 640-acre spacing units for each of the proposed new gas pools will afford the applicant the opportunity to produce its just and equitable share of the gas in the pools, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and otherwise prevent waste and protect correlative rights.

(10) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(11) That the special rules and regulations should be established for a temporary period to expire one year from the date that a pipeline connection is first obtained for a well in either or both of said pools; that during this temporary period all operators in the subject pools should gather all available information relative to drainage and recoverable reserves.

(12) That this case should be reopened at an examiner hearing one year from the date that a pipeline connection is first obtained for a well in either or both of said pools, at which time the operators in the subject pools should appear and show cause why the Rock Tank-Upper Morrow and/or the Rock Tank-Lower Morrow Gas Pools should not be developed on 320-acre spacing units.

(13) That the first operator to obtain a pipeline connection for a well in either or both of said pools should notify the Commission in writing of such fact, whereupon the Commission should notify the operator of the time for reopening this case.

(14) That the establishment of the proposed non-standard unit is unnecessary and would disrupt systematic and orderly development of the properties in the area of the pools and should, therefore, be denied.

IT IS THEREFORE ORDERED:

(1) That a new pool in Eddy County, New Mexico, classified as a gas pool for Upper Morrow production, is hereby created and designated the Rock Tank-Upper Morrow Gas Pool, with vertical limits comprising that portion of the Morrow formation above the marker found at 10,155 feet in the Monsanto Company Rock Tank Unit Well No. 1, located 660 feet from the North line and 920 feet from the West line of Section 7, Township 23 South, Range 25 East, NMPM, Eddy County, New Mexico, and horizontal limits comprising all of said Section 7.

(2) That a new pool in Eddy County, New Mexico, classified as a gas pool for Lower Morrow production, is hereby created and designated the Rock Tank-Lower Morrow Gas Pool, with vertical limits comprising that portion of the Morrow formation from the

aforesaid marker to the base of the Morrow formation, and horizontal limits comprising all of said Section 7.

(3) That temporary Special Rules and Regulations for the Rock Tank-Upper Morrow Gas Pool and for the Rock Tank-Lower Morrow Gas Pool, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
ROCK TANK-UPPER MORROW GAS POOL
AND THE
ROCK TANK-LOWER MORROW GAS POOL

RULE 1. Each well completed or recompleted in the Rock Tank-Upper Morrow Gas Pool or in the Upper Morrow formation within one mile thereof, and not nearer to or within the limits of another designated Upper Morrow gas pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

Each well completed or recompleted in the Rock Tank-Lower Morrow Gas Pool or in the Lower Morrow formation within one mile thereof, and not nearer to or within the limits of another designated Lower Morrow gas pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located on a standard unit containing 640 acres, more or less, consisting of a governmental section.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 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 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 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 shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all operators offsetting the proposed location or if no objection to the unorthodox location has been entered within 20 days after the Secretary-Director has received the application.

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Rock Tank-Upper Morrow Gas Pool or in the Upper Morrow formation within one mile thereof and any well presently drilling to or completed in the Rock Tank-Lower Morrow Gas Pool or in the Lower Morrow formation within one mile thereof that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of said rule. The operator shall

notify the Artesia District Office of the Commission in writing of the name and location of the well on or before June 30, 1968.

(2) That each well presently drilling to or completed in the Rock Tank-Upper Morrow Gas Pool or in the Upper Morrow formation within one mile thereof and any well presently drilling to or completed in the Rock Tank-Lower Morrow Gas Pool or in the Lower Morrow formation within one mile thereof shall not have more than 320 acres dedicated thereto until a Form C-102 dedicating 640 acres to the well has been filed with the Commission.

(3) That this case shall be reopened at an examiner hearing one year from the date that a pipeline connection is first obtained for a well in either or both of said pools, at which time the operators in the subject pools may appear and show cause why the Rock Tank-Upper Morrow and/or the Rock Tank-Lower Morrow Gas Pools should not be developed on 320-acre spacing units.

(4) That the first operator to obtain a pipeline connection for a well in either or both of said pools shall notify the Commission in writing of such fact, whereupon the Commission shall notify the operator of the time for reopening the case.

(5) That the applicant, Monsanto Company, is hereby authorized to complete its aforesaid Rock Tank Unit Well No. 1 as a dual completion (conventional) to produce gas from the Rock Tank-Upper Morrow Gas Pool through the casing-tubing annulus and from the Rock Tank-Lower Morrow Gas Pool through 2 7/8-inch tubing, with separation of zones by a packer set at approximately 10,200 feet;

PROVIDED HOWEVER, that the applicant shall complete, operate, and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the Annual Shut-in Pressure Test Period for the Rock Tank-Lower Morrow Gas Pool.

(6) That the applicant's request to dedicate a non-standard proration unit comprising the W/2 of Section 7, Township 23 South,

Range 25 East, and the E/2 of Section 12, Township 23 South, Range 24 East, NMPM, Eddy County, New Mexico, is hereby denied.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

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

esr/

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

June 6, 1968

Re: Case No. 3727
Order No. R-3428
Applicant:
MONSANTO COMPANY

Mr. Clarence Hinkle
Hinkle, Bondurant & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico 88201

DOCKET MAILED
Date 4-30-70

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC
Other

mr. George Hatch

RECEIVED
APR 3 1969
O. C. C.
ARTESIA, OFFICE

Monsanto

HYDROCARBONS & POLYMERS DIVISION

Monsanto Company
101 North Marienfeld
Midland, Texas 79701
(915) 683-3306

April 2, 1969

New Mexico Oil Conservation Commission
P. O. Drawer DD
Artesia, New Mexico 88210

Gentlemen:

This is your notification of first gas sales to Transwestern Pipeline Company from Monsanto's Rock Tank Unit #1-C, #1-T and #2, Eddy County, New Mexico, on March 21, 1969.

Yours very truly,

A. W. Wood

A. W. WOOD
District Production
Superintendent

AWW:bw

Rock tank Unit #1 - D - 7 - 23 - 25
" 2 - K 6 - 23 - 25

in Compliance w/ Case # 3727 Order R-3428

CLARENCE E. HINKLE
W. E. BONDURANT, JR.
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
MICHAEL R. WALLER

STUART D. SHANOR

LAW OFFICES
HINKLE, BONDURANT & CHRISTY
600 HINKLE BUILDING
ROSWELL, NEW MEXICO 88201

MIDLAND, TEXAS OFFICE
521 MIDLAND TOWER
(915) MU 3-4691

OF COUNSEL: HIRAM M. DOW

TELEPHONE (505) 622-6510
POST OFFICE BOX 10

February 19, 1968

Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Attention: Dan Nutter

Gentlemen:

We enclose in triplicate application of Monsanto Company for approval of a non-standard gas well location, dual completion, and adoption of special pool rules in connection with the recent discovery of Monsanto in Section 7, Township 23 South, Range 25 East. This appears as Case No. 3727 on the examiner's docket and is in accordance with our previous discussion over the telephone.

Yours sincerely,

HINKLE, BONDURANT & CHRISTY

By _____

CEH:cs
Enc.
cc: Monsanto Company

'68 FEB 20 AM 8

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

APPLICATION OF MONSANTO COMPANY FOR APPROVAL OF NON-STANDARD GAS WELL LOCATION 920 FEET FROM THE WEST LINE AND 660 FEET FROM THE NORTH LINE OF SECTION 7, TOWNSHIP 23 SOUTH, RANGE 25 EAST; ALSO FOR APPROVAL OF DUAL COMPLETION OF ROCK TANK UNIT NO. 1 WELL LOCATED UNIT D, SECTION 7, TOWNSHIP 23 SOUTH, RANGE 25 EAST, EDDY COUNTY, N.M. IN UPPER AND LOWER GAS ZONES MORROW FORMATION; ALSO ADOPTION OF SPECIAL POOL RULES, INCLUDING 640 ACRE SPACING AND DEDICATION OF W½ SECTION 7, TOWNSHIP 23 SOUTH, RANGE 25 EAST AND E½ SECTION 12, TOWNSHIP 23 SOUTH, RANGE 24 EAST TO SAID WELL.

Case No. 3727

'60 FEB 20 AM 8 30

Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Comes Monsanto Company, with offices at Midland, Texas, acting by and through the undersigned attorneys, and hereby makes application for approval of a non-standard gas well location 920 feet from the West line and 660 feet from the North line of Section 7, Township 23 South, Range 25 East; also for approval of dual completion of Rock Tank Unit No. 1 well located in Unit D, Section 7, Township 23 South, Range 25 East, Eddy County in upper and lower gas zones of the Morrow formation; also adoption of special pool rules, including 640 acres spacing and dedication of W½ Section 7, Township 23 South, Range 25 East and E½ Section 12, Township 23 South, Range 24 East to said well, and in support thereof respectfully shows:

1. That applicant is the unit operator designated in a certain Unit Agreement for the Development and Operation of the Rock Tank Unit Area situated in Eddy County, New Mexico and has recently completed a well capable of producing gas in paying quantities from the Morrow formation, said well being located 920 feet from

the West line and 660 feet from the North line of Section 7, Township 23 South, Range 25 East, N.M.P.M. That there is attached hereto, made a part hereof and for purposes of identification marked Exhibit "A" a plat showing the outlines of said unit area and the location of the discovery well, together with the ownership of the oil and gas leases within a radius of two miles from the discovery well.

2. That the initial test well was drilled as a wildcat oil well, being located at the most strategic location according to geophysical information available, and was projected to test the Devonian formation. That said well was drilled to a depth sufficient to test the Devonian formation as required by the terms of the unit agreement and the Devonian formation was found to be non-productive and the well was plugged back and completed as a gas well in the upper and lower zones of the Morrow formation. That there is attached hereto, made a part hereof, and for purposes of identification marked Exhibit "B", a diagrammatic sketch showing the manner in which said well was completed. Said well was completed as a well capable of producing gas from the upper zone of the Morrow formation through perforations between 9,965 feet and 9,978 feet, which will be produced through the annulus, and capable of producing gas from the lower zone of the Morrow formation through perforations between 10,290 feet and 10,324 feet, said gas to be produced through the tubing string. Said well, upon completion, was potentialed as being capable of producing 6,696,000 cubic feet of gas from the upper Morrow formation and 44,000,000 cubic feet from the lower Morrow formation.

3. That there is attached hereto, made a part hereof and for purposes of identification marked Exhibit "C", a plat showing the exact well location and the names and addresses of all the offset operators.

4. That to the best of applicant's knowledge and belief wells completed as gas wells in the upper and lower zones of the Morrow formation will effectively and efficiently drain more than 640 acres, and that in order to prevent the economic loss caused by the drilling of unnecessary wells and to avoid the augmentation of risk arising from the drilling of an excessive number of wells and to otherwise prevent waste and protect correlative rights, applicant is desirous that the Commission promulgate temporary special rules and regulations for the area, yet undesignated or defined, in which said discovery has been made, including 640 acre spacing and regular well locations

and that such rules provide an exception as to the location of the subject well, and that due to existing geological conditions and said well being located within the Rock Tank Unit Area the W½ Section 7, Township 23 South, Range 25 East and the E½ Section 12, Township 23 South, Range 24 East be dedicated to said well.

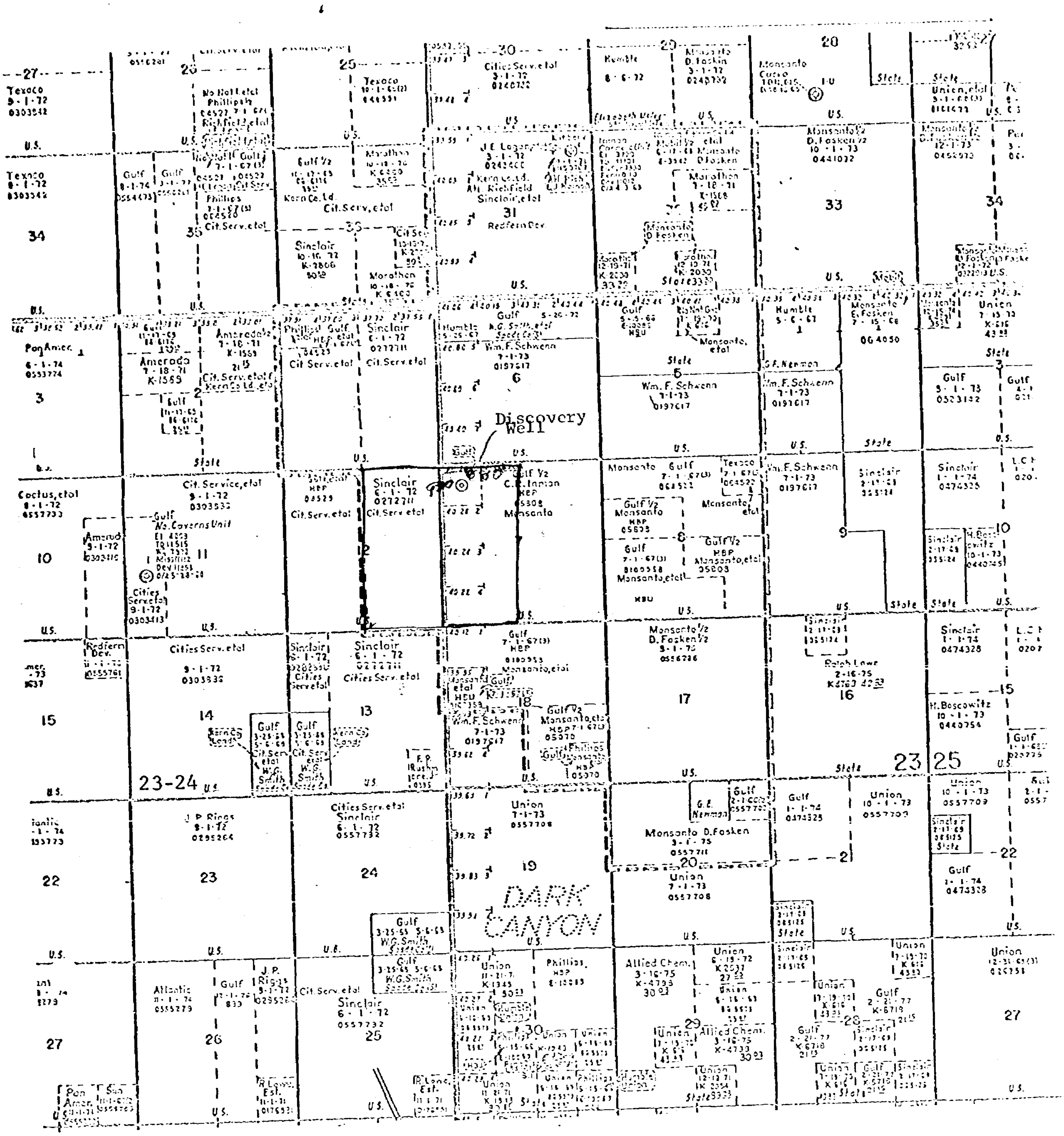
5. That applicant requests that this matter be heard at the examiner's hearing to be held on February 28, 1968.

Respectfully submitted,

MONSANTO COMPANY

By _____

Member of the Firm of
HINKLE, BONDURANT & CHRISTY
Attorneys for Applicant
Box 10
Roswell, New Mexico



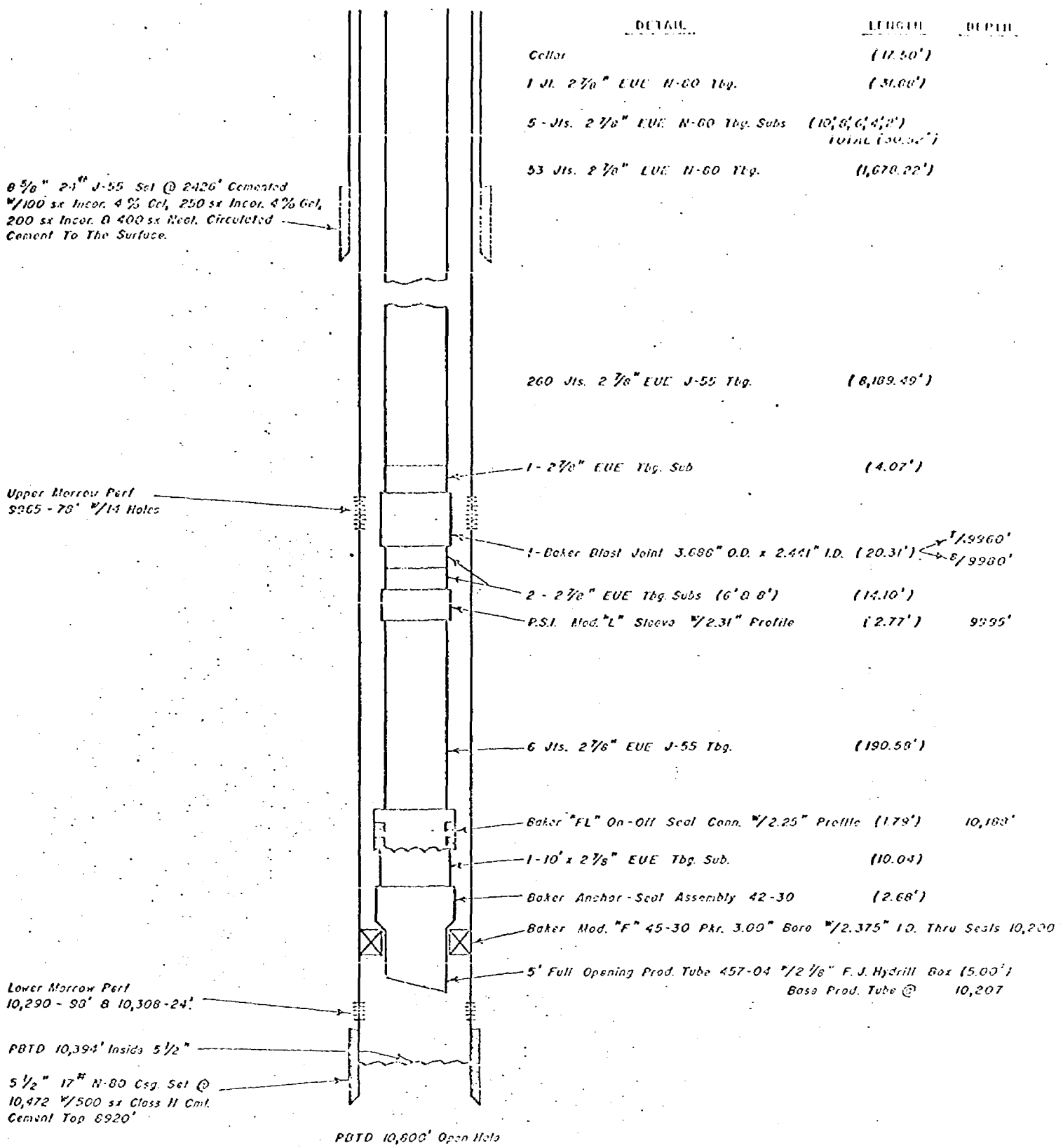
----Outline of Rock Tank Unit Area

EXHIBIT "A"

