CASE 3496: Application of NEWMONT OIL CO. for a waterflood expansion, Eddy County, New Mexico.

CASE NO. 3496

Application,
Transcripts,
Small Exhibits
ETC.

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

December 6, 1966

COPY

Mr. John Russell
Attorney at Law
Post Office Drawer 640
Roswell, New Mexico

Dear Sir:

Enclosed herewith is Commission Order No. R-3156, entered in Case No. 3496, approving the expansion of the Newmont Oil Company's West Square Lake Waterflood Project.

Injection is to be through the casing of the one additional authorized water injection well. Prior to injection this casing shall be tested to a minimum of 2100 psi surface pressure for 30 minutes. Please notify the Artesia district office of the Commission of the date and hour this pressure test will be conducted so that the test may be witnessed.

According to our calculations, when the additional injection well has been placed on active injection, the number of proration units which will be included in this new project area is eight.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify

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

Mr. John Russell
Attorney at Law
Post Office Drawer 640
Roswell, New Mexico

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both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

O

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

P

Very truly yours,

Y

A. L. PORTER, Jr.,
Secretary-Director

ALP/DSN/ir

cc: Mr. Frank Irby
State Engineer Office
Santa Fe, New Mexico

Oil Conservation Commission
Artesia, New Mexico

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. 3496
Order No. R-3156

APPLICATION OF NEWMONT OIL COMPANY
FOR A WATERFLOOD EXPANSION, EDDY
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on November 30, 1966, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 6th day of December, 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, Newmont Oil Company, seeks authority to expand its West Square Lake Waterflood Project in the Square Lake Pool by the conversion to water injection of its Continental State Well No. 1, located 1980 feet from the North line and 1980 feet from the West line of Section 36, Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico.

(3) That the wells in the proposed expanded project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed expansion of the West Square Lake Waterflood Project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the expanded 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, Newmont Oil Company, is hereby authorized to expand its West Square Lake Waterflood Project in the Square Lake Pool by the conversion to water injection into the Grayburg-San Andres formations of its Continental State Well No. 1, located 1980 feet from the North line and 1980 feet from the West line of Section 36, Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico.

(2) That the expanded waterflood project shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(4) 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/

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 12-1-66

CASE 3496 Hearing Date 9am 11-30-66 DSN & SF

My recommendations for an order in the above numbered cases are as follows:

Enter an order authorizing Rawmont Oil Company to expand its West Square Lake waterflood project by the conversion of its Continental State Well No. 1, located 1980' FNL and 1980' FWL of 36-16S-30E to water injection in the Grayburg San Andres formations.

Dan Nutter

LAW OFFICES OF
JOHN F. RUSSELL
SUITE 1010 SECURITY NATIONAL BANK BUILDING
P. O. DRAWER 640
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-4641
AREA CODE 505

November 23, 1966

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation
Commission
P. O. Box 2088
Santa Fe, New Mexico

Re: Newmont Application
Case No. 3496

Dear Mr. Porter:

I now transmit herewith two additional copies of Exhibit 3 to Newmont's Application pursuant to my letter of November 2, 1966.

Very truly yours,

John F. Russell

JFR/wa
2 Enc:
Cys of Exhibit 3

Docket No. 30-66

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 30, 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 3492: Application of Midwest Oil Corporation for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Cinta Roja-Morrow Gas Pool, Lea County, New Mexico, including a provision for 640-acre proration units.

CASE 3493: Application of H. N. Sweeney for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Hale Unit Area comprising 1920 acres, more or less, of Federal, State and Fee lands in Township 20 South, Range 30 East, Eddy County, New Mexico.

CASE 3494: Application of Texaco Inc. for a non-standard gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Cotton Draw Unit Well No. 64 at an unorthodox gas well location 660 feet from the North line and 1652 feet from the West line of Section 18, Township 25 South, Range 32 East, in an undesignated Devonian gas pool, Lea County, New Mexico.

CASE 3495: Application of Burleson & Huff for a non-standard proration unit and a non-standard location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the approval of a 50.30-acre non-standard oil proration unit comprising all of Lot 3, Section 2, Township 16 South, Range 32 East, North Anderson Ranch-Wolfcamp Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a non-standard location for said pool 990 feet from the North line and 330 feet from the East line of said Lot 3.

CASE 3496: Application of Newmont Oil Company for a waterflood expansion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its West Square Lake Waterflood Project, Square Lake Pool, by the conversion to water injection of its Continental State Well No. 1, located 1980 feet from the North line and 1980 feet from the West line of Section 36, Township 16 South, Range 31 East, Eddy County, New Mexico.

CASE 3497: Application of Me-Tex Supply Company for a non-standard gas proration unit and a non-standard gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the approval of a non-standard gas proration unit comprising Lots 5, 6, 11, 12, 13, and 14 of Section 3, Township 11 South, Range

(Case 3497 continued)

36 East, Eumont Gas Pool, Lea County, New Mexico, to be dedicated to its Wallace State Well No. 3 located at an unorthodox location 3,300 feet from the South line and 1980 feet from the West line of said Section 3. Applicant further seeks the assignment to said proration unit of the accumulated underproduction presently carried by its Wallace State Well No. 2 located in Unit L of said Section 3, said well currently being dedicated to a 160-acre non-standard gas proration unit comprising Lots 5, 6, 11, and 12 of said Section 3, and also the assignment to said unit of the accumulated underproduction presently carried by the aforesaid Wallace State Well No. 3, said well currently being dedicated to an 80-acre non-standard proration unit comprising Lots 13 and 14 of said Section 3.

