

CASE 156: Application of SHELL
OIL CO. for a waterflood project
in N. Square Lake Premier Unit.

ASE NO.

3356

Application,
Transcripts,
Small Exhibits
ETC.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

December 17, 1965

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

Dear Mr. Morris:

Reference is made to Commission Order No. R-3017, recently entered in Case No. 3356, approving the Shell North Square Lake Premier Waterflood Project.

Injection is to be through the 13 authorized water injection wells which shall be equipped with packers and plastic-coated tubing.

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 840 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

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

-2-

December 17, 1965

Mr. Richard S. Morris
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Post Office Box 2307
Santa Fe, New Mexico

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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/ as/esr

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

Oil Conservation Commission
Drawer DD
Artesia, New Mexico

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3356
Order No. R-3017

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on December 14, 1965, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 16th day of December, 1965, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Shell Oil Company, seeks permission to institute a waterflood project in the North Square Lake Premier Unit Area, North Square Lake Grayburg-San Andres Pool, by the injection of water into the Premier Sand of the Grayburg formation through thirteen injection wells in Sections 5, 6, and 8, Township 16 South, Range 31 East, NMPM, Eddy County, New Mexico.

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

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

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

-2-

CASE No. 3356
Order No. R-3017

IT IS THEREFORE ORDERED:

(1) That the applicant, Shell Oil Company, is hereby authorized to institute a waterflood project in the North Square Lake Premier Unit Area, North Square Lake Grayburg-San Andres Pool, by the injection of water into the Premier Sand of the Grayburg formation through the following-described wells in Township 16 South, Range 31 East, NMPM, Eddy County, New Mexico:

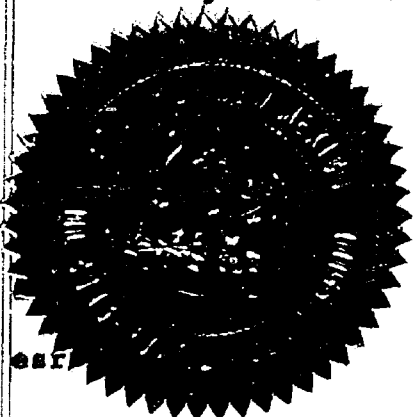
WELL	SECTION	UNIT
Shell Trigg Federal No. 1	5	S
Shell Trigg Federal No. 2	6	P
Shell Trigg Federal No. 4	5	V
Shell Trigg Federal No. 6	6	Q
Shell Trigg Federal No. 8	6	X
Shell Trigg Federal No. 10	6	J
Mobil PV No. 1	5	Q
Mobil PV No. 3	5	M
Mobil PV No. 4	5	N
Mobil PV No. 5	8	D
Mobil C No. 8	5	X
Leonard Midwest Inv. No. 1	8	B
(To be drilled)	6	V

(2) That the subject waterflood project is hereby designated the Shell North Square Lake Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

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

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



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION OF SHELL OIL COMPANY
FOR APPROVAL OF A WATERFLOOD
PROJECT IN THE NORTH SQUARE LAKE
PREMIER UNIT AREA, EDDY COUNTY,
NEW MEXICO.

Case No. 3356

A P P L I C A T I O N

Comes now Shell Oil Company, by its attorneys, and requests approval of the waterflood project it proposes to conduct in the North Square Lake Unit Area, and in support of its application states:

1. By separate application Shell Oil Company is requesting approval of the North Square Lake Premier Unit Agreement covering 1,080 acres of federal, state and fee lands in T. 16 S., R. 31 E., Eddy County, New Mexico.
2. Shell Oil Company seeks approval of the New Mexico Oil Conservation Commission to institute a waterflood project in the North Square Lake Premier Unit area by the injection of water into the premier sand (a basal member of the Grayburg Formation) through thirteen wells located within the said unit area as shown on Exhibit No. 1-a attached to and made a part of this application.
3. Said Exhibit No. 1-a also shows the location of all other wells within two miles from the unit area, the formations in which those wells are completed, and lessees of record.
4. Attached to and made a part of this application are the logs of the proposed injection wells to the extent that they are available.
5. Attached to and made a part of this application are diagramatic sketches of the proposed injection wells.
6. It is estimated that approximately 2,600,000 barrels of water will be required for this project. The daily rate of injection will be 2,600 barrels or 170-200 barrels per well per

DOCKET MAILED

Date 12-1-65

day. This water will be purchased from either the Yucca Water Company or Double Eagle Water Company. An analysis of the water obtainable from both companies is attached to and made a part of this application.

