



SKELLY OIL COMPANY

EXPLORATION & PRODUCTION DEPARTMENT
WEST CENTRAL DISTRICT

December 24, 1970

ADDRESS REPLY TO:
P. O. BOX 1351
MIDLAND, TEXAS 79701

P. L. NUNLEY, PRODUCTION MANAGER
B. A. STRICKLING, OPERATIONS SUPERINTENDENT
C. J. LOVE, DISTRICT ENGINEER
F. J. PETRO, DISTRICT PRODUCTION ENGINEER
J. D. MCCLAIN, DISTRICT RESERVOIR ENGINEER

File: Skelly Unit
Lease No. 73617
Grayburg-Jackson Pool
Eddy County, New Mexico

Re: Application for Waterflood Expansion

New Mexico Oil Conservation Commission
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. Secretary-Director

Gentlemen:

Skelly Oil Company respectfully requests administrative approval to expand its Skelly Unit Waterflood in the Grayburg-Jackson Pool, Eddy County, New Mexico. The Skelly Unit Waterflood Project was authorized by order no. R-2900 issued May 4, 1965, and amended by order no. R-3214 dated April 7, 1967.

Initial injection (April 1965) was into wells no. 42, 46, 44, 52, 54 and 56 by authority granted under order no. R-2900. Wells no. 24 and 34 were converted in July, 1967, by authority granted under order no. R-3214. Well no. 98 was converted in December, 1967, by authority granted under order no. WFX278 dated December 3, 1967. Wells no. 19, 21, 22, 24, 26, 30, 32, 38, 40, 48, 58, 71, 73, 83, 85, 96 and 105 were converted in March, 1968, by order no. R-3214. Wells no. 64, 66, 67, 75, 77, 89, 93 and 95 were converted in August, 1968, by authority granted under order no. WFX290 dated June 12, 1968. Wells no. 79 and 81 were converted in August, 1970, by authority granted under order no. WFX327 dated December 17, 1969.

The subject waterflood project is governed by the provisions of Rule 701, 702 and 703 of the Oil Conservation Commission rules and regulations; provided, however, that the Secretary-Director of the Commission may approve expansion of the Grayburg-Jackson Skelly Unit Waterflood Project to include additional wells, within said unit area, on water injection as may be necessary to complete an efficient waterflood pattern.

Skelly Oil Company desires to expand the waterflood and requests administrative approval to convert the following wells to water injection.

Skelly Unit Waterflood Expansion

Page 2

December 24, 1970

Township 17 South, Range 31 East

Skelly Unit Well No. 69, Unit letter L, Section 21

Skelly Unit Well No. 91, Unit letter D, Section 28

Skelly Unit Well No. 100, Unit letter L, Section 28

Under order R-3214, Skelly Oil Company was authorized to effect a waterflood project in the Grayburg-Jackson Pool in the Skelly Unit by the selective injection of water into various zones throughout the Grayburg-Jackson vertical producing interval. Selectivity of injection is to be achieved by dual injection utilizing the casing tubing annulus. Skelly Oil Company requests approval to selectively inject through the Skelly Unit; however, it is our intention to equip the proposed injectors as single injection wells and utilize the separation of zones only in wells where it is deemed necessary to achieve the most efficient vertical distribution of injected fluid.

Attached is a map showing all wells within a two mile radius, a unit plat showing the present and proposed injection wells, schematic diagrams and log sections of the proposed wells, an analysis of the water to be injected and a supplement to the Oil Proration Schedule.

Response to injection has been noted in the area. Shown below are the wells' producing capacity at the start of the pilot (April 1965) and the current producing (November 1970) rates.

Unit Well No.	Daily Average Production			
	April 1965		October 1970	
	Oil	Water	Oil	Water
69	7	0	29	1
91	4	0	5	1
100	24	0	29	3

The oil proration schedule supplement substantiates response in the area by showing increased allowables for wells no. 69 and 100.

