CASE 3253: Application of KENNEDY OIL CO. for a waterflood project in the SQUARE LAKE POOL.

CASE NO. 3253

Application,
Transcripts,
Small Exhibits
ETC.

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

June 8, 1965

Mr. A. J. Losee
Losee & Stewart
Attorneys at Law
Post Office Box 239
Artesia, New Mexico

Dear Sir:

Enclosed herewith is Commission Order No. R-2920, entered in Case No. 3253, approving the Kennedy Oil Company Dob-Sheldon Waterflood Project in the Square Lake Pool of Eddy County, New Mexico.

Injection is to be through one or both of the authorized water injection wells. Injection into the Dob Federal A Well No. 3, located in Unit M of Section 21, Township 16 South, Range 31 East shall be through the casing. Injection into the dual-zone Kennedy Federal Well No. 3 shall be through tubing and packer into the Lovington sand and through the casing-tubing annulus into the Upper and Lower Premier zones.

Casing in both wells is to be pressure-tested to a minimum of 3000 psi before commencing injection. In the event of casing failure or leak, injection will be permitted only through tubing and packer, or the casing shall be repaired to enable it to withstand 3000 psi.

Please notify the Artesia District Office of the Commission of the date and hour that pressure tests are to be commenced.

Very truly yours,

ALP/DSE/ir
Enclosures
cc: Mr. Frank Irby
Oil Conservation Commission - Artesia, N. M.

A. L. PORTER, Jr.
Secretary-Director

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. 3253
Order No. R-2920

APPLICATION OF KENNEDY 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 May 26, 1965, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 8th day of June, 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, Kennedy Oil Company, seeks permission to institute a waterflood project in the Square Lake Pool by the injection of water into the Grayburg and San Andres formations through one or two injection wells in Sections 21 and 28, Township 16 South, Range 31 East, NMPM, Eddy County, New Mexico.

(3) That the applicant proposes to convert either or both of the proposed injection wells to water injection following a response from the offsetting waterflood to the west and south.

(4) That the applicant also seeks the designation of the SW/4 SW/4 of said Section 21 and the N/2 NW/4 of said Section 28 as a waterflood buffer zone offsetting a capacity-type waterflood.

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

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

(7) That the proposed buffer zone offsets a capacity-type waterflood to the west and south.

(8) That approval of the proposed buffer zone will afford the applicant the opportunity to produce its just and equitable share of the oil in the pool and prevent waste, provided injection has been commenced in said buffer zone within 90 days after any well in the buffer zone receives positive stimulation from the offsetting capacity-type waterflood.

(9) 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; provided, however, that capacity allowables should be assigned to the wells in the SW/4 SW/4 of said Section 21 and the N/2 NW/4 of said Section 28.

(10) That the authority granted under this order should terminate ipso facto if water injection has not commenced within 90 days after any well in the project area has received positive stimulation from the offsetting waterflood project.

IT IS THEREFORE ORDERED:

(1) That the applicant, Kennedy Oil Company, is hereby authorized to institute a waterflood project in the Square Lake Pool by the injection of water into the Grayburg and San Andres formations through one or both of the following-described wells in Township 16 South, Range 31 East, NMPM, Eddy County, New Mexico:

DOB A Well No. 3, located in Unit M of Section 21;

Kennedy Federal Well No. 3, located in Unit C of Section 28.

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

PROVIDED HOWEVER, that the SW/4 SW/4 of Section 21 and the N/2 NW/4 of Section 28, Township 16 South, Range 31 East, NMPM, Eddy County, New Mexico, is hereby designated a waterflood buffer zone wherein wells can be produced at capacity.

(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 the authority granted under this order shall terminate ipso facto if water injection has not commenced within 90 days after any well in the project area has received positive stimulation from the offsetting waterflood project.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

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

esr/

LAW OFFICES
LOSEE AND STEWART
A. J. LOSEE
EDWARD B. STEWART
CARPER BUILDING - P O DRAWER 239
ARTESIA, NEW MEXICO
AREA CODE 505
746-3508

28 April 1965

Case 3253

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

Dear Mr. Porter:

Enclosed herewith you will please find three copies of the Application of Kennedy Oil Company for a waterflood project in the Square Lake Field, Eddy County, New Mexico, with the attached data therein described.

With a carbon copy of this letter we are sending, certified mail, return receipt requested, to Mr. Frank Irby a copy of this Application and all of the data therein described.

Please set this matter for hearing at the next regularly scheduled examiner's hearing and advise us the date of such hearing.

Very truly yours,

A. J. Losee

Enclosures

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

Kennedy Oil Company
Box 151
Artesia, New Mexico

DOCKET MAILED
Date 5-12-65

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION :
OF KENNEDY OIL COMPANY FOR A :
WATERFLOOD PROJECT, SQUARE LAKE : No. 3253
POOL, EDDY COUNTY, NEW MEXICO :

APPLICATION

COMES KENNEDY OIL COMPANY, by its attorneys, Losee and Stewart, and states:

1. That it is the operator of two producing oil wells and one abandoned oil well in the Square Lake Field, Eddy County, New Mexico, and within the proposed project area covered by this Application, to-wit:

Township 16 South, Range 31 East, N.M.P.M.,

Section 21: SW/4 SW/4
Section 28: N/2 NW/4

containing 120 acres, more or less.

2. There is attached hereto and by reference made a part hereof, a plat showing the location of the wells covered by this Application and the location of all other wells and leases within a radius of two miles from the proposed project area, and designating the formations from which said wells are producing.

3. That the two producing wells within the project area covered by this application have reached an advanced or "stripper" state of depletion and the Applicant proposes to inject water into the producing or once producing Grayburg

and San Andres formations in sufficient quantities and under sufficient pressure to stimulate the production of oil from the producing wells in the project area.

4. That Newmont Oil Company has recently placed on injection its Fidel Well No. 5 located on a non-standard location in the NE/4 NE/4 of Section 29, in said Township and Range, and the Applicant proposes that it be permitted a reasonable time to evaluate and study the effects of this injection well upon the presently producing wells located within the proposed project area. That after the expiration of such reasonable period Applicant proposes to commence injecting water into the Grayburg and San Andres formations through either or both of the following proposed injection wells, to-wit:

> Kennedy Oil Company, DOB A Well No. 3 located in the SW/4 SW/4 Section 21;
>
> Or in a newly drilled well to be designated as the Kennedy Oil Company, Kennedy Federal Well No. 3 located in the NE/4 NW/4 Section 28.

5. There is attached hereto and by reference made a part hereof a copy of the log on the Kennedy Oil Company DOB A Well No. 3.

6. There is attached hereto and by reference made a part hereof a diagrammatic sketch of both of the proposed alternative injection wells (which, where necessary, have been estimated as to the well proposed to be drilled and designated as the Kennedy Oil Company, Kennedy Federal Well No. 3) showing all casing strings, including diameters and setting depths, quantities used and tops of cement, perforated

or open-hole intervals, tubing strings, including diameters and setting depths, and the type and location of all packers.

7. That Applicant proposes to contract for the purchase of water from the Yucca Water Company or other similar commercial source.

8. That Applicant proposes to inject water into the injection well at an initial pressure of approximately 1500 p.s.i. and at a rate of 500 barrels per day.

9. That Newmont Oil Company and Kennedy Oil Company are presently operating at capacity allowables waterflood projects in the Square Lake Field immediately to the west and to the south adjoining Applicant's proposed project area and therefore Applicant proposes to conduct its waterflood project with a capacity buffer zone allowable.

10. That the approval of this waterflood project will be in the interest of conservation and will prevent waste and protect correlative rights.

WHEREFORE, Applicant prays the orders of the Commission as follows:

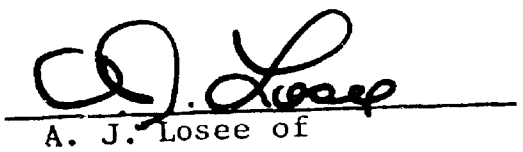
1. That this matter be set for hearing before an examiner duly appointed by the Commission and that due notice be given thereof as required by law.

2. That after hearing, an order be entered authorizing the Applicant to institute the aforesaid waterflood project as a buffer zone with capacity allowables and permitting the Applicant to wait a reasonable period of time before commencement of injection of water into the Grayburg and San Andres formations through either of the alternative injection

wells hereinabove described.

3. And for such other other relief as may be just in the premises.

KENNEDY OIL COMPANY

By 
A. J. Losee of

Losee and Stewart
Attorneys at Law
P. O. Drawer 239
Artesia, New Mexico

Docket No. 15-65

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 26, 1965

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

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

CASE 3250: Application of Amerada Petroleum Corporation for special rules for the Goodwin-Abo Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Goodwin-Abo Pool, in Sections 30 and 31, Township 18 South, Range 37 East, Lea County, New Mexico, including a provision for 80-acre proration units.

CASE 3251: Application of Continental Oil Company for a waterflood project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Rattlesnake Dakota Pool, San Juan County, New Mexico, by the injection of water into the upper and middle zones of the Dakota formation, through three injection wells in Sections 12 and 13, Township 29 North, Range 19 West.

CASE 3252: Application of Harvey E. Yates and Yates Drilling Company for the creation of a new gas pool and for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Pennsylvanian gas pool comprising all of Section 13, Township 20 South, Range 26 East, and all of Sections 7 and 18, Township 18 South, Range 27 East, Eddy County, New Mexico, and the promulgation of special pool rules for said pool, including a provision for 640-acre spacing and proration units.

CASE 3253: Application of Kennedy 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 Square Lake Pool by the injection of water into the Grayburg and San Andres formations through one or two proposed injection wells, the DOB A Well No. 3 located in Unit M of Section 21 and the Kennedy Federal Well No. 3 to be located in Unit C of Section 28, Township 16 South, Range 31 East, Eddy County, New Mexico. Applicant further seeks the designation of the SW/4 SW/4 of Section 21 and the N/2 NW/4 of Section 28 as a waterflood buffer zone offsetting a capacity-type waterflood to the West and South.