7. Approval of this application will prevent waste and protect correlative rights.

WHEREFORE, Shell Oil Company requests that this application be set for hearing before the Commission or one of its examiners during the month of December, 1965, and that the Commission enter its order approving the waterflood project as requested herein.

SETH, MONTGOMERY, FEDERICI & ANDREWS

By *Sumner Greene*
Attorneys for Shell Oil Company
P. O. Box 2307
Santa Fe, New Mexico

CERTIFICATE OF MAILING

The undersigned hereby certifies that on this 22nd day of November, 1965, a copy of this application, complete with all exhibits thereto, was mailed to Mr. Frank Irby, Chief, Water Rights Division, Office of the State Cengineer, Capitol Building, Santa Fe, New Mexico.

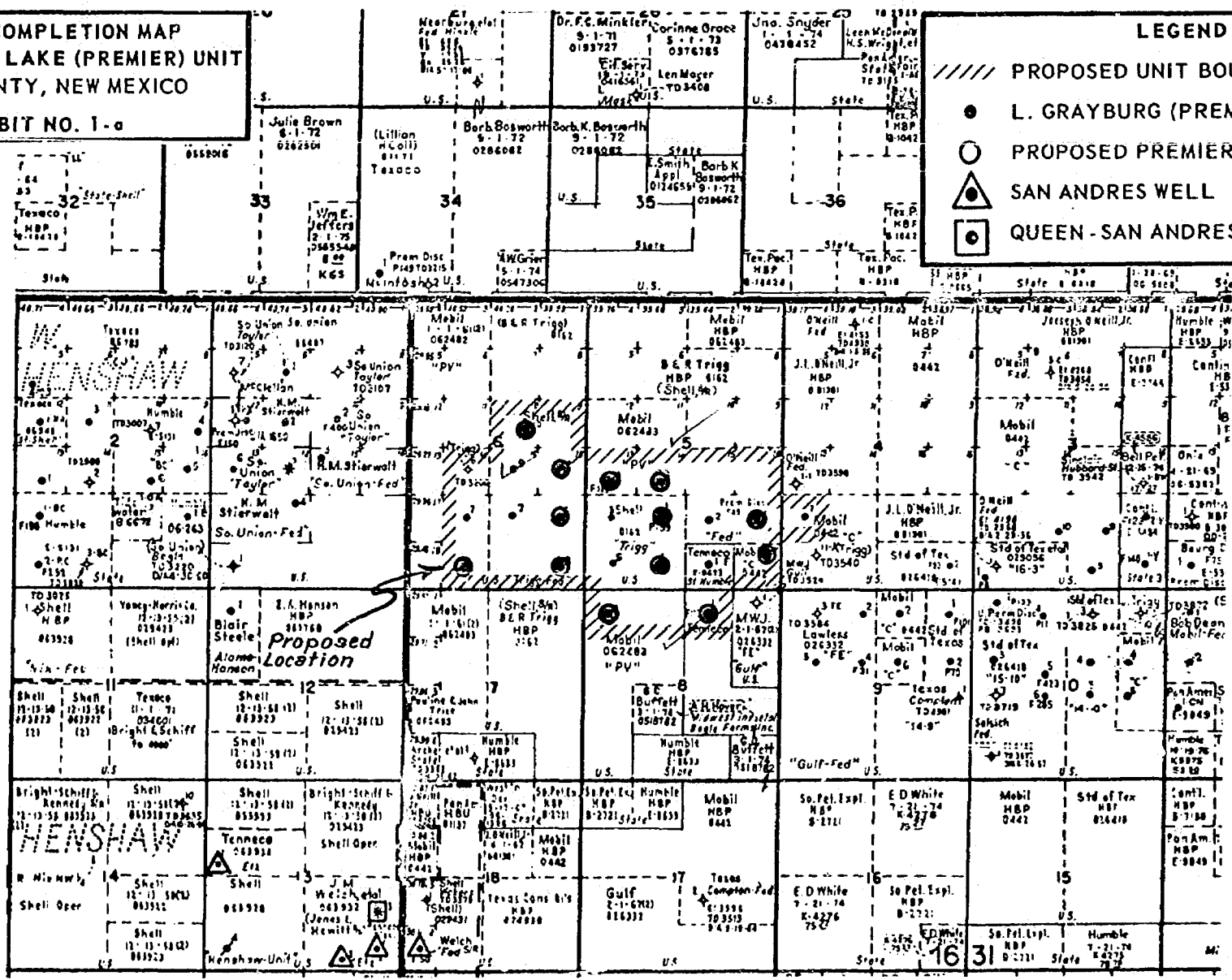
Sumner Greene

**LEASE & COMPLETION MAP
NORTH SQUARE LAKE (PREMIER) UNIT
EDDY COUNTY, NEW MEXICO**

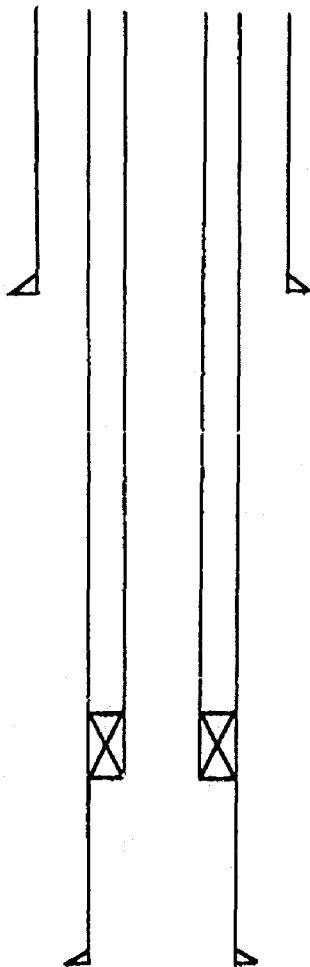
EXHIBIT NO. 1-a

