THE ATLANTIC REFINING COMPANY
EXHIBIT NO. 14
DESCRIPTION OF CASING PROGRAM OF INJECTION WELLS
HORSESHOE GALLUP UNIT

MARCH 1962

The following 15 wells are currently injection wells in the Proposed Horseshoe Gallup Project:

UNIT TRACT NUMBER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING Size	SURFACE CASING Depth	SURFACE CASING Cement	PRODUCTION CASING Size	PRODUCTION CASING Depth	PRODUCTION CASING Cement
3	Atlantic	Navajo "B"	1	SE/4 SW/4 Sec. 19, T31N,R16W	8-5/8"	102.06'	115 sx	5-1/2"	1577.21'	150 sx
		Navajo "B"	3	SE/4 SE/4 Sec. 19, T31N,R16W	8-5/8	103.65	115	4-1/2	1446.21	180
		Navajo "B"	4	NW/4 SE/4 Sec. 19, T31N,R16W	8-5/8	97.47	115	4-1/2	1474.27	190
		Navajo "B"	5	SE/4 NW/4 Sec. 19, T31N,R16W	8-5/8	98.05	115	4-1/2	1487.72	195
		Navajo "B"	7	SE/4 SW/4 Sec. 20, T31N,R16W	8-5/8	98.03	115	4-1/2	1513.40	225
		Navajo "B"	8	NE/4 SW/4 Sec. 20, T31N,R16W	8-5/8	100.09	100	4-1/2	1588.24	150
12	Atlantic	Navajo	9	NW/4 NE/4 Sec. 30, T31N,R16W	8-5/8	102.07	125	5-1/2	1446.72	135
		Navajo	16	SE/4 NE/4 Sec. 31, T31N,R16W	8-5/8	100.90	115	5-1/2	1300.73	130
		Navajo	17	NW/4 NE/4 Sec. 31, T31N,R16W	8-5/8	98.80	115	5-1/2	1286.00	130
		Navajo	22	NW/4 SE/4 Sec. 29, T31N,R16W	8-5/8	98.97	115	5-1/2	1362.52	130
		Navajo	23	SE/4 NW/4 Sec. 29, T31N,R16W	8-5/8	103.64	115	5-1/2	1379.01	130
		Navajo	24	NW/4 NW/4 Sec. 29, T31N,R16W	8-5/8	95.70	115	4-1/2	1409.82	160
		Navajo	26	NW/4 NE/4 Sec. 29, T31N,R16W	8-5/8	99.75	115	4-1/2	1347.09	190
		Navajo	29	SE/4 NW/4 Sec. 31, T31N,R16W	8-5/8	101.49	115	5-1/2	1366.00	130
13	Magnolia	Navajo "A"	9	NE/4 NW/4 Sec. 14, T31N,R17W	8-5/8	119.00	80	5-1/2	1101.00	100

DESCRIPTION OF CASING PROGRAM OF INJECTION WELLS
HORSESHOE GALLUP UNIT

The following 94 wells are to be converted to injection wells in the Proposed Horseshoe Gallup Project:

