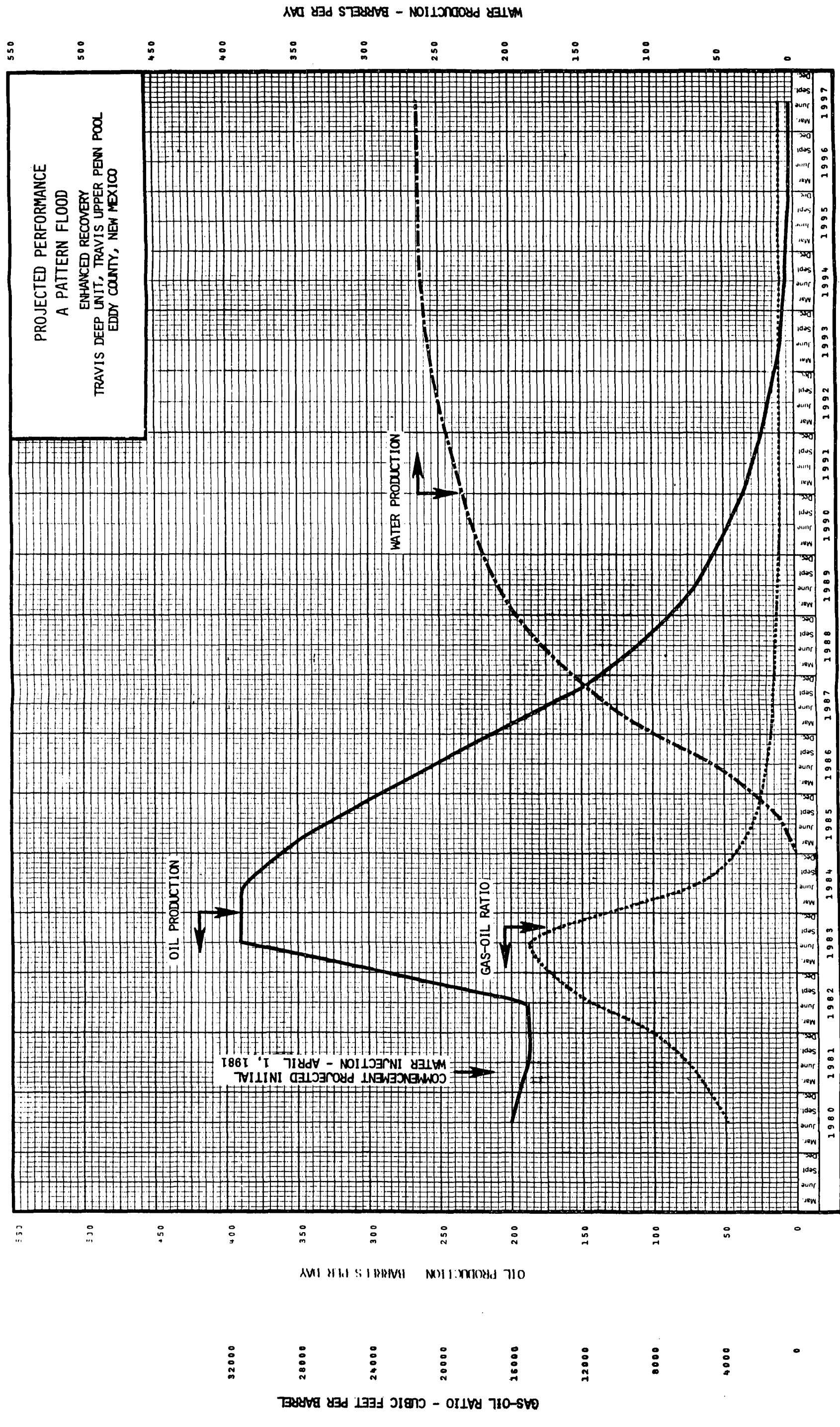
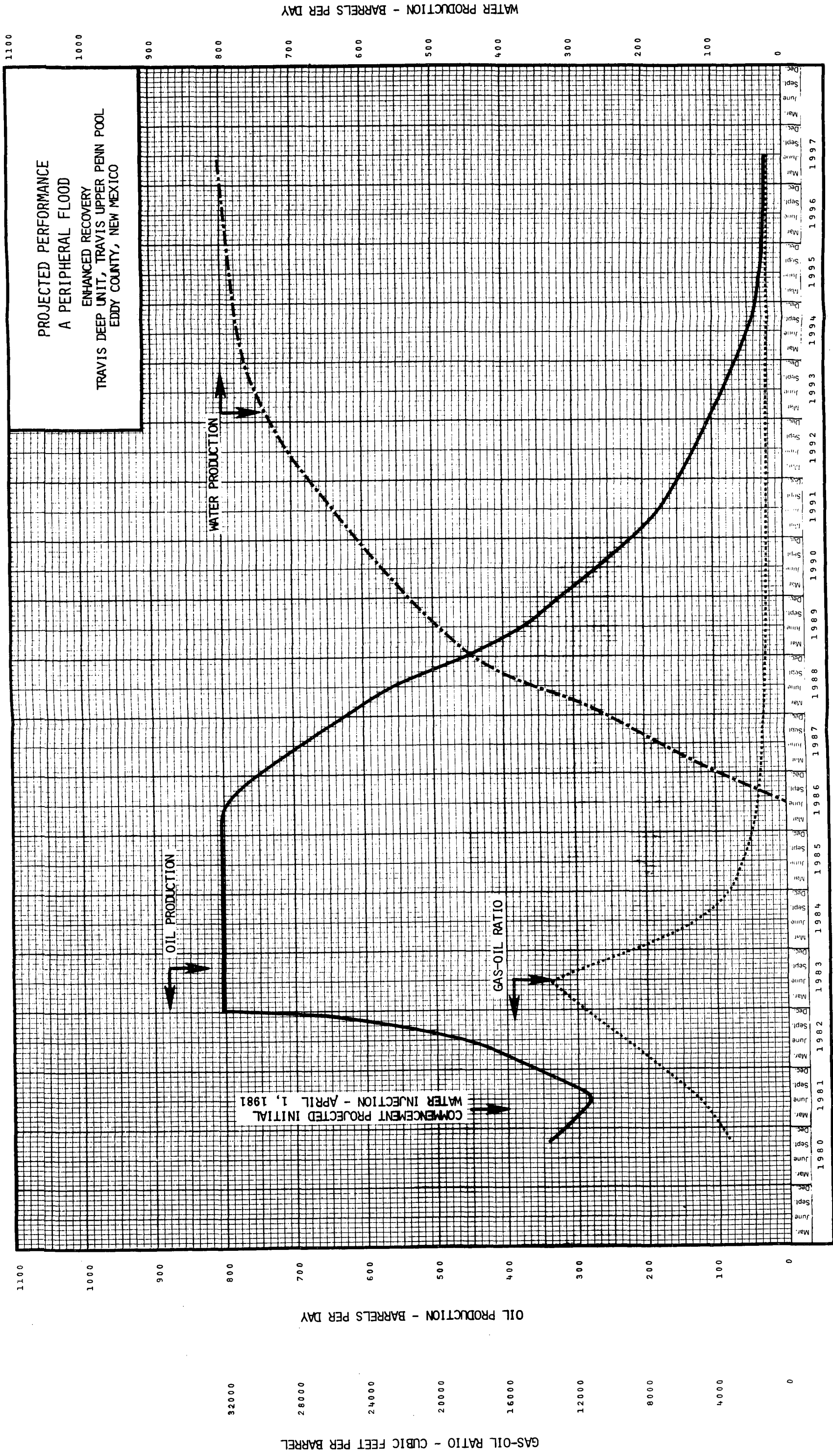