LEGEND

- //// PROPOSED UNIT BOUNDARY
- L. GRAYBURG (PREMIER) WELL
- PROPOSED PREMIER INJECTION WELL
- ▲ SAN ANDRES WELL
- ◻ QUEEN - SAN ANDRES DUAL WELL



Case 3256



Well: Shell Trigg Federal #1

Casing: 8 5/8" @ 521'

Cement: 350 sx

Cement Top: circ. (calculated)

Tubing: 2"

Packer: 3300'

Perforations: 3326-3473'

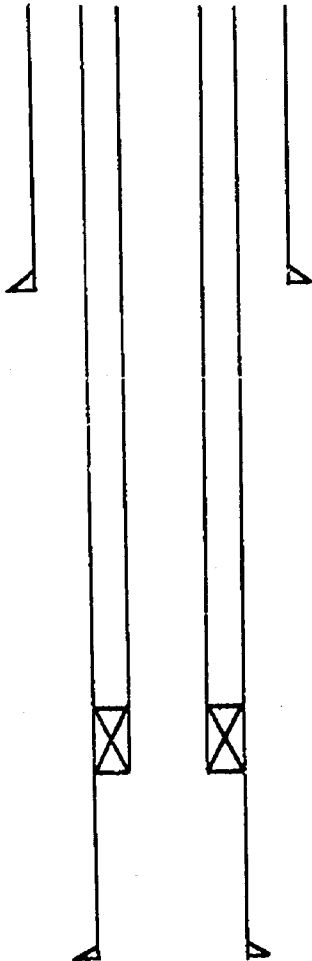
Casing: 4 1/2" @ 3498'

Cement: 250 sx

Cement Top: 2050' (calculated)

Total Depth: 3498'

Plug Back Total Depth: 3477'



Well: Shell Trigg Federal #2

Casing: 7 5/8" @ 200 '
Cement: 120 sx

Cement Top: circ. ' (calculated)

Tubing: 2 "

Packer: 3200 '

Perforations: 3233-43 '

Casing 4 1/2" @ 3351 '

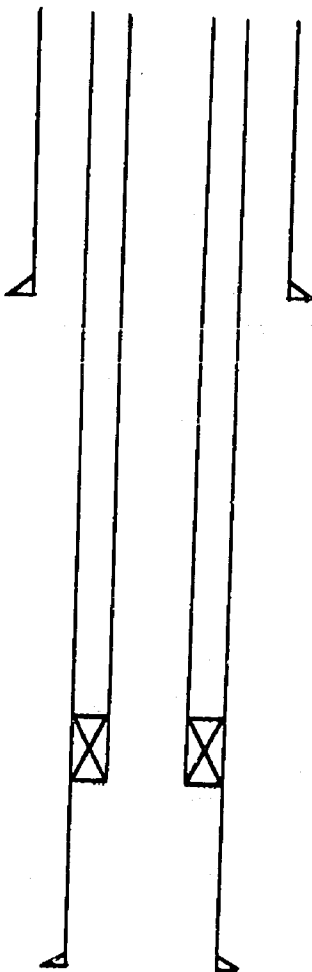
Cement: 200 sx

Cement Top: 2300 ' (calculated)

Total Depth: 3351 '

Plug Back Total Depth: 3330 '

Cor 3356



Well: Shell Trigg Federal #4

Casing: 7 5/8" @ 202'

Cement: 130 sq

Cement Top: circ. (calculated)

Tubing: 2"

Packer: 3330'