CASE 3254: Application of Dixon & Yates 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 Loco Hills Pool by the injection of water into the Grayburg formation through one well located in Unit D of Section 14, Township 18 South, Range 29 East. Applicant further seeks the designation of the N/2 NW/4 of said Section 14 as a waterflood buffer zone offsetting a capacity-type waterflood to the North and West.

CASE 3255: Application of Socony Mobil Oil Company, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the E-K Queen Unit Area comprising 2,895 acres, more or less, of Federal and State lands in Township 18 South, Ranges 33 and 34 East, Lea County, New Mexico.

CASE 3256: Application of Socony Mobil Oil Company, Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the E-K Queen Pool, Lea County, New Mexico, in its E-K Queen Unit Area by the injection of water into the Queen formation through twenty-six wells in Sections 13, 14, 23, and 24, Township 18 South, Range 33 East, and Sections 18 and 19, Township 18 South, Range 34 East.

CASE 3257: Application of Skelly Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Skelly Penrose "B" Unit Area comprising 2,612 acres, more or less, of State and fee lands in Townships 22 and 23 South, Range 37 East, Lea County, New Mexico.

CASE 3258: Application of Midwest Oil Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State "C" Well No. 1 located in Unit K of Section 32, Township 13 South, Range 34 East, Lea County, New Mexico, to produce oil from the Upper and Lower Pennsylvanian formations through parallel strings of tubing.

CASE 3259: Application of Midwest Oil Corporation for the creation of two new oil pools, and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of two new oil pools for Pennsylvanian production for its dually completed State "C" Well No. 1 located in Unit K of Section 32, Township 13 South, Range 34 East, Lea County, New Mexico, and for the establishment of special pool rules, including a provision for 80-acre proration units.

CASE 3225 (Readvertised from April 7, 1965 Examiner Hearing):

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 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 the point not closer than 330 feet to the North and West lines of the NW/4 SE/4 of said Section 26.

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date June 2, 1965

CASE 3253 Hearing Date 9 am May 26, '65
DSN @ SF

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

Enter an order authorizing Kennedy Oil Co. to institute a water flood project in the Square Lake Pool, Eddy Co., N.M. by the injection of water into the Grayburg & San Andres formations through one or both of the following wells:

DOB A Well No 3 Unit M Sec 21 T16S R31E
Kennedy Federal Well No 3 Unit C Sec 28 T16S R31E

Provide that the water flood project area shall consist of:

T16S R31E
Sec 21 SW/4 SW/4
Sec 28 N/2 NW/4

Also provide that the above ~~project~~ area may produce at capacity as a buffer zone offsetting a capacity type water flood project to the West and South.

Require that ~~injection~~ full scale injection ~~must~~ has been commenced in one or both of the above described wells within ~~30~~ days following positive stimulation by the offsetting water flood of any well in the project area — order will expire in absence of active. Provide that case shall remain in the jurisdiction of the Commission for the entry of such other orders as necessary, including the redetermination of the project ~~zone~~ area and the reconsideration of the buffer zone

Dan Nutter

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 26, 1965

EXAMINER HEARING

IN THE MATTER OF:

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

Case No. 3253

BEFORE:

DANIEL S. NUTTER

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case Number 3253.

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

MR. LOSEE: A. J. Losee, Artesia, New Mexico, appearing on behalf of the applicant. We have one witness, Mr. Kennedy.

Mr. Examiner, I think if I made a short statement at this time, it might make the presentation of this application a little clearer in everyone's mind. This is the application of Kennedy Oil Company for a waterflood project comprising the north half of Section 28 and the southwest of the southwest of Section 21--north half of the northwest and southwest of the southwest of Section 21, Township 16 South, Range 18 East, Eddy County Square Lake Field, by injecting water into the Premiere and Lovington Sands. The Newmont Oil Company Sidel Well Number 5, located in the northeast of the northeast of Section 29, same township and range, has recently been placed on injection, and this application requests a reasonable time for the applicant to determine the effect of this injection well upon his offsetting producing wells--that is to say, the Kennedy Sheldon Number 6 and the DOB A Number 3. We would suggest as a reasonable time, one year; but the applicant would be most agreeable to any such time as the Commission feels reasonable. During this time he can study the effects

upon his wells, and determine at that time whether to place the DOB A 3 Well on injection, or--actually and/or drill the Kennedy Federal Number 3 Well, which is a proposed location in the northeast quarter of the northwest quarter of Section 28; and because of the offsetting capacity floods to the west and to the south, the applicant requests capacity allowable.

With that explanation, I will let Mr. Kennedy tell you the factual data.

* * *

R O B E R T B. K E N N E D Y, the witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q Would you state your name and residence.

A Robert B. Kennedy, Artesia, New Mexico.

Q What is your occupation?

A With the Kennedy Oil Company.

Q Have you previously testified before and had your qualifications accepted as an expert witness by the Commission?

A Yes, I have.

MR. LOSEE: Are the witness's qualifications acceptable?

MR. NUTTER: Yes, they are.

MR. LOSEE: Please refer to what has been marked

Exhibit 1, Mr. Kennedy, and explain what is portrayed by that exhibit.

A Exhibit 1 is the map of the East Square Lake area, showing the state of development with producing wells and injection wells as of date. This is known as the Square Lake Field.

Q Would you give the Commission a brief statement of the history of the Square Lake Field.

A The Square Lake Field in Eddy County is one of our earlier fields. Development started in the early forties. Most of the drilling was done by 1945 or 1946. Upon the initiation of flooding within this area we have found that there are undeveloped portions of this field, and flooding adjacent to this has caused additional drilling. This has been one of our fairly active areas and we come up with the problem of drilling what we call sub-marginal wells--wells that will not necessarily pay out to primary, but it is necessary to have waterflood to initiate payout, and we feel we will recover additional oil in drilling these, that ordinarily would not be recovered.

Q What pay zones are productive within the field?

A There are three pay zones in the field--the Metex, the Upper and Lower Premiere and the Lovington sand.

Q Are all those pay zones present in your proposed project area?

A No, the Premiere and Lovington sands are the present members.

Q And the Metex is not?

A The Metex is tight.

Q What are the characteristics of those sand formations?

A The Grayburg and Lovington sands are what we classify as hard, fine, tight sand, and with very low permeability and porosity--long life production and short wells.

Q Do you know if the present orders of this Commission permit capacity allowables for the acreage offsetting you in the northeast quarter of Section 29?

A Yes, the northeast quarter has previously received a capacity allowable allocation.

Q Was that an extension of the original order given to the Ambassador Oil Company for initial flood in the Square Lake Field?

A Yes, including that and other acreage.

Q Is the south half of the northwest quarter of Section 28 included in a capacity allowable order?

A Yes, it is.

Q Any other data you will present to the Commission is on wells in your project area, and you have some additional data on other wells outside your project area. While we have

this Exhibit 1 open, would you point out the other wells you're going to talk about.

A Wells within the project area?

Q No--wells outside the area, that you have data to submit on.

A Wells we will submit data on are the Newmont Oil Company Sidel Numbers 3, 4 and 5.

Q Please refer to what has been marked Exhibit 2, and explain what is reflected by this exhibit.

A Exhibit 2 is a cumulative oil production of wells within this area, starting off with Section 28--I'm using the proration unit as a basis of the cumulative. The northwest of the northwest quarter has had two wells drilled on it. One well was drilled prior and produced during the early steps of the Square Lake Field, and the price of pipe popped up so high it was plugged in. In 1961 the Number 6 well was drilled and completed. The cumulative on Number 4 to plugging was 13,059 barrels. The Number 6 Sheldon to date, 2,049 barrels total production; from the proration unit, 15,658 barrels. The northeast quarter of the northwest quarter of Section 28 is an undrilled location; it was previously stated it would be drilled in the future. The southwest quarter of the northwest quarter is presently an injection well, having produced 15,982 barrels of oil before it was originally plugged out when pipe got too high in the late forties. Section 21, Township 16, 31 East, the south-

west quarter of the southwest quarter, containing the DOB A Number 3 Well, has a cumulative, according to Commission records, of 4,760 barrels of oil. In Section 29, the northeast quarter of the northeast quarter, containing the Sidel Number 4 Well of Newmont Oil Company, has a cumulative production of 49,803 barrels. The Sidel Number 3 in the northwest quarter of the northeast quarter has a cumulative production of 63,564 barrels.

Q Can you explain the great contrast in cumulative production between the wells in your project area and the Sidel Numbers 3 and 4?

A There is a great difference there. The increase-- over half of which can be attributed to recoverable oil from secondary recovery to date.

Q So that actually out of that cumulative figure on the Sidel Numbers 3 and 4, approximately half is primary and half is secondary?

A In excess of half would be secondary.

Q How long has that acreage been under a waterflood project--that is to say, offset by injection wells?

A Approximately two to two and a half years.

Q Do you feel that similar results could be expected from the wells in your project area?

A Yes, we have a very good chance, as we will bring

out in later core analyses and testimony.

Q The only well presently producing in your project area is the Sheldon Number 6, is that correct?

A We are producing actually the DOB A Number 3, but just with a pumping unit--it isn't making any production.

Q This exhibit reflects the monthly production from the Sheldon Number 3 for January, February and March, 1965. In your opinion, has this well reached an advanced or stripper state of primary depletion?

A Yes, these wells are in a stripper state.

Q And that is true also of the DOB A Number 3?

A That's right.

Q Have you recently treated any of these wells in your project area?

A On May 11th we did treat the Sheldon Number 6 Well. There had been somewhat of a problem in that well, and along with the DOB A Number 3, we classified it as an emulsion block due to over-gelling of oil when the wells were originally treated; and the zone that did have the block was treated with 40,000 gallons of oil and 30,000 pounds of sand. Currently we have broken the emulsion block and are getting crude out.

Q Your Exhibit 3 is the location of your Federal A Number 3 Well; and Exhibit 4 is a core report on the same well. Please refer to those and elaborate on what is shown by these

two exhibits.

