

CASE 3699: Application of H & S
OIL CO. for a waterflood project,
Eddy County, New Mexico.

Case No.

3689

Application, Transcript,
Small Exhibits, Etc.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
4/1 EXHIBIT NO. 4
CASE NO. 3698 43699

Ex 4

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INTRODUCTION:

The purpose of this study is to determine the practicality of forming a unit to conduct a secondary recovery program by waterflooding. The unit area is commonly referred to as 'The West Artesia Pool'. All lands in the proposed area are fully developed. Performance of waterflood projects in the Eddy County area gives a good indication of what might be anticipated by a secondary recovery program. Data necessary for establishing the pertinent covenants of a Unit Agreement and Unit Operating Agreement are incorporated in this study.

GEOLOGY

Area production is derived from four zones, Old Field (Artesia), Metex, Premier of the Grayburg Formation, and Lovington of the San Anders Formation. No one zone is productive throughout the area. Old Field is productive in ten wells, Metex in fourteen, Premier in eighteen, and Lovington in two. As a cross reference, eight wells produce from only one zone, thirteen from two and three from three.

Production is commingled in the well bore. No record is available to class the four zones by productivity. An estimate was made assigning an equal part of the cumulative production of a well to each of its productive intervals. It was not assumed that the wells produced in this manner, but it did determine a pattern that is reliable. Cumulative production, thus determined for

each zone is, Premier 224,330 barrels, Metex 113,312, Old Field 69,454 and Lovington 23,812.

Figure III shows the areal productivity limits of each of the four zones. Rating the zones in declining order of areal size is Premier, Metex, Old Field, and Lovington. It is assumed that a rating based on productivity would be in the same order.

Geological tops, shown in Table III, were picked from the Electric Logs if available. Information from Sample Log or Driller Logs was used where Electric Logs were not run.

PRODUCTION:

Production data was taken from the
New Mexico Oil & Gas Engineering

Committee Reports. Cumulative production in Table IV is to November 1, 1964. Present production is for six months, May through October, 1964, inclusive. Remaining primary production, in Table IV was estimated to be between 72,000 and 78,000 barrels, for simplicity in calculations it was set at 75,800 barrels to correspond in the first eighteen months recovery in the schedule in Table VII. Secondary recovery is estimated to equal ultimate primary recovery. Production in the secondary phase of operation is the estimated secondary recovery plus the then remaining primary. A primary recovery of 22,000 is estimated from November 1, 1964 to July 1, 1965, the projected effective date of the project. This interim production of 22,000 leaves 53,800 barrels of primary oil to be recovered after commencement of a secondary recovery project. Table V is a summary of the production.

PARTICIPATION:

True value of a well is the total recoverable oil and oil products.

Therefore, recoveries are the only criterion used in calculating the participating factors. State of depletion among the wells necessitate the two phase participation system. Phase one proportions the remaining primary recovery as determined by the present producing rate. May through October, 1964 production was determined as basis for arriving at an equitable percent producing rate. Phase two commences after the recovery of the remaining primary which is 75,800 barrels.

Ultimate primary recovery is the sum of present cumulative, production plus estimated remaining primary recovery. Estimated secondary recovery (equal to ultimate primary recovery) is the basis for determining participation during phase two or the secondary recovery period.

Phase one permits the recently completed wells a high rate of return for primary development cost payout.

COSTS:

Total cost listed in Table VIII for 1965 and 1966 are divided

into phase one and phase two. Phase one costs are those that are normally primary production expenses, and are proportioned by phase one participation factors. Costs under phase two are development and operational attributed to secondary recovery and are proportioned by phase two participation factors. After the recovery of the 75,800 barrels, all participation, income and costs,

are under phase two.

DEVELOPMENT:

A four well pilot was designed to take advantage of a surplus injection plant. Expansions to the plant are identical pump and engine size. Well conversion plan summary is included in Table VI. Stages of development, in Table VI are hypothetical, but are similar to any that will evolve by normal response to water injection. Initial full field development can be employed, however, is not as popular as stage development.

ECONOMICS:

Average conditions were used to calculate the full unit economics. An average working interest of 78.125 was used, this would have the normal 1/8 royalty plus a 3/32 overriding royalty. (1) Gross income is based on an oil price of \$ 2.82 (two dollars and eighty two cents) per barrel less 3.503% taxes. No allowances are made for gas income, (2) Supervision and general office expense of \$ 90.00 (ninety dollars) per well per month, (3) Operation and maintainence expense of \$ 85.00 (eighty five dollars) per well per month, (4) Watered out wells are plugged and abandoned reducing the well count number in determining other costs, (5) Reduced estimate of operation and maintenance expenses to \$ 65.00 (sixty five dollars) per well per month; All wells plugged in 1973. It was assumed that the plugging costs at the end of the project life, would equal the salvage value.

Table VIII gives gross income, costs and net income of individual leases employing the unit total as determined in Table VII.

UNITIZATION:

All leases being State of New

Mexico will simplify unitization.

Regardless of sell-outs, trades, or side contracts on individual lease, a unit agreement would still be necessary. The potential recovery should prompt all interested operators to proceed with unitization for installing and operating the waterflood project.

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TABLE I
WELL COMPLETION RECORD
WEST ARTESIA POOL

OWNER Lease & Well No.	Completion Date	Surface Elevation	Total Depth	Casing Record size-depth/gas	Initial Production	Producing Intervals	Stimulation Treatments	Development Stage of Conversion
ALLISON, FRED M. Humble State 1	11-2-58	3623	2502 2376 PBD	8 5/8- 540/ 5 1/2-2376/80	258-F	64/2171-87 96/2230-54 88/2241-	2316 SOF - 41,000	
BEDINGFIELD, J. E. Spurck 1	1-30-58	3620	2415 2235 PBD	8 - 457 7 -2165/65	72-F	2165-2235	SOF - 40,000	3
CARPER DRILLING CO. Well 1	7-10-50	3609	2493 2255 PBD	8 5/8- 503/50	35-P	2065-2250	TNT - 497	
	9-1-50	3608	2235 2134 PBD	8 5/8 497/50	35-P	1935-2168	TNT - 542	2
	10-27-57	3609	2128 2118	8 5/8 500/25 5 1/2-2118/50	100-F	20/1986-96	Ac. - 6,300 SOF - 13,000 Ac. - 6,200 SOF - 7,000 Ac. - 6,300 SOF - 7,000	
	3-28-58	3611	2225 2222 PBD	8 5/8- 460 5 1/2-2222	70-F	30/1942-52 21/2156-63 28/2130-37	SOF - 29,000	
State 18 1	5-15-57	3614	2145	8 5/8- 510/35 5 1/2-2145/35	140-F			
DORRELLY DRILLING CO. Eddy State 1	12-15-56	3613	2166	8 5/8- 502/50 5 1/2-2166/100	62-P	40/2110-20	SOF - 30,000	Pilot
	4-14-57	3620	2482	8 5/8- 505/50 5 1/2-2478/100	60-F	88/2449-71	SOF - 15,000	4
Kelly State 1	4-1-58	3616	2485	8 5/8- 499/50 5 1/2-2485/100	21-P	32/2145-58 32/2458-66	SOF - 21,000	
KINCAID & WATSON DRILLING CO. Marathon State 1	8-1-64	36	2295	8 5/8- 426/50 5 1/2-2293/1000	40-F	80/2112-32	SOF - 35,880 & 70,000 #	

TABLE I
(cont)

OWNER Lease & Well No.	Completion Date	Surface Elevation	Total Depth	Casing Record size-depth/saxs	Initial Production	Producing Intervals	Stimulation Treatments	Development Stage of Conversion
KINCAID & WATSON DRILLING CO.								
Signal State 1	7-23-62-	3635	2359	8 5/8- 472/50 5 1/2-2348/100	13 1/2 L.O. 87 1/2 KW 15-P	16/2316-20 32/2024-32	SOF - 22,000 G 35,000 # SOF - 34,500 G 56,000 #	3
LEONARD OIL CO.								
State E-2715 1	6-10-58	3628	2382	8 5/8- 503/50 5 1/2-2260/150	40-F	56/2170-84 24/2204-10	Ac. - 250 SOF - 30,000	5
HASK & WESTALL								
Eddy State BO 1	2-4-59	3627	2409	7 5/8- 571/300 4 1/2-2402/325	51-P 6 KW	60/2178-88 84/2234-55 96/2294- 2318	Ac. - 500 SOF - 30,000	4
NDI & CURTIS								
Gulf State D 1	11- -58	3633	2297	5 1/2-2297/125	55-F	40/2254-64	SOF - 12,000	
T.P. State 1	8-1-58	3621	2252	8 5/8- 457/50	40-F	32/2164-72 16/2186-90 32/2200-08 4/2063-65 4/2072-74 12/2075-81	Ac. - 250 SOF - 45,000 G 60,000 # SOF - 10,000 G 40,000 #	
ROACH DRILLING CO.								
Humble State 1	12-24-57	3632	2314	8 5/8- 440/50 5 1/2-2314/100	60-F	40/2265-75 16/1988-96	SOF - 20,000 G 30,000 # SOF - 20,000 G 30,000 #	

TABLE I
(cont)

OWNER Lease & Well No.	Completion Date	Surface Elevation	Total Depth	Casing Record size-depth/cus	Initial Production	Producing Intervals	Stimulation Treatments	Development Stage of Conversion
ROMCI DRILLING CO.								
Humble State 2	2-25-58	3628	2290	8 5/8- 440/50 5 1/2-2290/100	36-F	40/2196- 2206	SOF - 40,000 g 60,000 #	
	9-19-61					24/2220-26 16/2234-38 32/2102-10	SOF - 40,000 g 60,000 # SOF - 10,000 g 20,000 #	
Leonard State 1	7-17-60	3611	2451. 2317 PBD	8 5/8-1506/set 5 1/2-2317/166	35-P 4XW	2115-17 2231-35 2267-69 2277-79	SOF - 40,000 g 60,000 #	2
Signal State 1	10-11-59	3623	2273	8 5/8- 427/ 5 1/2-2273/75	60-F	8/2236-38 32/2245-53	Ac. - 250 SOF - 20,000 g 30,000 #	Pilot
	4 - -60					2114-20 2204-10	SOF - 20,000 g 30,000 #	
2	1-21-58	3626	2305	8 5/8- 500/50 5 1/2-2305/100	60-F	40/2213-28	SOF - 20,000 g 30,000 #	
						24/2256-62 24/2266-72	SOF - 20,000 g 30,000 #	
						10/1990-26	SOF - 15,000 g 30,000 #	
2B	4-24-62	3628	2311. 2060 PBD	8 5/8- 442/50 4 1/2-2060/75	22-P	20/2007-17	SOF - 20,000 g 30,000 #	
SINCE & REESE OIL CO. Wilson State 1	2-6-58	3631	2340	8 5/8- 455/100 5 1/2-2340/100	60-F	40/2024-34 40/2130-40 12/2197- 2200	Ac. - 250 SOF - 57,500 g 36,250 #	Pilot

TABLE I
(cont)

OWNER Lease & Well No.	Completion Date	Surface Elevation	Total Depth	Casing Record size-depth/sags	Initial Production	Producing Intervals	Stimulation Treatments	Development Stage of Conversion
KINCAID & WATSON DRILLING CO.								
Signal State 1	7-23-62-	3635	2359	8 5/8- 472/50 5 1/2-2348/100	13% L.O. STB MW 15-P	16/2316-20 32/2024-32	SOF - 22,000 g 35,000 # SOF - 34,500 g 56,000 #	3
LEONARD OIL CO.								
State E-2715 1	6-10-58	3628	2382	8 5/8- 503/50 5 1/2-2260/150	40-F	56/2170-84 24/2204-10	Ac. - 250 SOF - 30,000	5
LASK & WESTALL								
Daddy State B0 1	2-4-59	3627	2409	7 5/8- 571/300 4 1/2-2402/325	51-P 6 MW	60/2178-88 84/2234-55 96/2294- 2318	Ac. - 500 SOF - 30,000	4
NIX & CURTIS								
Gulf State D 1	11-58	3633	2297	5 1/2-2297/125	55-F	40/2254-64	SOF - 12,000	
T.P. State 1	8-1-58	3621	2252	8 5/8- 457/50 5 1/2-2251/100	40-F	32/2164-72 16/2186-90 32/2200-08 4/2063-65 4/2072-74 12/2075-81	Ac. - 250 SOF - 45,000 g 60,000 # SOF - 10,000 g 40,000 #	
ROACH DRILLING CO.								
Humble State 1	12-24-57	3632	2314	8 5/8- 440/50 5 1/2-2314/100	60-F	40/2265-75 16/1988-96	SOF - 20,000 g 30,000 # SOF - 20,000 g 30,000 #	

