

CASE 3026: Application of SHELL
for a waterflood project in the
Jalmat Pool, Lea County, N. Mex.

See page 1
of 10
Jalmat Pool

CASE No.

3026

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 8, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Oil Company for a
waterflood project, Lea County, New
Mexico.

Case No. 3026

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 8, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Shell Oil Company)
for a waterflood project, Lea)
County, New Mexico.)

CASE NO. 3026

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please.

The next case will be Case 3026.

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

MR. MORRIS: If the Examiner please, I am Richard Morris
of Seth, Montgomery, Federici and Andrews, of Santa Fe, appearing
on behalf of the applicant, Shell Oil Company. We will have one
witness, Mr. Richard Sosa and I ask that he be sworn at this time.

(Witness sworn)



RICHARD SEBA.

called as a witness herein, having been first duly sworn on oath,
was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Seba, please state your name, by whom you are employed
and in what capacity and where you are located?

A My name is Richard D. Seba, I am a Senior Reservoir
Engineer with Shell Oil Company in Midland, Texas.

Q Have you previously testified before the New Mexico Oil
Conservation Commission or one of its examiners?

A No, sir.

Q Then, would you briefly outline your education and your
experience in the oil industry since finishing your formal
education?

A I have a Bachelor of Science Degree in Petroleum Engineer-
ing from the University of Oklahoma and a Master of Petroleum
Engineering Degree from the University of Oklahoma, and a Doctor
of Philosophy Degree with a major in Petroleum Engineering from
the University of Texas. Upon graduation, I was employed by Shell
Oil Company and for three years was associated with their research
group in Houston doing reservoir engineering research. Since
August of '63, I have been in Midland doing reservoir engineering
work in West Texas.



Q Are you familiar with the application of Shell Oil Company in Case 3026?

A Yes, sir, I am.

Q What is it that Shell Oil Company seeks by this application?

A Shell Oil Company seeks authorization to conduct water-flooding operations on the Wills Federal and Pubco State leases in the Jalmat Field in Sections 32 and 33, Township 26 South, Range 37 East, Lea County, New Mexico.

This project would be an expansion or extension of the present waterflood in the Scarborough Field in Winkler County, Texas.

Q If you would, refer now, Mr. Seba, to what has been marked Exhibit One in this case, which is your brochure, and refer to Enclosure Number One in this exhibit, which, I believe, is a plat of the area under consideration, and would you explain what is shown by that plat?

A Yes, sir. This is a map of the general area, including approximately two miles in each direction from the subject leases, the subject leases being the Wills Federal and Pubco State, and they are outlined in red. They are on the Texas-New Mexico line.

I have also included on this map a line marked "AA Prime" which is a cross section, which will be presented subsequently. I have also indicated the proposed injection wells by the red



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circles around the well locations, for both the two leases in New Mexico, and adjacent leases in Texas.

I have also included in this map contours on the top of the Yates formation.

Q Would you briefly describe the history of this particular area, the development in the Yates formations and the status of the development, both in Texas and New Mexico, in the Scarborough and Jalmat Pools?

A The Jalmat Field and Scarborough Field produce from a common reservoir, which underlies portions of Texas and New Mexico. The Jalmat denotes that segment of the reservoir in New Mexico and the Scarborough Field that part in Texas.

The Scarborough Field was discovered in 1927, produces from the Yates Formation at an average depth of about 3100 feet. However, the major development in it occurred in the late 1940's subsequent to the development of fracturing techniques. The Wills Federal and the Pubco State leases were drilled in 1953-59.

Waterflooding was started in the Scarborough Field in 1955 and currently most of the field is under waterflood, or will be in the near future.

The Yates Formation in the subject area has a gross thickness of about 400 feet and composed of alternate layers of Sandstone, Dolomite, Shale and various combinations of the three.

The logs on the four injectors have been submitted to the



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Commission, along with our application for this hearing. I have also prepared a cross section, which is Enclosure Two, which is the cross section marked on the first map "AA Prime", which is the North-South cross section, showing the Yates formation in this area of the reservoir.

You will note that the Yates is composed of nine distinguishable zones, each zone is separated by an impermeable layer of Dolomite. Within each one of these zones, there are sand stringers, which are the oil reservoir in the case of this field. Sand development does vary considerably between adjacent wells, however, in general, the deeper sand beds near the center of the field exhibits better continuity. In the Northern part of the field, which is the area we are interested in, the deeper sands are not as well developed, whereas, sandstone in the upper part of the Yates section showed improved reservoir characteristics.

Generally, zones One through Five, are productive on the leases in question today. The upper sands are not as widespread as the deeper erratic sands. The upper sands do possess some high porosity and looks like a good waterflood prospect.

I believe you said, Mr. Seba, it is the upper five zones of the Yates, as marked on your cross section, that we are primarily interested in today. By that, do you mean that these are the zones into which you propose to inject water as proposed in this waterflood project?



A We propose to inject water into all five zones, subject to testing before injection to determine if anyone of these zones will act as thief zones. In the absence of any one of these being a thief zone, we will inject water into all five zones.

Q What data do you have concerning engineering data concerning this reservoir and especially these five zones?

A The primary producing mechanism of the Scarborough Field and the Jalmat Field are solution gas drive. Due to the low permeability of the Yates Sand, the production rate has declined quite rapidly resulting in poor primary recovery for these fields. Tabulation perimeters are presented in Enclosure Three. I would like to just briefly mention a few of those that are of interest.

As I stated before, the average depth in this case is about 3,050 feet, the average pay - - effective pay thickness now for all five zones together is about 50 feet, average porosity of about 17 percent, and average horizontal permeability of about 15 millidarcies with a range from zero to 22. We estimate that the connate water saturation is about 41 percent and the oil in this reservoir is about 36 degrees API.

In looking at the zones, we have determined that all zones have roughly similar porosities and permeabilities and other reservoir characteristics and we anticipate that all zones will take water roughly in proportion to their thickness; unless we



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do find a thief zone, why, we will anticipate they will take water quite uniformly. Therefore, we will inject into all simultaneously.

Q There will be no selective injection?

A We do not anticipate it at the present time.

Q Mr. Seba, what is the current status of the wells in the North Scarborough and Jalmat Pools?

A In the vicinity of the area under consideration here today, generally, the wells in this area of the field have approached the stripper state of production after a rapid decline in the production rate on these two leases. The maximum production rate was achieved shortly after the initial drilling in 1958 and '59, and have declined quite rapidly.

I have presented a production curve for both leases in Figures Four and Five, from the time that the wells were originally drilled on these leases. You can see from those two curves that the production rate has declined quite rapidly and at the present time, the Pubco State lease is producing at an average rate of about one barrel of oil per day, whereas, the Wills Federal lease is producing at approximately three barrels of oil per day, which we feel classify them in the stripper state of production.

Q There a waterflood project presently being conducted in the Scarborough field?

A Yes. Currently, most of the Scarborough Field is under waterflood, and we have recently gotten permission to extend this



waterflood up to the New Mexico-Texas state line, so that all of Shell's leases and most of the other leases in this field, will be under waterflood within the near future.

Q What type of a pattern is in existence in the waterflood project immediately adjacent to the New Mexico state line?

A Generally, it is an irregular pattern due to the existing wall pattern and the irregular shape of the leases. Therefore, you might say that the proposed waterflood in the State of New Mexico will be roughly a line drive, and this was selected so that we could balance injection and production across lease lines to protect correlative rights of all parties involved. All of the injectors are flowed with casing cement through the Yates formation with perforations in one or more of the sand zones. I have presented the details of our completions in Enclosures Six, Seven and Eight and Nine. I might just look at one to explain what I have. They are all similar with the exception of the precise numbers.

Reference to Enclosure Six, as an example, we have a surface casing set roughly, in this case, at 609 feet with 400 sacks of cement. We have casing to total depth of the well, in this case, cemented with 200 sacks of cement. We anticipate producing this thing under a picker set at approximately the top of the Yates formation with perforations in the desired zones. I have also indicated on all of these the completion that was used at the time



these wells were drilled.

Q Do the perforations shown here indicate the perforations or projected perforations?

A They are the perforations in the wells. We do anticipate additional perforations to open up some zones that are currently behind the pipe, therefore, enable us to flood all of the zones that are productive in this area.

Q This enclosure that you have just referred to, is it similar to Enclosure Seven, Eight and Nine?

A Yes, sir.

Q On the other injection wells?

A Yes, sir. And I have also included in Enclosure 10 a tabulation of this to see the similarities between all of the wells. Just a summary of the data that appears in Enclosures Six through Nine.

Q Now, in the Scarborough Field, the waterflood project currently underway there, Mr. Seba, what rate of injection is being employed for the water injection wells?

A The waterflood currently in operation in the Scarborough Field indicates that the water injection rate for expansion will be about 100 barrels of water per day per injector. This is the injection rate in the proposed areas of Sections 22 and 31, and commensurate with existing waterflood wells on the proposed waterflood on the Shattuck corner adjacent to these in Texas.



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The Santa Rosa formation is the source of water for the proposed waterflood expansion in this case. The Santa Rosa water is relatively fresh and has been proved to be an excellent source of water for waterflood. The water project has been discussed with the office of the State Engineer and we have discussed at that time the physical installation of the wells, the source of the water, and we furnished him with a copy of water analysis, rates and all other aspects of this project. I believe the State Engineer's office has advised the Commission that they have no objection to this project.

I have also included some data just for your information, of the completion techniques of our water source well, and also, a copy of the analysis of that water. I have also presented in Enclosure 11 a map of our water distribution system, which indicates we will be importing water into the State of New Mexico from Texas. The source well being located on the lease directly south of the Wills Federal lease in the State of Texas. I have also indicated on that plat the estimated injection rate of 100 barrels a day for all of the injectors located in this area.