UNIT TRACT NUMBER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING			PRODUCTION CASING		
					Size	Depth	Cement	Size	Depth	Cement
1	El Paso	Chimney Rock	1	NE/4 SE/4 Sec. 23, T31N,R17W	8-5/8	126.00	100	5-1/2	1171.00	100
		Chimney Rock	2	NE/4 NE/4 Sec. 15, T31N,R17W	8-5/8	125.00	100	5-1/2	948.00	100
3	Atlantic	Navajo "B"	2	NW/4 SW/4 Sec. 19, T31N,R16W	8-5/8	101.25	125	5-1/2	1467.00	140
		Navajo "B"	6	NW/4 NW/4 Sec. 19, T31N,R16W	8-5/8	100.25	115	4-1/2	1499.00	160
4	Hidden Splendor	Horseshoe Canyon "G"	2	SE/4 NE/4 Sec. 6, T30N,R16W	8-5/8	62.00	80	5-1/2	1213.00	100
5	El Paso	Horseshoe Navajo	2	NW/4 NW/4 Sec. 5, T30N,R16W	7-5/8	137.00	100	5-1/2	1253.00	50
		Horseshoe Navajo	4	SE/4 SE/4 Sec. 5, T30N,R16W	7-5/8	134.00	100	5-1/2	1166.00	50
		Horseshoe Navajo	5	NW/4 SE/4 Sec. 5, T30N,R16W	7-5/8	124.00	100	5-1/2	1192.00	50
		Horseshoe Navajo	6	SE/4 NW/4 Sec. 5, T30N,R16W	7-5/8	126.00	100	5-1/2	1200.00	50
6	Hidden Splendor	Horseshoe Canyon "D"	2	SE/4 NE/4 Sec. 5, T30N,R16W	8-5/8	91.00	100	5-1/2	1259.00	100
		Horseshoe Canyon "D"	3	NW/4 NE/4 Sec. 5, T30N,R16W	8-5/8	81.00	100	5-1/2	1260.00	100
		Horseshoe Canyon "D"	6	NW/4 SW/4 Sec. 5, T30N,R16W	8-5/8	68.00	80	5-1/2	1187.00	100
		Horseshoe Canyon "D"	7	SE/4 SW/4 Sec. 5, T30N,R16W	8-5/8	72.00	80	5-1/2	1157.00	100
7-28	El Paso	Horseshoe Canyon "B"	4	NW/4 NW/4 Sec. 4, T30N,R16W	8-5/8	103.00	100	5-1/2	1280.00	100
9-30	Hidden Splendor	Horseshoe Canyon "F"	1	NW/4 SW/4 Sec. 4, T30N,R16W	8-5/8	96.00	80	5-1/2	1212.00	100

DESCRIPTION OF CASING PROGRAM OF WELLS TO BE CONVERTED TO INJECTION, PAGE 2

UNIT TRACT NUMBLER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING			PRODUCTION CASING		
					Size	Depth	Cement	Size	Depth	Cement
11-35	El Paso	Horseshoe Canyon "A"	1-A	NW/4 NW/4 Sec. 9, T30N,R16W	7-5/8	121.00	100	5-1/2	1207.00	50
12	Atlantic	Navajo	2	NW/4 SE/4 Sec. 32, T31N,R16W	8-5/8	105.03	115	5-1/2	1277.00	100
		Navajo	4	NW/4 NW/4 Sec. 32, T31N,R16W	8-5/8	100.00	125	5-1/2	1339.00	135
		Navajo	6	NW/4 SE/4 Sec. 30, T31N,R16W	8-5/8	103.30	125	5-1/2	1373.00	135
		Navajo	8	NW/4 NW/4 Sec. 30, T31N,R16W	8-5/8	101.50	125	5-1/2	1503.00	135
		Navajo	11	NW/4 SW/4 Sec. 29, T31N,R16W	8-5/8	101.99	115	5-1/2	1387.00	130
		Navajo	13	NW/4 NE/4 Sec. 32, T31N,R16W	8-5/8	99.56	125	5-1/2	1295.00	130
		Navajo	14	SE/4 SW/4 Sec. 32, T31N,R16W	8-5/8	97.92	115	5-1/2	1283.00	130
		Navajo	15	NW/4 SW/4 Sec. 32, T31N,R16W	8-5/8	100.03	80	5-1/2	1300.00	130
		Navajo	19	NW/4 SW/4 Sec. 30, T31N,R16W	8-5/8	102.67	115	5-1/2	1405.00	130
		Navajo	21	SE/4 SE/4 Sec. 29, T31N,R16W	8-5/8	102.15	115	4-1/2	1556.83	160
		Navajo	25	SE/4 NE/4 Sec. 29, T31N,R16W	8-5/8	97.62	125	5-1/2	1384.00	130
		Navajo	27	SE/4 SE/4 Sec. 31, T31N,R16W	8-5/8	100.93	115	4-1/2	1256.00	150
		Navajo	30	NW/4 NW/4 Sec. 31, T31N,R16W	8-5/8	98.80	115	5-1/2	1289.00	130
		Navajo	65	NW/4 SW/4 Sec. 33, T31N,R16W	8-5/8	102.65	115	4-1/2	1311.33	150
		Navajo	66	NW/4 NW/4 Sec. 33, T31N,R16W	8-5/8	99.53	115	4-1/2	1407.79	150
13	Mobil	Navajo "A"	1	SE/4 NE/4 Sec. 24, T31N,R17W	8-5/8	115.00	50	5-1/2	1565.00	100
		Navajo "A"	5	NW/4 NE/4 Sec. 24, T31N,R17W	8-5/8	115.00	90	5-1/2	1505.00	100
		Navajo "A"	7	NW/4 NW/4 Sec. 24, T31N,R17W	8-5/8	113.00	80	5-1/2	1593.00	100
		Navajo "A"	12	SE/4 SE/4 Sec. 14, T31N,R17W	8-5/8	114.00	100	5-1/2	1660.00	100
		Navajo "A"	15	SE/4 SW/4 Sec. 13, T31N,R17W	8-5/8	114.00	100	5-1/2	1695.00	100
		Navajo "A"	18	NW/4 SW/4 Sec. 13, T31N,R17W	8-5/8	120.00	100	5-1/2	1415.00	100
15	El Paso	Chimney Rock "A"	2	NW/4 SE/4 Sec. 24, T31N,R17W	8-5/8	109.00	100	5-1/2	1486.00	100
		Chimney Rock "A"	5	SE/4 SW/4 Sec. 24, T31N,R17W	8-5/8	107.00	100	5-1/2	1501.00	100
		Chimney Rock "A"	9	NW/4 NE/4 Sec. 25, T31N,R17W	8-5/8	99.00	125	5-1/2	1615.00	100
		Chimney Rock "A"	10	NW/4 SW/4 Sec. 24, T31N,R17W	8-5/8	160.00	150	5-1/2	1479.00	100
		Chimney Rock "A"	13	NW/4 SE/4 Sec. 25, T31N,R17W	7-5/8	235.00	200	5-1/2	1542.00	50

