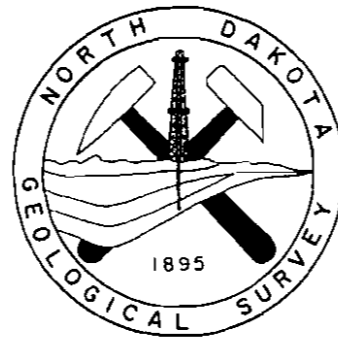


PRODUCTION PERFORMANCE CURVES
OF
SELECTED NORTH DAKOTA OIL FIELDS

by
Marvin E. Rygh

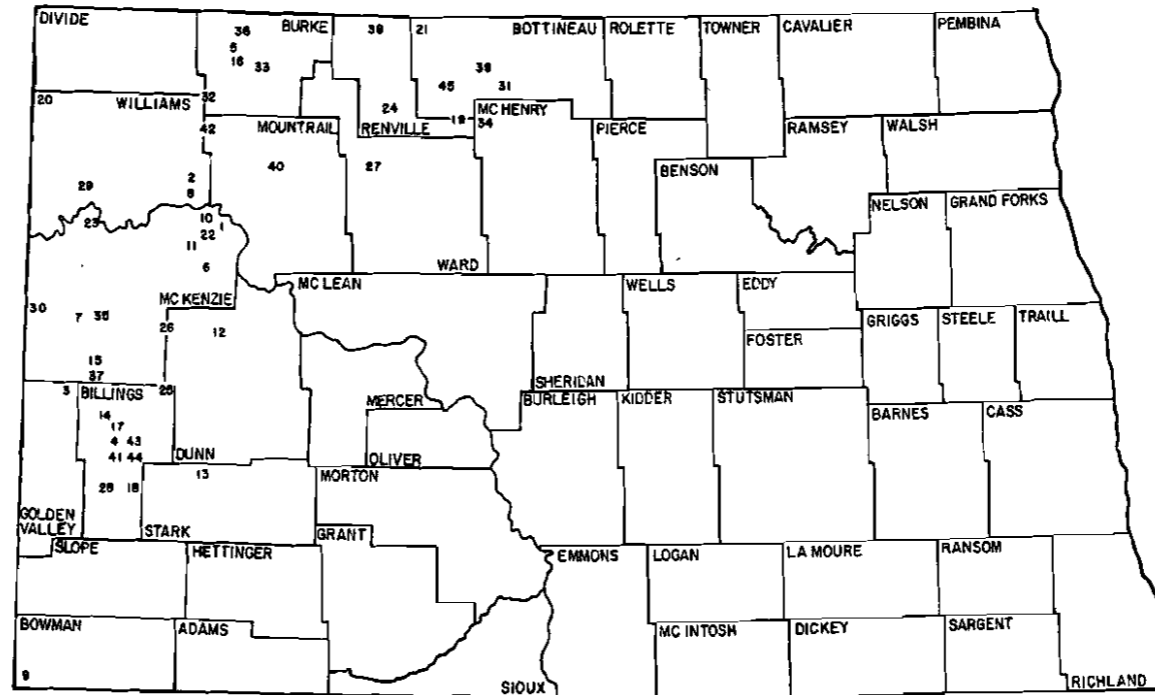


Miscellaneous Series 64
North Dakota Geological Survey
Don L. Halvorson, State Geologist
1983

RYGH, M.E. - PRODUCTION PERFORMANCE CURVES OF
SELECTED NORTH DAKOTA OIL FIELDS

Miscellaneous Series 64

OIL FIELD LOCATION MAP

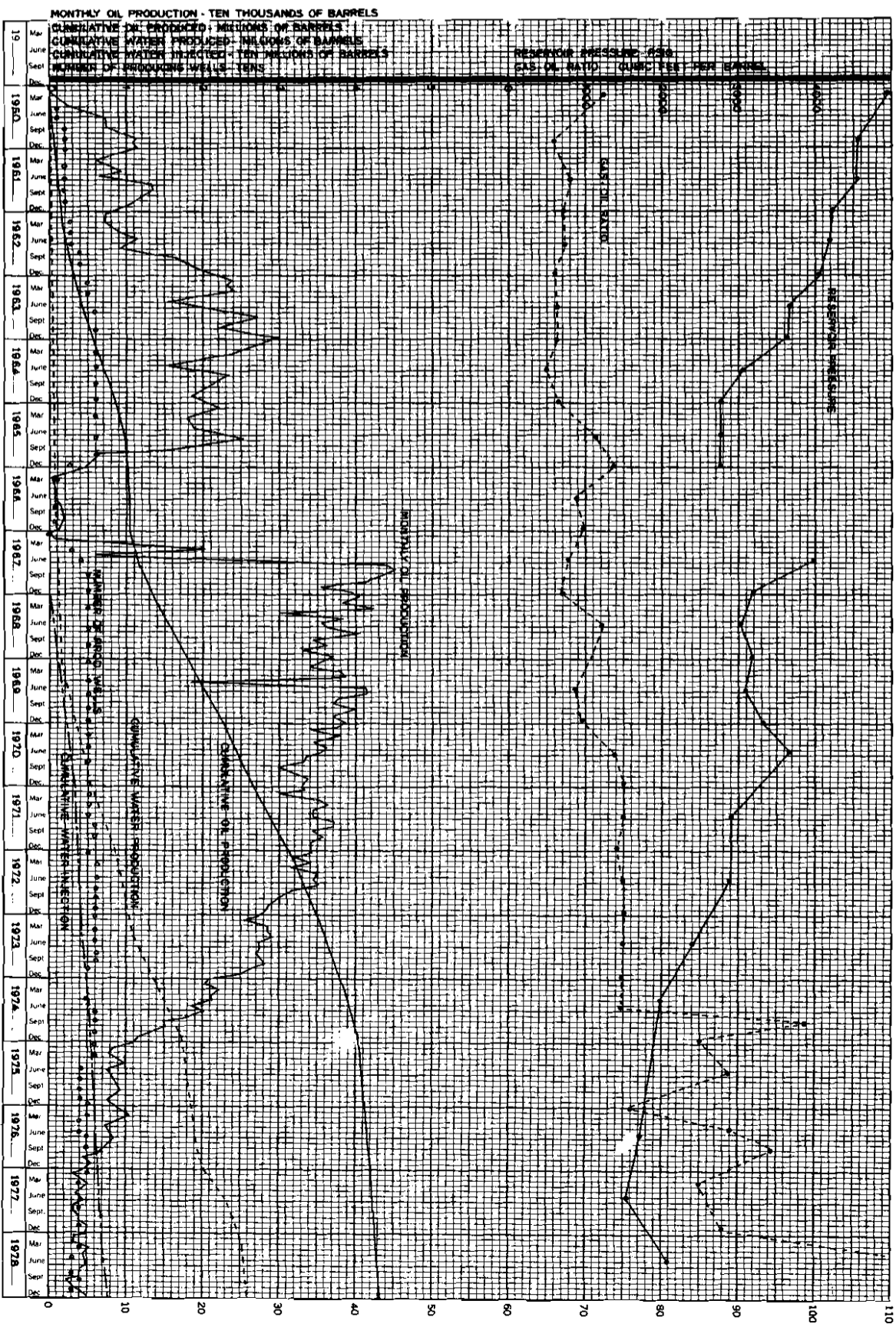


This folio of performance curves of selected oil fields in North Dakota is an attempt to supply reservoir data typical of the various production regions and producing intervals within the state. Most of the fields chosen are well developed pools producing from the Mississippian Madison Formation. The remainder of the curves describe production from the Red River (Ordovician), Stonewall (Ordovician), Interlake (Silurian), Duperow (Devonian), Tyler (or Heath of Montana) (Pennsylvanian), and Spearfish (Triassic) Formations.

All of the performance curves show monthly oil production, cumulative oil production, cumulative water production, and the number of producing wells. Most of the curves also include average reservoir pressures and gas-oil ratios. A cumulative water-injected line is included for fields subject to water-flooding.

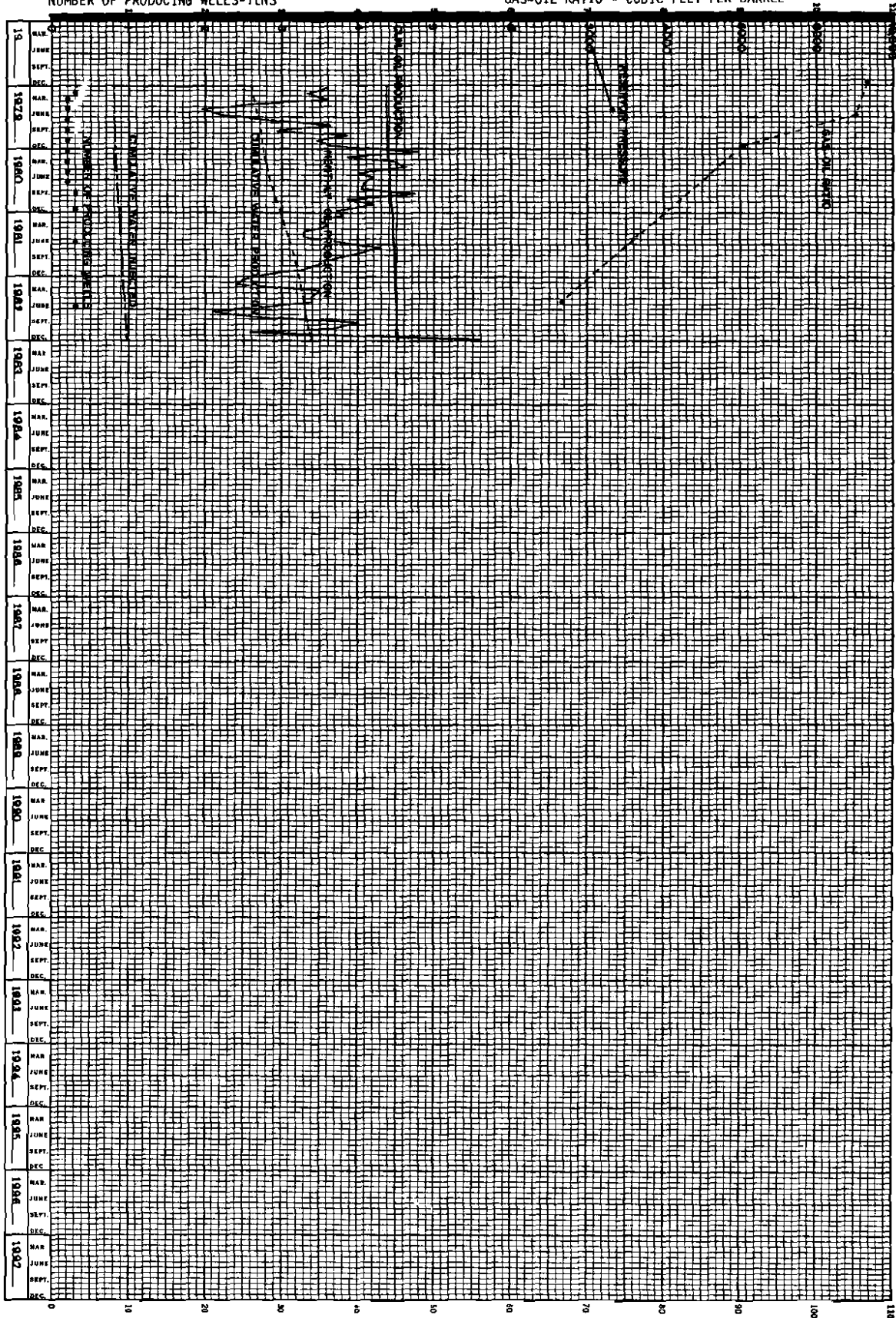
- | | | |
|------------------------------------|---------------------------------|--|
| 1. Antelope-Devonian Pool | 14. Elkhorn Ranch-Madison Pool | 29. Missouri Ridge-Red River Pool |
| Antelope-Madison Pool | 15. Flat Top Butte-Madison Pool | Missouri Ridge-Stonewall Pool |
| Antelope-Silurian Pool | Flat Top Butte-Red River Pool | 30. Mondak-Madison Pool |
| 2. Beaver Lodge-Devonian Pool | 16. Foothills-Madison Pool | 31. Newburg-Spearfish, Charles Pool |
| Beaver Lodge-Madison Pool | 17. Four Eyes-Duperow Pool | 32. North Tioga-Madison Pool |
| Beaver Lodge-Silurian Pool | Four Eyes-Madison Pool | 33. Northeast Foothills-Madison Pool |
| 3. Bicentennial-Red River Pool | 18. Fryburg-Heath Pool | 34. Pratt-Madison Pool |
| 4. Big Stick-Madison Pool | Fryburg-Madison Pool | 35. Red Wing Creek-Madison Pool |
| 5. Black Slough North-Madison Pool | 19. Glenburn-Madison Pool | 36. Rival-Madison Pool |
| Black Slough South-Madison Pool | 20. Grenora-Madison Pool | 37. Rough Rider-Madison Pool |
| 6. Blue Buttes-Madison Pool | 21. Haas-Madison Pool | 38. Sherwood-Madison Pool |
| 7. Boxcar Butte-Red River Pool | 22. Hawkeye-Madison Pool | 39. South Westhope-Spearfish, Charles Pool |
| 8. Capa-Madison Pool | 23. Indian Hill-Red River Pool | 40. Stanley-Madison Pool |
| 9. Cedar Creek-Ordovician Pool | 24. Lake Darling-Madison Pool | 41. T.R.-Madison Pool |
| 10. Charlson North-Madison Pool | 25. Little Knife-Madison Pool | 42. Tioga-Devonian Pool |
| Charlson South-Madison Pool | 26. Lone Butte-Madison Pool | Tioga-Madison Pool |
| 11. Clear Creek-Ordovician Pool | 27. Lone Tree-Madison Pool | 43. Tree Top-Madison Pool |
| 12. Corral Creek-Red River Pool | 28. Medora-Heath Pool | 44. Whiskey Joe-Madison Pool |
| 13. Dickinson-Heath Pool | Medora-Madison Pool | 45. Wiley-Madison Pool |

ANTELOPE - DEVONIAN POOL



CUMULATIVE WATER INJECTED-TEN MILLIONS OF BARRELS
 CUMULATIVE OIL PRODUCTION-MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS-TENS

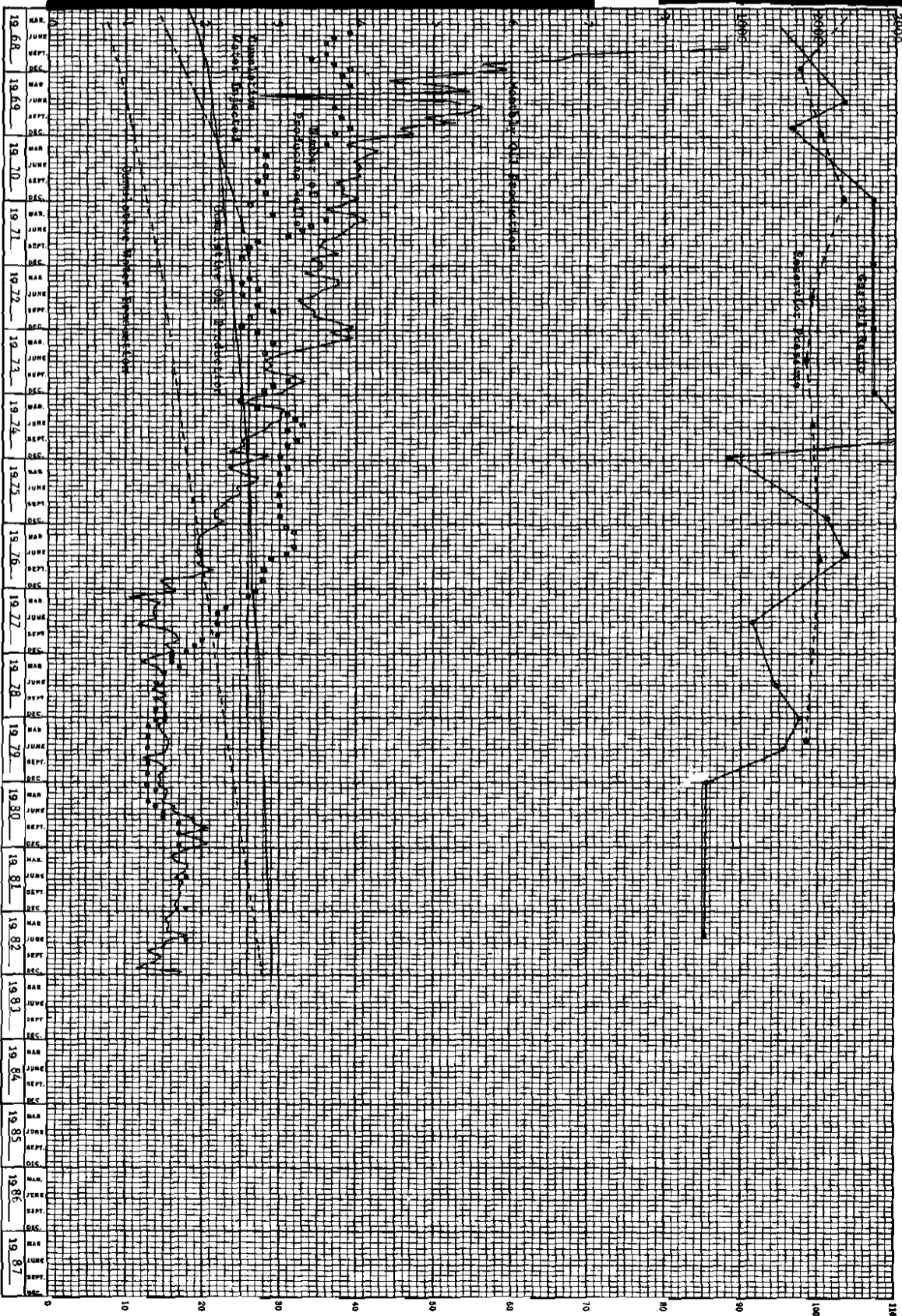
RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL



ANTELOPE - DEVONIAN POOL

Cumulative Oil Production - Five Millions of Barrels
 Cumulative Water Production - Five Millions of Barrels
 Cumulative Water Injected - Ten Millions of Barrels
 Monthly Oil Production - Ten Thousands of Barrels
 Number of Wells Producing - Tens

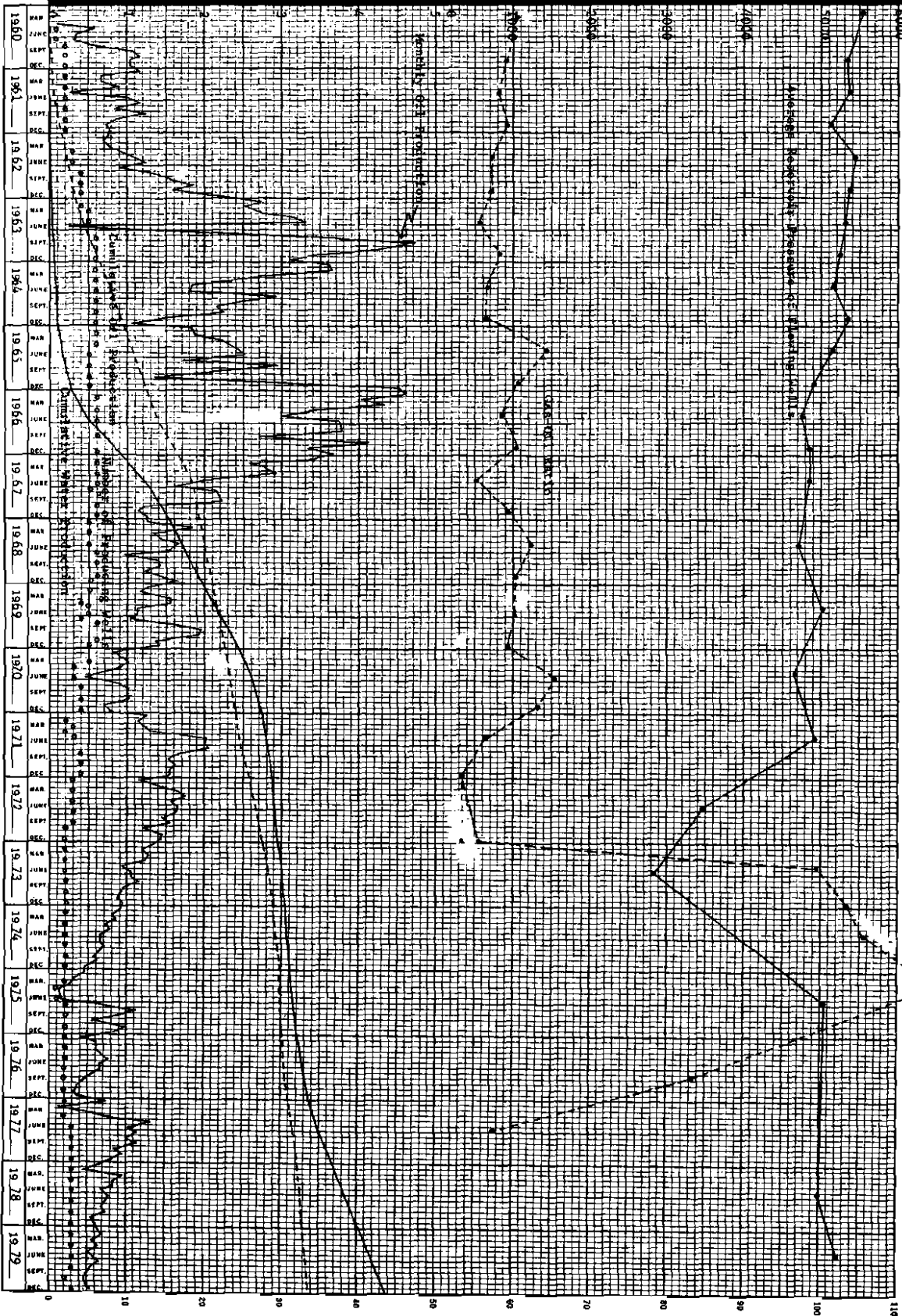
Reservoir Pressure - PSIG
 Gas-Oil Ratio - Cubic Feet Per Barrel



ANTELOPE - MADISON POOL

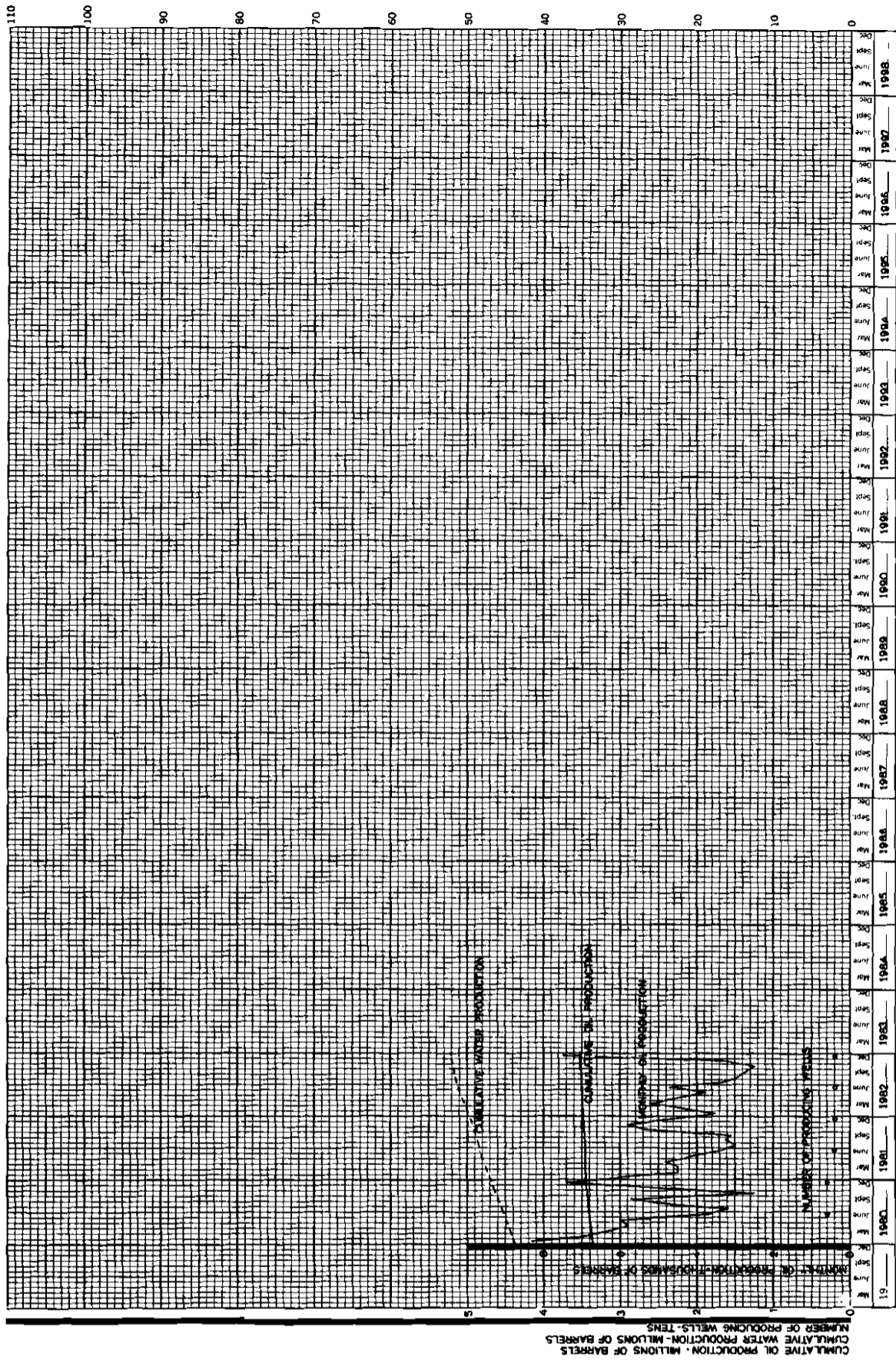
CUMULATIVE OIL PRODUCTION-MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS-TENS

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET-PER BARREL



ANTELOPE - SILURIAN POOL

ANTELOPE - SILURIAN POOL



CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS

NUMBER OF PRODUCING WELLS

Millions of Barrels

Millions of Barrels

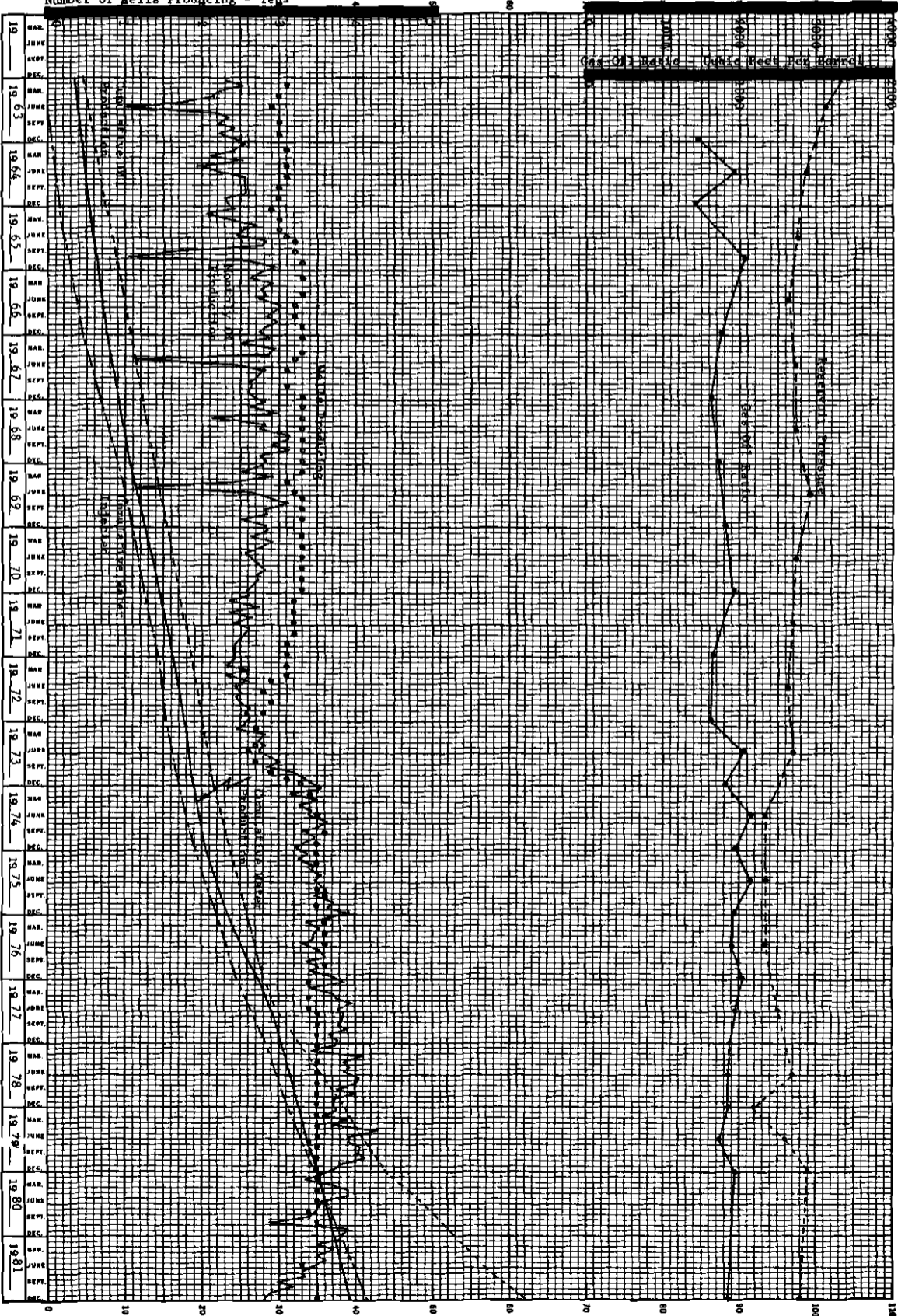
CUMULATIVE OIL PRODUCTION

CUMULATIVE WATER PRODUCTION

Cumulative Oil Production - 10 Millions of Barrels
 Cumulative Water Production - Millions of Barrels
 Cumulative Water Injected - 20 Millions of Barrels
 Monthly Oil Production - 50 Thousands of Barrels
 Number of Wells Producing - Tens

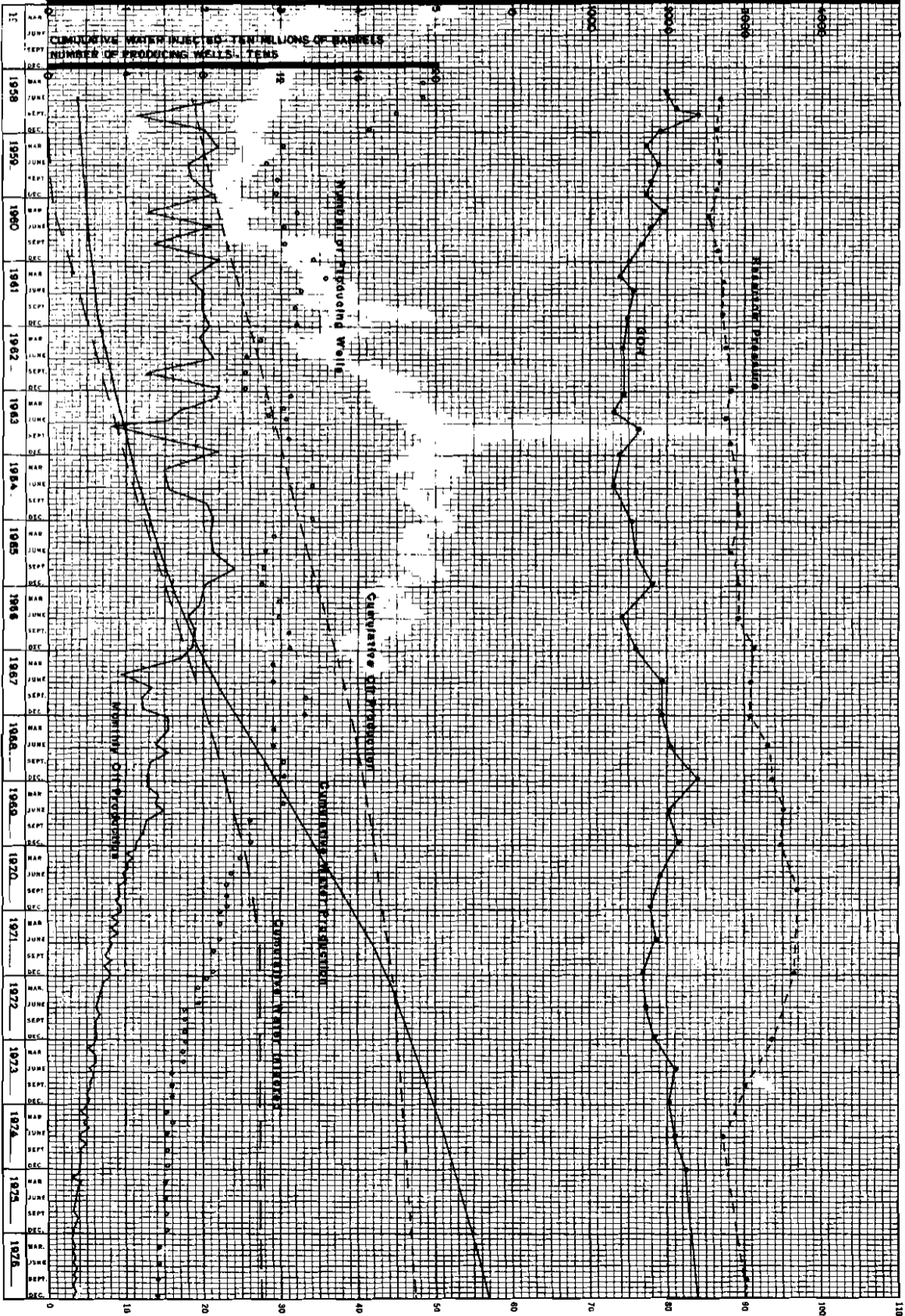
Reservoir Pressure - PSIG

Gas Oil Ratio - Cubic Feet Per Barrel



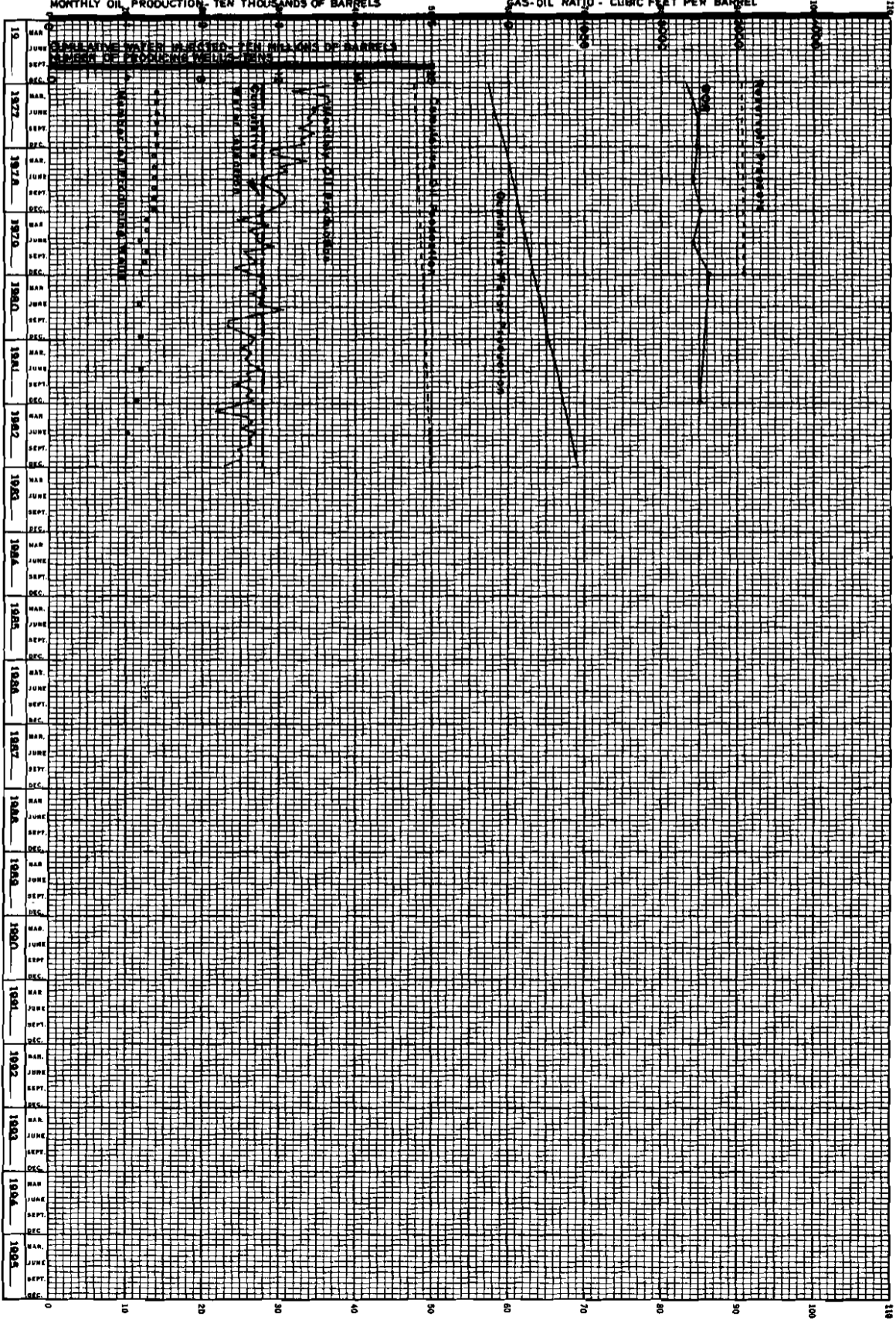
BEAVER LODGE - DEVONIAN POOL

CUMULATIVE OIL PRODUCTION - TEN MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - TEN MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - HUNDRED THOUSANDS OF BARRELS
 RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL



BEAVER LODGE - MADISON POOL

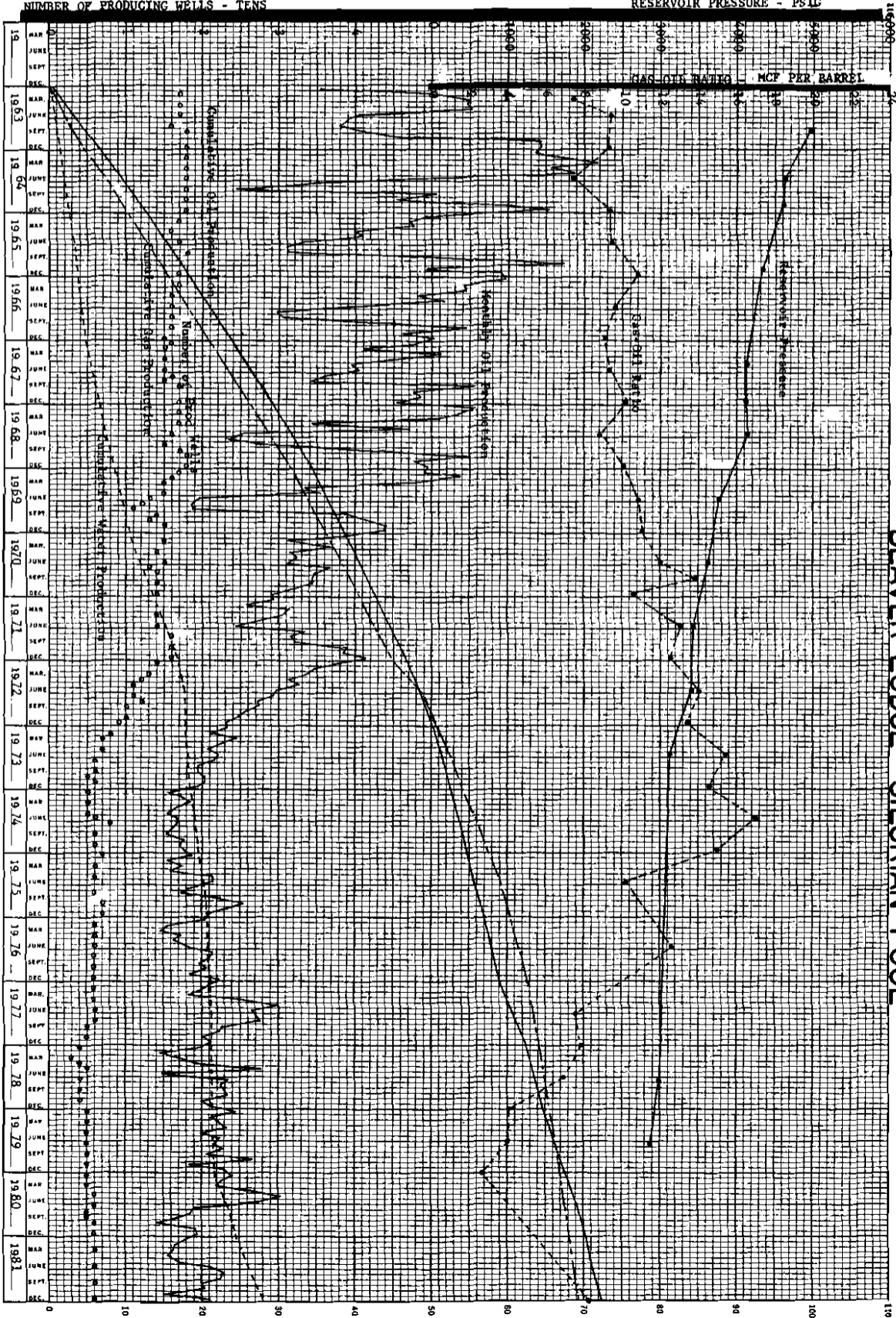
CUMULATIVE OIL PRODUCTION - TEN MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - TEN MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL



BEAVER LODGE - MADISON POOL

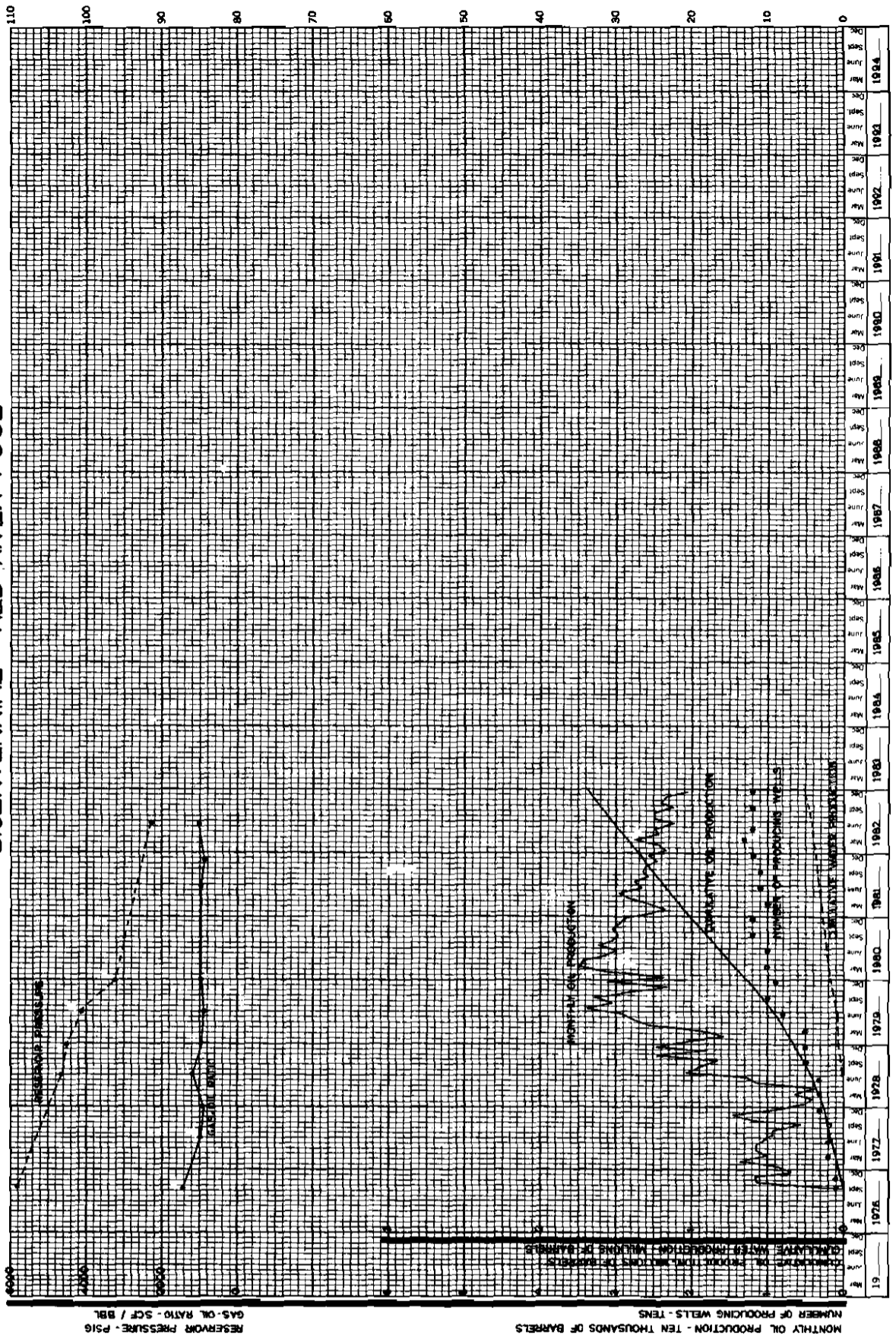
CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - HUNDRED THOUSANDS OF BARRELS
 CUMULATIVE GAS PRODUCTION - TEN MILLION MCF
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG



BEAVER LODGE - SILURIAN POOL

BICENTENNIAL - RED RIVER POOL



MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS

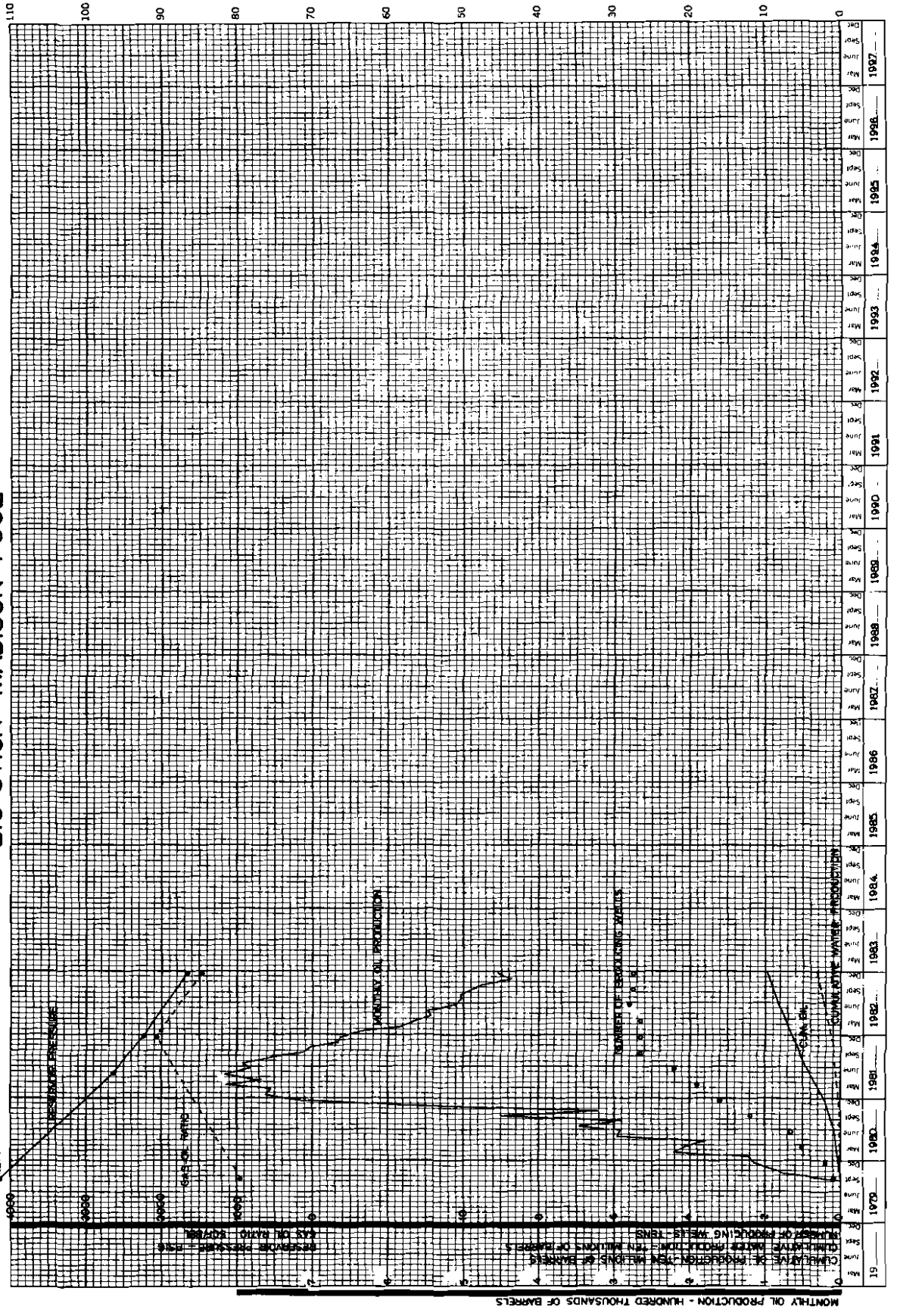
CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS

RESERVOIR PRESSURE - PSIG

GAS-OIL RATIO - SCF / BL

19

BIG STICK - MADISON POOL



MONTHLY OIL PRODUCTION - HUNDRED THOUSANDS OF BARRELS

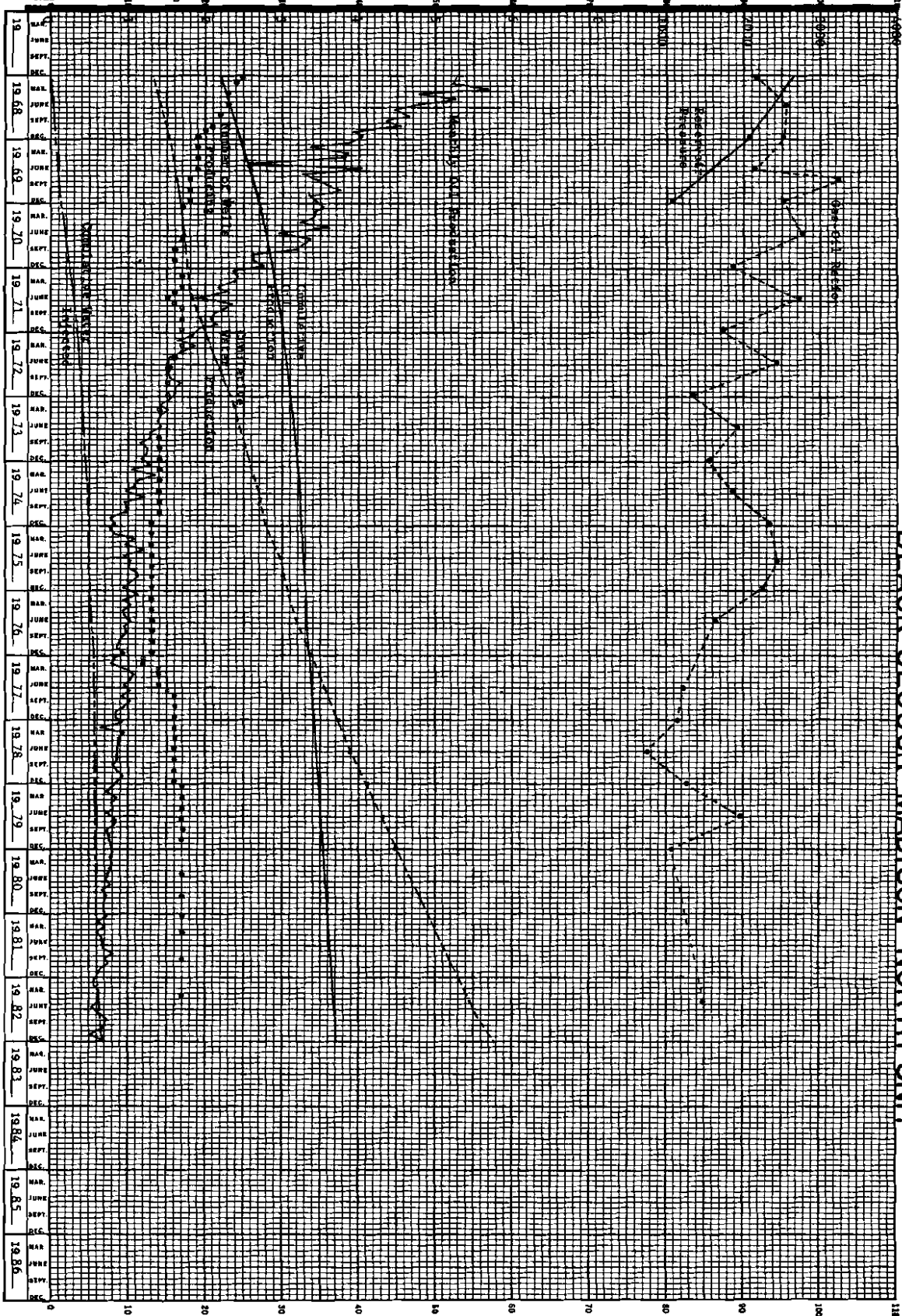
CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS

RESERVOIR PRESSURE - PSI

GAS-OIL RATIO - SCF/BBL

Monthly Oil Production - Five Thousands of Barrels
 Cumulative Oil Production - Millions Of Barrels
 Cumulative Water Production - Millions Of Barrels
 Cumulative Water Injected - Ten Millions of Barrels
 Number Of Producing Wells-Tens

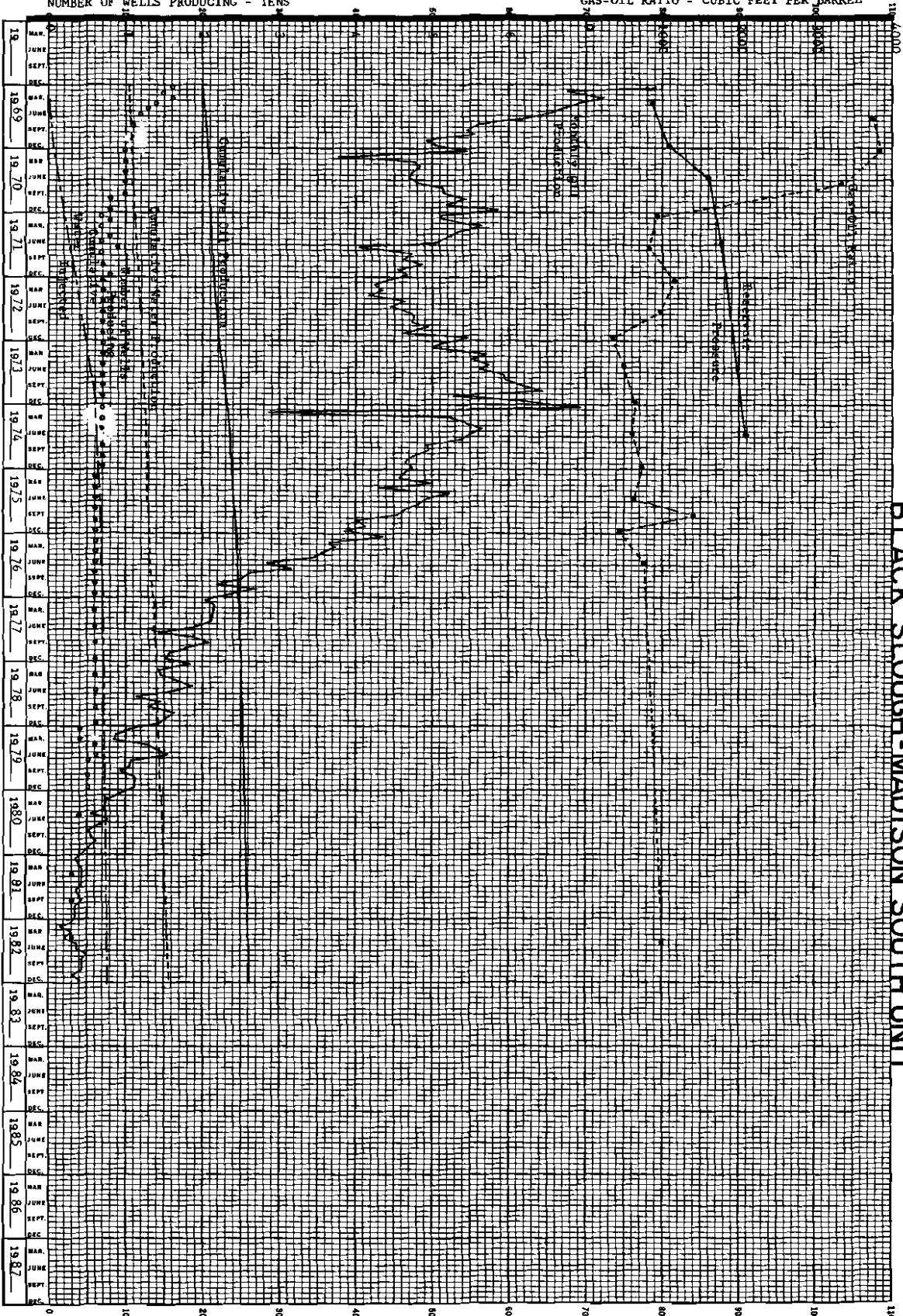
Reservoir Pressure - PSI
 Gas-Oil Ratio - Cubic Feet Per Barrel



BLACK SLOUGH-MADISON NORTH UNIT

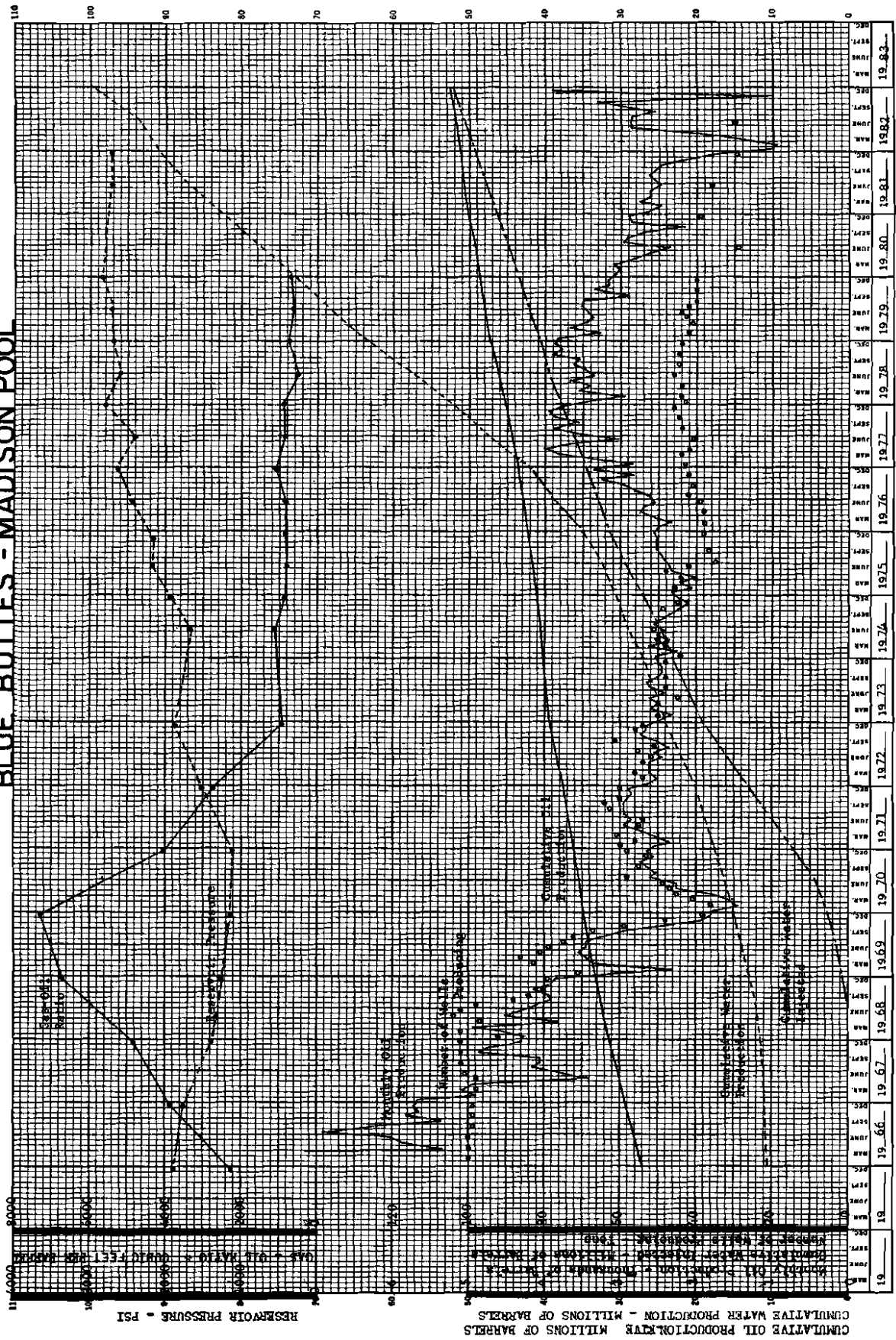
MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 NUMBER OF WELLS PRODUCING - TENS

RESERVOIR PRESSURE - PSI
 GAS-OIL RATIO - CUBIC FEET PER BARREL



BLACK SLOUGH-MADISON SOUTH UNIT

BLUE BUTTES - MADISON POOL



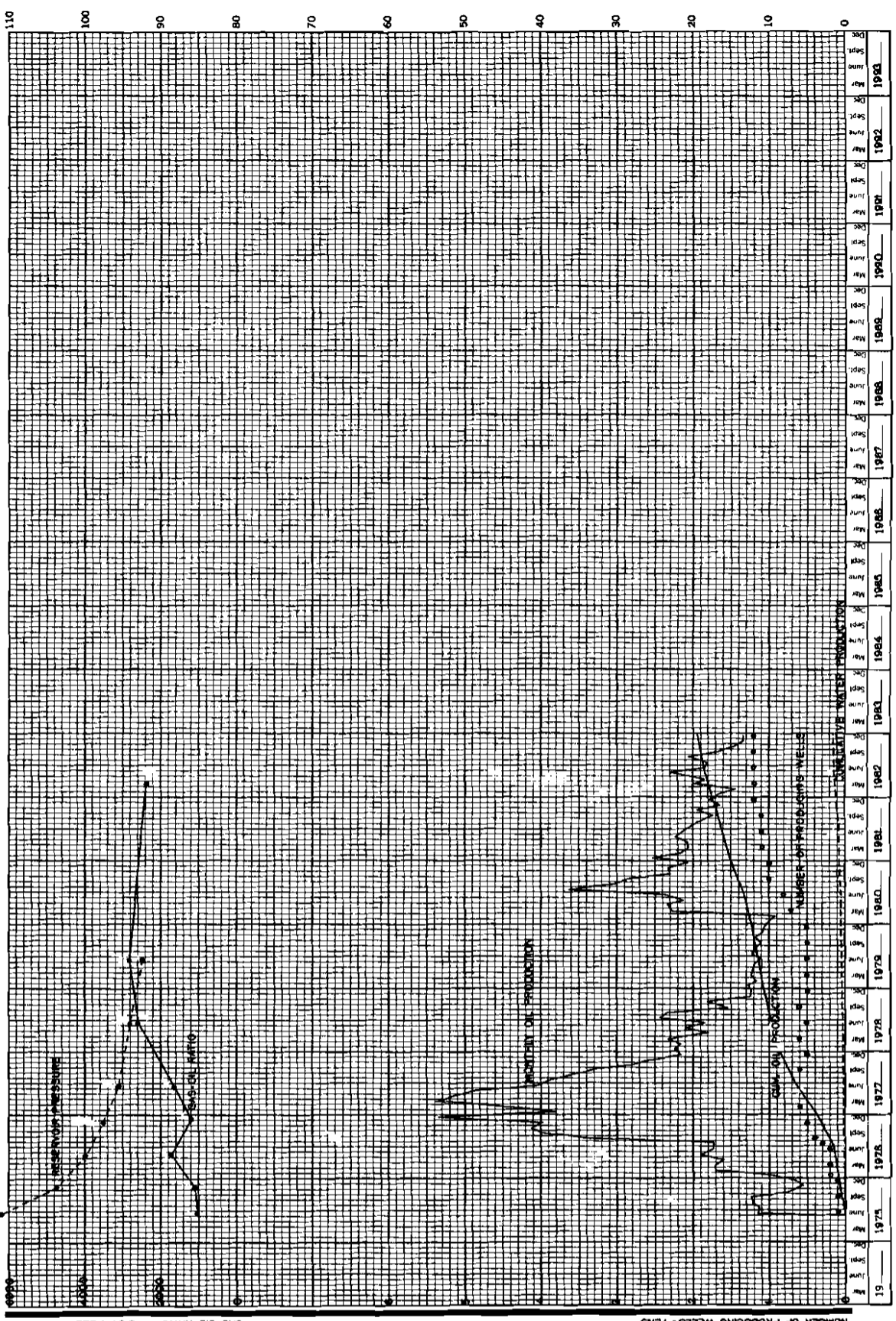
RESERVOIR PRESSURE - PSI

CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS

110
100
90
80
70
60
50
40
30
20
10
0

1958
1959
1960
1961
1962
1963
1964
1965
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1977
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1979
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1981
1982
1983

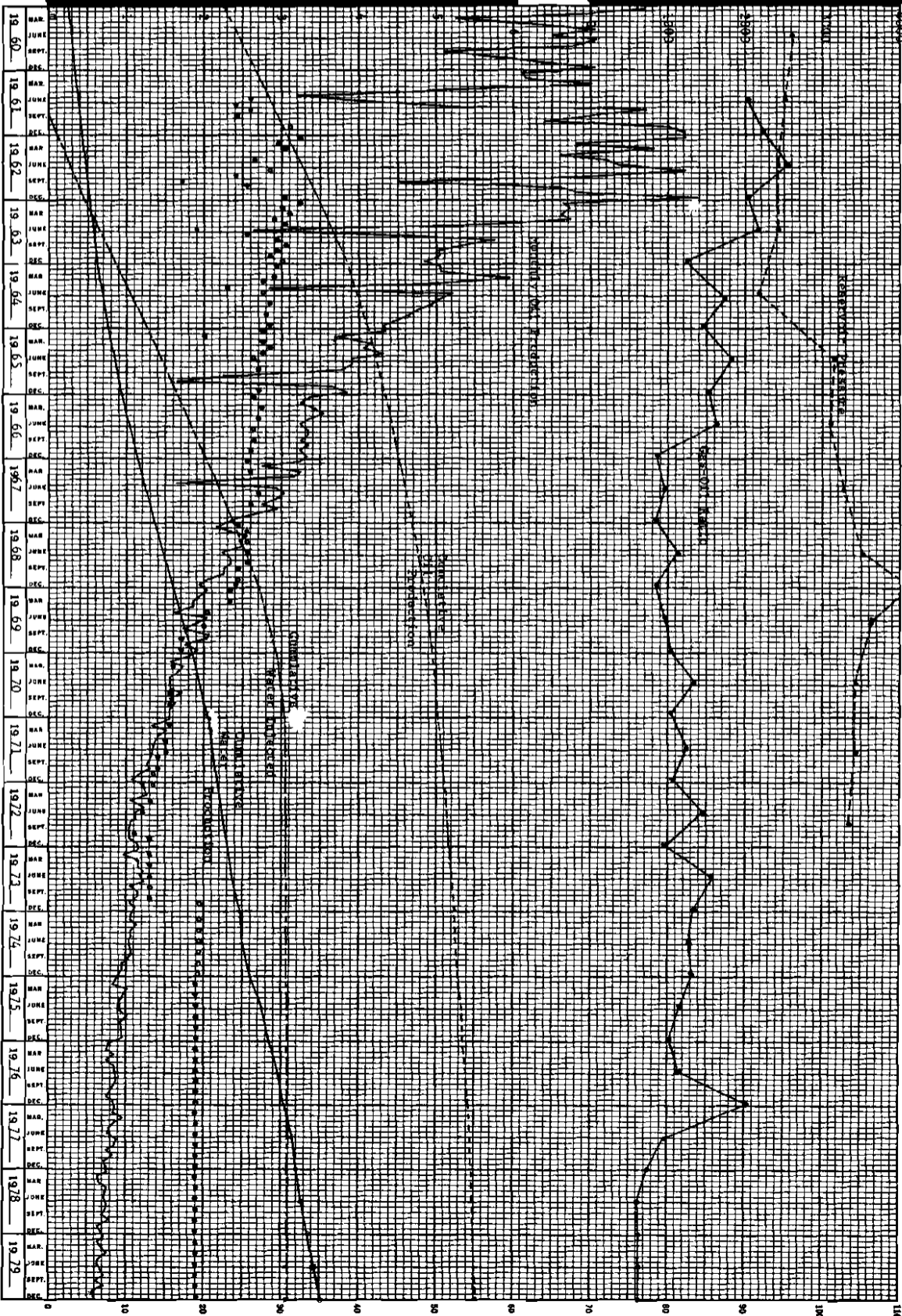
BOXCAR BUTTE - RED RIVER POOL



MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS
 RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - SCF / BBL

