CASE 1293: Amerada Petr. Corp. application
[illegible] Justis Gas Pool, Lea County.

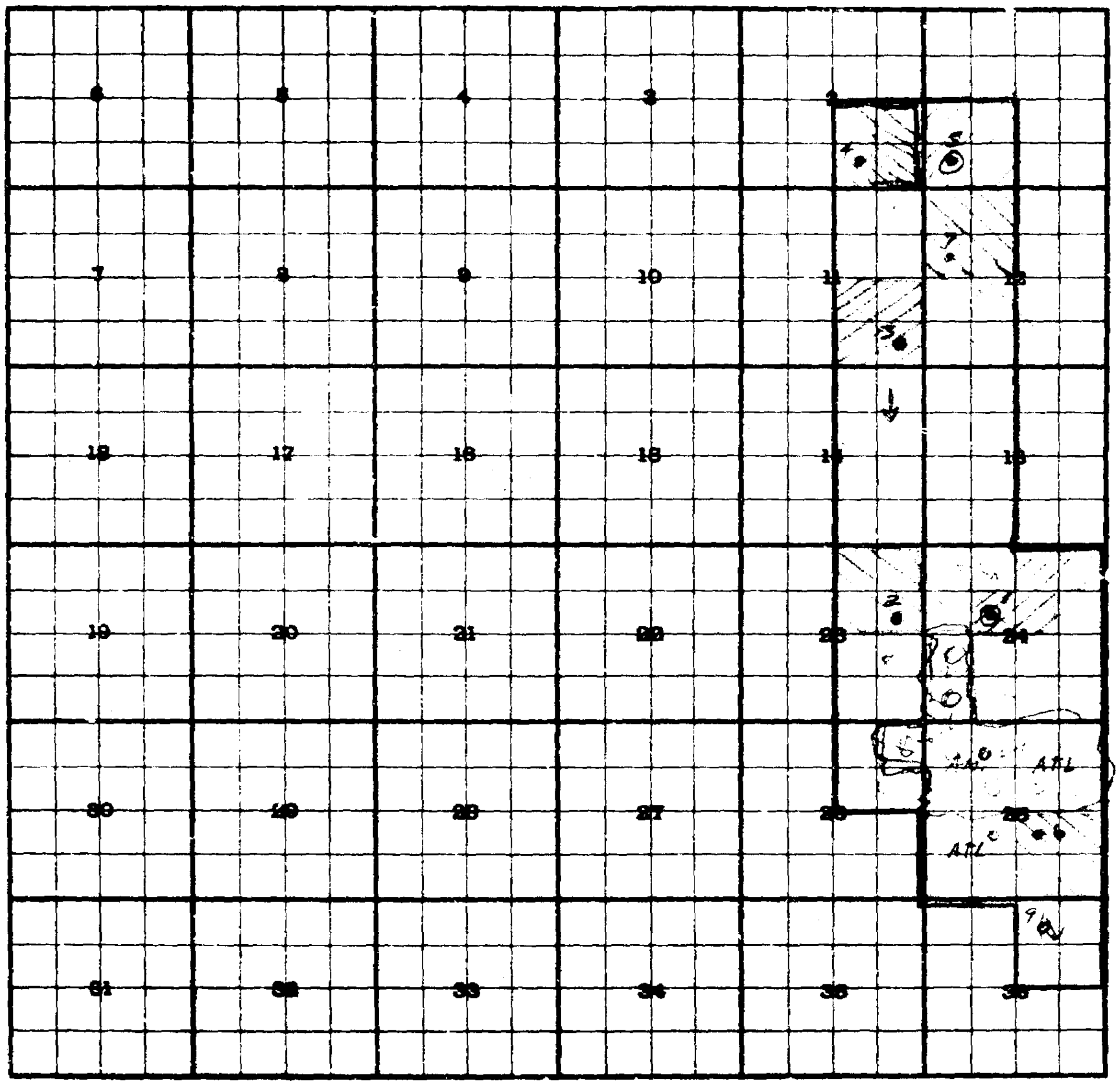
Case No.

1293

Application, Transcript,
Small Exhibits, Etc.

County ______________________ Pool ______________

TOWNSHIP .... South, RANGE .... East, ... NEW MEXICO PRINCIPAL MERIDIAN

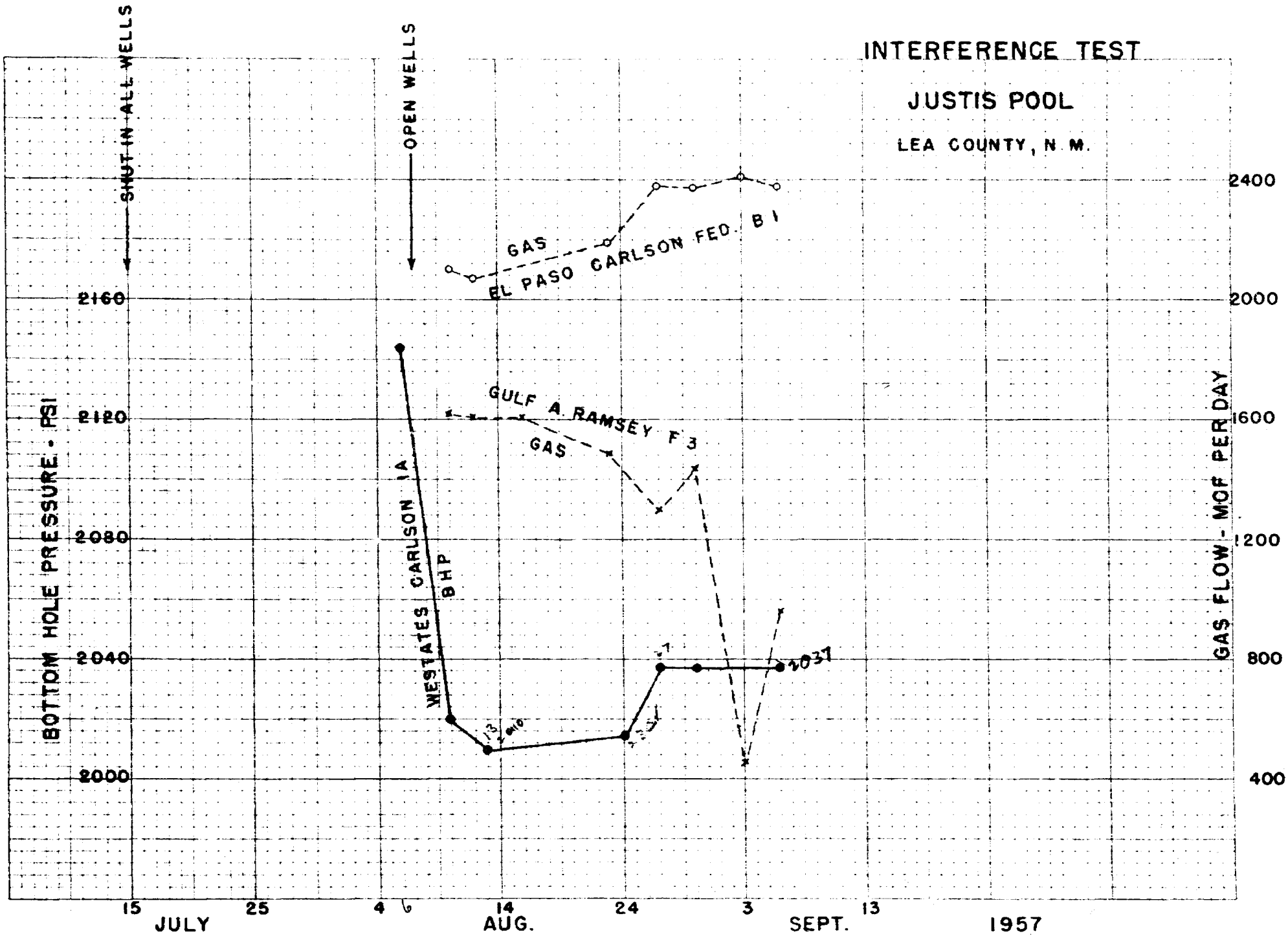


1. Dia[illegible] - Cont[illegible] "C" #1, [illegible] [illegible] Dual. — [illegible] /Mo.
2. [illegible] - [illegible] #1 — [illegible] /Mo.
3. [illegible] #1 — 24,000 [illegible] /Mo.
4. [illegible] — 14,[illegible] /Mo.
5. [illegible] - [illegible] — [illegible]
6. [illegible] #4 — 52,423 [illegible] /Mo.
7. [illegible] - [illegible] B #[illegible] [illegible] — 37,[illegible] /Mo.
8. [illegible] - Carlson [illegible] #1-3 — [illegible]
9. [illegible] [illegible] F. #3

INTERFERENCE TEST

JUSTIS POOL

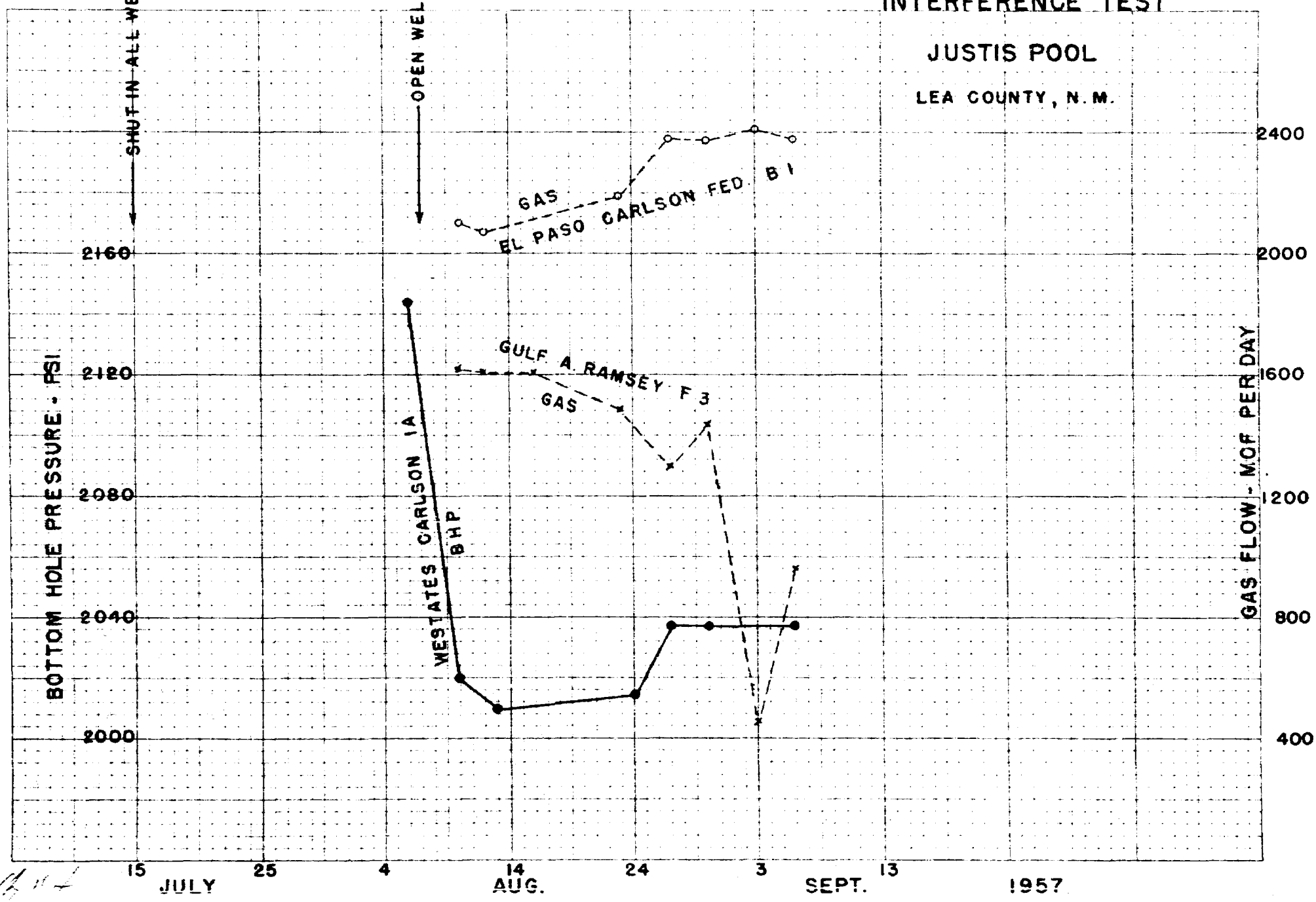
LEA COUNTY, N. M.



INTERFERENCE TEST

JUSTIS POOL

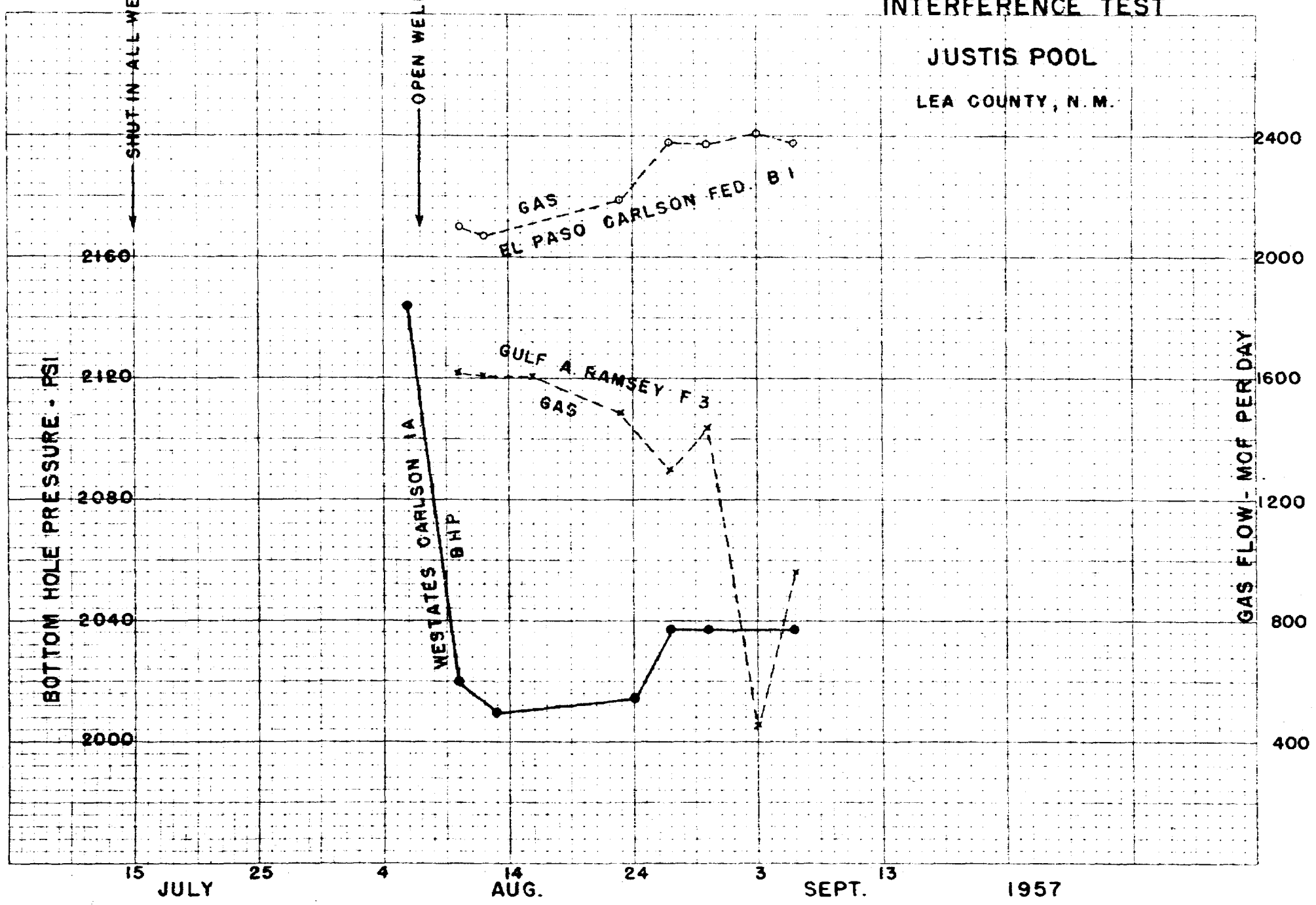
LEA COUNTY, N. M.



INTERFERENCE TEST

JUSTIS POOL

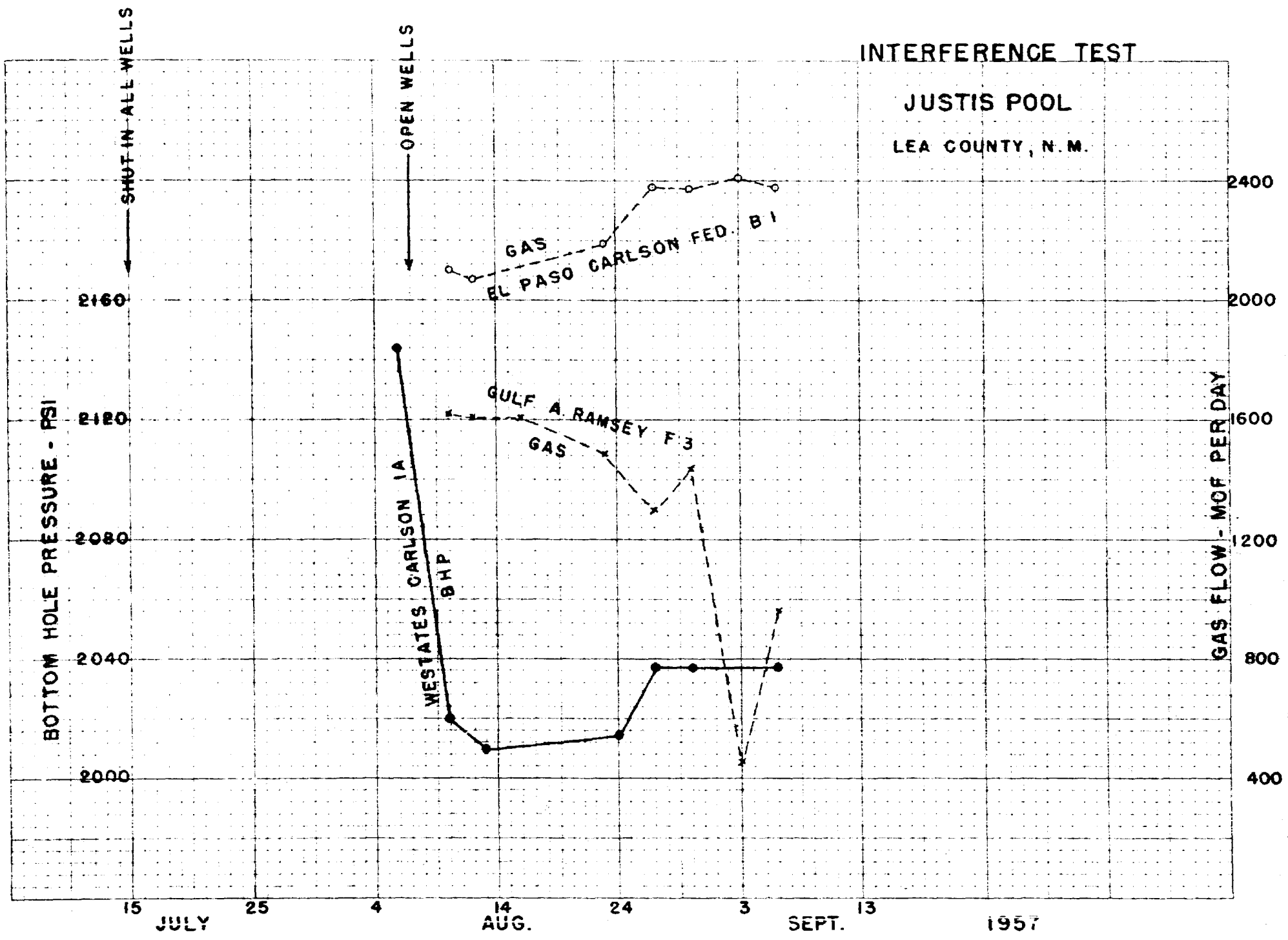
LEA COUNTY, N.M.



INTERFERENCE TEST

JUSTIS POOL

LEA COUNTY, N.M.



INTERFERENCE TEST

JUSTIS POOL

LEA COUNTY, N.M.

SHUT IN ALL WELLS

OPEN WELLS

GAS

EL PASO CARLSON FED. B 1

GULF A RAMSEY F 3

GAS

WESTATES CARLSON 1A

BHP

BOTTOM HOLE PRESSURE - PSI

2160
2120
2080
2040
2000

GAS FLOW - MCF PER DAY

2400
2000
1600
1200
800
400

15 JULY 25 4 AUG. 14 24 3 SEPT. 13 1957

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Applicant
CASE 1293

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 2
CASE

JUSTIS POOL INTERFERENCE TESTS

PART I

SHUT-IN PRESSURES, PSIG

Wells Shut-in @ 9:00 A.M., Monday, July 15, 1957.

Date and Time of Shut-in Pressures	El Paso Natural Gas Company Carlson Federal #1-B		Westates Pet. Corp. Carlson Federal #1-A		R. Olsen Oil Co. Wimberly #1		Gulf Oil Corp. Arnott Ramsey F-3		Tidewater Assoc. Oil Coates C-1 Tbg.	Western Natural Gas Eaton B-1	
	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Tbg.	csg.
July 15 - 12 hours	169[illegible]	1749	1709	1737	1630		1769		1621	917	
July 16 - 24 hours	169[illegible]	1754	1709	1738	1631		1779		1622	925	
16 - 36 hours	169[illegible]	1756	1710	1740	1632		1783		1623	932	
July 17 - 48 hours	169[illegible]	1758	1713	1743	1632		1786		1624	937	
17 - 60 hours	169[illegible]	1759	1714	1744	1633		1789		1625	941	
July 18 - 72 hours	169[illegible]	1761	1711	1739	1633		1794		1626	944	
18 - 84 hours	169[illegible]	1761	1711	1739	1633		1796		1626	948	
July 19 - 96 hours	169[illegible]	1762	1711	1739	1633		1798		1626	950	
19 - 108 hours	169[illegible]	1762	1711	1739	1633		1799		1626	952	
July 20 - 120 hours	169[illegible]	1763	1711	1739	1633		1801	1839	1626	954	
20 - 132 hours	170[illegible]	1763	1712	1740	1633		1801	1838	1627	956	
July 21 - 144 hours	170[illegible]	1764	1713	1741	1634		1802	1838	1628	958	
21 - 156 hours	170[illegible]	1764	1713	1740	1634		1803	1838	1631	959	
July 22 - 168 hours	169[illegible]	1765	1713	1740	1634		1805	1839	1637	960	
22 - 180 hours	169[illegible]	1766	1713	1740	1634		1806	1840	1635	962	
July 23 - 192 hours	169[illegible]	1766	1713	1740	1635		1807	1841	1633	963	
23 - 204 hours	169[illegible]	1765	1713	1740	1634		1807	1840	1635	964	
July 24 - 216 hours	169[illegible]	1765	1713	1740	1634		1808	1840	1636	966	
24 - 228 hours	169[illegible]	1766	1713	1740	1635		1808	1841	1635	960	
July 25 - 240 hours	169[illegible]	1767	1713	1740	1635		1809	1840	1634	967	
25 - 252 hours	169[illegible]	1768	1713	1740	1635		1809	1841	1632	968	
July 26 - 264 hours	169[illegible]	1769	1713	1741	1635		1810	1840	1631	969	
26 - 276 hours											
July 27 - 288 hours	168[illegible]	1769	1713	1740	1635		1810	1840	1632	971	
27 - 300 hours	168[illegible]	1769	1714	1740	1636		1811	1840	1632	972	
July 28 - 312 hours	168[illegible]	1769	1716	1743	1638		1812	1840	1634	972	
28 - 324 hours	168[illegible]	1768	1717	1743	1639		1813	1840	1635	973	

Date and Time of Shut-in Pressures	El Paso Natural Gas Company Carlson Federal #1-B		Westates Pet. Corp. Carlson Federal #1-A		R. Olsen Oil Co. Wimberly #1		Gulf Oil Corp. Arnott Ramsey F-3		Tidewater Assoc. Oil Coates C-1 Tbg.	Western Natural Gas Eaton B-1	
	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Csg.	Tbg.	Tbg.	Csg.
July 29 - 336 hours	1678	1768	1716	1743	1638		1813	1840	1635	974	
29 - 348 hours	1673	1768	1716	1744	1639		1812	1840	1634	974	
July 30 - 360 hours	1669	1768	1716	1744	1638		1812	1840	1634	975	
30 - 372 hours	1667	1768	1716	1744	1639		1812	1840	1634	976	
July 31 - 384 hours	1665	1768	1717	1744	1639		1812	1840	1635	977	
31 - 396 hours	1663	1768	1718	1745	1640		1812	1840	1636	977	
August 1 - 408 hours	1660	1768	1719	1745	1640		1812	1840	1637	978	
1 - 420 hours	1658	1768	1719	1745	1639		1812	1840	1636	978	
August 2 - 432 hours	1655	1769	1719	1745	1638		1812	1840	1636	978	
2 - 444 hours	1653	1769	1719	1746	1638		1812	1840	1635	977	
August 3 - 456 hours	1652	1770	1719	1746	1638		1812	1839	1635	977	
3 - 468 hours	1650	1770	1719	1746	1638		1812	1839	1636	978	
August 4 - 480 hours	1647	1769	1719	1746	1638		1812	1839	1636	979	
4 - 492 hours											
August 5 - 504 hours	1644	1769	1720	1746	1639		1812	1840	1637	981	
5 - 516 hours											
August 6 - 528 hours	1640	1769	1720	1746	1639		1812	1840	1637	982	

JUSTIS POOL INTERFERENCE TESTS

PART II

FLOWING PRESSURES AND VOLUMES

* All wells turned on excep R. Olsen Wimberly #1 and Westates Pet. Corp. Carlson Federal #1-A between 9:00 A.M. and 12:00 A.M. August 7, 1957.