DIAGRAMMATIC SKETCH

DATE: Jan 1, 1969 WELL NO. 1 LEASE: Rock Tank Unit COUNTY: Eddy STATE: New Mexico

660' FNL & 920' FWL Sec. 7-23S-25E



DETAIL	LENGTH	DEPTH
Cellar	(12.50')	
1 Jt. 2 7/8" EUE N-80 Tbg.	(31.66')	
5 - Jts. 2 7/8" EUE N-80 Tbg. Subs (10',6',6',4',2') Total (30.32')		
53 Jts. 2 7/8" EUE N-80 Tbg.	(1,670.22')	
260 Jts. 2 7/8" EUE J-55 Tbg.	(8,189.49')	
1 - 2 7/8" EUE Tbg. Sub	(4.07')	
1 - Baker Blast Joint 3.688" O.D. x 2.441" I.D.	(20.31')	T/9960' B/9980'
2 - 2 7/8" EUE Tbg. Subs (6' & 8')	(14.10')	
P.S.I. Mod. "L" Sleeve W/2.31" Profile	(2.77')	9995'
6 Jts. 2 7/8" EUE J-55 Tbg.	(190.58')	
Baker "FL" On-Off Seal Conn. W/2.25" Profile	(1.79')	10,183'
1 - 10' x 2 7/8" EUE Tbg. Sub.	(10.04')	
Baker Anchor-Seal Assembly 42-30	(2.68')	
Baker Mod. "F" 45-30 Pkr. 3.00" Bore W/2.375" I.D. Thru Seals		10,200
5' Full Opening Prod. Tube 457-04 W/2 7/8" F. J. Hydrill Box	(5.00')	
Base Prod. Tube @		10,207

MONSANTO COMPANY
MIDLAND DISTRICT PRODUCTION
Midland, Texas

EXHIBIT "B"

SFOCC
Attn Don Nutter

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 3-20-68

Name of Employee R. L. Stamets

Time of Departure 11:30 A.M. Time of Return 5:30 P.M.

Miles Travelled 124

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

To Monsanto Company, Rock Tank Unit #1 D 7-23-25, to witness beginning of reservoir limits test. Monsanto engineers Derald Lambert & Paul Harriman in charge of Test.

Coleman Engineering ran BHP bomb to mid-point of Lower zone perfs. Continuous recording chart gauge attached to lower zone. Had wrong size element for upper zone. These pressures will have to be taken by gauge and dead-weight checked. Gauge pressures, upper zone 3230 SI, Lower zone 3410 SI. The dead-weight gauge would not work while I was at the well. They were tearing it down when I left. We'll check back during the flow test period.

R. L. Stamets
Employee's Signature
District # II

'68 APR 9 AM 8 31

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 3-25-68

Name of Employee R. L. Stamets

Time of Departure 8:20 A.M. Time of Return 11:45 A.M.

Miles Travelled 125

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

To Monsanto Company, Rock Tank Unit No. 1 D, 7-23-25 to check on progress of reservoir limits test.
Arrived at well site at 9:30 A.M. more or less. Gauge chart on lower Morrow showed time at 8:10 A.M. and showed to have been running about 10 minutes. Bomb was still in the hole. Nobody at the location. Both zones shut-in.

SI Pressures observed
3-20-68 UZ 3230, LZ 3410
3-25-68 UZ 3250, LZ 3475
Monsanto dead weights UZ 3248, LZ 3418

Check dry hole in 28-23-23, not ready checked commingling facilities in 5-21-24 and gas wells in the Cemetary Morrow gas pool. Phillips Petroleum Co., Royal A #1, casing pressure 67#, flowing tubing pressure 1085#.

R. L. Stamets
Employee's Signature
District # II

'68 APR 9 AM 8 31

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 3-28-68

Name of Employee R. L. Stamets

Time of Departure 7:40 A.M. Time of Return 4:30 P.M.

Miles Travelled 121

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

To Monsanto Co., Rock Tank Unit #1 D, 7-23-25 to witness reservoir limit test.

At 9:00 A.M. Coleman Engineering was running a BHP bomb in the hole. Took a dead weight pressure on lower zone at 9:40 A.M., 3390 Psi. Results of flow & SI Tests on lower zone from Paul Harrimans note book.
Bottom hole Pressure during:
Flow Period

Time Hours	PSI	SI Period SI hrs./mins/	PSI
0	4257	0/15	4235
3	4054	0/30	4239
32	4068	1/00	4241
45	4068	2/00	4243
75	4070	44/00	4243

Flowed 5.8 MMCFD with apparent loss of 14 Psi BHP. If this pressure loss is valid reserves would equal 5-6 billion cubic feet.

There was no significant pressure change on upper zone during the test.

Bottom hole bomb indicated that there is now 1500 feet of water in the tubing. Production during the test equaled 5 BW & 7B Condensate.

Monsanto dead weight SI pressures, UZ 3237 # & LZ 3418#. Somewhat higher than Colemans readings.

Kicked off upper zone flow test at 2:18 P.M. Static pressure 500#, differential 40#, 1 3/4 orifice, 4" meter run at 94°.

Flow pressure dropped to 3142 immediately.

R. L. Stamets
Employee's Signature
District # II

'68 APR 9 AM 8 31

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 4-5-68

Name of Employee R. L. Stamets

Time of Departure 8:30 A.M. Time of Return 12:10 P.M.

Miles Travelled 117

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

To Monsanto Oil Co., Rock Tank Ut., #1 D, 7-23-25, To witness start of retest, reservoir limits test.

BHP bomb was run. Well kicked off at 10:10 A.M., pressure dropped 185#. Flowing through 4" meter run, 1 3/4 plate, 865# pressure, 95# differential

Monsanto dead weight gauges, SI pressure.

Upper Zone		Lower Zone	
4-5-68	3-28-68	4-5-68	3-28-68
3074#	3237#	3420#	3418#

Monsanto's gauge reads 30# too heavy. Gauge pressures on recording chart, all on 4-5-68.

Upper Zone		Lower Zone	
10:00 A.M.	10:45 A.M.	10:00 A.M.	10:45 AM
3000#	3019#	3195#	3020#

R. L. Stamets
Employee's Signature
District # II

'60 APR 9 AM 8 31

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

Date 4-8-68

Name of Employee R. L. Stamets

Time of Departure 8:00 A.M. Time of Return 3:40 P.M.

Miles Travelled 127

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

To Monsanto Company, Rock Tank Unit #1 D, 7-23-25, to witness completion of reservoir limits retest. At 9:30 A.M. well flowing at 852# separator pressure with 98# differential at 78°.

Dead weight test upper zone SI pressure
12:00 Noon 3190#
1:25 P.M. 3189#
Pressure built steadily during test.
Original SI pressure about 3237#.

Pulled bomb from lower zone and ran new bomb while flowing. Flowed 10 minutes with bomb on bottom then shut well in.

Dead weight Test Lower zone.

4-5-68		3420#	SI
4-8-68	12:00 Noon	3246#	Flowing
	1:03 P.M.		SI
	1:05 P.M.	3440#	SI
	1:13 P.M.	3450#	"
	1:16 P.M.	3445#	"

During flow period Lower zone pressure dropped to 3200# in 3 hours. Built up to 3246 after 24 hours and did not vary more than 2 or 3 pounds after.

Employee's Signature
District #

'68 APR 9 AM 8 31

Continued

Still would recommend against creation of two seperate Morrow pools for this area for surely if more wells are drilled there will be stinkers which can only be produced up one string of tubing under a packer.

CLARENCE E. HINKLE
W. E. BONDURANT, JR.
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
MICHAEL R. WALLER

STUART D. SHANOR
C. D. MARTIN
PAUL J. KELLY, JR.

LAW OFFICES
HINKLE, BONDURANT & CHRISTY
600 HINKLE BUILDING
ROSWELL, NEW MEXICO 88201

MIDLAND, TEXAS OFFICE
621 MIDLAND TOWER
(915) MU 3-4691

OF COUNSEL: HIRAM M. DOW

TELEPHONE (505) 622-6510
POST OFFICE BOX 10

April 30, 1968

Mr. A L. Porter, Jr.
Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

Re: OCC Case No. 3727 - Monsanto Co.

Dear Pete:

Monsanto Company has called our attention to the fact that an order has not been entered in Case No. 3727 which was heard at an examiner's hearing on February 28, 1968. This was the application of Monsanto for an unorthodox gas well location, a non-standard proration unit and dual completion and temporary special pool rules for the discovery well on the Rock Tank Unit. Monsanto is considering the drilling of another well on the unit in the near future and on that account would of course like to have a decision in connection with this matter at the earliest convenience of the Commission.

Anything you can do to expedite consideration will be greatly appreciated.

Yours very truly,

HINKLE, BONDURANT & CHRISTY

By Clarence E. Hinkle

CEH:cs
Enc.
cc: Monsanto Company

'68 MAY 1 PM 1 0

Gulf Oil Corporation

EXPLORATION AND PRODUCTION DEPARTMENT--U. S. OPERATIONS
ROSWELL DISTRICT

T. W. Kidd
DISTRICT MANAGER
M. I. Taylor
DISTRICT PRODUCTION MANAGER
F. O. Mortlock
DISTRICT EXPLORATION MANAGER
H. A. Rankin
DISTRICT SERVICES MANAGER

P. O. Drawer 1938
Roswell, New Mexico 88201

February 22, 1968

Oil Conservation Commission
State of New Mexico
Post Office Box 2088
Santa Fe, New Mexico 87501

'68 FEB 26 AM 8 35

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

Re: Case No. 3727 - Examiner Hearing
February 28, 1968

Gentlemen:

Gulf Oil Corporation, as a Working Interest Owner in the Rock Tank Unit, Eddy County, New Mexico, concurs in the application of the Unit Operator, Monsanto Company, for the approval of the non-standard location and for 640-acre spacing. However, it is the opinion of Gulf that the proration unit should be confined to the governmental section in which the well is located; otherwise if the proration unit is approved in parts of two sections, additional non-standard unit exceptions will be proposed in this pool and elsewhere throughout the State, each of which would require separate notice and hearings.

Gulf is not in complete accord with the dual completion; however, Gulf is not objecting to this portion of the application. Gulf requests that an operator with acreage outside the unit be given the option to single complete these two Morrow zones, if he so elects. This method of completion would be more conformable with other Morrow pools within the State, where these lenticular deposits of sand are considered to be within a single pool.

Yours very truly,

M. I. Taylor

JLH:ers

western union

Telegram (820).

(1255).

KA042 FKA042 KA042 FBH036 LC037 L VRA002 UU
(NS MDA013 NP) PD=MIDLAND TEX 13 930A CDT=
NEW MEXICO OIL CONSERVATION COMM=
SANTA FE NMEX= 1970 MAY 13 PM 12 34

Case 3727 (Reopened)

RE FIELD RULES HEARING MAY 13 1970. ROCK TANK UPPER MORROW AND ROCK TANK LOWER MORROW FIELDS, EDDY COUNTY NEW MEXICO.

ON BEHALF OF OUR CLIENT DAVID FASKEN A WI OWNER IN THE ROCK TANK UNIT AND SURROUNDING ACREAGE WE WISH TO RECOMMEND ADOPTION OF PERMANENT FIELD RULES IDENTIFICAL TO THE TEMPORARY FIELD RULES NOW IN EFFECT=
HENRY ENGINEERING JAMES B HENRY=

5-13-70
09

WU 1201 (R 5-69)

OIL CONSERVATION COMMISSION

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

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

May 20, 1970

Mr. Clarence Hinkle
Hinkle, Bondurant & Christy
Attorneys at Law
Post Office Box 10
Roswell, New Mexico 88201

Re: Case No. 3727 (Reopened)
Order No. R-3428-A
Applicant:
MONSANTO 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. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC X
Artesia OCC X
Aztec OCC
Other

western union

Telegram

KA067 LB203 DA223

D TNA010 BW PDB=TN DALLAS TEX 12 1145A CDT=

NEW MEXICO OIL CONSERVATION COMMISSION= 1970 MAY 12 PM 12 23

STATE LAND OFFICE BLDG COLLEGE AVE SANTA FE NMEX=

WE SUPPORT MONSANTOS REQUEST FOR 640 ACRESPACING IN BOTH THE ROCK TANK UPPER MORROW AND LOWER MORROW GAS POOLS HEARING SCHEDULED FOR MAY 13 CASE NO 3727=

JAKE L HAMON BY JAMES F MASSEY=.

5-12-70

WU 1201 (R 5-69)

Western Union

Telegram

K AQ85 SSQ039 (125).

K RWA023 BM PD=ROSWELL NMEX 12 707P MDT=

1970 MAY 12 PM 2 21

NEW MEXICO OIL CONSERVATION COMMISSION=

SANTA FE NMEX=

RE CASE 3727, AS A WORKING INTEREST OWNER, IN THE ROCK TANK UNIT ATLANTIC RICHFIELD COMPANY URGES CONTINUATION OF 640 ACRE SPACING UNITS FOR THE ROCK TANK UPPER MORROW AND LOWER MORROW GAS POOLS=

W P TOMLINSON=

Rec'd May 12, 1970

WU 1201 (R 5-69)

Mobil Oil Corporation

P.O. BOX 633
MIDLAND, TEXAS 79701

MAY 6 AM 8 11

May 5, 1970

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

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

file in case 3727 for May 13

CASE 3727 (REOPENED)
ROCK TANK-UPPER MORROW AND
ROCK TANK-LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation, as working interest owner, recommends and supports establishment of 640-acre spacing units for the Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools, Eddy County, New Mexico.

Very truly yours,

Ira B. Stitt
Division Operations Engineer

CRKreuz/bje

cc: Monsanto Company
101 N. Marienfeld
Midland, Texas 79701

DOCKET No. 12-70

DOCKET: REGULAR HEARING - WEDNESDAY - MAY 13, 1970

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

ALLOWABLE: (1) Consideration of the oil allowable for June, 1970;

(2) Consideration of the allowable production of gas for June, 1970, from fifteen prorated pools in Lea, Eddy, Roosevelt and Chaves Counties, New Mexico; also presentation of purchaser's nominations for said pools for the six-month period beginning July 1, 1970; consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for June, 1970.

THE FOLLOWING CASES WILL BE HEARD BEFORE DANIEL S. NUTTER, EXAMINER, OR ELVIS A. UTZ, ALTERNATE EXAMINER:

CASE 4354: Application of Michael P. Grace and Corinne Grace for compulsory pooling, Eddy County, New Mexico. Applicants, in the above-styled cause, seek an order pooling all mineral interests from the surface of the ground down to and including the Morrow formation underlying the N/2 of Section 11, Township 23 South, Range 26 East, South Carlsbad Field, Eddy County, New Mexico, said acreage to be dedicated to a well to be drilled in either the NE/4 NW/4 or the NW/4 NE/4 of said Section 11. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4355: Application of Pan American Petroleum Corporation for pool consolidation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of the North Bagley-Upper Pennsylvanian and North Bagley-Lower Pennsylvanian Pools, Lea County, New Mexico, into one pool. Applicant further requests the Lower Pennsylvanian Allowable Factor be applied to the consolidated pool.

CASE 3727 (Reopened):

In the matter of Case 3727 being reopened pursuant to the provisions of Order No. R-3428, which order established 640-acre spacing units for the Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools, Eddy County, New Mexico, for a period of one year after first pipeline connection in either of the pools. All interested persons may appear and show cause why said pools should not be developed on 320-acre spacing units.

CASE 4356: Southeastern nomenclature case calling for an order for the creation, abolishment, extension and contraction of certain pools in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico.

(a) Create a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Baum-Morrow Gas Pool. The discovery well is the RK Petroleum Corporation State No. 1 located in Unit B of Section 27, Township 13 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 13 SOUTH, RANGE 32 EAST, NMPM
SECTION 27: N/2

(b) Create a new pool in Lea County, New Mexico, classified as a gas pool for Queen-Penrose production and designated as the East Querecho Plains-Queen Gas Pool. The discovery well is Robert N. Enfield's Hudson Federal No. 1 located in Unit O of Section 30, Township 18 South, Range 33 East, NMPM.

