

**CASE 3286: Application of SKELLY  
OIL CO. for a waterflood project,  
Lea County, New Mexico**

CASE NO.

3286

Application,  
TRANSCRIPTS,  
SMALL Exhibits  
ETC.

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. 3286

Order No. R-2956

APPLICATION OF SKELLY 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  
August 11, 1965, at Santa Fe, New Mexico, before Examiner  
Elvis A. Utz.

NOW, on this        day of August, 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, Skelly Oil Company,  
seeks permission to institute a waterflood project, ~~in the~~  
Langlie-Mattix in the Skelly Penrose "B" Unit Area,  
Pool, by the injection of water into the  
Queen formation through 33 injection wells in  
Sections 31 and 32, Township 22 South, Range 37 East, and  
Sections 4, 5, 6, 7, 8, and 9, Township 23 ~~North~~, Range  
37 ~~West~~, NMPM, Lea County, New Mexico.  
East

(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.

IT IS THEREFORE ORDERED:

(1) That the applicant, Skelly Oil Company,  
is hereby authorized to institute a waterflood project ~~in the~~  
Langlie-Mattix <sup>in the Skelly Penrose "B" Unit Area,</sup> Pool, by the injection of water into the  
Queen <sup>33</sup> formation through the following-described wells  
~~in Township~~ ~~North, Range~~ ~~West~~  
~~South~~ ~~East~~  
~~in Lea~~ County, New Mexico:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
12	P	31 ✓
1	B	32 ✓
3	D	32 ✓
5	F	32 ✓
8	J	32 ✓
10	L	32 ✓
14	N	32 ✓
16	P	32 ✓

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
17	D	4 ✓
19	B	5 ✓
21	D	5 ✓
27	F	5 ✓
29	H	5 ✓
32	J	5 ✓
34	L	5 ✓
38	N	5 ✓
40	P	5 ✓
23	B	6 ✓
25	H	6 ✓
36	P	6 ✓
47	B	7 ✓
45	D	8 ✓
50	H	8 ✓
56	L	8 ✓
57	N	8 ✓
59	P	8 ✓
Re-entry, Old Abandoned Hole	B	8 ✓
Re-entry, Old Abandoned Hole	F	8 ✓
To Be Drilled	J	8 ✓
42	D	9 ✓
52	F	9 ✓
54	L	9 ✓
61	N	9 ✓

*See under*



WHITE, GILBERT, KOCH & KELLY  
(GILBERT, WHITE AND GILBERT)

ATTORNEYS AND COUNSELORS AT LAW

LINCOLN BUILDING

SANTA FE, NEW MEXICO

July 21, 1965

CARL H. GILBERT (1891-1963)

L. C. WHITE

WILLIAM W. GILBERT

SUMNER S. KOCH

WILLIAM BOOKER KELLY

JOHN F. MCCARTHY, JR.

*Case 3286*

POST OFFICE BOX 767

TELEPHONE 982-4301

(AREA CODE 505)

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

Re: Skelly Penrose "B" Unit, Lea  
County, New Mexico  
Examiner Hearing August 11, 1965

Gentlemen:

May this letter serve as a matter of record that we are acting  
as local counsel for Skelly Oil Company in their application  
for permission to conduct a waterflood project on the Skelly  
Penrose "B" Unit, Lea County, which is scheduled for hearing  
before an examiner on August 11, 1965.

Very truly yours,



L. C. WHITE

LCW:el

CC: Mr. George W. Selinger  
Skelly Oil Company

DOCKET MAILED

Date 7-30-65

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 11, 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 3283: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the adoption of a new "Manual of Back-Pressure Testing of Gas Wells" in the State of New Mexico, said manual being an adaptation of the test manual recently adopted by the Interstate Oil Compact Commission. Modification of several existing gas well test forms and adoption of several new forms will also be considered.

A copy of the proposed testing manual, complete with tables, charts, and specimens of the various forms, is available for inspection in the Santa Fe, Hobbs, Aztec, and Artesia offices of the Commission.

CASE 3284: Application of Foster Morrell for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Willow Draw Unit Area comprising 3840 acres, more or less, of State and Federal lands in Township 20 South, Range 26 East, Eddy County, New Mexico.

CASE 3285: Application of Richfield Oil Corporation for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Avalon Unit Area comprising 11,154 acres, more or less, of Federal, State and Fee lands in Township 21 South, Ranges 25 and 26 East, Eddy County, New Mexico.

CASE 3286: Application of Skelly Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Skelly Penrose "B" Unit, Langlie-Mattix Pool, Lea County, New Mexico, by the injection of water into the Queen formation through 33 injection wells in Sections 31 and 32, Township 22 South, Range 37 East, and Sections 4, 5, 6, 7, 8 and 9, Township 23 South, Range 37 East.

CASE 3287: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Langlie-Mattix Pool by the injection of water into the Queen formation through two wells in Section 21, Township 24 South, Range 37 East, Lea County, New Mexico.

CASE 3288: Application of Tenneco Oil Company for directional drilling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to recomplete by means of directional drilling the following wells:

TOWNSHIP 29 NORTH, RANGE 9 WEST  
Florance No. 22, Unit H, Section 12

TOWNSHIP 30 NORTH, RANGE 9 WEST  
Florance No. 2, Unit A, Section 20  
Florance No. 3, Unit M, Section 22  
Florance No. 4, Unit L, Section 10

August 11, 1965 Examiner Hearing

TOWNSHIP 30 NORTH, RANGE 9 WEST - Cont'd

Florance No. 6, Unit M, Section 23  
Florance No. 13, Unit B, Section 18  
Florance No. 20, Unit B, Section 24  
Prichard No. 1, Unit M, Section 1  
Riddle No. 1, Unit B, Section 21  
Riddle No. 2, Unit N, Section 17  
State No. 1, Unit M, Section 32  
State No. 2, Unit M, Section 16  
Florance No. 8, Unit N, Section 14  
Florance No. 16-X, Unit A, Section 6

TOWNSHIP 30 NORTH, RANGE 8 WEST

Florance No. 39, Unit B, Section 35  
Florance No. 45, Unit G, Section 22  
Florance No. 29, Unit K, Section 25  
Florance No. 37, Unit H, Section 6  
Florance No. 40, Unit G, Section 21  
Moore No. 1, Unit N, Section 8

All of the above wells are presently completed in the Blanco-Mesa-verde Pool. Applicant proposes to set a whipstock above the Mesa-verde producing interval and to directionally drill recompleting said wells in the Mesaverde formation, and in some instances, to further drill to the Dakota producing interval thereby permitting dual completion of the wells to produce gas from the Blanco-Mesa-verde and Basin-Dakota Gas Pools. Applicant further proposes to conduct appropriate deviation tests to ensure that none of the wells is completed nearer than 200 feet to the outer boundaries of its proration unit.

CASE 3289: Application of Kewanee Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Atoka-Grayburg Unit Area comprising 560 acres, more or less, of fee land in Sections 13 and 14, Township 18 South, Range 26 East, Eddy County, New Mexico.

CASE 3290: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Atoka-Grayburg Pool, Eddy County, New Mexico, by the injection of water into the Grayburg formation through two injection wells in Section 13, Township 18 South, Range 26 East.

CASE 3291: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Atoka-San Andres Pool, Eddy County, New Mexico, by the injection of water into the San Andres formation through one injection well in Section 13, Township 18 South, Range 26 East.

CASE 3092 and CASE 3093 (Reopened):

In the matter of Case No. 3092 and Case 3093 being reopened pursuant to the provisions of Orders Nos. R-2756 and R-2757, which orders established 80-acre spacing units for the Osudo-Upper Bone Spring

August 11, 1965 Examiner Hearing

Pool and the Osudo-Lower Bone Spring Pool, Lea County, New Mexico, for a period of one year. The subject pools have apparently been depleted and these cases will be dismissed in the absence of evidence requiring other action.

CASE 3073: (Reopened and continued from the July 28, 1965 Examiner Hearing)

In the matter of Case No. 3073 being reopened pursuant to the provisions of Order No. R-2758, which order, as amended by Orders Nos. R-2758-A and R-2758-B, established 160-acre oil well spacing and 320-acre gas well spacing for the Tocito Dome Pennsylvanian "D" Oil Pool, San Juan County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre oil well spacing and 160-acre gas well spacing, or such other spacing as may seem proper.

CASE 3292: Application of Texaco Inc. for the creation of a new pool or in the alternative for a non-standard location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new pool for the production of oil from the Bough "B" formation in Section 14, Township 12 South, Range 34 East, Ranger Lake Field, Lea County, New Mexico. Applicant, in the alternative, seeks authority to drill its State DA Well No. 1 at an unorthodox location within 150 feet of the center of Unit K, Section 14, Township 12 South, Range 34 East, Ranger Lake Pennsylvanian Pool, Lea County, New Mexico.

(Note: The above case, at the request of the applicant, will be dismissed.)

CASE 3281 (continued from the July 28, 1965 Examiner Hearing):

Application of Samuel G. Dunn for a two-well proration unit and an unorthodox location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill and produce the second well on the 160-acre oil proration unit comprising the SW/4 of Section 26, Township 26 North, Range 1 East, Puerto Chiquito-Gallup Oil Pool, Rio Arriba County, New Mexico, the 160-acre allowable to be produced from either well in any proportion. Said second well would be drilled at an unorthodox location 1720 feet from the South line and 460 feet from the West line of said Section 26. (The SW/4 of Section 26 is currently dedicated to a well in Unit M of said section.) In the alternative, applicant seeks the creation of two non-standard 80-acre proration units comprising the N/2 SW/4 and S/2 SW/4 of said Section 26 to be dedicated to the proposed well and the existing well, respectively.

MAIN OFFICE

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Case 3286

July 21, 1965

Mr. George W. Selinger  
Skelly Oil Company  
Box 1650  
Tulsa, Oklahoma 74102

Dear Mr. Selinger:

Receipt of a copy of Skelly Oil Company's application to convert, recomplete and drill the 33 wells, tabulated in the application, for injection purposes in the Langlie-Mattix Pool is hereby acknowledged. I have the following questions which I would appreciate answers to:

1. What is the location of the source water well to be used?
2. Will the source water well be opened to both the Seven Rivers formation and the Capitan Reef?
3. What is the analysis of the source water (each source, if the two are not in communication)?
4. What is the life expectancy of the project?
5. From your computations, what is the answer to-----  
367.4 acre feet x project life expectancy in years minus  
produced water to be re-injected?
6. On the diagrammatic sketches one well appears without number as Unit D of Sec. 9 which appears to be numbered 42 on your Exhibit A. Am I confused on this particular well?
7. What will be the construction and equipment program of the unnumbered well to be drilled in Unit J of Sec. 8?

8. How was the top of the cement surrounding the production string determined on the following wells?

No. 32, No. 36, No. 38, No. 40, No. 52, No. 54, No. 56, No. 59, No. 61 and those wells located in Unit D of Sec. 9 and Unit F of Sec. 8.

9. Where is the top of the cement "re land surface" surrounding the surface string on each of the 33 wells to which the application pertains?

My thanks in advance for this information.

Sincerely yours,

S. E. Reynolds  
State Engineer

By:

Frank E. Irby  
Chief  
Water Rights Div.

FBI/ma

cc-Mr. A. L. Porter, Jr.  
Mr. Joe Ramey

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF SKELLY OIL COMPANY, AS UNIT OPERATOR, FOR AN ORDER AUTHORIZING THE INJECTION OF FLUID FOR SECONDARY RECOVERY PURPOSES INTO THE LANGLEIE-MATTIX POOL ON ITS SKELLY PENROSE "B" UNIT, LOCATED IN PORTIONS OF SECTIONS 31 AND 32, TOWNSHIP 22 SOUTH, RANGE 37 EAST, AND PORTIONS OF SECTIONS 4, 5, 6, 7, 8 AND 9, TOWNSHIP 23 SOUTH, RANGE 37 EAST, LEA COUNTY, NEW MEXICO, AND FOR THE PROMULGATION OF SPECIAL RULES GOVERNING THE OPERATION OF SAID UNIT.

CASE NO.

MAIN OFFICE  
JUL 14 1965  
3286

APPLICATION

Comes now Skelly Oil Company and alleges and states:

1. That it is the operator of the Skelly Penrose "B" Unit containing 2,612.16 acres, more or less, of State and Fee lands described as follows:

LEA COUNTY, NEW MEXICO  
TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM  
Section 31: E/2 SE/4  
Section 32: W/2, W/2 NE/4, and SE/4

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM  
Section 4: W/2 NW/4  
Section 5: All  
Section 6: NE/4 and E/2 SE/4  
Section 7: N/2 NE/4  
Section 8: N/2, N/2 SW/4, SE/4 SW/4, and SE/4  
Section 9: W/2

2. That the Unit Agreement for said Unit was approved by this Commission by Order No. R-2915 pursuant to a hearing held on May 26, 1965, in Case No. 3257, and that said unit became effective on July 1, 1965.

3. That in order to carry out the secondary recovery operations as contemplated by the Unit Agreement, to prevent waste and to recover oil and associated hydrocarbons which would not otherwise be recovered, applicant desires to inject fluid into certain wells within the unit area for injection into the Langlie-Mattix Pool, pursuant to Rule 701 of this Commission.

4. That applicant proposes to convert, recomplete, or drill the following 33 wells and utilize same for injection purposes:

UNIT WELL NO.      UNIT LOCATION

1	B
3	D
5	F
8	J
10	L
12	P
14	N
16	P

17	D
19	B
21	D
23	B
25	H
27	F
29	H
32	J
34	L
36	P
38	N
40	P
42	D
45	D
47	B

LOCATION

Township 22 South, Range 37 East

Section 32
Section 32
Section 32
Section 32
Section 32
Section 31
Section 32
Section 32

Township 23 South, Range 37 East

Section 4
Section 5
Section 5
Section 6
Section 6
Section 5
Section 5
Section 5
Section 5
Section 5
Section 5
Section 5
Section 5
Section 9
Section 8
Section 7

(Continued)		
UNIT WELL NO.	UNIT LOCATION	LOCATION
		<u>Township 23 South, Range 37 East</u>
50	H	Section 8
52	F	Section 9
54	L	Section 9
56	L	Section 8
57	N	Section 8
59	P	Section 8
61	N	Section 9
Reentry, Old Abandoned Hole	B	Section 8
Reentry, Old Abandoned Hole	F	Section 8
To Be Drilled	J	Section 8
All in Lea County, New Mexico		

5. That attached hereto and made a part hereof is a map, labeled Exhibit "A", which shows the location of the proposed injection wells and the location of all other wells within a radius of two miles from said proposed injection wells, and the formation from which said wells are producing, and that also indicated on said exhibit are the lessees within said two-mile radius.

6. That attached hereto and made a part hereof is Exhibit "B" which contains the diagrammatic sketches of the proposed injection wells showing the casing strings, including diameter and setting depths, quantities used and top of cement, perforated or open hole intervals, tubing strings, including diameters and setting depths, and the type and location of packers.

7. That the formation sought to be waterflooded and into which injection will be made is the Langlie-Mattix Pool, which is described as that interval underlying the unit area, the vertical limits of which extend from a point 100 feet above the base of the Seven Rivers formation to the base of the Queen. This interval has been found to occur heretofore in Unit Well No. 61 (formerly Skelly's No. 11 Harrison "B" well), located in the SE/4 SW/4 Section 9, Township 23 South, Range 37 East, Lea County, at an indicated depth of 3,721 to 3,663 feet as recorded on the Gamma Ray Neutron log taken February 9, 1960.

8. That the fluid sought to be injected is brackish water, and the anticipated volumes to be injected are 8,000 barrels per day, and that the source of said injection fluid is from the Seven Rivers and Capitan Reef formations. Applicant, also, contemplates reinjection of produced water.

WHEREFORE, PREMISES CONSIDERED, applicant prays that this Commission, after the giving of notice as required by law, set this matter down for hearing, and that at the conclusion of said hearing based on the evidence adduced enter its order granting the applicant permission to conduct a waterflood project on its Skelly Penrose "B" Unit by utilizing as injection wells the wells above described, with said secondary recovery project to be governed by the provisions of Rule 701, for permission to expand or change the waterflood program by administrative means without the necessity of a separate hearing, for appropriate field rules if necessary, and for such other orders, rules and regulations as may be necessary in the premises.

Respectfully submitted,

SKELLY OIL COMPANY

*George W. Selinger*  
 By George W. Selinger  
 Its Attorney

Of Counsel:  
 L. C. White  
 White, Gilbert, Koch & Kelly  
 P. O. Box 787  
 Santa Fe, New Mexico



2646  
84  
2730  
81900

LAND COMMISSIONER  
E. S. JOHNNY WALKER  
MEMBER

GOVERNOR  
EDWIN L. MECHEM  
CHAIRMAN

State of New Mexico  
Oil Conservation Commission



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

P. O. BOX 2088  
SANTA FE  
87501

Mr. George Selinger  
Skelly Oil Company  
Box 1650  
Tulsa, Oklahoma 74102

Dear Mr. Selinger:

Gentlemen:

Reference is made to  
Enclosed herewith is Commission Order No. R- 2956, recently  
No. 3286, approving the Skelly Purose "B" Unit  
Water Flood Project.

as to acreage, indicate that  
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 2646 barrels per day. In addition, the project will be di-  
gital for an additional barrels when all wells producing  
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.  
from the Purose Pool, Section 8, Township 23 South, Range 37 East.  
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: Mr. Frank Irby  
OCC -Hobbs

A. L. PORTER, Jr.  
Secretary-Director

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

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

CASE No. 3286  
Order No. R-2956

APPLICATION OF SKELLY 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 August 11, 1965, at Santa Fe, New Mexico, before Examiner Elvis A. Uts.

NOW, on this 16th day of August, 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, Skelly Oil Company, seeks permission to institute a waterflood project in the Skelly Penrose "B" Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen formation through 33 injection wells in Sections 31 and 32, Township 22 South, Range 37 East, and Sections 4, 5, 6, 7, 8, and 9, Township 23 South, Range 37 East, NMPM, Lea 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.

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CASE No. 3286

Order No. R-2956

(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.

IT IS THEREFORE ORDERED:

(1) That the applicant, Skelly Oil Company, is hereby authorized to institute a waterflood project in the Skelly Penrose "B" Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen formation through the following-described 33 wells in Lea County, New Mexico:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
12	P	31
1	B	32
3	D	32
5	F	32
8	J	32
10	L	32
14	N	32
16	P	32

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
17	D	4
19	B	5
21	D	5
27	F	5
29	H	5
32	J	5
34	L	5
38	N	5
40	P	5
23	B	6
25	H	6
36	P	6
47	B	7
45	D	8
50	H	8
56	L	8

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CASE No. 3286  
Order No. R-2956

TOWNSHIP 23 SOUTH, RANGE 37 EAST, MMPM (CONT.)

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
57	N	8
59	P	8
Re-entry, Old Abandoned Hole	B	8
Re-entry, Old Abandoned Hole	F	8
To Be Drilled	J	8
42	D	9
52	F	9
54	L	9
61	N	9

(2) That the subject waterflood project 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

esr/

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

September 14, 1965

Mr. George Selinger  
Skelly Oil Company  
Post Office Box 1650  
Tulsa, Oklahoma 74102

Dear Mr. Selinger:

Reference is made to Commission Order No. R-2956, recently entered in Case No. 3286, approving the Skelly Penrose "B" Unit Waterflood Project.

Injection is to be through the 33 authorized water injection wells which shall be equipped with plastic-coated tubing and packers. Packers shall be set approximately 50 feet above the uppermost perforation except in the case of the one well completed open-hole, in which the packer shall be set approximately 50 feet above the casing-shoe.

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 2646 barrels per day. In addition, the project will be eligible for an additional 42 barrels when an oil well producing from the Langlie-Mattix Pool has been completed in the SW/4 SE/4 of Section 8, Township 23 South, Range 37 East.

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.

C  
O  
P  
Y

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Mr. George Selinger  
Skelly Oil Company  
Tulsa, Oklahoma

September 14, 1965

C  
O  
P  
Y

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/DJM/ir

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

Oil Conservation Commission  
Hobbs, New Mexico



# SKELLY OIL COMPANY

P. O. Box 1650  
TULSA, OKLAHOMA 74102

MAIL OFFICE 000

'65 JUL 14 AM 7 32

## PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT  
W. P. WHITMORE, MGR. PRODUCTION  
W. D. CARSON, MGR. TECHNICAL SERVICES  
ROBERT G. HILTZ, MGR. JOINT OPERATIONS  
GEORGE W. SELINGER, MGR. CONSERVATION

July 12, 1965

Re: Skelly Penrose "B" Unit  
Lea County, New Mexico

*See Case File*

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

Gentlemen:

We are attaching, in triplicate, our application for permission to conduct a waterflood project on our Skelly Penrose "B" Unit, Lea County, New Mexico, by the injection of fluid into the Langlie-Mattix Pool underlying said unit.

Will you please set this matter down for Examiner hearing in the early part of August, which we assume will be August 11, 1965.

Yours very truly,

*George W. Selinger*

RJJ:br  
Attach.

cc-State Engineer's Office  
P. O. Box 1079  
Santa Fe, New Mexico w/ attach.

GOVERNOR  
JACK M. CAMPBELL  
CHAIRMAN

State of New Mexico  
Oil Conservation Commission



LAND COMMISSIONER  
GUYTON B. HAYS  
MEMBER

P. O. BOX 2088  
SANTA FE

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

August 16, 1965

Mr. George Selinger  
Skelly Oil Company  
Post Office Box 1650  
Tulsa, Oklahoma 74102

Re: Case No. 3286  
Order No. R-2956  
Applicant:

SKELLY OIL COMPANY

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

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

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC       

Aztec OCC       

OTHER Ron J. Jacobs

John D. [unclear]



OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

January 4, 1966

Mr. George W. Selinger  
Skelly Oil Company  
P. O. Box 1650  
Tulsa, Oklahoma

Dear Mr. Selinger:

Reference is made to our letter of September 14, 1965,  
regarding your Skelly Penrose "B" Unit Waterflood Project, Lea  
County, New Mexico.

Paragraph (3) refers to a well which is to be drilled in  
the SW/4 SE/4 of Section 8; please correct this to read NW/4 SE/4  
of Section 8.

Very truly yours,

DANIEL S. NUTTER  
Chief Engineer

DGN:sg

cc: Oil Conservation Commission - Hobbs  
Mr. Frank Irby, State Engineer Office - Santa Fe  
✓ Case File 3286

C  
O  
P  
Y



# SKELLY OIL COMPANY

P. O. Box 1650  
TULSA, OKLAHOMA 74102

## PRODUCTION DEPARTMENT

C. L. BLACKSHER, VICE PRESIDENT

W. P. WHITMORE, MGR. PRODUCTION  
W. D. CARSON, MGR. TECHNICAL SERVICES  
ROBERT G. HILTZ, MGR. JOINT OPERATIONS  
GEORGE W. SELINGER, MGR. CONSERVATION

September 24, 1965

Re: Commission Order R-2956  
Skelly's Penrose "B" Unit  
Lea County, New Mexico

*File Case 3286*  
Mr. Daniel Nutter  
Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Dear Mr. Nutter:

We have your letter of September 14th approving the water injection project under our Skelly Penrose "B" Unit, Lea County, New Mexico.

Kindly refer to Paragraph 3, last line thereof. The location is in error reading SW/4 SE/4, whereas the correct and true location should read NW/4 SE/4.


Will you kindly correct your September 14th letter to reflect the true circumstances thereof.

Yours very truly,

*George W. Selinger*

GWS:br

*Answered*



1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
August 11, 1965

IN THE MATTER OF:

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

Case No. 3286

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The hearing will come to order. Case 3286.

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

MR. JACOBS: Appearing for the applicant, Ronald Jacobs, Tulsa, Oklahoma, and George Selinger, Tulsa, Oklahoma. We have one witness we would like to have sworn at this time, Mr. Examiner.

(Witness sworn.)

MR. JACOBS: In the way of an opening statement, this is the application of Skelly Oil Company for permission to conduct a secondary recovery project on its Skelly Penrose "B" Unit, located in Lea County, New Mexico. The pool involved is the Langlie-Mattix Pool, and to an areal extent is the largest among the earliest-developed oil pools in southeast New Mexico.

The Oil Conservation Commission nomenclature has designated the vertical limits of the Langlie-Mattix Pool as those formations encountered between the lower 100 feet of the Seven Rivers formation and the base of the Queen. The working interest owners of the Skelly Penrose "B" Unit have agreed that in order to conserve natural resources, prevent waste, protect correlative rights and institute and consummate secondary recovery operations, the Langlie-Mattix

Pool underlying those areas should be unitized.

Skelly Oil Company is the unit operator of this unit. The question of approval of the Unit Agreement has already been before this Commission in May, and the Commission has issued Order No. R-2915 in Case 3257. The unit became effective July 1, 1965.

WILLIAM SINGLEY

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

DIRECT EXAMINATION

BY MR. JACOBS:

Q Will you please state your full name, by whom you are employed and in what capacity?

A William Singley, Junior, Senior Production Engineer for Skelly Oil Company in their Hobbs office.

Q Have you heretofore testified before this Commission as a petroleum engineer?

A I have.

Q Have you prepared certain exhibits and testimony with respect to the hearing under consideration today?

A I have.

Q Did you participate in the Engineering Committee and have you in general prepared and assisted in preparing the basic data and reservoir studies of the pool underlying this

unit?

A I have.

MR. JACOBS: Are there any questions as to his qualifications, Mr. Examiner?

MR. UTZ: No, sir.

Q First of all, Mr. Singley, what are your recommendations and conclusions with respect to the secondary recovery project in the Skelly Penrose "B" Unit?

A Well, the primary producing life of the wells inside the unit area is 90% complete and those leases in the unit area which are not, have not reached their economic limit vary from 67 to 99% complete. There can be expected a successful secondary recovery operation in this area by the injection of water into the formation and an adequate water supply is available to the southwest of the area, and in order to recover as much secondary oil as possible, a water injection project should be initiated as soon as possible.

Q I call your attention to the map that is on the board there labeled as Exhibit A. Is that the Exhibit A that was attached to the application?

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

A Yes, it is, and on that map the Skelly Penrose "B" Unit is outlined and also shows relationships to other

secondary recovery proposed units in the area. The Skelly Penrose "A" just to the east, the Langlie-Mattix Penrose Sand operated by Ambassador to the northeast, and the proposed Skelly Penrose proposed "C" Unit to the south of the Skelly "B" Unit.

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

Q I call your attention to what has been marked for identification as Exhibit No. 1 in this case, and if the Examiner please, this exhibit contains a detailed report on the secondary recovery study and we will attempt to summarize the important parts from that. Attached to that exhibit also are, and labeled as attachments, are maps, graphs and other information.

Q Mr. Singley, what was the discovery well for this pool, or at least in this area, and when was it discovered?

A Skelly Oil Company Harrison "A" Well No. 1 was the initial completion in this area, and it was completed on December 4th, 1935.

Q You mentioned before that the primary life within the unit area is approximately 90% complete, or in other words, the primary, it's 90% depleted?

A That's correct.

Q Do you have an estimate of the ultimate primary

recovery from this unit?

A The ultimate primary recovery should be 1,717,780 barrels. On May 1st, 1965 the cumulative production was 1,550,398 barrels, leaving 167,382 barrels of remaining primary oil to be produced.

Q The present allowable for the producing wells and the present capabilities of production is in what range?

A Well, the present allowables for the individual wells in the area range from one barrel a day to eight barrels per day; six of the wells have already been shut in or temporarily abandoned as completing their economic life and two wells have been plugged and abandoned and one well is classified an associated gas well. In June the actual production from these wells, from the 61 wells inside the unit area was 165 barrels per day, which is slightly less than three barrels per day, was the average production.

Q Does this unit and does the proposed project cover the entire pool?

A No, it doesn't. The entire pool is quite large and in order to form a unit where you could have some control over the injection and also be able to come up with an equitable formula for the various working interest owners in the area, it was decided that the pool would be unitized in several different projects.



Skelly has coordinated the unitization of this particular project, the Penrose "B", and we are coordinating two other projects in the immediate area of the Skelly Penrose "A" Unit and the Skelly Penrose "C" Unit which I have previously pointed out on the map.

Q Are there additional units adjacent to the Skelly Penrose "B" Unit which are not operated or proposed to be operated by Skelly?

A Yes, sir, Ambassador is operating the Langlie-Mattix Penrose Sand Unit, and they have been injecting water for over a year in that area. Also Humble has had a pilot waterflood in their State "M" lease, which is directly north of the Penrose "B" Unit. Humble is now expanding their pilot and will, eventually their water injection will border the Penrose "B" Unit to the north.

Q Do the various operators of these various projects and units contemplate cooperative agreements between the units for injection?

A Yes, at the present time we are working on finalizing a cooperative pressure maintenance agreement with Humble for the State "M" lease Ambassador with the Langlie-Mattix and a cooperative agreement by the Penrose "B" and the proposed Penrose "A" Unit.

Q Do you have any pilot flood information which has

given you data and experience which allows you to state that you believe that the project will be successful?

A Yes. Skelly and Ambassador and Humble have started a pilot waterflood area in 1953, and attachment two of the handout shows where the location of the pilot area is, and it is on the boundary between the Skelly Penrose "A" Unit, the northeast boundary, and Ambassador's unit there.

There was a pilot operation going on in this area here. It was deemed a success by all those concerned, Skelly, Ambassador; and Ambassador unitized and they are presently expanding, and Skelly is initiating action on the Penrose "A" and "B" Units based on the findings of this pilot. From this information the best estimates are that the range of secondary recovery should be roughly equal to the primary recovery for that area.

Q What is the pay formation and at what depths is it found in this area, Mr. Singley?

A The pay formation in the area here, both the Penrose "A" and the Penrose "B" Units is the Penrose sand, which is a lower member of the Queen formation, and it's found from depths 3423 feet to 3701 feet. The average top of the Penrose sand in this unit area is 3580 feet.

Q What geological feature constitutes the trap for the oil in this area?

A Well, the oil reservoir is generally contained in a northwest trending anticlinal stratigraphic trap, which is broken by small saddles in the area which give little local highs.

Q Do you have any information as to the reservoir and rock characteristics of the pay formation?

A There was one core analysis in this area, and from that one analysis the following average values were given: for the rock porosity of 9.92%, residual oil saturation, 10.42%; total water saturation, 40.40, with a permeability of 1.12 millidarcies.

Q What is the primary driving mechanism at the present time in the Penrose sand?

A The primary driving mechanism is a solution gas and it produces approximately 36 degrees API gravity oil.

Q I call your attention to attachment number five on the Exhibit 1. What is that attachment?

A Attachment number five is a structure map on the top of the Queen sand, and it was drawn by Skelly's Geological Department.

Q What is shown by attachment six?

A Attachment number six is what is a typical log for this Langlie-Mattix area. This is Skelly Harrison "B" Well No. 10, and it's roughly typical of all the wells in the area.

Q What is your proposed plan of development for the flood project?

A Well, the proposed plan is a five-spot pattern. This field in this area was developed on a regular 40-acre spacing except for the south end of the unit where there were several undrilled, there are two undrilled locations, and so by going to an 80-acre five-spot pattern we'd be converting roughly half the wells to injection. We feel that we can get a quick response and the only modification of this may be in the general south end of the area where there are some undeveloped locations, there may be some deferment of injection for the time being in order to delay the cost on infill drilling.

Q This proposed injection pattern is shown on attachment 7, is that correct?

A That is correct, with diagrammatic sketches of the injection wells shown on attachment number eight.

Q I notice number eight, we also had, did we not, the diagrammatic sketches which were labeled as Exhibit B to the application?

A That is correct.

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

Q They are the same, are they not, except there were

two additional wells that are shown in attachment eight?

A Yes, that is correct. On the original application two wells were inadvertently left out and we now include those on attachment number eight. They were one of the wells which was to be drilled and one of the plugged and abandoned wells which is to be reentered.

Q So that the attachment eight now shows all the proposed injection wells?

A Yes, there are thirty-three wells.

Q What volume of water do you anticipate injecting in this project and at what pressure?

A We anticipate injecting 9,000 barrels of water per day at a maximum injection pressure of 1845 pounds. We believe initially that this water will go in at some pressure less than that, a thousand pounds, but after fillup the pressure should roughly approach 1845 pounds. This information was taken from our analysis of the pilot waterflood area just to the east. This volume approaches 275 barrels per day per injection well.

Q What is the supply source of this injection water?

A The Penrose "B" Unit will purchase water from Skelly's Jal water system. Skelly is developing a water source to the south and west of this area, approximately eight miles, in order to furnish water to the several units that Skelly is

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PAGE 12

planning to operate, mainly the Penrose "A" and the Penrose "C" in addition to these, plus this water will be used possibly by some of the other secondary recovery units in the area. The water itself will be a Seven Rivers water with Capitan Reef water added when the volumes are in excess of what the Seven Rivers can furnish.

Q Do you also anticipate the possibility of using or reinjecting produced water?

A Yes. Well, certainly, when the water becomes breakthrough and we get sufficient water to reinject, we will inject the water.

Q I call your attention to the application filed in this matter, paragraph one, it describes the unit, is that correct?

A That is correct.

Q And in paragraph four there are listed the wells and the location of the wells which are being sought for injection purposes?

A Correct.

Q There are thirty wells that are to be converted to injection and there's two reentries of old abandoned holes and one well to be drilled, is that right?

A That is right.

Q Have you furnished the State Engineer a copy

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PAGE 13

of this application and the attachments to that application?

A Yes.

Q Do you recommend that the Commission enter its order allowing Skelly Oil Company as unit operator permission to conduct secondary recovery operations in this unit?

A I do.

Q In your opinion will the granting of such an order and the institution of such a secondary recovery project be in the interest of conservation and be protective of correlative rights?

A That is correct.

MR. JACOBS: That's all we have, Mr. Examiner. We would offer Exhibit one and ask that the application be made a part of the record. We also have available here the logs of some of the wells, injection wells that we have available. We do not have all of them available. We have some six or seven wells at the present time, logs available. If you would like we could introduce those as an exhibit.

MR. UTZ: Probably a good idea.

MR. JACOBS: We ask that they be marked as Exhibit 2 and we will offer those also.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification and Exhibits 1 and 2 were offered in evidence.)

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PAGE 14

MR. UTZ: Without objection, Exhibits 1 and 2 will be accepted into the record of this case.

(Whereupon, Applicant's Exhibits 1 and 2 were admitted in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q I believe your application, which you requested be made a part of this record, states that you will operate under Rule 701, is that correct?

A Yes, it is.

Q Nowhere have I found yet what type of tubing you intend to inject through, is that plastic coat internally?

A We intend to inject through J3535 tubing internally plastic coat under a packer, which the packer will also be plastic coated. The bottom of the packer will also be protective coated. The injection lines running to the tubing will also have an internal coating.

Q Is the unit description as well as the well names, numbers and location on your application correct all the way through?

A To the best of my knowledge.

Q How about the last three wells listed on your application? Do you have the numbers for those yet?

A No, we do not. We numbered only those wells which



we are producing at the present time. When we go to convert these to injection, then they will be numbered at that time.

Q But it is your request that we approve those?

A Yes, those locations, at this time.

MR. UTZ: Any other questions of the witness?

MR. IRBY: Yes, sir. Frank Irby, State Engineer's Office.

BY MR. IRBY:

Q Mr. Singley, in response to my letter, you forwarded me an analysis of the water in both the Seven Rivers and the reef section.

A Yes, sir.

Q This analysis is dated October 12, 1964, under the British American Yates Sand Unit supply well. Opposite hydrogen sulphide, the analysis states that it's present but it doesn't give any indication whether it is small or large or what amount there might be of hydrogen sulphide. Can you give me an answer to that?

A I cannot give a definite percent in there from this well. I know we have made a general study in the area and it is our estimate that it will be in excess of the amount of hydrogen sulphide that is in the Seven Rivers water, which is 338.

Q It will be in excess?

A Yes.

Q I don't see on here what these values are. Is this parts per million?

A I cannot state definitely. Mr. Case always before has given it in milligrams per liter, is the way he refers to his.

Q Is this going to be a closed system?

A Yes. Most definitely it will be a closed system. We figure one of the ways to prevent this hydrogen sulphide from being more corrosive than it is is to keep the system oxygen free.

Q As I understand it, both of these water sources are contemplated sources?

A Yes, sir.

Q If water is to be taken from another source, will the Commission and our office both be notified and permission obtained to use the different water?

A Yes, sir. It will, and also let me state further, these are estimates of the samples we can get now. Of course, when we complete the wells there's a possibility that the water source will have slightly different characteristics than these present here. This is the best information we have available and it's our opinion that the water source will have close to these characteristics, but when we complete the

wells you will be furnished an analysis of the water when we complete the water supply wells.

Q Is this the flood in which you are conducting a pilot operation now with Santa Rosa water?

A No, sir. The pilot operation I pointed out on the map is the one that is being conducted with Santa Rosa water at this time. It's on attachment two.

MR. IRBY: Thank you. That's all the questions I have.

MR. UTZ: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. JACOBS: That's all the testimony we have.

MR. UTZ: Are there any other statements to be made in this case? The case will be taken under advisement.



