



SKELLY OIL COMPANY

May 13, 1971

EXPLORATION & PRODUCTION DEPARTMENT
WEST CENTRAL DISTRICT

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

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

File: Skelly Unit Waterflood
Lease No. 73617
Eddy County, New Mexico
Grayburg-Jackson Pool
Skelly Interest: 100%

Re: Application for Waterflood Expansion

New Mexico Oil Conservation Commission (3)
State Land Office Building
P. O. Box 2088
Sante Fe, New Mexico

Attention: Secretary-Director

WFX - 357
June 1

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 was authorized by order No. R-2900, May 4, 1965, and amended by order No. R-3214, April 11, 1967.

The subject waterflood project is governed by the provisions of Rules 701, 702, and 703 of the 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, or water injection as may be necessary to complete an efficient waterflood pattern.

Skelly initiated a six injection well, eighty-acre five-spot pilot project in April, 1965. The successful response to water injection led Skelly to expand the project. By April, 1971, the original pilot area has been expanded to include a total of 38 injection wells. The last expansion was by administrative order No. WFX-354, dated January 12, 1971.

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

Township 17 South, Range 31 East
Unit Well No. 102 Unit B Section 14
Unit Well No. 87 Unit D Section 27

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 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 throughout the Skelly Unit; however, it is our intention to equip the proposed injectors as single injection wells and utilize the separation of zones in only the wells where it is deemed necessary to achieve the most efficient vertical distribution of injected fluid.

Attached are a map showing all wells within a two mile radius, a unit plat showing the present and proposed injection wells, along with a schematic diagram and copy of the log on the wells included in this application. An analysis of the water to be injected and a copy of C-115's, which verify response, are also included.

Good response to water injection has been noted in the area of Skelly Unit Well No. 87; less than desired response has been observed in the area of Skelly Unit Well No. 102, this being due to the limited volumes of water which have been injected into this portion of the unit. Currently a study is underway, to see what can be done to improve this situation. The proposed injection well's producing capacity and other producing wells which directly offset the proposed water injectors are shown by the following tabulation.

<u>Unit Well No.</u>	<u>Daily Average Production</u>			
	<u>March 1967</u>		<u>March 1971</u>	
	<u>Oil</u>	<u>Water</u>	<u>Oil</u>	<u>Water</u>
102 (Proposed W. I. W.)	1.5	-	1	1
103	1	-	2	4
104	<u>2</u>	<u>-</u>	<u>5</u>	<u>3</u>
Total	4.5	-	8	8

	<u>January 1966</u>		<u>March 1971</u>	
	<u>Oil</u>	<u>Water</u>	<u>Oil</u>	<u>Water</u>
87 (Proposed W. I. W.)	15	-	20	4
88	12	-	98	6
55	<u>4</u>	<u>-</u>	<u>9</u>	<u>3</u>
Total	31	-	127	13

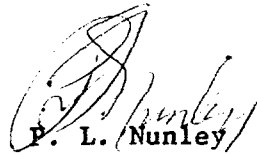
Injection water will be purchased from Double Eagle Water Company. The water is fresh and is taken from the Ogallala formation, as shown by the current water analysis. Anticipated injection rates are 300-600 BPD per well (600-1200 for both wells) at pressures of 1500-2000 psig.

Skelly Unit Waterflood
Page 3
May 12, 1971

The only operator adjoining the Skelly Unit is the Lea "C" lease, which lies immediately to the north of Skelly Unit No. 102. This lease is 100% owned and operated by Skelly.

This proposed expansion is in line with out Plan of Operation for the Skelly Unit.

