

CASE 3226: Application of SKELLY  
OIL CO. for a waterflood project,  
Eddy County, New Mexico.

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CASE No.  
3226

Application,  
Transcripts,  
Small Exhibits  
ETC.

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 7, 1965

EXAMINER HEARING

IN THE MATTER OF:

APPLICATION OF SKELLY OIL COMPANY  
FOR A WATERFLOOD PROJECT, EDDY COUNTY,  
NEW MEXICO

Case No. 3226

BEFORE:

ELVIS A. UTZ

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

SAN JUAN, N. M.  
PHONE 325-1182

SANTA FE, N. M.  
PHONE 983-3371

ALBUQUERQUE, N. M.  
PHONE 243-6691



MR. UTZ: Case Number 3226.

MR. DURRETT: Application of Skelly Oil Company for a waterflood project, Eddy County, New Mexico.

MR. UTZ: Are there appearances in this case?

MR. JACOBS: Ronald J. Jacobs for the applicant, Skelly Oil Company. L. C. White of Gilbert, White & Gilbert is our local resident counsel. We have two witnesses to be sworn.

MR. UTZ: Are there other appearances? -- The witnesses will be sworn.

\* \* \*

J. T. C O X, the witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JACOBS:

Q Please state your full name for the record; by whom you are employed, and in what capacity.

A My name is J. T. Cox. I am employed by Skelly Oil Company as district reservoir engineer in the New Mexico district.

Q You are located in Hobbs, New Mexico?

A Yes, sir.

Q Have you heretofore testified before the Commission as a petroleum engineer, and have your qualifications as such been recognized?

A Yes, sir.

Q Have you made a study with respect to the subject application, and prepared certain exhibits and testimony for this hearing?

A Yes, I have.

MR. JACOBS: Are there any questions as to the witness's qualifications?

MR. UTZ: No, sir--the witness is qualified.

MR. JACOBS: In order to avoid confusion, we have labeled--we are proposint to label our exhibits concurrently with those exhibits attached to the application. Those exhibits were through the letter "G"; our exhibits today will begin with "H."

MR. UTZ: Do you wish to make the exhibits you submitted with your application a part of this record?

MR. JACOBS: Yes, sir. Mr. Cox, what is the purpose of this application today?

A Skelly Oil Company has presented an application for a hearing to initiate a pilot project on its Lynch A lease in Eddy County, New Mexico. Included with this application was a plat showing the location of the six proposed injection wells and the two producing wells. This plat was entered as Exhibit A. A description of the proposed project area leases was included in the application. Exhibits B, C, D, E, F and G were diagrammatic sketches of the proposed injection wells. There

was an error on Exhibit C, and we would like to replace that exhibit with a corrected copy. The correction was to show that the well had been cleaned out to total depth--the original indicated that it was plugged back. A supplement to the data presented on these sketches was submitted to the State Engineer and the data is included in the exhibits presented at this hearing. Skelly Oil Company proposes to inject water into the Premier Grayburg and San Andres formations. The maximum water to be injected into the six injection wells will be 2,500 barrels per day. Water will be purchased from the Caprock Water Company; and if this application is granted, applicant will later request administrative approval pursuant to Rule 701 to enlarge the pressure maintenance project by adding and substituting additional injection wells. Maximum waterflood allowable oil production for the twenty-six project area wells would be 1,092 barrels per day.

Q Mr. Cox, did you intend in there to--you used the word "pressure maintenance." So that the record is clear at the outset, what we are actually proposing here is a waterflood, is that correct?

A Yes.

Q The wells, as your testimony will show later, are in an advanced state of depletion and are what we would commonly classify as stripper wells, is that right?

A Yes, that is true.

Q Will you please take Exhibit H and describe what it shows and the information it contains.

A Exhibit H is a map of the area showing well locations within a two-mile radius of the Dow Unit. Also indicated on this exhibit are the waterflood projects currently in operation. The completion intervals of wells shown on this map are coded and the meanings of the various codes are indicated in the legend in the lower left-hand corner. The Dow Unit area is outlined by a solid line. The Dow project area which we propose is outlined by the series of dashes and dots.

Q For the record, Mr. Cox, will you describe by section, township and range the Dow Unit and also the Dow project area.

A The Dow Unit includes Sections 14, 15, 21, 22, 23, the north three-quarters of Section 28, the northwest quarter of Section 27, all of the northeast quarter of Section 27 except for the southeast quarter; the north half of the northwest quarter of Section 26 is also included in the Dow Unit. The project area includes all of Section 22; 120 acres in Section 15, described as the south half of the southeast quarter and the southeast of the southwest quarter; 120 acres in Section 21, described as the east half of the southeast quarter and southeast of the southeast quarter; 120 acres in Section 23, described as the west half of the northwest quarter and northwest-southwest quarter; also 120 acres in Section 27, described as the north

half of the northwest quarter and the northeast of the northeast quarter; all sections being in Township 17 South, Range 31 East.

Q In your description of the project area, this area includes all forty-acre units which are directly or diagonally offset to a proposed injection well, is that correct?

A Yes.

Q What has been the production from this area?

A New Mexico Oil and Gas Engineering Committee records show that as of January 1, 1965, 4,445,345 barrels of stock tank oil have been produced from the Skelly Oil Company leases. Presented as Exhibit I is the production decline curve for the Dow and Lea C and Lea D leases. Shown on this plot are oil production monthly and gas production, and the number of producing wells.

Q Now, in Exhibit H you had labeled project areas or waterflood projects that are similar in nature to the project Skelly Oil is proposing here today?

A Yes, that is true. Referring to Exhibit H, there are two Grayburg-Jackson projects; one operated by Sinclair Oil & Gas Company and which is their Keel West flood. It is located to the northwest of the Skelly Dow Unit. This flood was initiated in September, 1962. The other Grayburg-Jackson project is operated by Waterflood Associates and is called the Carper-Kennedy flood. It is essentially due north of the Skelly Dow



Unit. This flood was initiated in September, 1962. There are two Maljamar project floods shown on this map--the Aztec Oil & Gas Company Robinson Unit flood, which is due east of the Carper-Kennedy flood--

Q Approximately Section 31, 16 South, 32 East?

A Yes. This flood was initiated in April, 1963. The other Maljamar project adjoins the Skelly Dow Unit on the east. Hudson & Hudson are the operators and the flood is designated as the Puckett flood. It was initiated in September, 1962. Newmont Oil Company's East Square Lake flood is shown due north of the Skelly, located roughly in Township 16 South, Range 31 East. This flood was initiated in February, 1958. The success of these projects, essentially the Sinclair Oil & Gas Keel West flood and the Hudson & Hudson Puckett flood, and also Newmont's flood, is indicated by their expansion since initial water injection.

Q How many wells are there within the pool that is proposed to be flooded, and what is the present status of these wells?

A The Grayburg-San Andres reservoirs are in the Grayburg-Jackson pool. 101 of the 114 wells drilled by Skelly on their leases have penetrated the Grayburg and San Andres formations. 98 of these penetrations now produce from the Grayburg-San Andres reservoir. One additional well is shut-in; two others are

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plugged and abandoned, and one is producing from the Strawn gas reservoir. Thirteen wells have been completed at depths above 3,000 feet in the Fren Seven Rivers oil reservoir at approximately 2,400 feet below ground level.

Q What is the status of the working interest ownership in the area?

A Skelly Oil Company owns one hundred percent of the working interest in the 6,400 acres of oil and gas leases in Eddy County, comprising all of Sections 11, 14, 15, 21, 22, 23, 26, 27, 28, and 33 in Township 17 South, Range 31 East. The leases which are actually included in the Dow Unit may be noted on Exhibit H.

Q Are all of these leases you mentioned unitized?

A The Dow Unit is unitized, and excludes the Lea C lease which is Section 11, and the Lea D lease which is all of Section 26 except the north half of the northwest quarter.

Q Now will you take Exhibit J, and I'll ask you what this exhibit contains.

A Exhibit J is a table showing well status and production data for wells in the project area. Included in this table is lease and well number, the plugback for total depth, production casing information; the size is given in inches, the depth is given in feet--producing interval is given in feet; completion date is given by month and year. Initial potential in barrels

of oil per day is given and it is indicated if the potential was taken for pumping, flowing or swabbing. Cumulative Grayburg-San Andres oil production to January 1, 1965 is given. Current production rates in barrels of oil per day are also given and are coded with reference to being pumped, flowed or swabbed. The project well status is also indicated. Reference is given also in the Remarks column to the proposed work required on two of the injection wells. The project area current production averages 7 barrels of oil per day per well.

Q It results in an average of seven barrels per day since it varies between one barrel as the minimum to seventeen barrels as the maximum, is that correct?

A That's correct.

Q What is the status of the wells in the 26-well project, with respect to whether they are open hole or perforated, or what?

A The 26 project area Grayburg-San Andres wells are currently completed with ten wells producing from the open hole, six wells producing through perforations and open hole, and ten wells producing through perforations only. Workover of the injection wells, Lynch A Number 4 and Number 13, will result in injection into open hole in Number 4, open hole and perforations in wells 9, 10 and 13; and injection into perforations only in wells Number 15 and 16. This would therefore make the count

for the project area after this workover to be nine open hole completions, seven open hole and perforations, and still only ten wells producing through perforations only.

Q Calling your attention to what has been marked for identification as Exhibit K, what does this exhibit show?

A Exhibit K is a table showing completion data for the proposed injection wells. Included in this table are lease and well number, location by unit, the total depth in feet and also plug-back depth; the completion interval in feet; surface casing information, which includes the size in inches and depth in feet, and with regard to the cement, the number of sacks used and the top of the cement, given in feet. It will be noted that the cement tops are referred to the bottom of the page, with regard to being calculated. The production casing information includes size in inches and depth in feet; the cement information includes the number of sacks used and the tops as calculated or surveyed by temperature surveys, and are coded as such.

Q Exhibit L is a series of logs, is that right?

A Yes, Exhibit L is copies of all available well logs for the proposed injection wells. No log is available on the Lynch A Number 4 injection well.

Q What is the interval of the Grayburg-San Andres zones in the unit area, and what is the nature of the reservoir in this area?

A The Grayburg-San Andres zones in the Dow Unit area are found at a depth of 3200 to 3700 feet for the Grayburg zone and from 3300 to 3800 feet for the San Andres zone. The Grayburg-San Andres series is composed of fractured intercrystalline and oolitic dolomite and dolomitic sands of Permian age, and are interbedded with anhydritic stringers.

Q What is the producing mechanism of the pool, and what pressure information do you have?

A The Grayburg-San Andres reservoir produces by solution gas drive. Pressure data is not available for the earlier years of development; however, reservoir pressure was probably near 1,000 PSI. Initial bottom hole pressures from recent completions have ranged from 500 to 1,000 PSI. Current producing gas-oil ratio and average daily production per well for the month of January, 1965 was 2800 to one, and seven barrels of oil per day, respectively.

Q With respect to the producing gas-oil ratio, what is the disposition of the gas?

A Produced gas is sold to the Skelly gas plant located in the immediate area.

Q None of the gas is flared to the atmosphere?

A That is correct.

Q What are the reservoir properties with regard to porosity, and so forth, for this area in the pool which is

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proposed to be waterflooded?

A The Grayburg-Premier zone is defined to be a white-gray finely crystalline dolomite with occasional streaks of fine gray dolomitic sand with anhydrite stringers. Average porosity is 7.6%; average pay thickness is eighteen feet. Connate water saturation is 26%. The formation top is encountered from 3200 to 3700 feet. The San Andres is defined as a white to white-gray finely crystalline to very finely crystalline fractured, or oolitic dolomite with traces of fine gray dolomitic sand and anhydrite stringers. Average porosity is 5.8%; average pay thickness fifteen feet; connate water saturation, 42%. Formation top is encountered from 3300 to 3800 feet. The Lovington sand in the San Andres zone is defined as a white to tan finely crystalline dolomite and dolomitic sand. Average porosity is 6.4%; average pay thickness nine feet; connate water saturation, 40%. Formation tops are encountered from 3500 to 3800 feet.

Q In general, how were these reservoir characteristics and values determined?

A Porosity and water saturation values and pay thicknesses were determined from three core analyses and well logs. An estimate of remaining primary reserves is 980,000 barrels of stock tank oil. Cumulative production to January 1, 1965 indicates primary recovery is 82% complete. Estimates of ultimate primary oil recovery is 5,400,000 barrels.