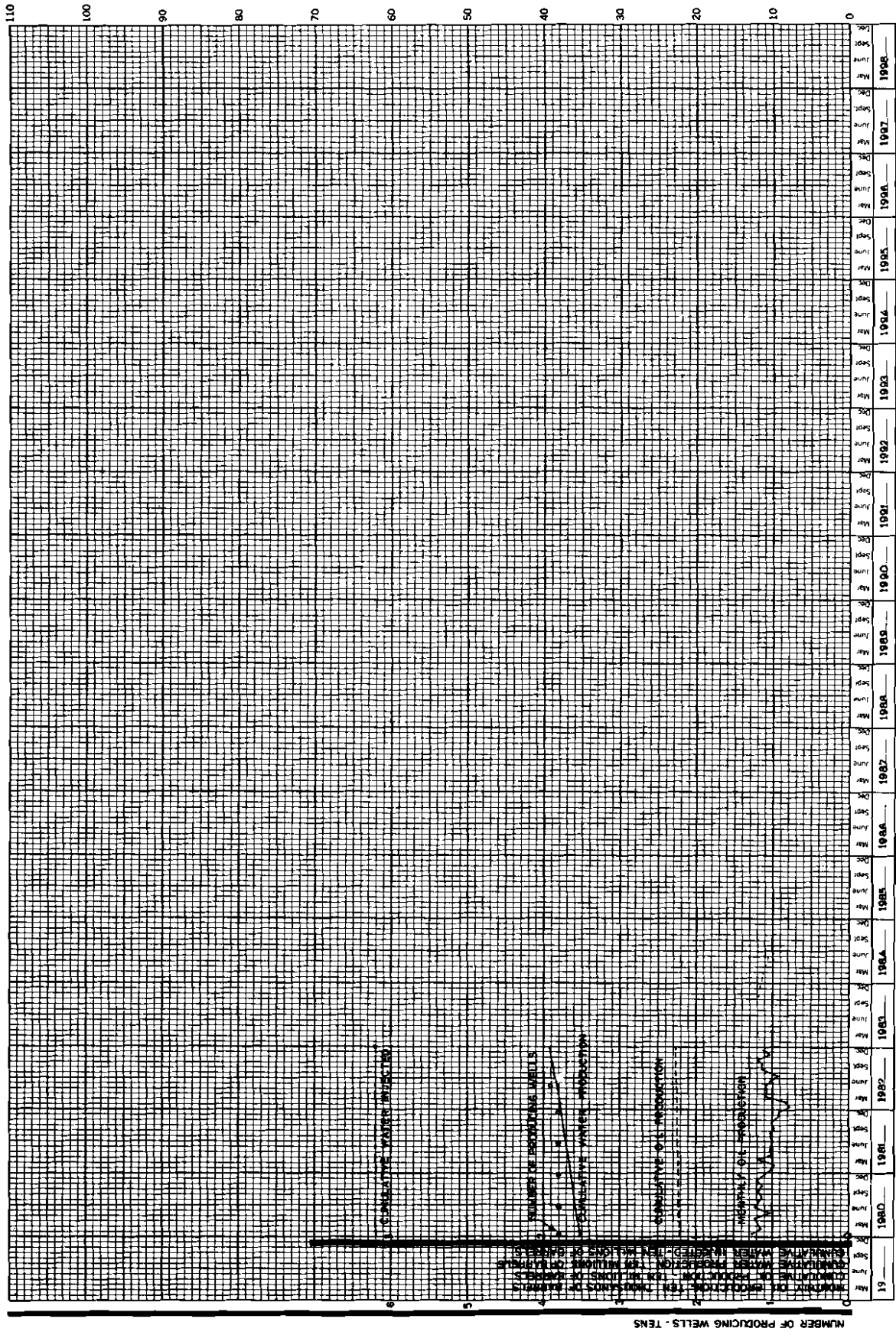
CUMULATIVE OIL PRODUCTION-TWO MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-FIVE MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED-TEN MILLIONS OF BARRELS
 MONTHLY PRODUCTION OIL-TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS-TWENTIES

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL

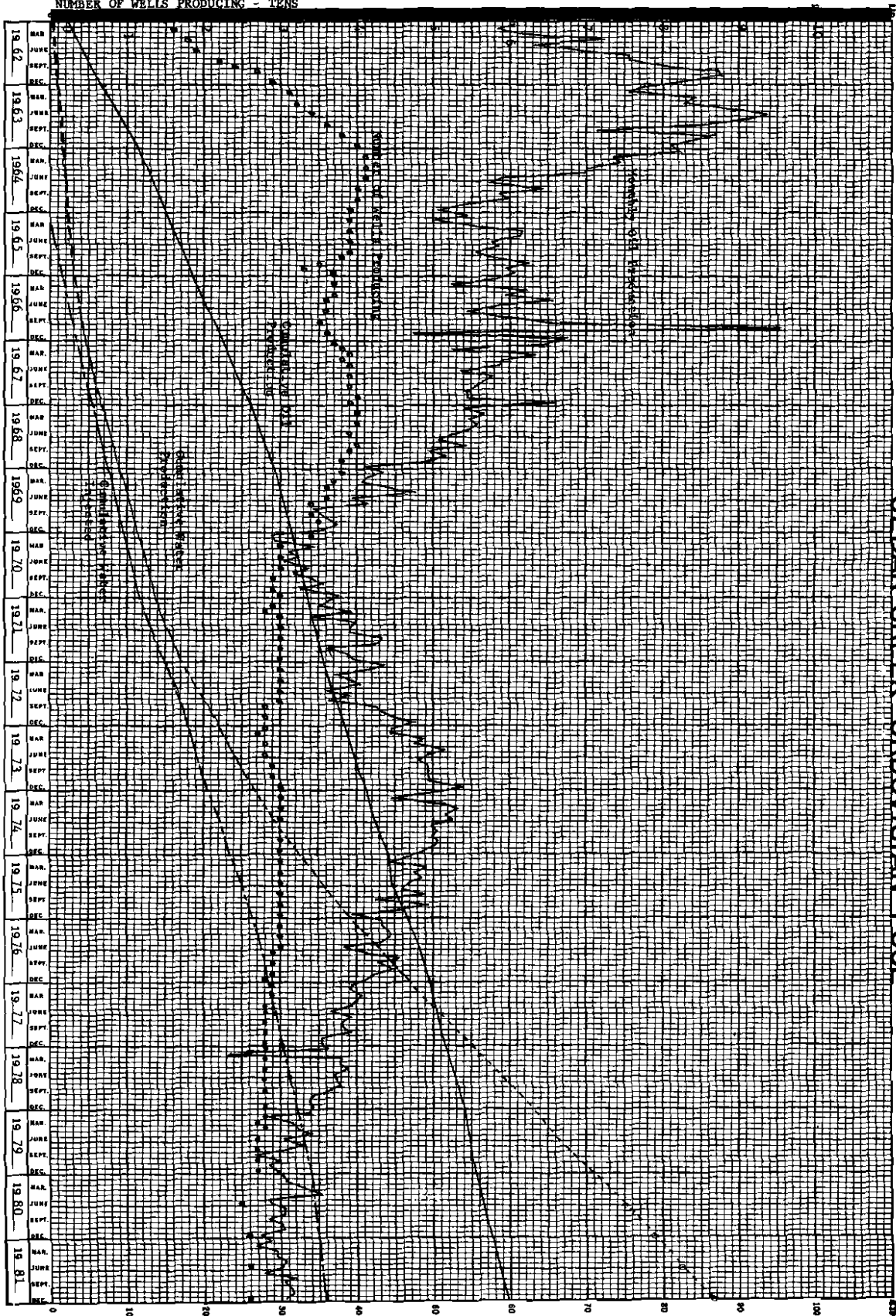


CAPA - MADISON POOL

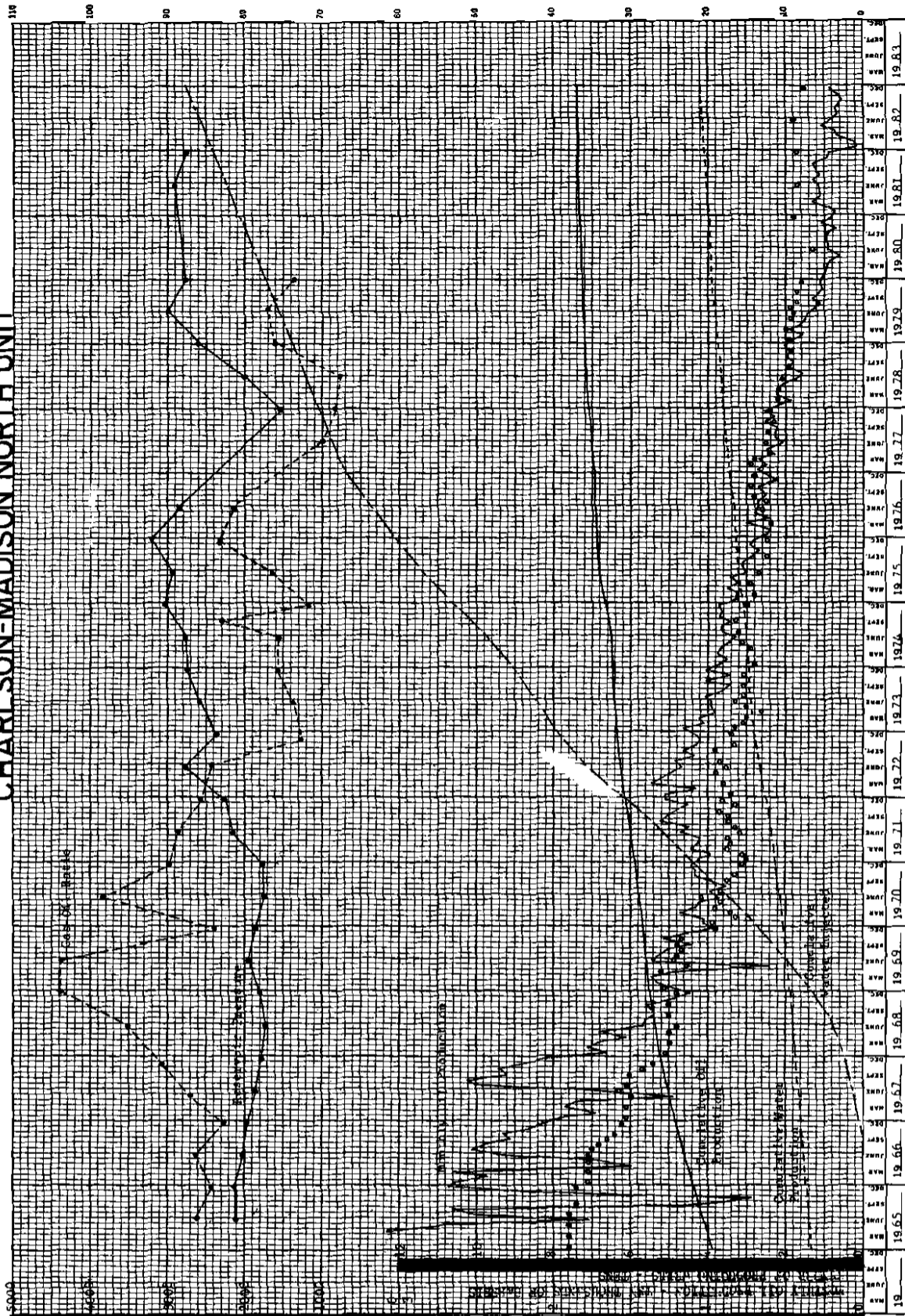
CAPA - MADISON POOL



MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - TWO MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - TWO MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 NUMBER OF WELLS PRODUCING - TENS



CHARI SON-MADISON NORTH UNIT

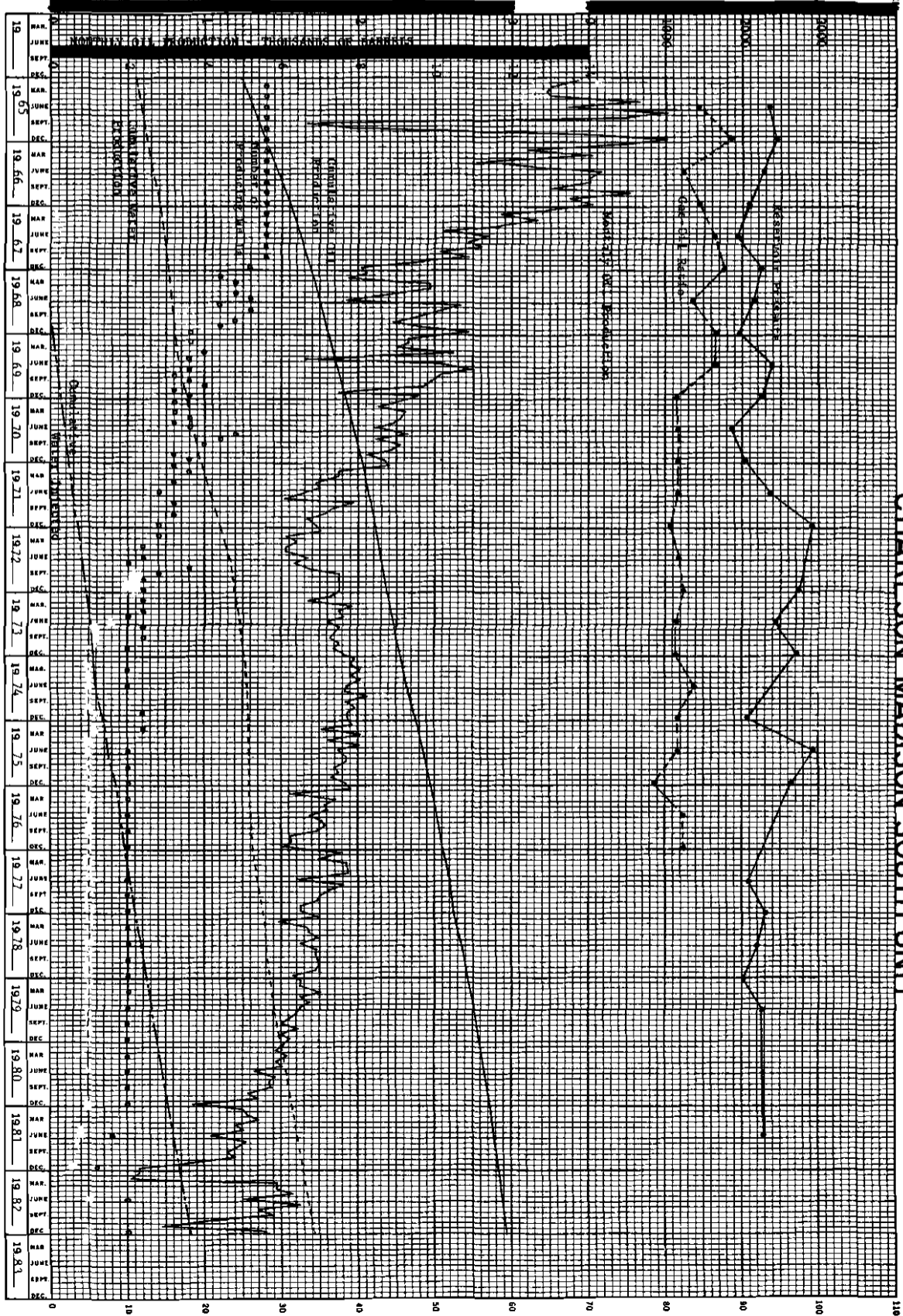


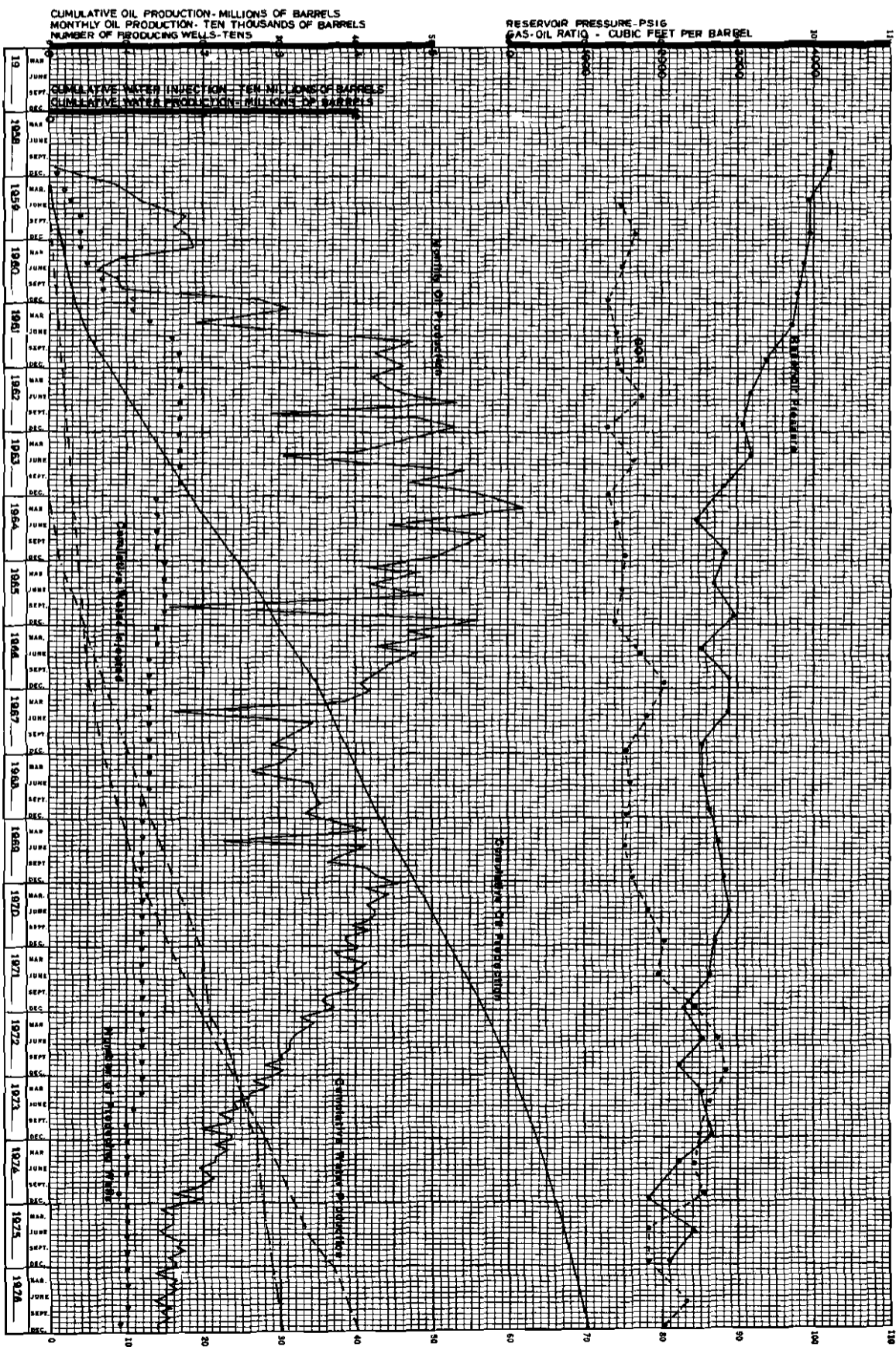
CHARI SON-MADISON NORTH UNIT - DATA FROM 1965 TO 1983
TERRAIN HEIGHT PER BARREL

CHARI SON-MADISON NORTH UNIT - DATA FROM 1965 TO 1983
TERRAIN HEIGHT PER BARREL

CUMULATIVE OIL PRODUCED - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCED - MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 NUMBER OF WELLS PRODUCING - TENS

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL

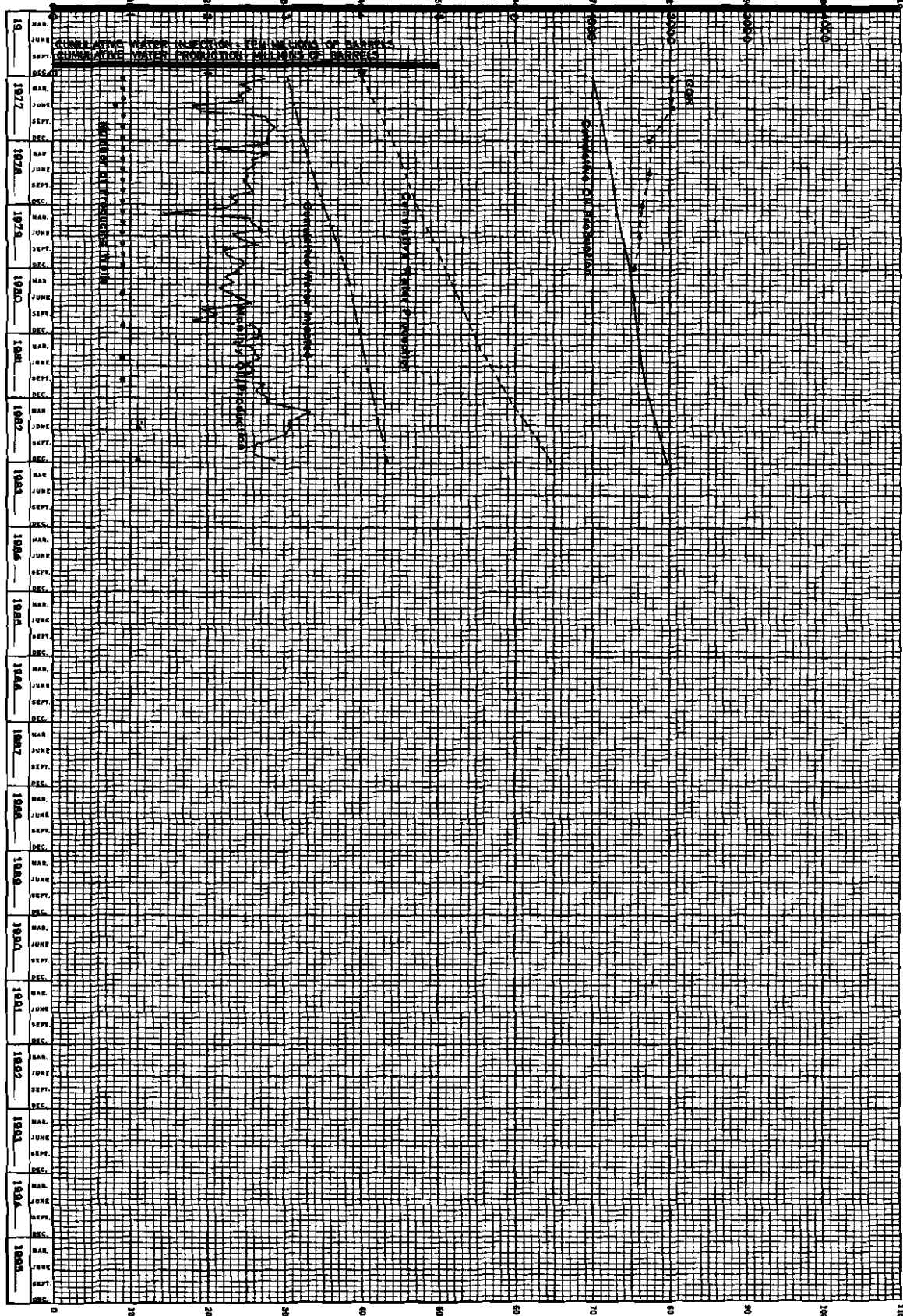




CLEAR CREEK - MADISON POOL

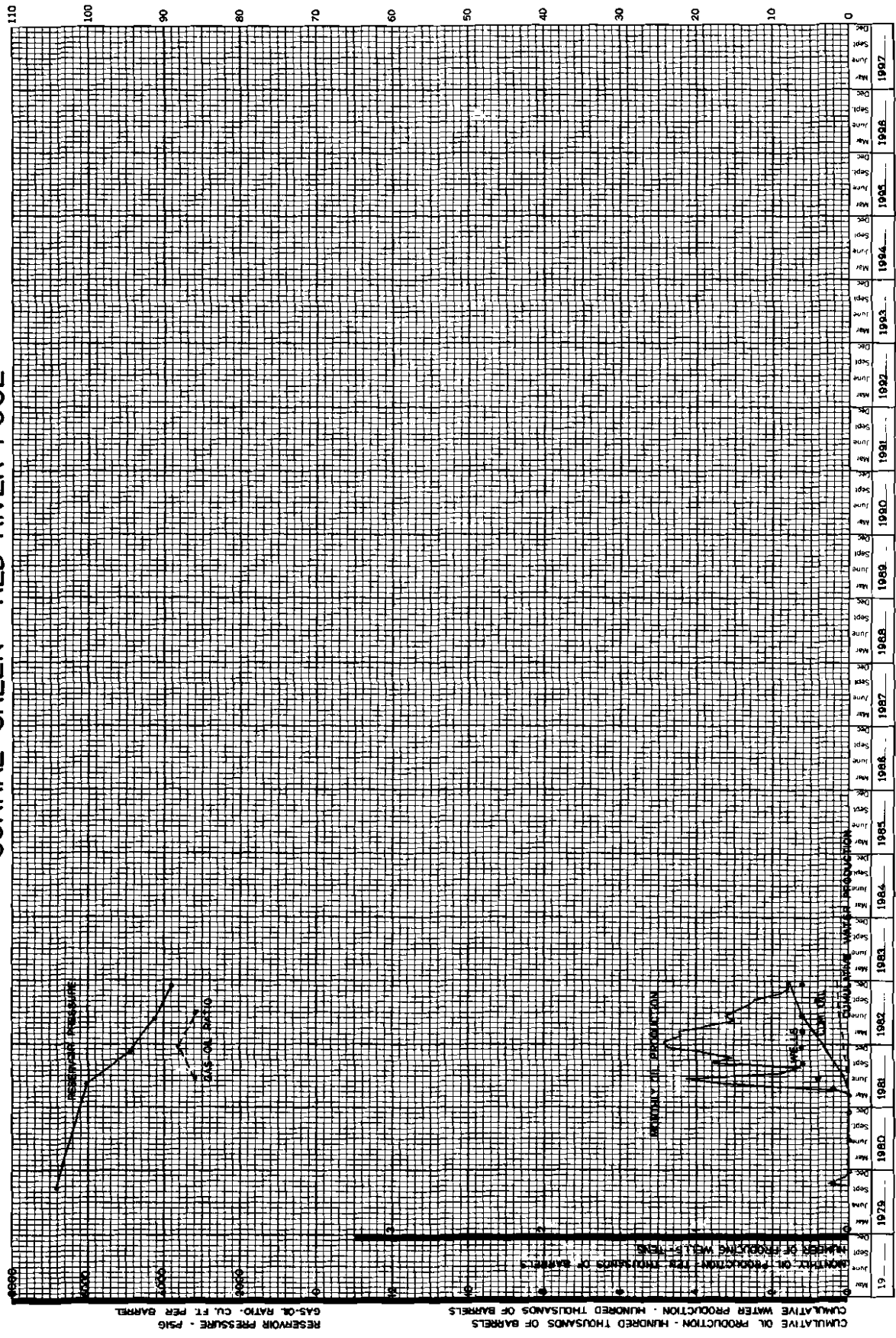
CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - FIVE THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL



CLEAR CREEK - MADISON POOL

CORRAL CREEK - RED RIVER POOL



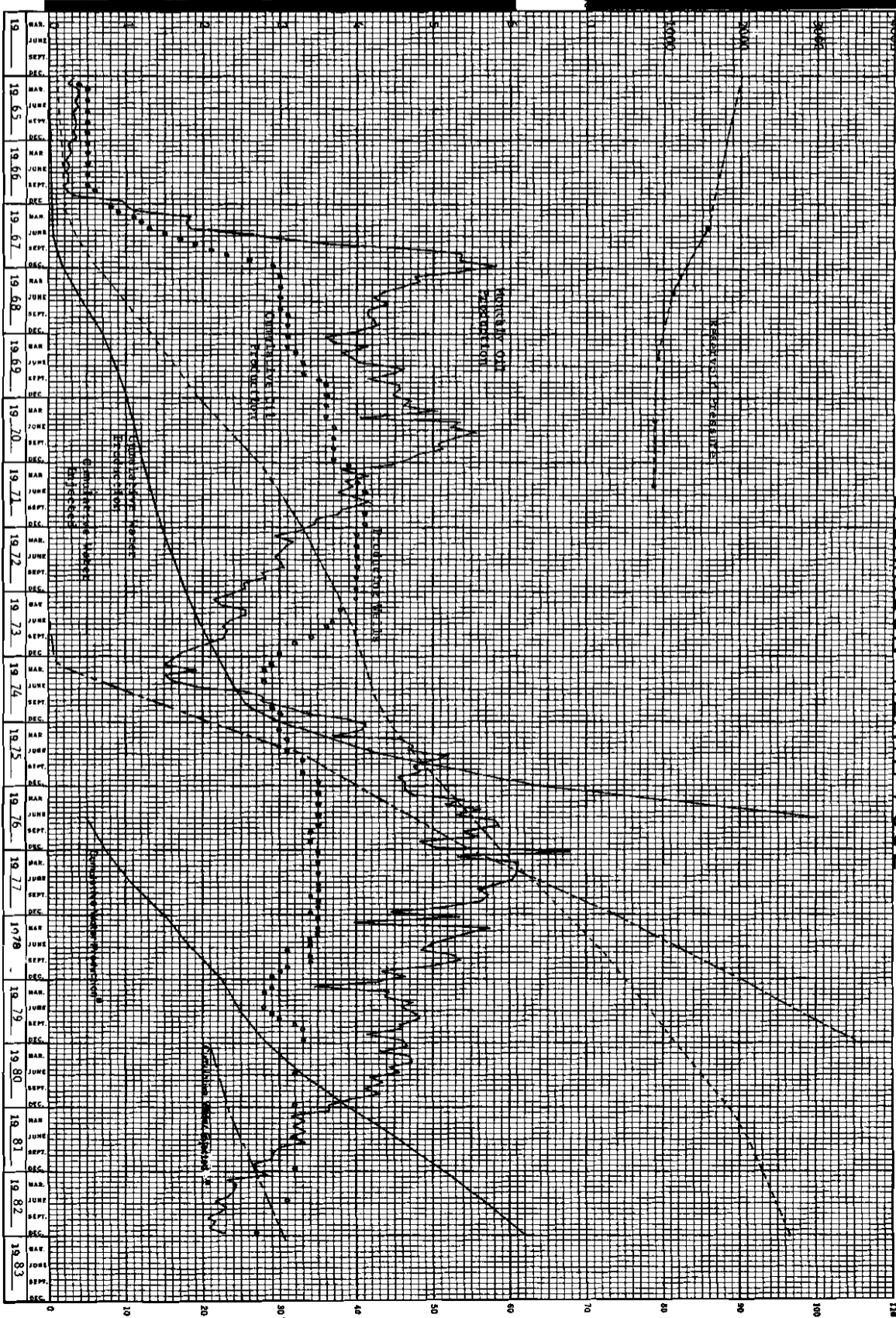
CUMULATIVE OIL PRODUCTION - HUNDRED THOUSANDS OF BARRELS
 MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
 RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CU. FT. PER BARREL

1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

110
100
90
80
70
60
50
40
30
20
10
0

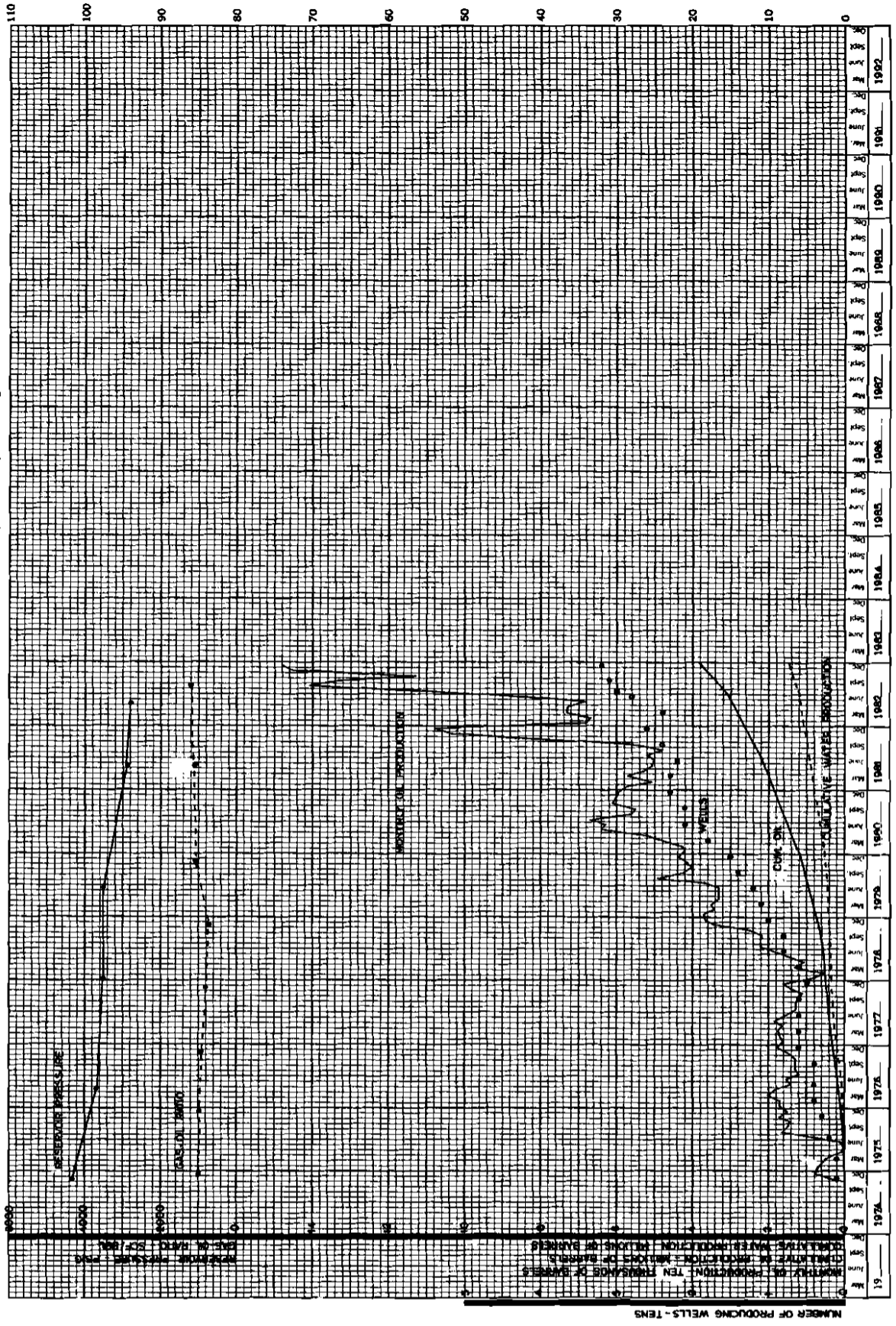
Cumulative Oil Production - 2 Millions of Barrels
 Cumulative Water Produced - One Hundred Thousands of Barrels - 2 MILLIONS OF BARRELS*
 Cumulative Water Injected - 2 Millions of Barrels - 10 MILLIONS OF BARRELS*
 Monthly Oil Production - 25 Thousands of Barrels
 Number of Producing Wells - Tens