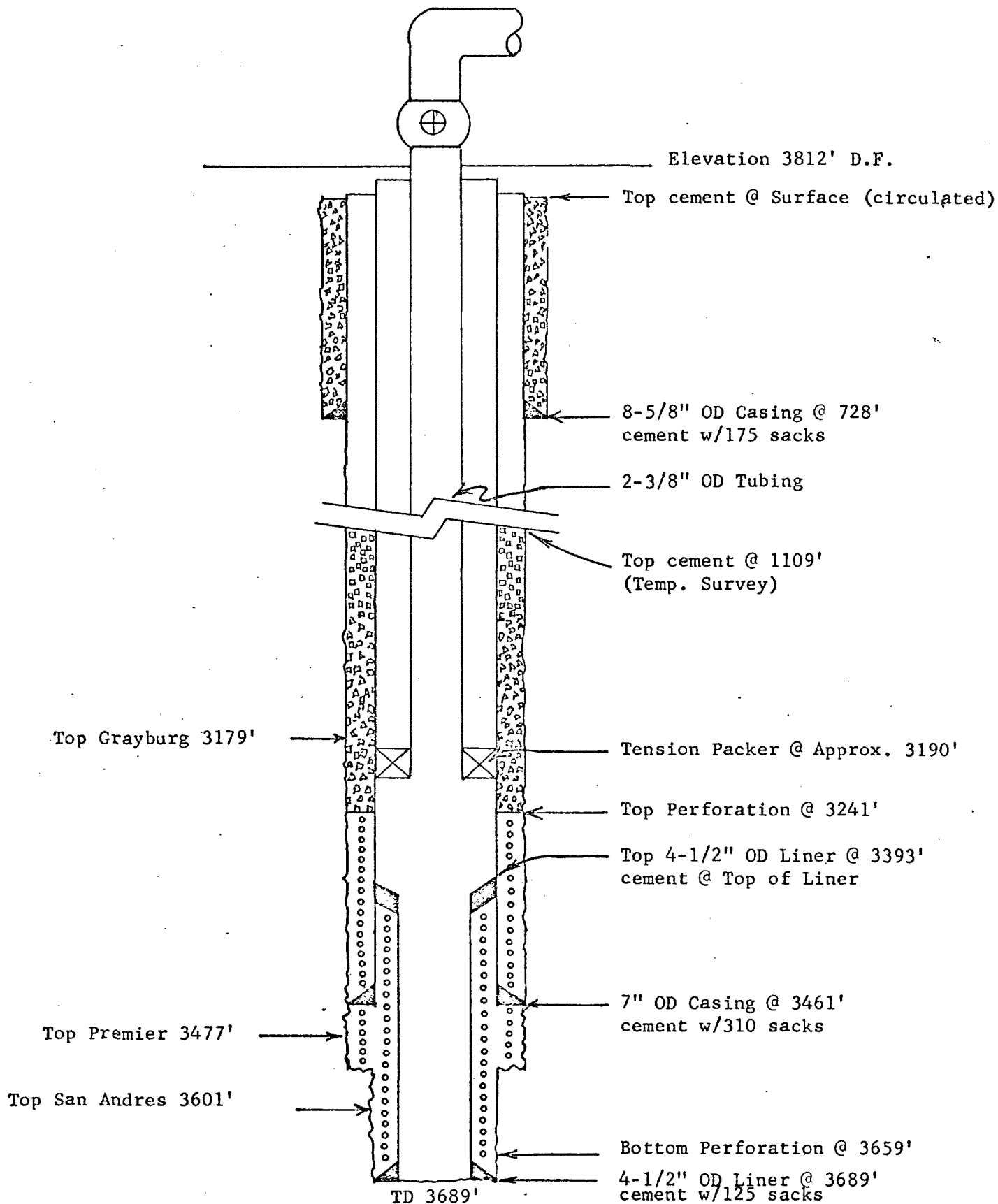
Yours very truly,

A handwritten signature in cursive script, appearing to read "P. L. Nunley".