Perforations: 3355-57'

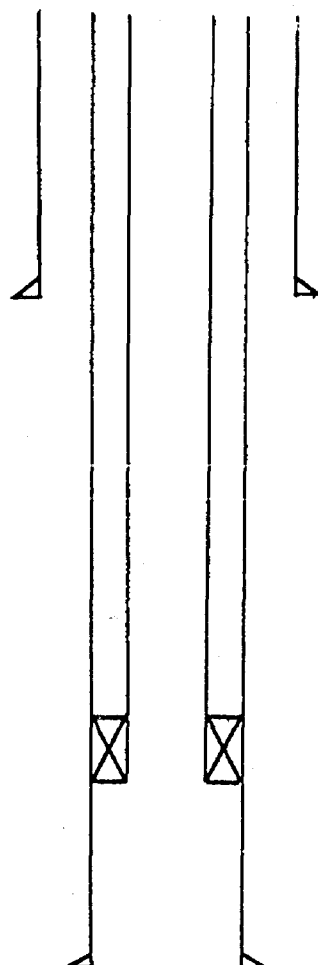
Casing 1 1/2" @ 3549'

Cement: 200 sq

Cement Top: 2500' (calculated)

Total Depth: 3529'

Plug Back Total Depth: 3550'



Well: Shell Trigg Federal #6

Casing: 7 5/8 " @ 202 '

Cement: 135 sx

Cement Top: circ ' (calculated)

Tubing: 2 "

Packer: 3200 '

Perforations: 3231-56 '

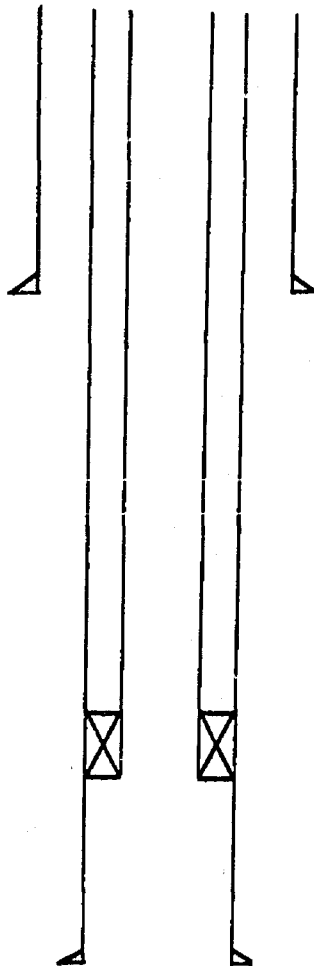
Casing 4 1/2 " @ 3328 '

Cement: 475 sx

Cement Top: circ ' (calculated)

Total Depth: 3328 '

Plug Back Total Depth: 3309 '



Well: Shell Trigg Federal #8

Casing: 7 5/8" @ 198 '

Cement: 120 sx

Cement Top: circ. ' (calculated)

Tubing: 1 1/2"

Packer: 3230 '

Perforations: 3255-61 '

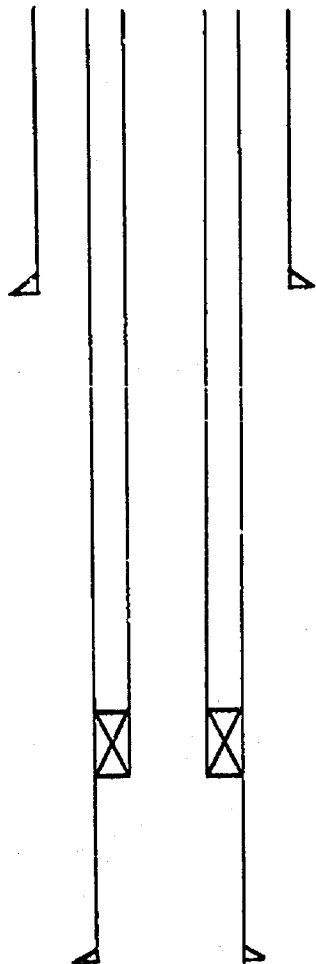
Casing 27/8" @ 3358 '

Cement: 200 sx

Cement Top: 2000 ' (calculated)

Total Depth: 3358 '

Plug Back Total Depth: 3329 '



Well: Shell Trigg Federal #10

Casing: 7 5/8" @ 207 '
Cement: 120 sx

Cement Top: circ. ' (calculated)

Tubing: 1 1/2"

Packer: 3200 '

Perforations: 3218-27 '