MR. JACOBS: That's all the questions we have of this witness on direct. We have another witness; I wonder if you care to examine him now, or if you possibly want to wait until the other witness has testified.

MR. UTZ: I think we can go ahead and cross-examine him at this time.

CROSS-EXAMINATION

BY MR. UTZ:

Q It's my understanding that all injection wells will be injected through tubing under a packer?

A Yes, sir, that's correct.

Q And the injected water is fresh water?

A Yes. This will be covered in the remaining testimony from the other witness.

MR. UTZ: Are there any other questions of the witness?  
... The witness may be excused.

(The witness thereupon withdrew from the stand.)

\* \* \*

W I L L I A M C A P P S, the witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JACOBS:

Q Please state your name, by whom you are employed and in what capacity.

A W. M. Capps, employed by Skelly Oil Company as senior production engineer at Hobbs, New Mexico.

Q Have you ever testified as a petroleum engineer before this Commission?

A No, sir, I have not.

Q Will you please then briefly outline your education above the high school level, and your experience.

A I was graduated from the University of California in September, 1950 with a B. S. in petroleum production engineering, and have since that time had some fourteen years experience in oil field drilling and production operations. I have been in my present position for some year and a half.

Q Since your graduation, then, you have had various jobs and responsibilities in an engineering capacity?

A Yes.

Q Have you prepared certain data with respect to this hearing on the Dow Unit waterflood?

A Yes.

Q Are you familiar with the proposed plan of operation for this waterflood?

A Yes, sir, I am.

MR. JACOBS: Are there any questions as to the witness's qualifications?

MR. UTZ: No, sir.



MR. JACOBS: Mr. Capps, would you please then briefly outline the initial plan of waterflood, and what you plan to do.

A Studies of this Dow Unit area indicate that a waterflood project would be successful. Large expenditures will be necessary to condition the wells and expose all productive zones. It is our intention to approach secondary recovery by installation of a pilot waterflood which will be expanded as the performance and economics of the pilot dictate.

Q Please describe the pilot wells you intend to use for this pilot project, and the reason for choosing these particular wells.

A An eight-well pilot waterflood is proposed, utilizing Lynch A wells Number 4, 9, 10, 13, 15, and 16 as injection wells to form two eighty-acre five-spot patterns. These wells were chosen to facilitate separate evaluation of the Grayburg and San Andres zones. Injection in wells Number 15 and 16 will be in the San Andres only; in wells Number 4 and 13 into both the Grayburg and the San Andres; and in wells Number 9 and 10 into the Grayburg section only. The Grayburg section will be opened in well Number 13 and approximately 200 feet of cement opposite the San Andres will be drilled out of well Number 4.

Q What information do you hope to gain by selecting this particular arrangement of wells, in the various zones you intend producing from and injecting into?

A Most of the wells in this Dow Unit area are open hole completions in all or both of the pay zones with many of the early completions having been stimulated by nitroglycerin. An extensive workover program will be necessary to flood all productive zones under Skelly leases. The pilot waterflood is proposed with the expectation that it will yield conclusive information regarding distribution of injected fluids as well as other information normally desired from a project. It is our intention to expand this pilot as soon as injection performance can be analyzed and workover programs initiated.

Q What is the source of the water you propose to use for injection purposes, and what approximate volume do you intend to use?

A Injection water will be purchased from the Caprock Water Company. The water supply is from the Ogallala formation and an analysis of the injection water has been submitted to the State Engineer. A copy of this analysis is available to the Commissioners as Exhibit M. Injection rates of approximately 400 barrels per day per well with maximum injection wellhead pressures of approximately 2,000 PSI are anticipated. Response in the two producing wells is expected within eight to twelve months after the start of water injection. Recovery of secondary oil is expected to equal primary recovery. Life of the project is expected to be fifteen to twenty years.

Q Mr. Capps, in your opinion will the granting of this application for a pilot waterflood and subsequent expansion by administrative means, be in the best interests of conservation and protect correlative rights and avoid waste?

A Yes, it will. Correlative rights should not be affected, since the surrounding area is owned 100% by Skelly Oil Company.

MR. JACOBS: That's all the questions we have on direct, Mr. Examiner. We would ask for the introduction and acceptance of Exhibits A through M, inclusive, and ask that the application be made a part of the record.

MR. UTZ: Without objection, Exhibits A through M will be entered into the record of this case. Are there any questions of the witness? The witness may be excused. I'm not sure whether the application stated it or not, but the allowable of 1,092 is based on Rule 701?

MR. JACOBS: Yes, sir.

MR. UTZ: You requested that this project be operated under that rule?

MR. JACOBS: Yes, sir.

MR. UTZ: Are there any further statements in this case? ... The case will be taken under advisement.

\* \* \*

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STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss

I, ELIZABETH K. HALE, Notary Public and Court Reporter,  
hereby certify that proceedings in the foregoing case were  
taken and transcribed by me, and that this transcript is a  
true and correct reflection of proceedings to the best of my  
knowledge, skill and ability.

IN WITNESS WHEREOF, my hand and seal of office this 8th  
day of April, 1965.

*Elizabeth K. Hale*  
Notary Public

My commission expires  
May 23, 1968.

I do hereby certify that the foregoing is  
a complete record of the proceedings in  
the Examiner hearing of Case No. 322-6,  
heard by me on *Apr 3*, 1965.

*Thos. L. [Signature]* Examiner  
New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

May 10, 1965

C  
Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Attention: Mr. George W. Selinger

Re: Order No. R-2900

O  
Gentlemen:

Reference is made to your letter of May 6, 1965, regarding the subject order and the letter of transmittal dated May 4th which accompanied same.

P  
Thank you for calling our attention to the miscalculation in figuring the maximum allowable for your Dow Unit Waterflood Project in Eddy County, New Mexico.

The third paragraph of our letter of May 4, 1965, should be as follows:

Y  
As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1,092 barrels per day. An additional 84 barrels could be assigned if and when wells are drilled in Unit N of Section 15 and Unit C of Section 22.

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

ALP/DSH/ir

cc: Mr. Frank Irby  
Mr. Charles White

Oil Conservation Commission office in Hobbs and Artesia



## SKELLY OIL COMPANY

P. O. Box 1650  
TULSA 2, OKLAHOMA

May 6, 1965

### PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT

W. P. WHITMORE, MGR. PRODUCTION

W. D. CARSON, MGR. TECHNICAL SERVICES

ROBERT G. HILTZ, MGR. JOINT OPERATIONS

GEORGE W. SELINGER, MGR. CONSERVATION

Re: Order No. R-2900  
Dow Unit Waterflood Project  
Eddy County, New Mexico

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

Dear Mr. Porter:

Thank you for your letter of May 4, 1965, to which you attached a copy of Order No. R-2900 which grants permission to inject and conduct a waterflood project in our Dow Unit in Eddy County, New Mexico.

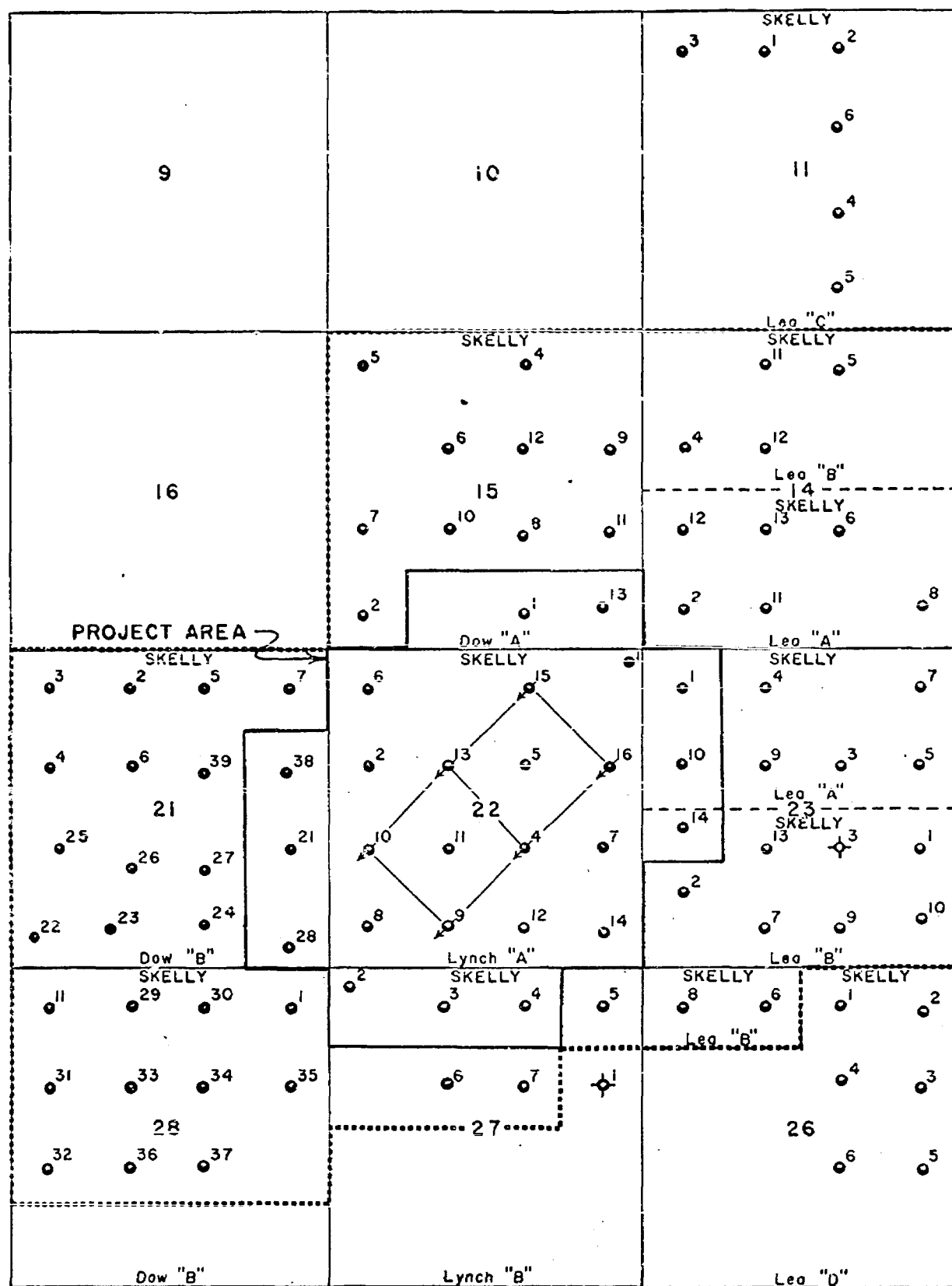
In your letter you stated that your calculations indicated that when all the authorized injection wells have been placed on active injection, the maximum allowable the project will be entitled to receive under the provisions of Rule 701-E-3 is 966 barrels per day. You further request that any error in this calculated maximum allowable be reported immediately to your office and to the appropriate district proration office.

We are attaching a plat, which by the way is the same plat that we attached to the application, which has outlined the project area. Our calculations indicate that when the six wells are on active injection there will be a total of 26 injection or producing wells within the project area. You will notice that each well within the red line either directly or diagonally offsets an injection well, and since the maximum allowable is 42 barrels for each well in the project area, our calculations indicate the maximum project allowable should be 1,092 barrels per day. It is true that an additional 84 barrels could be assigned if and when wells are drilled in Unit N of Section 15 and Unit C in Section 22. However, if and when those wells are drilled, the maximum allowable would then be 1,176 barrels per day.

Yours very truly,

RJJ:br  
Attach.

cc-Oil Conservation Commission, Box 1980, Hobbs, New Mexico w/ attach.  
Oil Conservation Commission, Drawer DD, Artesia, New Mexico w/ attach.



SKELLY OIL COMPANY  
DOW UNIT AREA  
EDDY COUNTY, NEW MEXICO  
TOWNSHIP 17-S, RANGE 31-E

SKELLY OIL CO.

EXHIBIT NO. A

LEGEND  
• GRAYBURG-SAN ANDRES  
OIL WELL  
⊕ DRY HOLE  
----- DOW UNIT

SCALE  
0 1320 2640 3960 5280

OIL CONSERVATION COMMISSION

P. O. BOX 2088  
SANTA FE, NEW MEXICO

May 4, 1965

C  
Mr. Charles White  
Gilbert, White & Gilbert  
Attorneys at Law  
Post Office Box 787  
Santa Fe, New Mexico

O  
Dear Sir:

Enclosed herewith is Commission Order No. R-2900, entered in Case No. 3226, approving the Skelly Oil Company Dow Unit Water-flood Project.