Q Mr. Sesa, what performance of this waterflood on the subject lease can you predict at this time?

A If you will refer back to Enclosure Four and Five, I have also included there an estimate of the performance that we expect on this water injection program. Let me further explain what we



have here. We anticipate to start water injection approximately June 1st, subject to approval, of course. We anticipate that we will start getting response from this in approximately six months, or roughly December of '64, and then, throughout '65, this project - production rate will increase to a maximum roughly in December, 1965. Thereafter, it will remain roughly constant until we get water breakthrough and as the water cut increases, it will decline to its economic limit, roughly at the end of 1975.

Q Still referring to those enclosures, Four and Five, what are the figures for each lease, showing the peak production per month, on each lease?

A The peak production for the Wills Federal lease is estimated to be around 8,000 per month, whereas, for the Pubco State lease, the maximum production rate will be about 2500 barrels per month.

Q Or, 10,500 barrels per month for the entire project?

A That's correct.

Q At the period of peak performance?

A Yes, sir.

Q Are you familiar with Rule 701 of the Commission's Rules and Regulations?

A Yes, I am.

Q Have you computed the allowable to which the project would be entitled under Rule 701?



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A Yes, I have. I have calculated that these will both be operated under a unit allowable in this case, and there will be nine 40 acre units. The allowable per well, or per unit, rather, is 42 barrels per day, thus yielding 378 barrels per day for the project, or 11,340 barrels per month. This figure is in excess of the predicted maximum production rate that we can expect from this flood, therefore, we will be able to produce at maximum capacity throughout the life of this project.

Q I believe you have already testified, Mr. Seba, that, in your opinion, correlative rights will be protected by the location of the injection and producing wells in this project?

A Yes, I have.

Q Do you have any opinion concerning whether this project will prevent waste?

A Yes, it will. At the present time, these wells have reached the economic limits and unless something is done to revive the production from this area, why, we will produce no more oil from this area.

Q Was Exhibit Number One, with all the enclosures, prepared by you or under your direction?

A Yes, it was.

MR. MORRIS: We move the introduction of Shell's Exhibit One in this case, and that completes the examination of Mr. Seba at this time.



MR. NUTTER: Shell's Exhibit One will be admitted in evidence.

Does anyone have any questions of Mr. Seba?

MR. DURRETT: I have a question of Mr. Seba.

CROSS EXAMINATION

BY MR. DURRETT:

Q What will be the allowable for the portion of your flood that is in Texas?

A The Scarborough Field is one of the fields in Texas that is not prorated. Therefore, it may produce at capacity.

Q Have you received approval from the Texas Railroad Commission to conduct the flood; is that correct?

A Yes, I have.

Q Now, producing at capacity, will there be approximately the same amount of oil taken in Texas as there will be in New Mexico, or would you say more or less?

A I would say that if anything, there will be more oil produced on the New Mexico side than on the Texas, as a result of the injector, which is Number 13, on the Linberry lease just south of the Wills Federal. There is no producer between that injector and the New Mexico lease. Therefore, it will benefit from this injector and move any oil that is between Well Number 13 and this lease on into the New Mexico side.



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MR. PORTER: This sounds good.

Q (By Mr. Durrett) You think we will protect New Mexico's correlative rights then?

A I think so, yes, sir.

* * *

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Seba, do you operate the acreage on the west part of the Section Two that is designated as Dr. S. G. Dunn?

A No, we don't.

Q Does Dr. Dunn have a permit for waterflooding that acreage?

A Yes, if you will refer to Enclosure One again, I have labeled two injectors on his lease and he is currently injecting into Wells Numbers 15 and Two. We approached Dr. Dunn to secure a cooperative agreement with him to inject water, but he declined to sign a cooperative agreement with us. However, he has indicated that he will inject water in Number 14 on that lease, so if he keeps his word, there will be one more injector in that lease, just to the south.

Q Now, how about the lease over in the east part of the Section Three in Texas, does he have any plans for injection in there that you know of?

A No, he doesn't.



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Q I presume that you are anticipating that any oil which is put in motion by this line drive flood on the northern part of the New Mexico leases would be intercepted by the row of wells along the Texas line before it entered the State of Texas?

A Yes, sir.

Q What has been the primary recovery from these two leases Mr. Seba?

A I believe it has been roughly in the neighborhood of 300 barrels- - I can't quote the figure to date, but it is something less than our anticipated secondary recovery. I recall a figure of approximately 350 barrels per acre, which is considerably less than the anticipated 2,000 barrels per acre that were anticipated with this flood.

Q How much acreages is in this again, some 400 acres, aren't they?

A 440, Yes.

Q 440.

A I think 300 barrels per acre.

Q 132,000 barrels on primary, and you are anticipating 300,000 on secondary?

A Yes. This is a very fine grain sandstone. I think it has shown very poor primary.

Q Has the flood down in the Texas portion of the field, which has been under operation for quite some time, yielded good



secondary recovery?

A There is a little bit of a strange situation. Some of these floods were started on it almost immediately with primary development, and it is difficult to separate primary from secondary, however, they performed very well. We have been very satisfied with the operation.

Q The older part of the field down in the Texas portion was developed on ten acre spacing, wasn't it?

A I don't believe so. I think that it was- -

Q Or, were the injection wells just infield wells?

A Well, for instance, in Section One, down here, it looks like the spacing is roughly 20 acres, which is slightly- - Well, half- - twice as dense, rather, as the section in New Mexico.

MR. NUTTER: I see. Any further questions of Mr. Seba? He may be excused. Do you have anything further, Mr. Morris?

MR. MORRIS: No, sir, I don't.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3026? Take the case under advisement.

* * * *



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STATE OF NEW MEXICO

COUNTY OF BERNALILLO

I, ROY D. WILKINS, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal of Office this 13th day of April, 1964.

NOTARY PUBLIC

My Commission Expires:

September 6, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Bernalillo County Oil Conservation Commission heard by me on 4/8 1964.

Examiner
New Mexico Oil Conservation Commission



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. 3026
Order No. R-2695

APPLICATION OF SHELL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
April 8, 1964, at Santa Fe, New Mexico, before Examiner
Daniel S. Mutter.

NOW, on this 28th day of April, 1964, 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, Shell Oil Company, seeks authority
to institute a waterflood project in the Jalmat Pool by the injec-
tion of water into the Yates formation through four wells in
Sections 32 and 33, Township 26 South, Range 37 East, NMPM, Lea
County, New Mexico.
- (3) That the wells in the proposed project area are in an
advanced state of depletion and should properly be classified as
"stripper" wells.
- (4) That the proposed waterflood project is in the interest
of conservation and should result in recovery of otherwise unreco-
verable oil, thereby preventing waste.
- (5) That the subject application should be approved and

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CASE No. 3026
Order No. R-2695

the project should be governed by the provisions of Rule 701 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to institute a waterflood project in the Jalmat Pool by the injection of water into the Yates formation through the following-described four wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Section 32:

Pubco State Well No. 2 located 1984 feet from the South line and 660 feet from the East line.

Section 33:

Wills Federal Well No. 3 located 660 feet from the North line and 660 feet from the West line.

Wills Federal Well No. 7 located 660 feet from the North line and 1980 feet from the West line.

Wills Federal Well No. 6 located 990 feet from the North line and 2310 feet from the East line.

(2) That the subject waterflood project shall be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including the allowable provisions thereof, and including the provisions with respect to expansion of the waterflood project.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1119 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.

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CASE No. 3026

Order No. R-2695

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell

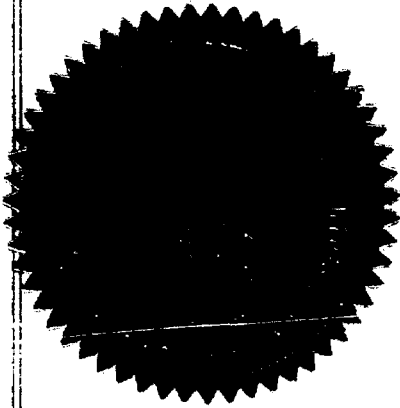
JACK M. CAMPBELL, Chairman

E. S. Walker

E. S. WALKER, Member

A. L. Porter, Jr.

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



esr/

MAIN OFFICE OCC

1964 MAR 18 AM 10:14

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

Application of Shell Oil Company }
for approval of a Water Flood }
Project, Lea County, New Mexico }

Case # 3036

A P P L I C A T I O N

Comes now Shell Oil Company, by its attorneys, and applies to the New Mexico Oil Conservation Commission for approval of a water flood project in the Jalmat pool, Lea County, New Mexico, and in support of its application states:

1. Shell Oil Company and others are the operators of a water flood project in the North Scarborough field of Winkler County, Texas, immediately adjacent to the Texas-New Mexico state line.

2. That Shell Oil Company desires to expand said water flood project into certain properties owned by it in Sections 32 and 33, T. 26 S., R. 37 E., Lea County, New Mexico, all as shown on the plats attached to and made a part of this application.

3. Shell Oil Company proposes to inject water at the rate of approximately 100 barrels per day into the Yates formation through each of Wells Nos. 2, 3, 6 and 7 as shown on the plat attached to and made a part of this application.

4. The source of water for said injection will be from the Santa Rosa formation and will be derived from a water source in the State of Texas; the proposed rate of injection in the New Mexico project will be comparable to the rates of injection of wells in the Texas project.

DOCKET MAILED

Date 3/22/64

5. Attached to and made a part of this application are exhibits showing a diagrametric sketch of each injection well, a log of each injection well, and a north-south cross section through a portion of the Jalmat and North Scarborough pools.

6. The wells in the proposed project area have reached an advanced stage of depletion and are properly considered as "stripper" wells.