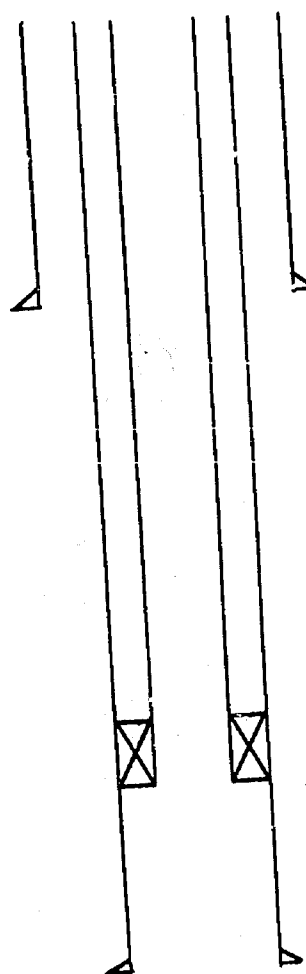
Casing: 4 1/2" @ 3270 '

Cement: 410 sx

Cement Top: 1700 ' (calculated)

Total Depth: 3270 '

Plug Back Total Depth: 3234 '



Well: Mobil PV #1

Casing: 8 5/8" @ 180 '
Cement: 75 sk

Cement Top: circ. (calculated)

Tubing: 2 "

Packer: 3430 '

Perforations: 3441-47 '

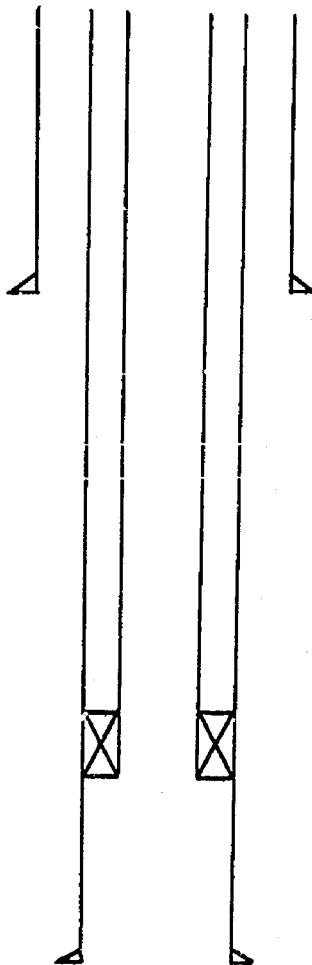
Casing 1 1/2" @ 3481 '

Cement: 137 sk

Cement Top: 3000 ' (calculated)

Total Depth: 3483 '

Plug Back Total Depth: -- '



Well: Mobil PV #3

Casing: 8 5/8" @ 729 '

Cement: 100 sx

Cement Top: 180 ' (calculated)

Tubing: 2 "

Packer: 3260 '

Perforations: 3274-90 '

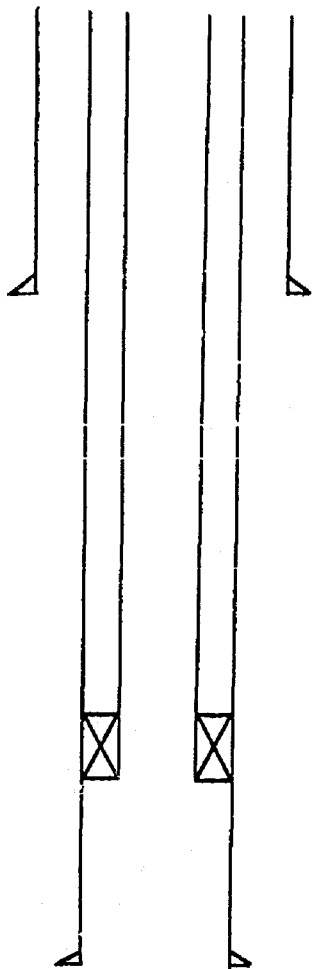
Casing: 4 1/2" @ 3331 '

Cement: 200 sx

Cement Top: 2280 ' (calculated)

Total Depth: 3331 '

Plug Back Total Depth: 3323 '



Well: Mobil PV 4

Casing: 8 5/8" @ 765'
Cement: 100 sx

Cement Top: 230 ' (calculated)

Tubing: 2 "

Packer: 3300 '

Perforations: 3323-48 '

