CASE 3407: Application of MIDWEST OIL CORP. for pressure maintenance project, Lea County, New Mexico.

ASE NO.

3407

pplication,

ranscripts,

mall Exhibits

ETC.

GOVERNOR
JACK M. CAMPBELL
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 1, 1966

Mr. Sumner Buell
Seth, Montgomery, Federici
& Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Re: Case No. 3407
Order No. R-3071
Applicant:

MIDWEST OIL CORPORATION

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

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION OF MIDWEST OIL CORPORATION FOR A PRESSURE MAINTENANCE PROJECT, LEA COUNTY, NEW MEXICO.

CASE NO. 3407

A P P L I C A T I O N

Comes now Midwest Oil Corporation and applies to the New Mexico Oil Conservation Commission for an order authorizing it to institute a pressure maintenance project in the Nonombre-Upper Pennsylvanian Gas Pool, Lea County, New Mexico, and in support of its application states:

1. Midwest Oil Corporation is the owner and operator of three wells in the Nonombre field in Section 32, Township 13 South, Range 34 East, Lea County, New Mexico, as shown on the plat attached to this application as Exhibit "A". This plat shows the pool in which each of the three wells is completed and also shows the location of the well through which it is proposed to inject water to institute a pressure maintenance project in the Nonombre-Upper Pennsylvanian Pool. The injection well, Harris State Well No. 1, is located 660 feet from the south line and 1,980 feet from the west line of Section 29, Township 13 South, Range 34 East, Lea County, New Mexico.

2. Attached to this application as Exhibit "B" is a log of the Harris State Well No. 1, the proposed injection well.

3. Attached to this application as Exhibit "C" is a diagrammatic sketch of the Harris State Well No. 1, the proposed injection well.

4. Midwest Oil Corporation proposes to institute a pressure maintenance project in the Nonombre-Upper Pennsylvanian Pool by the injection of water into the said Harris State Well No. 1. The water to be injected will be produced water derived from the three wells located in Section 32 immediately south of the proposed injection well. Injection would commence at the rate of approximately 750 barrels per day and would increase gradually to a rate of approximately 1,000 barrels per day. The proposed injection well is expected to take water by gravity.

5. Approval of this application will prevent waste and will protect correlative rights.

6. A copy of this application complete with all attachments has been furnished to the Office of the State Engineer, State Capitol Building, Santa Fe, New Mexico.

WHEREFORE, Midwest Oil Corporation requests that this application be set for hearing before the Commission or one of its examiners at its hearing to be scheduled for May 25, 1966, or as soon as it may be heard, and that the Commission enter its order approving this application.

SETH, MONTGOMERY, FEDERICI & ANDREWS

By Richard S. Morris

350 East Palace Avenue
Santa Fe, New Mexico

Attorneys for Applicant
Midwest Oil Corporation

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. 3407
Order No. R-3071

APPLICATION OF MIDWEST OIL CORPORATION
FOR A PRESSURE MAINTENANCE PROJECT, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 25, 1966, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of June, 1966, 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, Midwest Oil Corporation, seeks authority to institute a pressure maintenance project in the Nonombre-Upper Pennsylvanian Pool, Lea County, New Mexico, by the injection of water into the Upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N of Section 29, Township 13 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(4) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Midwest Oil Corporation, is hereby authorized to institute a pressure maintenance project in the Monombre-Upper Pennsylvanian Pool, Lea County, New Mexico, by the injection of water into the Upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N of Section 29, Township 13 South, Range 34 East, NMPM, Lea County, New Mexico.

(2) That said well shall be equipped with internally plastic-coated tubing and a packer, which shall be set at approximately 10,340 feet. Further, the casing-tubing annulus of said well shall be kept filled with a corrosion-inhibited fluid at all times.