7. Approval of this application will be in the best interest of conservation and will prevent waste and protect correlative rights.

WHEREFORE, Shell Oil Company requests that this matter be set for hearing before the Commission, or one of its examiners, and that following said hearing the Commission enter its order approving this application.

SETH, MONTGOMERY, FEDERICI & ANDREWS

By

Richard S. Morris

350 East Palace Avenue
Santa Fe, New Mexico
Attorneys for Shell Oil Company

APRIL 8, 1964 EXAMINER HEARING

approval of the Long Draw Unit Area comprising 3514 acres, more or less, of State and Federal lands in Township 20 South, Ranges 23 and 24 East, Eddy County, New Mexico.

CASE 3026: Application of Shell Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Jalmat Pool by the injection of water into the Yates formation through four wells in Sections 32, and 33, Township 26 South, Range 37 East, Lea County, New Mexico.

CASE 3027: Application of El Paso Natural Gas Company for the adoption of a new form. Applicant, in the above-styled cause, seeks the adoption of a new form entitled Purchaser's and Operator's Monthly Report, said form to be for the optional use of those gas purchasing companies which also have gas production. Use of said form to report monthly purchases and production would be in lieu of the monthly purchasers report and the monthly producers report presently required. Copies of the proposed form are available at the Office of the Oil Conservation Commission, State Land Office Building, Santa Fe, New Mexico.

CASE 3028: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the revision of certain existing forms, the adoption of certain new forms, and the amendment of certain rules pertaining to the filing of forms.

In the above-styled cause, the Commission proposes to consider the adoption of various forms patterned after the model forms recommended by the Interstate Oil Compact Commission for use in reporting all phases of oil and gas activity to state regulatory agencies. The forms have also been adopted and recommended by the Regulatory Practices Committee and the Executive Committee of the New Mexico Oil and Gas Association.

Adoption of the forms by the Commission will also entail amendment to numerous rules and orders of the Commission, particularly in Section M of the Rules and Regulations, wherever reference is made to the title or form number of an existing form which would be revised, or where detailed instructions for completing and filing of forms would not be consonant with the proposed forms.

It is further proposed to amend Rule 1121 of the Rules and Regulations and Rule 7 (A) of the General Rules and Regulations for Prorated Gas Pools in the State of New Mexico as promulgated by Order No. R-1670 to require that gas purchasers' nominations be submitted not later than the first day of the month during which the nominations will be considered at the monthly allowable hearing.

It is also proposed that said Rule 7 (A) be further amended to require that gas purchasers shall file a supplemental nomination for the purchase of gas each month.

Copies of all proposed forms are available at the office of the Oil Conservation Commission, State Land Office Building, Santa Fe, New Mexico.

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 8, 1964

DOCKET NO. 10-64

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 3020: In the matter of the application of the Oil Conservation Commission of
New Mexico upon its own motion for the abolishment and extension of the
following pools:

Abolish the Weir-Tubb Gas Pool in
Township 20 South, Range 37 East;

Extend the Monument-Tubb Pool in
Township 20 South, Range 37 East,

all in Lea County, New Mexico.

CASE 3021: Application of Cherry Brothers and Cabot Corporation for a tubingless
completion, Lea County, New Mexico. Applicants, in the above-styled
cause, seek approval of the tubingless completion of their Austin State
Well No. 1, located in Unit F of Section 19, Township 14 South, Range
36 East, Lea County, New Mexico, to produce oil from the Permo-Pennsyl-
vanian formation at approximately 10,356 feet through 2 7/8-inch casing.

CASE 3022: Application of Sinclair Oil & Gas Company for special pool rules, Lea
County, New Mexico. Applicant, in the above-styled cause, seeks the
establishment of special pool rules for the North Vacuum-Devonian Pool,
Lea County, New Mexico, including a provision for 80-acre spacing.

CASE 3023: Application of Cities Service Oil Company for salt water disposal, Lea
County, New Mexico. Applicant, in the above-styled cause, seeks authority
to dispose of produced salt water into the Ellenburger formation through
its Hodges "B" Well No. 2 which is dually completed in the McKee and
Ellenburger formations and located in Unit L of Section 1, Township 25
South, Range 37 East, Lea County, New Mexico.

CASE 3024: Application of Deane H. Stoltz for approval of a non-standard unit, a
dual completion, and commingling, Lea County, New Mexico. Applicant,
in the above-styled cause, seeks approval of a non-standard 80-acre
unit in the North Bagley-Wolfcamp Pool comprising the SW/4 NE/4 and
NW/4 SE/4 of Section 22, Township 11 South, Range 33 East, Lea County,
New Mexico, approval of the dual completion (conventional) of its
Deane H. Stoltz State 262 Well No. 1, located in Unit G of said Section
22, to produce oil from the North Bagley-Wolfcamp Pool through 1 1/4-
inch tubing and to produce oil from the North Bagley-Upper Pennsylvanian
Pool through the casing-tubing annulus by means of a hydraulic pump and
authority to commingle production from the North Bagley-Wolfcamp and
North Bagley-Pennsylvanian Pools into a common tank battery, computing
production from the North Bagley-Upper Pennsylvanian Pool by the sub-
traction method.

CASE 3025: Application of Pan American Petroleum Corporation for a unit agreement,
Eddy County, New Mexico. Applicant in the above-styled cause, seeks

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

CASE 3026

Date 4/20/64

Hearing Date 9am 4/8/64

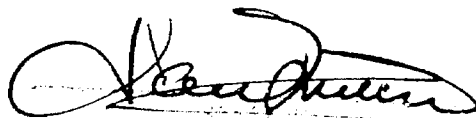
DSN (2) SF

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

Enter an order in this case authorizing the wtr fld. Sheld is requesting. Area is "stripper" and should be classified as wtr fld. Project should result in recovery of otherwise unrecoverable oil & prevent waste.

Injection into water formation through following wells.

Onaco State # 2 1984' FSL & 660' FEL 32-26-37
Wells Fed # 3 660' FNL & 660' FWL 33-26-37
Wells Fed # 7 660' FNL & 1980' FWL 33-26-37
Wells Fed # 6 990' FNL & 2310' FEL 33-26-37



GOVERNOR
L. MECHEM
CHIEF CLERK

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER



P. O. BOX 871
SANTA FE

42
378
STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

Mr. Richard Morris
Seth, Montgomery, Federici & Andrews _____, 19____
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Gentlemen:

Enclosed herewith is Commission Order No. R-2695, entered in Case No. 3026, approving the Sheel Oil Company Galveston Water Flood Project.

According to our calculations, 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 378 barrels per day.

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,

cc - Sheel Oil Co
A. L. PORTER, Jr.
Secretary-Director



Case 5026

MAIN OFFICE OCC

STATE OF NEW MEXICO

1964 MAR 25 AM 8:20

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

March 23, 1964

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

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

Dear Mr. Porter:

Reference is made to the application of Shell Oil Company dated March 17, 1963 which seeks approval of a water flood project in the Jalmat pool, Lea County, New Mexico.

This office offers no objection to the granting of this application provided the wells are constructed and equipped in accordance with the diagrammatic sketch submitted with the application as regards the following wells:

Shell Pubco State #2
Shell Wills Federal #3
Shell Wills Federal #6
Shell Wills Federal #7

Yours truly,

FEI/ma
cc-Dick Morris (2)

S. E. Reynolds
State Engineer

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

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

May 1, 1964

**Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
P. O. Box 2307
Santa Fe, New Mexico**

Dear Sir:

Reference is made to our letter of April 28, 1964, wherein we advised you that the maximum allowable for the Shell Oil Company Jalmat Waterflood Project authorized by Commission Order No. E-2693 would be 578 barrels per day.

Inasmuch as the project area contains five lots of approximately 33.00 acres each, a recomputation of the maximum allowable has been made, and it now appears that the maximum will be 342 barrels per day; our letter of April 28 is hereby amended to reflect this new figure.

Very truly yours,

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

ALP:DSN:sg

cc: Oil Conservation Commission - Hobbs
Case #3026

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

April 28, 1964

*Stamp: For Mr. Morris
4/28/64
to see Mr. D*

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Dear Sir:

Enclosed herewith is Commission Order No. R-2695, entered in Case No. 3026, approving the Shell Oil Company Jalmat Water-flood Project.

According to our calculations, 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 378 barrels per day.

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.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

Page -2-

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

C
Your cooperation in keeping the Commission so informed as to
the status of the project and the wells therein will be appre-
ciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

P
ALP/ir

Enclosure

cc: Oil Conservation Commission
Hobbs, New Mexico

SHELL OIL COMPANY
OPERATOR
WILLS-FEDERAL AND PUBCO-STATE LEASES
APPLICATION FOR
WATERFLOOD PROJECT

JAIMAT FIELD
LEA COUNTY, NEW MEXICO
APRIL 3, 1964

This exhibit is submitted in support of the application of Shell Oil Company to conduct waterflooding operations on the Wills-Federal and Pubco-State Leases in the Jalmat Field located in Sections 32 and 33, T-26-S, R-37-E, Lea County, New Mexico. This project would be an extension of present waterflooding operations in the Scarborough Field, Winkler County, Texas.

History

The Jalmat Field and the Scarborough Field produce from a common reservoir which underlies portions of Texas and New Mexico. The Jalmat Field denotes that segment of the reservoir in New Mexico and the Scarborough field that part in Texas. The Scarborough Field was discovered in 1927 and produces from the Yates formation at an average depth of 3100 feet; however, the major development of this field occurred in the late 1950's, subsequent to the development of fracturing techniques. The Wills-Federal and Pubco-State Leases were drilled in 1958 and 1959.