I N D E X

<u>WITNESS</u>		<u>PAGE</u>
WILLIAM SINGLEY		
Direct Examination by Mr. Jacobs		3
Cross Examination by Mr. Utz		14
Cross Examination by Mr. Irby		15
 <u>EXHIBIT</u>	 <u>MARKED</u>	 <u>OFFERED AND ADMITTED</u>
Exhibit A	4	
Exhibit 1	5	13, 14
Exhibit B	10	
Exhibit 2	13	13, 14

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STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, 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 this 26th day of August, 1965.

*Ada Dearnley*  
NOTARY PUBLIC

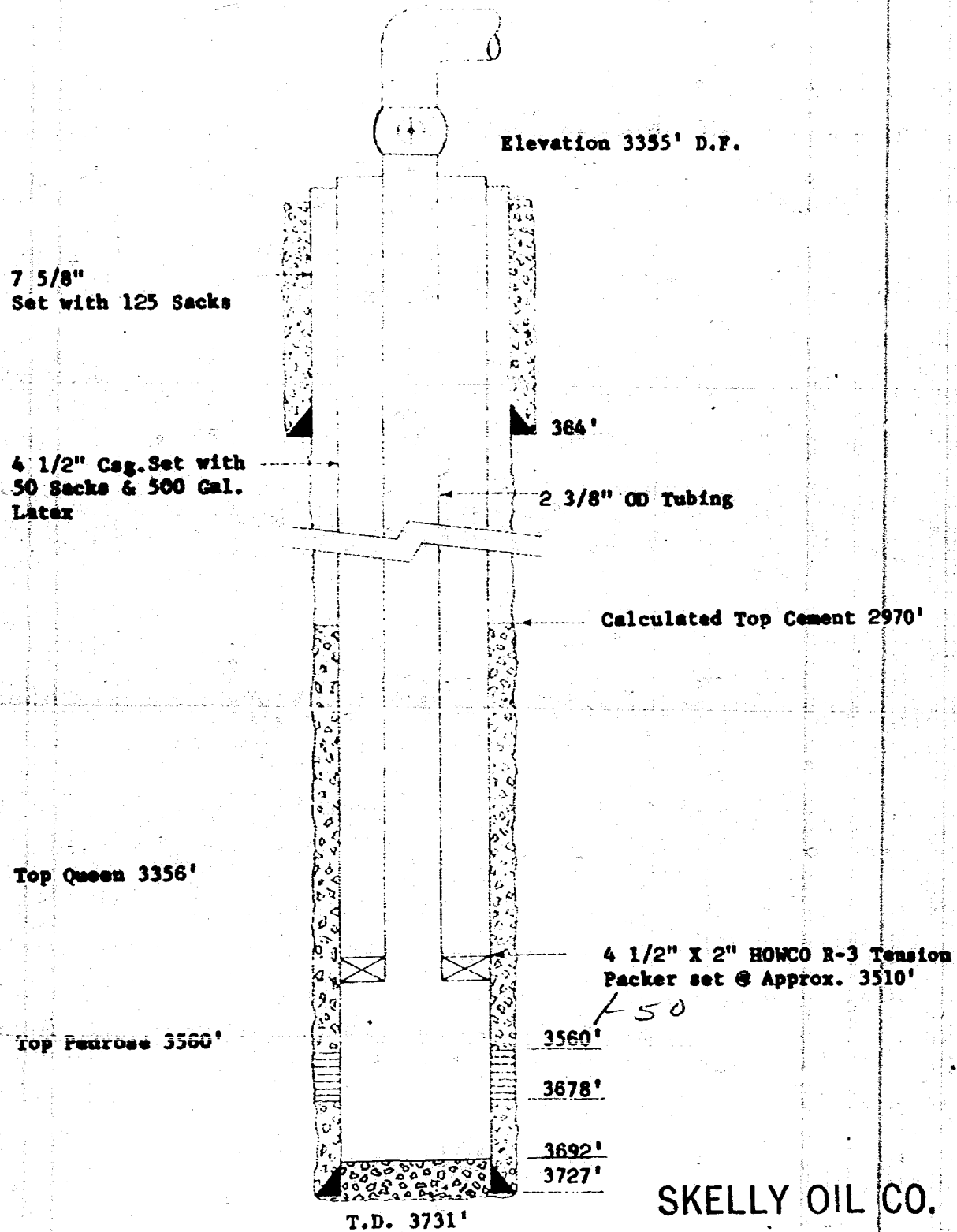
My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner Hearing of Case No. 3286 heard by me on 8-11, 1965.

*Thurston G. Hoff*, Examiner  
New Mexico Oil Conservation Commission

Operators Service Co.  
Cole - State No. 1  
990' FNL & 1650' FEL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 1

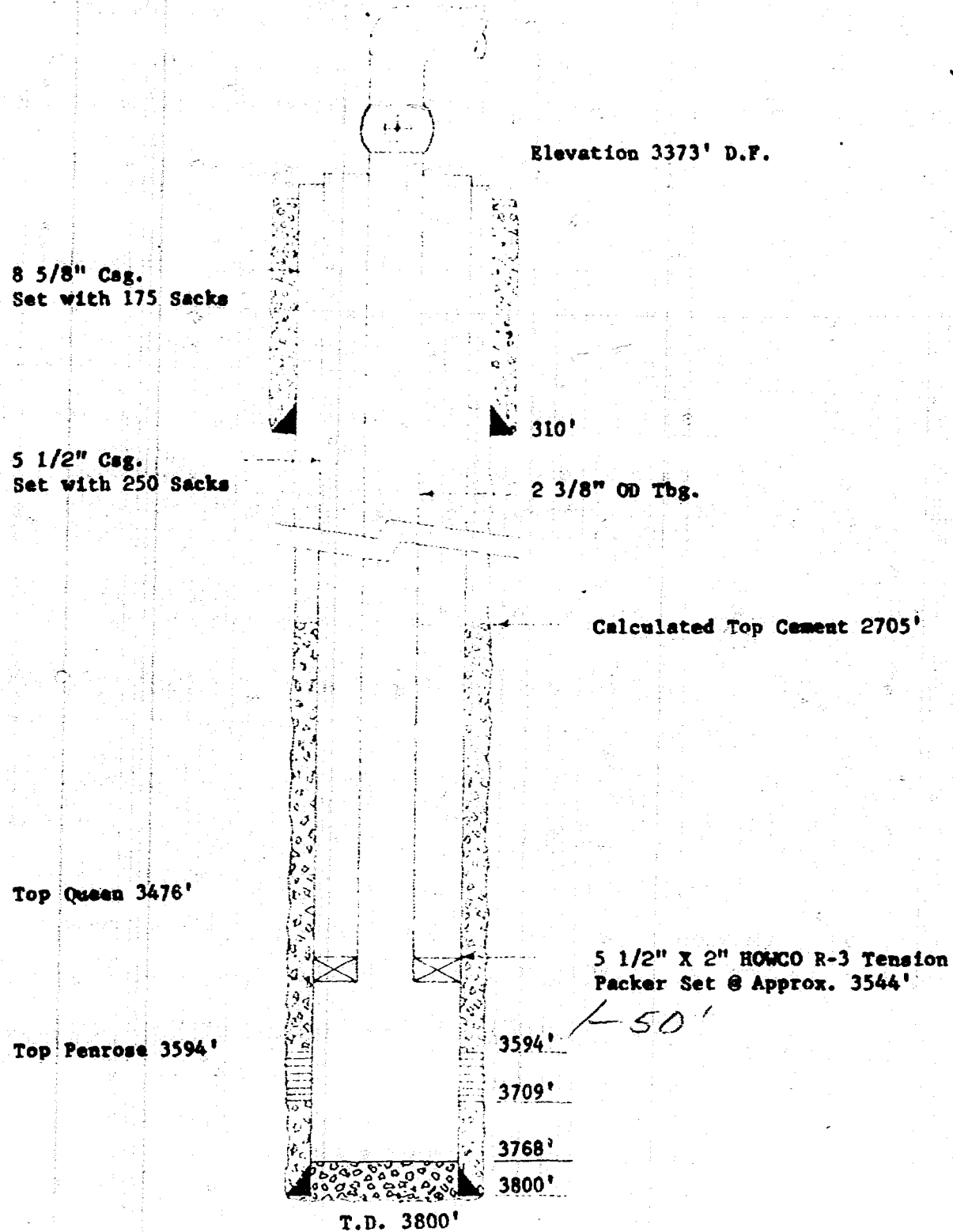


SKELLY OIL CO.

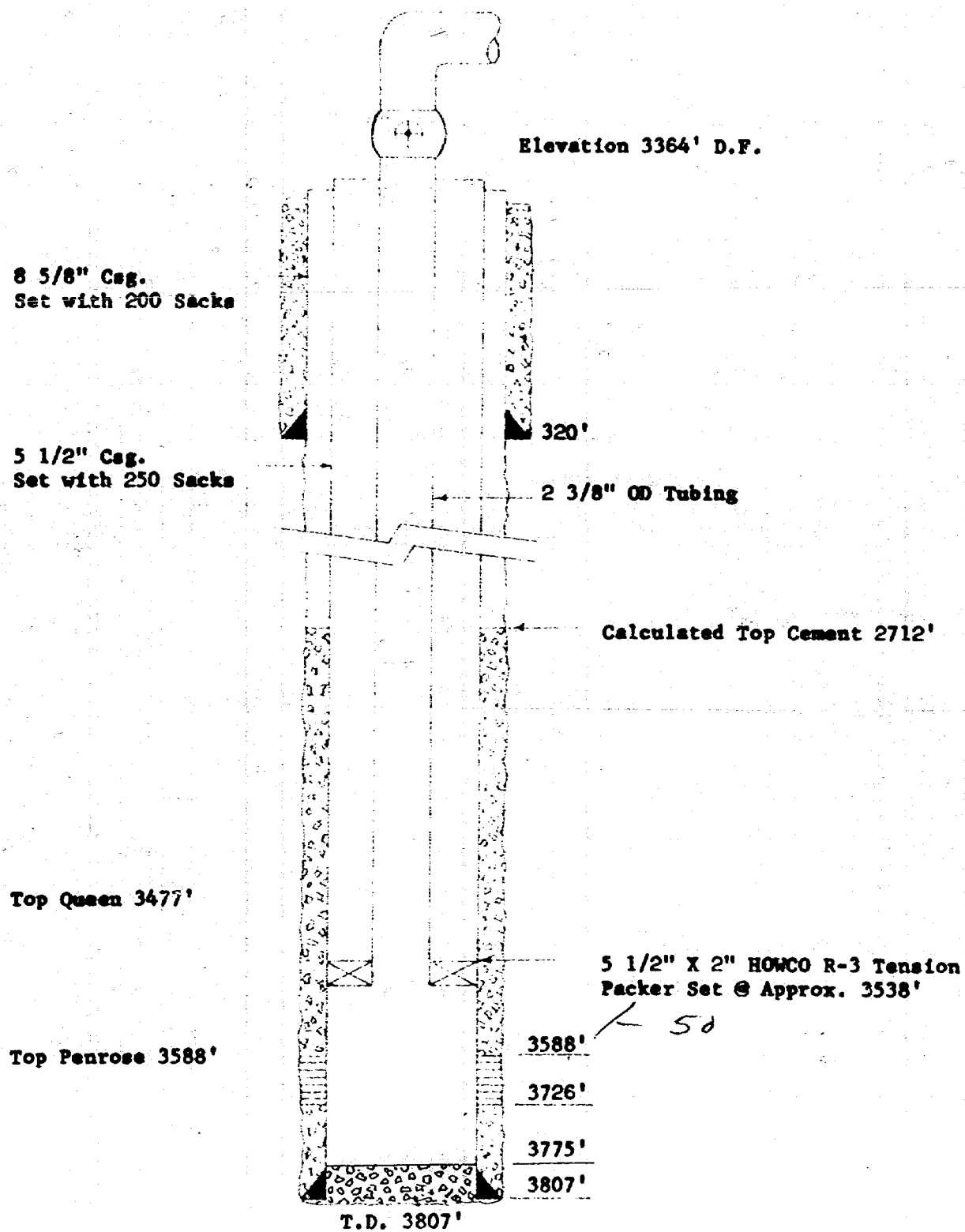
EXHIBIT NO. B

*Case 3286*

Compass Exploration, Inc.  
State No. 4 - 32  
660' FNL & 990' FWL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Ske'ly Penrose "B" Unit Well No. 3

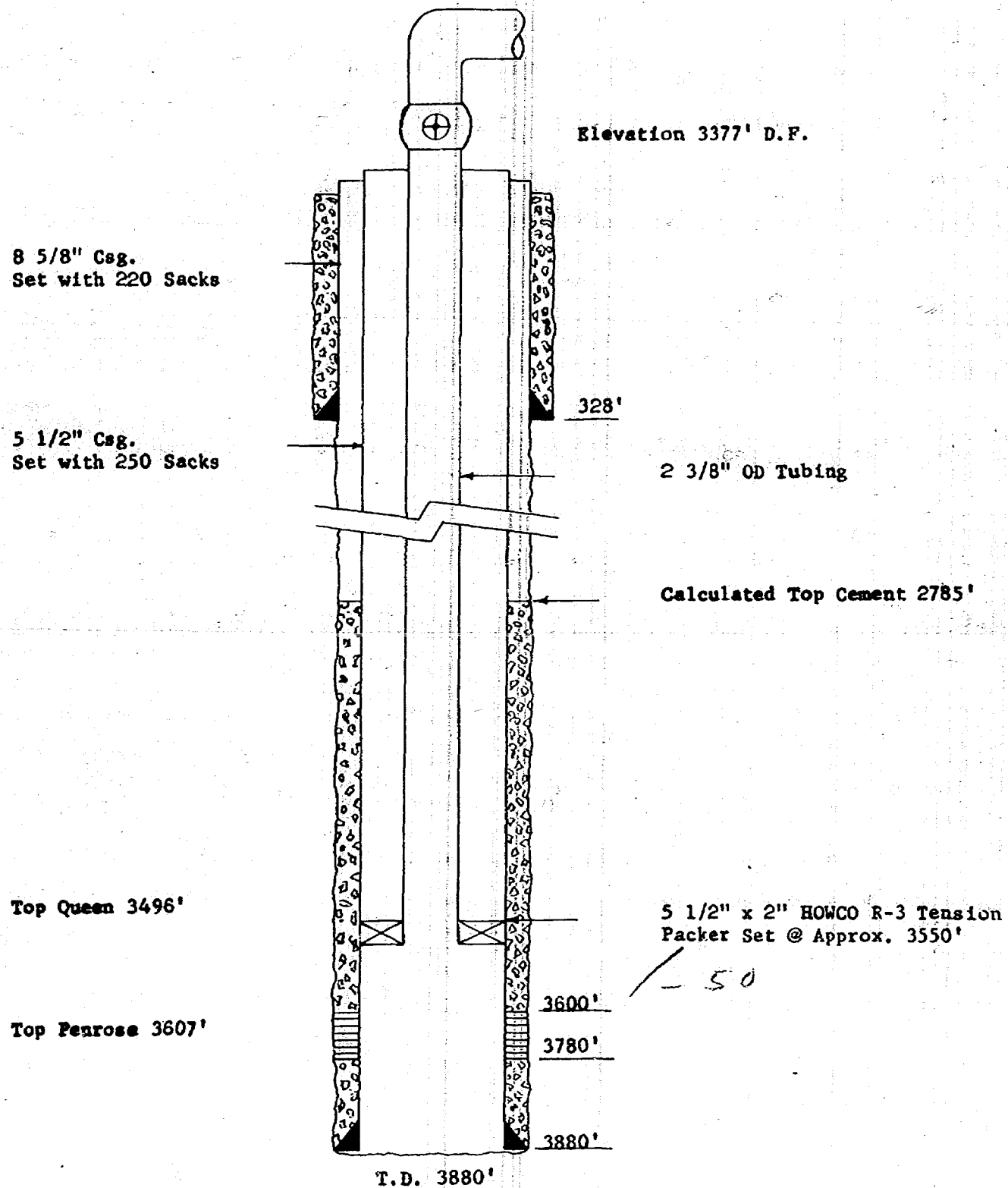


Compass Exploration, Inc.  
State No. 1 - 32  
1980' FNL & 2310' FWL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 5

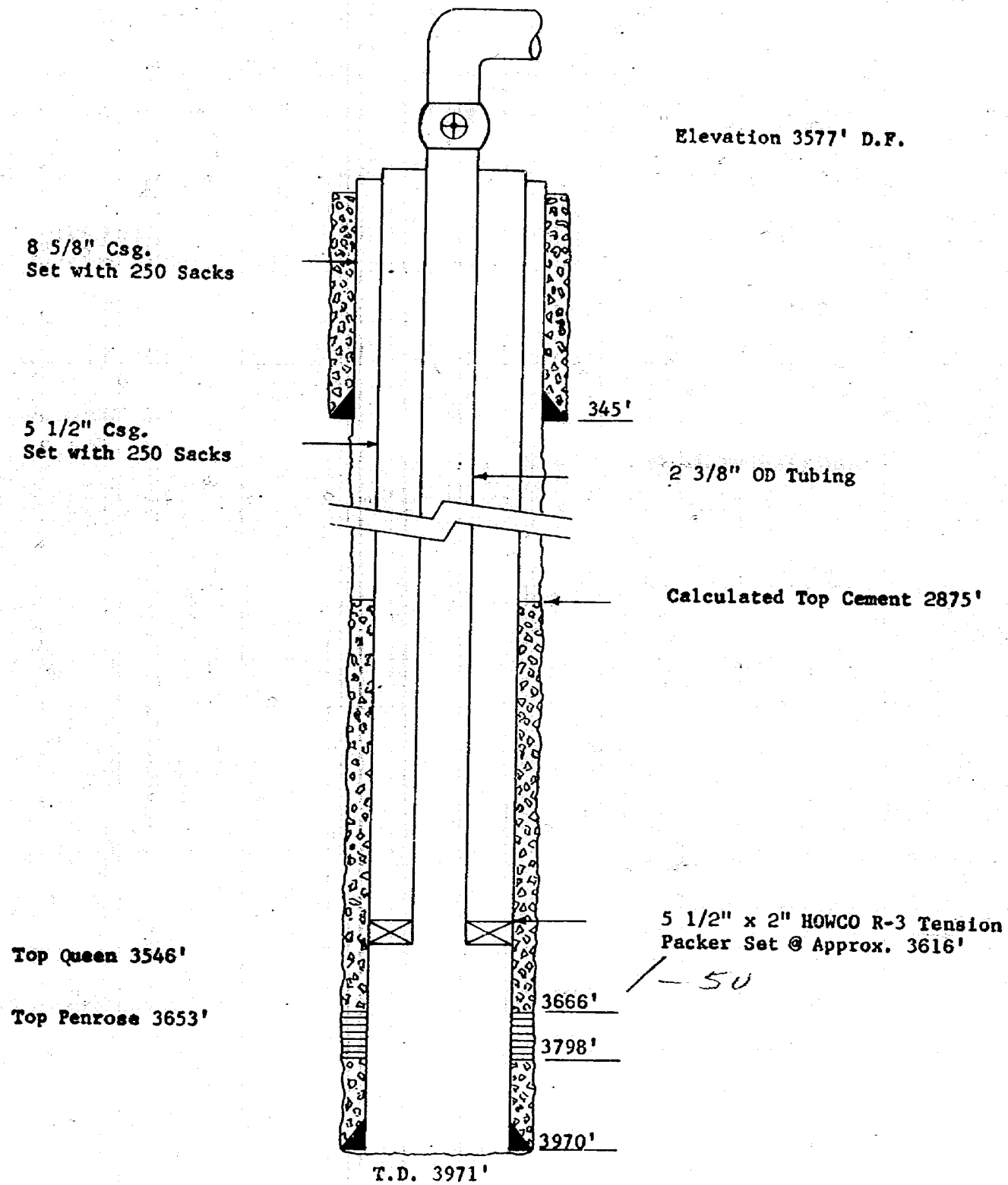




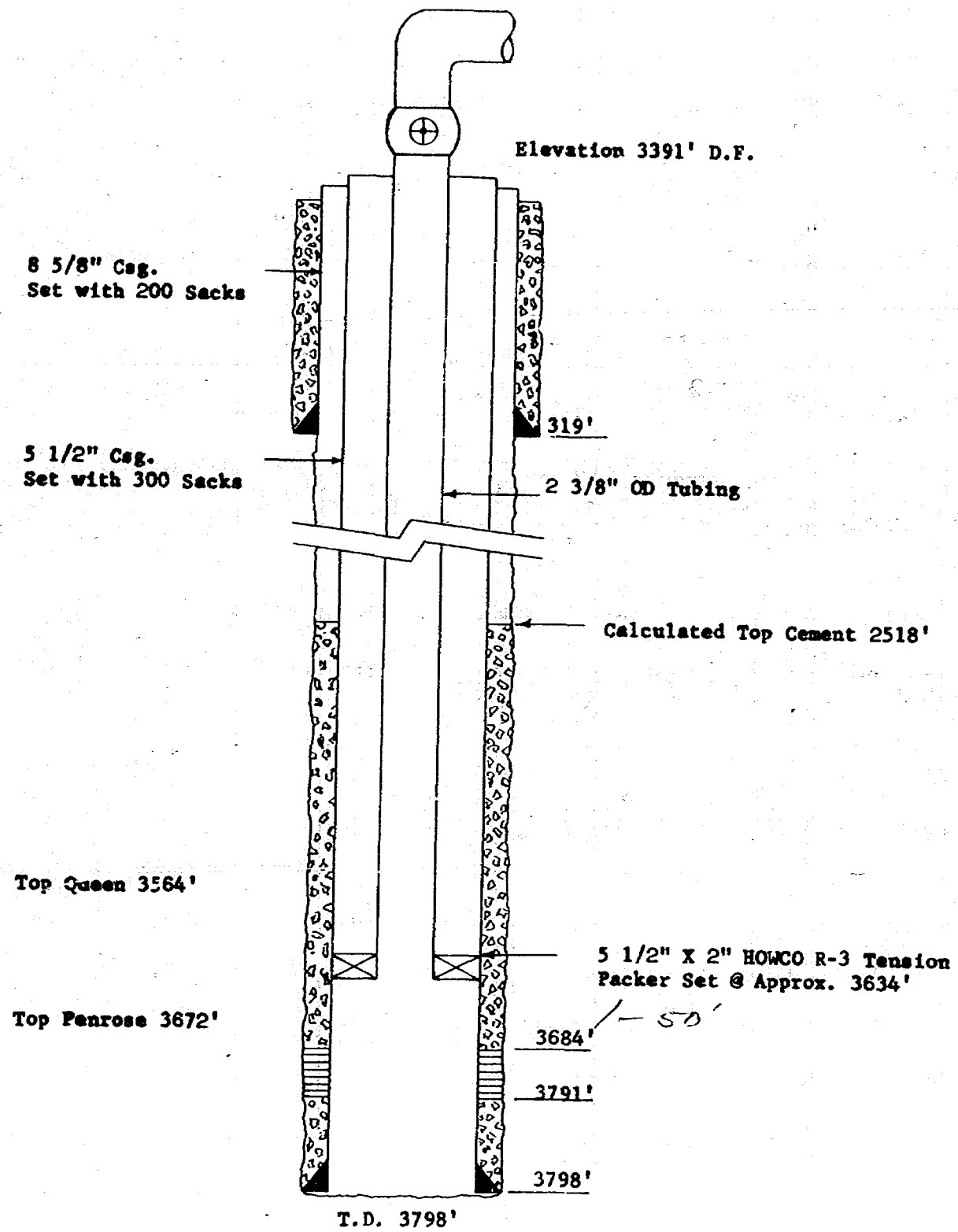
Oscar Bourg Drilling Company  
 King No. 3  
 1980' FSL & 1980' FEL Section 32, T22S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 8



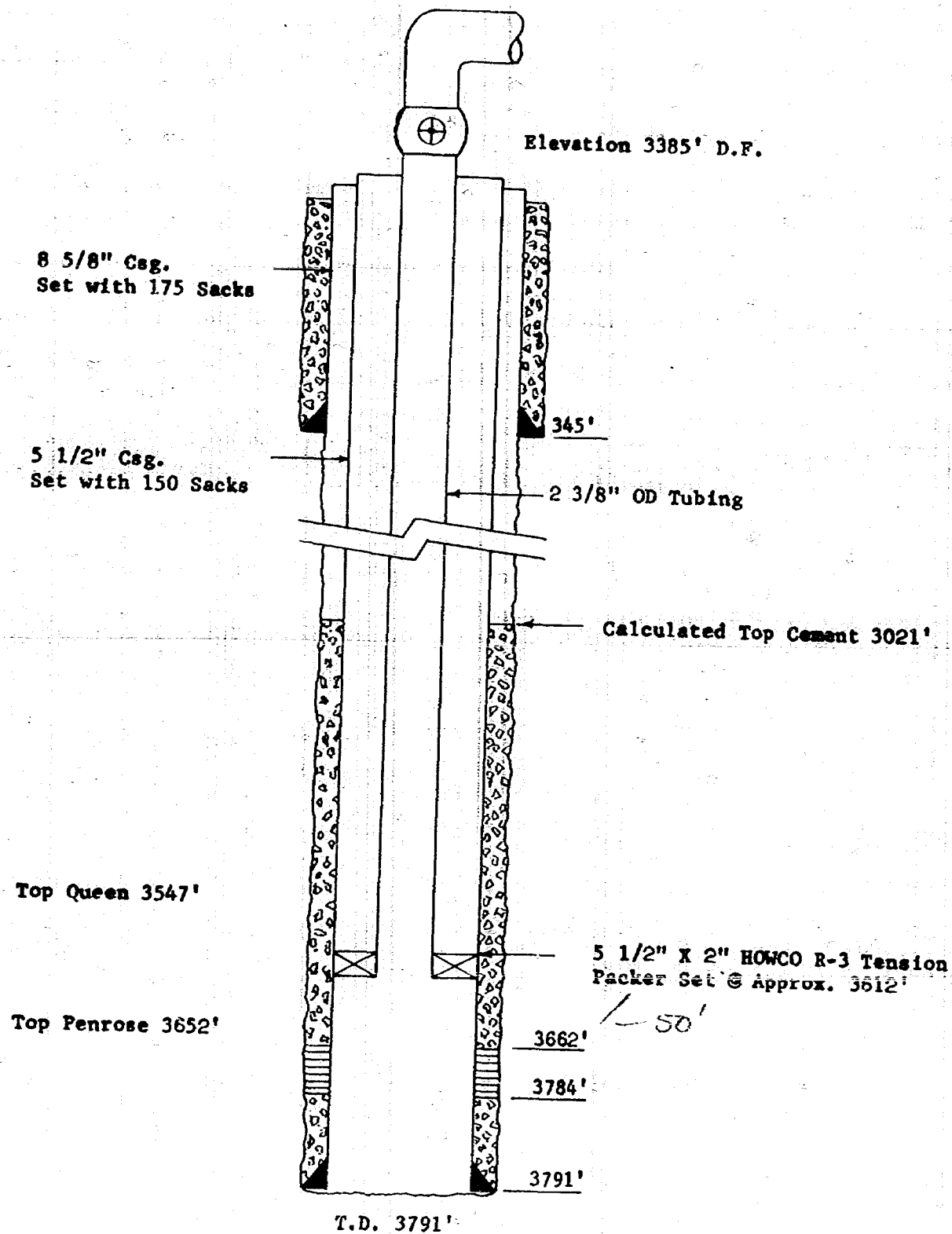
Oscar Bourg Drilling Company  
 State No. 3  
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 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 10



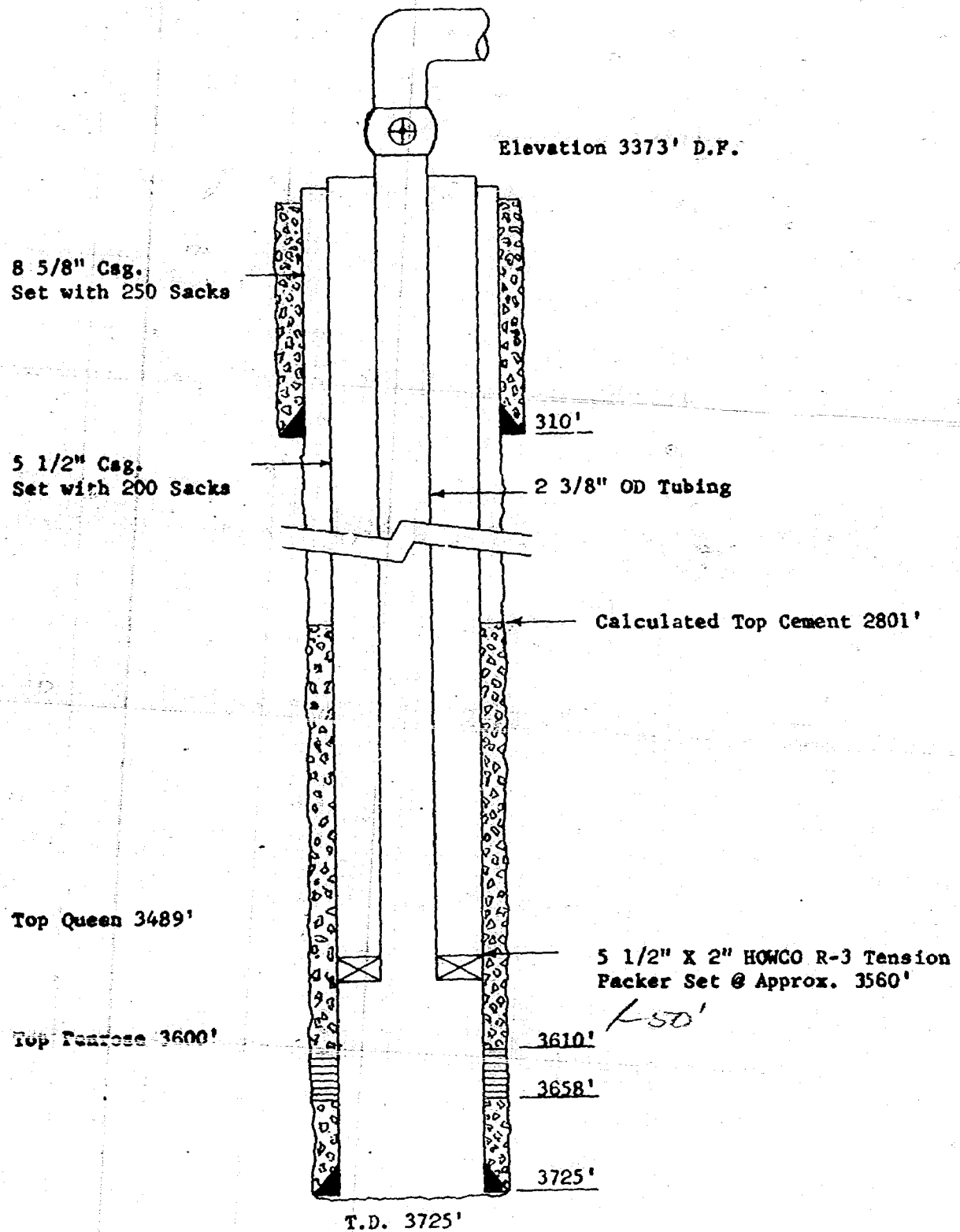
Dalport Oil Corporation  
 E. F. King "A" No. 1  
 330' FSL & 330' FEL Section 31, T22S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 12



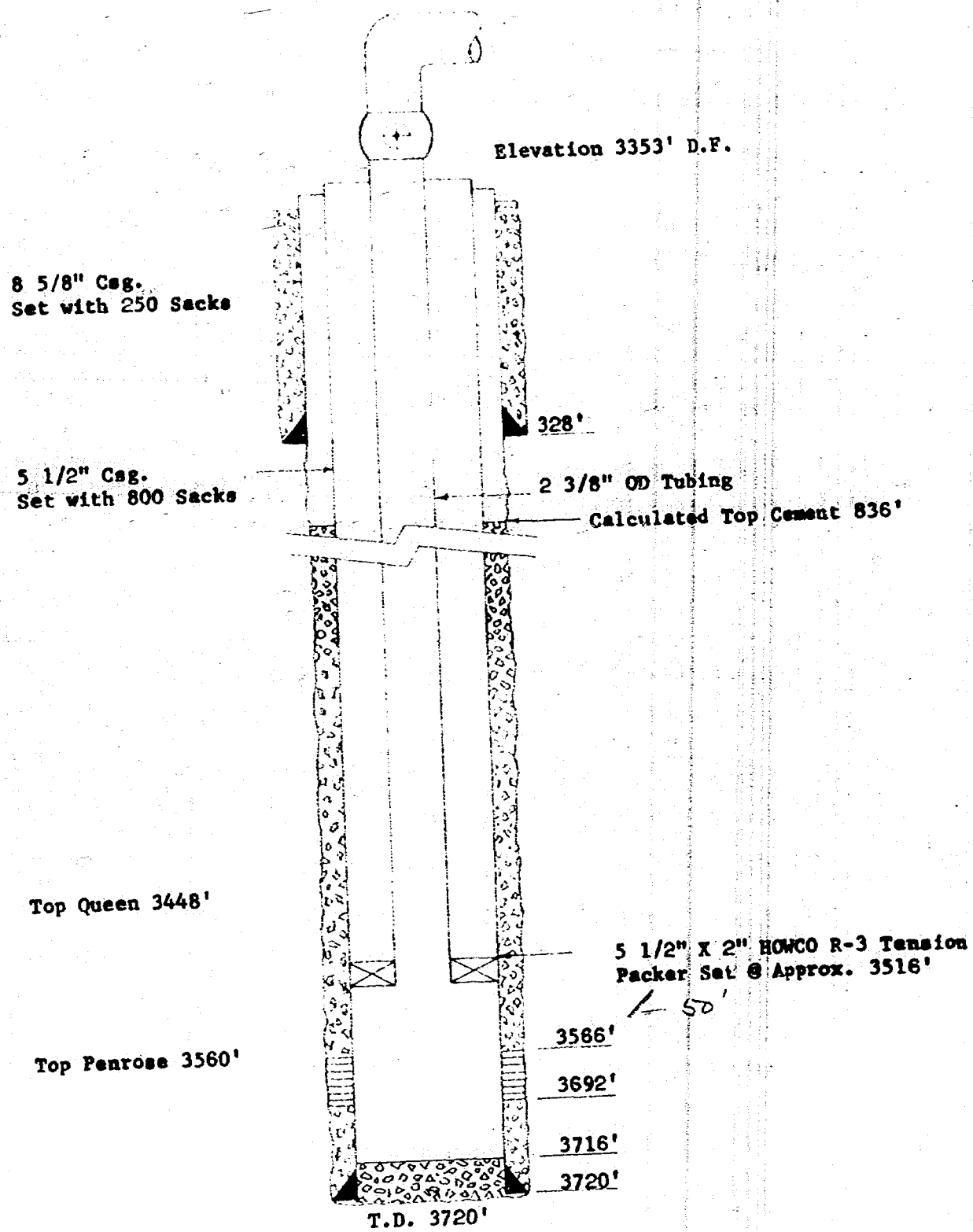
Bourg Drilling Co.  
 State No. 1  
 2310' FWL & 990' FSL Section 32, T22S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 14



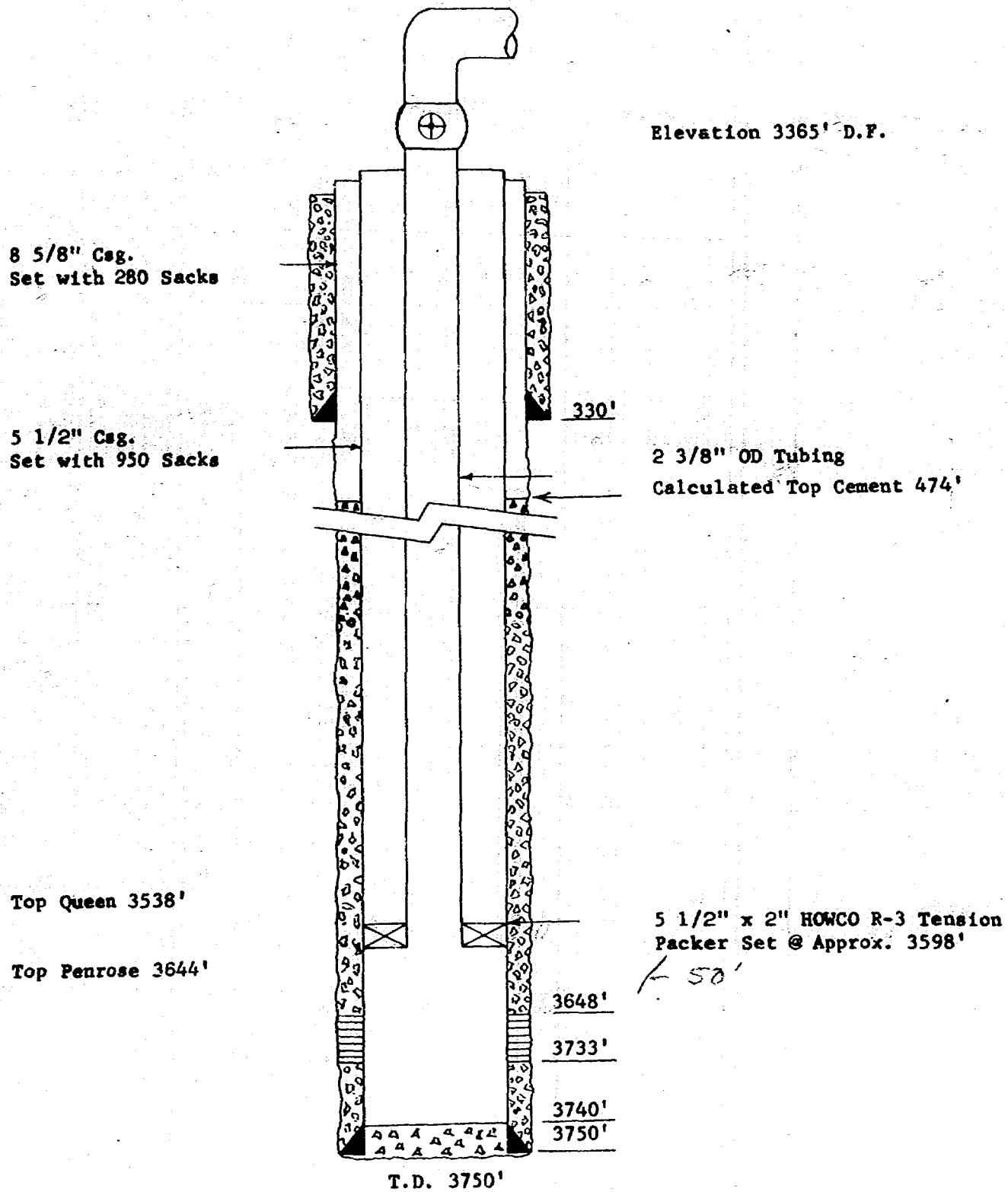
Bourg Drilling Co.  
King No. 2  
990' FSL & 660' FEL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 16