Reservoir Pressure - PSIG

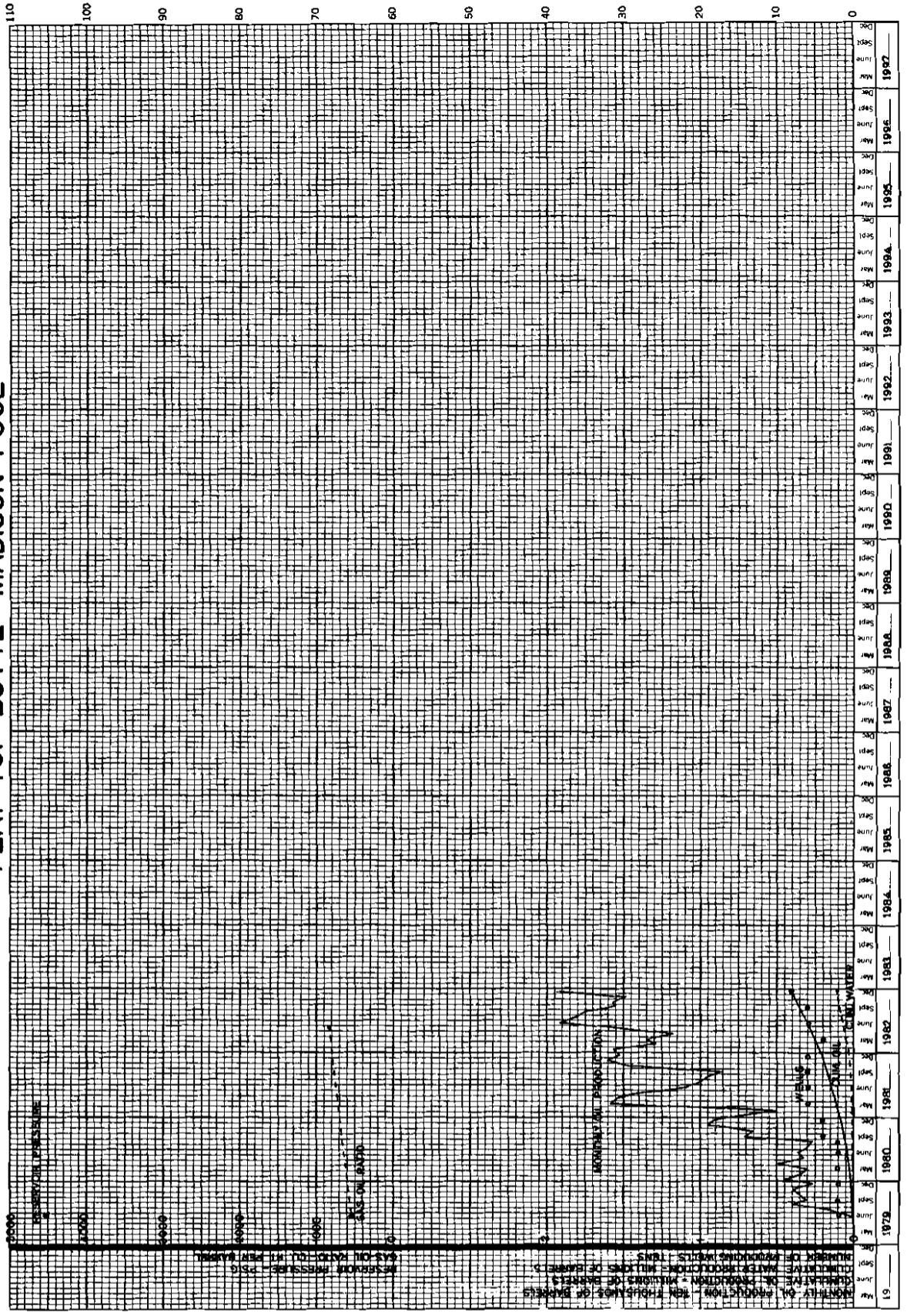


DICKINSON-HEATH POOL

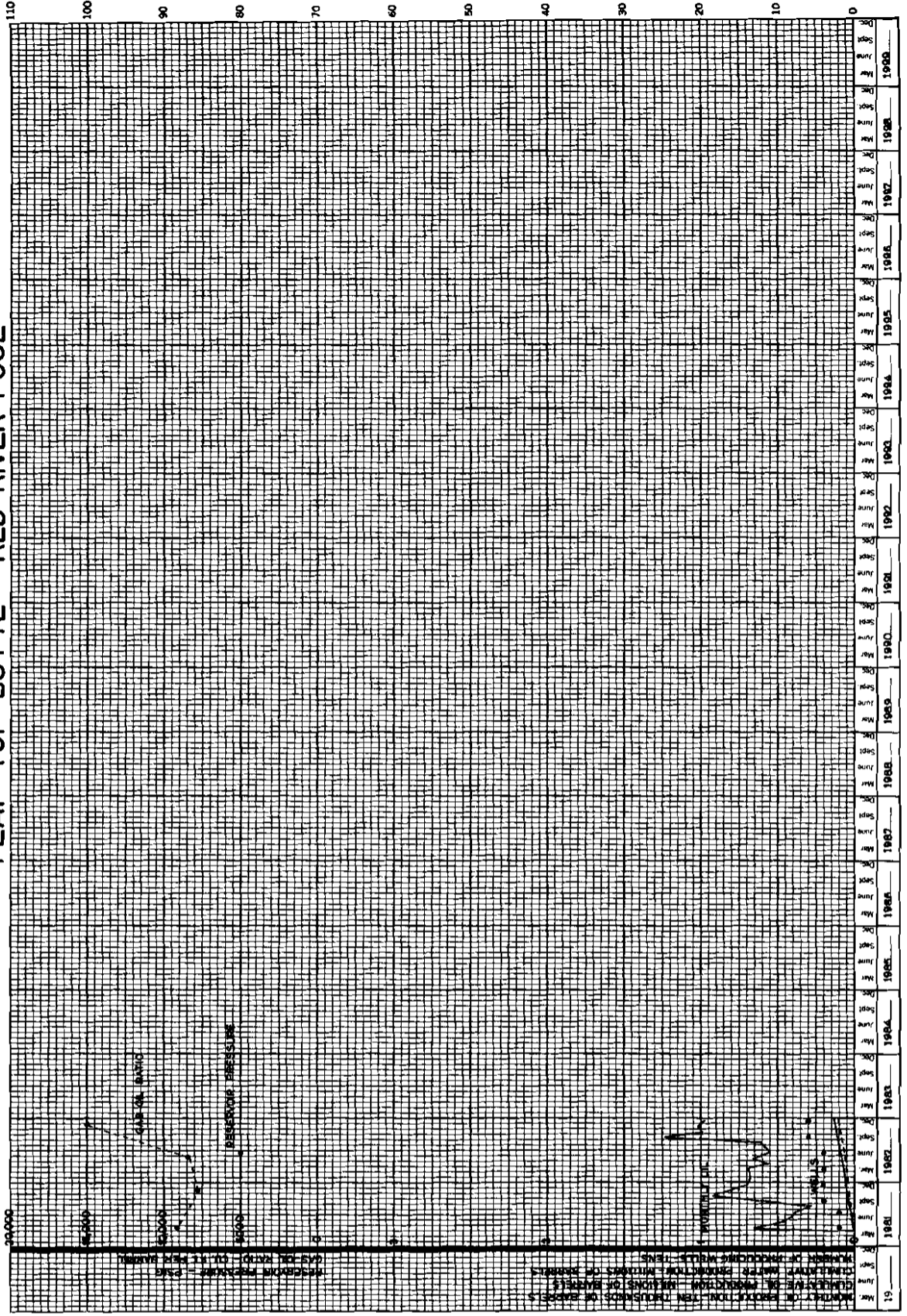
ELKHORN RANCH - MADISON POOL



FLAT TOP BUTTE - MADISON POOL

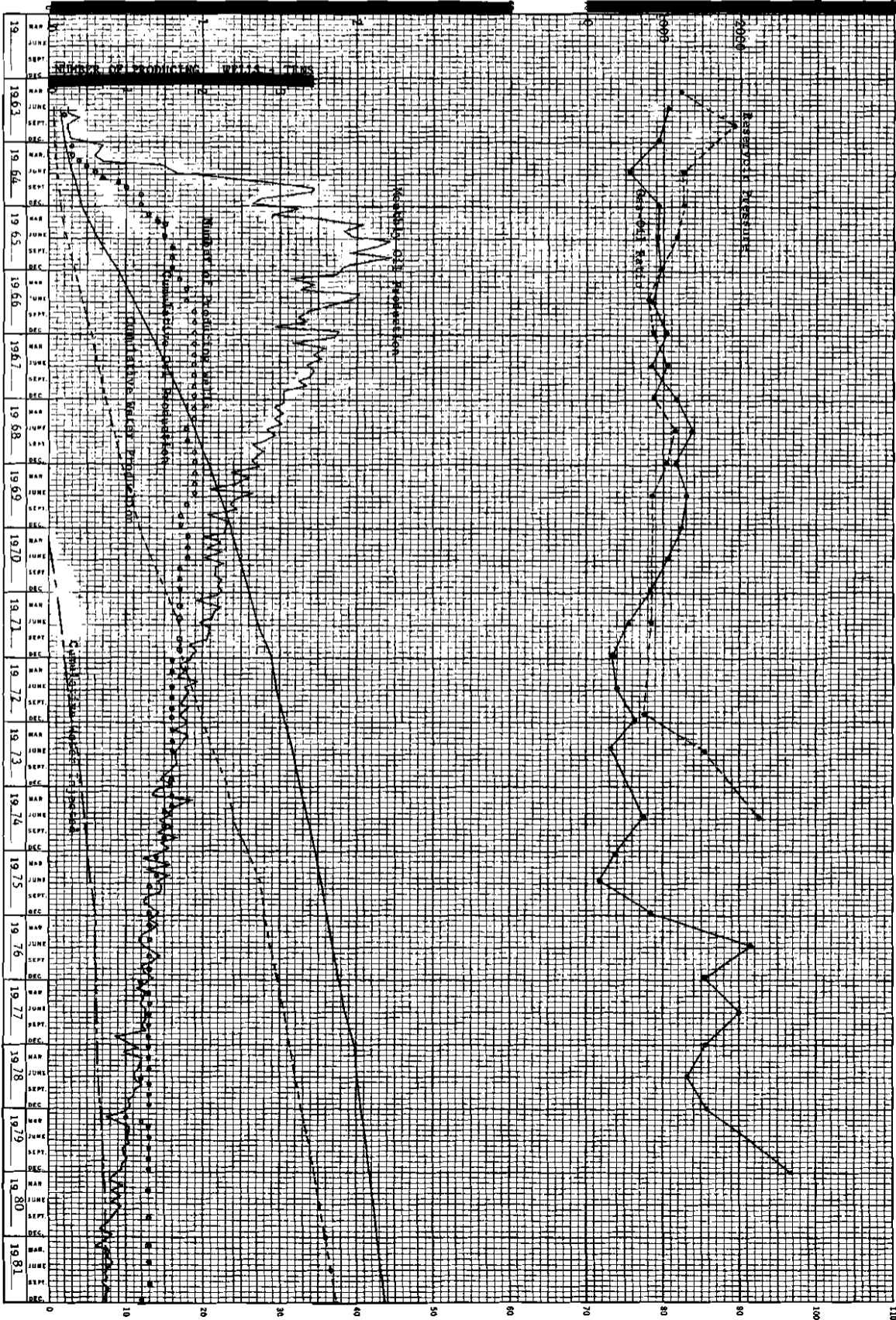


FLAT TOP BUTTE - RED RIVER POOL



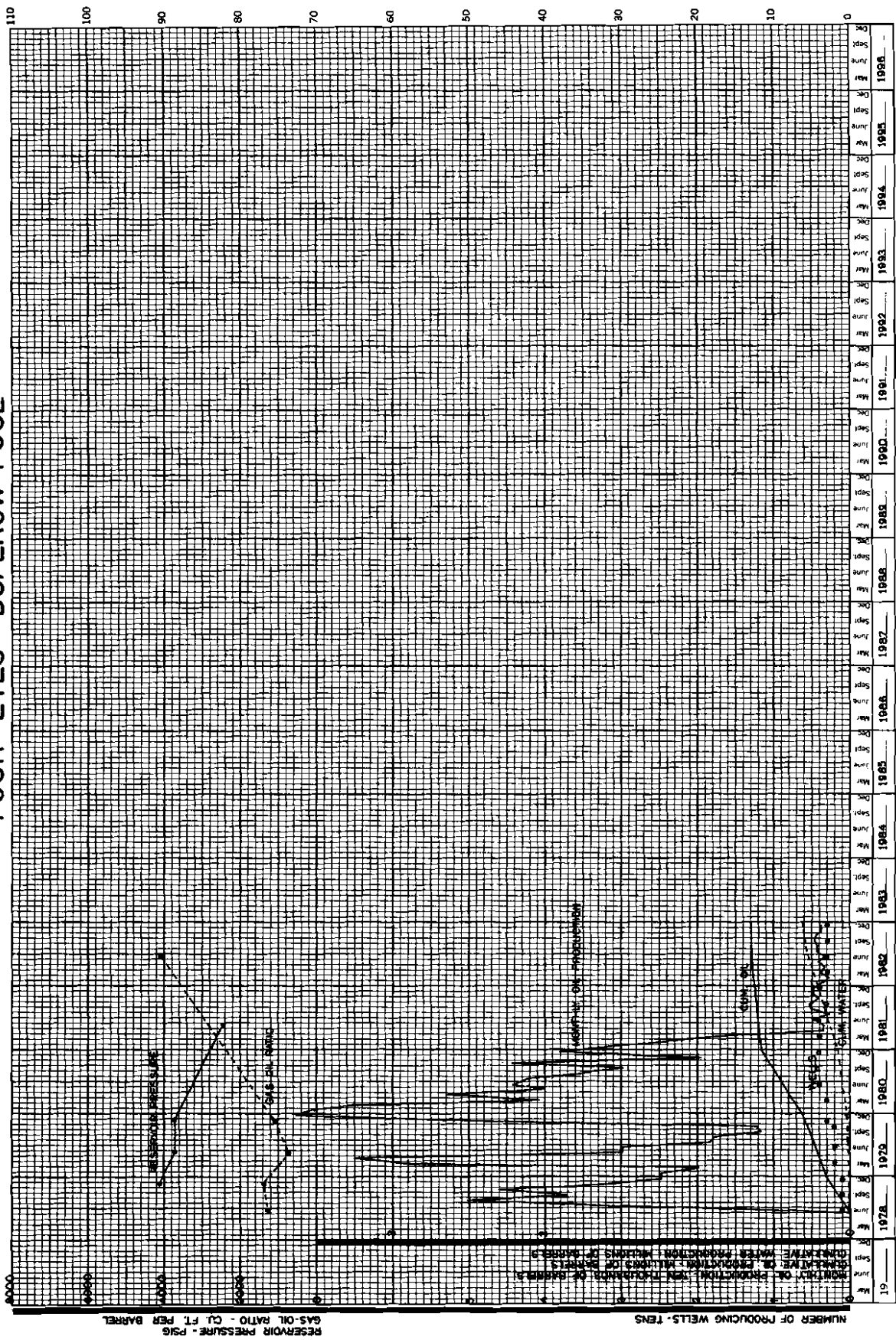
MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS

RESERVOIR PRESSURE - PSIG
 GAS OIL RATIO - CUBIC FT./BARREL



FOOTHILLS - MADISON POOL

FOUR EYES - DUPEROW POOL

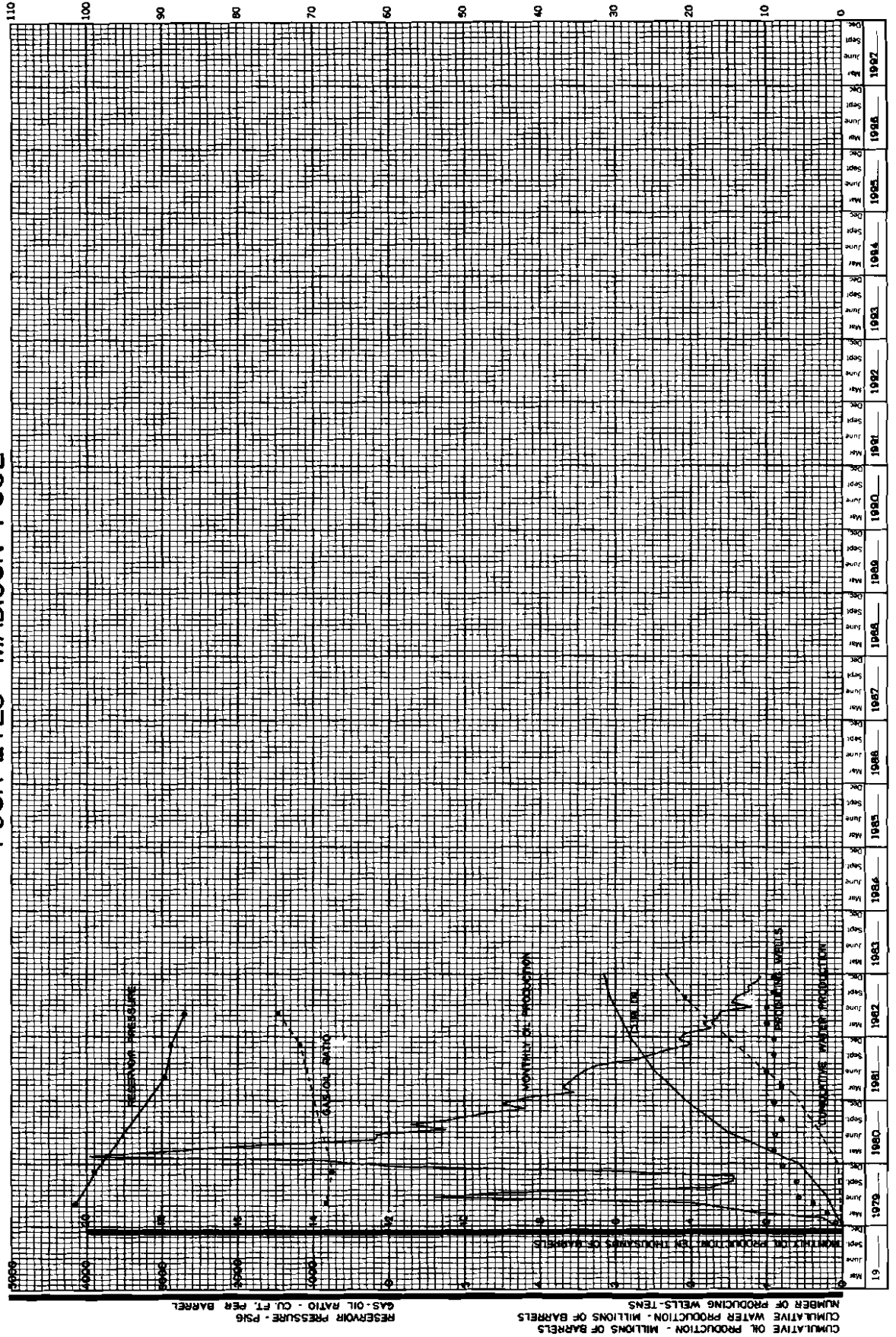


RESERVOIR PRESSURE - PSIG
GAS-OIL RATIO - CU FT PER BARREL

NUMBER OF PRODUCING WELLS - TENS

MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
MONTHLY WATER PRODUCTION - THOUSANDS OF BARRELS

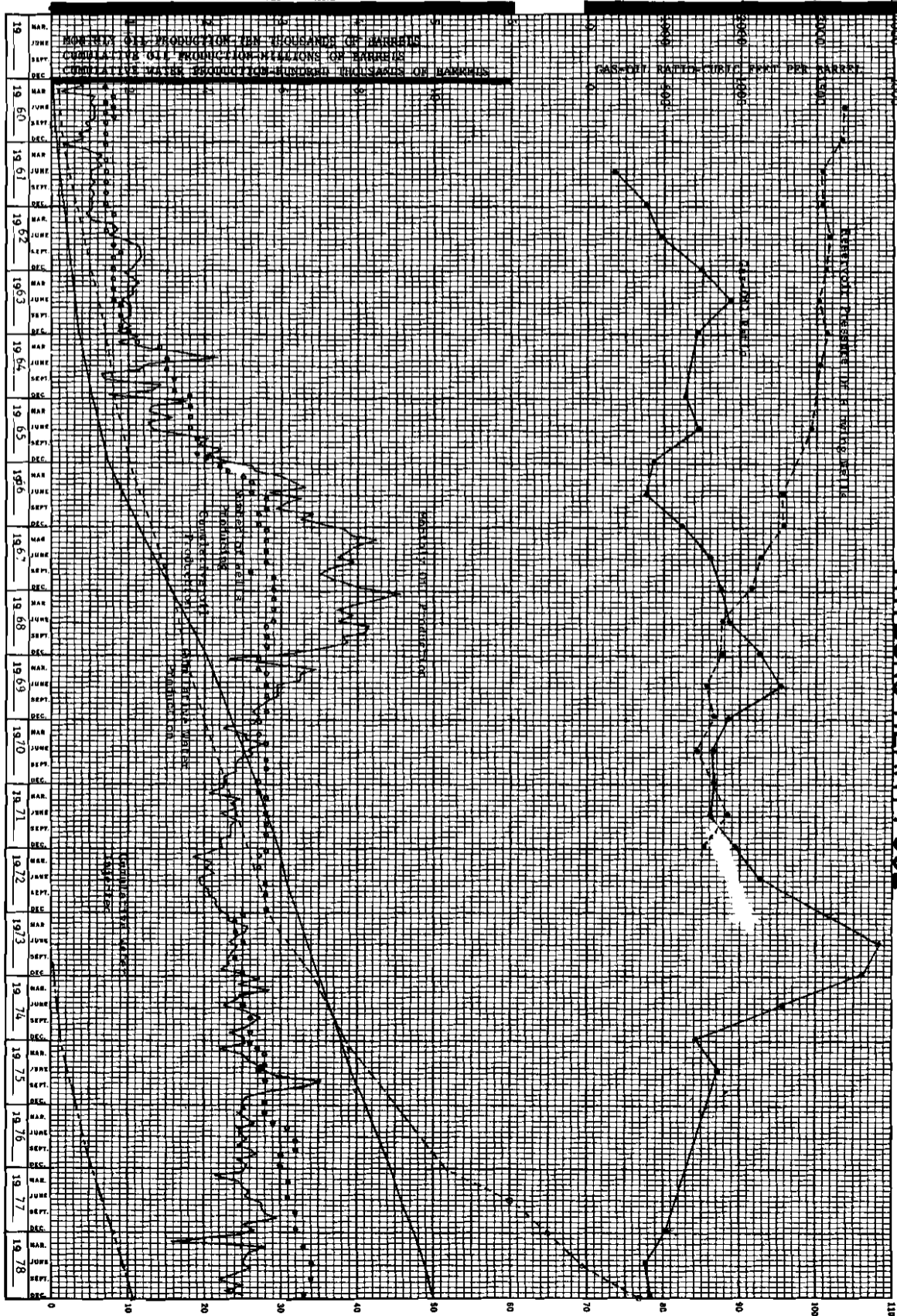
FOUR EYES - MADISON POOL



CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
 MONTHLY WATER PRODUCTION
 RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CU. FT. PER BARREL

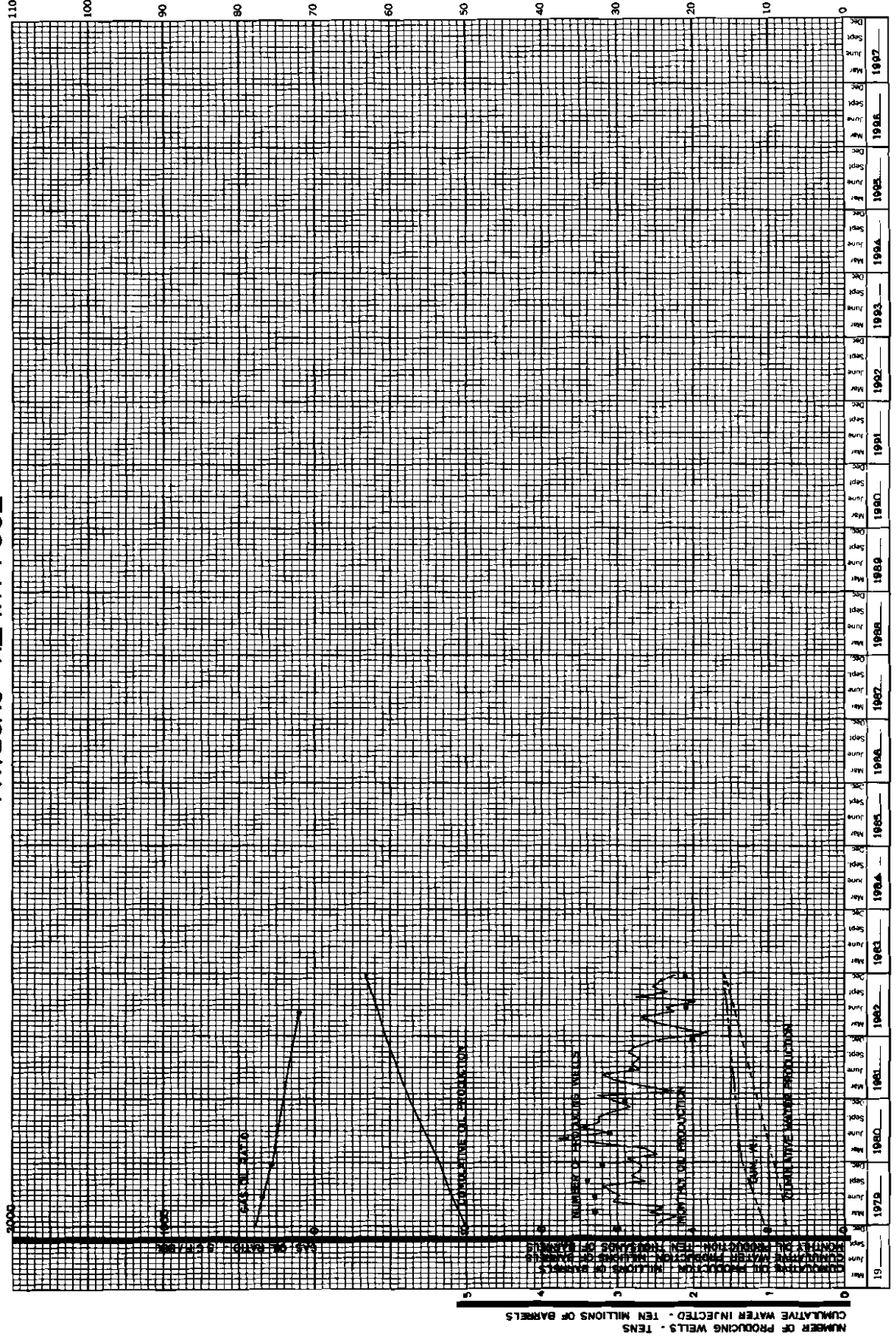
CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG



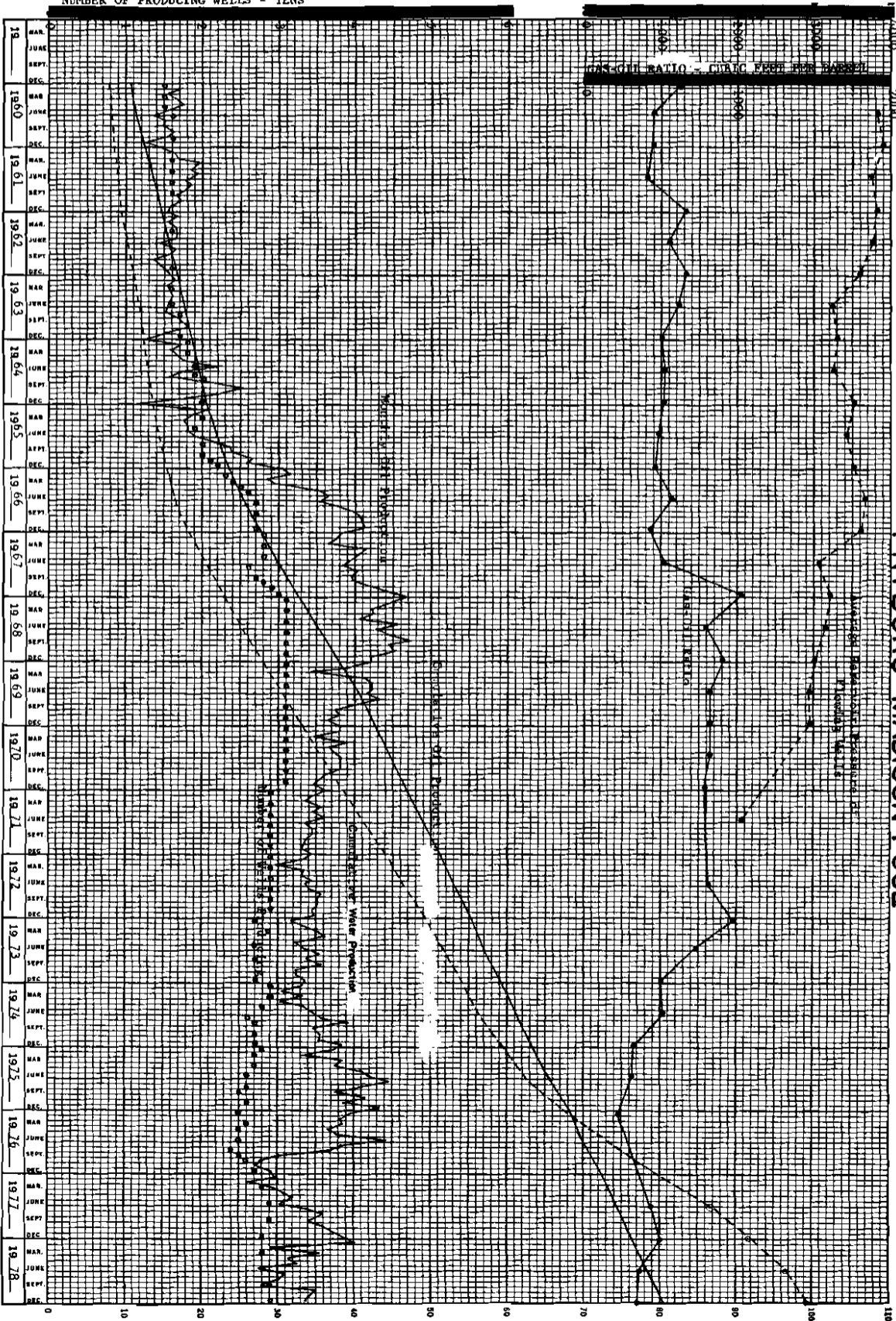
FRYBURG-HEATH POOL

FRYBURG - HEATH POOL



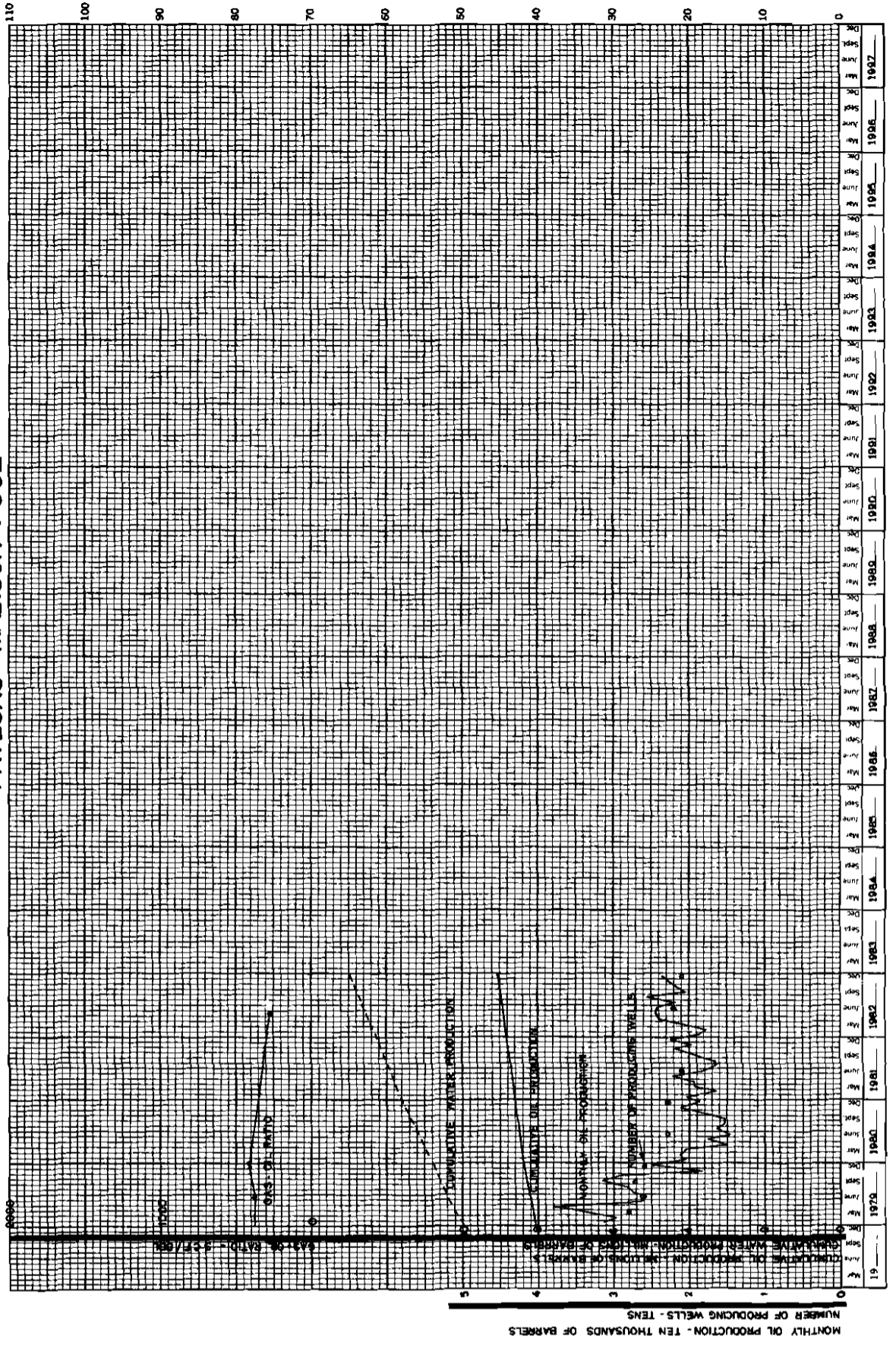
CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG



FRYBURG-MADISON POOL

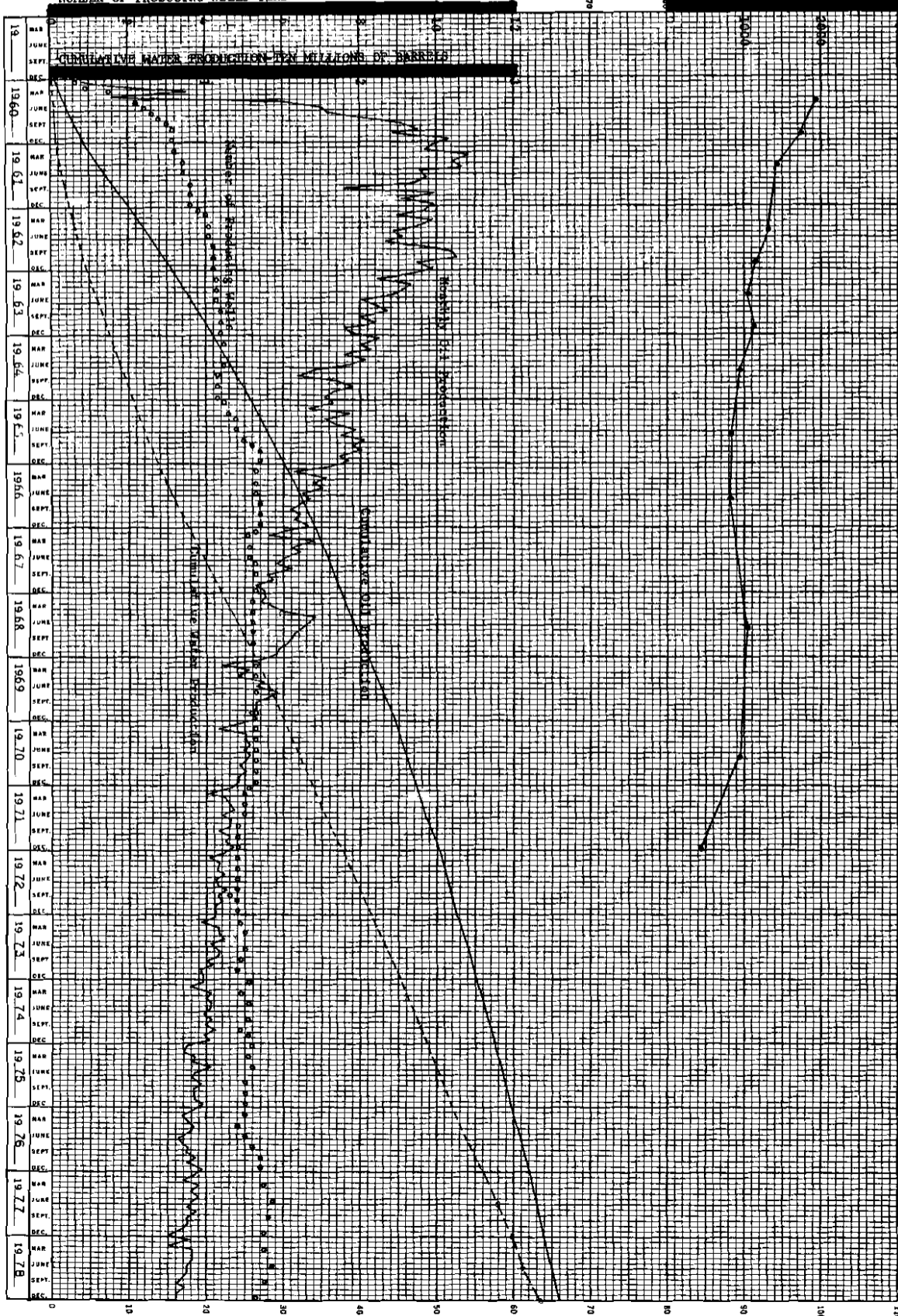
FRYBURG - MADISON POOL



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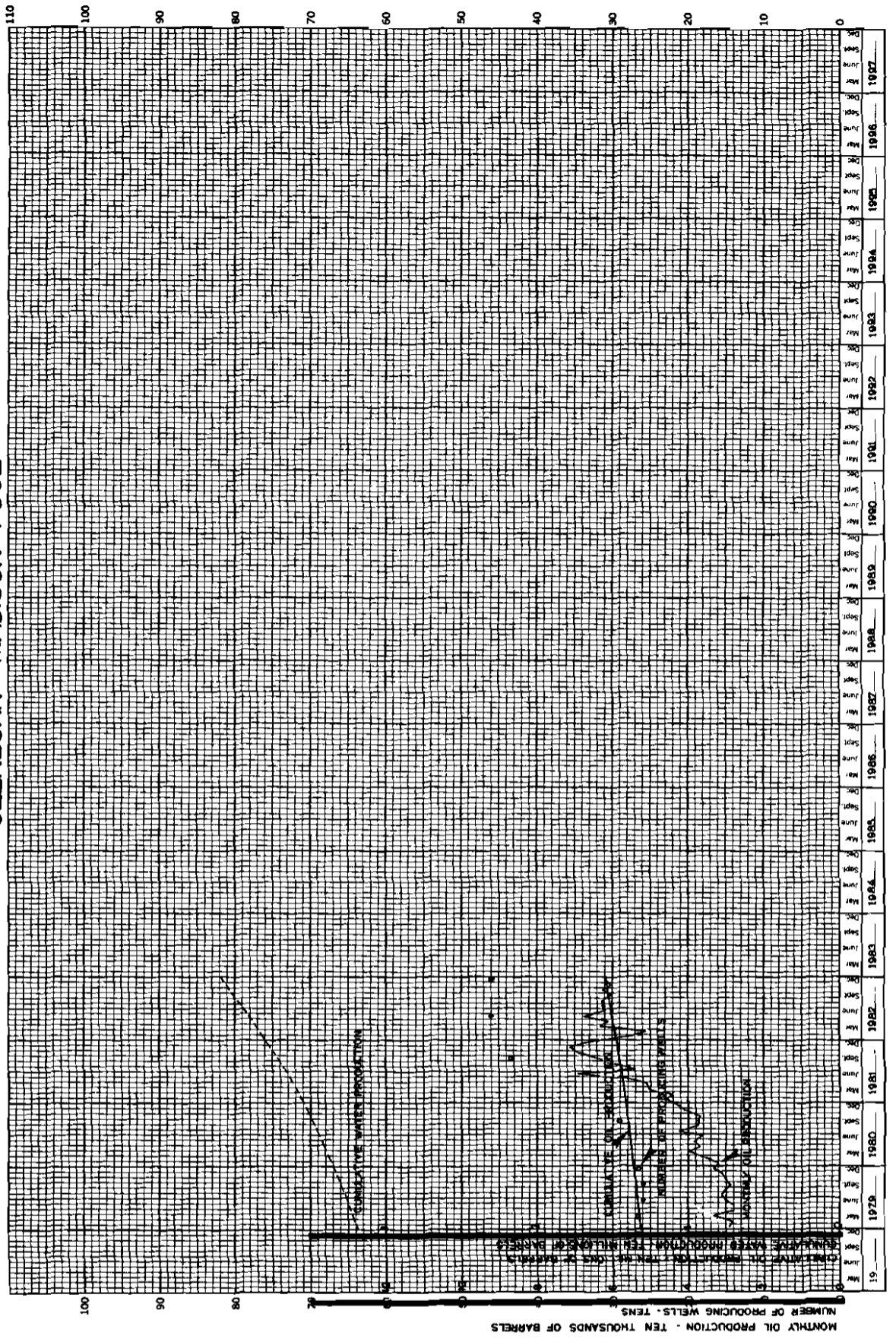
CUMULATIVE OIL PRODUCTION-MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS-TENS

RESERVOIR PRESSURE-PSIG



GLENBURN - MADISON POOL

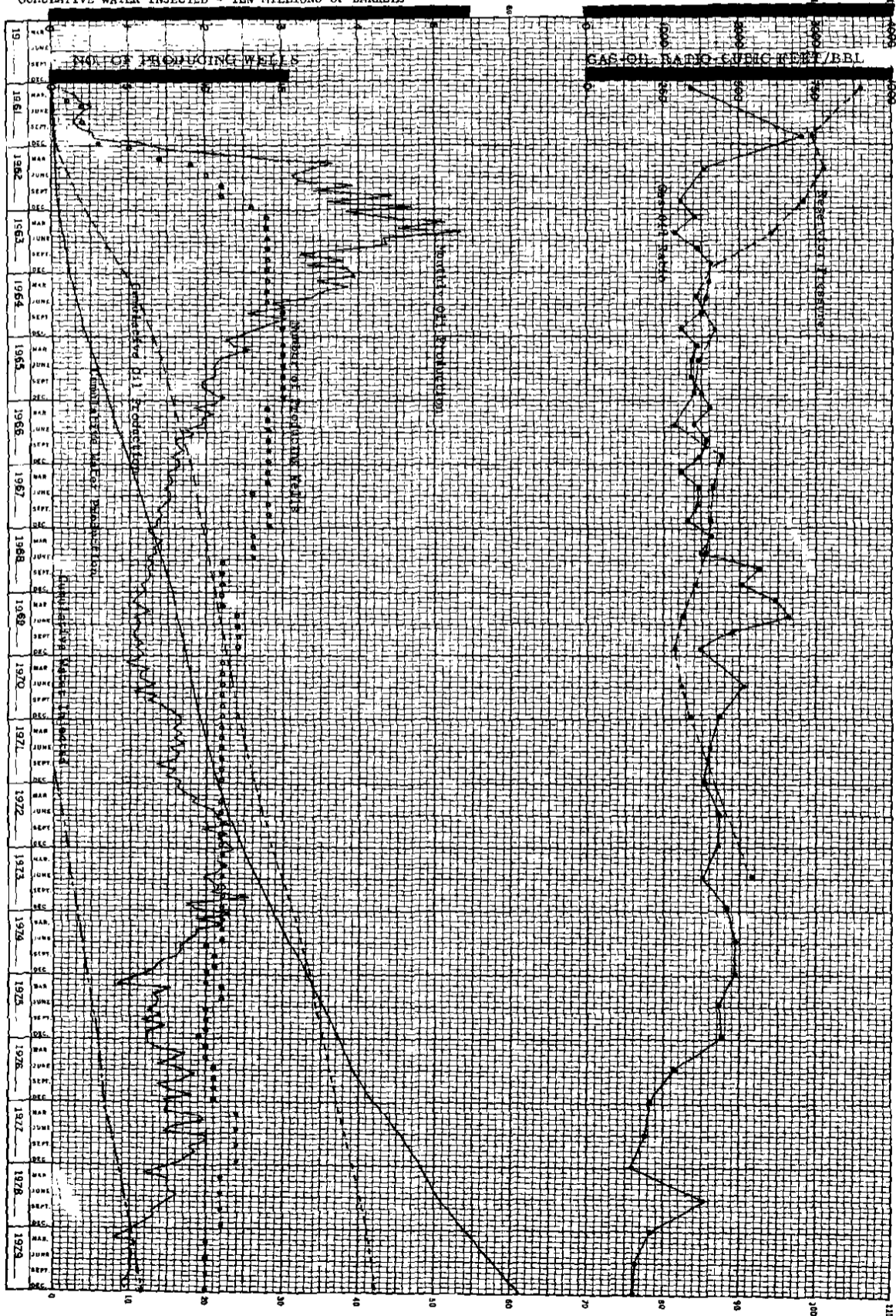
GLENBURN - MADISON POOL



MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS

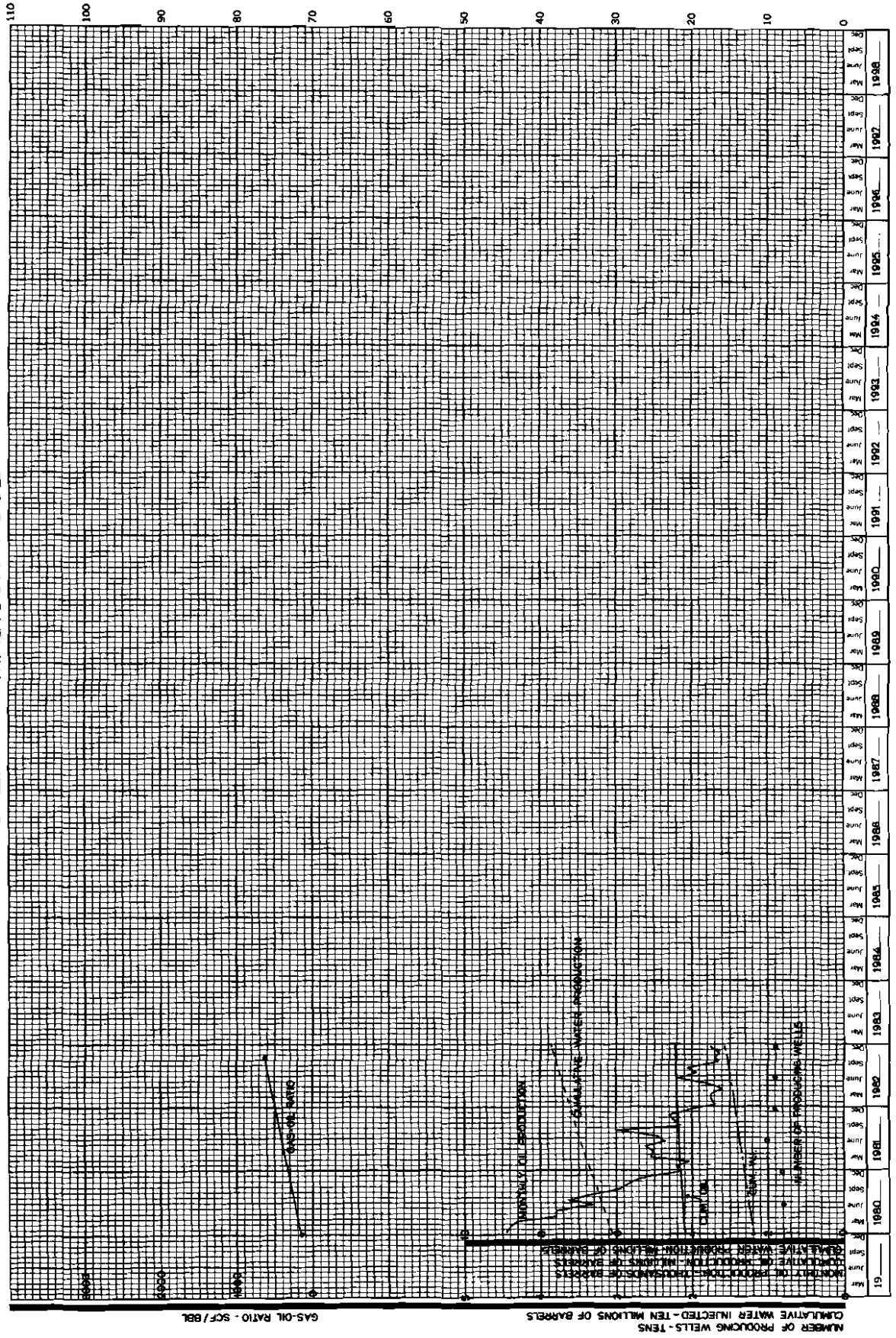
CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS

RESERVOIR PRESSURE - PSIG



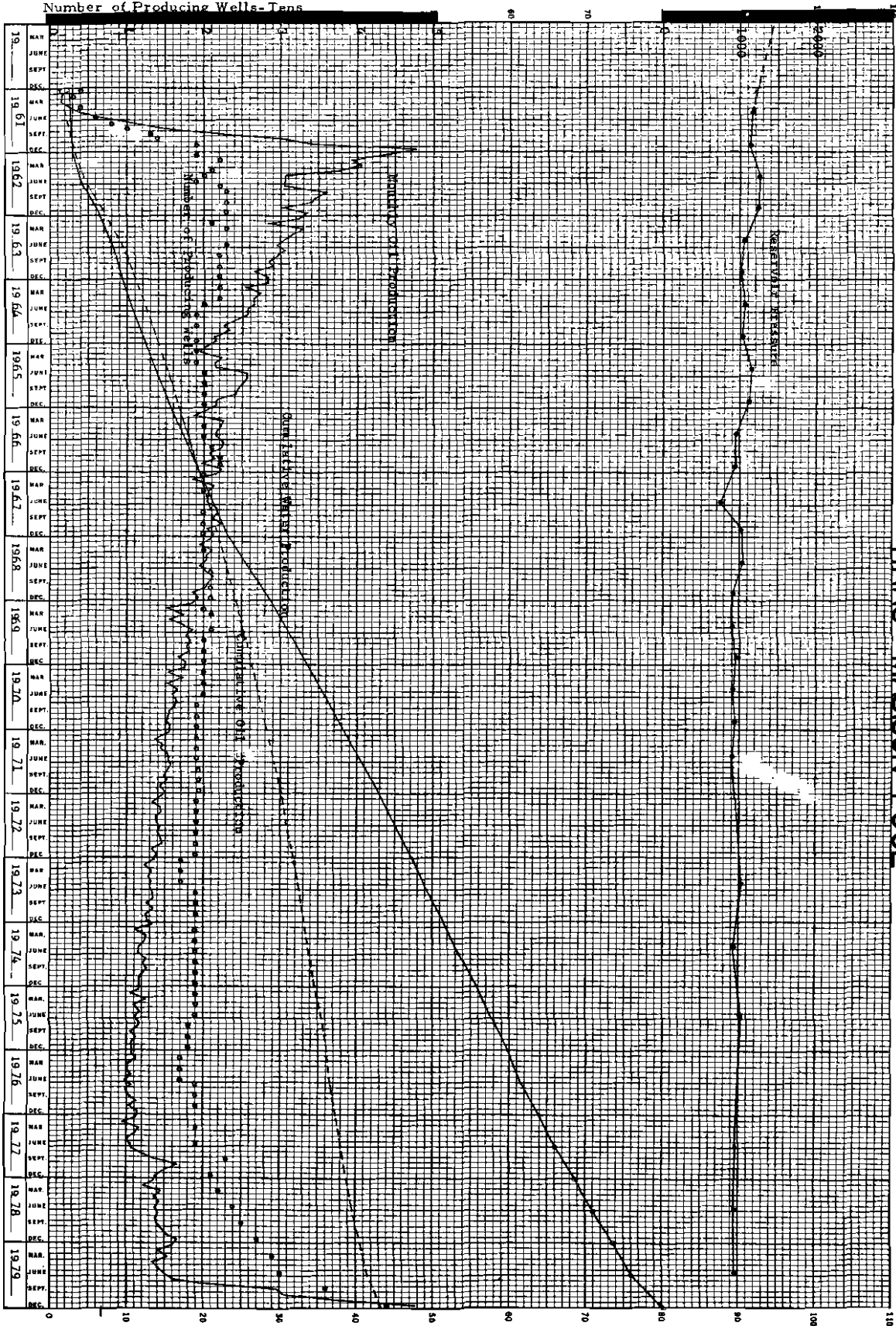
GRENORA - MADISON POOL

GRENORA - MADISON POOL



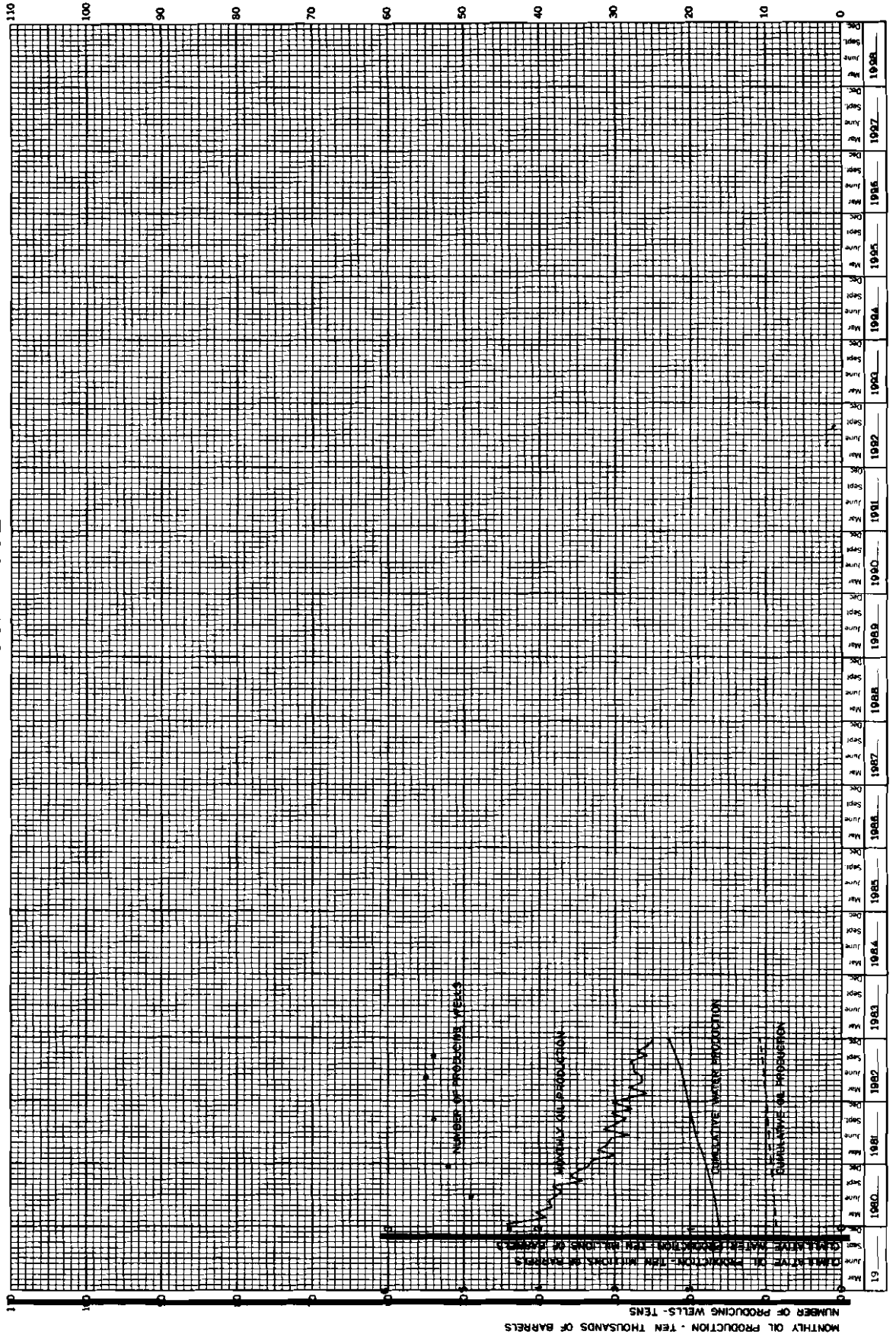
Cumulative Oil Production-Millions of Barrels
 Cumulative Water Production-Millions of Barrels
 Monthly Oil Production-Ten Thousands Of Barrels
 Number of Producing Wells-Tens

Reservoir Pressure-PSIG



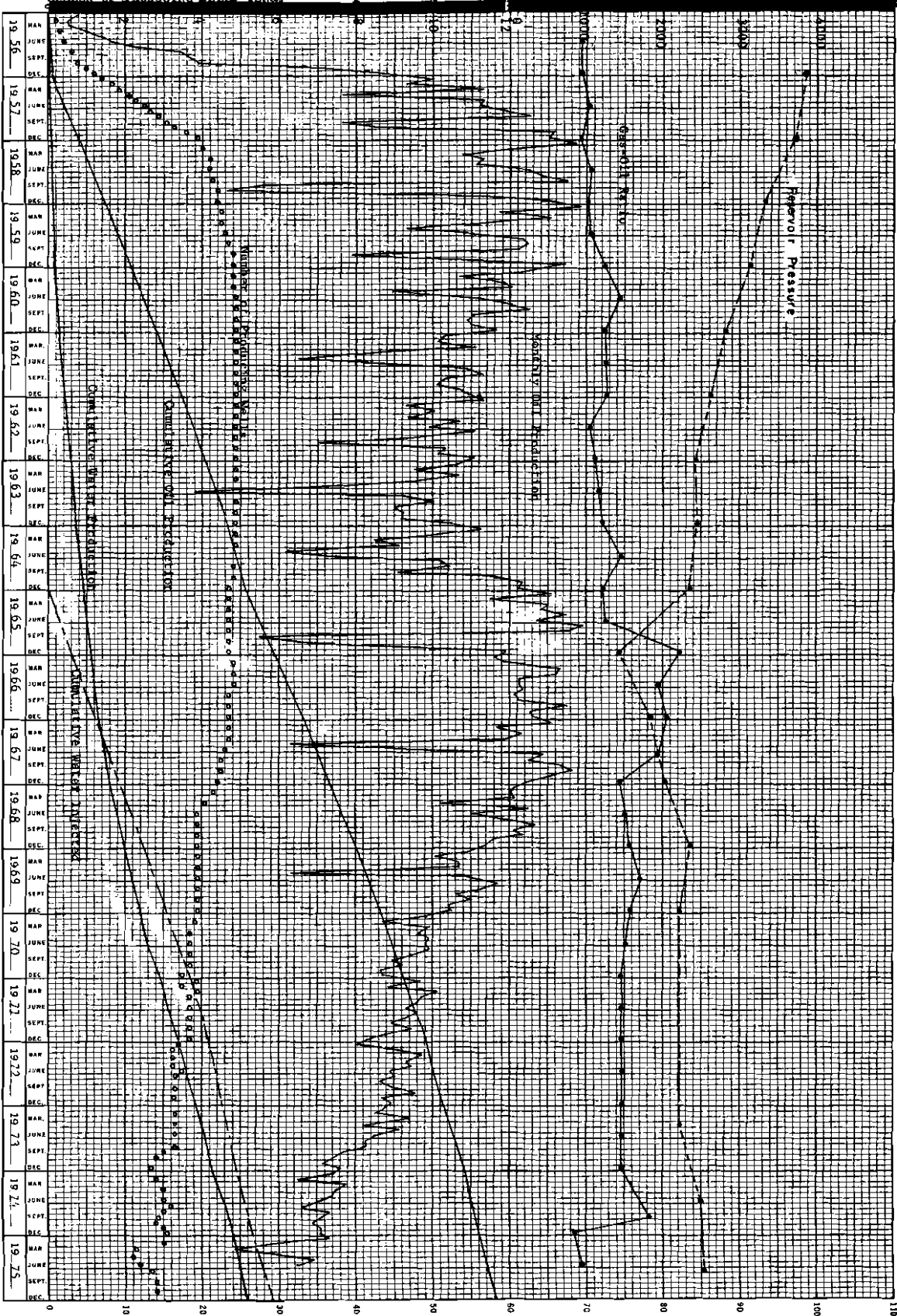
HAAS - MADISON POOL

HAAS - MADISON POOL



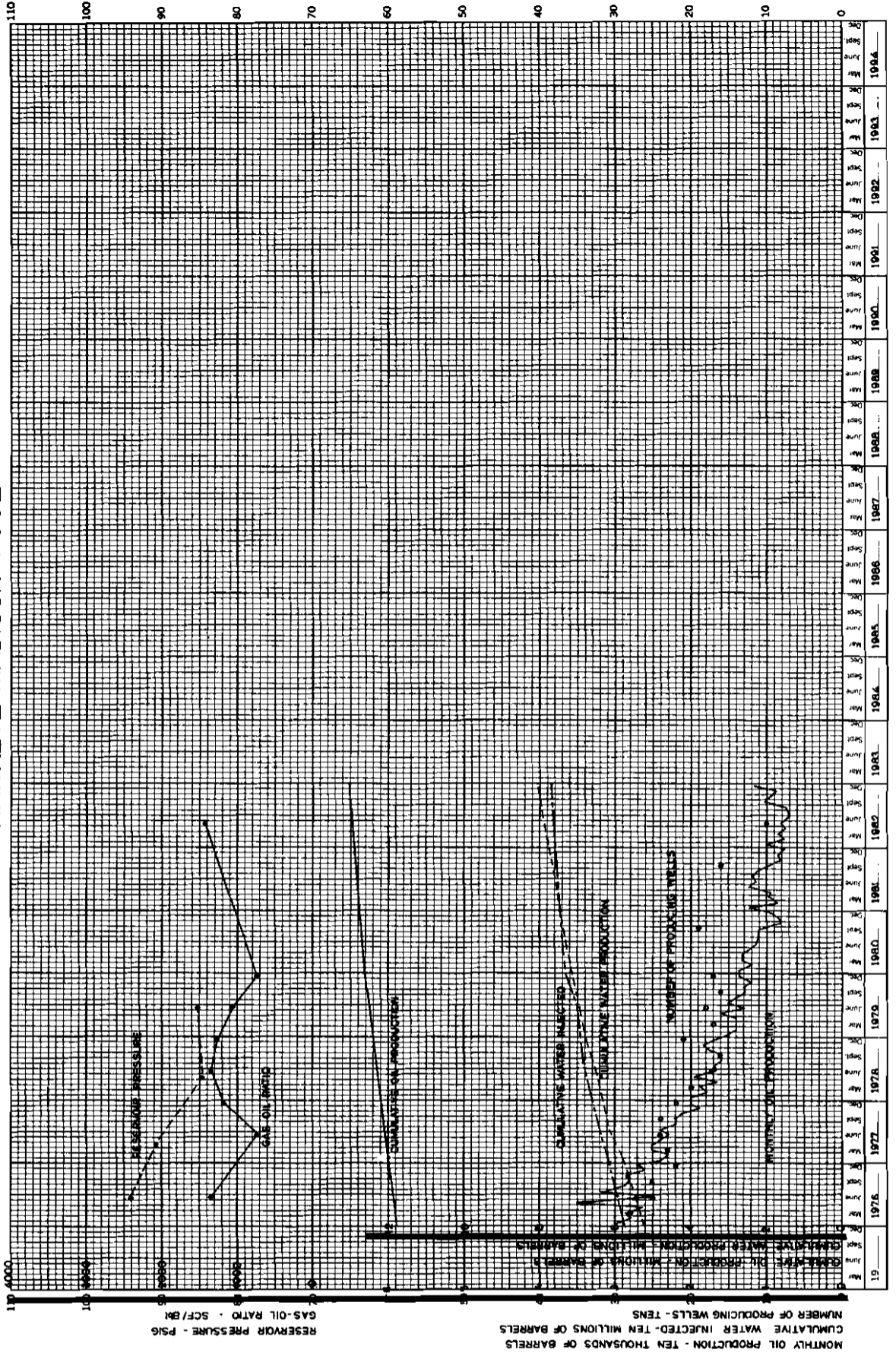
CUMULATIVE OIL PRODUCTION-MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-FIVE THOUSANDS OF BARRELS
 CUMULATIVE WATER INJECTED-FIVE MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS-TENS

GAS-OIL RATIO - CUBIC FEET PER BARREL
 RESERVOIR PRESSURE-PSIG



HAWKEYE - MADISON POOL

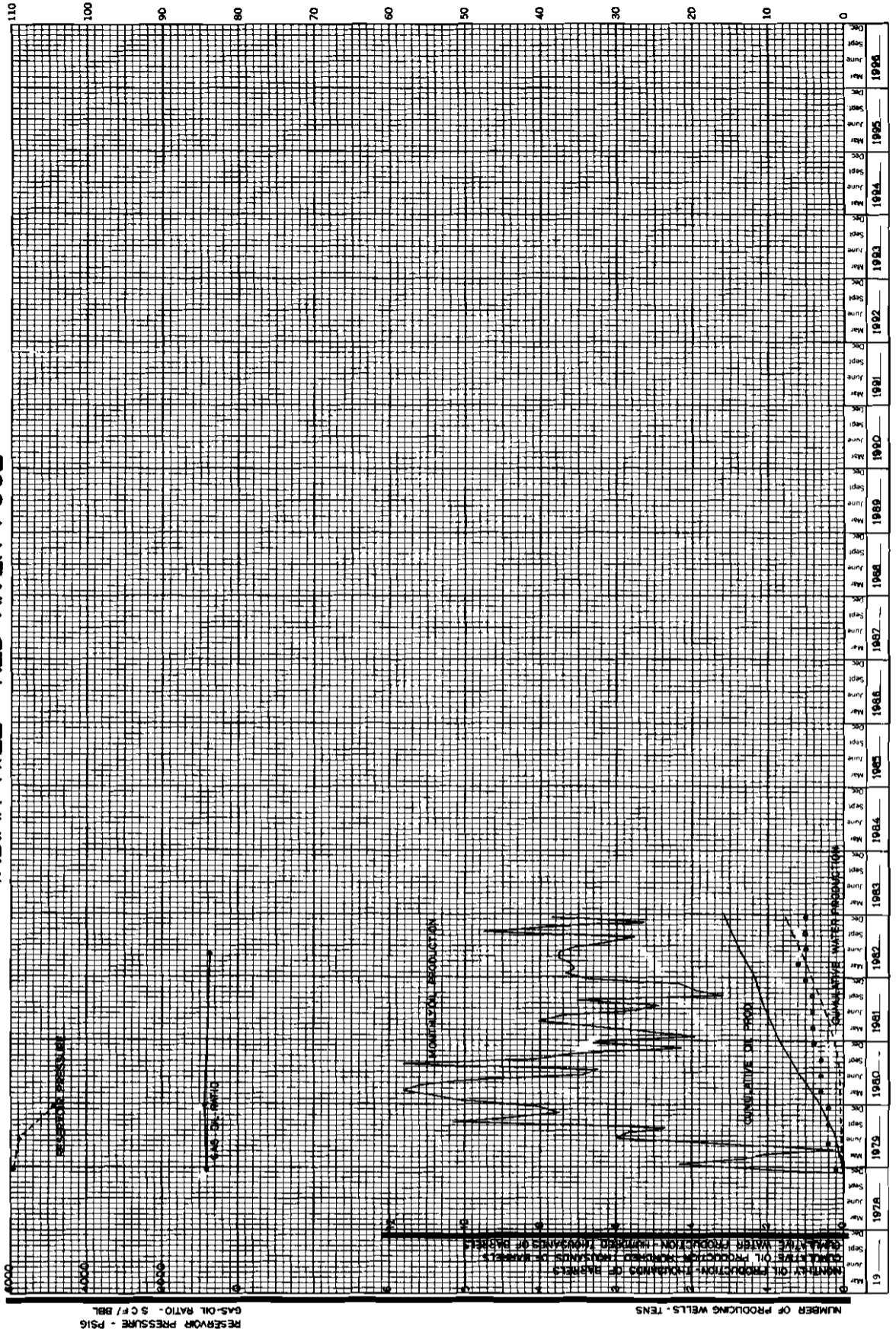
HAWKEYE-MADISON POOL



RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - SCF/BL
 CUMULATIVE OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED MINUS CUMULATIVE WATER PRODUCTION
 NUMBER OF PRODUCING WELLS - TENS

1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994

INDIAN HILL - RED RIVER POOL



RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - SCF/DBL

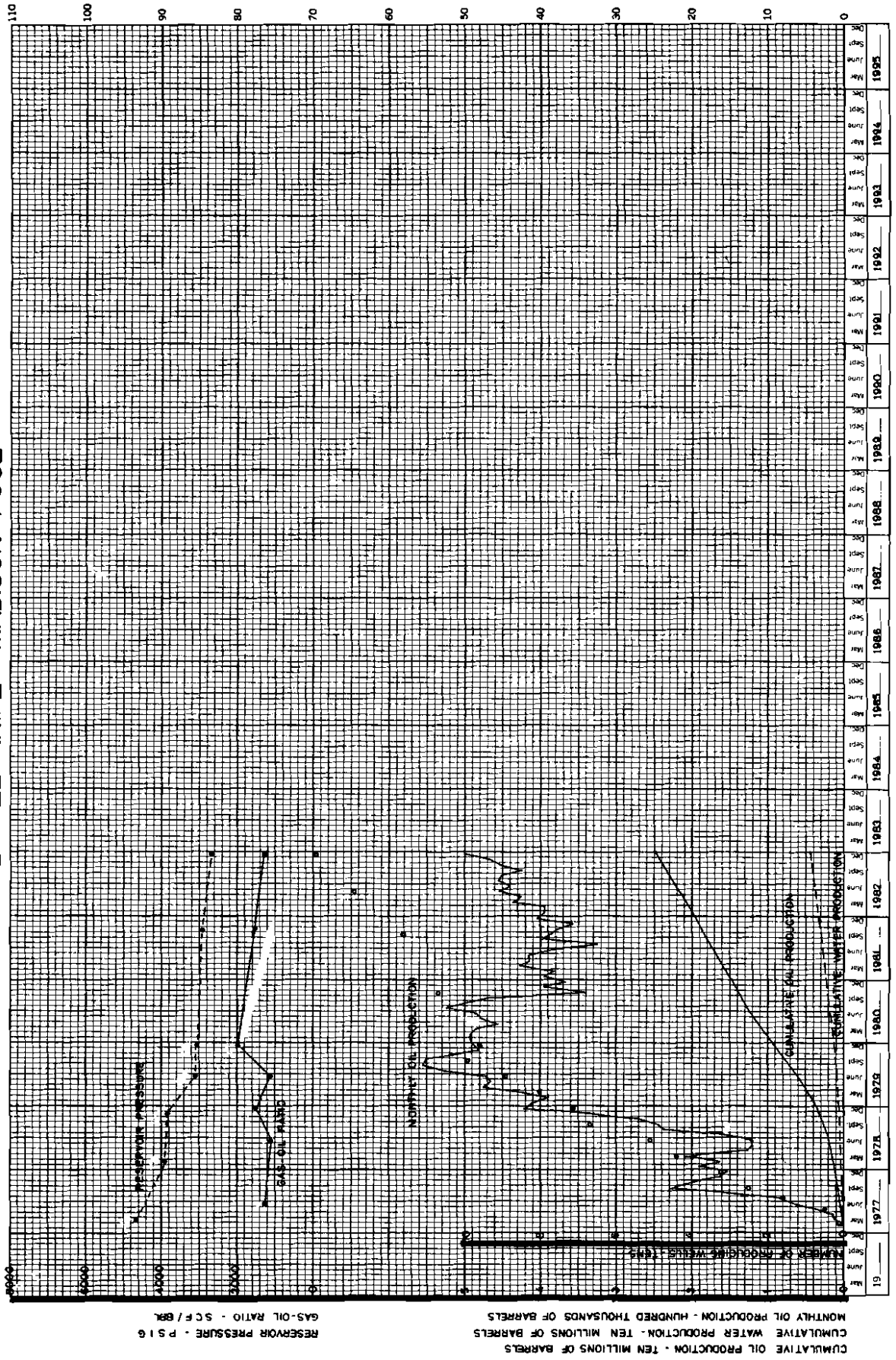
NUMBER OF PRODUCING WELLS - TENS

MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
 CUMULATIVE WATER PRODUCTION - THOUSANDS OF BARRELS

INDUSTRIAL PRODUCTION
 CUMULATIVE WATER PRODUCTION

Year	Month
1976	Sep
1976	Dec
1977	Mar
1977	Jun
1977	Sep
1978	Dec
1979	Mar
1979	Jun
1979	Sep
1980	Dec
1980	Mar
1980	Jun
1980	Sep
1981	Dec
1981	Mar
1981	Jun
1981	Sep
1982	Dec
1982	Mar
1982	Jun
1982	Sep
1983	Dec
1983	Mar
1983	Jun
1983	Sep
1984	Dec
1984	Mar
1984	Jun
1984	Sep
1985	Dec
1985	Mar
1985	Jun
1985	Sep
1986	Dec
1986	Mar
1986	Jun
1986	Sep
1987	Dec
1987	Mar
1987	Jun
1987	Sep
1988	Dec
1988	Mar
1988	Jun
1988	Sep
1989	Dec
1989	Mar
1989	Jun
1989	Sep
1990	Dec
1990	Mar
1990	Jun
1990	Sep
1991	Dec
1991	Mar
1991	Jun
1991	Sep
1992	Dec
1992	Mar
1992	Jun
1992	Sep
1993	Dec
1993	Mar
1993	Jun
1993	Sep
1994	Dec
1994	Mar
1994	Jun
1994	Sep
1995	Dec
1995	Mar
1995	Jun
1995	Sep
1996	Dec
1996	Mar
1996	Jun
1996	Sep