TABEL II

PRODUCTIVE ZONES - EACH WELL

West Artesia Pool

OWNER Lease & Well No.	OLD FIELD	METEX	PREMIER	LOVINGTON
ALLISON, FRED M. Humble State No. 1	---	2171-2187	2230-2254 2294-2316	---
BEDINGFIELD, J. E. Spurck 1	----	---	2165-2235	---
CARPER DRILLING CO. Well 1	---	2085 ----open hole-----	2250	---
2	1935-----open hole-----		2134	---
3	1986-1996	2047-2054 2086-2096	---	---
4	1942-1952	---	2156-2163	---
State 18 1	---	---	2130-2137	---
DONNELLY DRILLING CO. Eddy State 1	---	2110-2120	---	---
2	---	---	---	2449-2471
Kelly Stato 1	<i>open</i>	2145-2158	<i>open</i>	2458-2466 <i>perf. plug muds?</i>
KINCAID & WATSON DRILLING CO. Marathon State 1	---	2112-2132	---	---
Signal Stato 1	2024-2032	---	2316-2320	---

TABLE II
(con't)

OWNER Lease & Well No.	OLD FIELD	METEX	PREMIER	LOVINGTON
LEONARD OIL CO. State E-2715 1	---	---	2170-2184 2204-2210	---
MASK & WESTALL Eddy State BO 1	---	2178-2188	2234-2255 2294-2318	---
NIX & CURTIS Gulf State 1	---	---	2254-2264	---
T.P. State 1	---	2063-2065 2072-2074 2075-2081	2164-2172 2186-2190 2200-2208	---
ROACH DRILLING CO. Humble State 1	1988-1996	---	2265-2275	---
2	---	2102-2110	2196-2206 2220-2226 2234-2238	---
Leonard State 1	---	2115-2117	2231-2235 2267-2269 2277-2279	---
Signal State 1	---	2114-2120	2236-2238 2245-2253 2204-2210	

TABLE II
(con't)

<u>OWNER</u> <u>Lease & Well No.</u>	<u>OLD FIELD</u>	<u>METEX</u>	<u>PREMIER</u>	<u>LOVINGTON</u>
ROACH DRILLING CO. Signal State 2	1990-1996	---	2218-2228 2256-2262 2266-2272	---
2B	2007-2017	---	---	---
SIMES & REESE OIL CO. Wilson State 1	2024-2034	2130-2140 2197-2200	2253-2258 2260-2265	---
2	2050-2056	2166-2171 2200-2205	2300-2312	---

TABLE III
GEOLOGICAL FORMATION TOPS
West Artesia Pool

OWNER Lease & Well No.	GRAYBURG		OLD FIELD		METEX		PREMIER		SAN ANDRES		LOVINGTON		
	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	
ALLISON, FRED M. Humble State 1	---		---		2175	1448	---		2300	1323	---		*D
BEDINGFIELD, J. E. Spurck 1	---		---		---		---		2241	1379	---		D
CARPER DRILLING CO. Well 1	1872	1737	1950	1659	2060	1549	2175	1434	2250	1359	2445	1164	S
2									2230	1378			D
3													
4	1949	1762	1928	1683	2032	1579	2102	1509	---		---		L
State 18 1	---		2022	1592	2130	1484	---		---		---		S
DONNELLY DRILLING CO. Eddy State 1	1922	1691	1999	1614	2101	1512	---		---		---		L
2	1953	1667	2036	1584	2138	1482	2259	1361	2328	1292	2449	1171	L
Kelley State 1											2468	1148	D
KINCAID & WATSON DRILLING CO. Marathon State 1	1932	1700	2011	1621	2111	1521	2238	1394	---		---		L
Signal State 1	1941	1694	2023	1612	2124	1511	2247	1388	2330	1305	---		L

TABLE III
(cont)

OWNER Lease & Well No.	GRAYBORG		OLD FIELD		METEX		PRELDER		SAN ANDRES		LOVINGTON		
	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	Surface	Subsea	
LEONARD OIL CO. State E-2175 1	1860	1768	1942	1686	2044	1584	2167	1461	2244	1384	2372	1256	L
MASK & WESTALL Eddy State BO 1	---	---	---	---	---	---	---	---	2368	1259	---	---	D
NIX & CURTIS Gulf State D 1	1897	1736	1977	1656	2077	1556	2209	1424	2283	1350	---	---	L
T.P. State 1	1850	1771	1925	1696	2026	1595	2146	1475	2241	1380	---	---	L
ROACH DRILLING CO. Humble State 1	1902	1730	1984	1648	2084	1548	2122	1420	2294	1338	---	---	L
	2	1878	1752	1960	1670	2059	1571	2187	1443	2270	1360	---	L
Leonard State 1	1917	1694	1998	1613	2100	1511	2223	1388	2297	1314	---	---	L
Signal State 1	1886	1737	1964	1659	2066	1557	2192	1431	2267	1356	---	---	L
	2	1900	1726	1983	1643	2085	1541	2210	2286	1340	---	---	L
	2B	1915	1713	1994	1634	2101	1527	2231	2297	1331	---	---	L
SINUS & REESE OIL CO. Wilson State 1	1834	1697	2018	1612	2119	1512	2246	1385	2324	1304	---	---	L
	2	1961	1674	2046	1589	2146	1489	2291	2360	1275	---	---	L

* Information Obtained From:

D - Drillers Log

S - Sample Log

L - Electric Log

TABLE IV
PRODUCTION DATA
&
PARTICIPATION FACTORS

OWNER Lease & Well No.	CUMULATIVE PRODUCTION Nov. 1, 1964	PRESENT PRODUCTION May - Oct. 1964	PHASE I PARTICIPATION FACTOR	REMAINING PRIMARY PRODUCTION	ULTIMATE PRIMARY PRODUCTION	PHASE II PARTICIPATION FACTOR
ALLISON, FRED M. Humble State 1	12,316	612	3.72898	2,827	15,143	2.93056
BEDINGFIELD, J. E. Spurck 1	22,567	305	1.85839	1,409	23,976	4.63998
CARPER DRILLING CO. Well 1	23,533	1				
	1,129	37				
	1,173	278				
	20,619	136				
Total	46,454	452	2.75408	2,088	48,542	9.39412
State 18 1	18,377	208	1.26736	961	19,338	3.74240
COMPANY TOTAL	64,831	660	4.02144	3,049	67,880	13.33652
DONNELLY DRILLING CO. Eddy State 1	25,573	561	3.41823	2,591	28,164	5.45046
	32,456	1,256	7.65294	5,801	38,257	7.40372
Total	58,029	1,817	11.07117	8,392	66,421	12.85418
Kelly State 1	4,712	-0-	-0-	-0-	4,712	0.91190
COMPANY TOTAL	62,741	1,817	11.07117	8,392	71,133	13.76608

TABLE IV
(cont)

OWNER Lease & Well No.	CUMULATIVE PRODUCTION Nov. 1, 1964	PRESENT PRODUCTION May - Oct 1964	PHASE I PARTICIPATION FACTOR	REMAINING PRIMARY PRODUCTION	ULTIMATE PRIMARY PRODUCTION	PHASE II PARTICIPATION FACTOR
KINCAID & WATSON DRILLING CO. Marathon State 1 Signal State 1	1,327 11,409	1,327 3,320	8.08555 20.22910	6,129 15,333	7,456 26,742	1.44293 5.17526
COMPANY TOTAL	12,736	4,647	28.31465	21,462	34,198	6.61819
LEONARD OIL CO. State E-2715 1	8,473	289	1.76081	1,335	9,808	1.89810
MASK & WESTALL Eddy State BO 1	6,199	128	0.77992	591	6,790	1.31404
NIX & CURTIS Gulf State D 1 T.P. State 1	9,805 17,997	101 426	0.61540 2.59567	466 1,968	10,271 19,965	1.98771 3.86375
COMPANY TOTAL	27,802	527	3.21107	2,434	30,236	5.86346
ROACH DRILLING CO. Humble State 1 Total 2	38,629 30,074 68,703	1,253 404 1,657	10.09627	7,653	76,356	14.77686
Leonard State 1	5,592	-0-	-0-	-0-	5,592	1.08219
Signal State 1 2 2B Total	40,057 31,185 7,604 78,846	1,831 950 2,781	16.94492	12,844	91,690	17.74437
COMPANY TOTAL	153,141	4,438	27.04119	20,497	173,638	33.60342

TABLE IV
(con't)

OWNER Lease & Well No.	CUMULATIVE PRODUCTION Nov. 1, 1964	PRESENT PRODUCTION May - Oct. 1964	PHASE I PARTICIPATION FACTOR	REMAINING PRIMARY PRODUCTION	ULTIMATE PRIMARY PRODUCTION	PHASE II PARTICIPATION FACTOR
SIXTIS & REESE OIL CO.						
Wilson State 1	42,707	1,736				
2	27,414	1,253				
COMPANY TOTAL	70,121	2,989	18.21228	13,804	83,925	16.24165
POOL TOTAL	440,927	16,412	100.00000	75,800	516,727	100.00000

TABLE V
PRODUCTION SUMMARY

Cumulative Production to 11/1/64		440,937
Est. Remaining Primary	75,800	
Est. Production 11/1/64 to 7/1/65	<u>22,200</u>	
Remaining Primary at start of Secondary	53,800	<u>75,800</u>
Ultimate Primary Recovery		516,727
Estimated Secondary Recovery Remaining Primary		<u>516,727</u> <u>53,800</u>
Total Production During Secondary		570,527
Phase One Production	75,800	
Phase Two Production (est.)	494,727	

*These figures
should be reduced
somewhat
because 3 wells
included in this
study are
not in the unit
or the flood
zone.*

TABLE VI
SECONDARY RECOVERY DEVELOPMENT COSTS

PILOT STAGE

INJECTION WELL CONVERSION:

Donnelly Drilling Co. No. 1 Eddy State
Producing Intervals: 40 holes / 2110-20 Metex
(Injection down tubing)
COST: Workover & Wellhead Equipment \$ 750.00

Roach Drilling Co. No. 1 Humble State
Producing Intervals: 16 holes / 1923-96 Old Field
40 holes / 2265-75 Premier
(Injection tubing-annulus dual completion,
single packer)
COST: Workover & Wellhead Equipment \$ 1,200.00

Roach Drilling Co. No. 1 Signal State
Producing Intervals: 24 holes / 2114-20 Metex
24 holes / 2204-10 Premier
8 holes / 2236-28 Premier
32 holes / 2245-53 Premier
(Injection tubing-annulus dual completion,
single packer)
COST: Workover & Wellhead Equipment \$ 1,200.00

Simms & Reese No. 1 Wilson State
Producing Intervals: 40 holes / 2024-34 Old Field
40 holes / 2130-40 Metex
12 holes / 2197-
2200 Metex
20 holes / 2253-58 Premier
20 holes / 2260-65 Premier
(Injection tubing-annulus dual completion,
single packer)
COST: Workover & Wellhead Equipment \$ 1,200.00

RECOMPLETION:

Roach Drilling Co. No. 1 Signal State \$ 3,030.00

INJECTION SYSTEM:

Plant - Used Pump & Engine, Used Storage Tank
New Equipment & Piping, Labor - Complete \$10,000.00
Distribution Lines 2,620.00

Total Cost Pilot Stage \$20,000.00

SECOND STAGE

INJECTION WELL CONVERSION:

Roach Drilling Co. No. 1 Leonard State
Producing Intervals: 8 holes / 2115-17 Metex
8 holes / 2231-35 Premier
8 holes / 2267-69 Premier
8 holes / 2277-79 Premier

Table VI Continued

(Injection tubing-annulus dual completion, single packer)		
COST: Workover & Wellhead Equipment		\$ 1,200.00
Carper Drilling Co. No. 4 Well		
Producing Intervals: open hole / 1935-2168		(Old Field & Metex)
(Injection down tubing)		
COST: Workover & Wellhead Equipment		\$ 750.00
INJECTION SYSTEM		
Plant - Equal to Pilot w/New Pump & Engine		\$14,000.00
Distribution Lines		2,900.00
Contingencies		1,150.00
Total Cost Second Stage		\$20,000.00
<u>THIRD STAGE</u>		
INJECTION WELL CONVERSION:		
J. E. Beddingfield No. 1 Spurk State		
Producing Intervals: open hole / 2165-2235		Premier
(Injection down tubing)		
COST: Workover & Wellhead Equipment		\$ 750.00
Kincaid & Watson No. 1 Signal State		
Producing Intervals: 16 holes / 2024-32 Old Field		
(Injection down tubing)		
COST: Workover & Wellhead Equipment		\$ 750.00
INJECTION SYSTEM		
Plant		\$ -0-
Distribution Lines		3,800.00
Contingencies		700.00
Total Cost Third Stage		\$ 6,000.00
<u>FOURTH STAGE</u>		
INJECTION WELL CONVERSION:		
Mask & Westall No. 1 Eddy-State EO		
Producing Intervals: 60 holes / 2178-88 Metex		
84 holes / 2234-55 Premier		
96 holes / 2294-2318		Premier
(Injection tubing-annulus dual completion, single packer)		
COST: Workover & Wellhead Equipment		\$ 1,200.00
Donnelly Drilling Co. No. 2 Eddy State		
Producing Intervals: 88 holes / 2449-71 Lovington		