Waterflooding was started in the Scarborough Field in 1955 and currently most of the field is under waterflood or will be within the near future. Enclosure 1 is a map of the Jalmat and Scarborough Fields in the vicinity of the subject leases.

Geology

The Yates formation in the subject area has a gross thickness of about 400 feet and is composed of alternate layers of sandstone, dolomite, shale, and various combinations of the three. The carbonate sections are relatively uniform and dense and provide reliable correlative markers throughout the field. There are nine distinguishable sand zones (see Enclsoure 2) in the Scarborough Field. Sand development within each group varies considerably

even between adjacent wells; however, in general the deeper sand bodies near the center of the field exhibit better continuity. In the norther part of the field, in the area of the planned waterflood expansion, the deeper sands are not as well developed; whereas, sandstones in the upper part of the Yates section show improved reservoir characteristics. The upper sands are not as widespread as the deeper sands and their erratic occurrence suggests the influence of stream channel deposition. However, these upper sands do possess high average porosities and appear to be excellent waterflood prospects.

Reservoir Data

The primary producing mechanism of the Scarborough and the subject portion of the Jalmat Field has been solution gas drive. Due to the low permeability of the Yates sands, the production rate has declined rapidly resulting in poor primary recovery efficiencies for these fields. A tabulation of the average reservoir parameters, oil data and general reservoir data is presented by Enclosure 3. The values for initial oil saturation and residual oil saturation after waterflooding were derived from general correlations of core data as cores were not available from the wells in the waterflood expansion area.

Current Status

Both the Pubco-State and Wills-Federal Leases are in the stripper stage of depletion as a result of the rapid decline of the production rates from the maximum achieved shortly after development in 1958 (see Enclosures 4 and 5). Currently the oil production averages about three barrels per well per day for the Wills-Federal Lease and one barrel per well per day for the Pubco-State Lease.

Waterflood Expansion

A 5-spot pattern is employed throughout most of the Scarborough Field; however, due to the irregular spacing of existing wells and the odd shapes of the leases, an irregular pattern will be employed in this expansion. The injectors were selected such that injection could be balanced across lease lines and the state line, which would protect the correlative rights of all parties affected. All of the injectors are completed with casing cemented through the Yates formation, with perforations in one or more of the sand zones. The details of the completions are presented in Enclosures 6, 7, 8, and 9.

The waterflood currently in operation in the Scarborough Field indicates that the water injection rate for this expansion will be about 100 barrels of water per day per injector. This is the injection rate proposed for the waterflood in Sections 32 and 33 and is commensurate with the adjacent waterflood across the state line in Texas. A map of the water distribution system, with the injection rate noted, is presented in Enclosure 11.

The Santa Rosa formation is the source of the water for the proposed waterflood expansion. Santa Rosa water is relative fresh and had proved to be an excellent source of water for waterfloods. An analysis of the Santa Rosa water is presented in Enclosure 13. The water source well water (see Enclosures 11 and 12) is located in Section 2, Block C-23, PSL Survey, Winkler County, Texas. Water will be imported into New Mexico through the water distribution system in Enclosure 11.

Predicted Waterflood Performance

Waterflooding has proved to be a very successful method of operation for the Scarborough Field, with recoveries near the center of the field expected

to exceed 15,000 barrels per acre. Secondary recoveries become progressively poorer to the north and are expected to average between 2,000 and 5,140 barrels per acre in the area of the planned waterflood expansion. The predicted performances presented in Enclosures 4 and 5 indicate that the proposed waterflood will recover an additional 800,000 barrels of oil from the two leases. Almost all of this additional oil can be considered secondary oil, due to the low current productive capacity of the wells.

I. Reservoir and Fluid Data - Jalmat Field and Scarborough Field.

A. Information on entire reservoir

1. Name of formation: Yates
2. Estimated productive area of entire reservoir: 10,840 acres
3. Composition (sand, limestone, dolomite, etc.): Sand
4. Type of structure: Anticline
5. Subsea depth of oil-water contact: None Gas-oil contact: None
6. Type drive during primary production: Solution Gas Drive
7. Original BHP: 1500 psi (approx) Current BHP: 50 psi
8. Saturation pressure: 500 psi (est.) Formation Volume Factor: 1.1 (at present)

B. Information on proposed project area

1. Number of productive acres in leases within project area: 440
2. Average depth to top of pay: 3050 feet
3. Average effective pay thickness (feet): 50
4. Average porosity (%): 17
5. Average horizontal permeability (mds.): 15 Range: 0-22
6. Connate water content (% of pore space): 45
7. Gravity of oil (API): 36 degrees Viscosity: 2 cp.

II. Primary Production history

1. Date first well completed on leases: January 1958
2. Stage of depletion of project area: Primary 95% depleted
3. Number of producing wells in project area: 9
4. Average daily oil production per well at present time: 2 B/D
5. Average gas-oil ratio: 6500 ft³/bbl Water production (%): 40%

III. Results expected

1. Estimated oil saturation at present time (% of pore space): 50%
2. Estimated residual oil saturation at abandonment: 40% (average)
3. Estimated ultimate additional oil that will be recovered as a direct result of injection (bbls.): 800,000

IV. Injection

1. Type of Injection Fluid (water, gas, LPG): Water
2. Source of injected fluid (formation, depths): Santa Rosa Formation (550')
3. Injection pattern and spacing: Irregular
4. Maximum injection pressure to be used (psi): 1600 psi.
5. Estimated maximum per well rate of injection (bbls.): 100 B/D

Shell Pubco-State Lease
Jalmat Field
Los County, New Mexico

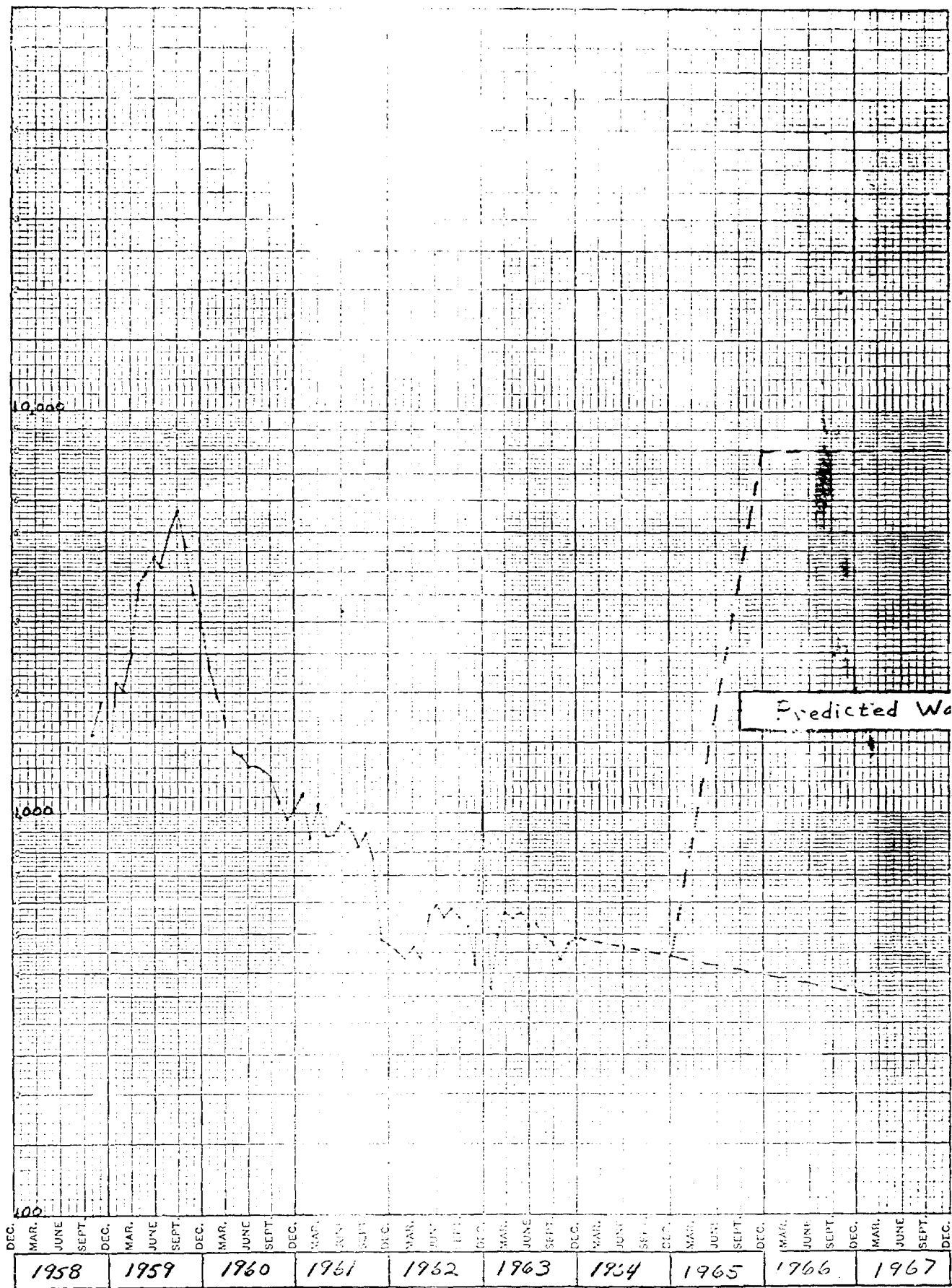
Enclosure 4

ted Waterflood Performance

JUNE	SEPT.	DEC.	MAR.	JUNE	SEPT.	DEC.	MAR.	JUNE	SEPT.	DEC.	MAR.	JUNE	SEPT.	DEC.	MAR.	JUNE	SEPT.	DEC.	MAR.	JUNE	SEPT.	DEC.
1977				1977												1976						



Oil Production Rate - Bbl./Mo.