P  
Initial injection is to be through the six authorized injection wells, which shall be equipped with tubing and packers. The packers shall be set as near to the injection zone as is practical.

Y  
As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 966 barrels per day. An additional 84 barrels could be assigned if and when wells are drilled in Unit E of Section 15 and Unit C of Section 22.

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 both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when



OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

-2-

Mr. Charles White

C  
O  
P  
Y  
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.

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

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

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

Mr. George Selinger  
Skelly Oil Company  
Post Office Box 1650  
Tulsa 2, Oklahoma

Oil Conservation Commission  
Hobbs and 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. 3226  
Order No. R-2900

APPLICATION OF SKELLY OIL COMPANY  
FOR A WATERFLOOD PROJECT, EDDY COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 7, 1965, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 4th day of May, 1965, 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, Skelly Oil Company, seeks permission to institute a waterflood project in the Grayburg-Jackson Pool in the Dow Unit Area by the injection of water into the Premier (Grayburg) and San Andres formations through six injection wells in Section 22, Township 17 South, Range 31 East, NMPM, Eddy County, New Mexico.

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

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

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CASE No. 3226  
Order No. R-2900

(5) 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, Skelly Oil Company, is hereby authorized to institute a waterflood project in the Grayburg-Jackson Pool in the Dow Unit Area by the injection of water into the Premier (Grayburg) and San Andres formations through the following-described six wells in Section 22, Township 17 South, Range 31 East, NMPM, Eddy County, New Mexico:

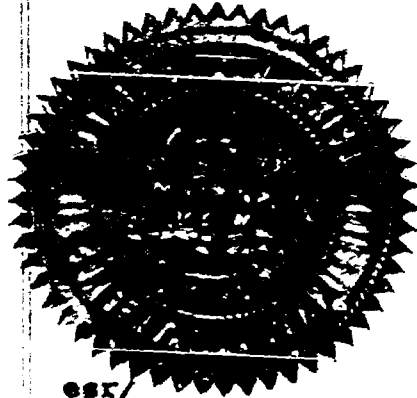
<u>LEASE AND</u> <u>WELL NO.</u>	<u>LOCATION</u> <u>UNIT</u>
Lynch "A" 4	J
Lynch "A" 9	N
Lynch "A" 10	L
Lynch "A" 13	F
Lynch "A" 15	B
Lynch "A" 16	H

(2) That the subject 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 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*  
JACK M. CAMPBELL, Chairman

*Guyton B. Hays*  
GUYTON B. HAYS, Member

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

esr/

Case 3226

Heard 4-7-65

Rec. 4-7-65

1. Grant Skelly's request for ~~pilot~~ ~~waterflood~~ in this flow unit. Approve the 6 injection wells as shown on their Exhibit II, attached.
  2. Operate under Rule 701.
- Wm. H. H. H.



# SKELLY OIL COMPANY

P. O. Box 1650  
TULSA 2, OKLAHOMA

## PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT  
W. P. WHITMORE, MGR. PRODUCTION  
W. D. CARSON, MGR. TECHNICAL SERVICES  
ROBERT G. HILTZ, MGR. JOINT OPERATIONS  
GEORGE W. SELINGER, MGR. CONSERVATION

March 9, 1965

Mr. A. L. Porter, Jr.  
Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Dear Mr. Porter:

We are attaching original and three copies of our application requesting approval of the installation and operation of a pilot waterflood on our Lynch "A" lease of the Dow Unit of Eddy County, New Mexico.

By carbon copy of this letter we are sending a copy to the State Engineer, and also a copy to the U.S.G.S. in Roswell, the latter having no objections as we understand it to this pilot project, and only require that a plan of development be filed with them.

We would appreciate having this matter set for the first Examiner's Hearing in April, which we understand to be April 7, 1965.

Yours very truly,

*George W. Selinger*

GWS:br  
Attach.

cc-State Engineer w/ attach.  
P. O. Box 1079  
Santa Fe, New Mexico

U.S.G.S. w/ attach.  
Roswell, New Mexico

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 7, 1965

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

The following cases will be heard before Elvis A. Uez, Examiner,  
or A. L. Porter, Jr., Alternate Examiner:

CASE 3225: Application of Harold L. Runnels for directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill his Millard Eidson B Well No. 3, the surface location of which is 660 feet from the South line and 1980 feet from the East line of Section 26, Township 16 South, Range 35 East, Shoebar Field, Lea County, New Mexico. Applicant proposes to set a whipstock at 6800 feet and directionally drill in a northwesterly direction bottoming said well at a true vertical depth of approximately 10,400 feet in the Permo-Pennsylvanian pay at a point not closer than 330 feet to the North and West lines of the SW/4 SE/4 of said Section 26.

CASE 3226: Application of Skelly Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Grayburg Jackson Pool in its Dow Unit Area, by the injection of water into the Premier (Grayburg) and San Andres formations through six wells located in Section 22, Township 17 South, Range 31 East, Eddy County, New Mexico.

CASE 3227: Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (combination) of its C. H. Weir "B" Well No. 6 located in Unit P of Section 11, Township 20 South, Range 37 East, Lea County, New Mexico, to produce oil from the Skaggs Glorieta Pool through 2 7/8 inch casing, gas from the Skaggs Drinkard Pool through 1.61 inch ID tubing installed in a parallel string of 2 7/8 inch casing, and gas from the East Weir Blinbry Pool through the tubing-casing annulus, both strings of 2 7/8 inch casing being cemented in a common well-bore.

CASE 3228: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Skaggs Pool by the injection of water into the Grayburg formation through nine wells in Sections 7, 12, and 13, Township 20 South, Range 37 East, Lea County, New Mexico.

Examiner Hearing - April 7, 1965

CASE 3229: Application of Pan American Petroleum Corporation for a coal completion and a non-standard gas production unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the coal completion (conventional) of its South Martin Unit Well No. 18 located in Unit G of Section 22, Township 24 South, Range 37 East, Lea County, New Mexico, to produce gas from the Lower Paddock formation and oil from the Blinbry formation, Fowler Field, through parallel strings of tubing. Applicant, further seeks approval of a Fowler-Lower Paddock non-standard gas production unit for said well, comprising the NE/4, E/2 NW/4, and N/2 SE/4, of said Section 22.

CASE 3002: In the matter of Case No. 3002 being reopened pursuant  
(Reopened) to the provisions of Order No. R-2684, which order established temporary 320-acre spacing for the Fowler-Lower Paddock Gas Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 160-acre spacing units.

CASE 3230: Application of The British-American Oil Producing Company for an unorthodox location and a non-standard gas unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox gas well location for its North Wilson Deep Unit Well No. 1 located 660 feet from the South line and 1980 feet from the East line of Section 31, Township 20 South, Range 36 East; applicant further seeks approval of a non-standard Morrow gas unit to be dedicated to said well, said unit comprising the SE/4 of Section 31 and the SW/4 of Section 32, Township 20 South, Range 36 East, Lea County, New Mexico.

CASE 3231: Application of Vilas P. Sheldon for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Old Loco Unit Area comprising 720 acres, more or less, of State lands in Sections 31 and 32, Township 17 South, Range 29 East, Eddy County, New Mexico.

CASE 3232: Application of Vilas P. Sheldon for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Grayburg Jackson and Loco Hills Pools in the Old Loco Unit Area by the injection of water into the Lovington and Grayburg formations through six injection wells in Section 32, Township 17 South, Range 29 East, Eddy County, New Mexico.



Examiner Hearing - April 7, 1965

CASE 3233: Application of Tidewater Oil Company for a unit agreement. Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Eumont Unit Area comprising 5,535 acres, more or less, of Federal, State and Fee lands in Townships 18, 19, and 20 South, Range 37 East, Lea County, New Mexico.

CASE 3234: Application of Tidewater Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Eumont Pool, Lea County, New Mexico, in its East Eumont Unit Area by the injection of water into the Yates, Seven Rivers and Queen formations through 69 wells in said unit area.



# SKELLY OIL COMPANY

P. O. Box 1650  
TULSA 2, OKLAHOMA

## PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT  
W. P. WHITMORE, MGR. PRODUCTION  
W. D. CARSON, MGR. TECHNICAL SERVICES  
ROBERT G. HILTZ, MGR. JOINT OPERATIONS  
GEORGE W. SELINGER, MGR. CONSERVATION

March 22, 1965

Subject: Pilot Waterflood  
Lynch "A" Lease of Dow Unit  
Eddy County, New Mexico

State Engineer's Office  
State Capitol  
Santa Fe, New Mexico

Attention: Mr. Frank E. Irby

Gentlemen:

We have your letter of March 11, 1965, in which you inquired as to certain information from Wells 4, 9, 10, 13, 15 and 16 of the Lynch "A" Lease. These questions were primarily concerned with the cement and casing of these wells.

We are attaching a separate page which we believe answers the questions raised in your letter. Should you need additional information, please advise.

Yours very truly,

(Signed) GEORGE W. SELINGER

RJJ:br  
Attach.

cc-Mr. A. L. Porter, Jr. w/ attach.  
Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501



## SKELLY OIL COMPANY

P.O. Box 730, Hobbs, New Mexico  
March 19, 1965

Re: Dow Unit  
Eddy County, New Mexico

Mr. G. W. Selinger:

Attached is a list of answers to Mr. Irby's questions, as requested by your note of March 16, 1965. Should further questions arise, please advise. These answers that are presented are as complete and accurate as can be determined from the well records available.

*J. E. Gab*

WMC/bh

Attachments

Lynch "A" #4

Calculated top of cement behind 8 5/8" O.D. surface casing (set at 655' in 11" hole) is 223'.

100 sacks of cement were used in setting surface casing. (Note: After cement plug was drilled out casing shut-off tested O.K.)

Calculated top of cement behind 7" production string is 810'. (150 sacks of cement were used.)

Lynch "A" #9

Cement used in setting 8 5/8" O.D. surface casing was circulated.

150 sacks of cement were used in setting surface casing. (Note: After cement plug was drilled out casing shut-off tested O.K. )

A total of 475 sacks cement was used in setting 7" production string at 3523.

No surveyed top of cement was recorded.

Calculated top of cement would show cement to have circulated.

Lynch "A" #10

Cement used in setting 8 5/8" O.D. surface casing was circulated.

150 sacks of cement were used in setting surface casing (Note: After cement plug was drilled out casing shut-off tested O.K. )

A total of 325 sacks cement was used in setting 7" production string at 3399.

No surveyed top of cement was recorded.

Calculated top of cement would show cement to have circulated.

Lynch "A" #13

Cement used in setting 8 5/8" O.D. surface casing was circulated.

150 sacks of cement were used in setting surface casing. (Note: After cement plug was drilled out casing shut-off tested O.K. )

355 sacks of cement were used in setting 5 1/2" production string.

Lynch "A" #15

Cement used in setting 8 5/8" O.D. surface casing was circulated.

300 sacks of cement were used in setting surface casing.

400 sacks of cement were used in setting 4 1/2" production string.

Lynch "A" #16

Calculated top of cement behind 8 5/8" O.D. surface casing (set at 650' in 11" hole) shows cement to have circulated.

280 sacks of cement were used in setting surface casing.

400 sacks of cement were used in setting 4 1/2" production string.

The HOWCO R-3 tension packer will be set 30'-50' above the top of the injection interval, which will be well below the top of the cement surrounding the production string in each well. Generally speaking, this packer setting will be some 1500-2000 feet below the top of the cement surrounding the production casing.

GILBERT, WHITE AND GILBERT

ATTORNEYS AND COUNSELORS AT LAW

BISHOP BUILDING

SANTA FE, NEW MEXICO

CARL H. GILBERT (1891-1963)

L. C. WHITE

WILLIAM W. GILBERT

SUMNER S. KOCH

WILLIAM BOOKER KELLY

JOHN F. MCCARTHY, JR.

April 6, 1965

POST OFFICE BOX 787

TELEPHONE 983-4324

(AREA CODE 505)

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

Re: Application of Skelly Oil Company  
Waterflood Project  
Case No. 3226

Dear Mr. Porter:

The firm of Gilbert, White and Gilbert hereby enters  
its appearance in the above-referred to case and associates  
with it Mr. George Selinger of Tulsa, Oklahoma, for presenta-  
tion of evidence.