Company, Lse and Well No.	Date	Tbg. Press. PSIG	Csg. Press. PSIG	Line Press. PSIG	Line Flow Temp (°F)	Differential (" H2O)	Gas Gravity	Orifice Size (")	Flowing Volume (MCFPD)	Dist. Prod. Bbl/day	Water Prod. Bbl/day	Gas-Dist. Ratio CF/bbl
El Paso Natural Gas Co.												
Carlson Federal #1-B	8-10-57	1626	1701	501	48	42.25	0.665	1.500	2104	33.36	44.16	63,070
Justis #1	8-10-57	275	276	175	72	40.96	0.685	1.250	798			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	8-10-57	1723	1748	(Bottom Hole Pressure w/E. L. I. Type 96 B.H.P. Bomb = 2020 PSIG @ 4880')								
R. Olsen Oil Company	(Observation Well)											
*Wimberly #1	8-10-57	1644										
Gulf Oil Corporation												
Arnott Ramsey #F-3	8-10-57	1719	1803	511	46	51.84	0.665	1.250	1625			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	8-10-57	1387		517	56	24.01	0.670	1.500	1595			
Western Natural Gas Co.												
Eaton B-1	8-10-57	638		635	102	36.60	0.675	1.250	1419			
Continental Oil Co.												
State "A"-2 #1	8-10-57	99	195	89	90	13.69	0.690	1.500	474			
Cities Service Oil Co.												
Hodges B-1 Tbg.	8-10-57	Well Shut-in due to line failure at chokes.										
El Paso Natural Gas Co.												
Carlson Federal 1-B	8-12-57	1617	1691	515	56	40.96	0.665	1.500	2074	27.60	32.16	75,145
Justis #1	8-12-57	253	253	224	74	18.49	0.685	1.500	875			
Westates Pet. Corp.	(Observation Well)											
Carlson Federal #1-A	8-12-57	1725	1750									
R. Olsen Oil Co.	(Observation Well)											
Wimberly #1	8-12-57	1643										
Gulf Oil Corporation												
Arnott Ramsey #F-3	8-12-57	1712	1795	517	47	50.41	0.665	1.250	1610			

Part II

FLOWING PRESSURES AND VOLUMES

Company, Lease and Well No.	Date	Tbg. Press. PSIG	Csg. Press. PSIG	Line Press. PSIG	Line Flow Temp (°F)	Differential (" H2O)	Gas Gravity	Orifice Size (")	Flowing Volume (MCFPD)	Dist. Prod. Bbl/day	Water Prod. Bbl/day	Gas-Dist. Ratio CF/bbl.
Tidewater Assoc. Oil Coates C-1 Tbg.	8-12-57	1387		517	52	23.04	0.670	1.500	1575			
Western Natural Gas Eaton B-1	8-12-57	633		630	102	36.00	0.675	1.250	1402			
Continental Oil Company State "A"-2 #1	8-12-57	115	193	108	84	10.89	0.690	1.500	468			
Cities Service Oil Co. Hodges B-1 Tbg.	8-12-57	Well Shut-in due to line failure at chokes.										
Westates Pet. Corp. Carlson Federal #1-A	(Observation Well) 8-13-57	1724	1751	(Bottom Hole Pressure w/E.L.I. Type 96 B.H.P. Bomb = 2010 PSIG @ 4880')								
El Paso Natural Gas Co. Carlson Federal #1-B	8-6-57			(Bottom Hole Pressure w/E.L.I. Type 96 B.H.P. Bomb = 2090 PSIG @ 4822'.								
Westates Pet. Corp. Carlson Federal #1-A	(Observation Well) 8-6-57			(Bottom Hole Pressure w/E.L.I. Type 96 B.H.P. Bomb = 2144 PSIG @ 4880')								
El Paso Natural Gas Co. Carlson Federal #1-B	8-16-57						0.665	1.500				
Justis #1	8-16-57	227	227	227	78	16.00	0.685	1.500	816			
Westates Pet. Corp. *Carlson Federal #1-A	(Observation Well) 8-16-57	1726	1752									
R. Olsen Oil Co. *Kimberly #1	(Observation Well) 8-16-57	1645										
Gulf Oil Corporation Arnott Ramsay #F-3	8-16-57	1705	1784	526	54	49.70	0.665	1.250	1601			
Tidewater Assoc. Oil Coates C-1 Tbg.	8-16-57	1380		526	56	23.04	0.670	1.500	1576			
Western Natural Gas Eaton B-1	8-16-57	825		821	114	90.25	0.675	1.250	2526			
Continental Oil Co. State "A"-2 #1	8-16-57	105	195	98	85	12.25	0.690	1.500	471			
Cities Service Oil Co. Hodges B-1 Tbg.	8-16-57	441		89	93	42.25	0.670	1.000	370			

Part II
FLOWING PRESSURES AND VOLUMES

Company, Lse and Well No.	Date	Tbg. Press. PSIG	Csg. Press. PSIG	Line Press. PSIG	Line Flow Temp (°F)	Differential (" H2O)	Gas Gravity	Orifice Size (")	Flowing Volume (MCFPD)	Dist. Prod. Bbl/day	Water Prod. Bbl/day	Gas-Dist Ratio CF/bbl.
El Paso Natural Gas Co.												
Carlson Federal #1-B	8-23-57	1582	1656	558	55	45.56	0.665	1.500	2292	32.36	42.58	70,828
Justis #1	8-23-57	220	225	224	79	14.82	0.685	1.500	779			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	8-23-57	1727	1753	(Bottom Hole Pressure 2015# @ 4880' August 24, 1957)								
R. Olsen Oil Co.	(Observation Well)											
Wimberly #1	8-23-57	1645										
Gulf Oil Corp.												
Arnott Ramsey #F-3	8-23-57	1671	1757	566	37	36.00	0.665	1.250	1455			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	8-23-57	1610	(Shut in @ 3:00 P.M., August 21, 1957 to run distillate)				0.670	1.500				
Western Natural Gas												
Eaton B-1	8-23-57	777		774	127	64.80	0.675	1.250	2064			
Continental Oil Co.												
State "A"-2 #1	8-23-57	104	195	97	84	12.96	0.690	1.500	482			
Cities Service Oil Co.												
Hodges B-1 Tbg.	8-23-57	887	(Shut-in by mistake) (60 hr. Shut-in)				0.670	1.000				
El Paso Natural Gas Co.												
Carlson Federal #1-B	8-27-57	1569	1645	538	53	50.41	0.665	1.500	2377	29.52	36.34	80,522
Justis #1	8-27-57	243	243	243	77	12.25	0.685	1.500	740			
Westates Petr. Corp.	(Observation Well)											
*Carlson Federal #1-A	8-27-57	1727	1753	(Bottom Hole Pressure 2037# @ 4880')								
R. Olsen Oil Co.	(Observation Well)											
Wimberly #1	8-27-57)	1641										
Gulf Oil Corporation												
Arnott Ramsey #F-3	8-27-57	1674	1746	551	44	30.25	0.665	1.250	1304			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	8-27-57	1251		530	53	50.41	0.670	1.500	2351			
Western Natural Gas												
Eaton B-1	8-27-57	775		773	105	64.00	0.675	1.250	2083			
Continental Oil Co.												
State A-2 #1	8-27-57		203	112	80	11.42	0.690	1.500	490			
Cities Service Oil Co.												
Hodges B-1 Tbg.	8-27-57	245		244	86	10.24	0.670	1.000	297			

Part II
FLOWING PRESSURES AND VOLUMES

Company, Lse and Well No.	ate	Tbg. Press. PSIG	Csg. Press. PSIG	Line Press. PSIG	Line Flow Temp (°F)	Differential (" H_2O)	Gas Gravity	Orifice Size (")	Flowing Volume (MCFPD)	Dist. Prod. Bbl/Day	Water Prod. BBl/Day	Gas-Dist. Ratio CF/Bbl.
El Paso Natural Gas Co.												
Carlson Federal #1-B	4-30-57	1565	1641	582	52	46.24	0.665	1.500	2368	27.25	27.25	86,899
Justis #1	4-30-57	269	269	269	76	4.00	0.685	1.500	445			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	4-30-57	1727	1752	(Bottom Hole Pressure 2037# @ 4880')								
R. Olsen Oil Company	(Observation Well)											
Wimberly #1	4-30-57	1641										
Gulf Oil Corporation												
Arnott Ramsey #F-3	4-30-57	1667	1744	593	40	33.64	0.665	1.250	1437			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	4-30-57	1220		583	58	43.56	0.670	1.500	2291			
Western Natural Gas												
Eaton B-1	4-30-57	765		763	106	53.29	0.675	1.250	1887			
Continental Oil Co.												
State A-2 #1	3-30-57		200	103	76	11.56	0.690	1.500	476			
Cities Service Oil Co.												
Hodges B-1 Tbg.	3-30-57	98		95	79	10.24	0.670	1.000	190			
El Paso Natural Gas Co.												
Carlson Federal #1-B	9-3-57	1559	1634	557	60	51.12	0.665	1.500	2409	24.44	32.40	98,568
Justis #1	9-3-57	240	240	240	78	11.56	0.685	1.500	714			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	9-3-57	1727	1752									
R. Olsen Oil Company	(Observation Well)											
*Wimberly #1	9-3-57	1641										
Gulf Oil Corporation												
Arnott Ramsey #F-3	9-3-57	1585	1779	562	55	3.61	0.665	1.250	446			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	9-3-57	1224		558	54	43.56	0.670	1.500	2247			
Western Natural Gas												
Eaton B-1	9-3-57	772		770	118	60.84	0.675	1.250	1993			
Continental Oil Co.												
State A-2 #1	9-3-57		205	114	82	10.24	0.690	1.500	467			
Cities Service Oil Co.												
Hodges B-1 Tbg.	9-3-57	308		240	106	0.00	0.670	1.000	0			

Part II
FLOWING PRESSURES AND VOLUMES

Company, Lease & Well No.	Date	Tbg. Press. PSIG	Csg. Press. PSIG	Line Press. PSIG	Line Flow Temp (°F)	Differential (" H_2O)	Gas Gravity	Orifice Size (")	Flowing Volume (MCFPD)	Dist. Prod. Bbl/day	Water Prod. Bbl/day	Gas-Dist. Ratio CF/Bbl.
El Paso Natural Gas Co.												
Carlson Federal #1-B	9-6-57	1558	1634	528	58	52.56	0.665	1.500	2382	36.35	43.18	65,530
Justis #1	9-6-57	239	239	238	79	11.56	0.685	1.500	709			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	9-6-57	1729	1752	(Bottom Hole Pressure - 2037# @ 4880')								
R. Olsen Oil Company	(Observation Well)											
*Wimberly #1	9-6-57	1646										
Gulf Oil Corporation												
Arnott Ramsey #F-3	9-6-57	1698	1774	532	47	16.06	0.665	1.250	981			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	9-6-57	1223		534	47	40.96	0.670	1.500	2144			
Western Natural Gas												
Eaton B-1	9-6-57	771		768	116	62.41	0.675	1.250	2020			
Continental Oil Co.												
State A-2 #1	9-6-57						0.690	1.500				
Cities Service Oil Co.												
Hodges B-1 Tbg.	9-6-57						0.670	1.000				
El Paso Natural Gas Co.												
Carlson Federal #1-B	9-13-57	1550	1625	543	56	49.00	0.665	1.500	2337	30.32	40.19	77,077
Justis #1	9-13-57	249	249	248	76	10.24	0.685	1.500	684			
Westates Pet. Corp.	(Observation Well)											
*Carlson Federal #1-A	9-13-57	1729	1753									
R. Olsen Oil Co.	(Observation Well)											
*Wimberly #1	9-13-57	1651										
Gulf Oil Corporation												
Arnott Ramsey #F-3	9-13-57	1695	1776	547	67	20.25	0.665	1.250	1022			
Tidewater Assoc. Oil												
Coates C-1 Tbg.	9-13-57	1613	(Shut-in to run distillate)				0.670	1.500				
Western Natural Gas												
Eaton B-1	9-13-57	773		769	74	2.56	0.675	1.250	435			
Continental Oil Co.												
State A-2 #1	9-13-57	166	167	90	74	10.24	0.690	1.500	419			
Cities Service Oil Co.												
Hodges B-1 Tbg.	9-13-57	(Shut-in by mistake)					0.670	1.000				

BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMERADA PETROLEUM CORPORATION FOR AN ORDER AMENDING THE SPECIAL RULES AND REGULATIONS FOR THE JUSTIS GAS POOL AS PROVIDED IN ORDER R-586, AS AMENDED, TO AUTHORIZE THE FORMATION OF 320-ACRE STANDARD GAS PRORATION UNITS IN THE JUSTIS GAS POOL, LEA COUNTY, NEW MEXICO.)

CASE NO. 1292

APPLICATION

Now Comes Amerada Petroleum Corporation, Tulsa, Oklahoma, and alleges the following:

1. That this Commission heretofore has created, designated and defined the vertical and horizontal limits of the Justis Gas Pool, Lea County, New Mexico.

2. That Rule 5, the Special Rules and Regulations for the Justis Gas Pool, of Order No. R-586, as amended, provides that a standard proration unit for the purpose of producing gas from the Justis Gas Pool shall consist of between 158 and 162 contiguous surface acres substantially in the form of a square which shall be a legal subdivision (quarter section) of the U. S. Public Land Surveys.

3. That applicant has evidence to show that these special rules and regulations for the Justis Gas Pool should be amended to authorize the formation of standard gas proration units consisting of 320 acres, more or less.

WHEREFORE, Applicant respectfully requests that this Commission set this application for public hearing at the time and place to be fixed by the Commission, that due and proper notice thereof be given as required by Law, and that at the conclusion of said hearing this Commission enter its order authorizing the formation of 320 acre standard gas proration units for the Justis Gas Pool and amending or entering such other rules and regulations as the Commission deems necessary for the purposes herein stated.

DATED this 18th day of July, 1957.

AMERADA PETROLEUM CORPORATION

By H. D. Bushnell

H. D. BUSHNELL, Attorney

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 15, 1957

TRANSCRIPT OF HEARING

Case 1293

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 15, 1957

IN THE MATTER OF: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order amending the Special Rules and Regulations for the Justis Gas Pool provided by Order R-586, as amended, to provide for 320-acre gas proration units in the Justis Gas Pool, Lea County, New Mexico.	Case 1293

BEFORE:

Mr. A. L. Porter
Mr. Murray Morgan
Honorable Edwin L. Mechem

TRANSCRIPT OF HEARING

MR. PORTER: I would like to call next Case 1293.

MR. COOLEY: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico.

MR. PORTER: Mr. Bushnell.

MR. BUSHENLL: H. D. Bushnell, attorney for Amerada, appearing on behalf of the Applicant, moves and asked that the case be continued for setting in September for the reason that certain tests now being conducted, in which we hoped to have results for this hearing, are not now available, but we hope will be available

for a September hearing.

MR. PORTER: Is there any objection to the counsel's motion for continuance of 1293 to the regular hearing in September? The case will be continued.

C E R T I F I C A T E

STATE OF NEW MEXICO)
: SS
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 21st day of August, 1957.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1959.

BEFORE THE
OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
Santa Fe, New Mexico

September 18, 1957

TRANSCRIPT OF HEARING

Case 1293

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
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BEFORE THE
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STATE OF NEW MEXICO
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IN THE MATTER OF: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order amending the Special Rules and Regulations for the Justis Gas Pool provided by Order R-586, as amended, to provide for 320-acre gas proration units in the Justis Gas Pool, Lea County, New Mexico.	Case 1293

BEFORE:

Mr. A. L. Porter
Mr. Murray Morgan
Honorable Edwin L. Mechem

TRANSCRIPT OF HEARING

MR. PORTER: We will consider next Case 1293.

MR. COOLEY: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico.

MR. BUSHNELL: H. D. Bushnell, attorney for Amerada, appearing on behalf of the applicant, and we are ready.

MR. PORTER: Mr. Bushnell, how many witnesses do you have?

MR. BUSHNELL: I have three witnesses.

MR. PORTER: We will have them all sworn at once.

(Witnesses sworn.)

MR. BUSHNELL: Mr. Chairman, before proceeding with taking the statement, I would like to make a brief opening explanation. The Special Rules and Regulations covering the Justis Gas Pool were originally published in 1954. Those rules expressly provide that standard gas proration units should be 180 acres. In February of 1957, Amerada filed its application asking for an exception to those Special Rules for the purpose of forming a non-standard proration gas unit of 440 acres. That application was denied.

Since the date of that hearing, which was had in March in Case No. 1219, we have new evidence which we are bringing before the Commission today in this case in support of our application filed in this cause to amend the Special Rules and Regulations, or so much of the Rules and Regulations of the Justis Gas Pool as to permit the formation of 320 acre gas proration units.

R. S. CHRISTIE

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

DIRECT EXAMINATION

By MR. BUSHNELL:

Q Would you state your name and the company for which you are employed?

A R. S. Christie, Amerada Petroleum Corporation.

Q In what capacity? A Petroleum Engineer.

Q Have you testified before this Commission in prior hearings

in that capacity? A Yes, I have.

MR. BUSHNELL: If there are no objections, are his qualifications acceptable to the Commission?

MR. PORTER: They are.

Q Mr. Christie, I hand you what is marked Exhibit No. 1, Amerada's Exhibit No. 1. Is it not true that this is a plat of the area that covers the Justis Gas Pool? A Yes, it is.

(Marked Amerada's Exhibit No. 1, for identification.)

Q The area outlined in red there represents the horizontal limits of the Justis Gas Pool under Special Rules and Regulations of the Commission, is that correct?

A I believe that is correct. There is one half section that I couldn't find an order on, but I assume that it is covered in some other order. I believe that is the outlines of the pool at the present time.

Q Also shown on this plat are nine wells designated by red circles, and those represent the nine completed gas wells in this pool, is that correct? A That's correct.

Q Now, Mr. Christie, have you had an opportunity to re-examine the testimony that you gave in Case No. 1219 which was the hearing had on Amerada's application for an exception authorizing a non-standard unit? A Yes, sir.

Q As I recall, is it not correct that you were the sole

engineer who testified in that case, is that correct?

A Yes, sir.

Q And as the sole engineer witness, you testified to certain facts from which you concluded that three wells now completed in the Justis Gas Pool had produced gas in excess of 160 acres under each well, and that you concluded that one well would drain in excess or a minimum of 320 acres, is that correct?

A That's correct, yes, sir.

MR. BUSHNELL: Mr. Chairman, we would like for the record of this case to refer to Mr. Christie's testimony given in Case 1219. If there is no objection we would like to have that testimony incorporated in the testimony that he has given in this case as part of his testimony in this case today. Perhaps I should ask one other question.

Q Mr. Christie, from that testimony of the facts and the conclusions that you gave in 1219, is it your testimony today that the testimony that you gave in 1219 would be the same?

A Yes, sir, with the exception of one factor, and that was the porosity that we used in calculating the amount of gas in place. At that time we had no porosity figures for the Paddock Zone in the Justis Pool, and we used an average porosity figure from the Monument-Paddock Pool. Since that time we have calculated porosities from two electric logs and found that one of them had a porosity of 5.4% and another one approximately 8.2%, which would

give an average of slightly in excess of the 6% that we used in effect, carry through the reservoir, then the amount of gas in place would be slightly higher.

MR. BUSHNELL: If there is no objection, we could then proceed with the new testimony and evidence that we have.

MR. PORTER: In other words, your motion is to --

MR. BUSHNELL: (Interrupting) Incorporate the testimony Mr. Christie gave in 1219 as part of his testimony in this case with this qualification.

MR. PORTER: With the exception of this qualification that he has made?

MR. BUSHNELL: Yes.

MR. PORTER: Without objection it will be made a part of the record in this case insofar as it has a bearing on this case.

MR. BUSHNELL: It all has a bearing on this case. That's all I have from this witness at this time.

MR. PORTER: Does anyone else have a question of Mr. Christie?

MR. COOLEY: I have sent out for the record of 1219. I would like to dismiss Christie now and if we have any questions concerning his testimony at that time we can recall him for cross examination.

MR. BUSHNELL: That is agreeable.

MR. PORTER: You may be excused, Mr. Christie.

MR. BUSHNELL: I would like to call Mr. Wright.

R. T. WRIGHT

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

DIRECT EXAMINATION

By MR. BUSHNELL:

Q Would you state your name and the company for which you are employed?

A My name is R. T. Wright. I'm employed by El Paso Natural Gas Company.

Q In what capacity?

A I am in charge of the Permian Division, Gas Engineering Department in Jal, New Mexico.

Q Have you ever previously testified in prior hearing before this Commission?

A No, sir, I have not.

Q What school did you graduate from?

A I graduated from Texas A. and M. in 1948 with a B. S. degree in mechanical engineering.

Q How long have you been employed since you graduated from college?

A I have been employed with El Paso Natural for the nine years since.

Q During this nine-year period that you were employed by El Paso, has the nature of your work been such that you have either conducted or supervised the conducting of taking the numerous types

of tests on gas wells, or has the nature of your work been such that you must have had knowledge of the interpretation of such gas well tests? A Yes, it has.

MR. BUSHNELL: I submit Mr. Wright's qualifications, and ask that he be accepted as an expert witness.

MR. PORTER: His qualifications are accepted.

Q Mr. Wright, I hand you what is marked Amerada's Exhibit No. 2. Before testifying as to this exhibit, Mr. Wright, have you of recent date conducted a series of tests known as interference tests in the Justis Gas Pool? A Yes, sir, we have.

(Marked Amerada's Exhibit No. 2, for identification.)

Q Referring to Exhibit 2, what does it purport to show?

A Exhibit No. 2 is a tabulation of all of the data obtained during the interference test that we recently ran on the Justis Pool.

Q Was it prepared by you or one under your supervision?

A It was.

Q Does it report accurately the findings of the test that you recently made? A Yes, sir, it does.

Q What period of time does this test cover?

A It covers the period from July 15, 1957 until September the 13th, 1957.

Q Now, how many wells are covered by this data sheet?

A It covers all nine wells in the Justis Pool.

Q What two wells, and would you identify them by referring to Exhibit No. 1, are considered the observation wells?

A The observation wells are the West States Petroleum Corporation Carlson Federal No. 1-A located in the northwest quarter of the southeast quarter of Section 25, Township 25 South, Range 37 East. The other one is the R. Olsen Oil Company Wimberly No. 1 in the southeast quarter of the northeast quarter of Section 23.

Q Now, referring in particular to part one shown at pages one and two of this exhibit, what does it purport to show?

A Part one is a tabulation of all of the surface shutin pressures taken on the six wells that were shut in during the interference test.

Q Now, there are nine wells completed in the Justis Gas Pool, three of which were not shut in, is that correct?

A That's correct.

Q Would you, to complete the record, identify on Exhibit No. 1 and describe the excepted wells?

A One of them is the Continental State A-2 No. 1, in the southwest quarter of the southeast quarter of Section 2. The second one is the Cities Service Hodges B No. 1 in the southwest quarter of the southwest quarter of Section 1. And a third one is the El Paso Natural Gas Company Justis No. 1 in the southeast quarter of the southeast quarter of Section 11.

Q So that to repeat the part one of this Exhibit covers all wells, the shutin pressures of all wells except for these three wells that you have just located, is that correct?

A That is correct.

Q Now, referring in particular to part two, beginning at page three, for the remainder of this exhibit, would you state what that purports to show?

A Part two is a tabulation that reflects the shutin surface pressure, bottomhole pressure, on the two observation wells, and also the flowing wellhead pressures and volumes on the seven remaining wells.

Q Mr. Wright, more specifically, this shows the surface shutin pressures on the Olsen and the West States Well and the bottomhole pressure and shutin surface pressure on the West States Well, is that correct?

A That is correct.

Q So that you do not have any report on the bottom pressure on the Olsen Well?

A We do not, no, sir.

Q Would you explain why?

A That was due to a mechanical fault of the wellhead of the well in question.

Q So that the only well in which you were able to take a bottomhole pressure was the West States Well, is that correct?

A That is correct.

Q In the course of conducting this test, did you find evidence of any liquids in the West States Well?

A Yes, sir. The first two times that we ran our bottomhole pressure bomb in the West States Well there was evidence of liquids in the bore, but thereafter there was none.

Q How many bottomhole pressure tests did you make in the West States Carlson Federal No. 1? A Seven.

Q The results of these seven tests are reflected in part two of this exhibit, is that correct? A That is correct.

MR. BUSHNELL: That's all the questions I have of this witness at this time.

MR. PORTER: Does anyone else have a question of Mr. Wright?

CROSS EXAMINATION

By MR. PORTER:

Q To your mind, are all these wells in the Justis Pool fairly old completions?

A No, sir. They are not all old completions. The ones in the south portion of the field are relatively new, Mr. Porter.

Q Drilled within the last year or two?