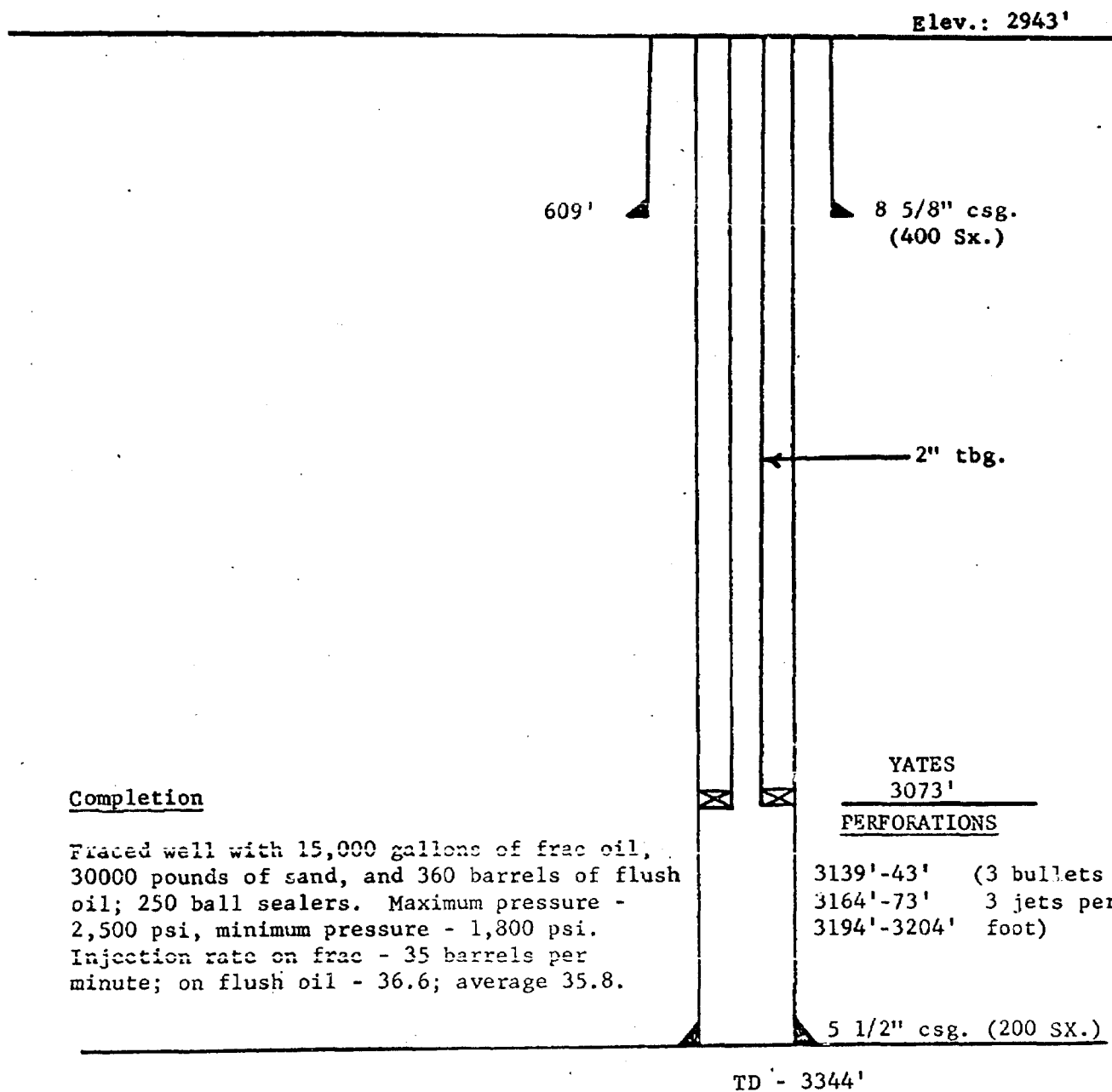
Shail Wells-Federal Lease
Jalmit Field
Lea County, New Mexico
Enclosure 5

ed Waterflood Performance

1967 1968 1969 1970 1971 1972 1973 1974 1975 1976

[illegible][illegible]

SHELL-PUBCO-STATE NO. 2
 660' FNL & 661' FEL, Sec. 32, T-26-S, R-37-E
 JALMAT FIELD
 LEA COUNTY, NEW MEXICO



SHELL-WILLS-FEDERAL NO. 3
 660' FNL & 660' FWL, SEC. 33, T-26-S, R-37-E
 JALMAT FIELD
 LEA COUNTY, NEW MEXICO

Elev.: 2945

612'

8 3/8" csg.
 (375 Sx.)

2" cbg.

Completion

Pumped 300 gallons of mud acid at 1/2 bbl./min. and let soak. Fraced with 15,000 gallons frac oil and 30,000# of sand, 265 bbls. flush oil. Maximum treating pressure 3,400 psi, minimum treating pressure 2,400 psi. Injection rate on frac oil, 20.5, injection rate on flush, 24. Overall rate, 20.5. Used 100 ball sealers.

YATES
 3104'

PERFORATIONS

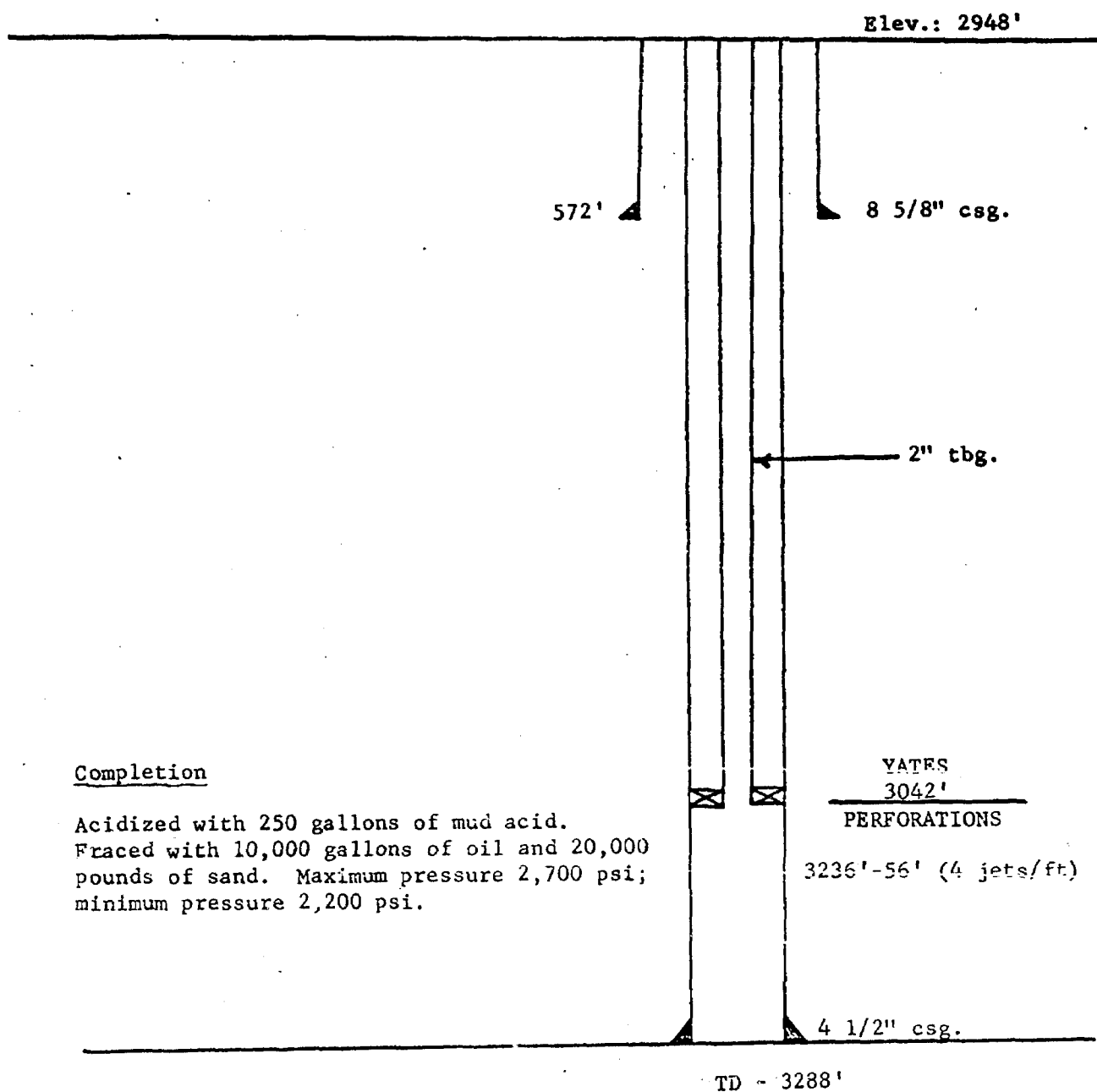
3178'-92'
 3197'-3202'
 3214'-31' (4 jets/ft)
 3244'-41'
 3281'-87'

4-1/2" csg (175 Sx.)