A The electric log on this well is a nuclear log, gamma ray neutron, and tying that in with the core analysis, it being on the edge of a field, it would have three feet of Lower Premiere which is somewhat tight, and in the Lovington section approximately ten feet, varying from tight to just fair permeability and porosity; and residual oil analysis does indicate that there is oil there. It has produced a little water, but we're not particularly worried about that.

Q This is the well located in the southwest quarter of the southwest quarter of Section 21?

A That's right.

Q Your Exhibits 5 and 6 pertain to the Sheldon Well Number 6--a log and core analysis. Would you explain those exhibits, please.

A Here again we have a gamma ray neutron log with core analyses. The Upper Premiere has six feet on core analysis; the Lower Premiere eight feet; and the Lovington sand seventeen feet. The Lovington sand core analysis is especially interesting because we do have one of the better sections of Lovington sand to be found in that area. This again is one of the zones that had been treated with gelled oil and disasterous results obtained. We have broken that block and are pumping backload, and we are fairly close to this new unorthodox in-

jection well, and hope to recover additional oil that has not been produced.

Q As between the Premiere and the Lovington sand, which has produced more secondary oil in this field?

A From our experience in the field, a good section of Lovington is worth just about twice what a Premiere section would be.

Q Now these Exhibits 7, 8 and 9 pertain to the offsetting Sidel Wells Number 3, 4 and 5. Please refer to these exhibits and explain what is portrayed there.

A Exhibit 7 is a copy of a log run on the Sidel Number 3 Well of Newmont Oil Company, the Sidel Number 3 being in the northwest quarter of the northeast quarter of that section. As stated previously, it was originally an old hole that existed and was plugged and re-entered. From looking at the Grayburg--you can't read anything on the log; it's distorted. I call your attention to the Lovington sand development, which shows ten feet of effective pay.

Exhibit 8 is an isotron log on the Newmont Oil Sidel Number 4, located in the northeast of the northeast of Section 29. There again, it was an old well, had been plugged out and re-entered when the flood came along. It has a shot hole you can't read, but we are getting a better section of Lovington, having sixteen feet of effective pay--as we move to

the east the Lovington is thickening on us.

Exhibit 9 is an acoustical log of the recent well drilled by Newmont. It has been converted to injection, being our Number 5 Sidel, located fifty feet from the north and east line of Section 29, Township 16 South, Range 31 East. This well wasn't cored. My interpretation showing the pay on this well gives the Lower Premiere seven feet and the Lovington sand fifteen feet of effective pay.

Q Now, Exhibits 3 through 11 are a study of the pay sections in this area; and what do these exhibits reflect which supports the application of Kennedy Oil Company?

A Noting sand thicknesses and oil that has been produced adjacent to us, the primary and secondary to date shows extensive oil yet to be recovered in this area, and that we do have the pay sections under the DOB A Number 3 and more so under the Sheldon Number 6, to recover oil that would not otherwise be produced.

Q How far is the Sidel Well Number 5, if you know, from your Dop A Number 3 well, in distance?

A From the DOB A Number 3 it would be 710 feet north and 710 feet east.

Q How far is the Sidel Well Number 5 from your Sheldon Number 6?

A That would be 380 feet east and 610 feet south.

Q What date was this Sidel well completed?

A Approximately April 29th, for injection purposes.

Q Do you know at what rate water is being injected into this well at the present time?

A According to information submitted to the United States Geological Survey, the first five days of injection showed that the Lovington was taken 169 barrels average per day at 2,600 pounds pressure, and the Premiere-Metex section was taking 63 barrels of water per day at 2,300 pounds per square inch.

Q Now, your application requests reasonable time to study the effect of this Sidel Well Number 5 on your project area, before you determine which of the two proposed wells, either the DOB A Number 3 or the Kennedy Federal Number 3, will be converted to injection. What do you need to learn from a study of the effects of this Sidel well on your project area?

A We need a thorough study of the rate of flow of injected fluids, and a true test of whether or not the Lovington sand can be effectively flooded. There are cases to the southwest in this area where they have found that by putting additional injection pressure into the Lovington by setting packers and isolating from the Premier, they have been able to move oil. We feel that in this area, with the permeability and porosity we have to work with on our wells, we should be

able to move oil through the Lovington sand, which is going to be our primary source of production in this project. Providing there is no plugging and the proper chemicals are added with the injection water, I think we will have a successful recovery. But time alone is going to give the answer, and the direction in which the water is going to move--according to the old rule of thumb it goes toward the line of least resistance, but we need to determine that. Other wells in this area adjacent to injection wells have taken on an average of from one to two years to respond from injection.

Q Is it possible that by reason of the close proximity of the Sidel Number 5 to your Kennedy Number 6, that the use of that well as a producing well would not be very satisfactory, and that this could be something you could learn from a study?

A It's a little closer than the normal quarter-quarter section spacing we're used to, and possibly we might have premature watering out, but with a thick sand section--we're dealing with in excess of fifteen feet with the Number 5 Sidel, and in our Number 6 Sheldon we're dealing with in excess of fifteen feet of pay in each well--that we do have quite a bit of oil in place in this area, and there again, it will move toward the line of least resistance.

Q What would you consider a reasonable period of

time for this study?

A One year should give us an adequate determination of which well to convert to injection.

Q But, on behalf of the applicant, you would accept such period of time as the Commission might determine to be reasonable?

A Certainly.

Q Please refer to what has been marked Exhibit 10, and explain what is reflected by this exhibit.

A Exhibit 10 is our well data showing completion, total depth, casing programs and perforations. The DOB A Number 3 well was completed January 15, 1962; total depth, 3,615 feet; 8-5/8 inch casing set at 359 feet with 250 sacks; a 4½-inch oil string set at 3,615 with 100 sacks. Perforated interval was in the Lovington sand at 3,593 to 3,597.

Our Sheldon Number 6 was completed March 30, 1962; total depth, 3,632 feet; 8-5/8 inch casing set at 495 feet with 200 sacks; 5½-inch casing set at 3,632 with 200 sacks. Perforated interval in the Upper Premiere, 3,407 feet to 3,416 feet; in the Lower Premire, 3,437 to 3,448; in the Lovington sand 3,560 feet to 3,580 feet.

The Kennedy Federal Number 3 is a proposed location and total depth is expected to be 3,650 feet, 13-3/8 inch casing will be set at approximately thirty feet, cemented to

surface. Either a string of 5½-inch or 4½-inch casing will be run, depending on the sand development in the Premiere section in the well we drill, and cemented with 200 sacks of cement.

Q Please refer to what has been marked Exhibits 11 and 12, and explain what is reflected by these exhibits.

A Exhibit 11 is a schematic drawing on our Dob A Number 3 well, as the proposed injection well, down the 4½-inch casing. Now, as noted previously, this well was completed in 1962, and at that time a new 11.6 pound J-4½ casing was set in this well. Our proposal was to inject down the casing on this well. Prior to injecting down the casing we would pressure test the casing in excess of the pressure--say, 3,000 pounds--that would ever be on it. That is, we would test it to 3,000 pounds.

Now, Exhibit 12 is a schematic drawing of the proposed well, Kennedy Federal Number 3. We are assuming we will have development both in the Premiere and Lovington sands. The casing program as outlined previously was one joint of 13-3/8 on a setting oil string. There would be a two-stage cement job around 250 feet, and 5½-pound, 4.50 J seamless casing, new, or 4.59 seamless casing, new, would be run in this well. The schematic drawing is based on the hope that the Premiere and Lovington would both be present, and that we could

have dual injection by running tubing on a packer and injecting down the tubing to take the Lovington, and down the casing to take the Premiere on injection.

Q What injection pressure and rates do you anticipate in these wells?

A There again I think we can go back to Newmont's established injection here, which will be fairly close. I would imagine the Lovington--that we could get 150 barrels a day, and it seems that it does take a higher pressure; possibly 26 to 2700 pounds pressure would be required. In the Premiere, depending on the development in the well, in my opinion it would be from 50 to 100 barrels at 250 pounds pressure.

Q Prior to the time injection commences in either of the wells you earlier mentioned, you would test the casing at 3,000 pounds, and I suppose if you find no leak, you propose to inject down the casing?

A Yes.

Q What if it won't test at that pressure?

A It would be necessary to run a packer on tubing and isolate that section.

Q What is the source of your water for this proposed project?

A It will either be Yucca or Caprock Water Company.

Q Where would they get the water?

A From sources off the Caprock--the Ogalalla.

Q Do you have an analysis of their water?

A I think an analysis has previously been submitted to the Commission.

Q You don't have one with you?

A No, I don't have an analysis.

Q Would you propose to treat the water?

A There is some treatment required. It would be treated as required.

Q Do you propose to re-inject produced water?

A At this time re-injection of produced water has not proven satisfactory, due to the fact that the produced water has such a heavy concentration of gyp and other salts that would act as plugging agents.

Q So you do not anticipate re-injecting the water?

A It is not anticipated.

Q What is the expected life of this project?

A Well, to bring it down to its last economic limit, we would say eight to ten years.

Q Would this proposed project recover oil that otherwise would not be recovered?

A Yes, that is our big point here. In other words, being at the stripper stage and with the sections that are there, we will recover adequate additional oil to compensate for

this project.

Q Will your proposed application and this project prevent wast of oil and protect the correlative rights of the parties interested?

A Yes, sir, waste will be prevented and oil recovered that normally would not be recovered.

Q Were Exhibits 1 through 12 prepared by you or under your supervision?

A Yes, they were.

MR. LOSEE: I offer Exhibits 1 through 12 in evidence.

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

MR. LOSEE: No further questions at this time.

MR. NUTTER: Does anyone have any questions of Mr. Kennedy?

MR. IRBY: Frank Irby, State Engineer's Office. What will be done with the produced water that you don't intend to re-inject?

A Produced water that is not being re-injected would be put in an evaporator pit at surface, with tank battery.

Q What a the approximate quantities anticipated?

A Of produced water?

Q Yes, sir.

A Well, that, Mr. Irby, is a good question. Some wells go up to 50 or 100 barrels a day.

Q In this field?

A At the latter stage in economics. In other words, you don't go on water for quite a spell of time. Sometimes there's a breakthrough when you go on it. It could go there and might possibly go higher.

