TYPE OF REPORT - (X)	
Initial Completion	—
Special	
General Survey	X

5600 - 3610 = 1990

NEW MEXICO OIL CONSERVATION COMMISSION

RESERVOIR PRESSURE REPORT

Operator: Cities Service Company | Pool: Empire Abo | County: Eddy | Date: 10-29-80

Address: Box 1919, Midland, Texas 79702 | Producing Formation: Abo | Oil Gradient: .035 psi/ft. | Water Gradient: .475 psi/ft. | Gas Gravity: .770 | Datum Plane: -2400

LEASE	WELL NO.	LOCATION U	S	T	R	ELEV.	OIL (O) OR GAS (G)	DATE TESTED	SHUT-IN HOURS	SHUT-IN TBG. PRESS.	BOMB TEST DATA: TEST DEPTH	B.H. TEMP. °F	OBSERVED PRESS.	SONIC INSTRUMENT TEST DATA*: PROD. TEST (BBLS./DAY) OIL	WATER	LIQUID LEVEL	LIQUID GRADIENT PSI/FT.	WT. OF LIQUID COL. PSI	WT. OF GAS CO... PSI	CSG. PRESS.	PRESS. AT DATUM
Citgo Empire Abo Unit	109	H	35	17	27	3610	O	10-22-80	52	831	5600		1150								1191
	110	O	35	17	27	3600	O	10-22-80	50	926	5621		1095								1110
	213	P	35	17	27	3641	O	10-22-80	50	799	5701		963								967
	214	M	35	17	27	3615	O	10-22-80	51	7	5658		1163								1184
	305	C	2	18	27	3585	O	10-22-80	54	891	5601		1054								1065
	404	B	2	18	27	3591	O	10-22-80	49	0	5700		1075								1129

BEFORE EXAMINER MORROW
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. A
CASE NO. 10356 & 10357

All depths plus or minus sea level; all pressures psi; Bomb shall be calibrated frequently enough against a dead weight tester to ensure an accuracy of one per cent; gas gravity shall be determined by analysis; liquid level shall be feet above datum plane. SEE RULE 302.

* Well shall be produced at least 24 hours prior to shutting in for sonic test.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

T. J. Mroczek (Signature)

Engineering Technician (Title)

November 11, 80

TYPE OF REPORT – (X)	
Initial Completion	
Special	
General Survey	X

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-122 Revised

RESERVOIR PRESSURE REPORT

Operator	Pool	County	Date
Cities Service Company	Empire Abo	Eddy	10-29-80

Address	Producing Formation	Oil Gradient	Water Gradient	Gas Gravity	Datum Plane
Box 1919, Midland, Texas 79702	Abo	.035 psi/ft.	.475 psi/ft.	.770	-2400

LEASE	WELL NO.	LOCATION U	S	T	R	ELEV.	OIL (O) OR GAS (G)	DATE TESTED	SHUT-IN HOURS	SHUT-IN TBG. PRESS.	BOMB TEST DATA: TEST DEPTH	B.H. TEMP. °F	OBSERVED PRESS.	SONIC INSTRUMENT TEST DATA*: PROD. TEST (BBLS./DAY) OIL	WATER	LIQUID LEVEL	LIQUID GRADIENT PSI/FT.	WT. OF LIQUID COL. PSI	WT. OF GAS COL. PSI	CSG. PRESS.	PRESS. AT DATUM
Citgo Empire Abo Unit	109	H	35	17	27	3610	0	10-22-80	52	831	5600		1150								1191
	110	O	35	17	27	3600	0	10-22-80	50	926	5621		1095								1110
	213	P	35	17	27	3641	0	10-22-80	50	799	5701		963								967
	214	M	35	17	27	3615	0	10-22-80	51	7	5658		1163								1184
	305	C	2	18	27	3585	0	10-22-80	54	891	5601		1054								1065
	404	B	2	18	27	3591	0	10-22-80	49	0	5700		1075								1129

BEFORE EXAMINER MORROW
OIL CONSERVATION DIVISION
EXHIBIT NO. A
CASE NO. 10356 + 10357

All depths plus or minus sea level; all pressures psi; Bomb shall be calibrated frequently enough against a dead weight tester to ensure an accuracy of one per cent; gas gravity shall be determined by analysis; liquid level shall be feet above datum plane. SEE RULE 302.

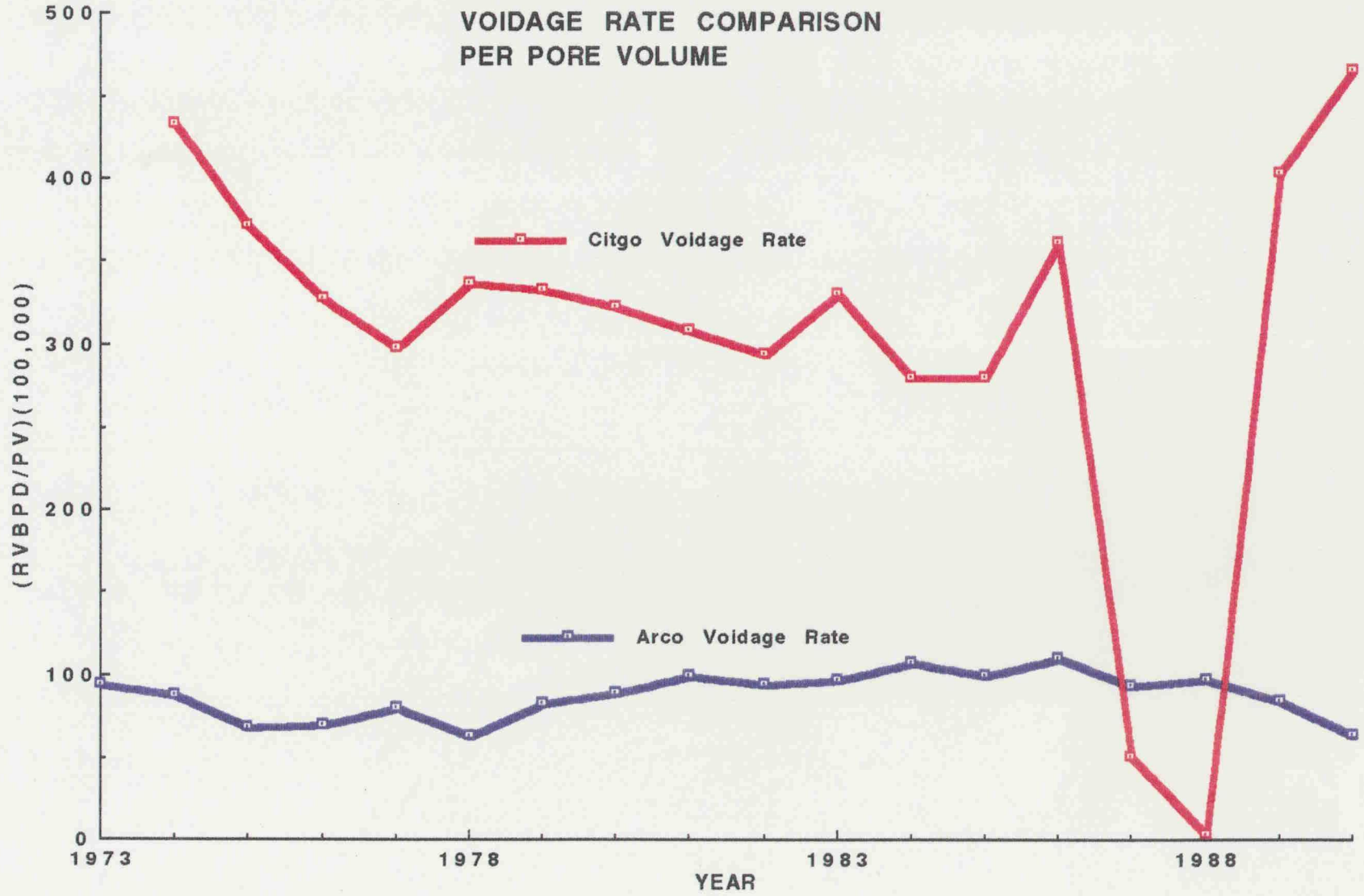
* Well shall be produced at least 24 hours prior to shutting in for sonic test.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

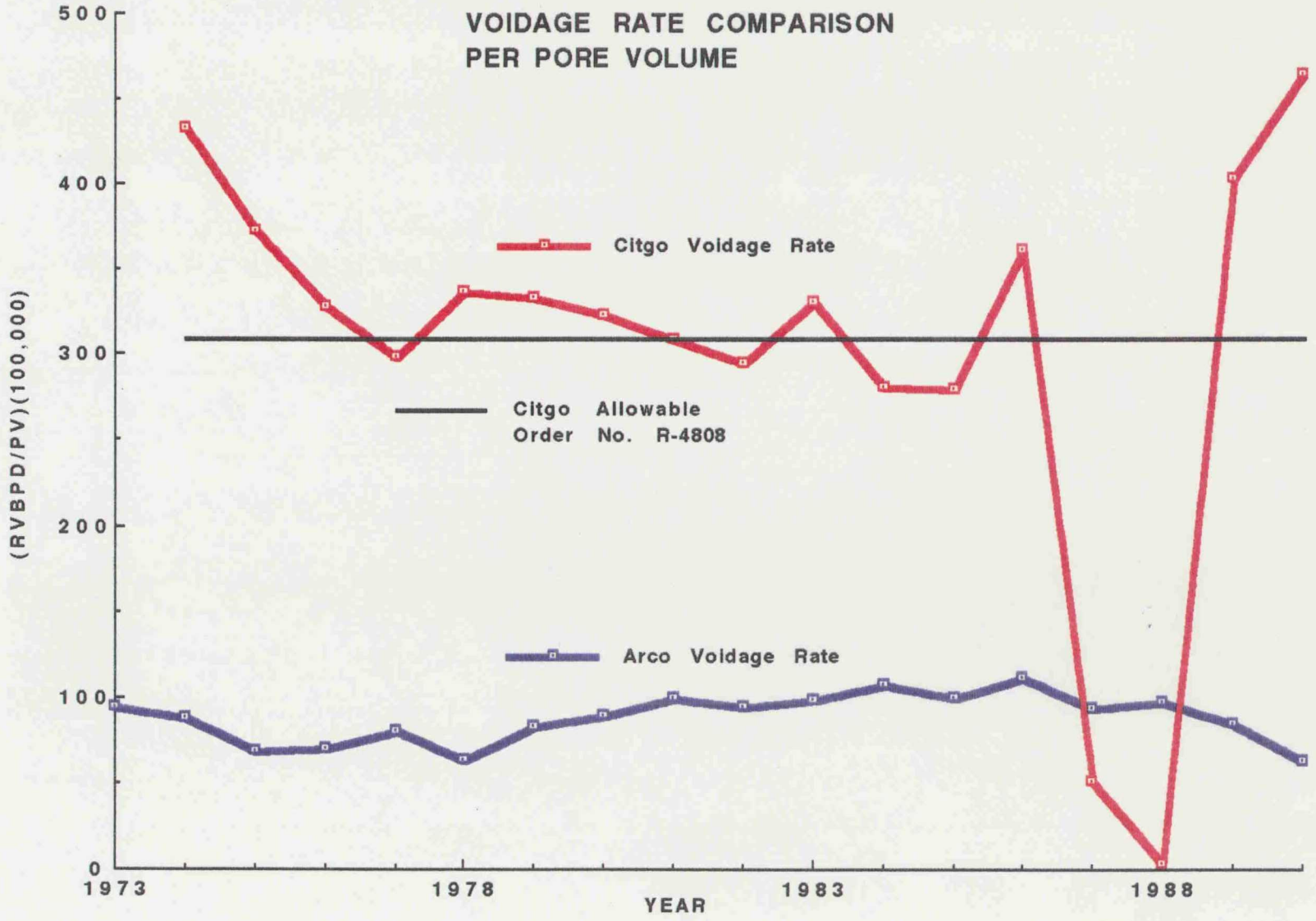
T. J. Kobayer
(Signature)

Engineering Technician
(Title)

November 11, 1980

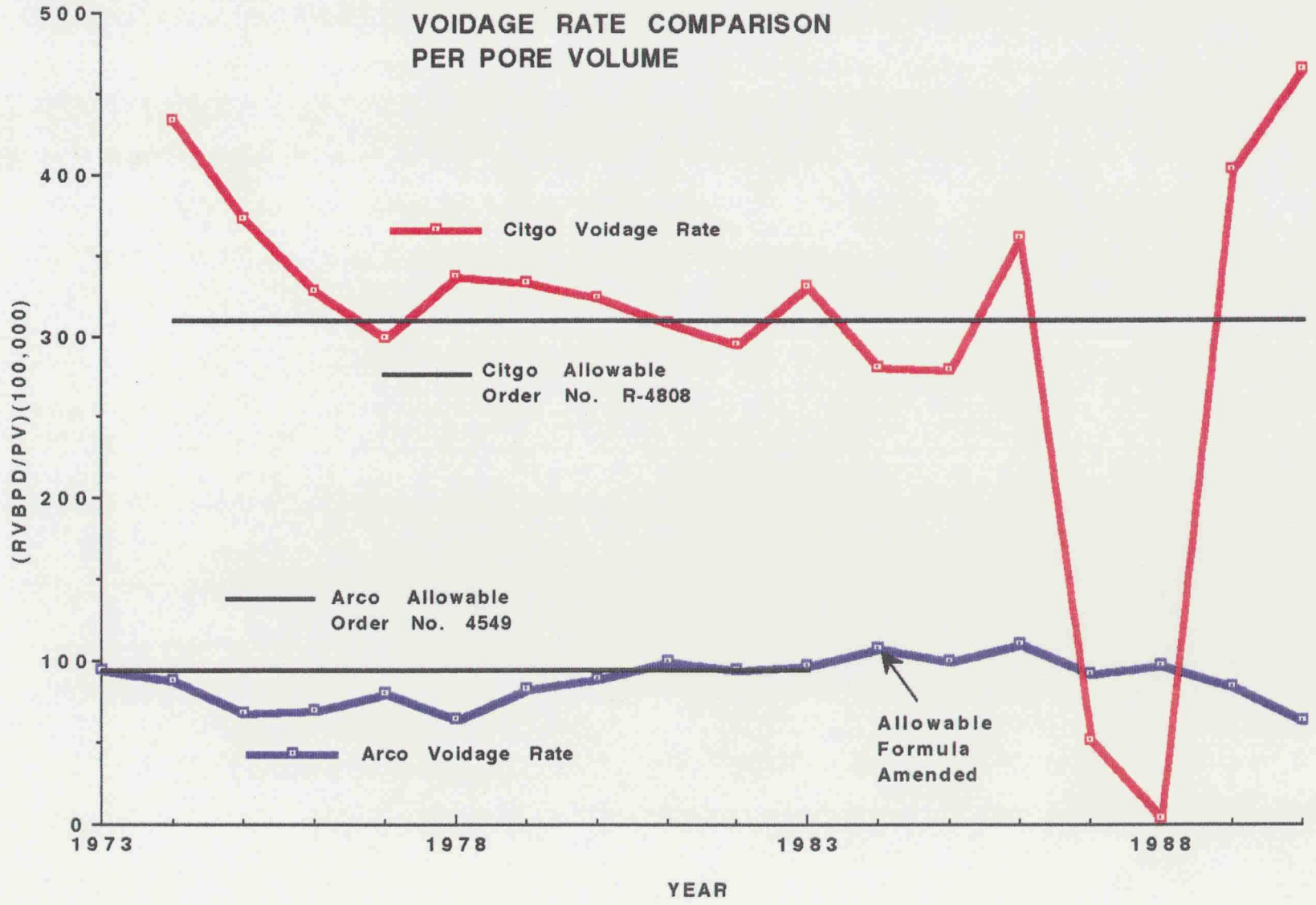

VOIDAGE RATE COMPARISON
PER PORE VOLUME
500
400
300
200
100
0
(RVBPD/PV)(100,000)
Citgo Voidage Rate
Arco Voidage Rate
1973
1978
1983
1988
YEAR

The CITGO UNIT has been voided 3.3 times faster than the ARCO UNIT


VOIDAGE RATE COMPARISON
PER PORE VOLUME
500
400
300
200
100
0
(RVBPD/PV)(100,000)
Citgo Voidage Rate
Citgo Allowable
Order No. R-4808
Arco Voidage Rate
1973
1978
1983
1988
YEAR

The Citgo Unit has consistently overproduced its allowable except when it had no gas market.

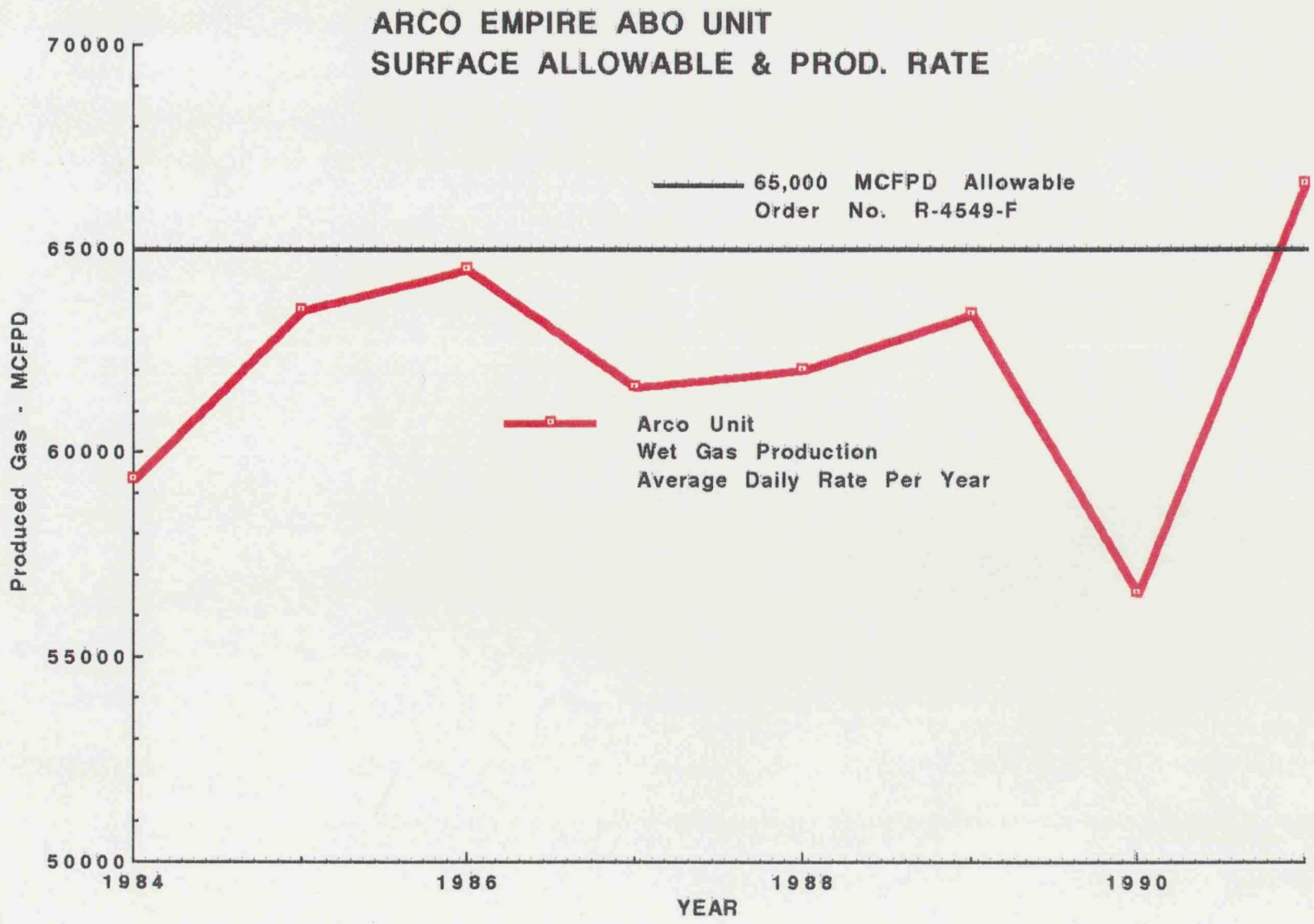
The ARCO UNIT has produced within its allowable limit for the life of the unit.


VOIDAGE RATE COMPARISON
PER PORE VOLUME
500
400
300
200
100
0
(RVBPD/PV)(100,000)
Citgo Voidage Rate
Citgo Allowable
Order No. R-4808
Arco Allowable
Order No. 4549
Arco Voidage Rate
Allowable
Formula
Amended
1973
1978
1983
1988
YEAR

In 1984 the ARCO allowable was changed from a **subsurface voidage rate** to a **surface allowable**.

The allowable was changed because it was demonstrated with a reservoir simulation model that the units **total voidage would change only slightly** and that recovery of NGL's would be **increased by 3,300,000 barrels**.

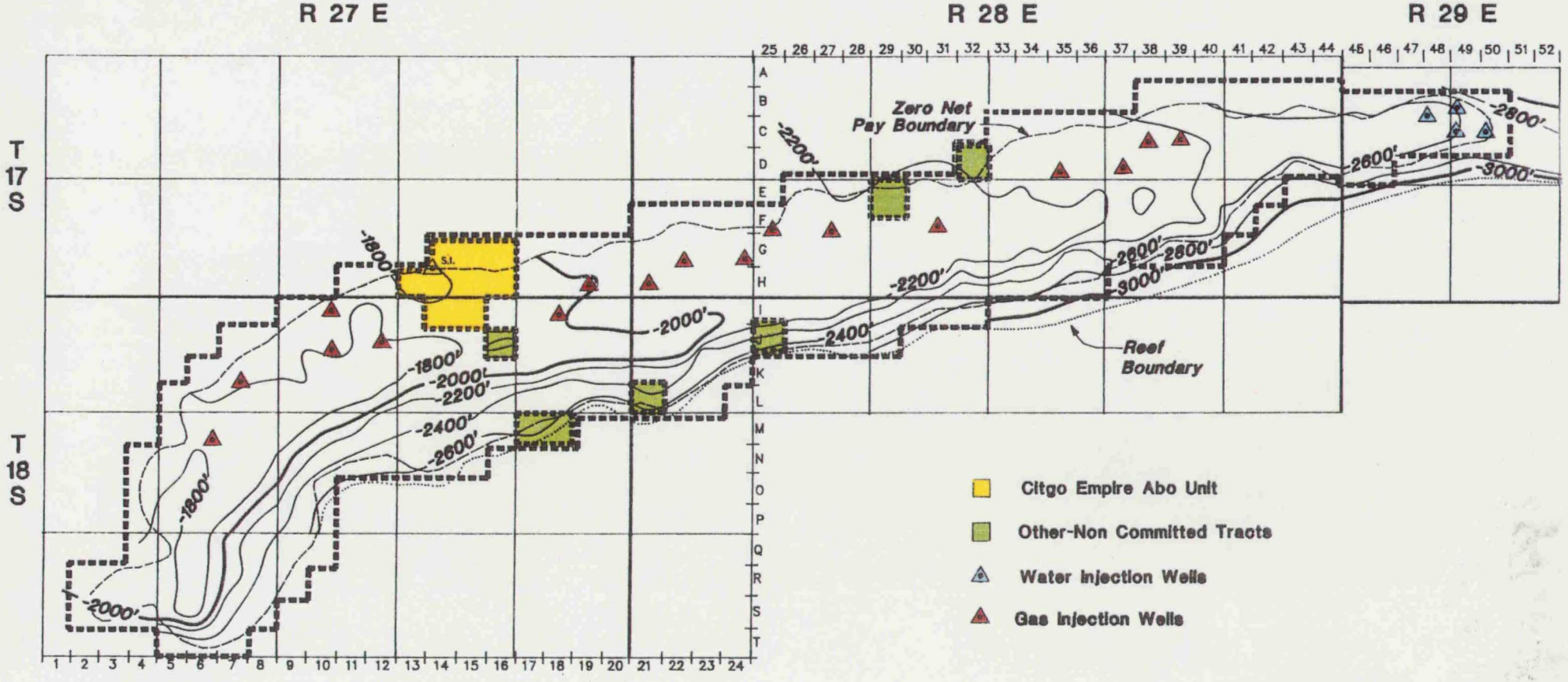
"Reinjection of all available residue gas" is **required** to receive a surface allowable of 65 MMCFPD by Order No. R-4549-F.

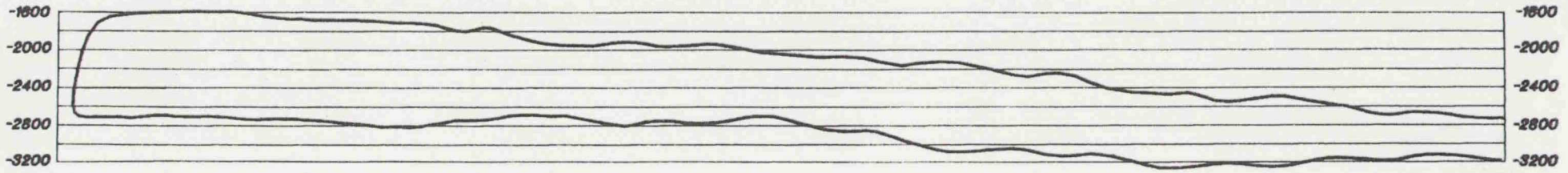

ARCO EMPIRE ABO UNIT
SURFACE ALLOWABLE & PROD. RATE
65,000 MCFPD Allowable
Order No. R-4549-F
Arco Unit
Wet Gas Production
Average Daily Rate Per Year
Produced Gas - MCFPD
70000
65000
60000
55000
50000
1984
1986
1988
1990
YEAR

EMPIRE ABO POOL

Eddy County, New Mexico

Top Of Reef





West-East Front Elevation

From Order No. R-4808
Case No. 5213
June 11, 1974
Application of Cities Service for a pressure maintenance project

Rule 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

Rule 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

To calculate reservoir voidage using Attachment A & B the following must be known:

1. Oil production
2. Gas production
3. Gas injection
4. Average reservoir pressure @ -2264' subsea

From the operators monthly Allowable Request Letters, Pressure Project Maintenance Report, Reservoir Pressure Report Form C-124 and the NMOCD Statistical Reports we have prepared on the following pages a detailed pressure history to be used for calculating voidage.

Row 1 is the year in which pressures were recorded in the NMOCD Statistical Report.

Row 2 is the subsea depth at which the pressures were reported.

Rows 3-8 are the reported pressures of the six wells in the Citgo Unit.

Row 9 is the arithmetic average pressure for the unit.

Row 10 is the porosity-feet weighted average pressure for the unit.

Row 11 is the porosity-feet weighted average reservoir pressure at the correct datum of -2264'.

Row 12 are the pressures reported by the operator in monthly allowable request letters to the NMOCD.