Very truly yours,

*W. B. Kelly*  
W. B. KELLY

WBK:cc

March 11, 1965

Skelly Oil Co.  
P. O. Box 1650  
Tulsa 2, Oklahoma

Attn. Mr. George W. Selinger

Dear Mr. Selinger:

DOCKET MARKED

Date 3/24/65

I have reviewed your application to the New Mexico Oil Conservation Commission dated March 9, 1965 which seeks approval of the installation and operation of a pilot waterflood on your Lynch "A" lease of the Dow Unity in Eddy County. I would appreciate receiving the following information on the designated wells:

Lynch "A" No. 4

Is cement used in setting surface casing circulated?  
How many sacks of cement were used?  
What is calculated or surveyed top of cement used in setting production string?

Lynch "A" No. 9

Is cement used in setting surface casing circulated?  
How many sacks of cement were used on surface string?  
What is calculated or surveyed top of cement used in setting production string?

Lynch "A" No. 10

Is cement used in setting surface casing circulated?  
How many sacks of cement were used in setting surface string?  
What is calculated or surveyed top of cement used in setting production string?

Lynch "A" No. 13

Is cement used in setting surface casing circulated?  
How many sacks of cement were used in setting surface string?

How many sacks of cement were used in setting production string?

Lynch "A" No. 15

Is cement used in setting surface casing circulated?

How many sacks of cement were used in setting surface string?

How many sacks of cement were used in setting production string?

Lynch "A" No. 16

Is cement used in setting surface casing circulated?

How many sacks of cement were used in setting surface string?

How many sacks of cement were used in setting production string?

Will the HAWCO R-3 tension packer be set well below the top of the cement surrounding the production string, in each case?

If satisfactory answers to the above questions are received promptly, I can make my recommendations to the Commission and avoid prolonging the hearing by cross-examination of the witnesses.

Best personal regards

Yours truly,

S. E. Reynolds  
State Engineer

By:

Frank E. Irby  
Chief  
Water Rights Div.

FEI/ma  
CC-A. L. Porter, Jr.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

APPLICATION OF SKELLY OIL COMPANY FOR AN )  
ORDER AUTHORIZING THE INJECTION OF WATER )  
FOR PRESSURE MAINTENANCE AND SECONDARY )  
RECOVERY PURPOSES INTO THE GRAYBURG )  
JACKSON POOL UNDERLYING ITS LYNCH "A" )  
LEASE ON ITS DOW UNIT, LOCATED IN SEC- )  
TIONS 14, 15, 16, 21, 22, 23, 26, 27, )  
AND 28, TOWNSHIP 17 SOUTH, RANGE 31 EAST, )  
EDDY COUNTY, NEW MEXICO, AND FOR PROMUL- )  
GATION OF SPECIAL RULES GOVERNING THE )  
OPERATION OF SAID PROJECT. )

CASE NO. 3220

TO: THE HONORABLE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO AND THE  
SECRETARY-DIRECTOR THEREOF

COMES NOW Skelly Oil Company, a Delaware Corporation, authorized to do  
business in the State of New Mexico as owner and operator of those leases contained  
in its Dow Unit, which are covered by its Lea "A", Lea "B", Dow "A", Dow "B",  
Lynch "A", and Lynch "B" leases in the area described above, and hereby makes  
application to the New Mexico Oil Conservation Commission for an order authorizing  
the injection of a pilot waterflood project for pressure maintenance and secondary  
recovery purposes into the Premier (Grayburg) and San Andres zones of the Grayburg  
Jackson Pool underlying the above described leases, pursuant to Rule 701 of this  
Commission, and for the promulgation of such rules and regulations as may be  
necessary in the premises to govern the operation of said project.

In support, applicant shows:

1.

A plat showing the location of the proposed injection wells described as  
the Lynch "A" Nos. 4, 9, 10, 13, 15 and 16, and the two producing wells in the five-  
spot pattern designated as the Lynch "A" Nos. 5 and 11, together with the location  
of all other wells, which is hereto attached and marked "Exhibit A" showing all those  
things as required by the rules and regulations of the Commission.

2.

Exhibit A shows in outline the proposed project area which includes all  
of Section 22; and 120 acres in Section 15 described as the S/2 of the SE/4 and  
SE of the SW/4; 120 acres in Section 21 described as the E/2 of the SE/4 and SE of  
the NE/4; 120 acres in Section 23 described as the W/2 of the NW/4 and NW SW/4; and  
120 acres in Section 27 described as the N/2 of the NW/4 and NW of the NE/4.

3.

There is also attached and made a part hereof, marked "Exhibit B, C, D,



E, F and G respectively, of Lynch "A" Nos. 4, 9, 10, 13, 15 and 16, diagrammatic sketch of the six proposed injection wells, and which shows the total depth of the well, size of the production casing, depth to which casing has been set, estimated top of cement used in setting the casing in the well, and the perforation intervals within the well.

4.

The two producing wells in the five-spot patterns will be the Lynch "A" No. 5 (San Andres), and No. 11 (Premier), which wells are located SW NE and NE SW respectively.

5.

Applicant proposes to inject fluid into the Premier (Grayburg) in Well Nos. 9 and 10, into the Premier and San Andres in Well Nos. 4 and 13, and into the San Andres only in Well Nos. 15 and 16.

6.

Maximum water injection into the six injection wells will be 2,500 barrels per day, which water will be purchased directly from Caprock Water Company on the lease. If this application is granted, applicant will later request administrative approval pursuant to Rule 701 to enlarge the pressure maintenance project by adding and substituting additional injection wells.

7.

Skelly Oil Company is the sole owner of operating interests within the project area as above described, and has offset to the East by similar project operated by other interests.

8.

Applicant believes and asserts that it will be in the interest of conservation and the prevention of waste to inaugurate a pilot waterflood project in order to evaluate the flooding of each zone of the Grayburg Jackson Pool from this one pilot operation, and that said project in the opinion of applicant is in the interest of obtaining the greatest ultimate recovery of oil and gas from the above mentioned zones in the Grayburg Jackson Pool.

9.

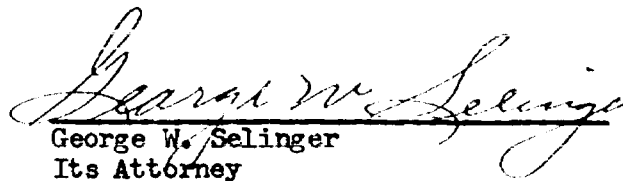
Applicant will recommend proper field rules for the operation of the Dow Unit (Lynch "A") Pilot Waterflood project in Eddy County, New Mexico, if same is found necessary

WHEREFORE, applicant requests that this application be set down for

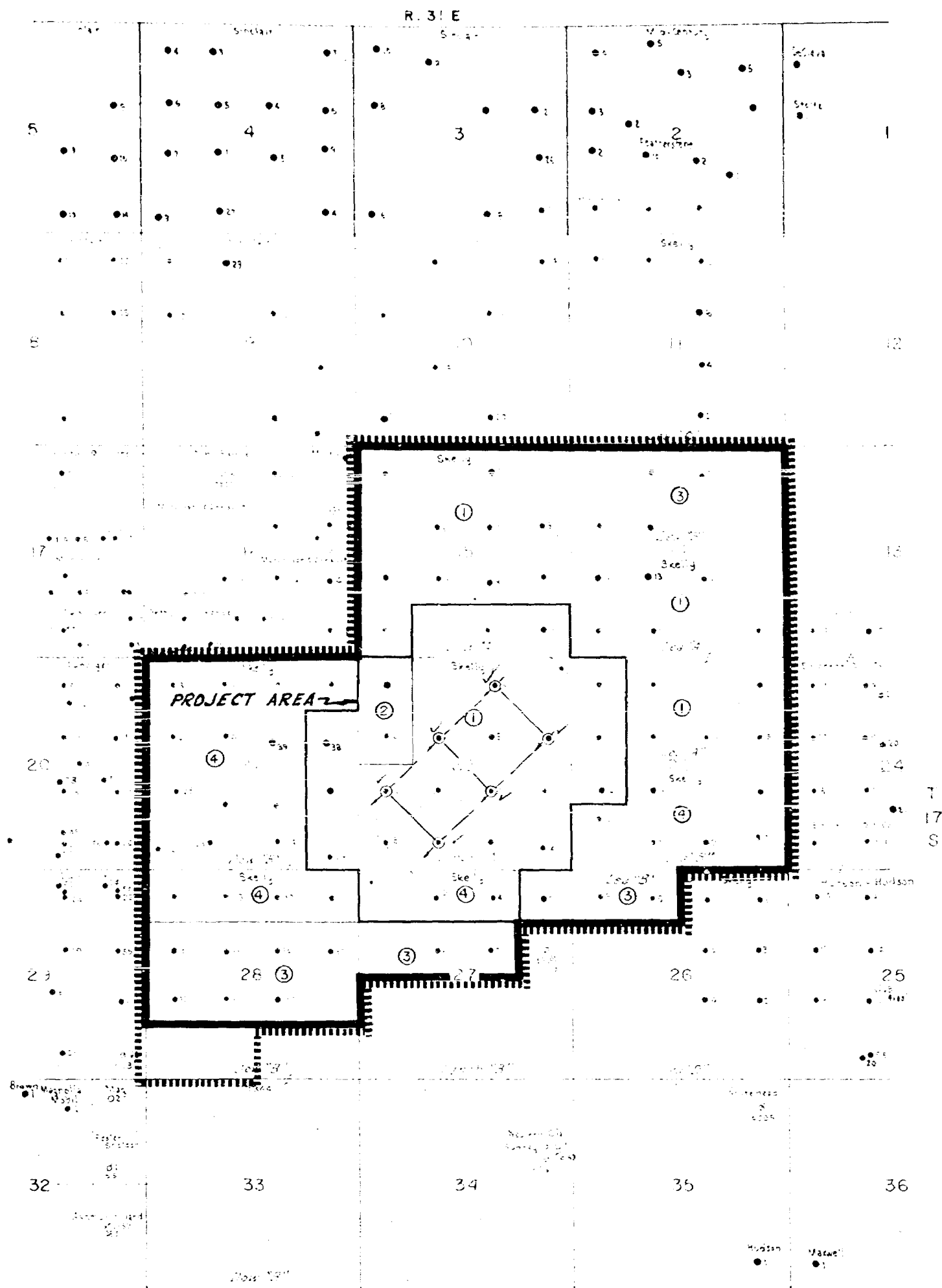
hearing either before the Commission or an Examiner after due notice as required  
by law.