DESCRIPTION OF CASING PROGRAM OF WELLS TO BE CONVERTED TO INJECTION, PAGE 3

UNIT TRACT NUMBER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING			PRODUCTION CASING		
					Size	Depth	Cement	Size	Depth	Cement
16	Texaco	Navajo-Ute Mountain Tribe	1	SE/4 SE/4 Sec. 21, T31N,R16W	8-5/8	94.00	100	4-1/2	1682.00	100
		Navajo-Ute Mountain Tribe	3	SE/4 SW/4 Sec. 21, T31N,R16W	8-5/8	104.00	100	4-1/2	1498.00	100
17	Atlantic	Ute	4	NW/4 NW/4 Sec. 35, T31N,R16W	8-5/8	102.57	115	4-1/2	1521.87	200
		Ute	6	NW/4 SW/4 Sec. 35, T31N,R16W	8-5/8	101.72	110	4-1/2	1469.76	160
		Ute	9	SE/4 SW/4 Sec. 35, T31N,R16W	8-5/8	104.16	100	4-1/2	1541.00	135
		Ute	11	SE/4 NW/4 Sec. 35, T31N,R16W	8-5/8	99.67	110	4-1/2	1640.00	150
		Ute	14	NW/4 SE/4 Sec. 35, T31N,R16W	8-5/8	96.93	100	4-1/2	1528.00	130
		Ute	17	NW/4 NE/4 Sec. 35, T31N,R16W	8-5/8	100.73	100	4-1/2	1548.00	135
		Ute	18	SE/4 SW/4 Sec. 26, T31N,R16W	8-5/8	100.45	100	4-1/2	1543.00	135
19	El Paso	Horseshoe Ute	10	SE/4 SW/4 Sec. 34, T31N,R16W	8-5/8	103.00	100	5-1/2	1518.00	100
		Horseshoe Ute	14	NW/4 NE/4 Sec. 33, T31N,R16W	7-5/8	135.00	75	5-1/2	1467.00	50
		Horseshoe Ute	15	NW/4 NW/4 Sec. 34, T31N,R16W	7-5/8	133.00	75	5-1/2	1555.00	50
		Horseshoe Ute	16	SE/4 SE/4 Sec. 28, T31N,R16W	7-5/8	102.00	125	5-1/2	1620.00	50
		Horseshoe Ute	18	SE/4 SW/4 Sec. 28, T31N,R16W	8-5/8	121.00	125	5-1/2	1760.00	100
		Horseshoe Ute	20	NW/4 SE/4 Sec. 34, T31N,R16W	8-5/8	122.00	125	5-1/2	1481.00	100
		Horseshoe Ute	22	NW/4 SE/4 Sec. 28, T31N,R16W	8-5/8	119.00	125	5-1/2	1782.00	100
		Horseshoe Ute	24	SE/4 SW/4 Sec. 27, T31N,R16W	8-5/8	119.00	125	5-1/2	1578.00	100
		Horseshoe Ute	26	SE/4 NW/4 Sec. 28, T31N,R16W	9-5/8	128.00	125	5-1/2	1710.00	100
		Horseshoe Ute	29	NW/4 NE/4 Sec. 34, T31N,R16W	9-5/8	105.00	125	5-1/2	1472.00	100
		Horseshoe Ute	30	SE/4 NE/4 Sec. 34, T31N,R16W	9-5/8	104.00	125	5-1/2	1485.00	100
		Horseshoe Ute	32	NW/4 SE/4 Sec. 27, T31N,R16W	9-5/8	118.00	125	5-1/2	1488.00	100
		Horseshoe Ute	36	SE/4 SE/4 Sec. 27, T31N,R16W	9-5/8	103.00	125	5-1/2	1712.00	100