CITGO EMPIRE ABO BHP II REV

1	**YEAR**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**
2	**DATUM**	-2400	-2400	2100	-2400	-2400	-2400	-2400	-2100
3	Tract 2 Magruder A #13	1375		1160	1246	1025	1120	967	923
4	Tract 2 Magruder A #14	1213		1160	1075	1320	1328	1184	1133
5	Tract 1 Russell C #9	1079		1302	1487	1368	1272	1191	1072
6	Tract 1 Russell C #10	1198	1158	1296	1371	1034	1176	1110	1007
7	Tract 3 STate CE #5			1214	1190	1142	1171	1065	1017
8	Tract 4 Wright State #4B	1384		1173	1149	1123	1227	1129	1088
9	Arithmetic Avg.	1250	1158	1218	1253	1169	1216	1108	1040
10	Porosity-ft. Wt. Avg.	1278	1158	1204	1223	1160	1221	1111	1049
11	**Press@Res. MP -2264 SS**	**1273**	**1153**	**1219**	**1218**	**1155**	**1216**	**1099**	**1087**
12	**Press Reported by the Operator in Allowable Letters to the NMOCD**	* *	* *	**1380**	**1321**	**1321**	**1192**	**1192**	**1191**

13

CITGO EMPIRE ABO BHP II REV

1	**YEAR**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**
2	**DATUM**	-2100	-2400	-2400	-2400	-2100	-2100	-2100
3	Tract 2 Magruder A #13	895	860	841	795	739	786	
4	Tract 2 Magruder A #14	1131	1082	1047	1006	956	931	
5	Tract 1 Russell C #9	1108	1087	1036	959	941	868	
6	Tract 1 Russell C #10	1012	968	932	896	859	811	857
7	Tract 3 STate CE #5	994	942	909	865	808	800	761
8	Tract 4 Wright State #4B	1074	1026	991	953	846	892	
9	Arithmetic Avg.	1036	994.2	959.3	912.3	858.2	848	809
10	Porosity-ft Wt. Avg.	1042	999.3	965.3	921.1	858.6	858.7	787.9
11	**Press@Res. MP -2264 SS**	**1047**	**993**	**961**	**906**	**898**	**900**	**821**
12	**Press Reported by the Operator In Allowable Letters to the NMOCD**	**1191**	**1035**	**1035**	**1035**	**1035**	**1035**	**1030**

CITGO EMPIRE ABO BHP II REV

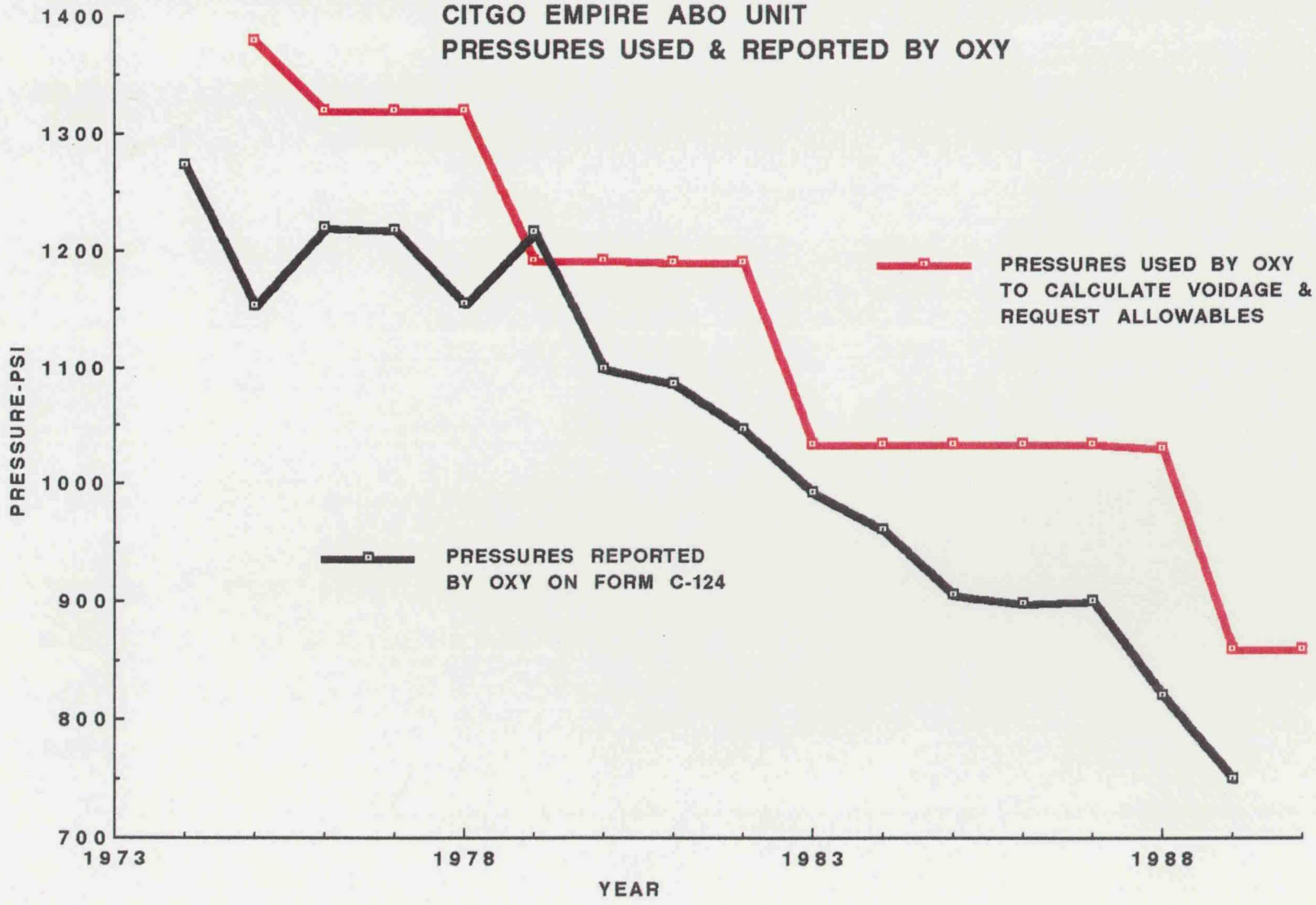
1	**YEAR**	**1989**	**1990**
2	**DATUM**	-2400	* *
3	Tract 2 Magruder A #13	762	* *
4	Tract 2 Magruder A #14	* *	* *
5	Tract 1 Russell C #9	* *	* *
6	Tract 1 Russell C #10	* *	* *
7	Tract 3 STate CE #5	739	* *
8	Tract 4 Wright State #4B	* *	* *
9	Arithmetic Avg.	751	* *
10	Porosity-ft. Wt. Avg.	756	* *
11	**Press@Res. MP -2264 SS**	**751**	* *
12	**Press Reported by the Operator in Allowable Letters to the NMOCD**	**860**	**860**

Citgo Unit Average Reservoir Pressure Summary

YEAR	PRESS. USED BY OPERATOR IN ALLOWABLE REQ.	PRESSURE FROM C-124's & STATISICAL RPTS.
1974	****	1273
1975	1380	1153
1976	1321	1219
1977	1321	1218
1978	1321	1155
1979	1192	1216
1980	1192	1099
1981	1191	1087
1982	1191	1047
1983	1035	993
1984	1035	961
1985	1035	906
1986	1035	898
1987	1035	900
1988	1030	821
1989	860	751
1990	860	****

The operator has used a higher pressure to calculate voidage in **14** of the **15** years that we can compare from the table above than what is supported by the statistical data.

Using a higher than actual pressure to calculate voidage yields voidage amounts that are lower than actual. **This enables the operator to produce more than they are entitled to by Order No. R-4808.**


CITGO EMPIRE ABO UNIT
PRESSURES USED & REPORTED BY OXY
PRESSURE-PSI
1400
1300
1200
1100
1000
900
800
700
1973
1978
1983
1988
YEAR
PRESSURES USED BY OXY TO CALCULATE VOIDAGE & REQUEST ALLOWABLES
PRESSURES REPORTED BY OXY ON FORM C-124

CITGO EMPIRE ABO UNIT AREA

Reservoir Voidage Formula - Gas Injection Credit

Equation 1: $Vrvb = Qo \quad [Bo + (Rpn - Rs)\ Bg]$

Where:

Vrvb = Reservoir voidage, bbls. per day
Qo = Oil Production rate, Stock tank bbls. per day
Bo = Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
Rpn = Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn = Rp\ (1.0 - \frac{Gi}{Gp})$$

Where:

Rp = producing gas-oil ratio, MCF/BO
Gi = daily volume of gas injected MCF/Day
Gp = daily volume of gas produced, MCF/Day

Rs = Solution gas-oil ratio (2), MCF/STBO
Bg = Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P_{base} = 15.025 psia P_{bp} = 2231 psia T_{res} = 109°F (569° R)

P_r	B_o	R_s	R_s	Z
15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.345	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P_r = Reservoir average pressure at datum -2264' subsea, lbs/in absolut

B_o = Oil formation volume factor, reservoir volumetric bbls/stock tank bbl.

B_g = Gas formation volume factor, reservoir volumetric bbls/thousand std. cu. ft.

R_s = Solution Gas/Oil Ratio, Thousand std. cu. ft/stock tank bbls. oil.

Z = Gas Compressibility Factor

Attachment "B"
Order No. R-4808

YV w/o RVBG w/Rev Pres

CITGO EMPIRE ABO UNIT
YEARLY VOIDAGE CALCULATIONS

		A	B	C	D	E	F
	YEAR	GAS PROD. (MCF)	GAS INJ. (MCF)	OIL PROD. (STB)	**ACTUAL YEARLY VOIDAGE (RVB)**	**YEARLY ALLOWABLE (RVB)**	** YRLY. VOID. MINUS YRLY ALL. (RVB)
1	*1974	343882	0	72865	631530	451452	180078
2	1975	1016087	486807	117151	971456	807745	163711
3	1976	1441799	1007840	94879	859737	809958	49779
4	1977	1310454	905104	66327	780269	807745	-27476
5	1978	1301134	852494	51582	879926	807745	72181
6	1979	1191601	760916	37793	870544	807745	62799
7	1980	1241728	818955	27132	846103	809958	36145
8	1981	1313541	944714	19706	805322	807745	-2423
9	1982	1279490	936239	19370	768845	807745	-38900
10	1983	1299282	930701	16857	861067	807745	53322
11	1984	1270003	973741	13801	733159	809958	-76799
12	1985	1148885	868164	9909	728584	807745	-79161
13	1986	1058923	712448	8489	943205	807745	135460
14	1987	461636	412548	5842	133481	807745	-674264
15	1988	23680	19478	838	11414	809958	-798544
16	1989	339764	0	4919	1051978	807745	244233
17	1990	360629	0	3226	1214095	807745	406350

*Production data starts at the unitization date of 6/74
**Positive values are overproduction

CITGO EMPIRE ABO UNIT
YEARLY VOIDAGE CALCULATIONS

Columns A,B & C are production data as supported by the operators letters reporting voidage to the NMOCD and by the NMOCD statistical reports.

Column D is the yearly voidage as calculated by the voidage equation of Attachment A of Order No. R-4808.

Column E is the voidage allowable from Order No. R-4808 times the number of days in the year. (2213 RVBPD)(365)=807745

Column F is the yearly voidage (Col. D) minus the yearly voidage allowable (Col. E). Overproduction is therefore positive.

Order No. R-4808 provides for a method to accumulate a gas bank during times of gas injection. The gas bank was intended to allow the unit to "maintain allowable production during times of injection compressor shut downs and similar problems". The status of the gas bank must be considered before any theoretical overage/underage calculation can be completed.

From Order No. R-4808
Case No. 5213
June 11, 1974
Application of Cities Service for a pressure maintenance project

Rule 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

Rule 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

Rule 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

Rule 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) month, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) **In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.**

Rule 7 & Rule 9(a) indicate that the gas bank increases when the amount of gas injected in a month is enough to make calculated reservoir voidage less than 2213 RVBPD.

Therefore, the amount of gas that would have to be injected to maintain voidage at 2213 RVBPD must be calculated. This is called Reservoir Voidage Balance Gas by the Order. When actual gas injection is greater than Reservoir Voidage Balance Gas then the gas bank is credited and becomes larger.

When actual gas injection is less than the Reservoir Voidage Balance Gas the gas bank is debited and becomes smaller. **A negative bank status indicates the unit is overproduced and should be shut in the following month to make up overproduction as per Rule 9 (e).**

The following pages are calculations of the gas bank status and the Citgo Units theoretical overage/underage position.

YV w/o RVBG w/Rev Pres

CITGO EMPIRE ABO UNIT
YEARLY VOIDAGE CALCULATIONS

		A	B	C	D	E	F	G
							**	**
	YEAR	GAS PROD. (MCF)	GAS INJ. (MCF)	OIL PROD. (STB)	**ACTUAL YEARLY VOIDAGE (RVB)**	**YEARLY ALLOWABLE (RVB)**	YRLY. VOID. MINUS YRLY ALL. (RVB)	CUM O/U (RVB)
1	*1974	343882	0	72865	631530	451452	180078	180078
2	1975	1016087	486807	117151	971456	807745	163711	343789
3	1976	1441799	1007840	94879	859737	809958	49779	393568
4	1977	1310454	905104	66327	780269	807745	-27476	366092
5	1978	1301134	852494	51582	879926	807745	72181	438273
6	1979	1191601	760916	37793	870544	807745	62799	501072
7	1980	1241728	818955	27132	846103	809958	36145	537217
8	1981	1313541	944714	19706	805322	807745	-2423	534794
9	1982	1279490	936239	19370	768845	807745	-38900	495894
10	1983	1299282	930701	16857	861067	807745	53322	549216
11	1984	1270003	973741	13801	733159	809958	-76799	472417
12	1985	1148885	868164	9909	728584	807745	-79161	393256
13	1986	1058923	712448	8489	943205	807745	135460	528716
14	1987	461636	412548	5842	133481	807745	-674264	0
15	1988	23680	19478	838	11414	809958	-798544	0
16	1989	339764	0	4919	1051978	807745	244233	244233
17	1990	360629	0	3226	1214095	807745	406350	**650583**

*Production data starts at the unitization date of 6/74

**Positive values are overproduction

CITGO EMPIRE ABO UNIT
YEARLY VOIDAGE CALCULATIONS

Columns A,B & C are production data as supported by the operators letters reporting voidage to the NMOCD and by the NMOCD statistical reports.

Column D is the actual yearly voidage as calculated by the voidage equation of Attachment A of Order No. R-4808.

Column E is the voidage allowable from Order No. R-4808 times the number of days in the year. (2213 RVBPD)(365)=807745

Column F is the yearly voidage (Col. D) minus the yearly voidage allowable (Col. E). Overproduction is therefore positive.

Column G is a cumulation of column F. **Positive numbers represent overproduction. Under production does not accumulate after overage is made up in 1987 because the gas bank balance is still not positive. The gas bank would have become positive in 1988 had the unit been injecting gas.**

SUMMARY
CITGO EMPIRE ABO UNIT
VOIDAGE CALCULATIONS

There has never been a positive gas bank in the Citgo Empire Abo Unit from which overproduction could occur. Therefore, any amount produced in excess of 2213 RVBPD is overproduction.

Column F indicates that the unit has been **overproduced in 10 of the 17 years** since it was unitized.

Column G indicates that **overproduction from as far back as 1974 was not made up until 1987.** Order No. R-4808 requires that overproduction be compensated for with underproduction in the following month. Col G also shows that **as recently as 1986 the unit was overproduced by 528,716 reservoir volumetric barrels and, is overproduced by 650,583 RVB at the end of 1990.**

Citgo Prod. History/Yrly

CITGO EMPIRE ABO UNIT
PRODUCTION HISTORY

	A	B	C	D	E	F
YEAR	NP/YR BO	CUM NP BO	GP/YR MCF	CUM GP MCF	GI/YR MCF	CUM GI MCF
1959		0		0	0	0
1962	327278	327278	561233	561233	0	0
1963	148166	475444	197881	759114	0	0
1964	147946	623390	196429	955543	0	0
1965	159828	783218	210072	1165615	0	0
1966	180344	963562	266591	1432206	0	0
1967	198311	1161873	295305	1727511	0	0
1968	191125	1352998	332122	2059633	0	0
1969	245095	1598093	379936	2439569	0	0
1970	268000	1866093	467976	2907545	0	0
1971	278239	2144332	494085	3401630	0	0
1972	225764	2370096	488012	3889642	0	0
1973	210634	2580730	627091	4516733	0	0
1974	142525	2723255	628420	5145153	0	0
1975	117151	2840406	1016087	6161240	486807	486807
1976	94879	2935285	1441799	7603039	1007840	1494647
1977	66327	3001612	1310454	8913493	905104	2399751
1978	51582	3053194	1301134	10214627	852494	3252245
1979	37793	3090987	1191601	11406228	760916	4013161
1980	27132	3118119	1241728	12647956	818955	4832116
1981	19706	3137825	1313541	13961497	944714	5776830
1982	19370	3157195	1279490	15240987	936239	6713069
1983	16857	3174052	1299282	16540269	930701	7643770
1984	13801	3187853	1270003	17810272	973741	8617511
1985	9909	3197762	1148885	18959157	868164	9485675
1986	8489	3206251	1058923	20018080	712448	10198123
1987	5842	3212093	461636	20479716	412548	10610671
1988	838	3212931	23680	20503396	19478	10630149
1989	4919	3217850	339764	20843160	0	10630149
1990	3226	**3221076**	360629	**21203789**	0	**10630149**

Gas Recovery = 21.2 BCF - 10.6 BCF = 10.6 BCF

ORIGINAL GAS IN PLACE
CITGO EMPIRE ABO UNIT

1. Original Reservoir Pressure = 2359 psi.

2. Boi = 1.606 RVB/STB

3. Bgi = 0.933 RVB/MCF

4. Rsi = 1250 SCF/STB

5. OOIP = 4,449,530 STB

6. OGIP = FREE GAS + SOLUTION GAS

7. FREE GAS =
(38 Ac-Ft)(7758 Bbl/Ac.Ft) / (0.933 RVB/MCF)
=316 MMCF

8. SOLUTION GAS = OOIP(Rsi) = (4449530 STB)(1250 SCF/STB)=
5.562 BCF

9. **OGIP = 5.562 + .316 = 5.878 BCF**

% GAS RECOVERY

1. Produced gas = 10.6 BCF

2. OGIP = 5.878 BCF

3. **% Recovery** = (10.6/5.878)(100)= **180 %**

CITGO EMPIRE ABO UNIT

CALCULATED GAS INFLUX

A	B	C	D	E	F
YEAR	AVERAGE RES. PRESS. PSI	CUM OIL PRODUCTION STB	CUM GAS PRODUCTION MCF	CUM GAS INJECTION MCF	CALCULATED CUM GAS INFLUX MCF
1959	2359	0	0	0	0
1962	1952	327,278	561,233	0	228,576
1963	1937	475,444	759,114	0	437,865
1964	1875	623,390	955,543	0	537,964
1965	1771	783,218	1,165,615	0	555,546
1966	1688	963,562	1,432,206	0	659,695
1967	1605	1,161,873	1,727,511	0	773,222
1968	1528	1,352,998	2,059,633	0	921,724
1969	1376	1,598,093	2,439,569	0	896,484
1970	1222	1,866,093	2,907,545	0	935,183
1971	1194	2,144,332	3,401,630	0	1,342,861
1972	1147	2,370,096	3,889,642	0	1,673,529
1973	1066	2,580,730	4,516,733	0	2,034,192
1974	1273	2,723,255	5,145,153	0	3,320,007
1975	1153	2,840,406	6,161,240	486,807	3,460,582
1976	1219	2,935,285	7,603,039	1,494,647	4,111,375
1977	1218	3,001,612	8,913,493	2,399,751	4,512,638
1978	1155	3,053,194	10,214,627	3,252,245	4,747,743
1979	1216	3,090,987	11,406,228	4,013,161	5,384,392
1980	1099	3,118,119	12,647,956	4,832,116	5,416,900
1981	1087	3,137,825	13,961,497	5,776,830	5,741,904
1982	1047	3,157,195	15,240,987	6,713,069	5,947,848
1983	993	3,174,052	16,540,269	7,643,770	6,143,510
1984	961	3,187,853	17,810,272	8,617,511	6,335,238
1985	906	3,197,762	18,959,157	9,485,675	6,451,887
1986	898	3,206,251	20,018,080	10,198,123	6,774,228
1987	900	3,212,093	20,479,716	10,610,671	6,829,193
1988	821	3,212,931	20,503,396	10,630,149	6,596,890
1989	751	3,217,850	20,843,160	10,630,149	6,709,195
1990	751	3,221,076	21,203,789	10,630,149	7,069,392

CITGO EMPIRE ABO UNIT
MATERIAL BALANCE SOLUTION

Columns A, B, C & D are a tabulation of the average reservoir pressure and cumulative production by year.

Column E is a listing of the Cumulative Gas Injection by year.

Column F is a solution to the material balance equation indicating a **total gas influx into the Citgo Unit** of **7.1 BCF** at the end of **1990**.

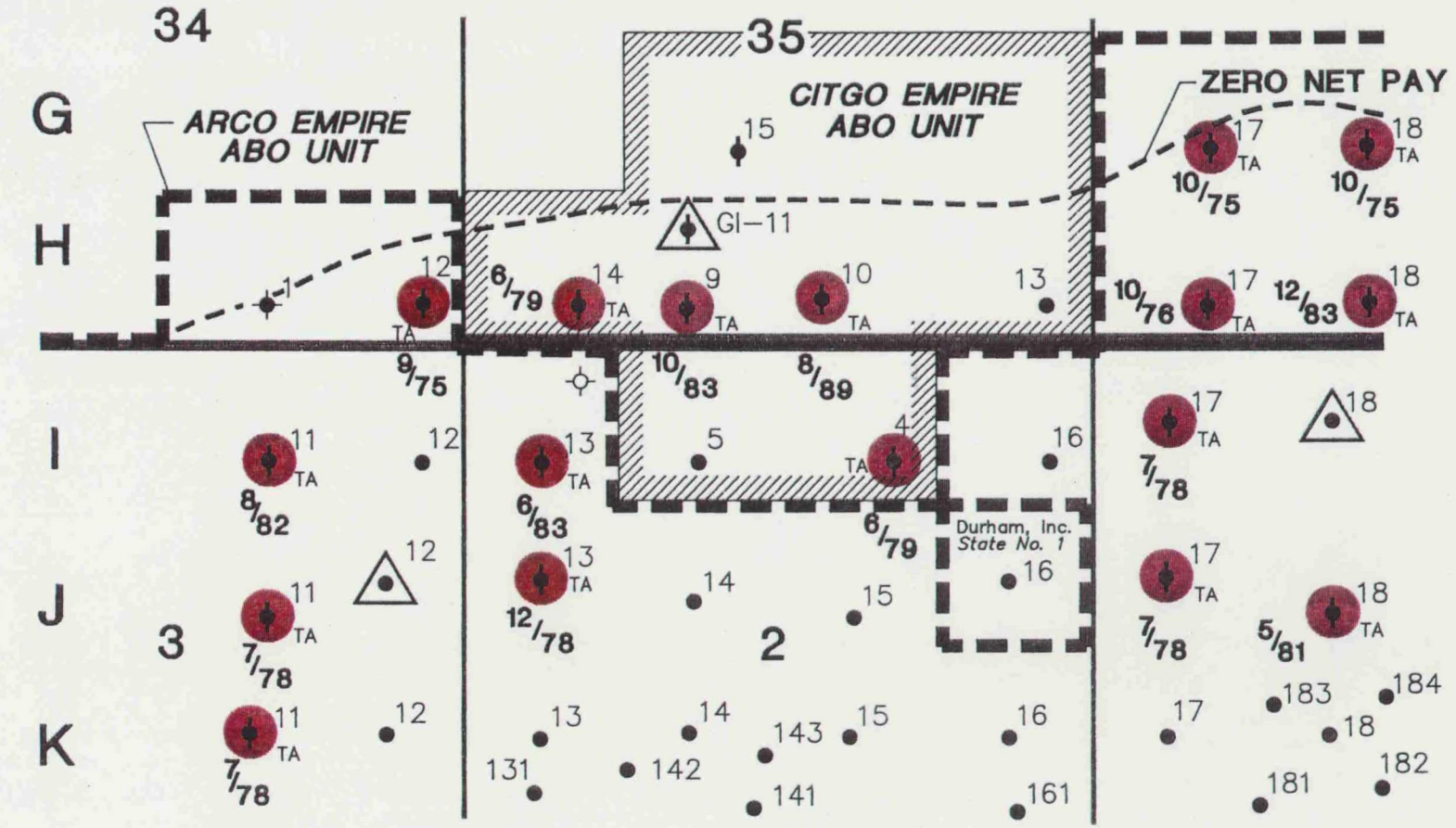
Notice that the near shut in condition of the Unit for 1988 caused the calculated influx to be reduced from 6.8 BCF to 6.6 BCF. Had the Unit been shut in earlier in the life of the reservoir, when reservoir energies were higher, the calculated influx would have been much less.

31

R 27 E

T 17 S

T 18 S



LEGEND

- PLUGGED ABANDONED
- INACTIVE GAS INJECTOR
- GAS INJECTOR
- PRODUCER
- TA TEMPORARY ABONDONED

ARCO Oil and Gas Company
Division of AtlanticRichfieldCompany
Central District Midland, Texas