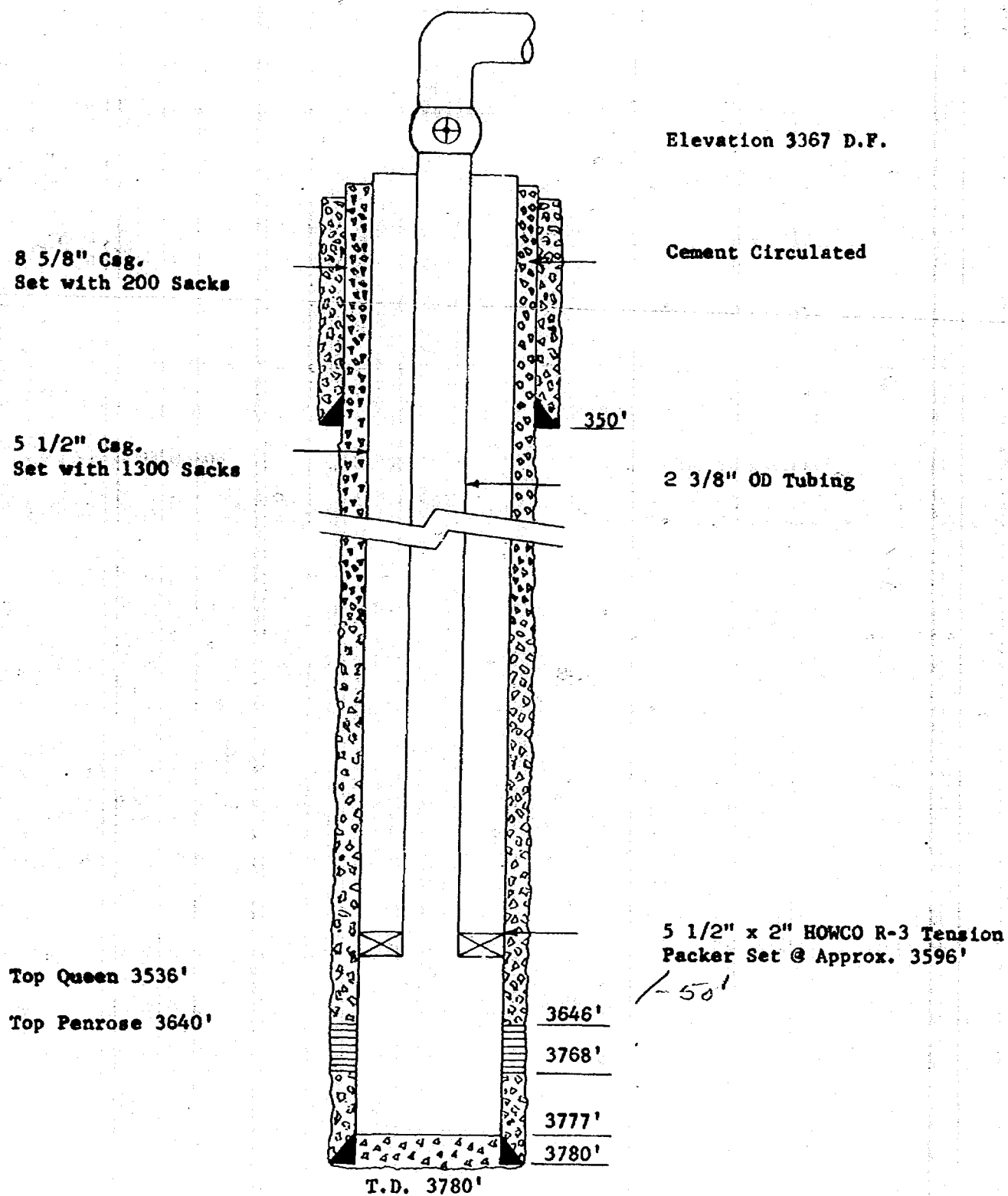
Ralph Lowe  
E. F. King No. 4  
660' FN & WL Section 4, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 17



Ralph Lowe  
 E. F. King No. 5  
 660' FNL & 1980' FEL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 19



Ralph Lowe  
 King "B" No. 3  
 660' FNL & 990' FWL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 21





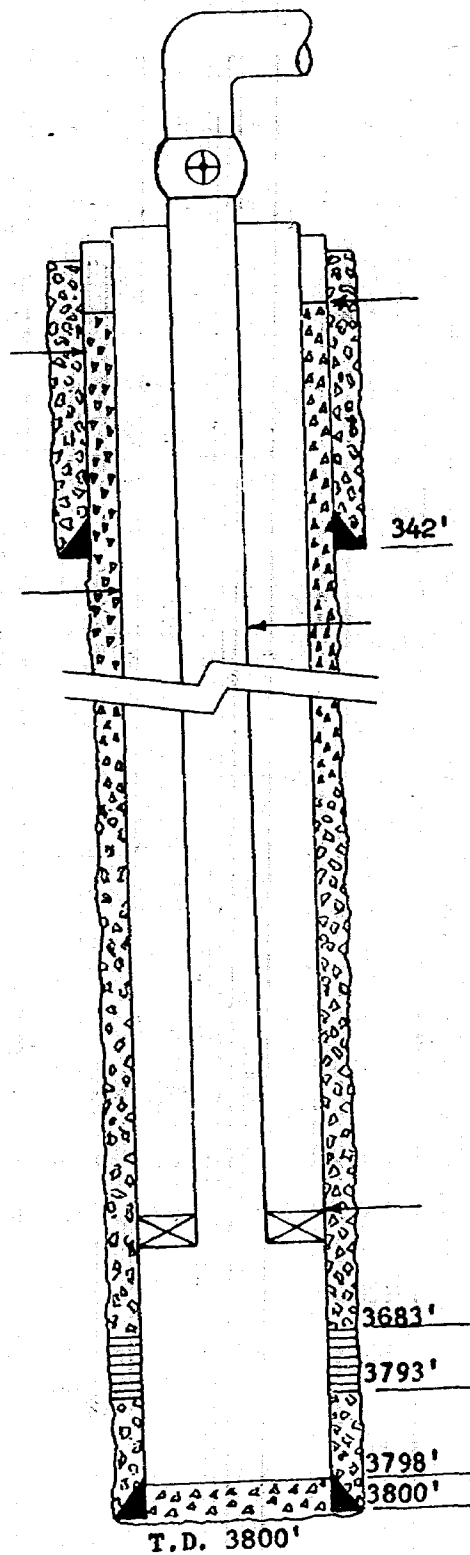
Ralph Lowe  
King "B" No. 7  
330' FNL & 1650' FEL Section 6, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well - - - - -  
Skelly Penrose "B" Unit Well No. 23

8 5/8" Csg.  
Set with 200 Sacks

5 1/2" Csg.  
Set with 1200 Sacks

Top Queen 3571'

Top Penrose 3674'



Elevation 3389' D.F.

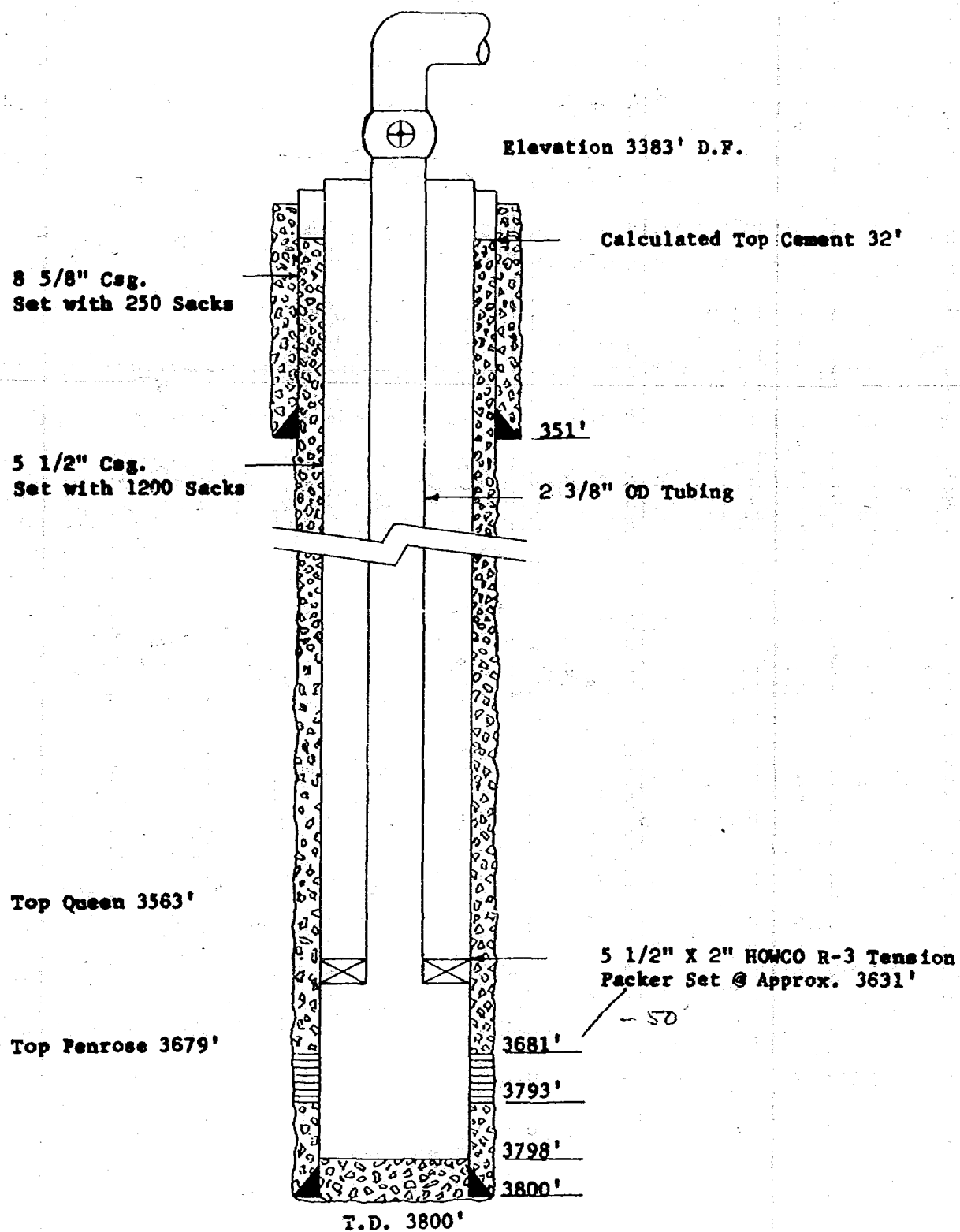
Calculated Top Cement 32'

2 3/8" OD Tubing

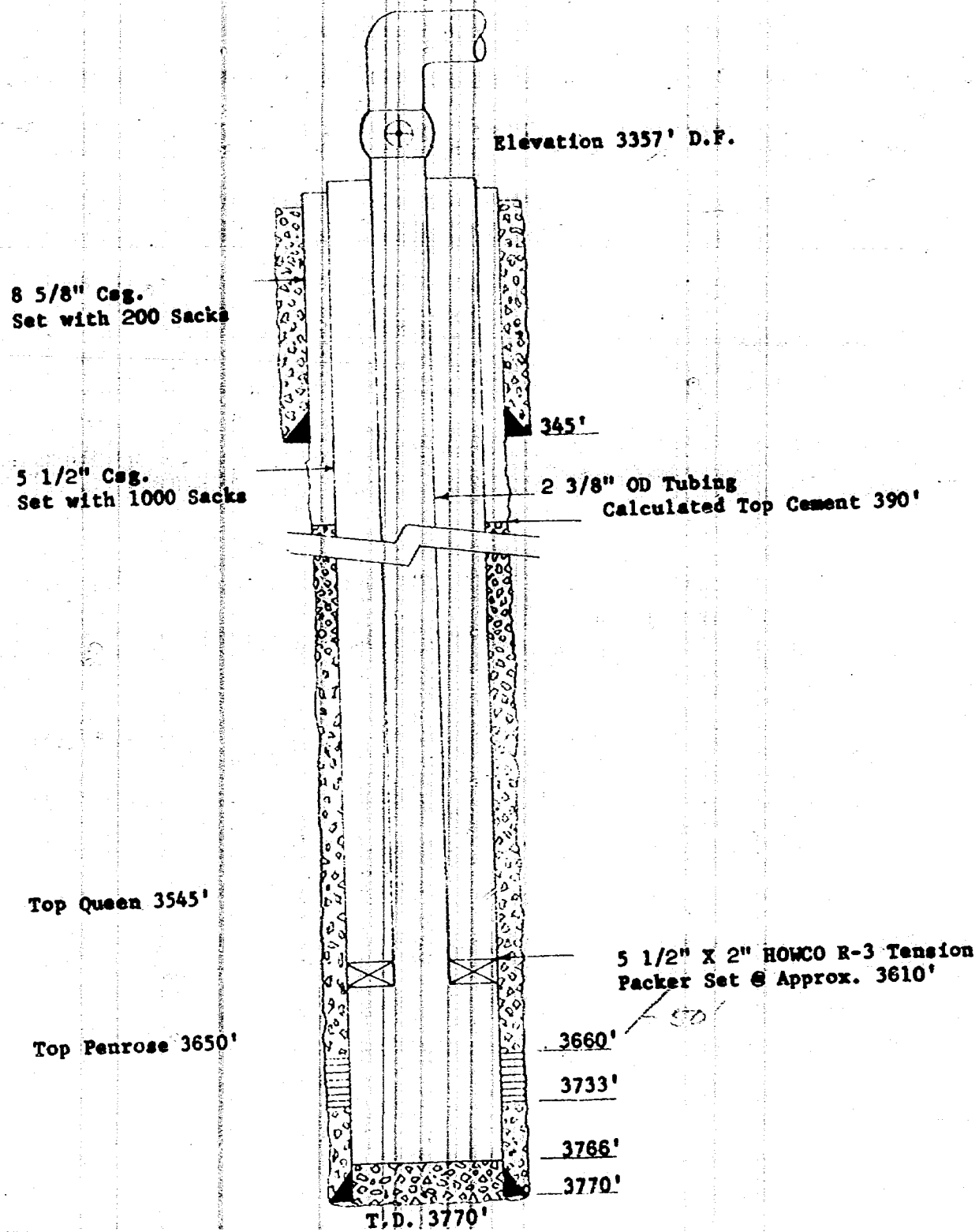
5 1/2" x 2" HOWCO R-3 Tension  
Packer Set @ Approx. 3633'

1-50'

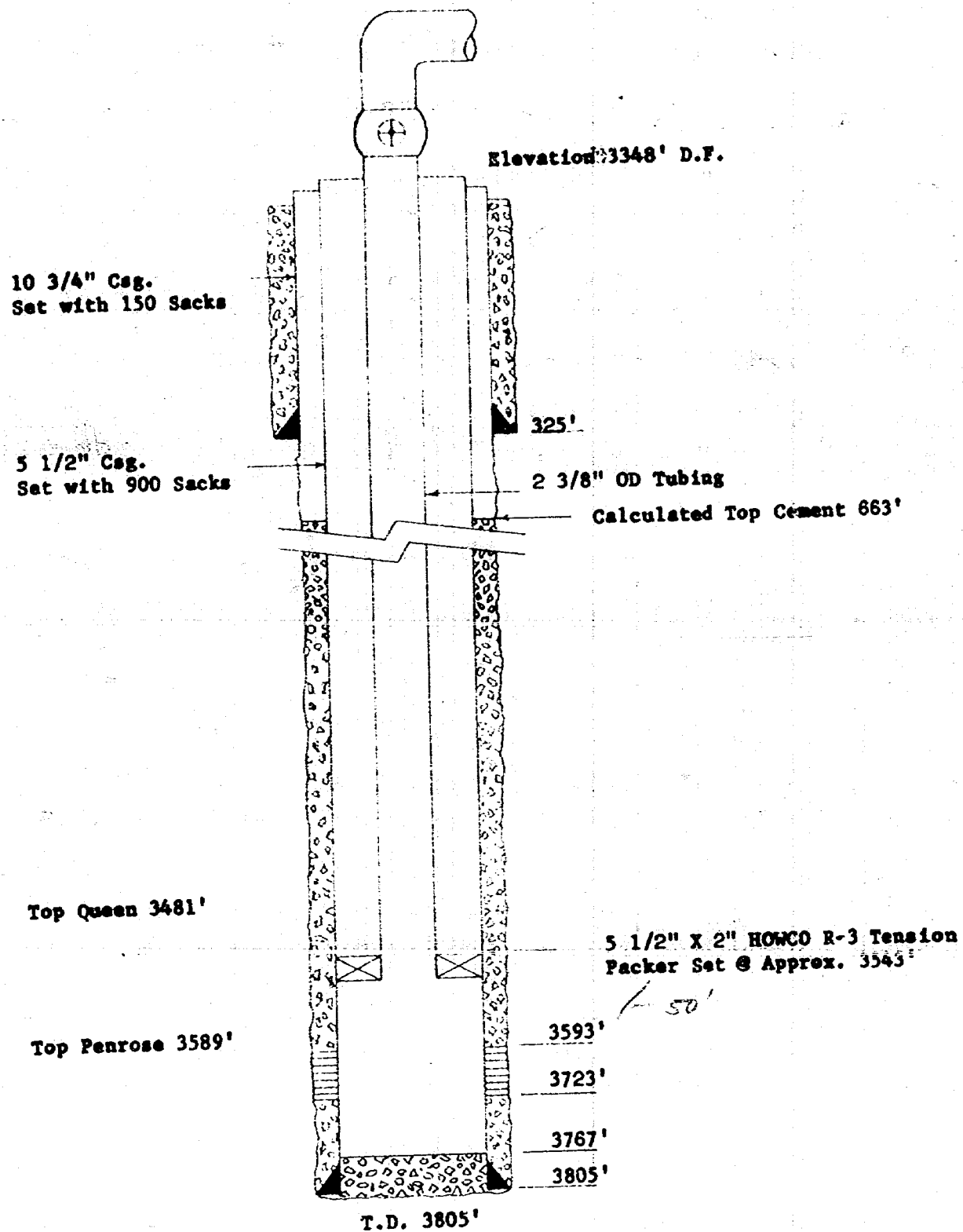
Ralph Lowe  
 King "B" No. 6  
 1788' FML & 330' FEL Section 6, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 25



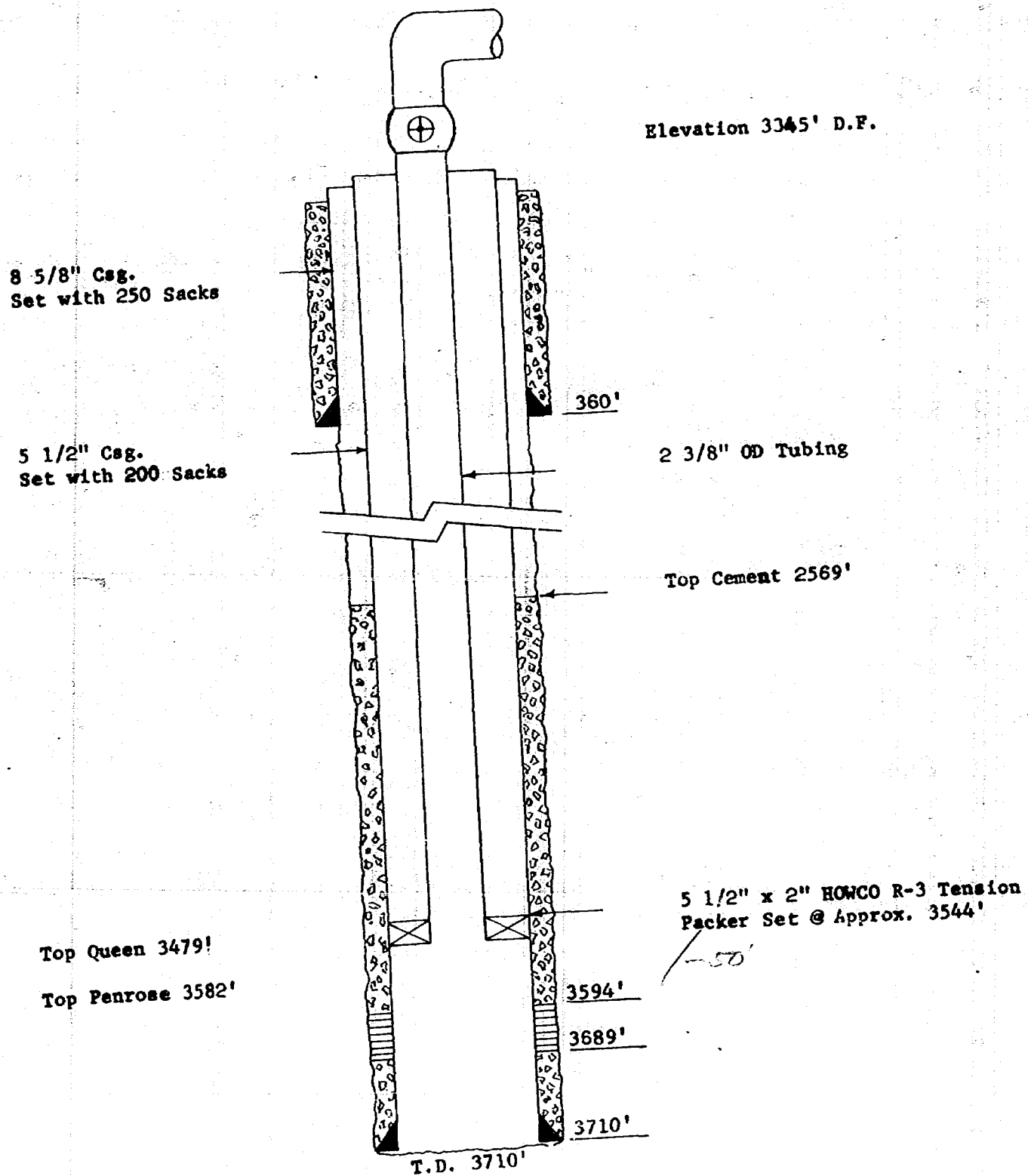
Ralph Lowe  
 King "B" No. 1  
 1980' FNL & 1980' FWL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 27



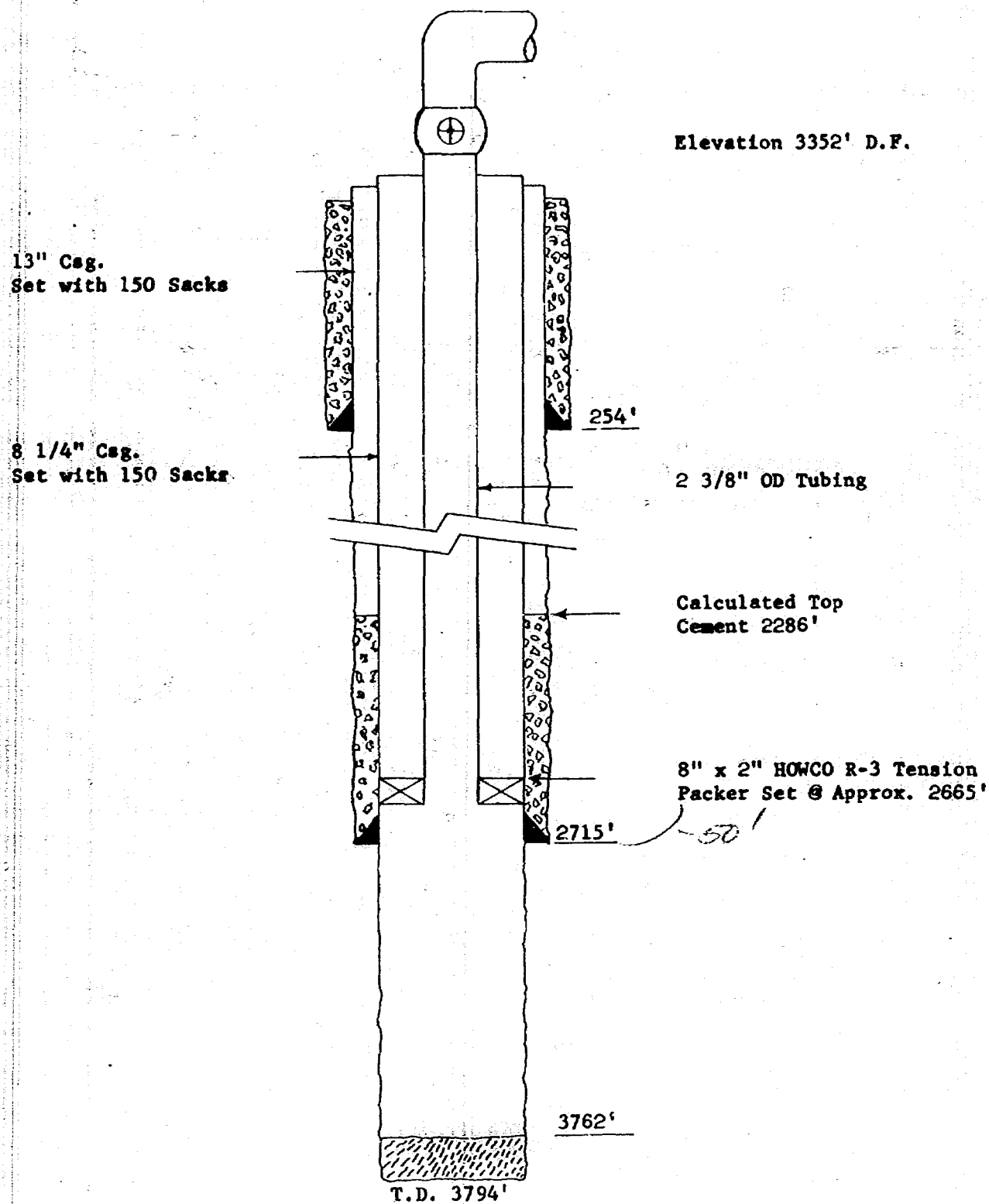
Ralph Lowe  
 E. F. King No. 2  
 2112 FNL & 660' FEL Section 5, T238, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 29



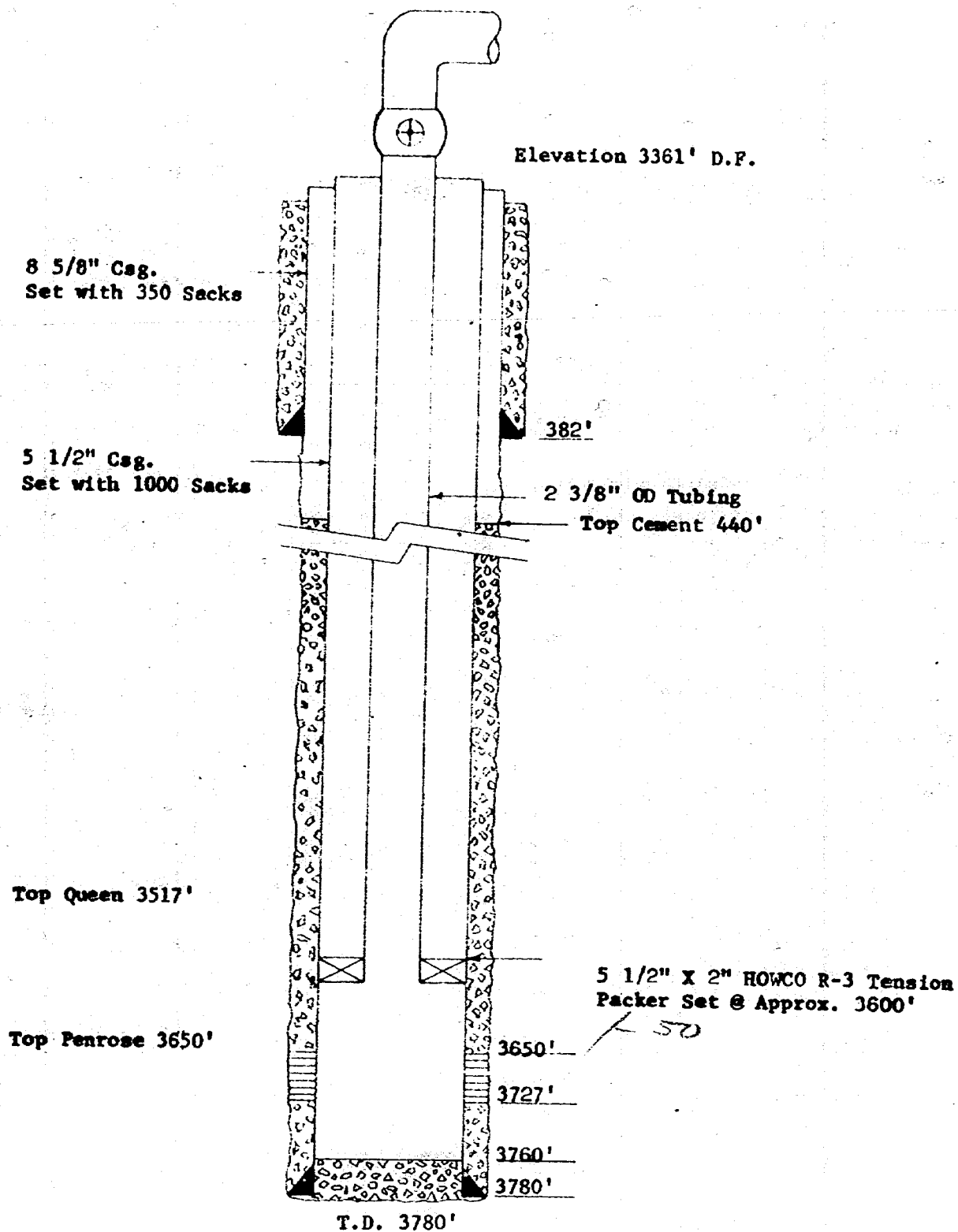
Skelly Oil Company  
 Harrison "B" No. 4  
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 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 32



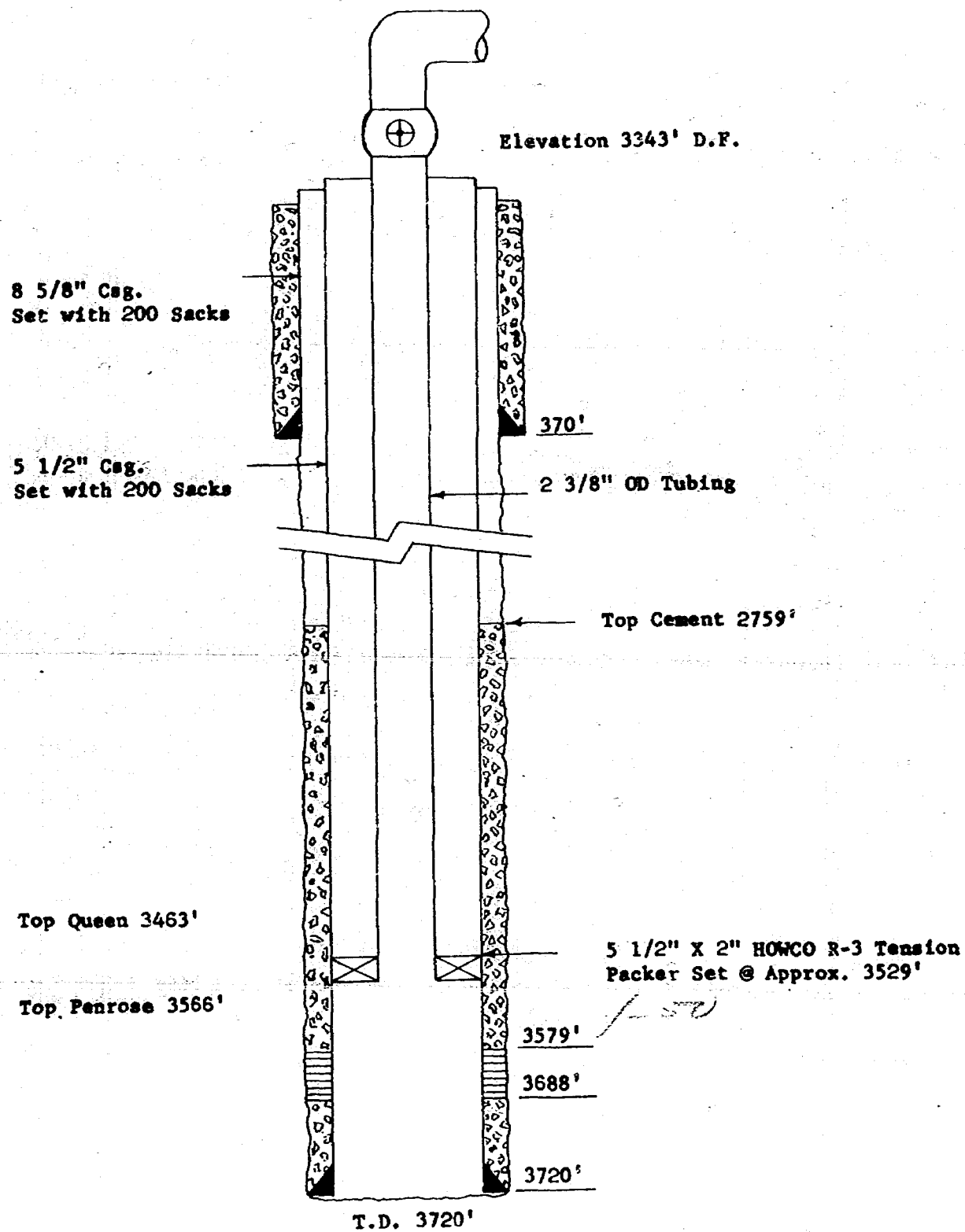
Skelly Oil Company  
Harrison "A" No. 1  
1980' FSL & 660' FWL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 34



Sun Oil Company  
 Richards No. 3  
 660' FSL & 660' FEL Section 6, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 36

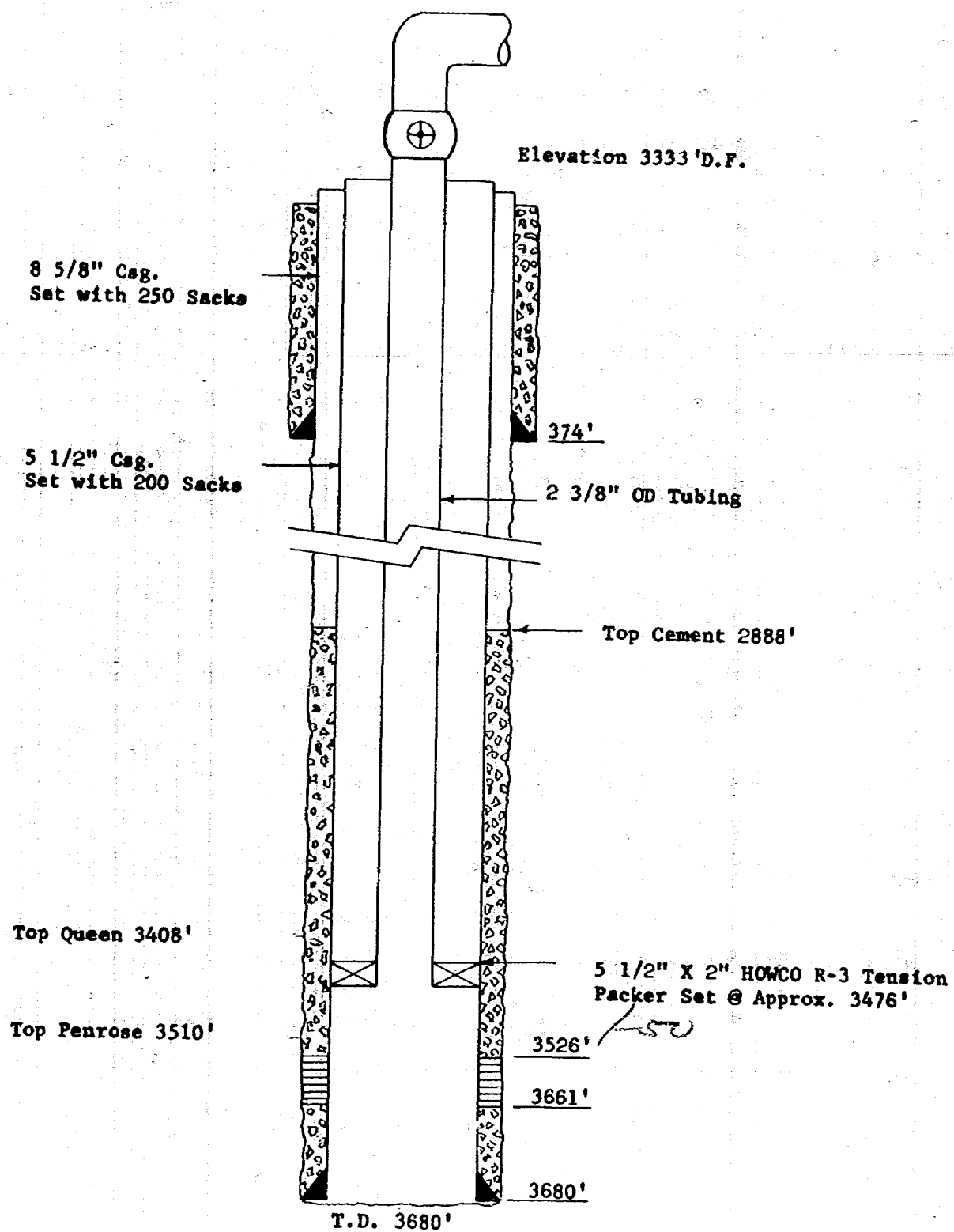


Skelly Oil Company  
 Harrison "A" No. 3  
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 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 38

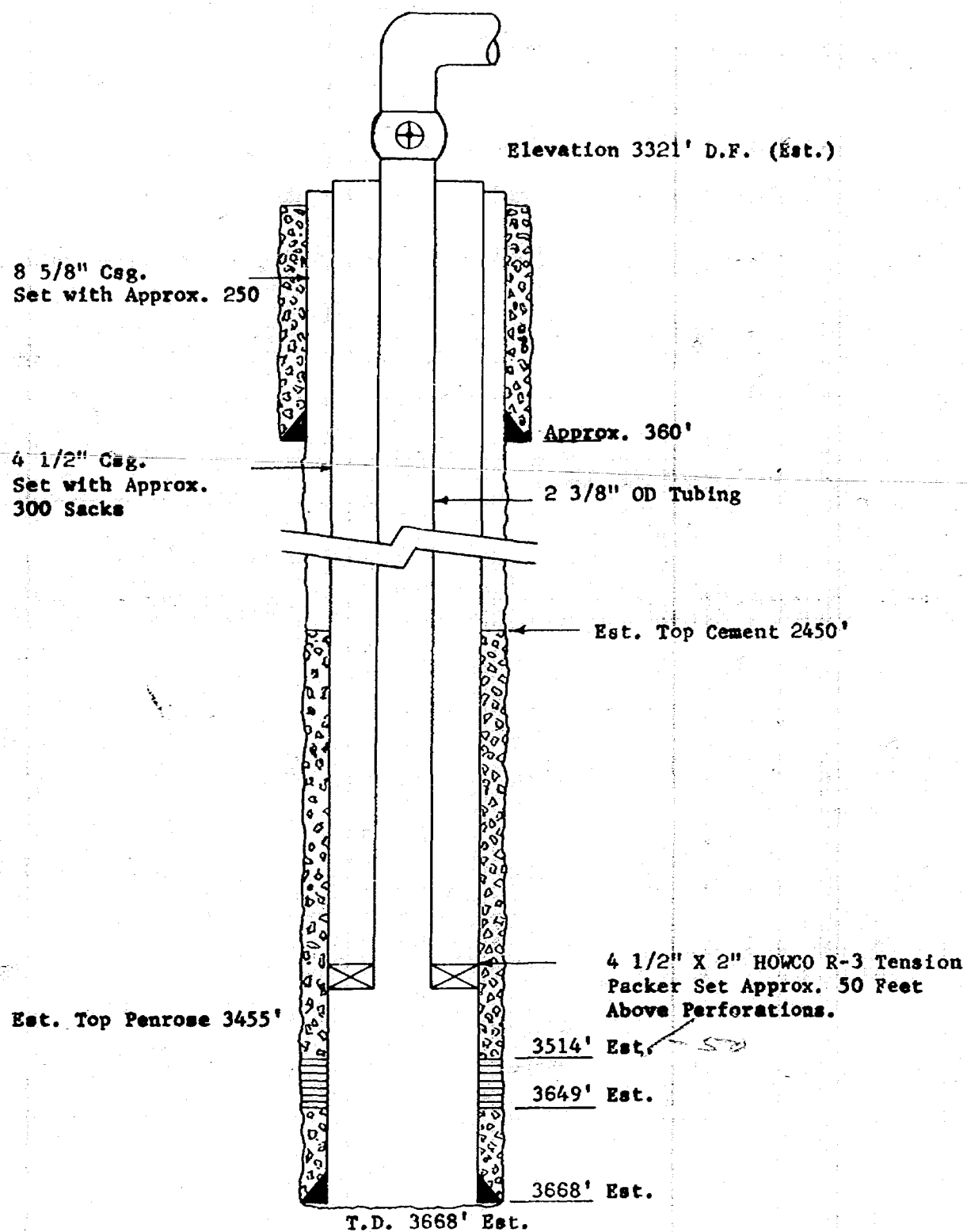




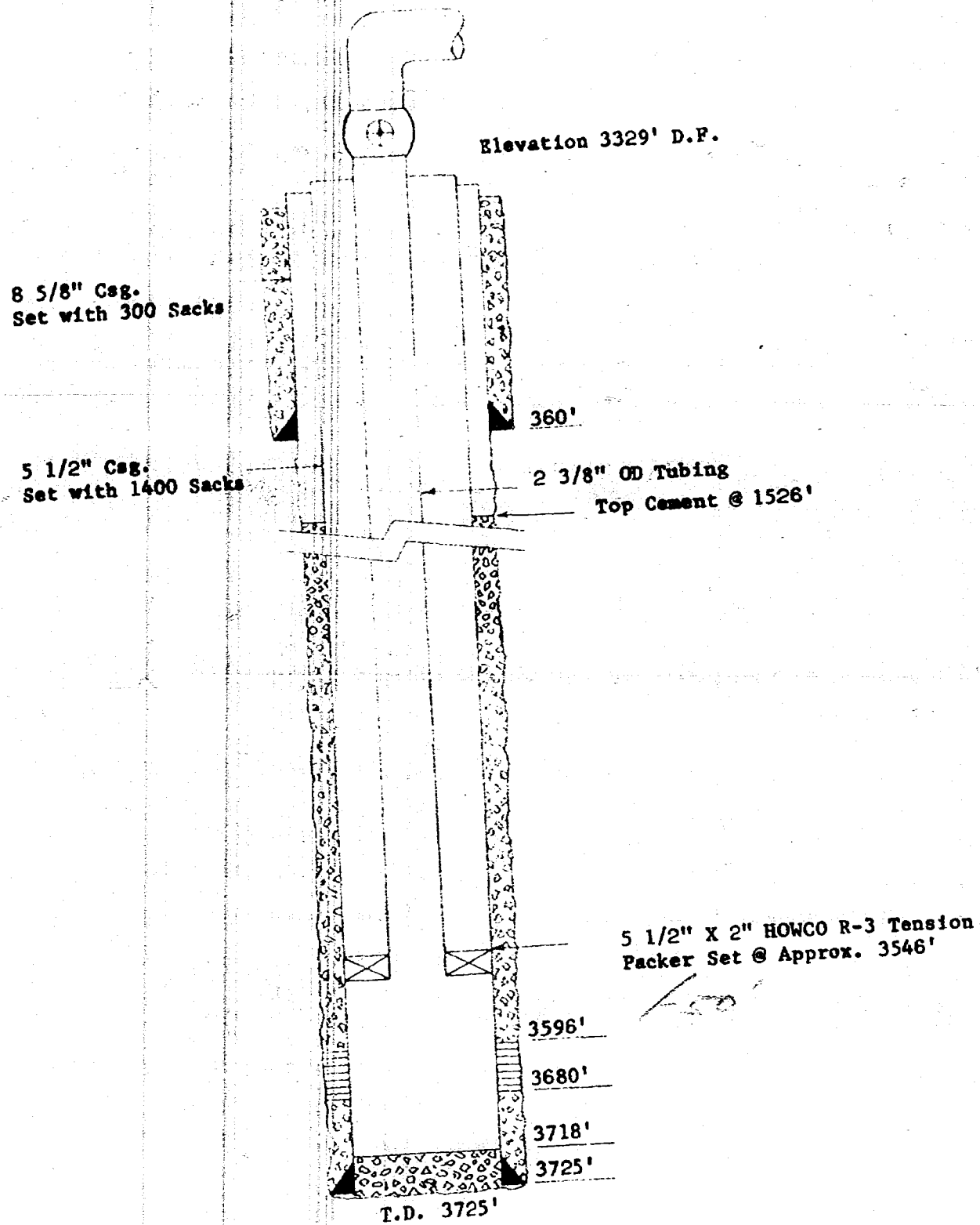
Skelly Penrose "B" Unit Well No. 40



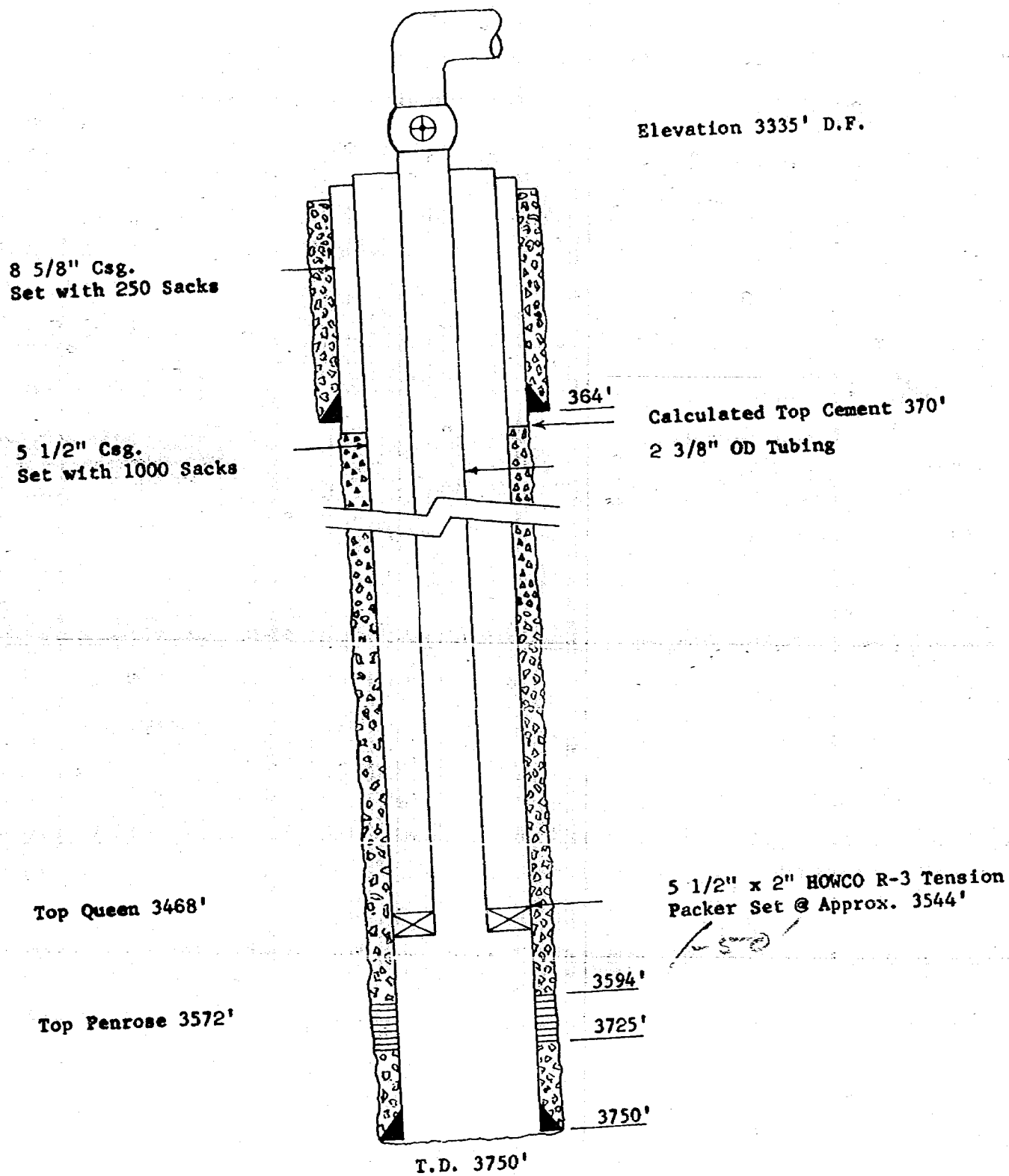
Skelly Oil Company  
 Skelly Penrose "B" Unit Well No. (To be Numbered)  
 To Be Drilled In Unit D, Section 9, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well



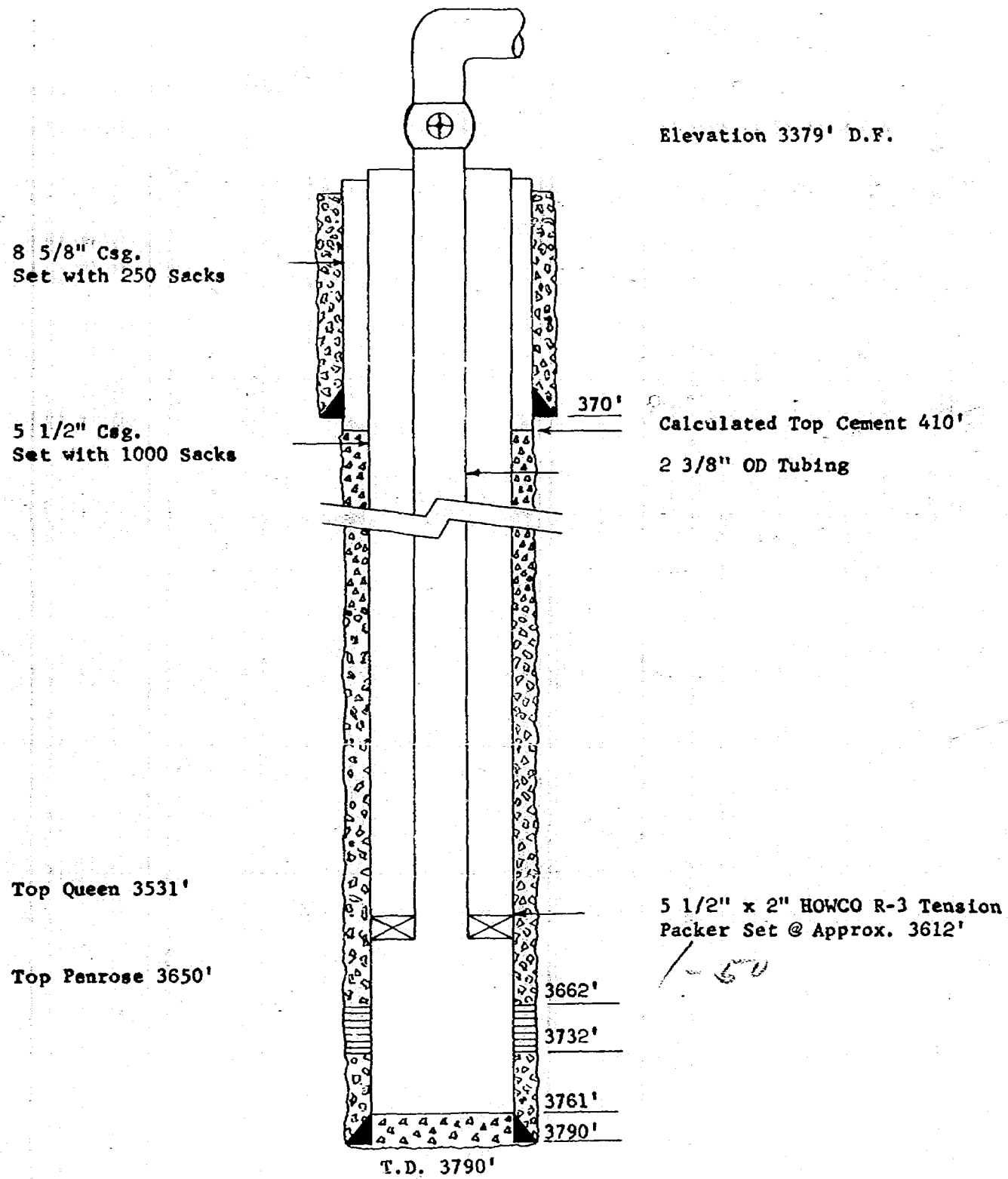
Gulf Oil Corporation  
Black Davis No. 1  
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Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. (Not Numbered)



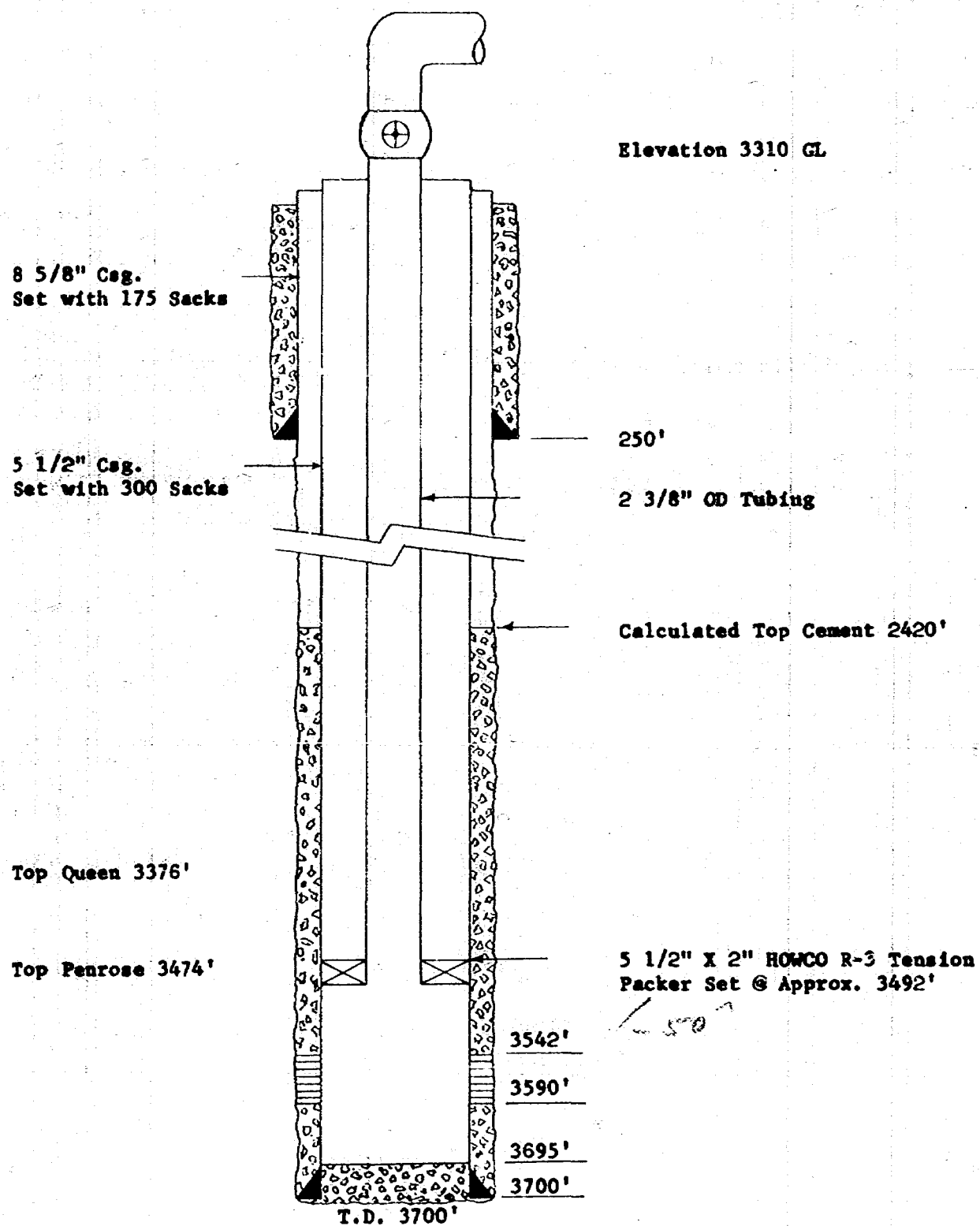
Redfern Development Corporation  
J. J. Redfern No. 1  
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Lea County, New Mexico  
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Skelly Penrose "B" Unit Well No. 45



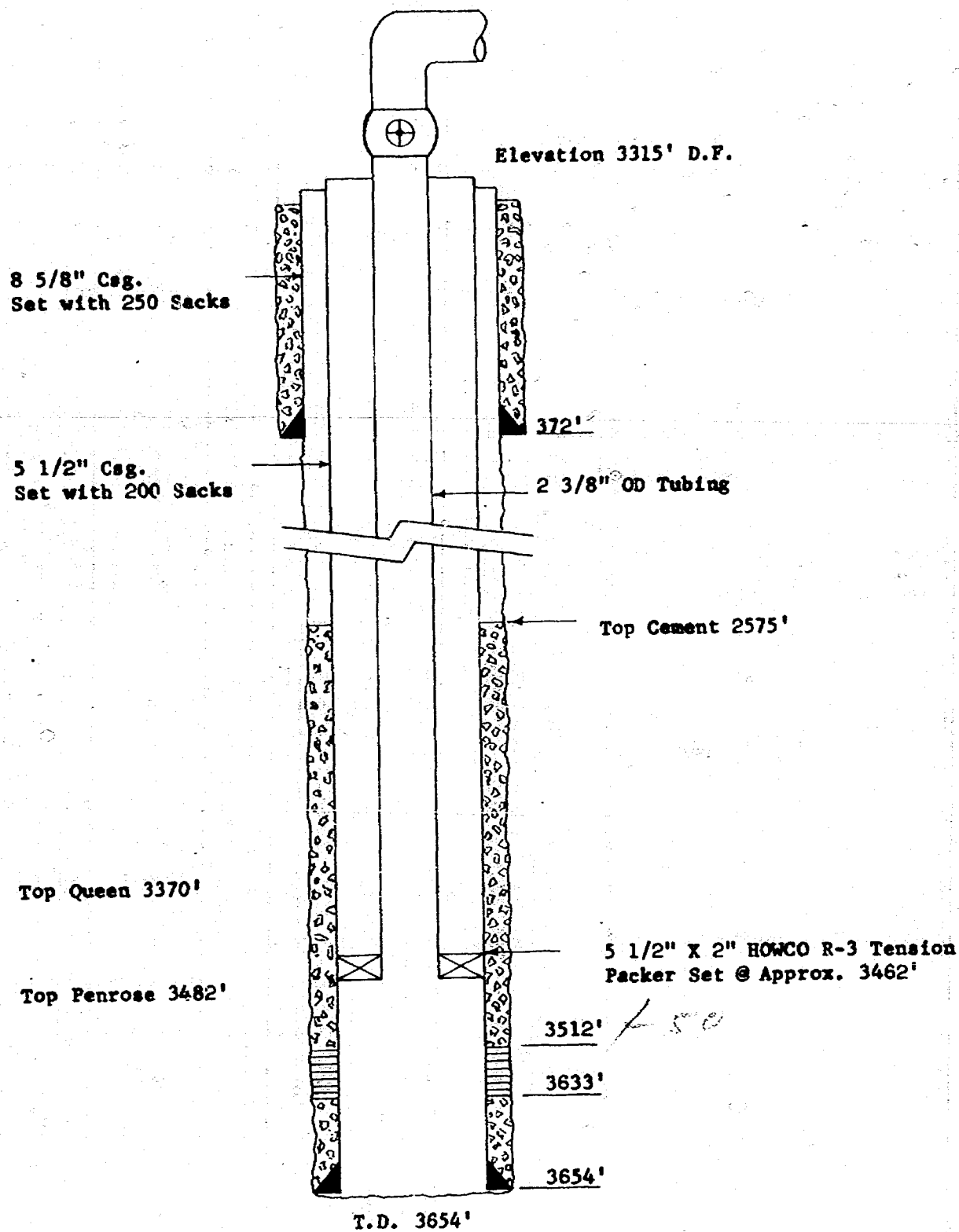
Sun Oil Company  
 A. D. Richards No. 4  
 660' FNL & 1980' FEL Section 7, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 47



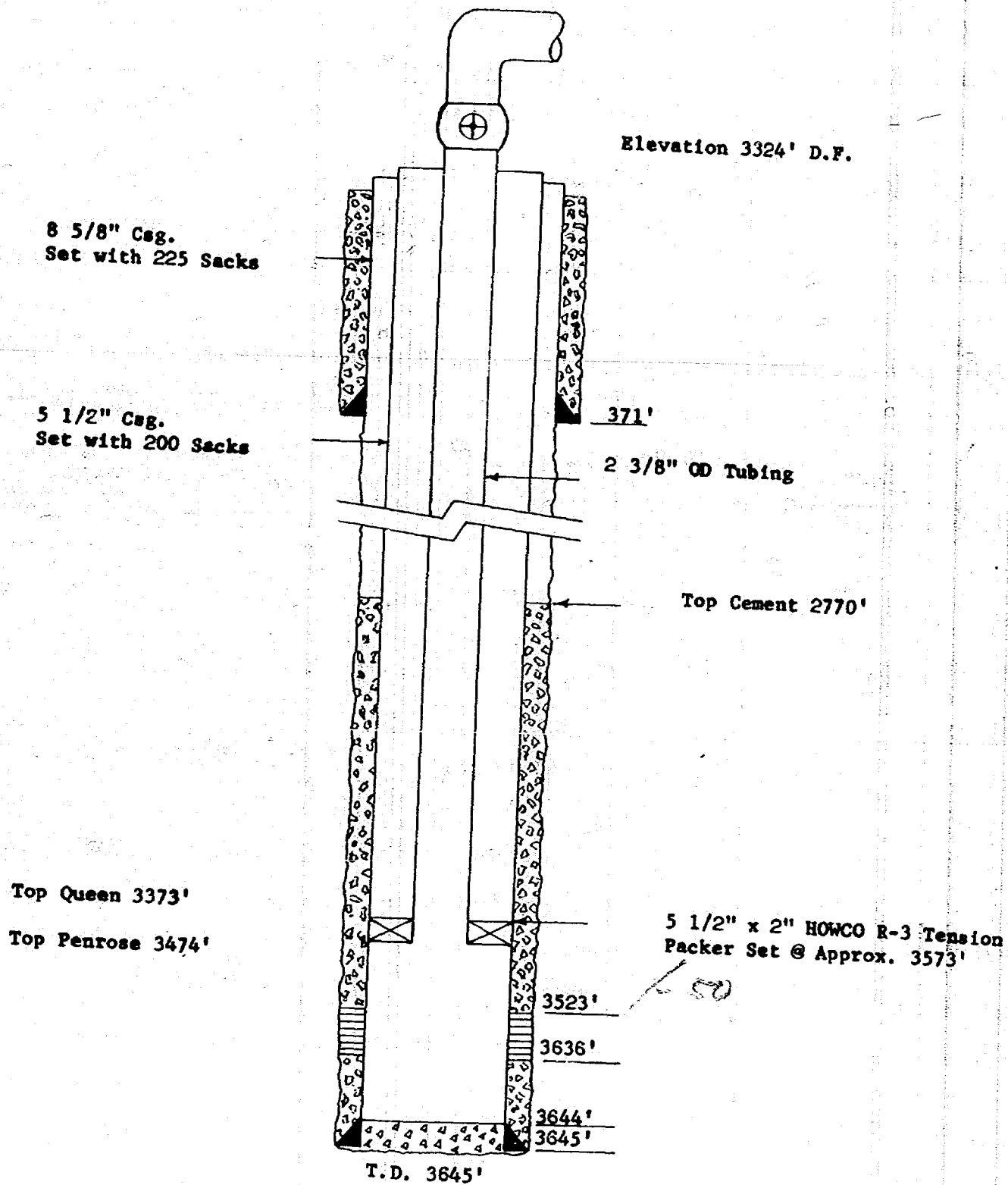
W. K. Byrom  
 Flora Davis No. 1  
 990' FEL & 1650' FNL Section 8, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 50



Skelly Oil Company  
 Harrison "B" No. 5  
 1980' FNL & 1980' FWL Section 9, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 52

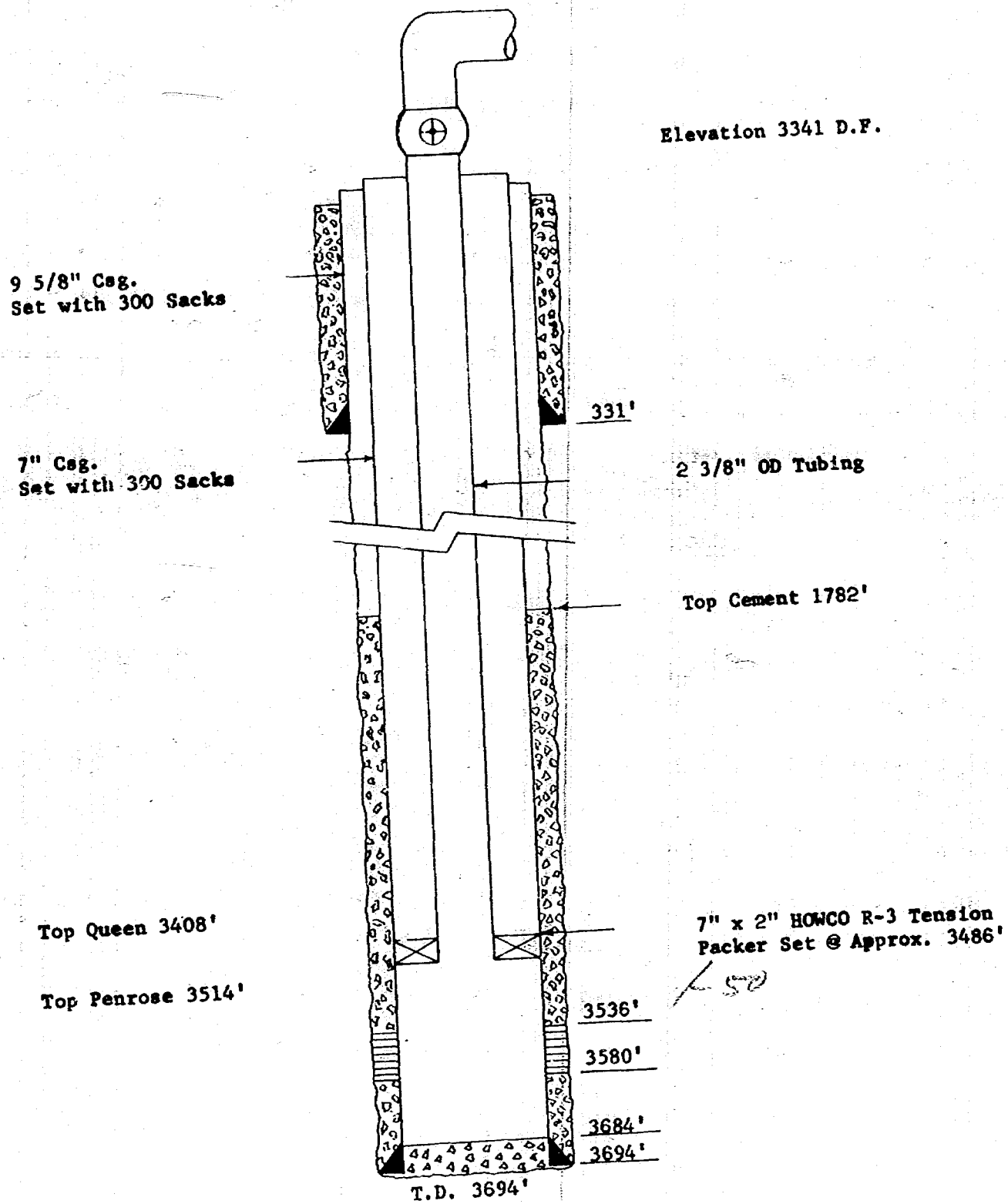


Skelly Oil Company  
 Harrison "B" No. 9  
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 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 54

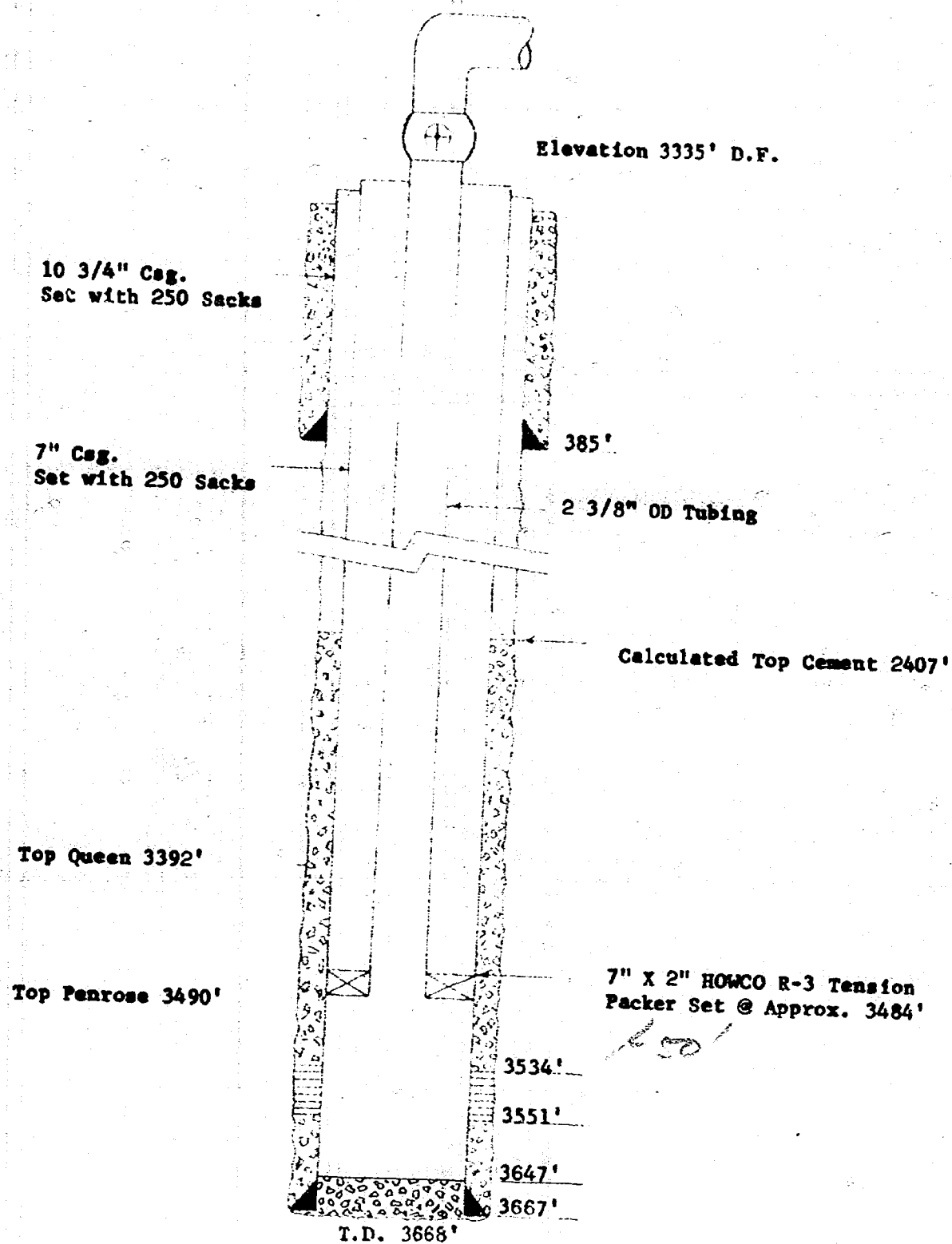




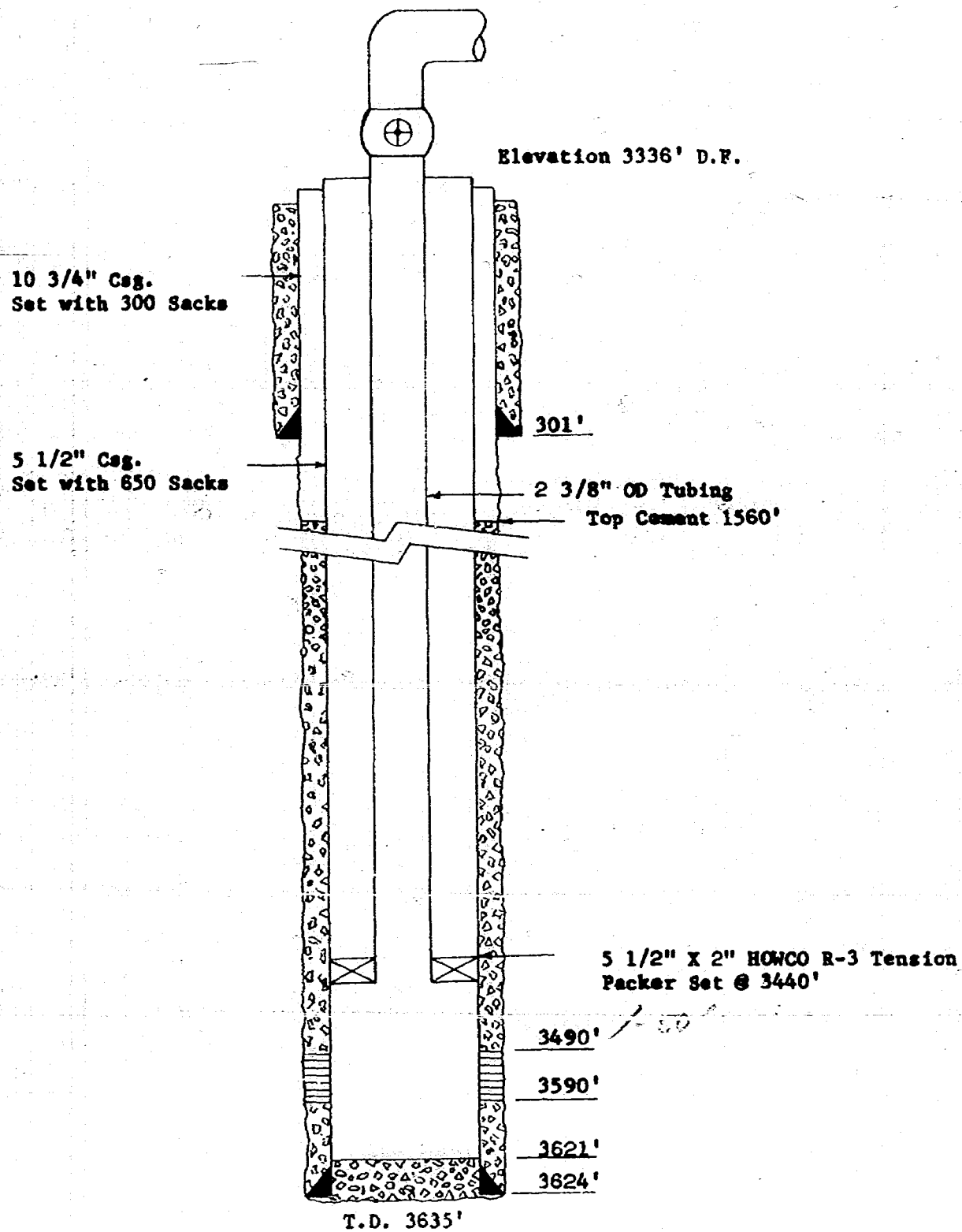
Texas Pacific Oil Company  
 Clift No. 5  
 660' FWL & 1980' FSL Section 8, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 56