LITTLE KNIFE - MADISON POOL

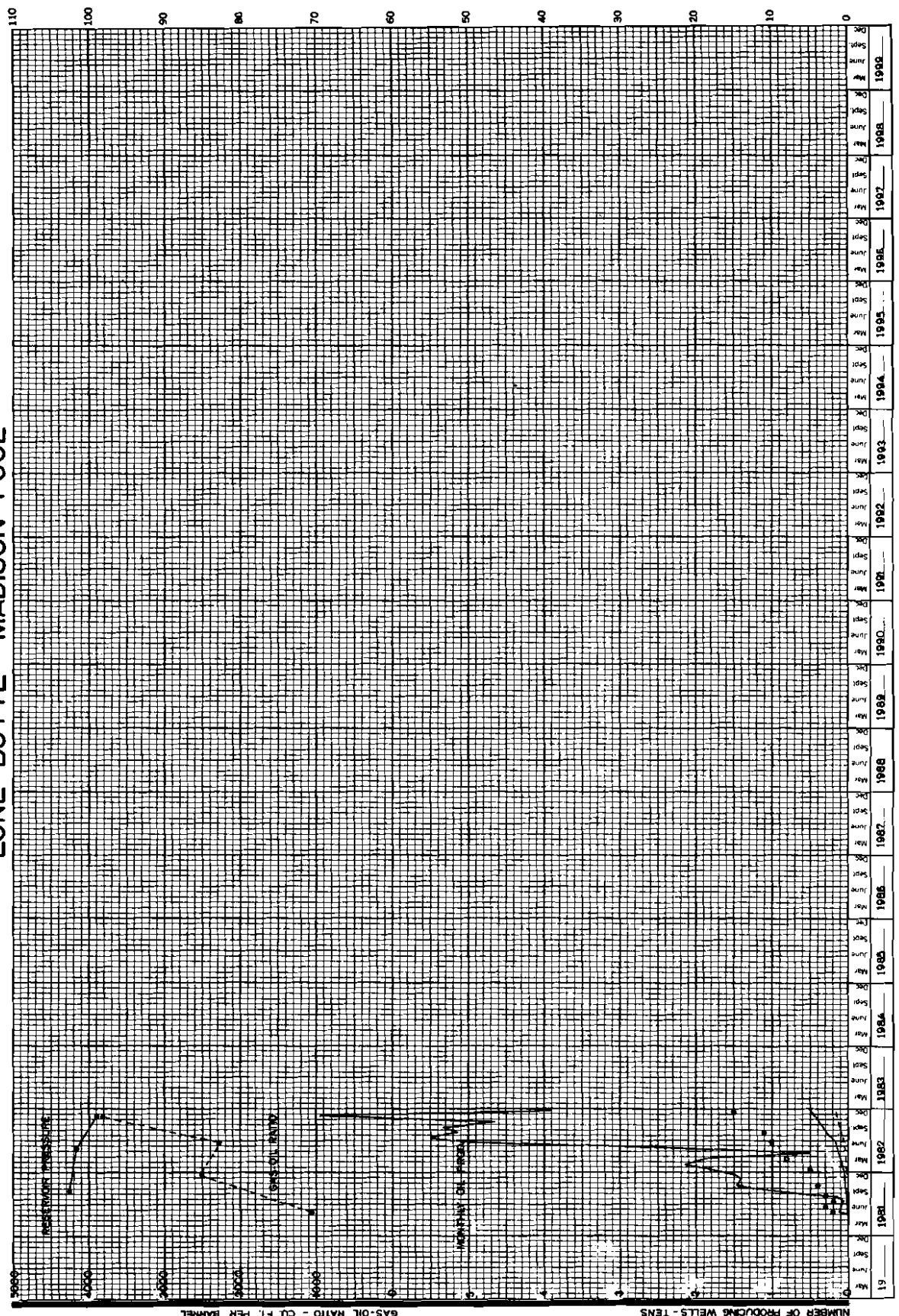


RESERVOIR PRESSURE - P.S.I.G.
GAS-OIL RATIO - SCF/BRL

CUMULATIVE OIL PRODUCTION - TEN MILLIONS OF BARRELS
MONTHLY OIL PRODUCTION - HUNDRED THOUSANDS OF BARRELS
CUMULATIVE WATER PRODUCTION

19 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995

LONE BUTTE - MADISON POOL

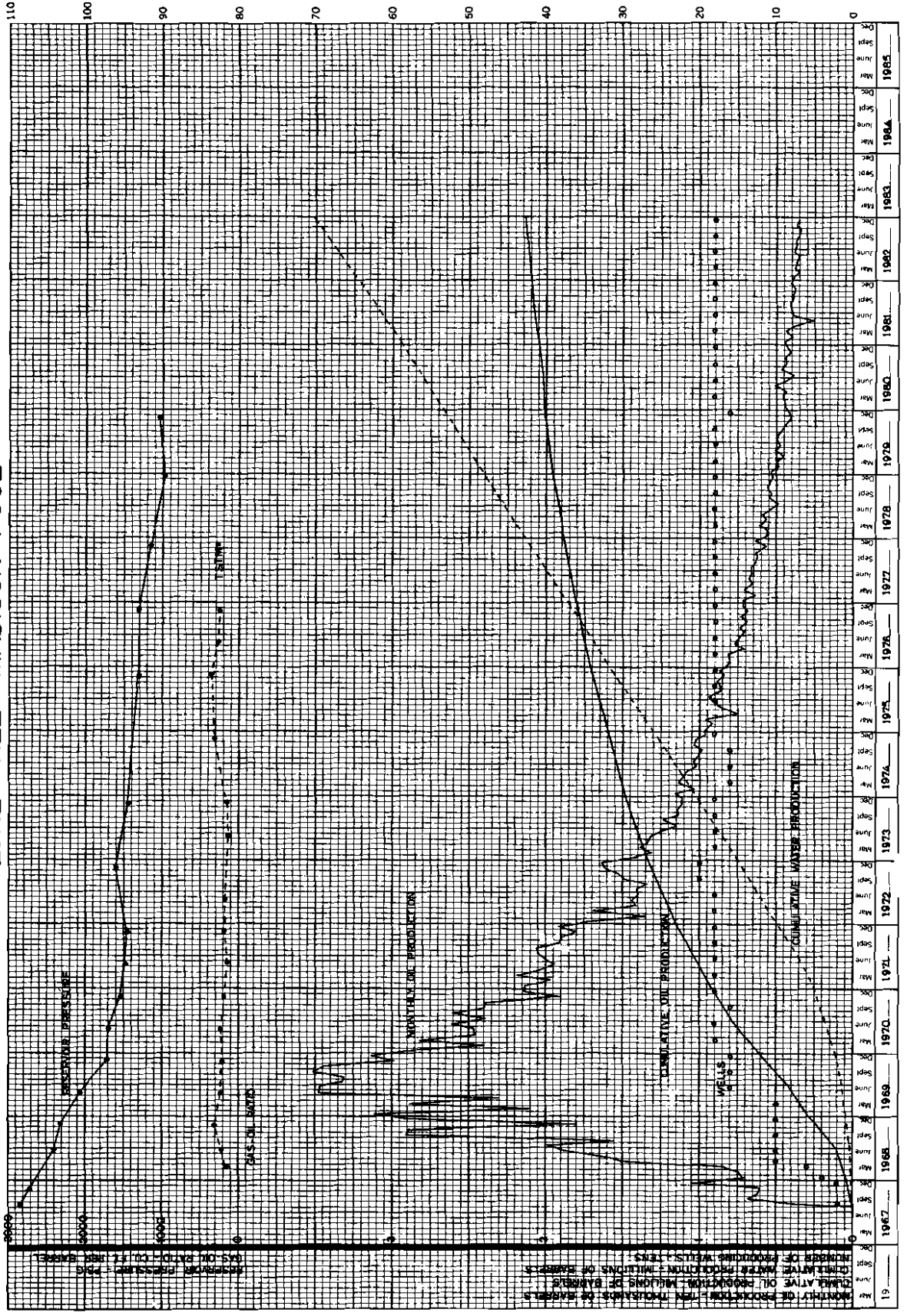


MONTHLY OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CU FT PER BARREL

Year	Month
1981	May
1981	June
1981	July
1981	Aug
1981	Sept
1981	Oct
1981	Nov
1981	Dec
1982	Jan
1982	Feb
1982	Mar
1982	Apr
1982	May
1982	June
1982	July
1982	Aug
1982	Sept
1982	Oct
1982	Nov
1982	Dec
1983	Jan
1983	Feb
1983	Mar
1983	Apr
1983	May
1983	June
1983	July
1983	Aug
1983	Sept
1983	Oct
1983	Nov
1983	Dec
1984	Jan
1984	Feb
1984	Mar
1984	Apr
1984	May
1984	June
1984	July
1984	Aug
1984	Sept
1984	Oct
1984	Nov
1984	Dec
1985	Jan
1985	Feb
1985	Mar
1985	Apr
1985	May
1985	June
1985	July
1985	Aug
1985	Sept
1985	Oct
1985	Nov
1985	Dec
1986	Jan
1986	Feb
1986	Mar
1986	Apr
1986	May
1986	June
1986	July
1986	Aug
1986	Sept
1986	Oct
1986	Nov
1986	Dec
1987	Jan
1987	Feb
1987	Mar
1987	Apr
1987	May
1987	June
1987	July
1987	Aug
1987	Sept
1987	Oct
1987	Nov
1987	Dec
1988	Jan
1988	Feb
1988	Mar
1988	Apr
1988	May
1988	June
1988	July
1988	Aug
1988	Sept
1988	Oct
1988	Nov
1988	Dec
1989	Jan
1989	Feb
1989	Mar
1989	Apr
1989	May
1989	June
1989	July
1989	Aug
1989	Sept
1989	Oct
1989	Nov
1989	Dec
1990	Jan
1990	Feb
1990	Mar
1990	Apr
1990	May
1990	June
1990	July
1990	Aug
1990	Sept
1990	Oct
1990	Nov
1990	Dec

LONE TREE - MADISON POOL



RESERVOIR PRESSURE - P.S.I.
 GAS OIL RATIO - P.P.T. PER BARREL

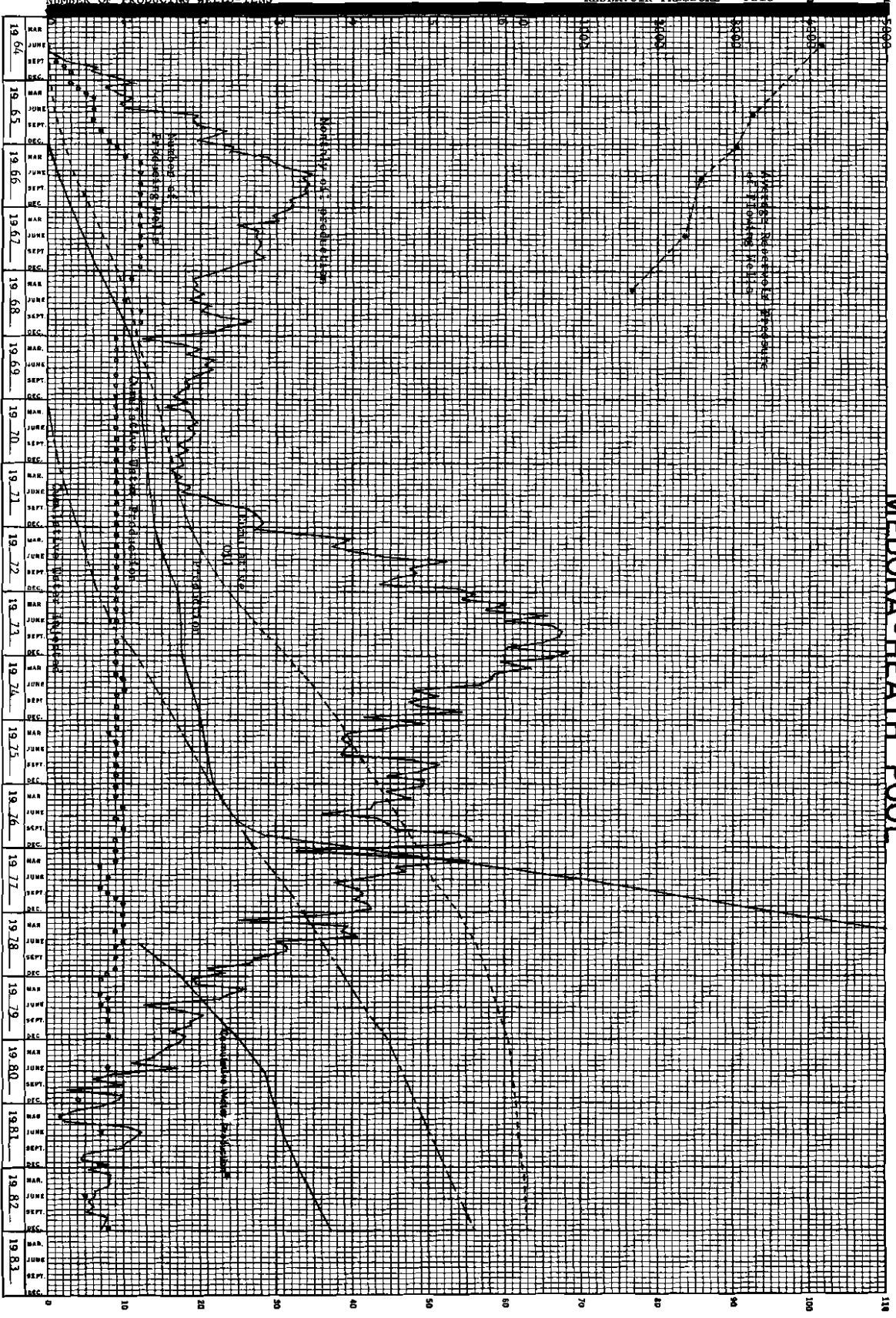
MONTHLY OIL PRODUCTION

CUMULATIVE OIL PRODUCTION

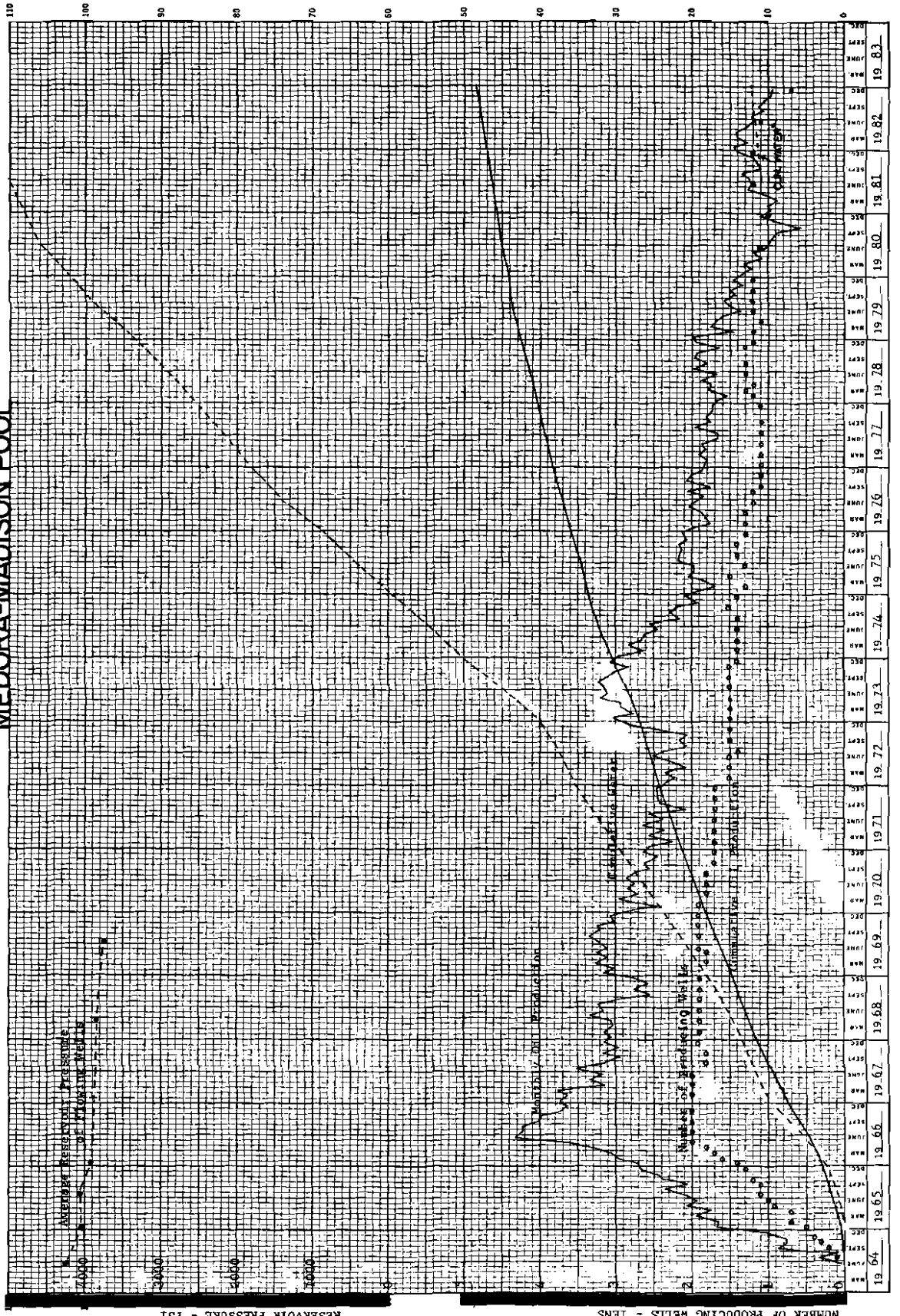
CUMULATIVE WATER PRODUCTION

MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS

CUMULATIVE OIL PRODUCTION-MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-ONE HUNDRED THOUSANDS OF BARRELS-MILLIONS OF BARRELS*
 CUMULATIVE WATER INJECTED-TWO MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS-TENS
 RESERVOIR PRESSURE - PSIG



MEDORA-MADISON POOL



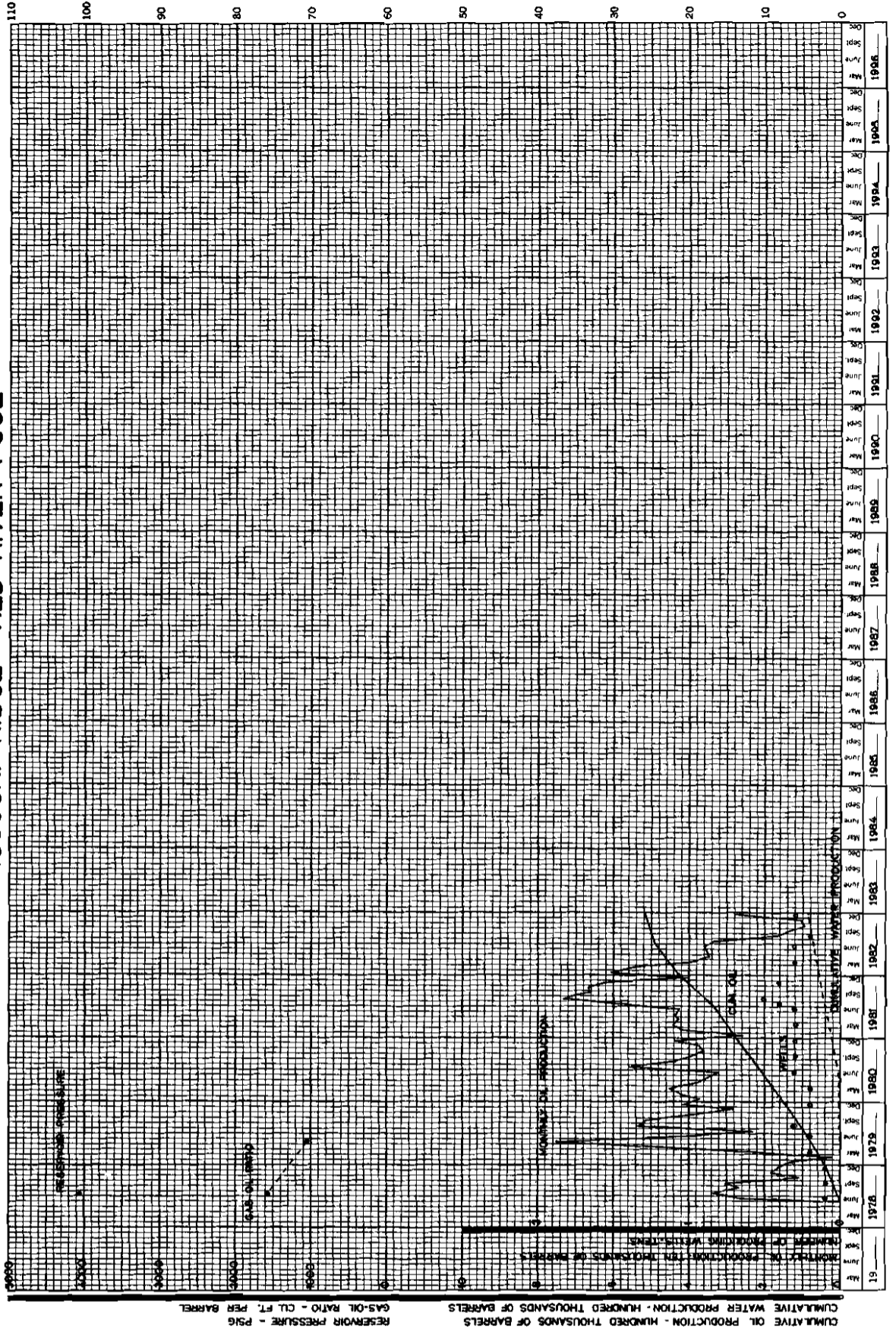
RESERVOIR PRESSURE - PSI

CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

110
100
90
80
70
60
50
40
30
20
10
0

1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983

MISSOURI RIDGE - RED RIVER POOL



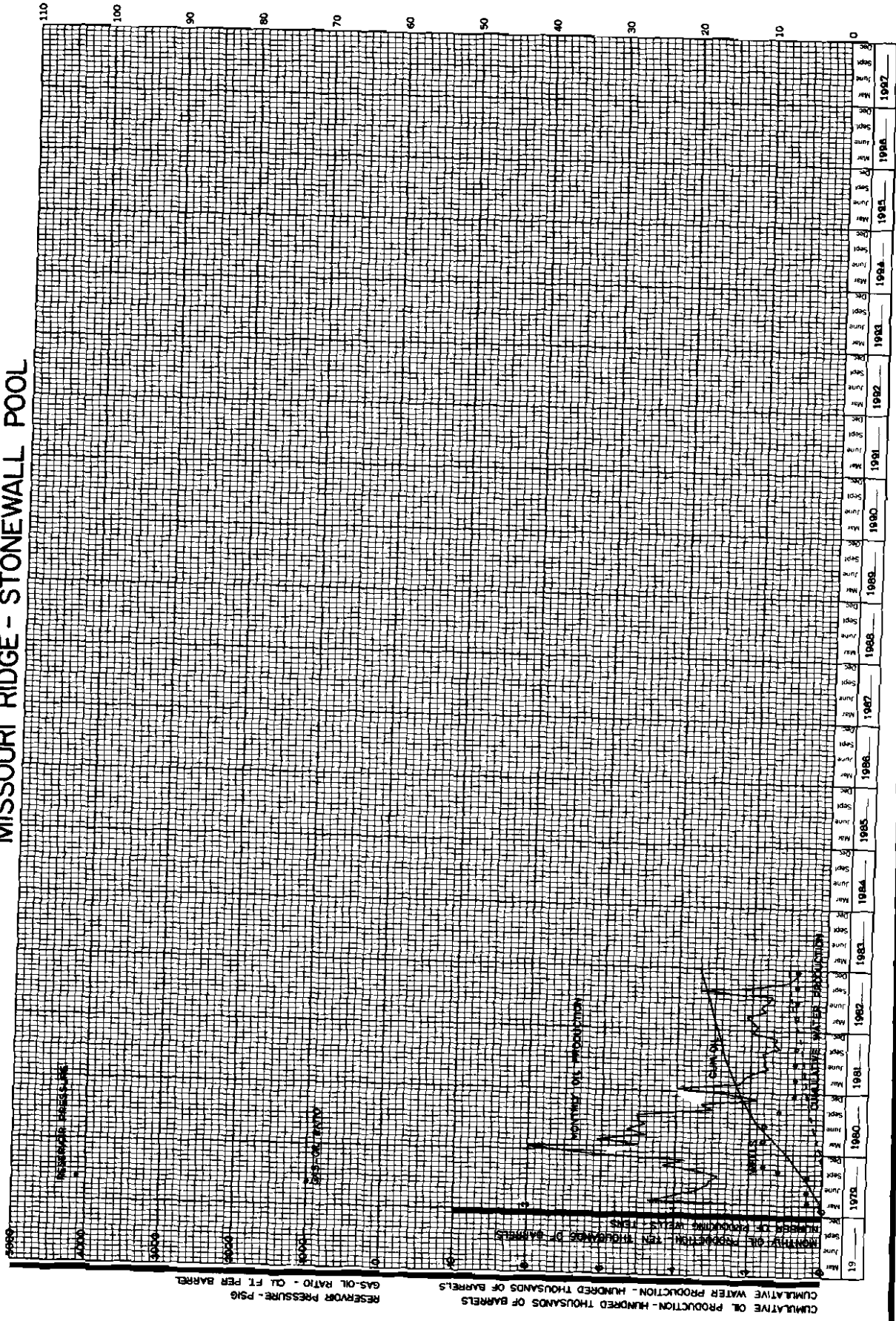
RESERVOIR PRESSURE - PSIG
GAS-OIL RATIO - CU. FT. PER BARREL

CUMULATIVE OIL PRODUCTION - HUNDRED THOUSANDS OF BARRELS
CUMULATIVE WATER PRODUCTION - THOUSANDS OF BARRELS

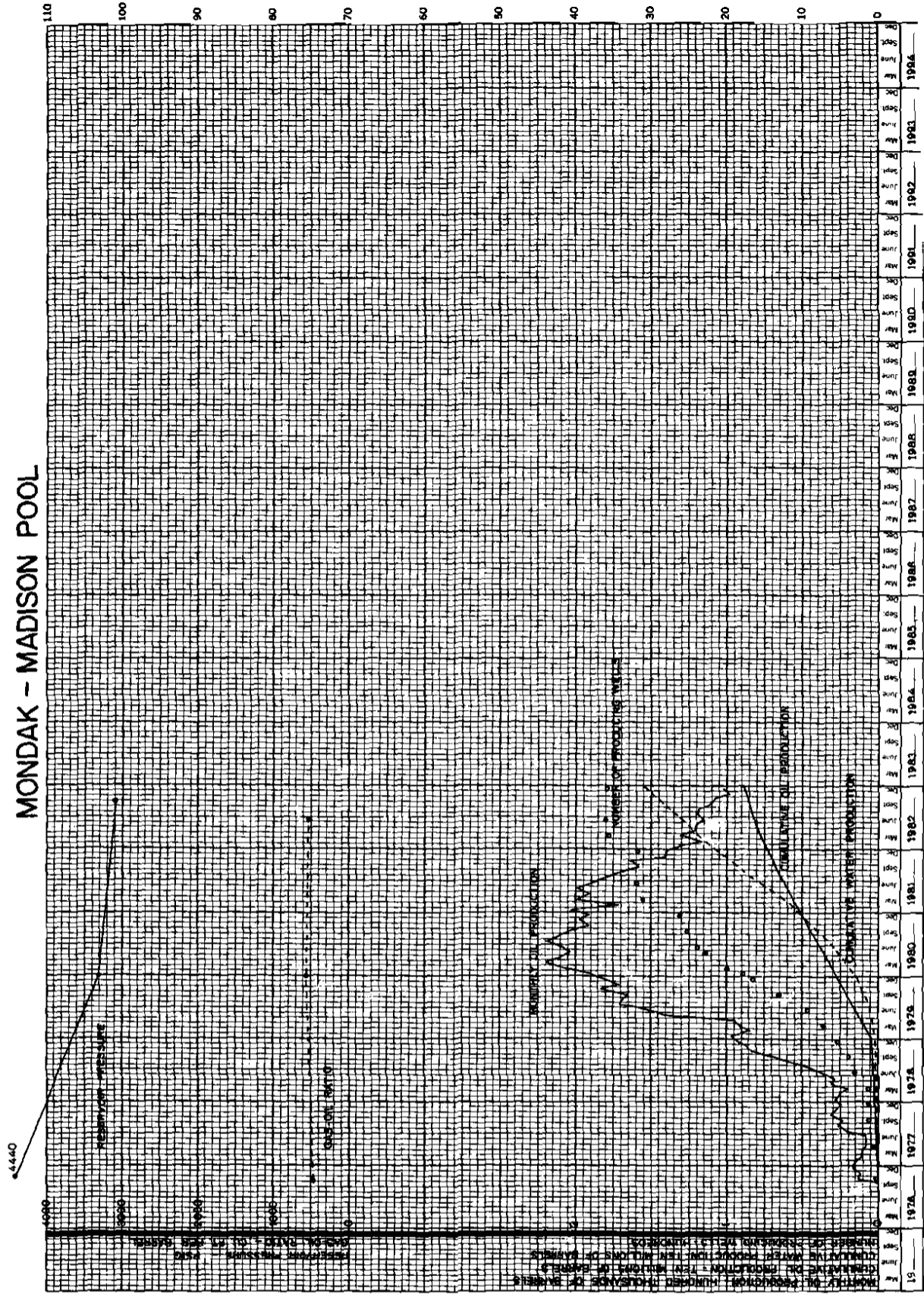
MONTHLY OIL PRODUCTION - THOUSANDS OF BARRELS
NUMBER OF PRODUCING WELLS - ITEMS

CUMULATIVE WATER PRODUCTION

MISSOURI RIDGE - STONEWALL POOL



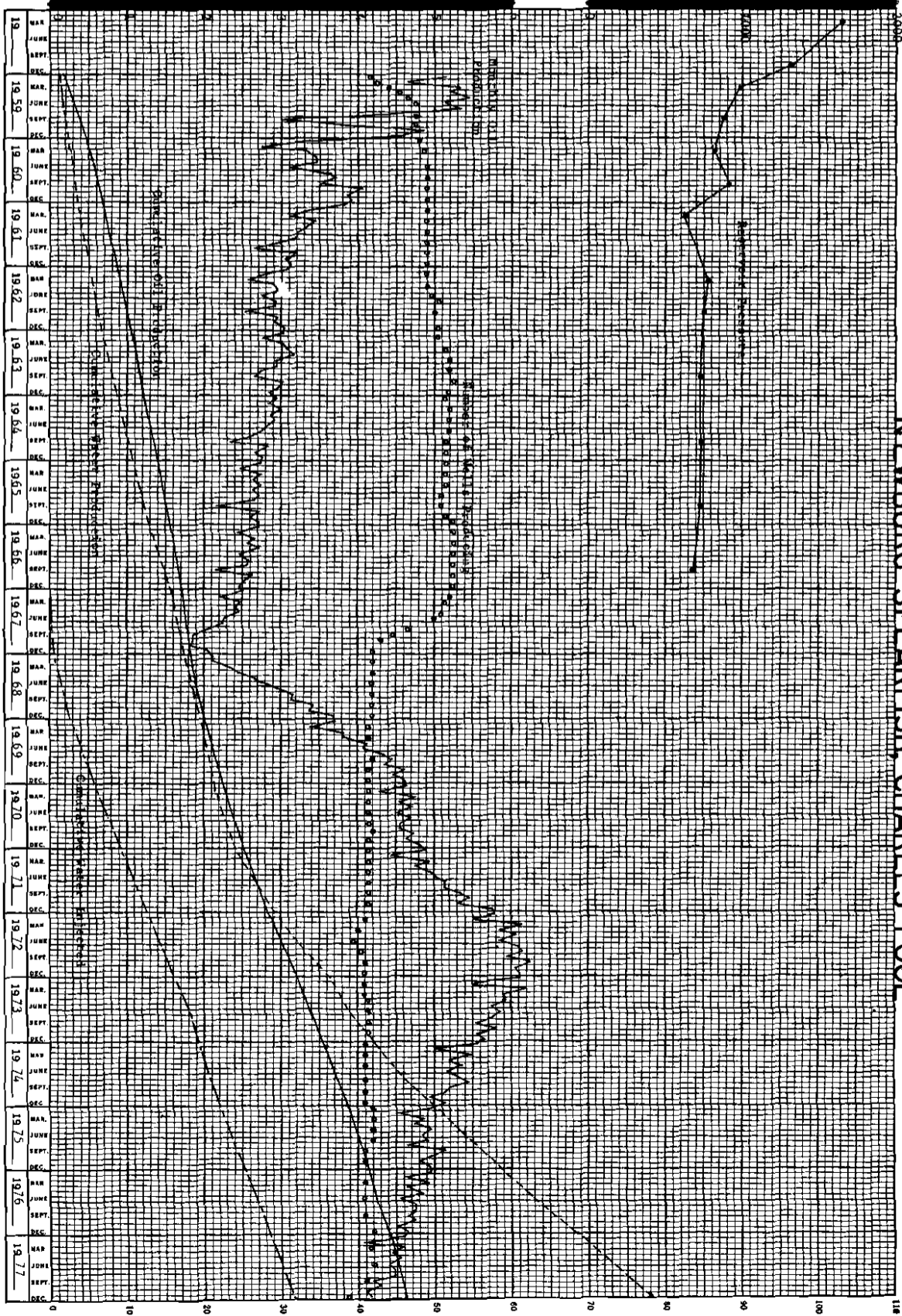
MONDAK - MADISON POOL



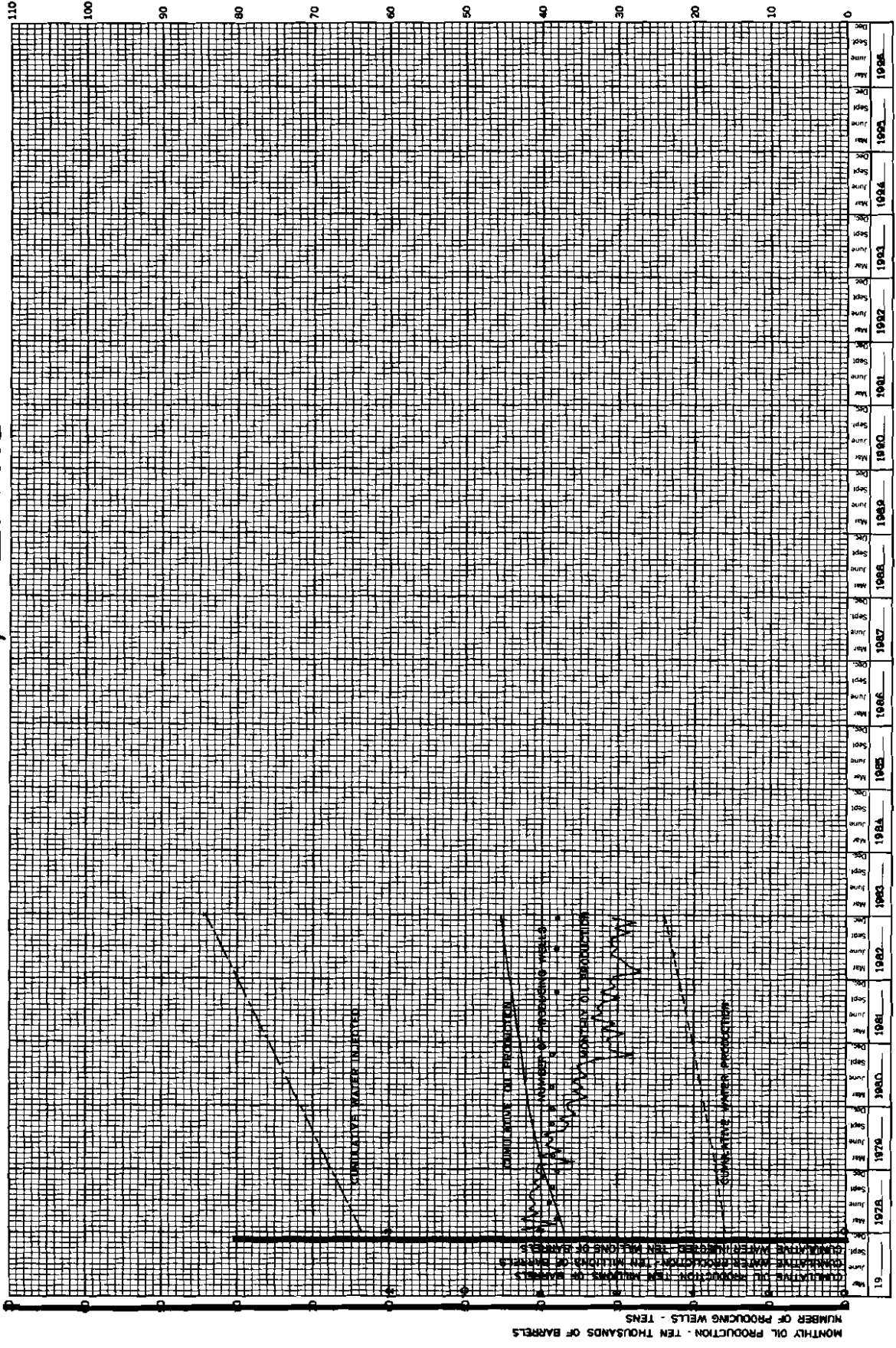
MONTHLY OIL PRODUCTION: HUNDRED THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION: HUNDRED THOUSANDS OF BARRELS
 RESERVOIR PRESSURE: PSI
 GAS OIL RATIO: DIMENSIONLESS

CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER INJECTED - TEN MILLIONS OF BARRELS
 CUMULATIVE OIL PRODUCTION - FOUR MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - TWENTY THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TWENTIES

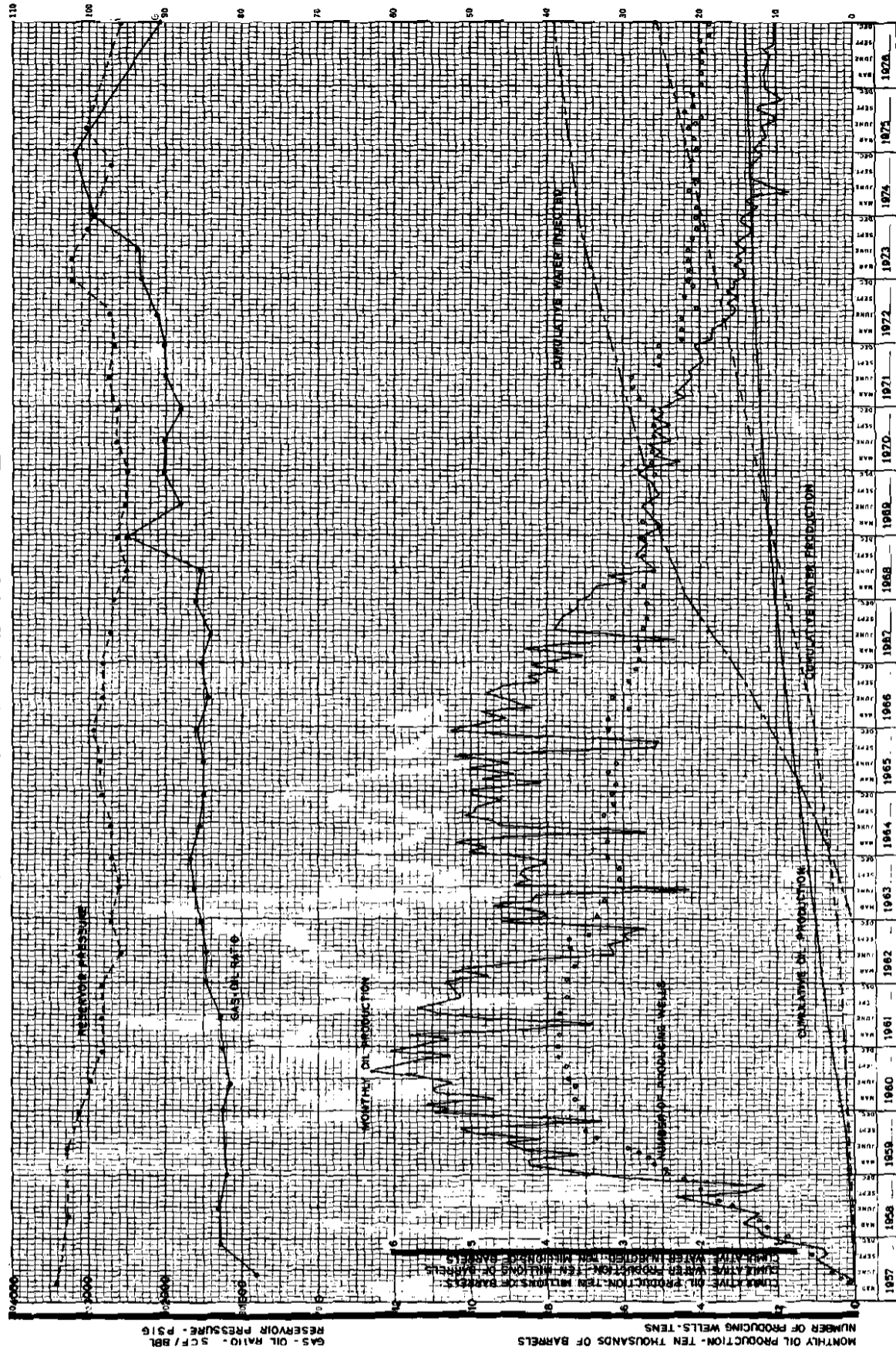
RESERVOIR PRESSURE - PSIG



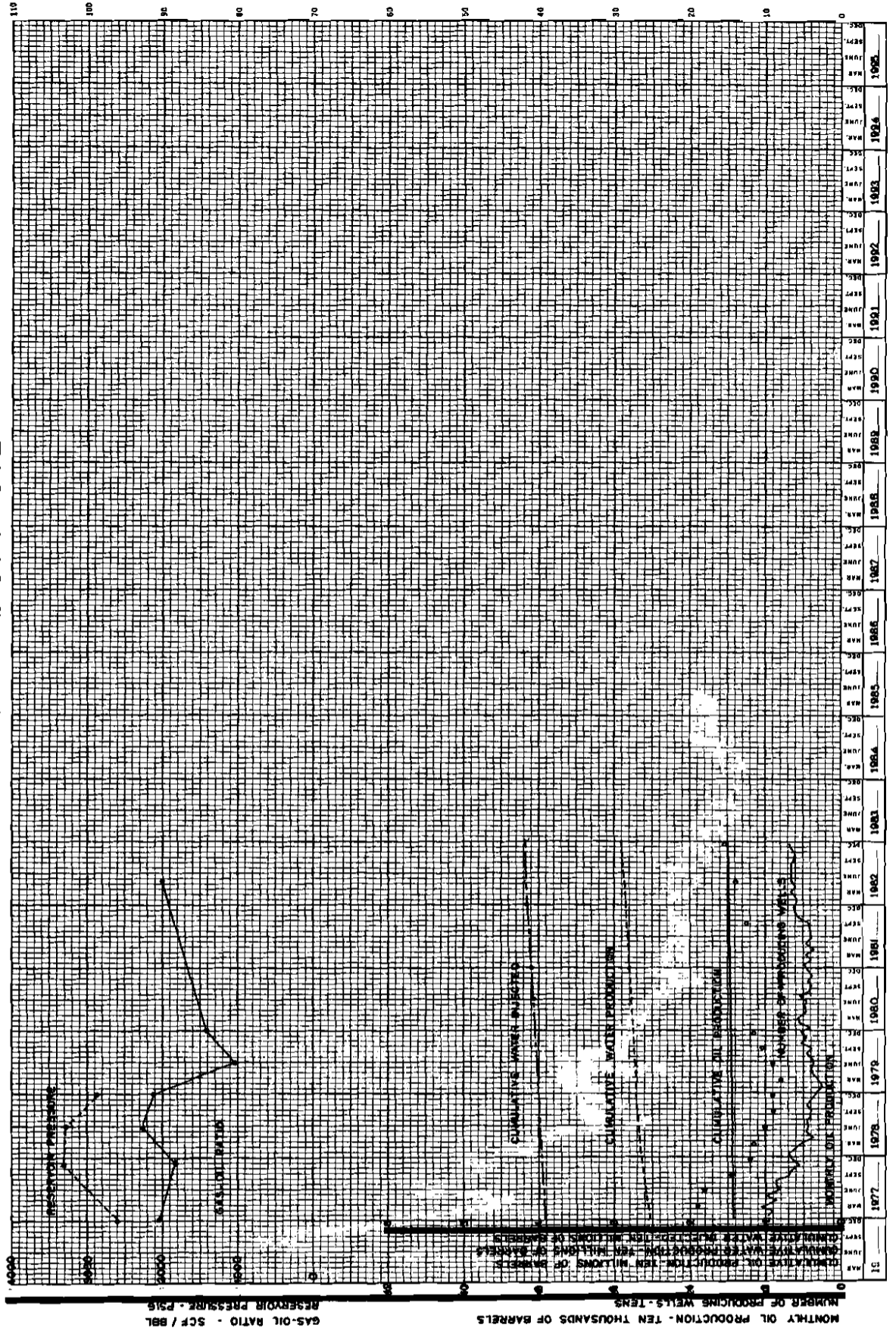
NEWBURG - SPEARFISH, CHARLES POOL



NORTH TIOGA - MADISON POOL



NORTH TIOGA - MADISON POOL

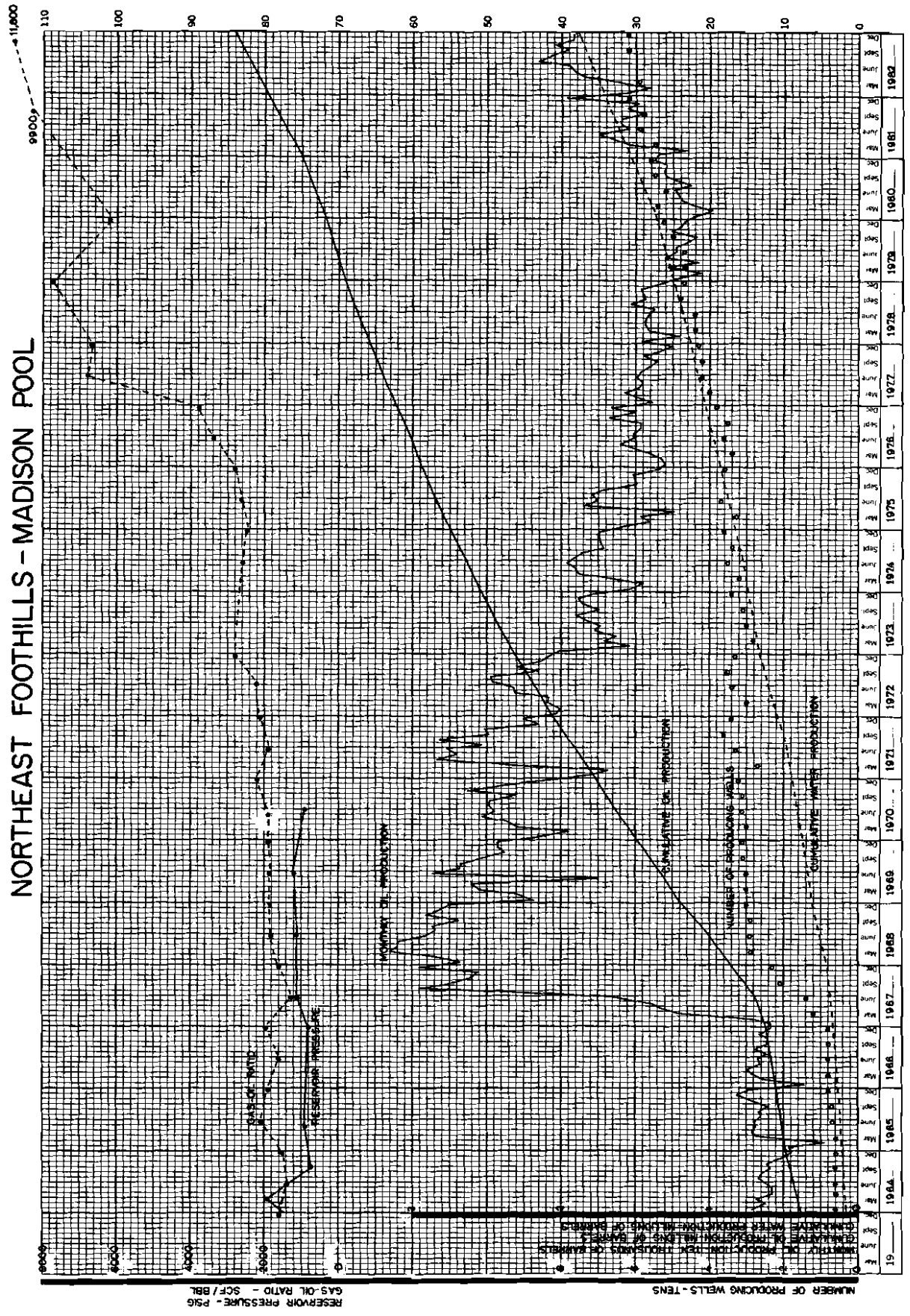


GAS-OIL RATIO - SCF / BBL
RESERVOIR PRESSURE - PSI

MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
NUMBER OF PRODUCING WELLS - TENS
CUMULATIVE OIL PRODUCTION - TEN MILLIONS OF BARRELS
CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
CUMULATIVE WATER INJECTION - MILLIONS OF BARRELS

Year	Month
1977	JAN
1977	FEB
1977	MAR
1977	APR
1977	MAY
1977	JUN
1977	JUL
1977	AUG
1977	SEP
1977	OCT
1977	NOV
1977	DEC
1978	JAN
1978	FEB
1978	MAR
1978	APR
1978	MAY
1978	JUN
1978	JUL
1978	AUG
1978	SEP
1978	OCT
1978	NOV
1978	DEC
1979	JAN
1979	FEB
1979	MAR
1979	APR
1979	MAY
1979	JUN
1979	JUL
1979	AUG
1979	SEP
1979	OCT
1979	NOV
1979	DEC
1980	JAN
1980	FEB
1980	MAR
1980	APR
1980	MAY
1980	JUN
1980	JUL
1980	AUG
1980	SEP
1980	OCT
1980	NOV
1980	DEC
1981	JAN
1981	FEB
1981	MAR
1981	APR
1981	MAY
1981	JUN
1981	JUL
1981	AUG
1981	SEP
1981	OCT
1981	NOV
1981	DEC
1982	JAN
1982	FEB
1982	MAR
1982	APR
1982	MAY
1982	JUN
1982	JUL
1982	AUG
1982	SEP
1982	OCT
1982	NOV
1982	DEC
1983	JAN
1983	FEB
1983	MAR
1983	APR
1983	MAY
1983	JUN
1983	JUL
1983	AUG
1983	SEP
1983	OCT
1983	NOV
1983	DEC
1984	JAN
1984	FEB
1984	MAR
1984	APR
1984	MAY
1984	JUN
1984	JUL
1984	AUG
1984	SEP
1984	OCT
1984	NOV
1984	DEC
1985	JAN
1985	FEB
1985	MAR
1985	APR
1985	MAY
1985	JUN
1985	JUL
1985	AUG
1985	SEP
1985	OCT
1985	NOV
1985	DEC
1986	JAN
1986	FEB
1986	MAR
1986	APR
1986	MAY
1986	JUN
1986	JUL
1986	AUG
1986	SEP
1986	OCT
1986	NOV
1986	DEC
1987	JAN
1987	FEB
1987	MAR
1987	APR
1987	MAY
1987	JUN
1987	JUL
1987	AUG
1987	SEP
1987	OCT
1987	NOV
1987	DEC
1988	JAN
1988	FEB
1988	MAR
1988	APR
1988	MAY
1988	JUN
1988	JUL
1988	AUG
1988	SEP
1988	OCT
1988	NOV
1988	DEC
1989	JAN
1989	FEB
1989	MAR
1989	APR
1989	MAY
1989	JUN
1989	JUL
1989	AUG
1989	SEP
1989	OCT
1989	NOV
1989	DEC
1990	JAN
1990	FEB
1990	MAR
1990	APR
1990	MAY
1990	JUN
1990	JUL
1990	AUG
1990	SEP
1990	OCT
1990	NOV
1990	DEC
1991	JAN
1991	FEB
1991	MAR
1991	APR
1991	MAY
1991	JUN
1991	JUL
1991	AUG
1991	SEP
1991	OCT
1991	NOV
1991	DEC
1992	JAN
1992	FEB
1992	MAR
1992	APR
1992	MAY
1992	JUN
1992	JUL
1992	AUG
1992	SEP
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1992	DEC
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1993	FEB
1993	MAR
1993	APR
1993	MAY
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1993	OCT
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1993	DEC
1994	JAN
1994	FEB
1994	MAR
1994	APR
1994	MAY
1994	JUN
1994	JUL
1994	AUG
1994	SEP
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1994	NOV
1994	DEC
1995	JAN
1995	FEB
1995	MAR
1995	APR
1995	MAY
1995	JUN
1995	JUL
1995	AUG
1995	SEP
1995	OCT
1995	NOV
1995	DEC

NORTHEAST FOOTHILLS - MADISON POOL



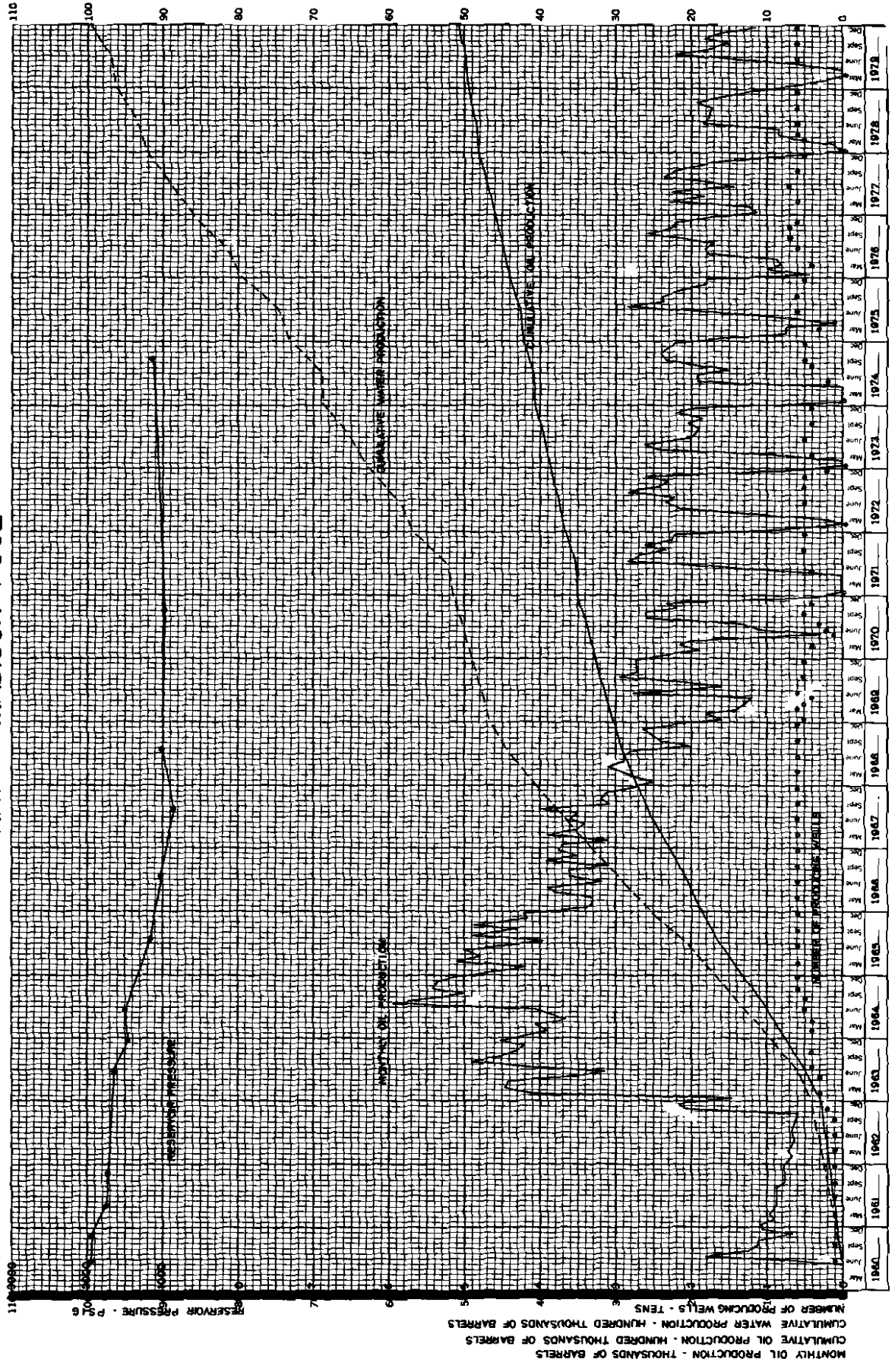
RESERVOIR PRESSURE - PSIG
GAS-OIL RATIO - SCF/BBL

NUMBER OF PRODUCING WELLS - TENS

CUMULATIVE OIL PRODUCTION - BARRLS
CUMULATIVE WATER PRODUCTION - BARRLS
CUMULATIVE GAS PRODUCTION - BARRLS

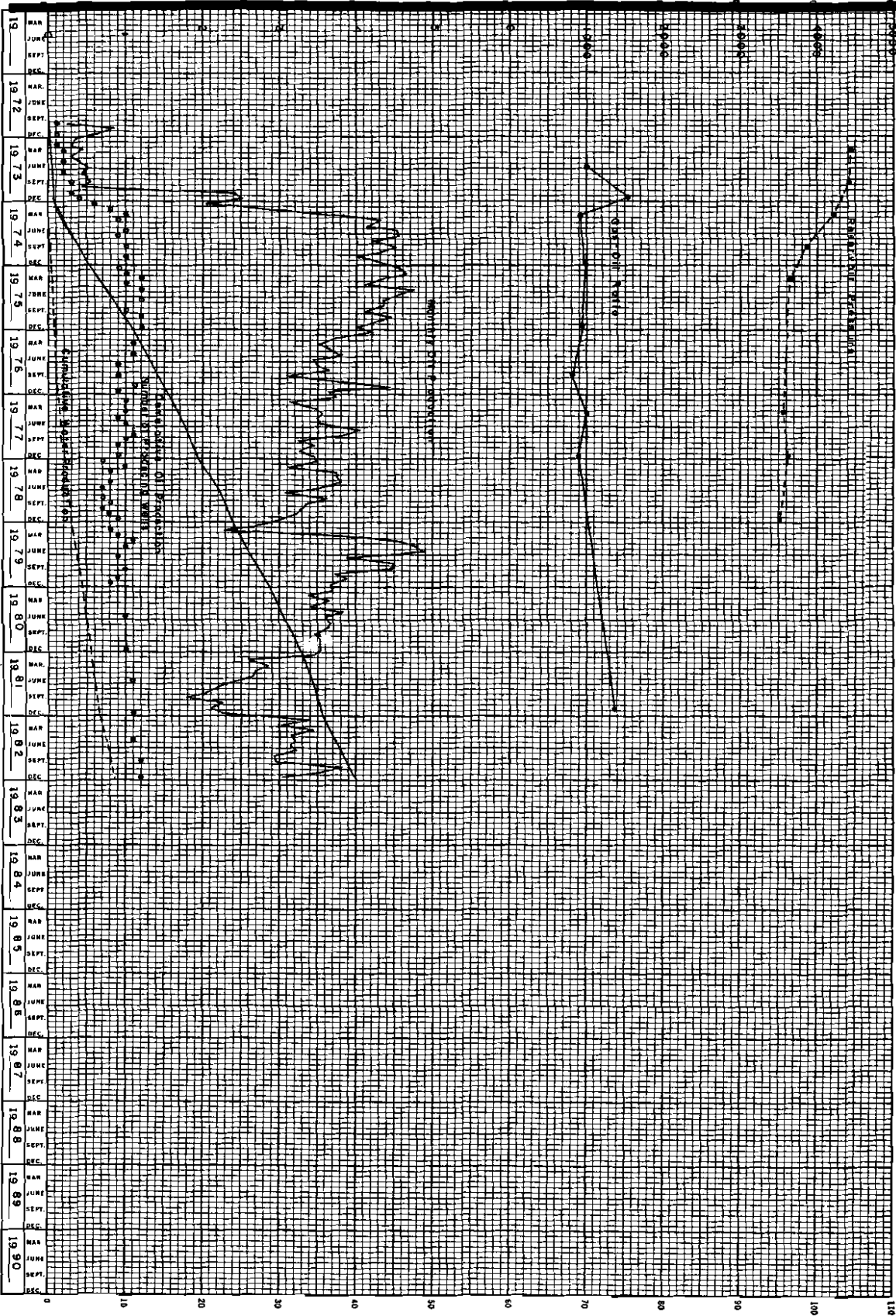
Year	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982		
Pressure (PSIG)	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70
Gas-Oil Ratio (SCF/BBL)	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Wells (TENS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Oil (BARRLS)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	24000	25000	26000	27000	28000	29000	30000	31000	32000	33000	34000	35000
Cumulative Water (BARRLS)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	24000	25000	26000	27000	28000	29000	30000	31000	32000	33000	34000	35000
Cumulative Gas (BARRLS)	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	21000	22000	23000	24000	25000	26000	27000	28000	29000	30000	31000	32000	33000	34000	35000

PRATT - MADISON POOL



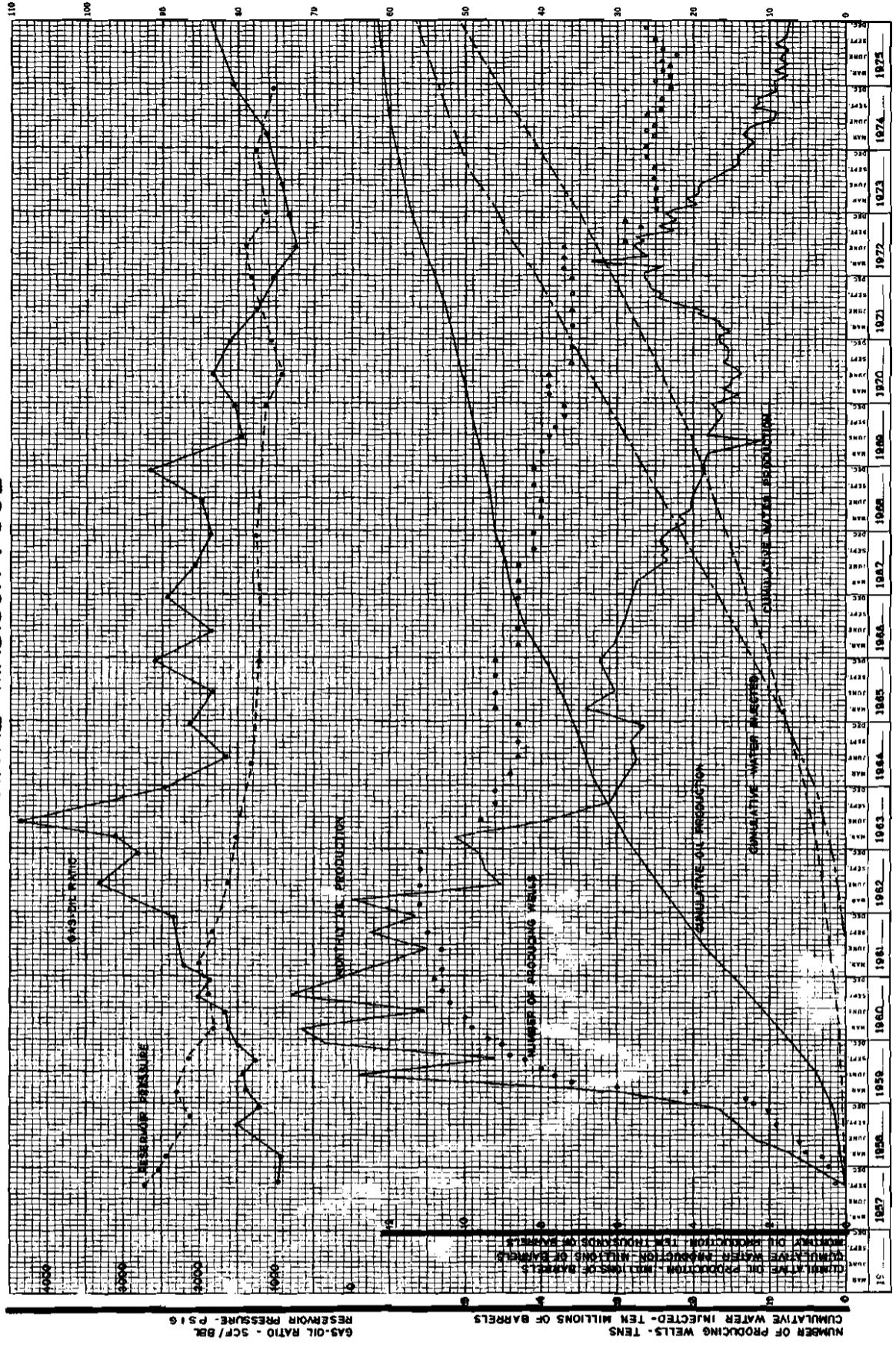
CUMULATIVE WATER INJECTED - 10 MILLIONS OF BARRELS
 CUMULATIVE OIL PRODUCTION - 2 MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - 20 THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL

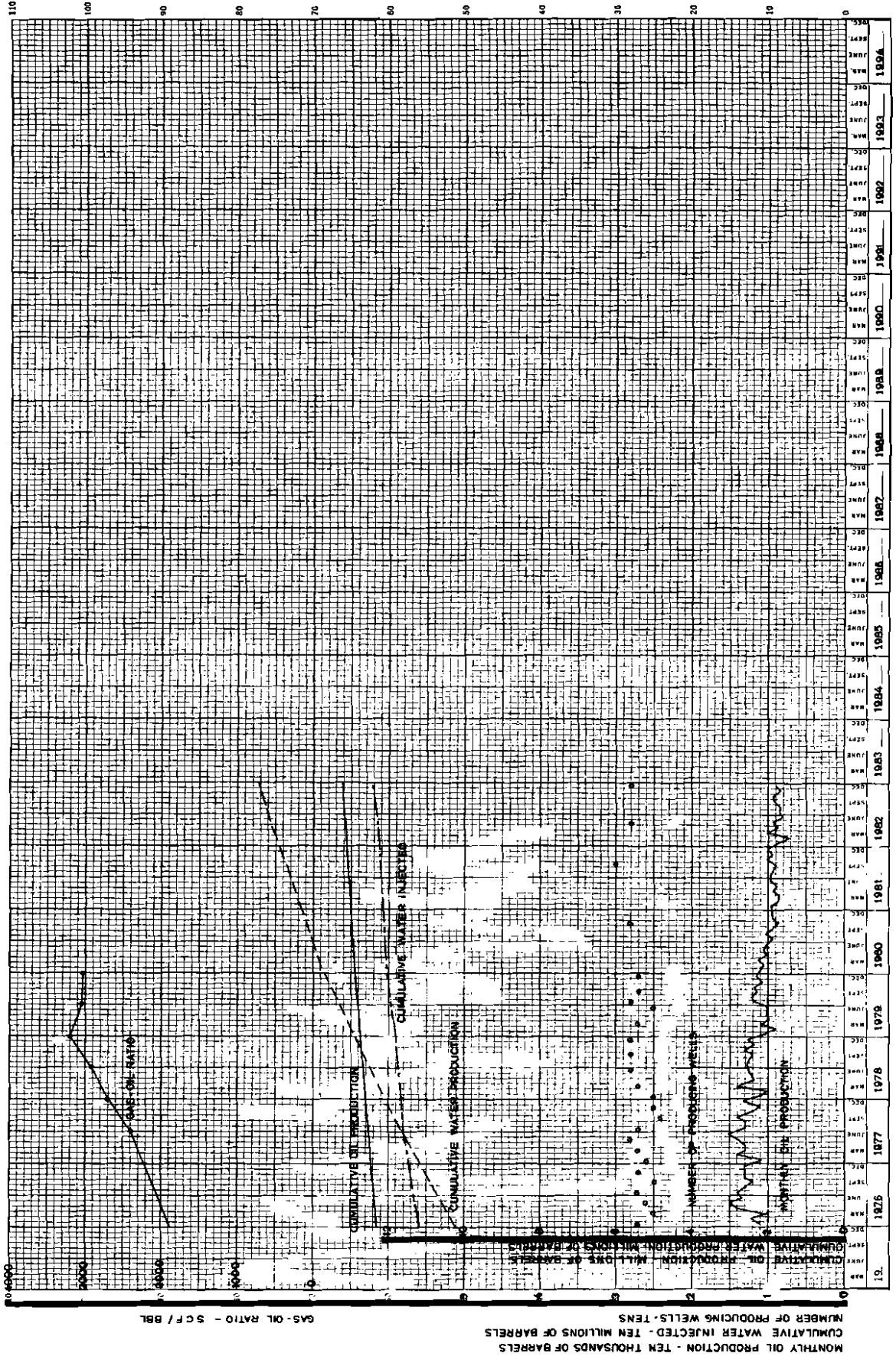


RED WING CREEK - MADISON POOL

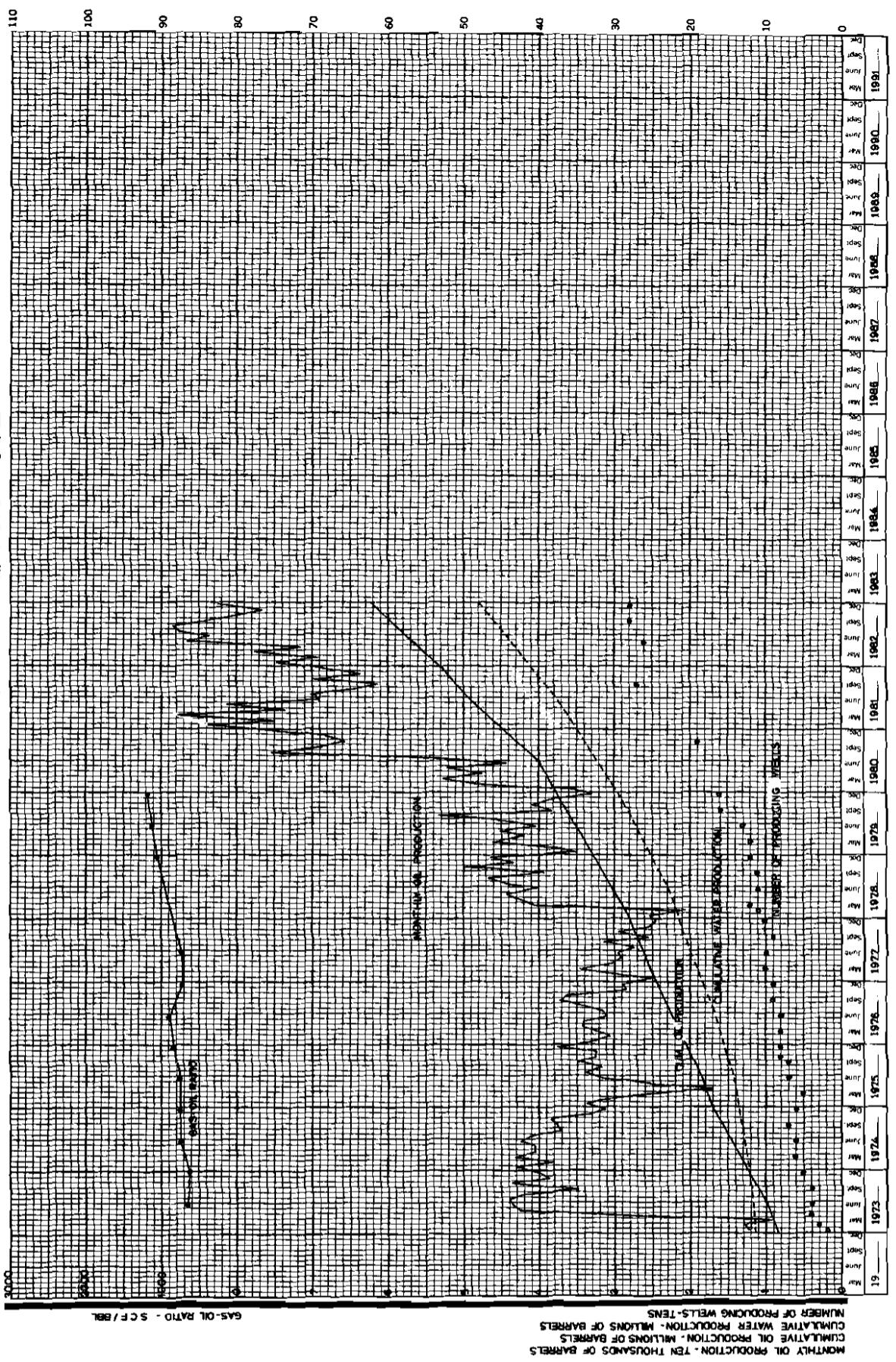
RIVAL-MADISON POOL



RIVAL - MADISON POOL



ROUGH RIDER - MADISON POOL

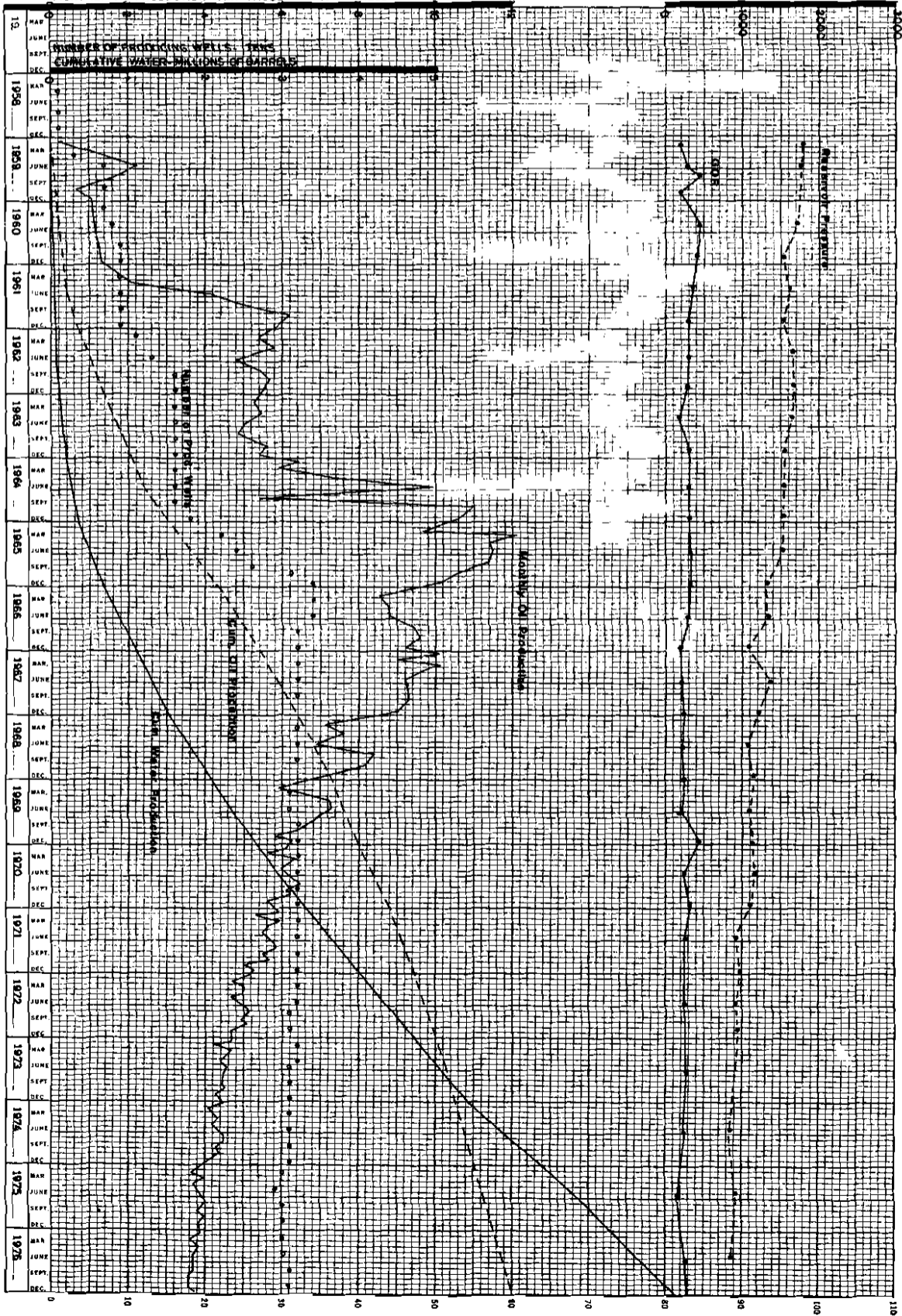


MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS
 GAS-OIL RATIO - SCF/BBL

Year	Month
1973	Mar
1973	Jun
1973	Sep
1973	Dec
1974	Mar
1974	Jun
1974	Sep
1974	Dec
1975	Mar
1975	Jun
1975	Sep
1975	Dec
1976	Mar
1976	Jun
1976	Sep
1976	Dec
1977	Mar
1977	Jun
1977	Sep
1977	Dec
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1978	Jun
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1978	Dec
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1987	Jun
1987	Sep
1987	Dec
1988	Mar
1988	Jun
1988	Sep
1988	Dec
1989	Mar
1989	Jun
1989	Sep
1989	Dec
1990	Mar
1990	Jun
1990	Sep
1990	Dec
1991	Mar
1991	Jun
1991	Sep
1991	Dec

CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS

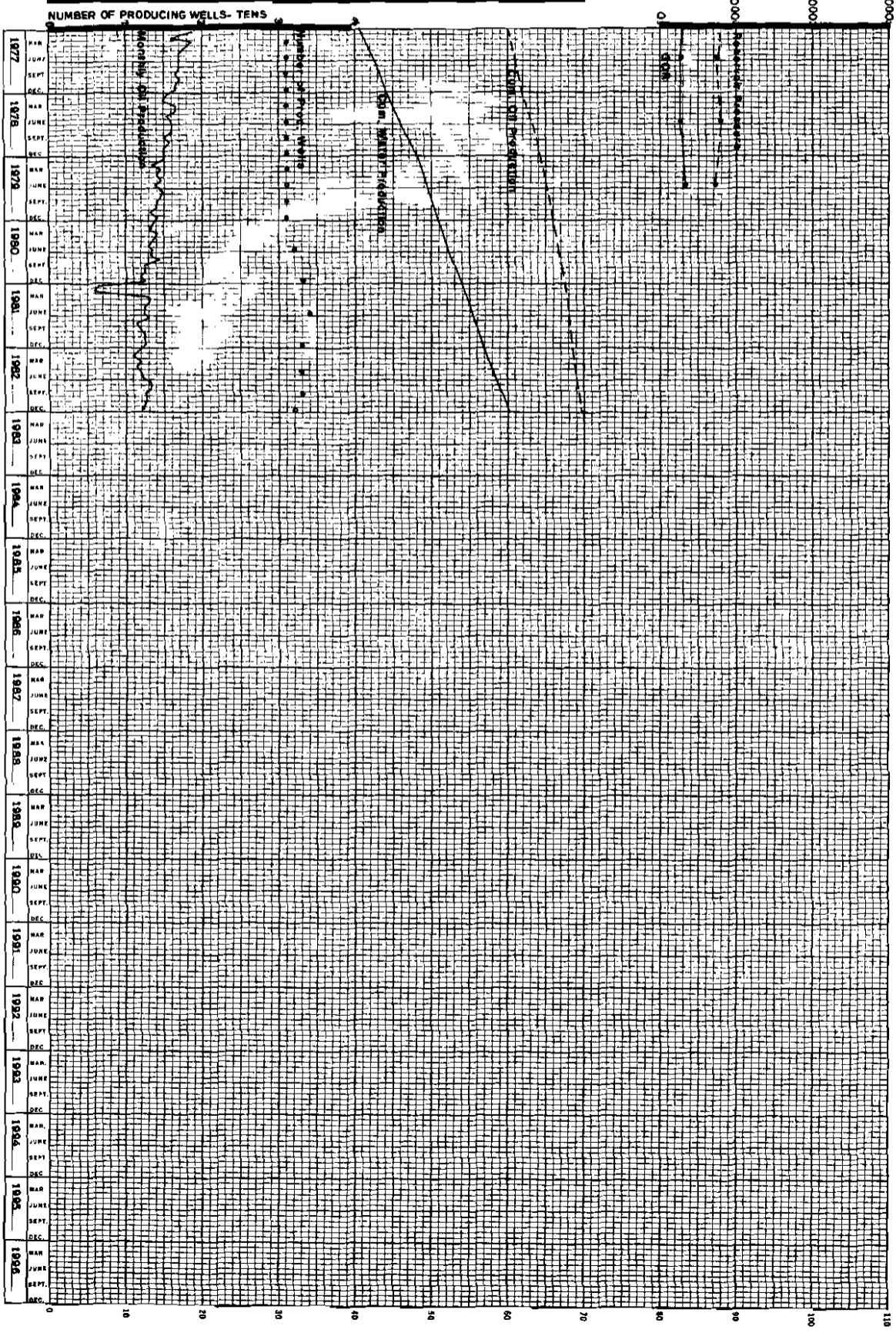
RESERVOIR PRESSURE - PSIG
GAS-OIL RATIO - CUBIC FEET PER BARREL



SHERWOOD - MADISON POOL

CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS

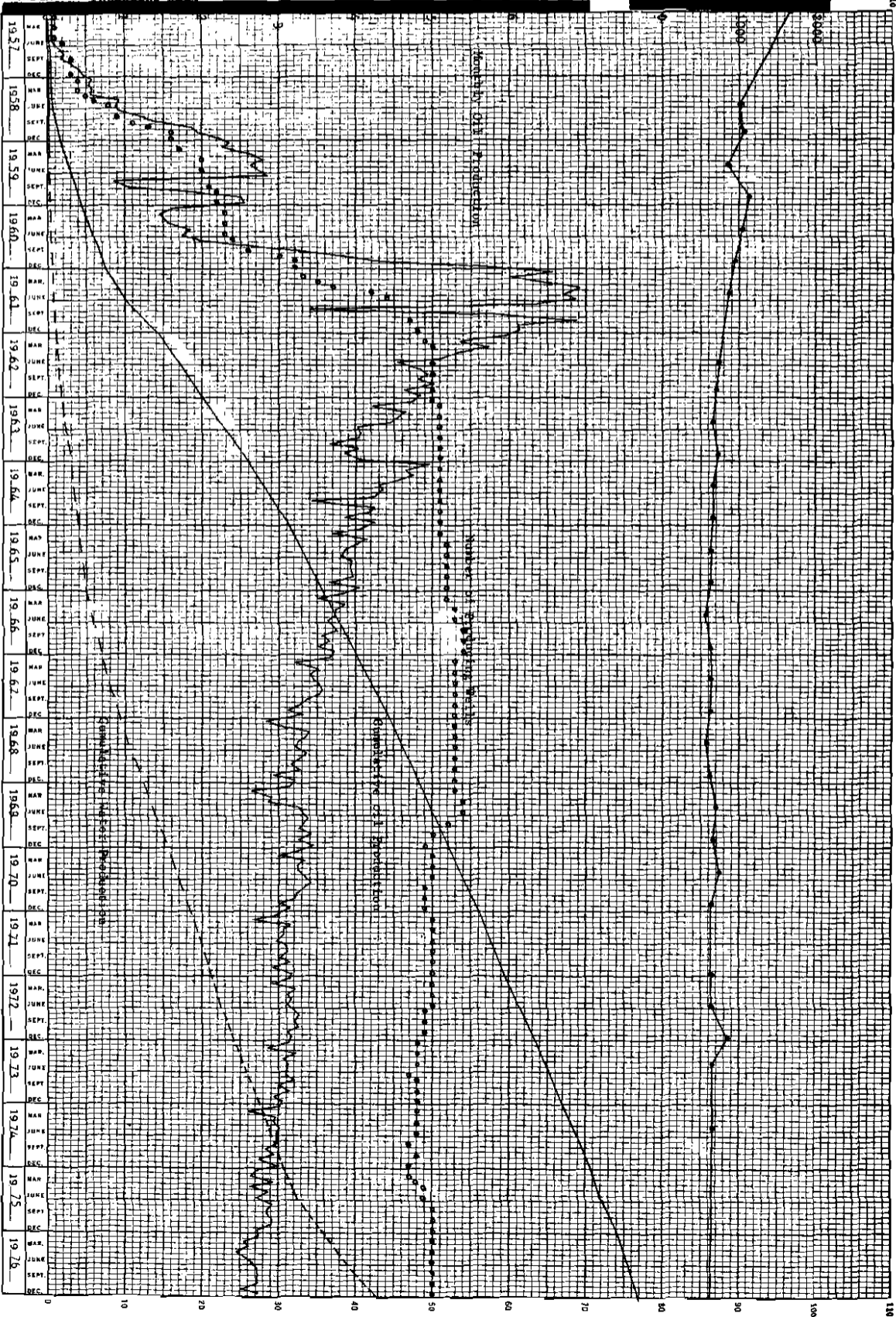
RESERVOIR PRESSURE - PSIG
 GOR - CUBIC FEET PER BARREL



SHERWOOD-MADISON POOL

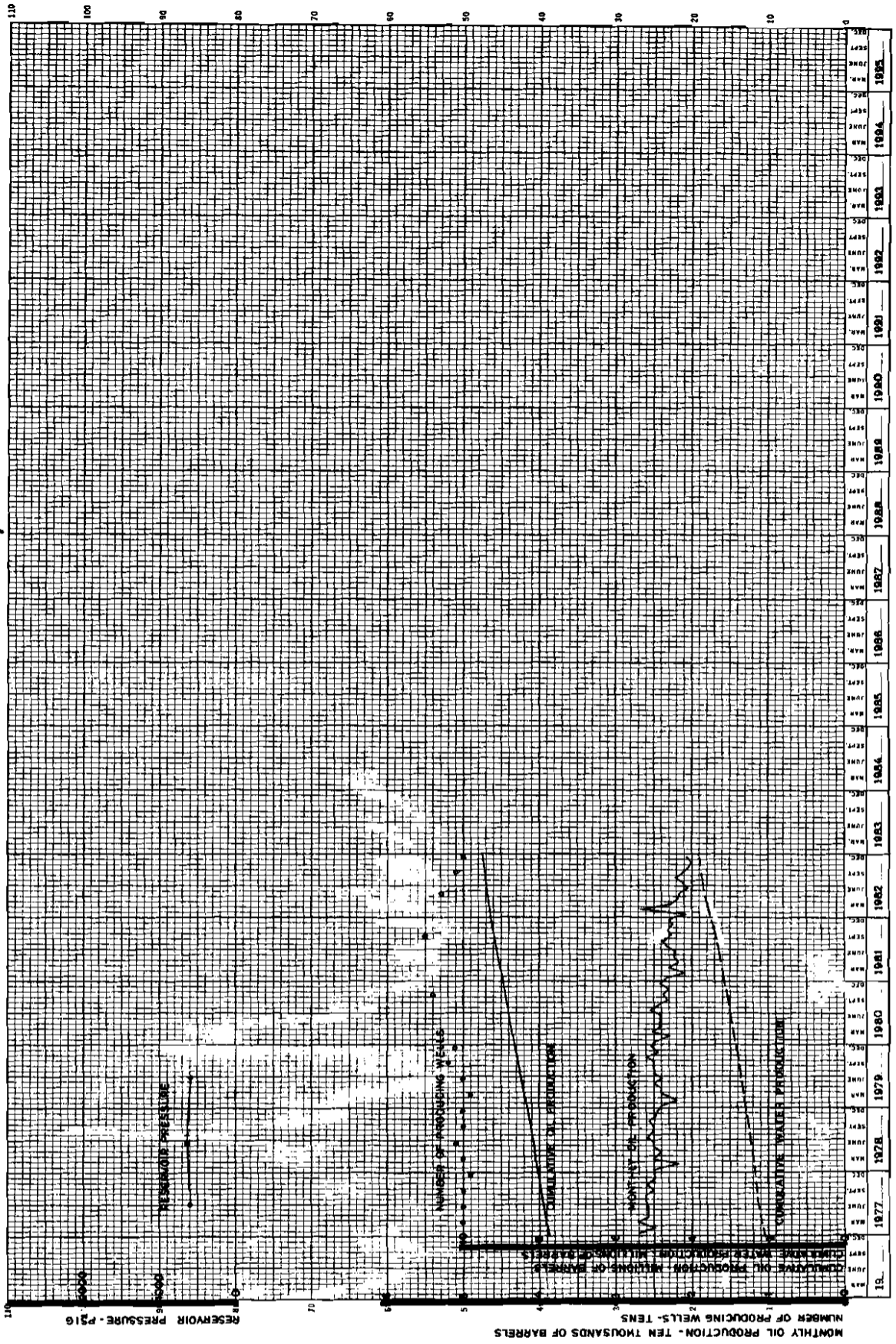
CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - FIVE HUNDRED THOUSANDS OF BARRELS
 MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

RESERVOIR PRESSURE - PSIG

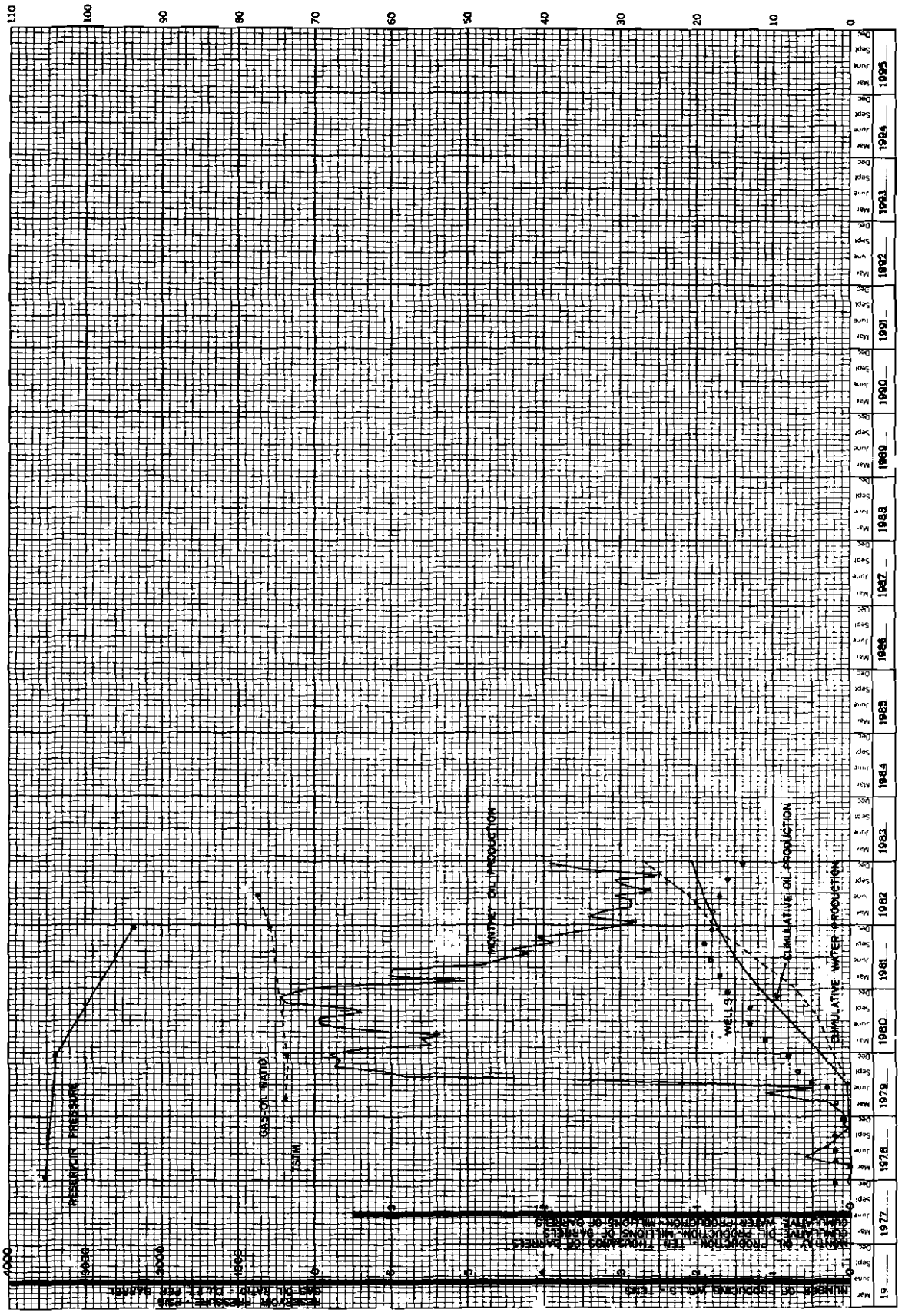


SOUTH WESTHOPE - SPEARFISH, CHARLES POOL

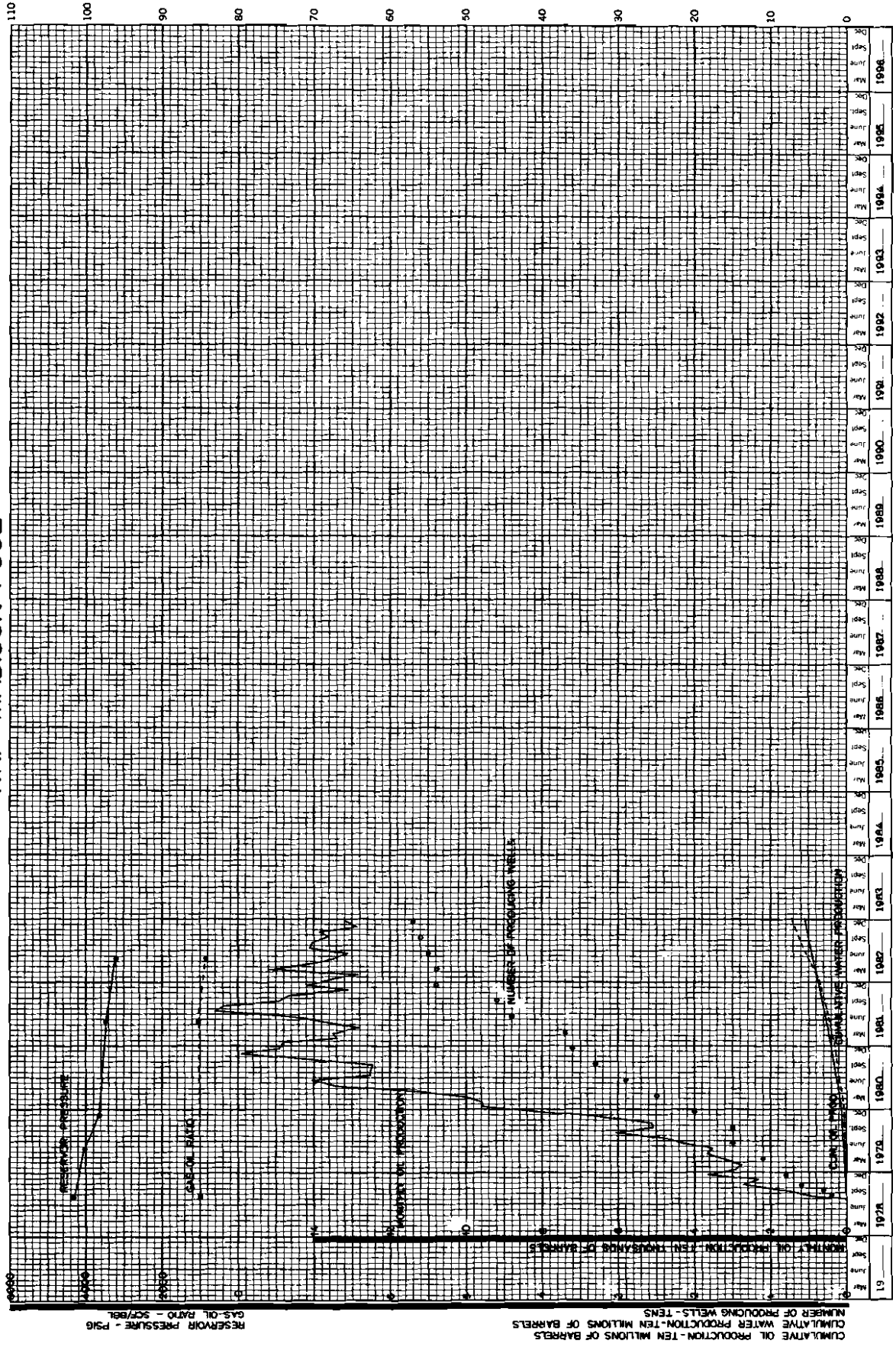
SOUTH WESTHOPE - SPEARFISH, CHARLES POOL



STANLEY - MADISON POOL

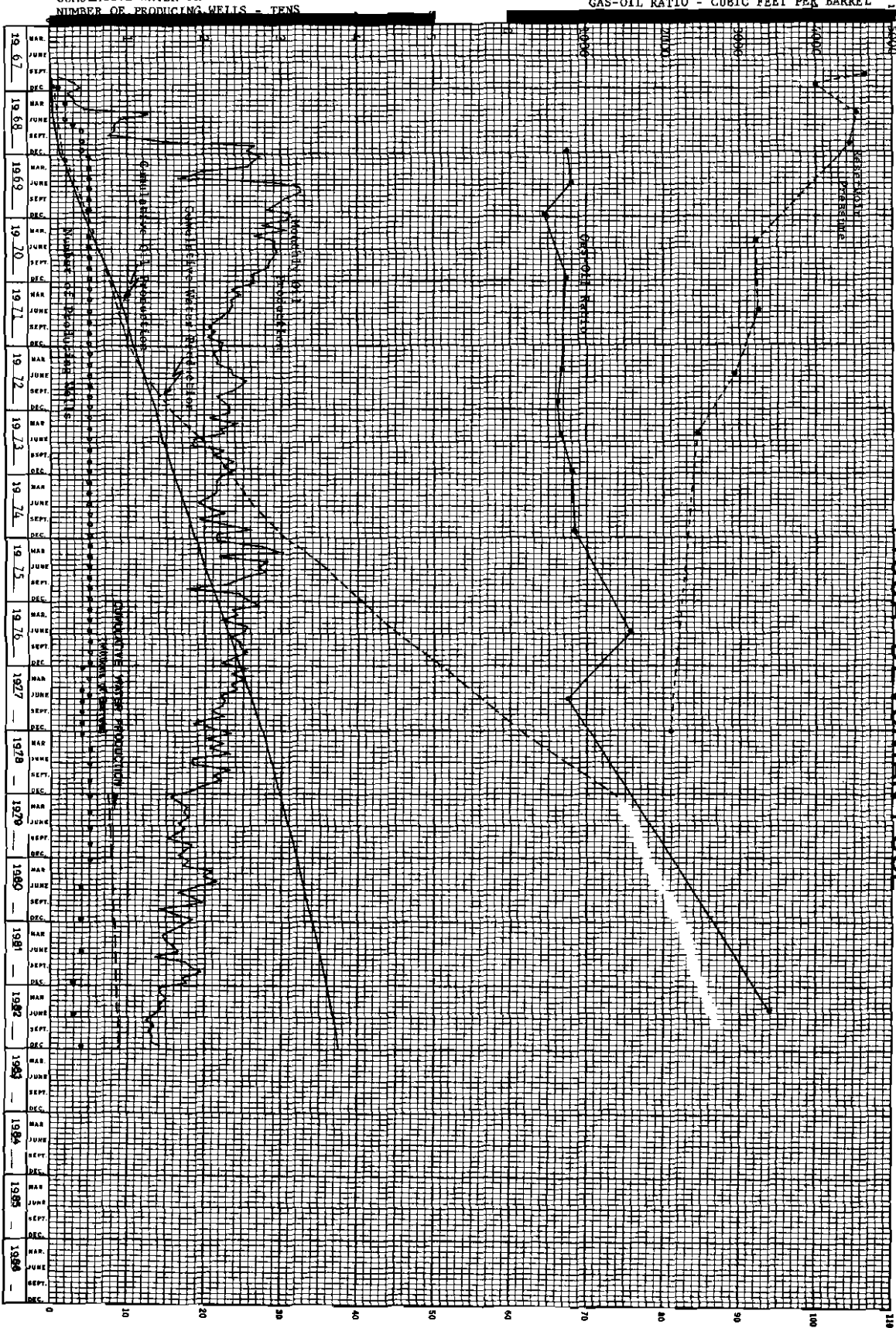


T.R. - MADISON POOL



MONTHLY OIL PRODUCTION - TEN THOUSANDS OF BARRELS
 CUMULATIVE OIL PRODUCTION - MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION - HUNDRED THOUSANDS OF BARRELS
 NUMBER OF PRODUCING WELLS - TENS

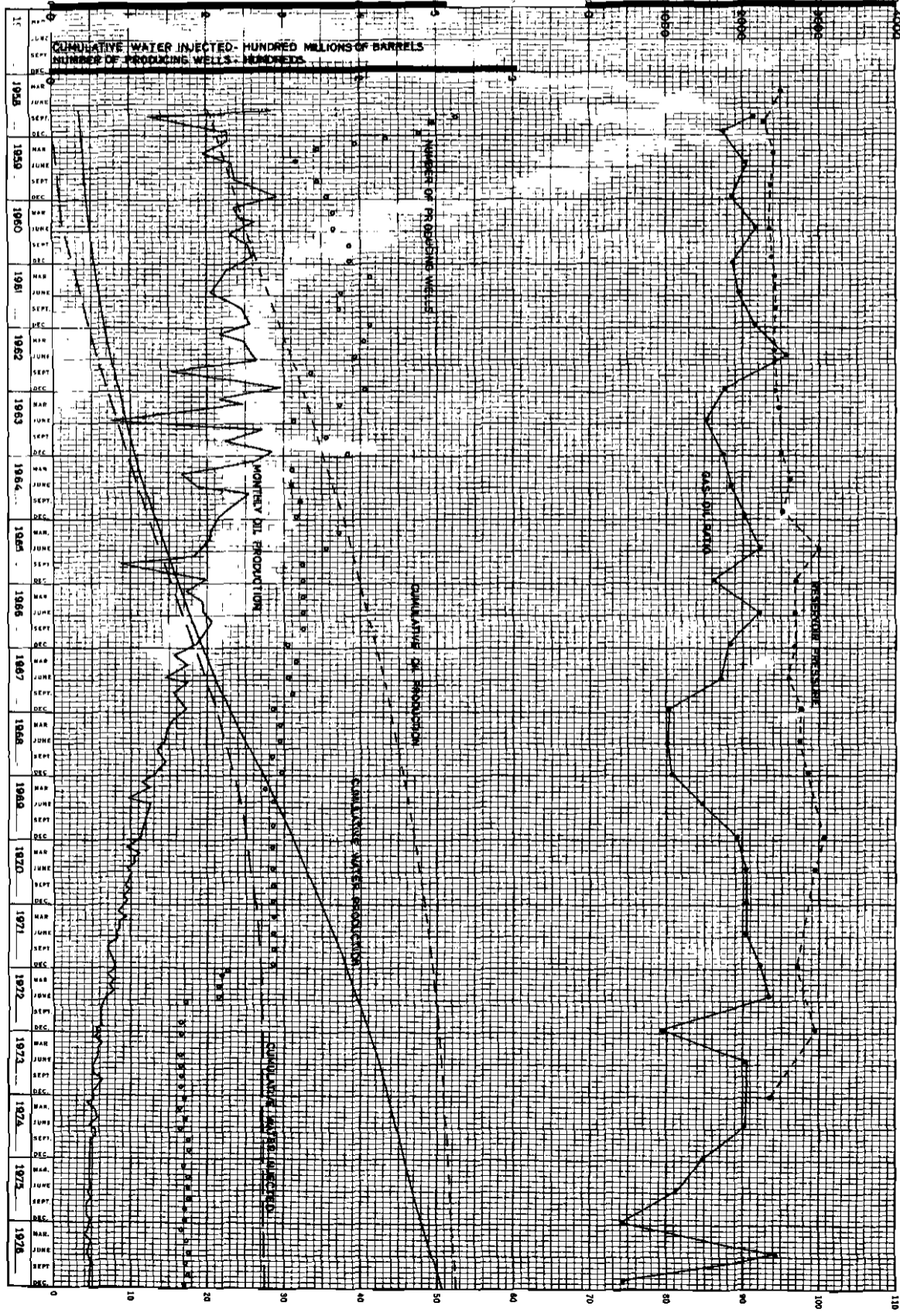
RESERVOIR PRESSURE - PSIG
 GAS-OIL RATIO - CUBIC FEET PER BARREL



TLOGA-DEVONIAN POOL

CUMULATIVE OIL PRODUCTION-TEN MILLIONS OF BARRELS
 CUMULATIVE WATER PRODUCTION-TEN MILLIONS OF BARRELS
 MONTHLY OIL PRODUCTION-HUNDRED THOUSANDS OF BARRELS

GAS-OIL RATIO - SCF/BBL
 RESERVOIR PRESSURE - PSIG



TIOGA - MADISON POOL