Injection make-up water will be purchased from the Double Eagle Water Company. The water is fresh produced from the Ogallala formation. The produced water is also being re-injected into the reservoir. Anticipated injection rates are 300-600 bbls. per day per well at wellhead pressures of 1500-2000 psi.

Correlative rights are being protected by offsetting injection under a Common Boundary Agreement between Atlantic-Richfield Company and Skelly Oil Company.

The U.S.G.S. has approved water injection into the proposed wells.

Offset operators are being notified by a copy of this application in accordance with the attached mailing list.

Yours very truly,



P. L. Nunley
District Production Manager

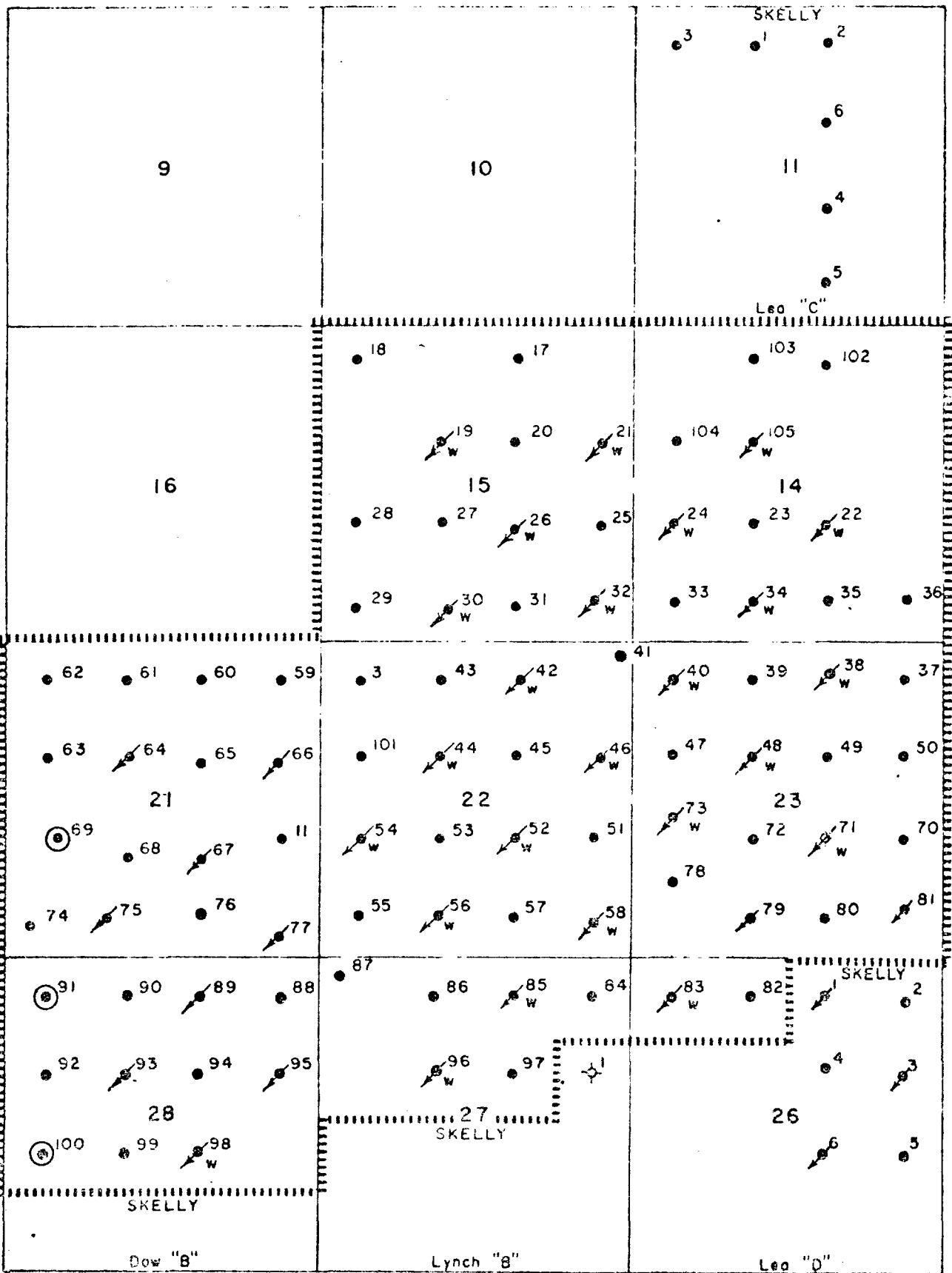
SKELLY UNIT MAILING LIST

Atlantic-Richfield Company
P. O. Box 1610
Midland, Texas 79701

Getty Oil Company
P. O. Box 1231
Midland, Texas 79701

Kersey and Company
808 West Grand
Artesia, New Mexico 88210

Murchison and Closuit
% Mr. Ernest Closuit
1019 Fort Worth National Bank Building
Fort Worth, Texas 76100