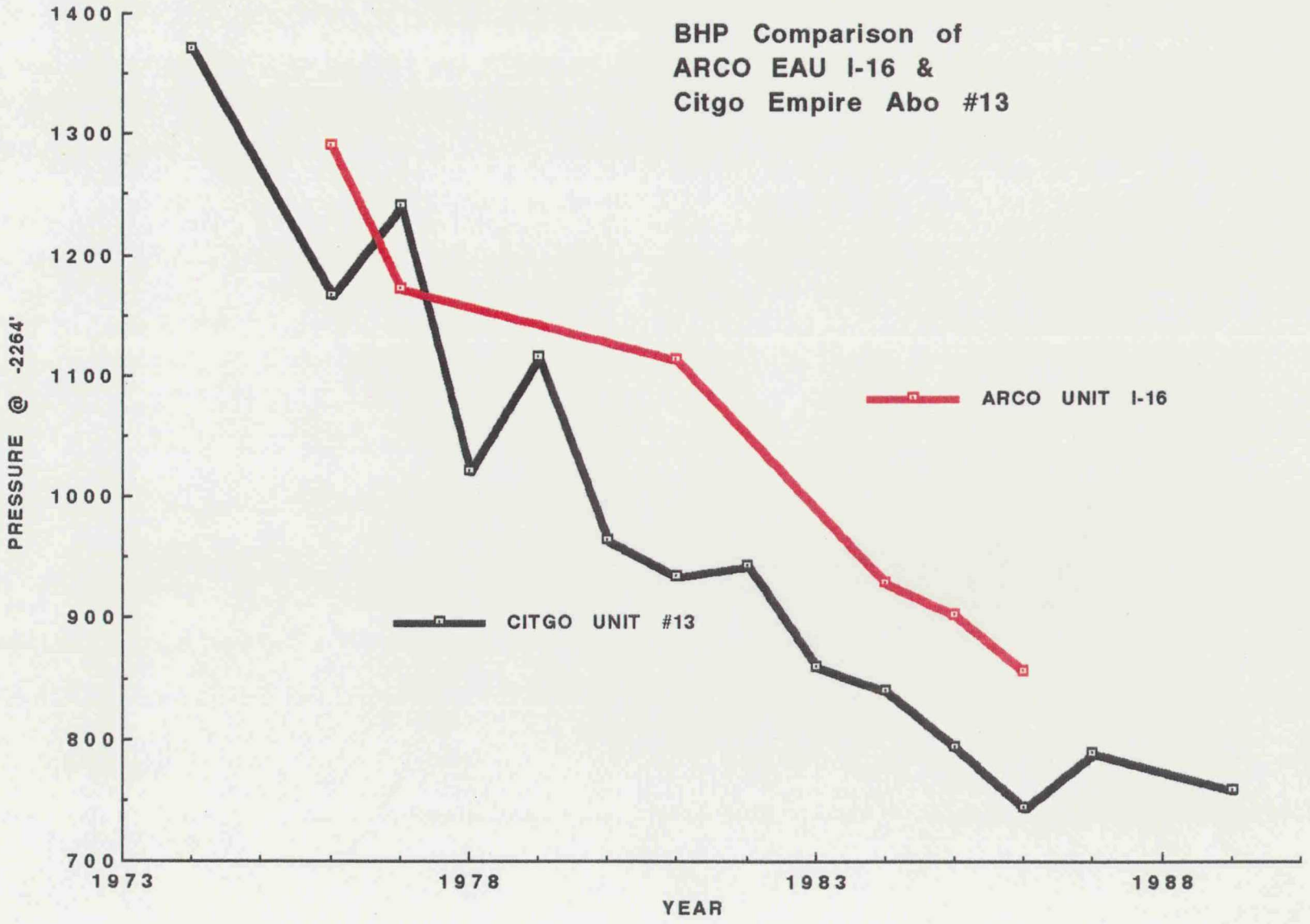
EMPIRE ABO FIELD

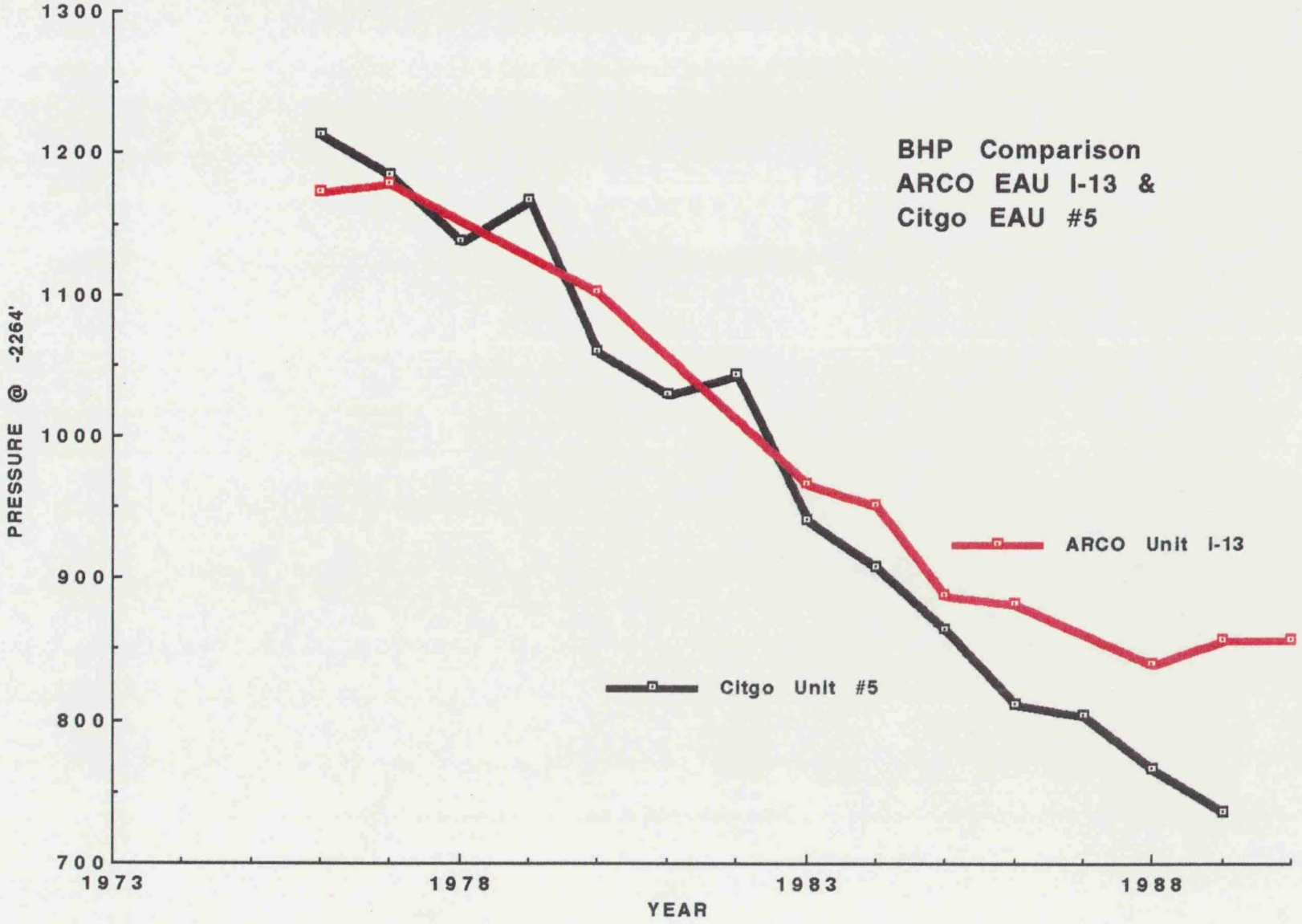
Eddy Co., New Mexico

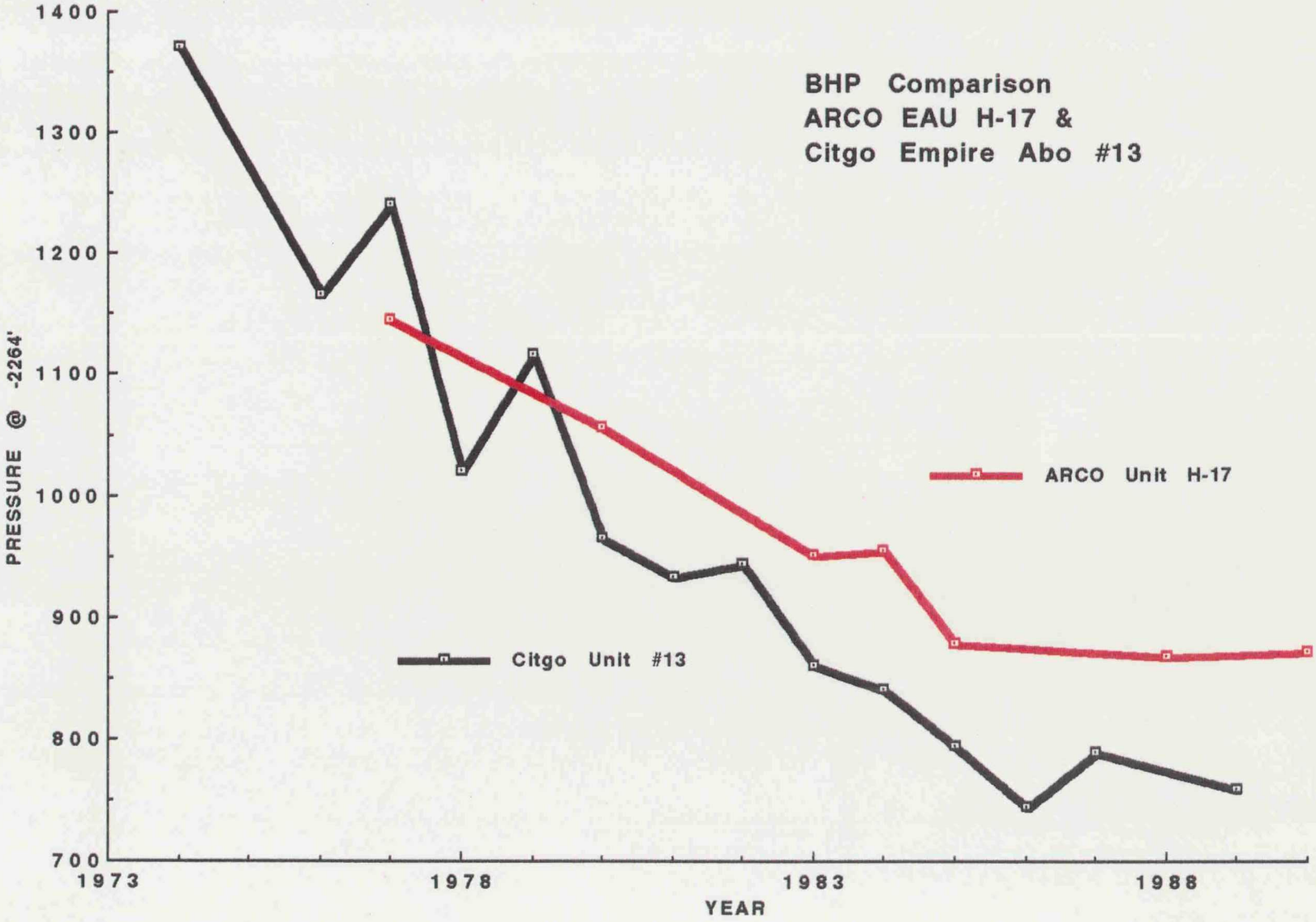
SHUT IN DATES

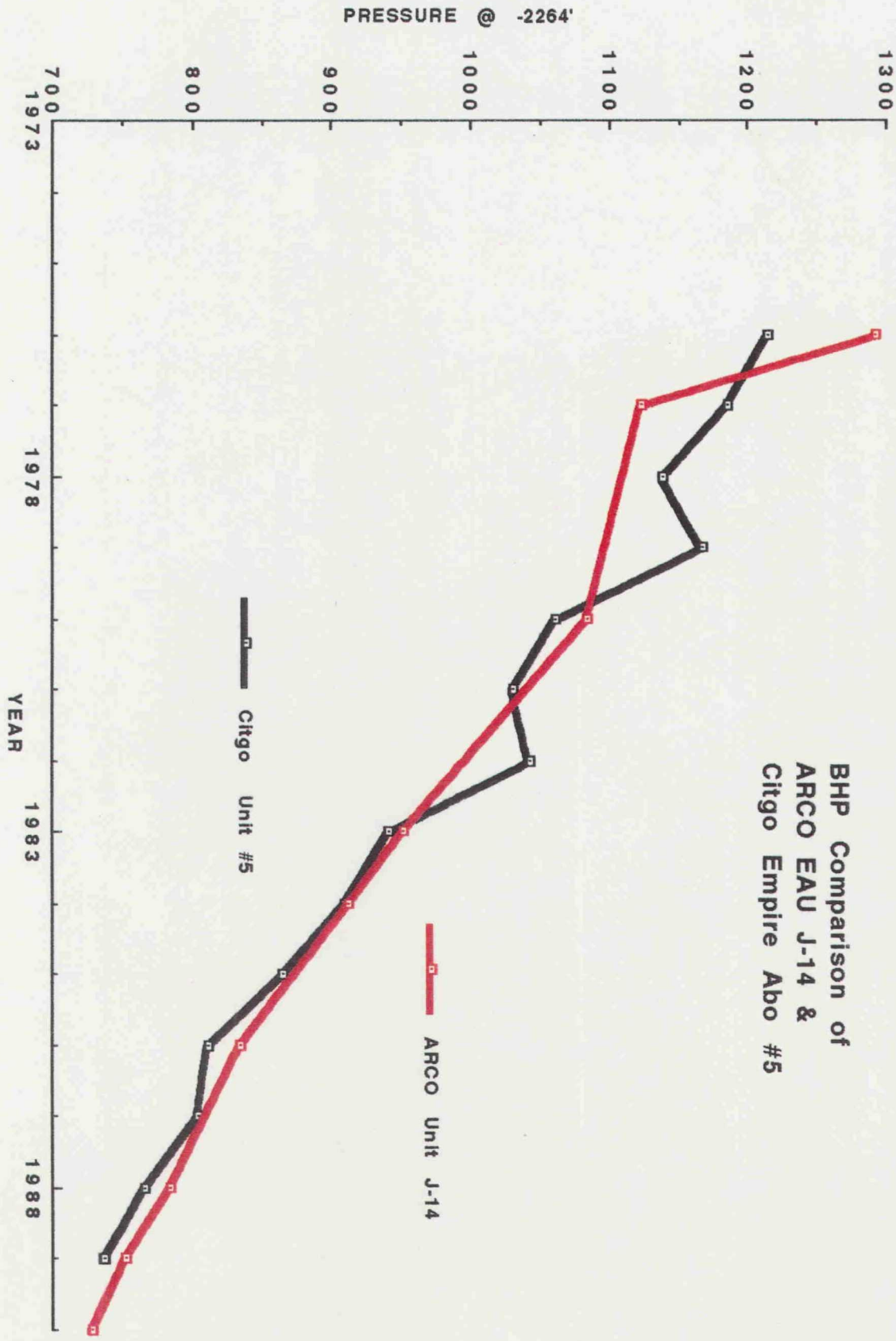
Scale 1"=1500'

By: G. SMALLWOOD	Drawn By	Date: 4/90
Date: 4/90	Revised By	Date: 5/91
Dept: ROCKY MT./N.MEX. AREA	Dwg No. CITGOUT NMPLT01	

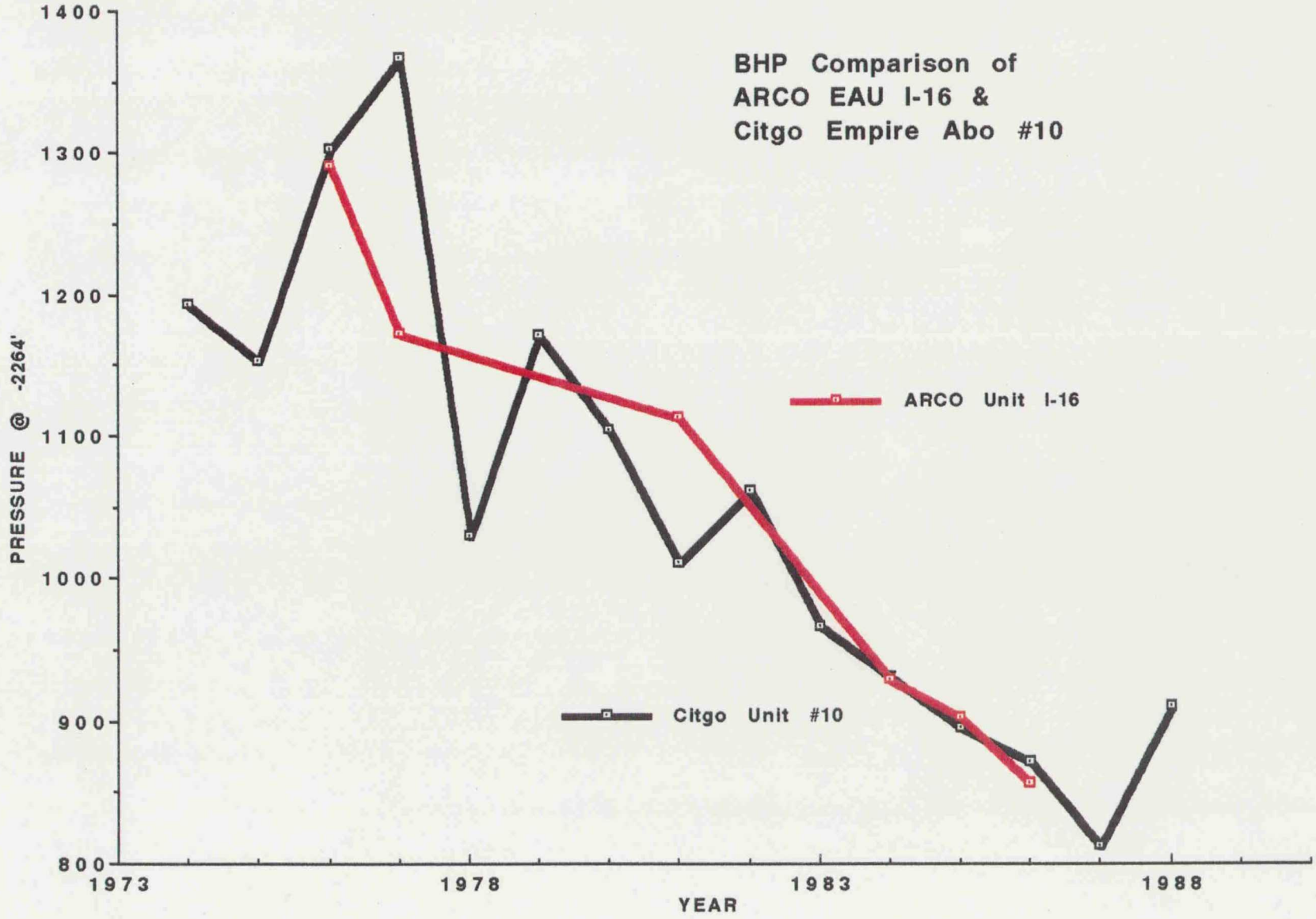

BHP Comparison of
ARCO EAU I-16 &
Citgo Empire Abo #13
ARCO UNIT I-16
CITGO UNIT #13
PRESSURE @ -2264'
1400
1300
1200
1100
1000
900
800
700
1973
1978
1983
1988
YEAR

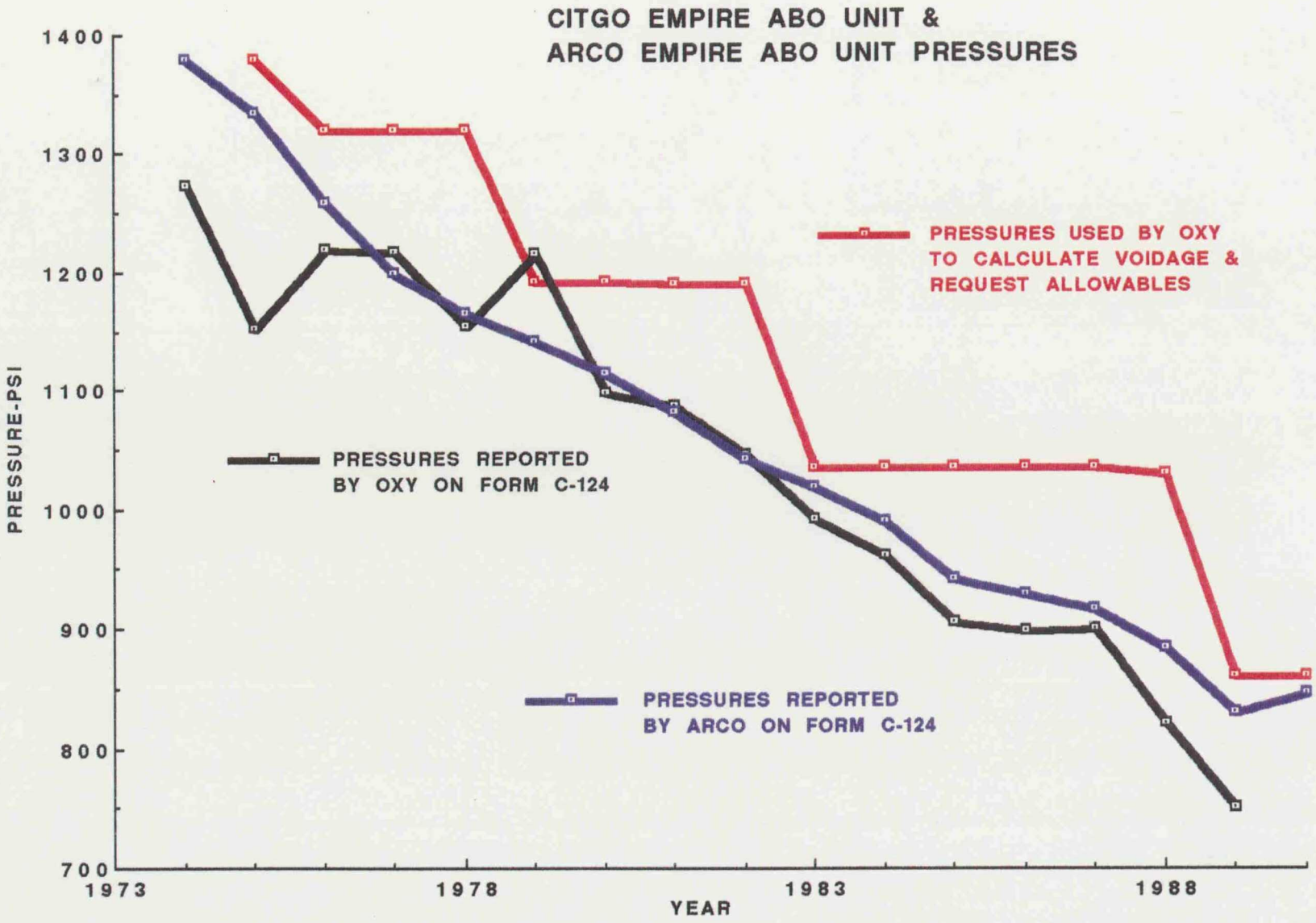

BHP Comparison
ARCO EAU I-13 &
Citgo EAU #5
ARCO Unit I-13
Citgo Unit #5
PRESSURE @ -2264'
1300
1200
1100
1000
900
800
700
1973
1978
1983
1988
YEAR

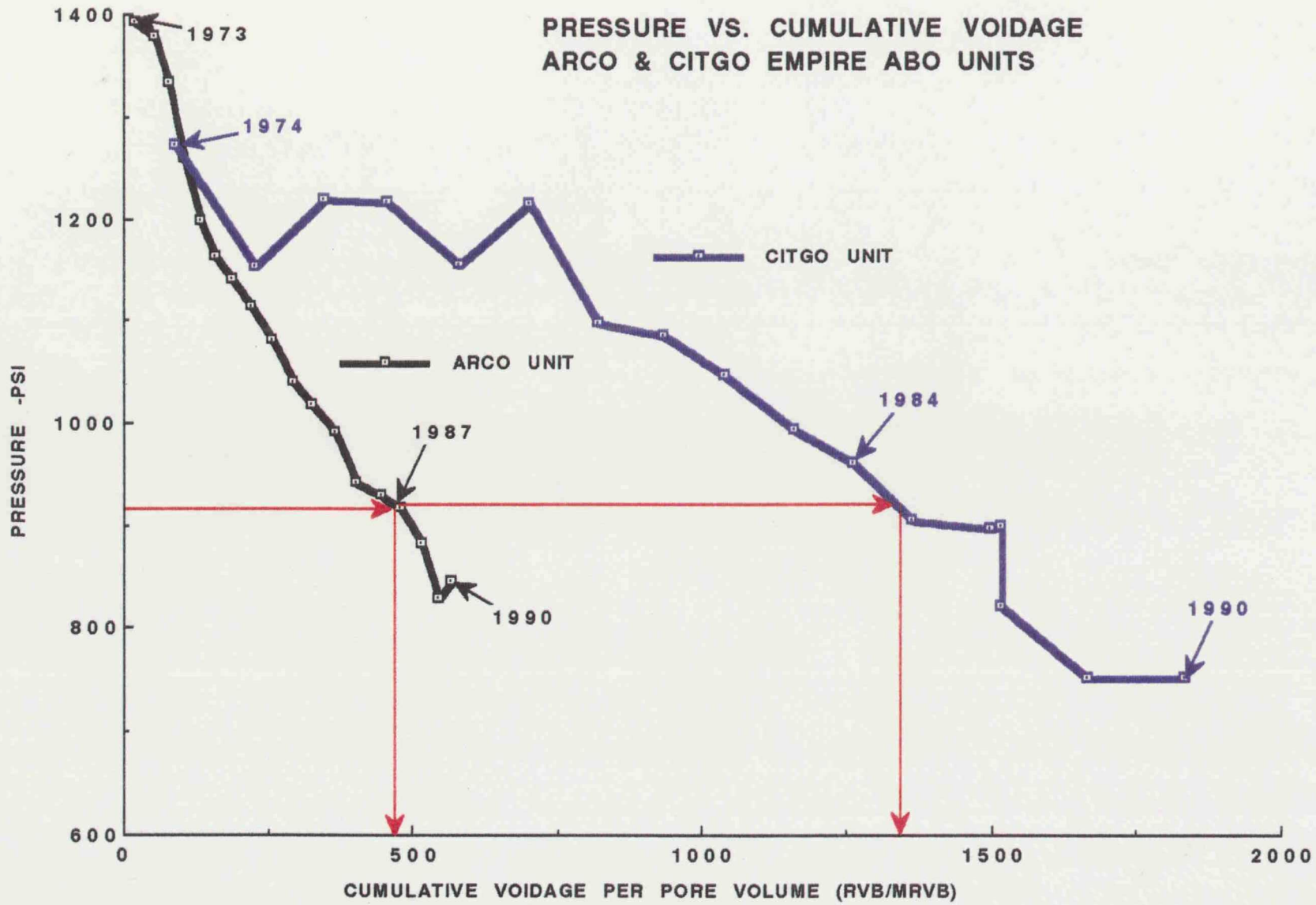

BHP Comparison
ARCO EAU H-17 &
Citgo Empire Abo #13
ARCO Unit H-17
Citgo Unit #13
PRESSURE @ -2264'
1400
1300
1200
1100
1000
900
800
700
1973
1978
1983
1988
YEAR

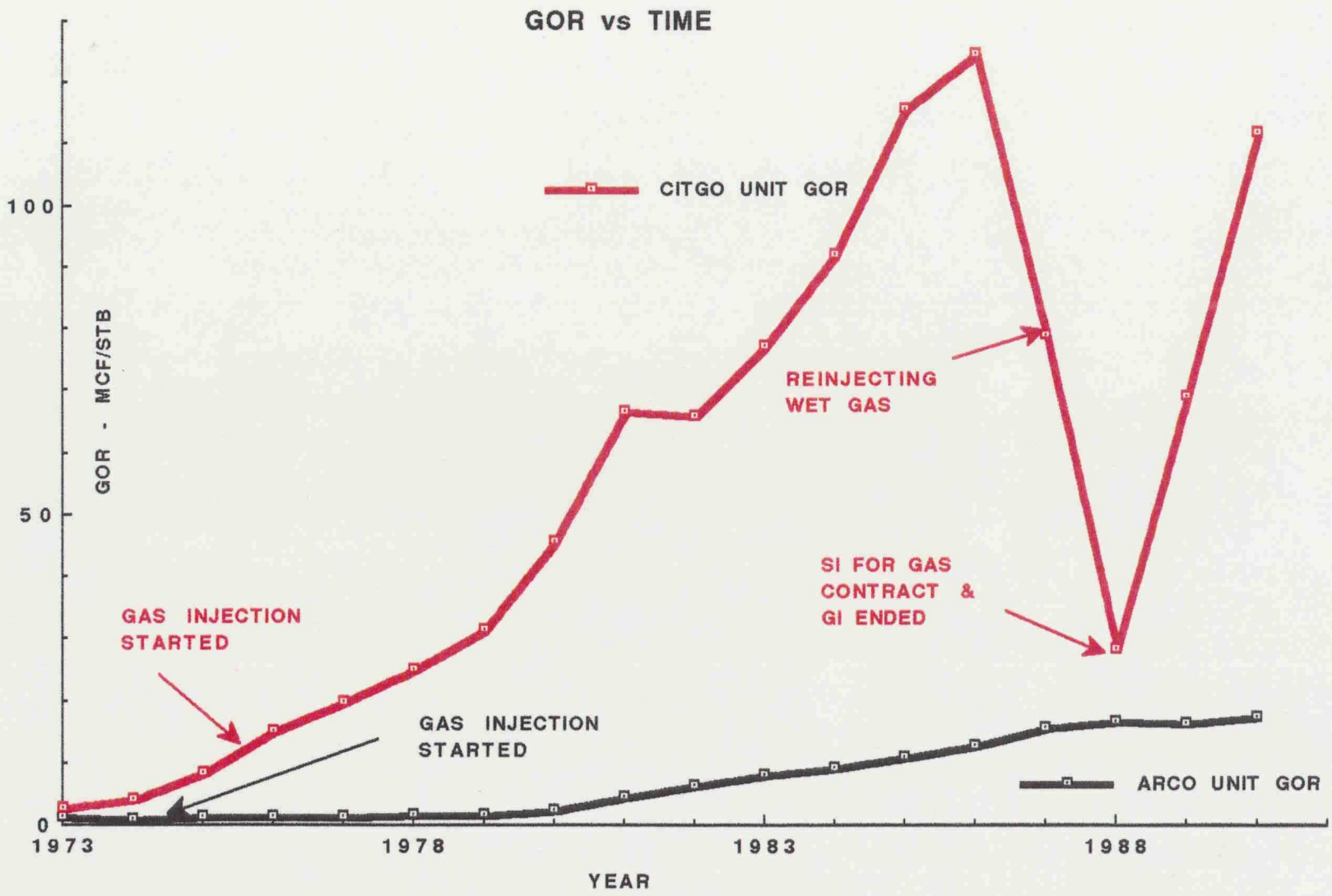


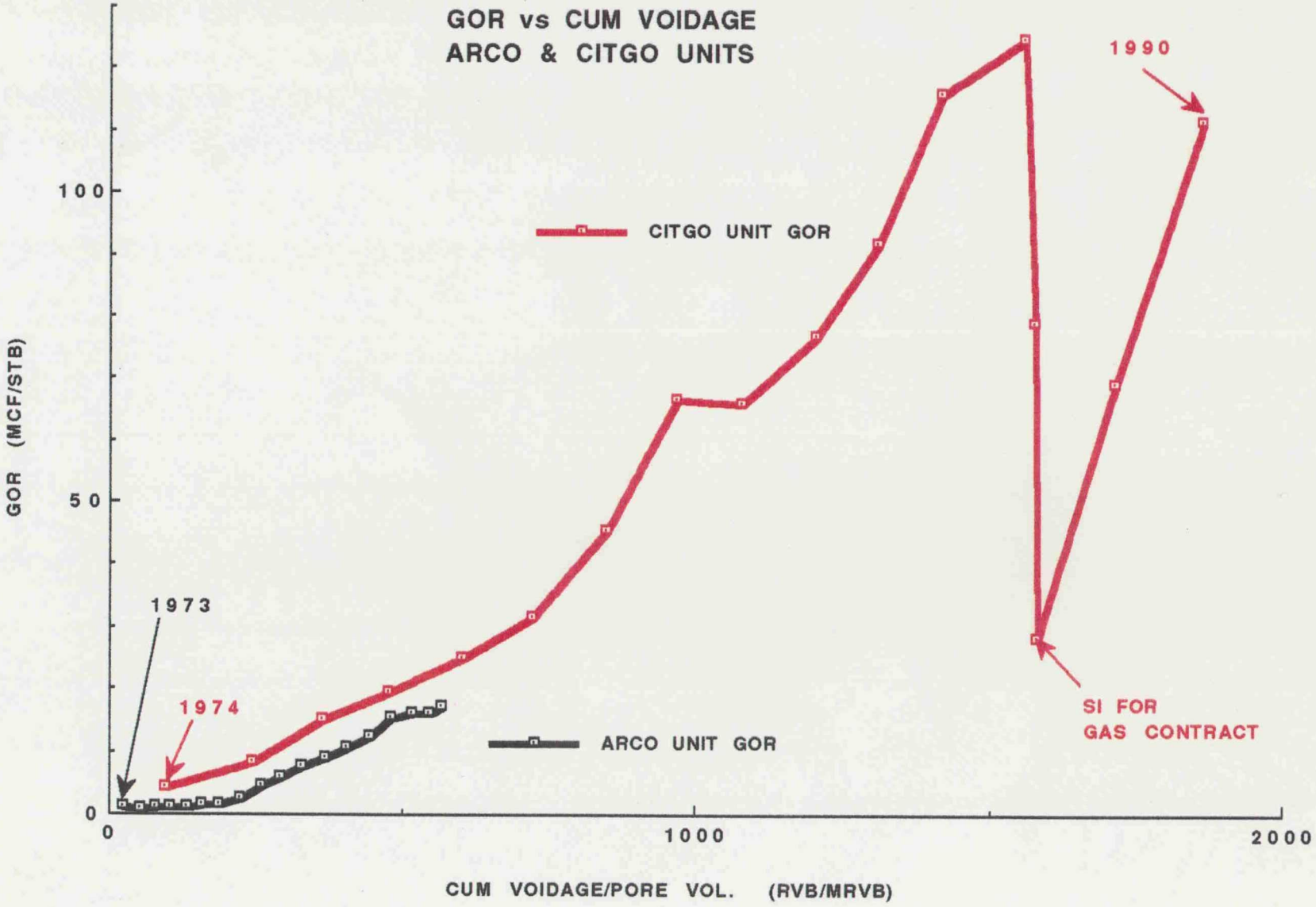
BHP Comparison of
ARCO EAU J-14 &
Citgo Empire Abo #5


