



KELLY OIL COMPA

July 31, 1972

ADDRESS REPLY TO: P. O. BOX 135! MIDLAND, TEXAS 79701

EXPLORATION & PRODUCTION DEPARTMENT WEST CENTRAL DISTRICT

A. B. CARY, EXPLORATION & PRODUCTION MANAGER V. E. BARTLETT, EXPLORATION MANAGER C. J. LOVE, PRODUCTION MANAGER

J. R. AVENT, ADMINISTRATIVE COORDINATOR

File: Lovington Paddock Unit

Lease General Lease No. 00308

Lea County, New Mexico

Application to Expand Injection

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

Gentlemen:

Skelly Oil Company respectfully requests administrative approval to expand the Lovington Paddock Unit water injection system by converting three additional wells to injectors. This unit was established by Oil Conservation Order No. R-3124 issued September 30, 1966. Approval was granted for the injection of water through 22 wells; however, 18 of 22 wells were converted to injection status at the time, four wells (Nos. 2, 25, 34, and 53) remained as producers.

The unit was expanded by Commission Order R-3352 issued December 4, 1967, with approval to convert seven more wells to injection status. Six wells were converted, leaving No. 8 as a producer.

Authority to convert wells No. 36, 38, 55, and 57 was granted by Oil Conservation Commission Order No. WFX-343, dated July 17, 1970. conversion of these wells to injectors several five spot patterns were created and their performance is presently being studied and evaluated. Results to date have been encouraging.

Plans at present are to convert additional producing wells to injection service and we request approval to convert and inject water into the Lovington Glorieta (Paddock) formation through the following wells.

Township 16 South Range 36 East Lovington Paddock Unit Well No. 21 Unit G Section 36

Lovington Paddock Unit Page No. 2 July 31, 1972

> Township 16 South Range 37 East Lovington Paddock Unit Well No. 23 Unit E Section 31

> Township 17 South Range 36 East Lovington Paddock Unit Well No. 61 Unit E Section 1

Through conversion of the wells several advantages will be realized:
(1) Greater injection capacity for the unit. (2) Creation of additional five spot patterns for more effective sweep. (3) If the five spot patterns continue to perform more effectively than the presently incorporated nine spot, plans are to convert to five spot patterns throughout the entire unit.

Attached as a part of this request are the following items: A map showing all wells within a two mile radius, which indicates ownership and producing horizons; a unit plat showing present and proposed injection wells; schematic diagrams and copies of logs on the proposed injection wells; a current analysis of injection water. Order No. 3692 provides for administrative approval for additional wells in this unit without the necessity of showing response to injection; however, response to injection has occurred in the areas of proposed expansion.

Produced water is reinjected into the Lovington Paddock Unit. Make-up water is supplied by Skelly owned water supply wells. This water is fresh and taken from the Ogallala formation. The two waters are not commingled prior to injection; preventing any problems that might arise due to incompatability. Anticipated injection rates are 300-500 BPD per well (900-1500 for the three wells) at well head injection pressures of 2000-2300 psig.

The casing-tubing annulus will be filled with an inert fluid and left open to detect leaks.