Table VI Continued

(Injection down tubing)		
COST: Workover & Wellhead Equipment		\$ 750.00
INJECTION SYSTEM		
Plant, Equal to Second Stage		\$14,000.00
Distribution Lines		3,000.00
Contingencies		<u>1,040.00</u>
Total Cost Fourth Stage		\$20,000.00
<u>FIFTH STAGE</u>		
INJECTION WELL CONVERSION:		
Leonard Oil Co. No. 1 State E-2715		
Producing Intervals: 56 holes / 2170-84 Premier		
24 holes / 2204-10 Premier		
(Injection down tubing)		
COST: Workover & Wellhead Equipment		\$ 750.00
INJECTION SYSTEM		
Plant		\$ -0-
Distribution Lines		1,750.00
Contingencies		<u>500.00</u>
Total Cost Fifth Stage		\$ 3,000.00
<u>SIXTH STAGE</u>		
LEASE MODERNIZATION & RETURN WATER SYSTEM:		\$10,000.00

<u>DEVELOPMENT COSTS BY YEARS</u>			
1965	Pilot		\$20,000.00
1966	Second Stage	\$20,000.00	
	Third Stage	<u>6,000.00</u>	\$26,000.00
1967	Fourth Stage	\$20,000.00	
	Fifth Stage	<u>3,000.00</u>	\$23,000.00
1968	Sixth Stage		<u>\$10,000.00</u>
Total Development Cost			\$79,000.00

TABLE VII

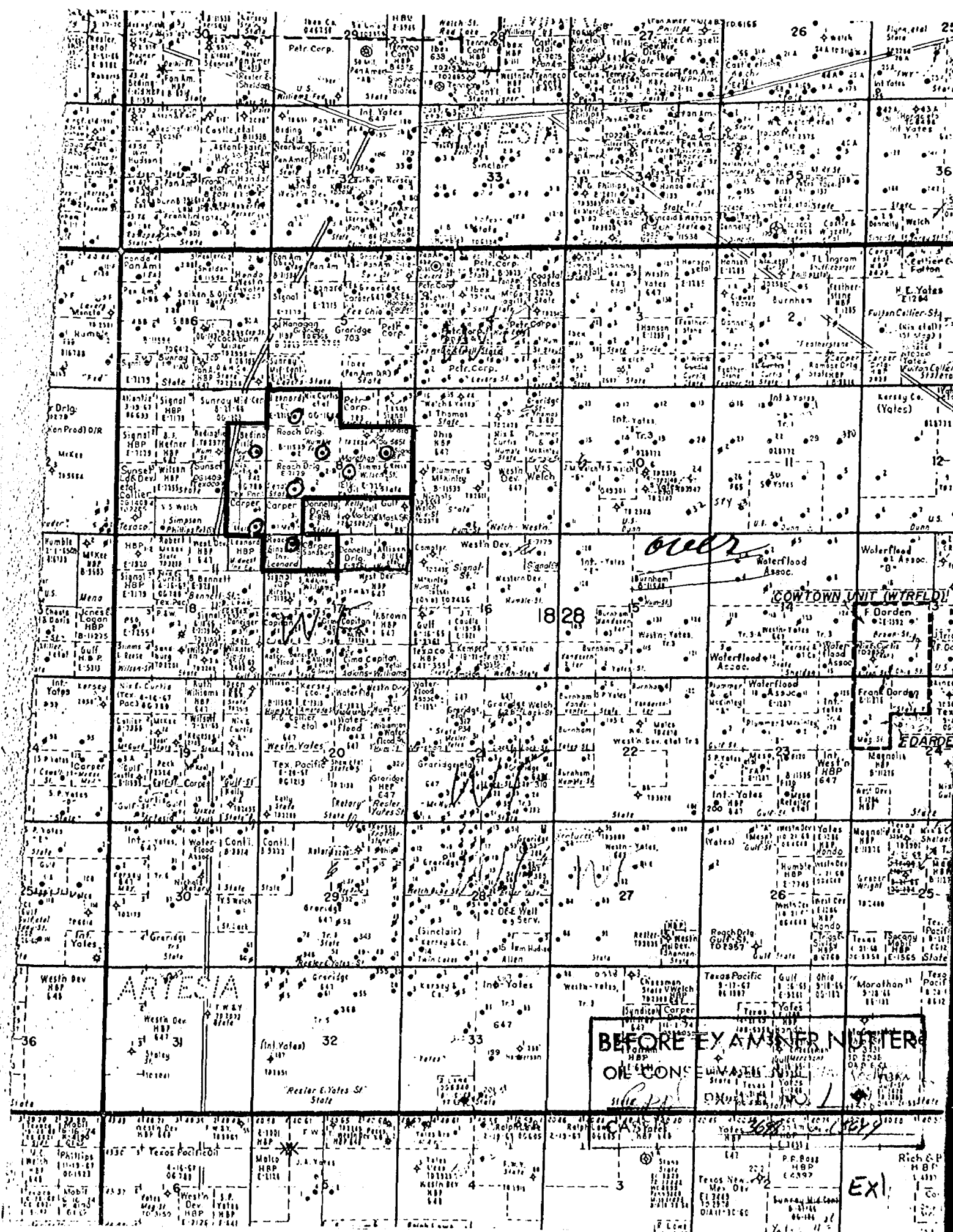
SECONDARY RECOVERY ECONOMICS

UNIT TOTAL

Year	Gross Production 78.125% av. Working Interest	Gross Income(1)	Development	Supervision & G.O.E.(2)	Costs Operation & Maintenance (3)	Water @ 2¢/bbl.	Total Costs	Net Income	Cumulative Net Income
1965(6mo)	11,800	23,800	20,000	12,960	12,240	15,000	60,200	(36,400)	(36,400)
1966	64,000	129,000	26,000	25,920	24,480	23,200	99,600	29,400	(7,000)
1967	186,000	374,000	23,000	25,920	24,480	30,000	103,400	270,600	263,600
1968	140,000	281,500	10,000	25,920	24,480	15,000	75,400	206,100	469,700
1969	69,000	139,000		25,920	24,480	9,600	60,000	79,000	548,700
1970	40,000	80,500		25,920	24,480	5,400	55,800	24,700	573,400
1971	27,000	54,400		21,600(4)	15,600(5)	3,000	40,200	14,200	587,600
1972	18,700	37,600		17,280	12,480	1,650	31,410	6,190	593,790
1973	14,027	28,400		12,960	9,360	900	23,220	5,180	598,970
TOTAL	570,527	1,145,200	79,000	194,400	172,080	103,750	549,230	598,970	

- (1) Income \$2.82 per barrel less 8.503% taxes, net \$2.58 per barrel
 (2) Combined fixed rate \$90.00 per well per month
 (3) Estimated direct charge \$85.00 per well per month
 (4) Plugged and Abandoned watered-out wells, 3 per year for 3 years, remaining 12 wells plugged at end of project life
 (5) Estimated direct charges reduced to \$65.00 per well per month

21 Wells - Plugged at end of project life
 24 Wells



8 inj tracts
 8 prod tracts

 16 total tracts
 42

 32
 64

 672

3 extra wells
~~3 x 14~~ = $3 \times 14 = 42$

42
 672

 714 total allowance

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

January 8, 1968

C
Mr. A. J. Losee
Attorney at Law
Post Office Box 239
Artesia, New Mexico 88210

O
Dear Mr. Losee:

P
Reference is made to Commission Order No. R-3357, recently entered in Case No. 3699, approving the H & S West Artesia Unit Waterflood Project.

Y
Injection is to be through the eight authorized water injection wells which shall be pressure tested to a minimum of 1500 psi prior to being placed on water injection. The Artesia District Office of the Commission shall be notified of the day and hour said tests are to be conducted so that a Commission representative can witness the tests. Any well which on conversion or later indicates the presence of a casing leak shall be equipped with tubing and a packer.

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 714 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

-2-

January 8, 1968

Mr. A. J. Losee
Attorney at Law
Post Office Box 239
Artesia, New Mexico

C 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.

O 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,

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

Y ALP/DSH/esr

cc: Oil Conservation Commission
Post Office Box 1980
Hobbs, New Mexico

Oil Conservation Commission
Drawer DD
Artesia, New Mexico

Mr. D. E. Gray
State Engineer Office
Capitol Building
Santa Fe, New Mexico

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3699
Order No. R-3357

APPLICATION OF H & S OIL COMPANY
FOR A WATERFLOOD PROJECT, EDDY
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on December 20, 1967, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 22nd day of December, 1967, 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, H & S Oil Company, seeks permission to institute a waterflood project in its West Artesia Grayburg Unit Area, Artesia Pool, by the injection of water into the Grayburg formation through eight injection wells in Sections 7, 8, and 17, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico.

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

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

-2-

CASE No. 3699

Order No. R-3357

(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, H & S Oil Company, is hereby authorized to institute a waterflood project in its West Artesia Grayburg Unit Area, Artesia Pool, by the injection of water into the Grayburg formation through the following-described wells in Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico:

<u>Lease Name</u>	<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
J. E. Beddingfield - Spurk	1	H	7
Cities Service - Mell	2	P	7
Tenneco - State	1	D	8
Roach and Shepard - Humble State	1	F	8
Roach and Shepard - Signal State	1	L	8
Kincaid & Watson - Signal State	1	H	8
H & S Oil Co. - Wilson State	1	J	8
Roach Drilling Co. - Leonard	1	D	17

PROVIDED HOWEVER, that the above-described J. E. Beddingfield-Spurk Well No. 1 shall not comprise any part of said waterflood project until such time as the SE/4 NE/4 of Section 7, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, is committed to the West Artesia Grayburg Unit.

(2) That the subject waterflood project is hereby designated the H & S West Artesia Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

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

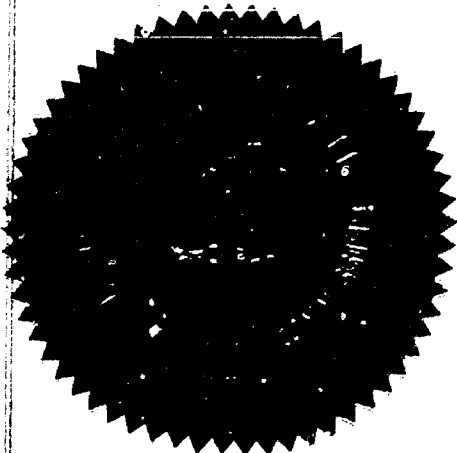
-3-

CASE No. 3699

Order No. R-3357

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


David F. Cargo
DAVID F. CARGO, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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

ear/

State of New Mexico
Oil Conservation Commission



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

December 22, 1967

Re: Case No. 3699
Order No. R-3357
Applicant:
H & S Oil Company

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

A. L. PORTER, Jr.
Secretary-Director

Carbon copy of order also sent to:

Other _____

DOCKET: EXAMINER HEARING - WEDNESDAY - DECEMBER 20, 1967

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

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

CASE 3695 continued from the November 29, 1967, Examiner Hearing

Application of Tenneco Oil Company for Special Pool Rules, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool, McKinley County, New Mexico, to provide that wells drilled in said pools could be located anywhere on the 40-acre unit except that no well could be located closer than 330 feet to the outer boundary of the lease nor closer than 200 feet to another well producing from the same pool. Applicant further proposes that any existing well not located in accordance with the above requirements be granted an exception to said requirements.

CASE 3698: Application of H & S Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the approval of the West Artesia Grayburg Unit Area comprising 640 acres, more or less, of state and fee lands in Sections 7, 8, and 17, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico.

CASE 3699: Application of H & S Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its West Artesia Grayburg Unit by the injection of water into the Grayburg formation through 8 wells located in Sections 7, 8, and 17, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico.

CASE 3700: Application of Lone Star Producing Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation through the perforated interval from 4910 to 5015 feet in its Federal New Mexico "D" Well No. 1 located in Unit A of Section 29, Township 8 South, Range 36 East, South Prairie Field, Roosevelt County, New Mexico.

CASE 3701: Application of Coastal States Gas Producing Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Baum Wolfcamp Pool in Township 14 South, Range 33 East, Lea County, New Mexico, including a provision for 160-acre spacing and proration units.