DESCRIPTION OF CASING PROGRAM OF WELLS TO BE CONVERTED TO INJECTION, PAGE 4

UNIT TRACT NUMBER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING			PRODUCTION CASING		
					Size	Depth	Cement	Size	Depth	Cement
19	El Paso	Horseshoe Ute	37	SE/4 NW/4 Sec. 27, T31N,R16W	9-5/8	117.00	125	5-1/2	1617.00	100
		Horseshoe Ute	38	NW/4 NW/4 Sec. 27, T31N,R16W	9-5/8	119.00	125	5-1/2	1619.00	100
		Horseshoe Ute	39	NW/4 NE/4 Sec. 28, T31N,R16W	9-5/8	115.00	125	5-1/2	1716.00	100
20	Banner	Ute	2	NW/4 SW/4 Sec. 34, T31N,R16W	9-5/8	100.00	125	7	1334.00	78
		Ute	5	SE/4 NW/4 Sec. 34, T31N,R16W	8-5/8	110.00	100	5-1/2	1402.00	100
		Ute	7	SE/4 NE/4 Sec. 28, T31N,R16W	8-5/8	100.00	100	5-1/2	1749.00	125
21	Hidden Splendor	Ute-Navajo	2	NW/4 SE/4 Sec. 33, T31N,R16W	8-5/8	89.00	70	5-1/2	1344.00	80
		Ute-Navajo	3	SE/4 SE/4 Sec. 34, T31N,R16W	8-5/8	99.00	90	5-1/2	1456.00	125
		Ute-Navajo	5	NW/4 SW/4 Sec. 27, T31N,R16W	8-5/8	71.50	80	5-1/2	1555.00	125
24	El Paso	Navajo Lowe	3	NW/4 NE/4 Sec. 2, T30N,R16W	9-5/8	104.00	100	5-1/2	1683.00	100
25	El Paso	Navajo Allotted	2	NW/4 SW/4 Sec. 2, T30N,R16W	9-5/8	104.00	100	5-1/2	1655.00	100
26	El Paso	Horseshoe Canyon "B"	1	NW/4 NW/4 Sec. 3, T30N,R16W	8-5/8	107.00	75	5-1/2	1787.00	50
27	Hidden Splendor	Horseshoe Canyon "C"	1	NW/4 NE/4 Sec. 3, T30N,R16W	8-5/8	89.00	70	5-1/2	1721.00	90
32	Hidden Splendor	Horseshoe Canyon "A"	2	NW/4 NE/4 Sec. 4, T30N,R16W	8-5/8	79.00	70	5-1/2	1365.00	100
33	El Paso	Horseshoe Canyon	6	NW/4 NW/4 Sec. 10, T30N,R16W	8-5/8	127.00	125	5-1/2	1697.00	100
		Horseshoe Canyon	11	SE/4 SE/4 Sec. 3, T30N,R16W	8-5/8	107.00	100	5-1/2	1645.00	100
		Horseshoe Canyon	13	SE/4 SW/4 Sec. 4, T30N,R16W	8-5/8	107.00	100	5-1/2	1250.00	100

