WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #1 (O-9). (SE 9-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1974	5	7.0	314.0	44.9	10.1	0.3	94.0	13.4	0.1	299.4	0.0	0.0	0.0
1974	6	25:0	696.0	27.8	23.2	1.0	209.0	8.4	0.3	300.3	0.0	0.0	0.0
1974	7	31.0	619.0	20.0	20.0	1.6	186.0	6.0	0.5	300.5	0.0	0.0	0.0
1974	8	28.0	537.0	19.2	17.3	2.2	161.0	5.8	0.7	299.8	0.0	0.0	0.0
1974	9	17.0	343.0	20.2	11.4	2.5	103.0	6.1	0.8	300.3	0.0	0.0	0.0
1974	10	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1974	11	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1974	12	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Subtotal		108.0	2509.0	23.2	10.2		753.0				0.0		
1975	1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	2	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	3	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	4	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	5	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	6	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	7	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	8	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	9	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	10	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	11	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1975	12	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		
1976	1	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1976	2	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1976	3	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1976	4	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1976	5	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1976	6	14.0	629.0	44.9	21.0	3.1	189.0	13.5	0.9	300.5	0.0	0.0	0.0
1976	7	31.0	791.0	25.5	25.5	3.9	237.0	7.6	1.2	299.6	0.0	0.0	0.0
1976	8	31.0	585.0	18.9	18.9	4.5	176.0	5.7	1.4	300.9	0.0	0.0	0.0
1976	9	29.0	635.0	21.9	21.2	5.1	191.0	6.6	1.5	300.8	0.0	0.0	0.0
1976	10	31.0	385.0	12.4	12.4	5.5	116.0	3.7	1.7	301.3	0.0	0.0	0.0
1976	11	30.0	355.0	11.8	11.8	5.9	106.0	3.5	1.8	298.6	0.0	0.0	0.0
1976	12	25.0	293.0	11.7	9.5	6.2	88.0	3.5	1.9	300.3	0.0	0.0	0.0
Subtotal		191.0	3673.0	19.2	10.0		1103.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #1 (O-9). (SE 9-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977	1	31.0	578.0	18.6	18.6	6.8	1651.0	53.3	3.5	2856.4	0.0	0.0	0.0
1977	2	28.0	362.0	12.9	12.9	7.1	1034.0	36.9	4.5	2856.4	0.0	0.0	0.0
1977	3	31.0	364.0	11.7	11.7	7.5	1040.0	33.5	5.6	2857.1	0.0	0.0	0.0
1977	4	30.0	423.0	14.1	14.1	7.9	1209.0	40.3	6.8	2858.2	0.0	0.0	0.0
1977	5	31.0	328.0	10.6	10.6	8.2	164.0	5.3	7.0	500.0	0.0	0.0	0.0
1977	6	30.0	313.0	10.4	10.4	8.6	157.0	5.2	7.1	501.6	0.0	0.0	0.0
1977	7	31.0	289.0	9.3	9.3	8.8	138.0	4.5	7.2	477.5	0.0	0.0	0.0
1977	8	31.0	328.0	10.6	10.6	9.2	164.0	5.3	7.4	500.0	0.0	0.0	0.0
1977	9	30.0	333.0	11.1	11.1	9.5	167.0	5.6	7.6	501.5	0.0	0.0	0.0
1977	10	31.0	339.0	10.9	10.9	9.8	170.0	5.5	7.7	501.5	0.0	0.0	0.0
1977	11	30.0	323.0	10.8	10.8	10.2	162.0	5.4	7.9	501.5	0.0	0.0	0.0
1977	12	31.0	340.0	11.0	11.0	10.5	170.0	5.5	8.1	500.0	0.0	0.0	0.0
Subtotal		365.0	4320.0	11.8	11.8		6226.0				0.0		
1978	1	31.0	319.0	10.3	10.3	10.8	160.0	5.2	8.2	501.6	0.0	0.0	0.0
1978	2	28.0	252.0	9.0	9.0	11.1	126.0	4.5	8.4	500.0	0.0	0.0	0.0
1978	3	4.0	72.0	18.0	2.3	11.1	36.0	9.0	8.4	500.0	0.0	0.0	0.0
1978	4	4.0	71.0	17.8	2.4	11.2	36.0	9.0	8.4	507.0	0.0	0.0	0.0
1978	5	0.0	0.0	0.0	0.0	11.2	0.0	0.0	8.4	0.0	0.0	0.0	0.0
1978	6	0.0	0.0	0.0	0.0	11.2	0.0	0.0	8.4	0.0	0.0	0.0	0.0
1978	7	0.0	0.0	0.0	0.0	11.2	0.0	0.0	8.4	0.0	0.0	0.0	0.0
1978	8	0.0	0.0	0.0	0.0	11.2	0.0	0.0	8.4	0.0	0.0	0.0	0.0
1978	9	30.0	763.0	25.4	25.4	12.0	382.0	12.7	8.8	500.7	0.0	0.0	0.0
1978	10	31.0	638.0	20.6	20.6	12.6	319.0	10.3	9.1	500.0	0.0	0.0	0.0
1978	11	25.0	549.0	22.0	18.3	13.2	275.0	11.0	9.4	500.9	0.0	0.0	0.0
1978	12	31.0	423.0	13.6	13.6	13.6	212.0	6.8	9.6	501.2	0.0	0.0	0.0
Subtotal		184.0	3087.0	16.8	8.5		1546.0				0.0		
1979	1	31.0	472.0	15.2	15.2	14.1	472.0	15.2	10.1	1000.0	0.0	0.0	0.0
1979	2	28.0	819.0	29.3	29.3	14.9	819.0	29.3	10.9	1000.0	0.0	0.0	0.0
1979	3	31.0	502.0	16.2	16.2	15.4	502.0	16.2	11.4	1000.0	0.0	0.0	0.0
1979	4	30.0	470.0	15.7	15.7	15.9	470.0	15.7	11.9	1000.0	0.0	0.0	0.0
1979	5	31.0	470.0	15.2	15.2	16.3	470.0	15.2	12.4	1000.0	0.0	0.0	0.0
1979	6	30.0	448.0	14.9	14.9	16.8	449.0	15.0	12.8	1002.2	0.0	0.0	0.0
1979	7	31.0	446.0	14.4	14.4	17.2	446.0	14.4	13.3	1000.0	0.0	0.0	0.0
1979	8	31.0	407.0	13.1	13.1	17.6	407.0	13.1	13.7	1000.0	0.0	0.0	0.0
1979	9	30.0	408.0	13.6	13.6	18.0	408.0	13.6	14.1	1000.0	0.0	0.0	0.0
1979	10	31.0	462.0	14.9	14.9	18.5	462.0	14.9	14.5	1000.0	0.0	0.0	0.0
1979	11	30.0	359.0	12.0	12.0	18.9	359.0	12.0	14.9	1000.0	0.0	0.0	0.0
1979	12	31.0	405.0	13.1	13.1	19.3	405.0	13.1	15.3	1000.0	0.0	0.0	0.0
Subtotal		365.0	5668.0	15.5	15.5		5669.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #1 (O-9). (SE 9-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980	1	29.0	317.0	10.9	10.2	19.6	317.0	10.9	15.6	1000.0	0.0	0.0	0.0
1980	2	29.0	366.0	12.6	13.6	19.9	366.0	12.6	16.0	1000.0	0.0	0.0	0.0
1980	3	13.0	394.0	30.3	12.7	20.3	394.0	30.3	16.4	1000.0	0.0	0.0	0.0
1980	4	30.0	728.0	24.3	24.3	21.1	728.0	24.3	17.1	1000.0	0.0	0.0	0.0
1980	5	31.0	344.0	11.1	11.1	21.4	344.0	11.1	17.4	1000.0	0.0	0.0	0.0
1980	6	30.0	232.0	7.7	7.7	21.6	232.0	7.7	17.7	1000.0	0.0	0.0	0.0
1980	7	30.0	268.0	8.9	8.6	21.9	261.0	8.7	17.9	973.9	0.0	0.0	0.0
1980	8	31.0	278.0	9.0	9.0	22.2	278.0	9.0	18.2	1000.0	0.0	0.0	0.0
1980	9	30.0	340.0	11.3	11.3	22.5	340.0	11.3	18.6	1000.0	0.0	0.0	0.0
1980	10	31.0	245.0	7.9	7.9	22.8	245.0	7.9	18.8	1000.0	0.0	0.0	0.0
1980	11	30.0	334.0	11.1	11.1	23.1	334.0	11.1	19.1	1000.0	0.0	0.0	0.0
1980	12	31.0	273.0	8.8	8.8	23.4	273.0	8.8	19.4	1000.0	0.0	0.0	0.0
Subtotal		345.0	4119.0	11.9	11.3		4112.0				0.0		
1981	1	31.0	272.0	8.8	8.8	23.6	272.0	8.8	19.7	1000.0	0.0	0.0	0.0
1981	2	28.0	295.0	10.5	10.5	23.9	295.0	10.5	20.0	1000.0	0.0	0.0	0.0
1981	3	8.0	228.0	28.5	7.4	24.2	233.0	29.1	20.2	1021.9	0.0	0.0	0.0
1981	4	19.0	150.0	7.9	5.0	24.3	150.0	7.9	20.4	1000.0	0.0	0.0	0.0
1981	5	31.0	380.0	12.3	12.3	24.7	380.0	12.3	20.7	1000.0	0.0	0.0	0.0
1981	6	30.0	289.0	9.6	9.6	25.0	289.0	9.6	21.0	1000.0	0.0	0.0	0.0
1981	7	31.0	266.0	8.6	8.6	25.3	266.0	8.6	21.3	1000.0	0.0	0.0	0.0
1981	8	31.0	234.0	7.5	7.5	25.5	234.0	7.5	21.5	1000.0	0.0	0.0	0.0
1981	9	30.0	317.0	10.6	10.6	25.8	317.0	10.6	21.8	1000.0	0.0	0.0	0.0
1981	10	31.0	292.0	9.4	9.4	26.1	292.0	9.4	22.1	1000.0	0.0	0.0	0.0
1981	11	30.0	267.0	8.9	8.9	26.4	267.0	8.9	22.4	1000.0	0.0	0.0	0.0
1981	12	31.0	319.0	10.3	10.3	26.7	319.0	10.3	22.7	1000.0	0.0	0.0	0.0
Subtotal		331.0	3309.0	10.0	9.1		3314.0				0.0		
1982	1	31.0	297.0	9.6	9.6	27.0	297.0	9.6	23.0	1000.0	0.0	0.0	0.0
1982	2	28.0	286.0	10.2	10.2	27.3	286.0	10.2	23.3	1000.0	0.0	0.0	0.0
1982	3	31.0	262.0	8.5	8.5	27.5	262.0	8.5	23.6	1000.0	0.0	0.0	0.0
1982	4	30.0	454.0	15.1	15.1	28.0	454.0	15.1	24.0	1000.0	0.0	0.0	0.0
1982	5	31.0	195.0	6.3	6.3	28.2	195.0	6.3	24.2	1000.0	0.0	0.0	0.0
1982	6	29.0	310.0	10.7	10.3	28.5	310.0	10.7	24.5	1000.0	0.0	0.0	0.0
1982	7	31.0	286.0	9.2	9.2	28.8	286.0	9.2	24.8	1000.0	0.0	0.0	0.0
1982	8	31.0	288.0	9.3	9.3	29.1	288.0	9.3	25.1	1000.0	0.0	0.0	0.0
1982	9	30.0	268.0	8.9	8.9	29.3	268.0	8.9	25.4	1000.0	0.0	0.0	0.0
1982	10	31.0	226.0	7.3	7.3	29.6	217.0	7.0	25.6	960.2	0.0	0.0	0.0
1982	11	29.0	386.0	13.3	12.9	29.9	386.0	13.3	26.0	1000.0	0.0	0.0	0.0
1982	12	31.0	740.0	23.9	23.9	30.7	740.0	23.9	26.7	1000.0	0.0	0.0	0.0
Subtotal		363.0	3998.0	11.0	11.0		3989.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #1 (O-9). (SE 9-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	31.0	675.0	21.8	21.8	31.4	675.0	21.8	27.4	1000.0	0.0	0.0	0.0
1983	2	28.0	606.0	21.6	21.6	32.0	606.0	21.6	28.0	1000.0	0.0	0.0	0.0
1983	3	17.0	381.0	22.4	12.3	32.3	381.0	22.4	28.4	1000.0	0.0	0.0	0.0
1983	4	8.0	363.0	45.4	12.1	32.7	363.0	45.4	28.7	1000.0	0.0	0.0	0.0
1983	5	31.0	978.0	31.5	31.5	33.7	978.0	31.5	29.7	1000.0	0.0	0.0	0.0
1983	6	30.0	800.0	26.7	26.7	34.5	800.0	26.7	30.5	1000.0	0.0	0.0	0.0
1983	7	31.0	731.0	23.6	23.6	35.2	731.0	23.6	31.2	1000.0	0.0	0.0	0.0
1983	8	31.0	837.0	27.0	27.0	36.1	837.0	27.0	32.1	1000.0	0.0	0.0	0.0
1983	9	29.0	350.0	12.1	11.7	36.4	350.0	12.1	32.4	1000.0	0.0	0.0	0.0
1983	10	30.0	680.0	22.7	21.9	37.1	680.0	22.7	33.1	1000.0	0.0	0.0	0.0
1983	11	30.0	642.0	21.4	21.4	37.7	642.0	21.4	33.8	1000.0	0.0	0.0	0.0
1983	12	21.0	539.0	25.7	17.4	38.3	539.0	25.7	34.3	1000.0	0.0	0.0	0.0
Subtotal		317.0	7582.0	23.9	20.8		7582.0				0.0		
1984	1	22.0	774.0	35.2	25.0	39.0	774.0	35.2	35.1	1000.0	0.0	0.0	0.0
1984	2	20.0	795.0	39.8	27.4	39.8	795.0	39.8	35.9	1000.0	0.0	0.0	0.0
1984	3	16.0	687.0	42.9	22.2	40.5	687.0	42.9	36.6	1000.0	0.0	0.0	0.0
1984	4	15.0	544.0	36.3	18.1	41.1	544.0	36.3	37.1	1000.0	0.0	0.0	0.0
1984	5	31.0	805.0	26.0	26.0	41.9	805.0	26.0	37.9	1000.0	0.0	0.0	0.0
1984	6	30.0	795.0	26.5	26.5	42.7	795.0	26.5	38.7	1000.0	0.0	0.0	0.0
1984	7	31.0	758.0	24.5	24.5	43.4	758.0	24.5	39.5	1000.0	0.0	0.0	0.0
1984	8	31.0	710.0	22.9	22.9	44.1	710.0	22.9	40.2	1000.0	0.0	0.0	0.0
1984	9	30.0	724.0	24.1	24.1	44.9	724.0	24.1	40.9	1000.0	0.0	0.0	0.0
1984	10	13.0	434.0	33.4	14.0	45.3	434.0	33.4	41.3	1000.0	0.0	0.0	0.0
1984	11	30.0	659.0	22.0	22.0	46.0	659.0	22.0	42.0	1000.0	0.0	0.0	0.0
1984	12	30.0	705.0	23.5	22.7	46.7	705.0	23.5	42.7	1000.0	0.0	0.0	0.0
Subtotal		299.0	8390.0	28.1	22.9		8390.0				0.0		
1985	1	31.0	662.0	21.4	21.4	47.3	662.0	21.4	43.3	1000.0	0.0	0.0	0.0
1985	2	28.0	417.0	14.9	14.9	47.7	417.0	14.9	43.8	1000.0	0.0	0.0	0.0
1985	3	31.0	746.0	24.1	24.1	48.5	746.0	24.1	44.5	1000.0	0.0	0.0	0.0
1985	4	30.0	467.0	15.6	15.6	48.9	467.0	15.6	45.0	1000.0	0.0	0.0	0.0
1985	5	31.0	790.0	25.5	25.5	49.7	790.0	25.5	45.8	1000.0	0.0	0.0	0.0
1985	6	30.0	664.0	22.1	22.1	50.4	664.0	22.1	46.4	1000.0	0.0	0.0	0.0
1985	7	31.0	838.0	27.0	27.0	51.2	838.0	27.0	47.3	1000.0	0.0	0.0	0.0
1985	8	31.0	301.0	9.7	9.7	51.5	301.0	9.7	47.6	1000.0	0.0	0.0	0.0
1985	9	30.0	300.0	10.0	10.0	51.8	300.0	10.0	47.9	1000.0	0.0	0.0	0.0
1985	10	31.0	231.0	7.5	7.5	52.1	231.0	7.5	48.1	1000.0	0.0	0.0	0.0
1985	11	30.0	296.0	9.9	9.9	52.4	296.0	9.9	48.4	1000.0	0.0	0.0	0.0
1985	12	31.0	300.0	9.7	9.7	52.7	300.0	9.7	48.7	1000.0	0.0	0.0	0.0
Subtotal		365.0	6012.0	16.5	16.5		6012.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #1 (O-9). (SE 9-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	248.0	8.0	8.0	52.9	248.0	8.0	48.9	1000.0	0.0	0.0	0.0
1986	2	19.0	256.0	13.5	9.1	53.2	256.0	13.5	49.2	1000.0	0.0	0.0	0.0
1986	3	31.0	259.0	8.4	8.4	53.4	259.0	8.4	49.5	1000.0	0.0	0.0	0.0
1986	4	18.0	229.0	12.7	7.6	53.7	229.0	12.7	49.7	1000.0	0.0	0.0	0.0
1986	5	31.0	241.0	7.8	7.8	53.9	241.0	7.8	49.9	1000.0	0.0	0.0	0.0
1986	6	6.0	181.0	30.2	6.0	54.1	181.0	30.2	50.1	1000.0	0.0	0.0	0.0
1986	7	31.0	202.0	6.5	6.5	54.3	202.0	6.5	50.3	1000.0	0.0	0.0	0.0
1986	8	31.0	214.0	6.9	6.9	54.5	214.0	6.9	50.5	1000.0	0.0	0.0	0.0
1986	9	30.0	198.0	6.6	6.6	54.7	198.0	6.6	50.7	1000.0	0.0	0.0	0.0
1986	10	31.0	178.0	5.7	5.7	54.9	178.0	5.7	50.9	1000.0	0.0	0.0	0.0
1986	11	30.0	127.0	4.2	4.2	55.0	127.0	4.2	51.0	1000.0	0.0	0.0	0.0
1986	12	24.0	67.0	2.8	2.2	55.1	78.0	3.3	51.1	1164.2	0.0	0.0	0.0
Subtotal		313.0	2400.0	7.7	6.6		2411.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #2 (K-13). (SW 13-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1962	12	20.0	689.0	34.5	22.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		20.0	689.0	34.5	22.2		0.0				0.0		
1963	1	12.0	380.0	31.7	12.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	2	6.0	129.0	21.5	4.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	3	15.0	347.0	23.1	11.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	4	10.0	187.0	18.7	6.2	1.0	93.0	9.3	0.1	497.3	0.0	0.0	0.0
1963	5	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1963	6	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1963	7 *	0.0	441.0	0.0	14.2	1.5	132.0	0.0	0.2	299.3	0.0	0.0	0.0
1963	8	15.0	1610.0	107.3	51.9	3.1	483.0	32.2	0.7	300.0	0.0	0.0	0.0
1963	9	30.0	2991.0	99.7	99.7	6.1	525.0	17.5	1.2	175.5	0.0	0.0	0.0
1963	10	21.0	2720.0	129.5	87.7	8.8	475.0	22.6	1.7	174.6	0.0	0.0	0.0
1963	11	18.0	1881.0	104.5	62.7	10.7	329.0	18.3	2.0	174.9	0.0	0.0	0.0
1963	12	2.0	274.0	137.0	8.8	11.0	48.0	24.0	2.1	175.2	0.0	0.0	0.0
Subtotal		129.0	10960.0	85.0	30.0		2085.0				0.0		
1964	1	18.0	2319.0	128.8	74.8	13.3	406.0	22.6	2.5	175.1	0.0	0.0	0.0
1964	2	12.0	1098.0	91.5	37.9	14.4	192.0	16.0	2.7	174.9	0.0	0.0	0.0
1964	3	0.0	0.0	0.0	0.0	14.4	0.0	0.0	2.7	0.0	0.0	0.0	0.0
1964	4	13.0	1669.0	128.4	55.6	16.0	292.0	22.5	3.0	175.0	0.0	0.0	0.0
1964	5	22.0	2825.0	128.4	91.1	18.9	494.0	22.5	3.5	174.9	0.0	0.0	0.0
1964	6	25.0	2089.0	83.6	69.6	21.0	366.0	14.6	3.8	175.2	0.0	0.0	0.0
1964	7	28.0	2912.0	104.0	93.9	23.9	510.0	18.2	4.3	175.1	0.0	0.0	0.0
1964	8	31.0	2870.0	92.6	92.6	26.7	402.0	13.0	4.7	140.1	0.0	0.0	0.0
1964	9	30.0	2325.0	77.5	77.5	29.1	325.0	10.8	5.1	139.8	0.0	0.0	0.0
1964	10	18.0	1723.0	95.7	55.6	30.8	241.0	13.4	5.3	139.9	0.0	0.0	0.0
1964	11	28.0	3514.0	125.5	117.1	34.3	492.0	17.6	5.8	140.0	0.0	0.0	0.0
1964	12	31.0	2459.0	79.3	79.3	36.8	393.0	12.7	6.2	159.8	0.0	0.0	0.0
Subtotal		256.0	25803.0	100.8	70.5		4113.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* NR