TD - 3313'

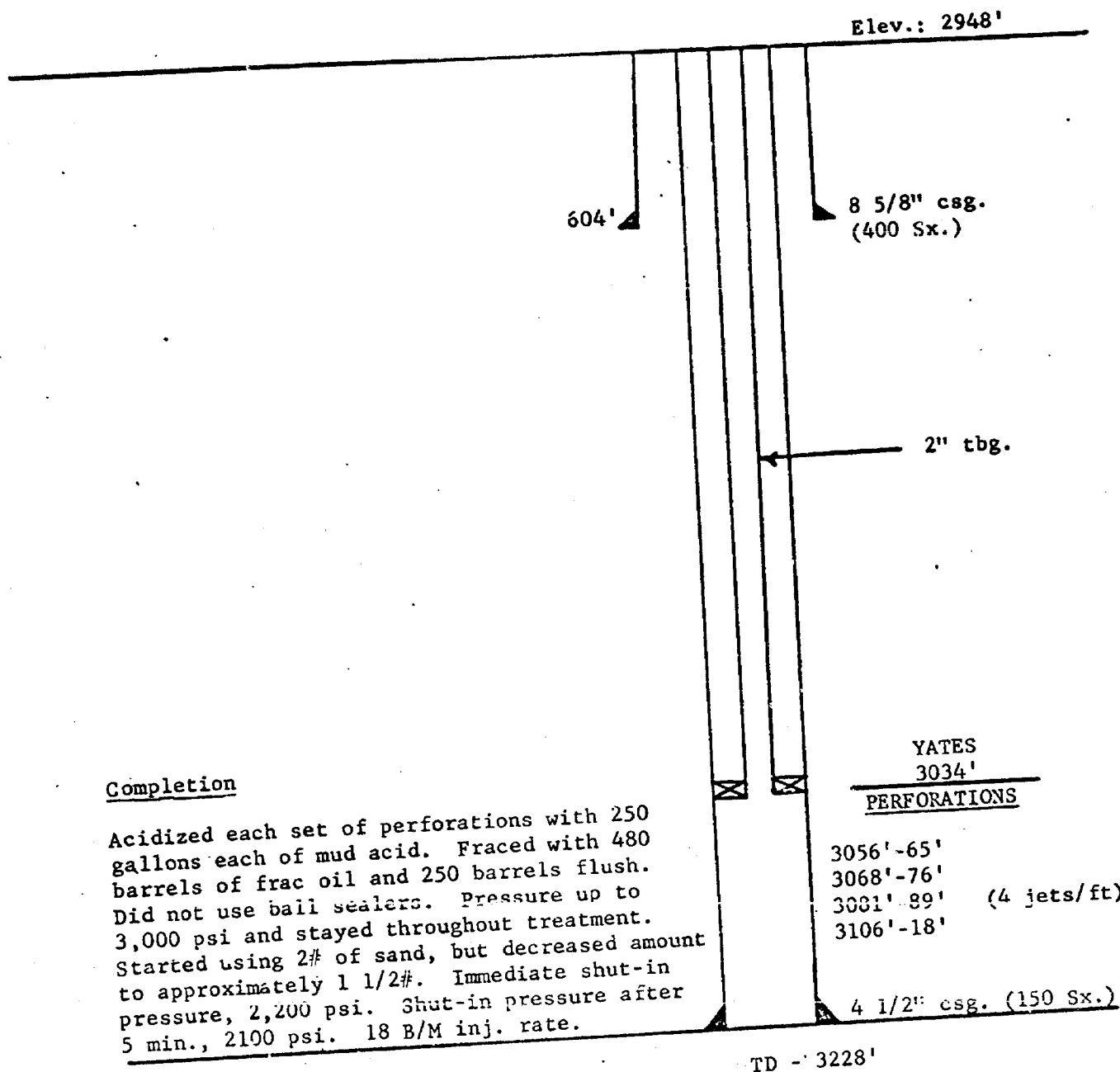
Enclosure 7

SHELL-WILLS-FEDERAL NO. 6
 990' FNL & 2310' FEL, SEC. 33, T-26-N, R-37-E
 JALMAT FIELD
 LEA COUNTY, NEW MEXICO



Enclosure 8

SHELL-WILLS-FEDERAL NO. 7
 1660' FNL & 1980' FNL, SEC. 33, T-26-S, R-37-E
 JALMAT FIELD
 LEA COUNTY, NEW MEXICO



Enclosure 9

INJECTION WELL DATA

Use Name & No. Well Number		Pubco- State No. 2	Wills- Federal No. 3	Wills- Federal No. 6	Wills- Federal No. 7						
Surface Casing	Size	8 5/8" 24#	8 5/8" 24#	8 5/8"	8 5/8"						
	Length	609'	612'	572'	604'						
	Sacks & Type Cement	400 Sx. 2% CaCl ₂	375 Sx.	-	400 Sx. Reg Neat w/2% CaCl ₂						
Production Casing	Size	5 1/2" 14# J-55	4 1/2" 9.5# J-55	4 1/2" 9.5# J-55	4 1/2"						
	Length	3350'	3330'	3288'	3345'						
	Sacks & Type Cement	200 Sx. 50-50 Pos. Mix 2% gel	175 Sx. 50-50 Pos. Mix 2% gel	-	150 Sx. 50-50 Pos. Mix 2% gel						
Tubing	Length	3073'	3104'	3042'	3034'						
	Packer Depth	3073'	3104'	3042'	3034'						
Injection	Depth	3073'- 3344'	3104'- 3313'	3042'- 3288'	3034'- 3228'						
	Thru casing or tubing?	Tubing	Tubing	Tubing	Tubing						

Field Jalmat

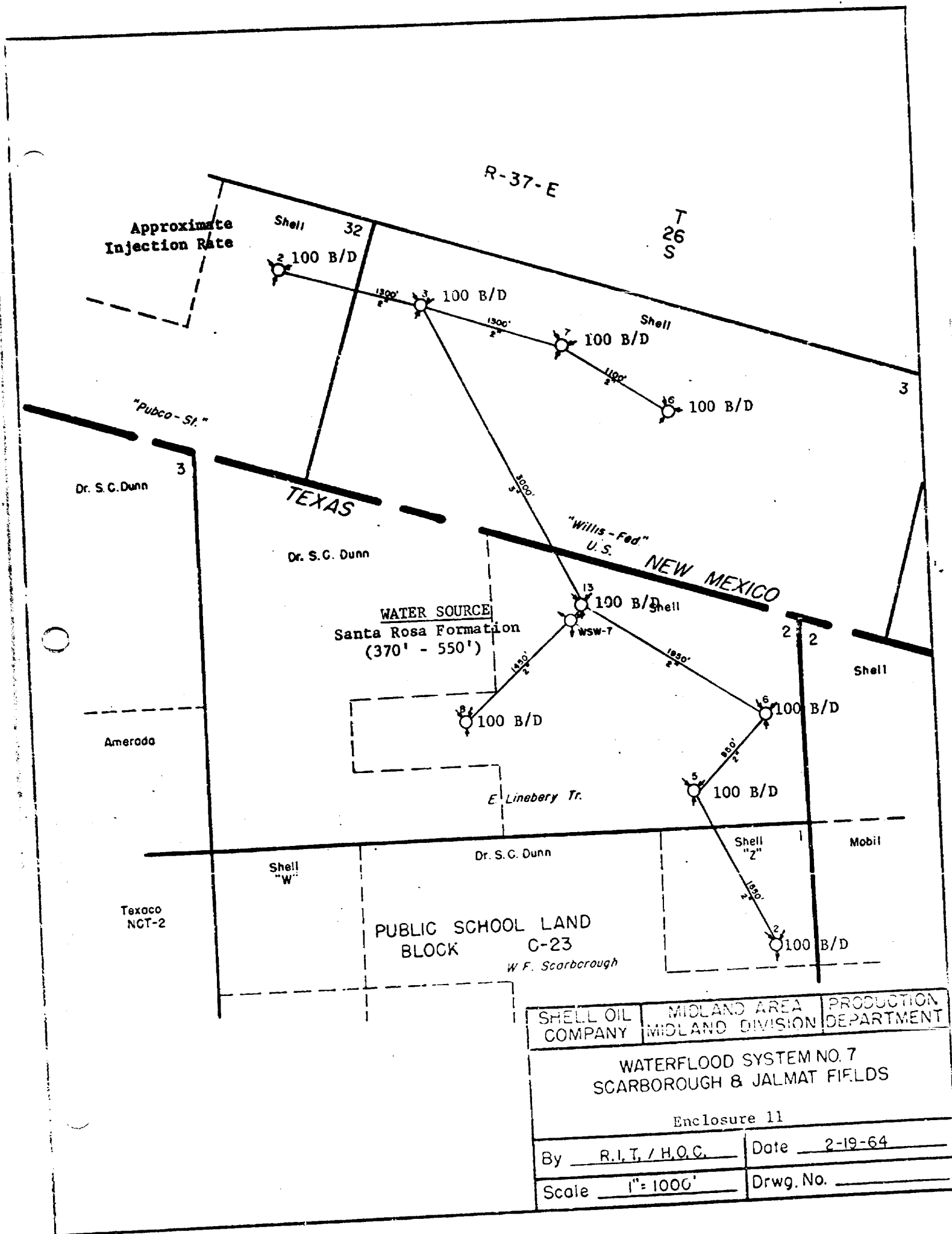
County Lea

Operator Shell Oil Company

Date March 13, 1964

Address P. O. Box 1810, Midland, Texas

Enclosure 10



SCARBOROUGH WATER WELL NO. 7-1
LINEBERRY LEASE
SCARBOROUGH FIELD
165' S OF LINEBERRY 13

Elev: Approx. 2957

Pipe to gravel pack 7" csg

13 3/8 @ 125'
Gravel packed w/3 to 5
yds. of pea gravel

Santa Rosa
370'

Slotted Casing

7" @ 550'
Gravel packed w/12 to 15
yds. of pea gravel

Enclosure 12

INJECTION WATER ANALYSIS

Location - Scarborough Field, Winkler County, Texas

Formation - Santa Rosa

Depth - 500 feet

Physical Characteristics

Specific Gravity - 1.0004

pH - 7.42

Resistivity - 7.30 ohm-meters (at 80°F.)