TOWNSHIP 18 SOUTH, RANGE 33 EAST, NMPM
SECTION 30: SE/4

(c) Abolish the Bluitt-San Andres Pool in Roosevelt County, New Mexico, described as:

TOWNSHIP 8 SOUTH, RANGE 38 EAST, NMPM
SECTION 7: All
SECTION 8: All
SECTION 17: All
SECTION 18: All

(d) Extend the Bluitt-San Andres Associated Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 38 EAST, NMPM
SECTION 8: S/2
SECTION 17: W/2

(e) Contract the Bagley-Pennsylvanian Pool in Lea County, New Mexico, by the deletion of the following described area:

TOWNSHIP 12 SOUTH, RANGE 33 EAST, NMPM
SECTION 4: NE/4

(Case 4356 continued)

(f) Extend the North Bagley-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 33 EAST, NMPM
SECTION 33: E/2

TOWNSHIP 12 SOUTH, RANGE 33 EAST, NMPM
SECTION 4: NE/4

(g) Extend the Cerca-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 34 EAST, NMPM
SECTION 34: NW/4

TOWNSHIP 14 SOUTH, RANGE 34 EAST, NMPM
SECTION 8: NW/4

(h) Extend the Double L-Queen Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 29 EAST, NMPM
SECTION 12: E/2 NE/4

(i) Extend the Hobbs-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 38 EAST, NMPM
SECTION 33: NE/4

(j) Extend the Lea-Bone Springs Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 34 EAST, NMPM
SECTION 35: SE/4

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
SECTION 2: E/2

(k) Extend the Rock Tank-Lower Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM
SECTION 12: All

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

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM
SECTION 12: All

(m) Extend the Tulk-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 32 EAST, NMPM
SECTION 34: NE/4

(n) Extend the Tulk-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 32 EAST, NMPM
SECTION 9: NE/4

CASE 4301: (Continued from the March 25, 1970, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit Robert T. Smith and all other interested persons to appear and show cause why the following Robert T. Smith wells located in Section 32, Township 20 North, Range 9 West, McKinley County, New Mexico, should not be plugged and abandoned in accordance with a Commission-approved plugging program:

State Well No. 1 located 487 feet from the North line and 990 feet from the East line;

State "A" Well No. 1 located 400 feet from the North line and 990 feet from the East line;

State Well No. 3 located 330 feet from the North line and 330 feet from the West line;

State Well No. 6 located 220 feet from the North line and 1485 feet from the East line;

State Well No. 6-Y located approximately 5 feet West of the above-described Well No 6;

State Well No. 8 located 1155 feet from the North line and 2475 feet from the East line.

CASE 4337: (Continued from the April 15, 1970,Examiner Hearing) Application of Petroleum Corporation of Texas for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicant's Dexter Hanagan Graridge Federal Well No. 1 located in Unit J, Section 22, Township 17 South, Range 30 East, Jackson-Abo Pool, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by said well in an unlined surface pit in the vicinity of said well.

CASE 4336: (Continued from the April 15, 1970, Examiner Hearing) Application of Byron McKnight for an exception to Order No. R-3221, as amended, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil or gas on the surface of the ground in Lea, Eddy, Chaves and Roosevelt Counties. Said exception would be for applicant's lease comprising all of Section 19, W/2 of Section 20, NW/4 Section 29, and NW/4 Section 30, Township 19 South, Range 34 East, undesignated Yates-Seven Rivers gas pool, Lea County, New Mexico. Applicant seeks authority to dispose of salt water produced by wells on said leases in unlined surface pits on the leases.

CASE 4084: (Reopened) (Continued from the April 15, 1970, Examiner Hearing).
In the matter of Case No. 4084 being reopened pursuant to the provisions of Order No. R-3732, which order established 160-acre spacing units and an 80-acre proportional factor of 4.77 for the Feather-Wolfcamp Pool, Lea County, New Mexico. All interested parties may appear and show cause why the said pool should not be developed on less than 160-acre spacing units and to show cause why the 80-acre proportional factor of 4.77 should or should not be retained.

CASE 4351: (Continued from the April 29, 1970, Examiner Hearing) Application of Humble Oil & Refining Company for well reclassification and simultaneous dedication of acreage, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the reclassification of its New Mexico "G" State Well No. 5 from an oil well in the Eumont Pool to a gas well in said pool. Applicant further seeks the dedication of a standard 640-acre gas proration unit comprising all of Section 23, Township 21 South, Range 36 East, Lea County, New Mexico, to said Well No. 5 and to applicant's New Mexico "G" State Well No. 9, located, respectively in Units E and G of said Section 23, and authority to produce the allowable assigned to said unit from either of said wells in any proportion.

CASE 4352: (Continued from the April 29, 1970, Examiner Hearing) Application of Jack L. McClellan for the creation of a new gas pool or, in the alternative, the establishment of pool rules for two existing pools, Chaves and Lea Counties, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Queen gas pool comprising the following-described acreage:

CHAVES COUNTY, NEW MEXICO

TOWNSHIP 15 SOUTH, RANGE 29 EAST
Section 11: SE/4
Section 12: SW/4
Section 13: NW/4
Section 14: E/2
Section 23: NE/4 and SW/4

In the alternative applicant seeks the promulgation of special rules for the Sulimar-Queen Pool, Chaves County, and Double L-Queen Pool, Chaves and Lea Counties, New Mexico, as separate or as consolidated pools, including provisions for the classification of oil and gas wells, spacing and well location requirements for oil and gas wells, and an allocation formula for withdrawals by oil wells and gas wells.

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

April 3, 1968

Monsanto Company
101 North Marienfeld
Midland, Texas 79704

Attention: Mr. P. G. Anderson

Gentlemen:

Reference is made to your letter of April 1, 1968, requesting authority to repeat the reservoir limits test recently conducted on the lower zone of your Rock Tank Unit Well No. 1 in Eddy County, New Mexico, due to inconclusive results having been obtained from the first flow test.

We have received verbal consent to the repeat test from Mr. John A. Anderson, Regional Supervisor of the United States Geological Survey, and the New Mexico Oil Conservation Commission has no objection to the test. You are therefore hereby authorized to produce and flare gas from the subject well at a rate not to exceed six million cubic feet per day for a period of 72 hours.

Please notify our Artesia District Office of the date and hour said test is to be commenced.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/esr

cc: Mr. John A. Anderson
Regional Supervisor
United States Geological Survey
Drawer 1857
Roswell, New Mexico

Mr. W. A. Gressett, Supervisor
District 2
Oil Conservation Commission
Drawer DD
Artesia, New Mexico

Monsanto
COMPANY

HYDROCARBONS DIVISION

101 North Marienfeld
Midland, Texas 79704
(915) MUtual 3-3306

April 1, 1968

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Reservoir Limits Test
Rock Tank Unit Well No. 1

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

Monsanto Company desires to conduct another three day flow test on the Lower Morrow zone of the subject well. This test will be almost identical to the previous test run on this zone March 21-24, 1968, where 18,240 mcf was produced during a 75 hour flow period.

Due to the large capacity of this well, the reservoir pressure draw down and build-up data observed during this test was not amenable for analysis. The flowing bottom hole pressure after 75 hours of flow was higher than the flowing bottom hole pressure after only one hour of flow. The static shut-in reservoir pressure stabilized at 4243 psig at a shut-in time of only two hours. However, it was noted that this pressure is 14 psi less than the static shut-in reservoir pressure of 4257 psig observed prior to the beginning of the flow test.

We are presently concluding the draw down test of the Upper Morrow zone and desire to commence retesting the Lower Morrow zone as soon as the build-up of the Upper Morrow zone is completed.

Your earliest consideration in this matter will be appreciated. By copy of this letter we are notifying the USGS and all working interest owners of our intentions in this matter.

Yours very truly,

P. G. ANDERSON
District Engineer

PGA:lmj

cc: Mr. E. H. Muhlbach
USGS - Roswell
W.I. Owners (3)

'68 APR 3 AM 8 32

Monsanto
COMPANY

HYDROCARBONS DIVISION

101 North Marienfeld
Midland, Texas 79704
(915) MUtual 3-3306

March 29, 1968

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Re: Reservoir Limits Test
Rock Tank Unit Well No. 1

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

Attached are the results of the reservoir pressure draw down and build-up of the Lower Morrow completion in the subject well.

The Lower Morrow zone was flowed for 75 hours and produced a total of 18,240 mcf during this period. The well was shut-in at 4:00 p.m., CST on March 24, 1968, for an 89 hour build-up. The bottom hole pressure stabilized at 4243 psig at 10,307' on the second hour and remained on this value through the 89th hour. During the draw down and build-up periods, the bottom hole pressure was measured with an Amerada RPG-3 pressure instrument hung at 10,157'.

The reservoir limits test on the Upper Morrow zone was commenced at 3:20 p.m., CST on March 28, 1968, and we are now in the draw down portion of this test. Due to the Upper Morrow zone being completed in the tubing-casing annulus, no bottom hole pressure instrument will be utilized in this test. All reservoir pressures for the upper zone will be computed from surface measurements. Mr. Dan Nutter, of your office, was advised on March 27, 1968, of our intention to conduct the reservoir limits test on the Upper Morrow zone.

As soon as the build-up portion of the test is completed you will be furnished all the data on the test of the upper zone.

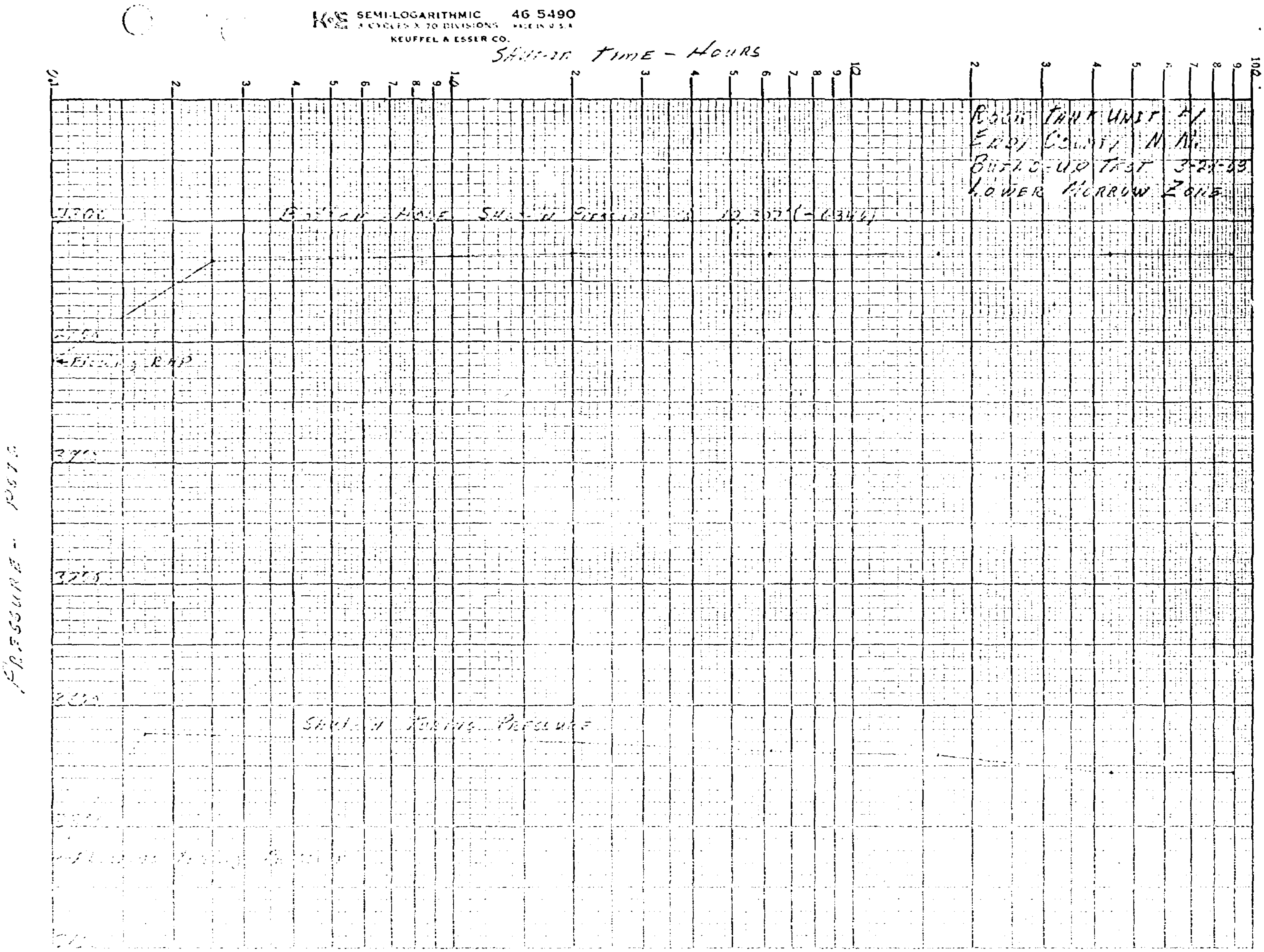
Yours very truly,

P. G. ANDERSON
District Engineer

'68 APR 1 13

PGA:lmj
encls.

cc: Mr. John Rushing


K&E SEMI-LOGARITHMIC 46 5490
KEUFFEL & ESSER CO.
SHUT-IN TIME - HOURS
EDDY COUNTY N.M.
LOWER MORROW ZONE
SHUT-IN TUBING PRESSURE

KEUFFEL & ESSER CO. SEMI-LOGARITHMIC 46 5490 3 CYCLES X 70 DIVISIONS MADE IN U.S.A.

FLOW TIME - HOURS

0.1 2 3 4 5 6 7 8 9 1.0 2 3 4 5 6 7 8 9 10.0

ROCK TANK UNIT #1
EDDY COUNTY, NEW MEXICO
DRAW DOWN TEST 3-21-68
LOWER MORROW ZONE
RATE - 5836 MCF/D

4300
4100
3900
3700
3500
3300
3100

BOTTOM HOLE PRESSURE - 10,307 (-6346)

PRESSURE - PSIG

ROCK TANK UNIT #1
EDDY COUNTY, NEW MEXICO
BUILD-UP TEST 3-24-68
LOWER MORROW ZONE

	Δt Hours	[illegible]	Tubing Pressure PSIG (Dead weight)	[illegible] Pressure	Casing Pressure PSIG (Dead weight)
[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]
	.17	[illegible]	3453		3224
	.33	[illegible]	3450?	4035?	3227?
	.50	[illegible]	[illegible]	[illegible]	[illegible]
	.75	[illegible]	[illegible]		3265?
	1.00	[illegible]	[illegible]	4241?	3264?
	1.5	[illegible]	[illegible]		[illegible]
	2.0	[illegible]	[illegible]	4242?	3258?
	3.0	[illegible]	[illegible]	[illegible]	3254?
	[illegible]	[illegible]	[illegible]	[illegible]	3250
3 25	[illegible]	[illegible]	[illegible]	4243	3248?
3 26	44.0		[illegible]	4243	3208?
3 28	[illegible]	62	3390	4243	3205

Adopted
1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION

PACKER SETTING REPORT

I, M. D. Lambert, being of lawful age and having full
Name of party making report
knowledge of the facts hereinbelow set out do state:

That I am employed by Monsanto Company in the capacity of

Drlg. & Prod. Supervisor, that on January 13, 1968

I personally supervised the setting of a Baker Model "F" Packer
Make & type of packer
in Monsanto Company, Rock Tank Unit,
Operator of well *Lease name*
Well no. 1 located in the undesignated field,

Eddy county, state of New Mexico, at a subsurface depth of

10,200 feet, said depth measurement having been furnished me by

McCullough Tool Company;

That the purpose of setting this packer was to effect a seal in the annular space between two strings of pipe where the packer was set so as to prevent the commingling, in the bore of this well, of fluids produced from a stratum below the packer with fluids produced from a stratum above the packer; that this packer was properly set and that it did, when set, effectively and absolutely seal off the annular space between the two strings of pipe where it was set in such manner as that it prevented any movement of fluids across the packer.

