

Case Number

4520

Application

Transcripts

Small Exhibits

ETC.

dearnley-meier reporting service, inc.

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

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

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

April 14, 1971

EXAMINER HEARING

IN THE MATTER OF:

Application of Shenandoah Oil
Corporation for a waterflood
project, Eddy County, New Mexico

Case No. 4520

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

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1 MR. NUTTER: We'll next take Case Number 4520.

2 MR. HATCH: Case 4520. Application of
 3 Shenandoah Oil Corporation for a waterflood project, Eddy
 4 County, New Mexico.

5 MR. JENNINGS: James T. Jennings, Jennings, Christy
 6 and Copple, Roswell, New Mexico, appearing on behalf of the
 7 Applicant, Shenandoah Oil Corporation, and we will have one
 8 witness, Mr. Toler.

9 (Witness sworn.)

10 NEIL F. TOLER

11 called as a witness, having been first duly sworn, was
 12 examined and testified as follows:

13 DIRECT EXAMINATION

14 BY MR. JENNINGS:

15 Q Would you state your name and occupation, please, sir?

16 A My name is Neil F. Toler, I am a petroleum engineer
 17 with Shenandoah Oil Corporation.

18 Q Mr. Toler, I believe you have not testified before the
 19 Commission on prior occasion, have you not?

20 A No, not before this Commission.

21 Q Could you briefly outline to the Examiner your
 22 educational and experience qualifications?

23 A Well, I graduated from Texas A. & M., 1958, with a
 24 petroleum engineering degree. After that, I worked with
 25 Texaco for twelve and a half years in various capacities

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- 1 as a reservoir engineer, operating engineer, both
- 2 domestic and foreign, in areas of the Panhandle, north
- 3 Texas, Trinidad, West Indies, and Midland, Texas.
- 4 Q And you're currently the supervisor or manager of
- 5 Shenandoah's water flood project?
- 6 A Manager, secondary recovery.
- 7 Q Mr. Toler, are you familiar with application which
- 8 Shenandoah has filed here for the water flood project
- 9 number seven?
- 10 A I am.
- 11 Q It is in order of operators of the property covered by
- 12 the application?
- 13 A They are.
- 14 Q I hand you what has been marked as Exhibit A, and ask
- 15 you to tell what that is, and identify it, please.
- 16 A Exhibit A is a plat showing the location of Applicant's
- 17 project and the lands therein. It is principally
- 18 nonperipheral or nonsymmetrical type pattern flood if
- 19 we plan to install on the properties shown.
- 20 Q What is the general location of the property?
- 21 A The general location is in Eddy County, New Mexico,
- 22 Range 28, 29, Township 17 South.
- 23 Q How many wells do you propose to convert to water
- 24 injection wells?
- 25 A Initially we plan to convert to injection nine wells.

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- 1 Q Go ahead. What is the current state of it and the
2 nature of the production from these wells at this time?
- 3 A They are in a depleted state, and what will be classified
4 as stripper.
- 5 Q I hand you what has been marked as Applicant's Exhibit B
6 and ask you if you will identify that and tell what it
7 is, please.
- 8 A This is a plat or regular contour map of Eddy County,
9 showing the location of the application of our acreage,
10 and the location of all the other wells within the radius
11 of two miles from the proposed injection wells.
- 12 Q Now, what zones do you propose to inject in the wells?
- 13 A We propose to inject into the premier zones and the
14 Maytex of the Grayburg formation.
- 15 Q Are there other floods being conducted in the same
16 general area?
- 17 A Yes. Depco has the Artesia unit directly to the west
18 of our property.
- 19 Q Are they successful?
- 20 A They are successful with their waterflood.
- 21 Q Do you feel that flooding these zones will result in
22 increased ultimate recovery of oil?
- 23 A Yes.
- 24 Q What type of water do you propose to inject, Mr. Toler?
- 25 A We propose to inject fresh water.

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- 1 Q When produced water is available, will you also use it?
- 2 A When produced water becomes available, we will inject it.
- 3 Q Approximately how much do you propose to inject in the
- 4 well?
- 5 A We propose to inject approximately a hundred fifty
- 6 barrels of water per day into each zone for a total of
- 7 three hundred barrels per well per day with a total
- 8 injection rate of approximately twenty-seven hundred
- 9 barrels per day.
- 10 Q I hand you what has been marked Exhibits C1 through 9
- 11 and ask you to examine these and explain them to the
- 12 Commission.
- 13 A Exhibit C, which is numbered 1 through 9, are
- 14 diagrammatical sketches of the well and the proposed
- 15 equipment that we plan to put into the well.
- 16 Q Is that on each one of the nine wells listed in your
- 17 application?
- 18 A It is on each one of the nine wells.
- 19 Q Basically, what would reflect the manner in which you're
- 20 going to inject?
- 21 A Well, the manner in which we plan to inject will be
- 22 downhole through tubing, separated, the zones will be
- 23 perforated in the Maytex formation, injection into the
- 24 two zones will be separated by packers, and injection
- 25 will be monitored by downhole flow regulators.

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1 Q Will that generally be carried out in each of the wells?

2 A This will be carried out in each of our injection wells,
 3 and it is being successfully done on our flood floor
 4 in the Shugart area at the present time.

5 Q I hand you what has been marked as Exhibit D, and ask
 6 you if you would identify that and tell what it is.

7 A This is a downhole sketch that Baker Oil Tool supplied
 8 us with the equipment on our flood floor.. It is supplied
 9 as a supplemental to this testimony. And this is a
 10 typical example of what we have in flood floor..

11 Q Do you propose to follow that same plan in your project
 12 number seven?

13 A Yes, sir.

14 Q Has it worked successfully?

15 A Very successfully.

16 Q Mr. Toler, have you obtained the approval of the U.S.
 17 Geological Survey for your project?

18 A We have.

19 MR. JENNINGS: Has the Commission received
 20 approval from the U.S.G.S.?

21 MR. NUTTER: No, we have not received such approval.

22 Q (Mr. Jennings continuing) I hand you what has been
 23 marked as Exhibit F, and ask you if that is the
 24 communication received.

25 A This is the letter we received on April the 6th, 1971,

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1 from the U.S.G.S.

2 Q That is approving the project?

3 A Right.

4 Q And I will hand you what has been marked Exhibit E,
 5 1 through 9, and ask you to identify those.

6 A These are radioactive logs of the proposed injection
 7 wells. They have been marked formation top, as shown
 8 on Exhibit C also.

9 Q Mr. Toler, were all the exhibits, except Exhibit E,
 10 which is the log and the letter from the U.S.G.S., which
 11 is Exhibit F, prepared by you or under your supervision?

12 A Under my supervision, yes.

13 MR. JENNINGS: We would at this time offer
 14 Exhibits A through E.

15 MR. NUTTER: Shenandoah Exhibits A through E
 16 will be admitted into evidence. And also, Exhibit Number F
 17 will be admitted into evidence.

18 MR. JENNINGS: Yes.

19 (Whereupon, Applicant's Exhibits
 20 A through F were duly admitted
 into evidence.)

21 CROSS EXAMINATION

22 BY MR. NUTTER:

23 Q Mr. Toler, your Exhibit Number A indicates that ten
 24 wells would be placed on injection. However, one well
 25 is indicated as being in phase two of the waterflood

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- 1 project.
- 2 A Yes, sir.
- 3 Q You are only considering for the first nine wells at
- 4 this time; is this correct?
- 5 A Yes, sir. Right.
- 6 Q And you will later add this tenth well to your injection?
- 7 A Right, sir.
- 8 Q Now, with respect to Exhibits C1 through C9, they show
- 9 the casing on the wells, but no tubing. So each one
- 10 of these will have a string of tubing, and a packer?
- 11 A Right, as shown by Exhibit D.
- 12 Q As depicted on Exhibit D? In the interval that is shown
- 13 on each one of these wells on Exhibit C1 through C9,
- 14 there is an interval there of -- take C1, for example,
- 15 from 2423 to 2433. Is that the present perforated
- 16 interval?
- 17 A Yes, sir.
- 18 Q But you will open perforations in the Maytex as well?
- 19 A In selected intervals in the Maytex formation.
- 20 Q Is each one of these nine wells going to be duly complete,
- 21 so-to-speak?
- 22 A Yes, sir, they will be.
- 23 Q With injections to the Maytex wells, the premier zone?
- 24 A Yes, sir.
- 25 Q And then you will have your Baker dual flow valves in

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1 there so that --

2 A Dual packers and regulators.

3 Q I see. So injection will be into both zones, but there
 4 will be a packer above the uppermost injection?

5 A That's right. It will be isolated.

6 Q Well, how about the casing tubing and units? How will
 7 you set that?

8 A The tubing casing and units will have a pressure gauge
 9 on it and will be loaded with inert fluid.

10 Q Inert fluid?

11 MR. NUTTER: Are there any further questions of
 12 this witness? You may be excused. Do you have anything
 13 further, Mr. Jennings?

14 MR. JENNINGS: No, sir. That's all we have.

15 MR. NUTTER: Does anyone have anything they wish
 16 to offer in Case Number 4520? We'll take the case under
 17 advisement.

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I N D E X

WITNESS:

Page

NEIL F. TOLER

Direct Examination by Mr. Jennings

2

Cross Examination by Mr. Nutter

7

EXHIBIT

MARKED

OFFERED AND
ADMITTED

Applicant's Exhibits A - F

7

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1 STATE OF NEW MEXICO)
 2) SS
 3 COUNTY OF BERNALILLO)

4 I, LINDA MALONE, Court Reporter in and for the County
 5 of Bernalillo, State of New Mexico, do hereby certify
 6 that the foregoing and attached Transcript of Hearing before
 7 the New Mexico Oil Conservation Commission was reported by
 8 me and that the same is a true and correct record of the said
 9 proceedings, to the best of my knowledge, skill and ability.