A Yes, sir. The ones in the northern part of the field are fairly old.

MR. COOLEY: We would like to dismiss this witness with the privilege of calling him for cross examination.

MR. PORTER: For the time being the witness may be excused.

(Witness excused.)

MR. BUSHNELL: Call Mr. Blackwood.

J. C. BLACKWOOD

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

DIRECT EXAMINATION

By MR. BUSHNELL:

Q Would you state your name and the company for which you are employed?

A I am J. C. Blackwood, employed by Amerada Petroleum Corporation as a Petroleum Engineer.

Q Have you testified before this Commission in prior hearings in that capacity? A Yes, I have.

Q Mr. Blackwood, referring to Exhibit No. 1, shown on there are some contour lines. Would you state what those contour lines represent?

A These contours are on a marker at about the top of the Yates formation. Contour interval is 25 feet.

Q Now, you do not have enough data to complete contour lines on the Paddock, is that correct?

A That's right, there are too few wells drilled into the Paddock formation in this general area to draw a complete structure map on the top of the Paddock formation.

Q Is it your opinion that the contours here on the top of the

Yates represents substantially the structure of the Paddock sand?

A Yes, that's right.

Q Now, I hand you what is marked, or will be marked, Exhibit No. 3, Amerada's Exhibit No. 3, which is a north-south cross section in this Paddock sand, is that correct?

A Yes, that's right.

(Marked Amerada's Exhibit No. 3, for identification.)

Q Now, would you identify by name and by description, the wells on this north-south cross section?

A The well on the south is the Gulf Oil Corporation Arnot Ramsey No. 3-F. That's in Section 36 of 25,37. The second well is El Paso Natural Gas Company's Carlson Federal 1-B in Section 25 of 25, 37. The next well is Tidewater Oil Company's Coates No. 1-C, in Section 24 of 25, 37. The fourth one is Western Gas Company's Eaton No. 1 in Section 12, 25, 37.

Q What does this cross section purport to show?

A It shows the electric log or radioactivity logs of these four mentioned wells, and has marked on it the top of the Glorietta formation and the top of the Paddock.

Q Does it show continuity of the Paddock sand?

A Yes, it does.

Q Now, Mr. Blackwood, have you had an opportunity to examine the data sheet known herein as Exhibit No. 2 which was prepared

as a result of the recent interference tests conducted in the Paddock Pool? A Yes, I have.

Q Have you made a study of those facts and attempted to analyze the findings? A Yes, I have.

Q I hand you what is marked Amerada's Exhibit No. 4 which is a graph, and was this prepared by you or by one under your supervision? A Yes, it was.

(Marked Amerada's Exhibit No. 4, for identification.)

Q Now, this graph shows that on July 15 all the wells that were shut in were shut in on that date, is that correct?

A Yes.

Q That would be the six wells that Mr. Wright identified as being all the wells on the Paddock sand except for the three that he excepted by description, is that correct?

A Yes.

Q This graph shows that these six wells were shut in from July 15 to August 6, is that correct?

A They were actually opened, I believe, on August 7.

Q That's right. Now, would you show on this graph and explain the line which is identified West State Carlson 1-A which shows the first mark as being dated on August 6?

A Of course, all the information shown on this graph is taken from the tabulation Exhibit No. 2. It's just simply the information, a graphical presentation of the information that was

collected under the supervision of Mr. Wright and is set down in tabular form in Exhibit No. 2. The line you ask about, West States Carlson 1-A, connects the points representing the determinations of bottomhole pressure made in this well during this test period. The first test taken in this well was taken on August the 6th, the bottomhole pressure taken at 4880 feet below the surface and the pressure was 2144 pounds per square inch. This was taken on the 6th day prior to the date that the wells were opened up.

Q That is designated by the first dot shown at the top of that line marked West States Carlson 1-A, is that correct?

A That is correct. Then the subsequent determinations are shown by the other dots connected by this solid line.

Q Now the second test.

A The second test was taken on August 10th, at which time the pressure was 2010, or 2020 pounds, or 124 pounds below the pressure determined on the 6th of August.

Q So that this shows there has been 124 pound drop between August 6 and August 10th, is that correct?

A Yes.

Q That on August 7, the plat shows at the top that the wells were then open and put on production except for the two wells that are considered the control wells or observation wells, is that correct?

A Yes, that's correct.

Q Now, the third test --

A (Interrupting) The third pressure determination on this well was taken on August 13, and showed a pressure of 2010 pounds or 134 pound drop from the static determination.

Q And the plat shows that on August 24 the next test was taken, however, that should be shown actually as August 23, isn't that correct?

A That's correct. That is misplotted on that graph. The pressure was actually taken on August 23, the pressure was determined to be 2015 pounds. The next pressure was taken on August 27, pressure was determined to be 2037 pounds, or 107 pounds below the static pressure.

Q Two final tests made on August 30 and September 6 show that that pressure remained constant, is that correct?

A That's correct. Apparently it stabilized at 2037 pounds.

Q Mr. Blackwood, considering these bottomhole pressure tests, these seven tests in relation to the date the wells were shut in, and the date they were subsequently opened for production, what conclusion do you reach, or observation do you make?

A Well, from, just from the pressures of that well, it's apparent that the other wells in the pool are in communication with this well, the subject well, the West States Carlson 1-A.

Q That is shown by the rapid decline of the bottomhole pressure which is shown as being 124 pound drop between August 6

and August 10th, is that correct? A Yes, that's correct.

Q What do the dotted lines on the graph purport to show?

A The dotted line on the graph connects points designating the daily gas flow from these two wells that are shown. One is the El Paso Carlson Federal B-1 which is west of the West States Carlson 1-A, the observation well, and the other well is the Gulf Arnot Ramsey F-3 which is south of the observation well.

Q Now, referring to the dotted line covering production from the Gulf A Ramsey well, what does that show?

A Well, it shows that by August 10th, or on August 10th, the well was flowing at a rate of 1,600,000 cubic feet per day, and it flowed at about the same rate until about the 16th of August, and after that time on to the end of the recorded information there was a general decline in the amount of gas produced.

Q Now, referring to the line which represents the production from the El Paso Carlson Well, would you state what you observed when you plotted that information?

A Well, it shows on August 10th the gas production was about 2,100,000 cubic feet per day, and gradually increased over the length of the test until it reached a maximum of about 2,400,000 feet a day.

Q Now, Mr. Blackwood, considering the production data from these two wells as shown on the graph in relation to the bottomhole pressure test results as indicated on the solid line, what

observation do you make and what relationship exists there?

A Well, it appears to me that there is rather a definite relation between the quantity of gas being produced from the Gulf Ramsey F-3 and the results of the bottomhole pressure in the West States Carlson 1-A. You'll notice that as the gas rate in the Gulf Ramsey Well declined over the length of the test that the pressure gradually built up from its minimum in the West States Well, gradually built up and apparently stabilized.

Now, the pressure stabilized in the West States Carlson 1-A Well at 2037 when it might appear that if the pressure were solely dependent on the gas withdrawals from the Gulf Ramsey Well it might have built up to a higher pressure and not stabilized at that point. From the fact that it stabilized and did not exactly follow the production from the Gulf Ramsey Well, I would infer that it is also, the pressure in this well is also subject to withdrawals from other wells in the pool.

Q You are concluding, therefore, that the results of the bottomhole pressure tests in the West States Carlson 1-A Well are affected by the production from both the Gulf Ramsey Well and the El Paso Carlson Well, and perhaps also by the production figures of the other wells in the pool, is that correct?

A Yes, that's right.

Q Now, Mr. Blackwood, referring again to Exhibit No. 2, does it not show that during the period of this test the shutin tubing

pressure in the West States Carlson I.P. built up for a total of six pounds, or a maximum of six pounds at its maximum amount, and then settled back two or three pounds, is that correct?

A During the period in which the other wells were flowing?

Q That's right.

A Yes, that's right. On August the 10th, the tubing pressure on the West States Carlson Well as shown on the tabulation is 1723 pounds. The pressure gradually built up to 1729, the end of the test, or a matter of some six pounds.

Q That was the maximum buildup, is that correct, to six pounds?

A Yes.

Q That was a buildup of surface pressure on one of the observation wells, the well from which the bottomhole pressures were taken, is that correct? A Yes.

Q What significance do you attach to that finding?

A Well, the first thing I notice about it, of course, is that the tubing pressure does not reflect the changes in the bottomhole pressure.

Q What explanation do you have for that?

A Well, I'm satisfied that it fails to reflect it because of changes in the amount of liquid in the well bore or in the tubing.

Q Now, Mr. Blackwood, considering the findings that have been made by this interference test, what conclusions do you reach concerning the communication in the Paddock sand?

A Because of the rapid drop observed in this interference test, I conclude that communication within the reservoir is good. At least in the area where we tried it.

Q Would you, in your opinion, state what area would be drained as shown from the evidence on this graph?

A It appears that since the West States Well reflected the behavior or the withdrawal from the Gulf Ramsey Well, that at least we can be sure that there is effective communication and drainage over the distance between those two wells, which is 2640 feet, or a half mile.

Q So is it your opinion that one well in this area would drain an area of a circle that has a radius of 2640 feet?

A Well, yes.

Q On the basis of the test information and its results, is it your opinion, Mr. Blackwood, that one well will drain a minimum of 320 acres in this Paddock sand? A Yes.

MR. BUSHNELL: That's all the questions I have of this witness at this time.

MR. PORTER: Does anyone else have a question of Mr. Blackwood? Mr. Cooley.

CROSS EXAMINATION

By MR. COOLEY:

Q Would you repeat, Mr. Blackwood, for my benefit, the method at which you arrive at the 2600 and some feet of drainage influence,

I missed that last step?

A I believe that the graph shown here indicates that the pressure in the West States Carlson 1-A was directly influenced by withdrawals from the Gulf Ramsey F-3. Since these two wells are some 2640 feet apart, I would conclude that we have shown drainage or communication over that distance.

Q How can you be sure that the major portion of the drop is not caused by the El Paso well?

A Because of the variation in the pressure. In other words, if the bottomhole pressure in the West States Carlson was dependent on the withdrawals from the El Paso Carlson B-1, then during the course of the observation period the bottomhole pressure should have continued to go down since the volume produced from the El Paso well went up.

Q Isn't it natural for them to stabilize after a point like that even though it is dependent on one well?

A I don't think it would be natural for it to stabilize as long as the gas volume being produced from the El Paso well continued to increase.

Q Was that a very sharp increase?

A Well, it is not a very sharp increase, no.

MR. PORTER: Mr. Nutter.

By MR. NUTTER:

Q Mr. Blackwood, you stated that you thought that the pressure

buildup on the Carlson 1-A Well was on account of the reduced withdrawals from the Ramsey B-2 Well, is that right?

A I believe that's correct, yes.

Q That well is further away from the Carlson 1-A Well than the Carlson B-1, is it not? A Yes.

Q Why would a well further away have more effect on the bottomhole pressure in the Carlson 1-A Well than a well close to it would?

A The perforations in those two wells are not in the identical same zone of porosity. The perforations in the, maybe I had better consult my notes on that, the perforations in the West States Carlson Well cover an interval from 4820 to 4880, the perforations in the El Paso Well start up at 4614 and continue down to 4820. The elevation on these two wells are almost identical within two feet of one another, so it is apparent that the perforations on the El Paso Well come down to a point 4820, and that's the bottom of their perforations, whereas on the West States Well the top of the perforations are 4820.

Q So that you maintain that the difference in structure position and the difference in the perforated interval of the Carlson B-1 and the Carlson A-1 is so much difference that the two wells are not comparable for the interference test?

A I believe that there is communication there, but it's slow because of the different perforated interval. The fact that

they are not in quite the same interval.

Q How far apart are those wells?

A 1320 feet.

MR. PORTER: Mr. Cooley.

By MR. COOLEY:

Q Then if the West States Well had the south half of 25 dedicated to it, it is your opinion it would not adequately drain it?

A Maybe I had better get that question again, please.

Q I believe you just testified in answer to Mr. Nutter's question that due to the difference in perforation interval between the southeast quarter of Section 25 and the southwest quarter of Section 25 where the West States and El Paso Wells are located, made drainage very slow? A That's right.

Q Then, if the entire south half, if there were only one well in the south half of Section 25 which would be 320 acres?

A Yes.

Q Do you feel that it would adequately drain the south half?

A Yes, I do. This pressure change here is an extremely rapid thing, and we're drawing our conclusions on that and we're talking about whether the well would drain over a long period of time.

Q I'm talking about effective drainage. I have heard testimony in the drainage cases, one well will drain the whole pool if given a hundred years, but I don't think we have a hundred years.

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I mean the effective drainage pattern, would this well drain the south half within a reasonable length of time?

A Yes.

Q But still the production from the El Paso well would not affect the West States pressure nearly as much as one 2600 --

A (Interrupting) Not so rapidly, but I believe in the period, it was production from the El Paso well that eventually caused the pressure to stabilize on the West States well. Instead of building back up as it might have done if it were related only to withdrawals in the Gulf well, it stabilized, because of the influence of the El Paso well.

Q Tell me how this curve would look if the Ramsey well were not there at all.

A If the Ramsey well were not there at all I suppose it would have taken a good many days for interference to have shown up and the drop wouldn't have been quite so large.

Q What information do you have that makes you believe that the Paddock zone will conform to the contours of the Yates formation?

A Well, I don't know that it's going to conform exactly. That is an interval of about 2500 feet from this contour interval that we're using on the map. Certainly it wouldn't conform exactly, but in general I think it gives a picture of the Paddock structure.

Q Do you have anything to base that opinion on?

A Well, of course, I don't know the completed Paddock picture,

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but as far as we can tell from these wells, why it appears to reflect it.

MR. COOLEY: That's all I have.

MR. PORTER: Anyone else have a question? Mr. Utz.

By MR. UTZ:

Q Mr. Blackwood, the fact that you think that communication is less between the West States Carlson 1-A and the El Paso Carlson 1-B which is 1320 feet, than the communication between the West States Carlson 1-A and the Gulf Ramsey F-3 which is 2640 feet, would that indicate to you that the permeability was quite lenticular in this pool?

A No, I don't believe that's true. The perforated interval on these wells, I presume, was selected by the individual and doesn't necessarily cover the entire porous interval in the Paddock formation.

Q You don't have any idea why they perforated the El Paso well where they did?

A No. I couldn't say why they did that. Certainly it's productive there and covers at least a substantial part of what they thought the pay was.

Q Nevertheless, your testimony is, isn't it, that you had more communication from the well further away from the shutin well than you did from the one that was closer to it?

A Yes, that's right.

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MR. WHITE: That's all.

MR. PORTER: Anyone else have a question of Mr. Blackwood? Mr. Cooley.

By MR. COOLEY:

Q Do you feel that if the maximum limit of efficient drainage in the range of 2640 feet or something like that, that this would be sufficient to justify 320 acre spacing?

A Yes, I do.

Q Where would you suggest that the well be located in the 320, from the standpoint of the long ways to drain the furthermost points in the proration unit?

MR. BUSHNELL: Mr. Cooley, in our application we are only asking for amendment to the Special Rules as to the size of the unit, we are not asking for an amendment to the location of the well.

MR. COOLEY: Yes, but if the radius of drainage is only 2640 feet, it is quite obvious that even a well location in the center of one quarter section would not drain to the other end of this proration unit.

A I don't believe, at least I didn't mean to testify that the drainage would be limited to 2640 feet. We show, I think, by this interference test drainage to that distance within a short period of time. I don't believe that that limits the distance of drainage. Certainly if you were setting up in your question as a limit, as a condition of your question 2640 feet, why it should be drilled

DEARNLEY, MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

somewhere near the center of the 320 acre tract.

Q But there's nothing evidenced by the tests in question here on the West States Well that the drainage area is substantially in excess of 2640 feet by any stretch of the imagination, is there?

A Well, yes, I think so. I believe, well, there was apparently some testimony given previously that indicated there had been drainage from substantially larger areas than that, and the radius of 2640, I think is a minimum distance because we got such rapid reflex in the bottomhole pressure in the West States Well.

MR. PORTER: Does anyone have a question of Mr. Blackwood? You may be excused.

(Witness excused.)

MR. PORTER: Mr. Cooley, did you wish to call one of the other witnesses now?

MR. COOLEY: Just a minute, please.

MR. BUSHNELL: I would like to offer Amerada's Exhibits 1 through 4 into the record. That is all the witnesses we have, and I understand there are statements however to be made.

MR. PORTER: I believe, Mr. Bushnell, that you indicated that these witnesses indicated that the exhibits were prepared by them?

MR. BUSHNELL: I thought that I did on each instance make that statement.

MR. PORTER: Without objection the exhibits will be admitted.

Mr. [illegible], would you take the witness stand again?

R. S. CHRISTIE

recalled as a witness, testified further as follows:

CROSS EXAMINATION

By MR. COOLEY:

Q I heard that you stated these figures on the Paddock in the two tests that you made, you got one test of 5.4 and another of 8.2, giving an average of 6%?

A It would be a little better than six for those two wells.

Q How did you say this compared with your estimated porosity that you testified to Case 1219?

A Well, the average of 5.4 and 8.2 would be slightly greater than 6%, which of course would give you a slightly larger volume of gas in the reservoir initially.

Q Larger than what?

A Larger than the volume that I testified to I believe at the last hearing, or in Case 1219.

Q Mr. Christie, either you are in error or the reporter is in error. I quote from your testimony in Case 1219, in answer to question "What fact are you using as a basis for reaching this conclusion?" The conclusion was that "One well would drain 440 acres. Unfortunately we have very little reservoir information in this particular area, and since we haven't drilled our own well, we have to use other information from other sources not knowing what the

exact porosity, permeability and so forth are underneath this tract. I have used alternate methods of attempting to determine what the drainage area might be. We have assumed, or it is not, actually not an assumption, we have estimated that the average pay thickness underneath this tract is 20 feet of net effective pay. We have used a percent of porosity of eight and a half which is the porosity based on an analysis in the Paddock and Monument Pool, which is to the northwest of the Justis Pool."

A I stand corrected. I say we have eight and a half. I say we have 6%. So that would give you a less volume of gas.

Q Approximately how much less?

A Well, the percentage that eight and a half bears to the average of 5.4 and 8.2.

Q That would be nearly 25% less?

A No, it wouldn't be that much.

Q I believe it would be.

A Well, I'm satisfied if you are at 25%.

MR. NUTTER: It is 20% less.

A Average of 6.8 compared to 8.5 would be less than 2%.

Q It would be less than what?

A Two percent less, the average would be 2% less.

Q Twenty percent less?

A Well, I'm talking about the values themselves, 6.8 against 8.5.

MR. COOLEY: That's all. Thank you.

MR. PORTER: Mr. Woodruff.

MR. WOODRUFF: John Woodruff, representing El Paso Natural Gas Company.

By MR. WOODRUFF:

Q Mr. Christie, would not the lower porosity indicate that the wells would have to be drained from an even wider area to get the amount of gas that has been produced?

A Yes, it would.

Q So instead of 440 it would be something larger than that, would it not?

A Yes, sir.

MR. WOODRUFF: That's all I have.

MR. PORTER: Does anyone else have a question of Mr. Christie? You may be excused. Pardon me, Mr. Utz, I didn't see you.

By MR. UTZ:

Q Mr. Christie, I take it that you calculated the reserve on the base, basis of the figures that you now have?

A No, I have not. I assume, well, I didn't assume, I just didn't do it.

Q I gather from your answer to the question Mr. Woodruff, the El Paso attorney asked you, that you were making a comparison between reserves and production, production that has already been produced in this pool, is that correct?

A Yes.

Q Is that a correct assumption? A Yes, sir.

Q What would you use for reserves in order to make that comparison?

A My testimony in Case 1219, I used 7,000 M.C.F. per acre.

Q 7,000 M.C.F. per acre? A Yes, sir.

Q That would be decreased now by approximately 20%?

A Yes, sir.

Q I wonder if you have the original data at hand to clarify the record as to the reservoir factors that you did use.

A The factors would be 20 feet average pay thickness.

Q 20 feet?

A And 6.8% porosity and an estimated water saturation of 20%, and the pressure that we used initially was 2,000 pounds reservoir pressure.

Q Did you have any permeability data?

A No, sir.

MR. UTZ: That's all.

MR. PORTER: Mr. Nutter, did you have another question?

By MR. NUTTER:

Q Mr. Christie, I wonder if you would put in the record the names and location on which you used the porosity figures as calculated from the logs? A Yes, sir.

Q Please.

A I'm pretty sure I have that somewhere. I am pretty sure it was the Carlson Federal B No. 1 and the Tidewater Coates C No. 1.

Q Both of which are located within the horizontal limits of the Justis Gas Pool, correct? A Yes, sir.

MR. NUTTER: That's all, thank you.

MR. PORTER: Mr. Cooley.

By MR. COOLEY:

Q Mr. Christie, are you of the opinion that this field may be a water drive field?

A The indications are that it is.

Q If that is the case, what effect would it have upon the calculations that you have just mentioned?

A Well, it has quite a serious effect on it. Those calculations wouldn't hold strictly on a water drive field. If you remember the testimony I presented in Case 1216, I used another method of, in Case 1219, excuse me, in arriving at those drainage areas.

MR. COOLEY: Thank you.

MR. PORTER: Does anyone else have a question of Mr. Christie? The witness may be excused.

(Witness excused.)

MR. PORTER: Do you wish to recall Mr. Wright?

MR. COOLEY: No, sir. That's all we have.

MR. PORTER: Does anyone have anything further to say in this case?

MR. KASTLER: Mr. Chairman, Gulf Oil Corporation is an operator in this Justis Gas Pool and we concur in the application.

MR. PORTER: Anyone else? Mr. Woodruff.

MR. WOODRUFF: John Woodruff, representing El Paso Natural Gas Company. El Paso fully concurs in Amerada's conclusions and recommendation and urges the Commission to grant their application consistent with our position in other fields, we do not feel the fact that some operators, including ourselves, have drilled wells under 160 acre spacing, we do not think that fact should preclude the Commission from establishing a wider spacing unit when it has been shown that one well will efficiently drain such wider acreage or area, and that the establishment of a larger unit will prevent the drilling of some unnecessary wells.

We are also authorized to say on behalf of West States Petroleum Corporation that they concur in this application subject to the Commission's finding that one well will efficiently drain 320 acres.

MR. PORTER: Mr. Tomlinson.

MR. TOMLINSON: Mr. Tomlinson for the Atlantic Refining Company. We have an undeveloped lease in the vicinity of the area tested by the interference test. We made a careful examination of the data presented by Amerada, and we believe that

107 pound pressure drop is a fairly large pressure drop to occur on such a short interval of time. To us it indicates that the drainage area larger than 320 acres could be expected in this pool for one well. We therefore concur with Amerada in their application.

MR. PORTER: Any further statements? If not we'll take the case under advisement. The applicant in Case 1309 has requested time to post some exhibits, so we'll take a short recess.

(Recess.)

C E R T I F I C A T E

STATE OF NEW MEXICO)
: SS
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 7th day of October, 1957.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1959.

No. 24-57

DOCKET: REGULAR HEARING AUGUST 15, 1957

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe, NM

ALLOWABLE: (1) Consideration of the oil allowable for September, 1957.

(2) Consideration of the allowable production of gas for September, 1957, from the seven prorated pools in Lea County, New Mexico; also consideration of the allowable production of gas from the six prorated pools in San Juan and Rio Arriba Counties, New Mexico, for September, 1957.

NEW CASES

CASE 977: In the matter of the hearing ordered to be held by Paragraph 3 of Order R-794-A, Case 977, to permit Southern Union Gas Company and other interested parties to show cause why 320-acre spacing should be continued in the Tapacito-Pictured Cliffs Gas Pool.

CASE 1291: Application of Tidewater Oil Company for approval of an oil-oil dual completion in an undesignated Drinkard Pool and an undesignated McKee Pool underlying Section 24, Township 25 South, Range 37 East, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing an oil-oil dual completion, by means of parallel strings of tubing, in an undesignated Drinkard Pool and an undesignated McKee Pool underlying Section 24, Township 25 South, Range 37 East, Lea County, New Mexico, for its Coates "C" Well No. 8 located 660 feet from the North line and 1880 feet from the East line of said Section 24.

CASE 1292: Application of John H. Trigg for an order authorizing a pilot program for the injection of gas into the Caprock-Queen Pool, Chaves County, New Mexico, for purposes of pressure maintenance, and further, authorizing the transfer of allowables for the injection well to other wells on the same basic lease, and further, to exempt certain of his wells from gas-oil ratio penalties. Applicant, in the above-styled cause, seeks an order authorizing the injection of gas into the Caprock-Queen Pool through his Federal Trigg No. 10-9 Well located in the NW/4 SE/4 of Section 9, Township 14 South, Range 31 East, Chaves County, New Mexico. Applicant further requests that the allowables assigned to the injection well be transferred to another well or wells on the same basic lease, and further, that during the period of the pilot program all wells in Section 9, which are on the same lease as the injection well, be exempt from gas-oil ratio penalties.

CASE 1293: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order amending the Special Rules and Regulations for the Justis Gas Pool provided by Order R-586, as amended, to provide for 320-acre gas proration units in the Justis Gas Pool, Lea County, New Mexico.