Suspended solid - 2.40 ppm (hydrated iron oxide)

Dissolved Solids (ppm)

Iron - 0

Calcium - 84

Magnesium - 40

Sodium - 137

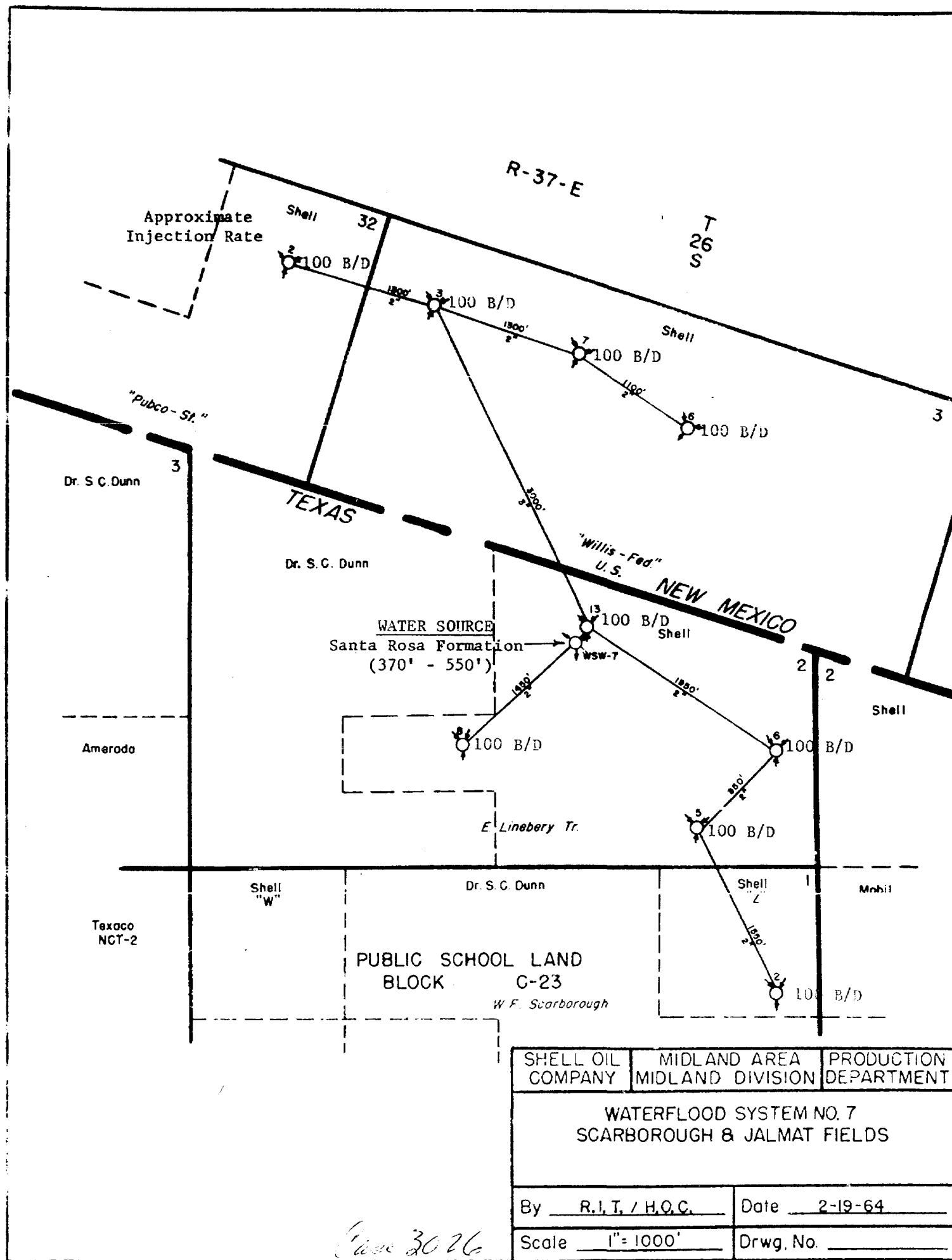
Bicarbonate - 229

Sulfate - 294

Chloride - 130

Sulfide - 0

Total - 914



INJECTION WELL DATA

Lse. Name & No. Well Number		Pubco- State No. 2	Wills- Federal No. 3	Wills- Federal No. 6	Wills- Federal No. 7						
Surface Casing	Size	8 5/8" 24#	8 5/8" 24#	8 5/8"	8 5/8"						
	Length	609'	612'	572'	604'						
	Sacks & Type Cement	400 Sx. 2% CaCl ₂	375 Sx.	-	400 Sx. Reg Neat w/2% CaCl ₂						
Production Casing	Size	5 1/2" 14# J-55	4 1/2" 9.5# J-55	4 1/2" 9.5# J-55	4 1/2"						
	Length	3350'	3330'	3288'	3345'						
	Sacks & Type Cement	200 Sx. 50-50 Pos. Mix 2% gel	175 Sx. 50-50 Pos. Mix 2% gel	-	150 Sx. 50-50 Pos. Mix 2% gel						
Tubing	Length	3073'	3104'	3042'	3034'						
	Packer Depth	3073'	3104'	3042'	3034'						
Injection	Depth	3073'- 3344'	3104'- 3313'	3042'- 3288'	3034'- 3228'						
	Thru casing or tubing?	Tubing	Tubing	Tubing	Tubing						