Respectfully submitted,

SKELLY OIL COMPANY

  
George W. Selinger  
Its Attorney

Of Counsel:  
Gilbert, White & Gilbert  
Bishop Building  
Santa Fe, New Mexico



# SKELLEY UNIT

EDDY COUNTY, NEW MEXICO

— LEGEND —

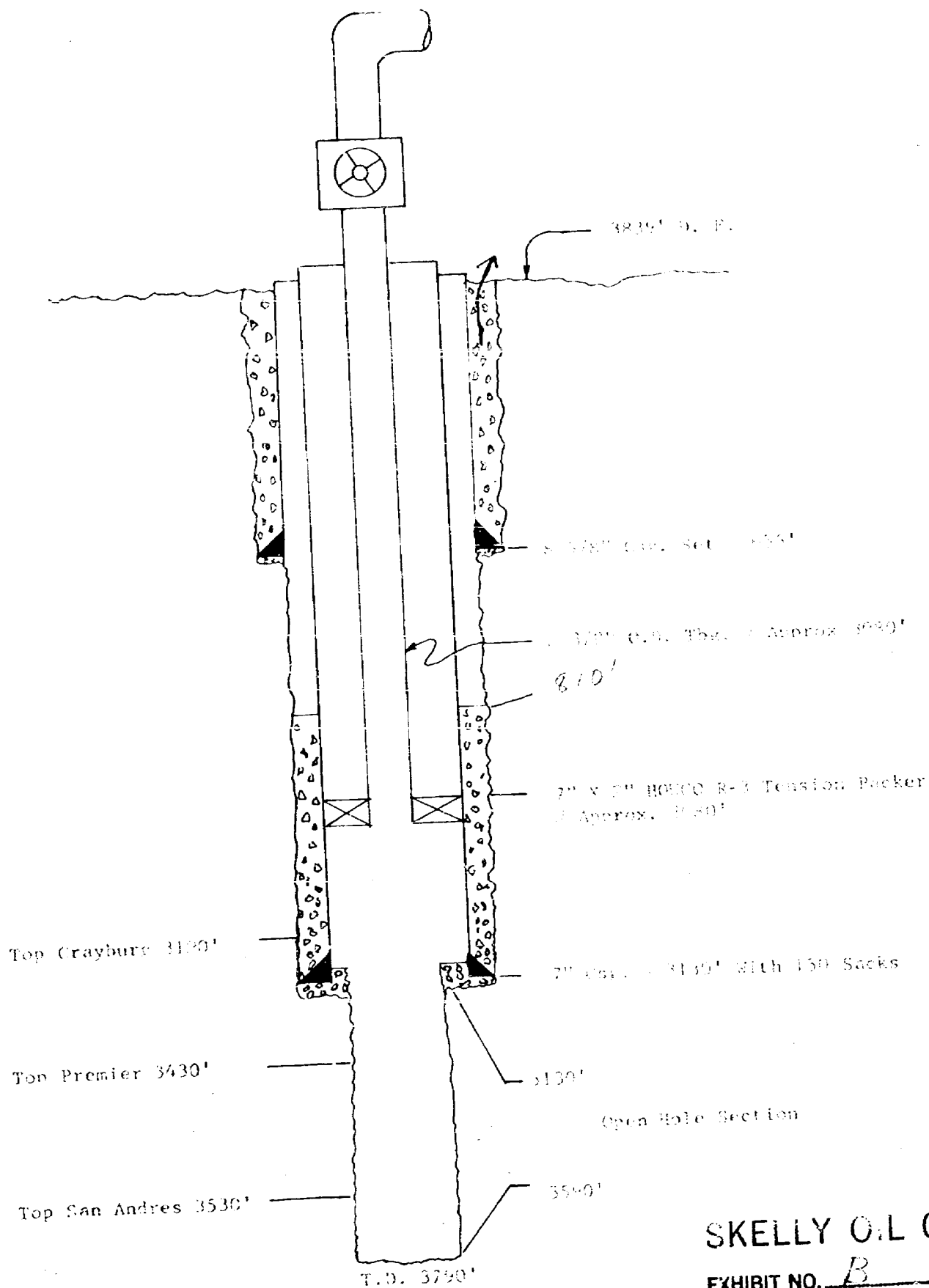
- GRAY: JRG JACKSON HILL COMPLETION
- ① TRACT NUMBER
- SKELLEY UNIT OUTLINE
- SKELLEY UNIT PARTICIPATING TRACT

SCALE 1" = 3000'

EXHIBIT "A"

3228

SKELLY OIL COMPANY  
 1000' P.H. & 1000' C.M. SECTION  
 CLAYTON, MICHIGAN AND DEER CREEK

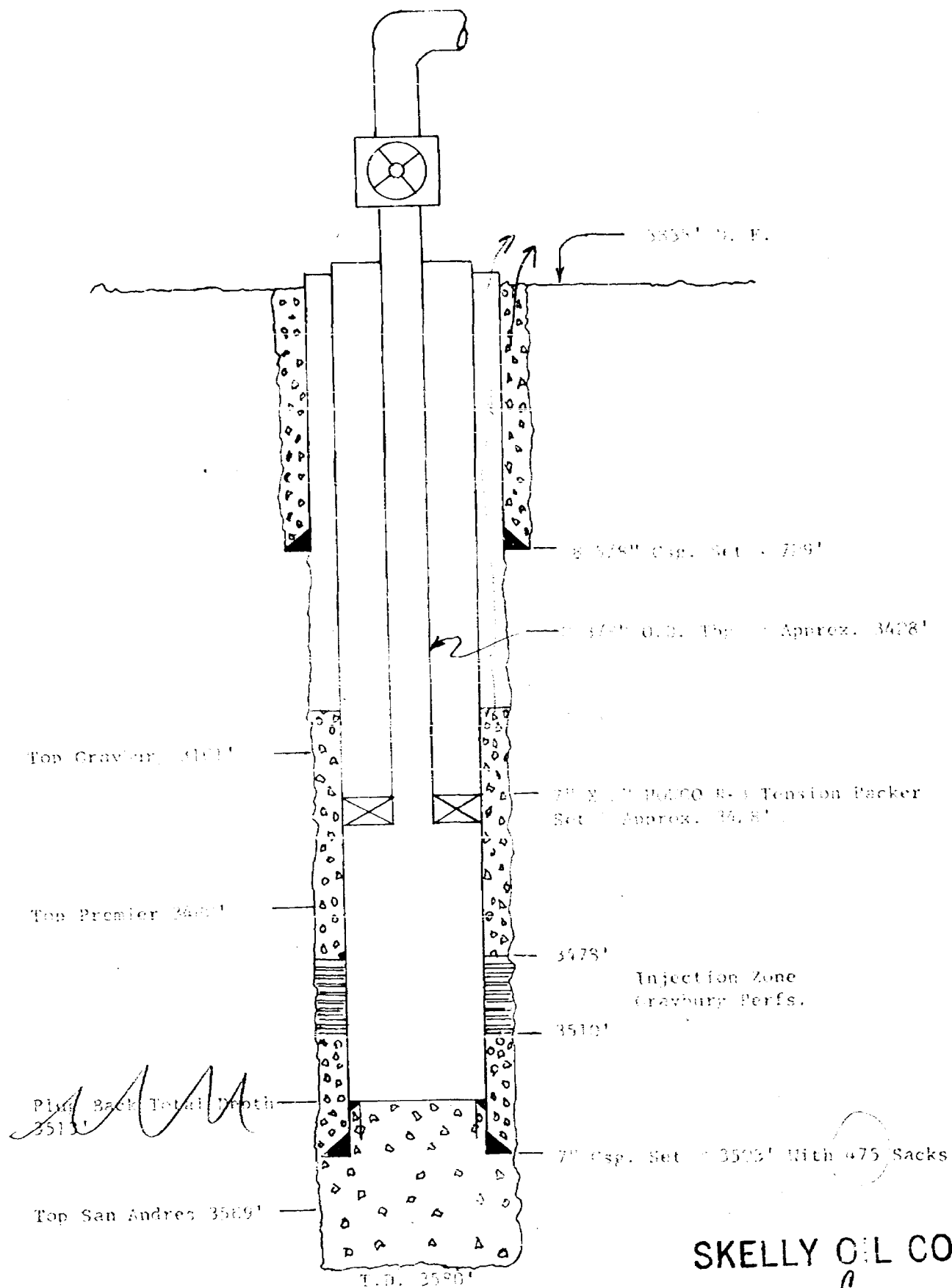


SKELLY OIL CO.

EXHIBIT NO. B

3226

SKELLY OIL COMPANY  
 15500 10th St.  
 Dallas, Texas 75244  
 SECTION 1, T. 17 N., R. 31 E.  
 23rd TOWNSHIP, DALLAS COUNTY, TEXAS

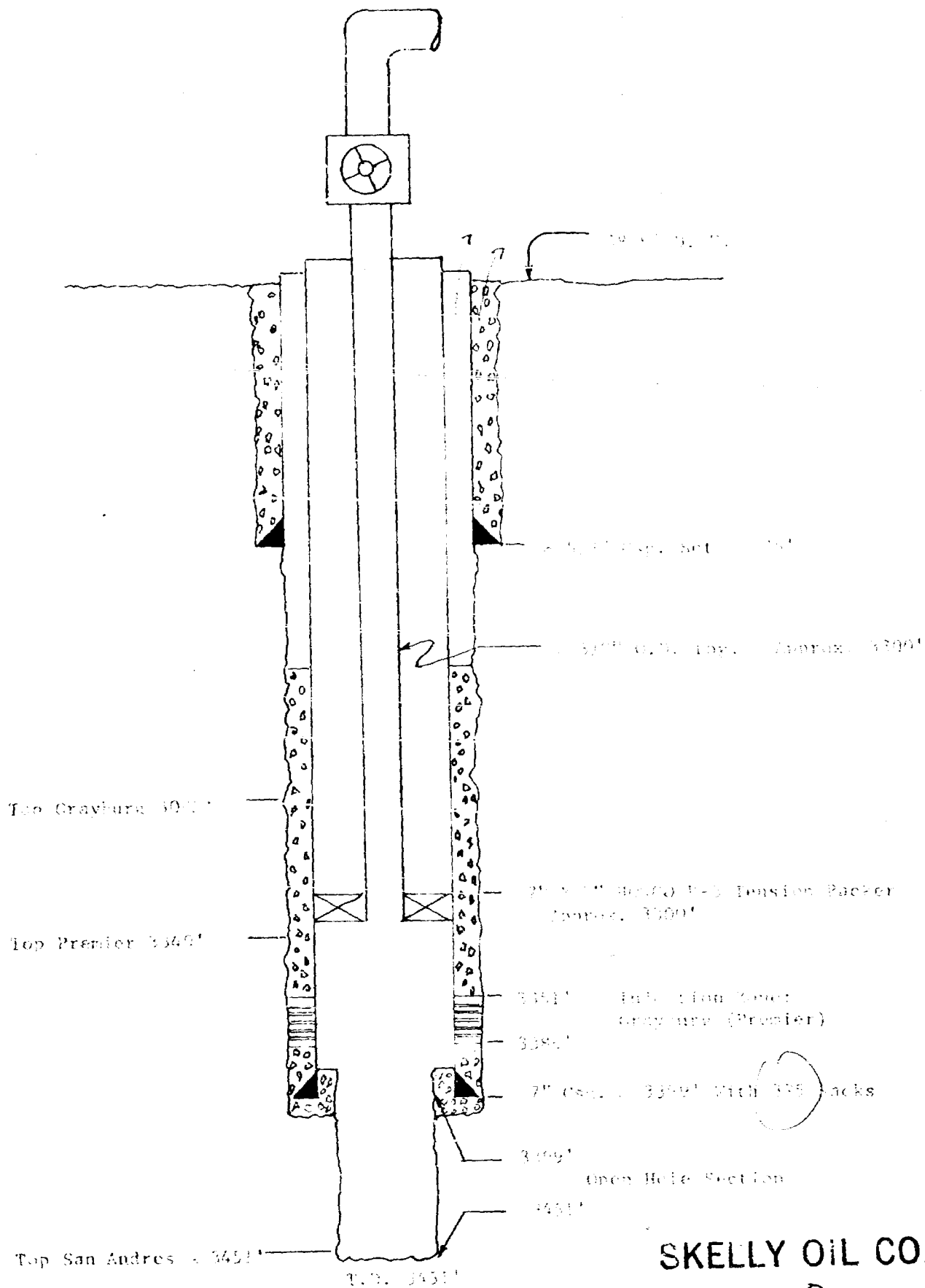


SKELLY OIL CO.