- CASE 3702: Application of Coastal States Gas Producing Company for an exception to Order No. R-3221, Lea County, New Mexico. Applicant, in the above-styled cause, on its own behalf and as operator of the Flying "M" Unit Area, seeks an exception to the provision of Paragraph (6) of the Commission Order No. R-3221 which requires that certain unlined pits used for the disposal of produced water be filled, leveled, and compacted. Applicant proposes that said pits be left open in the Flying "M" San Andres Pool, Lea County, New Mexico, to permit their use for temporary emergency storage of produced water in connection with individual tank batteries connected to the Flying "M" San Andres Pressure Maintenance Project operated by Coastal States Gas Producing Company.
- CASE 3703: Application of Texaco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Abo formation in the perforated interval from 9013 to 9046 feet in its New Mexico "CW" State Well No. 2 located in Unit L of Section 18, Township 17 South, Range 37 East, Midway-Abo Pool, Lea County, New Mexico.
- CASE 3704: Application of New Mexico Salt Water Disposal Company, Inc., for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Bough "D" zone of the Pennsylvanian formation in the perforated interval from 9844 to 9875 feet in its Ainsworth Well No. 1 located in Unit H of Section 19, Township 9 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico.
- CASE 3705: Application of Midwest Oil Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Bough zone of the Pennsylvanian formation in the perforated interval from 9784 to 9810 feet in its Ainsworth State Well No. 1, formerly the Sunray DX State I Well No. 1, located in Unit N of Section 36, Township 9 South, Range 33 East, Lane-Pennsylvanian Pool, Lea County, New Mexico.
- CASE 3706: Application of Major, Giebel & Forster for an amendment to Order No. R-3307, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3307 to designate Major, Giebel & Forster as operators of the NW/4 SW/4 of Section 6, Township 13 South, Range 38 East, West Bronco-Devonian Pool, Lea County, New Mexico, rather than Vasicek and Fullinwider dba V. F. Petroleum, who were originally designated as operators of said compulsorily pooled unit.

LAW OFFICES

A. J. LOSEE

CARPER BUILDING - P. O. DRAWER 239
ARTESIA, NEW MEXICO 88210

JOEL M. CARSON

AREA CODE 505
746-3508

14 December 1967

MAIN OFFICE

'67 DEC 18 AM 9 54

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

Dear Mr. Porter:

Enclosed herewith you will please find triplicate copies of Application of H & S Oil Company for a Unit Agreement, Eddy County, New Mexico, and Application of H & S Oil Company for a waterflood project, Eddy County, New Mexico. These Applications have been set for hearing as Case Nos. 3698 and 3699, respectively, before the Examiner on December 20, 1967.

With a copy of this letter we are furnishing Mr. Irby with a copy of the Application and all exhibits in Case No. 3699.

Very truly yours,



A. J. Losee

Enclosures
AJL:rh

cc: Certified Mail
Return Receipt Requested
W/ Enclosures
Mr. Frank Irby, Chief
Water Rights Division
State Engineer Office
P. O. Box 1079
Santa Fe, New Mexico

Tract No.	Basic Royalty	Percentage
2	State	All
3	State	All
4	State	All
5	State	All
6	State	All
7	State	All
8	State	All
9	State	All
10	State	All
11	State	All
12	Midwest Investment Company	All
13	Midwest Investment Company	All

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
<i>gls</i>	EXHIBIT NO. <u>3</u>
CASE 1	<u>3698 and 3699</u>

Tract No.	Phase 1 Partic- ipation Factor	Overriding Royalty	Percentage	Commitment Status
2				
3	11.94837	Humble Oil and Refining Lonnie Keeper	5.4687 2.7344	100%
4	1.59360	None		
5		O. P. out of 57% of 87.5% of 3,000,000 to (educat- ional) Foundation Inc. Robert W. Server et al., Continental Illinois Bank and Trust Company of Chicago		-0-
6	20.05366	Signal Oil and Gas Co. Lonnie Keeper	5.46875 2.73438	100%
7	21.55322	Wilson Oil Co. and Frances P. Bolton d/b as Wyoming Oil Company	5.4687	100%
8	2.93762	Marathon Oil Company Robert E. Dowling Tracey Clark Cities Services Suspense Various Interest Owners of New Mexico Oil and Gas Company	6.93750 .12500 .12500 .0625 4.000	
9	3.07132	Joseph L. Seagraves & Son, Inc.	12.5	100%
10	.72830	Gulf Oil Corporation	8.20312	100%

Tract No.	Phase 1 Partic- ipation Factor	Overriding Royalty	Percentage	Commitment Status
11	23.94000	Signal Oil and Gas Co. Robert G. Mannagan	8.203 3.125	100%
12	-0-	Tenneco	8.203125	100%
13	3.25930	Tenneco	5.4688	100%
TOTAL	89.08589			

Tract No.	Phase 1 Partic- ipation Factor	Working Interest	Percentage	Comm- ited Status
2				
3	11.94837	Raymond Smith Gene Reischman Glenn R. Harrison Ben B. Ginsberg C. E. Roach Drilling E. J. Shepard Minnie Shepard	25.00 25.00 25.00 12.50 6.25 3.125 3.125	100.00%
4	1.59360	Cities Service	100.00	100.00%
5	2.08393	Penneco	100.00	100.00%
6	20.05336	Raymond Smith Gene Reischman Glenn R. Harrison Ben B. Ginsberg C. E. Roach Drilling E. J. Shepard Minnie Shepard	25.00 25.00 25.00 12.50 6.25 3.125 3.125	100.00%
7	21.55322	H & S Oil Co. C. E. Roach Drilling E. J. Shepard Minnie Shepard	87.50 6.25 3.125 3.125	100.00%
8	9.56879	John N. Castner Duham Drilling Company, Inc. Robert Galt Harry B. Gilmore H & S Oil Co. A. Weber, Jr. Kincaid & Watson Drilling Co.	6.25 25.00 6.25 12.50 18.75 6.25 25.00	100.00%
9	3.07182	H & S Oil Company C. E. Roach Drilling E. J. Shepard Minnie Shepard Nix & Curtis Oil Co.	43.75 3.125 1.562 1.562 50.00	100.00%

Tract No.	Partic- ipation Factor	Working Interest	Percentage	
10	.72830	Nix & Curtis Oil Co.	75.00	
		L. F. Hamilton	12.50	
		C. E. Roach Drilling	6.25	
		E. J. Shepard	3.125	
		Minnie Shepard	3.125	100.00%
11	23.94000	Oscar Bourg	6.25	
		John N. Costner	6.25	
		Durham Drilling	25.00	
		Robert Gault	6.25	
		Harry B. Gilmore d/b as		
		G & S Oil Company	6.25	
		W. S. Nelson	6.25	
		H & S Oil Company	12.50	
		A. Weber, Jr.	6.25	
		Kincaid & Watson	25.00	100.00%
12	-0-	Ginsberg Investment	25.00	
		Glenn R. Harrison	25.00	
		Raymond Smith	25.00	
		Gene Reischman	12.50	
		C. E. Roach Drilling	12.50	100.00%
13	3.25930	Cities Service	100.00	100.00%
TOTAL	97.80069			

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
H & S OIL COMPANY, UNIT OPERATOR, FOR
A WATERFLOOD PROJECT, WEST ARTESIA
POOL, EDDY COUNTY, NEW MEXICO

NO. 3699

APPLICATION

FILED OFFICE 000

'67 DEC 18 AM 9 54

COMES H & S OIL COMPANY, a partnership composed of
Rupert L. Heinsch and Herbert R. Spencer, by its attorney,
A. J. Losee, and states:

1. Pursuant to the terms of the West Artesia Gray-
burg Unit Agreement and Unit Operating Agreement, the Appli-
cant is designated as Operator of the Grayburg formation
underlying the following lands in Eddy County, New Mexico,
comprising the project area covered by this Application, to-
wit:

Township 18 South, Range 28 East, N.M.P.M.,

Section 7: SE/4 NE/4, E/2 SE/4
Section 8: S/2 NE/4, NW/4, N/2 SW/4,
SW/4 SW/4, N/2 SE/4
Section 17: N/2 NW/4

containing 640 acres, more or less.

2. There is attached hereto and by reference made a
part hereof a plat showing the location of the proposed in-
jection wells and the location of all other wells and lessees
adjoining the proposed project area.

3. The Applicant proposes to inject water into the
producing intervals of the Grayburg formation in the follow-
ing wells located within the project area, to-wit:

Tenneco State E-2716, No. 1 Well located in the NW/4 NW/4 Section 8;

Kincaid & Watson Signal State OG-5851, No. 1 Well located in the SE/4 NE/4 Section 8; ✓

Roach & Shepard Humble State B-11539, Well No. 1 located in the SE/4 NW/4 Section 8; ✓

J. E. Beddingfield Spurk B-6043, Well No. 1 located in the SE/4 NE/4 Section 7; ✓

Roach & Shepard Signal State E-7179, Well No. 1 located in the NW/4 SW/4 Section 8; ✓

H & S Oil Company Wilson State E-7255, Well No. 1 located in the NW/4 SE/4 Section 8; ✓

Cities Service Oil Company Mell Fee, Well No. 2 located in the SE/4 SE/4 Section 7; ✓

Roach Drilling Company Leonard Fee, Well No. 1 located in the NW/4 NW/4 Section 17.

4. That all of the wells in the project area have reached the advanced or "stripper" state of depletion and Applicant proposes to inject water into the producing intervals of the Grayburg formation at the rate of approximately 250 barrels of water per well, per day, under a pressure of approximately ⁸⁰⁰~~1200~~ p.s.i. to stimulate the production of oil from the producing wells in the project area.

5. There is attached hereto and by reference made a part hereof electric logs on all of the proposed injection wells within the project area except for the Cities Service Oil Company Mell Fee Well No. 2 upon which no electric log is available.

6. There is attached hereto and by reference made a part hereof a diagrammatic sketch of all of the eight proposed injection wells.

7. It is proposed that Yucca Water Company will furnish the water for this project, or Applicant will secure water

from some other commercial source.

8. That Applicant proposes to conduct said waterflood project under the allowable provisions of Rule 701 of the New Mexico Oil Conservation Commission.

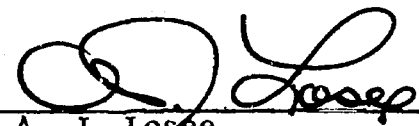
9. The approval of this waterflood project will be in the interest of conservation and will prevent waste and protect correlative rights.

10. That a copy of this Application and all exhibits attached hereto have been sent to the State Engineer's Office, attention Mr. Frank Irby, Capitol Building, Santa Fe, New Mexico, certified mail, return receipt requested.

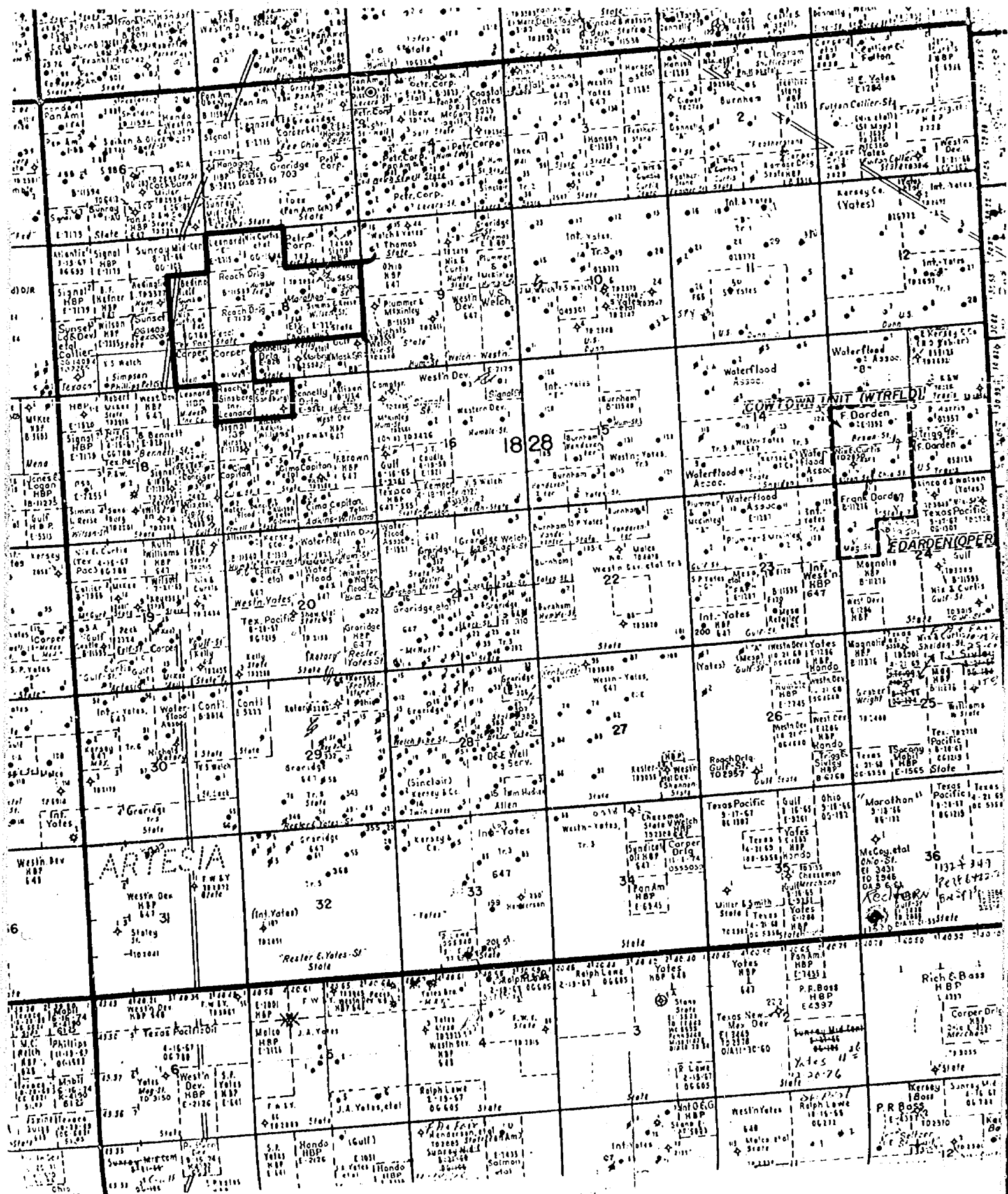
WHEREFORE, Applicant prays that an order be entered authorizing the institution of the aforesaid waterflood project and for such other relief as may be just in the premises.