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #2 (K-13). (SW 13-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1965	1	21.0	1850.0	88.1	59.7	38.6	795.0	37.9	7.0	429.7	0.0	0.0	0.0
1965	2	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	3	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	4	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	5	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	6	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	7	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	8	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	9	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	10	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	11	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1965	12	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
Subtotal		21.0	1850.0	88.1	5.1		795.0				0.0		
1966	1	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	2	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	3	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	4	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	5	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	6	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	7	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	8	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	9	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	10	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	11	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1966	12	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		
1967	1	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	2	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	3	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	4	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	5	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	6	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	7	0.0	0.0	0.0	0.0	38.6	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	8	8.0	581.0	72.6	18.7	39.2	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	9	26.0	1136.0	43.7	37.9	40.3	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	10	31.0	2007.0	64.7	64.7	42.3	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	11	2.0	78.0	39.0	2.6	42.4	0.0	0.0	7.0	0.0	0.0	0.0	0.0
1967	12	0.0	0.0	0.0	0.0	42.4	0.0	0.0	7.0	0.0	0.0	0.0	0.0
Subtotal		67.0	3802.0	56.7	10.4		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM.
BENSON-MONTIN-GREER DRILLING CORP., COU #3 (A-14). (NE 14-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1962	12	8.0	737.0	92.1	23.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		8.0	737.0	92.1	23.8		0.0				0.0		
1963	1	24.0	1538.0	64.1	49.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1963	2	15.0	882.0	58.8	31.5	2.4	222.0	14.8	0.2	251.7	0.0	0.0	0.0
1963	3	25.0	1795.0	71.8	57.9	4.2	452.0	18.1	0.7	251.8	0.0	0.0	0.0
1963	4	29.0	2333.0	80.4	77.8	6.5	588.0	20.3	1.3	252.0	0.0	0.0	0.0
1963	5	31.0	1888.0	60.9	60.9	8.4	476.0	15.4	1.7	252.1	0.0	0.0	0.0
1963	6	30.0	1892.0	63.1	63.1	10.3	477.0	15.9	2.2	252.1	0.0	0.0	0.0
1963	7	27.0	1709.0	63.3	55.1	12.0	431.0	16.0	2.6	252.2	0.0	0.0	0.0
1963	8	31.0	1848.0	59.6	59.6	13.9	466.0	15.0	3.1	252.2	0.0	0.0	0.0
1963	9	30.0	1838.0	61.3	61.3	15.7	566.0	18.9	3.7	307.9	0.0	0.0	0.0
1963	10	25.0	1813.0	72.5	58.5	17.5	558.0	22.3	4.2	307.8	0.0	0.0	0.0
1963	11	28.0	1843.0	65.8	61.4	19.4	568.0	20.3	4.8	308.2	0.0	0.0	0.0
1963	12	21.0	1262.0	60.1	40.7	20.6	379.0	18.0	5.2	300.3	0.0	0.0	0.0
Subtotal		316.0	20641.0	65.3	56.6		5183.0				0.0		
1964	1	30.0	1505.0	50.2	48.5	22.1	464.0	15.5	5.6	308.3	0.0	0.0	0.0
1964	2	10.0	620.0	62.0	21.4	22.8	191.0	19.1	5.8	308.1	0.0	0.0	0.0
1964	3	14.0	873.0	62.4	28.2	23.6	269.0	19.2	6.1	308.1	0.0	0.0	0.0
1964	4	16.0	963.0	60.2	32.1	24.6	297.0	18.6	6.4	308.4	0.0	0.0	0.0
1964	5	31.0	1960.0	63.2	63.2	26.6	604.0	19.5	7.0	308.2	0.0	0.0	0.0
1964	6	29.0	1888.0	65.1	62.9	28.5	581.0	20.0	7.6	307.7	0.0	0.0	0.0
1964	7	25.0	2090.0	83.6	67.4	30.5	644.0	25.8	8.2	308.1	0.0	0.0	0.0
1964	8	14.0	1122.0	80.1	36.2	31.7	321.0	22.9	8.6	286.1	0.0	0.0	0.0
1964	9	30.0	1694.0	56.5	56.5	33.4	484.0	16.1	9.0	285.7	0.0	0.0	0.0
1964	10	14.0	752.0	53.7	24.3	34.1	215.0	15.4	9.3	285.9	0.0	0.0	0.0
1964	11	1.0	60.0	60.0	2.0	34.2	17.0	17.0	9.3	283.3	0.0	0.0	0.0
1964	12	0.0	0.0	0.0	0.0	34.2	0.0	0.0	9.3	0.0	0.0	0.0	0.0
Subtotal		214.0	13527.0	63.2	37.0		4087.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #3 (A-14). (NE 14-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1965	1	0.0	0.0	0.0	0.0	34.2	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	2	0.0	0.0	0.0	0.0	34.2	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	3	10.0	4482.0	448.2	144.6	38.7	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	4	30.0	8396.0	279.9	279.9	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	5	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	6	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	7	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	8	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	9	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	10	0.0	0.0	0.0	0.0	47.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	11	11.0	1923.0	174.8	64.1	49.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0
1965	12	31.0	4710.0	151.9	151.9	53.7	0.0	0.0	9.3	0.0	0.0	0.0	0.0
Subtotal		82.0	19511.0	237.9	53.5		0.0				0.0		
1966	1	31.0	4445.0	143.4	143.4	58.1	1542.0	49.7	10.8	346.9	0.0	0.0	0.0
1966	2	28.0	3730.0	133.2	133.2	61.9	1294.0	46.2	12.1	346.9	0.0	0.0	0.0
1966	3	31.0	3562.0	114.9	114.9	65.4	1236.0	39.9	13.3	347.0	0.0	0.0	0.0
1966	4	30.0	3704.0	123.5	123.5	69.1	1285.0	42.8	14.6	346.9	0.0	0.0	0.0
1966	5	31.0	3506.0	113.1	113.1	72.6	1216.0	39.2	15.8	346.8	0.0	0.0	0.0
1966	6	29.0	3990.0	137.6	133.0	76.6	1384.0	47.7	17.2	346.9	0.0	0.0	0.0
1966	7	30.0	2954.0	98.5	95.3	79.6	1025.0	34.2	18.3	347.0	0.0	0.0	0.0
1966	8	30.0	2658.0	88.6	85.7	82.2	481.0	16.0	18.7	181.0	0.0	0.0	0.0
1966	9	28.0	3266.0	116.6	108.9	85.5	918.0	32.8	19.7	281.1	0.0	0.0	0.0
1966	10	31.0	3350.0	108.1	108.1	88.8	941.0	30.4	20.6	280.9	0.0	0.0	0.0
1966	11	28.0	3504.0	125.1	116.8	92.3	985.0	35.2	21.6	281.1	0.0	0.0	0.0
1966	12	25.0	2872.0	114.9	92.6	95.2	807.0	32.3	22.4	281.0	0.0	0.0	0.0
Subtotal		352.0	41541.0	118.0	113.8		13114.0				0.0		
1967	1	31.0	3218.0	103.8	103.8	98.4	904.0	29.2	23.3	280.9	0.0	0.0	0.0
1967	2	28.0	2648.0	94.6	94.6	101.1	744.0	26.6	24.0	281.0	0.0	0.0	0.0
1967	3	31.0	3555.0	114.7	114.7	104.6	963.0	31.1	25.0	270.9	0.0	0.0	0.0
1967	4	30.0	3194.0	106.5	106.5	107.8	897.0	29.9	25.9	280.8	0.0	0.0	0.0
1967	5	28.0	3086.0	110.2	99.5	110.9	867.0	31.0	26.8	280.9	0.0	0.0	0.0
1967	6	30.0	2983.0	99.4	99.4	113.9	838.0	27.9	27.6	280.9	0.0	0.0	0.0
1967	7	26.0	2241.0	86.2	72.3	116.1	630.0	24.2	28.2	281.1	0.0	0.0	0.0
1967	8	29.0	2166.0	74.7	69.9	118.3	766.0	26.4	29.0	353.6	0.0	0.0	0.0
1967	9	12.0	909.0	75.8	30.3	119.2	321.0	26.8	29.3	353.1	0.0	0.0	0.0
1967	10	29.0	1756.0	60.6	56.6	121.0	622.0	21.4	29.9	354.2	0.0	0.0	0.0
1967	11	30.0	1596.0	53.2	53.2	122.6	565.0	18.8	30.5	354.0	0.0	0.0	0.0
1967	12	29.0	1279.0	44.1	41.3	123.9	453.0	15.6	31.0	354.2	0.0	0.0	0.0
Subtotal		333.0	28631.0	86.0	78.4		8570.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #3 (A-14). (NE 14-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1968	1	31.0	1775.0	57.3	57.3	125.6	628.0	20.3	31.6	353.8	0.0	0.0	0.0
1968	2	29.0	1326.0	45.7	45.7	127.0	469.0	16.2	32.1	353.7	0.0	0.0	0.0
1968	3	31.0	1348.0	43.5	43.5	128.3	477.0	15.4	32.5	353.9	0.0	0.0	0.0
1968	4	30.0	1587.0	52.9	52.9	129.9	562.0	18.7	33.1	354.1	0.0	0.0	0.0
1968	5	31.0	1015.0	32.7	32.7	130.9	359.0	11.6	33.4	353.7	0.0	0.0	0.0
1968	6	30.0	1790.0	59.7	59.7	132.7	634.0	21.1	34.1	354.2	0.0	0.0	0.0
1968	7	31.0	1644.0	53.0	53.0	134.3	582.0	18.8	34.7	354.0	0.0	0.0	0.0
1968	8	31.0	1743.0	56.2	56.2	136.1	657.0	21.2	35.3	376.9	0.0	0.0	0.0
1968	9	30.0	1118.0	37.3	37.3	137.2	900.0	30.0	36.2	805.0	0.0	0.0	0.0
1968	10	31.0	1190.0	38.4	38.4	138.4	910.0	29.4	37.1	764.7	0.0	0.0	0.0
1968	11	30.0	1183.0	39.4	39.4	139.6	842.0	28.1	38.0	711.7	0.0	0.0	0.0
1968	12	31.0	2013.0	64.9	64.9	141.6	2214.0	71.4	40.2	1099.9	0.0	0.0	0.0
Subtotal		366.0	17732.0	48.4	48.4		9234.0				0.0		
1969	1	30.0	2169.0	72.3	70.0	143.8	4338.0	144.6	44.5	2000.0	0.0	0.0	0.0
1969	2	28.0	1922.0	68.6	68.6	145.7	4228.0	151.0	48.8	2199.8	0.0	0.0	0.0
1969	3	31.0	2058.0	66.4	66.4	147.7	3972.0	128.1	52.7	1930.0	0.0	0.0	0.0
1969	4	30.0	1727.0	57.6	57.6	149.5	3454.0	115.1	56.2	2000.0	0.0	0.0	0.0
1969	5	31.0	1510.0	48.7	48.7	151.0	3020.0	97.4	59.2	2000.0	0.0	0.0	0.0
1969	6	27.0	1049.0	38.9	35.0	152.0	2098.0	77.7	61.3	2000.0	0.0	0.0	0.0
1969	7	13.0	420.0	32.3	13.5	152.4	1260.0	96.9	62.6	3000.0	0.0	0.0	0.0
1969	8	0.0	0.0	0.0	0.0	152.4	0.0	0.0	62.6	0.0	0.0	0.0	0.0
1969	9	0.0	0.0	0.0	0.0	152.4	0.0	0.0	62.6	0.0	0.0	0.0	0.0
1969	10	0.0	0.0	0.0	0.0	152.4	0.0	0.0	62.6	0.0	0.0	0.0	0.0
1969	11	0.0	0.0	0.0	0.0	152.4	0.0	0.0	62.6	0.0	0.0	0.0	0.0
1969	12	0.0	0.0	0.0	0.0	152.4	0.0	0.0	62.6	0.0	0.0	0.0	0.0
Subtotal		190.0	10855.0	57.1	29.7		22370.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #4 (P-11). (SE 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1964	1	31.0	12422.0	400.7	400.7	12.4	3727.0	120.2	3.7	300.0	0.0	0.0	0.0
1964	2	21.0	12081.0	575.3	416.6	24.5	3624.0	172.6	7.4	300.0	0.0	0.0	0.0
1964	3	0.0	0.0	0.0	0.0	24.5	0.0	0.0	7.4	0.0	0.0	0.0	0.0
1964	4	12.0	5514.0	459.5	183.8	30.0	1957.0	163.1	9.3	354.9	0.0	0.0	0.0
1964	5	22.0	9194.0	417.9	296.6	39.2	3264.0	148.4	12.6	355.0	0.0	0.0	0.0
1964	6	30.0	8619.0	287.3	287.3	47.8	3060.0	102.0	15.6	355.0	0.0	0.0	0.0
1964	7	25.0	9974.0	399.0	321.7	57.8	3541.0	141.6	19.2	355.0	0.0	0.0	0.0
1964	8	31.0	12967.0	418.3	418.3	70.8	5510.0	177.7	24.7	424.9	0.0	0.0	0.0
1964	9	28.0	9802.0	350.1	326.7	80.6	4166.0	148.8	28.8	425.0	0.0	0.0	0.0
1964	10	16.0	6773.0	423.3	218.5	87.3	2878.0	179.9	31.7	424.9	0.0	0.0	0.0
1964	11	26.0	8310.0	319.6	277.0	95.7	3523.0	135.5	35.3	423.9	0.0	0.0	0.0
1964	12	27.0	8887.0	329.1	286.7	104.5	3777.0	139.9	39.0	425.0	0.0	0.0	0.0
Subtotal		269.0	104543.0	388.6	285.6		39027.0				0.0		
1965	1	31.0	10519.0	339.3	339.3	115.1	3997.0	128.9	43.0	380.0	0.0	0.0	0.0
1965	2	26.0	11762.0	452.4	420.1	126.8	4470.0	171.9	47.5	380.0	0.0	0.0	0.0
1965	3	31.0	11462.0	369.7	369.7	138.3	4356.0	140.5	51.9	380.0	0.0	0.0	0.0
1965	4	30.0	10990.0	366.3	366.3	149.3	4176.0	139.2	56.0	380.0	0.0	0.0	0.0
1965	5	31.0	11380.0	367.1	367.1	160.7	4324.0	139.5	60.4	380.0	0.0	0.0	0.0
1965	6	7.0	2420.0	345.7	80.7	163.1	925.0	132.1	61.3	382.2	0.0	0.0	0.0
1965	7	2.0	413.0	206.5	13.3	163.5	156.0	78.0	61.4	377.7	0.0	0.0	0.0
1965	8	28.0	13067.0	466.7	421.5	176.6	4965.0	177.3	66.4	380.0	0.0	0.0	0.0
1965	9	30.0	13901.0	463.4	463.4	190.5	5282.0	176.1	71.7	380.0	0.0	0.0	0.0
1965	10	31.0	13962.0	450.4	450.4	204.4	5306.0	171.2	77.0	380.0	0.0	0.0	0.0
1965	11	30.0	12732.0	424.4	424.4	217.2	4838.0	161.3	81.8	380.0	0.0	0.0	0.0
1965	12	31.0	15481.0	499.4	499.4	232.6	5882.0	189.7	87.7	379.9	0.0	0.0	0.0
Subtotal		308.0	128089.0	415.9	350.9		48677.0				0.0		
1966	1	31.0	13858.0	447.0	447.0	246.5	5266.0	169.9	93.0	380.0	0.0	0.0	0.0
1966	2	27.0	12192.0	451.6	435.4	258.7	4633.0	171.6	97.6	380.0	0.0	0.0	0.0
1966	3	31.0	13717.0	442.5	442.5	272.4	5212.0	168.1	102.8	380.0	0.0	0.0	0.0
1966	4	30.0	11086.0	369.5	369.5	283.5	4213.0	140.4	107.0	380.0	0.0	0.0	0.0
1966	5	30.0	12272.0	409.1	395.9	295.8	4663.0	155.4	111.7	380.0	0.0	0.0	0.0
1966	6	30.0	11505.0	383.5	383.5	307.3	4372.0	145.7	116.1	380.0	0.0	0.0	0.0
1966	7	31.0	11096.0	357.9	357.9	318.4	4216.0	136.0	120.3	380.0	0.0	0.0	0.0
1966	8	29.0	11775.0	406.0	379.8	330.1	4380.0	151.0	124.7	372.0	0.0	0.0	0.0
1966	9	30.0	11645.0	388.2	388.2	341.8	4332.0	144.4	129.0	372.0	0.0	0.0	0.0
1966	10	31.0	11570.0	373.2	373.2	353.3	4304.0	138.8	133.3	372.0	0.0	0.0	0.0
1966	11	28.0	11421.0	407.9	380.7	364.8	4249.0	151.8	137.5	372.0	0.0	0.0	0.0
1966	12	26.0	10286.0	395.6	331.8	375.1	3852.0	148.2	141.4	374.5	0.0	0.0	0.0
Subtotal		354.0	142423.0	402.3	390.2		53692.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #4 (P-11). (SE 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1967	1	31.0	12519.0	403.8	403.8	387.6	4657.0	150.2	146.1	372.0	0.0	0.0	0.0
1967	2	28.0	9931.0	354.7	354.7	397.5	3694.0	131.9	149.7	372.0	0.0	0.0	0.0
1967	3	31.0	11760.0	379.4	379.4	409.3	4375.0	141.1	154.1	372.0	0.0	0.0	0.0
1967	4	24.0	9198.0	383.3	306.6	418.5	3422.0	142.6	157.5	372.0	0.0	0.0	0.0
1967	5	26.0	9258.0	356.1	298.6	427.7	3444.0	132.5	161.0	372.0	0.0	0.0	0.0
1967	6	30.0	10190.0	339.7	339.7	437.9	3791.0	126.4	164.8	372.0	0.0	0.0	0.0
1967	7	31.0	11205.0	361.5	361.5	449.1	4168.0	134.5	168.9	372.0	0.0	0.0	0.0
1967	8	31.0	10348.0	333.8	333.8	459.5	4139.0	133.5	173.1	400.0	0.0	0.0	0.0
1967	9	28.0	9316.0	332.7	310.5	468.8	3726.0	133.1	176.8	400.0	0.0	0.0	0.0
1967	10	31.0	9533.0	307.5	307.5	478.3	3813.0	123.0	180.6	400.0	0.0	0.0	0.0
1967	11	30.0	6983.0	232.8	232.8	485.3	4890.0	163.0	185.5	700.3	0.0	0.0	0.0
1967	12	31.0	8316.0	268.3	268.3	493.6	3326.0	107.3	188.8	400.0	0.0	0.0	0.0
Subtotal		352.0	118557.0	336.8	324.8		47445.0				0.0		
1968	1	31.0	7496.0	241.8	241.8	501.1	2998.0	96.7	191.8	399.9	0.0	0.0	0.0
1968	2	29.0	6300.0	217.2	217.2	507.4	2520.0	86.9	194.4	400.0	0.0	0.0	0.0
1968	3	31.0	6404.0	206.6	206.6	513.8	2562.0	82.6	196.9	400.1	0.0	0.0	0.0
1968	4	30.0	6349.0	211.6	211.6	520.2	2540.0	84.7	199.5	400.1	0.0	0.0	0.0
1968	5	31.0	6431.0	207.5	207.5	526.6	2572.0	83.0	202.0	399.9	0.0	0.0	0.0
1968	6	30.0	5810.0	193.7	193.7	532.4	2324.0	77.5	204.4	400.0	0.0	0.0	0.0
1968	7	31.0	5589.0	180.3	180.3	538.0	2236.0	72.1	206.6	400.1	0.0	0.0	0.0
1968	8	31.0	4649.0	150.0	150.0	542.6	1790.0	57.7	208.4	385.0	0.0	0.0	0.0
1968	9	29.0	4673.0	161.1	155.8	547.3	2024.0	69.8	210.4	433.1	0.0	0.0	0.0
1968	10	31.0	4760.0	153.5	153.5	552.1	1428.0	46.1	211.8	300.0	0.0	0.0	0.0
1968	11	30.0	4800.0	160.0	160.0	556.9	1488.0	49.6	213.3	310.0	0.0	0.0	0.0
1968	12	31.0	4529.0	146.1	146.1	561.4	1857.0	59.9	215.2	410.0	0.0	0.0	0.0
Subtotal		365.0	67790.0	185.7	185.2		26339.0				0.0		
1969	1	30.0	3263.0	108.8	105.3	564.7	1077.0	35.9	216.3	330.1	0.0	0.0	0.0
1969	2	15.0	1166.0	77.7	41.6	565.8	385.0	25.7	216.6	330.2	0.0	0.0	0.0
1969	3	0.0	0.0	0.0	0.0	565.8	0.0	0.0	216.6	0.0	0.0	0.0	0.0
1969	4	0.0	0.0	0.0	0.0	565.8	0.0	0.0	216.6	0.0	0.0	0.0	0.0
1969	5	6.0	1401.0	233.5	45.2	567.2	420.0	70.0	217.1	299.8	0.0	0.0	0.0
1969	6	20.0	3491.0	174.6	116.4	570.7	1152.0	57.6	218.2	330.0	0.0	0.0	0.0
1969	7	31.0	3520.0	113.5	113.5	574.2	1059.0	34.2	219.3	300.9	0.0	0.0	0.0
1969	8	18.0	807.0	44.8	26.0	575.1	243.0	13.5	219.5	301.1	0.0	0.0	0.0
1969	9	0.0	0.0	0.0	0.0	575.1	0.0	0.0	219.5	0.0	0.0	0.0	0.0
1969	10	0.0	0.0	0.0	0.0	575.1	0.0	0.0	219.5	0.0	0.0	0.0	0.0
1969	11	0.0	0.0	0.0	0.0	575.1	0.0	0.0	219.5	0.0	0.0	0.0	0.0
1969	12	8.0	2495.0	311.9	80.5	577.5	998.0	124.8	220.5	400.0	0.0	0.0	0.0
Subtotal		128.0	16143.0	126.1	44.2		5334.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #4 (P-11), (SE 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	30.0	6697.0	223.2	216.0	584.2	2813.0	93.8	223.3	420.0	0.0	0.0	0.0
1970	2	27.0	4752.0	176.0	169.7	589.0	2376.0	88.0	225.7	500.0	0.0	0.0	0.0
1970	3	28.0	4525.0	161.6	146.0	593.5	2489.0	88.9	228.2	550.1	0.0	0.0	0.0
1970	4	30.0	3395.0	113.2	113.2	596.9	3395.0	113.2	231.6	1000.0	0.0	0.0	0.0
1970	5	31.0	2752.0	88.8	88.8	599.7	3440.0	111.0	235.0	1250.0	0.0	0.0	0.0
1970	6	30.0	2081.0	69.4	69.4	601.7	3475.0	115.8	238.5	1669.9	0.0	0.0	0.0
1970	7	31.0	1701.0	54.9	54.9	603.4	3079.0	99.3	241.6	1810.1	0.0	0.0	0.0
1970	8	25.0	1010.0	40.4	32.6	604.5	3030.0	121.2	244.6	3000.0	0.0	0.0	0.0
1970	9	0.0	0.0	0.0	0.0	604.5	0.0	0.0	244.6	0.0	0.0	0.0	0.0
1970	10	0.0	0.0	0.0	0.0	604.5	0.0	0.0	244.6	0.0	0.0	0.0	0.0
1970	11	0.0	0.0	0.0	0.0	604.5	0.0	0.0	244.6	0.0	0.0	0.0	0.0
1970	12	0.0	0.0	0.0	0.0	604.5	0.0	0.0	244.6	0.0	0.0	0.0	0.0
Subtotal		232.0	26913.0	116.0	73.7		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #6 (L-11). (SW 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1964	11	28.0	6465.0	230.9	215.5	6.5	2262.0	80.8	2.3	349.9	0.0	0.0	0.0
1964	12	23.0	8797.0	382.5	283.8	15.3	2657.0	115.5	4.9	302.0	0.0	0.0	0.0
Subtotal		51.0	15262.0	299.3	250.2		4919.0				0.0		
1965	1	31.0	10181.0	328.4	328.4	25.4	3074.0	99.2	8.0	301.9	0.0	0.0	0.0
1965	2	26.0	9240.0	355.4	330.0	34.7	2790.0	107.3	10.8	301.9	0.0	0.0	0.0
1965	3	31.0	8735.0	281.8	281.8	43.4	2637.0	85.1	13.4	301.9	0.0	0.0	0.0
1965	4	30.0	8390.0	279.7	279.7	51.8	2534.0	84.5	16.0	302.0	0.0	0.0	0.0
1965	5	15.0	1012.0	67.5	32.6	52.8	306.0	20.4	16.3	302.4	0.0	0.0	0.0
1965	6	0.0	0.0	0.0	0.0	52.8	0.0	0.0	16.3	0.0	0.0	0.0	0.0
1965	7	0.0	0.0	0.0	0.0	52.8	0.0	0.0	16.3	0.0	0.0	0.0	0.0
1965	8	0.0	0.0	0.0	0.0	52.8	0.0	0.0	16.3	0.0	0.0	0.0	0.0
1965	9	10.0	4817.0	481.7	160.6	57.6	1926.0	192.6	18.2	399.8	0.0	0.0	0.0
1965	10	31.0	14259.0	460.0	460.0	71.9	5704.0	184.0	23.9	400.0	0.0	0.0	0.0
1965	11	30.0	13415.0	447.2	447.2	85.3	5366.0	178.9	29.3	400.0	0.0	0.0	0.0
1965	12	31.0	14298.0	461.2	461.2	99.6	5719.0	184.5	35.0	400.0	0.0	0.0	0.0
Subtotal		235.0	84347.0	358.9	231.1		30056.0				0.0		
1966	1	31.0	15104.0	487.2	487.2	114.7	6042.0	194.9	41.0	400.0	0.0	0.0	0.0
1966	2	28.0	11091.0	396.1	396.1	125.8	4436.0	158.4	45.5	400.0	0.0	0.0	0.0
1966	3	31.0	14964.0	482.7	482.7	140.8	5986.0	193.1	51.4	400.0	0.0	0.0	0.0
1966	4	30.0	11473.0	382.4	382.4	152.2	4589.0	153.0	56.0	400.0	0.0	0.0	0.0
1966	5	31.0	13441.0	433.6	433.6	165.7	5376.0	173.4	61.4	400.0	0.0	0.0	0.0
1966	6	30.0	14069.0	469.0	469.0	179.8	5628.0	187.6	67.0	400.0	0.0	0.0	0.0
1966	7	31.0	13380.0	431.6	431.6	193.1	5352.0	172.6	72.4	400.0	0.0	0.0	0.0
1966	8	24.0	10152.0	423.0	327.5	203.3	3827.0	159.5	76.2	377.0	0.0	0.0	0.0
1966	9	30.0	13064.0	435.5	435.5	216.3	4925.0	164.2	81.1	377.0	0.0	0.0	0.0
1966	10	30.0	11491.0	383.0	370.7	227.8	4332.0	144.4	85.5	377.0	0.0	0.0	0.0
1966	11	28.0	11032.0	394.0	367.7	238.9	4159.0	148.5	89.6	377.0	0.0	0.0	0.0
1966	12	25.0	9590.0	383.6	309.4	248.5	3615.0	144.6	93.2	377.0	0.0	0.0	0.0
Subtotal		349.0	148851.0	426.5	407.8		58267.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #6 (L-11). (SW 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1967	1	31.0	12802.0	413.0	413.0	261.3	4826.0	155.7	98.1	377.0	0.0	0.0	0.0
1967	2	27.0	9489.0	351.4	338.9	270.8	3577.0	132.5	101.6	377.0	0.0	0.0	0.0
1967	3	31.0	12034.0	388.2	388.2	282.8	4537.0	146.4	106.2	377.0	0.0	0.0	0.0
1967	4	30.0	13159.0	438.6	438.6	295.9	4961.0	165.4	111.1	377.0	0.0	0.0	0.0
1967	5	31.0	13373.0	431.4	431.4	309.3	5042.0	162.6	116.2	377.0	0.0	0.0	0.0
1967	6	30.0	11682.0	389.4	389.4	321.0	4404.0	146.8	120.6	377.0	0.0	0.0	0.0
1967	7	31.0	11454.0	369.5	369.5	332.5	4318.0	139.3	124.9	377.0	0.0	0.0	0.0
1967	8	31.0	11552.0	372.6	372.6	344.0	4967.0	160.2	129.9	430.0	0.0	0.0	0.0
1967	9	28.0	11361.0	405.8	378.7	355.4	3636.0	129.9	133.5	320.0	0.0	0.0	0.0
1967	10	31.0	11792.0	380.4	380.4	367.2	5070.0	163.5	138.6	430.0	0.0	0.0	0.0
1967	11	30.0	11373.0	379.1	379.1	378.5	4890.0	163.0	143.5	430.0	0.0	0.0	0.0
1967	12	31.0	11729.0	378.4	378.4	390.3	5043.0	162.7	148.5	430.0	0.0	0.0	0.0
Subtotal		362.0	141800.0	391.7	388.5		55271.0				0.0		
1968	1	31.0	10456.0	337.3	337.3	400.7	4496.0	145.0	153.0	430.0	0.0	0.0	0.0
1968	2	29.0	10941.0	377.3	377.3	411.7	4704.0	162.2	157.7	429.9	0.0	0.0	0.0
1968	3	31.0	12472.0	402.3	402.3	424.1	5363.0	173.0	163.1	430.0	0.0	0.0	0.0
1968	4	30.0	11287.0	376.2	376.2	435.4	4853.0	161.8	167.9	430.0	0.0	0.0	0.0
1968	5	31.0	11169.0	360.3	360.3	446.6	4803.0	154.9	172.7	430.0	0.0	0.0	0.0
1968	6	30.0	10652.0	355.1	355.1	457.2	4580.0	152.7	177.3	430.0	0.0	0.0	0.0
1968	7	31.0	11179.0	360.6	360.6	468.4	4807.0	155.1	182.1	430.0	0.0	0.0	0.0
1968	8	31.0	10751.0	346.8	346.8	479.2	4354.0	140.5	186.5	405.0	0.0	0.0	0.0
1968	9	30.0	10423.0	347.4	347.4	489.6	4583.0	152.8	191.1	439.7	0.0	0.0	0.0
1968	10	31.0	10412.0	335.9	335.9	500.0	2988.0	96.4	194.0	287.0	0.0	0.0	0.0
1968	11	29.0	9252.0	319.0	308.4	509.3	2776.0	95.7	196.8	300.0	0.0	0.0	0.0
1968	12	29.0	9812.0	338.3	316.5	519.1	3140.0	108.3	200.0	320.0	0.0	0.0	0.0
Subtotal		363.0	128806.0	354.8	351.9		51447.0				0.0		
1969	1	27.0	8364.0	309.8	269.8	527.4	2592.0	96.0	202.6	309.9	0.0	0.0	0.0
1969	2	28.0	7543.0	269.4	269.4	535.0	2248.0	80.3	204.8	298.0	0.0	0.0	0.0
1969	3	31.0	8924.0	287.9	287.9	543.9	2704.0	87.2	207.5	303.0	0.0	0.0	0.0
1969	4	29.0	8749.0	301.7	291.6	552.6	2712.0	93.5	210.2	310.0	0.0	0.0	0.0
1969	5	31.0	7855.0	253.4	253.4	560.5	2514.0	81.1	212.7	320.1	0.0	0.0	0.0
1969	6	27.0	6993.0	259.0	233.1	567.5	2692.0	99.7	215.4	385.0	0.0	0.0	0.0
1969	7	31.0	10227.0	329.9	329.9	577.7	3856.0	124.4	219.3	377.0	0.0	0.0	0.0
1969	8	31.0	7498.0	241.9	241.9	585.2	2872.0	92.6	222.2	383.0	0.0	0.0	0.0
1969	9	30.0	9488.0	316.3	316.3	594.7	3226.0	107.5	225.4	340.0	0.0	0.0	0.0
1969	10	31.0	9204.0	296.9	296.9	603.9	3129.0	100.9	228.5	340.0	0.0	0.0	0.0
1969	11	30.0	8107.0	270.2	270.2	612.0	2837.0	94.6	231.3	349.9	0.0	0.0	0.0
1969	12	31.0	9423.0	304.0	304.0	621.4	3315.0	106.9	234.7	351.8	0.0	0.0	0.0
Subtotal		357.0	102375.0	286.8	280.5		34697.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #6 (L-11). (SW 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	29.0	9360.0	322.8	301.9	630.8	3276.0	113.0	237.9	350.0	0.0	0.0	0.0
1970	2	20.0	6624.0	331.2	236.6	637.4	2286.0	114.3	240.2	345.1	0.0	0.0	0.0
1970	3	30.0	12326.0	410.9	397.6	649.8	4191.0	139.7	244.4	340.0	0.0	0.0	0.0
1970	4	28.0	9994.0	356.9	333.1	659.7	3498.0	124.9	247.9	350.0	0.0	0.0	0.0
1970	5	31.0	9653.0	311.4	311.4	669.4	3378.0	109.0	251.3	349.9	0.0	0.0	0.0
1970	6	30.0	8323.0	277.4	277.4	677.7	3163.0	105.4	254.4	380.0	0.0	0.0	0.0
1970	7	30.0	8633.0	287.8	278.5	686.4	3194.0	106.5	257.6	370.0	0.0	0.0	0.0
1970	8	30.0	9958.0	331.9	321.2	696.3	3784.0	126.1	261.4	380.0	0.0	0.0	0.0
1970	9	29.0	9470.0	326.6	315.7	705.8	3599.0	124.1	265.0	380.0	0.0	0.0	0.0
1970	10	31.0	7590.0	244.8	244.8	713.4	2732.0	88.1	267.8	359.9	0.0	0.0	0.0
1970	11	26.0	8261.0	317.7	275.4	721.6	3056.0	117.5	270.8	369.9	0.0	0.0	0.0
1970	12	30.0	11935.0	397.8	385.0	733.6	4297.0	143.2	275.1	360.0	0.0	0.0	0.0
Subtotal		344.0	112127.0	326.0	307.2		0.0				0.0		
1971	1	31.0	10520.0	339.4	339.4	744.1	3840.0	123.9	279.0	365.0	0.0	0.0	0.0
1971	2	27.0	1376.0	51.0	49.1	745.5	3422.0	126.7	282.4	2486.9	0.0	0.0	0.0
1971	3	31.0	9217.0	297.3	297.3	754.7	2949.0	95.1	285.3	320.0	0.0	0.0	0.0
1971	4	30.0	7842.0	261.4	261.4	762.5	2588.0	86.3	287.9	330.0	0.0	0.0	0.0
1971	5	31.0	9805.0	316.3	316.3	772.3	2549.0	82.2	290.5	260.0	0.0	0.0	0.0
1971	6	30.0	10773.0	359.1	359.1	783.1	3124.0	104.1	293.6	290.0	0.0	0.0	0.0
1971	7	31.0	9631.0	310.7	310.7	792.7	2793.0	90.1	296.4	290.0	0.0	0.0	0.0
1971	8	31.0	8818.0	284.5	284.5	801.5	2645.0	85.3	299.0	300.0	0.0	0.0	0.0
1971	9	27.0	8543.0	316.4	284.8	810.1	2563.0	94.9	301.6	300.0	0.0	0.0	0.0
1971	10	28.0	8240.0	294.3	265.8	818.3	2472.0	88.3	304.1	300.0	0.0	0.0	0.0
1971	11	30.0	9095.0	303.2	303.2	827.4	2728.0	90.9	306.8	299.9	0.0	0.0	0.0
1971	12	31.0	9685.0	312.4	312.4	837.1	2906.0	93.7	309.7	300.1	0.0	0.0	0.0
Subtotal		358.0	103545.0	289.2	283.7		34579.0				0.0		
1972	1	31.0	9942.0	320.7	320.7	847.1	2983.0	96.2	312.7	300.0	0.0	0.0	0.0
1972	2	29.0	8756.0	301.9	301.9	855.8	2626.0	90.6	315.3	299.9	0.0	0.0	0.0
1972	3	31.0	9744.0	314.3	314.3	865.6	2923.0	94.3	318.2	300.0	0.0	0.0	0.0
1972	4	30.0	9481.0	316.0	316.0	875.0	2844.0	94.8	321.1	300.0	0.0	0.0	0.0
1972	5	31.0	9598.0	309.6	309.6	884.6	2879.0	92.9	323.9	300.0	0.0	0.0	0.0
1972	6	30.0	8345.0	278.2	278.2	893.0	2504.0	83.5	326.4	300.1	0.0	0.0	0.0
1972	7	31.0	9258.0	298.6	298.6	902.2	2777.0	89.6	329.2	300.0	0.0	0.0	0.0
1972	8	31.0	9506.0	306.6	306.6	911.7	2852.0	92.0	332.1	300.0	0.0	0.0	0.0
1972	9	30.0	9527.0	317.6	317.6	921.3	2858.0	95.3	334.9	300.0	0.0	0.0	0.0
1972	10	31.0	8969.0	289.3	289.3	930.2	2691.0	86.8	337.6	300.0	0.0	0.0	0.0
1972	11	30.0	9075.0	302.5	302.5	939.3	2723.0	90.8	340.4	300.1	0.0	0.0	0.0
1972	12	31.0	9608.0	309.9	309.9	948.9	2882.0	93.0	343.2	300.0	0.0	0.0	0.0
Subtotal		366.0	111809.0	305.5	305.5		33542.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #6 (L-11). (SW 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	29.0	9360.0	322.8	301.9	630.8	3276.0	113.0	237.9	350.0	0.0	0.0	0.0
1970	2	20.0	6624.0	331.2	236.6	637.4	2286.0	114.3	240.2	345.1	0.0	0.0	0.0
1970	3	30.0	12326.0	410.9	397.6	649.8	4191.0	139.7	244.4	340.0	0.0	0.0	0.0
1970	4	28.0	9994.0	356.9	333.1	659.7	3498.0	124.9	247.9	350.0	0.0	0.0	0.0
1970	5	31.0	9653.0	311.4	311.4	669.4	3378.0	109.0	251.3	349.9	0.0	0.0	0.0
1970	6	30.0	8323.0	277.4	277.4	677.7	3163.0	105.4	254.4	380.0	0.0	0.0	0.0
1970	7	30.0	8633.0	287.8	278.5	686.4	3194.0	106.5	257.6	370.0	0.0	0.0	0.0
1970	8	30.0	9958.0	331.9	321.2	696.3	3784.0	126.1	261.4	380.0	0.0	0.0	0.0
1970	9	29.0	9470.0	326.6	315.7	705.8	3599.0	124.1	265.0	380.0	0.0	0.0	0.0
1970	10	31.0	7590.0	244.8	244.8	713.4	2732.0	88.1	267.8	359.9	0.0	0.0	0.0
1970	11	26.0	8261.0	317.7	275.4	721.6	3056.0	117.5	270.8	369.9	0.0	0.0	0.0
1970	12	30.0	11935.0	397.8	385.0	733.6	4297.0	143.2	275.1	360.0	0.0	0.0	0.0
Subtotal		344.0	112127.0	326.0	307.2		0.0				0.0		
1971	1	31.0	10520.0	339.4	339.4	744.1	3840.0	123.9	279.0	365.0	0.0	0.0	0.0
1971	2	27.0	1376.0	51.0	49.1	745.5	3422.0	126.7	282.4	2486.9	0.0	0.0	0.0
1971	3	31.0	9217.0	297.3	297.3	754.7	2949.0	95.1	285.3	320.0	0.0	0.0	0.0
1971	4	30.0	7842.0	261.4	261.4	762.5	2588.0	86.3	287.9	330.0	0.0	0.0	0.0
1971	5	31.0	9805.0	316.3	316.3	772.3	2549.0	82.2	290.5	260.0	0.0	0.0	0.0
1971	6	30.0	10773.0	359.1	359.1	783.1	3124.0	104.1	293.6	290.0	0.0	0.0	0.0
1971	7	31.0	9631.0	310.7	310.7	792.7	2793.0	90.1	296.4	290.0	0.0	0.0	0.0
1971	8	31.0	8818.0	284.5	284.5	801.5	2645.0	85.3	299.0	300.0	0.0	0.0	0.0
1971	9	27.0	8543.0	316.4	284.8	810.1	2563.0	94.9	301.6	300.0	0.0	0.0	0.0
1971	10	28.0	8240.0	294.3	265.8	818.3	2472.0	88.3	304.1	300.0	0.0	0.0	0.0
1971	11	30.0	9095.0	303.2	303.2	827.4	2728.0	90.9	306.8	299.9	0.0	0.0	0.0
1971	12	31.0	9685.0	312.4	312.4	837.1	2906.0	93.7	309.7	300.1	0.0	0.0	0.0
Subtotal		358.0	103545.0	289.2	283.7		34579.0				0.0		
1972	1	31.0	9942.0	320.7	320.7	847.1	2983.0	96.2	312.7	300.0	0.0	0.0	0.0
1972	2	29.0	8756.0	301.9	301.9	855.8	2626.0	90.6	315.3	299.9	0.0	0.0	0.0
1972	3	31.0	9744.0	314.3	314.3	865.6	2923.0	94.3	318.2	300.0	0.0	0.0	0.0
1972	4	30.0	9481.0	316.0	316.0	875.0	2844.0	94.8	321.1	300.0	0.0	0.0	0.0
1972	5	31.0	9598.0	309.6	309.6	884.6	2879.0	92.9	323.9	300.0	0.0	0.0	0.0
1972	6	30.0	8345.0	278.2	278.2	893.0	2504.0	83.5	326.4	300.1	0.0	0.0	0.0
1972	7	31.0	9258.0	298.6	298.6	902.2	2777.0	89.6	329.2	300.0	0.0	0.0	0.0
1972	8	31.0	9506.0	306.6	306.6	911.7	2852.0	92.0	332.1	300.0	0.0	0.0	0.0
1972	9	30.0	9527.0	317.6	317.6	921.3	2858.0	95.3	334.9	300.0	0.0	0.0	0.0
1972	10	31.0	8969.0	289.3	289.3	930.2	2691.0	86.8	337.6	300.0	0.0	0.0	0.0
1972	11	30.0	9075.0	302.5	302.5	939.3	2723.0	90.8	340.4	300.1	0.0	0.0	0.0
1972	12	31.0	9608.0	309.9	309.9	948.9	2882.0	93.0	343.2	300.0	0.0	0.0	0.0
Subtotal		366.0	111809.0	305.5	305.5		33542.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #6 (L-11). (SW 11-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1973	1	31.0	9475.0	305.6	305.6	958.4	2843.0	91.7	346.1	300.1	0.0	0.0	0.0
1973	2	28.0	8689.0	310.3	310.3	967.1	2607.0	93.1	348.7	300.0	0.0	0.0	0.0
1973	3	29.0	7990.0	275.5	257.7	975.1	2397.0	82.7	351.1	300.0	0.0	0.0	0.0
1973	4	30.0	9002.0	300.1	300.1	984.1	2700.0	90.0	353.8	299.9	0.0	0.0	0.0
1973	5	31.0	10559.0	340.6	340.6	994.6	3168.0	102.2	356.9	300.0	0.0	0.0	0.0
1973	6	30.0	10793.0	359.8	359.8	1005.4	3238.0	107.9	360.2	300.0	0.0	0.0	0.0
1973	7	31.0	10914.0	352.1	352.1	1016.3	3274.0	105.6	363.5	300.0	0.0	0.0	0.0
1973	8	31.0	11308.0	364.8	364.8	1027.7	3392.0	109.4	366.9	300.0	0.0	0.0	0.0
1973	9	30.0	10564.0	352.1	352.1	1038.2	3169.0	105.6	370.0	300.0	0.0	0.0	0.0
1973	10	31.0	10776.0	347.6	347.6	1049.0	3233.0	104.3	373.3	300.0	0.0	0.0	0.0
1973	11	30.0	9975.0	332.5	332.5	1059.0	2993.0	99.8	376.2	300.1	0.0	0.0	0.0
1973	12	31.0	10261.0	331.0	331.0	1069.2	3078.0	99.3	379.3	300.0	0.0	0.0	0.0
Subtotal		363.0	120306.0	331.4	329.6		36092.0				0.0		
1974	1	31.0	9960.0	321.3	321.3	1079.2	2988.0	96.4	382.3	300.0	0.0	0.0	0.0
1974	2	28.0	9332.0	333.3	333.3	1088.5	2800.0	100.0	385.1	300.0	0.0	0.0	0.0
1974	3	31.0	10367.0	334.4	334.4	1098.9	3110.0	100.3	388.2	300.0	0.0	0.0	0.0
1974	4	30.0	10156.0	338.5	338.5	1109.0	3047.0	101.6	391.3	300.0	0.0	0.0	0.0
1974	5	31.0	9702.0	313.0	313.0	1118.7	2911.0	93.9	394.2	300.0	0.0	0.0	0.0
1974	6	30.0	7185.0	239.5	239.5	1125.9	2156.0	71.9	396.3	300.1	0.0	0.0	0.0
1974	7	31.0	5884.0	189.8	189.8	1131.8	5184.0	167.2	401.5	881.0	0.0	0.0	0.0
1974	8	31.0	5151.0	166.2	166.2	1137.0	5929.0	191.3	407.4	1151.0	0.0	0.0	0.0
1974	9	30.0	4670.0	155.7	155.7	1141.6	5604.0	186.8	413.1	1200.0	0.0	0.0	0.0
1974	10	31.0	4493.0	144.9	144.9	1146.1	5697.0	183.8	418.8	1268.0	0.0	0.0	0.0
1974	11	24.0	3382.0	140.9	112.7	1149.5	5141.0	214.2	423.9	1520.1	0.0	0.0	0.0
1974	12	31.0	4169.0	134.5	134.5	1153.7	7046.0	227.3	430.9	1690.1	0.0	0.0	0.0
Subtotal		359.0	84451.0	235.2	231.4		51613.0				0.0		
1975	1	31.0	3431.0	110.7	110.7	1157.1	6382.0	205.9	437.3	1860.1	0.0	0.0	0.0
1975	2	28.0	2661.0	95.0	95.0	1159.8	5130.0	183.2	442.4	1927.8	0.0	0.0	0.0
1975	3	31.0	2547.0	82.2	82.2	1162.3	5528.0	178.3	448.0	2170.4	0.0	0.0	0.0
1975	4	30.0	2203.0	73.4	73.4	1164.5	5992.0	199.7	454.0	2719.9	0.0	0.0	0.0
1975	5	21.0	1346.0	64.1	43.4	1165.9	4657.0	221.8	458.6	3459.9	0.0	0.0	0.0
Subtotal		141.0	12188.0	86.4	80.7		27689.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #7 (A-23). (NE 23-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM*	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1965	4	10.0	1445.0	144.5	48.2	1.4	505.0	50.5	0.5	349.5	0.0	0.0	0.0
1965	5	31.0	3100.0	100.0	100.0	4.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1965	6	6.0	600.0	100.0	20.0	5.1	125.0	20.8	0.6	208.3	0.0	0.0	0.0
Subtotal		47.0	5145.0	109.5	56.5		630.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* OBSERVATION WELL.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1966	3	15.0	703.0	46.9	22.7	0.7	174.0	11.6	0.2	247.5	0.0	0.0	0.0
1966	4	15.0	610.0	40.7	20.3	1.3	151.0	10.1	0.3	247.5	0.0	0.0	0.0
1966	5	16.0	823.0	51.4	26.5	2.1	204.0	12.8	0.5	247.9	0.0	0.0	0.0
1966	6	22.0	995.0	45.2	33.2	3.1	247.0	11.2	0.8	248.2	0.0	0.0	0.0
1966	7	26.0	841.0	32.3	27.1	4.0	209.0	8.0	1.0	248.5	0.0	0.0	0.0
1966	8	15.0	415.0	27.7	13.4	4.4	161.0	10.7	1.1	388.0	0.0	0.0	0.0
1966	9	30.0	1256.0	41.9	41.9	5.6	487.0	16.2	1.6	387.7	0.0	0.0	0.0
1966	10	19.0	618.0	32.5	19.9	6.3	150.0	7.9	1.8	242.7	0.0	0.0	0.0
1966	11	30.0	608.0	20.3	20.3	6.9	236.0	7.9	2.0	388.2	0.0	0.0	0.0
1966	12	16.0	457.0	28.6	14.7	7.3	177.0	11.1	2.2	387.3	0.0	0.0	0.0
Subtotal		204.0	7326.0	35.9	23.9		2196.0				0.0		
1967	1	24.0	869.0	36.2	28.0	8.2	337.0	14.0	2.5	387.8	0.0	0.0	0.0
1967	2	26.0	921.0	35.4	32.9	9.1	357.0	13.7	2.9	387.6	0.0	0.0	0.0
1967	3	31.0	1030.0	33.2	33.2	10.1	400.0	12.9	3.3	388.3	0.0	0.0	0.0
1967	4	29.0	958.0	33.0	31.9	11.1	372.0	12.8	3.7	388.3	0.0	0.0	0.0
1967	5	31.0	1013.0	32.7	32.7	12.1	393.0	12.7	4.1	388.0	0.0	0.0	0.0
1967	6	29.0	947.0	32.7	31.6	13.1	367.0	12.7	4.4	387.5	0.0	0.0	0.0
1967	7	31.0	924.0	29.8	29.8	14.0	359.0	11.6	4.8	388.5	0.0	0.0	0.0
1967	8	14.0	697.0	49.8	22.5	14.7	261.0	18.6	5.0	374.5	0.0	0.0	0.0
1967	9	0.0	0.0	0.0	0.0	14.7	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1967	10	0.0	0.0	0.0	0.0	14.7	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1967	11	10.0	630.0	63.0	21.0	15.3	236.0	23.6	5.3	374.6	0.0	0.0	0.0
1967	12	31.0	1005.0	32.4	32.4	16.3	377.0	12.2	5.7	375.1	0.0	0.0	0.0
Subtotal		256.0	8994.0	35.1	24.6		3459.0				0.0		
1968	1	26.0	875.0	33.7	28.2	17.2	328.0	12.6	6.0	374.9	0.0	0.0	0.0
1968	2	15.0	663.0	44.2	22.9	17.9	249.0	16.6	6.2	375.6	0.0	0.0	0.0
1968	3	22.0	674.0	30.6	21.7	18.5	253.0	11.5	6.5	375.4	0.0	0.0	0.0
1968	4	30.0	705.0	23.5	23.5	19.2	264.0	8.8	6.7	374.5	0.0	0.0	0.0
1968	5	31.0	677.0	21.8	21.8	19.9	254.0	8.2	7.0	375.2	0.0	0.0	0.0
1968	6	30.0	646.0	21.5	21.5	20.6	242.0	8.1	7.2	374.6	0.0	0.0	0.0
1968	7	31.0	658.0	21.2	21.2	21.2	247.0	8.0	7.5	375.4	0.0	0.0	0.0
1968	8	31.0	582.0	18.8	18.8	21.8	192.0	6.2	7.7	329.9	0.0	0.0	0.0
1968	9	30.0	663.0	22.1	22.1	22.5	219.0	7.3	7.9	330.3	0.0	0.0	0.0
1968	10	31.0	588.0	19.0	19.0	23.1	195.0	6.3	8.1	331.6	0.0	0.0	0.0
1968	11	30.0	706.0	23.5	23.5	23.8	232.0	7.7	8.3	328.6	0.0	0.0	0.0
1968	12	21.0	503.0	24.0	16.2	24.3	171.0	8.1	8.5	340.0	0.0	0.0	0.0
Subtotal		328.0	7940.0	24.2	21.7		2846.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1969	1	25.0	828.0	33.1	26.7	25.1	290.0	11.6	8.8	350.2	0.0	0.0	0.0
1969	2	0.0	0.0	0.0	0.0	25.1	0.0	0.0	8.8	0.0	0.0	0.0	0.0
1969	3	0.0	0.0	0.0	0.0	25.1	0.0	0.0	8.8	0.0	0.0	0.0	0.0
1969	4	21.0	783.0	37.3	26.1	25.9	266.0	12.7	9.1	339.7	0.0	0.0	0.0
1969	5	28.0	732.0	26.1	23.6	26.6	249.0	8.9	9.3	340.2	0.0	0.0	0.0
1969	6	30.0	690.0	23.0	23.0	27.3	242.0	8.1	9.5	350.7	0.0	0.0	0.0
1969	7	30.0	535.0	17.8	17.3	27.8	187.0	6.2	9.7	349.5	0.0	0.0	0.0
1969	8	0.0	0.0	0.0	0.0	27.8	0.0	0.0	9.7	0.0	0.0	0.0	0.0
1969	9	0.0	0.0	0.0	0.0	27.8	0.0	0.0	9.7	0.0	0.0	0.0	0.0
1969	10	0.0	0.0	0.0	0.0	27.8	0.0	0.0	9.7	0.0	0.0	0.0	0.0
1969	11	10.0	476.0	47.6	15.9	28.3	171.0	17.1	9.9	359.2	0.0	0.0	0.0
1969	12	31.0	790.0	25.5	25.5	29.1	284.0	9.2	10.2	359.5	0.0	0.0	0.0
Subtotal		175.0	4834.0	27.6	13.2		1689.0				0.0		
1970	1	26.0	794.0	30.5	25.6	29.9	286.0	11.0	10.5	360.2	0.0	0.0	0.0
1970	2	27.0	713.0	26.4	25.5	30.6	250.0	9.3	10.7	350.6	0.0	0.0	0.0
1970	3	31.0	580.0	18.7	18.7	31.2	203.0	6.5	10.9	350.0	0.0	0.0	0.0
1970	4	24.0	480.0	20.0	16.0	31.7	168.0	7.0	11.1	350.0	0.0	0.0	0.0
1970	5	23.0	356.0	15.5	11.5	32.0	125.0	5.4	11.2	351.1	0.0	0.0	0.0
1970	6	0.0	0.0	0.0	0.0	32.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0
1970	7	0.0	0.0	0.0	0.0	32.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0
1970	8	15.0	703.0	46.9	22.7	32.7	246.0	16.4	11.5	349.9	0.0	0.0	0.0
1970	9	27.0	803.0	29.7	26.8	33.5	281.0	10.4	11.7	349.9	0.0	0.0	0.0
1970	10	30.0	903.0	30.1	29.1	34.4	316.0	10.5	12.1	349.9	0.0	0.0	0.0
1970	11	30.0	842.0	28.1	28.1	35.3	286.0	9.5	12.4	339.7	0.0	0.0	0.0
1970	12	29.0	794.0	27.4	25.6	36.1	270.0	9.3	12.6	340.1	0.0	0.0	0.0
Subtotal		262.0	6968.0	26.6	19.1		0.0				0.0		
1971	1	31.0	767.0	24.7	24.7	36.8	261.0	8.4	12.9	340.3	0.0	0.0	0.0
1971	2	27.0	675.0	25.0	24.1	37.5	230.0	8.5	13.1	340.7	0.0	0.0	0.0
1971	3	18.0	464.0	25.8	15.0	38.0	158.0	8.8	13.3	340.5	0.0	0.0	0.0
1971	4	9.0	260.0	28.9	8.7	38.2	88.0	9.8	13.4	338.5	0.0	0.0	0.0
1971	5	29.0	761.0	26.2	24.5	39.0	259.0	8.9	13.6	340.3	0.0	0.0	0.0
1971	6	25.0	539.0	21.6	18.0	39.5	183.0	7.3	13.8	339.5	0.0	0.0	0.0
1971	7	19.0	391.0	20.6	12.6	39.9	133.0	7.0	13.9	340.2	0.0	0.0	0.0
1971	8	0.0	0.0	0.0	0.0	39.9	0.0	0.0	13.9	0.0	0.0	0.0	0.0
1971	9	15.0	544.0	36.3	18.1	40.5	180.0	12.0	14.1	330.9	0.0	0.0	0.0
1971	10	31.0	648.0	20.9	20.9	41.1	214.0	6.9	14.3	330.2	0.0	0.0	0.0
1971	11	27.0	584.0	21.6	19.5	41.7	193.0	7.1	14.5	330.5	0.0	0.0	0.0
1971	12	31.0	583.0	18.8	18.8	42.3	192.0	6.2	14.7	329.3	0.0	0.0	0.0
Subtotal		262.0	6216.0	23.7	17.0		2091.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1972	1	31.0	548.0	17.7	17.7	42.8	181.0	5.8	14.9	330.3	0.0	0.0	0.0
1972	2	29.0	587.0	20.2	20.2	43.4	194.0	6.7	15.1	330.5	0.0	0.0	0.0
1972	3	31.0	596.0	19.2	19.2	44.0	197.0	6.4	15.3	330.5	0.0	0.0	0.0
1972	4	28.0	553.0	19.8	18.4	44.6	166.0	5.9	15.4	300.2	0.0	0.0	0.0
1972	5	20.0	363.0	18.2	11.7	44.9	109.0	5.5	15.6	300.3	0.0	0.0	0.0
1972	6	13.0	330.0	25.4	11.0	45.3	99.0	7.6	15.7	300.0	0.0	0.0	0.0
1972	7	28.0	523.0	18.7	16.9	45.8	157.0	5.6	15.8	300.2	0.0	0.0	0.0
1972	8	31.0	720.0	23.2	23.2	46.5	216.0	7.0	16.0	300.0	0.0	0.0	0.0
1972	9	28.0	533.0	19.0	17.8	47.0	160.0	5.7	16.2	300.2	0.0	0.0	0.0
1972	10	21.0	446.0	21.2	14.4	47.5	134.0	6.4	16.3	300.4	0.0	0.0	0.0
1972	11	19.0	377.0	19.8	12.6	47.9	113.0	5.9	16.4	299.7	0.0	0.0	0.0
1972	12	18.0	482.0	26.8	15.5	48.3	145.0	8.1	16.6	300.8	0.0	0.0	0.0
Subtotal		297.0	6058.0	20.4	16.6		1871.0				0.0		
1973	1	31.0	560.0	18.1	18.1	48.9	168.0	5.4	16.8	300.0	0.0	0.0	0.0
1973	2	27.0	384.0	14.2	13.7	49.3	115.0	4.3	16.9	299.5	0.0	0.0	0.0
1973	3	5.0	82.0	16.4	2.6	49.4	25.0	5.0	16.9	304.9	0.0	0.0	0.0
1973	4	6.0	164.0	27.3	5.5	49.5	49.0	8.2	16.9	298.8	0.0	0.0	0.0
1973	5	27.0	397.0	14.7	12.8	49.9	119.0	4.4	17.1	299.7	0.0	0.0	0.0
1973	6	27.0	461.0	17.1	15.4	50.4	138.0	5.1	17.2	299.3	0.0	0.0	0.0
1973	7	23.0	325.0	14.1	10.5	50.7	98.0	4.3	17.3	301.5	0.0	0.0	0.0
1973	8	29.0	437.0	15.1	14.1	51.1	131.0	4.5	17.4	299.8	0.0	0.0	0.0
1973	9	29.0	418.0	14.4	13.9	51.6	125.0	4.3	17.6	299.0	0.0	0.0	0.0
1973	10	31.0	414.0	13.4	13.4	52.0	124.0	4.0	17.7	299.5	0.0	0.0	0.0
1973	11	25.0	284.0	11.4	9.5	52.3	85.0	3.4	17.8	299.3	0.0	0.0	0.0
1973	12	31.0	363.0	11.7	11.7	52.6	109.0	3.5	17.9	300.3	0.0	0.0	0.0
Subtotal		291.0	4289.0	14.7	11.8		1286.0				0.0		
1974	1	13.0	483.0	37.2	15.6	53.1	145.0	11.2	18.0	300.2	0.0	0.0	0.0
1974	2	24.0	580.0	24.2	20.7	53.7	174.0	7.3	18.2	300.0	0.0	0.0	0.0
1974	3	28.0	624.0	22.3	20.1	54.3	187.0	6.7	18.4	299.7	0.0	0.0	0.0
1974	4	30.0	635.0	21.2	21.2	54.9	191.0	6.4	18.6	300.8	0.0	0.0	0.0
1974	5	30.0	626.0	20.9	20.2	55.6	188.0	6.3	18.8	300.3	0.0	0.0	0.0
1974	6	29.0	579.0	20.0	19.3	56.2	174.0	6.0	18.9	300.5	0.0	0.0	0.0
1974	7	31.0	625.0	20.2	20.2	56.8	188.0	6.1	19.1	300.8	0.0	0.0	0.0
1974	8	31.0	603.0	19.5	19.5	57.4	181.0	5.8	19.3	300.2	0.0	0.0	0.0
1974	9	30.0	593.0	19.8	19.8	58.0	178.0	5.9	19.5	300.2	0.0	0.0	0.0
1974	10	31.0	595.0	19.2	19.2	58.6	178.0	5.7	19.7	299.2	0.0	0.0	0.0
1974	11	12.0	231.0	19.3	7.7	58.8	69.0	5.8	19.7	298.7	0.0	0.0	0.0
1974	12	19.0	565.0	29.7	18.2	59.4	170.0	8.9	19.9	300.9	0.0	0.0	0.0
Subtotal		308.0	6739.0	21.9	18.5		2023.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1975	1	31.0	644.0	20.8	20.8	60.0	193.0	6.2	20.1	299.7	0.0	0.0	0.0
1975	2	28.0	557.0	19.9	19.9	60.6	167.0	6.0	20.3	299.8	0.0	0.0	0.0
1975	3	0.0	0.0	0.0	0.0	60.6	0.0	0.0	20.3	ERR	0.0	ERR	0.0
1975	4	10.0	379.0	37.9	12.6	60.9	114.0	11.4	20.4	300.8	0.0	0.0	0.0
1975	5	31.0	590.0	19.0	19.0	61.5	177.0	5.7	20.5	300.0	0.0	0.0	0.0
1975	6	30.0	628.0	20.9	20.9	62.2	188.0	6.3	20.7	299.4	0.0	0.0	0.0
1975	7	31.0	621.0	20.0	20.0	62.8	186.0	6.0	20.9	299.5	0.0	0.0	0.0
1975	8	30.0	610.0	20.3	19.7	63.4	183.0	6.1	21.1	300.0	0.0	0.0	0.0
1975	9	30.0	581.0	19.4	19.4	64.0	174.0	5.8	21.3	299.5	0.0	0.0	0.0
1975	10	31.0	598.0	19.3	19.3	64.6	179.0	5.8	21.5	299.3	0.0	0.0	0.0
1975	11	29.0	599.0	20.7	20.0	65.2	180.0	6.2	21.6	300.5	0.0	0.0	0.0
1975	12	30.0	634.0	21.1	20.5	65.8	190.0	6.3	21.8	299.7	0.0	0.0	0.0
Subtotal		311.0	6441.0	20.7	17.6		1931.0				0.0		
1976	1	31.0	612.0	19.7	19.7	66.4	184.0	5.9	22.0	300.7	0.0	0.0	0.0
1976	2	29.0	584.0	20.1	20.1	67.0	175.0	6.0	22.2	299.7	0.0	0.0	0.0
1976	3	31.0	623.0	20.1	20.1	67.6	187.0	6.0	22.4	300.2	0.0	0.0	0.0
1976	4	24.0	512.0	21.3	17.1	68.1	154.0	6.4	22.5	300.8	0.0	0.0	0.0
1976	5	31.0	627.0	20.2	20.2	68.8	188.0	6.1	22.7	299.8	0.0	0.0	0.0
1976	6	30.0	518.0	17.3	17.3	69.3	155.0	5.2	22.9	299.2	0.0	0.0	0.0
1976	7	31.0	590.0	19.0	19.0	69.9	177.0	5.7	23.0	300.0	0.0	0.0	0.0
1976	8	30.0	641.0	21.4	20.7	70.5	192.0	6.4	23.2	299.5	0.0	0.0	0.0
1976	9	26.0	542.0	20.8	18.1	71.1	163.0	6.3	23.4	300.7	0.0	0.0	0.0
1976	10	26.0	567.0	21.8	18.3	71.6	170.0	6.5	23.6	299.8	0.0	0.0	0.0
1976	11	30.0	606.0	20.2	20.2	72.2	182.0	6.1	23.7	300.3	0.0	0.0	0.0
1976	12	30.0	572.0	19.1	18.5	72.8	172.0	5.7	23.9	300.7	0.0	0.0	0.0
Subtotal		349.0	6994.0	20.0	19.1		2099.0				0.0		
1977	1	30.0	601.0	20.0	19.4	73.4	180.0	6.0	24.1	299.5	0.0	0.0	0.0
1977	2	28.0	530.0	18.9	18.9	73.9	159.0	5.7	24.3	300.0	0.0	0.0	0.0
1977	3	29.0	533.0	18.4	17.2	74.5	160.0	5.5	24.4	300.2	0.0	0.0	0.0
1977	4	30.0	558.0	18.6	18.6	75.0	167.0	5.6	24.6	299.3	0.0	0.0	0.0
1977	5	27.0	502.0	18.6	16.2	75.5	151.0	5.6	24.7	300.8	0.0	0.0	0.0
1977	6	27.0	575.0	21.3	19.2	76.1	173.0	6.4	24.9	300.9	0.0	0.0	0.0
1977	7	29.0	483.0	16.7	15.6	76.6	145.0	5.0	25.1	300.2	0.0	0.0	0.0
1977	8	31.0	611.0	19.7	19.7	77.2	183.0	5.9	25.2	299.5	0.0	0.0	0.0
1977	9	30.0	500.0	16.7	16.7	77.7	150.0	5.0	25.4	300.0	0.0	0.0	0.0
1977	10	31.0	531.0	17.1	17.1	78.2	162.0	5.2	25.6	305.1	0.0	0.0	0.0
1977	11	30.0	538.0	17.9	17.9	78.8	161.0	5.4	25.7	299.3	0.0	0.0	0.0
1977	12	25.0	541.0	21.6	17.5	79.3	162.0	6.5	25.9	299.4	0.0	0.0	0.0
Subtotal		347.0	6503.0	18.7	17.8		1953.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1978	1	25.0	525.0	21.0	16.9	79.8	158.0	6.3	26.0	301.0	0.0	0.0	0.0
1978	2	28.0	482.0	17.2	17.2	80.3	145.0	5.2	26.2	300.8	0.0	0.0	0.0
1978	3	6.0	227.0	37.8	7.3	80.5	68.0	11.3	26.2	299.6	0.0	0.0	0.0
1978	4	29.0	520.0	17.9	17.3	81.1	364.0	12.6	26.6	700.0	0.0	0.0	0.0
1978	5	25.0	527.0	21.1	17.0	81.6	158.0	6.3	26.8	299.8	0.0	0.0	0.0
1978	6	30.0	490.0	16.3	16.3	82.1	147.0	4.9	26.9	300.0	0.0	0.0	0.0
1978	7	29.0	501.0	17.3	16.2	82.6	150.0	5.2	27.1	299.4	0.0	0.0	0.0
1978	8	31.0	509.0	16.4	16.4	83.1	153.0	4.9	27.2	300.6	0.0	0.0	0.0
1978	9	30.0	494.0	16.5	16.5	83.6	148.0	4.9	27.4	299.6	0.0	0.0	0.0
1978	10	31.0	496.0	16.0	16.0	84.1	149.0	4.8	27.5	300.4	0.0	0.0	0.0
1978	11	30.0	477.0	15.9	15.9	84.6	143.0	4.8	27.7	299.8	0.0	0.0	0.0
1978	12	31.0	480.0	15.5	15.5	85.0	144.0	4.6	27.8	300.0	0.0	0.0	0.0
Subtotal		325.0	5728.0	17.6	15.7		1927.0				0.0		
1979	1	1.0	2.0	2.0	0.1	85.0	1.0	1.0	27.8	500.0	0.0	0.0	0.0
1979	2	13.0	394.0	30.3	14.1	85.4	118.0	9.1	27.9	299.5	0.0	0.0	0.0
1979	3	18.0	331.0	18.4	10.7	85.8	99.0	5.5	28.0	299.1	0.0	0.0	0.0
1979	4	13.0	384.0	29.5	12.8	86.1	115.0	8.8	28.1	299.5	0.0	0.0	0.0
1979	5	26.0	523.0	20.1	16.9	86.7	157.0	6.0	28.3	300.2	0.0	0.0	0.0
1979	6	21.0	478.0	22.8	15.9	87.1	143.0	6.8	28.4	299.2	0.0	0.0	0.0
1979	7	31.0	549.0	17.7	17.7	87.7	165.0	5.3	28.6	300.5	0.0	0.0	0.0
1979	8	31.0	516.0	16.6	16.6	88.2	155.0	5.0	28.8	300.4	0.0	0.0	0.0
1979	9	30.0	508.0	16.9	16.9	88.7	152.0	5.1	28.9	299.2	0.0	0.0	0.0
1979	10	26.0	468.0	18.0	15.1	89.2	140.0	5.4	29.0	299.1	0.0	0.0	0.0
1979	11	30.0	476.0	15.9	15.9	89.7	143.0	4.8	29.2	300.4	0.0	0.0	0.0
1979	12	26.0	460.0	17.7	14.8	90.1	138.0	5.3	29.3	300.0	0.0	0.0	0.0
Subtotal		266.0	5089.0	19.1	13.9		1526.0				0.0		
1980	1	18.0	289.0	16.1	9.3	90.4	87.0	4.8	29.4	301.0	0.0	0.0	0.0
1980	2	0.0	0.0	0.0	0.0	90.4	0.0	0.0	29.4	0.0	0.0	0.0	0.0
1980	3	0.0	0.0	0.0	0.0	90.4	0.0	0.0	29.4	0.0	0.0	0.0	0.0
1980	4	14.0	425.0	30.4	14.2	90.8	128.0	9.1	29.5	301.2	0.0	0.0	0.0
1980	5	25.0	514.0	20.6	16.6	91.3	154.0	6.2	29.7	299.6	0.0	0.0	0.0
1980	6	27.0	495.0	18.3	16.5	91.8	149.0	5.5	29.8	301.0	0.0	0.0	0.0
1980	7	25.0	493.0	19.7	15.9	92.3	144.0	5.8	30.0	292.1	0.0	0.0	0.0
1980	8	22.0	447.0	20.3	14.4	92.8	134.0	6.1	30.1	299.8	0.0	0.0	0.0
1980	9	29.0	503.0	17.3	16.8	93.3	151.0	5.2	30.3	300.2	0.0	0.0	0.0
1980	10	31.0	525.0	16.9	16.9	93.8	157.0	5.1	30.4	299.0	0.0	0.0	0.0
1980	11	23.0	478.0	20.8	15.9	94.3	143.0	6.2	30.6	299.2	0.0	0.0	0.0
1980	12	31.0	575.0	18.5	18.5	94.9	172.0	5.5	30.7	299.1	0.0	0.0	0.0
Subtotal		245.0	4744.0	19.4	13.0		1419.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1981	1	31.0	494.0	15.9	15.9	95.4	148.0	4.8	30.9	299.6	0.0	0.0	0.0
1981	2	28.0	461.0	16.5	16.5	95.8	138.0	4.9	31.0	299.3	0.0	0.0	0.0
1981	3	13.0	231.0	17.8	7.5	96.0	71.0	5.5	31.1	307.4	0.0	0.0	0.0
1981	4	26.0	549.0	21.1	18.3	96.6	165.0	6.3	31.3	300.5	0.0	0.0	0.0
1981	5	13.0	244.0	18.8	7.9	96.8	73.0	5.6	31.3	299.2	0.0	0.0	0.0
1981	6	26.0	523.0	20.1	17.4	97.4	157.0	6.0	31.5	300.2	0.0	0.0	0.0
1981	7	25.0	391.0	15.6	12.6	97.8	117.0	4.7	31.6	299.2	0.0	0.0	0.0
1981	8	0.0	0.0	0.0	0.0	97.8	0.0	0.0	31.6	0.0	0.0	0.0	0.0
1981	9	9.0	248.0	27.6	8.3	98.0	74.0	8.2	31.7	298.4	0.0	0.0	0.0
1981	10	31.0	554.0	17.9	17.9	98.6	166.0	5.4	31.9	299.6	0.0	0.0	0.0
1981	11	30.0	499.0	16.6	16.6	99.1	150.0	5.0	32.0	300.6	0.0	0.0	0.0
1981	12	31.0	511.0	16.5	16.5	99.6	153.0	4.9	32.2	299.4	0.0	0.0	0.0
Subtotal		263.0	4705.0	17.9	12.9		1412.0				0.0		
1982	1	29.0	478.0	16.5	15.4	100.0	143.0	4.9	32.3	299.2	0.0	0.0	0.0
1982	2	27.0	445.0	16.5	15.9	100.5	134.0	5.0	32.4	301.1	0.0	0.0	0.0
1982	3	7.0	276.0	39.4	8.9	100.8	83.0	11.9	32.5	300.7	0.0	0.0	0.0
1982	4	29.0	495.0	17.1	16.5	101.3	149.0	5.1	32.7	301.0	0.0	0.0	0.0
1982	5	31.0	496.0	16.0	16.0	101.8	149.0	4.8	32.8	300.4	0.0	0.0	0.0
1982	6	24.0	453.0	18.9	15.1	102.2	136.0	5.7	33.0	300.2	0.0	0.0	0.0
1982	7	31.0	477.0	15.4	15.4	102.7	143.0	4.6	33.1	299.8	0.0	0.0	0.0
1982	8	29.0	456.0	15.7	14.7	103.1	137.0	4.7	33.2	300.4	0.0	0.0	0.0
1982	9	12.0	146.0	12.2	4.9	103.3	44.0	3.7	33.3	301.4	0.0	0.0	0.0
1982	10	20.0	292.0	14.6	9.4	103.6	90.0	4.5	33.4	308.2	0.0	0.0	0.0
1982	11	28.0	283.0	10.1	9.4	103.9	85.0	3.0	33.5	300.4	0.0	0.0	0.0
1982	12	12.0	123.0	10.3	4.0	104.0	37.0	3.1	33.5	300.8	0.0	0.0	0.0
Subtotal		279.0	4420.0	15.8	12.1		1330.0				0.0		
1983	1	26.0	460.0	17.7	14.8	104.4	138.0	5.3	33.6	300.0	0.0	0.0	0.0
1983	2	12.0	235.0	19.6	8.4	104.7	71.0	5.9	33.7	302.1	0.0	0.0	0.0
1983	3	5.0	199.0	39.8	6.4	104.9	60.0	12.0	33.8	301.5	0.0	0.0	0.0
1983	4	19.0	430.0	22.6	14.3	105.3	129.0	6.8	33.9	300.0	0.0	0.0	0.0
1983	5	28.0	479.0	17.1	15.5	105.8	144.0	5.1	34.0	300.6	0.0	0.0	0.0
1983	6	10.0	288.0	28.8	9.6	106.1	86.0	8.6	34.1	298.6	0.0	0.0	0.0
1983	7	26.0	457.0	17.6	14.7	106.5	137.0	5.3	34.3	299.8	0.0	0.0	0.0
1983	8	31.0	428.0	13.8	13.8	107.0	128.0	4.1	34.4	299.1	0.0	0.0	0.0
1983	9	30.0	419.0	14.0	14.0	107.4	126.0	4.2	34.5	300.7	0.0	0.0	0.0
1983	10	31.0	416.0	13.4	13.4	107.8	125.0	4.0	34.6	300.5	0.0	0.0	0.0
1983	11	30.0	426.0	14.2	14.2	108.2	128.0	4.3	34.8	300.5	0.0	0.0	0.0
1983	12	31.0	444.0	14.3	14.3	108.7	133.0	4.3	34.9	299.5	0.0	0.0	0.0
Subtotal		279.0	4681.0	16.8	12.8		1405.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #8 (A-16). (NE 16-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984	1	27.0	371.0	13.7	12.0	109.0	111.0	4.1	35.0	299.2	0.0	0.0	0.0
1984	2	21.0	210.0	10.0	7.2	109.3	63.0	3.0	35.1	300.0	0.0	0.0	0.0
1984	3	4.0	55.0	13.8	1.8	109.3	17.0	4.3	35.1	309.1	0.0	0.0	0.0
1984	4	25.0	517.0	20.7	17.2	109.8	155.0	6.2	35.2	299.8	0.0	0.0	0.0
1984	5	26.0	436.0	16.8	14.1	110.3	131.0	5.0	35.4	300.5	0.0	0.0	0.0
1984	6	30.0	447.0	14.9	14.9	110.7	134.0	4.5	35.5	299.8	0.0	0.0	0.0
1984	7	31.0	433.0	14.0	14.0	111.1	130.0	4.2	35.6	300.2	0.0	0.0	0.0
1984	8	24.0	365.0	15.2	11.8	111.5	110.0	4.6	35.7	301.4	0.0	0.0	0.0
1984	9	28.0	411.0	14.7	13.7	111.9	123.0	4.4	35.9	299.3	0.0	0.0	0.0
1984	10	10.0	171.0	17.1	5.5	112.1	51.0	5.1	35.9	298.2	0.0	0.0	0.0
1984	11	0.0	0.0	0.0	0.0	112.1	0.0	0.0	35.9	0.0	0.0	0.0	0.0
1984	12	21.0	478.0	22.8	15.4	112.6	143.0	6.8	36.1	299.2	0.0	0.0	0.0
Subtotal		247.0	3894.0	15.8	10.6		1168.0				0.0		
1985	1	11.0	160.0	14.5	5.2	112.7	48.0	4.4	36.1	300.0	0.0	0.0	0.0
1985	2	3.0	151.0	50.3	5.4	112.9	45.0	15.0	36.2	298.0	0.0	0.0	0.0
1985	3	31.0	523.0	16.9	16.9	113.4	157.0	5.1	36.3	300.2	0.0	0.0	0.0
1985	4	29.0	420.0	14.5	14.0	113.8	126.0	4.3	36.4	300.0	0.0	0.0	0.0
1985	5	29.0	400.0	13.8	12.9	114.2	120.0	4.1	36.6	300.0	0.0	0.0	0.0
1985	6	30.0	383.0	12.8	12.8	114.6	115.0	3.8	36.7	300.3	0.0	0.0	0.0
1985	7	31.0	428.0	13.8	13.8	115.0	128.0	4.1	36.8	299.1	0.0	0.0	0.0
1985	8	31.0	422.0	13.6	13.6	115.5	127.0	4.1	36.9	300.9	0.0	0.0	0.0
1985	9	30.0	383.0	12.8	12.8	115.8	115.0	3.8	37.0	300.3	0.0	0.0	0.0
1985	10	31.0	475.0	15.3	15.3	116.3	143.0	4.6	37.2	301.1	0.0	0.0	0.0
1985	11	30.0	387.0	12.9	12.9	116.7	116.0	3.9	37.3	299.7	0.0	0.0	0.0
1985	12	21.0	310.0	14.8	10.0	117.0	93.0	4.4	37.4	300.0	0.0	0.0	0.0
Subtotal		307.0	4442.0	14.5	12.2		1333.0				0.0		
1986	1	15.0	185.0	12.3	6.0	117.2	56.0	3.7	37.5	302.7	0.0	0.0	0.0
1986	2	15.0	477.0	31.8	17.0	117.7	143.0	9.5	37.6	299.8	0.0	0.0	0.0
1986	3	9.0	237.0	26.3	7.6	117.9	71.0	7.9	37.7	299.6	0.0	0.0	0.0
1986	4	30.0	362.0	12.1	12.1	118.3	109.0	3.6	37.8	301.1	0.0	0.0	0.0
1986	5	23.0	488.0	21.2	15.7	118.8	146.0	6.3	37.9	299.2	0.0	0.0	0.0
1986	6	1.0	39.0	39.0	1.3	118.8	12.0	12.0	37.9	307.7	0.0	0.0	0.0
1986	7	15.0	253.0	16.9	8.2	119.0	76.0	5.1	38.0	300.4	0.0	0.0	0.0
1986	8	5.0	152.0	30.4	4.9	119.2	46.0	9.2	38.1	302.6	0.0	0.0	0.0
1986	9	14.0	211.0	15.1	7.0	119.4	63.0	4.5	38.1	298.6	0.0	0.0	0.0
1986	10	31.0	323.0	10.4	10.4	119.7	97.0	3.1	38.2	300.3	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	119.7	0.0	0.0	38.2	0.0	0.0	0.0	0.0
1986	12	9.0	253.0	28.1	8.2	120.0	88.0	9.8	38.3	347.8	0.0	0.0	0.0
Subtotal		167.0	2980.0	17.8	8.2		907.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1968	1	18.0	672.0	37.3	21.7	0.7	825.0	45.8	0.8	1227.7	0.0	0.0	0.0
1968	2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1968	3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1968	4	16.0	945.0	59.1	31.5	1.6	1079.0	67.4	1.9	1141.8	0.0	0.0	0.0
1968	5	21.0	785.0	37.4	25.3	2.4	896.0	42.7	2.8	1141.4	0.0	0.0	0.0
1968	6	2.0	45.0	22.5	1.5	2.4	51.0	25.5	2.9	1133.3	0.0	0.0	0.0
1968	7	28.0	1239.0	44.3	40.0	3.7	1415.0	50.5	4.3	1142.1	0.0	0.0	0.0
1968	8	21.0	587.0	28.0	18.9	4.3	473.0	22.5	4.7	805.8	0.0	0.0	0.0
1968	9	12.0	306.0	25.5	10.2	4.6	247.0	20.6	5.0	807.2	0.0	0.0	0.0
1968	10	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1968	11	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1968	12	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
Subtotal		118.0	4579.0	38.8	12.5		4986.0				0.0		
1969	1	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	2	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	3	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	4	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	5	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	6	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	7	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	8	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	9	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	10	0.0	0.0	0.0	0.0	4.6	0.0	0.0	5.0	0.0	0.0	0.0	0.0
1969	11	6.0	756.0	126.0	25.2	5.3	1210.0	201.7	6.2	1600.5	0.0	0.0	0.0
1969	12	28.0	2360.0	84.3	76.1	7.7	3776.0	134.9	10.0	1600.0	0.0	0.0	0.0
Subtotal		34.0	3116.0	91.6	8.5		4986.0				0.0		
1970	1	18.0	1548.0	86.0	49.9	9.2	2477.0	137.6	12.4	1600.1	0.0	0.0	0.0
1970	2	1.0	3.0	3.0	0.1	9.2	5.0	5.0	12.5	1666.7	0.0	0.0	0.0
1970	3	28.0	2554.0	91.2	82.4	11.8	4086.0	145.9	16.5	1599.8	0.0	0.0	0.0
1970	4	30.0	2090.0	69.7	69.7	13.9	3345.0	111.5	19.9	1600.5	0.0	0.0	0.0
1970	5	31.0	1708.0	55.1	55.1	15.6	2733.0	88.2	22.6	1600.1	0.0	0.0	0.0
1970	6	30.0	1583.0	52.8	52.8	17.2	2533.0	84.4	25.2	1600.1	0.0	0.0	0.0
1970	7	28.0	1615.0	57.7	52.1	18.8	2584.0	92.3	27.7	1600.0	0.0	0.0	0.0
1970	8	24.0	1352.0	56.3	43.6	20.1	649.0	27.0	28.4	480.0	0.0	0.0	0.0
1970	9	30.0	1593.0	53.1	53.1	21.7	765.0	25.5	29.1	480.2	0.0	0.0	0.0
1970	10	31.0	969.0	31.3	31.3	22.7	465.0	15.0	29.6	479.9	0.0	0.0	0.0
1970	11	6.0	181.0	30.2	6.0	22.9	87.0	14.5	29.7	480.7	0.0	0.0	0.0
1970	12	22.0	2753.0	125.1	88.8	25.6	1321.0	60.0	31.0	479.8	0.0	0.0	0.0
Subtotal		279.0	17949.0	64.3	49.2		21050.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1971	1	31.0	1772.0	57.2	57.2	27.4	851.0	27.5	31.9	480.2	0.0	0.0	0.0
1971	2	28.0	1593.0	56.9	56.9	29.0	765.0	27.3	32.6	480.2	0.0	0.0	0.0
1971	3	19.0	1488.0	78.3	48.0	30.5	714.0	37.6	33.4	479.8	0.0	0.0	0.0
1971	4	22.0	911.0	41.4	30.4	31.4	437.0	19.9	33.8	479.7	0.0	0.0	0.0
1971	5	31.0	1340.0	43.2	43.2	32.7	643.0	20.7	34.4	479.9	0.0	0.0	0.0
1971	6	29.0	1016.0	35.0	33.9	33.8	406.0	14.0	34.8	399.6	0.0	0.0	0.0
1971	7	0.0	0.0	0.0	0.0	33.8	0.0	0.0	34.8	0.0	0.0	0.0	0.0
1971	8	20.0	1394.0	69.7	45.0	35.2	669.0	33.5	35.5	479.9	0.0	0.0	0.0
1971	9	30.0	1465.0	48.8	48.8	36.6	703.0	23.4	36.2	479.9	0.0	0.0	0.0
1971	10	31.0	1436.0	46.3	46.3	38.1	689.0	22.2	36.9	479.8	0.0	0.0	0.0
1971	11	30.0	1374.0	45.8	45.8	39.4	660.0	22.0	37.6	480.3	0.0	0.0	0.0
1971	12	31.0	1234.0	39.8	39.8	40.7	494.0	15.9	38.1	400.3	0.0	0.0	0.0
Subtotal		302.0	15023.0	49.7	41.2		7031.0				0.0		
1972	1	31.0	1339.0	43.2	43.2	42.0	536.0	17.3	38.6	400.3	0.0	0.0	0.0
1972	2	29.0	1196.0	41.2	41.2	43.2	478.0	16.5	39.1	399.7	0.0	0.0	0.0
1972	3	30.0	1347.0	44.9	43.5	44.5	539.0	18.0	39.6	400.1	0.0	0.0	0.0
1972	4	28.0	1296.0	46.3	43.2	45.8	518.0	18.5	40.1	399.7	0.0	0.0	0.0
1972	5	31.0	1503.0	48.5	48.5	47.3	1052.0	33.9	41.2	699.9	0.0	0.0	0.0
1972	6	30.0	1346.0	44.9	44.9	48.7	942.0	31.4	42.1	699.9	0.0	0.0	0.0
1972	7	31.0	1494.0	48.2	48.2	50.2	1046.0	33.7	43.2	700.1	0.0	0.0	0.0
1972	8	31.0	1415.0	45.6	45.6	51.6	991.0	32.0	44.2	700.4	0.0	0.0	0.0
1972	9	30.0	1339.0	44.6	44.6	52.9	937.0	31.2	45.1	699.8	0.0	0.0	0.0
1972	10	31.0	1356.0	43.7	43.7	54.3	949.0	30.6	46.0	699.9	0.0	0.0	0.0
1972	11	30.0	1307.0	43.6	43.6	55.6	915.0	30.5	47.0	700.1	0.0	0.0	0.0
1972	12	31.0	1323.0	42.7	42.7	56.9	926.0	29.9	47.9	699.9	0.0	0.0	0.0
Subtotal		363.0	16261.0	44.8	44.4		9829.0				0.0		
1973	1	31.0	1336.0	43.1	43.1	58.3	935.0	30.2	48.8	699.9	0.0	0.0	0.0
1973	2	27.0	1108.0	41.0	39.6	59.4	776.0	28.7	49.6	700.4	0.0	0.0	0.0
1973	3	31.0	1387.0	44.7	44.7	60.8	971.0	31.3	50.6	700.1	0.0	0.0	0.0
1973	4	30.0	1212.0	40.4	40.4	62.0	848.0	28.3	51.4	699.7	0.0	0.0	0.0
1973	5	31.0	1277.0	41.2	41.2	63.2	894.0	28.8	52.3	700.1	0.0	0.0	0.0
1973	6	30.0	1294.0	43.1	43.1	64.5	906.0	30.2	53.2	700.2	0.0	0.0	0.0
1973	7	31.0	1330.0	42.9	42.9	65.9	931.0	30.0	54.1	700.0	0.0	0.0	0.0
1973	8	31.0	1258.0	40.6	40.6	67.1	881.0	28.4	55.0	700.3	0.0	0.0	0.0
1973	9	30.0	1315.0	43.8	43.8	68.4	921.0	30.7	55.9	700.4	0.0	0.0	0.0
1973	10	31.0	1414.0	45.6	45.6	69.9	990.0	31.9	56.9	700.1	0.0	0.0	0.0
1973	11	30.0	1299.0	43.3	43.3	71.2	909.0	30.3	57.8	699.8	0.0	0.0	0.0
1973	12	31.0	1395.0	45.0	45.0	72.6	976.0	31.5	58.8	699.6	0.0	0.0	0.0
Subtotal		364.0	15625.0	42.9	42.8		10938.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1974	1	31.0	1412.0	45.5	45.5	74.0	988.0	31.9	59.8	699.7	0.0	0.0	0.0
1974	2	28.0	1226.0	43.8	43.8	75.2	858.0	30.6	60.7	699.8	0.0	0.0	0.0
1974	3	31.0	1355.0	43.7	43.7	76.5	949.0	30.6	61.6	700.4	0.0	0.0	0.0
1974	4	30.0	1342.0	44.7	44.7	77.9	939.0	31.3	62.6	699.7	0.0	0.0	0.0
1974	5	31.0	1342.0	43.3	43.3	79.2	939.0	30.3	63.5	699.7	0.0	0.0	0.0
1974	6	30.0	1314.0	43.8	43.8	80.5	920.0	30.7	64.4	700.2	0.0	0.0	0.0
1974	7	31.0	1354.0	43.7	43.7	81.9	948.0	30.6	65.4	700.1	0.0	0.0	0.0
1974	8	31.0	1370.0	44.2	44.2	83.3	959.0	30.9	66.3	700.0	0.0	0.0	0.0
1974	9	30.0	1261.0	42.0	42.0	84.5	883.0	29.4	67.2	700.2	0.0	0.0	0.0
1974	10	31.0	1353.0	43.6	43.6	85.9	947.0	30.5	68.1	699.9	0.0	0.0	0.0
1974	11	30.0	1340.0	44.7	44.7	87.2	938.0	31.3	69.1	700.0	0.0	0.0	0.0
1974	12	31.0	1342.0	43.3	43.3	88.6	939.0	30.3	70.0	699.7	0.0	0.0	0.0
Subtotal		365.0	16011.0	43.9	43.9		11207.0				0.0		
1975	1	31.0	1278.0	41.2	41.2	89.8	894.0	28.8	70.9	699.5	0.0	0.0	0.0
1975	2	28.0	1240.0	44.3	44.3	91.1	818.0	29.2	71.7	659.7	0.0	0.0	0.0
1975	3	31.0	1344.0	43.4	43.4	92.4	941.0	30.4	72.7	700.1	0.0	0.0	0.0
1975	4	30.0	1306.0	43.5	43.5	93.7	914.0	30.5	73.6	699.8	0.0	0.0	0.0
1975	5	31.0	1333.0	43.0	43.0	95.1	933.0	30.1	74.5	699.9	0.0	0.0	0.0
1975	6	30.0	1273.0	42.4	42.4	96.3	891.0	29.7	75.4	699.9	0.0	0.0	0.0
1975	7	31.0	1342.0	43.3	43.3	97.7	939.0	30.3	76.4	699.7	0.0	0.0	0.0
1975	8	31.0	1310.0	42.3	42.3	99.0	917.0	29.6	77.3	700.0	0.0	0.0	0.0
1975	9	27.0	1233.0	45.7	41.1	100.2	863.0	32.0	78.1	699.9	0.0	0.0	0.0
1975	10	31.0	1377.0	44.4	44.4	101.6	964.0	31.1	79.1	700.1	0.0	0.0	0.0
1975	11	30.0	1365.0	45.5	45.5	103.0	956.0	31.9	80.1	700.4	0.0	0.0	0.0
1975	12	31.0	1345.0	43.4	43.4	104.3	942.0	30.4	81.0	700.4	0.0	0.0	0.0
Subtotal		362.0	15746.0	43.5	43.1		10972.0				0.0		
1976	1	31.0	1360.0	43.9	43.9	105.7	952.0	30.7	82.0	700.0	0.0	0.0	0.0
1976	2	29.0	1262.0	43.5	43.5	106.9	883.0	30.4	82.8	699.7	0.0	0.0	0.0
1976	3	31.0	1387.0	44.7	44.7	108.3	971.0	31.3	83.8	700.1	0.0	0.0	0.0
1976	4	30.0	1288.0	42.9	42.9	109.6	902.0	30.1	84.7	700.3	0.0	0.0	0.0
1976	5	31.0	1355.0	43.7	43.7	111.0	2209.0	71.3	86.9	1630.3	0.0	0.0	0.0
1976	6	30.0	1090.0	36.3	36.3	112.1	763.0	25.4	87.7	700.0	0.0	0.0	0.0
1976	7	31.0	1209.0	39.0	39.0	113.3	846.0	27.3	88.5	699.8	0.0	0.0	0.0
1976	8	31.0	1335.0	43.1	43.1	114.6	935.0	30.2	89.5	700.4	0.0	0.0	0.0
1976	9	30.0	1271.0	42.4	42.4	115.9	890.0	29.7	90.4	700.2	0.0	0.0	0.0
1976	10	31.0	1373.0	44.3	44.3	117.2	824.0	26.6	91.2	600.1	0.0	0.0	0.0
1976	11	30.0	1319.0	44.0	44.0	118.6	923.0	30.8	92.1	699.8	0.0	0.0	0.0
1976	12	31.0	1283.0	41.4	41.4	119.8	898.0	29.0	93.0	699.9	0.0	0.0	0.0
Subtotal		366.0	15532.0	42.4	42.4		11996.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977	1	31.0	1319.0	42.5	42.5	121.2	923.0	29.8	93.9	699.8	0.0	0.0	0.0
1977	2	28.0	1148.0	41.0	41.0	122.3	804.0	28.7	94.7	700.3	0.0	0.0	0.0
1977	3	31.0	1335.0	43.1	43.1	123.6	935.0	30.2	95.7	700.4	0.0	0.0	0.0
1977	4	30.0	1276.0	42.5	42.5	124.9	893.0	29.8	96.6	699.8	0.0	0.0	0.0
1977	5	31.0	1279.0	41.3	41.3	126.2	895.0	28.9	97.4	699.8	0.0	0.0	0.0
1977	6	30.0	1219.0	40.6	40.6	127.4	853.0	28.4	98.3	699.8	0.0	0.0	0.0
1977	7	31.0	1284.0	41.4	41.4	128.7	899.0	29.0	99.2	700.2	0.0	0.0	0.0
1977	8	31.0	1346.0	43.4	43.4	130.0	942.0	30.4	100.1	699.9	0.0	0.0	0.0
1977	9	30.0	1536.0	51.2	51.2	131.6	1075.0	35.8	101.2	699.9	0.0	0.0	0.0
1977	10	30.0	1288.0	42.9	41.5	132.9	902.0	30.1	102.1	700.3	0.0	0.0	0.0
1977	11	30.0	1268.0	42.3	42.3	134.1	888.0	29.6	103.0	700.3	0.0	0.0	0.0
1977	12	31.0	1277.0	41.2	41.2	135.4	894.0	28.8	103.9	700.1	0.0	0.0	0.0
Subtotal		364.0	15575.0	42.8	42.7		10903.0				0.0		
1978	1	31.0	1265.0	40.8	40.8	136.7	886.0	28.6	104.8	700.4	0.0	0.0	0.0
1978	2	28.0	1085.0	38.8	38.8	137.8	760.0	27.1	105.5	700.5	0.0	0.0	0.0
1978	3	31.0	1184.0	38.2	38.2	139.0	829.0	26.7	106.4	700.2	0.0	0.0	0.0
1978	4	30.0	1142.0	38.1	38.1	140.1	343.0	11.4	106.7	300.4	0.0	0.0	0.0
1978	5	31.0	1297.0	41.8	41.8	141.4	908.0	29.3	107.6	700.1	0.0	0.0	0.0
1978	6	30.0	1080.0	36.0	36.0	142.5	756.0	25.2	108.4	700.0	0.0	0.0	0.0
1978	7	31.0	1171.0	37.8	37.8	143.6	820.0	26.5	109.2	700.3	0.0	0.0	0.0
1978	8	31.0	1215.0	39.2	39.2	144.9	851.0	27.5	110.1	700.4	0.0	0.0	0.0
1978	9	30.0	1171.0	39.0	39.0	146.0	820.0	27.3	110.9	700.3	0.0	0.0	0.0
1978	10	31.0	1162.0	37.5	37.5	147.2	813.0	26.2	111.7	699.7	0.0	0.0	0.0
1978	11	30.0	1154.0	38.5	38.5	148.3	808.0	26.9	112.5	700.2	0.0	0.0	0.0
1978	12	31.0	1217.0	39.3	39.3	149.6	852.0	27.5	113.3	700.1	0.0	0.0	0.0
Subtotal		365.0	14143.0	38.7	38.7		9446.0				0.0		
1979	1	31.0	1221.0	39.4	39.4	150.8	855.0	27.6	114.2	700.2	0.0	0.0	0.0
1979	2	28.0	1048.0	37.4	37.4	151.8	734.0	26.2	114.9	700.4	0.0	0.0	0.0
1979	3	31.0	1215.0	39.2	39.2	153.0	851.0	27.5	115.8	700.4	0.0	0.0	0.0
1979	4	30.0	1178.0	39.3	39.3	154.2	825.0	27.5	116.6	700.3	0.0	0.0	0.0
1979	5	31.0	1232.0	39.7	39.7	155.5	862.0	27.8	117.5	699.7	0.0	0.0	0.0
1979	6	30.0	1192.0	39.7	39.7	156.6	819.0	27.3	118.3	687.1	0.0	0.0	0.0
1979	7	31.0	1242.0	40.1	40.1	157.9	869.0	28.0	119.2	699.7	0.0	0.0	0.0
1979	8	31.0	1223.0	39.5	39.5	159.1	856.0	27.6	120.0	699.9	0.0	0.0	0.0
1979	9	30.0	1199.0	40.0	40.0	160.3	839.0	28.0	120.9	699.7	0.0	0.0	0.0
1979	10	31.0	1137.0	36.7	36.7	161.4	796.0	25.7	121.6	700.1	0.0	0.0	0.0
1979	11	30.0	1117.0	37.2	37.2	162.6	782.0	26.1	122.4	700.1	0.0	0.0	0.0
1979	12	31.0	1208.0	39.0	39.0	163.8	846.0	27.3	123.3	700.3	0.0	0.0	0.0
Subtotal		365.0	14212.0	38.9	38.9		9934.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2).. (NW 2-24N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1980	1	31.0	1180.0	38.1	38.1	165.0	826.0	26.6	124.1	700.0	0.0	0.0	0.0
1980	2	29.0	1083.0	37.3	43.0	166.0	758.0	26.1	124.9	699.9	0.0	0.0	0.0
1980	3	31.0	1247.0	40.2	40.2	167.3	873.0	28.2	125.7	700.1	0.0	0.0	0.0
1980	4	30.0	1064.0	35.5	35.5	168.3	745.0	24.8	126.5	700.2	0.0	0.0	0.0
1980	5	31.0	1150.0	37.1	37.1	169.5	805.0	26.0	127.3	700.0	0.0	0.0	0.0
1980	6	30.0	1153.0	38.4	38.4	170.6	577.0	19.2	127.9	500.4	0.0	0.0	0.0
1980	7	31.0	1238.0	39.9	39.9	171.9	604.0	19.5	128.5	487.9	0.0	0.0	0.0
1980	8	31.0	1250.0	40.3	40.3	173.1	625.0	20.2	129.1	500.0	0.0	0.0	0.0
1980	9	30.0	1139.0	38.0	38.0	174.3	570.0	19.0	129.7	500.4	0.0	0.0	0.0
1980	10	31.0	1220.0	39.4	39.4	175.5	610.0	19.7	130.3	500.0	0.0	0.0	0.0
1980	11	30.0	1212.0	40.4	40.4	176.7	606.0	20.2	130.9	500.0	0.0	0.0	0.0
1980	12	31.0	1294.0	41.7	41.7	178.0	647.0	20.9	131.5	500.0	0.0	0.0	0.0
Subtotal		366.0	14230.0	38.9	38.9		8246.0				0.0		
1981	1	31.0	1228.0	39.6	39.6	179.2	614.0	19.8	132.1	500.0	0.0	0.0	0.0
1981	2	28.0	1104.0	39.4	39.4	180.3	552.0	19.7	132.7	500.0	0.0	0.0	0.0
1981	3	31.0	1179.0	38.0	38.0	181.5	724.0	23.4	133.4	614.1	0.0	0.0	0.0
1981	4	30.0	1358.0	45.3	45.3	182.9	814.0	27.1	134.2	599.4	0.0	0.0	0.0
1981	5	31.0	1209.0	39.0	39.0	184.1	725.0	23.4	135.0	599.7	0.0	0.0	0.0
1981	6	30.0	1207.0	40.2	40.2	185.3	724.0	24.1	135.7	599.8	0.0	0.0	0.0
1981	7	31.0	1171.0	37.8	37.8	186.5	468.0	15.1	136.1	399.7	0.0	0.0	0.0
1981	8	31.0	1207.0	38.9	38.9	187.7	483.0	15.6	136.6	400.2	0.0	0.0	0.0
1981	9	28.0	1036.0	37.0	34.5	188.7	414.0	14.8	137.0	399.6	0.0	0.0	0.0
1981	10	31.0	1114.0	35.9	35.9	189.8	471.0	15.2	137.5	422.8	0.0	0.0	0.0
1981	11	30.0	996.0	33.2	33.2	190.8	398.0	13.3	137.9	399.6	0.0	0.0	0.0
1981	12	31.0	948.0	30.6	30.6	191.8	379.0	12.2	138.3	399.8	0.0	0.0	0.0
Subtotal		363.0	13757.0	37.9	37.7		6766.0				0.0		
1982	1	31.0	1199.0	38.7	38.7	193.0	480.0	15.5	138.8	400.3	0.0	0.0	0.0
1982	2	28.0	1114.0	39.8	39.8	194.1	446.0	15.9	139.2	400.4	0.0	0.0	0.0
1982	3	31.0	1154.0	37.2	37.2	195.2	462.0	14.9	139.7	400.3	0.0	0.0	0.0
1982	4	30.0	1110.0	37.0	37.0	196.3	444.0	14.8	140.1	400.0	0.0	0.0	0.0
1982	5	31.0	1247.0	40.2	40.2	197.6	499.0	16.1	140.6	400.2	0.0	0.0	0.0
1982	6	30.0	1086.0	36.2	36.2	198.7	434.0	14.5	141.1	399.6	0.0	0.0	0.0
1982	7	31.0	1169.0	37.7	37.7	199.8	468.0	15.1	141.5	400.3	0.0	0.0	0.0
1982	8	31.0	1073.0	34.6	34.6	200.9	429.0	13.8	142.0	399.8	0.0	0.0	0.0
1982	9	30.0	1137.0	37.9	37.9	202.0	455.0	15.2	142.4	400.2	0.0	0.0	0.0
1982	10	31.0	1242.0	40.1	40.1	203.3	496.0	16.0	142.9	399.4	0.0	0.0	0.0
1982	11	29.0	926.0	31.9	30.9	204.2	370.0	12.8	143.3	399.6	0.0	0.0	0.0
1982	12	31.0	1136.0	36.6	36.6	205.4	454.0	14.6	143.7	399.6	0.0	0.0	0.0
Subtotal		364.0	13593.0	37.3	37.2		5437.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL. RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	31.0	1069.0	34.5	34.5	206.4	428.0	13.8	144.2	400.4	0.0	0.0	0.0
1983	2	28.0	925.0	33.0	33.0	207.3	370.0	13.2	144.5	400.0	0.0	0.0	0.0
1983	3	31.0	1148.0	37.0	37.0	208.5	459.0	14.8	145.0	399.8	0.0	0.0	0.0
1983	4	30.0	1042.0	34.7	34.7	209.5	417.0	13.9	145.4	400.2	0.0	0.0	0.0
1983	5	31.0	1021.0	32.9	32.9	210.6	408.0	13.2	145.8	399.6	0.0	0.0	0.0
1983	6	30.0	1018.0	33.9	33.9	211.6	407.0	13.6	146.2	399.8	0.0	0.0	0.0
1983	7	31.0	1049.0	33.8	33.8	212.6	420.0	13.5	146.6	400.4	0.0	0.0	0.0
1983	8	31.0	1158.0	37.4	37.4	213.8	463.0	14.9	147.1	399.8	0.0	0.0	0.0
1983	9	30.0	1010.0	33.7	33.7	214.8	404.0	13.5	147.5	400.0	0.0	0.0	0.0
1983	10	31.0	979.0	31.6	31.6	215.8	392.0	12.6	147.9	400.4	0.0	0.0	0.0
1983	11	30.0	1072.0	35.7	35.7	216.8	429.0	14.3	148.3	400.2	0.0	0.0	0.0
1983	12	31.0	1173.0	37.8	37.8	218.0	469.0	15.1	148.8	399.8	0.0	0.0	0.0
Subtotal		365.0	12664.0	34.7	34.7		5066.0				0.0		
1984	1	31.0	994.0	32.1	32.1	219.0	398.0	12.8	149.2	400.4	0.0	0.0	0.0
1984	2	29.0	1066.0	36.8	36.8	220.1	426.0	14.7	149.6	399.6	0.0	0.0	0.0
1984	3	31.0	1092.0	35.2	35.2	221.2	437.0	14.1	150.1	400.2	0.0	0.0	0.0
1984	4	30.0	1049.0	35.0	35.0	222.2	420.0	14.0	150.5	400.4	0.0	0.0	0.0
1984	5	31.0	1063.0	34.3	34.3	223.3	425.0	13.7	150.9	399.8	0.0	0.0	0.0
1984	6	30.0	1022.0	34.1	34.1	224.3	777.0	25.9	151.7	760.3	0.0	0.0	0.0
1984	7	31.0	996.0	32.1	32.1	225.3	757.0	24.4	152.4	760.0	0.0	0.0	0.0
1984	8	31.0	910.0	29.4	29.4	226.2	692.0	22.3	153.1	760.4	0.0	0.0	0.0
1984	9	30.0	987.0	32.9	32.9	227.2	888.0	29.6	154.0	899.7	0.0	0.0	0.0
1984	10	31.0	930.0	30.0	30.0	228.1	837.0	27.0	154.8	900.0	0.0	0.0	0.0
1984	11	30.0	914.0	30.5	30.5	229.0	823.0	27.4	155.7	900.4	0.0	0.0	0.0
1984	12	31.0	969.0	31.3	31.3	230.0	969.0	31.3	156.6	1000.0	0.0	0.0	0.0
Subtotal		366.0	11992.0	32.8	32.8		7849.0				0.0		
1985	1	31.0	843.0	27.2	27.2	230.9	843.0	27.2	157.5	1000.0	0.0	0.0	0.0
1985	2	28.0	854.0	30.5	30.5	231.7	854.0	30.5	158.3	1000.0	0.0	0.0	0.0
1985	3	31.0	875.0	28.2	28.2	232.6	1050.0	33.9	159.4	1200.0	0.0	0.0	0.0
1985	4	30.0	833.0	27.8	27.8	233.4	1000.0	33.3	160.4	1200.5	0.0	0.0	0.0
1985	5	31.0	844.0	27.2	27.2	234.3	1182.0	38.1	161.6	1400.5	0.0	0.0	0.0
1985	6	29.0	640.0	22.1	21.3	234.9	1133.0	39.1	162.7	1770.3	0.0	0.0	0.0
1985	7	31.0	808.0	26.1	26.1	235.7	1430.0	46.1	164.1	1769.8	0.0	0.0	0.0
1985	8	28.0	714.0	25.5	23.0	236.4	1264.0	45.1	165.4	1770.3	0.0	0.0	0.0
1985	9	30.0	716.0	23.9	23.9	237.1	1432.0	47.7	166.8	2000.0	0.0	0.0	0.0
1985	10	31.0	359.0	11.6	11.6	237.5	718.0	23.2	167.5	2000.0	0.0	0.0	0.0
1985	11	30.0	598.0	19.9	19.9	238.1	1316.0	43.9	168.9	2200.7	0.0	0.0	0.0
1985	12	31.0	740.0	23.9	23.9	238.8	1776.0	57.3	170.6	2400.0	0.0	0.0	0.0
Subtotal		361.0	8824.0	24.4	24.2		13998.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL. RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #9 (C-2). (NW 2-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	635.0	20.5	20.5	239.5	1524.0	49.2	172.2	2400.0	0.0	0.0	0.0
1986	2	28.0	599.0	21.4	21.4	240.1	1438.0	51.4	173.6	2400.7	0.0	0.0	0.0
1986	3	31.0	632.0	20.4	20.4	240.7	1643.0	53.0	175.2	2599.7	0.0	0.0	0.0
1986	4	30.0	591.0	19.7	19.7	241.3	1537.0	51.2	176.8	2600.7	0.0	0.0	0.0
1986	5	31.0	616.0	19.9	19.9	241.9	1725.0	55.6	178.5	2800.3	0.0	0.0	0.0
1986	6	30.0	511.0	17.0	17.0	242.4	1635.0	54.5	180.1	3199.6	0.0	0.0	0.0
1986	7	31.0	628.0	20.3	20.3	243.0	2010.0	64.8	182.2	3200.6	0.0	0.0	0.0
1986	8	8.0	165.0	20.6	5.3	243.2	561.0	70.1	182.7	3400.0	0.0	0.0	0.0
1986	9	12.0	317.0	26.4	10.6	243.5	1078.0	89.8	183.8	3400.6	0.0	0.0	0.0
1986	10	31.0	436.0	14.1	14.1	244.0	1657.0	53.5	185.4	3800.5	0.0	0.0	0.0
1986	11	22.0	241.0	11.0	8.0	244.2	964.0	43.8	186.4	4000.0	0.0	0.0	0.0
1986	12	21.0	268.0	12.8	8.6	244.5	1688.0	80.4	188.1	6298.5	0.0	0.0	0.0
Subtotal		306.0	5639.0	18.4	15.4		17460.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1967	3	20.0	1542.0	77.1	49.7	1.5	617.0	30.9	0.6	400.1	0.0	0.0	0.0
1967	4	30.0	2055.0	68.5	68.5	3.6	822.0	27.4	1.4	400.0	0.0	0.0	0.0
1967	5	31.0	2147.0	69.3	69.3	5.7	859.0	27.7	2.3	400.1	0.0	0.0	0.0
1967	6	20.0	1893.0	94.7	63.1	7.6	757.0	37.9	3.1	399.9	0.0	0.0	0.0
1967	7	30.0	1766.0	58.9	57.0	9.4	706.0	23.5	3.8	399.8	0.0	0.0	0.0
1967	8	25.0	2205.0	88.2	71.1	11.6	500.0	20.0	4.3	226.8	0.0	0.0	0.0
1967	9	27.0	1870.0	69.3	62.3	13.5	561.0	20.8	4.8	300.0	0.0	0.0	0.0
1967	10	31.0	1915.0	61.8	61.8	15.4	575.0	18.5	5.4	300.3	0.0	0.0	0.0
1967	11	29.0	1806.0	62.3	60.2	17.2	542.0	18.7	5.9	300.1	0.0	0.0	0.0
1967	12	30.0	1784.0	59.5	57.5	19.0	535.0	17.8	6.5	299.9	0.0	0.0	0.0
Subtotal		273.0	18983.0	69.5	62.0		6474.0				0.0		
1968	1	29.0	1640.0	56.6	52.9	20.6	492.0	17.0	7.0	300.0	0.0	0.0	0.0
1968	2	20.0	995.0	49.8	34.3	21.6	298.0	14.9	7.3	299.5	0.0	0.0	0.0
1968	3	20.0	1011.0	50.6	32.6	22.6	303.0	15.2	7.6	299.7	0.0	0.0	0.0
1968	4	30.0	1764.0	58.8	58.8	24.4	529.0	17.6	8.1	299.9	0.0	0.0	0.0
1968	5	31.0	1692.0	54.6	54.6	26.1	508.0	16.4	8.6	300.2	0.0	0.0	0.0
1968	6	30.0	1760.0	58.7	58.7	27.8	528.0	17.6	9.1	300.0	0.0	0.0	0.0
1968	7	31.0	1315.0	42.4	42.4	29.2	395.0	12.7	9.5	300.4	0.0	0.0	0.0
1968	8	31.0	1453.0	46.9	46.9	30.6	414.0	13.4	9.9	284.9	0.0	0.0	0.0
1968	9	30.0	1305.0	43.5	43.5	31.9	372.0	12.4	10.3	285.1	0.0	0.0	0.0
1968	10	2.0	105.0	52.5	3.4	32.0	30.0	15.0	10.3	285.7	0.0	0.0	0.0
1968	11	24.0	1833.0	76.4	61.1	33.9	522.0	21.8	10.9	284.8	0.0	0.0	0.0
1968	12	31.0	1761.0	56.8	56.8	35.6	610.0	19.7	11.5	346.4	0.0	0.0	0.0
Subtotal		309.0	16634.0	53.8	45.4		5001.0				0.0		
1969	1	16.0	863.0	53.9	27.8	36.5	246.0	15.4	11.7	285.1	0.0	0.0	0.0
1969	2	24.0	1812.0	75.5	64.7	38.3	516.0	21.5	12.2	284.8	0.0	0.0	0.0
1969	3	2.0	253.0	126.5	8.2	38.5	72.0	36.0	12.3	284.6	0.0	0.0	0.0
1969	4	30.0	1936.0	64.5	64.5	40.5	552.0	18.4	12.9	285.1	0.0	0.0	0.0
1969	5	28.0	1491.0	53.3	48.1	42.0	209.0	7.5	13.1	140.2	0.0	0.0	0.0
1969	6	26.0	1282.0	49.3	42.7	43.3	365.0	14.0	13.4	284.7	0.0	0.0	0.0
1969	7	26.0	1227.0	47.2	39.6	44.5	350.0	13.5	13.8	285.2	0.0	0.0	0.0
1969	8	28.0	1441.0	51.5	46.5	45.9	1441.0	51.5	15.2	1000.0	0.0	0.0	0.0
1969	9	23.0	1204.0	52.3	40.1	47.1	384.0	16.7	15.6	318.9	0.0	0.0	0.0
1969	10	26.0	1487.0	57.2	48.0	48.6	474.0	18.2	16.1	318.8	0.0	0.0	0.0
1969	11	27.0	1273.0	47.1	42.4	49.9	406.0	15.0	16.5	318.9	0.0	0.0	0.0
1969	12	31.0	1233.0	39.8	39.8	51.1	393.0	12.7	16.9	318.7	0.0	0.0	0.0
Subtotal		287.0	15502.0	54.0	42.5		5408.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	24.0	1077.0	44.9	34.7	52.2	623.0	26.0	17.5	578.5	0.0	0.0	0.0
1970	2	27.0	1361.0	50.4	48.6	53.6	434.0	16.1	17.9	318.9	0.0	0.0	0.0
1970	3	26.0	1198.0	46.1	38.6	54.8	382.0	14.7	18.3	318.9	0.0	0.0	0.0
1970	4	30.0	1198.0	39.9	39.9	56.0	382.0	12.7	18.7	318.9	0.0	0.0	0.0
1970	5	15.0	886.0	59.1	28.6	56.8	283.0	18.9	19.0	319.4	0.0	0.0	0.0
1970	6	14.0	942.0	67.3	31.4	57.8	300.0	21.4	19.3	318.5	0.0	0.0	0.0
1970	7	26.0	1374.0	52.8	44.3	59.2	438.0	16.8	19.7	318.8	0.0	0.0	0.0
1970	8	25.0	1049.0	42.0	33.8	60.2	635.0	25.4	20.4	605.3	0.0	0.0	0.0
1970	9	30.0	1410.0	47.0	47.0	61.6	458.0	15.3	20.8	324.8	0.0	0.0	0.0
1970	10	26.0	1142.0	43.9	36.8	62.8	371.0	14.3	21.2	324.9	0.0	0.0	0.0
1970	11	28.0	1286.0	45.9	42.9	64.0	418.0	14.9	21.6	325.0	0.0	0.0	0.0
1970	12	31.0	1291.0	41.6	41.6	65.3	420.0	13.5	22.0	325.3	0.0	0.0	0.0
Subtotal		302.0	14214.0	47.1	38.9		0.0				0.0		
1971	1	9.0	540.0	60.0	17.4	65.9	175.0	19.4	22.2	324.1	0.0	0.0	0.0
1971	2	25.0	1269.0	50.8	45.3	67.1	412.0	16.5	22.6	324.7	0.0	0.0	0.0
1971	3	30.0	1267.0	42.2	40.9	68.4	412.0	13.7	23.0	325.2	0.0	0.0	0.0
1971	4	22.0	1056.0	48.0	35.2	69.5	343.0	15.6	23.4	324.8	0.0	0.0	0.0
1971	5	2.0	95.0	47.5	3.1	69.6	31.0	15.5	23.4	326.3	0.0	0.0	0.0
1971	6	0.0	0.0	0.0	0.0	69.6	0.0	0.0	23.4	0.0	0.0	0.0	0.0
1971	7	12.0	911.0	75.9	29.4	70.5	296.0	24.7	23.7	324.9	0.0	0.0	0.0
1971	8	23.0	1804.0	78.4	58.2	72.3	577.0	25.1	24.3	319.8	0.0	0.0	0.0
1971	9	28.0	1816.0	64.9	60.5	74.1	581.0	20.8	24.9	319.9	0.0	0.0	0.0
1971	10	17.0	1467.0	86.3	47.3	75.6	469.0	27.6	25.3	319.7	0.0	0.0	0.0
1971	11	30.0	2037.0	67.9	67.9	77.6	652.0	21.7	26.0	320.1	0.0	0.0	0.0
1971	12	31.0	1926.0	62.1	62.1	79.5	616.0	19.9	26.6	319.8	0.0	0.0	0.0
Subtotal		229.0	14188.0	62.0	38.9		4564.0				0.0		
1972	1	31.0	1870.0	60.3	60.3	81.4	598.0	19.3	27.2	319.8	0.0	0.0	0.0
1972	2	29.0	1899.0	65.5	65.5	83.3	608.0	21.0	27.8	320.2	0.0	0.0	0.0
1972	3	23.0	1754.0	76.3	56.6	85.0	561.0	24.4	28.4	319.8	0.0	0.0	0.0
1972	4	30.0	1735.0	57.8	57.8	86.8	555.0	18.5	28.9	319.9	0.0	0.0	0.0
1972	5	31.0	1718.0	55.4	55.4	88.5	550.0	17.7	29.5	320.1	0.0	0.0	0.0
1972	6	28.0	1453.0	51.9	48.4	90.0	465.0	16.6	29.9	320.0	0.0	0.0	0.0
1972	7	23.0	1514.0	65.8	48.8	91.5	454.0	19.7	30.4	299.9	0.0	0.0	0.0
1972	8	31.0	1691.0	54.5	54.5	93.2	507.0	16.4	30.9	299.8	0.0	0.0	0.0
1972	9	17.0	885.0	52.1	29.5	94.0	265.0	15.6	31.2	299.4	0.0	0.0	0.0
1972	10	23.0	1792.0	77.9	57.8	95.8	538.0	23.4	31.7	300.2	0.0	0.0	0.0
1972	11	26.0	1560.0	60.0	52.0	97.4	468.0	18.0	32.2	300.0	0.0	0.0	0.0
1972	12	31.0	1626.0	52.5	52.5	99.0	488.0	15.7	32.6	300.1	0.0	0.0	0.0
Subtotal		323.0	19497.0	60.4	53.3		6057.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1973	1	31.0	1598.0	51.5	51.5	100.6	479.0	15.5	33.1	299.7	0.0	0.0	0.0
1973	2	28.0	1369.0	48.9	48.9	102.0	411.0	14.7	33.5	300.2	0.0	0.0	0.0
1973	3	28.0	1374.0	49.1	44.3	103.4	412.0	14.7	34.0	299.9	0.0	0.0	0.0
1973	4	28.0	1552.0	55.4	51.7	104.9	457.0	16.3	34.4	294.5	0.0	0.0	0.0
1973	5	31.0	1499.0	48.4	48.4	106.4	450.0	14.5	34.9	300.2	0.0	0.0	0.0
1973	6	30.0	1499.0	50.0	50.0	107.9	1184.0	39.5	36.0	789.9	0.0	0.0	0.0
1973	7	31.0	1535.0	49.5	49.5	109.4	1213.0	39.1	37.3	790.2	0.0	0.0	0.0
1973	8	29.0	1287.0	44.4	41.5	110.7	1017.0	35.1	38.3	790.2	0.0	0.0	0.0
1973	9	30.0	1417.0	47.2	47.2	112.1	1119.0	37.3	39.4	789.7	0.0	0.0	0.0
1973	10	31.0	1496.0	48.3	48.3	113.6	1182.0	38.1	40.6	790.1	0.0	0.0	0.0
1973	11	30.0	1416.0	47.2	47.2	115.1	1119.0	37.3	41.7	790.3	0.0	0.0	0.0
1973	12	31.0	1491.0	48.1	48.1	116.6	1178.0	38.0	42.9	790.1	0.0	0.0	0.0
Subtotal		358.0	17533.0	49.0	48.0		10221.0				0.0		
1974	1	31.0	1513.0	48.8	48.8	118.1	1195.0	38.5	44.1	789.8	0.0	0.0	0.0
1974	2	25.0	1205.0	48.2	43.0	119.3	952.0	38.1	45.0	790.0	0.0	0.0	0.0
1974	3	31.0	1467.0	47.3	47.3	120.7	1159.0	37.4	46.2	790.0	0.0	0.0	0.0
1974	4	30.0	1408.0	46.9	46.9	122.1	1112.0	37.1	47.3	789.8	0.0	0.0	0.0
1974	5	29.0	1349.0	46.5	43.5	123.5	1066.0	36.8	48.4	790.2	0.0	0.0	0.0
1974	6	30.0	1303.0	43.4	43.4	124.8	1029.0	34.3	49.4	789.7	0.0	0.0	0.0
1974	7	16.0	755.0	47.2	24.4	125.6	596.0	37.3	50.0	789.4	0.0	0.0	0.0
1974	8	30.0	1558.0	51.9	50.3	127.1	1231.0	41.0	51.2	790.1	0.0	0.0	0.0
1974	9	29.0	1306.0	45.0	43.5	128.4	1032.0	35.6	52.2	790.2	0.0	0.0	0.0
1974	10	19.0	842.0	44.3	27.2	129.3	665.0	35.0	52.9	789.8	0.0	0.0	0.0
1974	11	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	ERR	0.0	ERR	0.0
1974	12	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	ERR	0.0	ERR	0.0
Subtotal		270.0	12706.0	47.1	34.8		10037.0				0.0		
1975	1	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	2	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	3	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	4	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	5	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	6	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	7	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	8	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	9	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	10	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	11	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1975	12	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1976	1	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1976	2	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1976	3	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1976	4	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1976	5	0.0	0.0	0.0	0.0	129.3	0.0	0.0	52.9	0.0	0.0	0.0	0.0
1976	6	12.0	610.0	50.8	20.3	129.9	482.0	40.2	53.4	790.2	0.0	0.0	0.0
1976	7	31.0	1034.0	33.4	33.4	130.9	310.0	10.0	53.7	299.8	0.0	0.0	0.0
1976	8	31.0	1136.0	36.6	36.6	132.0	341.0	11.0	54.0	300.2	0.0	0.0	0.0
1976	9	29.0	881.0	30.4	29.4	132.9	264.0	9.1	54.3	299.7	0.0	0.0	0.0
1976	10	31.0	1029.0	33.2	33.2	133.9	309.0	10.0	54.6	300.3	0.0	0.0	0.0
1976	11	30.0	920.0	30.7	30.7	134.9	276.0	9.2	54.9	300.0	0.0	0.0	0.0
1976	12	31.0	887.0	28.6	28.6	135.8	266.0	8.6	55.2	299.9	0.0	0.0	0.0
Subtotal		195.0	6497.0	33.3	17.8		2248.0				0.0		
1977	1	31.0	871.0	28.1	28.1	136.6	261.0	8.4	55.4	299.7	0.0	0.0	0.0
1977	2	28.0	707.0	25.3	25.3	137.3	212.0	7.6	55.6	299.9	0.0	0.0	0.0
1977	3	31.0	820.0	26.5	26.5	138.2	246.0	7.9	55.9	300.0	0.0	0.0	0.0
1977	4	30.0	784.0	26.1	26.1	138.9	235.0	7.8	56.1	299.7	0.0	0.0	0.0
1977	5	31.0	807.0	26.0	26.0	139.7	242.0	7.8	56.4	299.9	0.0	0.0	0.0
1977	6	30.0	735.0	24.5	24.5	140.5	221.0	7.4	56.6	300.7	0.0	0.0	0.0
1977	7	31.0	784.0	25.3	25.3	141.3	392.0	12.6	57.0	500.0	0.0	0.0	0.0
1977	8	31.0	799.0	25.8	25.8	142.1	240.0	7.7	57.2	300.4	0.0	0.0	0.0
1977	9	30.0	754.0	25.1	25.1	142.8	226.0	7.5	57.4	299.7	0.0	0.0	0.0
1977	10	31.0	764.0	24.6	24.6	143.6	229.0	7.4	57.7	299.7	0.0	0.0	0.0
1977	11	30.0	755.0	25.2	25.2	144.3	227.0	7.6	57.9	300.7	0.0	0.0	0.0
1977	12	31.0	774.0	25.0	25.0	145.1	232.0	7.5	58.1	299.7	0.0	0.0	0.0
Subtotal		365.0	9354.0	25.6	25.6		2963.0				0.0		
1978	1	31.0	745.0	24.0	24.0	145.9	224.0	7.2	58.3	300.7	0.0	0.0	0.0
1978	2	28.0	665.0	23.8	23.8	146.5	200.0	7.1	58.5	300.8	0.0	0.0	0.0
1978	3	21.0	704.0	33.5	22.7	147.2	211.0	10.0	58.8	299.7	0.0	0.0	0.0
1978	4	30.0	653.0	21.8	21.8	147.9	215.0	7.2	59.0	329.2	0.0	0.0	0.0
1978	5	26.0	720.0	27.7	23.2	148.6	238.0	9.2	59.2	330.6	0.0	0.0	0.0
1978	6	30.0	856.0	28.5	28.5	149.5	282.0	9.4	59.5	329.4	0.0	0.0	0.0
1978	7	31.0	653.0	21.1	21.1	150.1	215.0	6.9	59.7	329.2	0.0	0.0	0.0
1978	8	31.0	681.0	22.0	22.0	150.8	225.0	7.3	59.9	330.4	0.0	0.0	0.0
1978	9	30.0	676.0	22.5	22.5	151.5	223.0	7.4	60.2	329.9	0.0	0.0	0.0
1978	10	31.0	689.0	22.2	22.2	152.1	227.0	7.3	60.4	329.5	0.0	0.0	0.0
1978	11	30.0	676.0	22.5	22.5	152.8	223.0	7.4	60.6	329.9	0.0	0.0	0.0
1978	12	31.0	697.0	22.5	22.5	153.5	230.0	7.4	60.8	330.0	0.0	0.0	0.0
Subtotal		350.0	8415.0	24.0	23.1		2713.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1979	1	31.0	688.0	22.2	22.2	154.2	227.0	7.3	61.1	329.9	0.0	0.0	0.0
1979	2	28.0	603.0	21.5	21.5	154.8	199.0	7.1	61.3	330.0	0.0	0.0	0.0
1979	3	31.0	682.0	22.0	22.0	155.5	225.0	7.3	61.5	329.9	0.0	0.0	0.0
1979	4	30.0	672.0	22.4	22.4	156.2	222.0	7.4	61.7	330.4	0.0	0.0	0.0
1979	5	31.0	684.0	22.1	22.1	156.9	226.0	7.3	61.9	330.4	0.0	0.0	0.0
1979	6	30.0	673.0	22.4	22.4	157.5	222.0	7.4	62.2	329.9	0.0	0.0	0.0
1979	7	31.0	712.0	23.0	23.0	158.2	235.0	7.6	62.4	330.1	0.0	0.0	0.0
1979	8	31.0	696.0	22.5	22.5	158.9	235.0	7.6	62.6	337.6	0.0	0.0	0.0
1979	9	28.0	662.0	23.6	22.1	159.6	218.0	7.8	62.8	329.3	0.0	0.0	0.0
1979	10	31.0	657.0	21.2	21.2	160.3	217.0	7.0	63.1	330.3	0.0	0.0	0.0
1979	11	30.0	631.0	21.0	21.0	160.9	208.0	6.9	63.3	329.6	0.0	0.0	0.0
1979	12	30.0	610.0	20.3	19.7	161.5	201.0	6.7	63.5	329.5	0.0	0.0	0.0
Subtotal		362.0	7970.0	22.0	21.8		2635.0				0.0		
1980	1	31.0	678.0	21.9	21.9	162.2	224.0	7.2	63.7	330.4	0.0	0.0	0.0
1980	2	29.0	590.0	20.3	0.0	162.8	195.0	6.7	63.9	330.5	0.0	0.0	0.0
1980	3	0.0	0.0	0.0	0.0	162.8	0.0	0.0	63.9	0.0	0.0	0.0	0.0
1980	4	30.0	625.0	20.8	20.8	163.4	206.0	6.9	64.1	329.6	0.0	0.0	0.0
1980	5	31.0	652.0	21.0	21.0	164.0	215.0	6.9	64.3	329.8	0.0	0.0	0.0
1980	6	30.0	650.0	21.7	21.7	164.7	2600.0	86.7	66.9	4000.0	0.0	0.0	0.0
1980	7	31.0	662.0	21.4	21.4	165.3	2580.0	83.2	69.5	3897.3	0.0	0.0	0.0
1980	8	31.0	676.0	21.8	21.8	166.0	2704.0	87.2	72.2	4000.0	0.0	0.0	0.0
1980	9	30.0	632.0	21.1	21.1	166.7	2528.0	84.3	74.7	4000.0	0.0	0.0	0.0
1980	10	31.0	668.0	21.5	21.5	167.3	2672.0	86.2	77.4	4000.0	0.0	0.0	0.0
1980	11	30.0	649.0	21.6	21.6	168.0	2596.0	86.5	80.0	4000.0	0.0	0.0	0.0
1980	12	31.0	681.0	22.0	22.0	168.7	2724.0	87.9	82.7	4000.0	0.0	0.0	0.0
Subtotal		335.0	7163.0	21.4	19.6		19244.0				0.0		
1981	1	31.0	545.0	17.6	17.6	169.2	2180.0	70.3	84.9	4000.0	0.0	0.0	0.0
1981	2	28.0	631.0	22.5	22.5	169.8	2324.0	83.0	87.2	3683.0	0.0	0.0	0.0
1981	3	31.0	636.0	20.5	20.5	170.5	2864.0	92.4	90.1	4503.1	0.0	0.0	0.0
1981	4	29.0	586.0	20.2	19.5	171.1	2578.0	88.9	92.7	4399.3	0.0	0.0	0.0
1981	5	31.0	660.0	21.3	21.3	171.7	2904.0	93.7	95.6	4400.0	0.0	0.0	0.0
1981	6	30.0	594.0	19.8	19.8	172.3	2614.0	87.1	98.2	4400.7	0.0	0.0	0.0
1981	7	31.0	617.0	19.9	19.9	172.9	3764.0	121.4	101.9	6100.5	0.0	0.0	0.0
1981	8	31.0	569.0	18.4	18.4	173.5	3470.0	111.9	105.4	6098.4	0.0	0.0	0.0
1981	9	28.0	526.0	18.8	17.5	174.0	894.0	31.9	106.3	1699.6	0.0	0.0	0.0
1981	10	31.0	599.0	19.3	19.3	174.6	1018.0	32.8	107.3	1699.5	0.0	0.0	0.0
1981	11	30.0	578.0	19.3	19.3	175.2	1907.0	63.6	109.2	3299.3	0.0	0.0	0.0
1981	12	31.0	611.0	19.7	19.7	175.8	3727.0	120.2	113.0	6099.8	0.0	0.0	0.0
Subtotal		362.0	7152.0	19.8	19.6		30244.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1982	1	30.0	588.0	19.6	19.0	176.4	3587.0	119.6	116.5	6100.3	0.0	0.0	0.0
1982	2	28.0	580.0	20.7	20.7	177.0	3538.0	126.4	120.1	6100.0	0.0	0.0	0.0
1982	3	18.0	649.0	36.1	20.9	177.6	1103.0	61.3	121.2	1699.5	0.0	0.0	0.0
1982	4	30.0	622.0	20.7	20.7	178.2	1057.0	35.2	122.2	1699.4	0.0	0.0	0.0
1982	5	31.0	646.0	20.8	20.8	178.9	2326.0	75.0	124.6	3600.6	0.0	0.0	0.0
1982	6	30.0	606.0	20.2	20.2	179.5	2182.0	72.7	126.7	3600.7	0.0	0.0	0.0
1982	7	31.0	615.0	19.8	19.8	180.1	2214.0	71.4	129.0	3600.0	0.0	0.0	0.0
1982	8	31.0	611.0	19.7	19.7	180.7	2200.0	71.0	131.2	3600.7	0.0	0.0	0.0
1982	9	29.0	567.0	19.6	18.9	181.3	2041.0	70.4	133.2	3599.6	0.0	0.0	0.0
1982	10	29.0	619.0	21.3	20.0	181.9	3236.0	111.6	136.4	5227.8	0.0	0.0	0.0
1982	11	31.0	477.0	15.4	15.9	182.4	1717.0	55.4	138.2	3599.6	0.0	0.0	0.0
1982	12	31.0	625.0	20.2	20.2	183.0	2250.0	72.6	140.4	3600.0	0.0	0.0	0.0
Subtotal		349.0	7205.0	20.6	19.7		27451.0				0.0		
1983	1	31.0	560.0	18.1	18.1	183.6	2016.0	65.0	142.4	3600.0	0.0	0.0	0.0
1983	2	28.0	532.0	19.0	19.0	184.1	1915.0	68.4	144.3	3599.6	0.0	0.0	0.0
1983	3	31.0	580.0	18.7	18.7	184.7	2088.0	67.4	146.4	3600.0	0.0	0.0	0.0
1983	4	30.0	554.0	18.5	18.5	185.2	1994.0	66.5	148.4	3599.3	0.0	0.0	0.0
1983	5	31.0	545.0	17.6	17.6	185.8	1962.0	63.3	150.4	3600.0	0.0	0.0	0.0
1983	6	30.0	338.0	11.3	11.3	186.1	1217.0	40.6	151.6	3600.6	0.0	0.0	0.0
1983	7	31.0	393.0	12.7	12.7	186.5	1415.0	45.6	153.0	3600.5	0.0	0.0	0.0
1983	8	31.0	446.0	14.4	14.4	187.0	1606.0	51.8	154.6	3600.9	0.0	0.0	0.0
1983	9	30.0	405.0	13.5	13.5	187.4	1458.0	48.6	156.1	3600.0	0.0	0.0	0.0
1983	10	31.0	419.0	13.5	13.5	187.8	1508.0	48.6	157.6	3599.0	0.0	0.0	0.0
1983	11	30.0	400.0	13.3	13.3	188.2	1440.0	48.0	159.0	3600.0	0.0	0.0	0.0
1983	12	31.0	472.0	15.2	15.2	188.7	1699.0	54.8	160.7	3599.6	0.0	0.0	0.0
Subtotal		365.0	5644.0	15.5	15.5		20318.0				0.0		
1984	1	28.0	304.0	10.9	9.8	189.0	1094.0	39.1	161.8	3598.7	0.0	0.0	0.0
1984	2	29.0	372.0	12.8	12.8	189.3	1339.0	46.2	163.2	3599.5	0.0	0.0	0.0
1984	3	31.0	393.0	12.7	12.7	189.7	1415.0	45.6	164.6	3600.5	0.0	0.0	0.0
1984	4	30.0	372.0	12.4	12.4	190.1	1339.0	44.6	165.9	3599.5	0.0	0.0	0.0
1984	5	31.0	333.0	10.7	10.7	190.4	1199.0	38.7	167.1	3600.6	0.0	0.0	0.0
1984	6	30.0	384.0	12.8	12.8	190.8	1382.0	46.1	168.5	3599.0	0.0	0.0	0.0
1984	7	31.0	382.0	12.3	12.3	191.2	1375.0	44.4	169.9	3599.5	0.0	0.0	0.0
1984	8	31.0	383.0	12.4	12.4	191.6	1379.0	44.5	171.2	3600.5	0.0	0.0	0.0
1984	9	30.0	388.0	12.9	12.9	192.0	1397.0	46.6	172.6	3600.5	0.0	0.0	0.0
1984	10	31.0	487.0	15.7	15.7	192.5	1753.0	56.5	174.4	3599.6	0.0	0.0	0.0
1984	11	29.0	632.0	21.8	21.1	193.1	2275.0	78.4	176.7	3599.7	0.0	0.0	0.0
1984	12	30.0	626.0	20.9	20.2	193.7	2253.0	75.1	178.9	3599.0	0.0	0.0	0.0
Subtotal		361.0	5056.0	14.0	13.8		18200.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #10 (O-33). (SE 33-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	31.0	574.0	18.5	18.5	194.3	2066.0	66.6	181.0	3599.3	0.0	0.0	0.0
1985	2	25.0	514.0	20.6	18.4	194.8	1850.0	74.0	182.8	3599.2	0.0	0.0	0.0
1985	3	31.0	544.0	17.5	17.5	195.3	1958.0	63.2	184.8	3599.3	0.0	0.0	0.0
1985	4	30.0	487.0	16.2	16.2	195.8	1753.0	58.4	186.5	3599.6	0.0	0.0	0.0
1985	5	31.0	404.0	13.0	13.0	196.2	1454.0	46.9	188.0	3599.0	0.0	0.0	0.0
1985	6	29.0	403.0	13.9	13.4	196.6	1451.0	50.0	189.5	3600.5	0.0	0.0	0.0
1985	7	31.0	560.0	18.1	18.1	197.2	2016.0	65.0	191.5	3600.0	0.0	0.0	0.0
1985	8	31.0	565.0	18.2	18.2	197.8	2034.0	65.6	193.5	3600.0	0.0	0.0	0.0
1985	9	30.0	527.0	17.6	17.6	198.3	1897.0	63.2	195.4	3599.6	0.0	0.0	0.0
1985	10	31.0	552.0	17.8	17.8	198.8	1987.0	64.1	197.4	3599.6	0.0	0.0	0.0
1985	11	30.0	473.0	15.8	15.8	199.3	1713.0	57.1	199.1	3621.6	0.0	0.0	0.0
1985	12	31.0	557.0	18.0	18.0	199.9	2005.0	64.7	201.1	3599.6	0.0	0.0	0.0
Subtotal		361.0	6160.0	17.1	16.9		22184.0				0.0		
1986	1	24.0	427.0	17.8	13.8	200.3	1537.0	64.0	202.6	3599.5	0.0	0.0	0.0
1986	2	22.0	451.0	20.5	16.1	200.8	1623.0	73.8	204.3	3598.7	0.0	0.0	0.0
1986	3	31.0	556.0	17.9	17.9	201.3	2001.0	64.5	206.3	3598.9	0.0	0.0	0.0
1986	4	30.0	492.0	16.4	16.4	201.8	1771.0	59.0	208.0	3599.6	0.0	0.0	0.0
1986	5	31.0	522.0	16.8	16.8	202.3	1879.0	60.6	209.9	3599.6	0.0	0.0	0.0
1986	6	30.0	188.0	6.3	6.3	202.5	677.0	22.6	210.6	3601.1	0.0	0.0	0.0
1986	7	31.0	452.0	14.6	14.6	203.0	1627.0	52.5	212.2	3599.6	0.0	0.0	0.0
1986	8	31.0	549.0	17.7	17.7	203.5	1976.0	63.7	214.2	3599.3	0.0	0.0	0.0
1986	9	30.0	487.0	16.2	16.2	204.0	1753.0	58.4	215.9	3599.6	0.0	0.0	0.0
1986	10	27.0	354.0	13.1	11.4	204.4	1274.0	47.2	217.2	3598.9	0.0	0.0	0.0
1986	11	28.0	508.0	18.1	16.9	204.9	1829.0	65.3	219.1	3600.4	0.0	0.0	0.0
1986	12	30.0	583.0	19.4	18.8	205.4	1756.0	58.5	220.8	3012.0	0.0	0.0	0.0
Subtotal		345.0	5569.0	16.1	15.3		19703.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1967	9	15.0	4869.0	324.6	162.3	4.9	1753.0	116.9	1.8	360.0	0.0	0.0	0.0
1967	10	31.0	7763.0	250.4	250.4	12.6	2795.0	90.2	4.5	360.0	0.0	0.0	0.0
1967	11	30.0	5556.0	185.2	185.2	18.2	2000.0	66.7	6.5	360.0	0.0	0.0	0.0
1967	12	2.0	859.0	429.5	27.7	19.0	309.0	154.5	6.9	359.7	0.0	0.0	0.0
Subtotal		78.0	19047.0	244.2	156.1		6857.0				0.0		
1968	1	26.0	12368.0	475.7	399.0	31.4	4452.0	171.2	11.3	360.0	0.0	0.0	0.0
1968	2	29.0	12931.0	445.9	445.9	44.3	4655.0	160.5	16.0	360.0	0.0	0.0	0.0
1968	3	29.0	11798.0	406.8	380.6	56.1	4247.0	146.4	20.2	360.0	0.0	0.0	0.0
1968	4	30.0	13580.0	452.7	452.7	69.7	4889.0	163.0	25.1	360.0	0.0	0.0	0.0
1968	5	31.0	12862.0	414.9	414.9	82.6	4630.0	149.4	29.7	360.0	0.0	0.0	0.0
1968	6	30.0	11620.0	387.3	387.3	94.2	4183.0	139.4	33.9	360.0	0.0	0.0	0.0
1968	7	31.0	12493.0	403.0	403.0	106.7	4497.0	145.1	38.4	360.0	0.0	0.0	0.0
1968	8	30.0	9879.0	329.3	318.7	116.6	3062.0	102.1	41.5	310.0	0.0	0.0	0.0
1968	9	30.0	12199.0	406.6	406.6	128.8	4100.0	136.7	45.6	336.1	0.0	0.0	0.0
1968	10	31.0	12694.0	409.5	409.5	141.5	4265.0	137.6	49.8	336.0	0.0	0.0	0.0
1968	11	29.0	9861.0	340.0	328.7	151.3	3363.0	116.0	53.2	341.0	0.0	0.0	0.0
1968	12	22.0	6541.0	297.3	211.0	157.9	2158.0	98.1	55.4	329.9	0.0	0.0	0.0
Subtotal		348.0	138826.0	398.9	379.3		48501.0				0.0		
1969	1	9.0	4816.0	535.1	155.4	162.7	1637.0	181.9	57.0	339.9	0.0	0.0	0.0
1969	2	28.0	17029.0	608.2	608.2	179.7	5296.0	189.1	62.3	311.0	0.0	0.0	0.0
1969	3	31.0	20412.0	658.5	658.5	200.1	6389.0	206.1	68.7	313.0	0.0	0.0	0.0
1969	4	30.0	19160.0	638.7	638.7	219.3	6131.0	204.4	74.8	320.0	0.0	0.0	0.0
1969	5	31.0	19189.0	619.0	619.0	238.5	5757.0	185.7	80.6	300.0	0.0	0.0	0.0
1969	6	30.0	19547.0	651.6	651.6	258.0	6841.0	228.0	87.4	350.0	0.0	0.0	0.0
1969	7	31.0	20894.0	674.0	674.0	278.9	7104.0	229.2	94.5	340.0	0.0	0.0	0.0
1969	8	29.0	15845.0	546.4	511.1	294.8	5102.0	175.9	99.6	322.0	0.0	0.0	0.0
1969	9	27.0	19023.0	704.6	634.1	313.8	5859.0	217.0	105.5	308.0	0.0	0.0	0.0
1969	10	31.0	22408.0	722.8	722.8	336.2	7395.0	238.5	112.9	330.0	0.0	0.0	0.0
1969	11	30.0	19489.0	649.6	649.6	355.7	6626.0	220.9	119.5	340.0	0.0	0.0	0.0
1969	12	31.0	20381.0	657.5	657.5	376.1	8356.0	269.5	127.9	410.0	0.0	0.0	0.0
Subtotal		338.0	218193.0	645.5	597.8		72493.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	31.0	21379.0	689.6	689.6	397.4	7859.0	253.5	135.7	367.6	0.0	0.0	0.0
1970	2	27.0	18330.0	678.9	654.6	415.8	6782.0	251.2	142.5	370.0	0.0	0.0	0.0
1970	3	31.0	21286.0	686.6	686.6	437.1	8089.0	260.9	150.6	380.0	0.0	0.0	0.0
1970	4	30.0	19985.0	666.2	666.2	457.0	7394.0	246.5	158.0	370.0	0.0	0.0	0.0
1970	5	30.0	21074.0	702.5	679.8	478.1	2587.0	86.2	160.6	122.8	0.0	0.0	0.0
1970	6	30.0	21174.0	705.8	705.8	499.3	7622.0	254.1	168.2	360.0	0.0	0.0	0.0
1970	7	30.0	20914.0	697.1	674.6	520.2	7320.0	244.0	175.5	350.0	0.0	0.0	0.0
1970	8	31.0	23623.0	762.0	762.0	543.8	7796.0	251.5	183.3	330.0	0.0	0.0	0.0
1970	9	30.0	22892.0	763.1	763.1	566.7	7554.0	251.8	190.9	330.0	0.0	0.0	0.0
1970	10	31.0	24502.0	790.4	790.4	591.2	8331.0	268.7	199.2	340.0	0.0	0.0	0.0
1970	11	30.0	22079.0	736.0	736.0	613.3	7286.0	242.9	206.5	330.0	0.0	0.0	0.0
1970	12	29.0	19374.0	668.1	625.0	632.7	6587.0	227.1	213.1	340.0	0.0	0.0	0.0
Subtotal		360.0	256612.0	712.8	703.0		85207.0				0.0		
1971	1	31.0	21446.0	691.8	691.8	654.1	7506.0	242.1	220.6	350.0	0.0	0.0	0.0
1971	2	28.0	13338.0	476.4	476.4	667.5	4668.0	166.7	225.2	350.0	0.0	0.0	0.0
1971	3	31.0	14360.0	463.2	463.2	681.8	4739.0	152.9	230.0	330.0	0.0	0.0	0.0
1971	4	30.0	15890.0	529.7	529.7	697.7	5244.0	174.8	235.2	330.0	0.0	0.0	0.0
1971	5	31.0	21321.0	687.8	687.8	719.0	4264.0	137.5	239.5	200.0	0.0	0.0	0.0
1971	6	30.0	22516.0	750.5	750.5	741.5	6755.0	225.2	246.2	300.0	0.0	0.0	0.0
1971	7	31.0	22036.0	710.8	710.8	763.6	6611.0	213.3	252.8	300.0	0.0	0.0	0.0
1971	8	31.0	20555.0	663.1	663.1	784.1	6783.0	218.8	259.6	330.0	0.0	0.0	0.0
1971	9	25.0	16316.0	652.6	543.9	800.5	4895.0	195.8	264.5	300.0	0.0	0.0	0.0
1971	10	31.0	20185.0	651.1	651.1	820.6	6055.0	195.3	270.6	300.0	0.0	0.0	0.0
1971	11	30.0	22082.0	736.1	736.1	842.7	6625.0	220.8	277.2	300.0	0.0	0.0	0.0
1971	12	31.0	22851.0	737.1	737.1	865.6	6855.0	221.1	284.1	300.0	0.0	0.0	0.0
Subtotal		360.0	232896.0	646.9	638.1		71000.0				0.0		
1972	1	31.0	24240.0	781.9	781.9	889.8	7272.0	234.6	291.3	300.0	0.0	0.0	0.0
1972	2	29.0	20510.0	707.2	707.2	910.3	6153.0	212.2	297.5	300.0	0.0	0.0	0.0
1972	3	31.0	21519.0	694.2	694.2	931.8	6456.0	208.3	303.9	300.0	0.0	0.0	0.0
1972	4	30.0	20336.0	677.9	677.9	952.2	6101.0	203.4	310.0	300.0	0.0	0.0	0.0
1972	5	31.0	16708.0	539.0	539.0	968.9	5012.0	161.7	315.1	300.0	0.0	0.0	0.0
1972	6	30.0	15880.0	529.3	529.3	984.8	4764.0	158.8	319.8	300.0	0.0	0.0	0.0
1972	7	31.0	15173.0	489.5	489.5	999.9	4552.0	146.8	324.4	300.0	0.0	0.0	0.0
1972	8	31.0	14532.0	468.8	468.8	1014.5	4360.0	140.6	328.7	300.0	0.0	0.0	0.0
1972	9	30.0	15057.0	501.9	501.9	1029.5	4517.0	150.6	333.2	300.0	0.0	0.0	0.0
1972	10	31.0	15408.0	497.0	497.0	1044.9	4622.0	149.1	337.9	300.0	0.0	0.0	0.0
1972	11	30.0	14986.0	499.5	499.5	1059.9	4496.0	149.9	342.4	300.0	0.0	0.0	0.0
1972	12	31.0	15108.0	487.4	487.4	1075.0	4532.0	146.2	346.9	300.0	0.0	0.0	0.0
Subtotal		366.0	209457.0	572.3	572.3		62837.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1973	1	31.0	15024.0	484.6	484.6	1090.1	4507.0	145.4	351.4	300.0	0.0	0.0	0.0
1973	2	28.0	14521.0	518.6	518.6	1104.6	4356.0	155.6	355.8	300.0	0.0	0.0	0.0
1973	3	31.0	15775.0	508.9	508.9	1120.4	4733.0	152.7	360.5	300.0	0.0	0.0	0.0
1973	4	30.0	14033.0	467.8	467.8	1134.4	4210.0	140.3	364.7	300.0	0.0	0.0	0.0
1973	5	31.0	15561.0	502.0	502.0	1149.9	5318.0	171.5	370.0	341.8	0.0	0.0	0.0
1973	6	30.0	12250.0	408.3	408.3	1162.2	5268.0	175.6	375.3	430.0	0.0	0.0	0.0
1973	7	31.0	11796.0	380.5	380.5	1174.0	3952.0	127.5	379.2	335.0	0.0	0.0	0.0
1973	8	31.0	12266.0	395.7	395.7	1186.3	3864.0	124.6	383.1	315.0	0.0	0.0	0.0
1973	9	30.0	12456.0	415.2	415.2	1198.7	3924.0	130.8	387.0	315.0	0.0	0.0	0.0
1973	10	31.0	13502.0	435.5	435.5	1212.2	5023.0	162.0	392.0	372.0	0.0	0.0	0.0
1973	11	30.0	12759.0	425.3	425.3	1225.0	5512.0	183.7	397.6	432.0	0.0	0.0	0.0
1973	12	31.0	13176.0	425.0	425.0	1238.1	5429.0	175.1	403.0	412.0	0.0	0.0	0.0
Subtotal		365.0	163119.0	446.9	446.9		56096.0				0.0		
1974	1	31.0	12719.0	410.3	410.3	1250.9	5240.0	169.0	408.2	412.0	0.0	0.0	0.0
1974	2	28.0	11684.0	417.3	417.3	1262.6	5129.0	183.2	413.4	439.0	0.0	0.0	0.0
1974	3	31.0	13459.0	434.2	434.2	1276.0	6958.0	224.5	420.3	517.0	0.0	0.0	0.0
1974	4	30.0	13998.0	466.6	466.6	1290.0	6299.0	210.0	426.6	450.0	0.0	0.0	0.0
1974	5	31.0	13092.0	422.3	422.3	1303.1	6284.0	202.7	432.9	480.0	0.0	0.0	0.0
1974	6	30.0	13133.0	437.8	437.8	1316.2	5910.0	197.0	438.8	450.0	0.0	0.0	0.0
1974	7	31.0	13695.0	441.8	441.8	1329.9	6683.0	215.6	445.5	488.0	0.0	0.0	0.0
1974	8	31.0	13163.0	424.6	424.6	1343.1	6279.0	202.5	451.8	477.0	0.0	0.0	0.0
1974	9	30.0	12462.0	415.4	415.4	1355.6	5944.0	198.1	457.7	477.0	0.0	0.0	0.0
1974	10	31.0	12375.0	399.2	399.2	1367.9	6093.0	196.5	463.8	492.4	0.0	0.0	0.0
1974	11	30.0	12008.0	400.3	400.3	1379.9	5836.0	194.5	469.6	486.0	0.0	0.0	0.0
1974	12	31.0	12929.0	417.1	417.1	1392.9	7951.0	256.5	477.6	615.0	0.0	0.0	0.0
Subtotal		365.0	154717.0	423.9	423.9		74606.0				0.0		
1975	1	31.0	12681.0	409.1	409.1	1405.5	8319.0	268.4	485.9	656.0	0.0	0.0	0.0
1975	2	28.0	11724.0	418.7	418.7	1417.3	5768.0	206.0	491.7	492.0	0.0	0.0	0.0
1975	3	31.0	11809.0	380.9	380.9	1429.1	5527.0	178.3	497.2	468.0	0.0	0.0	0.0
1975	4	30.0	11217.0	373.9	373.9	1440.3	6427.0	214.2	503.6	573.0	0.0	0.0	0.0
1975	5	31.0	11245.0	362.7	362.7	1451.5	6859.0	221.3	510.5	610.0	0.0	0.0	0.0
1975	6	30.0	10486.0	349.5	349.5	1462.0	5096.0	169.9	515.6	486.0	0.0	0.0	0.0
1975	7	31.0	10650.0	343.5	343.5	1472.7	5155.0	166.3	520.7	484.0	0.0	0.0	0.0
1975	8	31.0	10676.0	344.4	344.4	1483.4	5167.0	166.7	525.9	484.0	0.0	0.0	0.0
1975	9	30.0	9259.0	308.6	308.6	1492.6	2861.0	95.4	528.8	309.0	0.0	0.0	0.0
1975	10	31.0	10363.0	334.3	334.3	1503.0	6218.0	200.6	535.0	600.0	0.0	0.0	0.0
1975	11	30.0	9698.0	323.3	323.3	1512.7	5819.0	194.0	540.8	600.0	0.0	0.0	0.0
1975	12	31.0	9937.0	320.5	320.5	1522.6	5624.0	181.4	546.4	566.0	0.0	0.0	0.0
Subtotal		365.0	129745.0	355.5	355.5		68840.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1976	1	31.0	10281.0	331.6	331.6	1532.9	5151.0	166.2	551.6	501.0	0.0	0.0	0.0
1976	2	29.0	9682.0	333.9	333.9	1542.6	5470.0	188.6	557.1	565.0	0.0	0.0	0.0
1976	3	31.0	10701.0	345.2	345.2	1553.3	6046.0	195.0	563.1	565.0	0.0	0.0	0.0
1976	4	30.0	10276.0	342.5	342.5	1563.6	7615.0	253.8	570.7	741.0	0.0	0.0	0.0
1976	5	31.0	10079.0	325.1	325.1	1573.6	5312.0	171.4	576.0	527.0	0.0	0.0	0.0
1976	6	30.0	9707.0	323.6	323.6	1583.3	5824.0	194.1	581.9	600.0	0.0	0.0	0.0
1976	7	31.0	10183.0	328.5	328.5	1593.5	6191.0	199.7	588.0	608.0	0.0	0.0	0.0
1976	8	31.0	10218.0	329.6	329.6	1603.7	6213.0	200.4	594.3	608.0	0.0	0.0	0.0
1976	9	30.0	9637.0	321.2	321.2	1613.4	5859.0	195.3	600.1	608.0	0.0	0.0	0.0
1976	10	31.0	10617.0	342.5	342.5	1624.0	6455.0	208.2	606.6	608.0	0.0	0.0	0.0
1976	11	30.0	10003.0	333.4	333.4	1634.0	6082.0	202.7	612.7	608.0	0.0	0.0	0.0
1976	12	31.0	10621.0	342.6	342.6	1644.6	6458.0	208.3	619.1	608.0	0.0	0.0	0.0
Subtotal		366.0	122005.0	333.3	333.3		72676.0				0.0		
1977	1	31.0	11006.0	355.0	355.0	1655.6	6692.0	215.9	625.8	608.0	0.0	0.0	0.0
1977	2	28.0	9767.0	348.8	348.8	1665.4	5938.0	212.1	631.7	608.0	0.0	0.0	0.0
1977	3	31.0	10557.0	340.5	340.5	1675.9	6419.0	207.1	638.2	608.0	0.0	0.0	0.0
1977	4	30.0	10556.0	351.9	351.9	1686.5	6418.0	213.9	644.6	608.0	0.0	0.0	0.0
1977	5	31.0	10543.0	340.1	340.1	1697.0	6347.0	204.7	650.9	602.0	0.0	0.0	0.0
1977	6	30.0	10498.0	349.9	349.9	1707.5	6320.0	210.7	657.2	602.0	0.0	0.0	0.0
1977	7	31.0	11540.0	372.3	372.3	1719.1	6947.0	224.1	664.2	602.0	0.0	0.0	0.0
1977	8	31.0	8179.0	263.8	263.8	1727.3	4924.0	158.8	669.1	602.0	0.0	0.0	0.0
1977	9	30.0	7292.0	243.1	243.1	1734.6	4390.0	146.3	673.5	602.0	0.0	0.0	0.0
1977	10	31.0	7856.0	253.4	253.4	1742.4	4723.0	152.4	678.2	601.2	0.0	0.0	0.0
1977	11	30.0	7872.0	262.4	262.4	1750.3	4739.0	158.0	683.0	602.0	0.0	0.0	0.0
1977	12	31.0	7434.0	239.8	239.8	1757.7	4475.0	144.4	687.4	602.0	0.0	0.0	0.0
Subtotal		365.0	113100.0	309.9	309.9		68332.0				0.0		
1978	1	31.0	8553.0	275.9	275.9	1766.3	16422.0	529.7	703.9	1920.0	0.0	0.0	0.0
1978	2	28.0	6854.0	244.8	244.8	1773.1	13160.0	470.0	717.0	1920.0	0.0	0.0	0.0
1978	3	31.0	6556.0	211.5	211.5	1779.7	11866.0	382.8	728.9	1809.9	0.0	0.0	0.0
1978	4	30.0	6020.0	200.7	200.7	1785.7	10896.0	363.2	739.8	1810.0	0.0	0.0	0.0
1978	5	31.0	6545.0	211.1	211.1	1792.2	17998.0	580.6	757.8	2749.9	0.0	0.0	0.0
1978	6	30.0	6287.0	209.6	209.6	1798.5	17289.0	576.3	775.1	2750.0	0.0	0.0	0.0
1978	7	31.0	6478.0	209.0	209.0	1805.0	17815.0	574.7	792.9	2750.1	0.0	0.0	0.0
1978	8	31.0	6111.0	197.1	197.1	1811.1	16805.0	542.1	809.7	2750.0	0.0	0.0	0.0
1978	9	30.0	5590.0	186.3	186.3	1816.7	11247.0	374.9	820.9	2012.0	0.0	0.0	0.0
1978	10	31.0	6596.0	212.8	212.8	1823.3	18139.0	585.1	839.1	2750.0	0.0	0.0	0.0
1978	11	30.0	5054.0	168.5	168.5	1828.4	13898.0	463.3	853.0	2749.9	0.0	0.0	0.0
1978	12	31.0	5293.0	170.7	170.7	1833.7	14556.0	469.5	867.5	2750.0	0.0	0.0	0.0
Subtotal		365.0	75937.0	208.0	208.0		180091.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1979	1	31.0	4903.0	158.2	158.2	1838.6	7109.0	229.3	874.6	1449.9	0.0	0.0	0.0
1979	2	28.0	4163.0	148.7	148.7	1842.7	6036.0	215.6	880.7	1449.9	0.0	0.0	0.0
1979	3	31.0	4805.0	155.0	155.0	1847.5	5718.0	184.5	886.4	1190.0	0.0	0.0	0.0
1979	4	30.0	4357.0	145.2	145.2	1851.9	5185.0	172.8	891.6	1190.0	0.0	0.0	0.0
1979	5	31.0	4213.0	135.9	135.9	1856.1	5013.0	161.7	896.6	1189.9	0.0	0.0	0.0
1979	6	30.0	3852.0	128.4	128.4	1859.9	4584.0	152.8	901.2	1190.0	0.0	0.0	0.0
1979	7	31.0	3669.0	118.4	118.4	1863.6	4550.0	146.8	905.7	1240.1	0.0	0.0	0.0
1979	8	31.0	3992.0	128.8	128.8	1867.6	4212.0	135.9	909.9	1055.1	0.0	0.0	0.0
1979	9	30.0	3644.0	121.5	121.5	1871.3	3844.0	128.1	913.8	1054.9	0.0	0.0	0.0
1979	10	31.0	5407.0	174.4	174.4	1876.7	5704.0	184.0	919.5	1054.9	0.0	0.0	0.0
1979	11	30.0	5253.0	175.1	175.1	1881.9	5542.0	184.7	925.0	1055.0	0.0	0.0	0.0
1979	12	31.0	5625.0	181.5	181.5	1887.5	5934.0	191.4	931.0	1054.9	0.0	0.0	0.0
Subtotal		365.0	53883.0	147.6	147.6		63431.0				0.0		
1980	1	31.0	5708.0	184.1	184.1	1893.2	5423.0	174.9	936.4	950.1	0.0	0.0	0.0
1980	2	29.0	5195.0	179.1	207.1	1898.4	4935.0	170.2	941.3	950.0	0.0	0.0	0.0
1980	3	31.0	6005.0	193.7	193.7	1904.4	5705.0	184.0	947.0	950.0	0.0	0.0	0.0
1980	4	30.0	5264.0	175.5	175.5	1909.7	5001.0	166.7	952.0	950.0	0.0	0.0	0.0
1980	5	31.0	5517.0	178.0	178.0	1915.2	5241.0	169.1	957.3	950.0	0.0	0.0	0.0
1980	6	30.0	5186.0	172.9	172.9	1920.4	8194.0	273.1	965.5	1580.0	0.0	0.0	0.0
1980	7	31.0	4703.0	151.7	151.7	1925.1	7243.0	233.6	972.7	1540.1	0.0	0.0	0.0
1980	8	31.0	5020.0	161.9	161.9	1930.1	7932.0	255.9	980.6	1580.1	0.0	0.0	0.0
1980	9	30.0	4617.0	153.9	153.9	1934.8	7295.0	243.2	987.9	1580.0	0.0	0.0	0.0
1980	10	31.0	4998.0	161.2	161.2	1939.8	7897.0	254.7	995.8	1580.0	0.0	0.0	0.0
1980	11	30.0	4937.0	164.6	164.6	1944.7	7554.0	251.8	1003.4	1530.1	0.0	0.0	0.0
1980	12	31.0	5058.0	163.2	163.2	1949.7	6126.0	197.6	1009.5	1211.2	0.0	0.0	0.0
Subtotal		366.0	62208.0	170.0	170.0		78546.0				0.0		
1981	1	31.0	5089.0	164.2	164.2	1954.8	5751.0	185.5	1015.3	1130.1	0.0	0.0	0.0
1981	2	28.0	4770.0	170.4	170.4	1959.6	5129.0	183.2	1020.4	1075.3	0.0	0.0	0.0
1981	3	31.0	4895.0	157.9	157.9	1964.5	10226.0	329.9	1030.6	2089.1	0.0	0.0	0.0
1981	4	30.0	4685.0	156.2	156.2	1969.2	9557.0	318.6	1040.2	2039.9	0.0	0.0	0.0
1981	5	31.0	5100.0	164.5	164.5	1974.3	10404.0	335.6	1050.6	2040.0	0.0	0.0	0.0
1981	6	30.0	5109.0	170.3	170.3	1979.4	10422.0	347.4	1061.0	2039.9	0.0	0.0	0.0
1981	7	31.0	5969.0	192.5	192.5	1985.4	8774.0	283.0	1069.8	1469.9	0.0	0.0	0.0
1981	8	31.0	5937.0	191.5	191.5	1991.3	8727.0	281.5	1078.5	1469.9	0.0	0.0	0.0
1981	9	28.0	5732.0	204.7	191.1	1997.0	8139.0	290.7	1086.6	1419.9	0.0	0.0	0.0
1981	10	31.0	5697.0	183.8	183.8	2002.7	8090.0	261.0	1094.7	1420.0	0.0	0.0	0.0
1981	11	30.0	5675.0	189.2	189.2	2008.4	9477.0	315.9	1104.2	1670.0	0.0	0.0	0.0
1981	12	30.0	5347.0	178.2	172.5	2013.8	8929.0	297.6	1113.1	1669.9	0.0	0.0	0.0
Subtotal		362.0	64005.0	176.8	175.4		103625.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1982	1	31.0	5320.0	171.6	171.6	2019.1	7767.0	250.5	1120.9	1460.0	0.0	0.0	0.0
1982	2	28.0	4857.0	173.5	173.5	2023.9	7091.0	253.3	1128.0	1460.0	0.0	0.0	0.0
1982	3	31.0	5491.0	177.1	177.1	2029.4	8017.0	258.6	1136.0	1460.0	0.0	0.0	0.0
1982	4	30.0	5126.0	170.9	170.9	2034.5	7484.0	249.5	1143.5	1460.0	0.0	0.0	0.0
1982	5	31.0	5320.0	171.6	171.6	2039.9	7288.0	235.1	1150.8	1369.9	0.0	0.0	0.0
1982	6	30.0	4895.0	163.2	163.2	2044.8	8077.0	269.2	1158.9	1650.1	0.0	0.0	0.0
1982	7	31.0	5059.0	163.2	163.2	2049.8	9005.0	290.5	1167.9	1780.0	0.0	0.0	0.0
1982	8	31.0	5002.0	161.4	161.4	2054.8	8754.0	282.4	1176.6	1750.1	0.0	0.0	0.0
1982	9	30.0	4630.0	154.3	154.3	2059.5	8843.0	294.8	1185.5	1909.9	0.0	0.0	0.0
1982	10	31.0	5165.0	166.6	166.6	2064.6	8956.0	288.9	1194.4	1734.0	0.0	0.0	0.0
1982	11	30.0	4704.0	156.8	156.8	2069.3	8138.0	271.3	1202.6	1730.0	0.0	0.0	0.0
1982	12	31.0	4893.0	157.8	157.8	2074.2	8930.0	288.1	1211.5	1825.1	0.0	0.0	0.0
Subtotal		365.0	60462.0	165.6	165.6		98350.0				0.0		
1983	1	31.0	4904.0	158.2	158.2	2079.1	8950.0	288.7	1220.4	1825.0	0.0	0.0	0.0
1983	2	28.0	4290.0	153.2	153.2	2083.4	7829.0	279.6	1228.3	1824.9	0.0	0.0	0.0
1983	3	31.0	4827.0	155.7	155.7	2088.2	8809.0	284.2	1237.1	1824.9	0.0	0.0	0.0
1983	4	30.0	4606.0	153.5	153.5	2092.8	8406.0	280.2	1245.5	1825.0	0.0	0.0	0.0
1983	5	31.0	4839.0	156.1	156.1	2097.7	8831.0	284.9	1254.3	1825.0	0.0	0.0	0.0
1983	6	30.0	4594.0	153.1	153.1	2102.3	8384.0	279.5	1262.7	1825.0	0.0	0.0	0.0
1983	7	31.0	4770.0	153.9	153.9	2107.0	8705.0	280.8	1271.4	1824.9	0.0	0.0	0.0
1983	8	31.0	4635.0	149.5	149.5	2111.7	8459.0	272.9	1279.9	1825.0	0.0	0.0	0.0
1983	9	30.0	4351.0	145.0	145.0	2116.0	7941.0	264.7	1287.8	1825.1	0.0	0.0	0.0
1983	10	31.0	4736.0	152.8	152.8	2120.8	8643.0	278.8	1296.4	1825.0	0.0	0.0	0.0
1983	11	30.0	4133.0	137.8	137.8	2124.9	7543.0	251.4	1304.0	1825.1	0.0	0.0	0.0
1983	12	31.0	4182.0	134.9	134.9	2129.1	7632.0	246.2	1311.6	1825.0	0.0	0.0	0.0
Subtotal		365.0	54867.0	150.3	150.3		100132.0				0.0		
1984	1	31.0	4078.0	131.5	131.5	2133.2	7442.0	240.1	1319.1	1824.9	0.0	0.0	0.0
1984	2	29.0	3844.0	132.6	132.6	2137.0	7015.0	241.9	1326.1	1824.9	0.0	0.0	0.0
1984	3	31.0	4274.0	137.9	137.9	2141.3	7800.0	251.6	1333.9	1825.0	0.0	0.0	0.0
1984	4	30.0	4348.0	144.9	144.9	2145.6	7935.0	264.5	1341.8	1825.0	0.0	0.0	0.0
1984	5	31.0	4426.0	142.8	142.8	2150.0	8077.0	260.5	1349.9	1824.9	0.0	0.0	0.0
1984	6	30.0	4618.0	153.9	153.9	2154.7	8428.0	280.9	1358.3	1825.0	0.0	0.0	0.0
1984	7	31.0	4670.0	150.6	150.6	2159.3	8523.0	274.9	1366.8	1825.1	0.0	0.0	0.0
1984	8	31.0	4324.0	139.5	139.5	2163.7	7891.0	254.5	1374.7	1824.9	0.0	0.0	0.0
1984	9	30.0	4044.0	134.8	134.8	2167.7	7380.0	246.0	1382.1	1824.9	0.0	0.0	0.0
1984	10	31.0	4351.0	140.4	140.4	2172.1	7940.0	256.1	1390.1	1824.9	0.0	0.0	0.0
1984	11	30.0	3972.0	132.4	132.4	2176.0	7249.0	241.6	1397.3	1825.0	0.0	0.0	0.0
1984	12	31.0	4423.0	142.7	142.7	2180.5	8072.0	260.4	1405.4	1825.0	0.0	0.0	0.0
Subtotal		366.0	51372.0	140.4	140.4		93752.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #11 (E-10). (NW 10-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	31.0	4202.0	135.5	135.5	2184.7	7669.0	247.4	1413.0	1825.1	0.0	0.0	0.0
1985	2	28.0	4200.0	150.0	150.0	2188.9	7665.0	273.8	1420.7	1825.0	0.0	0.0	0.0
1985	3	31.0	4388.0	141.5	141.5	2193.2	8008.0	258.3	1428.7	1825.0	0.0	0.0	0.0
1985	4	30.0	4024.0	134.1	134.1	2197.3	7344.0	244.8	1436.1	1825.0	0.0	0.0	0.0
1985	5	31.0	4060.0	131.0	131.0	2201.3	7410.0	239.0	1443.5	1825.1	0.0	0.0	0.0
1985	6	30.0	3704.0	123.5	123.5	2205.0	6760.0	225.3	1450.2	1825.1	0.0	0.0	0.0
1985	7	31.0	4444.0	143.4	143.4	2209.5	8110.0	261.6	1458.3	1824.9	0.0	0.0	0.0
1985	8	31.0	4418.0	142.5	142.5	2213.9	8063.0	260.1	1466.4	1825.0	0.0	0.0	0.0
1985	9	30.0	4440.0	148.0	148.0	2218.3	8103.0	270.1	1474.5	1825.0	0.0	0.0	0.0
1985	10	31.0	3958.0	127.7	127.7	2222.3	7223.0	233.0	1481.7	1824.9	0.0	0.0	0.0
1985	11	29.0	3580.0	123.4	119.3	2225.9	6534.0	225.3	1488.3	1825.1	0.0	0.0	0.0
1985	12	17.0	2293.0	134.9	74.0	2228.2	4187.0	246.3	1492.4	1826.0	0.0	0.0	0.0
Subtotal		350.0	47711.0	136.3	130.7		87076.0				0.0		
1986	1	25.0	3613.0	144.5	116.5	2231.8	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	2	28.0	3407.0	121.7	121.7	2235.2	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	3	31.0	4018.0	129.6	129.6	2239.2	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	4	30.0	3555.0	118.5	118.5	2242.8	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	5	31.0	2663.0	85.9	85.9	2245.4	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	6	15.0	1217.0	81.1	40.6	2246.6	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	7	28.0	1676.0	59.9	54.1	2248.3	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	8	8.0	423.0	52.9	13.6	2248.7	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	2248.7	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	2248.7	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	2248.7	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	2248.7	0.0	0.0	1492.4	0.0	0.0	0.0	0.0
Subtotal		196.0	20572.0	105.0	56.4		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #12 (A-22). (NE 22-25N-1W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1968 12	18.0	7634.0	424.1	246.3	7.6	2996.0	166.4	3.0	392.5	0.0	0.0	0.0
Subtotal	18.0	7634.0	424.1	246.3		2996.0				0.0		
1969 1	31.0	13080.0	421.9	421.9	20.7	4447.0	143.5	7.4	340.0	0.0	0.0	0.0
1969 2	28.0	11130.0	397.5	397.5	31.8	8784.0	313.7	16.2	789.2	0.0	0.0	0.0
1969 3	25.0	11744.0	469.8	378.8	43.6	3993.0	159.7	20.2	340.0	0.0	0.0	0.0
1969 4	26.0	9193.0	353.6	306.4	52.8	3126.0	120.2	23.3	340.0	0.0	0.0	0.0
1969 5	29.0	13690.0	472.1	441.6	66.5	4244.0	146.3	27.6	310.0	0.0	0.0	0.0
1969 6	28.0	11950.0	426.8	398.3	78.4	3704.0	132.3	31.3	310.0	0.0	0.0	0.0
1969 7	30.0	13863.0	462.1	447.2	92.3	4297.0	143.2	35.6	310.0	0.0	0.0	0.0
1969 8	31.0	11764.0	379.5	379.5	104.0	3882.0	125.2	39.5	330.0	0.0	0.0	0.0
1969 9	30.0	11359.0	378.6	378.6	115.4	3748.0	124.9	43.2	330.0	0.0	0.0	0.0
1969 10	31.0	11226.0	362.1	362.1	126.6	3705.0	119.5	46.9	330.0	0.0	0.0	0.0
1969 11	30.0	9845.0	328.2	328.2	136.5	3249.0	108.3	50.2	330.0	0.0	0.0	0.0
1969 12	31.0	12136.0	391.5	391.5	148.6	4005.0	129.2	54.2	330.0	0.0	0.0	0.0
Subtotal	350.0	140980.0	402.8	386.2		51184.0				0.0		
1970 1	31.0	15070.0	486.1	486.1	163.7	4973.0	160.4	59.2	330.0	0.0	0.0	0.0
1970 2	24.0	15122.0	630.1	540.1	178.8	4990.0	207.9	64.1	330.0	0.0	0.0	0.0
1970 3	31.0	18313.0	590.7	590.7	197.1	6043.0	194.9	70.2	330.0	0.0	0.0	0.0
1970 4	28.0	16684.0	595.9	556.1	213.8	5506.0	196.6	75.7	330.0	0.0	0.0	0.0
1970 5	31.0	16324.0	526.6	526.6	230.1	5394.0	174.0	81.1	330.4	0.0	0.0	0.0
1970 6	30.0	15936.0	531.2	531.2	246.1	5259.0	175.3	86.3	330.0	0.0	0.0	0.0
1970 7	30.0	15731.0	524.4	507.5	261.8	5191.0	173.0	91.5	330.0	0.0	0.0	0.0
1970 8	31.0	19703.0	635.6	635.6	281.5	7093.0	228.8	98.6	360.0	0.0	0.0	0.0
1970 9	30.0	19671.0	655.7	655.7	301.2	7082.0	236.1	105.7	360.0	0.0	0.0	0.0
1970 10	31.0	18246.0	588.6	588.6	319.4	6933.0	223.6	112.6	380.0	0.0	0.0	0.0
1970 11	30.0	16205.0	540.2	540.2	335.6	6320.0	210.7	119.0	390.0	0.0	0.0	0.0
1970 12	31.0	18404.0	593.7	593.7	354.0	6993.0	225.6	126.0	380.0	0.0	0.0	0.0
Subtotal	358.0	205409.0	573.8	562.8		71777.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #12 (A-22). (NE 22-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1971	1	31.0	21285.0	686.6	686.6	375.3	8195.0	264.4	134.2	385.0	0.0	0.0	0.0
1971	2	28.0	15988.0	571.0	571.0	391.3	6155.0	219.8	140.3	385.0	0.0	0.0	0.0
1971	3	31.0	11574.0	373.4	373.4	402.9	8681.0	280.0	149.0	750.0	0.0	0.0	0.0
1971	4	30.0	7862.0	262.1	262.1	410.7	4717.0	157.2	153.7	600.0	0.0	0.0	0.0
1971	5	31.0	4745.0	153.1	153.1	415.5	2847.0	91.8	156.6	600.0	0.0	0.0	0.0
1971	6	0.0	0.0	0.0	0.0	415.5	0.0	0.0	156.6	0.0	0.0	0.0	0.0
1971	7	29.0	9172.0	316.3	295.9	424.6	5962.0	205.6	162.5	650.0	0.0	0.0	0.0
1971	8	24.0	8309.0	346.2	268.0	433.0	5816.0	242.3	168.3	700.0	0.0	0.0	0.0
1971	9	30.0	8630.0	287.7	287.7	441.6	6041.0	201.4	174.4	700.0	0.0	0.0	0.0
1971	10	31.0	8927.0	288.0	288.0	450.5	6249.0	201.6	180.6	700.0	0.0	0.0	0.0
1971	11	30.0	8262.0	275.4	275.4	458.8	5370.0	179.0	186.0	650.0	0.0	0.0	0.0
1971	12	31.0	11048.0	356.4	356.4	469.8	7181.0	231.6	193.2	650.0	0.0	0.0	0.0
Subtotal		326.0	115802.0	355.2	317.3		67214.0				0.0		
1972	1	31.0	9712.0	313.3	313.3	479.5	6313.0	203.6	199.5	650.0	0.0	0.0	0.0
1972	2	29.0	8229.0	283.8	283.8	487.8	5349.0	184.4	204.8	650.0	0.0	0.0	0.0
1972	3	31.0	5496.0	177.3	177.3	493.3	3572.0	115.2	208.4	649.9	0.0	0.0	0.0
1972	4	30.0	6281.0	209.4	209.4	499.5	1313.0	43.8	209.7	209.0	0.0	0.0	0.0
1972	5	23.0	4637.0	201.6	149.6	504.2	11592.0	504.0	221.3	2499.9	0.0	0.0	0.0
1972	6	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	7	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	8	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	9	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	10	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	11	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1972	12	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
Subtotal		144.0	34355.0	238.6	93.9		28139.0				0.0		
1973	1	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	2	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	3	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	4	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	5	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	6	0.0	0.0	0.0	0.0	504.2	0.0	0.0	221.3	0.0	0.0	0.0	0.0
1973	7	6.0	507.0	84.5	16.4	504.7	2535.0	422.5	223.8	5000.0	0.0	0.0	0.0
1973	8	31.0	1025.0	33.1	33.1	505.7	6150.0	198.4	230.0	6000.0	0.0	0.0	0.0
1973	9	30.0	502.0	16.7	16.7	506.2	3012.0	100.4	233.0	6000.0	0.0	0.0	0.0
1973	10	10.0	140.0	14.0	4.5	506.4	840.0	84.0	233.8	6000.0	0.0	0.0	0.0
1973	11	0.0	0.0	0.0	0.0	506.4	0.0	0.0	233.8	0.0	0.0	0.0	0.0
1973	12	0.0	0.0	0.0	0.0	506.4	0.0	0.0	233.8	0.0	0.0	0.0	0.0
Subtotal		77.0	2174.0	28.2	6.0		12537.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* CURRENTLY AN OBSERVATION WELL.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27). (SW 27-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	4	25.0	6190.0	247.6	206.3	6.2	1857.0	74.3	1.9	300.0	0.0	0.0	0.0
1970	5	31.0	7443.0	240.1	240.1	13.6	2233.0	72.0	4.1	300.0	0.0	0.0	0.0
1970	6	30.0	7767.0	258.9	258.9	21.4	2330.0	77.7	6.4	300.0	0.0	0.0	0.0
1970	7	30.0	7915.0	263.8	255.3	29.3	2375.0	79.2	8.8	300.1	0.0	0.0	0.0
1970	8	31.0	8054.0	259.8	259.8	37.4	2140.0	69.0	10.9	265.7	0.0	0.0	0.0
1970	9	30.0	11660.0	388.7	388.7	49.0	3102.0	103.4	14.0	266.0	0.0	0.0	0.0
1970	10	31.0	11290.0	364.2	364.2	60.3	3003.0	96.9	17.0	266.0	0.0	0.0	0.0
1970	11	30.0	11470.0	382.3	382.3	71.8	3051.0	101.7	20.1	266.0	0.0	0.0	0.0
1970	12	31.0	10838.0	349.6	349.6	82.6	2883.0	93.0	23.0	266.0	0.0	0.0	0.0
Subtotal		269.0	82627.0	307.2	300.5		22974.0				0.0		
1971	1	31.0	9962.0	321.4	321.4	92.6	3586.0	115.7	26.6	360.0	0.0	0.0	0.0
1971	2	28.0	9196.0	328.4	328.4	101.8	3310.0	118.2	29.9	359.9	0.0	0.0	0.0
1971	3	31.0	12177.0	392.8	392.8	114.0	4384.0	141.4	34.3	360.0	0.0	0.0	0.0
1971	4	30.0	11475.0	382.5	382.5	125.4	4131.0	137.7	38.4	360.0	0.0	0.0	0.0
1971	5	31.0	11861.0	382.6	382.6	137.3	4270.0	137.7	42.7	360.0	0.0	0.0	0.0
1971	6	30.0	11778.0	392.6	392.6	149.1	4240.0	141.3	46.9	360.0	0.0	0.0	0.0
1971	7	31.0	11844.0	382.1	382.1	160.9	4264.0	137.5	51.2	360.0	0.0	0.0	0.0
1971	8	31.0	11380.0	367.1	367.1	172.3	3414.0	110.1	54.6	300.0	0.0	0.0	0.0
1971	9	30.0	10821.0	360.7	360.7	183.1	3246.0	108.2	57.8	300.0	0.0	0.0	0.0
1971	10	31.0	12427.0	400.9	400.9	195.5	3728.0	120.3	61.5	300.0	0.0	0.0	0.0
1971	11	29.0	11583.0	399.4	386.1	207.1	3475.0	119.8	65.0	300.0	0.0	0.0	0.0
1971	12	31.0	10816.0	348.9	348.9	217.9	3245.0	104.7	68.3	300.0	0.0	0.0	0.0
Subtotal		364.0	135320.0	371.8	370.7		45293.0				0.0		
1972	1	31.0	11300.0	364.5	364.5	229.2	3390.0	109.4	71.7	300.0	0.0	0.0	0.0
1972	2	29.0	10245.0	353.3	353.3	239.5	3074.0	106.0	74.7	300.0	0.0	0.0	0.0
1972	3	31.0	10585.0	341.5	341.5	250.1	3176.0	102.5	77.9	300.0	0.0	0.0	0.0
1972	4	30.0	10165.0	338.8	338.8	260.2	3050.0	101.7	81.0	300.0	0.0	0.0	0.0
1972	5	31.0	10884.0	351.1	351.1	271.1	3265.0	105.3	84.2	300.0	0.0	0.0	0.0
1972	6	30.0	10263.0	342.1	342.1	281.4	3079.0	102.6	87.3	300.0	0.0	0.0	0.0
1972	7	31.0	11316.0	365.0	365.0	292.7	3395.0	109.5	90.7	300.0	0.0	0.0	0.0
1972	8	31.0	10471.0	337.8	337.8	303.2	3141.0	101.3	93.8	300.0	0.0	0.0	0.0
1972	9	30.0	10118.0	337.3	337.3	313.3	3035.0	101.2	96.9	300.0	0.0	0.0	0.0
1972	10	31.0	10478.0	338.0	338.0	323.8	3143.0	101.4	100.0	300.0	0.0	0.0	0.0
1972	11	30.0	10060.0	335.3	335.3	333.8	3018.0	100.6	103.0	300.0	0.0	0.0	0.0
1972	12	31.0	10008.0	322.8	322.8	343.8	1416.0	45.7	104.4	141.5	0.0	0.0	0.0
Subtotal		366.0	125893.0	344.0	344.0		36182.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27). (SW 27-26N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1973	1	31.0	10189.0	328.7	328.7	354.0	3057.0	98.6	107.5	300.0	0.0	0.0	0.0
1973	2	28.0	8981.0	320.8	320.8	363.0	2694.0	96.2	110.2	300.0	0.0	0.0	0.0
1973	3	31.0	10220.0	329.7	329.7	373.2	3066.0	98.9	113.3	300.0	0.0	0.0	0.0
1973	4	30.0	9470.0	315.7	315.7	382.7	2841.0	94.7	116.1	300.0	0.0	0.0	0.0
1973	5	31.0	9695.0	312.7	312.7	392.4	2908.0	93.8	119.0	299.9	0.0	0.0	0.0
1973	6	30.0	8738.0	291.3	291.3	401.1	2621.0	87.4	121.6	300.0	0.0	0.0	0.0
1973	7	31.0	9220.0	297.4	297.4	410.4	2766.0	89.2	124.4	300.0	0.0	0.0	0.0
1973	8	31.0	8574.0	276.6	276.6	418.9	2572.0	83.0	127.0	300.0	0.0	0.0	0.0
1973	9	30.0	8689.0	289.6	289.6	427.6	2607.0	86.9	129.6	300.0	0.0	0.0	0.0
1973	10	31.0	8508.0	274.5	274.5	436.1	2552.0	82.3	132.1	300.0	0.0	0.0	0.0
1973	11	30.0	8538.0	284.6	284.6	444.7	2561.0	85.4	134.7	300.0	0.0	0.0	0.0
1973	12	31.0	8786.0	283.4	283.4	453.4	2636.0	85.0	137.3	300.0	0.0	0.0	0.0
Subtotal		365.0	109608.0	300.3	300.3		32881.0				0.0		
1974	1	31.0	8854.0	285.6	285.6	462.3	2656.0	85.7	140.0	300.0	0.0	0.0	0.0
1974	2	28.0	8193.0	292.6	292.6	470.5	2458.0	87.8	142.4	300.0	0.0	0.0	0.0
1974	3	31.0	8698.0	280.6	280.6	479.2	2609.0	84.2	145.1	300.0	0.0	0.0	0.0
1974	4	30.0	8649.0	288.3	288.3	487.8	2595.0	86.5	147.6	300.0	0.0	0.0	0.0
1974	5	31.0	8942.0	288.5	288.5	496.8	2683.0	86.5	150.3	300.0	0.0	0.0	0.0
1974	6	30.0	8591.0	286.4	286.4	505.4	2577.0	85.9	152.9	300.0	0.0	0.0	0.0
1974	7	31.0	9013.0	290.7	290.7	514.4	2704.0	87.2	155.6	300.0	0.0	0.0	0.0
1974	8	31.0	8906.0	287.3	287.3	523.3	2672.0	86.2	158.3	300.0	0.0	0.0	0.0
1974	9	30.0	8541.0	284.7	284.7	531.8	2562.0	85.4	160.8	300.0	0.0	0.0	0.0
1974	10	31.0	8786.0	283.4	283.4	540.6	2636.0	85.0	163.5	300.0	0.0	0.0	0.0
1974	11	30.0	8389.0	279.6	279.6	549.0	2517.0	83.9	166.0	300.0	0.0	0.0	0.0
1974	12	31.0	8677.0	279.9	279.9	557.7	2603.0	84.0	168.6	300.0	0.0	0.0	0.0
Subtotal		365.0	104239.0	285.6	285.6		31272.0				0.0		
1975	1	31.0	8669.0	279.6	279.6	566.4	2601.0	83.9	171.2	300.0	0.0	0.0	0.0
1975	2	28.0	7814.0	279.1	279.1	574.2	2344.0	83.7	173.5	300.0	0.0	0.0	0.0
1975	3	31.0	8635.0	278.5	278.5	582.8	2591.0	83.6	176.1	300.1	0.0	0.0	0.0
1975	4	30.0	8429.0	281.0	281.0	591.2	2529.0	84.3	178.7	300.0	0.0	0.0	0.0
1975	5	31.0	8828.0	284.8	284.8	600.1	2648.0	85.4	181.3	300.0	0.0	0.0	0.0
1975	6	30.0	8593.0	286.4	286.4	608.7	2578.0	85.9	183.9	300.0	0.0	0.0	0.0
1975	7	31.0	8981.0	289.7	289.7	617.6	2694.0	86.9	186.6	300.0	0.0	0.0	0.0
1975	8	31.0	8762.0	282.6	282.6	626.4	2629.0	84.8	189.2	300.0	0.0	0.0	0.0
1975	9	29.0	7612.0	262.5	253.7	634.0	2284.0	78.8	191.5	300.1	0.0	0.0	0.0
1975	10	31.0	9077.0	292.8	292.8	643.1	2723.0	87.8	194.2	300.0	0.0	0.0	0.0
1975	11	30.0	8566.0	285.5	285.5	651.7	2570.0	85.7	196.8	300.0	0.0	0.0	0.0
1975	12	31.0	8801.0	283.9	283.9	660.5	2640.0	85.2	199.4	300.0	0.0	0.0	0.0
Subtotal		364.0	102767.0	282.3	281.6		30831.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27). (SW 27-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1976	1	31.0	8970.0	289.4	289.4	669.4	2691.0	86.8	202.1	300.0	0.0	0.0	0.0
1976	2	29.0	8409.0	290.0	290.0	677.8	2523.0	87.0	204.6	300.0	0.0	0.0	0.0
1976	3	31.0	9318.0	300.6	300.6	687.2	2795.0	90.2	207.4	300.0	0.0	0.0	0.0
1976	4	30.0	8340.0	278.0	278.0	695.5	2502.0	83.4	209.9	300.0	0.0	0.0	0.0
1976	5	31.0	9085.0	293.1	293.1	704.6	2726.0	87.9	212.7	300.1	0.0	0.0	0.0
1976	6	30.0	8259.0	275.3	275.3	712.8	2478.0	82.6	215.1	300.0	0.0	0.0	0.0
1976	7	31.0	8919.0	287.7	287.7	721.8	2676.0	86.3	217.8	300.0	0.0	0.0	0.0
1976	8	31.0	8846.0	285.4	285.4	730.6	2654.0	85.6	220.5	300.0	0.0	0.0	0.0
1976	9	29.0	8307.0	286.4	276.9	738.9	2492.0	85.9	223.0	300.0	0.0	0.0	0.0
1976	10	31.0	8858.0	285.7	285.7	747.8	2657.0	85.7	225.6	300.0	0.0	0.0	0.0
1976	11	30.0	8377.0	279.2	279.2	756.1	2513.0	83.8	228.1	300.0	0.0	0.0	0.0
1976	12	31.0	8804.0	284.0	284.0	764.9	2641.0	85.2	230.8	300.0	0.0	0.0	0.0
Subtotal		365.0	104492.0	286.3	285.5		31348.0				0.0		
1977	1	31.0	8830.0	284.8	284.8	773.8	2649.0	85.5	233.4	300.0	0.0	0.0	0.0
1977	2	28.0	7380.0	263.6	263.6	781.2	2214.0	79.1	235.6	300.0	0.0	0.0	0.0
1977	3	31.0	8685.0	280.2	280.2	789.8	2606.0	84.1	238.2	300.1	0.0	0.0	0.0
1977	4	30.0	8611.0	287.0	287.0	798.5	2583.0	86.1	240.8	300.0	0.0	0.0	0.0
1977	5	31.0	8884.0	286.6	286.6	807.3	2665.0	86.0	243.5	300.0	0.0	0.0	0.0
1977	6	30.0	8503.0	283.4	283.4	815.8	2551.0	85.0	246.0	300.0	0.0	0.0	0.0
1977	7	31.0	8756.0	282.5	282.5	824.6	2627.0	84.7	248.7	300.0	0.0	0.0	0.0
1977	8	31.0	9216.0	297.3	297.3	833.8	2765.0	89.2	251.4	300.0	0.0	0.0	0.0
1977	9	30.0	8561.0	285.4	285.4	842.4	2568.0	85.6	254.0	300.0	0.0	0.0	0.0
1977	10	31.0	8977.0	289.6	289.6	851.3	2693.0	86.9	256.7	300.0	0.0	0.0	0.0
1977	11	30.0	8640.0	288.0	288.0	860.0	2592.0	86.4	259.3	300.0	0.0	0.0	0.0
1977	12	31.0	8814.0	284.3	284.3	868.8	2644.0	85.3	261.9	300.0	0.0	0.0	0.0
Subtotal		365.0	103857.0	284.5	284.5		31157.0				0.0		
1978	1	31.0	7313.0	235.9	235.9	876.1	2194.0	70.8	264.1	300.0	0.0	0.0	0.0
1978	2	28.0	7082.0	252.9	252.9	883.2	2125.0	75.9	266.3	300.1	0.0	0.0	0.0
1978	3	31.0	8035.0	259.2	259.2	891.2	2411.0	77.8	268.7	300.1	0.0	0.0	0.0
1978	4	30.0	7814.0	260.5	260.5	899.0	2304.0	76.8	271.0	294.9	0.0	0.0	0.0
1978	5	31.0	8415.0	271.5	271.5	907.5	3534.0	114.0	274.5	420.0	0.0	0.0	0.0
1978	6	30.0	7919.0	264.0	264.0	915.4	3326.0	110.9	277.8	420.0	0.0	0.0	0.0
1978	7	31.0	8168.0	263.5	263.5	923.5	3431.0	110.7	281.3	420.1	0.0	0.0	0.0
1978	8	31.0	8212.0	264.9	264.9	931.8	3449.0	111.3	284.7	420.0	0.0	0.0	0.0
1978	9	30.0	7979.0	266.0	266.0	939.7	3352.0	111.7	288.1	420.1	0.0	0.0	0.0
1978	10	31.0	8165.0	263.4	263.4	947.9	3429.0	110.6	291.5	420.0	0.0	0.0	0.0
1978	11	29.0	7549.0	260.3	251.6	955.5	3171.0	109.3	294.7	420.1	0.0	0.0	0.0
1978	12	31.0	8122.0	262.0	262.0	963.6	3411.0	110.0	298.1	420.0	0.0	0.0	0.0
Subtotal		364.0	94773.0	260.4	259.7		36137.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27).   (SW 27-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1979	1	31.0	8150.0	262.9	262.9	971.7	3505.0	113.1	301.6	430.1	0.0	0.0	0.0
1979	2	28.0	7218.0	257.8	257.8	978.9	3104.0	110.9	304.7	430.0	0.0	0.0	0.0
1979	3	31.0	8230.0	265.5	265.5	987.2	3539.0	114.2	308.2	430.0	0.0	0.0	0.0
1979	4	30.0	8051.0	268.4	268.4	995.2	3462.0	115.4	311.7	430.0	0.0	0.0	0.0
1979	5	31.0	8362.0	269.7	269.7	1003.6	3596.0	116.0	315.3	430.0	0.0	0.0	0.0
1979	6	30.0	8324.0	277.5	277.5	1011.9	3579.0	119.3	318.9	430.0	0.0	0.0	0.0
1979	7	30.0	8481.0	282.7	273.6	1020.4	3647.0	121.6	322.5	430.0	0.0	0.0	0.0
1979	8	31.0	8528.0	275.1	275.1	1028.9	3667.0	118.3	326.2	430.0	0.0	0.0	0.0
1979	9	30.0	8224.0	274.1	274.1	1037.1	3536.0	117.9	329.7	430.0	0.0	0.0	0.0
1979	10	31.0	8107.0	261.5	261.5	1045.3	3486.0	112.5	333.2	430.0	0.0	0.0	0.0
1979	11	30.0	7585.0	252.8	252.8	1052.8	3262.0	108.7	336.5	430.1	0.0	0.0	0.0
1979	12	31.0	7722.0	249.1	249.1	1060.6	3320.0	107.1	339.8	429.9	0.0	0.0	0.0
Subtotal		364.0	96982.0	266.4	265.7		41703.0				0.0		
1980	1	31.0	7810.0	251.9	251.9	1068.4	3124.0	100.8	342.9	400.0	0.0	0.0	0.0
1980	2	29.0	7151.0	246.6	285.2	1075.5	2860.0	98.6	345.8	399.9	0.0	0.0	0.0
1980	3	31.0	8272.0	266.8	266.8	1083.8	3309.0	106.7	349.1	400.0	0.0	0.0	0.0
1980	4	30.0	7463.0	248.8	248.8	1091.3	2985.0	99.5	352.1	400.0	0.0	0.0	0.0
1980	5	31.0	8012.0	258.5	258.5	1099.3	3445.0	111.1	355.5	430.0	0.0	0.0	0.0
1980	6	30.0	7860.0	262.0	262.0	1107.1	2830.0	94.3	358.3	360.1	0.0	0.0	0.0
1980	7	31.0	8072.0	260.4	260.4	1115.2	2833.0	91.4	361.2	351.0	0.0	0.0	0.0
1980	8	31.0	8399.0	270.9	270.9	1123.6	3024.0	97.5	364.2	360.0	0.0	0.0	0.0
1980	9	30.0	7972.0	265.7	265.7	1131.6	2870.0	95.7	367.1	360.0	0.0	0.0	0.0
1980	10	31.0	8342.0	269.1	269.1	1139.9	3003.0	96.9	370.1	360.0	0.0	0.0	0.0
1980	11	30.0	7967.0	265.6	265.6	1147.9	2868.0	95.6	372.9	360.0	0.0	0.0	0.0
1980	12	31.0	8071.0	260.4	260.4	1155.9	2905.0	93.7	375.8	359.9	0.0	0.0	0.0
Subtotal		366.0	95391.0	260.6	260.6		36056.0				0.0		
1981	1	31.0	8345.0	269.2	269.2	1164.3	3004.0	96.9	378.8	360.0	0.0	0.0	0.0
1981	2	28.0	7660.0	273.6	273.6	1172.0	2708.0	96.7	381.5	353.5	0.0	0.0	0.0
1981	3	31.0	7998.0	258.0	258.0	1180.0	2162.0	69.7	383.7	270.3	0.0	0.0	0.0
1981	4	30.0	8008.0	266.9	266.9	1188.0	2883.0	96.1	386.6	360.0	0.0	0.0	0.0
1981	5	31.0	8482.0	273.6	273.6	1196.4	3054.0	98.5	389.6	360.1	0.0	0.0	0.0
1981	6	30.0	8064.0	268.8	268.8	1204.5	2903.0	96.8	392.5	360.0	0.0	0.0	0.0
1981	7	31.0	8161.0	263.3	263.3	1212.7	3836.0	123.7	396.4	470.0	0.0	0.0	0.0
1981	8	31.0	8236.0	265.7	265.7	1220.9	3871.0	124.9	400.3	470.0	0.0	0.0	0.0
1981	9	30.0	7440.0	248.0	248.0	1228.3	2976.0	99.2	403.2	400.0	0.0	0.0	0.0
1981	10	31.0	7447.0	240.2	240.2	1235.8	2979.0	96.1	406.2	400.0	0.0	0.0	0.0
1981	11	30.0	7385.0	246.2	246.2	1243.2	2806.0	93.5	409.0	380.0	0.0	0.0	0.0
1981	12	31.0	8132.0	262.3	262.3	1251.3	3090.0	99.7	412.1	380.0	0.0	0.0	0.0
Subtotal		365.0	95358.0	261.3	261.3		36272.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY.   * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27). (SW 27-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1982	1	31.0	7718.0	249.0	249.0	1259.0	3056.0	98.6	415.2	396.0	0.0	0.0	0.0
1982	2	28.0	7058.0	252.1	252.1	1266.1	2795.0	99.8	418.0	396.0	0.0	0.0	0.0
1982	3	31.0	7563.0	244.0	244.0	1273.6	2995.0	96.6	421.0	396.0	0.0	0.0	0.0
1982	4	30.0	7571.0	252.4	252.4	1281.2	2998.0	99.9	423.9	396.0	0.0	0.0	0.0
1982	5	31.0	8308.0	268.0	268.0	1289.5	3614.0	116.6	427.6	435.0	0.0	0.0	0.0
1982	6	30.0	7703.0	256.8	256.8	1297.2	3389.0	113.0	431.0	440.0	0.0	0.0	0.0
1982	7	31.0	7781.0	251.0	251.0	1305.0	3112.0	100.4	434.1	399.9	0.0	0.0	0.0
1982	8	31.0	7652.0	246.8	246.8	1312.7	2678.0	86.4	436.7	350.0	0.0	0.0	0.0
1982	9	30.0	7281.0	242.7	242.7	1319.9	2548.0	84.9	439.3	350.0	0.0	0.0	0.0
1982	10	31.0	7911.0	255.2	255.2	1327.9	2846.0	91.8	442.1	359.8	0.0	0.0	0.0
1982	11	30.0	7300.0	243.3	243.3	1335.2	2628.0	87.6	444.8	360.0	0.0	0.0	0.0
1982	12	31.0	7642.0	246.5	246.5	1342.8	2942.0	94.9	447.7	385.0	0.0	0.0	0.0
Subtotal		365.0	91488.0	250.7	250.7		35601.0				0.0		
1983	1	31.0	7343.0	236.9	236.9	1350.1	2827.0	91.2	450.5	385.0	0.0	0.0	0.0
1983	2	28.0	6478.0	231.4	231.4	1356.6	2494.0	89.1	453.0	385.0	0.0	0.0	0.0
1983	3	31.0	7273.0	234.6	234.6	1363.9	2800.0	90.3	455.8	385.0	0.0	0.0	0.0
1983	4	30.0	7358.0	245.3	245.3	1371.2	2833.0	94.4	458.7	385.0	0.0	0.0	0.0
1983	5	31.0	7334.0	236.6	236.6	1378.6	2824.0	91.1	461.5	385.1	0.0	0.0	0.0
1983	6	30.0	7123.0	237.4	237.4	1385.7	2742.0	91.4	464.2	385.0	0.0	0.0	0.0
1983	7	31.0	7350.0	237.1	237.1	1393.1	2830.0	91.3	467.1	385.0	0.0	0.0	0.0
1983	8	31.0	7470.0	241.0	241.0	1400.5	2876.0	92.8	469.9	385.0	0.0	0.0	0.0
1983	9	30.0	7103.0	236.8	236.8	1407.6	2735.0	91.2	472.7	385.0	0.0	0.0	0.0
1983	10	31.0	7284.0	235.0	235.0	1414.9	2804.0	90.5	475.5	385.0	0.0	0.0	0.0
1983	11	30.0	7264.0	242.1	242.1	1422.2	2797.0	93.2	478.3	385.0	0.0	0.0	0.0
1983	12	31.0	7152.0	230.7	230.7	1429.3	2754.0	88.8	481.0	385.1	0.0	0.0	0.0
Subtotal		365.0	86532.0	237.1	237.1		33316.0				0.0		
1984	1	31.0	7298.0	235.4	235.4	1436.6	2810.0	90.6	483.8	385.0	0.0	0.0	0.0
1984	2	29.0	6645.0	229.1	229.1	1443.3	2558.0	88.2	486.4	385.0	0.0	0.0	0.0
1984	3	31.0	7348.0	237.0	237.0	1450.6	2829.0	91.3	489.2	385.0	0.0	0.0	0.0
1984	4	30.0	6778.0	225.9	225.9	1457.4	2610.0	87.0	491.8	385.1	0.0	0.0	0.0
1984	5	31.0	6882.0	222.0	222.0	1464.3	2650.0	85.5	494.5	385.1	0.0	0.0	0.0
1984	6	30.0	6912.0	230.4	230.4	1471.2	2661.0	88.7	497.1	385.0	0.0	0.0	0.0
1984	7	31.0	6992.0	225.5	225.5	1478.2	2691.0	86.8	499.8	384.9	0.0	0.0	0.0
1984	8	31.0	6756.0	217.9	217.9	1484.9	2601.0	83.9	502.4	385.0	0.0	0.0	0.0
1984	9	30.0	6705.0	223.5	223.5	1491.6	2580.0	86.0	505.0	384.8	0.0	0.0	0.0
1984	10	31.0	6945.0	224.0	224.0	1498.6	2674.0	86.3	507.7	385.0	0.0	0.0	0.0
1984	11	30.0	6332.0	211.1	211.1	1504.9	2438.0	81.3	510.1	385.0	0.0	0.0	0.0
1984	12	31.0	6959.0	224.5	224.5	1511.9	2680.0	86.5	512.8	385.1	0.0	0.0	0.0
Subtotal		366.0	82552.0	225.6	225.6		31782.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #13 (L-27). (SW 27-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	31.0	6237.0	201.2	201.2	1518.1	2401.0	77.5	515.2	385.0	0.0	0.0	0.0
1985	2	28.0	4851.0	173.3	173.3	1523.0	1868.0	66.7	517.1	385.1	0.0	0.0	0.0
1985	3	31.0	6796.0	219.2	219.2	1529.8	2616.0	84.4	519.7	384.9	0.0	0.0	0.0
1985	4	30.0	6715.0	223.8	223.8	1536.5	2585.0	86.2	522.3	385.0	0.0	0.0	0.0
1985	5	31.0	6860.0	221.3	221.3	1543.3	2641.0	85.2	524.9	385.0	0.0	0.0	0.0
1985	6	30.0	6404.0	213.5	213.5	1549.7	2466.0	82.2	527.4	385.1	0.0	0.0	0.0
1985	7	31.0	6840.0	220.6	220.6	1556.6	2633.0	84.9	530.0	384.9	0.0	0.0	0.0
1985	8	30.0	6629.0	221.0	213.8	1563.2	2552.0	85.1	532.6	385.0	0.0	0.0	0.0
1985	9	30.0	6660.0	222.0	222.0	1569.9	2564.0	85.5	535.1	385.0	0.0	0.0	0.0
1985	10	31.0	6904.0	222.7	222.7	1576.8	2782.0	89.7	537.9	403.0	0.0	0.0	0.0
1985	11	30.0	6309.0	210.3	210.3	1583.1	2429.0	81.0	540.3	385.0	0.0	0.0	0.0
1985	12	31.0	6548.0	211.2	211.2	1589.6	2521.0	81.3	542.9	385.0	0.0	0.0	0.0
Subtotal		364.0	77753.0	213.6	213.0		30058.0				0.0		
1986	1	30.0	6009.0	200.3	193.8	1595.6	2313.0	77.1	545.2	384.9	0.0	0.0	0.0
1986	2	28.0	5506.0	196.6	196.6	1601.1	2120.0	75.7	547.3	385.0	0.0	0.0	0.0
1986	3	31.0	6137.0	198.0	198.0	1607.3	4296.0	138.6	551.6	700.0	0.0	0.0	0.0
1986	4	30.0	5680.0	189.3	189.3	1613.0	3976.0	132.5	555.6	700.0	0.0	0.0	0.0
1986	5	31.0	5716.0	184.4	184.4	1618.7	4001.0	129.1	559.6	700.0	0.0	0.0	0.0
1986	6	30.0	5179.0	172.6	172.6	1623.9	3625.0	120.8	563.2	699.9	0.0	0.0	0.0
1986	7	30.0	5169.0	172.3	166.7	1629.0	3618.0	120.6	566.8	699.9	0.0	0.0	0.0
1986	8	31.0	5509.0	177.7	177.7	1634.5	4958.0	159.9	571.8	900.0	0.0	0.0	0.0
1986	9	30.0	5033.0	167.8	167.8	1639.6	4530.0	151.0	576.3	900.1	0.0	0.0	0.0
1986	10	31.0	4337.0	139.9	139.9	1643.9	4337.0	139.9	580.6	1000.0	0.0	0.0	0.0
1986	11	30.0	4236.0	141.2	141.2	1648.1	5930.0	197.7	586.6	1399.9	0.0	0.0	0.0
1986	12	31.0	4115.0	132.7	132.7	1652.3	8127.0	262.2	594.7	1975.0	0.0	0.0	0.0
Subtotal		363.0	62626.0	172.5	171.6		51831.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1971	2	19.0	7745.0	407.6	276.6	7.7	2323.0	122.3	2.3	299.9	0.0	0.0	0.0
1971	3	31.0	13140.0	423.9	423.9	20.9	3942.0	127.2	6.3	300.0	0.0	0.0	0.0
1971	4	30.0	11914.0	397.1	397.1	32.8	3574.0	119.1	9.8	300.0	0.0	0.0	0.0
1971	5	31.0	12545.0	404.7	404.7	45.3	3764.0	121.4	13.6	300.0	0.0	0.0	0.0
1971	6	30.0	12734.0	424.5	424.5	58.1	3820.0	127.3	17.4	300.0	0.0	0.0	0.0
1971	7	31.0	12826.0	413.7	413.7	70.9	3848.0	124.1	21.3	300.0	0.0	0.0	0.0
1971	8	29.0	11454.0	395.0	369.5	82.4	3436.0	118.5	24.7	300.0	0.0	0.0	0.0
1971	9	30.0	12083.0	402.8	402.8	94.4	3625.0	120.8	28.3	300.0	0.0	0.0	0.0
1971	10	31.0	14214.0	458.5	458.5	108.7	4264.0	137.5	32.6	300.0	0.0	0.0	0.0
1971	11	30.0	14726.0	490.9	490.9	123.4	4418.0	147.3	37.0	300.0	0.0	0.0	0.0
1971	12	31.0	14574.0	470.1	470.1	138.0	4372.0	141.0	41.4	300.0	0.0	0.0	0.0
Subtotal		323.0	137955.0	427.1	413.0		41386.0				0.0		
1972	1	31.0	14834.0	478.5	478.5	152.8	4450.0	143.5	45.8	300.0	0.0	0.0	0.0
1972	2	29.0	11469.0	395.5	395.5	164.3	4588.0	158.2	50.4	400.0	0.0	0.0	0.0
1972	3	31.0	10776.0	347.6	347.6	175.0	4310.0	139.0	54.7	400.0	0.0	0.0	0.0
1972	4	30.0	9142.0	304.7	304.7	184.2	2788.0	92.9	57.5	305.0	0.0	0.0	0.0
1972	5	31.0	7214.0	232.7	232.7	191.4	14428.0	465.4	72.0	2000.0	0.0	0.0	0.0
1972	6	30.0	5860.0	195.3	195.3	197.3	11720.0	390.7	83.7	2000.0	0.0	0.0	0.0
1972	7	31.0	5400.0	174.2	174.2	202.7	10800.0	348.4	94.5	2000.0	0.0	0.0	0.0
1972	8	31.0	4781.0	154.2	154.2	207.4	9562.0	308.5	104.0	2000.0	0.0	0.0	0.0
1972	9	30.0	4246.0	141.5	141.5	211.7	8492.0	283.1	112.5	2000.0	0.0	0.0	0.0
1972	10	31.0	4960.0	160.0	160.0	216.6	9920.0	320.0	122.4	2000.0	0.0	0.0	0.0
1972	11	30.0	4839.0	161.3	161.3	221.5	9678.0	322.6	132.1	2000.0	0.0	0.0	0.0
1972	12	31.0	4721.0	152.3	152.3	226.2	9442.0	304.6	141.6	2000.0	0.0	0.0	0.0
Subtotal		366.0	88242.0	241.1	241.1		100178.0				0.0		
1973	1	31.0	4479.0	144.5	144.5	230.7	8958.0	289.0	150.5	2000.0	0.0	0.0	0.0
1973	2	28.0	4219.0	150.7	150.7	234.9	8438.0	301.4	159.0	2000.0	0.0	0.0	0.0
1973	3	31.0	4836.0	156.0	156.0	239.7	23551.0	759.7	182.5	4869.9	0.0	0.0	0.0
1973	4	30.0	5182.0	172.7	172.7	244.9	26273.0	875.8	208.8	5070.1	0.0	0.0	0.0
1973	5	31.0	5958.0	192.2	192.2	250.9	32108.0	1035.7	240.9	5389.1	0.0	0.0	0.0
1973	6	30.0	4280.0	142.7	142.7	255.2	23369.0	779.0	264.3	5460.0	0.0	0.0	0.0
1973	7	31.0	4588.0	148.0	148.0	259.7	28010.0	903.5	292.3	6105.1	0.0	0.0	0.0
1973	8	31.0	4433.0	143.0	143.0	264.2	25862.0	834.3	318.1	5834.0	0.0	0.0	0.0
1973	9	30.0	4179.0	139.3	139.3	268.4	24380.0	812.7	342.5	5833.9	0.0	0.0	0.0
1973	10	31.0	4133.0	133.3	133.3	272.5	30349.0	979.0	372.9	7343.1	0.0	0.0	0.0
1973	11	30.0	3827.0	127.6	127.6	276.3	31232.0	1041.1	404.1	8161.0	0.0	0.0	0.0
1973	12	31.0	3764.0	121.4	121.4	280.1	32626.0	1052.5	436.7	8667.9	0.0	0.0	0.0
Subtotal		365.0	53878.0	147.6	147.6		295156.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1974	1	31.0	3518.0	113.5	113.5	283.6	32823.0	1058.8	469.5	9330.0	0.0	0.0	0.0
1974	2	28.0	3055.0	109.1	109.1	286.6	29725.0	1061.6	499.3	9730.0	0.0	0.0	0.0
1974	3	31.0	3291.0	106.2	106.2	289.9	32811.0	1058.4	532.1	9969.9	0.0	0.0	0.0
1974	4	30.0	3325.0	110.8	110.8	293.3	31973.0	1065.8	564.1	9615.9	0.0	0.0	0.0
1974	5	31.0	2703.0	87.2	87.2	296.0	27030.0	871.9	591.1	10000.0	0.0	0.0	0.0
1974	6	30.0	2608.0	86.9	86.9	298.6	22001.0	733.4	613.1	8436.0	0.0	0.0	0.0
1974	7	31.0	3000.0	96.8	96.8	301.6	30015.0	968.2	643.1	10005.0	0.0	0.0	0.0
1974	8	31.0	2865.0	92.4	92.4	304.4	28724.0	926.6	671.8	10025.8	0.0	0.0	0.0
1974	9	30.0	2785.0	92.8	92.8	307.2	27922.0	930.7	699.7	10025.9	0.0	0.0	0.0
1974	10	31.0	2878.0	92.8	92.8	310.1	29117.0	939.3	728.9	10117.1	0.0	0.0	0.0
1974	11	30.0	2685.0	89.5	89.5	312.8	25921.0	864.0	754.8	9654.0	0.0	0.0	0.0
1974	12	31.0	2587.0	83.5	83.5	315.4	27396.0	883.7	782.2	10589.9	0.0	0.0	0.0
Subtotal		365.0	35300.0	96.7	96.7		345458.0				0.0		
1975	1	31.0	2974.0	95.9	95.9	318.3	25401.0	819.4	807.6	8541.0	0.0	0.0	0.0
1975	2	28.0	2721.0	97.2	97.2	321.1	26347.0	941.0	833.9	9682.8	0.0	0.0	0.0
1975	3	31.0	2924.0	94.3	94.3	324.0	27901.0	900.0	861.8	9542.1	0.0	0.0	0.0
1975	4	30.0	2994.0	99.8	99.8	327.0	29192.0	973.1	891.0	9750.2	0.0	0.0	0.0
1975	5	31.0	2903.0	93.6	93.6	329.9	31352.0	1011.4	922.4	10799.9	0.0	0.0	0.0
1975	6	30.0	2926.0	97.5	97.5	332.8	29553.0	985.1	951.9	10100.1	0.0	0.0	0.0
1975	7	31.0	2928.0	94.5	94.5	335.7	31330.0	1010.6	983.3	10700.1	0.0	0.0	0.0
1975	8	31.0	2912.0	93.9	93.9	338.7	31158.0	1005.1	1014.4	10699.9	0.0	0.0	0.0
1975	9	30.0	2976.0	99.2	99.2	341.6	31813.0	1060.4	1046.2	10689.9	0.0	0.0	0.0
1975	10	31.0	3042.0	98.1	98.1	344.7	30815.0	994.0	1077.0	10129.8	0.0	0.0	0.0
1975	11	30.0	2993.0	99.8	99.8	347.7	30319.0	1010.6	1107.4	10130.0	0.0	0.0	0.0
1975	12	31.0	3134.0	101.1	101.1	350.8	30306.0	977.6	1137.7	9670.1	0.0	0.0	0.0
Subtotal		365.0	35427.0	97.1	97.1		355487.0				0.0		
1976	1	31.0	3107.0	100.2	100.2	353.9	32002.0	1032.3	1169.7	10300.0	0.0	0.0	0.0
1976	2	29.0	2954.0	101.9	101.9	356.9	29658.0	1022.7	1199.3	10039.9	0.0	0.0	0.0
1976	3	31.0	3274.0	105.6	105.6	360.1	32871.0	1060.4	1232.2	10040.0	0.0	0.0	0.0
1976	4	30.0	2789.0	93.0	93.0	362.9	30053.0	1001.8	1262.2	10775.5	0.0	0.0	0.0
1976	5	31.0	3053.0	98.5	98.5	366.0	32240.0	1040.0	1294.5	10560.1	0.0	0.0	0.0
1976	6	30.0	2574.0	85.8	85.8	368.6	27259.0	908.6	1321.7	10590.1	0.0	0.0	0.0
1976	7	31.0	2816.0	90.8	90.8	371.4	30413.0	981.1	1352.2	10800.1	0.0	0.0	0.0
1976	8	31.0	2818.0	90.9	90.9	374.2	30434.0	981.7	1382.6	10799.9	0.0	0.0	0.0
1976	9	30.0	2598.0	86.6	86.6	376.8	28058.0	935.3	1410.7	10799.8	0.0	0.0	0.0
1976	10	24.0	2467.0	102.8	79.6	379.3	26644.0	1110.2	1437.3	10800.2	0.0	0.0	0.0
1976	11	23.0	2438.0	106.0	81.3	381.7	26330.0	1144.8	1463.6	10799.8	0.0	0.0	0.0
1976	12	29.0	3000.0	103.4	96.8	384.7	32400.0	1117.2	1496.0	10800.0	0.0	0.0	0.0
Subtotal		350.0	33888.0	96.8	92.6		358362.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1977	1	28.0	2661.0	95.0	85.8	387.4	28739.0	1026.4	1524.8	10800.1	0.0	0.0	0.0
1977	2	27.0	2538.0	94.0	90.6	389.9	27410.0	1015.2	1552.2	10799.8	0.0	0.0	0.0
1977	3	31.0	2521.0	81.3	81.3	392.4	27227.0	878.3	1579.4	10800.1	0.0	0.0	0.0
1977	4	30.0	2888.0	96.3	96.3	395.3	31190.0	1039.7	1610.6	10799.9	0.0	0.0	0.0
1977	5	30.0	2739.0	91.3	88.4	398.0	30129.0	1004.3	1640.7	11000.0	0.0	0.0	0.0
1977	6	29.0	2473.0	85.3	82.4	400.5	27203.0	938.0	1667.9	11000.0	0.0	0.0	0.0
1977	7	31.0	2691.0	86.8	86.8	403.2	29601.0	954.9	1697.5	11000.0	0.0	0.0	0.0
1977	8	31.0	2792.0	90.1	90.1	406.0	30712.0	990.7	1728.2	11000.0	0.0	0.0	0.0
1977	9	30.0	2590.0	86.3	86.3	408.6	28490.0	949.7	1756.7	11000.0	0.0	0.0	0.0
1977	10	31.0	2980.0	96.1	96.1	411.6	32780.0	1057.4	1789.5	11000.0	0.0	0.0	0.0
1977	11	30.0	2817.0	93.9	93.9	414.4	30987.0	1032.9	1820.5	11000.0	0.0	0.0	0.0
1977	12	31.0	2792.0	90.1	90.1	417.2	30712.0	990.7	1851.2	11000.0	0.0	0.0	0.0
Subtotal		359.0	32482.0	90.5	89.0		355180.0				0.0		
1978	1	31.0	2717.0	87.6	87.6	419.9	25975.0	837.9	1877.2	9560.2	0.0	0.0	0.0
1978	2	28.0	2281.0	81.5	81.5	422.2	21806.0	778.8	1899.0	9559.8	0.0	0.0	0.0
1978	3	31.0	2651.0	85.5	85.5	424.8	25344.0	817.5	1924.3	9560.2	0.0	0.0	0.0
1978	4	29.0	2391.0	82.4	79.7	427.2	22858.0	788.2	1947.2	9560.0	0.0	0.0	0.0
1978	5	31.0	2087.0	67.3	67.3	429.3	27674.0	892.7	1974.9	13260.2	0.0	0.0	0.0
1978	6	30.0	1979.0	66.0	66.0	431.3	26242.0	874.7	2001.1	13260.2	0.0	0.0	0.0
1978	7	31.0	2206.0	71.2	71.2	433.5	29252.0	943.6	2030.4	13260.2	0.0	0.0	0.0
1978	8	31.0	2315.0	74.7	74.7	435.8	30697.0	990.2	2061.1	13260.0	0.0	0.0	0.0
1978	9	30.0	2364.0	78.8	78.8	438.2	37115.0	1237.2	2098.2	15700.1	0.0	0.0	0.0
1978	10	31.0	2477.0	79.9	79.9	440.6	32845.0	1059.5	2131.0	13260.0	0.0	0.0	0.0
1978	11	30.0	2389.0	79.6	79.6	443.0	31678.0	1055.9	2162.7	13259.9	0.0	0.0	0.0
1978	12	31.0	2201.0	71.0	71.0	445.2	29185.0	941.5	2191.9	13259.9	0.0	0.0	0.0
Subtotal		364.0	28058.0	77.1	76.9		340671.0				0.0		
1979	1	29.0	2323.0	80.1	74.9	447.6	32987.0	1137.5	2224.9	14200.2	0.0	0.0	0.0
1979	2	27.0	2223.0	82.3	79.4	449.8	31567.0	1169.1	2256.4	14200.2	0.0	0.0	0.0
1979	3	31.0	2546.0	82.1	82.1	452.3	35644.0	1149.8	2292.1	14000.0	0.0	0.0	0.0
1979	4	30.0	2497.0	83.2	83.2	454.8	34958.0	1165.3	2327.0	14000.0	0.0	0.0	0.0
1979	5	31.0	2636.0	85.0	85.0	457.5	36904.0	1190.5	2363.9	14000.0	0.0	0.0	0.0
1979	6	30.0	2384.0	79.5	79.5	459.8	33376.0	1112.5	2397.3	14000.0	0.0	0.0	0.0
1979	7	31.0	2495.0	80.5	80.5	462.3	38423.0	1239.5	2435.7	15400.0	0.0	0.0	0.0
1979	8	31.0	2405.0	77.6	77.6	464.7	37278.0	1202.5	2473.0	15500.2	0.0	0.0	0.0
1979	9	30.0	2267.0	75.6	75.6	467.0	35139.0	1171.3	2508.2	15500.2	0.0	0.0	0.0
1979	10	31.0	2239.0	72.2	72.2	469.2	34705.0	1119.5	2542.9	15500.2	0.0	0.0	0.0
1979	11	30.0	2078.0	69.3	69.3	471.3	11429.0	381.0	2554.3	5500.0	0.0	0.0	0.0
1979	12	31.0	2212.0	71.4	71.4	473.5	34286.0	1106.0	2588.6	15500.0	0.0	0.0	0.0
Subtotal		362.0	28305.0	78.2	77.5		396696.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980 1	29.0	2170.0	74.8	70.0	475.7	27342.0	942.8	2615.9	12600.0	0.0	0.0	0.0
1980 2	29.0	1967.0	67.8	81.3	477.7	24784.0	854.6	2640.7	12599.9	0.0	0.0	0.0
1980 3	31.0	2358.0	76.1	76.1	480.0	29711.0	958.4	2670.4	12600.1	0.0	0.0	0.0
1980 4	30.0	2188.0	72.9	72.9	482.2	27569.0	919.0	2698.0	12600.1	0.0	0.0	0.0
1980 5	31.0	2220.0	71.6	71.6	484.4	27972.0	902.3	2726.0	12600.0	0.0	0.0	0.0
1980 6	30.0	2146.0	71.5	71.5	486.6	26181.0	872.7	2752.1	12199.9	0.0	0.0	0.0
1980 7	31.0	2232.0	72.0	72.0	488.8	26535.0	856.0	2778.7	11888.4	0.0	0.0	0.0
1980 8	31.0	2296.0	74.1	74.1	491.1	28011.0	903.6	2806.7	12199.9	0.0	0.0	0.0
1980 9	30.0	2155.0	71.8	71.8	493.3	26291.0	876.4	2833.0	12200.0	0.0	0.0	0.0
1980 10	31.0	2311.0	74.5	74.5	495.6	0.0	0.0	2833.0	0.0	0.0	0.0	0.0
1980 11	30.0	1740.0	58.0	58.0	497.3	19366.0	645.5	2852.3	11129.9	0.0	0.0	0.0
1980 12	31.0	1994.0	64.3	64.3	499.3	27435.0	885.0	2879.8	13758.8	0.0	0.0	0.0
Subtotal	364.0	25777.0	70.8	70.4		291197.0				0.0		
1981 1	31.0	1896.0	61.2	61.2	501.2	27966.0	902.1	2907.7	14750.0	0.0	0.0	0.0
1981 2	27.0	1604.0	59.4	57.3	502.8	23609.0	874.4	2931.3	14718.8	0.0	0.0	0.0
1981 3	31.0	2150.0	69.4	69.4	505.0	26671.0	860.4	2958.0	12405.1	0.0	0.0	0.0
1981 4	30.0	1685.0	56.2	56.2	506.6	25022.0	834.1	2983.0	14849.9	0.0	0.0	0.0
1981 5	31.0	1929.0	62.2	62.2	508.6	28646.0	924.1	3011.7	14850.2	0.0	0.0	0.0
1981 6	30.0	1763.0	58.8	58.8	510.3	26181.0	872.7	3037.9	14850.3	0.0	0.0	0.0
1981 7	31.0	1706.0	55.0	55.0	512.0	27808.0	897.0	3065.7	16300.1	0.0	0.0	0.0
1981 8	31.0	1838.0	59.3	59.3	513.9	29959.0	966.4	3095.6	16299.8	0.0	0.0	0.0
1981 9	30.0	1640.0	54.7	54.7	515.5	26732.0	891.1	3122.4	16300.0	0.0	0.0	0.0
1981 10	31.0	1833.0	59.1	59.1	517.4	29878.0	963.8	3152.2	16300.1	0.0	0.0	0.0
1981 11	28.0	1664.0	59.4	55.5	519.0	24394.0	871.2	3176.6	14659.9	0.0	0.0	0.0
1981 12	28.0	1390.0	49.6	44.8	520.4	20294.0	724.8	3196.9	14600.0	0.0	0.0	0.0
Subtotal	359.0	21098.0	58.8	57.8		317160.0				0.0		
1982 1	31.0	1838.0	59.3	59.3	522.2	28489.0	919.0	3225.4	15500.0	0.0	0.0	0.0
1982 2	28.0	1716.0	61.3	61.3	524.0	26598.0	949.9	3252.0	15500.0	0.0	0.0	0.0
1982 3	31.0	1828.0	59.0	59.0	525.8	28334.0	914.0	3280.4	15500.0	0.0	0.0	0.0
1982 4	30.0	1908.0	63.6	63.6	527.7	29574.0	985.8	3309.9	15500.0	0.0	0.0	0.0
1982 5	31.0	1772.0	57.2	57.2	529.5	27643.0	891.7	3337.6	15599.9	0.0	0.0	0.0
1982 6	30.0	2241.0	74.7	74.7	531.7	26668.0	888.9	3364.2	11900.0	0.0	0.0	0.0
1982 7	31.0	2278.0	73.5	73.5	534.0	27564.0	889.2	3391.8	12100.1	0.0	0.0	0.0
1982 8	31.0	2370.0	76.5	76.5	536.4	27445.0	885.3	3419.2	11580.2	0.0	0.0	0.0
1982 9	30.0	2211.0	73.7	73.7	538.6	26090.0	869.7	3445.3	11800.1	0.0	0.0	0.0
1982 10	31.0	2371.0	76.5	76.5	540.9	26623.0	858.8	3472.0	11228.6	0.0	0.0	0.0
1982 11	30.0	2066.0	68.9	68.9	543.0	23346.0	778.2	3495.3	11300.1	0.0	0.0	0.0
1982 12	31.0	2213.0	71.4	71.4	545.2	27884.0	899.5	3523.2	12600.1	0.0	0.0	0.0
Subtotal	365.0	24812.0	68.0	68.0		326258.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1983	1	30.0	2061.0	68.7	66.5	547.3	25969.0	865.6	3549.2	12600.2	0.0	0.0	0.0
1983	2	28.0	1800.0	64.3	64.3	549.1	22680.0	810.0	3571.8	12600.0	0.0	0.0	0.0
1983	3	31.0	1963.0	63.3	63.3	551.0	24734.0	797.9	3596.6	12600.1	0.0	0.0	0.0
1983	4	30.0	2098.0	69.9	69.9	553.1	26435.0	881.2	3623.0	12600.1	0.0	0.0	0.0
1983	5	31.0	2014.0	65.0	65.0	555.2	25376.0	818.6	3648.4	12599.8	0.0	0.0	0.0
1983	6	30.0	1890.0	63.0	63.0	557.0	23814.0	793.8	3672.2	12600.0	0.0	0.0	0.0
1983	7	31.0	1958.0	63.2	63.2	559.0	24671.0	795.8	3696.9	12600.1	0.0	0.0	0.0
1983	8	31.0	1934.0	62.4	62.4	560.9	24368.0	786.1	3721.2	12599.8	0.0	0.0	0.0
1983	9	30.0	2049.0	68.3	68.3	563.0	25817.0	860.6	3747.1	12599.8	0.0	0.0	0.0
1983	10	31.0	2278.0	73.5	73.5	565.3	28703.0	925.9	3775.8	12600.1	0.0	0.0	0.0
1983	11	27.0	1741.0	64.5	58.0	567.0	21936.0	812.4	3797.7	12599.7	0.0	0.0	0.0
1983	12	31.0	1880.0	60.6	60.6	568.9	23688.0	764.1	3821.4	12600.0	0.0	0.0	0.0
Subtotal		361.0	23666.0	65.6	64.8		298191.0				0.0		
1984	1	30.0	1889.0	63.0	60.9	570.8	23801.0	793.4	3845.2	12599.8	0.0	0.0	0.0
1984	2	29.0	1722.0	59.4	59.4	572.5	21697.0	748.2	3866.9	12599.9	0.0	0.0	0.0
1984	3	30.0	1823.0	60.8	58.8	574.3	22970.0	765.7	3889.8	12600.1	0.0	0.0	0.0
1984	4	30.0	1843.0	61.4	61.4	576.2	23222.0	774.1	3913.1	12600.1	0.0	0.0	0.0
1984	5	31.0	1814.0	58.5	58.5	578.0	20471.0	660.4	3933.5	11285.0	0.0	0.0	0.0
1984	6	30.0	1603.0	53.4	53.4	579.6	20198.0	673.3	3953.7	12600.1	0.0	0.0	0.0
1984	7	31.0	2174.0	70.1	70.1	581.8	27392.0	883.6	3981.1	12599.8	0.0	0.0	0.0
1984	8	31.0	2060.0	66.5	66.5	583.8	25956.0	837.3	4007.1	12600.0	0.0	0.0	0.0
1984	9	30.0	2150.0	71.7	71.7	586.0	27090.0	903.0	4034.2	12600.0	0.0	0.0	0.0
1984	10	24.0	2240.0	93.3	72.3	588.2	28224.0	1176.0	4062.4	12600.0	0.0	0.0	0.0
1984	11	26.0	2060.0	79.2	68.7	590.3	25956.0	998.3	4088.4	12600.0	0.0	0.0	0.0
1984	12	31.0	2234.0	72.1	72.1	592.5	28148.0	908.0	4116.5	12599.8	0.0	0.0	0.0
Subtotal		353.0	23612.0	66.9	64.5		295125.0				0.0		
1985	1	31.0	2152.0	69.4	69.4	594.7	27115.0	874.7	4143.6	12599.9	0.0	0.0	0.0
1985	2	28.0	2254.0	80.5	80.5	596.9	28400.0	1014.3	4172.0	12599.8	0.0	0.0	0.0
1985	3	31.0	2285.0	73.7	73.7	599.2	28791.0	928.7	4200.8	12600.0	0.0	0.0	0.0
1985	4	30.0	2026.0	67.5	67.5	601.2	25528.0	850.9	4226.3	12600.2	0.0	0.0	0.0
1985	5	31.0	1505.0	48.5	48.5	602.7	18963.0	611.7	4245.3	12600.0	0.0	0.0	0.0
1985	6	30.0	1212.0	40.4	40.4	603.9	15271.0	509.0	4260.6	12599.8	0.0	0.0	0.0
1985	7	31.0	1479.0	47.7	47.7	605.4	18635.0	601.1	4279.2	12599.7	0.0	0.0	0.0
1985	8	17.0	754.0	44.4	24.3	606.2	9475.0	557.4	4288.7	12566.3	0.0	0.0	0.0
1985	9	17.0	750.0	44.1	25.0	606.9	9450.0	555.9	4298.1	12600.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
Subtotal		246.0	14417.0	58.6	39.5		181628.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #14 (C-34). (NW 34-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	606.9	0.0	0.0	4298.1	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1971	8	20.0	1082.0	54.1	34.9	1.1	325.0	16.3	0.3	300.4	0.0	0.0	0.0
1971	9	26.0	1063.0	40.9	35.4	2.1	319.0	12.3	0.6	300.1	0.0	0.0	0.0
1971	10	11.0	657.0	59.7	21.2	2.8	197.0	17.9	0.8	299.8	0.0	0.0	0.0
1971	11	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0
1971	12	8.0	201.0	25.1	6.5	3.0	60.0	7.5	0.9	298.5	0.0	0.0	0.0
Subtotal		65.0	3003.0	46.2	19.6		901.0				0.0		
1972	1	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
1972	2	2.0	8.0	4.0	0.3	3.0	2.0	1.0	0.9	250.0	0.0	0.0	0.0
1972	3	29.0	1599.0	55.1	51.6	4.6	480.0	16.6	1.4	300.2	0.0	0.0	0.0
1972	4	30.0	1073.0	35.8	35.8	5.7	322.0	10.7	1.7	300.1	0.0	0.0	0.0
1972	5	27.0	958.0	35.5	30.9	6.6	287.0	10.6	2.0	299.6	0.0	0.0	0.0
1972	6	30.0	973.0	32.4	32.4	7.6	292.0	9.7	2.3	300.1	0.0	0.0	0.0
1972	7	30.0	1060.0	35.3	34.2	8.7	318.0	10.6	2.6	300.0	0.0	0.0	0.0
1972	8	30.0	1008.0	33.6	32.5	9.7	302.0	10.1	2.9	299.6	0.0	0.0	0.0
1972	9	30.0	1018.0	33.9	33.9	10.7	305.0	10.2	3.2	299.6	0.0	0.0	0.0
1972	10	11.0	533.0	48.5	17.2	11.2	160.0	14.5	3.4	300.2	0.0	0.0	0.0
1972	11	0.0	0.0	0.0	0.0	11.2	0.0	0.0	3.4	0.0	0.0	0.0	0.0
1972	12	25.0	1069.0	42.8	34.5	12.3	321.0	12.8	3.7	300.3	0.0	0.0	0.0
Subtotal		244.0	9299.0	38.1	25.4		2789.0				0.0		
1973	1	28.0	937.0	33.5	30.2	13.2	281.0	10.0	4.0	299.9	0.0	0.0	0.0
1973	2	14.0	421.0	30.1	15.0	13.7	126.0	9.0	4.1	299.3	0.0	0.0	0.0
1973	3	0.0	0.0	0.0	0.0	13.7	0.0	0.0	4.1	0.0	0.0	0.0	0.0
1973	4	0.0	0.0	0.0	0.0	13.7	0.0	0.0	4.1	0.0	0.0	0.0	0.0
1973	5	11.0	660.0	60.0	21.3	14.3	198.0	18.0	4.3	300.0	0.0	0.0	0.0
1973	6	29.0	911.0	31.4	30.4	15.2	273.0	9.4	4.6	299.7	0.0	0.0	0.0
1973	7	28.0	830.0	29.6	26.8	16.1	249.0	8.9	4.8	300.0	0.0	0.0	0.0
1973	8	27.0	689.0	25.5	22.2	16.8	207.0	7.7	5.0	300.4	0.0	0.0	0.0
1973	9	25.0	877.0	35.1	29.2	17.6	263.0	10.5	5.3	299.9	0.0	0.0	0.0
1973	10	31.0	1018.0	32.8	32.8	18.6	305.0	9.8	5.6	299.6	0.0	0.0	0.0
1973	11	28.0	946.0	33.8	31.5	19.6	284.0	10.1	5.9	300.2	0.0	0.0	0.0
1973	12	28.0	640.0	22.9	20.6	20.2	192.0	6.9	6.1	300.0	0.0	0.0	0.0
Subtotal		249.0	7929.0	31.8	21.7		2378.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1974	1	23.0	706.0	30.7	22.8	20.9	212.0	9.2	6.3	300.3	0.0	0.0	0.0
1974	2	24.0	781.0	32.5	27.9	21.7	234.0	9.8	6.5	299.6	0.0	0.0	0.0
1974	3	14.0	678.0	48.4	21.9	22.4	203.0	14.5	6.7	299.4	0.0	0.0	0.0
1974	4	30.0	979.0	32.6	32.6	23.4	294.0	9.8	7.0	300.3	0.0	0.0	0.0
1974	5	31.0	922.0	29.7	29.7	24.3	277.0	8.9	7.3	300.4	0.0	0.0	0.0
1974	6	29.0	892.0	30.8	29.7	25.2	268.0	9.2	7.6	300.4	0.0	0.0	0.0
1974	7	31.0	948.0	30.6	30.6	26.1	569.0	18.4	8.1	600.2	0.0	0.0	0.0
1974	8	24.0	825.0	34.4	26.6	27.0	495.0	20.6	8.6	600.0	0.0	0.0	0.0
1974	9	30.0	932.0	31.1	31.1	27.9	280.0	9.3	8.9	300.4	0.0	0.0	0.0
1974	10	21.0	959.0	45.7	30.9	28.9	288.0	13.7	9.2	300.3	0.0	0.0	0.0
1974	11	21.0	756.0	36.0	25.2	29.6	227.0	10.8	9.4	300.3	0.0	0.0	0.0
1974	12	27.0	934.0	34.6	30.1	30.5	280.0	10.4	9.7	299.8	0.0	0.0	0.0
Subtotal		305.0	10312.0	33.8	28.3		3627.0				0.0		
1975	1	23.0	780.0	33.9	25.2	31.3	234.0	10.2	9.9	300.0	0.0	0.0	0.0
1975	2	28.0	560.0	20.0	20.0	31.9	168.0	6.0	10.1	300.0	0.0	0.0	0.0
1975	3	0.0	0.0	0.0	0.0	31.9	0.0	0.0	10.1	0.0	0.0	0.0	0.0
1975	4	10.0	802.0	80.2	26.7	32.7	241.0	24.1	10.3	300.5	0.0	0.0	0.0
1975	5	30.0	1019.0	34.0	32.9	33.7	306.0	10.2	10.6	300.3	0.0	0.0	0.0
1975	6	30.0	935.0	31.2	31.2	34.6	561.0	18.7	11.2	600.0	0.0	0.0	0.0
1975	7	31.0	935.0	30.2	30.2	35.6	281.0	9.1	11.5	300.5	0.0	0.0	0.0
1975	8	28.0	857.0	30.6	27.6	36.4	257.0	9.2	11.7	299.9	0.0	0.0	0.0
1975	9	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1975	10	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1975	11	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1975	12	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
Subtotal		180.0	5888.0	32.7	16.1		2048.0				0.0		
1976	1	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1976	2	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1976	3	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1976	4	0.0	0.0	0.0	0.0	36.4	0.0	0.0	11.7	0.0	0.0	0.0	0.0
1976	5	7.0	604.0	86.3	19.5	37.0	362.0	51.7	12.1	599.3	0.0	0.0	0.0
1976	6	30.0	1041.0	34.7	34.7	38.1	312.0	10.4	12.4	299.7	0.0	0.0	0.0
1976	7	27.0	955.0	35.4	30.8	39.0	573.0	21.2	13.0	600.0	0.0	0.0	0.0
1976	8	29.0	948.0	32.7	30.6	40.0	284.0	9.8	13.3	299.6	0.0	0.0	0.0
1976	9	24.0	843.0	35.1	28.1	40.8	506.0	21.1	13.8	600.2	0.0	0.0	0.0
1976	10	27.0	878.0	32.5	28.3	41.7	263.0	9.7	14.0	299.5	0.0	0.0	0.0
1976	11	30.0	937.0	31.2	31.2	42.6	562.0	18.7	14.6	599.8	0.0	0.0	0.0
1976	12	26.0	849.0	32.7	27.4	43.5	255.0	9.8	14.9	300.4	0.0	0.0	0.0
Subtotal		200.0	7055.0	35.3	19.3		3117.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977	1	27.0	609.0	22.6	19.6	44.1	365.0	13.5	15.2	599.3	0.0	0.0	0.0
1977	2	27.0	697.0	25.8	24.9	44.8	418.0	15.5	15.6	599.7	0.0	0.0	0.0
1977	3	31.0	867.0	28.0	28.0	45.7	520.0	16.8	16.2	599.8	0.0	0.0	0.0
1977	4	27.0	799.0	29.6	26.6	46.5	479.0	17.7	16.6	599.5	0.0	0.0	0.0
1977	5	31.0	928.0	29.9	29.9	47.4	557.0	18.0	17.2	600.2	0.0	0.0	0.0
1977	6	29.0	767.0	26.4	25.6	48.2	460.0	15.9	17.7	599.7	0.0	0.0	0.0
1977	7	31.0	903.0	29.1	29.1	49.1	542.0	17.5	18.2	600.2	0.0	0.0	0.0
1977	8	31.0	891.0	28.7	28.7	49.9	535.0	17.3	18.7	600.4	0.0	0.0	0.0
1977	9	30.0	817.0	27.2	27.2	50.8	490.0	16.3	19.2	599.8	0.0	0.0	0.0
1977	10	30.0	857.0	28.6	27.6	51.6	514.0	17.1	19.7	599.8	0.0	0.0	0.0
1977	11	30.0	865.0	28.8	28.8	52.5	519.0	17.3	20.3	600.0	0.0	0.0	0.0
1977	12	31.0	878.0	28.3	28.3	53.4	527.0	17.0	20.8	600.2	0.0	0.0	0.0
Subtotal		355.0	9878.0	27.8	27.1		5926.0				0.0		
1978	1	28.0	749.0	26.8	24.2	54.1	449.0	16.0	21.2	599.5	0.0	0.0	0.0
1978	2	28.0	764.0	27.3	27.3	54.9	458.0	16.4	21.7	599.5	0.0	0.0	0.0
1978	3	5.0	376.0	75.2	12.1	55.3	226.0	45.2	21.9	601.1	0.0	0.0	0.0
1978	4	30.0	850.0	28.3	28.3	56.1	510.0	17.0	22.4	600.0	0.0	0.0	0.0
1978	5	26.0	788.0	30.3	25.4	56.9	473.0	18.2	22.9	600.3	0.0	0.0	0.0
1978	6	28.0	656.0	23.4	21.9	57.5	394.0	14.1	23.3	600.6	0.0	0.0	0.0
1978	7	5.0	208.0	41.6	6.7	57.8	125.0	25.0	23.4	601.0	0.0	0.0	0.0
1978	8	1.0	6.0	6.0	0.2	57.8	4.0	4.0	23.4	666.7	0.0	0.0	0.0
1978	9	0.0	0.0	0.0	0.0	57.8	0.0	0.0	23.4	0.0	0.0	0.0	0.0
1978	10	10.0	348.0	34.8	11.2	58.1	209.0	20.9	23.6	600.6	0.0	0.0	0.0
1978	11	25.0	1156.0	46.2	38.5	59.3	694.0	27.8	24.3	600.3	0.0	0.0	0.0
1978	12	30.0	870.0	29.0	28.1	60.1	522.0	17.4	24.8	600.0	0.0	0.0	0.0
Subtotal		216.0	6771.0	31.3	18.6		4064.0				0.0		
1979	1	24.0	642.0	26.8	20.7	60.8	385.0	16.0	25.2	599.7	0.0	0.0	0.0
1979	2	20.0	513.0	25.7	18.3	61.3	308.0	15.4	25.5	600.4	0.0	0.0	0.0
1979	3	0.0	0.0	0.0	0.0	61.3	0.0	0.0	25.5	0.0	0.0	0.0	0.0
1979	4	0.0	0.0	0.0	0.0	61.3	0.0	0.0	25.5	0.0	0.0	0.0	0.0
1979	5	6.0	292.0	48.7	9.4	61.6	175.0	29.2	25.7	599.3	0.0	0.0	0.0
1979	6	11.0	411.0	37.4	13.7	62.0	247.0	22.5	26.0	601.0	0.0	0.0	0.0
1979	7	28.0	832.0	29.7	26.8	62.8	499.0	17.8	26.5	599.8	0.0	0.0	0.0
1979	8	29.0	834.0	28.8	26.9	63.7	500.0	17.2	27.0	599.5	0.0	0.0	0.0
1979	9	26.0	821.0	31.6	27.4	64.5	493.0	19.0	27.5	600.5	0.0	0.0	0.0
1979	10	26.0	817.0	31.4	26.4	65.3	490.0	18.8	27.9	599.8	0.0	0.0	0.0
1979	11	30.0	782.0	26.1	26.1	66.1	469.0	15.6	28.4	599.7	0.0	0.0	0.0
1979	12	30.0	800.0	26.7	25.8	66.9	280.0	9.3	28.7	350.0	0.0	0.0	0.0
Subtotal		230.0	6744.0	29.3	18.5		3846.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980	1	10.0	442.0	44.2	14.3	67.3	265.0	26.5	29.0	599.5	0.0	0.0	0.0
1980	2	16.0	518.0	32.4	17.9	67.8	311.0	19.4	29.3	600.4	0.0	0.0	0.0
1980	3	0.0	0.0	0.0	0.0	67.8	0.0	0.0	29.3	0.0	0.0	0.0	0.0
1980	4	22.0	1072.0	48.7	35.7	68.9	643.0	29.2	29.9	599.8	0.0	0.0	0.0
1980	5	28.0	875.0	31.3	28.2	69.8	525.0	18.8	30.4	600.0	0.0	0.0	0.0
1980	6	30.0	800.0	26.7	26.7	70.6	480.0	16.0	30.9	600.0	0.0	0.0	0.0
1980	7	31.0	792.0	25.5	25.5	71.4	464.0	15.0	31.4	585.9	0.0	0.0	0.0
1980	8	31.0	836.0	27.0	27.0	72.2	502.0	16.2	31.9	600.5	0.0	0.0	0.0
1980	9	30.0	765.0	25.5	25.5	73.0	459.0	15.3	32.3	600.0	0.0	0.0	0.0
1980	10	31.0	815.0	26.3	26.3	73.8	0.0	0.0	32.3	0.0	0.0	0.0	0.0
1980	11	30.0	804.0	26.8	26.8	74.6	482.0	16.1	32.8	599.5	0.0	0.0	0.0
1980	12	15.0	387.0	25.8	12.5	75.0	232.0	15.5	33.1	599.5	0.0	0.0	0.0
Subtotal		274.0	8106.0	29.6	22.1		4363.0				0.0		
1981	1	9.0	375.0	41.7	12.1	75.4	225.0	25.0	33.3	600.0	0.0	0.0	0.0
1981	2	27.0	967.0	35.8	34.5	76.3	380.0	14.1	33.7	393.0	0.0	0.0	0.0
1981	3	12.0	323.0	26.9	10.4	76.6	189.0	15.8	33.9	585.1	0.0	0.0	0.0
1981	4	21.0	837.0	39.9	27.9	77.5	502.0	23.9	34.4	599.8	0.0	0.0	0.0
1981	5	11.0	312.0	28.4	10.1	77.8	187.0	17.0	34.5	599.4	0.0	0.0	0.0
1981	6	30.0	1078.0	35.9	35.9	78.9	657.0	21.9	35.2	609.5	0.0	0.0	0.0
1981	7	31.0	803.0	25.9	25.9	79.7	482.0	15.5	35.7	600.2	0.0	0.0	0.0
1981	8	19.0	520.0	27.4	16.8	80.2	312.0	16.4	36.0	600.0	0.0	0.0	0.0
1981	9	18.0	785.0	43.6	26.2	81.0	471.0	26.2	36.5	600.0	0.0	0.0	0.0
1981	10	31.0	845.0	27.3	27.3	81.8	507.0	16.4	37.0	600.0	0.0	0.0	0.0
1981	11	27.0	703.0	26.0	23.4	82.5	422.0	15.6	37.4	600.3	0.0	0.0	0.0
1981	12	18.0	514.0	28.6	16.6	83.0	308.0	17.1	37.7	599.2	0.0	0.0	0.0
Subtotal		254.0	8062.0	31.7	22.1		4642.0				0.0		
1982	1	14.0	658.0	47.0	21.2	83.7	395.0	28.2	38.1	600.3	0.0	0.0	0.0
1982	2	28.0	764.0	27.3	27.3	84.5	458.0	16.4	38.6	599.5	0.0	0.0	0.0
1982	3	12.0	514.0	42.8	16.6	85.0	308.0	25.7	38.9	599.2	0.0	0.0	0.0
1982	4	30.0	672.0	22.4	22.4	85.7	403.0	13.4	39.3	599.7	0.0	0.0	0.0
1982	5	23.0	445.0	19.3	14.4	86.1	267.0	11.6	39.5	600.0	0.0	0.0	0.0
1982	6	0.0	0.0	0.0	0.0	86.1	0.0	0.0	39.5	0.0	0.0	0.0	0.0
1982	7	0.0	0.0	0.0	0.0	86.1	0.0	0.0	39.5	0.0	0.0	0.0	0.0
1982	8	26.0	707.0	27.2	22.8	86.8	424.0	16.3	40.0	599.7	0.0	0.0	0.0
1982	9	23.0	332.0	14.4	11.1	87.1	199.0	8.7	40.2	599.4	0.0	0.0	0.0
1982	10	25.0	783.0	31.3	25.3	87.9	465.0	18.6	40.6	593.9	0.0	0.0	0.0
1982	11	16.0	637.0	39.8	21.2	88.6	382.0	23.9	41.0	599.7	0.0	0.0	0.0
1982	12	30.0	814.0	27.1	26.3	89.4	488.0	16.3	41.5	599.5	0.0	0.0	0.0
Subtotal		227.0	6326.0	27.9	17.3		3789.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	30.0	773.0	25.8	24.9	90.1	464.0	15.5	42.0	600.3	0.0	0.0	0.0
1983	2	25.0	594.0	23.8	21.2	90.7	459.0	18.4	42.4	772.7	0.0	0.0	0.0
1983	3	1.0	28.0	28.0	0.9	90.8	22.0	22.0	42.4	785.7	0.0	0.0	0.0
1983	4	24.0	850.0	35.4	28.3	91.6	66.0	2.8	42.5	77.6	0.0	0.0	0.0
1983	5	30.0	732.0	24.4	23.6	92.3	566.0	18.9	43.1	773.2	0.0	0.0	0.0
1983	6	30.0	677.0	22.6	22.6	93.0	523.0	17.4	43.6	772.5	0.0	0.0	0.0
1983	7	30.0	689.0	23.0	22.2	93.7	532.0	17.7	44.1	772.1	0.0	0.0	0.0
1983	8	29.0	640.0	22.1	20.6	94.4	495.0	17.1	44.6	773.4	0.0	0.0	0.0
1983	9	30.0	812.0	27.1	27.1	95.2	628.0	20.9	45.2	773.4	0.0	0.0	0.0
1983	10	14.0	408.0	29.1	13.2	95.6	315.0	22.5	45.6	772.1	0.0	0.0	0.0
1983	11	20.0	531.0	26.6	17.7	96.1	410.0	20.5	46.0	772.1	0.0	0.0	0.0
1983	12	17.0	591.0	34.8	19.1	96.7	457.0	26.9	46.4	773.3	0.0	0.0	0.0
Subtotal		280.0	7325.0	26.2	20.1		4937.0				0.0		
1984	1	18.0	733.0	40.7	23.6	97.4	567.0	31.5	47.0	773.5	0.0	0.0	0.0
1984	2	21.0	533.0	25.4	18.4	98.0	412.0	19.6	47.4	773.0	0.0	0.0	0.0
1984	3	23.0	562.0	24.4	18.1	98.5	434.0	18.9	47.8	772.2	0.0	0.0	0.0
1984	4	25.0	734.0	29.4	24.5	99.3	567.0	22.7	48.4	772.5	0.0	0.0	0.0
1984	5	27.0	655.0	24.3	21.1	99.9	506.0	18.7	48.9	772.5	0.0	0.0	0.0
1984	6	30.0	659.0	22.0	22.0	100.6	509.0	17.0	49.4	772.4	0.0	0.0	0.0
1984	7	31.0	672.0	21.7	21.7	101.2	519.0	16.7	49.9	772.3	0.0	0.0	0.0
1984	8	26.0	566.0	21.8	18.3	101.8	438.0	16.8	50.4	773.9	0.0	0.0	0.0
1984	9	4.0	172.0	43.0	5.7	102.0	133.0	33.3	50.5	773.3	0.0	0.0	0.0
1984	10	0.0	0.0	0.0	0.0	102.0	0.0	0.0	50.5	0.0	0.0	ERR	0.0
1984	11	16.0	529.0	33.1	17.6	102.5	409.0	25.6	50.9	773.2	0.0	0.0	0.0
1984	12	17.0	381.0	22.4	12.3	102.9	295.0	17.4	51.2	774.3	0.0	0.0	0.0
Subtotal		238.0	6196.0	26.0	16.9		4789.0				0.0		
1985	1	0.0	0.0	0.0	0.0	102.9	0.0	0.0	51.2	0.0	0.0	0.0	0.0
1985	2	0.0	0.0	0.0	0.0	102.9	0.0	0.0	51.2	0.0	0.0	0.0	0.0
1985	3	16.0	528.0	33.0	17.0	103.4	408.0	25.5	51.6	772.7	0.0	0.0	0.0
1985	4	22.0	711.0	32.3	23.7	104.1	550.0	25.0	52.2	773.6	0.0	0.0	0.0
1985	5	31.0	828.0	26.7	26.7	105.0	640.0	20.6	52.8	772.9	0.0	0.0	0.0
1985	6	23.0	731.0	31.8	24.4	105.7	565.0	24.6	53.4	772.9	0.0	0.0	0.0
1985	7	31.0	600.0	19.4	19.4	106.3	464.0	15.0	53.8	773.3	0.0	0.0	0.0
1985	8	30.0	626.0	20.9	20.2	106.9	484.0	16.1	54.3	773.2	0.0	0.0	0.0
1985	9	5.0	181.0	36.2	6.0	107.1	140.0	28.0	54.5	773.5	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	107.1	0.0	0.0	54.5	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	107.1	0.0	0.0	54.5	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	107.1	0.0	0.0	54.5	0.0	0.0	0.0	0.0
Subtotal		158.0	4205.0	26.6	11.5		3251.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #16 (L-3). (SW 3-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	21.0	959.0	45.7	30.9	108.1	741.0	35.3	55.2	772.7	0.0	0.0	0.0
1986	2	28.0	850.0	30.4	30.4	108.9	657.0	23.5	55.9	772.9	0.0	0.0	0.0
1986	3	11.0	530.0	48.2	17.1	109.4	410.0	37.3	56.3	773.6	0.0	0.0	0.0
1986	4	23.0	758.0	33.0	25.3	110.2	586.0	25.5	56.9	773.1	0.0	0.0	0.0
1986	5	28.0	707.0	25.3	22.8	110.9	707.0	25.3	57.6	1000.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	110.9	0.0	0.0	57.6	0.0	0.0	0.0	0.0
1986	7	13.0	681.0	52.4	22.0	111.6	526.0	40.5	58.1	772.4	0.0	0.0	0.0
1986	8	4.0	313.0	78.3	10.1	111.9	242.0	60.5	58.3	773.2	0.0	0.0	0.0
1986	9	12.0	693.0	57.8	23.1	112.6	536.0	44.7	58.9	773.4	0.0	0.0	0.0
1986	10	28.0	842.0	30.1	27.2	113.4	651.0	23.3	59.5	773.2	0.0	0.0	0.0
1986	11	19.0	757.0	39.8	25.2	114.2	585.0	30.8	60.1	772.8	0.0	0.0	0.0
1986	12	31.0	797.0	25.7	25.7	115.0	714.0	23.0	60.8	895.9	0.0	0.0	0.0
Subtotal		218.0	7887.0	36.2	21.6		6355.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #21 (G-32). (NE 32-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	11.0	200.0	18.2	6.5	0.2	380.0	34.5	0.4	1900.0	0.0	0.0	0.0
1985	2	7.0	123.0	17.6	4.4	0.3	234.0	33.4	0.6	1902.4	0.0	0.0	0.0
1985	3	1.0	20.0	20.0	0.6	0.3	38.0	38.0	0.7	1900.0	0.0	0.0	0.0
1985	4	15.0	225.0	15.0	7.5	0.6	428.0	28.5	1.1	1902.2	0.0	0.0	0.0
1985	5	19.0	261.0	13.7	8.4	0.8	496.0	26.1	1.6	1900.4	0.0	0.0	0.0
1985	6	6.0	44.0	7.3	1.5	0.9	84.0	14.0	1.7	1909.1	0.0	0.0	0.0
1985	7	19.0	320.0	16.8	10.3	1.2	608.0	32.0	2.3	1900.0	0.0	0.0	0.0
1985	8	20.0	246.0	12.3	7.9	1.4	467.0	23.4	2.7	1898.4	0.0	0.0	0.0
1985	9	27.0	257.0	9.5	8.6	1.7	488.0	18.1	3.2	1898.8	0.0	0.0	0.0
1985	10	21.0	166.0	7.9	5.4	1.9	315.0	15.0	3.5	1897.6	0.0	0.0	0.0
1985	11	10.0	203.0	20.3	6.8	2.1	386.0	38.6	3.9	1901.5	0.0	0.0	0.0
1985	12	5.0	97.0	19.4	3.1	2.2	184.0	36.8	4.1	1896.9	0.0	0.0	0.0
Subtotal		161.0	2162.0	13.4	5.9		4108.0				0.0		
1986	1	11.0	208.0	18.9	6.7	2.4	395.0	35.9	4.5	1899.0	0.0	0.0	0.0
1986	2	10.0	158.0	15.8	5.6	2.5	300.0	30.0	4.8	1898.7	0.0	0.0	0.0
1986	3	10.0	114.0	11.4	3.7	2.6	217.0	21.7	5.0	1903.5	0.0	0.0	0.0
1986	4	9.0	150.0	16.7	5.0	2.8	285.0	31.7	5.3	1900.0	0.0	0.0	0.0
1986	5	4.0	74.0	18.5	2.4	2.9	141.0	35.3	5.4	1905.4	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	2.9	0.0	0.0	5.4	0.0	0.0	0.0	0.0
1986	7	4.0	82.0	20.5	2.6	2.9	156.0	39.0	5.6	1902.4	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	2.9	0.0	0.0	5.6	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	2.9	0.0	0.0	5.6	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	2.9	0.0	0.0	5.6	0.0	0.0	0.0	0.0
1986	11	5.0	83.0	16.6	2.8	3.0	157.0	31.4	5.8	1891.6	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	3.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0
Subtotal		53.0	869.0	16.4	2.4		1651.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #23 (N-22). (SW 22-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	5	5.0	270.0	54.0	8.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	7	4.0	113.0	28.3	3.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	8	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	10	25.0	2113.0	84.5	68.2	2.5	1058.0	42.3	1.1	500.7	0.0	0.0	0.0
1983	11	30.0	1798.0	59.9	59.9	4.3	611.0	20.4	1.7	339.8	0.0	0.0	0.0
1983	12	30.0	1731.0	57.7	55.8	6.0	589.0	19.6	2.3	340.3	0.0	0.0	0.0
Subtotal		94.0	6025.0	64.1	24.6		2258.0				0.0		
1984	1	31.0	1750.0	56.5	56.5	7.8	595.0	19.2	2.9	340.0	0.0	0.0	0.0
1984	2	29.0	1589.0	54.8	54.8	9.4	540.0	18.6	3.4	339.8	0.0	0.0	0.0
1984	3	31.0	1723.0	55.6	55.6	11.1	586.0	18.9	4.0	340.1	0.0	0.0	0.0
1984	4	30.0	1564.0	52.1	52.1	12.7	532.0	17.7	4.5	340.2	0.0	0.0	0.0
1984	5	31.0	1744.0	56.3	56.3	14.4	593.0	19.1	5.1	340.0	0.0	0.0	0.0
1984	6	30.0	1488.0	49.6	49.6	15.9	506.0	16.9	5.6	340.1	0.0	0.0	0.0
1984	7	31.0	1458.0	47.0	47.0	17.3	496.0	16.0	6.1	340.2	0.0	0.0	0.0
1984	8	31.0	1435.0	46.3	46.3	18.8	488.0	15.7	6.6	340.1	0.0	0.0	0.0
1984	9	30.0	1406.0	46.9	46.9	20.2	478.0	15.9	7.1	340.0	0.0	0.0	0.0
1984	10	31.0	1476.0	47.6	47.6	21.7	502.0	16.2	7.6	340.1	0.0	0.0	0.0
1984	11	30.0	1373.0	45.8	45.8	23.0	467.0	15.6	8.0	340.1	0.0	0.0	0.0
1984	12	31.0	1467.0	47.3	47.3	24.5	498.0	16.1	8.5	339.5	0.0	0.0	0.0
Subtotal		366.0	18473.0	50.5	50.5		6281.0				0.0		
1985	1	31.0	1423.0	45.9	45.9	25.9	484.0	15.6	9.0	340.1	0.0	0.0	0.0
1985	2	28.0	1334.0	47.6	47.6	27.3	454.0	16.2	9.5	340.3	0.0	0.0	0.0
1985	3	31.0	1412.0	45.5	45.5	28.7	480.0	15.5	10.0	339.9	0.0	0.0	0.0
1985	4	30.0	1367.0	45.6	45.6	30.0	465.0	15.5	10.4	340.2	0.0	0.0	0.0
1985	5	31.0	1646.0	53.1	53.1	31.7	560.0	18.1	11.0	340.2	0.0	0.0	0.0
1985	6	30.0	1454.0	48.5	48.5	33.1	494.0	16.5	11.5	339.8	0.0	0.0	0.0
1985	7	31.0	1322.0	42.6	42.6	34.5	450.0	14.5	11.9	340.4	0.0	0.0	0.0
1985	8	11.0	476.0	43.3	15.4	34.9	162.0	14.7	12.1	340.3	0.0	0.0	0.0
1985	9	18.0	472.0	26.2	15.7	35.4	160.0	8.9	12.2	339.0	0.0	0.0	0.0
1985	10	21.0	890.0	42.4	28.7	36.3	303.0	14.4	12.6	340.4	0.0	0.0	0.0
1985	11	30.0	1295.0	43.2	43.2	37.6	440.0	14.7	13.0	339.8	0.0	0.0	0.0
1985	12	31.0	1224.0	39.5	39.5	38.8	416.0	13.4	13.4	339.9	0.0	0.0	0.0
Subtotal		323.0	14315.0	44.3	39.2		4868.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #23 (N-22). (SW 22-26N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	1193.0	38.5	38.5	40.0	406.0	13.1	13.8	340.3	0.0	0.0	0.0
1986	2	28.0	1111.0	39.7	39.7	41.1	378.0	13.5	14.2	340.2	0.0	0.0	0.0
1986	3	31.0	1344.0	43.4	43.4	42.5	457.0	14.7	14.6	340.0	0.0	0.0	0.0
1986	4	30.0	1260.0	42.0	42.0	43.7	428.0	14.3	15.1	339.7	0.0	0.0	0.0
1986	5	31.0	1338.0	43.2	43.2	45.1	455.0	14.7	15.5	340.1	0.0	0.0	0.0
1986	6	30.0	1073.0	35.8	35.8	46.1	365.0	12.2	15.9	340.2	0.0	0.0	0.0
1986	7	31.0	1045.0	33.7	33.7	47.2	355.0	11.5	16.3	339.7	0.0	0.0	0.0
1986	8	31.0	1511.0	48.7	48.7	48.7	514.0	16.6	16.8	340.2	0.0	0.0	0.0
1986	9	30.0	1125.0	37.5	37.5	49.8	383.0	12.8	17.1	340.4	0.0	0.0	0.0
1986	10	31.0	942.0	30.4	30.4	50.8	320.0	10.3	17.5	339.7	0.0	0.0	0.0
1986	11	30.0	1194.0	39.8	39.8	51.9	406.0	13.5	17.9	340.0	0.0	0.0	0.0
1986	12	30.0	1298.0	43.3	41.9	53.2	601.0	20.0	18.5	463.0	0.0	0.0	0.0
Subtotal		364.0	14434.0	39.7	39.5		5068.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #24 (J-8). (SE 8-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	10	12.0	149.0	12.4	4.8	0.0	60.0	5.0	0.1	402.7	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Subtotal		12.0	149.0	12.4	1.6		60.0				0.0		
1986	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	9	8.0	61.0	7.6	2.0	0.1	24.0	3.0	0.1	393.4	0.0	0.0	0.0
1986	10	31.0	135.0	4.4	4.4	0.2	54.0	1.7	0.1	400.0	0.0	0.0	0.0
1986	11	13.0	103.0	7.9	3.4	0.3	41.0	3.2	0.2	398.1	0.0	0.0	0.0
1986	12	27.0	110.0	4.1	3.5	0.4	51.0	1.9	0.2	463.6	0.0	0.0	0.0
Subtotal		79.0	409.0	5.2	1.1		170.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #25 (B-32). (NE 32-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	8.0	4386.0	548.3	141.5	4.4	2632.0	329.0	2.6	600.1	0.0	0.0	0.0
1985	2	28.0	15290.0	546.1	546.1	19.7	9174.0	327.6	11.8	600.0	0.0	0.0	0.0
1985	3	27.0	13800.0	511.1	445.2	33.5	8280.0	306.7	20.1	600.0	-0.0	0.0	0.0
1985	4	30.0	15060.0	502.0	502.0	48.5	9036.0	301.2	29.1	600.0	0.0	0.0	0.0
1985	5	31.0	14639.0	472.2	472.2	63.2	5856.0	188.9	35.0	400.0	0.0	0.0	0.0
1985	6	28.0	13657.0	487.8	455.2	76.8	5463.0	195.1	40.4	400.0	0.0	0.0	0.0
1985	7	30.0	15908.0	530.3	513.2	92.7	6363.0	212.1	46.8	400.0	0.0	0.0	0.0
1985	8	29.0	14371.0	495.6	463.6	107.1	5748.0	198.2	52.6	400.0	0.0	0.0	0.0
1985	9	29.0	16008.0	552.0	533.6	123.1	6403.0	220.8	59.0	400.0	0.0	0.0	0.0
1985	10	31.0	15643.0	504.6	504.6	138.8	6257.0	201.8	65.2	400.0	0.0	0.0	0.0
1985	11	27.0	15703.0	581.6	523.4	154.5	6281.0	232.6	71.5	400.0	0.0	0.0	0.0
1985	12	29.0	15639.0	539.3	504.5	170.1	6256.0	215.7	77.7	400.0	0.0	0.0	0.0
Subtotal		327.0	170104.0	520.2	466.0		77749.0				0.0		
1986	1	30.0	15255.0	508.5	492.1	185.4	6102.0	203.4	83.9	400.0	0.0	0.0	0.0
1986	2	26.0	14590.0	561.2	521.1	199.9	5836.0	224.5	89.7	400.0	0.0	0.0	0.0
1986	3	30.0	19118.0	637.3	616.7	219.1	7648.0	254.9	97.3	400.0	0.0	0.0	0.0
1986	4	30.0	21436.0	714.5	714.5	240.5	8574.0	285.8	105.9	400.0	0.0	0.0	0.0
1986	5	31.0	22383.0	722.0	722.0	262.9	8953.0	288.8	114.9	400.0	0.0	0.0	0.0
1986	6	30.0	21150.0	705.0	705.0	284.0	17301.0	576.7	132.2	818.0	0.0	0.0	0.0
1986	7	29.0	20036.0	690.9	646.3	304.1	19996.0	689.5	152.2	998.0	0.0	0.0	0.0
1986	8	15.0	9301.0	620.1	300.0	313.4	7952.0	530.1	160.1	855.0	0.0	0.0	0.0
1986	9	21.0	14101.0	671.5	470.0	327.5	13480.0	641.9	173.6	956.0	0.0	0.0	0.0
1986	10	28.0	17632.0	629.7	568.8	345.1	16398.0	585.6	190.0	930.0	0.0	0.0	0.0
1986	11	29.0	15330.0	528.6	511.0	360.4	14717.0	507.5	204.7	960.0	0.0	0.0	0.0
1986	12	30.0	16190.0	539.7	522.3	376.6	17864.0	595.5	222.6	1103.4	0.0	0.0	0.0
Subtotal		329.0	206522.0	627.7	565.8		144821.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #26 (K-31). (SW 31-25N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	BOPPD	BOPCD	CUM MBO	GAS MCF/M	MCF/D	CUM MMCF	GOR SCF/BBL	WATER Month	BWPD	CUM MBW
1985	5	1.0	138.0	138.0	4.5	0.1	69.0	69.0	0.1	500.0	0.0	0.0	0.0
1985	6	29.0	498.0	17.2	16.6	0.6	349.0	12.0	0.4	700.8	0.0	0.0	0.0
1985	7	31.0	183.0	5.9	5.9	0.8	128.0	4.1	0.5	699.5	0.0	0.0	0.0
1985	8	31.0	168.0	5.4	5.4	1.0	118.0	3.8	0.7	702.4	0.0	0.0	0.0
1985	9	30.0	145.0	4.8	4.8	1.1	102.0	3.4	0.8	703.4	0.0	0.0	0.0
1985	10	31.0	134.0	4.3	4.3	1.3	94.0	3.0	0.9	701.5	0.0	0.0	0.0
1985	11	30.0	125.0	4.2	4.2	1.4	88.0	2.9	0.9	704.0	0.0	0.0	0.0
1985	12	31.0	134.0	4.3	4.3	1.5	94.0	3.0	1.0	701.5	0.0	0.0	0.0
Subtotal		214.0	1525.0	7.1	6.2		1042.0				0.0		
1986	1	31.0	122.0	3.9	3.9	1.6	85.0	2.7	1.1	696.7	0.0	0.0	0.0
1986	2	25.0	106.0	4.2	3.8	1.8	74.0	3.0	1.2	698.1	0.0	0.0	0.0
1986	3	29.0	110.0	3.8	3.5	1.9	77.0	2.7	1.3	700.0	0.0	0.0	0.0
1986	4	17.0	93.0	5.5	3.1	2.0	65.0	3.8	1.3	698.9	0.0	0.0	0.0
1986	5	31.0	112.0	3.6	3.6	2.1	78.0	2.5	1.4	696.4	0.0	0.0	0.0
1986	6	30.0	58.0	1.9	1.9	2.1	41.0	1.4	1.5	706.9	0.0	0.0	0.0
1986	7	31.0	96.0	3.1	3.1	2.2	67.0	2.2	1.5	697.9	0.0	0.0	0.0
1986	8	8.0	20.0	2.5	0.6	2.2	14.0	1.8	1.5	700.0	0.0	0.0	0.0
1986	9	11.0	51.0	4.6	1.7	2.3	36.0	3.3	1.6	705.9	0.0	0.0	0.0
1986	10	31.0	40.0	1.3	1.3	2.3	28.0	0.9	1.6	700.0	0.0	0.0	0.0
1986	11	29.0	163.0	5.6	5.4	2.5	114.0	3.9	1.7	699.4	0.0	0.0	0.0
1986	12	31.0	82.0	2.6	2.6	2.6	66.0	2.1	1.8	804.9	0.0	0.0	0.0
Subtotal		304.0	1053.0	3.5	2.9		745.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #27 (K-8). (SE 8-24N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	5	27.0	1026.0	38.0	33.1	1.0	513.0	19.0	0.5	500.0	0.0	0.0	0.0
1985	6	30.0	499.0	16.6	16.6	1.5	266.0	8.9	0.8	533.1	0.0	0.0	0.0
1985	7	31.0	498.0	16.1	16.1	2.0	265.0	8.5	1.0	532.1	0.0	0.0	0.0
1985	8	31.0	480.0	15.5	15.5	2.5	256.0	8.3	1.3	533.3	0.0	0.0	0.0
1985	9	30.0	470.0	15.7	15.7	3.0	251.0	8.4	1.6	534.0	0.0	0.0	0.0
1985	10	31.0	492.0	15.9	15.9	3.5	262.0	8.5	1.8	532.5	0.0	0.0	0.0
1985	11	18.0	439.0	24.4	14.6	3.9	234.0	13.0	2.0	533.0	0.0	0.0	0.0
1985	12	16.0	457.0	28.6	14.7	4.4	244.0	15.3	2.3	533.9	0.0	0.0	0.0
Subtotal		214.0	4361.0	20.4	17.8		2291.0				0.0		
1986	1	28.0	474.0	16.9	15.3	4.8	253.0	9.0	2.5	533.8	0.0	0.0	0.0
1986	2	27.0	421.0	15.6	15.0	5.3	224.0	8.3	2.8	532.1	0.0	0.0	0.0
1986	3	31.0	431.0	13.9	13.9	5.7	230.0	7.4	3.0	533.6	0.0	0.0	0.0
1986	4	17.0	445.0	26.2	14.8	6.1	237.0	13.9	3.2	532.6	0.0	0.0	0.0
1986	5	31.0	417.0	13.5	13.5	6.5	222.0	7.2	3.5	532.4	0.0	0.0	0.0
1986	6	30.0	405.0	13.5	13.5	7.0	216.0	7.2	3.7	533.3	0.0	0.0	0.0
1986	7	31.0	380.0	12.3	12.3	7.3	203.0	6.5	3.9	534.2	0.0	0.0	0.0
1986	8	8.0	82.0	10.3	2.6	7.4	44.0	5.5	3.9	536.6	0.0	0.0	0.0
1986	9	15.0	196.0	13.1	6.5	7.6	104.0	6.9	4.0	530.6	0.0	0.0	0.0
1986	10	30.0	246.0	8.2	7.9	7.9	126.0	4.2	4.2	512.2	0.0	0.0	0.0
1986	11	29.0	572.0	19.7	19.1	8.4	305.0	10.5	4.5	533.2	0.0	0.0	0.0
1986	12	31.0	311.0	10.0	10.0	8.7	192.0	6.2	4.6	617.4	0.0	0.0	0.0
Subtotal		308.0	4380.0	14.2	12.0		2356.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #28 (B-29). (NE 29-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	2	19.0	10878.0	572.5	388.5	10.9	6527.0	343.5	6.5	600.0	0.0	0.0	0.0
1986	3	29.0	24380.0	840.7	786.5	35.3	16822.0	580.1	23.3	690.0	0.0	0.0	0.0
1986	4	28.0	23157.0	827.0	771.9	58.4	15978.0	570.6	39.3	690.0	0.0	0.0	0.0
1986	5	31.0	28898.0	932.2	932.2	87.3	19940.0	643.2	59.3	690.0	0.0	0.0	0.0
1986	6	30.0	26720.0	890.7	890.7	114.0	19559.0	652.0	78.8	732.0	0.0	0.0	0.0
1986	7	29.0	26242.0	904.9	846.5	140.3	20023.0	690.4	98.8	763.0	0.0	0.0	0.0
1986	8	26.0	22592.0	868.9	728.8	162.9	18525.0	712.5	117.4	820.0	0.0	0.0	0.0
1986	9	21.0	19507.0	928.9	650.2	182.4	17264.0	822.1	134.6	885.0	0.0	0.0	0.0
1986	10	31.0	25686.0	828.6	828.6	208.1	22655.0	730.8	157.3	882.0	0.0	0.0	0.0
1986	11	26.0	24098.0	926.8	803.3	232.2	17880.0	687.7	175.2	742.0	0.0	0.0	0.0
1986	12	31.0	24367.0	786.0	786.0	256.5	24284.0	783.4	199.5	996.6	0.0	0.0	0.0
Subtotal		301.0	256525.0	852.2	768.0		199457.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #29 (E-6). (NW 6-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	12	1.0	482.0	482.0	15.5	0.5	265.0	265.0	0.3	549.8	0.0	0.0	0.0
Subtotal		1.0	482.0	482.0	15.5		265.0				0.0		
1986	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	29.0	3178.0	109.6	102.5	3.2	1106.0	38.1	1.1	348.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	3.2	0.0	0.0	1.1	0.0	0.0	0.0	0.0
1986	5	4.0	2717.0	679.3	87.6	5.9	946.0	236.5	2.1	348.2	0.0	0.0	0.0
1986	6	30.0	18477.0	615.9	615.9	24.4	23835.0	794.5	25.9	1290.0	0.0	0.0	0.0
1986	7	30.0	19130.0	637.7	617.1	43.5	19895.0	663.2	45.8	1040.0	0.0	0.0	0.0
1986	8	24.0	14168.0	590.3	457.0	57.7	14791.0	616.3	60.6	1044.0	0.0	0.0	0.0
1986	9	27.0	12695.0	470.2	423.2	70.4	15361.0	568.9	75.9	1210.0	0.0	0.0	0.0
1986	10	29.0	15034.0	518.4	485.0	85.4	18687.0	644.4	94.6	1243.0	0.0	0.0	0.0
1986	11	30.0	8694.0	289.8	289.8	94.1	8137.0	271.2	102.8	935.9	0.0	0.0	0.0
1986	12	28.0	12956.0	462.7	417.9	107.0	10539.0	376.4	113.3	813.4	0.0	0.0	0.0
Subtotal		231.0	107049.0	463.4	293.3		113297.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #30 (F-30). (NW 30-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	9	20.0	3354.0	167.7	111.8	3.4	2012.0	100.6	2.0	599.9	0.0	0.0	0.0
1986	10	29.0	9212.0	317.7	297.2	12.6	15384.0	530.5	17.4	1670.0	0.0	0.0	0.0
1986	11	29.0	10330.0	356.2	344.3	22.9	11156.0	384.7	28.6	1080.0	0.0	0.0	0.0
1986	12	19.0	6590.0	346.8	212.6	29.5	8094.0	426.0	36.6	1228.2	0.0	0.0	0.0
Subtotal		97.0	29486.0	304.0	241.7		36646.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #31 (N-31). (SW 31-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	4	8.0	1303.0	162.9	43.4	1.3	899.0	112.4	0.9	689.9	0.0	0.0	0.0
1986	5	8.0	2124.0	265.5	68.5	3.4	1440.0	180.0	2.3	678.0	0.0	0.0	0.0
1986	6	30.0	8176.0	272.5	272.5	11.6	3270.0	109.0	5.6	400.0	0.0	0.0	0.0
1986	7	30.0	8205.0	273.5	264.7	19.8	3610.0	120.3	9.2	440.0	0.0	0.0	0.0
1986	8	31.0	8638.0	278.6	278.6	28.4	4319.0	139.3	13.5	500.0	0.0	0.0	0.0
1986	9	30.0	7854.0	261.8	261.8	36.3	4712.0	157.1	18.3	599.9	0.0	0.0	0.0
1986	10	31.0	7393.0	238.5	238.5	43.7	4436.0	143.1	22.7	600.0	0.0	0.0	0.0
1986	11	18.0	5600.0	311.1	186.7	49.3	3920.0	217.8	26.6	700.0	0.0	0.0	0.0
1986	12	25.0	5451.0	218.0	175.8	54.7	3158.0	126.3	29.8	579.3	0.0	0.0	0.0
Subtotal		211.0	54744.0	259.5	199.1		29764.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., COU #32 (J-6). (SE 32-25N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5	1.0	150.0	150.0	4.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	15.0	1559.0	103.9	52.0	1.7	7795.0	519.7	7.8	5000.0	0.0	0.0	0.0
1986	7	30.0	4455.0	148.5	143.7	6.2	8197.0	273.2	16.0	1840.0	0.0	0.0	0.0
1986	8	28.0	4626.0	165.2	149.2	10.8	7679.0	274.3	23.7	1660.0	0.0	0.0	0.0
1986	9	28.0	5315.0	189.8	177.2	16.1	6750.0	241.1	30.4	1270.0	0.0	0.0	0.0
1986	10	30.0	3789.0	126.3	122.2	19.9	7331.0	244.4	37.8	1934.8	0.0	0.0	0.0
1986	11	27.0	3409.0	126.3	113.6	23.3	8113.0	300.5	45.9	2379.9	0.0	0.0	0.0
1986	12	30.0	4301.0	143.4	138.7	27.6	6778.0	225.9	52.6	1575.9	0.0	0.0	0.0
Subtotal		189.0	27604.0	146.1	112.7		52643.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1967	1	22.0	1307.0	59.4	42.2	1.3	9802.0	445.5	9.8	7499.6	418.0	19.0	0.4
1967	2	0.0	0.0	0.0	0.0	1.3	0.0	0.0	9.8	0.0	0.0	0.0	0.4
1967	3	0.0	0.0	0.0	0.0	1.3	0.0	0.0	9.8	0.0	0.0	0.0	0.4
1967	4	0.0	0.0	0.0	0.0	1.3	0.0	0.0	9.8	0.0	0.0	0.0	0.4
1967	5	18.0	1175.0	65.3	37.9	2.5	8812.0	489.6	18.6	7499.6	380.0	21.1	0.8
1967	6	30.0	1563.0	52.1	52.1	4.0	11722.0	390.7	30.3	7499.7	458.0	15.3	1.3
1967	7	31.0	1266.0	40.8	40.8	5.3	9495.0	306.3	39.8	7500.0	286.0	9.2	1.5
1967	8	23.0	1361.0	59.2	43.9	6.7	10925.0	475.0	50.8	8027.2	154.0	6.7	1.7
1967	9	0.0	0.0	0.0	0.0	6.7	0.0	0.0	50.8	0.0	0.0	0.0	1.7
1967	10	16.0	987.0	61.7	31.8	7.7	7923.0	495.2	58.7	8027.4	390.0	24.4	2.1
1967	11	6.0	316.0	52.7	10.5	8.0	2536.0	422.7	61.2	8025.3	36.0	6.0	2.1
1967	12	0.0	0.0	0.0	0.0	8.0	0.0	0.0	61.2	0.0	0.0	0.0	2.1
Subtotal		146.0	7975.0	54.6	21.8		61215.0				2122.0		
1968	1	2.0	128.0	64.0	4.1	8.1	1027.0	513.5	62.2	8023.4	0.0	0.0	2.1
1968	2	2.0	91.0	45.5	3.1	8.2	730.0	365.0	63.0	8022.0	0.0	0.0	2.1
1968	3	2.0	76.0	38.0	2.5	8.3	610.0	305.0	63.6	8026.3	0.0	0.0	2.1
1968	4	8.0	777.0	97.1	25.9	9.0	6235.0	779.4	69.8	8024.5	84.0	10.5	2.2
1968	5	21.0	1103.0	52.5	35.6	10.1	8854.0	421.6	78.7	8027.2	309.0	14.7	2.5
1968	6	25.0	702.0	28.1	23.4	10.9	5635.0	225.4	84.3	8027.1	432.0	17.3	2.9
1968	7	10.0	547.0	54.7	17.6	11.4	4391.0	439.1	88.7	8027.4	38.0	3.8	3.0
1968	8	6.0	478.0	79.7	15.4	11.9	2271.0	378.5	91.0	4751.0	94.0	15.7	3.1
1968	9	20.0	823.0	41.2	27.4	12.7	3909.0	195.5	94.9	4749.7	0.0	0.0	3.1
1968	10	8.0	618.0	77.3	19.9	13.3	2056.0	257.0	96.9	3326.9	117.0	14.6	3.2
1968	11	10.0	632.0	63.2	21.1	14.0	3002.0	300.2	99.9	4750.0	121.0	12.1	3.3
1968	12	15.0	595.0	39.7	19.2	14.5	2826.0	188.4	102.8	4749.6	191.0	12.7	3.5
Subtotal		129.0	6570.0	50.9	18.0		41546.0				1386.0		
1969	1	7.0	280.0	40.0	9.0	14.8	1330.0	190.0	104.1	4750.0	50.0	7.1	3.6
1969	2	1.0	35.0	35.0	1.3	14.9	166.0	166.0	104.3	4742.9	8.0	8.0	3.6
1969	3	1.0	28.0	28.0	0.9	14.9	133.0	133.0	104.4	4750.0	0.0	0.0	3.6
1969	4	13.0	526.0	40.5	17.5	15.4	2498.0	192.2	106.9	4749.0	282.0	21.7	3.8
1969	5	26.0	1140.0	43.8	36.8	16.6	5415.0	208.3	112.3	4750.0	471.0	18.1	4.3
1969	6	28.0	977.0	34.9	32.6	17.5	4484.0	160.1	116.8	4589.6	184.0	6.6	4.5
1969	7	29.0	839.0	28.9	27.1	18.4	3985.0	137.4	120.8	4749.7	405.0	14.0	4.9
1969	8	26.0	1084.0	41.7	35.0	19.5	3686.0	141.8	124.5	3400.4	441.0	17.0	5.3
1969	9	27.0	935.0	34.6	31.2	20.4	3179.0	117.7	127.6	3400.0	353.0	13.1	5.7
1969	10	21.0	611.0	29.1	19.7	21.0	2077.0	98.9	129.7	3399.3	48.0	2.3	5.7
1969	11	18.0	1018.0	56.6	33.9	22.0	3461.0	192.3	133.2	3399.8	131.0	7.3	5.9
1969	12	9.0	451.0	50.1	14.5	22.5	1533.0	170.3	134.7	3399.1	86.0	9.6	6.0
Subtotal		206.0	7924.0	38.5	21.7		31947.0				2459.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1970	1	11.0	409.0	37.2	13.2	22.9	1391.0	126.5	136.1	3401.0	154.0	14.0	6.1
1970	2	19.0	522.0	27.5	18.6	23.4	1775.0	93.4	137.9	3400.4	83.0	4.4	6.2
1970	3	1.0	35.0	35.0	1.1	23.4	119.0	119.0	138.0	3400.0	0.0	0.0	6.2
1970	4	1.0	37.0	37.0	1.2	23.5	126.0	126.0	138.1	3405.4	0.0	0.0	6.2
1970	5	14.0	908.0	64.9	29.3	24.4	3087.0	220.5	141.2	3399.8	275.0	19.6	6.5
1970	6	22.0	1478.0	67.2	49.3	25.9	5025.0	228.4	146.2	3399.9	244.0	11.1	6.7
1970	7	15.0	1098.0	73.2	35.4	27.0	3733.0	248.9	150.0	3399.8	114.0	7.6	6.8
1970	8	11.0	840.0	76.4	27.1	27.8	2402.0	218.4	152.4	2859.5	57.0	5.2	6.9
1970	9	15.0	1037.0	69.1	34.6	28.8	2966.0	197.7	155.3	2860.2	74.0	4.9	7.0
1970	10	17.0	1308.0	76.9	42.2	30.1	3740.0	220.0	159.1	2859.3	257.0	15.1	7.2
1970	11	7.0	692.0	98.9	23.1	30.8	1979.0	282.7	161.1	2859.8	90.0	12.9	7.3
1970	12	13.0	935.0	71.9	30.2	31.8	2674.0	205.7	163.7	2859.9	219.0	16.8	7.5
Subtotal		146.0	9299.0	63.7	25.5		29017.0				1567.0		
1971	1	2.0	199.0	99.5	6.4	32.0	569.0	284.5	164.3	2859.3	54.0	27.0	7.6
1971	2	3.0	328.0	109.3	11.7	32.3	938.0	312.7	165.2	2859.8	44.0	14.7	7.6
1971	3	10.0	1061.0	106.1	34.2	33.4	3034.0	303.4	168.3	2859.6	71.0	7.1	7.7
1971	4	20.0	1122.0	56.1	37.4	34.5	3209.0	160.5	171.5	2860.1	373.0	18.7	8.1
1971	5	28.0	1210.0	43.2	39.0	35.7	3461.0	123.6	174.9	2860.3	390.0	13.9	8.5
1971	6	30.0	1070.0	35.7	35.7	36.8	3060.0	102.0	178.0	2859.8	436.0	14.5	8.9
1971	7	12.0	536.0	44.7	17.3	37.3	1533.0	127.8	179.5	2860.1	117.0	9.8	9.0
1971	8	1.0	21.0	21.0	0.7	37.3	61.0	61.0	179.6	2904.8	4.0	4.0	9.0
1971	9	1.0	18.0	18.0	0.6	37.3	51.0	51.0	179.6	2833.3	5.0	5.0	9.0
1971	10	2.0	27.0	13.5	0.9	37.4	77.0	38.5	179.7	2851.9	11.0	5.5	9.0
1971	11	2.0	21.0	10.5	0.7	37.4	60.0	30.0	179.8	2857.1	12.0	6.0	9.1
1971	12	1.0	12.0	12.0	0.4	37.4	34.0	34.0	179.8	2833.3	8.0	8.0	9.1
Subtotal		112.0	5625.0	50.2	15.4		16087.0				1525.0		
1972	1	1.0	8.0	8.0	0.3	37.4	3.0	3.0	179.8	375.0	7.0	7.0	9.1
1972	2	2.0	17.0	8.5	0.6	37.4	49.0	24.5	179.9	2882.4	9.0	4.5	9.1
1972	3	14.0	821.0	58.6	26.5	38.2	2348.0	167.7	182.2	2859.9	150.0	10.7	9.2
1972	4	28.0	2835.0	101.3	94.5	41.1	3487.0	124.5	185.7	1230.0	395.0	14.1	9.6
1972	5	30.0	2378.0	79.3	76.7	43.5	2925.0	97.5	188.6	1230.0	324.0	10.8	9.9
1972	6	30.0	1924.0	64.1	64.1	45.4	2366.0	78.9	191.0	1229.7	466.0	15.5	10.4
1972	7	31.0	1575.0	50.8	50.8	47.0	1937.0	62.5	192.9	1229.8	447.0	14.4	10.9
1972	8	29.0	1923.0	66.3	62.0	48.9	2885.0	99.5	195.8	1500.3	390.0	13.4	11.2
1972	9	29.0	2288.0	78.9	76.3	51.2	3432.0	118.3	199.2	1500.0	380.0	13.1	11.6
1972	10	16.0	1548.0	96.8	49.9	52.7	2322.0	145.1	201.6	1500.0	144.0	9.0	11.8
1972	11	1.0	16.0	16.0	0.5	52.7	24.0	24.0	201.6	1500.0	3.0	3.0	11.8
1972	12	19.0	1956.0	102.9	63.1	54.7	2934.0	154.4	204.5	1500.0	30.0	1.6	11.8
Subtotal		230.0	17289.0	75.2	47.2		24712.0				2745.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1973	1	29.0	2603.0	89.8	84.0	57.3	3905.0	134.7	208.4	1500.2	152.0	5.2	12.0
1973	2	19.0	1425.0	75.0	50.9	58.7	2138.0	112.5	210.6	1500.4	69.0	3.6	12.0
1973	3	1.0	55.0	55.0	1.8	58.8	82.0	82.0	210.6	1490.9	0.0	0.0	12.0
1973	4	1.0	21.0	21.0	0.7	58.8	32.0	32.0	210.7	1523.8	0.0	0.0	12.0
1973	5	20.0	1869.0	93.5	60.3	60.7	2804.0	140.2	213.5	1500.3	171.0	8.6	12.2
1973	6	30.0	1998.0	66.6	66.6	62.7	2997.0	99.9	216.5	1500.0	587.0	19.6	12.8
1973	7	31.0	1540.0	49.7	49.7	64.2	2310.0	74.5	218.8	1500.0	807.0	26.0	13.6
1973	8	26.0	1825.0	70.2	58.9	66.0	3650.0	140.4	222.4	2000.0	381.0	14.7	14.0
1973	9	24.0	1842.0	76.8	61.4	67.9	3684.0	153.5	226.1	2000.0	510.0	21.3	14.5
1973	10	31.0	2590.0	83.5	83.5	70.5	5180.0	167.1	231.3	2000.0	390.0	12.6	14.9
1973	11	26.0	819.0	31.5	27.3	71.3	1638.0	63.0	232.9	2000.0	192.0	7.4	15.1
1973	12	17.0	518.0	30.5	16.7	71.8	1036.0	60.9	234.0	2000.0	119.0	7.0	15.2
Subtotal		255.0	17105.0	67.1	46.9		29456.0				3378.0		
1974	1	8.0	832.0	104.0	26.8	72.6	1838.0	229.8	235.8	2209.1	33.0	4.1	15.2
1974	2	21.0	1806.0	86.0	64.5	74.4	3612.0	172.0	239.4	2000.0	128.0	6.1	15.3
1974	3	4.0	317.0	79.3	10.2	74.7	634.0	158.5	240.1	2000.0	272.0	68.0	15.6
1974	4	17.0	1420.0	83.5	47.3	76.2	2840.0	167.1	242.9	2000.0	373.0	21.9	16.0
1974	5	4.0	350.0	87.5	11.3	76.5	700.0	175.0	243.6	2000.0	56.0	14.0	16.0
1974	6	22.0	1755.0	79.8	58.5	78.3	3510.0	159.5	247.1	2000.0	725.0	33.0	16.8
1974	7	31.0	1479.0	47.7	47.7	79.7	2958.0	95.4	250.1	2000.0	738.0	23.8	17.5
1974	8	29.0	1020.0	35.2	32.9	80.8	2040.0	70.3	252.1	2000.0	854.0	29.4	18.4
1974	9	16.0	1301.0	81.3	43.4	82.1	2602.0	162.6	254.7	2000.0	144.0	9.0	18.5
1974	10	1.0	38.0	38.0	1.2	82.1	76.0	76.0	254.8	2000.0	12.0	12.0	18.5
1974	11	10.0	962.0	96.2	32.1	83.1	1924.0	192.4	256.7	2000.0	116.0	11.6	18.6
1974	12	3.0	428.0	142.7	13.8	83.5	856.0	285.3	257.6	2000.0	25.0	8.3	18.7
Subtotal		166.0	11708.0	70.5	32.1		23590.0				3476.0		
1975	1	1.0	15.0	15.0	0.5	83.5	30.0	30.0	257.6	2000.0	26.0	26.0	18.7
1975	2	1.0	12.0	12.0	0.4	83.5	24.0	24.0	257.6	2000.0	21.0	21.0	18.7
1975	3	1.0	7.0	7.0	0.2	83.5	14.0	14.0	257.6	2000.0	5.0	5.0	18.7
1975	4	8.0	967.0	120.9	32.2	84.5	1934.0	241.8	259.6	2000.0	91.0	11.4	18.8
1975	5	21.0	1852.0	88.2	59.7	86.3	3700.0	176.2	263.3	1997.8	305.0	14.5	19.1
1975	6	30.0	2576.0	85.9	85.9	88.9	5152.0	171.7	268.4	2000.0	334.0	11.1	19.4
1975	7	23.0	1892.0	82.3	61.0	90.8	3784.0	164.5	272.2	2000.0	146.0	6.3	19.6
1975	8	29.0	1893.0	65.3	61.1	92.7	3786.0	130.6	276.0	2000.0	437.0	15.1	20.0
1975	9	27.0	1636.0	60.6	54.5	94.3	3272.0	121.2	279.3	2000.0	401.0	14.9	20.4
1975	10	31.0	1915.0	61.8	61.8	96.3	3690.0	119.0	283.0	1926.9	458.0	14.8	20.9
1975	11	14.0	845.0	60.4	28.2	97.1	1690.0	120.7	284.6	2000.0	251.0	17.9	21.1
1975	12	1.0	63.0	63.0	2.0	97.2	126.0	126.0	284.8	2000.0	15.0	15.0	21.1
Subtotal		187.0	13673.0	73.1	37.5		27202.0				2490.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1976	1	2.0	126.0	63.0	4.1	97.3	252.0	126.0	285.0	2000.0	21.0	10.5	21.2
1976	2	3.0	221.0	73.7	7.6	97.5	442.0	147.3	285.5	2000.0	57.0	19.0	21.2
1976	3	17.0	1688.0	99.3	54.5	99.2	3376.0	198.6	288.8	2000.0	221.0	13.0	21.4
1976	4	2.0	109.0	54.5	3.6	99.3	218.0	109.0	289.1	2000.0	0.0	0.0	21.4
1976	5	24.0	2534.0	105.6	81.7	101.8	5068.0	211.2	294.1	2000.0	90.0	3.8	21.5
1976	6	30.0	1580.0	52.7	52.7	103.4	3160.0	105.3	297.3	2000.0	758.0	25.3	22.3
1976	7	30.0	1881.0	62.7	60.7	105.3	3762.0	125.4	301.0	2000.0	481.0	16.0	22.8
1976	8	10.0	656.0	65.6	21.2	106.0	1312.0	131.2	302.4	2000.0	155.0	15.5	22.9
1976	9	12.0	669.0	55.8	22.3	106.6	1338.0	111.5	303.7	2000.0	132.0	11.0	23.1
1976	10	1.0	25.0	25.0	0.8	106.7	50.0	50.0	303.8	2000.0	0.0	0.0	23.1
1976	11	1.0	8.0	8.0	0.3	106.7	16.0	16.0	303.8	2000.0	0.0	0.0	23.1
1976	12	1.0	19.0	19.0	0.6	106.7	38.0	38.0	303.8	2000.0	0.0	0.0	23.1
Subtotal		133.0	9516.0	71.5	26.0		19032.0				1915.0		
1977	1	5.0	417.0	83.4	13.5	107.1	834.0	166.8	304.6	2000.0	0.0	0.0	23.1
1977	2	21.0	1880.0	89.5	67.1	109.0	3760.0	179.0	308.4	2000.0	0.0	0.0	23.1
1977	3	22.0	1797.0	81.7	58.0	110.8	3594.0	163.4	312.0	2000.0	572.0	26.0	23.6
1977	4	27.0	2309.0	85.5	77.0	113.1	4618.0	171.0	316.6	2000.0	183.0	6.8	23.8
1977	5	27.0	1897.0	70.3	61.2	115.0	3794.0	140.5	320.4	2000.0	151.0	5.6	24.0
1977	6	22.0	1159.0	52.7	38.6	116.1	2318.0	105.4	322.7	2000.0	260.0	11.8	24.2
1977	7	12.0	899.0	74.9	29.0	117.0	1798.0	149.8	324.5	2000.0	319.0	26.6	24.5
1977	8	31.0	1781.0	57.5	57.5	118.8	3562.0	114.9	328.1	2000.0	311.0	10.0	24.9
1977	9	26.0	1551.0	59.7	51.7	120.4	3102.0	119.3	331.2	2000.0	471.0	18.1	25.3
1977	10	31.0	2232.0	72.0	72.0	122.6	2606.0	84.1	333.8	1167.6	421.0	13.6	25.8
1977	11	28.0	1591.0	56.8	53.0	124.2	3182.0	113.6	337.0	2000.0	121.0	4.3	25.9
1977	12	21.0	1350.0	64.3	43.5	125.5	2700.0	128.6	339.7	2000.0	163.0	7.8	26.0
Subtotal		273.0	18863.0	69.1	51.7		35868.0				2972.0		
1978	1	21.0	1322.0	63.0	42.6	126.9	2644.0	125.9	342.3	2000.0	328.0	15.6	26.4
1978	2	1.0	20.0	20.0	0.7	126.9	40.0	40.0	342.4	2000.0	0.0	0.0	26.4
1978	3	1.0	70.0	70.0	2.3	127.0	140.0	140.0	342.5	2000.0	0.0	0.0	26.4
1978	4	4.0	245.0	61.3	8.2	127.2	490.0	122.5	343.0	2000.0	0.0	0.0	26.4
1978	5	14.0	919.0	65.6	29.6	128.1	1838.0	131.3	344.8	2000.0	241.0	17.2	26.6
1978	6	13.0	919.0	70.7	30.6	129.0	1838.0	141.4	346.7	2000.0	278.0	21.4	26.9
1978	7	30.0	2134.0	71.1	68.8	131.2	4268.0	142.3	350.9	2000.0	385.0	12.8	27.3
1978	8	4.0	237.0	59.3	7.6	131.4	474.0	118.5	351.4	2000.0	38.0	9.5	27.3
1978	9	8.0	299.0	37.4	10.0	131.7	598.0	74.8	352.0	2000.0	65.0	8.1	27.4
1978	10	1.0	61.0	61.0	2.0	131.8	111.0	111.0	352.1	1819.7	0.0	0.0	27.4
1978	11	7.0	674.0	96.3	22.5	132.4	1348.0	192.6	353.5	2000.0	61.0	8.7	27.4
1978	12	1.0	18.0	18.0	0.6	132.5	36.0	36.0	353.5	2000.0	0.0	0.0	27.4
Subtotal		105.0	6918.0	65.9	19.0		13825.0				1396.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1979	1	2.0	78.0	39.0	2.5	132.5	156.0	78.0	353.7	2000.0	0.0	0.0	27.4
1979	2	7.0	409.0	58.4	14.6	133.0	818.0	116.9	354.5	2000.0	93.0	13.3	27.5
1979	3	6.0	431.0	71.8	13.9	133.4	862.0	143.7	355.3	2000.0	124.0	20.7	27.6
1979	4	1.0	70.0	70.0	2.3	133.5	140.0	140.0	355.5	2000.0	0.0	0.0	27.6
1979	5	10.0	957.0	95.7	30.9	134.4	1914.0	191.4	357.4	2000.0	159.0	15.9	27.8
1979	6	1.0	47.0	47.0	1.6	134.5	94.0	94.0	357.5	2000.0	0.0	0.0	27.8
1979	7	2.0	101.0	50.5	3.3	134.6	202.0	101.0	357.7	2000.0	0.0	0.0	27.8
1979	8	7.0	690.0	98.6	22.3	135.2	1380.0	197.1	359.1	2000.0	129.0	18.4	27.9
1979	9	10.0	814.0	81.4	27.1	136.1	1628.0	162.8	360.7	2000.0	122.0	12.2	28.1
1979	10	1.0	16.0	16.0	0.5	136.1	32.0	32.0	360.7	2000.0	0.0	0.0	28.1
1979	11	1.0	10.0	10.0	0.3	136.1	20.0	20.0	360.7	2000.0	0.0	0.0	28.1
1979	12	1.0	8.0	8.0	0.3	136.1	16.0	16.0	360.8	2000.0	0.0	0.0	28.1
Subtotal		49.0	3631.0	74.1	9.9		7262.0				627.0		
1980	1	1.0	6.0	6.0	0.2	136.1	12.0	12.0	360.8	2000.0	0.0	0.0	28.1
1980	2	1.0	10.0	10.0	0.1	136.1	20.0	20.0	360.8	2000,0	0.0	0.0	28.1
1980	3	1.0	3.0	3.0	0.1	136.1	0.0	0.0	360.8	0.0	0.0	0.0	28.1
1980	4	2.0	42.0	21.0	1.4	136.2	84.0	42.0	360.9	2000.0	0.0	0.0	28.1
1980	5	1.0	28.0	28.0	0.9	136.2	56.0	56.0	360.9	2000.0	0.0	0.0	28.1
1980	6	1.0	33.0	33.0	1.1	136.2	66.0	66.0	361.0	2000.0	0.0	0.0	28.1
1980	7	1.0	27.0	27.0	0.9	136.2	54.0	54.0	361.1	2000.0	0.0	0.0	28.1
1980	8	5.0	346.0	69.2	11.2	136.6	692.0	138.4	361.7	2000.0	134.0	26.8	28.2
1980	9	22.0	543.0	24.7	18.1	137.1	1086.0	49.4	362.8	2000.0	546.0	24.8	28.7
1980	10	27.0	621.0	23.0	20.0	137.8	1242.0	46.0	364.1	2000.0	600.0	22.2	29.3
1980	11	24.0	618.0	25.8	20.6	138.4	1236.0	51.5	365.3	2000.0	512.0	21.3	29.8
1980	12	30.0	666.0	22.2	21.5	139.0	1332.0	44.4	366.6	2000.0	606.0	20.2	30.5
Subtotal		116.0	2943.0	25.4	8.0		5880.0				2398.0		
1981	1	28.0	485.0	17.3	15.6	139.5	970.0	34.6	367.6	2000.0	442.0	15.8	30.9
1981	2	27.0	558.0	20.7	19.9	140.1	1116.0	41.3	368.7	2000.0	423.0	15.7	31.3
1981	3	6.0	140.0	23.3	4.5	140.2	280.0	46.7	369.0	2000.0	98.0	16.3	31.4
1981	4	24.0	674.0	28.1	22.5	140.9	1348.0	56.2	370.4	2000.0	502.0	20.9	31.9
1981	5	14.0	501.0	35.8	16.2	141.4	1002.0	71.6	371.4	2000.0	223.0	15.9	32.1
1981	6	5.0	265.0	53.0	8.8	141.7	530.0	106.0	371.9	2000.0	58.0	11.6	32.2
1981	7	26.0	559.0	21.5	18.0	142.2	1118.0	43.0	373.0	2000.0	554.0	21.3	32.8
1981	8	30.0	473.0	15.8	15.3	142.7	946.0	31.5	373.9	2000.0	387.0	12.9	33.1
1981	9	9.0	186.0	20.7	6.2	142.9	372.0	41.3	374.3	2000.0	0.0	0.0	33.1
1981	10	6.0	141.0	23.5	4.5	143.0	282.0	47.0	374.6	2000.0	88.0	14.7	33.2
1981	11	27.0	722.0	26.7	24.1	143.7	1444.0	53.5	376.0	2000.0	492.0	18.2	33.7
1981	12	26.0	488.0	18.8	15.7	144.2	976.0	37.5	377.0	2000.0	352.0	13.5	34.1
Subtotal		228.0	5192.0	22.8	14.2		10384.0				3619.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1982	1	12.0	214.0	17.8	6.9	144.4	428.0	35.7	377.5	2000.0	164.0	13.7	34.2
1982	2	2.0	69.0	34.5	2.5	144.5	138.0	69.0	377.6	2000.0	44.0	22.0	34.3
1982	3	1.0	58.0	58.0	1.9	144.6	116.0	116.0	377.7	2000.0	0.0	0.0	34.3
1982	4	1.0	47.0	47.0	1.6	144.6	94.0	94.0	377.8	2000.0	0.0	0.0	34.3
1982	5	1.0	35.0	35.0	1.1	144.7	70.0	70.0	377.9	2000.0	0.0	0.0	34.3
1982	6	5.0	302.0	60.4	10.1	145.0	604.0	120.8	378.5	2000.0	92.0	18.4	34.4
1982	7	1.0	12.0	12.0	0.4	145.0	24.0	24.0	378.5	2000.0	0.0	0.0	34.4
1982	8	19.0	602.0	31.7	19.4	145.6	1204.0	63.4	379.7	2000.0	538.0	28.3	34.9
1982	9	26.0	553.0	21.3	18.4	146.1	1106.0	42.5	380.8	2000.0	537.0	20.7	35.4
1982	10	30.0	270.0	9.0	8.7	146.4	1134.0	37.8	381.9	4200.0	462.0	15.4	35.9
1982	11	18.0	367.0	20.4	12.2	146.8	734.0	40.8	382.7	2000.0	259.0	14.4	36.2
1982	12	7.0	431.0	61.6	13.9	147.2	862.0	123.1	383.5	2000.0	81.0	11.6	36.3
Subtotal		123.0	2960.0	24.1	8.1		6514.0				2177.0		
1983	1	22.0	525.0	23.9	16.9	147.7	1050.0	47.7	384.6	2000.0	40.0	1.8	36.3
1983	2	17.0	310.0	18.2	11.1	148.0	620.0	36.5	385.2	2000.0	339.0	19.9	36.6
1983	3	1.0	12.0	12.0	0.4	148.0	24.0	24.0	385.2	2000.0	0.0	0.0	36.6
1983	4	4.0	283.0	70.8	9.4	148.3	566.0	141.5	385.8	2000.0	49.0	12.3	36.7
1983	5	31.0	770.0	24.8	24.8	149.1	1540.0	49.7	387.3	2000.0	80.0	2.6	36.8
1983	6	20.0	445.0	22.3	14.8	149.5	890.0	44.5	388.2	2000.0	60.0	3.0	36.8
1983	7	16.0	385.0	24.1	12.4	149.9	770.0	48.1	389.0	2000.0	335.0	20.9	37.2
1983	8	12.0	569.0	47.4	18.4	150.5	1138.0	94.8	390.1	2000.0	236.0	19.7	37.4
1983	9	2.0	92.0	46.0	3.1	150.6	184.0	92.0	390.3	2000.0	10.0	5.0	37.4
1983	10	1.0	2.0	2.0	0.1	150.6	4.0	4.0	390.3	2000.0	0.0	0.0	37.4
1983	11	1.0	2.0	2.0	0.1	150.6	4.0	4.0	390.3	2000.0	0.0	0.0	37.4
1983	12	1.0	3.0	3.0	0.1	150.6	6.0	6.0	390.3	2000.0	0.0	0.0	37.4
Subtotal		128.0	3398.0	26.5	9.3		6796.0				1149.0		
1984	1	14.0	413.0	29.5	13.3	151.0	826.0	59.0	391.2	2000.0	99.0	7.1	37.5
1984	2	1.0	3.0	3.0	0.1	151.0	6.0	6.0	391.2	2000.0	0.0	0.0	37.5
1984	3	9.0	456.0	50.7	14.7	151.5	912.0	101.3	392.1	2000.0	134.0	14.9	37.6
1984	4	10.0	247.0	24.7	8.2	151.7	494.0	49.4	392.6	2000.0	197.0	19.7	37.8
1984	5	24.0	420.0	17.5	13.5	152.1	840.0	35.0	393.4	2000.0	619.0	25.8	38.4
1984	6	30.0	451.0	15.0	15.0	152.6	902.0	30.1	394.3	2000.0	475.0	15.8	38.9
1984	7	31.0	384.0	12.4	12.4	153.0	768.0	24.8	395.1	2000.0	372.0	12.0	39.3
1984	8	25.0	381.0	15.2	12.3	153.3	762.0	30.5	395.8	2000.0	329.0	13.2	39.6
1984	9	2.0	10.0	5.0	0.3	153.4	20.0	10.0	395.9	2000.0	24.0	12.0	39.6
1984	10	1.0	2.0	2.0	0.1	153.4	4.0	4.0	395.9	2000.0	21.0	21.0	39.7
1984	11	1.0	2.0	2.0	0.1	153.4	4.0	4.0	395.9	2000.0	0.0	0.0	39.7
1984	12	1.0	1.0	1.0	0.0	153.4	2.0	2.0	395.9	2000.0	20.0	20.0	39.7
Subtotal		149.0	2770.0	18.6	7.6		5540.0				2290.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 200 #1 (D-21). (NW 21-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	1.0	4.0	4.0	0.1	153.4	8.0	8.0	395.9	2000.0	0.0	0.0	39.7
1985	2	1.0	1.0	1.0	0.0	153.4	0.0	0.0	395.9	0.0	0.0	0.0	39.7
1985	3	1.0	1.0	1.0	0.0	153.4	2.0	2.0	395.9	2000.0	0.0	0.0	39.7
1985	4	2.0	2.0	1.0	0.1	153.4	4.0	2.0	395.9	2000.0	0.0	0.0	39.7
1985	5	13.0	441.0	33.9	14.2	153.8	882.0	67.8	396.8	2000.0	70.0	5.4	39.8
1985	6	30.0	565.0	18.8	18.8	154.4	1130.0	37.7	397.9	2000.0	325.0	10.8	40.1
1985	7	5.0	20.0	4.0	0.6	154.4	40.0	8.0	397.9	2000.0	5.0	1.0	40.1
1985	8	1.0	4.0	4.0	0.1	154.4	8.0	8.0	397.9	2000.0	1.0	1.0	40.1
1985	9	4.0	30.0	7.5	1.0	154.4	60.0	15.0	398.0	2000.0	0.0	0.0	40.1
1985	10	26.0	439.0	16.9	14.2	154.9	878.0	33.8	398.9	2000.0	460.0	17.7	40.6
1985	11	1.0	3.0	3.0	0.1	154.9	6.0	6.0	398.9	2000.0	5.0	5.0	40.6
1985	12	2.0	10.0	5.0	0.3	154.9	20.0	10.0	398.9	2000.0	10.0	5.0	40.6
Subtotal		87.0	1520.0	17.5	4.2		3038.0				876.0		
1986	1	1.0	5.0	5.0	0.2	154.9	10.0	10.0	398.9	2000.0	0.0	0.0	40.6
1986	2	1.0	5.0	5.0	0.2	154.9	10.0	10.0	398.9	2000.0	0.0	0.0	40.6
1986	3	2.0	10.0	5.0	0.3	154.9	20.0	10.0	399.0	2000.0	0.0	0.0	40.6
1986	4	1.0	10.0	10.0	0.3	154.9	20.0	20.0	399.0	2000.0	0.0	0.0	40.6
1986	5	2.0	6.0	3.0	0.2	154.9	12.0	6.0	399.0	2000.0	0.0	0.0	40.6
1986	6	2.0	44.0	22.0	1.5	155.0	122.0	61.0	399.1	2772.7	40.0	20.0	40.6
1986	7	20.0	415.0	20.8	13.4	155.4	830.0	41.5	399.9	2000.0	617.0	30.9	41.2
1986	8	28.0	450.0	16.1	14.5	155.8	900.0	32.1	400.8	2000.0	0.0	0.0	41.2
1986	9	13.0	397.0	30.5	13.2	156.2	794.0	61.1	401.6	2000.0	230.0	17.7	41.5
1986	10	15.0	307.0	20.5	9.9	156.5	614.0	40.9	402.2	2000.0	165.0	11.0	41.6
1986	11	19.0	314.0	16.5	10.5	156.8	628.0	33.1	402.9	2000.0	73.0	3.8	41.7
1986	12	4.0	149.0	37.3	4.8	157.0	298.0	74.5	403.2	2000.0	67.0	16.8	41.8
Subtotal		108.0	2112.0	19.6	5.8		4258.0				1192.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 403 #1 (I-17). (SE 17-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977	12	15.0	343.0	22.9	11.1	0.3	1029.0	68.6	1.0	3000.0	0.0	0.0	0.0
Subtotal		15.0	343.0	22.9	11.1		1029.0				0.0		
1978	1	23.0	208.0	9.0	6.7	0.6	129.0	5.6	1.2	620.2	1229.0	53.4	1.2
1978	2	15.0	190.0	12.7	6.8	0.7	570.0	38.0	1.7	3000.0	437.0	29.1	1.7
1978	3	13.0	41.0	3.2	1.3	0.8	381.0	29.3	2.1	9292.7	35.0	2.7	1.7
1978	4	8.0	235.0	29.4	7.8	1.0	639.0	79.9	2.7	2719.1	182.0	22.8	1.9
1978	5	31.0	226.0	7.3	7.3	1.2	615.0	19.8	3.4	2721.2	181.0	5.8	2.1
1978	6	23.0	172.0	7.5	5.7	1.4	468.0	20.3	3.8	2720.9	315.0	13.7	2.4
1978	7	30.0	290.0	9.7	9.4	1.7	789.0	26.3	4.6	2720.7	255.0	8.5	2.6
1978	8	25.0	222.0	8.9	7.2	1.9	604.0	24.2	5.2	2720.7	98.0	3.9	2.7
1978	9	25.0	385.0	15.4	12.8	2.3	1047.0	41.9	6.3	2719.5	160.0	6.4	2.9
1978	10	26.0	338.0	13.0	10.9	2.7	919.0	35.3	7.2	2718.9	136.0	5.2	3.0
1978	11	12.0	120.0	10.0	4.0	2.8	326.0	27.2	7.5	2716.7	40.0	3.3	3.1
1978	12	17.0	67.0	3.9	2.2	2.8	182.0	10.7	7.7	2716.4	28.0	1.6	3.1
Subtotal		248.0	2494.0	10.1	6.8		6669.0				3096.0		
1979	1	12.0	64.0	5.3	2.1	2.9	174.0	14.5	7.9	2718.8	21.0	1.8	3.1
1979	2	22.0	267.0	12.1	9.5	3.2	726.0	33.0	8.6	2719.1	37.0	1.7	3.2
1979	3	18.0	114.0	6.3	3.7	3.3	310.0	17.2	8.9	2719.3	10.0	0.6	3.2
1979	4	16.0	127.0	7.9	4.2	3.4	345.0	21.6	9.3	2716.5	12.0	0.8	3.2
1979	5	21.0	403.0	19.2	13.0	3.8	1096.0	52.2	10.3	2719.6	58.0	2.8	3.2
1979	6	28.0	435.0	15.5	14.5	4.2	1183.0	42.3	11.5	2719.5	49.0	1.8	3.3
1979	7	30.0	413.0	13.8	13.3	4.7	1123.0	37.4	12.7	2719.1	52.0	1.7	3.3
1979	8	24.0	387.0	16.1	12.5	5.0	1053.0	43.9	13.7	2720.9	36.0	1.5	3.4
1979	9	28.0	407.0	14.5	13.6	5.5	5195.0	185.5	18.9	12764.1	43.0	1.5	3.4
1979	10	10.0	230.0	23.0	7.4	5.7	626.0	62.6	19.5	2721.7	10.0	1.0	3.4
1979	11	7.0	164.0	23.4	5.5	5.8	446.0	63.7	20.0	2719.5	0.0	0.0	3.4
1979	12	1.0	11.0	11.0	0.4	5.9	30.0	30.0	20.0	2727.3	0.0	0.0	3.4
Subtotal		217.0	3022.0	13.9	8.3		12307.0				328.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 403 #1 (I-17). (SE 17-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980	1	15.0	208.0	13.9	6.7	6.1	566.0	37.7	20.6	2721.2	0.0	0.0	3.4
1980	2	2.0	52.0	26.0	0.7	6.1	141.0	70.5	20.7	2711.5	0.0	0.0	3.4
1980	3	2.0	21.0	10.5	0.7	6.1	57.0	28.5	20.8	2714.3	0.0	0.0	3.4
1980	4	9.0	224.0	24.9	7.5	6.4	609.0	67.7	21.4	2718.8	0.0	0.0	3.4
1980	5	15.0	389.0	25.9	12.5	6.8	1050.0	70.0	22.4	2699.2	0.0	0.0	3.4
1980	6	18.0	337.0	18.7	11.2	7.1	917.0	50.9	23.3	2721.1	40.0	2.2	3.5
1980	7	19.0	177.0	9.3	5.7	7.3	481.0	25.3	23.8	2717.5	7.0	0.4	3.5
1980	8	1.0	5.0	5.0	0.2	7.3	14.0	14.0	23.8	2800.0	0.0	0.0	3.5
1980	9	1.0	5.0	5.0	0.2	7.3	14.0	14.0	23.9	2800.0	0.0	0.0	3.5
1980	10	17.0	357.0	21.0	11.5	7.6	971.0	57.1	24.8	2719.9	0.0	0.0	3.5
1980	11	7.0	158.0	22.6	5.3	7.8	430.0	61.4	25.3	2721.5	0.0	0.0	3.5
1980	12	6.0	105.0	17.5	3.4	7.9	286.0	47.7	25.5	2723.8	3.0	0.5	3.5
Subtotal		112.0	2038.0	18.2	5.6		5536.0				50.0		
1981	1	10.0	362.0	36.2	11.7	8.3	985.0	98.5	26.5	2721.0	0.0	0.0	3.5
1981	2	8.0	108.0	13.5	3.9	8.4	294.0	36.8	26.8	2722.2	0.0	0.0	3.5
1981	3	2.0	21.0	10.5	0.7	8.4	57.0	28.5	26.9	2714.3	0.0	0.0	3.5
1981	4	19.0	315.0	16.6	10.5	8.7	857.0	45.1	27.7	2720.6	29.0	1.5	3.5
1981	5	31.0	267.0	8.6	8.6	9.0	726.0	23.4	28.5	2719.1	33.0	1.1	3.5
1981	6	9.0	112.0	12.4	3.7	9.1	304.0	33.8	28.8	2714.3	17.0	1.9	3.6
1981	7	1.0	14.0	14.0	0.5	9.1	38.0	38.0	28.8	2714.3	0.0	0.0	3.6
1981	8	30.0	227.0	7.6	7.3	9.3	617.0	20.6	29.4	2718.1	27.0	0.9	3.6
1981	9	15.0	188.0	12.5	6.3	9.5	511.0	34.1	29.9	2718.1	29.0	1.9	3.6
1981	10	31.0	305.0	9.8	9.8	9.8	830.0	26.8	30.8	2721.3	8.0	0.3	3.6
1981	11	27.0	139.0	5.1	4.6	10.0	378.0	14.0	31.1	2719.4	3.0	0.1	3.6
1981	12	31.0	320.0	10.3	10.3	10.3	870.0	28.1	32.0	2718.8	0.0	0.0	3.6
Subtotal		214.0	2378.0	11.1	6.5		6467.0				146.0		
1982	1	20.0	153.0	7.7	4.9	10.4	416.0	20.8	32.4	2719.0	0.0	0.0	3.6
1982	2	3.0	22.0	7.3	0.8	10.5	60.0	20.0	32.5	2727.3	0.0	0.0	3.6
1982	3	1.0	11.0	11.0	0.4	10.5	30.0	30.0	32.5	2727.3	0.0	0.0	3.6
1982	4	1.0	9.0	9.0	0.3	10.5	24.0	24.0	32.5	2666.7	0.0	0.0	3.6
1982	5	2.0	13.0	6.5	0.4	10.5	35.0	17.5	32.6	2692.3	0.0	0.0	3.6
1982	6	2.0	29.0	14.5	1.0	10.5	79.0	39.5	32.7	2724.1	0.0	0.0	3.6
1982	7	30.0	367.0	12.2	11.8	10.9	998.0	33.3	33.7	2719.3	0.0	0.0	3.6
1982	8	31.0	327.0	10.5	10.5	11.2	889.0	28.7	34.5	2718.7	6.0	0.2	3.6
1982	9	30.0	264.0	8.8	8.8	11.5	718.0	23.9	35.3	2719.7	6.0	0.2	3.6
1982	10	31.0	194.0	6.3	6.3	11.7	528.0	17.0	35.8	2721.6	2.0	0.1	3.6
1982	11	22.0	120.0	5.5	4.0	11.8	326.0	14.8	36.1	2716.7	2.0	0.1	3.6
1982	12	7.0	108.0	15.4	3.5	11.9	294.0	42.0	36.4	2722.2	0.0	0.0	3.6
Subtotal		180.0	1617.0	9.0	4.4		4397.0				16.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 403 #1 (I-17). (SE 17-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	12.0	156.0	13.0	5.0	12.0	424.0	35.3	36.8	2717.9	0.0	0.0	3.6
1983	2	18.0	155.0	8.6	5.5	12.2	422.0	23.4	37.3	2722.6	0.0	0.0	3.6
1983	3	1.0	4.0	4.0	0.1	12.2	11.0	11.0	37.3	2750.0	0.0	0.0	3.6
1983	4	4.0	70.0	17.5	2.3	12.3	190.0	47.5	37.5	2714.3	0.0	0.0	3.6
1983	5	31.0	349.0	11.3	11.3	12.6	949.0	30.6	38.4	2719.2	0.0	0.0	3.6
1983	6	6.0	50.0	8.3	1.7	12.7	138.0	23.0	38.5	2760.0	0.0	0.0	3.6
1983	7	21.0	257.0	12.2	8.3	12.9	699.0	33.3	39.2	2719.8	0.0	0.0	3.6
1983	8	9.0	93.0	10.3	3.0	13.0	253.0	28.1	39.5	2720.4	0.0	0.0	3.6
1983	9	26.0	296.0	11.4	9.9	13.3	805.0	31.0	40.3	2719.6	0.0	0.0	3.6
1983	10	27.0	263.0	9.7	8.5	13.6	715.0	26.5	41.0	2718.6	0.0	0.0	3.6
1983	11	15.0	150.0	10.0	5.0	13.7	408.0	27.2	41.4	2720.0	0.0	0.0	3.6
1983	12	8.0	60.0	7.5	1.9	13.8	163.0	20.4	41.6	2716.7	0.0	0.0	3.6
Subtotal		178.0	1903.0	10.7	5.2		5177.0				0.0		
1984	1	1.0	1.0	1.0	0.0	13.8	3.0	3.0	41.6	3000.0	0.0	0.0	3.6
1984	2	1.0	3.0	3.0	0.1	13.8	8.0	8.0	41.6	2666.7	0.0	0.0	3.6
1984	3	1.0	1.0	1.0	0.0	13.8	2.0	2.0	41.6	2000.0	0.0	0.0	3.6
1984	4	1.0	1.0	1.0	0.0	13.8	2.0	2.0	41.6	2000.0	0.0	0.0	3.6
1984	5	2.0	7.0	3.5	0.2	13.8	19.0	9.5	41.6	2714.3	0.0	0.0	3.6
1984	6	2.0	10.0	5.0	0.3	13.8	27.0	13.5	41.6	2700.0	0.0	0.0	3.6
1984	7	12.0	212.0	17.7	6.8	14.0	577.0	48.1	42.2	2721.7	0.0	0.0	3.6
1984	8	22.0	182.0	8.3	5.9	14.2	495.0	22.5	42.7	2719.8	0.0	0.0	3.6
1984	9	16.0	68.0	4.3	2.3	14.3	185.0	11.6	42.9	2720.6	0.0	0.0	3.6
1984	10	2.0	29.0	14.5	0.9	14.3	79.0	39.5	43.0	2724.1	0.0	0.0	3.6
1984	11	20.0	45.0	2.3	1.5	14.4	122.0	6.1	43.1	2711.1	0.0	0.0	3.6
1984	12	12.0	86.0	7.2	2.8	14.4	234.0	19.5	43.3	2720.9	0.0	0.0	3.6
Subtotal		92.0	645.0	7.0	1.8		1753.0				0.0		
1985	1	3.0	10.0	3.3	0.3	14.5	27.0	9.0	43.4	2700.0	0.0	0.0	3.6
1985	2	1.0	2.0	2.0	0.1	14.5	6.0	6.0	43.4	3000.0	0.0	0.0	3.6
1985	3	1.0	3.0	3.0	0.1	14.5	8.0	8.0	43.4	2666.7	0.0	0.0	3.6
1985	4	2.0	5.0	2.5	0.2	14.5	13.0	6.5	43.4	2600.0	0.0	0.0	3.6
1985	5	7.0	42.0	6.0	1.4	14.5	114.0	16.3	43.5	2714.3	0.0	0.0	3.6
1985	6	29.0	146.0	5.0	4.9	14.6	397.0	13.7	43.9	2719.2	0.0	0.0	3.6
1985	7	19.0	53.0	2.8	1.7	14.7	197.0	10.4	44.1	3717.0	0.0	0.0	3.6
1985	8	23.0	115.0	5.0	3.7	14.8	313.0	13.6	44.4	2721.7	0.0	0.0	3.6
1985	9	8.0	43.0	5.4	1.4	14.9	117.0	14.6	44.5	2720.9	0.0	0.0	3.6
1985	10	24.0	104.0	4.3	3.4	15.0	283.0	11.8	44.8	2721.2	0.0	0.0	3.6
1985	11	1.0	4.0	4.0	0.1	15.0	11.0	11.0	44.8	2750.0	0.0	0.0	3.6
1985	12	1.0	3.0	3.0	0.1	15.0	8.0	8.0	44.8	2666.7	0.0	0.0	3.6
Subtotal		119.0	530.0	4.5	1.5		1494.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 403 #1 (I-17). (SE 17-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	1.0	3.0	3.0	0.1	15.0	8.0	8.0	44.8	2666.7	0.0	0.0	3.6
1986	2	1.0	2.0	2.0	0.1	15.0	5.0	5.0	44.8	2500.0	0.0	0.0	3.6
1986	3	9.0	20.0	2.2	0.6	15.0	54.0	6.0	44.9	2700.0	0.0	0.0	3.6
1986	4	14.0	70.0	5.0	2.3	15.1	190.0	13.6	45.1	2714.3	0.0	0.0	3.6
1986	5	21.0	92.0	4.4	3.0	15.2	250.0	11.9	45.3	2717.4	0.0	0.0	3.6
1986	6	8.0	34.0	4.3	1.1	15.2	92.0	11.5	45.4	2705.9	0.0	0.0	3.6
1986	7	8.0	110.0	13.8	3.5	15.3	299.0	37.4	45.7	2718.2	0.0	0.0	3.6
1986	8	20.0	38.0	1.9	1.2	15.3	103.0	5.2	45.8	2710.5	5.0	0.3	3.6
1986	9	2.0	4.0	2.0	0.1	15.3	10.0	5.0	45.8	2500.0	0.0	0.0	3.6
1986	10	5.0	20.0	4.0	0.6	15.4	544.0	108.8	46.4	27200.0	0.0	0.0	3.6
1986	11	6.0	22.0	3.7	0.7	15.4	60.0	10.0	46.4	2727.3	0.0	0.0	3.6
1986	12	1.0	4.0	4.0	0.1	15.4	8.0	8.0	46.5	2000.0	0.0	0.0	3.6
Subtotal		96.0	419.0	4.4	1.1		1623.0				5.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL. RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 404 #1 (O-16). (SE 16-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977	12	9.0	139.0	15.4	4.5	0.1	56.0	6.2	0.1	402.9	0.0	0.0	0.0
Subtotal		9.0	139.0	15.4	4.5		56.0				0.0		
1978	1	5.0	95.0	19.0	3.1	0.2	38.0	7.6	0.1	400.0	264.0	52.8	0.3
1978	2	5.0	310.0	62.0	11.1	0.5	126.0	25.2	0.2	406.5	268.0	53.6	0.5
1978	3	6.0	185.0	30.8	6.0	0.7	74.0	12.3	0.3	400.0	40.0	6.7	0.6
1978	4	30.0	816.0	27.2	27.2	1.5	326.0	10.9	0.6	399.5	262.0	8.7	0.8
1978	5	11.0	661.0	60.1	21.3	2.2	264.0	24.0	0.9	399.4	161.0	14.6	1.0
1978	6	14.0	760.0	54.3	25.3	3.0	304.0	21.7	1.2	400.0	85.0	6.1	1.1
1978	7	28.0	1461.0	52.2	47.1	4.4	584.0	20.9	1.8	399.7	75.0	2.7	1.2
1978	8	12.0	683.0	56.9	22.0	5.1	273.0	22.8	2.0	399.7	20.0	1.7	1.2
1978	9	19.0	1200.0	63.2	40.0	6.3	1440.0	75.8	3.5	1200.0	30.0	1.6	1.2
1978	10	11.0	836.0	76.0	27.0	7.1	334.0	30.4	3.8	399.5	25.0	2.3	1.2
1978	11	14.0	7669.0	547.8	255.6	14.8	308.0	22.0	4.1	40.2	20.0	1.4	1.3
1978	12	8.0	578.0	72.3	18.6	15.4	231.0	28.9	4.4	399.7	17.0	2.1	1.3
Subtotal		163.0	15254.0	93.6	41.8		4302.0				1267.0		
1979	1	3.0	206.0	68.7	6.6	15.6	82.0	27.3	4.4	398.1	12.0	4.0	1.3
1979	2	25.0	1422.0	56.9	50.8	17.0	569.0	22.8	5.0	400.1	25.0	1.0	1.3
1979	3	8.0	473.0	59.1	15.3	17.5	189.0	23.6	5.2	399.6	0.0	0.0	1.3
1979	4	5.0	322.0	64.4	10.7	17.8	129.0	25.8	5.3	400.6	0.0	0.0	1.3
1979	5	22.0	1471.0	66.9	47.5	19.3	588.0	26.7	5.9	399.7	0.0	0.0	1.3
1979	6	14.0	835.0	59.6	27.8	20.1	334.0	23.9	6.2	400.0	0.0	0.0	1.3
1979	7	28.0	1751.0	62.5	56.5	21.9	700.0	25.0	6.9	399.8	0.0	0.0	1.3
1979	8	27.0	1765.0	65.4	56.9	23.6	706.0	26.1	7.7	400.0	0.0	0.0	1.3
1979	9	29.0	2063.0	71.1	68.8	25.7	825.0	28.4	8.5	399.9	0.0	0.0	1.3
1979	10	18.0	1162.0	64.6	37.5	26.9	465.0	25.8	8.9	400.2	0.0	0.0	1.3
1979	11	8.0	527.0	65.9	17.6	27.4	211.0	26.4	9.2	400.4	0.0	0.0	1.3
1979	12	29.0	1454.0	50.1	46.9	28.8	582.0	20.1	9.7	400.3	0.0	0.0	1.3
Subtotal		216.0	13451.0	62.3	36.9		5380.0				37.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 404 #1 (O-16). (SE 16-27N-1W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1980	1	10.0	587.0	58.7	18.9	29.4	704.0	70.4	10.4	1199.3	0.0	0.0	1.3
1980	2	2.0	145.0	72.5	2.6	29.6	174.0	87.0	10.6	1200.0	0.0	0.0	1.3
1980	3	2.0	75.0	37.5	2.4	29.7	90.0	45.0	10.7	1200.0	0.0	0.0	1.3
1980	4	10.0	413.0	41.3	13.8	30.1	496.0	49.6	11.2	1201.0	0.0	0.0	1.3
1980	5	12.0	704.0	58.7	22.7	30.8	845.0	70.4	12.0	1200.3	0.0	0.0	1.3
1980	6	27.0	1331.0	49.3	44.4	32.1	1597.0	59.1	13.6	1199.8	0.0	0.0	1.3
1980	7	31.0	1487.0	48.0	48.0	33.6	1784.0	57.5	15.4	1199.7	0.0	0.0	1.3
1980	8	30.0	1433.0	47.8	46.2	35.0	1720.0	57.3	17.1	1200.3	0.0	0.0	1.3
1980	9	19.0	822.0	43.3	27.4	35.8	986.0	51.9	18.1	1199.5	0.0	0.0	1.3
1980	10	4.0	158.0	39.5	5.1	36.0	190.0	47.5	18.3	1202.5	0.0	0.0	1.3
1980	11	24.0	1179.0	49.1	39.3	37.2	1415.0	59.0	19.7	1200.2	0.0	0.0	1.3
1980	12	28.0	1302.0	46.5	42.0	38.5	1562.0	55.8	21.3	1199.7	0.0	0.0	1.3
Subtotal		199.0	9636.0	48.4	26.3		11563.0				0.0		
1981	1	26.0	1245.0	47.9	40.2	39.7	1494.0	57.5	22.8	1200.0	0.0	0.0	1.3
1981	2	23.0	1108.0	48.2	39.6	40.8	1330.0	57.8	24.1	1200.4	0.0	0.0	1.3
1981	3	4.0	186.0	46.5	6.0	41.0	223.0	55.8	24.3	1198.9	0.0	0.0	1.3
1981	4	23.0	1096.0	47.7	36.5	42.1	1315.0	57.2	25.7	1199.8	0.0	0.0	1.3
1981	5	18.0	806.0	44.8	26.0	42.9	967.0	53.7	26.6	1199.8	0.0	0.0	1.3
1981	6	14.0	619.0	44.2	20.6	43.5	743.0	53.1	27.4	1200.3	0.0	0.0	1.3
1981	7	22.0	1095.0	49.8	35.3	44.6	1314.0	59.7	28.7	1200.0	0.0	0.0	1.3
1981	8	27.0	1263.0	46.8	40.7	45.9	1516.0	56.1	30.2	1200.3	0.0	0.0	1.3
1981	9	25.0	1171.0	46.8	39.0	47.1	1405.0	56.2	31.6	1199.8	0.0	0.0	1.3
1981	10	28.0	1310.0	46.8	42.3	48.4	1572.0	56.1	33.2	1200.0	0.0	0.0	1.3
1981	11	28.0	1316.0	47.0	43.9	49.7	1579.0	56.4	34.8	1199.8	0.0	0.0	1.3
1981	12	31.0	1385.0	44.7	44.7	51.1	1662.0	53.6	36.4	1200.0	0.0	0.0	1.3
Subtotal		269.0	12600.0	46.8	34.5		15120.0				0.0		
1982	1	25.0	1119.0	44.8	36.1	52.2	1343.0	53.7	37.8	1200.2	0.0	0.0	1.3
1982	2	3.0	197.0	65.7	7.0	52.4	236.0	78.7	38.0	1198.0	0.0	0.0	1.3
1982	3	1.0	28.0	28.0	0.9	52.4	34.0	34.0	38.0	1214.3	0.0	0.0	1.3
1982	4	8.0	440.0	55.0	14.7	52.9	528.0	66.0	38.6	1200.0	0.0	0.0	1.3
1982	5	11.0	589.0	53.5	19.0	53.5	707.0	64.3	39.3	1200.3	0.0	0.0	1.3
1982	6	30.0	1577.0	52.6	52.6	55.0	1892.0	63.1	41.2	1199.7	0.0	0.0	1.3
1982	7	25.0	1144.0	45.8	36.9	56.2	1373.0	54.9	42.5	1200.2	0.0	0.0	1.3
1982	8	26.0	1214.0	46.7	39.2	57.4	1457.0	56.0	44.0	1200.2	0.0	0.0	1.3
1982	9	25.0	973.0	38.9	32.4	58.4	1168.0	46.7	45.2	1200.4	0.0	0.0	1.3
1982	10	23.0	1447.0	62.9	46.7	59.8	1667.0	72.5	46.8	1152.0	0.0	0.0	1.3
1982	11	13.0	1003.0	77.2	33.4	60.8	1204.0	92.6	48.0	1200.4	0.0	0.0	1.3
1982	12	7.0	503.0	71.9	16.2	61.3	604.0	86.3	48.6	1200.8	0.0	0.0	1.3
Subtotal		197.0	10234.0	51.9	28.0		12213.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 404 #1 (O-16). (SE 16-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	15.0	715.0	47.7	23.1	62.0	858.0	57.2	49.5	1200.0	0.0	0.0	1.3
1983	2	1.0	3.0	3.0	0.1	62.0	4.0	4.0	49.5	1333.3	0.0	0.0	1.3
1983	3	1.0	24.0	24.0	0.8	62.1	29.0	29.0	49.5	1208.3	0.0	0.0	1.3
1983	4	4.0	216.0	54.0	7.2	62.3	259.0	64.8	49.8	1199.1	0.0	0.0	1.3
1983	5	27.0	1134.0	42.0	36.6	63.4	1361.0	50.4	51.1	1200.2	0.0	0.0	1.3
1983	6	18.0	945.0	52.5	31.5	64.4	1134.0	63.0	52.3	1200.0	0.0	0.0	1.3
1983	7	12.0	566.0	47.2	18.3	64.9	679.0	56.6	53.0	1199.6	0.0	0.0	1.3
1983	8	11.0	509.0	46.3	16.4	65.4	722.0	65.6	53.7	1418.5	0.0	0.0	1.3
1983	9	30.0	1213.0	40.4	40.4	66.6	1456.0	48.5	55.1	1200.3	0.0	0.0	1.3
1983	10	28.0	1468.0	52.4	47.4	68.1	1762.0	62.9	56.9	1200.3	0.0	0.0	1.3
1983	11	30.0	772.0	25.7	25.7	68.9	926.0	30.9	57.8	1199.5	0.0	0.0	1.3
1983	12	9.0	473.0	52.6	15.3	69.4	568.0	63.1	58.4	1200.8	0.0	0.0	1.3
Subtotal		186.0	8038.0	43.2	22.0		9758.0				0.0		
1984	1	22.0	1009.0	45.9	32.5	70.4	1211.0	55.0	59.6	1200.2	0.0	0.0	1.3
1984	2	7.0	315.0	45.0	10.9	70.7	378.0	54.0	60.0	1200.0	0.0	0.0	1.3
1984	3	3.0	130.0	43.3	4.2	70.8	156.0	52.0	60.1	1200.0	0.0	0.0	1.3
1984	4	6.0	285.0	47.5	9.5	71.1	342.0	57.0	60.5	1200.0	0.0	0.0	1.3
1984	5	31.0	1407.0	45.4	45.4	72.5	1688.0	54.5	62.2	1199.7	0.0	0.0	1.3
1984	6	30.0	900.0	30.0	30.0	73.4	1080.0	36.0	63.2	1200.0	0.0	0.0	1.3
1984	7	31.0	799.0	25.8	25.8	74.2	959.0	30.9	64.2	1200.3	0.0	0.0	1.3
1984	8	1.0	5.0	5.0	0.2	74.2	6.0	6.0	64.2	1200.0	0.0	0.0	1.3
1984	9	11.0	317.0	28.8	10.6	74.5	380.0	34.5	64.6	1198.7	0.0	0.0	1.3
1984	10	1.0	2.0	2.0	0.1	74.5	2.0	2.0	64.6	1000.0	68.0	68.0	1.4
1984	11	1.0	3.0	3.0	0.1	74.5	0.0	0.0	64.6	0.0	0.0	0.0	1.4
1984	12	17.0	497.0	29.2	16.0	75.0	596.0	35.1	65.2	1199.2	0.0	0.0	1.4
Subtotal		161.0	5669.0	35.2	15.5		6798.0				68.0		
1985	1	3.0	135.0	45.0	4.4	75.2	162.0	54.0	65.4	1200.0	0.0	0.0	1.4
1985	2	1.0	20.0	20.0	0.7	75.2	24.0	24.0	65.4	1200.0	0.0	0.0	1.4
1985	3	1.0	2.0	2.0	0.1	75.2	2.0	2.0	65.4	1000.0	0.0	0.0	1.4
1985	4	1.0	8.0	8.0	0.3	75.2	10.0	10.0	65.4	1250.0	0.0	0.0	1.4
1985	5	12.0	556.0	46.3	17.9	75.7	667.0	55.6	66.1	1199.6	0.0	0.0	1.4
1985	6	30.0	1166.0	38.9	38.9	76.9	1399.0	46.6	67.5	1199.8	0.0	0.0	1.4
1985	7	31.0	1063.0	34.3	34.3	78.0	1276.0	41.2	68.7	1200.4	31.0	1.0	1.4
1985	8	21.0	906.0	43.1	29.2	78.9	1087.0	51.8	69.8	1199.8	2.0	0.1	1.4
1985	9	7.0	203.0	29.0	6.8	79.1	244.0	34.9	70.1	1202.0	0.0	0.0	1.4
1985	10	31.0	1662.0	53.6	53.6	80.7	1994.0	64.3	72.1	1199.8	0.0	0.0	1.4
1985	11	15.0	457.0	30.5	15.2	81.2	914.0	60.9	73.0	2000.0	0.0	0.0	1.4
1985	12	21.0	771.0	36.7	24.9	82.0	1542.0	73.4	74.5	2000.0	0.0	0.0	1.4
Subtotal		174.0	6949.0	39.9	19.0		9321.0				33.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., JICARILLA 404 #1 (O-16). (SE 16-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	25.0	916.0	36.6	29.5	82.9	110.0	4.4	74.6	120.1	0.0	0.0	1.4
1986	2	18.0	534.0	29.7	19.1	83.4	641.0	35.6	75.3	1200.4	0.0	0.0	1.4
1986	3	20.0	617.0	30.9	19.9	84.0	740.0	37.0	76.0	1199.4	0.0	0.0	1.4
1986	4	8.0	225.0	28.1	7.5	84.3	270.0	33.8	76.3	1200.0	0.0	0.0	1.4
1986	5	22.0	723.0	32.9	23.3	85.0	867.0	39.4	77.1	1199.2	0.0	0.0	1.4
1986	6	28.0	872.0	31.1	29.1	85.9	1046.0	37.4	78.2	1199.5	0.0	0.0	1.4
1986	7	31.0	821.0	26.5	26.5	86.7	985.0	31.8	79.2	1199.8	0.0	0.0	1.4
1986	8	18.0	473.0	26.3	15.3	87.2	570.0	31.7	79.7	1205.1	0.0	0.0	1.4
1986	9	6.0	157.0	26.2	5.2	87.3	188.0	31.3	79.9	1197.5	0.0	0.0	1.4
1986	10	13.0	449.0	34.5	14.5	87.8	539.0	41.5	80.5	1200.4	10.0	0.8	1.4
1986	11	19.0	348.0	18.3	11.6	88.1	418.0	22.0	80.9	1201.1	0.0	0.0	1.4
1986	12	3.0	95.0	31.7	3.1	88.2	114.0	38.0	81.0	1200.0	0.0	0.0	1.4
Subtotal		211.0	6230.0	29.5	17.1		6488.0				10.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., FLORANCE #1 (JICARILLA 408). (NE 20-27N-1W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1977 11	7.0	143.0	20.4	4.8	0.1	43.0	6.1	0.0	300.7	0.0	0.0	0.0
1977 12	16.0	601.0	37.6	19.4	0.7	180.0	11.3	0.2	299.5	0.0	0.0	0.0
Subtotal	23.0	744.0	32.3	12.2		223.0				0.0		
1978 1	29.0	120.0	4.1	3.9	0.9	36.0	1.2	0.3	300.0	0.0	0.0	0.0
1978 2	16.0	30.0	1.9	1.1	0.9	9.0	0.6	0.3	300.0	0.0	0.0	0.0
1978 3	12.0	25.0	2.1	0.8	0.9	35.0	2.9	0.3	1400.0	0.0	0.0	0.0
1978 4	20.0	35.0	1.8	1.2	1.0	14.0	0.7	0.3	400.0	0.0	0.0	0.0
1978 5	31.0	78.0	2.5	2.5	1.0	704.0	22.7	1.0	9025.6	0.0	0.0	0.0
1978 6	29.0	84.0	2.9	2.8	1.1	10.0	0.3	1.0	119.0	0.0	0.0	0.0
1978 7	27.0	60.0	2.2	1.9	1.2	24.0	0.9	1.1	400.0	0.0	0.0	0.0
1978 8	19.0	50.0	2.6	1.6	1.2	20.0	1.1	1.1	400.0	0.0	0.0	0.0
1978 9	23.0	14.0	0.6	0.5	1.2	14.0	0.6	1.1	1000.0	0.0	0.0	0.0
1978 10	12.0	15.0	1.3	0.5	1.3	15.0	1.3	1.1	1000.0	0.0	0.0	0.0
1978 11	5.0	22.0	4.4	0.7	1.3	9.0	1.8	1.1	409.1	0.0	0.0	0.0
1978 12	5.0	6.0	1.2	0.2	1.3	7.0	1.4	1.1	1166.7	0.0	0.0	0.0
Subtotal	228.0	539.0	2.4	1.5		897.0				0.0		
1979 1	10.0	18.0	1.8	0.6	1.3	13.0	1.3	1.1	722.2	0.0	0.0	0.0
1979 2	2.0	7.0	3.5	0.3	1.3	9.0	4.5	1.1	1285.7	0.0	0.0	0.0
1979 3	3.0	16.0	5.3	0.5	1.3	6.0	2.0	1.1	375.0	0.0	0.0	0.0
1979 4	4.0	5.0	1.3	0.2	1.3	9.0	2.3	1.2	1800.0	4.0	1.0	0.0
1979 5	6.0	3.0	0.5	0.1	1.3	7.0	1.2	1.2	2333.3	0.0	0.0	0.0
1979 6	4.0	9.0	2.3	0.3	1.3	14.0	3.5	1.2	1555.6	0.0	0.0	0.0
1979 7	2.0	2.0	1.0	0.1	1.3	3.0	1.5	1.2	1500.0	0.0	0.0	0.0
1979 8	4.0	10.0	2.5	0.3	1.4	18.0	4.5	1.2	1800.0	0.0	0.0	0.0
1979 9	6.0	4.0	0.7	0.1	1.4	9.0	1.5	1.2	2250.0	0.0	0.0	0.0
1979 10	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1979 11	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1979 12	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Subtotal	41.0	74.0	1.8	0.2		88.0				4.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., FLORANCE #1 (JICARILLA 408). (NE 20-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980	1	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	2	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	3	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	4	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	5	5.0	13.0	2.6	0.4	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	6	6.0	2.0	0.3	0.1	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1980	7	8.0	5.0	0.6	0.2	1.4	2.0	0.3	1.2	400.0	0.0	0.0	0.0
1980	8	5.0	5.0	1.0	0.2	1.4	2.0	0.4	1.2	400.0	0.0	0.0	0.0
1980	9	18.0	101.0	5.6	3.4	1.5	40.0	2.2	1.3	396.0	0.0	0.0	0.0
1980	10	10.0	31.0	3.1	1.0	1.5	12.0	1.2	1.3	387.1	0.0	0.0	0.0
1980	11	13.0	51.0	3.9	1.7	1.6	20.0	1.5	1.3	392.2	7.0	0.5	0.0
1980	12	9.0	36.0	4.0	1.2	1.6	14.0	1.6	1.3	388.9	0.0	0.0	0.0
Subtotal		74.0	244.0	3.3	0.7		90.0				7.0		
1981	1	12.0	47.0	3.9	1.5	1.6	19.0	1.6	1.3	404.3	0.0	0.0	0.0
1981	2	6.0	26.0	4.3	0.9	1.7	10.0	1.7	1.3	384.6	0.0	0.0	0.0
1981	3	0.0	0.0	0.0	0.0	1.7	0.0	0.0	1.3	0.0	0.0	0.0	0.0
1981	4	4.0	29.0	7.3	1.0	1.7	12.0	3.0	1.3	413.8	3.0	0.8	0.0
1981	5	6.0	24.0	4.0	0.8	1.7	10.0	1.7	1.3	416.7	0.0	0.0	0.0
1981	6	2.0	1.0	0.5	0.0	1.7	0.0	0.0	1.3	0.0	0.0	0.0	0.0
1981	7	5.0	27.0	5.4	0.9	1.8	11.0	2.2	1.4	407.4	0.0	0.0	0.0
1981	8	4.0	36.0	9.0	1.2	1.8	14.0	3.5	1.4	388.9	0.0	0.0	0.0
1981	9	4.0	27.0	6.8	0.9	1.8	11.0	2.8	1.4	407.4	0.0	0.0	0.0
1981	10	4.0	17.0	4.3	0.5	1.8	7.0	1.8	1.4	411.8	0.0	0.0	0.0
1981	11	3.0	15.0	5.0	0.5	1.8	6.0	2.0	1.4	400.0	0.0	0.0	0.0
1981	12	2.0	12.0	6.0	0.4	1.9	5.0	2.5	1.4	416.7	0.0	0.0	0.0
Subtotal		52.0	261.0	5.0	0.7		105.0				3.0		
1982	1	1.0	8.0	8.0	0.3	1.9	3.0	3.0	1.4	375.0	0.0	0.0	0.0
1982	2	1.0	3.0	3.0	0.1	1.9	1.0	1.0	1.4	333.3	0.0	0.0	0.0
1982	3	1.0	2.0	2.0	0.1	1.9	1.0	1.0	1.4	500.0	0.0	0.0	0.0
1982	4	1.0	3.0	3.0	0.1	1.9	1.0	1.0	1.4	333.3	0.0	0.0	0.0
1982	5	2.0	5.0	2.5	0.2	1.9	2.0	1.0	1.4	400.0	0.0	0.0	0.0
1982	6	6.0	38.0	6.3	1.3	1.9	15.0	2.5	1.4	394.7	0.0	0.0	0.0
1982	7	8.0	41.0	5.1	1.3	2.0	16.0	2.0	1.4	390.2	0.0	0.0	0.0
1982	8	2.0	11.0	5.5	0.4	2.0	4.0	2.0	1.4	363.6	0.0	0.0	0.0
1982	9	5.0	24.0	4.8	0.8	2.0	10.0	2.0	1.5	416.7	0.0	0.0	0.0
1982	10	2.0	18.0	9.0	0.6	2.0	7.0	3.5	1.5	388.9	0.0	0.0	0.0
1982	11	4.0	17.0	4.3	0.6	2.0	7.0	1.8	1.5	411.8	0.0	0.0	0.0
1982	12	1.0	10.0	10.0	0.3	2.0	4.0	4.0	1.5	400.0	0.0	0.0	0.0
Subtotal		34.0	180.0	5.3	0.5		71.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., FLORANCE #1 (JICARILLA 408). (NE 20-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	1.0	3.0	3.0	0.1	2.0	12.0	12.0	1.5	4000.0	0.0	0.0	0.0
1983	2	1.0	1.0	1.0	0.0	2.0	4.0	4.0	1.5	4000.0	0.0	0.0	0.0
1983	3	1.0	1.0	1.0	0.0	2.0	4.0	4.0	1.5	4000.0	0.0	0.0	0.0
1983	4	1.0	2.0	2.0	0.1	2.0	8.0	8.0	1.5	4000.0	0.0	0.0	0.0
1983	5	1.0	3.0	3.0	0.1	2.1	1.0	1.0	1.5	333.3	0.0	0.0	0.0
1983	6	8.0	57.0	7.1	1.9	2.1	23.0	2.9	1.5	403.5	0.0	0.0	0.0
1983	7	10.0	28.0	2.8	0.9	2.1	11.0	1.1	1.5	392.9	0.0	0.0	0.0
1983	8	2.0	5.0	2.5	0.2	2.1	2.0	1.0	1.5	400.0	0.0	0.0	0.0
1983	9	4.0	15.0	3.8	0.5	2.2	6.0	1.5	1.5	400.0	0.0	0.0	0.0
1983	10	8.0	10.0	1.3	0.3	2.2	4.0	0.5	1.5	400.0	0.0	0.0	0.0
1983	11	1.0	2.0	2.0	0.1	2.2	1.0	1.0	1.5	500.0	0.0	0.0	0.0
1983	12	1.0	3.0	3.0	0.1	2.2	1.0	1.0	1.6	333.3	0.0	0.0	0.0
Subtotal		39.0	130.0	3.3	0.4		77.0				0.0		
1984	1	1.0	1.0	1.0	0.0	2.2	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1984	2	1.0	1.0	1.0	0.0	2.2	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1984	3	5.0	2.0	0.4	0.1	2.2	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1984	4	9.0	30.0	3.3	1.0	2.2	12.0	1.3	1.6	400.0	0.0	0.0	0.0
1984	5	12.0	15.0	1.3	0.5	2.2	6.0	0.5	1.6	400.0	0.0	0.0	0.0
1984	6	6.0	10.0	1.7	0.3	2.2	4.0	0.7	1.6	400.0	0.0	0.0	0.0
1984	7	5.0	20.0	4.0	0.6	2.3	8.0	1.6	1.6	400.0	25.0	5.0	0.0
1984	8	3.0	12.0	4.0	0.4	2.3	5.0	1.7	1.6	416.7	0.0	0.0	0.0
1984	9	6.0	15.0	2.5	0.5	2.3	6.0	1.0	1.6	400.0	0.0	0.0	0.0
1984	10	1.0	2.0	2.0	0.1	2.3	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1984	11	1.0	1.0	1.0	0.0	2.3	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1984	12	6.0	20.0	3.3	0.6	2.3	8.0	1.3	1.6	400.0	0.0	0.0	0.0
Subtotal		56.0	129.0	2.3	0.4		49.0				25.0		
1985	1	2.0	4.0	2.0	0.1	2.3	2.0	1.0	1.6	500.0	0.0	0.0	0.0
1985	2	2.0	4.0	2.0	0.1	2.3	2.0	1.0	1.6	500.0	0.0	0.0	0.0
1985	3	1.0	2.0	2.0	0.1	2.3	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1985	4	6.0	20.0	3.3	0.7	2.3	8.0	1.3	1.6	400.0	32.0	5.3	0.1
1985	5	10.0	30.0	3.0	1.0	2.4	12.0	1.2	1.6	400.0	0.0	0.0	0.1
1985	6	15.0	14.0	0.9	0.5	2.4	6.0	0.4	1.6	428.6	70.0	4.7	0.1
1985	7	4.0	34.0	8.5	1.1	2.4	14.0	3.5	1.6	411.8	0.0	0.0	0.1
1985	8	7.0	20.0	2.9	0.6	2.4	8.0	1.1	1.7	400.0	0.0	0.0	0.1
1985	9	5.0	11.0	2.2	0.4	2.4	4.0	0.8	1.7	363.6	0.0	0.0	0.1
1985	10	7.0	20.0	2.9	0.6	2.5	8.0	1.1	1.7	400.0	0.0	0.0	0.1
1985	11	1.0	2.0	2.0	0.1	2.5	1.0	1.0	1.7	500.0	0.0	0.0	0.1
1985	12	1.0	3.0	3.0	0.1	2.5	0.0	0.0	1.7	0.0	0.0	0.0	0.1
Subtotal		61.0	164.0	2.7	0.4		65.0				102.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