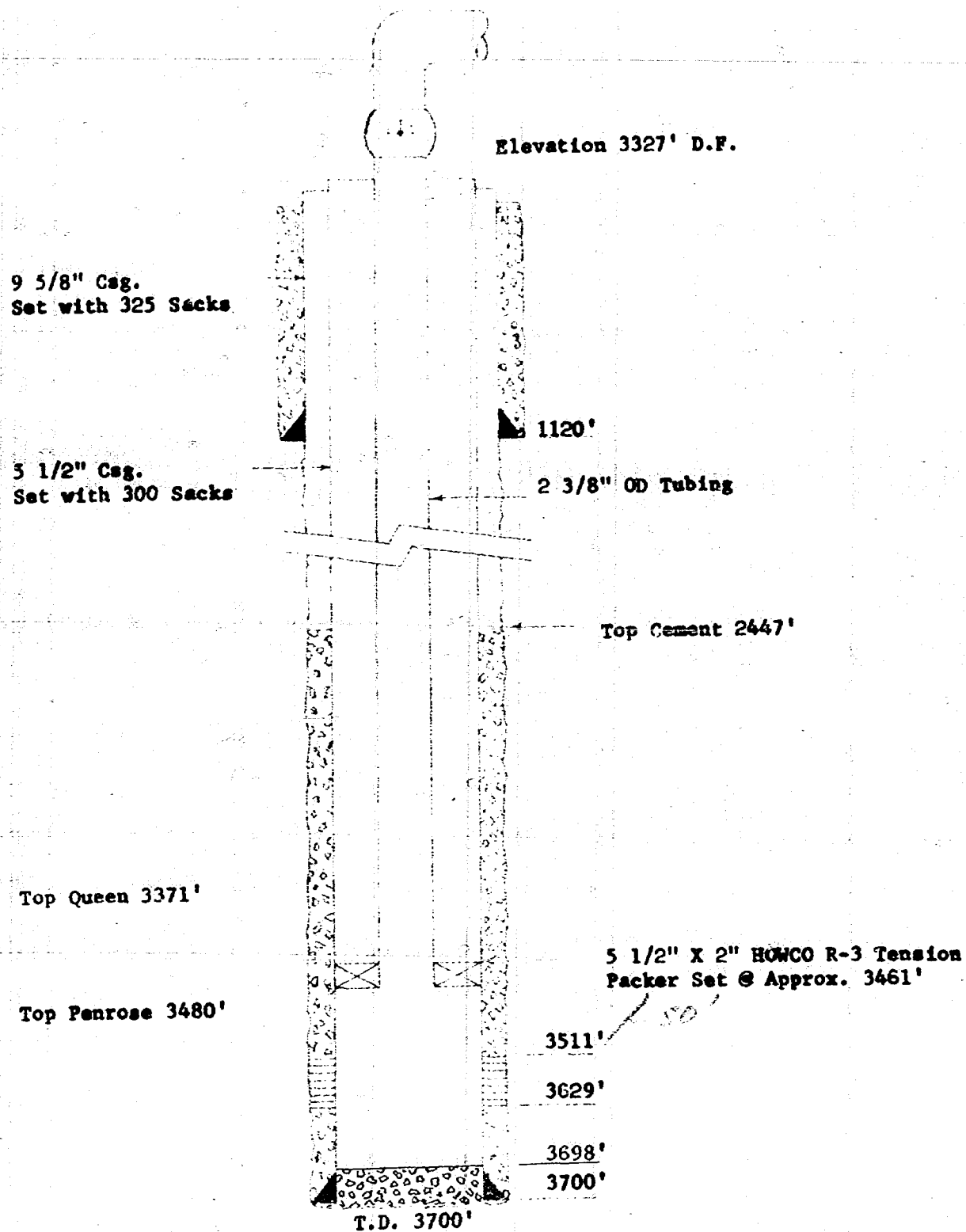
Texas Pacific Oil Co.  
Clift No. 3  
1980' FWL & 660' FSL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No.57



Texas Pacific Oil Company  
Clift No. 4  
330' FSL & 330' FEL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 59



Skelly Oil Company  
Harrison "B" No. 11  
680' FSL & 1980' FWL Section 9, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 61



SECONDARY RECOVERY STUDY  
SKELLY PENROSE "B" UNIT  
LEA COUNTY, NEW MEXICO

PREPARED BY:  
SKELLY OIL COMPANY  
UNIT OPERATOR  
JULY 12, 1965

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
SKELLY EXHIBIT NO. 1  
CASE NO. 3286

TABLE OF CONTENTS

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Conclusions and Recommendations	2
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### INTRODUCTION

The Langlie Mattix Pool, located in Lea County, New Mexico is areally the largest and among the earliest developed oil pools in southeast New Mexico. This report concerns that portion of the Langlie Mattix Pool outlined on Attachment I as the Skelly Penrose "B" Unit and described as follows:

Township 22 South, Range 37 East  
E/2 SE/4 Section 31  
NW/4, W/2 NE/4, S/2 Section 32

Township 23 South, Range 37 East  
W/2 NW/4 Section 4  
All Section 5  
NE/4, E/2 SE/4 Section 6  
N/2 NE/4 Section 7  
N/2, SE/4, N/2, SE/4 SW/4 Section 8  
W/2 Section 9

New Mexico Oil Conservation Commission nomenclature designates as the vertical limits of the Langlie Mattix Pool those formations encountered between the lower 100 feet of the Seven Rivers formation and the base of the Queen formation.

The Working Interest Owners of the proposed Skelly Penrose "B" Unit have agreed that in order to conserve natural resources, to prevent waste, to protect correlative rights, and to institute and consummate secondary recovery operations the Langlie Mattix Pool underlying the proposed Unit Area should be unitized. Skelly Oil Company was selected to be the Unit Operator.

This report has been prepared in order to present data concerning the unit and secondary recovery operations at the New Mexico Oil Conservation Commission hearing which has been called by Skelly to request authority to institute the waterflood project.

### CONCLUSIONS AND RECOMMENDATIONS

1. Primary producing life of the entire proposed unit area is 90 per cent complete on May 1, 1965. Those leases which have not reached their economic limit have reached 76 to 99 per cent of primary depletion.
2. An economically successful secondary recovery project for the subject unit can be expected.
3. Unitization of the unit area is necessary in order to prevent waste and protect correlative rights.
4. An adequate water supply is available for operating the unit.
5. Installation of secondary recovery facilities should be effected with all possible expediency.



#### DEVELOPMENT AND PRODUCTION HISTORY

Development of the Penrose Sand within the area of the Skelly Penrose "B" Unit was started with the drilling of Skelly Oil Company's Harrison "A" Well No. 1, completed December 4, 1935. Development east of the proposed unit area was rapid with most of the wells outlined on Attachment III as part of the proposed Skelly Penrose "A" Unit having been completed by 1940. Few wells in the "B" Unit were completed during the 1935-1940 period; most of the development in this area was during 1957 and 1958, with some wells completed as late as early 1960.

Primary life of the Penrose "B" Unit area is approximately 90 per cent complete. Estimated ultimate primary oil recovery is 1,717,780 barrels. On May 1, 1965, cumulative primary production was 1,550,398 barrels, with 167,382 barrels remaining primary oil to be produced. The remaining primary reserves were determined by extrapolation of rate time production curves. The present allowable for producing wells in the Skelly Penrose "B" Unit ranges from 1 to 8 barrels per day with six wells shut-in or temporarily abandoned, two wells plugged and abandoned and one well classified as an associated gas well.

Extensive Penrose Sand development is present adjacent to the proposed Unit area to the north, south and east. Skelly Oil Company is negotiating units in the south and east areas also, and will be unit operator for those areas when unitization is effected. The formation of three separate units was planned because development, in general, was considerably earlier in the "A" area than in the south and west areas, and the three areas are in different stages of depletion, the east (A area) being more advanced. The formation of separate units will better facilitate the negotiation of an equitable basis of participation in each of

the three areas. Certain notable differences in completion practices, as well as rate of development, are evident among the three areas; consequently, different operational problems may be encountered in the different areas.

Adjacent to Skelly Penrose "B" Unit on the north will be two secondary recovery projects; the Langlie Mattix Penrose Unit operated by Ambassador Oil Corporation, and Humble Oil and Refining's State "M" Lease on which a waterflood project has recently been initiated. Cooperative line flooding between the Skelly Penrose "B" Unit, the Ambassador Langlie Mattix Unit and the Skelly Penrose "A" Unit waterfloods will facilitate secondary operations and avoid undue drainage of unitized substances around the boundaries of the units.

Skelly Oil Company, in cooperation with Humble and Ambassador, has operated a pilot waterflood on its H. O. Sims Lease in Section 34-T22S-R37E since August 1953. A map indicating the location of this pilot is shown on Attachment No. II. The Skelly portion of two 80-acre five-spots includes two injection wells and one producer within an enclosed five-spot pattern. Based on the production from H. O. Sims No. 6, the center producer of the five-spot, ultimate secondary recovery from Skelly's portion of the pilot area is estimated to be equal to ultimate primary recovery. Operation of the pilot indicates that injection difficulties can be expected due to gas stringers exposed in many of the older open hole completions. Pilot performance, however, definitely indicates that waterflooding of the Penrose Sand in the vicinity of the proposed Skelly Penrose "B" Unit can be accomplished profitably, and will promote conservation of natural resources.

A graph of the projected secondary response is shown on Attachment No. IV.

### GEOLOGY AND RESERVOIR CHARACTERISTICS

The oil pay formation in the Skelly Penrose "B" Unit is the Penrose Sand, a lower member of the Queen formation. The Penrose top is encountered from depths of 3,423 to 3,701 feet; average depth of the Penrose top in the Skelly Penrose "B" Unit is 3,580 feet.

The Penrose zone of the Queen formation is described as lenticular, closely cemented sand lenses contained in a dense dolomitic limestone which was deposited during the Permian age along the western edge of the Central Basin Platform, accompanying a period of mild geologic disturbance. The oil reservoir is contained in a generally northwest trending anticlinal stratigraphic trap which is broken by small "saddles".

One core analysis (of the lower 50 feet of the Penrose Section from the Redfern Development Corporation, Redfern No. 1 in Unit D Section 8-T23S-R37E) is available from the proposed Skelly Penrose "B" Unit area. The following weighted average values were the result of the analysis:

Gross feet analyzed	50.0
Net feet of pay	11.2
Porosity, per cent	9.92
Residual saturations, oil	10.42
Total water	40.40
Permeability, md.	1.12

In the south part of the Penrose "B" Unit area, the upper Penrose is gas productive. Gas is usually

section thickness below 200 feet is 125 feet in the oil area.

The primary driving mechanism of the Penrose Sand is solution gas, producing oil of approximately 36 degrees API gravity. The gas zones present in the upper Penrose, as well as the immediately higher Queen and Seven Rivers formations, are present as localized gas stringers, found in the higher portions of the

general antclinal effect. There is no evidence to suggest that the Penrose formation contains enough continuous vertical permeability that the gas zones could have furnished energy as a principal driving force in the production of primary oil from the Penrose.

No estimation of original oil in place or per cent primary recovery is presented in this report. Any estimation of oil in place would be highly conjectural, and is not considered necessary at this time. It is felt that the cooperative pilot waterflood performance affords adequate justification for waterflooding the Penrose section underlying the Skelly Penrose "B" Unit area.

Attachment No. V is an interpretation of the Queen formation structure in the Langlie Mattix area by Skelly Oil Company's Geological Department. Attachment No. VI is a Gamma Ray-Neutron log of a type Langlie Mattix section within the area of the proposed unit.

#### PLAN OF DEVELOPMENT

Characteristics of the producing formation and the 40-acre spacing development in the Langlie-Mattix Area are well adapted to the 80-acre five-spot injection pattern for waterflooding. Cooperative line flooding between the Skelly Penrose "B" Unit, the Ambassador Langlie-Mattix Unit, the Humble State "M" Lease, the Skelly Penrose "A" Unit, and the Skelly Penrose "C" Unit waterfloods will facilitate secondary operations and avoid undue drainage of unitized substances around the boundaries of these units.

Completion practices, in general, will support the five-spot pattern with a minimum of re-working, for conversion of producing wells to injection wells. The largest per cent of those wells in the Skelly Penrose "B" Unit which were logged, cased, cemented, and perforated in the Penrose Section can be utilized as injection wells by expansion of the 80-acre five-spot pattern in the H. O. Sims pilot area throughout the Ambassador Langlie-Mattix Flood and the proposed Skelly Penrose "A" and "B" Units. The proposed pattern is shown on Attachment VII.

Use of the 80-acre five-spot pattern, except in the south portion of the proposed unit where the pattern may be modified to allow peripheral injection, will minimize recompletion costs and permit deferment of the expense of recompleting the plugged and abandoned wells and drilling the two undrilled locations. The advisability of these recompletions and drilling possibilities can be more definitely determined as secondary operations proceed. The diagrammatic sketches of the injection wells is shown as Attachment No. VIII.

Provision for plant equipment include three triplex pumps capable of furnishing 9,077 barrels injection water per day at 1845 psi, which is the maximum requirements of the flood. This volume approximates 275 barrels per injection well per day under full operation, and compares favorably with injection rates and

pressures noted in the pilot project nearby. Initial injection pressures at these rates are expected to be well under 1000 psi.

#### WATER SUPPLY

The Penrose "B" Unit will purchase injection water from the Skelly operated Jal Water System. The water source for the Jal Water System will be Seven Rivers and Capitan Reef water supply wells located approximately eight (8) miles southwest of the unit.

#### UNITIZATION AND PARTICIPATION

The Working Interest Owners of leases within the proposed Skelly Penrose "B" Unit have unitized their leases and selected Skelly Oil Company to be the Unit Operator. The effective date of the unit was July 1, 1965.

The participation formula that was used as an equitable method of determining participation in the unit is as follows:

Phase I: 50% Current Production (1-1-63 to 4-1-63) plus  
50% Remaining Primary Recovery @ 4-1-63

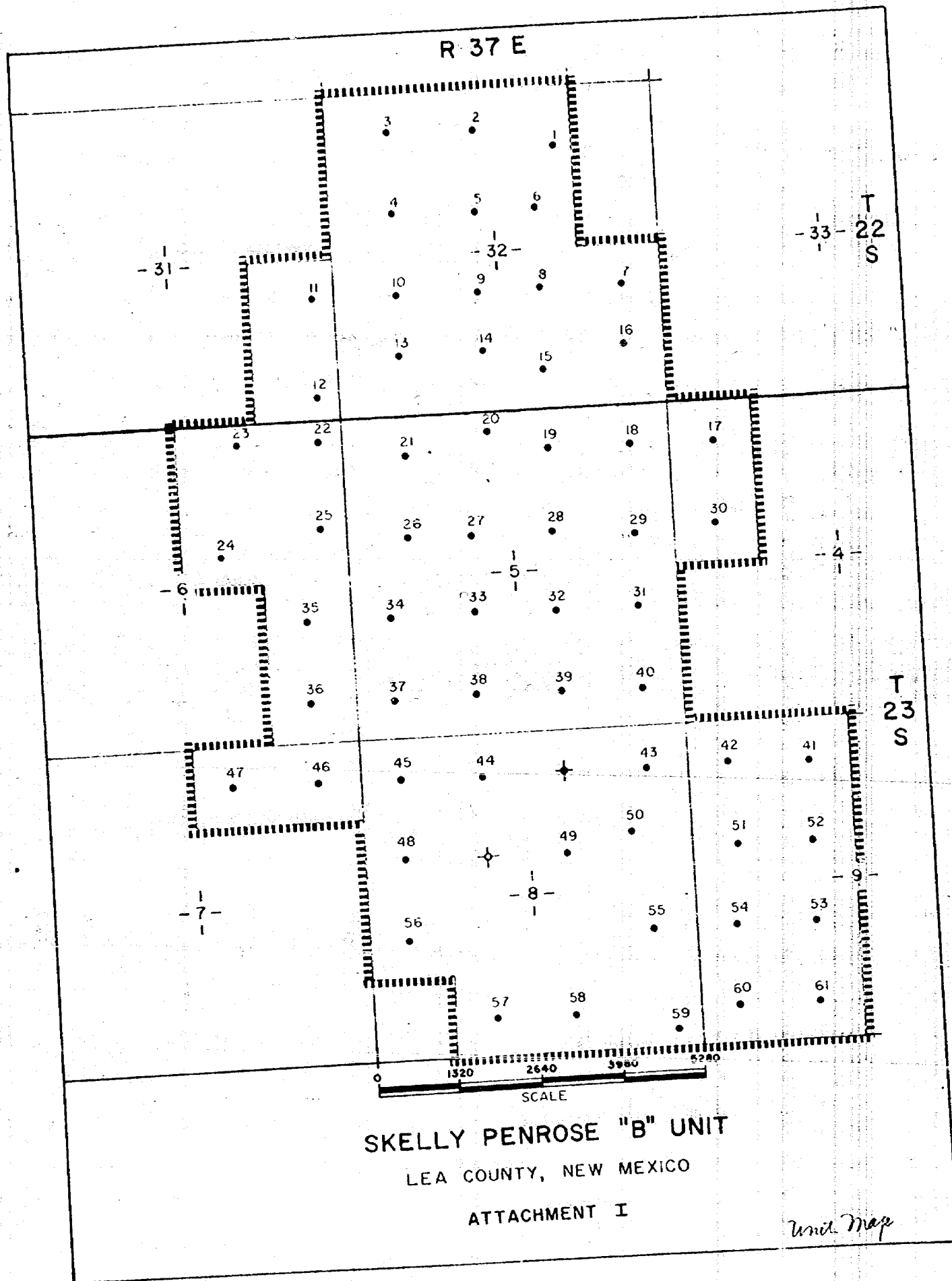
Phase II: 100% Ultimate Primary Recovery

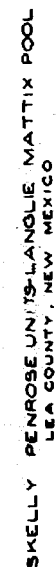
Phase I is to remain in effect until a total of 167,382 barrels of oil have been produced from the original Unit Area from and after May 1, 1965. Phase II will remain in effect thereafter.

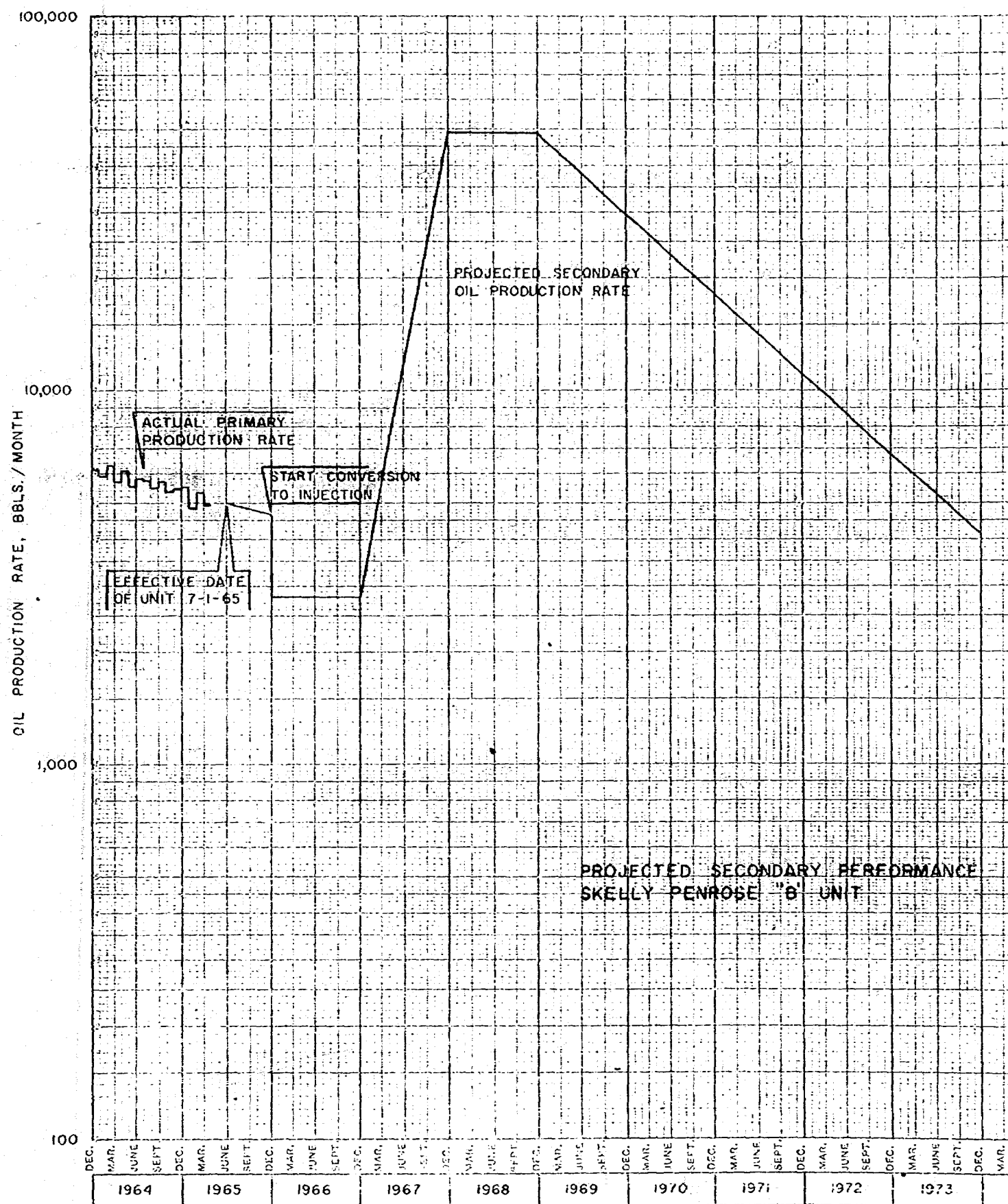


LIST OF ATTACHMENTS

<u>Attachment No.</u>	<u>Title</u>
I	Penrose "B" Unit Map
II	Map of Pilot Waterflood Area
III	Map of Skelly Penrose "B" Unit Area
IV	Projected Secondary Performance
V	Structure Map of Queen Sand
VI	Typical log of Langlie-Mattix Section
VII	Injection Pattern
VIII	Diagrammatic Sketch of Injection Wells

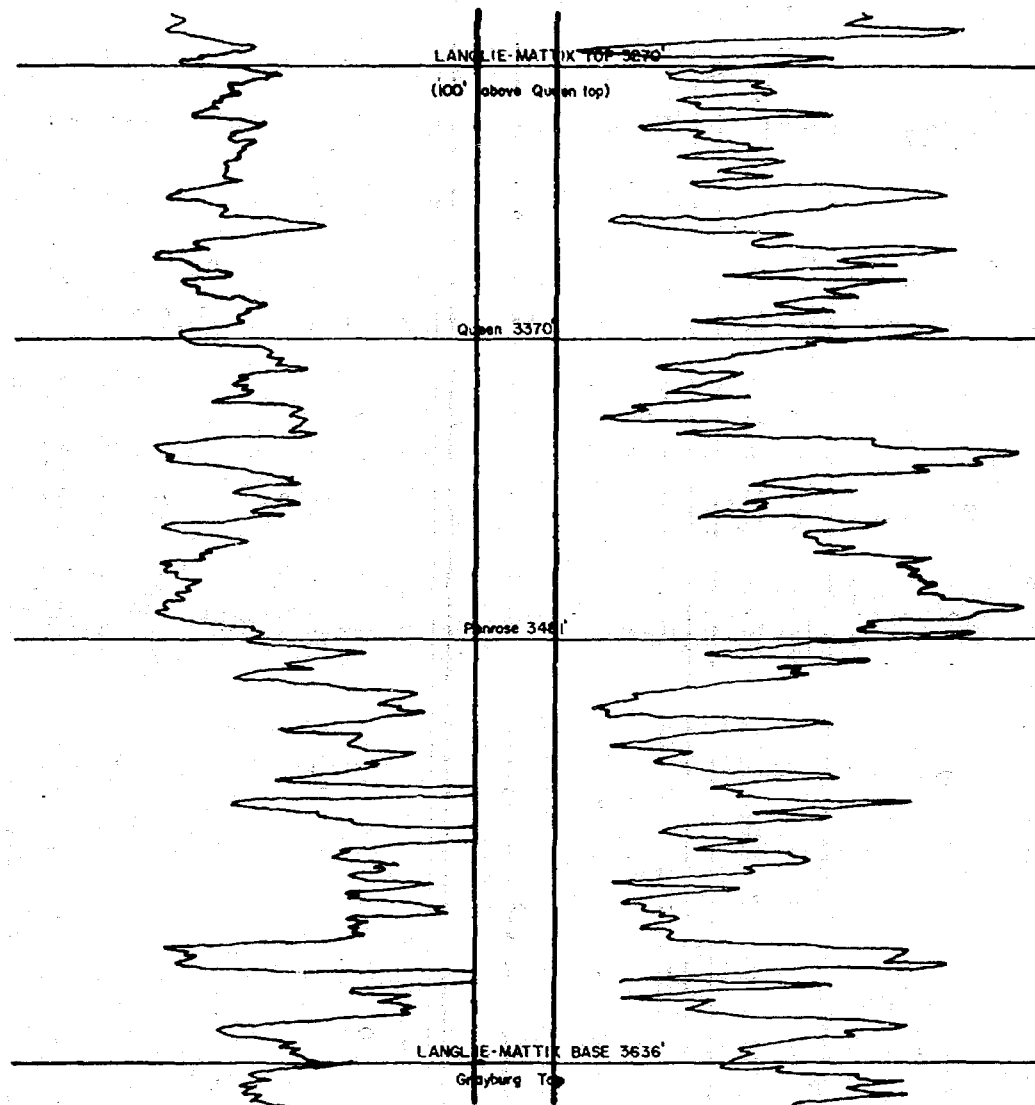


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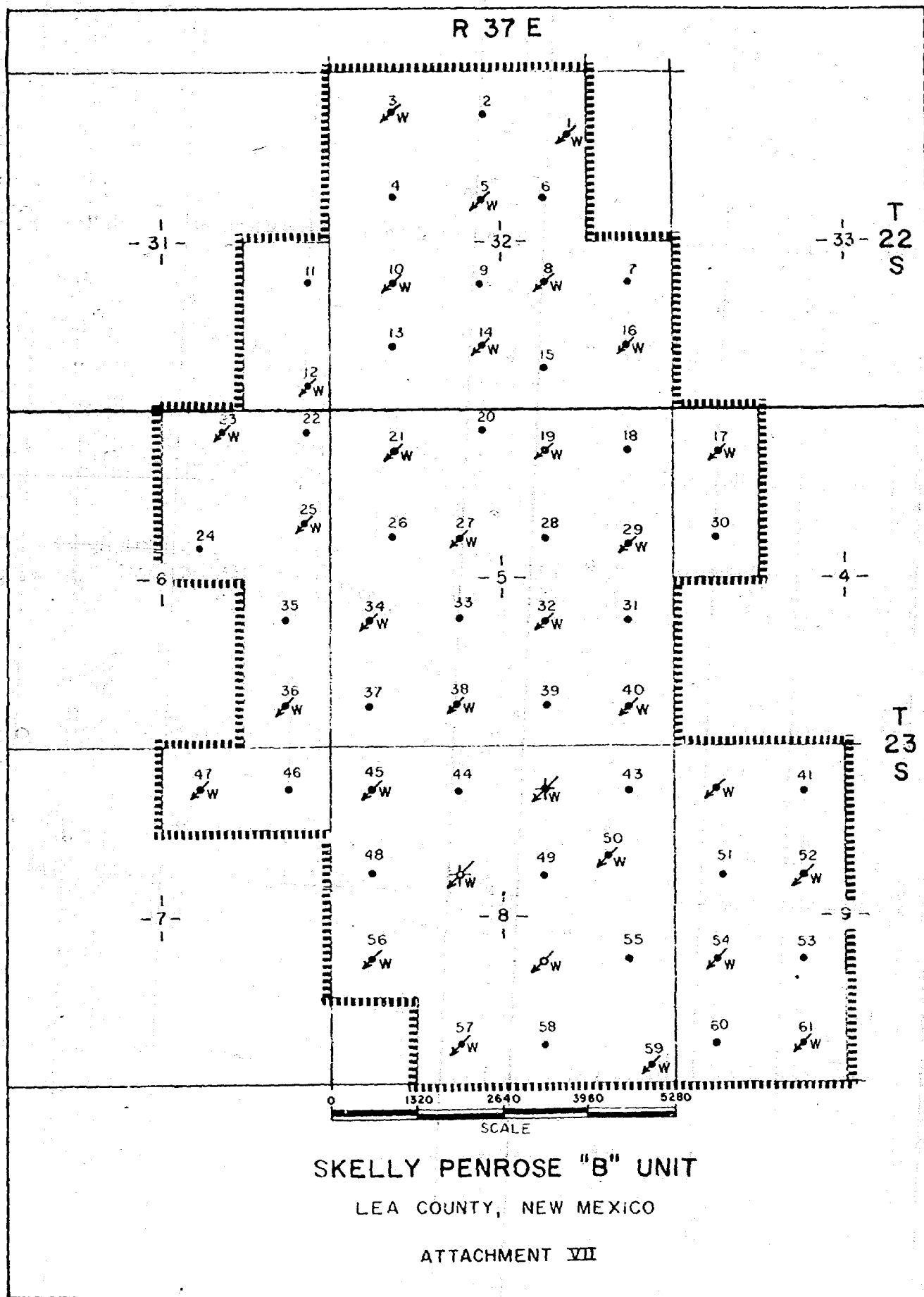




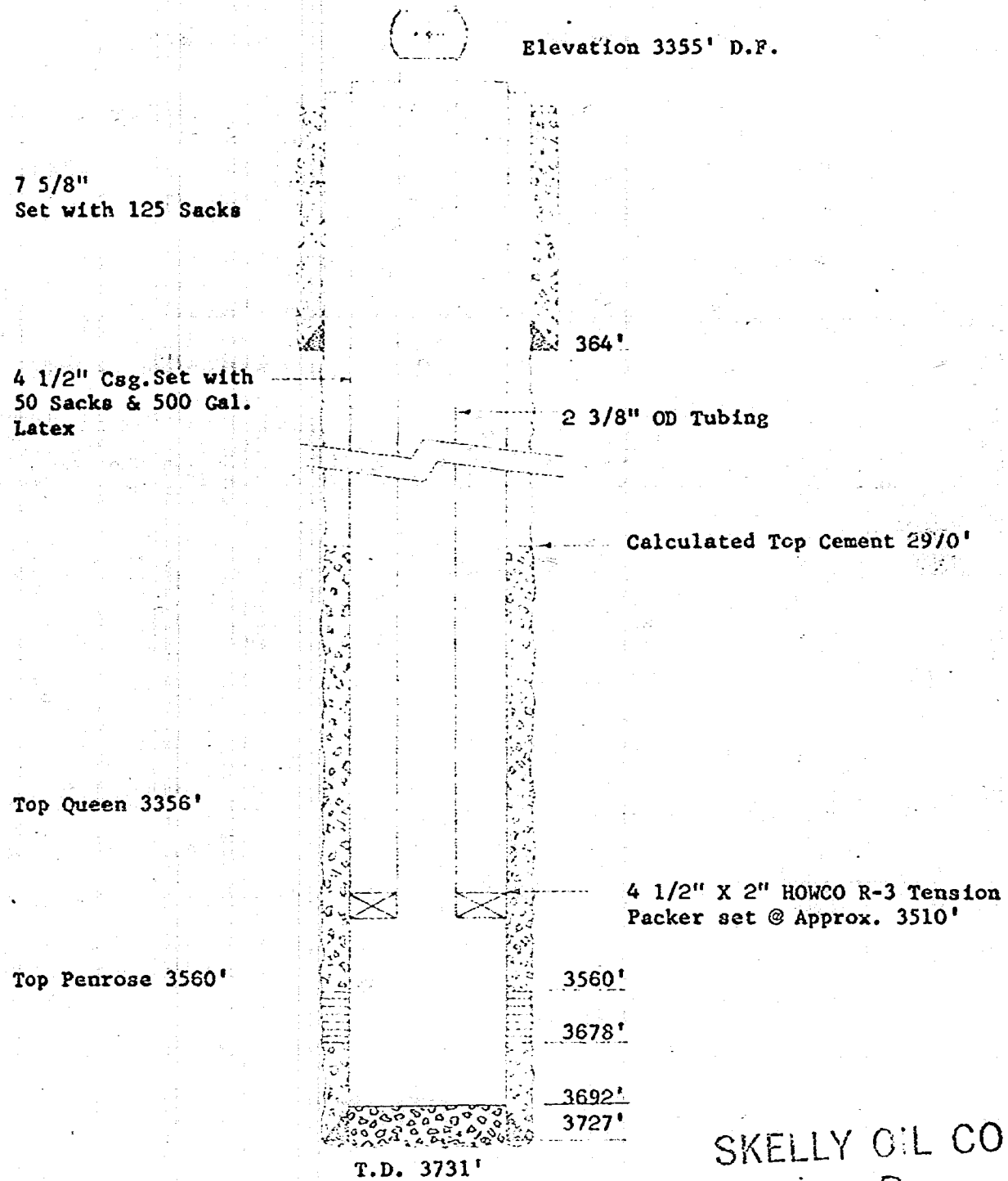
ATTACHMENT VI



TYPE LOG LANGLIE-MATTIX SECTION  
SKELLY HARRISON "B" NO. 10



Operators Service Co.  
Cole - State No. 1  
990' FNL & 1650' FEL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 1



SKELLY OIL CO.  
EXHIBIT NO. B



Compass Exploration, Inc.  
State No. 4 - 32  
660' FNL & 990' FWL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 3

Elevation 3373' D.F.

8 5/8" Csg.  
Set with 175 Sacks

310'

5 1/2" Csg.  
Set with 250 Sacks

2 3/8" OD Tbg.