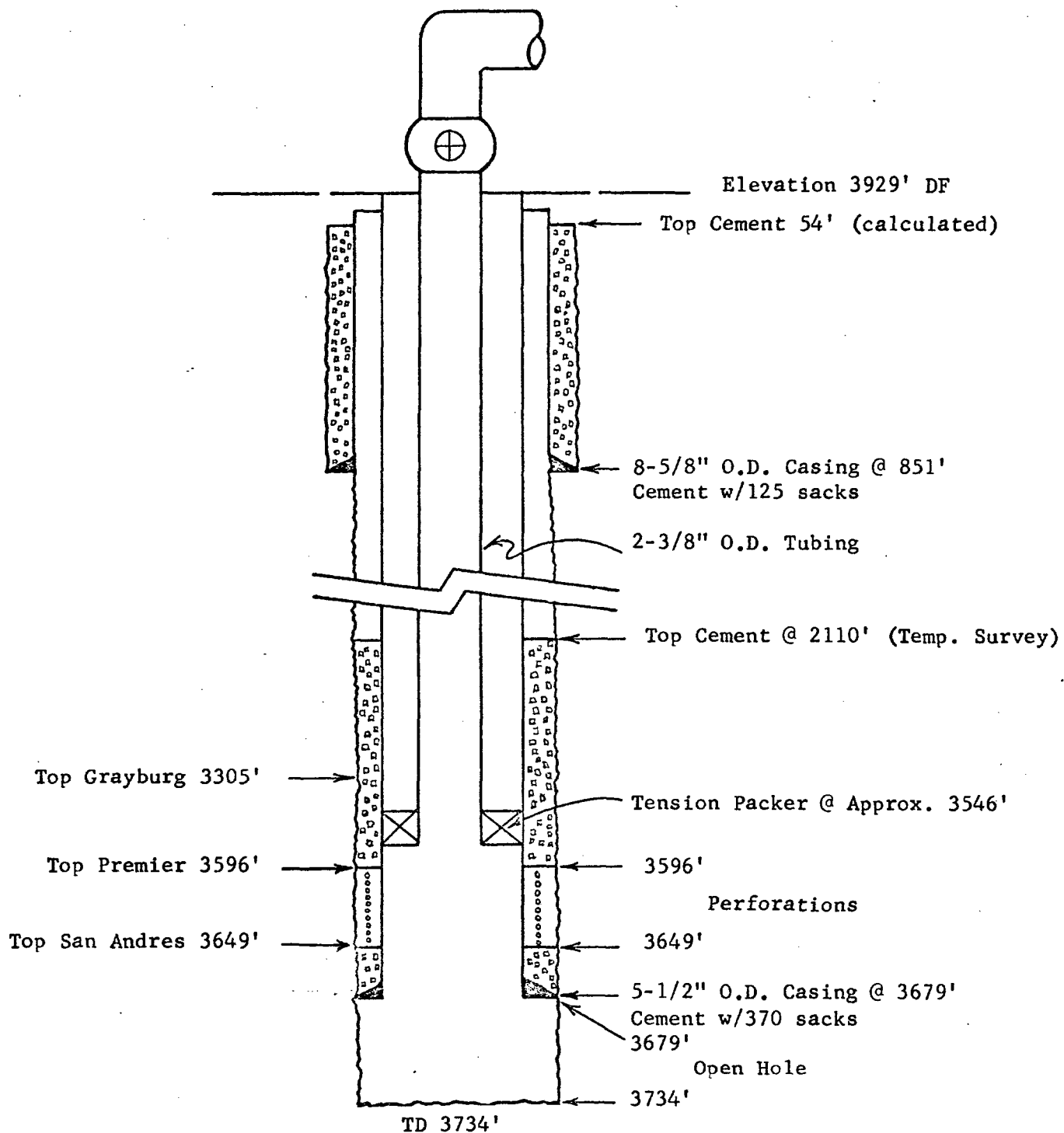
P. L. Nunley
District Production Manager

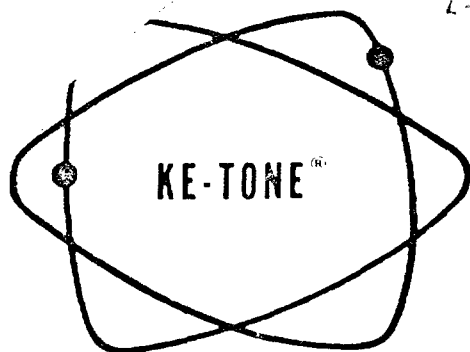
WTT:lks
Attach.

SKELLY OIL COMPANY
 SKELLY UNIT NO. 87
 330' FNL & 330' FWL, Section 27-17S-31E



SKELLY OIL COMPANY
 SKELLY UNIT NO. 102
 660' FNL & 1980' FEL, Section 14-17S-31E





UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Skelly Oil Company

Field _____

Lease Skelly Unit Plant #1

Sampling Date 6-5 -70

Type of Sample Fresh Water

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	2.10	42
Magnesium (Mg++)	1.40	17
Sodium (Na+) (Calculated)	1.71	39
Bicarbonate (HCO ₃)	2.10	128
Carbonate (CO ₃ -)	NOT FOUND	
Hydroxide (OH-)	NOT FOUND	
Sulphate (SO ₄ -)	1.98	95
Chloride (Cl -)	1.13	40
H ₂ S		0
6.5 ph c 68°F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	3.50	175
Carbonate Hardness as CaCO ₃ (temporary)	2.10	105
Non-Carbonate Hardness as CaCO ₃ (permanent)	1.40	70
Alkalinity as CaCO ₃	2.10	105
Specific Gravity c 68° F	1.002	