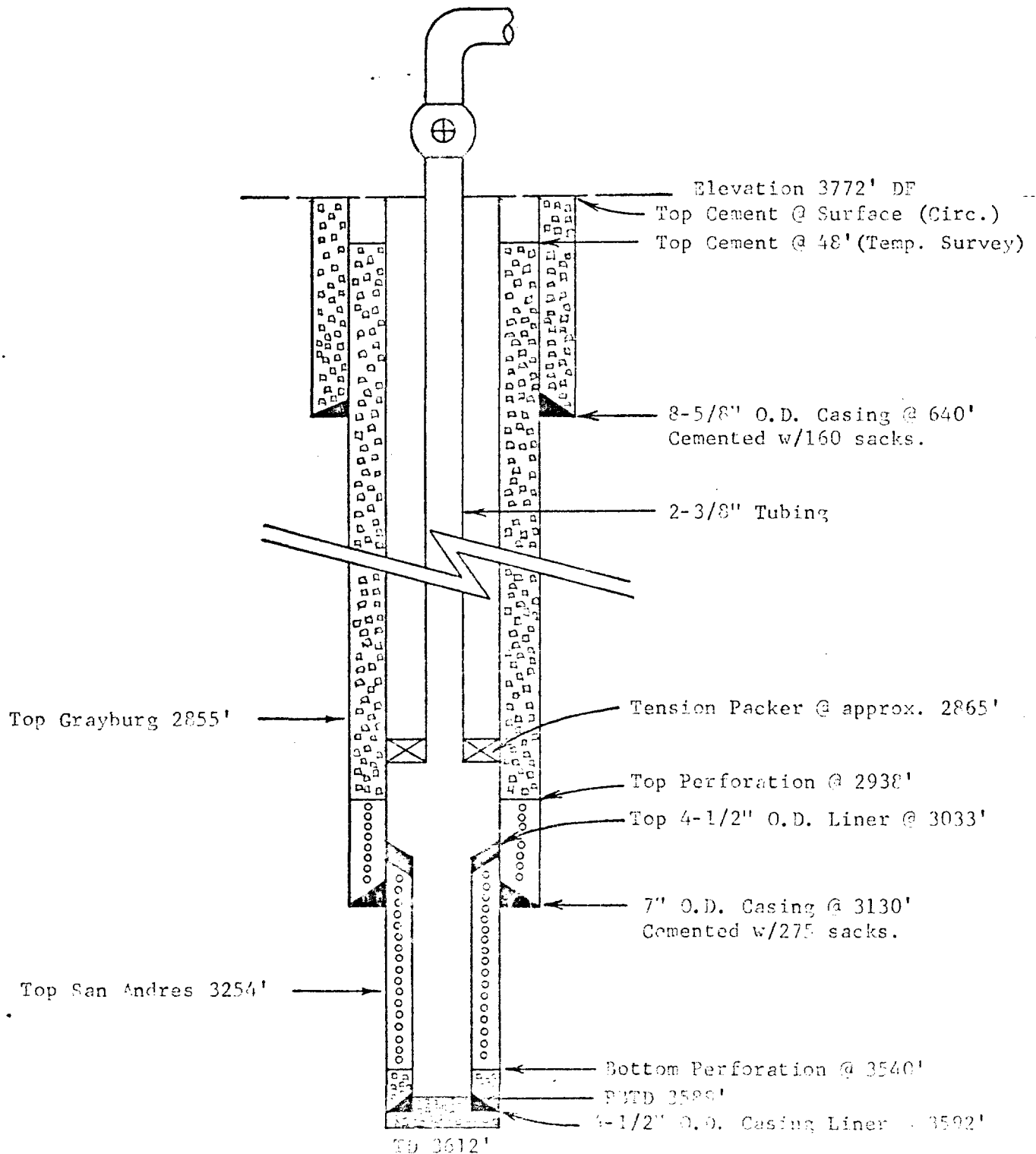


SKELLY OIL COMPANY
 SKELLY UNIT
 EDDY COUNTY, NEW MEXICO
 TOWNSHIP 17-S, RANGE 31-E
 SCALE: 1"=2400'