EXHIBIT NO. C

3226

SKELLY OIL COMPANY  
 LYNCH, TEXAS  
 1450' DEEP 4 1/2" EX. SECTION ...  
 GRAYBURG JACKSON INJECTION WELL

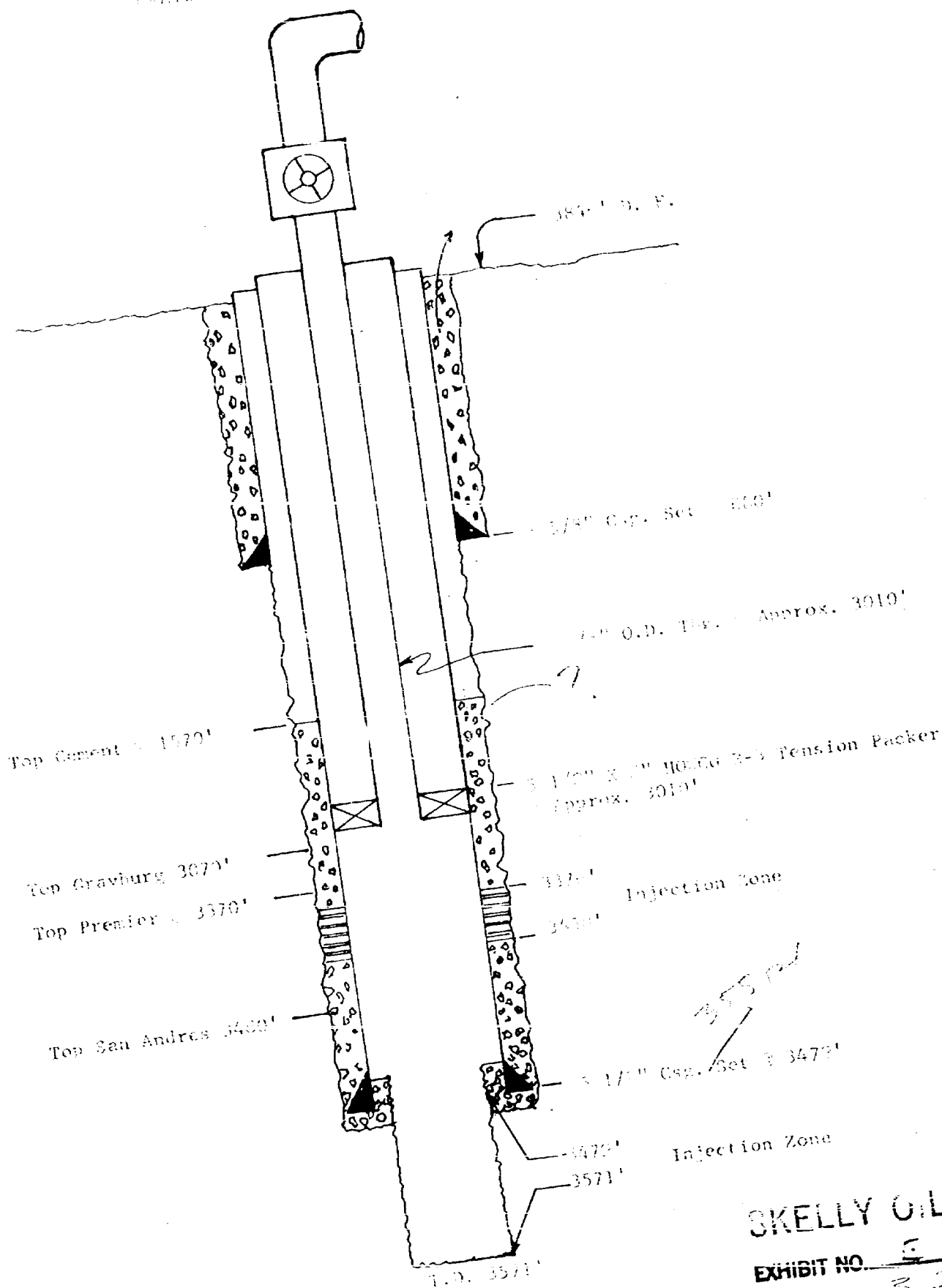


SKELLY OIL CO.

EXHIBIT NO. D

Case 3226

SKELLY OIL COMPANY  
 LYNCH, PA. 17  
 1000' F.N. - 1000' F.N. 1000' F.N. 1000' F.N.  
 CRAWFORD JACKSON INJECTION WELL

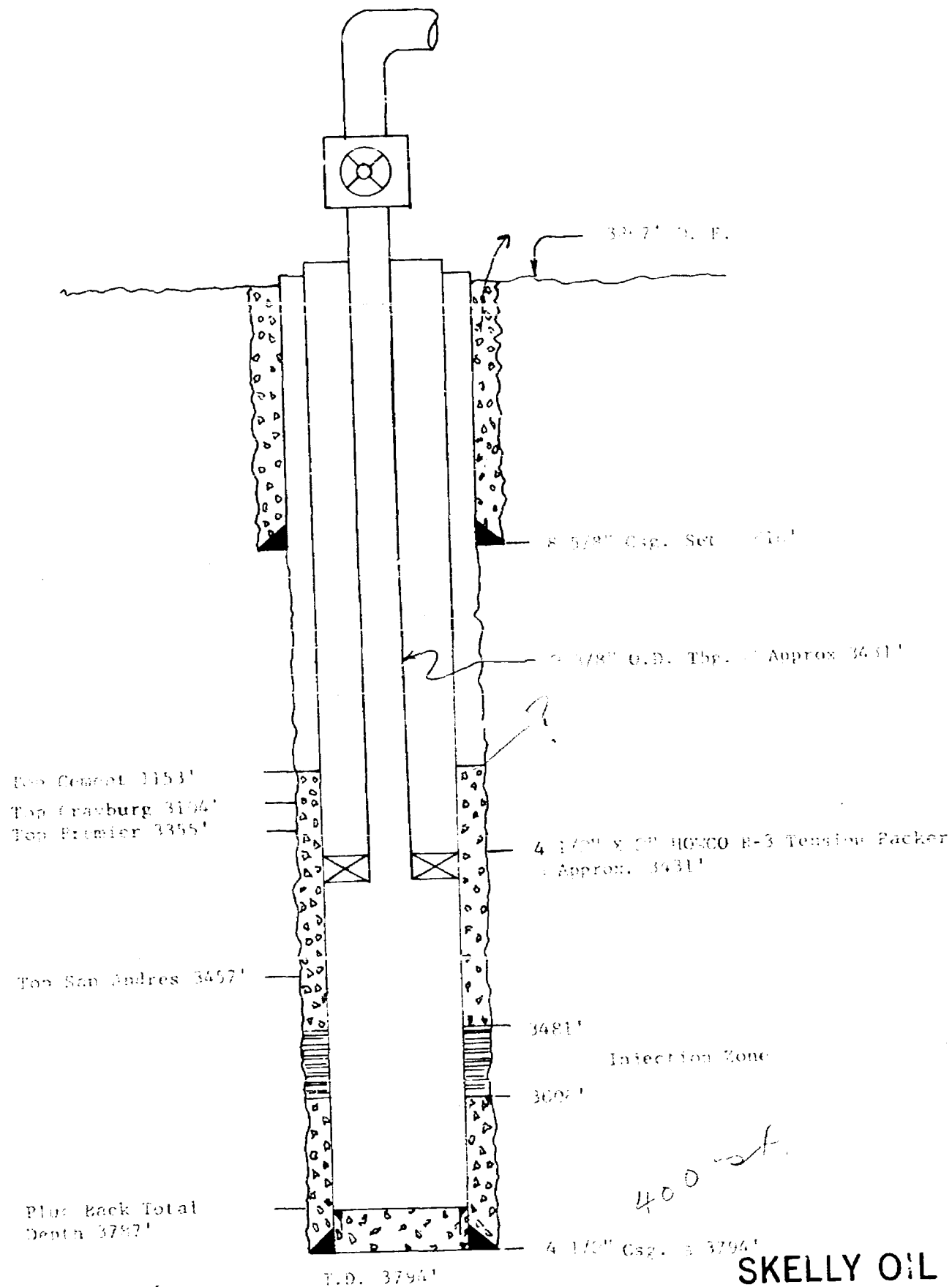


SKELLY OIL CO.

EXHIBIT NO. E

3220

SKELLY OIL COMPANY  
 LYNCH VAL #15  
 400' ENL & 1280' EEL Section 17, T. 17 N., R. 34 E.  
 2214 RD JACKSON TOWNSHIP WELLS



SKELLY OIL CO.

EXHIBIT NO. F



SKELLY OIL COMPANY  
 LYNCH "A" #1  
 1980' P.H. & 5-0" P.H. Section  
 RAYMOND JACKSON INSPECTED & APP.

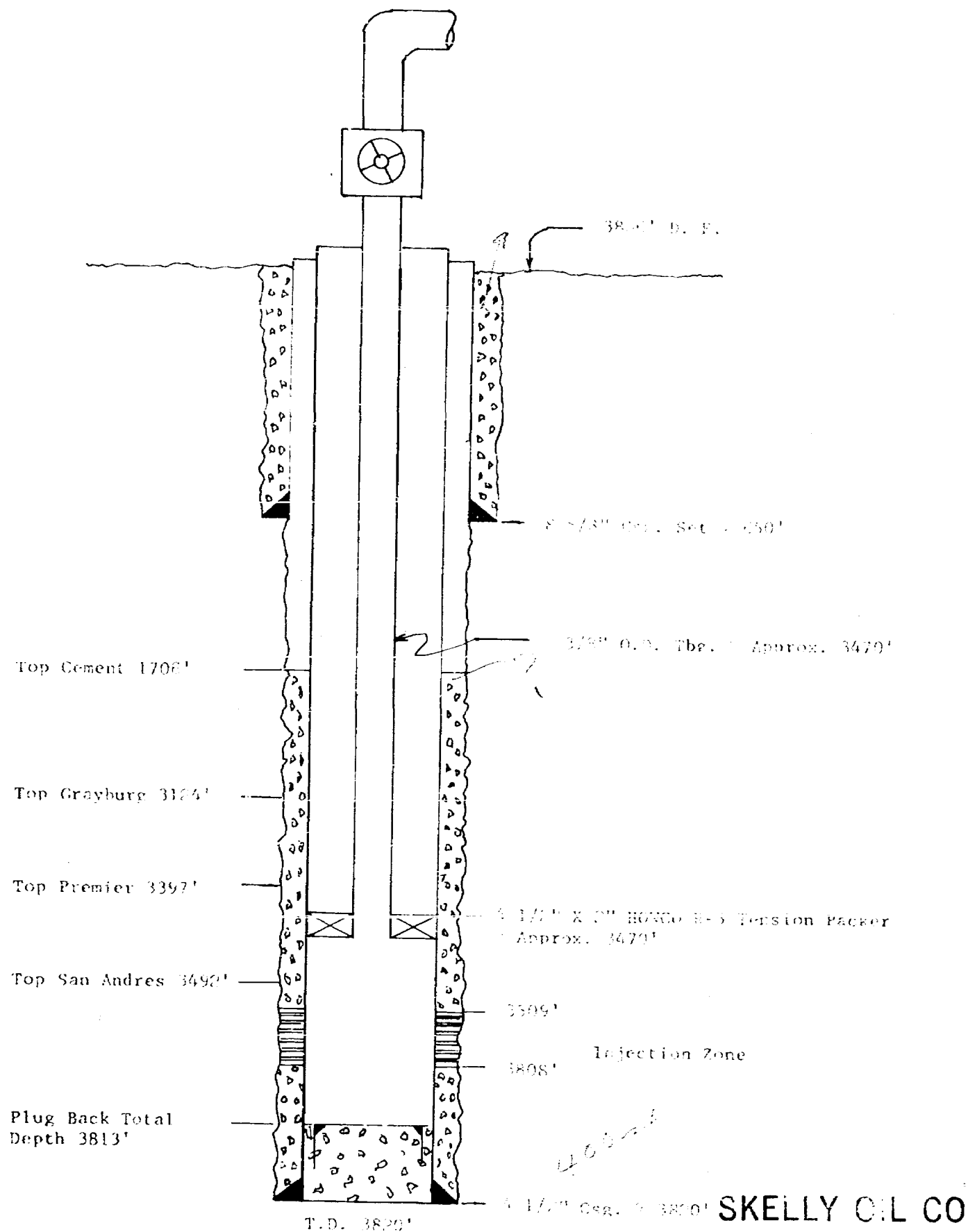
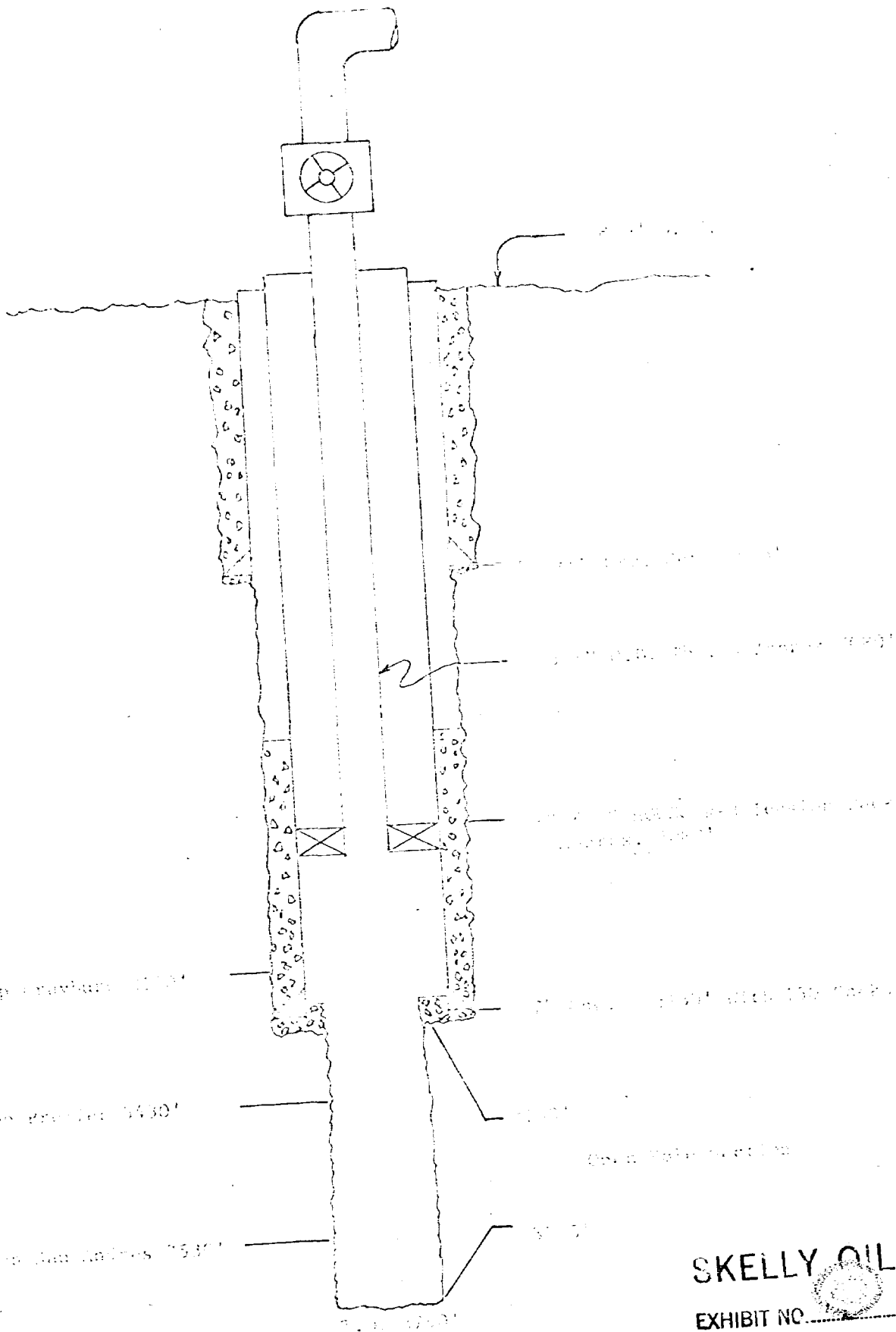