CASE 3498: Application of Pan American Petroleum Corporation for a pressure maintenance project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in the Piñon Gallup Oil Pool by the injection of water into the Gallup formation through five wells located in Section 19, Township 28 North, Range 11 West and Sections 14, 15, and 24, Township 28 North, Range 12 West, San Juan County, New Mexico. Applicant further seeks the promulgation of special rules for the operation of said project.

CASE 3499: Application of Pan American Petroleum Corporation for pressure interference tests, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to conduct a pressure interference test in the Cato-San Andres Pool, Chaves County, New Mexico, by shutting in a number of its wells in said pool and producing its Baskett "D" Well No. 1 located in Unit G, Section 11, Township 8 South, Range 30 East, Chaves County, New Mexico. Applicant also seeks authority to transfer the allowable from other wells on said Baskett "D" lease to Well No. 1, to temporarily overproduce said lease, and to make-up the overproduction at the conclusion of the test period by curtailment of wells on said lease. Applicant further seeks authority to accumulate underproduction on any lease where wells will be shut-in, for production upon conclusion of the interference tests.

LAW OFFICES OF
JOHN F. RUSSELL
SUITE 1010 SECURITY NATIONAL BANK BUILDING
P. O. DRAWER 640
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-4641
AREA CODE 505

November 2, 1966

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

Dear Mr. Porter:

I enclose herewith three copies of the Application of Newmont Oil Company for conversion of its Continental State No. 1 Well to a water injection well.

At this time I was only furnished one copy of Exhibit 3, which is attached to the original of the Application. I am securing additional copies and upon receipt, will forward them to your office.

A copy of the Application and Exhibits is being furnished to Mr. Frank Irby, Office of the State Engineer.

Very truly yours,

John F. Russell

John F. Russell

JFR:bl

Enclosures

DOCKET MAILED

Date 11-8-66

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF NEWMONT OIL COMPANY FOR AN ORDER AUTHORIZING THE CONVERSION TO WATER INJECTION ITS CONTINENTAL STATE NO. 1 WELL LOCATED 1980 FEET FROM THE NORTH LINE AND 1980 FEET FROM THE WEST LINE OF SECTION 36, TOWNSHIP 16 SOUTH, RANGE 30 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.	No. 3921

APPLICATION

COMES NOW Applicant, Newmont Oil Company, by its attorney, John F. Russell, and states:

1. Applicant is the operator of the West Square Lake Waterflood Project in Eddy County, New Mexico, which project area is shown on Exhibit 1, which is attached hereto and made a part hereof.

2. Applicant seeks to convert at this time to water injection, its Continental State No. 1 Well, located 1980 feet from the North line and 1980 feet from the West line of Section 36, Township 16 South, Range 30 East, Eddy County, New Mexico.

3. The conversion of the aforesaid well to water injection at this time is necessary to protect correlative rights.

4. Attached hereto, marked Exhibit 2, and made a part hereof is a schmatic diagram of the well.

5. Attached hereto marked Exhibit 3, is a copy of the Completion Record on the proposed injection well.

6. The source of water for injection purposes will be from Yucca Water Company.

WHEREFORE Applicant requests the Commission to set this matter down for hearing before its examiner, publish notice as required by law, and, after hearing, issue its Order authorizing the conversion to water injection of its Continental State No. 1 Well, as prayed for herein.