H & S OIL COMPANY

By



A. J. Losee
P. O. Drawer 239
Artesia, New Mexico



H & S Oil Company Operator
West Artesia Grayburg Unit

Signal State E-7179
NW 1/4 SW 1/4 Sec 8 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3623' G. L.

T/Cement 8 5/8 Casing
calculated 37'

8 5/8" surface casing set at
427' w/50. sx

T/cement, 5 1/2"
calculated 1830'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
(8) 2236-2238

(32) 2245-2253
2114-2120
2204-2210

TD 2273', 5 1/2"
w/75 sx

H & S Oil Company Unit Operator
West Artesia Grayburg Unit

Mell Fee #2

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 7 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3611' G. L.

T/ Cement 8 5/8" Casing
calculated 70'

8 5/8" surface casing set at
460' w/50 sx

T/cement, 5 1/2"
calculated 1632'

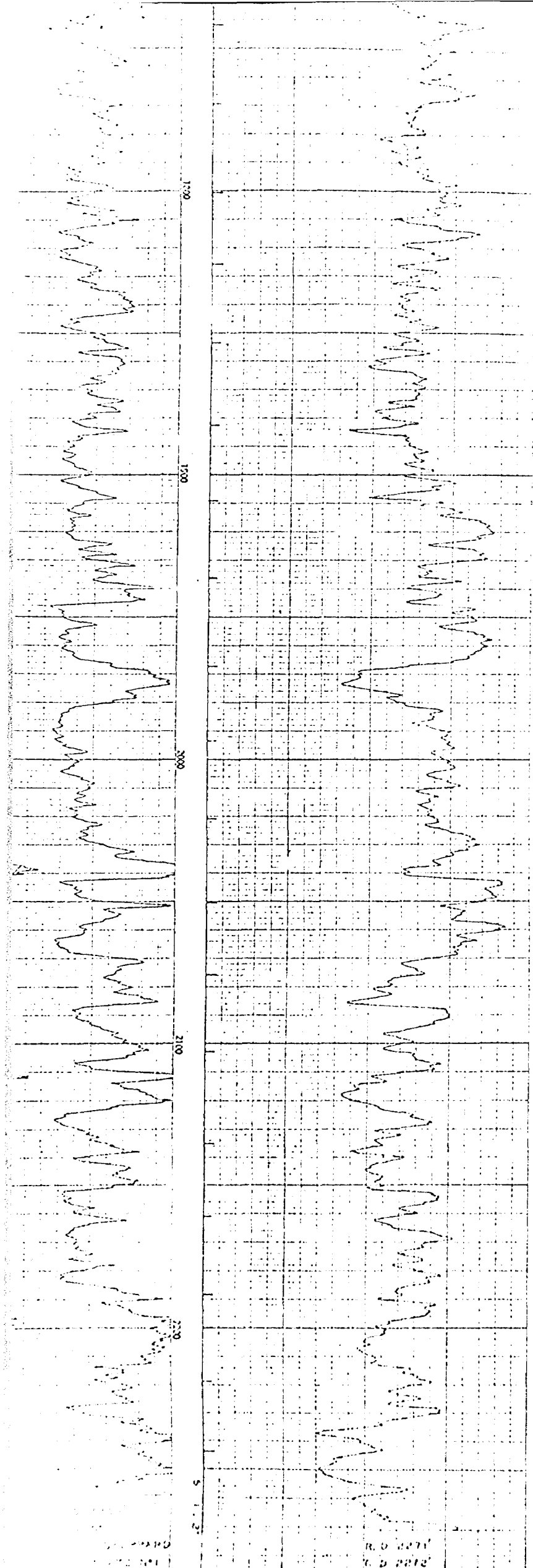
Injection to be fresh
water down 5 1/2" casing

PERFORATIONS

(30) 1942-1952

(21) 2156-2163

TD 2222', 5 1/2"
w/100 sx



LANE WELLS		Radioactivity Log	
COMPANY: ROACH & SHEPPARD		Location of Well	
WELL: SIGNAL STATE NO. 1		SPOTS	
FIELD: ARTESTA		1450 PS-950PWL	
COUNTY: EDDY		STATE: N. HEX.	
LOCATION: SW 1/4 OF NW 1/4 OF SEC. 8, R-18-E, T-26-S			
LOG MEAS. FROM		CABLE TOOL FLOOR	ELEV. 3366
DPLG. MEAS. FROM		CABLE TOOL FLOOR	ELEV. 3366
FIRM DATUM		GROUND LEVEL	ELEV. 3365
TOTAL DEPTH (DRILLER) S. L.		2273	2273
EFFECTIVE DEPTH (DRILLER)		2272	2272
TOP OF LOGGED INTERVAL		SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL		2273	2273
TYPE OF FLUID IN HOLE		WATER	WATER
FLUID LEVEL		100	100
MAXIMUM RECORDED TEMP.			50.0
SOURCE STRENGTH & TYPE			11.5
SOURCE SPACING—IN.		SCINT.	SCINT.
DETECTOR CLASS		1001	1001
DETECTOR TYPE		4	4
LENGTH OF MEAS. DEVICE—IN.		3 5/8	3 5/8
O.D. OF INSTRUMENT—IN.		2.0-2.9	2.0-2.9
TIME CONSTANT—SECONDS		30-60	30-60
LOGGING SPEED FT./MIN.		RECORDED	RECORDED
STATISTICAL VARIATION—IN.		274 1/2	274 1/2
SENSITIVITY REFERENCE		274 1/2	274 1/2
RECORDED BY		ROACH	ROACH
WITNESSED BY			
WELL RECORD			
RUN	BIT SIZE	CASING WT.—LB.	FROM WELL RECORD
015	8 5/8		SURFACE TO 111
015	5 1/2		SURFACE TO 2273
			TO
			TO
			TO

REMARKS OR OTHER DATA

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

REFERENCE A7340A

H & S Oil Company Operator
West Artesia Grayburg Unit

Wilson State #1 E-7255
NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 8 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3631' G. L.

$\frac{23}{28}$ T/ Cement 8 5/8 Casing
calculated 65'

8 5/8" surface casing set at
455' w/50 sx

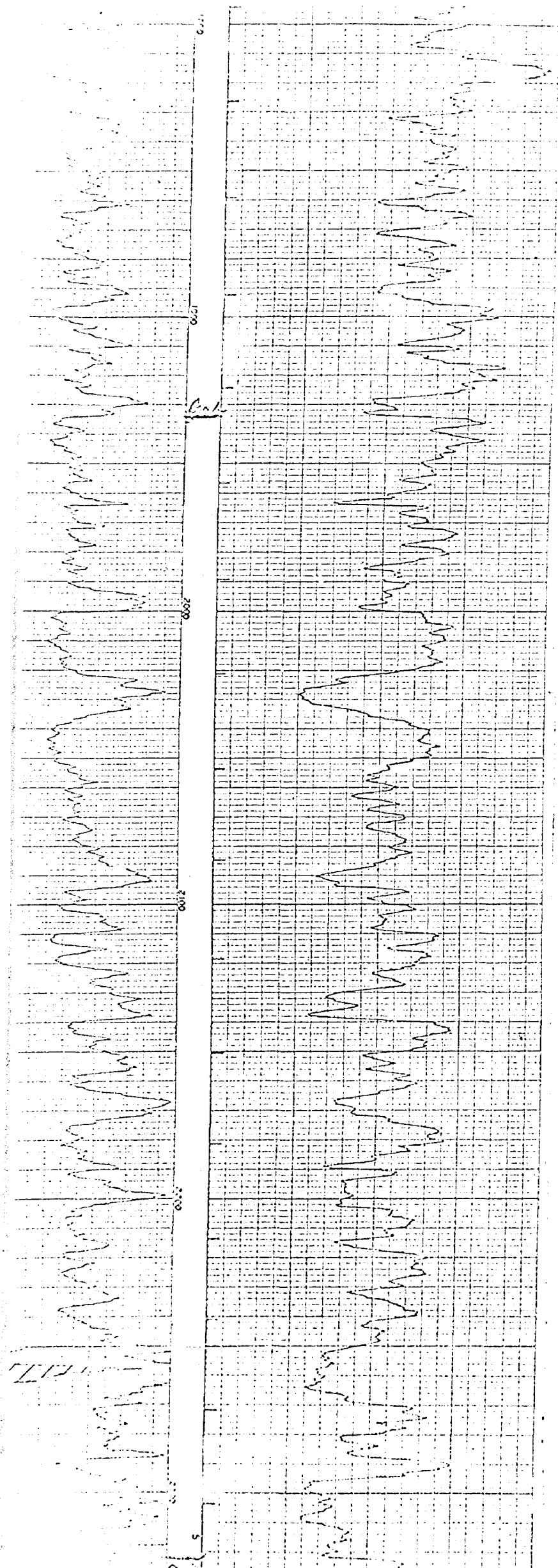
$\frac{25}{10}$ T/cement, 5 $\frac{1}{2}$ "
calculated 1750'

Injection to be fresh
water down 5 $\frac{1}{2}$ " casing

PERFORATIONS
(40) 2024-2034

(40) 2130-2140
2197-2222
2253-2258
2260-2265

TD 2340', 5 $\frac{1}{2}$ "
w/ 100 sx



Radioactivity Log

COMPANY: SPOSS & WADSWORTH WELL: WILSON STATE NO. 6-2 FIELD: ARIZONA LOCATION: 3301' FAL. & 3301' FAL. OF SEC. 8, T-1P-S, R-2E-2 COUNTY: MOHAVE STATE: N.MEX. LOG ZERO: 100' CABLE TOOL FLOOR DEPT. ZERO: TOP CARD DEPT. FLOOR PERM. DATUM: 100' FLOOR	Well Location	

TYPE OF LOG	DATE	TIME	TIME
RUN NO.	2-1-58	2-1-58	2-1-58
TOTAL DEPTH (DRILLER'S L.)	2310	2310	2310
EFFECTIVE DEPTH (DRILLER'S)	2311	2311	2311
TOP OF LOGGED INTERVAL	SURFACE	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	2315	2320	2320
TYPE OF FLUID IN HOLE	NATURAL	NATURAL	NATURAL
FLUID LEVEL	74'	74'	74'
MAXIMUM RECORDED TEMP.	13.5	13.5	13.5
SOURCE STRENGTH & TYPE	1001	1001	1001
DETECTOR CLASS	SP-1	SP-1	SP-1
DETECTOR TYPE	4	4	4
LENGTH OF MEAS. DEVICE—IN.	3 5/8	3 5/8	3 5/8
OD. OF INSTRUMENT—IN.	2.0-0.9	2.0-0.9	2.0-0.9
TIME CONSTANT—SECONDS	30-60	30-60	30-60
LOGGING SPEED FT./MIN.	RECORDED	RECORDED	RECORDED
STATISTICAL VARIATION—IN.	0.933	0.933	0.933
SENSITIVITY REFERENCE	HURST & SUTTON	HURST & SUTTON	HURST & SUTTON
RECORDED BY	SPENCER	SPENCER	SPENCER
WITNESSED BY			

RUN	BIT SIZE	CASING	WT.—LB.	FROM WELL RECORD	FROM LOG
ONE	10	8 5/8		SURFACE TO 153	SURFACE TO
TWO	8	5 1/2		SURFACE TO 2338	SURFACE TO 2331
				TO	TO
				TO	TO
				TO	TO