Q Are these evaporative pits lined?

A No, sir.

MR. IRBY: Thank you.

MR. NUTTER: What zone is the Newmont Number 5 completed in for injection--the Lovington only?

A No, sir, the perforations on that one shot per foot for three feet at 3354-55 and 56, in what we normally call the Metex pay. The Premiere was perforated at 3390, 91, 93, 98, 3400, 07, 09, 12, 14, 15, 19, 20 and 22. The Lovington was perforated--there again, one shot per foot, at 3543-45, 47, 49, 52, 54, 55 and 57.

Q This Metex--is that the equivalent of the Upper Premiere?

A No, sir--well, we call it Zone 5 down in our country. It's up about 90 feet above the San Andres lime.

Q The perforations in the Premiere from 3390 to 3422 take in the Upper and Lower Premiere?

A Yes.

Q So they've got both zones on the Premiere on injection, as well as the Lovington and Metex?

A Yes, providing there's anything in the Metex and Upper Premiere. In looking at their log and having core analyses 700 feet away from it, I question on the Metex whether there's anything in it; and my opinion is that the Upper Premiere is tight, and my opinion would be that the water is going in the Lower Premiere out of the three zones.

Q Do you know if they have run surveys to determine where the water is going?

A They do have a packer isolating the Lovington from the two sections of Premiere and the Metex.

Q And that was--the amount that went above and below the packer was the basis of the test they submitted to the US Geological Survey--60 in one zone?

A Yes, sir, and 169 in the Lovington.

MR. NUTTER: We had a log of your Number 6 here somewhere, I think.

MR. LOSEE: That should be Exhibit 5, about.

MR. NUTTER: And it has the two Premiere and the Lovington sand present in it?

A Yes, sir, upper and lower.

Q Do you have any idea as to the amount of oil that

has been produced from the Lovington as compared with the two zones of the Premiere in this well?

A In this well practically all the oil has come from the Upper and Lower Premiere, due to that emulsion block I mentioned.

Q And it's too early to tell whether treatment is going to be effective?

A We're pumping backload at the present time--we're pumping back emulsion block material.

Q How soon would you say it will be before you know if you're cleaning that up and if the Lovington is productive or not?

A I'd say thirty days. Of course, we're basing that on the proximity of oil produced on core analysis, which shows excellent oil saturation, and I personally saw the core and it was a beautiful one.

Q From the Lovington in this well?

A From the Lovington.

Q But it has always had this emulsion block?

A That's right, and they squeezed it and set a breachblock and produced the Premier, and then I purchased the well and knocked it out and started on the program I'm on now.

Q You stated that what you were seeking here was an order for a reasonable period of time. A reasonable period of

time for what, before what?

A To ascertain whether to put the DOB A Number 3 well or the proposed Kennedy Federal Number 3 well on as an injection well.

Q To complete the pattern you'll need both, won't you?

A It would be nice to have both. We might have premature watering out of the Number 6 Sheldon well, which might set up the Number 3 to be more advantageous as a producing well down the line, and possibly a later conversion of the Number 6 Sheldon well to an injection well.

Q So in effect, as I understand your application here, it is for designation of this orange area on Exhibit 1 as a waterflood project area?

A Yes, sir.

Q With assignment of capacity allowables because it offsets a capacity type flood?

A Yes, sir.

Q But for a delay in the conversion or drilling of the well for water injection--

A Yes, sir.

Q --Until you evaluate the producing characteristics of the Number 6, or maybe the Number 3 DOB?

A Right, sir.

Q After the Newmont Number 5 has gone on injection, which was April 29th, it's going to take some time for either of these two wells to respond to water injection?

A That's right.

Q For what length of time after they have responded is this delay going to be necessary, before making your determination?

A Well, after it responded and came up to a fixed point, I would say ninety days would give us adequate time.

Q From the time of initial--

A From the time--to where it's positive that it's pushing.

Q A positive response?

A A positive response.

Q And then you would determine at that time whether the DOB Number 3 or the proposed Number 3 would be used as an injection well?

A That's right.

Q And after you made that determination, how long would it take to put the well on active injection, in the case of the DOB Number 3?

A It would be relatively short--say within thirty to forty-five days, and then of course we would have to drill the Number 3 well, which would take, say, sixty days.

Q To drill the well and have it on injection?

A To have it ready.

Q How near is the water supply line you would be purchasing water from?

A The water supply line is closer--one is 100 feet north of Number 6 Sheldon--a new twelve-inch line just laid across; and the next supplying point would be approximately a half-mile south, at the Number 4 Johnson.

Q So the laying of a water supply line would entail no great amount of time?

A No, we're hemmed in pretty well.

Q Would water be furnished at injection pressure?

A In one case, yes. In the other case we would set in our own plant and have an extension of the flood project coming out to the area to the east.

MR. NUTTER: Are there further questions of Mr. Kennedy? ... He may be excused. Does anyone have anything further they wish to offer in Case Number 3253? We will take the case under advisement.

* * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

IN WITNESS WHEREOF, my hand and seal of office this 7th day of June, 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. 3253, heard by me on June 24, 1965.

..... Examiner
New Mexico Oil Conservation Commission

ACCUMULATIVE OIL PRODUCTION

Proration Unit	Accumulative to 1-1-65	January 1965	February 1965	March 1965	Total Production from Proration Unit
Sec. 28, T-16S, R-31E					
NW/4 NW/4 Sheldon #4 (Abd)	13,059	-	-	-	
Sheldon #6	2,049	244	140	166	15,658
NE/4 NW/4 Kennedy #3 (Undrilled)	0	0	0	0	0
SW/4 NW/4 Sheldon #3 (Injection Well)	15,982	0	0	0	15,982
Sec. 21, T-16S, R-31E					
SW/4 SW/4 Dob #A-3	4,760	-	-	-	4,760
Sec. 20, T-16S, R-31E					
SE/4 SE/4 Dob #A-2	17,217	299	263	230	18,009
SW/4 SE/4 Dob #A-1	21,997	352	310	230	22,889
Sec. 29, T-16S, R-31E					
NE/4 NE/4 Fidel #4	46,315	1,351	1,127	1,010	49,803
NW/4 NE/4 Fidel #3	60,034	1,378	995	1,157	63,564

DWS-5A

1-#4

Darrell W. Smith Co.

PHONE OX 4-2511—MIDLAND, TEXAS
PHONE EX 3-6173—HOBBS, N. MEX.

FULL DIAMETER CORE STUDY

KENNEDY OIL CO.

Operator ~~Bob Oil Properties, Inc.~~ Field ~~North~~ Square Lake Formation Grayburg -- San Andres

Well No. 3 Federal "A" Location 660' FSL & 660' FWL, Sec. 21 -- Twp. 16S -- R. 31E

Depths _____ Date _____ Lab No. 516-H

SAMPLE NO.	REPRESENTATIVE OF FEET	FOOTAGE	PERMEABILITY, MD. HORIZONTAL	PERMEABILITY, MD. VERTICAL	EFFECTIVE POROSITY %	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
			Core No. 1 3320-3396 (76 Ft.)					
			Recovered 3320-3396 (76 Ft.)					
	3320-26	6.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs NS NA
	3326-36	10.0	-		-	-	-	Ahy dolo Sh ptgs NS NA
	3336-41	5.0	-		-	-	-	Vfg red Ss very ahyd dolo slty NS NA
	3341-42	1.0	-		-	-	-	Ahy shy sdy dolo NS NA
	3342-47	5.0	-		-	-	-	Vfg red Ss very ahyd slty dolo NS NA
	3347-48	1.0	-		-	-	-	Vfg red Ss ahyd shy dolo NS NA
	3348-55	7.0	-		-	-	-	Dol d sc Ahy incls NS NA
	3355-57	2.0	-		-	-	-	Dol d sc Ahy incls sdy shy NS NA
	3357-59	2.0	-		-	-	-	Ahy shy sdy dolo NS NA
	3359-61	2.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs NS NA
	3361-68	7.0	-		-	-	-	Ahy shy dolo NS NA
	3368-70	2.0	-		-	-	-	Dol d sc Ahy incls NS NA
	3370-75	5.0	-		-	-	-	Vfg red Ss sc Ahy incls dolo shy Ns NA
	3375-86	11.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs NS NA
	3386-88	2.0	-		-	-	-	Ahy shy NS NA
	3388-96	8.0	-		-	-	-	Dol d sc Ahy incls sdy very shy slty NS NA
			Core No. 2 3396-3465 (69 Ft.)					
			Recovered 3396-3465 (69 Ft.)					
	3396-98	2.0	-		-	-	-	Vfg red Ss very ahyd dolo shy NS NA
	3398-99	1.0	-		-	-	-	Dol d sc Ahy incls styo 3" Sh stgr NS NA