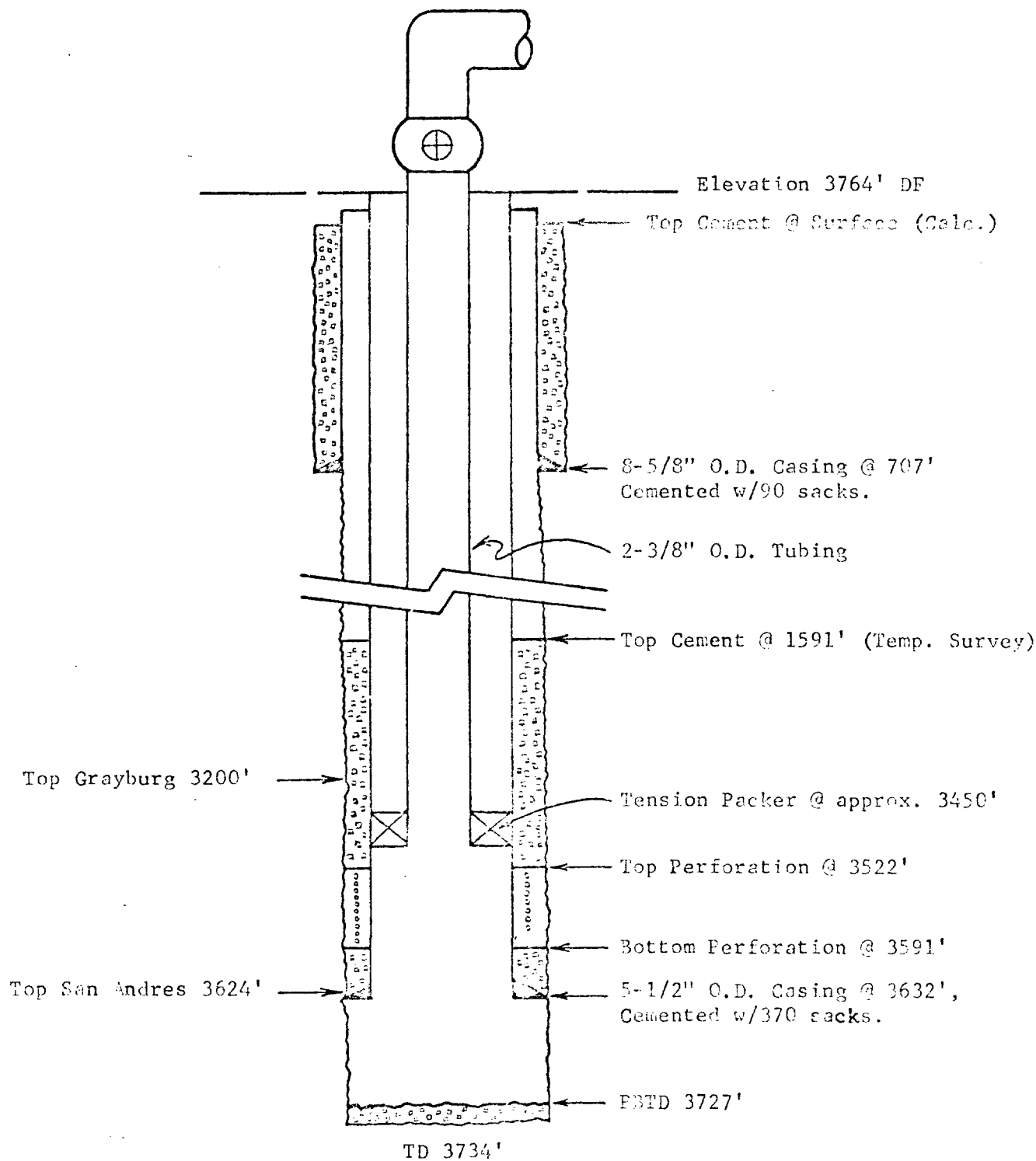
LEGEND

- GRAYSBURG-SAN ANTONIO OIL WELL
- ⊕ DRY HOLE
- ⋯ SKELLY UNIT
- ⊙ PROPOSED WATER INJECTION WELL

