

CASE 3566: Application of WM. A.
AND EDWARD R. HUDSON for a water-
flood expansion, Eddy County.

CASE No.
3566

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

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

August 21, 1967

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

Dear Sir:

O Reference is made to Commission Order No. R-3230, entered in Case No. 3566, approving the expansion of the Hudson and Hudson Puckett Waterflood Project.

P Additional injection is to be through the 10 newly authorized water injection wells which shall be equipped as follows:

Y In the case of old wells such as Nos. 2, 5, 7, 9, and 11, which all have 7-inch casing set at the top of the pay, liners shall be run through the pay and tubing and packers set in the upper portion of the liner. In the case of newer wells which have casing set through the pay, injection shall be through tubing. In the event more than one zone is placed on selective injection in one of these newer wells, tubing and packers shall be run and injection of fresh water only will be permitted down the casing-tubing annulus.

In accordance with Mr. Ralph Gray's letter of June 22, 1967, and several subsequent telephone conversations between him and Mr. Dan Nutter of this office, written confirmation is hereby given of the authority for Hudson and Hudson to inject down the casing in the older wells for a maximum of 6 months in order to obtain partial reservoir fill-up prior to running the liners and perforating. This will permit obtaining injectivity profiles and should also help to prevent cement loss in cementing the liners.

Please advise this office in the event fill-up has not been obtained or if the liners have not been run by January 1, 1968.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

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Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Santa Fe, New Mexico
August 21, 1967

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 1780 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

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 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/DSN/ir

cc: Oil Conservation Commission - Artesia, New Mexico
U. S. Geological Survey - Artesia, New Mexico
Mr. Frank Irby, State Engineer Office, Santa Fe, N. Mex.

C
O
P
Y

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

May 9, 1967

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

Re: Case No. 3566
Order No. R-3230
Applicant:
Hudson & Hudson

Dear Sir:

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

Very truly yours,

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

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC X
Artesia OCC X
Aztec OCC
State Engineer X

Other

RALPH L. GRAY
PETROLEUM ENGINEERING - PRODUCTION
CONSULTANT
P. O. BOX 198
ARTESIA, NEW MEXICO

June 22, 1967

MAIN OFFICE

'67 JUN 23 AM 8 13

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

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

Dear Sir:

A short time ago William A. & Edward R. Hudson filed an application with the Oil Conservation Commission for expanding their waterflood project in the Maljamar Pool to their Puckett "B" lease. This expansion program was approved by your Order No. R-3230. As stated in our testimony, the program for converting Puckett "B" #2, 7, 9 and 11 includes cleaning these wells out, running Gamma Ray-Sonic surveys and then cementing $4\frac{1}{2}$ " liners throughout the open hole, perforating the pay zones and setting packers in the upper portion of the $4\frac{1}{2}$ " liners.

We wish permission to deviate slightly from this program as outlined at the hearing. After running the Gamma Ray-Sonic surveys, we would like to inject water into the open hole sections for a relatively short period of time until we get a small pressure build-up in the bore hole. We will then run flow meter surveys in order to determine what intervals are taking water. It is desired to perform this testing before the liners are run in order to supplement information that we will obtain by logging. The amount of water that we propose to inject before running the flow meter is difficult to state at this time, but the injection would only be temporary. After this information is obtained, we will then proceed with the normal program of cementing liners throughout the open hole and completing the conversion as previously stated in our testimony.

We were not certain whether your approval would be needed on this preliminary work but your authorization is being requested so that there will be no chance for a misunderstanding.

Yours very truly,


REGISTERED PETROLEUM ENGINEER.

cc: New Mexico Oil Conservation Commission
Attention: Mr. W. A. Gressett
Artesia, New Mexico

Continental Oil Company
Attention: Mr. L. P. Thompson, Superintendent
Hobbs, New Mexico

William A. & Edward R. Hudson

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. 3566
Order No. R-3230

APPLICATION OF WILLIAM A. AND
EDWARD R. HUDSON FOR A WATER-
FLOOD EXPANSION, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 26, 1967,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of May, 1967, 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 applicants, William A. and Edward R. Hudson,
seek permission to expand their Puckett Waterflood Project in
the Maljamar Pool by the injection of water into the Grayburg-
San Andres formations through ten additional wells in Sections
24 and 25, Township 17 South, Range 31 East, NMPM, Eddy County,
New Mexico.

(3) That the applicants further seek an administrative
procedure whereby said project could be expanded to include
additional lands and injection wells in the area of the said
project as may be necessary in order to complete an efficient
injection pattern; that said administrative procedure should
provide for administrative approval for conversion to water
injection in exception to the well response requirements of
Rule 701 E-5 of the Commission Rules and Regulations.

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CASE No. 3566
Order No. R-3230

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

(5) That the proposed expansion of the Puckett Waterflood Project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(6) 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; provided however, that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection.

IT IS THEREFORE ORDERED:

(1) That the applicants, William A. and Edward R. Hudson, are hereby authorized to expand their Puckett Waterflood Project, Maljamar Pool, by the injection of water into the Grayburg-San Andres formations through the following-described wells in Township 17 South, Range 31 East, NMPM, Eddy County, New Mexico:

<u>WELL</u>	<u>NO.</u>	<u>UNIT</u>	<u>SECTION</u>
Puckett "B"	2	P	24
Puckett "B"	5	N	24
Puckett "B"	7	B	25
Puckett "B"	9	H	25
Puckett "B"	11	P	25
Puckett "B"	12	J	25
Puckett "B"	14	D	25
Puckett "B"	16	F	25
Puckett "B"	18	L	25
Puckett "B"	20	N	25

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

PROVIDED HOWEVER, that the Secretary-Director of the Commission may approve expansion of the Puckett Waterflood Project to include such additional lands and injection wells in the area of said project as may be necessary to complete an efficient water injection pattern; that the showing of well response as required

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CASE No. 3566
Order No. R-3230

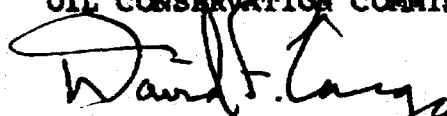
by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection.

(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.

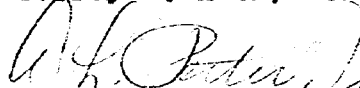
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



DAVID F. CARGO, Chairman



GUYTON B. HAYS, Member



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



esr/



18 AM 7 49

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

April 17, 1967

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

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

Dear Mr. Porter:

Reference is made to the application of W. A. and E. R. Hudson which seeks permission of the Oil Conservation Commission to expand their existing waterflood project on their Puckett lease in the Maljamar Pool in Eddy County, by converting 10 wells in Sections 24 and 25, T. 17 S., R. 31 E., to water injection. The application states that water will be purchased from Double Eagle Water Company which is fresh water from their supply system, but does not state whether produced water will be re-injected. I have found the following additional deficiencies in the application:

1. There is no indication as to where the packers will be set in any of the wells.
2. No indication of use of a packer in the Puckett "B" #12 is indicated and the size of the production casing is not given and the quality of cement is not given for either of the casing strings.
3. By perforations above the packer indicated on the diagrammatic sketch, it appears that Puckett "B" #14 is intended to be a dual injection well. This is the only one showing perforations above the packer, but it would lead to the question as to whether all of the wells are to be dual injectors.
4. The diagrammatic sketch for Puckett "B" #18 indicates that a packer will be set if the Grayburg interval is perforated, but does not state where the packer will be set.

Mr. A. L. Porter

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April 17, 1967

5. No packer is indicated for Puckett "B" #20.

FEI/ma
cc-Jason Kellahin

Yours truly,

S. E. Reynolds
State Engineer

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

Case 3566

Heard 4-25-67

Rec. 9-27-67

1. Grant Hudson & Hudson permission to expand their Puckett waterflood by converting 10 wells to injection in sections 24 & 25 of 17S, R31E as follows:

Hudson & Hudson - Puckett 'B' No. 5 ✓ N Sec. 24

✓ ✓ ✓ No. 2 ✓ P ✓ 24

✓ ✓ ✓ No. 7 ✓ B ✓ 25

✓ ✓ ✓ No. 14 D ✓ ✓

✓ ✓ ✓ No. 16 F ✓ ✓

✓ ✓ ✓ No. 9 ✓ H ✓ ✓

✓ ✓ ✓ No. 12 S ✓ ✓

✓ ✓ ✓ No. 18 L ✓ ✓

✓ ✓ ✓ No. 20 N ✓ ✓

✓ ✓ ✓ 11 ✓ P ✓ ✓

Grant Admin. approval for future expansions.

Shirley J. [Signature]

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Docket No. 12-67

April 26, 1967 Examiner Hearing

CASE 3565: Application of Jomar Industries, Inc. for a non-standard oil proration unit, several non-standard locations, temporary exception to Rule 307, and capacity allowables, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill 64 oil wells at non-standard locations on a non-standard oil proration unit comprising the S/2 NW/4 SE/4 and the N/2 SW/4 SE/4 of Section 30, Township 18 South, Range 33 East, Lea County, New Mexico, for production from the Ogallala formation. Said wells would be drilled to a density of four wells to each 2.5 acres and would be no nearer than 82.5 feet to the outer boundary of the unit and no nearer than 165 feet to another well producing from the same formation. Applicant also seeks a temporary exception to Rule 307 for each well to permit utilization of a vacuum-type drilling unit during the drilling and completion operation. Applicant further seeks authority to produce the wells at capacity even though the aggregate production from said wells exceeds the 40-acre normal unit allowable.

CASE 3566: Application of William A. and Edward R. Hudson for a waterflood expansion, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to expand their Puckett Waterflood Project, Maljamar Pool, by the injection of water into the Grayburg-San Andres formations through 10 wells in Sections 24 and 25, Township 17 South, Range 31 East, Eddy County, New Mexico. Applicant further seeks an administrative procedure for future expansion of said project.

ir/

CASE 3559: Application of BTA Oil Producers for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 80-acre proration units.

CASE 3560: Application of Phillips Petroleum Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Hat Mesa Unit Area comprising 7874 acres, more or less, of Federal and State lands in Township 21 South, Ranges 32 and 33 East, Lea County, New Mexico.

CASE 3561: Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Meyer B-4 Well No. 19 located in Unit O of Section 4, Township 21 South, Range 36 East, to produce oil from an undesignated Paddock pool and from the Oil Center-Blinebry Pool through parallel strings of tubing.

CASE 3562: Application of Continental Oil Company for a dual completion, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Table Mesa Well No. 29 in Unit H of Section 9, Township 27 North, Range 17 West, San Juan County, New Mexico, to produce gas from the Table Mesa-Pennsylvanian "C" Gas Pool and from an undesignated Mississippian gas pool through the casing-tubing annulus and 2-inch tubing, respectively.

CASE 3563: Application of Skelly Oil Company for an amendment to the Southeast New Mexico Gas Proration Rules and Regulations. Applicant, in the above-styled cause, seeks an amendment to Order No. R-1670, as amended, Rules and Regulations for Prorated Gas Pools, Lea, Eddy, Chaves and Roosevelt Counties, New Mexico, to provide an administrative procedure whereby wells ordered shut-in for extended periods to make up accumulated overproduction could be permitted to produce up to 500 MCF each month during such shut-in.

CASE 3564: Application of Maxwell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Taylor Unit Area comprising 640 acres, more or less, of federal lands in Sections 12 and 13, Township 18 South, Range 31 East, Eddy County, New Mexico.

Docket No. 12-67

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 26, 1967

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. Utz, Examiner,
or Daniel S. Nutter, Alternate Examiner:

- - -
- CASE 3554: Application of Coastal States Gas Producing Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Flying "M" San Andres Unit Area comprising 4080 acres, more or less, of State, Federal and Fee lands in Township 9 South, Range 33 East, Lea County, New Mexico.
- CASE 3555: Application of Coastal States Gas Producing Company for a pressure maintenance expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand the pressure maintenance project in its Flying "M" San Andres Unit by the injection of water into the San Andres formation through 8 injection wells located in Sections 15, 16, 17, 20, 22, 28, 29 and 33, Township 9 South, Range 33 East, Lea County, New Mexico. Applicant further seeks the promulgation of special rules for said project, including provision for future expansion.
- CASE 3556: Application of Southland Royalty Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a proposed Devonian gas test well at an unorthodox gas well location 660 feet from the North and West lines of Section 12, Township 25 South, Range 35 East, Lea County, New Mexico. The well would be dedicated to the N/2 of said Section 12.
- CASE 3557: Application of Gulf Oil Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Inbe-Pennsylvanian Pool underlying the E/2 SW/4 of Section 13, Township 11 South, Range 33 East, Lea County, New Mexico.
- CASE 3558: Application of BTA Oil Producers for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Lowe 671 Ltd. Well No. 1 as an exception to the well location requirements of Order No. R-2929 for the Nonombre-Upper Pennsylvanian Pool and the Nonombre-Lower Pennsylvanian Pool, Lea County, New Mexico. The proposed well would be located 560 feet from the North and West lines of Section 5, Township 14 South, Range 34 East.

APR 7 1967 PH 1 15

BEFORE THE
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
WILLIAM A. AND EDWARD R. HUDSON TO
EXPAND THE PUCKETT WATERFLOOD
PROJECT, MALJAMAR POOL, EDDY COUNTY,
NEW MEXICO

Case 3566

A P P L I C A T I O N

Come now WILLIAM A. and EDWARD R. HUDSON, and apply
to the Oil Conservation Commission for permission to expand
the existing waterflood project on their Puckett lease,
Maljamar Pool, Eddy County, New Mexico, as heretofore approved
by the Commission, and in support thereof would show the
Commission:

1. Applicant proposes to expand its present
waterflood project by the conversion of ten presently pro-
ducing wells to water injection wells, as follows:

Puckett "B" #2 - Unit P, Sec. 24-17S-31E
 #5 - Unit N, Sec. 24-17S-31E
 #7 - Unit B, Sec. 25-17S-31E
 #9 - Unit H, Sec. 25-17S-31E
 #11 - Unit P, Sec. 25-17S-31E
 #12 - Unit J, Sec. 25-17S-31E
 #14 - Unit D, Sec. 25-17S-31E
 #16 - Unit F, Sec. 25-17S-31E
 #18 - Unit L, Sec. 25-17S-31E
 #20 - Unit N, Sec. 25-17S-31E

2. There is attached hereto, and made a part of
this application, a plat showing the location of present in-
jection wells in the project, the location of proposed addi-
tional injection wells, and the location of all other wells
within the area, together with ownership, to the best of
applicant's knowledge and belief.

DOCKET MAILED

Date *4-14-67*

3. Attached hereto, and made a part of this application, are diagrammatic sketches of the proposed injection wells, showing casing strings, diameters of casing, setting depths, cement tops, and proposed program for recompletion of said wells for injection purposes.

4. Applicant will inject water into the Grayburg-San Andres formations at depths ranging from approximately 3600 feet to approximately 4000 feet.