PAGE NO. 2 OPERATOR Doh Oil Properties Inc. LAB NO. 516-H

SAMPLE NO.	REPRESENTATIVE OF FEET	FOOTAGE	PERMEABILITY, MD. HORIZONTAL	PERMEABILITY, MD. VERTICAL	EFFECTIVE POROSITY %	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
	3399-3402	3.0	-		-	-	-	Dol d sc Ahy incls styo Sh ptgs Ns NA
	3402-04	2.0	-		-	-	-	Dol d sc Ahy incls shy sdy NS NA
	3404-05	1.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs NS NA
	3405-06.5	1.5	-		-	-	-	Vfg red Ss ahyd shy NS NA
	3406.5-28	21.5	-		-	-	-	Dol d sc Ahy incls styo Sh ptgs NS NA
	3428-32	4.0	-		-	-	-	Vfg red Ss very dolo ahyd shy NS NA
	3432-36	4.0	-		-	-	-	Dol d sc Ahy incls sdy shy NS NA
	3436-42	6.0	-		-	-	-	Vfg red Ss ahyd dolo shy NS NA
	3442-45	3.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs styo NS NA
	3445-47	2.0	-		-	-	-	Dol d very shy sc Ahy incls NS NA
	3447-48	1.0	-		-	-	-	Dol d sc Ahy incls Sh ptgs NS NA
	3448-50	2.0	-		-	-	-	Vfg red Ss dolo shy ahyd NS NA
	3450-51	1.0	-		-	-	-	Vfg gray Ss dolo ahyd slty NS NA
	3451-54	3.0	-		-	-	-	Vfg red Ss ahyd shy NS NA
1	3454-55	1.0	2.5		12.1	9.1	66.1	Vfg gray Ss dolo slty Tr Gil
2	3455-56	1.0	1.0		11.1	9.9	72.0	Vfg gray Ss dolo slty Tr Gil
3	3456-57	1.0	0.55		9.3	12.9	59.1	Vfg gray Ss dolo slty Gil
	3457-60	3.0	-		-	-	-	Vfg red Ss very shy dolo NS NA
	3460-65	5.0	-		-	-	-	Dol d styo Sh ptgs NS NA
			Core No. 3 3555-3615 (60 Ft.)					
			Recovered 3555-3615 (60 Ft.)					
	3555-73	18.0	-		-	-	-	Dol d sc Ahy incls styo Sh ptgs NS NA
	3573-74	1.0	-		-	-	-	Dol vfx sc Ahy incls shy slty NS NA
4	3574-75	1.0	2.0		13.2	18.9	50.7	Vfg gray Ss very shy very dolo
5	3575-76	1.0	0.47		8.6	21.4	64.2	Vfg gray Ss very shy very dolo
6	3576-77	1.0	5.0		11.3	18.6	41.6	Vfg gray Ss very shy very dolo
7	3577-78	1.0	5.8		9.9	7.1	48.5	Vfg gray Ss very shy very dolo
8	3578-79	1.0	0.27		6.9	20.3	63.7	Vfg gray Ss very shy very dolo
	3579-80	1.0	-		-	-	-	Vfg red Ss very shy very dolo NS NA
	3580-82.5	2.5	-		-	-	-	Dol d styo Sh ptgs NS NA
	3582.5-85	2.5	-		-	-	-	Dol vfx very shy sdy NS NA
9	3585-86	1.0	0.99		11.1	15.3	51.4	Vfg gray Ss very shy dolo slty
10	3586-87	1.0	0.57		6.8	14.7	65.3	Vfg gray Ss sl shy slty dolo
11	3587-88	1.0	7.3		13.7	8.0	46.8	Vfg gray Ss shy slty dolo M Sh Lam

PAGE NO. 3 OPERATOR Dob Oil Properties Incorporated LAB NO. 516-H

SAMPLE NO.	REPRESENTATIVE OF FEET	FOOTAGE	PERMEABILITY, MD. HORIZONTAL	PERMEABILITY, MD. VERTICAL	EFFECTIVE POROSITY %	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
12	3588-89	1.0	3.1		12.7	14.2	39.1	Vfg gray Ss sl shy slty dolo
13	3589-90	1.0	0.75		10.5	13.3	34.3	Vfg gray Ss very shy dolo
14	3590-91	1.0	1.1		12.8	10.9	33.6	Vfg gray Ss very shy dolo VF
15	3591-92	1.0	0.73		10.7	1.4	47.7	Vfg gray Ss very shy dolo VF
16	3592-93	1.0	1.4		12.2	20.1	53.3	Vfg gray Ss very shy dolo
17	3593-94	1.0	1.5		9.8	5.1	49.0	Vfg gray Ss very shy very dolo
18	3594-95	1.0	0.14		3.4	4.4	67.6	Vfg gray Ss very shy very dolo
	3595-99	4.0	-		-	-	-	Dol vfx shy slty sl sdy NS NA
	3599-3603	4.0	-		-	-	-	Dol d sc Ahy incls styo Sh ptgs NS NA
	3603-05	2.0	-		-	-	-	Dol d M Sh incls RF
	3605-15	10.0	-		-	-	-	Dol d styo Sh ptgs NS NA

#6

CORE LABORATORIES, INC. — Petroleum Reservoir Engineering

PRELIMINARY PRINT

COMPANY J. J. TRAVIS KENNEDY OIL CO. FILE NO. NP-3-1793
WELL SHELDON FEDERAL NO. X 6 DATE 10-30-61 ENGRS. ECONE
FIELD SQUARE LAKE FORMATION AS NOTED ELEV. 4009' DF
COUNTY EDDY STATE NEW MEXICO DRLG. FLD WATER BASE MUD CORES DIAMOND 4 3/8"
LOCATION 660 FN & 330 FWL SEC 28-T16S-R31E REMARKS SAMPLED AS DIRECTED BY CLIENT

COMPLETION COREGRAPH

SAND, SHALE, LIMESTONE, DOLOMITE, CONGLOMERATE, OOLITES, CHERT, ANHYDRITE

SAMPLE CHARACTERISTICS
F: Fractured L: Laminated FG; MG; CG: Type Grain Size S: Stylolitic V: Vuggy

PROBABLE PRODUCTION
O: Oil W: Water G: Gas T: Transitional

TOTAL WATER O—O
PERCENT PORE SPACE
75 50 25

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY, MD * = Horizontal Perm Plug HORIZONTAL *	POROSITY %	RESIDUAL SATURATION % PORE SPACE OIL	RESIDUAL SATURATION % PORE SPACE TOTAL WATER
		CONVENTIONAL ANALYSIS			

PERMEABILITY O—O MILLIDARCYS 20 10
POROSITY X---X PERCENT 20 10
OIL SATURATION X---X PERCENT PORE SPACE 25 50 75

GRAYBURG

3360
3365
3370
3375
3385
3390
3395

All Tests

DENSE-NO SHOW

1	3404.0-05.0	<0.1		5.1	0.0	80.4	FG	
2	05.0-06.0	<0.1		7.9	2.5	76.0	FG	
3	06.0-07.0	56		21.9	19.6	46.6	FG	
4	07.0-08.0	0.6		12.5	21.6	44.2	FG	
5	08.0-09.0	0.4		11.8	22.8	48.3	FG	
6	09.0-10.0	0.4		11.1	5.3	80.9	FG	

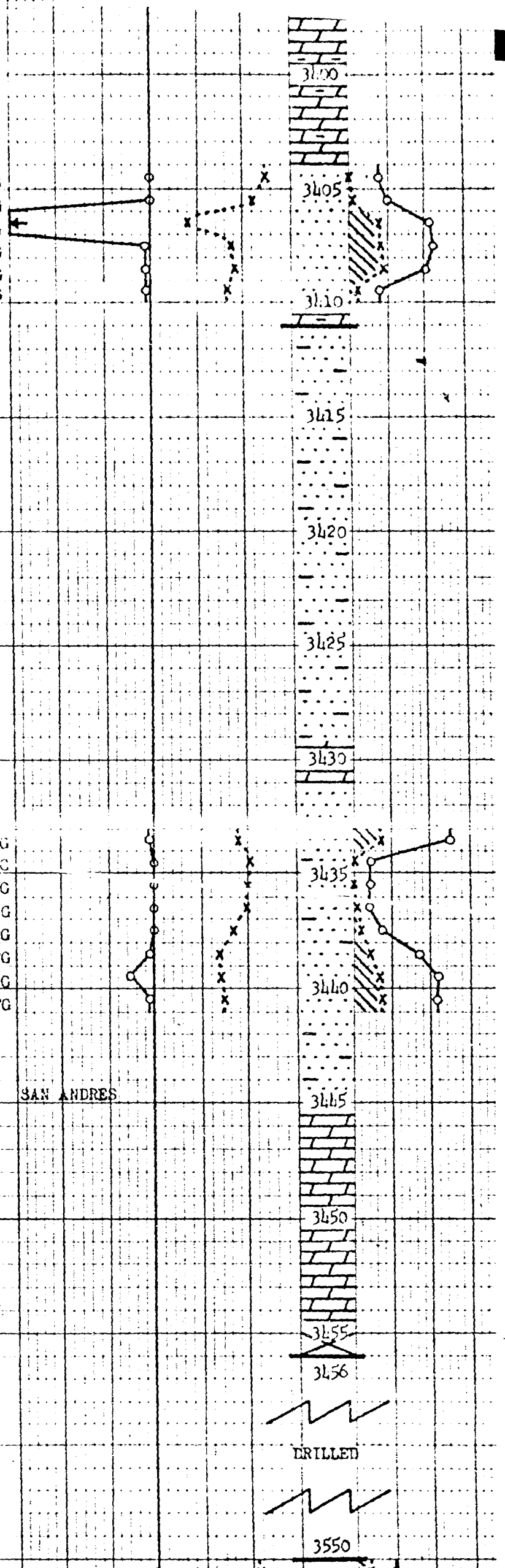
DENSE-NO SHOW

7	3433.0-34.0	0.2		12.1	19.8	37.2	FG	
8	34.0-35.0	<0.1		9.5	0.0	88.5	FG	
9	35.0-36.0	<0.1		10.0	0.0	88.0	FG	
10	36.0-37.0	<0.1		10.1	2.0	89.2	FG	
11	37.0-38.0	<0.1		13.2	5.3	81.8	FG	
12	38.0-39.0	0.2		16.5	11.5	57.7	FG	
13	39.0-40.0	5.1		16.2	17.9	45.1	FG	
14	40.0-41.0	0.4		15.3	19.6	45.8	FG	