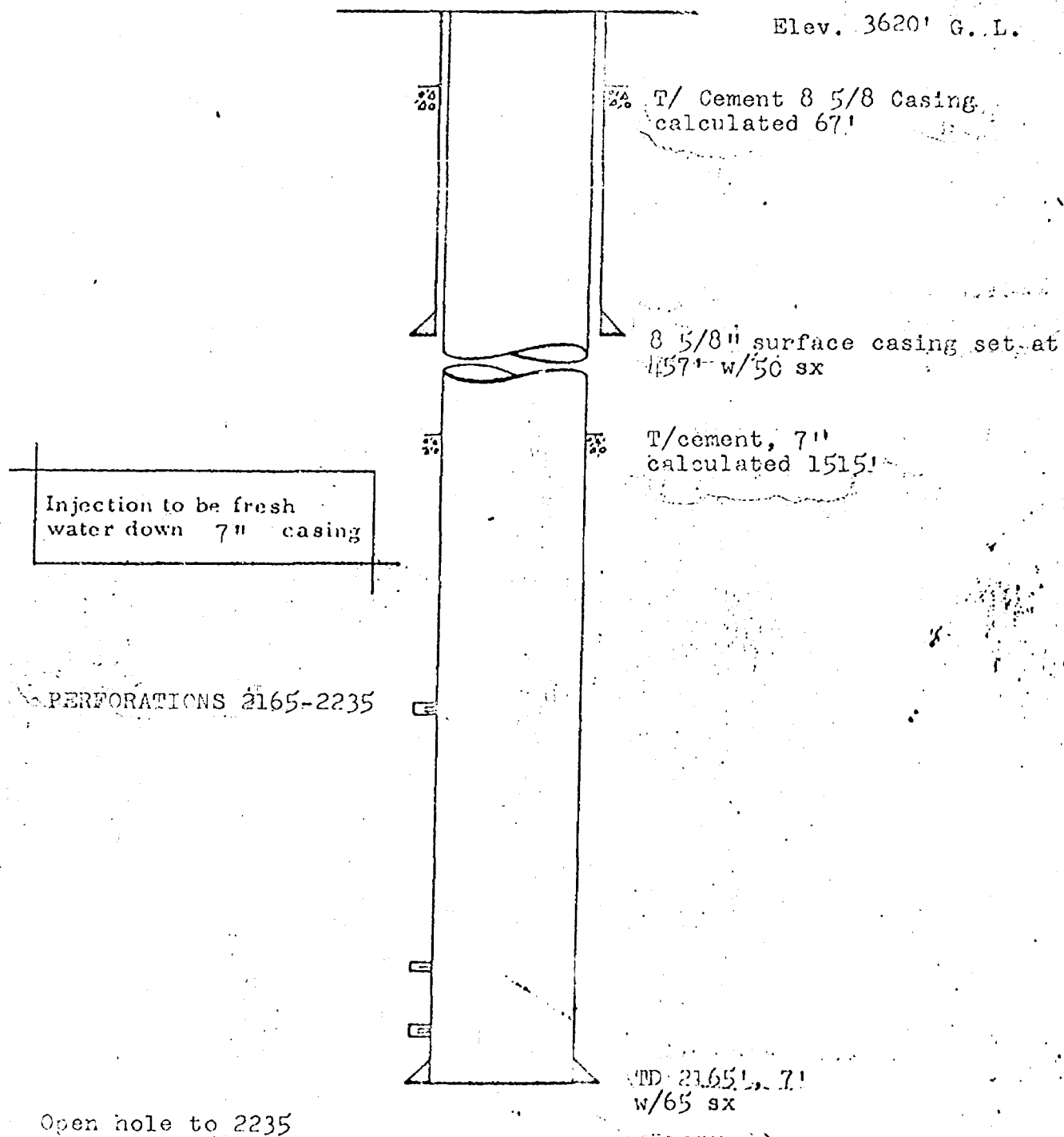
REMARKS OR OTHER DATA

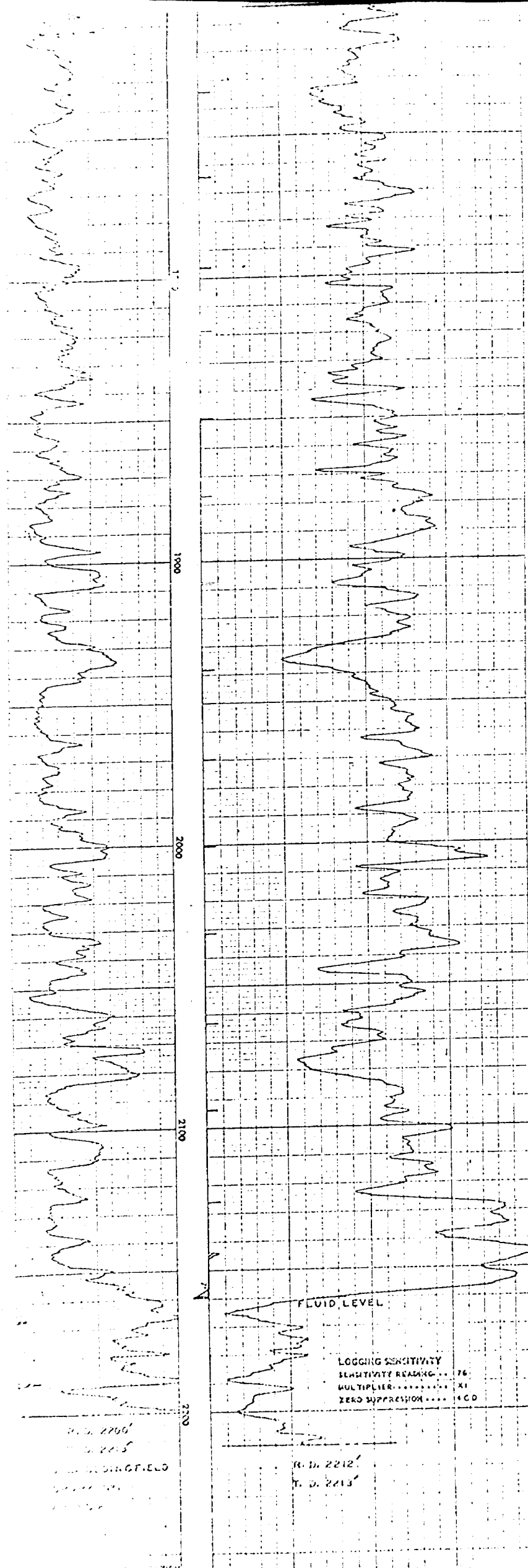
Reproduced By
West Texas Electrical Log Service
 Dallas 9, Texas
 REFERENCE **A7732B**
 9 **COMPLETION RECORD**
 SPUD DATE
 COMP DATE

H & S Oil Company Operator
West Artesia Grayburg Unit

Spurk #1 - B6043
SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 7 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3620' G.L.





LANE WELLS *Radioactivity Log*

COMPANY: J. E. McFALL	Well Location
WELL: SEC. 8 NO. 3	
FIELD: ARTESIA	
LOCATION: SE. 1/4 NE. 1/4 SEC. 7, T. 12-S.	
COUNTY: BEXAR	STATE: N. MEX.
LOG ZERO: TOP 7" CASING	ELEV.:
DALG. ZERO: TOP 7" CASING	ELEV.:
PERM. DATUM: TOP 7" CASING	ELEV.:

TYPE OF LOG	DATE	TIME	WELL
RUN NO.	ONE-ONE	ONE-ONE	
DATE	2-12-59	2-12-59	
TOTAL DEPTH (ORILLER) - FEET	2235	2235	
EFFECTIVE DEPTH (ORILLER) - FEET	2220	2220	
TOP OF LOGGED INTERVAL	5" SPACER	5" SPACER	
BOTTOM OF LOGGED INTERVAL	2220	2220	
TYPE OF FLUID IN HOLE	OIL	OIL	
FLUID LEVEL		2160	
MAXIMUM RECORDED TEMP.			
SOURCE STRENGTH & TYPE		5100	
SOURCE SPACING - IN.		13.5	
DETECTOR CLASS	SCINT.	SCINT.	
DETECTOR TYPE	MG	MG	
LENGTH OF MEAS. DEVICE - IN.	1	1	
O.D. OF INSTRUMENT - IN.	3 3/8	3 3/8	
TIME CONSTANT - SECONDS	2.0-0.8	2.0-0.8	
LOGGING SPEED FT./MIN.	30-60	30-60	
STATISTICAL VARIATION - IN.	RECORDED	RECORDED	
SENSITIVITY REFERENCE	0933	0933	
RECORDED BY	COPPLAND	COPPLAND	
WITNESSED BY	BRADYFIELD	BRADYFIELD	

RUN	BITSIZE	CASING	WT.-LB.	FROM WELL RECORD	FROM LOG
ONE	7	20		SURFACE TO 2165	SURFACE TO 2159.5
				TO 2220	2159.5 TO 2213
				TO	TO
				TO	TO
				TO	TO

REMARKS OR OTHER DATA

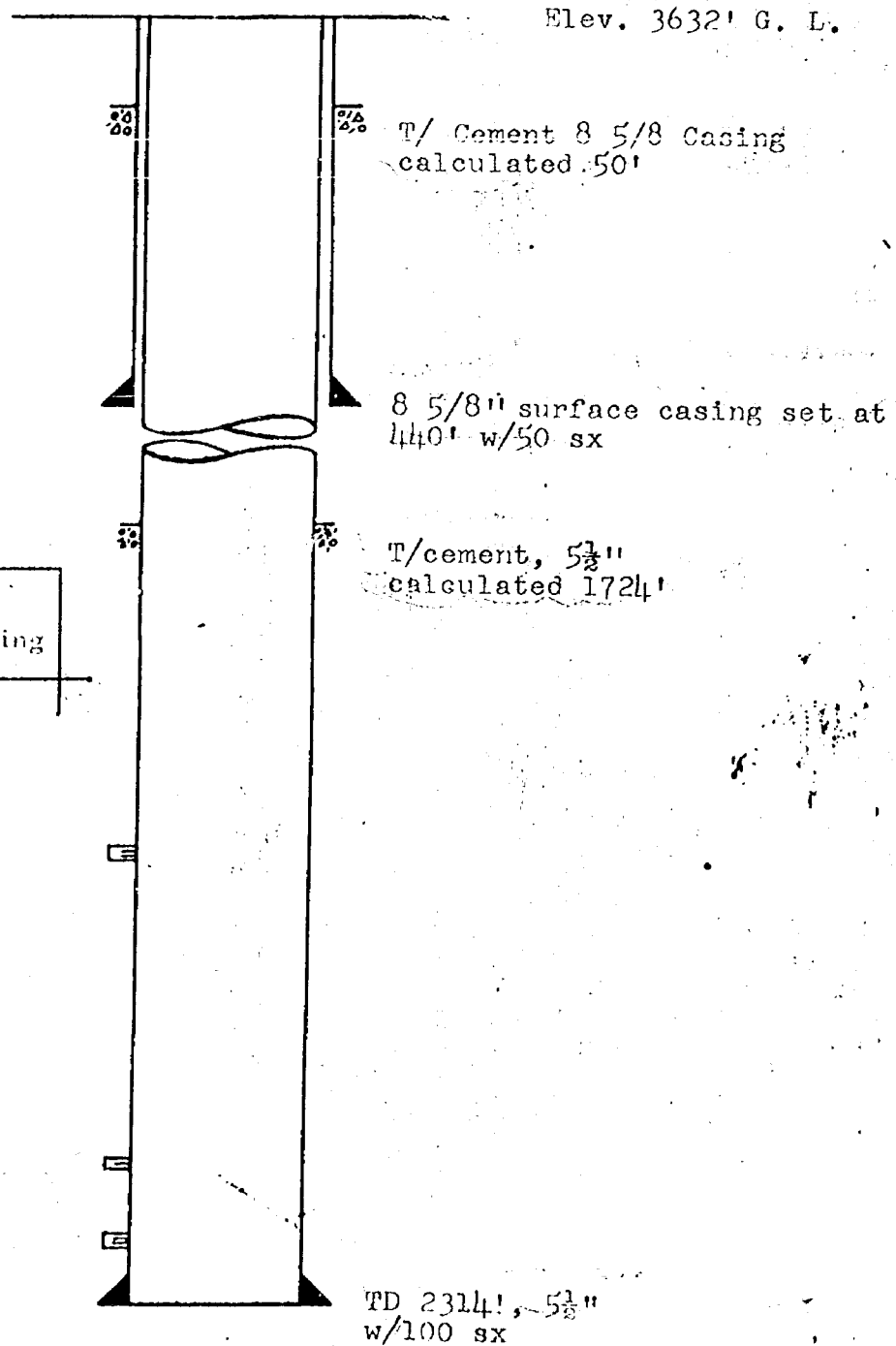
* ELEVATION UNAVAILABLE.