WEST PUERTO CHIQUITO POOL, RIO ARRIBA CO., NM
BENSON-MONTIN-GREER DRILLING CORP., FLORANCE #1 (JICARILLA 408). (NE 20-27N-1W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	2.0	12.0	6.0	0.4	2.5	5.0	2.5	1.7	416.7	0.0	0.0	0.1
1986	2	1.0	3.0	3.0	0.1	2.5	1.0	1.0	1.7	333.3	0.0	0.0	0.1
1986	3	2.0	14.0	7.0	0.5	2.5	6.0	3.0	1.7	428.6	0.0	0.0	0.1
1986	4	8.0	28.0	3.5	0.9	2.5	11.0	1.4	1.7	392.9	0.0	0.0	0.1
1986	5	6.0	18.0	3.0	0.6	2.5	7.0	1.2	1.7	388.9	0.0	0.0	0.1
1986	6	5.0	13.0	2.6	0.4	2.6	5.0	1.0	1.7	384.6	16.0	3.2	0.2
1986	7	4.0	12.0	3.0	0.4	2.6	5.0	1.3	1.7	416.7	0.0	0.0	0.2
1986	8	5.0	15.0	3.0	0.5	2.6	6.0	1.2	1.7	400.0	0.0	0.0	0.2
1986	9	2.0	8.0	4.0	0.3	2.6	3.0	1.5	1.7	375.0	0.0	0.0	0.2
1986	10	6.0	12.0	2.0	0.4	2.6	5.0	0.8	1.7	416.7	0.0	0.0	0.2
1986	11	3.0	3.0	1.0	0.1	2.6	1.0	0.3	1.7	333.3	0.0	0.0	0.2
1986	12	2.0	3.0	1.5	0.1	2.6	1.0	0.5	1.7	333.3	0.0	0.0	0.2
Subtotal		46.0	141.0	3.1	0.4		56.0				16.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL
PRODUCTION STATISTICS

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 9113 Exhibit No. 2
Submitted by DUGAN
Hearing Date 3/30/87

GAVILAN MANCOS POOL., RIO ARRIBA CO., NM
GAVILAN MANCOS POOL TOTAL.

			OIL				GAS			GOR	WATER		
YR MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1980 11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980 12	1	1	60.0	60.0	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	1	1	60.0	60.0	1.0		0.0				0.0		
1981 1	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 2	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 3	1	2	36.0	18.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 4	1	4	6.0	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 5	1	5	12.0	2.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 6	1	24	56.0	2.3	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 7	1	31	56.0	1.8	1.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 8	1	4	16.0	4.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 9	1	13	9.0	0.7	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 10	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 11	1	15	2.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981 12	1	10	4.0	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	9	108	197.0	1.8	0.1		0.0				0.0		
1982 1	1	11	2.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982 2	1	12	4.0	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982 3	2	13	1082.0	83.2	17.5	1.3	1135.0	87.3	1.1	1049.0	0.0	0.0	0.0
1982 4	0	3	0.0	0.0	0.0	1.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0
1982 5	2	32	75.0	2.3	1.2	1.4	0.0	0.0	1.1	0.0	96.0	3.0	0.1
1982 6	1	30	1197.0	39.9	39.9	2.6	9129.0	304.3	10.3	7626.6	57.0	1.9	0.2
1982 7	1	24	547.0	22.8	17.6	3.2	10293.0	428.9	20.6	18817.2	3.0	0.1	0.2
1982 8	2	24	883.0	36.8	14.2	4.0	8249.0	343.7	28.8	9342.0	13.0	0.5	0.2
1982 9	1	25	971.0	38.8	32.4	5.0	8116.0	324.6	36.9	8358.4	23.0	0.9	0.2
1982 10	1	31	878.0	28.3	28.3	5.9	8847.0	285.4	45.8	10076.3	31.0	1.0	0.2
1982 11	1	15	778.0	51.9	25.9	6.7	7733.0	515.5	53.5	9939.6	3.0	0.2	0.2
1982 12	1	14	761.0	54.4	24.5	7.4	8606.0	614.7	62.1	11308.8	0.0	0.0	0.2
Subtotal	14	234	7178.0	30.7	1.4		62108.0				226.0		

* BOPPD: BARRELS PEER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL., RIO ARRIBA CO., NM
GAVILAN MANCOS POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	OIL AVE BOPPD	OIL AVE BOPCD	OIL CUM MBO	GAS MCF/M	GAS AVE MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER AVE BWPD	WATER CUM MBW
1983	1	2	48	2042.0	42.5	32.9	9.5	15098.0	314.5	77.2	7393.7	4.0	0.1	0.2
1983	2	2	48	1776.0	37.0	31.7	11.3	12591.0	262.3	89.8	7089.5	16.0	0.3	0.2
1983	3	1	5	206.0	41.2	6.6	11.5	4061.0	812.2	93.9	19713.6	0.0	0.0	0.2
1983	4	1	16	1073.0	67.1	35.8	12.5	8552.0	534.5	102.4	7970.2	2.0	0.1	0.2
1983	5	1	31	1575.0	50.8	50.8	14.1	18790.0	606.1	121.2	11930.2	60.0	1.9	0.3
1983	6	2	31	1756.0	56.6	29.3	15.9	17836.0	575.4	139.0	10157.2	5.0	0.2	0.3
1983	7	2	50	2723.0	54.5	43.9	18.6	12996.0	259.9	152.0	4772.7	6.0	0.1	0.3
1983	8	4	58	6924.0	119.4	55.8	25.5	18643.0	321.4	170.7	2692.5	420.0	7.2	0.7
1983	9	6	81	8205.0	101.3	45.6	33.7	17956.0	221.7	188.6	2188.4	98.0	1.2	0.8
1983	10	5	81	10112.0	124.8	65.2	43.8	15568.0	192.2	204.2	1539.6	96.0	1.2	0.9
1983	11	9	200	21375.0	106.9	79.2	65.2	12761.0	63.8	217.0	597.0	427.0	2.1	1.4
1983	12	5	255	31627.0	124.0	204.0	96.8	25297.0	99.2	242.3	799.9	287.0	1.1	1.6
Subtotal		40	904	89394.0	98.9	6.1		180149.0				1421.0		
1984	1	10	278	29448.0	105.9	95.0	126.3	22374.0	80.5	264.6	759.8	279.0	1.0	1.9
1984	2	10	250	29380.0	117.5	101.3	155.7	20990.0	84.0	285.6	714.4	231.0	0.9	2.2
1984	3	10	240	35279.0	147.0	113.8	190.9	23521.0	98.0	309.1	666.7	217.0	0.9	2.4
1984	4	10	241	30826.0	127.9	102.8	221.8	29178.0	121.1	338.3	946.5	269.0	1.1	2.6
1984	5	12	313	48106.0	153.7	129.3	269.9	52385.0	167.4	390.7	1088.9	172.0	0.5	2.8
1984	6	11	287	37533.0	130.8	113.7	307.4	43143.0	150.3	433.8	1149.5	186.0	0.6	3.0
1984	7	10	293	35510.0	121.2	114.5	342.9	40491.0	138.2	474.3	1140.3	183.0	0.6	3.2
1984	8	13	390	48575.0	124.6	120.5	391.5	50402.0	129.2	524.7	1037.6	254.0	0.7	3.4
1984	9	13	385	53177.0	138.1	136.4	444.7	55346.0	143.8	580.1	1040.8	181.0	0.5	3.6
1984	10	14	389	49721.0	127.8	114.6	494.4	56561.0	145.4	636.6	1137.6	103.0	0.3	3.7
1984	11	16	412	53438.0	129.7	111.3	547.8	56307.0	136.7	693.0	1053.7	192.0	0.5	3.9
1984	12	16	453	50865.0	112.3	102.6	598.7	58255.0	128.6	751.2	1145.3	106.0	0.2	4.0
Subtotal		145	3931	501858.0	127.7	9.5		508953.0				2373.0		
1985	1	18	494	44806.0	90.7	80.3	643.5	54837.0	111.0	806.0	1223.9	639.0	1.3	4.7
1985	2	19	412	46740.0	113.4	87.9	690.2	68213.0	165.6	874.3	1459.4	193.0	0.5	4.9
1985	3	20	420	51713.0	123.1	83.4	741.9	77613.0	184.8	951.9	1500.8	154.0	0.4	5.0
1985	4	24	597	66737.0	111.8	92.7	808.7	104172.0	174.5	1056.0	1560.9	559.0	0.9	5.6
1985	5	24	572	73684.0	128.8	99.0	882.4	102511.0	179.2	1158.6	1391.2	201.0	0.4	5.8
1985	6	27	611	85109.0	139.3	105.1	967.5	124827.0	204.3	1283.4	1466.7	191.0	0.3	6.0
1985	7	28	698	86253.0	123.6	99.4	1053.7	123932.0	177.6	1407.3	1436.8	179.0	0.3	6.1
1985	8	27	658	88588.0	134.6	105.8	1142.3	135181.0	205.4	1542.5	1526.0	188.0	0.3	6.3
1985	9	24	585	77586.0	132.6	107.8	1219.9	114295.0	195.4	1656.8	1473.1	154.0	0.3	6.5
1985	10	27	669	92111.0	137.7	110.0	1312.0	128199.0	191.6	1785.0	1391.8	442.0	0.7	6.9
1985	11	29	737	104089.0	141.2	119.6	1416.1	133530.0	181.2	1918.5	1282.8	353.0	0.5	7.3
1985	12	27	729	104623.0	143.5	125.0	1520.7	131884.0	180.9	2050.4	1260.6	650.0	0.9	7.9
Subtotal		294	7182	922039.0	128.4	8.6		1299194				3903.0		

* BOPPD: BARRELS PEER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL., RIO ARRIBA CO., NM
GAVILAN MANCOS POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1986	1	34	822	131246.0	159.7	124.5	1652.0	137475.0	167.2	2187.9	1047.5	310.0	0.4	8.2
1986	2	32	739	112110.0	151.7	125.1	1764.1	149927.0	202.9	2337.8	1337.3	978.0	1.3	9.2
1986	3	30	772	128971.0	167.1	138.7	1893.1	160597.0	208.0	2498.4	1245.2	379.0	0.5	9.6
1986	4	27	734	109425.0	149.1	135.1	2002.5	173543.0	236.4	2671.9	1586.0	172.0	0.2	9.8
1986	5	37	775	128752.0	166.1	112.3	2131.2	166917.0	215.4	2838.9	1296.4	223.0	0.3	10.0
1986	6	44	1126	163219.0	145.0	123.7	2294.4	258691.0	229.7	3097.6	1584.9	976.0	0.9	11.0
1986	7	43	1065	151941.0	142.7	114.0	2446.4	314718.0	295.5	3412.3	2071.3	1004.0	0.9	12.0
1986	8	41	1030	132257.0	128.4	104.1	2578.6	284554.0	276.3	3696.8	2151.5	831.0	0.8	12.8
1986	9	41	716	86793.0	121.2	70.6	2665.4	184219.0	257.3	3881.0	2122.5	532.0	0.7	13.3
1986	10	48	1129	101728.0	90.1	68.4	2767.2	284917.0	252.4	4166.0	2800.8	658.0	0.6	14.0
1986	11	50	1187	99292.0	83.6	66.2	2866.5	316441.0	266.6	4482.4	3187.0	657.0	0.6	14.6
1986	12	49	1242	98042.0	78.9	64.5	2964.5	321674.0	259.0	4804.1	3281.0	875.0	0.7	15.5
Subtotal		476	11337	1443776	127.4	8.3		2753673				7595.0		

* BOPPD: BARRELS PEER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
AMOCO POOL TOTAL.

YR MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	OIL AVE BOPPD	OIL AVE BOPCD	OIL CUM MBO	GAS MCF/M	GAS AVE MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER AVE BWPD	WATER CUM MBW
1984 11	1	30	680.0	22.7	22.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984 12	1	31	275.0	8.9	8.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	2	61	955.0	15.7	7.8		0.0				0.0		
1985 1	1	31	219.0	7.1	7.1	1.2	0.0	0.0	0.0	0.0	100.0	3.2	0.1
1985 2	2	28	2500.0	89.3	44.6	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 3	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 4	1	1	1.0	1.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 5	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 6	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 7	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 8	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 9	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 10	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 11	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 12	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	4	60	2720.0	45.3	1.9		0.0				100.0		
1986 1	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 2	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 3	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 4	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 5	0	0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 6	1	30	126.0	4.2	4.2	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 7	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 8	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 9	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 10	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 11	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 12	0	0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	1	30	126.0	4.2	0.3		0.0				0.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP. POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	OIL AVE BOPPD	OIL AVE BOPCD	OIL CUM MBO	GAS MCF/M	GAS AVE MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER AVE BWPD	WATER CUM MBW
1980	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	12	1	1	60.0	60.0	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		1	1	60.0	60.0	1.0		0.0				0.0		
1981	1	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	2	0	0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	3	1	2	36.0	18.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	4	1	4	6.0	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	5	1	5	12.0	2.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	6	1	24	56.0	2.3	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	7	1	31	56.0	1.8	1.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	8	1	4	16.0	4.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	9	1	13	9.0	0.7	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	10	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	11	1	15	2.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	12	1	10	4.0	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		9	108	197.0	1.8	0.1		0.0				0.0		
1982	1	1	11	2.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	2	1	12	4.0	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	3	1	10	3.0	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	4	0	3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	5	1	31	10.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	6	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	7	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	8	1	6	1.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	9	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	10	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	11	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	12	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		5	73	20.0	0.3	0.0		0.0				0.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP. POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	GAS MCF/M	AVE MCF/D	CUM MMCF	GOR SCF/BBL	WATER Month	AVE BWPD	CUM MBW
1983	1	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	2	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	3	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	4	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	5	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	6	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	7	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	8	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	9	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	10	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	11	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	12	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0	0	0.0	0.0	0.0		0.0				0.0		
1984	1	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	2	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	3	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	4	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	5	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	6	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	7	0	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	8	1	31	1321.0	42.6	42.6	1.6	835.0	26.9	0.8	632.1	16.0	0.5	0.0
1984	9	1	30	1288.0	42.9	42.9	2.9	814.0	27.1	1.6	632.0	15.0	0.5	0.0
1984	10	1	22	984.0	44.7	31.7	3.9	622.0	28.3	2.3	632.1	11.0	0.5	0.0
1984	11	2	35	1604.0	45.8	26.7	5.5	992.0	28.3	3.3	618.5	75.0	2.1	0.1
1984	12	2	51	1658.0	32.5	26.7	7.1	2072.0	40.6	5.3	1249.7	26.0	0.5	0.1
Subtotal		7	169	6855.0	40.6	2.7		5335.0				143.0		
1985	1	2	58	1668.0	28.8	26.9	8.8	2079.0	35.8	7.4	1246.4	29.0	0.5	0.2
1985	2	2	33	1145.0	34.7	20.4	9.9	1274.0	38.6	8.7	1112.7	16.0	0.5	0.2
1985	3	1	4	74.0	18.5	2.4	10.0	306.0	76.5	9.0	4135.1	2.0	0.5	0.2
1985	4	2	48	1503.0	31.3	25.1	11.5	2245.0	46.8	11.2	1493.7	24.0	0.5	0.2
1985	5	2	58	1735.0	29.9	28.0	13.3	2128.0	36.7	13.4	1226.5	30.0	0.5	0.2
1985	6	2	47	1652.0	35.1	27.5	14.9	1952.0	41.5	15.3	1181.6	24.0	0.5	0.3
1985	7	2	54	1603.0	29.7	25.9	16.5	1700.0	31.5	17.0	1060.5	28.0	0.5	0.3
1985	8	2	42	1512.0	36.0	24.4	18.0	1749.0	41.6	18.8	1156.7	13.0	0.3	0.3
1985	9	2	59	1519.0	25.7	25.3	19.5	2809.0	47.6	21.6	1849.2	22.0	0.4	0.3
1985	10	2	62	1463.0	23.6	23.6	21.0	2803.0	45.2	24.4	1915.9	24.0	0.4	0.4
1985	11	2	60	1393.0	23.2	23.2	22.4	2647.0	44.1	27.0	1900.2	23.0	0.4	0.4
1985	12	2	59	1246.0	21.1	20.1	23.6	2233.0	37.8	29.3	1792.1	23.0	0.4	0.4
Subtotal		23	584	16513.0	28.3	2.0		23925.0				258.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY.

* BOPCD: BARRELS PER WELL PER CALENDAR DAY.

BAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP. POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1986	1	2	62	1251.0	20.2	20.2	24.9	2350.0	37.9	31.6	1878.5	24.0	0.4	0.4
1986	2	3	59	1116.0	18.9	13.3	26.0	2128.0	36.1	33.7	1906.8	421.0	7.1	0.8
1986	3	3	60	777.0	13.0	8.4	26.8	1818.0	30.3	35.6	2339.8	172.0	2.9	1.0
1986	4	1	53	604.0	11.4	20.1	27.4	1124.0	21.2	36.7	1860.9	21.0	0.4	1.0
1986	5	3	82	3173.0	38.7	34.1	30.6	3177.0	38.7	39.9	1001.3	29.0	0.4	1.1
1986	6	3	89	5468.0	61.4	60.8	36.0	5444.0	61.2	45.3	995.6	23.0	0.3	1.1
1986	7	3	70	3916.0	55.9	42.1	39.9	4510.0	64.4	49.8	1151.7	29.0	0.4	1.1
1986	8	3	65	3863.0	59.4	41.5	43.8	3882.0	59.7	53.7	1004.9	11.0	0.2	1.1
1986	9	2	8	1077.0	134.6	18.0	44.9	834.0	104.3	54.5	774.4	3.0	0.4	1.1
1986	10	4	67	3362.0	50.2	27.1	48.3	3993.0	59.6	58.5	1187.7	24.0	0.4	1.2
1986	11	4	109	5069.0	46.5	42.2	53.3	7139.0	65.5	65.7	1408.4	30.0	0.3	1.2
1986	12	3	105	5067.0	48.3	54.5	58.4	7347.0	70.0	73.0	1450.0	95.0	0.9	1.3
Subtotal		34	829	34743.0	41.9	2.8		43746.0				882.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY.   * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MALLON OIL CO. POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	OIL AVE BOPPD	OIL AVE BOPCD	OIL CUM MBO	GAS MCF/M	GAS AVE MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER AVE BWPD	WATER CUM MBW
1985	3	1	12	429.0	35.8	13.8	0.4	257.0	21.4	0.3	599.1	0.0	0.0	0.0
1985	4	1	19	1734.0	91.3	57.8	2.2	1040.0	54.7	1.3	599.8	0.0	0.0	0.0
1985	5	1	2	249.0	124.5	8.0	2.4	149.0	74.5	1.4	598.4	0.0	0.0	0.0
1985	6	1	18	2733.0	151.8	91.1	5.1	1399.0	77.7	2.8	511.9	0.0	0.0	0.0
1985	7	3	42	9958.0	237.1	107.1	15.1	5055.0	120.4	7.9	507.6	0.0	0.0	0.0
1985	8	3	44	14693.0	333.9	158.0	29.8	10441.0	237.3	18.3	710.6	0.0	0.0	0.0
1985	9	2	35	9620.0	274.9	160.3	39.4	6877.0	196.5	25.2	714.9	0.0	0.0	0.0
1985	10	3	40	13483.0	337.1	145.0	52.9	8121.0	203.0	33.3	602.3	0.0	0.0	0.0
1985	11	3	55	18068.0	328.5	200.8	71.0	13487.0	245.2	46.8	746.5	0.0	0.0	0.0
1985	12	3	47	9144.0	194.6	98.3	80.1	7012.0	149.2	53.8	766.8	0.0	0.0	0.0
Subtotal		21	314	80111.0	255.1	12.5		53838.0				0.0		
1986	1	5	137	42758.0	312.1	275.9	122.9	21020.0	153.4	74.9	491.6	0.0	0.0	0.0
1986	2	4	111	33749.0	304.0	301.3	156.6	34274.0	308.8	109.1	1015.6	0.0	0.0	0.0
1986	3	5	121	36624.0	302.7	236.3	193.2	26656.0	220.3	135.8	727.8	0.0	0.0	0.0
1986	4	5	112	34343.0	306.6	229.0	227.6	34100.0	304.5	169.9	992.9	0.0	0.0	0.0
1986	5	4	74	29265.0	395.5	236.0	256.8	31556.0	426.4	201.4	1078.3	0.0	0.0	0.0
1986	6	4	115	46196.0	401.7	385.0	303.0	60005.0	521.8	261.4	1298.9	0.0	0.0	0.0
1986	7	5	99	36151.0	365.2	233.2	339.2	63026.0	636.6	324.5	1743.4	0.0	0.0	0.0
1986	8	5	138	37512.0	271.8	242.0	376.7	58931.0	427.0	383.4	1571.0	0.0	0.0	0.0
1986	9	6	148	38525.0	260.3	214.0	415.2	78996.0	533.8	462.4	2050.5	0.0	0.0	0.0
1986	10	6	162	29799.0	183.9	160.2	445.0	69528.0	429.2	531.9	2333.2	0.0	0.0	0.0
1986	11	6	162	31215.0	192.7	173.4	476.2	71680.0	442.5	603.6	2296.3	0.0	0.0	0.0
1986	12	6	166	28371.0	170.9	152.5	504.6	73804.0	444.6	677.4	2601.4	0.0	0.0	0.0
Subtotal		61	1545	424508.0	274.8	19.1		623576.0				0.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY.   * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1984	5	1	18	1806.0	100.3	58.3	1.8	0.0	0.0	0.0	0.0	16.0	0.9	0.0
1984	6	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	7	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	8	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	9	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	10	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	11	0	0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	12	1	30	0.0	0.0	0.0	1.8	1621.0	54.0	1.6	0.0	0.0	0.0	0.0
Subtotal		2	48	1806.0	37.6	3.7		1621.0				16.0		
1985	1	1	31	735.0	23.7	23.7	2.5	1600.0	51.6	3.2	2176.9	430.0	13.9	0.4
1985	2	1	28	3984.0	142.3	142.3	6.5	12689.0	453.2	15.9	3185.0	97.0	3.5	0.5
1985	3	1	31	5110.0	164.8	164.8	11.6	21515.0	694.0	37.4	4210.4	16.0	0.5	0.6
1985	4	2	44	7952.0	180.7	132.5	19.6	11401.0	259.1	48.8	1433.7	30.0	0.7	0.6
1985	5	2	61	10976.0	179.9	177.0	30.6	19199.0	314.7	68.0	1749.2	20.0	0.3	0.6
1985	6	2	58	11369.0	196.0	189.5	41.9	17056.0	294.1	85.1	1500.2	62.0	1.1	0.7
1985	7	2	61	12860.0	210.8	207.4	54.8	20156.0	330.4	105.2	1567.3	17.0	0.3	0.7
1985	8	2	62	11844.0	191.0	191.0	66.6	23224.0	374.6	128.5	1960.8	8.0	0.1	0.7
1985	9	2	51	11285.0	221.3	188.1	77.9	20820.0	408.2	149.3	1844.9	7.0	0.1	0.7
1985	10	3	78	14050.0	180.1	151.1	92.0	22327.0	286.2	171.6	1589.1	246.0	3.2	0.9
1985	11	4	87	13812.0	158.8	115.1	105.8	32464.0	373.1	204.1	2350.4	108.0	1.2	1.1
1985	12	3	61	11493.0	188.4	123.6	117.3	22894.0	375.3	227.0	1992.0	10.0	0.2	1.1
Subtotal		25	653	115470.0	176.8	12.7		225345.0				1051.0		
1986	1	5	49	8622.0	176.0	55.6	125.9	17907.0	365.4	244.9	2076.9	58.0	1.2	1.1
1986	2	4	74	12194.0	164.8	108.9	138.1	15602.0	210.8	260.5	1279.5	379.0	5.1	1.5
1986	3	3	63	13861.0	220.0	149.0	152.0	16330.0	259.2	276.8	1178.1	49.0	0.8	1.6
1986	4	2	56	12252.0	218.8	204.2	164.2	18499.0	330.3	295.3	1509.9	18.0	0.3	1.6
1986	5	2	62	11071.0	178.6	178.6	175.3	15757.0	254.1	311.1	1423.3	9.0	0.1	1.6
1986	6	2	60	10841.0	180.7	180.7	186.1	16321.0	272.0	327.4	1505.5	40.0	0.7	1.6
1986	7	2	62	10642.0	171.6	171.6	196.8	20739.0	334.5	348.1	1948.8	29.0	0.5	1.6
1986	8	2	62	10763.0	173.6	173.6	207.5	18684.0	301.4	366.8	1735.9	22.0	0.4	1.7
1986	9	2	51	7522.0	147.5	125.4	215.0	15911.0	312.0	382.7	2115.3	6.0	0.1	1.7
1986	10	5	88	9536.0	108.4	61.5	224.6	18162.0	206.4	400.9	1904.6	32.0	0.4	1.7
1986	11	5	122	9766.0	80.0	65.1	234.3	41440.0	339.7	442.3	4243.3	49.0	0.4	1.8
1986	12	5	130	12205.0	93.9	78.7	246.6	47523.0	365.6	489.8	3893.7	58.0	0.4	1.8
Subtotal		39	879	129275.0	147.1	9.1		262875.0				749.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

BAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERRION OIL & GAS CORP. POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1985	1	3	56	871.0	15.6	9.4	0.9	2411.0	43.1	2.4	2768.1	0.0	0.0	0.0
1985	2	3	35	531.0	15.2	6.3	1.4	1670.0	47.7	4.1	3145.0	0.0	0.0	0.0
1985	3	3	27	370.0	13.7	4.0	1.8	2307.0	85.4	6.4	6235.1	0.0	0.0	0.0
1985	4	3	71	1313.0	18.5	14.6	3.1	4213.0	59.3	10.6	3208.7	158.0	2.2	0.2
1985	5	3	67	737.0	11.0	7.9	3.8	5612.0	83.8	16.2	7614.7	13.0	0.2	0.2
1985	6	3	69	739.0	10.7	8.2	4.6	4347.0	63.0	20.6	5882.3	0.0	0.0	0.2
1985	7	3	53	463.0	8.7	5.0	5.0	2184.0	41.2	22.7	4717.1	0.0	0.0	0.2
1985	8	3	68	523.0	7.7	5.6	5.5	2205.0	32.4	24.9	4216.1	0.0	0.0	0.2
1985	9	2	36	246.0	6.8	4.1	5.8	1222.0	33.9	26.2	4967.5	0.0	0.0	0.2
1985	10	2	32	247.0	7.7	4.0	6.0	1181.0	36.9	27.4	4781.4	0.0	0.0	0.2
1985	11	2	52	698.0	13.4	11.6	6.7	2434.0	46.8	29.8	3487.1	0.0	0.0	0.2
1985	12	1	31	565.0	18.2	18.2	7.3	1695.0	54.7	31.5	3000.0	0.0	0.0	0.2
Subtotal		31	597	7303.0	12.2	0.6		31481.0				171.0		
1986	1	2	40	422.0	10.6	6.8	7.7	2423.0	60.6	33.9	5741.7	0.0	0.0	0.2
1986	2	3	37	600.0	16.2	7.1	8.3	4395.0	118.8	38.3	7325.0	0.0	0.0	0.2
1986	3	2	30	170.0	5.7	2.7	8.5	1188.0	39.6	39.5	6988.2	0.0	0.0	0.2
1986	4	2	34	188.0	5.5	3.1	8.7	1165.0	34.3	40.7	6196.8	0.0	0.0	0.2
1986	5	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	6	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	7	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	8	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	9	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	10	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	11	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
1986	12	0	0	0.0	0.0	0.0	8.7	0.0	0.0	40.7	0.0	0.0	0.0	0.2
Subtotal		9	141	1380.0	9.8	0.4		9171.0				0.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P. MCHUGH POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1983	1	1	23	479.0	20.8	15.5	0.5	690.0	30.0	0.7	1440.5	0.0	0.0	0.0
1983	2	1	28	787.0	28.1	28.1	1.3	0.0	0.0	0.7	0.0	15.0	0.5	0.0
1983	3	0	0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	4	0	0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	5	0	0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	6	1	1	233.0	233.0	7.8	1.5	7.0	7.0	0.7	30.0	0.0	0.0	0.0
1983	7	1	31	1550.0	50.0	50.0	3.0	2428.0	78.3	3.1	1566.5	0.0	0.0	0.0
1983	8	1	2	970.0	485.0	31.3	4.0	2390.0	1195.0	5.5	2463.9	0.0	0.0	0.0
1983	9	2	7	1083.0	154.7	18.1	5.1	1917.0	273.9	7.4	1770.1	0.0	0.0	0.0
1983	10	1	5	961.0	192.2	31.0	6.1	1129.0	225.8	8.6	1174.8	0.0	0.0	0.0
1983	11	5	128	14289.0	111.6	95.3	20.4	3857.0	30.1	12.4	269.9	427.0	3.3	0.4
1983	12	6	158	24298.0	153.8	130.6	44.7	6016.0	38.1	18.4	247.6	250.0	1.6	0.7
Subtotal		19	383	44650.0	116.6	6.4		18434.0				692.0		
1984	1	6	163	19059.0	116.9	102.5	63.7	4741.0	29.1	23.2	248.8	268.0	1.6	1.0
1984	2	6	147	17850.0	121.4	102.6	81.6	3574.0	24.3	26.7	200.2	220.0	1.5	1.2
1984	3	6	116	23540.0	202.9	126.6	105.1	5217.0	45.0	32.0	221.6	128.0	1.1	1.3
1984	4	6	123	18573.0	151.0	103.2	123.7	10047.0	81.7	42.0	540.9	169.0	1.4	1.5
1984	5	6	154	33359.0	216.6	179.3	157.0	18174.0	118.0	60.2	544.8	132.0	0.9	1.6
1984	6	6	162	25945.0	160.2	144.1	183.0	18272.0	112.8	78.5	704.3	184.0	1.1	1.8
1984	7	6	174	24408.0	140.3	131.2	207.4	12609.0	72.5	91.1	516.6	183.0	1.1	2.0
1984	8	8	235	36999.0	157.4	149.2	244.4	17988.0	76.5	109.1	486.2	238.0	1.0	2.2
1984	9	8	235	41611.0	177.1	173.4	286.0	22285.0	94.8	131.3	535.6	166.0	0.7	2.4
1984	10	8	244	38668.0	158.5	155.9	324.7	22132.0	90.7	153.5	572.4	92.0	0.4	2.5
1984	11	8	220	41857.0	190.3	174.4	366.5	21562.0	98.0	175.0	515.1	117.0	0.5	2.6
1984	12	8	218	39542.0	181.4	159.4	406.1	22799.0	104.6	197.8	576.6	80.0	0.4	2.7
Subtotal		82	2191	361411.0	165.0	12.0		179400.0				1977.0		
1985	1	7	212	32700.0	154.2	150.7	438.8	22048.0	104.0	219.9	674.3	80.0	0.4	2.7
1985	2	7	184	30755.0	167.1	156.9	469.5	21711.0	118.0	241.6	705.9	80.0	0.4	2.8
1985	3	8	212	36790.0	173.5	148.3	506.3	16619.0	78.4	258.2	451.7	86.0	0.4	2.9
1985	4	9	240	40964.0	170.7	151.7	547.3	30756.0	128.2	289.0	750.8	100.0	0.4	3.0
1985	5	10	242	43973.0	181.7	141.8	591.2	26449.0	109.3	315.4	601.5	72.0	0.3	3.1
1985	6	13	269	51862.0	192.8	133.0	643.1	35151.0	130.7	350.6	677.8	70.0	0.3	3.2
1985	7	12	338	46496.0	137.6	125.0	689.6	38491.0	113.9	389.1	827.8	125.0	0.4	3.3
1985	8	11	326	47286.0	145.0	138.7	736.9	43437.0	133.2	432.5	918.6	137.0	0.4	3.4
1985	9	11	322	45594.0	141.6	138.2	782.5	40941.0	127.1	473.4	897.9	125.0	0.4	3.5
1985	10	12	350	52698.0	150.6	141.7	835.2	46928.0	134.1	520.4	890.5	140.0	0.4	3.7
1985	11	12	315	57778.0	183.4	160.5	893.0	42762.0	135.8	563.1	740.1	118.0	0.4	3.8
1985	12	12	353	62524.0	177.1	168.1	955.5	52126.0	147.7	615.3	833.7	136.0	0.4	3.9
Subtotal		124	3363	549420.0	163.4	12.1		417419.0				1269.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	GAS MCF/M	AVE MCF/D	CUM MMCF	GOR SCF/BBL	WATER Month	AVE BWPD	CUM MBW
1982	3	1	3	1079.0	359.7	34.8	1.1	1135.0	378.3	1.1	1051.9	0.0	0.0	0.0
1982	4	0	0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0
1982	5	1	1	65.0	65.0	2.1	1.1	0.0	0.0	1.1	0.0	96.0	96.0	0.1
1982	6	1	30	1197.0	39.9	39.9	2.3	9129.0	304.3	10.3	7626.6	57.0	1.9	0.2
1982	7	1	24	547.0	22.8	17.6	2.9	10293.0	428.9	20.6	18817.2	3.0	0.1	0.2
1982	8	1	18	882.0	49.0	28.5	3.8	8249.0	458.3	28.8	9352.6	13.0	0.7	0.2
1982	9	1	25	971.0	38.8	32.4	4.7	8116.0	324.6	36.9	8358.4	23.0	0.9	0.2
1982	10	1	31	878.0	28.3	28.3	5.6	8847.0	285.4	45.8	10076.3	31.0	1.0	0.2
1982	11	1	15	778.0	51.9	25.9	6.4	7733.0	515.5	53.5	9939.6	3.0	0.2	0.2
1982	12	1	14	761.0	54.4	24.5	7.2	8606.0	614.7	62.1	11308.8	0.0	0.0	0.2
Subtotal		9	161	7158.0	44.5	2.6		62108.0				226.0		
1983	1	1	25	1563.0	62.5	50.4	8.7	14408.0	576.3	76.5	9218.2	4.0	0.2	0.2
1983	2	1	20	989.0	49.5	35.3	9.7	12591.0	629.6	89.1	12731.0	1.0	0.1	0.2
1983	3	1	5	206.0	41.2	6.6	9.9	4061.0	812.2	93.2	19713.6	0.0	0.0	0.2
1983	4	1	16	1073.0	67.1	35.8	11.0	8552.0	534.5	101.7	7970.2	2.0	0.1	0.2
1983	5	1	31	1575.0	50.8	50.8	12.6	18790.0	606.1	120.5	11930.2	60.0	1.9	0.3
1983	6	1	30	1523.0	50.8	50.8	14.1	17829.0	594.3	138.3	11706.5	5.0	0.2	0.3
1983	7	1	19	1173.0	61.7	37.8	15.3	10568.0	556.2	148.9	9009.4	6.0	0.3	0.3
1983	8	3	56	5954.0	106.3	64.0	21.2	16253.0	290.2	165.2	2729.8	420.0	7.5	0.7
1983	9	4	74	7122.0	96.2	59.4	28.3	16039.0	216.7	181.2	2252.0	98.0	1.3	0.8
1983	10	4	76	9151.0	120.4	73.8	37.5	14439.0	190.0	195.6	1577.9	96.0	1.3	0.9
1983	11	4	72	7086.0	98.4	59.1	44.6	8904.0	123.7	204.5	1256.6	0.0	0.0	0.9
1983	12	4	97	7329.0	75.6	59.1	51.9	19281.0	198.8	223.8	2630.8	37.0	0.4	1.0
Subtotal		26	521	44744.0	85.9	4.7		161715.0				729.0		
1984	1	4	115	10389.0	90.3	83.8	62.3	17633.0	153.3	241.5	1697.3	11.0	0.1	1.0
1984	2	4	103	11530.0	111.9	99.4	73.8	17416.0	169.1	258.9	1510.5	11.0	0.1	1.0
1984	3	4	124	11739.0	94.7	94.7	85.6	18304.0	147.6	277.2	1559.2	89.0	0.7	1.1
1984	4	4	118	12253.0	103.8	102.1	97.8	19131.0	162.1	296.3	1561.3	100.0	0.8	1.2
1984	5	5	141	12941.0	91.8	83.5	110.8	34211.0	242.6	330.5	2643.6	24.0	0.2	1.2
1984	6	5	125	11588.0	92.7	77.3	122.3	24871.0	199.0	355.4	2146.3	2.0	0.0	1.2
1984	7	4	119	11102.0	93.3	89.5	133.4	27882.0	234.3	383.3	2511.4	0.0	0.0	1.2
1984	8	4	124	10255.0	82.7	82.7	143.7	31579.0	254.7	414.8	3079.4	0.0	0.0	1.2
1984	9	4	120	10278.0	85.7	85.7	154.0	32247.0	268.7	447.1	3137.5	0.0	0.0	1.2
1984	10	4	120	10030.0	83.6	80.9	164.0	33207.0	276.7	480.3	3310.8	0.0	0.0	1.2
1984	11	4	120	9111.0	75.9	75.9	173.1	32553.0	271.3	512.9	3572.9	0.0	0.0	1.2
1984	12	4	123	9390.0	76.3	75.7	182.5	31763.0	258.2	544.6	3382.6	0.0	0.0	1.2
Subtotal		50	1452	130606.0	89.9	7.1		320797.0				237.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MESA GRANDE RESOURCES POOL TOTAL.

					OIL				GAS		GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1985	1	4	106	8613.0	81.3	69.5	191.1	26699.0	251.9	571.3	3099.8	0.0	0.0	1.2
1985	2	4	104	7825.0	75.2	69.9	198.9	30869.0	296.8	602.2	3944.9	0.0	0.0	1.2
1985	3	6	134	8940.0	66.7	48.1	207.9	36609.0	273.2	638.8	4095.0	50.0	0.4	1.2
1985	4	6	174	13270.0	76.3	73.7	221.2	54517.0	313.3	693.3	4108.3	247.0	1.4	1.5
1985	5	6	142	16014.0	112.8	86.1	237.2	48974.0	344.9	742.3	3058.2	66.0	0.5	1.6
1985	6	6	150	16754.0	111.7	93.1	253.9	64922.0	432.8	807.2	3875.0	35.0	0.2	1.6
1985	7	6	150	14873.0	99.2	80.0	268.8	56346.0	375.6	863.6	3788.5	9.0	0.1	1.6
1985	8	6	116	12730.0	109.7	68.4	281.5	54125.0	466.6	917.7	4251.8	30.0	0.3	1.6
1985	9	5	82	9322.0	113.7	62.1	290.8	41626.0	507.6	959.3	4465.4	0.0	0.0	1.6
1985	10	5	107	10170.0	95.0	65.6	301.0	46839.0	437.7	1006.1	4605.6	32.0	0.3	1.7
1985	11	6	168	12340.0	73.5	68.6	313.4	39736.0	236.5	1045.9	3220.1	104.0	0.6	1.8
1985	12	6	178	19651.0	110.4	105.7	333.0	45924.0	258.0	1091.8	2337.0	481.0	2.7	2.2
Subtotal		66	1611	150502.0	93.4	6.2		547186.0				1054.0		
1986	1	7	190	24804.0	130.5	114.3	357.8	46811.0	246.4	1138.6	1887.2	11.0	0.1	2.3
1986	2	6	154	17529.0	113.8	104.3	375.3	43790.0	284.4	1182.4	2498.1	0.0	0.0	2.3
1986	3	5	149	15852.0	106.4	102.3	391.2	46971.0	315.2	1229.4	2963.1	2.0	0.0	2.3
1986	4	5	139	10871.0	78.2	72.5	402.1	49011.0	352.6	1278.4	4508.4	3.0	0.0	2.3
1986	5	8	124	12469.0	100.6	50.3	414.5	24029.0	193.8	1302.4	1927.1	43.0	0.3	2.3
1986	6	9	213	17572.0	82.5	65.1	432.1	46827.0	219.8	1349.2	2664.9	0.0	0.0	2.3
1986	7	8	187	15557.0	83.2	62.7	447.7	42359.0	226.5	1391.6	2722.8	0.0	0.0	2.3
1986	8	7	157	11171.0	71.2	51.5	458.8	33178.0	211.3	1424.8	2970.0	0.0	0.0	2.3
1986	9	7	181	13862.0	76.6	66.0	472.7	32490.0	179.5	1457.3	2343.8	0.0	0.0	2.3
1986	10	9	222	17769.0	80.0	63.7	490.5	48989.0	220.7	1506.3	2757.0	10.0	0.0	2.3
1986	11	9	242	15941.0	65.9	59.0	506.4	79254.0	327.5	1585.5	4971.7	3.0	0.0	2.3
1986	12	9	222	13271.0	59.8	47.6	519.7	58135.0	261.9	1643.7	4380.6	15.0	0.1	2.3
Subtotal		89	2180	186668.0	85.6	5.7		551844.0				87.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MOBIL POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1986	1	2	6	1020.0	170.0	16.5	1.0	0.0	0.0	0.0	0.0	48.0	8.0	0.0
1986	2	0	0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0	0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0	0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0	0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	3	56	7253.0	129.5	80.6	8.3	15273.0	272.7	15.3	2105.7	721.0	12.9	0.8
1986	7	3	89	10199.0	114.6	109.7	18.5	31318.0	351.9	46.6	3070.7	723.0	8.1	1.5
1986	8	3	87	9334.0	107.3	100.4	27.8	31293.0	359.7	77.9	3352.6	617.0	7.1	2.1
1986	9	3	60	6088.0	101.5	67.6	33.9	16964.0	282.7	94.8	2786.5	420.0	7.0	2.5
1986	10	3	77	4677.0	60.7	50.3	38.6	26707.0	346.8	121.6	5710.3	443.0	5.8	3.0
1986	11	3	76	4296.0	56.5	47.7	42.9	22876.0	301.0	144.4	5325.0	426.0	5.6	3.4
1986	12	3	79	4118.0	52.1	44.3	47.0	21141.0	267.6	165.6	5133.8	506.0	6.4	3.9
Subtotal		23	530	46985.0	88.7	5.6		165572.0				3904.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
E. ALEX PHILLIPS POOL TOTAL.

				OIL				GAS			GOR	WATER		
YR	MO	NO PROD WELLS	WELL DAYS PROD	BOPM	AVE BOPPD	AVE BOPCD	CUM MBO	MCF/M	AVE MCF/D	CUM MMCF	SCF/BBL	Month	AVE BWPD	CUM MBW
1984	10	1	3	39.0	13.0	1.3	0.0	600.0	200.0	0.6	15384.6	0.0	0.0	0.0
1984	11	1	7	186.0	26.6	6.2	0.2	1200.0	171.4	1.8	6451.6	0.0	0.0	0.0
1984	12	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
Subtotal		2	10	225.0	22.5	1.2		1800.0				0.0		
1985	1	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	2	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	3	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	4	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	5	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	6	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	7	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	8	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	9	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	10	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	11	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985	12	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
Subtotal		0	0	0.0	0.0	0.0		0.0				0.0		
1986	1	0	0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1986	2	1	4	118.0	29.5	4.2	0.3	1213.0	303.3	3.0	10279.7	0.0	0.0	0.0
1986	3	1	30	488.0	16.3	15.7	0.8	6834.0	227.8	9.8	14004.1	7.0	0.2	0.0
1986	4	1	20	95.0	4.8	3.2	0.9	3343.0	167.2	13.2	35189.5	0.0	0.0	0.0
1986	5	1	30	204.0	6.8	6.6	1.1	6202.0	206.7	19.4	30402.0	0.0	0.0	0.0
1986	6	1	13	77.0	5.9	2.6	1.2	5177.0	398.2	24.6	67233.8	0.0	0.0	0.0
1986	7	1	31	66.0	2.1	2.1	1.3	3980.0	128.4	28.5	60303.0	0.0	0.0	0.0
1986	8	1	31	24.0	0.8	0.8	1.3	4015.0	129.5	32.6	167291.7	0.0	0.0	0.0
1986	9	1	4	46.0	11.5	1.5	1.3	1994.0	498.5	34.6	43347.8	0.0	0.0	0.0
1986	10	1	26	106.0	4.1	3.4	1.4	4568.0	175.7	39.1	43094.3	0.0	0.0	0.0
1986	11	1	30	101.0	3.4	3.4	1.6	4785.0	159.5	43.9	47376.2	0.0	0.0	0.0
1986	12	1	31	105.0	3.4	3.4	1.7	4030.0	130.0	47.9	38381.0	23.0	0.7	0.0
Subtotal		11	250	1430.0	5.7	0.4		46141.0				30.0		

* BOPPD: BARRELS PER WELL PER PRODUCING DAY.   * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
READING & BATES POOL TOTAL.

YR	MO	NO PROD WELLS	WELL DAYS PROD	OIL BOPM	OIL AVE BOPPD	OIL AVE BOPCD	OIL CUM MBO	GAS MCF/M	GAS AVE MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER AVE BWPD	WATER CUM MBW
1986	7	1	0	1056.0	0.0	34.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	0	0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	9	0	0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	10	0	0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	11	1	5	160.0	32.0	5.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	12	1	30	407.0	13.6	13.1	1.6	11497.0	383.2	11.5	28248.2	0.0	0.0	0.0
Subtotal		3	35	1623.0	46.4	2.9		11497.0				0.0		

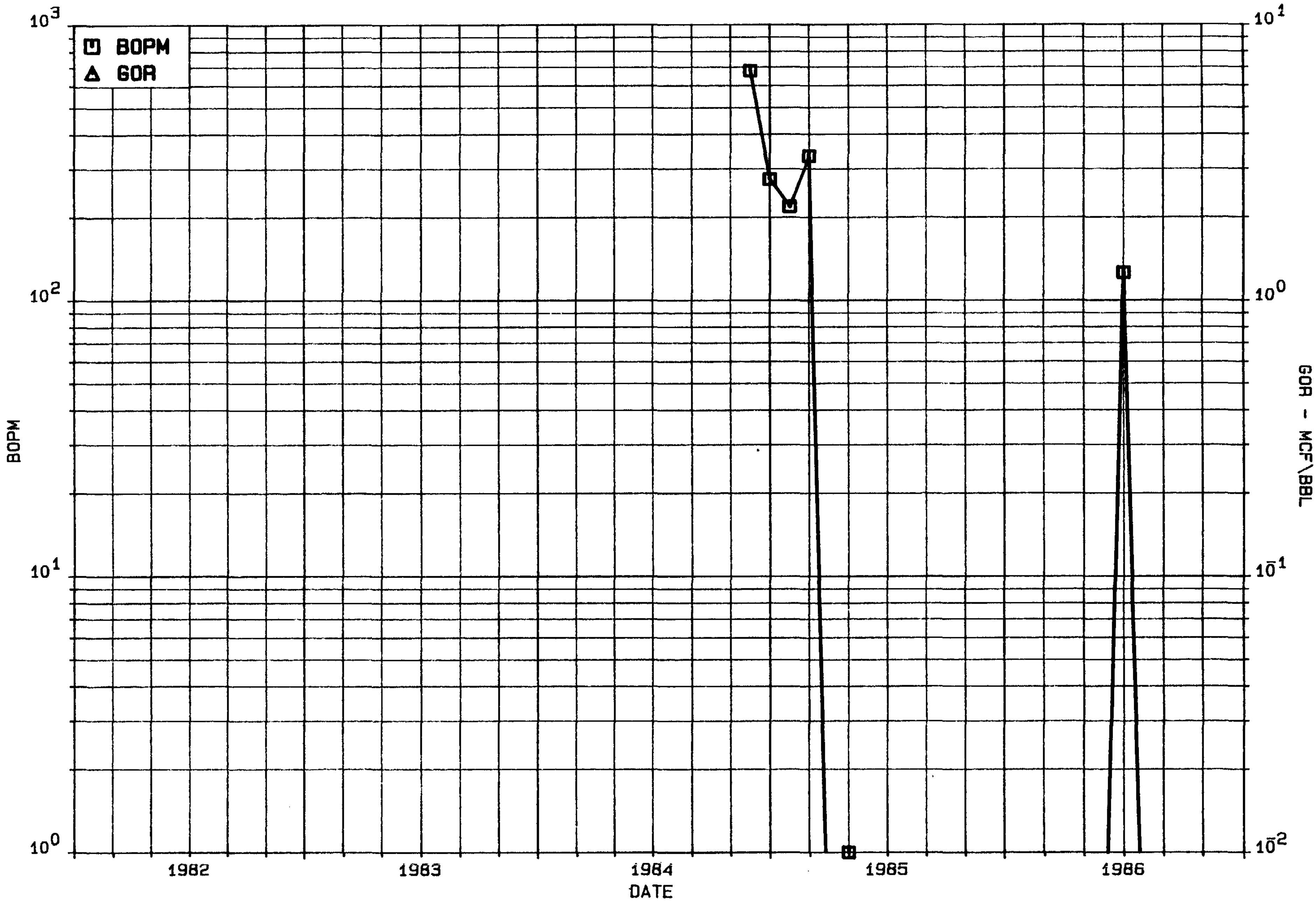
* BOPPD: BARRELS PER WELL PER PRODUCING DAY. * BOPCD: BARRELS PER WELL PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
AMOCO, OSO CANYON FED. #1. (NW 24-24N-2W)

YR MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1984 11	30.0	680.0	22.7	22.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984 12	31.0	275.0	8.9	8.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	61.0	955.0	15.7	15.4		0.0				0.0		
1985 1	31.0	219.0	7.1	7.1	1.2	0.0	0.0	0.0	0.0	100.0	0.5	0.1
1985 2	28.0	333.0	11.9	11.9	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 3	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 4	1.0	1.0	1.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 6	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 7	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 8	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 9	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 10	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 11	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1985 12	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	60.0	553.0	9.2	1.5		0.0				100.0		
1986 1	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 2	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 3	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 4	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 6	30.0	126.0	4.2	4.2	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 7	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 8	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 9	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 10	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 11	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
1986 12	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Subtotal	30.0	126.0	4.2	0.3		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

AMOCO OSO CANYON FED. #1. (NW 24-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

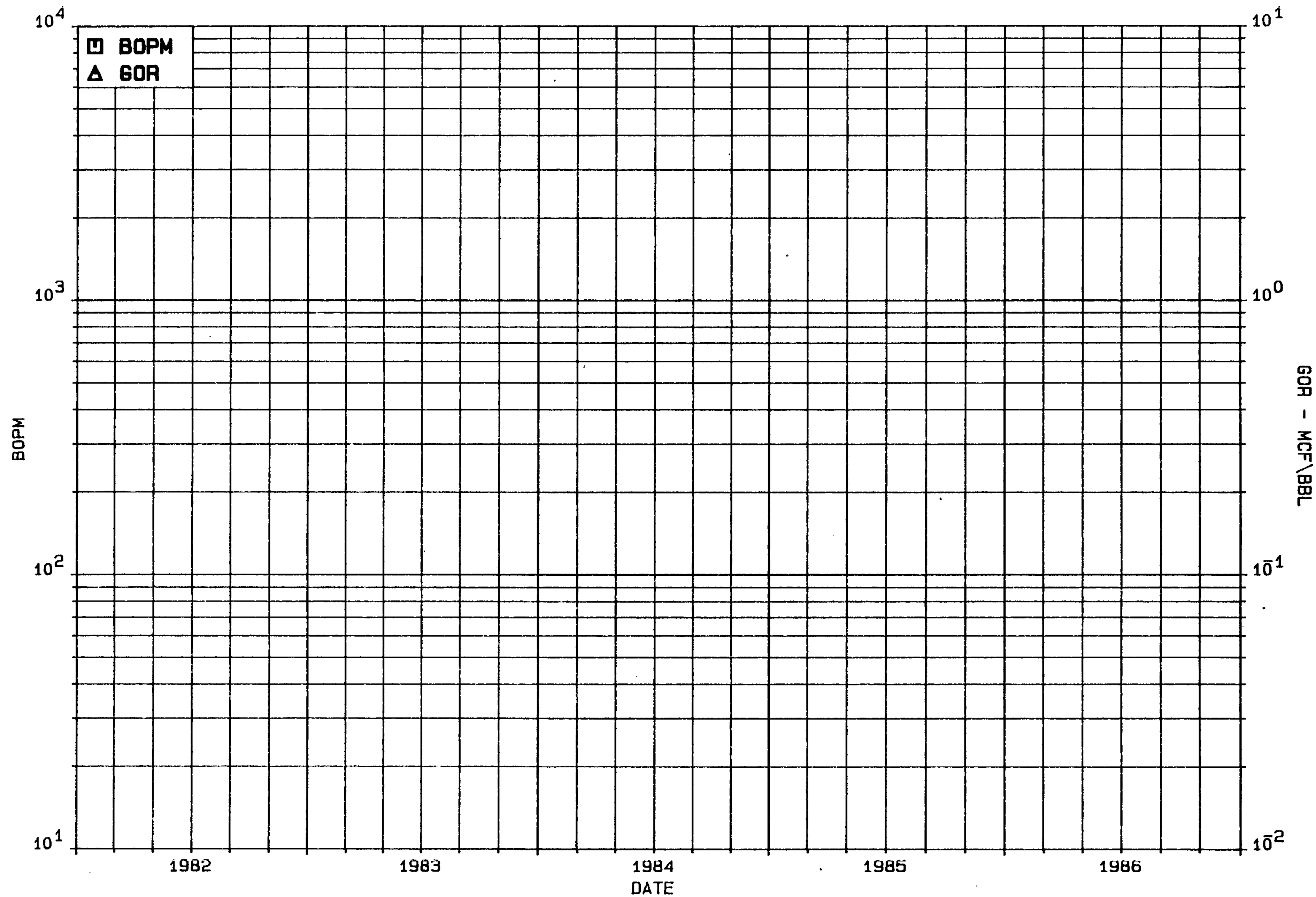


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
AMOCO, OSO CANYON FED. A #1. (NW 14-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		
1986	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. *BOPCD: BARRELS PER CALENDAR DAY.

AMOCO OSO CANYON FED. A #1. (NW 14-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



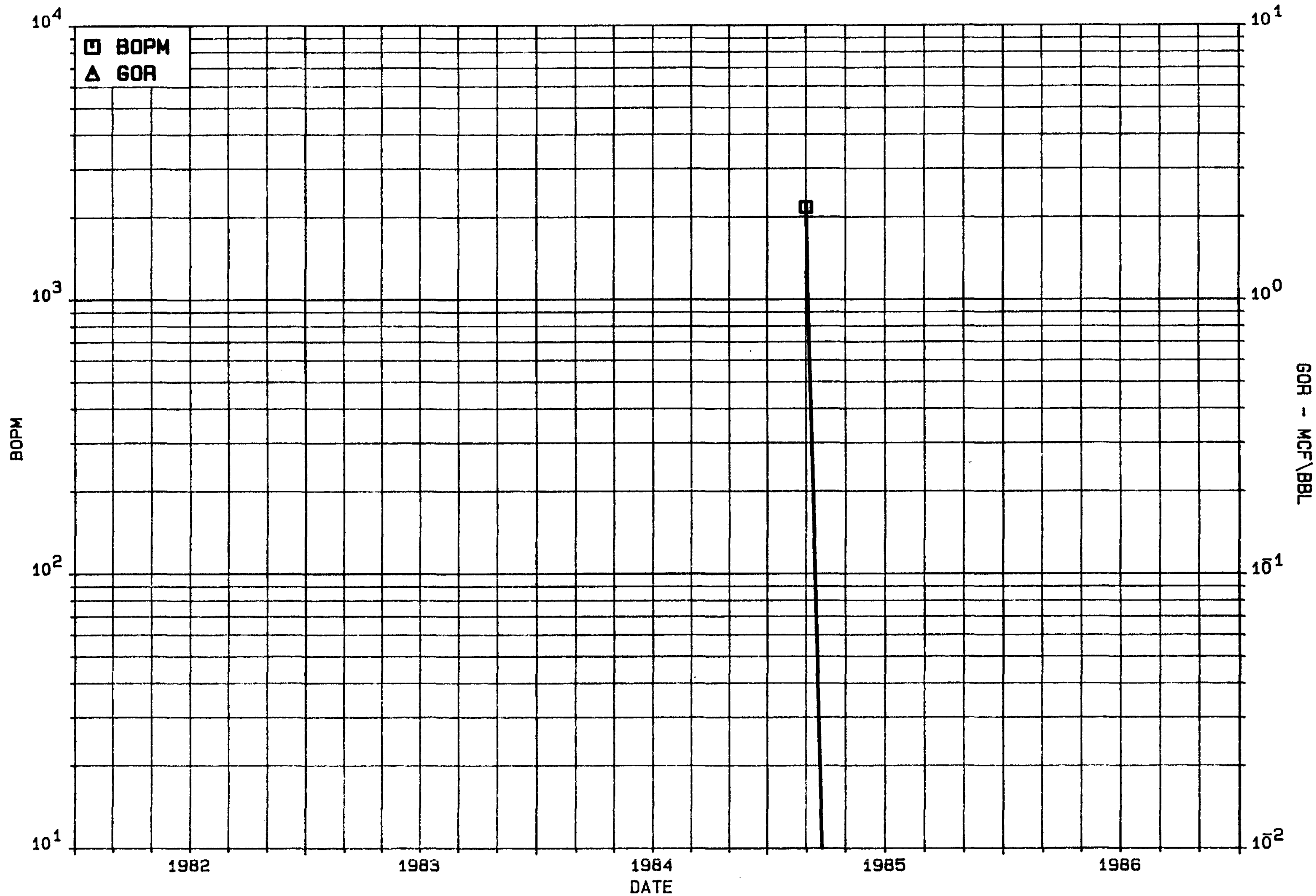
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
AMOCO, OSO CANYON FED. B #1. (NW 11-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	2 *	0.0	2167.0	0.0	77.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	3	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	4	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	5	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	6	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	7	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	8	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	2167.0	0.0	6.5		0.0				0.0		
1986	1	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENENDAR DAY.