10 *Linda Malone*
 11 Court Reporter

22 I do hereby certify that the foregoing is
 23 a true and correct copy of the transcript of
 24 the hearing held on April 21, 1971.
 25 *[Signature]*
 New Mexico Oil Conservation Commission

SHENANDOAH OIL CORPORATION

1500 COMMERCE BUILDING
FORT WORTH, TEXAS 76102

B. J. KELLENBERGER
PRESIDENT

August 17, 1971

TELEPHONE
817-332-7381

RECEIVED
AUG 18 1971
OIL CONSERVATION COMM

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

Re: Shenandoah Oil Corporation's
Artesia Seven Waterflood Project
Eddy County, New Mexico

Dear Mr. Porter:

In accordance with Rule 703(a) of the New Mexico Rules and Regulation Book, this is to advise you that water injection into the nine wells as set forth in Case No. 4520, was commenced August 12, 1971. These wells are located in Sections 30 and 31, Township 17 South, Range 29 East and Sections 25 and 36, Township 17 South, Range 28 East, Eddy County, New Mexico as follows:

| <u>Lease</u> | <u>Well No.</u> | <u>Location</u> |
|-----------------------|-----------------|---------------------|
| Atsel Federal | 2 | Unit I - Section 30 |
| Green Federal | 1 | Unit D - Section 31 |
| Green Federal | 5 | Unit E - Section 31 |
| Green Federal | 7 | Unit B - Section 31 |
| Continental "B" State | 3 | Unit N - Section 30 |
| Continental "E" State | 4 | Unit F - Section 30 |
| Five "J" | 1 | Unit I - Section 25 |
| Five "J" | 3 | Unit O - Section 25 |
| Five "J" | 2 | Unit G - Section 36 |

Attached is a plat showing the location of the above wells within the Project Area.

Very truly yours,

SHENANDOAH OIL CORPORATION

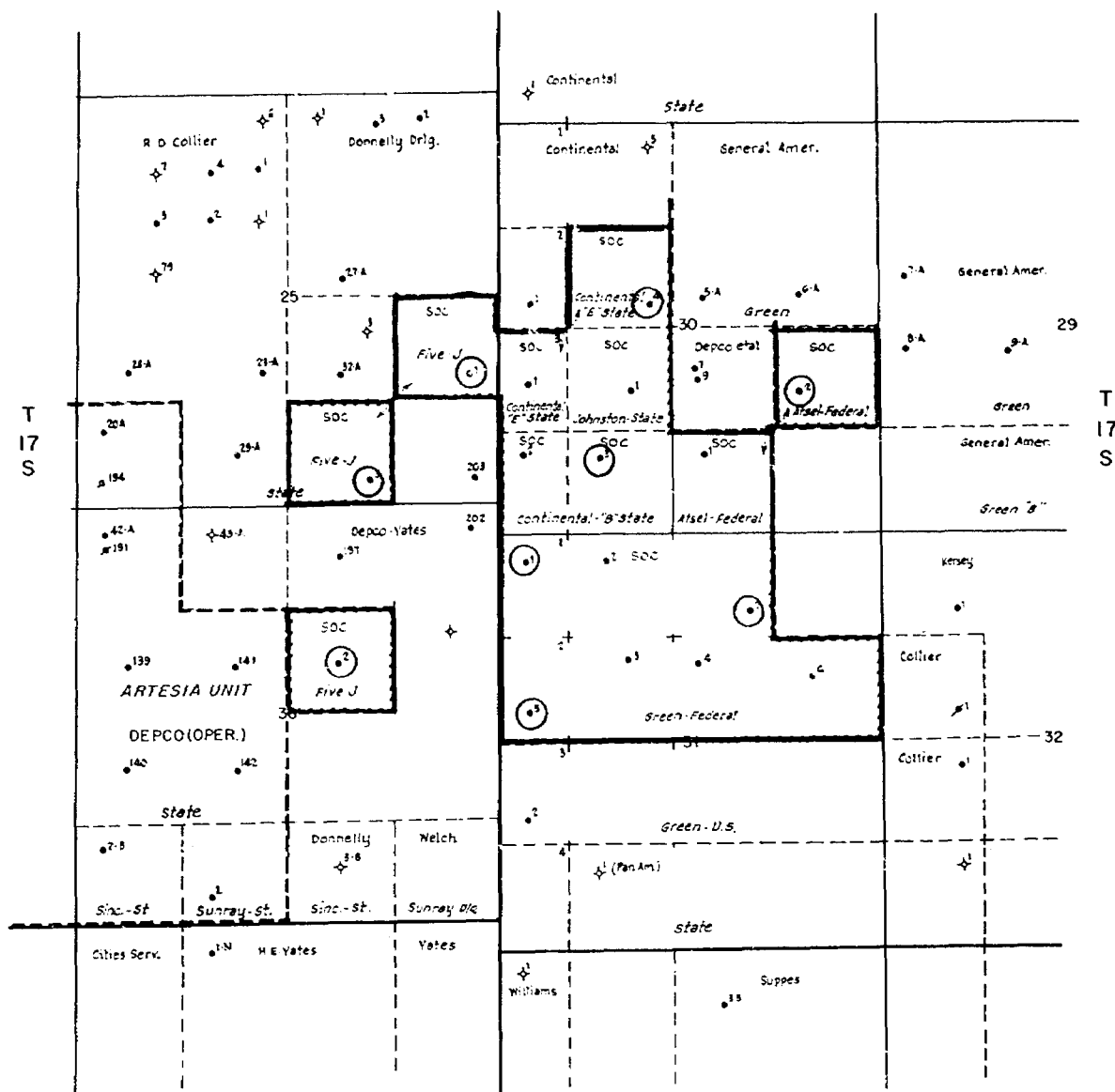
T.P. Bates

T.P. Bates
Vice President - Secondary Recovery

TPB:jn
Attachment

CC: C. W. Downey
New Mex. Oil Conservation Commission - Artesia
U. S. Geological Survey - Artesia
U. S. Geological Survey - Roswell

R 29 E



//// SOC Acreage

① Injection Wells



SOC
SHENANDOAH OIL CORPORATION

FLOOD 7
ARTESIA
EDDY COUNTY, NEW MEXICO

AUG, 1970

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

May 24, 1971

C
O
P
Y

Mr. James T. Jennings
Jennings, Christy & Copple
Attorneys at Law
P. O. Box 1180
Roswell, New Mexico 88201

Dear Sir:

Reference is made to Commission Order No. R-4134, recently entered in Case No. 4520, approving the Shenandoah Artesia Seven Waterflood Project.

Initial injection is to be through the authorized water injection wells with each well equipped with a string of tubing set in a packer located as near as is practicable to the uppermost injection perforation; separation of the injection fluid into the Matex and the Premier zones shall be accomplished through down-hole flow regulators. The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 924 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less, subject to acreage factor corrections for Units L and M of Section 30 and D and E of Section 31, and also subject to 14 extra barrels for each additional well, if operated, on several tracts.

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.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

Mr. James T. Jennings
Roswell, New Mexico

-2-

May 24, 1971

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In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

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

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/dr

cc: Oil Conservation Commission

Hobbs and Artesia

Mr. D. E. Gray, State Engineer Office

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. 4520
Order No. R-4134

APPLICATION OF SHENANDOAH OIL
CORPORATION FOR A WATERFLOOD
PROJECT, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 14, 1971, at Hobbs, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 19th day of April, 1971, 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, Shenandoah Oil Corporation, seeks authority to institute a waterflood project in the Artesia Pool by the injection of water into the Metex and Premier Zones of the Grayburg formation through nine wells, located in Sections 25 and 36 of Township 17 South, Range 28 East and Sections 30 and 31 of Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico.

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

-2-

CASE NO. 4520
Order No. R-4134

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

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Shenandoah Oil Corporation, is hereby authorized to institute a waterflood project in the Artesia Pool by the injection of water into the Metex and Premier Zones of the Grayburg formation through the following described nine wells in Eddy County, New Mexico:

| <u>WELL NUMBER</u> | <u>LOCATION</u> |
|--------------------------------|-----------------------------------|
| Five "J" No. 1 | NE/4 SE/4 Sec. 25, T-17-S, R-28-E |
| Five "J" No. 3 | SW/4 SE/4 Sec. 25, T-17-S, R-28-E |
| Five "J" No. 2 | SW/4 NE/4 Sec. 36, T-17-S, R-28-E |
| Atscl - Federal No. 2 | NE/4 SE/4 Sec. 30, T-17-S, R-29-E |
| Continental "B" State No. 3 | SE/4 SW/4 Sec. 30, T-17-S, R-29-E |
| Continental "E" State No. 4 | SE/4 NW/4 Sec. 30, T-17-S, R-29-E |
| Green - Federal No. 1 | NW/4 NW/4 Sec. 31, T-17-S, R-29-E |
| Green - Federal No. 5 | SW/4 NW/4 Sec. 31, T-17-S, R-29-E |
| Green - Federal No. 7 | NW/4 NE/4 Sec. 31, T-17-S, R-29-E |

(2) That the subject waterflood project is hereby designated the Shenandoah Artesia Seven Waterflood project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations;

-3-
CASE NO. 4520
Order No. R-4134

PROVIDED HOWEVER, that the Secretary-Director of the Commission may approve expansion of the above-described waterflood project to include such additional injection wells in the area of said project as may be necessary to complete an efficient water injection pattern; that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection.

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

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

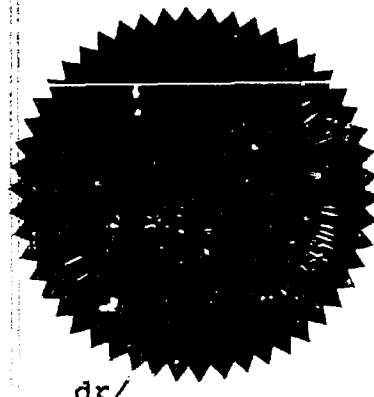
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Bruce King
BRUCE KING, Chairman

Alex J. Armijo
ALEX J. ARMIJO, Member

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



dr/

Mr. James T. Jennings
Jennings, Christy & Copple
Attorneys at Law
Post Office Box 1180
Roswell, New Mexico 88201
Dear Sir:

water injection is to be thru the mine
and the water injection was in with each
well equipped with a string of tubing & 4 in a
jacket placed as near as the space allow to the
uppermost injection perforation & separation of the injection
placed into the matrix and the Perforation zone shall be accom-
plished through down-hole flow regulators. The casing-tubing
& annulus shall be filled with an inert fluid and squeezed

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.