(3) That the subject pressure maintenance project is hereby designated the Midwest Monombre Pressure Maintenance Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(4) That monthly progress reports of the pressure maintenance project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(5) 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

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

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

esr/

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

'66 MAY 13 PM 1 2

S. E. REYNOLDS
STATE ENGINEER

May 12, 1966

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, NEW MEXICO 87501

3407

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Midwest Oil Corporation which seeks authority to institute a pressure maintenance project in the Nonombre-Upper Pennsylvanian Gas Pool by converting the Harris State Well No. 1 to injection service. The well is located 660' from the south line and 1980' from the west line of Sec. 29, T. 13 S., R. 34 E. Since injection is to be down internally plastic coated tubing under a tension type packer set at 10,340', it appears that no threat of contamination will result from the operation. Therefore, this office offers no objection to the granting of the application.

FEI/ma
cc-Mr. Richard Morris
(for Midwest Oil Corp.)

Yours truly,

S. E. Reynolds
State Engineer

By: Frank E. Irby
Frank E. Irby
Chief
Water Rights Div.

CASE 3002 - Continued:

said gas pool and the amendment of the special pool rules to include the classification of oil and gas wells in said pool, a provision for 80-acre spacing for oil wells, and the establishment of a limiting gas-oil ratio of 6000 to 1.

CASE 3407: Application of Midwest Oil Corporation for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N, Section 29, Township 13 South, Range 34 East, Nonombre-Upper Pennsylvanian Pool, Lea County, New Mexico.

CASE 3408: Application of Marathon Oil 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 Queen formation through three wells in Sections 10 and 15, Township 18 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 3409: Application of Dr. Sam G. Dunn for a secondary recovery project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a secondary recovery project by the injection of air into the Upper San Andres formation through three wells located in Section 26, Township 7 South, Range 26 East, Leslie Spring-San Andres Pool, Chaves County, New Mexico. Applicant further seeks an administrative procedure to place additional wells on air injection if necessary.

Docket No. 13-66

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 25, 1966

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 3399: (Continued and Readvertised)

Application of Tenneco Oil Company for two non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of two non-standard gas proration units adjacent to the Blanco-Pictured Cliffs Pool and described as follows:

(1) A 155.40-acre unit comprising the SE/4 SW/4 and Lot 4 of Section 19, and the E/2 NW/4 and Lots 1 and 2 of Section 30, Township 30 North, Range 9 West;

(2) A 156.08-acre unit comprising the E/2 SW/4 and lots 3 and 4 of Section 30 and the NE/4 NW/4 and lot 1 of Section 31, Township 30 North, Range 9 West, all in San Juan County, New Mexico.

CASE 3404: Application of Tenneco Oil 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 and San Andres formations through six wells in Sections 22 and 28, Township 17 South, Range 29 East, Grayburg-Jackson Pool, Eddy County, New Mexico. Applicant further seeks an administrative procedure for expansion of said project to include additional injection wells and leases.

CASE 3405: Application of David Fasken for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the North Indian Hills-Morrow Gas Pool in Section 4, Township 21 South, Range 24 East, Eddy County, New Mexico, including a provision for 640-acre spacing units.

CASE 3406: Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bough-Devonian Pool, Lea County, New Mexico, including a provision for 80-acre proration units.

CASE 3002: (Continued and Readvertised)

In the matter of Case No. 3002 being reopened pursuant to the provisions of Order No. R-2684-A, which order continued the original order for an additional year, establishing 320-acre spacing for the Fowler-Lower Paddock Gas Pool, Lea County, New Mexico. The original applicant, Pan American Petroleum Corporation, seeks continuation of the 320-acre spacing for

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 25, 1966

EXAMINER HEARING

IN THE MATTER OF:

Application of Midwest Oil Corporation for a pressure maintenance project, Lea County, New Mexico.

Case No. 3407

BEFORE:

Daniel S. Nutter, Chief Engineer

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The next Case will be Case 3407. Application of Midwest Oil Corporation for a pressure maintenance project, Lea County, New Mexico.

MR. BUELL: Mr. Examiner, Sumner Buell of Seth, Montgomery, Frederici and Andres appearing on behalf of the applicant. We have one witness, Mr. B. D. Baker.