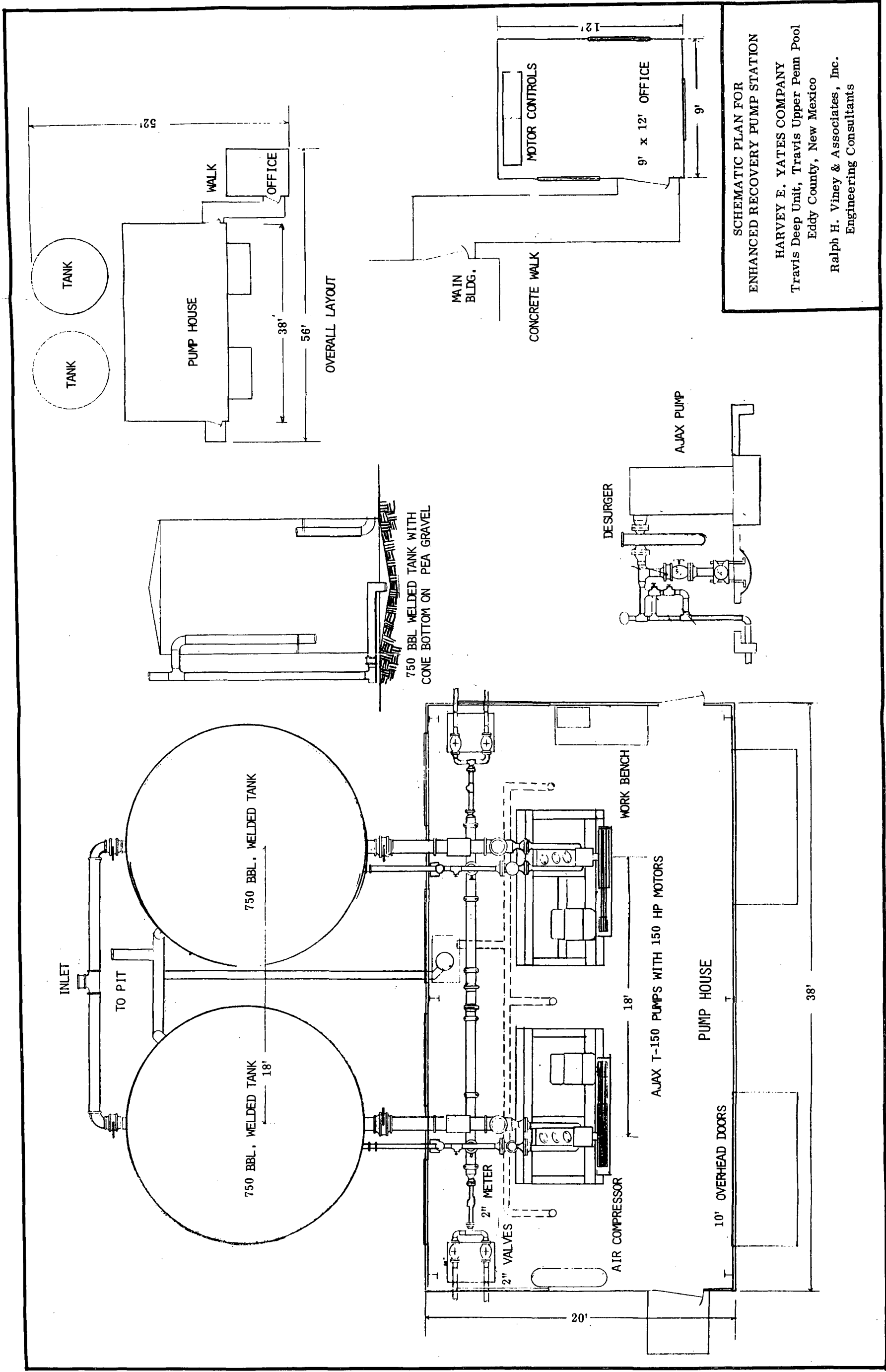