BHP Comparison of
ARCO EAU I-16 &
Citgo Empire Abo #10
ARCO Unit I-16
Citgo Unit #10
PRESSURE @ -2264'
1400
1300
1200
1100
1000
900
800
1973
1978
1983
1988
YEAR


CITGO EMPIRE ABO UNIT &
ARCO EMPIRE ABO UNIT PRESSURES
PRESSURE-PSI
1400
1300
1200
1100
1000
900
800
700
1973
1978
1983
1988
YEAR
PRESSURES USED BY OXY
TO CALCULATE VOIDAGE &
REQUEST ALLOWABLES
PRESSURES REPORTED
BY OXY ON FORM C-124
PRESSURES REPORTED
BY ARCO ON FORM C-124


PRESSURE VS. CUMULATIVE VOIDAGE
ARCO & CITGO EMPIRE ABO UNITS
1400
1200
1000
800
600
PRESSURE -PSI
1973
1974
1987
1990
1984
1990
CITGO UNIT
ARCO UNIT
0
500
1000
1500
2000
CUMULATIVE VOIDAGE PER PORE VOLUME (RVB/MRVB)


GOR vs TIME
CITGO UNIT GOR
REINJECTING
WET GAS
SI FOR GAS
CONTRACT &
GI ENDED
GAS INJECTION
STARTED
GAS INJECTION
STARTED
ARCO UNIT GOR
100
50
0
GOR - MCF/STB
1973
1978
1983
1988
YEAR

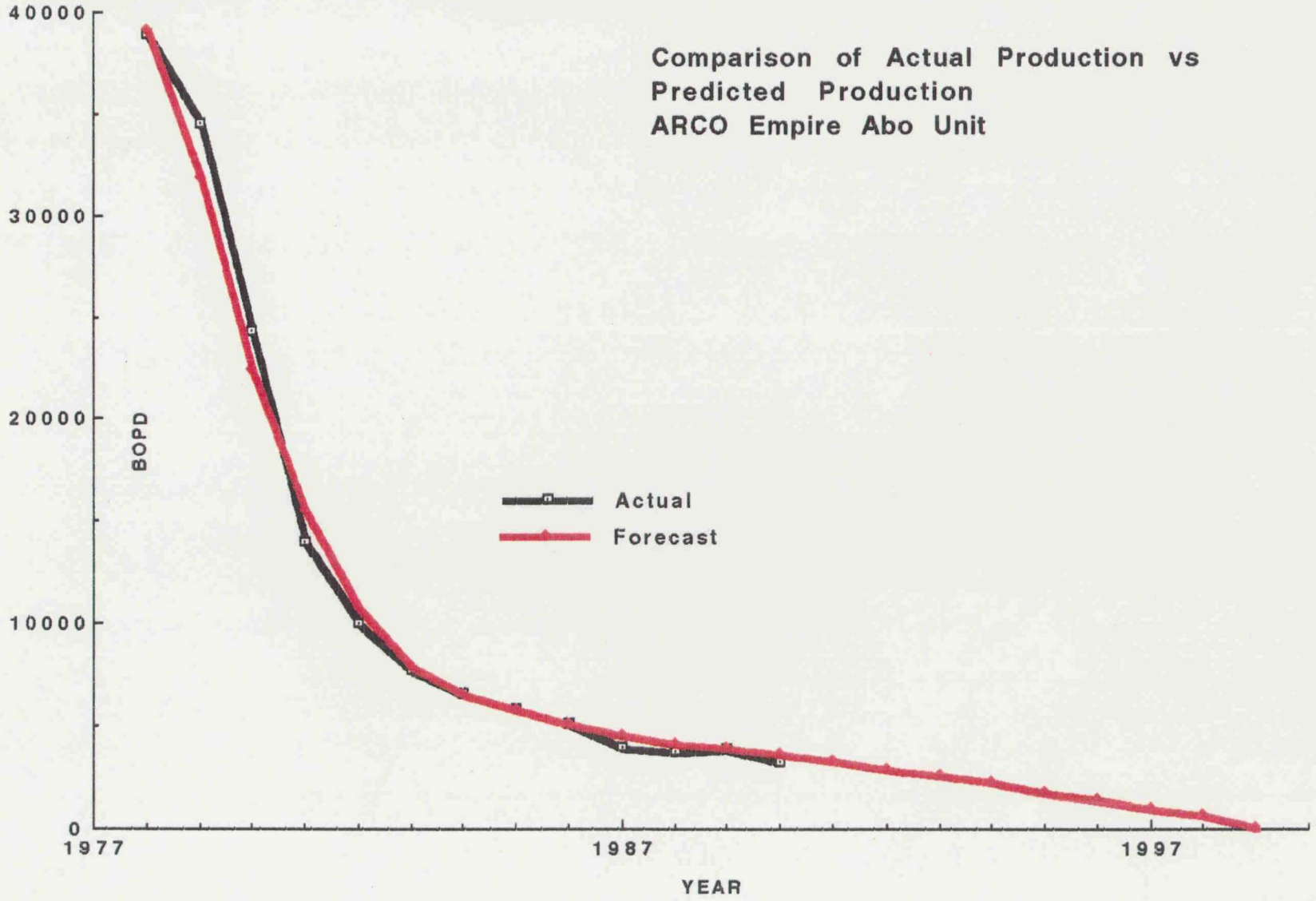

GOR vs CUM VOIDAGE
ARCO & CITGO UNITS
1990
CITGO UNIT GOR
100
50
0
GOR (MCF/STB)
1973
1974
ARCO UNIT GOR
SI FOR
GAS CONTRACT
0
1000
2000
CUM VOIDAGE/PORE VOL. (RVB/MRVB)

EMPIRE ABO POOL
Eddy County, New Mexico
Comparison of CITGO and ARCO Operated Units

		CITGO	ARCO
1.	OPERATOR		
2.	Original Oil in Place, MMSTB	4.45	374
3.	Oil Filled Pore Volume, MMRVB	7.15	600.7
4. *	Hydrocarbon Pore Volume, MMRVB	7.15	600.7
5.	**Gas Recovery % OGIP**	**180 %**	**36 %**
6.	**Oil Recovery % OOIP**	**72 %**	**56 %**
7.	1990 Voidage MMRVB	1.044	13.77

In 1990 the Citgo Unit was drained 6.37 times faster than the Arco Unit. The cumulative average is 3.3 times as fast.

* The initial pore volume occupied by free gas is so small that it takes more significant figures for the hydrocarbon pore volumes (line 4) to appear different than the oil filled pore volume (line 3)


Comparison of Actual Production vs
Predicted Production
ARCO Empire Abo Unit
40000
30000
20000
10000
0
BOPD
Actual
Forecast
1977
1987
1997
YEAR

RECOMMENDATION

We recommend shutting in the Citgo Unit until all overproduction is made up.

With the current surface voidage allowable of the ARCO Unit of 65 MMCFPD, which is contingent upon reinjection of all available residue gas, the estimated subsurface voidage of the ARCO Unit is 18,800,000 RVB per year.

The ARCO Unit is 84 times larger than the Citgo Unit.

We recommend an allowable for the Citgo Unit of 1/84th of the estimated ARCO voidage of 18,800,000 RVB per year or, 613 reservoir volumetric barrels per day.

We recommend that Rule 3 of Order R-4808 be amended to read as follows: **"The maximum daily project allowable be an amount of oil which will result in reservoir voidage no greater than 613 reservoir volumetric barrels per day."**

No other changes are recommended for Order No. R-4808.

OXY USA INC.

NMOCD HEARING

to Rescind Pool Rules (Order No. 4808)

Citgo Empire Abo Unit

Eddy County, New Mexico

Case No. 10356
August 23, 1991

Exhibit #1

This is a plat of the Empire Abo Pool in Eddy County, New Mexico. It shows the various operators in the pool and the two pressure maintenance projects. Arco is the operator of the Empire Abo Unit, which is uncolored, and Oxy is the operator of the Citgo Empire Abo Unit, highlighted in yellow. Each project operates under it's own set of rules, and the other five operators are subject to statewide rules.

EMPIRE ABO POOL

Eddy County, New Mexico

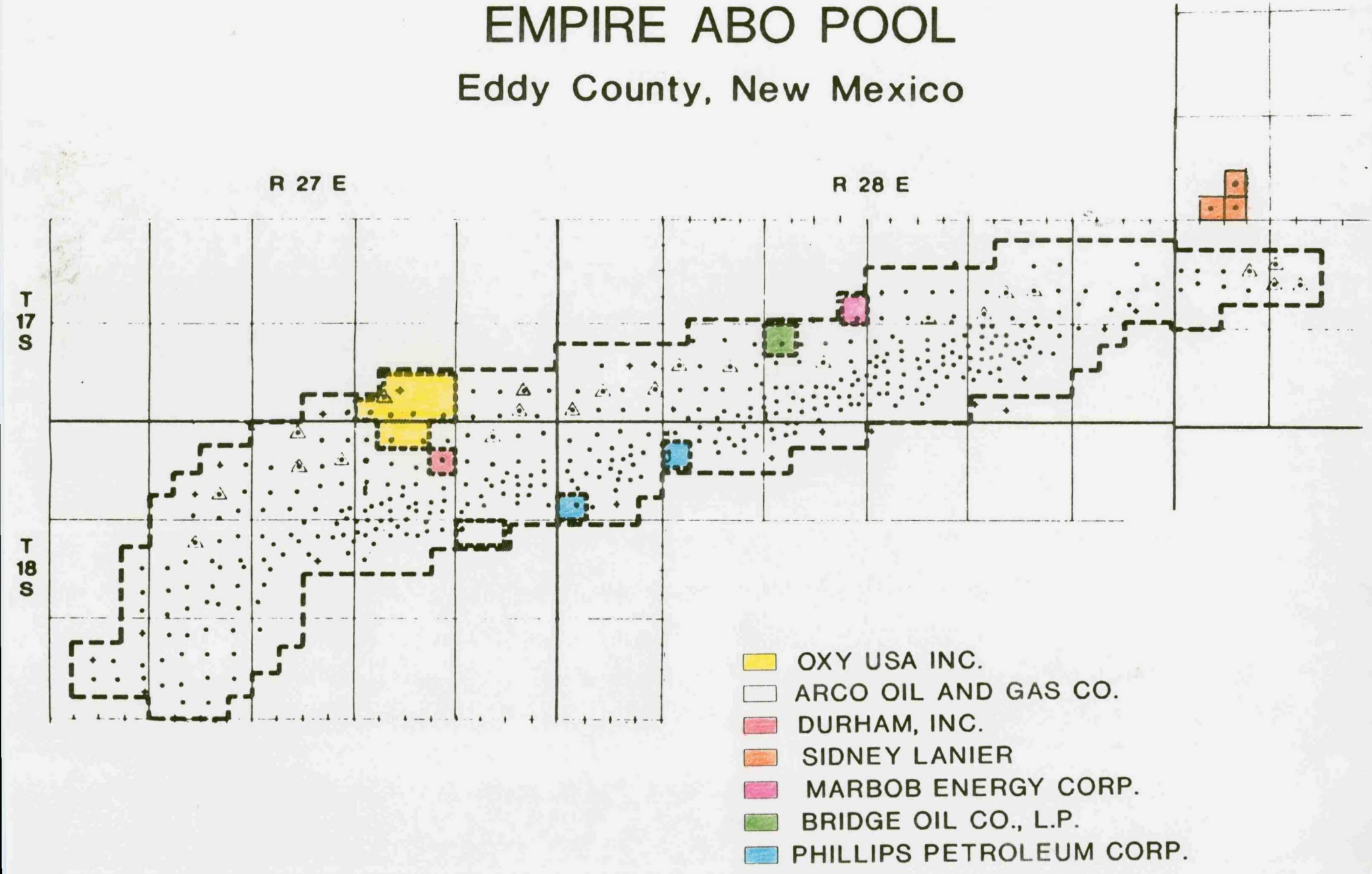
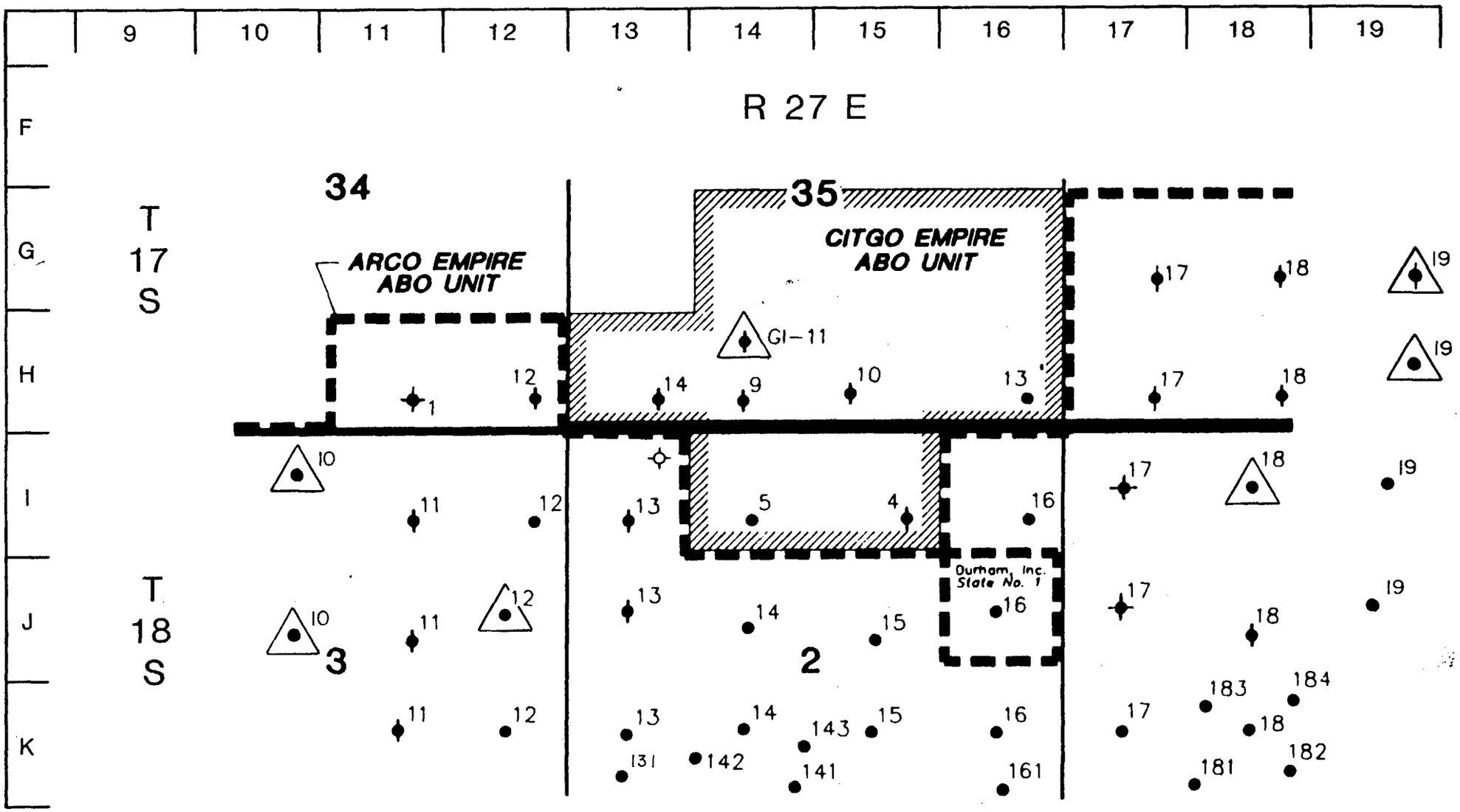


Exhibit #2

This is a plat showing more detail of the Citgo Empire Abo Unit and offset wells. As you can see, we have a temporarily abandoned injection well, the Citgo Empire Abo Unit #111-G (GI-11), and six producing wells of which four are temporarily abandoned.



EMPIRE ABO FIELD

EDDY CO., NEW MEXICO

WELL STATUS

SCALE: 1":1500' MAY 1991

HISTORY OF EMPIRE ABO POOL

Date	Citgo Empire Abo Unit	ARCO Empire Abo Unit
November, 1957	Pool discovery date.	Pool discovery date.
June, 1973		Unit Agreement approved, pressure maintenance project approved.
March, 1974		Gas injection started.
June, 1974	Unit Agreement approved, pressure maintenance project approved.	
June, 1975	Gas injection started.	
April, 1984		Voidage limit of 56,912 RB/Day rescinded, capacity allowable of 65 MMCF/Day adopted. Gas bank language in Rule 4 eliminated.
March, 1988	Gas injection stopped.	

Exhibit #3

Exhibit #3 is a table showing the history of the pool and of both projects. The Empire Abo Pool was discovered in November 1957 and was developed on 40 acre spacing with an allowable of 142 BOPD, 2000:1 GOR. In 1973, Arco unitized the Empire Abo Unit and received NMOCD approval for pressure maintenance rules (Order No. 4549). Gas injection commenced in the Arco Empire Abo Unit the following year.

In 1974, Oxy received approval of the Citgo Empire Abo Unit and pressure maintenance rules similar to Arco's. Gas injection started one year later in mid-1975.

In 1984, Arco sought and received approval to change their project allowable from a voidage limit to a production ceiling of 65 MMCFPD, which was the capacity of their plant. The gas bank language in Rule 4 was eliminated except for the "Extraneous Gas Bank".

In 1988, after unsuccessfully injecting wet gas, Oxy ceased gas injection in the Citgo Empire Abo Unit.

Exhibit #4

This is a copy of NMOCD Order No. 4549-G. It established special rules and regulations to govern the operation of the Arco Empire Abo Unit and was originally adopted in mid-1973.

Rule 3 sets the allowable for the Arco Empire Abo Unit at the amount of oil associated with the production of a maximum of 65 MMCFPD associated gas production.

Rule 5 states that oil allowables shall be assigned such that associated gas production will not exceed 65 MMCFPD and also provides that Arco may exceed the allowable on a cumulative basis by a maximum of 325 MMCF.

Other than the "Extraneous Gas Bank", an accounting procedure to keep track of extraneous gas injected and stored in the Arco Empire Abo Unit, there is no mention of a "Gas Bank" for allowable.

EMPIRE-ABO POOL
(Pressure Maintenance)
Eddy County, New Mexico

Order No. R-4549, Authorizing Atlantic Richfield Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 15, 1973, as Amended by Order No. R-4549-A, January 1, 1974, Order No. R-4549-B, April 30, 1974, Order No. R-4549-C, July 1, 1975, Order No. R-4549-D, November 17, 1975, Order No. R-4549-E, January 28, 1980, Order No. R-4549-F, April 20, 1984, and Order No. R-4549-G, November 7, 1990.

Order No. R-4549-A, January 1, 1974, extends the project area to include 200.13 acres and increases project allowable to 33,000 barrels per day.

Order No. R-4549-F, April 20, 1984, rescinds Rules 3, 4, 4(A), 5, 6, 7, 8, 9, 10, 11, 12, and 13, adopted by Order No. R-4549, and amended by Orders Nos. R-4549-B through R-4549-E, providing for well allowables based upon reservoir voidage; adopts new Rules 3, 4, 5, and 6; and, redesignates Rules 14A through 14D as Rules 7A through 7D and Rule 15 as Rule 8.

Application of Atlantic Richfield Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 4953
Order No. R-4549

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 25, 1973, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of June, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:
(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Atlantic Richfield Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, by initially limiting reservoir voidage, and within one year by reinjection of approximately 70 per cent of the produced gas, as plant residue gas, into the Abo formation through eight wells in Section 36, Township 17 South, Range 27 East, Sections 3, 4, and 9, Township 18 South, Range 27 East, and Sections 26, 31, 32, and 33, Township 17 South, Range 28 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the assignment of special allowables to wells in the project area based on reservoir voidage factors, net gas-oil ratios, the shutting in or curtailment of less efficient wells, and allowable credit for gas injection wells.

(4) (As Amended by Order No. R-4549-A, January 1, 1974) That initially the project area should comprise only the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4, S/2 NW/4, and NW/4 NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2 NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4, NW/4 NE/4 (Lot 2)

(5) That the applicant has been a major operator in the Empire-Abo Pool and that with a majority of the other operators in said pool has conducted extensive reservoir evaluations and studies in and of said pool.

(6) That said evaluations and studies show that the Empire-Abo Pool will be more efficiently produced through the curtailment of production from high gas-oil ratio wells or by reinjection of plant residue gas or both, and operation of the pool on a net reservoir voidage basis.

(7) That said evaluations and studies show that production from the project area as described in Finding (4) of this order should be limited to the average reservoir voidage for the project area for the calendar year 1972 or 30,000 barrels of oil per day, whichever is less, except that after reinjection of approximately 70 percent of the produced gas has been achieved, the production from said project area should be limited to the average reservoir voidage for the calendar year 1972 or 40,192 barrels of oil per day, whichever is less.

(8) That to provide incentive for the reinjection of produced gas prior to achievement of the full 70 percent reinjection planned, production in excess of the aforementioned 30,000 barrels per day should be permitted within the project area. Said excess production should be computed in accordance with the following formula and should be limited to 10,192 barrels per day:

additional allowable in excess of 30,000 BOPD equals 97.07 $\left(2\left(\frac{\text{MCF gas inj. previous month} \times 10}{\text{MCF gas prod. previous month}}\right)\right.$

$\left.-\left(\frac{\text{MCF gas inj. previous month} \times 10}{\text{MCF gas prod. previous month}}\right)\right)$

(9) That the aforesaid pressure maintenance project, designated the ARCO Empire-Abo Unit Pressure Maintenance Project, and comprising the above-described area, is in the interest of conservation and should result in the recovery of approximately thirty million barrels of additional oil from said reservoir.

(10) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(11) That special rules and regulations for the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That approval of the application for a pressure maintenance project and the proposed special rules therefore is in the interest of sound conservation practices and will not cause waste or harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Atlantic Richfield Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in its Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the ARCO Empire-Abo Unit Pressure Maintenance Project, initially by the shutting in or curtailment of production from less efficient wells within the project and within 12 months after the effective date of this order by the reinjection of approximately 70 percent of the produced gas, as plant residue gas, into the Abo formation through the following described wells:

Operator	Lease Name	Well No.	Section	Location
Amoco	Malco "H" Federal	2	3	H
Amoco	Windfuhr Federal	4	4	J
Exxon	Chalk Bluff Draw Unit "A"	4	9	C

All in Township 18 South, Range 27 East, NMPM.

M. Yates III	Dooley Abo State	2	36	J

In Township 17 South, Range 27 East, NMPM.

Hondo	State "A"	21	26	K
Amoco	State "BM"	1	31	K
Amoco	State "BV"	1	32	F
Arco	M. Yates B (ARC)	8	33	G

All in Township 17 South, Range 28 East, NMPM.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

(2) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(3) That Special Rules and Regulations governing the operation of the ARCO Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. (As Amended by Order No. R-4549-A, January 1, 1974, and Order No. R-4549-C, July 1, 1975.) The project area of the ARCO Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 34: S/2 SE/4
Section 36: S/2

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2 and S/2 N/2
Section 26: S/2, S/2 NE/4, and SE/4 NW/4
Section 27: S/2
Section 31: S/2 and S/2 N/2
Section 32: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 33: S/2, NE/4, S/2 NW/4, and NE/4 NW/4
Section 34: All
Section 35: N/2 and N/2 S/2
Section 36: N/2 NW/4 and SW/4 NW/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 29: S/2 NW/4 and N/2 SW/4
Section 30: SW/4, S/2 N/2, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 1: All
Section 2: S/2, NE/4 NE/4, SW/4 NE/4, NW/4
Section 3: All
Section 4: SE/4, S/2 NE/4, S/2 SW/4, and NE/4 SW/4
Section 8: E/2 SE/4 and SE/4 NE/4
Section 9: All
Section 10: W/2 and NE/4
Section 11: NW/4, W/2 NE/4, and NE/4 NE/4
Section 15: N/2, NW/4 and SW/4 NW/4
Section 16: N/2, SW/4, N/2 SE/4, and SW/4 SE/4
Section 17: S/2 NE/4, NE/4 NE/4, SE/4 NW/4, NE/4 SW/4, and N/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 4: N/2 N/2, SW/4 NW/4
Section 5: NE/4, N/2 NW/4, NE/4 NW/4
Section 6: NW/4, N/2 SW/4, SE/4 SW/4, N/2 SE/4, SW/4 SE/4, S/2 NE/4, NE/4 NE/4, NW/4 NE/4 (Lot 2)

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. (As Added by Order No. R-4549-F, April 20, 1984.) That the maximum daily project allowable shall be an amount of oil which will result in monthly average associated gas production of no more than 65 MMCF per day.

For the purpose of these rules, "Available Residue Gas" shall be defined as being all gas produced from the unitized formation less plant shrinkage, plant fuel, and lease fuel required for operation of the lease.

RULE 4. (As Added by Order No. R-4549-F, April 20, 1984, and Amended by Order No. R-4549-G, November 7, 1990.) All Available Residue Gas from the unit shall be reinjected. No raw gas nor plant residue gas attributable to the project shall be sold or otherwise disposed of by any other means.

In addition to the injection of Available Residue Gas, the project operator may inject up to and including 35 million cubic feet of extraneous gas per day into the Abo formation underlying the project area.

Withdrawals of said extraneous gas may be made, pending reservoir blow down, as follows:

(A) During each of the winter seasons (November 1 through March 31) of 1990 through 1996, a volume of gas not to exceed 300,000 MCF may be withdrawn, provided that the volume of extraneous gas withdrawn shall be replaced during the next succeeding summer season (April 1 through October 31) at a rate not to exceed 2,300 MCFD.

(B) During each of the winter seasons (November 1 through March 31) of 1996 through 1998, a volume of gas not to exceed 800,000 MCF may be withdrawn, provided that the volume of extraneous gas withdrawn shall be replaced during the next succeeding summer season (April 1 through October 31) at a rate not to exceed 5,500 MCFD.

(C) In addition to complete replacement of the volumes of extraneous gas withdrawn during the immediately preceding winter season, an additional volume of gas shall be injected during each summer season equal to 12% of the volume withdrawn during the immediately preceding winter season to compensate the Empire Abo Unit for any fuel used, shrinkage or metering errors.

(D) No extraneous gas may be withdrawn during a winter season until all gas withdrawn during preceding winter seasons is replaced plus the additional 12% volume required by paragraph C of this rule.

(E) The provisions of Paragraphs 4 (A) through 4 (D) shall be of no further effect on the date the Pressure Maintenance Project ceases or November 1,1998, whichever occurs first.

The project operator shall establish and maintain an "Extraneous Gas Bank Statement" which shall be filed with the Division each month concurrently with the project operators "Empire-Abo Pressure Maintenance Project Monthly Report", and which shall show thereon each month the volume of extraneous gas injected, the cumulative volume of such gas injected, the volume of gas withdrawn and delivered back to the supplier of extraneous gas and the net cumulative extraneous gas bank.

RULE 5. (As Added by Order No. R-4549-F, April 20, 1984.) Allowables shall be assigned to unit wells in accordance with nominations submitted by the unit operator during the months of March, July, and November of each year. That such nominations shall accompany the Pressure Maintenance Project Operator's Report filed for that month.

(EMPIRE-ABO (PRESSURE MAINTENANCE) POOL - Cont'd.)

The allowables assigned shall result in production of casinghead gas averaging not more than 65 MMCF per day for the month, provided however, that on a cumulative basis, the unit operator may carry gas overproduction of 325 MMCF.

That no producing well in the project area which directly or diagonally offsets a well not committed to the unit, and producing from the same common source of supply, shall receive an allowable or produce in excess of two times the top unit allowable for the pool.

RULE 6. (As Added by Order No. R-4549-F, April 20, 1984.) Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report on a form prescribed by the Division. The report shall show all project wells, production of oil, gas, and water; volumes of water, residue gas, and extraneous gas injected; total production of oil, gas and water, and such other data as the Division may require.

RULE 7. A. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve such additional producing wells and gas injection and water injection wells at orthodox and unorthodox locations within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said wells are drilled no closer than 660 feet to any outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas or water injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

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

RULE 7. B. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director of the Division is hereby authorized to approve the drilling of "horizontal drainholes" for the purposes of production or injection within the boundaries of the ARCO Empire Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided no perforated or openhole portion of said wells shall be closer than 330 feet to the outer boundary of said unit or to any tract not committed to such unit nor, in the case of a well to be used for injection closer than 1650 feet to such boundary or tract. To obtain such approval, the project operator shall file proper application with the Division Director, which application, if it seeks authorization to convert additional wells to injection or to drill additional production or injection wells shall include the following:

(1) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(2) Schematic drawings of the proposed well which fully describes the casing, tubing, perforated or open-hole interval, kick-off point, and proposed trajectory of the drainhole section.