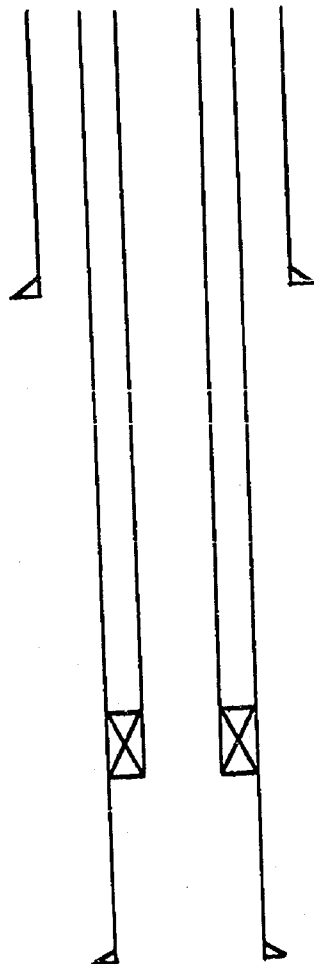
Casing: 4 1/2" @ 3388'

Cement: 200 sx

Cement Top: 2330 ' (calculated)

Total Depth: 3390 '

Plug Back Total Depth: 3365 '



Well: Mobil PV 5

Casing: 8 5/8" @ 682'
Cement: 100 sx

Cement Top: 130 ' (calculated)

Tubing: 2 "

Packer: 3270 '

Perforations: 3296-3300 '

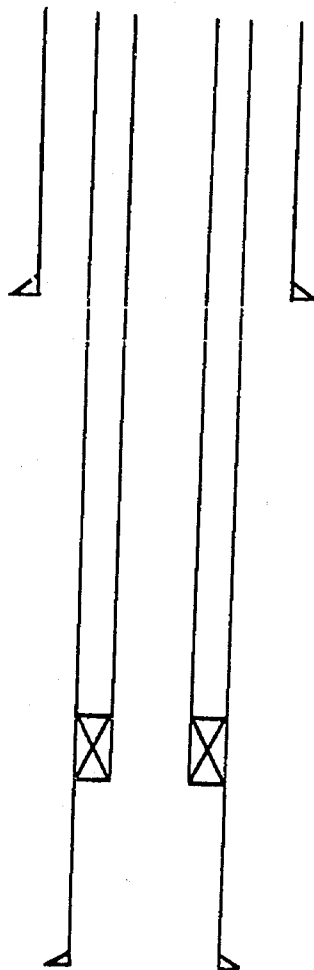
Casing: 4 1/2" @ 3344'

Cement: 200 sx

Cement Top: 2180 ' (calculated)

Total Depth: 3350 '

Plug Back Total Depth: 3323 '



Well: Mobil C #8

Casing: 8 5/8" @ 852 '

Cement: 100 sx

Cement Top: 300 ' (calculated)

Tubing: 2 "

Packer: 3430 '

Perforations: 3450-57 '

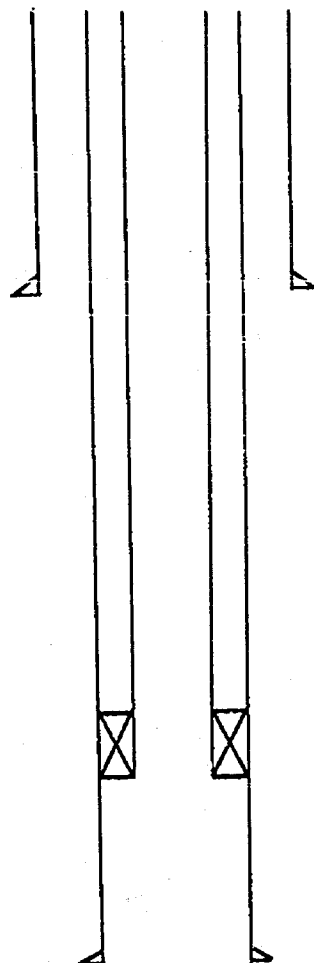
Casing 4 1/2" @ 3530 '

Cement: 100 sx

Cement Top: 2300 ' (calculated)

Total Depth: 3539 '

Plug Back Total Depth: 3503 '



Well: Leonard Oil Co. Midwest Inv. #1

Casing: 2 5/8 " @ 215 '

Cement: 125 SX

Cement Top: circ ' (calculated)

Tubing: 2 "

Packer: 3370 '

Perforations: 3390-3430 '

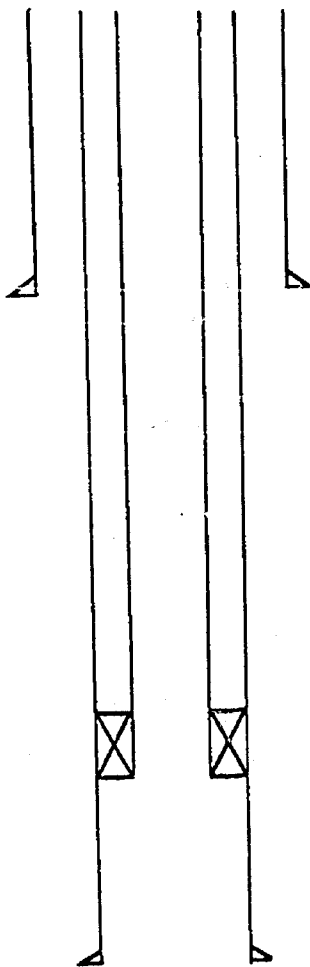
Casing: 4 1/2 " @ 3451 '