SCHEMATIC PLAN FOR
ENHANCED RECOVERY PUMP STATION

HARVEY E. YATES COMPANY
Travis Deep Unit, Travis Upper Penn Pool
Eddy County, New Mexico

Ralph H. Viney & Associates, Inc.
Engineering Consultants

HARVEY E. YATES COMPANY
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO

FRACTIONAL FLOW FORMULA
BUCKLEY - LEVETT METHOD

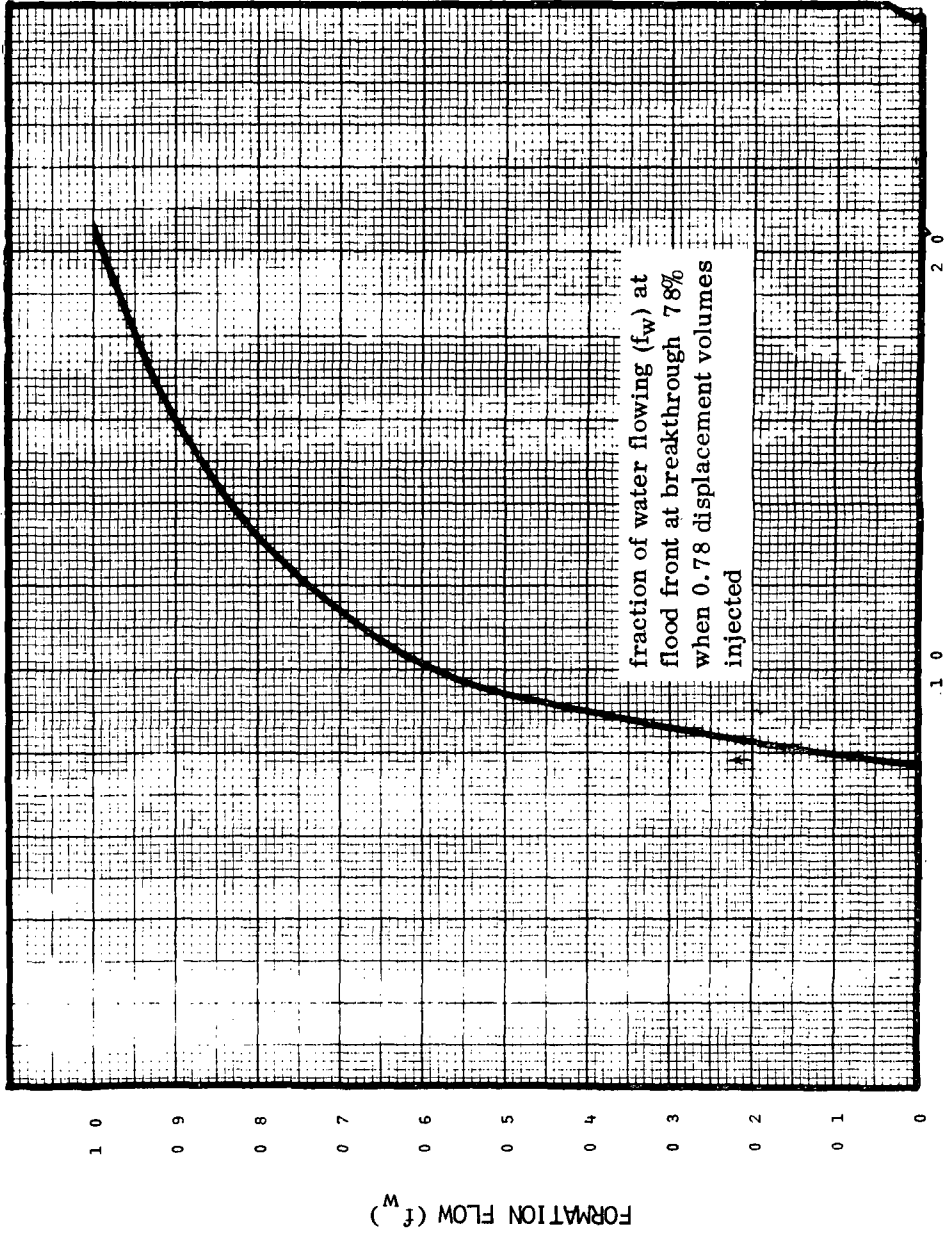
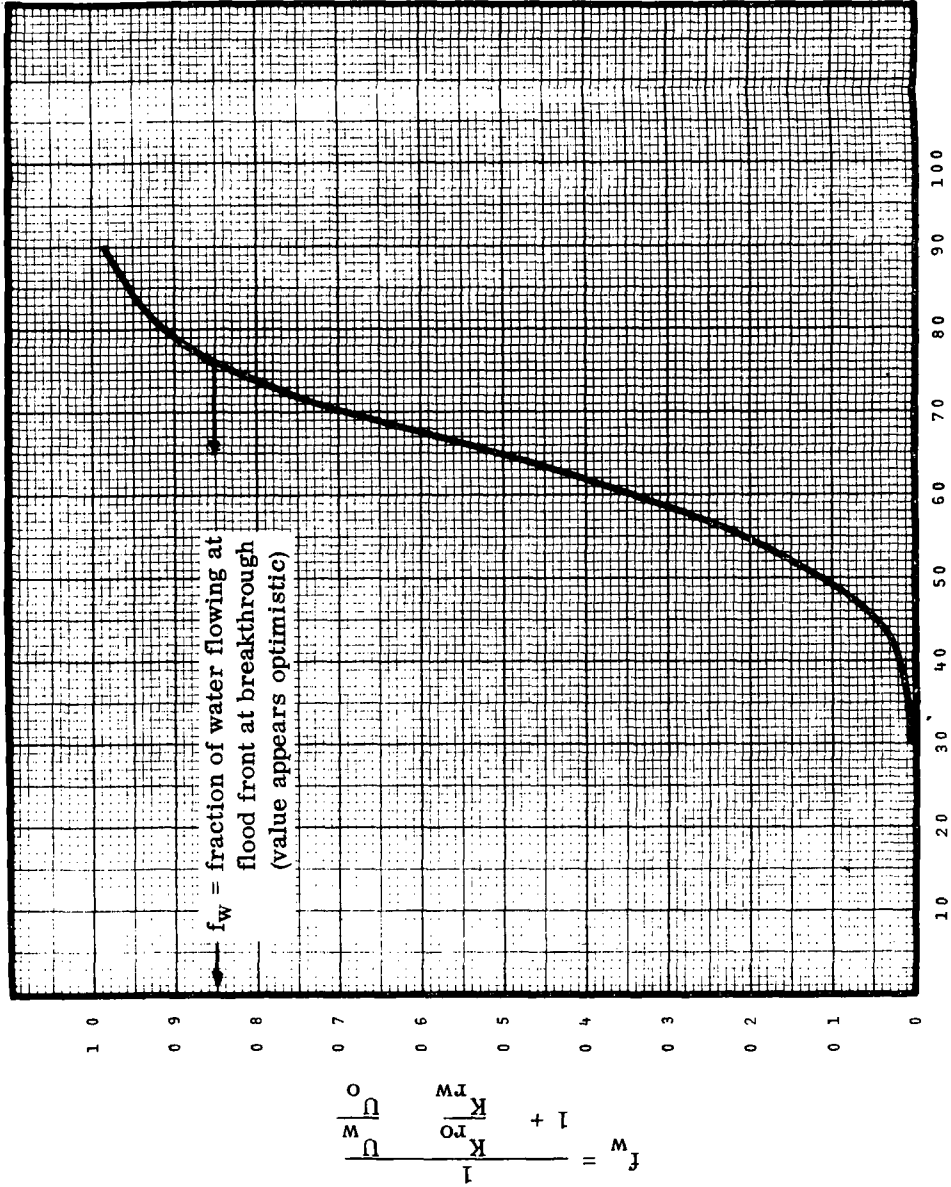
S_w	$\frac{K_{ro}}{K_{rw}}$	$\frac{U_w}{U_o}$	f_w
30	680.000	0.88	0.001668
40	60.000	0.88	0.018587
50	9.000	0.88	0.112108
60	2.100	0.88	0.351124
70	0.475	0.88	0.705219
80	0.110	0.88	0.911743
90	0.020	0.88	0.982704