MAIN OFFICE
'68 FEB 15 AM 8 4

M. D. Lambert
(Signature)

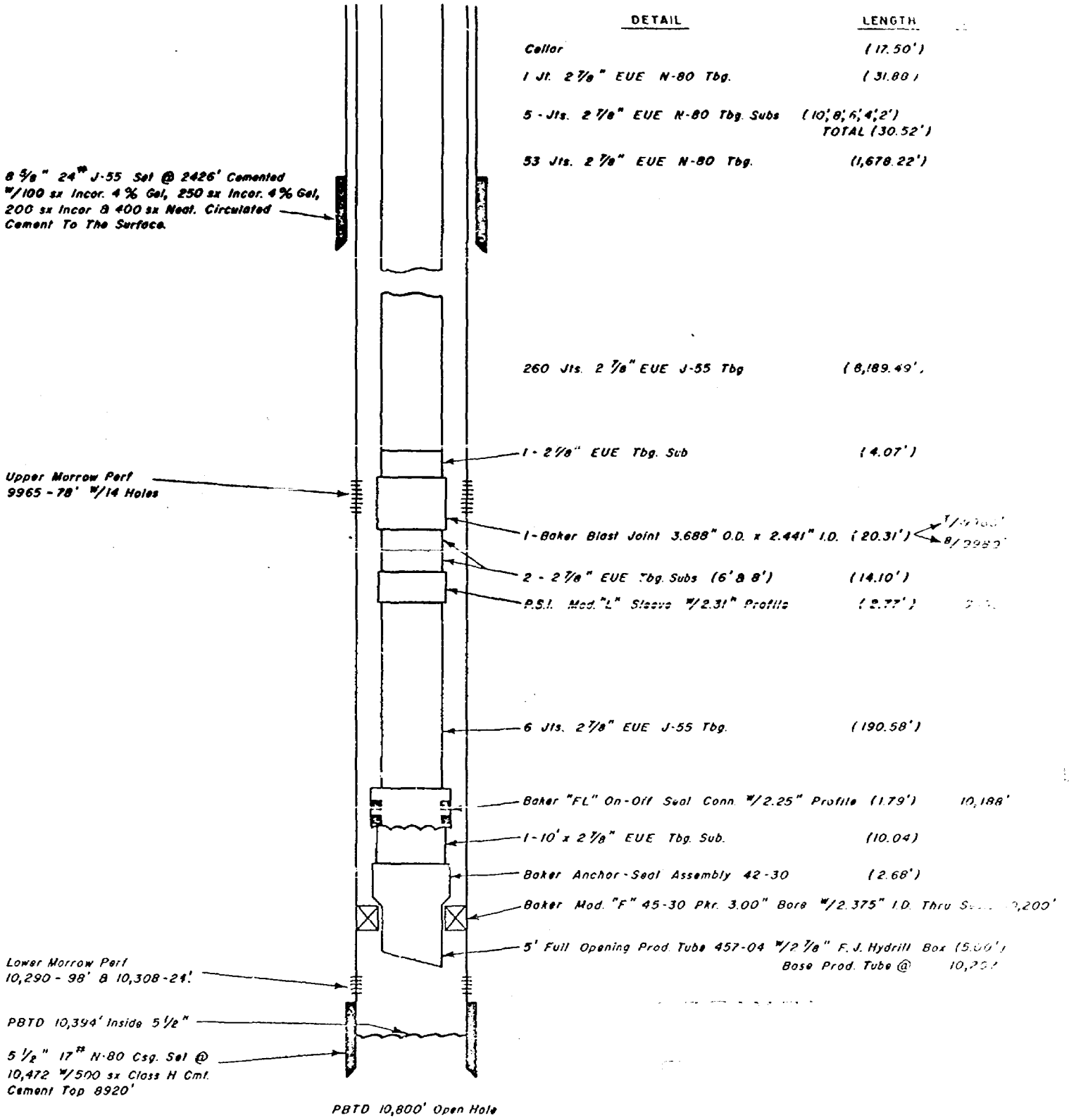
Drilling & Production Supervisor
(Title)

February 6, 1968
(Date)

DIAGRAMMATIC SKETCH

DATE: Jan., 1968 WELL NO. 1 LEASE: Rock Tank Unit COUNTY: Eddy STATE: N.M.

660' FNL & 920' FWL Sec. 7-23S-25E



DETAIL	LENGTH
Cellar	(17.50')
1 Jt. 2 7/8" EUE N-80 Tbg.	(31.80)
5 - Jts. 2 7/8" EUE N-80 Tbg. Subs	(10', 8', 6', 4', 2') TOTAL (30.52')
53 Jts. 2 7/8" EUE N-80 Tbg.	(1,678.22')
260 Jts. 2 7/8" EUE J-55 Tbg	(8,189.49',
1 - 2 7/8" EUE Tbg. Sub	(4.07')
1 - Baker Blast Joint 3.688" O.D. x 2.441" I.D.	(20.31') T/ 9[illegible]' B/ 9983'
2 - 2 7/8" EUE Tbg. Subs (6' & 8')	(14.10')
P.S.I. Mod. "L" Sleeve w/2.31" Profile	(2.77')
6 Jts. 2 7/8" EUE J-55 Tbg.	(190.58')
Baker "FL" On-Off Seal Conn. w/2.25" Profile	(1.79') 10,188'
1 - 10' x 2 7/8" EUE Tbg. Sub.	(10.04)
Baker Anchor-Seal Assembly 42-30	(2.68')
Baker Mod. "F" 45-30 Pkr. 3.00" Bore w/2.375" I.D. Thru S[illegible]	0,200'
5' Full Opening Prod. Tube 457-04 w/2 7/8" F. J. Hydrill Box	(5.00')
Base Prod. Tube @	10,20[illegible]

MONSANTO COMPANY

MIDLAND DISTRICT PRODUCTION

Midland, Texas

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

March 13, 1968

Monsanto Company
101 North Marienfeld
Midland, Texas 79704

Attention: Mr. P. G. Anderson

Re: Reservoir Limits Test
Rock Tank Unit Well No. 1

Gentlemen:

Reference is made to your letter of March 6, 1968, requesting authority to conduct a reservoir limits test on your Rock Tank Unit Well No. 1, located in Section 7, Township 23 South, Range 25 East, Eddy County, New Mexico, and to flare the gas produced during said test. We understand that the royalty owner, The United States of America, has no objection to the proposal.

Monsanto Company is hereby authorized to produce the lower zone of the Morrow formation in the subject well for three days at a rate not to exceed six million cubic feet of gas per day, to then shut in the well for pressure build-up, and to then produce the upper zone of the Morrow formation for five days at a rate not to exceed 2.5 million cubic feet of gas per day. Pressure observations of the producing as well as the shut-in zones shall be made.

Please notify the Artesia district office of the Commission of the date and hour the tests are to be commenced in order that a Commission representative may be present to witness the tests.

Inasmuch as we feel that the results of these tests may be of significant importance in arriving at a decision in Case

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

March 13, 1968

Monsanto Company
101 North Marienfeld
Midland, Texas

No. 3727, which regards this well and was heard by an examiner on February 28, we would appreciate receiving the results of the tests as soon as is practicable as no order will be issued pending their receipt.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/esr

cc: Oil Conservation Commission - Artesia
United States Geological Survey - Artesia
United States Geological Survey - Roswell

Monsanto
COMPANY

HYDROCARBONS DIVISION

101 North Marienfeld
Midland, Texas 79704
(915) MUtual 3-3308

March 6, 1968

'68 MAR 7 PM 1 0

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Dan Nutter

Rock Tank Unit #1
Sec. 7-23S-25E
Eddy County, New Mexico

Gentlemen:

The subject well was recently completed as a gas-gas dual from the Upper and Lower Morrow formations. The well is shut-in pending its connection to a gas transmission line. This connection is anticipated within 12 months.

Before embarking upon additional development in this area, Monsanto is desirous of conducting certain reservoir limit tests on the Rock Tank Unit #1 in order to better ascertain the extent and quantity of this hydrocarbon accumulation. The purpose of this letter is to inform the Commission of our intent and to request permission to conduct these tests.

Briefly, the tests would consist of flowing the Lower Morrow zone at a constant rate (in the order of 6 MMCFPD) for three days and then shutting in the well for a reservoir pressure build-up.

At the conclusion of this pressure build-up the Upper Morrow zone would be opened and flowed for five days at an approximate rate of 2.5 MMCFPD. The Upper Morrow would then be shut-in for pressure build-up. During the course of testing the Lower Morrow zone, flowing and shut-in pressures would be measured with a bottom hole pressure gauge. Since there is no gas sales connection for this well, it is obvious that all gas produced would have to be vented to atmosphere. Depending on the outcome of the test of the Lower Morrow zone we may elect not to conduct the test on the Upper Morrow reservoir.

A large portion of the acreage within the unit boundary is Federal land. Yesterday, I visited with Mr. Knauf, District Engineer for the U.S.G.S. in Artesia and informed him of our intent to conduct these tests. He advised me the U.S.G.S. would offer no objection to such tests on this well.

Your earliest consideration of this matter will be appreciated and should you have any questions, please advise.

Yours very truly,

P. G. ANDERSON
District Engineer

PGA:bw
cc - NMOCC - Artesia, N.M.
USGS - Artesia, N.M.

Monsanto
COMPANY

HYDROCARBONS DIVISION

101 North Marienfeld
Midland, Texas 79704
(915) MUtual 3-3306

Case 3127

February 8, 1968

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

'68 FEB 9 AM 8 48

Gentlemen:

Enclosed are the following forms for Monsanto Company's ROCK TANK UNIT Well No. 1, Eddy County, New Mexico:

1. Application for Multiple Completion (3)
2. Diagrammatic Sketch of the Multiple Completion (3)
3. Borehole Compensated Sonic and Gamma-Ray and induction-electrical logs (1)
4. Plat of area with required information (3)

The remainder of the forms required for this well have been filed with the U.S.G.S. and N.M.O.C.C. offices in Artesia, New Mexico.

Yours very truly,

A. W. Wood

A. W. WOOD
District Production
Superintendent

CLF:bw

cc: NMOCC - Artesia w/att.
USGS - Artesia w/att.

DOCKET MAILED
Date 2-15-68

NEW MEXICO OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
APPLICATION FOR MULTIPLE COMPLETION

Form C-107
5-1-61

Case 3727

Operator			County	Date
MONSANTO COMPANY			Eddy	February 8, 1968
Address			Lease	Well No.
101 N. Marienfeld, Midland, Texas			ROCK TANK UNIT	1
Location of Well	Unit: D	Section: 7	Township: 23-S	Range: 25-E

1. Has the New Mexico Oil Conservation Commission heretofore authorized the multiple completion of a well in these same pools or in the same zones within one mile of the subject well? YES _____ NO X
2. If answer is yes, identify one such instance: Order No. _____ ; Operator Lease, and Well No.: _____

3. The following facts are submitted:	Upper Zone	Intermediate Zone	Lower Zone
a. Name of Pool and Formation	Undesignated - U. Mw.		Undesignated - L. Mw.
b. Top and Bottom of Pay Section (Perforations)	9965-78'		10,290-298' 10,308-324'
c. Type of production (Oil or Gas)	Gas		Gas
d. Method of Production (Flowing or Artificial Lift)	Flow		Flow

4. The following are attached. (Please check YES or NO)

Yes	No	
X		a. Diagrammatic Sketch of the Multiple Completion, showing all casing strings including diameters and setting depths, centralizers and/or turbolizers and location thereof, quantities used and top of cement, perforated intervals, tubing strings, including diameters and setting depth, location and type of packers and side door chokes, and such other information as may be pertinent.
X		b. Plat showing the location of all wells on applicant's lease, all offset wells on offset leases, and the names and addresses of operators of all leases offsetting applicant's lease.
X		c. Waivers consenting to such multiple completion from each offset operator, or in lieu thereof, evidence that said offset operators have been furnished copies of the application.*
X		d. Electrical log of the well or other acceptable log with tops and bottoms of producing zones and intervals of perforation indicated thereon. (If such log is not available at the time application is filed it shall be submitted as provided by Rule 112-A.)

5. List all offset operators to the lease on which this well is located together with their correct mailing address.

David Fasken, c/o Richard S. Brooks, 608 1st Nat'l Bank Bldg., Midland, Texas

Sinclair Oil & Gas Co., P. O. Box 1470, Midland, Texas

Cities Service Oil Co., 901 Broadmoor Bldg., Hobbs, New Mexico

'68 FEB 9 AM 8 49

Jake L. Hamon, P. O. Box 663, Dallas, Texas

Gulf Oil Corporation, P. O. Box 1938, Roswell, New Mexico

6. Were all operators listed in Item 5 above notified and furnished a copy of this application? YES X NO _____. If answer is yes, give date of such notification 2-8-68.

CERTIFICATE: I, the undersigned, state that I am the Dist. Prod. Supt. of the Monsanto Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

A. W. Wood
A. W. Wood — Signature

Should waivers from all offset operators not accompany an application for administrative approval, the New Mexico Oil Conservation Commission will hold the application for a period of twenty (20) days from date of receipt by the Commission's Santa Fe office. If, after said twenty-day period, no protest nor request for hearing is received by the Santa Fe office, the application will then be processed.

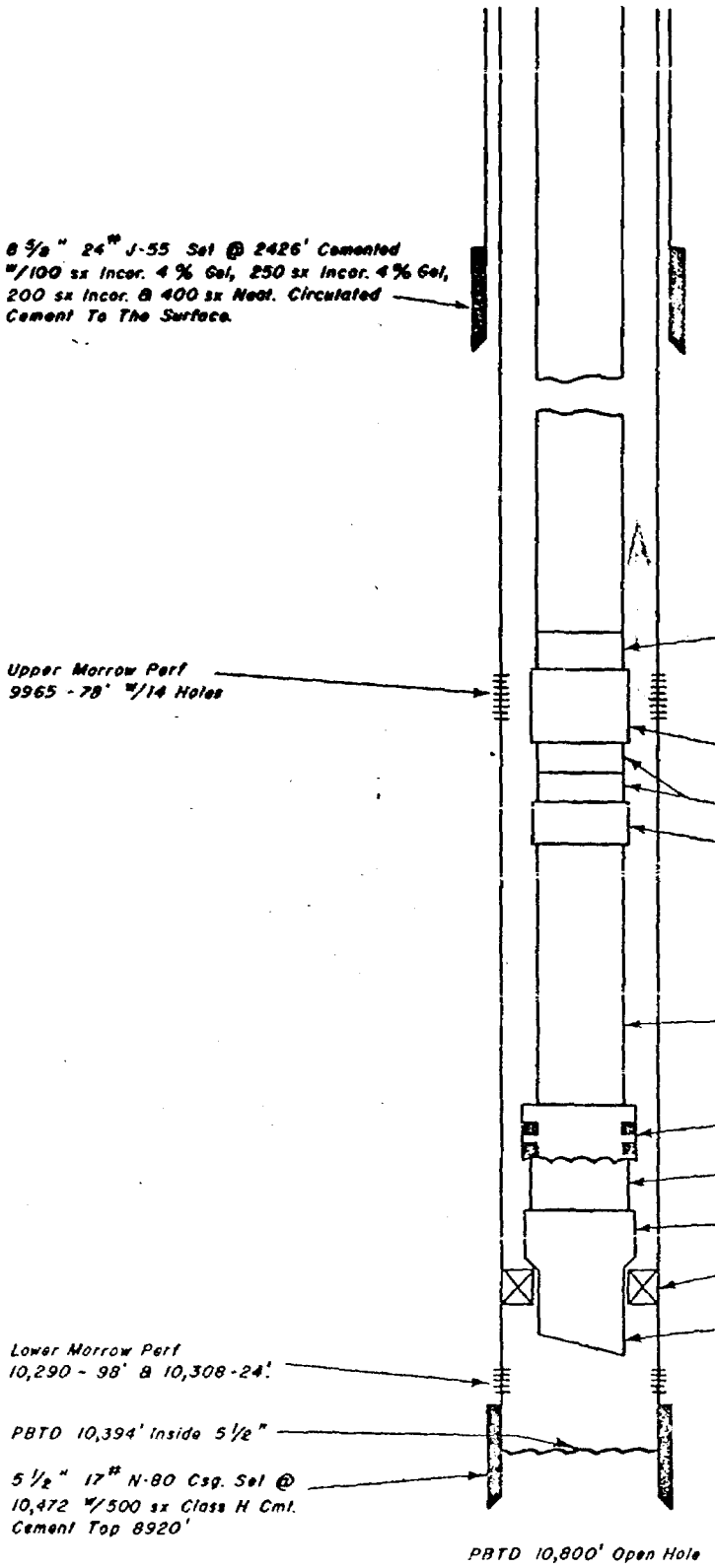
NOTE: If the proposed multiple completion will result in an unorthodox well location and/or a non-standard proration unit in one or more of the producing zones, then separate application for approval of the same should be filed simultaneously with this application.

Case 3727

DIAGRAMMATIC SKETCH

DATE: Jan., 1968 WELL NO. 1 LEASE: Rock Tank Unit COUNTY: Eddy STATE: New Mexico

660' FNL & 920' FWL Sec. 7-23S-25E



DETAIL	LENGTH	DEPTH
Cellar	(17.50')	
1 Jt. 2 7/8" EUE N-80 Tbg.	(31.88')	
5 - Jts. 2 7/8" EUE N-80 Tbg. Subs (10', 8', 6', 4', 2') TOTAL (30.52')		
53 Jts. 2 7/8" EUE N-80 Tbg.	(1,678.22')	
260 Jts. 2 7/8" EUE J-55 Tbg.	(8,189.49')	
1 - 2 7/8" EUE Tbg. Sub	(4.07')	
1 - Baker Blast Joint 3.688" O.D. x 2.441" I.D. (20.31')	T/9960' B/9980'	
2 - 2 7/8" EUE Tbg. Subs (6' & 8')	(14.10')	
P.S.I. Mod. "L" Sleeve w/2.31" Profile	(2.77')	9995'
6 Jts. 2 7/8" EUE J-55 Tbg.	(190.58')	
Baker "FL" On-Off Seal Conn. w/2.25" Profile	(1.79')	10,188'
1 - 10' x 2 7/8" EUE Tbg. Sub.	(10.04)	
Baker Anchor-Seal Assembly 22-30	(2.68')	
Baker Mod. "F" 45-30 Pkr. 3.00" Bore w/2.375" I.D. Thru Seals		10,200'
5' Full Opening Prod. Tube 457-04 w/2 7/8" F. J. Hydrill Box	(5.00')	
Base Prod. Tube @		10,207