Calculated Top Cement 2705'

Top Queen 3476'

5 1/2" X 2" HOWCO R-3 Tension  
Packer Set @ Approx. 3544'

Top Penrose 3594'

3594'

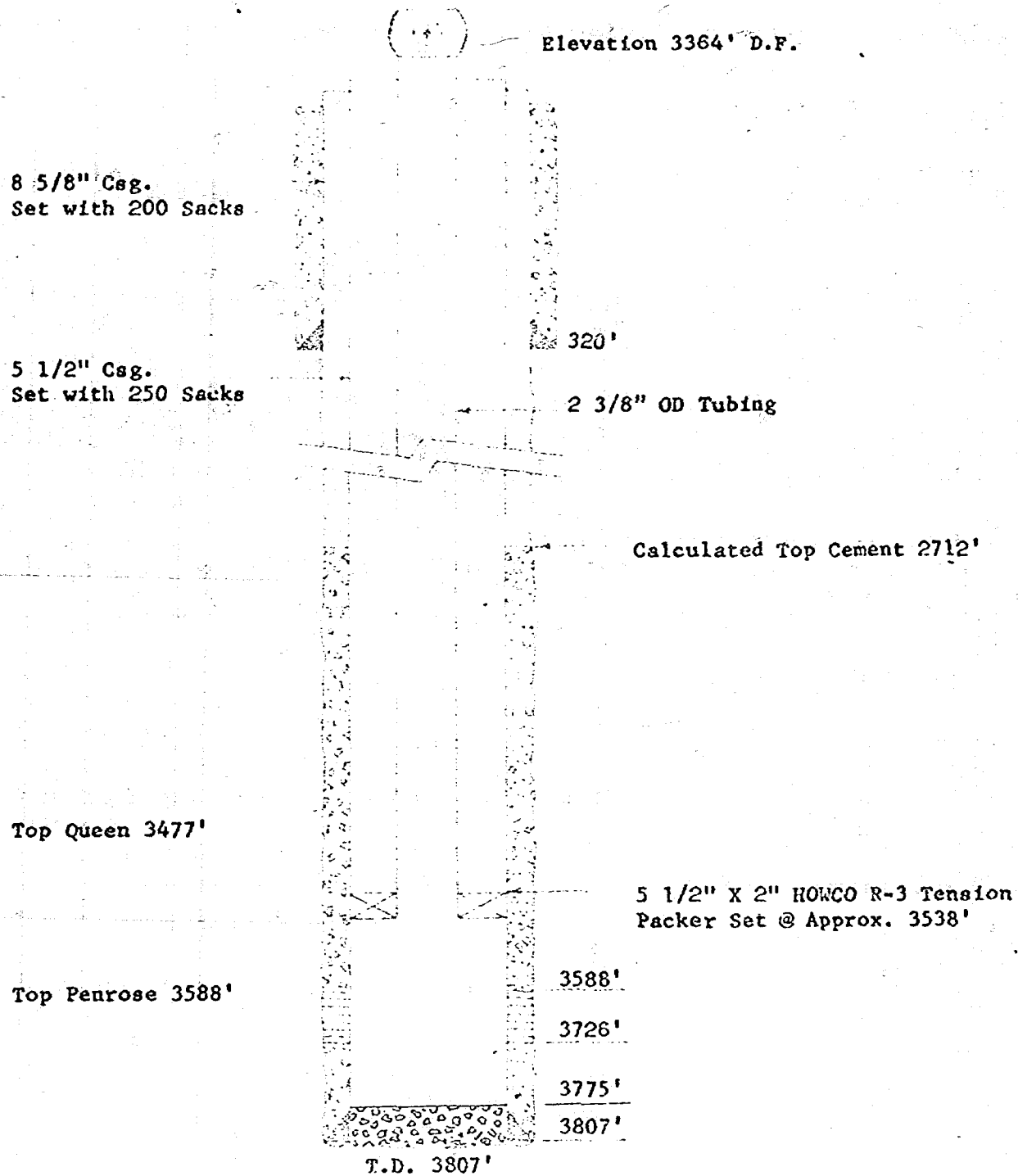
3709'

3768'

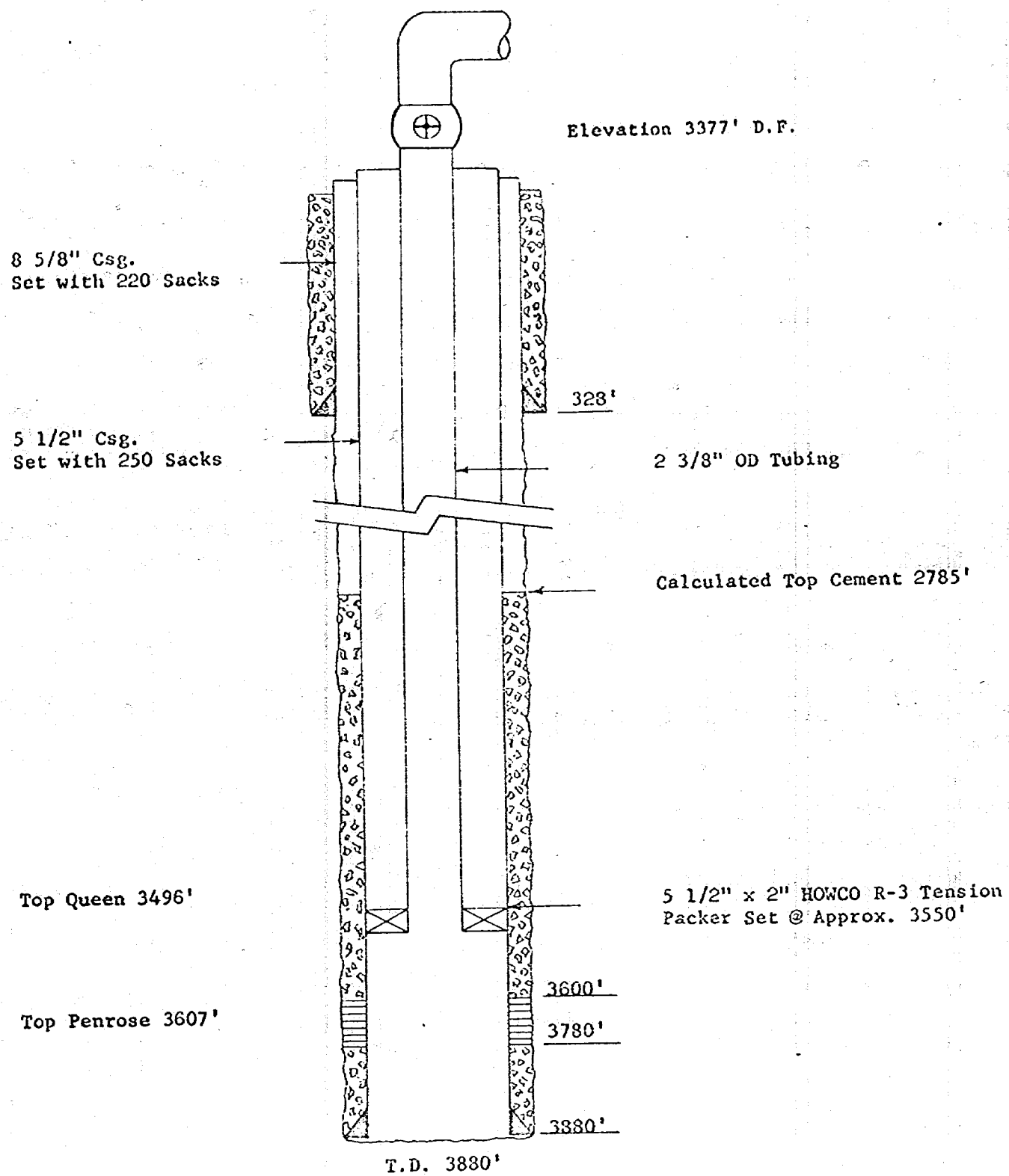
3800'

T.D. 3800'

Compass Exploration, Inc.  
State No. 1 - 32  
1980' FNL & 2310' FWL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 5



Oscar Bourg Drilling Company  
King No. 3  
1980' FSL & 1980' FEL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 8



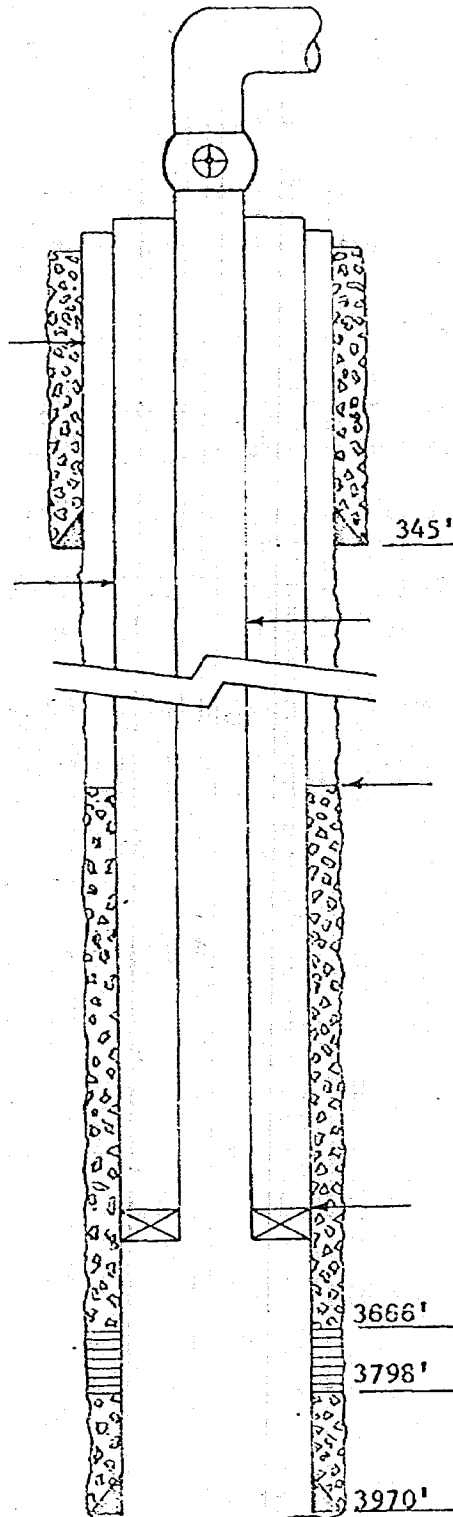
Oscar Bourg Drilling Company  
 State No. 3  
 1980' FSL & 990' FWL Section 32, T22S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 10

8 5/8" Csg.  
 Set with 250 Sacks

5 1/2" Csg.  
 Set with 250 Sacks

Top Queen 3546'

Top Penrose 3653'



Elevation 3577' D.F.

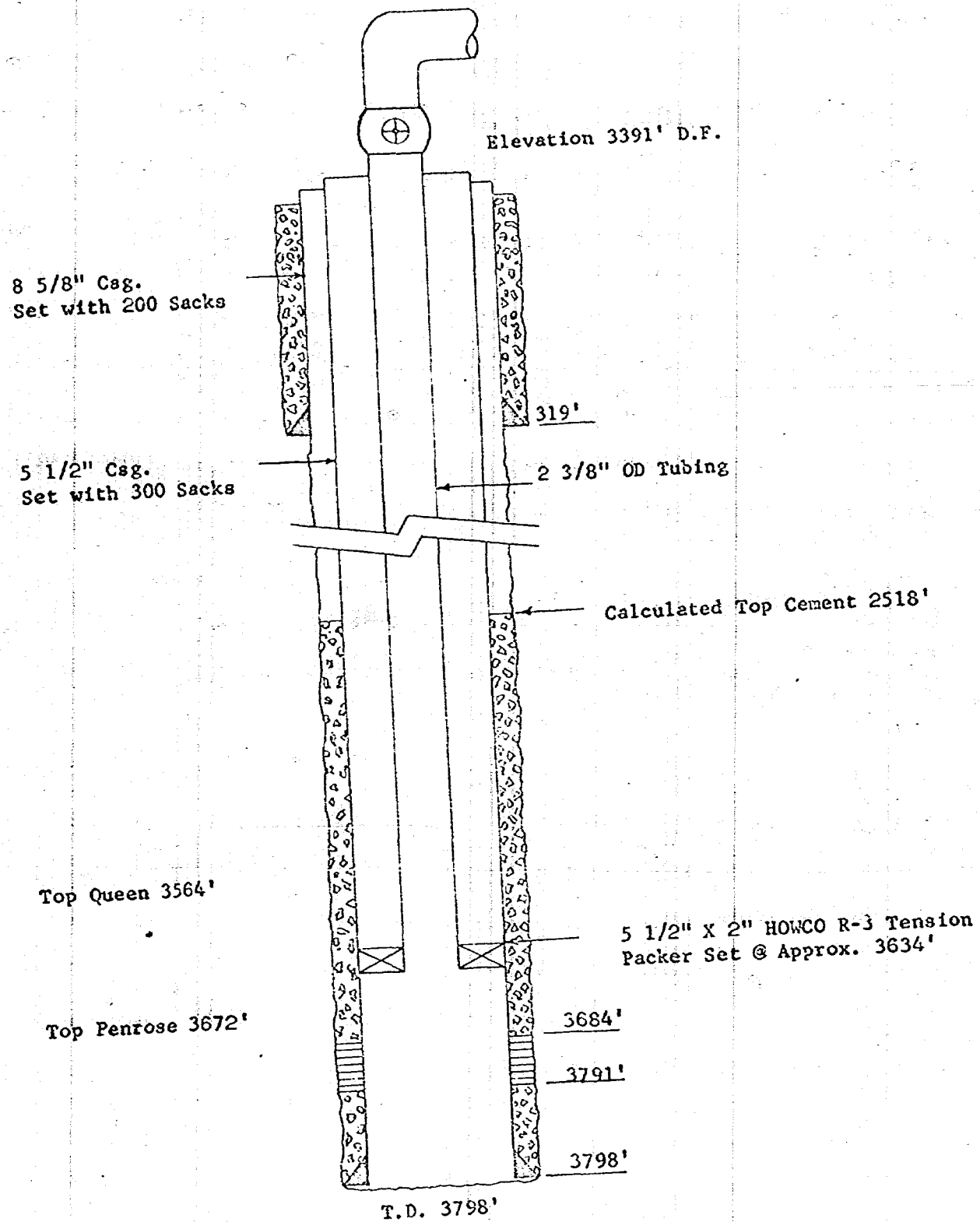
2 3/8" OD Tubing

Calculated Top Cement 2875'

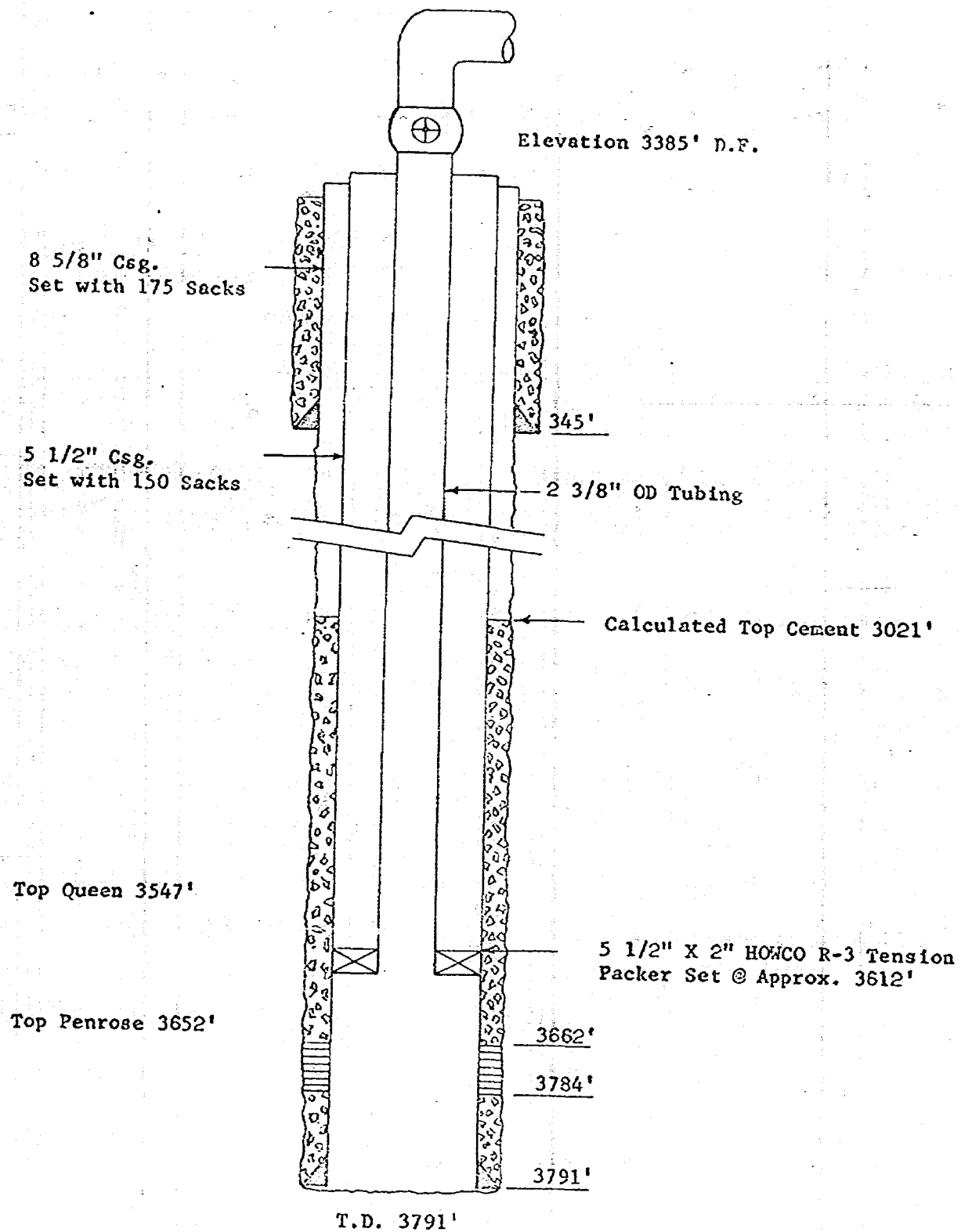
5 1/2" x 2" HOKCO R-3 Tension  
 Packer Set @ Approx. 3616'

T.D. 3971'

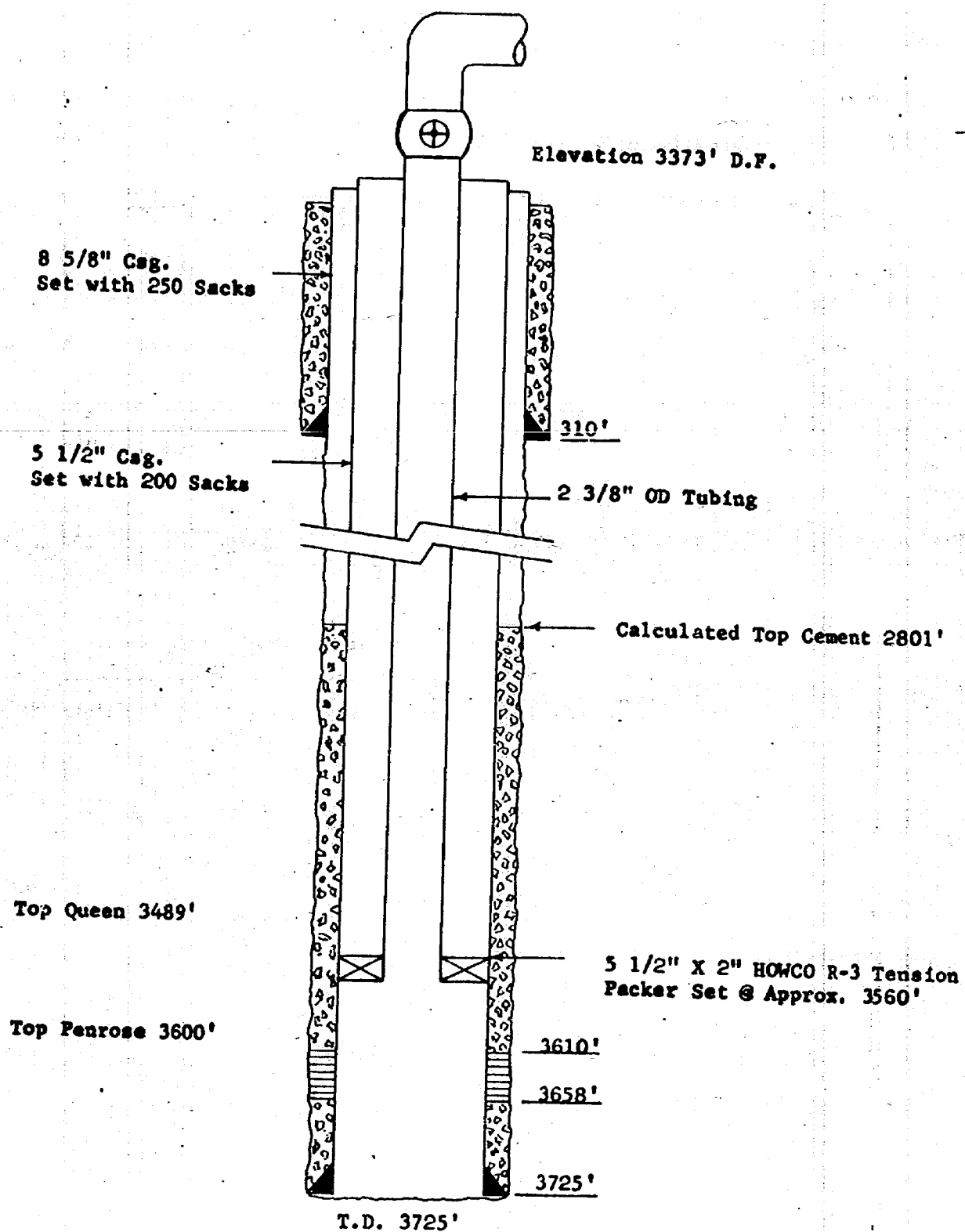
Dalport Oil Corporation  
 E. F. King "A" No. 1  
 330' FSL & 330' FEL Section 31, T22S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 12



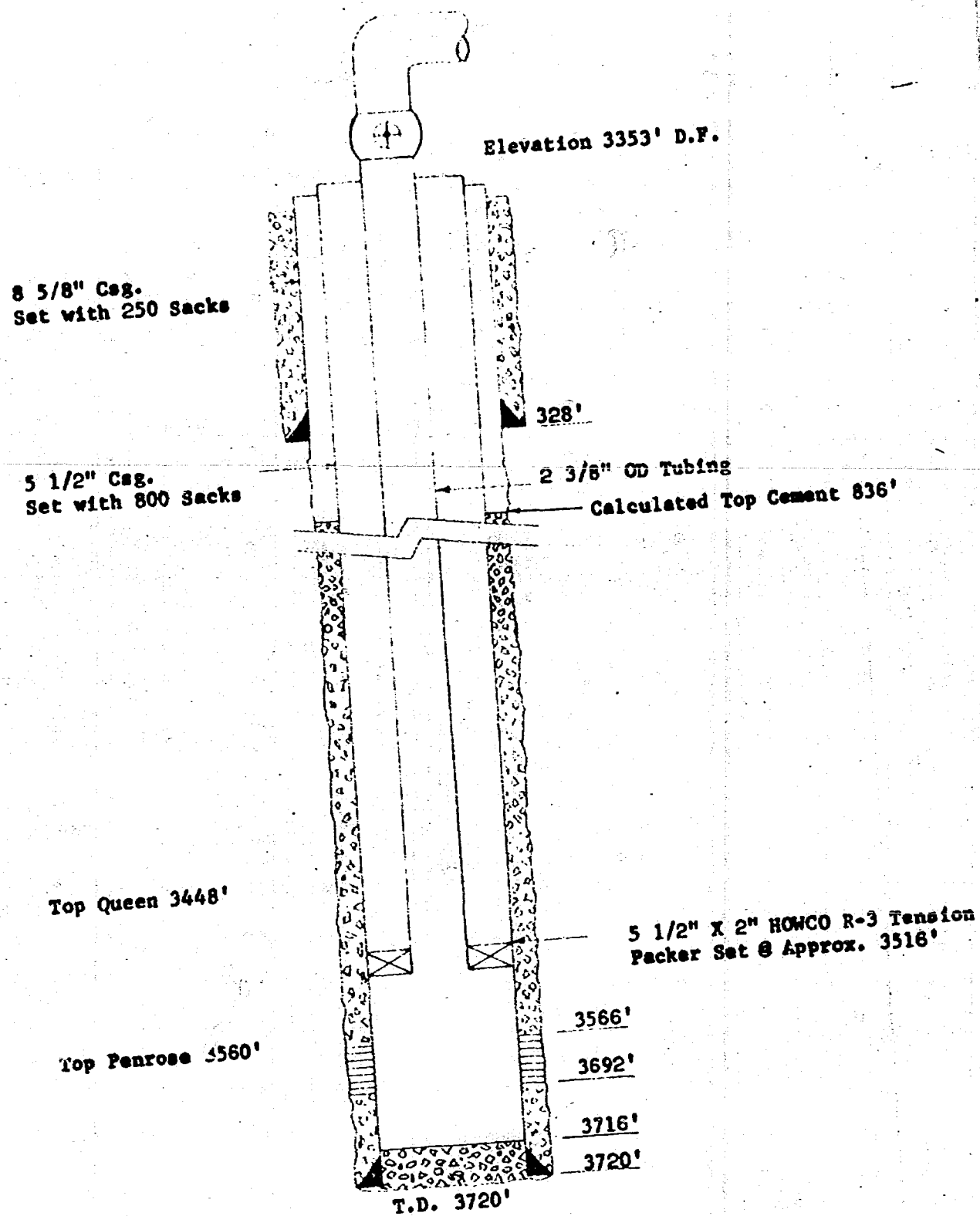
Bourg Drilling Co.  
State No. 1  
2310' FWL & 990' FSL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 14



Bourg Drilling Co.  
King No. 2  
990' FSL & 660' FEL Section 32, T22S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 16

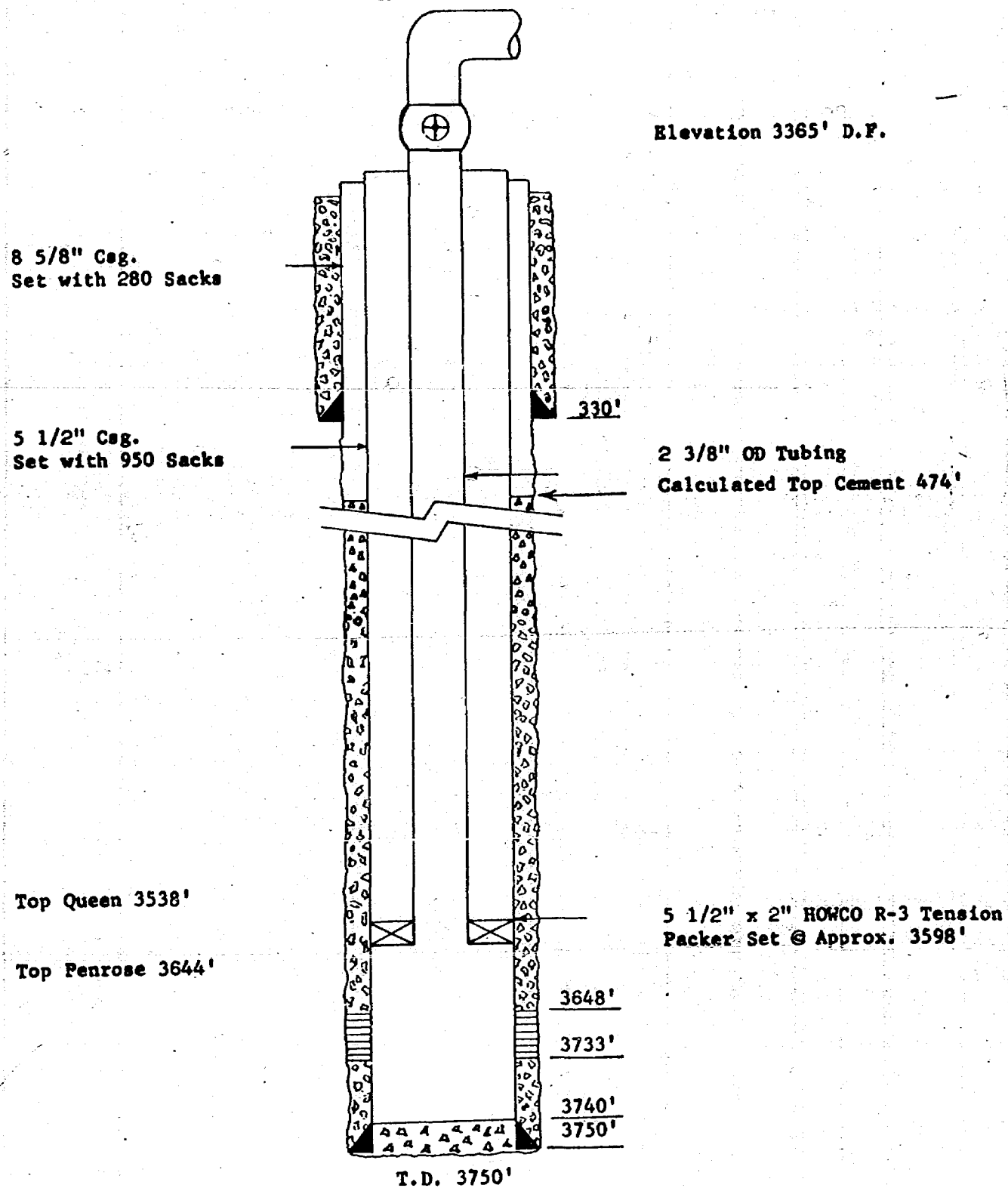


Ralph Lowe  
E. F. King No. 4  
660' FN & WL Section 4, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 17





Ralph Lowe  
E. F. King No. 5  
660' FNL & 1980' FEL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 19



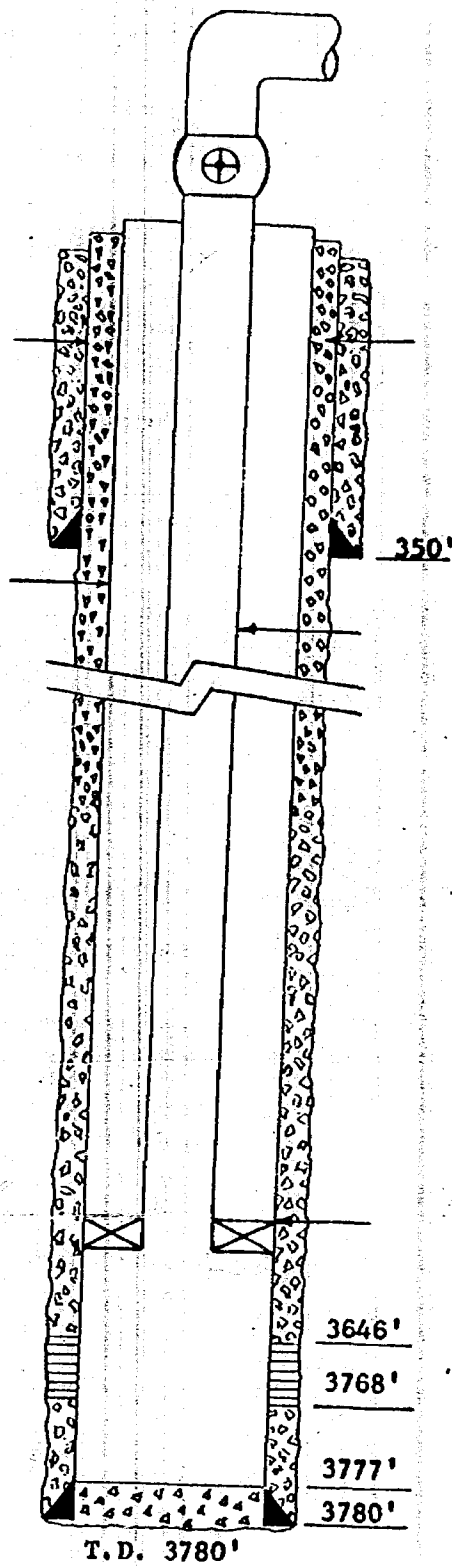
Ralph Lowe  
 King "B" No. 3  
 660' PNL & 990' FWL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 21

8 5/8" Csg.  
 Set with 200 Sacks

5 1/2" Csg.  
 Set with 1300 Sacks

Top Queen 3536'

Top Penrose 3640'



Elevation 3367 D.F.