FRACTIONAL FLOW AND DISPLACEMENT
CAUDLE, DYERS AND ERICKSON METHOD

Mobility Ratio (M) = $\frac{\frac{K_{rw}}{U_o} \omega}{\frac{K_{ro}}{U_o}}$

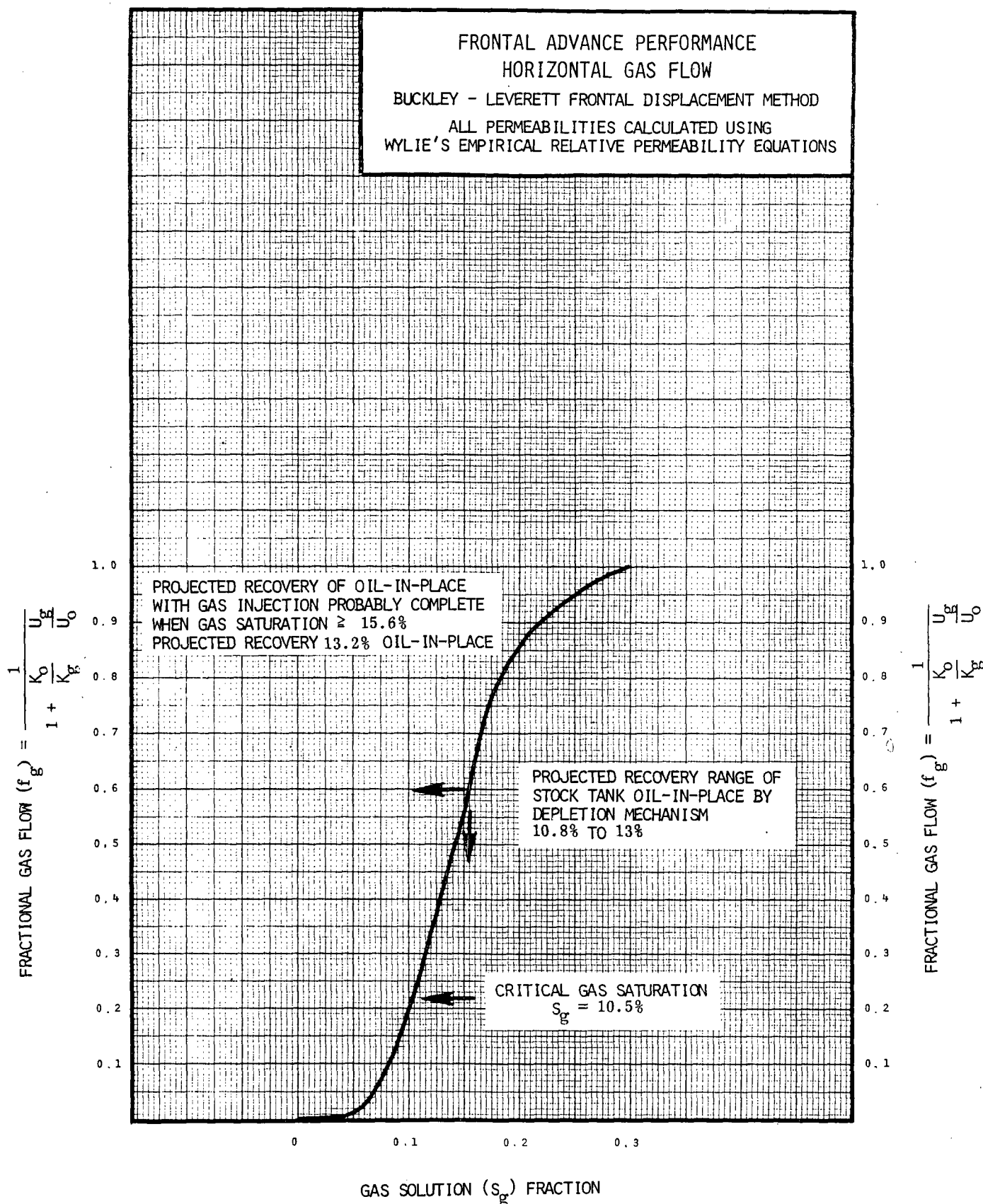
Where: $S_{oi} = 0.67$: $K_{ro} = 0.600$
 $S_{of} = 0.26$: $K_{rw} = 0.245$
 $U_w = 0.35$ cp : $U_o = 0.400$ cp