Reproduced By

H & S Oil Company Operator
West Artesia Grayburg Unit

Humble State #1 B-11539
SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 8 T-18-S R-28E
Eddy County, New Mexico

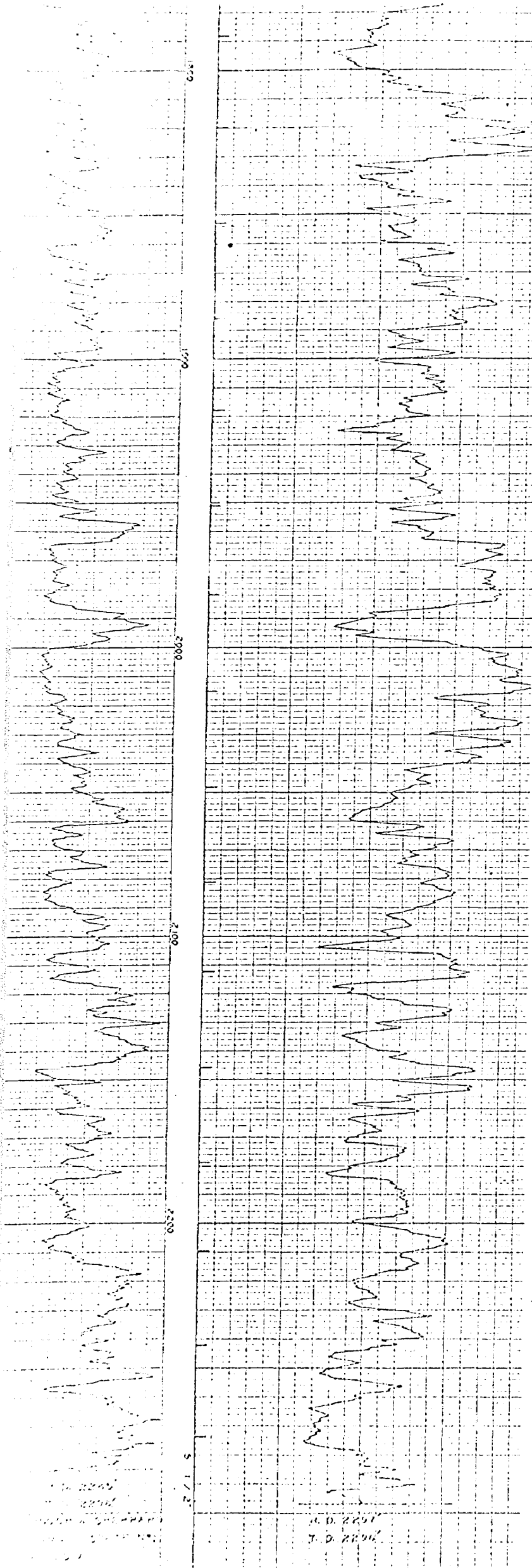
Elev. 3632' G. L.



Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
(16) 1988-96

(40) 2265-75



 LANDS WELLS		<i>Radioactivity Log</i>																																																																																	
COMPANY: ROOCH & SHEPARD WELL: HURSTLE STATE NO. 1 FIELD: ARTESIA LOCATION: 23101 P.W. & 19501 P.W. OF SECT. 8 COUNTY: ELIZABETH STATE: N. YESS.		Well Location 																																																																																	
LOG ZERO: CHALK ROCK FORM DEEG ZERO: CHALK ROCK FORM PCMA DATUM: 6' 2 1/2" BELOW		ELEV. 3523 ELEV. 3533 ELEV. 3521																																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">TYPE OF LOG</th> <th style="width: 15%;">DATE</th> <th style="width: 15%;">TIME</th> <th style="width: 15%;">TIME</th> </tr> </thead> <tbody> <tr> <td>TOTAL DEPTH (DRILLER'S) S. L.</td> <td>12-21-57</td> <td>12-21-57</td> <td></td> </tr> <tr> <td>EFFECTIVE DEPTH (DRILLER)</td> <td>2311</td> <td>2312</td> <td></td> </tr> <tr> <td>TOP OF LOGGED INTERVAL</td> <td>2312</td> <td>2312</td> <td></td> </tr> <tr> <td>BOTTOM OF LOGGED INTERVAL</td> <td>21-20</td> <td>21-00</td> <td></td> </tr> <tr> <td>TYPE OF FLUID IN HOLE</td> <td>20-5</td> <td>22-7</td> <td></td> </tr> <tr> <td>FLUID LEVEL</td> <td>21-4</td> <td>21-11</td> <td></td> </tr> <tr> <td>MAXIMUM RECORDED TEMP.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>SOURCE STRENGTH & TYPE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>SOURCE SPACING - IN.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DETECTOR CLASS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DETECTOR TYPE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>LENGTH OF MEAS. DEVICE - IN.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>D.D. OF INSTRUMENT - IN.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>TIME CONSTANT - SECONDS</td> <td></td> <td></td> <td></td> </tr> <tr> <td>LOGGING SPEED FT./MIN.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>STATISTICAL VARIATION - IN.</td> <td></td> <td></td> <td></td> </tr> <tr> <td>SENSITIVITY REFERENCE</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RECORDED BY</td> <td></td> <td></td> <td></td> </tr> <tr> <td>WITNESSED BY</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				TYPE OF LOG	DATE	TIME	TIME	TOTAL DEPTH (DRILLER'S) S. L.	12-21-57	12-21-57		EFFECTIVE DEPTH (DRILLER)	2311	2312		TOP OF LOGGED INTERVAL	2312	2312		BOTTOM OF LOGGED INTERVAL	21-20	21-00		TYPE OF FLUID IN HOLE	20-5	22-7		FLUID LEVEL	21-4	21-11		MAXIMUM RECORDED TEMP.				SOURCE STRENGTH & TYPE				SOURCE SPACING - IN.				DETECTOR CLASS				DETECTOR TYPE				LENGTH OF MEAS. DEVICE - IN.				D.D. OF INSTRUMENT - IN.				TIME CONSTANT - SECONDS				LOGGING SPEED FT./MIN.				STATISTICAL VARIATION - IN.				SENSITIVITY REFERENCE				RECORDED BY				WITNESSED BY			
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RUN	BITSIZE	CASING	WT.-LB.	FROM WELL RECORD	FROM LOG																																																																														
172	8			SURFACE TO 140	SURFACE TO 140																																																																														
173	5 1/2			SURFACE TO 2311	SURFACE TO 2298																																																																														
				TO	TO																																																																														
				TO	TO																																																																														

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

REFERENCE A7335E

6 COMPLETION RECORD

H & S Oil Company Operator
West Artesia Grayburg Unit

Signal State OG-5851
SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 8 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3635 G.L.

T/ Cement 8 5/8" Casing
calculated 82'

8 5/8" surface casing set at
472' w/50 sx

T/cement, 5 1/2"
calculated 1758'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
(16) 2316-2320

(32) 2024-2032

TD 2348' , 5 1/2"
w/100 sx

H & S Oil Company Operator
West Artesia Grayburg Unit

Leonard State Fee
NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 17 T-18S R-28-E
Eddy County, New Mexico

Elev. 3611 G. L.

T/ Cement 8 5/8 Casing
calculated 1170'

8 5/8" surface casing set at
1506' w/50' sx

T/cement, 5 1/2"
calculated 1727'

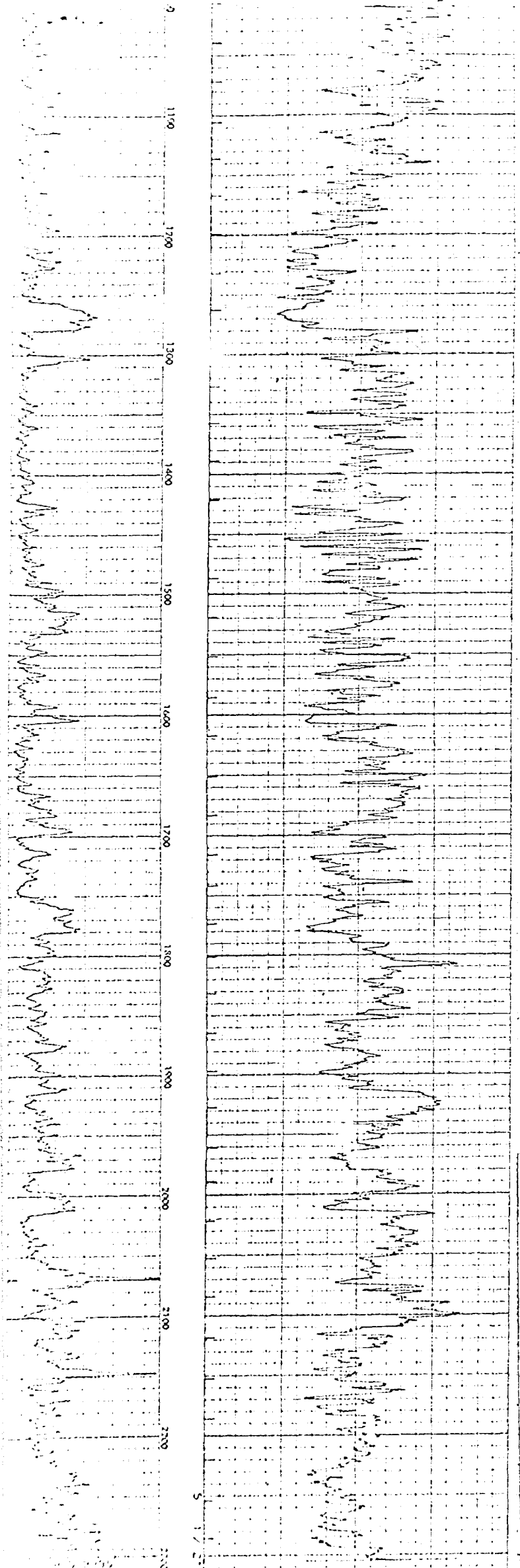
Injection to be fresh
water down 5 1/2" casing

PERFORATIONS

2115-2117

2231-2235
2267-2269
2277-2279

TD 2317', 5 1/2"
w/100' sx



COMPANY ROACH DRILLING COMPANY
 WELL LEONARD NO. 1
 FIELD ARTESIA
 COUNTY EDDY STATE NEW MEXICO
 LOCATION NW 1/4 OF NW 1/4
 SEC 17 TWP 24S RGE 24E
 Permanent Datum GROUND LEVEL Elev. 2140
 Log Measured from GROUND LEVEL 2 ft. Above Permanent Datum
 Logging Measured from GROUND LEVEL Elev. 2140

Date	5-4-50	5-4-50	5-4-50
Run No.	100	101	102
Type Log	WASH. RAY	S. NEWTON	COM. LUM.
Depth Cor.	2300	2300	2300
Depth Logger	2307	2307	2307
Station Logged Interval	2235	2300	2300
Top Logged Interval	SURFACE	SURFACE	2140
Core Fluid in Hole	WATER	WATER	WATER
Sealant Pgm. Cl.			
Depth to Cor.			
Level		245	
Max. Rec. Temp. Deg. F.			
Log. Log. Time	2 1/2 HOURS		
Recorded By	ALCO	NEED	REED
Witnessed By	ALCO	ROACH	ALCO

Run No.	Bore Hole Record			Casing Record		
	From	To	Size	Wgt.	From	To
1			5 1/2"		SURFACE	2300

Reproduced By
 West Texas Electrical Log Service
 Dallas 9, Texas

REFERENCE A9983B



COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

R. D. 2300
 R. D. 2301

LOGGING SCHEMATIC
 ELECTRICALLY MEASURED

H & S Oil Company Operator
West Artesia Grayburg Unit

Tenneco State E-2715
NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 8 T-18-S R-28-E
Eddy County, New Mexico

Elev. 3628' G. L.