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

RULE 7. C. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. 4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) The Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Director may grant immediate approval, provided waivers of objection are received from all offset operators.

RULE 7. D. (As Amended by Order No. R-4549-B, April 30, 1974, Order No. R-4549-E, January 28, 1980, and Renumbered by Order No. R-4549-F, April 20, 1984.) Within 20 days following completion of any horizontal drainhole the operator shall submit a report to the Division Director with sufficient detail to locate the kick-off point and the trajectory of the deviated portion of the well bore with respect to any quarter-quarter section(s) penetrated by such well and any 40-acre tract directly or diagonally offsetting such quarter-quarter section(s).

The Director may approve the final location of the horizontal drainhole by acceptance of such report.

The Director may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such hole is located closer to the unit boundary or any uncommitted tract than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

RULE 8. (As Amended and Renumbered by Order No. R-4549-F, April 20, 1984.) Expansion or contraction of the project area may be approved by the Director of the Division administratively when good cause is shown therefor.

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

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

Exhibit #5

This is a copy of NMOCD Order No. 4808, the pressure maintenance rules applying to the Citgo Empire Abo Unit. Issued in mid-1974, it has not been changed since.

Rule 3 sets the allowable for the Citgo Empire Abo Unit pressure maintenance project at the average reservoir voidage for the unit in 1972 (2213 reservoir bbls) or 852 BOPD whichever is less.

Rule 8 requires that all voidage calculations be made in accordance with attachment "A" of the Order.

Rule 9 describes the gas bank and how it shall be calculated.

Findings 6, 7 , and 8 illustrate the intent of this order which is to treat the Citgo Empire Abo Unit on the same basis as the Arco Empire Abo Unit as much as possible.

(LEO (KERSEY & COMPANY CREEK-LEO WATERFLOOD) POOL - Cont'd.)

(6) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Kersey & Company, is hereby authorized to institute a waterflood project in the Leo Pool, by the injection of water into the Grayburg formation through the following-described well in Section 23, Township 18 South, Range 30 East, NMPM, Eddy County, New Mexico:

WELL NAME	WELL NO.	LOCATION
Kersey & Company Creek	1	330' FNL & 1650' FWL

(2) That injection into said well shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as possible to the casing-shoe and that the casing-tubing annulus shall be filled with an inert fluid and equipped with a pressure gauge or left open at the surface in order to determine leakage in the casing, tubing or packer.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing or packer in said injection well, the leakage of any water or oil from around any producing well or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the subject waterflood project is hereby designated the Kersey & Company Creek-Leo Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

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

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

EMPIRE-ABO POOL
(Citgo Empire-Abo Pressure Maintenance Project)
Eddy County, New Mexico

Order No. R-4808, Authorizing Cities Service Oil Company to Institute a Pressure Maintenance Project in the Empire-Abo Pool, Eddy County, New Mexico, June 11, 1974.

Application of Cities Service Oil Company for a Pressure Maintenance Project, Eddy County, New Mexico.

CASE NO. 5213
Order No. R-4808

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on April 10, 1974, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 11th day of June, 1974, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Cities Service Oil Company, seeks authority to institute a pressure maintenance project in the Empire-Abo Pool in its Citgo Empire-Abo Unit Area, Eddy County, New Mexico, by the injection of gas into the Abo formation through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project, including provision for the operation of the project under a net GOR rule and the establishment of a gas injection credit "bank" against which injection credit could be drawn in order to maintain full allowables during such times as injection plant shut-downs and similar problems.

(4) That initially the project area should comprise the following described area:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

(5) That the applicant is the operator of the Citgo Empire-Abo Unit, which embraces the above-described lands.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

(6) That the Citgo Empire-Abo Unit embraces lands immediately adjacent to the Atlantic Richfield Empire-Abo Unit Area, which area is also under pressure maintenance by the injection of gas, and injection of gas in the Citgo Empire-Abo Unit Area is in the interest of more efficient operation of the pool as a whole.

(7) That the production permitted the Atlantic Richfield Empire-Abo Pressure Maintenance Project is limited to reservoir voidage equal to or less than the average reservoir voidage for the project area for the calendar year 1972.

(8) That the evidence indicates that the portion of the Empire-Abo Pool underlying the Citgo Empire-Abo Unit Area will be more efficiently produced by operating under a reservoir voidage formula similar to that used for said Atlantic Richfield project.

(9) That reinjection of produced gas at a location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, will efficiently aid in maintaining pressures in the Abo formation in the unit area, and an injection well at that location should be approved.

(10) That the production from the project area should be limited to the average reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

(11) That special rules and regulations for the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project should be promulgated and, for operational convenience, such rules should provide certain flexibility in authorizing the production of the project allowable from any well or wells in the project area in any proportion, provided that no well in the project area which directly or diagonally offsets a well not committed to said unit producing from the same common source of supply should be allowed to produce more than two top unit allowables for the Empire-Abo Pool.

(12) That an administrative procedure should be established whereby said project area may be contracted or expanded for good cause shown, and whereby additional injection wells and producing wells at orthodox and unorthodox locations in the project area may be approved without the necessity of notice and hearing.

(13) That approval of the application for a pressure maintenance project and the proposed special rules therefor is in the interest of sound conservation practices and will not cause waste nor harm correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Cities Service Oil Company, is hereby authorized to institute a pressure maintenance project in the Empire-Abo Pool in the Citgo Empire-Abo Unit Area, Eddy County, New Mexico, to be designated the Citgo Empire-Abo Unit Pressure Maintenance Project, by the shutting in or curtailment of production from less efficient wells and/or the reinjection of produced gas as raw gas or plant residue gas into the Abo formation.

(2) Initial injection of gas shall be through a well to be drilled at an unorthodox location 990 feet from the South line and 2635 feet from the East line of Section 35, Township 17 South, Range 27 East, NMPM, which location is hereby approved.

(3) That the injection should be through 2-3/8-inch internally coated tubing installed in a packer set within 100 feet of the uppermost perforations, and that the casing-tubing annulus should be fitted with a pressure gauge in order to determine leakage in the casing, tubing, or packer.

(4) That Special Rules and Regulations governing the operation of the Citgo Empire-Abo Unit Pressure Maintenance Project, Eddy County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Citgo Empire-Abo Unit Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the area described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 35: SE/4, S/2 SW/4, and NE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NE/4 NW/4 and NW/4 NE/4

RULE 2. The allowable for the project shall be computed monthly based on the estimated net reservoir voidage for the succeeding month.

RULE 3. The maximum daily project allowable shall be an amount of oil which will result in reservoir voidage no greater than the average daily reservoir voidage for the project area for the calendar year 1972 (2213 reservoir barrels) or 852 barrels of oil per day, whichever is less.

RULE 4. The allowable assigned to the project area may be produced from any well or wells within the project area in any proportion, provided that no producing well in the project area which directly or diagonally offsets a well not committed to the Unit and producing from the same common source of supply, shall produce in excess of two times top unit allowable for the pool and provided that individual well allowables have been requested in accordance with Rule 5 below.

RULE 5. Each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlined 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 6. 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.

RULE 7. That the volume of gas required to be injected in any month to maintain average daily reservoir voidage in the project area at 2213 reservoir barrels shall be known as "Reservoir Voidage Balance Gas."

RULE 8. That all calculations of reservoir voidage shall be in accordance with the formula set out in Attachment "A" to this order utilizing the Table of Fluid Properties set out in Attachment "B" to this order.

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

RULE 9. A gas "bank" shall be established for the project against which injection credit may be drawn in order to maintain allowable production during such times as injection compressor shutdowns and similar problems. The gas bank shall operate under and be subject to the following provisions:

(a) That volume of gas injected in the project in any month in excess of Reservoir Voidage Balance Gas shall be credited to the gas bank and be carried cumulatively forward.

(b) The gas bank balance shall not exceed a maximum of the average monthly total Reservoir Voidage Balance Gas volumes for the previous three (3) months, not including the month being reported.

(c) The operator shall report monthly to the Commission the status of the gas bank in a form acceptable to the Commission. The report shall be designed to show the status of the gas bank over a twelve (12) month period and shall be revised monthly to a current basis.

(d) The accumulated gas bank may be applied to the injection volume during any future month in which the gas injection volume is less than the Reservoir Voidage Balance Gas volume.

(e) In the event there are insufficient credits accrued to the gas bank to bring actual injection plus applied credits up to the Reservoir Voidage Balance Gas requirement during any given production month, production for that month shall be reduced to an amount commensurate with the average daily reservoir voidage set forth in Rule 3 above. Production beyond this amount shall be considered overproduction and shall be compensated for by underproduction during the following month.

RULE 10. The Secretary-Director of the Commission is hereby authorized to approve such additional producing wells and injection wells at orthodox and unorthodox locations within the boundaries of the Citgo Empire-Abo Unit Area as may be necessary to complete an efficient production and injection pattern, provided said producing wells are drilled no closer than 660 feet to the outer boundary of said unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary and provided that no well shall be approved for gas injection when such well is located closer than 1650 feet to a tract which is not committed to the unit and on which is located a well producing from the same common source of supply. 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 production or injection wells shall include the following:

(a) A plat identifying the lands committed to the unit agreement and those lands not committed to said agreement, and showing the location of the proposed well, all wells within the unit area, and offset operators.

(b) A schematic drawing of the proposed well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed 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.

RULE 11. Expansion or contractions of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

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

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

CITGO EMPIRE ABO UNIT AREA

Reservoir Voidage Formula - Gas Injection Credit

Equation 1:

Vrvb: $Qo\ (Bo + (Rpn - Rs)\ Bg)$

Where:

Vrvb : Reservoir voidage, bbls. per day
Qo : Oil Production rate, Stock tank bbls. per day
Bo : Oil formation volume factor (1), reservoir volumetric bbls/stock tank bbl.
Rpn : Net producing gas-oil ratio, NCF/S.T.B.O.

$$Rpn: \quad Rp\ (1.0 - \frac{Gi}{Gp})$$

Where:

Rp : producing gas-oil ratio, MCF/BO
Gi : daily volume of gas injected MCF/Day
Gp : daily volume of gas produced, MCF/Day

Rs : Solution gas-oil ratio (2), MCF/STBO
Bg : Gas formation volume factor (3), RVB/MCF

(1), (2), (3): These values calculated from Table of Fluid Properties, Attachment "B".

Attachment "A" Order No. R-4808

(EMPIRE-ABO (CITGO EMPIRE-ABO PRESSURE MAINTENANCE PROJECT) POOL - Cont'd.)

CITGO EMPIRE ABO UNIT AREA

Table of Fluid Properties

P-base equals 15.025 psia, P-bp equals 2231 psia, Tres equals 109° F (569° R)

15.025	1.000	194.696	0	1.0
100	1.125	28.229	.180	.965
200	1.163	13.749	.235	.940
300	1.193	8.970	.290	.920
400	1.218	6.692	.349	.915
500	1.244	5.236	.395	.895
600	1.263	4.276	.445	.877
700	1.285	3.644	.495	.872
800	1.304	3.108	.540	.850
900	1.325	2.746	.585	.845
1000	1.344	2.437	.625	.833
1100	1.364	2.178	.675	.819
1200	1.384	1.962	.725	.805
1300	1.404	1.790	.775	.795
1400	1.425	1.649	.825	.789
1500	1.445	1.516	.875	.777
1600	1.465	1.404	.925	.768
1700	1.485	1.304	.975	.758
1800	1.505	1.220	1.025	.751
1900	1.525	1.147	1.075	.745
2000	1.548	1.053	1.125	.720
2100	1.573	1.000	1.175	.718
2200	1.597	.953	1.225	.717
2231	1.606	.939	1.250	.716

P-r equals Reservoir average pressure at datum -2264' subsea, lbs/in absolute.

B-o equals Oil formation volume factor, reservoir volumetric bbls/stock tank bbl.

B-g equals Gas formation volume factor, reservoir volumetric bbls/thousand std. cu. ft.

R-s equals Solution Gas/Oil Ratio, Thousand std. cu. ft/stock tank bbls. oil.

Z equals Gas Compressibility Factor

Attachment "B"
Order No. R-4808

LANGLIE-MATTIX POOL
(Skelly Johnson Langlie-Mattix Waterflood Project)
Lea County, New Mexico

Order No. R-4785, Authorizing Skelly Oil Company to Institute a Waterflood Project in the Seven Rivers-Queen Formation in the Langlie-Mattix Pool, Lea County, New Mexico, May 21, 1974.

Application of Skelly Oil Company for a Waterflood Project and a Dual Completion, Lea County, New Mexico.

CASE NO. 5197
Order No. R-4785

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on March 27, 1974, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of May, 1974, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Skelly Oil Company, seeks authority to institute a waterflood project by injection of water into the Seven Rivers-Queen formation in its J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Langlie-Mattix Pool, Lea County, New Mexico.

(3) That the applicant further seeks authority to recomplete said J. C. Johnson Well No. 4, located in Unit D of Section 20, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to also produce gas from the Jalmat gas pool through the casing-tubing annulus with separation of the zones by means of a packer set at approximately 3375 feet.

(4) That the applicant further seeks the establishment of an administrative procedure whereby additional wells may be converted to injection and the project area expanded without notice and hearing.

(5) That the well in the proposed waterflood project area is in an advanced state of depletion and may properly be classified as a "stripper" well.

Exhibit #6

This exhibit illustrates what the NMOCD was trying to accomplish at the beginning. The allowable limitations for both units were originally based on a voidage concept - the reservoir voidage that was produced from the project area in 1972. Both orders allowed for a gas bank that accumulated credits when the injection volume exceeded what was required. The maximum amount of credits that could be carried forward from month to month was based on volumes from the three prior months.

Since Arco's original order was adopted, the voidage limit was replaced in 1984 with a gas production allowable of 65 MMCFPD and the language in Rule 4 regarding the gas bank for injection credit was eliminated. Oxy has made no change to Order No. 4808 for the Citgo Empire Abo Unit.

Comparison of Original Pool Rules

Rule	CEAU	ARCO EAU
Allowable	2,213 RB/Day, based on actual voidage in project area in 1972 (Rule 3)	56,912 RB/Day, based on actual voidage in project area in 1972 (Rule 3)
Gas Bank	Credited when volume injected exceeds requirement (RVBG) (Rule 9)	Credited when volume injected > 95% of availible residue (Rule 4)
Gas Bank Maximum	Average of total mo. RVBG volumes for the three previous months (Rule 9)	Average of total mo. gas inj. volumes for the three previous months (Rule 4)

Order 4549-C vs Order 4808

Exhibit #7

This is a plot of the oil and gas produced and gas injected in the Citgo Empire Abo Unit. The oil production is in barrels per calendar day and is shown in green, the gas production is in MCF per calendar day and is shown in red, and the gas injected is in MCF per calendar day and is shown in blue.

As mentioned before, gas injection commenced in mid-1975 and ceased totally in early 1988 because it was uneconomical to continue injection. Our only other alternative was to market the gas and a year was spent looking for a market. During that time, we produced and flared very small volumes, just enough to hold the unit together. In early 1989, a market was secured with Phillips and the sale of gas from the Citgo Empire Abo Unit was commenced. Gas production was initially increased to 1.5 MMCFPD and has been declining ever since due to allowable curtailment.

In December 1986, the Natural Gas Liquids plant was shut down because it was no longer economical to strip liquids. At that point Oxy began injecting the wet gas into the reservoir which greatly reduced the reservoir voidage from the reservoir as only the oil was being sold. In mid-1987 Oxy began experiencing major compressor problems which caused severe curtailment of production. Finally in early 1988, the compressors failed and it was not economical to repair the compressors.

CITCO EMPIRE ABO UNIT

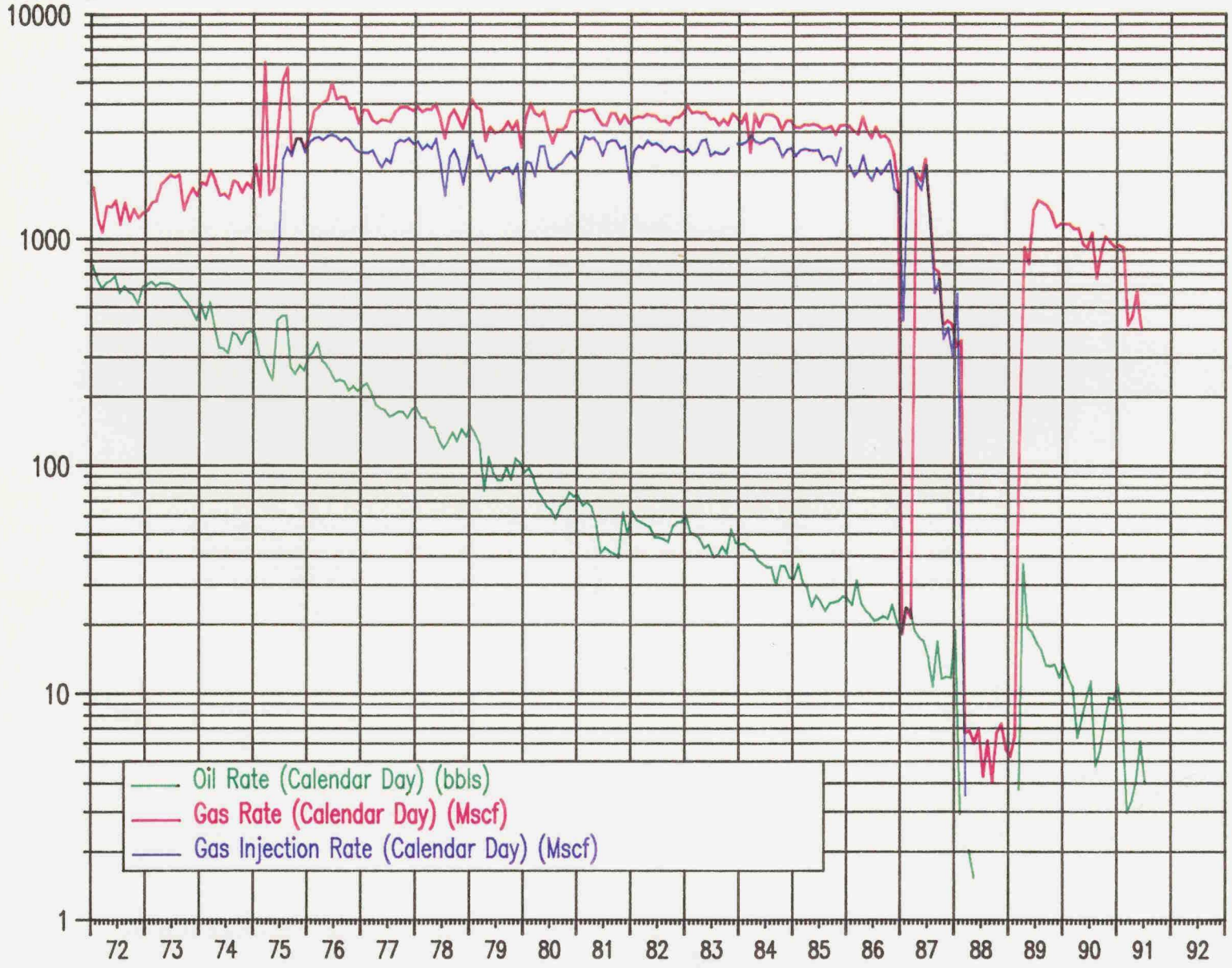


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Exhibit #8

Bottom hole pressures have been measured frequently for the Citgo Empire Abo Unit. This exhibit is a summary of the actual pressure measurements taken for each well. The measured pressure ("pressure @ test depth"), the depth at which the pressure was measured ("test depth"), and the gradient were used to calculate the pressure at a datum of 2264' subsea.

OXY USA Inc.
Citgo Empire Abo Unit # 109

Elevation - 3622'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/21/76	5410	1302	0.035	1319	P
07/27/77	5410	1243	0.475	1469	T
07/19/78	5600	1235	0.405	1351	T
10/18/78	5410	1277	0.305	1422	T
10/10/79	5600	1209	0.21	1269	T
10/22/80	5600	1150	0.374	1257	T
10/21/81	5602	1072	0.031	1081	T
09/15/82	5595	1078	0.265	1155	T
10/26/83	5518	1021	0.343	1147	P
10/15/84	5518	983	0.278	1085	T
10/16/85	5609	942	0.166	988	T
12/04/86	5610	900	0.405	1012	T
11/09/87	5598	841	0.186	895	T
04/10/91	5540	705	0.02	712	T

OXY USA Inc.
Citgo Empire Abo Unit # 110

Elevation - 3612'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/21/76	5500	1296	0.045	1313	P
07/27/77	5500	1221	0.05	1240	P
07/19/78	5634	1204	0.187	1249	P
10/18/78	5500	1028	0.02	1036	P
10/10/79	5630	1130	0.153	1168	P
10/22/80	5621	1095	0.19	1143	P
10/21/81	4299	1007	0.024	1045	P
09/15/82	3719	968	0.022	1015	P
10/26/83	5604	966	0.019	971	P
10/15/84	5130	921	0.02	936	P
10/16/85	5420	890	0.023	900	P
12/04/86	5405	837	0.075	872	P
11/09/87	5408	805	0.019	814	T
11/17/88	5420	767	0.133	828	T
04/10/91	5450	741	0.216	833	T

OXY USA Inc.
Citgo Empire Abo Unit # 213

Elevation - 3654'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/21/76	5691	1160	0.035	1168	P
07/27/77	5691	1061	0.04	1070	P
07/19/78	5709	1030	0.333	1100	P
10/18/78	5691	1015	0.035	1023	P
10/10/79	5710	1015	0.316	1081	P
10/22/80	5701	963	0.11	987	P
10/21/81	5696	923	0.073	939	P
09/15/82	5690	893	0.035	901	P
10/26/83	5715	859	0.056	870	P
10/15/84	5690	839	0.03	846	P
10/16/85	5705	794	0.035	801	P
12/04/86	5710	758	0.025	763	P
11/09/87	5691	785	0.02	790	P
11/13/89	4828	337	0.465	844	P
04/15/91	5692	672	0.022	677	P

OXY USA Inc.
Citgo Empire Abo Unit # 214

Elevation - 3627'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/24/76	5515	1160	0.31	1277	P
07/27/77	5515	1219	0.305	1334	P
07/19/78	5670	1204	0.039	1213	P
10/18/78	5515	1202	0.395	1351	P
10/10/79	5660	1212	0.386	1301	P
10/22/80	5658	1163	0.371	1249	T
10/21/81	5668	1133	0.366	1215	T
09/15/82	5645	1104	0.385	1199	T
10/26/83	5660	1058	0.428	1157	T
10/15/84	5655	1024	0.379	1113	T
10/16/85	5660	985	0.386	1074	T
12/04/86	5665	935	0.413	1028	T
11/09/87	5648	903	0.421	1005	T
04/10/91	5590	779	0.33	878	T

OXY USA Inc.
Citgo Empire Abo Unit # 305

Elevation – 3597'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/21/76	5585	1214	0.045	1226	P
07/27/77	5585	1170	0.05	1184	P
07/19/78	5605	1097	0.2	1148	P
10/18/78	5585	1133	0.03	1141	P
10/10/79	5600	1111	0.2	1163	P
10/22/80	5601	1054	0.125	1087	P
10/21/81	5597	1017	0.083	1039	P
09/15/82	5595	991	0.03	999	P
10/26/83	5614	940	0.034	948	P
10/15/84	5600	907	0.025	914	P
10/16/85	5606	863	0.023	869	P
12/04/86	5140	798	0.019	812	P
11/09/87	5220	788	0.025	804	P
11/17/88	5266	751	0.025	766	P
11/13/89	4750	739	0.025	767	P
04/15/91	4670	691	0.017	711	P

OXY USA Inc.
Citgo Empire Abo Unit # 404

Elevation – 3607'

Date	Test Depth	Press @ Test Depth	Gradient @ Test Depth	Press @ Datum of -2264'	Prod or TA'd
07/21/76	5611	1173	0.035	1182	P
07/27/77	5611	1128	0.065	1145	P
07/19/78	5689	1129	0.154	1157	P
10/18/78	5611	1111	0.04	1121	P
10/10/79	5812	1136	0.507	1166	P
10/22/80	5820	1129	0.45	1152	T
10/21/81	5815	1088	0.476	1115	T
09/15/82	5805	1069	0.454	1099	T
10/26/83	5834	1026	0.466	1043	T
10/15/84	5812	990	0.455	1017	T
10/16/85	5824	953	0.404	972	T
12/04/86	5691	846	0.338	907	T
11/09/87	5809	892	0.419	918	T
04/15/91	5707	755	0.332	809	T

Exhibit #9

Order No. 4808 requires that our production be limited to 2213 reservoir barrels per day. Since this is a reservoir withdrawal rate as opposed to a surface withdrawal rate, the voidage is calculated according to the formula in Attachment A of the order. This exhibit is an example calculation of the voidage based on the pressures in Exhibit 8. Measured values of gas production and gas injection, in standard cubic feet, oil production in stock tank barrels, and reservoir pressure in psia are used to calculate the reservoir volume or voidage that was produced that month. The "Reservoir Voidage Balance Gas" is the volume of gas produced that is needed to be injected that month to keep the reservoir voidage at 2213 reservoir barrels per day. Actual injection volumes are compared to the Reservoir Voidage Balance Gas to determine if there was overinjection, which results in a credit to the gas bank, or an underinjection , which results in a debit to the gas bank. There is a limit on how much credit can accumulate in the gas bank, which is the average monthly total Reservoir Voidage Balance Gas volumes for the previous three months not including the month being reported.

This calculation was done each month, beginning with the first month of injection.

Citgo Empire Abo Unit

Reservoir Voidage
Example Calculations
for the Month of October 1986

Given:

Oil Production = 651 BBLS/Month (Q_o)
Gas Production = 85,289 MCF/Month (G_p)
Gas Injection = 69,131 MCF/Month (G_i)
Producing Gas-Oil Ratio = 131.012 MCF/BBL (R_p)
Allowable Reservoir Voidage = 68603 Res BBLS/Month =(2213)(31 days)
Reservoir Pressure = 949 psia (average of BHP recorded on 10/85 for all 6 producers)

Reservoir Voidage Equations

$$V_{vrb} = Q_o(B_o+(R_{pn}-R_s)B_g)$$

where:

$$R_{pn} = R_p(1-(G_i/G_p))$$

Calculations

1. From interpolation of the Table of Fluid Properties found in Order R-4808, the following fluid properties were obtained for a Reservoir Pressure of ~~854~~ 949 psia:
   B_o= 1.33431 R_s= 0.6046 B_g= 2.5946

2. Net Producing Gas-Oil Ratio Calculation : $R_{pn} = R_p(1-(G_i/G_p))$

   R_{pn} = 131.012(1-(69131/85289)) = 24.8203 MCF/BBL

3. Reservoir Voidage Calculation : $V_{vrb} = Q_o(B_o+(R_{pn}-R_s)B_g)$

   V_{vrb} = 651(1.33431+(24.8203-0.6046)2.5946) = 41,771 Res BBL/Mo

4. Reservoir Voidage Balance Gas Calculation :

   Using the Allowable Reservoir Voidage of 68603 Res Bbls in the Reservoir Voidage Equation, an R_{pn} can be calculated which is the net gas-oil ratio required to keep reservoir voidage at a rate of 2213 Res Bbls per Day.

   $$V_{vrb} = Q_o(B_o+(R_{pn}-R_s)B_g)$$

   $$68603 = 651(1.33431+(R_{pn}-0.6046)2.5946)$$

   $$R_{pn} = 40.706 \text{ MCF/BBL}$$

Using the R_{pn} calculated above in the Net Gas-Oil Ratio Equation, a G_i can be calculated which is the amount of gas that is needed to be injected to keep reservoir voidage at 2213 Res Bbls/day. This is also defined as the Reservoir Voidage Balance Gas.

$$R_{pn} = R_p(1-(G_i/G_p))$$

$$40.706 = 131.012(1-(G_i/85289))$$

$$G_i = 58,789 \text{ MCF}$$

5. Cummulative Over/Under Reservoir Voidage:
   Sum of current and all prior months overage/underage as compared to the allowed reservoir voidage of 2213 RVB/day.

6. Over/Under Injection Calculation :

   Over/Under Inj = Gas Injected - Reservoir Voidage Balance Gas

   Over/Under Inj = 69,131 - 58,789 = 10,342 MCF over injection

7. Unadjusted Gas Bank :
   Sum of current and all prior months over/under injection.

8. Adjusted Gas Bank :
   In Order R-4808 a maximum was set on the Gas Bank which is equal to the average of the prior three months Reservoir Voidage Balance Gas volumes not including the current month.