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

A. L. PORTER, Jr.
Secretary-Director

~~Mr. Frank Irby~~, State Engineer Office, Santa Fe, New Mexico
Mr. D. E. Gray,

will be found in the
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OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2082 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN
LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER
STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

April 19, 1971

Mr. James T. Jennings
Jennings, Christy & Copple
Attorneys at Law
Post Office Box 1180
Roswell, New Mexico 88201

Re: Case No. 4520
Order No. R-4134
Applicant:
Shenandoah Oil Corporation

Dear Sir:

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

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC _____
State Engineer x

Other _____

DEPCO, Inc.

PRODUCTION & EXPLORATION

April 12, 1971

New Mexico Oil and Gas
Conservation Commission
P. O. Box 871
Santa Fe, New Mexico 87501

Re: Case No. 4520

Gentlemen:

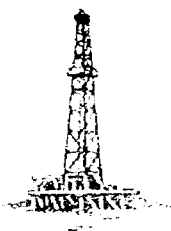
DEPCO, Inc., as operator of certain properties in the area embraced by the above proceedings, will not be represented at the hearing. Negotiations relative to the sale of our interests in the properties involved in this matter to Shenandoah Oil Corporation are in progress. DEPCO, Inc. has no objection to the application by Shenandoah for waterflood project approval.

Yours very truly,

C. D. Crump
C. D. CRUMP
Production Manager

CDC/jer

cc: Shenandoah Oil Corporation
1018 Commerce Building
Fort Worth, Texas 76100



1025 PETROLEUM CLUB BLDG. • DENVER, COLORADO 80202 • PHONE 303/292-0980

A diagramed sketch is attached that shows the typical downhole equipment to be installed in an injection well. The example is from another flood that Shenandoah operates and it has proven very successful.

The casing-tubing annulus will be loaded with inert fluid and will have a pressure gauge at the surface to check for indications of any packer leakage.

CASE 4352 (Reopened):

(Continued from Page 1)

an opportunity to appear and present evidence as to whether the Double L-Queen and Suble-Queen Pools, Chaves County, New Mexico, are in fact separate reservoirs or one common reservoir. Further, in the event it is found that the two pools comprise one common reservoir, the Commission will consider the adoption of special rules and regulations to provide for the classification of oil and gas wells, spacing and well location requirements for oil and gas wells, and an allocation formula for withdrawals from the gas wells and oil wells.

CASE 4520: Application of Shenandoah Oil Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Artesia Pool by the injection of water into the Grayburg formation through nine wells located in Sections 25 and 36 of Township 17 South, Range 28 East and Sections 30 and 31 of Township 17 South, Range 29 East, Eddy County, New Mexico. Applicant further seeks a procedure whereby additional injection wells may be approved administratively.

CASE 4521: Application of Shenandoah Oil Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Grayburg-Jackson Pool by the injection of water into the Grayburg and San Andres formations through three wells located in Sections 15 and 22 of Township 17 South, Range 30 East, Eddy County, New Mexico. Applicant further seeks a procedure whereby additional injection wells may be approved administratively.

CASE 4522: Southeastern New Mexico nomenclature case calling for the creation of a new pool, the assignment of oil discovery allowable, and the extension of certain pools in Lea and Chaves Counties, New Mexico:

(a) Create a new pool in Chaves County, New Mexico, classified as an oil pool for Queen production and

DRAFT

GMH/dr

(iv)

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. 4520

Order No. R-4134

APPLICATION OF SHENANDOAH OIL

CORPORATION FOR A WATERFLOOD
PROJECT, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 14, 1971,
at ~~Santa Fe~~, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of April, 1971, 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, Shenandoah Oil Corporation, seeks
authority to institute a waterflood project in the Artesia
Pool by the injection of water into the ^{meter and Premier zone of the} Grayburg formation
through nine wells, located in Sections 25 and 36 of Township 17
South, Range 28 East and Sections 30 and 31 of Township 17 South,
Range 29 East, NMPM, Eddy County, New Mexico.

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

(under)

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

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

IT IS THEREFORE ORDERED:

(1) That the applicant, Shenandoah Oil Corporation, is hereby authorized to institute a waterflood project in the Artesia Pool by the injection of water into the ^{water and Precipitation zone of the} Grayburg formation through ~~the following designated~~ ^{the following designated} wells located in Sections 25 and 36 of Township 17 South, Range 28 East and Sections 30 and 31 of Township 17 South, Range 29 East, ~~NMPM~~ ⁱⁿ Eddy County, New Mexico ~~located~~

WELL NUMBER

LOCATION

| | |
|--------------------------|---|
| Five "J" #1 | NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 25, T-17-S, R-28-E ✓ |
| Five "J" #3 | SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 25, T-17-S, R-28-E ✓ |
| Five "J" #2 | SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 36, T 17-S, R-28-E ✓ |
| Atsel - Federal #2 | NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E ✓ |
| Continental "B" State #3 | SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E ✓ |
| Continental "E" State #4 | SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E ✓ |
| Green - Federal #1 | NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E |
| Green - Federal #5 | SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E |
| Green - Federal #7 | NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E |

DONE at Santa Fe, New Mexico, on the day of 1944
designated.