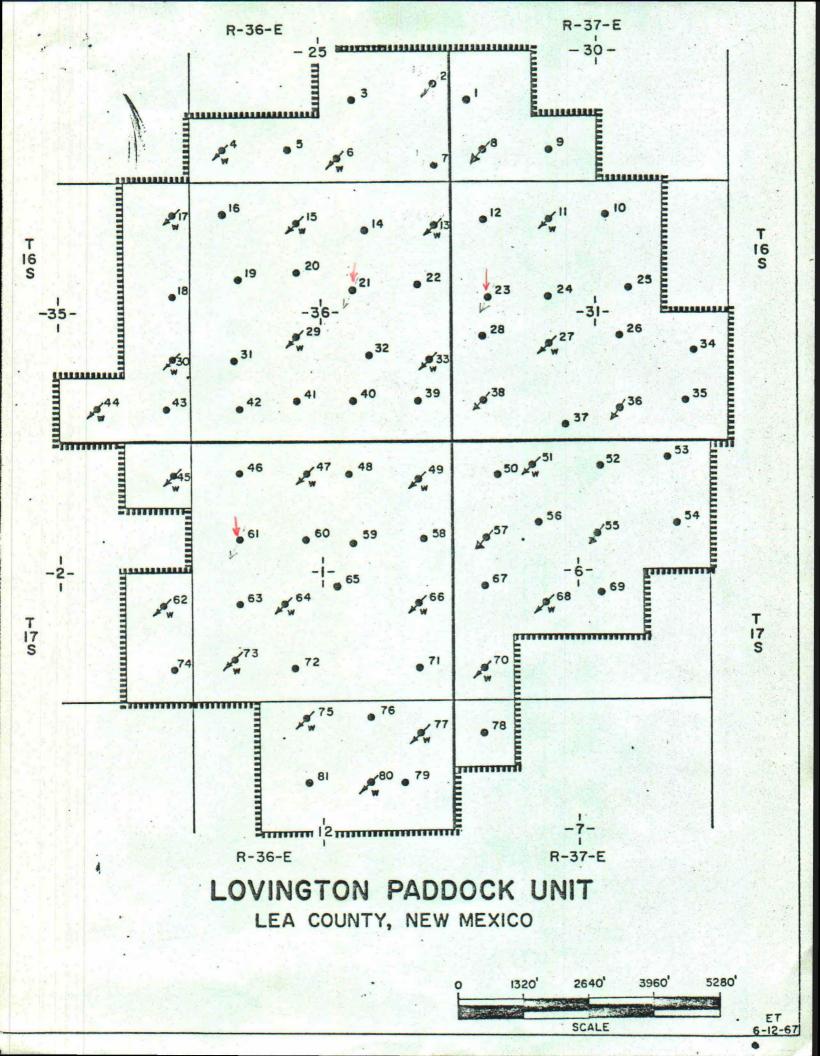
Yours very truly,

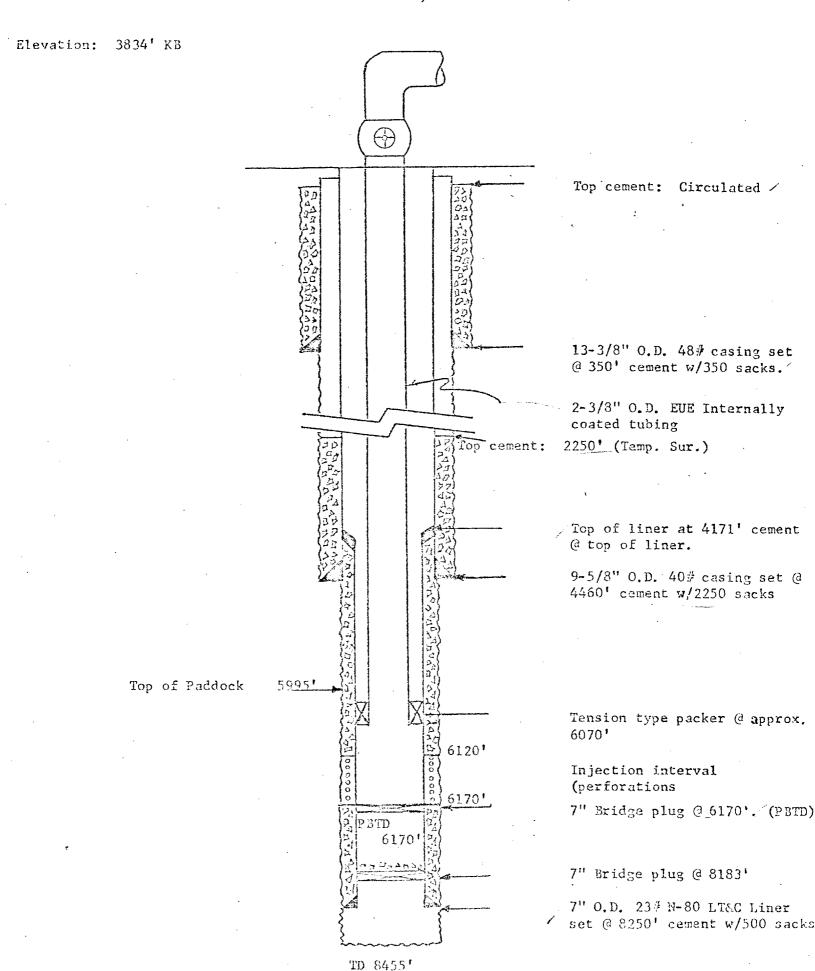
C. J. Love

WTT/rc Attachments

United States Geological Survey (2) P. O. Drawer 1857 Roswell, New Mexico 88201

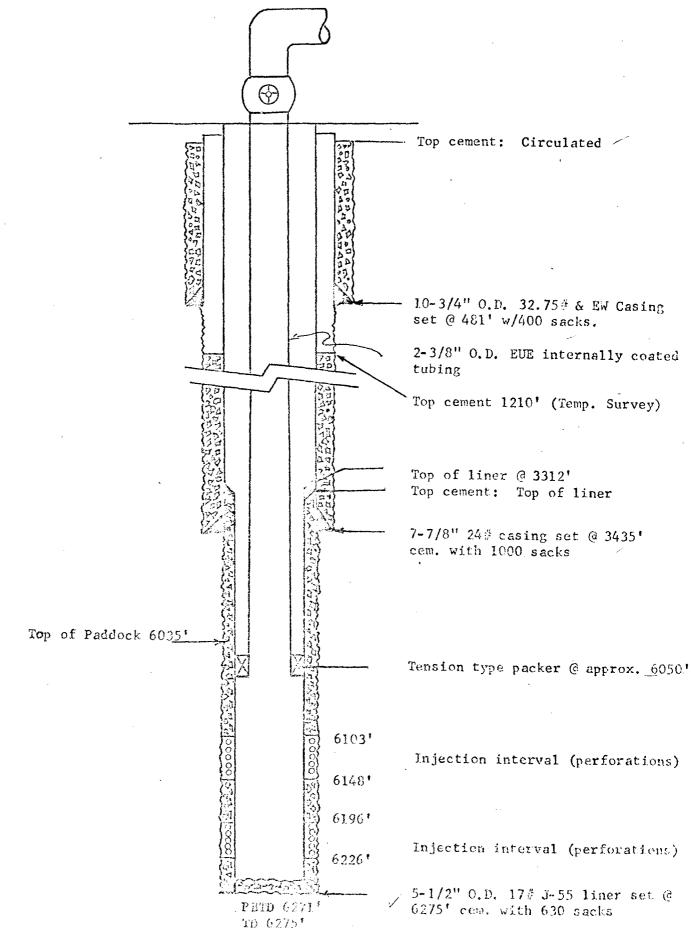