July 1986	Res. Voidage Balance Gas =	71,462 MCF
August 1986	Res. Voidage Balance Gas =	60,928 MCF
September 1986	Res. Voidage Balance Gas =	61,676 MCF
	Total for the three months =	194,066 MCF

Average for the three months = 194,066/3 = 64,689 MCF

64,689 MCF is the maximum amount of over injection (Gas Bank Credit) that may be carried forward into October 1986.

Exhibit #10

Exhibit 10 is a tabulation of the monthly voidage and gas bank balance. It employs the same methodology described in the previous exhibit.

The calculations start in June 1975, which was the first month of gas injection in the Citgo Empire Abo Unit. This is consistent with the filings that were made at the time by Cities Service (now Oxy).

The first four columns (pressure, gas produced, gas injected, and oil production) are measured quantities from the unit. The remaining values are calculated values based on the measured quantities.

The result is that, at the time gas injection ceased totally, the unit was underproduced according to the gas bank. In addition the unit had under produced the reservoir voidage limit of 2213 reservoir barrels per day by almost 1 million reservoir barrels on a cumulative basis.

Since injection was discontinued until December 1990, the unit has under produced the 2213 reservoir barrel per day voidage limit an additional 92,679 reservoir barrels.

Citgo Empire Abo Unit Reservoir Voidage Calculations

	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
JUN 75	1181	94670	24050	13013	5.4269	1.3802	0.7155	2.0030	140765	44260	-96505	72229	-48179	-48179	
JUL 75	1181	157535	70147	14044	6.2224	1.3802	0.7155	2.0030	174298	68603	-202200	122914	-52767	-100947	
AUG 75	1181	179754	79589	14069	7.1196	1.3802	0.7155	2.0030	199889	68603	-333486	145132	-65543	-166490	
SEP 75	1181	72459	70180	8008	0.2846	1.3802	0.7155	2.0030	4141	66390	-271237	39103	31077	-135413	-135413
OCT 75	1181	86429	86429	7707	0.0000	1.3802	0.7155	2.0030	-408	68603	-202226	51976	34453	-100959	-100959
NOV 75	1181	83782	81082	8210	0.3289	1.3802	0.7155	2.0030	4973	66390	-140809	50420	30662	-70298	-70298
DEC 75	1181	77903	75330	8017	0.3209	1.3802	0.7155	2.0030	4729	68603	-76935	43442	31888	-38409	-38409
JAN 76	1181	90475	83570	9218	0.7491	1.3802	0.7155	2.0030	13343	68603	-21675	55982	27588	-10821	-10821
FEB 76	1181	107175	81361	9098	2.8373	1.3802	0.7155	2.0030	51225	64177	-8722	74895	6466	-4354	-4354
MAR 76	1181	120023	88478	10757	2.9325	1.3802	0.7155	2.0030	62616	68603	-2735	85489	2989	-1366	-1366
APR 76	1181	121452	82853	8619	4.4784	1.3802	0.7155	2.0030	76859	66390	-13204	88079	-5226	-6592	-6592
MAY 76	1181	129698	89174	8465	4.7872	1.3802	0.7155	2.0030	80723	68603	-25324	95225	-6051	-12643	-12643
JUN 76	1181	149926	87514	7617	8.1938	1.3802	0.7155	2.0030	124610	66390	-83544	116580	-29066	-41709	-41709
JUL 76	1263	129544	88608	7182	5.6998	1.3966	0.7565	1.8536	75840	68603	-90781	92512	-3904	-45613	-45613
AUG 76	1263	132874	84843	7305	6.5751	1.3966	0.7565	1.8536	88991	68603	-111168	95842	-10999	-56611	-56611
SEP 76	1263	127658	84999	6956	6.1327	1.3966	0.7565	1.8536	79035	66390	-123813	91821	-6822	-63433	-63433
OCT 76	1263	117335	84725	6522	5.0000	1.3966	0.7565	1.8536	60410	68603	-115621	80305	4420	-59013	-59013
NOV 76	1263	114550	76054	6650	5.7889	1.3966	0.7565	1.8536	71320	66390	-120551	78714	-2660	-61673	-61673
DEC 76	1263	101089	75661	6491	3.9174	1.3966	0.7565	1.8536	47097	68603	-99045	64059	11602	-50071	-50071
JAN 77	1263	116327	75145	6818	6.0402	1.3966	0.7565	1.8536	76298	68603	-106740	79296	-4151	-54222	-54222
FEB 77	1263	104638	67609	6383	5.8012	1.3966	0.7565	1.8536	68602	61964	-113378	71190	-3581	-57803	-57803
MAR 77	1263	104489	77161	6405	4.2667	1.3966	0.7565	1.8536	50620	68603	-95395	67459	9702	-48102	-48102
APR 77	1263	97777	67537	5480	5.5182	1.3966	0.7565	1.8536	56023	66390	-85028	61944	5593	-42509	-42509
MAY 77	1263	105051	64505	5445	7.4465	1.3966	0.7565	1.8536	75127	68603	-91552	68024	-3519	-46029	-46029
JUN 77	1263	100869	68418	5171	6.2756	1.3966	0.7565	1.8536	60123	66390	-85285	65037	3381	-42648	-42648
JUL 77	1263	102664	67560	4992	7.0321	1.3966	0.7565	1.8536	65042	68603	-81724	65639	1921	-40727	-40727
AUG 77	1255	113438	82347	5104	6.0915	1.395	0.7525	1.8674	58007	68603	-71128	76673	5674	-35052	-35052
SEP 77	1255	115045	82973	5103	6.2849	1.395	0.7525	1.8674	59839	66390	-64577	79465	3508	-31544	-31544
OCT 77	1255	120103	84584	5266	6.7450	1.395	0.7525	1.8674	66274	68603	-62248	83337	1247	-30297	-30297
NOV 77	1255	114861	84740	4770	6.3147	1.395	0.7525	1.8674	56199	66390	-52058	79283	5457	-24840	-24840
DEC 77	1255	115194	82435	5390	6.0777	1.395	0.7525	1.8674	61119	68603	-44574	78427	4008	-20833	-20833
JAN 78	1255	120056	84643	5495	6.4446	1.395	0.7525	1.8674	66074	68603	-42045	83289	1354	-19478	-19478
FEB 78	1255	102784	70112	4477	7.2977	1.395	0.7525	1.8674	60966	61964	-41047	69578	534	-18944	-18944

	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
MAR 78	1255	117267	81786	4934	7.1911	1.395	0.7525	1.8674	66207	68603	-38650	80503	1283	-17661	-17661
APR 78	1255	112722	75799	4370	8.4492	1.395	0.7525	1.8674	68905	66390	-41166	77146	-1347	-19008	-19008
MAY 78	1255	124602	87180	4475	8.3625	1.395	0.7525	1.8674	69836	68603	-42399	87840	-660	-19668	-19668
JUN 78	1255	102866	64360	3830	10.0538	1.395	0.7525	1.8674	71867	66390	-47876	67293	-2933	-22601	-22601
JUL 78	1255	86630	48305	3628	10.5637	1.395	0.7525	1.8674	71531	68603	-50804	49873	-1568	-24169	-24169
AUG 78	1218	108074	73670	3910	8.7990	1.3876	0.734	1.9310	66319	68603	-48520	72487	1183	-22986	-22986
SEP 78	1218	113116	75618	4151	9.0335	1.3876	0.734	1.9310	72287	66390	-54416	78672	-3054	-26040	-26040
OCT 78	1218	106381	69009	3907	9.5654	1.3876	0.734	1.9310	72050	68603	-57864	70794	-1785	-27825	-27825
NOV 78	1197	92629	52478	4301	9.3353	1.3834	0.7235	1.9685	78861	66390	-70335	58813	-6335	-34160	-34160
DEC 78	1197	114007	69534	4104	10.8365	1.3834	0.7235	1.9685	87377	68603	-89109	79071	-9537	-43698	-43698
JAN 79	1197	129590	85192	4542	9.7750	1.3834	0.7235	1.9685	87211	68603	-107717	94645	-9453	-53151	-53151
FEB 79	1197	107568	64144	3777	11.4970	1.3834	0.7235	1.9685	85325	61964	-131078	76012	-11868	-65018	-65018
MAR 79	1197	116434	73314	3805	11.3325	1.3834	0.7235	1.9685	84726	68603	-147201	81504	-8190	-73209	-73209
APR 79	1197	81817	61642	2295	8.7908	1.3834	0.7235	1.9685	39620	66390	-120431	48043	13599	-59610	-59610
MAY 79	1197	97692	56060	3356	12.4052	1.3834	0.7235	1.9685	81815	68603	-133643	62772	-6712	-66321	-66321
JUN 79	1197	88927	60585	2756	10.2837	1.3834	0.7235	1.9685	55678	66390	-122931	55143	5442	-60880	-60880
JUL 79	1197	92342	61050	2643	11.8396	1.3834	0.7235	1.9685	61490	68603	-115818	57436	3614	-57266	-57266
AUG 79	1197	94987	63695	2649	11.8128	1.3834	0.7235	1.9685	61490	68603	-108705	60081	3614	-53652	-53652
SEP 79	1197	100030	65147	2956	11.8007	1.3834	0.7235	1.9685	68546	66390	-110861	66242	-1095	-54748	-54748
OCT 79	1197	94756	60376	2658	12.9345	1.3834	0.7235	1.9685	67568	68603	-109826	59850	526	-54222	-54222
NOV 79	1206	100682	65007	3204	11.1345	1.3852	0.728	1.9517	69512	66390	-112948	66607	-1600	-55822	-55822
DEC 79	1206	80770	54281	3152	8.4039	1.3852	0.728	1.9517	51586	68603	-95930	45562	8719	-47102	-47102
JAN 80	1206	108105	68460	2871	13.8088	1.3852	0.728	1.9517	77272	68603	-104600	72902	-4442	-51544	-51544
FEB 80	1206	98489	65033	2805	11.9273	1.3852	0.728	1.9517	65195	64177	-105618	65555	-522	-52066	-52066
MAR 80	1206	107404	59750	2721	17.5134	1.3852	0.728	1.9517	92908	68603	-129923	72204	-12454	-64520	-64520
APR 80	1206	105529	75417	2277	13.2244	1.3852	0.728	1.9517	58688	66390	-122221	71471	3946	-60573	-60573
MAY 80	1206	114292	76403	2188	17.3167	1.3852	0.728	1.9517	73869	68603	-127488	79101	-2698	-63271	-63271
JUN 80	1206	91474	63012	1961	14.5140	1.3852	0.728	1.9517	55479	66390	-116576	57421	5591	-57681	-57681
JUL 80	1206	85568	62301	1944	11.9686	1.3852	0.728	1.9517	45340	68603	-93314	50382	11919	-45762	-45762
AUG 80	1206	97623	65589	1780	17.9966	1.3852	0.728	1.9517	62457	68603	-87168	62440	3149	-42612	-42612
SEP 80	1206	95734	65737	1962	15.2890	1.3852	0.728	1.9517	58475	66390	-79252	61681	4056	-38557	-38557
OCT 80	1206	103514	72677	2106	14.6425	1.3852	0.728	1.9517	60109	68603	-70758	68325	4352	-34205	-34205
NOV 80	1161	115652	73534	2270	18.5542	1.3762	0.7055	2.0462	86030	66390	-90399	83132	-9598	-43803	-43803
DEC 80	1161	118344	71042	2247	21.0512	1.3762	0.7055	2.0462	96640	68603	-118435	84744	-13702	-57504	-57504

	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
JAN 81	1161	119804	77008	2256	18.9699	1.3762	0.7055	2.0462	87419	68603	-137251	86203	-9195	-66700	-66700
FEB 81	1161	107563	78244	1845	15.8911	1.3762	0.7055	2.0462	59869	61964	-135157	77220	1024	-65676	-65676
MAR 81	1161	119819	86484	2122	15.7092	1.3762	0.7055	2.0462	68068	68603	-134622	86223	261	-65415	-65415
APR 81	1161	119819	86852	2111	15.6168	1.3762	0.7055	2.0462	67316	66390	-135548	87305	-453	-65867	-65867
MAY 81	1161	111423	82378	1715	16.9359	1.3762	0.7055	2.0462	59317	68603	-126262	77840	4538	-61329	-61329
JUN 81	1161	97876	70585	1225	22.2784	1.3762	0.7055	2.0462	55761	66390	-115634	65391	5194	-56135	-56135
JUL 81	1161	99486	83596	1340	11.8582	1.3762	0.7055	2.0462	32424	68603	-79455	65915	17681	-38455	-38455
AUG 81	1161	114353	85459	1284	22.5031	1.3762	0.7055	2.0462	59037	68603	-69890	80784	4675	-33780	-33780
SEP 81	1161	108306	82509	1214	21.2496	1.3762	0.7055	2.0462	52705	66390	-56205	75821	6688	-27092	-27092
OCT 81	1161	108178	78547	1210	24.4884	1.3762	0.7055	2.0462	60551	68603	-48152	74612	3935	-23157	-23157
NOV 81	1087	100523	77650	1856	12.3238	1.3614	0.6685	2.2117	50370	66390	-32132	70407	7243	-15914	-15914
DEC 81	1087	106391	55402	1528	33.3698	1.3614	0.6685	2.2117	112592	68603	-76121	75291	-19889	-35803	-35803
JAN 82	1087	109827	76725	1938	17.0805	1.3614	0.6685	2.2117	72984	68603	-80502	78706	-1981	-37784	-37784
FEB 82	1087	98961	73011	1599	16.2289	1.3614	0.6685	2.2117	57206	61964	-75744	70859	2152	-35632	-35632
MAR 82	1087	108164	78982	1730	16.8682	1.3614	0.6685	2.2117	64338	68603	-71479	77054	1928	-33704	-33704
APR 82	1087	109521	82626	1633	16.4697	1.3614	0.6685	2.2117	59292	66390	-64381	79416	3210	-30495	-30495
MAY 82	1087	111479	81587	1647	18.1494	1.3614	0.6685	2.2117	65918	68603	-61696	80373	1214	-29281	-29281
JUN 82	1087	105570	80094	1438	17.7163	1.3614	0.6685	2.2117	56176	66390	-51482	75476	4618	-24663	-24663
JUL 82	1087	107359	80275	1478	18.3248	1.3614	0.6685	2.2117	59728	68603	-42607	76262	4013	-20650	-20650
AUG 82	1087	107233	76086	1456	21.3922	1.3614	0.6685	2.2117	68716	68603	-42720	76137	-51	-20701	-20701
SEP 82	1087	107311	77403	1371	21.8147	1.3614	0.6685	2.2117	65986	66390	-42316	77220	183	-20518	-20518
OCT 82	1087	111967	79916	1661	19.2962	1.3614	0.6685	2.2117	70692	68603	-44405	80860	-944	-21463	-21463
NOV 82	1076	105497	73753	1679	18.9065	1.3592	0.663	2.2402	70900	66390	-48915	75766	-2013	-23476	-23476
DEC 82	1076	114493	76241	1740	21.9839	1.3592	0.663	2.2402	85471	68603	-65783	83771	-7530	-31006	-31006
JAN 83	1076	122766	78197	1861	23.9490	1.3592	0.663	2.2402	99607	68603	-96788	92037	-13840	-44846	-44846
FEB 83	1076	101790	66605	1395	25.2222	1.3592	0.663	2.2402	78644	61964	-113468	74051	-7446	-52292	-52292
MAR 83	1076	114372	76790	1526	24.6278	1.3592	0.663	2.2402	83997	68603	-128862	83662	-6872	-59164	-59164
APR 83	1076	109763	82463	1415	19.2933	1.3592	0.663	2.2402	60978	66390	-123450	80047	2416	-56748	-56748
MAY 83	1076	113835	86374	1330	20.6474	1.3592	0.663	2.2402	61349	68603	-116197	83136	3238	-53510	-53510
JUN 83	1076	102698	70434	1334	24.1859	1.3592	0.663	2.2402	72108	66390	-121915	72987	-2553	-56063	-56063
JUL 83	1076	106385	75943	1216	25.0345	1.3592	0.663	2.2402	68042	68603	-121354	75692	251	-55812	-55812
AUG 83	1076	104756	74541	1235	24.4656	1.3592	0.663	2.2402	67531	68603	-120282	74062	479	-55334	-55334
SEP 83	1076	103538	72048	1317	23.9104	1.3592	0.663	2.2402	70377	66390	-124268	73828	-1780	-57113	-57113
OCT 83	1076	101003	78789	1256	17.6863	1.3592	0.663	2.2402	49605	68603	-105270	70308	8481	-48633	-48633

	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
NOV 83	1038	108832	86082	1567	14.5182	1.3516	0.644	2.3386	52961	66390	-91841	80339	5743	-42890	-42890
DEC 83	1038	109757	82435	1409	19.3911	1.3516	0.644	2.3386	63677	68603	-86915	80329	2106	-40784	-40784
JAN 84	1038	101410	78952	1389	16.1685	1.3516	0.644	2.3386	52305	68603	-70617	71983	6969	-33815	-33815
FEB 84	1038	104699	82016	1304	17.3949	1.3516	0.644	2.3386	52845	64177	-59285	77170	4846	-28969	-28969
MAR 84	1038	113111	89632	1318	17.8141	1.3516	0.644	2.3386	54704	68603	-45385	83689	5943	-23025	-23025
APR 84	1038	108513	81815	1253	21.3073	1.3516	0.644	2.3386	62242	66390	-41237	80041	1774	-21252	-21252
MAY 84	1038	107770	82762	1175	21.2834	1.3516	0.644	2.3386	58302	68603	-30936	78357	4405	-16847	-16847
JUN 84	1038	107516	81487	1098	23.7058	1.3516	0.644	2.3386	60701	66390	-25247	79054	2433	-14414	-14414
JUL 84	1038	111975	87255	1095	22.5753	1.3516	0.644	2.3386	57641	68603	-14285	82567	4688	-9726	-9726
AUG 84	1038	110213	84849	1097	23.1212	1.3516	0.644	2.3386	59146	68603	-4828	80805	4044	-5683	-5683
SEP 84	1038	103593	79148	887	27.5592	1.3516	0.644	2.3386	57030	66390	4532	75145	4003	-1680	-1680
OCT 84	1038	95353	71897	1118	20.9803	1.3516	0.644	2.3386	54681	68603	18454	65944	5953	4273	4273
NOV 84	1000	100731	75065	1078	23.8089	1.344	0.625	2.4370	62355	66390	22489	73409	1656	5929	5929
DEC 84	1000	105119	78863	991	26.4945	1.344	0.625	2.4370	63808	68603	27284	76896	1967	7896	7896
JAN 85	1000	97701	72673	978	25.5910	1.344	0.625	2.4370	60818	68603	35069	69479	3194	11091	11091
FEB 85	1000	87591	69724	1023	17.4653	1.344	0.625	2.4370	43359	61964	53674	62089	7635	18725	18725
MAR 85	1000	99709	78454	939	22.6358	1.344	0.625	2.4370	51630	68603	70647	71489	6965	25690	25690
APR 85	1000	96451	74868	862	25.0383	1.344	0.625	2.4370	52443	66390	84593	69145	5723	31413	31413
MAY 85	1000	99966	76794	739	31.3559	1.344	0.625	2.4370	56338	68603	96859	71761	5033	36446	36446
JUN 85	1000	95599	74968	801	25.7566	1.344	0.625	2.4370	50134	66390	113114	68298	6670	43116	43116
JUL 85	1000	95270	70111	770	32.6740	1.344	0.625	2.4370	61175	68603	120543	67063	3048	46164	46164
AUG 85	1000	97225	72303	704	35.4006	1.344	0.625	2.4370	60609	68603	128537	69023	3280	49445	49445
SEP 85	1000	94874	70049	737	33.6839	1.344	0.625	2.4370	60367	66390	134561	67577	2472	51916	51916
OCT 85	1000	89990	66001	772	31.0738	1.344	0.625	2.4370	58323	68603	144841	61783	4218	56135	56135
NOV 85	949	95472	76401	757	25.1929	1.33431	0.6046	2.5946	49304	66390	161927	69816	6585	62720	62720
DEC 85	949	99037	65818	827	40.1681	1.33431	0.6046	2.5946	85996	68603	144534	72522	-6704	56016	56016
JAN 86	949	98447	55899	800	53.1850	1.33431	0.6046	2.5946	110207	68603	102930	71934	-16035	39981	39981
FEB 86	949	84266	53188	676	45.9734	1.33431	0.6046	2.5946	80476	61964	84417	60323	-7135	32846	32846
MAR 86	949	89603	62526	963	28.1173	1.33431	0.6046	2.5946	70028	68603	82992	63075	-549	32297	32297
APR 86	949	105579	70850	743	46.7416	1.33431	0.6046	2.5946	89933	66390	59449	79924	-9074	23223	23223
MAY 86	949	93692	60330	707	47.1881	1.33431	0.6046	2.5946	86395	68603	41657	67187	-6857	16366	16366
JUN 86	949	84239	54555	655	45.3191	1.33431	0.6046	2.5946	76864	66390	31183	58592	-4037	12329	12329
JUL 86	949	97960	64029	638	53.1834	1.33431	0.6046	2.5946	87887	68603	11898	71462	-7433	4896	4896
AUG 86	949	87427	60280	649	41.8290	1.33431	0.6046	2.5946	70283	68603	10218	60928	-648	4249	4249

	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
SEP 86	949	87322	62177	647	38.8640	1.33431	0.6046	2.5946	65089	66390	11519	61676	501	4750	4750
OCT 86	949	85289	69131	651	24.8203	1.33431	0.6046	2.5946	41771	68603	38351	58789	10342	15092	15092
NOV 86	949	73531	50265	730	31.8712	1.33431	0.6046	2.5946	60195	66390	44546	47877	2388	17479	17479
DEC 86	949	70786	49218	630	34.2349	1.33431	0.6046	2.5946	55812	68603	57337	44288	4930	22409	22409
JAN 87	914	41497	38709	557	5.0054	1.32766	0.5906	2.7027	7386	68603	118554	16059	22650	45059	45059
FEB 87	914	59494	55176	660	6.5424	1.32766	0.5906	2.7027	11493	61964	169025	36502	18674	63733	36075
MAR 87	914	63106	58361	709	6.6925	1.32766	0.5906	2.7027	12634	68603	224994	37653	20708	84441	32283
APR 87	914	53412	49148	557	7.6553	1.32766	0.5906	2.7027	11375	66390	280009	28793	20355	104797	30071
MAY 87	914	50113	45413	539	8.7199	1.32766	0.5906	2.7027	12558	68603	336054	24677	20736	125533	34316
JUN 87	914	62251	57949	500	8.6040	1.32766	0.5906	2.7027	11493	66390	390951	37637	20312	145845	30374
JUL 87	914	40420	36848	424	8.4245	1.32766	0.5906	2.7027	9540	68603	450014	14995	21853	167698	30369
AUG 87	914	33391	18015	328	46.8780	1.32766	0.5906	2.7027	41469	68603	477147	7976	10039	177737	25770
SEP 87	914	21095	19970	503	2.2366	1.32766	0.5906	2.7027	2905	66390	540632	0	19970	197707	20203
OCT 87	914	12745	11281	355	4.1239	1.32766	0.5906	2.7027	3861	68603	605373	0	11281	208988	7657
NOV 87	914	13341	12195	351	3.2650	1.32766	0.5906	2.7027	3003	66390	668760	0	12195	221183	2659
DEC 87	886	10417	9482	359	2.6045	1.32206	0.5787	2.7967	2508	68603	734855	0	9482	230665	0
JAN 88	886	19764	17757	578	3.4723	1.32206	0.5787	2.7967	5442	68603	798016	0	17757	248422	0
FEB 88	886	2075	1612	84	5.5119	1.32206	0.5787	2.7967	1270	64177	860923	0	1612	250034	0
MAR 88	886	204	109	22	4.3182	1.32206	0.5787	2.7967	259	68603	929267	0	109	250143	0
APR 88	886	204	0	60	3.4000	1.32206	0.5787	2.7967	553	66390	995104				
MAY 88	886	184	0	47	3.9149	1.32206	0.5787	2.7967	501	68603	1063207				
JUN 88	886	208	0	11	18.9091	1.32206	0.5787	2.7967	578	66390	1129018				
JUL 88	886	132	0	1	132.0000	1.32206	0.5787	2.7967	369	68603	1197252				
AUG 88	886	190	0	10	19.0000	1.32206	0.5787	2.7967	528	68603	1265327				
SEP 88	886	120	0	1	120.0000	1.32206	0.5787	2.7967	335	66390	1331382				
OCT 88	886	206	0	8	25.7500	1.32206	0.5787	2.7967	574	68603	1399411				
NOV 88	886	213	0	8	26.6250	1.32206	0.5787	2.7967	593	66390	1465208				
DEC 88	812	174	0	8	21.7500	1.30652	0.5454	3.0646	530	68603	1533280				
JAN 89	812	161	0	8	20.1250	1.30652	0.5454	3.0646	490	68603	1601393				
FEB 89	812	180	0	16	11.2500	1.30652	0.5454	3.0646	546	61964	1662811				
MAR 89	812	4270	0	115	37.1304	1.30652	0.5454	3.0646	13044	68603	1718370				
APR 89	812	27639	0	1099	25.1492	1.30652	0.5454	3.0646	84300	66390	1700460				
MAY 89	812	24007	0	594	40.4158	1.30652	0.5454	3.0646	73354	68603	1695709				
JUN 89	812	40416	0	549	73.6175	1.30652	0.5454	3.0646	123657	66390	1638442				

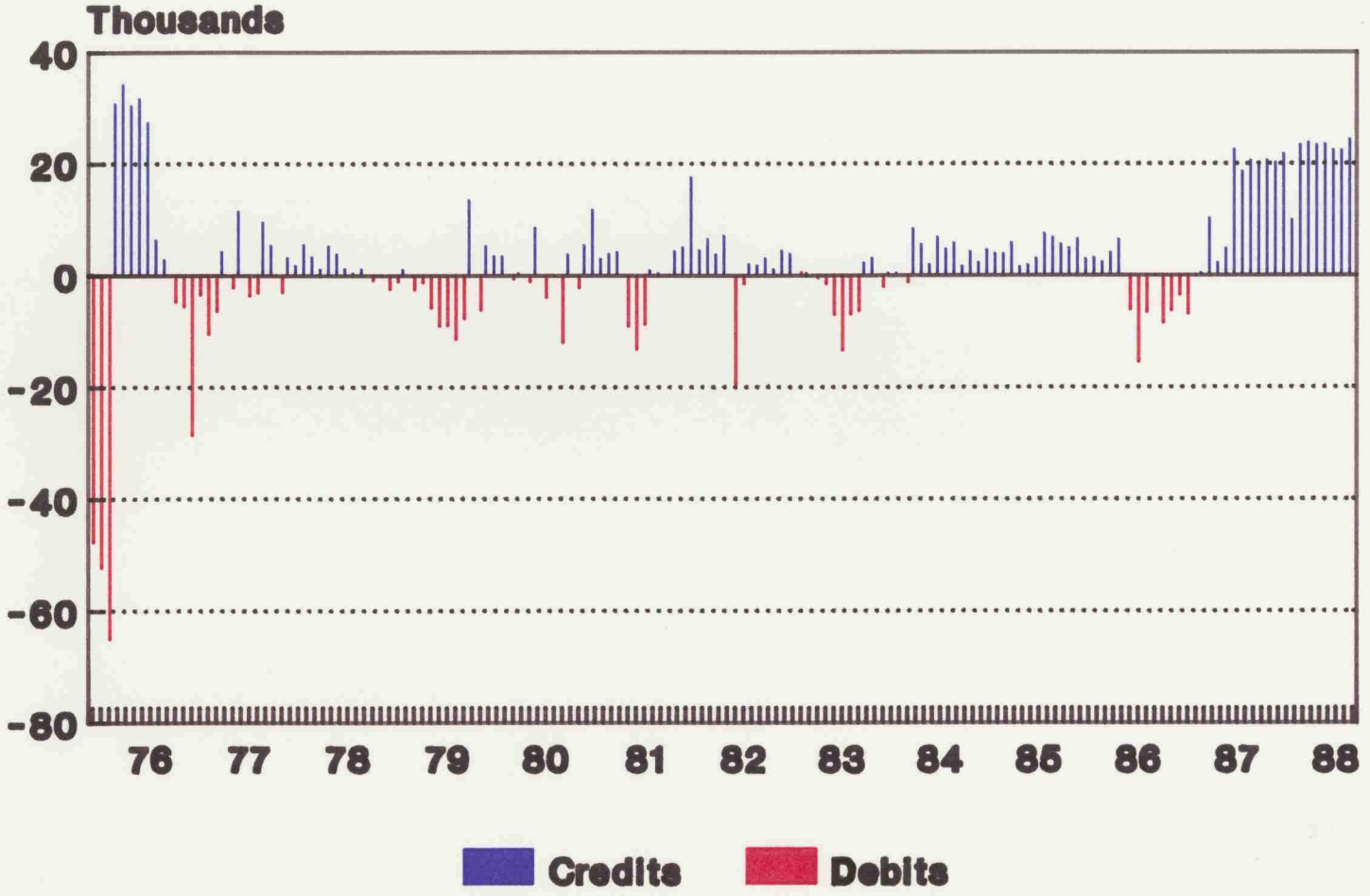
	Res Press (PSIA)	Gas Prod (MCF)	Gas Inj (MCF)	Oil Prod (STB)	Rpn	Bo	Rs	Bg	Res Voidage (RB)	Monthly Voidage Allow (RB)	Cumm Over/Under Neg= Overprod (RB)	Res Void Balance Gas (MCF)	Over/Under Injection Neg=Under (MCF)	Unadjusted Gas Bank (MCF)	Adjusted Gas Bank (MCF)
JUL 89	812	45252	0	509	88.9037	1.30652	0.5454	3.0646	138492	68603	1568553				
AUG 89	812	44626	0	475	93.9495	1.30652	0.5454	3.0646	136586	68603	1500570				
SEP 89	812	41893	0	393	106.5980	1.30652	0.5454	3.0646	128240	66390	1438720				
OCT 89	812	40278	0	403	99.9454	1.30652	0.5454	3.0646	123287	68603	1384036				
NOV 89	812	33740	0	397	84.9874	1.30652	0.5454	3.0646	103253	66390	1347173				
DEC 89	821	36094	0	360	100.2611	1.30841	0.54945	3.0320	109308	68603	1306468				
JAN 90	821	35952	0	414	86.8406	1.30841	0.54945	3.0320	108858	68603	1266213				
FEB 90	821	32425	0	325	99.7692	1.30841	0.54945	3.0320	98196	61964	1229982				
MAR 90	821	34137	0	326	104.7147	1.30841	0.54945	3.0320	103386	68603	1195198				
APR 90	821	33350	0	188	177.3936	1.30841	0.54945	3.0320	101049	66390	1160539				
MAY 90	821	29124	0	238	122.3697	1.30841	0.54945	3.0320	88218	68603	1140924				
JUN 90	821	27118	0	282	96.1631	1.30841	0.54945	3.0320	82120	66390	1125193				
JUL 90	821	33019	0	347	95.1556	1.30841	0.54945	3.0320	99989	68603	1093807				
AUG 90	821	20634	0	146	141.3288	1.30841	0.54945	3.0320	62510	68603	1099901				
SEP 90	821	25996	0	165	157.5515	1.30841	0.54945	3.0320	78760	66390	1087530				
OCT 90	821	31652	0	221	143.2217	1.30841	0.54945	3.0320	95889	68603	1060244				
NOV 90	821	28816	0	285	101.1088	1.30841	0.54945	3.0320	87268	66390	1039367				
DEC 90	821	28406	0	289	98.2907	1.30841	0.54945	3.0320	86023	68603	1021946				

Exhibit #11

This is a plot of the values shown in the prior exhibit in the column labeled "Over/Under Injection". Another way of describing Exhibit 11 is to think of the negative values (red) as debits to the gas bank or overproduction and positive values (blue) as credits to the gas bank or underproduction.