Respectfully submitted,

NEWMONT OIL COMPANY

By John J. Russell

P. O. Drawer 640
Roswell, New Mexico

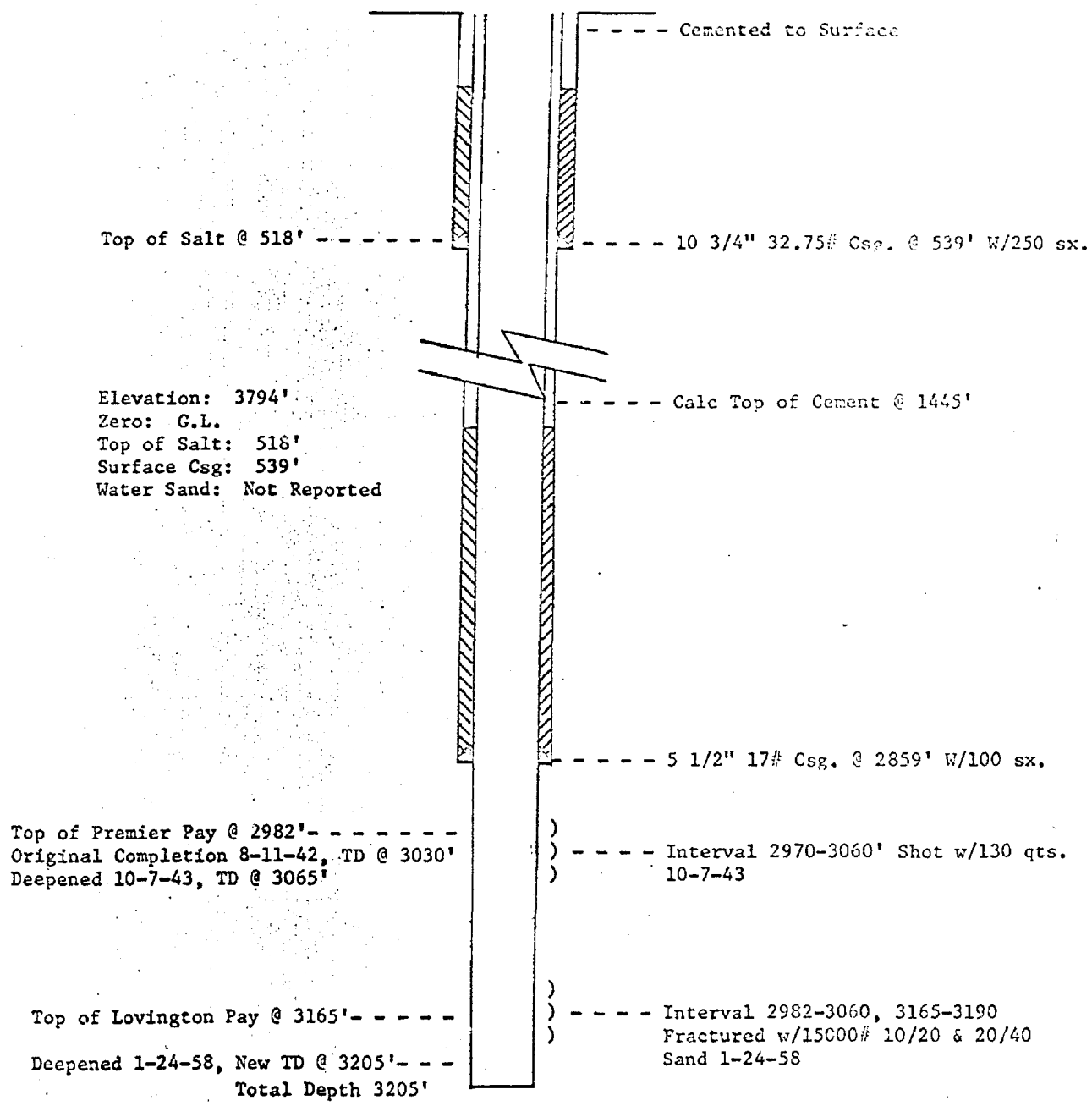
Attorney for Applicant

DATED: November 2, 1966

Exhibit 2

SQUARE LAKE POOL, CONTINENTAL STATE 36 WELL NO. 1

1980' FNL - 1980' FWL, Sec. 36-T16-R30

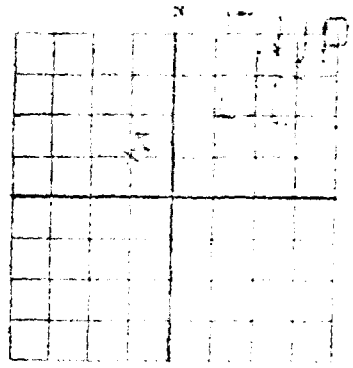


Elevation: 3794'
Zero: G.L.
Top of Salt: 518'
Surface Csg: 539'
Water Sand: Not Reported

Top of Premier Pay @ 2982'
Original Completion 8-11-42, TD @ 3030'
Deepened 10-7-43, TD @ 3065'

Top of Lovington Pay @ 3165'

Deepened 1-24-58, New TD @ 3205'
Total Depth 3205'



AREA 640 ACRES
LOCATE WELL CORRECTLY

NEW MEXICO OIL CONSERVATION COMMISSION

Exhibit 3

Santa Fe, New Mexico

RECEIVED
SEP 2 1942
HOBBS OFFICE

WELL RECORD

Mail to Oil Conservation Commission, Santa Fe, New Mexico, or its proper agent not more than twenty days after completion of well. Follow instructions in the Rules and Regulations of the Commission. Indicate questionable data by following it with (?). SUBMIT IN TRIPLICATE.

Continental Oil Company (Company or Operator) Box CC, Hobbs, New Mexico (Address)

State 36 (Lease) Well No. 1 in NW /4 of Sec. 36, T. 16S

R. 30 E, N M P M, Square Lake Field, Eddy County.

Well is 2280 feet south of the North line and 1980 feet west of the East line of Sec. 36

If State land the oil and gas lease is No. _____ Assignment No. _____

If patented land the owner is _____ Address _____

If Government land the permittee is _____ Address _____

The Lessee is The Continental Oil Company Address Box CC, Hobbs, N. M.

Drilling commenced June 23 1942 Drilling was completed August 11 1942

Name of drilling contractor Kincaid & Todd Address _____

Elevation above sea level at top of casing 3794 feet.

The information given is to be kept confidential until _____ 19____

OIL SANDS OR ZONES

No. 1, from 2892 to 3030 No. 4, from _____ to _____

No. 2, from _____ to _____ No. 5, from _____ to _____

No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet. _____

No. 2, from _____ to _____ feet. _____

No. 3, from _____ to _____ feet. _____

No. 4, from _____ to _____ feet. _____

CASING RECORD

SIZE	WEIGHT PER FOOT	THREADS PER INCH	MAKE	AMOUNT	KIND OF SHOE	CUT & FILLED FROM	PERFORATED FROM	PERFORATED TO	PURPOSE
10 3/4	40.5	8	new	539'3"	2 P				
7"	24	8	new	2879'8"	cement	guide shoe and float collar			
2853	6.40	8	new	3013'1"	set at	2892			

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
14	10 3/4	540	250	Halliburton		
9	7	2892	100	Halliburton		

Heaving plug—Material _____ Length _____ Depth Set _____

Adapters—Material _____ Size _____

RECORD OF SHOOTING OR CHEMICAL TREATMENT

SIZE	SHELL USED	EXPLOSIVE OR CHEMICAL USED	QUANTITY	DATE	DEPTH SHOT OR TREATED	DEPTH CLEANED OUT

Results of shooting or chemical treatment WAS NOT SHOT OR TREATED.

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto.