CASE 1294: Application of Ambassador Oil Corporation, Graridge Corporation and Gulf Oil Corporation for an order authorizing a pilot water flood project in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico, and further, authorizing the applicants to produce at capacity their wells located within and offsetting the pilot water flood program. Applicants, in the above-styled cause, seek an order authorizing the injection of water into the Queen formation of the Caprock-Queen Pool through six wells located in Sections 1 and 12, Township 13 South, Range 31 East, Chaves County, New Mexico, and further, authorizing capacity production from ten wells located within and offsetting the pilot water flood area located in Sections 1, 11, and 12, Township 13 South, Range 31 East, and Section 6, Township 13 South, Range 32 East, in Chaves and Lea Counties, New Mexico.

CASE 1295: Application of Southern Union Gas Company and Southern Union Gathering Company for the suspension for a period of not less than six months of the cancellation of underproduction in the six prorated gas pools in San Juan and Rio Arriba Counties, New Mexico. Applicants, in the above-styled cause, seek an order extending until a date not earlier than January 31, 1958, the date upon which accumulated underproduction accrued to certain of their connections as of January 31, 1957, will be cancelled for non-production under the provisions of the Special Rules and Regulations for the Aztec-Pictured Cliffs, Ballard-Pictured Cliffs, Fulcher Kutz-Pictured Cliffs, South Blanco-Pictured Cliffs, West Kutz-Pictured Cliffs, and Blanco Mesaverde Gas Pools in San Juan and Rio Arriba Counties, New Mexico. Applicants further request similar relief for any and all wells of other producers in the same pools if the facts and circumstances are such as to make similar relief necessary.

CASE 1296: Application of the Oil Conservation Commission of New Mexico upon its own motion for the suspension for a period of not less than six months of the overage shut-in provisions of the Special Rules and Regulations for the six prorated gas pools in San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks an order suspending until a date not earlier than January 31, 1958, the overage shut-in provisions of Special Rules and Regulations for the Aztec-Pictured Cliffs, Ballard-Pictured Cliffs, Fulcher Kutz-Pictured Cliffs, South Blanco-Pictured Cliffs, West Kutz-Pictured Cliffs, and Blanco Mesaverde Gas Pools in San Juan and Rio Arriba Counties, New Mexico.

CASE 1297: Southeastern New Mexico Nomenclature case calling for an order creating new pools and extending and deleting certain areas from existing pools in Lea, Roosevelt and Eddy Counties, New Mexico.

(a) Create a new oil pool for Paddock production, designated as the Grayburg-Paddock Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 30 EAST
Section 18: SE/4

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 9-23-57

CASE 1293 Hearing Date 9-18-57

My recommendations for an order in the above numbered cases are as follows:

I recommend that the application be granted for 320 Ac spacing as ~~applied~~ requested. Units may be spaced N-S or E-W. and let cluster them in one good spot.

This order, R-586-C should amend the Jicarilla Pool Rules to provide 320 proration units running NS or EW. All of the administrative approval facilities, etc., are already provided in R-586.

Staff Member

OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

October 30, 1957

COPY

Mr. Jack Campbell
P.O. Box 721
Roswell, New Mexico

Dear Sir:

On behalf of your client, John H. Trigg, we enclose two copies of Order R-1076, Order of Dismissal, issued October 29, 1957, by the Oil Conservation Commission in Case 1292.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

Memo

From

Copies of R-586-C sent to:

To

Bill Kailey [illegible]

John Woodward Roswell [illegible]

W. L. Tomlinson [illegible]

[illegible]

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

October 4, 1957

COPY

Mr. H. D. Bushnell
Amerada Petroleum Corp.
P.O. Box 2040
Tulsa 2, Oklahoma

Dear Sir:

We enclose a copy of Order R-586-C issued October 3, 1957, by the Oil Conservation Commission in Case 1293, which was heard on September 18th.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encl.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

October 3, 1957

COPY

MEMORANDUM

TO: All Justis Gas Pool Operators

FROM: A. L. Porter, Jr.

SUBJECT: Commission Order R-586-C

The provisions of Commission Order R-586-C, which increase the size of a standard gas proration unit in the Justis Gas Pool to 320 acres, become effective November 1, 1957. It will, therefore, be necessary for any operator who desires to increase the size of an existing unit to 320 acres to file Form C-128 outlining the acreage to be dedicated by October 25, 1957. Otherwise the increase in acreage will not become effective until the first of the month following the month in which Form C-128 is filed. It must be borne in mind that only acreage within the presently defined limits of the pool may be included in a proration unit until the pool boundaries are extended after notice and hearing.

Form C-128 must be filed in duplicate with the Hobbs Office of the Commission.

MEMO MAILED TO:

ALP:bp

Cities Service, Hobbs
Continental Oil, Hobbs & Eunice, Box 68
El Paso Natural, El Paso, Box 1492
Gulf Oil Corp., Hobbs, Box 2167
R. Olsen Oil Co., Oklahoma City2805 Liberty Bank Bldg, ATTN: Phil Randolph
Tidewater Oil Co., Hobbs, Box 547
Western Natural Gas Company, Midland, 823 Tower Bldg.
Westates Petr. Corp., Jal, Box 1381, J. G. Benton

COPY OF ORDER ATTACHED TO MEMO

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

October 10, 1957

COPY

MEMORANDUM

TO: All Justis Gas Pool Operators

FROM: A. L. Porter, Jr., Secretary-Director

SUBJECT: Commission Order R-586-C

It has come to the attention of this Commission that there is a typographical error in Rule 5 (d) 7 in the reference in that section to 'sub-paragraph 5 of this rule' should be to sub-paragraph 6 of the rule.

Please change your copies of the order to reflect this correction.

Memo mailed to:

Cities Service, Hobbs
Continental Oil, Hobbs & Eunice, Box 68
El Paso Natural, El Paso
Gulf Oil Corp., Hobbs
R. Olsen Oil Co. Okla City, Okla.
Tidewater Oil Co., Hobbs
Western Natural Gas Co. Midland
Westates Petr. Corp. Jal, N.M.

Bill Kastler, Gulf
John Woodward, El Paso
W. P. Tomlinson, Atlantic
H. D. Bucknell, of Randall

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 1293
Order No. R-586-C

APPLICATION OF AMERADA PETROLEUM CORPORATION FOR AN ORDER AMENDING THE SPECIAL RULES AND REGULATIONS FOR THE JUSTIS GAS POOL IN LEA COUNTY, NEW MEXICO AS SET FORTH IN ORDER R-586, R-586-A AND R-586-B, AS AMENDED BY ORDER R-967, TO PROVIDE FOR 320-ACRE GAS PRORATION UNITS.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 15, 1957, and again on September 18, 1957, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 3rd day of October, 1957, the Commission, a quorum being present, having considered the application and the evidence adduced 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 Commission by Order R-586 dated April 11, 1955, established 160-acre spacing for the Justis Gas Pool.

(3) That the applicant, Amerada Petroleum Corporation, has proved by the evidence in this case that one well will drain 320 acres in the Justis Gas Pool.

(4) That at present, the Justis Gas Pool has not been so far developed as to prevent the adoption of 320-acre spacing in said pool.

(5) That the adoption of 320-acre spacing in the Justis Gas Pool will not cause waste nor impair correlative rights.

(6) That the adoption of 320-acre spacing in the Justis Gas Pool will prevent the drilling of unnecessary wells in said pool.

IT IS THEREFORE ORDERED:

(1) That any well which was projected to or completed in the Justis Gas Pool prior to the effective date of this order be and the same is hereby granted an exception to Rule 5 hereinafter set forth.

(2) That an increase in the acreage dedicated to any such excepted well shall become effective the first day of the month following receipt by the Commission of Form C-128, Well Location and Acreage Dedication Plat, provided said Form C-128 indicates that the acreage dedicated to such well has been increased in conformance with the Special Rules and Regulations for the Justis Gas Pool.

(3) That Rule 5 of the Special Rules and Regulations for the Justis Gas Pool be and the same is hereby superseded by the following rule:

SPECIAL RULES AND REGULATIONS FOR THE
JUSTIS GAS POOL

* * *

RULE 5. (a) The acreage allocated to a gas well for proration purposes shall be known as the Gas Proration Unit for that well. For the purpose of Gas Allocation in the Justis Gas Pool, a standard proration unit shall consist of between 316 and 324 contiguous surface acres, substantially in the form of a rectangle which shall be a legal subdivision (half section) of the U. S. Public Land Surveys with a well located at least 660 feet from the nearest property lines;

(b) The allowable production from any non-standard gas proration unit as compared with the allowable production therefrom if such tract were a standard unit shall be in the ratio of the area of such non-standard proration unit expressed in acres to the area of 320 acres. Any gas proration unit containing between 316 and 324 acres shall be considered to contain 320 acres for the purpose of computing allowables.

(c) A non-standard gas proration unit may be formed after notice and hearing by the Commission, or by administrative approval under the provisions of Paragraph (d) of this Rule.

(d) The Secretary-Director of the Commission shall have authority to grant an exception to Rule 5 (a) without notice and hearing where a verified application has been filed in due form and where the following facts exist and the following provisions are complied with;

1. The proposed non-standard proration unit consists of less than 320 acres or where the unorthodox size or shape of the tract is due to a variation in legal subdivision of the U. S. Public Land Surveys.

2. The non-standard gas proration unit consists of contiguous quarter-quarter sections and/or lots.

3. The non-standard gas proration unit lies wholly within a single governmental section.

4. The entire non-standard gas proration unit may reasonably be presumed to be productive of gas from the Justis Gas Pool.

5. The length or width of the non-standard gas proration unit does not exceed 5280 feet.

6. The applicant presents written consent in the form of waivers from (a) all operators owning interests in section in which any part of the non-standard gas proration unit is situated and which acreage is not included in said non-standard gas proration unit, and (b) all operators owning interests within 1500 feet of the well to which such gas proration unit is proposed to be allocated.

7. In lieu of sub-paragraph 6 of this rule, the applicant may furnish proof of the fact that said offset operators were notified by registered mail of his intent to form such non-standard gas proration unit. The Secretary of the Commission may approve the application if, after a period of 30 days following the mailing of said notice, no operator has made objection to formation of such non-standard gas proration unit. * * *

(4) The provisions of this order shall become effective November 1, 1957.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

[illegible] Hearing 7/2/58 - Ambassador
[illegible] to amend Order R-1053 -
approve development pattern & permit ad-
ministrative approval for certain aspects.

This order will be
R-1053-B

Case No.

1294

Application, Transcript,
Small Exhibits, Etc.

ARTHUR W. ALLEN, JR.
300 WEST WALL AVENUE
MIDLAND, TEXAS

TELEPHONE
MUTUAL 2-2509

January 22, 1960

The Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Attention: Mrs. Ida Rodriguez

Dear Mrs. Rodriguez:

Attached you will find Exhibits No. 3, 4, and 21 which I have photographed and herewith return to you for refiling in your Case File No. 1294 (Ambassador Oil Co. application for water flood).

Many thanks for your cheerful help during the first part of this week while I extracted some necessary information from your good files.

Sincerely yours,

Arthur W. Allen, Jr.

AWA/ld

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 9-9-57

CASE 1294 Hearing Date Reg Hrg 8-15-57

My recommendations for an order in the above numbered cases are as follows:

Enter an order granting applicant authority to institute a pilot water flood.

Authorize injection ~~for~~ of water, for the purpose of secondary recovery of oil, into the following wells.

			Sec	T	R
Ambassador Oil Corp	State "E"-1	SE SW	1	13	31 ✓
" " "	State "H"-2	SE SE	1	13	31
" " "	State "J"-2	NW NE	12	13	31
" " "	State "M"-1	SE NW	12	13	31
Gradidge Corp	Maxwell State "A"-1	NW SE	1	13	31
Gulf Oil Corp	Chaves State "A"-2	NW NW	12	13	31

No need to mention the producing wells in this flood, nor allowables nor injection rates.

David F. Cole
Staff Member

CASE 1294: Application of Ambassador Oil Corporation, Graridge Corporation and Gulf Oil Corporation for an order authorizing a pilot water flood project in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico, and further, authorizing the applicants to produce at capacity their wells located within and offsetting the pilot water flood program. Applicants, in the above-styled cause, seek an order authorizing the injection of water into the Queen formation of the Caprock-Queen Pool through six wells located in Sections 1 and 12, Township 13 South, Range 31 East, Chaves County, New Mexico, and further, authorizing capacity production from ten wells located within and offsetting the pilot water flood area located in Sections 1, 11, and 12, Township 13 South, Range 31 East, and Section 6, Township 13 South, Range 32 East, in Chaves and Lea Counties, New Mexico.

CASE 1295: Application of Southern Union Gas Company and Southern Union Gathering Company for the suspension for a period of not less than six months of the cancellation of underproduction in the six prorated gas pools in San Juan and Rio Arriba Counties, New Mexico. Applicants, in the above-styled cause, seek an order extending until a date not earlier than January 31, 1958, the date upon which accumulated underproduction accrued to certain of their connections as of January 31, 1957, will be cancelled for non-production under the provisions of the Special Rules and Regulations for the Aztec-Pictured Cliffs, Ballard-Pictured Cliffs, Fulcher Kutz-Pictured Cliffs, South Blanco-Pictured Cliffs, West Kutz-Pictured Cliffs, and Blanco Mesaverde Gas Pools in San Juan and Rio Arriba Counties, New Mexico. Applicants further request similar relief for any and all wells of other producers in the same pools if the facts and circumstances are such as to make similar relief necessary.

CASE 1296: Application of the Oil Conservation Commission of New Mexico upon its own motion for the suspension for a period of not less than six months of the overage shut-in provisions of the Special Rules and Regulations for the six prorated gas pools in San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks an order suspending until a date not earlier than January 31, 1958, the overage shut-in provisions of Special Rules and Regulations for the Aztec-Pictured Cliffs, Ballard-Pictured Cliffs, Fulcher Kutz-Pictured Cliffs, South Blanco-Pictured Cliffs, West Kutz-Pictured Cliffs, and Blanco Mesaverde Gas Pools in San Juan and Rio Arriba Counties, New Mexico.

CASE 1297: Southeastern New Mexico Nomenclature case calling for an order creating new pools and extending and deleting certain areas from existing pools in Lea, Roosevelt and Eddy Counties, New Mexico.

(a) Create a new oil pool for Paddock production, designated as the Grayburg-Paddock Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 30 EAST
Section 18: SE/4

No. 24-57

DOCKET: REGULAR HEARING AUGUST 15, 1957

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe, NM

ALLOWABLE: (1) Consideration of the oil allowable for September, 1957.

(2) Consideration of the allowable production of gas for September, 1957, from the seven prorated pools in Lea County, New Mexico; also consideration of the allowable production of gas from the six prorated pools in San Juan and Rio Arriba Counties, New Mexico, for September, 1957.

NEW CASES

CASE 977: In the matter of the hearing ordered to be held by Paragraph 3 of Order R-794-A, Case 977, to permit Southern Union Gas Company and other interested parties to show cause why 320-acre spacing should be continued in the Tapacito-Pictured Cliffs Gas Pool.

CASE 1291: Application of Tidewater Oil Company for approval of an oil-oil dual completion in an undesignated Drinkard Pool and an undesignated McKee Pool underlying Section 24, Township 25 South, Range 37 East, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing an oil-oil dual completion, by means of parallel strings of tubing, in an undesignated Drinkard Pool and an undesignated McKee Pool underlying Section 24, Township 25 South, Range 37 East, Lea County, New Mexico, for its Coates "C" Well No. 8 located 660 feet from the North line and 1880 feet from the East line of said Section 24.

CASE 1292: Application of John H. Trigg for an order authorizing a pilot program for the injection of gas into the Caprock-Queen Pool, Chaves County, New Mexico, for purposes of pressure maintenance, and further, authorizing the transfer of allowables for the injection well to other wells on the same basic lease, and further, to exempt certain of his wells from gas-oil ratio penalties. Applicant, in the above-styled cause, seeks an order authorizing the injection of gas into the Caprock-Queen Pool through his Federal Trigg No. 10-9 Well located in the NW/4 SE/4 of Section 9, Township 14 South, Range 31 East, Chaves County, New Mexico. Applicant further requests that the allowables assigned to the injection well be transferred to another well or wells on the same basic lease, and further, that during the period of the pilot program all wells in Section 9, which are on the same lease as the injection well, be exempt from gas-oil ratio penalties.

CASE 1293: Application of Amerada Petroleum Corporation for an order amending the Special Rules and Regulations for the Justis Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order amending the Special Rules and Regulations for the Justis Gas Pool provided by Order R-586, as amended, to provide for 320-acre gas proration units in the Justis Gas Pool, Lea County, New Mexico.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

July 28, 1958

COPY

Mr. Jack Campbell
Campbell & Russell
P.O. Box 721
Roswell, New Mexico

Dear Mr. Campbell:

On behalf of your client, Ambassador Oil Corporation, we enclose two copies of Order R-1053-B issued July 28, 1958, by the Oil Conservation Commission in Case 1294, which was heard on July 2nd by an examiner.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp

Order Mailed to
Raymond Lamb
7-28-58

No 19-58

DOCKET: EXAMINER HEARING JULY 2, 1958

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe, New Mexico

The following cases will be heard before Daniel S. Nutter, Examiner:

CASE 354: In the matter of the application of Skelly Oil Company to amend Order No. R-179-A. Applicant, in the above-styled cause, seeks an order amending Order No. R-179-A to permit the transfer of allowables from water injection wells to producing wells on the same basic lease and to establish a lease allowable for its H. O. Sims pilot water flood project in the Penrose-Skelly Pool in Lea County, New Mexico, to enable the production of six times the normal unit allowable from any well or wells in said project.

CASE 1475: Application of Sinclair Oil and Gas Company for permission to commingle oil from two separate pools in common storage. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the Kemnitz-Wolfcamp Pool and Kemnitz-Pennsylvanian Pool production from its State Lea 692 Well No. 1 located 660 feet from the South lines of Section 24, Township 16 South, Range 33 East, Lea County, New Mexico.

CASE 1476: Application of Austral Oil Exploration Company for permission to commingle production from two separate leases. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the Townsend-Wolfcamp Pool production from its W. M. Snyder "D" Lease, comprising Lots 5 and 6, and its W. M. Snyder "E" Lease, comprising Lot 2 of Section 6, all in Township 16 South, Range 36 East, Lea County, New Mexico. Applicant proposes to measure the production from each of the above-described leases by means of metering separators.

CASE 1477: In the matter of the application of Amerada Petroleum Corporation for a dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Ida Wimbeley No. 4 Well located 660 feet from the South line and 990 feet from the West line of Section 24, Township 25 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Drinkard formation adjacent to the Justis-Drinkard Pool and oil from the Fusselman formation adjacent to the Justis-Fusselman Pool through parallel strings of 2-3/8" tubing.

CASE 1478: In the matter of the application of R. Olsen Oil Company for a non-standard gas proration unit. Applicant, in the above-styled cause, seeks an order establishing a 160-acre non-standard gas proration unit in the Tubb Gas Pool consisting of the N/2 NW/4, SW/4 NW/4, and NW/4 SW/4 of Section 25, Township 22 South, Range 37 East, Lea County, New Mexico.

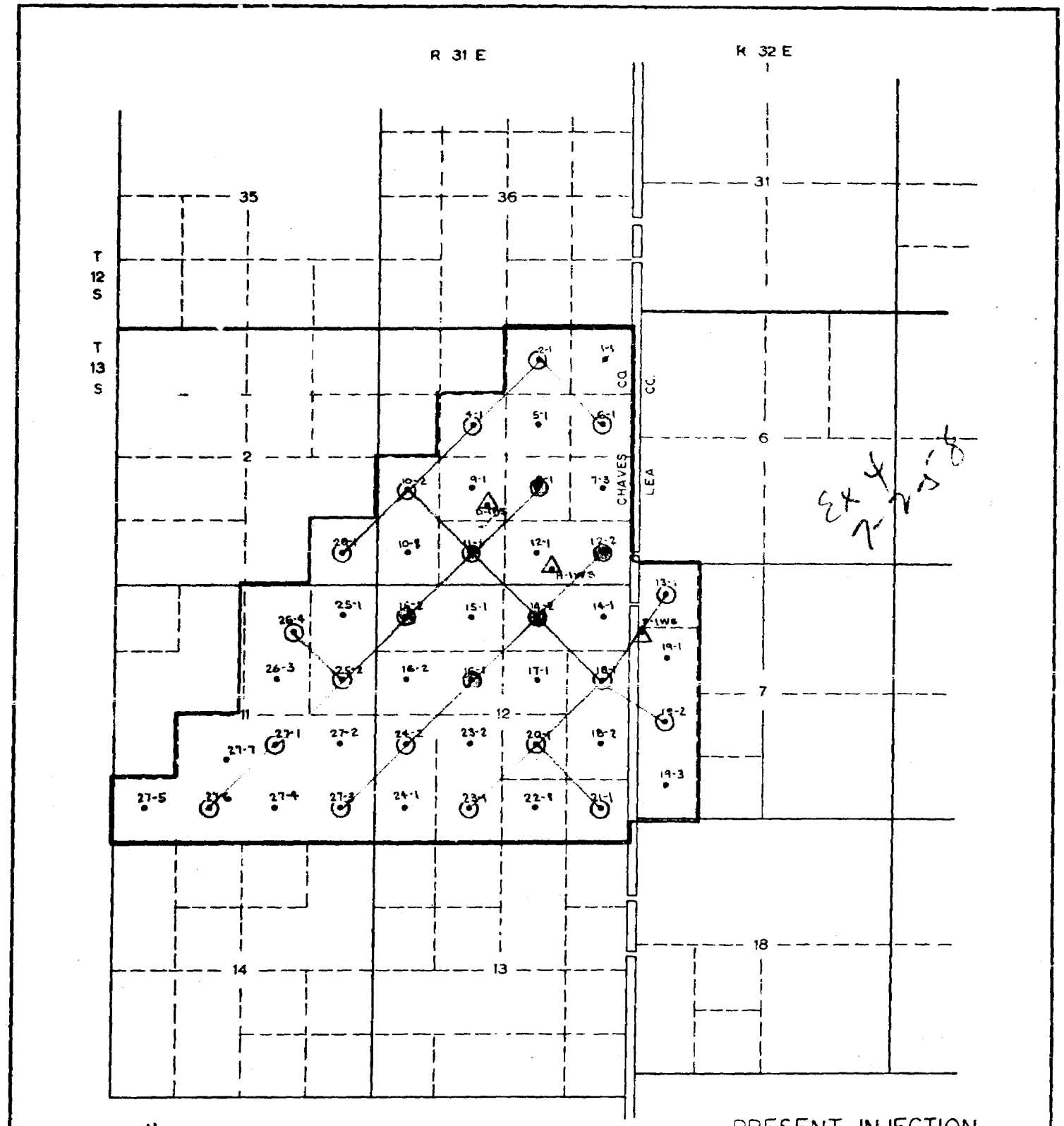
CASE 1294: Application of Ambassador Oil Corporation for an order amending Order No. R-1053. Applicant, in the above-styled cause, seeks an order amending Order No. R-1053 to approve a development pattern for the entire water flood project operated by the applicant in the Caprock-Queen Pool, Chaves and Lea Counties, New Mexico, and to permit administrative approval for the conversion of water injection wells in said project, which is within the limits of the North Caprock-Queen Unit No. 2, authorized by Commission Order R-1194.

CASE 1402: Application of Neville G. Penrose, Inc. for an order amending Order R-1151. Applicant, in the above-styled cause, seeks an order amending Order No. R-1151 to extend the time allowed for the flaring of gas from its McCallister Well No. 1, located 660 feet from the North and West lines of Section 7, Township 22 South, Range 38 East, Tubb Gas Pool, Lea County, New Mexico.

CASE 1479: Application of Aztec Oil and Gas Company for an oil-oil dual completion and for permission to commingle production from two separate pools. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its State BD-36 Well No. 1, located 1980 feet from the South and East lines of Section 36, Township 22 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Blinebry formation adjacent to the Blinebry Oil Pool and oil from the Drinkard Pool through parallel strings of 1 1/2 inch tubing. The applicant further proposes to commingle the Blinebry and Drinkard production from said well in common storage.