BANK CREDITS/DEBITS

Citgo Empire Abo Unit



Jun. 1975 to Mar. 1988

WHAT OXY IS SEEKING FOR CEAU

- Rescind Order No. 4808 effective May 1, 1988.
- Assign each capable well a top allowable of 142 BOPD and gas limit of 284 MCFPD, beginning with May, 1988.
- Reinstate all underproduction that accumulated during each monthly proration period, beginning with May, 1988.
- Allow two years to make the underproduction.
- Combine the proration and spacing units to allow the flexibility to produce the allowable from any well or wells or combinations thereof.

Exhibit #13

As discussed before, the other operators in the pool, except Arco, are subject to the same allowable limitations that existed in the early 1970's. These limitations are 142 BOPD and a 2000:1 GOR for 40 acres. This exhibit is a copy of the latest proration schedule for the Empire Abo Pool and shows the operators and wells currently located in the pool.

Oxy is asking to be treated the same as these operators in the pool, to enjoy the same allowable limitations as they enjoy.

EAGLE CREEK - SAN ANDRES continued:

YATES PETROLEUM continued:

Yates Fee DT	1,2	E	13017025	M
Gissler AV	3,10,16,21,35	E	23-17-25	NSO
"	4,13,19,26,36	L	"	NSO
Gissler AV	5,24,25,[illegible]	K	23-17-25	NSO
"	7,11,32,31	M	"	NSO
"	8,14,18,20,30,39,43	F	"	NSO
"	9,12,17,27	C	"	M
"	22,23,28	G	"	NSO

ELKIN - SAN ANDRES
Oil - 80 Acre Spacing
Top Allowable 80 GOR Limit 2,000
No Test Required
Top Casinghead Gas Limit 160 MCF
OILFIELD TRAINING CENTER FOUNDATION

Amonett	1Y	H	21-7-28	M
Lusk	1	E	22-7-28	M
Pogo State	1	P	16-7-28	M
"	2	M	"	M

ELKINS - FUSSELMAN, SOUTH
Top Allowable 222 GOR Limit 2,000
Top Casinghead Gas Limit 666 MCF
WALTERS EXPLORATION, INC.

J.G. O'Brien (84)	1	E	21-7-29	M 1369

Acreage Factor .925

EMPIRE - ABO
Top Allowable 142 GOR Limit 2,000
Top Casinghead Gas Limit 284 MCF
ARCO OIL & GAS CO - DIVISION OF ATLANTIC RICHFIELD CO.
R-4549
Empire Abo Pressure Maintenance Project
*Maximum Allowable Formula:
284 X 142 = 40,320

Empire Abo Unit

" B	40	H	26-17-28	SI
"	45	E	30-17-29	
"	46	F	"	SI
"	47	G	30-17-29	
" B	48	H	"	INPUT
"	49	E	29-17-29	"

Empire Abo Unit

" C	34	K	27-17-28	SI
"	35	J	"	SI
"	36	I	"	SI
"	37	L	26-17-28	SI
/*	38	K	"	SI-DROP
"	39	J	"	INPUT
"	40	I	"	
"	41	L	25-17-28	
"	42	K	"	
"	43	J	"	
"	44	I	"	
"	45	L	30-17-29	SI
"	46	K	"	SI
"	47	J	"	
"	49	L	29-17-29	INPUT
"	50	K	"	"

Empire Abo Unit

" D	33	M	27-17-28	SI
"	34	N	"	

EMPIRE - ABO continued:

ARCO OIL & GAS continued:
Empire Abo Unit D

"	36	P	27-17-28	
"	361	P	"	
"	37	N	26-17-28	INPUT
"	38	N	"	SI
"	39	O	"	
"	40	P	"	
"	41	N	25-17-28	SI
"	42	N	"	
"	43	O	"	
"	44	P	"	

Empire Abo Unit

" E	26	C	32-17-28	SI
"	27	B	32-17-28	SI
"	28	A	"	SI
"	30	C	33-17-28	SI
"	31	B	"	SI
"	32	A	"	SI
"	33	O	34-17-28	SI
"	341	C	"	SI
"	35	B	"	
"	351	B	"	
"	36	A	"	SI
"	361	A	"	SI
"	362	A	"	SI
"	363	A	"	SI
"	37	D	35-17-28	
"	371	D	"	
"	372	D	"	SI
"	373	D	"	SI
"	38	C	35-17-29	SI
"	381	C	"	SI
"	382	C	"	SI
"	383	C	"	SI
"	384	C	"	SI
"	79	B	"	SI
"	391	B	"	SI
"	392	B	"	SI
"	393	B	"	SI
"	395	B	"	SI
"	40	A	35-17-28	SI
/*	41	D	36-17-28	TA

Empire Abo Unit

" F	22	F	31-27-28	SI
"	25	E	32-17-28	INPUT
"	26	F	"	SI
"	27	G	"	INPUT
"	28	H	"	SI
"	29	E	33-17-28	SI
"	30	F	"	SI
"	31	G	33-17-28	INPUT
"	32	H	"	SI
"	321	H	"	SI
"	332	H	"	SI
"	33	E	34-17-28	SI
"	331	E	"	
"	332	E	"	
"	333	E	"	
"	334	E	"	SI
"	335	E	"	
"	336	E	"	
"	34	F	"	
"	341	F	"	
"	342	F	"	
"	343	F	34-17-28	
"	35	G	"	SI

EMPIRE - ABO continued:

ARCO OIL & GAS continued:
Empire Abo Unit

" G	351	G	34-17-28	SI
"	352	G	"	SI
"	353	G	"	SI
"	354	G	"	
"	36	h	"	SI
"	361	H	"	
"	362	H	"	SI
"	363	H	"	SI
"	364	H	"	SI
"	37	E	35-17-28	SI
"	371	E	"	SI
"	373	E	"	
"	374	E	"	SI
"	375	E	"	SI
"	376	E	"	
"	38	F	"	SI
"	382	F	"	SI
"	39	G	"	SI
"	391	G	"	SI
"	40	H	"	SI

Empire Abo Unit

" G	22	K	"	INPUT
"	23	J	"	SI
"	24	I	"	INPUT
"	25	L	32-17-28	
"	26	K	"	
"	27	J	"	
"	28	I	"	SI
"	29	L	33-17-28	
"	291	L	"	
"	30	K	"	
"	301	K	"	
"	31	J	"	SI
"	311	J	"	
"	312	J	"	
"	313	J	"	
"	314	J	"	SI
"	315	J	"	
"	32	I	"	
"	321	I	"	SI
"	322	I	"	
"	323	I	"	
"	324	I	"	
"	33	L	34-17-28	SI
"	331	L	"	
"	332	L	"	
"	333	L	"	
"	334	L	"	
"	341	K	"	SI
"	342	K	"	
"	35	J	"	SI
"	352	J	"	SI
"	353	J	"	
"	361	I	"	SI
"	37	L	35-17-28	SI
"	38	K	"	SI

Empire Abo Unit

" H	12	P	34-17-27	SI
"	17	N	36-17-27	SI
"	18	N	"	SI
"	19	O	"	INPUT
"	20	P	"	SI
"	21	N	31-17-28	INPUT
"	22	N	"	SI
"	23	O	"	
"	24	P	"	

EMPIRE - ABO continued:

ARCO OIL & GAS CO. continued:
Empire Abo Unit

" H	25	M	32-17-28	
"	26	N	"	
"	261	N	"	
"	27	O	"	
"	271	O	"	
"	272	O	"	
"	28	P	"	
"	281	P	"	
"	29	M	33-17-28	
"	291	M	"	
"	292	M	"	
"	293	M	"	
"	294	M	"	
"	295	M	"	
"	30	N	33-17-28	SI
"	301	N	"	SI
"	302	N	"	SI
"	303	N	"	SI
"	31	O	"	SI
"	312	O	"	SI
"	32	P	"	SI
"	321	P	"	
"	322	P	"	
"	33	M	34-17-28	
"	331	M	"	SI
"	34	N	"	SI
"	341	N	"	SI
"	35	O	"	

Empire Abo Unit

" I	10	C	3-18-27	INPUT
"	11	B	"	SI
"	12	A	"	
"	13	D	2-18-27	SI
"	16	A	"	
"	17	D	"	SI
"	18	C	1-18-27	INPUT
"	19	B	"	
"	20	A	1-18-27	
"	21	D	8-18-28	
"	22	C	"	
"	23	B	"	SI
"	231	B	"	
"	24	A	"	
"	25	D	5-18-28	
"	251	D	"	SI
"	26	C	"	
"	261	C	"	
"	27	B	"	
"	271	B	"	
"	272	B	"	
"	273	B	"	
"	28	A	5-18-28	
"	281	A	"	
"	282	A	"	
"	283	A	"	
"	29	D	4-18-28	SI
"	291	D	"	
"	292	D	"	
"	30	C	"	SI

Empire Abo Unit

" J	8	H	4-18-27	SI
"	9	E	3-18-27	
"	10	F	"	SI
"	11	G	"	SI
"	12	H	"	INPUT

EMPIRE - ABO continued:

ARCO OIL & GAS CO continued:
Empire Abo Unit

" J	13	E	2-18-27	SI
"	14	F		
"	15	G		
"	17	E		SI
"	18	F	2-18-27	SI
"	19	G	"	
"	191	G	"	SI
"	20	H	2-18-27	SI
"	201	H	"	
"	202	H	1-18-27	
"	203	H	"	
"	21	E	6-18-28	
"	211	E	"	
"	212	E	"	
"	213	E	"	
"	22	F	"	
"	221	F	"	
"	222	F	6-18-28	
"	223	F	"	SI
"	23	G	"	SI
"	231	G	"	
"	232	G	"	
"	233	G	"	
"	234	G	"	
"	235	G	"	
"	24	H	6-18-28	
"	241	H	"	
"	26	F	5-18-28	
"	27	G	"	SI
"	28	H	"	

Empire Abo Unit

" K	7	J	4-18-27	INPUT
"	8	I	"	SI
"	9	J	3-18-27	
"	10	K	"	
"	11	J	"	SI
"	12	I	"	
"	13	L	2-18-27	
"	131	L	"	
"	14	K	2-18-27	
"	141	K	2-18-27	
"	142	K	"	
"	143	K	"	
"	15	J	"	
"	16	I	"	
"	161	I	"	
"	17	L	1-18-27	
"	18	K	"	
"	181	K	"	
"	182	K	"	
"	183	K	"	
"	184	K	"	
"	19	J	"	
"	191	J	"	SI
"	192	J	"	
"	193	J	1-18-27	
"	194	J	"	SI
"	20	I	"	
"	21	L	"	
"	211	L	6-18-28	
"	22	K	"	
"	23	J	"	
"	231	J	"	
"	232	J	"	SI
"	24	I	"	SI

EMPIRE - ABO continued.

ARCO OIL & GAS CO continued:
Empire Abo Unit

" L	5	M	6-18-28	SI
"	6	N	4-18-27	SI
"	7	O	"	SI
"	8	P	"	SI
"	9	M	3-18-27	
"	10	N	"	
"	11	O	"	SI
"	111	O	"	
"	12	P	"	
"	121	P	"	
"	122	P	3-18-27	
"	123	P	"	
"	13	M	2-18-27	
"	131	M	"	
"	132	M	2-18-27	
"	133	M	"	
"	134	M	"	
"	141	M	"	
"	141	N	"	SI
"	142	N	"	
"	143	N	"	
"	15	O	"	
"	151	O	"	SI
"	152	O	"	
"	153	O	"	SI
"	154	O	"	SI
"	155	O	"	
"	156	O	"	
"	16	P	"	
"	17	M	1-18-27	
"	171	M	"	
"	18	N	"	SI
"	19	O	"	SI
"	20	P	"	SI
"	22	N	6-18-28	

Empire Abo Unit

" M	6	C	9-18-27	INPUT
"	7	B	"	
"	8	A	"	
"	9	D	10-18-27	
"	901	D	10-18-27	SI
"	10	C	"	
"	101	C	"	
"	11	B	"	
"	12	A	"	
"	121	A	"	
"	123	A	"	
"	132	D	"	IA
"	133	D	10-18-27	
"	14	C	"	SI
"	141	C	"	
"	15	B	"	
"	151	B	10-18-27	
"	152	B	"	
"	153	B	10-18-27	
"	16	A	"	

Empire Abo Unit

" N	4	H	8-18-27	SI
"	5	E	9-18-27	SI
"	6	F	"	SI
"	7	G	"	
/"	701	G	"	IA
"	8	H	"	SI
"	801	H	"	SI

EMPIRE - ABO UNIT continued.

ARCO OIL & GAS CO. continued:
Empire Abo Unit

" M	9	E	10-18-27	
"	901	E	"	
"	10	F	"	
"	11	G	"	
"	12	H	"	
"	13	E	11-18-27	SI
/"	14	F	10-18-27	SI-DROP

Empire Abo Unit

" O	4	I	8-18-27	SI
"	5	L	9-18-27	SI
"	6	K	"	SI
"	7	J	"	
"	8	I	"	
"	9	L	10-18-27	SI

Empire Abo Unit

" P	4	P	8-18-27	SI
"	5	M	9-18-27	SI
"	6	N	"	SI
"	7	O	"	SI
"	8	P	"	
"	9	M	10-18-27	

Empire Abo Unit

" Q	5	D	16-18-27	SI
"	6	C	"	SI
"	7	B	"	SI
"	8	A	"	SI
"	9	D	15-18-27	

Empire Abo Unit

" R	3	G	17-18-27	SI
"	4	N	"	SI
"	5	E	16-18-27	SI
"	6	F	"	SI
"	7	G	"	SI
"	8	H	"	SI

Empire Abo Unit

" S	2	K	17-18-27	SI
"	3	J	"	SI
"	5	L	16-18-27	SI
"	6	K	"	SI
"	7	J	"	SI
"	8	I	"	SI

Empire Abo Unit

" T	6	N	16-18-27	SI
"	7	O	16-18-27	SI

DURHAM, INC.

/State H (9)	1	H	2-18-27	25	10000

SIDNEY LANIER

State 19 (14)	1	N	19-17-29	M	1571
State S-19	3	J	"		SI
State 19 (6)	4	O	"	M	3500

MARBOB ENERGY CORP.

Hanover St. (5)	2	P	28-17-28	M	4400

*OXY USA INC.
(Citgo Empire Abo Pressure Maintenance Project)
Capacity Allowable
Cities Empire Abo

" Tr. 1	10	O	35-17-27	
" Tr. 2	13	P	"	
" Tr. 3	5	C	2-18-27	
" Tr. 1	11	M	35-17-27	INPUT

EMPIRE - ABO UNIT continued:

BRIDGE OIL CO., L.P.

/Delhi A St.(8)	1	O	33-17-28	*N	38643

PHILLIPS PETROLEUM CORP

State E-A1(61)	1	E	5-18-28	M	4776
State M-A1(9)	2	M	6-18-28	M	31205

EMPIRE - WOLFCAMP, SOUTH
80 Acre Spacing
Allowable 310 GOR Limit 6,000
No Test Required
Top Casinghead Gas Limit 1060 MCF
AMOCO PRODUCTION CO.

Empire South Deep Unit	4	G	32-17-29	M
"	11	F	"	M310

EMPIRE-YATES-SEVEN RIVERS
Top Allowable 80 No GOR Limit
ARROWHEAD OIL CORP.

Powco State	1,2	B	31-17-28	M

BJ PRODUCTION CO

Delhi	8	C	36-17-27	M

BAKER WELL SERVICE CO.

Acrey	2,3Y	F	36-17-27	M
Acrey State	5	F	"	M
Brainard	1	O	25-17-27	M
"	2	N	"	M
Conklin	1,2	G	36-17-27	M
Delhi	1,7	A	"	M
"	2,5,6	C	"	M
"	3,4	L	"	M
Hastie	1,3,9,10	E	18-17-28	M
Acreage Factor 1.075				
Hastie	2	F	18-17-28	M
"	6	C	"	M
Malco State	1	G	31-17-28	M
State A	1,2	B	36-17-28	M
State E-279	1	M	"	M

WILLIAM P. DOOLEY

Hastie	1	J	18-17-28	M
Hastie	2	I	18-17-28	M
"	3	P	"	M
Ramapo	1,2	K	26-17-27	M
"	3	J	"	M
"	4	N	"	M
Shearn Federal	1,2	H	14-17-27	M

FROSTMAN OIL CORP.

Blake State	1	P	30-17-28	M

HANSON ENERGY

Harbold	3	F	35-17-27	M
Hastie	5,7,9	L	18-17-28	M
"	6,8	M	"	M
Malco	1	A	3-18-27	M
Saunders	2	P	13-17-27	M
Trigg Fed	1,2	O	26-17-27	M
West	1	D	30-17-28	M
"	2	P	24-17-27	M

MV Rev C-124 prss./for oxy

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		CITGO EMPIRE ABO UNIT															
2		VOIDAGE HISTORY AND BANK STATUS															
3																	
4																	
5					GAS	GAS	OIL	DAILY	RES. VOID.	MONTHLY	CUM						
6					PROD.	INJ.	PROD.	VOIDAGE	BALANCE	CHANGE IN	GAS BANK	VOIDAGE		PR	BO	BG	RS
7	DAYS	Press	YEAR	mon	(MCF)	(MCF)	(STB)	RVB/D	GAS-MCF	GAS BANK	STATUS	RVB					
8										MCF	MCF						
9	20	1273	1974	6	31701	0	6451	2911	7601	-7601	-7601	58218		1273	1.399	1.836	0.762
10	31	1273		7	46576	0	9551	2759	9220	-9220	-16821	85535		1273	1.399	1.836	0.762
11	31	1273		8	56108	0	11824	3324	18752	-18752	-35573	103041		1273	1.399	1.836	0.762
12	30	1273		9	54768	0	11182	3353	18617	-18617	-54191	100580		1273	1.399	1.836	0.762
13	31	1273		10	49487	0	10467	2932	12131	-12131	-66322	90881		1273	1.399	1.836	0.762
14	30	1273		11	53249	0	11322	3260	17098	-17098	-83421	97790		1273	1.399	1.836	0.762
15	31	1273		12	51993	0	12068	3080	14637	-14637	-98058	95484		1273	1.399	1.836	0.762
16					343882	0	72865	3096	98058			631530					
17																	
18																	
19	31	1273		1	66346	0	11726	3930	28990	-28990	-127048	121842		1273	1.399	1.836	0.762
20	28	1273		2	42765	0	8360	2805	9024	-9024	-136073	78537		1273	1.399	1.836	0.762
21	31	1273		3	55416	0	9018	3283	18060	-18060	-154133	101770		1273	1.399	1.836	0.762
22	30	1273		4	46721	0	7736	2860	10570	-10570	-164703	85801		1273	1.399	1.836	0.762
23	31	1273		5	52307	0	7243	3099	14951	-14951	-179654	96060		1273	1.399	1.836	0.762
24	30	1273	1975	6	94670	24050	13013	4323	58520	-34470	-214124	129691		1273	1.399	1.836	0.762
25	31	1273		7	157535	70147	14044	5177	120180	-50033	-264156	160485		1273	1.399	1.836	0.762
26	31	1273		8	179754	79589	14069	5934	142399	-62810	-326966	183949		1273	1.399	1.836	0.762
27	30	1273		9	72459	70180	8008	140	36308	33872	-293094	4186		1273	1.399	1.836	0.762
28	31	1153		10	86429	86429	7707	-18	52911	33518	-259576	-562		1153	1.375	2.064	0.702
29	30	1153		11	83782	81082	8210	166	51319	29763	-229813	4973		1153	1.375	2.064	0.702
30	31	1153		12	77903	75330	8017	152	44374	30956	-198857	4725		1153	1.375	2.064	0.702
31					1016087	486807	117151	2662	587606			971456					
32																	

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RV IG

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
33	31	1153	1976	1	90475	83570	9218	438	56903	26667	-172190	13576		1153	1.375	2.064	0.702
34	29	1153		2	107175	81361	9098	1814	75753	5608	-166582	52604		1153	1.375	2.064	0.702
35	31	1153		3	120023	88478	10757	2074	86397	2081	-164501	64309		1153	1.375	2.064	0.702
36	30	1153		4	121452	82853	8619	2634	88974	-6121	-170622	79021		1153	1.375	2.064	0.702
37	31	1153		5	129698	89174	8464	2678	96153	-6979	-177601	83005		1153	1.375	2.064	0.702
38	30	1153		6	149926	87514	7617	4274	117484	-29970	-207570	128233		1153	1.375	2.064	0.702
39	31	1219		7	129544	88608	7182	2541	93877	-5269	-212839	78768		1219	1.388	1.929	0.735
40	31	1219		8	132874	84843	7305	2982	97205	-12362	-225201	92453		1219	1.388	1.929	0.735
41	30	1219		9	127658	84999	6956	2737	93141	-8142	-233344	82099		1219	1.388	1.929	0.735
42	31	1219		10	117335	84725	6522	2023	81678	3047	-230297	62724		1219	1.388	1.929	0.735
43	30	1219		11	114550	76054	6650	2469	80038	-3984	-234281	74076		1219	1.388	1.929	0.735
44	31	1219		12	101089	75661	6491	1576	65432	10229	-224052	48869		1219	1.388	1.929	0.735
45					1441799	1007840	94879	2349	1033035			859737					
46																	
47																	
48	31	1219	1977	1	116327	75145	6818	2557	80665	-5520	-229572	79254		1219	1.388	1.929	0.735
49	28	1219		2	104638	67609	6383	2545	72424	-4815	-234387	71254		1219	1.388	1.929	0.735
50	31	1219		3	104487	77161	6405	1695	68832	8329	-226058	52533		1219	1.388	1.929	0.735
51	30	1219		4	97777	67537	5480	1939	63283	4254	-221804	58182		1219	1.388	1.929	0.735
52	31	1219		5	105051	64505	5445	2518	69410	-4905	-226709	78067		1219	1.388	1.929	0.735
53	30	1219		6	100869	68418	5171	2082	66379	2039	-224670	62457		1219	1.388	1.929	0.735
54	31	1219		7	102664	67560	4992	2180	67030	530	-224140	67581		1219	1.388	1.929	0.735
55	31	1219		8	113438	82437	5104	1925	77802	4635	-219506	59661		1219	1.388	1.929	0.735
56	30	1219		9	115045	82973	5103	2058	80556	2417	-217089	61728		1219	1.388	1.929	0.735
57	31	1218		10	120103	84584	5266	2207	84495	89	-217001	68432		1218	1.388	1.931	0.734
58	30	1218		11	114861	84740	4770	1934	80407	4333	-212668	58023		1218	1.388	1.931	0.734
59	31	1218		12	115194	82435	5390	2035	79584	2851	-209817	63098		1218	1.388	1.931	0.734
60					1310454	905104	66327	2138	890869			780269					
61																	
62																	
63	31	1218	1978	1	120056	84643	5495	2201	84445	198	-209619	68220		1218	1.388	1.931	0.734
64	28	1218		2	102784	70112	4477	2248	70627	-515	-210133	62958		1218	1.388	1.931	0.734

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
65	31	1218		3	117267	81786	4934	2205	81664	122	-210012	68368		1218	1.388	1.931	0.734
66	30	1218		4	112722	75799	4370	2372	78274	-2475	-212487	71170		1218	1.388	1.931	0.734
67	31	1218		5	124602	87180	4475	2327	89007	-1827	-214314	72130		1218	1.388	1.931	0.734
68	30	1218		6	102866	64360	3830	2475	68426	-4066	-218380	74243		1218	1.388	1.931	0.734
69	31	1218		7	86630	48305	3628	2384	51048	-2743	-221123	73899		1218	1.388	1.931	0.734
70	31	1218		8	108074	73670	3910	2139	72487	1183	-219940	66319		1218	1.388	1.931	0.734
71	30	1218		9	113116	75618	4151	2410	78672	-3054	-222993	72287		1218	1.388	1.931	0.734
72	31	1155		10	106381	69009	3907	2473	72930	-3921	-226914	76677		1155	1.375	2.059	0.703
73	30	1155		11	92629	52478	4301	2746	60239	-7761	-234675	82371		1155	1.375	2.059	0.703
74	31	1155		12	114007	69534	4104	2945	80549	-11015	-245690	91285		1155	1.375	2.059	0.703
75					1301134	852494	51582	2411	888367			879926					
76																	
77																	
78	31	1155	1979	1	129590	85192	4542	2939	96117	-10925	-256615	91099		1155	1.375	2.059	0.703
79	28	1155		2	107568	64144	3777	3184	77345	-13201	-269816	89148		1155	1.375	2.059	0.703
80	31	1155		3	116434	73314	3805	2855	82986	-9672	-279488	88520		1155	1.375	2.059	0.703
81	30	1155		4	81817	61642	2295	1379	49497	12145	-267343	41380		1155	1.375	2.059	0.703
82	31	1155		5	97692	56060	3356	2758	64260	-8200	-275543	85488		1155	1.375	2.059	0.703
83	30	1155		6	88927	60585	2756	1939	56591	3994	-271548	58165		1155	1.375	2.059	0.703
84	31	1155		7	92342	61050	2643	2072	58935	2115	-269433	64247		1155	1.375	2.059	0.703
85	31	1155		8	94987	63695	2649	2072	61580	2115	-267318	64247		1155	1.375	2.059	0.703
86	30	1155		9	100030	65147	2956	2387	67687	-2540	-269857	71619		1155	1.375	2.059	0.703
87	31	1216		10	94756	60376	2658	2143	59250	1126	-268732	66426		1216	1.387	1.934	0.733
88	30	1216		11	100682	65007	3204	2297	66312	-1305	-270036	68914		1216	1.387	1.934	0.733
89	31	1216		12	86776	44704	3152	2622	51263	-6559	-276595	81290		1216	1.387	1.934	0.733
90					1191601	760916	37793	2385	791821			870544					
91																	
92																	
93	31	1216	1980	1	108105	68460	2871	2471	72596	-4136	-280731	76604		1216	1.387	1.934	0.733
94	28	1216		2	98489	65033	2805	2308	66413	-1380	-282111	64634		1216	1.387	1.934	0.733
95	31	1216		3	107404	59750	2721	2971	71897	-12147	-294259	92102		1216	1.387	1.934	0.733
96	30	1216		4	105529	75417	2277	1939	71173	4244	-290015	58181		1216	1.387	1.934	0.733