SAN ANDRES

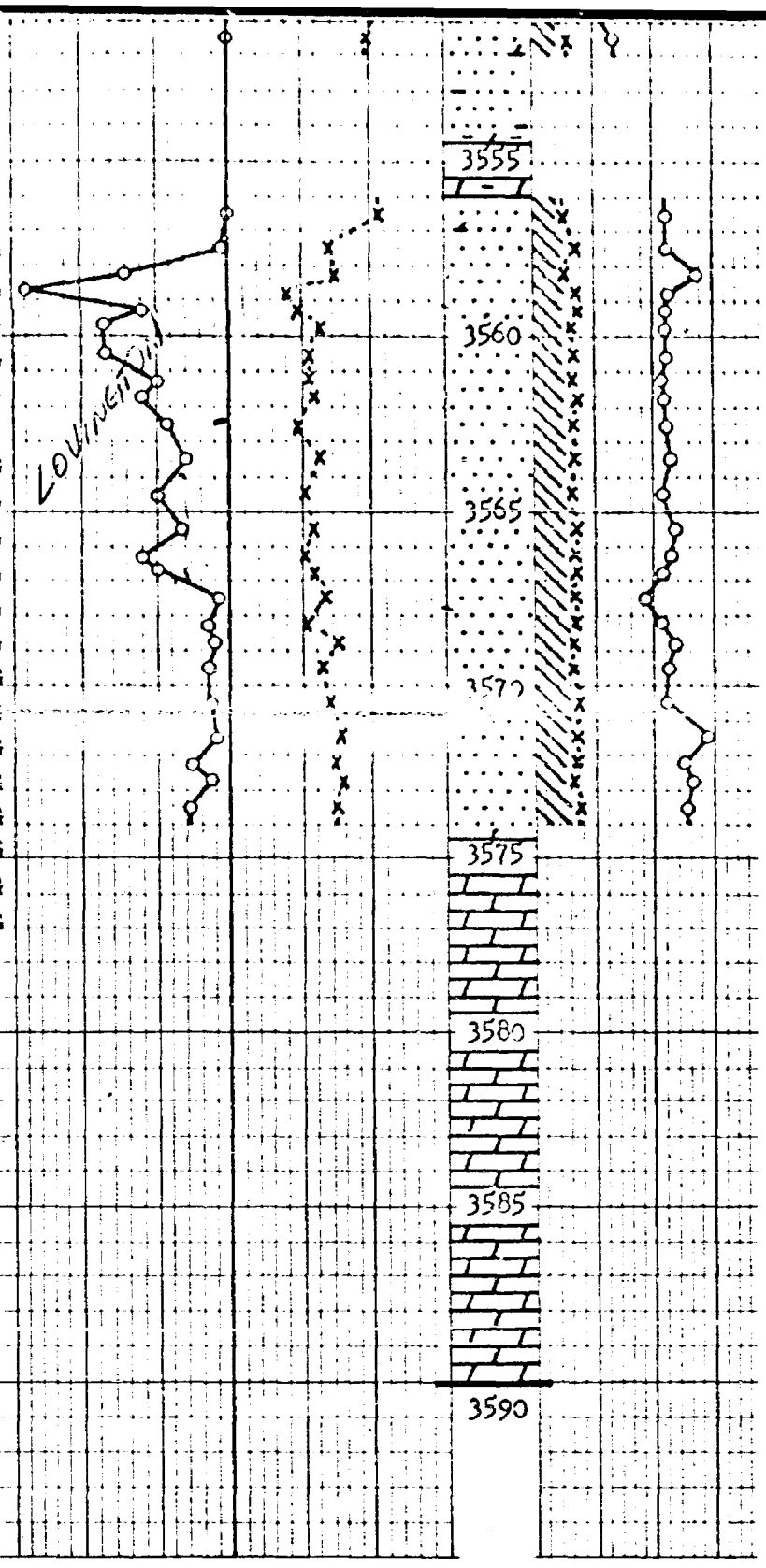
DENSE-NO SHOW

15	3550.0-51.0	<0.1		8.9	7.9	76.4	FG	



16	51.0-52.0	<0.1		10.2	15.7	66.8	FG	
17	3556.0-57.0	<0.1		8.7	13.8	43.7	FG	
18	57.0-58.0	0.4		16.5	17.6	43.6	FG	
19	58.0-58.5	14		14.7	13.0	32.0	FG	
20	58.5-59.0	28		21.9	17.8	43.4	FG	
21	59.0-59.5	12		20.5	18.0	44.4	FG	
22	59.5-60.0	17		17.5	16.5	44.6	FG	
23	60.0-61.0	17		19.0	16.8	46.8	FG	
24	61.0-61.5	10		19.1	16.7	45.0	FG	
25	61.5-62.0	12		18.2	18.6	43.3	FG	
26	62.0-63.0	8.8		20.4	17.3	43.8	FG	
27	63.0-64.0	6.0		17.7	17.5	42.9	FG	
28	64.0-65.0	10		19.7	16.7	46.2	FG	
29	65.0-66.0	6.5		18.5	17.3	41.7	FG	
30	66.0-66.5	12		19.7	17.2	42.7	FG	
31	66.5-67.0	10		18.6	17.7	45.7	FG	
32	67.0-68.0	1.2		17.1	16.3	53.2	FG	
33	68.0-68.5	2.9		19.4	17.0	46.8	FG	
34	68.5-69.0	2.0		15.1	16.5	41.1	FG	
35	69.0-70.0	2.9		17.4	16.7	43.2	FG	
36	70.0-71.0	2.5		16.3	18.4	44.2	FG	
37	71.0-72.0	1.6		14.7	17.7	27.9	FG	
38	72.0-72.5	5.1		15.4	17.5	37.7	FG	
39	72.5-73.0	2.5		14.6	16.4	33.5	FG	
40	73.0-74.0	5.6		15.6	19.2	36.5	FG	

DENSE-NO SHOW



Form CA-26

#7

THE WESTERN COMPANY
GAMMATRON
Simultaneous [illegible] Log

FILING	
COMPANY	NEWMONT OIL COMPANY
WELL	FIDEL # 3
FIELD	SQUARE LAKE
COUNTY	EDDY
STATE	NEW MEXICO
LOCATION	660'FNL & 1980'FEL
SEC	29
TWP	16-S
RGE	31-E
OTHER SERVICES	

Permanent Datum GROUND LEVEL Elev 3250

Log Measured From 0 Ft. Above Permanent Datum

Drilling Measured From G.L.

ELEVATIONS	
KB	
DF	
GL	3250

DATE	5-4-62	5-4-62	5-4-62
RUN NO	ONE	ONE	ONE
TYPE LOG	GAMMA-RAY	NEUTRON	CEL
DEPTH—DRILLER	3511	3511	3511
DEPTH—LOGGER	3509	3509	3509
BOTTOM LOGGED INTERVAL	3500	3507.5	3505
TOP LOGGED INTERVAL	SURF.	SURF.	2100
TYPE FLUID IN HOLE	WATER	WATER	WATER
SALINITY PPM CL			
DENSITY			
LEVEL			
MAX REC TEMP DEG F			
OPR RIG TIME			
RECORDED BY	CARROLL	CARROLL	CARROLL
WITNESSED BY			

BORE HOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT	FROM	TO
				5 1/2		SURF.	3262
				4		3161	3509

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

ELSI

REFERENCE A1032L

9 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

CASING RECORD

PERFORATING RECORD

ACID, FRAC SHOT

I P

GOR

GR

T P

C P

REMARKS:

EQUIPMENT DATA

GAMMA RAY			
RUN NO	ONE		
TOOL MODEL NO	175		
DIAM	1 7/8"		
DETECT MODEL NO	SPAT2		
TYPE	SCINT		
LENGTH	3"		
DIST TO N SOURCE	96"		

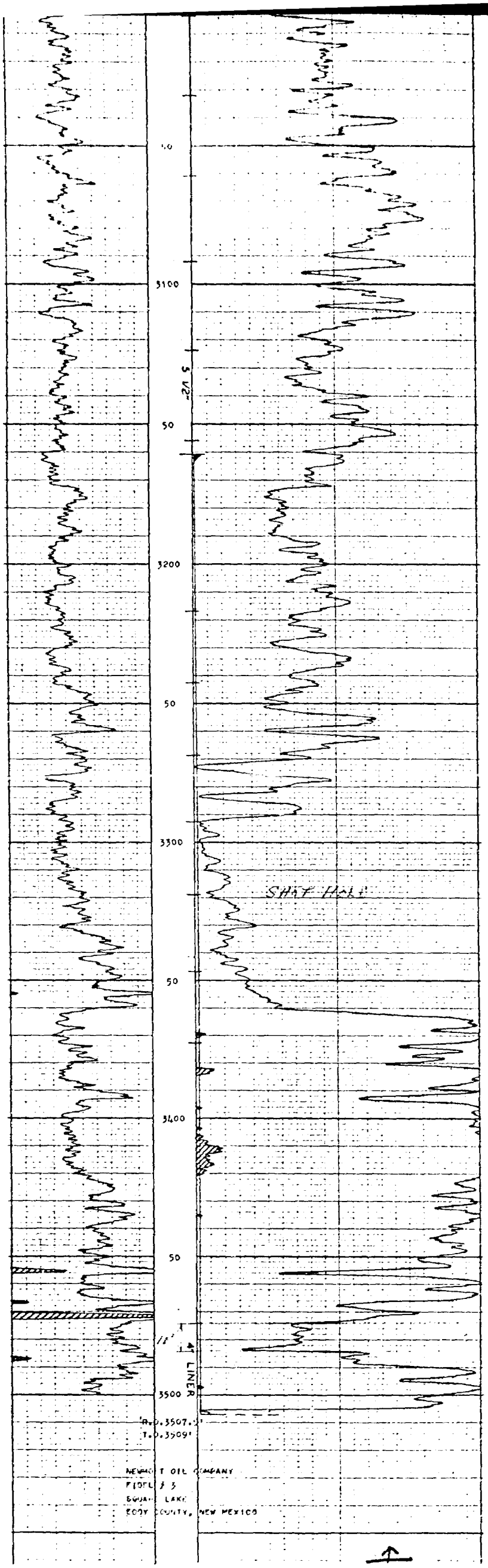
GENERAL			
HOST TRUCK NO	6611		
INST TRUCK NO	6511		
TOOL SERIAL NO	1		
LOG TICKET NO	[illegible]		

NEUTRON			
RUN NO	ONE		
LOG TYPE	N-N (THERM)		
TOOL MODEL NO	175		
DIAM	1 5/8"		
DETECT MODEL NO	[illegible]		
TYPE	[illegible]		
LENGTH	1 1/2"		
SOURCE MODEL NO	[illegible]		
SERIAL NO			
SPACING	[illegible]		
TYPE	[illegible]		
STRENGTH	[illegible]		

LOGGING DATA

RUN NO	DEPTH FROM	DEPTH TO	SPEED FT/MIN	GAMMA RAY T.C. SEC	GAMMA RAY SENS SETTING	GAMMA RAY ZERO DIV L or R	GAMMA RAY API G.R. UNITS PER LOG DIV	NEUTRON T.C. SEC	NEUTRON SENS SETTING	NEUTRON ZERO DIV L or R	NEUTRON API N UNITS PER LOG DIV
	3507.5	2540	30	2	220	0	10	2	67	3 L	50
	3507.5	SURF.	60	2-1	220	0	10	2-1	67	3 L	50

REFERENCE LITERATURE


3100
50
3200
50
3300
SHOT HOLE
50
3400
50
3500
LINER
T.D. 3509'
NEWMONT OIL COMPANY
FIDEL # 3
SQUARE LAKE
EDDY COUNTY, NEW MEXICO

#8

ISOTRON
PERFORATORS, INC.