TOOLS USED

Rotary tools were used from _____ feet to _____ feet, and from _____ feet to _____ feet

Cable tools were used from 0 feet to 3030 feet, and from _____ feet to _____ feet

PRODUCTION

Put to producing August 16, 19 42

The production of the first 24 hours was 252 barrels of fluid of which 100 % was oil; _____ %

emulsion; _____ % water; and _____ % sediment. Gravity, Be. _____

If gas well, cu. ft. per 24 hours 535,000 Gallons gasoline per 1,000 cu. ft. of gas _____

Rock pressure, lbs. per sq. in. _____

EMPLOYEES

E. K. Dillard Driller O. T. Mays Driller

M. S. Smith Driller _____ Driller

FORMATION RECORD ON OTHER SIDE

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

Subscribed and sworn to before me this 1st day of September, 19 42

J. D. McCormick
Notary Public

My Commission expires 4 - 26 - 43

Hobbs, New Mexico, 9 - 2 - 42

Name _____

Position Assistant Superintendent

Representing Continental Oil Company

Address Box CC, Hobbs, New Mexico

FORMATION RECORD

FROM	TO	THICKNESS IN FEET	FORMATION
0	103		Surface and Caliche
103	150		Redbeds
150	210		Red sand
210	340		Redrock
340	400		Caliche
400	425		Redrock
425	495		Red shale
495	515		Redrock
515	530		Red shale, anhydrite and salt
530	545		Salt and stone
545	920		Anhydrite, salt and shale
920	988		Salt Anhy. and shale
988	1495		Salt anhydrite and shale
1495	1695		Anhy & sh and salt and
1695	1765		Anhydrite and redrock
1765	2096		Anhydrite, red shale and salt
2096	2110		Anhydrite
2110	2140		Blue shale
2140	2240		Anhydrite and Red shale
2240	2340		Anhy salts and redrock
2340	2380		Anhydrite and lime
2380	2407		Red sand
2407	2410		Hard lime
2410	2530		Lime and shale
2530	2752		Anhydrite and Red lime
2752	2835		Anhydrite, Redrock, and Sand
2835	2894		Brown lime
2894	2969		Red shale, Redrock
2969	2984		Brown Lime
2984	2987		Hard Grey lime
2987	2989		Brown lime
2989	3035		Sand
3035	3050		Hard Grey lime and sand
3050			Sand and lime

BEFORE THE NEW MEXICO
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 30, 1966

EXAMINER HEARING

In the Matter of:

Application of Newmont Oil Company for waterflood expansion, Eddy County, New Mexico.

CASE NUMBER
3496

BEFORE:

DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

T1-19
3496

MR. HATCH: Case 3496, application of Newmont Oil Company for waterflood expansion, Eddy County, New Mexico.

(Whereupon, Applicant's Exhibits 1 through 3 were marked for identification.)

MR. RUSSELL: John F. Russell, Roswell, New Mexico, appearing on behalf of the applicant. The exhibits have been marked.

HERMAN J. LEDBETTER, called as a witness on behalf of the applicant, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name, residence, occupation and by whom you are employed?

A Herman Ledbetter, employed by Newmont Oil Company at Artesia, New Mexico.

Q In what capacity?

A Division superintendent.

Q You have previously qualified to testify before the Commission and its examiners, have you not?

A Yes, sir.

Q Are you familiar with the application of Newmont Oil Company in Case Number 3496?

A Yes, sir.

Q Will you please explain to the Examiner what this

application seeks to accomplish?

A In this application we are asking for permission to convert the Continental State 36 Well located in Section 36, 16 South, 30 East, in Eddy County to water injection in an orderly development of our West Square Lake waterflood.

Q Now, referring you to Applicant's Exhibit Number 1, what does that show?

A We have the proposed injection well circled in red with a red arrow pointing toward it. The present injection wells in the area, both to the east and to the west, are colored green on the map.

Q And there is also an area in between those two waterflood projects which have wells colored in green, is that correct?

A Yes, sir. This area is operated by Ryder Scott Management Company and Western Oil Field.

Q And the waterflood project to the east of that and to the west are both operated by Newmont, is that correct?

A Yes, sir.

Q Now, why are you requesting your -- this particular, your Continental State Number 1 Well be converted to water injection at this time?

A We have arrived at a pattern along with our offset operators and have participated in the drilling of a well to

T1-21
3496

the north and east on the boundary, and in order to compensate for injection of these other operators, we have agreed to convert this Continental State Number 1 to injection.

Q This is along a lease line agreement to, in order to protect correlative rights of the parties, is that right?

A Yes, sir.

Q All right, now, I refer you to Applicant's Exhibit Number 2, and ask you to explain that exhibit.

A This is a schematic diagram of the casing and cement that is presently in the well as we have determined from the records.

Q Now, how do you propose to inject water into this well?

A We propose to, first to remove the producing equipment, then to set a plug at the base of the casing and to test the casing to 300 pounds above the proposed injection pressure of 1800 pounds or 2100. We do this by filling the casing with water, pressing up on it, and if it will hold for fifteen to thirty minutes without losing pressure, why, we consider this adequate test of the casing and then we would like to remove the plug and to inject water down the casing.

Q Where did you say you were going to insert the plug?

A At the bottom of the casing or very near the bottom, right in --

Q What depth is that?

A The bottom of the casing is 2859 feet and we would probably set the plug between 2800 and 2859.

Q And below the base of the casing is open hole, isn't it?

A Yes. From 3859 to the total depth of 3802 is all open hole.

Q Now, is this fresh water that you're going to inject?

A Yes, sir.

Q It's from Yucca Water Company?

A Yes, sir.

Q It comes from Caprock in Lea County, is that correct?

A Yes, sir.