5. Water will be purchased from Double Eagle Water Company, which is fresh water from their supply system.

6. It is estimated that approximately 300 barrels of water per well, per day, will be injected, with pressures ranging up to 1800 psi.

7. To facilitate further expansion of this project, applicant requests establishment of an administrative procedure for future expansion of the project, and the conversion of producing wells to water injection.

8. By copy of this application, together with all attachments thereto, the office of the State Engineer, Capitol Building, Santa Fe, New Mexico, has been notified of this application.

WHEREFORE applicant prays that this matter be set for hearing before the Commission's duly appointed examiner, and that after notice and hearing as required by law the Commission enter its order approving the expansion of applicant's waterflood project, together with establishment of an administrative procedure for further expansion of said project in the event such expansion becomes necessary.

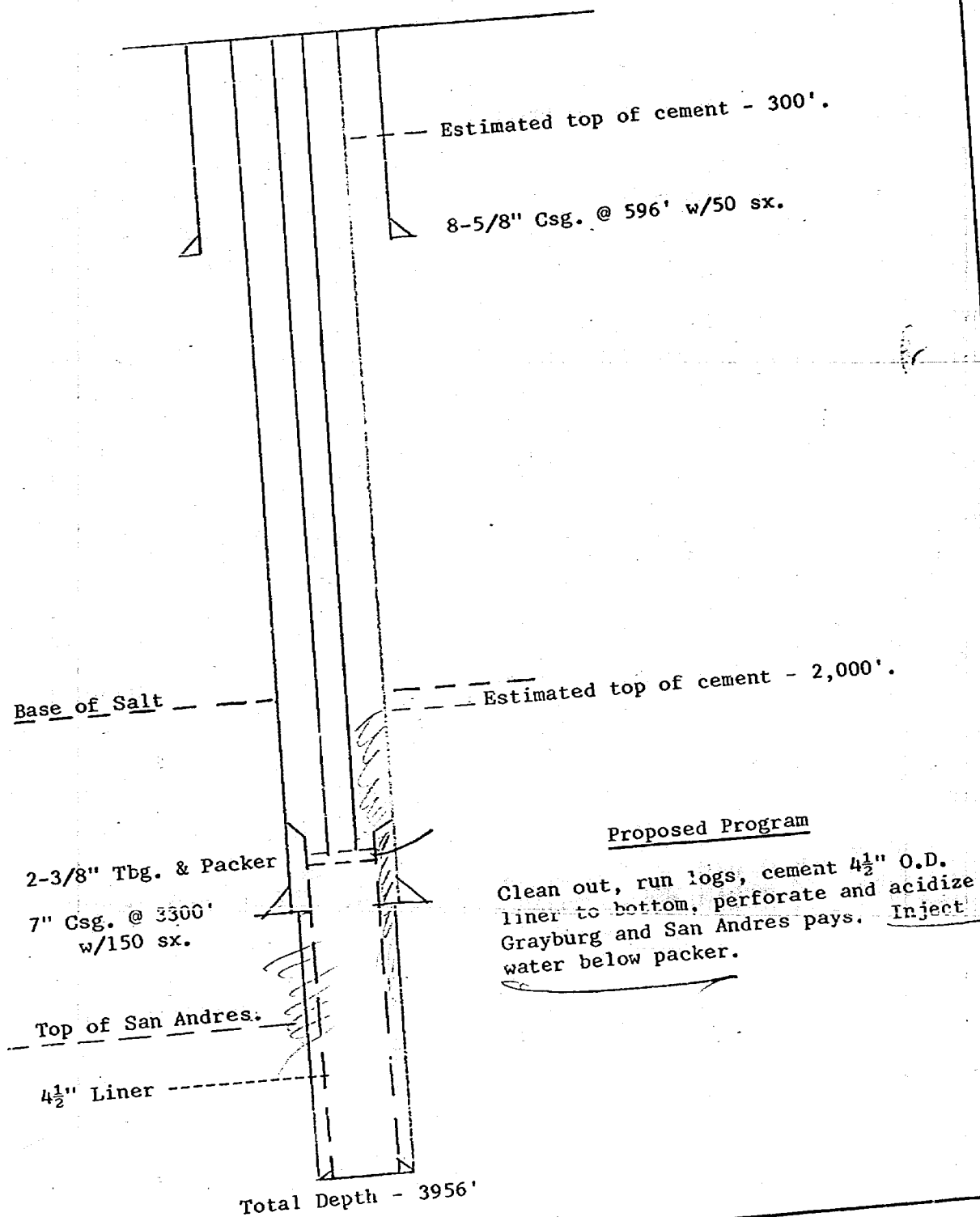
Respectfully submitted,

WILLIAM A. and EDWARD R. HUDSON

BY: Jaron W. Kellahin
Kellahin & Fox
Post Office Box 1769
Santa Fe, New Mexico
Attorneys for Applicant

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #2

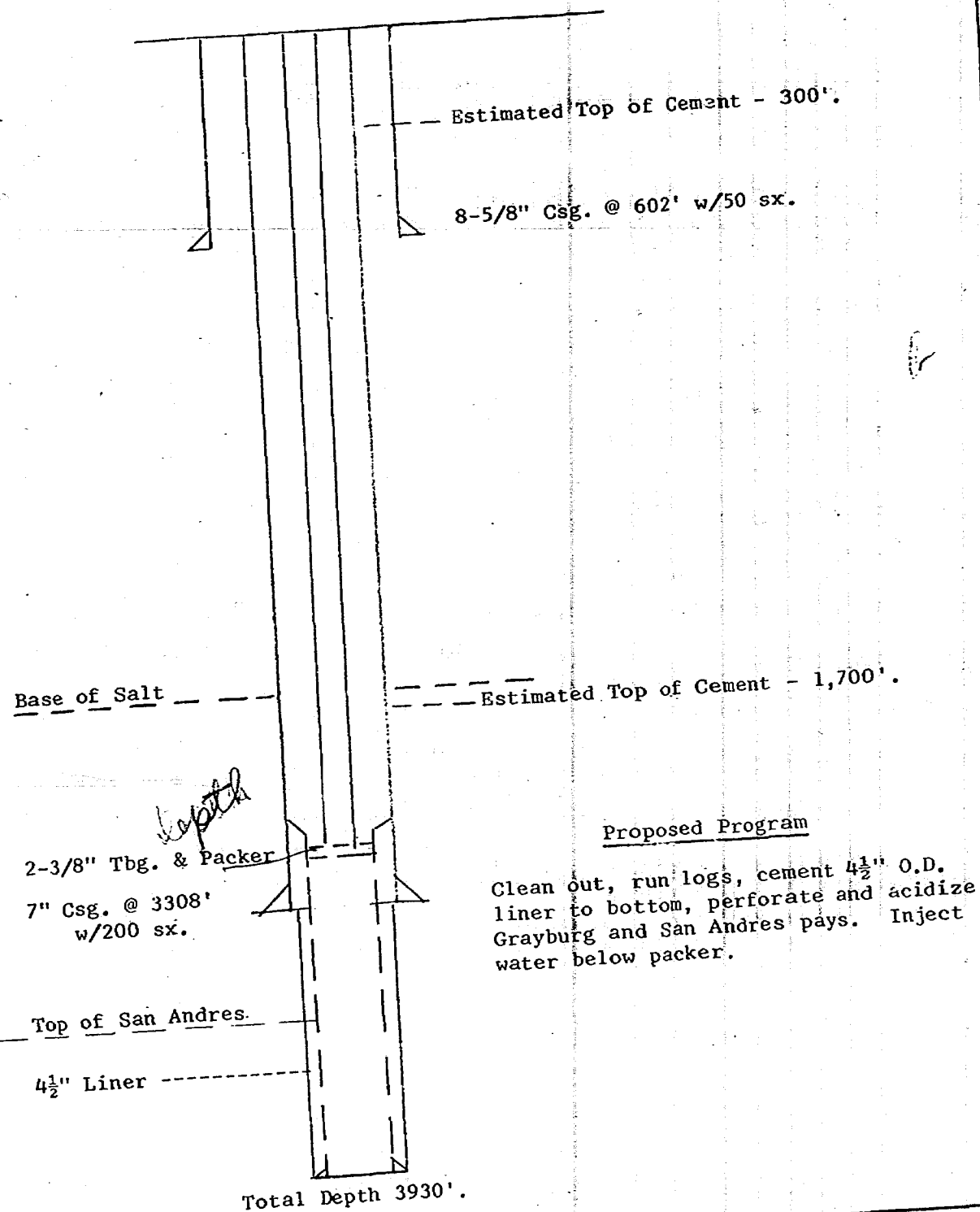
PROPOSED INJECTION WELL



RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #5

PROPOSED INJECTION WELL



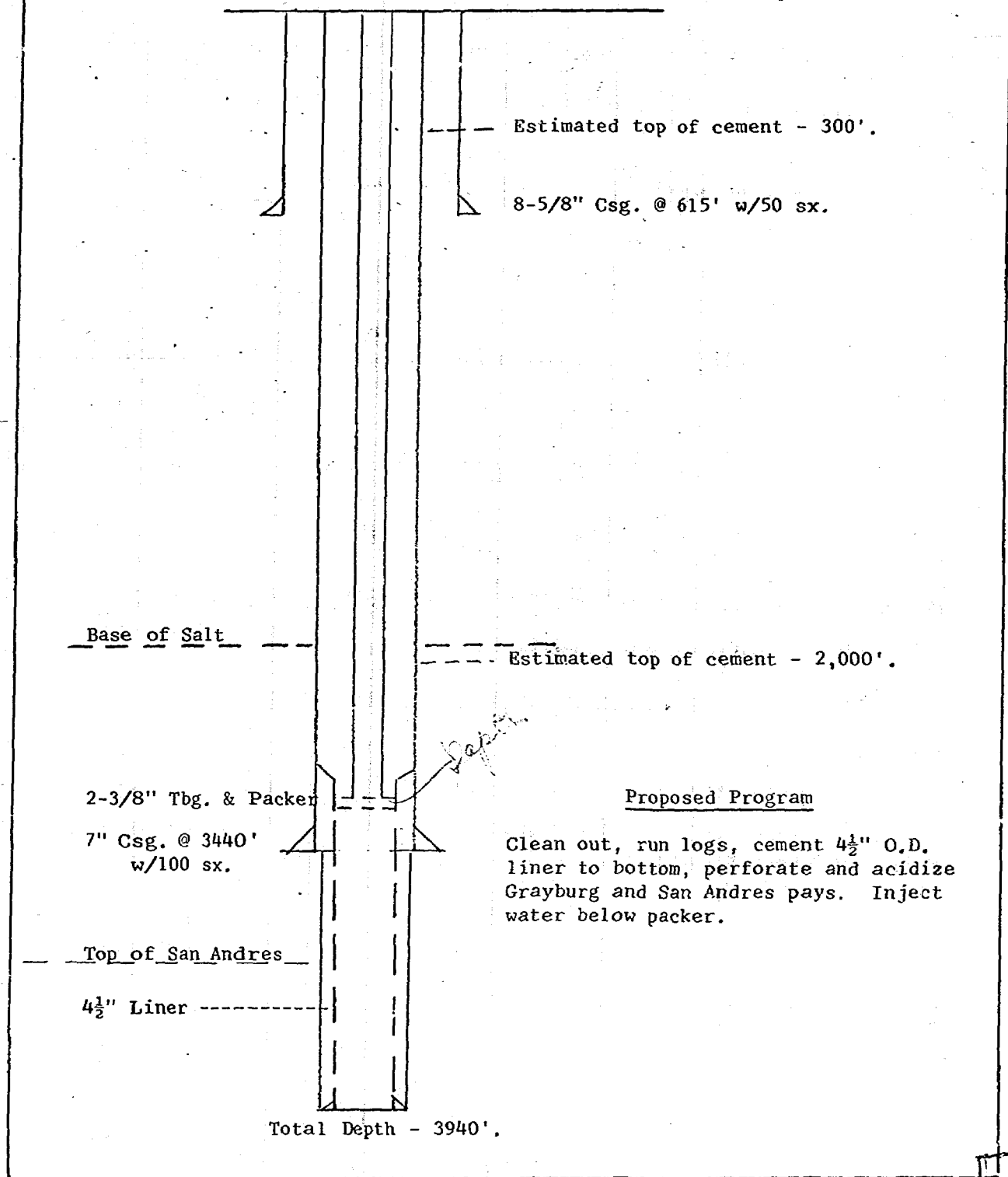
Proposed Program

Clean out, run logs, cement 4 1/2" O.D. liner to bottom, perforate and acidize Grayburg and San Andres pays. Inject water below packer.

RALPH L. GRAY
PETROLEUM ENGINEERING

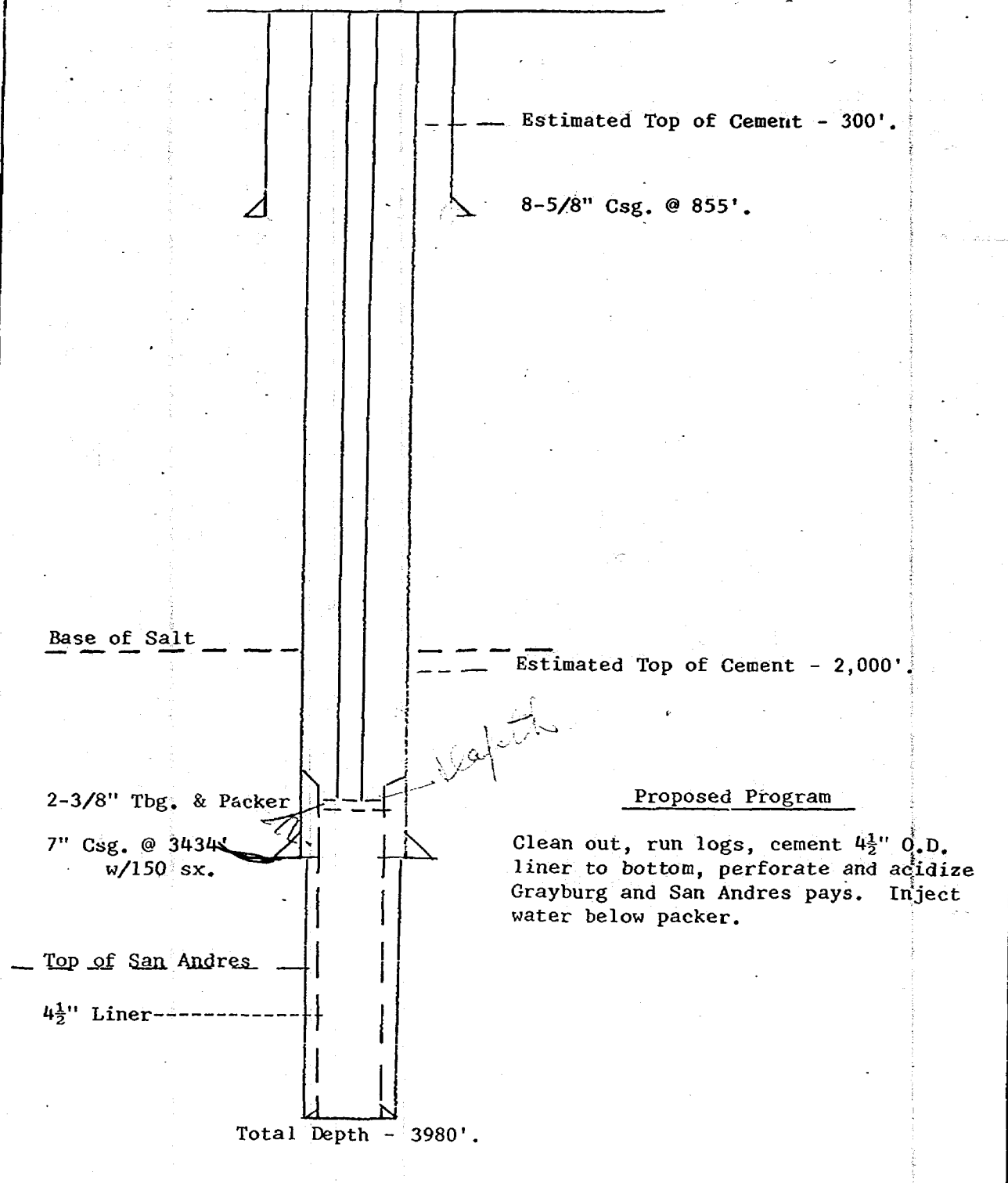
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #7