EXHIBIT NO. G

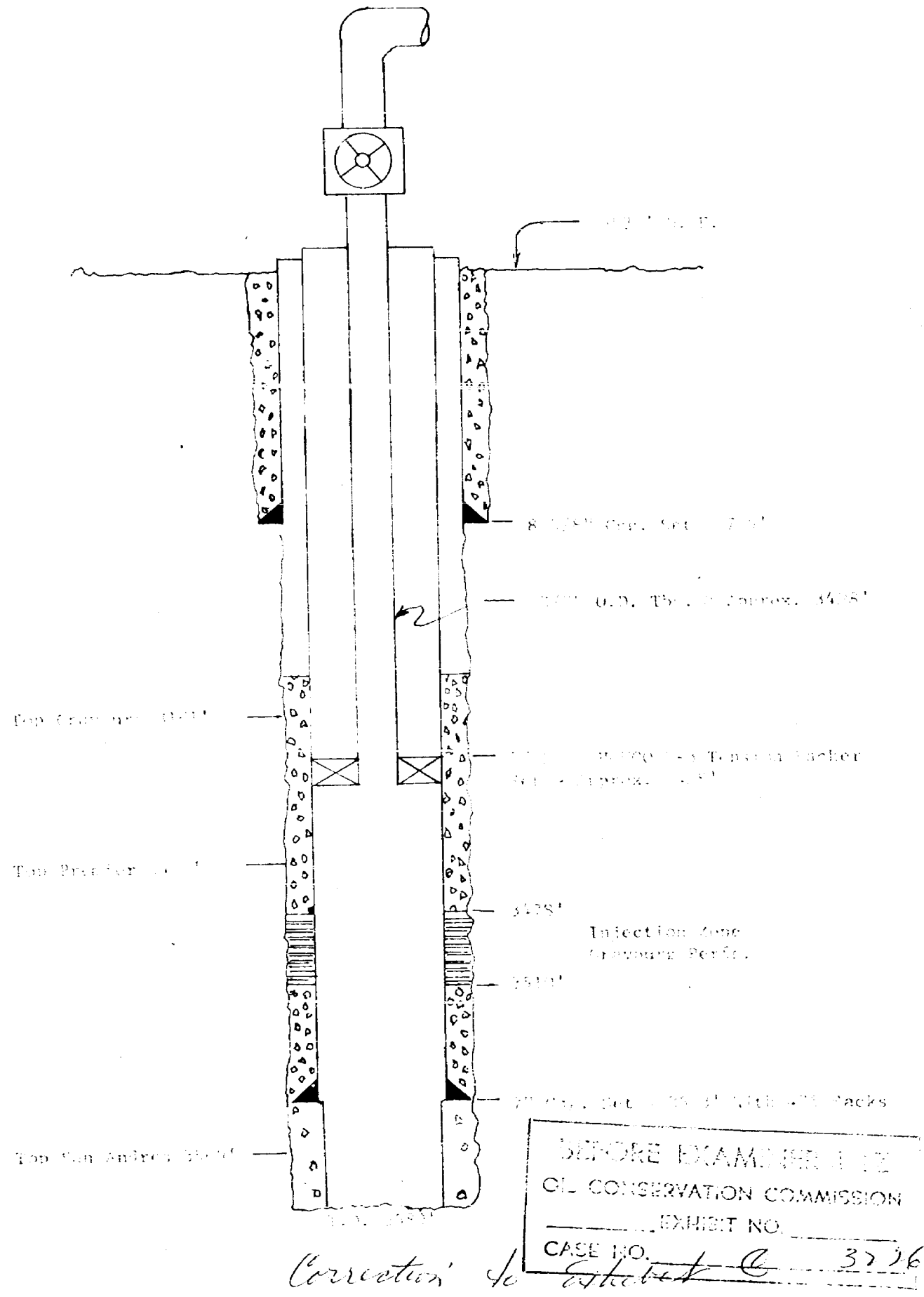
3.220



BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. B  
CASE NO. 3226

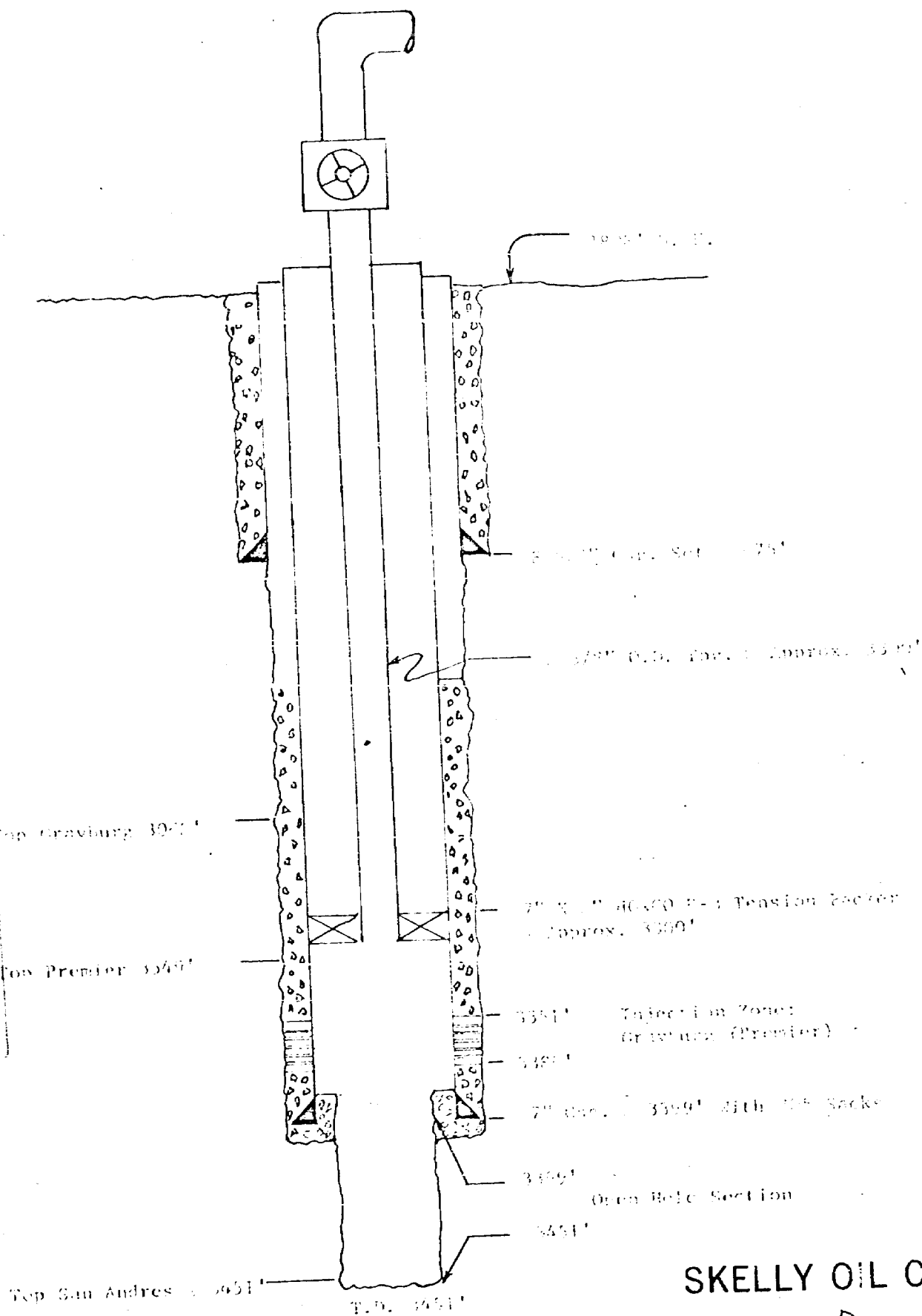
SKELLY OIL CO.  
EXHIBIT NO. 177

WATER FILLED CANNON  
 100' DIA. 10' HIGH  
 100' DIA. 10' HIGH  
 100' DIA. 10' HIGH



SKELLY OIL COMPANY  
 15410 "A" 10  
 1990' DEEP N. O. O. DEEP SECTION, T. 12 N., R. 10 E., S. 1  
 (PAYMENT MADE ON INJECTION 1941)