* NR

AMOCO OSO CANYON FED. B #1. (NW 11-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

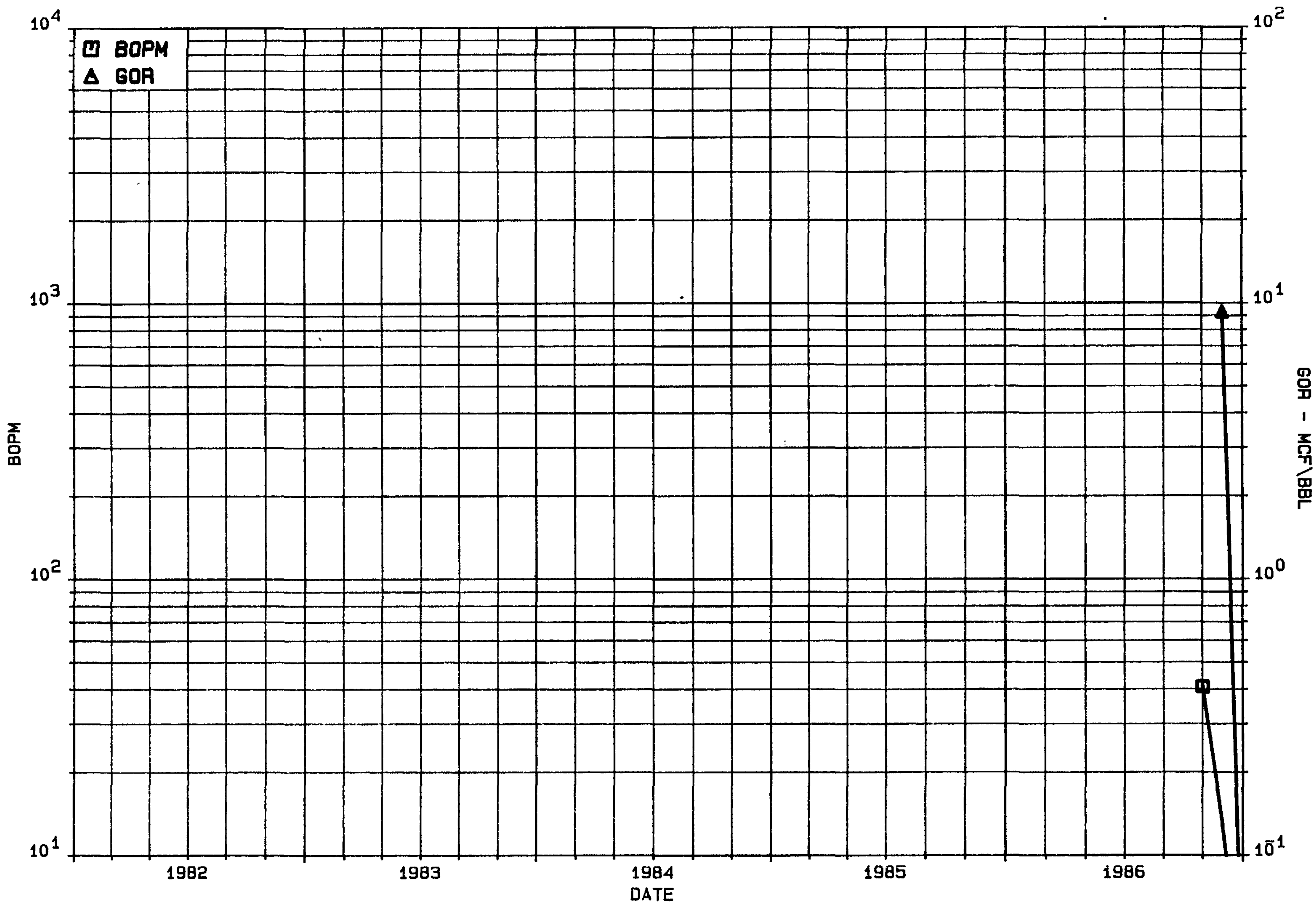


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., DIVIDE #1. (NE 35-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	10	4.0	41.0	10.3	1.3	0.0	2.0	0.5	0.0	48.8	0.0	0.0	0.0
1986	11	19.0	13.0	0.7	0.4	0.1	121.0	6.4	0.1	9307.7	3.0	0.2	0.0
1986	12	8.0	0.0	0.0	0.0	0.1	14.0	1.8	0.1	0.0	4.0	0.5	0.0
Subtotal		31.0	54.0	1.7	0.6		137.0				7.0		

* BOPPD: BARRLES PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

DUGAN PRODUCTION CORP., DIVIDE #1. (NE 35-26N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

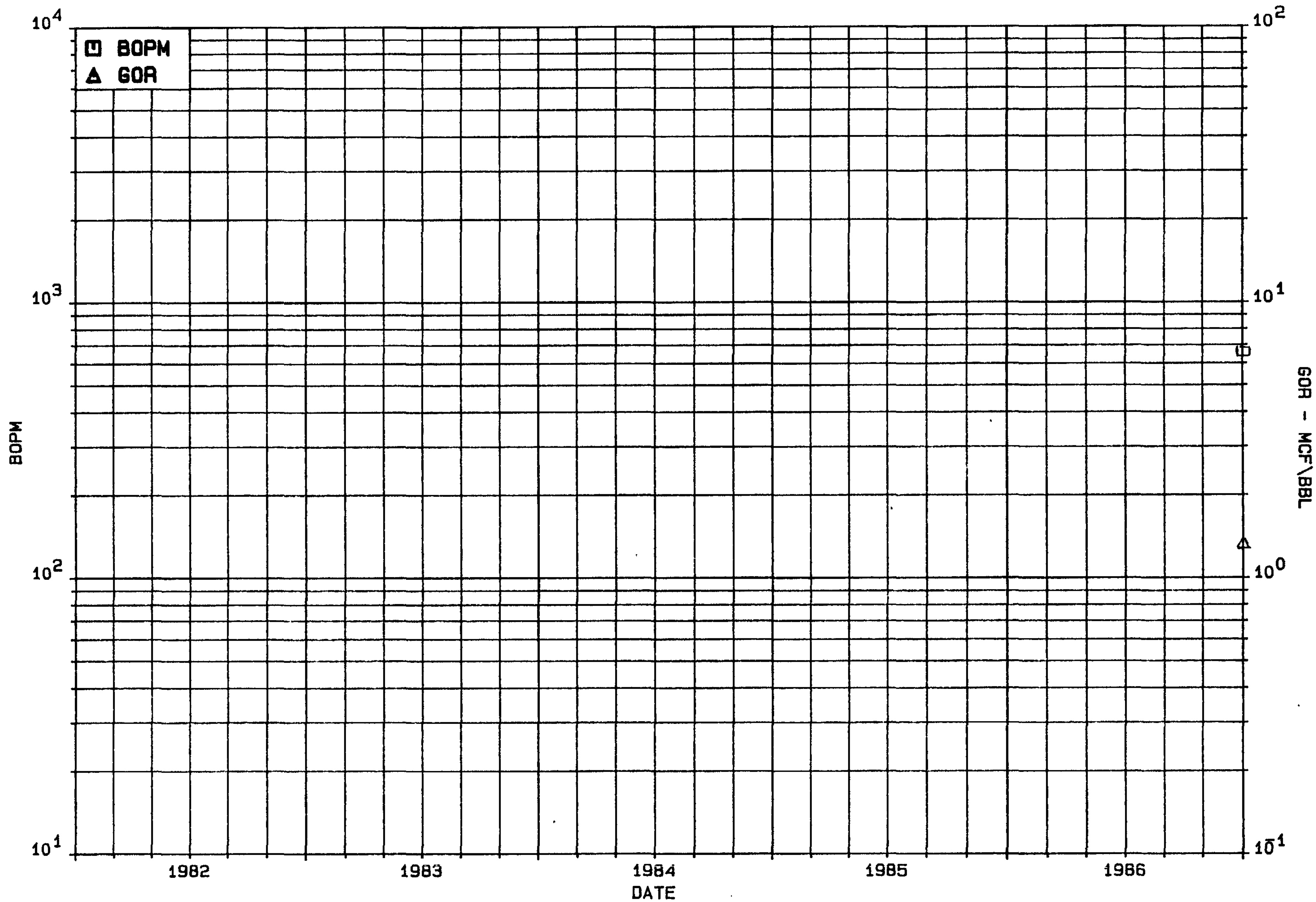


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., DIVIDE #3. (SW 35-26N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986 12	6.0	157.0	26.2	5.1	0.2	230.0	38.3	0.2	1465.0	60.0	10.0	0.1
Subtotal	6.0	157.0	26.2	5.1		230.0				60.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

DUGAN PRODUCTION CORP., DIVIDE #3. (SW 35-26N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

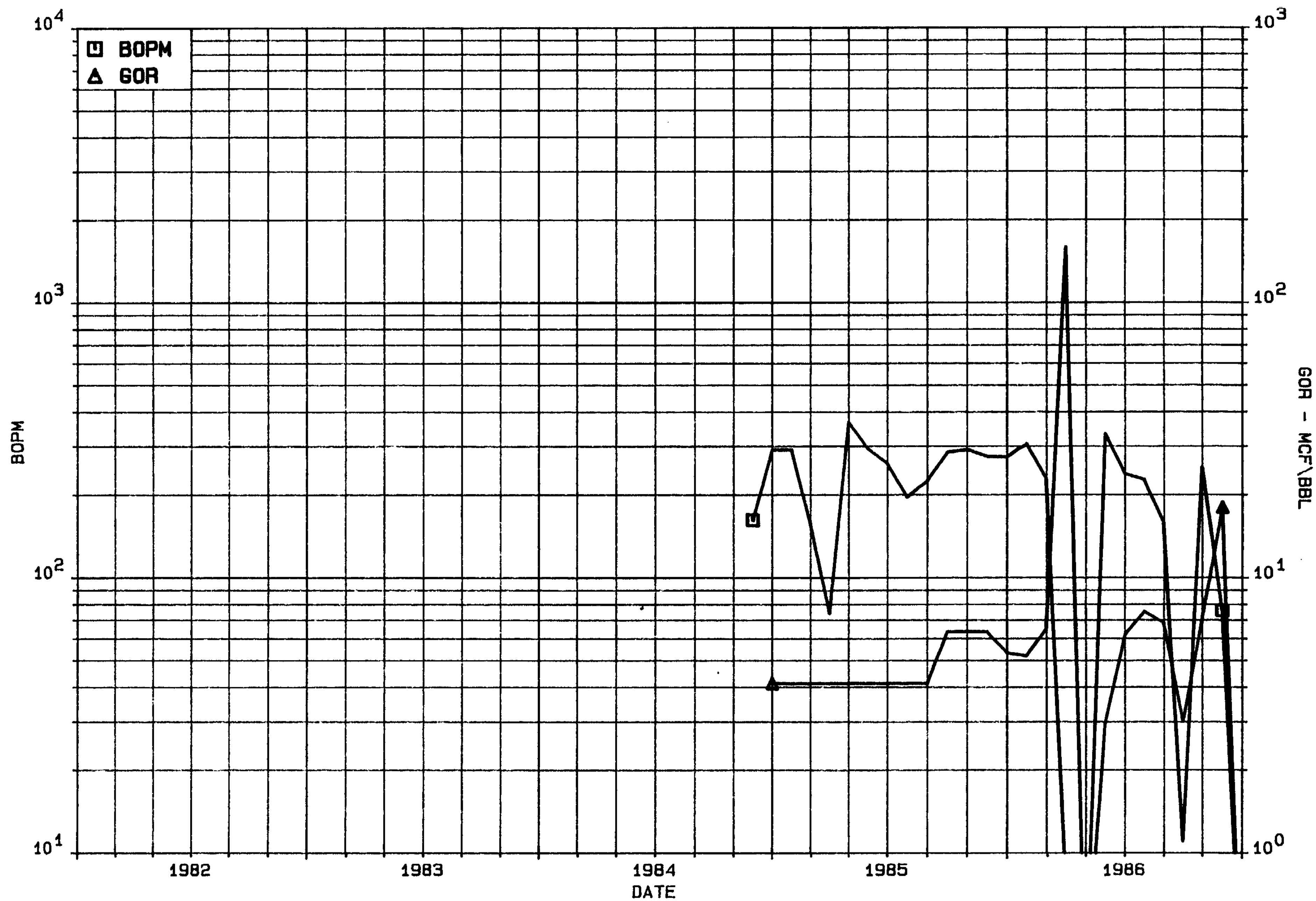


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., LINDRITH #1. (SE 36-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984 11	5.0	162.0	32.4	5.4	0.2	81.0	16.2	0.1	500.0	60.0	12.0	0.1
1984 12	20.0	292.0	14.6	9.4	0.5	1209.0	60.5	1.3	4140.4	10.0	0.5	0.1
Subtotal	25.0	454.0	18.2	7.4		1290.0				70.0		
1985 1	27.0	292.0	10.8	9.4	0.7	1209.0	44.8	2.5	4140.4	14.0	0.5	0.1
1985 2	12.0	157.0	13.1	5.6	0.9	650.0	54.2	3.1	4140.1	6.0	0.5	0.1
1985 3	4.0	74.0	18.5	2.4	1.0	306.0	76.5	3.5	4135.1	2.0	0.5	0.1
1985 4	26.0	369.0	14.2	12.3	1.3	1528.0	58.8	5.0	4140.9	13.0	0.5	0.1
1985 5	27.0	294.0	10.9	9.5	1.6	1217.0	45.1	6.2	4139.5	14.0	0.5	0.1
1985 6	17.0	259.0	15.2	8.6	1.9	1072.0	63.1	7.3	4139.0	9.0	0.5	0.1
1985 7	23.0	196.0	8.5	6.3	2.1	811.0	35.3	8.1	4137.8	12.0	0.5	0.1
1985 8	11.0	226.0	20.5	7.3	2.3	936.0	85.1	9.0	4141.6	5.0	0.5	0.1
1985 9	30.0	286.0	9.5	9.5	2.6	1826.0	60.9	10.8	6384.6	15.0	0.5	0.2
1985 10	31.0	293.0	9.5	9.5	2.9	1871.0	60.4	12.7	6385.7	16.0	0.5	0.2
1985 11	30.0	275.0	9.2	9.2	3.2	1756.0	58.5	14.5	6385.5	15.0	0.5	0.2
1985 12	31.0	274.0	8.8	8.8	3.4	1458.0	47.0	15.9	5321.2	16.0	0.5	0.2
Subtotal	269.0	2995.0	11.1	8.2		14640.0				137.0		
1986 1	31.0	308.0	9.9	9.9	3.8	1598.0	51.5	17.5	5188.3	16.0	0.5	0.2
1986 2	27.0	228.0	8.4	8.1	4.0	1500.0	55.6	19.0	6578.9	14.0	0.5	0.2
1986 3	31.0	8.0	0.3	0.3	4.0	1281.0	41.3	20.3	160125.0	16.0	0.5	0.3
1986 4	30.0	0.0	0.0	0.0	4.0	643.0	21.4	21.0	0.0	15.0	0.5	0.3
1986 5	31.0	335.0	10.8	10.8	4.3	1006.0	32.5	22.0	3003.0	16.0	0.5	0.3
1986 6	30.0	238.0	7.9	7.9	4.6	1480.0	49.3	23.4	6218.5	15.0	0.5	0.3
1986 7	31.0	227.0	7.3	7.3	4.8	1718.0	55.4	25.2	7568.3	16.0	0.5	0.3
1986 8	20.0	158.0	7.9	5.1	5.0	1078.0	53.9	26.2	6822.8	0.0	0.0	0.3
1986 9	2.0	11.0	5.5	0.4	5.0	33.0	16.5	26.3	3000.0	1.0	0.5	0.3
1986 10	31.0	254.0	8.2	8.2	5.2	1814.0	58.5	28.1	7141.7	16.0	0.5	0.3
1986 11	30.0	76.0	2.5	2.5	5.3	1371.0	45.7	29.5	18039.5	15.0	0.5	0.3
1986 12	31.0	0.0	0.0	0.0	5.3	1266.0	40.8	30.7	0.0	16.0	0.5	0.4
Subtotal	325.0	1843.0	5.7	5.0		14788.0				156.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

DUGAN PRODUCTION CORP., LINDRITH #1. (SE 36-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., TAPACITOS #2. (SW 25-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1980	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	12	1.0	60.0	60.0	1.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		1.0	60.0	60.0	1.0		0.0				0.0		
1981	1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	3	2.0	36.0	18.0	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	4	4.0	6.0	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	5	5.0	12.0	2.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	6	24.0	56.0	2.3	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	7	31.0	56.0	1.8	1.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	8	4.0	16.0	4.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	9	13.0	9.0	0.7	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	11	15.0	2.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	12	10.0	4.0	0.4	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		108.0	197.0	1.8	0.5		0.0				0.0		
1982	1	11.0	2.0	0.2	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	2	12.0	4.0	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	3	10.0	3.0	0.3	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	4	3.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	5	31.0	10.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	7	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	8	6.0	1.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	9	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	11	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	12	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		73.0	20.0	0.3	0.1		0.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., TAPACITOS #2. (SW 25-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	7	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	8	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	9	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	11	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	12	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	0.0	0.0	0.0		0.0				0.0		
1984	1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	6	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	7	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	8	31.0	1321.0	42.6	42.6	1.6	835.0	26.9	0.8	632.1	16.0	0.5	0.0
1984	9	30.0	1288.0	42.9	42.9	2.9	814.0	27.1	1.6	632.0	15.0	0.5	0.0
1984	10	22.0	984.0	44.7	31.7	3.9	622.0	28.3	2.3	632.1	11.0	0.5	0.0
1984	11	30.0	1442.0	48.1	48.1	5.3	911.0	30.4	3.2	631.8	15.0	0.5	0.1
1984	12	31.0	1366.0	44.1	44.1	6.7	863.0	27.8	4.0	631.8	16.0	0.5	0.1
Subtotal		144.0	6401.0	44.5	17.5		4045.0				73.0		
1985	1	31.0	1376.0	44.4	44.4	8.1	870.0	28.1	4.9	632.3	15.0	0.5	0.1
1985	2	21.0	988.0	47.0	35.3	9.0	624.0	29.7	5.5	631.6	10.0	0.5	0.1
1985	3	0.0	0.0	0.0	0.0	9.0	0.0	0.0	5.5	0.0	0.0	0.0	0.1
1985	4	22.0	1134.0	51.5	37.8	10.2	717.0	32.6	6.3	632.3	11.0	0.5	0.1
1985	5	31.0	1441.0	46.5	46.5	11.6	911.0	29.4	7.2	632.2	16.0	0.5	0.1
1985	6	30.0	1393.0	46.4	46.4	13.0	880.0	29.3	8.0	631.7	15.0	0.5	0.1
1985	7	31.0	1407.0	45.4	45.4	14.4	889.0	28.7	8.9	631.8	16.0	0.5	0.2
1985	8	31.0	1286.0	41.5	41.5	15.7	813.0	26.2	9.7	632.2	8.0	0.3	0.2
1985	9	29.0	1233.0	42.5	41.1	16.9	983.0	33.9	10.7	797.2	7.0	0.2	0.2
1985	10	31.0	1170.0	37.7	37.7	18.1	932.0	30.1	11.7	796.6	8.0	0.3	0.2
1985	11	30.0	1118.0	37.3	37.3	19.2	891.0	29.7	12.6	797.0	8.0	0.3	0.2
1985	12	28.0	972.0	34.7	31.4	20.2	775.0	27.7	13.3	797.3	7.0	0.3	0.2
Subtotal		315.0	13518.0	42.9	37.0		9285.0				121.0		

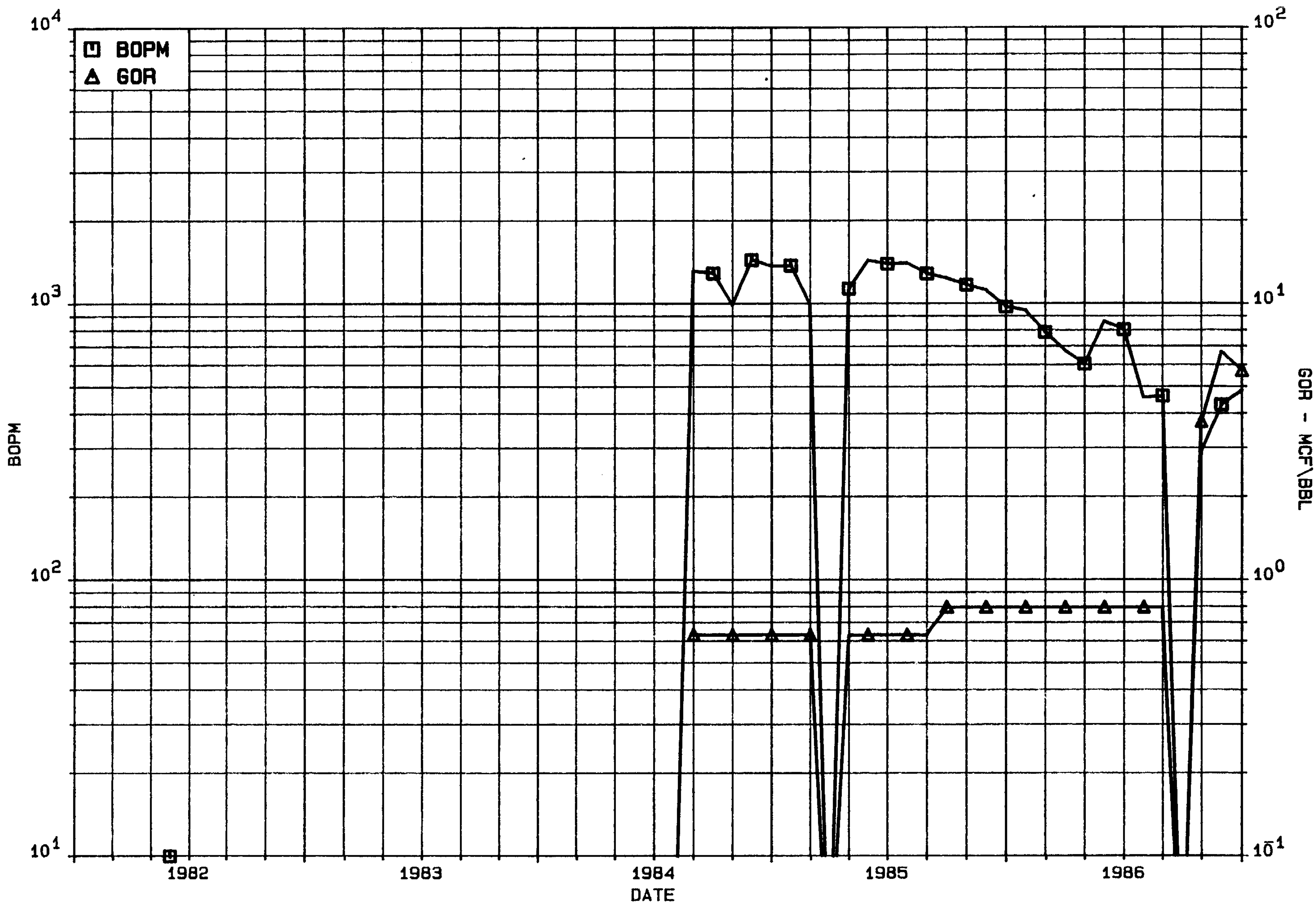
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., TAPACITOS #2. (SW 25-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	943.0	30.4	30.4	21.1	752.0	24.3	14.1	797.5	8.0	0.3	0.2
1986	2	28.0	788.0	28.1	28.1	21.9	628.0	22.4	14.7	797.0	7.0	0.3	0.2
1986	3	25.0	674.0	27.0	21.7	22.6	537.0	21.5	15.2	796.7	6.0	0.2	0.2
1986	4	23.0	604.0	26.3	20.1	23.2	481.0	20.9	15.7	796.4	6.0	0.3	0.2
1986	5	31.0	866.0	27.9	27.9	24.1	690.0	22.3	16.4	796.8	8.0	0.3	0.2
1986	6	30.0	806.0	26.9	26.9	24.9	642.0	21.4	17.1	796.5	8.0	0.3	0.2
1986	7	18.0	455.0	25.3	14.7	25.3	363.0	20.2	17.4	797.8	5.0	0.3	0.2
1986	8	20.0	463.0	23.2	14.9	25.8	369.0	18.5	17.8	797.0	5.0	0.3	0.2
1986	9	0.0	0.0	0.0	0.0	25.8	0.0	0.0	17.8	0.0	0.0	0.0	0.2
1986	10	16.0	290.0	18.1	9.4	26.1	1083.0	67.7	18.9	3734.5	4.0	0.3	0.3
1986	11	30.0	430.0	14.3	14.3	26.5	2886.0	96.2	21.8	6711.6	4.0	0.1	0.3
1986	12	31.0	486.0	15.7	15.7	27.0	2777.0	89.6	24.5	5714.0	8.0	0.3	0.3
Subtotal		283.0	6805.0	24.0	18.6		11208.0				69.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

DUGAN PRODUCTION CORP., TAPACITOS #2. (SW 25-26N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

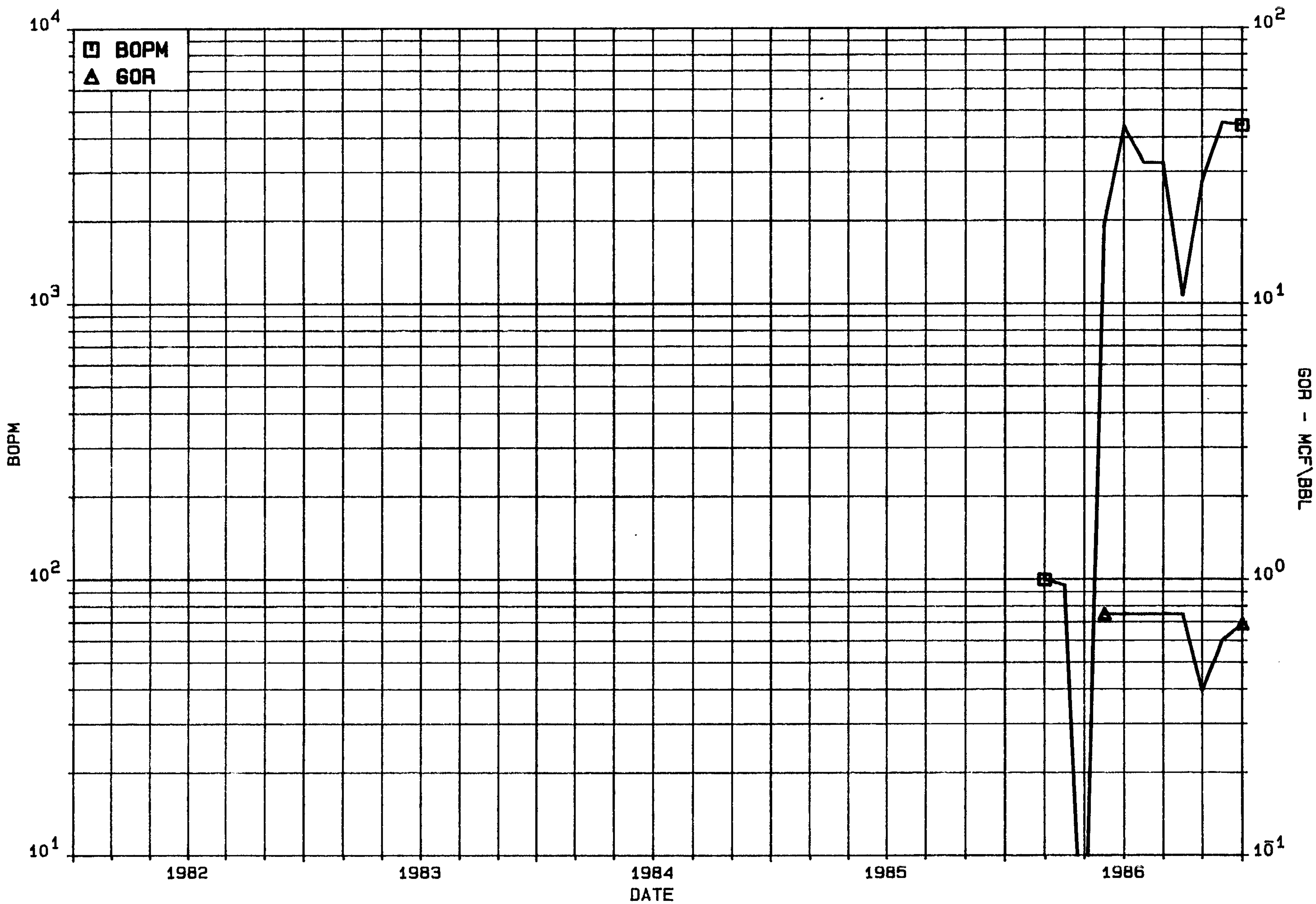


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
DUGAN PRODUCTION CORP., TAPACITOS #4. (SE 36-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	2	4.0	100.0	25.0	3.6	0.1	0.0	0.0	0.0	0.0	400.0	100.0	0.4
1986	3	4.0	95.0	23.8	3.1	0.2	0.0	0.0	0.0	0.0	150.0	37.5	0.6
1986	4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6
1986	5	20.0	1972.0	98.6	63.6	2.2	1481.0	74.1	1.5	751.0	5.0	0.3	0.6
1986	6	29.0	4424.0	152.6	147.5	6.6	3322.0	114.6	4.8	750.9	0.0	0.0	0.6
1986	7	21.0	3234.0	154.0	104.3	9.8	2429.0	115.7	7.2	751.1	8.0	0.4	0.6
1986	8	25.0	3242.0	129.7	104.6	13.1	2435.0	97.4	9.7	751.1	6.0	0.2	0.6
1986	9	6.0	1066.0	177.7	35.5	14.1	801.0	133.5	10.5	751.4	2.0	0.3	0.6
1986	10	16.0	2777.0	173.6	89.6	16.9	1094.0	68.4	11.6	394.0	4.0	0.3	0.6
1986	11	30.0	4550.0	151.7	151.7	21.5	2761.0	92.0	14.3	606.8	8.0	0.3	0.6
1986	12	29.0	4424.0	152.6	142.7	25.9	3060.0	105.5	17.4	691.7	7.0	0.2	0.6
Subtotal		184.0	25884.0	140.7	77.5		17383.0				590.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

DUGAN PRODUCTION CORP., TAPACITOS #4. (SE 36-26N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

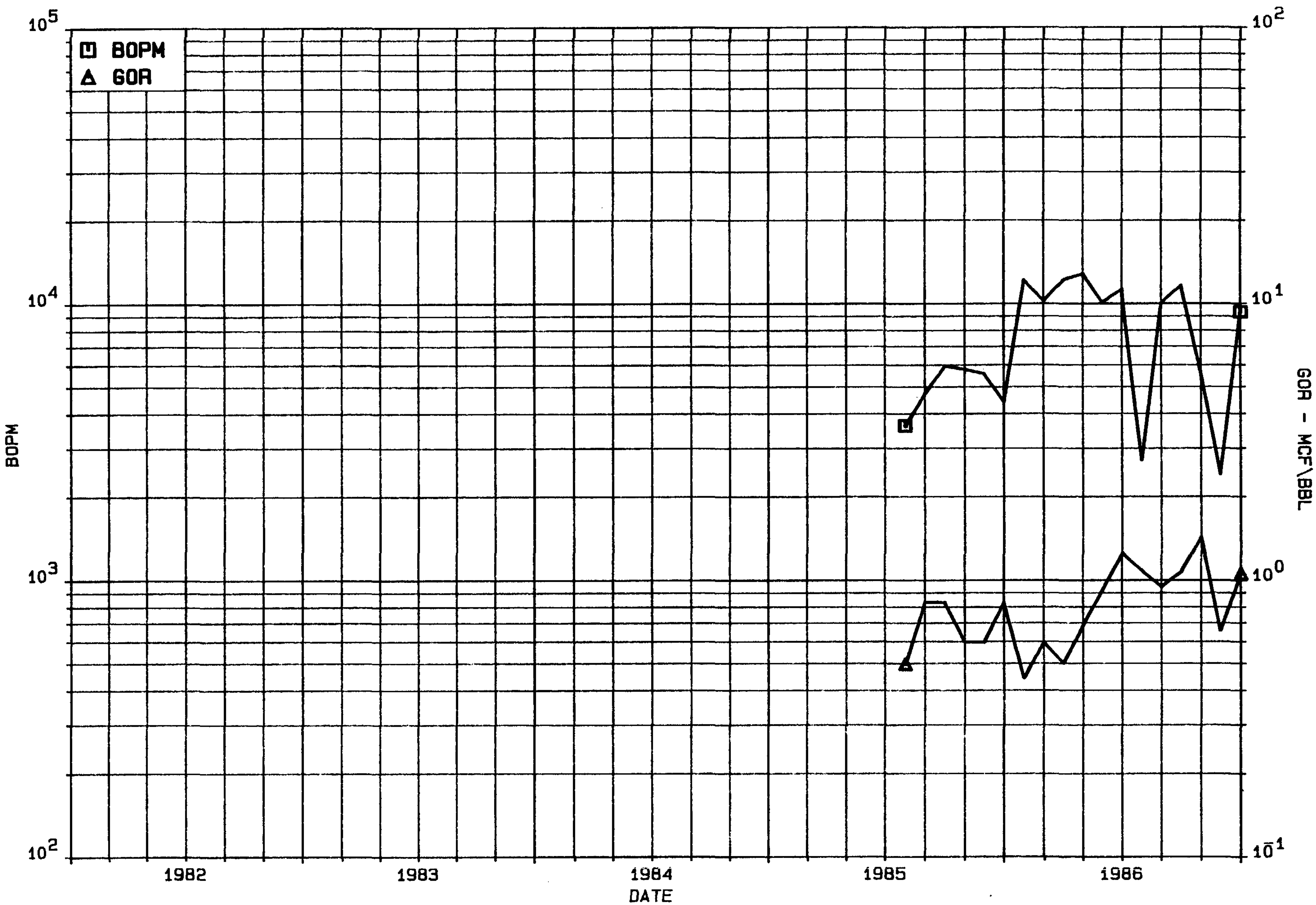


GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MALLON OIL CO., FISHER FEDERAL #2-1. (NE 2-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	7	10.0	3632.0	363.2	117.2	3.6	1816.0	181.6	1.8	500.0	0.0	0.0	0.0
1985	8	14.0	4749.0	339.2	153.2	8.4	3980.0	284.3	5.8	838.1	0.0	0.0	0.0
1985	9	16.0	5986.0	374.1	199.5	14.4	5016.0	313.5	10.8	838.0	0.0	0.0	0.0
1985	10	13.0	5796.0	445.8	187.0	20.2	3478.0	267.5	14.3	600.1	0.0	0.0	0.0
1985	11	17.0	5591.0	328.9	186.4	25.8	3355.0	197.4	17.6	600.1	0.0	0.0	0.0
1985	12	11.0	4423.0	402.1	142.7	30.2	3706.0	336.9	21.4	837.9	0.0	0.0	0.0
Subtotal		81.0	30177.0	372.6	164.0		21351.0				0.0		
1986	1	30.0	12302.0	410.1	396.8	42.5	5452.0	181.7	26.8	443.2	0.0	0.0	0.0
1986	2	28.0	10239.0	365.7	365.7	52.7	6155.0	219.8	33.0	601.1	0.0	0.0	0.0
1986	3	31.0	12253.0	395.3	395.3	65.0	6163.0	198.8	39.1	503.0	0.0	0.0	0.0
1986	4	25.0	12914.0	516.6	430.5	77.9	8950.0	358.0	48.1	693.0	0.0	0.0	0.0
1986	5	23.0	10114.0	439.7	326.3	88.0	9381.0	407.9	57.5	927.5	0.0	0.0	0.0
1986	6	25.0	11376.0	455.0	379.2	99.4	14389.0	575.6	71.8	1264.9	0.0	0.0	0.0
1986	7	15.0	2704.0	180.3	87.2	102.1	2934.0	195.6	74.8	1085.1	0.0	0.0	0.0
1986	8	23.0	10091.0	438.7	325.5	112.2	9565.0	415.9	84.3	947.9	0.0	0.0	0.0
1986	9	28.0	11755.0	419.8	391.8	123.9	12743.0	455.1	97.1	1084.0	0.0	0.0	0.0
1986	10	21.0	5605.0	266.9	180.8	129.5	8120.0	386.7	105.2	1448.7	0.0	0.0	0.0
1986	11	24.0	2405.0	100.2	80.2	131.9	1580.0	65.8	106.8	657.0	0.0	0.0	0.0
1986	12	31.0	9359.0	301.9	301.9	141.3	9933.0	320.4	116.7	1061.3	0.0	0.0	0.0
Subtotal		304.0	111117.0	365.5	304.4		95365.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., FISHER FEDERAL #2-1. (NE 2-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

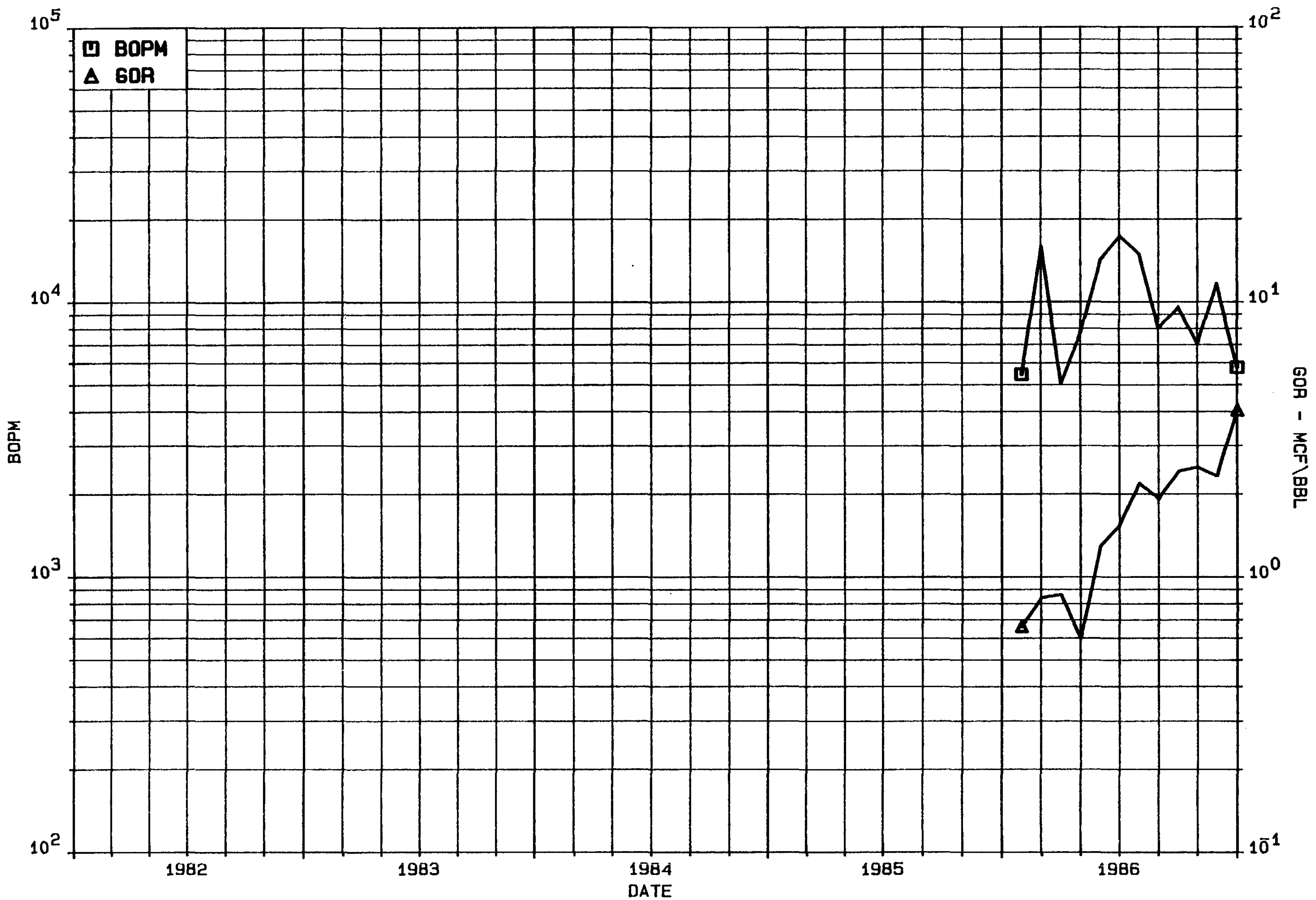


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MALLON OIL CO., HOWARD #1-11. (SW 1-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	15.0	5474.0	364.9	176.6	5.5	3642.0	242.8	3.6	665.3	0.0	0.0	0.0
1986	2	28.0	16109.0	575.3	575.3	21.6	13659.0	487.8	17.3	847.9	0.0	0.0	0.0
1986	3	8.0	5043.0	630.4	162.7	26.6	4391.0	548.9	21.7	870.7	0.0	0.0	0.0
1986	4	13.0	7826.0	602.0	260.9	34.5	4729.0	363.8	26.4	604.3	0.0	0.0	0.0
1986	5	24.0	14314.0	596.4	461.7	48.8	18675.0	778.1	45.1	1304.7	0.0	0.0	0.0
1986	6	30.0	17494.0	583.1	583.1	66.3	27418.0	913.9	72.5	1567.3	0.0	0.0	0.0
1986	7	25.0	14961.0	598.4	482.6	81.2	33131.0	1325.2	105.6	2214.5	0.0	0.0	0.0
1986	8	27.0	8032.0	297.5	259.1	89.3	15565.0	576.5	121.2	1937.9	0.0	0.0	0.0
1986	9	30.0	9635.0	321.2	321.2	98.9	23512.0	783.7	144.7	2440.3	0.0	0.0	0.0
1986	10	25.0	7087.0	283.5	228.6	106.0	17968.0	718.7	162.7	2535.3	0.0	0.0	0.0
1986	11	26.0	11791.0	453.5	393.0	117.8	27515.0	1058.3	190.2	2333.6	0.0	0.0	0.0
1986	12	22.0	5808.0	264.0	187.4	123.6	23599.0	1072.7	213.8	4063.2	0.0	0.0	0.0
Subtotal		273.0	123574.0	452.7	338.6		213804.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., HOWARD #1-11. (SW 1-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

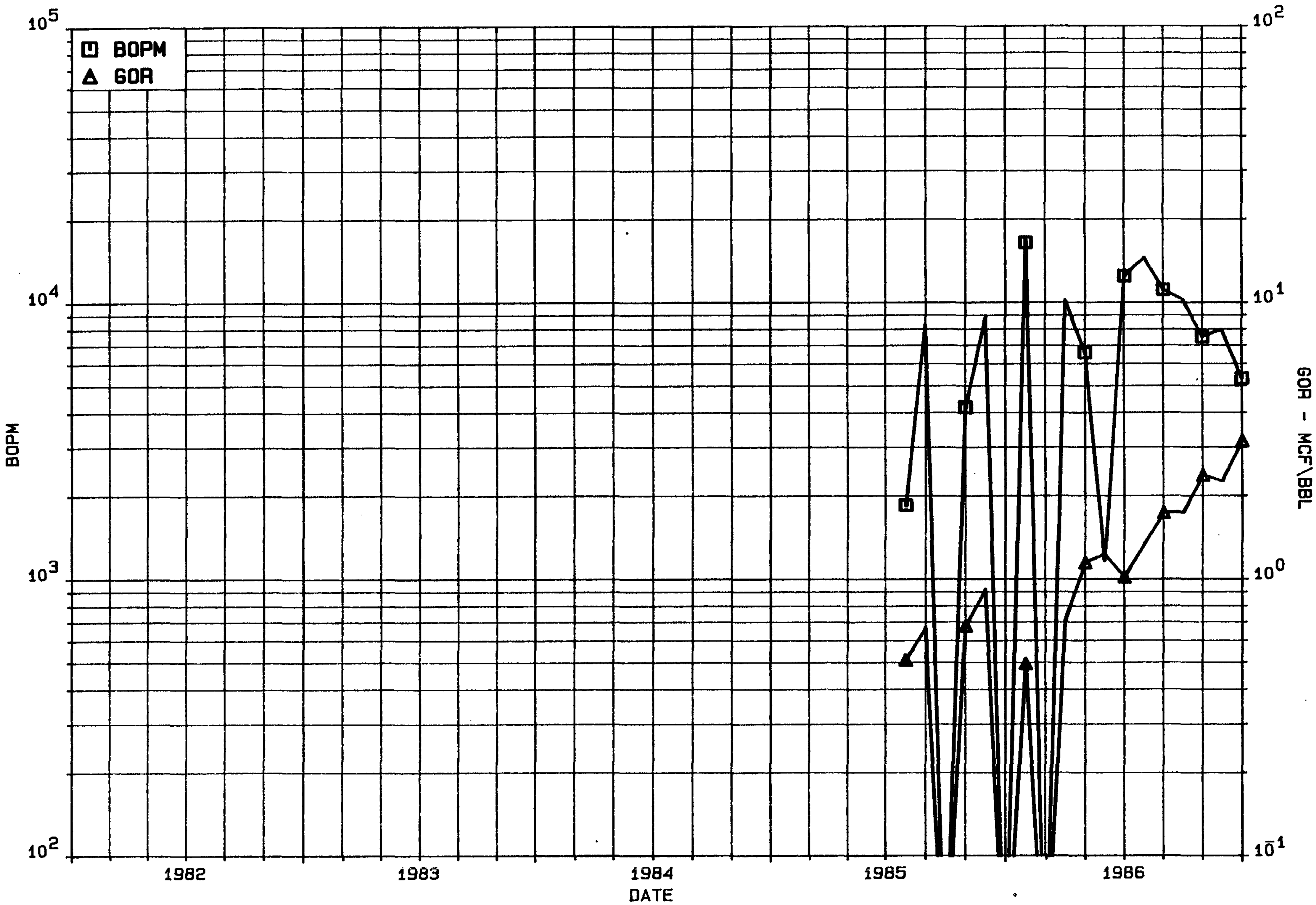


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MALLON OIL CO., HOWARD FEDERAL #1-8. (NE 1-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985 7	5.0	1856.0	371.2	59.9	1.9	950.0	190.0	1.0	511.9	0.0	0.0	0.0
1985 8	20.0	8402.0	420.1	271.0	10.3	5671.0	283.6	6.6	675.0	0.0	0.0	0.0
1985 9	0.0	0.0	0.0	0.0	10.3	0.0	0.0	6.6	0.0	0.0	0.0	0.0
1985 10	9.0	4207.0	467.4	135.7	14.5	2861.0	317.9	9.5	680.1	0.0	0.0	0.0
1985 11	19.0	8999.0	473.6	300.0	23.5	8351.0	439.5	17.8	928.0	0.0	0.0	0.0
1985 12	0.0	0.0	0.0	0.0	23.5	0.0	0.0	17.8	0.0	0.0	0.0	0.0
Subtotal	53.0	23464.0	442.7	127.5		17833.0				0.0		
1986 1	30.0	16538.0	551.3	533.5	40.0	8231.0	274.4	26.1	497.7	0.0	0.0	0.0
1986 2	0.0	-5.0	0.0	-0.2	40.0	2297.0	0.0	28.4	0.0	0.0	0.0	0.0
1986 3	23.0	10310.0	448.3	332.6	50.3	7430.0	323.0	35.8	720.7	0.0	0.0	0.0
1986 4	19.0	6605.0	347.6	220.2	56.9	7615.0	400.8	43.4	1152.9	0.0	0.0	0.0
1986 5	10.0	1162.0	116.2	37.5	58.1	1445.0	144.5	44.9	1243.5	0.0	0.0	0.0
1986 6	30.0	12537.0	417.9	417.9	70.6	12792.0	426.4	57.6	1020.3	0.0	0.0	0.0
1986 7	30.0	14657.0	488.6	472.8	85.3	19699.0	656.6	77.3	1344.0	0.0	0.0	0.0
1986 8	26.0	11160.0	429.2	360.0	96.4	19505.0	750.2	96.8	1747.8	0.0	0.0	0.0
1986 9	28.0	10214.0	364.8	340.5	106.6	17956.0	641.3	114.8	1758.0	0.0	0.0	0.0
1986 10	25.0	7544.0	301.8	243.4	114.2	17989.0	719.6	132.8	2384.5	0.0	0.0	0.0
1986 11	29.0	8044.0	277.4	268.1	122.2	18188.0	627.2	151.0	2261.1	0.0	0.0	0.0
1986 12	22.0	5326.0	242.1	171.8	127.6	16894.0	767.9	167.9	3172.0	0.0	0.0	0.0
Subtotal	272.0	104092.0	382.7	285.2		150041.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., HOWARD FEDERAL #1-8. (NE 1-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

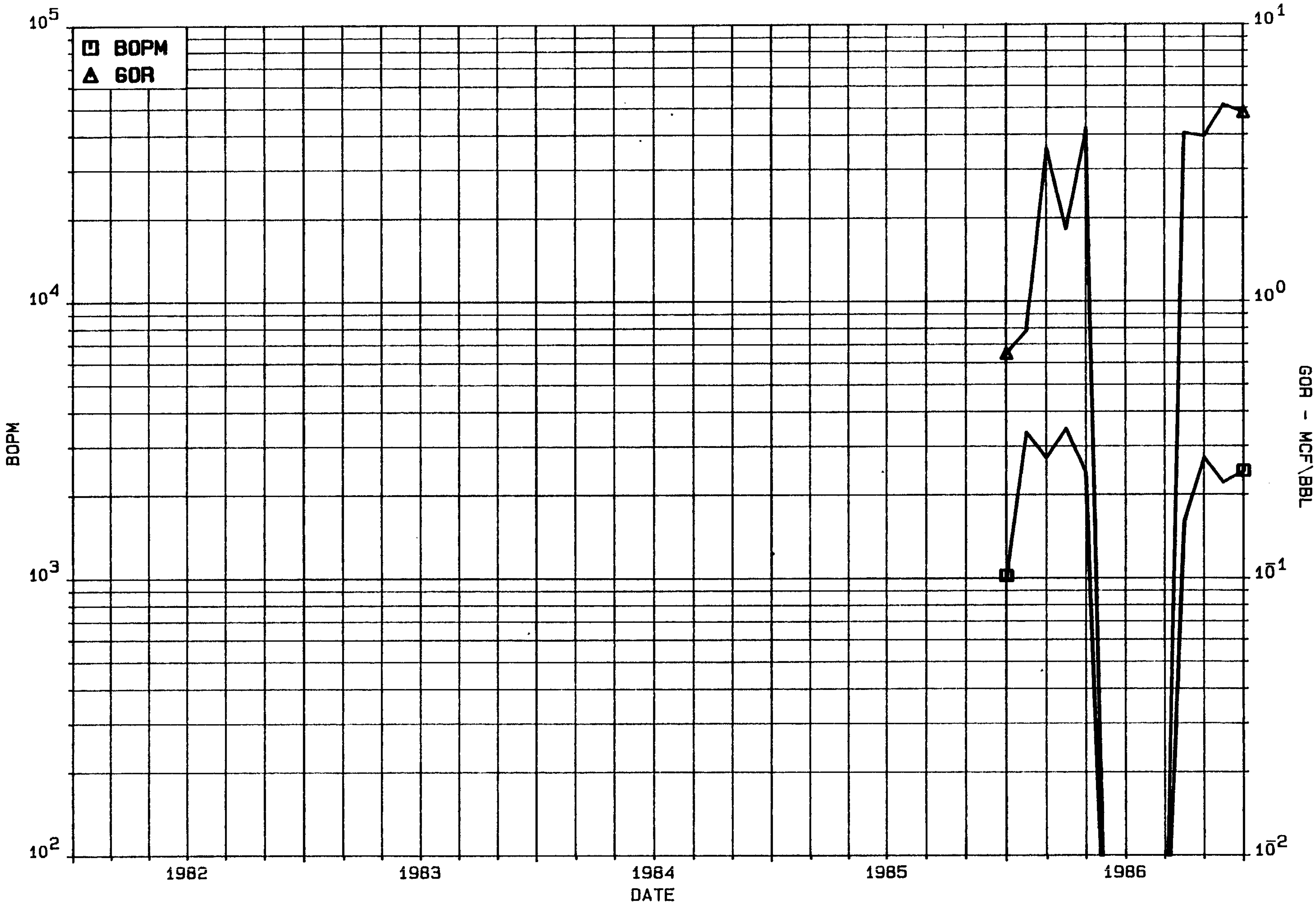


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MALLON OIL CO., JOHNSON FEDERAL #12-5. (NW 12-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985 12	12.0	1026.0	85.5	33.1	1.0	666.0	55.5	0.7	649.1	0.0	0.0	0.0
Subtotal	12.0	1026.0	85.5	33.1		666.0				0.0		
1986 1	31.0	3385.0	109.2	109.2	4.4	2669.0	86.1	3.3	788.5	0.0	0.0	0.0
1986 2	28.0	2715.0	97.0	97.0	7.1	9781.0	349.3	13.1	3602.6	0.0	0.0	0.0
1986 3	30.0	3487.0	116.2	112.5	10.6	6343.0	211.4	19.5	1819.0	0.0	0.0	0.0
1986 4	25.0	2401.0	96.0	80.0	13.0	10244.0	409.8	29.7	4266.6	0.0	0.0	0.0
1986 5	0.0	0.0	0.0	0.0	13.0	337.0	0.0	30.0	0.0	0.0	0.0	0.0
1986 6	0.0	0.0	0.0	0.0	13.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0
1986 7	0.0	0.0	0.0	0.0	13.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0
1986 8	0.0	0.0	0.0	0.0	13.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0
1986 9	17.0	1620.0	95.3	54.0	14.6	6606.0	388.6	36.6	4077.8	0.0	0.0	0.0
1986 10	31.0	2748.0	88.6	88.6	17.4	10832.0	349.4	47.5	3941.8	0.0	0.0	0.0
1986 11	27.0	2211.0	81.9	73.7	19.6	11406.0	422.4	58.9	5158.8	0.0	0.0	0.0
1986 12	30.0	2448.0	81.6	79.0	22.0	11792.0	393.1	70.7	4817.0	0.0	0.0	0.0
Subtotal	219.0	21015.0	96.0	57.6		70010.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., JOHNSON FEDERAL #12-5. (NW 12-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

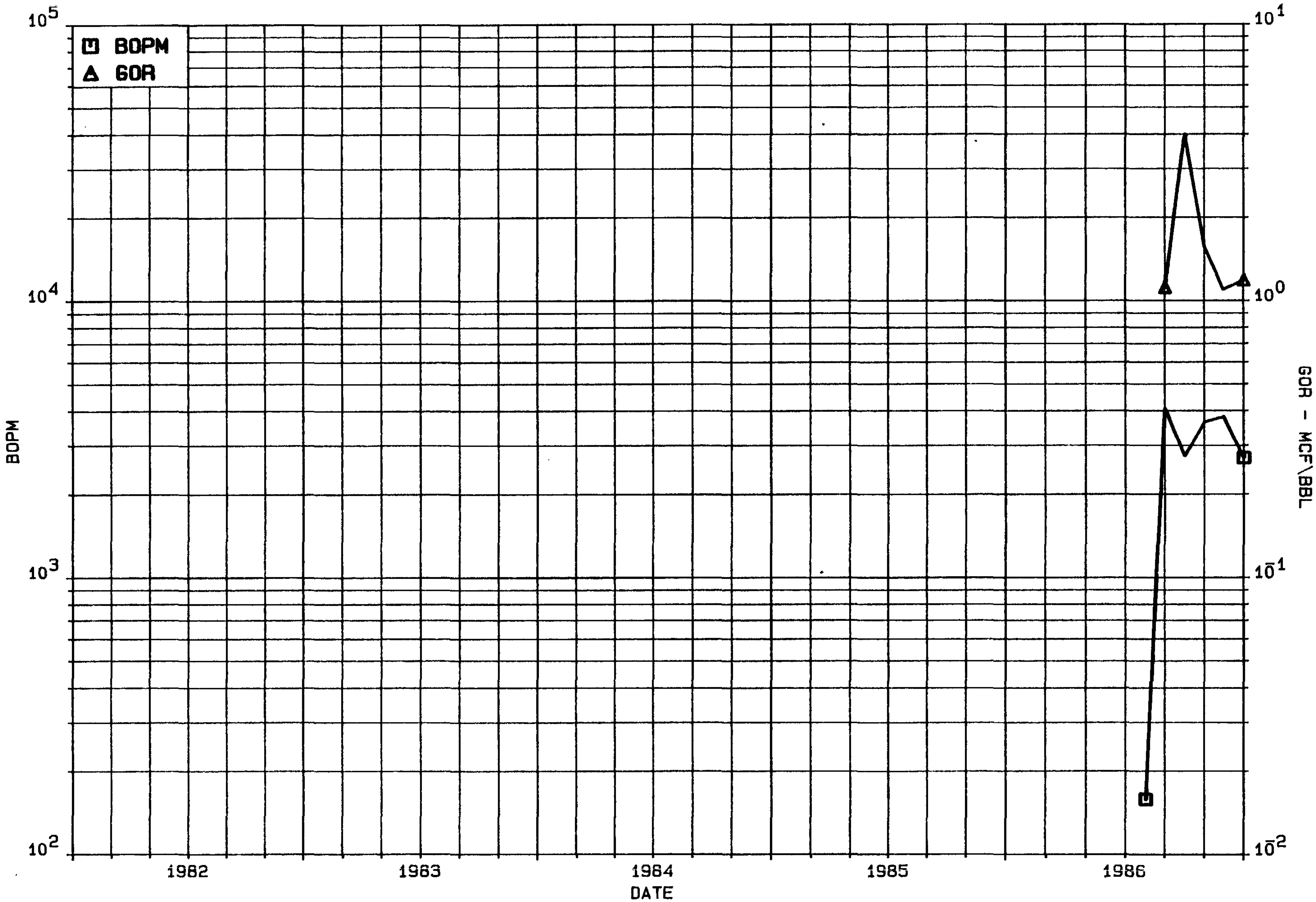


GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MALLON OIL CO., POST FEDERAL #13-6. (NW 13-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	6	0.0	0.0	0.0	0.0	0.0	565.0	0.0	0.6	0.0	0.0	0.0	0.0
1986	7	1.0	159.0	159.0	5.1	0.2	0.0	0.0	0.6	0.0	0.0	0.0	0.0
1986	8	31.0	4127.0	133.1	133.1	4.3	4617.0	148.9	5.2	1118.7	0.0	0.0	0.0
1986	9	18.0	2755.0	153.1	91.8	7.0	11065.0	614.7	16.2	4016.3	0.0	0.0	0.0
1986	10	29.0	3658.0	126.1	118.0	10.7	5735.0	197.8	22.0	1567.8	0.0	0.0	0.0
1986	11	26.0	3828.0	147.2	127.6	14.5	4193.0	161.3	26.2	1095.4	0.0	0.0	0.0
1986	12	30.0	2714.0	90.5	87.5	17.2	3230.0	107.7	29.4	1190.1	0.0	0.0	0.0
Subtotal		135.0	17241.0	127.7	80.6	.	29405.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., POST FEDERAL #13-6. (NW 13-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

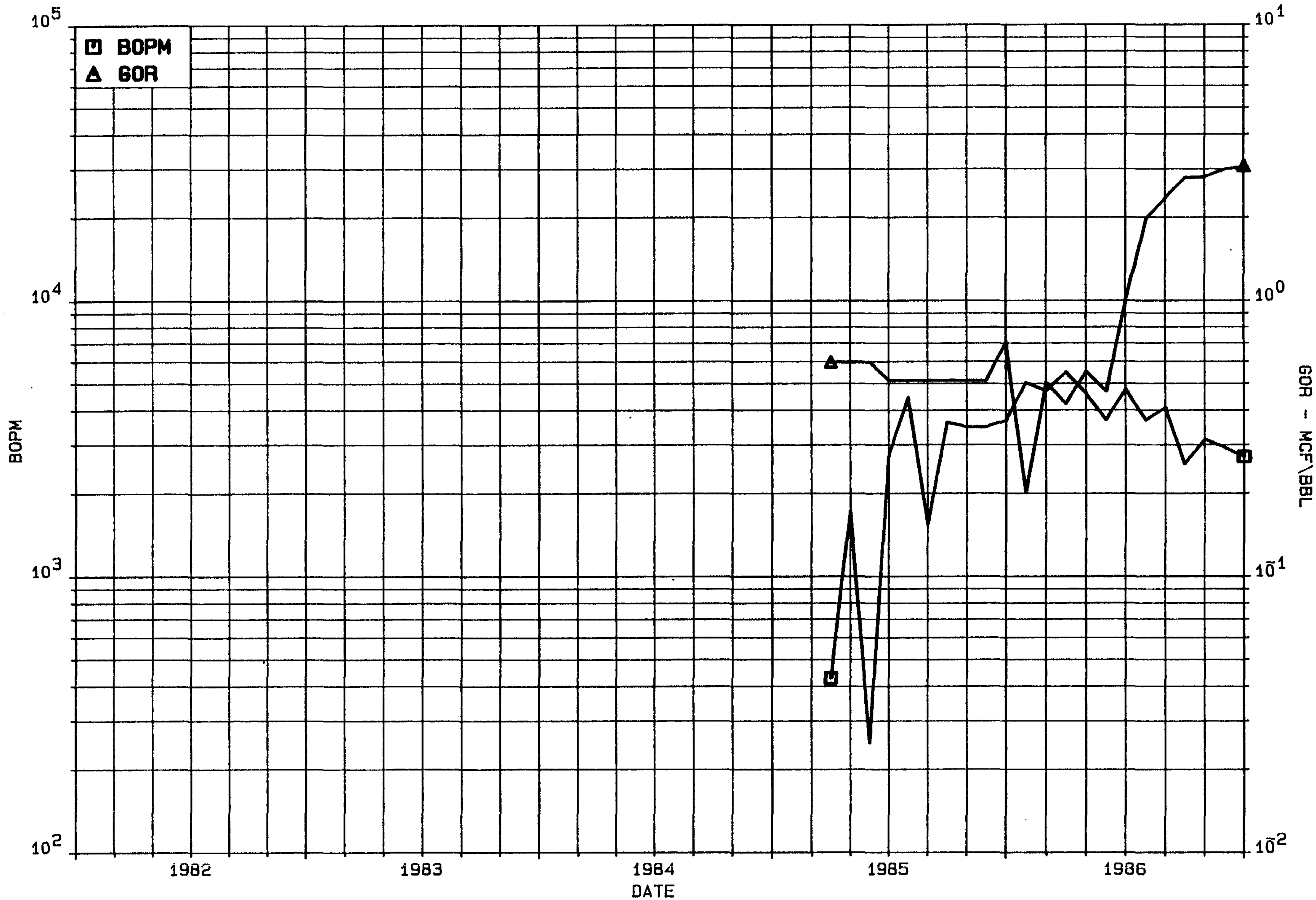


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MALLON OIL CO., RIBEYOWIDS #2-16. (SE 2-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	3	12.0	429.0	35.8	13.8	0.4	257.0	21.4	0.3	599.1	0.0	0.0	0.0
1985	4	19.0	1734.0	91.3	57.8	2.2	1040.0	54.7	1.3	599.8	0.0	0.0	0.0
1985	5	2.0	249.0	124.5	8.0	2.4	149.0	74.5	1.4	598.4	0.0	0.0	0.0
1985	6	18.0	2733.0	151.8	91.1	5.1	1399.0	77.7	2.8	511.9	0.0	0.0	0.0
1985	7	27.0	4470.0	165.6	144.2	9.6	2289.0	84.8	5.1	512.1	0.0	0.0	0.0
1985	8	10.0	1542.0	154.2	49.7	11.2	790.0	79.0	5.9	512.3	0.0	0.0	0.0
1985	9	19.0	3634.0	191.3	121.1	14.8	1861.0	97.9	7.8	512.1	0.0	0.0	0.0
1985	10	18.0	3480.0	193.3	112.3	18.3	1782.0	99.0	9.6	512.1	0.0	0.0	0.0
1985	11	19.0	3478.0	183.1	115.9	21.7	1781.0	93.7	11.3	512.1	0.0	0.0	0.0
1985	12	24.0	3695.0	154.0	119.2	25.4	2640.0	110.0	14.0	714.5	0.0	0.0	0.0
Subtotal		168.0	25444.0	151.5	83.2		13988.0				0.0		
1986	1	31.0	5059.0	163.2	163.2	30.5	1026.0	33.1	15.0	202.8	0.0	0.0	0.0
1986	2	27.0	4691.0	173.7	167.5	35.2	2382.0	88.2	17.4	507.8	0.0	0.0	0.0
1986	3	29.0	5531.0	190.7	178.4	40.7	2329.0	80.3	19.7	421.1	0.0	0.0	0.0
1986	4	30.0	4597.0	153.2	153.2	45.3	2562.0	85.4	22.3	557.3	0.0	0.0	0.0
1986	5	17.0	3675.0	216.2	118.5	49.0	1718.0	101.1	24.0	467.5	0.0	0.0	0.0
1986	6	30.0	4789.0	159.6	159.6	53.8	4841.0	161.4	28.8	1010.9	0.0	0.0	0.0
1986	7	28.0	3670.0	131.1	118.4	57.5	7262.0	259.4	36.1	1978.7	0.0	0.0	0.0
1986	8	31.0	4102.0	132.3	132.3	61.6	9679.0	312.2	45.8	2359.6	0.0	0.0	0.0
1986	9	27.0	2546.0	94.3	84.9	64.1	7114.0	263.5	52.9	2794.2	0.0	0.0	0.0
1986	10	31.0	3157.0	101.8	101.8	67.3	8884.0	286.6	61.8	2814.1	0.0	0.0	0.0
1986	11	30.0	2936.0	97.9	97.9	70.2	8798.0	293.3	70.6	2996.6	0.0	0.0	0.0
1986	12	31.0	2716.0	87.6	87.6	72.9	8356.0	269.5	78.9	3076.6	0.0	0.0	0.0
Subtotal		342.0	47469.0	138.8	130.1		64951.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MALLON OIL CO., RIBEYOWIDS #2-16. (SE 2-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

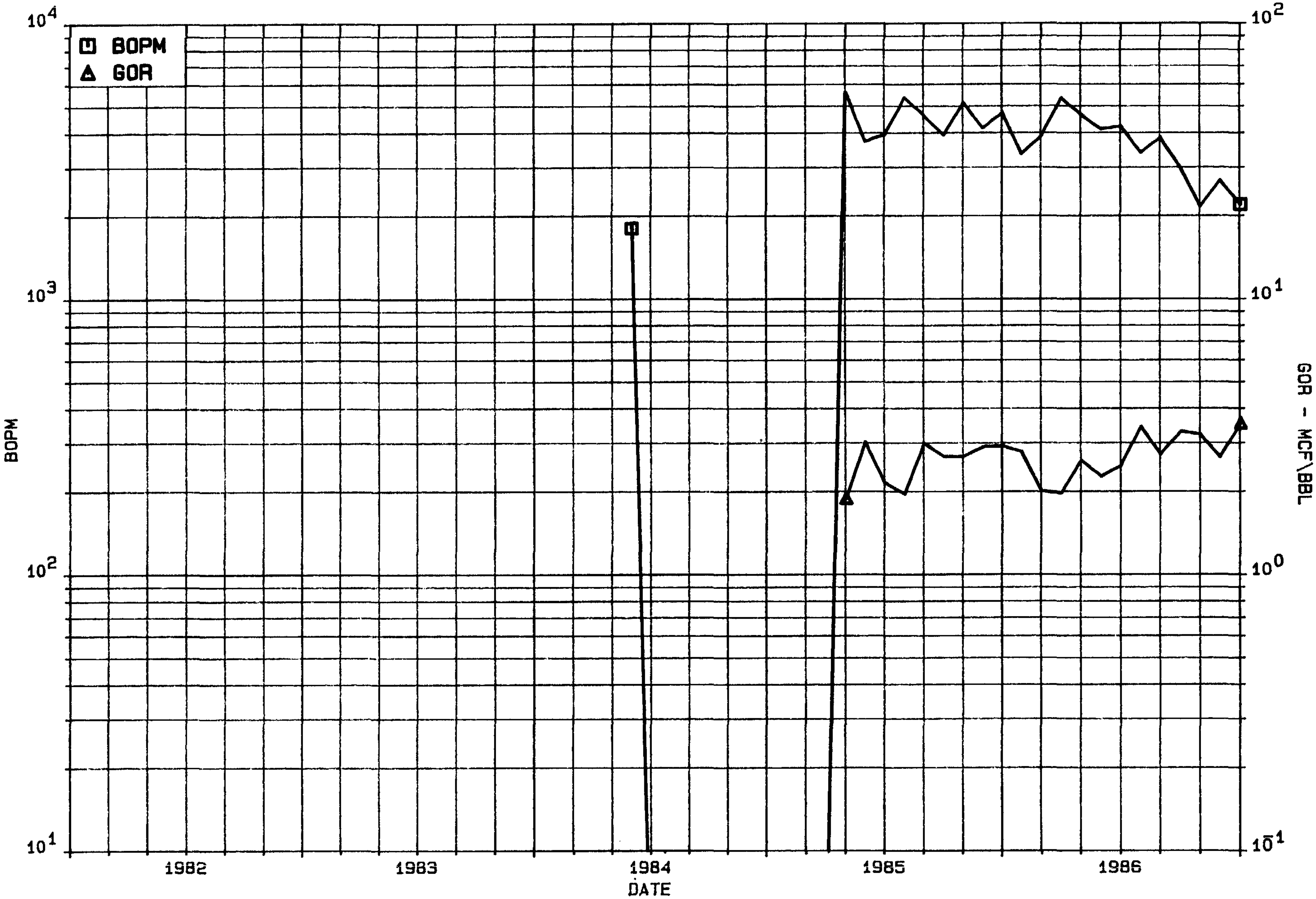


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL, HAWK FED #2. (NW 35-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984	5	18.0	1806.0	100.3	58.3	1.8	0.0	0.0	0.0	0.0	16.0	0.9	0.0
1984	6	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	7	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	8	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	9	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	10	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	11	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	12	30.0	0.0	0.0	0.0	1.8	1621.0	54.0	1.6	0.0	0.0	0.0	0.0
Subtotal		48.0	1806.0	37.6	7.4		1621.0				16.0		
1985	1	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1985	2	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1985	3	0.0	0.0	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.0	0.0	0.0
1985	4	23.0	5683.0	247.1	189.4	7.5	10770.0	468.3	12.4	1895.1	23.0	1.0	0.0
1985	5	31.0	3718.0	119.9	119.9	11.2	11325.0	365.3	23.7	3046.0	10.0	0.3	0.0
1985	6	28.0	3963.0	141.5	132.1	15.2	8512.0	304.0	32.2	2147.9	59.0	2.1	0.1
1985	7	31.0	5399.0	174.2	174.2	20.6	10550.0	340.3	42.8	1954.1	9.0	0.3	0.1
1985	8	31.0	4635.0	149.5	149.5	25.2	13897.0	448.3	56.7	2998.3	4.0	0.1	0.1
1985	9	22.0	3922.0	178.3	130.7	29.1	10495.0	477.0	67.2	2675.9	2.0	0.1	0.1
1985	10	31.0	5178.0	167.0	167.0	34.3	13919.0	449.0	81.1	2688.1	0.0	0.0	0.1
1985	11	26.0	4147.0	159.5	138.2	38.5	12097.0	465.3	93.2	2917.0	0.0	0.0	0.1
1985	12	27.0	4763.0	176.4	153.6	43.2	13978.0	517.7	107.2	2934.7	0.0	0.0	0.1
Subtotal		250.0	41408.0	165.6	113.4		105543.0				107.0		
1986	1	21.0	3345.0	159.3	107.9	46.6	9304.0	443.0	116.5	2781.5	20.0	1.0	0.1
1986	2	20.0	3910.0	195.5	139.6	50.5	7832.0	391.6	124.3	2003.1	101.0	5.1	0.2
1986	3	27.0	5372.0	199.0	173.3	55.8	10578.0	391.8	134.9	1969.1	27.0	1.0	0.3
1986	4	28.0	4662.0	166.5	155.4	60.5	12183.0	435.1	147.1	2613.3	13.0	0.5	0.3
1986	5	31.0	4112.0	132.6	132.6	64.6	9326.0	300.8	156.4	2268.0	6.0	0.2	0.3
1986	6	30.0	4247.0	141.6	141.6	68.9	10617.0	353.9	167.0	2499.9	9.0	0.3	0.3
1986	7	31.0	3381.0	109.1	109.1	72.2	11698.0	377.4	178.7	3459.9	9.0	0.3	0.3
1986	8	31.0	3865.0	124.7	124.7	76.1	10515.0	339.2	189.2	2720.6	10.0	0.3	0.3
1986	9	29.0	2982.0	102.8	99.4	79.1	9902.0	341.4	199.1	3320.6	0.0	0.0	0.3
1986	10	22.0	2152.0	97.8	69.4	81.2	6933.0	315.1	206.1	3221.7	1.0	0.0	0.3
1986	11	22.0	2704.0	122.9	90.1	83.9	7187.0	326.7	213.2	2657.9	1.0	0.0	0.3
1986	12	20.0	2196.0	109.8	70.8	86.1	7780.0	389.0	221.0	3542.8	8.0	0.4	0.3
Subtotal		312.0	42928.0	137.6	117.6		113855.0				205.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MERIDIAN OIL, HAWK FED #2. (NW 35-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

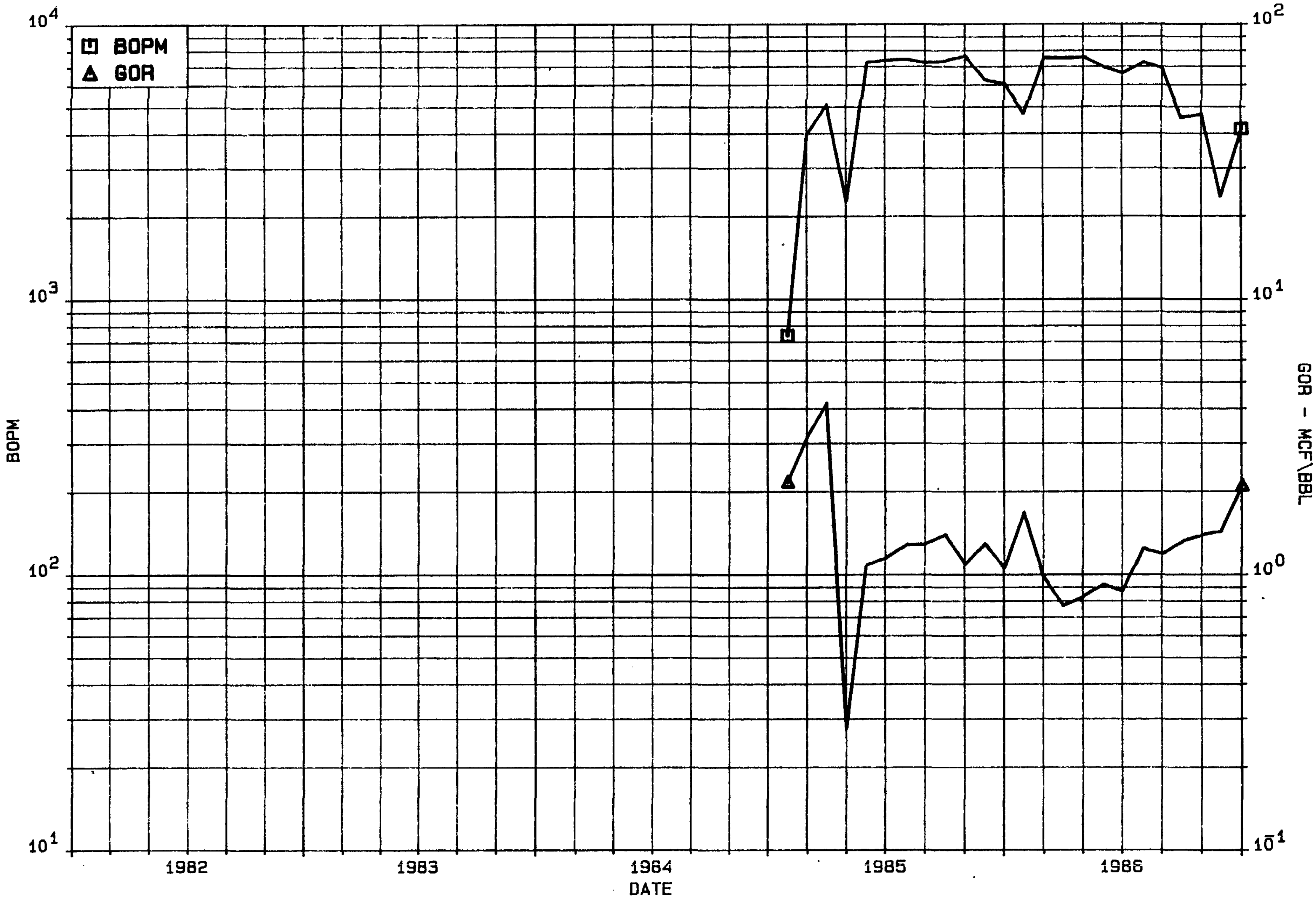


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL, HAWK FED #3. (SW 35-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	31.0	735.0	23.7	23.7	0.7	1600.0	51.6	1.6	2176.9	430.0	13.9	0.4
1985	2	28.0	3984.0	142.3	142.3	4.7	12689.0	453.2	14.3	3185.0	97.0	3.5	0.5
1985	3	31.0	5110.0	164.8	164.8	9.8	21515.0	694.0	35.8	4210.4	16.0	0.5	0.5
1985	4	21.0	2269.0	108.0	75.6	12.1	631.0	30.0	36.4	278.1	7.0	0.3	0.6
1985	5	30.0	7258.0	241.9	234.1	19.4	7874.0	262.5	44.3	1084.9	10.0	0.3	0.6
1985	6	30.0	7406.0	246.9	246.9	26.8	8544.0	284.8	52.9	1153.7	3.0	0.1	0.6
1985	7	30.0	7461.0	248.7	240.7	34.2	9606.0	320.2	62.5	1287.5	8.0	0.3	0.6
1985	8	31.0	7209.0	232.5	232.5	41.4	9327.0	300.9	71.8	1293.8	4.0	0.1	0.6
1985	9	29.0	7363.0	253.9	245.4	48.8	10325.0	356.0	82.1	1402.3	5.0	0.2	0.6
1985	10	31.0	7662.0	247.2	247.2	56.5	8325.0	268.5	90.4	1086.5	0.0	0.0	0.6
1985	11	26.0	6238.0	239.9	207.9	62.7	8097.0	311.4	98.5	1298.0	0.0	0.0	0.6
1985	12	30.0	6036.0	201.2	194.7	68.7	6333.0	211.1	104.9	1049.2	0.0	0.0	0.6
Subtotal		348.0	68731.0	197.5	188.3		104866.0				580.0		
1986	1	25.0	4702.0	188.1	151.7	73.4	7949.0	318.0	112.8	1690.6	24.0	1.0	0.6
1986	2	25.0	7539.0	301.6	269.3	81.0	7414.0	296.6	120.2	983.4	41.0	1.6	0.6
1986	3	29.0	7468.0	257.5	240.9	88.4	5725.0	197.4	126.0	766.6	15.0	0.5	0.7
1986	4	28.0	7590.0	271.1	253.0	96.0	6316.0	225.6	132.3	832.1	5.0	0.2	0.7
1986	5	31.0	6959.0	224.5	224.5	103.0	6431.0	207.5	138.7	924.1	3.0	0.1	0.7
1986	6	30.0	6594.0	219.8	219.8	109.6	5704.0	190.1	144.4	865.0	31.0	1.0	0.7
1986	7	31.0	7261.0	234.2	234.2	116.8	9041.0	291.6	153.4	1245.1	20.0	0.6	0.7
1986	8	31.0	6898.0	222.5	222.5	123.7	8169.0	263.5	161.6	1184.3	12.0	0.4	0.7
1986	9	22.0	4540.0	206.4	151.3	128.3	6009.0	273.1	167.6	1323.6	6.0	0.3	0.7
1986	10	25.0	4705.0	188.2	151.8	133.0	6571.0	262.8	174.2	1396.6	3.0	0.1	0.7
1986	11	18.0	2347.0	130.4	78.2	135.3	3383.0	187.9	177.6	1441.4	2.0	0.1	0.7
1986	12	29.0	4151.0	143.1	133.9	139.5	8770.0	302.4	186.3	2112.7	4.0	0.1	0.7
Subtotal		324.0	70754.0	218.4	193.8		81482.0				166.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MERIDIAN OIL, HAWK FED #3. (SW 35-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

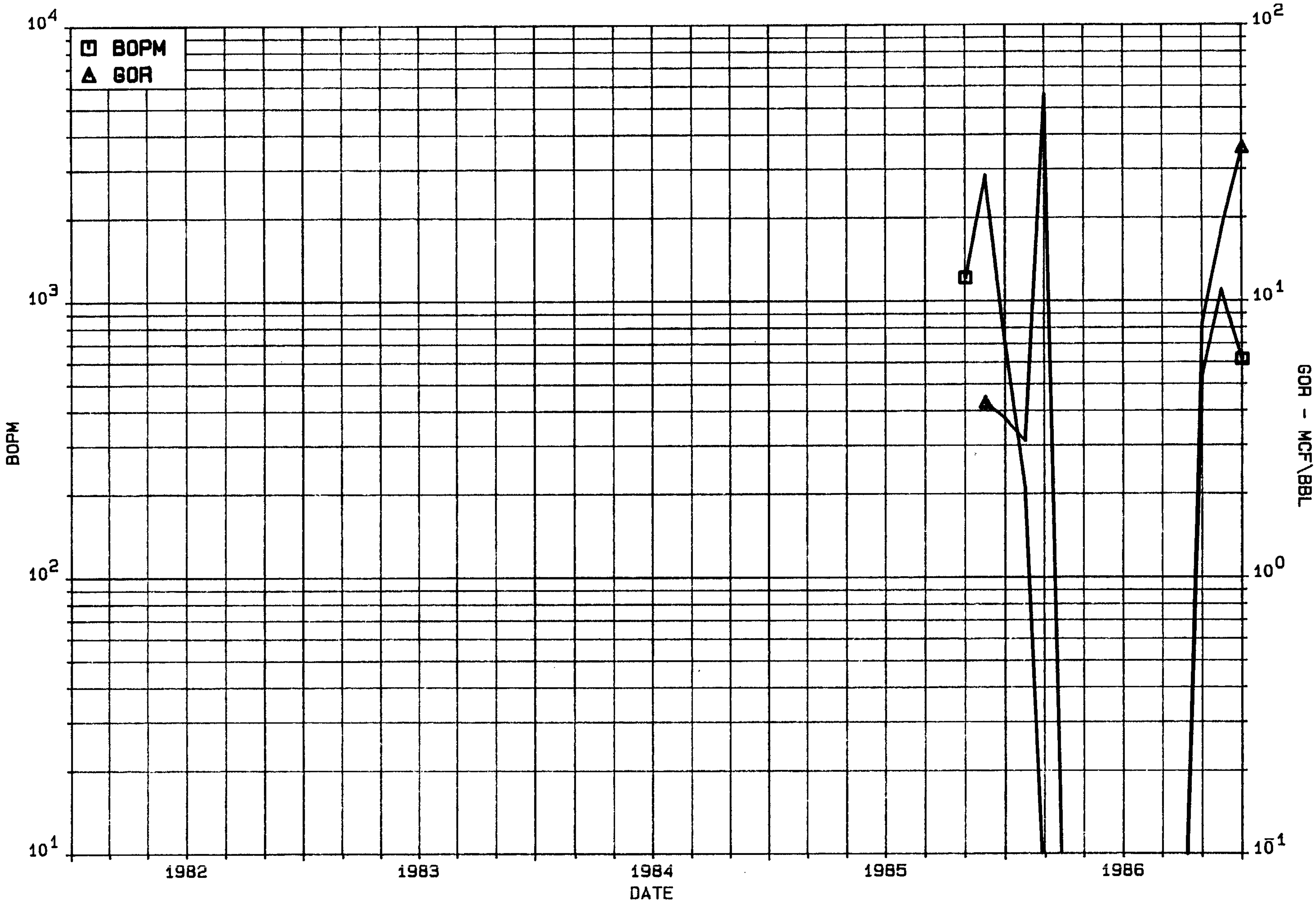


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL, HILL FED #1. (NW 24-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985 10	16.0	1210.0	75.6	39.0	1.2	83.0	5.2	0.1	68.6	246.0	15.4	0.2
1985 11	19.0	2867.0	150.9	95.6	4.1	12270.0	645.8	12.4	4279.7	108.0	5.7	0.4
1985 12	4.0	694.0	173.5	22.4	4.8	2583.0	645.8	14.9	3721.9	10.0	2.5	0.4
Subtotal	39.0	4771.0	122.3	51.9		14936.0				364.0		
1986 1	1.0	209.0	209.0	6.7	5.0	646.0	646.0	15.6	3090.9	2.0	2.0	0.4
1986 2	24.0	6.0	0.3	0.2	5.0	337.0	14.0	15.9	56166.7	50.0	2.1	0.4
1986 3	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 4	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 5	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 6	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 7	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 8	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 9	0.0	0.0	0.0	0.0	5.0	0.0	0.0	15.9	0.0	0.0	0.0	0.4
1986 10	7.0	542.0	77.4	17.5	5.5	4522.0	646.0	20.4	8343.2	3.0	0.4	0.4
1986 11	30.0	1102.0	36.7	36.7	6.6	19927.0	664.2	40.4	18082.6	12.0	0.4	0.4
1986 12	24.0	612.0	25.5	19.7	7.2	21984.0	916.0	62.4	35921.6	10.0	0.4	0.4
Subtotal	86.0	2471.0	28.7	6.8		47416.0				77.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

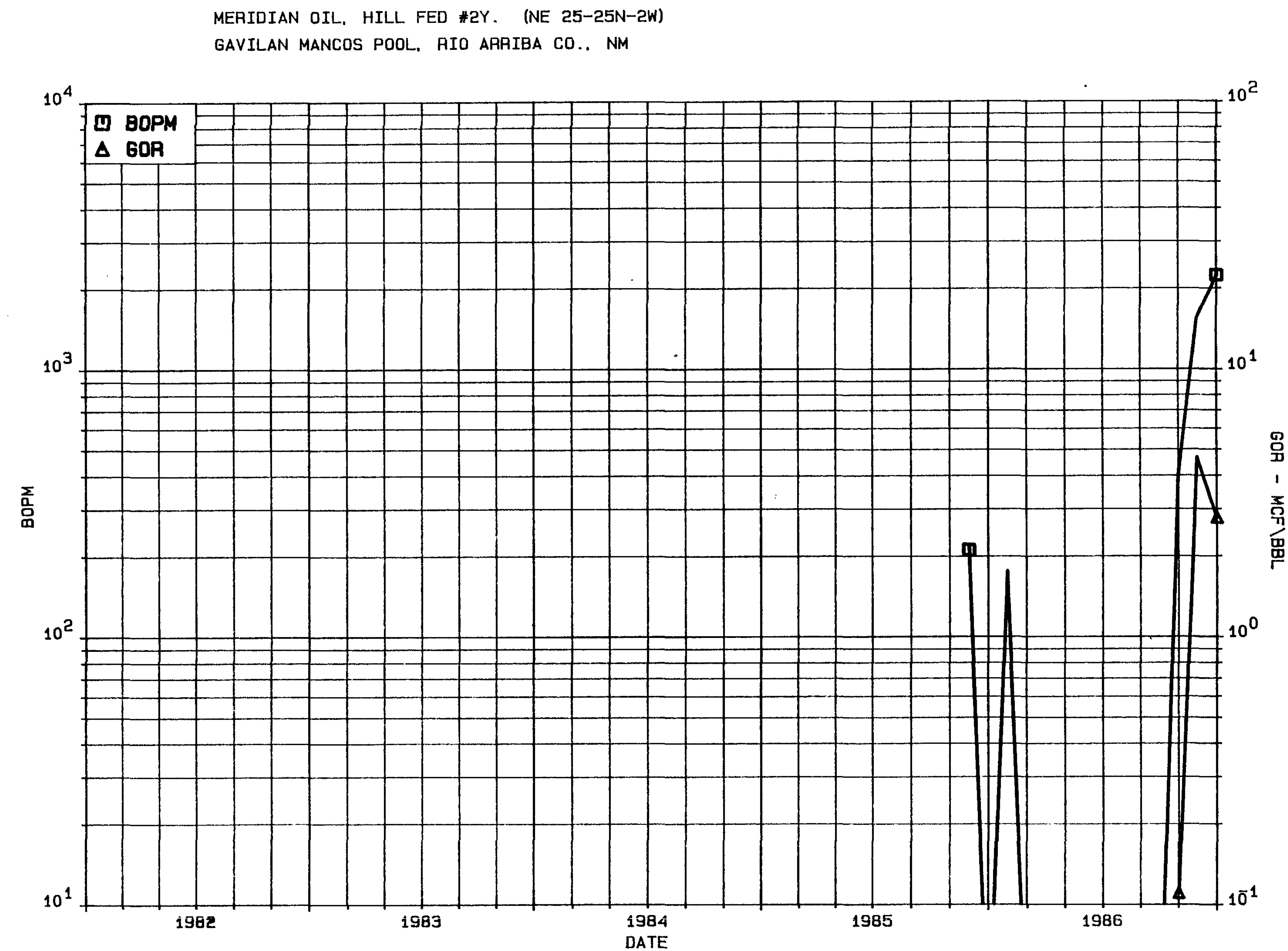
MERIDIAN OIL, HILL FED #1. (NW 24-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL, HILL FED #2Y. (NE 25-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985 11	3.0	210.0	70.0	7.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985 12	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	3.0	210.0	70.0	3.4		0.0				0.0		
1986 1	1.0	176.0	176.0	5.7	0.4	4.0	4.0	0.0	22.7	5.0	5.0	0.0
1986 2	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 3	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 4	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 5	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 6	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 7	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 8	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986 10	11.0	400.0	36.4	12.9	0.8	44.0	4.0	0.0	110.0	2.0	0.2	0.0
1986 11	22.0	1550.0	70.5	51.7	2.3	7274.0	330.6	7.3	4692.9	4.0	0.2	0.0
1986 12	26.0	2229.0	85.7	71.9	4.6	6163.0	237.0	13.5	2764.9	5.0	0.2	0.0
Subtotal	60.0	4355.0	72.6	11.9		13485.0				16.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.



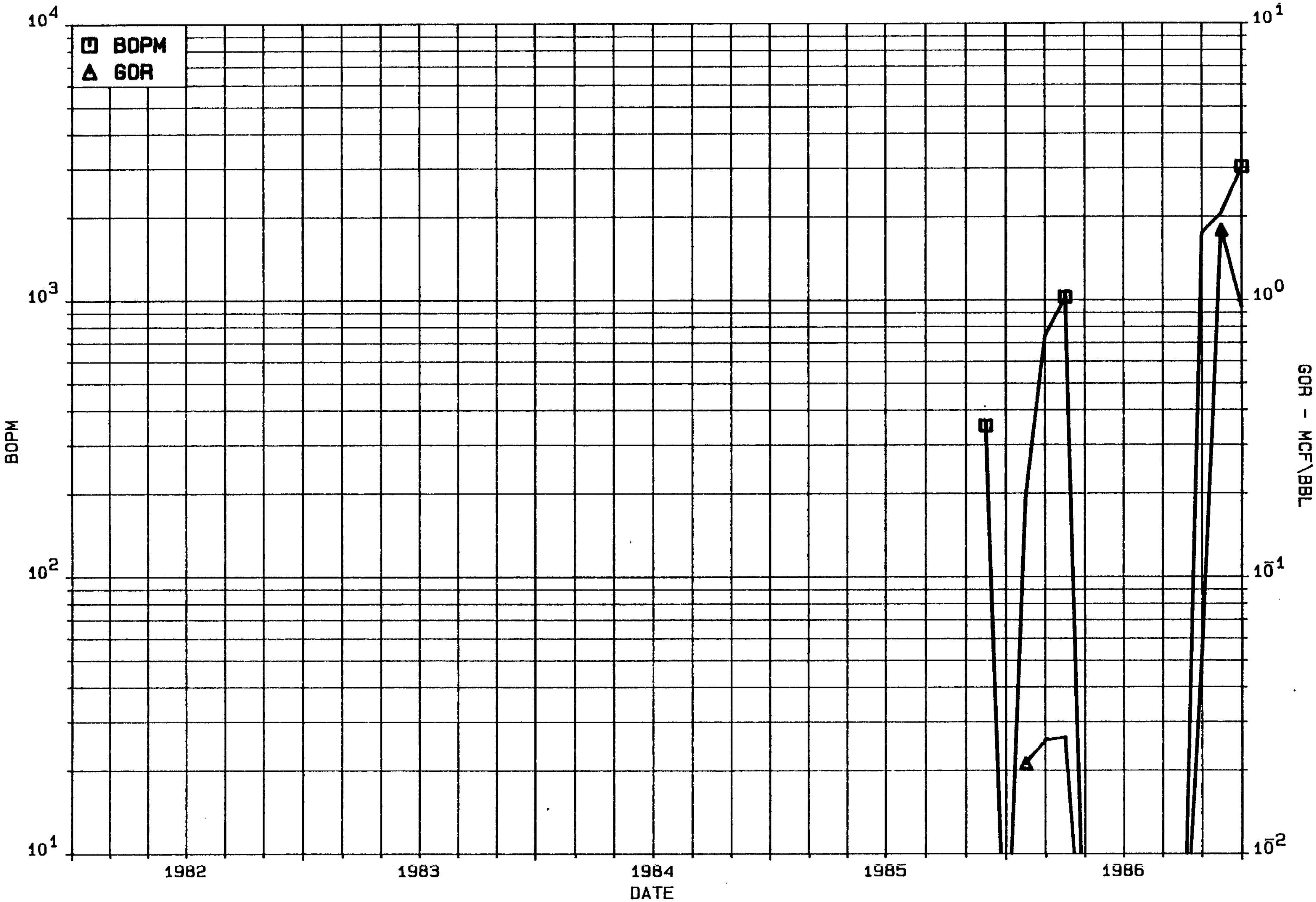
MERIDIAN OIL, HILL FED #2Y. (NE 25-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
BOPM
GOR
10^4
10^3
10^2
10^1
BOPM
10^2
10^1
10^0
10^{-1}
GOR - MCF\BBL
1982
1983
1984
1985
1986
DATE

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERIDIAN OIL, HILL FED. #3. (NW 36-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	11	13.0	350.0	26.9	11.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		13.0	350.0	26.9	5.7		0.0				0.0		
1986	1	1.0	190.0	190.0	6.1	0.5	4.0	4.0	0.0	21.1	7.0	7.0	0.0
1986	2	5.0	739.0	147.8	26.4	1.3	19.0	3.8	0.0	25.7	187.0	37.4	0.2
1986	3	7.0	1021.0	145.9	32.9	2.3	27.0	3.9	0.1	26.4	7.0	1.0	0.2
1986	4	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	5	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	6	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	7	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	8	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	9	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.1	0.0	0.0	0.0	0.2
1986	10	23.0	1737.0	75.5	56.0	4.0	92.0	4.0	0.1	53.0	23.0	1.0	0.2
1986	11	30.0	2063.0	68.8	68.8	6.1	3669.0	122.3	3.8	1778.5	30.0	1.0	0.3
1986	12	31.0	3017.0	97.3	97.3	9.1	2826.0	91.2	6.6	936.7	31.0	1.0	0.3
Subtotal		97.0	8767.0	90.4	24.0		6637.0				285.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MERIDIAN OIL, HILL FED #3. (NW 36-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

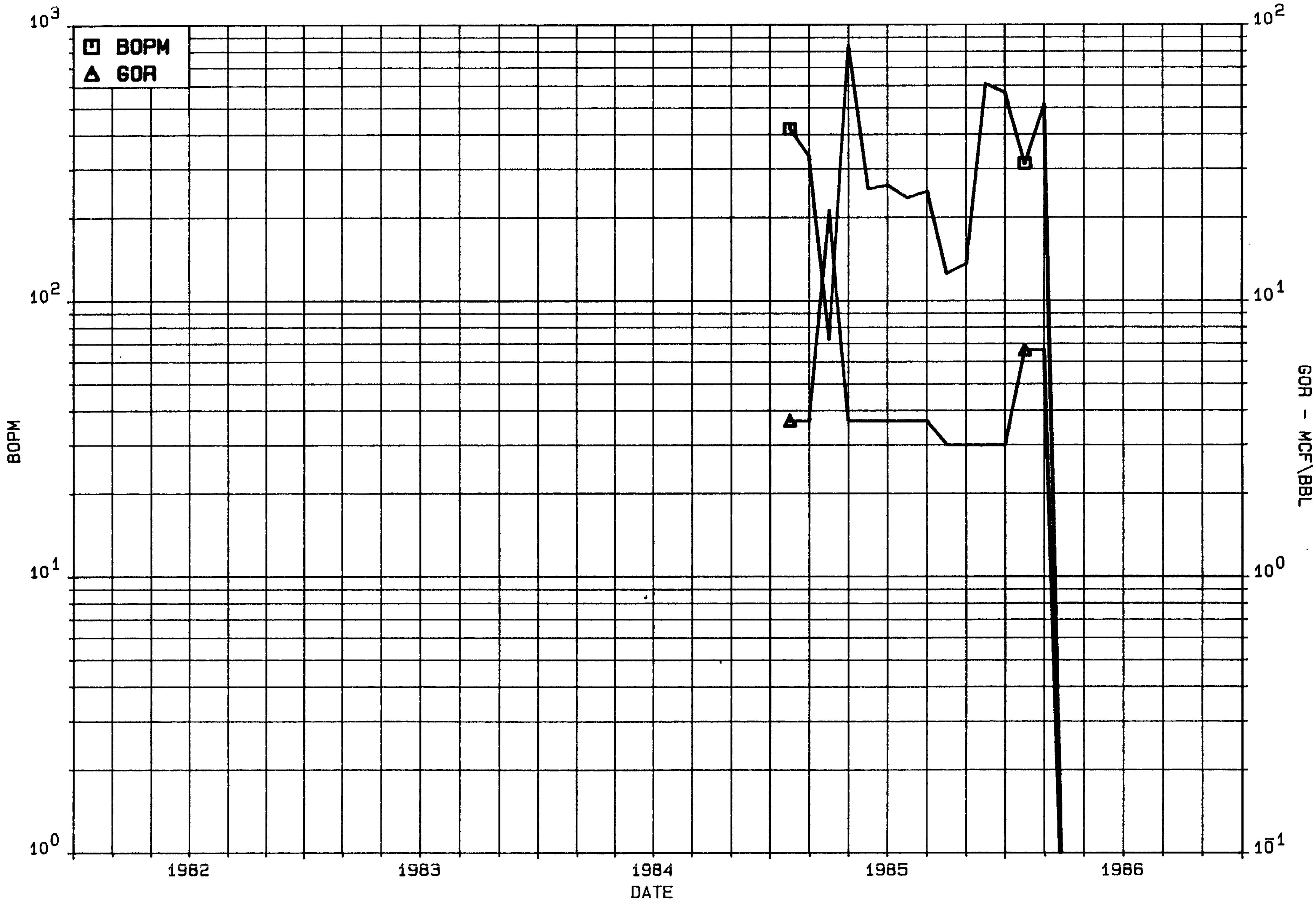


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERRION OIL & GAS CORP., KRYSTINA #1. (SW 14-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	25.0	420.0	16.8	13.5	0.4	1544.0	61.8	1.5	3676.2	0.0	0.0	0.0
1985	2	15.0	333.0	22.2	11.9	0.8	1224.0	81.6	2.8	3675.7	0.0	0.0	0.0
1985	3	17.0	72.0	4.2	2.3	0.8	1537.0	90.4	4.3	21347.2	0.0	0.0	0.0
1985	4	23.0	847.0	36.8	28.2	1.7	3114.0	135.4	7.4	3676.5	33.0	1.4	0.0
1985	5	11.0	253.0	23.0	8.2	1.9	928.0	84.4	8.3	3668.0	0.0	0.0	0.0
1985	6	12.0	263.0	21.9	8.8	2.2	964.0	80.3	9.3	3665.4	0.0	0.0	0.0
1985	7	10.0	235.0	23.5	7.6	2.4	862.0	86.2	10.2	3668.1	0.0	0.0	0.0
1985	8	12.0	250.0	20.8	8.1	2.7	917.0	76.4	11.1	3668.0	0.0	0.0	0.0
1985	9	6.0	125.0	20.8	4.2	2.8	375.0	62.5	11.5	3000.0	0.0	0.0	0.0
1985	10	3.0	137.0	45.7	4.4	2.9	411.0	137.0	11.9	3000.0	0.0	0.0	0.0
1985	11	28.0	613.0	21.9	20.4	3.5	1839.0	65.7	13.7	3000.0	0.0	0.0	0.0
1985	12	31.0	565.0	18.2	18.2	4.1	1695.0	54.7	15.4	3000.0	0.0	0.0	0.0
Subtotal		193.0	4113.0	21.3	11.3		15410.0				33.0		
1986	1	12.0	314.0	26.2	10.1	4.4	2085.0	173.8	17.5	6640.1	0.0	0.0	0.0
1986	2	25.0	517.0	20.7	18.5	4.9	3433.0	137.3	20.9	6640.2	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	4.9	0.0	0.0	20.9	0.0	0.0	0.0	0.0
Subtotal		37.0	831.0	22.5	2.3		5518.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MERRION OIL & GAS CORP., KRYSTINA #1. (SW 14-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

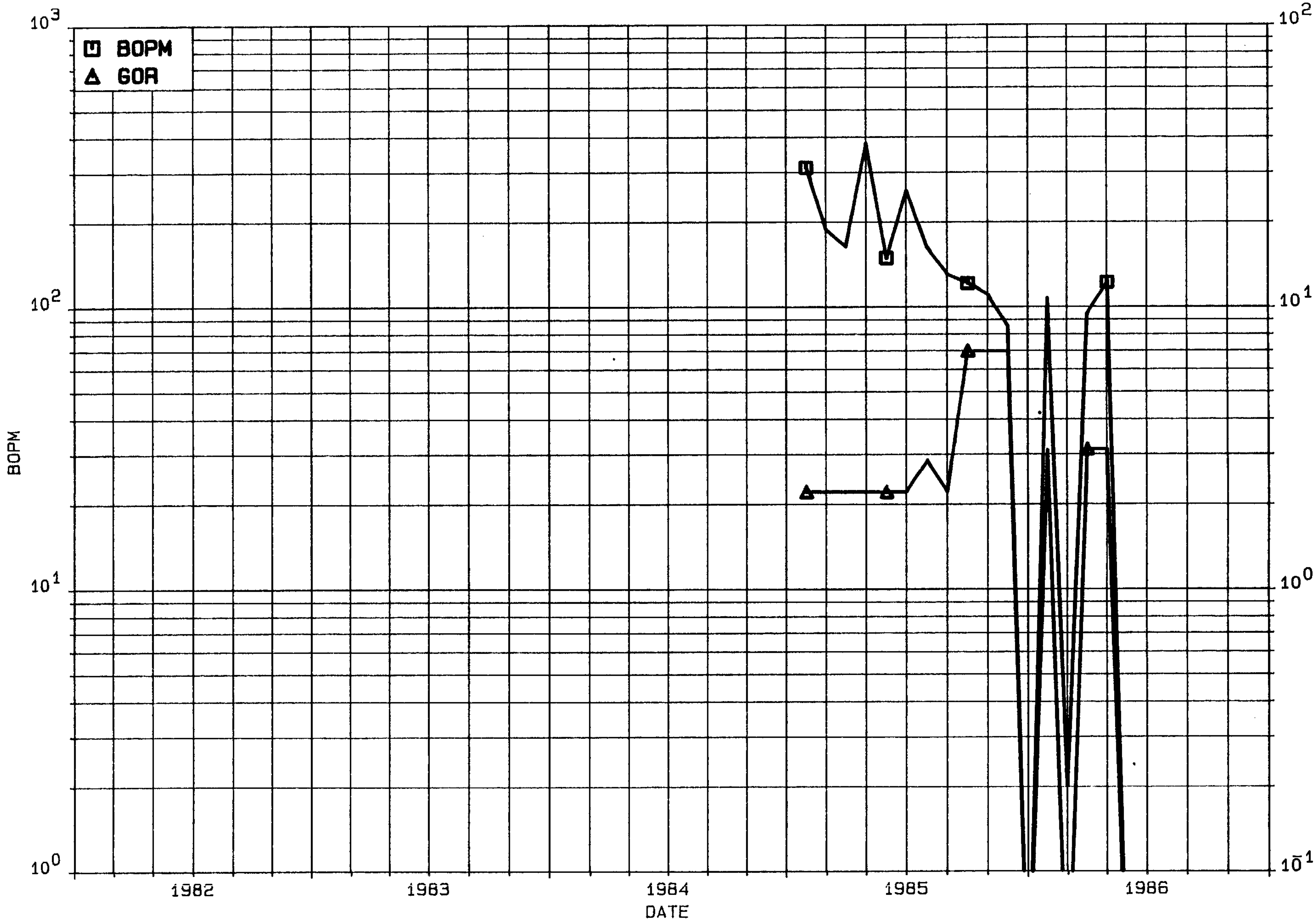


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERRION OIL & GAS CORP., OSO CANYON GAS COM #1. (NW 13-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M.	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	20.0	312.0	15.6	10.1	0.3	690.0	34.5	0.7	2211.5	0.0	0.0	0.0
1985	2	18.0	188.0	10.4	6.7	0.5	416.0	23.1	1.1	2212.8	0.0	0.0	0.0
1985	3	5.0	163.0	32.6	5.3	0.7	360.0	72.0	1.5	2208.6	0.0	0.0	0.0
1985	4	25.0	383.0	15.3	12.8	1.0	847.0	33.9	2.3	2211.5	125.0	5.0	0.1
1985	5	25.0	149.0	6.0	4.8	1.2	329.0	13.2	2.6	2208.1	13.0	0.5	0.1
1985	6	30.0	260.0	8.7	8.7	1.5	575.0	19.2	3.2	2211.5	0.0	0.0	0.1
1985	7	31.0	162.0	5.2	5.2	1.6	464.0	15.0	3.7	2864.2	0.0	0.0	0.1
1985	8	28.0	130.0	4.6	4.2	1.7	287.0	10.3	4.0	2207.7	0.0	0.0	0.1
1985	9	30.0	121.0	4.0	4.0	1.9	847.0	28.2	4.8	7000.0	0.0	0.0	0.1
1985	10	29.0	110.0	3.8	3.5	2.0	770.0	26.6	5.6	7000.0	0.0	0.0	0.1
1985	11	24.0	85.0	3.5	2.8	2.1	595.0	24.8	6.2	7000.0	0.0	0.0	0.1
1985	12	0.0	0.0	0.0	0.0	2.1	0.0	0.0	6.2	0.0	0.0	0.0	0.1
Subtotal		265.0	2063.0	7.8	5.7		6180.0				138.0		
1986	1	28.0	108.0	3.9	3.5	2.2	338.0	12.1	6.5	3129.6	0.0	0.0	0.1
1986	2	0.0	2.0	0.0	0.1	2.2	0.0	0.0	6.5	0.0	0.0	0.0	0.1
1986	3	5.0	95.0	19.0	3.1	2.3	297.0	59.4	6.8	3126.3	0.0	0.0	0.1
1986	4	13.0	122.0	9.4	4.1	2.4	381.0	29.3	7.2	3123.0	0.0	0.0	0.1
1986	5	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	6	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	7	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	8	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	9	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	10	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	11	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
1986	12	0.0	0.0	0.0	0.0	2.4	0.0	0.0	7.2	0.0	0.0	0.0	0.1
Subtotal		46.0	327.0	7.1	0.9		1016.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRLES PER CALENDAR DAY.

MERRION OIL & GAS CORP., OSO CANYON GC #1. (NW 13-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

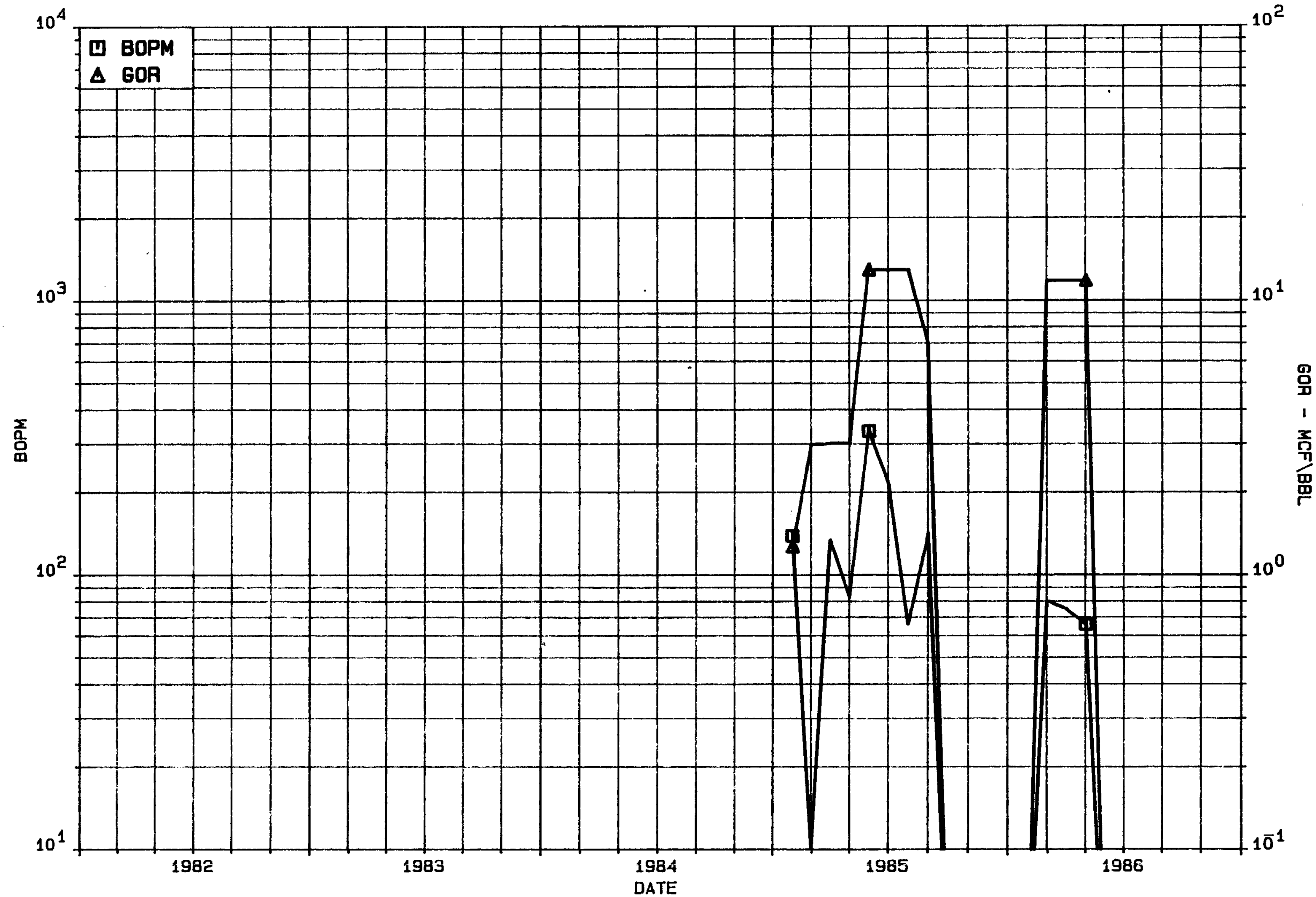


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MERRION OIL & GAS CORP., ROCKY MTN #1. (SW 24-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	11.0	139.0	12.6	4.5	0.1	177.0	16.1	0.2	1273.4	0.0	0.0	0.0
1985	2	2.0	10.0	5.0	0.4	0.1	30.0	15.0	0.2	3000.0	0.0	0.0	0.0
1985	3	5.0	135.0	27.0	4.4	0.3	410.0	82.0	0.6	3037.0	0.0	0.0	0.0
1985	4	23.0	83.0	3.6	2.8	0.4	252.0	11.0	0.9	3036.1	0.0	0.0	0.0
1985	5	31.0	335.0	10.8	10.8	0.7	4355.0	140.5	5.2	13000.0	0.0	0.0	0.0
1985	6	27.0	216.0	8.0	7.2	0.9	2808.0	104.0	8.0	13000.0	0.0	0.0	0.0
1985	7	12.0	66.0	5.5	2.1	1.0	858.0	71.5	8.9	13000.0	0.0	0.0	0.0
1985	8	28.0	143.0	5.1	4.6	1.1	1001.0	35.8	9.9	7000.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	1.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	1.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	1.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	1.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0
Subtotal		139.0	1127.0	8.1	3.1		9891.0				0.0		
1986	1	0.0	0.0	0.0	0.0	1.1	0.0	0.0	9.9	0.0	0.0	0.0	0.0
1986	2	12.0	81.0	6.8	2.9	1.2	962.0	80.2	10.9	11876.5	0.0	0.0	0.0
1986	3	25.0	75.0	3.0	2.4	1.3	891.0	35.6	11.7	11880.0	0.0	0.0	0.0
1986	4	21.0	66.0	3.1	2.2	1.3	784.0	37.3	12.5	11878.8	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.5	0.0	0.0	0.0	0.0
Subtotal		58.0	222.0	3.8	0.6		2637.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MERRION OIL & GAS CORP., ROCKY MTN #1. (SW 24-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

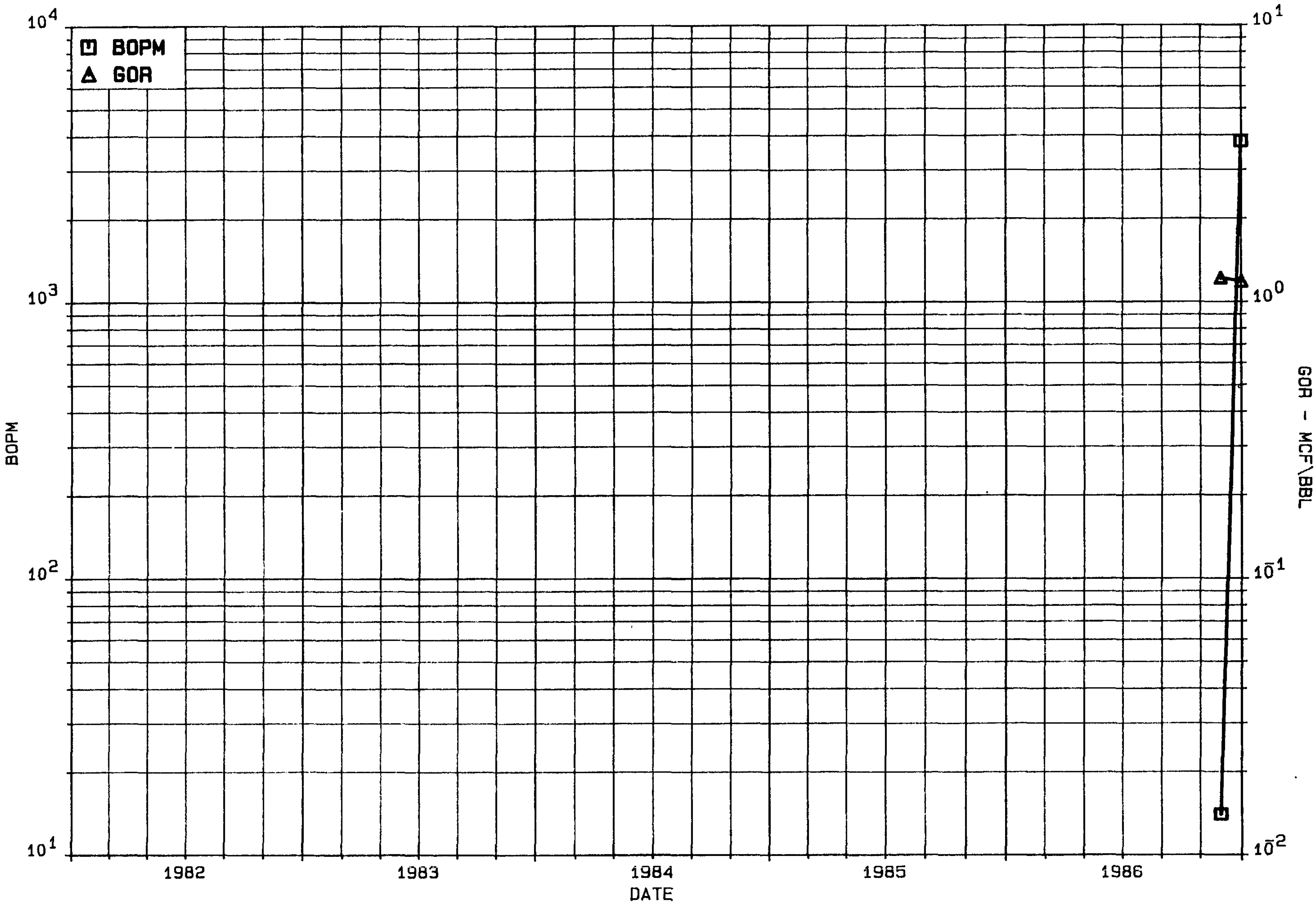


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, BEEK'S BABBIT #1. (NE 17-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	11	5.0	14.0	2.8	0.5	0.0	17.0	3.4	0.0	1214.3	0.0	0.0	0.0
1986	12	24.0	3800.0	158.3	122.6	3.8	4487.0	187.0	4.5	1180.8	7.0	0.3	0.0
Subtotal		29.0	3814.0	131.5	11.4		4504.0				7.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, BEEK'S BABBIT #1. (NE 17-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

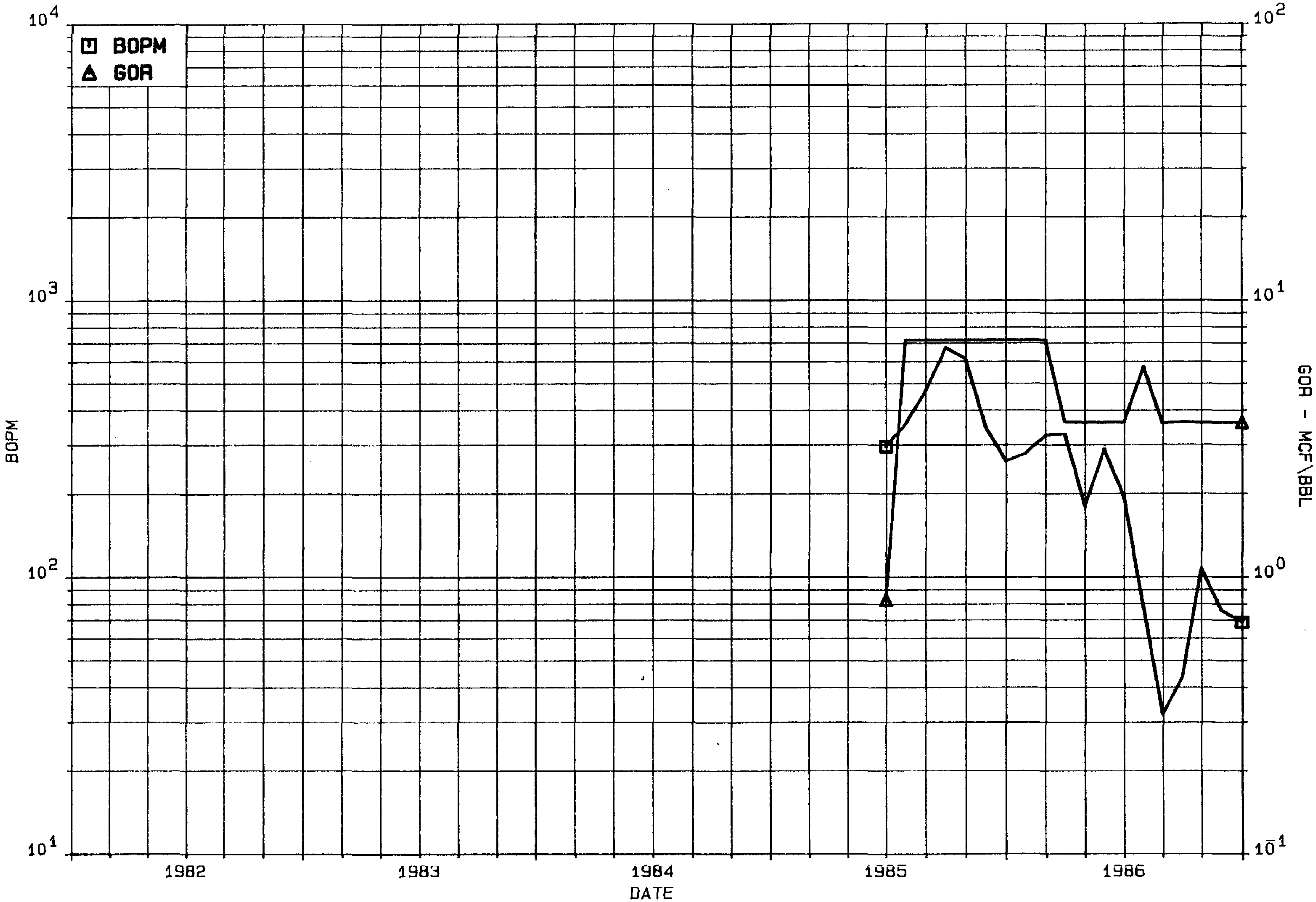


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, BOYT & LOLA #1. (SE 11-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	6	7.0	298.0	42.6	9.9	0.3	248.0	35.4	0.2	832.2	0.0	0.0	0.0
1985	7	31.0	361.0	11.6	11.6	0.7	2611.0	84.2	2.9	7232.7	15.0	0.5	0.0
1985	8	31.0	475.0	15.3	15.3	1.1	3436.0	110.8	6.3	7233.7	15.0	0.5	0.0
1985	9	30.0	679.0	22.6	22.6	1.8	4912.0	163.7	11.2	7234.2	10.0	0.3	0.0
1985	10	31.0	617.0	19.9	19.9	2.4	4463.0	144.0	15.7	7233.4	10.0	0.3	0.1
1985	11	29.0	348.0	12.0	11.6	2.8	2517.0	86.8	18.2	7232.8	5.0	0.2	0.1
1985	12	27.0	262.0	9.7	8.5	3.0	1895.0	70.2	20.1	7232.8	8.0	0.3	0.1
Subtotal		186.0	3040.0	16.3	14.2		20082.0				63.0		
1986	1	31.0	282.0	9.1	9.1	3.3	2040.0	65.8	22.1	7234.0	10.0	0.3	0.1
1986	2	28.0	328.0	11.7	11.7	3.7	2373.0	84.8	24.5	7234.8	10.0	0.4	0.1
1986	3	31.0	331.0	10.7	10.7	4.0	1205.0	38.9	25.7	3640.5	10.0	0.3	0.1
1986	4	30.0	181.0	6.0	6.0	4.2	656.0	21.9	26.4	3624.3	3.0	0.1	0.1
1986	5	28.0	292.0	10.4	9.4	4.5	1061.0	37.9	27.4	3633.6	8.0	0.3	0.1
1986	6	30.0	194.0	6.5	6.5	4.6	704.0	23.5	28.1	3628.9	8.0	0.3	0.1
1986	7	24.0	79.0	3.3	2.5	4.7	459.0	19.1	28.6	5810.1	5.0	0.2	0.1
1986	8	2.0	32.0	16.0	1.0	4.8	115.0	57.5	28.7	3593.8	0.0	0.0	0.1
1986	9	9.0	44.0	4.9	1.5	4.8	161.0	17.9	28.9	3659.1	0.0	0.0	0.1
1986	10	31.0	109.0	3.5	3.5	4.9	394.0	12.7	29.2	3614.7	0.0	0.0	0.1
1986	11	30.0	76.0	2.5	2.5	5.0	275.0	9.2	29.5	3618.4	3.0	0.1	0.1
1986	12	31.0	69.0	2.2	2.2	5.1	250.0	8.1	29.8	3623.2	3.0	0.1	0.1
Subtotal		305.0	2017.0	6.6	5.5		9693.0				60.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, BOYT & LOLA #1. (SE 11-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

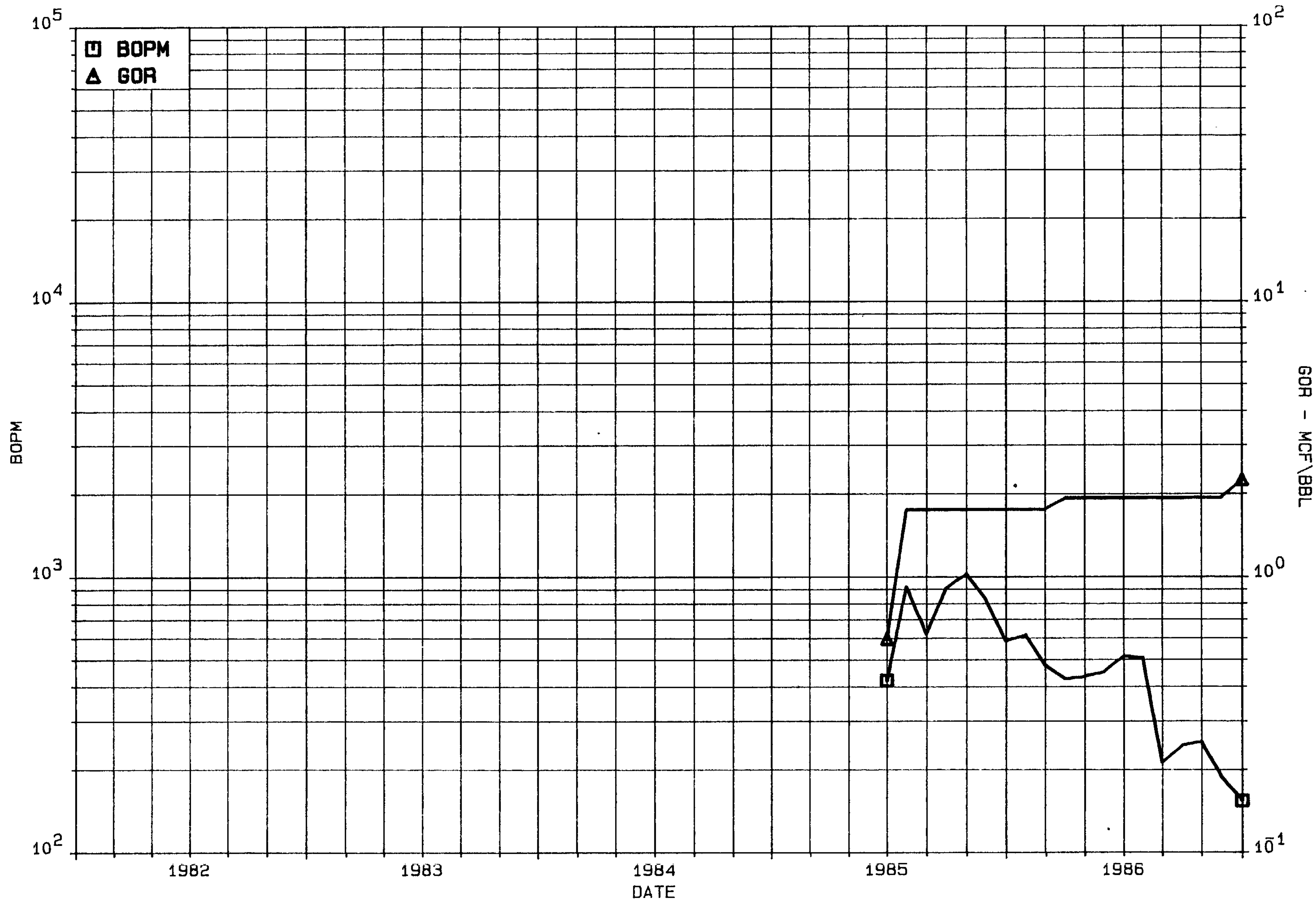


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, BOYT & LOLA #2. (NW 12-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	6	12.0	424.0	35.3	14.1	0.4	254.0	21.2	0.3	599.1	0.0	0.0	0.0
1985	7	31.0	931.0	30.0	30.0	1.4	1647.0	53.1	1.9	1769.1	20.0	0.6	0.0
1985	8	31.0	622.0	20.1	20.1	2.0	1100.0	35.5	3.0	1768.5	20.0	0.6	0.0
1985	9	30.0	916.0	30.5	30.5	2.9	1620.0	54.0	4.6	1768.6	20.0	0.7	0.1
1985	10	31.0	1035.0	33.4	33.4	3.9	1830.0	59.0	6.5	1768.1	20.0	0.6	0.1
1985	11	24.0	828.0	34.5	27.6	4.8	1465.0	61.0	7.9	1769.3	16.0	0.7	0.1
1985	12	27.0	587.0	21.7	18.9	5.3	1038.0	38.4	9.0	1768.3	13.0	0.5	0.1
Subtotal		186.0	5343.0	28.7	25.0		8954.0				109.0		
1986	1	29.0	620.0	21.4	20.0	6.0	1097.0	37.8	10.1	1769.4	15.0	0.5	0.1
1986	2	28.0	480.0	17.1	17.1	6.4	849.0	30.3	10.9	1768.8	15.0	0.5	0.1
1986	3	31.0	428.0	13.8	13.8	6.9	832.0	26.8	11.7	1943.9	15.0	0.5	0.2
1986	4	30.0	438.0	14.6	14.6	7.3	853.0	28.4	12.6	1947.5	15.0	0.5	0.2
1986	5	31.0	456.0	14.7	14.7	7.8	887.0	28.6	13.5	1945.2	15.0	0.5	0.2
1986	6	30.0	519.0	17.3	17.3	8.3	1010.0	33.7	14.5	1946.1	15.0	0.5	0.2
1986	7	31.0	509.0	16.4	16.4	8.8	989.0	31.9	15.5	1943.0	15.0	0.5	0.2
1986	8	31.0	212.0	6.8	6.8	9.0	413.0	13.3	15.9	1948.1	5.0	0.2	0.2
1986	9	30.0	246.0	8.2	8.2	9.3	477.0	15.9	16.4	1939.0	5.0	0.2	0.2
1986	10	31.0	255.0	8.2	8.2	9.5	498.0	16.1	16.9	1952.9	31.0	1.0	0.3
1986	11	30.0	189.0	6.3	6.3	9.7	367.0	12.2	17.2	1941.8	5.0	0.2	0.3
1986	12	31.0	155.0	5.0	5.0	9.9	350.0	11.3	17.6	2258.1	5.0	0.2	0.3
Subtotal		363.0	4507.0	12.4	12.3		8622.0				156.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, BOYT & LOLA #2. (NW 12-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

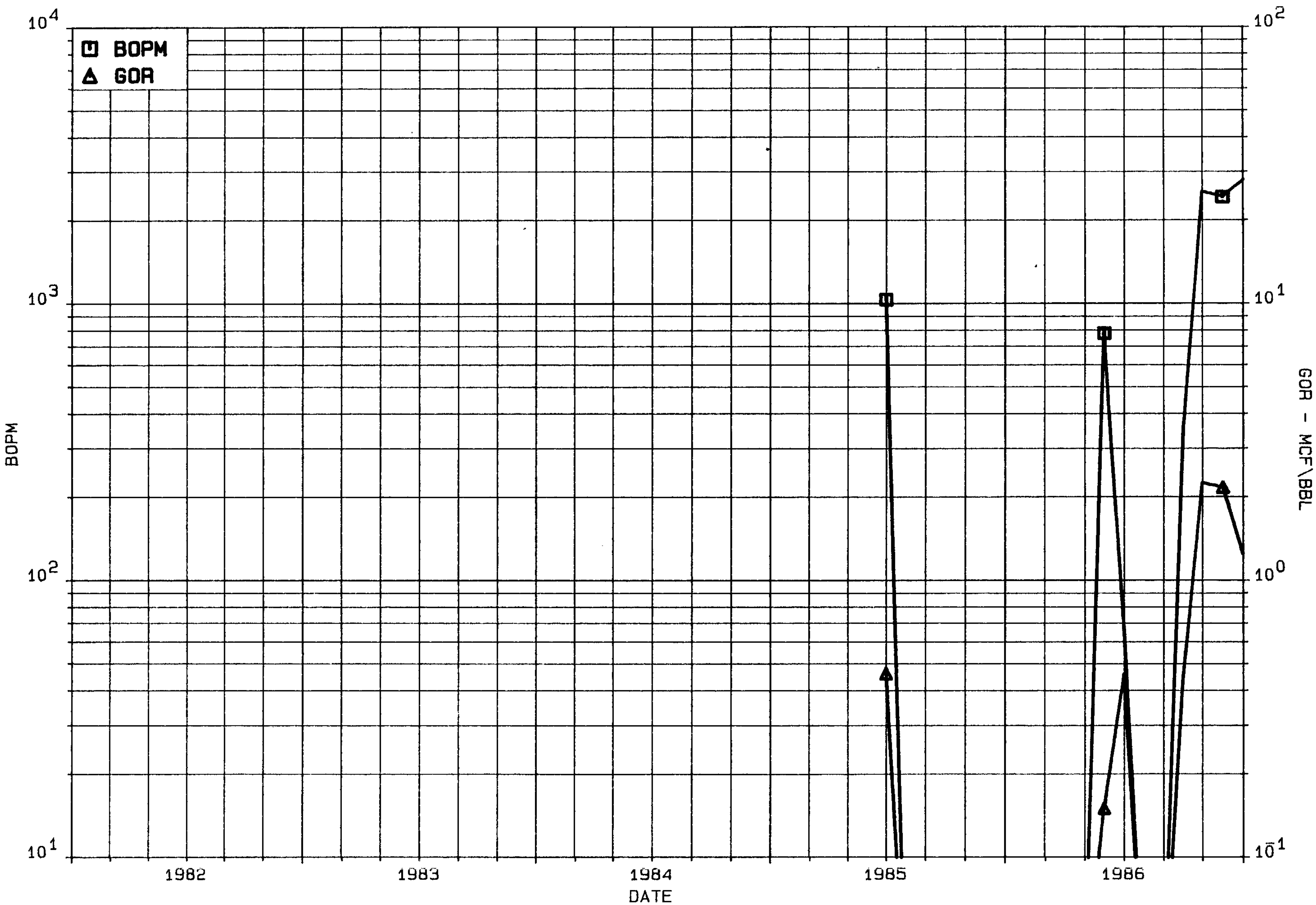


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, DR. DADDY-O #1. (NW 33-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	6	5.0	1035.0	207.0	34.5	1.0	479.0	95.8	0.5	462.8	0.0	0.0	0.0
1985	7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1985	8	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Subtotal		5.0	1035.0	207.0	4.8		479.0				0.0		
1986	1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
1986	5	19.0	783.0	41.2	25.3	1.8	118.0	6.2	0.6	150.7	10.0	0.5	0.0
1986	6	7.0	69.0	9.9	2.3	1.9	32.0	4.6	0.6	463.8	1.0	0.1	0.0
1986	7	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.6	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.6	0.0	0.0	0.0	0.0
1986	9	6.0	339.0	56.5	11.3	2.2	147.0	24.5	0.8	433.6	3.0	0.5	0.0
1986	10	31.0	2558.0	82.5	82.5	4.8	5808.0	187.4	6.6	2270.5	10.0	0.3	0.0
1986	11	30.0	2437.0	81.2	81.2	7.2	5300.0	176.7	11.9	2174.8	10.0	0.3	0.0
1986	12	31.0	2818.0	90.9	90.9	10.0	3510.0	113.2	15.4	1245.6	10.0	0.3	0.0
Subtotal		124.0	9004.0	72.6	24.7		14915.0				44.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, DR. DADDY-O #1. (NW 33-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, E.T. #1. (NW 28-25N-2W)

YR MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1983 11	30.0	249.0	8.3	8.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983 12	31.0	2608.0	84.1	84.1	2.9	0.0	0.0	0.0	0.0	16.0	0.5	0.0
Subtotal	61.0	2857.0	46.8	46.8		0.0				16.0		
1984 1	31.0	3759.0	121.3	121.3	6.6	0.0	0.0	0.0	0.0	16.0	0.5	0.0
1984 2	29.0	3491.0	120.4	120.4	10.1	0.0	0.0	0.0	0.0	15.0	0.5	0.0
1984 3	9.0	964.0	107.1	31.1	11.1	314.0	34.9	0.3	325.7	10.0	1.1	0.1
1984 4	8.0	1235.0	154.4	41.2	12.3	224.0	28.0	0.5	181.4	4.0	0.5	0.1
1984 5	31.0	2675.0	86.3	86.3	15.0	1042.0	33.6	1.6	389.5	16.0	0.5	0.1
1984 6	30.0	2408.0	80.3	80.3	17.4	1135.0	37.8	2.7	471.3	15.0	0.5	0.1
1984 7	31.0	2475.0	79.8	79.8	19.9	1000.0	32.3	3.7	404.0	16.0	0.5	0.1
1984 8	31.0	2544.0	82.1	82.1	22.4	926.0	29.9	4.6	364.0	10.0	0.3	0.1
1984 9	30.0	2480.0	82.7	82.7	24.9	1066.0	35.5	5.7	429.8	15.0	0.5	0.1
1984 10	28.0	2245.0	80.2	72.4	27.1	1113.0	39.8	6.8	495.8	12.0	0.4	0.1
1984 11	30.0	2616.0	87.2	87.2	29.7	1094.0	36.5	7.9	418.2	15.0	0.5	0.2
1984 12	31.0	2854.0	92.1	92.1	32.6	1215.0	39.2	9.1	425.7	5.0	0.2	0.2
Subtotal	319.0	29746.0	93.2	81.3		9129.0				149.0		
1985 1	31.0	2791.0	90.0	90.0	35.4	1257.0	40.5	10.4	450.4	5.0	0.2	0.2
1985 2	28.0	2513.0	89.8	89.8	37.9	1101.0	39.3	11.5	438.1	5.0	0.2	0.2
1985 3	29.0	2484.0	85.7	80.1	40.4	1089.0	37.6	12.6	438.4	10.0	0.3	0.2
1985 4	30.0	2328.0	77.6	77.6	42.7	959.0	32.0	13.5	411.9	10.0	0.3	0.2
1985 5	30.0	2264.0	75.5	73.0	45.0	912.0	30.4	14.4	402.8	5.0	0.2	0.2
1985 6	30.0	2371.0	79.0	79.0	47.4	938.0	31.3	15.4	395.6	5.0	0.2	0.2
1985 7	31.0	2296.0	74.1	74.1	49.7	926.0	29.9	16.3	403.3	10.0	0.3	0.2
1985 8	31.0	2320.0	74.8	74.8	52.0	1020.0	32.9	17.3	439.7	5.0	0.2	0.2
1985 9	30.0	2298.0	76.6	76.6	54.3	893.0	29.8	18.2	388.6	5.0	0.2	0.2
1985 10	31.0	2347.0	75.7	75.7	56.6	888.0	28.6	19.1	378.4	5.0	0.2	0.2
1985 11	30.0	2226.0	74.2	74.2	58.8	883.0	29.4	20.0	396.7	5.0	0.2	0.2
1985 12	31.0	2232.0	72.0	72.0	61.1	933.0	30.1	20.9	418.0	10.0	0.3	0.2
Subtotal	362.0	28470.0	78.6	78.0		11799.0				80.0		

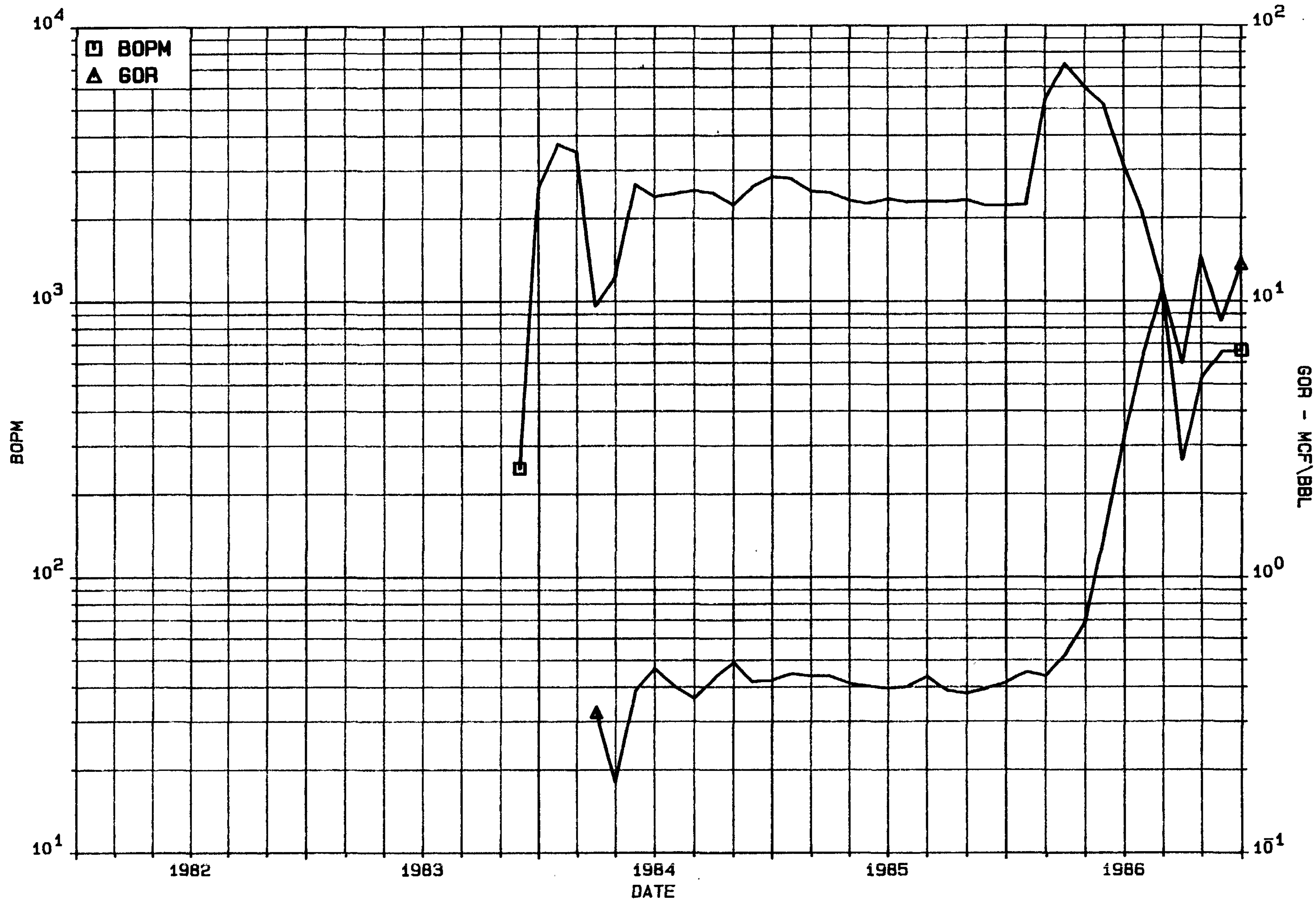
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, E.T. #1. (NW 28-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	2259.0	72.9	72.9	63.3	1031.0	33.3	22.0	456.4	10.0	0.3	0.3
1986	2	27.0	5405.0	200.2	193.0	68.7	2371.0	87.8	24.3	438.7	8.0	0.3	0.3
1986	3	31.0	7313.0	235.9	235.9	76.1	3883.0	125.3	28.2	531.0	5.0	0.2	0.3
1986	4	30.0	6000.0	200.0	200.0	82.1	4170.0	139.0	32.4	695.0	5.0	0.2	0.3
1986	5	31.0	5168.0	166.7	166.7	87.2	7473.0	241.1	39.9	1446.0	15.0	0.5	0.3
1986	6	30.0	3128.0	104.3	104.3	90.3	10223.0	340.8	50.1	3268.2	10.0	0.3	0.3
1986	7	31.0	2074.0	66.9	66.9	92.4	13464.0	434.3	63.5	6491.8	10.0	0.3	0.3
1986	8	29.0	1146.0	39.5	37.0	93.6	12877.0	444.0	76.4	11236.5	10.0	0.3	0.3
1986	9	2.0	264.0	132.0	8.8	93.8	1569.0	784.5	78.0	5943.2	1.0	0.5	0.3
1986	10	19.0	527.0	27.7	17.0	94.4	7741.0	407.4	85.7	14688.8	6.0	0.3	0.3
1986	11	18.0	660.0	36.7	22.0	95.0	5599.0	311.1	91.3	8483.3	6.0	0.3	0.3
1986	12	20.0	665.0	33.3	21.5	95.7	9116.0	455.8	100.4	13708.3	6.0	0.3	0.3
Subtotal		299.0	34609.0	115.7	94.8		79517.0				92.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, E.T. #1. (NW 28-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

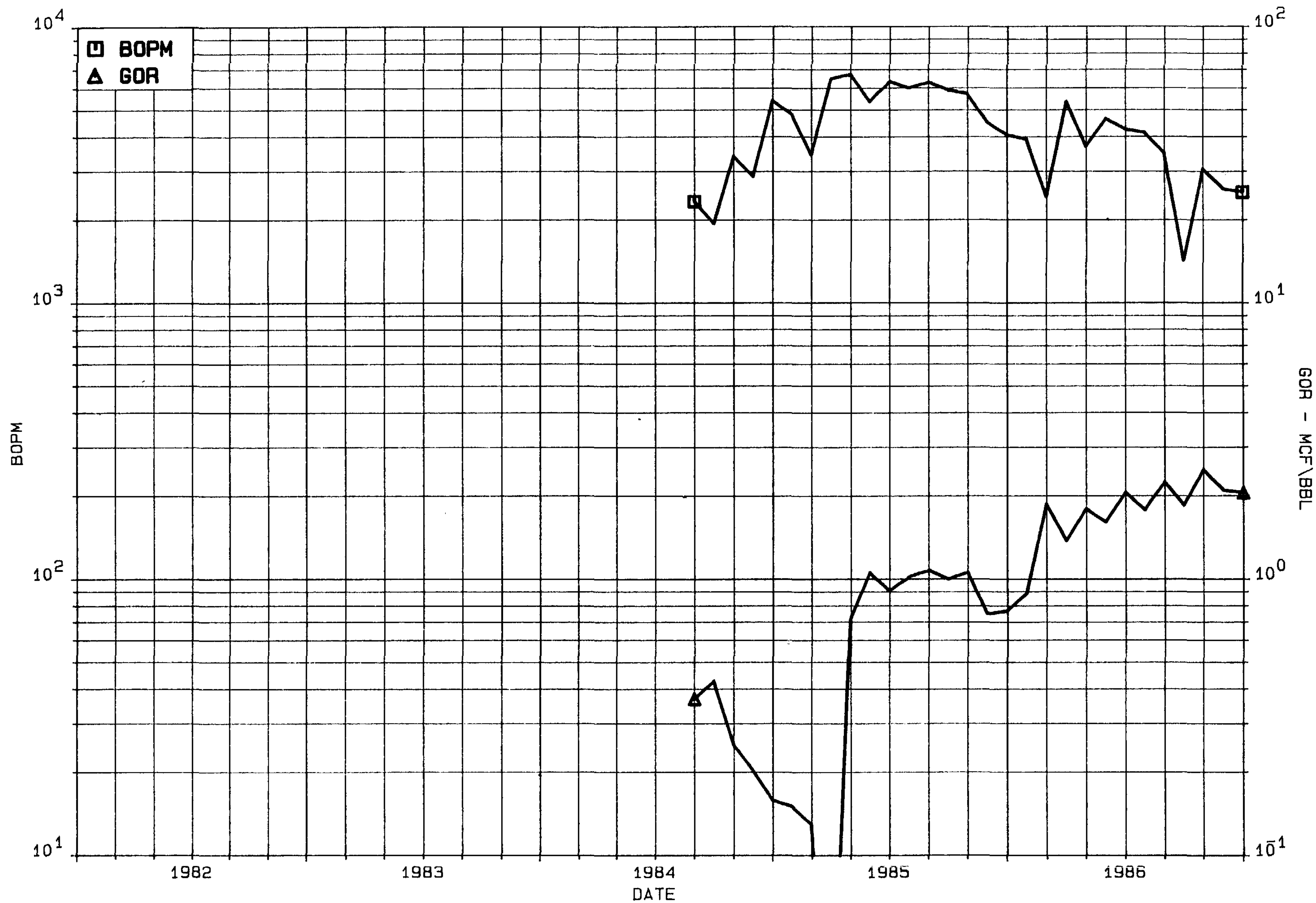


GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
J.P.MCHUGH, FULL SAIL #1. (SE 29-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984 8	31.0	2337.0	75.4	75.4	2.3	862.0	27.8	0.9	368.8	47.0	1.5	0.0
1984 9	25.0	1938.0	77.5	64.6	4.3	834.0	33.4	1.7	430.3	12.0	0.5	0.1
1984 10	31.0	3424.0	110.5	110.5	7.7	862.0	27.8	2.6	251.8	10.0	0.3	0.1
1984 11	21.0	2873.0	136.8	95.8	10.6	584.0	27.8	3.1	203.3	10.0	0.5	0.1
1984 12	31.0	5434.0	175.3	175.3	16.0	862.0	27.8	4.0	158.6	20.0	0.6	0.1
Subtotal	139.0	16006.0	115.2	104.6		4004.0				99.0		
1985 1	26.0	4814.0	185.2	155.3	20.8	723.0	27.8	4.7	150.2	20.0	0.8	0.1
1985 2	16.0	3445.0	215.3	123.0	24.3	445.0	27.8	5.2	129.2	20.0	1.3	0.1
1985 3	31.0	6513.0	210.1	210.1	30.8	111.0	3.6	5.3	17.0	15.0	0.5	0.2
1985 4	30.0	6782.0	226.1	226.1	37.6	4947.0	164.9	10.2	729.4	20.0	0.7	0.2
1985 5	24.0	5350.0	222.9	172.6	42.9	5680.0	236.7	15.9	1061.7	15.0	0.6	0.2
1985 6	30.0	6369.0	212.3	212.3	49.3	5783.0	192.8	21.7	908.0	10.0	0.3	0.2
1985 7	31.0	6007.0	193.8	193.8	55.3	6152.0	198.5	27.8	1024.1	5.0	0.2	0.2
1985 8	31.0	6324.0	204.0	204.0	61.6	6846.0	220.8	34.7	1082.5	12.0	0.4	0.2
1985 9	30.0	5903.0	196.8	196.8	67.5	5900.0	196.7	40.6	999.5	10.0	0.3	0.2
1985 10	31.0	5716.0	184.4	184.4	73.2	6090.0	196.5	46.7	1065.4	10.0	0.3	0.2
1985 11	26.0	4515.0	173.7	150.5	77.7	3374.0	129.8	50.1	747.3	4.0	0.2	0.2
1985 12	31.0	4055.0	130.8	130.8	81.8	3125.0	100.8	53.2	770.7	1.0	0.0	0.2
Subtotal	337.0	65793.0	195.2	180.3		49176.0				142.0		
1986 1	31.0	3915.0	126.3	126.3	85.7	3511.0	113.3	56.7	896.8	5.0	0.2	0.2
1986 2	28.0	2426.0	86.6	86.6	88.1	4575.0	163.4	61.3	1885.8	5.0	0.2	0.3
1986 3	31.0	5410.0	174.5	174.5	93.6	7451.0	240.4	68.7	1377.3	10.0	0.3	0.3
1986 4	24.0	3675.0	153.1	122.5	97.2	6652.0	277.2	75.4	1810.1	8.0	0.3	0.3
1986 5	31.0	4673.0	150.7	150.7	101.9	7501.0	242.0	82.9	1605.2	5.0	0.2	0.3
1986 6	30.0	4250.0	141.7	141.7	106.1	8833.0	294.4	91.7	2078.4	10.0	0.3	0.3
1986 7	31.0	4141.0	133.6	133.6	110.3	7366.0	237.6	99.1	1778.8	10.0	0.3	0.3
1986 8	29.0	3489.0	120.3	112.5	113.8	7899.0	272.4	107.0	2264.0	10.0	0.3	0.3
1986 9	13.0	1418.0	109.1	47.3	115.2	2616.0	201.2	109.6	1844.9	2.0	0.2	0.3
1986 10	28.0	3086.0	110.2	99.5	118.3	7741.0	276.5	117.3	2508.4	9.0	0.3	0.3
1986 11	27.0	2591.0	96.0	86.4	120.9	5433.0	201.2	122.8	2096.9	9.0	0.3	0.3
1986 12	31.0	2523.0	81.4	81.4	123.4	5185.0	167.3	127.9	2055.1	10.0	0.3	0.3
Subtotal	334.0	41597.0	124.5	114.0		74763.0				93.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, FULL SAIL #1. (SE 29-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