MOORE BUSINESS FORMS INC. LA

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Makes Water Work

NEW MEXICO OIL CONSERVATION COMMISSION
 BOX 2088 SANTA FE, NEW MEXICO
 OPERATOR'S MONTHLY REPORT

MAR 1971

Page 37

Company or Operator: SKELLY OIL COMPANY (Address) P. O. Box 1351, Midland, Texas FOR MONTH

WELL NO. UNIT SEC. TWP. RNO. POOL NAME (UNDERLINE)	WELL STATUS	TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF	DAYS PROD.	DISPOSITION OF GAS				DISPOSITION OF OIL						
		MONTHLY OIL ALLOWABLE	ACTUAL BARRLS PRODUCED	BARRLS OF WATER PRODUCED			VENTED	USED ON LEASE	SOLD	PURCH.	OTHER	C O D E	OIL ON HAND BEG. OF MONTH	BARRLS TO TRANS- PORTER	OTHER	C O D E	OIL ON HAND END OF MONTH
LEASE NAME AND STATE LAND LEASE NUMBER OR FEDERAL LEASE NUMBER																	
Grayburg Jackson - Hddy - (Continued)																	
Skelly Unit No. 1 - Section 276 (Continued)																	
95 H 28 17 31	I				Water Injection Well												
96 F 27 17 31	I				Water Injection Well												
97 G 27 17 31	P	217	169	254	116	31											
98 J 28 17 31	I				Water Injection Well												
99 K 28 17 31	T				Temporarily Abandoned												
100 L 28 17 31	P	961	Water Injection Well	3-28-71.													
101 E 22 17 31	P	186	103	0	0	25											
102 B 14 17 31	P	155	35	23	124	31											
103 C 14 17 31	P	155	70	136	163	31											
104 E 14 17 31	P	217	147	103	99	31											
105 F 14 17 31	I				Water Injection Well												
106 C 15 17 31	P	2015	1773	0	946	31											
Totals this page		3706	2297	516	1448												
Pool Total		42371	32445	24402	10129												
3021 32819																	
TMM 2647																	

"OTHER" GAS DISPOSITION CODE
 A - - - - - USED OFF LEASE
 D - - - - - USED FOR DRILLING
 G - - - - - GAS LIFT
 L - - - - - LOST (ACF ESTIMATED)
 E - - - - - EXPLANATION ATTACHED
 R - - - - - REPRESSURING OR PRESSURE MAINTENANCE

"OTHER" OIL DISPOSITION CODE
 C - - - - - CIRCULATING OIL
 L - - - - - LOST
 S - - - - - SEDIMENTATION (BARR)
 E - - - - - EXPLANATION ATTACHED

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

STATUS CODE
 F - - - - - FLOWING
 P - - - - - PLUGGING
 S - - - - - SHUT IN
 T - - - - - TEMP. ABANDONED
 I - - - - - INJECTION

APR 22 1971
 District Administrative Coordinator

Submitted in Lieu of Form No. 9-329

STATEWIDE FORM C-115 REV. 10-1-81
SUBMIT: ORIGINAL TO OCC SANTA FE
ONE COPY TO OCC DIST. OFFICE
ONE COPY TO TALENT OFFICE

Page of

C	TRANS-	OIL ON
O	PORTER	HAND
O		END OF
E		MONTH

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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EXH-1

11521

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

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(SIGNATURE)

2000

(POSITION)

NEW MEXICO OIL CONSERVATION COMMISSION

BOX 2088 SANTA FE, NEW MEXICO

OPERATOR'S MONTHLY REPORT

SKELLY OIL COMPANY

7

P. O. Box 1351 Midland, Texas

FOR MONTH

MAR

1971

Page 33

WELL NO. UNIT SEC. TWP. RNO.		WELL STATUS		TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF		DAYS PROD.		DISPOSITION OF GAS					DISPOSITION OF OIL					
POOL NAME (UNDERLINE)		WELL	MONTHLY OIL ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED	LEASE NAME AND STATE LAND LEASE NUMBER OR FEDERAL LEASE NUMBER	GAS PRODUCED MCF	DAYS PROD.	VENTED	USED ON LEASE	SOLD	PURCH.	OTHER	C O D E	OIL ON HAND BEG. OF MONTH	BARRELS TO TRANS-PORTER	OTHER	C O D E	TRANS-PORTER	OIL ON HAND END OF MONTH	
Grayburg Jackson - Eddy - (Continued)																					
Skelly Unit No. 1 - Section 276 (Continued)																					
50 H 23 17 31	P		372	245	27		32	31													
51 I 22 17 31	P		1736	1418	156		247	31													
52 J 22 17 31	I					Water Injection Well															
53 K 22 17 31	P		403	300	177		369	31													
54 L 22 17 31	I					Water Injection Well															
55 M 22 17 31	P		372	273	101		68	31													
56 N 22 17 31	I					Water Injection Well															
57 O 22 17 31	P		589	300	111		95	31													
58 P 22 17 31	I					Water Injection Well															
59 A 21 17 31	P		279	135	34		133	31													
60 B 21 17 31	P		155	270	0		115	31													
Total this page			3906	2941	606		1059														
(Continued on next page)																					