(Witness sworn.)

(Whereupon, Applicant's Exhibits A through F marked for identification.)

* * *

B. D. B A K E R, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SUMNER:

Q Would you please state your name, by whom you are employed, where and in what capacity?

A B. D. Baker, employed by Midwest Oil Corporation in Midland, Texas as a Petroleum Engineer.

Q Mr. Baker, have you previously testified before the Commission or one of its examiners?

A Yes, I have.

Q Were you qualifications accepted?

A Yes.

Q Are you familiar with what Midwest Oil Company seeks by its application in Case 3407?

A Yes, I am.

Q What does Midwest Oil Company seek?

A Seeks the authority to institute a pressure maintenance project by the injection of water into the upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N, Section 29, Township 13 South, Range 34 East, Nonombre-Upper Pennsylvanian Pool, Lea County, New Mexico.

Q Referring you to what has been marked as Applicant's Exhibit A, would you please describe what this exhibit shows?

A This is a plat of an area in Township 13 South and Township 14 South, Range 34 East, which shows the Nonombre Pennsylvanian Pool and surrounding acreage. In the South half of Section 29 is shown our proposed injection well, the Harris State Number 1. In Section 32 we have shown the 3 producing wells in the Nonombre Pennsylvanian Pool. Now, this pool is divided into upper Pennsylvanian and lower Pennsylvanian. The 3 producing wells, starting in the Southwest Quarter of Section 32, we have the State Number 1C, and I'd like to point out a nomenclature difference here on this exhibit. They're referred to as 1C, 2C and 2D, on the forthcoming exhibit they will be State C1, State D1 and State D2. The State C1 is an upper and lower Pennsylvanian completion. In the

Northeast Quarter we have the State D Number 1 which is an upper Pennsylvanian completion; Northwest Quarter we have the State D2 which is a lower Pennsylvanian completion.

Q Mr. Baker, I take it that Midwest Oil proposes to use the produced water from the C1, D1 and D2 as the water into the Harris State well?

A Yes, that's correct. All the water will be produced water from these 3 wells with the major portion of it being from the lower Pennsylvanian completions.

Q Midwest Oil is the only producer from this field?

A That's correct, we are the only producer in the field. The plat also shows dry holes which have been drilled around the field. In Section 5 to the South is the Ralph Lowe MWO-State Number 1 which is a dry hole. In Section 28 is shown the Phillips Number 1 which was the dry hole, and in Section 30 is the Cactus Smelter State Number 1, another dry hole. These were all drilled through the lower Pennsylvanian and found to be non-productive.

Q Mr. Baker, referring you now to what's been marked as Applicant's Exhibit B, would you please explain briefly what that shows?

A Exhibit B is a North-South cross section through the producing wells. It starts with our proposed injection well on the left, goes through the 3 producing wells down to

the Ralph Lowe MWO dry hole on the right. We have shown on this exhibit the top of the Bough Lime which is the Low A, Low B porosity zone from which the upper Pennsylvanian Pool is producing, and the top of the Ranger Lake zone which is the producing zone for the lower Pennsylvanian Pool.

Now, back up to the colored-in section in red, this is the producing interval in the Bough B and the section that we propose to inject water into through the Harris State Number 1. We have 2 producing wells in this zone, the State C Number 1 and the State D Number 1, with perforations as shown in this cross section. The Harris State Number 1 has been perforated in this section and found to be water productive due to its low structural relationship to other wells, and it is through these perforations that we plan to inject our water into this Bough B producing zone.

From this cross section you can see that the perforations that we'll be injecting into are some 40 to 45 feet lower than the Bough B producing zone in the other 3 wells directly to the left on this cross section.

Q Can you determine from this cross section the approximate separation between the upper and lower Pennsylvanian zones?

A Yes, there's approximately 350 feet between our producing zone in the Bough B and the Ranger Lake zone from

which the Bough B is producing.