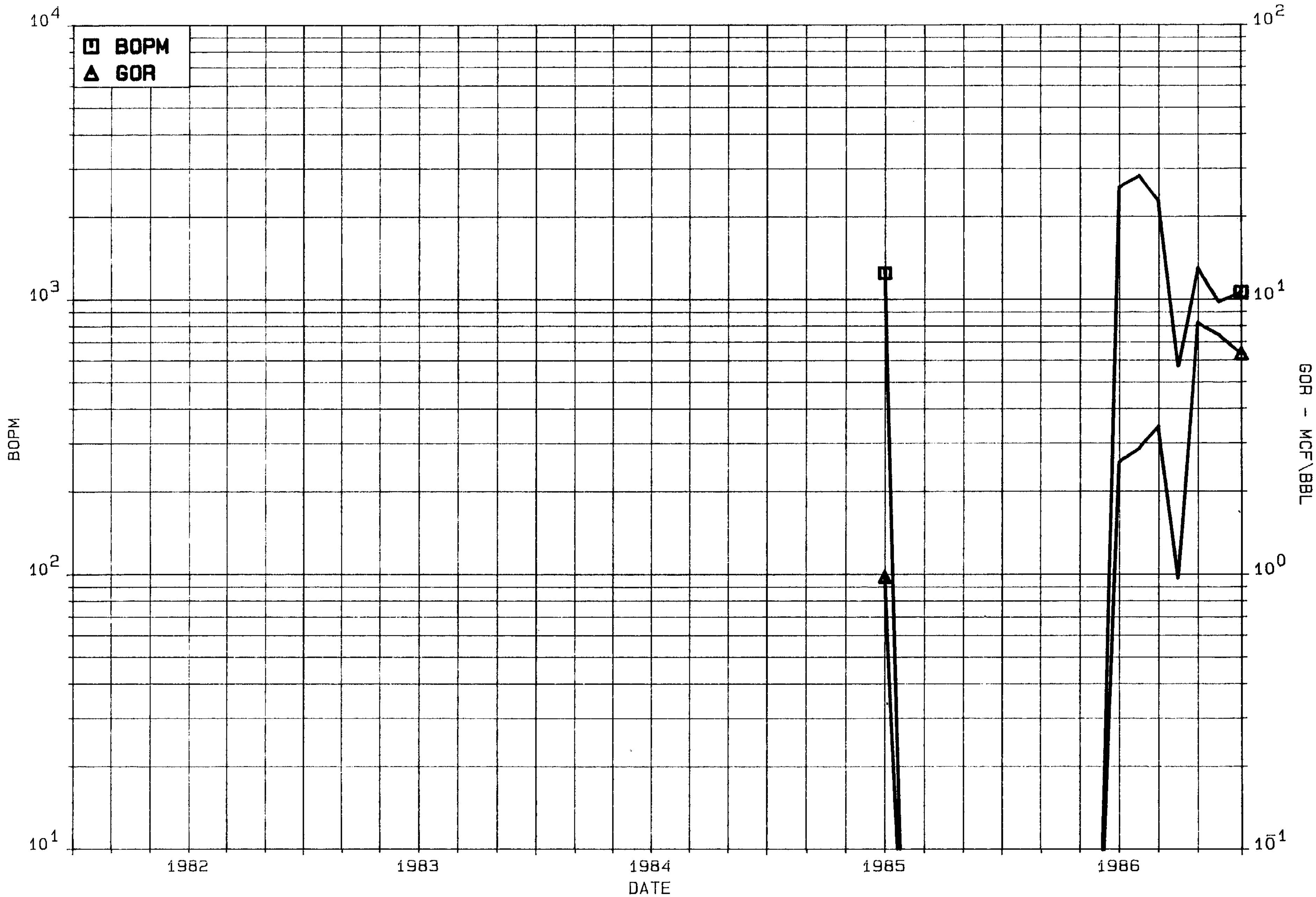


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, FULL SAIL #2. (SE 28-26N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	6	3.0	1249.0	416.3	41.6	1.2	1223.0	407.7	1.2	979.2	0.0	0.0	0.0
1985	7	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1985	8	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
Subtotal		3.0	1249.0	416.3	5.8		1223.0				0.0		
1986	1	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0
1986	6	15.0	2570.0	171.3	85.7	3.8	6618.0	441.2	7.8	2575.1	8.0	0.5	0.0
1986	7	17.0	2839.0	167.0	91.6	6.7	8170.0	480.6	16.0	2877.8	10.0	0.6	0.0
1986	8	15.0	2281.0	152.1	73.6	8.9	7934.0	528.9	23.9	3478.3	4.0	0.3	0.0
1986	9	6.0	569.0	94.8	19.0	9.5	548.0	91.3	24.5	963.1	3.0	0.5	0.0
1986	10	12.0	1313.0	109.4	42.4	10.8	10878.0	906.5	35.4	8284.8	1.0	0.1	0.0
1986	11	12.0	976.0	81.3	32.5	11.8	7207.0	600.6	42.6	7384.2	4.0	0.3	0.0
1986	12	13.0	1065.0	81.9	34.4	12.9	6741.0	518.5	49.3	6329.6	4.0	0.3	0.0
Subtotal		90.0	11613.0	129.0	31.8		48096.0				34.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, FULL SAIL #2. (SE 28-26N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

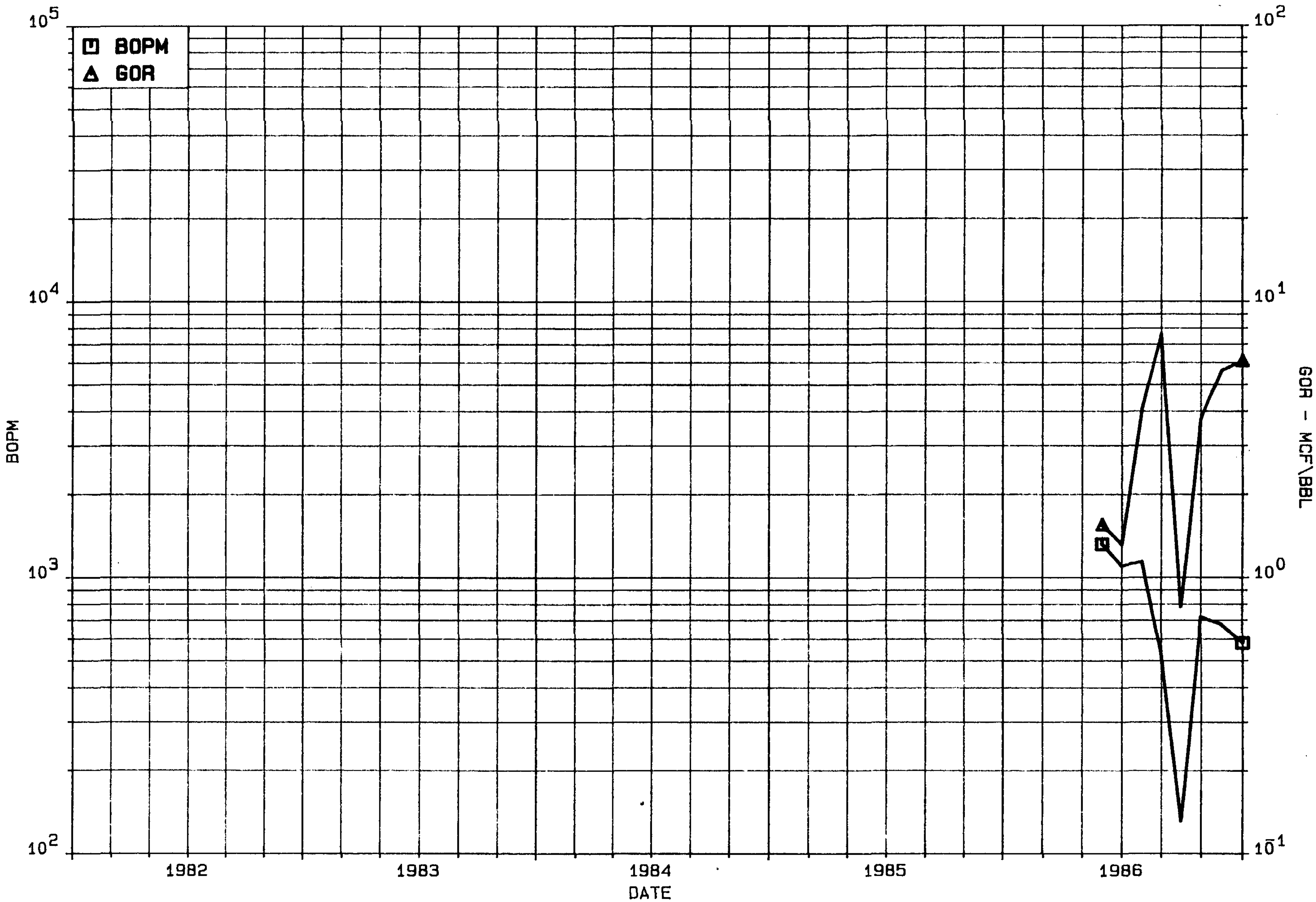


SAVILAN MANCOS POOL, RIO ARRIBA.CO., NM
J.P.MCHUGH, FULL SAIL #3. (NW 29-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5	20.0	1319.0	66.0	42.5	1.3	2047.0	102.4	2.0	1551.9	0.0	0.0	0.0
1986	6	30.0	1095.0	36.5	36.5	2.4	1437.0	47.9	3.5	1312.3	10.0	0.3	0.0
1986	7	31.0	1144.0	36.9	36.9	3.6	4717.0	152.2	8.2	4123.3	10.0	0.3	0.0
1986	8	31.0	526.0	17.0	17.0	4.1	4028.0	129.9	12.2	7657.8	5.0	0.2	0.0
1986	9	6.0	130.0	21.7	4.3	4.2	101.0	16.8	12.3	776.9	1.0	0.2	0.0
1986	10	31.0	723.0	23.3	23.3	4.9	2705.0	87.3	15.0	3741.4	10.0	0.3	0.0
1986	11	30.0	674.0	22.5	22.5	5.6	3768.0	125.6	18.8	5590.5	10.0	0.3	0.0
1986	12	29.0	579.0	20.0	18.7	6.2	3528.0	121.7	22.3	6093.3	0.0	0.0	0.0
Subtotal		208.0	6190.0	29.8	25.3		22331.0				46.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, FULL SAIL #3. (NW 29-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

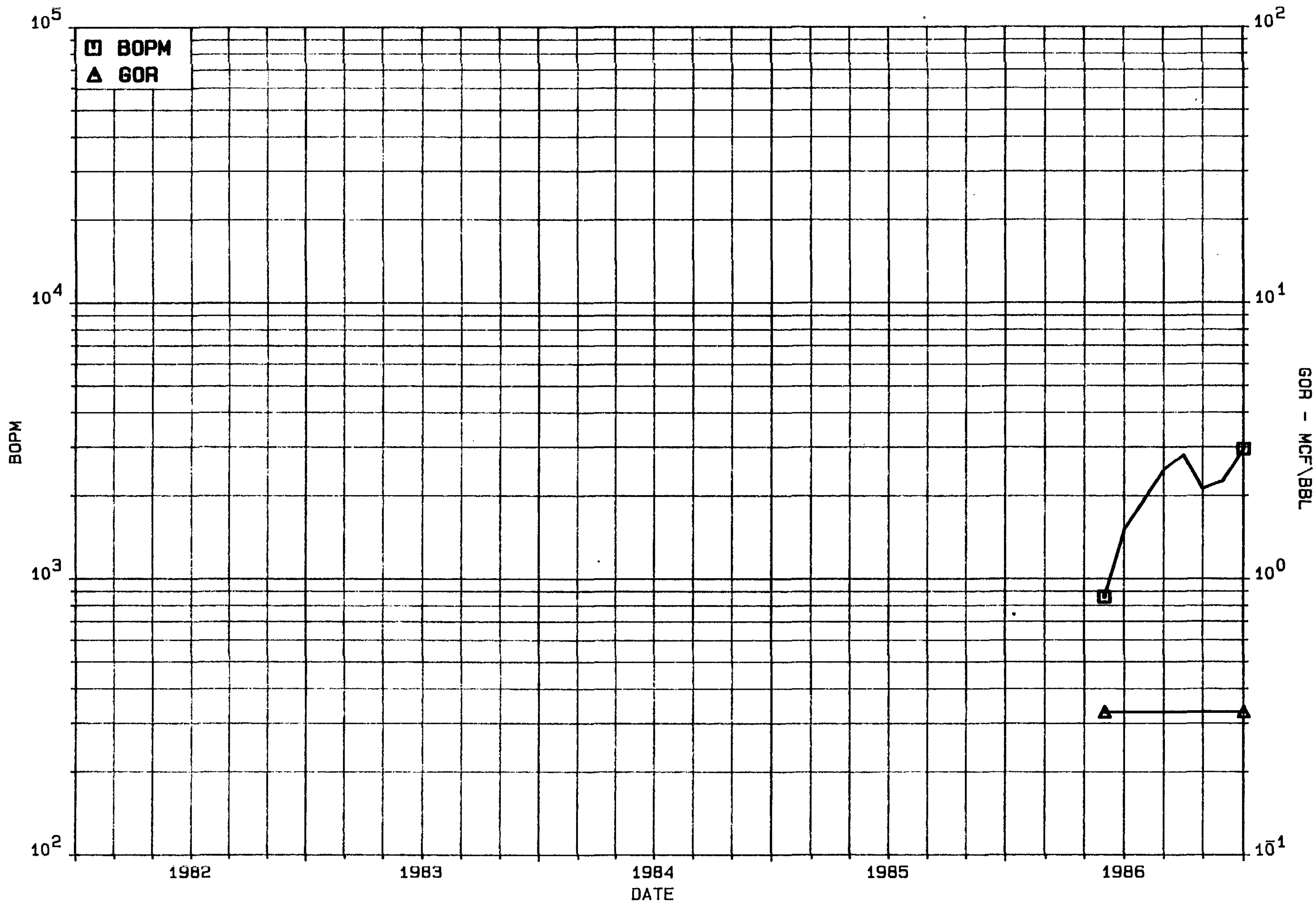


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, GREENER GRASS #1. (SE 10-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5	3.0	858.0	286.0	27.7	0.9	282.0	94.0	0.3	328.7	0.0	0.0	0.0
1986	6	21.0	1509.0	71.9	50.3	2.4	497.0	23.7	0.8	329.4	0.0	0.0	0.0
1986	7	31.0	1944.0	62.7	62.7	4.3	640.0	20.6	1.4	329.2	10.0	0.3	0.0
1986	8	31.0	2490.0	80.3	80.3	6.8	819.0	26.4	2.2	328.9	10.0	0.3	0.0
1986	9	30.0	2822.0	94.1	94.1	9.6	929.0	31.0	3.2	329.2	10.0	0.3	0.0
1986	10	31.0	2111.0	68.1	68.1	11.7	694.0	22.4	3.9	328.8	10.0	0.3	0.0
1986	11	30.0	2272.0	75.7	75.7	14.0	748.0	24.9	4.6	329.2	10.0	0.3	0.1
1986	12	31.0	2946.0	95.0	95.0	17.0	969.0	31.3	5.6	328.9	10.0	0.3	0.1
Subtotal		208.0	16952.0	81.5	69.2		5578.0				60.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, GREENER GRASS #1. (SE 10-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

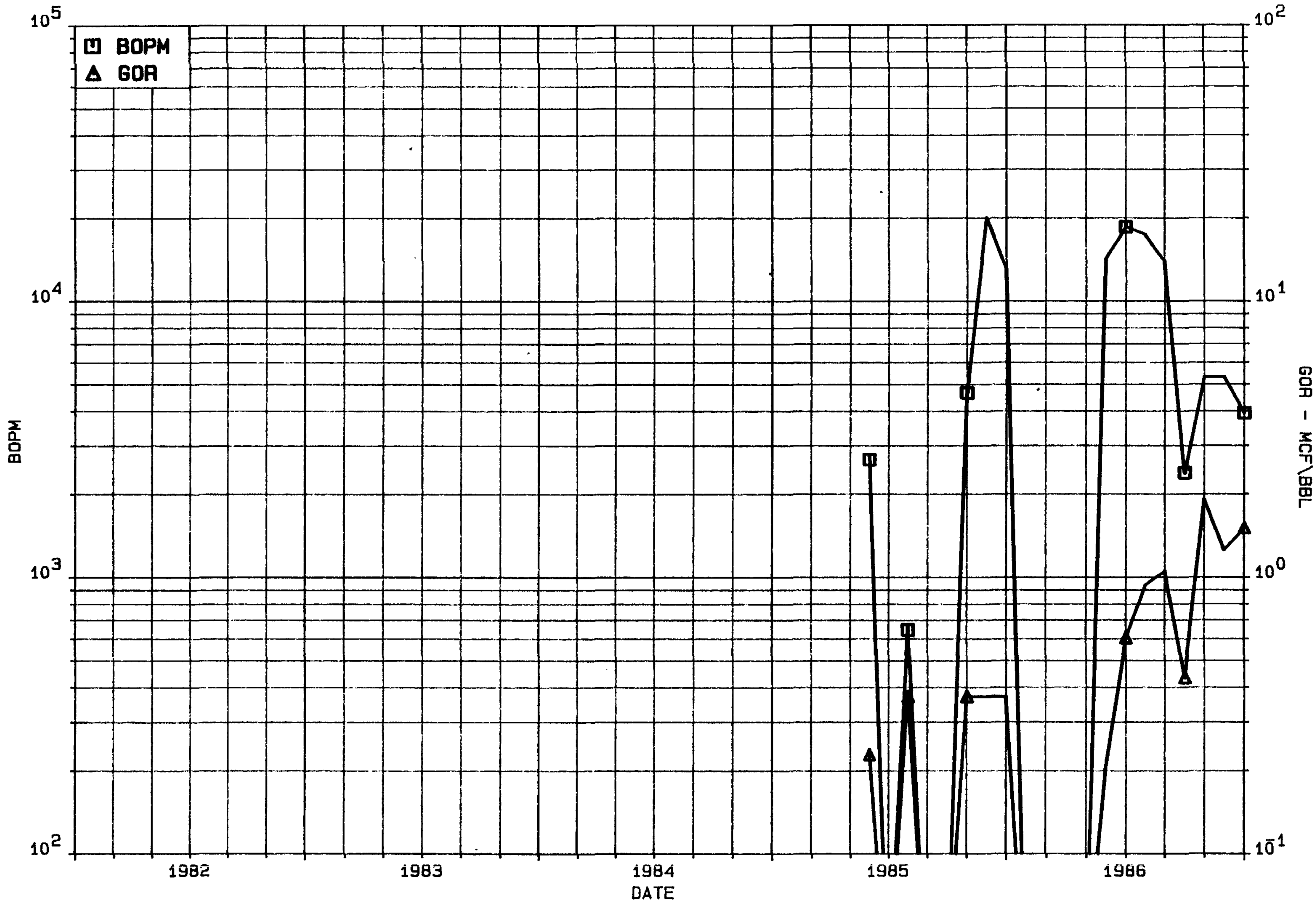


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P. MCHUGH, HOMESTEAD RANCH #2. (SW 34-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	5	5.0	2667.0	533.4	86.0	2.7	610.0	122.0	0.6	228.7	0.0	0.0	0.0
1985	6	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0
1985	7	2.0	646.0	323.0	20.8	3.3	240.0	120.0	0.9	371.5	10.0	5.0	0.0
1985	8	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.9	0.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.9	0.0	0.0	0.0	0.0
1985	10	9.0	4654.0	517.1	150.1	8.0	1727.0	191.9	2.6	371.1	5.0	0.6	0.0
1985	11	30.0	20105.0	670.2	670.2	28.1	7460.0	248.7	10.0	371.1	10.0	0.3	0.0
1985	12	20.0	12973.0	648.7	418.5	41.0	4814.0	240.7	14.9	371.1	10.0	0.5	0.0
Subtotal		66.0	41045.0	621.9	167.5		14851.0				35.0		
1986	1	0.0	0.0	0.0	0.0	41.0	0.0	0.0	14.9	0.0	25.0	0.0	0.1
1986	2	0.0	0.0	0.0	0.0	41.0	0.0	0.0	14.9	0.0	25.0	0.0	0.1
1986	3	0.0	0.0	0.0	0.0	41.0	0.0	0.0	14.9	0.0	25.0	0.0	0.1
1986	4	0.0	0.0	0.0	0.0	41.0	0.0	0.0	14.9	0.0	20.0	0.0	0.1
1986	5	25.0	14249.0	570.0	459.6	55.3	2992.0	119.7	17.8	210.0	20.0	0.8	0.1
1986	6	30.0	18555.0	618.5	618.5	73.8	11212.0	373.7	29.1	604.3	20.0	0.7	0.2
1986	7	31.0	17383.0	560.7	560.7	91.2	16311.0	526.2	45.4	938.3	31.0	1.0	0.2
1986	8	29.0	13841.0	477.3	446.5	105.1	14628.0	504.4	60.0	1056.9	25.0	0.9	0.2
1986	9	6.0	2382.0	397.0	79.4	107.5	1034.0	172.3	61.0	434.1	13.0	2.2	0.2
1986	10	13.0	5340.0	410.8	172.3	112.8	10310.0	793.1	71.3	1930.7	2.0	0.2	0.2
1986	11	11.0	5302.0	482.0	176.7	118.1	6611.0	601.0	77.9	1246.9	15.0	1.4	0.3
1986	12	14.0	3930.0	280.7	126.8	122.0	5918.0	422.7	83.9	1505.9	21.0	1.5	0.3
Subtotal		159.0	80982.0	509.3	221.9		69016.0				242.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, HOMESTEAD RANCH #2. (SW 34-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, JANET #1. (NE 27-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	1	23.0	479.0	20.8	15.5	0.5	690.0	30.0	0.7	1440.5	0.0	0.0	0.0
1983	2	28.0	787.0	28.1	28.1	1.3	0.0	0.0	0.7	0.0	15.0	0.5	0.0
1983	3	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	4	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	5	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1983	6	1.0	233.0	233.0	7.8	1.5	7.0	7.0	0.7	30.0	0.0	0.0	0.0
1983	7	31.0	1550.0	50.0	50.0	3.0	2428.0	78.3	3.1	1566.5	0.0	0.0	0.0
1983	8	2.0	970.0	485.0	31.3	4.0	2390.0	1195.0	5.5	2463.9	0.0	0.0	0.0
1983	9	7.0	738.0	105.4	24.6	4.8	1917.0	273.9	7.4	2597.6	0.0	0.0	0.0
1983	10	5.0	961.0	192.2	31.0	5.7	1129.0	225.8	8.6	1174.8	0.0	0.0	0.0
1983	11	17.0	3966.0	233.3	132.2	9.7	2758.0	162.2	11.3	695.4	90.0	5.3	0.1
1983	12	31.0	5317.0	171.5	171.5	15.0	4128.0	133.2	15.4	776.4	30.0	1.0	0.1
Subtotal		145.0	15001.0	103.5	41.1		15447.0				135.0		
1984	1	31.0	4966.0	160.2	160.2	20.0	3272.0	105.5	18.7	658.9	32.0	1.0	0.2
1984	2	24.0	4317.0	179.9	148.9	24.3	2269.0	94.5	21.0	525.6	0.0	0.0	0.2
1984	3	31.0	4578.0	147.7	147.7	28.9	3063.0	98.8	24.1	669.1	15.0	0.5	0.2
1984	4	30.0	2820.0	94.0	94.0	31.7	2041.0	68.0	26.1	723.8	15.0	0.5	0.2
1984	5	31.0	4124.0	133.0	133.0	35.8	2921.0	94.2	29.0	708.3	16.0	0.5	0.2
1984	6	30.0	4134.0	137.8	137.8	39.9	2562.0	85.4	31.6	619.7	15.0	0.5	0.2
1984	7	31.0	4325.0	139.5	139.5	44.3	2480.0	80.0	34.1	573.4	16.0	0.5	0.2
1984	8	31.0	3958.0	127.7	127.7	48.2	2569.0	82.9	36.6	649.1	16.0	0.5	0.3
1984	9	30.0	4183.0	139.4	139.4	52.4	2418.0	80.6	39.0	578.1	30.0	1.0	0.3
1984	10	31.0	4592.0	148.1	148.1	57.0	2528.0	81.5	41.6	550.5	15.0	0.5	0.3
1984	11	20.0	2256.0	112.8	75.2	59.3	1935.0	96.8	43.5	857.7	10.0	0.5	0.3
1984	12	31.0	3998.0	129.0	129.0	63.3	2269.0	73.2	45.8	567.5	15.0	0.5	0.3
Subtotal		351.0	48251.0	137.5	131.8		30327.0				195.0		
1985	1	31.0	3773.0	121.7	121.7	67.0	2688.0	86.7	48.5	712.4	15.0	0.5	0.3
1985	2	28.0	4055.0	144.8	144.8	71.1	3118.0	111.4	51.6	768.9	15.0	0.5	0.4
1985	3	31.0	4639.0	149.6	149.6	75.7	3521.0	113.6	55.1	759.0	20.0	0.6	0.4
1985	4	30.0	3921.0	130.7	130.7	79.6	2359.0	78.6	57.5	601.6	15.0	0.5	0.4
1985	5	30.0	3775.0	125.8	121.8	83.4	2248.0	74.9	59.7	595.5	10.0	0.3	0.4
1985	6	30.0	3615.0	120.5	120.5	87.0	2321.0	77.4	62.0	642.0	15.0	0.5	0.4
1985	7	26.0	2467.0	94.9	79.6	89.5	1753.0	67.4	63.8	710.6	10.0	0.4	0.4
1985	8	31.0	3512.0	113.3	113.3	93.0	1724.0	55.6	65.5	490.9	25.0	0.8	0.5
1985	9	30.0	3779.0	126.0	126.0	96.8	2062.0	68.7	67.6	545.6	20.0	0.7	0.5
1985	10	31.0	3353.0	108.2	108.2	100.1	1709.0	55.1	69.3	509.7	20.0	0.6	0.5
1985	11	14.0	1582.0	113.0	52.7	101.7	953.0	68.1	70.2	602.4	9.0	0.6	0.5
1985	12	31.0	3773.0	121.7	121.7	105.5	2292.0	73.9	72.5	607.5	25.0	0.8	0.5
Subtotal		343.0	42244.0	123.2	115.7		26748.0				199.0		

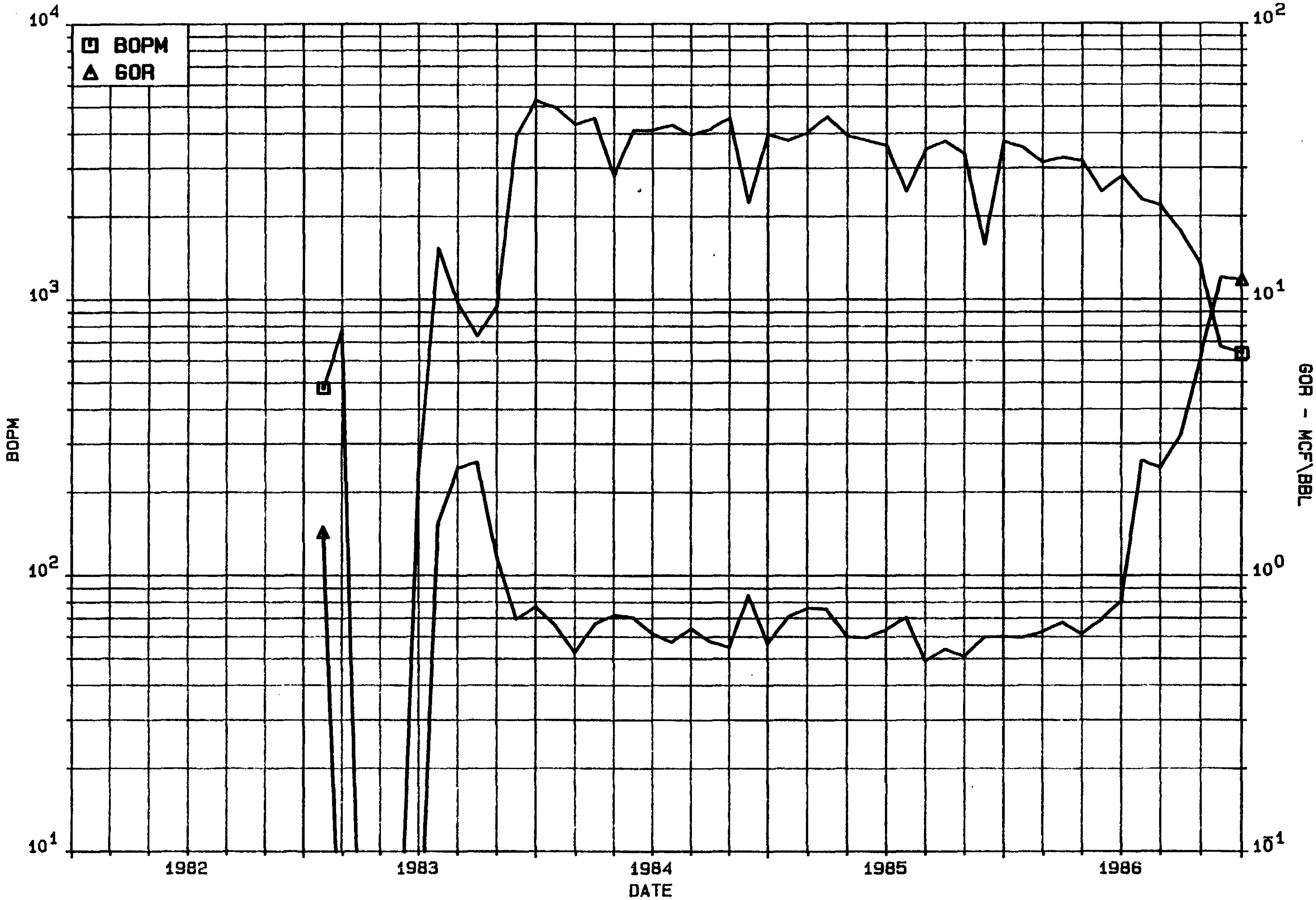
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, JANET #1. (NE 27-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	3555.0	114.7	114.7	109.1	2125.0	68.5	74.6	597.7	25.0	0.8	0.6
1986	2	27.0	3145.0	116.5	112.3	112.2	1979.0	73.3	76.6	629.3	43.0	1.6	0.6
1986	3	31.0	3292.0	106.2	106.2	115.5	2244.0	72.4	78.9	681.7	20.0	0.6	0.6
1986	4	29.0	3183.0	109.8	106.1	118.7	1961.0	67.6	80.8	616.1	20.0	0.7	0.6
1986	5	26.0	2463.0	94.7	79.5	121.1	1722.0	66.2	82.6	699.1	16.0	0.6	0.7
1986	6	30.0	2834.0	94.5	94.5	124.0	2318.0	77.3	84.9	817.9	20.0	0.7	0.7
1986	7	31.0	2310.0	74.5	74.5	126.3	6079.0	196.1	90.9	2631.6	26.0	0.8	0.7
1986	8	29.0	2199.0	75.8	70.9	128.5	5420.0	186.9	96.4	2464.8	22.0	0.8	0.7
1986	9	2.0	1757.0	878.5	58.6	130.2	5781.0	2890.5	102.2	3290.3	23.0	11.5	0.7
1986	10	28.0	1344.0	48.0	43.4	131.6	8499.0	303.5	110.6	6323.7	18.0	0.6	0.8
1986	11	21.0	674.0	32.1	22.5	132.3	8175.0	389.3	118.8	12129.1	11.0	0.5	0.8
1986	12	20.0	639.0	32.0	20.6	132.9	7559.0	378.0	126.4	11829.4	12.0	0.6	0.8
Subtotal		305.0	27395.0	89.8	75.1		53862.0				256.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, JANET #1. (NE 27-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, JANET #2. (SE 21-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	9 *	0.0	345.0	0.0	11.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	11	30.0	1826.0	60.9	60.9	2.2	1099.0	36.6	1.1	601.9	40.0	1.3	0.0
1983	12	31.0	2896.0	93.4	93.4	5.1	1888.0	60.9	3.0	651.9	0.0	0.0	0.0
Subtotal		61.0	5067.0	83.1	41.5		2987.0				40.0		
1984	1	31.0	2522.0	81.4	81.4	7.6	1469.0	47.4	4.5	582.5	0.0	0.0	0.0
1984	2	28.0	2555.0	91.3	88.1	10.1	1305.0	46.6	5.8	510.8	0.0	0.0	0.0
1984	3	17.0	1231.0	72.4	39.7	11.4	982.0	57.8	6.7	797.7	0.0	0.0	0.0
1984	4	8.0	1189.0	148.6	39.6	12.6	718.0	89.8	7.5	603.9	0.0	0.0	0.0
1984	5	31.0	2875.0	92.7	92.7	15.4	1575.0	50.8	9.0	547.8	0.0	0.0	0.0
1984	6	30.0	2440.0	81.3	81.3	17.9	1552.0	51.7	10.6	636.1	0.0	0.0	0.0
1984	7	31.0	2449.0	79.0	79.0	20.3	1449.0	46.7	12.0	591.7	0.0	0.0	0.0
1984	8	31.0	2205.0	71.1	71.1	22.5	1201.0	38.7	13.2	544.7	0.0	0.0	0.0
1984	9	30.0	2248.0	74.9	74.9	24.8	1100.0	36.7	14.3	489.3	5.0	0.2	0.0
1984	10	30.0	2490.0	83.0	80.3	27.3	1152.0	38.4	15.5	462.7	15.0	0.5	0.1
1984	11	31.0	2531.0	81.6	84.4	29.8	1194.0	38.5	16.7	471.8	7.0	0.2	0.1
1984	12	31.0	7075.0	228.2	228.2	36.9	2714.0	87.5	19.4	383.6	10.0	0.3	0.1
Subtotal		329.0	31810.0	96.7	86.9		16411.0				37.0		
1985	1	31.0	2212.0	71.4	71.4	39.1	2163.0	69.8	21.6	977.8	10.0	0.3	0.1
1985	2	28.0	2219.0	79.3	79.3	41.3	1760.0	62.9	23.3	793.2	10.0	0.4	0.1
1985	3	24.0	2004.0	83.5	64.6	43.3	1153.0	48.0	24.5	575.3	10.0	0.4	0.1
1985	4	30.0	2291.0	76.4	76.4	45.6	1590.0	53.0	26.1	694.0	15.0	0.5	0.1
1985	5	30.0	2193.0	73.1	70.7	47.8	1625.0	54.2	27.7	741.0	10.0	0.3	0.1
1985	6	30.0	2219.0	74.0	74.0	50.0	1384.0	46.1	29.1	623.7	10.0	0.3	0.1
1985	7	31.0	2147.0	69.3	69.3	52.2	1593.0	51.4	30.7	742.0	10.0	0.3	0.2
1985	8	31.0	2514.0	81.1	81.1	54.7	1723.0	55.6	32.4	685.4	10.0	0.3	0.2
1985	9	30.0	2953.0	98.4	98.4	57.6	2567.0	85.6	35.0	869.3	10.0	0.3	0.2
1985	10	31.0	2355.0	76.0	76.0	60.0	1939.0	62.5	36.9	823.4	15.0	0.5	0.2
1985	11	28.0	2226.0	79.5	74.2	62.2	2221.0	79.3	39.1	997.8	18.0	0.6	0.2
1985	12	31.0	6706.0	216.3	216.3	68.9	4562.0	147.2	43.7	680.3	20.0	0.6	0.2
Subtotal		355.0	32039.0	90.3	87.8		24280.0				148.0		

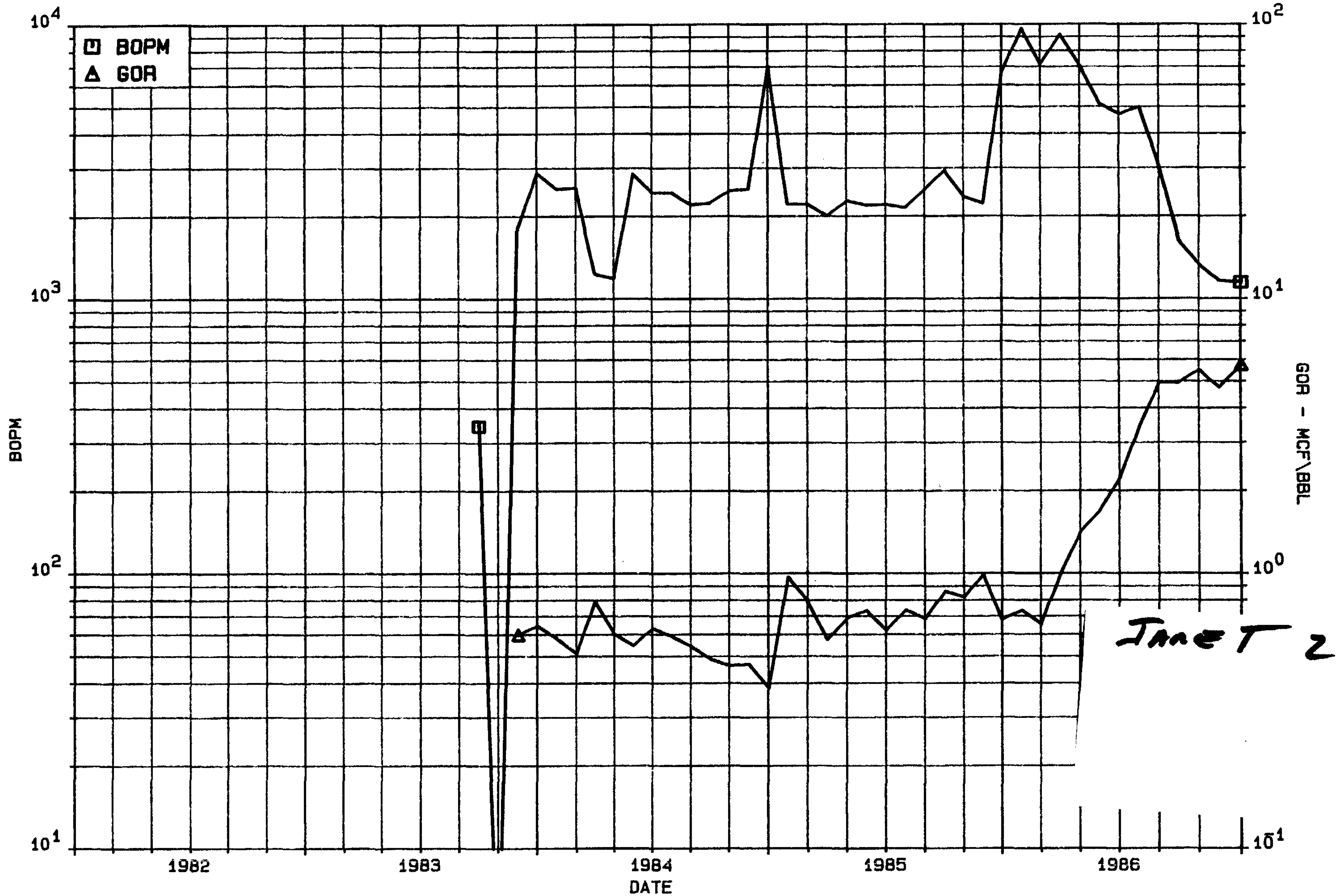
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* NR

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, JANET #2. (SE 21-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	9668.0	311.9	311.9	78.6	7169.0	231.3	50.8	741.5	20.0	0.6	0.2
1986	2	27.0	7125.0	263.9	254.5	85.7	4671.0	173.0	55.5	655.6	20.0	0.7	0.3
1986	3	31.0	9225.0	297.6	297.6	94.9	9236.0	297.9	64.8	1001.2	15.0	0.5	0.3
1986	4*	30.0	7064.0	235.5	235.5	102.0	10059.0	335.3	74.8	1424.0	15.0	0.5	0.3
1986	5	31.0	5125.0	165.3	165.3	107.1	8751.0	282.3	83.6	1707.5	20.0	0.6	0.3
1986	6	30.0	4692.0	156.4	156.4	111.8	10538.0	351.3	94.1	2246.0	20.0	0.7	0.3
1986	7	31.0	5032.0	162.3	162.3	116.8	17325.0	558.9	111.4	3443.0	20.0	0.6	0.4
1986	8	29.0	3065.0	105.7	98.9	119.9	15278.0	526.8	126.7	4984.7	11.0	0.4	0.4
1986	9	16.0	1626.0	101.6	54.2	121.5	8057.0	503.6	134.8	4955.1	7.0	0.4	0.4
1986	10	16.0	1331.0	83.2	42.9	122.9	7411.0	463.2	142.2	5568.0	5.0	0.3	0.4
1986	11	15.0	1163.0	77.5	38.8	124.0	5520.0	368.0	147.7	4746.3	5.0	0.3	0.4
1986	12	15.0	1148.0	76.5	37.0	125.2	6620.0	441.3	154.3	5766.6	4.0	0.3	0.4
Subtotal		302.0	56264.0	186.3	154.1		110635.0				162.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, JANET #2. (SE 21-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

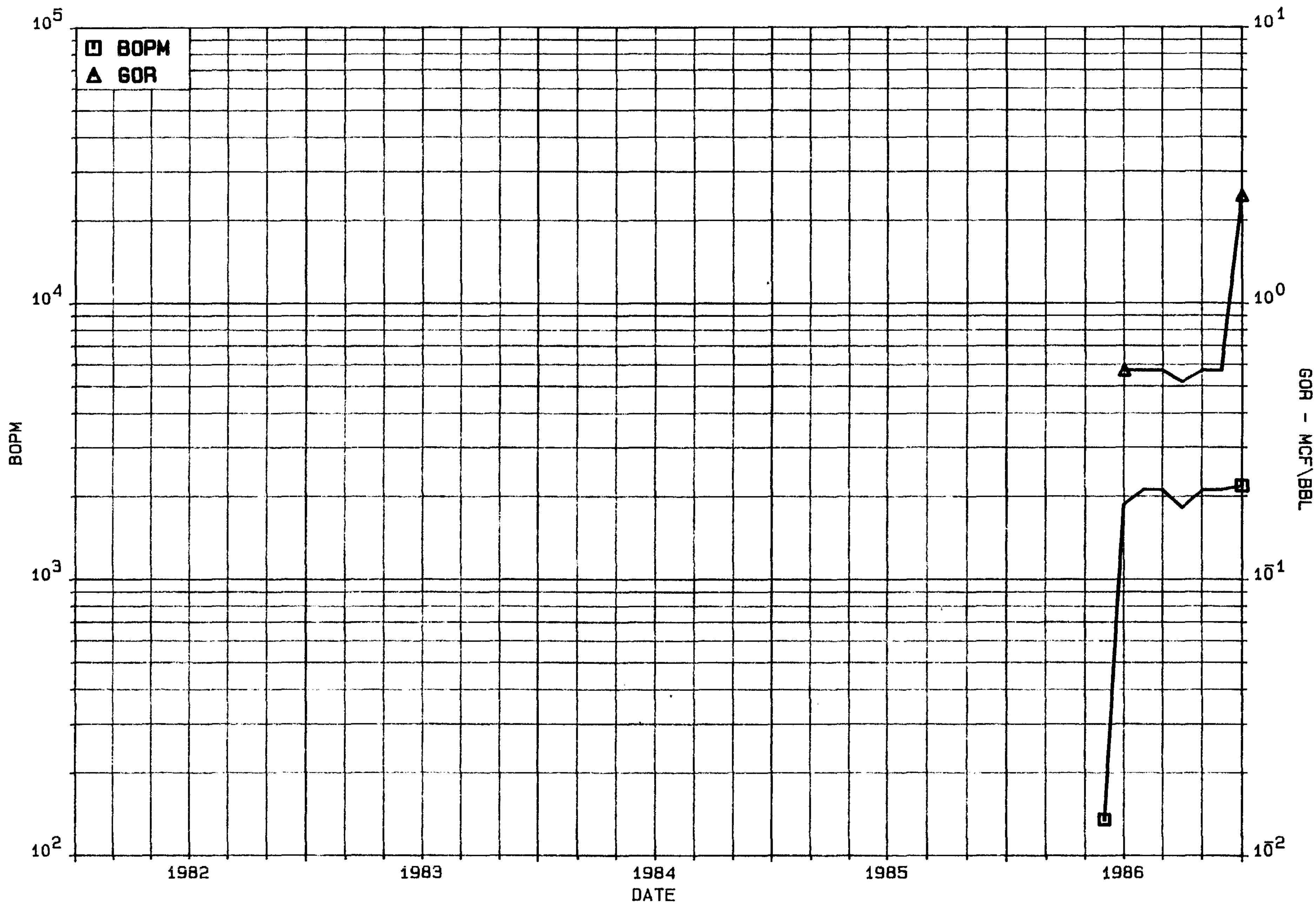


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH. JANET #3. (NW 21-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5 *	0.0	135.0	0.0	4.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	24.0	1867.0	77.8	62.2	2.0	1066.0	44.4	1.1	571.0	20.0	0.8	0.0
1986	7	31.0	2124.0	68.5	68.5	4.1	1213.0	39.1	2.3	571.1	10.0	0.3	0.0
1986	8	31.0	2112.0	68.1	68.1	6.2	1206.0	38.9	3.5	571.0	10.0	0.3	0.0
1986	9	30.0	1811.0	60.4	60.4	8.0	934.0	31.1	4.4	515.7	10.0	0.3	0.1
1986	10	31.0	2108.0	68.0	68.0	10.2	1204.0	38.8	5.6	571.2	10.0	0.3	0.1
1986	11	30.0	2113.0	70.4	70.4	12.3	1207.0	40.2	6.8	571.2	10.0	0.3	0.1
1986	12	31.0	2181.0	70.4	70.4	14.5	5340.0	172.3	12.2	2448.4	10.0	0.3	0.1
Subtotal		208.0	14451.0	69.5	59.0		12170.0				80.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* SWABBED

J.P. MCHUGH, JANET #3. (NW 21-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



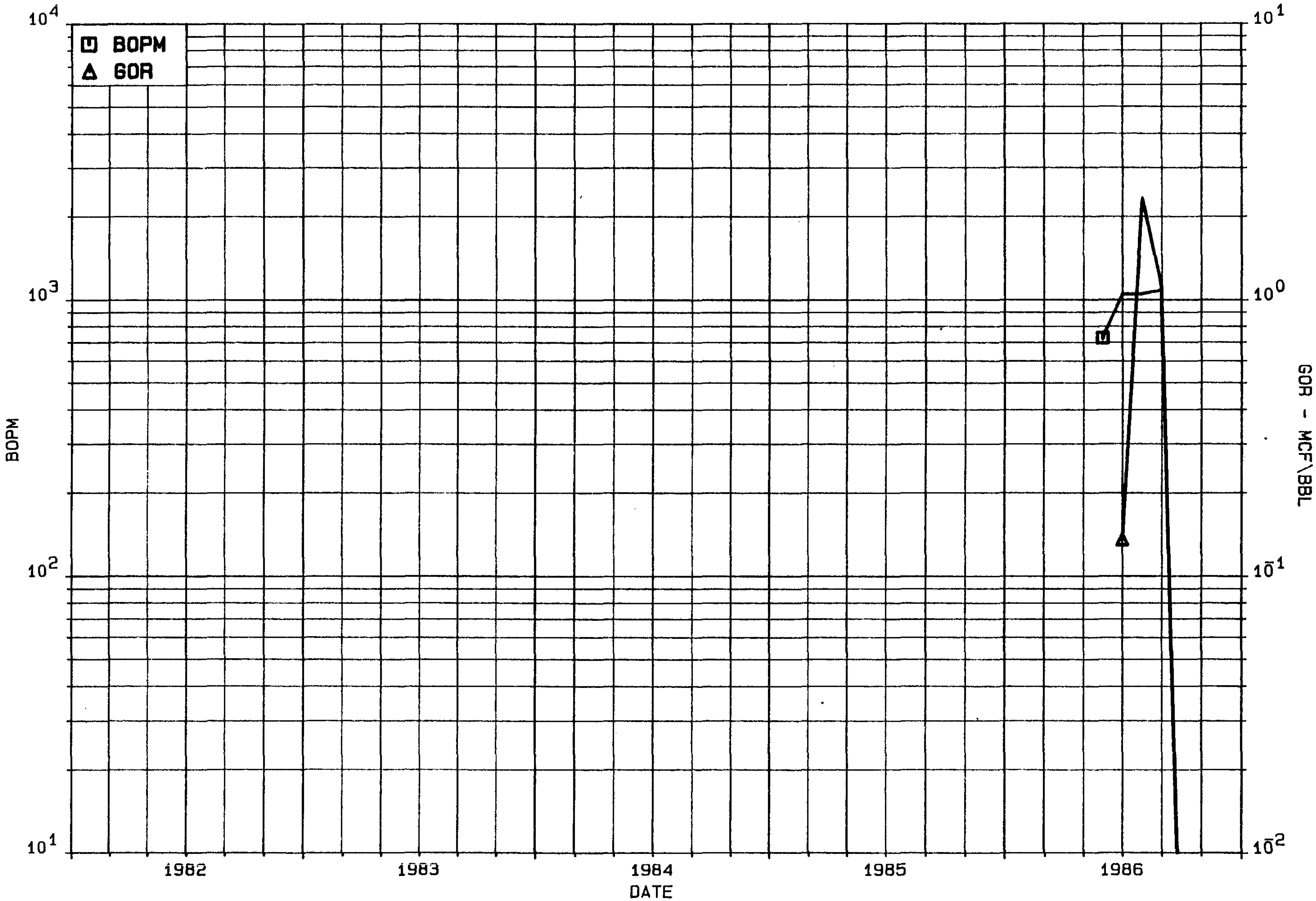
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, LADY LUCK #1. (NE 5-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5 *	0.0	726.0	0.0	23.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	26.0	1048.0	40.3	34.9	1.8	142.0	5.5	0.1	135.5	10.0	0.4	0.0
1986	7	25.0	1051.0	42.0	33.9	2.8	2461.0	98.4	2.6	2341.6	10.0	0.4	0.0
1986	8	18.0	1088.0	60.4	35.1	3.9	1208.0	67.1	3.8	1110.3	6.0	0.3	0.0
1986	9	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.8	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.8	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.8	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Subtotal		69.0	3913.0	56.7	16.0		3811.0				26.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

* SWABBED

J.P. MCHUGH, LADY LUCK #1. (NE 5-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

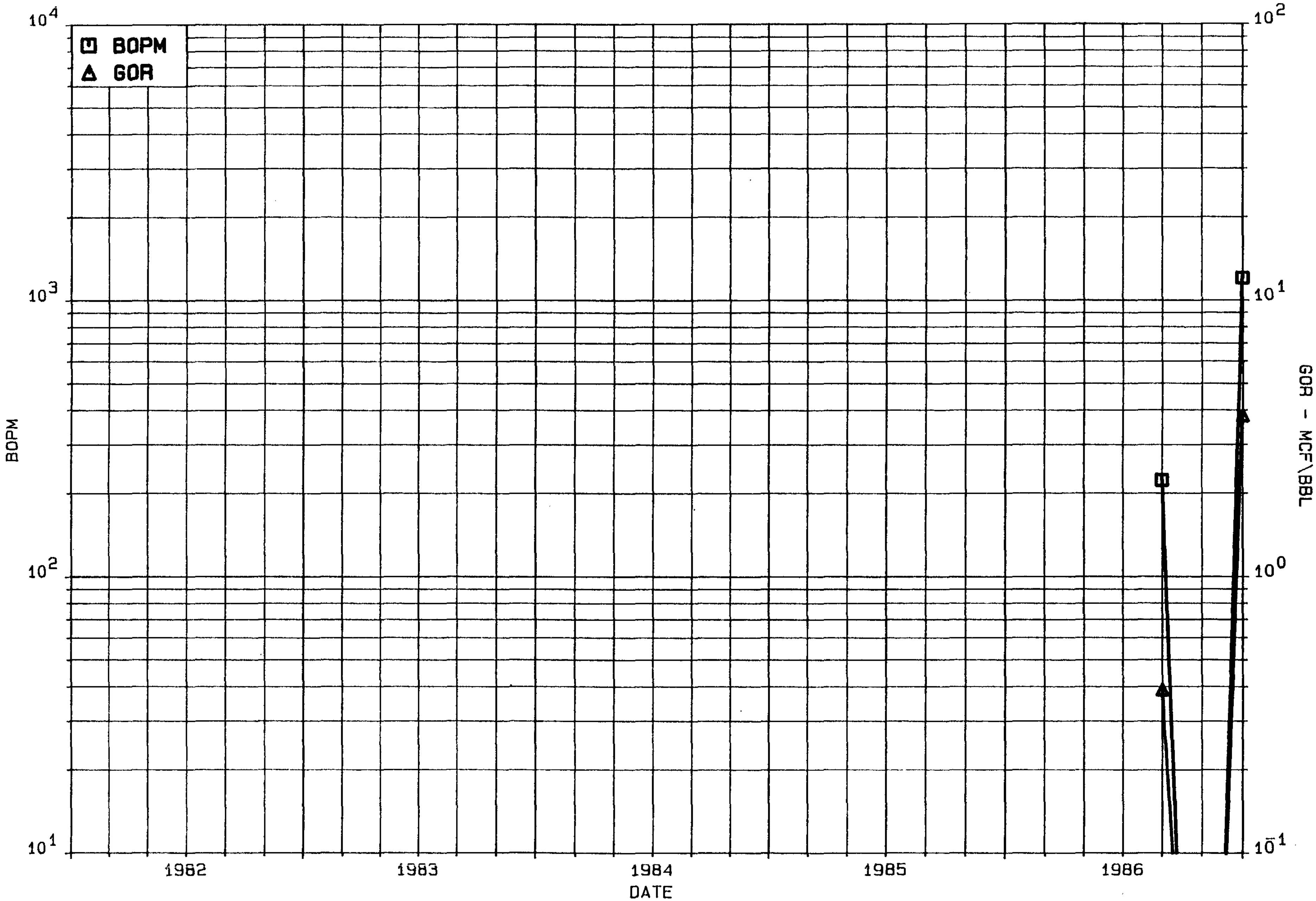


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, LODDY #1. (NW 20-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	3.0	223.0	74.3	7.2	0.2	87.0	29.0	0.1	390.1	3.0	1.0	0.0
1986	9	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0
1986	12	16.0	1205.0	75.3	38.9	1.4	4604.0	287.8	4.7	3820.7	2.0	0.1	0.0
Subtotal		19.0	1428.0	75.2	4.3		4691.0				5.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, LODDY #1. (NW 20-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, MOTHERLODE #1, (NE 3-24N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983 11	21.0	5422.0	258.2	180.7	5.4	0.0	0.0	0.0	0.0	210.0	10.0	0.2
1983 12	31.0	9825.0	316.9	316.9	15.2	0.0	0.0	0.0	0.0	60.0	1.9	0.3
Subtotal	52.0	15247.0	293.2	250.0		0.0				270.0		
1984 1	31.0	2723.0	87.8	87.8	18.0	0.0	0.0	0.0	0.0	62.0	2.0	0.3
1984 2	29.0	2440.0	84.1	84.1	20.4	0.0	0.0	0.0	0.0	58.0	2.0	0.4
1984 3	5.0	2727.0	545.4	88.0	23.1	174.0	34.8	0.2	63.8	10.0	2.0	0.4
1984 4	30.0	2447.0	81.6	81.6	25.6	1169.0	39.0	1.3	477.7	60.0	2.0	0.5
1984 5	8.0	12159.0	1519.9	392.2	37.7	5092.0	636.5	6.4	418.8	7.0	0.9	0.5
1984 6	29.0	9967.0	343.7	332.2	47.7	6962.0	240.1	13.4	698.5	60.0	2.1	0.5
1984 7	31.0	4859.0	156.7	156.7	52.6	3903.0	125.9	17.3	803.3	20.0	0.6	0.5
1984 8	31.0	4252.0	137.2	137.2	56.8	3652.0	117.8	21.0	858.9	10.0	0.3	0.6
1984 9	30.0	3578.0	119.3	119.3	60.4	3576.0	119.2	24.5	999.4	60.0	2.0	0.6
1984 10	31.0	3600.0	116.1	116.1	64.0	4138.0	133.5	28.7	1149.4	15.0	0.5	0.6
1984 11	30.0	4543.0	151.4	151.4	68.5	5400.0	180.0	34.1	1188.6	60.0	2.0	0.7
1984 12	31.0	4904.0	158.2	158.2	73.4	5929.0	191.3	40.0	1209.0	15.0	0.5	0.7
Subtotal	316.0	58199.0	184.2	159.0		39995.0				437.0		
1985 1	31.0	4073.0	131.4	131.4	77.5	5386.0	173.7	45.4	1322.4	15.0	0.5	0.7
1985 2	28.0	3854.0	137.6	137.6	81.4	3558.0	127.1	48.9	923.2	15.0	0.5	0.7
1985 3	31.0	3525.0	113.7	113.7	84.9	4052.0	130.7	53.0	1149.5	15.0	0.5	0.8
1985 4	30.0	3192.0	106.4	106.4	88.1	3561.0	118.7	56.6	1115.6	20.0	0.7	0.8
1985 5	30.0	2922.0	97.4	94.3	91.0	2819.0	94.0	59.4	964.8	15.0	0.5	0.8
1985 6	30.0	3052.0	101.7	101.7	94.1	2813.0	93.8	62.2	921.7	15.0	0.5	0.8
1985 7	31.0	2913.0	94.0	94.0	97.0	2673.0	86.2	64.9	917.6	15.0	0.5	0.8
1985 8	31.0	2754.0	88.8	88.8	99.7	2851.0	92.0	67.7	1035.2	20.0	0.6	0.8
1985 9	30.0	3051.0	101.7	101.7	102.8	3100.0	103.3	70.8	1016.1	20.0	0.7	0.9
1985 10	31.0	2741.0	88.4	88.4	105.5	2545.0	82.1	73.4	928.5	25.0	0.8	0.9
1985 11	26.0	1995.0	76.7	66.5	107.5	2749.0	105.7	76.1	1377.9	21.0	0.8	0.9
1985 12	31.0	2825.0	91.1	91.1	110.3	3558.0	114.8	79.7	1259.5	20.0	0.6	0.9
Subtotal	360.0	36897.0	102.5	101.1		39665.0				216.0		

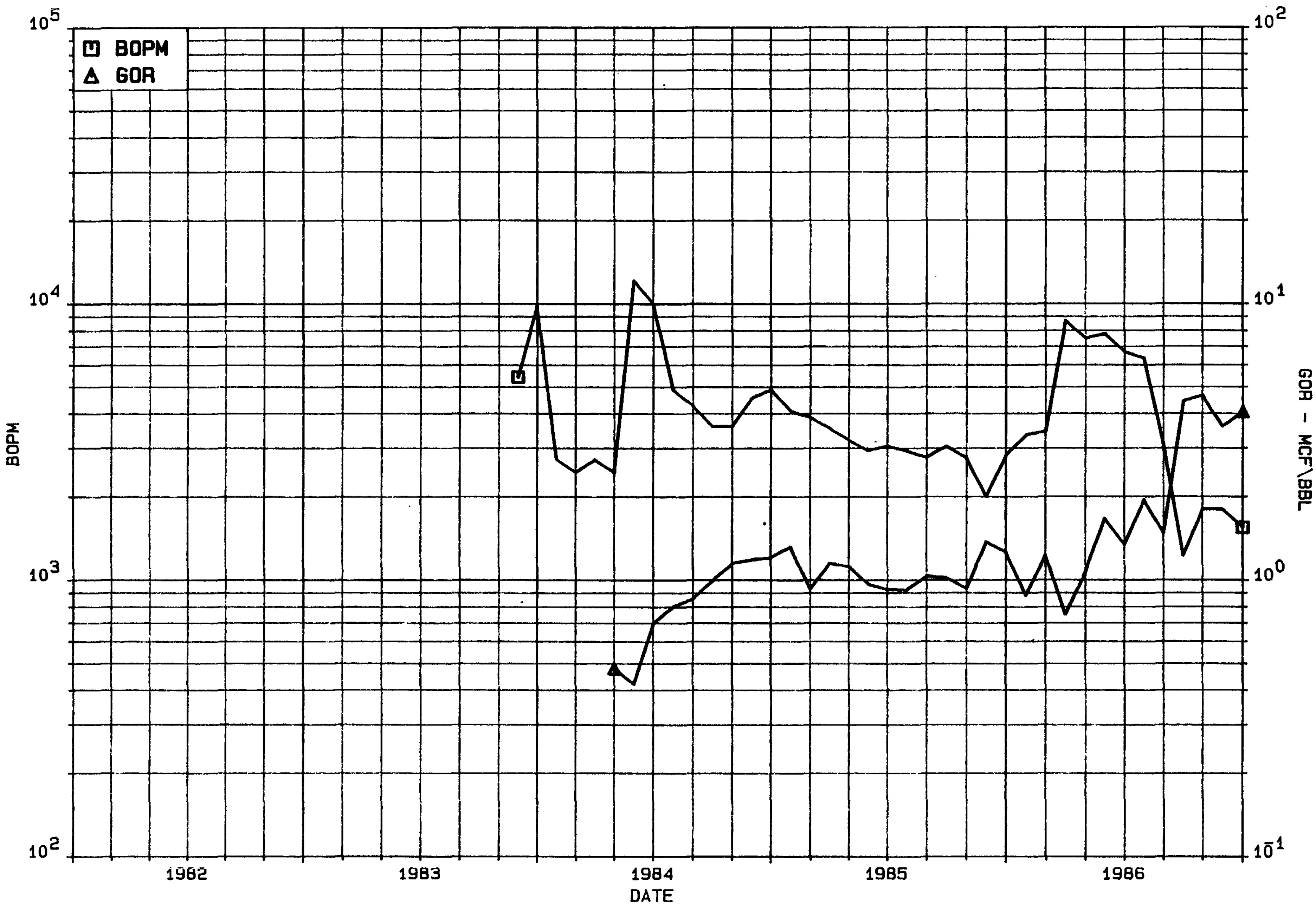
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, MOTHERLODE #1. (NE 3-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	30.0	3344.0	111.5	107.9	113.7	2927.0	97.6	82.6	875.3	25.0	0.8	0.9
1986	2	27.0	3461.0	128.2	123.6	117.1	4263.0	157.9	86.9	1231.7	25.0	0.9	1.0
1986	3	30.0	8709.0	290.3	280.9	125.9	6494.0	216.5	93.3	745.7	25.0	0.8	1.0
1986	4	29.0	7464.0	257.4	248.8	133.3	8025.0	276.7	101.4	1075.2	20.0	0.7	1.0
1986	5	31.0	7778.0	250.9	250.9	141.1	13021.0	420.0	114.4	1674.1	20.0	0.6	1.0
1986	6	30.0	6666.0	222.2	222.2	147.8	8927.0	297.6	123.3	1339.2	20.0	0.7	1.1
1986	7	31.0	6312.0	203.6	203.6	154.1	12324.0	397.5	135.6	1952.5	31.0	1.0	1.1
1986	8	26.0	3109.0	119.6	100.3	157.2	4578.0	176.1	140.2	1472.5	25.0	1.0	1.1
1986	9	20.0	1217.0	60.9	40.6	158.4	5388.0	269.4	145.6	4427.3	13.0	0.7	1.1
1986	10	25.0	1808.0	72.3	58.3	160.2	8460.0	338.4	154.1	4679.2	2.0	0.1	1.1
1986	11	23.0	1798.0	78.2	59.9	162.0	6418.0	279.0	160.5	3569.5	15.0	0.7	1.1
1986	12	27.0	1548.0	57.3	49.9	163.6	6285.0	232.8	166.8	4060.1	21.0	0.8	1.2
Subtotal		329.0	53214.0	161.7	145.8		87110.0				242.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, MOTHERLODE #1. (NE 3-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

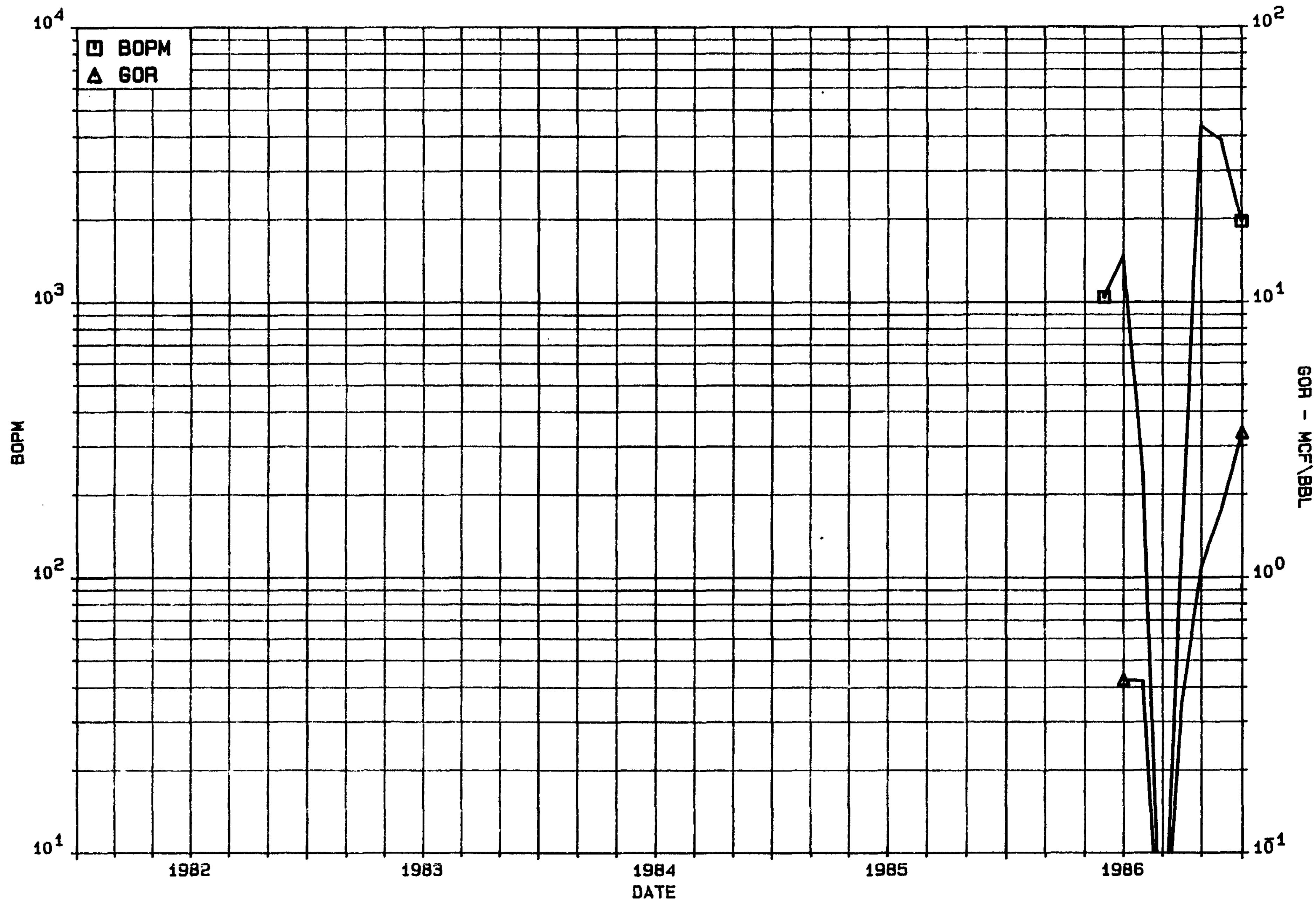


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, MOTHERLODE #2. (SW 3-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5 *	0.0	1042.0	0.0	33.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	30.0	1482.0	49.4	49.4	2.5	631.0	21.0	0.6	425.8	0.0	0.0	0.0
1986	7	5.0	241.0	48.2	7.8	2.8	101.0	20.2	0.7	419.1	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.7	0.0	0.0	0.0	0.0
1986	9	2.0	135.0	67.5	4.5	2.9	48.0	24.0	0.8	355.6	0.0	0.0	0.0
1986	10	27.0	4389.0	162.6	141.6	7.3	4775.0	176.9	5.6	1087.9	8.0	0.3	0.0
1986	11	19.0	3863.0	203.3	128.8	11.2	6806.0	358.2	12.4	1761.8	6.0	0.3	0.0
1986	12	18.0	1966.0	109.2	63.4	13.1	6591.0	366.2	19.0	3352.5	4.0	0.2	0.0
Subtotal		101.0	13118.0	129.9	53.5		18952.0				18.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.
* SWABBED

J.P. MCHUGH, MOTHERLODE #2. (SW 3-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

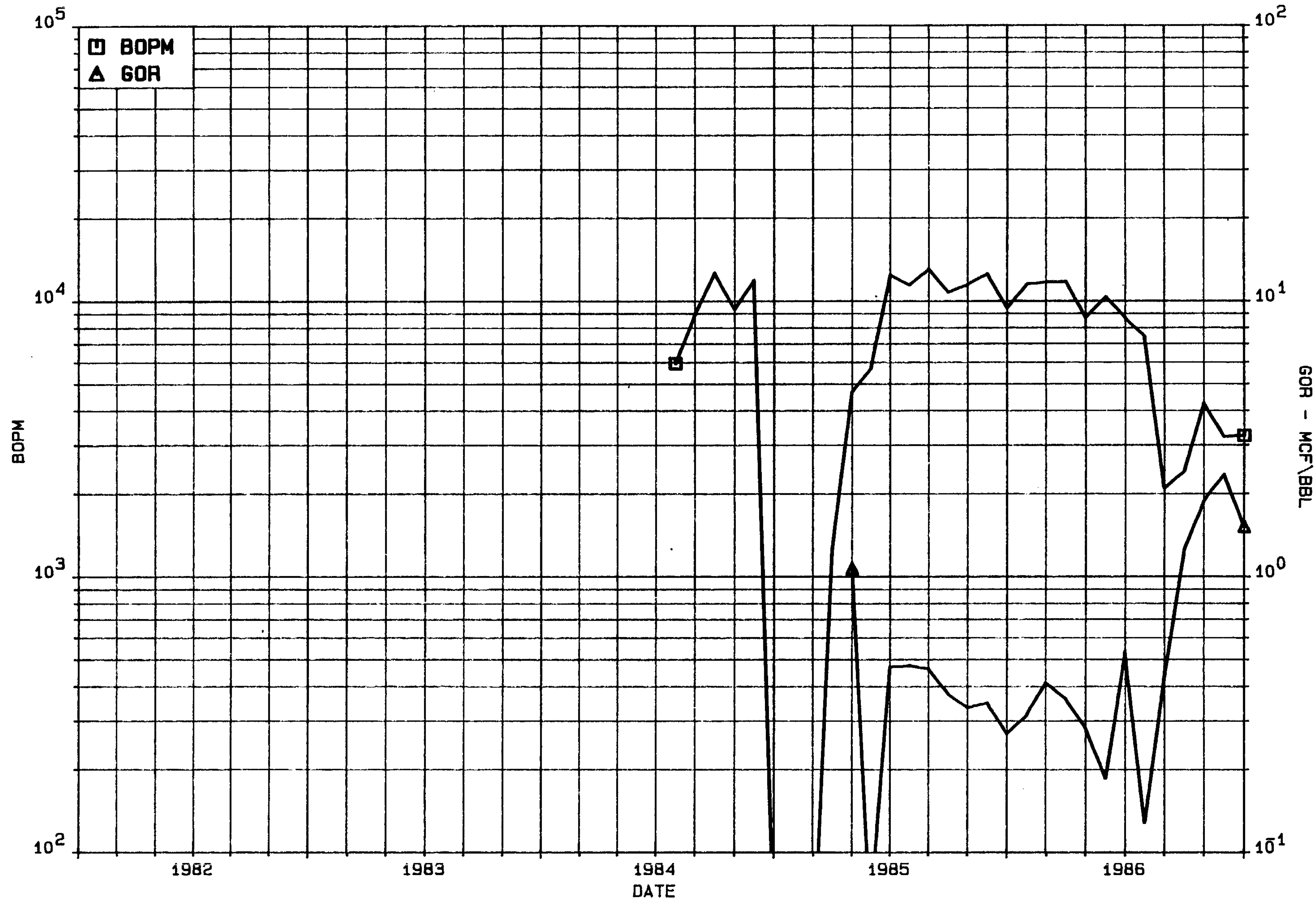


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, NATIVE SON #1, (NE 34-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984	7	19.0	5927.0	311.9	191.2	5.9	0.0	0.0	0.0	0.0	38.0	2.0	0.0
1984	8	31.0	8939.0	288.4	288.4	14.9	0.0	0.0	0.0	0.0	62.0	2.0	0.1
1984	9	30.0	12683.0	422.8	422.8	27.5	48.0	1.6	0.0	3.8	10.0	0.3	0.1
1984	10	31.0	9284.0	299.5	299.5	36.8	50.0	1.6	0.1	5.4	10.0	0.3	0.1
1984	11	30.0	11944.0	398.1	398.1	48.8	48.0	1.6	0.1	4.0	0.0	0.0	0.1
1984	12	1.0	62.0	62.0	2.0	48.8	2.0	2.0	0.1	32.3	0.0	0.0	0.1
Subtotal		142.0	48839.0	343.9	265.4		148.0				120.0		
1985	1	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1985	2	0.0	0.0	0.0	0.0	48.8	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1985	3	4.0	1244.0	311.0	40.1	50.1	6.0	1.5	0.2	4.8	1.0	0.3	0.1
1985	4	30.0	4686.0	156.2	156.2	54.8	5004.0	166.8	5.2	1067.9	0.0	0.0	0.1
1985	5	31.0	5705.0	184.0	184.0	60.5	331.0	10.7	5.5	58.0	0.0	0.0	0.1
1985	6	28.0	12454.0	444.8	415.1	72.9	5861.0	209.3	11.4	470.6	0.0	0.0	0.1
1985	7	31.0	11381.0	367.1	367.1	84.3	5428.0	175.1	16.8	476.9	0.0	0.0	0.1
1985	8	30.0	13075.0	435.8	421.8	97.4	6039.0	201.3	22.8	461.9	0.0	0.0	0.1
1985	9	30.0	10714.0	357.1	357.1	108.1	4009.0	133.6	26.8	374.2	0.0	0.0	0.1
1985	10	31.0	11503.0	371.1	371.1	119.6	3828.0	123.5	30.7	332.8	0.0	0.0	0.1
1985	11	27.0	12575.0	465.7	419.2	132.2	4395.0	162.8	35.0	349.5	0.0	0.0	0.1
1985	12	31.0	9370.0	302.3	302.3	141.5	2514.0	81.1	37.6	268.3	0.0	0.0	0.1
Subtotal		273.0	92707.0	339.6	254.0		37415.0				1.0		
1986	1	31.0	11521.0	371.6	371.6	153.1	3623.0	116.9	41.2	314.5	0.0	0.0	0.1
1986	2	27.0	11750.0	435.2	419.6	164.8	4851.0	179.7	46.0	412.9	0.0	0.0	0.1
1986	3	31.0	11776.0	379.9	379.9	176.6	4216.0	136.0	50.3	358.0	0.0	0.0	0.1
1986	4	30.0	8636.0	287.9	287.9	185.2	2432.0	81.1	52.7	281.6	0.0	0.0	0.1
1986	5	31.0	10370.0	334.5	334.5	195.6	1912.0	61.7	54.6	184.4	0.0	0.0	0.1
1986	6	30.0	8643.0	288.1	288.1	204.2	4633.0	154.4	59.2	536.0	0.0	0.0	0.1
1986	7	31.0	7387.0	238.3	238.3	211.6	940.0	30.3	60.2	127.3	0.0	0.0	0.1
1986	8	31.0	2077.0	67.0	67.0	213.7	904.0	29.2	61.1	435.2	0.0	0.0	0.1
1986	9	12.0	2428.0	202.3	80.9	216.1	3054.0	254.5	64.1	1257.8	0.0	0.0	0.1
1986	10	28.0	4266.0	152.4	137.6	220.4	8001.0	285.8	72.1	1875.5	5.0	0.2	0.1
1986	11	22.0	3206.0	145.7	106.9	223.6	7554.0	343.4	79.7	2356.2	3.0	0.1	0.1
1986	12	21.0	3242.0	154.4	104.6	226.8	4911.0	233.9	84.6	1514.8	6.0	0.3	0.1
Subtotal		325.0	85302.0	262.5	233.7		47031.0				14.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, NATIVE SON #1. (NE 34-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



SAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH. NATIVE SON #2. (SW 27-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983 12	3.0	289.0	96.3	9.3	0.3	0.0	0.0	0.0	0.0	51.0	17.0	0.1
Subtotal	3.0	289.0	96.3	9.3		0.0				51.0		
1984 1	8.0	1066.0	133.3	34.4	1.4	0.0	0.0	0.0	0.0	65.0	8.1	0.1
1984 2	8.0	1221.0	152.6	42.1	2.6	0.0	0.0	0.0	0.0	60.0	7.5	0.2
1984 3	23.0	9701.0	421.8	312.9	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2
1984 4	17.0	6846.0	402.7	228.2	19.1	3795.0	223.2	3.8	554.3	0.0	0.0	0.2
1984 5	22.0	7485.0	340.2	241.5	26.6	4910.0	223.2	8.7	656.0	0.0	0.0	0.2
1984 6	13.0	3932.0	302.5	131.1	30.5	2901.0	223.2	11.6	737.8	4.0	0.3	0.2
1984 7	0.0	0.0	0.0	0.0	30.5	0.0	0.0	11.6	0.0	0.0	0.0	0.2
1984 8	18.0	9077.0	504.3	292.8	39.6	4921.0	273.4	16.5	542.1	0.0	0.0	0.2
1984 9	30.0	10634.0	354.5	354.5	50.3	8945.0	298.2	25.5	841.2	5.0	0.2	0.2
1984 10	31.0	9132.0	294.6	294.6	59.4	7290.0	235.2	32.8	798.3	5.0	0.2	0.2
1984 11	30.0	11693.0	389.8	389.8	71.1	8775.0	292.5	41.5	750.4	5.0	0.2	0.2
1984 12	31.0	11024.0	355.6	355.6	82.1	6075.0	196.0	47.6	551.1	5.0	0.2	0.2
Subtotal	231.0	81811.0	354.2	223.5		47612.0				149.0		
1985 1	31.0	12072.0	389.4	389.4	94.2	7198.0	232.2	54.8	596.3	5.0	0.2	0.2
1985 2	28.0	11924.0	425.9	425.9	106.1	8499.0	303.5	63.3	712.8	5.0	0.2	0.2
1985 3	31.0	13098.0	422.5	422.5	119.2	4492.0	144.9	67.8	343.0	5.0	0.2	0.2
1985 4	30.0	14349.0	478.3	478.3	133.5	10266.0	342.2	78.1	715.5	5.0	0.2	0.2
1985 5	31.0	15652.0	504.9	504.9	149.2	10789.0	348.0	88.9	689.3	5.0	0.2	0.2
1985 6	30.0	15620.0	520.7	520.7	164.8	11487.0	382.9	100.3	735.4	5.0	0.2	0.2
1985 7	31.0	14242.0	459.4	459.4	179.1	12436.0	401.2	112.8	873.2	5.0	0.2	0.2
1985 8	24.0	12746.0	531.1	411.2	191.8	15848.0	660.3	128.6	1243.4	5.0	0.2	0.2
1985 9	27.0	12740.0	471.9	424.7	204.5	13432.0	497.5	142.1	1054.3	5.0	0.2	0.2
1985 10	31.0	15041.0	485.2	485.2	219.6	19130.0	617.1	161.2	1271.9	5.0	0.2	0.3
1985 11	25.0	9173.0	366.9	305.8	228.8	14588.0	583.5	175.8	1590.3	8.0	0.3	0.3
1985 12	31.0	16764.0	540.8	540.8	245.5	24257.0	782.5	200.0	1447.0	5.0	0.2	0.3
Subtotal	350.0	163421.0	466.9	447.7		152422.0				63.0		

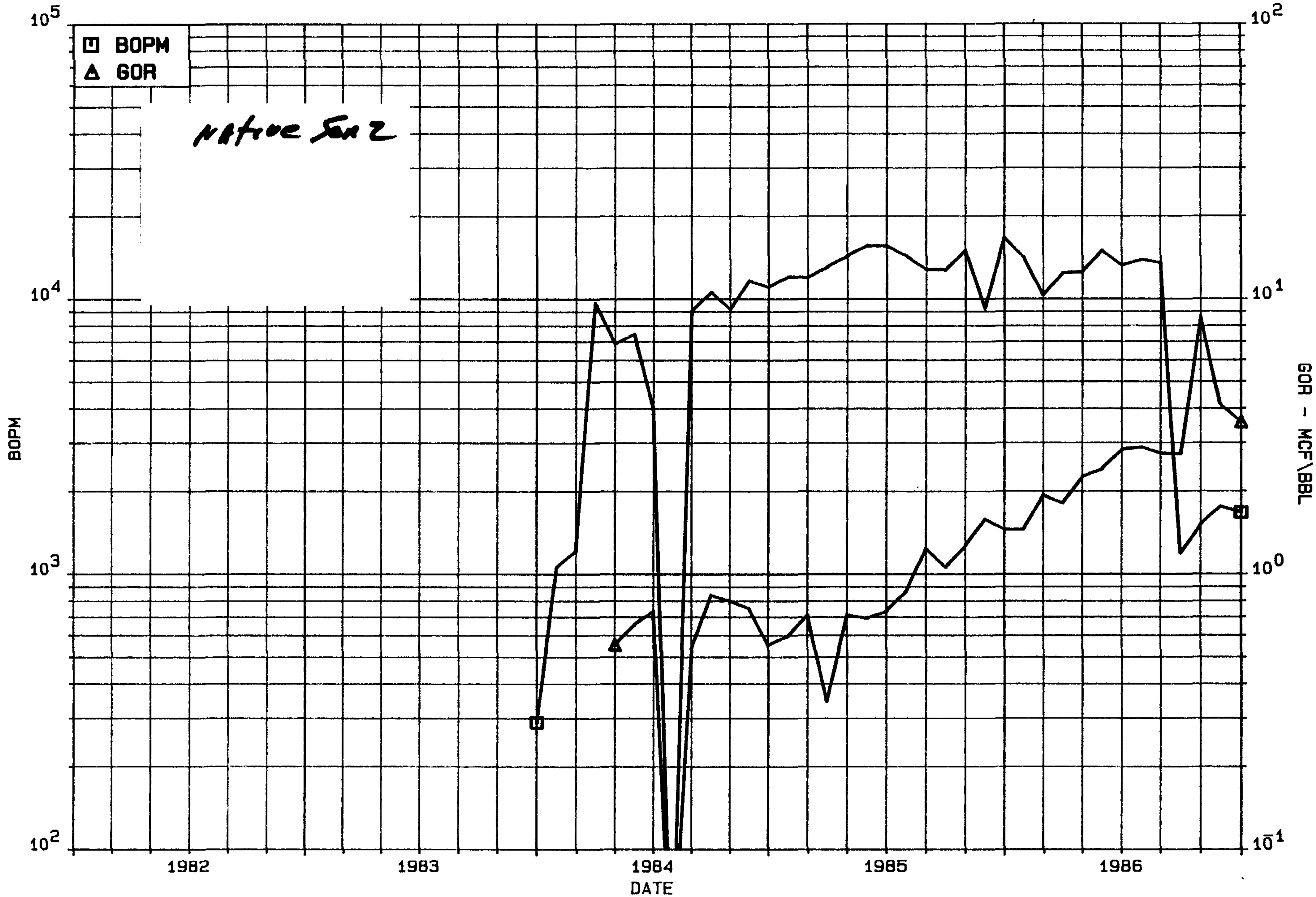
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, NATIVE SON #2, (SW 27-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	14113.0	455.3	455.3	259.6	20600.0	664.5	220.6	1459.6	0.0	0.0	0.3
1986	2	26.0	10273.0	395.1	366.9	269.9	19870.0	764.2	240.5	1934.2	5.0	0.2	0.3
1986	3	31.0	12430.0	401.0	401.0	282.3	22383.0	722.0	262.9	1800.7	0.0	0.0	0.3
1986	4	29.0	12582.0	433.9	419.4	294.9	28422.0	980.1	291.3	2258.9	0.0	0.0	0.3
1986	5	31.0	15006.0	484.1	484.1	309.9	36244.0	1169.2	327.6	2415.3	0.0	0.0	0.3
1986	6	30.0	13199.0	440.0	440.0	323.1	37412.0	1247.1	365.0	2834.5	0.0	0.0	0.3
1986	7	31.0	13935.0	449.5	449.5	337.1	40418.0	1303.8	405.4	2900.5	0.0	0.0	0.3
1986	8	29.0	13489.0	465.1	435.1	350.5	36884.0	1271.9	442.3	2734.4	10.0	0.3	0.3
1986	9	6.0	1182.0	197.0	39.4	351.7	3214.0	535.7	445.5	2719.1	1.0	0.2	0.3
1986	10	25.0	1515.0	60.6	48.9	353.2	13121.0	524.8	458.6	8660.7	1.0	0.0	0.3
1986	11	5.0	1764.0	352.8	58.8	355.0	7276.0	1455.2	465.9	4124.7	1.0	0.2	0.3
1986	12	6.0	1671.0	278.5	53.9	356.7	5930.0	988.3	471.8	3548.8	1.0	0.2	0.3
Subtotal		280.0	111159.0	397.0	304.5		271774.0				19.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, NATIVE SON #2. (SW 27-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



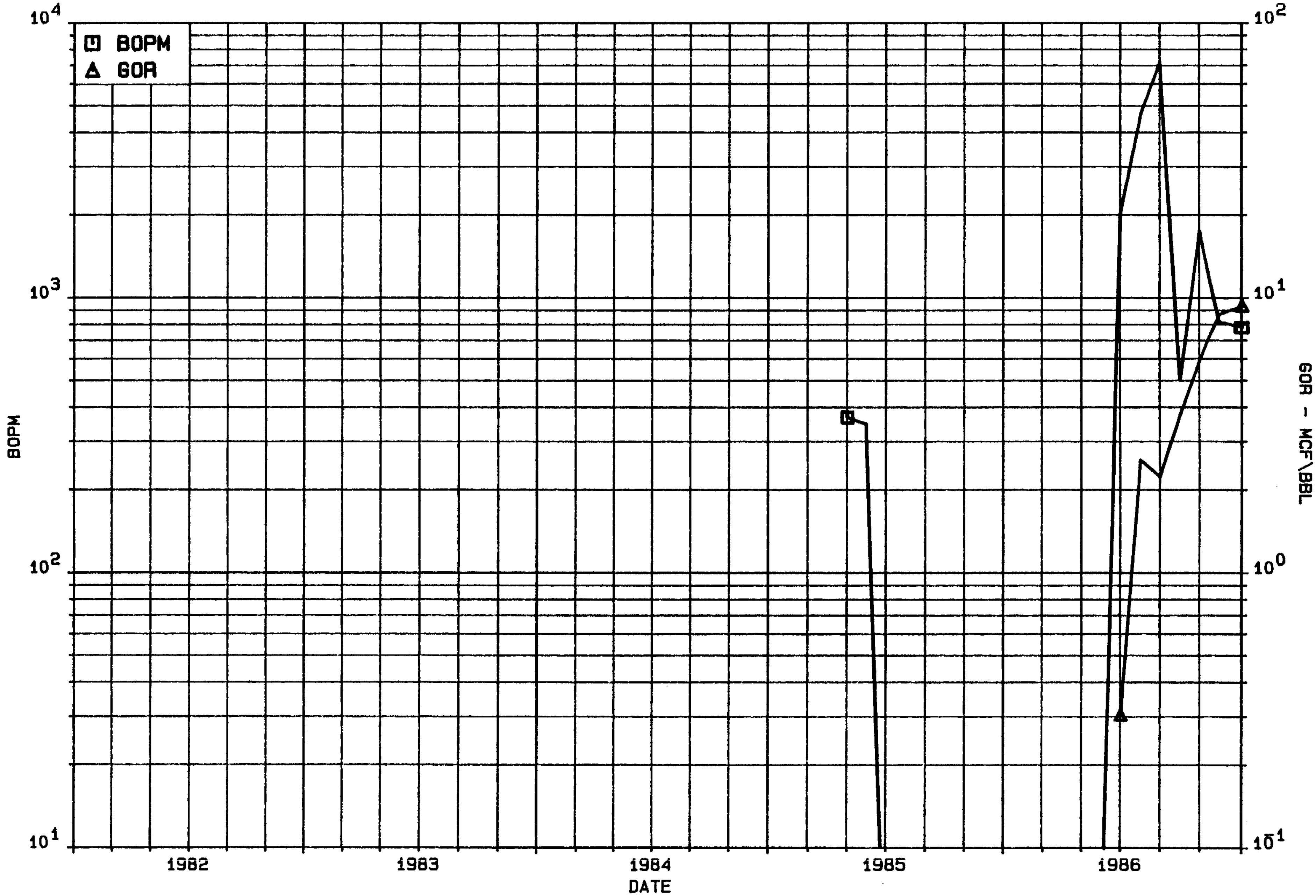
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, NATIVE SON #3. (SE 33-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	4 *	0.0	367.0	0.0	12.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	5 *	0.0	346.0	0.0	11.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	6	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	7	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	8	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	9	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	10	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	11	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	12	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal		0.0	713.0	0.0	2.6		0.0				0.0		
1986	1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	7.0	2049.0	292.7	68.3	2.8	624.0	89.1	0.6	304.5	4.0	0.6	0.0
1986	7	17.0	4665.0	274.4	150.5	7.4	12043.0	708.4	12.7	2581.6	5.0	0.3	0.0
1986	8	29.0	7248.0	249.9	233.8	14.7	16153.0	557.0	28.8	2228.6	5.0	0.2	0.0
1986	9	6.0	505.0	84.2	16.8	15.2	1904.0	317.3	30.7	3770.3	2.0	0.3	0.0
1986	10	11.0	1758.0	159.8	56.7	16.9	10413.0	946.6	41.1	5923.2	1.0	0.1	0.0
1986	11	9.0	816.0	90.7	27.2	17.8	7113.0	790.3	48.3	8716.9	1.0	0.1	0.0
1986	12	8.0	780.0	97.5	25.2	18.5	7295.0	911.9	55.5	9352.6	1.0	0.1	0.0
Subtotal		87.0	17821.0	204.8	48.8		55545.0				19.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

* NR

J.P. MCHUGH, NATIVE SON #3. (SE 33-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

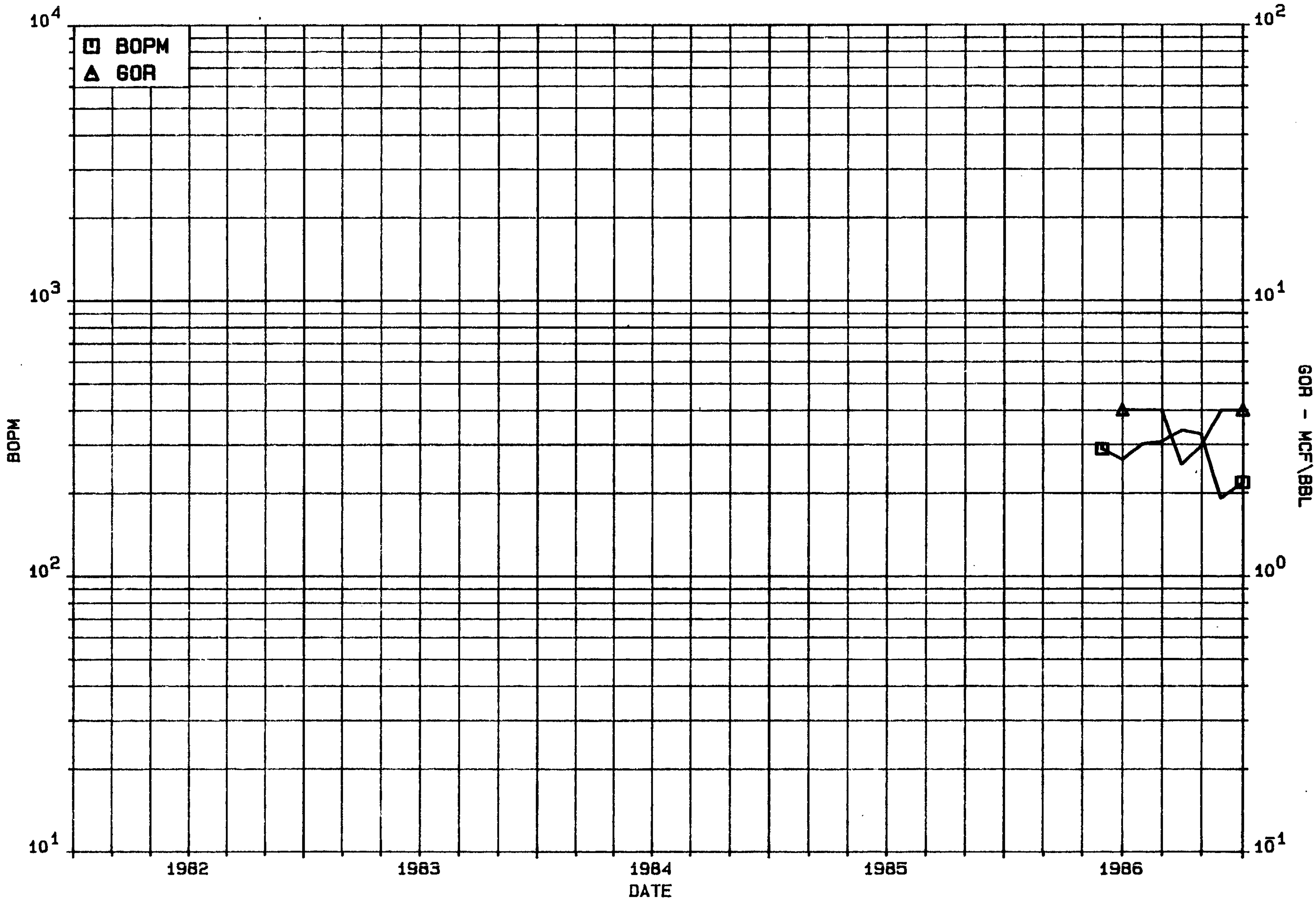


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, NEW HORIZON #1. (SE 2-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5	3.0	289.0	96.3	9.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	30.0	264.0	8.8	8.8	0.6	1058.0	35.3	1.1	4007.6	0.0	0.0	0.0
1986	7	31.0	302.0	9.7	9.7	0.9	1207.0	38.9	2.3	3996.7	3.0	0.1	0.0
1986	8	31.0	309.0	10.0	10.0	1.2	1238.0	39.9	3.5	4006.5	5.0	0.2	0.0
1986	9	30.0	340.0	11.3	11.3	1.5	861.0	28.7	4.4	2532.4	5.0	0.2	0.0
1986	10	31.0	327.0	10.5	10.5	1.8	975.0	31.5	5.3	2981.7	5.0	0.2	0.0
1986	11	30.0	191.0	6.4	6.4	2.0	765.0	25.5	6.1	4005.2	5.0	0.2	0.0
1986	12	31.0	219.0	7.1	7.1	2.2	877.0	28.3	7.0	4004.6	5.0	0.2	0.0
Subtotal		217.0	2241.0	10.3	9.1		6981.0				28.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, NEW HORIZON #1. (SE 2-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

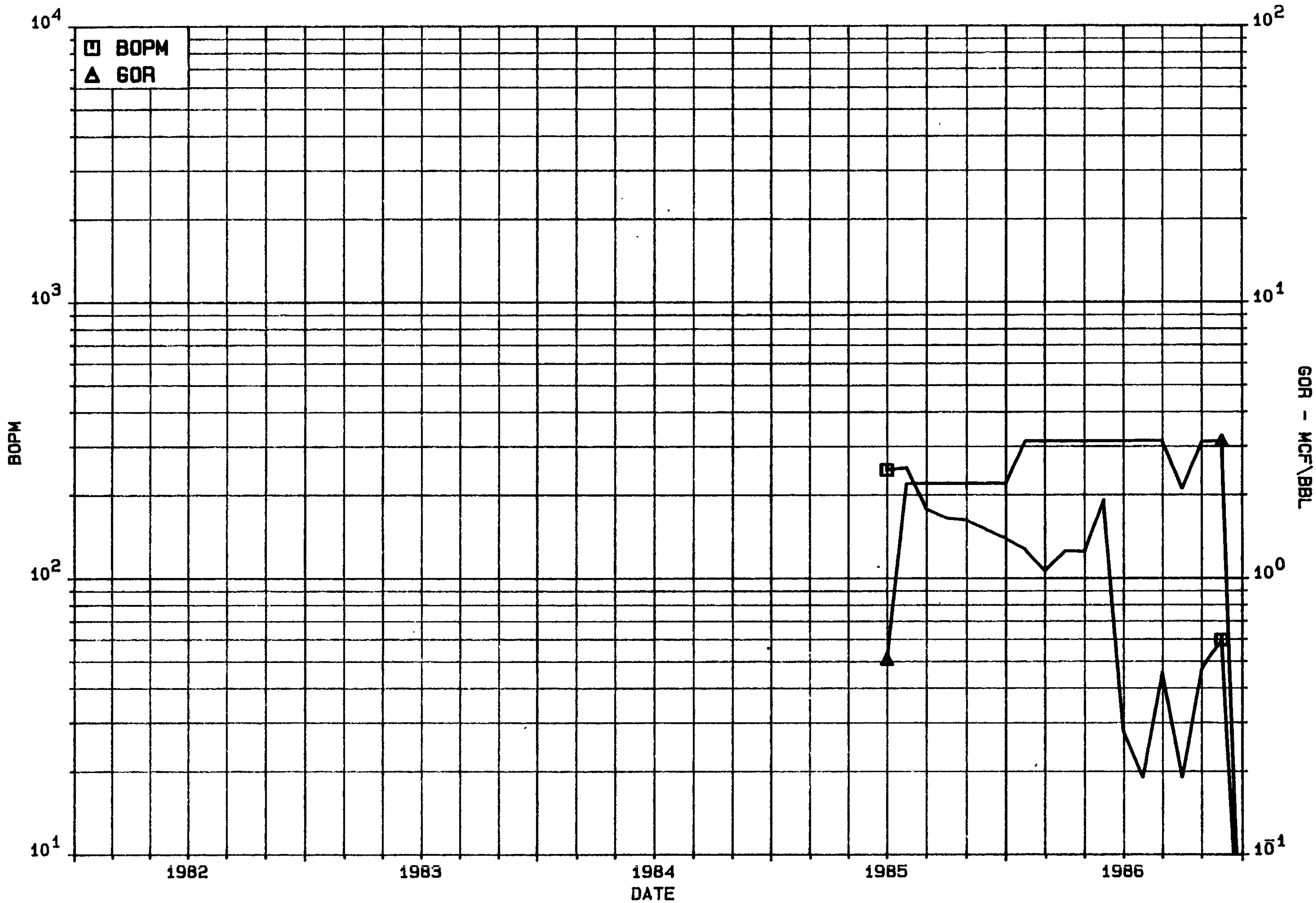


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, TWILIGHT ZONE #1. (SE 12-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	6	4.0	247.0	61.8	8.2	0.2	126.0	31.5	0.1	510.1	0.0	0.0	0.0
1985	7	31.0	252.0	8.1	8.1	0.5	558.0	18.0	0.7	2214.3	10.0	0.3	0.0
1985	8	24.0	178.0	7.4	5.7	0.7	394.0	16.4	1.1	2213.5	5.0	0.2	0.0
1985	9	30.0	165.0	5.5	5.5	0.8	365.0	12.2	1.4	2212.1	5.0	0.2	0.0
1985	10	31.0	162.0	5.2	5.2	1.0	359.0	11.6	1.8	2216.0	5.0	0.2	0.0
1985	11	30.0	150.0	5.0	5.0	1.2	332.0	11.1	2.1	2213.3	5.0	0.2	0.0
1985	12	31.0	139.0	4.5	4.5	1.3	308.0	9.9	2.4	2215.8	4.0	0.1	0.0
Subtotal		181.0	1293.0	7.1	6.0		2442.0				34.0		
1986	1	31.0	127.0	4.1	4.1	1.4	399.0	12.9	2.8	3141.7	4.0	0.1	0.0
1986	2	28.0	106.0	3.8	3.8	1.5	333.0	11.9	3.2	3141.5	4.0	0.1	0.0
1986	3	31.0	126.0	4.1	4.1	1.7	395.0	12.7	3.6	3134.9	4.0	0.1	0.0
1986	4	30.0	125.0	4.2	4.2	1.8	392.0	13.1	4.0	3136.0	4.0	0.1	0.0
1986	5	31.0	193.0	6.2	6.2	2.0	607.0	19.6	4.6	3145.1	4.0	0.1	0.1
1986	6	30.0	28.0	0.9	0.9	2.0	88.0	2.9	4.7	3142.9	2.0	0.1	0.1
1986	7	12.0	19.0	1.6	0.6	2.0	60.0	5.0	4.7	3157.9	2.0	0.2	0.1
1986	8	6.0	46.0	7.7	1.5	2.1	145.0	24.2	4.9	3152.2	0.0	0.0	0.1
1986	9	2.0	19.0	9.5	0.6	2.1	40.0	20.0	4.9	2105.3	0.0	0.0	0.1
1986	10	7.0	47.0	6.7	1.5	2.1	147.0	21.0	5.0	3127.7	0.0	0.0	0.1
1986	11	14.0	60.0	4.3	2.0	2.2	189.0	13.5	5.2	3150.0	0.0	0.0	0.1
1986	12	0.0	0.0	0.0	0.0	2.2	0.0	0.0	5.2	0.0	21.0	0.0	0.1
Subtotal		222.0	896.0	4.0	2.5		2795.0				45.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, TWLIGHT ZONE #1. (SE 12-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, WRIGHT WAY #1. (NW 2-24N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983 11	30.0	2826.0	94.2	94.2	2.8	0.0	0.0	0.0	0.0	87.0	2.9	0.1
1983 12	31.0	3363.0	108.5	108.5	6.2	0.0	0.0	0.0	0.0	93.0	3.0	0.2
Subtotal	61.0	6189.0	101.5	101.5		0.0				180.0		
1984 1	31.0	4023.0	129.8	129.8	10.2	0.0	0.0	0.0	0.0	93.0	3.0	0.3
1984 2	29.0	3826.0	131.9	131.9	14.0	0.0	0.0	0.0	0.0	87.0	3.0	0.4
1984 3	31.0	4339.0	140.0	140.0	18.4	684.0	22.1	0.7	157.6	93.0	3.0	0.5
1984 4	30.0	4036.0	134.5	134.5	22.4	2100.0	70.0	2.8	520.3	90.0	3.0	0.5
1984 5	31.0	4041.0	130.4	130.4	26.5	2634.0	85.0	5.4	651.8	93.0	3.0	0.6
1984 6	30.0	3064.0	102.1	102.1	29.5	3160.0	105.3	8.6	1031.3	90.0	3.0	0.7
1984 7	31.0	4373.0	141.1	141.1	33.9	3777.0	121.8	12.4	863.7	93.0	3.0	0.8
1984 8	31.0	3687.0	118.9	118.9	37.6	3857.0	124.4	16.2	1046.1	93.0	3.0	0.9
1984 9	30.0	3867.0	128.9	128.9	41.4	4298.0	143.3	20.5	1111.5	29.0	1.0	0.9
1984 10	31.0	3901.0	125.8	125.8	45.3	4999.0	161.3	25.5	1281.5	10.0	0.3	1.0
1984 11	28.0	3401.0	121.5	113.4	48.7	2532.0	90.4	28.0	744.5	10.0	0.4	1.0
1984 12	31.0	4191.0	135.2	135.2	52.9	3733.0	120.4	31.8	890.7	10.0	0.3	1.0
Subtotal	364.0	46749.0	128.4	127.7		31774.0				791.0		
1985 1	31.0	2965.0	95.6	95.6	55.9	2633.0	84.9	34.4	888.0	10.0	0.3	1.0
1985 2	28.0	2745.0	98.0	98.0	58.6	3230.0	115.4	37.6	1176.7	10.0	0.4	1.0
1985 3	31.0	3283.0	105.9	105.9	61.9	2195.0	70.8	39.8	668.6	10.0	0.3	1.0
1985 4	30.0	3048.0	101.6	101.6	65.0	2070.0	69.0	41.9	679.1	15.0	0.5	1.0
1985 5	31.0	3099.0	100.0	100.0	68.1	1435.0	46.3	43.3	463.1	12.0	0.4	1.0
1985 6	30.0	2909.0	97.0	97.0	71.0	2234.0	74.5	45.6	768.0	10.0	0.3	1.0
1985 7	31.0	2853.0	92.0	92.0	73.8	2474.0	79.8	48.0	867.2	15.0	0.5	1.1
1985 8	31.0	2766.0	89.2	89.2	76.6	2456.0	79.2	50.5	887.9	20.0	0.6	1.1
1985 9	25.0	2396.0	95.8	79.9	79.0	2081.0	83.2	52.6	868.5	20.0	0.8	1.1
1985 10	31.0	3174.0	102.4	102.4	82.2	2420.0	78.1	55.0	762.4	20.0	0.6	1.1
1985 11	26.0	2055.0	79.0	68.5	84.2	1825.0	70.2	56.8	888.1	17.0	0.7	1.1
1985 12	31.0	2838.0	91.5	91.5	87.1	2830.0	91.3	59.7	997.2	20.0	0.6	1.1
Subtotal	356.0	34131.0	95.9	93.5		27883.0				179.0		

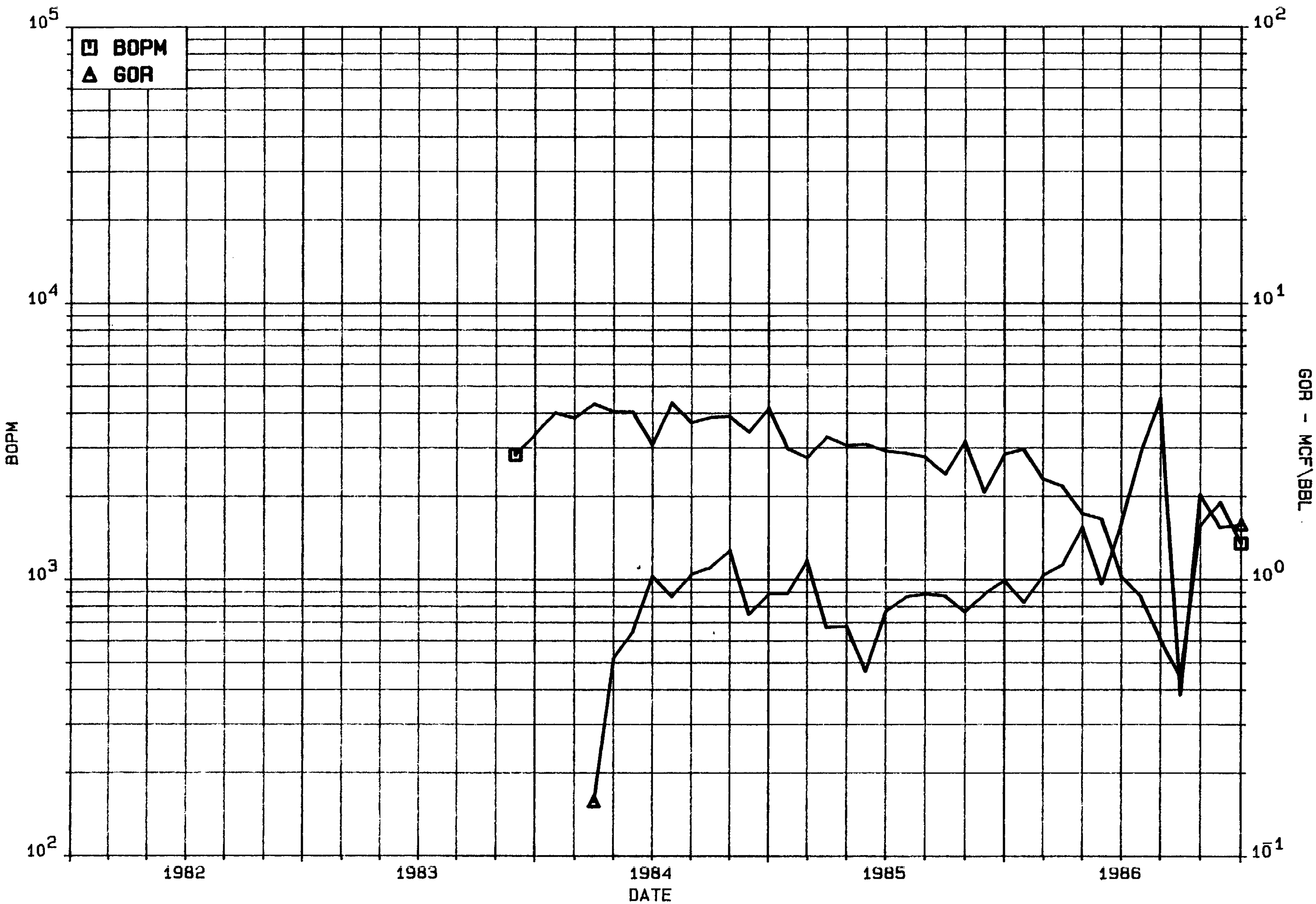
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
J.P.MCHUGH, WRIGHT WAY #1. (NW 2-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	2965.0	95.6	95.6	90.0	2442.0	78.8	62.1	823.6	30.0	1.0	1.2
1986	2	27.0	2305.0	85.4	82.3	92.3	2390.0	88.5	64.5	1036.9	18.0	0.7	1.2
1986	3	10.0	2159.0	215.9	69.6	94.5	2461.0	246.1	67.0	1139.9	20.0	2.0	1.2
1986	4	29.0	1724.0	59.4	57.5	96.2	2679.0	92.4	69.6	1553.9	20.0	0.7	1.2
1986	5	31.0	1645.0	53.1	53.1	97.9	1578.0	50.9	71.2	959.3	9.0	0.3	1.2
1986	6	30.0	1025.0	34.2	34.2	98.9	1641.0	54.7	72.8	1601.0	14.0	0.5	1.3
1986	7	24.0	863.0	36.0	27.8	99.8	2499.0	104.1	75.3	2895.7	15.0	0.6	1.3
1986	8	31.0	608.0	19.6	19.6	100.4	2757.0	88.9	78.1	4534.5	15.0	0.5	1.3
1986	9	30.0	439.0	14.6	14.6	100.8	167.0	5.6	78.3	380.4	4.0	0.1	1.3
1986	10	31.0	1564.0	50.5	50.5	102.4	3195.0	103.1	81.5	2042.8	15.0	0.5	1.3
1986	11	30.0	1905.0	63.5	63.5	104.3	2919.0	97.3	84.4	1532.3	20.0	0.7	1.3
1986	12	31.0	1349.0	43.5	43.5	105.6	2131.0	68.7	86.5	1579.7	15.0	0.5	1.3
Subtotal		335.0	18551.0	55.4	50.8		26859.0				195.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

J.P. MCHUGH, WRIGHT WAY #1. (NW 2-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

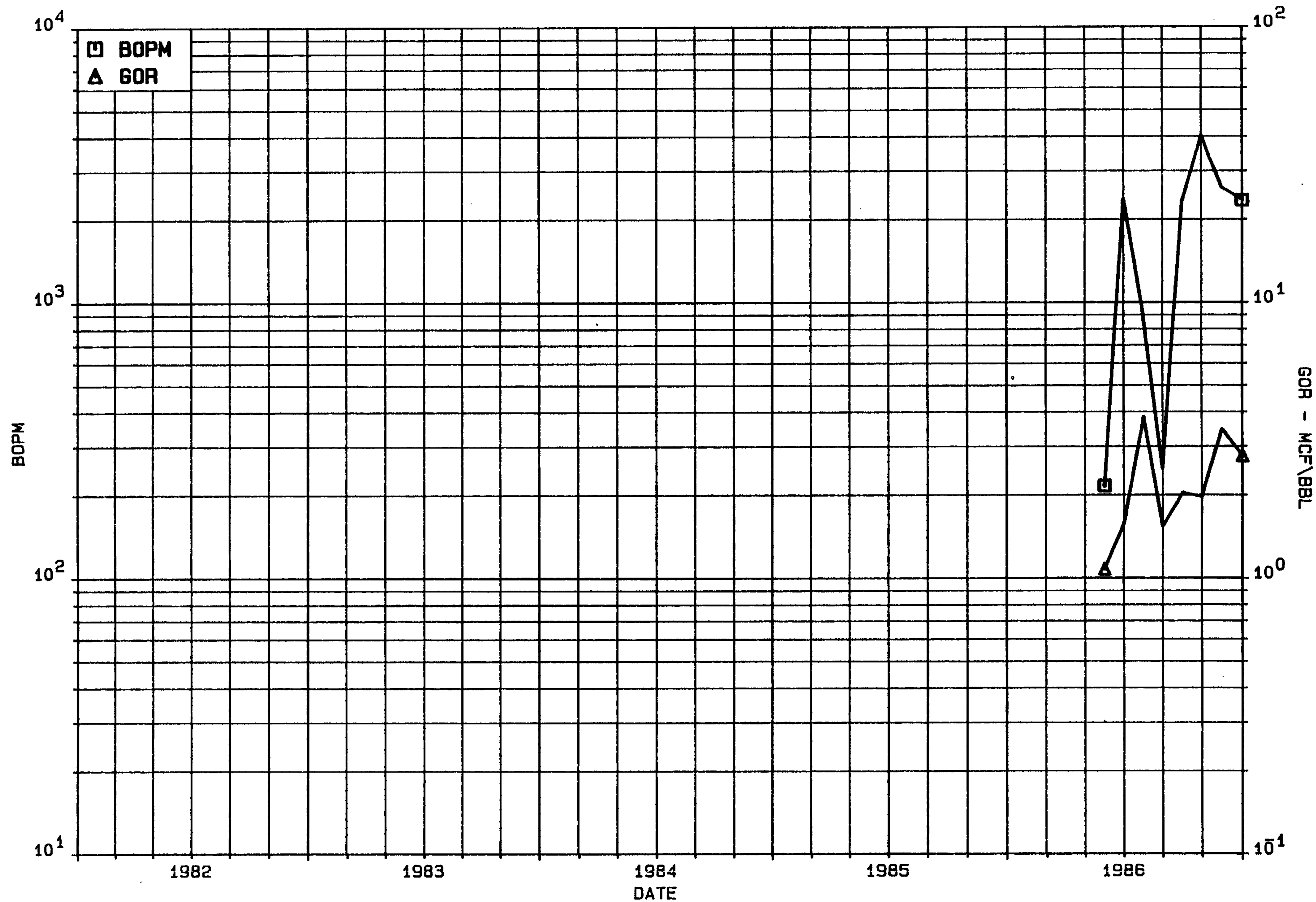


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, BEARCAT #1. (SE 22-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	5	8.0	215.0	26.9	6.9	0.2	230.0	28.8	0.2	1069.8	0.0	0.0	0.0
1986	6	23.0	2374.0	103.2	79.1	2.6	3750.0	163.0	4.0	1579.6	0.0	0.0	0.0
1986	7	11.0	891.0	81.0	28.7	3.5	3435.0	312.3	7.4	3855.2	0.0	0.0	0.0
1986	8	3.0	247.0	82.3	8.0	3.7	376.0	125.3	7.8	1522.3	0.0	0.0	0.0
1986	9	26.0	2330.0	89.6	77.7	6.1	4754.0	182.8	12.5	2040.3	0.0	0.0	0.0
1986	10	30.0	4042.0	134.7	130.4	10.1	7906.0	263.5	20.5	1956.0	1.0	0.0	0.0
1986	11	30.0	2600.0	86.7	86.7	12.7	9023.0	300.8	29.5	3470.4	0.0	0.0	0.0
1986	12	27.0	2340.0	86.7	75.5	15.0	6444.0	238.7	35.9	2753.8	0.0	0.0	0.0
Subtotal		158.0	15039.0	95.2	61.4		35918.0				1.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, BEARCAT #1. (SE 22-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

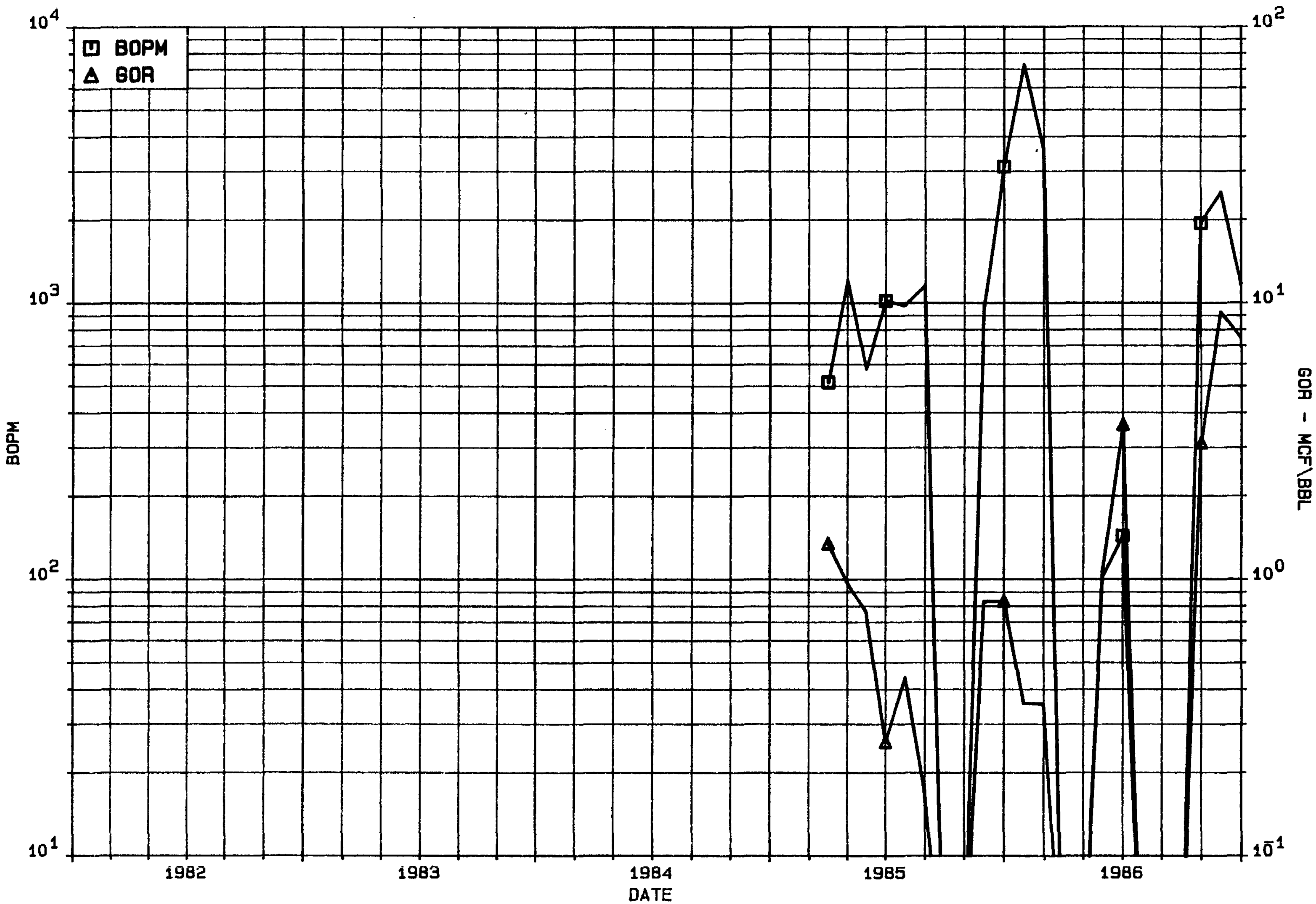


SAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES. BROWN #1. (SW 17-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985 3	10.0	517.0	51.7	16.7	0.5	700.0	70.0	0.7	1354.0	48.0	4.8	0.0
1985 4	24.0	1220.0	50.8	40.7	1.7	1185.0	49.4	1.9	971.3	231.0	9.6	0.3
1985 5	9.0	576.0	64.0	18.6	2.3	440.0	48.9	2.3	763.9	47.0	5.2	0.3
1985 6	12.0	1023.0	85.3	34.1	3.3	265.0	22.1	2.6	259.0	33.0	2.8	0.4
1985 7	18.0	977.0	54.3	31.5	4.3	435.0	24.2	3.0	445.2	7.0	0.4	0.4
1985 8	8.0	1170.0	146.3	37.7	5.5	200.0	25.0	3.2	170.9	30.0	3.8	0.4
1985 9	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.2	0.0	0.0	0.0	0.4
1985 10	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.2	0.0	0.0	0.0	0.4
1985 11	30.0	968.0	32.3	32.3	6.5	810.0	27.0	4.0	836.8	88.0	2.9	0.5
1985 12	24.0	3119.0	130.0	100.6	9.6	2610.0	108.8	6.6	836.8	476.0	19.8	1.0
Subtotal	135.0	9570.0	70.9	31.3		6645.0				960.0		
1986 1	30.0	7326.0	244.2	236.3	16.9	2610.0	87.0	9.3	356.3	5.0	0.2	1.0
1986 2	15.0	3563.0	237.5	127.3	20.5	1260.0	84.0	10.5	353.6	0.0	0.0	1.0
1986 3	0.0	0.0	0.0	0.0	20.5	0.0	0.0	10.5	0.0	0.0	0.0	1.0
1986 4	0.0	0.0	0.0	0.0	20.5	0.0	0.0	10.5	0.0	0.0	0.0	1.0
1986 5	2.0	102.0	51.0	3.3	20.6	110.0	55.0	10.6	1078.4	0.0	0.0	1.0
1986 6	2.0	144.0	72.0	4.8	20.7	524.0	262.0	11.1	3638.9	0.0	0.0	1.0
1986 7	0.0	0.0	0.0	0.0	20.7	0.0	0.0	11.1	0.0	0.0	0.0	1.0
1986 8	0.0	0.0	0.0	0.0	20.7	0.0	0.0	11.1	0.0	0.0	0.0	1.0
1986 9	0.0	0.0	0.0	0.0	20.7	0.0	0.0	11.1	0.0	0.0	0.0	1.0
1986 10	17.0	1948.0	114.6	62.8	22.7	6080.0	357.6	17.2	3121.1	7.0	0.4	1.0
1986 11	24.0	2533.0	105.5	84.4	25.2	23690.0	987.1	40.9	9352.5	0.0	0.0	1.0
1986 12	20.0	1170.0	58.5	37.7	26.4	8765.0	438.3	49.7	7491.5	0.0	0.0	1.0
Subtotal	110.0	16786.0	152.6	46.0		43039.0				12.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, BROWN #1. (SW 17-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MESA GRANDE RESOURCES. GAVILAN FED #1. (NE 26-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1982	3	3.0	1079.0	359.7	34.8	1.1	1135.0	378.3	1.1	1051.9	0.0	0.0	0.0
1982	4	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	0.0	0.0
1982	5	1.0	65.0	65.0	2.1	1.1	0.0	0.0	1.1	0.0	96.0	96.0	0.1
1982	6	30.0	1197.0	39.9	39.9	2.3	9129.0	304.3	10.3	7626.6	57.0	1.9	0.2
1982	7	24.0	547.0	22.8	17.6	2.9	10293.0	428.9	20.6	18817.2	3.0	0.1	0.2
1982	8	18.0	882.0	49.0	28.5	3.8	8249.0	458.3	28.8	9352.6	13.0	0.7	0.2
1982	9	25.0	971.0	38.8	32.4	4.7	8116.0	324.6	36.9	8358.4	23.0	0.9	0.2
1982	10	31.0	878.0	28.3	28.3	5.6	8847.0	285.4	45.8	10076.3	31.0	1.0	0.2
1982	11	15.0	778.0	51.9	25.9	6.4	7733.0	515.5	53.5	9939.6	3.0	0.2	0.2
1982	12	14.0	761.0	54.4	24.5	7.2	8606.0	614.7	62.1	11308.8	0.0	0.0	0.2
Subtotal		161.0	7158.0	44.5	23.4		62108.0				226.0		
1983	1	25.0	1563.0	62.5	50.4	8.7	14408.0	576.3	76.5	9218.2	4.0	0.2	0.2
1983	2	20.0	989.0	49.5	35.3	9.7	12591.0	629.6	89.1	12731.0	1.0	0.1	0.2
1983	3	5.0	206.0	41.2	6.6	9.9	4061.0	812.2	93.2	19713.6	0.0	0.0	0.2
1983	4	16.0	1073.0	67.1	35.8	11.0	8552.0	534.5	101.7	7970.2	2.0	0.1	0.2
1983	5	31.0	1575.0	50.8	50.8	12.6	18790.0	606.1	120.5	11930.2	60.0	1.9	0.3
1983	6	30.0	1523.0	50.8	50.8	14.1	17829.0	594.3	138.3	11706.5	5.0	0.2	0.3
1983	7	19.0	1173.0	61.7	37.8	15.3	10568.0	556.2	148.9	9009.4	6.0	0.3	0.3
1983	8	31.0	3030.0	97.7	97.7	18.3	15119.0	487.7	164.0	4989.8	60.0	1.9	0.4
1983	9	30.0	3254.0	108.5	108.5	21.5	11560.0	385.3	175.6	3552.6	40.0	1.3	0.4
1983	10	24.0	447.0	18.6	14.4	22.0	3888.0	162.0	179.5	8698.0	92.0	3.8	0.5
1983	11	30.0	171.0	5.7	5.7	22.2	1329.0	44.3	180.8	7771.9	0.0	0.0	0.5
1983	12	30.0	2477.0	82.6	79.9	24.6	10970.0	365.7	191.8	4428.7	4.0	0.1	0.5
Subtotal		291.0	17481.0	60.1	47.9		129665.0				274.0		
1984	1	27.0	2707.0	100.3	87.3	27.3	8640.0	320.0	200.4	3191.7	0.0	0.0	0.5
1984	2	22.0	2613.0	118.8	90.1	30.0	6452.0	293.3	206.9	2469.2	0.0	0.0	0.5
1984	3	31.0	2849.0	91.9	91.9	32.8	7526.0	242.8	214.4	2641.6	3.0	0.1	0.5
1984	4	28.0	2886.0	103.1	96.2	35.7	7006.0	250.2	221.4	2427.6	6.0	0.2	0.5
1984	5	31.0	2933.0	94.6	94.6	38.6	7639.0	246.4	229.0	2604.5	2.0	0.1	0.5
1984	6	30.0	2457.0	81.9	81.9	41.1	5462.0	182.1	234.5	2223.0	1.0	0.0	0.5
1984	7	28.0	2648.0	94.6	85.4	43.7	6519.0	232.8	241.0	2461.9	0.0	0.0	0.5
1984	8	31.0	2533.0	81.7	81.7	46.3	10243.0	330.4	251.3	4043.8	0.0	0.0	0.5
1984	9	30.0	2223.0	74.1	74.1	48.5	11991.0	399.7	263.3	5394.1	0.0	0.0	0.5
1984	10	31.0	2263.0	73.0	73.0	50.8	11742.0	378.8	275.0	5188.7	0.0	0.0	0.5
1984	11	30.0	2385.0	79.5	79.5	53.1	11354.0	378.5	286.3	4760.6	0.0	0.0	0.5
1984	12	31.0	2489.0	80.3	80.3	55.6	10298.0	332.2	296.6	4137.4	0.0	0.0	0.5
Subtotal		350.0	30986.0	88.5	84.7		104872.0				12.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

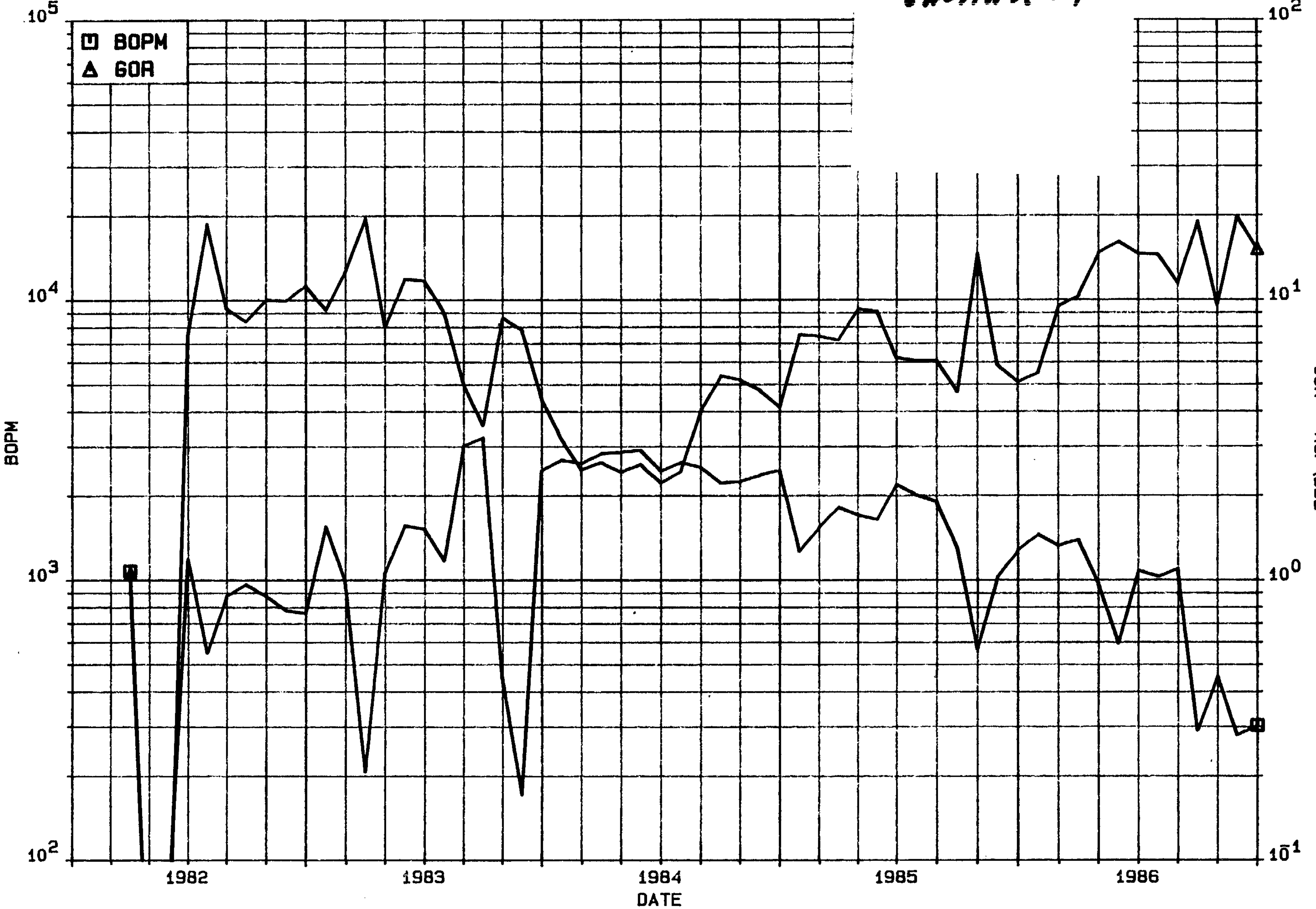
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, GAVILAN FED #1. (NE 26-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1985	1	23.0	1268.0	55.1	40.9	56.9	9593.0	417.1	306.2	7565.5	0.0	0.0	0.5
1985	2	23.0	1551.0	67.4	55.4	58.4	11506.0	500.3	317.7	7418.4	0.0	0.0	0.5
1985	3	28.0	1835.0	65.5	59.2	60.3	13183.0	470.8	330.9	7184.2	0.0	0.0	0.5
1985	4	30.0	1710.0	57.0	57.0	62.0	15959.0	532.0	346.9	9332.7	3.0	0.1	0.5
1985	5	31.0	1649.0	53.2	53.2	63.6	15007.0	484.1	361.9	9100.7	15.0	0.5	0.5
1985	6	30.0	2210.0	73.7	73.7	65.8	13702.0	456.7	375.6	6200.0	2.0	0.1	0.5
1985	7	31.0	2010.0	64.8	64.8	67.9	12196.0	393.4	387.8	6067.7	2.0	0.1	0.5
1985	8	31.0	1904.0	61.4	61.4	69.8	11546.0	372.5	399.3	6064.1	0.0	0.0	0.5
1985	9	17.0	1297.0	76.3	43.2	71.1	6079.0	357.6	405.4	4687.0	0.0	0.0	0.5
1985	10	31.0	567.0	18.3	18.3	71.6	8375.0	270.2	413.8	14770.7	0.0	0.0	0.5
1985	11	30.0	1033.0	34.4	34.4	72.7	6047.0	201.6	419.8	5853.8	13.0	0.4	0.5
1985	12	31.0	1287.0	41.5	41.5	73.9	6524.0	210.5	426.4	5069.2	5.0	0.2	0.6
Subtotal		336.0	18321.0	54.5	50.2		129717.0				40.0		
1986	1	31.0	1469.0	47.4	47.4	75.4	8101.0	261.3	434.5	5514.6	6.0	0.2	0.6
1986	2	27.0	1330.0	49.3	47.5	76.7	12677.0	469.5	447.1	9531.6	0.0	0.0	0.6
1986	3	29.0	1407.0	48.5	45.4	78.2	14630.0	504.5	461.8	10398.0	2.0	0.1	0.6
1986	4	29.0	972.0	33.5	32.4	79.1	14393.0	496.3	476.2	14807.6	0.0	0.0	0.6
1986	5	19.0	596.0	31.4	19.2	79.7	9686.0	509.8	485.8	16251.7	7.0	0.4	0.6
1986	6	30.0	1090.0	36.3	36.3	80.8	15914.0	530.5	501.8	14600.0	0.0	0.0	0.6
1986	7	31.0	1031.0	33.3	33.3	81.8	14962.0	482.6	516.7	14512.1	0.0	0.0	0.6
1986	8	31.0	1109.0	35.8	35.8	82.9	12700.0	409.7	529.4	11451.8	0.0	0.0	0.6
1986	9	24.0	291.0	12.1	9.7	83.2	5584.0	232.7	535.0	19189.0	0.0	0.0	0.6
1986	10	19.0	461.0	24.3	14.9	83.7	4420.0	232.6	539.4	9587.9	0.0	0.0	0.6
1986	11	30.0	281.0	9.4	9.4	84.0	5600.0	186.7	545.0	19928.8	0.0	0.0	0.6
1986	12	13.0	306.0	23.5	9.9	84.3	4652.0	357.8	549.7	15202.6	0.0	0.0	0.6
Subtotal		313.0	10343.0	33.0	28.3		123319.0				15.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, GAVILAN FED #1. (NE 26-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

Gavilan #1



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, GAVILAN FEE #3, (NW 26-25N-2W)
DUAL COMPLETION: GAVILAN MANCOS.

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	8	18.0	1239.0	68.8	40.0	1.2	604.0	33.6	0.6	487.5	360.0	20.0	0.4
1983	9	25.0	1149.0	46.0	38.3	2.4	2217.0	88.7	2.8	1929.5	58.0	2.3	0.4
1983	10	26.0	1330.0	51.2	42.9	3.7	5417.0	208.3	8.2	4072.9	4.0	0.2	0.4
1983	11	15.0	916.0	61.1	30.5	4.6	3456.0	230.4	11.7	3772.9	0.0	0.0	0.4
1983	12	30.0	1056.0	35.2	34.1	5.7	5316.0	177.2	17.0	5034.1	33.0	1.1	0.5
Subtotal		114.0	5690.0	49.9	37.2		17010.0				455.0		
1984	1	26.0	1131.0	43.5	36.5	6.8	2958.0	113.8	20.0	2615.4	11.0	0.4	0.5
1984	2	23.0	1129.0	49.1	38.9	8.0	2657.0	115.5	22.6	2353.4	11.0	0.5	0.5
1984	3	31.0	1252.0	40.4	40.4	9.2	2804.0	90.5	25.4	2239.6	86.0	2.8	0.6
1984	4	30.0	1165.0	38.8	38.8	10.4	4817.0	160.6	30.2	4134.8	94.0	3.1	0.7
1984	5	31.0	833.0	26.9	26.9	11.2	7339.0	236.7	37.6	8810.3	22.0	0.7	0.7
1984	6	30.0	611.0	20.4	20.4	11.8	10071.0	335.7	47.7	16482.8	1.0	0.0	0.7
1984	7	29.0	507.0	17.5	16.4	12.3	14204.0	489.8	61.9	28015.8	0.0	0.0	0.7
1984	8	31.0	537.0	17.3	17.3	12.9	14701.0	474.2	76.6	27376.2	0.0	0.0	0.7
1984	9	30.0	648.0	21.6	21.6	13.5	14752.0	491.7	91.3	22765.4	0.0	0.0	0.7
1984	10	31.0	641.0	20.7	20.7	14.1	15144.0	488.5	106.5	23625.6	0.0	0.0	0.7
1984	11	30.0	575.0	19.2	19.2	14.7	16144.0	538.1	122.6	28076.5	0.0	0.0	0.7
1984	12	31.0	514.0	16.6	16.6	15.2	17740.0	572.3	140.3	34513.6	0.0	0.0	0.7
Subtotal		353.0	9543.0	27.0	26.1		123331.0				225.0		
1985	1	22.0	392.0	17.8	12.6	15.6	13960.0	634.5	154.3	35612.2	0.0	0.0	0.7
1985	2	25.0	365.0	14.6	13.0	16.0	15939.0	637.6	170.2	43668.5	0.0	0.0	0.7
1985	3	29.0	732.0	25.2	23.6	16.7	19483.0	671.8	189.7	26616.1	0.0	0.0	0.7
1985	4	30.0	687.0	22.9	22.9	17.4	6430.0	214.3	196.2	9359.5	13.0	0.4	0.7
1985	5	9.0	304.0	33.8	9.8	17.7	1369.0	152.1	197.5	4503.3	4.0	0.4	0.7
1985	6	18.0	469.0	26.1	15.6	18.2	3465.0	192.5	201.0	7388.1	0.0	0.0	0.7
1985	7	8.0	246.0	30.8	7.9	18.4	339.0	42.4	201.3	1378.0	0.0	0.0	0.7
1985	8	8.0	947.0	118.4	30.5	19.4	2531.0	316.4	203.9	2672.7	0.0	0.0	0.7
1985	9	9.0	280.0	31.1	9.3	19.7	2712.0	301.3	206.6	9685.7	0.0	0.0	0.7
1985	10	31.0	1054.0	34.0	34.0	20.7	4248.0	137.0	210.8	4030.4	32.0	1.0	0.7
1985	11	26.0	877.0	33.7	29.2	21.6	3397.0	130.7	214.2	3873.4	0.0	0.0	0.7
1985	12	31.0	1108.0	35.7	35.7	22.7	4524.0	145.9	218.7	4083.0	0.0	0.0	0.7
Subtotal		246.0	7461.0	30.3	20.4		78397.0				49.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, GAVILAN FEE #3. (NW 26-25N-2W)
DUAL COMPLETION: GAVILAN MANCOS.

YR MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1983 8	18.0	1239.0	68.8	40.0	1.2	604.0	33.6	0.6	487.5	360.0	20.0	0.4
1983 9	25.0	1149.0	46.0	38.3	2.4	2217.0	88.7	2.8	1929.5	58.0	2.3	0.4
1983 10	26.0	1330.0	51.2	42.9	3.7	5417.0	208.3	8.2	4072.9	4.0	0.2	0.4
1983 11	15.0	916.0	61.1	30.5	4.6	3456.0	230.4	11.7	3772.9	0.0	0.0	0.4
1983 12	30.0	1056.0	35.2	34.1	5.7	5316.0	177.2	17.0	5034.1	33.0	1.1	0.5
Subtotal	114.0	5690.0	49.9	37.2		17010.0				455.0		
1984 1	26.0	1131.0	43.5	36.5	6.8	2958.0	113.8	20.0	2615.4	11.0	0.4	0.5
1984 2	23.0	1129.0	49.1	38.9	8.0	2657.0	115.5	22.6	2353.4	11.0	0.5	0.5
1984 3	31.0	1252.0	40.4	40.4	9.2	2804.0	90.5	25.4	2239.6	86.0	2.8	0.6
1984 4	30.0	1165.0	38.8	38.8	10.4	4817.0	160.6	30.2	4134.8	94.0	3.1	0.7
1984 5	31.0	833.0	26.9	26.9	11.2	7339.0	236.7	37.6	8810.3	22.0	0.7	0.7
1984 6	30.0	611.0	20.4	20.4	11.8	10071.0	335.7	47.7	16482.8	1.0	0.0	0.7
1984 7	29.0	507.0	17.5	16.4	12.3	14204.0	489.8	61.9	28015.8	0.0	0.0	0.7
1984 8	31.0	537.0	17.3	17.3	12.9	14701.0	474.2	76.6	27376.2	0.0	0.0	0.7
1984 9	30.0	648.0	21.6	21.6	13.5	14752.0	491.7	91.3	22765.4	0.0	0.0	0.7
1984 10	31.0	641.0	20.7	20.7	14.1	15144.0	488.5	106.5	23625.6	0.0	0.0	0.7
1984 11	30.0	575.0	19.2	19.2	14.7	16144.0	538.1	122.6	28076.5	0.0	0.0	0.7
1984 12	31.0	514.0	16.6	16.6	15.2	17740.0	572.3	140.3	34513.6	0.0	0.0	0.7
Subtotal	353.0	9543.0	27.0	26.1		123331.0				225.0		
1985 1	22.0	392.0	17.8	12.6	15.6	13960.0	634.5	154.3	35612.2	0.0	0.0	0.7
1985 2	25.0	365.0	14.6	13.0	16.0	15939.0	637.6	170.2	43668.5	0.0	0.0	0.7
1985 3	29.0	732.0	25.2	23.6	16.7	19483.0	671.8	189.7	26616.1	0.0	0.0	0.7
1985 4	30.0	687.0	22.9	22.9	17.4	6430.0	214.3	196.2	9359.5	13.0	0.4	0.7
1985 5	9.0	304.0	33.8	9.8	17.7	1369.0	152.1	197.5	4503.3	4.0	0.4	0.7
1985 6	18.0	469.0	26.1	15.6	18.2	3465.0	192.5	201.0	7388.1	0.0	0.0	0.7
1985 7	8.0	246.0	30.8	7.9	18.4	339.0	42.4	201.3	1378.0	0.0	0.0	0.7
1985 8	8.0	947.0	118.4	30.5	19.4	2531.0	316.4	203.9	2672.7	0.0	0.0	0.7
1985 9	9.0	280.0	31.1	9.3	19.7	2712.0	301.3	206.6	9685.7	0.0	0.0	0.7
1985 10	31.0	1054.0	34.0	34.0	20.7	4248.0	137.0	210.8	4030.4	32.0	1.0	0.7
1985 11	26.0	877.0	33.7	29.2	21.6	3397.0	130.7	214.2	3873.4	0.0	0.0	0.7
1985 12	31.0	1108.0	35.7	35.7	22.7	4524.0	145.9	218.7	4083.0	0.0	0.0	0.7
Subtotal	246.0	7461.0	30.3	20.4		78397.0				49.0		

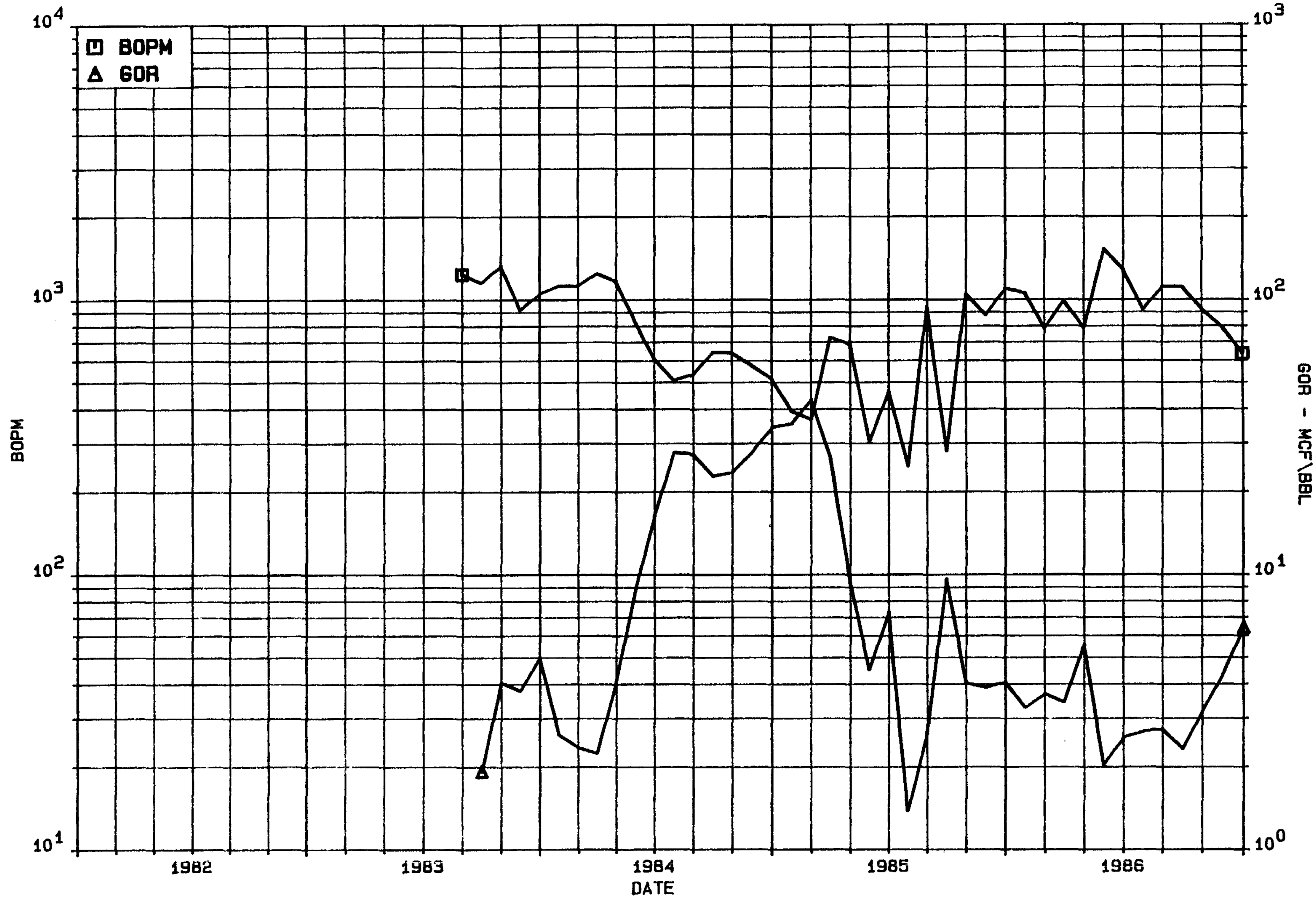
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, GAVILAN FEE #3. (NW 26-25N-2W)
DUAL COMPLETION: GAVILAN MANCOS.