COMPANY ARMORT OIL COMPANY

WELL FIDEL NO. 8

FIELD SQUARE LAKE

COUNTY EDDY STATE NEW MEXICO

LOCATION 810' F.N.L. 990' F.E.L.

SEC 29 TWP 16-S RGE 31-E

OTHER SERVICES

Permanent Datum GROUND LEVEL Elev.
Log Measured from G.L. 0 ft. above Perm. Datum
Drilling Measured from K.B.

Elev.: K.B. / D.F. 3973 / G.L.

Date	10-9-62
Run No.	ONE
Type Log	ISOTRON
Depth Driller	3550'
Depth Logger	3550'
Bottom Logged Interval	3550'
Top Logged Interval	SURFACE
Type Fluid in Hole	WATER
Salinity PPM CL	N.A.
Density lb/Gal	N.A.
Level	FULL
Max. Recorded Temp. Deg. F	N.A.
Opr. Rig Time	PORTABLE MAST
Recorded by	RUSSELL
Witnessed by	MR. HAGGARD

RUN NO.	BORE HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
				5-1/2		SURFACE	3297'
				4" T.J.		3296'	T.D.

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

REFERENCE A1281K

ELSI

8 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

I P

GOR GR

T P C P

REMARKS:

EQUIPMENT DATA

GAMMA RAY		ISOTRON	
Run No.	ONE	Run No.	ONE
Tool Model No.	1300-11	Log Type	N-G
Diam.	3-1/2	Tool Model No.	1300-11
Detector Model No.	453-C	Diam.	3-1/8
Type	Na.I.	Detector Model No.	452-C
Length	4"	Type	Na.I.
Dist. to N. Source	81"	Length	4"
		Source Model No.	420-C
		Serial No.	
		Spacing	15.5
		Type	RA-BE
		Strength	8.1 x 10^6

GENERAL	
Hoist Truck No.	110
Inst. Truck No.	204
Tool Ser. No.	

LOGGING DATA

Run No.	Depths From	Depths To	Speed Ft/Min	T.C. Sec	Gamma Ray Sens Settings	Gamma Ray Zero Div. L or R	API G.R. Units Per Log Div	Isotron T.C. Sec	Isotron Sens Settings	Isotron Zero Div. L or R	API N. Units Per Log Div
1	T.D.	2500'	15	2	200-20	0	12.5	2	400-20	5-L	100
2	T.D.	SURFACE	40	1	200-20	0	17.5	1	400-20	5-L	100

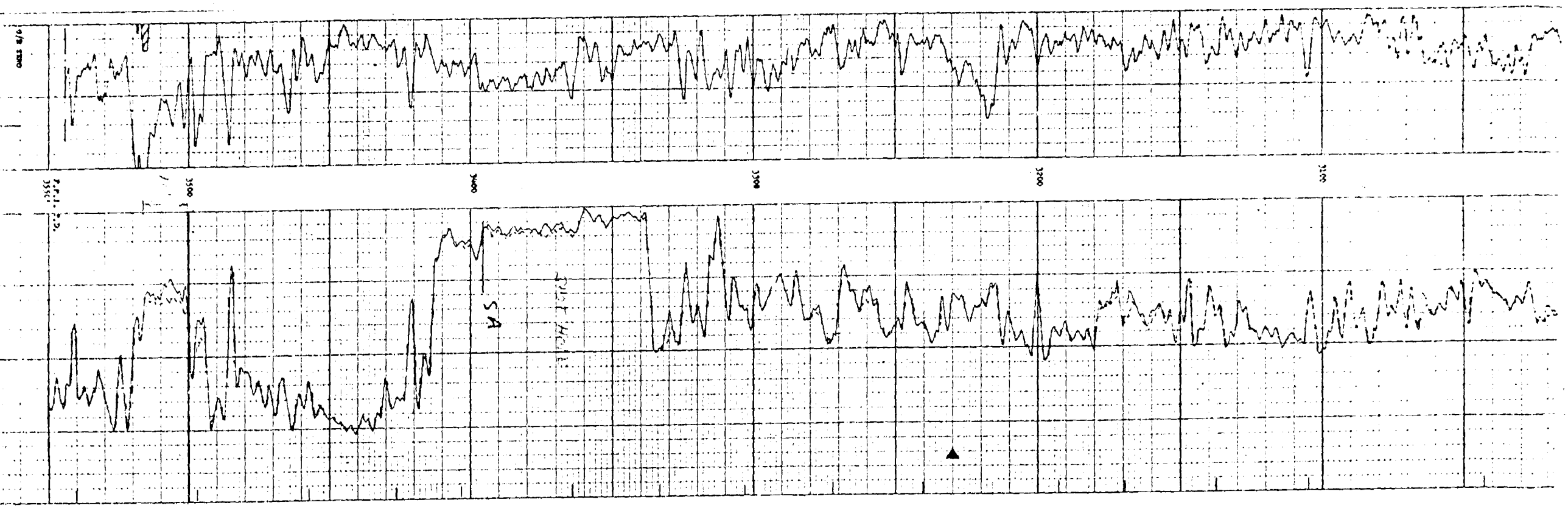
Reference Literature

NORMALIZATION POINT ◀

Remarks

WORKOVER WELL
COLLARS AS NOTED

GAMMA RAY	DEPTHS	ISOTRON


3500
3400
3300
3200
3100
SA

FILE NO. [illegible]

COMPANY NEWMONT OIL COMPANY

WELL FIDEL NO. 5

FIELD EAST SQUARE LAKE

COUNTY EDDY STATE NEW MEXICO

LOCATION: 50' FNL & 50' FEL

SEC 29 TWP 16-S RGE 31-E

Other Services

Elevations: KB [illegible] DF [illegible] GL [illegible]

Permanent Datum	GROUND LEVEL	Elev.	
Log Measured from	G. L.	Ft. Above Permanent Datum	
Drilling Measured from	K. B.		

Date	4/14/65		
Run No.	ONE		
Depth—Driller	3590		
Depth—Logger	3579		
Bottom Logged Interval	3573		
Top Logged Interval	110		
Casing—Driller	13 3/8@335	@	@
Casing—Logger			
Bit Size	7 7/8"		
Type Fluid in Hole	SALT MUD		
Density and Viscosity	10 [illegible]		
pH and Fluid Loss		cc	cc
Source of Sample			
Rm @ Meas. Temp.	.05 @ 75 °F	@ °F	@ °F
Rmf @ Meas. Temp.	.04 @ 75 °F	@ °F	@ °F
Rmc @ Meas. Temp.	.06 @ 75 °F	@ °F	@ °F
Source of Rmf and Rmc	CALC. CALC.		
Rm @ BHT	.04 @ 93 °F	@ °F	@ °F
Time Since Circ.	1 HOURS		
Max. Rec. Temp. Logged	93 °F	°F	°F
Equip. No. and Location	1-900 HOBBS		
Recorded By	HARTLEY		
Witnessed By	MR. HAGAN		

FOLD HERE

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-31

REMARKS

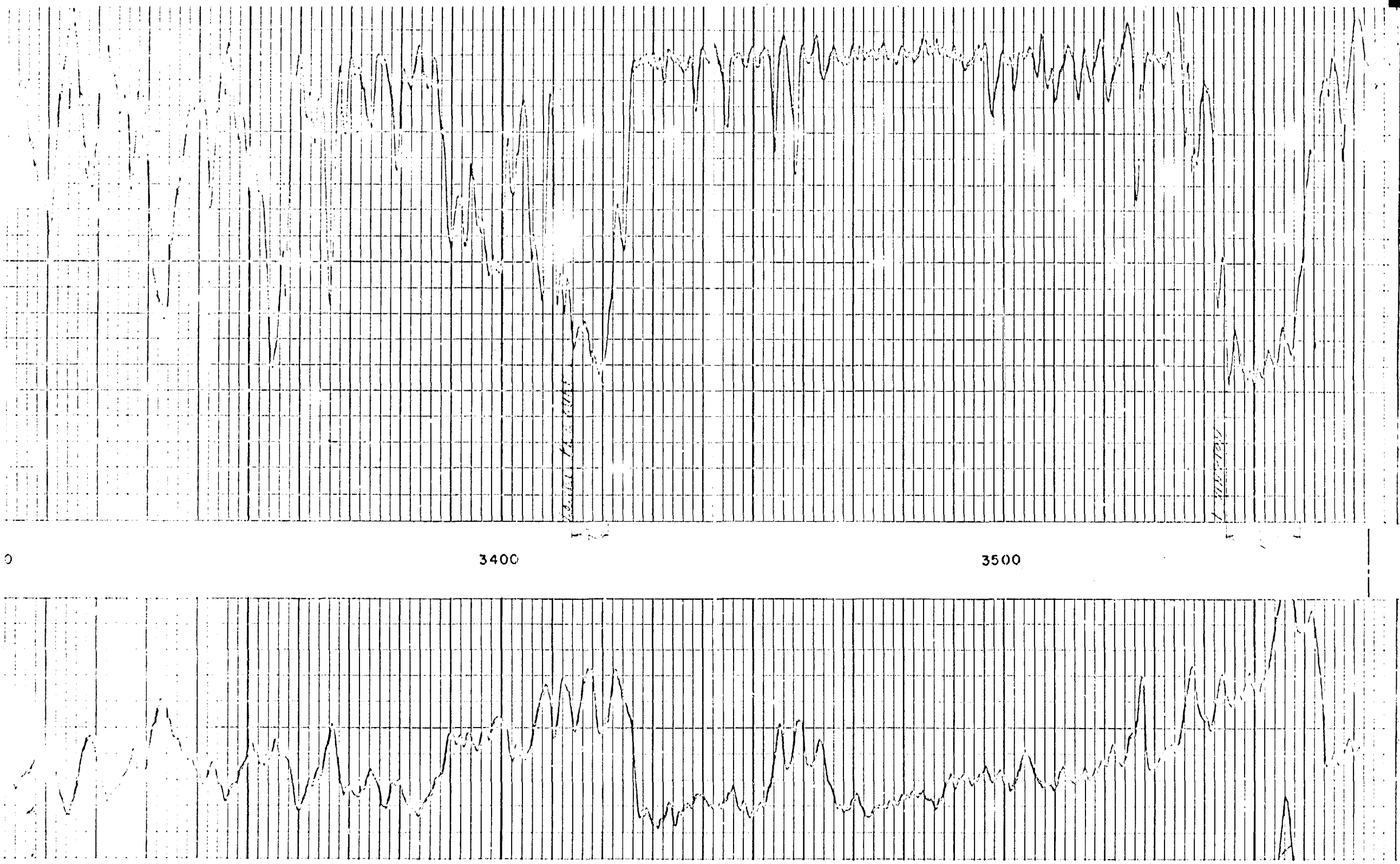
DETECTOR TYPE	D4G1 SCINT.	SEN. SETTING	990 X-1
DETECTOR LENGTH	4"	ZERO DIV. L OR R	-0-
T.C.	2.0 & 0.9		
LOG SPEED	30' & 60'		