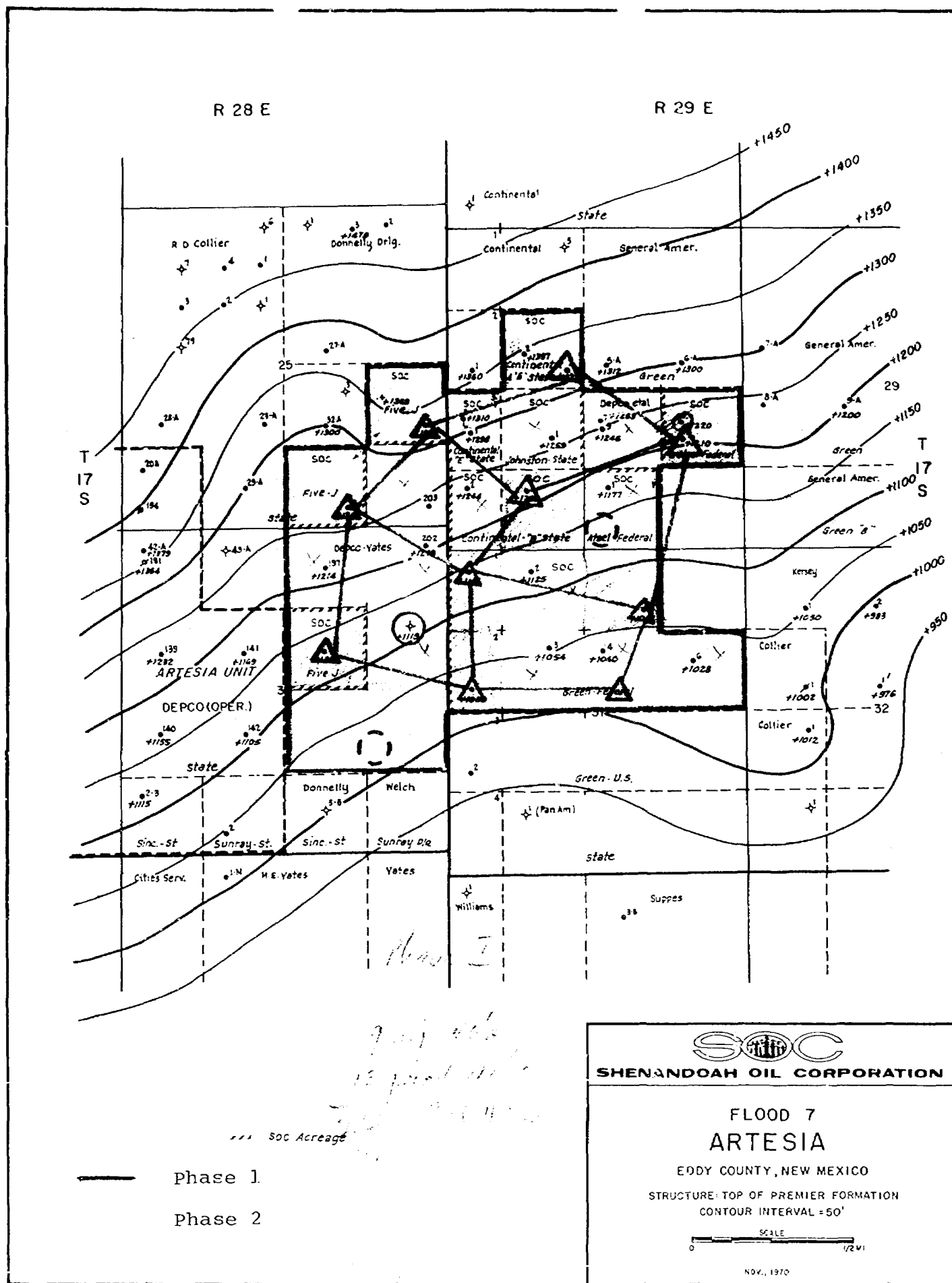
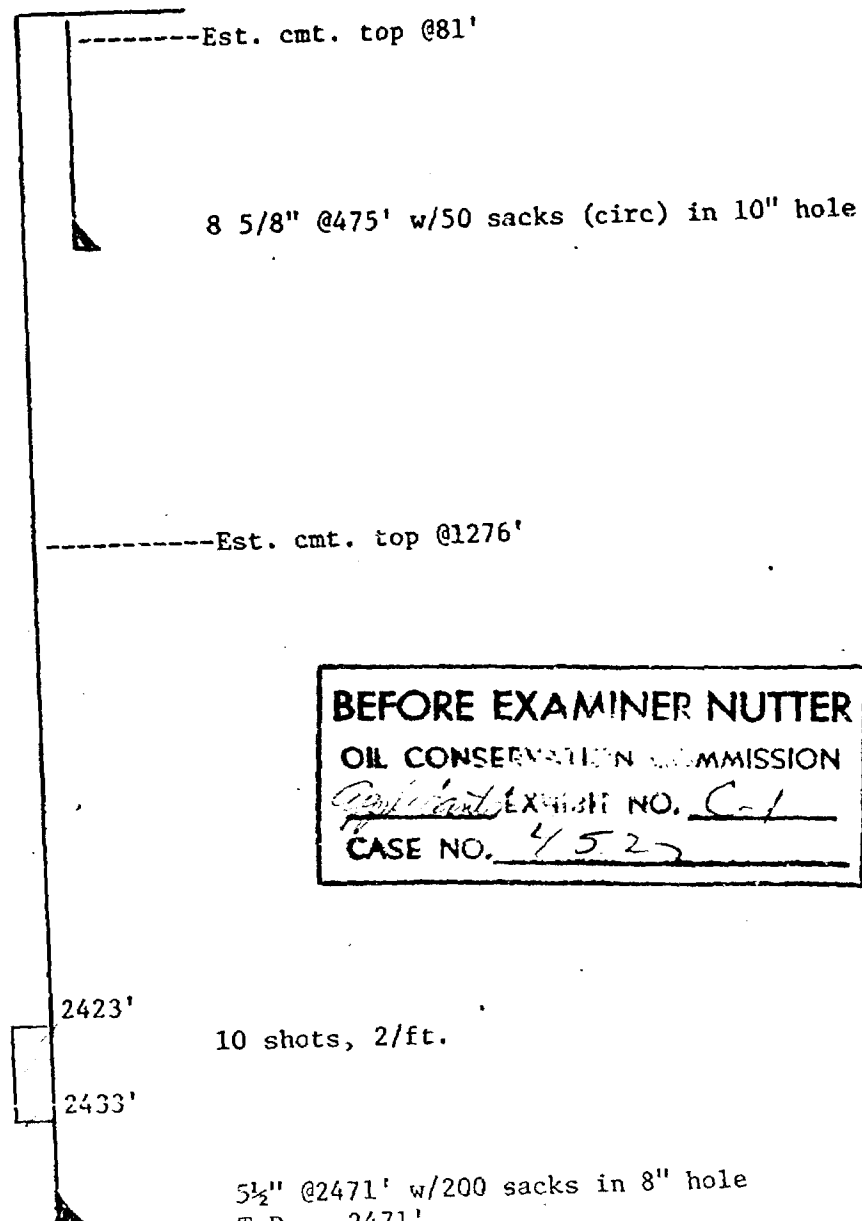
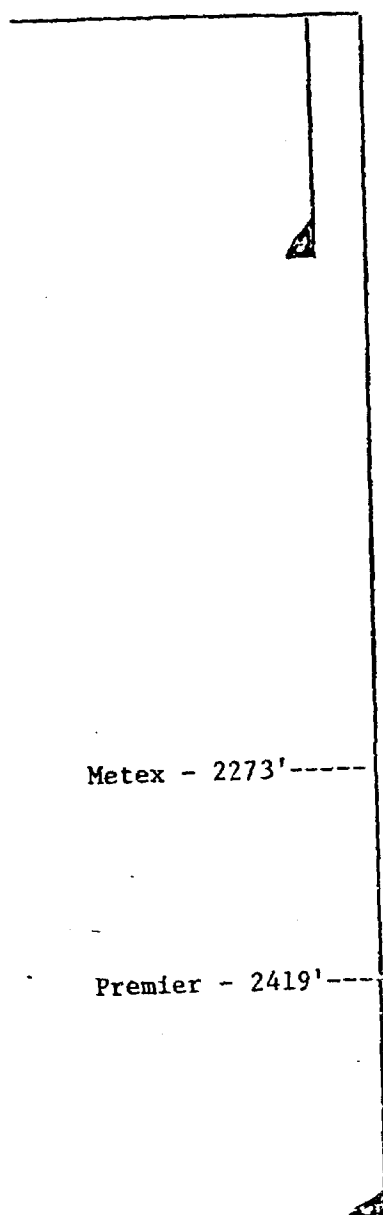


EXHIBIT "A"

ATSEL - FEDERAL #2

Unit I - 1,760 FSL & 990 FEL
Section 30, T-17S, R-29E
Eddy County, New Mexico



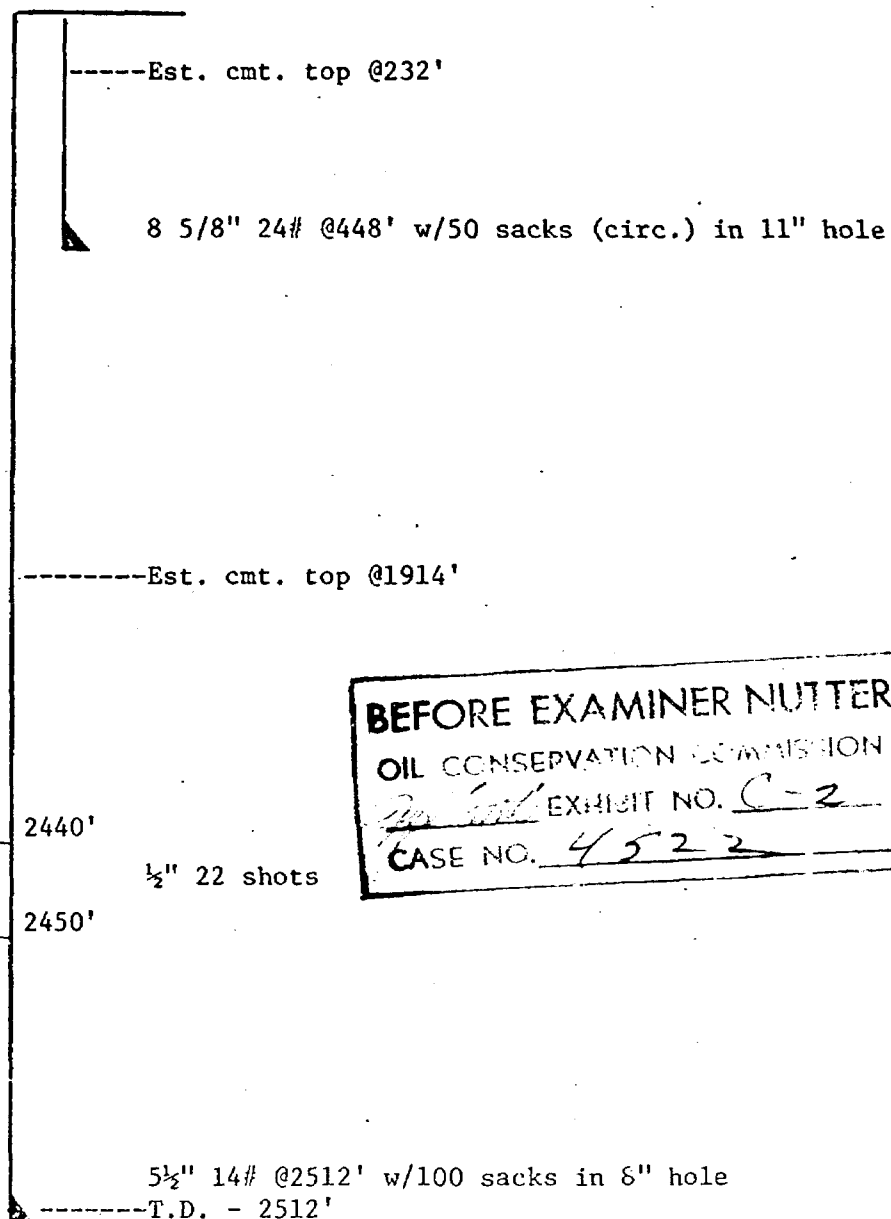
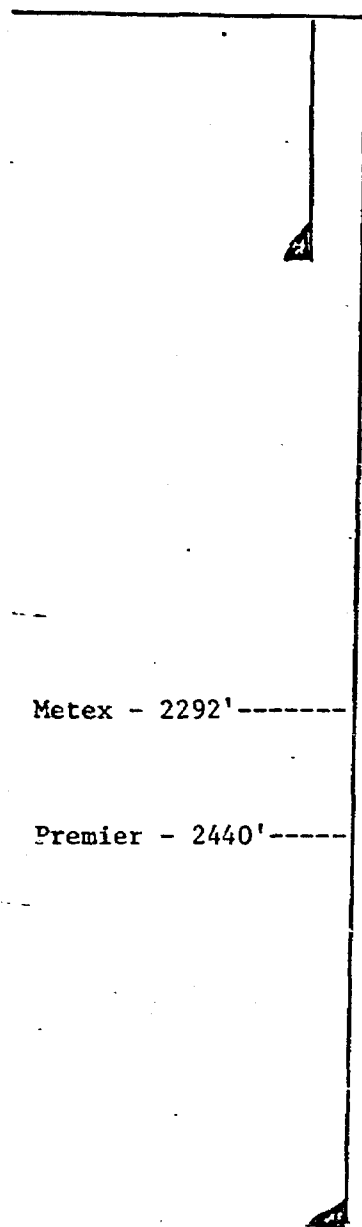
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Confidential EXHIBIT NO. C-1
CASE NO. 4525

NOTE: Metex Formation will be perforated in selected intervals and these intervals will be separated from the Premier by using Baker flow valves and a packer arrangement with 1 string of 2" tubing.