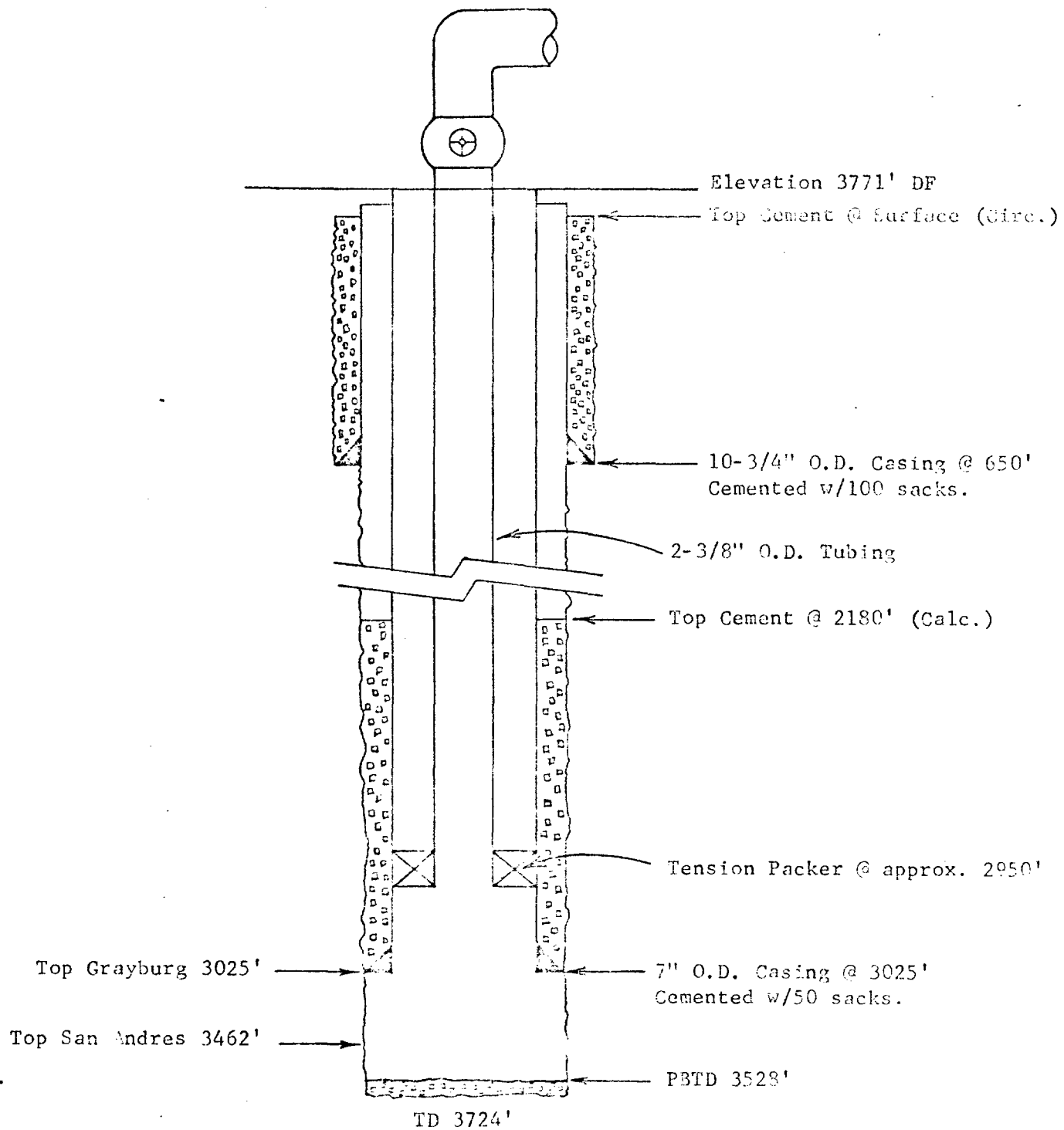
SKELLY OIL COMPANY
 Skelly Unit Well No. 60
 1980' FSL & 760' FWL, Section 21, T-17-S, R-31-E
 Grayburg Jackson Injection Well