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	1057.0	34.1	34.1	23.8	3459.0	111.6	222.2	3272.5	0.0	0.0	0.7
1986	2	28.0	786.0	28.1	28.1	24.5	2913.0	104.0	225.1	3706.1	0.0	0.0	0.7
1986	3	31.0	998.0	32.2	32.2	25.5	3425.0	110.5	228.5	3431.9	0.0	0.0	0.7
1986	4	29.0	790.0	27.2	26.3	26.3	4420.0	152.4	233.0	5594.9	0.0	0.0	0.7
1986	5	26.0	1540.0	59.2	49.7	27.9	3130.0	120.4	236.1	2032.5	0.0	0.0	0.7
1986	6	30.0	1284.0	42.8	42.8	29.1	3304.0	110.1	239.4	2573.2	0.0	0.0	0.7
1986	7	31.0	918.0	29.6	29.6	30.1	2486.0	80.2	241.9	2708.1	0.0	0.0	0.7
1986	8	31.0	1119.0	36.1	36.1	31.2	3098.0	99.9	245.0	2768.5	0.0	0.0	0.7
1986	9	30.0	1117.0	37.2	37.2	32.3	2598.0	86.6	247.6	2325.9	0.0	0.0	0.7
1986	10	27.0	922.0	34.1	29.7	33.2	2957.0	109.5	250.5	3207.2	0.0	0.0	0.7
1986	11	29.0	795.0	27.4	26.5	34.0	3438.0	118.6	254.0	4324.5	0.0	0.0	0.7
1986	12	30.0	638.0	21.3	20.6	34.7	4114.0	137.1	258.1	6448.3	15.0	0.5	0.7
Subtotal		353.0	11964.0	33.9	32.8		39342.0				15.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, GAVILAN FEE #3. (NW 26-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

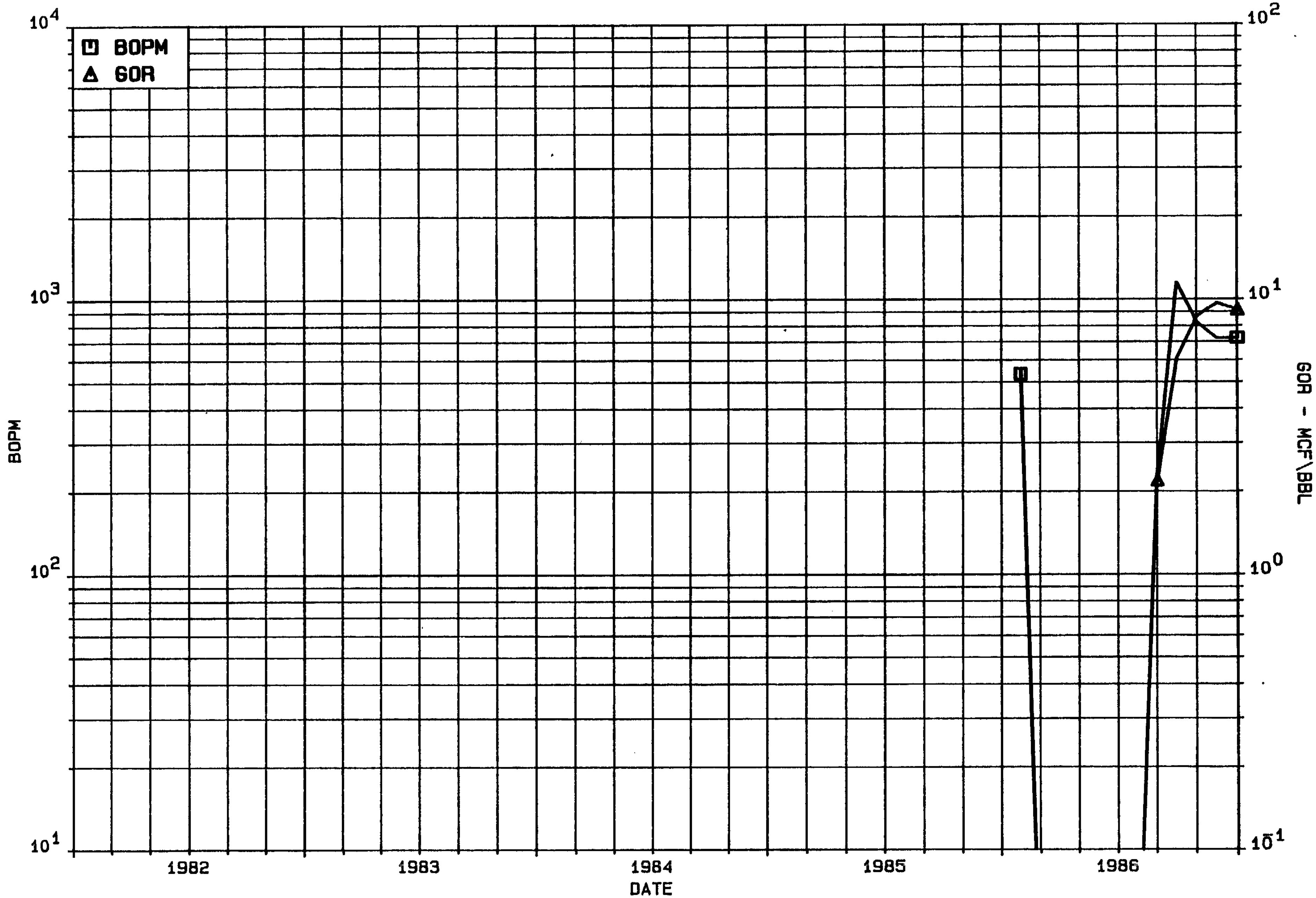


GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, HELLCAT #1. (NW 22-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	5.0	533.0	106.6	17.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	7	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	4.0	226.0	56.5	7.3	0.8	494.0	123.5	0.5	2185.8	0.0	0.0	0.0
1986	9	24.0	1149.0	47.9	38.3	1.9	7001.0	291.7	7.5	6093.1	0.0	0.0	0.0
1986	10	26.0	825.0	31.7	26.6	2.7	7105.0	273.3	14.6	8612.1	0.0	0.0	0.0
1986	11	25.0	716.0	28.6	23.9	3.4	6930.0	277.2	21.5	9678.8	0.0	0.0	0.0
1986	12	30.0	719.0	24.0	23.2	4.2	6560.0	218.7	28.1	9123.8	0.0	0.0	0.0
Subtotal		114.0	4168.0	36.6	11.4		28090.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, HELLCAT #1. (NW 22-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

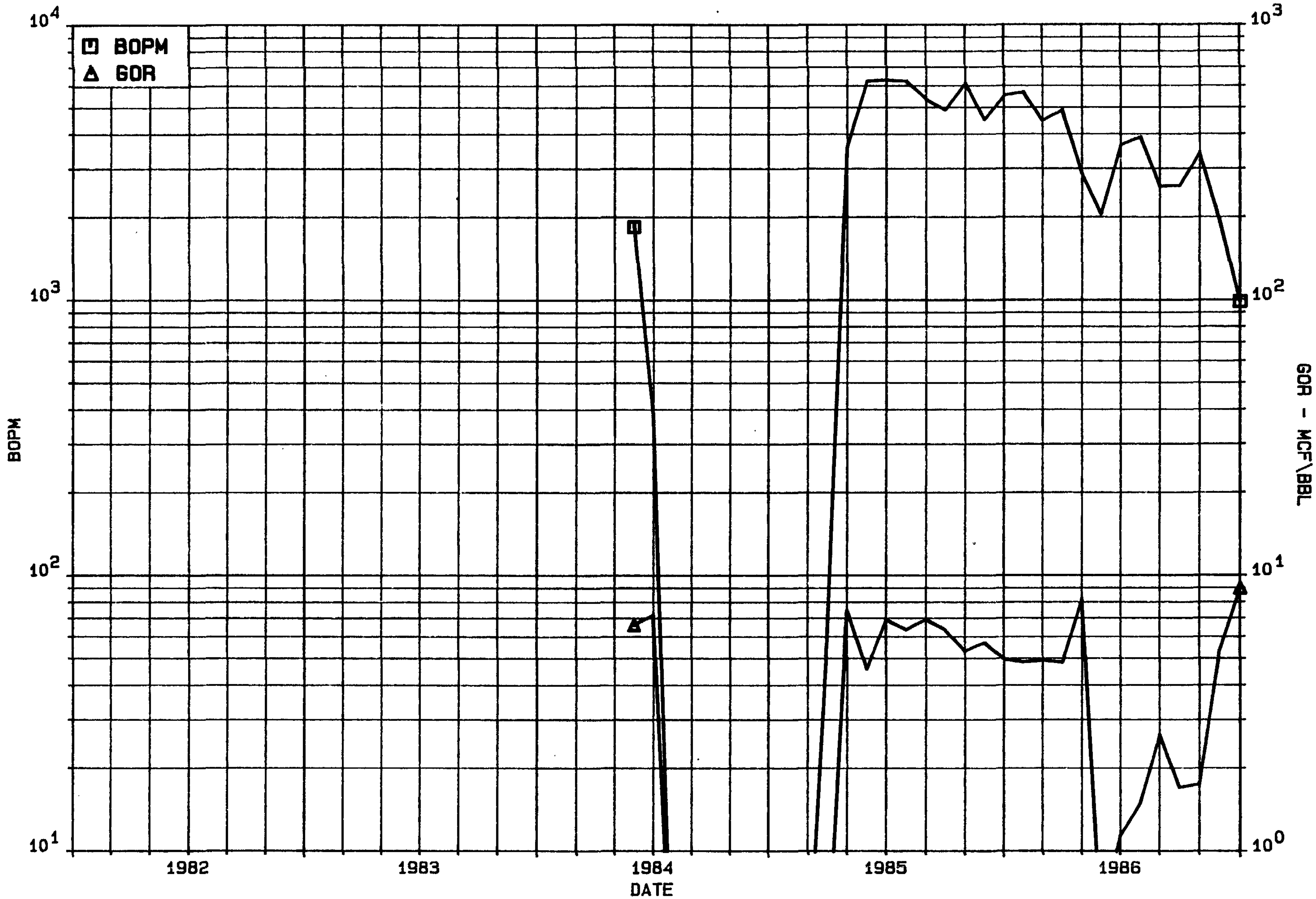


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, HOWARD #1. (NW 23-25N-2W)
DUAL COMPLETION: GAVILAN MANCOS.

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984	5	17.0	1845.0	108.5	59.5	1.8	12240.0	720.0	12.2	6634.1	0.0	0.0	0.0
1984	6	5.0	380.0	76.0	12.7	2.2	2750.0	550.0	15.0	7236.8	0.0	0.0	0.0
1984	7	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1984	8	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1984	9	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1984	10	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1984	11	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1984	12	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
Subtotal		22.0	2225.0	101.1	9.1		14990.0				0.0		
1985	1	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1985	2	0.0	0.0	0.0	0.0	2.2	0.0	0.0	15.0	0.0	0.0	0.0	0.0
1985	3	5.0	59.0	11.8	1.9	2.3	0.0	0.0	15.0	0.0	2.0	0.4	0.0
1985	4	30.0	3611.0	120.4	120.4	5.9	27260.0	908.7	42.3	7549.2	0.0	0.0	0.0
1985	5	31.0	6273.0	202.4	202.4	12.2	28763.0	927.8	71.0	4585.2	0.0	0.0	0.0
1985	6	30.0	6337.0	211.2	211.2	18.5	44141.0	1471.4	115.2	6965.6	0.0	0.0	0.0
1985	7	31.0	6250.0	201.6	201.6	24.8	39724.0	1281.4	154.9	6355.8	0.0	0.0	0.0
1985	8	31.0	5369.0	173.2	173.2	30.1	37512.0	1210.1	192.4	6986.8	0.0	0.0	0.0
1985	9	26.0	4893.0	188.2	163.1	35.0	31052.0	1194.3	223.4	6346.2	0.0	0.0	0.0
1985	10	31.0	6182.0	199.4	199.4	41.2	32933.0	1062.4	256.4	5327.2	0.0	0.0	0.0
1985	11	26.0	4512.0	173.5	150.4	45.7	25921.0	997.0	282.3	5744.9	0.0	0.0	0.0
1985	12	30.0	5550.0	185.0	179.0	51.3	27645.0	921.5	309.9	4981.1	0.0	0.0	0.0
Subtotal		271.0	49036.0	180.9	134.3		294951.0				2.0		
1986	1	31.0	5724.0	184.6	184.6	57.0	27739.0	894.8	337.7	4846.1	0.0	0.0	0.0
1986	2	28.0	4472.0	159.7	159.7	61.5	22122.0	790.1	359.8	4946.8	0.0	0.0	0.0
1986	3	29.0	4912.0	169.4	158.5	66.4	23754.0	819.1	383.6	4835.9	0.0	0.0	0.0
1986	4	29.0	2870.0	99.0	95.7	69.2	23859.0	822.7	407.4	8313.2	0.0	0.0	0.0
1986	5	10.0	2048.0	204.8	66.1	71.3	1155.0	115.5	408.6	564.0	0.0	0.0	0.0
1986	6	30.0	3665.0	122.2	122.2	75.0	4191.0	139.7	412.8	1143.5	0.0	0.0	0.0
1986	7	31.0	3931.0	126.8	126.8	78.9	5919.0	190.9	418.7	1505.7	0.0	0.0	0.0
1986	8	26.0	2582.0	99.3	83.3	81.5	6920.0	266.2	425.6	2680.1	0.0	0.0	0.0
1986	9	26.0	2605.0	100.2	86.8	84.1	4443.0	170.9	430.0	1705.6	0.0	0.0	0.0
1986	10	26.0	3441.0	132.3	111.0	87.5	6055.0	232.9	436.1	1759.7	0.0	0.0	0.0
1986	11	25.0	1963.0	78.5	65.4	89.5	10505.0	420.2	446.6	5351.5	0.0	0.0	0.0
1986	12	18.0	987.0	54.8	31.8	90.5	8899.0	494.4	455.5	9016.2	0.0	0.0	0.0
Subtotal		309.0	39200.0	126.9	107.4		145561.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, HOWARD #1. (NW 23-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

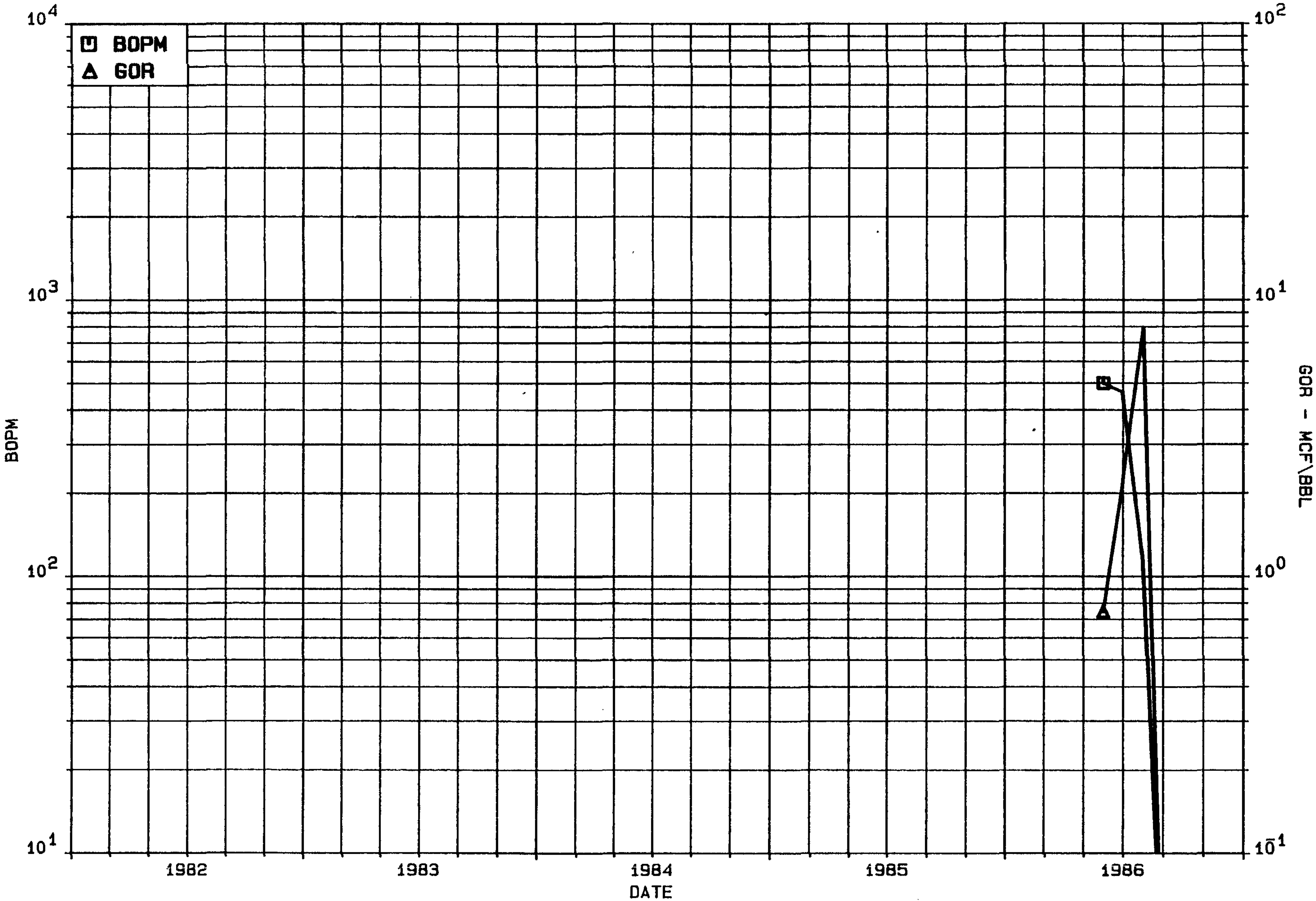


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, INVADER #1. (NW 1-24N-2W)

YR	MO	DAYS PRODUCED	OIL BOPM	OIL BOPPD	OIL BOPCD	OIL CUM MBO	GAS MCF/M	GAS MCF/D	GAS CUM MMCF	GOR SCF/BBL	WATER Month	WATER BWPD	WATER CUM MBW
1986	5	3.0	498.0	166.0	16.1	0.5	370.0	123.3	0.4	743.0	33.0	11.0	0.0
1986	6	19.0	459.0	24.2	15.3	1.0	1008.0	53.1	1.4	2196.1	0.0	0.0	0.0
1986	7	9.0	114.0	12.7	3.7	1.1	907.0	100.8	2.3	7956.1	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	0.0	0.0
1986	11	0.0	0.0	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	0.0	0.0
1986	12	0.0	0.0	0.0	0.0	1.1	0.0	0.0	2.3	0.0	0.0	0.0	0.0
Subtotal		31.0	1071.0	34.5	4.4		2285.0				33.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, INVADER #1. (NW 1-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

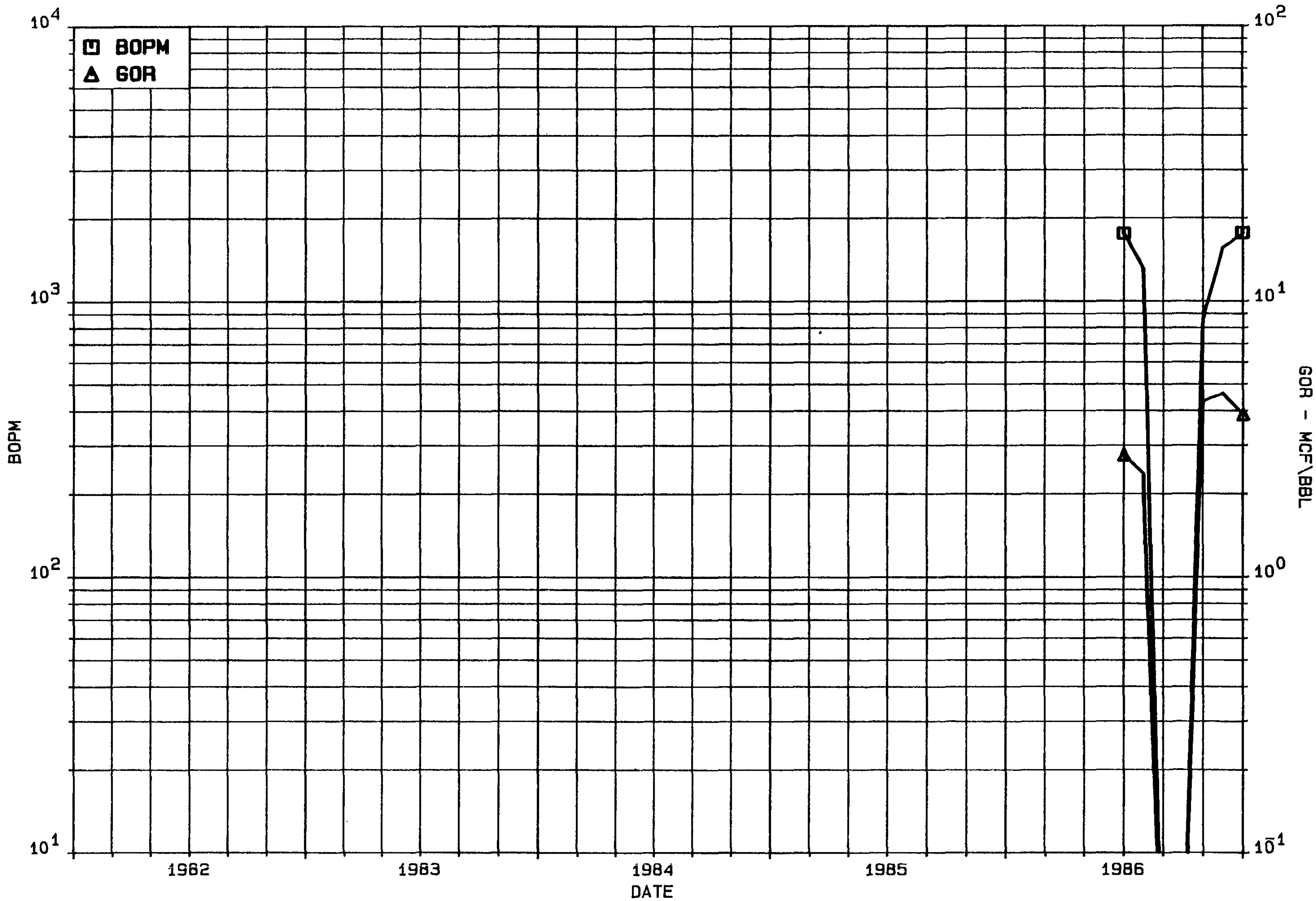


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, MARAUDER #1, (SW 8-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	6	19.0	1756.0	92.4	58.5	1.8	4847.0	255.1	4.8	2760.3	0.0	0.0	0.0
1986	7	12.0	1298.0	108.2	41.9	3.1	3060.0	255.0	7.9	2357.5	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	3.1	0.0	0.0	7.9	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	3.1	0.0	0.0	7.9	0.0	0.0	0.0	0.0
1986	10	18.0	866.0	48.1	27.9	3.9	3757.0	208.7	11.7	4338.3	0.0	0.0	0.0
1986	11	21.0	1559.0	74.2	52.0	5.5	7245.0	345.0	18.9	4647.2	0.0	0.0	0.0
1986	12	22.0	1768.0	80.4	57.0	7.2	6823.0	310.1	25.7	3859.2	0.0	0.0	0.0
Subtotal		92.0	7247.0	78.8	33.9		25732.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, MARAUDER #1. (SW 8-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, RUCKER LAKE #2. (SW 24-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	9	5.0	1602.0	320.4	53.4	1.6	1358.0	271.6	1.4	847.7	0.0	0.0	0.0
1983	10	12.0	4839.0	403.3	156.1	6.4	3231.0	269.3	4.6	667.7	0.0	0.0	0.0
1983	11	18.0	3470.0	192.8	115.7	9.9	2317.0	128.7	6.9	667.7	0.0	0.0	0.0
1983	12	6.0	1162.0	193.7	37.5	11.1	178.0	29.7	7.1	153.2	0.0	0.0	0.0
Subtotal		41.0	11073.0	270.1	90.8		7084.0				0.0		
1984	1	31.0	2756.0	88.9	88.9	13.8	1175.0	37.9	8.3	426.3	0.0	0.0	0.0
1984	2	29.0	4752.0	163.9	163.9	18.6	3464.0	119.4	11.7	729.0	0.0	0.0	0.0
1984	3	31.0	5044.0	162.7	162.7	23.6	3495.0	112.7	15.2	692.9	0.0	0.0	0.0
1984	4	30.0	4547.0	151.6	151.6	28.2	2876.0	95.9	18.1	632.5	0.0	0.0	0.0
1984	5	31.0	4101.0	132.3	132.3	32.3	2661.0	85.8	20.8	648.9	0.0	0.0	0.0
1984	6	30.0	4778.0	159.3	159.3	37.1	2591.0	86.4	23.3	542.3	0.0	0.0	0.0
1984	7	31.0	4776.0	154.1	154.1	41.8	3103.0	100.1	26.4	649.7	0.0	0.0	0.0
1984	8	31.0	4298.0	138.6	138.6	46.1	2824.0	91.1	29.3	657.0	0.0	0.0	0.0
1984	9	30.0	4208.0	140.3	140.3	50.3	2187.0	72.9	31.5	519.7	0.0	0.0	0.0
1984	10	29.0	4150.0	143.1	133.9	54.5	2477.0	85.4	33.9	596.9	0.0	0.0	0.0
1984	11	30.0	3667.0	122.2	122.2	58.2	2233.0	74.4	36.2	608.9	0.0	0.0	0.0
1984	12	31.0	3633.0	117.2	117.2	61.8	1576.0	50.8	37.7	433.8	0.0	0.0	0.0
Subtotal		364.0	50710.0	139.3	138.6		30662.0				0.0		
1985	1	31.0	3871.0	124.9	124.9	65.7	1481.0	47.8	39.2	382.6	0.0	0.0	0.0
1985	2	28.0	3346.0	119.5	119.5	69.0	1816.0	64.9	41.0	542.7	0.0	0.0	0.0
1985	3	31.0	3299.0	106.4	106.4	72.3	1693.0	54.6	42.7	513.2	0.0	0.0	0.0
1985	4	30.0	3375.0	112.5	112.5	75.7	1820.0	60.7	44.6	539.3	0.0	0.0	0.0
1985	5	31.0	4056.0	130.8	130.8	79.7	1584.0	51.1	46.1	390.5	0.0	0.0	0.0
1985	6	30.0	4007.0	133.6	133.6	83.7	1533.0	51.1	47.7	382.6	0.0	0.0	0.0
1985	7	31.0	3570.0	115.2	115.2	87.3	1701.0	54.9	49.4	476.5	0.0	0.0	0.0
1985	8	19.0	1814.0	95.5	58.5	89.1	1144.0	60.2	50.5	630.7	0.0	0.0	0.0
1985	9	18.0	1904.0	105.8	63.5	91.0	810.0	45.0	51.3	425.4	0.0	0.0	0.0
1985	10	7.0	1250.0	178.6	40.3	92.3	491.0	70.1	51.8	392.8	0.0	0.0	0.0
1985	11	26.0	2524.0	97.1	84.1	94.8	1697.0	65.3	53.5	672.3	0.0	0.0	0.0
1985	12	31.0	5456.0	176.0	176.0	100.3	2667.0	86.0	56.2	488.8	0.0	0.0	0.0
Subtotal		313.0	38472.0	122.9	105.4		18437.0				0.0		

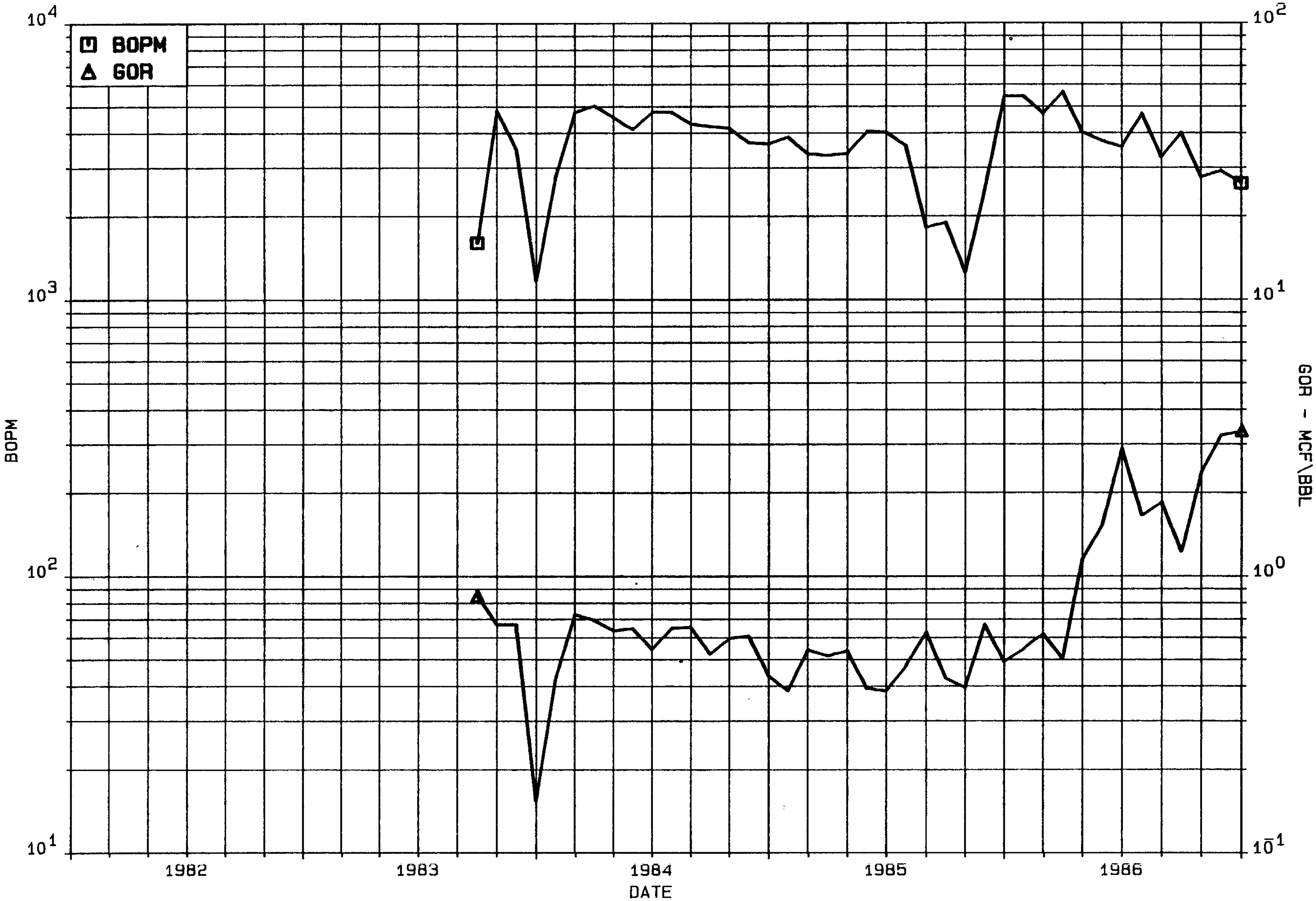
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

SAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, RUCKER LAKE #2. (SW 24-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	5418.0	174.8	174.8	105.7	2963.0	95.6	59.1	546.9	0.0	0.0	0.0
1986	2	28.0	4693.0	167.6	167.6	110.4	2920.0	104.3	62.1	622.2	0.0	0.0	0.0
1986	3	29.0	5647.0	194.7	182.2	116.0	2835.0	97.8	64.9	502.0	0.0	0.0	0.0
1986	4	29.0	4002.0	138.0	133.4	120.0	4604.0	158.8	69.5	1150.4	0.0	0.0	0.0
1986	5	25.0	3717.0	148.7	119.9	123.7	5748.0	229.9	75.3	1546.4	0.0	0.0	0.0
1986	6	30.0	3539.0	118.0	118.0	127.3	10322.0	344.1	85.6	2916.6	0.0	0.0	0.0
1986	7	31.0	4713.0	152.0	152.0	132.0	7738.0	249.6	93.3	1641.8	0.0	0.0	0.0
1986	8	31.0	3251.0	104.9	104.9	135.2	6047.0	195.1	99.4	1860.0	0.0	0.0	0.0
1986	9	26.0	4022.0	154.7	134.1	139.3	4898.0	188.4	104.3	1217.8	0.0	0.0	0.0
1986	10	29.0	2751.0	94.9	88.7	142.0	6540.0	225.5	110.8	2377.3	0.0	0.0	0.0
1986	11	28.0	2921.0	104.3	97.4	144.9	9431.0	336.8	120.2	3228.7	0.0	0.0	0.0
1986	12	31.0	2623.0	84.6	84.6	147.6	8757.0	282.5	129.0	3338.5	0.0	0.0	0.0
Subtotal		348.0	47297.0	135.9	129.6		72803.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, RUCKER LAKE #2. (SW 24-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, RUCKER LAKE #3. (SW 25-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1983	8	7.0	1685.0	240.7	54.4	1.7	530.0	75.7	0.5	314.5	0.0	0.0	0.0
1983	9	14.0	1117.0	79.8	37.2	2.8	904.0	64.6	1.4	809.3	0.0	0.0	0.0
1983	10	14.0	2535.0	181.1	81.8	5.3	1903.0	135.9	3.3	750.7	0.0	0.0	0.0
1983	11	9.0	2529.0	281.0	84.3	7.9	1802.0	200.2	5.1	712.5	0.0	0.0	0.0
1983	12	31.0	2634.0	85.0	85.0	10.5	2817.0	90.9	8.0	1069.5	0.0	0.0	0.0
Subtotal		75.0	10500.0	140.0	68.6		7956.0				0.0		
1984	1	31.0	3795.0	122.4	122.4	14.3	4860.0	156.8	12.8	1280.6	0.0	0.0	0.0
1984	2	29.0	3036.0	104.7	104.7	17.3	4843.0	167.0	17.7	1595.2	0.0	0.0	0.0
1984	3	31.0	2594.0	83.7	83.7	19.9	4479.0	144.5	22.1	1726.7	0.0	0.0	0.0
1984	4	30.0	3655.0	121.8	121.8	23.6	4432.0	147.7	26.6	1212.6	0.0	0.0	0.0
1984	5	31.0	3229.0	104.2	104.2	26.8	4332.0	139.7	30.9	1341.6	0.0	0.0	0.0
1984	6	30.0	3362.0	112.1	112.1	30.2	3997.0	133.2	34.9	1188.9	0.0	0.0	0.0
1984	7	31.0	3171.0	102.3	102.3	33.3	4056.0	130.8	39.0	1279.1	0.0	0.0	0.0
1984	8	31.0	2887.0	93.1	93.1	36.2	3811.0	122.9	42.8	1320.1	0.0	0.0	0.0
1984	9	30.0	3199.0	106.6	106.6	39.4	3317.0	110.6	46.1	1036.9	0.0	0.0	0.0
1984	10	29.0	2976.0	102.6	96.0	42.4	3844.0	132.6	49.9	1291.7	0.0	0.0	0.0
1984	11	30.0	2484.0	82.8	82.8	44.9	2822.0	94.1	52.7	1136.1	0.0	0.0	0.0
1984	12	30.0	2754.0	91.8	88.8	47.6	2149.0	71.6	54.9	780.3	0.0	0.0	0.0
Subtotal		363.0	37142.0	102.3	101.5		46942.0				0.0		
1985	1	30.0	3082.0	102.7	99.4	50.7	1665.0	55.5	56.6	540.2	0.0	0.0	0.0
1985	2	28.0	2563.0	91.5	91.5	53.3	1608.0	57.4	58.2	627.4	0.0	0.0	0.0
1985	3	31.0	2498.0	80.6	80.6	55.8	1550.0	50.0	59.7	620.5	0.0	0.0	0.0
1985	4	30.0	2667.0	88.9	88.9	58.5	1863.0	62.1	61.6	698.5	0.0	0.0	0.0
1985	5	31.0	3156.0	101.8	101.8	61.6	1811.0	58.4	63.4	573.8	0.0	0.0	0.0
1985	6	30.0	2708.0	90.3	90.3	64.3	1816.0	60.5	65.2	670.6	0.0	0.0	0.0
1985	7	31.0	1820.0	58.7	58.7	66.1	1951.0	62.9	67.2	1072.0	0.0	0.0	0.0
1985	8	19.0	1526.0	80.3	49.2	67.7	1192.0	62.7	68.4	781.1	0.0	0.0	0.0
1985	9	12.0	948.0	79.0	31.6	68.6	973.0	81.1	69.3	1026.4	0.0	0.0	0.0
1985	10	7.0	1117.0	159.6	36.0	69.7	792.0	113.1	70.1	709.0	0.0	0.0	0.0
1985	11	30.0	2426.0	80.9	80.9	72.2	1864.0	62.1	72.0	768.3	3.0	0.1	0.0
1985	12	31.0	3131.0	101.0	101.0	75.3	1954.0	63.0	73.9	624.1	0.0	0.0	0.0
Subtotal		310.0	27642.0	89.2	75.7		19039.0				3.0		

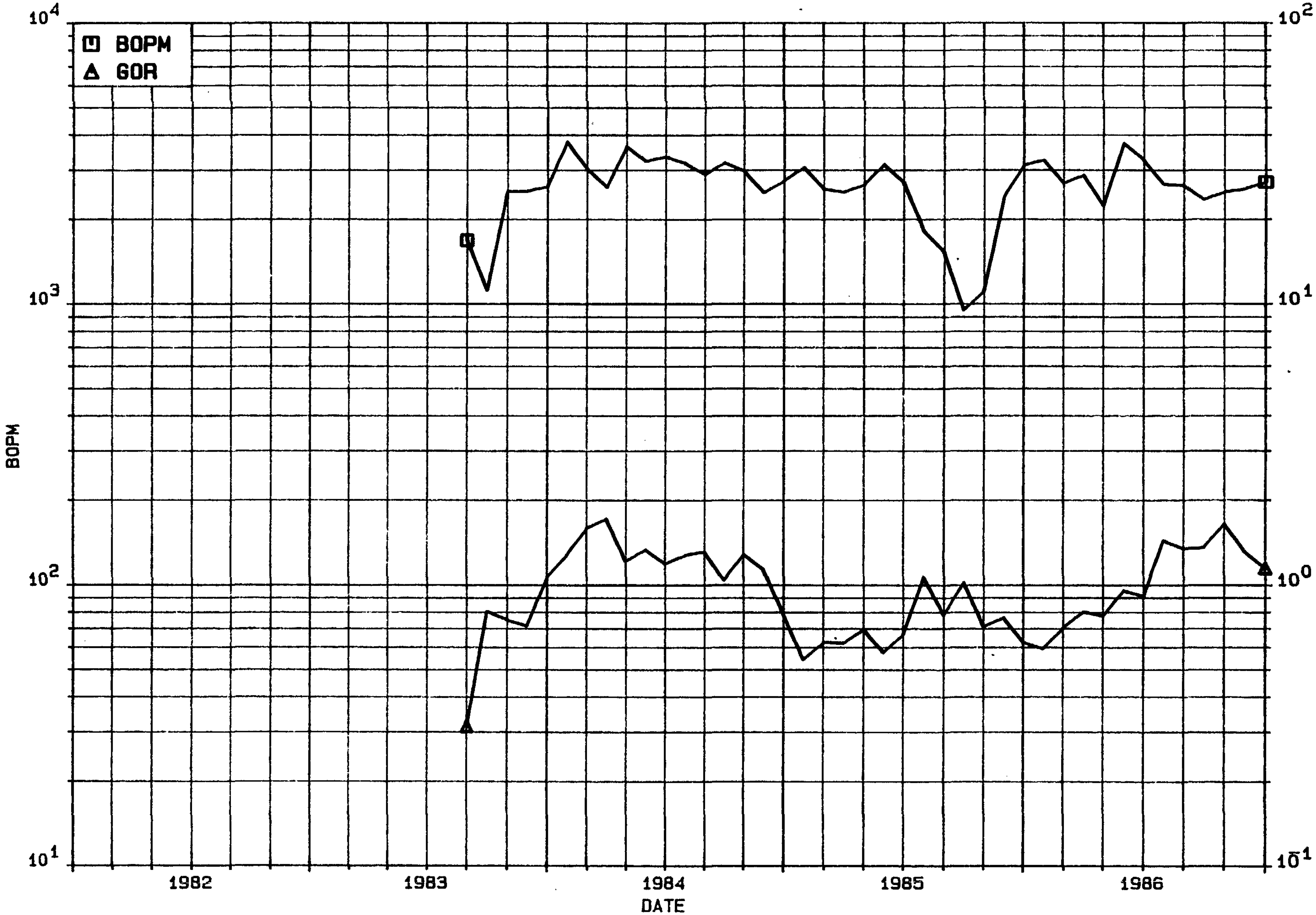
* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MESA GRANDE RESOURCES, RUCKER LAKE #3. (SW 25-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	31.0	3277.0	105.7	105.7	78.6	1939.0	62.5	75.9	591.7	0.0	0.0	0.0
1986	2	28.0	2685.0	95.9	95.9	81.2	1898.0	67.8	77.8	706.9	0.0	0.0	0.0
1986	3	31.0	2888.0	93.2	93.2	84.1	2327.0	75.1	80.1	805.7	0.0	0.0	0.0
1986	4	23.0	2237.0	97.3	74.6	86.4	1735.0	75.4	81.8	775.6	3.0	0.1	0.0
1986	5	31.0	3753.0	121.1	121.1	90.1	3600.0	116.1	85.4	959.2	3.0	0.1	0.0
1986	6	30.0	3261.0	108.7	108.7	93.4	2967.0	98.9	88.4	909.8	0.0	0.0	0.0
1986	7	31.0	2661.0	85.8	85.8	96.0	3852.0	124.3	92.3	1447.6	0.0	0.0	0.0
1986	8	31.0	2637.0	85.1	85.1	98.7	3543.0	114.3	95.8	1343.6	0.0	0.0	0.0
1986	9	25.0	2348.0	93.9	78.3	101.0	3212.0	128.5	99.0	1368.0	0.0	0.0	0.0
1986	10	30.0	2513.0	83.8	81.1	103.5	4169.0	139.0	103.2	1659.0	2.0	0.1	0.0
1986	11	30.0	2573.0	85.8	85.8	106.1	3392.0	113.1	106.6	1318.3	3.0	0.1	0.0
1986	12	31.0	2720.0	87.7	87.7	108.8	3121.0	100.7	109.7	1147.4	0.0	0.0	0.0
Subtotal		352.0	33553.0	95.3	91.9		35755.0				11.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MESA GRANDE RESOURCES, RUCKER LAKE #3. (SW 25-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

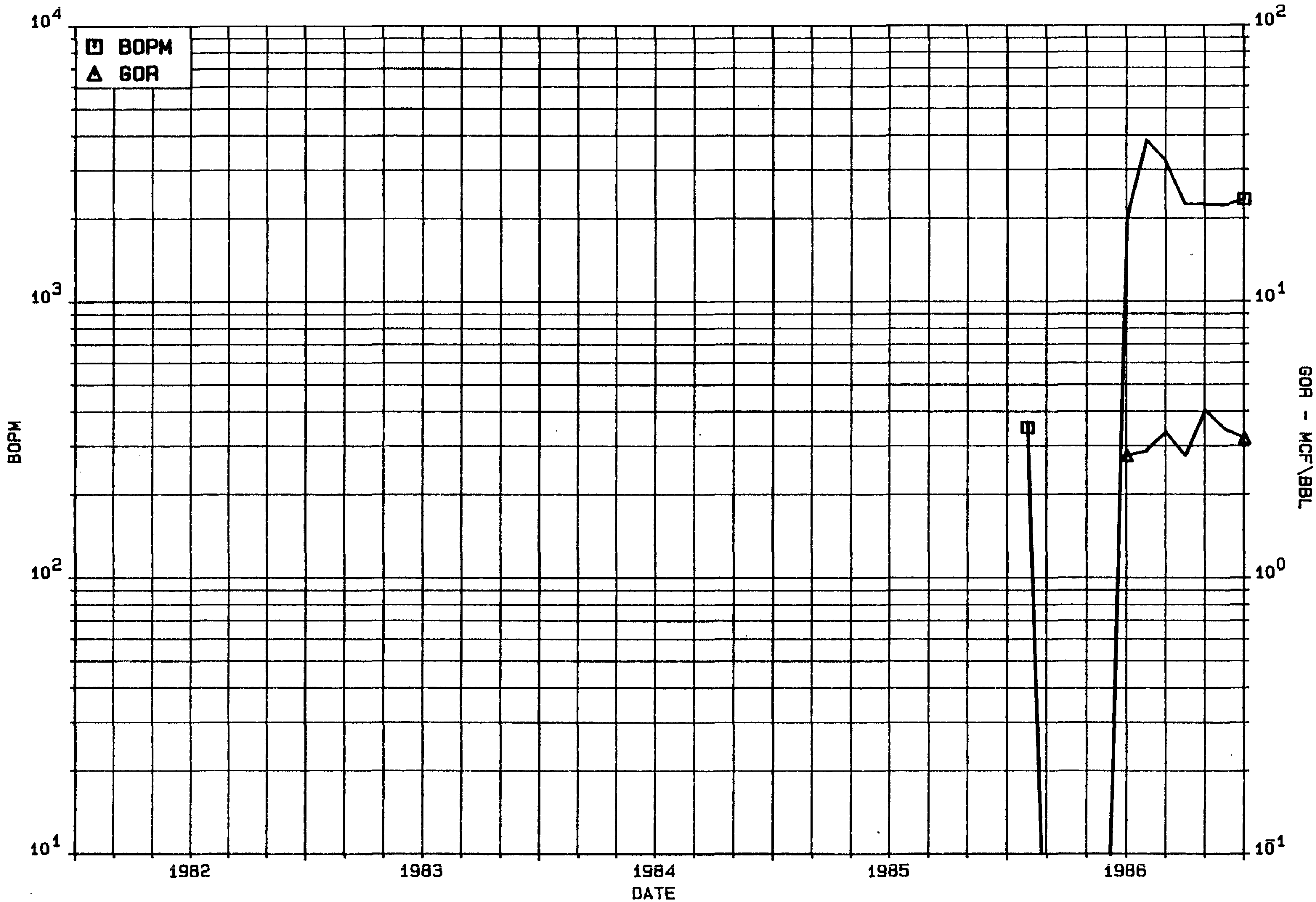


GAVILAN MANCOS POOL. RIO ARRIBA CO., NM
MOBIL, LINDRITH B UNIT #34. (NE 32-25N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	3.0	349.0	116.3	11.3	0.3	0.0	0.0	0.0	0.0	24.0	8.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	18.0	2005.0	111.4	66.8	2.4	5531.0	307.3	5.5	2758.6	180.0	10.0	0.2
1986	7	31.0	3840.0	123.9	123.9	6.2	11046.0	356.3	16.6	2876.6	252.0	8.1	0.5
1986	8	29.0	3207.0	110.6	103.5	9.4	10845.0	374.0	27.4	3381.7	232.0	8.0	0.7
1986	9	20.0	2238.0	111.9	74.6	11.6	6164.0	308.2	33.6	2754.2	160.0	8.0	0.8
1986	10	22.0	2246.0	102.1	72.5	13.9	9132.0	415.1	42.7	4065.9	138.0	6.3	1.0
1986	11	23.0	2215.0	96.3	73.8	16.1	7631.0	331.8	50.3	3445.1	138.0	6.0	1.1
1986	12	25.0	2335.0	93.4	75.3	18.4	7443.0	297.7	57.8	3187.6	178.0	7.1	1.3
Subtotal		171.0	18435.0	107.8	50.5		57792.0				1302.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MOBIL, LINDRITH B UNIT #34. (NE 32-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

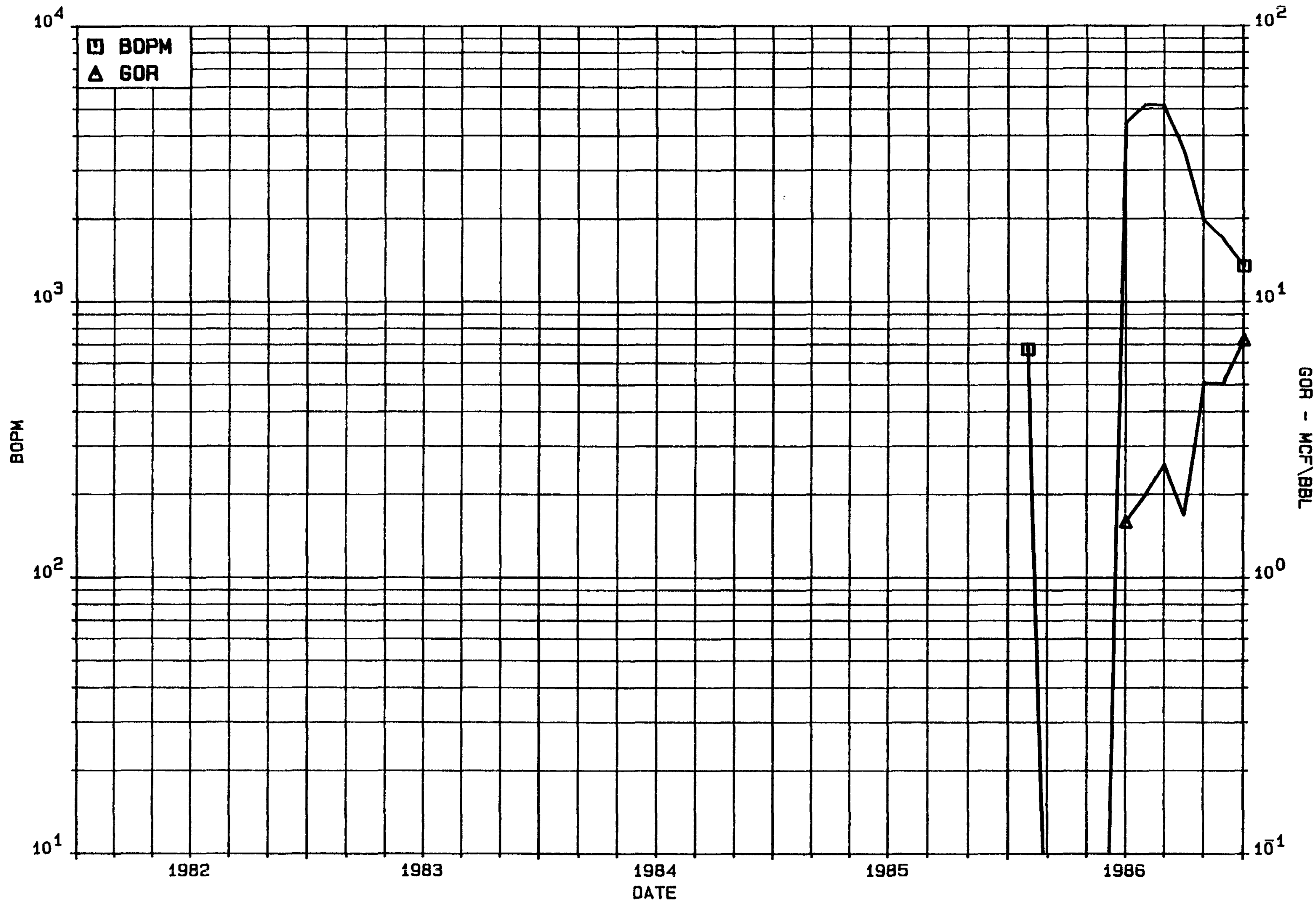


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MOBIL, LINDRITH B UNIT #37. (NE 4-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	1	3.0	671.0	223.7	21.6	0.7	0.0	0.0	0.0	0.0	24.0	8.0	0.0
1986	2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	5	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	6	19.0	4440.0	233.7	148.0	5.1	7072.0	372.2	7.1	1592.8	171.0	9.0	0.2
1986	7	27.0	5194.0	192.4	167.5	10.3	10379.0	384.4	17.5	1998.3	143.0	5.3	0.3
1986	8	29.0	5118.0	176.5	165.1	15.4	13184.0	454.6	30.6	2576.0	145.0	5.0	0.5
1986	9	20.0	3512.0	175.6	117.1	18.9	5888.0	294.4	36.5	1676.5	100.0	5.0	0.6
1986	10	31.0	1973.0	63.6	63.6	20.9	10071.0	324.9	46.6	5104.4	155.0	5.0	0.7
1986	11	30.0	1682.0	56.1	56.1	22.6	8473.0	282.4	55.1	5037.5	150.0	5.0	0.9
1986	12	31.0	1340.0	43.2	43.2	23.9	9740.0	314.2	64.8	7268.7	155.0	5.0	1.0
Subtotal		190.0	23930.0	125.9	65.6		64807.0				1043.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

MOBIL, LINDRITH B UNIT #37. (NE 4-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

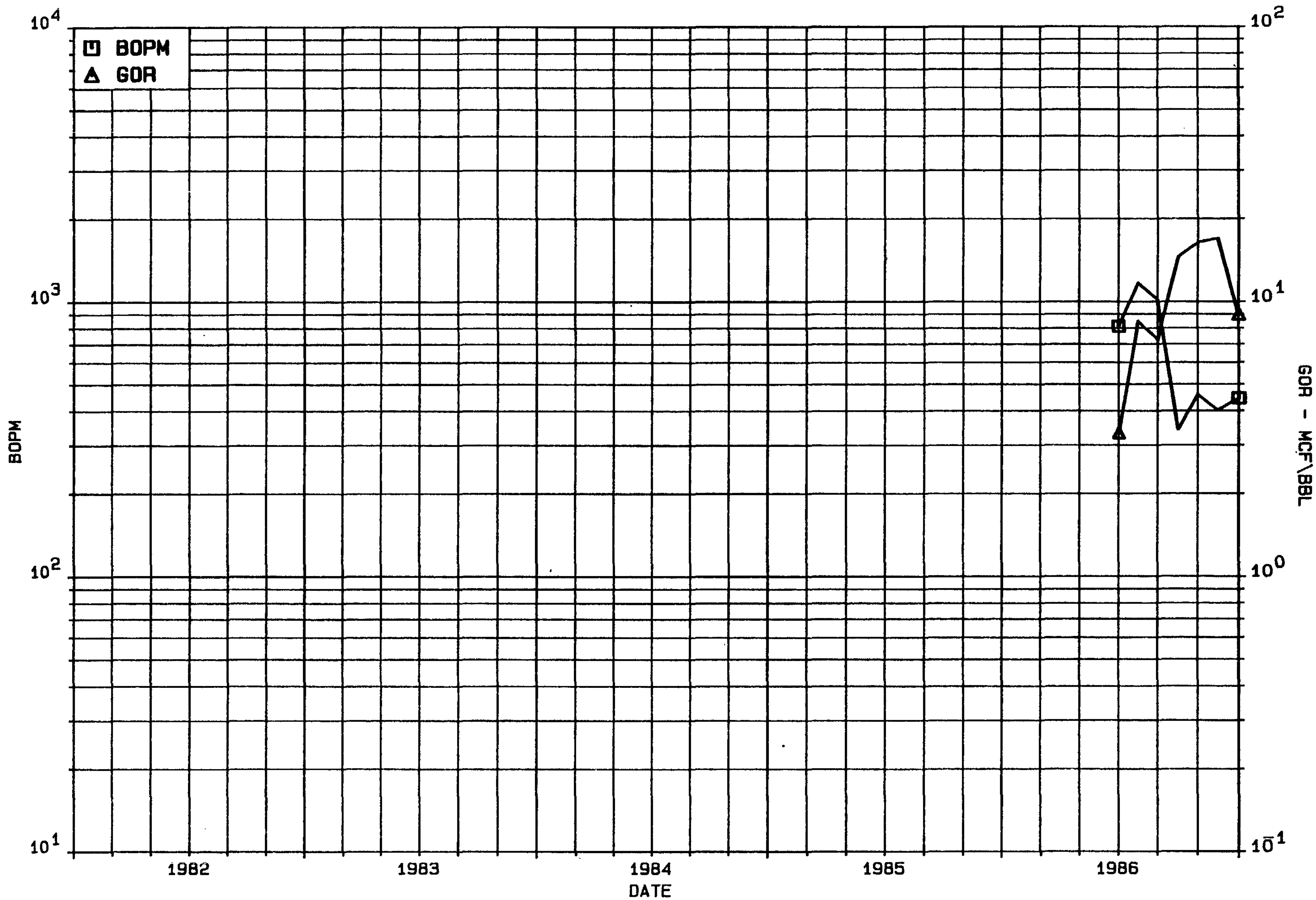


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
MOBIL, LINDRITH B UNIT #38, (SW 4-24N-2W)

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	6	19.0	808.0	42.5	26.9	0.8	2670.0	140.5	2.7	3304.5	370.0	19.5	0.4
1986	7	31.0	1165.0	37.6	37.6	2.0	9893.0	319.1	12.6	8491.8	328.0	10.6	0.7
1986	8	29.0	1009.0	34.8	32.5	3.0	7264.0	250.5	19.8	7199.2	240.0	8.3	0.9
1986	9	20.0	338.0	16.9	11.3	3.3	4912.0	245.6	24.7	14532.5	160.0	8.0	1.1
1986	10	24.0	458.0	19.1	14.8	3.8	7504.0	312.7	32.2	16384.3	150.0	6.3	1.2
1986	11	23.0	399.0	17.3	13.3	4.2	6772.0	294.4	39.0	16972.4	138.0	6.0	1.4
1986	12	23.0	443.0	19.3	14.3	4.6	3958.0	172.1	43.0	8934.5	173.0	7.5	1.6
Subtotal		169.0	4620.0	27.3	21.6		42973.0				1559.0		

* BOPPD: BARRELS PER PRODUCING DAY.
* BOPCD: BARRELS PER CALENDAR DAY.

MOBIL, LINDRITH B UNIT #38. (SW 4-24N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM

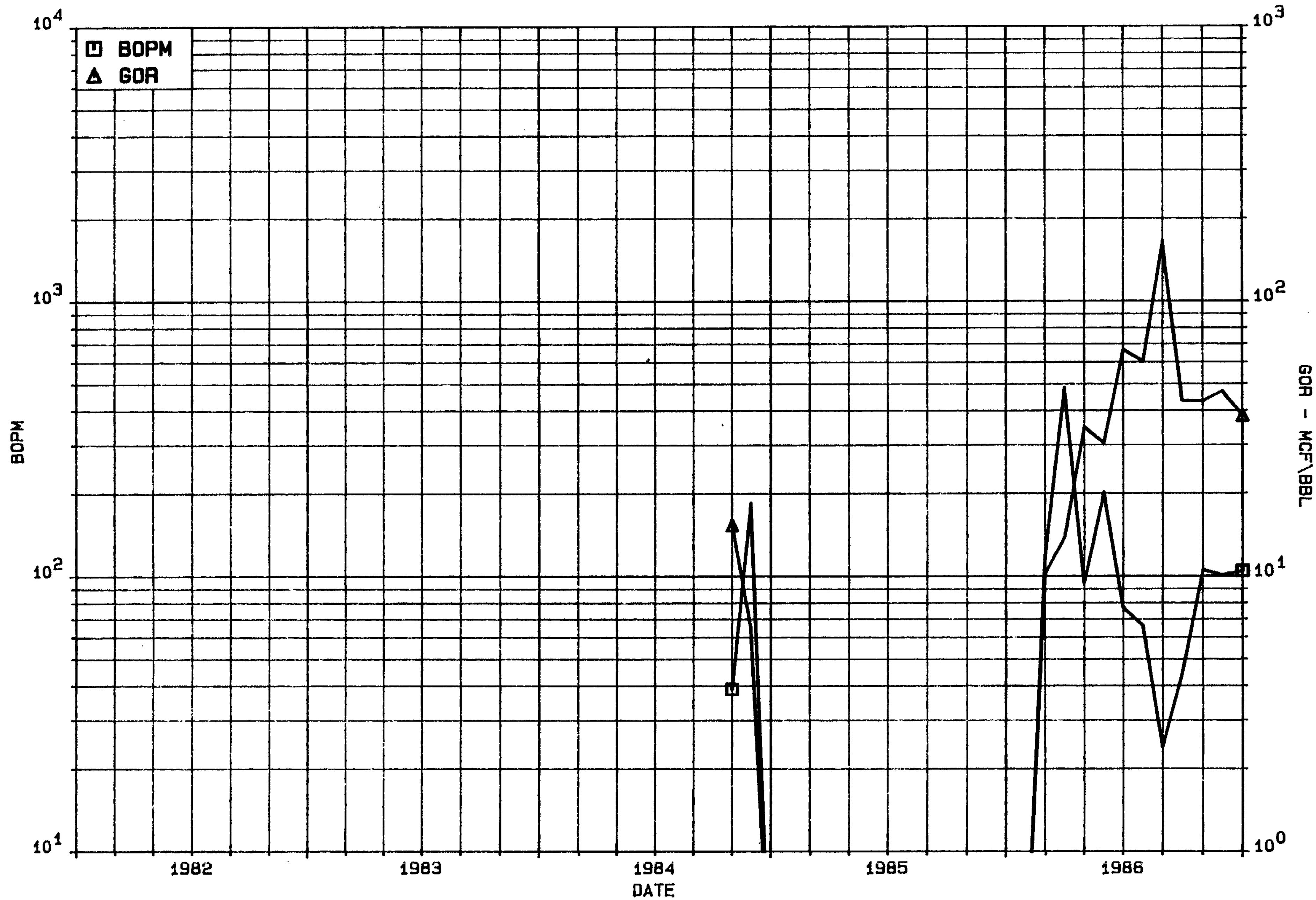


GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
E. ALEX PHILLIPS. GAVILAN FED #2. (SE 26-25N-2W)

		OIL				GAS			GOR	WATER		
YR MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1984 10	3.0	39.0	13.0	1.3	0.0	600.0	200.0	0.6	15384.6	0.0	0.0	0.0
1984 11	7.0	186.0	26.6	6.2	0.2	1200.0	171.4	1.8	6451.6	0.0	0.0	0.0
1984 12	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
Subtotal	10.0	225.0	22.5	2.4		1800.0				0.0		
1985 1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 6	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 8	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 9	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 10	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 11	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1985 12	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
Subtotal	0.0	0.0	0.0	0.0		0.0				0.0		
1986 1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0	0.0	0.0
1986 2	4.0	118.0	29.5	4.2	0.3	1213.0	303.3	3.0	10279.7	0.0	0.0	0.0
1986 3	30.0	488.0	16.3	15.7	0.8	6834.0	227.8	9.8	14004.1	7.0	0.2	0.0
1986 4	20.0	95.0	4.8	3.2	0.9	3343.0	167.2	13.2	35189.5	0.0	0.0	0.0
1986 5	30.0	204.0	6.8	6.6	1.1	6202.0	206.7	19.4	30402.0	0.0	0.0	0.0
1986 6	13.0	77.0	5.9	2.6	1.2	5177.0	398.2	24.6	67233.8	0.0	0.0	0.0
1986 7	31.0	66.0	2.1	2.1	1.3	3980.0	128.4	28.5	60303.0	0.0	0.0	0.0
1986 8	31.0	24.0	0.8	0.8	1.3	4015.0	129.5	32.6	167291.7	0.0	0.0	0.0
1986 9	4.0	46.0	11.5	1.5	1.3	1994.0	498.5	34.6	43347.8	0.0	0.0	0.0
1986 10	26.0	106.0	4.1	3.4	1.4	4568.0	175.7	39.1	43094.3	0.0	0.0	0.0
1986 11	30.0	101.0	3.4	3.4	1.6	4785.0	159.5	43.9	47376.2	0.0	0.0	0.0
1986 12	31.0	105.0	3.4	3.4	1.7	4030.0	130.0	47.9	38381.0	23.0	0.7	0.0
Subtotal	250.0	1430.0	5.7	3.9		46141.0				30.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDAR DAY.

E. ALEX PHILLIPS. GAVILAN FED #2. (SE 26-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



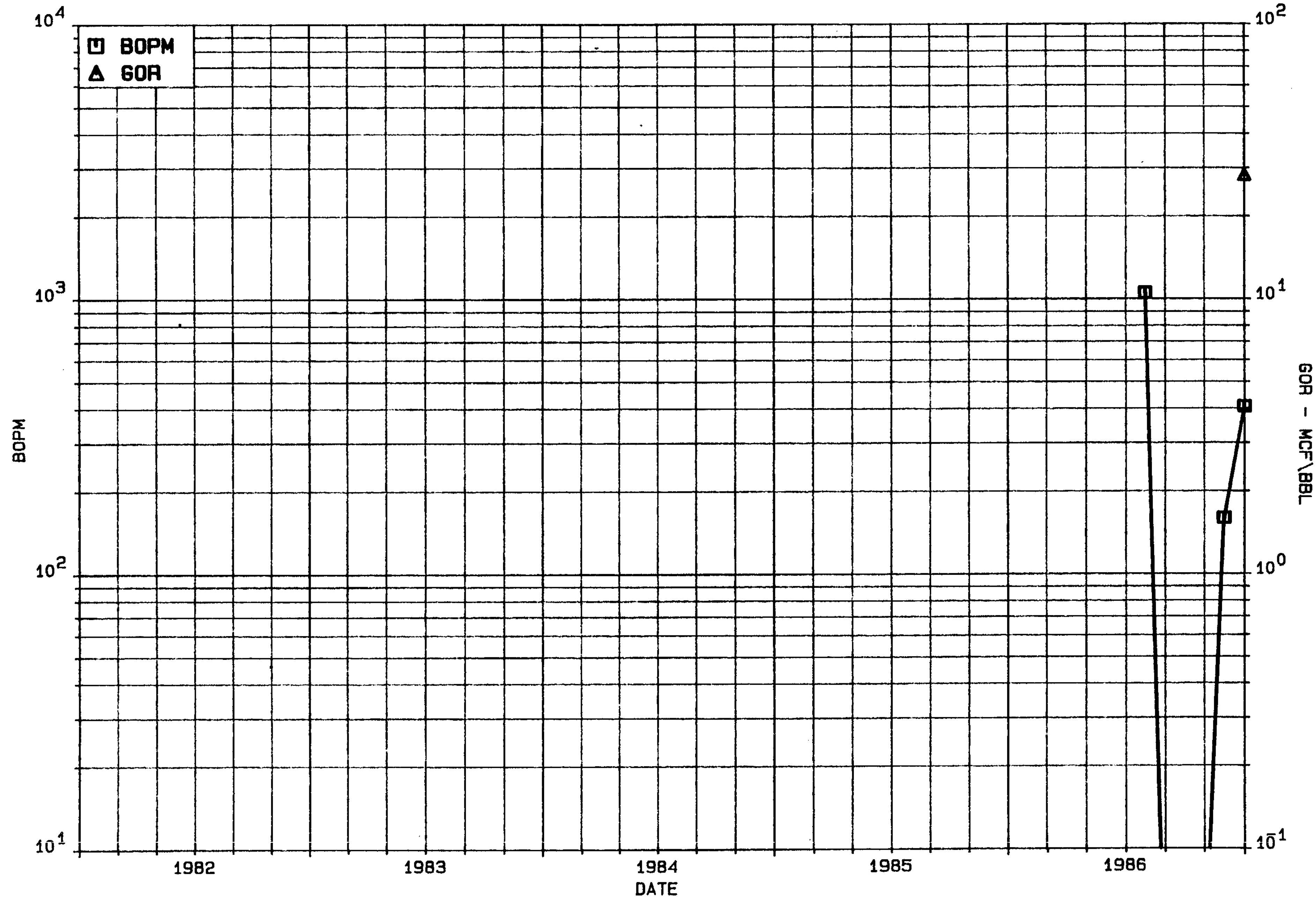
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM
READING & BATES, HOWARD FED #43-15. (SE 15-25N-2W)
DUAL COMPLETION: GAVILAN MANCOS.

			OIL				GAS			GOR	WATER		
YR	MO	DAYS PRODUCED	BOPM	BOPPD	BOPCD	CUM MBO	MCF/M	MCF/D	CUM MMCF	SCF/BBL	Month	BWPD	CUM MBW
1986	7 *	0.0	1056.0	0.0	34.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	8	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	9	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	10	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	11	5.0	160.0	32.0	5.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	12	30.0	407.0	13.6	13.1	1.6	11497.0	383.2	11.5	28248.2	0.0	0.0	0.0
Subtotal		35.0	1623.0	46.4	8.8		11497.0				0.0		

* BOPPD: BARRELS PER PRODUCING DAY. * BOPCD: BARRELS PER CALENDER DAY.

* NR

READING & BATES HOWARD FED #43-15. (SE 15-25N-2W)
GAVILAN MANCOS POOL, RIO ARRIBA CO., NM



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EXHIBITS FOR TESTIMONY

OF

W. JOHN LEE

4/3/87

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 9113 Exhibit No. 1.
Submitted by LEE
Hearing Date 4-3-87

CONCLUSIONS

BASIC ROCK AND FLUID PROPERTIES

1. The reservoir oil was under-saturated at discovery and the bubble point pressure was 1534 psia.

2. The matrix will not contribute to reservoir oil reserves.

3. Interference tests are a valid source of reservoir description data. Petroleum engineers routinely analyze interference tests using the EI-function (line source) solution. Applications to naturally fractured reservoirs are reported in petroleum literature. Properties determined from these interference tests characterize an area much larger than a narrow line between the two wells involved in the test.

4. Permeability - thickness values equal or exceed 10 Darcy-feet in much of the reservoir.

RESERVOIR PERFORMANCE

5. The application of the material balance equation did not lead to a reliable estimate of original oil in place.

6. The effects of multiphase flow on the potential of the matrix to produce oil have been ignored in the application of the

dual porosity reservoir simulator. Especially important is the need to consider the so-called "capillary end effect" caused by large differences in matrix and fracture permeabilities. This effect tends to prevent the flow of oil from the matrix to the fracture and, instead, to collect at the fracture face.

BUBBLE POINT PRESSURE

CONCLUSION

The fluid sample from the Canada Ojitos Unit No. 6 (L-11) is representative of the Gavilan-Mancos reservoir fluid. The bubble point pressure of 1534 psia is in close agreement to that of samples taken very early and late in the life of this reservoir.

IMPLICATIONS

1. The reservoir was under-saturated at discovery, and remained under-saturated for many years.

2. Fluid properties for use in pressure transient test analysis and reservoir performance analysis can be developed from the L-11 sample analysis. However, no single set of separator conditions is used throughout the field, so the properties based on one set of separator conditions should be used cautiously.

3. An attempt to analyze the reservoir using material balance calculations will be unsuccessful during times in which large parts of the reservoir are above the bubble point pressure and other large parts are below. Material balance calculations require the reservir oil to be essentially totally above the bubble point or totally below the bubble point.

CANADA OJITOS NO. L-11 FLUID PROPERTIES

CORRECTED TO SEPARATOR PRESSURE OF 160 psig

p, psia	B_o, RB/STB	R_s, SCF/STB	p,psia	μ_o, cp
1915	1.254		2015	0.652
1815	1.255		1534	0.625
1715	1.257		1365	0.684
1615	1.258		1265	0.696
1534	1.259	410	1115	0.731
1404	1.246	379	965	0.780
1274	1.233	347	815	0.835
1144	1.220	317	665	0.900
978	1.203	278	515	0.980
827	1.188	242	265	1.161
673	1.172	205		
534	1.157	171		
374	1.141	131		
233	1.122	92		

SUMMARY OF SAMPLE RESULTS

Well	Sample Date	Elevation ft ASL	Sample Bubble Point Press. psia
COU No. 2 (K-13)	10/02/62	1125	1539
COU No. 6 (L-11)	07/01/65	582	1534
Loddy No. 1	02/26/86	173	1497

Comments

1. Bubble point pressure increases with increasing elevation, as expected in reservoirs with long oil columns.

2. Bubble point pressures from samples taken over 24 years apart have similar values (even more similar when elevation differences are considered). This is strong evidence that the bubble point pressure is approximately 1534 psia (as obtained in the carefully conditioned well COU No. L-11) and that the reservoir was highly under-saturated at discovery.

3. If the reservoir fluid had the same composition in Gavilan as in COU No. L-11 but was at the higher temperature in Gavilan, its bubble point pressure would be about 1572 psia.

DETAILS OF FLUID SAMPLE ANALYSES

Canada Ojitos Unit No. 6 (L-11 or 12-11)

Sampled: 07/01/65 Completed: 11/9/64

Producing interval - 6648-6687

Sampling pressure = 1693 psig @ 6650 ft

S.I. 27 days prior

N_p = 52,800 STB G_p = 16,300 MCF

P_b = 1519 psig @ 162°F.

R_{sd} = 478 SCF/STB

Elevation = 7232 KB

Conditioned well for 10-14 days: @ 50 bpd with maximum drawdown was 45 psi during this time.

datum = 7232-6650=582' ASL

Gavilan-Mancos Loddy No. 1

Sampled: 02/26/86 Completed: 8/30/85

Producing interval - 6822-7122

Sampling pressure = 1648 psig @ 6994 ft

S.I. since 09/10/85

N_p = 60 STB (est.) G_p = 2340 MCF (est.)

P_b = 1482 psig @ 170°F.

R_{sd} = 588 SCF/STB

Elevation = 7167' KB

datum = 7167-6994=173' ASL

Canada Ojitos Unit No. 2 (K-13 or Bolack No. 2)

Sampled: 10/02/62 Completed: 8/15/62

Producing Interval 4898 - 6022'

Sampling pressure = 1631 psig @ 5975 ft.

BU for 2 months to 1620 - 1631 psi

N_p = 60 STB G_p = 29 MCF (est.)

P_b = 1524 psig @ 152° F.

R_{sd} = 481 SCF/STB

Elevation = 7100' KB

Conditioned well 4 days @ 15 bpd with drawdown to 800 psi

Datum = 7100-5975=1125' ASL

McHugh Native Son No. 3

Sample not representative

File RFL 2302

Company	Benson-Montin-Greer Drilling Corporation	Date Sampled	October 2, 1962
Well	Bolack No. 2	County	Rio Arriba
Field	Wildcat	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name	Gallup
Date First Well Completed	August 15, 19 62
Original Reservoir Pressure	1631 PSIG @ 5957 Ft.
Original Produced Gas-Oil Ratio	SCF/Bbl
Production Rate	Bbl/Day
Separator Pressure and Temperature	PSIG, °F.
Oil Gravity at 60° F.	°API
Datum	Ft. Subsea
Original Gas Cap	

WELL CHARACTERISTICS

Elevation	7100 KB Ft.
Total Depth	6022 Ft.
Producing Interval	4900-6022 OH Ft.
Tubing Size and Depth	2-3/8 In. to 6003 Ft.
Productivity Index	Bbl/D/PSI @ Bbl/Day
Last Reservoir Pressure	1631 PSIG @ 5975 Ft.
Date	October 2, 19 62
Reservoir Temperature	152 °F. @ 5975 Ft.
Status of Well	Shut in
Pressure Gauge	Amerada (DO)
Normal Production Rate	Bbl/Day
Gas-Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Base Pressure	PSIA
Well Making Water	% Cut

SAMPLING CONDITIONS

Sampled at	5975 Ft.
Status of Well	Shut in
Gas-Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Tubing Pressure	0 PSIG
Casing Pressure	PSIG
Core Laboratories Engineer	NT
Type Sampler	Perco

REMARKS:

CL-215

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 2302
Well Bolack No. 2

West Puerto Chiquito
Cañada Ojitos Unit

VOLUMETRIC DATA OF Reservoir Fluid SAMPLE

1. Saturation pressure (bubble-point pressure) 1524 PSIG @ 152 °F.
2. Thermal expansion of saturated oil @ 5000 PSI = $\frac{V @ 152 °F}{V @ 73 °F}$ = 1.04245
3. Compressibility of saturated oil @ reservoir temperature: Vol/Vol/PSI:

   From 5000 PSI to 3500 PSI = 7.92×10^{-6}

   From 3500 PSI to 2500 PSI = 8.93×10^{-6}

   From 2500 PSI to 1524 PSI = 10.34×10^{-6}
4. Specific volume at saturation pressure: ft^3/lb 0.02223 @ 152 °F.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 3366

Company	Benson-Montin-Greer Drilling Corporation	Date Sampled	July 1, 1965
Well	Canada Ojitos Unit No. ~~12~~ 2-11	County	Rio Arriba
Field	Puerto Chiquito	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name	Nio Braro (Gallup)
Date First Well Completed	October, 19 62
Original Reservoir Pressure	1631 PSIG @ 5957 Ft.
Original Produced Gas-Oil Ratio	SCF/Bbl
Production Rate	Bbl/Day
Separator Pressure and Temperature	PSIG, °F.
Oil Gravity at 60° F.	°API
Datum	Ft. Subsea
Original Gas Cap	

WELL CHARACTERISTICS

Elevation	7232 KB Ft.
Total Depth	6687 Ft.
Producing Interval	6648-6687 Ft.
Tubing Size and Depth	In. to Ft.
Productivity Index	Bbl/D/PSI @ Bbl/Day
Last Reservoir Pressure	1693 PSIG @ 6650 Ft.
Date	July 1, 19 65
Reservoir Temperature	162 °F. @ 6650 Ft.
Status of Well	Shut in 27 days
Pressure Gauge	Amerada
Normal Production Rate	Bbl/Day
Gas-Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Base Pressure	15.025 PSIA
Well Making Water	None % Cut

SAMPLING CONDITIONS

Sampled at	6650 KB Ft.
Status of Well	Shut in 27 days
Gas-Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Tubing Pressure	0 PSIG
Casing Pressure	0 PSIG
Core Laboratories Engineer	NT
Type Sampler	Perco

REMARKS:

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 3366
Well Canada Ojitos Unit No. 12-11

VOLUMETRIC DATA OF Reservoir Fluid SAMPLE

1. Saturation pressure (bubble-point pressure) 1519 PSIG @ 162 °F.
2. Thermal expansion of saturated oil @ 5000 PSI = $\frac{V @ 162\ °F}{V @ 76\ °F}$ = 1.04528
3. Compressibility of saturated oil @ reservoir temperature: Vol/Vol/PSI:

   From 5000 PSI to 3500 PSI = 8.24×10^{-6}

   From 3500 PSI to 2500 PSI = 9.49×10^{-6}

   From 2500 PSI to 1519 PSI = 10.68×10^{-6}
4. Specific volume at saturation pressure: ft³/lb 0.02218 @ 162 °F.
5. Saturation pressure at various temperatures:

Temperature, °F.	Saturation Pressure, PSI BHS No. 1	Saturation Pressure, PSI BHS No. 2
76	1203	1204
110	1351	
152	1491	1492
162	1519	1519
172	1540	

CORE LABORATORIES, INC.

Reservoir Fluid Analysis

File ARFL-860042

Company	Jerome P. McHugh and Associates	Date Sampled	February 26, 1986
Well	~~Lottie~~ Loddy No. 1	County	Sandoval
Field	Lindrith Unit	State	New Mexico

FORMATION CHARACTERISTICS

Formation Name	Gallup Mancos
Date First Well Completed	
Original Reservoir Pressure	PSIG @ Ft.
Original Produced Gas/Oil Ratio	SCF/Bbl
Production Rate	Bbl/Day
Separator Pressure and Temperature	PSIG °F.
Oil Gravity at 60°F.	°API
Datum	Ft. Subsea
Original Gas Cap	

WELL CHARACTERISTICS

Elevation	7155 GL Ft.
Total Depth	PD 8130 TD 8175 Ft.
Producing Interval	6822-7122 Ft.
Tubing Size and Depth	2 7/8 In. to 7148 Ft.
Productivity Index	Bbl/D/PSI @ Bbl/Day
Last Reservoir Pressure	1648 PSIG @ 6994 Ft.
Date	February 26, 1986
Reservoir Temperature	170 °F. @ 6994 Ft.
Status of Well	Shut in since September 10, 1985
Pressure Gauge	Amerada
Normal Production Rate	Bbl/Day
Gas/Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Base Pressure	PSIA
Well Making Water	% Cut

SAMPLING CONDITIONS

Sampled at	6994 Ft.
Status of Well	Shut in
Gas/Oil Ratio	SCF/Bbl
Separator Pressure and Temperature	PSIG, °F.
Tubing Pressure	354 PSIG
Casing Pressure	1312 PSIG
Sampled by	Tefteller, Inc.
Type Sampler	Wofford

REMARKS:

VOLUMETRIC DATA OF RESERVOIR FLUID SAMPLE

Saturation pressure (bubble point pressure) = 1482 PSIG @ 170°F.

Specific volume at saturation pressure = 0.02291 ft^3/lb @ 170°F.

Thermal expansion @ 5000 PSIG = 1.05109 V @ 170°F./V @ 75°F.

Compressibility @ 170°F.:

From 5000 PSIG to 4000 PSIG = 8.82×10^{-6} V/V/PSI

From 4000 PSIG to 3000 PSIG = 9.92×10^{-6} V/V/PSI

From 3000 PSIG to 2000 PSIG = 11.09×10^{-6} V/V/PSI

From 2000 PSIG to 1482 PSIG = 12.41×10^{-6} V/V/PSI

MATRIX CONTRIBUTION

EXPLANATION OF ATTACHMENTS

AVERAGE PERMEABILITY IN GAVILAN MANCOS

Mr. Hueni reported an average permeability of 0.018 md from core analysis. This value was based on dry, unconfined core measurements. When corrected for confining pressure, Mr. Hueni reported a value of 0.0003 md, which is rounded to one significant digit from the 0.000268 md we calculate, using the correlation he suggests. However, he adjusted this value to 0.002 md (page 3.5 of his testimony) in his simulator, with no physical measurements providing the basis.

SPE PAPER, "LABORATORY STUDY OR LOW PERMEABILITY GAS SANDS"

This paper presents a correlating equation with correct core permeabilities determined without confining pressure and with liquids removed to actual reservoir conditions in which there is net confining pressure and connate water ~~pressure~~. While developed for use with tight gas reservoirs (obviously its major application), it can also be applied to oil reservoirs. The equation, when applied to oil permeabilities in tight rock, is

$$K_o = K^{1.9/7.5}$$

where

K_o = oil permeability corrected to reservoir conditions.

K = permeability from routine laboratory analysis.

Applying this correction to the unadjusted permeability Mr. Hueni reported, the result is a corrected permeability of

$$K_o = (0.018)^{1.9/7.5}$$
$$= 0.0000646 \text{ md}$$

Thus, the average matrix permeability corrected for in situ conditions is about 0.0000646 md. This is too low to be of practical importance.

Alternatively, the paper indicates that Thomas and Ward found that connate water saturation reduces non-wetting phase permeability (oil in this case) to 10% to 20% of the dry core value. Conservatively applying the 20% factor to Mr. Hueni's permeability estimate adjusted for confining pressure,

$$k = (0.000268)(0.2) = 0.0000536 \text{ md}$$

As a practical matter, the result is the same: even before adjusting for relative permeability to oil in the presence of gas, the average matrix permeability is too small to be of practical importance. More disturbing though, is the reported adjustment of permeability <u>upward</u> to 0.002 md.

b. There is matrix/microfracture porosity as evidenced by the porosity and the storage capacity exhibited by the core plug test. Porosity is similar to the values quoted in another Terra Tek core plug analysis to determine porosity and permeability (Figure 32). In this report, 12 plug samples, free from dehydration cracks, exhibited an average porosity of 2.4 percent and an average permeability of .018 md at ambient conditions. In the pore compressibility test, the sample was reduced from 2.6 percent porosity at ambient conditions to 0.64 percent at net overburden. Using the relationship for correcting assumed microfracture permeability for net overburden pressure:

$$\frac{\Phi_1}{\Phi_2} = \left(\frac{K_1}{K_2}\right)^{1/3}$$

Then $\Phi_1 = 2.6$, $\Phi_2 = 0.64$,
$K_1 = 0.18$ md and $K_2 = .0003$ md

The net overburden permeability value (K_2) appears small but is not unreasonable when one considers that the absolute permeability assigned to the entire rock matrix (lower permeability fracture, microfracture and matrix) in the simulation model is .002 md and this is more than sufficient to provide flow out of the matrix and into the fractures.

3. Absolute Permeability: Absolute permeability for the Gavilan Mancos Pool has been replaced by transmissibility (Kh) due to the difficulty in defining actual net thickness values (h). Interference test transmissibility values of 5 to 10 darcy-feet reported in the Canada Ojitos Unit have

A Laboratory Study of Low-Permeability Gas Sands

F.O. Jones, SPE, Amoco Production Co.
W.W. Owens, SPE, Amoco Production Co.

Introduction

Yearly compilations of U.S. oil and gas reserves by the American Gas Assn.[1] show that U.S. gas reserves reached a maximum in 1967 of nearly 290 Tcf (8×10^{12} m^3). With the exception of the year 1970 when Prudhoe Bay reserves were added, gas reserves have declined at a near-constant rate of 10 Tcf (2.8×10^{11} m^3) per year since then. To help moderate or reverse this trend, the industry is extending its exploration and development efforts to include horizons with permeabilities in about the same range as common cement – i.e., microdarcies. The design of stimulation treatments to achieve commercial rates of production and reliable assessment of potential reserves in such low-permeability rocks demands accurate knowledge of their permeability, porosity, and flow properties. Though meager, there is sufficient information already available in the literature to suggest that some of the flow properties of these rocks differ markedly from those of more permeable rocks and, thus, require closer study.

Results of several different studies of the properties of low-permeability gas-producing horizons have been published previously. A study by Thomas and Ward[2] showed that the permeability of cores from the Pictured Cliffs and Fort Union formations were affected significantly by confining pressure. Porosities, however, were not altered greatly. They also reported that the presence of a simulated connate water saturation (about 50%) reduced gas permeabilities to only 10% to 20% of the specific gas permeability. Vairogs *et al.*[3] concluded that very low-permeability rocks are affected by stress to a greater degree than those having higher levels of permeability. This agreed with results reported earlier by McLatchie *et al.*[4]

Tannich[5] mathematically studied liquid removal from fractured gas wells in low-permeability horizons and concluded that in very low-permeability rocks, cleanup times could be extensive but that permanent formation damage was not likely. The study, however, provided no measured experimental data of the flow properties of low-permeability rocks.

Early wells drilled and cored by Amoco Production Co. in the Wattenberg field of Colorado in the Union Pacific Railroad Lease Area indicated the need for further laboratory studies of tight gas sands. Large differences in formation permeabilities, as derived from core and pressure buildup analyses, were not entirely explainable from data available in the literature. In addition, developments in stimulation design showed the need for reliable reservoir permeability values to prevent overdesign

0149-2136/80/0009-7551$00.25

Editor's Note: This paper won the 1980 Award for Outstanding Applied Research presented May 29 by the U.S. National Committee for Rock Mechanics of the National Research Council.

Routine permeabilities of tight gas sands are shown to be greater than under reservoir conditions, often by more than a hundred-fold, because of the great relief of stress, absence of connate water, and increased gas slippage. Correlations are presented that can be used to estimate in-situ permeability from routine data.

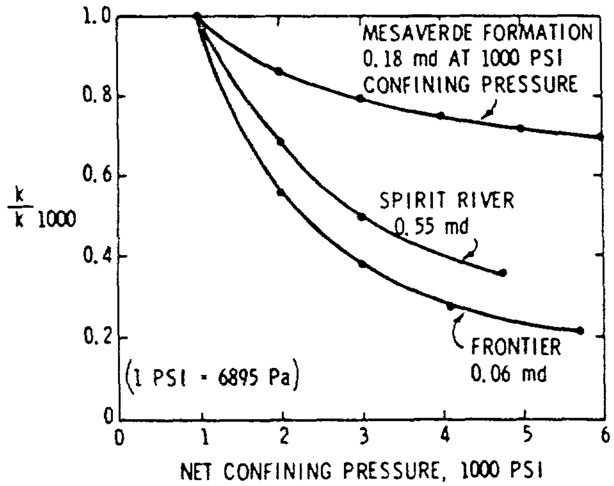

Fig. 1 – Effect of confining pressure on tight gas sand permeability.

(and cost) of massive hydraulic fracturing treatments. In addition, concern existed over the proper choice of drilling and stimulation fluids to minimize formation damage. This study is part of an ongoing Amoco study to provide answers to these and other problems that arise in the development of tight gas sand reserves.

Reported here are the results of selected laboratory tests that were designed to (1) study the factors that cause routine core-analysis permeability values to be different from those that exist in the reservoir, (2) study the range of the influence of these factors in low permeability producing horizons of interest to Amoco, (3) develop, if possible, correlations for predicting reservoir values of permeability from core analysis results, and (4) evaluate the effects of invasion of fluids of different salinities on the rate of regainment of permeability to gas.

Apparatus and Experimental Procedure

Plug samples ¾ in. (1.9 cm) in diameter and 1 in. (2.5 cm) long drilled parallel to formation bedding planes were tested in Hassler sleeve holders capable of exerting up to 10,000 psi (69 MPa) confining pressure uniformly in all directions ("hydrostatic" test conditions). Permeability to either gas or water could be measured at injection pressures up to 1,000 psi (6.9 MPa) and were measured at flow rates sufficiently low to avoid turbulence. Vacuum deaerated liquids, passing through line filters, were supplied to the cores at constant pressure by nitrogen-driven transfer cylinders designed to prevent diffusion of nitrogen into the driven liquid. Flowing pressures were measured with Bourdon gauges for gas and variable reluctance diaphragm transducers and indicators for liquid. Confining pressures were exerted by oil and were adjusted to compensate for average pore pressure to obtain a given net confining pressure.

Flow rates of liquids were measured by timing their travel in pipets. Flow rates lower than 10^{-6} cm^3/s could be measured to allow measuring permeabilities down to 10^{-6} md. Low gas flow rates were measured by timing the passage of the meniscus when displacing oil from a horizontal pipet whose tip was bent downward to discharge under oil. This arrangement – with its constant, slightly negative oil head – insured instant displacement of oil by gas and avoided complications from the action of interfacial forces at either the meniscus or pipet tip. Pipets of 1- to 2-cm^3 capacity with 0.01-cm^3 subdivisions ordinarily were used. It is important that the meniscus travel horizontally; if the oil head changes during flow measurement, gas between the core and meniscus will change volume sufficiently to introduce significant error when using small-bore pipets. However, 10-cm^3 pipets can be operated vertically with less than 1% error if volume between the core and pipet is less than 5 cm^3. Samples were liquid-saturated by evacuating them in pressure chambers for 4 hours at pressures less than 1 mm Hg (130 Pa), after which deaerated liquid was admitted and then pressured at 1,000 psi (6.9 MPa) for 16 hours to dissolve remaining traces of gas. Pore volume compressibilities were determined using the Hassler cells and measuring the liquid displaced into calibrated pipets (0.001-cm^3 subdivisions) with time allowed to obtain equilibrium at each step.

Effects of confining pressure on permeability ordinarily were measured in gas flow tests using dry cores. Permeabilities were measured at increasing confining pressure levels up usually to the reservoir net overburden pressure. [Net overburden pressure is taken to be the difference between gross overburden pressure, assumed to increase at 1.0 psi/ft (22.6 kPa/m), and reservoir fluid pressure.] Klinkenberg (no gas slippage) permeabilities were determined at the highest confining pressures by the conventional method of measuring permeabilities at more than one average flowing pressure; preliminary investigations indicated that measurements at two injection pressures provided sufficient data. Gas drive tests were performed using cores which had been saturated with formation water and whose permeability to water had been determined. For reasons discussed in a later section, nitrogen was injected, usually at 1,000 psi (6.9 MPa) (sometimes lower, if needed, to avoid turbulence) until 3,500 cm^3 (at ambient pressure) had emitted downstream. Permeability was monitored throughout the test. Holdup volumes were too great to permit measuring the rate of water production; consequently, saturation data for determining relative permeabilities could not be collected except for end points.

Results

Effect of Confining Pressure on Permeability

The large effect of confining pressure on the permeability of tight gas sands documented earlier[2-4] also was found in this study. Hydrostatically applied confining pressures equaling reservoir net overburden pressure [5,000 to 6,000 psi (34 to 41 MPa)] reduced permeability nearly 10-fold below the routine values measured under surface conditions in which confining pressure is 150 to 250 psi (1 to 1.7 MPa). Reductions ranged from less than threefold to more than 20-fold. Typical results are shown in Fig. 1. The reason that confining pressure has greater effects on tighter sands than on more permeable ones is not well established. A popular conjecture holds that rock compression is distributed as greater fractional changes of the smaller apertures of the tight sands, the effect of which is further increased by the fact that flow depends on a higher power of the aperture dimension (round capillaries vary as the fourth power and slits by the cube of the dimension).

The experimental data were plotted in a number of ways in search of linear relationships to facilitate data handling, correlation, and, ultimately, to simplify testing. For representing behavior between 1,000 psi (6.9 MPa) and reservoir net overburden conditions, a plot of the cube root of permeability vs. the logarithm of confining pressure was found well-suited. Fig. 2 shows plots of the cube root of permeability against the logarithm of confining pressure using the data presented in Fig. 1 to illustrate the linear character of this relation. Permeability values are normalized on the basis of permeability measured at 1,000 psi (6.9 MPa) net confining pressure to allow direct comparison of the influence of confining pressure independent of permeability level; the slopes of the lines are measures of this influence. A convenient form of the equation for the relation is

$$k = k_{1,000}\left(1 - S\log\frac{P_k}{1,000}\right)^3, \qquad (1)$$

where S, the magnitude of the negative slope, is given by

$$S = \frac{1-\left(\dfrac{k}{k_{1,000}}\right)^{1/3}}{\log\dfrac{P_k}{1,000}} \qquad (2)$$

Use of the straight-line relation simplifies both testing and handling of data. Permeabilities need be measured at only two confining pressures to fix the slope parameter of the equation well enough for most engineering purposes. Measurements usually are made at 1,000 psi (6.9 MPa) and at the reservoir net overburden pressure. The S factor, the absolute value of the slope, embodies the effect of confining pressure in a single number convenient for conceptual and correlation purposes. Increasing values of S imply increasing effects of confining pressure. Moderate effects of stress, such as seen in testing higher permeability rocks, produce S factors in the vicinity of 0.1 to 0.2. Significant effects, as obtained in most tight gas sand tests, yielded S factors in the range of 0.3 to 0.6 with factors greater than 0.7 indicating large reductions. A rock decreased 10-fold in permeability below routine permeability by reservoir overburden pressure would have an S factor of approximately 0.4.

Generally, the lower the core permeability the more it is affected by confining pressure. This is illustrated in the top half of Fig. 3, a plot of S factors of Frontier formation samples against the logarithms of permeabilities measured at 1,000-psi (6.9-MPa)

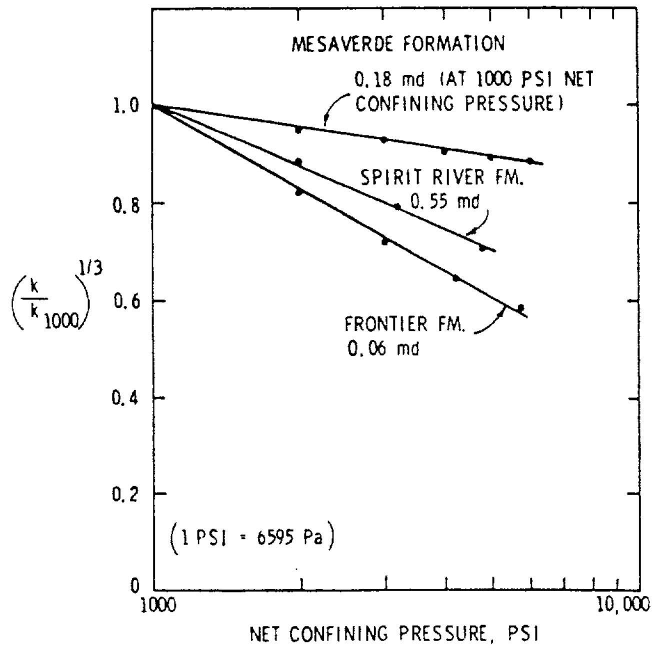

Fig. 2 – The cube root of permeability as a linear function of the logarithm of confining pressure.

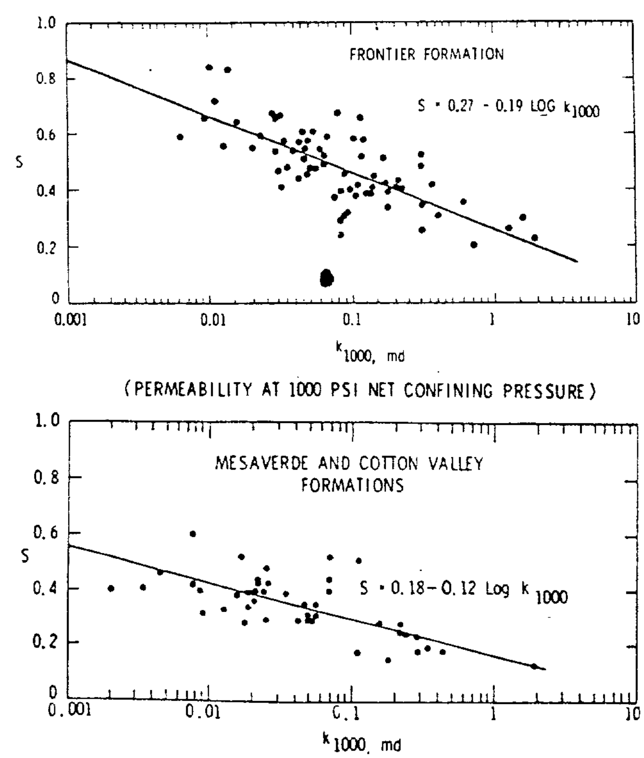

Fig. 3 – Correlation of permeability stress factor S with permeability.

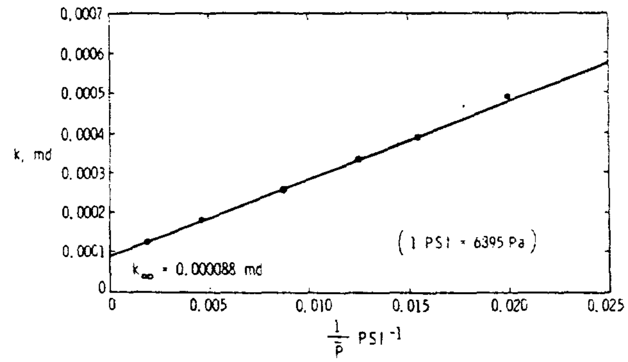

Fig. 4 – Determination of Klinkenberg permeability.

TABLE 1 – COMPARISON OF KLINKENBERG AND OIL PERMEABILITIES

Formation	Net Confining Pressure (psi)	k_∞ (md)	k_o (md)
Mesaverde	5,100	0.0092	0.0092
Mesaverde	5,200	0.0040	0.0032
Frontier	5,400	0.0018	0.0013
Frontier	5,500	0.0018	0.0010
Frontier	5,500	0.0039	0.0037
Frontier	5,500	0.0026	0.0023
Frontier	5,700	0.0066	0.0050

net confining pressure. Note also that the data, although scattered, have a linear trend. A best-fit straight line through the data affords a compact description of the average effect of confining pressure on permeability of cores from this formation. Fig. 3 shows plots of this type. Frontier formation data plotted in the upper half of the figure show effects of stress on permeability which are greater than those for the Mesaverde and Cotton Valley formations shown in the lower half.

No correlation between permeability and reduction due to confining stress was found which extended down to the 150- to 250-psi (1- to 1.7-MPa) net confining pressure condition commonly used in routine core testing; such correlations evidently must be made on an individual formation basis. Permeability measured at 1,000-psi (6.9-MPa) net confining pressure usually is between 0.4 to 0.75 times the routine permeability.

Above 2,000-psi (14-MPa) net confining pressure the logarithm of permeability vs. the logarithm of confining pressure produces fairly linear plots that possibly may be the best correlative relation for use in predicting effects by confining pressure on permeability as reservoirs are depleted.

Gas Slippage

Gas slippage, or Klinkenberg[6] effects, are large in tight gas sands. As an example, a sample with 0.001-md true, or Klinkenberg, permeability typically would exhibit about 0.003 md with gas injected at 100 psig (0.69 MPa) and exiting at atmospheric pressure, and more than 0.007 md if upstream pressure were 15 psig (103 kPa). Effective pore radii of sands with less than 0.1 md are indicated by mercury injection data and by gas slippage theory to range downward from 1 micron (1 μm) into the size realm of the mean free paths of the gas molecules. Because of this, there was concern that the conventional extrapolative procedure (in which permeability plotted vs. reciprocal arithmetic mean pressure is extrapolated to zero reciprocal pressure) for determining Klinkenberg permeability might not yield a straight line for the very low-permeability tight gas sands. The reason for this concern was that Warburg's model,[7] on which Klinkenberg based his development, assumed mean free path length was small compared with capillary radius. Klinkenberg ascribed depressions in b factors (the slope of the line connecting a data point to the Klinkenberg permeability in the above plot) determined at reduced pressure to this departure from Warburg's model. In this study, however, very good straight-line Klinkenberg plots were obtained for rocks with Klinkenberg permeabilities even less than 0.0001 md. An example is given in Fig. 4, showing the results of a test on an 0.000 088-md sample in which upstream pressures ranged from 50 to 1,000 psig (0.34 to 6.9 MPa). Both dry Klinkenberg permeabilities and specific permeabilities to a 1.3 cp (1.3 mPa.s) refined oil (Soltrol 130) were measured in tests on a series of cores in the 0.001- to 0.01-md range; the results are given in Table 1. Oil permeabilities were equal to or lower than Klinkenberg permeability in every case, averaging 25% less. The agreement is sufficiently close, however, to assume that Klinkenberg permeabilities obtained by the extrapolation procedure are satisfactory for practical application. It is not known which, if either, of the permeabilities is "correct." Oil permeabilities might be low because of interactions between the oil and rock, or Klinkenberg values may trend higher because of departure from the Warburg model.

For this study, Klinkenberg permeabilities and b factors were calculated from permeabilities measured usually at 100- and 1,000-psig (0.7- and 6.9-MPa) upstream pressure and atmospheric pressure downstream. Lower pressures were used when necessary during tests of the more-permeable samples to avoid turbulence. The measurements were made at net confining pressures equaling reservoir net overburden pressures. Confining pressure was increased sufficiently to offset average increase in pore pressure to keep confining pressure essentially constant during determination of the Klinkenberg permeability. Klinkenberg's b factor was calculated from the data using the Klinkenberg equation:

$$k_a = k_\infty \left(1 + \frac{b}{\bar{p}}\right). \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

As indicated by the equation, the b factor is an index of the magnitude of the gas slippage effect. It often is regarded as the fractional increase in apparent permeability which would be observed when

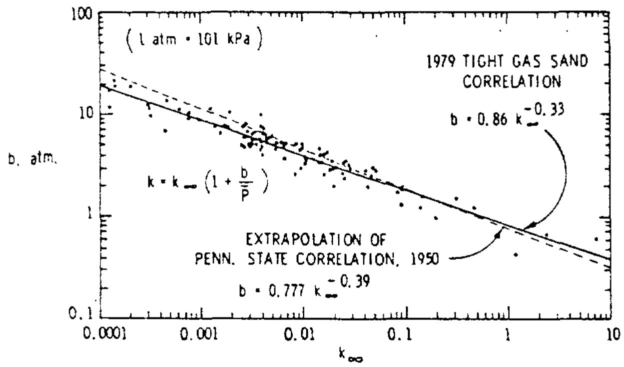

Fig. 5 – Klinkenberg b factor as a function of Klinkenberg permeability.

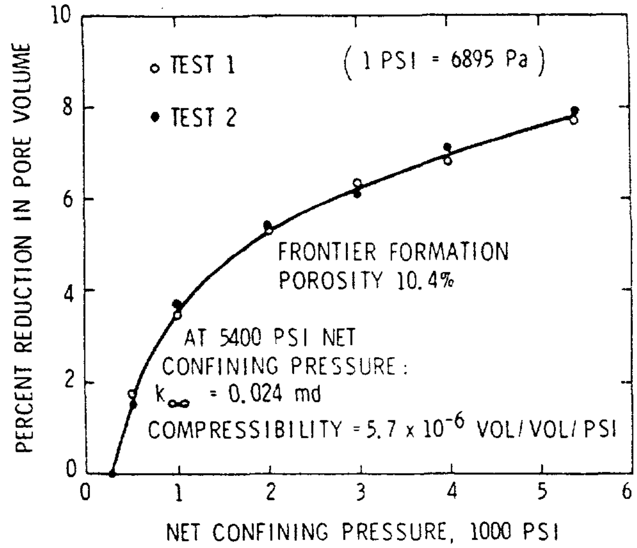

Fig. 6 – Pore volume compressibility of typical tight gas sand sample.

measuring permeability with gas at atmospheric pressure.

The results of measurements made on more than 100 tight gas sand samples are given in Fig. 5 as a plot of the logarithm of b factor against the logarithm of Klinkenberg permeability, a method used by Heid *et al.*[8] for presenting results of the 1950 study of Pennsylvania State U. for the API. The tight gas sand data are scattered closely about a straight line not greatly different from an extrapolation of the best-fit straight line through the higher-permeability 1950 Penn State data, the equation for which is

$$b = 0.777\, k_\infty^{-0.39} \quad \text{.....................} \quad (4)$$

The best line through the tight gas sand data given in this study is

$$b = 0.86\, k_\infty^{-0.33} \quad \text{.....................} \quad (5)$$

As discussed in the 1950 Penn State study, for ideal cases consisting of a parallel capillary bundle, b should vary inversely as the square root of permeability, which would yield a slope of -0.5 cycles/cycle. The -0.39 slope was regarded as nearly corresponding to this idealized view. The -0.33 slope obtained in this tight gas sand study is reminiscent of the cube root relation arising from Lamb's[9,10] expression for flow through ducts and suggests that apertures controlling flow in the tight gas sands may be slit-like rather than round.

The tight gas sand correlation (Eq. 5) yields values of the b factor sufficiently accurate for many practical purposes. The correlative power function may be substituted for b in Klinkenberg's equation as follows.

$$k_a = k_\infty \left(1 + \frac{0.86\, k_\infty^{-0.33}}{\bar{P}}\right). \quad \text{............} \quad (6)$$

This expression can be used as a starting point for generating graphs or numerical solutions for calculating Klinkenberg permeabilities and b factors from ordinary permeability data, provided the pressures used in the measurements are known. An expression originating from Eq. 6 from which k_∞ may be estimated from permeabilities k_a measured at 100-psig (0.69-MPa) upstream pressure is

$$k_\infty = 10^{(-0.0398 \log^2 k_a + 1.067 \log k_a - 0.0825)},$$
$$0.0001 \text{ md} < k_a < 1 \text{ md}, \quad \text{...............................} \quad (7)$$

which agrees with Eq. 6 within a few percent over the k_a range of 0.0001 to 1 md.

Pore Volume Compressibility

The chief reason for measuring pore volume compressibility was to determine if porosity values measured in routine tests were significantly greater than under reservoir conditions. It was found that the behavior of tight gas sands was similar to higher-permeability consolidated rocks and that the porosity measured at the surface was not appreciably greater than at depth. Pore volume diminished usually between 5 and 10%; a rock exhibiting 10% porosity under surface conditions would have 9.0 to 9.5% porosity in the reservoir. For many purposes, the effect of overburden pressure on porosity can be ignored. Multiplying porosity by a factor of 0.95 will correct most data sufficiently close to reservoir-condition porosity for all but the most exacting purposes. Pore volume compressibility averages about 6×10^{-6} vol/vol/psi (vol/vol/6895 Pa).

Results of a typical test are shown in Fig. 6. The percent decrease in pore volume is given as a function of increasing confining pressure. The pore volume compressibility at reservoir stress level is calculated from the slope of the curve at the reservoir net overburden pressure, taking also into account the pore volume decrease up to that point. Table 2

TABLE 2 – PORE VOLUME COMPRESSIBILITY

Formation	Porosity (%)	Net Confining Pressure (psi)	Permeability to H_2O (md)	Pore Volume Decrease (%)	Pore Volume Compressibility (vol/vol/psi × 10^6)
Mesaverde	12.8	5,200	–	5.7	5.4
Mesaverde	12.1	5,200	0.00057	5.8	5.0
Mesaverde	10.6	5,200	0.0025	6.6	6.0
Mesaverde	13.6	5,200	–	3.8	5.1
Mesaverde	13.4	5,200	0.0015	5.6	4.3
Frontier	13.2	5,400	0.0073	7.8	5.7
Frontier	14.3	5,700	0.00029	9.5	5.7
Frontier	11.6	5,700	0.012	10.4	3.5
Frontier	7.0	5,500	0.00091	4.3	2.7
Frontier	10.0	5,500	–	8.5	6.1
Frontier	11.1	5,500	–	10.4	9.0
Frontier	10.8	5,500	0.000069	9.8	9.1
Frontier	12.1	5,500	0.00041	4.6	3.2
Frontier	13.6	5,500	–	9.6	7.7
Frontier	13.8	5,500	–	7.1	5.9
Frontier	13.5	6,700	–	8.1	3.3
Frontier	14.0	5,700	0.00052	7.0	5.5
Muddy "J"	10.8	4,000	0.0012	8.3	9.2
Spirit River	10.2	4,000	0.0099	8.1	15.7

presents the data from a number of such tests, showing both pore volume compressibility and total effect on pore volume.

Effect of Water on Core Permeability

Water greatly reduces permeability of tight gas sands and in a manner different from its effect on higher-permeability sands. Brine causes almost as great a reduction in permeability as fresh water. For example, a 60,000-mg/L NaCl solution will reduce permeability typically 85% below Klinkenberg permeability of the dry core; introduction of distilled water will cause further reduction but only in the order of another 10% for a total reduction of about 95%. Examples of such test results are given in Table 3. A more permeable-water-sensitive sand, such as Berea, would lose about 50% permeability upon introducing the above brine but would lose more than 49% additional permeability upon exposure to distilled water for a total reduction of more than 99%. Fresh water has a lesser proportionate effect on tight gas sands possibly because otherwise dispersible clays or mineral fines may tend to be mechanically locked or wedged in place in the smaller pores of the fine-textured rocks and, thereby, are inhibited from moving to form obstructions. However, the reason that even highly saline solutions can reduce permeability severely is not explained easily. There are several existing theories that alone or in combination may offer explanation. The most popular theory, although subject to much controversy concerning the magnitude of the effects, holds that water adjacent to high-energy surfaces becomes ordered to result in viscosity increase or even solidification sufficient to

TABLE 3 – EFFECT OF FRESH WATER ON PERMEABILITY

Formation	Net Confining Pressure (psi)	k_∞* (md)	k_w** (md)	k_{H_2O}† (md)
Lewis	2,000	0.0077	0.00094	0.00027
Lewis	2,000	0.0070	0.00094	0.00034
Mesaverde	5,300	0.0031	0.00032	0.00010
Mesaverde	5,300	0.0063	0.0021	0.00080
Mesaverde	5,300	0.014	0.0040	0.00064
Mesaverde	6,000	0.0039	0.00055	0.00036
Mesaverde	6,000	0.091	0.076	0.041
Mesaverde	6,000	0.0040	0.0011	0.00037
Frontier	2,000	–	0.0026	0.0009
Frontier	2,000	0.092	0.016	0.0047
Frontier	2,000	0.089	0.033	0.0090
Frontier	2,000	0.0090	0.00029	0.00013
Frontier	6,700	0.010	0.00084	0.00051
Frontier	5,700	0.0065	0.0010	0.00026
Spirit River	4,000	0.033	0.011	0.0037
Spirit River	4,000	0.0068	0.0010	0.00091
Spirit River	4,000	0.0011	0.000031	0.000022

*Klinkenberg permeability of dry core at indicated confining pressure.
**Specific permeability to formation water at indicated confining pressure.
†Specific permeability to distilled water at indicated confining pressure following flow of 60,000-mg/L NaCl solution to sensitize clays.

reduce effective pore diameter significantly. Calculations based on Poiseuille's and Lamb's laws applied to pore radii calculated from Klinkenberg b factor[6,8] indicate that fixed layers of water would need to be in the order of 100 Å (0.01 μm) or more to account for the minimum reduction observed in 0.001- to 0.1-md samples of this study.

Smectites exfoliate and most clays and many other mineral fines associate with water in going from the dry to the moistened state (even in brine) to increase the volumes of aggregates. Apertures could be reduced by this mechanism sufficient to impede flow.

The specific permeabilities to formation water of more than 100 tight gas sand samples were measured. Klinkenberg permeabilities were measured with the samples dry prior to the water flow tests. All tests were made at net confining pressure equaling reservoir net overburden pressures. The results are given in Fig. 7 as a plot of the logarithm of water permeability vs. the logarithm of Klinkenberg permeability. Two features are evident: the trend is linear and the lower the permeability the more water reduces permeability. A line centered in this data is the power function

$$k_w = k_\infty^{1.32},$$
$$k < 1 \text{ md} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

This correlative function may be used to calculate the average effect of water on permeability. Plots such as these of data from single formations or rock types may be less scattered, meaning that, in particular cases, laboratory data from samples selected from a range of permeabilities can be used to determine the exponent applicable for use in the water-effect power equation for that formation. Examination of Fig. 7 shows that the boundary of minimum effect appears well defined; a line along this boundary has a slope of about 1.13 cycles/cycle. A line bounding most of the data below 0.1-md dry Klinkenberg permeability on the side of maximum effect has a slope of about 1.5 cycles/cycle. This function can be used in conjunction with the correlations describing effects of stress and slippage to obtain estimates of in-situ gas permeability from routine permeability values. This is discussed in a later section.

Clay content was not found to correlate with effect of water on permeability. Large clay content usually forecasts large effects of water, but low clay content does not forecast low effects. Cores with large amounts of clay probably were affected most because of the low permeability resulting from the presence of clay rather than by effects of the clay itself.

The fact that water of even high salinity can seriously affect tight gas sand permeability but that, in contrast, fresh water has relatively less additional effect has obvious practical significance. Limiting entry of water during drilling or stimulation should help preserve reservoir permeability and hasten cleanup time. Filtrate invasion from muds can be reduced by maintaining mud weights close to balance, or even underbalanced, with respect to reservoir pressure. Minimizing postfracture shut-in times might also reduce fracturing-fluid invasion and

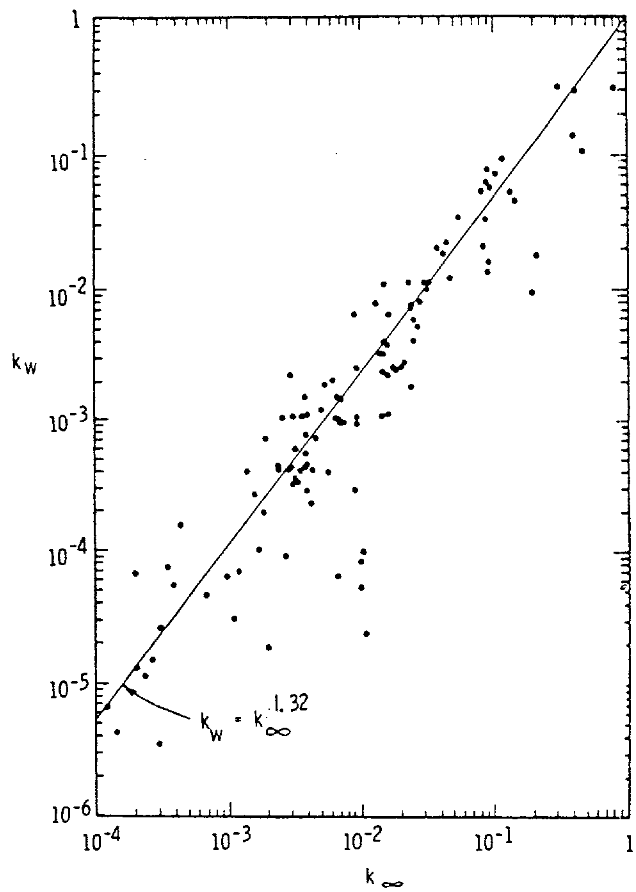

Fig. 7 – Specific water permeability as a function of Klinkenberg permeability.

prove beneficial. Another point implied, since fresh water is not a great deal more harmful than brines, is that less concern is needed regarding the chemical composition of fracturing fluids or mud filtrates.

Effect of Partial Water Saturation on Gas Permeability

Those tight gas sands whose specific water permeabilities are a great deal less than the Klinkenberg permeabilities of the dry samples also have correspondingly low gas permeabilities in the presence of simulated connate water saturations. As a first approximation, effective gas permeability under reservoir conditions can be taken as equal to specific permeability to water measured under reservoir stress conditions. Experiments demonstrating this observation are discussed as follows.

Relative permeability apparatus suitable for testing tight gas sands was not available at the initiation of the study. Exploratory gas drive experiments showed, however, that gas injected usually at 1,000 psi (6.9 MPa) into the plug samples [¾-in. (1.9-cm) diameter and 1-in. (2.5-cm) long] for a time sufficient to produce 3,500 cm^3 downstream at atmospheric pressure reduced water saturations to an average of 40% pore space. Under these conditions most of the water is removed by displacement; not more than 10% pore space of the water was evaporated. No attempt was made to measure or account for saturation gradients which may have existed. An example of the development of permeability with

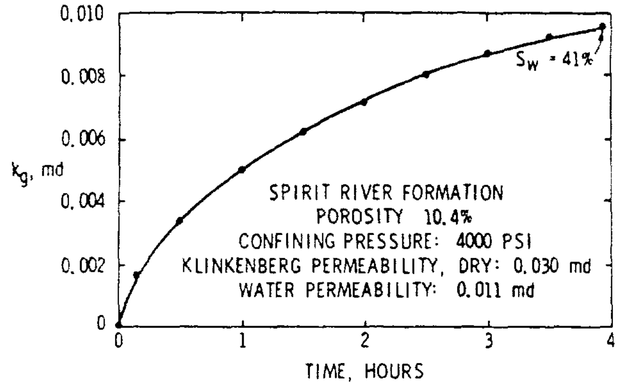

Fig. 8 – Establishment of gas permeability during displacement of water by gas.

time in a gas drive test of this type is shown in Fig. 8. Results of 22 gas drive tests are given in Table 4 in which are compared Klinkenberg permeabilities of the dry cores, specific permeabilities to water, and effective gas permeabilities at the indicated water saturations. There is a degree of bias in that testing of higher-permeability samples was favored because of the inordinate length of time required for tests of samples with less than 0.001-md permeability. Examination of the data shows that effective gas permeability in every case is nearer the specific water permeability, most often by a large margin, than to the Klinkenberg permeability of the dry sample. In more than three-fourths of the cases, effective gas permeability is within a factor of two of the specific permeability to formation water. Effective gas permeability averaged about 35% higher than specific water permeability. This suggests, as mentioned earlier, that the more easily obtained water permeability values could be used for estimating formation gas permeability. Gas drive tests are lengthy and must be attended closely, while, on the other hand, several specific water permeability tests may be conducted simultaneously by one person, usually faster than a sample per cell per day.

Combined Effects of Confining Pressure, Gas Slippage, and Water on Permeability

The individual effects of stress, gas slippage, and water on tight gas sand permeability have been described in the preceding sections. Also, the measurement of specific formation water permeability under reservoir stress conditions was suggested as a core test for estimating effective gas permeabilities under reservoir conditions. This section deals with methods of estimating reservoir-condition gas permeability using routine core analysis data.

Routine permeabilities are inexpensive and consequently plentiful, but because they are measured on dry cores at low stress levels and low flowing gas pressures, they poorly represent in-situ tight gas sand permeabilities. Routine values range from ten to more than a thousand times too high. Also, because of variability in response, routine values cannot be depended upon for comparison purposes. Frontier sand samples compared with Mesaverde sand samples, for example, commonly exhibit higher routine values but lower effective gas permeabilities under reservoir conditions of stress, presence of water saturation, and elimination of slippage. Methods for correcting routine permeability values to reservoir-condition permeability must, therefore, not only compensate for the large changes but also for the wide range of rock variability.

Two methods for estimating reservoir-condition gas permeability are suggested. The first involves

TABLE 4 – COMPARISON OF EFFECTIVE GAS PERMEABILITY TO SPECIFIC WATER PERMEABILITY

Formation	Net Confining Pressure (psi)	k_∞ (md)	k_w (md)	k_g (md) @	S_w (%)
Mesaverde	5,100	0.0092	0.0050	0.0028	40
Mesaverde	5,200	0.0032	0.00057	0.00079	29
Mesaverde	5,200	0.0035	0.00041	0.00010	29
Mesaverde	5,200	0.0096	0.0025	0.0033	34
Mesaverde	5,200	0.0068	0.0015	0.0020	34
Frontier	5,100	0.0067	0.000065	0.000054	44
Frontier	5,400	0.0017	0.00010	0.000070	47
Frontier	5,400	0.024	0.0073	0.0083	60
Frontier	5,700	0.0039	0.00029	0.00071	33
Frontier	5,700	0.047	0.012	0.029	60
Frontier	5,500	0.0027	0.00091	0.00075	43
Frontier	5,500	0.0012	0.000069	0.000073	49
Frontier	5,500	0.0043	0.00041	0.0011	33
Frontier	6,700	0.016	0.0011	0.0028	40
Frontier	5,700	0.010	0.00052	0.0015	52
Muddy "J"	4,000	0.0050	0.0012	0.0015	38
Cotton Valley	4,900	0.0014	0.00040	0.00026	45
Cotton Valley	4,900	0.044	0.022	0.018	32
Spirit River	4,000	0.030	0.011	0.010	41
Spirit River	4,000	0.023	0.011	0.010	38
Spirit River	4,000	0.033	0.0037*	0.0063	40
Spirit River	4,000	0.0068	0.00091*	0.0011	39

*Distilled water following 60,000-mg/L NaCl solution.

correcting sequentially for stress, slippage, and presence of connate water and is the more flexible of the two because adjustments can be made for the individual effects. The second method is derived from the first in which all effects are compounded into a single "stadium" equation (providing "ballpark" values) with two parameters that are varied simultaneously over the range from minimum to very large effects of stress, water, and slippage. Neither method, at least at present, appears capable of high precision, but the two methods do provide more reasonable values for reservoir gas permeability than the routine permeability values.

The first method requires five steps: (1) correction of routine permeability to that at 1,000-psi (6.9-MPa) confining pressure, (2) calculation of S factor (influence of pressure), (3) calculation of effect of overburden pressure using the S factor, (4) correction for gas slippage, and (5) calculation of the effect of water. Core tests over a range of permeability values for each rock type can be used to evaluate necessary parameters that then may be applied to existing routine results. For scoping studies, values of the necessary parameters may be assumed. Only three estimates are necessary: (1) the correction of routine permeability to 1,000-psi (6.9-MPa) confining pressure (a factor usually of 0.4 to 0.75), (2) selection of an S factor equation between defined upper and lower limits, $S = (0.1 \text{ to } 0.3) - (0.1 \text{ to } 0.23) \log k_{1,000}$, and (3) selection of a water-effect exponent for Eq. 8 that also lies within the reasonably well-defined limits of 1.13 to 1.5; k_w then is assumed equal to k_g.

This method was used to generate a series of curves ranging from minimum to maximum effect of stress and water, assuming that rocks most affected by stress were also most affected by water. These calculations all generated gently curving, almost linear curves in plots of the logarithms of routine permeability against the logarithms of the calculated reservoir-condition gas permeability. Straight lines were fitted by eye to these curves, which lay within a few percent of the calculated value over the range of 0.02- to 0.55-md routine permeability. The intercepts and the slopes of these lines are the coefficients and exponents used in the stadium equation:

$$k_g = a\,k^c,\quad 0.02 \text{ md} < k < 0.55 \text{ md} \qquad (9)$$

k_g is effective gas permeability under reservoir conditions, and k is routine permeability. The coefficient a varies from 1/5 to 1/20 and the exponent c varies from 1.5 to 2.7 as the effect of stress and water increases.

Severity of Effects of Stress and Water	a	c
Minimum	1/5	1.5
Moderate	1/7.5	1.9
Great	1/12	2.3
Very great	1/20	2.7

Examples of formations having lower effect of stress and water are clean Mesaverde and Cotton Valley sands. Those moderately affected are shaly Cotton Valley sand samples and cleaner Frontier sands. Most Frontier samples studied exhibited large effects, and some experienced very large effects. Lesser effects tend to accompany increased induration, while increased clay content appears associated with larger effects. Parameters of $a = 1/7.5$ and $c = 1.9$ are reasonable values for use as first approximations in the absence of other information.

Conclusions

Results of compressibility and flow tests on more than 100 tight gas sand core samples from five formations indicate the following.

1. Confining pressure simulating net reservoir overburden pressure reduces permeability of tight gas sands two to more than 10 times, depending on permeability and rock type. The cube root of permeability was found to be a linear function of the logarithm of confining pressure; the slope of the line indicative of the intensity of the effect of stress and was found correlatable with permeability, with correlations varying with rock type. Lower permeability rocks were more affected by stress than higher permeability ones.

2. Gas slippage (Klinkenberg) effects were found to be substantial, as would be anticipated for lower permeability rocks. Slippage effects were found correlatable with an expression not greatly different from an earlier expression derived from more permeable rocks.

3. Water (including brine) severely reduced permeability with the effect more pronounced in the lower permeability rocks. This indicates that preservation of permeability in an invaded zone in a reservoir would be assisted by minimizing invasion of water during drilling and fracturing. Water permeability was found correlatable with Klinkenberg permeability.

4. Specific water permeability measured at the reservoir level of confining pressure was found useful as an approximation of effective gas permeability under conditions of reservoir stress, gas slippage, and partial water saturation.

5. Despite large permeability reductions caused by brine, reducing salinity has comparatively less additional effect, to suggest that the chemical composition of mud filtrates or fracture fluids is ordinarily of secondary importance in preventing permeability impairment.

6. Pore volume compressibility of tight gas sands is of the same order as more permeable sands. Pore volume under reservoir overburden conditions was indicated to average 93% of that under no stress for the samples tested.

7. Effects of stress, gas slippage, and water were found correlatable with permeability but not directly with clay content. Lower permeability rocks experienced large effects with both low and high clay contents. These results suggest that the large effects observed with clay-laden rocks are attributable to the low permeabilities accompanying the high clay content, not to the fact that the fine material was clay.

8. Correlations were found to enable estimating in-situ effective gas permeability from routine core analysis data by taking into account the separate effects of stress, gas slippage, and partial water saturations.

Nomenclature

a = coefficient for stadium equation
b = Klinkenberg b factor, atm
c = exponent for stadium equation
k = permeability, md
k_a = apparent gas permeability, md
k_g = effective permeability to gas, partial water saturation present, md
k_o = specific permeability to oil, md
k_w = specific permeability to water, md
k_∞ = Klinkenberg (no gas slippage) permeability, md
$k_{1,000}$ = permeability measured of dry core at 1,000-psi (6.9-MPa) net confining pressure, md
$\bar{P}$ = arithmetic mean of gas pressure in core during flow of gas, atm (Pa)
P_k = confining pressure, psi (Pa)
S = stress factor defined in text

References

1. "Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1977," AGA and API (June 1978) 39.
2. Thomas, R.D. and Ward, D.C.: "Effect of Overburden Pressure and Water on Gas Permeability of Tight Sandstone Cores," *J. Pet. Tech.* (Feb. 1972) 120-124.
3. Vairogs, J., Hearn, C.L., Dareing, D.W., and Rhoades, V.W.: "Effect of Rock Stress on Gas Production from Low-Permeability Reservoirs," *J. Pet. Tech.* (Sept. 1971) 1161-1167; *Trans.*, AIME **251**.
4. McLatchie, A.S., Hemstock, R.A., and Young, J.W.: "The Effective Compressibility of Reservoir Rock and Its Effects on Permeability," *J. Pet. Tech.* (June 1958) 49-51; *Trans.* AIME, **213**.
5. Tannich, J.D.: "Liquid Removal From Hydraulically Fractured Gas Wells," *J. Pet. Tech.* (Nov. 1975) 1309-1317.
6. Klinkenberg, L.J.: "The Permeability of Porous Media to Liquids and Gases," *Drill. and Prod. Prac.*, API (1941) 200-213.
7. Warburg, E.: *Annalen der Physik*, Halle, Leipzig (1876) Series 2, 159, 499.
8. Heid, J.G., McMahon, J.J., Nielsen, R.F., and Yuster, S.T.: "Study of the Permeability of Rocks to Homogeneous Fluids," *Drill. and Prod. Prac.*, API (1950) 230-246.
9. Lamb, H.: *Hydrodynamics*, sixth edition, Cambridge U. Press, New York City (1932) 582.
10. Jones, F.O.: "A Laboratory Study of the Effects of Confining Pressure on Fracture Flow and Storage Capacity in Carbonate Rocks," *J. Pet. Tech.* (Jan. 1975) 21-27.

SI Metric Conversion Factors

atm	× 1.013 250*	E+02	=	kPa
L	× 1*		=	dm^3
psi	× 6.894 757	E−03	=	MPa
torr (mm Hg, 0°C)	× 1.333 224	E−01	=	kPa

*Conversion factor is exact.

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INTERFERENCE TEST ANALYSIS

CONCLUSION

Petroleum engineers routinely analyze interference tests using the EI-function or line source solution. Applications to naturally fractured reservoirs are reported in the petroleum literature. Properties determined from these interference tests characterize an area much larger than a narrow line between the two wells involved in the test.

IMPLICATION

Interference tests are a valuable source of formation property estimates for the Gavilan-West Puerto Chiquito Mancos Reservoir.

DESCRIPTION OF ATTACHMENTS

1. Quote from textbook, Well Testing. - This is a peer-reviewed introduction to well test analysis. Figure 6.2 shows the size of the region whose properties affect the interference test response.

2. The paper "Reservoir Performance and Well Spacing, Spraberry Trend Area Field of West Texas" illustrates the successful application of EI-function solutions to test data from this important field in West Texas.

3. The paper "Interference Test Analysis for Anisotropic Formations - A Case History" illustrates application of the EI-function solution to interference test analysis in a complex reservoir with different permeabilities in different directions. Individual well tests and interference test analysis have comparable results for kh (page 128). The author, Dr. Ramey, concludes (p. 128) that his method is likely applicable to naturally fractured reservoirs even in the extreme case in which there are fractures in only one direction (requiring the complicated form of anisotropy corrections presented in this paper).

Well Testing

John Lee
Professor of Petroleum Engineering
Texas A&M University

First Printing

Society of Petroleum Engineers of AIME
New York 1982 Dallas

Chapter 6
Other Well Tests

6.1 Introduction

This concluding chapter surveys four well-testing techniques not yet discussed in the text: interference tests; pulse tests; drillstem tests; and wireline formation tests. These tests and others covered in previous chapters by no means exhaust the subject; however, the comprehensive treatment needed by the practitioner is provided by SPE monographs[1,2] and the Canadian gas well testing manual.[3]

6.2 Interference Testing

Interference tests have two major objectives. They are used (1) to determine whether two or more wells are in pressure communication (i.e., in the same reservoir) and (2) when communication exists, to provide estimates of permeability k and porosity/compressibility product, ϕc_t, in the vicinity of the tested wells.

An interference test is conducted by producing from or injecting into at least one well (the active well) and by observing the pressure response in at least one other well (the observation well). Fig. 6.1 indicates the typical test program with one active well and one observation well.

As the figure indicates, an active well starts producing from a reservoir at uniform pressure at Time 0. Pressure in an observation well, a distance r away, begins to respond after some time lag (related to the time for the radius of investigation corresponding to the rate change at the active well to reach the observation well). The pressure in the active well begins to decline immediately, of course. The magnitude and timing of the deviation in pressure response at the observation well depends on reservoir rock and fluid properties in the vicinity of the active and observation wells.

Vela and McKinley[4] showed that these properties are values from the area investigated in the test – a rectangle with sides of length $2r_i$ and $2r_i+r$ (see Fig. 6.2). In Fig. 6.2, r_i is the radius of investigation achieved by the active well during the test and r is the distance between active and observation wells. The essential point is that the region investigated is much greater than some small area between wells, as intuition might suggest.

In an infinite-acting, homogeneous, isotropic reservoir, the simple Ei-function solution to the diffusivity equation describes the pressure change at the observation well as a function of time:

$$p_i - p_r = -70.6\frac{qB\mu}{kh}Ei\left(-948\frac{\phi\mu c_t r^2}{kt}\right). \quad \ldots (6.1)$$

This is simply a restatement of a familiar result. The pressure drawdown at radius r (i.e., the observation well) resulting from production from the active well at rate q, starting from a reservoir initially at uniform pressure p_i, is given by the Ei-function solution. Eq. 6.1 assumes that the skin factor of the active well does not affect the drawdown at the observation well. Wellbore storage effects also are assumed negligible at both the active and observation wells when Eq. 6.1 is used to model an interference test. Jargon[5] shows that both these assumptions can lead to error in test analysis in some cases.

A convenient analysis technique for interference tests is the use of type curves. Fig. 6.3 is a type curve presented by Earlougher;[1] it is simply the Ei function expressed as a function of its usual argument in flow problems, $948\,\phi\mu c_t r^2/kt$. Note that Eq. 6.1 can be expressed completely in terms of dimensionless variables:

$$\frac{p_i - p_r}{\left(141.2\dfrac{qB\mu}{kh}\right)} = -\frac{1}{2}Ei\left[\left(-\frac{1}{4}\right)\cdot\left(\frac{\phi\mu c_t r_w^2}{0.000264\,kt}\right)\left(\frac{r}{r_w}\right)^2\right],$$

or

$$p_D = -\frac{1}{2}Ei\left(\frac{-r_D^2}{4t_D}\right), \quad \ldots (6.2)$$

where

$$p_D = \frac{(p_i - p_r)\,kh}{141.2\,qB\mu},$$

$$r_D = r/r_w,$$

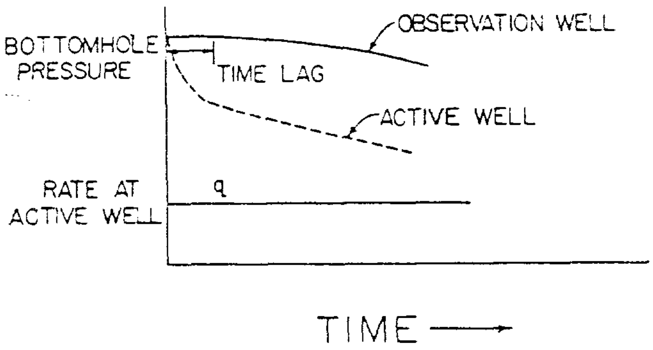

Fig. 6.1 – Pressure response in interference test.

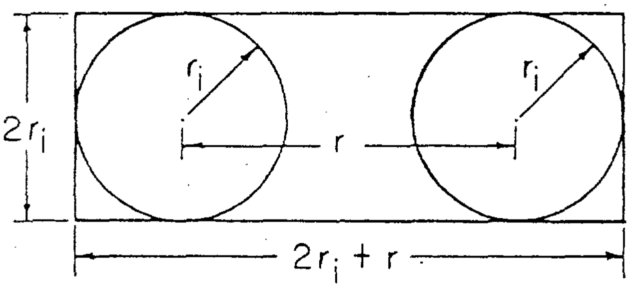

Fig. 6.2 – Region investigated in interference test.

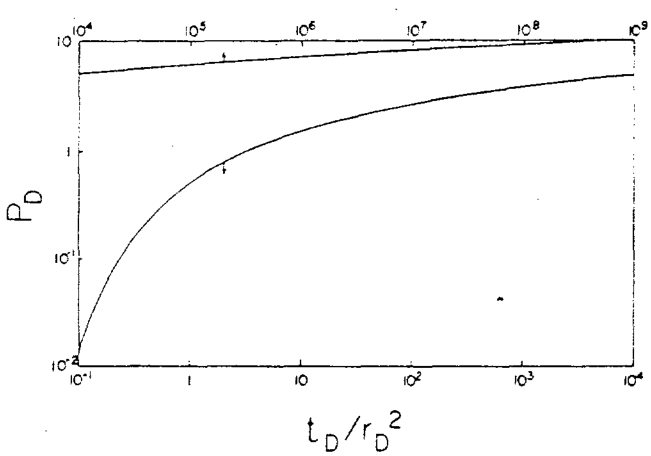

Fig. 6.3 – Exponential integral solution.

and

$$t_D = \frac{0.000264\,kt}{\phi\mu c_t r_w^2}.$$

Fig. 6.3 can be used in the following way to analyze interference tests.

1. Plot pressure drawdown in an observation well, $\Delta p = p_i - p_r$, vs. elapsed time t on the same size log-log paper as the full-scale, type-curve version of Fig. 6.3 using an undistorted curve (the reader can prepare such a curve easily).
2. Slide the plotted test data over the type curve until a match is found. (Horizontal and vertical sliding both are required.)
3. Record pressure and time match points, $(p_D)_{MP}$, Δp_{MP} and $[(t_D/r_D^2)_{MP}, t_{MP}]$.
4. Calculate permeability k in the test region from the pressure match point:

$$k = 141.2\frac{qB\mu}{h}\frac{(p_D)_{MP}}{(\Delta p)_{MP}}.$$

5. Calculate ϕc_t from the time match point:

$$\phi c_t = \left(\frac{0.000264\,k}{\mu r^2}\right)\left[\frac{t_{MP}}{(t_D/r_D^2)_{MP}}\right].$$

Example 6.1 – Interference Test in Water Sand

Problem. An interference test was run in a shallow-water sand. The active well, Well 13, produced 466 STB/D water. Pressure response in shut-in Well 14, which was 99 ft from Well 13, was measured as a function of time elapsed since the drawdown in Well 13 began. Estimated rock and fluid properties include $\mu_w = 1.0$ cp, $B_w = 1.0$ RB/STB, $h = 9$ ft, $r_w = 3$ in., and $\phi = 0.3$. Total compressibility is unknown. Pressure readings in Well 14 were as given in Table 6.1. Estimate formation permeability and total compressibility.

Solution. We assume that the aquifer is homogeneous, isotropic, and infinite-acting; we use the *Ei*-function type curves to estimate k and c_t. Data to be plotted are presented in Table 6.2. The data fit the *Ei*-function type curve well. A pair of match points are ($\Delta t = 128$ minutes, $t_D/r_D^2 = 10$) and ($\Delta p = 5.1$ psi, $p_D = 1.0$). (See Fig. 6.4.) Thus,

$$k = 141.2\frac{qB\mu}{h}\frac{(p_D)_{MP}}{(\Delta p)_{MP}}$$

$$= \frac{(141.2)(466)(1.0)(1.0)}{(9.0)}\frac{(1.0)}{(5.1)}$$

$$= 1{,}433 \text{ md},$$

and

$$c_t = \frac{0.000264}{\phi r^2}\frac{k}{\mu}\frac{(t_{MP}/60)}{(t_D/r_D^2)_{MP}}$$

RESERVOIR PERFORMANCE AND WELL SPACING, SPRABERRY TREND AREA FIELD OF WEST TEXAS

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SUMMARY

The Spraberry Trend Field of West Texas was discovered in January, 1949. Drilling of 2,234 wells and production of some 45 million bbl of oil by January, 1953, indicated this to be an important field which will ultimately cover more than 400,000 acres. In addition to being the world's largest field in areal extent, the Spraberry has presented many problems in well completion and operation and has demonstrated unique reservoir performance characteristics.

The pay section consists primarily of a few fine grained sandstone or siltstone members in a thousand-ft thick section of shale, limestone, and siltstone. Since porosity averages only 10 per cent and nearly all permeabilities are less than 1 md, conventional core analysis does not delineate the "pay" section. Mercury injection was used as a capillary pressure test adaptable to rapid routine use to select those intervals having low enough connate water saturation to contain commercially significant oil saturation. In the central area of the field this "pay" amounts to 16 ft of Upper Spraberry and 15 ft of Lower Spraberry sands.

An interconnected system of vertical fractures, observed in cores, provides the flow channels for oil to drain into the wells but most of the oil is stored in the matrix since the void volume of fractures is estimated to be less than 1 per cent of that in the sand. Initial potentials of wells range up to 1,000 B/D after fracture treatment which should be compared with estimated capacity of 5 to 10 B/D if oil had to flow into the wells through the sand itself.

Without exception initial pressures of later drilled wells were significantly lower than initial pressures of earlier drilled nearby wells in a large area some 6 miles long. This means the earlier drilled wells had drained fluids from areas much greater than their 40-acre proration units. Since most of this performance occurred while the reservoir pressure was above the saturation pressure it was analyzed by the compressible fluid flow theory. This analysis gave calculated initial pressures which agreed within ± 30 psi of measured pressures of 60 per cent of wells in the area using 16-md permeability corresponding to a fracture system substantially that indicated by cores and using combined compressibility of rock and its contained oil and water corresponding to the core analysis data. The most important feature of this analysis was the very close agreement between effective compressibility of the rock and its contained oil and water from the field performance and that from the core tests, because it meant there are no "islands" of low permeability reservoir rock left untapped in the inter-well area and thus no additional wells are necessary to insure that at least one well penetrates each "reservoir."

Twenty-five of forty-four 40-acre spaced wells on three contiguous sections were used in a four-month interference test. Six shut-in wells were tested monthly for oil production, productivity index, gas-oil ratio and pressure buildup, and seven shut-in wells were tested for decline in reservoir pressure. Tests on 12 regularly producing wells gave comparative data for interpretation of shut-in test wells. Reduction in reservoir pressure, decline in productivity index, and increase in gas-oil ratio were found to be substantially the same in the shut-in test wells as those in the comparative regularly producing wells, meaning that the producing wells were depleting the

[1]References given at end of paper.

Manuscript received in the Petroleum Branch office Feb. 2, 1953. Paper presented at the AIME Annual Meeting in Los Angeles, Calif., Feb. 14-19, 1953.

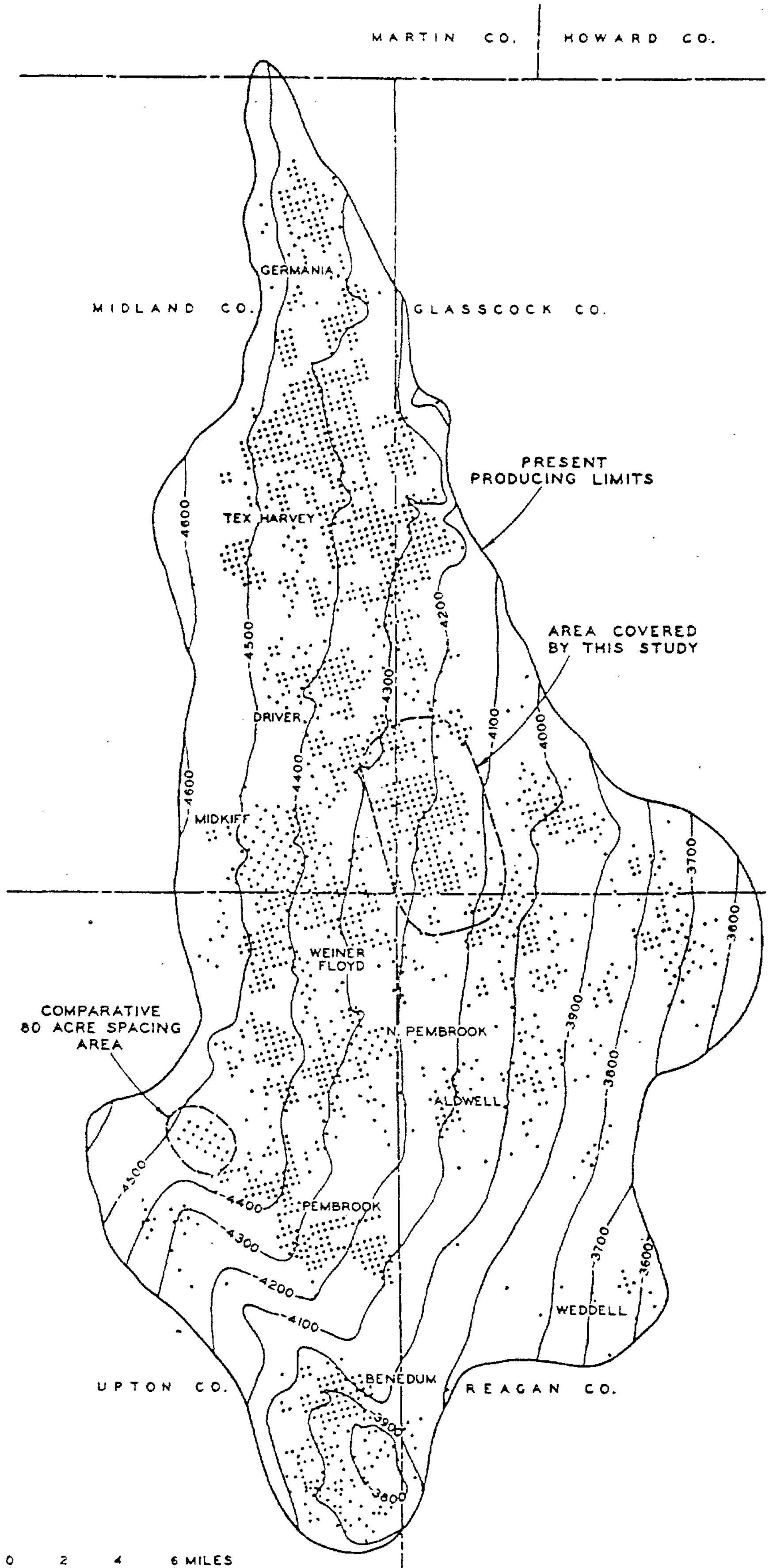

FIG. 1 — SPRABERRY TREND FIELD, CONTOURS ON TOP OF SPRABERRY FORMATION

reservoir with the same efficiency at these points in the reservoir a quarter of a mile away as they were at points near the producing wells themselves.

Rapid decline in oil productivity and rapid increase in gas-oil ratio point to recovery of only some 7 or 8 per cent of oil in place. Laboratory tests on Spraberry cores indicate this low recovery is probably caused by capillary retention of oil due to "end effects" in the small fractured blocks of the reservoir rocks. Production rates necessary to overcome this capillary retention of oil cannot be achieved by any practicable spacing of wells.

The significance of this study is that direct experiment in the field itself demonstrates ability of a well in the Spraberry to recover oil from areas of the order of at least 160 acres as efficiently as could many wells on the same area even though the effective permeability of the reservoir including its fractures is only 16 md. It also demonstrates how modern reservoir engineering methods coupled with an enlightened management attitude can lead to an early understanding of a specific reservoir's performance and thus to proper development and operation.

HISTORY

The Spraberry sands of West Texas, named from a ranch owner on whose property they were first tested, were proved productive in January, 1949, in the Spraberry Deep Field in Dawson County. In February, 1949, the sands were proved productive in the Tex-Harvey Field in Midland County some 50 miles to the south. Development was very slow until late 1950 and early 1951 when additional fields were discovered including Germania, Driver, Midkiff, Pembrook, Benedum Spraberry, and others. Activity increased in 1951, reaching a peak at the beginning of 1952 when some 235 rotary rigs were in operation in the Trend. Thereafter drilling fell off sharply due partly to the steel shortage, but due mostly to the rapid decline in oil productivity of wells.

Development as of Jan. 1, 1953, is outlined in Fig. 1, including limits of semi-proved commercial production. More than 400,000 acres in an area nearly 40 miles in length and up to 25 miles in width are included in this one field which most likely will be proved ultimately to be continuous, making it the largest in areal extent in the world. The circled area near the center of the field indicates the area in which tests were run which are presented in this paper. History of development and production of the Spraberry Trend are shown graphically in Fig. 2.

Originally 40-acre proration units were in effect despite two concerted efforts in 1951 to obtain wider spacing. In December, 1952, however, regulations were changed to provide 80-acre proration units with 80-acre plus tolerance to each unit at the option of the operation. In addition, the various Spraberry fields covering parts of five counties were combined officially into one known as the Spraberry Trend Area Field.

GEOLOGY

The Spraberry formation is of Permian Leonard age and consists of about a thousand-ft section of sandstones, siltstones, shales and limestones with the top of the section occurring at a depth range of about 6,300 to 7,200 ft within the probable productive area. The structure is predominantly a broad regional monocline dipping westward about 50 ft per mile as illustrated in Fig. 1. Some noses are superimposed on the monocline and there is one anticline with about 200 ft of closure in the Benedum Area at the southern tip of the Spraberry Trend. Other anticlinal structures occur in Spraberry fields outside the Trend area such as Spraberry Deep in Dawson County. To the north and east the section grades primarily to a carbonate section providing the necessary seal for the stratigraphic trap. To the south and west the section becomes more shaly. Updip limits of commercial production are controlled by scarcity of vertical fracturing — the dominant feature of this unique reservoir — rather than by lack of accumulation of petroleum. Downdip production is limited both by scarcity of fractures and by water. Readers are referred to other papers for greater geological detail.[1,2,3]

DRILLING AND COMPLETION

Wells are drilled to the top of the Spraberry in about 35 days with rotary rigs using water and water-base mud. Some operators set a salt string at about 4,000 ft, followed by a liner to reduce mud costs while others set a single long oil string. Until late 1951 nearly all wells had casing set on top of the Spraberry after which the wells were drilled in with cable tools or with rotary tools using formation oil as the drilling fluid. Initially some wells were shot with nitroglycerine, but most wells have been hydrafraced to obtain satisfactory productivity. Very few wells will flow without such treatment.[4,5] Initial potentials of wells range up to 1,000 B/D and average about 250 B/D. Since late 1951 many wells have been successfully drilled through the entire Spraberry section with water-base mud, casing set through, cemented, and gun perforated. They have then been completed by hydrafrac using packers and temporary bridging plugs for selective treatment. Nearly all wells in the test area discussed in this paper were completed in the Upper Spraberry alone with casing set on top followed by cable tool and hydrafrac completion. After tests reported in this paper were completed, many of these wells were deepened to the lower Spraberry by continuous diamond drilling using oil as the drilling fluid and were completed in open hole. On new wells this same operator has changed entirely to normal rotary drilling with water-base mud and with casing set through the entire zone.