MONSANTO COMPANY

MIDLAND DISTRICT PRODUCTION

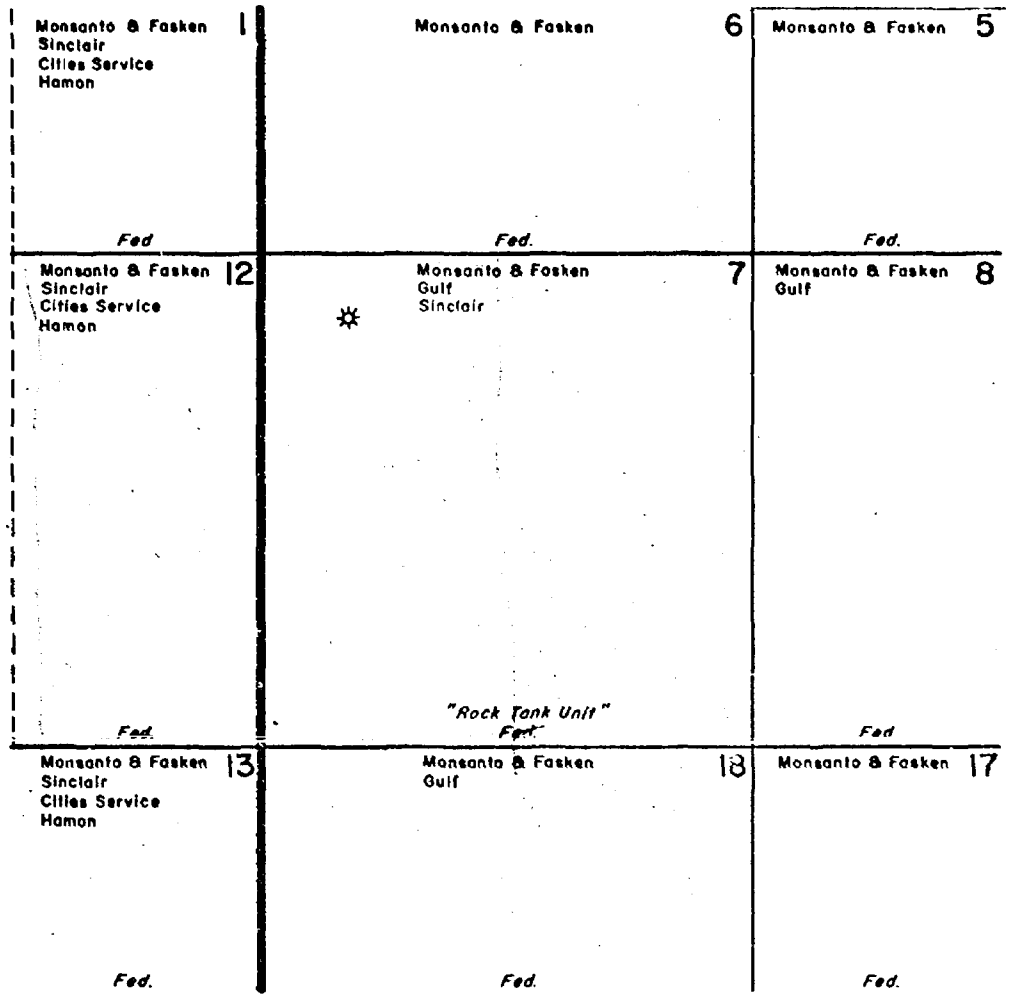
Midland, Texas

Case 3727

MONSANTO & FASKEN, ETAL

#1-Rock Tank Unit

Eddy County, New Mexico



MONSANTO CO.
101 N. Marienfeld
Midland, Texas

DAVID FASKEN
% Richard S. Brooks
608 First National Bank Bldg.
Midland, Texas

GULF OIL CORP.
P.O. Box 1938
Roswell, New Mexico

SINCLAIR OIL & GAS CO.
P.O. Box 1470
Midland, Texas

CITIES SERVICE OIL CO.
901 Broadmoor Bldg.
Hobbs, New Mexico

JAKE L. HAMON
P.O. Box 663
Dallas, Texas

Docket No. 6-68

DOCKET: EXAMINER HEARING - WEDNESDAY - FEBRUARY 28, 1968

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

The following cases will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner:

CASE 3714: (Continued from the January 24, 1968, Examiner Hearing)

Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its State "O" Well No. 1 located in Unit F of Section 16, Township 17 South, Range 32 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the perforated interval 3140 to 3160 feet, Maljamar-Queen Gas Pool, and the injection of water for secondary recovery purposes into the Grayburg-San Andres formations in the interval from 3700 to 4050 feet through parallel strings of 2-inch tubing.

CASE 3724: Application of El Paso Natural Gas Company for a dual completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its San Juan 27-4 Unit Well No. 30 (GD) located in Unit N of Section 32, Township 27 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of gas from the Gallup formation and the Basin-Dakota Pool through tubing and the casing-tubing annulus, respectively, by means of a cross-over.

CASE 3725: Application of Continental Oil Company for two non-standard gas proration units and an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the following two non-standard gas proration units in the Jalmat Gas Pool:

A 160-acre unit comprising the E/2 E/2 of Section 1, Township 25 South, Range 36 East, Lea County, New Mexico, to be dedicated to its Wells B-1 Well No. 1 located 660 feet from the North and East lines of said Section 1; and a 200-acre unit comprising the W/2 E/2 and NE/4 NW/4 of said Section 1 to be dedicated to its Wells B-1 Well No. 3 located at an unorthodox location 660 feet from the North line and 1650 feet from the West line of said Section 1.

CASE 3726: Application of John Yuronka and Robert Chandler for compulsory pooling, Lea County, New Mexico. Applicants, in the above-styled cause, seek an order force-pooling all mineral interests from the surface down to a depth of 7400 feet underlying the E/2 SW/4 of Section 7, Township 22 South, Range 38 East, Lea County, New Mexico, to form two 40-acre proration units for Drinkard, Paddock, Blinebry, Tubb or other oil production to be dedicated to two wells to be drilled in Units K and N of said Section 7, or to form an 80-acre non-standard gas proration unit in the event gas production is encountered in the Tubb Gas Pool. Also to be considered will be the costs of drilling said wells and a charge for the risk involved, and a provision for the allocation of actual operating costs and the establishment of charges for supervision of said wells.

CASE 3727: Application of Monsanto Company for an unorthodox gas well location, a non-standard proration unit, a dual completion, and temporary special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox gas well location of its Rock Tank Unit Well No. 1 located 660 feet from the North line and 920 feet from the West line of Section 7, Township 23 South, Range 25 East, Eddy County, New Mexico, said well to be dedicated to the proposed non-standard proration unit comprising the W/2 of said Section 7 and the E/2 of Section 12, Township 23 South, Range 24 East. Applicant also seeks approval of the dual completion (conventional) of said well to produce gas from the Upper Morrow and Lower Morrow formations through the casing-tubing annulus and the tubing, respectively. Applicant further seeks the creation of Upper Morrow and Lower Morrow gas pools for said well and the promulgation of temporary special rules therefor, including a provision for 640-acre spacing.

CASE 3728: Application of Tenneco Oil Company for an amendment to Order No. R-3127, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3127 for the expansion of the Grayburg-Jackson West Cooperative Unit Area by some 400 additional acres of State land in Section 16, Township 17 South, Range 29 East, Eddy County, New Mexico.

CASE 3729: Application of Pan American Petroleum Corporation for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to

CASE 3729: (Continued from Page 2)

drill a well at an unorthodox location 510 feet from the South line and 1830 feet from the East line of Section 15, Township 24 South, Range 37 East, Fowler-Ellenburger Pool, Lea County, New Mexico, in exception to the pool rules that require that wells be drilled in the NW/4 or the SE/4 of the quarter section.

CASE 3730: Application of Tamarack Petroleum Company, Inc., for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the South Pearl Queen Unit Area comprising 1523 acres, more or less, of Fee and Federal lands in Township 20 South, Range 35 East, Lea County, New Mexico.

CASE 3731: Application of Tamarack Petroleum Company, Inc., for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Queen formation through 14 wells in its South Pearl Queen Unit, Township 20 South, Range 35 East, Pearl-Queen Pool, Lea County, New Mexico.

CASE 3732: Application of Weier Drilling Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Grayburg-San Andres formations through its V. L. Foster Well No. 6 located 2310 feet from the North line and 1650 feet from the East line of Section 17, Township 17 South, Range 31 East, Grayburg-Jackson Pool, Eddy County, New Mexico.

CASE 3733: Application of Daryl Davis to re-enter a well, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to re-enter the State "A" Well No. 1 located 1980 feet from the South and West lines of Section 1, Township 4 South, Range 26 East, Chaves County, New Mexico, and attempt to complete said well as a producer from the San Andres formation.

ROCK TANK UPPER & LOWER MORROW POOLS
EDDY COUNTY, NEW MEXICO

AVERAGE RESERVOIR CHARACTERISTICS

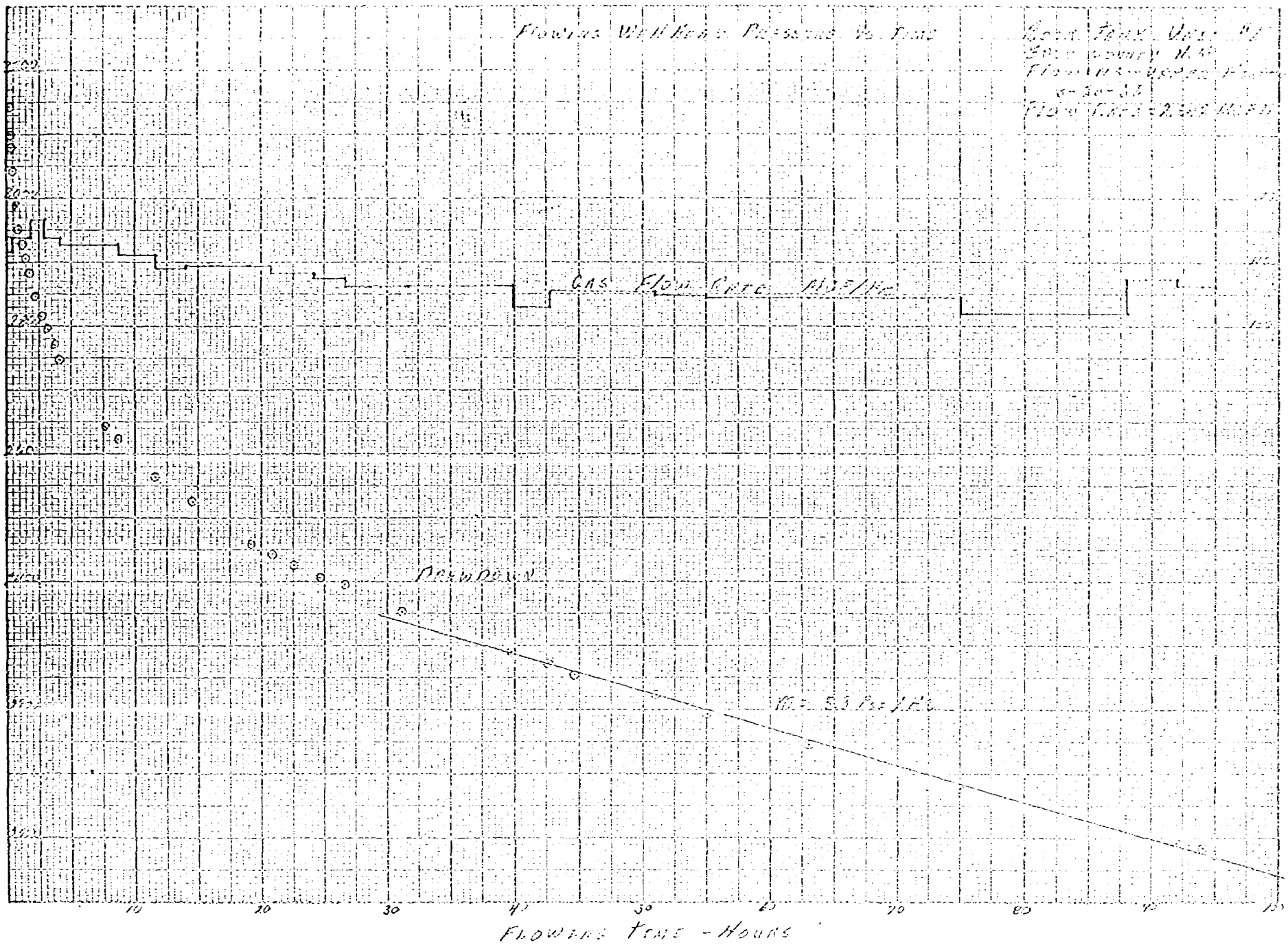
UPPER MORROW:

Depth	9965-9986 Feet
Temperature	170°F
Porosity	17%
Connate Water Saturation	30%
Permeability	20 md.
Original Pressure	3971 psig
Separator Gas Gravity	.589
Condensate Gravity, API	None Produced

LOWER MORROW:

Depth	10,290-10,326 Feet
Temperature	172°F
Porosity	9%
Connate Water Saturation	30%
Permeability	324 md.
Original Pressure	4300 psig
Separator Gas Gravity	.588
Condensate Gravity, API	54°
Gas-Condensate Ratio	755.5 MCF/Bbl.

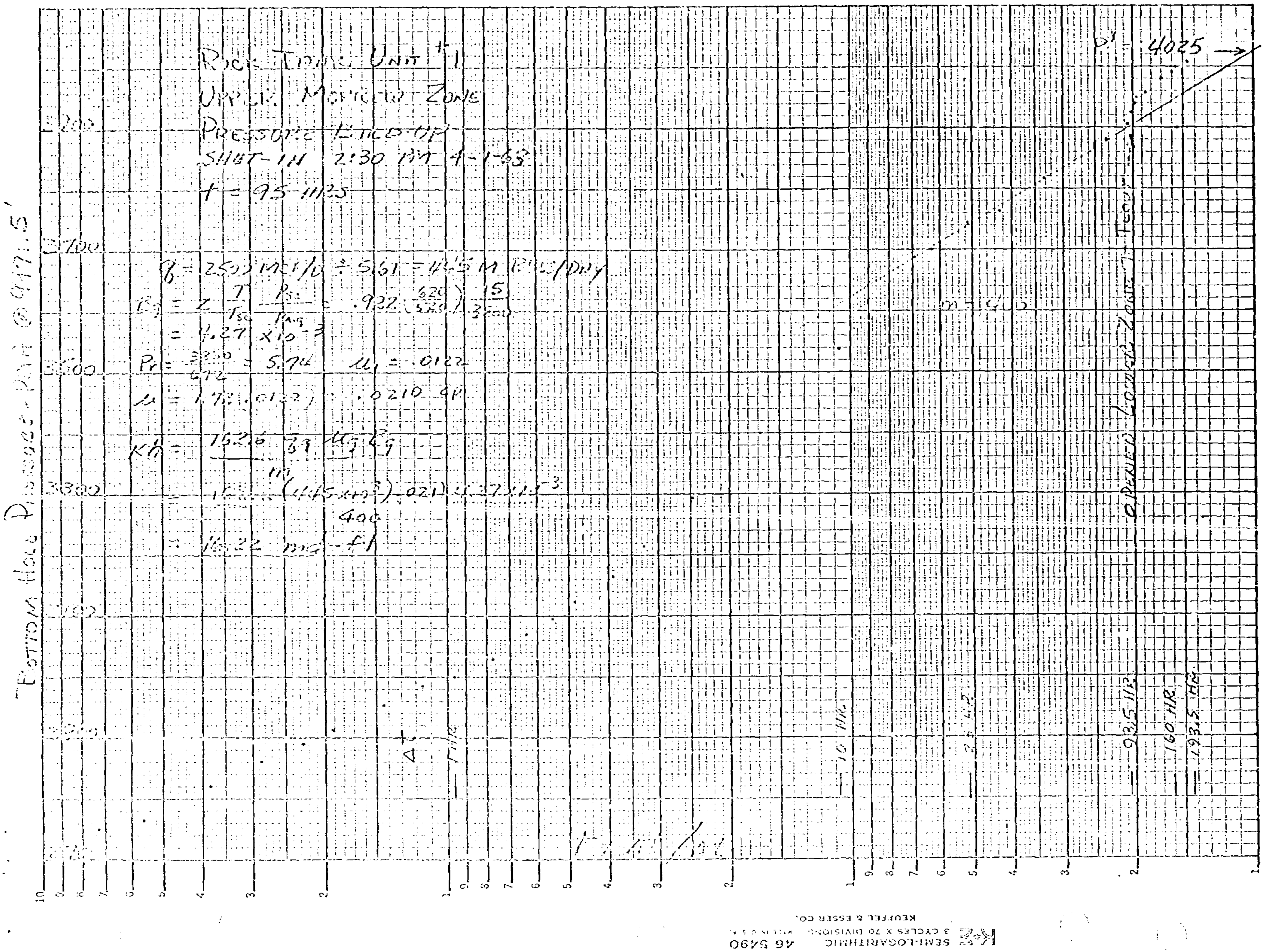
10 X 10 TO THE ½ INCH KEUFFEL & ESSER CO. MADE IN U.S.A. 359F-11G



[illegible] Unit #1
Upper Zone [illegible]
[illegible], [illegible] 95 [illegible]
[illegible] 2542 MCFPD.