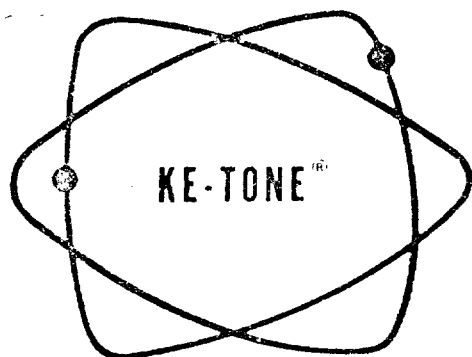


SKELLY OIL COMPANY
 Skelly Unit Well No. 100
 1980' FSL & 660' FWL, Section 28, T-17-S, R-31-E
 Grayburg Jackson Injection Well



SKELLY OIL COMPANY
 Skelly Unit Well No. 91
 660' FNL & 660' FWL, Section 28, T-17-S, R-31-E
 Grayburg Jackson Injection Well





UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Skelly Oil Company

Field _____

Lease Double Eagle WaterSampling Date 11-19-69Type of Sample Inlet to Skelly Tank

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	2.59	52
Magnesium (Mg++)	1.07	13
Sodium (Na+) (Calculated)	2.07	48
Iron		0.55
Bicarbonate (HCO ₃ -)	2.10	128
Carbonate (CO ₃ -)	NOT	FOUND
Hydroxide (OH-)	NOT	FOUND
Sulphate (SO ₄ -)	2.08	100
Chloride (Cl-)	1.55	55
6.7ph c 68°F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	3.66	183
Carbonate Hardness as CaCO ₃ (temporary)	2.10	105
Non-Carbonate Hardness as CaCO ₃ (permanent)	1.56	78
Alkalinity as CaCO ₃	2.10	105
Specific Gravity @ 68° F	1.000	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Calcium Carbonate scaling index negative at 86°F

Calcium Sulfate scaling index negative

[illegible]

**NEW MEXICO
OIL CONSERVATION COMMISSION
P. O. DRAWER DD
ARTESIA, NEW MEXICO**

Sept. 1969

No. A 1

SUPPLEMENT TO THE OIL PRORATION SCHEDULE

DATE 9/1/69

PURPOSE: ALLOWABLE REVISION (Waterflood)

Effective 9/1/69, the allowable^s of the following Skelly Oil Co. wells in the Grayburg Jackson Pool are hereby revised as indicated.