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
97	31	1216		5	114292	76403	2188	2362	78794	-2391	-292406	73228		1216	1.387	1.934	0.733
98	30	1216		6	91474	63012	1961	1833	57124	5888	-286517	54999		1216	1.387	1.934	0.733
99	31	1216		7	85568	62301	1944	1450	50074	12227	-274290	44950		1216	1.387	1.934	0.733
100	31	1216		8	97623	65589	1780	1997	62131	3458	-270833	61914		1216	1.387	1.934	0.733
101	30	1216		9	95734	65737	1962	1932	61383	4354	-266479	57968		1216	1.387	1.934	0.733
102	31	1099		10	103514	72677	2106	2162	71950	727	-265752	67017		1099	1.364	2.181	0.675
103	30	1099		11	115652	73534	2270	3053	85095	-11561	-277313	91599		1099	1.364	2.181	0.675
104	31	1099		12	118344	71042	2247	3320	86773	-15731	-293044	102906		1099	1.364	2.181	0.675
105					1241728	818955	27132	2318	835404			846103					
106																	
107																	
108	31	1099	1981	1	119804	77008	2256	3003	88233	-11225	-304268	93079		1099	1.364	2.181	0.675
109	28	1099		2	107563	78244	1845	2276	79056	-812	-305081	63735		1099	1.364	2.181	0.675
110	31	1099		3	119819	86484	2122	2338	88254	-1770	-306851	72463		1099	1.364	2.181	0.675
111	30	1099		4	119819	86852	2111	2389	89270	-2418	-309268	71662		1099	1.364	2.181	0.675
112	31	1099		5	111423	82378	1715	2037	79878	2500	-306768	63152		1099	1.364	2.181	0.675
113	30	1099		6	97876	70585	1225	1979	67370	3215	-303553	59379		1099	1.364	2.181	0.675
114	31	1099		7	99486	83596	1340	1113	67959	15637	-287917	34506		1099	1.364	2.181	0.675
115	31	1099		8	114353	85459	1284	2028	82829	2630	-285287	62869		1099	1.364	2.181	0.675
116	30	1099		9	108306	82509	1214	1871	77801	4708	-280579	56123		1099	1.364	2.181	0.675
117	31	1087		10	108178	78547	1210	2109	77095	1452	-279127	65392		1087	1.361	2.212	0.669
118	30	1087		11	100523	77650	1856	1679	70407	7243	-271884	50370		1087	1.361	2.212	0.669
119	31	1087		12	106391	55402	1528	3632	75291	-19889	-291773	112592		1087	1.361	2.212	0.669
120					1313541	944714	19706	2206	943443			805322					
121																	
122																	
123	31	1087	1982	1	109827	76625	1938	2361	78706	-2081	-293854	73205		1087	1.361	2.212	0.669
124	28	1087		2	98961	73011	1599	2043	70859	2152	-291702	57206		1087	1.361	2.212	0.669
125	31	1087		3	108164	78982	1730	2075	77054	1928	-289774	64338		1087	1.361	2.212	0.669
126	30	1087		4	109521	82626	1633	1976	79416	3210	-286565	59292		1087	1.361	2.212	0.669
127	31	1087		5	111479	81587	1647	2126	80373	1214	-285351	65918		1087	1.361	2.212	0.669
128	30	1087		6	105570	80094	1438	1873	75476	4618	-280733	56176		1087	1.361	2.212	0.669

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
129	31	1087		7	107359	80275	1478	1927	76262	4013	-276720	59728		1087	1.361	2.212	0.669
130	31	1087		8	104333	76086	1456	2010	73237	2849	-273871	62303		1087	1.361	2.212	0.669
131	30	1047		9	96599	77043	1371	1502	67836	9207	-264664	45074		1047	1.353	2.315	0.649
132	31	1047		10	107687	79916	1661	2066	77950	1966	-262698	64051		1047	1.353	2.315	0.649
133	30	1047		11	105497	73753	1679	2442	76715	-2962	-265660	73247		1047	1.353	2.315	0.649
134	31	1047		12	114493	76241	1740	2849	84751	-8510	-274170	88306		1047	1.353	2.315	0.649
135					1279490	936239	19370	2106	918636			768845					
136																	
137																	
138	31	1047	1983	1	122553	78197	1861	3304	92803	-14606	-288777	102421		1047	1.353	2.315	0.649
139	28	1047		2	101790	66605	1395	2902	74938	-8333	-297109	81256		1047	1.353	2.315	0.649
140	31	1047		3	114372	76790	1526	2800	84644	-7854	-304963	86787		1047	1.353	2.315	0.649
141	30	1047		4	109763	82463	1415	2100	80998	1465	-303498	62997		1047	1.353	2.315	0.649
142	31	1047		5	113835	86374	1330	2045	84119	2255	-301243	63383		1047	1.353	2.315	0.649
143	30	1047		6	102698	70434	1334	2483	73938	-3504	-304747	74502		1047	1.353	2.315	0.649
144	31	1047		7	106385	75943	1216	2268	76677	-734	-305480	70301		1047	1.353	2.315	0.649
145	31	1047		8	104756	74541	1235	2251	75046	-505	-305986	69773		1047	1.353	2.315	0.649
146	30	1047		9	103538	72048	1317	2424	74779	-2731	-308717	72713		1047	1.353	2.315	0.649
147	31	993		10	101003	78789	1256	1754	73004	5785	-302932	54381		993	1.343	2.459	0.622
148	30	993		11	108832	86082	1563	1855	81710	4372	-298560	55641		993	1.343	2.459	0.622
149	31	993		12	109757	82435	1409	2158	81747	688	-297872	66911		993	1.343	2.459	0.622
150					1299282	930701	16857	2359	954403			861067					
151																	
152																	
153	31	993	1984	1	101410	78952	1387	1773	73402	5550	-292322	54956		993	1.343	2.459	0.622
154	28	993		2	104699	82016	1304	1983	79397	2619	-289703	55525		993	1.343	2.459	0.622
155	31	993		3	113111	89632	1318	1854	85108	4524	-285179	57480		993	1.343	2.459	0.622
156	30	993		4	108513	81815	1253	2180	81415	400	-284778	65406		993	1.343	2.459	0.622
157	31	993		5	107770	82762	1175	1976	79778	2984	-281794	61266		993	1.343	2.459	0.622
158	30	993		6	107516	81487	1098	2126	80430	1057	-280737	63790		993	1.343	2.459	0.622
159	31	993		7	111975	87255	1095	1954	83989	3266	-277470	60572		993	1.343	2.459	0.622
160	31	993		8	110213	84849	1097	2005	82227	2622	-274848	62155		993	1.343	2.459	0.622

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
161	30	993		9	103593	79148	887	1998	76523	2625	-272223	59935		993	1.343	2.459	0.622
162	31	961		10	95353	71897	1118	1927	68432	3465	-268758	59741		961	1.337	2.558	0.609
163	30	961		11	100731	75065	1078	2180	74679	386	-268371	65402		961	1.337	2.558	0.609
164	31	961		12	105119	78863	991	2159	78209	654	-267717	66930		961	1.337	2.558	0.609
165					1270003	973741	13801	2009	943586			733159					
166																	
167																	
168	31	961	1985	1	97701	72673	978	2058	70792	1881	-265836	63792		961	1.337	2.558	0.609
169	28	961		2	87591	69724	1023	1624	63274	6450	-259386	45468		961	1.337	2.558	0.609
170	31	961		3	99709	78454	939	1747	72803	5651	-253735	54151		961	1.337	2.558	0.609
171	30	961		4	96451	74868	862	1834	70417	4451	-249285	55007		961	1.337	2.558	0.609
172	31	961		5	99966	76794	739	1906	73078	3716	-245568	59099		961	1.337	2.558	0.609
173	30	961		6	95599	74968	801	1753	69571	5397	-240171	52586		961	1.337	2.558	0.609
174	31	961		7	95270	70111	770	2070	68379	1732	-238439	64173		961	1.337	2.558	0.609
175	31	961		8	97225	72303	704	2051	70340	1963	-236476	63582		961	1.337	2.558	0.609
176	30	961		9	94874	70049	737	2111	68851	1198	-235278	63327		961	1.337	2.558	0.609
177	31	906		10	89990	66001	772	2104	64759	1242	-234036	65216		906	1.326	2.727	0.587
178	30	906		11	95472	76401	757	1727	71054	5347	-228689	51806		906	1.326	2.727	0.587
179	31	906		12	99037	65818	827	2915	73801	-7983	-236672	90375		906	1.326	2.727	0.587
180					1148885	868164	9909	1996	837119			728584					
181																	
182																	
183	31	906	1986	1	98447	55899	800	3736	73213	-17314	-253986	115827		906	1.326	2.727	0.587
184	28	906		2	84266	53188	676	3021	61479	-8291	-262277	84577		906	1.326	2.727	0.587
185	31	906		3	90385	62526	963	2443	65135	-2609	-264886	75719		906	1.326	2.727	0.587
186	30	906		4	105579	70850	743	3151	81162	-10312	-275199	94517		906	1.326	2.727	0.587
187	31	906		5	93692	60330	707	2929	68468	-8138	-283336	90798		906	1.326	2.727	0.587
188	30	906		6	84239	54555	655	2693	59831	-5276	-288613	80781		906	1.326	2.727	0.587
189	31	906		7	97960	64029	638	2980	72743	-8714	-297327	92369		906	1.326	2.727	0.587
190	31	906		8	87427	60280	649	2383	62209	-1929	-299255	73863		906	1.326	2.727	0.587
191	30	906		9	87322	62177	647	2280	62915	-738	-299993	68403		906	1.326	2.727	0.587
192	31	906		10	85289	69131	651	1416	60070	9061	-290933	43891		906	1.326	2.727	0.587

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
193	30	906		11	73531	50265	730	2109	49116	1149	-289784	63256		906	1.326	2.727	0.587
194	31	898		12	70786	49218	630	1910	45804	3414	-286370	59203		898	1.325	2.753	0.584
195					1058923	712448	8489	2584	762146			943205					
196																	
197																	
198	31	898	1987	1	41497	38709	557	243	16522	22187	-264183	7518		898	1.325	2.753	0.584
199	28	898		2	59494	55176	660	418	36920	18256	-245927	11701		898	1.325	2.753	0.584
200	31	898		3	63106	58361	709	415	38116	20245	-225682	12863		898	1.325	2.753	0.584
201	30	898		4	53412	49149	557	386	29241	19908	-205774	11579		898	1.325	2.753	0.584
202	31	898		5	50113	45413	539	412	25140	20273	-185501	12787		898	1.325	2.753	0.584
203	30	898		6	62251	57949	500	390	38086	19863	-165639	11703		898	1.325	2.753	0.584
204	31	898		7	40420	36848	424	313	15459	21389	-144250	9714		898	1.325	2.753	0.584
205	31	898		8	33391	18015	328	1363	8440	9575	-134675	42241		898	1.325	2.753	0.584
206	30	898		9	21449	19970	503	131	-2716	22686	-111988	3929		898	1.325	2.753	0.584
207	31	898		10	12745	11281	355	127	-12209	23490	-88499	3930		898	1.325	2.753	0.584
208	30	900		11	13341	12195	351	102	-10872	23067	-65432	3048		900	1.325	2.746	0.585
209	31	900		12	10417	9482	359	80	-14603	24085	-41347	2466		900	1.325	2.746	0.585
210					461636	412548	5842	366	167526			133481					
211																	
212																	
213	31	900	1988	1	19764	17757	578	173	-5278	23035	-18312	5349		900	1.325	2.746	0.585
214	28	900		2	2075	1612	84	45	-20499	22111	3799	1248		900	1.325	2.746	0.585
215	31	900		3	204	109	22	8	-24781	24890	28689	255		900	1.325	2.746	0.585
216	30	900		4	204	0	60	18	-23979			543		900	1.325	2.746	0.585
217	31	900		5	184	0	47	16	-24804			492		900	1.325	2.746	0.585
218	30	900		6	208	0	11	19	-23970			568		900	1.325	2.746	0.585
219	31	900		7	132	0	1	12	-24851			362		900	1.325	2.746	0.585
220	31	900		8	190	0	10	17	-24794			519		900	1.325	2.746	0.585
221	30	900		9	120	0	1	11	-24057			329		900	1.325	2.746	0.585
222	31	900		10	206	0	8	18	-24778			563		900	1.325	2.746	0.585
223	30	821		11	219	0	8	22	-21679			661		821	1.308	3.032	0.549
224	31	821		12	174	0	8	17	-22453			525		821	1.308	3.032	0.549

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
225					23680	19478	838	31				11414					
226																	
227																	
228	31	821	1989	1	161	0	8	16	-22466			485		821	1.308	3.032	0.549
229	28	821		2	180	0	16	19	-20259			540		821	1.308	3.032	0.549
230	31	821		3	4270	0	115	416	-18370			12905		821	1.308	3.032	0.549
231	30	821		4	27639	0	1099	2780	5613			83408		821	1.308	3.032	0.549
232	31	821		5	24007	0	594	2341	1310			72576		821	1.308	3.032	0.549
233	30	821		6	40416	0	549	4078	18455			122344		821	1.308	3.032	0.549
234	31	821		7	46094	0	510	4502	23407			139574		821	1.308	3.032	0.549
235	31	821		8	44812	0	475	4377	22130			135699		821	1.308	3.032	0.549
236	30	821		9	42073	0	393	4247	20130			127424		821	1.308	3.032	0.549
237	31	821		10	40278	0	403	3935	17604			121978		821	1.308	3.032	0.549
238	30	751		11	33740	0	397	3785	13990			113546		751	1.295	3.371	0.518
239	31	751		12	36094	0	360	3919	15693			121497		751	1.295	3.371	0.518
240					339764	0	4919	2882				1051978					
241																	
242																	
243	31	751	1990	1	35952	0	414	3903	15543			120994		751	1.295	3.371	0.518
244	28	751		2	32425	0	325	3898	13998			109146		751	1.295	3.371	0.518
245	31	751		3	34137	0	326	3707	13740			114916		751	1.295	3.371	0.518
246	30	751		4	33350	0	188	3744	13628			112326		751	1.295	3.371	0.518
247	31	751		5	29124	0	238	3163	8739			98059		751	1.295	3.371	0.518
248	30	751		6	27118	0	282	3043	7384			91278		751	1.295	3.371	0.518
249	31	751		7	33019	0	347	3585	12619			111139		751	1.295	3.371	0.518
250	31	751		8	20634	0	146	2241	261			69484		751	1.295	3.371	0.518
251	30	751		9	25996	0	165	2918	6277			87549		751	1.295	3.371	0.518
252	31	751		10	31652	0	221	3438	11269			106588		751	1.295	3.371	0.518
253	30	751		11	28816	0	285	3233	9081			97000		751	1.295	3.371	0.518
254	31	751		12	28406	0	289	3084	8014			95616		751	1.295	3.371	0.518
255					360629	0	3226	3326				1214095					
256																	

BEFORE EXAMINER MORROW

OIL CONSERVATION DIVISION

EXHIBIT NO. 14

CASE NO.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

January 21, 1988

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

Arco Oil & Gas Company
P. O. Box 1610
Midland, Texas 79702

Attention: Jack Lowden

Re: Empire Abo Unit,
Order No. R-4549-F
Gas Bank Balance

Dear Mr. Lowden:

In response to your letter of October 14, 1987, it is satisfactory for you to accumulate gas underproduction in your gas bank. While accumulation since April, 1984 through July, 1987 is nearly 3 billion cubic feet and probably far more than you will ever need, it is our desire, and yours, that oil production not be curtailed so long as there is no question of waste or impairment of correlative rights.

Sincerely,

WILLIAM J. LEMAY,
Director

VTL/WJL/dr

cc: Mike Williams, Artesia
Harold Garcia, Santa Fe

BEFORE EXAMINER MORROW
OIL CONSERVATION DIVISION
OXY EXHIBIT NO. 15
CASE NO.

EMPIRE ABO UNIT
GAS BANK BALANCE

MONTH	GAS PRODUCED (MCF)	ALLOWABLE @ 65 MMCFD (MCF)	MONTHLY UNDER/(OVER) ALLOWABLE (MCF)	CUMULATIVE UNDER/(OVER) ALLOWABLE (MCF)	GAS BANK BALANCE (MCF)
4/84	1798318	1950000	151682	-	325000
5	1893118	2015000	121882	121882	446882
6	1744697	1950000	205303	327185	652185
7	1752642	2015000	262358	589543	914543
8	1712006	2015000	302994	892537	1217537
9	1686617	1950000	263383	1155920	1480920
10	1909558	2015000	105442	1261362	1586362
11	1850728	1950000	99272	1360634	1685634
12	1973394	2015000	41606	1402240	1727240
1/85	1915830	2015000	99170	1501410	1826410
2	1737635	1820000	82365	1583775	1908775
3	1907564	2015000	107436	1691211	2016211
4	1878389	1950000	71611	1762822	2087822
5	1989462	2015000	25538	1788360	2113360
6	1981217	1950000	-31217	1757143	2082143
7	2050138	2015000	-35138	1722005	2047005
8	1949042	2015000	65958	1787963	2112963
9	1876481	1950000	73519	1861482	2186482
10	2012658	2015000	2342	1863824	2188824
11	1826204	1950000	123796	1987620	2312620
12	2068120	2015000	-53120	1934500	2259500
1/86	2018243	2015000	-3243	1931257	2256257
2	1870624	1820000	-50624	1880633	2205633
3	2035629	2015000	-20629	1860004	2185004
4	1988752	1950000	-38752	1821252	2146252
5	1957124	2015000	57876	1879128	2204128
6	1893751	1950000	56249	1935377	2260377
7	2008252	2015000	6748	1942125	2267125
8	1902732	2015000	112268	2054393	2379393
9	1805272	1950000	144728	2199121	2524121
10	1963610	2015000	51390	2250511	2575511
11	1986705	1950000	-36705	2213806	2538806
12	2129837	2015000	-114837	2098969	2423969
1/87	2126796	2015000	-111796	1987173	2312173
2	1822464	1820000	-2464	1984709	2309709
3	1951847	2015000	63153	2047862	2372862
4	1953825	1950000	-3825	2044037	2369037
5	2029383	2015000	-14383	2029654	2354654
6	1779323	1950000	170677	2200331	2525331
7	1651924	2015000	363076	2563407	2888407
8	1703028	2015000	311972	2875379	3200379
9	1813608	1950000	136392	3011771	3336771
10	1939216	2015000	75784	3087555	3412555
11	1890606	1950000	59394	3146949	3471949
12	1834897	2015000	180103	3327052	3652052

CITGO

CITIES SERVICE OIL COMPANY

Box 1919
Midland, Texas 79701
Telephone (915) 684-7131
August 5, 1975

OXY 16
Case No. 10356

Artesia
New Mexico Oil Conservation Commission
Drawer DD 88210

Gentlemen:

In accordance with the Commission's Order Number R-4808 dated June 11, 1974 Cities Service Oil Company is submitting the initial Citgo Empire Abo Unit Pressure Maintenance Project Operator's Report for approval be the Commission. This report for June, 1975, if approved, will be a precedent in form for all future reports. Future reports will be computer print-outs tabulated and presented in the same fashion as the current report.

Due to delays in compiling a computer program, the June, 1975, report requesting the allowabe for August, 1975, is unavoidably late. Succeeding reports will be filed requesting allowables for the second month following. For example, July's report will request an allowable for September, and so on. This should allow ample evaluation time for the commission and will allow accurate and complete voidage calculations. Due to a one month delay in gas accounting, reports of gas production figures are lagged by one month. Reporting and requesting over a three month span permits voidage calculations to be made with exact production figures.

The report will consist of four separate tables. One table will list wells, locations, most recent well test data, and production figures for the month being reported. A second table will list wells and individual daily and monthly oil allowables as calculated by the reservoir voidage calculations. The voidage calculations for each well are listed in a third table. A fourth table is a gas bank statement.

During the month of June the unit was overproduced due to the fact that considerable downtime was encountered on the compressors trying to get them started and running smoothly. In order to compensate for this over-voidage, the daily voidage for August was set at 510 reservoir barrels. Individual allowables were requested based on voidage calculations performed on each well. Producing GOR's from the month of May were used in each calculation. A G_i/G_p ratio of .89734 was also used in each calculation.

If, after reviewing the report, you have any questions about the accuracy or procedure used in the calculations, please notify me. I will provide any information you need.

Sincerely yours,

Mike Sackash

Mike Sackash

CITGO EMPIRE ABO UNIT
PRESSURE MAINTENANCE PROJECT
N.M.O.C.C. ORDER R-4808
CITIES SERVICE OIL COMPANY-OPERATOR

MONTHLY REPORT FOR JUNE, 1975

Tract No.	Well No.	Sec.	T	R	Test Data Latest 24 Hour: Well Status	Date Mo-Yr.	Oil Bbl	Water Bbl	Gas MCF	GOR CF/B	Production Average June, 1975: Oil BOPD	Water BWPD	Gas MCFD	GOR CF/B
1	9	35	17S	27E	1	5-74	124	0	445	3589	4	0	20	5000
1	10	35	17S	27E	1	5-74	74	0	557	7527	35	0	337	9629
2	13	35	17S	27E	1	5-74	124	0	641	5169	106	0	964	9094
2	14	35	17S	27E	1	5-74	97	0	467	4814	83	0	690	8313
3	5	2	18S	27E	1	5-74	135	0	470	3481	103	0	621	6029
4	4	2	18S	27E	1	5-74	140	0	334	2386	103	0	524	5087
											434	0	3156	Total
											Injection Averages			
1	11	35	17S	27E	3						802			

1 = Flowing
2 = Pumping
3 = Injection

CITGO EMPIRE ABO PRESSURE MAINTENANCE PROJECT
ALLOWABLE REQUEST FOR AUGUST 1975

Tract No.	Well No.	Sec.	T	R	Well Status	Daily Allowable BOPD	Monthly Allowable BOPM
1	9	35	17S	27E	1	55	1705
1	10	35	17S	27E	1	25	775
2	13	35	17S	27E	1	40	1240
2	14	35	17S	27E	1	80	2480
3	5	2	18S	27E	1	110	3410
4	4	2	18S	27E	1	110	3410
Total						420	13020

CITGO EMPIRE ABO UNIT
PRESSURE MAINTENANCE PROJECT
RESERVOIR VOIDAGE CALCULATIONS

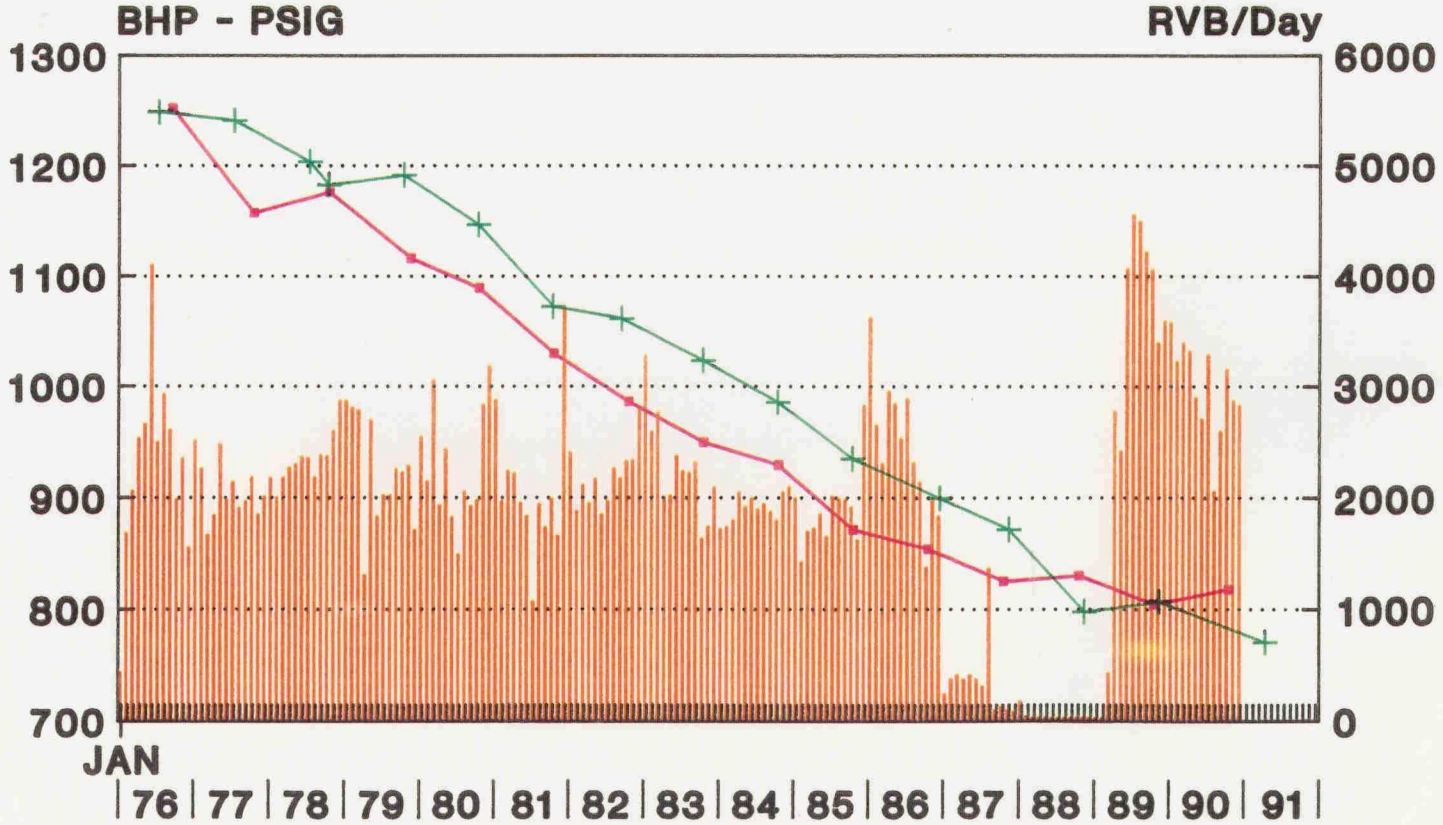
Tract No.	Well No.	Sec.	T	R	Qo Bbl/Day	Oil Voidage (Qo)*(Bo) RVB/Day	Gas Voidage (Qo(Bg)(Rp(1-Gi/Gp)-Rs) RVB/Day	Total Net Voidage RVB/Day
1	9	35	17S	27E	55	78	-28	50
1	10	35	17S	27E	25	36	11	47
2	13	35	17S	27E	40	57	9	66
2	14	35	17S	27E	80	114	11	125
3	5	2	18S	27E	110	156	-36	120
4	4	2	18S	27E	110	156	-54	102
Totals					420	597	-87	510

CITGO EMPIRE ABO UNIT
PRESSURE MAINTENANCE PROJECT

GAS BANK STATEMENT

MONTH	GAS PRODUCED MCF/MO.	GAS INJECTED MCF/MO.	BANK CREDIT MCF	BANK DEBIT MCF	BANK STATUS MCF
June	94670	24050	-	31470	-31470

ARCO VS OXY BHP
COMMON BOUNDARY WELLS - ALL WELLS



BEFORE EXAMINER MORROW
Oil Conservation Division
OXY Exhibit No. 17
Case No. 10356

Citgo Empire Abo Unit
Remaining Reserves as per Arco's
Field Management Study dated October 2, 1970

	Primary (Bbls)	Secondary (Bbls)
Remaining reserves underneath the Citgo Empire Abo Unit as of 1/1/71	609,954	320,981
Reserves produced prior to 1/1/71	1,951,159	0
Total Reserves as per Arco's Study	2,561,113	320,981

Total Primary and Secondary reserves underneath the Citgo Empire Abo Unit as per Arco Study = 2,882,094 Bbls

	1/1/71	6/1/74	6/1/75	1/1/91
CEAU Cumulative Oil Prod (Bbls)	1,951,159	2,732,229	2,852,404	3,306,181

Empire Abo Pool
Remaining Reserves as per Arco's
Field Management Study dated October 2, 1970

	Primary (Bbls)	Secondary (Bbls)
Remaining reserves underneath the Empire Abo Pool as of 1/1/71	101,893,203	27,656,988
Reserves produced prior to 1/1/71	70,592,872	0
Total Reserves as per Arco's Study	172,486,075	27,656,988

Total Primary and Secondary reserves underneath the Empire Abo Pool as per Arco Study = 200,143,063 Bbls

	1/1/71	1/1/91
Empire Abo Pool Cum. Oil Prod (Bbls)	70,592,872	218,514,252