RESERVOIR CONDITIONS

Sand Properties

The Spraberry section is best illustrated by means of the composite log in Fig. 3 which includes the gamma ray and induction logs, geological description, and core analysis. Typical is the main upper pay sand about 31 ft in gross thickness productive throughout most of the field and the main lower pay sand about 27 ft in thickness productive in part of the field. In addition, numerous other thinner sands and siltstones occur distributed throughout the 900-ft section which is mostly shale. Porosity of these sands ranges up to 13 per cent and permeability ranges from less than 0.001 md to about 1 md. Shale sections also have about these same porosities and per-

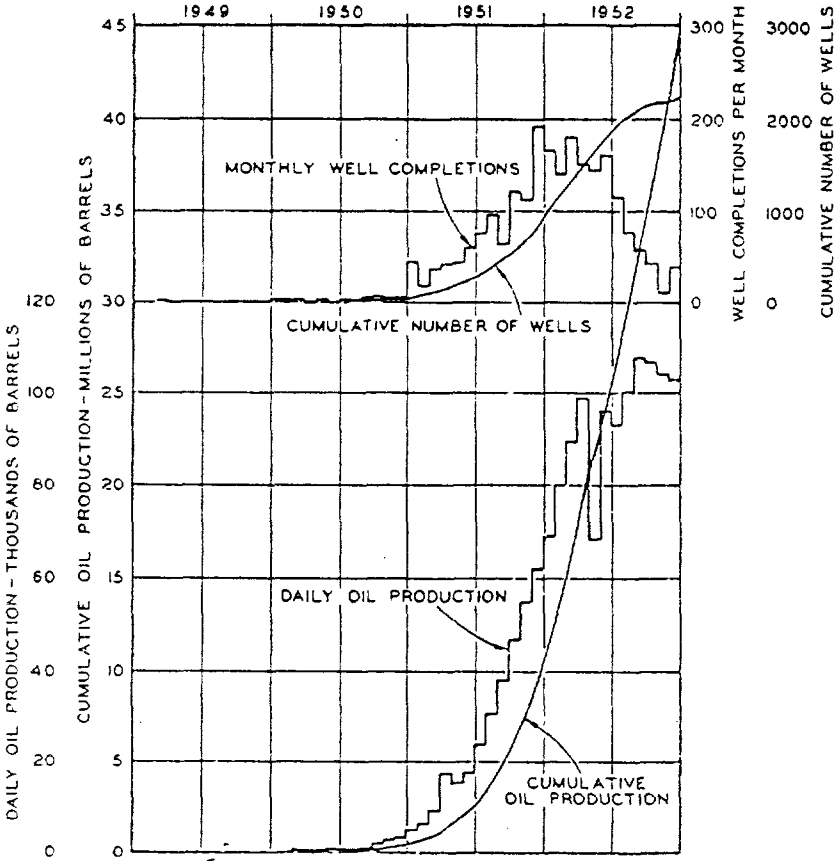

FIG. 2 — HISTORY OF DEVELOPMENT AND PRODUCTION, SPRABERRY TREND AREA FIELD.

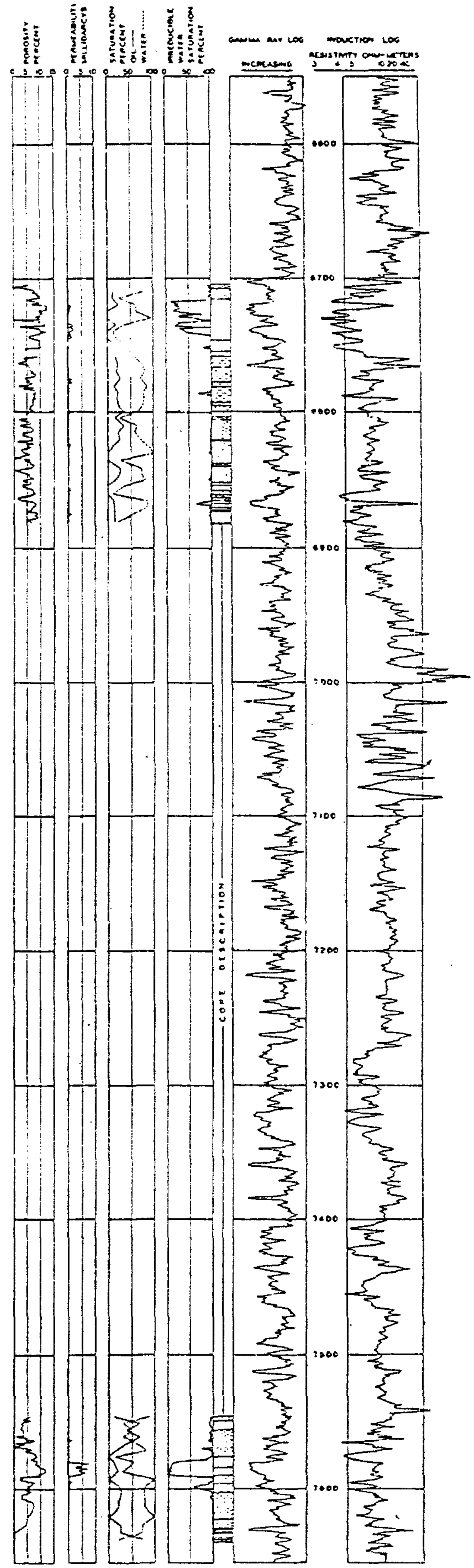

FIG. 3 — COMPOSITE LOG, SOHIO PROCTOR NO. 1, REAGAN COUNTY, TEX.

meabilities. Residual oil saturation in water-base mud cut cores determined by both retort and extraction methods ranges from about 10 per cent to 30 per cent in both shales and sands. Thus, conventional core analysis does not delineate the "pay" section.

Retorting of Spraberry shale at 400° F under vacuum yielded no oil recovery while retorting of companion samples at 1,000° F yielded recovery equivalent of 10 to 30 per cent of pore space. Vacuum distillation of Spraberry crude at 400° F gave about 50 per cent vaporization. The hydrocarbon material in the Spraberry shale thus is not ordinary crude oil but is probably a highly viscous or even semi-solid residue. It is not a commercial deposit.

Porous diaphragm, centrifuge, and mercury injection capillary pressure methods all give similar values for irreducible water saturation for Spraberry sandstones. Single point mercury injection measurements at 1,300 psi were made to determine those portions of sand which had pores large enough to permit oil entry under conditions of capillarity which probably exist in the reservoir. Typical data are included in Fig. 3 and are labeled irreducible water saturation. Similar tests by commercial service laboratories have been reported as "productive porosity." Arbitrarily selecting "pay" as that section having less than 60 per cent irreducible water saturation limits the main upper sand to an average of 16 ft and the main lower sand to an average of 15 ft. Most other sand

Table 1 — Spraberry Sand Properties, Driver Field, Glasscock County, Texas

Well	Gross* Sand Section Ft	Net** Pay Ft	Average Porosity Net Pay Per Cent	Average Irreducible Water Sat. Net Pay	Reservoir Pore Vol. Bbl/Acre Gross Sand	Hydrocarbon Pore Volume Bbl/Acre Gross Sand	Hydrocarbon Pore Volume Bbl/Acre Net Sand
Main Upper Spraberry Sand							
A	30	18	10.6	28.4	21,650	11,650	10,630
B	36	20	9.1	28.4	24,600	11,650	10,100
C***	24	15	9.8	19.4	16,550	10,100	9,230
D	29	15	10.1	25.0	20,300	9,150	8,850
E	22	10	10.2	32.8	16,400	6,280	5,280
F***	17	11	10.4	25.0	12,700	7,530	6,360
G	41	13	9.7	32.0	27,500	8,530	6,750
H	27	17	8.5	25.7	18,250	9,080	8,300
I	28	14	8.9	30.6	18,800	8,470	6,670
J	32	23	11.1	37.8	25,800	13,800	12,400
Average	31	16	9.9	30.1	21,600	9,930	8,610
Main Lower Spraberry Sand							
A	27	14	9.4	15.2	15,850	9,310	8,700
I	36	20	9.9	24.9	23,700	11,800	11,500
J	19	10	10.6	9.5	12,100	7,680	7,450
Average	27	15	10.0	16.5	17,230	9,630	9,230

*Sandstone and siltstone section by core description.
**Section having less than 60% irreducible water saturation by Mercury Injection Method.
***Complete section not cored and analyzed. Excluded from averages.

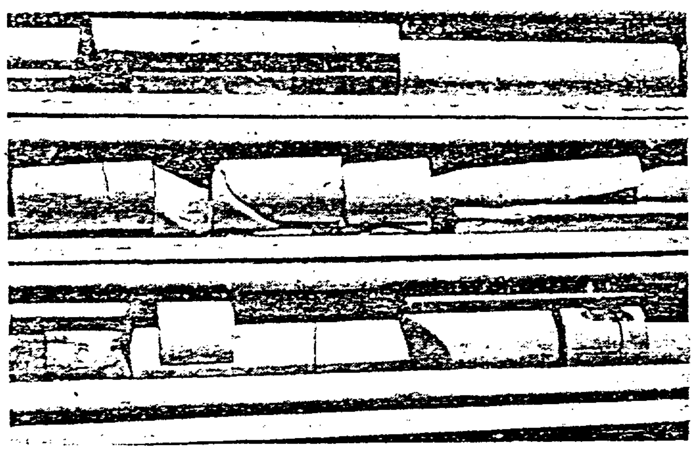

FIG. 4 — TYPICAL FRACTURES IN SPRABERRY CORES.

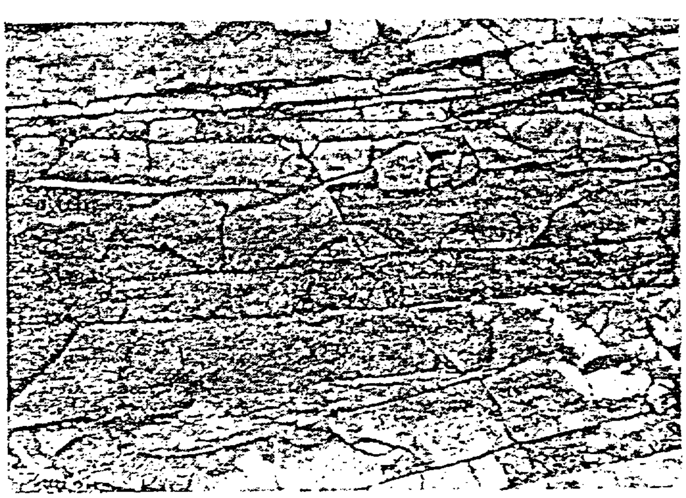

FIG. 5 — TOP VIEW OF VERTICAL FRACTURES IN OUTCROP OF BRUSHY CANYON FORMATION.

streaks are too fine grained to contain sufficient oil saturation to be productive in this area but some of these thinner streaks apparently are productive in some parts of the field. Data for ten wells cored in the test area are summarized in Table 1. Values for hydrocarbon pore space for each well on both the gross sand and net sand basis are not products of average values but are summation of values measured individually on a sample of each foot of core.

Vertical Fractures

The unique feature of the Spraberry formation is the extensive vertical fracturing observed in all productive wells cored. Sixty-two per cent of 2,058 ft of cores from five wells in this area had single fractures present and 4 per cent had multiple fractures, some parallel and some intersecting. Fracture spacing laterally is probably of the order of a few inches to a few feet estimated from frequency of fractures observed vertically in the 3.5 in. diameter cores. Typical fractures in cores are illustrated in Fig. 4. The vertical fracture pattern may very well be similar to that occurring in the outcrop of the Spraberry equivalent Brushy Canyon Formation some 70 miles south of Carlsbad, New Mexico, as illustrated in Fig. 5.

One hundred eleven measurements of fracture openings were made on these cores by comparing core diameter normal to the fracture with that parallel to the fracture after matching the core pieces by bedding planes, bit scratches, and fracture irregularities. These fracture measurements ranged up to 0.013 in. and averaged 0.002 in. Some large fractures exist as demonstrated by cement in cores cut below casing but these are infrequent. Productivity of wells indicates some of the fractures must be open because the actual initial potentials of wells often exceed the potential calculated from core analysis permeability by a factor of about 25. Fractures exist in the shales but pressure-production data discussed later indicate

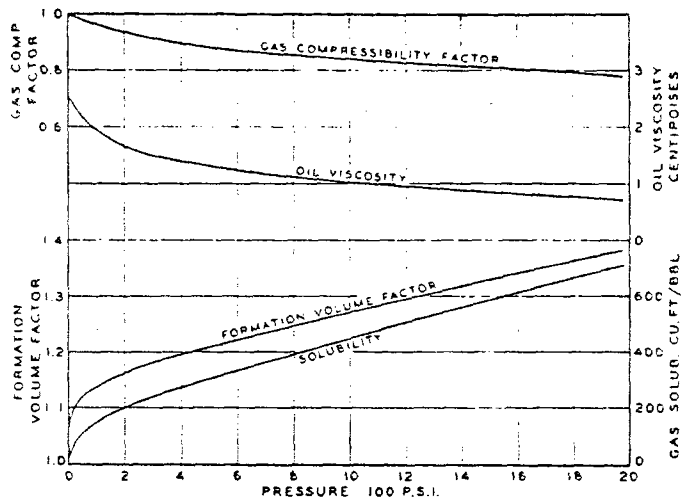

FIG. 6 — AVERAGE SUBSURFACE OIL SAMPLE, UPPER SPRABERRY SAND, DRIVER FIELD, GLASSCOCK COUNTY, TEX. TEMPERATURE, 136° F.

flow is mainly limited to the sand section and vertical communication through fractures in shale is negligible.

Fracture void volume in the main upper Spraberry sand is estimated to be about 110 bbl per acre based on fracture opening and probable fracture spacing just discussed. Fractures thus contribute little to reservoir void volume but do serve as conduits for flow of oil and gas from the reservoir to the wells.

Properties of Oil at Reservoir Conditions

Subsurface samples of oil were obtained from ten newly completed upper Spraberry wells in this area. Properties of each oil sample at saturation pressure are summarized in Table 2 and average properties at various pressures are presented graphically in Fig. 6. Of greatest significance for analysis of upper Spraberry reservoir performance observed is the approximate 300 psi undersaturation of oil initially. Formation volume factor is 1.385 and gas in solution is 713 cu ft per bbl at the 136° F reservoir temperature. Lower Spraberry oil in this area was saturated initially at a pressure of about 2,535 psi. Formation volume factor is 1.58 and gas in solution is 1,047 cu ft per bbl at the 144° F reservoir temperature.

Oil in Place Initially

Tank oil in place initially in the Upper Spraberry, estimated from these various core analysis, fracture opening, and subsurface sample data, is 7,250 bbl per acre on the gross section basis and 6,300 bbl per acre on the net section basis considering only those intervals having less than 60 per cent irreducible water saturation. Similar estimates for the main lower Spraberry sand are 6,150 bbl per acre on the gross basis and 5,900 bbl on the net basis respectively.

MEASUREMENT AND INTERPRETATION OF INITIAL PRESSURES IN WELLS

After hydrafrac treatment each well in the subject area was produced just a few hours for clean up and was then shut in for a minimum of 72 hours prior to measurement of reservoir pressure. Production during clean up ranged from 100 to 400 bbl generally. Wells so tested are identified in Fig. 7 and data obtained are presented graphically in Fig. 8 with appropriate corresponding circular symbols. Subsequent 72-hour shut in pressures of some producing wells are shown as X's, and lines connect pressures of an individual well. Within each closely associated group the later drilled wells had lower initial pressures without exception than did the earlier drilled wells, and in nearly all cases the initial pressures of later drilled wells correspond closely with 72-hour shut in pressures of nearby regularly producing wells. Each later drilled well was at least 1,320 ft from any previously producing well, and one, Davenport C-14, in Section 11, was over half a mile from any producing well. This latter well reflected some 130 psi reduction in reservoir pressure at this distance even though it was completed within about three months of the wells first drilled in the area.

This rapid equalization of pressure over such wide area means the fractures observed in cores are a sample of an

Table 2 — Properties of Reservoir Oil, Upper Spraberry Sand, Driver Field, Glasscock County, Texas

Well	Reservoir Pressure Psi (−4400′ Datum)	Reservoir Temp. °F	Pressure at Sampling Depth Psi	Sat. Press. Psi	Formation Volume Factor	Gas Sol. Cu Ft Per Bbl	Oil Visc. at Sat. Press. Cent.	Compressibility of Oil Vol/Vol/Psi	Gravity Residual Oil °API
A	2330	135	2111	1944	1.398	721	0.77	12.7×10^{-6}	37.7
B	2231	136	2110	1982	1.391	719	—	12.0×10^{-6}	37.0
C	2263	137	2185	2008	1.362	685	0.66	12.7×10^{-6}	36.6
D	2251	137	2130	2090	1.356	679	0.62	11.9×10^{-6}	37.4
E	2212	138	2109	1797	1.365	666	0.78	11.7×10^{-6}	37.3
F	2325	137	2111	1959	1.396	714	—	12.1×10^{-6}	37.1
G	2341	137	2108	2016	1.397	726	—	12.0×10^{-6}	37.3
H	2308	136	2175	2124	1.370	740	—	11.2×10^{-6}	37.3
I	2074	136	1847	1935	1.441	768	—	12.9×10^{-6}	37.5
J	2218	136	2002	1958	1.376	711	—	12.4×10^{-6}	37.0
Average		136		1981	1.385	713	.71	12.2×10^{-6}	[illegible]

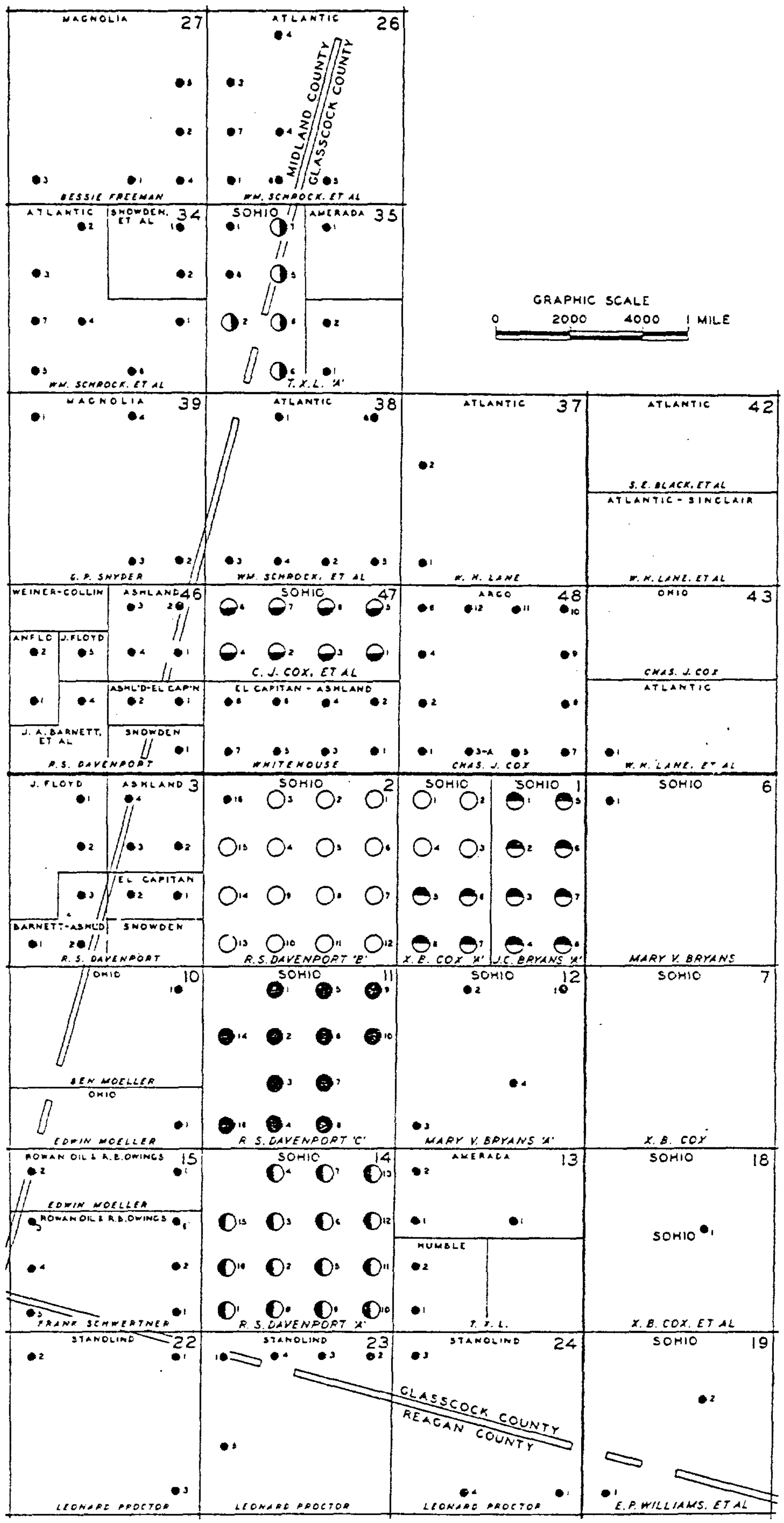

FIG. 7 — GROUPING OF WELLS FOR COMPARISON OF DECLINE OF INITIAL PRESSURE IN WELLS WITH DATE OF COMPLETION.

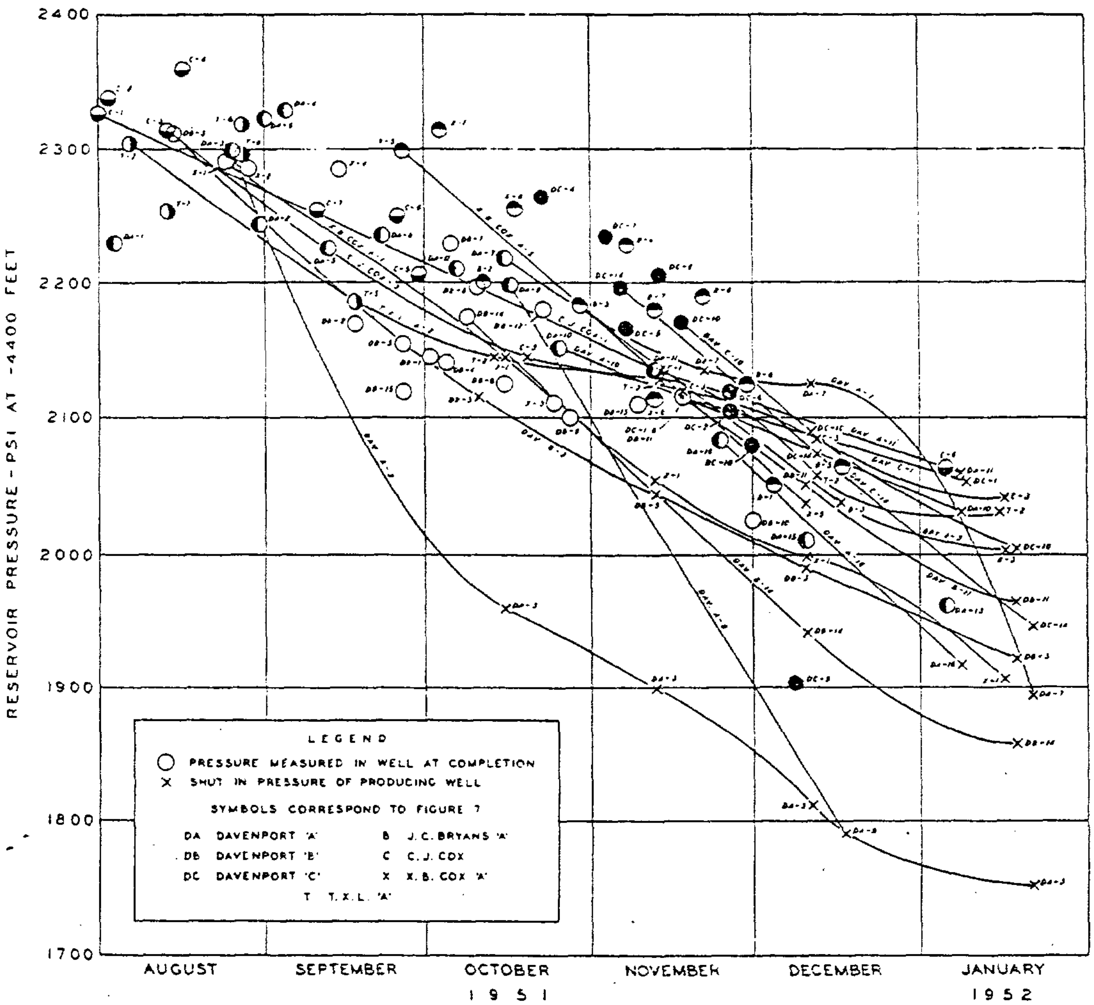

FIG. 8 — COMPARISON OF INITIAL PRESSURES IN WELLS WITH DATE OF COMPLETION.

extensive well interconnected system of fractures covering this entire area. Since without exception reduced pressures were observed in all later drilled wells in each area, many wells drilled were unnecessary because they did not connect to fractures not already being drained by previously drilled wells.

Since reservoir pressures were above the saturation pressure of the oil until about Dec. 1. 1951. the performance was analyzed by the theory of flow compressible fluids by considering each well as a point sink in an infinite reservoir of uniform thickness, porosity, and permeability, and calculating the pressure drawdown at locations of each new well by Equation (1).[6,7]

$$P_o - P = \frac{Q\,U\,B}{4\pi KH\,1.127}\,Ei\left(-\frac{R^2}{\frac{4\,KT}{UCF}\;6.32}\right) \quad \ldots \quad (1)$$

where:

- P_o — Initial pressure, psi
- P — Pressure at R at time T
- Q — Constant production rate, B/D
- U — Oil viscosity, centipoise
- B — Formation volume factor
- K — Effective permeability, darcys
- H — Thickness, feet
- R — Distance, feet
- C — Weighed average compressibility of oil, connate water, and rock
- F — Porosity, fraction
- T — Time, days
- $Ei()$ — Exponential integral
- 1.127, 6.32 — Conversion factors

Total pressure drawdown is the summation of effects of all producing wells using their appropriate production rates, distances, times on production, etc. Production from 143 wells within three miles of key wells indicated in Figs. 7 and 8 was used in calculation of expected initial pressures of 65 wells completed by Dec. 1, 1951.

Because the correct diffusivity factor is unknown and is in implicit form in the relation it was necessary to assume various values of $\frac{K}{UCF}$ and calculate pressures of each well. Deviations between measured and calculated pressures are shown for three values of diffusivity in Fig. 9 leading to selection of 2.77×10^4 as the "best" value of $\frac{K}{UCF}$ based on most

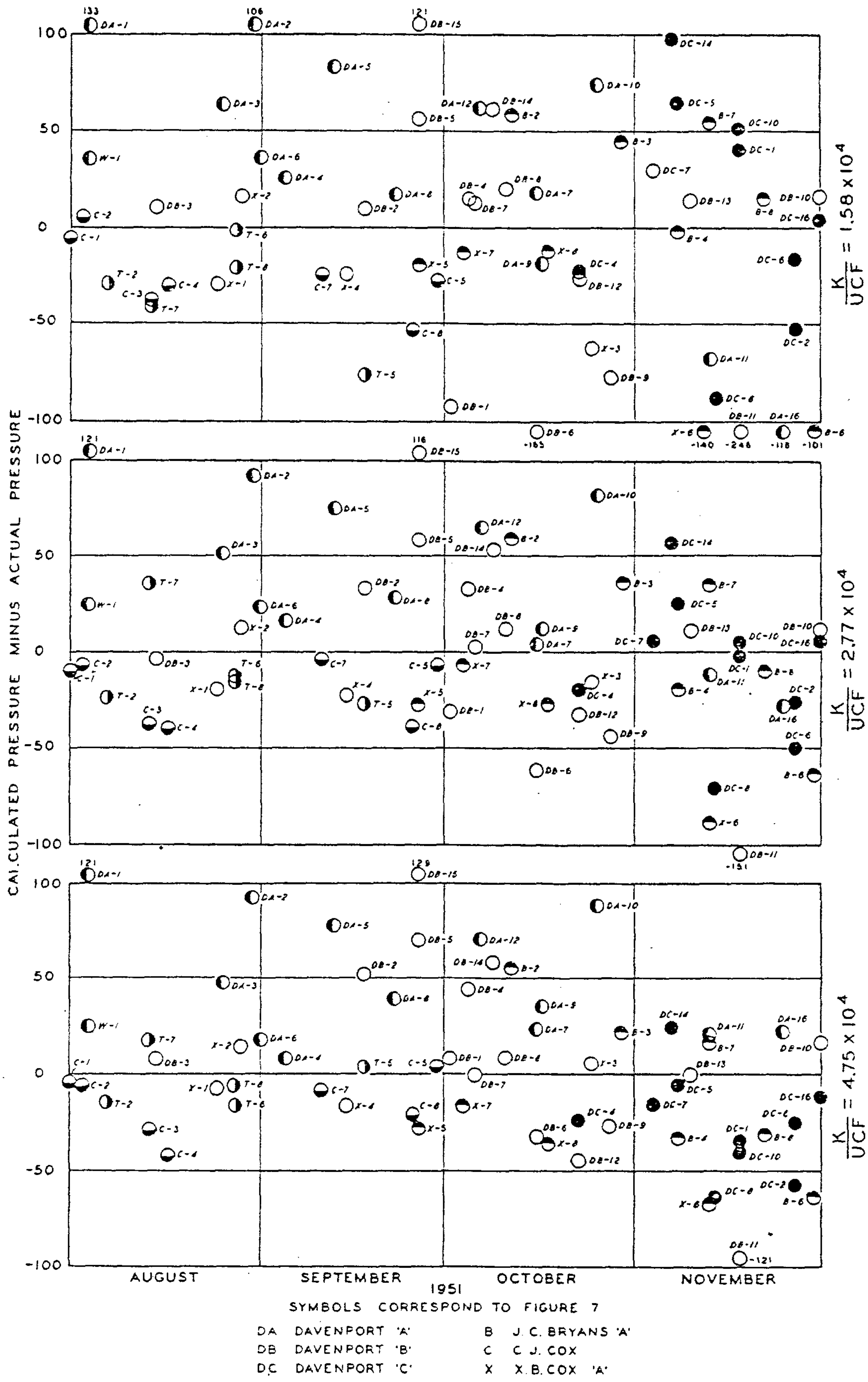

FIG. 9 — COMPARISON OF CALCULATED INITIAL PRESSURES WITH ACTUAL INITIAL PRESSURES OF WELLS.

Table 3 — Expansibility of Rock, Oil and Water Derived from Pressure — Production Analysis Upper Spraberry Sand

Diffusivity $\frac{K}{UCF}$	Expansibility Bbl/Acre/Psi
1.58×10^4	0.186
2.77×10^4	0.204
4.75×10^4	0.197

uniform distribution of plus and minus errors on the basis of both time and geographical distribution. Sixty per cent of calculated pressures are within plus or minus 30 psi of measured initial pressures of wells, which is very excellent considering the working accuracy of pressure gauges in field application, difference in clean-up production and build-up characteristics of wells and the necessary assumption that all wells on each lease had equal production during any particular month.

Average effective permeability in this area was approximately 16 md for the 31-ft gross section as determined by this analysis, corresponding to productivity index of 0.48 B/D per psi and initial potential of 520 B/D. Actual productivity indices ranged from about 0.1 to 2.5 initially and initial potentials ranged from 31 to 960 B/D in this area. This effective permeability in millidarcy-feet is also of the same order of magnitude as that determined by build-up curve analysis in an adjacent area.[8] Considering the flow to be primarily in two sets of equally spaced mutually perpendicular uniform fractures permits calculation of average fracture opening by Equation (2).[9]

$$W = \left(\frac{12\,KS}{6.45 \times 10^8} \right)^{1/3} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \; . \quad (2)$$

where

W — Fracture opening, inch
K — Effective permeability, darcys
S — Fracture spacing, inches

For average fracture spacing of 10 in. corresponding to frequency of fractures seen vertically in 3.5 in. diameter cores the fracture opening is calculated to be 0.0015 in. For 4-in. spacing the opening would be 0.0011 in., and for 2-ft spacing 0.0020 in. These calculated fracture openings compare favorably with the average opening of 0.002 in. actually observed in cores.

The factor HCF, obtained by elimination of $\frac{K}{U}$ from $\frac{KH}{U}$ and $\frac{K}{UCF}$ in Equation (1), multiplied by 7,758 is combined expansibility of rock and its contained oil and water in bbl per acre per psi. Expansibility so calculated is summarized in Table 3 for a three-fold range of diffusivity used in the analysis of the pressure-production performance.. It is significant that the calculated expansibility varies only 9 per cent for this range and thus little error is introduced even though the resolving power of the analysis is not high in selecting the most probable value of the diffusivity factor. The corresponding combined expansibility of rock, oil, and water calculated from core analyses and subsurface samples is summarized in Table 4. Certainly the almost perfect agreement between expansibility calculated from the pressure-production analysis and that from the cores is partly fortuitous because data from individual core wells have an average deviation of ± 15 per cent from the mean. But the good agreement of all factors in the analysis including calculated individual well pressures, calculated permeability and fracture opening versus well tests and core measurement, and calculated expansibility of rock, oil, and water versus core data must mean these values quite accurately represent average conditions in this area of the field. Close agreement of expansibility of oil, water and rock derived from the analysis with that from cores using only sand intervals probably means production comes only from the sand and vertical migration through fractures in shale is not significant. At least this lack of migration through large vertical intervals was confirmed by a large increase in production when nearly depleted upper Spraberry wells were deepened to the lower Spraberry.

Observation of reduced reservoir pressure initially in all later drilled wells in each area certainly leads to the conclusion that there exists an interconnected system of fractures tapped by all wells drilled. But the almost perfect agreement between combined expansibility of rock, oil and water derived

Table 4 — Expansibility of Rock, Oil and Water Derived from Cores and Subsurface Fluid Samples Upper Spraberry Sand

	Volume Bbl/Acre	Unit Expansibility Vol/Vol/Psi	Gross Expansion Bbl/Acre/Psi
Oil	10,060	12.2×10^{-6}	0.124
Water	11,650	3.2×10^{-6}	0.037
Rock	240,000	1.88×10^{-7}*	0.045
			0.206

*Pore Vol. Change/Bulk Vol/Psi.

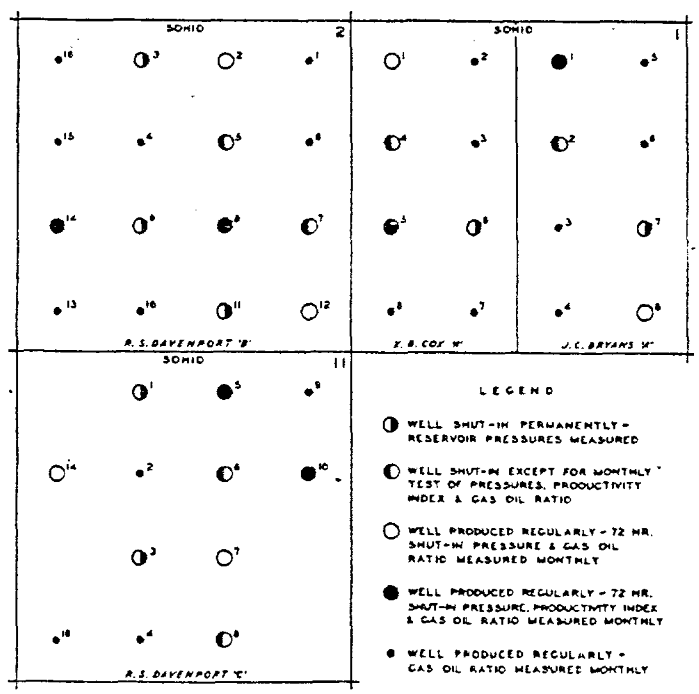

FIG. 10 — KEY TO WELLS IN LARGE SCALE INTERFERENCE TEST.

using only production and initial pressures of wells and expansibility of rock, oil, and water obtained from core analyses indicate the chance is nil that the interwell area has untapped "islands" of reservoir containing commercially significant amounts of oil. Thus additional wells, and for that matter many existing wells, are unnecessary to insure that each part of the reservoir is permeably connected to some well.

INTERFERENCE TEST

In order to continue to observe interference and other features of reservoir performance in the inter-well area, indicated initially by reduced reservoir pressure of later drilled wells, Sohio Petroleum Co. obtained permission from the Texas Railroad Commission to conduct a large scale long time interference test. The test area included three contiguous sections of land upon which 44 wells almost completed uniform 40-acre spacing development. Alternate wells in the center rows were shut in and their allowable production transferred to other wells on each lease in such manner as to protect correlative rights among all leases involved in the test area. The test area is outlined in Fig. 10.

Seven of the wells were shut in throughout the test and had reservoir pressure measurements made monthly. Six of the shut-in wells had production rate, gas-oil ratio, and flowing bottom hole pressure measured after which they were then shut in for a 72-hour pressure buildup test. Additional spot measurements of reservoir pressure were made after the wells had been shut in for one week and for one month. The wells were then returned to production for a 48-hour test period during which gas and oil production were measured and the flowing bottom hole pressure was measured in each well during the last six hours of the test period. The wells were then shut in again for 72-hour pressure buildup tests and for spot readings of reservoir pressure after shut-in periods of one week and one month, etc. Each of the six wells so tested was shut in for three successive months each followed by the 48-hour production test and pressure tests just described. Shut-in wells so tested are illustrated by appropriate symbols in Fig. 10.

To provide a basis for evaluating the observations in the shut-in wells, various tests were made in regularly producing wells. Seventy-two hour shut-in pressures were measured at monthly intervals in six regularly producing wells. Production rate, gas-oil ratio, and flowing bottom hole pressure measurements followed by 72-hour reservoir pressure buildup tests were conducted at monthly intervals in six additional regularly producing wells. Wells so tested are illustrated by appropriate symbols in Fig. 10. In addition, oil production rate and gas-oil ratio were measured on all regularly producing wells in the test area at least once each month.

Decline in Reservoir Pressure

Although the reservoir was below the saturation pressure in the area during the interference test, reservoir pressure continued to decline rapidly due to continued development and due to rapidly increasing gas-oil ratios. Pressure data of the shut-in wells and of the producing wells are presented graphically in Fig. 11 with appropriate symbols to designate test program of each well. Some of the wells shut in permanently

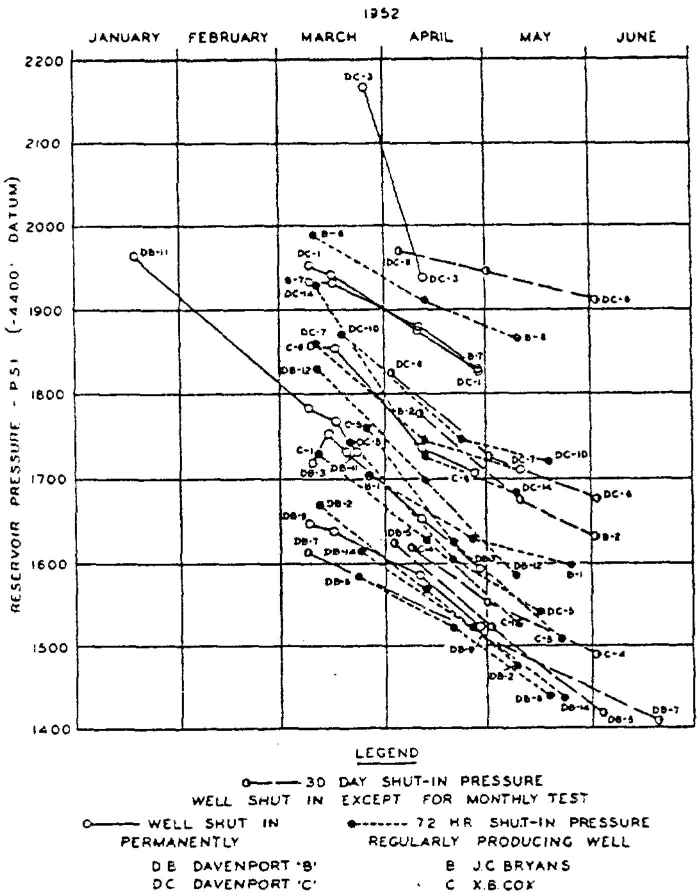

FIG. 11 — COMPARISON OF DECLINE IN RESERVOIR PRESSURE, SHUT-IN WELLS VS REGULARLY PRODUCING WELLS.

showed build up in reservoir pressure for a short time, but soon all shut in wells demonstrated significant decline in reservoir pressure at these points 1,320 ft from any producing well. In wells shut in except for 48-hour production tests monthly, the reservoir pressure built up to a maximum and then declined within each 30-day shut-in period. Only the 30-day shut-in pressures of these wells are included in Fig. 12. These wells also demonstrated significant decline in reservoir pressures at points in the reservoir 1,320 ft from regularly producing wells. Shut-in wells had approximately the same rate of pressure decline as did the producing wells and none of the shut-in wells failed to indicate some significant decline in pressure. During March and April, 1952, the pressure declined about 3 psi per day. During May and June, 1952, the rate of decline of reservoir pressure was reduced to about 2 psi per day due to curtailed production during the oil strike.

Reservoir pressures in the test area covered a range of some 500 psi due partly to difference in date of development of various areas and due partly to variations in density of drilling surrounding particular wells. Thus wells on the Davenport "B" lease drilled earlier and most completely surrounded by areas approaching complete development on a uniform 40-acre spacing pattern reflect the lowest reservoir pressure. Such regional variation in reservoir pressure makes it difficult to determine lag of pressure decline in the inter-

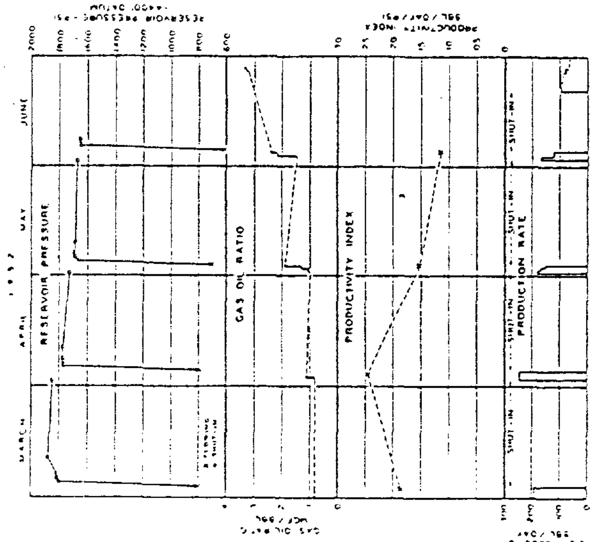

FIG. 12-A — PERFORMANCE OF DAVENPORT C-6 SHUT-IN TEST WELL.

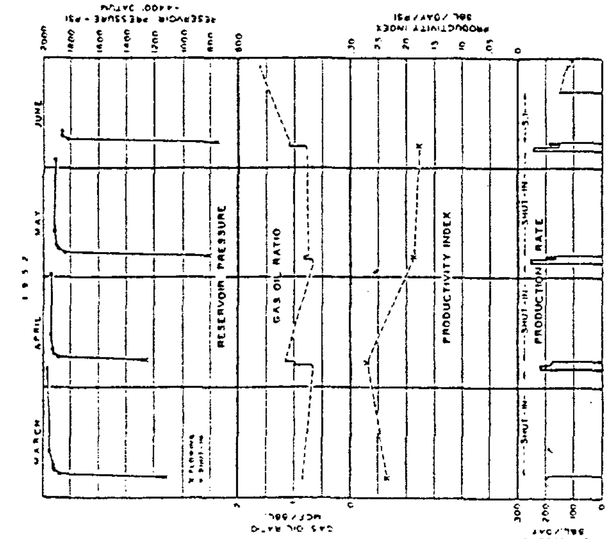

FIG. 12-B — PERFORMANCE OF DAVENPORT C-8 SHUT-IN TEST WELL.

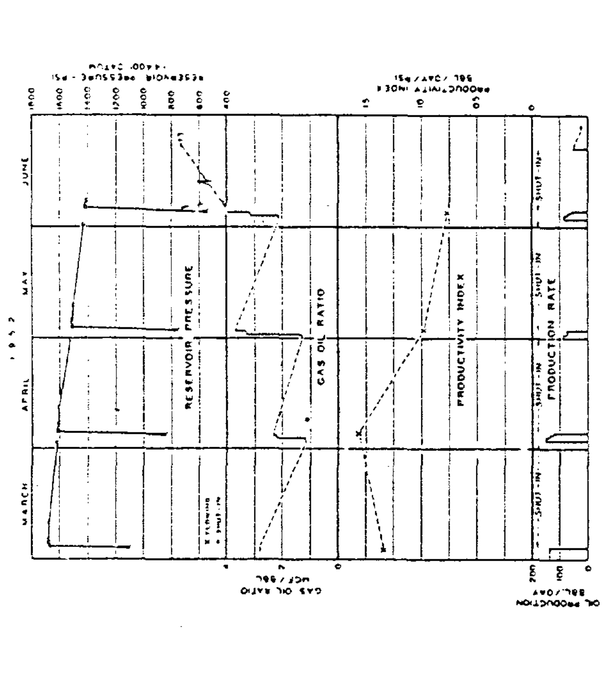

FIG. 12-C — PERFORMANCE OF DAVENPORT B-5 SHUT-IN TEST WELL.

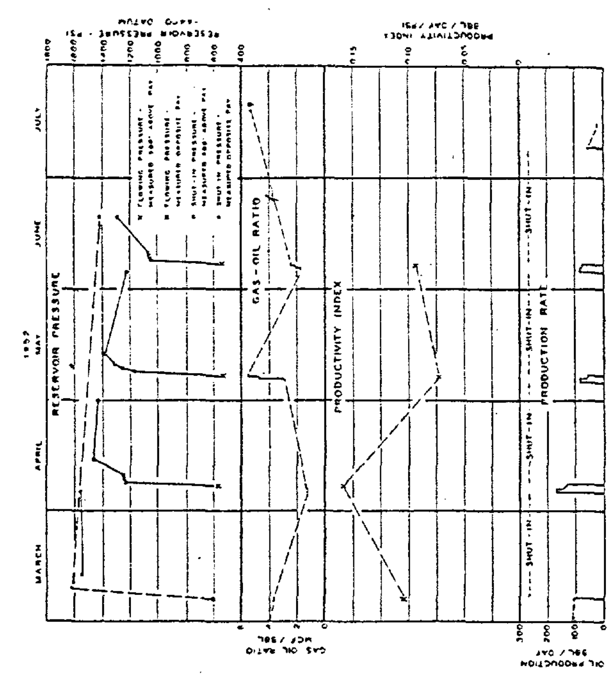

FIG. 12-D — PERFORMANCE OF DAVENPORT B-7 SHUT-IN TEST WELL.

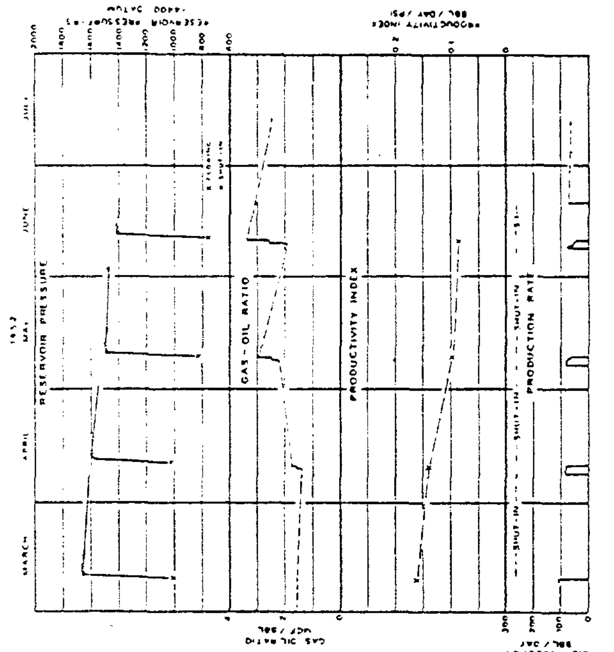

FIG. 12-E — PERFORMANCE OF X. B. COX A-4 SHUT-IN TEST WELL.

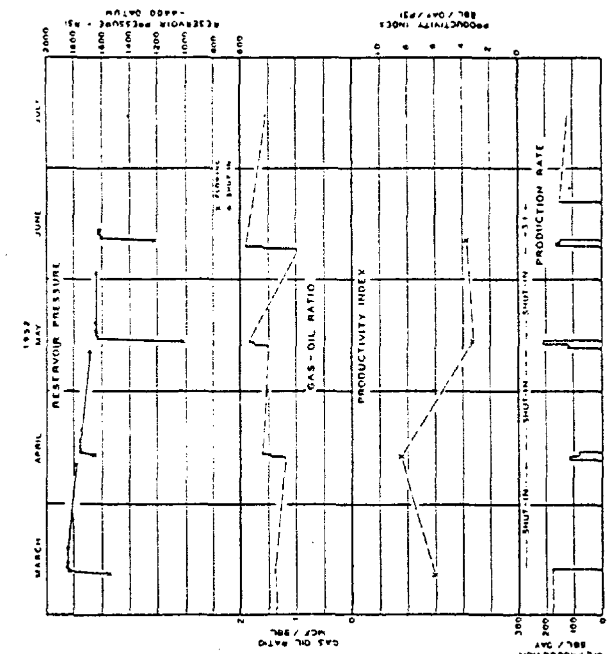

FIG. 12-F — PERFORMANCE OF J. C. BRYANS A-2 SHUT-IN TEST WELL.

well area behind that of the area close to the producing wells. One good example, however, is Davenport B-11 which had been shut in long before the test program started. Five of the eight surrounding wells had 72-hour shut-in pressures measured in March, 1952. Average of these pressures was 1,725 psi or about 40 psi below the 1,765 psi pressure of Davenport B-11 when all pressures were corrected to a common date.

These data show that, on the average, the pressure declined in shut-in observation wells 1,320 ft from any producing well at almost exactly the same rate as it did in the producing wells. As should be expected, the pressure in the shut-in wells was slightly higher than in the nearby producing wells but this lag which ranges at most up to 200 psi indicates depletion of the area of shut-in wells lagged only a few weeks behind the depletion of the area near the producing wells.

Most of the observations of lower initial pressures in later drilled newly completed wells were made while reservoir pressure was above or very near the saturation pressure of the formation oil. Under those conditions large pressure changes occurred with removal of quite small volumes of oil due to the expansibility of oil above the saturation pressure. These observations during the interference test have shown that without exception production from wells has continued to affect reservoir conditions at points up to at least 1,320 ft away from the producing wells while the reservoir pressure has declined hundreds of psi below the saturation pressure of the formation oil. And this occurred during a period when much larger amounts of oil and gas must be removed to effect reservoir pressure changes due to the much larger expansibility of fluids below the saturation pressure.

Gas-Oil Ratios and Productivity Indices

In previous discussions of well spacing and recovery efficiency, proponents of wider spacing have often stated that interference between wells demonstrated by changes in pressure means efficient recovery of oil over the distance pressure drawdown was observed. Opponents of wider spacing have argued that reduction of pressure did not necessarily mean recovery of oil. The proponents have had to rely on theoretical considerations involving assumptions which were not acceptable to all concerned. It would indeed be fortunate if methods were available by which a well could be drilled and the oil content of the reservoir determined accurately. The well could then be shut in while other wells are produced and later could be resampled to determine oil recovery from the reservoir by difference. However, such techniques have not yet been developed and it is necessary to rely on indirect observations of depletion such as changes in oil productivity and gas-oil ratios in shut-in wells compared with such changes as occur in regularly producing wells to judge relative recovery efficiency.

As previously mentioned, gas-oil ratios and productivity indices were measured for six wells shut in except for a 48-hour production test each month. Data obtained in the series of tests on each of the wells are presented graphically in Fig. 12A-F, inclusive. With one exception the reservoir pressure in each well reached a maximum and then declined during each 30-day shut-in test period, and all of the wells had significant decline in pressure from month to month as discussed previously. Circled pressure points represent 1, 2, 3, 7, and 30 days shut-in pressures. In three shut-in wells the gas-oil ratio decreased during the first month it was shut in and in all six shut-in wells it was higher at the end of the four-month test period than it was at the beginning. In five of the six shut-in wells the productivity index was higher following the first one-month shut-in period than it had been at the beginning of the test. In all of the six shut-in wells the productivity index was lower at the end of the three-month test period than it was at the beginning of the test.

During each 48-hour production test of the shut-in wells, oil production was gauged for the first 24 hours, the next 18 hours, and finally for each of the last six one-hour periods. Flowing bottom hole pressures were recorded during this last six-hour period just prior to shutting in the well for a pressure buildup test. Gas production was measured throughout the 48 hours by orifice meters. Production data and gas-oil ratio calculated for the first 24 hours, the next 18 hours, and the last six hour periods included in Fig. 12A-F, inclusive, show that oil production declined generally and gas-oil ratio increased generally for each of the wells such that 48 hours was insufficient for the wells to be completely stabilized. Thus actual changes in productivity and gas-oil ratios in these shut-in wells probably were more severe than the 48-hour tests indicate. Additional gas-oil ratio and oil production tests were made within one to two weeks after the wells had been returned to regular production and four of the six wells showed further significant increase in gas-oil ratio. Data of these latter tests are included in each well performance chart.

Results obtained in six regularly producing wells tested for comparison are presented in Fig. 13A-F, inclusive. These charts show the oil production rate, gas-oil ratio, and productivity index data along with the flowing pressure and static reservoir pressure measured after 24 hours, 48 hours, and 72 hours shut-in periods. These 72-hour shut-in pressures, summarized in Fig. 11, were discussed previously. Gas-oil ratios of all six of these regularly producing test wells increased during the period and productivity indices of all six of these wells declined significantly throughout the test period.

Productivity indices of all shut-in and regularly producing test wells are summarized in Table 5. The tabulation includes ratio of the last test to the first test of each well to illustrate relative decline in productivity. For the regular producing wells this ratio averaged 0.56 representing 44 per cent decline in productivity during a two month period. For the shut-in test wells this ratio averaged 0.66 representing 34 per cent decline in productivity. As mentioned in discussion of well performance records in Fig. 12A-F these shut in test wells were still declining in production at the end of the 48-hour test following each one-month shut-in period. The last three tests were not comparable to the stabilized test following regular production before the well was shut in but they should be comparable to each other since all were measured at comparable times on production. For the group of shut-in wells the ratio of last productivity index to that measured after the first one-month shut-in period averaged 0.54 representing 46 per cent decline during a two-month period during which only enough oil was produced to test the wells. Production of these six wells during the 48-hour tests totalled less than 2 per cent of production from the four leases involved and average production of each of the shut-in wells was less than 10 per cent of average production of each of the regularly producing wells during the test period.

Reservoir pressure declined about 150 to 185 psi during the test and the corresponding increase in viscosity of oil should have been about 10 per cent from 0.82 to 0.90 cp. Thus, only 10 per cent of the 45 per cent decline in productivity index is attributable to changes in oil viscosity and the remaining 35 per cent must be due to actual reduction of oil saturation in the reservoir. Since over three-fourths of the decline in productivity index observed is due to reduction in oil saturation and since the same percentage decline in productivity index occurred in shut-in wells as did in regularly producing wells, it can only be concluded that a well in the Spraberry effects recovery of oil as efficiently at points in the reservoir at least

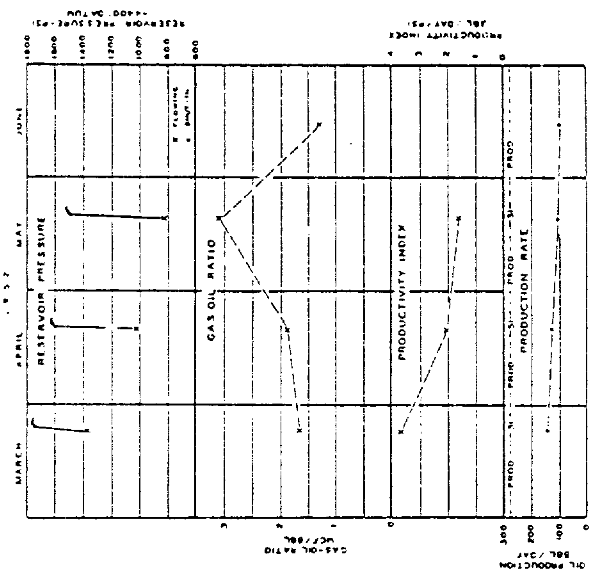

FIG. 13-E — PERFORMANCE OF X. B. COX A-5 REGULARLY PRODUCING WELL.

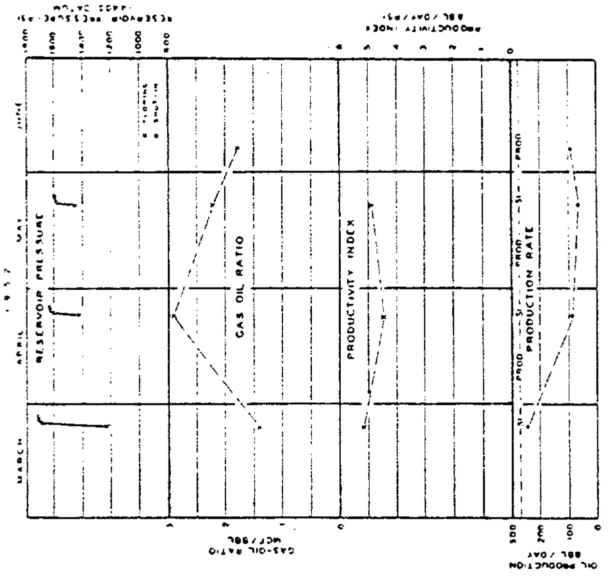

FIG. 13-F — PERFORMANCE OF J. C. BRYANS A-1 REGULARLY PRODUCING WELL.

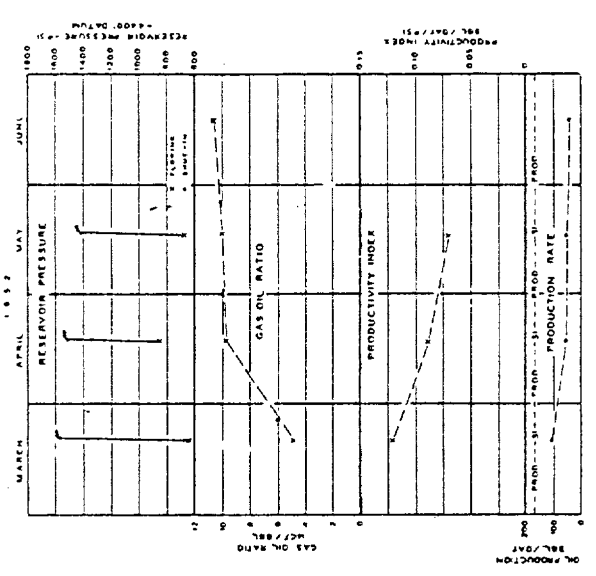

FIG. 13-C — PERFORMANCE OF DAVENPORT B-8 REGULARLY PRODUCING WELL.

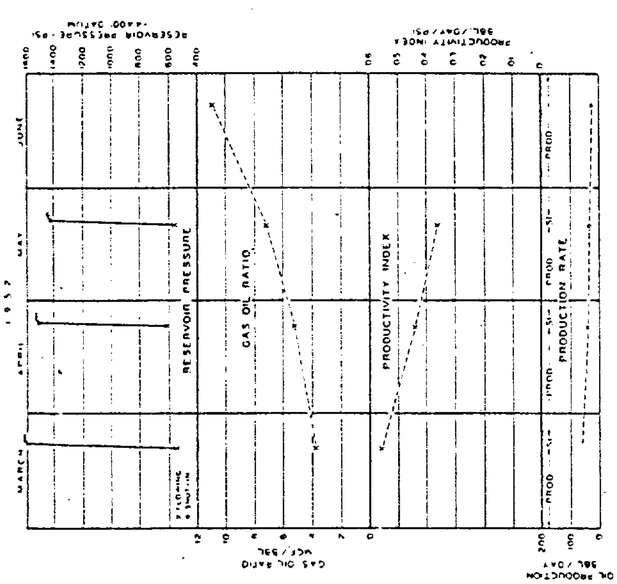

FIG. 13-D — PERFORMANCE OF DAVENPORT B-14 REGULARLY PRODUCING WELL.

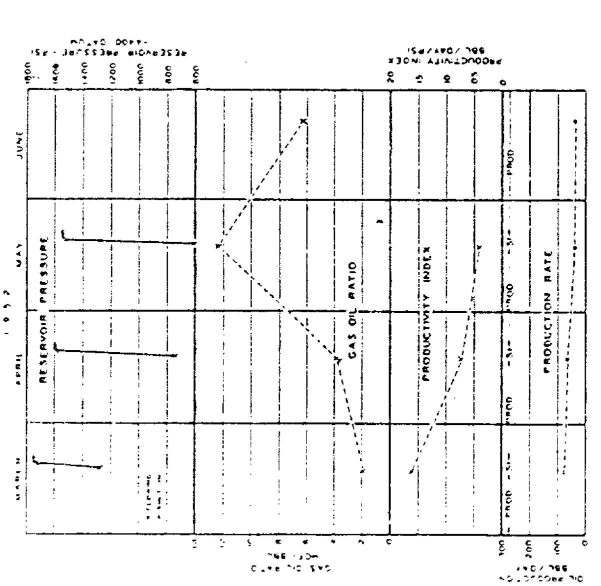

FIG. 13-A — PERFORMANCE OF DAVENPORT C-5 REGULARLY PRODUCING WELL.

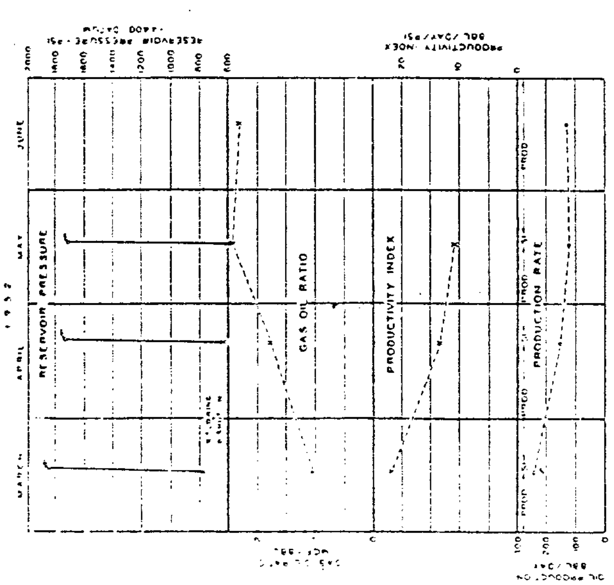

FIG. 13-B — PERFORMANCE OF DAVENPORT C-10 REGULARLY PRODUCING WELL.

Table 5 — Decline in Productivity Index

Shut-In Wells Tested Monthly

Well	Productivity Index — Bbl/Day/Psi March*	April**	May**	June**	Ratio June Test / March Test	Ratio June Test / April Test
Davenport C-6	0.187	0.248	0.150	0.114	0.61	0.46
Davenport C-8	0.235	0.269	0.185	0.176	0.75	0.65
Davenport B-5	0.134	0.157	0.098	0.077	0.57	0.49
Davenport B-7	0.105	0.158	0.073	0.093	0.88	0.59
Cox A-4	0.160	0.140	0.099	0.087	0.54	0.62
Bryans A-2	0.59	0.82	0.32	0.36	0.61	0.44
Average					0.66	0.54

Wells Produced Regularly

Well	Productivity Index — Bbl/Day/Psi March	April	May	Ratio May Test / March Test
Davenport C-5	0.163	0.073	0.043	0.26
Davenport C-10	0.219	0.133	0.111	0.51
Davenport B-8	0.120	0.088	0.070	0.58
Davenport B-14	0.056	0.044	0.036	0.64
Cox A-5	0.365	0.202	0.152	0.42
Bryans A-1	0.52	0.45	0.49	0.94
Average				0.56

*Test taken after regular production before well shut-in.
**Test taken last 6 hours of 48-hour production test following one month shut-in period.

1,320 ft from the well as it does from points near the well itself.

Since gas-oil ratios in the Spraberry have increased rapidly after the reservoir pressure declined below 1,600-1,700 psi, it is best to compare gas-oil ratios of the shut-in wells with those of the producing wells at common pressures rather than at common dates. Gas-oil ratios of the six regularly producing wells having productivity index tests and the gas-oil ratios of the six shut-in test wells are plotted versus 72-hour shut-in reservoir pressure in Fig. 14. The last gas-oil ratio point for each shut-in well plotted at the lowest reservoir pressure represents the test one to two weeks after the well had been returned to production. It is included because it represents more stabilized production than do the other measurements made during the 48-hour production tests following each one-month shut-in period. Similarly the last gas-oil ratio point for each of the regularly producing wells represents a test in June, 1952, most nearly corresponding in date to the last tests of the shut-in wells.

Although gas-oil ratios of individual wells varied irregularly during the test, there is good general agreement between the trend of gas-oil ratios of shut-in wells and the trend of gas-oil ratios of regularly producing wells. This is particularly true when it is recalled that shut-in wells were not stabilized within the 48-hour production test following each one-month shut-in period. This is best illustrated by Davenport B-5 and Davenport B-7 wells, whose gas-oil ratios increased from 3,364 to 13,077 cu ft per bbl and from 2,414 to 9,160 cu ft per bbl, respectively, within one to two weeks after the wells had been returned to regular production. These compare with gas-oil ratios 14,250 cu ft per bbl for Davenport B-8 and 11,130 cu ft per bbl for the Davenport B-14 at approximately the same date.

Since change in gas-oil ratio is an index of depletion of oil and since approximately the same changes in gas-oil ratios occurred in the shut-in wells as did in the regularly producing wells, it can only be concluded that oil saturation was reduced by substantially the same amount in the vicinity of the shut-in wells as it was in the vicinity of the producing wells.

These various comparisons of performance of shut-in wells with performance of nearby producing wells have shown by three indices of depletion, decline in reservoir pressure, decline in productivity index, and increase in gas-oil ratio, that substantially the same reduction in oil saturation was occurring in the vicinity of the shut-in wells as was occurring in the vicinity of the producing wells. These detailed tests were conducted in an area drilled on a uniform 40-acre spacing pattern so the tests of shut-in wells are limited to points 1,320 ft from some regularly producing well. But the previous observations of reduced pressure in newly completed wells in this same area included many step out developmental wells 1,870 ft from any producing well and one over half a mile from any

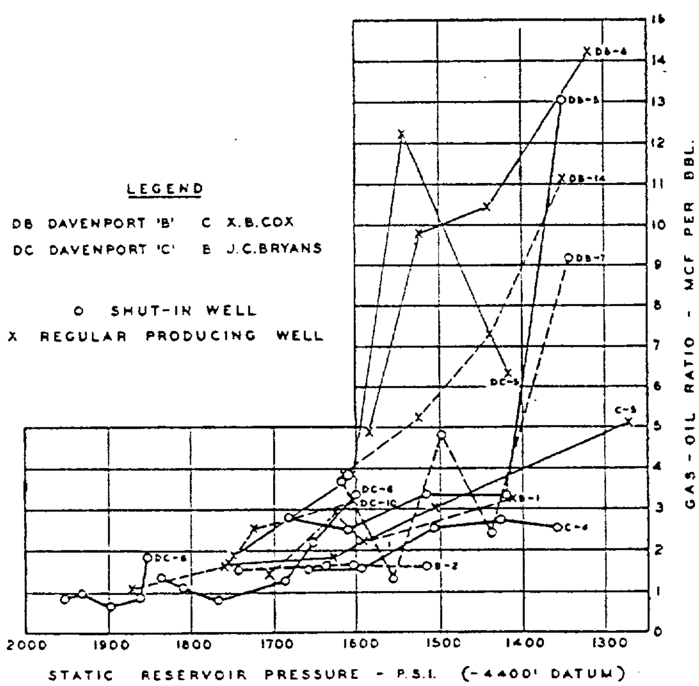

FIG. 14 — COMPARISON OF GAS-OIL RATIOS OF SHUT-IN AND PRODUCING WELLS.

producing well. There is no reason to believe reduction in productivity index and increase in gas-oil ratio would be limited to distances of 1,320 ft when reductions in reservoir pressures have occurred over much greater distances. From these various observations, it can only be concluded that one well can effect recovery of oil from an area of at least 160 acres in the Spraberry Trend as efficiently as could many wells drilled on the same tract.

GENERAL RESERVOIR PERFORMANCE

Production History

This extensive program of obtaining cores, subsurface oil samples, initial pressures of each well and the conduct of an extensive interference test in this area has yielded the most complete record of performance of any area in the Spraberry Trend. History of oil production, gas-oil ratio, and reservoir pressure of the 16-well Davenport "B" lease covering Section 2 in this area is presented in Fig. 15. Production began in August, 1951, and reached a maximum in January, 1952, when full development on a 40-acre spacing pattern had been completed. During this period average reservoir pressure declined from 2,350 psi initially to about 1,900 psi and gas-oil ratios remained below 1,000 cu ft per bbl at or near the solution ratio. Cumulative recovery was 170,000 bbl, or 265 bbl per acre. Production declined sharply in March due partly to some wells being shut in for the test program just described and due partly to some wells being dead and shut in for installation of gas lift equipment. Radical changes in reservoir conditions caused production to continue to decline sharply through June when it averaged only 25 bbl per well per day even though additional wells were returned to production each month. In February gas-oil ratios started to increase rapidly such that by June the average gas-oil ratio for the lease was about 9,500 cu ft per bbl and ratios for some wells were as high as 30,000 cu ft per bbl. Reservoir pressure had declined to about 1,400 psi in June and cumulative lease production was only 280,000 bbl, equivalent to 17,500 bbl per well or 440 bbl per acre. Four wells on the lease were deepened to the lower Spraberry, accounting for the increase in production and decrease in gas-oil ratio in July, 1952. Extrapolation of production decline from the upper Spraberry alone on this lease would not indicate future production to be a large percentage of past production, and this points to very low ultimate recovery in barrels per acre and in percentage of oil in place initially.

Other leases in the test area have experienced the same type decline in oil productivity and increase in gas-oil ratio, although such changes have lagged slightly behind that of

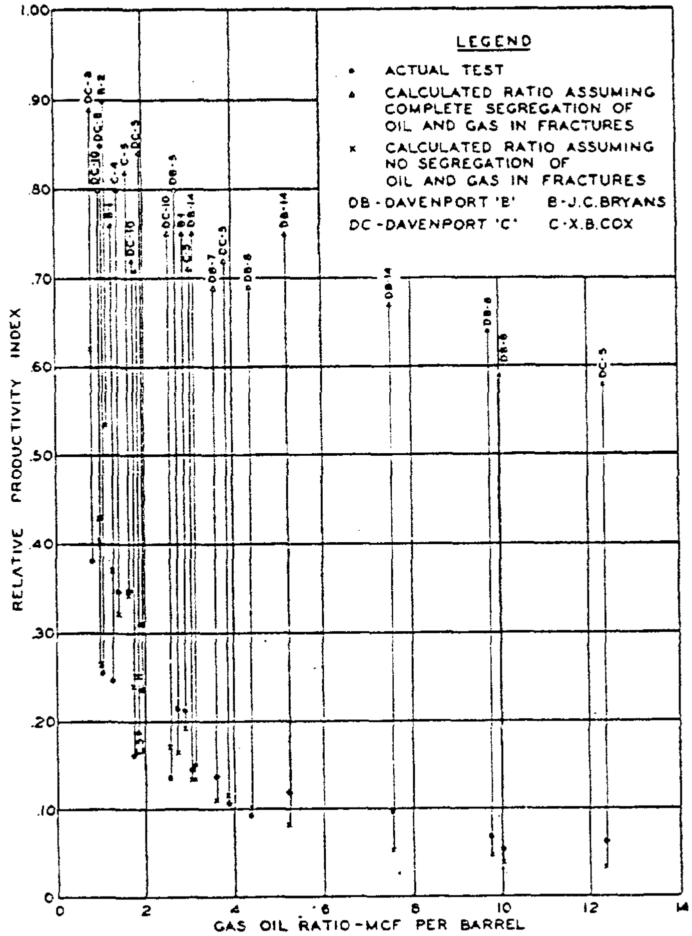

FIG. 16 — RELATION BETWEEN DECLINE IN PRODUCTIVITY INDEX AND GAS-OIL RATIO AND DEGREE OF SEGREGATION OF OIL AND GAS IN FRACTURES.

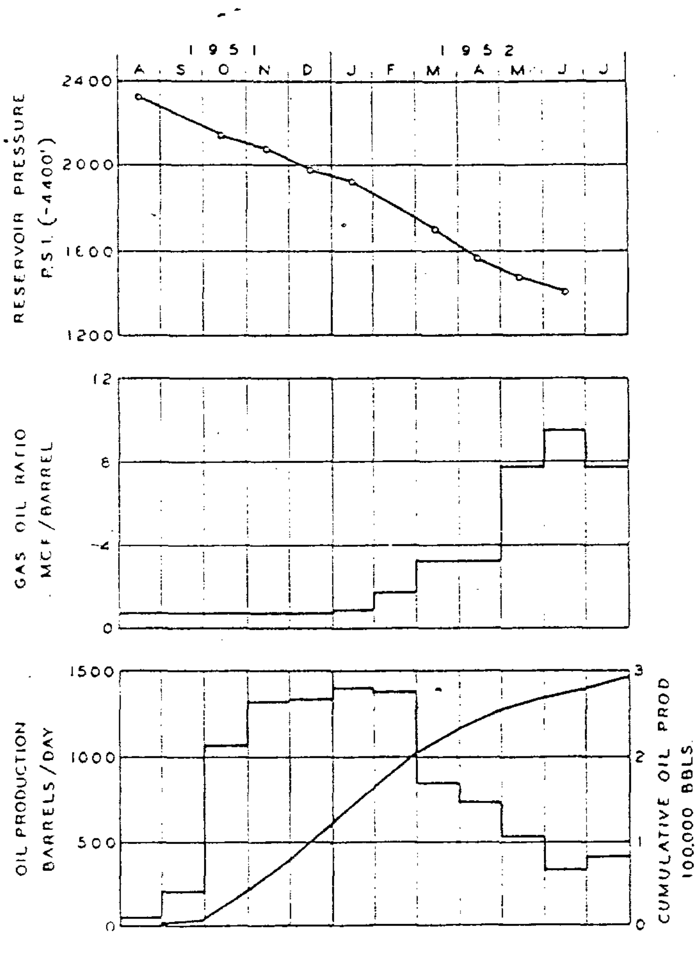

FIG. 15 — RESERVOIR PERFORMANCE, SPRABERRY SAND, DAVENPORT B LEASE (16 WELLS), DRIVER FIELD, GLASSCOCK COUNTY, TEX.

the Davenport "B" lease due partly to later development and due partly to the Davenport "B" lease being most completely surrounded by areas of complete development on the 40-acre spacing pattern.

Decline in Well Productivity

Many factors affecting production change very rapidly in the Spraberry, as indicated by the decline in production of this typical lease and by the decline in productivity indices of various test wells in the interference program. For example, one well near the test area had a productivity index of 0.46 B/D per psi in a test taken within a few days after completion of the well. Two months later in a second test the productivity index declined from 0.23 to 0.09 B/D per psi in a 14-day test while the gas-oil ratio was still less than 1,000 cu ft per bbl. Such decline in productivity is much greater than that corresponding to normal relative permeability - saturation relations.

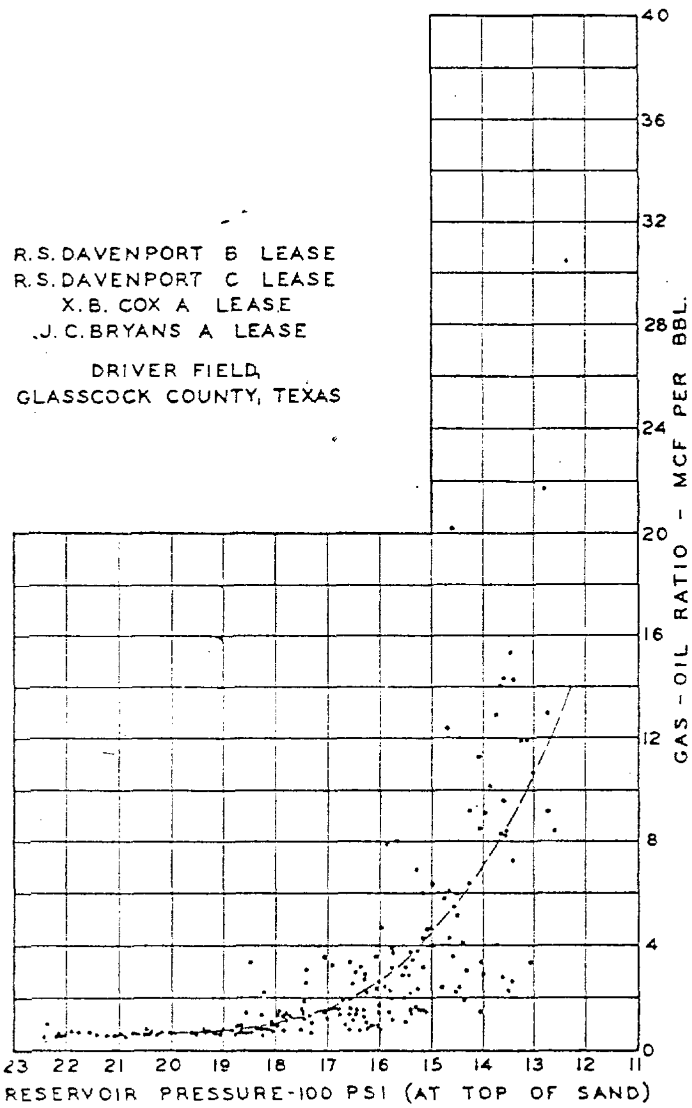

FIG. 17 — GAS-OIL RATIO VS RESERVOIR PRESSURE, PERIODIC INDIVIDUAL WELL TESTS.

Since the fracture openings are paper thin, gravity segregation of oil and gas may be very incomplete — particularly in the vicinity of the wells where velocities are highest, where considerable additional gas is being continually released from solution as the fluids flow into the area of reduced pressure, and where the converging flow concentrates pressure loss due to friction. With complete segregation of oil and gas in uniform fractures the relative permeabilities to oil and gas would correspond ideally to the relative saturations in the fractures (diagonals of a permeability - saturation plot). With no segregation in the fractures, gas would be transported as bubbles dispersed in the oil phase and the friction effects would be about the same as if only oil were present. Relative permeability to oil would correspond to the fractional composition of oil in the flowing mixture and relative permeability to gas would have no meaning in the normal concept of permeability.

Theoretical productivity index was calculated for each test of the wells in the interference test program both for the case of complete segregation of oil and gas in the fractures and for the case of no segregation of oil and gas using relative permeability - saturation relations just previously defined and using Equation (3) developed by Evinger and Muskat.[10]

$$PI = \frac{2\pi K_s H}{(P_s - P_f)\ ln\ r_e/r_w} \int_{P_f}^{P_s} \frac{K_o/K_s}{U \quad B} dP \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

where:

PI Productivity index
K_s Specific permeability
H Thickness
K_o Effective permeability to oil
P_s Static reservoir pressure
P_f Flowing bottom hole pressure
U Oil viscosity
B Formation volume factor
r_e Drainage radius
r_w Well radius

Initial productivity indices of these test wells were calculated from initial potential tests, measured initial shut in reservoir pressures, and flowing bottom hole pressures estimated from a simple linear average of tubing pressure versus flowing bottom hole pressure from 16 tests of other new Spraberry wells. Error in flowing bottom hole pressure is estimated to have been less than 100 psi, and pressure drawdown was greater than 500 psi in all but one of the 12 test wells. Actual relative productivity indices, using these as starting points, and theoretical relative productivity indices for 23 tests of the 12 wells are plotted versus gas-oil ratio in Fig. 16. Assumption of no segregation of oil and gas in the fractures gives approximately ten times closer agreement with the actual productivity tests than does assumption of complete segregation of oil and gas in the fractures. At gas-oil ratios greater than 5,000 cu ft per bbl actual productivity is consistently greater than that calculated assuming no segregation of oil and gas in the fractures but still many fold less than that assuming complete segregation. Some deviation is not surprising because oil volume fraction of the flowing gas-oil mixture is less than 10 per cent and at least some segregation should be expected.

In addition to explaining the abnormal decline in productivity of Spraberry wells this analysis has one very practical application in considering installation of artificial lift to increase production rate of flowing wells. This theory indicates only nominal increase in production by lowering flowing bot-

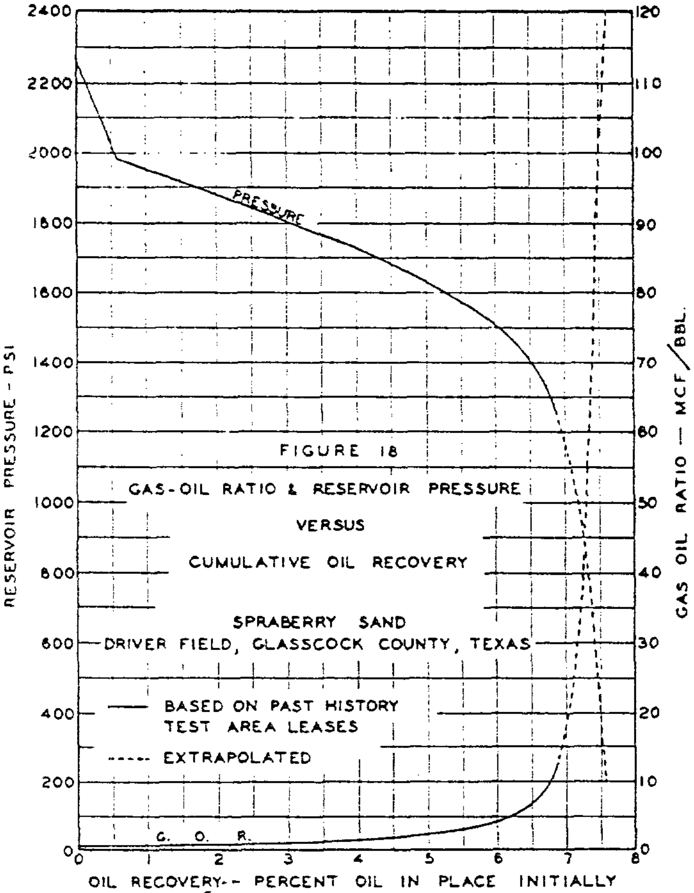

FIG. 18 — GAS-OIL RATIO AND RESERVOIR PRESSURE *VS* CUMULATIVE OIL RECOVERY.

tom hole pressure from say 500 psi to 100 psi when the well is capable of flowing steadily at the higher pressure. Many wells tested under these conditions have flowed at substantially the same rates as they could be pumped.

Gas-Oil Ratio, Pressure and Recovery

Individual gas-oil ratios of the various wells on the test leases are plotted versus reservoir pressure in Fig. 17. Gas-oil ratios remained at or near the solution gas-oil ratio until the pressure declined below 1,900 psi. With further reduction in pressure they then increased rapidly and averaged about 11,000 cu ft per bbl at 1,250 psi reservoir pressure. Gas-oil ratios of many wells in the test area have increased further to the range of 20,000 to 80,000 cu ft per bbl at reservoir pressure in excess of 900 psi although insufficient pressure data are available to plot the trend accurately.

Because of the rapid changes in Spraberry wells and differences in depletion of the wells, the relation between pressure decline, gas-oil ratio, and cumulative recovery cannot be accurately determined simply by averaging lease data. Such a comparison can be made, however, by material balance methods using the gas-oil ratio - pressure trend in Fig. 17, and the properties of the reservoir oil in Fig. 6. Calculations of percentage recovery of oil were made for increments of pressure decline such that gas-oil ratio corresponded to the average in that pressure range and the material balance was satisfied. Results of these calculations are presented in Fig. 18, which shows calculated gas-oil ratio and pressure versus percentage recovery of oil in place initially. The solid line corresponds with the gas-oil ratio - pressure trend in Fig. 17 and the dashed line corresponds with extrapolation of the gas-oil ratio trend.

This relation between pressure and oil recovery per cent permits an approximate indirect material balance estimate of oil in place initially in the main upper Spraberry sand in the test area. Recovery percentages corresponding to May 20, 1952, reservoir pressures of 18 wells in the three-section test area ranged from 2.45 per cent to 6.65 per cent and averaged 5.72 per cent. Combining this recovery percentage with oil in place initially in the main upper Spraberry sand indicates expected recovery of 360 to 415 bbl per acre by May 20, 1952, depending upon whether net sand oil content or gross sand oil content is applicable. Actual recovery of the four leases to that date totalled 735,000 bbl, or 418 bbl per acre on the basis of 40 acres per well.

The comparison cannot be exact because analytical methods have not yet been developed which will account for the complex flow behavior when the reservoir is below the saturation pressure and both free gas and oil are present. Equalization of pressure between the undeveloped area and the test area should be much slower than that observed in newly completed wells during development when the reservoir was above the saturation pressure. Reduction in effective permeability to oil, demonstrated by the two-fold reduction in productivity indices of wells in the interference test, and seven-fold increase in expansibility of the oil-gas mixture when the pressure declines below the saturation pressure should reduce this rate of pressure equalization.

Considering these factors, the agreement between the expected recovery and the actual recovery is good. Not only does this mean that the pressure-recovery relation in Fig. 18 reasonably represents basic performance of the Spraberry, but it also re-affirms the previous conclusion that the fracture system provides permeable contact with all reservoir blocks containing oil. Thus "islands" of reservoir rock containing commercial quantities of oil do not remain untapped by fractures in the inter-well area.

Unique Reservoir Performance

The relations between gas-oil ratio, pressure, and oil recovery percentage in Fig. 18 show that gas-oil ratios had increased significantly above the solution ratio when only 3 or 4 per cent of the oil in place had been recovered and that they had increased to about 12,000 cu ft per bbl when less than 7 per cent of oil in place had been recovered. Such trend to very high gas-oil ratio at very low percentage recovery of oil is not the performance normally expected in sandstone reservoirs where recoveries are often 15 to 25 per cent of oil in place before high average gas-oil ratios are reached. This performance of the Spraberry results from the unique properties of the reservoir, including the exceedingly fine grained low permeability matrix and the high degree of fracturing. With such conditions, retention of oil within the pores of the rock due to unbalanced capillary forces, well known as end effects in laboratory fluid-flow experiments, is important. Normally this end effect, which may be expressed as a capillary pressure difference, is at most a few psi and it is unimportant when compared with total pressure difference from a distant point in the reservoir to the well bore where the oil and gas must flow the entire length through chains of pores. In the Spraberry where the reservoir rock is divided into segments a few inches to a few feet in size, the total pressure gradient from the center of a block to the fracture face is of

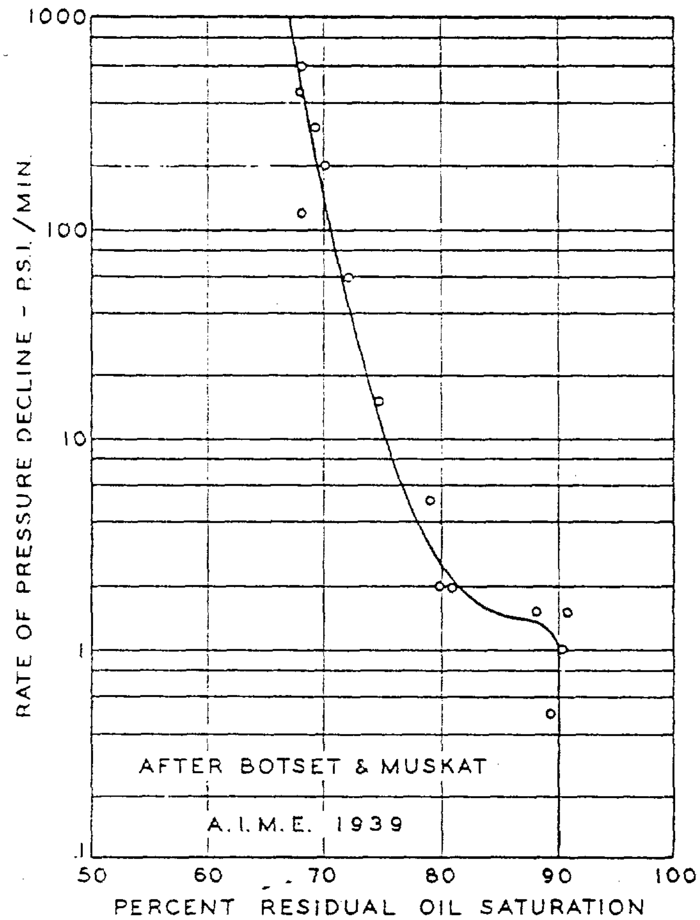

FIG. 19 — EFFECT OF RATE OF PRESSURE DECLINE ON FINAL SATURATION (SMALL CORE TESTS).

the same order of magnitude as the force of capillary retention and lower recoveries of oil result. The inter-relation between permeability, flow rate, capillary pressure, fluid properties, etc., is complex but the characteristic performance of small samples of reservoir rock is illustrated by an experiment conducted by Botset and Muskat, reported in 1939.[11] These investigators performed experiments in which a small core filled with gas-saturated oil was allowed to produce by pressure depletion at different rates in successive experiments. Results of these experiments are summarized in Fig. 19, which is a plot of residual oil saturation versus rate of pressure decline. With pressure decline of 600 psi per minute, the residual oil saturation was 67 per cent of pore space. At successively lower rates of pressure decline, the residual oil saturation was higher until the pressure decline rate reached about 1.5 psi per minute. Below this rate of production, recovery was independent of rate within experimental limits of accuracy. At high rates of production, the pressure gradient within the core was sufficient largely to overcome the capillary retention of oil. At lower rates of production, the pressure gradient was less and effects of capillarity were more pronounced. At very ates of production, a certain minimum oil recovery was a .ned regardless of production rate. This latter phenomenon is due to necessity of removal of enough oil so that gas bubbles forming within individual pores could grow in size to connect with gas bubbles in adjacent pores such that it could flow readily out of the core. When this equilibrium saturation had been reached the gas flow rate was low enough that the viscous drag of gas on oil was insufficient to overcome the capillary retention and no more oil was produced.

Since the relation between the various factors involved are very complex and many of them not known quantitatively for the Spraberry, similar laboratory experiments were performed directly upon a Spraberry core sample. A core 2 in. in diameter and 6 in. in length was machined to fit closely a steel cylinder. The core containing 28.5 per cent water saturation was placed in the cell and filled with gas-saturated Spraberry oil from a subsurface sample. Gas and oil were removed from the core at such a rate to result in pressure decline of about 200 psi per minute. The core was removed and oil saturation determined to be 2 per cent by difference in weight between the core with its residual oil and water saturation and the weight of the core with its initial water saturation. Oil recovery was calculated to be 52 per cent of oil in place initially in the core.

After being cleaned, the same core containing 13.4 per cent water saturation was replaced in the cell and again filled with gas-saturated Spraberry crude oil. Withdrawal of fluids was slowed to a constant rate of pressure decline of about 100 psi per day. Residual oil similarly determined by weight difference was 57.5 per cent of pore space and the oil recovery similarly calculated to be 7 per cent of oil in place initially. Data for both tests are summarized in Table 6. Practically all production of oil occurred before pressure declined to 1,000 psi. Thereafter only gas was produced.

Pressure decline of 100 psi per day in the slower experiment reported is some 30 to 100 times faster than the reservoir pressure decline rate in presently developed areas of the Spraberry Trend, which is of the order of 1 to 3 psi per day. Recovery performance of fracture blocks of size and properties similar to that used in the laboratory experiment should certainly be no better than that of the laboratory core. In addition, recovery performance of blocks a few feet in size at pressure decline rates of the order of 1 to 3 psi should be about the same as that observed in the laboratory core test at a pressure decline rate of 100 psi per day. This is based on assumption from theory of relative permeability and capillarity that similar end effects occur in different sized blocks when production rates are such that total pressure drop from the center to the face of the block is the same in all blocks. Frequency of fractures and opening of fractures observed in cores coupled with determination of reservoir permeability from analysis of the pressure-production relation indicates

Table 6 — Results of Laboratory Experiments
Pressure Depletion of Oil Saturated Spraberry Cores

CORE PROPERTIES	
Porosity	8.15%
Permeability	1.1 md
Size	2.18" diam. x 6.1" length
TEST NO. 1	
Simulated Connate Water Saturation	28.5 %
Saturation Pressure of Crude Oil	2000 Psi
Average Rate Pressure Drawdown	200 Psi/Min.
Residual Oil Saturation by Weight Difference	25 %
Calculated Oil Recovery — Per cent of Oil in Place Initially	52 %
TEST NO. 2	
Simulated Connate Water Saturation	13.4 %
Saturation Pressure of Crude Oil	1990 Psi
Average Rate of Pressure Drawdown	100 Psi/Day
Residual Oil Saturation by Weight Difference	57.5 %
Calculated Oil Recovery — Per cent of Oil in Place Initially	7 %

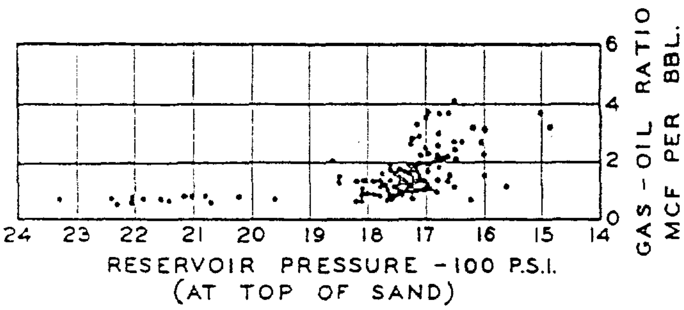

FIG. 20 — GAS-OIL RATIO VS RESERVOIR PRESSURE, PERIODIC INDIVIDUAL WELL TESTS. E. D. BERNSTEIN LEASE, R. W. CLARK LEASE, R. PEMBROOK LEASE, PEMBROOK FIELD, UPTON COUNTY, TEX.

fracture blocks are probably in this size range, and it appears that this recovery mechanism greatly influenced by capillary retention is the proper explanation of early trend to high gas-oil ratios and very low percentage recovery of oil in place indicated by performance to date in the Spraberry.

Since most Spraberry wells have been produced at near capacity and very low recovery percentage is indicated even in the areas of 40-acre spacing, no practical method exists by which the rate of pressure decline could be greatly accelerated to achieve more efficient natural recovery.

The possibility that recovery is affected by production rate in the Spraberry cannot be ruled out on the basis of the two Spraberry core tests by analogy to the Botset-Muskat experiments. However, a portion of the Pembrook Field was developed on uniform 80-acre spacing. With proration based on 40-acre units, the production rate per acre in this portion of the Pembrook Field has been half the production rate per acre of the portion of the Driver Field drilled on 40-acre spacing, which has been discussed in this paper. Relation between gas-oil ratio and reservoir pressure for this portion of the Pembrook Field is presented in Fig. 20.

Core analyses, oil characteristics including solubility, shrinkage and saturation pressure, and reservoir pressure initially in this area of the Pembrook Field were very similar to those in the Driver Field. Comparison of data in Fig. 20 with that in Fig. 17 shows the relation between gas-oil ratio and pressure — and thus recovery efficiency — are substantially the same for the 80-acre spacing area and the 40-acre spacing area. In addition oil recovery per acre attained when reservoir pressure had declined to 1,650 psi was about the same in both areas. These factors demonstrate reduced withdrawal rate per acre should have no adverse effect on ultimate recovery if the remainder of the field is developed on wider spacing.

Applicability to Entire Field

Reservoir performance data included in this paper come entirely from the two areas outlined. However, reservoir conditions and reservoir performance are qualitatively similar to this throughout the Spraberry Trend. Those readers interested in any other particular area are referred to the testimony presented by W. O. Keller at the recent hearing on the Spraberry Trend.[12] This includes summaries of core analyses, subsurface sample analyses, potentials and productivity indices of wells, examples of reduced reservoir pressure in later drilled wells, decline curve estimates of ultimate recoveries, etc., for various areas in the field.

CONCLUSIONS

1. Spraberry oil is stored primarily in pores of sand matrix of very limited section. Paper-thin vertical fractures provide flow channels for oil in this extremely low permeability reservoir.
2. That a well can deplete an area of at least 160 acres in the Spraberry as efficiently as could many wells in the same area was confirmed by direct experiment in the field.
3. Capillary "end effects" in the small fractured blocks of rock limit recovery to only a few per cent of oil in place initially.

ACKNOWLEDGMENT

Just as important as the particular facts reported here regarding reservoir performance and well spacing in the Spraberry Trend is the demonstration of co-operation that can be achieved through thorough understanding at all levels from field personnel to corporate management in solving a pressing problem. While space does not permit individual acknowledgment, the tireless efforts of pumpers, pressure unit operators, field engineers and supervisors, laboratory personnel, and others are gratefully appreciated for making the thousands of measurements accurately and on time which made this analysis possible.

The author wishes to express his appreciation to the management of Sohio Petroleum Co. for its support in the conduct of this extensive field research program and for its permission to publish the data included in this paper.

REFERENCES

1. McLennan, Lamar, Jr., and Bradley, H. W.: "Spraberry and Dean Sandstones of West Texas," *Bull.* AAPG, (April, 1951).
2. Wilkinson, W. M.: "Fracturing in the Spraberry Reservoir, West Texas." Presented at Los Angeles Meeting AAPG, March 28, 1952.
3. Bartley, J. H.: "Geology of the Spraberry Trend of the Permian Basin of West Texas." Presented at Shreveport Meeting API. March 5, 1952.
4. Franklin, Leonard O.: "Drilling and Completion Practices, Spraberry Trend." Presented at Shreveport Meeting API, March 5, 1952.
5. *Spraberry Symposium*, Third Oil Recovery Conference, Texas Petroleum Research Committee.
6. Muskat, M.: *Flow of Homogeneous Fluids through Porous Media*, McGraw-Hill, (1937) 667.
7. Bruce, W. A.: "Pressure Prediction for Oil Reservoirs," *Trans.* AIME, (1943) 151, 73.
8. Dyes, A. B., and Johnston, O. C.: "Spraberry Permeability from Build-up Curve Analysis," *Trans.* AIME, (1953) 198, 135. (*Jour. of Pet. Tech.*, May, 1953.)
9. Muskat, M.: *op. cit.*, 425.
10. Evinger, H. H., and Muskat, M.: "Calculation of Theoretical Productivity Factor," *Trans.* AIME, (1942) 146, 126.
11. Botset, H. G., and Muskat, M.: "Effect of Pressure Reduction on Core Saturation." *Trans.* AIME. (1939) 132, 172.
12. Keller, W. O.: Testimony presented before Texas Railroad Commission at hearing on Spraberry Trend. Sept. 11-17, 1952.

Interference Analysis for Anisotropic Formations — A Case History

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Introduction

It has long been known that many formations appear to exhibit simple k_y-k_x anisotropy. This model also may be applicable for formations containing trending fracture patterns. Knowledge of directional permeability obviously would have an important effect on planning reservoir development, particularly for fluid injection operations. A recent study by Papadopulos[1] outlines methods for interference analysis in anisotropic formations. The method is used here to analyze a field water-injection test to determine major and minor permeabilities and the orientation of the unknown permeability matrix. The method also may be extended to pressure falloff (or buildup) interference analysis.

The theory of flow of either fluid or heat through an anisotropic medium is well established.[2,3] A brief review of this information is sufficient here. We consider that a well is produced at a constant volumetric rate in an infinite, anisotropic medium. The formation has a constant thickness and porosity, and the total system effective compressibility is constant. Collins[4] has presented perhaps the best-known solution to this problem in the area of oil production technology. In the mid-1960's, a series of papers appeared in the groundwater hydrology literature dealing with the problem of well test analysis for anisotropic aquifers. Studies by Hantush,[5,6] Papadopulos,[1] and Walton[7] are particularly notable. The Papadopulos study appears to be well-suited for application to analysis of oil and gas well test data and serves as the basis for this study. The purpose of this paper is to present analysis of actual field data with the Papadopulos method in a form readily useable by petroleum engineers. The method is extended to falloff data.

Theory

The Collins[4] solution for the pressure field caused by a well producing from an anisotropic reservoir is correct, but it assumes the directions of the major and minor permeability axes are known and are aligned with the well-location coordinate system. In the general well test analysis situation, the direction of the major permeability axis would be unknown. Fig. 1 shows the known well location x-y coordinate system with the unknown permeability axes, X-Y, oriented at some unknown angle θ. The pressure at (x,y,t) caused by a line-source well at the origin was presented by Papadopulos:

$$\sqrt{k_{xx}k_{yy} - k_{xy}^2}\;\frac{h(p_i - p_{x,y,t})}{141.2\,qB\mu} = -\frac{1}{2}\,\mathrm{Ei}\left[\frac{-\phi\mu c}{0.00105t}\left(\frac{k_{xx}y^2+k_{yy}x^2-2k_{xy}xy}{k_{xx}k_{yy}-k_{xy}^2}\right)\right] \quad \ldots (1)$$

$$k_{XX} = \frac{1}{2}\left\{(k_{xx}+k_{yy}) + \left[(k_{xx}-k_{yy})^2 + 4k_{xy}^2\right]^{1/2}\right\} \quad . (2)$$

$$k_{YY} = \frac{1}{2}\left\{(k_{xx}+k_{yy}) - \left[(k_{xx}-k_{yy})^2 + 4k_{xy}^2\right]^{1/2}\right\} \quad . (3)$$

$$\theta = \arctan\left(\frac{k_{XX} - k_{xx}}{k_{xy}}\right) \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

If the permeability axes were coincident with the well axes, k_{XX} would equal k_{xx} and the angle θ would become

Many formations, such as channel sands, appear to exhibit simple k_y-k_x anisotropy. Directional permeability has an important effect on planning fluid-injection oil recovery. The method discussed in this paper uses data obtained during water injection to determine major and minor permeability axes and the orientation of the unknown permeability matrix.

zero, as indicated by Eq. 4. In this case, Eq. 1 would produce the Collins result:

$$\sqrt{k_{xx} k_{yy}} \; \frac{h(p_i - p_{x,y,t})}{141.2\, qB\mu} = -\frac{1}{2}\,\mathrm{Ei}\left[-\frac{\phi\mu c\,(k_{xx}\,y^2 + k_{yy}\,x^2)}{4(0.000264)k_{xx}\,k_{yy}\,t}\right], \quad \ldots\ldots (5)$$

where k_{xx} and k_{yy} are the principal permeabilities. Ref. 1 provides a derivation of Eqs. 1 through 5. Eq. 5 shows that a well test conducted in an anisotropic reservoir and analyzed in the conventional manner for a constant-permeability case would yield the geometric mean permeability.

Eq. 5 also can be used to analyze field data for an unknown permeability orientation by a trial-and-error method. The x-y coordinate system is taken as aligned with the major and minor permeability directions, and the well pattern is rotated about the origin until a minimum between computed and measured pressures is found.

Papadopulos suggested that Eq. 1 could be used in two ways. First, it might be used directly with the type-curve matching technique on log-log coordinates. Papadopulos also described the use of a semilog graphing method correct for conditions when the line-source solution can be represented by the logarithmic approximation. In either case, pressure data from three different observation wells located on different rays from the producing (or injecting) well would be required if ϕc were not known. That is, pressure data from three observation wells along different lines from the producing well would yield k_{xx}, k_{yy}, θ, and ϕc. If ϕc were known, data from only two observation wells are sufficient. It might appear that the pressure data from the producing well would provide additional information to determine one of the unknowns. This is not correct because the skin effect at the producing well constitutes an additional unknown introduced by the producer.

Field Example

In planning a project in a watered-out formation, an injection test was run to determine whether directional permeability would influence the project. An injection test was selected because producing rates were very low, causing low pressure drawdowns. Fig. 2 presents an isopach map for the well pattern used in this test. Fig. 3 presents the well pattern only. In Fig. 3, the numbers in parentheses after each well designation represent the coordinates of the well with the injector as origin (units are in feet). As can be seen, the well pattern is an isolated nine-spot. The test was run as a single-well injection test, with the surrounding wells (Wells 5-E, 1-E, 1-D, 1-C, 5-C, 9-C, 9-D, and 9-E) used as observation wells only. The test was run by injecting 115 B/D of water into the central well, Well 5-D, and measuring the pressure rise at the surrounding eight wells. Table 1 presents the pertinent well and reservoir data and the pressure-time data at the surrounding observation wells. Injection was stopped at 101 hours and the succeeding falloff data are also presented in Table 1.

Table 1 presents the complete field test data, which is more information than is required to establish the utility of the Papadopulos method for this case. Papadopulos illustrated his method with synthetic information. A liter-

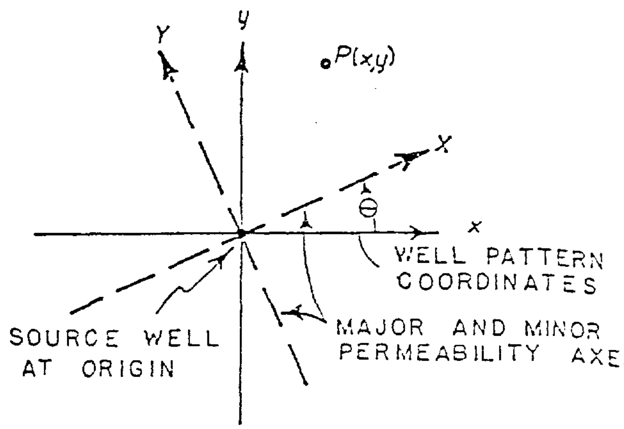


Fig. 1—Coordinates for anisotropic permeability solution.

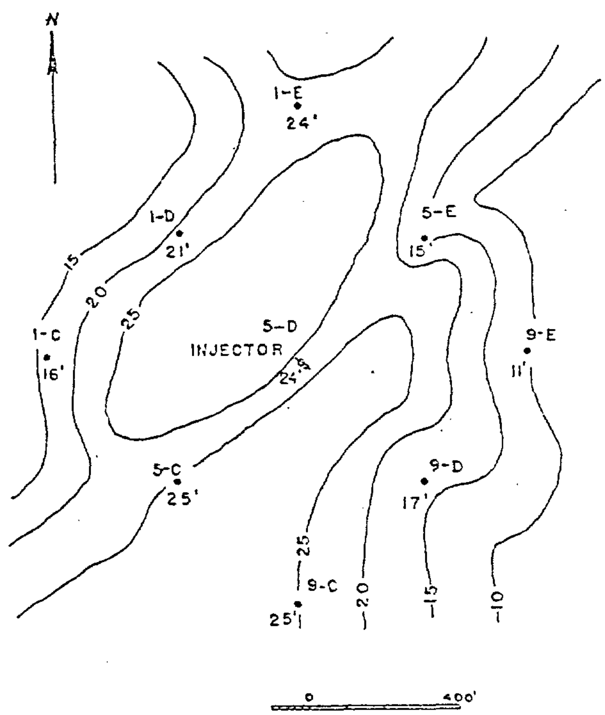


Fig. 2—Net sand isopach.

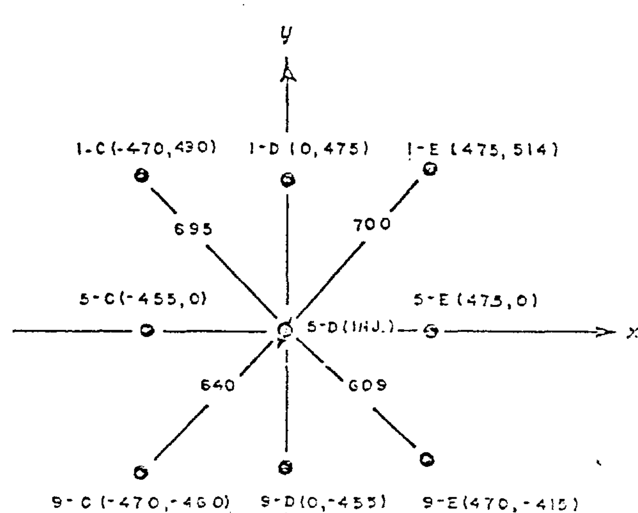


Fig. 3—Field example well pattern (distances and coordinates in feet).

... complete interference data of the type required for such a study are rare. For this reason, I have tried to present all information gathered in this test that might be of interest in future studies, as well as that required for present purposes. For example, the injection well data are given although they are not necessary for this study, and the data for both wells in an opposite pair (such as Wells 5-C and 5-E) are given although both should (and *do*) yield the same results if the anisotropic model is correct for the field data. The falloff data are also given.

A few comments concerning the applicability of single-phase flow theory to this water injection case are in order. In this case, the formation involved was a thoroughly watered-out oil reservoir with a very high producing water cut. Thus, the oil content of the formation had an appreciable effect only on the total system effective compressibility. This is a nearly perfect application of single-phase flow theory to a reservoir containing two phases. Only water had significant mobility and there was no known gas saturation. In this case, the total system effective compressibility can be related to the pore space saturations of the two phases:[8]

$$c = S_o c_o + S_w c_w + c_f \qquad (6)$$

Or,

$$c = c_o + S_w(c_w - c_o) + c_f$$
$$= S_o(c_o - c_w) + c_w + c_f, \qquad (7)$$

because there was no gas saturation. If it can be assumed that the compressibilities are all known, determination of the total system compressibility from an interference test can provide an estimate of the oil saturation using Eq. 7.

Returning to the question of the applicability of single-phase flow theory to real multiphase flow cases, it is not necessary that other potential applications be as ideal as the one in this paper. If there were a gas saturation at or below the critical gas saturation for flow of a gas phase, the gas would affect only the total system effective compressibility and would thus modify Eqs. 6 and 7. In the extreme case where oil, water, and gas were mobile, the method still would be applicable in view of the Perrine[17] speculation on multiphase flow, later explained by Martin.[18] (See also Matthews and Russell.[11])

Perhaps one of the greatest concerns in water injection testing is the mobility banks caused by injection. Even in this extreme case, single-phase flow theory is usually appropriate because the mobility-bank (single or multiple) effect is incorporated into the apparent skin effect on the injection well. The total mobility ratio suggested by Perrine would be, in this case, that of the multiphase flow in the reservoir ahead of the banks near the injection well.

Actually, water injection testing can have rather broad application without serious concern for mobility-ratio effects. In a study of wellbore storage and skin effect, Wattenbarger and Ramey[9] showed that, under certain conditions, annular regions of different mobility of radii

TABLE 1—FIELD EXAMPLE INTERFERENCE TEST DATA

i_w = 115 STB/D	c_f = 3.7 × 10^{-6} (Ref. 13)
h = 25 ft	c_o = 7.5 × 10^{-6} (Ref. 12)
B_w = 1 res bbl/STB	Oil gravity 36° API at 60°/60°
μ_w = 1 cp	Formation temperature = 72°F
ϕ = 20 percent	Initial pressure = 240 psi
c = 8 × 10^{-6} psi^{-1}	r_w = 0.563 ft mean, open hole shot with nitro
c_w = 3.3 × 10^{-6}	

Injection Well Data: Total depth, 1,011 ft; completed with 2-in. EUE tubing, bottom-hole packer

Pressure Data (Δp is pressure rise above initial pressure)

Well 1-C		Well 1-D		Well 1-E		Well 5-C	
t (hours)	Δp (psi)	t (hours)	Δp (psi)	t (hours)	Δp (psi)	t (hours)	Δp (psi)
		23.5	6.7	27.5	3	47	10
		28.5	7.2	47	5	71	17.2
		51	15	72	11	94	24
		77	20	95	13	113	25.1
		95	25	115	16	124	26
		119	24	125	16	146	24
113	22	125	23.2	142	13	192	17
125	22	141	19	192	10	210	15
146	19	163	18	215	10	240	15.2
195	16	188	14	240	6	260	14
215	14	215	12	295	5.8	285	13
249	14	265	10				
295	11	290	10				

Well 5-E		Well 9-C		Well 9-D		Well 9-E	
t (hours)	Δp (psi)	t (hours)	Δp (psi)	t (hours)	Δp (psi)	t (hours)	Δp (psi)
21	4	24	4	23.5	8.2	21	3
47	11	47	8	28.5	9.3	47	3
72	16.3	72	13	51	17	71	3
94	21.2	94	17.7	75	23.2	94	10
115	22	115	18	95	27.2	115	12.5
122	25	126	18	120	27	125	13
140	22.3	145	17	143	21	143	12.8
188	19.2	194	11	190	16	195	13
210	18	215	13	215	14	215	13
285	15	245	11	270	13	240	10
		295	10	285	12	295	10

up to 1,000 r_w may only change the apparent skin effect of a producing or injection well. This resulted because wellbore storage tends to dominate the time period normally affected by the mobility bank near a well.

Finally, another practical case where single-phase flow theory is applicable is injection of gas into a heavy oil or tar reservoir. Because displacement is so poor, gas flows mainly through existing gas space. Interference testing can provide estimates of the mean gas saturation.

Results

In the following, only Wells 5-E, 1-E, and 1-D were used. It can be verified that opposite pairs of wells yield the same results, indicating that the anisotropic model is reasonably correct. Fig. 4 presents a log-log graph of the field-data pressure rise vs the injection time for Wells 5-E, 1-E, and 1-D. Fig. 5 presents the analytical solution for the conventional line-source well (exponential integral solution).

$$p_D = -\frac{1}{2}\mathrm{Ei}\left(-\frac{r_D^2}{4t_D}\right), \quad \ldots \quad (8)$$

where

$$p_D = \frac{kh}{141.2\,qB\mu}(p_i - p_{r,t}) \quad \ldots \quad (9)$$

$$r_D = r/r_w \quad \ldots \quad (10)$$

$$t_D = \frac{0.000264kt}{\phi\mu c r_w^2} \quad \ldots \quad (11)$$

Fig. 5 also represents the anisotropic solution given by Eq. 1. The dimensionless quantities for the anisotropic case should be defined as

$$p_D = \frac{\sqrt{k_{xx}k_{yy}-k_{xy}^2}}{141.2\,qB\mu}\,h(p_i - p_{x,y,t}) \quad \ldots \quad (12)$$

$$\frac{t_D}{r_D^2} = \left(\frac{0.000264t}{\phi\mu c}\right)\left(\frac{k_{xx}k_{yy}-k_{xy}^2}{k_{xx}y^2+k_{yy}x^2-2k_{xy}xy}\right) \ldots (13)$$

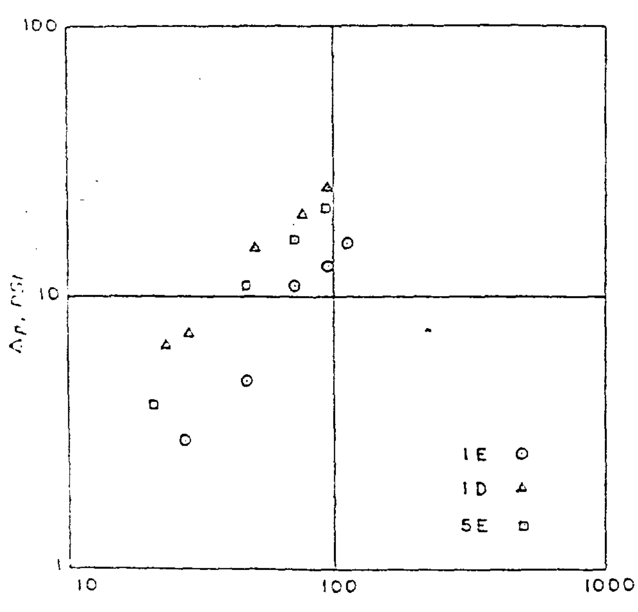


Fig. 4—Water-injection interference data.

Full size copies of Fig. 5 may be obtained from the author.

The field data in Fig. 4 have the rough shape of the line-source solution. The apparent problem is that the observation wells are at different distances from the injection well. The appropriate distances are indicated in Fig. 3. Wells 5-E and 1-D are both 475 ft from the injector. From Fig. 4, it is clear that data for Well 5-E are consistently below those for Well 1-D. Fig. 6 presents a type-curve match for Well 1-E with the line-source solution from Fig. 5. The data for Wells 5-E and 1-D also are shown in Fig. 6. However, the time scales have been displaced to correlate with the Well 1-E data. The vertical lines to the right of the 100-hour index indicate the appropriate 100-hour location for Wells 5-E and 1-D. Thus, it is possible to find match points for each of the observation wells.

Both Papadopulos[3] and Walton[7] have described type-curve matching methods for anisotropic formations using multiple observation wells. They indicate that different pressure-scale matches may be found for the various observation wells and recommend that the pressure-scale match points be averaged. We have used this method for several sets of data and find this averaging is not usually necessary. Inspection of Eq. 1 indicates that the permeability term within the radical on the left will be the same for all observation wells. Thus, the pressure scale in pounds per square inch for all sets of field data must be the same. One simply aligns the pressure scale and adjusts the time scale until the observation data match. Then, the matched field data can be matched with the line-source type curve. Thus, for Fig. 6, the data for Well 1-E were first matched with the line-source solution of Fig. 5. Then, the data for Well 5-E were matched by aligning the pressure difference of 10 psi with $p_D = 0.26$ and moving along the abscissa until a time of 100 hours matched a t_D/r_D^2 of 1.10. The time match for Well 1-D yielded a t_D/r_D^2 of 1.40.

From Fig. 6, for the three observation wells, at Δp = 10 psi, all wells match a p_D of 0.26.

At a time of 100 hours for each well, the t_D/r_D^2 are as follows.

Well	t_D/r_D^2	r (ft)
1-E	0.70	700
5-E	1.10	475
1-D	1.40	475

From the pressure match for all wells.

$$p_D = \frac{\sqrt{k_{xx}k_{yy}-k_{xy}^2}\,(25)(10)}{141.2(115)(1)(1)} = 0.26$$

$$\sqrt{k_{xx}k_{yy}-k_{xy}^2} = 16.89 \text{ md}$$

$$k_{xx}k_{yy}-k_{xy}^2 = 285.3 \text{ md}^2.$$

Eq. 13 now may be used with the time-match data to write three more equations. Recalling that the match time was 100 hours, and using the coordinates for each well from Fig. 3, we have the following.

Well 5-E (x = 475 ft, y = 0):

$$1.10 = \frac{(0.000264)(100)(285.3)}{\phi\mu c k_{yy} 475^2}$$

Well 1-E (x = 475 ft, y = 514 ft):

$$0.70 = \frac{(0.000264)(100)(285.3)}{\phi\mu c\left[k_{xx}514^2 + k_{yy}475^2 - 2k_{xy}(514)(475)\right]}$$

Well 1-D ($x = 0$, $y = 475$ ft):

$$1.40 = \frac{(0.000264)(100)(285.3)}{\phi\mu c k_{xx}475^2}$$

imultaneous solution yields

$k_{xx} = 15.2$ md
$k_{yy} = 19.4$ md
$k_{xy} = 3.12$ md
$\phi\mu c = 1.57 \times 10^{-6}$ cp/psi.

For viscosity of 1 cp and ϕ of 0.2, $c = 7.85 \times 10^{-6}$ psi^{-1}.

It is now possible to compute the principal permeabilities and the orientation from Eqs. 2 through 4:

$$k_{XX} = \frac{1}{2}\left\{15.2 + 19.4 + \left[(15.2 - 19.4)^2 + 4(3.12)^2\right]^{1/2}\right\}$$
$$= 21.1 \text{ md.}$$

$$k_{YY} = \frac{1}{2}\left\{15.2 + 19.4 - \left[(15.2 - 19.4)^2 + 4(3.12)^2\right]^{1/2}\right\}$$
$$= 13.5 \text{ md.}$$

$$\theta = \arctan\left(\frac{21.1 - 15.2}{3.12}\right) = \arctan 1.89.$$

$$\theta = 62.1°.$$

As shown in Fig. 3, the x axis was chosen as a line through Wells 5-C, 5-D, and 5-E. True north lies along the line through Wells 5-D and 1-E. (See Fig. 2 for ompass orientation of the well pattern.) Thus, the major ermeability axis lies in the direction north-14.8°-west.

As mentioned earlier, the estimate of total system compressibility of 7.85×10^{-6} also can be used to estimate liquid saturations using Eq. 7:

$$c = S_o(c_o - c_w) + c_w + c_f$$
$$7.85 \times 10^{-6} = S_o(7.5 \times 10^{-6} - 3.3 \times 10^{-6}) + 3.3 \times 10^{-6} + 3.7 \times 10^{-6}$$
$$S_o = 0.20 \text{ fraction PV.}$$

Both the oil and rock compressibilities were estimated from existing correlations,[12,13] as indicated in Table 1. The estimate of oil saturation (and water saturation of 0.80 fraction PV by difference) is not considered to be very good in the present instance. Both electric log and core data indicated a mean oil saturation of about 38 percent PV. The calculation is detailed here only as an example of the interesting possibility of estimation of in-place saturations using a transient test. Estimation of oil saturation was not an original objective of this test and the information available was not considered adequate for more than a rough estimate.

Discussion

The Papadopulos solution, Eq. 1, coupled with the log-log type-curve procedure, is a powerful tool for detecting reservoir anisotropy. It is likely that the injection interference test described in this study can be applied widely to aid planning fluid injection programs. The log-log type curve is particularly useful in that it is possible to see that all the field data match the line-source solution. Although not shown in this paper, opposing pairs of wells (such as Wells 1-E and 9-C) were tested to show that the simple anisotropy model did indeed match all data for this study.

Papadopulos also presented a method of analysis based on the logarithmic approximation for the exponential integral:

$$p_D = \frac{1}{2}\left[\ln(t_D/r_D^2) + 0.80907..\right], \quad \text{........ (14)}$$

where the parameters are defined by Eqs. 12 and 13.

Eq. 14 is correct after some lower limiting value of t_D/r_D^2. A limiting value equivalent to 25 was indicated by van Everdingen and Hurst[19] and appears to be widely accepted. This value is usually cited in a different man-

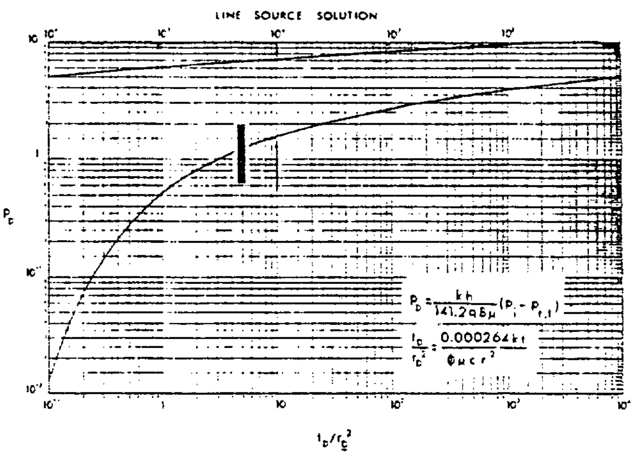


Fig. 5—The continuous line-source solution type curve.

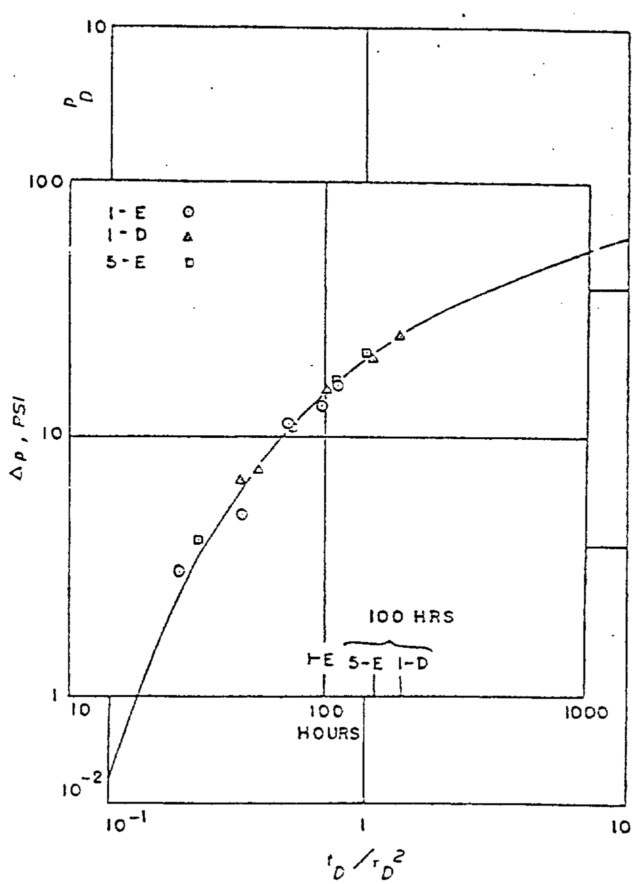


Fig. 6—Type-curve match for anisotropic-case water injection.

ner. It is generally stated that $-Ei(-x)$ may be represented by the semilog approximation for values of x less than 0.01. Because the exponential integral approaches the semilog straight line asymptotically, any such time limit is correct if some desired minimum error is specified. Fig. 7 presents a graph of the line-source solution on two different ordinate scales, the semilog approximation, and an error curve for the semilog approximation.

Inspection of either graph of the line-source solution leads to a surprising result. The lower curve for the compact dimensionless pressure scale appears to reach the semilog straight line at t_D/r_D^2 of about 5, a value one-fifth the usually accepted value of 25. The expanded pressure-scale graph appears to become straight at a later value of time — about $t_D/r_D^2 = 10$. This value is still much less than the common value of 25. Thus, we face the dilemma of selecting a proper value for application. This question is important because many similar dimensionless times (readjustment times, drainage radius formulas, etc.) appear in reservoir engineering.

The answer to selection of a proper time can be found with the aid of Fig. 7. Generally, field data are graphed such that the semilog straight-line slope is roughly between the values shown on Fig. 7; often, 8½- × 11-in. graph paper is used. A value of t_D/r_D^2 that can be identified on this scale should be selected. It appears that a value of 5 is appropriate, leading to a maximum error

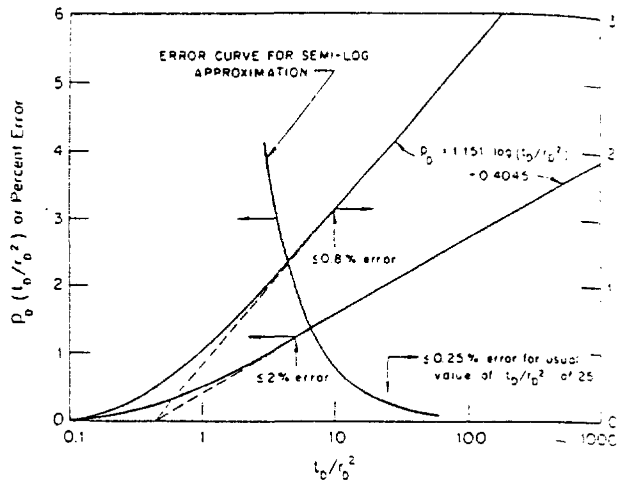


Fig. 7—Semilog graph of the continuous line-source solution

between the line-source solution and the semilog approximation of 2 percent. The commonly accepted value of 25 would yield an unrealistically low error of 0.25 percent. We do not normally work to this accuracy with graphical methods.

Setting unrealistic precision requirements for transient pressure approximations is a common problem. The time of onset of pseudosteady state or the time of reaching the semilog straight line in a case of wellbore storage produc-

TABLE 2—INJECTION WELL PRESSURE DATA, WELL 5-D — INJECTION

t (minutes)	p_{wi} (psi)	t (minutes)	p_{wi} (psi)	t (minutes)	p_{wi} (psi)	t (minutes)	p_{wi} (psi)
0	240	105	357	800	398	2,850	445
4	258	120	366	960	403	3,350	455
8	274	128	364	1,160	408	4,000	460
12	287	154	365	1,380	415	4,300	472
16	299	200	366	1,400	405		
20	302	240	368	1,450	394		
24	307	325	375	1,500	408		
28	310	410	378	1,550	415		
32	316	480	383	1,850	422		
40	321	560	388	2,180	433		
60	335	640	392	2,430	438		
80	346	750	395	2,650	442		

Injection Well Pressure Data, Well 5-D — Falloff

(Well shut in at 101 hours)

Δt (minutes)	p_{ws} (psi)	Δt (minutes)	p_{ws} (psi)
0		242	304
4	468	275	297
8	450	319	296
12	438	404	295
16	414	470	293
20	402	561	287
24	386	638	284
28	377	798	280
32	370	1,260	274
36	365	1,734	267
40	357	2,424	267
48	347	4,038	258
56	341	13,200	250
62	336		
72	331		
80	325		
88	324		
96	320		
103	316		
110	314		
121	314		
161	307		
202	305		

WELL TEST ANALYSIS RESULTS

Well(s)	Test	Effective Permeability - Thickness, md-ft
COU A-14 - COU L-11	1965 Interf.Test	5300
COU A-23 - COU L-11	1965 Interf.Test	4200
COU A-23 - COU K-13	1968 Interf.Test	1979
COU E-6 - (6 wells)	1986 Interf.Test	10,300
Native Son No. 1	7/84 Buildup	203
Native Son No. 1	11/84 Buildup	268
*COU B-29	8/86 Buildup	49,300
**COU B-32	8/86 Buildup	26,320
Rucker Lake No. 2	12/83 Buildup	241
***COU E-6	8/86 Buildup	12,860

---

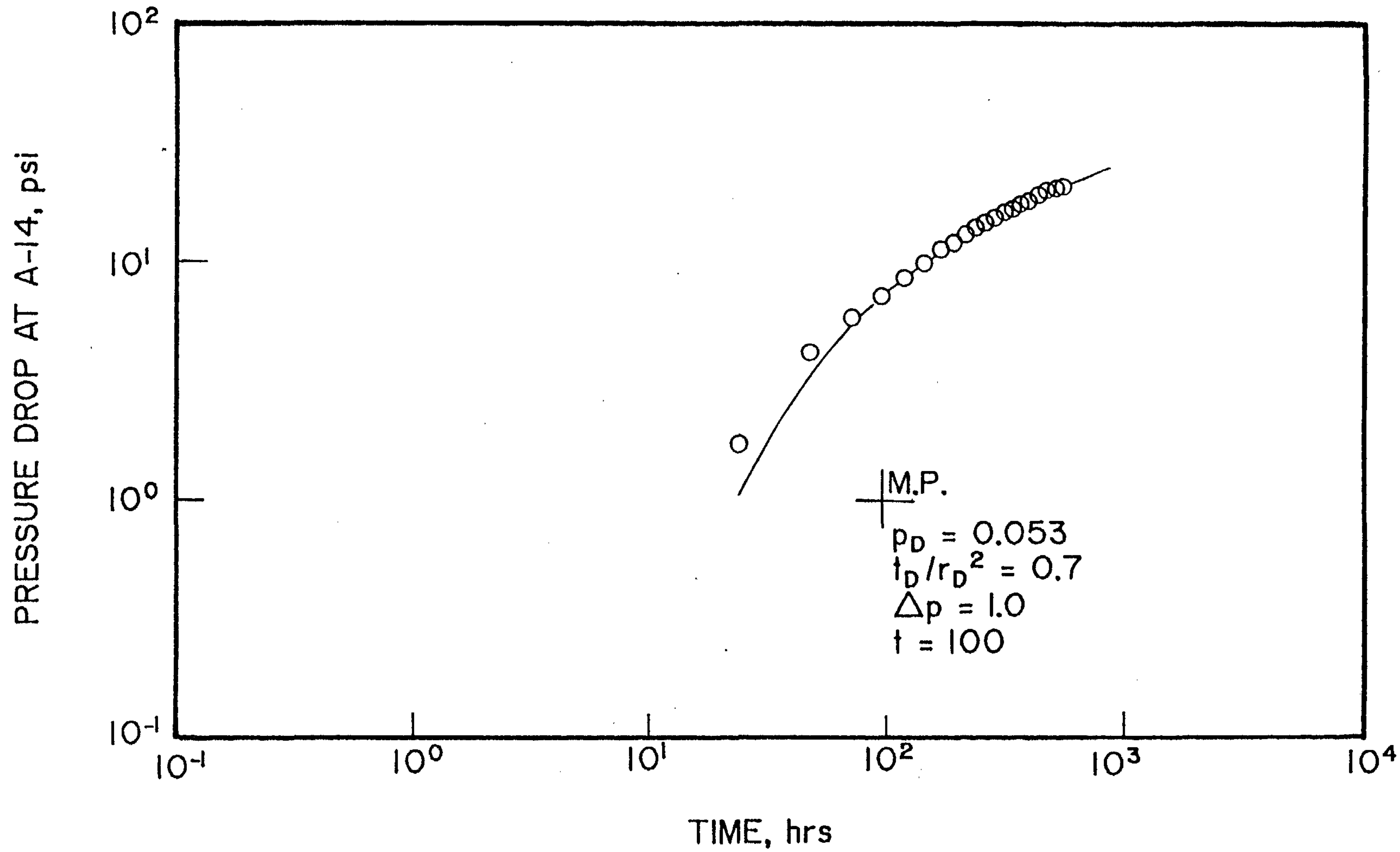
*p_{wf} unknown; entire test below p_b.