Q Now, assuming that this application is granted and you put this on injection, how can you determine whether or not a subsequent leak in the casing appears?

A We leave the Bradenhead open between the surface casing, which in this case is ten and three-quarter inch casing and the oil string which is five and a half inch casing. We leave this Bradenhead open at the surface and our past experience where we have had leaks in this casing we had, the water surfaced overnight or within a few hours to the surface. We were able to detect it in this manner. We

feel like, should for some reason it does not happen this way that we wouldn't -- that somehow it might get plugged and not get to the surface, why, due to the shallowness of the salt zone and other zones, this 1800 pound pressure would force water out into this at such a rate that we get an immediate drop in wellhead pressure and an immediate large increase in injection rate which we would be able to tell.

Q Could you determine that without the physical inspection of the meter at the wellhead?

A No, sir. We would -- it's our practice and has been and probably will continue to be, to read these meters daily and we have pressure gauges on the well and water injection meter, individual well water injection meter.

Q Now, is this well, insofar as age is concerned and present status, similar to the injection wells which you have already converted to the east of it -- I mean to the west?

A Yes, sir.

Q And were they injected through casing in open hole, the same as you propose here?

A Yes, sir. Many of those are injected through open hole and bound casing just as this well.

Q And where your testing of the casing or subsequent leak developed, what did you do in those cases?

A We run a string of tubing in packer and set the

packer well within the surface, or the oil string, that would be cemented from the bottom.

Q Which would be the same procedure you would follow on this one?

A Yes, sir.

Q All right, now, I refer you to Applicant's Exhibit Number 3, and ask you to explain that.

A This is the original -- copy of the original well record that was filed by Continental Oil Company when they drilled this well.

Q Now, is there anything in it which you want to point out to the Examiner, any information reflected there?

A One, that the surface, the oil string is five and a half inch, 17 pound, which is a little heavier pipe than is normally found in this area and normally most of the pipe in this area was 14 pounds per foot and this is 17 pound per foot. And also, it's my belief that this, where it shows six and half or six and a quarter inch hole, I can't tell quite which, with the five and a half inch casing and cemented in the record is shown, it is my belief this is probably a typographical error.

Q What size casing do you think it is?

A I would think it would be an eight inch casing, eight inch hole, based on the fact that I feel certain this

was drilled with cable tools and that the common practice would be to have set ten and three-quarter surface pipe and to have drilled at least an eight inch hole.

Q Were Exhibits 1 and 2 prepared under your supervision and direction?

A Yes, sir.

Q And is Exhibit Number 3 a copy of the official records in the Oil Conservation Commission Office?

A Yes, sir.

MR. RUSSELL: I offer Exhibits 1, 2 and 3 in evidence at this time.

MR. NUTTER: Newmont's Exhibits 1 through 3 will be admitted in evidence.

(Whereupon, Applicant Newmont's Exhibits 1 through 3 were received into evidence.)

MR. RUSSELL: I have no further questions of this witness.

MR. NUTTER: Are there any questions of Mr. Ledbetter? Mr. Irby.

MR. IRBY: Frank Irby, State Engineer's Office.

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. Ledbetter, if I understood you correctly, the casing would be tested to 300 p.s.i in excess of the maximum

injection pressures?

A Yes, sir.

Q Now, you said that the water to be used would be fresh water from Yucca Water Company?

A Yes, sir.

Q Now, is it your intention at a later date when this area begins to produce water to recycle the produced water through this well?

A Yes, sir, we would.

Q And you would anticipate, would you not, that this would be of a corrosive nature?

A Yes, sir, it has corrosive characteristics. We are, in the Loco Hills pool, reinjecting a great deal of produced water and we feel like that we are able to control this corrosiveness of the water by chemical treatment. We do chemically treat it and we are using bare surface lines and we have been able to -- and this is water that is somewhat similar through this area.

Q Then the treatment you have been giving seems to control the corrosive characteristics, is that correct?

A Yes, sir.

Q And when you start using the producing water, you will start chemical treatment of your injection water?

A Yes, sir. We make a, our normal procedure is to

inject it separately from the fresh water. It just makes it easier to treat.

Q Good. Now, you said you have separate meters measuring the injection water in each of these wells. Do these meters register rate as well as volume?

A The oneswe use here are these Pittsburgh meters that just register barrels and they wouldn't have a rate. The only way you could get rate would be to use some sort of time interval and, but it has a, I'm sure you are familiar with this, just a little pointer that moves around and you can kind of estimate from this movement sometimes.

Q With a stop watch you can determine your rate?

A Yes.

Q Oh, yes. You said something about pressure gauges. Are these a permanent installation?

A Well, we -- at present we don't permanently install them. It just worked out that it's easier for us to take less gauges and they seem to last longer putting them on and off of the well. They don't seem to be able to stand the vibration of the pumps and water very well.

Q Is this a closed system?

A No, sir. The fresh water is not. The salt water we do close up completely. The fresh water, according to our information, comes with oxygen in it so we -- the Lea County

Water Basin water has oxygen in it inherent when you produce it so we just -- we treat it but we don't have to close it. We treat it in a way that --

Q Then when you start using the produced water --

A Yes, sir. We close it.

Q -- it goes through a closed system, is that right?

A Right. We never let it get to oxygen. We separate the two for that reason.

Q I'm not quite clear yet, Mr. Ledbetter, how does the mechanics on this pressure gauge when you use it intermittently or at specific perdiods of time.

A Well, this is part of our normal production data gathering in the waterflood just like a gauge in a tank battery, we read the meters on our injection wells daily and we read the pressures at least once a week on these wells, but we do read the amount injected for over a twenty-four hour period every day and --

Q These other wells you have here are injecting in the same formation, right?