Q Refer to C and Explain what this represents?

A Exhibit C is a structure map of the same area we've just been talking about. It gives a picture of the same thing that we saw on the cross section. It shows that this is a closed feature from which the Pennsylvanian sections are producing. This is a cross section on the top of the Bough Lime or the Bough A.

Q And the Midwest Oil Company properties are marked on this?

A Our properties are marked in dark blue. This shows that the limits of the pool have been pretty well established by the dry holes surrounding it and their structural position on this structure map.

Q Referring you to what's been marked Applicant's Exhibit D, would you please explain this?

A Exhibit D is a set of curves showing the production history for the Nonombre-Upper Pennsylvanian Pool. The heavy black line is monthly production from the Nonombre-Upper Pennsylvanian. It's read on the scale to the left. The line on the lower part of the graph shows the wells in the field. We have two producing wells here. The dashed line through the middle part of the curve is the gas-oil ratio history of the Nonombre-Upper Pennsylvanian

and it's read on the right side of the curve. And then on the upper half of the graph we have a curve showing the bottom hole pressure history of the Nonombre-Upper Pennsylvanian. This is read on the right-hand side of the graph.

You can see from this that the pressure has declined very rapidly during the one year that this pool has been producing. The initial pressure was 3870 pounds, which is the first point on this curve. A second pressure was run on July 8th of '65, which was 3533 pounds. Both of these first two pressures were on the State C Number 1 which was a discovery well in the field. The third point is an average of two pressures which were taken one on the State C Number 1 and one on the State D Number 1. This pressure is 3220 pounds and the last point at the lower end of the curve is a pressure that was run on the State C Number 1 on March 4th of '66, which is 2145 pounds, and I believe is a little bit low. This pressure was taken a few hours after paraffin had been cut in the wells, so it's a little bit lower than it should be; possibly 45 or 50 pounds would be a correct pressure here.

Also shown is a saturation pressure which was determined from a reservoir fluid analysis of 2202 pounds up until this time, and I feel right now we are producing right above this saturation pressure. Our fluid analysis also showed a solution gas-oil ratio of 1023 cubic feet per

barrel, and the GOR history has pretty closely followed this solution GOR as determined from our fluid analysis.

MR. NUTTER: Is this line at 1,000 on the GOR scale, the horizontal line, is that the GOR?

A That is the GOR. The dashed line, which is almost horizontal, it's read to the right, and it's run right around a thousand since the first well was completed.

Now, then, we propose to inject water into the upper Pennsylvanian formation and maintain our pressure at or above the saturation pressure, which is the point which we have reached now. By doing this we will prevent the formation of a free gas phase in the reservoir which would be a loss of reservoir energy. As the free gas developed it would begin to move through the reservoir and be of no value to us in the production of oil. By keeping the pressure above saturation pressure we will also keep the viscosity of oil at its present level, which is .275 centapoints. We will prevent and increase the viscosity and prevent a reduction in the mobility of the oil.

Q Mr. Baker, from these things you have testified, is it your conclusion that this will tend to increase the total amount of recoverable oil from this pool?

A Yes, this will definitely increase our recovery.

Q Refer to Exhibit E and explain that, please?

A Exhibit E shows the anticipated daily production and injection volumes in the field. I have shown the daily production from the upper and lower Pennsylvanian wells. The State C Number 1 producing from both zones is shown. The State D Number 1 producing from the upper Pennsylvanian is shown, and the State D Number 2 producing from the lower Pennsylvanian is shown. We are at the present time producing approximately 470 barrels of oil per day from the upper Pennsylvanian with 21 barrels of water per day. From the lower Pennsylvanian we anticipate a production of 652 barrels of oil per day and 880 barrels of water per day. I say we anticipate, the State D Number 1 -- pardon me, the State C Number 1 lower zone is shut in at the present time. We have it on artificial lift but it is not producing at this time. Shown below this is simple calculation for daily voidage, and injection volumes on our daily voidage from the upper Pennsylvanian will be the barrels of oil produced times the formation volume factor plus the barrels of water which will be 750 barrels a day. Our daily injection volume will be the total water produced from the two pools which is 901 barrels a day.