T/Cement 8 5/8" Casing
calculated 113'

8 5/8" surface casing set at
503' w/50 sx

T/cement, 5 1/2"
calculated 1375'

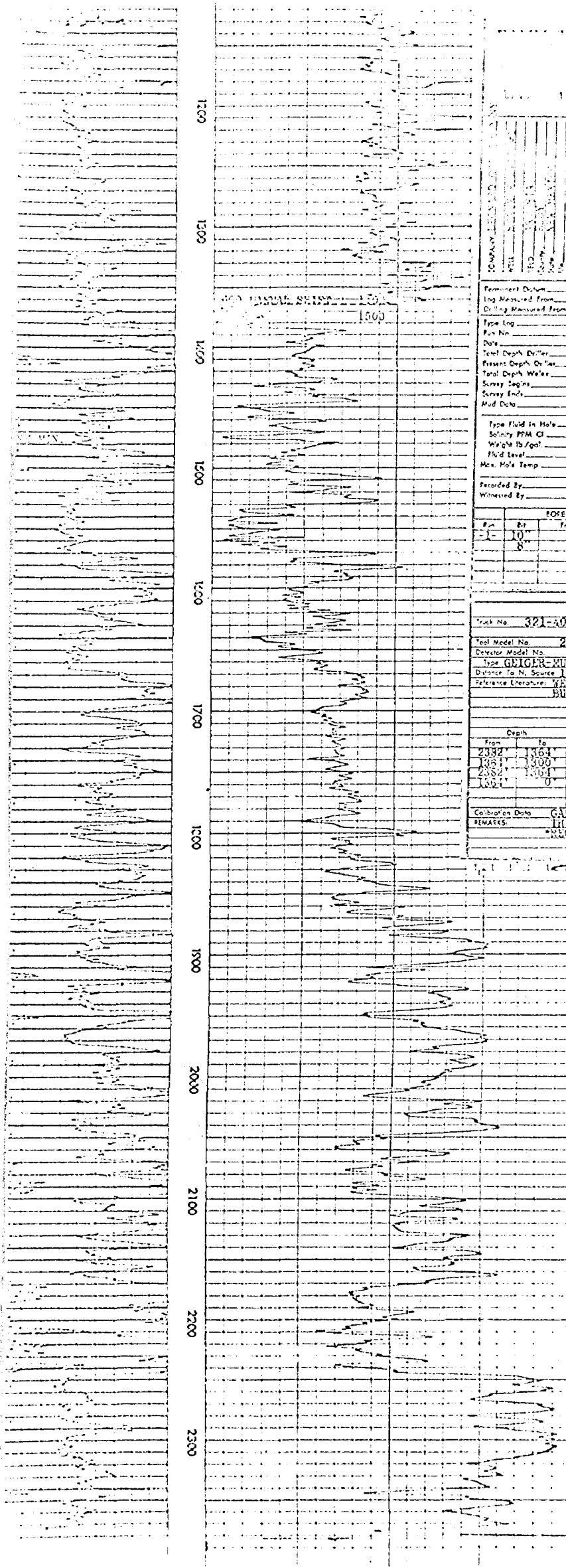
Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
(44) 2090-2101

(56) 2170-2184

(24) 2204-2210

TD 2260', 5 1/2"
w/ 150



COMPANY: **LEONARD OIL COMPANY**
WELL: **STATE A 2715 #1**
FIELD: **WILKIN**
COUNTRY: **INDY** STATE: **NEW MEXICO**

Location: 0000' F/NL
0000' F/WL
Other logs: NONE

Formation: 18-S 29-S
Log Measured from: **GROUND LEVEL** to **3590'**
Drilling Measured from: **DRILLER'S ZERO** to **3590'**

Type Log	GAMMA	N. GAMMA
Run No.	15-58	15-58
Total Depth Driller	2382'	2382'
Present Depth Driller	2382'	2382'
Total Depth Water	2382'	2382'
Survey Begins	2382'	2382'
Survey Ends	0'	10'
Mud Data		
Type Fluid in Hole	DRY	
Salinity PPM Cl		
Weight lb/gal		
Fluid Level		
Max. Hole Temp		

Recorded By: **P.C. HARRIS**
Witnessed By: **E. HUX**

PIPE HOLE RECORD				CASING RECORD			
Run	Size	From	To	Run	Size	From	To
1-1	10"	SURE	500'		8 5/8"	SURE	500'

LOGGING TOOL DATA

Truck No. **321-4018** Tool Model No. **2000** Do. **3 5/8"** Log Type **NEUTRON-GAMMA**
Tool Serial No. **2031**

Detector Model No. **2000** Do. **3 5/8"** Log Type **NEUTRON-GAMMA**
Type **GEIGER-MUELLER** Length **28"** Detector Model No. **2000** Do. **3 5/8"**
Distance to N. Source **120"** Type **GEIGER-MUELLER** Length **14"**
Reference Literature: **WELLYS RADIOACTIVITY LOGGING BULLETIN A-125** Source Model No. **18**
Sealing **19** Type **RADIUM-BERYLLIUM**
Strength **400 MD**

LOGGING DATA									
Depth		Speed	T. C.	Gamma Ray Setting			T. C.	Neutron Setting	
From	To	ft/min	Sec	Sensitivity	Zero	Scale	Sec	Sensitivity	Zero
2382'	1364'	2	90	90 CPS	0 CPS	3"=100'	2	1000 CPS	1000 CPS
1364'	1300'	2	90	90 CPS	0 CPS	3"=100'	2	1000 CPS	800 CPS
1300'	1264'	2	90	90 CPS	0 CPS	2"=100'	2	1000 CPS	1000 CPS
1264'	0'	2	90	90 CPS	0 CPS	2"=100'	2	1000 CPS	600 CPS

Calibration Data: **GAMMA STANDARD 188 CPS. NEUTRON STANDARD 766 CPS.**
REMARKS: **THIS LOG MADE WITH F.M. EQUIPMENT**
***RECORDED SPOTS ON LEFT INDICATE GR. LOGGING SPEED.**

H & S Oil Company Operator
West Artesia Grayburg Unit

Tenneco State 4-2715
NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 8 T18S R28E
Eddy County, New Mexico

Elev 3628 G.L.

*Calc must be
based on 100%
fill up*

*will inject
250 bbl/well
@ 800 psi
max*

Injection to be fresh
water down 5 $\frac{1}{2}$ " casing

PERFORATIONS
44 2090-2101

*any more
indicating csq look
shall be equipped
with tubing & packers*

56 2170-2184
24 2204-2210

T/cement 8 5/8" casing,
calculated 113'

8 5/8" surface casing set
at 503', w/50' sx

T/cement 5 $\frac{1}{2}$ "
calculated 1375'

*will pressure
test csq @ 1500 psi*

will oldfield pay
the oil
Premier

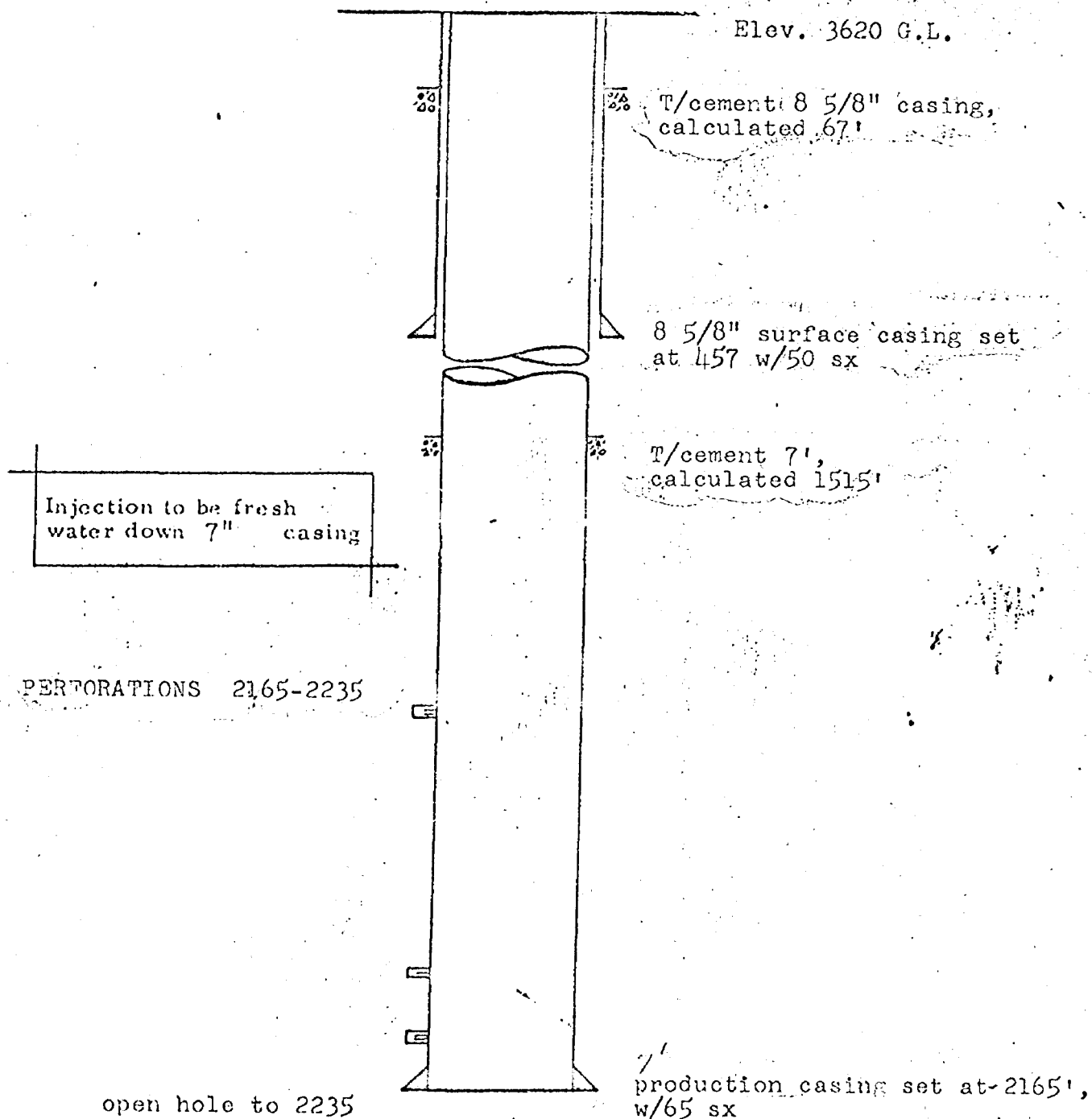
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 3698 + 3699

TD 2260, 5 $\frac{1}{2}$ ", w/150sx

Ex 6

H & S Oil Company Operator
West Artesia Grayburg Unit

Spurk #1 B6043
SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 7 T18S R28E
Eddy County, New Mexico



H & S Oil Company Operator
West Artesia Grayburg Unit

Humble State #1 B-11539
SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 8 T18S R28S
Eddy County, New Mexico

Elev. 3632 G.L.

T/cement 8 5/8" casing,
calculated 50'

8 5/8" surface casing set
at 140', w/50 sx

T/cement 5 1/2"
calculated 1724'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS

16

1988-1996

40

2265-2275

TD 2314, 5 1/2" w/100 sx

H & S Oil Company Operator
West Artesia Grayburg Unit

Signal State OG-5851
SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 8 T18S R28E
Eddy County, New Mexico

Elev. 3635 G.L.

T/cement 8 5/8" casing,
calculated 82'

8 5/8" surface casing set
at 472', w/50 sx

T/cement 5 1/2"
calculated 1758'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
16 2316-2320

32 2024-2032

TD 2348', 5 1/2", w/100 sx

H & S Oil Company Operator
West Artesia Grayburg Unit

Signal State E-7179
NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 8 T18S R28E
Eddy County, New Mexico

Elev. 3623 G.L.

T/cement 8 5/8" casing
calculated 37'

8 5/8" surface casing set
at 427'; w/50' sx

T/cement 5 1/2"
calculated 1830'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS
8

2236-2238

32

2245-2253
2114-2120
2204-2210

TD 2273', 5 1/2", w/75' sx

H & S Oil Company Operator
West Artesia Grayburg Unit

Wilson State #1 E-7255
NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 8 T18S R28E
Eddy County, New Mexico

Elev. 3631 G.L.

T/cement 8 5/8" casing,
calculated 65'

8 5/8" surface casing set
at 455', w/50 sx

T/cement 5 1/2"
calculated 1750'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS

40

2024-2034

40

2130-2140
2197-2222
2253-2258
2260-2265

TD 2340', 5 1/2", w/100sx

H & S Oil Company Operator
West Artesia Grayburg Unit

Mell Fee #2
SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 7 T18S R28E
Eddy County, New Mexico

Elev. 3611 G.L.

T/cement 8 5/8" casing,
calculated 70'

8 5/8" surface casing set
at 460', w/50 sx

T/cement 5 1/2",
calculated 1632'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS

30 1942-1952

21 2156-2163

TD2222', 5 1/2", w/100.sxx
18.17.37.78

H & S Oil Company Operator
West Artesia Grayburg Unit

Leonard State Fee
NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 17 T18S R28E
Eddy County, New Mexico

Elev 3611 G.L.

T/cement 8 5/8" casing,
calculated 1170'

8 5/8" surface casing set
at 1506', w/50' sx

T/cement 5 1/2"
calculated 1727'

Injection to be fresh
water down 5 1/2" casing

PERFORATIONS 2115-2117

2231-2235
2267-2269
2277-2279

TD 2317, 5 1/2", w/100' sx

N + S for waterflood

Artesia Pool - inject into
Grayburg formation 6 inj.
wells in Secs 7, 8, 12V -
18 S 28 E