June 16, 1958

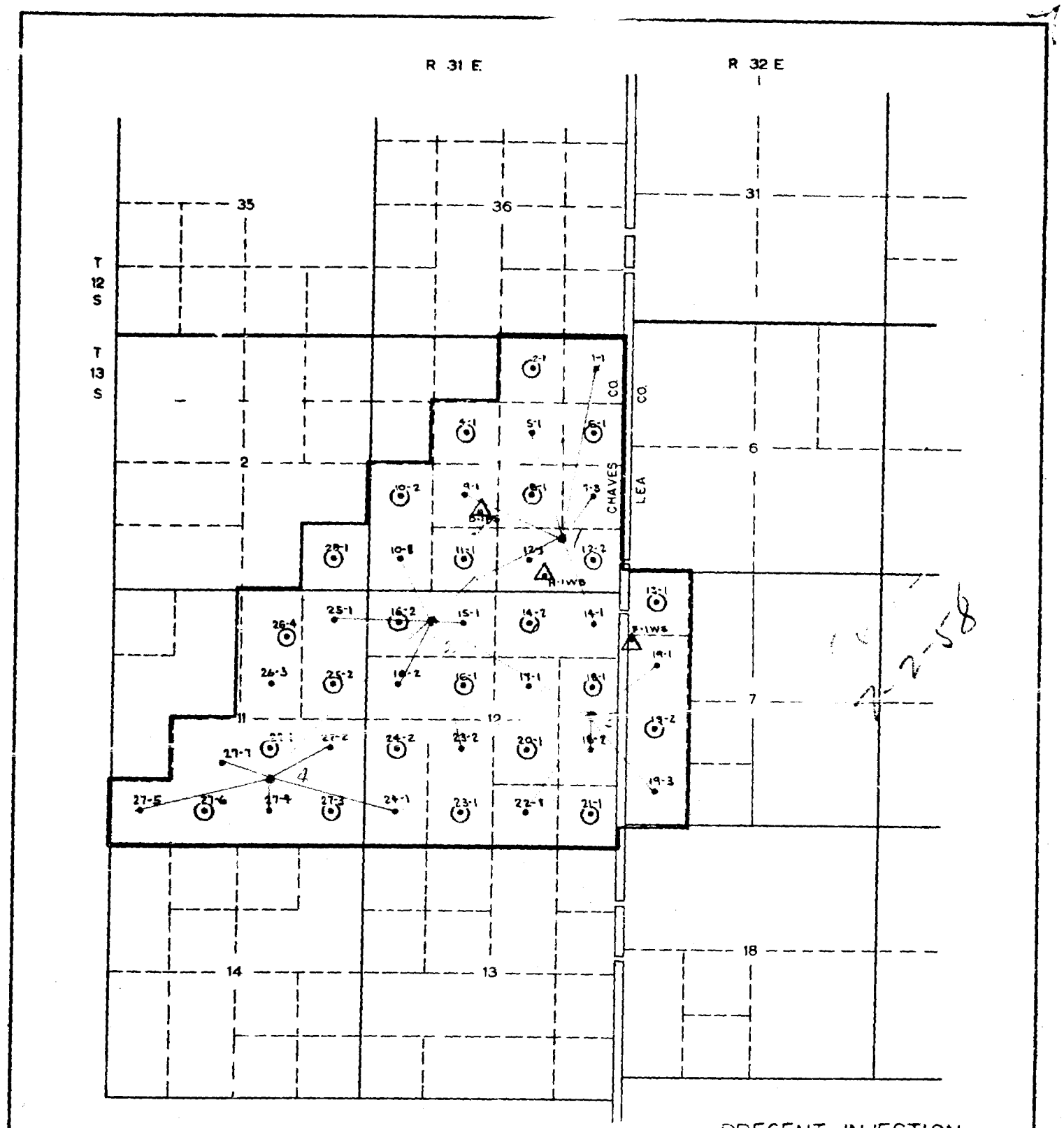
ga



AMBASSADOR OIL CORP.

PLAT OF NORTH CAPROCK QUEEN UNIT NO. 2, CAPROCK QUEEN POOL, LEA AND CHAVES COUNTIES, NEW MEXICO.

EXHIBIT A


R 31 E.
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CHAVES
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CO.
AMBASSADOR OIL CORP.
PLAT OF NORTH CAPROCK QUEEN UNIT NO. 2, CAPROCK QUEEN POOL, LEA AND CHAVES COUNTIES, NEW MEXICO.
EXHIBIT A
PRESENT INJECTION WELLS
PROPOSED INJECTION WELLS
PRESENT PRODUCERS
WATER SUPPLY WELLS

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS

DL = Day Letter

NL = Night Letter

LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at points of origin. Time of receipt is STANDARD TIME at point of destination

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MAIN OFFICE

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D MDA025 PD=MIDLAND TEX 15 839AMC=

Dc-11659

OIL CONSERVATION COMMISSION=

MABRY HALL STATE CAPITOL SANTA FE NMEX=

RE CASE 1294 WHERE IN AMBASSADOR OIL CORPORATION ET AL SEEK AN ORDER FOR A CAPACITY WATERFLOOD IN THE CAPROCK QUEEN POOL, GREAT WESTERN DRILLING COMPANY AS AN OFFSET OPERATOR HAS NO OBJECTION TO THE PROPOSED PLANS=

GREAT WESTERN DRILLING CO M B WILSON

PRODUCTION COORDINATOR=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Memo

From

To Duplicated Copies
Order R-1053 in Case
1294 sent to:
Bill Kastler - Gulf
Great Western, Midland
Grant Atkins, Union Oil Co
California
Frank Irby, State Engineer
9-24-57
SP

IN THE MATTER OF THE APPLICATION OF)
AMBASSADOR OIL CORPORATION FOR AN)
ORDER AMENDING ORDER NO. R-1053 AP-)
PROVING THE ENTIRE PROJECT PATTERN)
OF THE WATER FLOOD PROJECT AUTHORIZED) Case No. 1
THEREBY IN THE CAPROCK-QUEEN POOL IN)
LEA AND CHAVES COUNTIES, NEW MEXICO,)
AND FOR THE ESTABLISHING OF ADMINIS-)
TRATIVE PROCEDURES FOR ACTIVATION OF)
INJECTION WELLS.)

APPLICATION

Comes now Applicant, Ambassador Oil Corporation, by its attorneys, and states:

1. Applicant is the owner of certain properties situated within, and, under the terms of the North Caprock-Queen Unit No. Two Agreement, is the designated operator of a secondary recovery unit area encompassing a water flood project area of the Caprock-Queen Pool, Lea and Chaves Counties, New Mexico, which pilot water flood project was approved on September 16, 1957 by Commission Order No. R-1053. A plat showing the area of the North Caprock-Queen Unit No. Two is attached hereto and marked "Exhibit 1".

2. Applicant has shown on "Exhibit 1" attached hereto, all present injection wells, proposed injection wells, present producing wells, and all water supply wells within the unit area.

3. Applicant requests the Commission to issue its order, after hearing, approving the pattern of the entire water flood project within the North Caprock-Queen Unit No. Two unit area as indicated on "Exhibit 1".

4. Applicant requests the Commission in its order approving the overall project, including the injection pattern, to provide that the operator may, upon furnishing such evidence as the Commission may require, obtain administrative approval for the activation of injection wells as determined necessary by daily engineering evaluation of overall performance data within the unit area.

5. Applicant states that such administrative action is necessary in order to obtain efficient operation of the water flood project without waste and to prevent reduction in the ultimate recovery of oil.

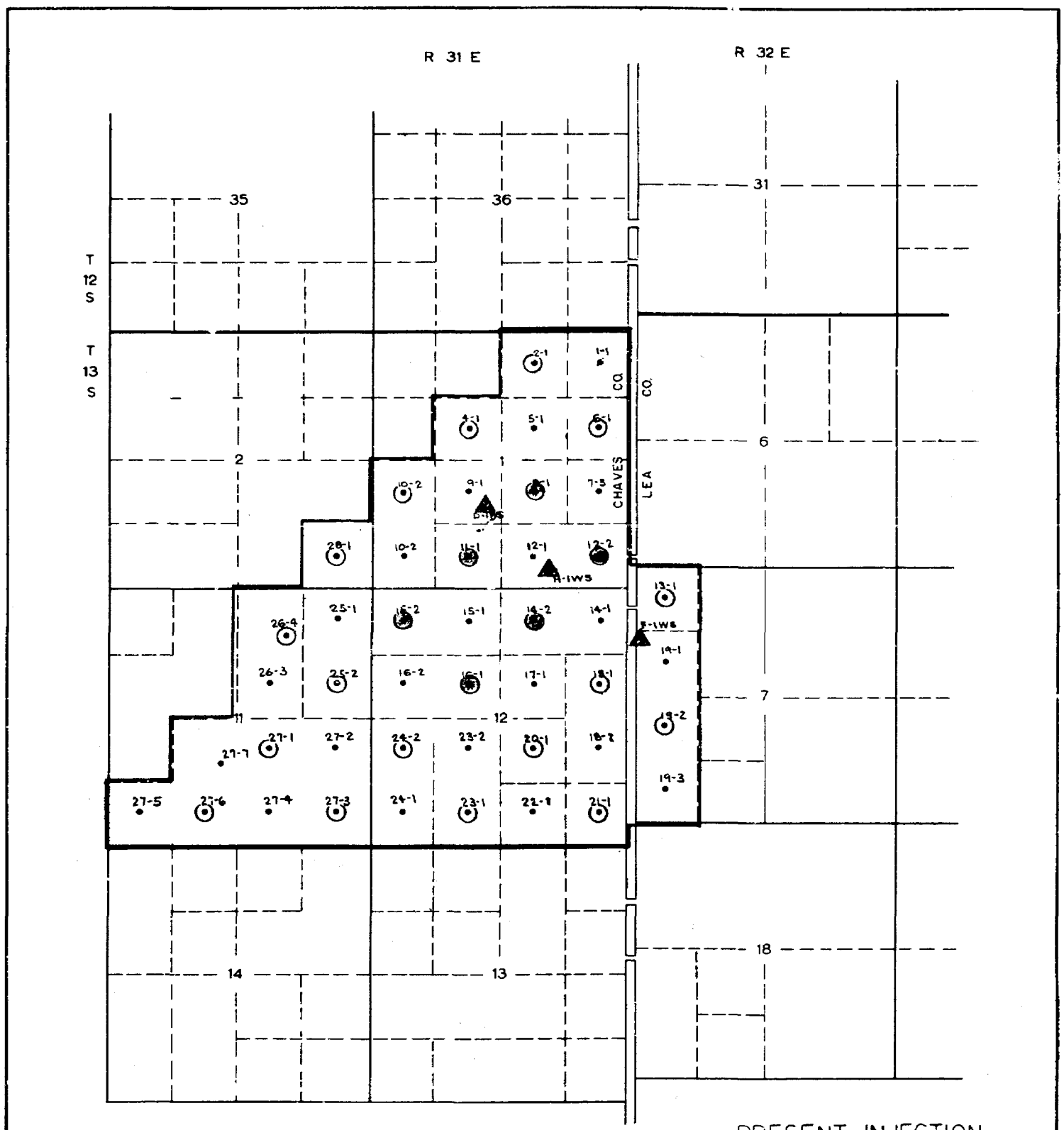
WHEREFORE, Applicant requests the Commission to set this matter down for regular hearing before an Examiner and that after hearing, the Commission issue its order approving the overall water injection pattern within the entire unit area as requested, and establish administrative procedures for the activation of water injection wells without the necessity of emergency orders or hearings.

Respectfully submitted,

CAMPBELL & RUSSELL

By: Jack M. Campbell
Attorneys for Applicant

DATED: June 13, 1958



AMBASSADOR OIL CORP.

PLAT OF NORTH CAPROCK QUEEN UNIT NO. 2, CAPROCK QUEEN POOL, LEA AND CHAVES COUNTIES, NEW MEXICO.

"EXHIBIT 1"

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE NO. 1294
Order No. R-1053

APPLICATION OF AMBASSADOR OIL
CORPORATION, GRARIDGE CORPORATION,
AND GULF OIL CORPORATION FOR AN
ORDER AUTHORIZING A PILOT WATER
FLOOD PROJECT IN THE CAPROCK-QUEEN
POOL IN LEA AND CHAVES COUNTIES,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 15, 1957, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 16th day of September, 1957, the Commission, a quorum being present, having considered the application, and the evidence adduced 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 case and the subject matter thereof.

(2) That the applicants propose to institute a pilot water flood project in the Caprock-Queen Pool to inject water into the Queen formation through six wells located in Sections 1 and 12 of Township 13 South, Range 31 East, Chaves County, New Mexico.

(3) That the portion of the original application in the subject case which requested authority to produce at capacity the wells located within and offsetting the pilot water flood area was deleted from the application by motion of the attorney for the applicants at the time the case was heard.

(4) That the proposed program will not adversely affect the interests of any other operators in the Caprock-Queen Pool.

(5) That the proposed program will promote conservation and will tend to prevent waste through the production of oil which might not otherwise be recovered.

(6) That periodic reports should be submitted to the Commission by the operator of the project disclosing the progress of the secondary recovery program.

IT IS THEREFORE ORDERED:

(1) That the application of Ambassador Oil Corporation, Graridge Corporation, and Gulf Oil Corporation for permission to institute a pilot water flood project in the Queen formation of the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico, for the purpose of secondary recovery, be and the same is hereby approved.

(2) That the following wells be and the same are hereby authorized as water injection wells:

			Sec. T. R.
Ambassador Oil Corporation	State "E" 1	SESW	1-13-31
" " "	State "H" 2	SESE	1-13-31
" " "	State "J" 2	NWNE	12-13-31
" " "	State "M" 1	SENW	12-13-31
Graridge Corporation	Maxwell St. "A" 1	NWSE	1-13-31
Gulf Oil Corporation	Chaves St. "A" 2	NWNW	12-13-31

all in Chaves County, New Mexico.

(3) That monthly progress reports on the water flood project herein authorized shall be submitted to the Commission in accordance with Rule 704 and Rule 1119 of the Commission Rules and Regulations.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

BEFORE THE OIL CONSERVATION COMMISSION OF THE

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF AMBASSADOR OIL CORPORATION, GRARIDGE CORPORATION AND GULF OIL CORPORATION FOR A PERMIT UNDER RULE 701 OF THE NEW MEXICO OIL CONSERVATION COMMISSION STATEWIDE RULES AND REGULATIONS FOR AN ORDER GRANTING APPROVAL TO INJECT WATER INTO THE QUEEN SAND UNDERLYING A PORTION OF THE CAPROCK QUEEN POOL IN LEA AND CHAVES COUNTIES, NEW MEXICO, AND AN ORDER EXCEPTING CERTAIN OIL WELLS IN THE CAPROCK QUEEN POOL FROM THE PROVISIONS OF RULE 502 OF THE NEW MEXICO OIL CONSERVATION COMMISSION STATEWIDE RULES AND REGULATIONS.

NO. 1294

A P P L I C A T I O N

AMBASSADOR OIL CORPORATION, GRARIDGE CORPORATION and GULF OIL CORPORATION hereby make application to the Commission for an order authorizing the injection of water in the Queen Sand Formation in the Caprock Queen Pool in Lea and Chaves Counties, New Mexico, and further make application to the Commission for an order excepting the wells described hereinbelow from the provisions of Rule 502 of the New Mexico Oil Conservation Commission Statewide Rules and Regulations, authorizing applicants to produce at capacity the wells located within and offsetting the pilot water flood program outlined herein and for which a permit is sought by this application. In support of this application, applicants respectfully submit and show the following:

(1) Attached hereto as Exhibit "A" and made a part hereof is a plat of the Caprock Queen Pool area showing the location of the proposed intake wells, the location of all oil and gas wells including drill wells and dry holes and the names of Lessees within one-half mile of all intake wells

and the name of each offset operator.

(2) All wells within more than one-half mile of the proposed injection wells as well as all wells within more than one-half mile of the proposed injection wells for a full scale flood operation all as shown in Exhibit "A" hereto are now producing from the Queen Sand, Permian Age. The Queen Sand is the only formation producing in the immediate area involved in this application.

(3) Injection will be made into the Queen Sand encountered at an approximate depth of 3,030. The actual average thickness of the pay section of the Queen Sand is not known, however, the average thickness thereof is estimated to be in excess of 12 feet in the area of the proposed project. Attached hereto as Exhibits B1, B2, B3 and B4 are Gamma Ray-Neutron logs on four of the six injection wells to be used in the pilot flood initially installed, such logs being the only available logs and being made in Ambassador Oil Corporation's wells State E-1, State H-2, State J-2 and State M-1, all of which are indicated on Exhibit "A".

(4) The casing program followed during the primary development of the Caprock Queen Pool was to set sufficient surface casing to protect the fresh water sands and to set the oil string from the surface to the top of the pay. In cases where the casing was not set down to the top of the pay, liners will be run and cemented in order to definitely confine injection to the Queen Sand. In cases where the casing is set to the top of the pay, leak tests will be made and if the present casing is satisfactory, it will be used in its present condition. The casing program for the proposed injection wells is set forth more fully in Exhibit "C" attached

hereto and made a part hereof.

(5) Water will be injected in the Queen Sand and will be obtained from a shallow sand encountered from the surface to a depth of 350 feet. Approval for the use of the water has been obtained from the State Engineer of the State of New Mexico. It is estimated that the initial injection rate will be approximately 500 to 800 barrels per well per day.

(6) The injection wells are located on leases owned by the applicants. All of the injection wells will be operated by the applicants herein. The address of Ambassador Oil Corporation is Box 9938, Fort Worth, Texas. The address of Graridge Corporation is Breckenridge, Texas, and the address of Gulf Oil Corporation is Post Office Drawer 1290, Fort Worth, Texas.

(7) The names and approximate location of the six wells in which injection is first proposed to be made as a pilot flood area are as follows:

Ambassador Oil Corporation
State E-1 20

$SE\frac{1}{4}SW\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State H-2 6

$SE\frac{1}{4}SE\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State J-2 3

$NW\frac{1}{4}NE\frac{1}{4}$ of Section 12, Township 13 South, Range 31 East

Ambassador Oil Corporation
State M-1 7

$SE\frac{1}{4}NW\frac{1}{4}$ of Section 12, Township 13 South, Range 31 East.

Graridge Corporation
Maxwell State A-1 3

$NW\frac{1}{4}SE\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Gulf Oil Corporation
Chaves State A-2 3

$NW\frac{1}{4}NW\frac{1}{4}$ of Section 12, Township 13 South, Range 31 East.

The wells for which applicants request an exception to Rule 502 of the New Mexico Oil Conservation Commission Statewide Rules and Regulations are as follows:

Ambassador Oil Corporation
State L-1 15

$SW\frac{1}{4}SW\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State D-1 2

$NE\frac{1}{4}SW\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Graridge Corporation
Malco State E-1 3

$SW\frac{1}{4}NE\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Graridge Corporation
Malco State F-3 1

$NE\frac{1}{4}SE\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State H-1 10
$SW\frac{1}{4}SE\frac{1}{4}$ of Section 1, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State J-1 4

$NE\frac{1}{4}NE\frac{1}{4}$ of Section 12, Township 13 South, Township 31 East.

Gulf Oil Corporation
Chaves State A-1 4

$NE\frac{1}{4}NW\frac{1}{4}$ of Section 12, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State M-2 2

$SW\frac{1}{4}NW\frac{1}{4}$ of Section 12, Township 13 South, Range 31 East.

Ambassador Oil Corporation
State G-1

$NE\frac{1}{4}NE\frac{1}{4}$ of Section 11, Township 13 South, Range 31 East.

Graridge Corporation
Livermore State J-3

$SW\frac{1}{4}SW\frac{1}{4}$ of Section 6, Township 13 South, Range 32 East.

Applicants respectfully request that this case be set for hearing before a trial examiner in Hobbs, New Mexico, unless the case can be sooner heard elsewhere by an examiner, in which event, the applicants request the earlier setting.

Respectfully submitted:

AMBASSADOR OIL CORPORATION

By ______________________

GRARIDGE CORPORATION

By ______________________

GULF OIL CORPORATION

By ______________________

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 2, 1957

IN THE MATTER OF:

Case No. 1294

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 9, 1957

IN THE MATTER OF:

Application of Ambassador Oil Corporation for an order amending Order No. R-1053. Applicant, in the above-styled cause, seeks an order amending Order No. R-1053 to approve a development pattern for the entire water flood project operated by the applicant in the Caprock-Queen Pool, Chaves and Lea Counties, New Mexico, and to permit administrative approval for the conversion of water injection wells in said project, which is within the limits of the North Caprock-Queen Unit No. 2, authorized by Commission Order R-1138.

Case No. 1134

BEFORE:

Mr. Daniel S. Nutter

TRANSCRIPT OF HEARING

MR. NUTTER: We will take case No. 1134.

MR. CAMPBELL: Jack M. Campbell, Campbell and Russell, Roswell, New Mexico, appearing on behalf of the applicant. I have one witness, Mr. Vick to be sworn.

(Witness sworn)

(Exhibits 1 through 4 inclusive marked for identification.)

DIRECT EXAMINATION

BY MR. CAMPBELL:

Q Will you state your name, please?

A Robert H. Vick.

Q By whom are you employed, Mr. Vick?

A By Ambassador Oil Corporation.

Q What capacity?

A Chief Engineer.

Q How long have you been employed by Ambassador Oil Corporation?

A Approximately two weeks, Mr. Campbell.

Q Prior to your employment with Ambassador, by whom were you employed?

A By the Grayridge Corporation and the Ibex Company.

Q During the time you were employed by Grayridge and Ibex were you generally acquainted with the water flood operation which encompasses the area known as the North Caprock-Queen Unit No. 2?

A Yes, sir.

Q Did Grayridge and Ibex have an interest in that particular project?

A Yes, sir, they did.

Q Have you previously testified before this commission and this examiner?

A Yes.

MR. CAMPBELL: Are the witnesses' qualifications acceptable?

MR. NUTTER: Yes, sir, they are, please proceed.

Q Mr. Vick, are you generally acquainted with the application of Ambassador Oil Corporation in Case No. 1234 now before the examiner?

A Yes, sir.

Q I'm going to hand you [illegible] Exhibits 1 through [illegible]. [illegible] the commission [illegible] water [illegible] project in the North [illegible]. [illegible] Exhibits as you see fit, would you [illegible] to the examiner what they reflect as to the present status of that particular project?

A Yes, sir. Well, in a way of summary, the water injection was started into a six-well injection pilot flood approximately the last part of October, 1957, the cumulative injection to date has been approximately [illegible]75 barrels of water into these six wells, the cumulative secondary oil has been approximately [illegible] barrels, above normal decline; the [illegible] production figure was 22,[illegible] barrels, the June production figure for the area was approximately [illegible] barrels, the daily average injection is approximately [illegible] barrels divided into the six wells or a total of approximately [illegible] barrels per well per day injection rate. The injection pressures are approximately five hundred pounds, surface pressure; the calculated voidage at the beginning of the water injection program was approximately [illegible] barrels and that leaves a net injection figure of somewhere in the neighborhood of 75,000 barrels above calculated voidage to begin with. The pilot flood as a whole is responding quite well; as indicated on Exhibit No. 1, the present production figures for the affected producers surrounding the six injection wells are indicated in the red underlined figures underneath each respective well location and

you can see that nine of the twelve wells surrounding the air injection wells and affected by them have responded to the water injection program in various stages or various states. The total production from the unit now is approximately 900 barrels per day and the Exhibit No. 1 indicates the present air injection wells, the present producing wells in the overall unit area which encompasses approximately 1500 acres and it also indicates the proposed injection pattern which will include a total of twenty-three injection wells and twenty-two producers eventually.

Q I note on Exhibit No. 1 that one well which appears to be designated as 12-1, top production rate as of June 30 was 415 barrels of oil per day. In your opinion, is that well approaching it's peak of production?

A Approximately, Mr. Campbell. We feel like it should come to the neighborhood of a peak production of five hundred barrels per day.

Q What is your estimate of the approximate length of time during which that maximum peak would be sustained? Do you have any way of knowing?

A Not definitely other than by reference back to the Grayridge Unit which the one center producer there that peaked out at approximately five hundred barrels per day maintained that peak for approximately a month and a half and then water production started in and and is now approximately fifteen percent water

out of that total five hundred barrels of [illegible] percent, it's on the decline.

Q What about the present production, if any, from the wells that have not responded to the water flood, are those all at a depleted stage in the outer rim of the unit there?

A Yes, sir. The average production from the surrounding wells are from one to two barrels per day per well.

Q Referring to your Exhibit No. 2, what does that reflect with regard to the length of time approximately from the beginning of the injection to the response in the area?

A Well, it's an overall performance curve worked up for the forty-five, forty acre units in the Caprock-Queen Unit No. 2. It indicates the primary producing history, the cumulative oil approximately two million barrels and the number of producing wells and the date water injection was started, the average monthly water injection and the current response in oil production of the pilot flood area.

Q I note on Exhibit 2 there apparently was an increase in production in 1955 prior to the time of the commencement of water injection, how do you explain that?

A That was due entirely to some additional drilling carried on by the Graymidge Corporation; when they acquired the properties it was edge drilling on the west side of the field. I believe four or five new wells which gave that --

Q Reaction to the production of oil there?

A Yes, sir.

Q I refer to exhibit 3, the sheet the examiner with the figures you have inserted on there now, Mr. Vick.

A This is a Map or cross section of actually the pilot flood area. It includes the injection wells on the left hand side of the page and in the red pencilled figures we have put in the new unit numbers for designation numbers for the injection wells and also on the right side, of course, that carries the cumulative volumes, the monthly injected volume and the daily average injection and the pressure and showing the approximate cumulative volumes after somewhere around one hundred fifty to one hundred sixty-four thousand barrels per well of water. On the right hand side of the page these figures were, the typed figures were the Ambassador operated properties only. As you know, the unit actually took effect June the first and this was a summary sheet of Ambassador's operations and we haven't had time to change it over. But it does give the new unit designation numbers there for the Ambassador properties and for the overall unit you can refer back to Exhibit No. 1 which gives the complete unit with the relative positions of each one of the wells and production data.

Q Now, refer to Exhibits 4 and 5 and state briefly to the examiner what those are intended to show.

A Well, these are projections of the number 4, of the proposed injection pattern outlining our injection system to include future expansion of the injection system. Number 5 is the

proposed oil gathering system [illegible] which has been projected as four common tank battery locations. We're now under a study or completing a study for possibility of installing a lease automatic custody transfer unit which would be installed at the number 2 location to take care of the automatic gauging, sampling and metering of the oil production from the unit.

Q With regard to Exhibit 6, will you state what that is?

A This is, Exhibit 6 is a more or less area map of the, both the adjoining Grayridge unit and the proposed Great Western unit to the south in the manner of showing the relative positions of the two pilot floods and as they would eventually tie into together and I might add that we have completed all the verbal negotiations for lease-line cooperation between the two units and are in the process of actually drawing up agreements to control the participation across the unit boundary lines.

Q Are you acquainted with the present status generally of the Great Western Unit, is that formed yet or is it in the process of being formed?

A It's in the process of being formed. There's still some points in the participation formula that haven't been, that each of the work interest owners haven't been satisfied on, but they feel that it will come around in time.

Q As a matter of fact of time, there is still considerable work to be done before any actual pilot project is underway in the Great Western area as designated on Exhibit 6, is that correct?

Mr. Vick, what is it exactly that you are seeking in this particular application?

A Well, to actually present our total future projected injection pattern for the Japrock-Queen Unit No. 2 and to obtain approval of the same, with the procedure --

Q How do you propose to activate injection wells?

A By submitting a letter of application to the commission, to the engineer department of the commission for their approval of the expansion of the actual pilot flood to include additional injection wells and --

Q What would you propose to furnish to the commission with regard to such an application for the activation of additional wells?

A All the engineering data that we keep at hand from our day to day operation and evaluation of the overall performance of the injection system and the producing system on the overall program, which would include volumetric balance figures, calculated voidages and performance curves, expected performance and discussion of any of the problems we are having in the area and how they affect overall performance.

Q Would you also include the reasons for the request for the addition of injection wells in such an application?

A Yes, sir, from an engineering standpoint, relative to preventing waste and loss of ultimate recoverable oil by not having

sufficient back-up and not being able to place injection wells on at the most desirable time.

Q Is this generally the procedure that is followed in the other states with which you are acquainted that are handling pilot flood programs?

A Yes, sir, I believe it is to a reasonable degree. In Texas I think it has been presented to the commission several times previously in different hearings that they have an initial hearing before the commission board and present the pilot or the overall program and then all subsequent expansion or actual operation of the subject floods are carried on by letter of application or direct correspondence.

Q Is it your idea that in presenting this application to the commission by letter that the commission, of course, would retain the right to call a hearing in any situation where they felt a hearing was required or should be held?

A Yes, sir.

Q But that there would be some mechanics for administrative approval in the routine addition of injection wells to protect the flood from loss of ultimate recovery, is that correct?

A Yes, sir.

Q Insofar as this particular unit is concerned, what is the present situation concerning the addition of injection wells? Are there presently injection wells that need to be activated?

A Yes, sir. We have what we feel like, right now approximately

eight wells that should go on injection. Of course, were those eight to be approved within the next month or the next week, it would still be quite sometime as far as their actually being put into operation. One point we might mention is the situation on the Grayburg-Caprock Unit No. 1, where we appeared and requested eight additional injection wells, four immediately and four at a future date and that's been approximately a month and a half ago, I believe, and to date they haven't been able to actually start injection into those wells. So, as far as any undue speed or putting the overall unit more or less on injection at one time, it reverts back to the testimony that has been presented before relative to the time necessary to complete the actual field operations and the amount of work that has to transpire before actual water injection can take place.

Q Do you have anything further that you should tell the examiner at this time in connection with this application?

A No, sir, I believe that's all.

MR. CAMPBELL: I would like to offer Applicant's Exhibits 1 through 6.

Q Did you prepare these Exhibits, Mr. Fick, or were they prepared under your supervision?

A Under my supervision, yes, sir.

MR. CAMPBELL: I would like to introduce Applicant's Exhibits, 1 through 6.

[illegible] Exhibits with a date on them so they wouldn't be confused with other Exhibits in the case.

MR. CAMPBELL: Yes, perhaps we should. Just let the record show that we are putting the date on Exhibits 1 through 6 and I offer them in evidence.

MR. HUTTER: Without objection, Ambassador Oil Corporation Exhibits 1 through 6, dated 7-2-59 will be entered in this case.

MR. CAMPBELL: I would like to make a statement if I could before you proceed with questioning.

MR. HUTTER: Yes, sir.

MR. CAMPBELL: It is the thought of the applicant in this case that in the interest of orderly development of these projects, as well as in the interest of avoiding the necessity for frequent emergency orders and subsequent hearings on a deadline, that perhaps is not the most orderly type of procedure, that some administrative rule should be set up which will adequately permit the orderly development of these projects, but which will not, of course, remove any of the basic authority the commission has or any other interested party may have in the subject matter. We feel that such a procedure can be set up and that it could be done generally in the manner that we propose that the hearing be held on the original pilot program, as is being done at the present time, that when the pilot has gone forward far enough to determine

[illegible] in instances where [illegible] hearing be held by [illegible], at which the operator would explain the proposed injection pattern, the proposed arrangements for tankage for the oil, give the commission an idea of the rate at which the injection would be activated and that the overall project at that time be approved or disapproved, as the commission saw fit, and then that as the project proceeds that some administrative procedure by letter be set up for the activation of particular injection wells at the discretion of the operator, subject, however, to a satisfactory explanation to the commission of the necessity for the activation of particular injection wells in order to obtain the greatest ultimate recovery of the oil. If the situation was such that the commission felt that a fuller hearing was required [illegible] to obtain additional information from the operator, of course, they would have that authority to call such a hearing. At the last hearing here in connection with this Ambassador Flood, I think there is testimony that this is generally the procedure being used in the States of Texas and Oklahoma, which have, of course, proceeded for a number of years in the operation of these water flood projects. . We are perfectly willing, of course, to abide by whatever rule the commission feels necessary to protect it's obligations, but we do feel that something could be worked out to make the procedure just a little bit more orderly than it is at the present time, both

[illegible] ission.

MR. [illegible]: [illegible], I'm sure that you will [illegible] that members of the [illegible] commission staff, if and the commission, will [illegible] that a more orderly system can be [illegible]. [illegible] entered by mid-[illegible] as you were talking, would this, you mentioned that the wells would be converted at the discretion of the operator, would your proposed system require the information to be submitted to the commission [illegible] the letter of authorization for the conversion of water wells, [illegible] water injection wells, be obtained prior to the time that the well was converted or water injected?

MR. CAMPBELL: Oh, yes. I didn't mean to imply that they would just do it and then advise the commission. No, the extent of the discretion would be that they would, with whom it was necessary to request the approval from the commission, not the discretion to put them on at will. I think the commission has not only that duty, but the obligation to be kept fully aware of any developments in these projects. I think it's a very basic question of prevention of waste by increasing ultimate recovery and that it's a very serious obligation of the commission to keep track of it. In no event should any well be activated without approval from the commission.

MR. NUTTER: I believe you stated that you felt at the present time that there were eight wells that should be converted to water

injection at the [illegible]

A Yes, there are eight wells as shown on the Exhibit [illegible], directly offsetting the proposed injection wells that are directly offsetting to the outside producing wells that have responded to the water flood. As has been testified to before by the various experts, the most ideal time would be to put the whole thing on at once, but actually the longer you wait, the more susceptible you are to loss of ultimate oil and definitely after a producing well to the outside backed up, we feel we are definitely losing considerable amount of oil.

MR. NUTTER: I recall testimony, Mr. Vick, at one of the previous hearings at which an expert on the subject of water flooding testified that he felt that within a reasonable length of time, I believe he stated thirty days or some such figure, you could convert a well to water injection [illegible] offsetting a well that had experienced a kick [illegible], do you concur in that theory?

A Well, generally, yes, that [illegible] on the area and the overall response of the characteristics of the reservoir, and such things as that, but generally speaking of the Caprock Field, I think that could be concurred with.

MR. NUTTER: What are the eight wells that you had in mind as being required for water injection now?

A It would be Unit No. 4-1, No. 10-2, No. 23-1 and 26-4, 26-2, 18-1, and 13-1, and 6-1.

MR. NUTTER: Would you please [illegible] necessary to convert the wells at the present time?

A Well, referring back to Exhibit No. 1 and starting down the northwest side of the pilot area, the well No. 9-1 has just begun to respond, it is producing fifteen barrels of oil per day.

MR. NUTTER: What was its previous production?

A Approximately one barrel per day. The No. 16-1 well is up to one hundred thirty-five barrels per day.

MR. NUTTER: Previous production?

A One to two barrels. The No. 2[illegible]-1 is producing at present twenty-five barrels from approximately four barrels.

MR. PORTER: Was 2[illegible]-1 one of the wells that you just designated?

A No, sir. 2[illegible]-1 and 2[illegible]-1, 2[illegible]-1.

MR. PORTER: 25-2?

A Yes, sir. The No. 16-2, we feel like the response has just started there, it's up from a barrel to this six barrels. The same on the No. 17-1, and the 14-1, the fifty-seven barrel production there has just been within the last week, the response has started there. Of course --

MR. NUTTER: What was its production prior to its response?

A Six barrels. Well, the No. 7-1 is producing one hundred forty barrels. That has been for approximately two weeks up from two barrels.

MR. NUTTER: What does this [illegible]

producing wells [illegible], [illegible] for the water injection in the [illegible] wells?

A I stated previously, it's [illegible] a question of economics and ultimate oil recovery. You are taking a separate five-spot pattern with, say the two lower injection wells placed on first and then with the center producer responding, you are pushed from these lower two injection wells or your water front is approaching the center injection well or would be the outside before the remaining two injection wells were put onto the outside. During the latter part of the flood life of that separate pattern you are going to have to carry a much higher water cut and therefore your economic limit on that separate pattern is going to be increased to a certain degree, whatever it actually comes out to be. The longer the two outside injection wells are delayed, actually the higher percentage of water cut that you are going to have to carry on the outside producer or the center producer, therefore, the loss of ultimate which would be recoverable oil under a balanced type of operation.

MR. NUTTER: You feel that the necessity of conversion to water injection of these eight wells then is predicated on the prevention of waste and the loss of ultimate recovery rather than for the sake of making the water flood bigger?

A Yes, sir, I definitely do.

MR. PAYNE: Mr. Vick, are you familiar with Order No. 972-A in the last Grayridge hearing?

A Yes, sir.

MR. PAYNE: That order lists four wells which may be converted in the future by administrative approval, isn't that correct?

A Yes, sir.

MR. PAYNE: So your application in this case seeks relief, so to speak, considerably broader than that granted in Order 972-A, does it not?

A Well, we don't consider it actually relief. Actually we are asking for an overall approval of the total projected injection system for the unit and then subject to the administrative approval by letter, letter of application and letter of approval from the commission when the wells are actually requested.

MR. PAYNE: You don't feel that it's necessary to list the wells in advance that you may ask for administrative approval to convert in the future?

A Well, in submitting this application for this hearing concerned with establishing a procedure whereby we could operate by the administratrive approval route as stated there, we definitely feel that several of these wells need to be put on injection right now and if the application is granted or approved, then we would immediately submit the letter of application for the wells that we thought should be placed on injection.

MR. CAMPBELL: In connection with your question, Mr. Payne, inasmuch as it involves the nature of the application, I think I can clarify that. I think you can say that the difference betwee

what we are requesting here and what the commission did in the Grayridge order would be that the wells that we would propose at this time would be all the wells in the unit area, that's the project injection wells.

MR. PAYNE: All twenty-three injection wells?

MR. CAMPBELL: All twenty-three of them if you follow that analogy, and then as the circumstances require, we would go through the procedure that you generally outline for those four wells in the Grayridge order. That would be the basic distinction. We will in an order on this case obtain approval of the project and the injection pattern for the project and then make it subject to the procedures that you might choose to set up, administrative procedures. I think the application is broad enough, I intended it to be so that the commission, whatever administrative requirements they felt were necessary could be incorporated in the procedures.

MR. PORTER: Would it be possible to identify all of the twenty-three of the injection wells at this time?

MR. CAMPBELL: They are identified on Exhibit 1.

MR. PORTER: Is there a possibility that there might be a deviation from that?

A No, sir.

MR. CAMPBELL: Would you anticipate any deviation from the present proposed pattern of injection wells?

A Not at this time, no, sir.

MR. CAMPBELL: I would presume under those circumstances it would necessitate a hearing to obtain a modification of the original order approving the overall injection pattern.

MR. PORTER: That was the point I was trying to bring out.

MR. PAYNE: One further question, Mr. Vice. Do you have any opinion as to what percentage of increase should be considered a substantial response?

A Well, I would say that there again it's going to depend on our overall evaluation which we would submit. Certainly there are special conditions of having an outside producer that hasn't responded, that your flood is far enough along that that well should have, and something is materially wrong with it, the well bore is damaged or something on that order, and we feel like that under some special case where we can justify that the outside injection well should be placed on, even though that well hadn't responded for some reason why we could explain or actually couldn't explain, that we should be able to go ahead and continue the flood on out like that. It would be a special case, but as far as the actual response, anything above the primary production, I mean the present production on the producing wells, should be a result of an indication because it has been proven in the Graynidge Unit and also in this one that once the production starts up, unless there's something drastically wrong with the surrounding area or reservoir conditions locally in that area, the well should come right on up and continue to increase in oil production.

MR. PAYNE: [illegible]

specific percentage of increase [illegible]

A I don't believe you could, no, sir.

MR. PAYNE: That's all I have.

MR. NUTTER: When did your well No. 12-1 first respond to the water flood, Mr. Vick?

A Approximately two months ago. I'm not exactly familiar, Mr. Nutter, with the exact time, but it was approximately six months after injection started, which would be October, November, December, January, February, March, the last of March sometime.

MR. NUTTER: Is the productivity of this well still increasing?

A Yes, sir.

MR. NUTTER: When do you expect it to reach its peak?

A Sometime within the next month, Mr. Nutter.

MR. NUTTER: How long do you think that it will be before it starts decline or will it decline immediately following reaching its peak?

A Theoretically, it would come up and peak one day and start a decline the next, depending on the amount of water that's being injected into the four injection wells surrounding it in relation to the exact sand volume you have and the rate it's flooding on a barrel per day per acre foot.

MR. NUTTER: Have any of these eight injection wells experienced a response to the water flood?

A No, sir, the overall condition here is considerably different

[illegible] outside of the [illegible] unit, I [illegible], which we don't appear to have [illegible].

MR. NUTTER: You [illegible] injection [illegible], is that not?

A Yes, sir.

MR. NUTTER: Is this normal that it will take, or that one and a half months after authority has been granted for conversion of wells to water injection that they still haven't been converted?

A Yes, sir, that's quite normal, Mr. Nutter; under operations, of course, the budget, when it is unitized in a situation like this, the budgets are approved for the approximated work that is going to be done during the year, but until actual commission approval is obtained, you can't start setting a liner in a well or cleaning it out or working it over or laying your injection lines. That was one of our thoughts in presenting the overall projected pattern, that we could go ahead under these circumstances and lay our injection lines and such things as that and be in a more efficient state of operations than we are right now.

MR. NUTTER: In other words, this month and a half that it has taken in the other unit to get these wells on injection, may be resulting in additional waste?

A Yes, sir.

MR. NUTTER: Anyone else have any questions of Mr. Vick? Mr. Lamb.

MR. LAMB: Raymond Lamb with the Wilson Oil Company.

[illegible]

[illegible], are we still [illegible] into the [illegible] project [illegible] hearing. It has [illegible]. It doesn't mention the pilot project, [illegible] water flood project.

MR. CAMPBELL: This hearing [illegible] the approval of the entire project as shown on Exhibit 1, within the unit area. Normally, as I said, if I may, since this is a procedural matter, [illegible] thought was that there should be two hearings, one on the pilot to start with and if the pilot responds satisfactorily, the applicant comes in as he is doing here, essentially asking for the approval of the area flood and the injection pattern, that would be the two hearings that you would have under the [illegible] hearing.

MR. NUTTER: I think in [illegible], Mr. Lamb, this is an application of [illegible] amending Order R-[illegible], and [illegible], authorizing a pilot water flood project.

MR. LAMB: Under the entire project has there been an allocation system established?

MR. CAMPBELL: There has not and this hearing does not encompass any allocation request. There had been capacity allowables granted to a number of the wells, that was the past hearing.

MR. LAMB: In the pilot?

MR. CAMPBELL: Within the area, yes, I mean they were in the pilot area.

A Yes.

MR. CAMPBELL: The call of this hearing did not encompass any additional requests at this time for allowable relief. The wells that are exceeding allowables at this time have already been granted a capacity.

A Theoretically, we actually still consider it a pilot flood and will until additional injection wells are started up, Mr. Lamb, even though it is still, I mean it's actually a unit operating now, the eighteen hundred acres are operated as one unit.

MR. PORTER: You would have to have more than six original wells before you could call it a pilot type.

A Some type of expansion.

MR. LAMB: This is a request to go into the expansion, but we keep the allocation system on the pilot project?

MR. CAMPBELL: There is no request in this application for additional allocation, Mr. Lamb.

MR. PORTER: Does it follow the state wide formula?

MR. CAMPBELL: Except the relief that has been granted, any further relief will have to be granted by future applications. This involves the injection program and the activation of injection wells and does not seek relief at this hearing in regard to additional allowable.

[illegible]. HUTTER: [illegible] If not, he may be excused.

(Witness excused.)

MR. SHEPARD: We have nothing further in this case, Mr. Examiner.

MR. HUTTER: Are there any statements or anything further to be observed in case 1691 today: If not, we will take the case under advisement and recess the hearing until 1:15.

(Recess.)

STATE OF NEW MEXICO,
COUNTY OF BERNALILLO. } ss.

I, ADA DEARNLEY, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission in Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my notarial seal and hand this 15th day of July, 1958.

Ada Dearnley
Notary Public, Court Reporter

My commission expires:
June 19, 1959

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1194, heard by me on 7-2, 1958.

Examiner
New Mexico Oil Conservation Commission

MAIN OFFICE OCC

1958 JUL 16 AM 8:31

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1294

TRANSCRIPT OF HEARING

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 3-6691

MARCH 11, 1959

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

Application of Ambassador Oil Corporation for capacity allowables for three wells in a water flood project. Applicant, in the above-styled cause, seeks an order authorizing capacity allowables for the following described wells situated in the project area of its North Caprock Queen water flood project No. 2 in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico.

Well No. 18-2, NE/4 SE/4, Section 12, Township 13 South, Range 31 East;

Well No. 19-1, SW/4 NW/4, Section 7, Township 13 South, Range 32 East;

Well No. 22-1, SW/4 SE/4, Section 12, Township 13 South, Range 31 East.

CASE NO. 1294

BEFORE:

Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will take up next Case 1294.

MR. PAYNE: Case 1294. Application of Ambassador Oil Corporation for capacity allowables for three wells in a water flood project.

MR. JENNINGS: Mr. Examiner, I [illegible] Jennings from Roswell appearing on behalf of the Ambassador Oil Corporation. We will have one witness, Mr. Vick.

(Witness sworn.)

MR. JENNINGS: Mr. Examiner, Ambassador Oil Corporation, for the purpose of this hearing, would like to adopt the testimony and evidence heretofore introduced and offered in this cause on May 7, 1958 and also the evidence and testimony introduced in the Graridge causes, and I believe these cases are 1135 and 1433. This testimony related to the necessity for capacity production or water flood oil, and any testimony we might give would just be additional and serve only to further clutter the record, and we would like to move the admission of the testimony in these prior cases in this case.

MR. NUTTER: Is there objection to the incorporation in the record in this case the testimony that was offered May the 7th, 1958 in Case 1294 and the testimony in cases 1135 and 1433? If not, the record will show that the testimony entered in these cases has been incorporated in this case.

ROBERT H. VICK

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

DIRECT EXAMINATION

BY: MR. JENNINGS:

Q Would you state your name

[redacted] employed by Ambassador Oil Corporation as manager of engineering.

Q Mr. Vick, have you heretofore testified before this Commission on a number of occasions?

A Yes, sir.

Q Are you a water flood engineer.

A Yes, sir.

MR. JENNINGS: Will the Commission accept Mr. Vick's qualifications?

MR. NUTTER: Yes, he is qualified, please proceed.

Q (By Mr. Jennings) Mr. Vick, the Ambassador Oil Corporation is the unit operator of the Caprock-Queen Unit No. 2?

A Yes, sir, the North Caprock Queen Unit No. 2.

Q And you have heretofore established a water flood project?

A Yes, sir.

Q And by an order of this Commission issued last May, a top capacity allowable was granted for twelve wells?

A Yes, sir.

Q Referring to Exhibit A, would you locate these wells?

A They are indicated by the red shaded area in the immediate center of the outlined unit No. 1 area, [redacted] twelve

wells [illegible] the Jicarilla Corporation's

Q Would you explain briefly what the development history has been since approval of the project.

A Since the inception of the five additional 40-acre five spot injection pattern, the flood has been expanded to the presently indicated area there of the injection wells shown in red, circled in red, consisting of eighteen present injection wells, with the total number of producers in the unit producing.

Q Were additional injection wells added pursuant to approval by this Commission?

A Yes, sir. By administrative approval.

Q What effect has the additional injection wells had on Wells No. 19-1, 18-2, and 22-1?

A Creating an additional response in oil production from these three producing wells to the amount shown on the exhibit in red letters; the oil and water production, the oil being on top, and the water production underneath the line.

MR. HUTTER: Mr. Nick, my exhibit A has the water production below the line, but it doesn't have the oil production above the line. Could you give me that information, please?

A 19-1 Well--these are the most recent tests that we have on the producing wells--3 barrels of oil, zero barrels of water, 18-2, 41 barrels of oil and zero barrels of water,

[illegible]

Q [illegible] C [illegible]

A This is an Oil Conservation Commission Form, Form C-1[illegible] on which is reported the most recent test of the three subject wells in the North Caprock Queen Unit No. 1 for which capacity allowables are being applied for; namely, 18-2, 19-1, and 22-1 showing there the date of the last test and present daily allowable, present daily oil and water production, and noted at the bottom, the approximate average production of the three wells prior to the effect of water flood, which was one and a half to two barrels per day per well.

Q What does it show about the present, the latest tests on these wells?

A It indicates the date of the latest test and the volume of oil and water, and the present daily allowable as carried by the Commission.

Q Well No. 22, the latest test showed nine barrels?

A Yes, sir.

Q Do you anticipate that that will increase?

A Yes, sir, within the next week, it's been the past history, as occurred in the 18-2 and 19-1, that the response starts out rather slow, like that, for a period of one week or two weeks, and then starts a very rapid incline.

Q Do you anticipate in the very near future that this

well [illegible] should be.

A Yes, sir, [illegible] yes, sir.

Q Mr. Utz, have you prepared or caused to be prepared a general report showing the general progress -- a report showing the result of the unit operations as of the month of January, 1959?

A Yes, sir, and we prepare a monthly report which is submitted to the working interest owners in the Fifth Caprock Queen Unit No. 2 and submit this data monthly to them.

Q Does this generally show the results of your water flood?

A Yes, sir, the detailed work that has transpired during the month, the entire presentation of general performance together with an up-to-date map of the unit and also includes a monthly data sheet including the monthly injection by wells, their average daily injection pressure, their cumulative injection volumes and also a resume of the oil production by producing wells during the month, both oil and water, and cumulative production figures on the oil and water for all the producing wells in the unit.

Q Referring to Page 8 as this Exhibit 2, just briefly explain that chart to the Commission.

A This monthly report also includes a general performance set of curves for the overall unit, including the number of producing wells, for the curve on the average injection pressure, the total water injected for the [illegible] the total oil

produced for the completed [illegible]

is in barrels per day, and the -- pardon me, in barrels produced for the month as is the water injection.

Q Mr. Vick, I believe that you have now had an emergency order covering Wells No. 15-1 and 19-1?

A Yes, sir, that's right.

Q And that order expired this morning at 7:00 a.m.?

A Yes, sir.

Q Do you feel that, Mr. Vick, all three of these wells, or that these wells will continue to be capable of producing in excess of the normal allowable?

A Yes, sir, I do.

Q And that production will increase.

A Yes, sir.

Q In the future?

A Yes, sir, substantially.

Q Mr. Vick, in your opinion will the ultimate recovery of oil be reduced and will waste occur if the production for these three wells is restricted or curtailed?

A Yes, sir. I believe so.

MR. JENNINGS: I believe that's all.

MR. NUTTER: Are there any questions of Mr. Vick?

MR. JENNINGS: Excuse me, I have one more question.

MR. NUTTER: Go ahead.

Q (By Mr. Jennings) Mr. Vick, do you know where the

[illegible] injection wells --

A Yes, sir, I have [illegible] water through the Lea County Underground Water Trap, that is being produced from wells indicated on our plat in Section [illegible] of 12 South, 34 East in Chaves County, the DSWS and our PLNG water supply wells, and also from our PLNS water supply well, which is located in Lea County in Section 7, in 13 South, 34 East.

Q And what part of the section is that in?

A The PLNS is in Lea County, in Section 7, and it is in the Southwest corner of the Northwest corner of the Northwest quarter of Section 7, and the others are as indicated. The PLNS water supply well located in the Southeast of the Southwest of the Southeast quarter of Section 1.

Q Is that Township 13?

A 13 South, 33 East. I am sorry. And the DSS, which was a replacement well drilled for the original DSS or supply well at the same location, the DSS located in the Northeast quarter of the -- Let's see, it would be, I am sorry, the Southeast quarter of the Northeast quarter of the Southwest Quarter of Section 1, Township 13 South, Range 33 East.

MR. JENNINGS: Mr. Examiner, we would like to move the admission of Exhibits -- or offer Exhibits A, B, and C.

MR. NUTTER: Is there objection to the introduction of Applicant's Exhibits A, B, and C? If not, they will be

[illegible] in evidence.

MR. JENNINGS: [illegible]

MR. NUTTER: Any questions of Mr. Vick.

CROSS EXAMINATION

BY: MR. NUTTER:

Q Mr. Vick, I notice in your Exhibit No. 2, the engineering report, that it refers to a thief zone that has been detected. Is this a thief zone for oil or water?

A For water in the injection well, Mr. Nutter. We feel that we have the situation under control now. We have recemented the liner in our 15-1 Well, which was included in the original pilot, and we located this thief zone by running a laterelog which indicated that approximately fifty per cent of the water was going into a section of the formation above the actual pay sand. The liner was cemented in and the water production on the four offsetting producing wells has since then started decreasing, and we feel that it will ultimately decrease to nothing, and we will go ahead and get an efficient flood out of it. Also, in the same line, the 2-1 well, we have entered that well and ran a caliper survey which indicated that the original liner set in the well did not have a correct cement job on it and was possibly the cause for early water production on 12-1 and 7-3 producing wells. That is also being remedied at the present time.

Q Mr. Vick, the Examiner not long ago had the occasion

to be reviewing the production as well as the allowables from this Caprock Queen Unit No. 2 and noted a rather wide discrepancy in the amount of allowable that is assigned to the wells in the unit and the amount of production. Do you think that there is any real necessity for carrying high allowables for these wells that are not making it?

A Mr. Examiner, I think the situation in point there was created by this early water break through that we are speaking of on 12-1 and 7-3 and some of the other wells which we had applied, which actually were producing in the neighborhood of 500 barrels per day, and when the water break through came, it cut the water production, which wasn't corrected soon enough by us. I believe that is the overall situation. I think now that it has been brought up to date, and it will be very closer to actual monthly anticipated production for the Commission's information and everybody's.

Q In other words, by correcting this water break through and getting your water --

A The oil production has started back up, but we have since corrected that wide discrepancy in allowables, in actual production in our C-120 and C-116 that we submit.

Q What is the most recent month that the production data is carried in this engineering report that you have?

A That report --

Q Is that January?

A That report is January. I have here the pencilled figures for February which we can submit for the Commission's information if they do so desire. It is the same type of information that will appear in our report for February which will be out in a few days.

Q Yes, if you could either give us the pencilled figures or mail us a report.

MR. JENNINGS: We will be glad to offer this and make it Exhibit D.

MR. NUTTER: You wish to offer this as Exhibit D?

MR. JENNINGS: Yes, sir.

MR. NUTTER: Without Objection, this tabulation of production statistics will be admitted as Exhibit D in this case.

Q (By Mr. Nutter) What is the total production for February, Mr. Vick?

A I don't have a copy of that, Mr. Examiner. Total oil production for the month of February was 51,676 barrels.

Q 51,6 --

A 51,676 barrels.

Q How many 40-acre units do you have contained in the North Caprock Queen Unit No. 2, Mr. Vick?

A A total of 47 40-acre units.

Q What would the production of the normal unit allowable

A I believe the present allowable unit allowable is thirty-four barrels, and on that basis it would be 1360 barrels per day.

Q And what would be the total allowable be for a 28 day month, February?

A 45,744 barrels.

Q So the production in February would exceed the normal unit allowable multiplied times the 40-acre units in the unit?

A Yes, sir.

MR. NUTTER: Are there any further questions of Mr. Vick?

Q (By Mr. Nutter) Mr. Vick, you are acquainted with the testimony offered in the cases which were consolidated in the record of this case today and the theory introduced at those hearings, are you not?

A Yes, sir.

Q Do you subscribe in principle to the theories that were adduced relative to the need for capacity allowables to gain the most oil on a water flood project?

A Yes, sir, I do.

MR. NUTTER: No further questions, the witness may be excused.

(Witness excused.)

request that you recommend to the Commission that these three wells be given the capacity allowable and that the order be made effective as of 7:00 a.m. this morning, as that is the date that the emergency order expires.

MR. NUTTER: We will take that motion into consideration, Mr. Jennings.

Does anyone have anything further in Case 1294? Nothing further, we will take the case under advisement.

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

I, Joseph A. Trujillo, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me in Stenotype and that the same was reduced to typewritten transcript by me and contains a true and correct record of said hearing, to the best of my knowledge, skill and ability.

DATED this 18th day of March, 1950, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1950

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1294, heard by me on 3-11, 1950.

Examiner
New Mexico Oil Conservation Commission

DEARNLEY, MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
Phone CHapel 3-6691

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 15, 1957

TRANSCRIPT OF HEARING

Case 1294

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 15, 1957

IN THE MATTER OF:

Application of Ambassador Oil Corporation, Graridge Corporation and Gulf Oil Corporation for an order authorizing a pilot water flood project in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico, and further, authorizing the applicants to produce at capacity their wells located within and offsetting the pilot water flood program. Applicants, in the above-styled cause, seek an order authorizing the injection of water into the Queen formation of the Caprock-Queen Pool through six wells located in Sections 1 and 12, Township 13 South, Range 31 East, Chaves County, New Mexico, and further, authorizing capacity production from ten wells located within and offsetting the pilot water flood area located in Sections 1, 11, and 12, Township 13 South, Range 31 East, and Section 6, Township 13 South, Range 32 East, in Chaves and Lea Counties, New Mexico.

Case 1294

BEFORE:

Mr. A. L. Porter
Mr. Murray Morgan
Honorable Edwin L. Mechem

TRANSCRIPT OF HEARING

MR. PORTER: The Commission will consider next Case 1294.

MR. COOLEY: Case 1294: Application of Ambassador Oil Corporation, Graridge Corporation and Gulf Oil Corporation for an order authorizing a pilot water flood project in the Caprock-Queen Pool in Lea and Chaves Counties, New Mexico, and further, authorizing the applicants to produce at capacity their wells located

and offsetting the pilot water flood program.

MR. NEWMAN: I am Kirk Newman of Roswell, representing Ambassador Oil Corporation, on behalf of the applicants in this case. Before we swear the witnesses, I would like to state that after further consideration of this matter, and the fact that we do not yet have the need for a capacity type allowable, we have decided that the application is premature and would like to amend our application in this case to omit the portion thereof dealing with the capacity type allowable, with the exception of the ten wells under Rule 5-2.

MR. PORTER: Is there any objection to counsel's amendment to the application? It is so amended.

MR. NEWMAN: We have one witness.

(Witness sworn.)

MR. NEWMAN: I would like to state at this time that although we consider this untimely, we will be back as the need arises.

H. L. McCRACKEN

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

DIRECT EXAMINATION

By MR. NEWMAN:

Q Would you state your name, please?

A H. L. McCracken.

Q By whom and in what capacity are you employed?

A Engineer for Ambassador Oil.

Q Would you state briefly your educational and professional experience?

A I graduated from Southern Methodist University in 1949 with a Bachelor of Science degree in geology. I am a registered professional geological engineer in the State of Texas. I worked three years for the Railroad Commission as, Texas Railroad Commission as field engineer, and three years as an examiner, and since that time I have been a water flood engineer for Ambassador.

MR. NEWMAN: Are the witness's qualifications accepted?

MR. PORTER: They are.

Q In what part of the Caprock-Queen Pool is this proposed water flood project located?

A If you'll turn to the first map in the brochure, this map covers the northern approximately one-quarter of the Caprock-Queen field. The location of the pilot program will be in the approximate center of the map. We have indicated the six injection wells by a half circle colored in red. There is one other pilot program in effect in the field, and we have indicated that by a blue circle. There are six well pilot operations by Graridge, Gulf and Great Western.

(Marked Ambassador's Exhibit No. 1, for identification.)

MR. NEWMAN: We wish [illegible] Exhibit [illegible] in this case.

MR. PORTER: Do you have other exhibits to offer?

MR. NEWMAN: Yes, we will have several other exhibits.

Q Will you give a brief history of the Caprock-Queen Pool?

A The name of the sand to be flooded is the Queen sand of the Permean system. This data is covered on the tabulation of Engineering Data immediately behind the map. The name of the sand to be flooded is the Queen sand of the Permean system. There are no other producing reservoirs in the area. The average top of the Queen sand is 3,030 feet. With respect to the structural features of the reservoir, the structure is that of stratigraphic trap trending north, northwest with a dip to the east, southeast. There is no gas cap present. Water-oil contact has not been definitely established. There are some wells making a small amount of water in the field insofar as the over-all picture is concerned.

Estimated average effective pay thickness is 12 feet. From a core analysis of two wells early in the life of the field, the average porosity was determined to be [illegible]. The average permeability to range from [illegible] to 250 millidarcys, and the average connate water content to be [illegible]. With respect to the characteristics of the reservoir fluids, the average API gravity is [illegible] degrees. It's under saturated paraffin base with relatively [illegible] content.

The field was discovered in November 1948 and during the primary producing life has operated under solution gas drive. The cumulative production from the ten wells immediately surrounding the proposed pilot flood, averages approximately 50,000 barrels per well. With respect to the stage of depletion, all of the wells in this general area are in the surface stage of depletion, averaging in the order of three to four barrels of oil per well per day. As shown on the map, the primary development was one well to each 40 acres.

Q How many oil and gas lease operators of Queen formation wells are there in the immediate area of this flood?

A There are four.

Q Who are they?

A Gulf Oil Corporation, the Graridge Corporation, Great Western Drilling Company, and the Ambassador Oil Corporation.

Q Has an agreement been worked out with the cooperation of all of the applicants in this case for the joint operation of the water flood pilot project?

A An agreement has been worked out and was signed and is in the brochure, and we would like to have it marked Exhibit 2, if we may.

(Marked Ambassador's Exhibit No. 2, for identification.)

MR. NEWMAN: We will introduce it as Exhibit 2.

ject in the Queen formation?

A We secured a water lease from the State Land Office, and obtained permission from the State Engineer to drill three water wells. Now, the source of the water will be the shallow sands down to a depth of approximately 230 feet. We've drilled two of the three wells, and have a capacity from the two in the order of 10,000 barrels. The State Engineer gave us approval to use 495 acre feet, which would be approximately 10,500 barrels per day on an average.

Q Do you have evidence in your exhibits of the granted authority by the State Engineer to use this water?

A Yes, sir, the permits on the three wells are in the file together with a letter of transmittal from the State Engineer's Office. We would like to have those marked collectively as our Exhibit No. 5.

(Marked Ambassador's Exhibit No. 5, for identification.)

MR. NEWMAN: They will be offered.

Q Has any other work been done to determine, with success, that is to determine another source of water other than the fresh water?

A We made a search of the general area on all the data that we could collect on wells drilled to a depth of approximately

5000 feet [illegible] source of sufficient quantity. In addition to that, while doing well work we were logging one of our wells and increased the sensitivity on the neutron side of the gama ray neutron log for the top thousand feet in an effort to see if there was any water in that general area there, in that general depth that we could use. We thought that we might be able to get some at 300 feet. We drilled down to it, but there was no water available there.

Q What is the estimated rate of injection and the pressure at which the water will be injected?

A Based on initial potentials in the field and experience had by the water flood, the pilot water flood that is in operation at the present time, and the logs that we've acquired on the wells, we anticipate an injection rate of in the order of from 500 to 800 barrels a day, and we think that most of the wells will take the water on gravity.

Q Do you have logs on the wells that you are proposing to inject?

A On the four Ambassador wells we've obtained gama ray neutron logs and we would like to have those logs marked collectively as our Exhibit No. 4.

(Marked Ambassador's Exhibit No. 4, for identification.)

MR. NEWMAN: We would offer those exhibits. Those exhibits

are in the folder there.

Q In your opinion will the injection of the water in the Queen sand formation permit the production of oil which would not otherwise be produced, thereby preventing underground waste?

A Yes.

Q Were these exhibits being offered here prepared by you and under your direction? A Yes.

Q There is one other question. What is the completion procedure for these injection wells and converting them to injection wells as far as your casing program is concerned?

A If you will turn to the last sheet in the brochure, there is a tabulation of the casing program on the six proposed injection wells. When this field was developed, in the primary development, the general practice was to drill with rotary down to approximately 3000 feet and then to tail in with cable tools. Well, as a result there is approximately 30 feet of salt and shale opened between the base of your five and a half inch oil string, and the top of the pay.

Now, in three of our wells we have gone back in and cemented a liner down to the top of the pay. In the fourth well the casing was so bad that we ran a new string of pipe to the top of the pay from the surface, a complete new string of pipe.

(Marked Ambassador's Exhibits Nos. 5 and 6, for identification.)

MR. NEWMAN: We would like to offer in evidence our Exhibits 1 through 6 as designated in the testimony, with the casing schedule being Exhibit No. 6 and the tabulation of the Engineer Data being No. 3.

MR. PORTER: Without objection the Exhibits 1 through 6 will be admitted.

MR. NEWMAN: That is all we have.

MR. PORTER: Anyone have a question of Mr. McCracken? Mr. Utz.

CROSS EXAMINATION

By MR. UTZ:

Q Mr. McCracken, did you state where these water wells were located?

A Where the water wells are located?

Q Yes.

A One of the wells is located in the northeast quarter of the southwest quarter of Section 1, Township 12, excuse me, Township 13 South, Range 31 East. The other water well is located in the southwest quarter of the southeast quarter of Section 1, Township 13 South, Range 31 East.

Q Those are the only two wells you have at the present time?

A Yes, sir. We're contemplating drilling a third well, but we also want to get a change of location on it before we drill it so we haven't gone ahead with it yet.

Q Did I understand you to say that you -- three wells is all you wanted to drill? A Yes, sir.

MR. UTZ: That's all I have.

MR. PORTER: Anyone else have a question of the witness? Mr. Irby.

MR. IRBY: I am Frank Irby from the State Engineer's Office, Santa Fe.

By MR. IRBY:

Q Did you enter your letter, March 20th, in evidence? It was your letter addressed to our District Engineer at Roswell.

A With respect --

Q (Interrupting) These applications for shallow water.

A No, sir. I'm sure I didn't.

Q Did you enter your letter of May 3rd--

A No, sir.

Q To our District Engineer? A No, sir.

Q My question refers to the third item of your letter of May 3rd which states "initially it was thought that produced salt water from the nearby field in Lea County would possibly be available for injection in the Caprock-Queen Pool. However, we have been informed by Amerada Petroleum Corporation that this water will be returned to the formation from which it is produced."

A Yes, sir.

Q To what use is this water being put that is returned to the

formation from which it is produced?

A I would assume it would be pressure maintenance.

Q Pressure maintenance? A Yes, sir.

Q And that is an assumption? A Yes, sir.

Q Have you had any further dealings with Amerada concerning the possible use of this water? A No, sir.

Q Have you made any further investigations since your letter of May 3rd with respect to finding some water other than potable water which might be used for this purpose in the future?

A As I pointed out a minute ago when we were talking about the water wells we logged one of the, all of our injection wells, but had the sensitivity on the neutron side increased so that we could better evaluate the first thousand feet, and it looked like we might be able to get some water at 300 feet in drilling one of the water wells where you generally found the top of the red beds in the order of 230 feet, we drilled on down to 300 feet to see if the water was there, see if we could find another source other than the fresh water, but we were unable to develop any water in the well.

Q Were you still in the red beds at that depth?

A Yes, sir.

MR. IRBY: That's all. Thank you.

MR. PORTER: Any other questions?

MR. COOLEY: Yes, just a minute.

MR. PORTER: Do you have a question, Mr. Cooley?

MR. COOLEY: Yes.

By MR. COOLEY:

Q I believe you testified that the injection rate would be somewhere between five and eight hundred barrels per day per well?

A Yes, sir. Of course, now, Mr. Cooley, that is an estimate because we actually don't have any tests in our data with respect to the reservoir is very limited, but based on the initial potential test for the wells in the area, plus the rates that they're obtaining on the other pilot flood in the area, we think our rates would probably be in that order.

Q Would you please evaluate for me how five to eight hundred barrels per day injection rate stands, is that high-low?

A It's high. I would call it relatively high, yes, sir.

Q Mr. McCracken, is it true that if you commence a water flood at a high injection rate, that you would run a risk of losing some oil and not getting a great recovery than if you went to a low production rate?

A No, sir. Would you ask that question again?

Q If you got a high injection rate, would you have to have a high production rate?

A If you have a high injection rate do you have to have a high production rate? If you put it in you have to take it out.

Q Yes, then if you start at a high injection rate, then cut

to a lower injection rate which would give you a lower production rate, would you incur any damage in the reservoir in loss of oil?

A I'd really prefer if it's all right with the Commission, to present data along those lines when we come back on our capacity type allowable. It's kind of getting into that question.

Q Isn't it true that if the answer to that question is in the affirmative, we would lose oil to reduce the production later? If the answer is in the affirmative and you commence at a high injection rate, would not the curtailment of production at a later date cause waste?

A In my opinion it definitely would.

Q Now, if you should proceed to inject at a lower rate, would there be any loss of oil through the low production? You have low injection, low production throughout the life of the water flood?

A I fail to see where the significance of a change, in my opinion, the higher injection rate will recover more oil. Now, if you started low and then went up to a higher rate well, you would still have the production, but you are still going to hurt when you reduce your injection rate.

Q If you start high and reduce, your testimony is that you are apt to lose some oil?

A In my opinion that is true.

Q If you start low and stay low, will you lose any oil?

A I don't think that the changing of injection rates after you get say an established rate, has anything to do with it. I mean I think the main difference in my opinion is the difference between high injection and low injection, and I think that the greatest ultimate recovery will be from high injection rates.

Now, like I say, we would like to put, come a little bit better prepared for that portion of the hearing which is kind of getting into the capacity part of it.

Q You testified that you have only one well on these 40 acres throughout this proposed unit? A Pardon.

Q You have only one well on each 40 acre unit throughout the project area?

A That was the primary development, yes, sir. One well to each 40 acre unit.

Q Is there only one well presently drilled in the six 40 acre units in which you have injection well, is the injection well the only well drilled in that unit?

A That's right.

Q The effect would be to leave that unit without any production whatsoever? A Yes, sir.

Q Since oil is prorated per unit?

A Yes, sir.

MR. COOLEY: That is all.

MR. PORTER: Mr. Newman.

RE-DIRECT EXAMINATION

By MR. NEWMAN:

Q At the estimated rate of injection, how long do you predict that it will be before you will have a fill up of the reservoir and a kick in the oil production?

A I would estimate from six to nine months.

Q And if your injection rate were lower, it would increase?

A Longer time.

Q Increase it proportionately? A Yes.

MR. PORTER: Anyone else have a question? Mr. Montgomery.

RE-CROSS EXAMINATION

By MR. MONTGOMERY:

Q How much water will it take to fill up this space, fill up this area?

A I haven't made calculations on this area itself. It would be, of course, you have got to replace the cumulative production from the reservoir which has been approximately 56,000 barrels per well.

Q You have authority, as I understand it, for 495 acre feet and you anticipate that you will need more water than that?

A No, sir.

Q Do you anticipate that you will need more water than that?

A No, sir.

MR. COOLEY: Is there a time limit on your water permit?

A No, sir.

MR. PORTER: Anyone else have a question? The witness may be excused.

(Witness excused.)

Anyone have anything further in this case? Mr. Kastler.

MR. KASTLER: Mr. Kastler, representing Gulf Oil Corporation. As one of the co-applicants in this matter, it is our opinion that a pilot water flood project will improve the feasibility of continued water flooding in the Caprock-Queen Pool. Therefore, we concur in the application.

MR. PORTER: Anyone else have a statement?

MR. COOLEY: I have a telegram from Great Western Drilling Company addressed to the Oil Commission. "Re Case 1294 wherein Ambassador Oil Corporation seeks an order for capacity water flood in the Caprock Queen Pool, Great Western Drilling Company, as an offset operator, has no objection to the proposed plans. Great Western Drilling Company. M. B. Wilson."

MR. ADKINS: Grant Adkins, representing Union Oil Company, California, who has about thirty wells in this field. I would like to go on record as supporting Ambassador in their application. We believe that granting of this application will result in an increased recovery of oil in the Caprock-Queen field.

MR. PORTER: Anyone else have a statement? If nothing further in the case, we will take it under advisement.

(Recess.)

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
3-6691 5-9546

C E R T I F I C A T E

STATE OF NEW MEXICO)
: SS
COUNTY OF BERNALILLO)

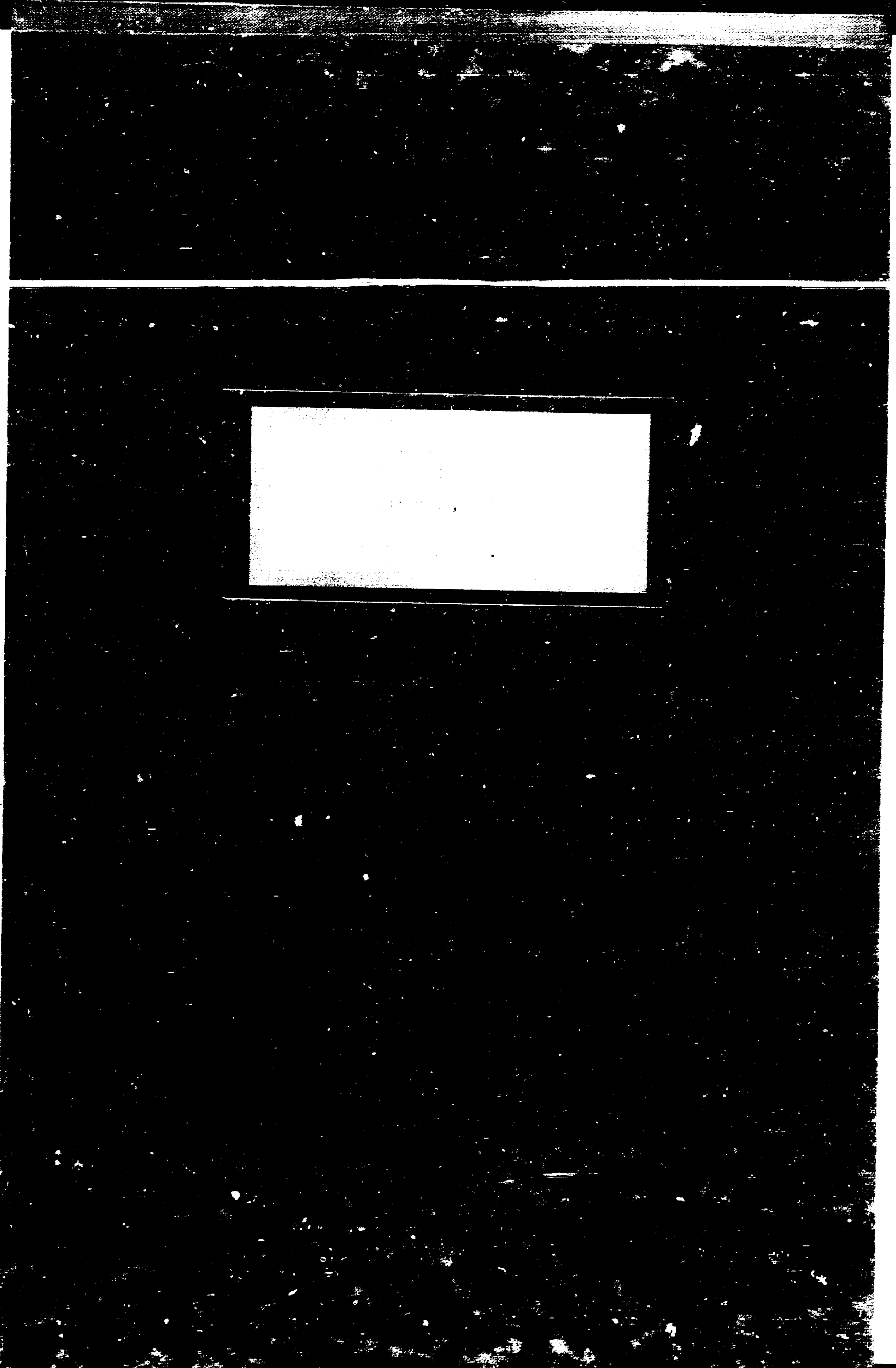
I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this day of August, 1957.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1959.



LIST OF EXHIBITS

1. Plat showing location of input wells, location of all oil and gas wells, and names of Lessees in the general vicinity of the proposed project.

2. Agreement between Ambassador Oil Corp., Gulf Oil Corp., and Graridge Corp.

3. Tabulation of Engineering Data.

4. Gamma Ray-Neutron logs of the four Ambassador Oil Corp. injection wells.

5. Permits from State Engineer to appropriate underground water in Lea County basin.

6. Chart showing casing program in each ofthe proposed input wells.

[illegible]

among other lands, the [illegible]

Township 13 South, Range 31 [illegible] County, [illegible]

> NW/4 of SE/4 of Section 1, upon which an oil well, [illegible]
> State "H" No.2 Well, is situated;
>
> SE/4 of NW/4 of Section 1, upon which an oil well, known as
> State "H" No.1 Well, is situated;
>
> NW/4 of NE/4 of Section 12, upon which an oil well, known as
> State "J" No.2 Well, is situated;
>
> SE/4 of NW/4 of Section 12, upon which an oil well, known as
> State "H" No.1 (Polis) is situated; and,

WHEREAS, Gulf is the owner of an oil and gas lease covering, among other land, the NW/4 of NE/4 of Section 12, Township 13 South, Range 31 East, in Chaves County, New Mexico, upon which an oil well, known as Chaves State "A" No.2 Well, is situated; and,

WHEREAS, Graridge is the owner of an oil and gas lease covering the NW/4 of SE/4 of Section 1, Township 13 South, Range 31 East, upon which an oil well, known as Livermore State "A" No.1 Well, is situated; and,

WHEREAS, all of the above described wells are producing oil from the Queen Sand formation; and,

WHEREAS, the parties hereto desire to provide for the conversion of the above identified and described wells into water input wells, to the end that said wells may [illegible] project purposes in the Queen Sand formation;

NOW, THEREFORE, for and in consideration of the [illegible], the parties hereto agree as follows:

III.