Q You will be injecting more water than you are removing in total volume per day?

A Yes, we will be injecting approximately 150 barrels per day more than we are removing from the reservoir.

Q Now, referring you to what's been marked as Exhibit F, would you please explain this to the Examiner?

A This is a schematic diagram of our proposed injection well. It shows the strings of casing which are set in the well and cemented as shown on the diagram. Our 13-3/8" has been cemented and circulated to 8-5/8", calculated top of 2700'. 4-1/2" has been set at 10,790' with a top at 10,070'. We have perforations at 10,390' to 10,395'. Injection of the water will be through the string 2-3/8" internally plastic coated tubing with a tension type packer set at 10,340' in the annulus. We will have corrosion inhibitive fresh water.

Q Mr. Baker, do you feel that the granting of this application would tend to prevent waste and protect Correlative Rights?

A Yes, sir, I do.

Q Were Exhibits A through F prepared by you or under your supervision?

A Yes, sir, they were.

MR. BUELL: Move the introduction of Exhibits A through F into evidence.

(Whereupon, Applicant's Exhibits A through F offered into evidence.)

MR. NUTTER: If there are no objections the exhibits will be admitted.

(Whereupon, Applicant's Exhibits A through F admitted into evidence.)

MR. BUELL: I have nothing further of this witness, sir.

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. Baker, that Pennsylvanian, or the lower Pennsylvanian well, the 2D, is in a good position structurally, I guess the development of the upper Pennsylvanian just wasn't present?

A No, it's present, it is there, and it is a very good zone, but we feel we can produce all the oil that will be produced from this field through the two present positions.

Q You just never have perforated the upper zone, but there is a pay there?

A That's correct, there is a pay there.

Q And in making your computation of the daily voidage and the amount of injection that you're going to have in the upper Pennsylvanian to take up this daily voidage, you're assuming that you keep this reservoir above the saturation pressure and that you don't have any free gas breakdown?

A That's correct.

Q You think you still are producing above the saturation pressure?

A Yes, if not above it, right at it.

Q The last bottom hole pressure that you took, being below the saturation pressure, was probably low?

A We had cut paraffin about six hours before the pressure was taken, so the well had been flowing 30 or 40 minutes previous to the time the pressure was taken. No, our pressures here have been in most cases 96 hour bottom hole pressures. It has taken that long for the pressure to build up.

Q Have you made any test to determine the compatibility of the water from the lower zone to the formation waters in the upper zone?

A No, sir, we have not; it's both Pennsylvanian water, both zones are Pennsylvanian, and we have not run any compatibility tests. The major portion of water will be from the lower Pennsylvanian with a small amount, 21 possibly, increasing to 506 barrels later on from the upper Pennsylvanian.

MR. NUTTER: Any further questions of the witness?

MR. IRBY: Yes, sir.

CROSS-EXAMINATION

BY MR. IRBY:

Q Referring to Mr. Buell's call to my office during my absence I understand that you do have an analysis of the water from one of the two zones, is this correct?

A That is correct, I have an analysis from the lower

Pennsylvanian Zone, I do not have one from the upper Pennsylvanian.

MR. IRBY: May I keep this?

MR. BUELL: Certainly.

MR. IRBY: Do you have any desire to enter this as an exhibit in the case?

MR. NUTTER: Might just as well, it's in the record.

(Whereupon, Applicant's Exhibit G marked for identification.)

MR. BUELL: We move the introduction of Exhibit G.

(Whereupon, Applicant's Exhibit G offered into evidence.)

MR. NUTTER: If there are no objections the exhibit will be admitted.

(Whereupon, Applicant's Exhibit G admitted into evidence.)

MR. IRBY: I don't believe I have any other questions, Mr. Examiner, thank you.

MR. NUTTER: Do you have anything further in this case?

MR. BUELL: I think the record should show Exhibit G is a laboratory report by the Halleburton Division Laboratory on the State C Number 1 lower Pennsylvanian water.

MR. NUTTER: Thank you. If there are no further questions the witness may be excused. Do you have anything further Mr. Buell?

MR. BUELL: No, sir.

MR. NUTTER: Does anyone have anything further to offer in Case 3407? We might note we have a letter from the State Engineers Office relating to this case, in the file. If there is nothing further in this case, the case will be taken under advisement.

I N D E X

WITNESS:

E X H I B I T S

NUMBER	MARKED FOR IDENTIFICATION	OFFERED	ADMITTED
Applt's. A	2	11	11
Applt's. B	2	11	11
Applt's. C	2	11	11
Applt's. D	2	11	11
Applt's. E	2	11	11
Applt's. F	2	11	11
Applt's. G	13	13	13

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, BOBBY J. DAVIS, 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 8th day of June, 1966.

Bobby J. Davis
NOTARY PUBLIC

My Commission Expires:

March 13, 1969.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3407 heard by me on 6/25, 1966.

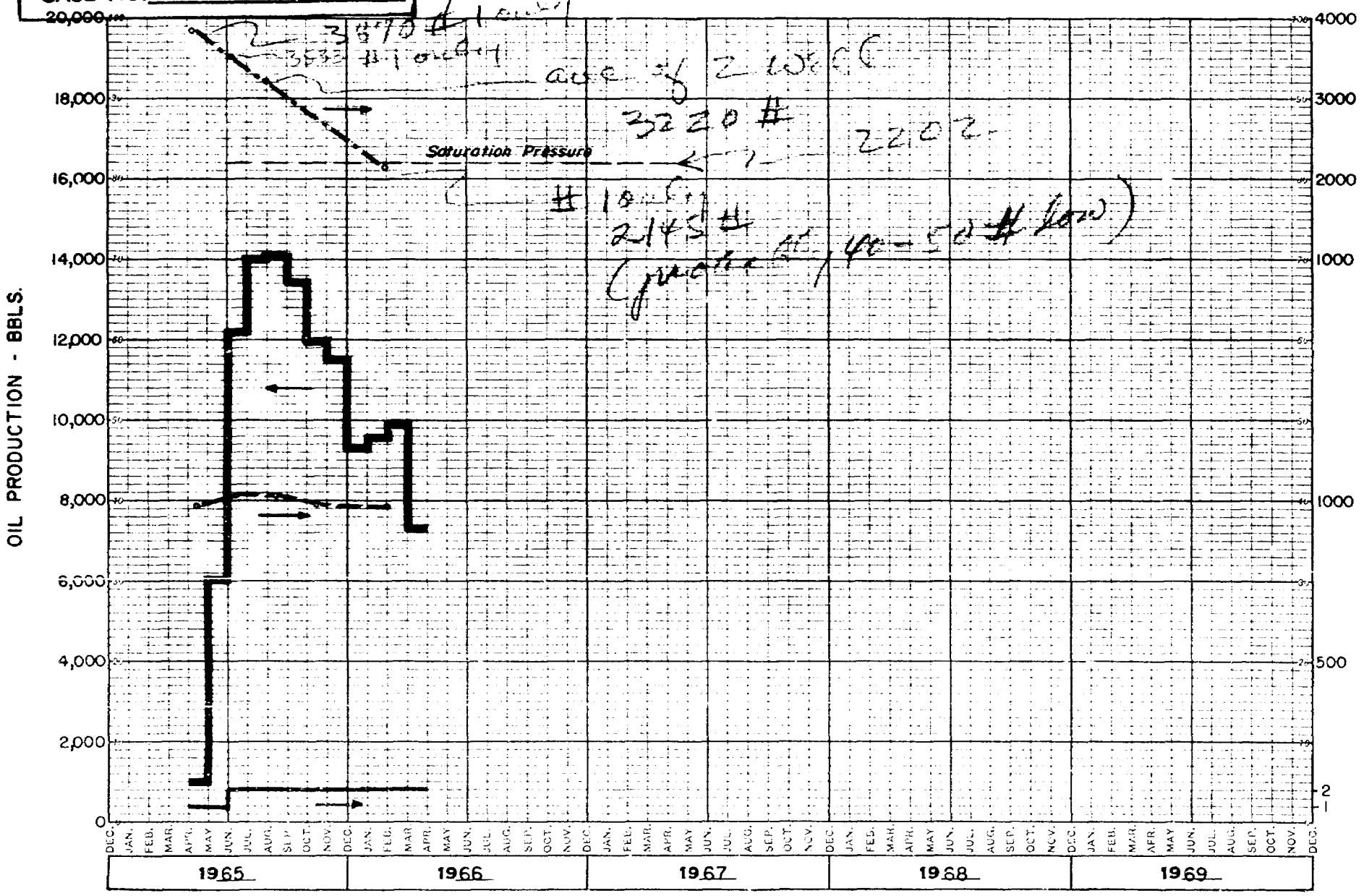
Examiner
New Mexico Oil Conservation Commission

NO. 31,120. FIVE YEARS BY MONTHS X 100 DIVISIONS.

CODEX BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS.
PRINTED IN U. S. A.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3407

NONOMBRE UPPER PENN. POOL
PRODUCTION HISTORY



NONOMBRE PENN

Daily Production & Injection Volumes

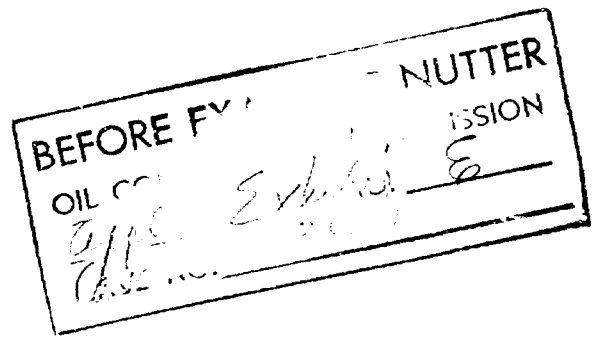
Well	Daily Prod. Upper Penn Oil	Upper Penn Water	Lower Penn Oil	Lower Penn Water
State "C" No. 1	150	Trace	336	544
State "D" Nc. 1	320	21	316	336
State "D" No. 2				
Totals	470	21	652	880