Field Jalmat

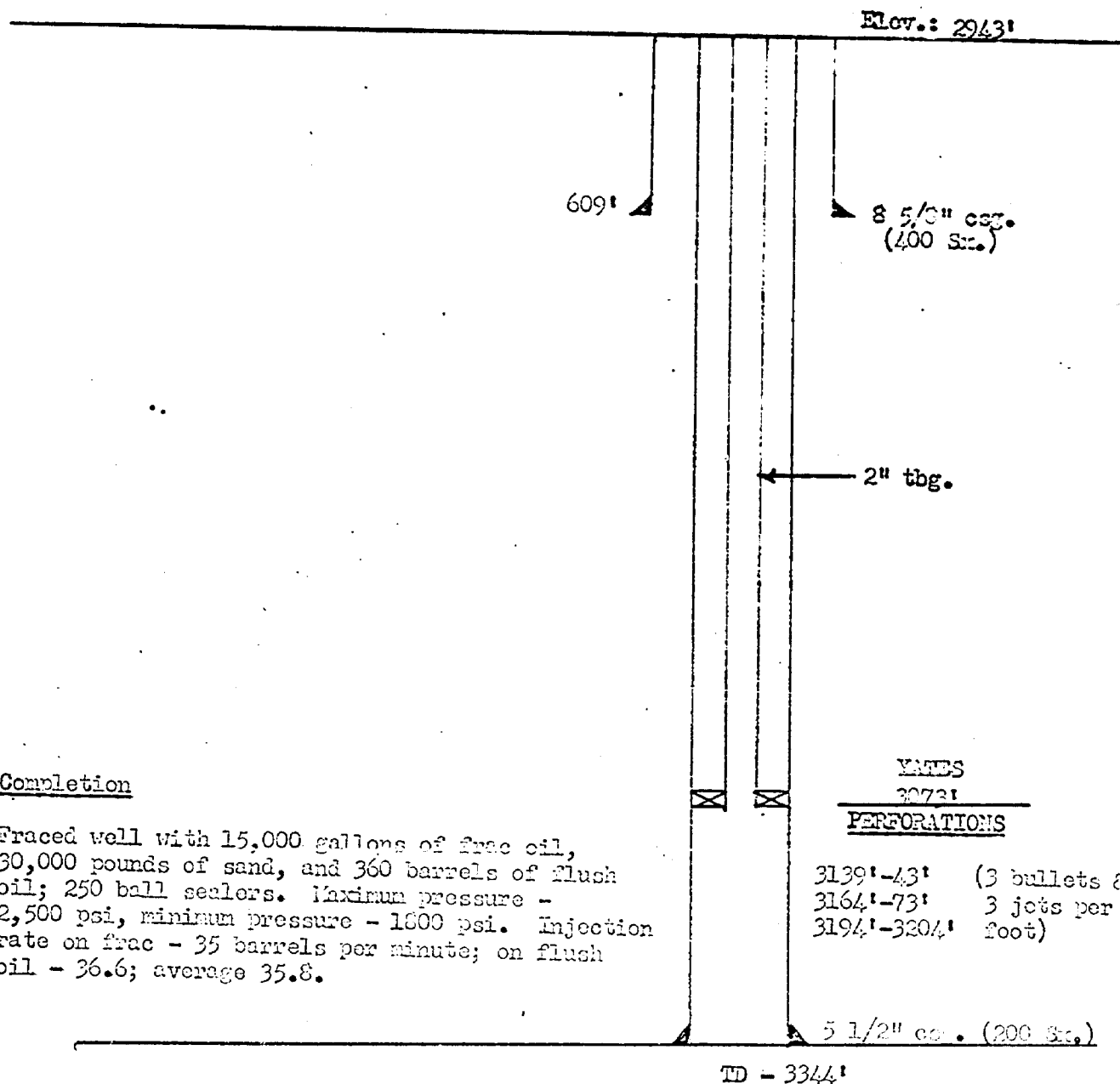
County Lea

Operator Shell Oil Company

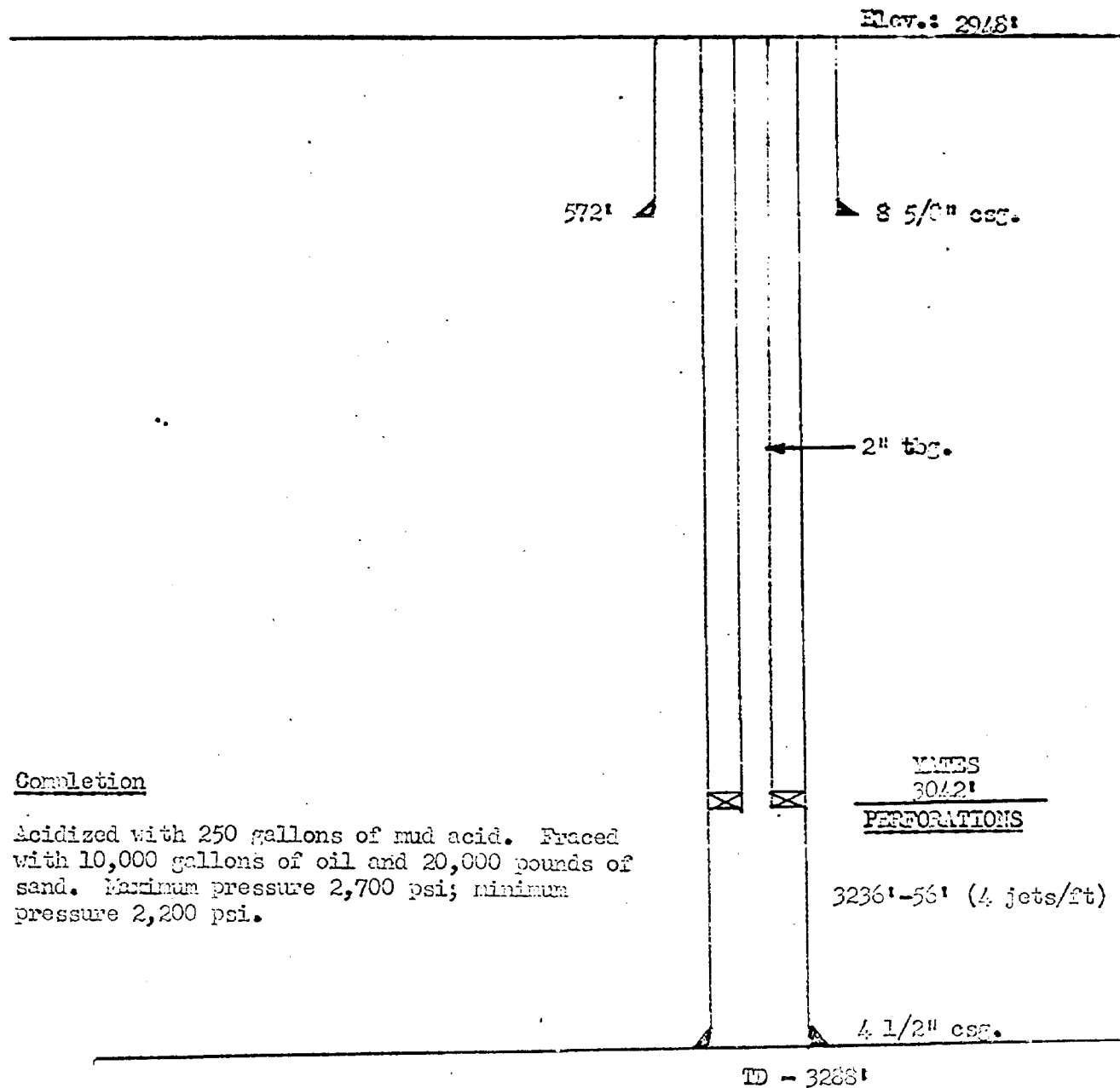
Date March 13, 1964

Address P. O. Box 1810, Midland, Texas

SHINE-PUROO-OWNER NO. 2
 660' TIL & 661' TIL, Dec. 32, T-26-S, R-37-E
 JALINT FIELD
 LEA COUNTY, NEW MEXICO



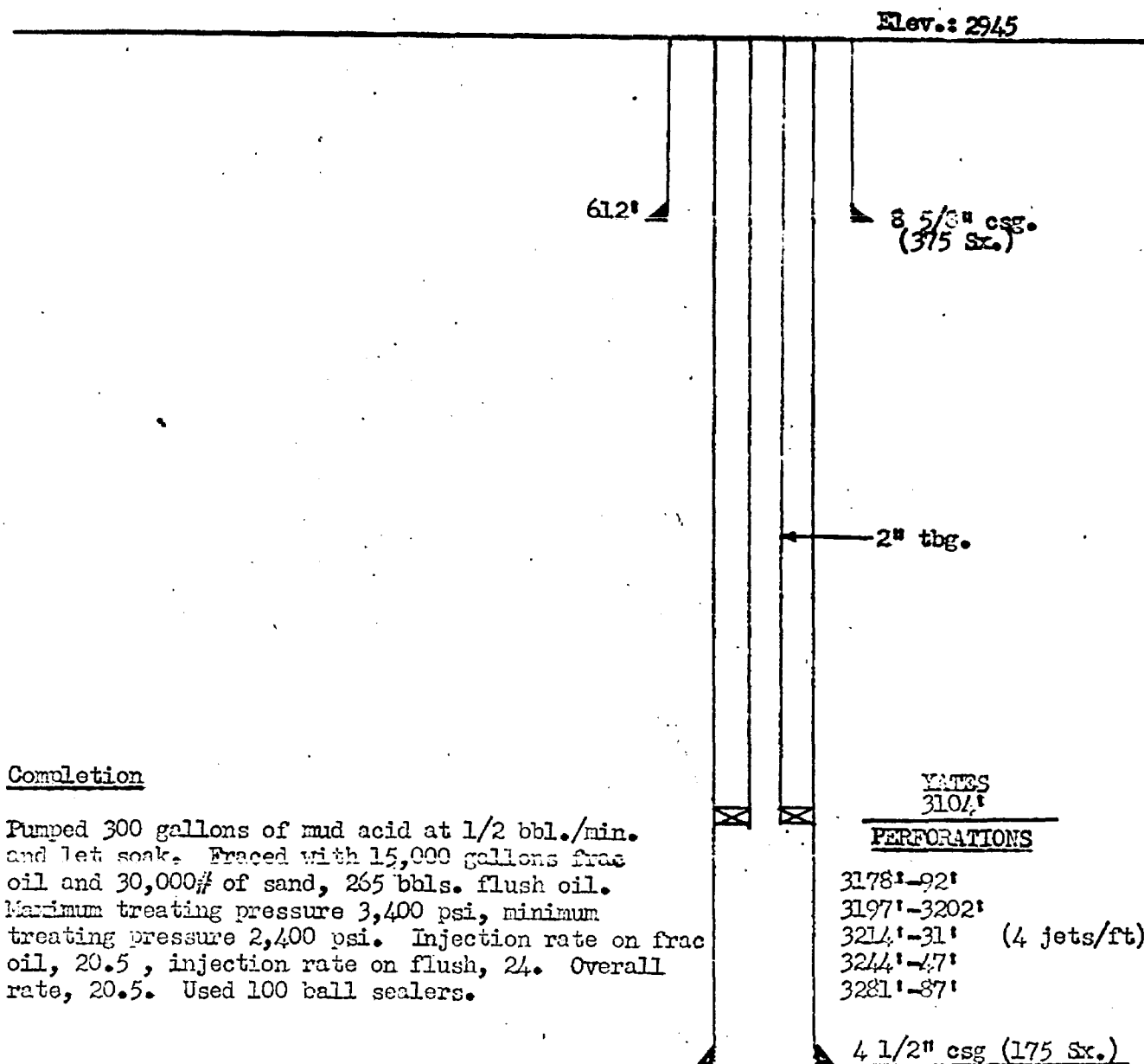
WELL-LOG NO. 6
 990' TIL 3 2310' TIL, Loc. 33, T-26-N, R-37-E
 J. L. WILSON
 LRA COASTAL, LRA MEXICO



Completion

Acidized with 250 gallons of mud acid. Fraced
 with 10,000 gallons of oil and 20,000 pounds of
 sand. Maximum pressure 2,700 psi; minimum
 pressure 2,200 psi.

SHELL-HILLS-FEDERAL NO. 3
 660' FNL & 660' FNL, Sec. 33, T-26-S, R-37-E
 JALMAT FIELD
 LEA COUNTY, NEW MEXICO



Completion

Pumped 300 gallons of mud acid at 1/2 bbl./min. and let soak. Fraced with 15,000 gallons frac oil and 30,000# of sand, 265 bbls. flush oil. Maximum treating pressure 3,400 psi, minimum treating pressure 2,400 psi. Injection rate on frac oil, 20.5, injection rate on flush, 24. Overall rate, 20.5. Used 100 ball sealers.

TD - 3313'

(5) That the subject application should be approved and the project should be governed by the provisions of Rule 701 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to institute a waterflood project in the Jalmat Pool by the injection of water into the Yates formation through the following-described four wells in Township 26 South, Range 37 East, NMPM, Lea County, New Mexico:

Section 32:

Public State well No 2 located 1984 feet from the South line and 660 feet from the East line.

Section 33:

Wells Federal well No 3 located 660 feet from the North line and 660 feet from the West line.

Wells Federal well No 7 located 660 feet from the North line and 1980 feet from the West line.

Wells Federal Well No 6 located 990 feet from the North line and 2310 feet from the East line.

(2) That the subject waterflood project shall be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including the allowable provisions thereof, and including the provisions with respect to expansion of the waterflood project.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1119 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.

DRAFT

JMD/esr

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. 3026

Order No. R- 2695

APPLICATION OF SHELL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 8, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this _____ day of April, 1964, the Commission, a quorum being present, having considered the ~~applicant's~~ testimony, the record, ~~and the testimony~~ 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, Shell Oil Company, seeks authority to institute a waterflood project in the Jalmat Pool by the injection of water into the Yates formation through four wells in Sections 32 and 33, Township 26 South, Range 37 East, NMPM, Lea County, New Mexico.

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

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