BEFORE EXAMINED BY  
 U.S. DEPARTMENT OF THE INTERIOR  
 GEOLOGICAL SURVEY  
 CASE NO. 3226  
 EXHIBIT NO. D



SKELLY OIL CO.  
 EXHIBIT NO. D

SKELLY OIL CO.  
EXHIBIT NO. E

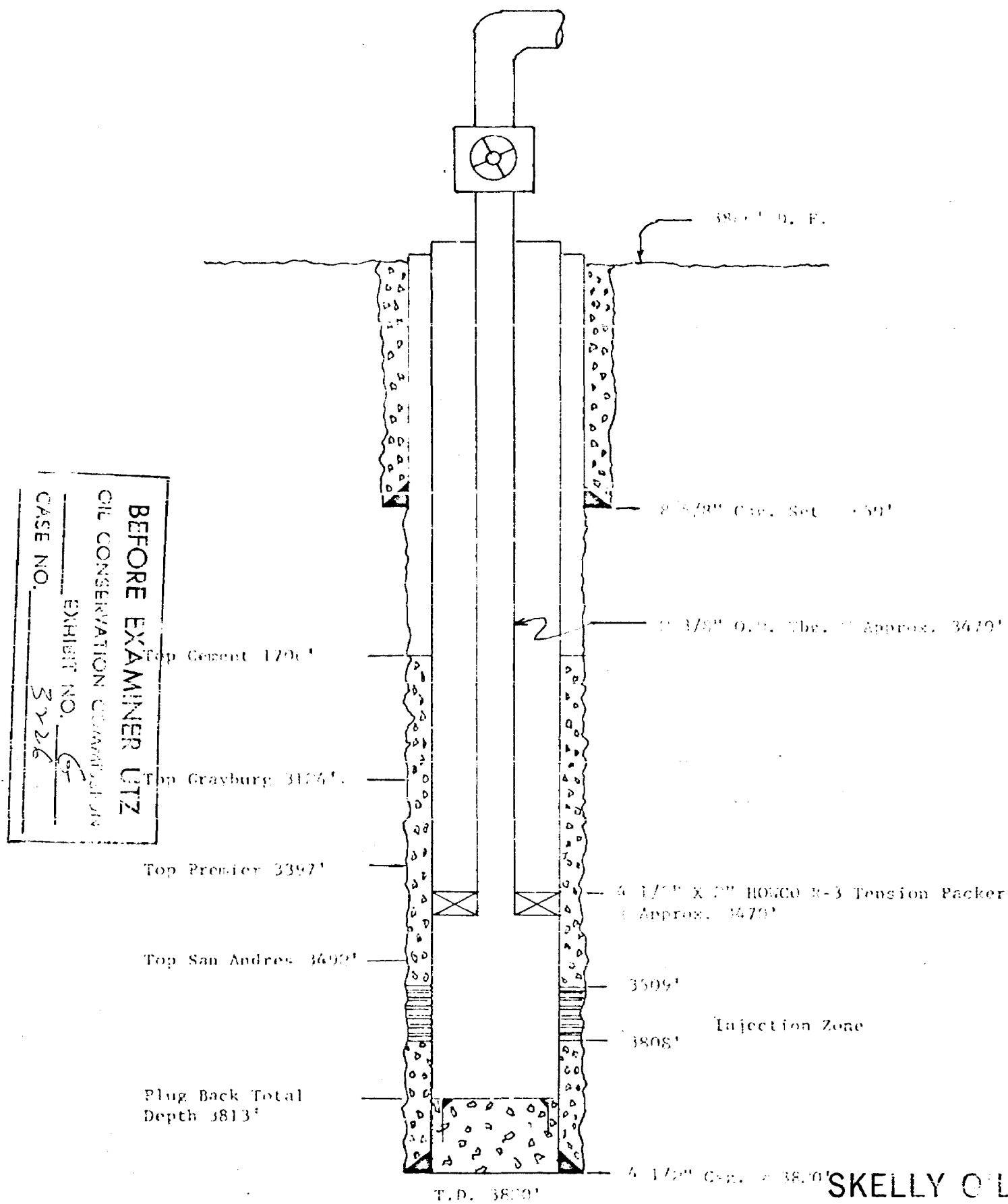
Plus Back Total  
Depth 3727'

7. D. 329.

6. 17.00 CASH. 3794.

SKELLY CO. CO.  
EXHIBIT NO. F

SKELLY OIL COMPANY  
 1 1/2" x 7"  
 1920' TEL. & 1/2" TEL. SECTION ON T. 17 N., R. 11 E.  
 GRAYBURG SECTION INJECTION WELL



BEFORE EXAMINER UTZ  
 OIL CONSERVATION COMMISSION  
 EXHIBIT NO. 67  
 CASE NO. 3226

SKELLY OIL CO.  
 EXHIBIT NO. G

WELL STATUS - PRODUCTION DATA													
SKELLY OIL COMPANY													
DOW UNIT PILOT WATERFLOOD PROJECT													
GRAYBURG-JACKSON POOL, EDDY COUNTY, NEW MEXICO													
LEASE AND WELL NO.	P.E.T.D. FEET	PRODUCTION CSG.		PRODUCING INTERVAL		COMPLETION DATE		INITIAL POTENTIAL BOFD	Cum. Oil Prod. to 1-1-65 BBLs.	CURRENT PROD. RATES BOFD	PROJECT WELL STATUS	REMARKS	
		SIZE INCHES	DEPTH FEET	INTERVAL FEET	MO. / YEAR								
Dow "A"	1	3788	8 1/4	3247	3247-3788	2/35	46	P*	86116	3	P	Prod.	
	3	12098	5 1/2	11970	11970-12098	5/54	284	F*	18566	4	P	Prod.	*Flumped
	13	3803	5 1/2	3808	3521-3815	10/31	238	F	12882	14	P	Prod.	
Dow "B"	21	3590	8 5/8	3605	2217-2350	10/54	238	F	12882	14	P	Dual Prod.	
	28	3446	7	3388	3358-3493	10/54	238	F	12882	14	P	Dual Prod.	
	38	3708	4 1/2	3714	3538-3635	1/53	1108	F	54575	11	P	Prod.	
Lea "A"	1	3811	7	3261	3261-3811	2/62	80	F	21109	17	P	Prod.	
	10	3470	7	3230	3230-3470	9/34	50	S*	147706	10	P	Prod.	
Lea "B"	14	3831	4 1/2	3834	3769-3814	12/47	29	P	37669	5	P	Prod.	
Lynch "A"	1	3818	6 5/8	3140	3140-3818	12/61	70	F	28729	16	P	Prod.	
	2	3350	7	3020	3020-3350	10/27	30	S	274474	4	P	Prod.	
	3	2305	7	2102	2102-2305	3/41	31	P	32161	3	P	Prod.	
	4	3590	7	3130	3130-3590	7/44	16	P	16584	6	P	Prod.	
	5	3805	5 1/2	3810	3741-3804	2/46	22	P	22929	3	P	Prod.	
	6	3750	9 5/8	3800	2246-2282	11/50	18	P	6506	12	P	Prod.	
	7	3503	8 5/8	3620	3578-3746	1/63	60	P	38442	3	P	Dual Prod.	
	8	3535	7	3474	3416-3574	1/55	178	F	31909	4	P	Prod.	
	9	3560	7	3523	3478-3580	7/58	372	F	29696	3	P	Prod.	
	10	3451	7	3399	3351-3451	8/58	224	F	29094	2	P	Prod.	
	11	3426	7	3432	3387-3426	10/58	644	F	31233	3	P	Prod.	
	12	3710	5 1/2	3618	3501-3710	11/58	275	F	38394	5	P	Prod.	
	13	3571	5 1/2	3472	3472-3571	2/59	228	F	22297	1	P	Prod.	
	14	3700	5 1/2	3589	3502-3700	8/59	79	F	19960	7	P	Prod.	
	15	3737	4 1/2	3794	3481-3606	11/61	66	P	24938	8	P	Prod.	
	16	3813	4 1/2	3820	3509-3808	11/61	543	F	24531	11	P	Prod.	
Lynch "B"	2	3560	7	3461	3401-3560	11/57	417	F	57170	10	P	Prod.	
	3	3673	7	3612	3562-3673	7/58	508	F	51452	10	P	Prod.	
	4	3754	5 1/2	3705	3705-3754	4/59	111	F	39262	5	P	Prod.	
To be deepened to 3790'.													
To be perf. 3373-3438'.													
Prod.													

To be deepened to 3790'.

\*Swabbed

\*Flowed

To be perf. 3378-3438'.

10 1/2



BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 8  
CASE NO. 3236

INJECTION WELL COMPLETION DATA

SKELLY OIL COMPANY  
DOW UNIT  
PILOT WATERFLOOD PROJECT  
Section 22 T 17 S R 36 E  
GRAYBURG JACKSON POOL  
EDDY COUNTY, NEW MEXICO

LEASE & WELL NO.	LOCATION UNIT	TOTAL DEPTH FEET	COMPLETION INTERVAL FEET	SIZE IN.	SURFACE CASING				PRODUCTION CASING			
					DEPTH FEET	SACKS	CEMENT TOP*/FT		SIZE IN.	DEPTH FEET	SACKS	CEMENT TOP*/FT.
Lynch "A" 4	J	3790 3590 PB	3130-3590	8 5/8	655	100	223 C	7		3130	150	810 C
Lynch "A" 9	N	3580 3513 PB	3478-3510	8 5/8	729	150	Circ.	7		3523	475	Circ. C
Lynch "A" 10	L	3451 3387 PB	3351-3386	8 5/8	675	150	Circ.	7		3399	325	Circ. C
Lynch "A" 13	F	3571	3472-3571	8 5/8	680	150	Circ.	5 1/2		3472	355	1570 S
Lynch "A" 15	B	3794 3787 PB	3481-3606	8 5/8	616	300	Circ.	4 1/2		3794	400	1153 S
Lynch "A" 16	H	3820 3813 PB	3509-3803	8 5/8	650	280	Circ. C	4 1/2		3820	400	1706 S

\*Circ. - Circulated  
C - Calculated  
S - Temperature Survey

JTC/bh  
April, 1965

Martin Water Laboratories  
BOX 1463 MONAHANS, TEXAS WIS-3234  
RESULT OF WATER ANALYSES

TO: Mr. H. E. Aab  
P. O. Box 730, Hobbs, New Mexico

LABORATORY NO. 36571  
SAMPLE RECEIVED 3-16-65  
RESULTS REPORTED 3-25-65

COMPANY Skelly Oil Company LEASE Dow Unit  
FIELD OR POOL

SECTION BLOCK SURVEY COUNTY Eddy STATE N. M.

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Raw water - taken from Caprock Water Co. line at valve near plant. 3-16-65

NO. 2 Produced water - taken from heater-treater. 3-16-65

NO. 3

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60 degs. F	1.0011	1.1519		
pH When Sampled	7.5	7.4		
pH When Received	7.5	7.5		
Total Alkalinity as CaCO <sub>3</sub>	158	360		
Super-saturation as CaCO <sub>3</sub>	-	20		
Under-saturation as CaCO <sub>3</sub>	2	--		
Total Hardness as CaCO <sub>3</sub>	156	10,591		
Calcium as CaCO <sub>3</sub>	112	5,348		
Magnesium as CaCO <sub>3</sub>	44	5,243		
Sodium and/or Potassium				
Sulfate as SO <sub>4</sub>	21	3,820		
Chloride as NaCl	49	199,080		
Iron as Fe	0.36	13.0		
Manganese as Mn				
Barium as Ba	0.0	0.0		
Turbidity - Elective	1.3	87.4		
Color as Pt	4.5	5.3		
Dissolved Solids at 103 deg. C				
Total Solids at 103 deg. C				
Total Solids, Calculated				
Temperature Degs. F.	58	116		
Carbon Dioxide, Calculated	10	29		
Dissolved Oxygen, Winkler	6.8	0.0		
Hydrogen Sulfide	0.0	1.0		
Resistivity OHMS/CC at 60 Degs. F.	1,650	5.8		
Total Suspended Oil		189		
Filterable solids removed by pressure millipore filter test	0.85 3,785 ml	81.8 1,850 ml		

All Results Reported As Parts Per Million

Additional Determinations And Remarks	Theoretical Compatible	Actual
Equal Mixture of Waters	Turbidity, ppm	Turbidity, ppm
Supply water & Produced water	BEFORE EXAMINER UTZ	31.9
	OIL CONSERVATION COMMISSION	
	EXHIBIT NO. 14	
Letter of recommendation attached.	CASE NO. 3726	

BY

Waylan C. Martin, M. A.

Martin Water Laboratories  
WATER CONSULTANTS SINCE 1953  
BACTERIAL AND CHEMICAL ANALYSES  
P. O. BOX 468      PHONE W13-3234  
MONAHANS, TEXAS 79756

To: Mr. H. E. Aab  
P. O. Box 730  
Hobbs, New Mexico

Laboratory No. B36533  
Samples received 3-16-65  
Results reported 3-23-65

Company: Skelly Oil Company  
County: Eddy, N. M.  
Field:  
Lease: Dow Unit

Source of samples and date taken:

- #1. Raw water - taken from Caprock Water Co. line at valve near plant. 3-16-65  
#2. Produced water - taken from heater-treater. 3-16-65

	#1	#2
Iron bacteria . . . . .	Not detected	Not detected
Sulfur bacteria . . . . .	73	Not detected
Sulfate-reducing bacteria . . . . .	Not detected	Not detected
Other aerobes . . . . .	3,900	20
Other anaerobes . . . . .	280	110
Fungi (& aciduric bacteria) . . . . .	2	Not detected
Algae . . . . .	Not detected	Not detected
Protozoa . . . . .	Not detected	Not detected
Total count . . . . .	4,255	130
pH. . . . .	7.5	7.4
Temperature . . . . .	58	116
Chlorine residual . . . . .	0.0	0.0

Note: All numerical results are reported as the number of cells per cubic centimeter of the sample as determined by plate counts; except iron, algae, and protozoa, which are determined microscopically.

Remarks: Letter of recommendation attached.

*W. C. Martin*  
Waylan C. Martin, M. A.