Cement: 200 SX

Cement Top: 2400 ' (calculated)

Total Depth: 3456 '

Plug Back Total Depth: -- '



Well: To be drilled

Casing: 7 5/8" @ 200 '

Cement: 100 sx

Cement Top: circ. ' (calculated)

Tubing: 2 "

Packer: 3280 '

Perforations: 3300 '

Casing: 4 1/2 @ 3500 '

Cement: sx

Cement Top: 2000 ' (calculated)

Total Depth: 3500 '

Plug Back Total Depth: -- '

Water Analysis Results
Conducted by Bradford Laboratories
Midland, Texas

Case No. 65M22

Shell Oil Company

Sample Number	X-1	X-3
Date Sampled	10-20-65	10-20-65
Time Sampled	2:45	1:00
Location	Yucca System	Double Eagle System
Appearance When Sampled	Clear	Gassy
Appearance After Standing	Clear	Clear
Odor	None	Clear
Temperature, °F	66	None
pH	7.3	92
Carbon Dioxide CO ₂	14	7.5
Dissolved Oxygen O ₂	7.7	10
Residual Chlorine Cl ₂	N.D.	5.0
Hydrogen Sulfide H ₂ S	0	N.D.
Turbidity SiO ₂	4.0	0
Carbon Alkalinity CO ₃	0	9.0
Bicarbonate Alkalinity HCO ₃	170	0
Chlorides Cl	27	180
Total Hardness CaCO ₃	170	23
Calcium Ca	54	150
Magnesium Mg	9	39
Sulfates SO ₄	26	12
Meta Phosphate NaPO ₃	0	25
Manganese Mn	0.05	0
Iron (Total) Fe	0.05	0.3
Iron (Dissolved) Fe	344	0.2
Total Solids	0.3	340
Suspended Solids	N.D.	1.4
Specific Gravity (60° F)	430	N.D.
Conductivity (micromhos)		430

Note: Results expressed in mg/liter
N.D. means "not determined".

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

December 16, 1965

Re: Case No. 3356

Order No. R-3017

Applicant:

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

SHELL OIL COMPANY

Dear Sir:

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

Very truly yours,

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

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other Mr. Frank Irby



Case 3356

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

December 14, 1965

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

DEC 14 1965

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

*use these descriptions
for a dry engineering well.*

Dear Mr. Porter:

Reference is made to Shell Oil Company's application seeking approval of a waterflood project in the North Square Lake Premier Unit Area. The wells involved are tabulated below:

*T-16-S
R-31-E*

		<i>Section</i>	<i>Depth</i>
Shell Trigg Federal No. 1		5	S
Shell Trigg Federal No. 2		6	P
Shell Trigg Federal No. 4		5	V
Shell Trigg Federal No. 6		6	Q
Shell Trigg Federal No. 8		6	X
Shell Trigg Federal No. 10		6	J
Mobil PV No. 1		5	Q
Mobil PV No. 3		5	M
Mobil PV No. 4		5	N
Mobil PV No. 5		8	D
Mobil C No. 8		5	X
Leonard Oil Co. Midwest Inv. No. 1		8	B
To be drilled (not numbered)	-----	6	V

Shell has submitted a revised diagrammatic sketch on the Shell Trigg Federal No. 4 well. The only change from the original sketch submitted is that TD is changed from 3529' to 3550' and plugged back TD is changed from 3550' to 3529'.

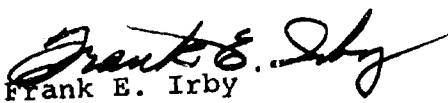
This office offers no objection to the granting of the application provided the wells are constructed and equipped as shown on the

diagrammatic sketches for the individual wells and using the revised sketch for the Shell Trigg Federal No. 4 well.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
cc-Seth, Montgomery, Federici &
Andrews
F. H. Hennighausen

By: 
Frank E. Irby
Chief
Water Rights Div.