DESCRIPTION OF CASING PROGRAM OF WELLS TO BE CONVERTED TO INJECTION, PAGE 5

UNIT TRACT NUMBER	OPERATOR	LEASE	WELL NO.	LOCATION	SURFACE CASING			PRODUCTION CASING		
					Size	Depth	Cement	Size	Depth	Cement
34	Arizona Expl. Co.	Bolack Federal	1	NW/4 SE/4 Sec. 9, T30N,R16W	8-5/8	100.00	75	5-1/2	1300.00	150
37	Hidden Splendor	Horseshoe Canyon "E"	2	SE/4 NW/4 Sec. 9, T30N,R16W	8-5/8	87.00	80	5-1/2	1412.00	100
38	Sohio	Bolack Federal	2	NW/4 SW/4 Sec. 3, T30N,R16W	8-5/8	80.00	70	5-1/2	1430.00	75
		Bolack Federal	3	NW/4 SE/4 Sec. 4, T30N,R16W	8-5/8	90.00	80	5-1/2	1314.00	75
		Bolack Federal	5	SE/4 NW/4 Sec. 4, T30N,R16W	8-5/8	107.00	80	5-1/2	1251.00	75
		Bolack Federal	8	NW/4 SE/4 Sec. 3, T30N,R16W	8-5/8	90.00	70	5-1/2	1725.00	75
		Bolack Federal	10	SE/4 NW/4 Sec. 10, T30N,R16W	8-5/8	84.00	70	5-1/2	1601.00	75
		Bolack Federal	12	NW/4 NE/4 Sec. 9, T30N,R16W	8-5/8	88.00	70	5-1/2	1642.00	75
		Bolack Federal	15	SE/4 NE/4 Sec. 3, T30N,R16W	8-5/8	102.00	80	5-1/2	1743.00	60
39	Hidden Splendor	Horseshoe Canyon "B"	2	SE/4 NE/4 Sec. 9, T30N,R16W	8-5/8	84.00	75	5-1/2	1415.00	100
40	Abraham	Federal "A"	6	SE/4 SE/4 Sec. 9, T30N,R16W	10-3/4	58.00	40	5-1/2	1473.00	100
41	El Paso	Burroughs State	1	NW/4 NW/4 Sec. 2, T30N,R16W	8-5/8	149.00	125	5-1/2	1736.00	100
42	EPROC	Monsanto State "H"	2	SE/4 NW/4 Sec. 2, T30N,R16W	10-3/8	68.00	40	5-1/2	1734.00	80

CHEMICAL ENGINEERING GROUP
WATER ANALYSIS REPORT

To: Chas Keritnik (2), T. O. Davis, S. G. Mat, File (3) PM 8-61-86

Date Collected: 8-25-61 Date Rec'd 8-28-61 Date Rep'd 9-27-61 Lab. No. 16637

Source of Sample Navajo "B" Plant, Horseshoe Gallup Field, N.M.

CHEMICAL ANALYSIS

CONSTITUENTS	Mg/Liter	CONSTITUENTS	Mg/Liter	CONSTITUENTS	Mg/Liter
1. Total Solids	Calc 6730	6. Calcium	150	11. Sulfates	4140
2. pH	7.0	7. Magnesium	70	12. Carbonates	0
3. Sp. Grav. 60°F.	1.005	8. Iron	tr	13. H_2S	None
4. Res. 68°F.	1.358	9. Chlorides	210	14. Hydroxide	0
5. Sodium	Calc 1910	10. Bicarbonates	250		
Pattern Code	A8A8A6A0:A0A4T7A0				