PROPOSED INJECTION WELL



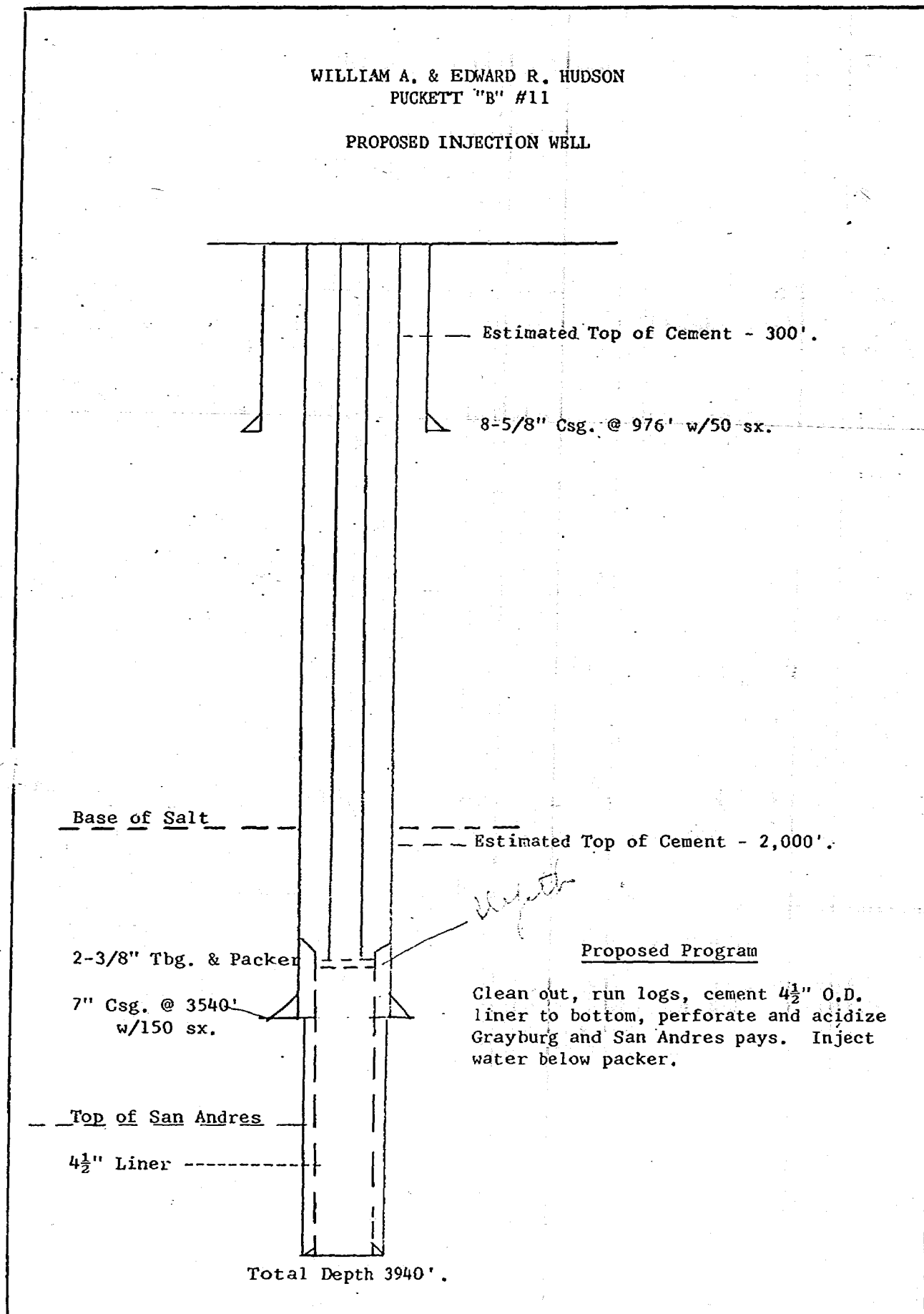
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #9

PROPOSED INJECTION WELL



WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #11

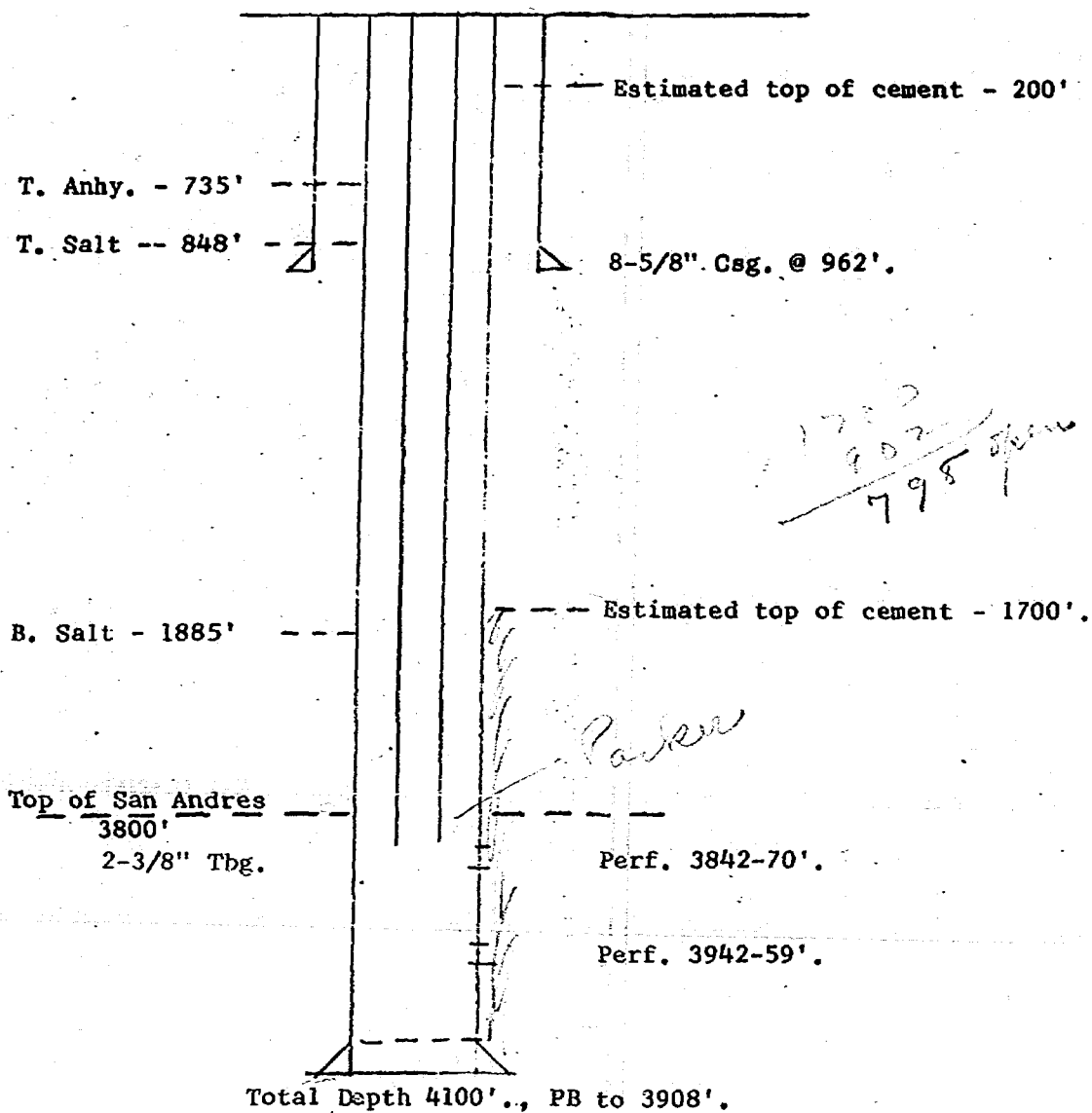
PROPOSED INJECTION WELL



WILLIAM A. & EDWARD R. HUDSON

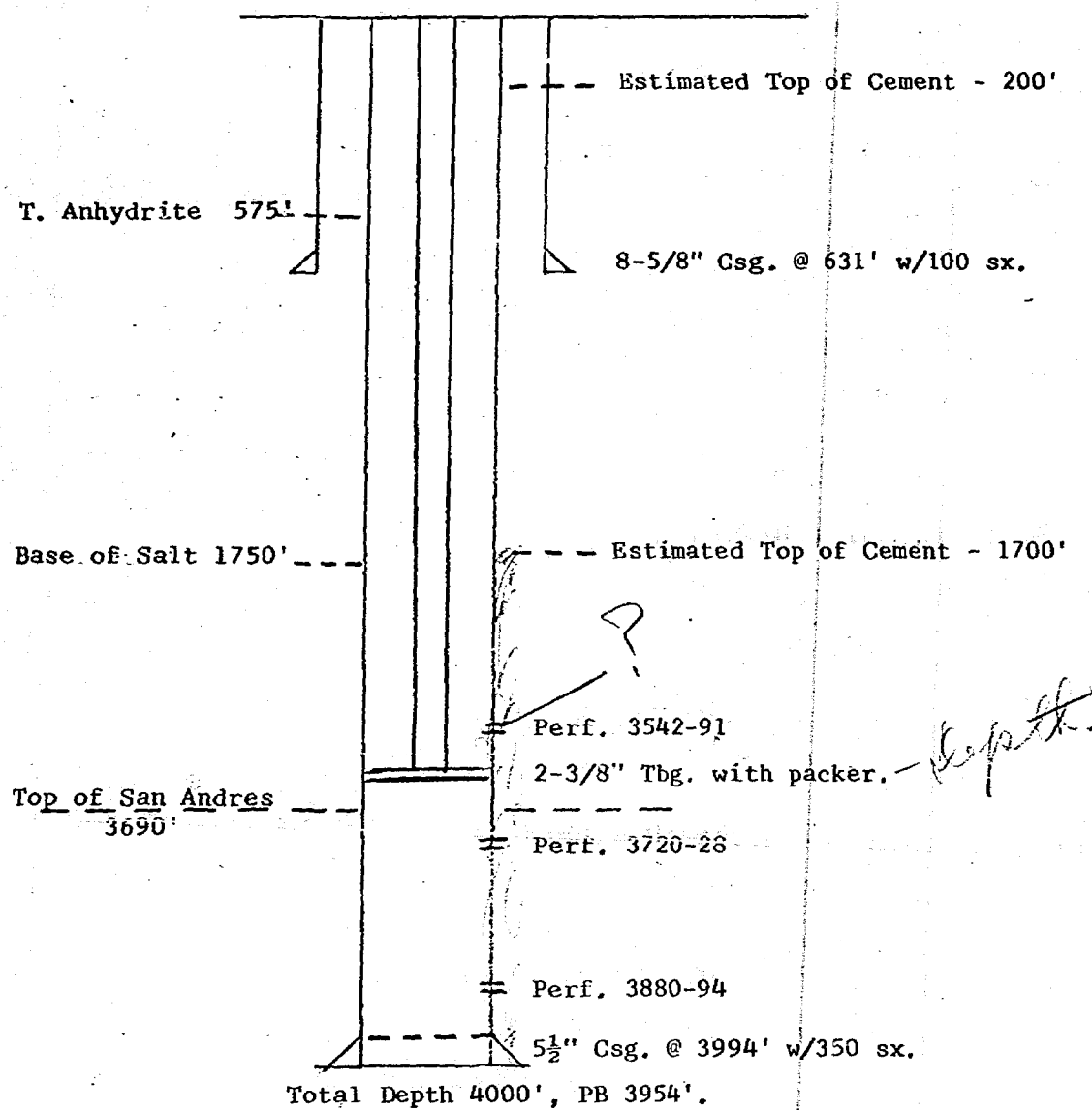
PUCKETT "B" #12

PROPOSED INJECTION WELL



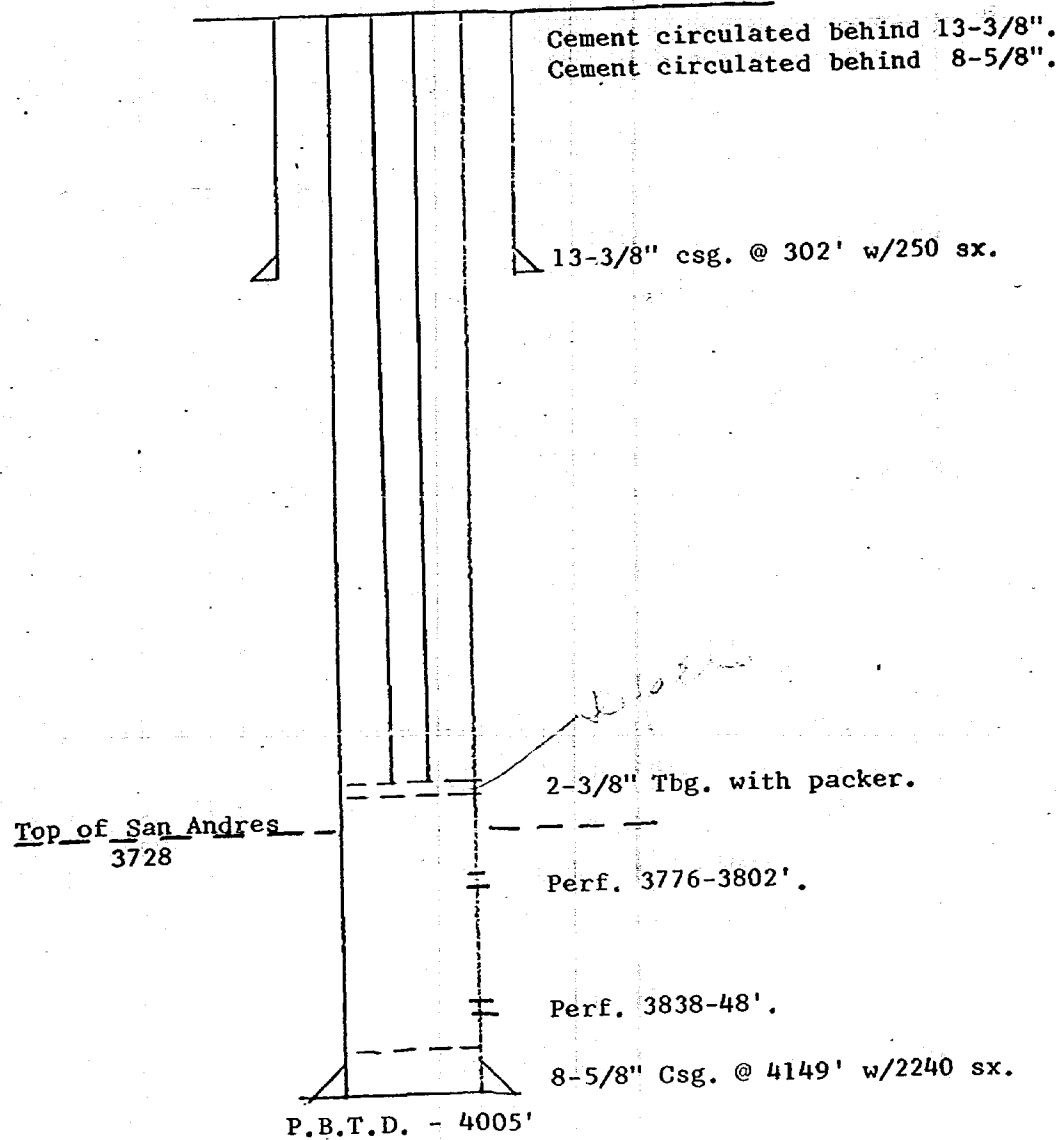
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #14

PROPOSED INJECTION WELL



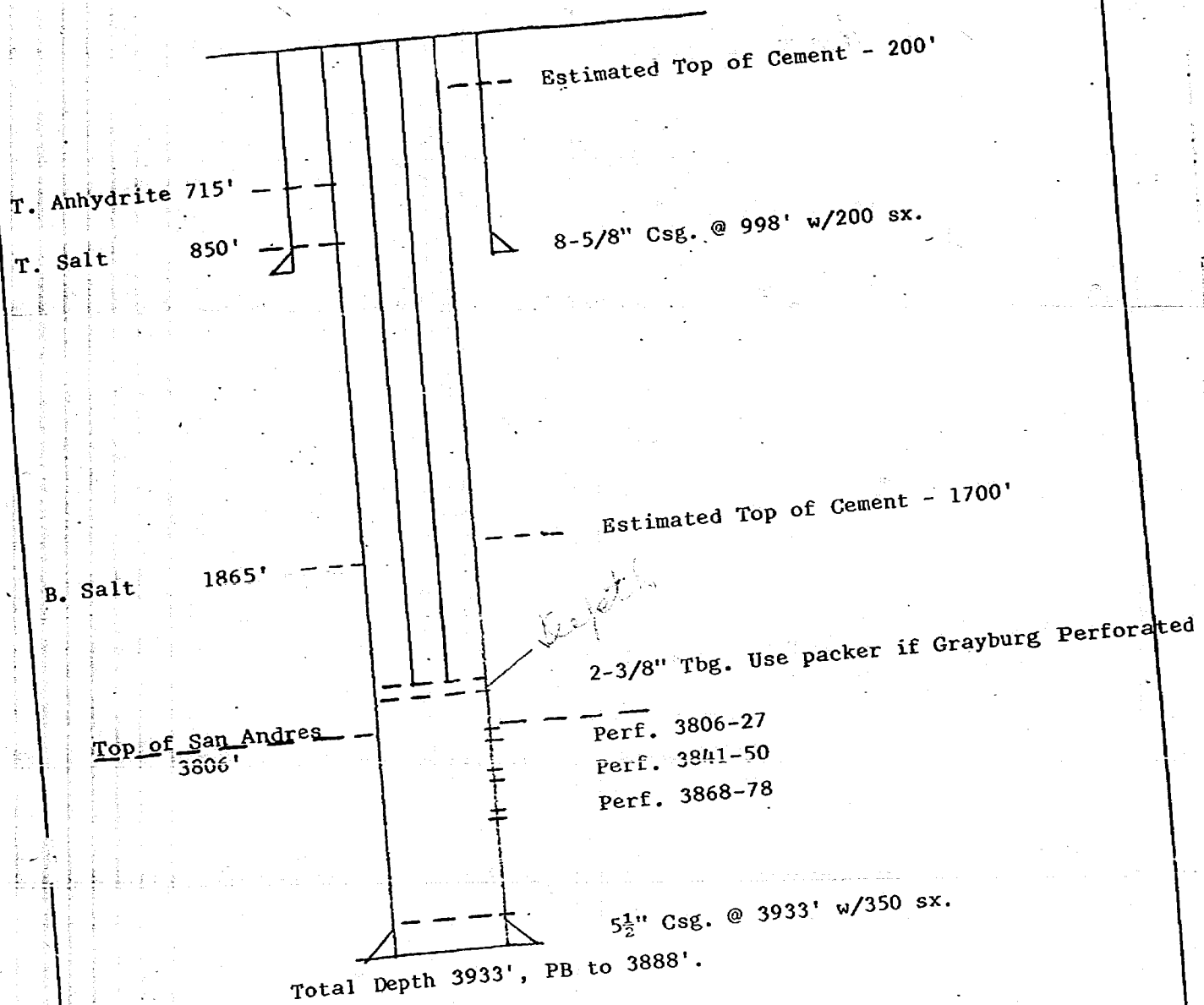
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #16

PROPOSED INJECTION WELL



WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #18

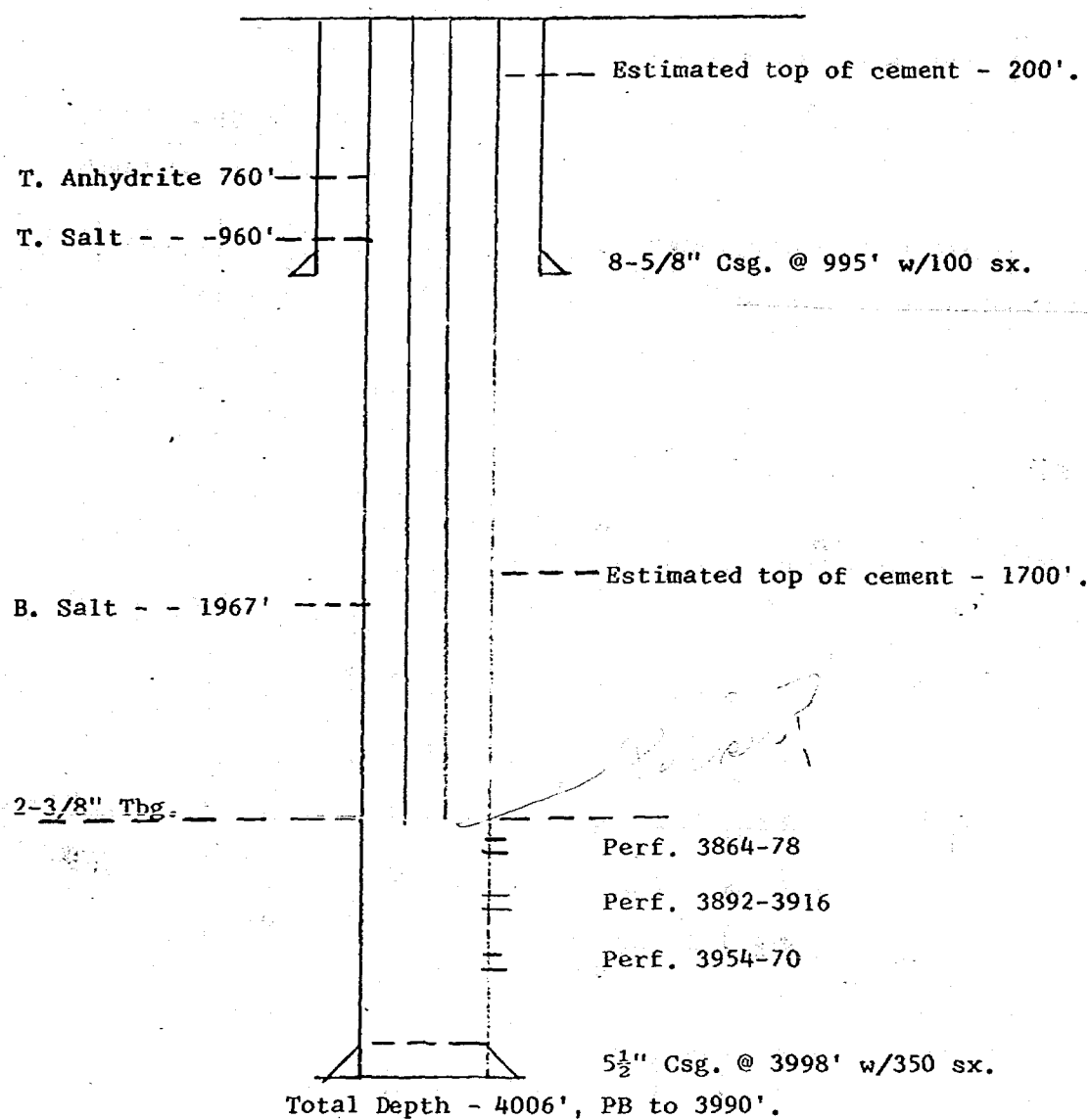
PROPOSED INJECTION WELL



RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #20

PROPOSED INJECTION WELL



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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-4491 • ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
EXAMINER HEARING

April 26, 1967

IN THE MATTER OF:

Application of William A. and Edward
R. Hudson for a waterflood expansion,
Eddy County, New Mexico.

Case 3566

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case 3566.

MR. HATCH: Case 3566, application of William A. and Edward R. Hudson for a water flood expansion, Eddy County, New Mexico.

MR. KELLAHIN: If the Commission please, Jason Kellahin of Santa Fe, representing the applicant. I have one witness I would like to have sworn, please.

(Witness sworn.)

MR. UTZ: Any other appearances? You may proceed.

MR. RALPH L. GRAY, called as a witness on behalf of the applicant, first having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Ralph L. Gray.

Q Mr. Gray what business are you engaged in?

A Consulting engineering.

Q As a consulting engineer, have you been employed by William A. and Edward R. Hudson in connection with Case 3566?

A Yes, sir.

Q Briefly state what is proposed by the Applicant in this case?

A The Applicant proposes to expand the water flood

project which is currently being conducted on their Puckett 'A' lease. It is proposed to ultimately inject water into ten additional wells.

Q Does the Applicant also ask for administrative procedure for further expansion of this project?

A Yes, sir.

(Whereupon, Applicant's Exhibit Number 1 was marked for identification.)

Q Now, referring to what has been marked as Exhibit Number 1, would you identify that exhibit, please?

A Exhibit Number 1 shows the present outline of the project area. That is designated by the cross-hatched symbol and it is marked "Project Area" on the map. It will be noted that the present project area includes the north half of the north half of Section 25 of 1731. This map also shows the present in-pit wells by the green coloring and the proposed expansion program, the proposed future injection wells and are indicated by the red marking on the map.

Q The map also shows the off-setting ownership, does it not?

A Yes, sir.

Q Is this expansion area off-set by a water injection program?

A Yes. Skelly Oil Company is currently engaged in

expanding their water flood project directly to the west of the Hudson property and the Continental Oil Company on their MCA unit is currently expanding their water flood project adjacent to the east of the Hudson property.

Q Now, do you have lease line agreements with the two off-setting operators?

A I believe that the Hudsons have actually signed the agreement with Continental, if not, they are very close to signing it. Skelly Oil Company has submitted a proposed lease line agreement on the east side of the property and we have tentatively come to an agreement on what the program will be along this lease line.

Q You have no doubt but what the lease line agreement will be achieved by both the off-setting operators?

A Yes, sir, I'm sure.

(Whereupon, Applicant's Exhibit Number 2 was marked for identification.)

Q Referring to what has been marked as Exhibit Number 2, would you identify that exhibit, please?

A Exhibit Number 2 has been prepared to show also the proposed injection wells. In addition, the wells on the Skelly property to the west, which we anticipate will be converted are indicated on this map by the red circles and the wells along the common Hudson-Continental boundary line are

also indicated by the red circles. These should conform with the programs that both companies have had applications on already.

Q What is the significance of the other information shown in the boxes under each well?

A This map also shows performance data for each of the producing wells and each of the injection wells on the Puckett 'A' lease.

Q Then, the figures in the boxes indicate the performance data on the wells, is that correct?

A Yes, sir, that's correct.

Q And, you have a further exhibit showing this, do you not, as to the project as a whole?

A Yes, sir.

(Whereupon, Applicant's Exhibit Number 3 was marked for identification.)

Q Now, referring to what has been marked as Exhibit Number 3, would you identify that exhibit, please?

A Exhibit Number 3 shows daily average oil and water production for each of the Puckett 'B' wells for the month of March, 1967. The average oil production per well was 7.9 barrels of oil per day, so it can be seen that these wells are definitely in the stripper stage of depletion.

This exhibit also shows the cumulative oil

production for each of these wells as of January 1st, 1967.

Q Now, this is in the area in which you are going to expand the flood?

A Yes, part of these wells are actually included within the present area, but we are just merely showing the entire Puckett 'B' lease on this exhibit.

(Whereupon, Applicant's Exhibits 4 through 13 were marked for identification.)

Q Now, referring to a series of exhibits which have been marked Exhibits Numbers 4 through 13, would you identify those exhibits, please?

A Exhibits 4 through 13 are diagramatic sketches of the proposed water injection wells. I would like to make some specific comments in regard to the insertion of these wells.

Q In that connection, did you receive a copy of a letter directed to Mr. A. L. Porter, signed on behalf of the State Engineer by Mr. Frank Irby?

A Yes, I did.

Q In connection with your comments on the Exhibits Numbers 4 through 13, would you also cover the items which have been mentioned in that letter, please?

A In Mr. Irby's letter, the number one comment that he had was that there is no indication as to where the packers

will be set in any of the wells. We don't show specific depths at which the packers will be set. We don't know, frankly, at this time exactly where they will be set, but as an example, Exhibit Number 4 shows the diagramatic sketch for the Puckett 'B' Number 2 well and the proposed program for converting this well to injection, provides for the cementing of the four and a half inch liner in this well, which will come up into the seven inch casing, which is the present production string and we indicate on the diagram that the packer will be set in the top part of the four and a half inch liner, so we feel that the purpose of the diagramatic sketch is to show approximately the procedure that we plan to use rather than showing specific depths.