DOCKET: EXAMINER HEARING - TUESDAY - DECEMBER 14, 1965

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

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

- CASE 3348: Application of Joseph I. O'Neill, Jr. for special rules for the South Prairie-San Andres Pool, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the South Prairie-San Andres Pool, Roosevelt County, New Mexico, including a provision for 80-acre proration units. Applicant further seeks the extension of said pool to include portions of Sections 16, 17, 20 and 21, Township 8 South, Range 36 East.
- CASE 3349: Application of International Oil & Gas Corporation for a dual completion Lea County, New Mexico. Applicant, in the above-styled cause, seeks the approval of the dual completion (conventional) of its Linam Federal Well No. 1 located in Unit I of Section 21, Township 18 South, Range 32 East, Lea County, New Mexico, to produce oil from the Bone Springs and Wolfcamp formations (both undesignated) through parallel strings of tubing.
- CASE 3350: Application of International Oil & Gas Corporation for the creation of a new oil pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Wolfcamp production in Section 21, Township 18 South, Range 32 East, Lea County, New Mexico, and the establishment of special rules therefor, including a provision for 80-acre proration units.
- CASE 3351: Application of Pan American Petroleum Corporation for special pool rules for the Dos Hermanos Morrow Gas Pool, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of temporary special pool rules for the Dos Hermanos Morrow Gas Pool in Section 28, Township 20 South, Range 30 East, Eddy County, New Mexico, including a provision for 640-acre proration units and fixed well locations.
- CASE 3352: Application of Bass Brothers Enterprises, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Custer Mountain Unit Area comprising 2560 acres, more or less, of State land in Township 23 South, Range 35 East, Lea County, New Mexico.
- CASE 3353: Application of Tesoro Petroleum Corporation to amend Order No. R-2807, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2807, which authorized a waterflood project in the Hospah Unit Area, to permit the production of oil from previously designated water injection wells, to approve unorthodox locations for additional producing wells, and to authorize additional injection wells, all in Section 36, Township 18 North, Range 9 West, McKinley County, New Mexico.

December 14, 1965, Examiner Hearing

CASE 3354: Application of Shell Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Antelope Ridge Unit Area comprising 4,480 acres, more or less, of Federal, State, and Fee lands in Township 23 South, Range 34 East, Lea County, New Mexico.

CASE 3355: Application of Shell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Square Lake Premier Unit Area comprising 1,080 acres, more or less, of Federal, State and Fee lands in Township 16 South, Range 31 East, Eddy County, New Mexico.

CASE 3356: Application of Shell Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its North Square Lake Premier Unit Area by the injection of water into the Premier Sand of the Grayburg formation through thirteen wells located in Sections 5, 6, and 8, Township 16 South, Range 31 East, Eddy County, New Mexico.

CASE 3357: Application of Skelly Oil Company for an oil well-salt water disposal dual completion, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Hobbs "T" Well No. 11, located in Unit P of Section 33, Township 7 South, Range 33 East, Roosevelt County, New Mexico, to produce oil from the Upper San Andres formation, Chaveroo San Andres Pool, and to dispose of produced salt water in the Lower San Andres formation in the interval from approximately 4700 feet to 4780 feet, utilizing parallel strings of tubing.

CLARENCE E. HINKLE
W. E. BONDURANT, JR.
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
MICHAEL R. WALLER

LAW OFFICES
HINKLE, BONDURANT & CHRISTY

HINKLE BUILDING
ROSWELL, NEW MEXICO

January 13, 1966

MAIN OFFICE OCC

JAN 14 AM 8:05

TELEPHONE 622-6510
AREA CODE 505
POST OFFICE BOX 10

Check 3365

Oil Conservation Commission
Box 2088
Santa Fe, New Mexico

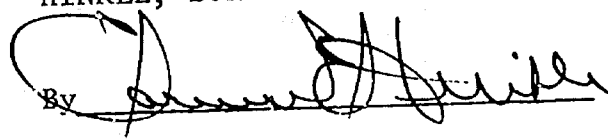
Re: North Cedar Hills Unit
Eddy County, New Mexico

Gentlemen:

We have heretofore filed application of Humble Oil & Refining Company for a hearing on the above unit, which we understand will be set down on the examiner's docket for January 26. Please find enclosed 3 copies of the form of unit agreement which are to be filed with the application.

Yours sincerely,

HINKLE, BONDURANT & CHRISTY

By 

CEH:cs
Enc.

Corrected

Well: SHELL TRIGG FEDERAL #4

Casing: 7 5/8" @ 202'
Cement: 130 sx

Cement Top: Circ. (calculated)

Tubing: 2"

Packer: 3330'

Perforations: 3355 - 57'

Casing: 4 1/2" @ 3549'

Cement: 200 sx

Cement Top: 2500' (calculated)

Total Depth: 3550'

Plug Back Total Depth: 3529'