Δt Hrs	Stop Press. PSIG	Stop Pressure PSIA	[illegible] P* 3771.5 PSIA	t+Δt / Δt, t = 95	[illegible] / Δt	
.0					0	S.I. [illegible] PM
.05	2050	2063	2620	95.05	1901	4-1-68
.08	2105	2118	2690	95.08	1179	
.13	2150	2163	2750	[illegible]	732	
.17	2158	2171	2765	[illegible]	560	
.25	[illegible]	2219	2820	[illegible]	381	
.33	2236	2249	2860	[illegible]	289	
.42	2260	2273	2872	95.42	227	
.50	2280	[illegible]	2910	95.50	191	
.67	2311	[illegible]	2955	95.67	143	
.83	2336	[illegible]	2985	95.83	115	
1.00	[illegible]	[illegible]	3000	[illegible]	[illegible]	
1.25	2376	2389	3033	96.25	77	
1.50	[illegible]	2417	3070	[illegible]	64	
1.75	[illegible]	2438	3097	[illegible]	55	
2.00	[illegible]	[illegible]	3122	97.0	48.5	
2.50	[illegible]	2495	3165	97.5	39.0	
3.00	2520	2533	3215	[illegible]	32.7	
4.00	[illegible]	[illegible]	[illegible]	99	24.8	
5	[illegible]	[illegible]	3350	100	20	
6	2672	2685	3400	101	16.8	
10	2790	2803	3538	105	10.5	4-2-68
16	2913	[illegible]	3697	111	6.93	
18	2925	[illegible]	3700	113	6.28	
23	2958	2971	3743	118	5.13	
29	2977	2990	3762	124	4.27	
41	3018	3031	3818	136	3.32	4-3-68
72	3072	3084	3880	167	2.32	4-4-68
89	3094	3107	3905	184	2.07	
93.5	3113	3126	3924	188.5	2.02*	{ BEGAN FLOWING
97	3127	3140	3940	192	1.98	} LOWER ZONE @ 11:30
99.5	3136	3149	3951	194.5	1.96	AM 4-5-68
111.5	3144	3157	3958	206.5	1.85	4-6-68
135.75	3166	3179	3980	230.75	1.70	4-7-68
[illegible]	[illegible]	3189	3992	254.75	1.60	4-8-68
165.96	3180	3193	4000	262.75	1.57	4-9-68
167.83	3179	3192	4000	262.83	1.57	←* LOWER ZONE S.I. 30 [illegible]
193.50	3191	3204	4098	288.50	1.49	4-9-68

*LOWER ZONE S.I. 2 PM CST 4-8-68



Rock Tank Unit #1
Upper Morrow Zone
Pressure Build Up
Shut-in 2:30 PM 4-1-63
t = 95 HRS
Bottom Hole Pressure - PSIA @ 9471.5'
P* = 4025
Opened Lower Zone
10 HR
93.5 HR
160 HR
193.5 HR
= 16.22 md-ft
3800
3700
3600
3300
KEUFFEL & ESSER CO.
SEMI-LOGARITHMIC 46 5490
3 CYCLES X 70 DIVISIONS

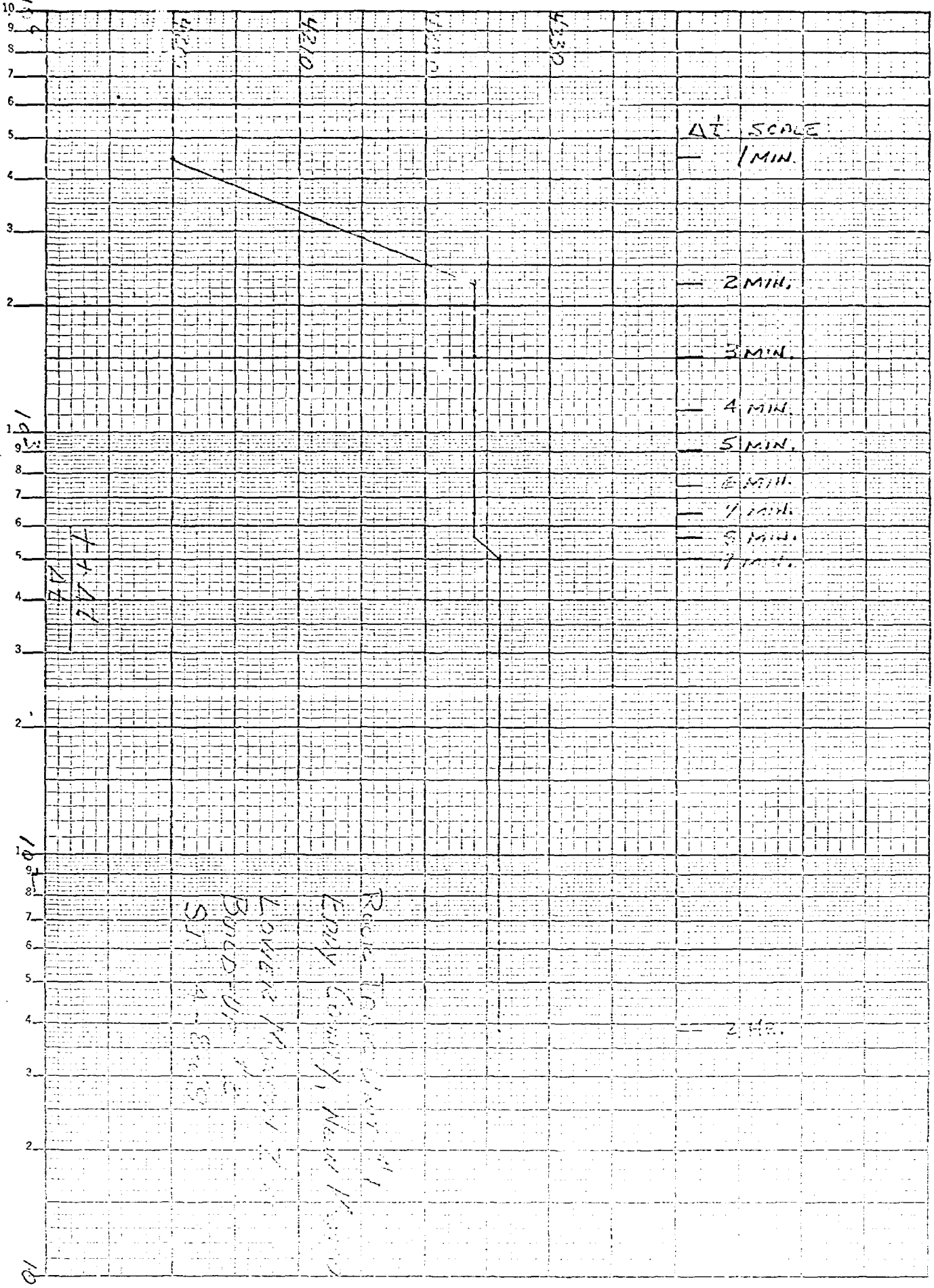
ROCK TANK UNIT #1
EDDY COUNTY, NEW MEXICO
BUILD-UP TEST 4-8-68
LOWER MORROW ZONE

Test #2

Date	Well Status	Elapsed Hrs	Well Head Temp.	Tubing Pressure PSIG D.W.T.	Bottomhole Pressure PSIA*	Casing Pressure PSIG D.W.T.
4-8	Shut-in Tbg @ 2 PM CST	0	90°F	3280	4255	3132
		1/60			4292	
		2/60			4294	
		3/60		3445	[illegible]	
		5/60		3450	[illegible]	
		8/60		3450	[illegible]	
		9/60		3445	[illegible]	
		1/6		3445	[illegible]	
		.2		3452	[illegible]	
		.233		3445		
		.333		3435		3172
		.416		3440		
		.5		[illegible]		
		[illegible]		3438		
		[illegible]		3435		
		.833		3433		
		1.5		3433		
		2.0			4256	
		2.25		3427		
4-9		23	56	3407		
		24		3407		
		25		3406		3191
		26		3407		

*Measured with Amerada RPG-3 BHP Instrument.

BHP @ 10,307 - PSIG



SEMI-LOGARITHMIC 46 5490
3 CYCLES X 70 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

FLOW TIME - HOURS

ROCK TANK UNIT #1
EDDY COUNTY, NEW MEXICO
DRAW DOWN TEST 4-5-68
LOWER MORROW ZONE
RATE - 5993 MCFPD

PRESSURE - PSIG

4300
4100
3900
3700
3500
3300
3101

Flowing Bottom Hole Pressure @ 12,207'(-6347)

Flowing Tubing Pressure

ROCK TANK UNIT AREA
EDDY COUNTY, NEW MEXICO

ROCK TANK UNIT
MONSANTO
(OPER)

DARK CANYON

ROCK TANK UPPER & LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

GAS & OIL PRODUCTION

UPPER MORROW:

	Rock Tank Unit #1-C	
DATE	GAS (MCF)	OIL (BBLS)
1968	15,161	
Mar., 1969	20,374	
April	53,224	10
May	55,498	8
June	54,130	15
July	59,799	29
Aug.	59,179	18
Sept.	48,327	31
Oct.	54,749	79
Nov.	45,254	26
Dec.	71,006	36
Jan., 1970	71,740	45
Feb.,	66,208	31
Mar.	68,581	37
	743,230	365

LOWER MORROW:

	Rock Tank Unit #1-T		Rock Tank Unit #2	
DATE	GAS (MCF)	OIL (BBLS)	GAS (MCF)	OIL (BBLS)
1968	73,618		9,400	
Mar., 1969	77,831	54	84,170	58
April	195,306	127	199,114	113
May	202,134	142	206,527	139
June	100,332	56	149,618	275
July	75,635	50	144,563	100
Aug.	72,841	39	113.448	72
Sept.	74,707	41	112,671	75
Oct.	275,701	99	254,981	155
Nov.	114,653	50	163,592	97
Dec.	70,293	33	127,453	88
Jan., 1970	65,248	26	127,057	72
Feb.	69,577	29	116,554	79
Mar.	122,259	53	163,680	98
	1,590,135	799	1,972,828	1441

ROCK TANK UPPER & LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

AVERAGE RESERVOIR CHARACTERISTICS

UPPER MORROW:

Depth	9965 feet
Temperature	170° F
Porosity	15%
Connate Water Saturation	35%
Permeability	20 md.
Original Pressure	3971 psig
Gas Gravity	.589
Condensate Gravity, API	52.9°
Gas-Condensate Ratio	2040 Mcf/Bbl.

LOWER MORROW:

Depth	10,290 feet
Temperature	172° F
Porosity	9%
Connate Water Saturation	30%
Permeability	324 md.
Original Pressure	4300 psig
Gas Gravity	.585
Condensate Gravity, API	52.9°
Gas-Condensate Ratio	1590 Mcf/Bbl.

ROCK TANK UPPER & LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

RESERVOIR PRESSURE

Upper Morrow:

DATE	SHUT-IN PRESSURE Wellhead (psig)	BHP (-5979) (psia)	CUM. PROD. (Mcf)	REMARKS
12-22-67		3980		RTU #1-C, DST
1-29-68	3117	3890*		RTU #1-C, C-122
5-7-69	2907	3640*	88,759	RTU #1-C, C-122
9-4-69	2337	2960*	317,365	RTU #1-C, C-125
5-11-70	2702	3392*	785,230	RTU #1-C

Lower Morrow:

DATE	SHUT-IN PRESSURE Wellhead (psig)	BHP (-6346) (psia)	CUM. PROD. (Mcf)	REMARKS
12-27-67		4313		RTU #1-T, DST
4-5-68	3394	4256	18,240	RTU #1-T
4-9-68	3400	4239	36,971	RTU #1-T
7-23-68	3384	4223	64,618	RTU #1-T
5-5-69	3340	4181	346,755	RTU #1-T
9-4-69	3265	4090*	797,697	RTU #1-T, C-125
7-11-68		4304		RTU #2, DST
7-23-68	3382	4210		RTU #2
5-5-69	3321	4151	292,684	RTU #2
9-2-69	3248	4063*	906,840	RTU #2, C-125
2-23-70	3118	3917*		Gulf Boothe "BO" Fed. #1, C-122

* BHP calculated from wellhead pressure.

DATE	AVG. BHP (psia)	BHP (psia/Z)	CUM. PROD. (MMCFG)
Original	3980	4239	
1-29-68	3890	4160*	
5-7-69	3640	3949*	88.8
9-4-69	2960	3304*	317.4
5-11-70	3392	3727*	785.2

*BHP calculated from wellhead pressures

Rock Tank Upper Morrow Gas Pool
Eddy County, New Mexico
Cum. Gas Prod. Vs. Pressure (BHP/Z)

BHP/Z (psia/Z) @ -5979

5000
4000
3000
2000
1000
0

0 500 1,000 1,500 2,000

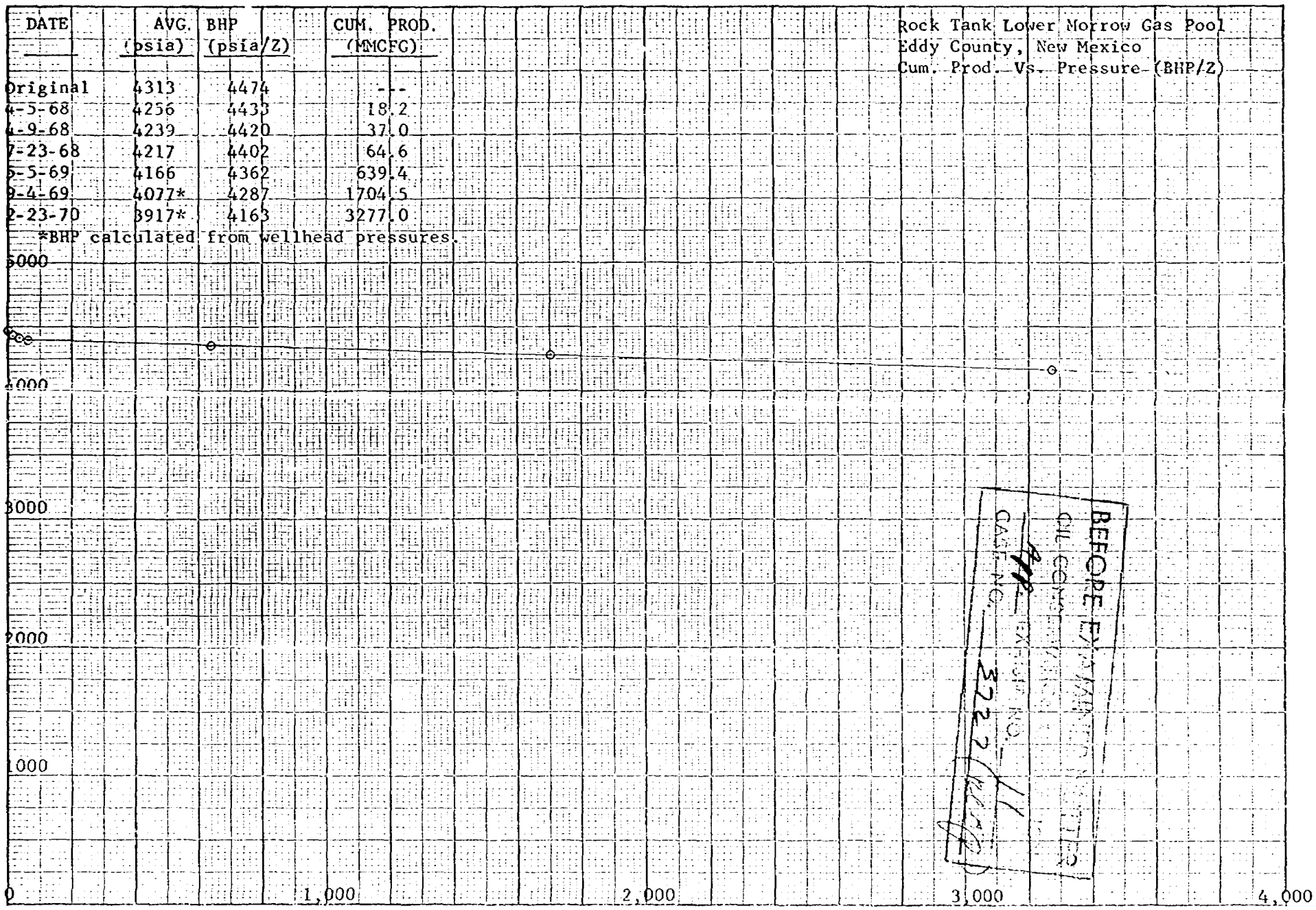
Cumulative Gas Production (MMCF)

BEFORE EXAMINER
OIL CONSERVATION
EXHIBIT NO.
CASE NO.

DATE	AVG. BHP (psia)	BHP (psia/Z)	CUM. PROD. (MMCFG)
Original	4313	4474	---
4-5-68	4256	4433	18.2
4-9-68	4239	4420	37.0
7-23-68	4217	4402	64.6
5-5-69	4166	4362	639.4
9-4-69	4077*	4287	1704.5
2-23-70	3917*	4163	3277.0

*BHP calculated from wellhead pressures.