Daily Voidage - Upper Penn

= bbl oil x fvf + bbl water
= (470 x 1.596) + 21
= 750 bbl

Daily Injection Volume - Upper Penn

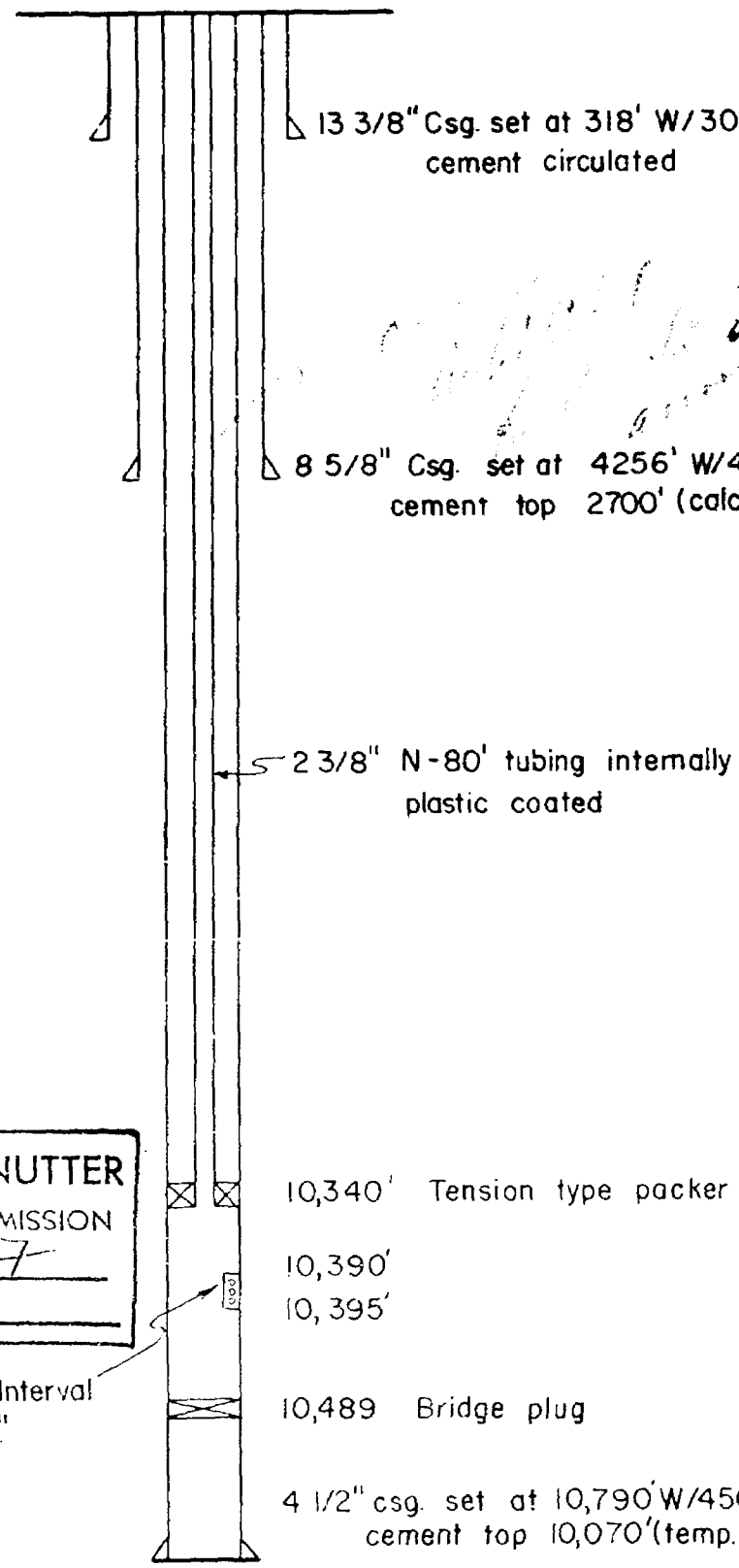
901 bbl



MIDWEST OIL CORP.

HARRIS STATE # 1

PROPOSED INJECTION WELL



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Case EXHIBIT NO. 7
CASE NO. 3407

Proposed Injection Interval
"UPPER PENN"

HALLIBURTON DIVISION LABORATORY

HALLIBURTON COMPANY
LOVINGTON, NEW MEXICO

No. W1-457-65

LABORATORY REPORT

Date 5/15/65

To Mid west Oil Co.
1500 Wilco Bldg.
Midland, Texas

Date Received 5/14/65

Well & Lease State C #1 Depth 10,600 Formation Lower Penn

Location ____ Field ____ Source ____

Specific gravity 60/60 °F	1.026
Color, filtrate	amber
pH	7.8
Resistivity @ 68 °F	0.208
	ppm (mpl)
Chlorides, Cl	17,600
Sulfates, SO_4	5550
Alkalinity, HCO_3	1380
Calcium, Ca	1040
Magnesium, Mg	280
Iron, Fe	nil
Sodium, Na*	14,400
Sulfides, H_2S	180

Remarks ____

ppm equals Parts per million uncorrected or milligrams per liter.
* includes Potassium as Na.

Respectfully submitted
HALLIBURTON COMPANY
By Dave Sutton
Dave Sutton

Laboratory Analyst
Sutton