A Yes, sir.

Q About what pressure are you using there now?

A The system which we intend to hook it onto is injecting about 1700 pounds, 1750.

Q And what did you say your maximum anticipated

T2-29
3496

pressure --

A 1800 pounds.

Q 1800. Now, with regard to the leak or leaks that you previously had there, I believe you said they were detected by observation of the annulus common to the production string in the surface casing?

A Yes.

Q Would this indicate that this occurred above the setting point of the surface casing?

A No, sir. It would be below the surface casing and above the cement of the oil string. Normally, or it could possibly have been around the cement. This is a possibility, but our experience in the past, the few leaks we have had have all been in the oil string between the surface casing and the cement, below the surface casing, and it would communicate up on the inside of the surface casing and on the outside of the oil string.

Q Then it's coming right up the annular space between the production string and oil string and the well bore into the surface casing, right?

A Yes.

Q You say these were noticeable in a very short time?

A Yes, sir. We have -- do not feel that any leaks have ever gone undetected for more than twenty-four hours of

any size at all. One of the things that makes it so noticeable here is that these wells take relatively small amount of water, average 200 barrels a day or thereabouts, and that even a small leak will grow into a 1,000 barrels a day leak pretty quick. The whole thing just seems to wash out in the pipe and you get quite a bit out in a hurry.

Q Now, when you repaired these, as I understood you, you ran a string of tubing in there and rather than put a packer on it, you just cemented in the --

A No, sir. We put the packer. I'm sorry, I must have not made it very clear, but we do run a packer on the tubing and set the packer right near the bottom. The comment about cement would be where it would be cement on the outside of it, on the outside of the oil string. Set it low enough to be sure it was in the cemented part of the pipe.

Q Now, with regard to Exhibit "A" -- pardon me, Exhibit 3, did you say that you thought this five and a half inch casing was larger?

A No. I think the casing is the right size. I think the hole is probably --

Q About six and a quarter?

A For the hole, yes, sir. I think that's probably, because --

Q When referring to your Exhibit 2 in connection

with Exhibit 3, if you had a larger hole, where would you be with your cement in that annulus behind your, between the hole and casing on your production string? It probably wouldn't --

A It might not be that high. Now, I don't have anything --

Q You're not sure about the size of the hole, but you know that the cement would be lower if you had a large --

A If the hole was bigger, the cement would be lower.

Q Then in that event, if you experienced a leak in this well, when you set your packer and tubing, you would determine definitely that your packer and your tubing in were below the top of the cement surrounding that pipe?

A We would probably say it's in the bottom 100 feet of the pipe. This is about where -- we generally try to get it -- the shop wells sometimes have a little bit of damaged pipe right near the bottom, and it's hard to set the packer, but within the bottom 100 feet it would be possible, I'm sure.

Q Then your surface casing is set approximately twenty feet below the top of the salt?

A Yes, sir. This is what -- and it was cemented with 250 sacks, which is enough to have circulated it, but I don't know, we have nothing on the record, whether --

Q You don't know whether it was observed or not?

A No, sir. I mean if the hole --

Q You probably weren't there?

A No, sir.

MR. IRBY: That's all of the questions I have.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Ledbetter, this calculated on top of the cement on Exhibit Number 2 is based on the hole size of six and a quarter?

A I don't know. It may be, now. I had one of the -- an engineer in the office calculated this and I suspect it is, looking at it right now, and I think maybe probably --

MR. IRBY: I calculated that, Mr. Examiner, on -- I read that figure to be six and a half or assumed it.

THE WITNESS: Yes. It's kind of hard.

MR. IRBY: And I had pretty close to the same fillup that he has.

MR. NUTTER: Was that just using 100 per cent fillup on it, no hole washed out or --

MR. IRBY: Right. Oh, I beg your pardon. Ten per cent.

MR. NUTTER: Ten per cent.

Q (By Mr. Nutter) Mr. Ledbetter, now, you have already got fifteen or twenty wells on water injection out

there?

A Yes.

Q Are any of your producing wells making water at this present time?

A We are beginning to get some water in small amounts.

Q Have you started reinjecting produced water yet?

A None at all in the west area.

Q I see. Now, did I understand you to say that when you do start making water and you do start reinjecting it, that you keep that water separate from the fresh water?

A It's easier for us to take it, it seems to be.

Q Don't you have to have two pressure plants, then?

A Well, yes, we kind of split it. We have been real fortunate that all of our plants have had more than one pump in it so that we could change it and in a sense, it was two plants.

Q You separated it up into two separate systems, then?

A Yes, sir.

Q How many wells have you actually had leaks on out here and had to run your tubing packers, Mr. Ledbetter?

A I don't -- I'm trying -- this is a recollection. I don't believe there is any to the west and to the east, I believe there are probably two or three.

Q So the wells with the packers and tubing are in the

small minority?

A Yes, sir. I would say less than ten per cent.

Q In the area and none in this particular flood?

A Yes.

Q Now, have you had any indication of tubing or casing leaks or bad cement jobsor failure of any type when you pressure test?

A Yes, sir. We have had, I believe in one instance over here on a well on this east area that did not hold, as I recall.

Q When you pressure test, you actually can't check the cement job?

A No, sir.

Q You put the plug in the bottom of the casing and pressure the casing?

A Yes. We do run like most all the people in the waterflood business, run a lot of tracers surveys and water injection surveys trying to find out for sure where our water is going and we have not found any bad cement jobs in all of this area so, up to date. All we have -- all of our water has gone out leaks in the casing above the cement.

Q And when you do encounter that, you run your tubing in the packer?