Changes in Mud Type or Additional Samples				
Date	Sample No.			
Depth-Driller				
Type Fluid in Hole				
Dens.	Visc.			
pH	Fluid Loss		cc	cc
Source of Sample				
Rm @ Meas. Temp.		@ °F	@ °F	
Rmf @ Meas. Temp.		@ °F	@ °F	
Rmc @ Meas. Temp.		@ °F	@ °F	
Source Rmf	Rmc			
Rm @ BHT		@ °F	@ °F	
Rmf @ BHT		@ °F	@ °F	
Rmc @ BHT		@ °F	@ °F	

Scale Changes			
Type Log	Depth	Scale Up Hole	Scale Down Hole

Equipment Data				
Run No.	Tool Type	Pad Type	Tool Position	Other
ONE	SERIES 605		FREE	

S.P. or G/R & Caliper	DEPTH	ACOUSTILOG T 3 R 1 R R
Millivolts − ←→ + HOLE SIZE - INCHES 7 9 11 13 15 10 API/CD 0 API 100 API	2"=100' LR 110'	SPECIFIC ACOUSTIC TIME Micro Seconds Per Foot 100 85 70 55 40 1' SPACING


3400
3500

KENNEDY OIL COMPANY
PAINTROCK FLOOD EXTENSION
EDDY COUNTY, NEW MEXICO

#10

SW/4 SW/4 Section 21, T-16S., R-31E.
N/2 NW/4 Section 28, T-16S., R-31E.

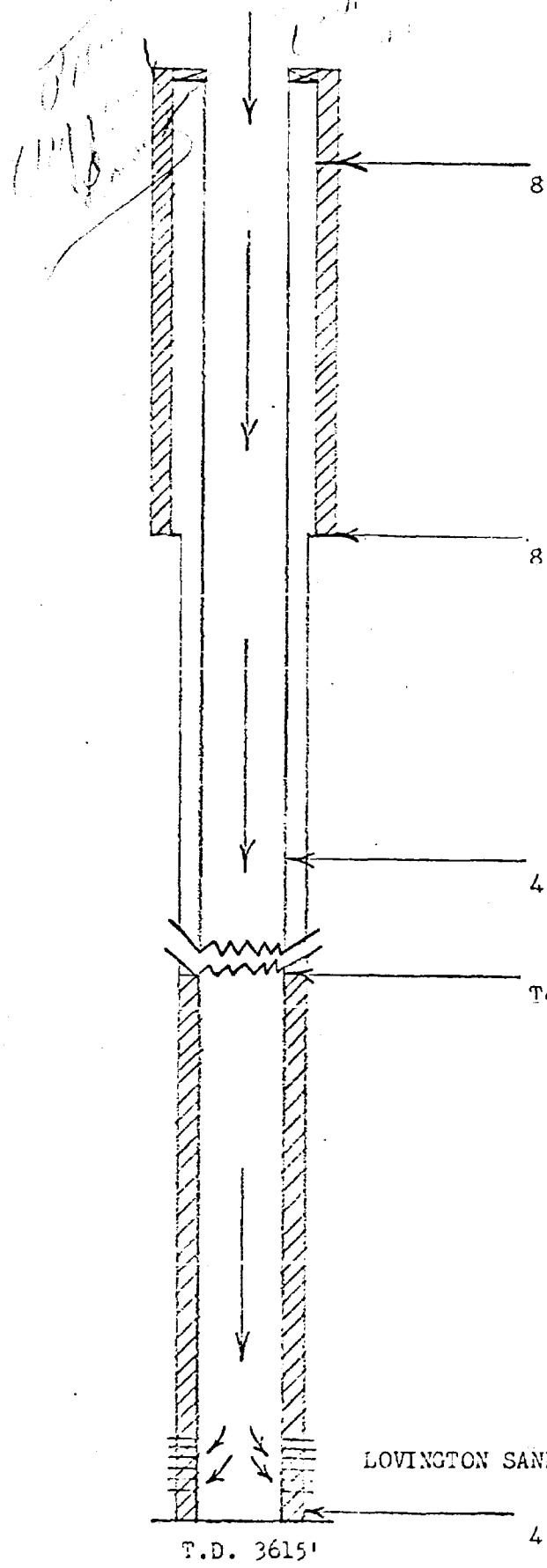
LEASE & WELL NO.	COMPLETION DATE	ELEVATION	T.D.	CASING SIZES	CASING DEPTH	CEMENT	PERFORATIONS
Dob Fed. #A-3	1-15-62	4003	3615	8 5/8" 4 1/2"	359' 3615'	250 100	3593-3597
Sheldon Fed. #6	3-30-62	4000	3632	8 5/8" 5 1/2"	495' 3632'	200 200	3407-3416 3437-3448 3560-3580
*Kennedy Fed. #3	Proposed Location	N.A.	3650 ±	13 3/8" 5½ or 4½	3650 ±	200	N.A.

*Proposed Location to be drilled in the NE/4 NW/4 Sec. 28-16S-31E

#11

SCHEMATIC DRAWING OF INJECTION WELL

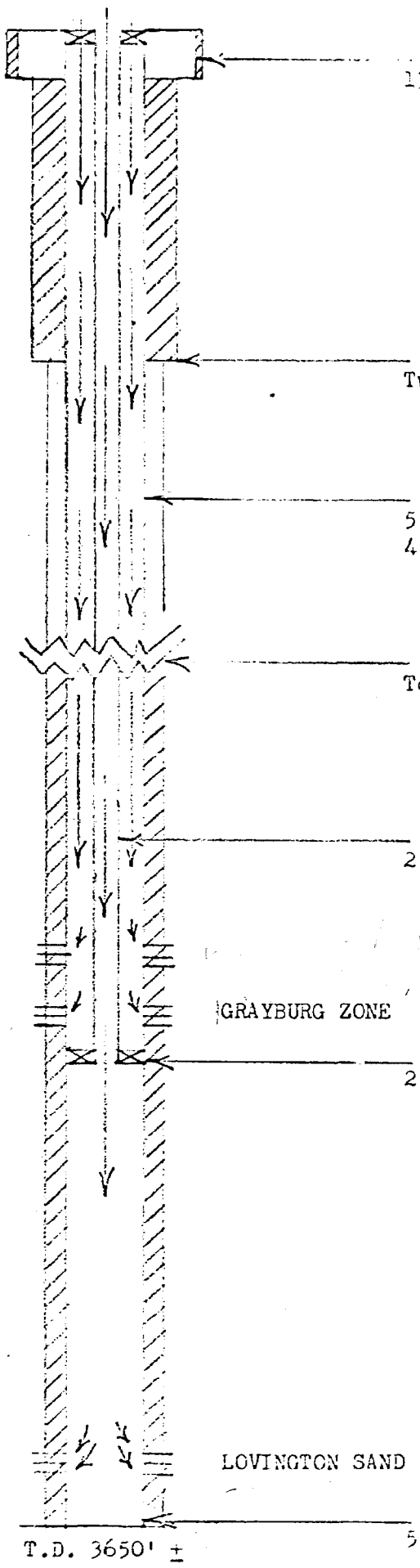
KENNEDY OIL COMPANY - DOB FED. #A-3
SW/4 SW/4 SECTION 21, T16S, R31E
EDDY COUNTY, NEW MEXICO
SQUARE LAKE POOL



#12

SCHEMATIC DRAWING OF PROPOSED INJECTION WELL

KENNEDY OIL COMPANY - KENNEDY FED. #3
NE/4 NW/4 SECTION 28, T16S, R31E
EDDY COUNTY, NEW MEXICO
SQUARE LAKE POOL



13 3/8" 54# J-55 casing cemented to surface at 30' ±

Two stage cement job at 600' ± 50 sacks

5 1/2" 14# J casing, seamless, new or
4 1/2" 9.5# J casing, seamless, new

Top cement behind 5 1/2" or 4 1/2" casing 2800' ±

2" EUE 8rd, seamless, new, tubing - Injection String

2" x 5 1/2" or 4 1/2" Tension Packer at 3350' ±

5 1/2" or 4 1/2" casing set at 3650' ±