(continued on next page)

"OTHER" GAS DISPOSITION CODE

A - - - - - USED OFF LEASE
 B - - - - - USED FOR DRILLING
 C - - - - - GAS LIFT
 D - - - - - LOST (GCE ESTIMATED)
 E - - - - - EXPLANATION ATTACHED
 F - - - - - REPRESSURING OR PRESSURE MAINTENANCE

"OTHER" OIL DISPOSITION CODE

C - - - - - CIRCULATING OIL
 L - - - - - LOST
 S - - - - - SEDIMENTATION (SAND)
 E - - - - - EXPLANATION ATTACHED

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Submitted in Lieu of Form No. 9-329

District Administrative Coordinator

APR 22 1971

(POSITION)

NEW MEXICO OIL CONSERVATION COMMISSION BOX 2088 SANTA FE, NEW MEXICO OPERATOR'S MONTHLY REPORT

NAME OF OPERATOR (Address) FOR MONTH OF DATE

NO. UNIT SEC. TWP. RNO.	WELL STATUS	TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF	DAYS PROD.	DISPOSITION OF GAS					DISPOSITION OF OIL						
		MONTHLY OIL ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED			VENTED	USED ON LEASE	SOLD	PURCH.	OTHER	C O D E	OIL ON HAND BEG. OF MONTH	BARRELS TO TRANS-PORTER	OTHER	C O D E	TRANS-PORTER	OIL ON HAND END OF MONTH
KELLY UNIT #55		310	411	78	79	31												
		247	881	102	538	✓												
		154	88	0	32	✓												
		155	117	0	32	✓												
		248	617	71	111	✓												
		310	176	20	95	✓												
		248	117	0	126	✓												
		1240	943	62	1629	✓												
		2162	3350	333	2642				2642									
		8206	6667	553	15816				15816		0		778	6667	0			92

THIS CODE

OTHER GAS DISPOSITION CODE
 X - - - - USED OFF LEASE
 O - - - - USED FOR DRILLING
 G - - - - GAS LIFT
 L - - - - LOST (MCF ESTIMATED)
 E - - - - EXPLANATION ATTACHED
 R - - - - REPRESSURING OR PRESSURE MAINTENANCE

OTHER OIL DISPOSITION CODE
 C - - - - CIRCULATING OIL
 L - - - - LOST
 S - - - - SEDIMENTATION (BS&W)
 E - - - - EXPLANATION ATTACHED

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

SIGNATURE DATE

(POSITION)

NEW MEXICO OIL CONSERVATION COMMISSION
BOX 2088 SANTA FE, NEW MEXICO
OPERATOR'S MONTHLY REPORT

(Company or Operator) SKELLY OIL COMPANY 7 (Address) P. O. Box 1351 Midland, Texas FOR MONTH MAR 1971 Page 36

WELL NO. UNIT SEC. TWP. RND.	WELL STATUS	TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF	DAYS PROD.	DISPOSITION OF GAS					DISPOSITION OF OIL				
		MONTHLY OIL ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED			VENTED	USED ON LEASE	SOLD	PURCH.	OTHER	C O D E	OIL ON HAND BEG. OF MONTH	BARRELS TO TRANS-PORTER	OTHER	C O D E
LEASE NAME AND STATE LAND LEASE NUMBER OR FEDERAL LEASE NUMBER																
Grayburg Jackson - Eddy (Continued)																
Skelly Unit No. I - Section 276 (Continued)																
83 D 26 17 31	I		Water	Injection Well												
84 A 27 17 31	P	279	236	0	86	31										
85 B 27 17 31	I		Water	Injection Well												
86 C 27 17 31	P	341	303	303	283	31										
87 D 27 17 31	P	620	608	109	502	31										
88 A 28 17 31	P	1271	1011	182	214	31										
89 B 28 17 31	I		Water	Injection Well												
90 C 28 17 31	P	1178	844	0	288	31										
91 D 28 17 31	P	217	Water	Injection Well												
92 E 28 17 31	P	4030	2934	8990	473	31										
93 F 28 17 31	I		Water	Injection Well												
94 G 28 17 31	P	682	506	759	231	31										
Totals this page		8618	6442	10343	2077											