Q Now, actually there will be no pressure on that casing in that particular well, will there?

A No, sir, not in the casing in the Puckett 'B' Number Two well.

Q Or, in any of the other wells in which you are running a liner, is that correct?

A That is correct. Now, there are two types of wells in this area, the old type in which the production string was seven inch and it was set way above the present pays and there is approximately three to four hundred feet of open hole section. In that type of well, we propose to cement these

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liners. The second type of well, we have, is in the newer wells, in which case the casing is usually five and a half and it was cemented to the bottom of the hole. In some of these cases we don't propose to use packers.

Q Now, would Exhibit Number 9 be an example of that type of well?

A Yes, sir, Exhibit Number 9 is a diagramatic sketch of the Puckett 'B' Number Twelve and this is one of these newer wells in which the five and a half casing is cemented to the bottom of the hole, and, we don't propose to use a packer in this well.

Q Now, is this a type of completion for an injection well that has been approved by this Commission in connection with your water flood project?

A Yes, sir, from the very initial hearing, this type of procedure has been approved by the Commission.

Q And that is one of the wells on which Mr. Irby commented, was it not, your Puckett 'B' Number Twelve?

A Yes. He had some other comments in his letter on the Puckett 'B' Number Twelve. He said the size of the production tracing was not given and the quantity of cement for either the casing strings and that was an oversight on our part. In typing these, well, that was left off and we have added that to Exhibit Number 9. So that, all of that

information is now shown.

Q Would you go ahead with your comments in regard to the completions on these injection wells?

A First of all, I would like to refer back to Exhibit Number 2, momentarily, and call your attention to the Puckett 'B' Number 5, which is located in the Southeast Quarter of the Southwest Quarter of Section 24. We are asking for authorization to convert this well to a water injection well, although we do not propose to immediately do that. We will inject water into the two injection wells that are shown as the Puckett 'B' Twenty-three and 'B' Twenty-one, just north of this well and then, at such time as this area is watered out, and watered to the extent of coming down to this Puckett 'B' Number Five well, well, then, at that time, we will convert that to a water injection well.

I would like to also comment that some of the older wells which includes the Puckett 'B' Number Two, Five, Seven, Nine and Eleven, have never had any type of electrical log run and in converting these old wells to injection wells, we propose to run logs at that time. Therefore, we won't know exactly where the completion intervals in this type of well will be until we actually run the surveys. Also, in our agreements with both Skelly Oil Company and Continental Oil Company, in converting the wells along these lease lines

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in accordance with our agreements, it will be necessary that we coordinate our completion procedure with these other people. They will have to agree as to what intervals will be perforated and so forth, so we are requesting a certain amount of flexibility in granting this authorization, which I think is normal anyhow, but certainly we need the flexibility in converting these wells to the point where we can decide the depth at which some of these liners will be actually cemented at a later date. For example, we may want to cement the liners above some of these shot holes which are present in the lower portion of the hole, rather than setting them clear to the bottom.

So, specifically, we are requesting flexibility in the depth at which these liners will actually be set, the perforated intervals that we will actually complete for injection, the exact depth at which these packers will be set in the cases where packers are to be used and also, we are specifically requesting that we be authorized to dually inject water into some of these wells, if that is indicated to be the program that each of the operators agree to at a later date.

Q Now, referring to what has been marked as Exhibit Number 10, does that indicate a proposed completion for injection into two different zones?

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dearnley-meier

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A It is not intended to. The reason that a packer has been shown for this installation is that we don't propose to inject water for the time being into the Grayburg formation in this area. At the present time, the Grayburg is open through the perforations of 3542 to 91.

Q Now, that is a perforation that is presently in the well bore?

A Yes, sir, it is presently open and the purpose of a packer in this case is to isolate the Grayburg perforation so that we will inject water only into the San Andres formation.

Q But, as to some of the wells, you do propose to inject by dual injectors in more than one zone, is this correct?

A Yes, sir, what I have in mind there is that in our discussions with Continental and Skelly, they have indicated that in some of these areas along these common lease lines, that they would like to see us inject water into the Grayburg formation, as well as the San Andres, but at the present time, we are only injecting water into the San Andres formation on our property, but in order to satisfy these other people, we have agreed that we would be willing to inject water into the Grayburg in some of these line wells in order to fit into the program that exists on their properties. So,

in cases where we are going to be injecting into the Grayburg and the San Andres on our leases, it is likely that we would prefer to control the injection separately and in some cases we might want to run two strings of tubing. We are not certain right at the moment. I mean, these are things that have to be worked out with these other people, too.

Q Now, as to the manner in which the wells are actually completed, you will file the appropriate report with this Commission showing where the packer is set and how the wells are completed, will you not?

A Yes, sir.

Q Referring to what has been marked as Exhibit Number 12, which relates to the Puckett the Number 18 well where it says, "two and three-eighths inch tubing use packer if the Grayburg is perforated." What is the significance of that?

A Well, this is a well that will be involved in a lease line agreement with Skelly Oil Company. This is a compensating off-set for their Lea Number 3 well, located in Section 26, which is shown with the red circle on Exhibit 2 and in the event that Skelly Oil Company requests us to perforate the Grayburg in this well, then, in that event, we would want to use a packer to segregate the Grayburg from the San Andres, so that we would be able to inject water separately into the

two formations.

Q That is the type of well you were just discussing?

A Yes, sir, in this particular case on Exhibit 12 we would actually inject water down the casing, if the Grayburg were open and we would inject water down the tubing into the San Andres.

Q Now, on the Exhibit Number 13, pertaining to the Pucket 'B' Number 20 well, there again, you will inject without the use of a packer, is that correct?

A Yes, that is correct, because we don't anticipate that the Grayburg will be open in this well.

Q Now, you have been using this system in other portions of the Puckett water flood project, haven't you?

A Yes, sir.

Q Have you encountered any difficulty in injecting down tubing with no packer?

A No, sir, we haven't encountered any difficulty at all and as we have, I believe, testified in some of the previous hearings, we run monthly tests on these wells to check for any possible casing failure. We have connections on the bradenheads of all the injection wells and once a month we go around and open those up and test for any casing failure. In the event that we would have a failure, well then, it would be noticed in making these tests.

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Q And have you encountered such a failure in the operation of this project?

A No, sir.

Q Does that complete your testimony as to the diagramatic sketches of the wells?

A Yes, I believe so.

(Whereupon, Applicant's Exhibits 14 through 18 were marked for identification.)

Q Now, referring to the series of exhibits marked 14 through 18, would you state what those are?

A On a few of the later wells that have been drilled, we have run electric logs and Exhibits 14 through 18 show a portion of the logs in each of these wells. These logs show the top of the San Andres. They show the present perforations and in some cases, there are bridge plugs in the wells and these are indicated on these exhibits.

Q But, you have not indicated on these exhibits the manner in which they will be completed for injection purposes, have you?

A No, sir, primarily because we still have to get with Continental and Skelly on some of these cases --

Q You are still not sure as to how they will be completed, is that correct?

A Right.

(Whereupon, Applicant's Exhibit Number 19 was marked for identification.)

Q Now, referring to what has been marked as Exhibit Number 19, will you identify that exhibit, please?

A Exhibit 19 is a series of curves which show the performance of the Puckett 'A' water flood project to date. The oil production is indicated by the solid heavy line and is so labeled "oil production". It will be noted that this curve is still increasing and has increased steadily from the beginning of the flood. At the present time the Puckett 'A' lease is producing approximately 14,000 barrels of oil per month. Whereas, under primary operation, our production would be roughly a thousand barrels per month.

Q If it would follow the normal decline which has been indicated?

A Correct. Yes, sir. Then Exhibit 19 also shows the curves for water injected, gas-oil ratio, average well head pressure and water produced.

Q Now, does that indicate that this is a successful flood for the Puckett lease?

A Yes, sir, it does.

Q Do you anticipate that you will get the same type of results in the expanded area?

A We hope so.

Q Is there any reason to believe you wouldn't?

A No, sir.

Q Were Exhibits 1 through 19 inclusive prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: I offer in evidence Exhibits 1 through 19.

MR. UTZ: Without objection, Exhibits 1 through 19 will be entered into the record of this case.

(Whereupon, Exhibits 1 through 19 were admitted into evidence.)

MR. KELLAHIN: That's all we have on direct examination, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Gray, on these wells that you are not proposing to put packers in, do you propose to put anything in the annulus or are you just going to leave them open?

A These wells will be open in the annulus. We have two thoughts in mind. First of all, let me state that these wells have five and a half 'J' fifteen and a half pound casing, which have a minimum yield pressure of 4,810 pounds. They should withstand 4,810 pounds before any yield starts

taking place. So, we are operating well under a safety factor of two on these things with our pressures. The reason that we don't run packers in some of these wells, first of all, a packer is a potential troublemaker. You might run a packer in a hole and three or four years later try to pull it out of the hole and you can't pull it and we have run into those things before. So, we don't want to use them unless we need to.

And then, secondly, there are cases where we like to reverse circulate down the casing and out the tubing on some of these water wells to remove deposition material that has come into the well bore which tends to clog the well bore up. In other words, it is a means of cleaning out some of these wells to reverse them out. So, with a packer in the hole you can't do that.

So, between the two thoughts, we don't like to run packers unless we feel that they are actually necessary for some specific reason.

Q How old is the casing on these wells that you don't intend to put packers in?

A These wells were drilled, the first of them were drilled about, let's see, 1960. If you will refer to Exhibit Number 19, you will notice that the oil production had a jump in the last part of 1960 and this jump continued into

1961 and the reason for that jump was the fact that these wells were drilled at that time as new five spot wells. So, the oldest of these wells are approximately seven years and the newest about four or five years.

MR. UTZ: Is there any other questions of the witness?

MR. KELLAHIN: I overlooked something here.

RE-DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Gray, what is the source of your water for injection into these wells?

A We will use fresh Ogallala water, which is being purchased from the Double Eagle Water Company.

Q And, you have water available, is this correct?

A Yes, sir.

Q And, that is fresh water?

A Yes, sir.

Q What volume of water do you anticipate you will inject?

A We are presently injecting about 4,000 barrels a day. Under the expanded program, we anticipate that our requirement will be approximately 6,800 barrels per day.

MR. KELLAHIN: That is all of the questions I have.

MR. UTZ: Mr. Hatch?

MR. HATCH: I have a letter from the State Engineer that Mr. Kellahin has already mentioned.

RE-CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Gray, how about produced water? Is it your intent to reinject used water, produced water?

A Our program on produced water is that, at such time as the volume became significant, well, then, we would start using the produced water. We don't like to mix the two waters. We have found by experience that there are a lot of troublesome factors involved when you do mix the two waters. In some cases they are not compatible in the formation. It tends to cause plugging problems, mixing of the two waters greatly increases the operating costs, because of the corrosion, additional corrosion involved and it is our intention that when the volume of produced water becomes significant or large enough to consider, well, then, we will create two injection systems.

We will dedicate a part of our system to the use of salt water and we will handle salt water separately from the fresh water system.

Q How much water do you think you would have to produce before you can afford to do this?

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A Well, one of these pumps normally will pump, oh, somewhere between a thousand and two thousand barrels of water per day. I mean, that is kind of a wide range, but by and large that is a range that normally you run through one pump. At the present time, we are producing about a hundred and fifty barrels of water per day from the Puckett 'A' lease. Well, you can see that a hundred and fifty barrels is too small to consider to dedicate one pump to, so it should be up, I would say, close to a thousand barrels a day, in order to utilize our present equipment. Now, there may be special cases where, for example, if this order comes out that we can't dump that water into surface pits, well, naturally, we are going to look for some other way to handle it and what we hope is that maybe we can find some kind of small capacity, high pressure pump that maybe we can utilize on smaller volumes. But, right at the present time, we would hate to have to put this 150 barrels of formation water into our present system.

MR. UTZ: Are there any other questions? You may be excused.

(Witness excused.)

MR. UTZ: Statements? The case will be taken under advisement and the hearing is adjourned.

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, JERRY POTTS, Notary Public, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

In Witness whereof, I have affixed my hand and notarial seal this 15th day of June, 1967.

Jerry Potts
 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. 3-566, heard by me on April 24, 1967.
Thurston, Examiner
 New Mexico Oil Conservation Commission

deanley-meier

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WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" LEASE - MALJAMAR POOL

	DAILY PRODUCTION March, 1967		CUMULATIVE OIL as of 1/1/67
	OIL	WATER	
Puckett "B" #1	8	8	79,515
#2	3	16	90,305
#3	7	28	87,971
#4	8	0	107,216
#5	21	0	77,565
#6	13	0	254,259
#7	8	0	142,548
#8	8	0	55,530
#9	4	2	76,324
#10	4	0	49,049
#11	3	0	52,803
#12	13	0	52,027
#13	12	2	54,058
#14	8	9	32,878
#15	10	45	35,365
#16	6	17	33,619
#17-19	16	3	60,617
#18	6	2	23,940
#20	<u>1</u>	<u>3</u>	<u>1,122</u>
	159	135	1,378,711

Average per Well 7.9 barrels oil per day.

BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

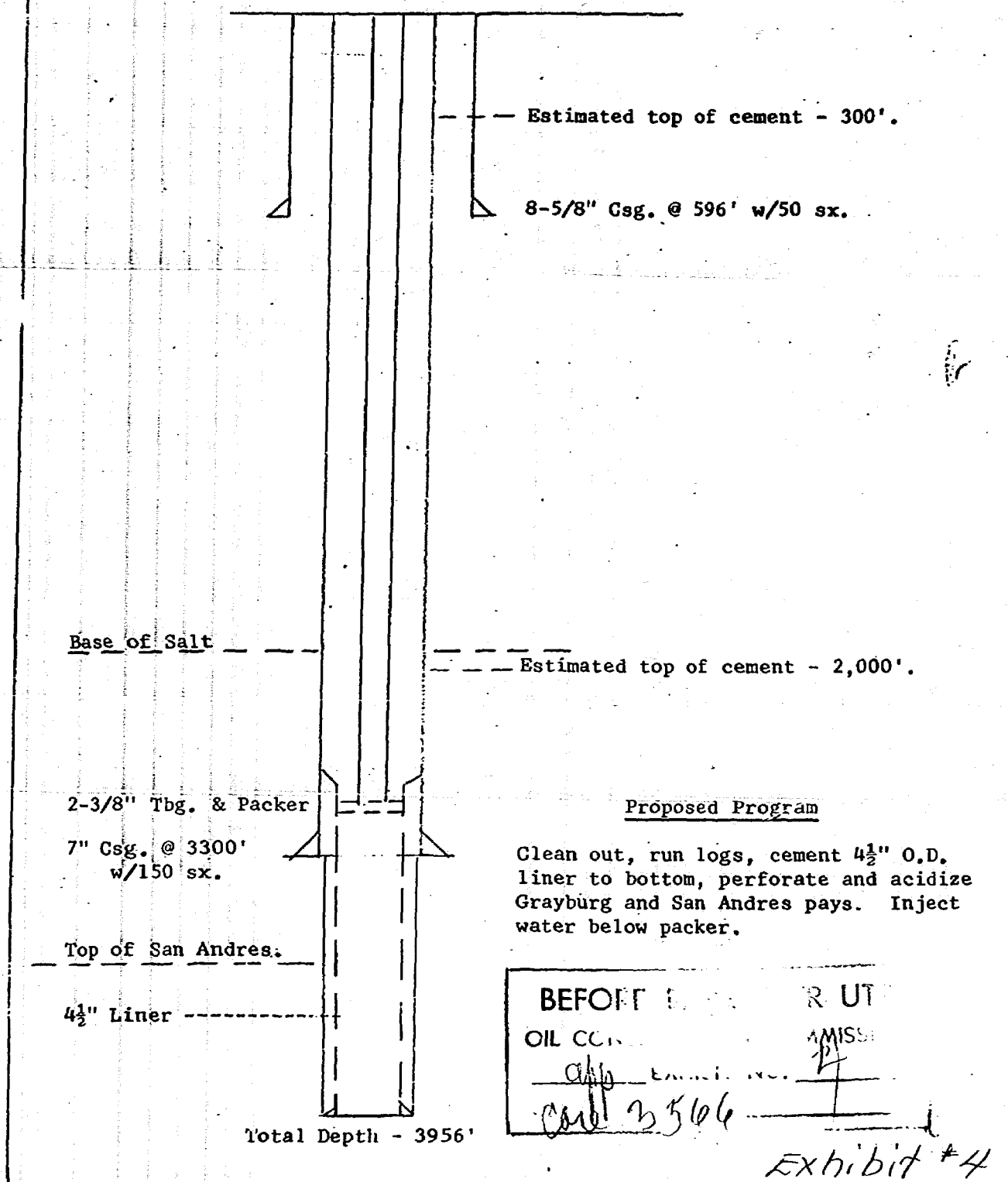
EXHIBIT NO. 3

CASE NO. 3566

Exhibit * 3

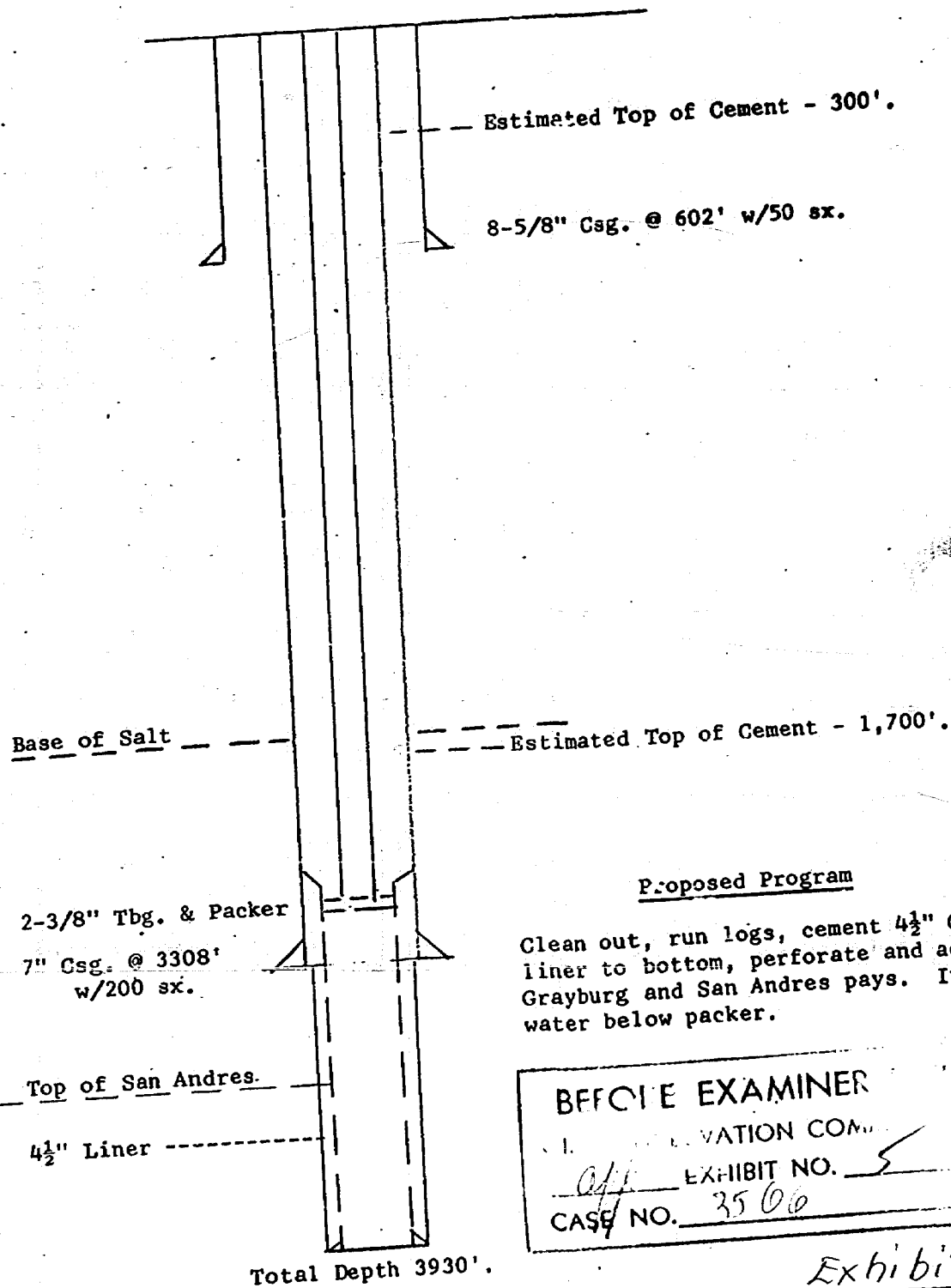
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #2

PROPOSED INJECTION WELL



WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #5

PROPOSED INJECTION WELL



Proposed Program

Clean out, run logs, cement 4 1/2" O.D. liner to bottom, perforate and acidize Grayburg and San Andres pays. Inject water below packer.

BECOME EXAMINER

STATE OF TEXAS

EXHIBIT NO. 5

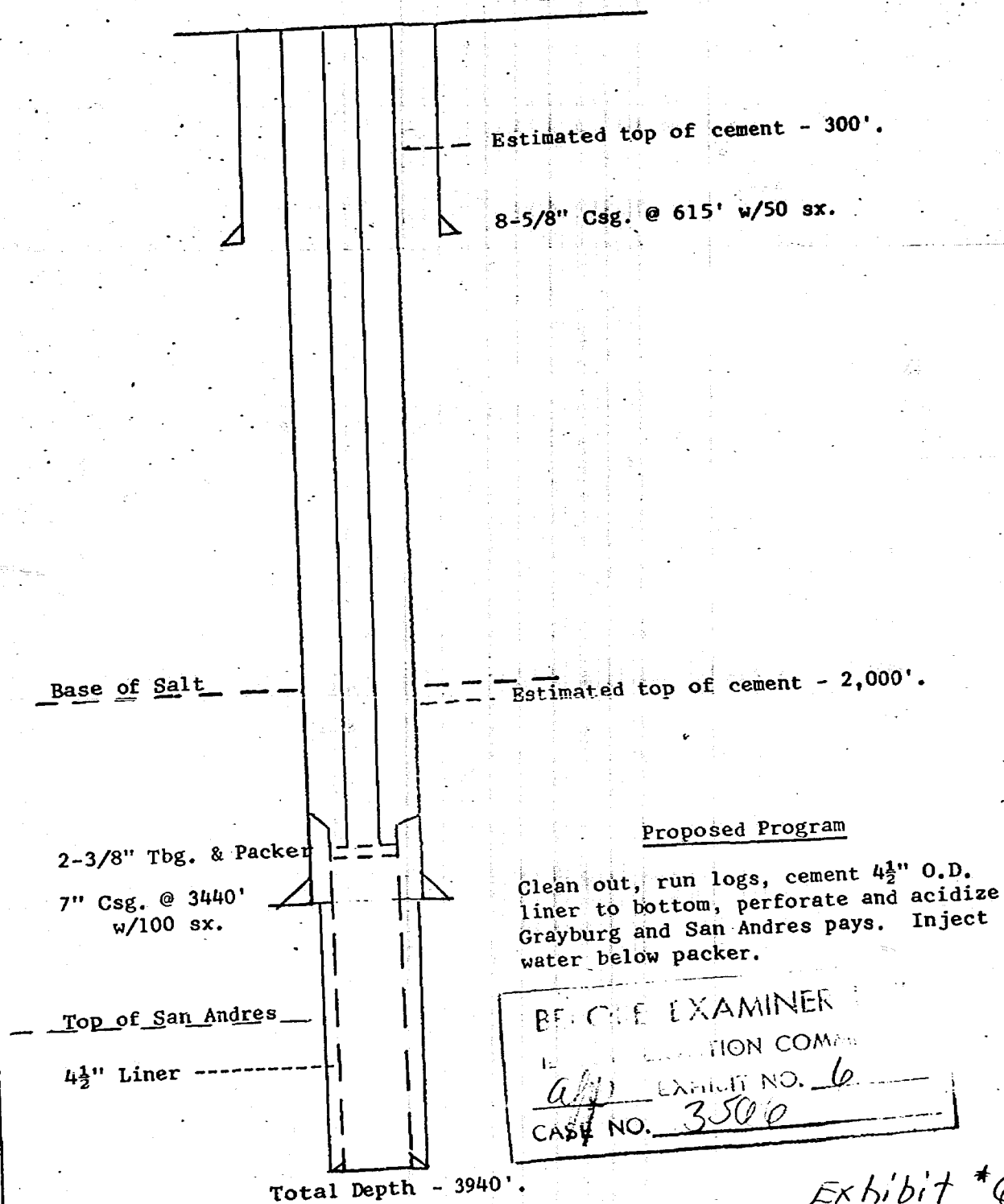
CASE NO. 3506

Exhibit *5

RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #7

PROPOSED INJECTION WELL



Proposed Program

Clean out, run logs, cement 4½" O.D. liner to bottom, perforate and acidize Grayburg and San Andres pays. Inject water below packer.