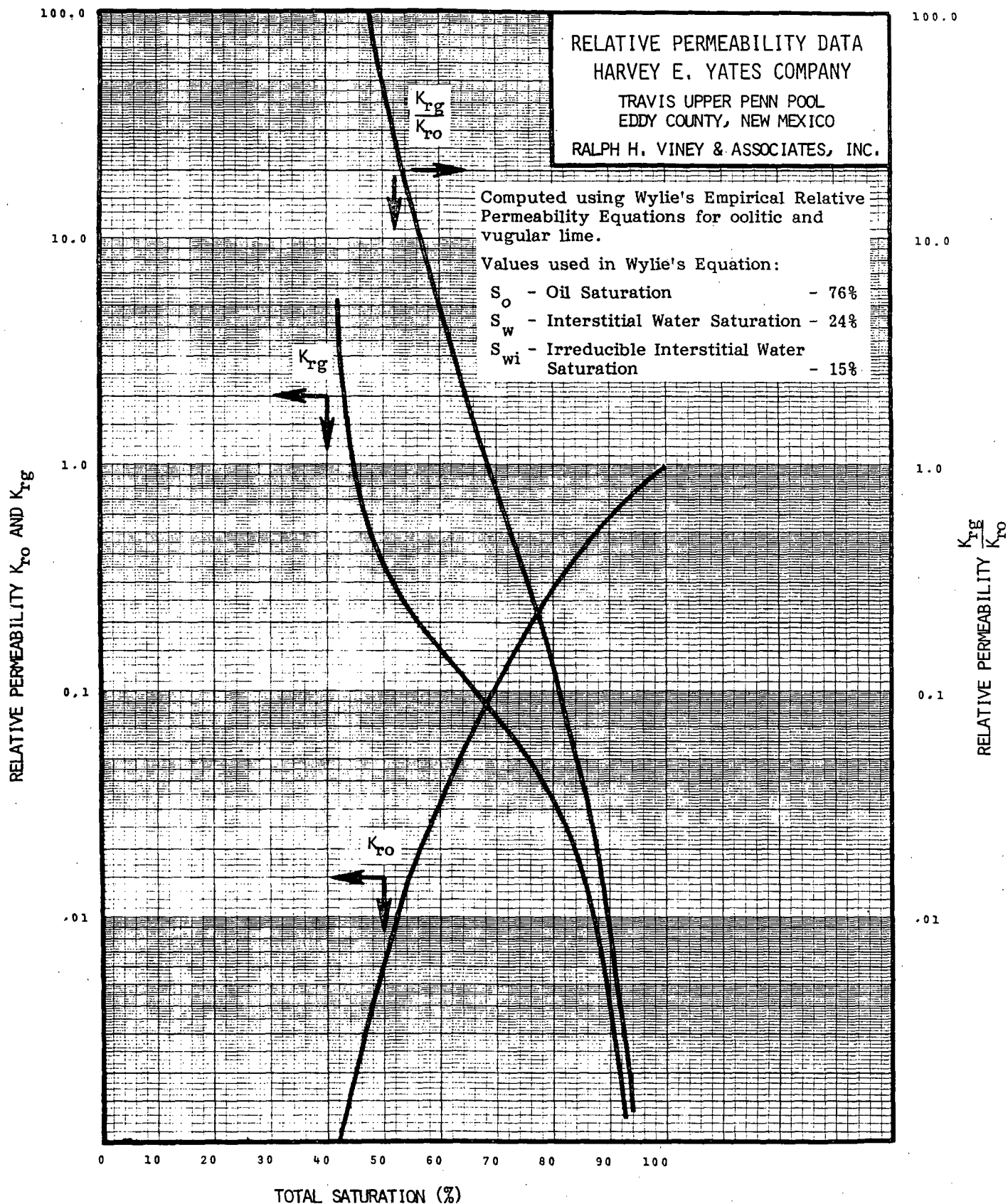
$M = 0.47 : \frac{1}{M} = 2.14$

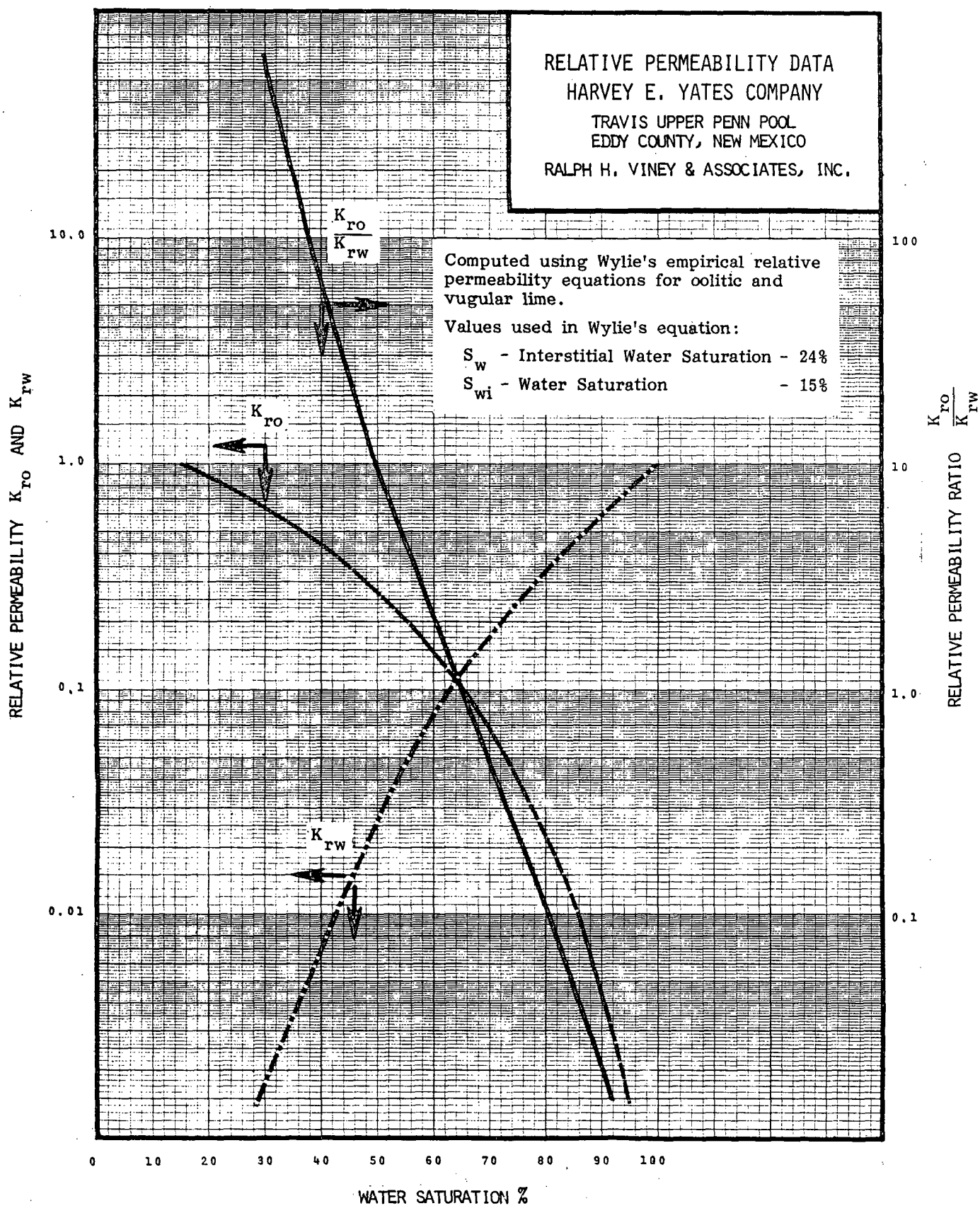


WATER SATURATION (S_w) PERCENT

DISPLACEMENT VOLUMES INJECTED







HARVEY E. YATES COMPANY
PROJECTED PERFORMANCE
TRAVIS DEEP UNIT WELLS NO. 2 AND 3; STATE COMM WELL NO. 1
NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES
OF PRODUCTION AND PRESSURE DATA
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO

Date	Well Name and No.	Reservoir Pressure psig	Cumulative Production		Reservoir Voidage - Barrels	
			Oil-Barrels	Gas-MCF	Oil	Gas
9- 8-77	TDU	3729	-	-	-	-
11- 1-77	TDU	3538	16,361	18,017	23,966	3,313
4-17-79	State Com	2513	194,090	254,722	285,000	85,000
11-12-79	TDU	2209	261,370	360,986	380,000	120,000
11-30-79	State Com	2421	272,826	378,812	402,800	133,550
6-17-80	North Travis 12-1	2730	319,786	430,055	470,600	155,000
8-13-80	Travis 13 State 1	2079	326,689	444,571	477,839	174,071

RESERVOIR PRESSURE - PSIG

4000
3000
2000
1000
0

smoothed pressure data
(least squares method)

OIL

GAS

CUMULATIVE RESERVOIR VOIDAGE - BARRELS

2000000
1500000
1000000
500000
0

0 500000 1000000 1500000 2000000

RESERVOIR VOIDAGE - BARRELS

CUMULATIVE OIL PRODUCTION - BARRELS

0 500000 1000000

PRODUCTION STATISTICS
HARVEY E. YATES COMPANY
TRAVIS DEEP UNIT WELL NO. 2
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO
RALPH H. VINEY & ASSOCIATES, INC.

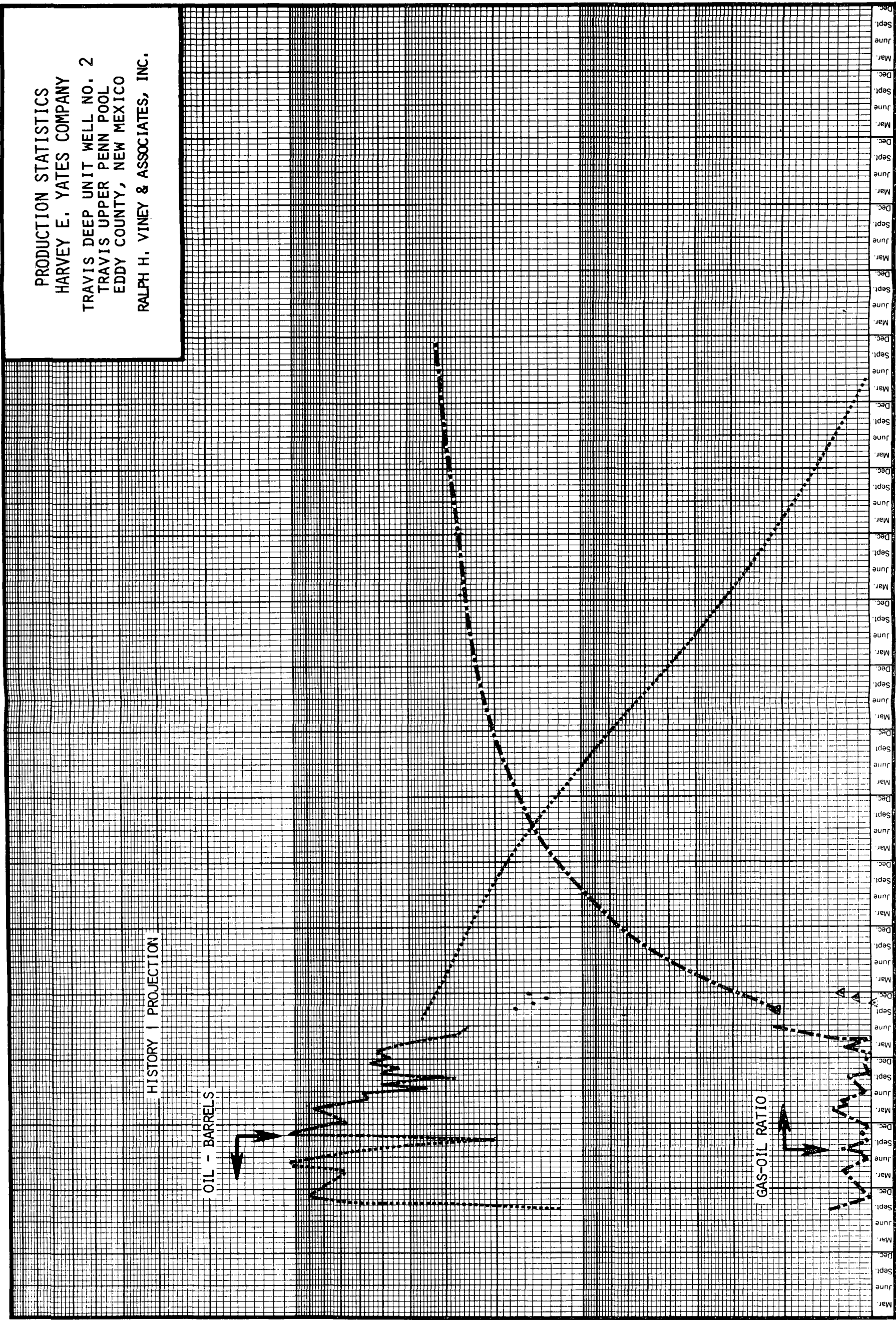
HISTORY | PROJECTION

OIL - BARRELS

GAS-OIL RATIO

OIL PRODUCTION - BARRELS PER MONTH

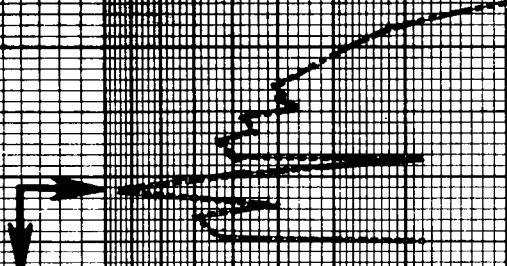
GAS-OIL RATIO - MCF PER BARREL



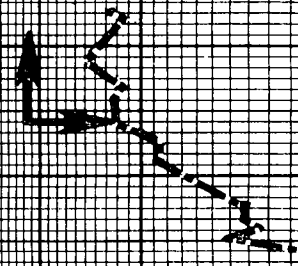
PRODUCTION STATISTICS
HARVEY E. YATES COMPANY
TRAVIS DEEP UNIT WELL NO. 3
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO
RALPH H. VINEY & ASSOCIATES, INC.