That Gulf shall, within thirty (30) days from the effective date of this agreement, commence operations for the conversion and equipping for water input purposes its well located on the NE/4 of NE/4 of Section 12, Township 13 South, Range 31 East, in Chaves County, New Mexico. The cost and expense of converting, equipping and operating said input well shall be borne by Gulf.

III.

That Grayridge shall, within thirty (30) days from the effective date of this agreement, commence operations for the conversion and equipping for water input purposes its well located on the NE/4 of NE/4 of Section 1, Township 13 South, Range 31 East, in Chaves County, New Mexico. The cost and expense of converting, equipping and operating said input well shall be borne by Grayridge.

IV.

Each party agrees that after commencing operations for the conversion and equipping for water input purposes of its well or wells, it will thereafter prosecute such operations with due diligence and in accordance with good engineering practices until each party's well or wells are satisfactorily converted for water input purposes. In the event Ambassador and Gulf should for any reason be unable to convert satisfactorily the well or wells which the parties hereto agree to convert into water input wells, then such party shall drill a substitute well or wells at its own cost and expense, and as near as practicable to the well or wells it is unable to convert, to be used as a water input well in lieu of the well or wells that it was unable to convert. If Grayridge is unable to convert

satisfactorily its well located in the NW/4 of [illegible] ship 13 South, Range 31 East, into a water input well, it shall not be required to drill a substitute water input well, and if it should elect not to drill such substitute well, it shall immediately notify Ambassador in writing of its election not to drill such substitute well, and Ambassador shall then have the right and option to drill such substitute well on the above described quarter-quarter section of land. If Ambassador drills the substitute water input well on the above described quarter-quarter section of land, it shall be paid the proceeds derived from Graridge's interest in the production attributable to said quarter-quarter section until it has recouped from such source an amount equal to the total of all sums expended by Ambassador in drilling, equipping and operating such substitute water input well. Any existing well that a party is unable to convert satisfactorily into a water input well shall be plugged and abandoned at the cost and expense of such party.

V.

The rate of injection of water into each of said wells, when so converted or drilled, shall be approximately equal, the number of barrels injected per day to be mutually agreed upon between the parties. The injection wells shall be kept in proper repair and records shall be maintained of the volume of water injected and the injection pressures required. Each party hereto shall, on the 20th day of each month, furnish to the other parties hereto a report covering the previous month, setting out the number of barrels of water injected into each injection well on its lease or leases and the well-head pressure of each such well.

VI.

Ambassador agrees that it will use every reasonable effort in developing or obtaining water in sufficient quantities to carry on the water flood project, and that it will either drill such water well or wells as may be necessary to supply the requirements of the project, or it will obtain sufficient water for the project from other source or sources. Ambassador will also install, maintain, and operate all pumps, tanks, plants, pipe lines and other facilities which are necessary to deliver the water to each party's lease. Ambassador agrees to furnish to Gulf and Graridge all necessary injection water at convenient delivery points located on their

[illegible]

and maintain the [illegible] per barrel for each barrel delivered to a pumping charge of two cents ([illegible]) [illegible] its lease. Likewise, Grarid[illegible] shall install and maintain a water meter on its lease and it shall pay to Ambassador a pumping charge of two cents (2¢) per barrel for each barrel of water delivered to its lease. The water pumping charge payments shall be made to Ambassador on or before the 20th day of each month for water deliveries made during the previous month.

VII.

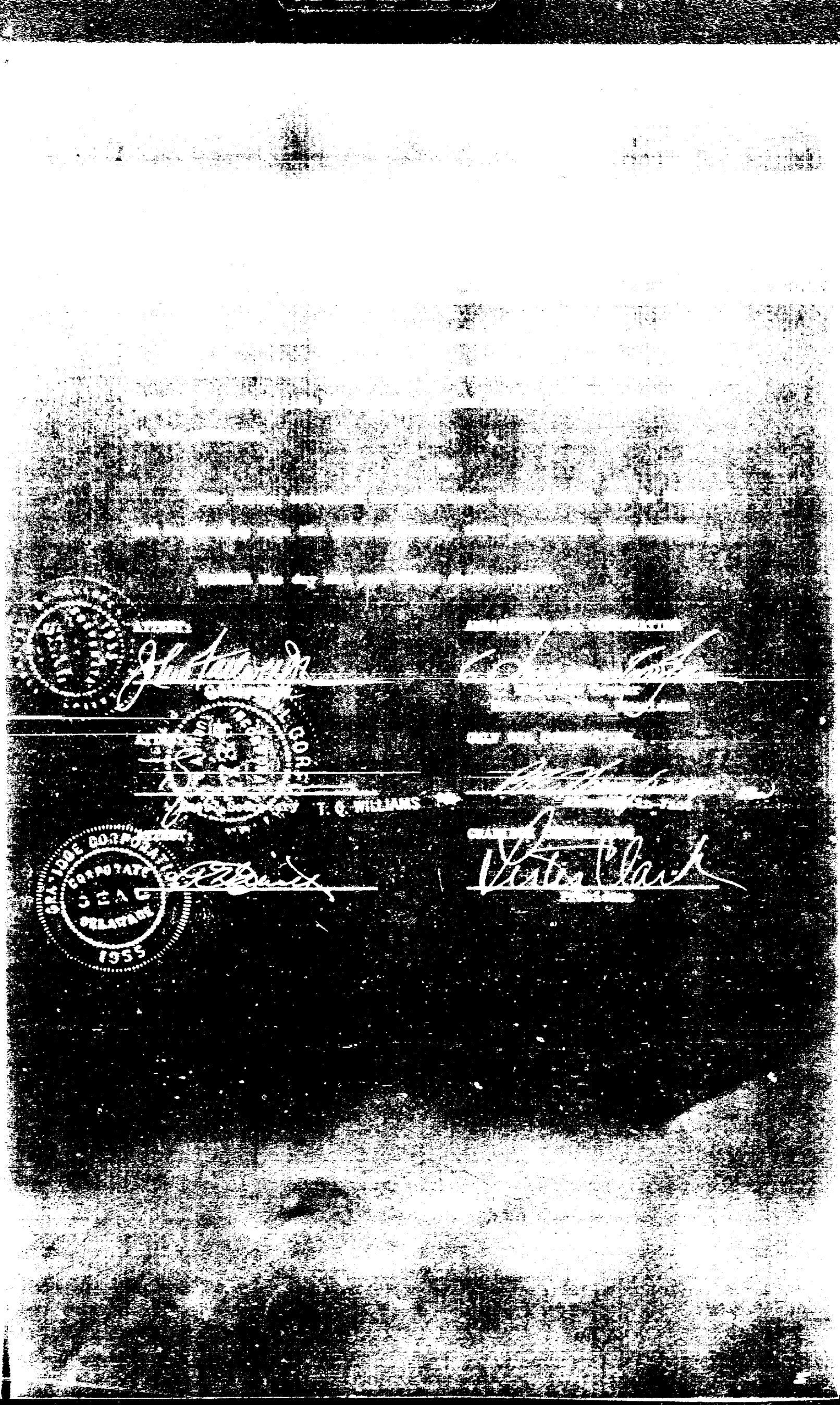
It is further understood that this agreement may be extended to include additional leases adjacent to the area covered hereby and additional operators under terms and conditions mutually agreed upon between the parties hereto and parties seeking to participate in water flooding the Queen Sand formation.

VIII.

This contract shall in no way affect the obligation of any party hereto to produce the oil from its own output wells, and each party shall be entitled to all production from its own wells and leases. The duties, liabilities and obligation of the parties hereto are intended to be several and not joint or collective and nothing herein contained shall ever be construed to impose a partnership obligation or liability with regard to any of the parties hereto. Each party shall be individually responsible for only its obligations as set out herein and shall be liable only for its proportionate share of the cost and expenses as herein stipulated.

IX.

It is believed that it will require approximately eighteen (18) months of actual water injection before the value of water flooding operations can be fully determined. For such reason, this Agreement shall be and remain in full force and effect for a period of eighteen (18) months from and after its effective date and thereafter subject to the right of any party to terminate the agreement as to its participation in the project by thirty (30) days written notice to the other parties, provided that, if before the end of said eighteen (18) months the injection of water into the Queen Sand reasonably appears to be of no benefit to any party, such party


T. G. WILLIAMS
GRAY-IDOE CORPORATION
CORPORATE SEAL
OKLAHOMA
1955

ENGINEERING DATA

Name of sand to be flooded - Queen Sand of Permian System.
Other producing formations in area - NONE.
Average Depth to the Top of the Queen Sand - 3030'

1. Structural Features

   a. Structure - Stratigraphic trap trending NNE - SSW, with a dip of approximately 25'/Mile to the ESE.

   b. Gas Cap - None.

   c. Water - Oil contact has not been definitely established. In general, an insifnificant amount of water has been produced.

   d. Estimated average effective pay thickness - 12'.

2. Physical properties of the reservoir rock (From core Anal. of 2 wells_

   a. Average porosity - 20%.

   b. Average permeability - 175-250 Mcs.

   c. Average connate water content - 19%.

3. Charactistics of reservoir fluids.

   a. Average API Gravity - 34°.

   b. Undersaturated, paraffin base, with relatively high salt content (4.08 pounds per 1000 BBS.)

4. Primary producing History.

   a. Discovery Date - November, 1940.

   b. Type drive during primary producing life - Solution gas.

   c. Cumulative production - Average approximately 56,000 BBls. per well for the 18 wells in project area.

   d. Stage of depletion - Stripper stage with wells averaging approximately 3 or 4 BBls/Well/Day.

   e. Development - Midpoint of 40 acre units.

5. Water source and treatment.

   a. Source - Shallow sands encountered to a depth of approximately 230'. A water lease was secured from the State Land Commission and permission obtained from the State Engineer to drill 3 water supply wells and appropriate a maximum total of 495 acre-feet per year (approximately 10,500 BBls/Day). Two of the three wells have been drilled, completed and tested for a total maximum capacity of 10,600 BBls. per day.

   b. Treatment - An Analysis of the water has not as yet been obtained. Initially, the water will be filtered with individual filters at each injection well.

6. Injection rates and pressure.
   a. Pattern and spacing - 80 acre, 5-spot by conversion of alternate wells on 40 acre units to injection service.
   b. Rates and pressures - Estimated initial injection rate - 500 - 800 BBls/Day.
      Estimated initial injection pressure - Gravity

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

[illegible]

[illegible]

Files [illegible] 3460 [illegible]

Ambassador [illegible] Corporation
General Delivery
Caprock, New Mexico

[illegible]

Gentlemen:

Enclosed is your [illegible] of application for permit [illegible] for secondary recovery of [illegible] water flooding [illegible] which has been approved.

Please see [illegible] the [illegible] in [illegible] days after completion of drilling.

Proof of Completion of Works should be [illegible] this office as soon as possible after completion of the well and installation of equipment, but in no event later than May 30, [illegible] for your convenience to be executed in triplicate, [illegible] and returned to this office.

Proof of Application of Water to Beneficial [illegible] this office [illegible] May 30, [illegible]. This [illegible] or land surveyor who is registered [illegible] New Mexico, and who must be designated and paid by you. As [illegible] are ready to have final inspection made, but in no event later than March 30, 1959, [illegible] should send this office the name of the engineer [illegible] and surveyor you wish to employ, so that we may send [illegible] necessary authorization and instructions.

Your rights under this permit will expire [illegible] May 30, 1959, unless proofs are filed or an application for extension of time is received in this office on or before above date.

Approved applications for permits to appropriate water for waterflooding purposes, L-3460 and L-3461, were handed to Mr. McCracken on May [illegible]. It was noted that [illegible] the stipulation on the back of these permits the total appropriation of water from wells L-3460, L-3461 and [illegible] 3462 was limited to 485 acre feet per year. This figure is in error and should

ILLEGIBLE

May 6, 1957

have read ... acre feet per year. The records in this office and in the Santa Fe office will be inspected to indicate that a limit of 490 acre feet per year is to be appropriated from L 3460, L 3461 and L 3462 and when this is done you will be so advised.

Very truly yours,

[illegible]
District Supervisor

By

William D. L. [illegible]
Basin Supervisor

BB jt
cc: State Engineer
encl: Application (3)
Forms-Proof of Forms (3)

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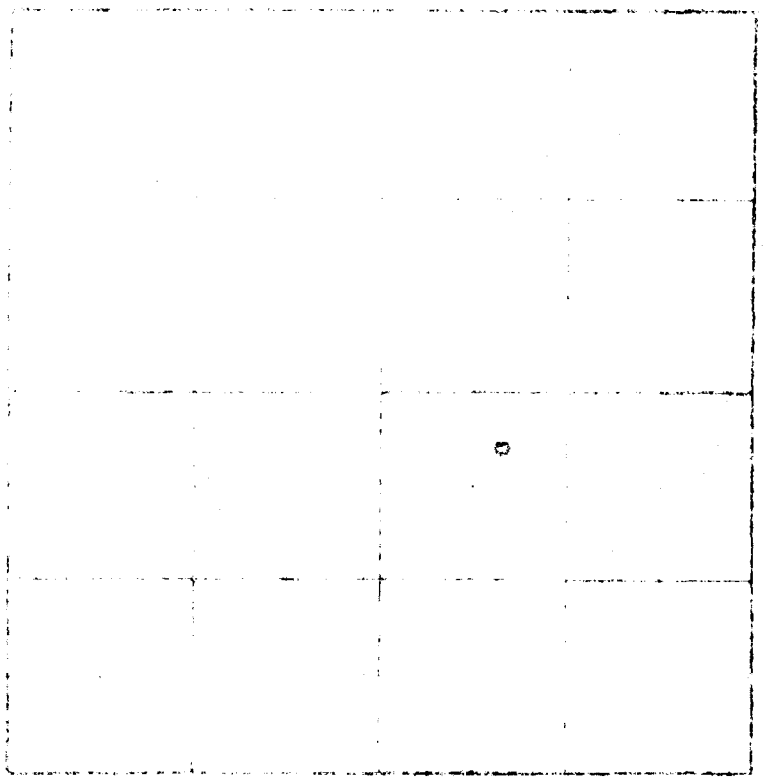

APPLICATION [illegible]

[illegible]

[illegible] Oil Corporation [illegible]

[illegible] Lea County [illegible]

[illegible] 1 [illegible] south [illegible] 33 east, [illegible] N.M.P.M.

[illegible] State of New Mexico

[illegible] Est. 350 [illegible]

[illegible] 8-5/8 [illegible]

Peerless Turbine, electric

[illegible]

For secondary recovery of oil by waterflooding [illegible] purposes

6. Acreage to be irrigated [illegible] acres

[illegible]

Subdivision	Sec.	Twp.	Range	Acres Irrigated	[illegible]

See attached letter and plat

[illegible]

7. Time required to commence construction [illegible] Three weeks.

Time required to complete the works: Two months.

Time required to fully apply water to beneficial use: Two months.

8. Additional statements or explanations [illegible]

This well will be used to supplement water obtained from wells on accompanying applications. Total for pilot project from all wells would be 211 acre feet per year, with maximum total of 495 acre feet for expanded project. Please refer to attached letter.

I, H. L. Holmesten, [illegible] and say that I have carefully read the foregoing statement and each and all of the items contained therein and that the same are true to the best of my knowledge and belief.

H L [illegible] [illegible]

Subscribed and sworn to before me this [illegible] day of March, [illegible] 1957.

My Commission expires [illegible]

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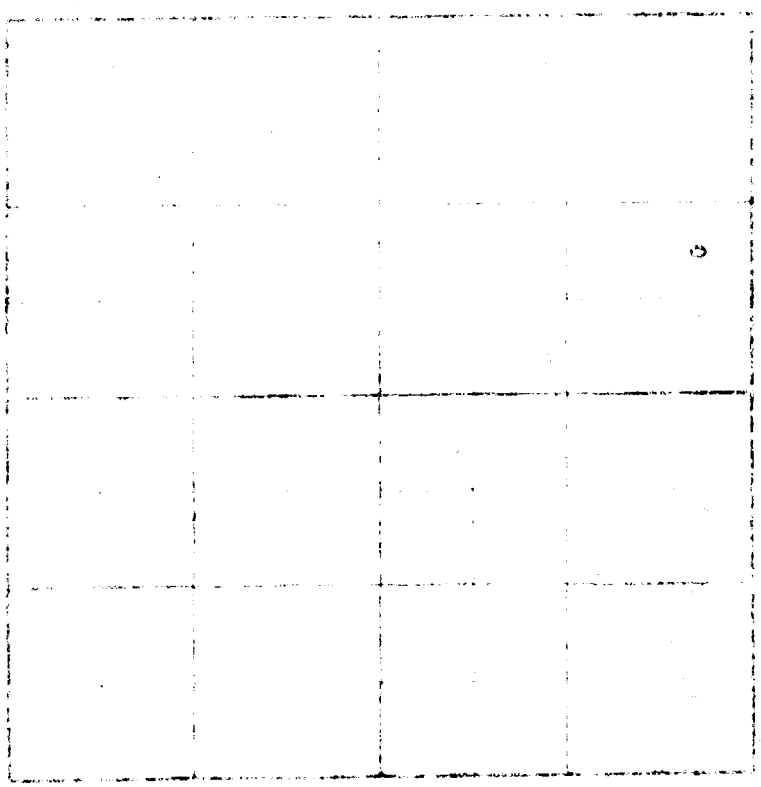


[illegible]

APPLICATION FOR PERMIT

To Appropriate the Underground Waters of the State of New Mexico

LEA COUNTY [illegible] WATER BASIN

Application No. L-3452 [illegible] LS-15 [illegible] March 21, 1957

1. Name of applicant: [illegible] Oil Corporation
Post office address: General Delivery [illegible]
County of: Lea [illegible]

2. Source of water supply: Shallow Sands
located in: Lea County Basin

3. The well is to be located in the NW ¼ [illegible] ¼ NW ¼
of section 7 [illegible] 11 South Range 32 East, N.M.P.M.
on land owned by State of New Mexico.

4. Description of well: driller [illegible] W.D. No. [illegible] depth to be drilled Est. 350 feet;
diameter (outside) of casing 8-5/8 inches; type of pump and power plant to be used
Peerless Turbine, electric

5. Quantity of water to be appropriated and beneficially used 72.5 acre feet per year for pilot maximum of 145 acre feet per year, expanded, [illegible]
for Secondary recovery of oil by waterflooding purposes.

6. Acreage to be irrigated [illegible] acres
located and described as follows (describe only lands to be irrigated):

Subdivision	Sec.	Twp.	Range	Acres Irrigated	Owner
See attached letter and plat.					

(Note: location of well and acreage to be irrigated must be shown on plat on reverse side.)

7. Time required to commence construction Three weeks.
Time required to complete the works Two months.
Time required to fully apply water to beneficial use Two months.

8. Additional statements or explanations (including data on any other water rights appurtenant to above lands)
~~This well will be used to supplement water obtained from wells on accompanying applications. Total for pilot project from all wells would be 211 acre feet per year, with maximum total of 495 acre feet for expanded project. Please refer to attached letter.~~

I, H. L. McCracken, being first duly sworn upon my oath, depose and say that I have carefully read the foregoing statement and each and all of the items contained therein, and that the same are true to the best of my knowledge and belief.

H. L. McCracken, applicant

Subscribed and sworn to before me this 21th day of March, A.D., 1957.

My Commission expires March 22, 1960. [signature], Notary Public

MAY 15 1957

ILLEGIBLE

APPROVAL OF THE STATE ENGINEER

Number of this permit: L-3468
Recorded in Book: LC-12
Page: 3468
Application received: March 31, 1957
Date returned for correction:
Date received corrected:
Publication of notice ordered: April 4, 1957
Name of paper: The Lovington Daily Leader
Affidavit of publication filed: April 30, 1957
Date of approval: May 14, 1957

This application is approved for 188 acre feet of water subject to all prior valid and existing rights to the use of the waters of said underground source and provided that the applicant complies with all rules and regulations of the State Engineer pertaining to the drilling of wells

Engineer of New Mexico. Appropriation of water not to exceed 188 acre feet per annum from Well No. L-3435.

Works shall be completed and proofs filed on or before May 30, 1958

Water shall be applied to beneficial use and proofs filed on or before May 30, 1959

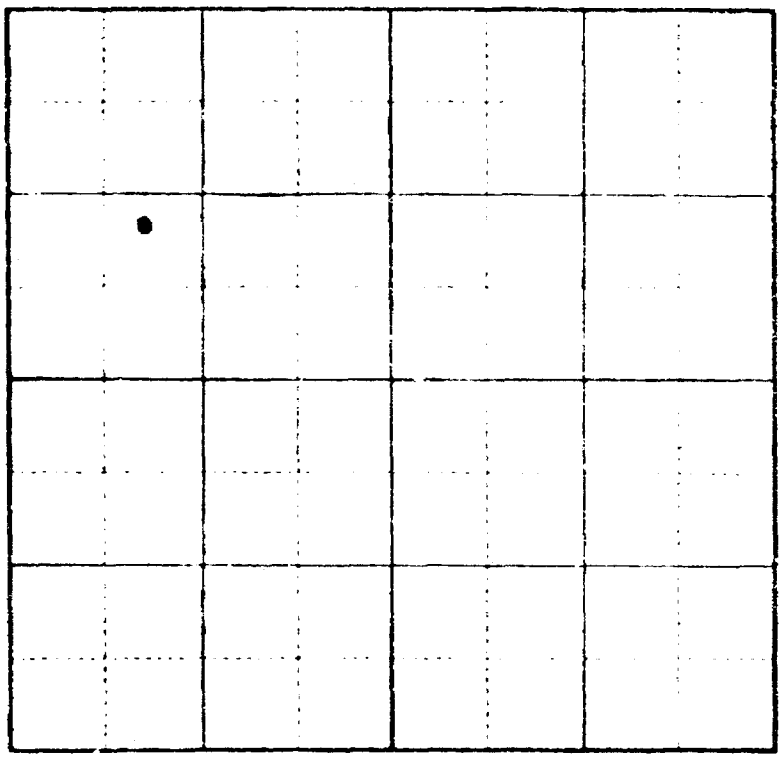
This is to certify that I have examined the above application for permit to appropriate the underground waters of the State of New Mexico and hereby approve the same subject to the foregoing provisions and conditions.

Witness my hand and seal this 14th day of May, A. D., 1957

E. S. WALKER
State Engineer

LOCATE WELL AND ACREAGE TO BE IRRIGATED AS ACCURATELY AS POSSIBLE ON FOLLOWING PLAT:

Section (s) 7 Township 12-S Range 38-E N.M.P.M.



By: L. E. Gray
D. E. Gray, Engineer
Water Rights Division

INSTRUCTIONS

This form shall be executed preferably typewritten, in triplicate and shall be accompanied by a filing fee of $5.00. Each of triplicate copies must be properly signed and attested.

A separate application for permit must be filed for each well used.

Secs. 1-4. Fill out all blanks fully and accurately.

Sec. 5—Irrigation use shall be stated in feet depth or acre feet of water per acre to be applied on the land. If for domestic, municipal, or other purposes, state total quantity in acre feet to be used annually. Domestic use may include the irrigation of not more than one acre of lawn and garden for noncommercial use.

Sec. 6—Describe only the lands to be irrigated. If on unsurveyed lands describe by legal subdivision "as projected" from the nearest government survey corners, or describe by metes and bounds and tie survey to some permanent, easily located natural object.

Sec. 7—Estimate time reasonably required to commence and to complete project.

Sec. 8—If lands are irrigated from any other source, explain in this section. Give any other data necessary to fully describe water right sought.

If additional space is necessary, use a separate sheet or sheets and attach securely hereto.

CASING PROGRAM FOR INJECTION WELLS

	SURFACE CASING					OIL STRING					
	SIZE	WT	COND.	NO. FT.	SACKS CEMENT	SIZE	WT.	COND.	SACKS CEMENT	#FEET	TOP OF PAY	REMEDIAL WORK 1957
AMBASSADOR, STATE "I" #1	8-5/8"	28#	New	298	150	5½"	15.5#	New	600	2993	3034	Ran 95' of 4½" 12.6# J-55 Liner with Base of Liner @ 3029' cemented with 80 sacks
" " "I" #2	8-5/8"	28#	New	295	150	5½"	15.5#	New	600	2983	3023	Ran 94' of 4½" 12.6# J-55 Liner with Base of Liner @ 3019' cemented with 150 sacks
" " "J" #2	8-5/8"	28#	New	295	150	5½"	15.5#	New	600	2989	3031	Ran 128' of 4½" 12.6# J-55 Liner with Base of Liner @ 3028' cemented with 75 sacks
" " "H" #1	9-5/8"	34#	S.H.	276	175	7"	24#	S.H.	600	3031	3035	Ran 3029' of 4½", 9.5# H-40 Casing inside 7" and cemented with 150 sacks
GRARIDGE, MAXWELL-STATE 1-A	8-5/8"	25#	New	298	150	5½"	15.5#	New	600	2998	3034	Liner will probably be set.
GULF, CHAVES STATE #2	8-5/8"	25.7#	New	244	180	5½"	14#	New	500	3003	3043	Liner will probably be set.