Cement Circulated

2 3/8" OD Tubing

5 1/2" x 2" HOWCO R-3 Tension  
 Packer Set @ Approx. 3596'

3646'

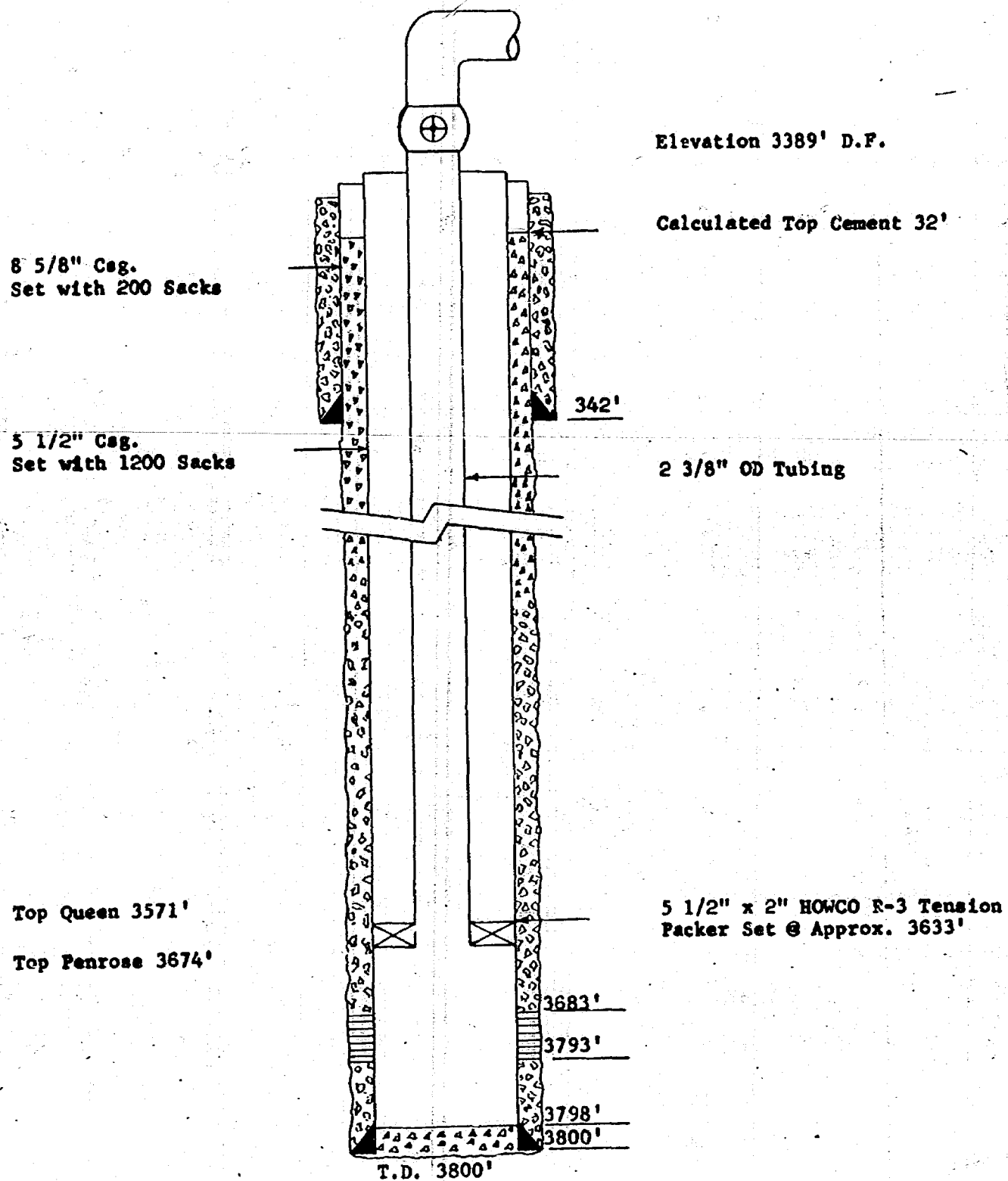
3768'

3777'

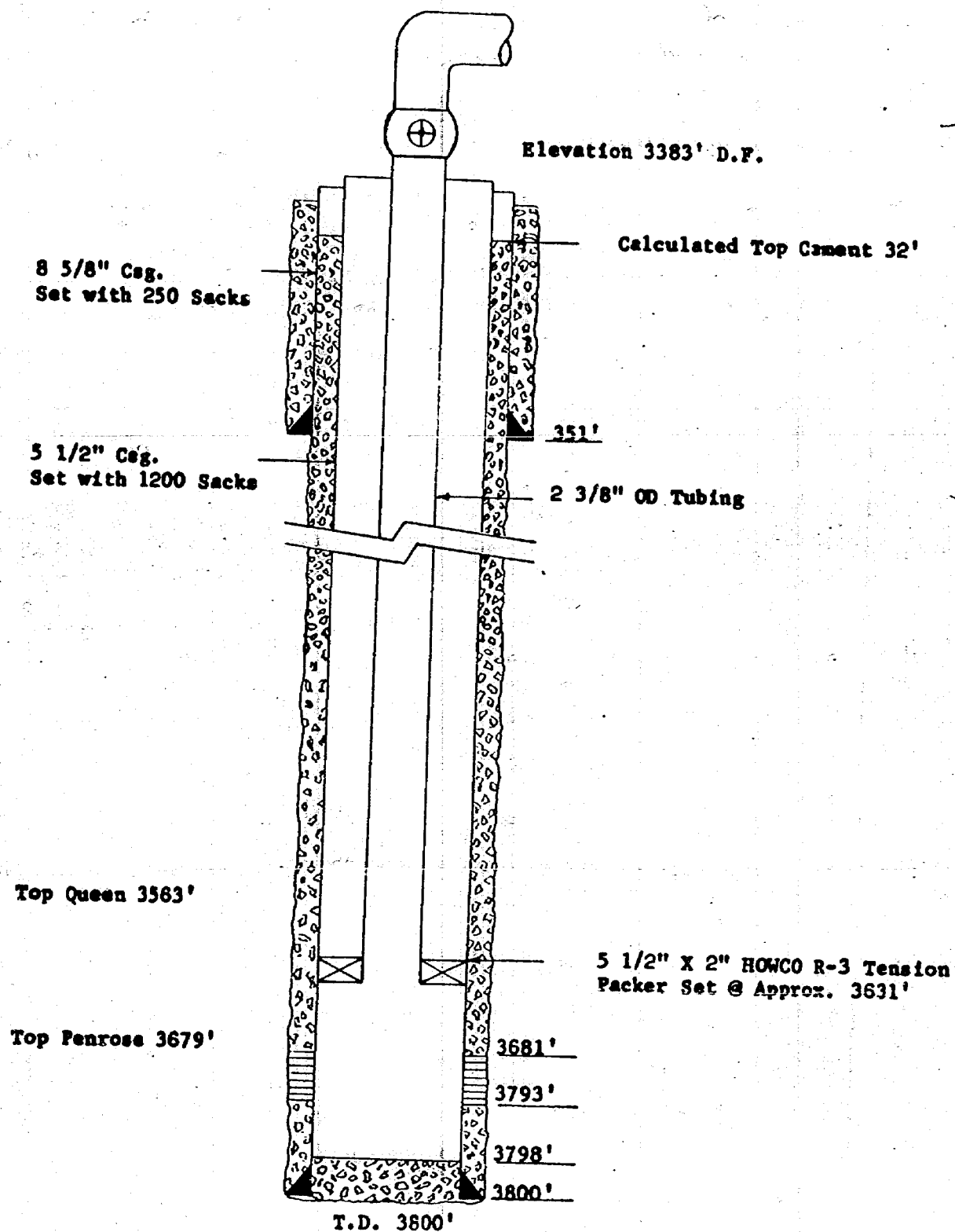
3780'

T.D. 3780'

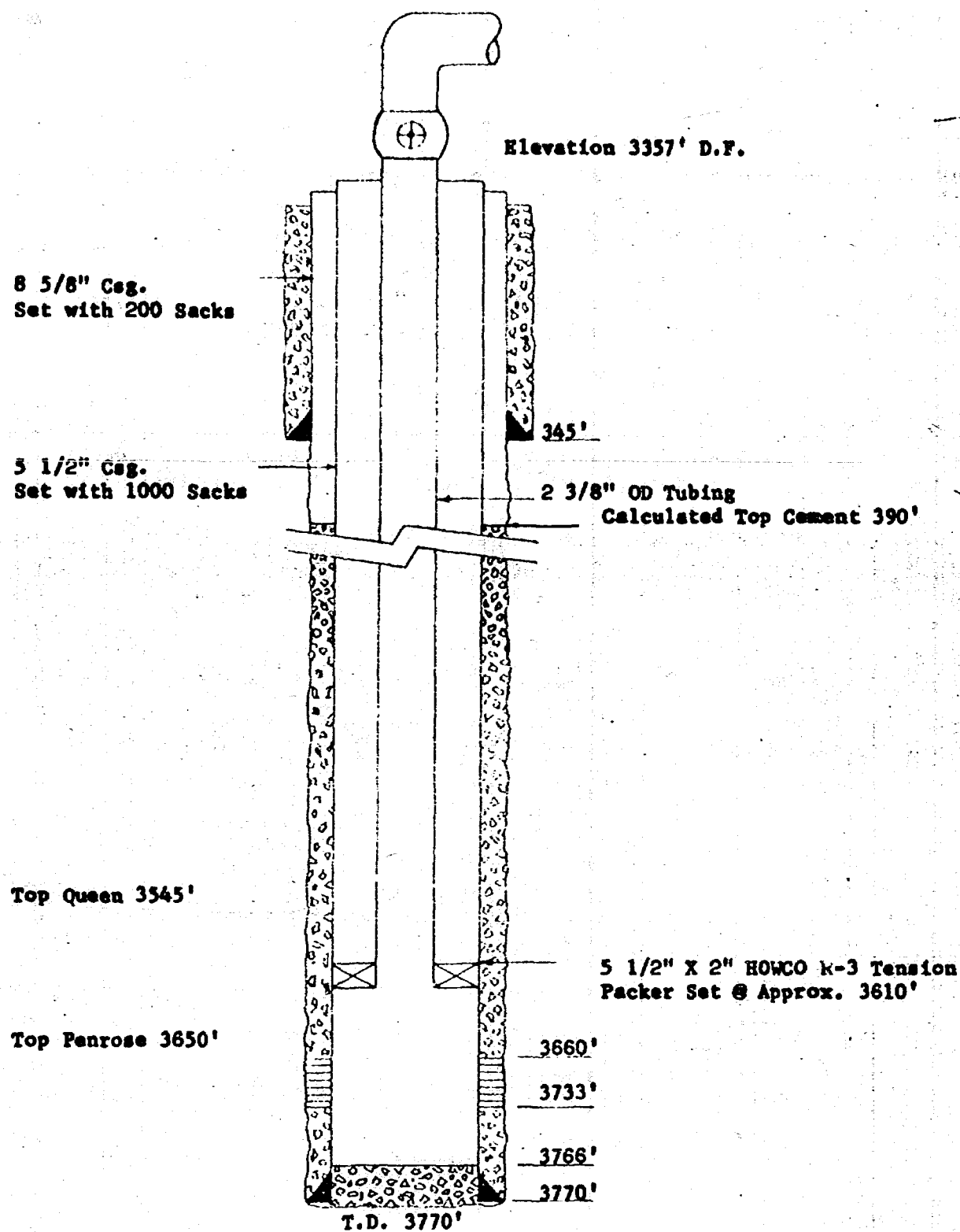
Ralph Lowe  
King "B" No. 7  
330' FNL & 1650' FEL Section 6, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well - - - - -  
Skelly Penrose "B" Unit Well No. 23



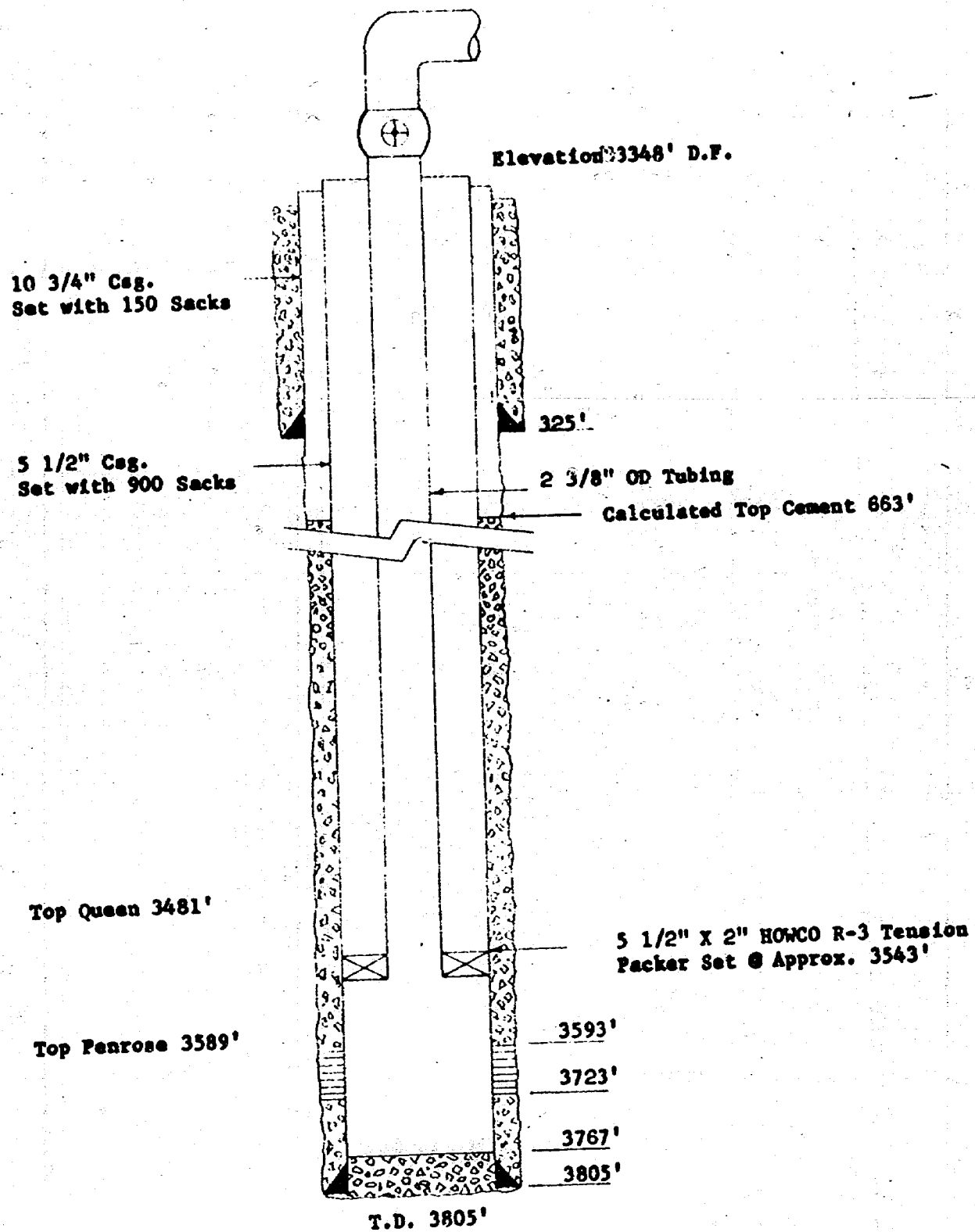
Ralph Lowe  
King "B" No. 6  
1788' FNL & 330' FEL Section 6, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 25



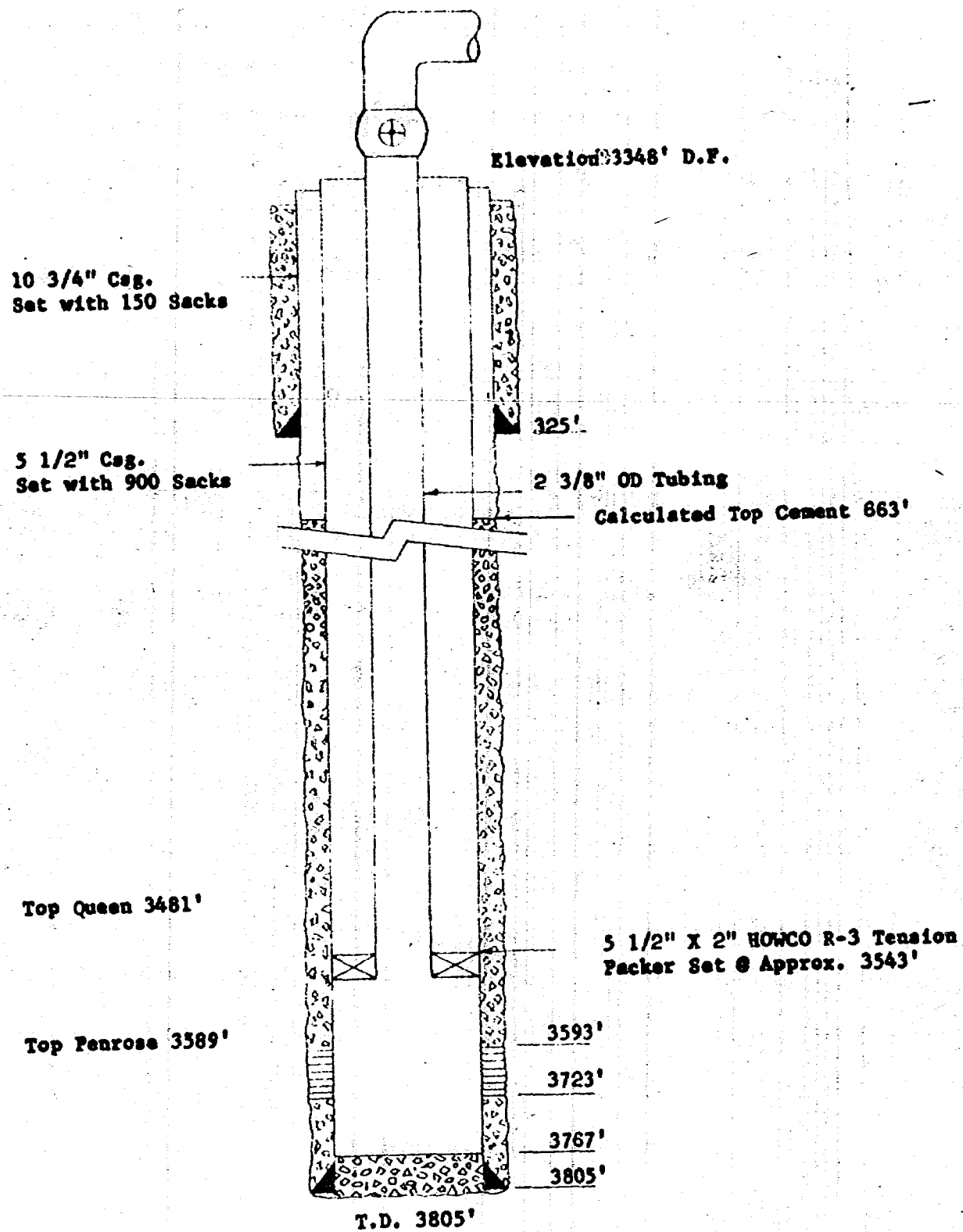
Ralph Lowe  
 King "B" No. 1  
 1980' FNL & 1980' FWL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 27



Ralph Lowe  
E. F. King No. 2  
2112 FNL & 660' FEL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 29



Ralph Lowe  
E. F. King No. 2  
2112 FNL & 660' FEL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 29



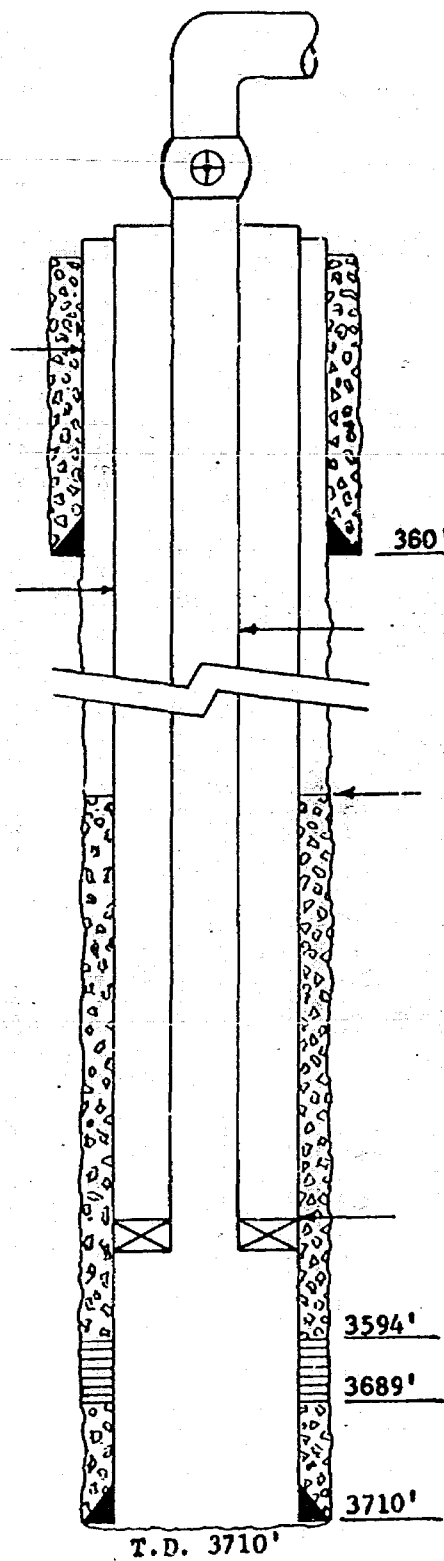
Skelly Oil Company  
Harrison "B" No. 4  
1980' FSL & 1980' FEL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 32

8 5/8" Csg.  
Set with 250 Sacks

5 1/2" Csg.  
Set with 200 Sacks

Top Queen 3479'

Top Penrose 3582'



Elevation 3345' D.F.

360'

2 3/8" OD Tubing

Top Cement 2569'

5 1/2" x 2" HOWCO R-3 Tension  
Packer Set @ Approx. 3544'

3594'

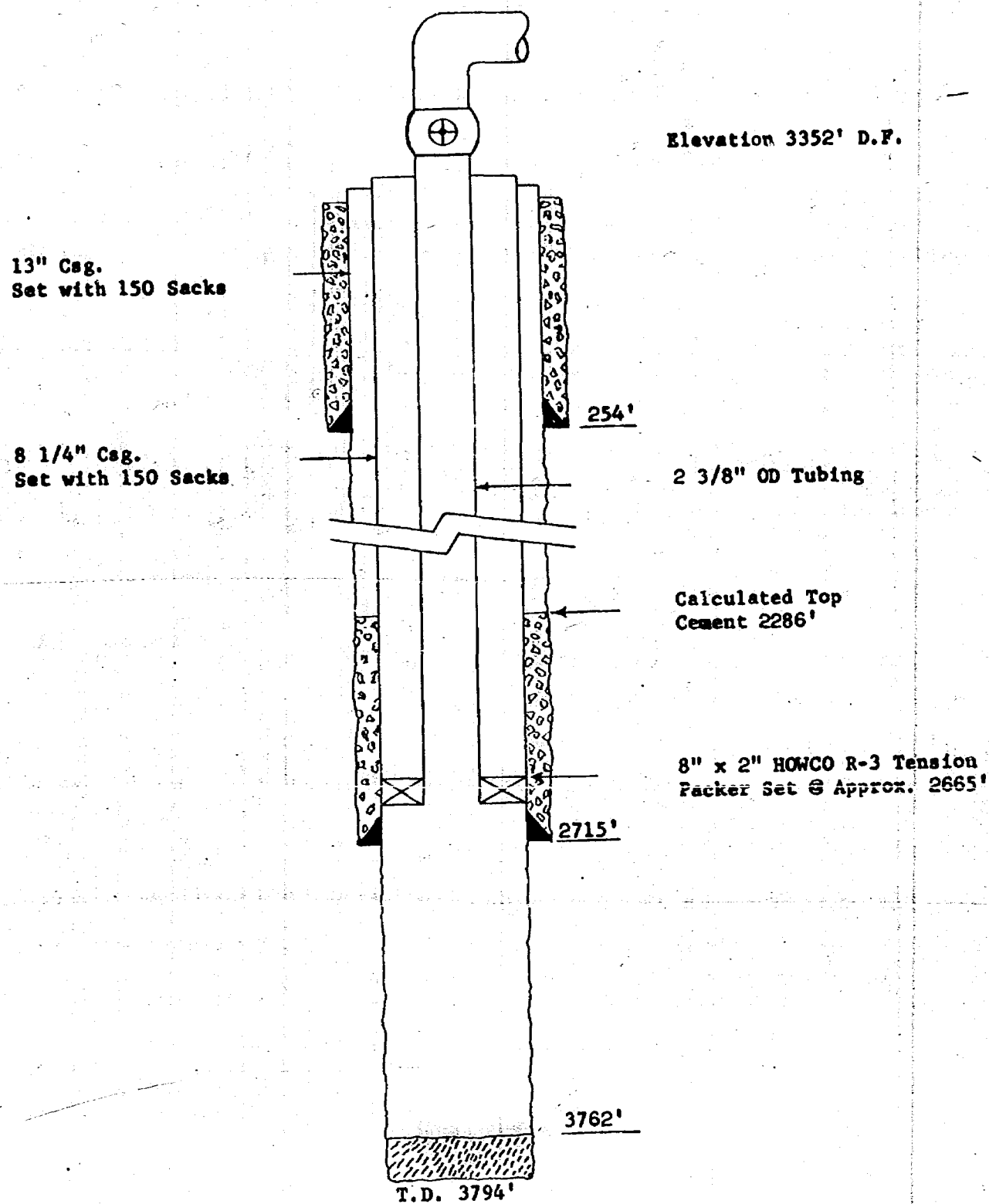
3689'

3710'

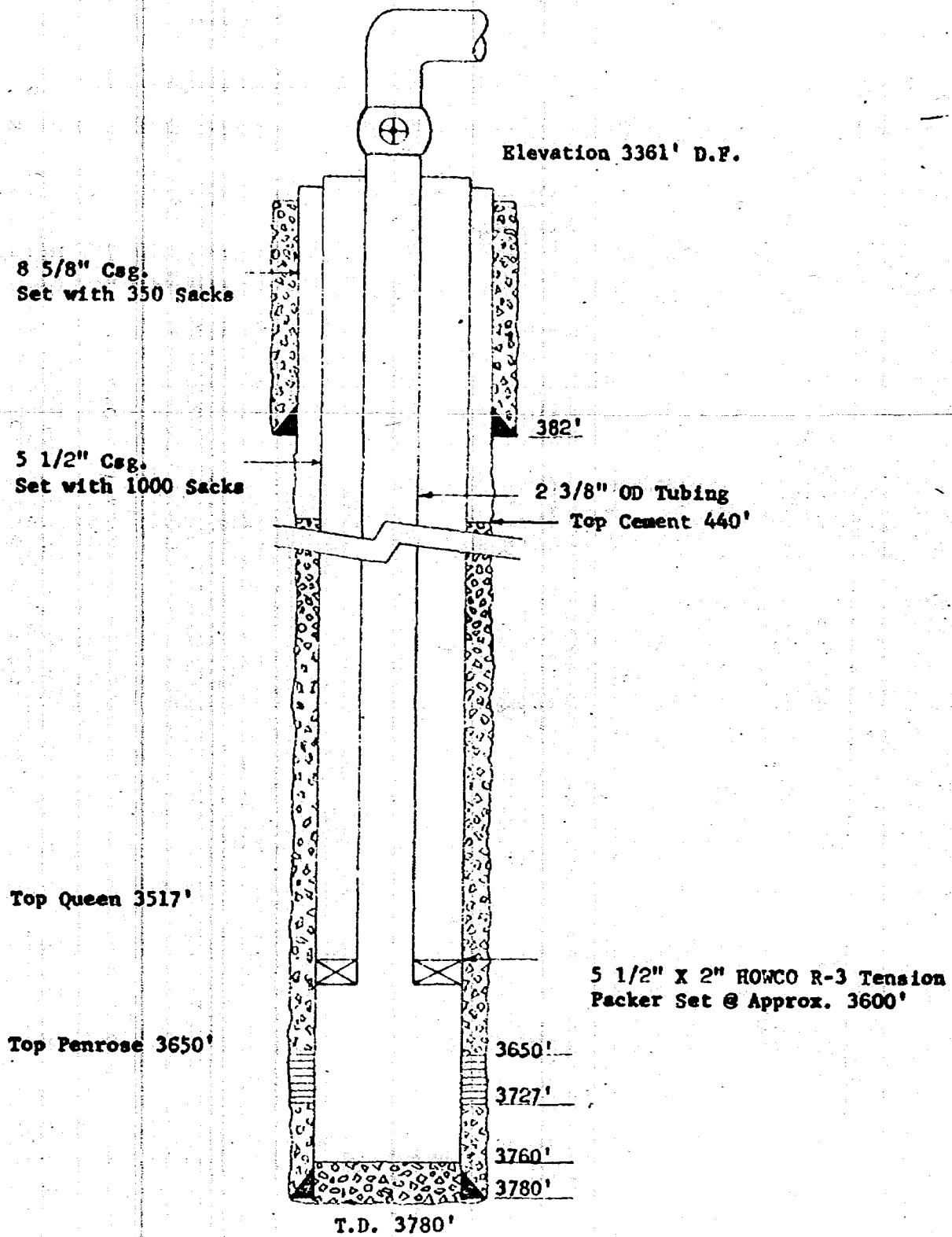
T.D. 3710'



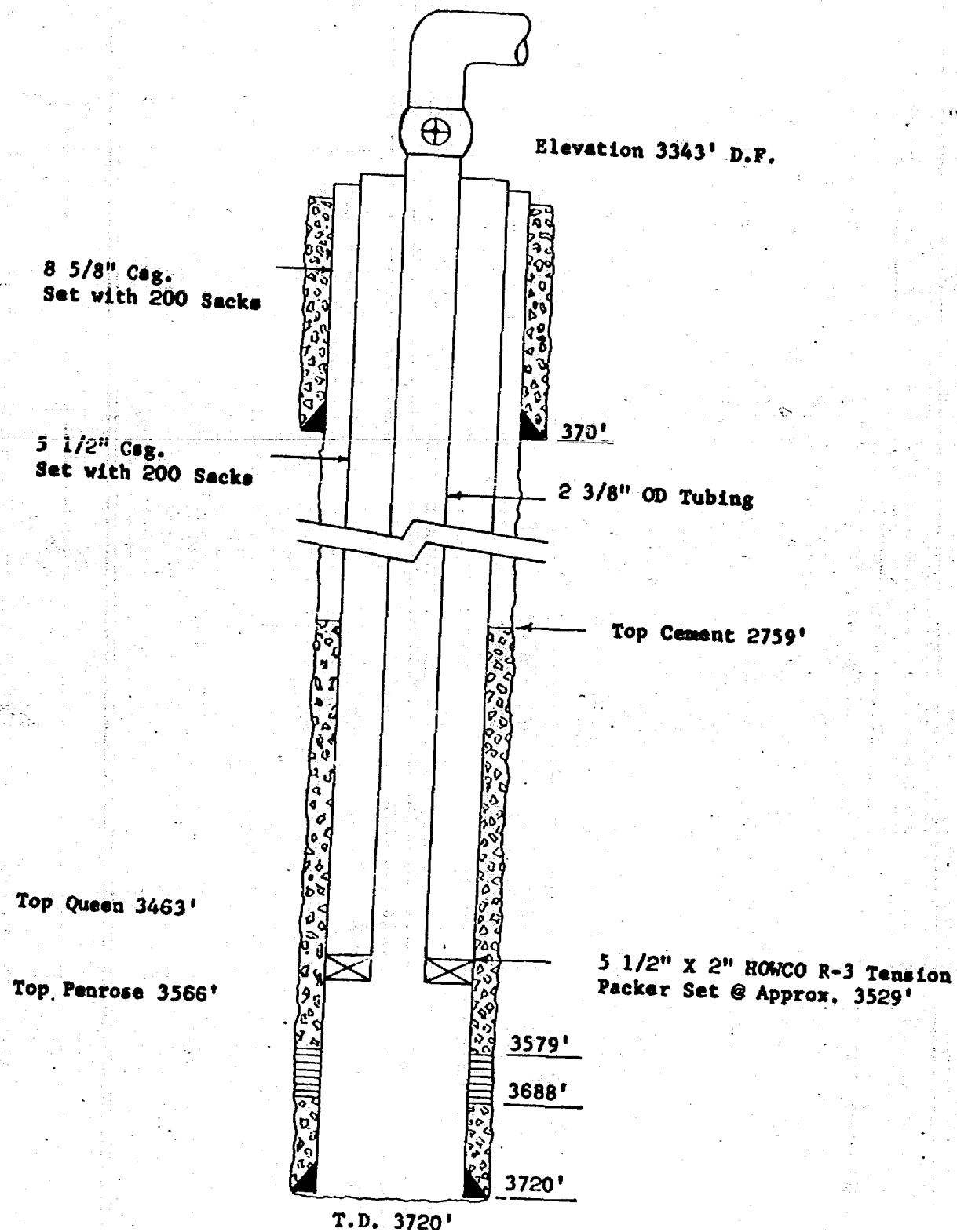
Skelly Oil Company  
Harrison "A" No. 1  
1980' FSL & 660' FWL Section 5, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 34



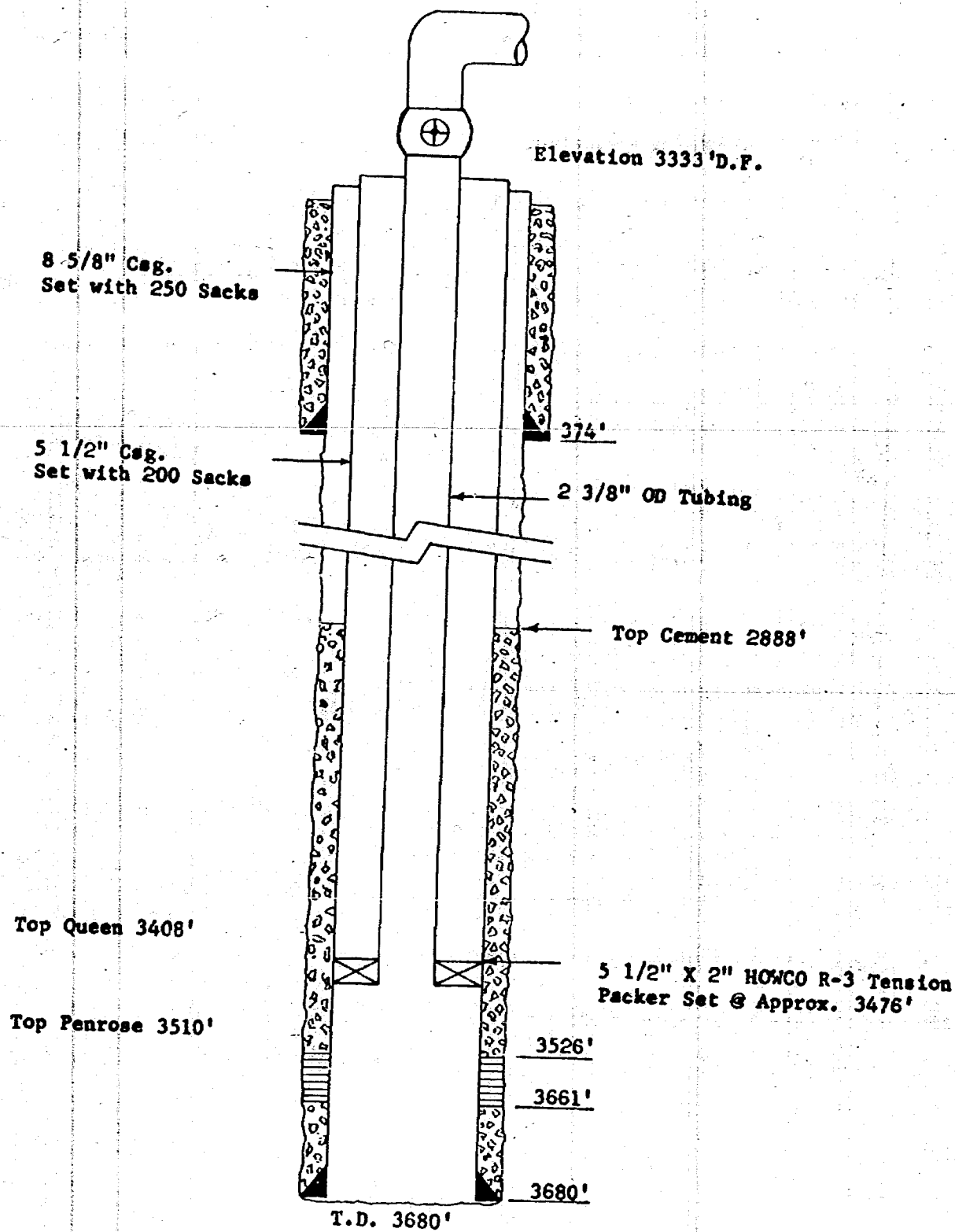
Sun Oil Company  
 Richards No. 3  
 660' FSL & 660' FEL Section 6, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 36



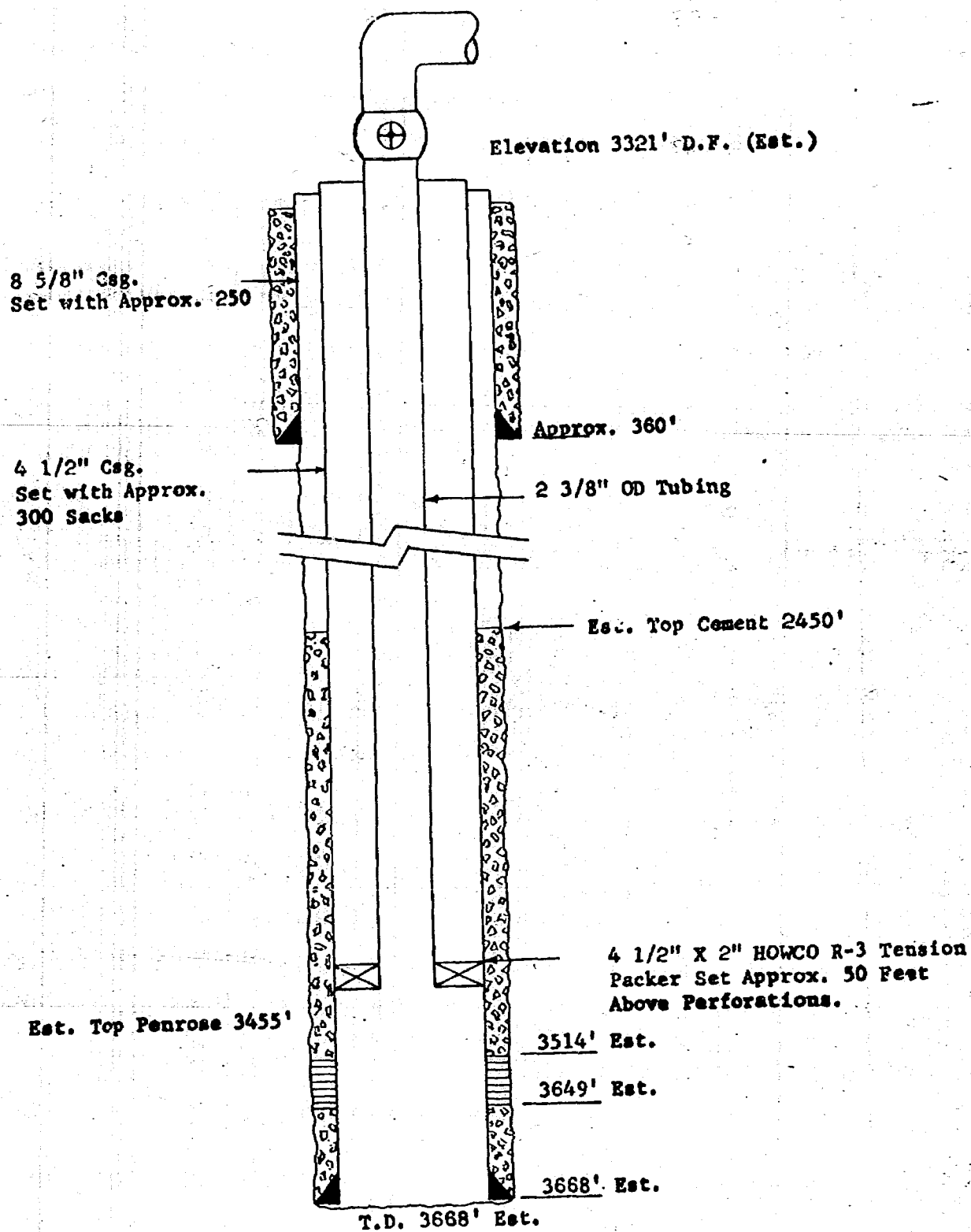
Skelly Oil Company  
 Harrison "A" No. 3  
 660' FSL & 1980' FWL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 38