Commissioner of Public Lands State of New Mexico Capitol Annex Building Santa Fe, New Mexico 87501





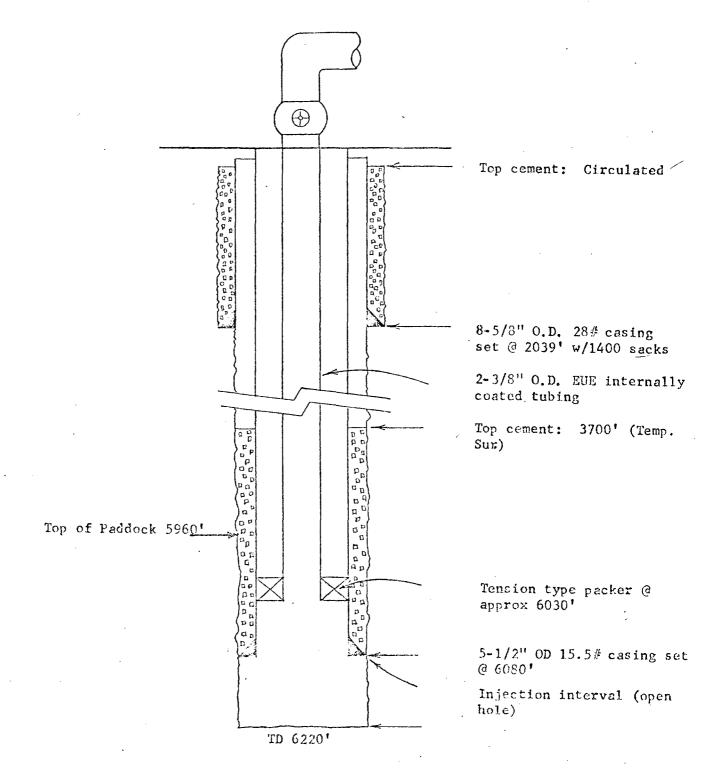
SKELLY OIL COMPANY Lovington Paddock Unit No. 21 1980' FEL & 2190' FNL, Section 36-16S-36E