INTERPRETATION

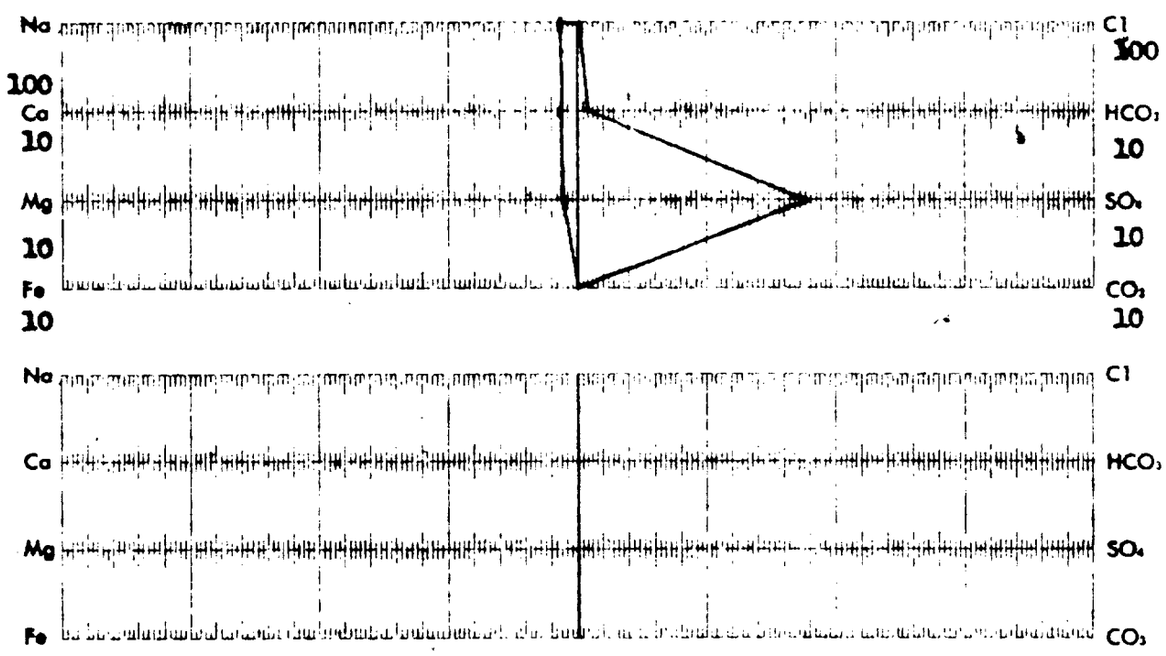
PROBLEM: Water quality study Horseshoe Gallup Waterflood

CONCLUSION: See letter from H. G. Byars dated September 28, 1961.

REMARKS:

Negative for SO_4 reducing bacteria after 14 days

Approved by W. V. Pasher Reported by J. P. McDonald, Jr.



38-543C

EXHIBIT 15

CHEMICAL ENGINEERING GROUP
WATER ANALYSIS REPORT

To: Chas Koritnik (2), T. O. Davis, S. O. Mut, File (3) PW 8-61-87

Date Collected: 8-25-61 Date Rec'd 8-28-61 Date Rep'd Lab. No. 16638

Source of Sample Navajo #2 Injection, Horseshoe Gallup Field, San Juan County, New Mexico

CHEMICAL ANALYSIS

CONSTITUENTS		Mg/Liter	CONSTITUENTS	Mg/Liter	CONSTITUENTS	Mg/Liter
1. Total Solids	Calc	7610	6. Calcium	180	11. Sulfates	4680
2. pH		7.3	7. Magnesium	54	12. Carbonates	0
3. Sp. Grav. 60°F.		1.005	8. Iron	—	13. H_2S	None
4. Res. 68°F.		1.493	9. Chlorides	255	14. Hydroxide	0
5. Sodium	Calc	2190	10. Bicarbonates	250		
Pattern Code		R0A9A4A0:A0A4J7A0				

INTERPRETATION

PROBLEM:

Water quality study Horseshoe Gallup Waterflood

CONCLUSION: See letter from H. G. Byars dated September 28, 1961

REMARKS:

Negative for $SO_4^=$ reducing bacteria after 14 days

Approved by W. V. Pasher Reported by J. P. McDonald, Jr.