A Yes, sir.

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

MR. PORTER: Mr. Examiner, I have one.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Ledbetter, how, in general, has this flood performed, that is in relation to what was anticipated of it?

A It's quite a bit less oil produced to date and it's primarily due to the water injection rate, Mr. Porter. The mechanism of moving the oil has been fairly efficient, the best I can tell, but the rate of getting the water into the pay zones has been somewhat slower than was anticipated originally.

Q What did you anticipate in the way of recovery to start with, one to one, as compared to primary or something like that?

A Yes, sir. Well, I -- we anticipated in excess of one to one originally.

Q Your primary wasn't too good?

A No, sir. This would average probably 30,000 barrels for forty acres, the field over.

MR. PORTER: I see. Thank you.

MR. NUTTER: Are there any other questions of the witness? You may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Russell?

MR. RUSSELL: I have nothing further.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3496?

We will take the case under advisement and call Case 3497.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JERRY POTTS, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

NOTARY PUBLIC

My Commission Expires:

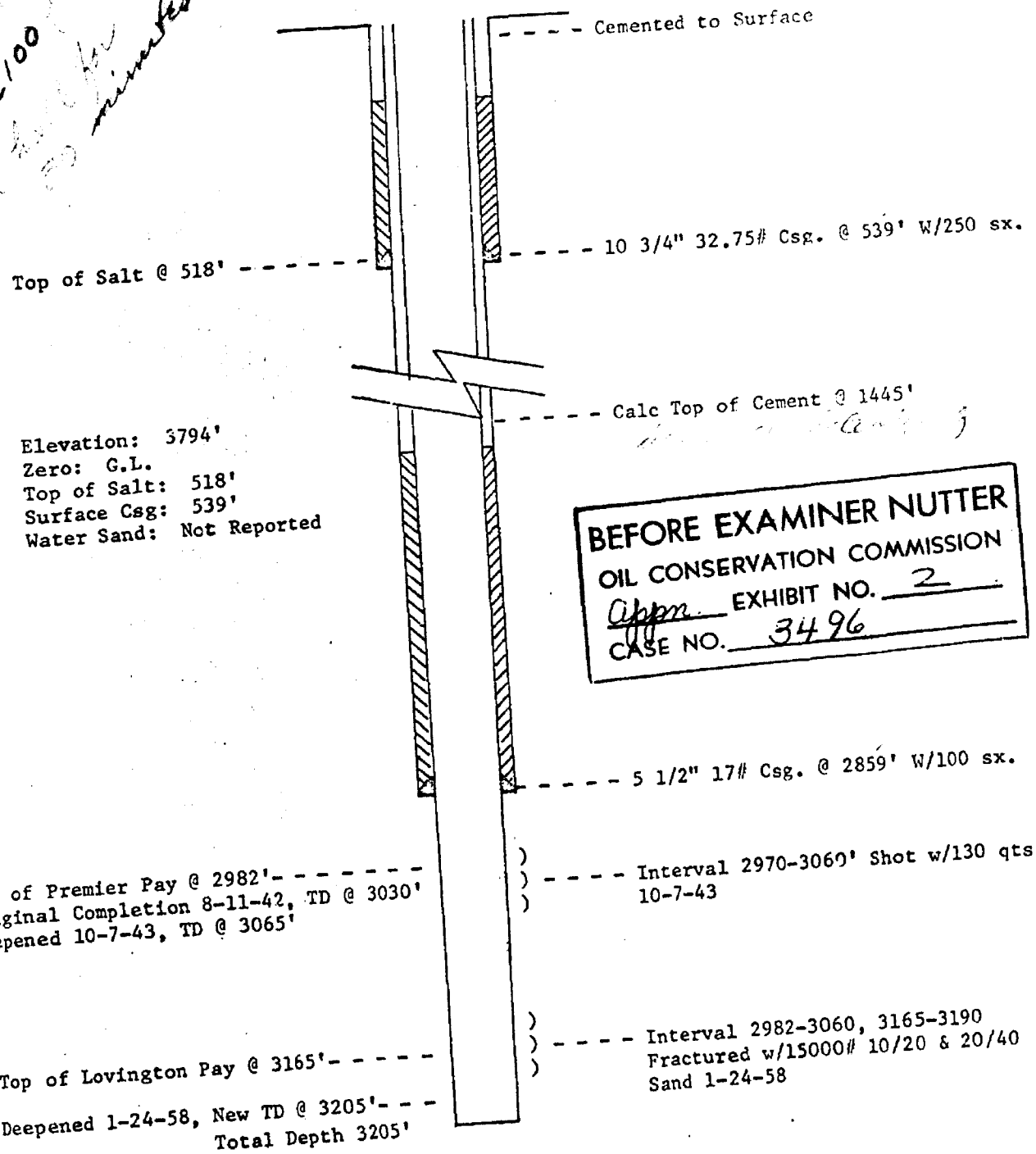
July 10, 1970

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3496, heard by me on 11/30, 1966.