Rock Tank Lower Morrow Gas Pool
Eddy County, New Mexico
Cum. Prod. Vs. Pressure (BHP/Z)



ROCK TANK UPPER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

RESERVES & ECONOMIC DATA COMPARING 640 & 320 ACRE DEVELOPMENT

WELL COST:	$215 M	Single Comp
ULTIMATE RECOVERY:	640 Ac.	320 Ac.
Upper ~~Lower~~ Morrow - Gas, MCF	6 MM	3 MM
Condensate, Bbls.	3 M	1.5 M
ECONOMICS:		
Ultimate Recovery; Gas, MCF	6 MM	3 MM
Condensate, Bbls.	3 M	1.5 M
Income from Sales	$816 M	$408 M
Direct Operating Expense & Sev. Tax	$165 M	$142 M
Operating Income	$651 M	$266 M
Investment (Well Cost)	$215 M	$215 M
Federal Income Tax	$106 M	$(30) M
Profit	$330 M	$ 81 M
Ratio of Profit to Investment	1.54	.38
Payout at 820 & 410 MCF/D respectively	6.7 years	16.5 years
Life	20 years	20 years

16.5 @ $3.05

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
APPL. EXHIBIT NO. 12
CASE NO. 3227 (de novo)

ROCK TANK LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

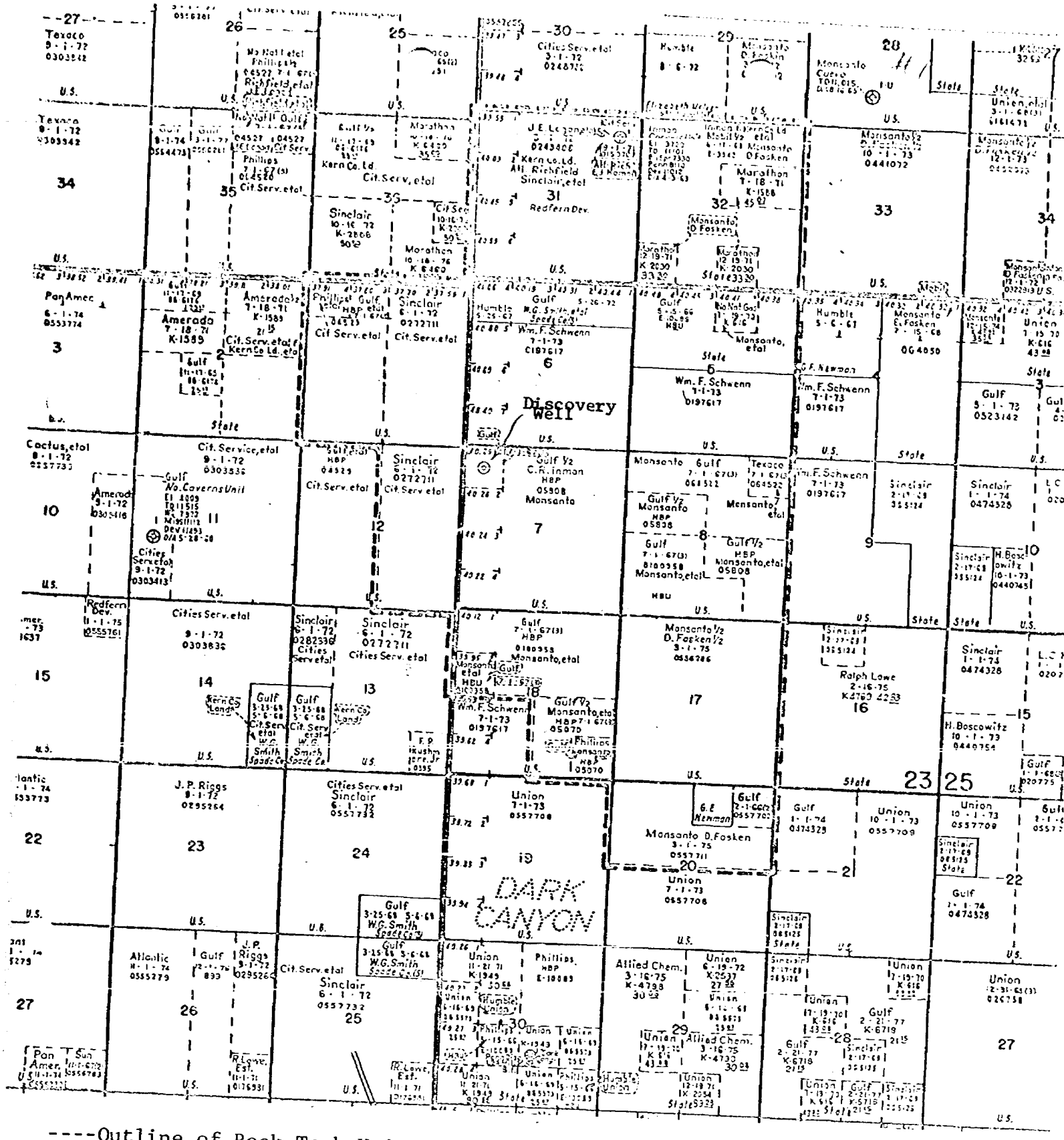
RESERVES & ECONOMIC DATA COMPARING 640 & 320 ACRE DEVELOPMENT

WELL COST:	$215 M	
ULTIMATE RECOVERY:	640 Ac.	320 Ac.
Lower Morrow - Gas, MCF	10 MM	5 MM
Condensate, Bbls.	6 M	3 M
ECONOMICS:		
Ultimate Recovery; Gas, MCF	10 MM	5 MM
Condensate, Bbls.	6 M	3 M
Income from Sales	$1365 M	$683 M
Direct Operating Expense & Sev. Tax	$ 195 M	$158 M
Operating Income	$1170 M	$525 M
Investment (Well Cost)	$215 M	$215 M
Federal Income Tax	$240 M	$ 61 M
Profit	$715 M	$249 M
Ratio of Profit to Investment	3.32	1.16
Payout at 1370 & 690 MCF/D respectively	3.7 years	8 years
Life	20 years	20 years

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
APP. EXHIBIT NO. 13
CASE NO. 3727

NEW MEXICO MORROW GAS POOLS

GAS POOL	COUNTY	SPACING (Acres)
Antelope Ridge Morrow	Lea	320
Cemetary Morrow	Eddy	320
Cinta Roja Morrow	Lea	640
Dagger Draw Morrow	Eddy	640
Dos Hermanos Morrow	Eddy	640
Grama Ridge Morrow	Lea	640
Indian Basin Morrow	Eddy	640
Lusk Morrow	Lea	640
McMillan Morrow	Eddy	640
Osudo North Morrow	Lea	640
Quail Ridge Morrow	Lea	320
Tower Hill Morrow	Eddy	640



----Outline of Rock Tank Unit Area

EXHIBIT "A"

Form No. 7XL5

ROCK TANK UNIT

Federal & State Unit

W.I - Initial Well -

Monsanto & Fasken	76.8 %
Gulf	22.6 %
J.R. Stephens	0.6 %

W.I - Subsuquent Wells & Initial Well After Payout.

Monsanto & Fasken	65.8 %
Gulf	22.6 %
Sinclair	3.4 %
Cities Service	3.3 %
Hamon	1.7 %
Redfern	1.0 %
Mobil	1.0 %
Marathon	0.6 %
Stephens	0.6 %

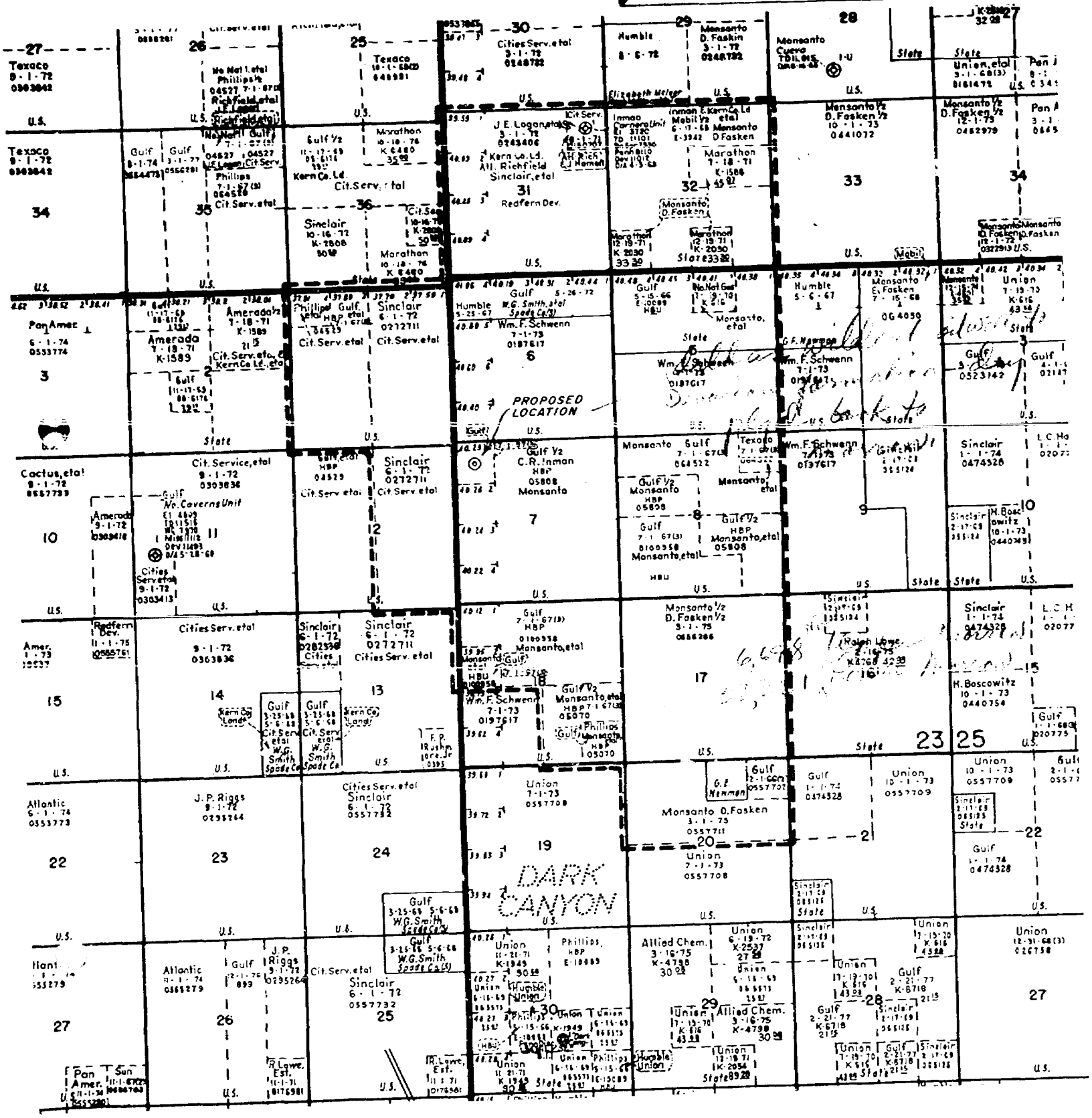
Region 03 District MIDLAND

State NEW MEXICO D-3-463

County EDDY

Field WILDCAT (Carnero Peak Area)

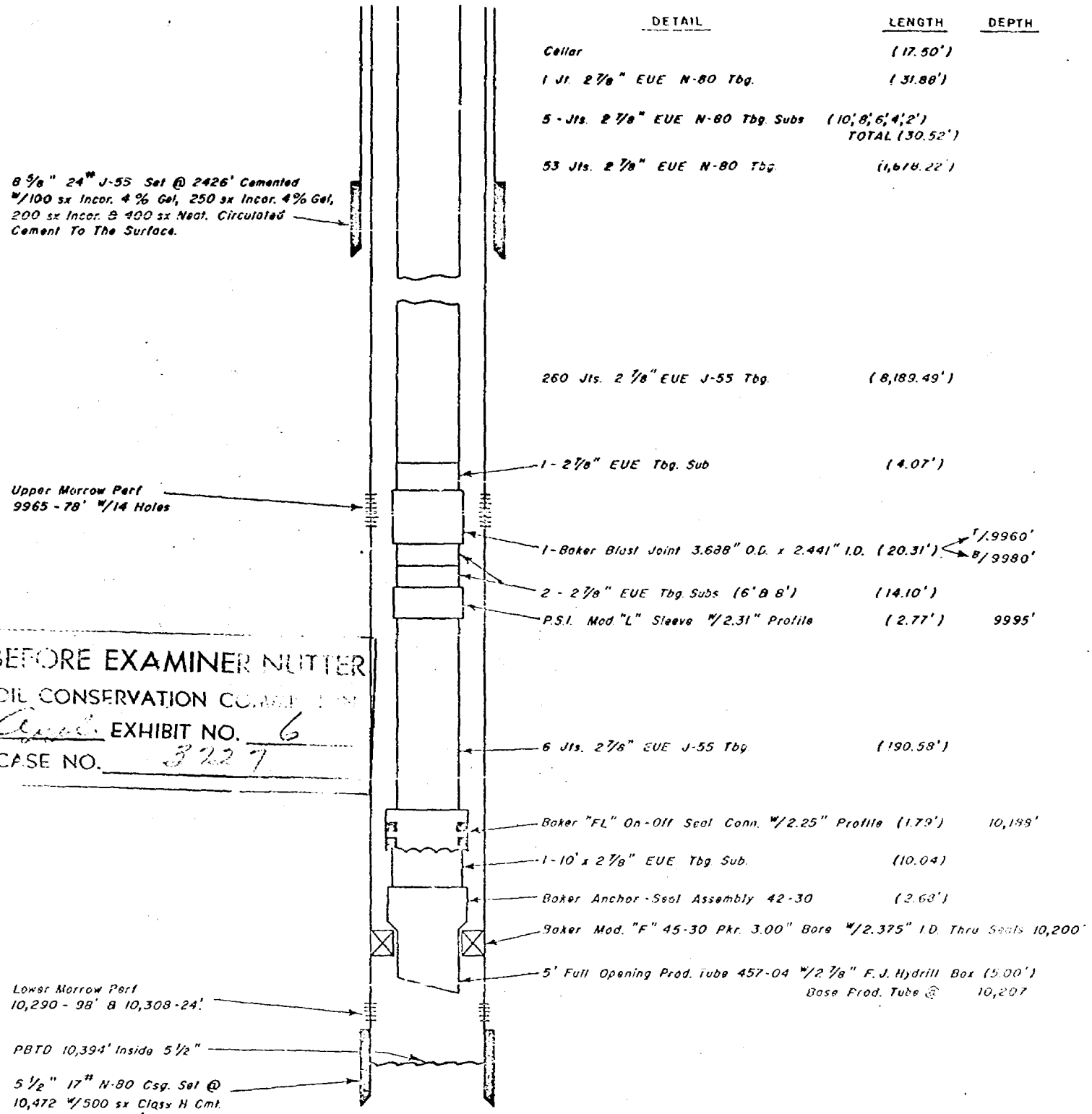
Date 9-25-67 Scale 1" = 4000'



DIAGRAMMATIC SKETCH

DATE: Jan., 1968 WELL NO. 1 LEASE: Rock Tank Unit COUNTY: Eddy STATE: New Mexico

660' FNL & 920' FWL Sec. 7-23S-25E



DETAIL	LENGTH	DEPTH
Cellar	(17.50')	
1 Jt. 2 7/8" EUE N-80 Tbg.	(31.88')	
5 - Jts. 2 7/8" EUE N-80 Tbg. Subs	(10', 8', 6', 4', 2') TOTAL (30.52')	
53 Jts. 2 7/8" EUE N-80 Tbg.	(1,678.22')	
260 Jts. 2 7/8" EUE J-55 Tbg.	(8,189.49')	
1 - 2 7/8" EUE Tbg. Sub	(4.07')	
1 - Baker Blast Joint 3.688" O.D. x 2.441" I.D.	(20.31')	T/9960' B/9980'
2 - 2 7/8" EUE Tbg. Subs (6' & 8')	(14.10')	
P.S.I. Mod "L" Sleeve w/2.31" Profile	(2.77')	9995'
6 Jts. 2 7/8" EUE J-55 Tbg.	(190.58')	
Baker "FL" On-Off Seal Conn. w/2.25" Profile	(1.79')	10,198'
1 - 10' x 2 7/8" EUE Tbg. Sub.	(10.04')	
Baker Anchor-Seal Assembly 42-30	(2.69')	
Baker Mod. "F" 45-30 Pkr. 3.00" Bore w/2.375" I.D. Thru Seals		10,200'
5' Full Opening Prod. Tube 457-04 w/2 7/8" F.J. Hydrill Box	(5.00')	
Base Prod. Tube @		10,207

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 3227

MONSANTO COMPANY
MIDLAND DISTRICT PRODUCTION
Midland, Texas

Form C-122
Revised 9-1-65

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

3727

Type Test: [X] Initial	[ ] Annual	[ ] Special		Test Date: 1-29-68		
Company: Monsanto Company		Connection: None				
Pool: Undesignated		Formation: Upper Morrow				Unit: D
Completion Date: 1-23-68	Total Depth: 11,026	Plug Back TD: 10,385		Elevation: 3961		Farm or Lease Name: Rock Tank Unit
Csg. Size: 5 1/2	Wt.: 17	d: 4.892	Set At: 10,472	Perforations: From 9965 To 9978		Well No.: 1-C
Tbg. Size: 2 7/8	Wt.: 6.5	d: 2.441	Set At: 10,204	Perforations: From 10,290 To 10,324		Unit: D Sec.: 17 Twp.: 23-S Rge.: 25E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G.				Packer Set At: 10,200		County: Eddy
Producing Thru: Casing	Reservoir Temp. °F: 170° @ 9971.5	Mean Annual Temp. °F: 60		Baro. Press. – P_a: 13.2		State: New Mexico
L: 9971.5	H: 9971.5	Gg: .589	% CO_2: .60	% N_2: .72	% H_2S: 0	Prover:	Meter Run: X	Taps: Flange

FLOW DATA / TUBING DATA / CASING DATA

NO.	Prover Line Size x Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Tubing Press. p.s.i.g.	Tubing Temp. °F	Casing Press. p.s.i.g.	Casing Temp. °F	Duration of Flow
SI							3117	58	7 days
1.	4.027 x 1.000	450	98	94			2962	62	60 Mins
2.	4.027 x 1.750	410	34	77			2704	66	60 Mins
3.	4.027 x 1.750	430	55	76			2536	68	60 Mins
4.	4.027 x 1.750	430	77	76			2364	69	60 Mins
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	4.753	210	463.2	.9688	1.303	1.030	1297
2.	14.93	118	423.2	.9840	1.303	1.03[illegible]	2329
3.	14.93	154	443.2	.9850	1.303	1.033	3048
4.	14.93	181	443.2	.9850	1.303	1.033	3582
5.							

NO.	P_r	Temp. °R	T_r	Z
1	.686	554	1.58	.943
2.	.626	537	1.53	.941
3.	.656	536	1.53	.938
4.	.656	536	1.53	.938
5.				