STATUS CODE "OTHER" GAS DISPOSITION CODE (Continued on next page) "OTHER" OIL DISPOSITION CODE
F - FLOWING B - USED OFF LEASE C - CIRCULATING OIL
G - GUMMING D - USED FOR DRILLING I - ESTIMATION MUST BE SHOWN ON FORM C-11
S - SHUT IN E - GAS LIFT L - LOST
T - TEMP ABANDONED F - EXPLANATION ATTACHED
I - INJECTION R - REPRESENTING OR PRESSURE MAINTENANCE

I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Submitted in Lieu of Form No. 9-329 District Administrative Coordinator APR 22 1971

NEW MEXICO OIL CONSERVATION COMMISSION
BOX 2088 SANTA FE, NEW MEXICO
OPERATOR'S MONTHLY REPORT

(Company or

(Address)

FOR MONTH

Page 2 of 2

WELL STATUS	TOTAL LIQUIDS PRODUCED			GAS PRODUCED MCF	DAYS PROD.	DISPOSITION OF GAS					DISPOSITION OF OIL					
	MONTHLY OIL ALLOWABLE	ACTUAL BARRELS PRODUCED	BARRELS OF WATER PRODUCED			VENTED	USED ON LEASE	SOLD	PURCH.	OTHER	C O D E	OIL ON HAND BEG. OF MONTH	BARRELS TO TRANS- PORTER	OTHER	C O D E	TRANS- PORTER
STRELLY UNIT #88	310	356	6	63	31											
	155	178	4	397	✓											
	372	148	0	125	✓											
	248	148	0	125	✓											
	341	148	0	481	✓											
	279	148	0	711	✓											
	217	148	0	961	✓											
	341	445	0	1841	✓											
	2265	1719	4	47944												

"OTHER" GAS DISPOSITION CODE

A --- USED OFF LEASE

D --- USED FOR DRILLING

G --- GAS LIFT

L --- LOST (MCF ESTIMATED)

E --- EXPLANATION ATTACHED

R --- REPRESSURING OR PRESSURE MAINTENANCE

"OTHER" OIL DISPOSITION CODE

C --- CIRCULATING OIL

L --- LOST

S --- SEDIMENTATION (BS&W)