....., Examiner
New Mexico Oil Conservation Commission

SQUARE LAKE POOL, CONTINENTAL STATE 36 WELL NO. 1

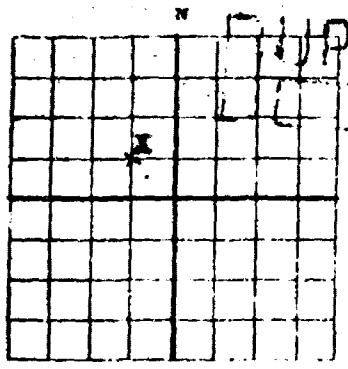
1980' FNL - 1980' FWL, Sec. 36-T16-R30



Elevation: 3794'
Zero: G.L.
Top of Salt: 518'
Surface Csg: 539'
Water Sand: Not Reported

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Appn. EXHIBIT NO. 2
CASE NO. 3496

FORM C-105



AREA 640 ACRES
LOCATE WELL CORRECTLY

DUPLICATE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

WELL RECORD

RECEIVED
SEP 2 1942
HOBBS OFFICE

Mail to Oil Conservation Commission, Santa Fe, New Mexico, or its proper agent not more than twenty days after completion of well. Follow instructions in the Rules and Regulations of the Commission. Indicate questionable data by following it with (?). SUBMIT IN TRIPLICATE.

Continental Oil Company (Company or Operator) Box CO, Hobbs, New Mexico (Address)

State 36 (Lease) Well No. 1 in NW /4 of Sec. 36, T. 16S

R. 30 E, N. M. P. M., Square Lake Field, Eddy County.

Well is 1980 feet south of the North line and 1980 feet west of the East line of Sec. 36

If State land the oil and gas lease is No. _____ Assignment No. _____

If patented land the owner is _____ Address _____

If Government land the permittee is _____ Address _____

The Lessee is The Continental Oil Company Address Box CO, Hobbs, N. M.

Drilling commenced June 23 1942 Drilling was completed August 11 1942

Name of drilling contractor Kincaid & Todd Address _____

Elevation above sea level at top of casing 3794 feet.

The information given is to be kept confidential until _____ 19____

OIL SANDS OR ZONES

No. 1, from 2982 to 3030 No. 4, from _____ to _____

No. 2, from _____ to _____ No. 5, from _____ to _____

No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet. _____

No. 2, from _____ to _____ feet. _____

No. 3, from _____ to _____ feet. _____

No. 4, from _____ to _____ feet. _____

CASING RECORD

SIZE	WEIGHT PER FOOT	THREADS PER INCH	MAKE	AMOUNT	KIND OF SHOE	CUT & FILLED FROM	PERFORATED FROM	PERFORATED TO	PURPOSE
10 3/4"	32.75	8	new	539'3"	2 P				
5½"	17	8	new	2899'8"	cement	guide shoe and float collar			
2" EU	4.70	8	new	3013'1"	set at	2892			

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
12¼	10 3/4	540	250	Halliburton		
6¼	5 ½	2859	100	Halliburton		

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Oppen EXHIBIT NO. 3
CASE 3496

Material _____ Depth Set _____

Adapters—Material _____ Size _____

RECORD OF SHOOTING OR CHEMICAL TREATMENT

SIZE	SHELL USED	EXPLOSIVE OR CHEMICAL USED	QUANTITY	DATE	DEPTH SHOT OR TREATED	DEPTH CLEANED OUT

Results of shooting or chemical treatment Was not shot or acidized.

RECORD OF DRILL-STEM AND SPECIAL TESTS

If drill-stem or other special tests or deviation surveys were made, submit report on separate sheet and attach hereto.

TOOLS USED

Rotary tools were used from _____ feet to _____ feet, and from _____ feet to _____ feet

Cable tools were used from 0 feet to 3050 feet, and from _____ feet to _____ feet

PRODUCTION

Put to producing August 16, 1942

The production of the first 24 hours was 252 barrels of fluid of which 100 % was oil; _____ % emulsion; _____ % water; and _____ % sediment. Gravity, Be _____

If gas well, cu. ft. per 24 hours 555,000 Gallons gasoline per 1,000 cu. ft. of gas _____

Rock pressure, lbs. per sq. in. _____

EMPLOYEES

M. K. Dillard, Driller — O. T. Mays, Driller

M. S. Smith, Driller — _____, Driller

FORMATION RECORD ON OTHER SIDE

I hereby swear or affirm that the information given herewith is a complete and correct record of the well and all work done on it so far as can be determined from available records.

Subscribed and sworn to before me this 1st day of September, 1942

L. D. McCormick
Notary Public

My Commission expires 4 - 26 - 45

Hobbs, New Mexico, 9 - 1 - 42

Name _____

Position Assistant Superintendent

Representing Continental Oil Company

Address Box CC, Hobbs, New Mexico

FORMATION RECORD

FROM	TO	THICKNESS IN FEET	FORMATION
0	105		Surface and Caliche
105	150		Redrock
150	210		Red Shale
210	340		Redrock
340	400		Caliche
400	425		Redrock
425	495		Red Shale
495	515		Redrock
515	538		Red Shale, Anhydrite and Salt
538	545		Salt and Potash
545	920		Anhydrite, Salt and Potash
920	985		Salt Anhy. and Salts
985	1475		Salt Anhydrite and Potash
1475	1495		Anhydrite and Red Sand
1495	1695		Anhydrite and Redrock
1695	1765		Anhydrite, Red Shale and Redrock
1765	2096		Anhydrite
2096	2100		Blue Shale
2100	2110		Anhydrite and Blue Shale
2110	2140		Anhydrite and Red Shale
2140	2280		Anhydrite and Redrock
2280	2348		Anhydrite and Lime
2348	2385		Red Sand
2385	2407		Hard Lime
2407	2410		Blue Shale
2410	2530		Anhydrite and Hard Lime
2530	2752		Anhydrite, Redrock, and Sand
2752	2835		Brown Lime
2835	2854		Red Shale, Redrock
2854	2859		Brown Lime
2859	2864		Hard Grey Lime
2864	2985		Brown Lime
2985	2989		Sand
2989	3015		Hard Grey Lime and Sand
3015	3030		Sand and Lime