HISTORY | PROJECTION

OIL - BARRELS



GAS-OIL RATIO



OIL PRODUCTION - BARRELS PER MONTH

GAS-OIL RATIO - MCF PER BARREL

1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991

PRODUCTION STATISTICS
HARVEY E. YATES COMPANY
TRAVIS DEEP UNIT WELL NO. 1-K
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO
RALPH H. VINEY & ASSOCIATES, INC.

HISTORY | PROJECTION

OIL - BARRELS

10000

100

OIL PRODUCTION - BARRELS PER MONTH

1000

10

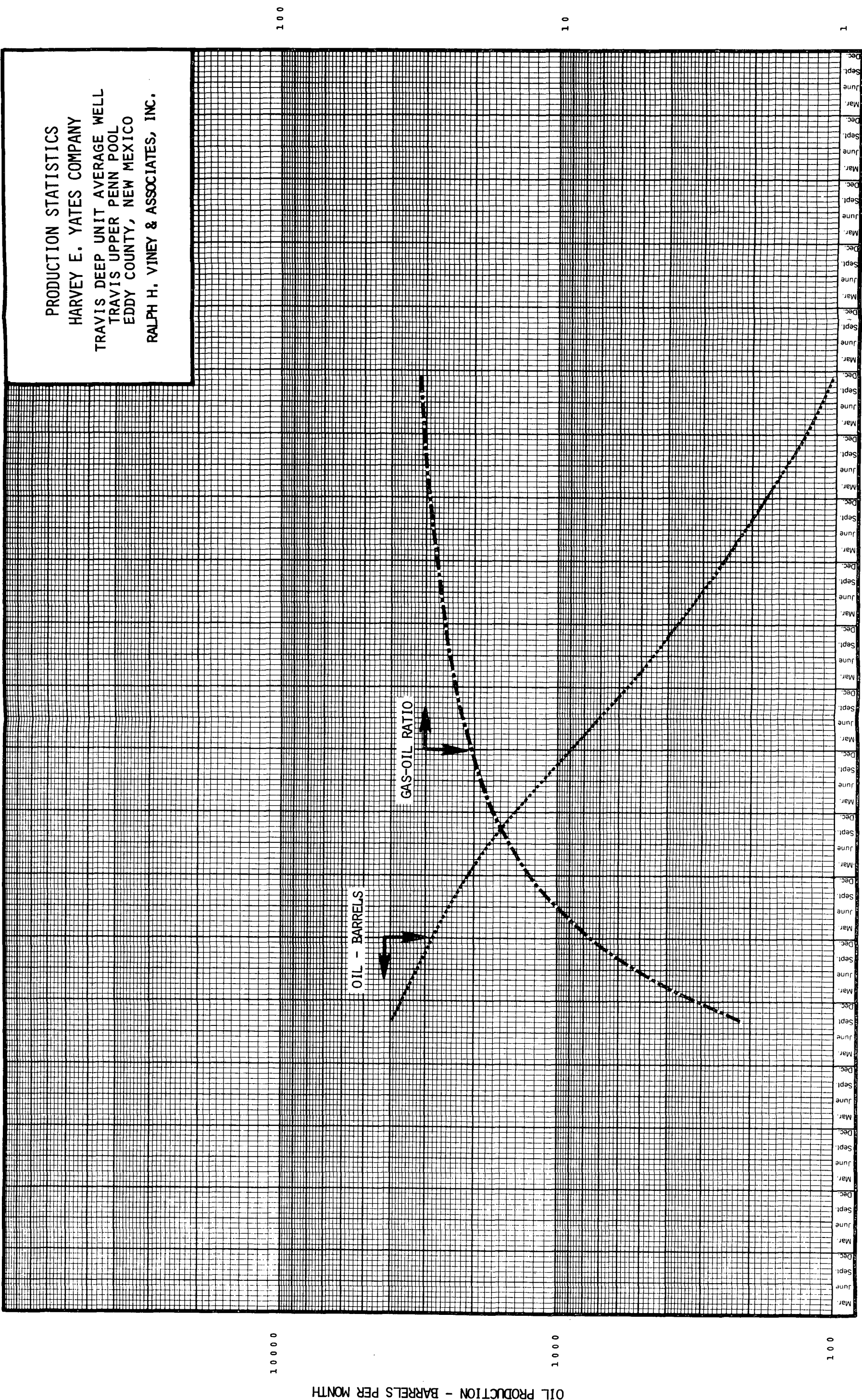
GAS-OIL RATIO

100

1

1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991

PRODUCTION STATISTICS
HARVEY E. YATES COMPANY
TRAVIS DEEP UNIT AVERAGE WELL
TRAVIS UPPER PENN POOL
EDDY COUNTY, NEW MEXICO
RALPH H. VINEY & ASSOCIATES, INC.



GAS-OIL RATIO - MCF PER BARREL

OIL PRODUCTION - BARRELS PER MONTH