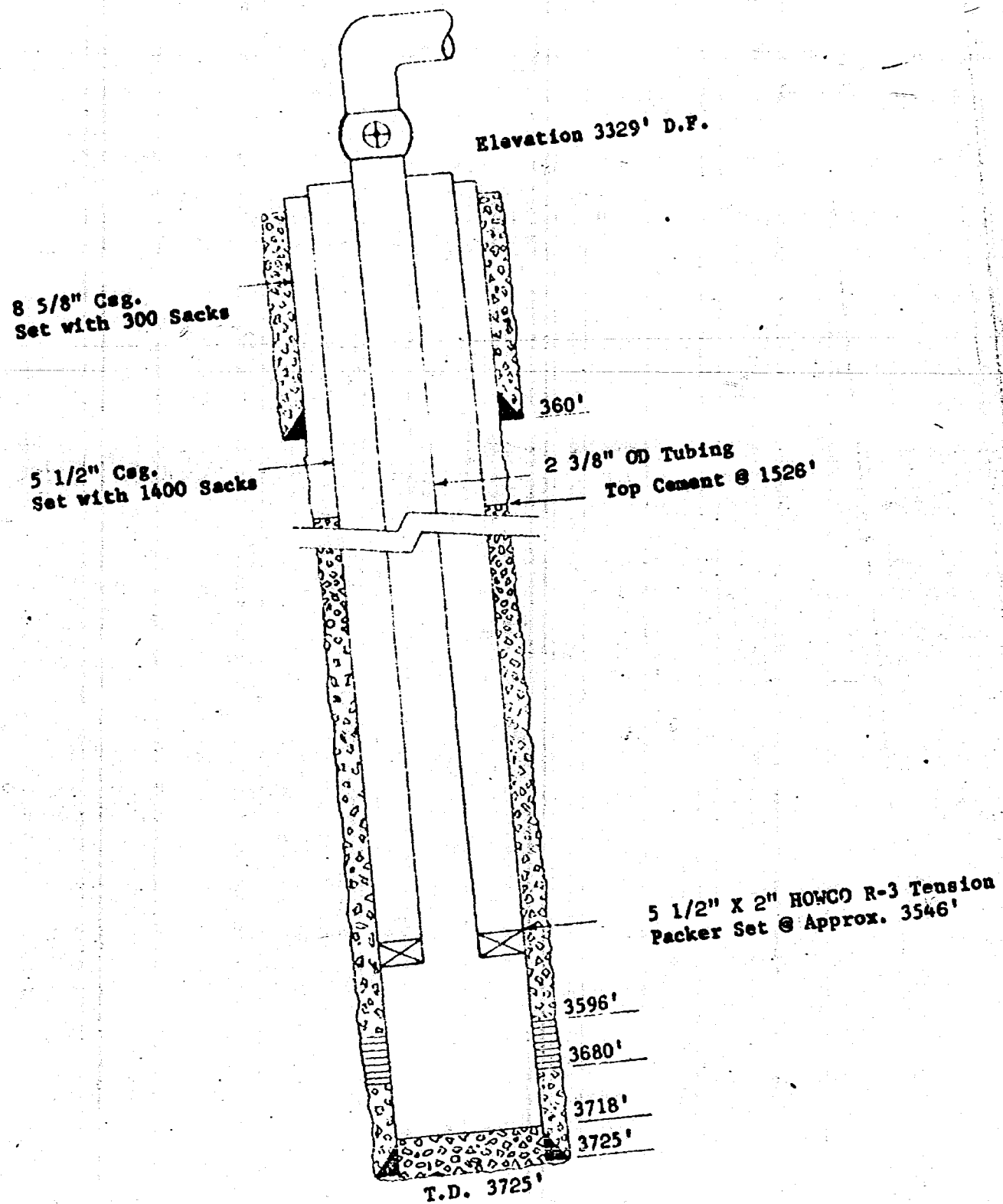
Skelly Oil Company  
 Harrison "B" No. 6  
 660' FSL & 660' FEL Section 5, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 40



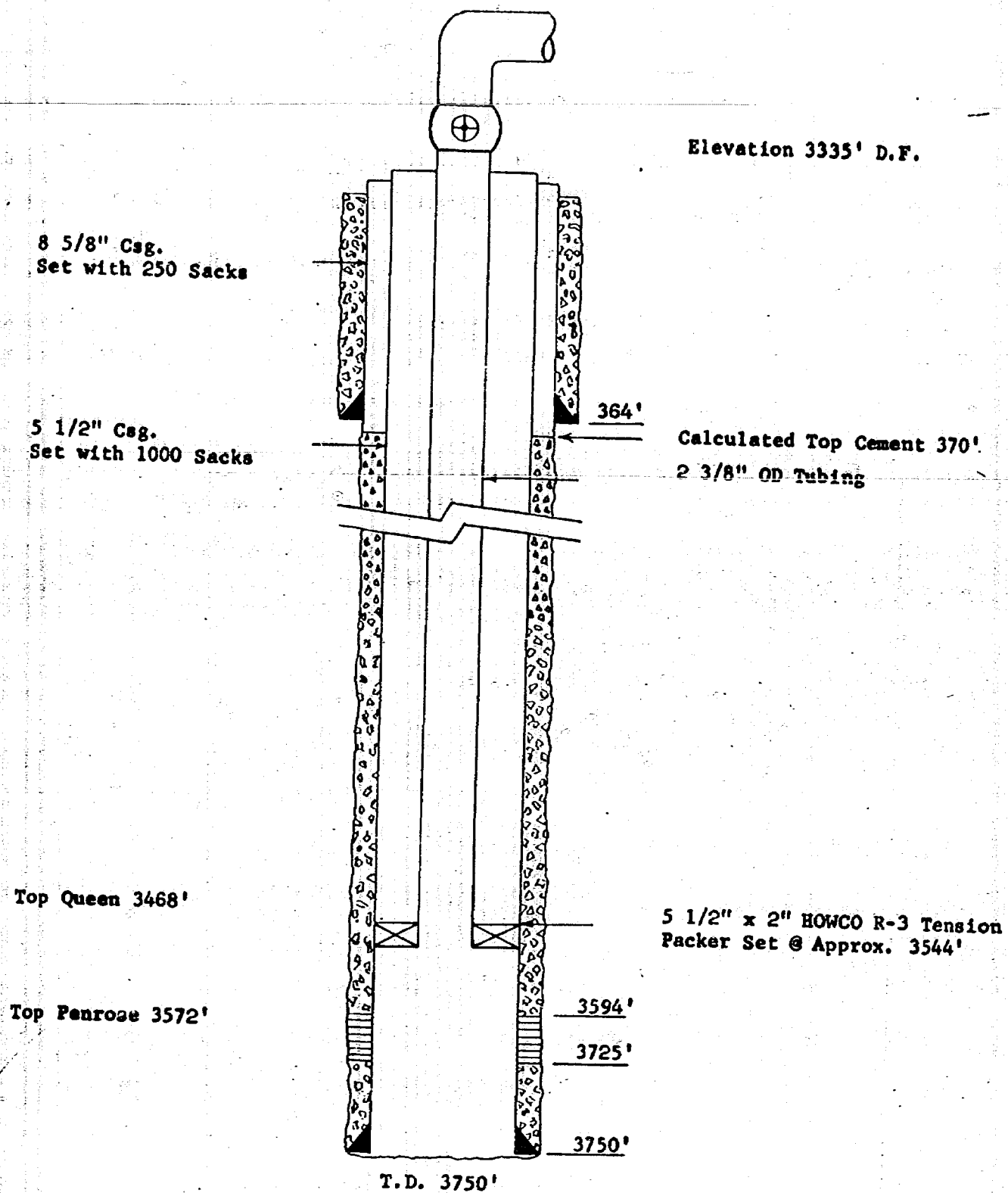
Skelly Oil Company  
 Skelly Penrose "B" Unit Well No. (To be Numbered)  
 To Be Drilled In Unit D, Section 9, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well



Gulf Oil Corporation  
Black Davis No. 1  
1980' FNL & 1980' FWL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. (Not Numbered)



Redfern Development Corporation  
J. J. Redfern No. 1  
660' FNL & 660' FWL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 45



Sun Oil Company  
A. D. Richards No. 4  
660' FNL & 1960' FEL Section 7, T23S, R37E  
Lea County, New Mexico  
Langliz Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 47

8 5/8" Csg.  
Set with 250 Sacks

5 1/2" Csg.  
Set with 1000 Sacks

Top Queen 3531'

Top Penrose 3650'

Elevation 3379' D.F.

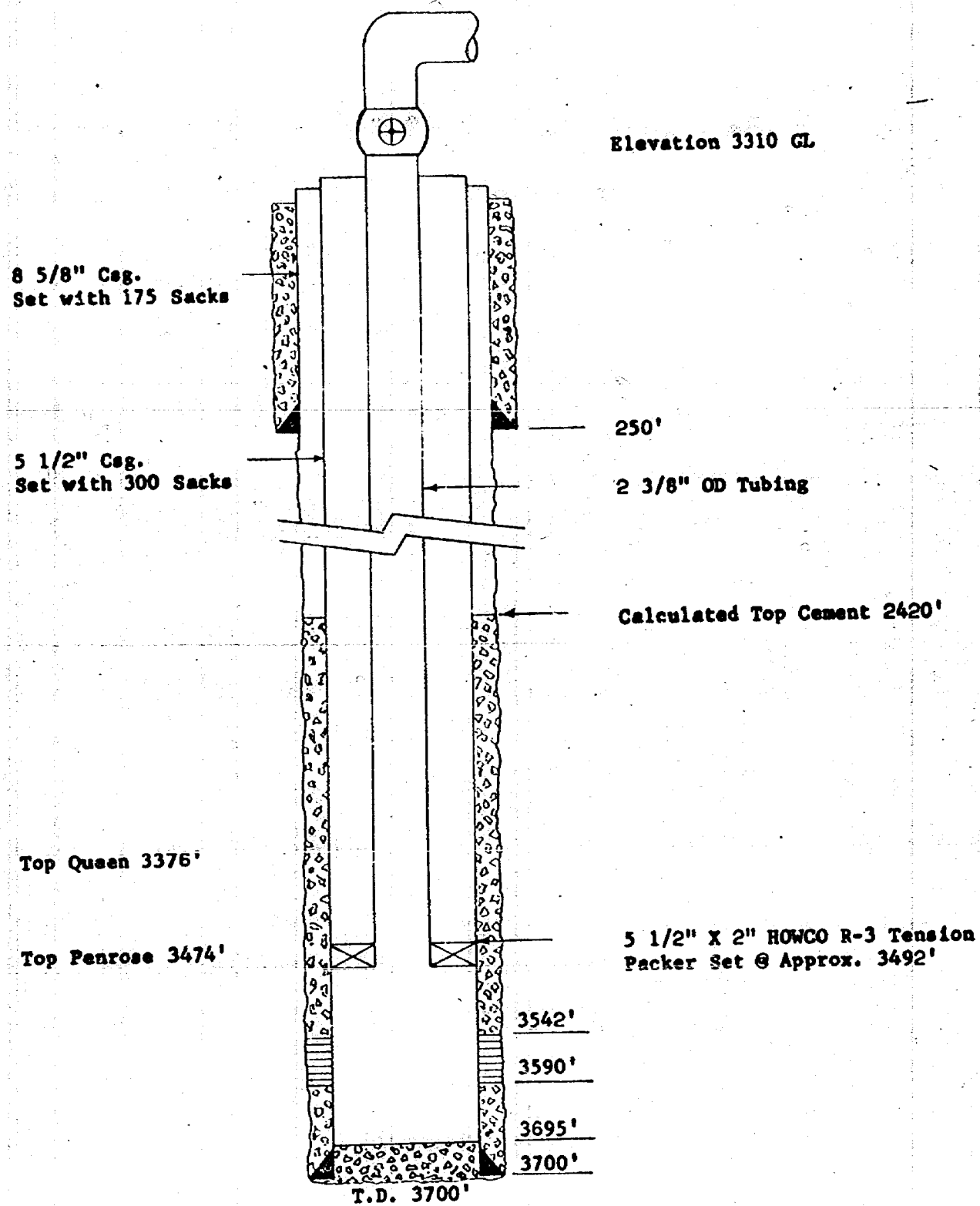
370'  
Calculated Top Cement 410'  
2 3/8" OD Tubing

5 1/2" x 2" HOWCO R-3 Tension  
Packer Set @ Approx. 3612'

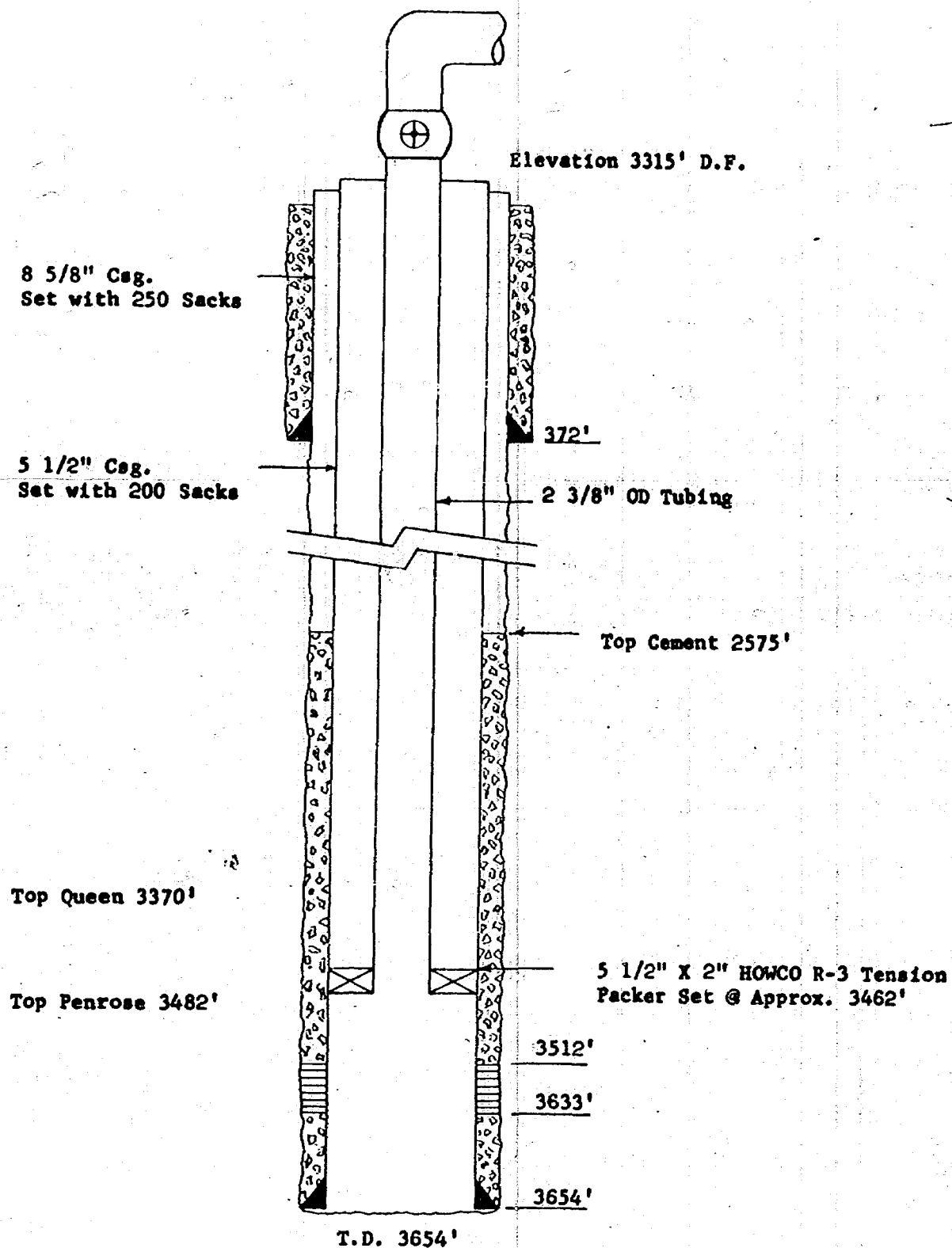
3662'  
3732'  
3761'  
3790'  
T.D. 3790'



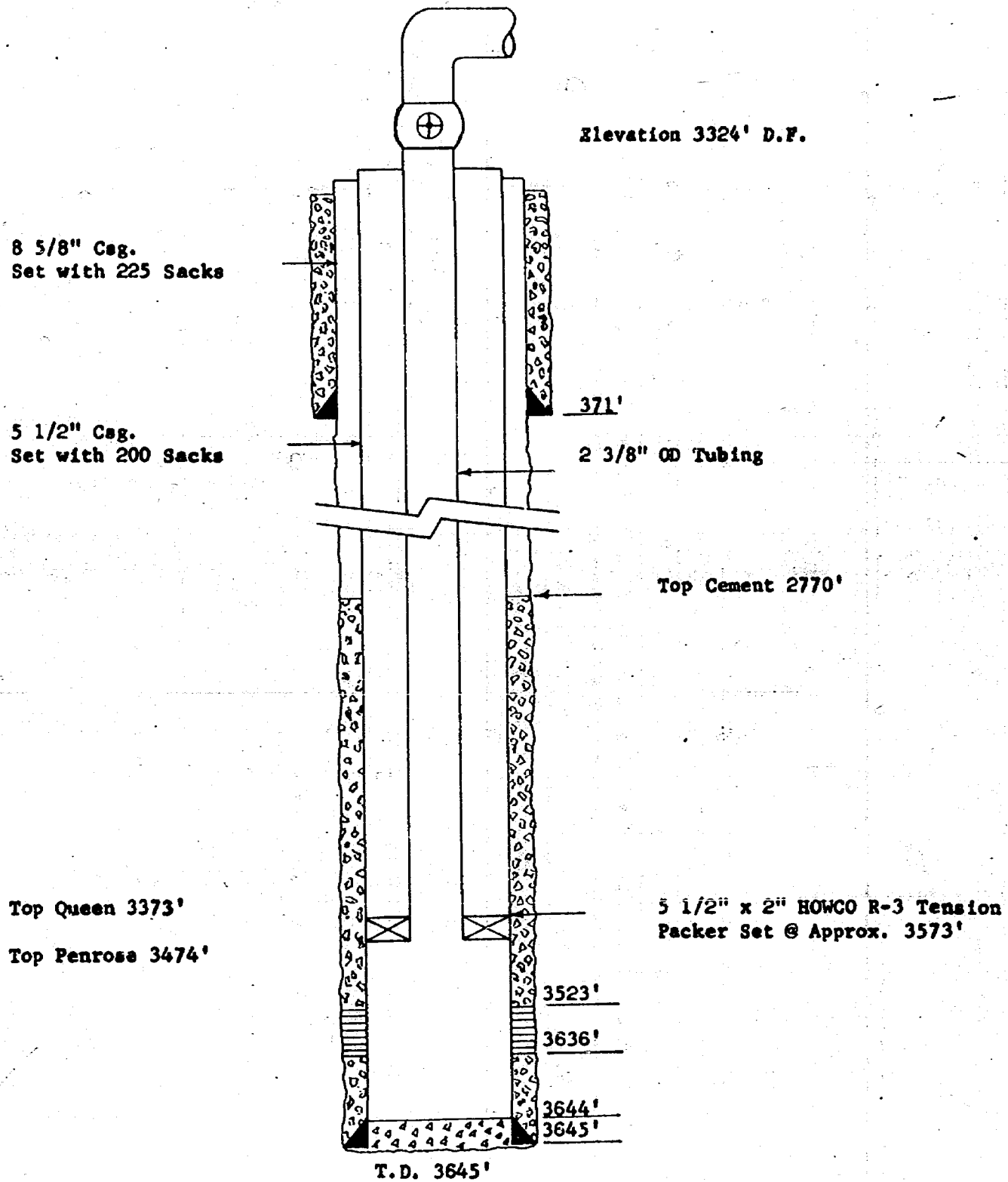
W. K. Byrom  
Flora Davis No. 1  
990' FEL & 1650' FNL Section 8, T23S, R37E  
Lee County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 50



Skelly Oil Company  
 Harrison "B" No. 5  
 1980' FNL & 1980' FWL Section 9, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 52



Skelly Oil Company  
 Harrison "B" No. 9  
 1980' FSL & 660' FWL Section 9, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 54



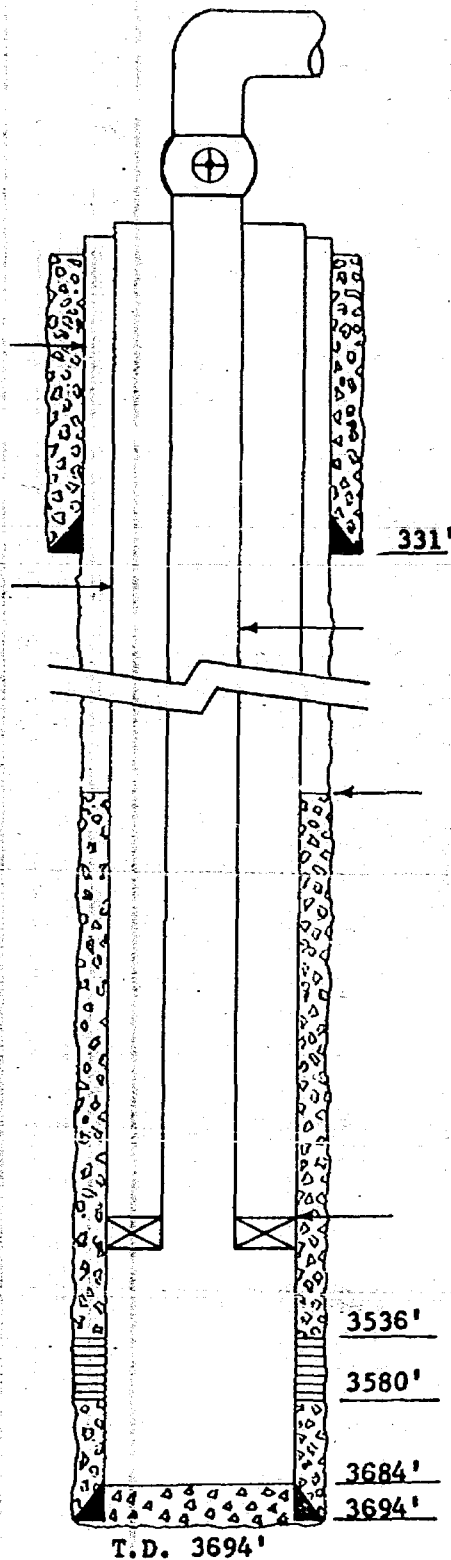
Texas Pacific Oil Company  
 Clift No. 5  
 660' FWL & 1980' FSL Section 8, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well  
 Skelly Penrose "B" Unit Well No. 56

9 5/8" Csg.  
 Set with 300 Sacks

7" Csg.  
 Set with 300 Sacks

Top Queen 3408'

Top Penrose 3514'



Elevation 3341 D.F.

2 3/8" OD Tubing

Top Cement 1782'

7" x 2" HOWCO R-3 Tension  
 Packer Set @ Approx. 3486'

3536'

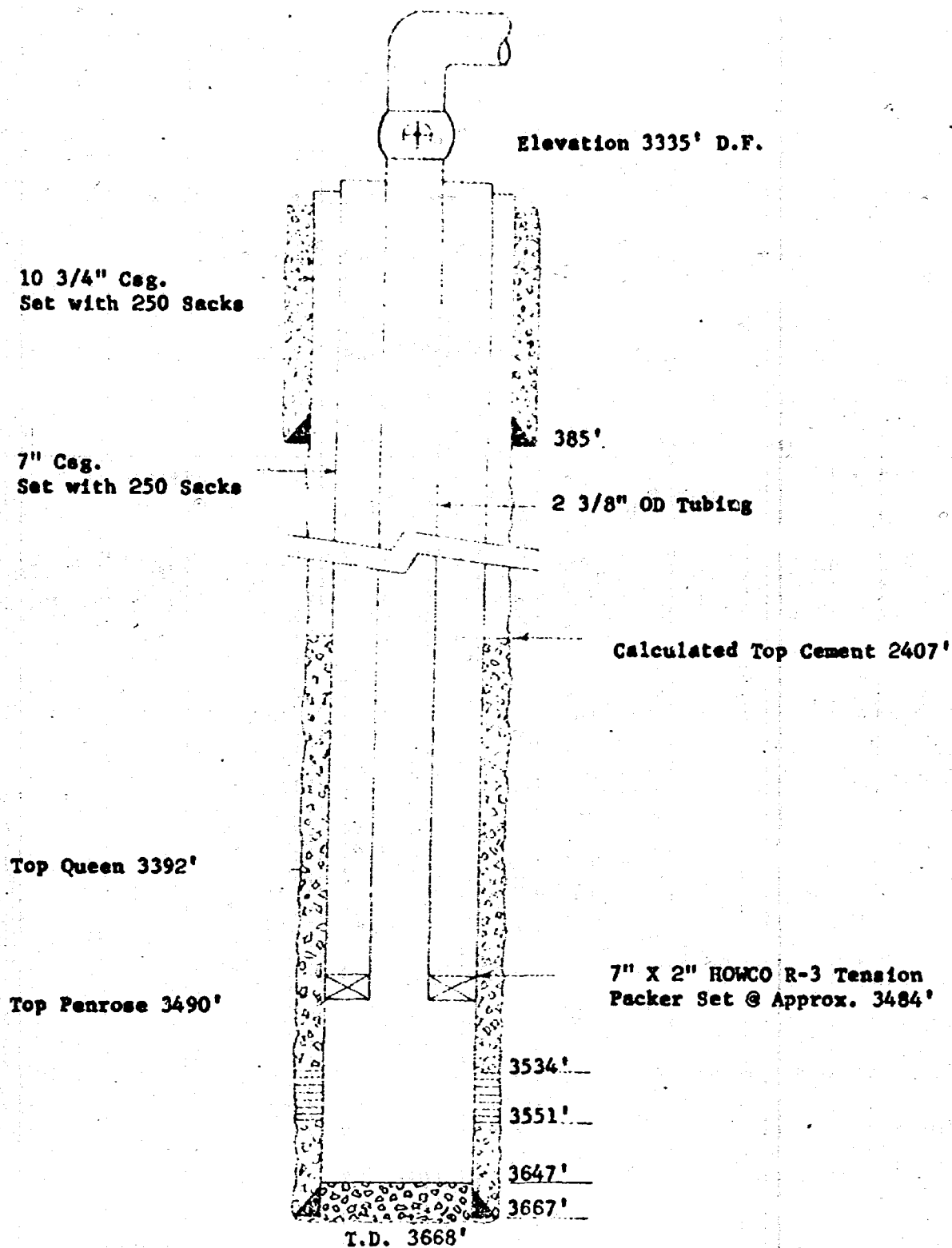
3580'

3684'

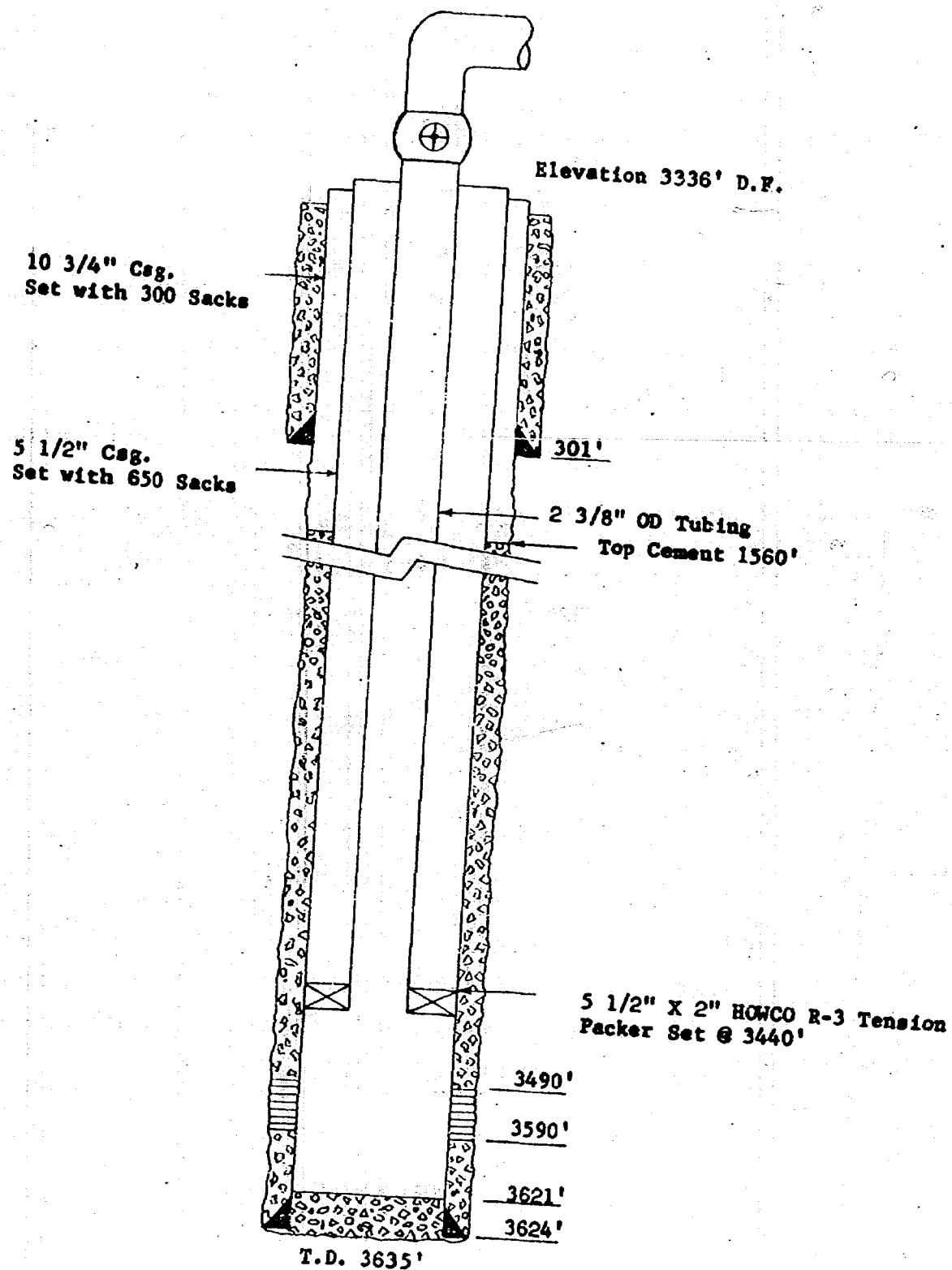
3694'

T.D. 3694'

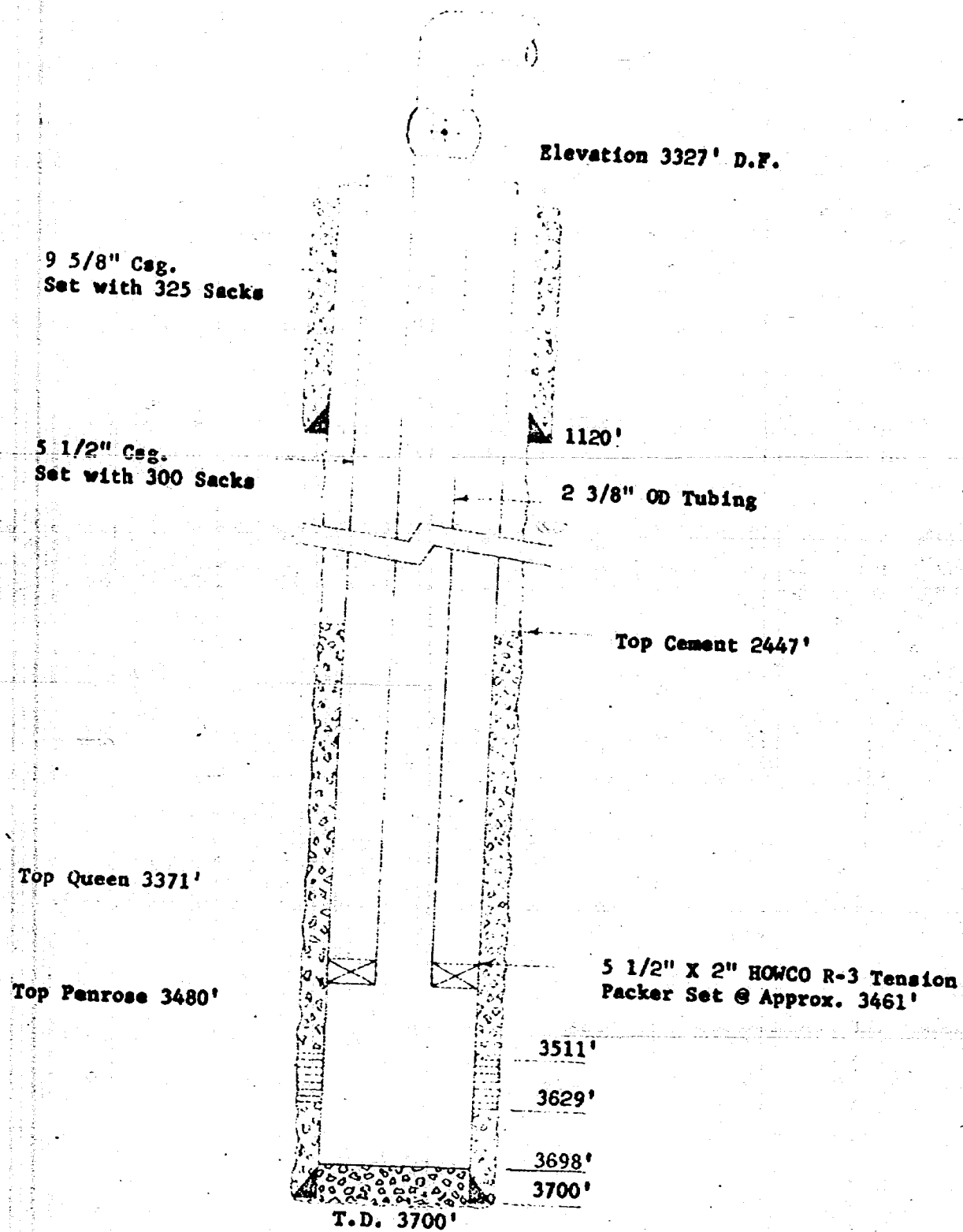
Texas Pacific Oil Co.  
Clift No. 3  
1980' FWL & 660' FSL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No.57



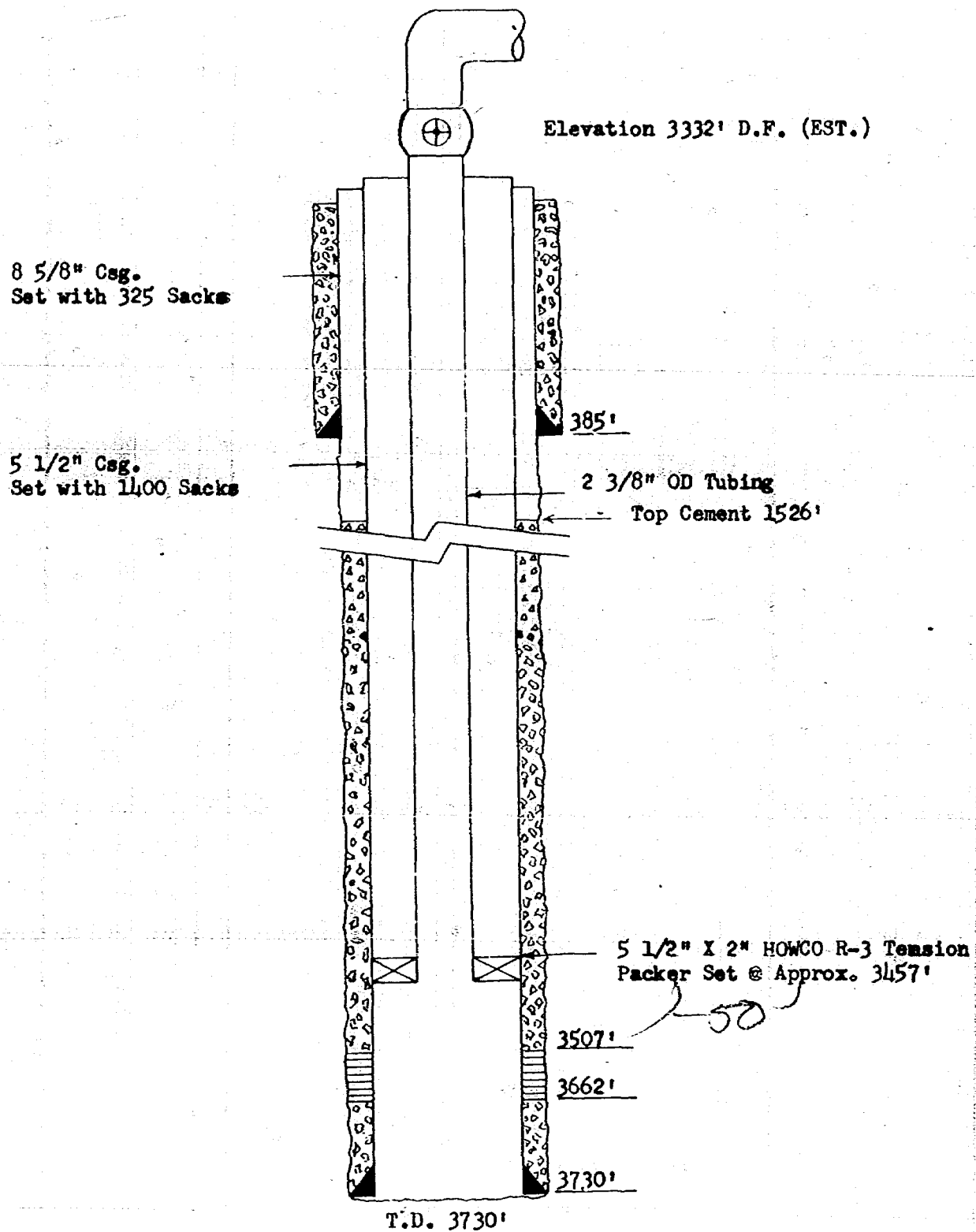
Texas Pacific Oil Company  
Clift No. 4  
330' FSL & 330' FEL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 59



Skelly Oil Company  
Harrison "B" No. 11  
660' FSL & 1980' FWL Section 9, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. 61



Gulf Oil Corporation  
Black Davis No. 2  
660' FNL & 1980' FEL Section 8, T23S, R37E  
Lea County, New Mexico  
Langlie Mattix Injection Well  
Skelly Penrose "B" Unit Well No. (To Be Numbered)





Skelly Oil Company  
 Skelly Penrose "B" Unit Well No. (To Be Drilled)  
 1980' FSL & 1980' FEL Section 8, T23S, R37E  
 Lea County, New Mexico  
 Langlie Mattix Injection Well