BEFORE EXAMINER

IN PRESENCE OF COMMISSIONER

APPROVED BY EXHIBIT NO. 6

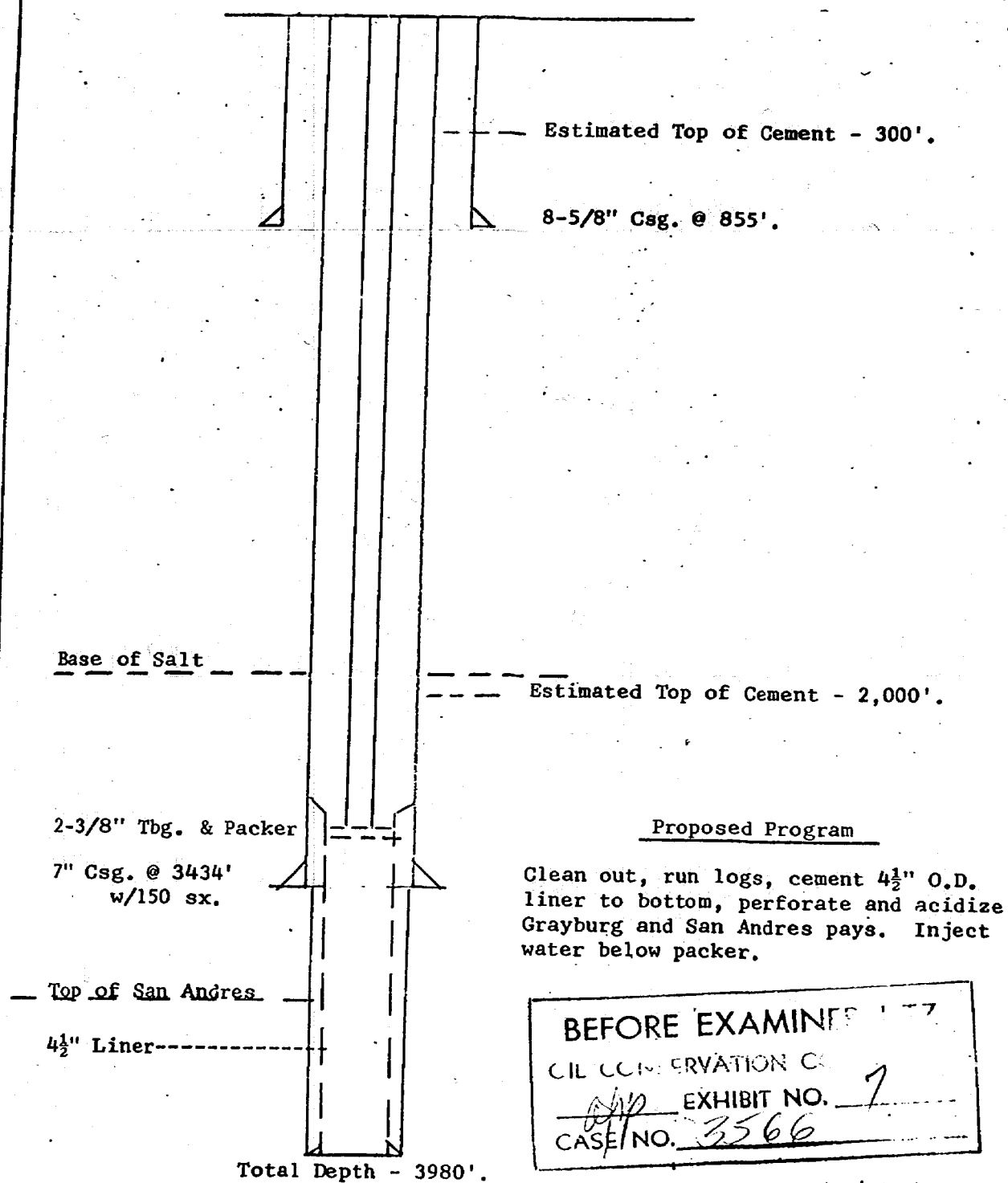
CASE NO. 3500

RALPH L. GRAY
PETROLEUM ENGINEERING

Exhibit *6

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #9

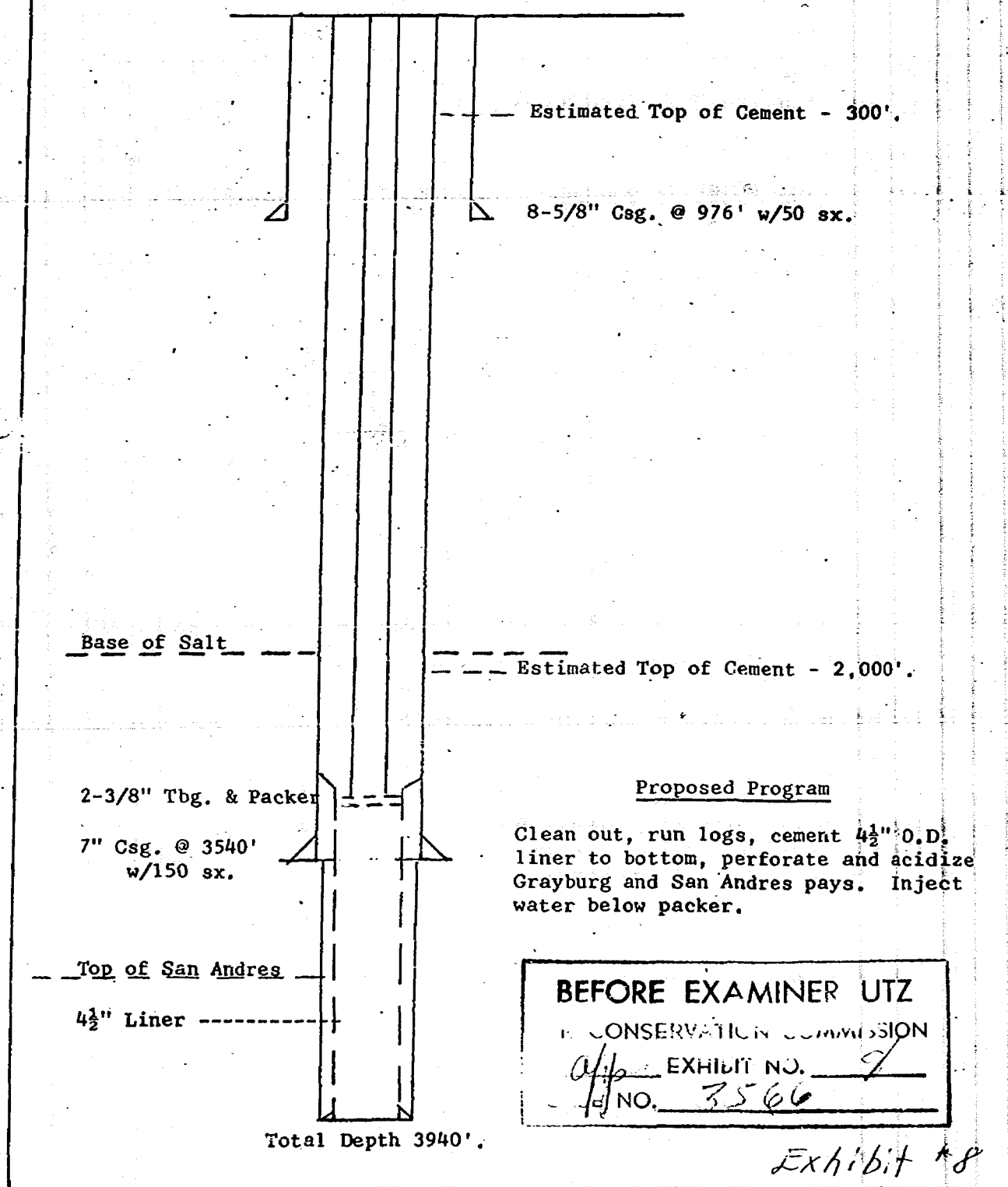
PROPOSED INJECTION WELL



RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #11

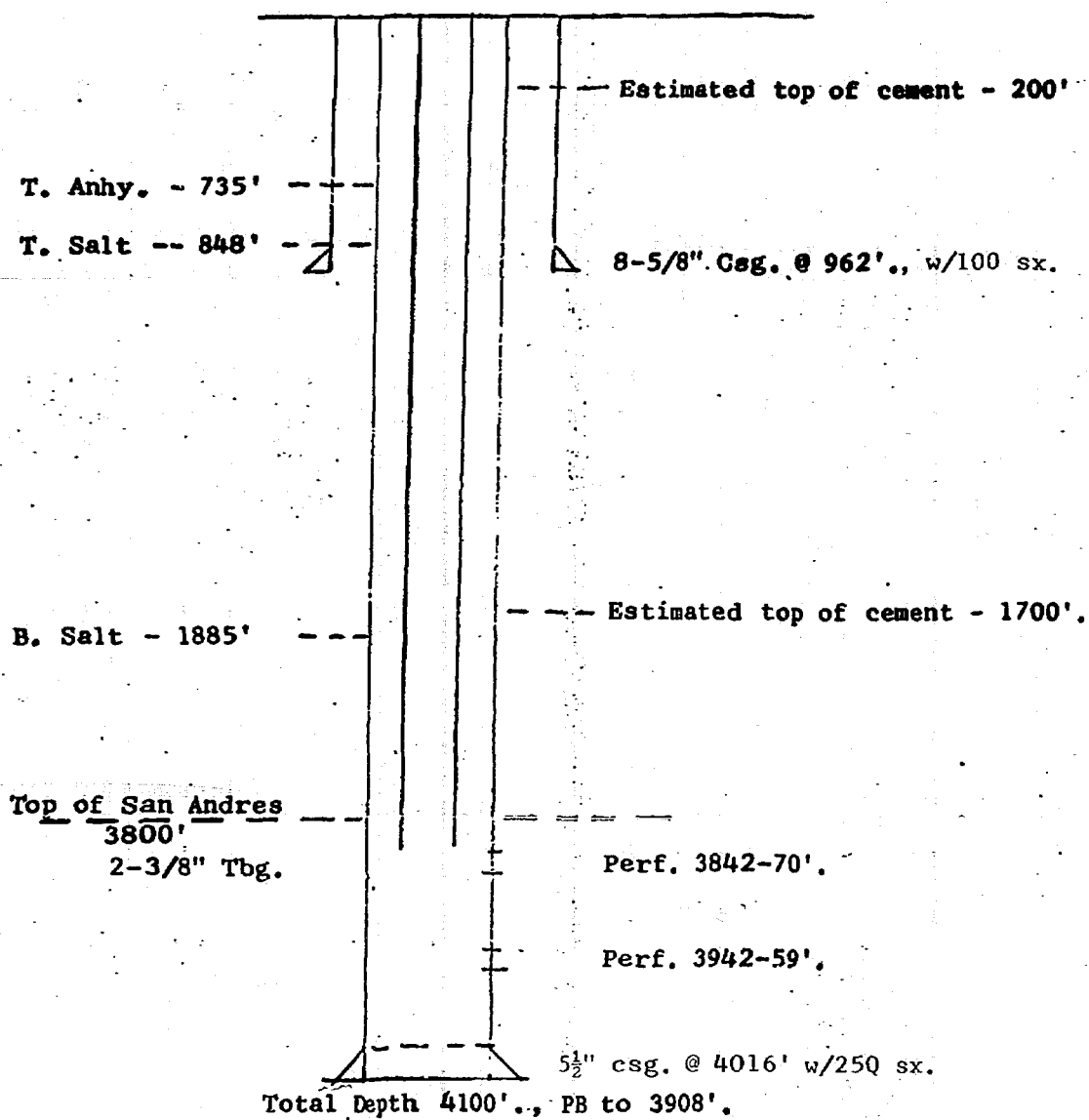
PROPOSED INJECTION WELL



WILLIAM A. & EDWARD R. HUDSON

PUCKETT "B" #12

PROPOSED INJECTION WELL



BEFORE EXAMINER UTZ

IL CONSERVATION COMMISSION

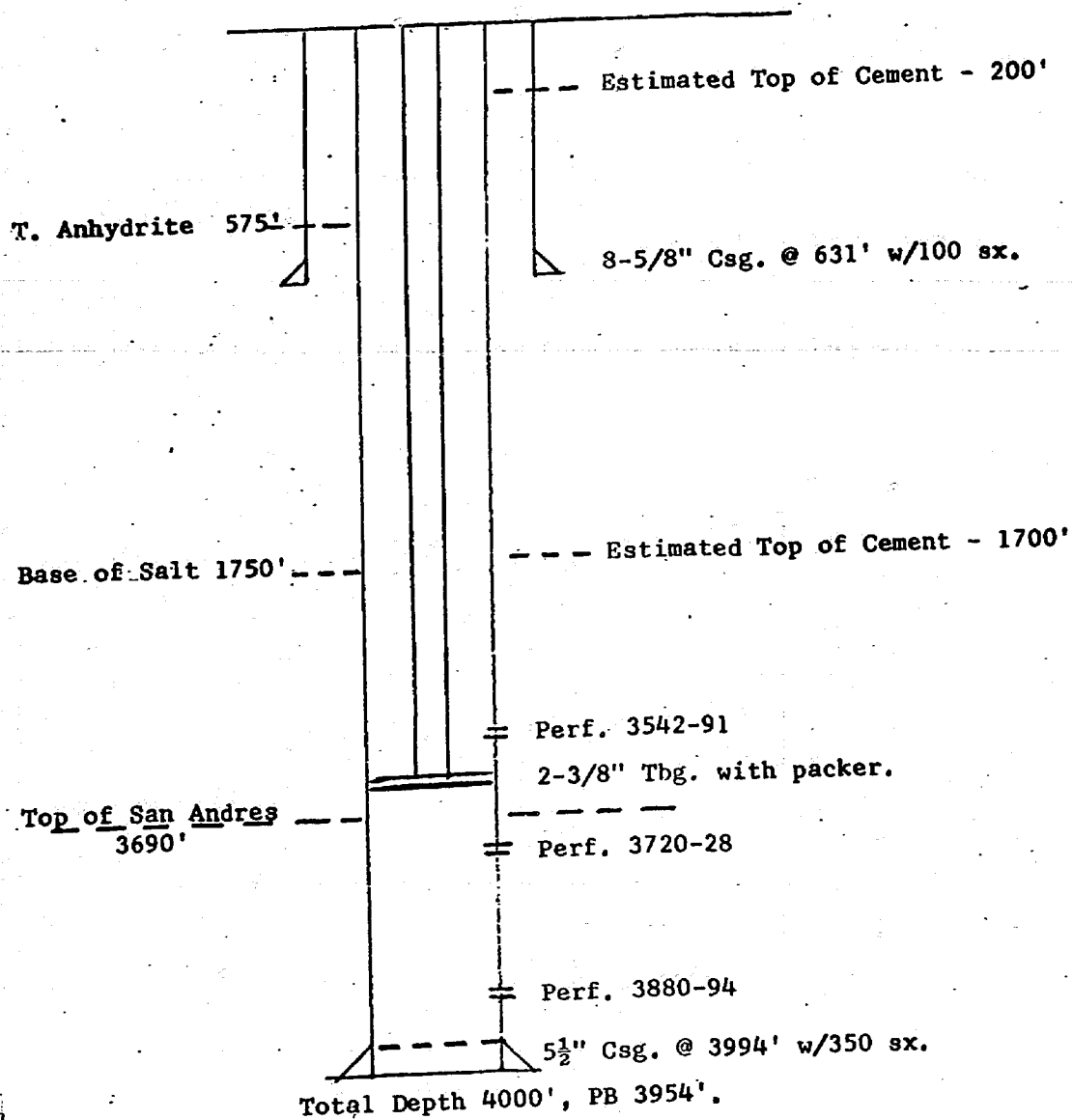
EXHIBIT NO. 9
CASE NO. 3566

Exhibit #9

RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #14

PROPOSED INJECTION WELL



BEFORE EXAMINER UTZ

RESERVATION NUMBER

EXHIBIT NO. 10

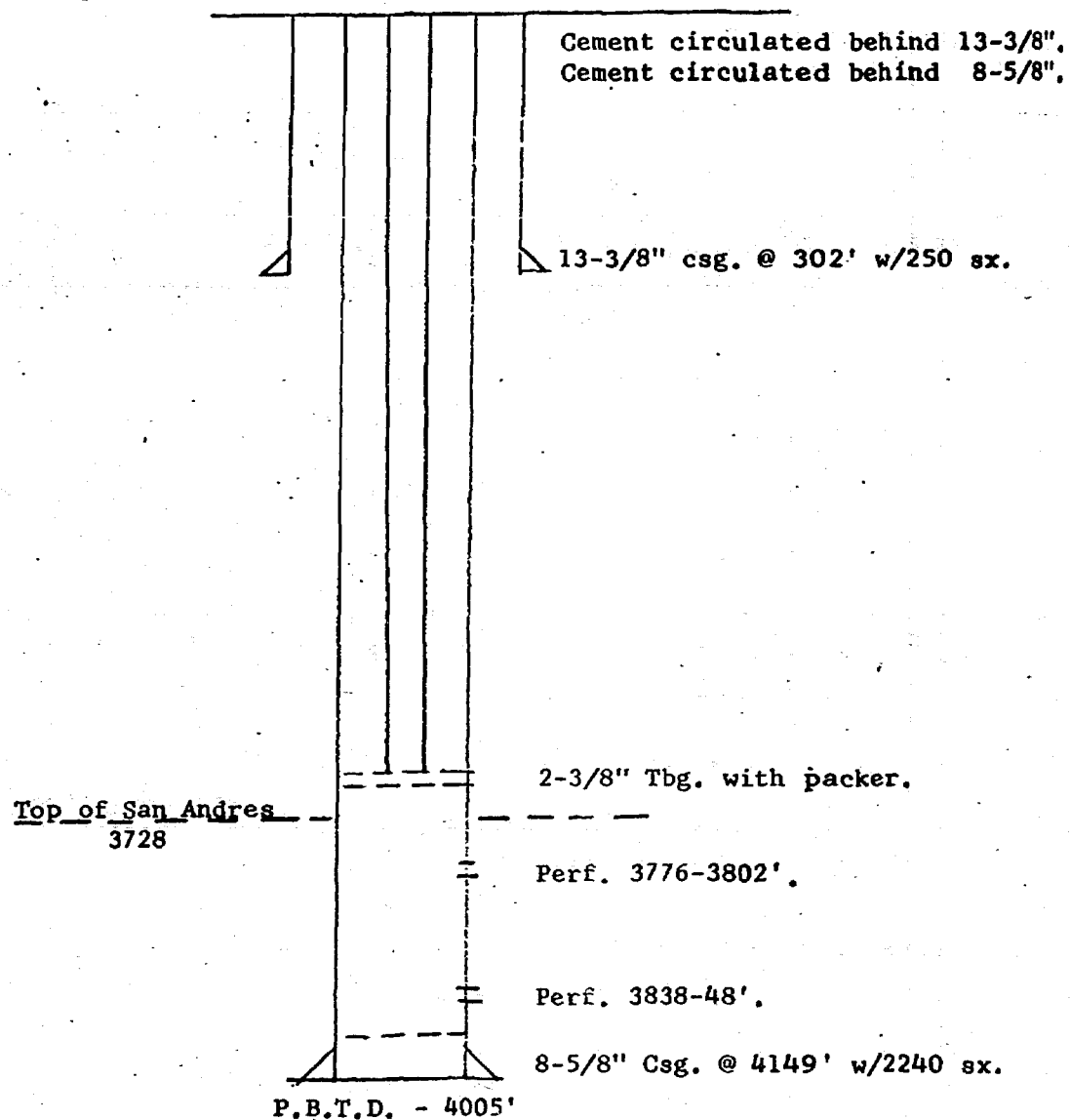
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Exhibit #10

RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #16

PROPOSED INJECTION WELL



BEFORE EXAMINER UTZ

IL CONSERVATION DIVISION

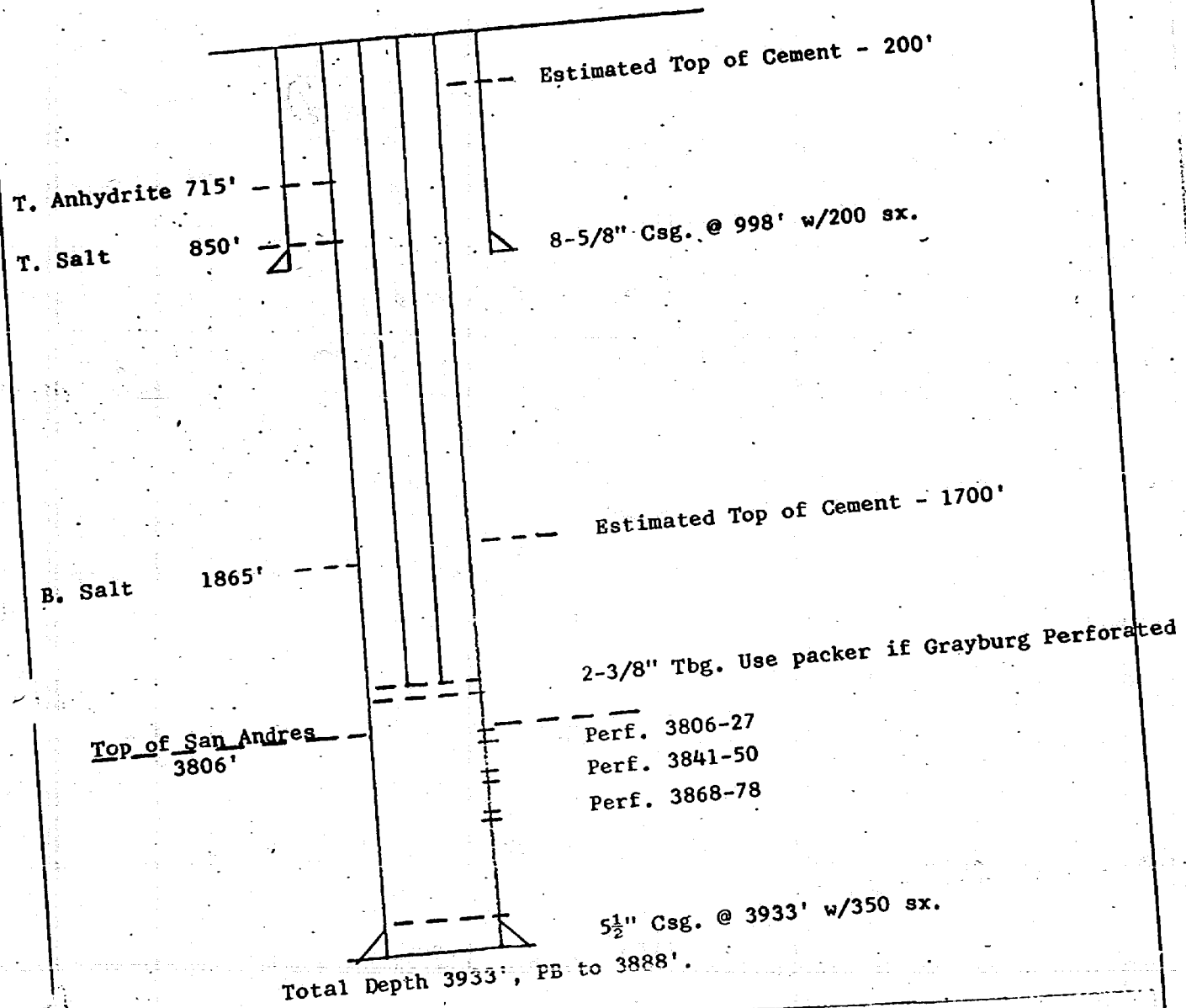
EXHIBIT NO. 11

CASE NO. 3566

Exhibit # 11

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #18

PROPOSED INJECTION WELL



BEFORE EXAMINER UTZ

OIL FIELD ION COMMISSION

EXHIBIT NO. 12

CASE NO. 3566

Exhibit #12

RALPH L. GRAY
PETROLEUM ENGINEERING

WILLIAM A. EDWARD & SONS
PROPOSED INJECTION WELL

T. Anhydrite 760'

T. Salt --- 960'

Estimated top of cement - 100'

8-5/8" Csg. @ 993' w/100' ex.

B. Salt --- 1967'

2-3/8" Tbg. ---

Perf. 3864-78

Perf. 3892-3916

Perf. 3954-70

5 1/2" Csg. @ 3998' w/150' ex.

PR to 3990'

Total Depth - 4006'

BEFORE EXAMINER USE

RECEIVED

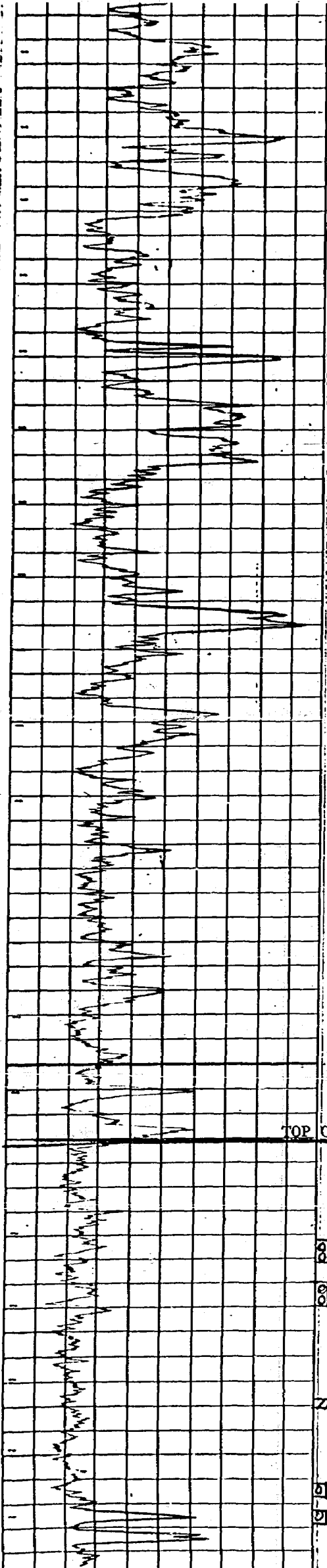
DATE

FILE NO.

33812

EXHIBIT A13

RALPH L. GRAY
PETROLEUM ENGINEERING



3400

3500

3600

3700

TOP OF SAN ANDRES

3800

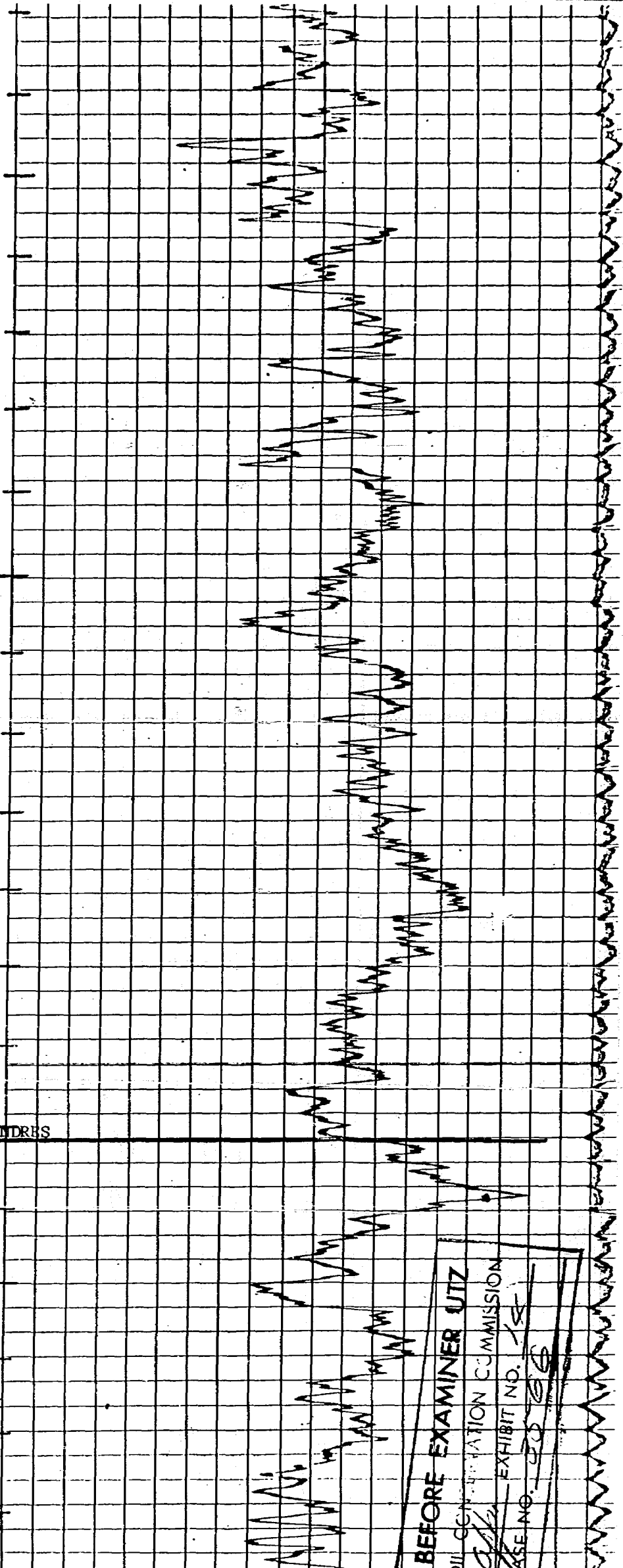
3900

3900

3900

WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #12
Sec. 25-17S-31E

3986 LANE WELLS FIRST READING



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 15
CASE NO. 2088

Exhibit A/4

3300

3400

3500

3600

TOP OF SAN ANDRES

3700

3800

3900

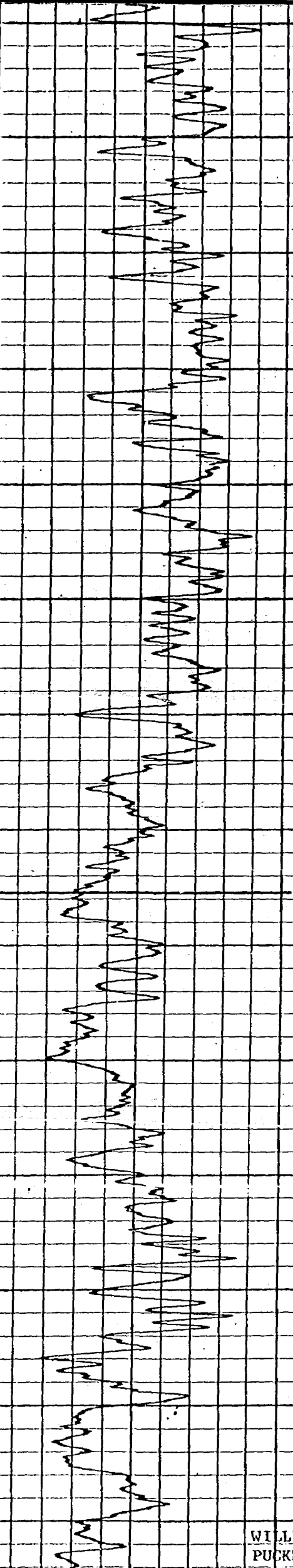
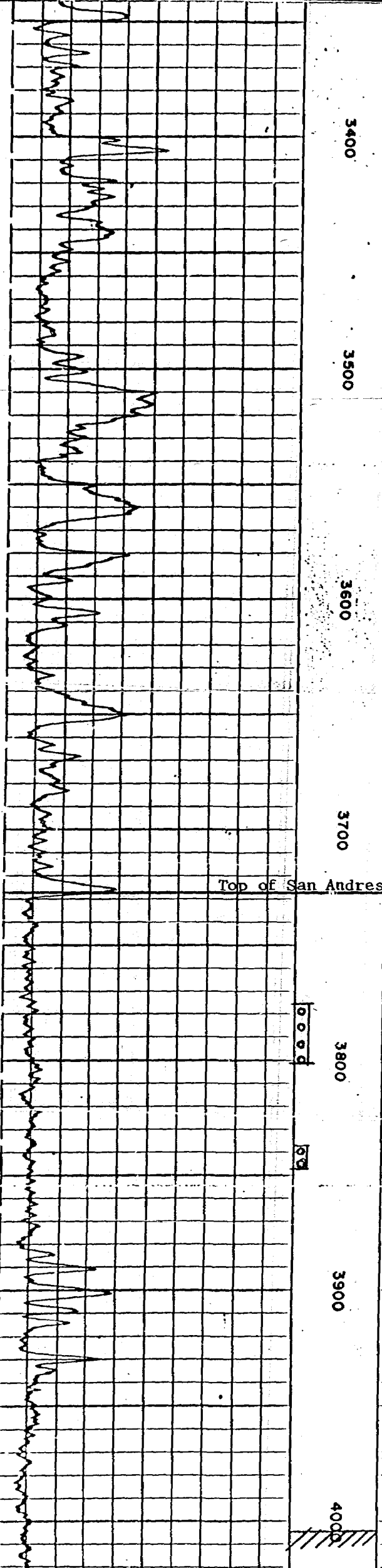
WM. A. & ED. R. HUDSON
PUCKETT "B" #14
Sec. 25-17S-31E

R. D. 3941

BEFORE EXAMINER
NON-EXAMINER
EXHIBIT #15

Exhibit #15

NO. 1 SAFETY FILM NO. 2 SAFETY FILM NO. 3 SAFETY FILM NO. 4 SAFETY FILM NO. 5 SAFETY FILM NO. 6 SAFETY FILM NO. 7 SAFETY FILM NO. 8 SAFETY FILM NO. 9 SAFETY FILM NO. 10 SAFETY FILM



BEFORE EXAMINER UTZ
OIL COMPANY
CASE NO. 35-16
ON LINE

Exhibit #16
WILLIAM A. & EDWARD R. HUDSON
PUCKETT "B" #16
SEC. 25-17S-31E

200

3300

3400

3500

3600

3700

3800

TOP OF SON ANDRES

WILLIAM A. & EDWARD P. HUDSON
PUCKETT "B" SITE
SEE: 25-178-31E

BEFORE EXAMINER LGT

NOISSIWWC

ON LIGHE

25-178-31E

Exhibit #17

WILLIAM A. J. & EDWARD R. HUDSON
BUCKETT "B" #20
Sec. 25-1-78-31E

R.O. 3991'
T.O. 3992.5'

BEFORE EXAMINER JUTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 18
CASE NO. 62-35615

Exhibit #18