Skelly Unit

#3-D,	22-17-31,	increased to	2 BOPD or	60 bbls	for the month.
#17-B,	15-17-31,	increased to	10 BOPD or	300 bbls	for the month.
#20-G,	"	, increased to	26 BOPD or	780 bbls	for the month.
#28-L,	"	, increased to	15 BOPD or	450 bbls	for the month.
#31-O,	"	, increased to	23 BOPD or	690 bbls	for the month.
#35-O,	14-17-31,	increased to	18 BOPD or	540 bbls	for the month.
#41-A,	22-17-31,	increased to	40 BOPD or	1200 bbls	for the month.
#45-G,	"	, increased to	46 BOPD or	1380 bbls	for the month.
#47-E,	23-17-31,	increased to	18 BOPD or	540 bbls	for the month.
#49-G,	"	, increased to	95 BOPD or	2850 bbls	for the month.
#53-K,	22-17-31,	increased to	33 BOPD or	990 bbls	for the month.
#11-I,	21-17-31,	increased to	20 BOPD or	600 bbls	for the month.
#59-A,	"	, increased to	25 BOPD or	750 bbls	for the month.
#60-B,	"	, increased to	18 BOPD or	540 bbls	for the month.
#61-C,	"	, increased to	16 BOPD or	480 bbls	for the month.
#62-D,	"	, increased to	21 BOPD or	630 bbls	for the month.
#63-E,	"	, increased to	20 BOPD or	600 bbls	for the month.
#65-G,	"	, increased to	29 BOPD or	870 bbls	for the month.

Continued.

WAG:jw
Skelly Oil Co.
TNM

copies to: Selmer
Theo Hudson
Shelley Tucker
Roy P. Merworth
9-2-69

OIL CONSERVATION COMMISSION

W. A. Gressett
SUPERVISOR, DISTRICT NO. 2

Supplement A--1 for September 1969 Continued

Skelly Unit

#68-K, 21-17-31,	increased to	21 BOPD or	630 bbls for the month.
#69-L, "	, increased to	20 BOPD or	600 bbls for the month.
#72-K, 23-17-31,	increased to	69 BOPD or	2070 bbls for the month.
#76-O, "	, increased to	57 BOPD or	1710 bbls for the month.
#78-M, "	, increased to	21 BOPD or	630 bbls for the month.
#80-O, "	, increased to	44 BOPD or	1320 bbls for the month.
#81-P, "	, increased to	29 BOPD or	870 bbls for the month.
#82-C, "	, increased to	33 BOPD or	990 bbls for the month.
#88-A, 28-17-31,	increased to	38 BOPD or	1140 bbls for the month.
#90-C, "	, increased to	18 BOPD or	540 bbls for the month.
#92-E, "	, increased to	198 BOPD or	5940 bbls for the month.
#94-G, "	, increased to	85 BOPD or	2550 bbls for the month.
#100-L, "	, increased to	46 BOPD or	1380 bbls for the month.

WAG:jw

Skelly Oil Company

TNM

*copies to: ScLinger
Theo Dodson
Shelby Tucker
Roy P. Merworth
9-2-69*



100

WELL DON B #32

FIELD GRAYBURG-JACKSON

COUNTY EDDY STATE NEW MEXICO

LOCATION:

1980'	FROM SOUTH LINE	OTHER SERVICES
660'	FROM WEST LINE	

ILLEGIBLE

SEC. 28 TWP. 17S RGE. 31E

GROUND LEVEL. ELEV. 3760

4. FT. ABOVE PERMANENT DATUM

FROM DERRICK FLOOR

11-29-59	12-3-59
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ONE

CR/N

3700

3696	
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INTERVAL	3695
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0	0
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Oil	22.20
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--	--

	2239
--	------

LESS 100	
----------	--

7 HOURS

PARDUE

MR. PURC

--	--

OLE RECORD

FROM	TO
------	----

0	707
---	-----

7	3700
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[illegible]