E --- EXPLANATION ATTACHED

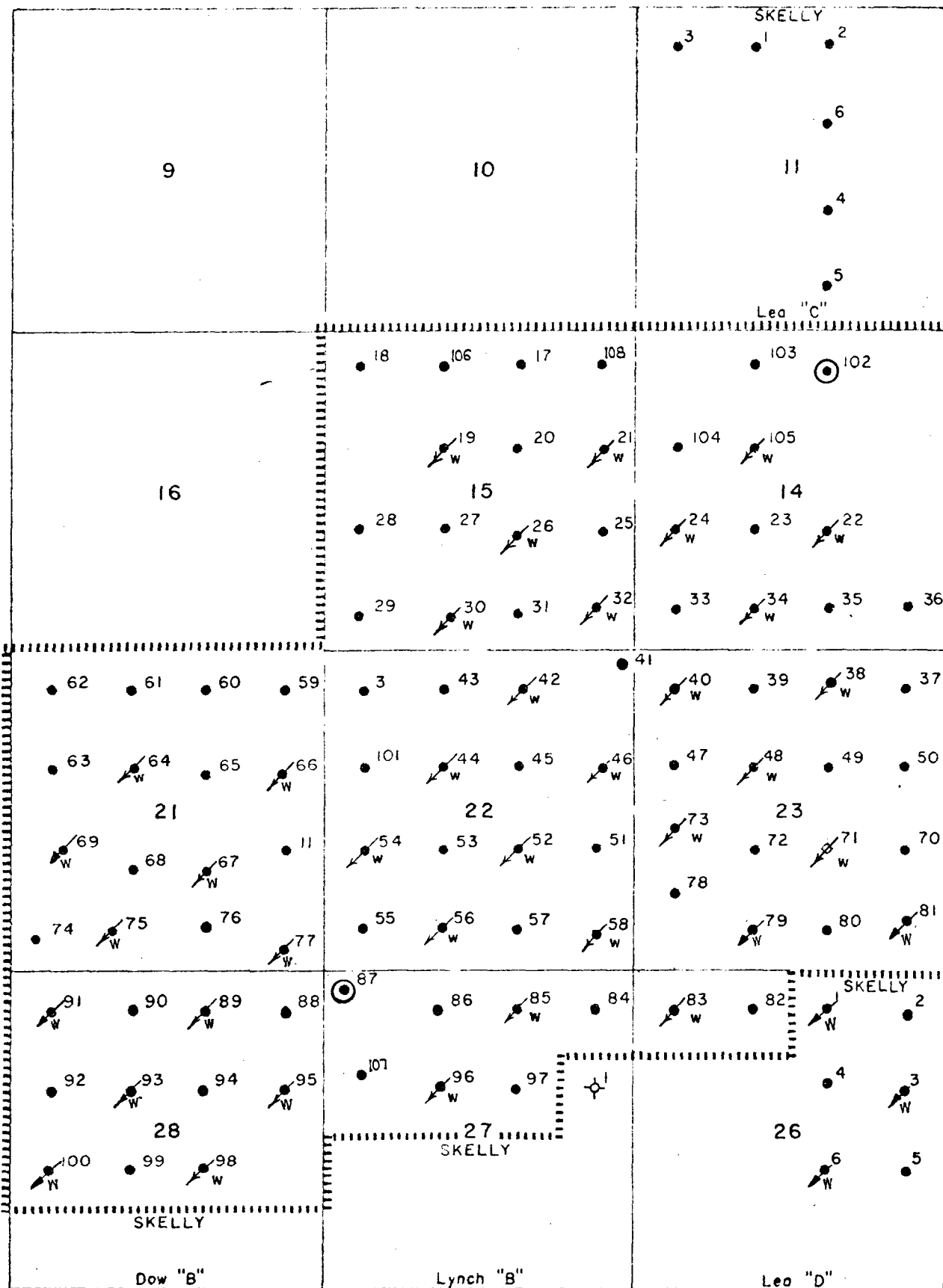
I HEREBY CERTIFY THAT THE INFORMATION GIVEN IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

(SIGNATURE)

[Signature]

(DATE)

12/2/66



SKELLY OIL COMPANY
 SKELLY UNIT
 EDDY COUNTY, NEW MEXICO
 TOWNSHIP 17-S, RANGE 31-E
 SCALE: 1"=2460'

- LEGEND
- GRAYBURG-SAN ANDRES OIL WELL
 - ◇ DRY HOLE
 - SKELLY UNIT
 - ⊙ PROPOSED WATER INJECTION WELL

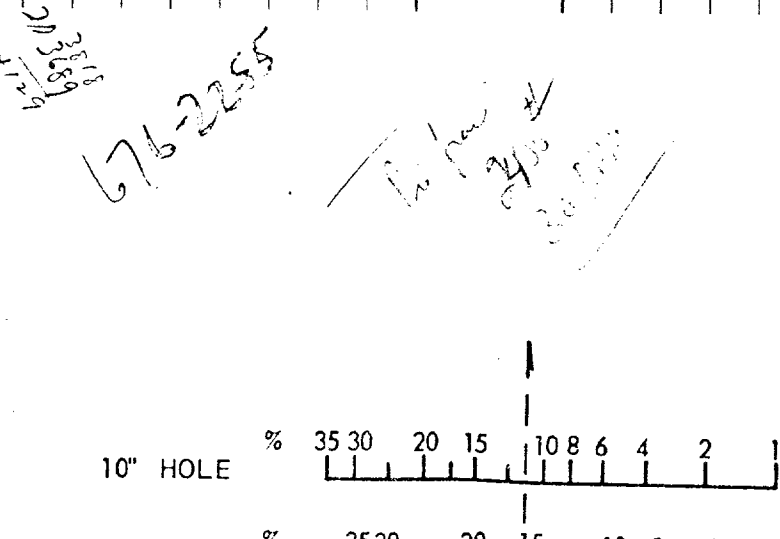
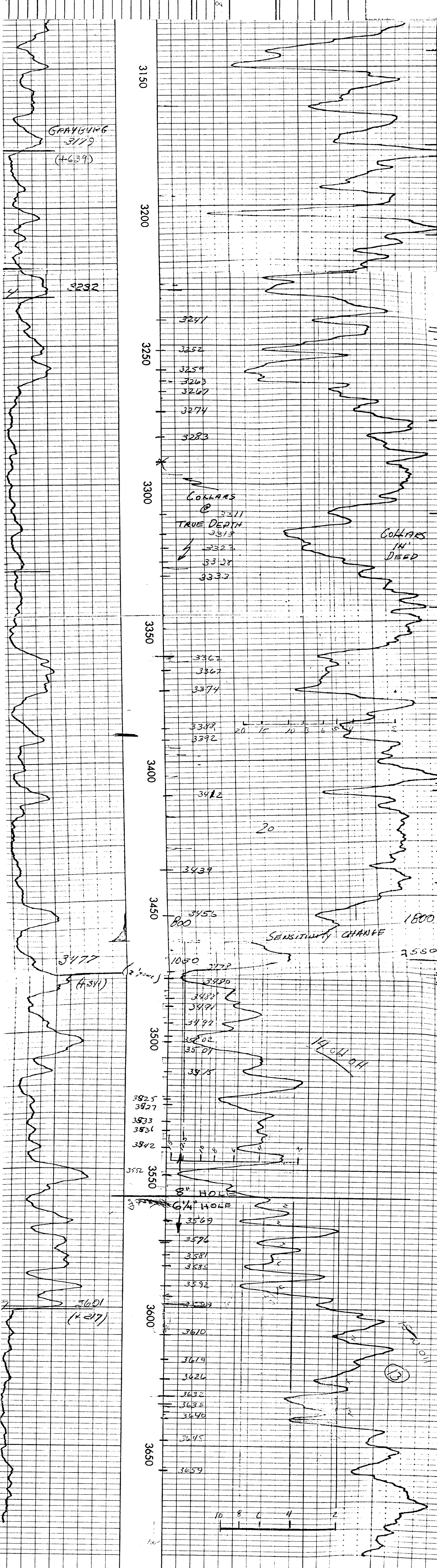
WELTEX

RADIOLOGIC TITRATION LOGS

1947

COMPANY SHELLY OIL CO.
WELL LYNCH "B" #2
FIELD GRAYBURG - JACKSON
COUNTY EVING STATE NEW MEXICO
Location NW 1/4 NW 1/4
Sec. 27 Twp. 11S Rge. 21E
Other Services:

Permanent Datum B5A COLLAR Elev. 3318
Log Measured from B. ABOVE B5A COLLAR Above Perm. Datum
Drilling Measured from B. ABOVE B5A COLLAR
Date 27 JUN 66
Run No. 1
Type Log GRN
Depth - Driller 5685
Depth - Welx 5687
Bottom - Welx 5688
Bottom Logged Interval 3000
Type Fluid in Hole M.W.
Solinity, PPM Cl. ---
Density ---
Level ---
Max. rec. temp. deg. F. 101
Operating Rig Time B.A. King
Witnessed by M.R. King
RUN No. --- Bore-hole RECORD To ---
Size --- WT. --- From ---
Casing RECORD To ---
Size --- WT. --- From ---





McCULLOUGH

TOOL COMPANY

RADIATION LOG



W-17411

Location of Well
SEC 14-17S-31E
660' FNL
1980' FEL

ELEV: 3929'DF
3926'GL

COMPANY *SKelly Unit #102*
SKELLY OIL COMPANY

WELL *LEE #5 LEE #5*

FIELD GRAYBURG JACKSON

COUNTY EDDY STATE NEW MEX.

LOCATION SEC 14-17S-31E 660' FNL
1980' FEL

Log Meas. From DERRICK FLOOR Elev. 3929'
Drig. Meas. From DERRICK FLOOR Elev. 3929'
Perm. Datum GROUND LEVEL Elev. 3926'

COMPANY SKELLY OIL COMPANY
WELL *LEE #5 LEE #5*
FIELD GRAYBURG JACKSON
COUNTY EDDY STATE NM
LOCATION SEC 14-17S-31E
660' FNL 1980' FEL

Rec. Trk. No. 1361 Trk. No. 996 Trk. Oper. BALLARD Log Ticket No. 67154
Date 6-8-59 Maximum Recorded Temp. LESS 100°
Total Depth (Driller) 3736' Effective Depth (McCullough) 3732'
Type of Fluid in Hole NONE Fluid Level -
O.D. of Instrument 3.5" Length of Device—Overall 11'
Neutron Source # 289-M Spacing 19.5" Setting -
Recorded By EBELING Witnessed By MR. PURCELL

Type of Log GAMMA RAY GAMMA RAY NEUTRON NEUTRON