Gas Liquid Hydrocarbon Ratio: None Produced Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: ______ Deg.
Specific Gravity Separator Gas: .589 | XXXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure by Analysis: 673.08 P.S.I.A. | 675 P.S.I.A.
Critical Temperature: 345.06 R | 350 R

P_c 3130.2 P_c^2 9798.1

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1	From	2973.6	8842	956
2	step	2714.9	7371	2427
3	wise	2553.2	6519	3279
4	calc.	2382.6	5676	4122
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 2.377$

(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.8701$

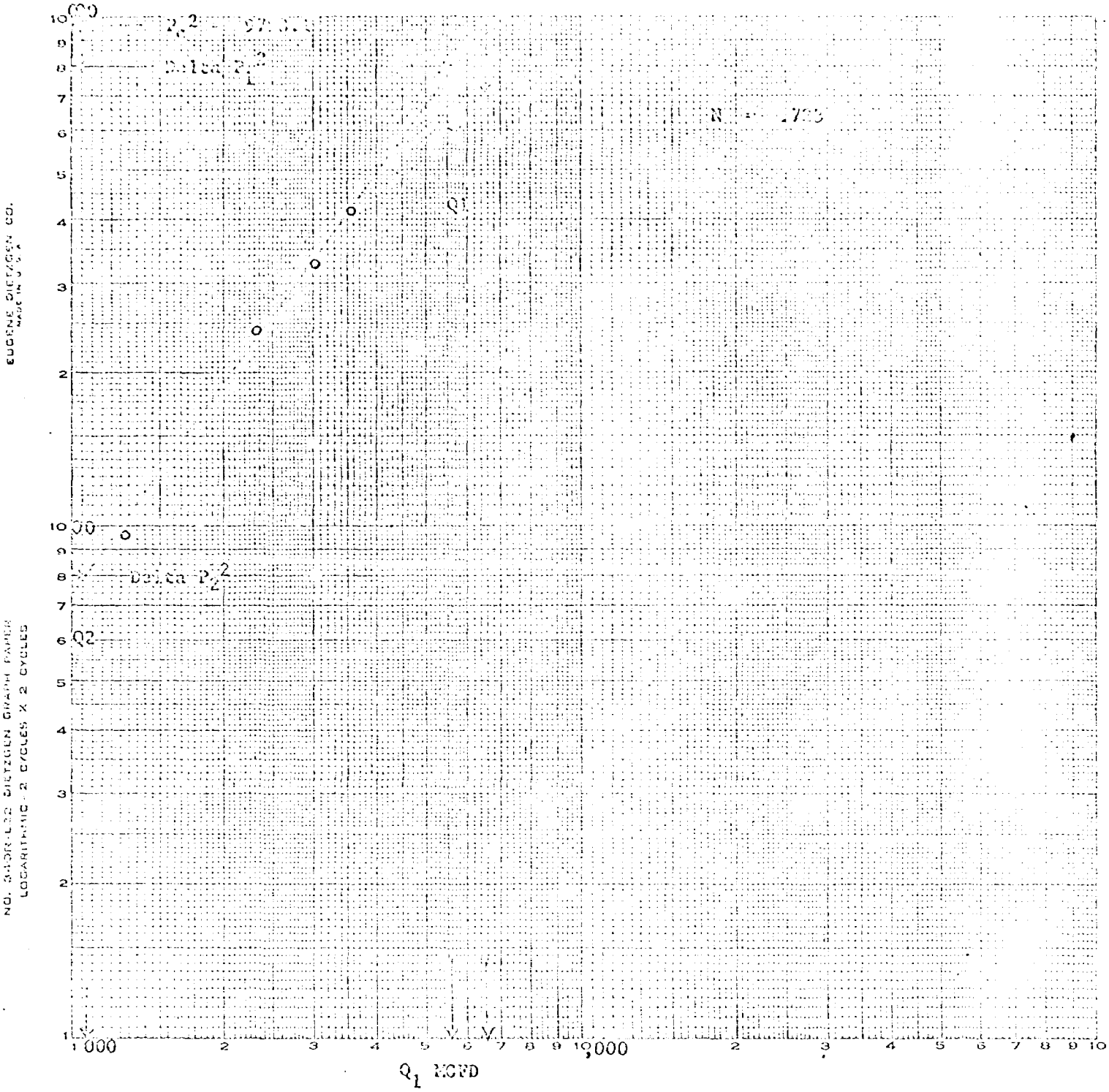
$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 6698$

Absolute Open Flow: 6698 Mcfd @ 15.025 | Angle of Slope θ: 54° | Slope, n: .723

Remarks: Computations made with Electronic Calculator using 7 Decimal Places.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. F. Jones	H. L. Hagler	

COMPANY Monsanto Company
WELL Rock Tank Unit #1-C
LOCATION D 17 23-S 25-E
COUNTY Eddy
DATE 1-29-68



Delta P_i^2; $P_c^2 - P_w^2$ = 5600; Log Q1 = 3.74819

Delta P_2^2; $P_c^2 - P_w^2$ = 1060; Log Q2 = 3.02531

n = .72288 = .723

NEW MEXICO OIL CONSERVATION COMMSSION

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

#1 3127

Type Test: [x] Initial [ ] Annual [ ] Special				Test Date: 1-30-68	
Company: Monsanto Company		Connection: None			
Pool: Undesignated		Formation: Lower Morrow		Unit: D	
Completion Date: 1-23-68	Total Depth: 11,026	Plug Back TD: 10,385	Elevation: 3961	Farm or Lease Name: Rock Tank Unit	
Csg. Size: 5 1/2 / Wt.: 17 / d: 4.892 / Set At: 10,204		Perforations: From 10,290 To 10,324		Well No.: 1-T	
Tbg. Size: 2 7/8 / Wt.: 6.5 / d: 2.441 / Set At: 10,204		Perforations: From Open Ended To		Unit: D / Sec.: 17 / Twp.: 23-S / Rge.: 25-E	
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: G. G.		Packer Set At: 10,200		County: Eddy	
Producing Thru: Tubing	Reservoir Temp. °F: 172° 10,307	Mean Annual Temp. °F: 60	Baro. Press. – P_a: 13.2	State: New Mexico	

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
10,307	10,307	.588	.63	.59	0		X	

NO.	FLOW DATA: Prover Line Size x Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					3385	49	Packer		7 days
1.	.067 x 2.50	450	44	59	3076	64			60 Min
2.	4.067 x 2.50	515	74	63	2898	70			60 Min
3.	4.067 x 2.50	530	96	68	2801	74			60 Min
4.	4.067 x 2.50	620	116	66	2694	78			60 Min
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	32.64	142.76	463.2	1.001	1.304	1.036	6301
2.	32.64	197.70	528.2	.9971	1.304	1.040	8725
3.	32.64	228.31	543.2	.9924	1.304	1.040	10031
4.	32.64	271.01	633.2	.9943	1.304	1.048	12019
5.							

NO.	P_t	Temp. °R	T_r	Z
1.	.69	519	1.50	.932
2.	.78	523	1.51	.924
3.	.80	528	1.52	.924
4.	.94	526	1.52	.911
5.				

Gas Liquid Hydrocarbon Ratio 755.5 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons 54 Deg.
Specific Gravity Separator Gas .588 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure by Analysis 674.2 P.S.I.A. 675 P.S.I.A.
Critical Temperature 344.5 R 346 R

P_c 3398.2 P_c^2 11,547

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		3148.8	9914	1633
2		3051.2	9310	2237
3		3025.5	9154	2393
4		2982.7	8896	2651
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 4.355$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4.355$

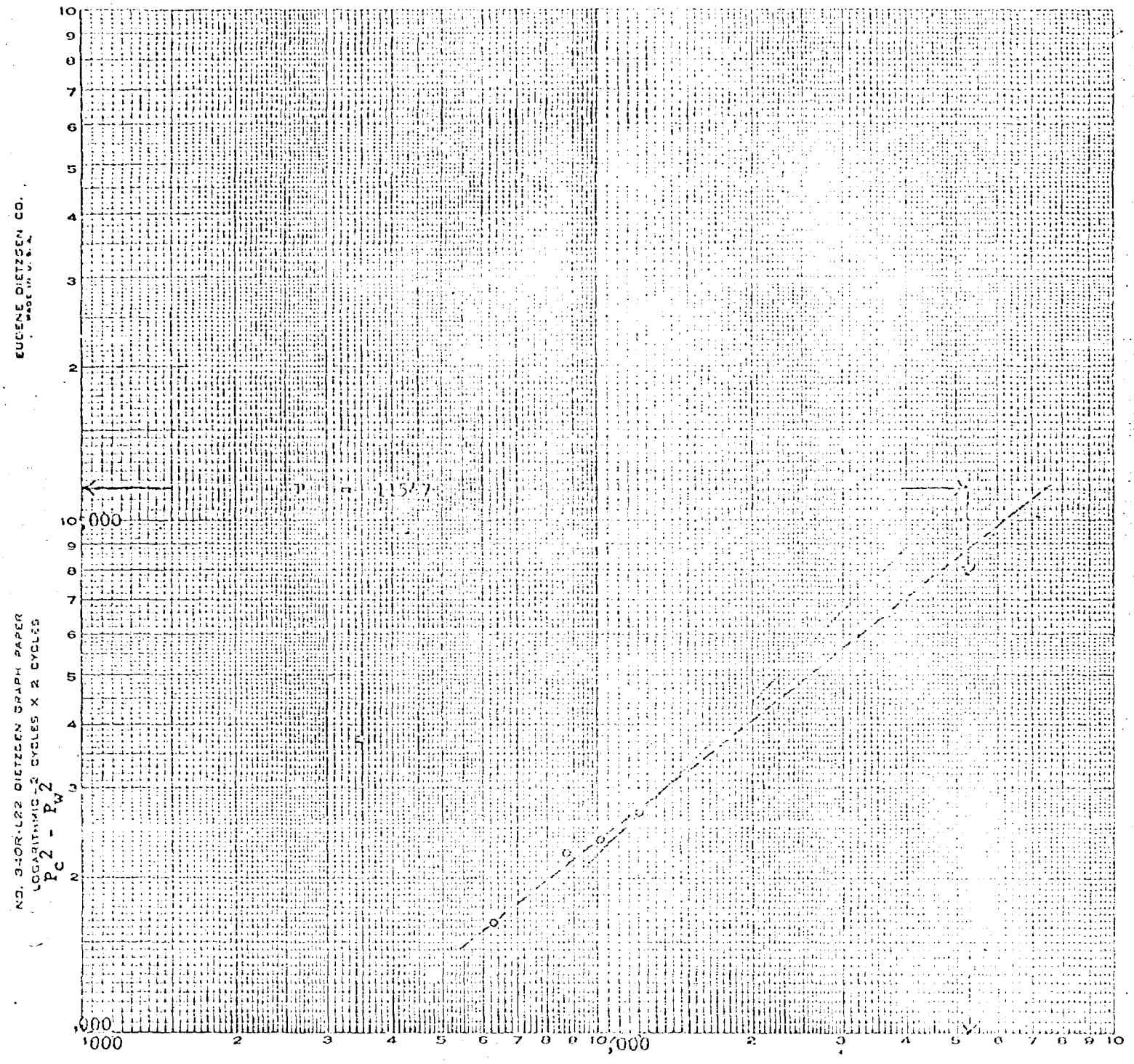
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 52351$

Absolute Open Flow 52351 Mcfd @ 15.025 Angle of Slope θ 45° Slope, n 1.0

Remarks: Computations were made with Electronic Type Calculator carried to 7 places.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	D. F. Jones	H. L. Hagler	

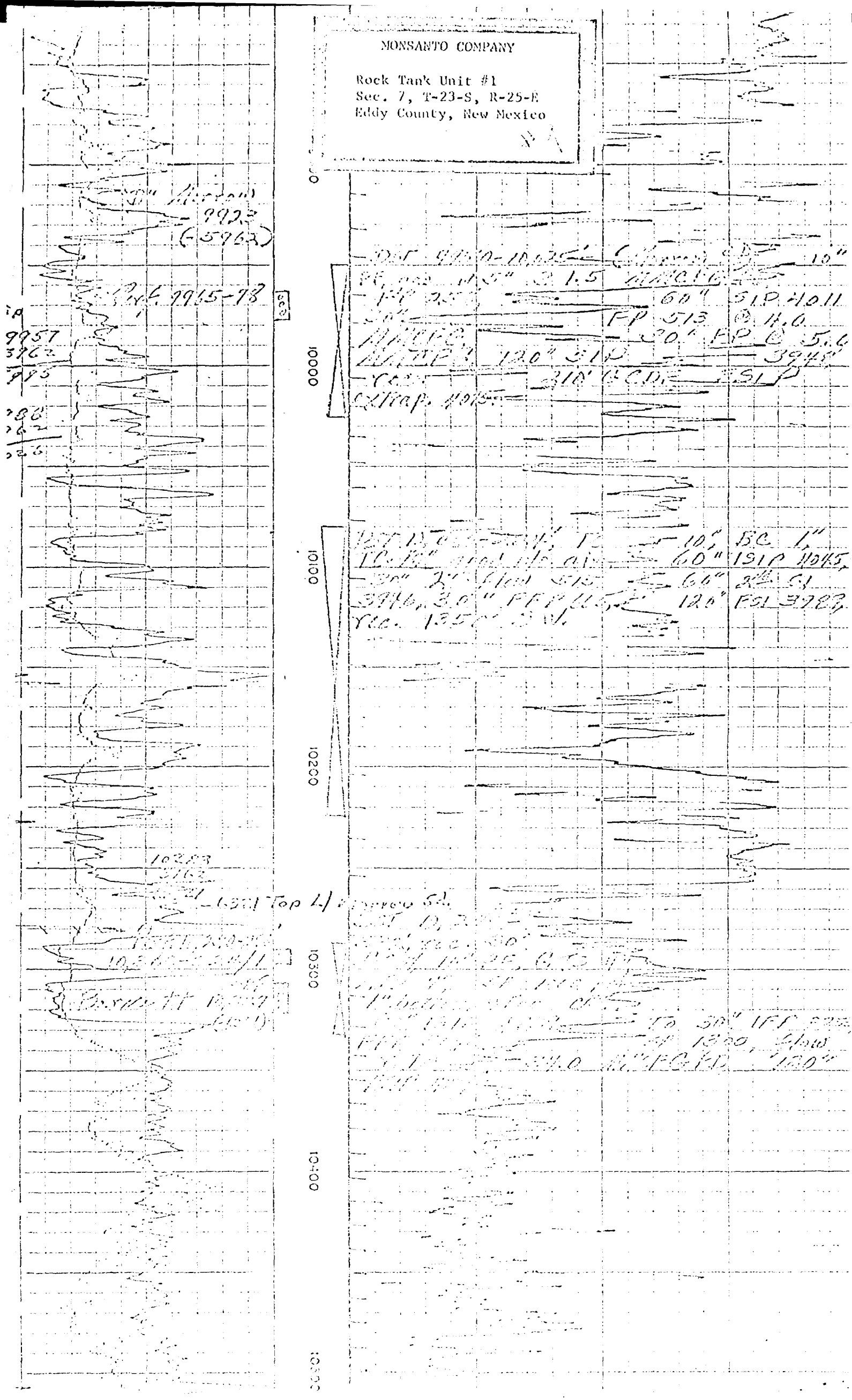
OPERATOR Monsanto Company
LEASE Rock Tank Unit Well No. 1-T
LOCATION D 17 23-S 25-E
COUNTY Eddy
DATE 1-30-68



Absolute Open Flow 52351 Mcf/Day

MONSANTO COMPANY

Rock Tank Unit #1
Sec. 7, T-23-S, R-25-E
Eddy County, New Mexico



ROCK TANK UPPER & LOWER MORROW POOLS
EDDY COUNTY, NEW MEXICO

AVERAGE RESERVOIR CHARACTERISTICS

UPPER MORROW:

Depth	9965-9986 Feet
Temperature	170°F
Porosity	17%
Connate Water Saturation	30%
Permeability	20 md.
Original Pressure	3971 psig
Separator Gas Gravity	.589
Condensate Gravity, API	None Produced

LOWER MORROW:

Depth	10,290-10,326 Feet
Temperature	172°F
Porosity	9%
Connate Water Saturation	30%
Permeability	324 md.
Original Pressure	4300 psig
Separator Gas Gravity	.588
Condensate Gravity, API	54°
Gas-Condensate Ratio	755.5 MCF/Bbl.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant EXHIBIT NO. 10
CASE NO. 3727

ROCK TANK UPPER & LOWER MORROW GAS POOLS
EDDY COUNTY, NEW MEXICO

RESERVES & ECONOMIC DATA COMPARING 640 & 320 ACRE DEVELOPMENT

WELL COST: ROCK TANK NO. 1 $279M
SUBSEQUENT DEVELOPMENT WELL $260M

	640 Ac.	320 Ac.
ULTIMATE RECOVERY:		
Upper Morrow - Gas, MCF	8MM	4MM
Condensate, Bbls.	16M	8M
Lower Morrow - Gas, MCF	8MM	4MM
Condensate, Bbls.	16M	8M
ECONOMICS:		
Ultimate Recovery; Gas, MCF	16MM	8MM
Condensate, Bbls.	32M	16M
Income from Sales	$2.54M	$1085M
Direct Operating Expense & Sev. Tax	$273M	$209M
Operating Income	$1881M	$876M
Investment	$260M	$260M
Federal Income Tax	$515M	$159M
Profit	$1106M	$457M
Ratio of Profit to Investment	4.25	1.76
Payout at 2200 & 1100 MCF/D respectively	2.9 years	6.2 years
Life	20 years	20 years

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 11
Case No. 3727

NEW MEXICO MORROW GAS POOLS

GAS POOL	COUNTY	SPACING (Acres)
Antelope Ridge Morrow	Lea	320
Cemetary Morrow	Eddy	320
Cinta Roja Morrow	Lea	640
Dagger Draw Morrow	Eddy	640
Dos Hermanos Morrow	Eddy	640
Grama Ridge Morrow	Lea	640
Indian Basin Morrow	Eddy	640
Indian Hills Morrow North	Eddy	640
Lusk Morrow	Lea	640
McMillan Morrow	Eddy	640
Osudo Norta Morrow	Lea	640
Tower Hill Morrow	Eddy	640