CASING RECORD			
SIZE	WGT.	FROM	TO
8-5/8	23	0	707
-	-	-	-
5-1/2	15.5	17	0
			3630

OTHER SERVICES	
ELEVATIONS:	
KB	3764'
DF	3760'
GL	3760'

ELEVATIONS:	
175	RGE. 31E
ELEV. 3760	
ABOVE PERMANENT DATUM	

FLOOR	
12-3-59	
TWO	
GR/N	
3732	
3734	
3733	
3200	
OIL & WATER	
-	
-	
FULL	
LESS 100	
2 HOURS	
TEAL	
MR. BAUMGARDNER	

RAYBURC-JACKSON	
DDY	STATE NEW MEXICO
980' FROM SOUTH LINE	
660' FROM WEST LINE	

KELLY OIL COMPANY	
54 1/2"	4 1/2" #100
100	"3" #32

NEW MEXICO	
RAYBURC-JACKSON	

Wuloughi	
RAYBURC-JACKSON	

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-33

EQUIPMENT DATA

Left Track:

- Rayburg 3607 (+364)
- Premier 3522 (+142)
- 5 1/2" Hole (+142)
- 3634'
- Set 2" Casing 3622'
- w/ 280 Rock 3602' to 3610'
- w/ 4% gel 3622' to 3634'
- Top Cement 3634'
- Road & 50' over 3634'
- Mileage 3634'

Right Track:

- 3100
- 3200
- 3300
- 3400
- 3500
- 3600
- 3700

Annotations:

- Increase Oil Gas @ 3482'
- @ 3498 = 3507
- @ 3507 Failed obs. Recd 186 vol. oil & 1/2 gal. water.
- @ 3610' Could not coil down (had 100' oil in hole.) Plug back total Depth 3611' to 3610' level "M" B.P.
- @ 3622' Could not lower fluid level below 3600'.
- @ 3635' had 1000' oil in hole - test
- @ 3700' failed obs. could not lower fluid level below 3600'.
- 4 1/2" hole 3700' to 3704'

Scale: 0 — 20 CHART DIV.

T.C. 3734' (+364)

PRODUCTION

WELL LOGGING

COMPANY SKELLY OIL CO.

WELL DOW "B" NO. 11

COUNTY EDDY STATE N.M.

LOCATION SEC. 28, 17-S, 31-E

COMPANY SKELLY OIL CO.

WELL DOW "B" NO. 11

FIELD MALJAMAR

LOCATION SEC. 28, 17-S, 31-E

Location of Well

660' FR. N/L

660' FR. W/L

COUNTY EDDY

STATE N.M.

Filing No.

LOG MEASURED FROM

D. F.

ELEV. 3771'

DRLG. MEASURED FROM

D. F.

ELEV. 3771'

PERM DATUM

G. L.

ELEV. 3769'

GAMA PAY

NETTOP

TSOTPCN

TYPE OF LOG

ONE

RUN NO.

ONE

DATE

1C-31-57

FIRST READING

3529'

LAST READING

0000

FOOTAGE LOGGED

3529'

MAX. DEPTH REACHED

3530'

BOTTOM DRILLER

3528'

FLUID NATURE

OIL & WATER

FLUID LEVEL

MAX. TEMP.

N.A.

LOG SIZE

7" - 3031'

LOG WEIGHT

.21#

OPEN HOLE DIA.

6-1/4" - 3031' TO T.D.

SENS. POS.

200

TIME CONSTANT

2

LOGGING SPEED

1000' & 2500'/HR.

RIG TIME

6 HOURS

LOCATION

HOBBS

ILLEGIBLE

2900

3000

3100

3200

3300

3400

3500

F.P.I. T.D. 3530'

F.P.I. T.D. 3530'

10 M.F. = 4.5 DIV.,
THEREFORE, EACH DIV.
= 2.22 M.F.

120 COUNTS/SEC. = 3.5