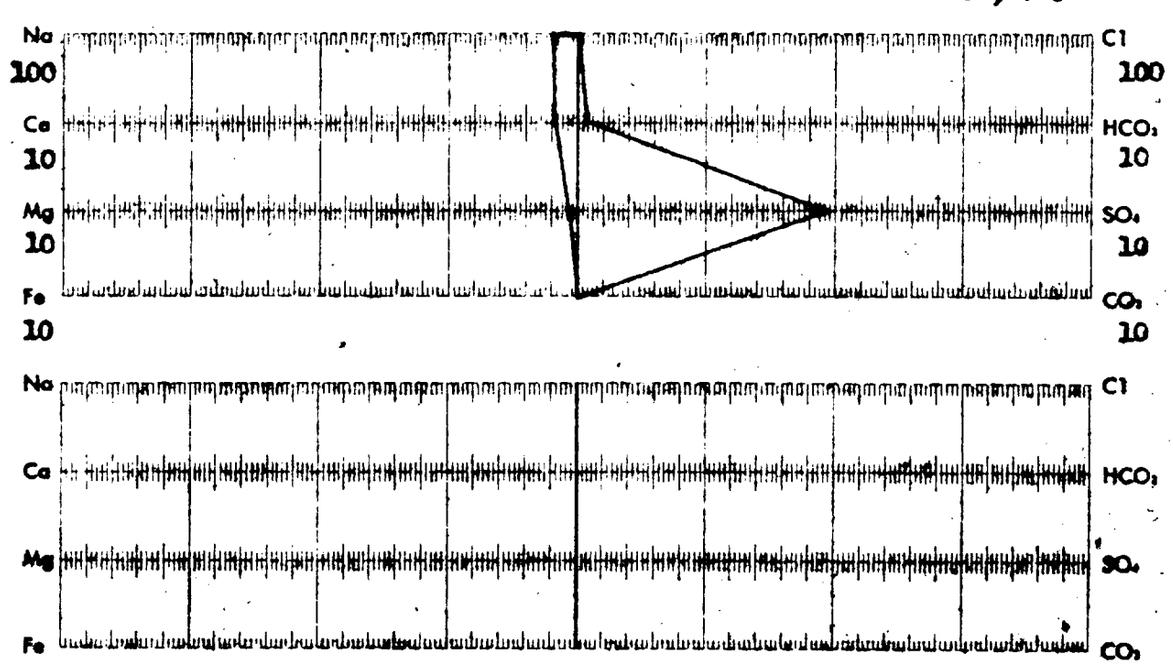


EXHIBIT 16

38-5430

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40 acre proration unit shall be top unit allowable for the Horseshoe-Gallup Oil Pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the Horseshoe-Gallup Oil Pool, whichever is less, provided that any producing well in the project area which directly or diagonally offsets a well outside the project area producing from the same common source of supply shall not produce in excess of two times top unit allowable for the pool. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the Horseshoe-Gallup Oil Pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2{,}000}{\frac{P_g - I_g}{P_o}}$$

where:

A_{adj} = the well's daily adjusted allowable

TUA = top unit allowable for the pool

F_a = the well's acreage factor

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet

P_o = average daily volume of oil produced by the well during the preceding month, barrels

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a 40-acre proration unit shall be top unit allowable for the Horseshoe-Gallup Oil Pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the Horseshoe-Gallup Oil Pool, whichever is less, provided that any producing well in the project area which directly or diagonally offsets a well outside the project area producing from the same common source of supply shall not produce in excess of two times top unit allowable for the pool. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the Horseshoe-Gallup Oil Pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the Horseshoe-Gallup Oil Pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2{,}000}{\frac{P_g - I_g}{P_o}}$$

where:

A_{adj} = the well's daily adjusted allowable

TUA = top unit allowable for the pool

F_a = the well's acreage factor

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet

P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 8. Credit for daily average net water injected into the Horseshoe-Gallup Oil Pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_{w\ inj} - V_{w\ prod}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^o}{T_r} \times \frac{1}{Z}$$

where:

E_g = average daily gas equivalent of net water injected, cubic feet

$V_{w\ inj}$ = average daily volume of water injected, barrels

$V_{w\ prod}$ = average daily volume of water produced, barrels

5.61 = cubic foot equivalent of one barrel of water

P_a = average reservoir pressure at mid-point of the pay-zones of Horseshoe-Gallup Oil Pool in project area, psig + 12.01, as determined from most recent survey

15.025 = pressure base, psi

520^o = temperature base of 60^oF expressed as absolute temperature

T_r = reservoir temperature of 87^oF expressed as absolute temperature (547^oR)

Z = compressibility factor from analysis of Horseshoe-Gallup gas at average reservoir pressure, P_a, interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	550	.6560
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8885	450	.7220	700	.5220
250	.8600	500	.6900	750	.4630
				800	.3935

RULE 9. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total

Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion except that no well in the Project which directly or diagonally offsets a well outside the Project producing from the same common source of supply shall produce in excess of two times top unit allowable for the Pool.

RULE 11. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval the Project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall include the following:

(1) A plat showing the location of proposed injection well, all wells within the project area, and offset operators, locating wells which offset the project area.

(2) A schematic drawing of the proposed injection well which fully describes the casing, tubing, perforated interval, and depth showing that the injection of gas or water will be confined to the Gallup formation.

(3) A letter stating that all offset operators within a one mile radius to a proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well, if within 20 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.