**Entire test below p_b.

***Right at p_b at end of test.

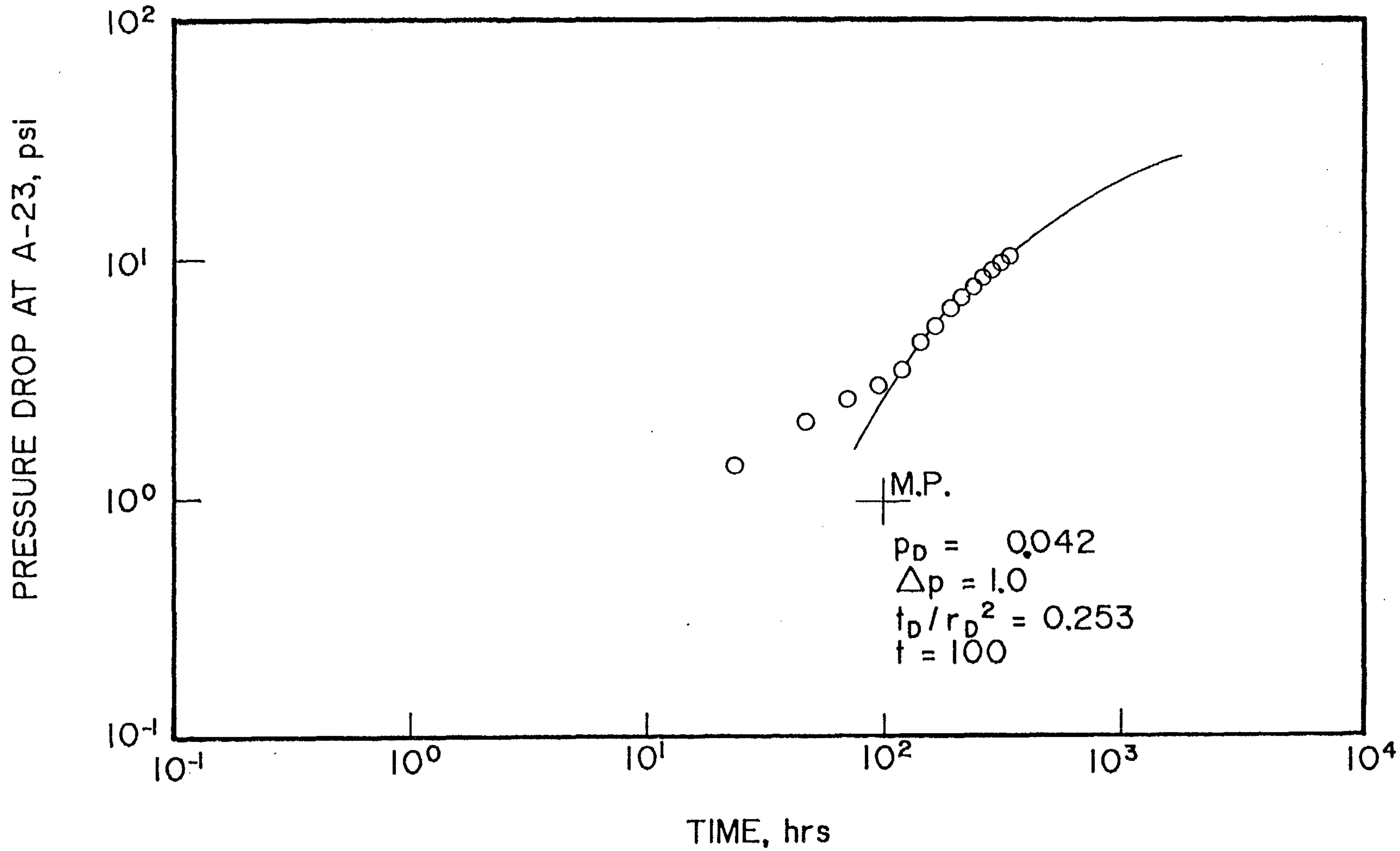
1965 INTERFERENCE TEST

RESPONSE AT A-14 DUE TO PRODUCTION AT L-11 AND P-11



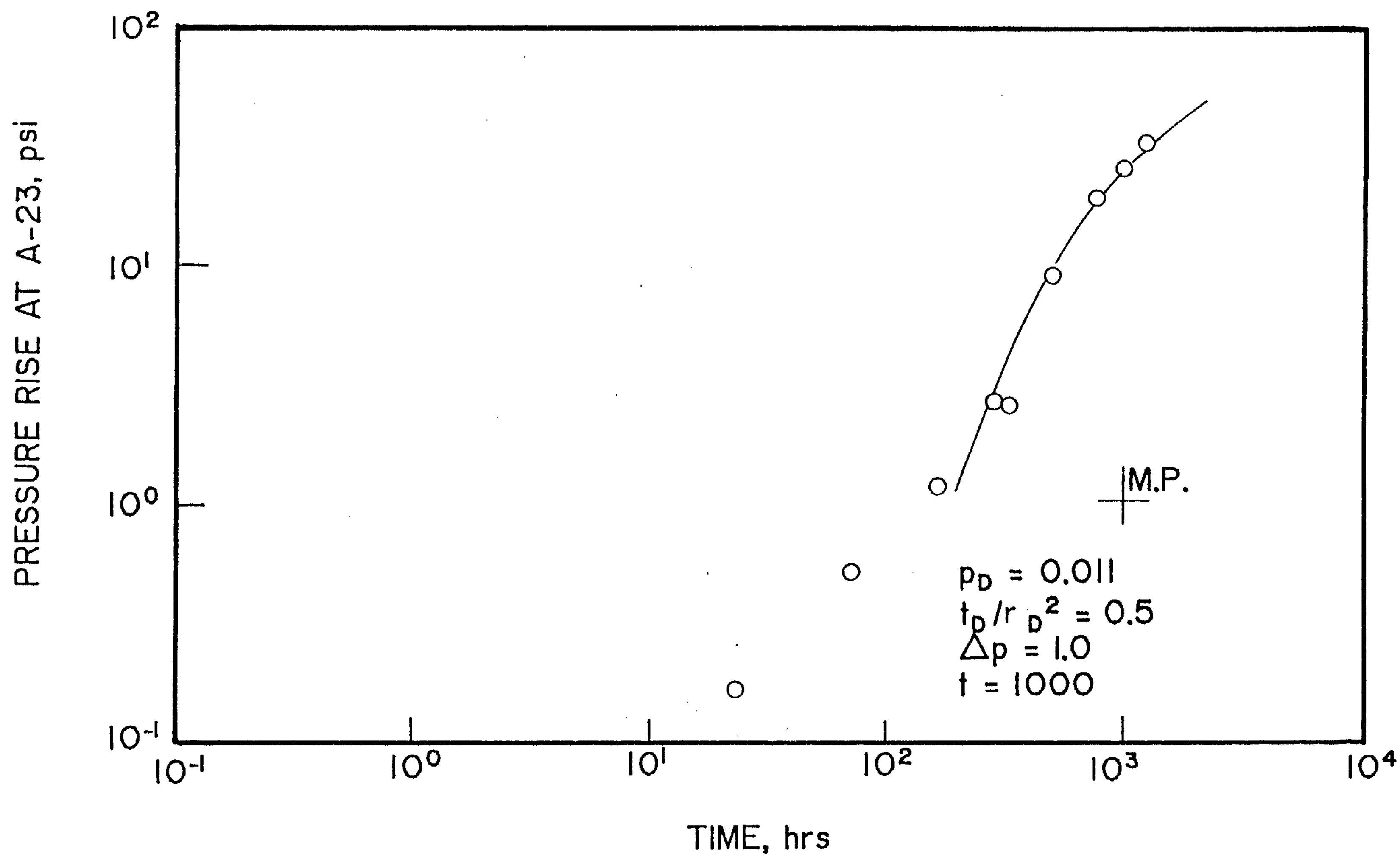
1965 INTERFERENCE TEST

RESPONSE AT A-23 DUE TO PRODUCTION AT L-11 AND P-11



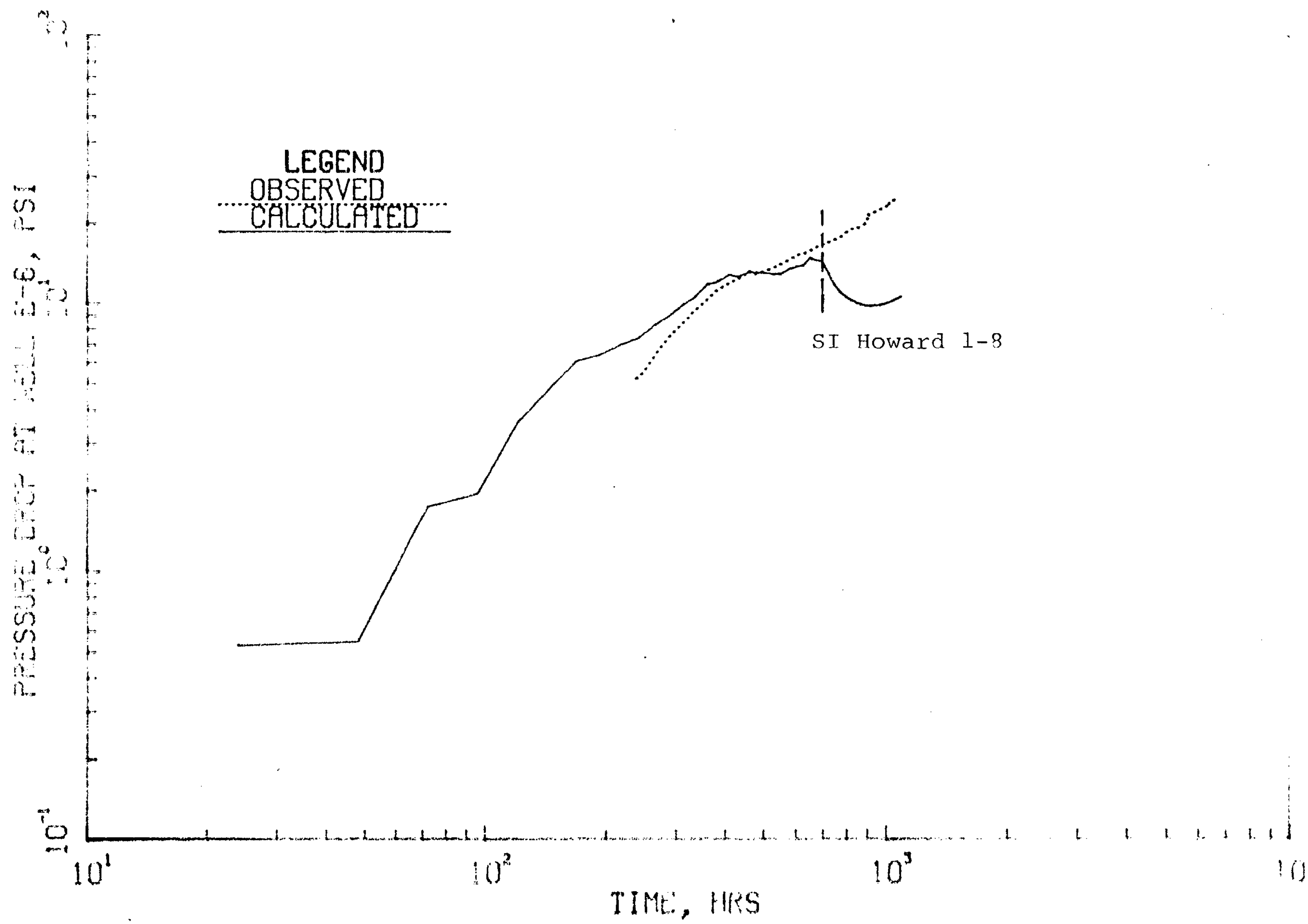
1968 INTERFERENCE TEST

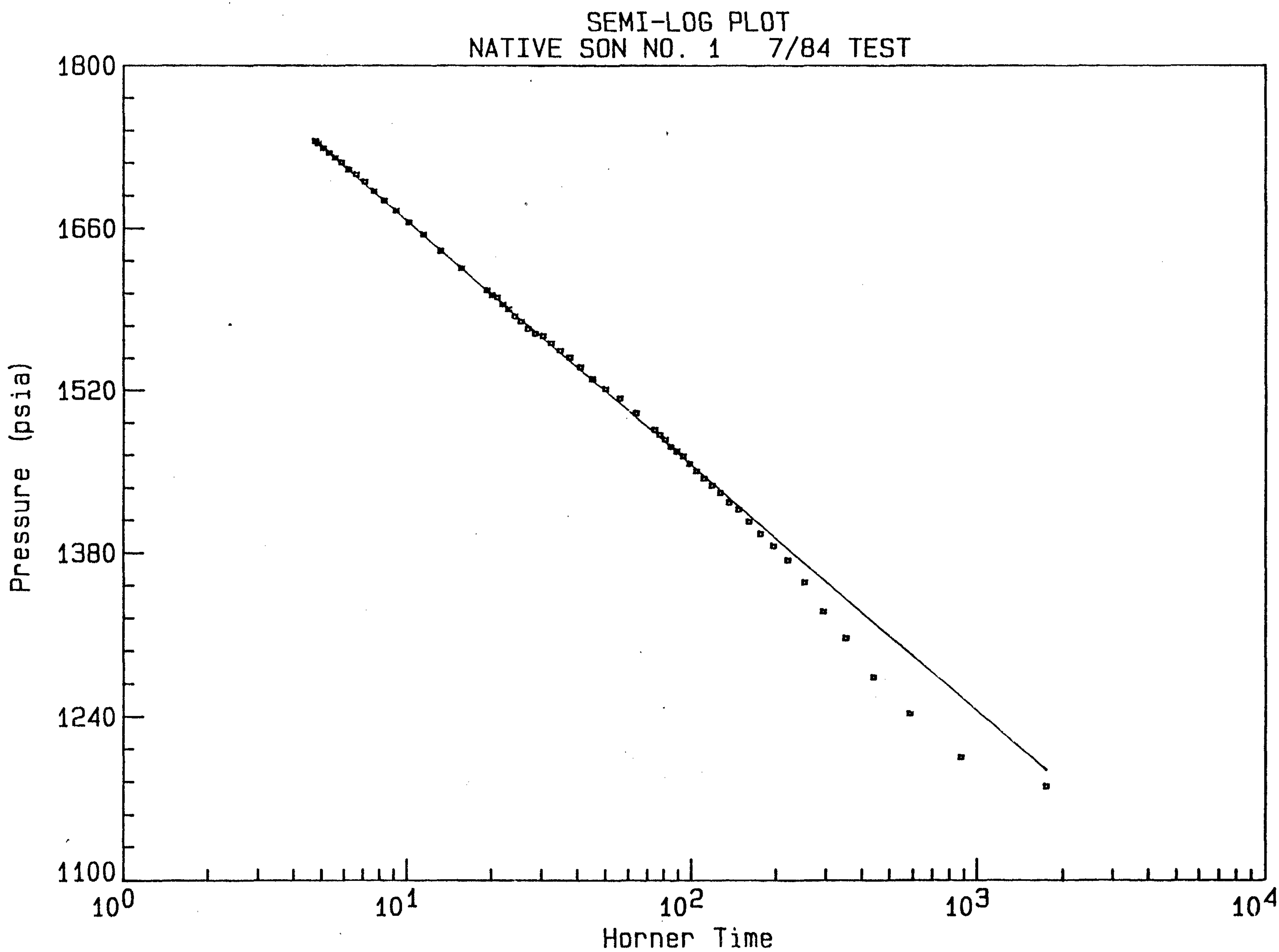
RESPONSE AT A-23 DUE TO
GAS INJECTION AT K-13

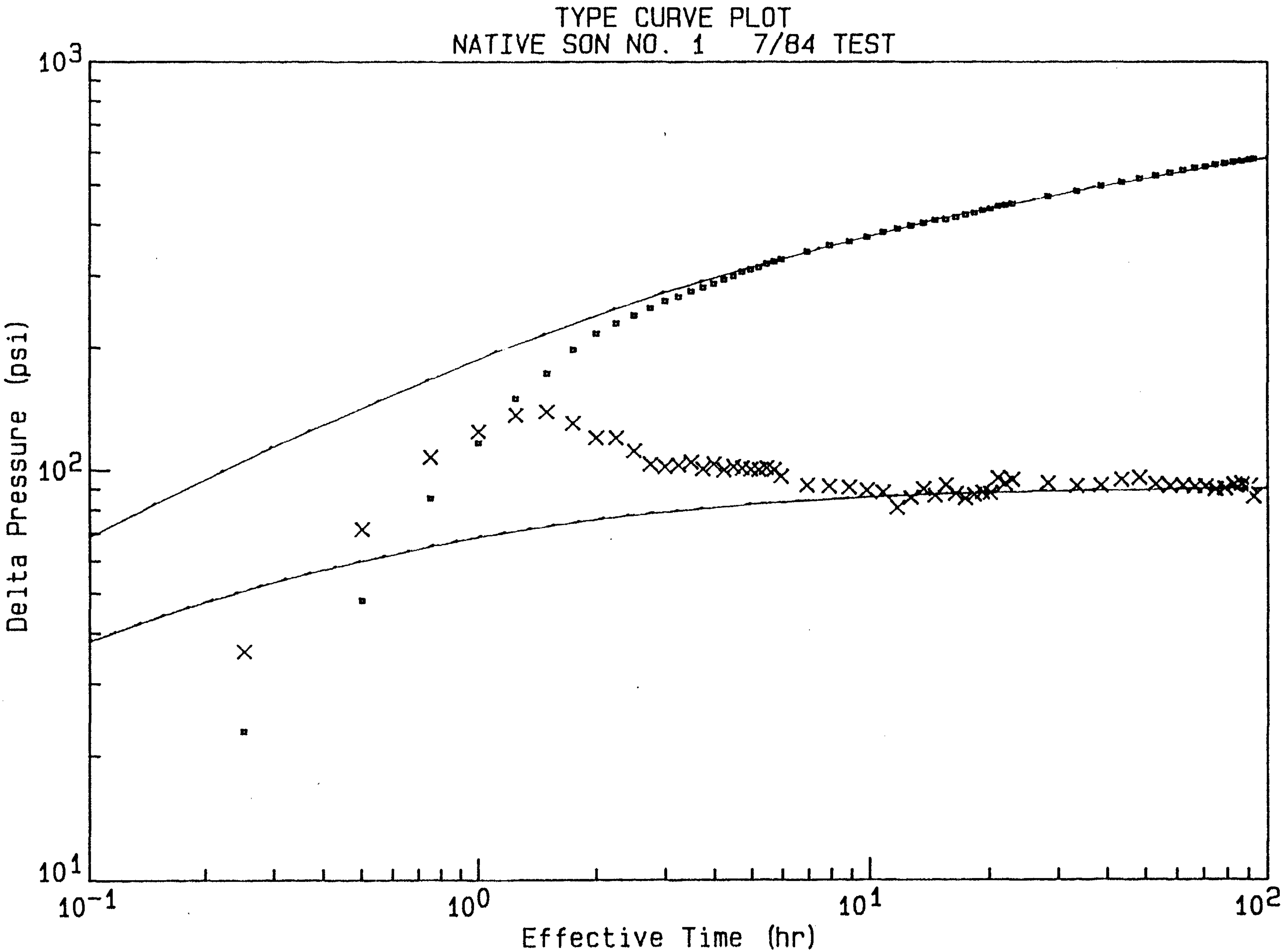


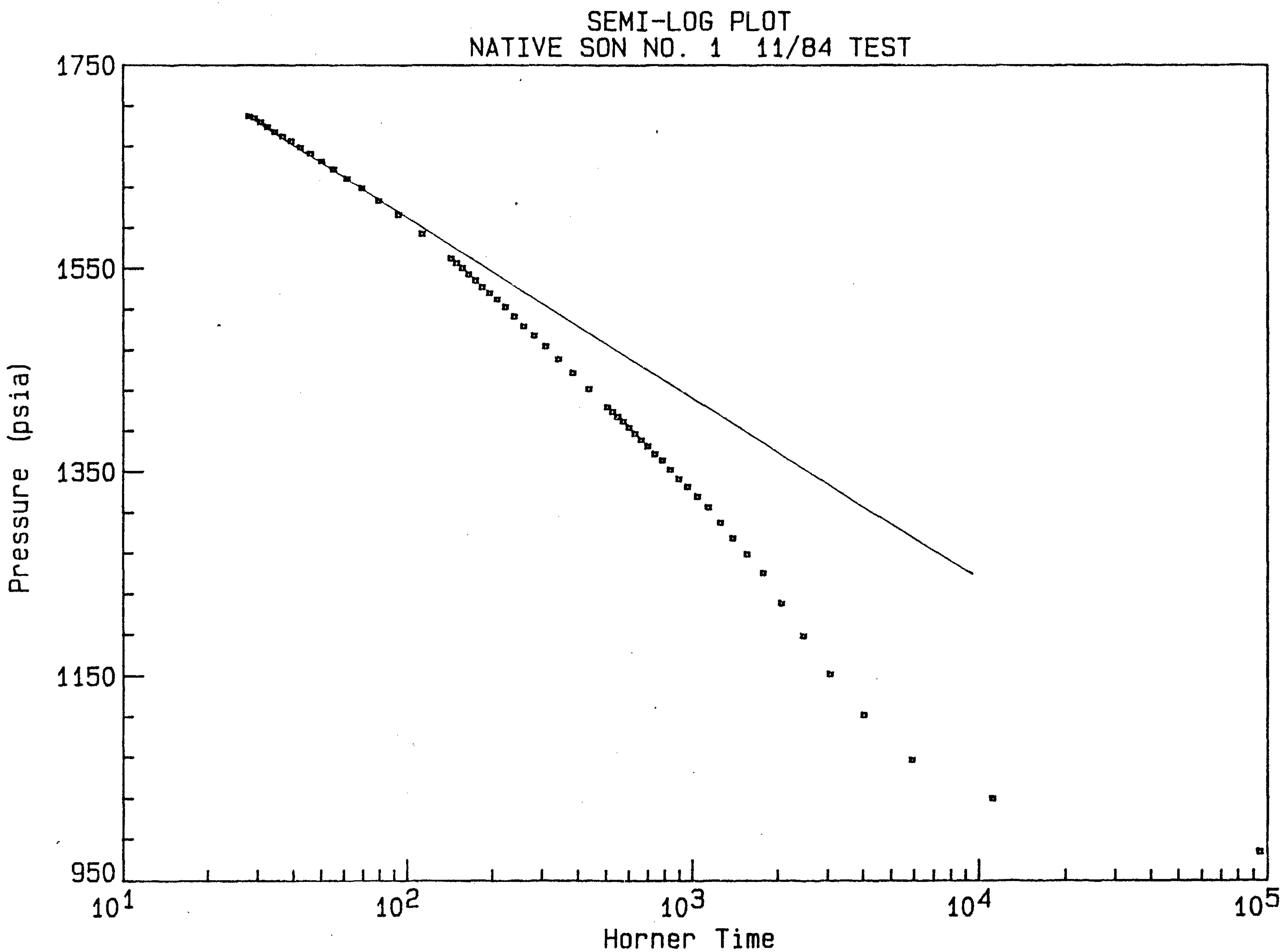
HISTORY MATCH OF WELL E-6

INTERFERENCE TEST - 1986

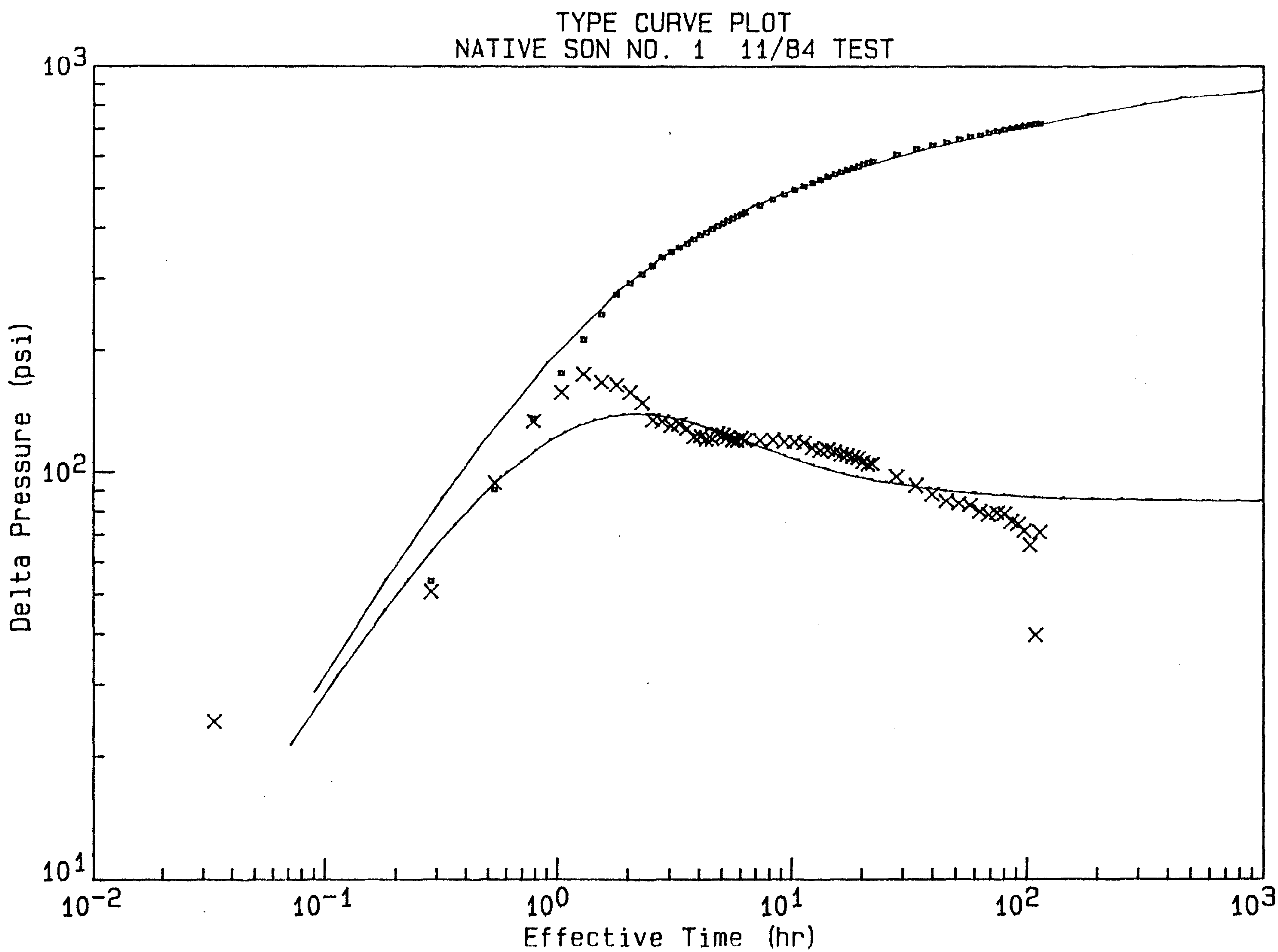



SEMI-LOG PLOT
NATIVE SON NO. 1   7/84 TEST
1800
1660
1520
1380
1240
1100
Pressure (psia)
10^0
10^1
10^2
10^3
10^4
Horner Time

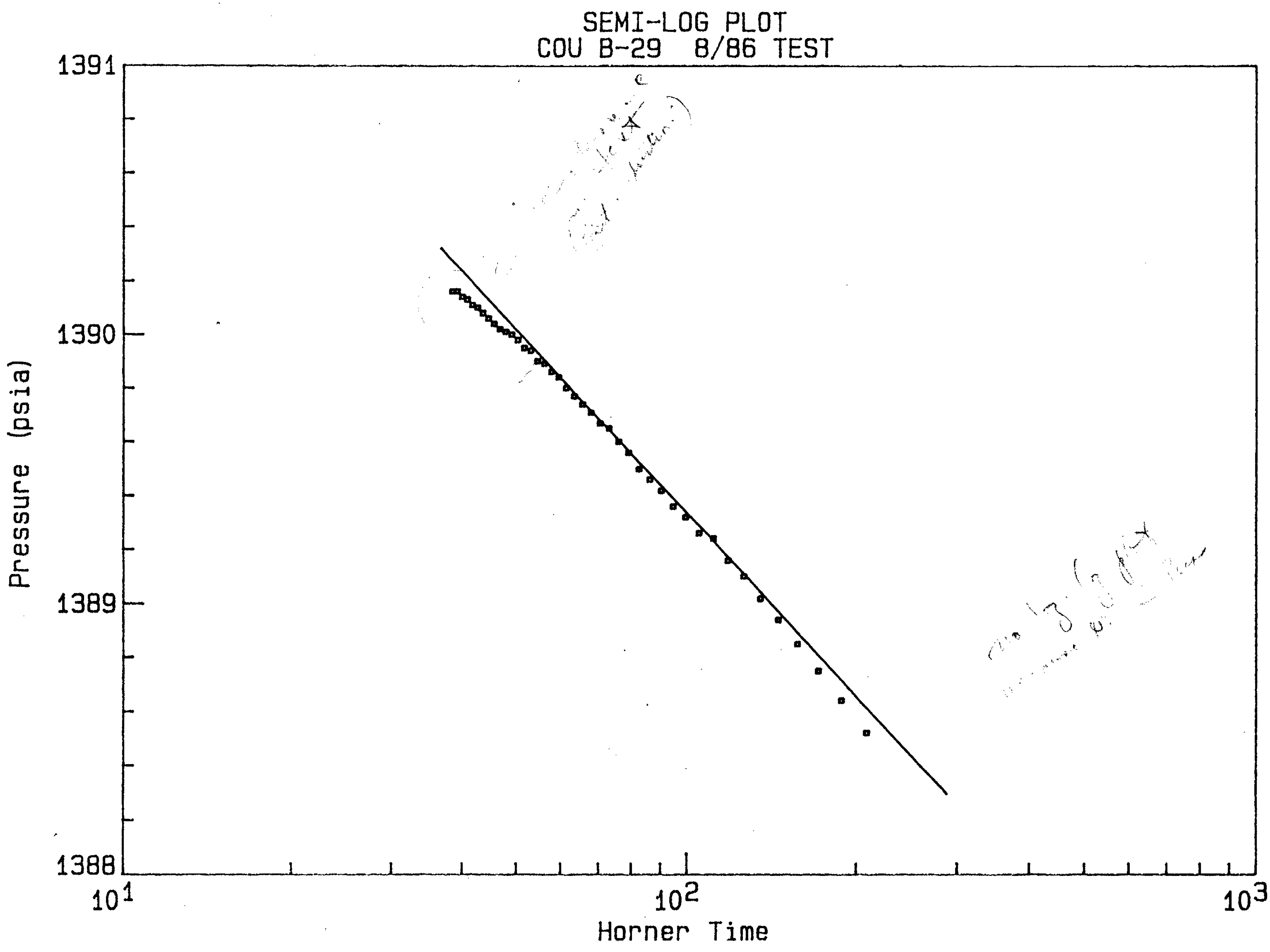

TYPE CURVE PLOT
NATIVE SON NO. 1   7/84 TEST
Delta Pressure (psi)
Effective Time (hr)
10^3
10^2
10^1
10^-1
10^0
10^1
10^2

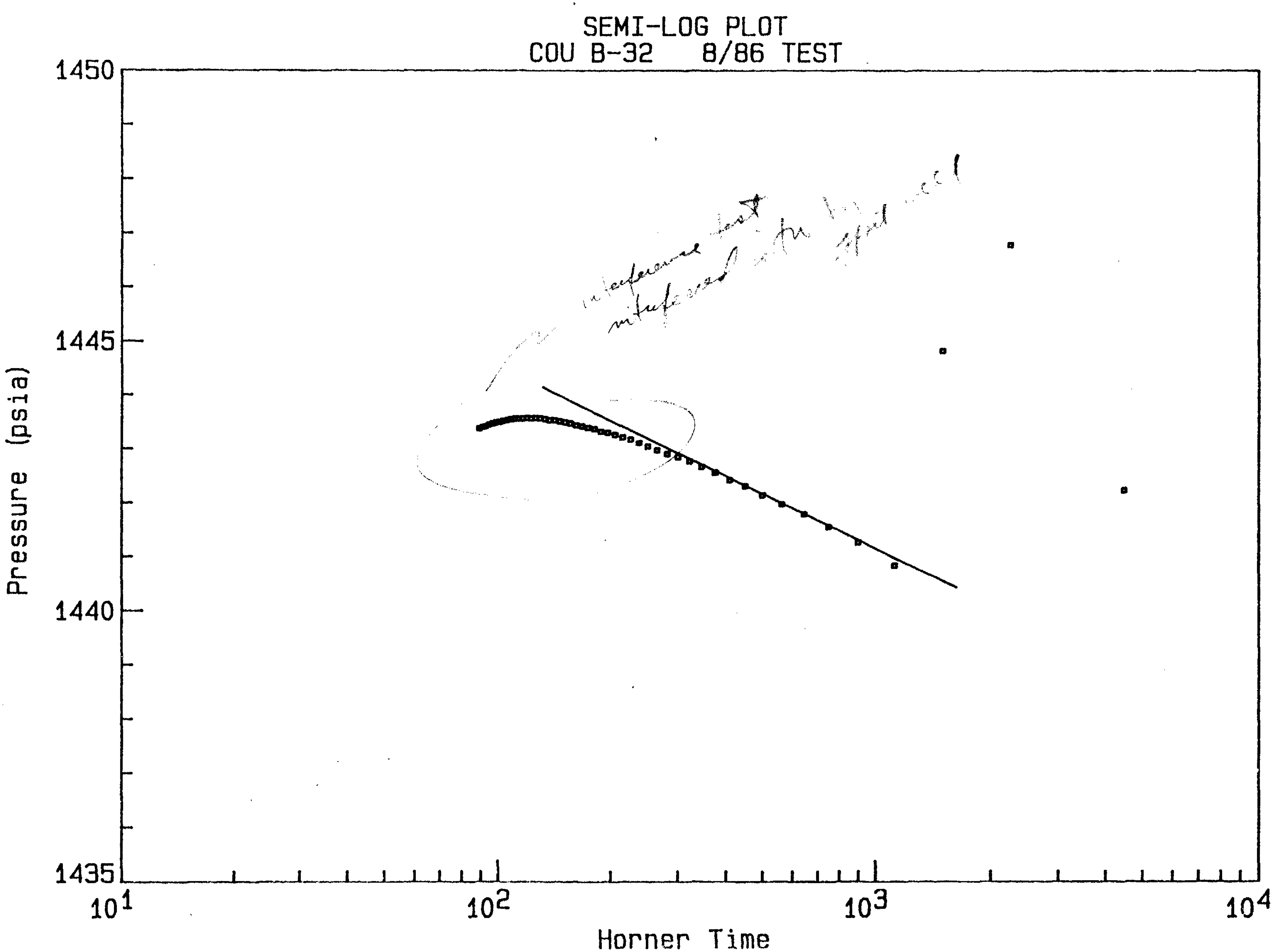


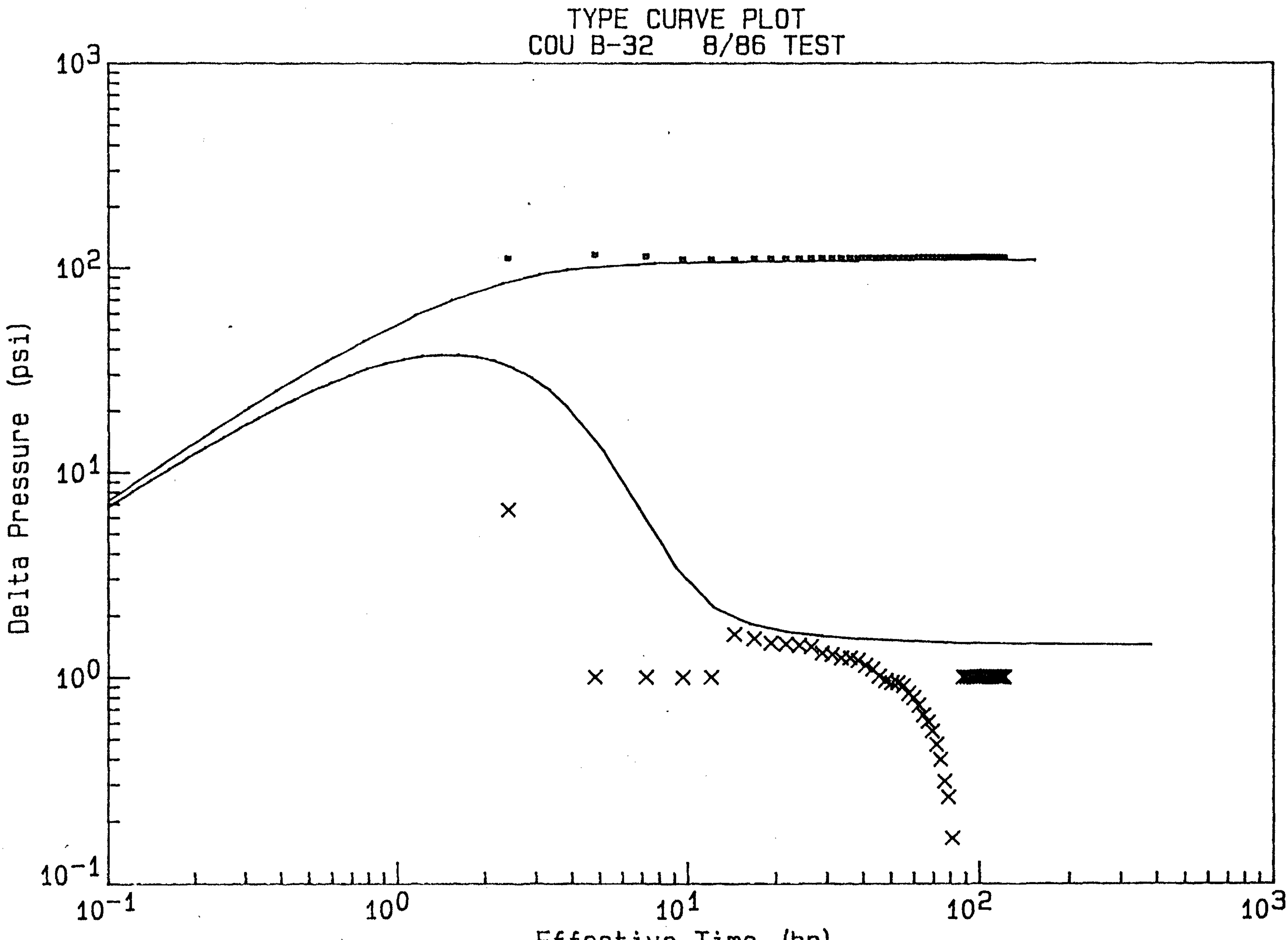
SEMI-LOG PLOT
NATIVE SON NO. 1 11/84 TEST
1750
1550
1350
1150
950
Pressure (psia)
10^1
10^2
10^3
10^4
10^5
Horner Time



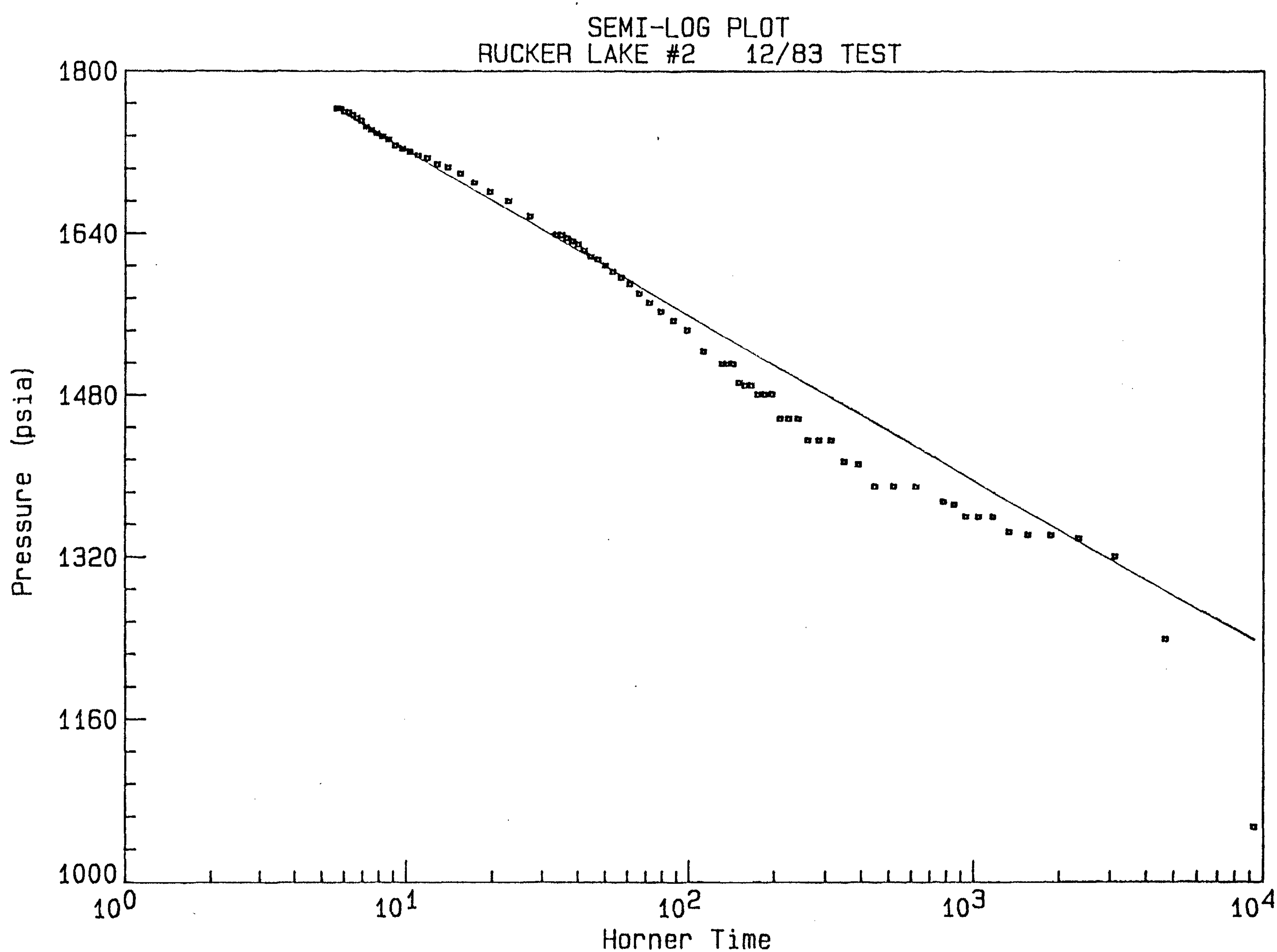
TYPE CURVE PLOT
NATIVE SON NO. 1 11/84 TEST
Delta Pressure (psi)
Effective Time (hr)
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{1}
10^{2}
10^{3}

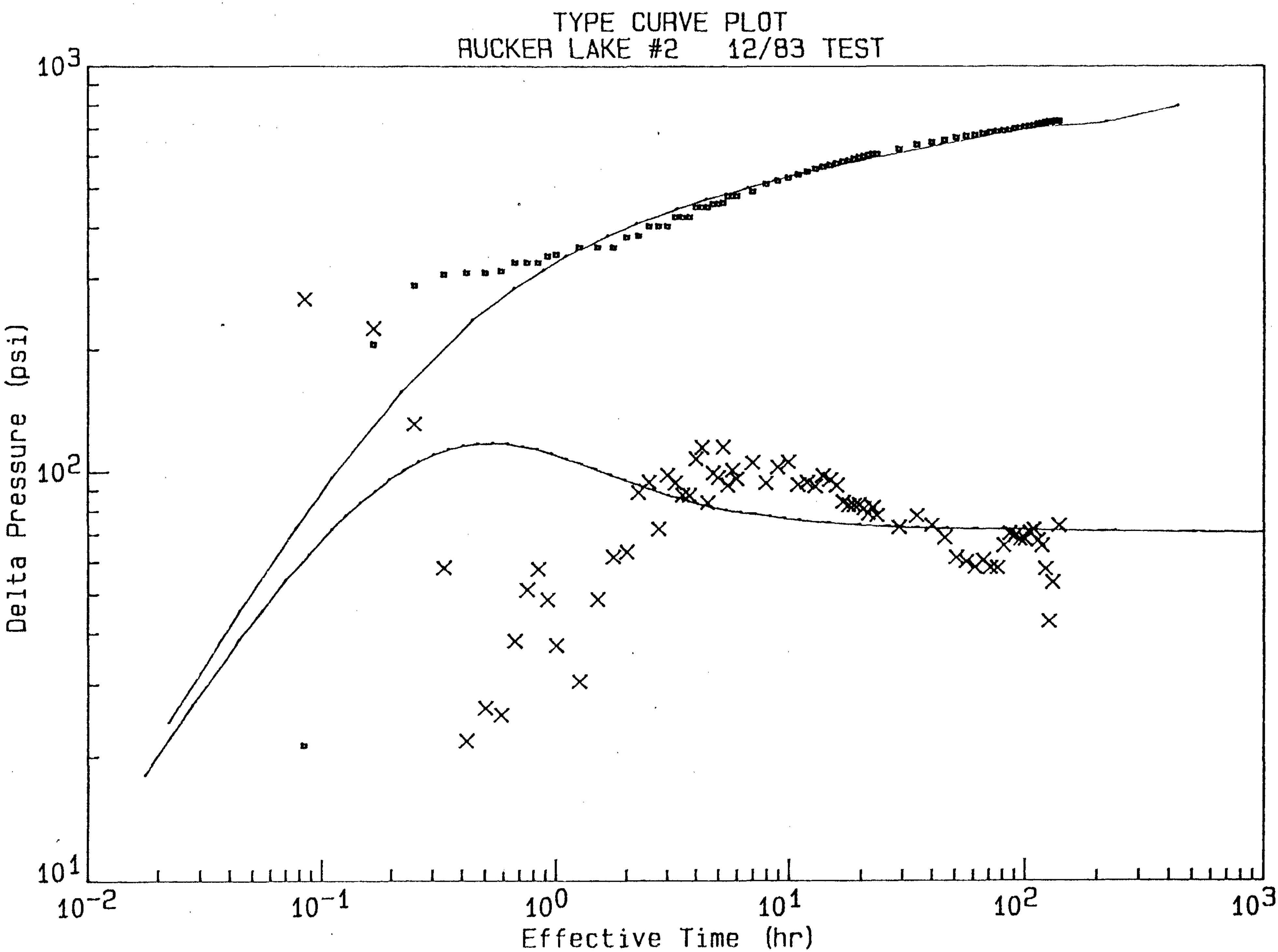

SEMI-LOG PLOT
COU B-29 8/86 TEST
1391
1390
1389
1388
Pressure (psia)
10^1
10^2
10^3
Horner Time

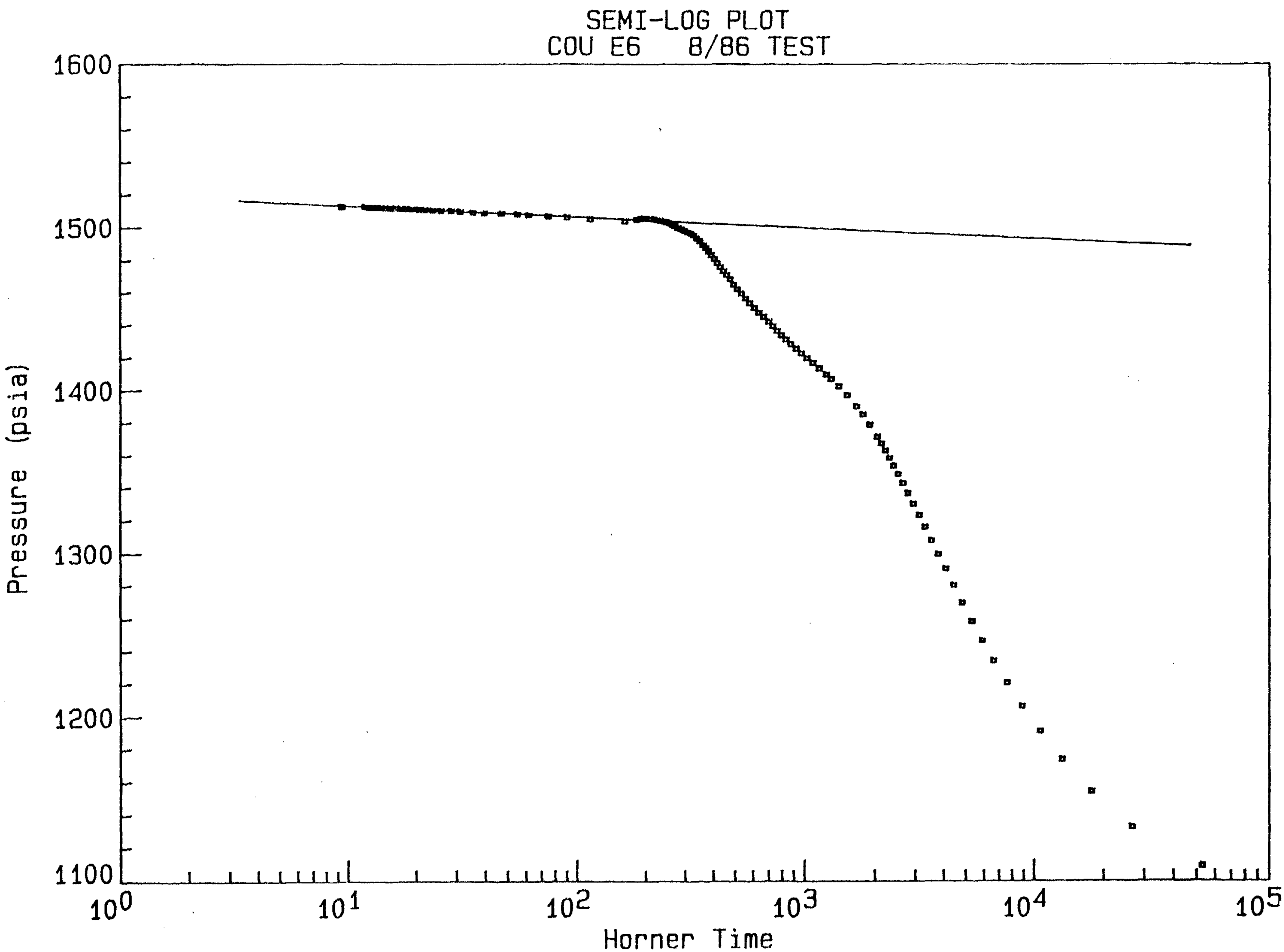

SEMI-LOG PLOT
COU B-32 8/86 TEST
1450
1445
1440
1435
Pressure (psia)
10^1
10^2
10^3
10^4
Horner Time



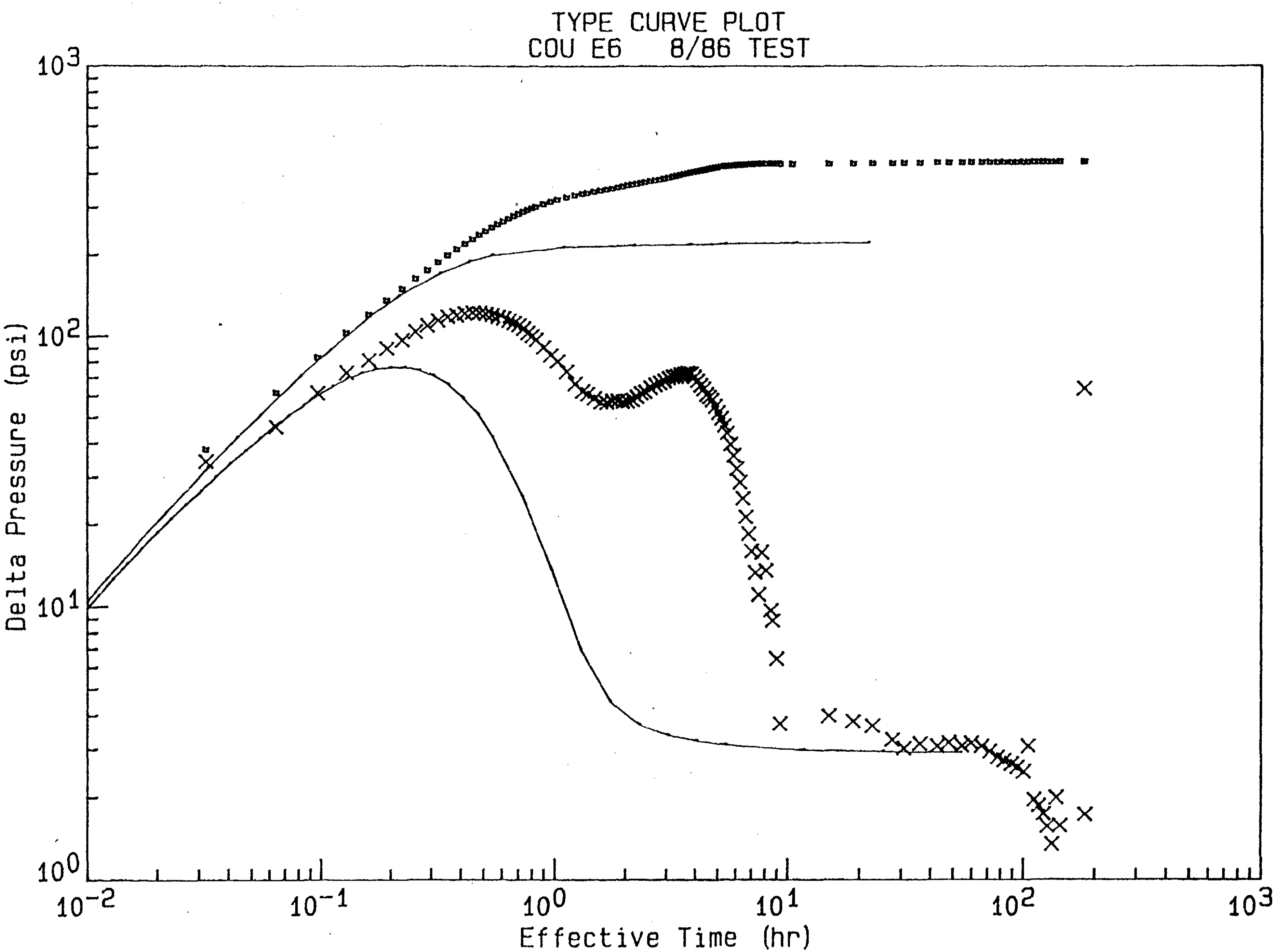
TYPE CURVE PLOT
COU B-32 8/86 TEST
Delta Pressure (psi)
Effective Time (hr)
10^3
10^2
10^1
10^0
10^-1
10^-1
10^0
10^1
10^2
10^3


SEMI-LOG PLOT
RUCKER LAKE #2 12/83 TEST
1800
1640
1480
1320
1160
1000
Pressure (psia)
10^0
10^1
10^2
10^3
10^4
Horner Time


TYPE CURVE PLOT
RUCKER LAKE #2   12/83 TEST
Delta Pressure (psi)
Effective Time (hr)
10^3
10^2
10^1
10^-2
10^-1
10^0
10^1
10^2
10^3



SEMI-LOG PLOT
COU E6 8/86 TEST
1600
1500
1400
1300
1200
1100
Pressure (psia)
10^0
10^1
10^2
10^3
10^4
10^5
Horner Time



TYPE CURVE PLOT
COU E6 8/86 TEST
Delta Pressure (psi)
Effective Time (hr)
10^{3}
10^{2}
10^{1}
10^{0}
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}

UNANALYZABLE PRESSURE BUILDUP TESTS

Gavilan Howard #1 (8/86)

In communication with Dakota prior to test; worked over and produced for approximately one day prior to shut-in. Do not know rate history or cumulative production from the Mancos.

Hawk Federal #2 (4/84)

Very inconsistent rate history prior to shut-in. Well kept dying.

Bearcat Federal #1 (5/86)

The well was shut-in when testers arrived on location. Exact rate history prior to test unknown.

Invader Federal #1 (5/86)

Well produced for only 21.5 hours. The duration of wellbore storage was not exceeded during either the production period or the buildup.

Loddy #1 (8/86)

Well produced for only two days. The duration of wellbore storage was not exceeded during the production period.

FIGURE 33

PRESSURE BUILD-UP COMPARISON SUMMARY

Gavilan Field Gallup Formation

					Type Curve Analysis						Horner Plot Analysis				
Well Name	Test Date	q_o	t_p	P_{wf}	$C_D e^{2S}$	$\Delta p/p_D$	$\Delta t/t_D/C_D$	kh	C	S	M	P*	P_{1h}	Kh	S
Rucker Lake 2	12/01/83	307	1325	988	1	62	.088	493	.024	-3.3	225	--	1290	156	-2.8
Hawk Fed. 2	04/10/84	185	72	1174	10^2	16	6.2	1151	4.0	-3.6	Test did not reach S.L.S.L.				
Native Son 1	07/23/84	334	426	1106	10	140	.877	237	.12	-3.0	212	1825	1265	181	-3.6
Native Son 1	11/30/84	398	2843	926	--	--	--	--	--	--	Test did not reach S.L.S.L.				
Bearcat Fed. 1.	05/06/86	125	790	993	1	227	2.8	55	.086	-4.0	310	--	715	46	-4.8
Gavilan Howard 1	05/06/86	150	11400	837	10^6	56.2	.28	266	.041	3.3	40	1410	1330	430	9.3
Invader Fed. 1	05/07/86	25	77	492	10^{10}	62	.98	40	.022	8.2	Test did not reach S.L.S.L.				

Lee agrees w/ Hueni

Assumed Reservoir Fluid and Well Constants:

$B_o = 1.33$

$\mu_o = .53$ cp

$\phi = .01$

$h = 300$ ft.

$r_w = .3$ ft.

$C_t = 100 * 10^{-6}$ psi^{-1}

Excerpts from
Hueni Exhibit Book
Mallon-Mobil-Mesa Grande
Exhibit No. 10
4/2/87

NORTHWEST PIPELINE CORPORATION
COUNTY, NEW MEXICO
TEST DATE 12/1/83 TO 12/8/83
Producing Time (tp) = 1325.0 HRS
Well Flowing Pressure (Pwf) = 988 PSIG HORNER PLOT

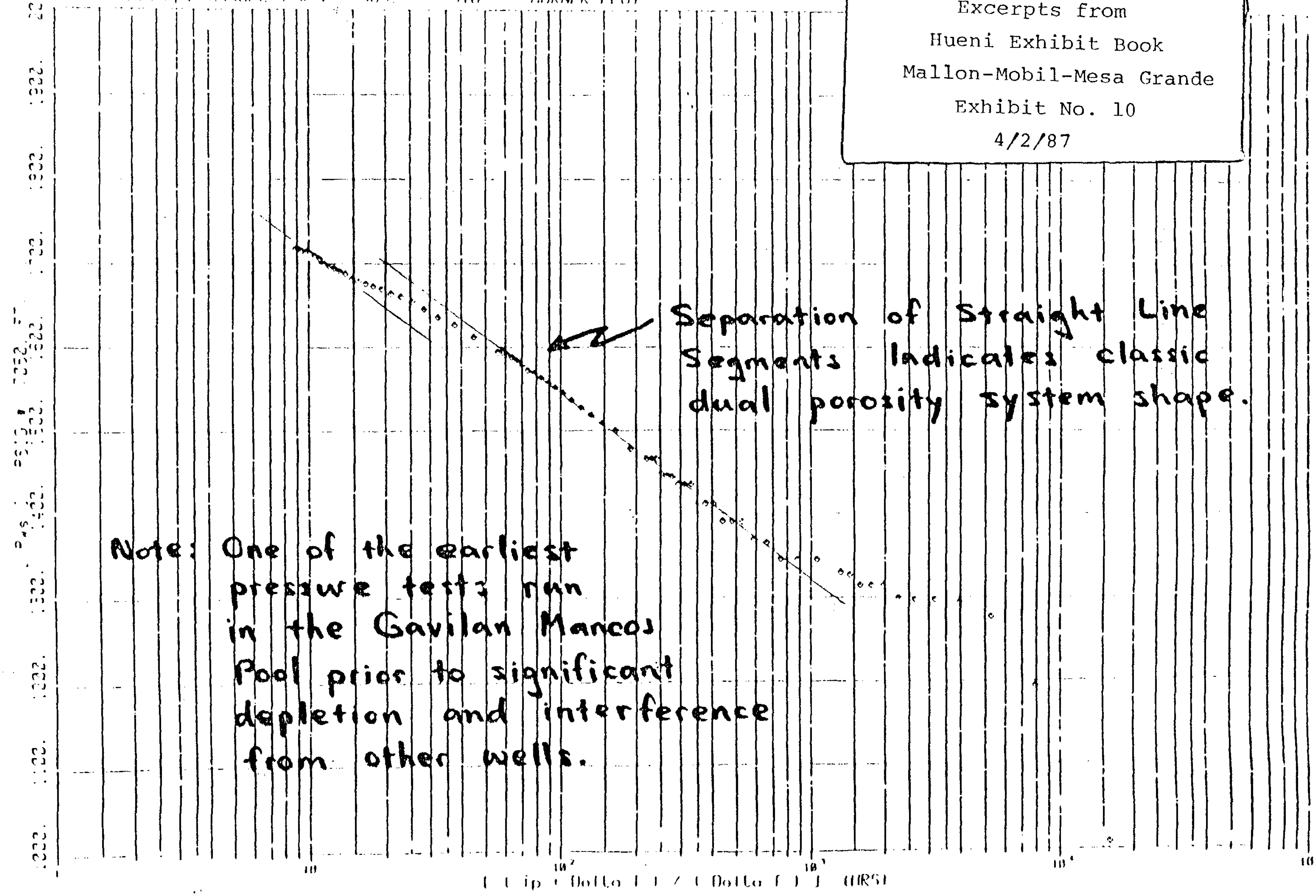
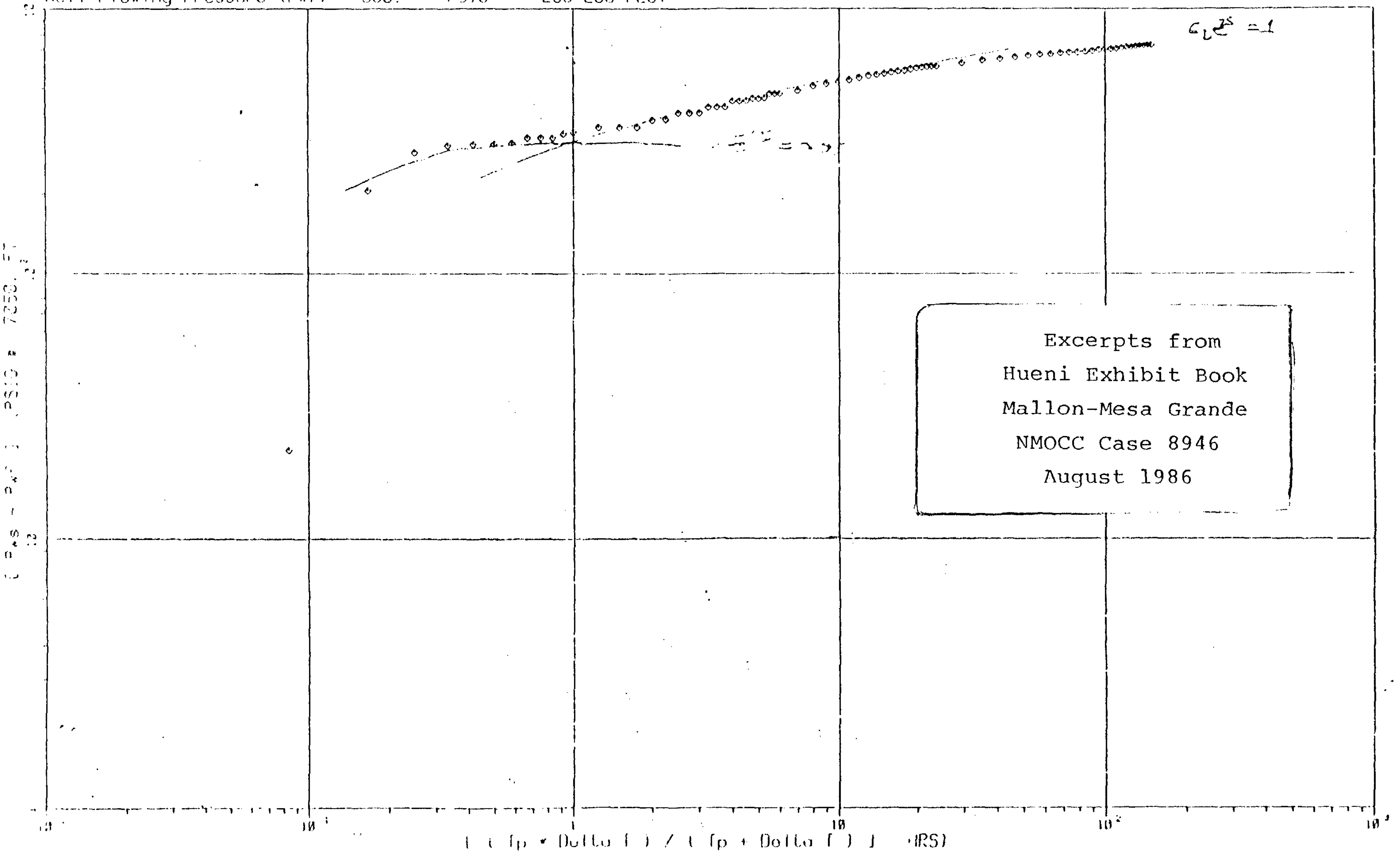


FIGURE 34

Jerry R Bergeson & Associates 04-AUG 86

RUCKER LAKE #2, NORTHWEST PIPELINE CORPORATION
RIO ARRIBA COUNTY, NEW MEXICO
TEST DATE: 12/1/83 TO 12/8/83
Producing Time (Tp) = 1325.0 HRS
Well Flowing Pressure (Pwf) = 988. PSIG LOG-LOG PLOT



APPLICATION OF MATERIAL BALANCE EQUATION

CONCLUSION

The solution gas drive material balance model, which was used to estimate gas in place in the Gavilan Mancos pool, does not match reservoir performance sufficiently well to lead to a valid estimate of original oil in place.

IMPLICATION

The proposed original oil in place estimate of 55 million STB is not reliable.

REQUIREMENTS FOR APPLICATION OF MATERIAL BALANCE EQUATION

GENERAL REQUIREMENTS

1. Proper drive mechanism identified.

2. All production and injection into reservoir (pore space in pressure communication) taken into account.

3. Uniform pressure throughout the reservoir.

4. Uniform saturations in oil zone and in gas cap (i.e., lack of saturation gradients).

5. Oil either totally above the bubble point or totally below the bubble point.

SPECIAL REQUIREMENT FOR DETERMINATION OF ORIGINAL OIL IN PLACE (OOIP)

To validate a particular tank-type material balance model (a model which assumes a specific drive mechanism, such as solution gas drive), a good technique is to calculate OOIP at different times. If the OOIP is constant, the model may be considered "verified"; if OOIP varies with time, either the assumed drive mechanism is incorrect or the other conditions required to apply the material balance model have not been satisfied.

The inconsistencies in this particular application of the material balance equation are noted below:

1. In the material balance calculations summarized in Figure 50, the OOIP was nowhere near constant; a better fit to the data in his Figure 50 is a continuously curving line (attached). The claim that OOIP is 55 million STB is undefendable.

2. Notably absent from the model is the Niobrara C in Gavilan and most of the West Puerto Chiquito production and injection. Given demonstrated pressure communication of these parts of the Mancos pool, however limited they are perceived to be, a complete reservoir model should include them.

3. The material balance calculations led to the claim that 55 million STB OIP was identified. The claim is also made that 90% of this 55 million is in the matrix. This is difficult to believe. Because a tight matrix would feed oil slowly to a well's drainage area in a pressure survey, the measured pressure in a survey would closely approximate the fracture pressure. Thus, a material balance calculation in a dual-porosity reservoir with a tight matrix should actually lead to an oil in place estimate approximately equal to oil in place in the fracture

(overstated only slightly by the pressure support provided by the matrix). Thus, even if we were to accept the material balance calculation as accurate, we would have to conclude that they showed fracture oil in place of slightly less than 55 million STB. The major point is that conditions required for applicability of a tank-type material balance are not satisfied in a dual-porosity system with a tight matrix block because of the pressure and saturation gradients in the system.

4. The solution gas drive material balance equation has been misapplied; thus, the original oil in place estimate of 55 million STB is not reliable.

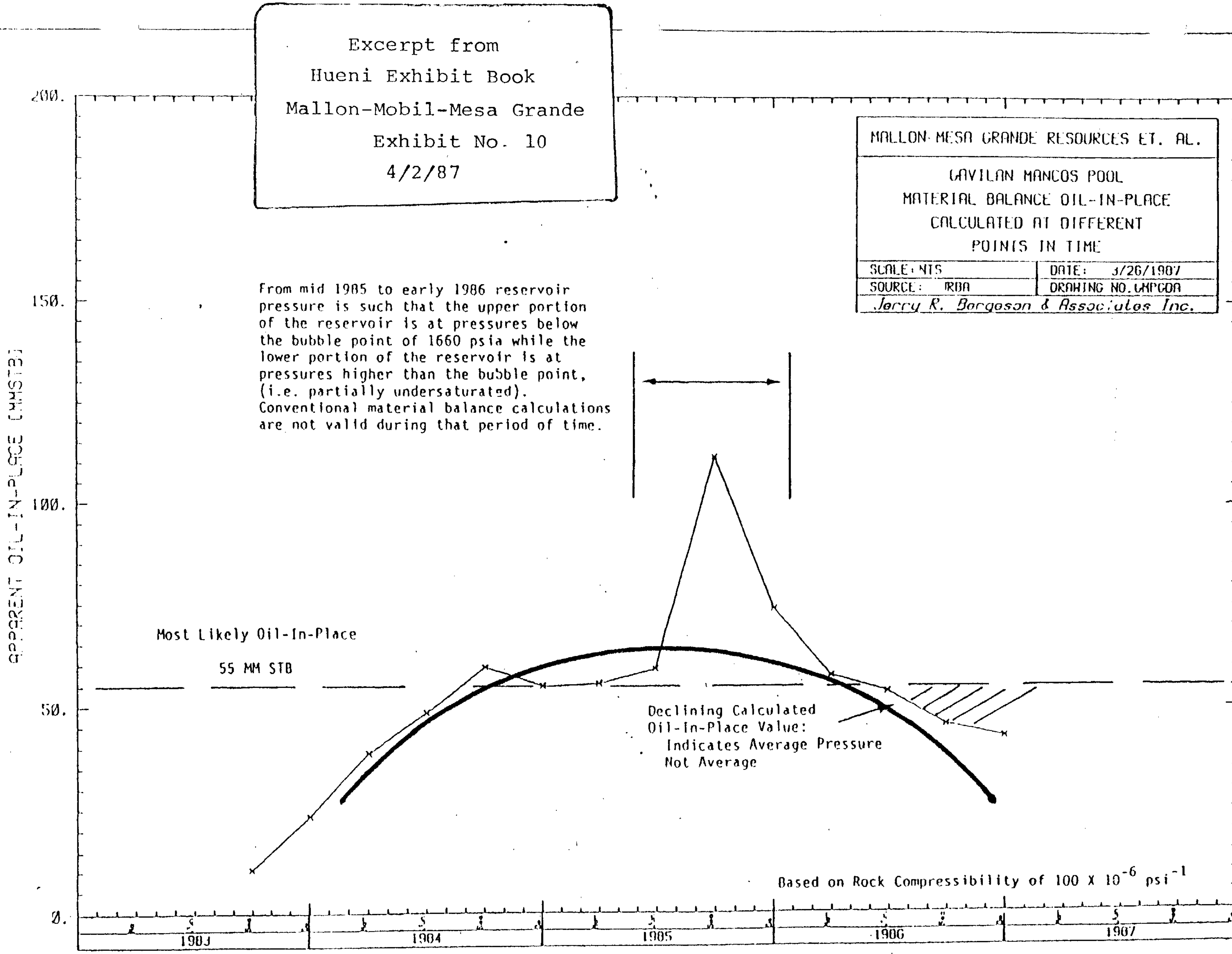

Excerpt from
Hueni Exhibit Book
Mallon-Mobil-Mesa Grande
Exhibit No. 10
4/2/87
MALLON-MESA GRANDE RESOURCES ET. AL.
GAVILAN MANCOS POOL
MATERIAL BALANCE OIL-IN-PLACE
CALCULATED AT DIFFERENT
POINTS IN TIME
SCALE: NTS
DATE: 3/26/1987
SOURCE: JRBA
DRAWING NO. GMPCOA
Jerry R. Bergeson & Associates Inc.
From mid 1985 to early 1986 reservoir pressure is such that the upper portion of the reservoir is at pressures below the bubble point of 1660 psia while the lower portion of the reservoir is at pressures higher than the bubble point, (i.e. partially undersaturated). Conventional material balance calculations are not valid during that period of time.
Most Likely Oil-In-Place
55 MM STB
Declining Calculated Oil-In-Place Value: Indicates Average Pressure Not Average
Based on Rock Compressibility of 100 X 10^-6 psi^-1
APPARENT OIL-IN-PLACE (MMSTB)
200.
150.
100.
50.
0.
1983
1984
1985
1986
1987

FIGURE 50

EFFECT OF MULTIPHASE FLOW ON MATRIX CONTRIBUTION

CONCLUSION

Two-phase (gas-oil) flow effects dramatically reduce the ability of a low permeability matrix to produce oil to a high permeability fracture system. There are two major effects: (1) the permeability to oil in the presence of gas is reduced significantly as gas saturation increases in the matrix; and (2) capillary forces (the so-called "capillary end effect") tends to retain the oil in the matrix at the fracture face and causes gas to be produced selectively. This latter effect was not taken into account in simulation; in fact, the simulator used does not model capillary end effects, and to compound the problem, zero capillary pressure in the matrix was input.

IMPLICATIONS

The probability of significant matrix contribution to reservoir reserves is reduced to virtually zero when two-phase effects are considered. Further, the dual-porosity system simulator used in this study is an inappropriate means for reaching <u>any</u> conclusions about the possible contribution of tight blocks which deplete by solution gas drive.

EXPLANATION OF ATTACHMENT

1. The attached paper on the Spraberry Field indicates the importance of capillary forces in retaining oil in matrix blocks. On page 97, Mr. Elkins says,

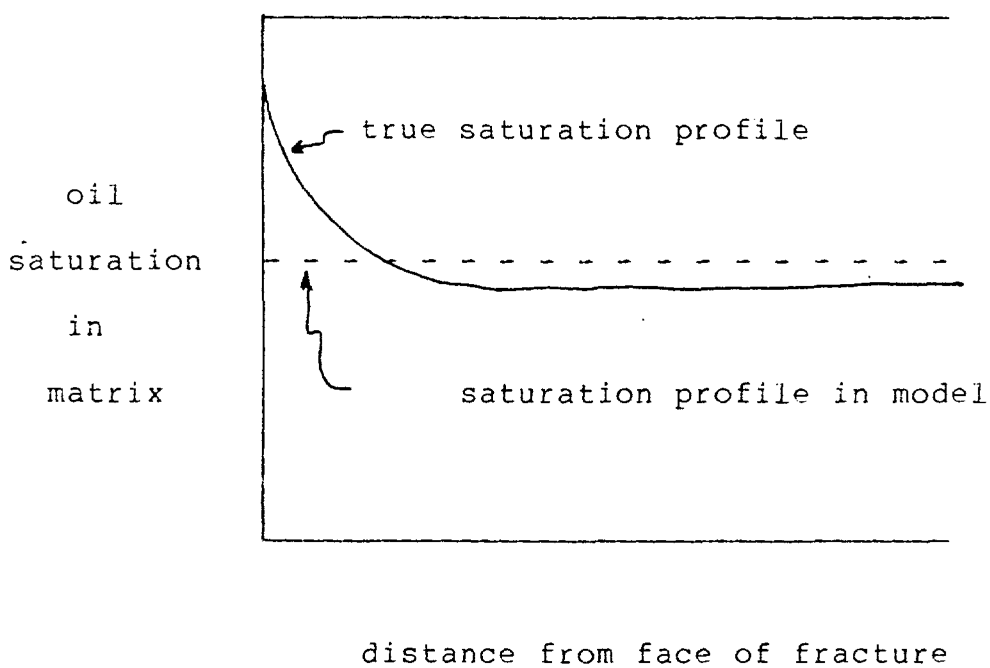
> "The Spraberry field covering 400,000 acres is a tight sand of less than 1-md permeability cut by an extensive system of vertical fractures. Primary recovery dominated by capillary retention of oil in the fractured sand matrix blocks is less than 10 percent of the oil in place."

In general, the lower the permeability of reservoir rock, the stronger the capillary retention forces. In the Gavilan Mancos, with its extremely low matrix permeability, capillary retention will be even more dominant than in Spraberry.

2. The attached paper on "Laboratory Determination of Relative Permeability" provides an introduction to the capillary end effect. Figures 4, 5, and 6 on page 189 offer some insight into this phenomenon. Each figure shows oil saturation vs. distance from the outflow face of a core in a steady-state displacement of oil by gas from the core. The important point is the tendency of oil to accumulate near the outflow face of the core. This accumulation is caused by a discontinuity in capillary pressure from inside the core (in which there is a differ-

ence between oil and gas phase pressures -- called capillary pressure) and outside the core, where pressures in oil and gas phases are the same.

This same discontinuity in capillary pressure exists at the point of matrix-fracture intersection in the Gavilan Mancos. The oil saturation distribution in a typical matrix block will appear as indicated by a solid line in the figure below.



In Mr. Hueni's model, because of the way the matrix flow equations are formulated, a single, uniform oil phase saturation and uniform oil and gas phase pressures are imposed throughout the entire matrix block at each time. This situation arises because, for computational efficiency, the model uses the so-called pseudo-steady state flow assumption proposed by Warren and Root. This assumption says the flow rate from the matrix, q_m, is proportional to the difference in pressure in the matrix, p_m, and in the fracture, p_f:

$$q_m = Ck_m \, k_{rm} \, (p_m - p_f)$$

The simplication is that a single, mean pressure in each phase is used throughout the matrix - rather than letting the matrix pressure vary with position, as it actually does. Since pressures in each phase throughout the matrix block are uniform, saturations are also uniform throughout the matrix block. Thus, saturation gradients are not modeled, and, specifically, the capillary end effect is not modeled.

The paper on Spraberry show the capillary retention effect is very important - in fact, it severely limits the flow of oil from the matrix to the fracture. Thus, the model will substantially over-predict the contribution from the matrix; it will likely predict some contribution from the matrix when there actually is none. Accordingly, we conclude that the model does not properly model the mechanics of the Gavilan-Mancos pool.

Determination of Fracture Orientation from Pressure Interference

LINCOLN F. ELKINS
MEMBER AIME
ARLIE M. SKOV
JUNIOR MEMBER AIME

SOHIO PETROLEUM CO.
OKLAHOMA CITY, OKLA.

ABSTRACT

Inclusion of anisotropic permeability in mathematical analysis of pressure transients observed during development of the huge Spraberry field indicates a major fracture trend which is in good agreement with that observed by fluid-injection tests spread over a 12- by 17-mile area. Delineation of this trend is important in selecting a pattern of injection for the pending large-scale water flooding in this field. Determination of reservoir parameters yielding best agreement between calculated pressures and observed reservoir pressures in newly completed wells was made using an IBM 650 computer.

INTRODUCTION

The Spraberry field covering 400,000 acres is a tight sand of less than 1-md permeability cut by an extensive system of vertical fractures. Primary recovery dominated by capillary retention of oil in the fractured sand matrix blocks is less than 10 per cent of oil in place. Strong forces of capillary imbibition of water into the sand, coupled with water flow under dynamic pressure gradient, indicate considerable increase in oil recovery can be achieved through water flooding. Best results will occur if the pattern of water injection is selected to force the water flow across the grain of the major fracture system.

Existence of an oriented vertical fracture system in the Spraberry, observed first in cores, was highlighted more recently by the 144-fold contrast in permeability along and at right angles to the major fracture trend required to match relative water breakthrough times in Humble Oil & Refining Co.'s waterflood test there. Spraberry operators since have conducted two gas-injection tracer tests for further areal confirmation of the fracture trend. Re-analysis of early reservoir pressure transients for evidence of anisotropic permeability has permitted many more local determinations of major fracture trend without resort to further field tests.

This paper is limited to updating analysis of reservoir pressure transients to include anisotropic permeability as a test for orientation of the major fracture trend in the Spraberry. The reader is referred to Refs. 1 and 2 for information about general Spraberry reservoir performance and to Refs. 3 and 4 for information about significance of fracture orientation in selection of the injection-well pattern for water flooding the Spraberry.

RESERVOIR PRESSURE DATA—DRIVER AREA

During early development of the Spraberry Driver area, Sohio Petroleum Co. made the extra effort to measure the initial pressure in each of the 71 wells in a 5-mile-long area immediately after completion. Progressively greater reductions in pressure ranging up to 400 psi were observed throughout the six-month development period. Detailed data are presented in Ref. 1.

Since the reservoir oil was undersaturated some 300 psi initially, early reservoir performance involving 55 new well pressures is subject to analysis as flow of a single compressible fluid in a porous media. Assumption of uniform permeability in all directions yielded good agreement between calculated pressures and observed pressures of these wells in the earlier study,[1] but subsequent, additional, mathematical development to include anisotropic permeability in the transient pressure considerations and present availability of electronic computers to perform the much more extensive arithmetical calculations now yield even better agreement.

The previous analysis, assuming uniform permeability, consisted essentially of calculating pressure reduction expanding circularly around each producing well and summing these effects at the time and location of each newly completed well for comparison with the measured pressure reduction. Permeability, effective fluid and rock compressibility, and permeability × thickness were varied until the best match with measured pressures was obtained. The present analysis, assuming anisotropic

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Discussion of this and all following technical papers is invited. Discussion in writing (three copies) may be sent to the office of the *Journal of Petroleum Technology*. Any discussion offered after Dec. 31, 1960, should be in the form of a new paper.

[1]References given at end of paper.

permeability, is similar except that, in effect, the pressure reduction caused by production of a well expands in elliptical form with length/width varying as the square root of the ratio of permeability along and at right angles to the fracture trend. This adds fracture length and permeability ratio to the other significant factors affecting performance. Values of certain of these variables were assumed and one other altered until a "best" fit was obtained. It was then "fixed" and a second one adjusted, then a third, etc., until no new combination could be found to improve the agreement between calculated and actual pressures. Seventy complete sets of calculations involving 155 producing wells and 55 new well pressure points were performed.

Results of this series of calculations with respect to the orientation of fractures and contrast in permeability — factors most pertinent to water flooding — are summarized in Figs. 2 and 3 which show average (root mean square) error in pressure vs these variables. Deviation between calculated pressures and measured pressures of individual wells are presented in Fig. 4 both for assumption of directional permeability and of uniform permeability. While the resolving power of the analysis is not high, indicated by comparison of error with and without consideration of permeability contrast, there is little doubt that orientation of the fractures so calculated has sufficient accuracy to serve as a starting point for planning Spraberry waterflood injection-well patterns. They indicate an average fracture trend of N 56° E and a thirteen-fold ratio of effective permeability along and at right angles to the main fractures. Corresponding flow capacities are 3,220 and 248 md-ft, or about 104- and 8-md effective permeabilities based on 31-ft gross Upper Spraberry sand thickness. Matrix permeability is less than 1 md.

Since these pressure data of 55 new wells cover an

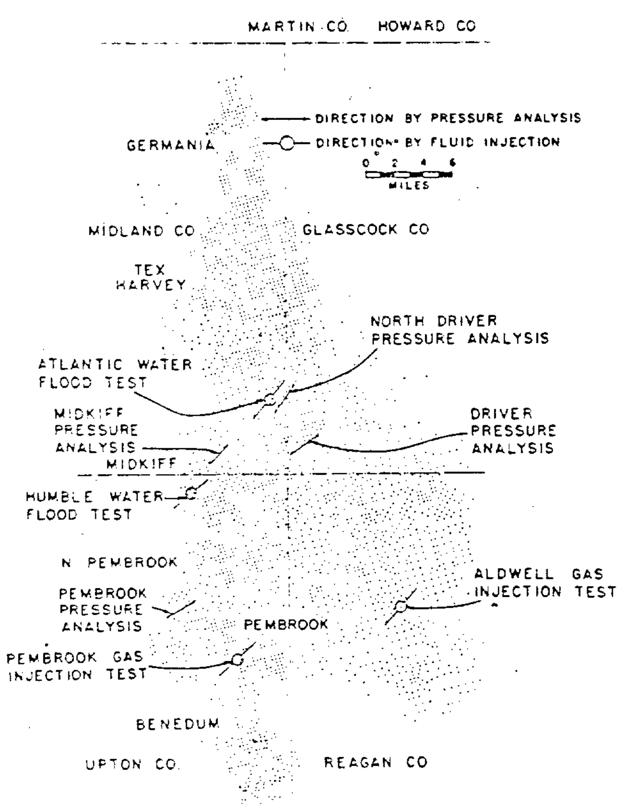

Fig. 1—Fracture Orientation, Spraberry Trend.

area 5 miles in length, they permit a determination of consistency of fracture orientation. Results of four subarea analyses also are presented in Fig. 2, with indicated

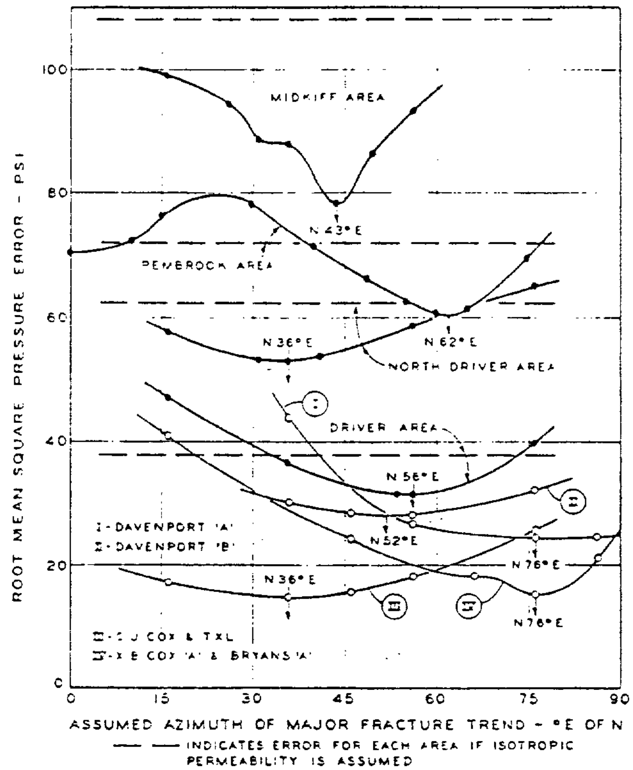

Fig. 2—Fracture Orientation by Area and by Lease in the Driver Area.

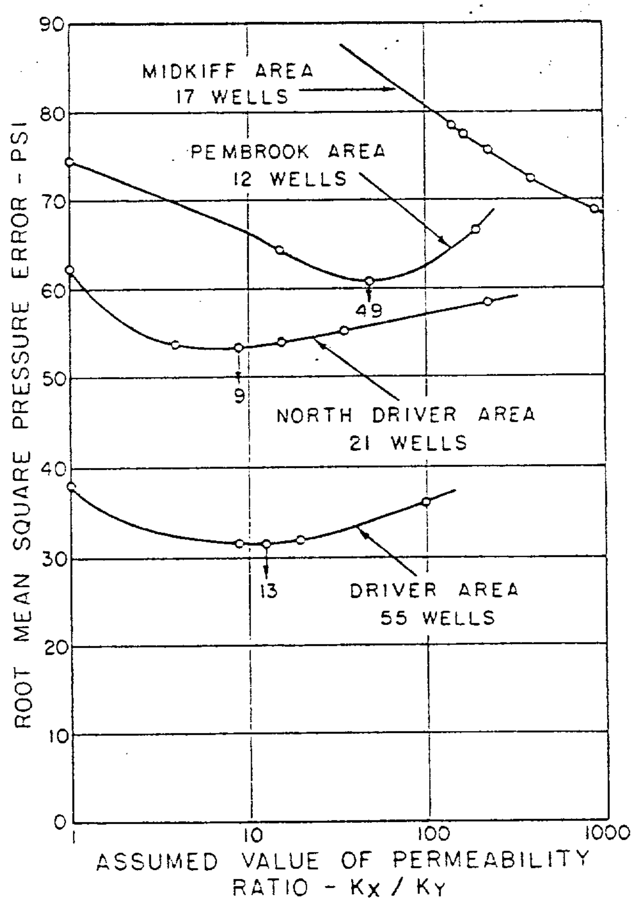

Fig. 3—Effects of Changing Magnitude of Permeability Ratio — k_x/k_y.

fracture orientation varying between N 36° E and N 76° E or ± 20° from the average direction determined using all 55 wells.

RESERVOIR PRESSURE STUDIES— OTHER SPRABERRY AREAS

Early pressures for four other areas in the Spraberry[2] have been analyzed similarly, and results are included in Figs. 2 and 3. Due possibly to the fact that three of these sets were not truly "initial" pressures of new wells but were pressures measured after as much as two months' production, there is significantly greater deviation between "best fit" calculated pressures and measured pressures than in the previously discussed results based on pressures measured immediately upon completion of new wells. Nevertheless, it is significant that fracture orientations calculated for the Midkiff and North Driver areas are in good agreement with those determined by the Humble[3] and Atlantic[4] waterflood tests, respectively. Similarly there is good agreement between the fracture orientation determined from one pressure analysis and that from the gas-injection test in the Pembrook area.[5] An attempt to determine fracture orientation from pressure data of another group of wells near the Pembrook gas-injection test resulted in such very large deviation between calculated pressures and measured pressures that no conclusion is warranted. Quite possibly this is due again to the fact that these pressures were not measured upon completion of the wells but were simply first tests available.

Fracture orientations determined by these various analyses of pressure interference between wells and by water injection and by gas injection are summarized in Fig. 1 and in Table 1. They show a range in direction from N 36° E to N 76° E over an area about 17 miles in length by 15 miles in width. Similarly, the ratio of permeability along the fracture trend to that perpendicular to it ranges from about 6 to 144 or higher.

CONCLUSIONS

Inclusion of anisotropic permeability in analysis of pressure transients in the Spraberry gives somewhat better agreement between calculated pressures and observed pressures of new wells than does assumption of uniform permeability. Close agreement between the many fracture orientations so determined and those indicated by field injection tests spread over a 15- by 17-mile area demonstrate the anisotropy is real — not merely a chance variation in the statistics. This evidence of wide-spread uniformity of fracture trend is helpful in planning the injection pattern for forthcoming Spraberry water floods.

ACKNOWLEDGMENTS

The authors wish to thank R. E. Collins of the U. of Houston and H. H. Rachford, Jr. of Humble Oil & Refining Co. for advice on the mathematical treatment of transient flow in anisotropic reservoirs. The original derivation of Eq. 1 is included in a book, *Flow of Fluids Through Porous Materials*, soon to be published by Collins. The authors also wish to thank the Pembrook Unit Operators Committee for permission to publish results of the Pembrook gas-injection fracture orientation test.

Ellen Kilpatrick developed the computer program and performed the calculations which serve as the basis for this paper.

REFERENCES

1. Elkins, L. F.: "Reservoir Performance and Well Spacing, Spraberry Trend Area Field of West Texas", *Trans.*, AIME (1953) 198, 177.
2. Testimony before Texas Railroad Commission, (Sept. 11-17, 1952) Oil and Gas Docket Nos. 125 and 126, Nos. 7 and 8 — 24360.
3. Barfield, E. C., Jordan, J. K. and Moore, W. D.: "An Analysis of Large Scale Flooding in The Fractured Sparberry Trend Area Reservoir", *Jour. Pet. Tech.* (April, 1959) XI, No. 4, 15.
4. Elkins, L. F.: "Spraberry Waterflood Possibilities", Talk presented to National Oil Scouts and Landmen's Assoc. (June 6, 1958); summary in *Oil and Gas Jour.* (June 30, 1958); *World Oil* (Aug. 1, 1958).
5. Pembrook Unit Operator: Personal Communication.
6. U. S. Bureau of Mines: Report to Southland Royalty Co. on Radioactive Gas Tracer Survey, Spraberry Trend, Aldwell Area, Reagan County, Tex. (Feb., 1960).
7. R. E. Collins: Personal Communication.

APPENDIX

The pressure drawdown at the location of a new well due to constant production of another well in an extensive reservoir of uniform thickness having aniso-

TABLE 1—FRACTURE ORIENTATION AND PERMEABILITY CONTRAST, SPRABERRY TREND AREA FIELD

	Fracture Trend	Ratio of Permeabilities*	Avg. Deviation Calculated vs Measured Pressures (psi)	Equivalent Permeability** (md-ft)
Midkiff Area				
Humble Water Flood	N 50° E	144		
Pressure Analysis (17 wells)	N 43° E	100 to 1000	78.4	443
North Driver Area				
Atlantic Water Flood***	N 42° E	—		
Pressure Analysis (21 wells)	N 36° E	9	53.3	406
Pembrook Area				
Gas Injection test	N 48° E	—		
Pressure Analysis (16 wells)	N 62° E	49	60.6	446
Aldwell Area				
Radioactive Gas Tracer[6]	N 53° E	about 16		
Driver Area†				
Pressure Analysis				
55-Well Composite	N 56° E	13	31.6	888
14-Well Davenport A Lease	N 76° E	36	24.7	1130
15-Well Davenport B Lease	N 52° E	6	28.4	968
13-Well X. B. Cox and J. C. Bryans A Leases	N 76° E	36	15.2	1020
12-Well C. J. Cox and T.X.L. Leases	N 36° E	7	14.7	481

*Ratio of permeability along major fracture trend to permeability perpendicular to fracture trend.

**$h\sqrt{k_x k_y}$

***Orientation determined by general pattern of reduction of gas-oil ratio and water breakthrough.

†See Ref. 1 for identification of leases.

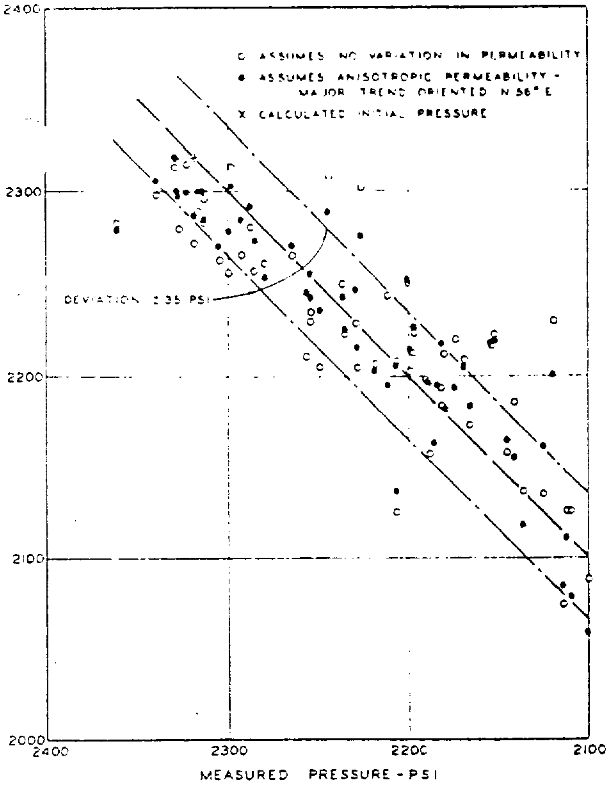

FIG. 4—CALCULATED PRESSURE VS MEASURED PRESSURES, DRIVER AREA, SPRABERRY TREND FIELD.

tropic permeability is given by Eq. 1 for conditions of single-phase flow.[7]

$$p_i - p = \frac{(-)\, q\, \mu\, B}{4\pi\sqrt{k_x k_y}\, h\, 1.127}\; \mathrm{Ei}\left(-\frac{\dfrac{(x-x_o)^2}{k_x}+\dfrac{(y-y_o)^2}{k_y}}{\dfrac{4t}{\mu c \phi}\; 6.32}\right) \quad . \; . \; . \; . \; (1)$$

where p_i = initial pressure (psi),
p = pressure at x, y at time t (psi),
q = production rate (B/D),
μ = viscosity of oil (cp),
B = formation volume factor,
h = thickness (ft),
t = time (days),
c = effective compressibility of oil, water and rock (vol/vol/psi),
ϕ = porosity (fraction),
Ei(− —) = exponential integral,
k_x = effective permeability in x direction (darcies),
k_y = effective permeability in y direction (darcies),
$(x - x_o)$ = distance from producing well to pressure point in x direction (ft),
$(y - y_o)$ = distance from producing well to pressure point in y direction (ft), and
1.127 and 6.32 = conversion factors.

The pressure reductions at a point due to production of different wells are additive. For uniform permeability, Eq. 1 reduces to the simpler, well known form involving r^2 and k.

Since significant reservoir properties including effective compressibility of rock and its contained fluids and permeability, whether uniform or anisotropic, appear implicitly in this relation they can be determined only by trial solutions until the set of values is found which gives the best match between calculated pressures and measured pressures. Fracture orientation, diffusivity parallel to the main fractures and diffusivity perpendicular to the main fractures are related implicitly in Eq. 1, and geometric mean permeability $\sqrt{k_x k_y}$ and p_i are explicit. Determination of the best set of these factors requires the following sequence.

1. Determine x and y coordinates of all producing wells and pressure observation wells.

2. Rotate these coordinates to an assumed fracture orientation since axes in Eq. 1 correspond to directions of maximum and minimum permeabilities.

3. Calculate $\Sigma\, q$ Ei (− —) for each pressure observation well using assumed values of diffusivity in the new x and y directions and determine the associated values of $\sqrt{k_x k_y}$ and p_i by least-squares method.

4. Successively modify the fracture orientation and diffusivities in the x and y directions until a set of values of these factors is found such that any further modification increases the sum of squares of the difference between measured and calculated pressures of the individual observation wells. ★★★

LABORATORY DETERMINATION OF RELATIVE PERMEABILITY

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ABSTRACT

A detailed study of a number of methods of relative permeability measurement has been made in a search for the technique most suited to routine analysis of cores taken from reservoir rock. It has been found from tests run on the same samples of core material by a number of techniques that the Penn State, Hassler, Hafford, and dispersed feed techniques all yield results which are felt to be reliable. Conditions under which the faster single core dynamic technique may be used are described. Further work on the calculation of relative permeabilities to oil from data obtained by the gas drive method is needed before this latter rapid method can be utilized.

Correlations between theoretical studies and experimental results have been obtained in studies of the boundary effect, pressure distribution in two-phase flow, and gas expansion effects. Previous conclusions that the effects of the outflow boundary could be made negligibly small have been substantiated. Results of experimentally determined oil and gas pressure distributions along a core sample during flow are presented. Further studies of the effects of rate of flow in the measurement of relative permeability-saturation relations have shown that results are independent of the rate of flow as long as the flow rate is below the point where inertial effects commence. An analysis of the effects of a severalfold expansion of gas along the flow path indicates that while saturation gradients are induced in the test sample, the errors caused by this phenomenon in relative permeability measurements are small.

INTRODUCTION

Many pages of literature have been devoted to pointing out the need for relative permeability-saturation relations in reservoir engineering. One of the most attractive ways of obtaining this information is by the analysis of samples of core material taken from the formation in question, and again literature has described many methods for obtaining these data. It is the purpose of this paper to present the work that has been done in the study of some of these published methods together with some other methods that have been recently developed in this laboratory. Also, a study of some of the factors that influence the laboratory determination of relative permeability-saturation relations is presented.

[1]References given at end of paper.

Manuscript received in the Petroleum Branch office March 24, 1952.

FACTORS WHICH AFFECT LABORATORY STUDY OF FLUID FLOW THROUGH RESERVOIR ROCK

To determine relative permeability-saturation relations of samples of reservoir rock in the laboratory, it is important to know what factors affect these measurements in order that the magnitude of these effects can be ascertained and steps then can be taken to eliminate or, in some cases, to minimize them. The factors that have been investigated are the boundary effect, the effect of gas expansion, and the rate effect.

Boundary Effect

In laboratory experiments in which two immiscible fluids are flowed through a porous medium, there exists a discontinuity of capillary properties at the outflow face. This discontinuity exists because the fluids pass from a region of finite capillary pressure in the sample to a region of zero capillary pressure in an open receiving vessel. The capillary forces existing in the core cause the rock to tend to retain

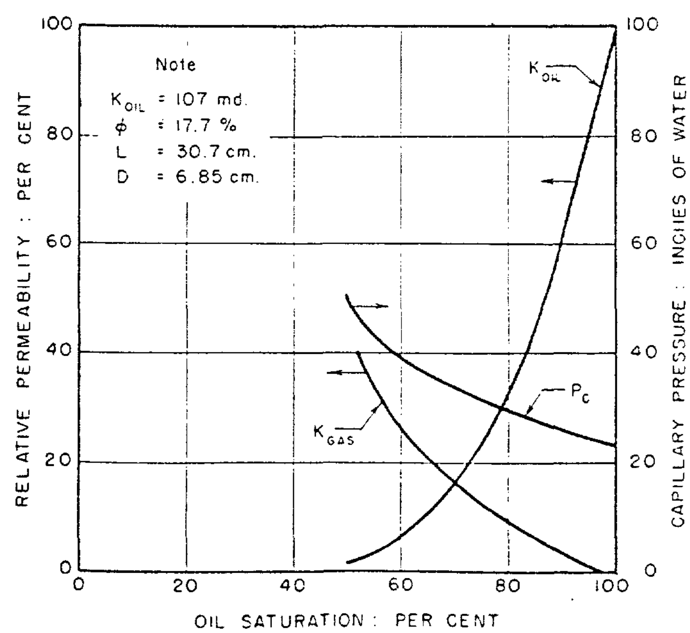

FIG. 1 — RELATIVE PERMEABILITY AND CAPILLARY PRESSURE SATURATION RELATIONS FOR BEREA OUTCROP SAND.

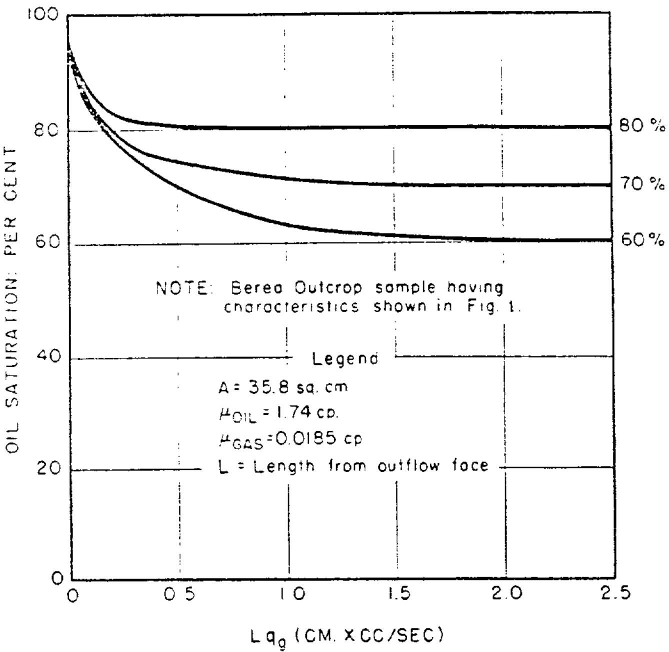

FIG. 2 — CALCULATED SATURATION GRADIENTS DUE TO BOUNDARY EFFECTS.

the wetting fluid, which results in the saturation of the wetting face being maintained at a higher level near the outflow end of the core than throughout the remainder of the core. This phenomenon is called the boundary effect. In a recent publication, Caudle, Slobod and Brownscombe[1] pointed out that the predicted influence of the boundary effect was larger than was determined experimentally. Since the influence of the boundary effect must be reckoned with in nearly all laboratory investigations dealing with multi-fluid flow, it is important to know exactly the role played by the boundary effect in these investigations.

Theory

When two immiscible fluids flow horizontally through a porous medium, they obey the three differential equations listed below:

$$-dP_w = \frac{q_w \mu_w dL}{K_w A} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \quad (1)$$

$$-dP_{nw} = \frac{q_{nw} \mu_{nw} dL}{K_{nw} A} \quad . \; . \; . \; . \; . \; . \; . \; . \; . \quad (2)$$

$$dP_c = dP_{nw} - dP_w \quad . \; . \; . \; . \; . \; . \; . \; . \; . \; . \quad (3)$$

Equation (1) is Darcy's Law applied to the wetting fluid and Equation (2) is Darcy's Law applied to the non-wetting fluid. Equation (3) expresses in differential form the capillary pressure relating the pressures in the two fluids. By substituting Equations (1) and (2) in Equation (3), the following differential equation can be developed:

$$\frac{dS_w}{dL} = \left(\frac{q_w \mu_w}{K_w} - \frac{q_{nw} \mu_{nw}}{K_{nw}} \right) \frac{1}{A} \cdot \frac{1}{\frac{dP_c}{dS_w}} \quad . \; . \quad (4)$$

One condition for which a solution of Equation (4) is desired is the condition that the fluids move through the porous medium in such a manner that the wetting fluid saturation is always decreasing from 100 per cent saturation. This type of behavior has been termed drainage. To solve Equation (4) for drainage conditions, a knowledge of the drainage flow characteristics of the porous medium is required. The boundary condition imposed on the solution of Equation (4) is that the saturation at the outflow face be the equilibrium non-wetting fluid saturation, which is the saturation at which the permeability to the non-wetting fluid becomes greater than zero. Experimental evidence has shown that this saturation exists at the outflow face.

For a sample of sandstone from a Berea outcrop, the saturation distribution of the wetting fluid that would exist was calculated for various ratios of non-wetting to wetting fluid flow rates. The drainage capillary pressure and relative permeability-saturation relations for the Berea outcrop are shown in Fig. 1. Inasmuch as the calculations of the saturation distribution required a solution of Equation (4), the first step in the solution was to select arbitrarily the rates of flow of the two fluids. This fixed the saturation of the wetting fluid within the sample at an infinite distance from the outflow end. Next, about ten saturations in incremental steps were chosen between the saturation at infinite distance from the outflow end and the saturation of the wetting fluid accompanying the equilibrium non-wetting fluid saturation. At each saturation, the quantity dS_w/dL was determined from Equation (4). Then, the reciprocal, dL/dS_w, was plotted as a function of saturation and by graphical integration of this relation the plot of the saturation as a function of the distance from the outflow end was obtained. By repeating this calculation for a number of fluid flow rates, a set of curves relating saturation and distance from the outflow end was obtained. These curves representing the saturation gradient due to the end effect at various rates of flow are shown in Fig. 2.

Experimental Results—Long Core Cut into Sections

A study was made to determine experimentally the saturation distribution in a sample of porous material due to the boundary effect when two fluids were flowing simultaneously through the material. For this investigation, a Berea outcrop sandstone was cut in a cylindrical shape with the axis of the cylinder parallel to the bedding plane. The sample, 30 cm long and 6.85 cm in diameter, was cut into eight sections with the slices made perpendicular to the axis of the sample; the faces of the sections were machined flat. The sections were then placed in the fluid flow apparatus end to end with porous tissue between the faces. A drawing of this apparatus is shown in Fig. 3. A strong spring was used to force the sections together to insure capillary contact between the sections.

The study of saturation gradients within the sample was made using various rates of flow. For each determination the

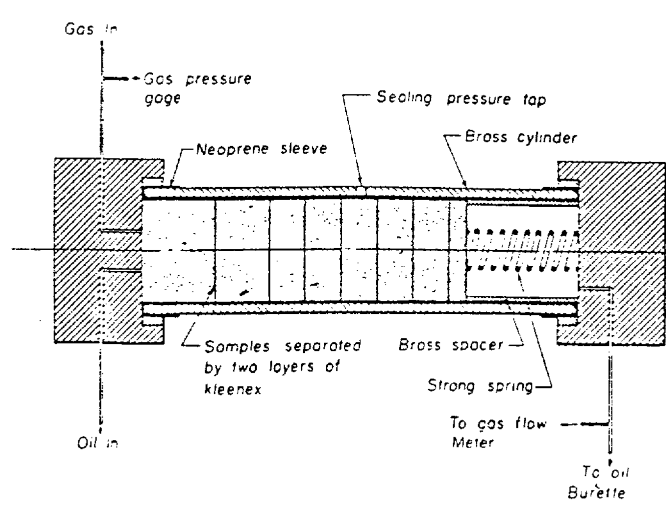

FIG. 3 — APPARATUS UTILIZING LARGE CORE SECTIONS

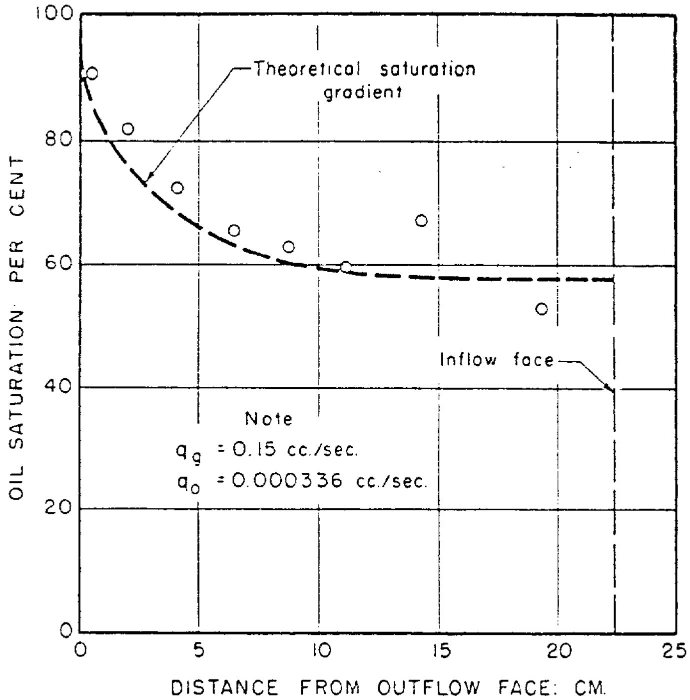

FIG. 4 — COMPARISON OF EXPERIMENTAL AND THEORETICAL SATURATION GRADIENTS DUE TO BOUNDARY EFFECT.

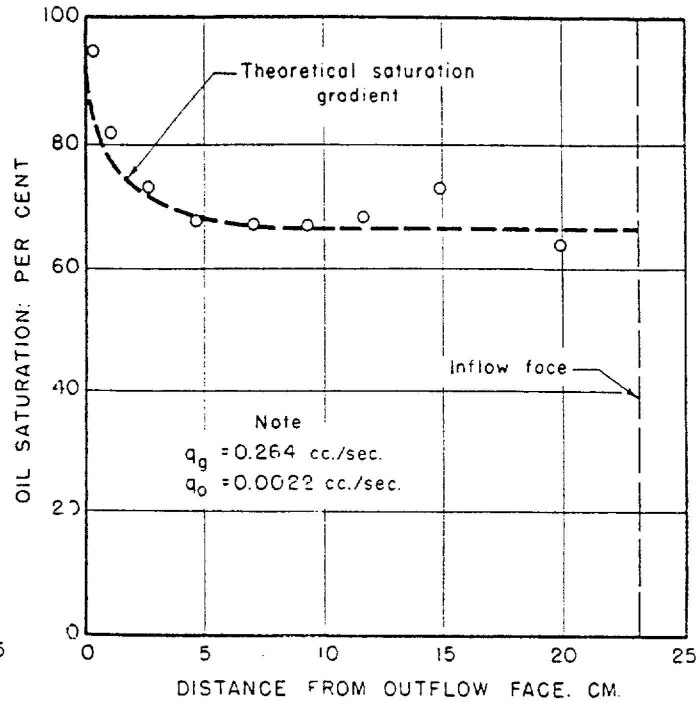

FIG. 5 — COMPARISON OF EXPERIMENTAL AND THEORETICAL SATURATION GRADIENTS DUE TO BOUNDARY EFFECT.

sections were first completely saturated with the wetting fluid (kerosene) which was then flowed through the sample. Next, the non-wetting fluid (helium) was introduced and flowed along with the oil through the sample at a rate giving the desired pressure gradient until both flow rates and pressures were no longer changing. The flow was then stopped and the oil saturation of each section was determined by weighing. The resulting saturations of the sections for three runs are shown in Figs. 4, 5, and 6. Also shown in these figures for comparison are the saturation distributions that were predicted by the solutions of Equation (4) for the Berea sample.

Experimental Results — Flowing Pressure Studies

In an effort to obtain information about the pressures existing in the wetting and in the non-wetting fluids while two fluids were flowing through porous material, a special long core apparatus was constructed whereby the pressure in the wetting and non-wetting fluids could be measured at several points along the length of a sample of porous material. Of particular interest was the behavior of these pressures near the outflow end where the boundary effect influenced the pressures.

The porous material used for this investigation was a piece of Berea sandstone outcrop. A cylindrical sample was cut with its axis parallel to the bedding plane. The sample was 30.7 cm long and 6.85 cm in diameter. Three cylindrical semi-permeable porcelain discs (oil pressure pads), 1 cm in diameter and 0.6 cm thick, were cemented into the samples at distances at 2.91, 15.35, and 27.79 cm from the inflow end to measure the pressures in the wetting fluid. These discs were connected to Moore Products pressure gauges by passing a probe through the rubber sleeve and sealing the probe to the semi-permeable discs with O-rings. The rubber sleeve had six imbedded piezometric rings to measure the pressures in the non-wetting fluid. A drawing of the apparatus is shown in Fig. 7.

With this apparatus, the pressures in the wetting fluid at three points along the sample length were measured and the pressures in the non-wetting fluid were measured at seven points. A number of runs were made flowing oil and gas through the sample at various rates. In each run the sample was initially saturated with oil to insure that true drainage conditions existed. The pressure distributions in the oil and in the gas within the sample for two typical runs are shown in Figs. 8 and 9.

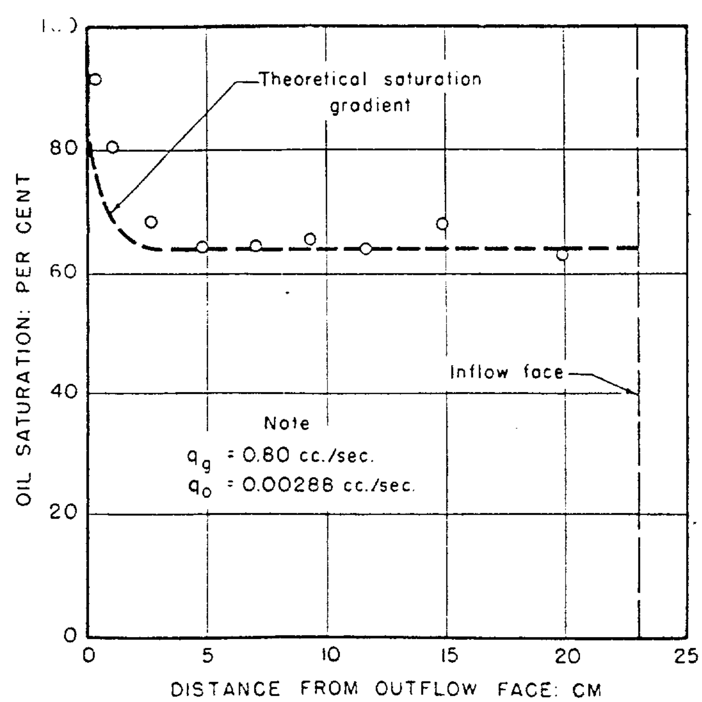

FIG. 6 — COMPARISON OF EXPERIMENTAL AND THEORETICAL SATURATION GRADIENTS DUE TO BOUNDARY EFFECT

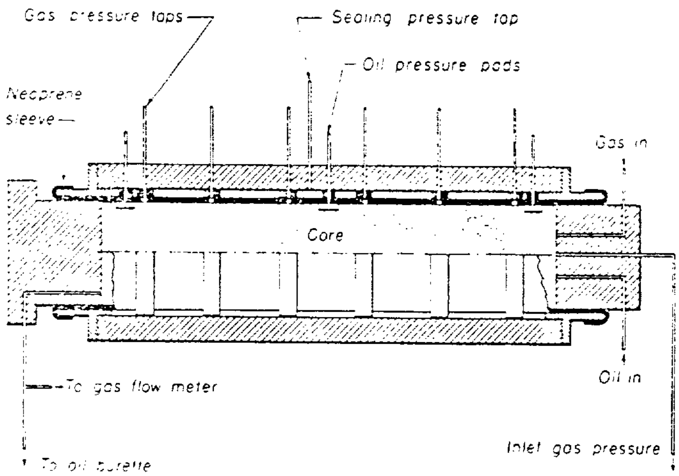

FIG. 7 — LONG CORE APPARATUS

In Fig. 8 the curvature caused by the boundary effect in the oil-pressure and in the gas-pressure distribution curves can be seen to extend a considerable distance into the core. These measurements were made at low rates of flow. The pressure distribution curves shown in Fig. 9 were obtained at high rates of flow and show that the curvatures in the pressure distribution curves caused by the boundary effect were confined to only a small part of the sample. The saturation gradients caused by the boundary effect extended into the sample for about 15 per cent of the length for the run shown in Fig. 8 and for about 3 per cent of the length for the run shown in Fig. 9.

It can be noted that at the outflow end all pressure distribution curves for gas were extrapolated to a value corresponding to the capillary pressure of the sample at the equilibrium gas saturation.

Interpretation of Results

The results obtained in these laboratory studies indicate that the influence of the boundary effect can be predicted by the fundamental equations of fluid flow and the relative permeability- and capillary pressure-saturation relations of the porous medium. A number of calculations made to determine the average permeability to gas and to oil that a sample would have if the saturation distribution were that shown in Fig. 2 revealed that the relative permeability to gas is the only one appreciably affected by the saturation gradient caused by the boundary effect. The errors in gas permeability measurement become negligible as the rate of flow is increased. At low rates of flow the error in the measurements of relative permeability is due primarily to the inability to determine the correct pressure gradients simply by measuring terminal pressures and sample length.

When a wetting and a non-wetting fluid flow through porous media the pressure difference between the two fluids at every point is equal to the capillary pressure corresponding to the saturation at that point. As the wetting fluid saturation increases near the outflow boundary as a result of the boundary effect the pressure difference between the two fluids decreases accordingly. Also, it was found that the wetting fluid pressure is continuous across the outflow boundary whereas the non-wetting fluid pressure is discontinuous at the outflow boundary. The magnitude of the discontinuity is equal to the capillary pressure at the equilibrium non-wetting fluid saturation.

Flow of Compressible and Non-Compressible Fluid Through Reservoir Rock

The use of a gas in studies of multiphase flow in the laboratory introduces a complication not encountered when two non-compressible fluids are flowing. The fact that the volume of gas flowing increases as the pressure on the gas decreases causes the gas-to-wetting fluid ratio to increase along the direction of flow. This increase in gas-to-wetting fluid ratio causes a saturation gradient along the flow path.

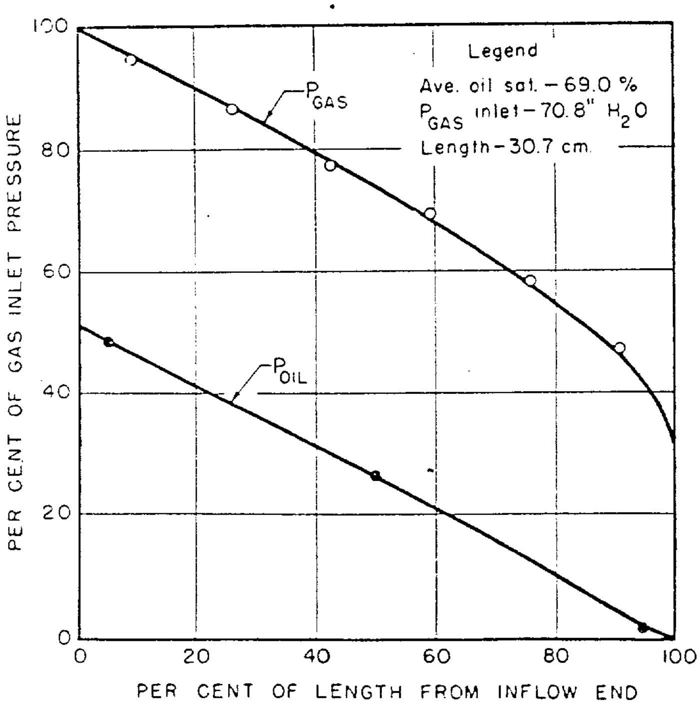

FIG. 8 — FLOWING PRESSURE-LENGTH RELATION FOR GAS AND OIL IN STEADY STATE FLOW.

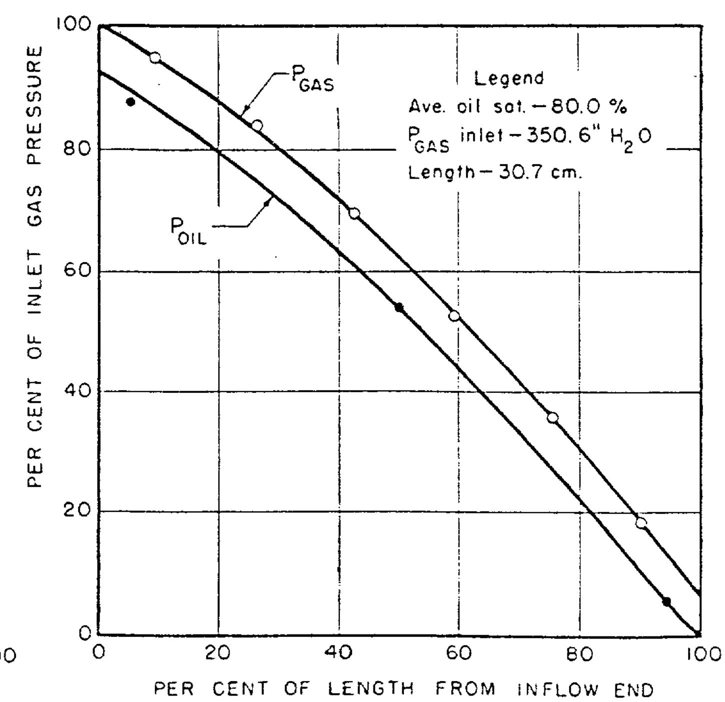

FIG. 9 — FLOWING PRESSURE-LENGTH RELATION FOR GAS AND OIL IN STEADY STATE FLOW.

as has been pointed out by several investigators.[2,3] The magnitude of the saturation gradient and the magnitude of the errors incurred in relative permeability measurements under conditions where the volume of gas flowing in a test sample increases severalfold along the length of the sample has been the subject of some conjecture in the literature. An attempt is made in the following discussion to describe mathematically the nature of the saturation gradient caused by gas expansion and the amount of error introduced thereby into relative permeabilities measured under these conditions. Also, experimental results are presented as a corollary to the theoretical study.

Theory

The equation governing the simultaneous flow of two fluids through porous media is Equation (4). For the study of the effect of gas expansion, this equation can be rearranged into the more convenient form shown in Equation (5).

$$\frac{q_g}{q_o} = \frac{K_g\mu_o}{K_o\mu_g} - \frac{K_g A}{q_o\mu_g} \cdot \frac{dP_c}{dS_o} \cdot \frac{dS_o}{dL} \quad . \; . \; . \; . \quad (5)$$

where subscript g refers to the gas phase and subscript o refers to the oil phase. From this equation and Darcy's Law for each phase, the gas/oil ratio at any point in the medium may be obtained as a function of the saturation and the saturation gradient at the point. A solution of Equation (5) was obtained for the specific set of conditions of flow using a Berea outcrop sample for which the relative permeability and capillary pressure-saturation relations are shown in Fig. 1. Calculations were made to determine the saturation distribution that would exist in a sample 22.4 cm long and 6.85 cm in diameter with gas and kerosene flowing at a high rate through the sample. For the calculation, three conditions were arbitrarily fixed for the flowing system. These were a pressure in the gas of 3.069 atmos. at the inflow face, a pressure in the oil of 2.996 atmos. at the inflow face, and an oil flow rate of 0.733 cu cm/sec. The gas flow rate, the pressures of the gas and oil along the length, and the saturation along the length were computed. Using the computed saturation-length relations, the average saturation of the sample was calculated to be 77 per cent by an integration process. The relative permeabilities to oil and gas were computed using the inlet gas pressure and the appropriate flow rates as would be done in laboratory flow tests. The relative permeability to oil was calculated to be 12.4 per cent and the relative permeability to gas was calculated to be 27.2 per cent. The relative permeabilities to oil and gas at 77 per cent saturation obtained from Fig. 1 are 12.0 per cent and 27.8 per cent respectively. Thus the error in oil relative permeability measurement was 0.4 per cent in 12 per cent and the error in gas relative permeability was 0.6 per cent in 27.8 per cent, which are less than experimental errors in most flow tests.

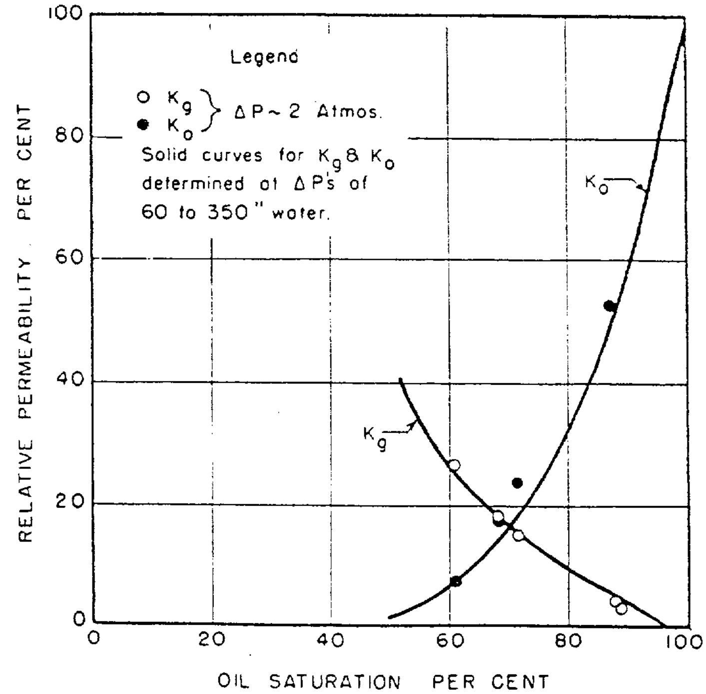

FIG. 11—EFFECT OF GAS EXPANSION ON THE RELATIVE PERMEABILITY-SATURATION RELATION.

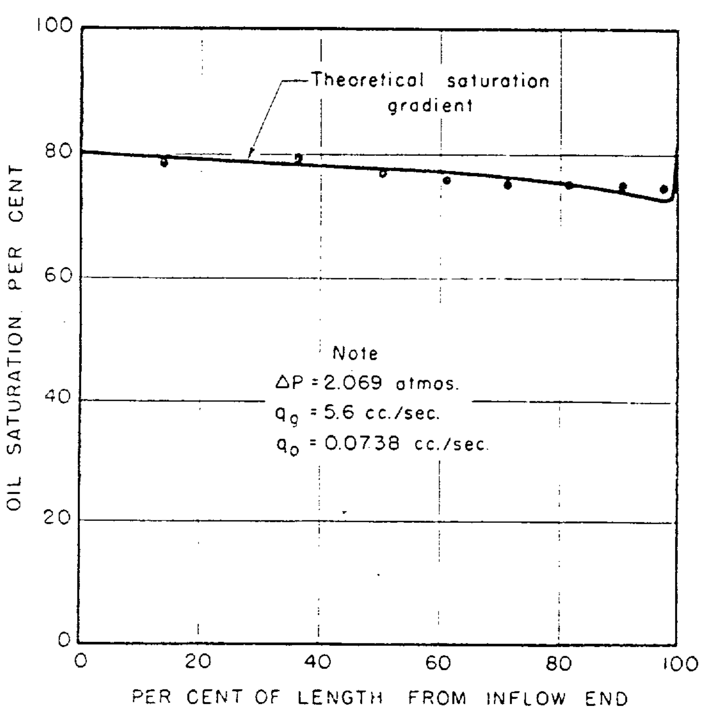

FIG. 10 — COMPARISON OF EXPERIMENTAL AND THEORETICAL SATURATION GRADIENTS DUE TO GAS EXPANSION.

Experimental Results

A set of experimental investigations was conducted to determine the effect of gas expansion on the flow of two fluids through porous material. In particular, one of the investigations was directed toward determining the saturation *vs* length relation for a sample of porous material through which gas and oil were flowing at high rates. The Berea outcrop sample cut into eight sections previously described and the apparatus described in Fig. 3 were used to study this saturation distribution.

Several experiments were performed in which gas and oil were flowed through the sections of Berea outcrop at high rates to obtain large pressure differences between the ends of the sample. The pressure difference was such that the volume of gas flowing through the sample changed several-fold along the length of the core because of the expansion of the gas as the pressure decreased. The apparatus was then broken apart and each of the sections was weighed to determine its saturation. A plot of the saturation of each of the sections as a function of its position within the sample is shown in Fig. 10. Also shown in Fig. 10 is the theoretical saturation distribution calculated from Equation (5).

In addition to determining the saturation distribution within the sample, the relative permeability-saturation relations were determined at high rates of flow of oil and gas with the long solid Berea sample previously described. These steady-state runs were made at sufficiently high pressure drops that the volume of gas flowing in the core changed severalfold as the gas expanded with the decreasing pressure along the length of the sample. In Fig. 11 the results of these runs are shown as points for comparison with the relative permeability-saturation relations obtained at much lower rates of flow shown as solid lines where there was a relatively small change in gas flow rate due to gas expansion.

Interpretation of Results

The agreement between the theoretically predicted saturation gradient and the experimentally determined saturation gradient for a particular set of conditions, as shown in Fig. 10, indicates Equation (5) correctly describes the flow conditions.

It has been determined theoretically that the relative permeability-saturation relations obtained with gas and oil are not appreciably affected by the fact that the gas flow rate increases along the length of the sample as the pressure declines. From the data plotted in Fig. 11 no apparent difference can be noted in the relative permeability-saturation relations obtained at pressure drops from 0.15 to 2 atmos. across the sample. Thus, it may be concluded that gas expansion effects have no important bearing on relative permeability measurements where the gas expands severalfold along the flow path. This analysis is not compatible with a mathematical analysis by Rose[2] of the simultaneous flow of gas and a liquid through porous media. His analysis contains a simplifying assumption which invalidates his results. Implicit in his treatment is the assumption that the permeability to gas and oil throughout the core sample is constant; whereas in the actual case, the permeabilities vary along the length of the core with changes in saturation caused by the increasing gas/oil ratio along the flow path.

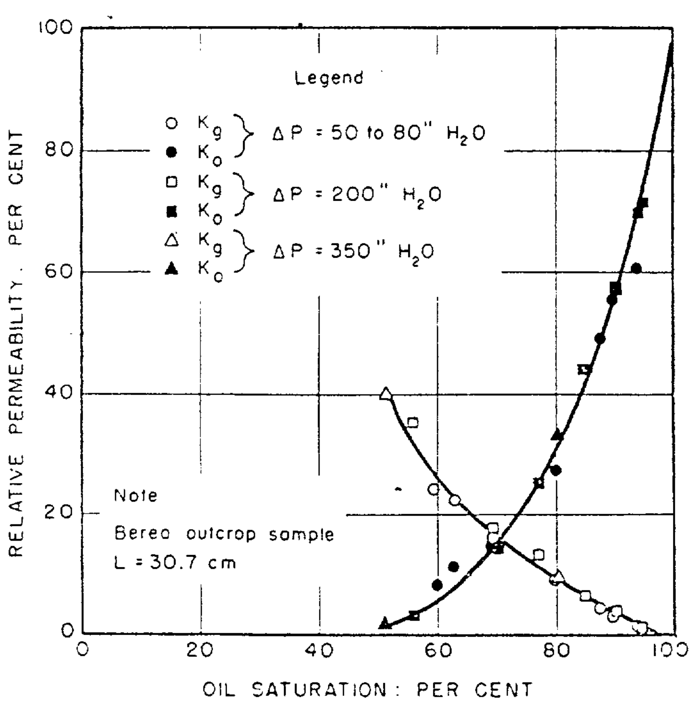

FIG. 12 — EFFECT OF FLOW RATE ON THE RELATIVE PERMEABILITY-SATURATION RELATION (DRAINAGE CONDITIONS).

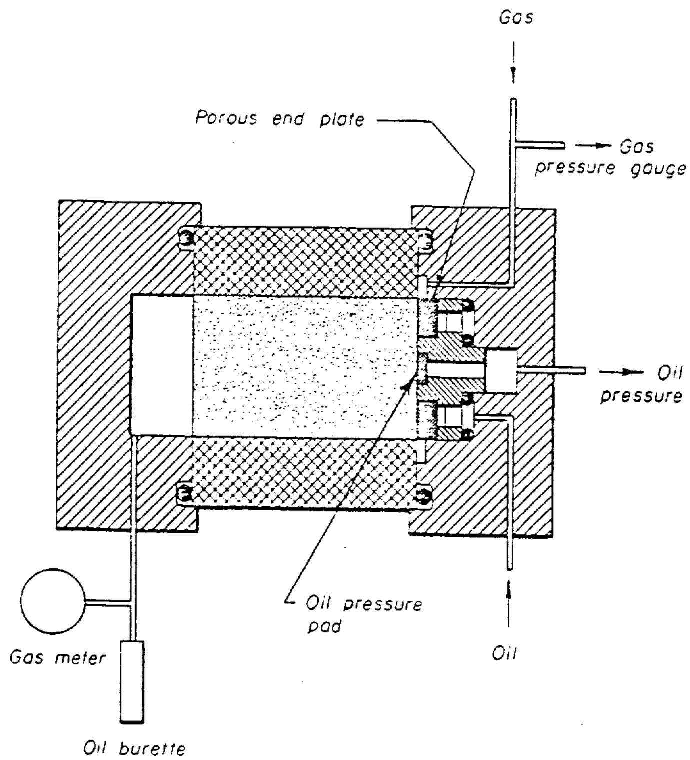

FIG. 13 — HAFFORD APPARATUS.

Rate of Flow

The laboratory determination of relative permeability-saturation relations of reservoir rock can be made more rapidly if the rate of flow through the sample is increased above reservoir flow rates. However, before the results of measurements of relative permeability made at high rates of flow on a routine basis can be accepted, it must be ascertained that the relative permeability-saturation relations are independent of the rate of flow.

It is known that the permeability of a porous medium to a single liquid is independent of the rate of flow through that medium provided the flow rate is not so high that inertial effects become important. Therefore, the investigations of the effects of rate of flow on the relative permeability were conducted at rates lower than those at which inertial effects became important.

Experimental Results — Long Core

With a large Berea sandstone core, it was possible to measure both the pressure in the gas and in the oil at various points along the sample length. By knowing both the pressure distribution in the oil and in the gas, studies of the effect of rate of flow on relative permeability could be made without the troublesome influence of the boundary effect.

To determine the relative permeability to oil or gas, the portion of the pressure distribution curve that was not influenced by the boundary effect was used to obtain the pressure gradient, see Figs. 8 and 9. The rate of flow was determined by measuring the throughput of each fluid for a known length of time, and the average saturation of the sample was determined by weighing. The drainage relative permeability-saturation relations obtained at pressure gradients varying from 2 to 11 in. of water per cm are shown in Fig. 12.

If instead of using the straight line portion of the pressure distribution curve to determine the pressure gradient, the difference between the inlet pressure and atmospheric pressure and the sample length were used, the calculated relative permeability to each of the fluids at the particular saturation would be lower than the correct relative permeability of the reservoir rock at that saturation. The difference between the two methods would be very small at high rates of flow, but at low rates the difference becomes large.

The results of these tests show that changing the pressure gradient or rate of flow (in the viscous flow range) did not change the drainage relative permeability-saturation relations.

MEASUREMENT OF DRAINAGE RELATIVE PERMEABILITY-SATURATION RELATIONS FOR SHORT CORE SAMPLES

The relative permeability characteristics of a great many core samples will be run at considerable expense in the laboratories of the oil industry. It is important, therefore, that the techniques utilized in any one laboratory yield reliable results and that these techniques permit measurement on as many samples as possible in a given time. Also, the tests in all the laboratories should yield the correct results, as operation of many reservoirs requires joint agreement of the participating companies. In the following discussion, a series of experiments is described in which six of the methods of relative permeability measurement that might be utilized in the industry were each used to obtain the flow characteristics of a single sample of sandstone. Comparisons between the methods are made as to the reliability of results and the rapidity with which results may be obtained. The six methods used were the Penn State, Hassler, single core dynamic, gas drive, Hafford, and the dispersed feed. The Penn State, Hassler, single core dynamic, and the gas drive techniques were described in a previous paper[4] and will not be discussed here. The two more recently investigated methods, the Hafford and the dispersed feed techniques, are described in the following:

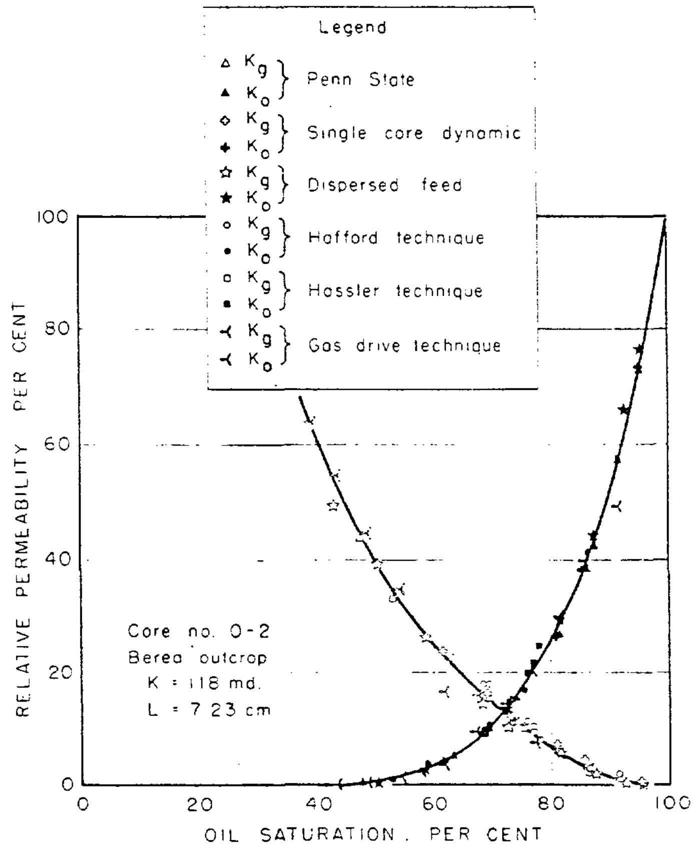

FIG. 15 — RELATIVE PERMEABILITY — SIX METHODS. LONG SECTION.

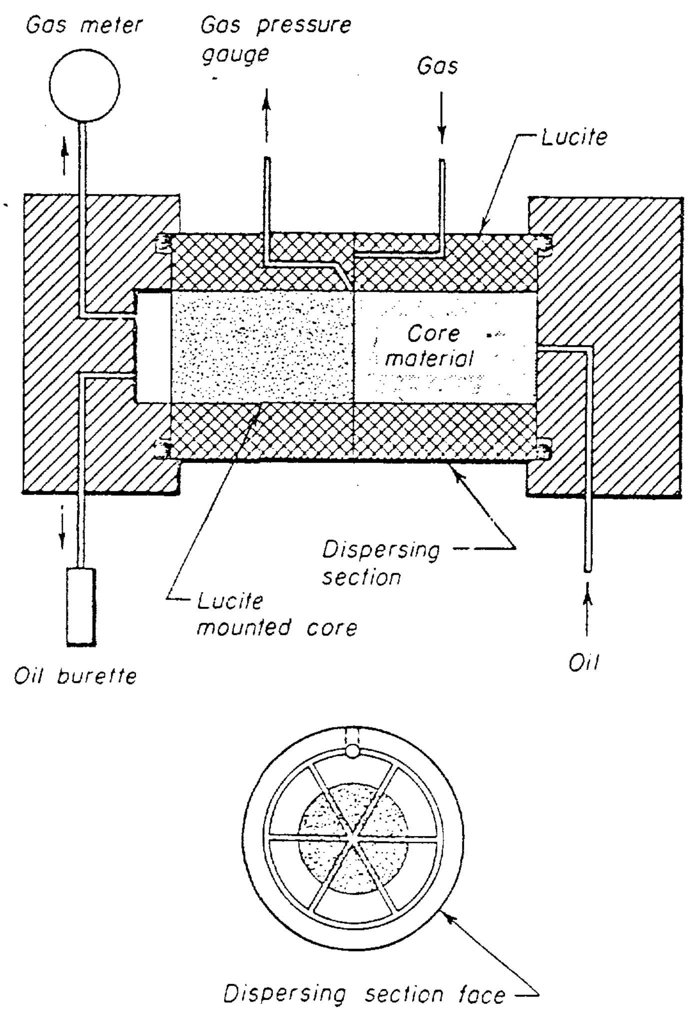

FIG. 14 — DISPERSED FEED APPARATUS.

Hafford Technique

Many of the earlier laboratory apparatus to measure relative permeability-saturation relations of reservoir rock were designed primarily to eliminate errors due to the boundary effect. When it was demonstrated that this error could be made insignificant if high rates of flow were used, attention was shifted from the outflow end of the sample to the inflow end of the test sample.

In the Hafford technique the non-wetting fluid is fed directly into the sample and the wetting fluid is fed into the sample through a semi-permeable disc that allows only the wetting fluid to pass. A drawing of the apparatus is shown in Fig. 13. The central portion of the semi-permeable disc is isolated from the remainder of the disc by a small metal sleeve. The central portion is used to measure the pressure in the wetting fluid at the input end of the core. The pressure in the non-wetting fluid is measured through the standard pressure tap machined into the Lucite surrounding the core. The pressure difference between the wetting and the non-wetting fluid is a measure of the capillary pressure of the sample at the inflow end.

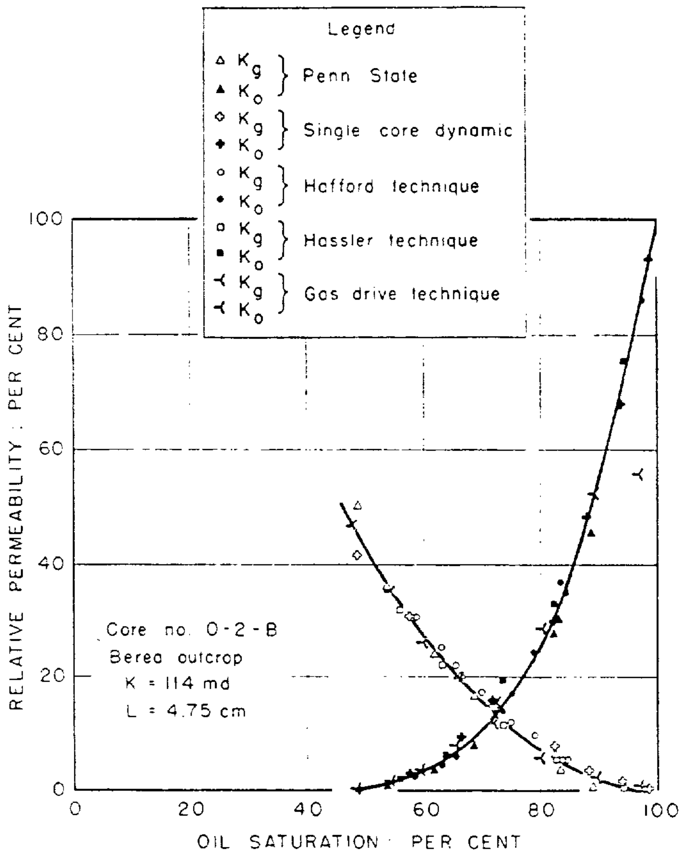

FIG. 16 — RELATIVE PERMEABILITY — FIVE METHODS, INTERMEDIATE SECTION (DRAINAGE CONDITIONS).

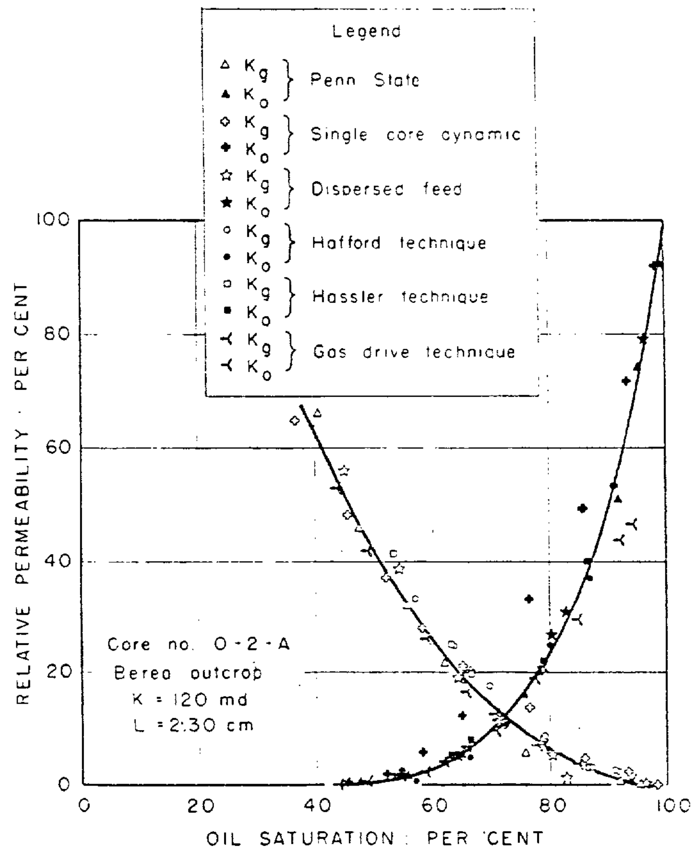

FIG. 17 — RELATIVE PERMEABILITY — SIX METHODS, SHORT SECTION (DRAINAGE CONDITIONS).

To measure drainage relative permeability-saturation relations the sample is first saturated with oil. The sample is then placed in the apparatus and oil is allowed to enter the core through the semi-permeable disc. The oil was previously subjected to vacuum to remove any dissolved gases. The oil flow rate is adjusted to give the desired pressure in the oil at the inflow end of the core. Gas is then allowed to enter and flow through the core at very low rates. When the pressure gauges read constant values, indicating that equilibrium has been reached in the sample, the pressures in the oil and gas at the inflow end of the sample, together with the flow rates of the oil and gas, are measured. The apparatus is broken apart and the sample removed to determine the saturation by weighing. The sample is then returned to the apparatus and oil and gas are again allowed to flow through the sample at the previous rates. The oil rate is then reduced and the gas rate is increased slightly to maintain essentially the same pressure in the gas at the inflow end. When equilibrium is again reached, the above procedure is repeated until complete relative permeability-saturation relations are obtained.

Dispersed Feed Method

The dispersed feed method is similar to the Hafford and single core dynamic methods. In this method the wetting fluid enters the test sample by first passing through a dispersing section. This dispersing section is made of porous material similar to the test sample, but it does not contain a device for measuring the pressure in the wetting fluid at the inflow end of the test sample as does the Hafford method. This porous material, which in some cases has been made from the same core material as the test sample, serves to disperse the wetting fluid so that the wetting fluid enters the test sample more or less uniformly over the inflow face.

Radial grooves are machined into the outflow face of the dispersing section. Gas is introduced to the test section through these radial grooves at the junction between the two cores. A drawing of the apparatus is shown in Fig. 14.

In measuring relative permeability-saturation relations by this method, the same procedure is employed as is used for the single core dynamic technique described in a previous paper.[4] Errors due to the boundary effect are made insignificant by using high rates of flow. During several initial runs employing the dispersed feed method, the dispersing section was weighed after each relative permeabiilty determination to determine its average oil saturation. This section remained essentially 100 per cent saturated with the wetting fluid even though the saturation of the test sample had been reduced to about 60 per cent saturation.

Saturation Determinations

The standard method of determining fluid saturations in the flow experiments described in this paper was by gravimetric means. A simple ratio of the weight of oil in the sample after any one run to the weight of oil held in the saturated sample was used to calculate saturations. The use of this method, particularly where one of the fluid phases is a gas, has been criticized in the literature because there is a tendency for the gas to expand from the sample as the flow is interrupted and the apparatus is broken apart, the expanding gas carrying oil from the sample with it.

A series of tests was conducted on a sample mounted in Lucite to determine quantitatively the amount of saturation error which would be incurred by gas forcing oil from a sample after a run had been completed. The test procedure involved placing an 8-cm-long sample having a known initial oil saturation in a cylindrical pressure chamber. Then the gas pressure in the cylinder was set at 100 psi. When sufficient time had been allowed to build up the pressure in the sample, the pressure was quickly reduced, the faces of the sample were wiped free of oil, and the sample was weighed to determine the saturation change. This procedure was repeated for various initial saturations. The maximum change in saturation incurred at a pressure reduction from 100 psi to atmospheric pressure was 2.3 per cent for a sample originally at 88 per cent oil saturation, the change being much less at all other saturations. When the chamber pressure was built up to only 10 psi, the maximum change in saturation was one per cent at 83 per cent oil saturation, being less at all other saturations.

The results of this investigation show that when a sample is removed from an apparatus after a flow experiment the change in saturation caused by the expulsion of oil by the expanding gas is quite small at the pressures normally used in these laboratory tests.

Comparison of Drainage Relative Permeability-Saturation Relations by the Six Methods

To compare the drainage relative permeability-saturation relations obtained by six methods, a small uniform sample of Berea sandstone outcrop was used. The sample was 7.23 cm long and 1.85 cm in diameter and was mounted in Lucite. The drainage relative permeability-saturation relations that were obtained are shown in Fig. 15.

The 7.23 cm sample was then cut into two sections; one section, 0-2-*B*, was 4.75 cm long and the other section, 0-2-*A*, was 2.30 cm long. Relative permeability determinations were made on sample 0-2-*B* by five methods and on sample 0-2-*A* by six methods. The results of these determinations are shown in Figs. 16 and 17. Sample 0-2-*B* was then cut into two sections; 0-2-*BC* was 2.24 cm long and 0-2-*D* was 2.29 cm long. These short sections were tested in the gas drive, Penn State. dispersed feed, and single core dynamic apparatus. The results obtained by these four methods on the two short sections, 0-2-*BC* and 0-2-*D*, are plotted in Figs. 18 and 19.

Interpretation of Results

The results indicate that determinations of relative permeability-saturations by the Penn State, the Hassler, the Hafford, and the dispersed feed systems all yield essentially the same drainage relative permeability-saturation relations for all sample lengths. The results indicate that the correct relative permeability-saturation relations can be obtained by these methods on samples that are as short as those taken from wire-line cores.

Since the measurements of relative permeability by the Hafford and the dispersed feed methods are made with the saturation gradient due to the boundary effect present in the test sample and in the Hassler and Penn State methods the saturation gradient is not present, it can be concluded that correct relative permeability-saturation relations can be made

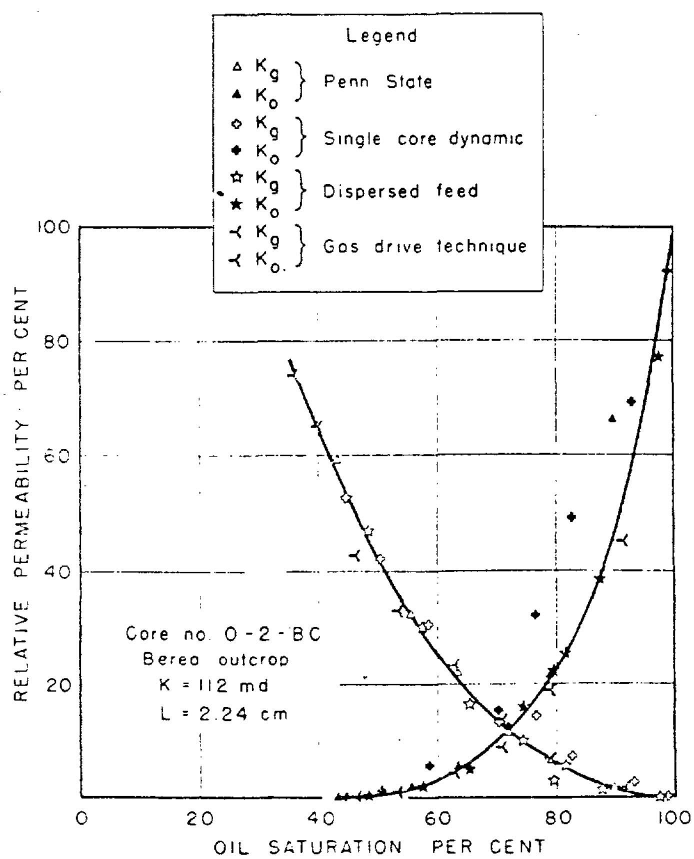

FIG. 18 — RELATIVE PERMEABILITY — FOUR METHODS, SHORT SECTION (DRAINAGE CONDITIONS).

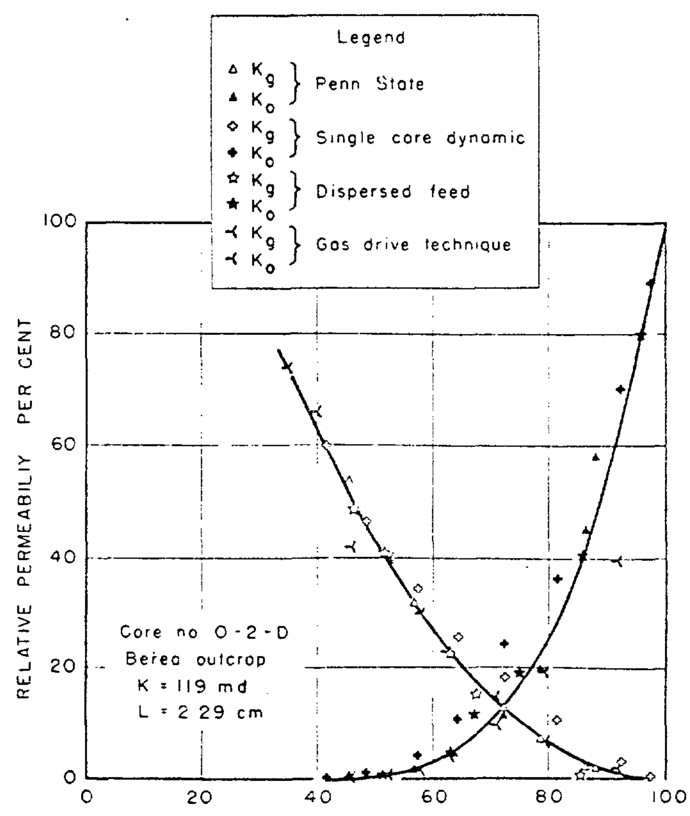

FIG. 19 — RELATIVE PERMEABILITY — FOUR METHODS, SHORT SECTION (DRAINAGE CONDITIONS).

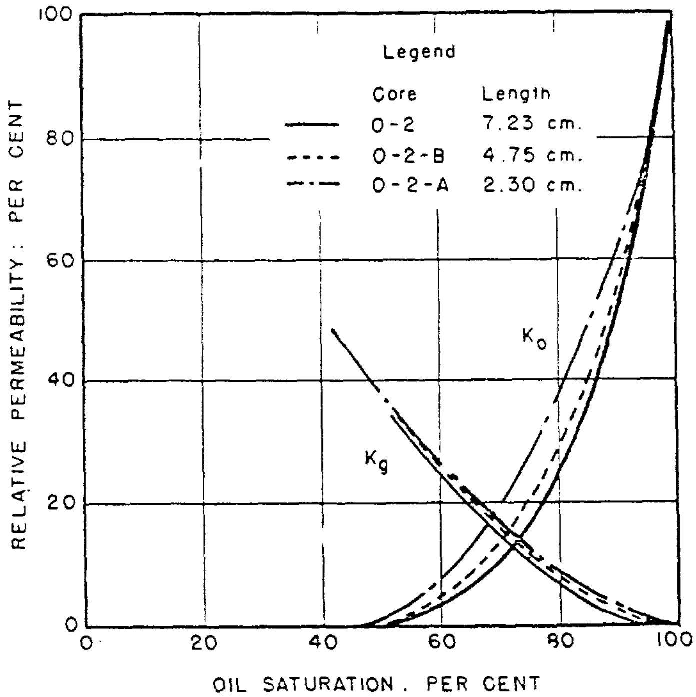

FIG. 20 — EFFECT OF CORE LENGTH ON SINGLE CORE DYNAMIC RELATIVE PERMEABILITY (DRAINAGE CONDITIONS).

with the saturation gradient from the boundary effect present within the test sample if high rates of fluid flow are used.

The measurement of relative permeability by the Hassler, Penn State, Hafford, and dispersed feed methods are made when the saturation at every point within the sample is not changing with time. Measurement of relative permeability by the gas drive technique is made when the saturation in the sample is changing at every point within the sample. However, the relative permeability-saturation relations were calculated in the same manner for the gas drive technique as for the other methods; that is, the rates at which the fluids flowed through the test sample were determined, the pressure at the inflow end of the sample was measured, and the average saturation in the sample was determined by weighing. The oil flow rate used in the calculation of oil permeabilities from gas drive data was the effluent oil flow divided by two. The oil pressure drop used in the calculation of the relative permeability to oil was the inlet gas pressure minus the capillary pressure at the average saturation of the sample. Comparison of the data obtained from gas drive experiments with those from steady state tests has indicated that the factor of one-half brings the data into agreement in many cases. It has been found experimentally that the oil flow rate increases almost linearly with the length, so one-half the effluent rate is approximately the average rate. The effluent oil flow rate was calculated from the weight loss of the sample during the run, the density of the oil, and the time period over which the run was made. From these data, the relative permeability-saturation relations were then obtained.

The results of the investigation on the Berea outcrop samples showed that the oil relative permeability-saturation relations determined by the gas drive technique agreed with those by the Penn State, Hassler, Hafford, and dispersed feed methods for samples 0-2 and 0-2*B* but was slightly lower than the other methods for 0-2-*A*, 0-2-*BC*, and 0-2-*D*. Comparisons using other samples indicated that the oil relative permeability determined by the gas drive technique was not always in agreement with those of other methods. A reason for this disagreement is the lack of ability to compute the permeability to oil from gas drive data in the correct manner.

The results, also, indicated that the relative permeability-saturation relations measured by the single core dynamic method were affected by sample length. This effect is illustrated in Fig. 20. As shown in Fig. 15, the relative permeabilities measured on the long sample by the single core dynamic method agreed with those measured by the Penn State and dispersed feed methods. On short samples the relative permeability-saturation relations determined by the single core dynamic method, particularly the oil relative permeabilities, were incorrect and were higher than those obtained by the Hassler, Penn State, Hafford, and dispersed feed methods. The inaccurate measurements by the single core dynamic method on short core samples may be attributable to the point-feed system which does not allow uniform dispersion of the two fluids within the short sample length.

Of the methods of relative permeability described, the Hassler technique is the slowest, requiring one week for the determination of a complete set of results on one sample. Data can be obtained by the Penn State, single core dynamic, Hafford, and dispersed feed methods at a rate of one relative permeability curve per day on samples having more than 100 md permeability. The gas drive method yields results at the greatest rate with the least chance for operator errors. About two hours is required to run one sample by this method.

CONCLUSIONS

From the investigations of the factors that influence the flow of fluids through porous material, the following conclusions can be drawn:

1. The influence of the boundary effect can be predicted from equations of fluid flow.
2. In laboratory measurements, errors caused by the boundary effect can be eliminated or made insignificant in many cases.
3. When gas and a liquid are used to determine the relative permeability-saturation relations, the effect of a severalfold gas expansion along the flow path has no important bearing on the laboratory measurements.
4. The drainage relative permeability-saturation relations are independent of the rate of fluid flow as long as the flow rates are below the point where inertial effects are important.
5. The Hafford, Penn State, Hassler, and dispersed feed methods measure the correct relative permeabilities to oil and gas.
6. Present techniques of calculating oil permeabilities from gas drive data are not adequate. Further work on the calculation methods is needed before this rapid technique can be utilized in routine testing.
7. On short core samples, the relative permeability to oil determined by the single core dynamic method is too high, while the relative permeability to gas is slightly high.

REFERENCES

1. Caudle, B. H., Slobod, R. L., and Brownscombe, E. R.: "Further Developments in the Laboratory Determination of Relative Permeability," *Trans.* AIME, (1951) 192, 145.
2. Rose, Walter: Technical Note—"Fluid Distributions Characterizing Gas-Liquid Flow," *Trans.* AIME, (1951) 192, 372.
3. Geffen, T. M., Owens, W. W., Parrish, D. R., and Morse, R. A.: "Experimental Investigation of Factors Affecting Laboratory Relative Permeabliity Measurements," *Trans.* AIME (1951) 192, 99.
4. Osoba, J. S., Richardson, J. G., Kerver, J. K., Hafford, J. A., Blair, P. M.: "Laboratory Measurements of Relative Permeability," *Trans.* AIME, (1951) 192, 47.

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SUMMARY

1. Conclusions based on results derived using the dual-porosity model are risky because the foundation on which the model is based is questionable.

2. Conclusions based on the oil in place estimate of 55 million STB derived from the material balance equation are also risky.