Elevation: 3838' DF



SKELLY OIL COMPANY Lovington Paddock Unit No. 61 1980' FNL & 990' FWL, Section 1-17S-36E

Elevation: 3846' KB



Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234 MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

408 W. ILLINOIS PHONE 683-4521 MIDLAND, TEXAS 79701

		_ABORATORY NO	17231	
TO:		CAMBLE BECEIVED	1-7-72	
2. 0. Dox 730, Hobbs. N.	. V.	BESULTS DEDORTED	1-17-72	
	 	RESULTS REPORTED	·	
COMPANY GALLY GIL COMPANY	I FASE	Lovington Rud	dock Pait	
	7			
SECTION BLOCK SURVEY	COUNTY	7.63 st	ATE I. I.	
SECTION BLOCK SURVEY SOURCE OF SAMPLE AND DATE TAKEN:		J1	~ · C — — — — — — — — — — — — — — — — — —	
No. 1 Mainated in water - taken for	om though 475	1-7-70 (Fra	54 Do 2/12	ביים ביינו ב
No. 2 200 Water - taken From water	er supply wel	1 #1. 1-7-72	37777	
No. 3 Fay vater - taken from vate			· · · · · · · · · · · · · · · · · · ·	
	• • •		1 7 70	
NO. 4 Tractal pater - taken from	<u> 1833erian au</u> 1833erian Sy		<u> </u>	
}				
CHEMICAL	AND PHYSICAL	· , · · · · · · · · · · · · · · · · · ·		
Sanifa Castina a (0) C	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1,0024			
pH When Sampled pH When Received	7-1			
Bicarbonate as HCO3	5.5			
Supersaturation as CaCO3	227			BLE
Undersaturation as CaCO3				$n \vdash \neg$
Total Hardness as CaCO3				₩
Calcium as Ca	300			
Magnesium as Mg	251		· · · · · · · · · · · · · · · · · · ·	
Sodium and/or Potassium				
Sulfate as SO4	5~1			
Chloride as CI	177			
Iron as Fe	7 24.3			
Barium as Ba	0.15			
Turbidity, Electric	- 			
Color as Pt	3.2			
Total Solids, Calculated	 			
Temperature °F.	2,323			
Carbon Dioxide, Calculated	0.2			
Dissolved Oxygen, Winkler	30	7 4	-	2 -
Hydrogen Sulfide	2.0	• •	939	7.3
Resistivity, ohms/m at 77° F.	2 - 6			
Suspended Oil	4.6			
Filtrable Solids as mg/	3 5			2 "
Volume Filtered, ml	2 000			1 73.
	- 4			+ 4 / 2 /
	Reported As Milligra	ams Per Liter		i
Additional Determinations And Remarks	of recommend	ation attached		
·				
				