EXHIBIT C-1

CONTINENTAL "B" STATE #3

Unit "N" - 990 FSL & 1375 FWL
Section 30, T-17S, R-29E
Eddy County, New Mexico



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. C-2
CASE NO. 4522

NOTE: Metex Formation will be perforated in selected intervals and these intervals will be separated from the Premier by using Baker flow valves and a packer arrangement with 1 string of 2" tubing.

EXHIBIT C-2

CONTINENTAL "E" STATE #4

Unit "F" - 2,310 FNL & 1,911 FWL
Section 30, T-17S, R-29E
Eddy County, New Mexico

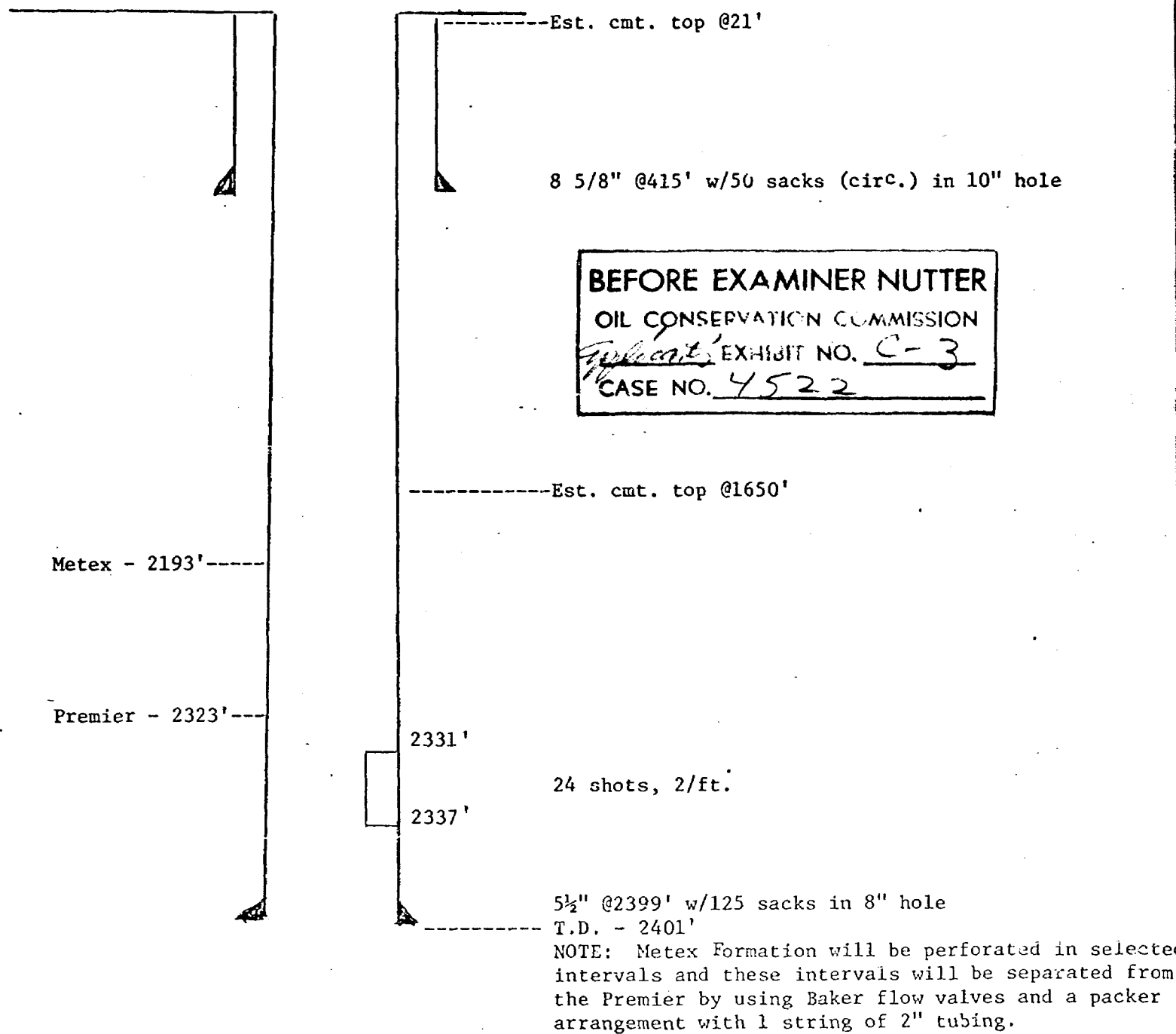


EXHIBIT C-3

FIVE "J" #1

Unit "I" - 1650 FSL & 330 FEL
Section 25, T-17S, R-28E
Eddy County, New Mexico

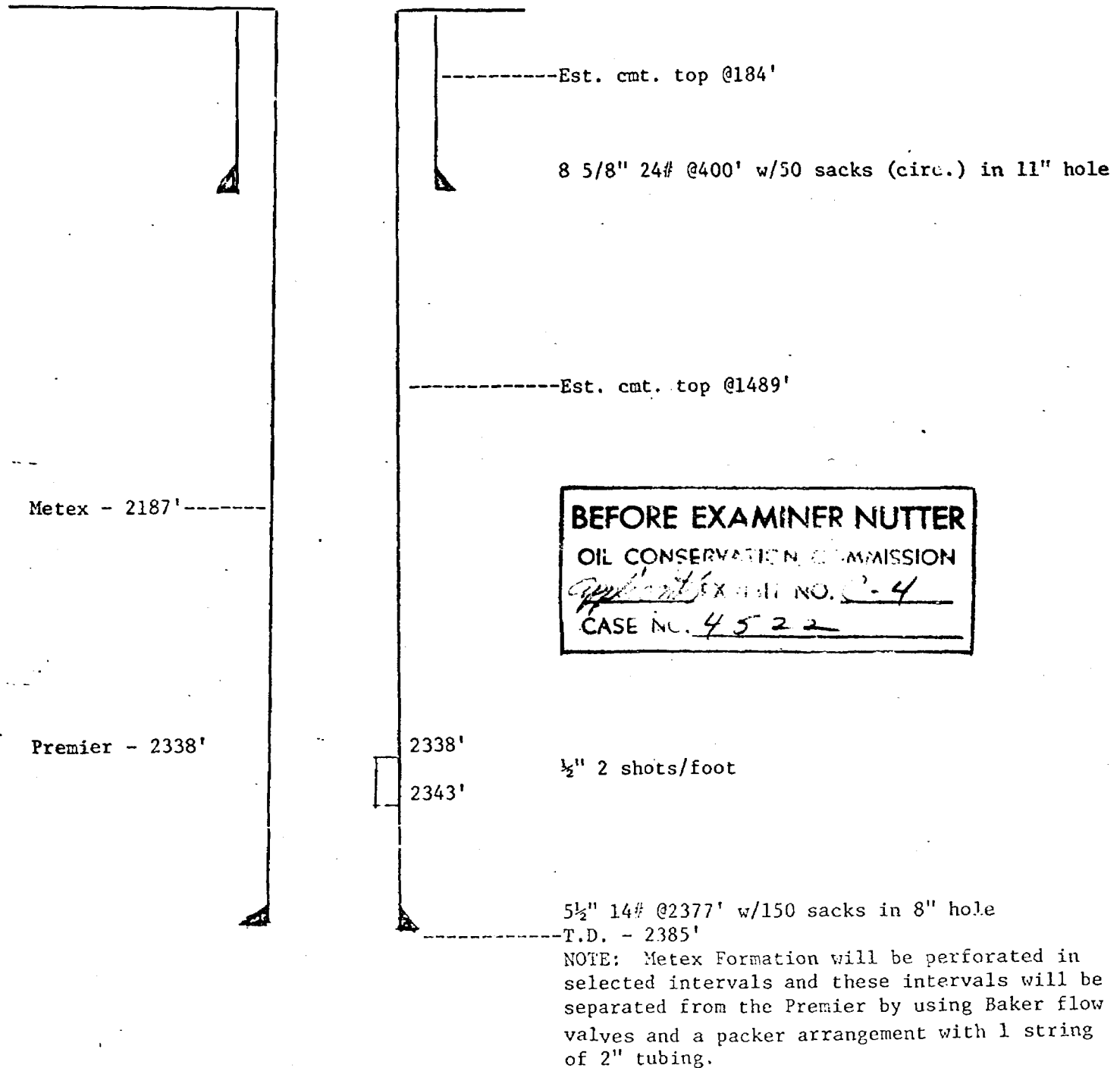
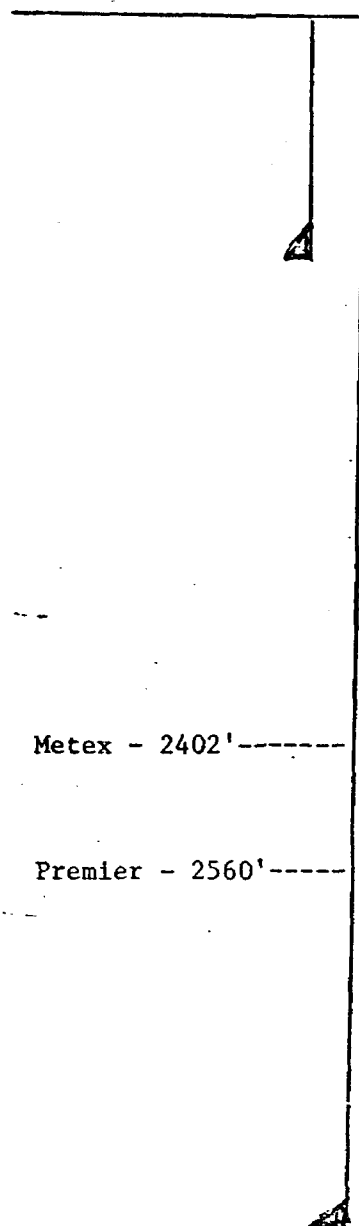


EXHIBIT C-4

FIVE "J" #2

Unit "G" - 1980 FNL & 1980 FEL
Section 36, T-17S, R-28E
Eddy County, New Mexico



Est. cmt. top @28'

8 5/8" 24# @422' w/50 sacks (circ.) in 10" hole.

| | |
|-----------------------------|------------------------|
| BEFORE EXAMINER NUTTER | |
| OIL CONSERVATION COMMISSION | |
| Applicant | EXHIBIT NO. <u>C-5</u> |
| CASE NO. | <u>4522</u> |

Est. cmt. top @2064'

2601'

2609'

5 1/2" 15# @2660' w/100 sacks in 8" hole.
T.D. - 2662'

NOTE: Metex Formation will be perforated in selected intervals and these intervals will be separated from the Premier by using Baker flow valves and a packer arrangement with 1 string of 2" tubing.

EXHIBIT C-5

FIVE "J" #3

Unit "O" - 330 FSL & 1650 FEL
Section 25, T-17S, R-28E
Eddy County, New Mexico

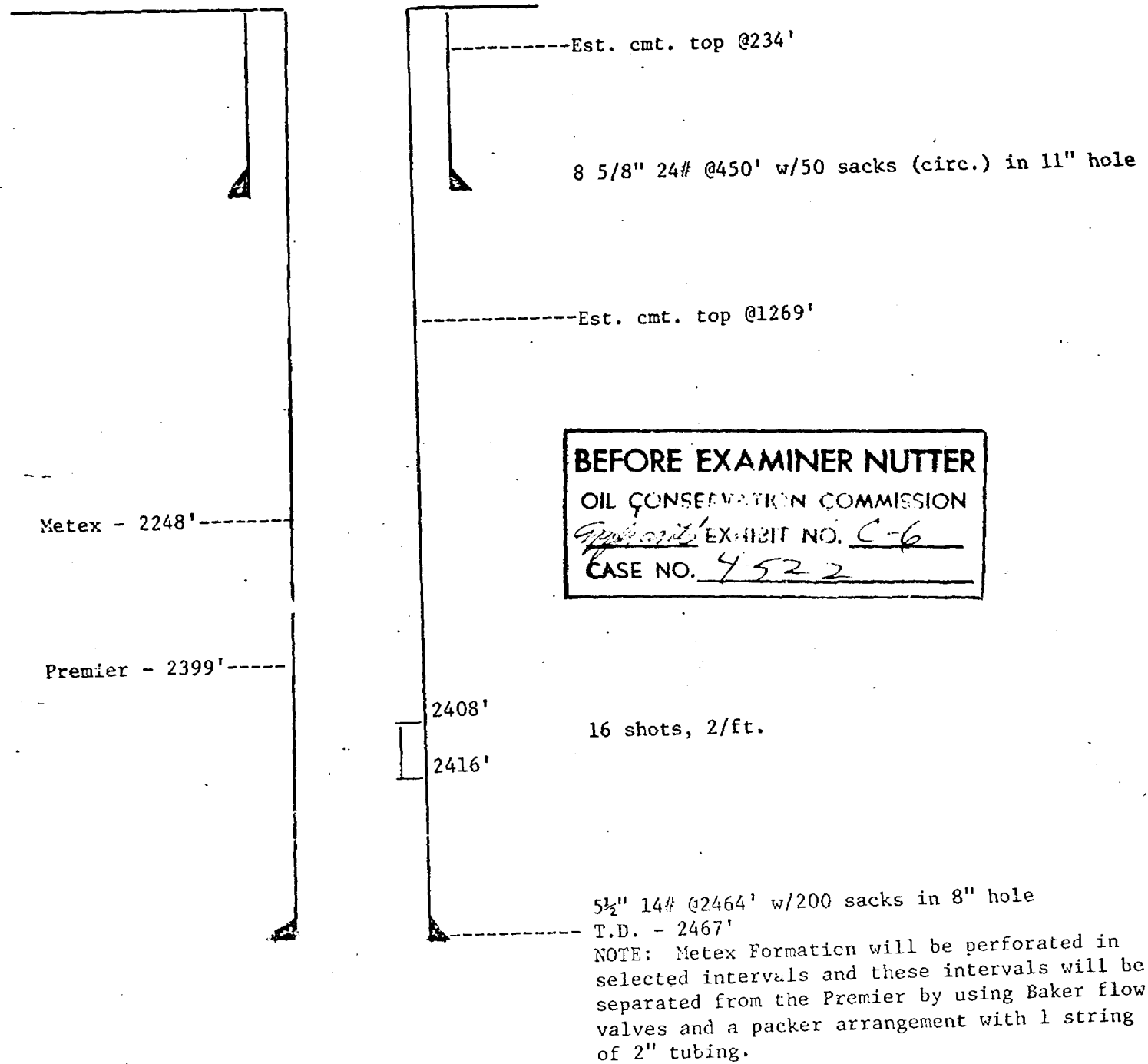


EXHIBIT C-6

GREEN - FEDERAL #1

Unit "D" - 330 FNL & 330 FWL
Section 31, T-17S, R-29E
Eddy County, New Mexico

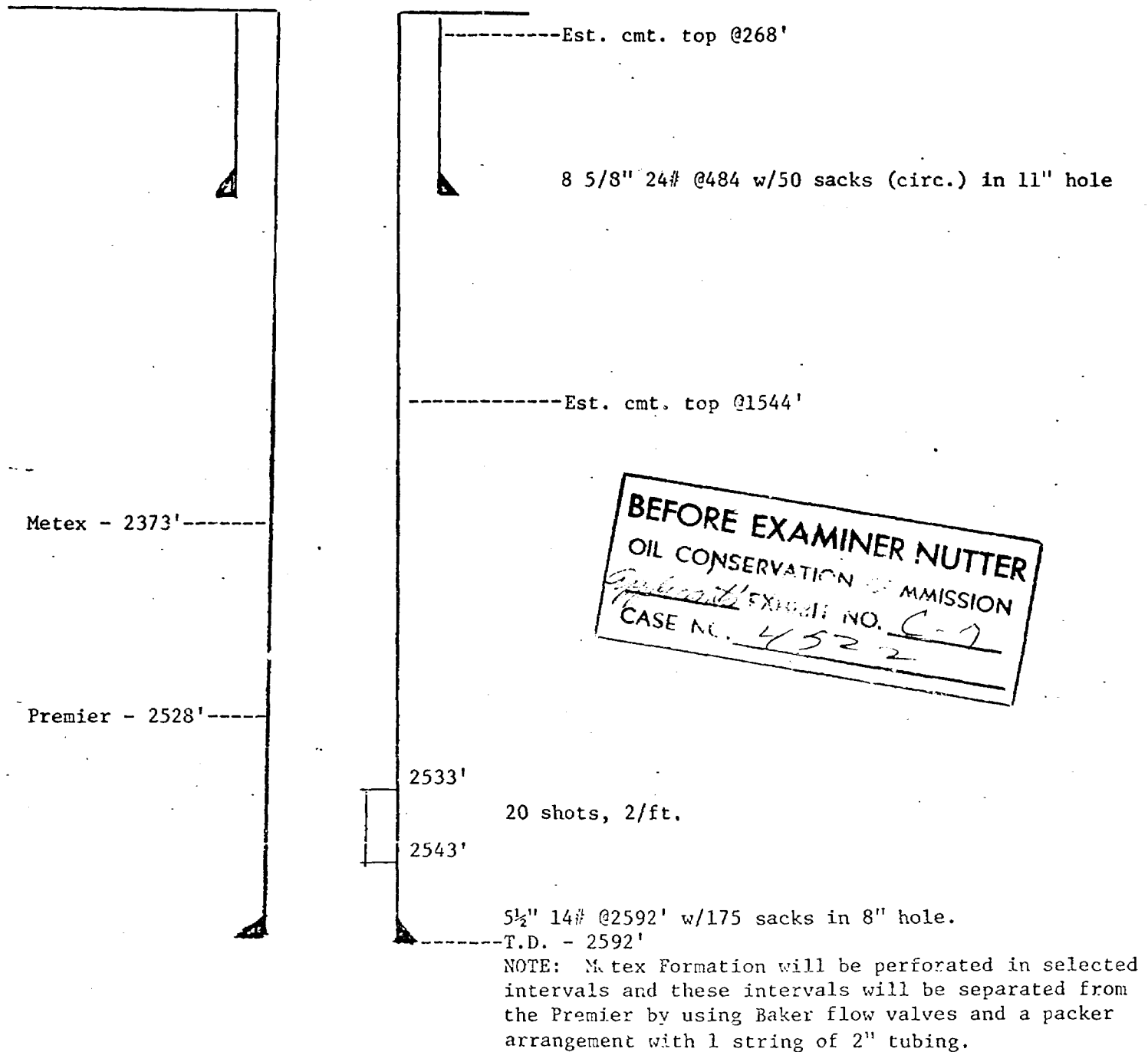


EXHIBIT C-7

GREEN FEDERAL #5

Unit "E" - 2310 FNL & 330 FNL
Section 31, T-17S, R-29E
Eddy County, New Mexico

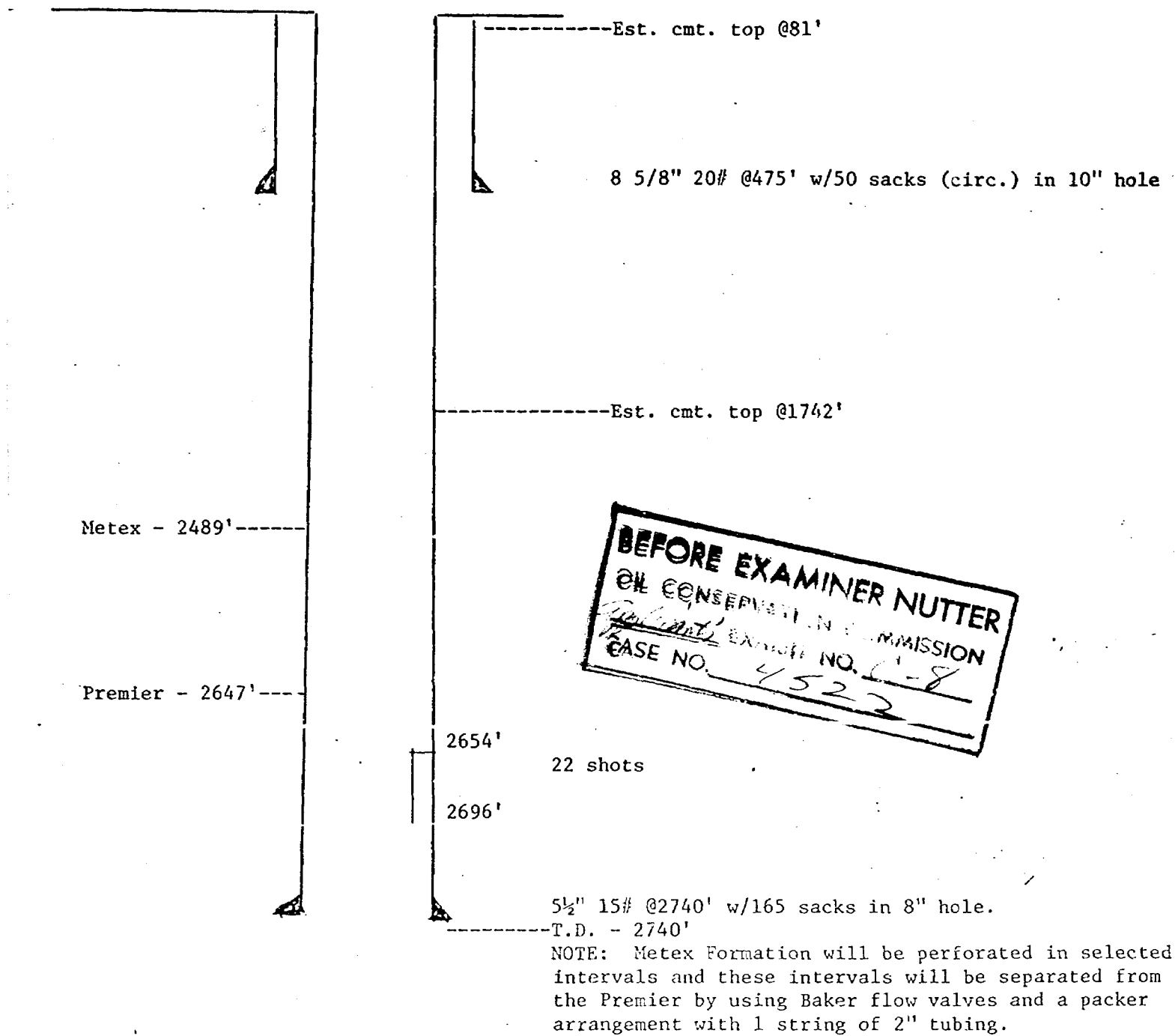


EXHIBIT C-8

GREEN - FEDERAL #7

Unit "B" - 990 FNL & 1750 FEL
Section 31, T-17S, R-29E
Eddy County, New Mexico

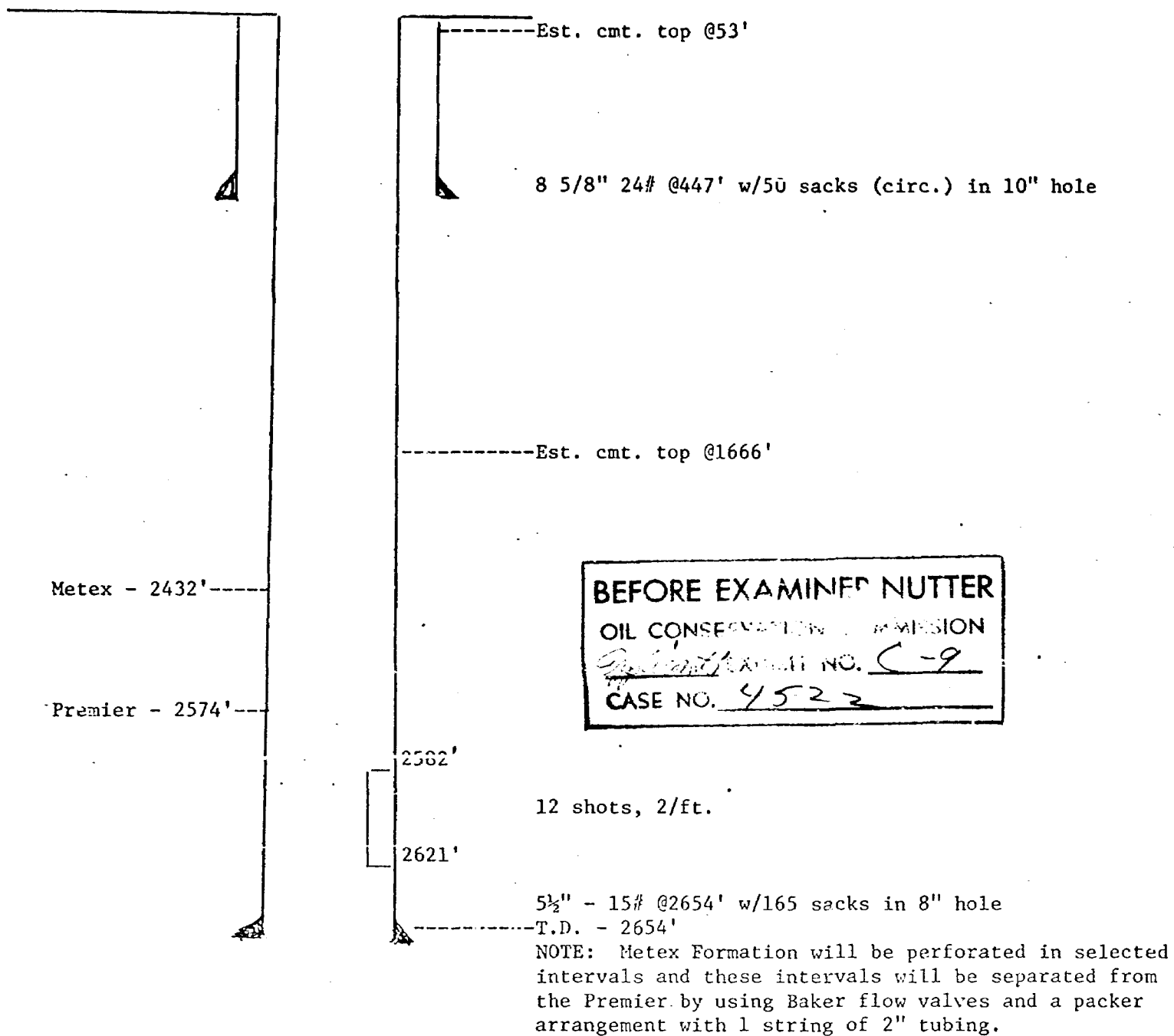
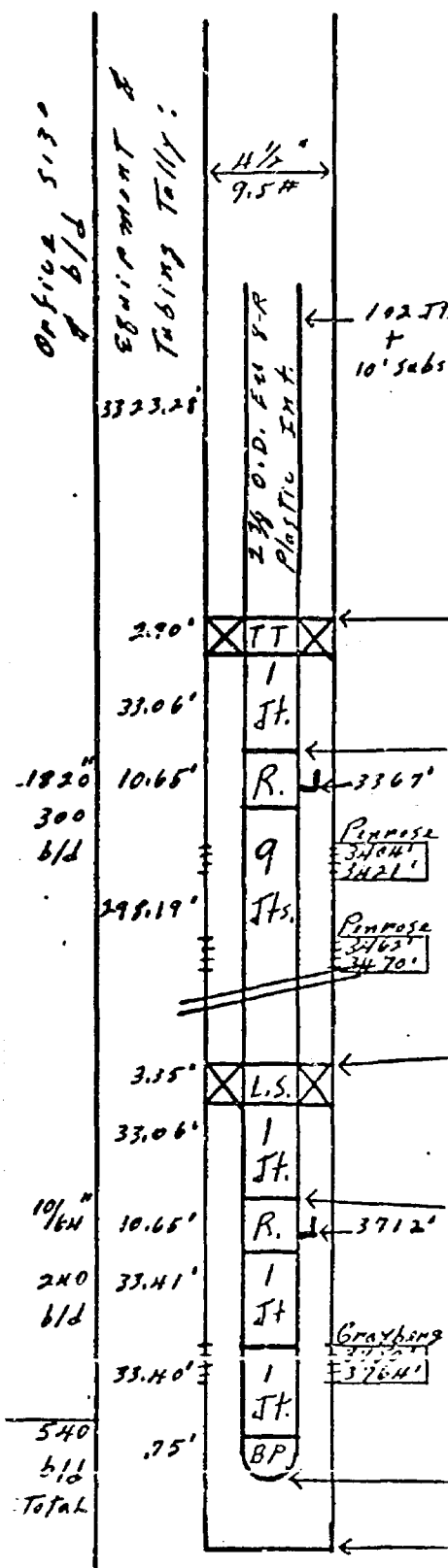


EXHIBIT C-9

WELL PROFILE



OPERATOR Shenandoah Oil Corp. CASING LINER TUBING

WELL # Mayer-Kenwood #1

FIELD Shugart

COUNTY Eddy

STATE New Mexico

DATE 3/17/70

☐ NEW COMPLETION ☒ WORKOVER

SIZE

WEIGHT

GRADE

THREAD

DEPTH

Waterflood

| ITEM NO. | EQUIPMENT AND SERVICES | ESTIMATE |
|----------|--|----------|
| | above top packer (115 Jts. total in well) (Subs under top joint.) | |
| 3326' | size 43A4 Baker Model "E" Tandem Tension Packer w/unloader (602-21-0946) w/TK-69 plastic internally and externally. | |
| 3362' | size 2.062 X 10' Baker Model "BF" Full Opening Down Hole Flow Regulator (600-34-2064) w/TK-69 plastic internally and externally. (monel piston) | |
| 3670' | size 43-A Baker Model A-2 Lok-Set Retrievable Casing Packer (646-12-0946) w/TK-69 plastic internally and externally. | |
| 3707' | size 2.062 X 10' Baker Model "BF" Full Opening Down Hole Flow Regulator (600-34-2064) w/TK-69 plastic internally and externally. (monel piston) | |
| 3785' | Tubing T.D. | |
| 3799.60' | Log. T.D. | |

COMMENTS:

TOTAL ESTIMATE

Packer set in 13,000# tension.
Fluid in well when packers run approx. 3,000'
Zero is 2' above ground level.
Slip type wellhead.

Shenandoah Repr. --- C.W. Downey --- Hobbs, N.M.
Pat. Notes --- Ft. Worth, Texas

PREPARED BY
M.R. Kruschke, S r.
Regional Staff Tech.

OFFICE
Odessa, Texas
PHONE
915-337-2383

Worksheet
No. 523



SAVE TIME AND MONEY WITH
COMPLETION BY BAKER

BAKER OIL TOOLS, INC.
HOUSTON LOS ANGELES NEW YORK

PRINTED IN U.S.A.

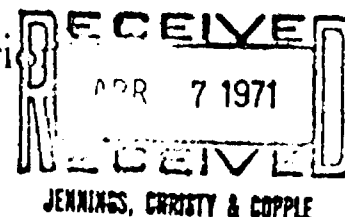
WELL INITIAL
FLUIDS FINAL



United States Department of the Interior

GEOLOGICAL SURVEY

P. O. Drawer U
Artesia, New Mexico 88210



April 6, 1971

Jennings, Christy & Copple
Post Office Box 1180
Roswell, New Mexico 88201

Gentlemen:

Your letter of March 18, 1971 requests approval for Shenandoah Oil Corporation to operate a water project of the Premier Zone of the Grayburg formation in T. 17 S., R. 28 and 29 E., N.M.P.M., Eddy County, New Mexico, involving that portion of Federal oil and gas leases described as follows:

Las Cruces 062407

T. 17 S., R. 29 E.
Sec. 30: N $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{2}$ SE $\frac{1}{4}$

New Mexico 0555569

T. 17 S., R. 29 E.
Sec. 31: NW $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$

This project includes State lands in sections 25 and 36, T. 17 S., R. 28 E., and sec. 30, T. 17 S., R. 29 E. The flood pattern would be nonsymmetrical and the project operator proposes to convert to water injection the following wells on Federal leases, and to drill as an injection a well in the SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, also on Federal land:

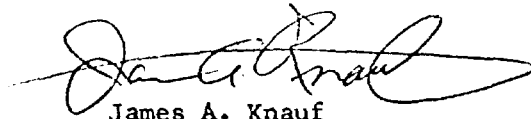
| <u>Well Number and Lease</u> | <u>Location</u> |
|------------------------------|---|
| 3-Atsel Federal | NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30 |
| 1-Green Federal | NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31 |
| 5-Green Federal | SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31 |
| 7-Green Federal | NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31 |

The plan for operating the Federal leases in the waterflood project as proposed in the application is satisfactory to this office and hereby approved subject to approval by the New Mexico Oil Conservation Commission and the following:

1. This project will be operated in compliance with the New Mexico Oil Conservation Commission regulations governing waterflood operations.

2. Duplicate copies of a monthly progress report (N.M.O.C.C. form C-120 acceptable) are to be submitted to this office showing the volume of water injected and average pressures for the injection wells and production for the producing wells in the project area.
3. This approval does not preclude the necessity for further approval when the project is expanded to include other wells and leases or the necessity to submit the usual notices and reports on wells involved on Federal leases. When this project is expanded to involve other operators and interests, the correlative rights of all concerned should be considered.

Sincerely yours,



James A. Knauf
District Engineer

cc:
N.M.O.C.C., Santa Fe
Roswell
Accounts

RLBeekman:ih 4/6/71

JAMES T. JENNINGS
SIM B. CHRISTY IV
ROGER L. COPPLE
BRIAN W. COPPLE

LAW OFFICES OF
JENNINGS, CHRISTY & COPPLE
1012 SECURITY NATIONAL BANK BUILDING
P. O. BOX 1180
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-8432
AREA CODE 505

March 18, 1971

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

Attention: Ida Rodriguez

RE: SHENANDOAH OIL CORPORATION APPLICATION FOR
APPROVAL OF WATERFLOOD PROJECT NO. 7

Enclosed herewith you will find the original and one copy of an Application on behalf of Shenandoah Oil Corporation for the approval of a waterflood project pursuant to Rule 701. Confirming our telephone conversation, I would appreciate it if you could put this on the docket for the hearing to be held April 14 at Hobbs. I have attached all of the exhibits, including the logs, to the original Application and the copy of the Application is complete except as to the logs as we did not have duplicate copies of these available.

I hope you find all the papers in order. If, however, you need anything further, please call me.

Shenandoah has another waterflood project pending and I hope to be able to get the necessary information so that an application can be filed to have the additional project approved at the same time on April 14.


JAMES T. JENNINGS

JTS/mb

Encl.

cc: U.S.G.S., Artesia
Shenandoah Oil Corporation

RECEIVED
4-2-71
JENNINGS, CHRISTY & COPPLE

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
SHENANDOAH OIL CORPORATION TO
INSTITUTE A WATERFLOOD PROJECT BY THE
INJECTION OF WATER INTO THE METEX AND
PREMIER ZONES OF THE GRAYBURG FORMATION
THROUGH NINE INJECTION WELLS TO BE
LOCATED IN SECTIONS 25 AND 36, TOWNSHIP
17 SOUTH, RANGE 28 EAST, AND SECTIONS
30 AND 31, TOWNSHIP 17 SOUTH, RANGE 29
EAST, ARTESIA QUEEN GRAYBURG SAN ANDRES
FIELD, EDDY COUNTY, NEW MEXICO.

APPLICATION FOR APPROVAL OF
SHENANDOAH OIL CORPORATION WATERFLOOD PROJECT NO. 7

Comes now the Applicant, Shenandoah Oil Corporation, and
hereby makes application for approval of a waterflood project pur-
suant to Rule 701 of the Rules and Regulations of the Commission
and in support thereof states:

1. Applicant desires to initiate a waterflood project to
inject fresh water into the Metex and Premier Zones of the Grayburg
formation in the nine existing wells on the following described
tracts:

| <u>WELL NUMBER</u> | <u>LOCATION</u> | |
|--------------------------|---|---|
| Atsel - Federal #2 | NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E | 4 |
| Continental "B" State #3 | SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E | 5 |
| Continental "E" State #4 | SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 30, T-17-S, R-29-E | 6 |
| Five "J" #1 | NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 25, T-17-S, R-28-E | 1 |
| Five "J" #2 | SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 36, T-17-S, R-28-E | 3 |
| Five "J" #3 | SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 25, T-17-S, R-28-E | 2 |
| Green - Federal #1 | NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E | 7 |
| Green - Federal #5 | SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E | 8 |
| Green - Federal #7 | NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 31, T-17-S, R-29-E | 9 |

2. That the above wells and all other wells in the area have reached an advanced state of depletion and are stripper wells.

3. That Applicant feels that the waterflooding of the Metex and Premier Zones of the Grayburg formation is feasible and that flooding will result in the increased ultimate recovery of oil and prevent waste.

4. Depco, Inc. is successfully waterflooding the Artesia Unit located immediately to the West in Sections 35 and 36, Township 17 South, Range 28 East.

5. That when need arises, upon administrative approval, Applicant should be permitted to convert to water injection wells additional wells within its lease boundaries or to drill additional injection wells, as shown on Exhibit "A" attached hereto.

6. Applicant proposes to inject fresh water and produced water when available in the Metex and Premier Zones of the Grayburg formation at the approximate depth of 2200 feet for the Metex Zone and from 2400 to 2600 feet for the Premier Zone, and to inject approximately 150 barrels of water per day into each zone, or a total of 300 barrels per well per day, with a total injection rate of approximately 2700 barrels of water per day. The injection areas of the various wells are set forth on Exhibit "C". Injection water will be purchased from Double Eagle Water Company, a commercial water company operating in the area, and the injection plant will be capable of handling produced water for reinjection.

7. That in support of this application and in accordance with the provisions of Rule 701-B, Applicant submits herewith the following exhibits:

Exhibit A - Plat showing the location of Applicant's project and lands embraced therein.

Exhibit B - Plat showing location of Applicant's acreage and the location of all other wells within the radius of two miles from the proposed injection wells.

Exhibit C - Nos. 1-9 Diagrametic Sketches of the proposed injection wells showing estimated tops of the cement, perforations and depths.

Exhibit D - Diagrametic Sketch showing the typical down hole equipment to be installed in each injection well.

Exhibit E - Nos. 1-9 Logs of the proposed injection wells.

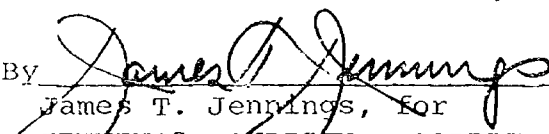
WHEREFORE, Applicant requests the Commission to set this matter down for hearing before an examiner at an early date, publish notice as required by law and, after hearing, issue its Order:

1. Authorizing the waterflood project and the injection of water into the Metex and Premier Zones of the Grayburg formation in the nine injection wells located in Sections 25 and 36, Township 17 South, Range 28 East, and Sections 30 and 31, Township 17 South, Range 29 East.

2. Establishing rules for administrative expansion and conversion of additional wells to water injection wells.

Respectfully submitted,

SHENANDOAH OIL CORPORATION

By 
James T. Jennings, for
JENNINGS, CHRISTY & COPPLE
Attorneys for Applicant
P. O. Box 1180
Roswell, New Mexico 88201