Form No. 3

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Martin Water Laboratories

P. O. BOX 1468 PHONE 943-3234 MONAHANS, TEXAS 79756

RESULT OF WATER ANALYSES

406 W. ILLINOIS PHONE 683-4521 MIDLAND, TEXAS 79701

To:	Ι Δ	BORATORY NO	17252		
Mr. D. R. Perkhurs	.t sai	SAMPLE RECEIVED 1-7-72			
7, 0, Ten 700, Hobb	3, W. M. RF	PESIL TS PEPOPTED			
		Journal Marian			
COMPANY Telly Oil Company FIELD OR POOL	LEASE _	Lovington 2	addock Vait		
FIELD OR POOL	Lovington				
SECTION BLOCK SURVEY	COUNTY	Lea s	TATE.		
SOURCE OF SAMPLE AND DATE TAKEN:					
No. 1 Profuced voter - taken	from heater treate	2-7-72			
NO. 2 Trantel mater - taken	from injection pump	discharge.	1-7-72		
NO. 3 Tainution water - take					
NO. 3	11 minute yaya	K 7 24	·		
NO. 4	Toineed Water Swats				
CHE	MICAL AND PHYSICAL P		 		
	NO. 1	NO. 2	NO. 3	NO. 4	
Specific Gravity at 60° F.	1.0775	1.7750	1.0756	 	
pH When Sampled	5,8	6.7	6.7		
pH When Received	7.0	ં.95	4.9		
Bicarbonate as HCO3	761	0.5 <u>j</u>	35-6		
Supersaturation as CaCO3	20	2.7	22		
Undersaturation as CaCO3	27 500		27.500		
Total Hardness as CaCO3 Calcium as Ca		76,253	27.700		
Magnesium as Mg	7,400	4, 70	7,210		
Sodium and/or Potassium	2 110	* 273	2,277		
Sulfate as SO4	37.074	37, 745	25 007		
Chloride as CI	1,005	1 205	1 775	· · · · · · · · · · · · · · · · · · ·	
Iron as Fe	76.771	71 (19 7 A	77,639		
Barium as Ba			- 3		
Turbidity, Electric	- ,	40.3	2	 	
Color as Pt			153		
Total Solids, Calculated	105 100	3½ 116 / 89	110 70E	 	
Temperature °F.	200		57.		
Carbon Dioxide, Calculated		200	100		
Dissolved Oxygen, Winkler	0.0				
Hydrogen Sulfide	2.5	~ 3	7 /		
Resistivity, ohms/m at 77° F.	0 075	7 non	2 251		
Suspended Oit	107	75	74		
Filtrable Solids as mg/1	A 5	10.3	3.3		
Volume Filtered, ml	2.000	1 200	7 000		
	Results Reported As Milligrams	Per Liter			
Additional Determinations And Remarks	tter of recommendat	ion attached			
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Form No. 3

Ву _____

RADIOACHAY LOG UTILET HIT SELVICES, INC.

8	LICENSED BY: WELL SURVEYS, INC.				
Location of Well	WELL TRACE	PLID-SPAT P / 18 SER H LOVINGÇO PLL & 231	F E L // l _t N PADDOOK NEW STATEMENICO O' FNL	COUNTY LEA STAT LOCATION 990 FILL & 231	COMPANY LEE DEFILITING CONTA STAND E STANDLIND-STAND E WELL PRACT # 18 WELL # 1 LOVINGTON PADDO
LOG MEAS, FROM	LOG MEAS, FROM TOP OF HOPARY TABLE ELEV. 3846				
PERM. DATUM	GROUND TEAEL	<u> </u>	ELEV.3833	TCO	K H
NEUTRON SOURCE SOURCE SPACING LENGTH OF MEAS O.D. OF INSTRUME TIME CONSTANY— LOGGING SPEED I STATISTICAL VARI	(DRILLER) (LOG) INTERVAL GED INTERVAL HOLE DED TEMPURATURE E STRENGTH & TYPEIN. UNING DEVICE-IN. EINT-INSECONDS FT./A.TH. ATTOR-IN.	34.11.4 RAY 12-2-55 142-166 3 6220 6220 6213 50 6202 110 7001 50 50 50 50 50 50 50 50 50 50 50 50 50	NEUTROII 1 2-2-55 133-693 6220 6220 6213 50 6211 ETOLL 600N 3.75 9.1 3.5/8 2.8 20-740		
SERSITIVITY REFER RECORDED BY VAITNESSED BY	FNCE	STEEON	SHERMAN SHUSON		

M CKOLOG	Location of Well	- 1	C G	Elevation: D.F.: K.B.: or G.L.:	FIING No.	
BERGER TELL SURENIES OF THE STAN THE ST	COMPANY FRED TURNER JR.	WELL MEBB FEDERAL # 2	FIELD S. LOY INGTON LOCATION SEC.31-165-37E	COUNTYLEA	STATE NEW MEXICO	2.40 Aby austic Q F G G F G G G G G G G G G G G G G G G
	₩ <u>y</u>	NO (1) JATES C ASAL	P1 244	3 - 7128 3 - 0 2 - 10017. 3 - 1 1 - 128 1 - 12	1001 1001 1101	RUN No. The Caling The

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE