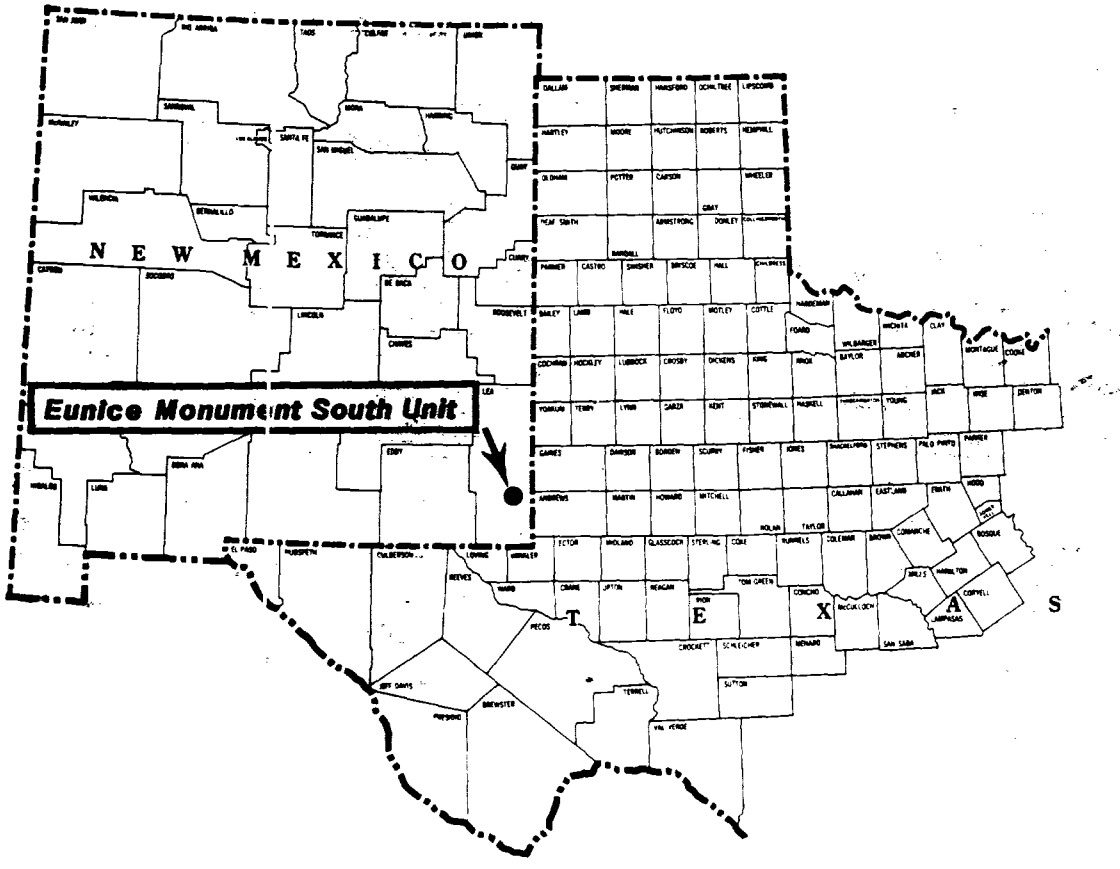
PROPOSED EUNICE MONUMENT SOUTH UNIT

LEA COUNTY, NEW MEXICO



TECHNICAL COMMITTEE REPORT

APRIL 1983

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INTRODUCTION

This report summarizes a study of the feasibility of unitizing and waterflooding leases in the southern portion of the Eunice Monument oil pool, and fulfills the charges given to the Technical Committee in a meeting of the Working Interest Owners on May 10, 1979. As outlined in Figure 1, the proposed unit will include 14,280 acres which lie in Township 20 South, Ranges 36 and 37 East, and Township 21 South, Range 36 East, in Lea County, New Mexico. This waterflood will unitize all oil production from the lower Penrose, Grayburg, and San Andres formations within the vertical limits described in the Recommendations section of this report.

Twenty-three companies have current or historical operations within the proposed unit area. Table 1 is a summary of the 101 tracts comprising the unit.

TABLE 1

EUNICE MONUMENT SOUTH UNIT
INDEX TO TRACTS AND OPERATORS

TRACT	OPERATOR	LEASE
1	Getty	Skelly 'H' State
2	Arco	State 'P'
3	Amoco	Gillully 'A' Federal
4	Amoco	Gillully 'B' Federal
5	Gulf	White (NCT-A)
6	Exxon	Fopeano Federal
7	Hudson	Phillips
8	Amerada	State 'W'
9	Arco	State '193'
10	Gulf	Sunshine State
12	Getty	Skelly 'G' State
13	Cities	State 'F'
17	Gulf	Bell (NCT-F)
18	Shell	State 'K'
19	Arco	State 'M'
20	Gulf	Orcutt (NCT-C)
21	Exxon	Aggies State
22	Texaco	New Mexico State 'H' (NCT-1)
23	Arco	State 'O'
24	Fields	Turner State
25	Getty	State 'AY'
26	Arco	State '196'
27	Shell	State 'J'
28	Arco	State 'L' Battery 2
31	Wilbanks	State 'G'
32	Shell	State 'EE'
33	Shell	State 'F'
34	Gulf	Orcutt (NCT-A)
35	Gulf	Bell (NCT-D)
36	Arco	State 'K'
37	Gulf	Graham State (NCT-E)
38	Gulf	Bell (NCT-B)
39	Gulf	Heasley State
40	Gulf	Orcutt (NCT-B)
42	Arco	State 'H'
43	Arco	State 'E'
44	Koch	State 'A'
45	Arco	State 'G'
46	Arco	State 'C'
47	Gulf	Bell-Ramsay (NCT-A)
48	Conoco	Meyer 'B-4'
49	Arco	State 'L'
50	Me-Tex	Wallace State
51	Sun	Akens
52	Apollo	Akens
53	Arco	Houston
54	Arco	Houston 'MA'
55	Amerada	Houston
56	Gulf	Campbell
57	Gulf	Houston
59	Conoco	Meyer 'B-8'
60	Getty	State 'A'
62	Arco	State 'B'
63	Gulf	Bell (NCT-A)
64	Gulf	Bell-Ramsay (NCT-A) Battery 2
65	Conoco	Meyer 'B-9'
66	Arco	Adkins
67	Exxon	Adkins
68	Brady	Adkins
69	Exxon	Knox
70	Hartman	Rasmussen State
71	Gulf	Bell (NCT-E)
72	Arco	State 'L' Battery 3
73	Two States	State 'B'
74	Wiser	McQuatters
75	Conoco	State 'D' Battery 2
77	Arco	Berryman
78	Bruno	Marshall
79	Bruno	Marshall Battery 2
80	Conoco	Meyer 'B-18'
81	Conoco	Meyer 'A-1'
82	Conoco	Lockhart 'A-18'
83	Getty	Coleman "A'
84	Arco	Coleman
85	Getty	Coleman
86	Shell	Coleman
87	Conoco	Meyer 'B-17'
88	Getty	Skelly 'B' State
89	Getty	State 'AW'
90	Getty	State 'AX'
91	Cities	State 'C'
92	Getty	State 'D'
93	Getty	State 'E'
94	Gulf	Bell (NCT-C)
95	Gulf	Janda (NCT-C)
96	Conoco	State 'D'
97	Conoco	Lockhart 'B-14'
98	Gulf	Collins
99	Gulf	Leck
102	Gulf	Arnott-Ramsay (NCT-C)
103	Getty	State 'G'
104	Amoco	State 'I'
105	Amoco	State 'J'
106	Arco	State 'L' Battery 4
107	Gulf	Leonard (NCT-A)
113	Rasmussen	State 'G'
114	Amoco	State 'C' Tract 11
115	Amoco	McQuatters
116	Conoco	Lockhart 'B-13'
117	Getty	Mexico State 'V'
118	Fields	Turner State Battery 2

CONCLUSIONS

1. Potential secondary reserves are present in sufficient quantity to justify unitizing properties in the southern portion of the Eunice Monument field to install a waterflood.

2. Secondary recovery factors of 48% and 18% were calculated for an optimum and minimum recovery cases, respectively. The optimum recovery case would produce 63.2 MM barrels of oil over a 30 year flood life, while the minimum recovery case would yield 23.7 MM barrels over the same time period.

3. The proposed unit is an economically attractive project. The optimum case yields a rate of return of 37.2% with a P/I ratio of 17.5, and the minimum case provides a rate of return of 23.4% with a P/I ratio of 5.

4. The proposed unit area contained an estimated OOIP of 671.5 MM STB. This solution gas drive reservoir has produced 119.8 MM barrels of oil to October 1, 1982, with ultimate primary production expected to reach 134.3 MM STB.

5. A total investment of approximately $62.5 MM will be required to install the surface facilities described in this report, drill and equip new wells to complete the waterflood pattern, perform the remedial work, install new pumping equipment, and obtain reservoir information.

RECOMMENDATIONS

1. The area within the southern portion of the Eunice Monument oil pool as outlined in Figure 1 of this report should be unitized.

2. The parameter table included as Table 8 on page 40 should be accepted as the basis for the Working Interest Owners to negotiate an equitable participation formula.

3. The vertical interval to be unitized should be described as follows:

   'The unitized interval shall include the formations from a lower limit defined by the base of the San Andres formation, to an upper limit defined by the top of the Grayburg formation or a -100 foot subsea datum, whichever is higher.'

4. A waterflood project should be initiated in the proposed unit area.

GEOLOGY

The proposed Eunice Monument South Unit, located in the southern portion of the Eunice Monument field, is situated on a NW-SE trending asymetrical anticline which lies along the northwestern edge of the Central Basin Platform. In this part of the field the oil producing formations are the Queen-Penrose and Grayburg, with the Grayburg being the major contributor to production (See Figures 3 and 4).

The Grayburg is a massive dolomite with thin stringers of sand interspersed within it. The majority of production probably comes from intercrystalline porosity within the dolomite. Overlaying the Grayburg is the Queen-Penrose. This section is composed of alternating layers of hard dolomite and sand stringers which are present over the entire anticline. The sands of the Queen-Penrose produce either oil or gas depending on their structural position on the anticline. Relative position and thickness of these formations are depicted on the Typelog shown in Figure 5.

Reports published during the early development of the field indicate that the gas-oil contact was believed to be -150 feet subsea, and the water-oil contact was believed to be -400 feet subsea. Our study of both field production data and individual well completion intervals indicates that the gas-oil contact is at approximately -100 feet subsea, and the oil-water contact is located at approximately -325 feet subsea. These contacts appear to be valid across the entire anticline and across formation boundaries. At this time there is insufficient data available to determine the degree of vertical reservoir communication.

Only 170 of the 344 proposed unit wells have logs, and the majority of these logs are of such poor quality that they are useless for technical interpretation. Most logs are uncompensated radioactivity and neutron logs, vintage 1955, or earlier,

which were run in the open hole and through casing. The resulting gamma ray and neutron curves are very erratic due to the open hole conditions encountered by the sonde, and the primitive nature of the equipment. Many wells had been acidized and/or shot in years prior to logging, and this caused erratic and oversized open hole sections. The resulting neutron logs show exaggerated porosity readings up to 100% because the logging tool was probably hanging free in the cavern-like condition. Years of oil production have concentrated radioactive salts along the wellbore and this also distorts the gamma ray logs. The combination of the above cited problems makes it impossible to calculate fluid saturations and reservoir volumes from existing information.

A few modern logs are available in the area from Blinebry wells; however, these wells are concentrated in the northeastern fringe of the field and would not provide sufficient information to allow volumetric calculations for the entire unit.

Core information has been located on 10 wells in the unit area. Of these cores, only two have saturation information, and they are also located in the northeastern edge of the field.

In conclusion, there is not enough reliable technical information available from logs or cores to accurately determine reservoir volumes and fluid saturations for the unit area. The new wells proposed for this unit will allow opportunities to selectively core and log wells to gain the information needed to effectively characterize this reservoir.

HYDROCARBON VOLUMES AND RECOVERIES

Due to a lack of modern log and core data from unit wells, no accurate calculation of reservoir volume or original oil in place (OOIP) can be made. This necessarily means that any estimate of recoverable secondary oil must be made by assuming a number of parameters which can be expected to define a minimum reservoir volume. We assume that this reservoir is typical of other Grayburg - San Andres reservoirs in West Texas and New Mexico, and that a reasonable estimate of ultimate primary recovery is 20% of the OOIP. For the Eunice Monument South Unit, the 134.3 MM barrel primary ultimate, as estimated from individual tract decline curves, would give an OOIP of 671.5 MM Stock Tank Barrels (STB). Based upon this value, the estimated OOIP for the 13,800 developed acres would then be 48,660 STB/acre. The average net pay for the unit is 134 feet, assuming an average porosity of 8%, an initial formation volume factor of 1.2 reservoir barrels per STB, and an initial water saturation of 30%. The calculated average thickness of 134' compares to the estimated thickness of 120-150 feet taken from the few usable logs and cores from unit wells.

Assuming an OOIP of 671.5 MM STB and a current formation volume factor of 1.05, the oil saturation at start of flood, January 1, 1985, is estimated at 50%. Using a conservative estimate of 60% for volumetric sweep efficiency, and a residual oil saturation of 25%, the estimated secondary recovery will be approximately 9.8% of OOIP or 65.8 MM STB. This gives a secondary recovery to primary recovery ratio of 49%.

FIELD DEVELOPMENT

The proposed unit includes virtually all wells which have current or historical production from the southern portion of the Eunice Monument pool, which was formerly designated the Eunice (Penrose, Grayburg, San Andres) pool. The Eunice pool was discovered March 21, 1929, upon completion of the #1 Continental Lockhart 'B-31' in Section 31, Township 21 South, Range 36 East, Lea County. This well is located approximately two miles South of the proposed unit. Records from the State of New Mexico show the following initial reservoir data for the Eunice (Penrose, Grayburg, San Andres) pool:

Initial Reservoir Pressure at 250' S.S.	1450 PSI
Reservoir Temperature at 250' S.S.	90° F
Solution Gas-Oil Ratio	432 FT^3/BBL
Saturation Pressure	1372 PSI
API Oil Gravity	32°

Following discovery, the field was developed on 40-acre spacing with the majority of wells being drilled and completed during the three year period from 1934 through 1937. Peak oil production rate for the unit wells occurred in May, 1937, when the monthly production was 791,800 barrels.

All oil wells within the unit area were classified as Eunice oil wells until 1953, when the New Mexico Oil Conservation Commission created the Eumont Gas pool overlying the Eunice and Monument oil pools. In defining the Eumont Gas pool vertical limits to include the Yates, Seven Rivers, and Queen formations, the Commission contracted the vertical limits of the Eunice and Monument oil pools to contain only the Grayburg

and San Andres formations. Subsequent to this decision, in 1956 the Commission ordered that wells which had completion intervals open across the top of the Grayburg formation be identified to the Commission for reclassification. As a result of this action, approximately thirty wells inside the southern and western edges of the proposed unit were reclassified from Eunice Monument oil wells to Eumont oil wells. The Commission did not order remedial work to isolate the two pools, but did order that future wells be completed in such a manner as to prevent communication between the oil and gas pools. We estimate that from 100 to 150 of the proposed unit wells have completion intervals which currently or historically have been simultaneously open in both the Penrose and Grayburg formations.

There are 357 40-acre proration units within the unit area of 14,280 acres. Thirteen of these locations have never produced from the proposed unitized interval because the location was undrilled, a dry hole was drilled, or no well was completed in the oil zone. All other locations have recorded production of Eumont oil, Eunice Monument oil, or both. Only 200 oil wells are currently active within the unit, with the remaining wells being temporarily abandoned, plugged, or recompleted. The producing status of the proposed unit wells is presented in Table 2.

TABLE 2
WELL STATUS BY TRACT
PROPOSED EUNICE MONUMENT SOUTH UNIT
STATUS CODES- P=PRODUCING TA=TEMP. ABANDONED PA=PLUGGED I=SWD
PAYCODES- EUNMON=EUNICE MONUMENT EUMOIL=EUMONT OIL EUMGAS=EUMONTGAS
LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
1	GETTY	SKELLY_H_STATE	1	TA	EUNMON	NONE	3852	25
	GETTY	SKELLY_H_STATE	2	P	EUNMON	NONE	3852	25
2	ARCO	STATE_P	1	P	EUNMON	NONE	3850	25
	ARCO	STATE_P	2	P	EUNMON	NONE	----	25
3	AMOCO	GILLULLY_A_FED	3	P	EUNMON	NONE	3850	25
	AMOCO	GILLULLY_A_FED	5	P	EUNMON	NONE	3866	25
	AMOCO	GILLULLY_A_FED	6	P	EUNMON	NONE	3854	25
4	AMOCO	GILLULLY_B_FED	1	TA	EUMOIL	NONE	3854	25
5	GULF	WHITE_A	1	P	EUNMON	NONE	3845	25
	GULF	WHITE_A	2	P	EUMGAS	NONE	3845	25
	GULF	WHITE_A	3	P	EUNMON	NONE	3850	25
	GULF	WHITE_A	4	PA	EUMGAS	EUNMON	----	25
	GULF	WHITE_A	5	P	EUNMON	NONE	3855	25
	GULF	WHITE_A	6	PA	EUNMON	NONE	----	25
	GULF	WHITE_A	7	P	EUMGAS	NONE	3750	25
6	EXXON	FOPEANO_FED	1	TA	EUNMON	NONE	----	25
	EXXON	FOPEANO_FED	3	PA	EUMOIL	NONE	----	25
7	HUDSON	PHILLIPS_UNIT	1	P	EUMGAS	EUNMON	3850	30
8	AMERADA	STATE_W	1	P	EUNMON	NONE	3835	30
	AMERADA	STATE_W	2	P	EUMGAS	EUNMON	3838	30
	AMERADA	STATE_W	3	P	EUNMON	NONE	3852	30
	AMERADA	STATE_W	4	TA	EUNMON	NONE	3820	30
9	ARCO	STATE_193	1	PA	EUNMON	NONE	----	30
10	GULF	SUNSHINE	1	P	EUNMON	NONE	3850	30
	GULF	SUNSHINE_STATE	2	P	EUMGAS	EUNMON	3840	30
	GULF	SUNSHINE	3	P	EUNMON	NONE	3832	30
12	GETTY	SKELLY_G_STATE	1	P	EUNMON	EUMGAS	3840	30
13	CITIES_SERVICE	STATE_F	1	P	EUNMON	NONE	3840	30
	CITIES_SERVICE	STATE_F	2	P	EUMGAS	NONE	3835	30
	CITIES_SERVICE	STATE_F	3	PA	EUNMON	NONE	----	30

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STATUS CODES- P=PRODUCING TA=TEMP. ABANDONED PA=PLUGGED I=SWD
PAYCODES- EUNMON=EUNICE MONUMENT EUMOIL=EUMONT OIL EUMGAS=EUMONTGAS
LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
17	GULF	BELL_(NCTF)	1	P	EUNMON	NONE	3850	36
	GULF	BELL_(NCTF)	2	P	EUMGAS	EUNMON	3840	36
	GULF	BELL_(NCTF)	3	P	EUNMON	NONE	3849	36
	GULF	BELL_(NCTF)	4	P	EUNMON	NONE	3855	36
	GULF	BELL_(NCTF)	5	P	EUMOIL	NONE	3852	36
	GULF	BELL_(NCTF)	6	P	EUMOIL	NONE	3855	36
	GULF	BELL_(NCTF)	7	PA	EUMOIL	NONE	----	36
	GULF	BELL_(NCTF)	8	P	EUMOIL	NONE	3860	36
18	SHELL	STATE_K	1	P	EUNMON	NONE	3850	36
	SHELL	STATE_K	2	P	EUNMON	NONE	3850	36
	SHELL	STATE_K	3	P	EUNMON	NONE	3850	36
	SHELL	STATE_K	4	P	EUNMON	NONE	3854	36
19	ARCO	STATE_M	1	P	EUNMON	NONE	----	36
	ARCO	STATE_M	2	P	EUNMON	NONE	3875	36
20	GULF	ORCUTT_(NCTC)	1	P	EUNMON	NONE	3870	6
	GULF	ORCUTT_(NCTC)	2	P	EUNMON	NONE	3865	6
	GULF	ORCUTT_(NCTC)	3	P	EUMGAS	EUNMON	3862	6
	GULF	ORCUTT_(NCTC)	4	TA	EUNMON	NONE	3860	6
	GULF	ORCUTT_(NCTC)	5	P	EUNMON	NONE	3847	36
	GULF	ORCUTT_(NCTC)	6	P	EUNMON	NONE	3847	6
	GULF	ORCUTT_(NCTC)	7	P	EUNMON	NONE	3846	36
	GULF	ORCUTT_(NCTC)	8	P	EUNMON	DUAL	3885	6
	GULF	ORCUTT_(NCTC)	8	P	EUMGAS	DUAL	3885	6
21	EXXON	AGGIES_STATE	1	P	EUNMON	NONE	3850	31
	EXXON	AGGIES_STATE	10	P	EUNMON	NONE	3830	31
	EXXON	AGGIES_STATE	11	TA	EUNMON	NONE	3840	31
	EXXON	AGGIES_STATE	12	PA	EUNMON	NONE	----	31
	EXXON	AGGIES_STATE	13	P	EUMGAS	NONE	----	31
	EXXON	AGGIES_STATE	2	P	EUNMON	NONE	3850	31
	EXXON	AGGIES_STATE	3	P	EUNMON	NONE	3845	31
	EXXON	AGGIES_STATE	4	P	EUMGAS	EUNMON	3850	31
	EXXON	AGGIES_STATE	5	TA	EUNMON	NONE	3840	31
	EXXON	AGGIES_STATE	6	P	EUNMON	NONE	3840	31
	EXXON	AGGIES_STATE	7	P	EUMGAS	EUNMON	3835	31
	EXXON	AGGIES_STATE	8	TA	EUNMON	NONE	3840	31
	EXXON	AGGIES_STATE	9	TA	EUNMON	NONE	3840	31
22	TEXACO	STATE_H_(NCTI)	1	PA	EUNMON	NONE	----	31
	TEXACO	STATE_H_(NCTI)	2	PA	EUNMON	NONE	----	31
	TEXACO	STATE_H_(NCTI)	24	P	EUMGAS	NONE	----	31
	TEXACO	STATE_H_(NCTI)	3	P	EUNMON	NONE	3868	31
	TEXACO	STATE_H_(NCTI)	4	P	EUNMON	NONE	3855	31

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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
23	ARCO	STATE_O	1	PA	EUNMON	NONE	----	32
	ARCO	STATE_O	2	P	EUMGAS	EUNMON	3840	32
24	FIELDS	TURNER_STATE	1	P	EUNMON	NONE	----	32
	FIELDS	TURNER_STATE	2	P	EUMGAS	NONE	----	32
	FIELDS	TURNER_STATE	3	P	EUNMON	NONE	----	32
25	GETTY	STATE_AY	1	P	EUMGAS	EUNMON	3860	32
26	ARCO	STATE_196	1	P	EUNMON	NONE	3860	32
	ARCO	STATE_196	2	TA	EUNMON	NONE	3861	32
27	SHELL	STATE_J	1	P	EUNMON	NONE	3845	32
	SHELL	STATE_J	2	P	EUNMON	NONE	3841	32
	SHELL	STATE_J	3	P	EUNMON	NONE	3832	32
	SHELL	STATE_J	4	P	EUNMON	NONE	3846	32
	SHELL	STATE_J	5	TA	EUNMON	NONE	6330	32
	EL_PASO_NATURAL	SHELL_STATE	6	P	EUMGAS	EUNMON	----	32
28	ARCO	STATE_L_BATT_2	3	P	EUNMON	NONE	3857	6
	ARCO	STATE_L_BATT_2	4	P	EUNMON	NONE	3850	6
31	WILBANKS	STATE_G	1	TA	EUNMON	NONE	----	6
	WILBANKS	STATE_G	2	I	EUNMON	NONE	----	6
32	EL_PASO_NATURAL	SHELL_STATE	1	P	EUMGAS	EUNMON	----	6
	SHELL	STATE_EE	1	P	EUNMON	NONE	3886	6
	EL_PASO_NATURAL	SHELL_STATE	6	P	EUMGAS	EUNMON	3886	6
33	SHELL	STATE_F	1	P	EUNMON	NONE	3860	6
	SHELL	STATE_F	2	TA	EUNMON	NONE	3851	6
34	GULF	ORCUTT_(NCTA)	1	P	EUMGAS	EUNMON	3890	5
	GULF	ORCUTT_(NCTA)	2	P	EUNMON	NONE	3895	5
	GULF	ORCUTT_(NCTA)	3	P	EUNMON	NONE	3894	5
	GULF	ORCUTT_(NCTA)	4	P	EUNMON	NONE	3902	6
	GULF	ORCUTT_(NCTA)	5	P	EUNMON	NONE	3890	5
	GULF	ORCUTT_(NCTA)	6	P	EUNMON	NONE	3873	6
35	GULF	BELL_(NCTD)	1	P	EUMOIL	NONE	3880	6
	GULF	BELL_(NCTD)	2	P	EUMOIL	NONE	3888	6
36	ARCO	STATE_K	1	P	EUNMON	NONE	3886	6
	ARCO	STATE_K_COM	2	P	EUMGAS	EUNMON	3867	6
37	GULF	GRAHAM_ST_(NCTE	1	P	EUNMON	NONE	3890	6
	GULF	GRAHAM_ST_(NCTE	2	P	EUMGAS	EUNMON	3885	6

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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
38	GULF	BELL_(NCTB)	1	P	EUNMON	NONE	3895	6
	GULF	BELL_(NCTB)	2	P	EUNMON	NONE	3885	6
39	GULF	HEASLEY_STATE	1	P	EUNMON	NONE	3882	5
	GULF	HEASLEY_STATE	2	P	EUNMON	NONE	3866	5
	GULF	HEASLEY_STATE	3	P	EUNMON	NONE	3859	5
	GULF	HEASLEY_STATE	4	P	EUNMON	NONE	3875	5
	GULF	HEASLEY_STATE	5	P	EUNMON	NONE	3861	5
	GULF	HEASLEY_STATE	6	P	EUNMON	NONE	3862	5
	GULF	HEASLEY_STATE	7	P	EUMGAS	NONE	3630	5
40	GULF	ORCUTT_(NCTB)	1	P	EUMGAS	EUNMON	3865	5
	GULF	ORCUTT_(NCTB)	2	P	EUNMON	NONE	3864	5
42	ARCO	STATE_H	1	P	EUMGAS	EUNMON	3910	5
	ARCO	STATE_H	2	P	EUNMON	NONE	3900	5
	ARCO	STATE_H	3	P	EUMGAS	EUNMON	3894	5
	ARCO	STATE_H	4	P	EUNMON	NONE	3887	5
43	ARCO	STATE_E	1	P	EUNMON	NONE	3897	5
	ARCO	STATE_E	2	P	EUNMON	NONE	3856	5
44	KOCH	STATE_A	1	P	EUNMON	NONE	3873	5
	KOCH	STATE_A	2	P	EUNMON	NONE	3890	5
45	ARCO	STATE_G_COM	1	P	EUMGAS	EUNMON	3890	5
	ARCO	STATE_G	2	P	EUNMON	NONE	3904	5
	ARCO	STATE_G	3	P	EUNMON	NONE	3948	5
46	ARCO	STATE_C	1	P	EUNMON	NONE	3949	5
	ARCO	STATE_C	2	P	EUNMON	NONE	3885	5
47	GULF	BELLRAMSAY_NCTA	10	P	EUNMON	NONE	3844	4
	GULF	BELLRAMSAY_NCTA	13	P	EUNMON	NONE	6050	4
	GULF	BELLRAMSAY_NCTA	5	P	EUMGAS	EUNMON	3868	4
	GULF	BELLRAMSAY_NCTA	6	P	EUNMON	NONE	3896	4
	GULF	BELLRAMSAY_NCTA	7	P	EUNMON	NONE	3893	4
	GULF	BELLRAMSAY_NCTA	8	P	EUMGAS	EUNMON	3890	4
	GULF	BELLRAMSAY_NCTA	9	P	EUNMON	NONE	3870	4

TABLE 2
WELL STATUS BY TRACT
PROPOSED EUNICE MONUMENT SOUTH UNIT
STATUS CODES- P=PRODUCING TA=TEMP. ABANDONED PA=PLUGGED I=SWD
PAYCODES- EUNMON=EUNICE MONUMENT EUMOIL=EUMONT OIL EUMGAS=EUMONTGAS
LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
48	CONOCO	MEYER_B4	1	P	EUNMON	NONE	3900	4
	CONOCO	MEYER_B4	10	P	EUNMON	NONE	3860	4
	CONOCO	MEYER_B4	11	P	EUNMON	NONE	3890	4
	CONOCO	MEYER_B4	12	TA	EUNMON	NONE	3860	4
	CONOCO	MEYER_B4	13	P	EUNMON	NONE	3871	4
	CONOCO	MEYER_B4	14	P	EUMGAS	EUNMON	----	4
	CONOCO	MEYER_B4	15	P	EUMGAS	EUNMON	3857	4
	CONOCO	MEYER_B4	16	TA	EUNMON	NONE	3835	4
	CONOCO	MEYER_B4	17	TA	EUNMON	NONE	3832	4
	CONOCO	MEYER_B4	18	TA	EUNMON	NONE	----	4
	CONOCO	MEYER_B4	2	P	EUNMON	NONE	3895	4
	CONOCO	MEYER_B4	3	P	EUNMON	NONE	3870	4
	CONOCO	MEYER_B4	4	P	EUMGAS	EUNMON	----	4
	CONOCO	MEYER_B4	5	P	EUNMON	NONE	3880	4
	CONOCO	MEYER_B4	6	P	EUNMON	EUMGAS	3864	4
	CONOCO	MEYER_B4	7	TA	EUNMON	EUMGAS	3873	4
	CONOCO	MEYER_B4	8	P	EUNMON	NONE	3852	4
	CONOCO	MEYER_B4	9	P	EUNMON	NONE	3870	4
49	ARCO	STATE_L	5	P	EUNMON	NONE	3845	3
50	ME-TEX	WALLACE_STATE	1	P	EUNMON	NONE	3901	3
	ME-TEX	WALLACE_STATE	2	TA	EUNMON	EUMGAS	3866	3
	ME-TEX	WALLACE_STATE	3	P	EUMGAS	EUNMON	----	3
	ME-TEX	WALLACE_STATE	4	TA	EUNMON	NONE	3879	3
	ME-TEX	WALLACE_STATE	8	P	EUMGAS	NONE	----	3
51	SUN	AKENS	1	P	EUMGAS	EUNMON	3885	3
	SUN	AKENS	2	TA	EUNMON	EUMGAS	3872	3
	SUN	AKENS	3	P	EUNMON	NONE	3945	3
	SUN	AKENS	4	TA	EUNMON	NONE	3963	3
	SUN	AKENS	5	P	EUNMON	NONE	3852	3
	SUN	AKENS	6	P	EUMGAS	EUNMON	3834	3
52	APOLLO	J.AKENS	1	P	EUNMON	NONE	----	3
53	ARCO	HOUSTON	1	P	EUMOIL	NONE	3884	7
	ARCO	HOUSTON	2	P	EUMOIL	NONE	3885	7
54	ARCO	HOUSTON_M.A.	1	TA	EUNMON	NONE	----	7
	ARCO	HOUSTON_M.A.	2	TA	EUNMON	NONE	----	7
55	AMERADA	H.L.HOUSTON	1	TA	EUNMON	NONE	3833	7
	AMERADA	H.L.HOUSTON	2	P	EUNMON	NONE	3880	7
	AMERADA	H.L.HOUSTON	3	P	EUMGAS	EUNMON	3895	7
	AMERADA	H.L.HOUSTON	4	P	EUNMON	NONE	3820	7

TABLE 2
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PROPOSED EUNICE MONUMENT SOUTH UNIT
STATUS CODES- P=PRODUCING TA=TEMP. ABANDONED PA=PLUGGED I=SWD
PAYCODES- EUNMON=EUNICE MONUMENT EUMOIL=EUMONT OIL EUMGAS=EUMONTGAS
LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
56	GULF	CAMPBELL	1	PA	EUNMON	NONE	----	7
	GULF	CAMPBELL	2	P	EUMGAS	EUMOIL	----	7
	GULF	CAMPBELL	3	PA	EUNMON	EUMOIL	----	7
	GULF	CAMPBELL	4	P	EUMOIL	NONE	3900	7
57	GULF	HOUSTON	1	PA	EUNMON	NONE	----	7
	GULF	HOUSTON	2	P	EUNMON	NONE	3886	7
	GULF	HOUSTON	3	PA	EUNMON	NONE	----	7
	GULF	HOUSTON	4	P	EUMGAS	EUNMON	3920	7
59	CONOCO	MEYER_B8	1	P	EUNMON	NONE	3870	8
	CONOCO	MEYER_B8	2	P	EUNMON	NONE	3891	8
	CONOCO	MEYER_B8	3	P	EUNMON	NONE	3875	8
	CONOCO	MEYER_B8	4	P	EUMGAS	EUNMON	3855	8
	CONOCO	MEYER_B8	5	P	EUNMON	NONE	4000	8
60	GETTY	STATE_A	1	P	EUNMON	NONE	3984	8
	GETTY	STATE_A	2	P	EUNMON	NONE	3905	8
	GETTY	STATE_A	3	P	EUNMON	NONE	3910	8
	GETTY	STATE_A	4	P	EUMGAS	EUNMON	3887	8
	GETTY	STATE_A	5	P	EUNMON	NONE	4020	8
62	ARCO	STATE_B	1	P	EUNMON	NONE	3901	8
	ARCO	STATE_B	2	P	EUNMON	NONE	3941	8
63	GULF	BELL_(NCTA)	1	P	EUNMON	NONE	----	8
	GULF	BELL_(NCTA)	2	P	EUMGAS	EUNMON	----	8
64	GULF	BELLRAMSAY_NCTA	1	P	EUNMON	NONE	3910	8
	GULF	BELLRAMSAY_NCTA	2	P	EUNMON	NONE	3886	8
	GULF	BELLRAMSAY_NCTA	3	PA	EUNMON	NONE	----	8
	GULF	BELLRAMSAY_NCTA	4	P	EUNMON	NONE	3880	8
65	CONOCO	MEYER_B9	1	P	EUNMON	NONE	3900	9
	CONOCO	MEYER_B9	2	P	EUNMON	DUAL	3824	9
	CONOCO	MEYER_B9	2	P	EUMGAS	DUAL	3824	9
	CONOCO	MEYER_B9	3	TA	EUNMON	NONE	3858	9
	CONOCO	MEYER_B9	4	P	EUNMON	NONE	3884	9
66	ARCO	E.C.ADKINS	1	TA	EUNMON	NONE	3900	9
	ARCO	E.C.ADKINS	10	P	EUNMON	NONE	3900	9
	ARCO	E.C.ADKINS	11	P	EUNMON	NONE	6400	9
	ARCO	E.C.ADKINS	2	P	EUNMON	NONE	3880	9
	ARCO	E.C.ADKINS	3	P	EUNMON	NONE	3915	9
	ARCO	E.C.ADKINS	4	P	EUNMON	NONE	3900	9
	ARCO	E.C.ADKINS	5	P	EUMGAS	EUNMON	3895	9
	ARCO	E.C.ADKINS	6	P	EUNMON	NONE	3895	9
	ARCO	E.C.ADKINS	7	P	EUNMON	NONE	3890	9

TABLE 2
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STATUS CODES- P=PRODUCING TA=TEMP. ABANDONED PA=PLUGGED I=SWD
PAYCODES- EUNMON=EUNICE MONUMENT EUMOIL=EUMONT OIL EUMGAS=EUMONTGAS
LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
66	ARCO	E.C.ADKINS	8	PA	EUNMON	NONE	----	9
	ARCO	E.C.ADKINS	9	P	EUMGAS	NONE	3705	9
67	EXXON	ADKINS	1	TA	EUNMON	NONE	3890	10
	EXXON	ADKINS	2	P	EUNMON	NONE	3910	10
	EXXON	ADKINS	3	TA	EUNMON	NONE	3880	10
	EXXON	ADKINS	4	P	EUMGAS	NONE	3867	10
	EXXON	ADKINS	5	TA	EUNMON	NONE	3865	10
	EXXON	ADKINS	6	TA	EUNMON	NONE	3880	10
	EXXON	ADKINS	7	TA	EUNMON	NONE	3890	10
68	BRADY	ADKINS	1	P	EUNMON	NONE	----	10
69	EXXON	KNOX	1	P	EUMGAS	EUNMON	3865	10
	EXXON	KNOX	2	TA	EUNMON	NONE	3852	10
	EXXON	KNOX	3	P	EUNMON	NONE	3880	10
	EXXON	KNOX	4	P	EUNMON	NONE	3866	10
	EXXON	KNOX	5	P	EUNMON	NONE	3885	10
	EXXON	KNOX	6	P	EUNMON	NONE	3890	10
	EXXON	KNOX	7	TA	EUNMON	NONE	3890	10
	EXXON	KNOX	8	P	EUNMON	NONE	3865	10
70	HARTMAN	RASMUSSEN_STATE	1	P	EUNMON	NONE	----	2
71	GULF	BELL_(NCTE)	1	P	EUNMON	NONE	3855	11
	GULF	BELL_(NCTE)	2	P	EUNMON	NONE	3850	11
72	ARCO	STATE_L_BATT_3	1	P	EUNMON	NONE	3877	11
73	TWO_STATES	STATE_B	1	P	EUNMON	NONE	----	11
74	WISER	MCQUATTERS	1	P	EUMGAS	NONE	3886	11
	WISER	MCQUATTERS	2	PA	EUNMON	NONE	3854	11
	WISER	MCQUATTERS	3	P	EUNMON	NONE	3854	11
75	CONOCO	STATE_D_BATT_2	1	P	EUMGAS	EUNMON	----	11
	CONOCO	STATE_D_BATT_2	2	P	EUNMON	NONE	3900	11
	CONOCO	STATE_D_BATT_2	3	P	EUNMON	NONE	3905	11
	CONOCO	STATE_D_BATT_2	4	P	EUNMON	NONE	3890	11
77	ARCO	BERRYMAN	1	P	EUMGAS	EUNMON	3882	11
78	BRUNO	MARSHALL	1	TA	EUNMON	NONE	----	11
	BRUNO	MARSHALL	2	PA	EUNMON	NONE	----	11
79	BRUNO	MARSHALL	3	P	EUNMON	NONE	----	12
	BRUNO	MARSHALL	4	PA	EUNMON	NONE	----	12

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WELL STATUS BY TRACT
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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
80	CONOCO	MEYER_B18	1	PA	EUNMON	NONE	----	18
	CONOCO	MEYER_B18	2	P	EUMGAS	NONE	----	18
	CONOCO	MEYER_B18	3	TA	EUMOIL	NONE	----	18
	CONOCO	MEYER_B18	4	TA	EUMOIL	NONE	----	18
81	CONOCO	MEYER_A1	1	P	EUNMON	NONE	3875	8
	CONOCO	MEYER_A1	10	P	EUNMON	NONE	3992	17
	CONOCO	MEYER_A1	11	P	EUMGAS	NONE	----	17
	CONOCO	MEYER_A1	12	P	EUNMON	NONE	3955	17
	CONOCO	MEYER_A1	13	P	EUNMON	NONE	3939	18
	CONOCO	MEYER_A1	14	P	EUMGAS	EUMOIL	----	18
	CONOCO	MEYER_A1	15	P	EUNMON	NONE	4001	17
	CONOCO	MEYER_A1	16	P	EUNMON	NONE	4191	17
	CONOCO	MEYER_A1	17	TA	EUNMON	NONE	4141	17
	CONOCO	MEYER_A1	18	TA	UNKNOWN	----	82	17
	CONOCO	MEYER_A1	2	P	EUNMON	NONE	3914	8
	CONOCO	MEYER_A1	3	P	EUMGAS	EUNMON	3885	8
	CONOCO	MEYER_A1	4	P	EUNMON	NONE	3900	8
	CONOCO	MEYER_A1	5	P	EUNMON	NONE	3914	18
	CONOCO	MEYER_A1	6	P	EUMGAS	NONE	----	18
	CONOCO	MEYER_A1	7	P	EUMOIL	NONE	----	18
	CONOCO	MEYER_A1	8	P	EUNMON	NONE	3933	18
	CONOCO	MEYER_A1	9	P	EUNMON	NONE	3970	17
82	CONOCO	LOCKHART_A	2	PA	EUMOIL	NONE	----	18
	CONOCO	LOCKHART_A	3	P	EUMGAS	NONE	----	18
	CONOCO	LOCKHART_A	4	P	EUMGAS	NONE	----	18
	CONOCO	LOCKHART_A	5	PA	EUMOIL	NONE	----	18
	CONOCO	LOCKHART_A	6	P	EUMOIL	NONE	----	18
83	GETTY	COLEMAN_A	1	P	EUNMON	NONE	3900	17
84	ARCO	COLEMAN	1	P	EUMGAS	EUNMON	4015	17
	ARCO	COLEMAN	2	P	EUNMON	NONE	4003	17
85	GETTY	COLEMAN	1	P	EUNMON	NONE	4147	17
	GETTY	COLEMAN	2	P	EUNMON	NONE	3935	17
	GETTY	COLEMAN	3	P	EUMGAS	EUNMON	3925	17
	GETTY	COLEMAN	4	P	EUNMON	NONE	3943	17
	GETTY	COLEMAN	5	P	EUNMON	NONE	4168	17
86	EL_PASO_NATURAL	COLEMAN	1	P	EUMGAS	EUNMON	----	17
	SHELL	COLEMAN(1Y)	1	P	EUMOIL	NONE	----	17
	SHELL	COLEMAN	2	P	EUNMON	NONE	3961	17
87	CONOCO	MEYER_B17	1	P	EUMGAS	EUMOIL	----	17
	CONOCO	MEYER_B17	2	TA	EUNMON	NONE	3950	17

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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
88	GETTY	SKELLY_B_STATE	1	P	EUNMON	NONE	3903	16
	GETTY	SKELLY_B_STATE	2	P	EUNMON	NONE	3902	16
	GETTY	SKELLY_B_STATE	3	P	EUNMON	NONE	3893	16
	GETTY	SKELLY_B_STATE	4	P	EUNMON	NONE	3900	16
	GETTY	SKELLY_B_STATE	6	P	EUNMON	NONE	3911	16
	GETTY	SKELLY_B_STATE	7	P	EUMGAS	NONE	3480	16
89	GETTY	STATE_AW	1	P	EUNMON	NONE	3885	16
90	GETTY	STATE_AX	1	P	EUNMON	NONE	3886	16
91	CITIES_SERVICE	STATE_C	1	P	EUMOIL	NONE	3912	16
	CITIES_SERVICE	STATE_C	2	PA	EUMOIL	NONE	----	16
	CITIES_SERVICE	STATE_C	3	P	EUMGAS	EUMOIL	3851	16
	CITIES_SERVICE	STATE_C	4	P	EUMOIL	NONE	3912	16
92	GETTY	STATE_D	1	P	EUNMON	NONE	3890	16
	GETTY	STATE_D	2	P	EUNMON	NONE	3900	16
93	GETTY	STATE_E	1	P	EUNMON	NONE	3886	16
	GETTY	STATE_E	2	P	EUMGAS	EUNMON	3906	16
	GETTY	STATE_E	3	P	EUNMON	NONE	4058	16
94	GULF	BELL_(NCTC)	1	P	EUNMON	NONE	----	15
	GULF	BELL_(NCTC)	2	P	EUNMON	NONE	----	15
	GULF	BELL_(NCTC)	3	P	EUNMON	NONE	----	15
	GULF	BELL_(NCTC)	4	P	EUNMON	DUAL	----	15
	GULF	BELL_(NCTC)	4	P	EUMGAS	DUAL	----	15
95	GULF	JANDA_(NCTC)	1	P	EUNMON	NONE	3892	15
	GULF	JANDA_(NCTC)	2	PA	EUNMON	NONE	----	15
	GULF	JANDA_(NCTC)	3	P	EUNMON	NONE	3896	15
	GULF	JANDA_(NCTC)	4	P	EUNMON	NONE	3883	15
96	CONOCO	STATE_D	10	P	EUNMON	NONE	3865	15
	CONOCO	STATE_D	11	P	EUNMON	NONE	3878	15
	CONOCO	STATE_D	12	P	EUMGAS	EUNMON	----	15
	CONOCO	STATE_D	5	TA	EUNMON	NONE	3885	15
	CONOCO	STATE_D	6	P	EUNMON	NONE	3865	15
	CONOCO	STATE_D	7	P	EUNMON	NONE	3875	15
	CONOCO	STATE_D	8	P	EUNMON	NONE	3889	15
	CONOCO	STATE_D	9	P	EUNMON	NONE	3880	15

TABLE 2
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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
97	CONOCO	LOCKHART_B14	1	TA	EUNMON	NONE	3870	14
	CONOCO	LOCKHART_B14	2	TA	EUNMON	NONE	3895	14
	CONOCO	LOCKHART_B14	3	P	EUNMON	NONE	3871	14
	CONOCO	LOCKHART_B14	4	P	EUMGAS	EUNMON	----	14
	CONOCO	LOCKHART_B14	5	P	EUMGAS	EUNMON	----	14
	CONOCO	LOCKHART_B14	6	P	EUNMON	NONE	3867	14
	CONOCO	LOCKHART_B14	8	P	EUMGAS	NONE	----	14
98	GULF	COLLINS	1	PA	EUNMON	NONE	----	14
	GULF	COLLINS	2	PA	EUNMON	NONE	----	14
	GULF	COLLINS	3	P	EUNMON	NONE	3860	14
	GULF	COLLINS	4	P	EUMGAS	NONE	3880	14
	GULF	COLLINS	5	PA	DRY	NONE	----	14
99	GULF	FRONA_LECK	1	P	EUNMON	NONE	----	14
102	GULF	ARNT_RAMSAY_C	10	P	EUNMON	NONE	3905	21
	GULF	ARNT_RAMSAY_C	11	P	EUNMON	NONE	3890	21
	GULF	ARNT_RAMSAY_C	12	P	EUNMON	NONE	3885	21
	GULF	ARNT_RAMSAY_C	13	P	EUNMON	DUAL	3902	21
	GULF	ARNT_RAMSAY_C	13	P	EUMGAS	DUAL	3902	21
	GULF	ARNT_RAMSAY_C	14	P	EUNMON	NONE	3890	21
	GULF	ARNT_RAMSAY_C	2	P	EUNMON	NONE	3924	21
	GULF	ARNT_RAMSAY_C	3	TA	EUNMON	NONE	3898	21
	GULF	ARNT_RAMSAY_C	4	P	EUNMON	NONE	3919	21
	GULF	ARNT_RAMSAY_C	6	TA	EUNMON	NONE	3911	21
	GULF	ARNT_RAMSAY_C	7	P	EUNMON	NONE	3914	21
	GULF	ARNT_RAMSAY_C	9	P	EUNMON	NONE	3916	21
103	GETTY	STATE_G	1	P	EUMOIL	NONE	3906	21
104	AMOCO	STATE_I	1	P	EUNMON	NONE	3908	22
	AMOCO	STATE_I	2	P	EUNMON	NONE	3908	22
105	AMOCO	STATE_J	1	P	EUNMON	NONE	3900	22
106	ARCO	STATE_L_BATT_4	2	P	EUNMON	NONE	3900	22
107	GULF	H.LEONARD_NCTA	1	P	EUNMON	NONE	3892	22
	GULF	H.LEONARD_NCTA	10	P	EUMOIL	NONE	3950	22
	GULF	H.LEONARD_NCTA	11	P	EUMOIL	NONE	3950	22
	GULF	H.LEONARD_NCTA	2	TA	EUNMON	NONE	3890	22
	GULF	H.LEONARD_NCTA	3	P	EUMGAS	EUNMON	3895	22
	GULF	H.LEONARD_NCTA	4	PA	EUNMON	NONE	----	22
	GULF	H.LEONARD_NCTA	5	P	EUNMON	NONE	3874	22
	GULF	H.LEONARD_NCTA	9	P	EUMOIL	NONE	3950	22

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LASTPAY- CURRENT OR LAST PRODUCTIVE ZONE PREVPAY- PREVIOUS ZONE

TRACT	OPERATOR	LEASE	WELL	STATUS	LASTPAY	PREVPAY	TD	SECTION
113	RASMUSSEN	STATE_G	1	TA	EUNMON	NONE	3852	2
	RASMUSSEN	STATE_G	2	TA	EUNMON	NONE	3842	2
114	AMOCO	STATE_C	1	P	EUMGAS	NONE	----	2
	AMOCO	STATE_C	2	P	EUNMON	NONE	----	2
115	AMOCO	MCQUATTERS	1	P	EUMGAS	NONE	----	11
	AMOCO	MCQUATTERS	2	P	EUNMON	NONE	----	11
116	CONOCO	LOCKHART_B13	7	P	EUMGAS	NONE	----	13
117	GETTY	MEXICO_V_COM	1	P	EUMGAS	EUNMON	3900	16

PRIMARY RECOVERY

The primary performance plot for the unit area is shown in Figure 6. Cumulative production for the unit area has been 119,785,804 barrels, as of September 30, 1982, giving an average production of 8,680 barrels per developed acre. The maximum production rate for the area occurred during 1937, when 321 wells produced an average of 720,000 barrels of oil per month for the year. Currently, approximately 200 wells are producing an average of 65,000 barrels of oil per month at an average decline rate of 4% per year. Figures 7 through 14 are 2-D and 3-D contour presentations of cumulative and current oil production, current water production, and current gas production for the unit area.

Individual lease decline curves are presented in Figures 15 through 95, and summarized in Table 3. Final decline rates were assigned by the Technical Committee for each active lease in the Unit. The production data for these decline curves was extracted from New Mexico Oil Conservation Commission production records, and corrected by actual production records of the individual operators when necessary. The Remaining Primary Reserve figure shown on each curve was calculated to an economic limit of 30 barrels per month per active well, using the Committee approved decline rate. The Ultimate Primary Recovery number is the simple summation of Cumulative Recovery to October 1, 1982, and Remaining Primary Reserves. The total remaining reserve for the Unit is approximately 14.5 million barrels when values for the individual leases are summed. This value is reasonably close to the 14 million barrel remaining primary reserve which can be extrapolated from the unit decline curve. Based upon either of these estimates, the primary reserves are approximately

90% depleted in the unit area. An examination of production records for the proposed unit area for 1980 and 1981 shows that oil production for each year was approximately 800,000 barrels, and water production for each year was approximately 3,100,000 barrels, giving an apparent field wide watercut of 79.5%. However, after analyzing individual well production records it is obvious that the water production is not evenly distributed throughout the field. For example, in 1980, only 19% of the active wells produced more than 50 barrels of water per day for a total of 75% of all produced water. Similarly, in 1981, 16% of the wells produced in excess of 50 barrels of water per day for a total of 71% of all produced water in the unit area. When the effect of these wells is removed from production statistics, the average watercut is less than 60% for the unit area, with production averaging 10 barrels of oil and 13 barrels of water per day per well.

An attempt was made to correlate the high water production areas to the formation structure to determine if a portion of the unit might be experiencing uniform water encroachment. After comparing water production, decline rates, and structural position for active leases in the field it was determined that no clear trend could be established. The water production is not uniform throughout the area and does not relate to decline rates or projected ultimate recoveries in any obvious way.

Considering the entire unit area, the water production history does not indicate a strong or uniform water drive mechanism. Furthermore, the early field production behavior exhibits the characteristics of a typical solution gas drive reservoir, having a rapid decline in reservoir pressure without a rapid rise in water production. Consequently, solution gas drive is considered to be the predominant drive mechanism.

TABLE 3
EUNICE MONUMENT SOUTH UNIT
TRACT DECLINE, PRODUCTION, AND RESERVE SUMMARY

TRACT	LEASE	DECLINE FACTOR PER YEAR	ULT RECOVERY AT ECONOMIC LIMIT (STB)	TOTAL PRODUCTION TO DATE (STB)	PRIMARY RESERVES (STB)	ECONOMIC LIMIT
1	SKELLY*H*	.071	596614	547732	48882	60
2	STATE*P*	.040	693684	615785	77899	60
3	GILLULLY*A*	.088	1083731	1051814	31917	90
4	GILLULLY*B*	.000	64868	64868	0	0
5	WHITE*A*	.041	1061900	971608	90292	90
6	FOPEANO	.000	362290	362290	0	0
7	PHILLIPS	.000	69517	69517	0	0
8	STATE*W*	.027	319564	317682	1882	60
9	STATE193	.000	132941	132941	0	0
10	SUNSHINE	.028	627739	577034	50705	60
12	SKELLY*G*	.116	151897	150924	973	30
13	STATE*F*	.107	512389	506027	6362	30
17	R_R_BELL*F*	.043	3528777	2949963	578814	180
18	STATE*K*	.039	3618342	2384372	1233970	120
19	STATE*M*	.022	1081545	925110	156435	60
20	ORCUTT*C*	.054	4396074	3851334	544740	180
21	AGGIES	.093	3577050	3460262	116788	150
22	STATE*H*	.028	1020828	944770	76058	60
23	STATE*O*	.000	120665	120665	0	0
24	TURNER_STATE	.036	318361	285631	32730	60
25	STATE*AY*	.000	21573	21573	0	0
26	STATE*196*	.063	381373	363854	17519	30
27	STATE*J*	.052	427681	398468	29213	120
28	STATE*L*_BATT2	.069	922598	897087	25511	60
31	STATE*G*	.000	529686	529686	0	0
32	STATE*EE*	.140	848320	819677	28643	30
33	STATE*F*	.000	569390	569390	0	0
34	ORCUTT*A*	.123	2566750	2426863	139887	150
35	R_R_BELL*D*	.073	924772	840869	83903	60
36	STATE*K*	.069	444679	433937	10742	30
37	GRAHAM_STATE*E*	.036	949266	907372	41894	30
38	R_R_BELL*B*	.041	2635327	1735275	900052	60
39	HEASLEY_STATE	.026	2791516	2213016	578500	180
40	ORCUTT*B*	.028	569443	525076	44367	30
42	STATE*H*	.054	1576492	1490025	86467	60
43	STATE*E*	.041	2010710	1365768	644942	60
44	STATE*A*	.147	711506	706600	4906	60
45	STATE*G*	.098	1227053	1181096	45957	60
46	STATE*C*	.041	1325255	1081610	243645	60
47	BELL_RAMSAY*A*	.039	2057392	1855285	202107	150
48	MEYER*B4*	.048	8387823	7321758	1066065	330
49	STATE*L*	.027	174053	155639	18414	30
50	WALLACE	.041	583429	566804	16625	30
51	AKENS	.092	1114003	1105175	8828	60
52	AKENS	.117	528833	479649	49184	30
53	HOUSTON	.067	927409	895397	32012	60
54	H_L_HOUSTON*MA*	.000	461791	461791	0	0

TABLE 3
EUNICE MONUMENT SOUTH UNIT
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TRACT	LEASE	DECLINE FACTOR PER YEAR	ULT RECOVERY AT ECONOMIC LIMIT (STB)	TOTAL PRODUCTION TO DATE (STB)	PRIMARY RESERVES (STB)	ECONOMIC LIMIT
55	HOUSTON	.181	2065502	2013216	52286	60
56	MOLLIE_CAMPBELL	.041	368264	358518	9746	30
57	A_F_HOUSTON	.141	1508803	1505329	3474	30
59	MEYER*B8*	.024	5435382	2876588	2558794	120
60	STATE*A*	.074	2569125	2369336	199789	120
62	STATE*B*	.091	1330887	1279320	51567	60
63	BELL*A*	.164	1004752	1004016	736	30
64	BELL_RAMSAY*A*2	.098	1629966	1606697	23269	90
65	MEYER*B9*	.042	1991625	1826619	165006	90
66	ADKINS	.029	4395649	3820702	574947	210
67	ADKINS	.068	2146758	2137045	9713	30
68	ADKINS	.049	537239	472750	64489	30
69	J_D_KNOX	.053	2789776	2657560	132216	150
70	RASMUSSEN_ST	.042	159151	157193	1958	30
71	BELL*E*	.073	689225	672445	16780	60
72	STATE*L*BATT3	.040	404721	370034	34687	30
73	STATE*B*	.000	165071	165071	0	0
74	MCQUATTERS	.000	502736	502736	0	0
75	STATE*D*BATT2	.045	949474	926018	23456	90
77	BERRYMAN	.000	122116	122116	0	0
78	MARSHALL	.000	283207	283207	0	0
79	MARSHALL	.000	212949	212949	0	0
80	MEYER*B18*	.000	610333	610333	0	0
81	MEYER*A1*	.046	10294096	8966471	1327625	390
82	LOCKHART_*A*	.076	1872355	1831365	40990	60
83	COLEMAN*A*	.060	635821	602851	32970	30
84	COLEMAN	.095	725405	710979	14426	30
85	COLEMAN	.065	2421222	2306058	115164	120
86	COLEMAN	.084	1006394	965363	41031	60
87	MEYER*B17*	.000	774162	774162	0	0
88	SKELLY_STATE*B*	.085	2535772	2479035	56737	150
89	STATE*AW*	.067	350913	345202	5711	30
90	STATE*AX*	.058	390324	385906	4418	30
91	STATE*C*	.126	1539256	1516980	22276	60
92	STATE*D*	.037	1131006	983003	148003	60
93	STATE*E*	.065	1013875	978165	35710	60
94	BELL*C*	.031	2518212	1949372	568840	120
95	JANDA	.091	1913123	1849230	63893	90
96	STATE*D*	.031	2786097	2511730	274367	180
97	LOCKHART*B14*	.114	1288965	1265171	23794	60
98	COLLINS	.014	852187	754307	97880	30
99	FRONA_LECK	.121	169580	165393	4187	30
102	ARNOTT_RAMSAY*C*	.093	4592500	4392116	200384	270
103	STATE*G*	.068	416222	385550	30672	30
104	STATE*I*	.052	787325	767101	20224	60
105	STATE*J*	.070	393803	375283	18520	30
106	STATE*L*BATT4	.109	433191	412916	20275	30

TABLE 3
EUNICE MONUMENT SOUTH UNIT
TRACT DECLINE, PRODUCTION, AND RESERVE SUMMARY

TRACT	LEASE	DECLINE FACTOR PER YEAR	ULT RECOVERY AT ECONOMIC LIMIT (STB)	TOTAL PRODUCTION TO DATE (STB)	PRIMARY RESERVES (STB)	ECONOMIC LIMIT
107	LEONARD	.115	1380115	1326091	54024	150
113	STATE"G"	.000	155642	155642	0	0
114	ST."C"_TR11	.000	76388	76388	0	0
115	MCQUATTERS	.088	474168	465831	8337	30
116	LOCKHART"B13"	.000	169815	169815	0	0
117	MEXICO"V"	.000	329459	329459	0	0
118	TURNER_ST_BATT2	.000	0	0	0	0
TOTAL			134307003	119785802	14521201	

SECONDARY RECOVERY

The Grayburg and San Andres formations are being flooded successfully in numerous locations in New Mexico and Texas, with secondary recovery production varying from 50% to 100% of primary production. The Eunice Monument is believed to be a typical carbonate reservoir, and based upon recoveries from similar reservoirs in the vicinity, is expected to become a successful operation.

In the absence of a definitive reservoir characterization of the Eunice Monument, conventional analytical models and methods could not be used to construct a secondary recovery prediction. A number of empirical and analog predictions were also investigated without good results. Finally, a method developed by Messrs. Bush and Helander and reproduced in SPE Reprint Series No. 2a was used with some variation to construct the 'minimum recovery' prediction.

Basically, the Bush and Helander empirical model is not directly applicable to New Mexico and West Texas carbonates because it is based upon data taken from eighty-six shallow (average depth 2,650') sandstone and limestone Oklahoma floods with average lives of 11.5 years. In lieu of a direct application of the parameters of the Bush and Hellander model, a similar technique was developed from two mature floods in the area of the Eunice Monument to define new parameters by which the Eunice Monument performance might be predicted. The parameters which were eventually used included the following: (1) peak oil rate as a percent of injection rate; (2) percent of total life required to produce 50% and 75% of total waterflood reserves; (3) percent of total life in incline and decline periods; (4) total flood life in years. The resulting 'minimum recovery' prediction shown in Figure 96 is obviously a pessimistic case because the projected secondary recovery to primary recovery ratio of

19% is considerably less than normal recoveries for Grayburg/San Andres floods.

In an effort to construct a more reasonable recovery prediction Gulf investigated a number of similar southwest waterfloods, to develop the 'Optimum Recovery' prediction on Figure 96. This prediction reflects a more realistic secondary to primary recovery ratio of approximately 48% and a life of 30 years.

The injection rate at peak oil production is expected to be approximately 2.7 MM BWPM, based on an average maximum injection rate of 500 BWPD per well. Initially the number of injection wells will be limited to a maximum of 136 until cooperative injection agreements can be negotiated with offset operators. Full development of the injection well pattern will create a total of 179 injectors, assuming the pattern depicted in Figure 97.

FACILITY DESIGN

The initial cost estimate for the unit is based on a preliminary facility design depicted in Figures 109 and 110. This design was based on the following assumptions:

1. The unit will be fully developed using an 80-acre five spot pattern. Edge wells will be completed as producers pending negotiation of cooperative injection agreements.
2. Peak injection requirement will be 2.7 MM barrels per month in the fillup phase of flooding.
3. Peak oil production is estimated at 676,000 barrels per month.
4. Only Class A equipment will be installed for unit facilities.
5. All undrilled locations will be drilled to complete the unit pattern.
6. Plugged and abandoned wells will be redrilled.
7. Remedial activity will be estimated based upon the best available estimate of well conditions.
8. All wells will become single completions in the unitized interval.

The resulting facility design consists of two major parts, the production system and the injection/water supply system. The production system design is based on an operational concept using a single central battery with twelve satellite batteries located throughout the field. Each satellite battery will have well test facilities, gas separation equipment, and a gas sales point. Liquids from the satellite batteries will be transferred to the central battery for treatment and water separation. The single oil sales point for the unit will be at the central battery.

The water injection plant and treating facilities will be located at the central battery site. Water will be transferred under pressure to the primary distribution headers located at each satellite battery site, then to secondary headers located in the field, each serving from three to five injection wells.

The total water requirement will be provided by reinjection of produced water, and from make-up water provided by nine San Andres supply wells. For this cost estimate, the assumption was made that new water supply wells would be drilled; however, there is a possibility that existing wellbores may be available which could be purchased and completed in the San Andres.

COST ESTIMATE

The cost estimate for the above preliminary design can be summarized into seven major categories as listed below:

Item	Tangibles	Intangibles
1. Production and Injection Facilities	$ 12,548,200	$ 6,681,450
2. Drill & Equip 9 Water Supply Wells	3,051,000	1,989,000
3. Drill & Equip 19 Producers	2,726,500	3,543,500
4. Drill & Equip 16 Injectors	1,336,000	2,984,000
5. Remedial Work - 208 Wells	10,060,000	9,295,000
6. Coring Cost - 20 Wells		1,000,000
7. Pumping Unit Replacements	6,726,000	570,000
Subtotal	$ 36,447,700	$ 26,062,950
Grand Total	$ 62,510,650	

1. Production and Injection Facilities

   This item includes all storage, transfer, treatment, metering and sales equipment. This item also includes costs for electrifying the unit, retiring existing facilities as they are replaced, and settling right-of-way and damage claims due to construction.

2. Drill and Equip 9 Water Supply Wells

   This item provides for drilling, completing, and equipping nine wells to provide water from the lower San Andres formation. The wells will be required to provide the water injection requirement which is expected to peak at 2.7 MM barrels per month during fillup.

3. Drill and Equip 19 Producers

This item includes the cost to drill, complete and equip the 19 wells required on producing well locations. Five of these wells would be drilled on locations which had no previous wells and the other twelve wells will be replacements for abandoned wells.

4. Drill and Equip 16 Injectors

This item includes the cost to drill, complete and equip the 16 wells which will be required to complete the injection pattern. Three wells will be drilled on undeveloped locations and thirteen are replacement wells.

5. Remedial Work - 208 Wells

After evaluating the well status information provided by some operators, expected remedial activity was divided into ten categories for which cost estimates could be generated. The categories and costs varied from simple clean out and stimulation of a producer which would cost $45,000, to a major effort which could include cleaning out an abandoned Eunice Monument zone, squeezing a previously productive Eumont gas zone, setting an injection liner, perforating and treating the Eunice Monument, and equipping the well for operation at a total cost in excess of $115,000.

6. Coring Cost

In order to perform the reservoir analysis required to optimize secondary recovery operations, and provide a data base lease for future study of enhanced recovery applications, coring must be performed on newly drilled unit wells. The cost estimate in this item is intended to cover coring of twenty wells, which can include injectors, producers, or water supply wells.

7. Pumping Unit Replacements

   This item includes costs for purchasing and installing higher capacity pumping units which will be required as the flood begins to respond to injection.

Cost estimates for equipment and labor were based on published and currently applicable rates. No effort was made to adjust these rates for the reductions which would be realized by competitively bidding labor and installation costs, or by ordering equipment and material in the quantities which will be required for this unit.

ECONOMICS

Economics were calculated for the unit based on the cost estimate given on page 30, and the two recovery cases illustrated in Figure 96. A schedule of expenditures is shown in Table 4, and basically illustrates an effort designed to complete the unit within three years following unitization. The majority of tangible costs are evenly divided between the first two years following unitization, with the majority of intangible costs occurring in the second year to reflect the time delay between the purchase and installation of equipment.

Assumptions made to facilitate the economic evaluation included the following:

1. Operating expenses were based on average values for 10 similar floods in Southeast New Mexico, beginning at $2,000 per month per producing well.
2. Oil price was based on a 1984 base price of $31.50 with taxes calculated by assuming all oil is classified as Tier 1 for tax purposes, although a high but unknown percentage of the oil now being produced from proposed unit leases is being taxed as Tier 2 oil.
3. An average gas price of $.57 per MCF was used for this economic evaluation. All gas was assumed to be NGPA Section 104. No estimate of the value of liquids was made for this appraisal.

The three economic summaries shown in Tables 5, 6, and 7 present the results from evaluation of the base case, minimum recovery incremental case, and optimum recovery incremental case, respectively. The minimum recovery case yields a discounted cash flow rate of return in excess of 23%, with profit in excess of $312,000,000 after tax. This case represents a viable project even though it represents a very low secondary to primary recovery ratio of 18%. The optimum recovery case is an excellent project which will yield a discounted cash flow rate of return in excess of 37%, with profit in excess of $1,000,000,000 after tax.

The only economic factor which does not meet normal criteria for smaller projects is the After-Tax payout calculation. The two parameters which cause this factor to be unusually high (greater than 7 years) are the low initial production rate due to the anticipated long fill-up time and the large investment made in the early years of the unit. The actual payout is expected to occur sooner than this calculated payout because of the very large remedial effort which is planned to occur during the first three years following unitization. The expected increase in production due to remedial work was not estimated for the recovery projection, or added to the economic evaluations.

In summary, the two economic cases are based upon reasonable assumptions of recoveries, expenses and investments, and represent an acceptable economic project.

TABLE 4
PRELIMINARY COST ESTIMATE
PROPOSED EUNICE MONUMENT SOUTH UNIT

PART 1: TANGIBLE COSTS - AMOUNTS IN THOUSANDS

ITEM	TOTAL	1984	1985	1986	1987	1988
INJECTION LINES	$ 3306.7	$ 1653.4	$ 1653.3	$	$	$
INJECTION HEADERS	212.7	106.4	106.3			
WATER SUPPLY LINES	259.2	129.6	129.6			
PRODUCTION LINES	1706.6	853.3	853.3			
METER ASSEMBLIES	356.0	178.0	178.0			
SATELLITE BATT. (12)	960.0	480.0	480.0			
CENTRAL BATTERY	1771.0	885.5	885.5			
INJECTION PLANT	2176.0	1632.0	544.0			
ELECT. DIST. SYS.	1800.0	450.0	450.0	900.0		
WATER SUPPLY WELLS (9)	3051.0	1356.0	1695.0			
PRODUCTION WELLS (19)	2726.5	861.0	1865.5			
INJECTION WELLS (16)	1336.0	501.0	835.0			
REMEDIAL COSTS (208)	10060.0	2418.3	4836.5	2805.2		
PUMPING UNITS (114)	6726.0			2006.0	2360.0	2360.0
SUBTOTALS	$ 36447.7	$ 11504.5	$ 14512.0	$ 5711.2	$ 2360.0	$ 2360.0

PART 2: INTANGIBLE COSTS - AMOUNTS IN THOUSANDS

ITEM	TOTAL	1984	1985	1986	1987	1988
INJECT LINE CONST.	$ 1345.0	$ 336.2	$ 672.6	$ 336.2		
WATER SUPPLY LINE CONST.	216.0	108.0	108.0			
PROD. LINE CONST.	1319.5	659.8	659.7			
SATELLITE BATT. CONST.	480.0	240.0	240.0			
CENTRAL BATT. CONST.	400.0	100.0	300.0			
INJ. PLANT CONST.	400.0	100.0	300.0			
ELECTRICAL SYS. CONST.	500.0	125.0	250.0	125.0		
ROAD & SITE CONST.	121.0	60.5	60.5			
RETIREMENT OF FACILITIES	1100.0	275.0	550.0	275.0		
ROW & DAMAGES	800.0	200.0	400.0	200.0		
WATER SUPPLY WELLS (9)	1989.0	884.0	1105.0			
PRODN WELLS (19)	3543.5	1119.0	2424.5			
INJECTION WELLS (16)	2984.0	1119.0	1865.0			
REMEDIAL	9295.0	2234.4	4468.7	2591.9		
CORING COSTS	1000.0	500.0	500.0			
PUMPING UNITS	570.0			170.0	200.0	200.0
SUBTOTALS	$ 26063.0	$ 8060.9	$ 13904.0	$ 3698.1	$ 200.0	$ 200.0
TANGIBLE SUBTOTALS	$ 36447.7	$ 11504.5	$ 14512.0	$ 5711.2	$ 2360.0	$ 2360.0
INTANGIBLE SUBTOTALS	26063.0	8060.9	13904.0	3698.1	200.0	200.0
TOTAL	$ 62510.7	$ 19565.4	$ 28416.0	$ 9409.3	$ 2560.0	$ 2560.0

TABLE 5

EUNICE MONUMENT SOUTH UNIT — BASECASE

DATE 03/21/83 — SUMMARY OF PROFITABILITY — AMOUNTS IN THOUSANDS

ECONOMIC AND FINANCIAL MEASURES - AFTER TAX

MODIFIED CALENDAR YEAR CASH FLOWS - YR 1 HAS 12 MONTHS

DCF RATE OF RETURN - %	NONE
GROWTH RATE OF RETURN (@ 15.0%) - %	NONE
NET PRESENT VALUE @ 10.0%	55915.0
ZERO POINT @ 15.0%	37351.4
1/01/84 @ 20.0%	27632.2

PRODUCTIVE LIFE - YEARS 31.0 PAYOUT DATE 1/1984

A.TAX BURR. RATE 6.21 %	BEFORE INT.	AFTER INT.
PAYOUT FROM INIT. EXP.(1/1/84)-YRS	0.0	0.0
PAYOUT FROM START-UP (1/1/84)-YRS	0.0	0.0
PROFIT TO INVESTMENT RATIO	0.0	0.0

OPERATING MEASURES

	WORKING	NET	N.PROF.
INIT. INTEREST %	1.00000	0.87500	0.0
FIRST CHNG. - 0/ 0	0.0	0.0	0.0
SECOND CHNG. - 0/ 0	0.0	0.0	0.0
THIRD CHNG. - 0/ 0	0.0	0.0	0.0

VOLUMES-	GROSS PROD.	NET SALES	NET SALES AFTER P.O.
BARRELS OIL & COND.	12445.0	10887.0	10887.0
MCF GAS	49276.0	43117.0	43117.0
EQ.VOL.(PRICE) - BBLS	13277.8	11618.1	
EQ.VOL. (BTU) - BBLS	21236.7	18582.1	

	$	$/UNIT (PRICE)	$/UNIT (BTU)
REVENUES			
GROSS	1218578.0	91.78	57.38
NET OF ROYALTY	1066256.0	91.78	57.38
INVESTMENTS			
LEASE COST	0.0	0.0	0.0
PRODUCING EQUIPMENT	0.0	0.0	0.0
INTANGIBLE DRILLING	0.0	0.0	0.0
MULTI-LEASE & OTHER	0.0	0.0	0.0
SALVAGE	0.0	0.0	0.0
TOTAL	0.0	0.0	0.0
OPERATING EXPENSES			
FED. EXCISE TAXES	368307.0	31.70	19.82
PRODUCTION EXPENSES	133440.0	11.49	7.18
PROD. & PROP. TAXES	134634.0	11.59	7.25
OVERHEAD	28024.0	2.41	1.51
OTHER	0.0	0.0	0.0
TOTAL	664405.0	57.19	35.76
NON-OPER. CASH FLOW	0.0	0.0	0.0
TOT. CASH PROFIT BTAX	401854.0	34.59	21.63
TOT. U.S. INCOME TAXES	192891.0	16.60	10.38
TOT. CASH PROFIT ATAX	208965.0	17.99	11.25

INCREMENTAL

TABLE 6

INCREMENTAL TRIAL - MIN RECOV W/ 30YR

SUMMARY OF PROFITABILITY

AMOUNTS IN THOUSANDS

ECONOMIC AND FINANCIAL MEASURES - AFTER TAX

MODIFIED CALENDAR YEAR CASH FLOWS - YR 1 HAS 12 MONTHS

DCF RATE OF RETURN - % ZERO PT. 1/01/84		23.4
GROWTH RATE OF RETURN (@ 15.0%) - %		28.1
NET PRESENT VALUE	@ 10.0%	71955.4
ZERO POINT	@ 15.0%	31563.7
1/01/84	@ 20.0%	9434.2

PRODUCTIVE LIFE - YEARS 31.0 PAYOUT DATE 8/1991

A.TAX BORR. RATE 6.21 %	BEFORE INT.	AFTER INT.
PAYOUT FROM INIT. EXP.(1/1/84)-YRS	7.6	7.9
PAYOUT FROM START-UP (1/1/84)-YRS	7.6	7.9
PROFIT TO INVESTMENT RATIO	5.0	4.9

OPERATING MEASURES

	WORKING	NET	N.PROF.
INIT. INTEREST %	0.0	0.0	0.0
FIRST CHNG. - 0/ 0	0.0	0.0	0.0
SECOND CHNG. - 0/ 0	0.0	0.0	0.0
THIRD CHNG. - 0/ 0	0.0	0.0	0.0

VOLUMES-	GROSS PROD.	NET SALES	NET SALES AFTER P.O.
BARRELS OIL & COND.	23651.0	20698.0	17822.5
MCF GAS	-12830.0	-11230.0	-2795.8
EQ.VOL.(PRICE) - BBLS	23434.9	20508.9	
EQ.VOL. (BTU) - BBLS	21361.5	18694.0	

	$	$/UNIT (PRICE)	$/UNIT (BTU)
REVENUES			
GROSS	1962887.0	83.76	91.89
NET OF ROYALTY	1717535.0	83.75	91.88
INVESTMENTS			
LEASE COST	0.0	0.0	0.0
PRODUCING EQUIPMENT	18434.0	0.90	0.99
INTANGIBLE DRILLING	27460.0	1.34	1.47
MULTI-LEASE & OTHER	16511.0	0.81	0.88
SALVAGE	0.0	0.0	0.0
TOTAL	62405.0	3.04	3.34
OPERATING EXPENSES			
FED. EXCISE TAXES	568994.8	27.74	30.44
PRODUCTION EXPENSES	221192.9	10.79	11.83
PROD. & PROP. TAXES	222686.9	10.86	11.91
OVERHEAD	46450.9	2.26	2.48
OTHER	0.0	0.0	0.0
TOTAL	1059325.0	51.65	56.67
NON-OPER. CASH FLOW	0.0	0.0	0.0
TOT. CASH PROFIT BTAX	595795.9	29.05	31.87
TOT. U.S. INCOME TAXES	283326.9	13.81	15.16
TOT. CASH PROFIT ATAX	312466.8	15.24	16.71

INCREMENTAL

TABLE 7

INCREMENTAL TRIAL - OPT RECOV W/ 30YR

SUMMARY OF PROFITABILITY

AMOUNTS IN THOUSANDS

ECONOMIC AND FINANCIAL MEASURES - AFTER TAX

MODIFIED CALENDAR YEAR CASH FLOWS - YR 1 HAS 12 MONTHS

DCF RATE OF RETURN - % ZERO PT. 1/01/84		37.2
GROWTH RATE OF RETURN (@ 15.0%) - %		45.5
NET PRESENT VALUE	@ 10.0%	284977.9
ZERO POINT	@ 15.0%	154271.4
1/01/84	@ 20.0%	83466.1

PRODUCTIVE LIFE - YEARS 31.0 PAYOUT DATE 3/1991

A.TAX BURR. RATE 6.21 %	BEFORE INT.	AFTER INT.
PAYOUT FROM INIT. EXP.(1/1/84)-YRS	7.2	7.4
PAYOUT FROM START-UP (1/1/84)-YRS	7.2	7.4
PROFIT TO INVESTMENT RATIO	17.5	17.4

OPERATING MEASURES

	WORKING	NET	N.PROF.
INIT. INTEREST %	0.0	0.0	0.0
FIRST CHNG. - 0/ 0	0.0	0.0	0.0
SECOND CHNG. - 0/ 0	0.0	0.0	0.0
THIRD CHNG. - 0/ 0	0.0	0.0	0.0

VOLUMES-	GROSS PROD.	NET SALES	NET SALES AFTER P.O.
BARRELS OIL & COND.	63170.0	55274.0	52456.5
MCF GAS	25704.0	22490.0	31325.2
EQ.VOL.(PRICE) - BBLS	63672.0	55713.2	
EQ.VOL. (BTU) - BBLS	67756.5	59287.3	

	$	$/UNIT (PRICE)	$/UNIT (BTU)
REVENUES			
GROSS	5219569.0	81.98	77.03
NET OF ROYALTY	4567129.0	81.98	77.03
INVESTMENTS			
LEASE COST	0.0	0.0	0.0
PRODUCING EQUIPMENT	18434.0	0.33	0.31
INTANGIBLE DRILLING	27460.0	0.49	0.46
MULTI-LEASE & OTHER	16511.0	0.30	0.28
SALVAGE	0.0	0.0	0.0
TOTAL	62405.0	1.12	1.05
OPERATING EXPENSES			
FED. EXCISE TAXES	1548960.0	27.80	26.13
PRODUCTION EXPENSES	221192.9	3.97	3.73
PROD. & PROP. TAXES	593337.8	10.65	10.01
OVERHEAD	46450.9	0.83	0.78
OTHER	0.0	0.0	0.0
TOTAL	2409942.0	43.26	40.65
NON-OPER. CASH FLOW	0.0	0.0	0.0
TOT. CASH PROFIT BTAX	2094778.0	37.60	35.33
TOT. U.S. INCOME TAXES	1002838.1	18.00	16.91
TOT. CASH PROFIT ATAX	1091939.0	19.60	18.42

UNITIZATION PARAMETERS

The Technical Committee was asked to investigate the following six possible unitization parameters:

1. Net Acreage
2. Primary Ultimate Recovery
3. Cumulative Recovery
4. Remaining Primary Reserves
5. Current Oil Production Rate
6. Secondary Reserves

Data has been assembled for all parameters except Secondary Reserves. Due to the lack of modern logs and cores for the unit, no accurate projection of secondary recovery could be made for individual tracts. The Technical Committee elected to recommend deletion of this parameter from further consideration.

Table 8 is the completed list of parameters, with participation percentages assigned to individual Working Interest Owners. Four operators have not provided a confirmed list of owners for their leases, and are being shown as 100% owners of their properties. These operators are designated with an asterisk (*) in the table.

Regarding the individual parameters, the following comments should be noted. Net acreage was provided by individual operators and allocated to individual owners. Cumulative recovery information was taken from New Mexico Oil Conservation Commission records, with corrections provided by individual operators when necessary. Remaining primary reserves were calculated for each active tract based upon the individual tract decline curves. Future production was extrapolated to an economic limit of

30 barrels of oil per month per active well on each lease. Primary ultimate was calculated to the same economic limit. The 1982 oil production was also taken from New Mexico State records from January 1, 1982, through September 30, 1982.

TABLE 8B
EUNICE MONUMENT SOUTH UNIT
PARAMETER TABLE

OWNER	NET ACREAGE TOTAL	NET ACREAGE PERCENT	PRIMARY ULTIMATE AT ECONOMIC LIMIT TOTAL-STB	PRIMARY ULTIMATE AT ECONOMIC LIMIT PERCENT	CUMULATIVE RECOVERY TO 10/1/82 TOTAL-STB	CUMULATIVE RECOVERY TO 10/1/82 PERCENT	REMAINING PRIMARY RESERVES TOTAL-STB	REMAINING PRIMARY RESERVES PERCENT	1982 OIL PRODUCTION 1/1/82 THRU 9/30/82 TOTAL-STB	1982 OIL PRODUCTION 1/1/82 THRU 9/30/82 PERCENT
AMERADA	320.00	0.022410	2385066	0.017758	2330898	0.019459	54168	0.003730	10680	0.017989
AMOCO	1003.40	0.070268	9931012	0.073943	8579013	0.071620	1351999	0.093105	43606	0.073447
APOLLO*	40.00	0.002801	528833	0.003937	479649	0.004004	49184	0.003387	5952	0.010025
ARCO	2255.97	0.157986	24944337	0.185726	21744490	0.181528	3199847	0.220357	107901	0.181741
BRADY	20.00	0.001401	268620	0.002000	236375	0.001973	32245	0.002221	1435	0.002417
BRUNO	160.00	0.011205	496156	0.003694	496156	0.004142	0	0.000000	145	0.000244
CATRON	120.00	0.008404	967282	0.007202	917838	0.007662	49444	0.003405	3043	0.005125
CHEVRON	630.00	0.044119	7706139	0.057377	6410571	0.053517	1295569	0.089219	38563	0.064953
CITIES	280.00	0.019608	2051645	0.015276	2023007	0.016889	28638	0.001972	4283	0.007214
CONOCO	1110.00	0.077733	11441710	0.085191	9848319	0.082216	1593392	0.109729	49066	0.082643
EXXON	1180.00	0.082636	9144494	0.068087	8853532	0.073911	290962	0.020037	21632	0.036435
FIELDS	30.00	0.002101	79590	0.000593	71408	0.000596	8183	0.000564	343	0.000578
GETTY	1085.70	0.076032	11909322	0.088672	11227721	0.093732	681601	0.046938	44484	0.074926
GULF	4022.90	0.281724	39582316	0.294715	35227694	0.294089	4354623	0.299880	199122	0.335387
HARTMAN*	40.00	0.002801	159151	0.001185	157193	0.001312	1958	0.000135	329	0.000554
HEDDLEY	15.00	0.001050	62842	0.000468	62842	0.000525	0	0.000000	0	0.000000
HUDSON,ER	15.75	0.001103	16397	0.000122	15784	0.000132	614	0.000042	26	0.000044
HUDSON,W&E	89.25	0.006250	92915	0.000692	89436	0.000747	3478	0.000240	146	0.000246
KOCH	80.00	0.005602	711506	0.005298	706600	0.005899	4906	0.000338	2097	0.003532
LANDRETH	51.60	0.003614	507734	0.003780	492111	0.004108	15623	0.001076	935	0.001575
ME-TEX	240.00	0.016807	583429	0.004344	566804	0.004732	16625	0.001145	474	0.000798
RASMUSSEN*	40.00	0.002801	155642	0.001159	155642	0.001299	0	0.000000	0	0.000000
SHELBY	30.00	0.002101	79590	0.000593	71408	0.000596	8183	0.000564	343	0.000578
SHELL	640.00	0.044819	6470127	0.048174	5137270	0.042887	1332857	0.091787	52239	0.087988
SUN	320.00	0.022410	1756284	0.013077	1697509	0.014171	58775	0.004048	4209	0.007089
TEXACO	160.00	0.011205	1020828	0.007601	944770	0.007887	76058	0.005238	1880	0.003167
TURNER	75.00	0.005252	119385	0.000889	107112	0.000894	12274	0.000845	514	0.000866
TWO-STATES	85.00	0.005953	353597	0.002633	353597	0.002952	0	0.000000	261	0.000440
WILBANKS*	80.00	0.005602	529686	0.003944	529686	0.004422	0	0.000000	0	0.000000
WISER	40.00	0.004202	251368	0.001872	251368	0.002098	0	0.000000	0	0.000000
TOTAL	14279.57	1.000000	134307003	1.000000	119785803	1.000000	14521206	1.000000	593708	1.000000

NOTES: (1) REVISED 12/2/83 TO REFLECT CORRECT WORKING INTEREST IN TRACT 54
(2) DATA CUTOFF DATE IS 10/1/82
(3) * INDICATES WORKING INTEREST OWNERSHIP NOT CONFIRMED

UNITIZED INTERVAL

During Technical Committee meetings in February and May of 1982, a major discussion item was the definition of the vertical interval to be unitized. A number of wells which are classified as Eunice Monument oil wells are actually producing from open hole completions exposing both the Eumont and Eunice Monument pools. In addition, many of the Eumont oil wells located along the western and southern edges of the proposed unit are producing from both pools.

An evaluation of the few available logs, cross-sections and production data indicates that the oil column within and adjacent to the unit is continuous from approximately -325 feet to -100 feet subsea, and includes oil being classified as both Eumont (Penrose and Queen) and Eunice Monument (Grayburg) production. Because of structural variations throughout the field, the upper limit of -100 feet subsea varies from mid-Grayburg in the eastern portion of the field to upper-Queen in the southwestern area of the field. In general, gas wells are completed above the -100 foot datum, and oil wells are completed below the -100 foot datum, regardless of their classification as Eumont or Eunice Monument wells. This is easily seen in the completion interval diagrams shown in Figures 98 through 106, and the geologic cross sections shown in Figures 107 and 108.

Originally the fact that many wells were open hole completions across the top of the Grayburg was of no consequence since the Eunice pool included both Queen and Grayburg formations. However, separation of the Eunice pool into the Eumont Gas Pool and Eunice Monument Oil Pool in the early 1950's created an accounting and classification problem for oil produced in the area. Because the oil wells were allowed to remain on production in their original completion status, a number of problems are evident which affect this unitization effort. First, there is no practical method

to isolate the Eumont and Eunice Monument pools in future operations except by installing liners and selectively perforating the individual zones. Approximately one-half of all proposed unit wells would require this remedial work. Second, because it is impossible to allocate historical production between the two pools in these wells, cumulative production, predicted future production, and ultimate production cannot be calculated for approximately one-half of the leases in the proposed unit; and these parameters cannot be used in the proposed formulas for negotiations of equity.

The Technical Committee, in addressing these problems determined that the following facts should be considered:

1. The entire oil column must be included in the unitized interval if secondary recovery is to be effective and efficient.
2. There is no indication that a barrier to communication exists between the Grayburg and Penrose formations.
3. Oil production in the unit area occurs at and below approximately -100 feet subsea, regardless of whether the productive formation is designated as Eumont or Eunice Monument.
4. Oil produced from Eunice Monument and Eumont oil wells is similar in composition and quality.

In view of the above factors, the technical committee recommended the following definition be proposed to describe the vertical unitized interval:

> "The Unitized Interval shall include the formations from a lower limit defined by the base of the San Andres formation, to an upper limit defined by the top of the Grayburg formation or a -100 foot subsea datum, whichever is higher."

UNIT BOUNDARY

After selection of the recommended unitized interval, the committee considered recommendations for establishing the geographical boundary.

The current boundary was selected to include virtually all current and historical Eunice Monument oil production in the southern portion of the field. The boundary was drawn in a manner which would allow for reasonable development of the flood, with a minimum number of "window" areas or unfloodable locations.

Two operators have presented requests to have their leases excluded from unitization. The operators, Messrs. Hartman and Rasmussen, have leases covering S/2 SW/4 Section 2, Township 21 South, Range 36 East, and are designated as Tracts 70 and 113 (Figure 2). During the committee meeting of May 4, 1982, members voted to recommend that these tracts not be deleted from the unit. These tracts have a contiguous oil column to the rest of the unit and if deleted would create boundary problems and reduce the overall unit secondary recovery.

Prior and subsequent to this vote Mr. Hartman has requested release of his property by letters which are included in the Correspondence section.

MISCELLANEOUS

During the Technical Committee meeting of February 2, 1982, the committee discussed the possibility of recommending 'Useable Wellbores' as a unitization parameter. Operators were requested to determine which wellbores would be committed for unit operation, and which wellbores would be withheld for other use.

In evaluating this request operators discovered that they were unable to determine the disposition of every wellbore. The major cause of concern involved wells which have been recompleted into the Eumont pool, or which are dual completions in the Eumont and Eunice Monument. These wells could not be economically evaluated with the information and guidelines that were available. The various problems were further outlined in a Conoco letter dated August 25, 1982, and the Gulf letter dated September 22, 1982, which appear in the Correspondence section of this report.

As a result of the numerous questions involved in this decision, Gulf proposed that 'Useable Wellbores' be eliminated as a possible parameter. Gulf suggested that the inequities which would arise from some members withholding wellbores, or not having operational wellbores, could be resolved in the inventory adjustment process rather than in the parameter table. Gulf initiated a ballot to remove 'Useable Wellbores' from further consideration, and the ballot was approved by a vote of 13 to 2, with 9 operators failing to respond.

CORRESPONDENCE

Minutes of Operators
Proposed Eunice Monument Waterflood
5-10-79

A meeting of the Working Interest Owners was held at 9:30 A.M. on Thursday May 10, 1979 in ARCO's 1st floor conference room in Midland, Texas. Representatives that attended the meeting are shown on the attached list.

Mr. J. L. Tweed (ARCO) opened the meeting by stating the purpose was to review a waterflood study ARCO had done on the Eunice Monument Field. As he indicated the proposed flood was in Lea County, New Mexico and centered in Township 21 S, R36E, as identified on the handouts.

Mr. Bob Malaise (ARCO) explained that a cursory study had been completed at the request of ARCO's management. This study had not been intended as a unitization study but much of the data could be unitilized in future unitization efforts. He continued by stating the area studied included the South end of the Eunice Monument Field, more specifically, it included 9,760 acres as shown by a cross-hatch outlined area on a handout. He indicated that ARCO realizes that there may be additional areas with waterflood possibilities that could be included as an addition to this proposed boundary. ARCO feels this would be a good waterflood candidate based on the high cumulative production of 86 MMSTBO, as of 1-1-79. In addition, cross sections indicated the pay continuity to be good within the area.

Mr. Malaise described the main zone as being the Grayburg which is at a depth of 3750'. The Grayburg is surrounded by the Queen on the top and the San Andres on the bottom. This zone is a fine crystalline, gray dolomite, interbedded with sand stringers. Mr. Malaise pointed out a generally southwesterly dip to the Grayburg as indicated on a structure map, drawn on the Grayburg top. It was shown on the structure map also a very pronounced dip in the west and southwest proportion of the unit area. Looking at a type log from the Conoco B-8 #5, ARCO estimated the gas-oil contact to be at 3740' (-150'ss) and a water-oil contact to be 3915' (-325'ss). At this point, Mr. Tweed interjected the comment that he felt the gas-oil contact was reliable based on production data and log data, but that the oil water contact may vary in certain parts of the field. He further stated that this study used a gross oil column of 175', porosity of 7-8%, and averaged air permeability to be 10-15 MD. Additional fluid and rock properties were shown on a separate handout. Mr. Tweed stated again some of the parameters would be changed when a more detailed study was completed. In reviewing a north/south cross section through the middle of the unit, Mr. Malaise pointed out that to the North the Grayburg contains oil, the Queen gas, and the San Andres appears to be wet. Moving South the oil column is found in the upper Grayburg and lower Queen. In the extreme West area much of the production appears to have been produced from the Queen interval.

Mr. Bob Malaise explained that the development of the Eunice Monument GB started in 1929. Many of the wells were completed open hole with a large number being shot w/nitro. Original-oil-in-place within the proposed unit is 575 MMSTBO based on the parameters already listed. Decline curve analysis on a lease basis, indicated 5 MMSTBO remain to be recovered as of 1-1-79. Ultimate recovery will be between 16-17% of the original oil-in-place. Current GB production is approximately 1700 BOPD. Mr. Malaise stated that the secondary opportunities within the proposed area appear to be very attractive. A A stratified waterflood analysis indicate a secondary potential of 56 MMSTBO or approximately 55% of estimated primary production. He also concluded that the secondary reserves were conservative in nature based on three variables used in the analysis. They were the initial gas saturation at the start of the flood, Sgx (19%), the initial water saturation Swc (35%) and the residual oil saturation, Sor (35%).

In summary, Mr. Malaise stated within the studied area the following parameters were found:

1. Cumulative oil, as of 1-1-79, 87 MMSTO *
2. Acres - 9760
3. Remaining primary - 5.2 MMSTBO
4. Ultimate primary - 95 MMSTBO
5. Estimated secondary - 56 MMSTBO

At this time, Mr. Tweed suggested that a vote be taken concerning the formation of an Engineering Sub Committee for the purpose of studying the Eunice Monument area for possibilities of future waterflooding. All the companies that were represented voted yes concering this vote. In addition, it was pointed out that AMOCO was interested in waterflooding the area but due to a conflict in scheduling, were unable to attend the meeting. At this point, Mr. Tweed indicated that Gulf Oil would have the largest interest within the studied area. He felt that by the time the initial Engineering Sub Committee was formed, Gulf should indicate any desire to expedite and operate a future unit. Mr. R. L. Borgan (Gulf) acknowledged this request.

Mr. Buck (Shell) questioned the reason for the proposed unit outline. Mr. Tweed explained that the unit line had been chosen as much by convenience as anything, although, there were reservoir boundaries to the East and West that would define a logical unit area. To the East, the continuity and quality of pay deteriates. To the West, the structure dips are very deep and there would be a loss of both pay quality and oil column. Mr. Buck suggested that there may be some area both to the North and South that should be included within any future study done. After additional discussion on this matter, Mr. Tweed suggested to charge an Engineering Sub Committee with the responsibility of studying two additional sections North and 1 section South

* contains some Eumont oil

of the proposed area. It was indicated that they would include the Eumont oil zone in a future waterflood study.

Listed below are the agreed charges to be determined by a future Engineering Sub Committee:

1. Update and correct a base map
2. Define area of waterflood study (include 2 sections North and one south of proposed area)
3. Establish a parameter table to include the following:
    1. Current oil/gas rate (12 month period)
    2. Cumulative oil production
    3. Total acres
    4. Remaining primary
    5. Ultimate primary
    6. Secondary reserves (if recommended by Engineering Sub Committee)
4. Prepare water flood study and plan of operation.
5. Define vertical interval to be unitized.

Concerning a future voting procedure, after a lengthy discussion it was decided that the future unit expeditor will send out a letter ballot or will request a vote at the first Engineering Sub Committee meeting concerning the same. The Working Interest Owners requested that ARCO send out a letter with the minutes asking for company representatives for a future Working Interest Owners' Committee and Engineering Sub Committee. The general opinion concerning a voting procedure within the Engineering Sub Committee phase was that each active participant would have one vote. The expeditor would try to get as much agreement as possible during the Engineering Sub Committee phase but would not be required to meet a certain percentage. Also, it was decided any pre unitization expense would be handled by letter ballot once the unit expeditor was confirmed.

It was agreed that the next meeting will be of the Engineering Sub Committee which will be held in the next 4 to 5 weeks. Gulf will determine by this time if they want to expedite and operate. The Engineering Sub Committee will discuss what type of study will be required to meet their charges.

The Working Interest Owners will be notified by letter when the Engineering Sub Committee meeting will be held and will be informed as to the time and place of the meeting. The meeting concluded at 11:20 A.M.

Gulf Oil Exploration and Production Company

J. M. Thacker
GENERAL MANAGER PRODUCTION
SOUTHWEST DISTRICT

September 22, 1982

P. O. Drawer 1150
Midland, TX. 79702

Engineering Committee Members
Address List Attached

Gentlemen:

Re: Eunice Monument South Unit
Lea County, New Mexico

Inquiries have been made to Gulf concerning the economic and operational implications of designating specific wellbores to be contributed to the proposed Unit. A copy of one inquiry from Conoco is attached. Since few operators have responded to the request for data in our August 3, 1982 letter, we assume that most committee members are experiencing the same problems with the evaluation of wellbores.

We have found that several basic questions must be answered before an operator can determine whether to contribute or withhold a wellbore from the Unit. These questions include the following:

1. Will the working interest owners allow dual completions in Unit wellbores? If yes, under what conditions?

2. What penalty will be assessed an operator for not contributing an operational wellbore on each 40-acre proration unit credited with production?

3. How can the inequity arising from the failure of some operators to contribute useable wellbores best be resolved?

4. If dual completions are allowed, what is the probability of recovering the "other zone" production if the well is killed to recomplete or recondition the unitized interval?

5. Will operators receive the Section 103 gas price if a new well is drilled for Eumont Gas?

Some of the above questions cannot be resolved at this time without additional Engineering Committee meetings. Also, question 5 cannot be answered without action from the New Mexico Oil Conservation Division. Since this information is not available, it is impossible to make the economic decisions necessary to complete the proposed "Useable Wellbore" parameter at this time.

As an alternative to delaying the completion of the parameter table, Gulf proposes that the "Useable Wellbore" parameter be eliminated from the final table. In our opinion, the inequity arising from the failure of some operators to contribute wellbores can be more effectively resolved through inventory adjustment procedures than in the participation formula. Specifically, owners should receive a credit to inventory for operational wellbores contributed to the Unit, and should be assessed a penalty for not furnishing a wellbore on any 40-acre proration unit which has been credited with production.

By the attached ballot, we request that you approve or disapprove the above proposal. Please complete the ballot and return it to this office, to the attention of Mr. Tom Wheeler, by October 5, 1982. If your Company has multiple addressees on the mailing list, please coordinate a single reply.

You will be notified of the results of this ballot and of a future Committee meeting as soon as the results can be tabulated.

Please continue to prepare and submit the list of Royalty and Overriding Royalty Owners for your individual tracts, as we requested in our letter of August 3, 1982.

Your continued assistance in this unitization effort is appreciated.

Yours very truly,

J. M. THACKER

TSW:mc

Enclosures

David L. Wacker
Division Engineer
Production Department
Hobbs Division
North American Production

Conoco Inc.
P.O. Box 460
726 E. Michigan
Hobbs, NM 88240
(505) 393-4141

1509

August 20, 1982

Gulf Oil Exploration & Production Co.
P.O. Drawer 1150
Midland, Texas 79702

Attention: Mr. J. M. Thacker

Re: Proposed Eunice Monument, South Unit
Lea County, New Mexico

Gentlemen:

Reference is made to your letter of August 3, 1982, same subject.

Before furnishing the list of wells which would be committed to the unit, we need to know the following:

1. Would dual completed wells be acceptable to the unit?
2. What penalty would Gulf propose if the operator did not furnish a wellbore?

We also request that you furnish us your proposed waterflood pattern and a unit waterflood performance prediction so that we can evaluate our options.

Yours very truly,

D. L. Wacker
Division Engineer

CCW:vrm

EXXON COMPANY, U.S.A.
POST OFFICE BOX 1700 • MIDLAND, TEXAS 79702 (915) 685-9648

PRODUCTION DEPARTMENT
MIDCONTINENT DIVISION

R R HICKMAN
JOINT INTEREST MANAGER

2314

RECEIVED
DEC 15 1982
J. M. THACKER

December 10, 1982

Proposed Eunice Monument South Unit
Lea County, New Mexico

Gulf Oil Explo. & Prod. Co.
P.O. Drawer 1150
Midland, TX 79702

Attention: J. M. Thacker

We received your letter of October 25, 1982 regarding the request of three operators to reconsider the decline curves assigned to their tracts. We are of the opinion that a review of this type is not appropriate unless all of the tracts are reviewed in the same manner. A significant amount of time has passed since the curves were set, and many operators may feel that their tracts should be reviewed. In our own case, there are two tracts which have maintained higher production rates than what is indicated by the assigned decline. Therefore, we feel that the committee should either re-evaluate every tract or leave the matter as was previously agreed upon. If negotiations continue for a period of as much as one year from the last "cut-off" date, we are of the opinion that all parameters should be updated.

Yours very truly,

R. R. Hickman

R. R. Hickman

WGL:slp

DOYLE HARTMAN
Oil Operator
500 N. MAIN
P. O. BOX 10426
MIDLAND, TEXAS 79702

(915) 684-4011

December 10, 1981

Gulf Oil Corporation
P. O. Box 1150
Midland, Texas 79702

Attention: Mr. Tom Wheeler

Re: W/2 S/3 S/2 Section 2
T-21-S, R-36-E
Lea County, New Mexico

Gentlemen:

Reference is made to our telephone conversation today concerning our Rasmussen State No. 1, located W/2 S/3 S/2 Section 2, T-21-S, R-36-E, Lea County, New Mexico, and Gulf's proposed Eunice-Monument waterflood project in the area. This was our first notice from Gulf of any plans they might have for any future secondary oil recovery project in the vicinity of our tract in Section 2, T-21-S, R-36-E.

The Rasmussen State No. 1, situated on the subject tract in Unit U, was drilled in late 1978 and completed in early 1979, and qualifies for both the maximum oil price and maximum gas price allowed under Federal regulations. Furthermore, the Rasmussen State No. 1 has, since its completion, produced at a highly satisfactory producing rate. Therefore, because of the good economics we are receiving from the Rasmussen State No. 1, we are in no way interested in including our tract in any future secondary oil recovery project in the area of our well. It is also our opinion that any secondary oil recovery project in the Grayburg-San Andres reservoirs would be a highly risky project and would yield only moderate economic results at best.

It is the position of Doyle Hartman as operator, and the other working interest participants in the Rasmussen State No. 1 that it would be to our financial detriment for us to include this tract in any secondary recovery project, and therefore we would be unwilling to commit our well to Gulf's proposed secondary recovery project. We would appreciate it very much if Gulf would omit this tract from this outlined proposed secondary recovery unit.

Please notify us promptly of any opinions you may have to the contrary.

Very truly yours,

Doyle Hartman

Doyle Hartman

WILLIAM P. AYCOCK & ASSOCIATES, INC.
Petroleum Engineering Consultants
308 WALL TOWERS WEST
MIDLAND, TEXAS 79701
PHONE 915/683-5721

Feburary 3, 1982

Gulf Oil Exploration and Production Co.
P.O. Box 1150
Midland, Texas 79702

Attention Mr. Thomas S. Wheeler

Subject: Doyle Hartman-Proposed
Eunice Monument South Unit
Lea County, New Mexico

Gentlemen:

After the meeting yesterday , I reported to Mr. Hartman as I had indicated to you that I would.

Mr. Hartman desires to contact Gulf directly about his situation. He understands that, as far as Gulf is concerned, elimination of his Rasmussen-State lease from the proposed secondary recovery unit will be a decision for the Techinical Committee.

I thought you and your cohorts made an effective presentation, and I enjoyed making your acquaintance.

Very truly yours,

Wm. P. Aycock, P.E.

DOYLE HARTMAN
Oil Operator
500 N. MAIN
P. O. BOX 10426
MIDLAND, TEXAS 79702
(915) 684-4011

August 6, 1982

Gulf Oil Exploration and Production Company
Post Office Box 1150
Midland, Texas 79702

Attention: Mr. J. M. Thacker
General Manager Production
Southwest Division

Re: Gulf's Proposed Eunice
Monument South Unit
Lea County, New Mexico

Gentlemen:

Reference is made to your letter of August 3, 1982, concerning your proposed Eunice Monument South Unit in Lea County, New Mexico.

As has been pointed out by our representatives at several unit meetings, and also in all of our previous correspondence concerning this matter, it is not, nor has it ever been, our intention to commit our 40 acre tract consisting of the W/2 of the S/3 of the SW/4 of Section 2, T-21-S, R-36-E, Lea County, New Mexico to Gulf's proposed secondary recovery unit.

In order to make the numbers less complicated in the future, we suggest that you start the paper work necessary to delete our acreage from the proposed unit at this time.

Very truly yours,

DOYLE HARTMAN

DH:be

cc: Campbell, Byrd and Black, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87501

Attention: Mr. William F. Carr

DOYLE HARTMAN
Oil Operator
500 N. MAIN
P. O. BOX 10426
MIDLAND, TEXAS 79702

(915) 684-4011

September 27, 1982

Gulf Oil Exploration and Production Company
Post Office Box 1150
Midland, Texas 79702

Attention: Mr. J. M. Thacker
General Manager Production
Southwest Division

Re: Gulf's Proposed Eunice
Monument South Unit
Lea County, New Mexico

Gentlemen:

On August 6, 1982, our office wrote to you concerning the above captioned Unit. In this letter we mentioned that we had pointed out in all of our correspondence concerning this Unit, that it was not, nor had it ever been, the intention of Doyle Hartman to commit his 40 acre tract consisting of the W/2 of the S/3 of the SW/4 of Section 2, T-21-S, R-36-E, Lea County, New Mexico to Gulf's proposed secondary recovery unit.

On September 24, 1982, we received from Gulf a letter dated September 22, 1982 to the Engineering Committee Members, in which you have included Mr. Doyle Hartman. We can not stress enough that we will not nor had we ever intended to commit our acreage.

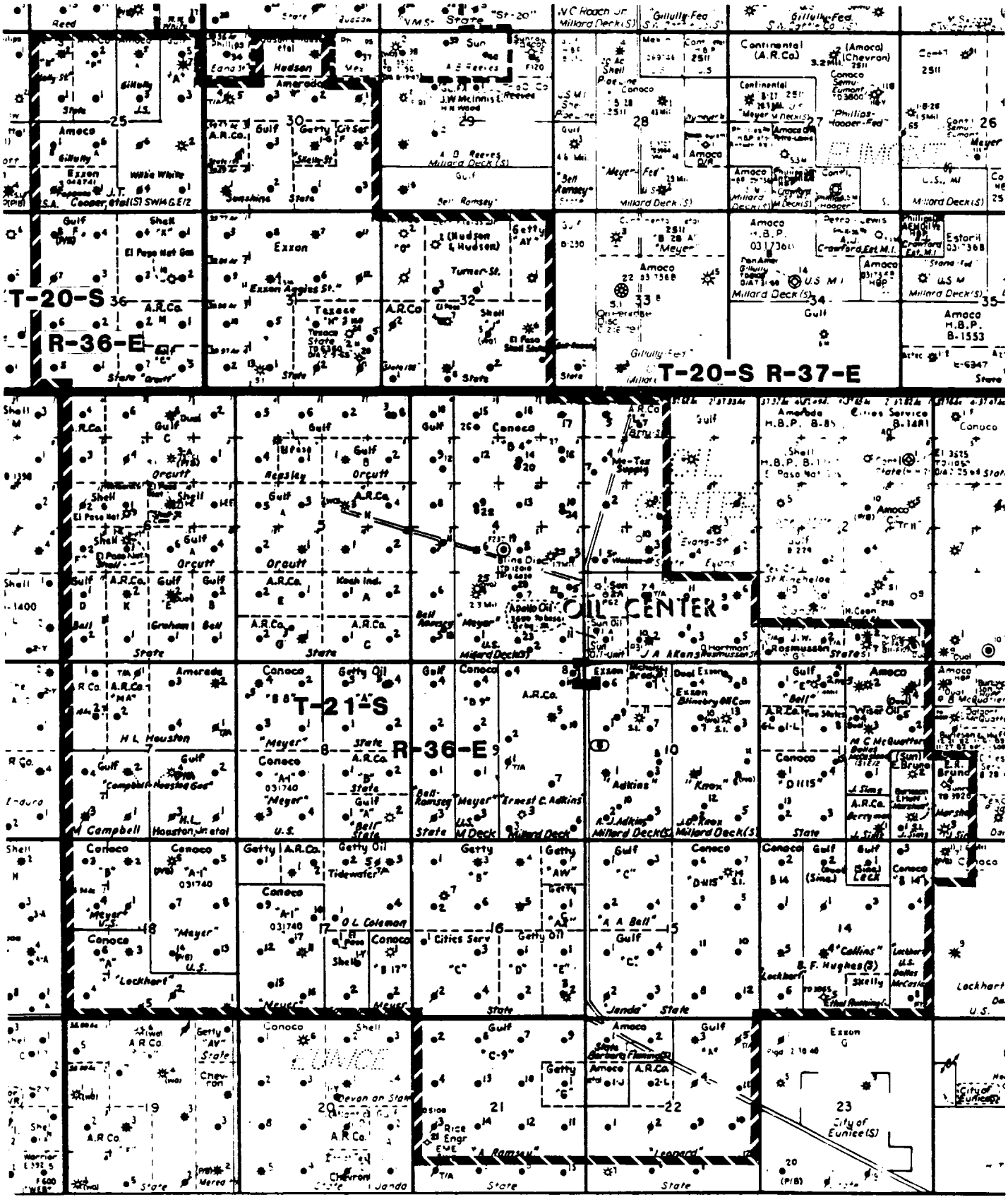
Once again, we ask that Mr. Hartman's name be taken off your mailing list immediately. Our acreage also needs to be deleted so that there can not be any confusion on yours or anyone else's part that our acreage is included in this Unit.

We appreciate your expedient handling of this matter.

Very truly yours,

Doyle Hartman

cc: Mr. William F. Carr
Campbell, Byrd and Black, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87501



EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

0 1/2 1 Mile
Scale

Figure 1

TRACT INDEX MAP
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

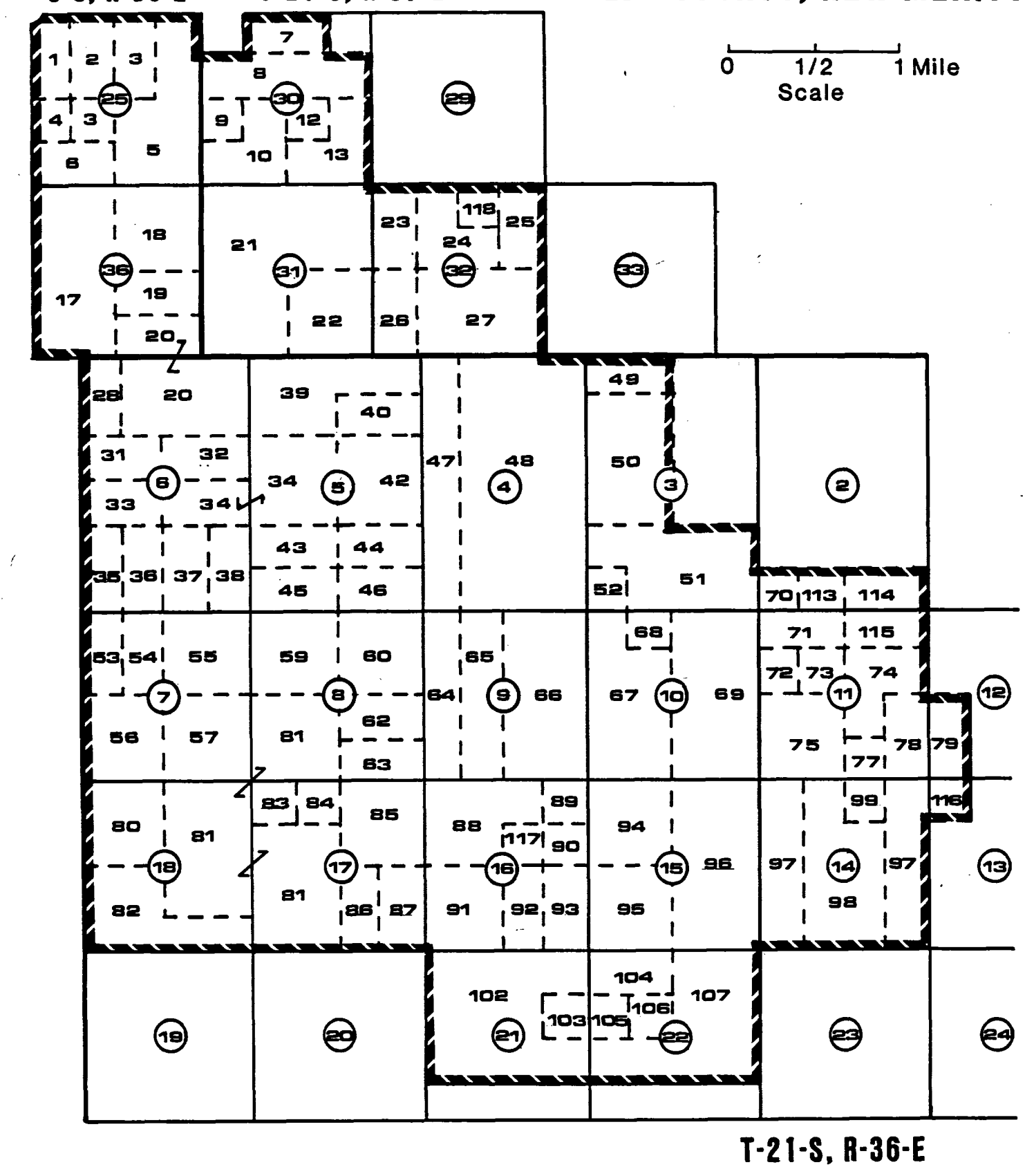
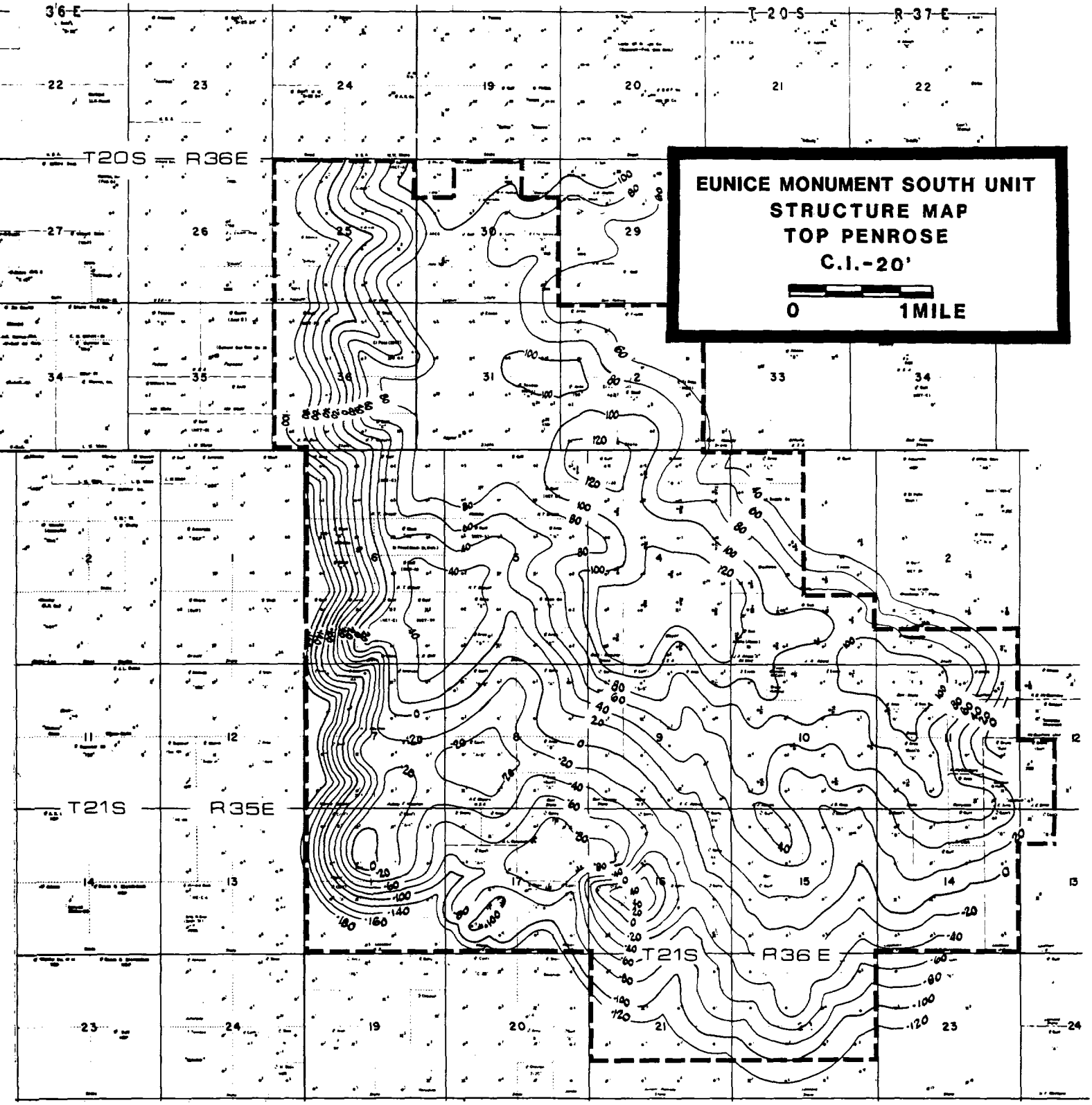


Figure 2


EUNICE MONUMENT SOUTH UNIT
STRUCTURE MAP
TOP PENROSE
C.I.-20'
0
1MILE
T20S
R36E
T21S
R35E
T21S
R36E
T 20 S
R 37 E

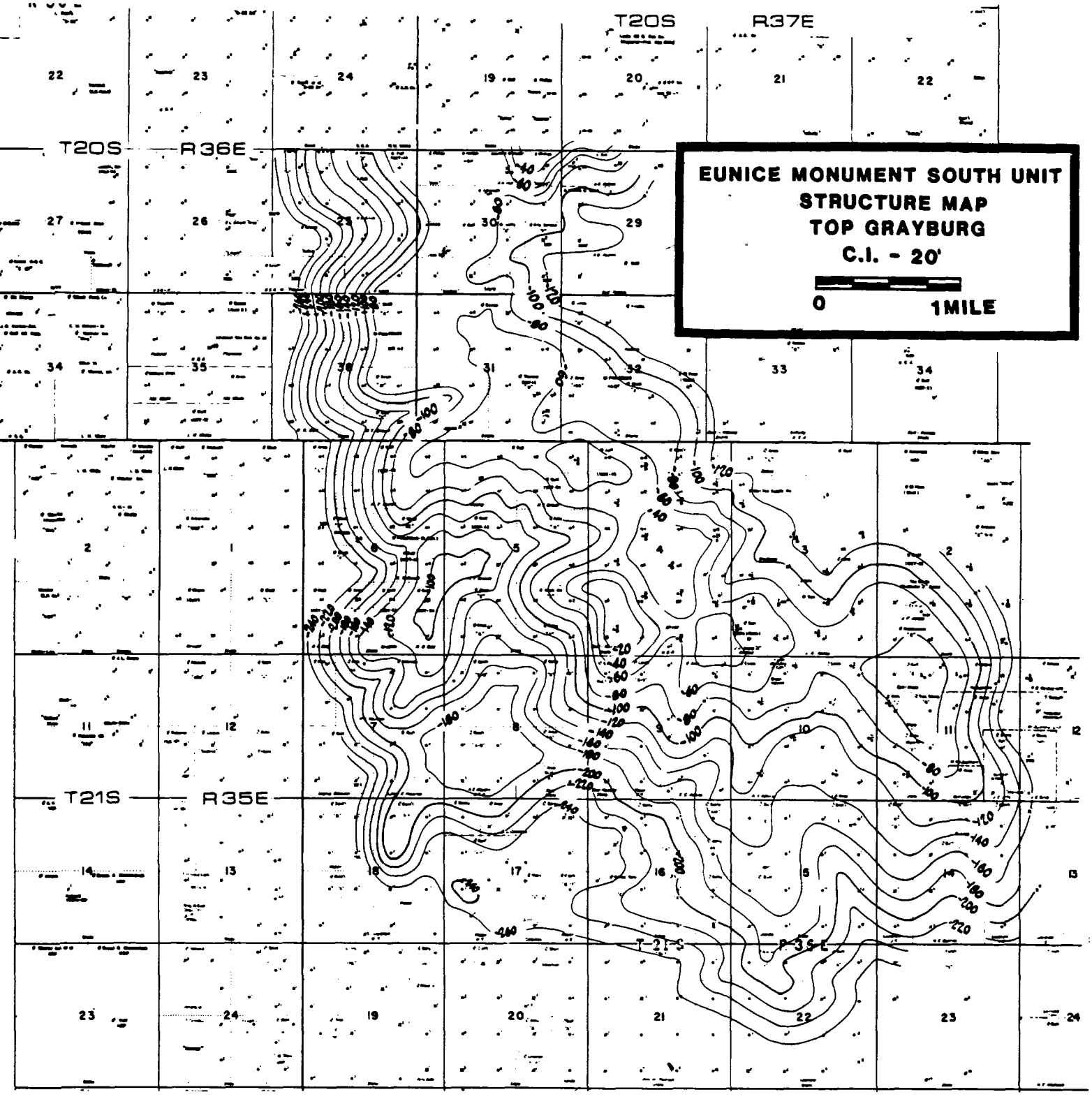

T20S
R37E
T20S
R36E
EUNICE MONUMENT SOUTH UNIT
STRUCTURE MAP
TOP GRAYBURG
C.I. - 20'
0
1MILE
T21S
R35E

Figure 4

TYPE LOG

TIDEWATER OIL CO.
O.L. COLEMAN #5
660 FNL, 900 FEL, SEC. 17, T21S-R36E
LEA CO., NEW MEXICO

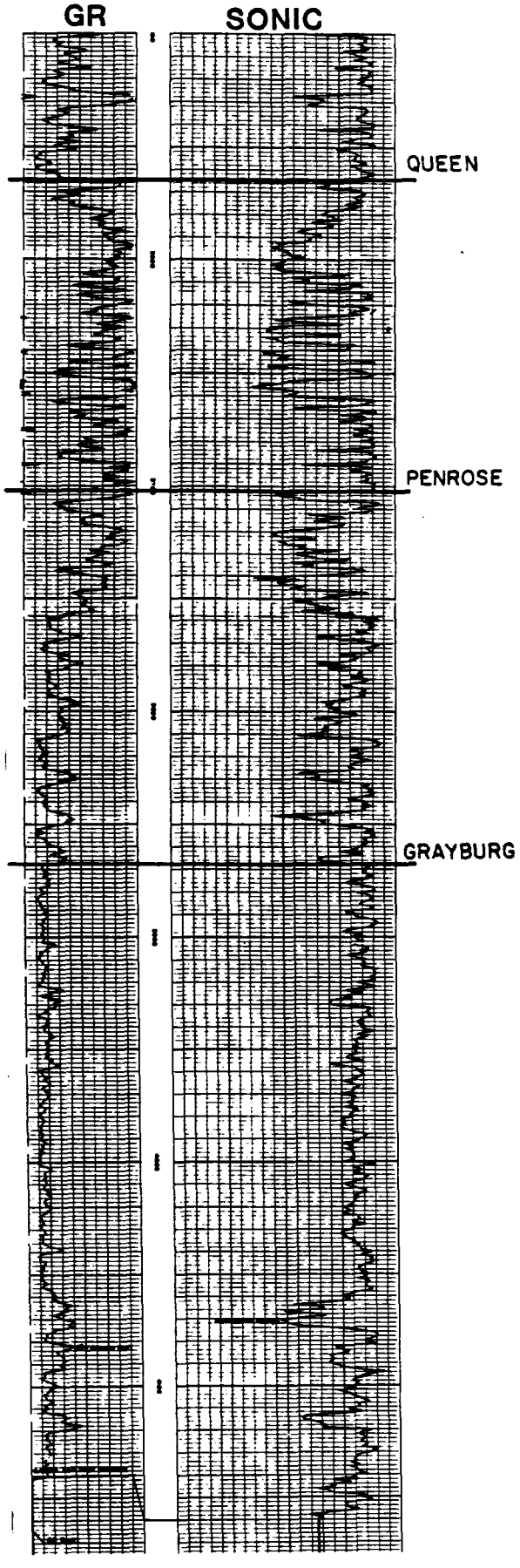


Figure 5

DECLINE CURVE ANALYSIS
RATE VS TIME
PROPOSED EUNICE MONUMENT SOUTH UNIT

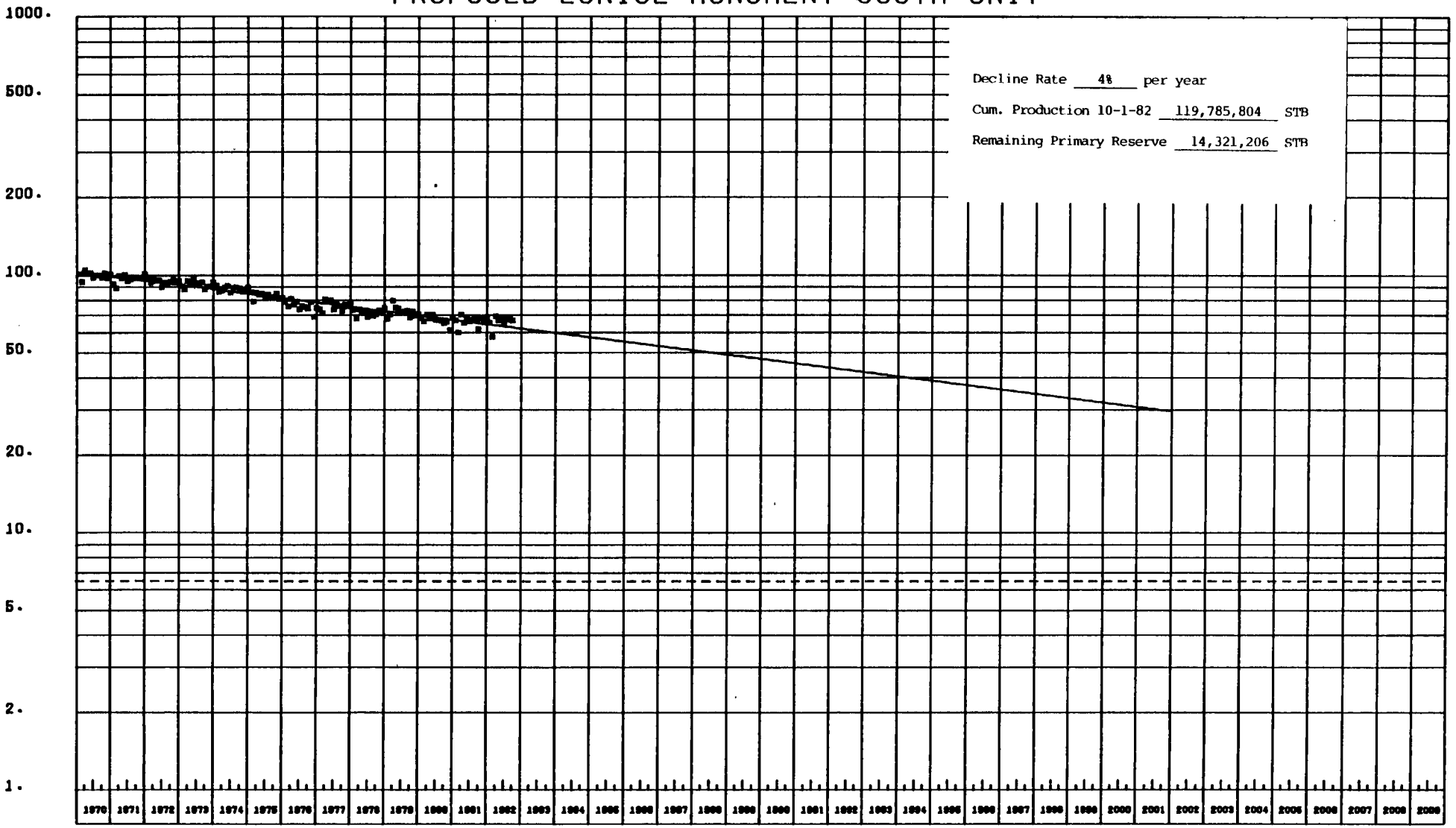
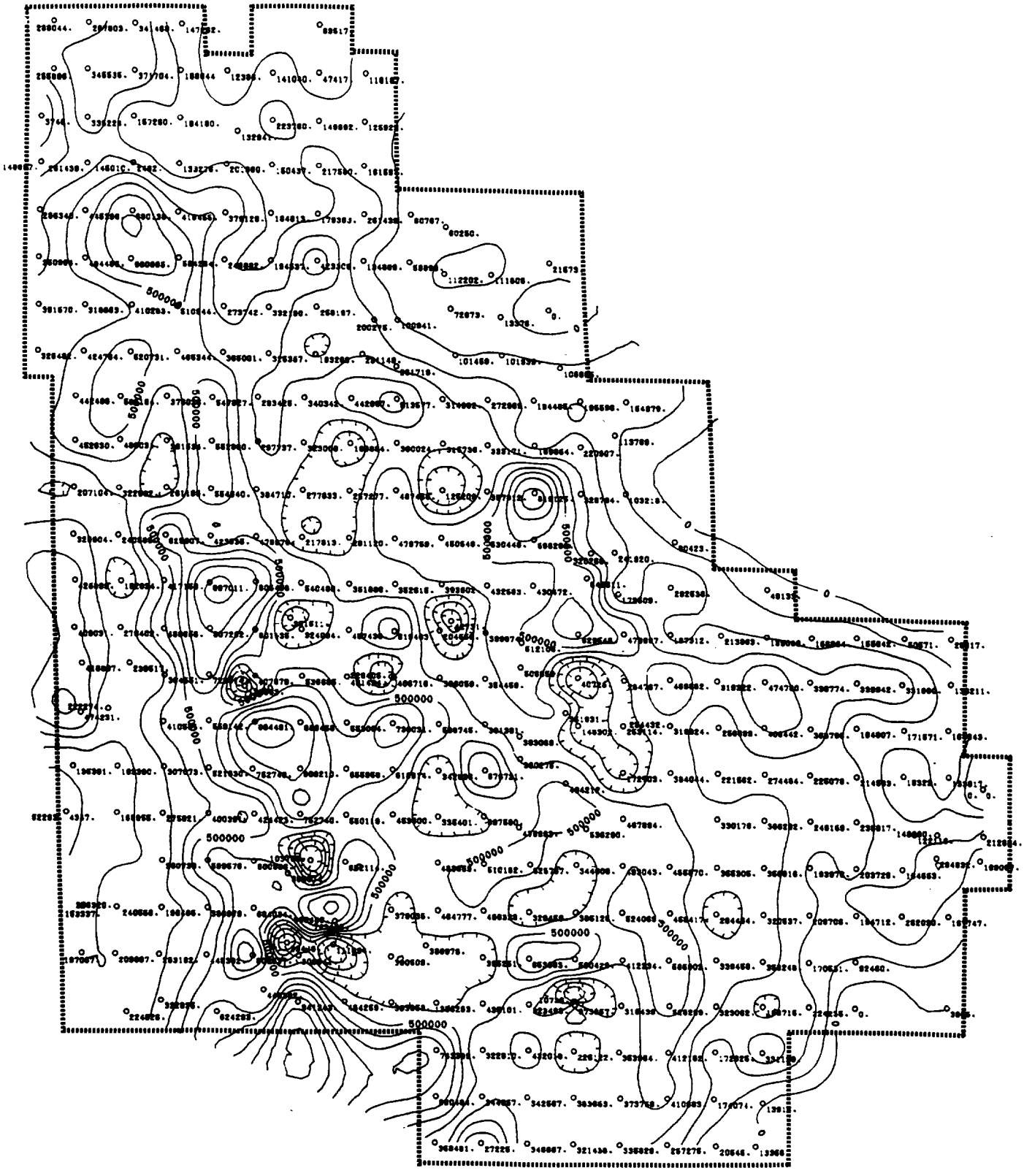
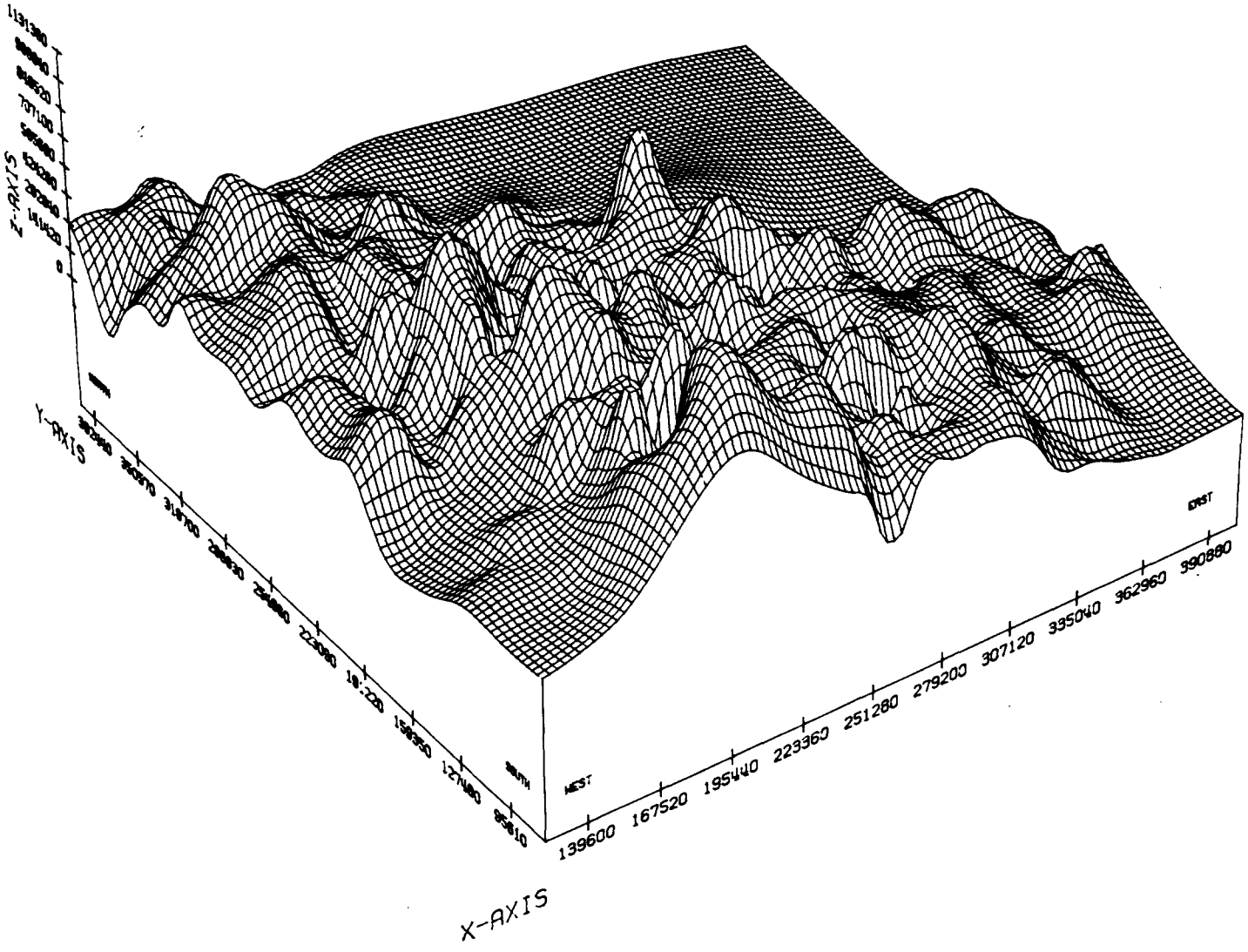


Figure 6



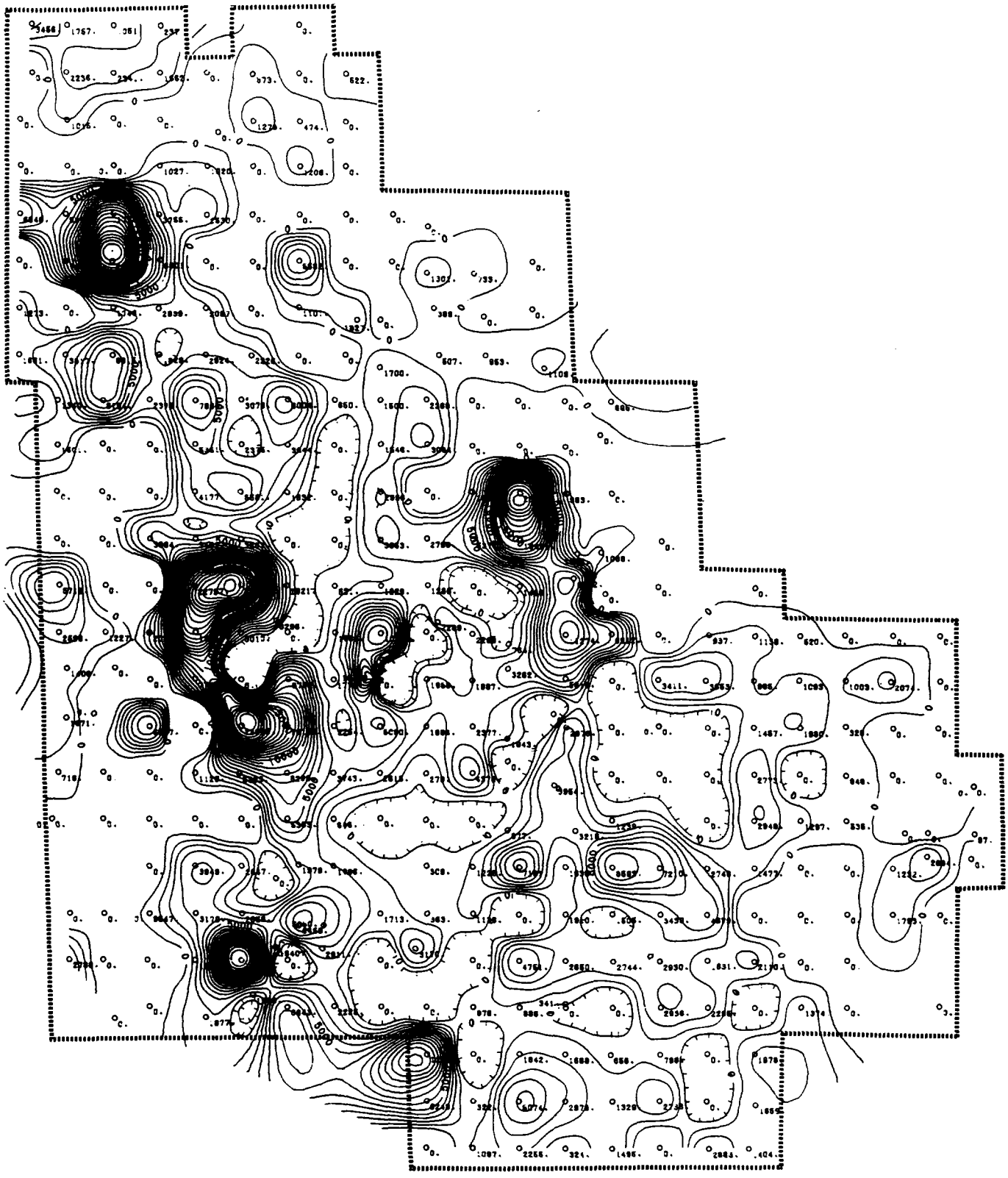
EUNICE MONUMENT SOUTH UNIT
CONTOUR ON CUMULATIVE OIL PRODUCTION THROUGH 1981
CONTOUR INTERVAL = 100,000 STB
SCALE: 1" = 4000'

Figure 7



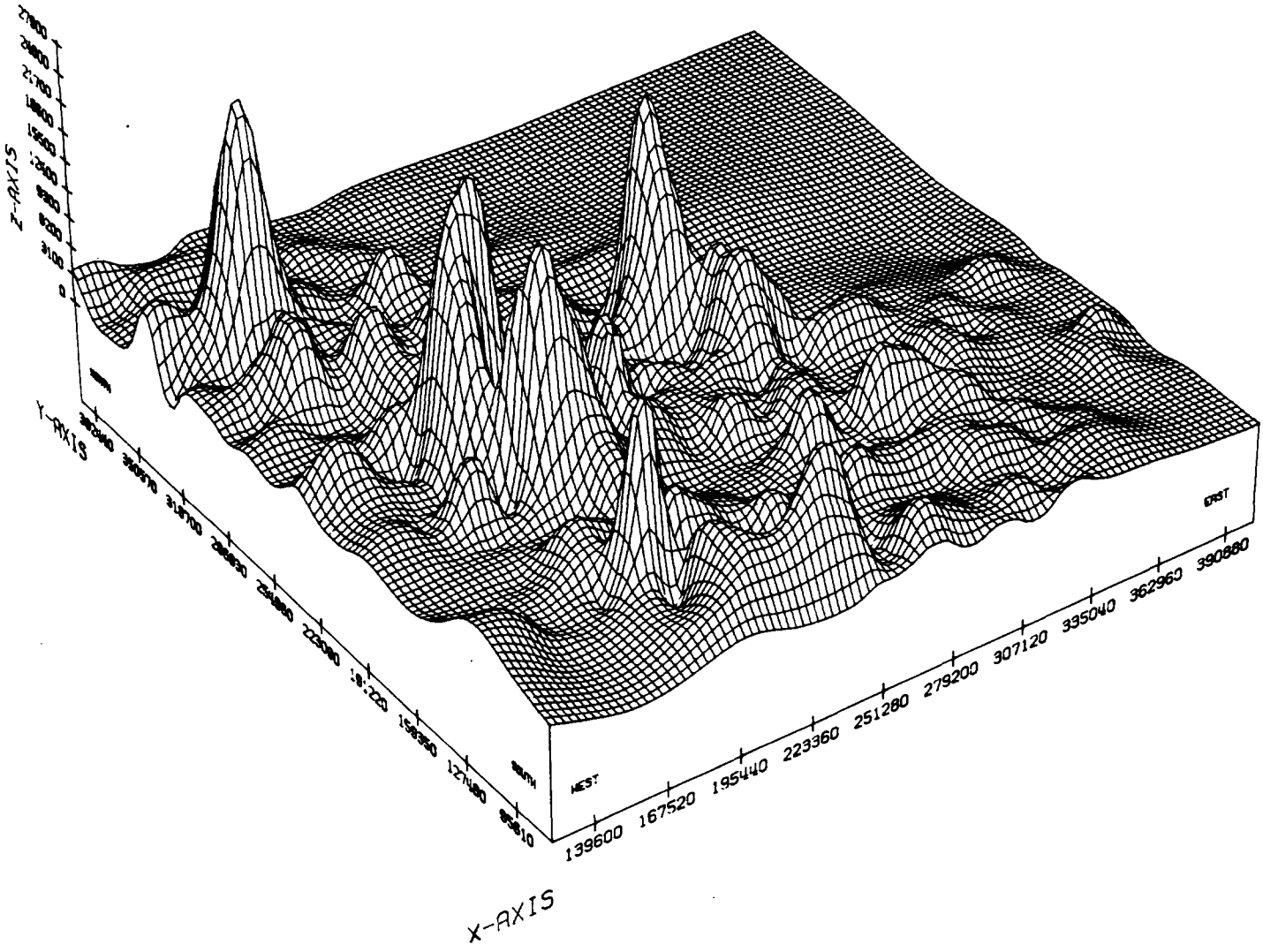
EUNICE MONUMENT SOUTH UNIT
MESH PERSPECTIVE ON CUMULATIVE OIL PRODUCTION
THROUGH 1981

Figure 8



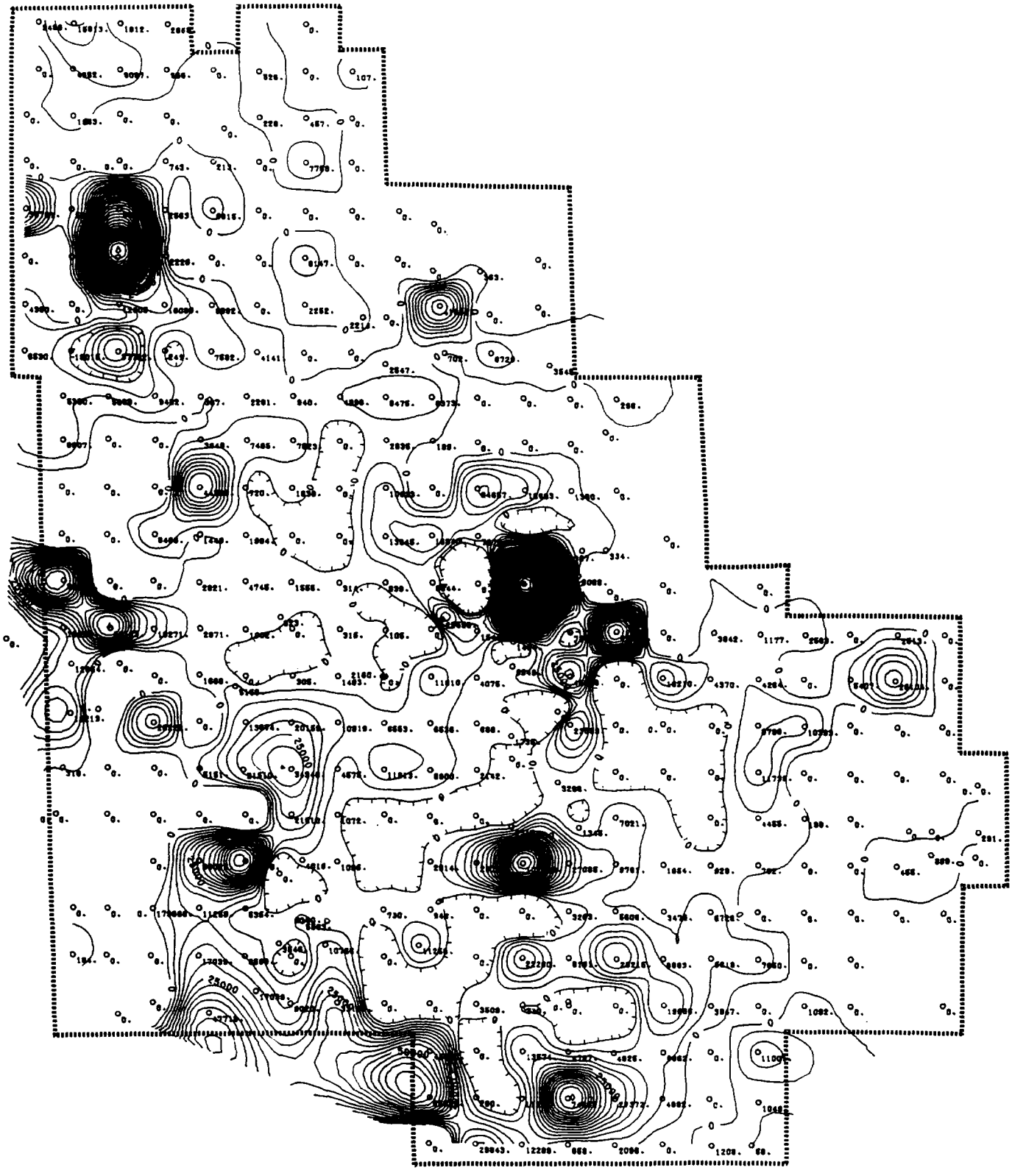
EUNICE MONUMENT SOUTH UNIT
CONTOUR ON 1981 OIL PRODUCTION
CONTOUR INTERVAL = 1000 STB
SCALE: 1"= 4000'

Figure 9



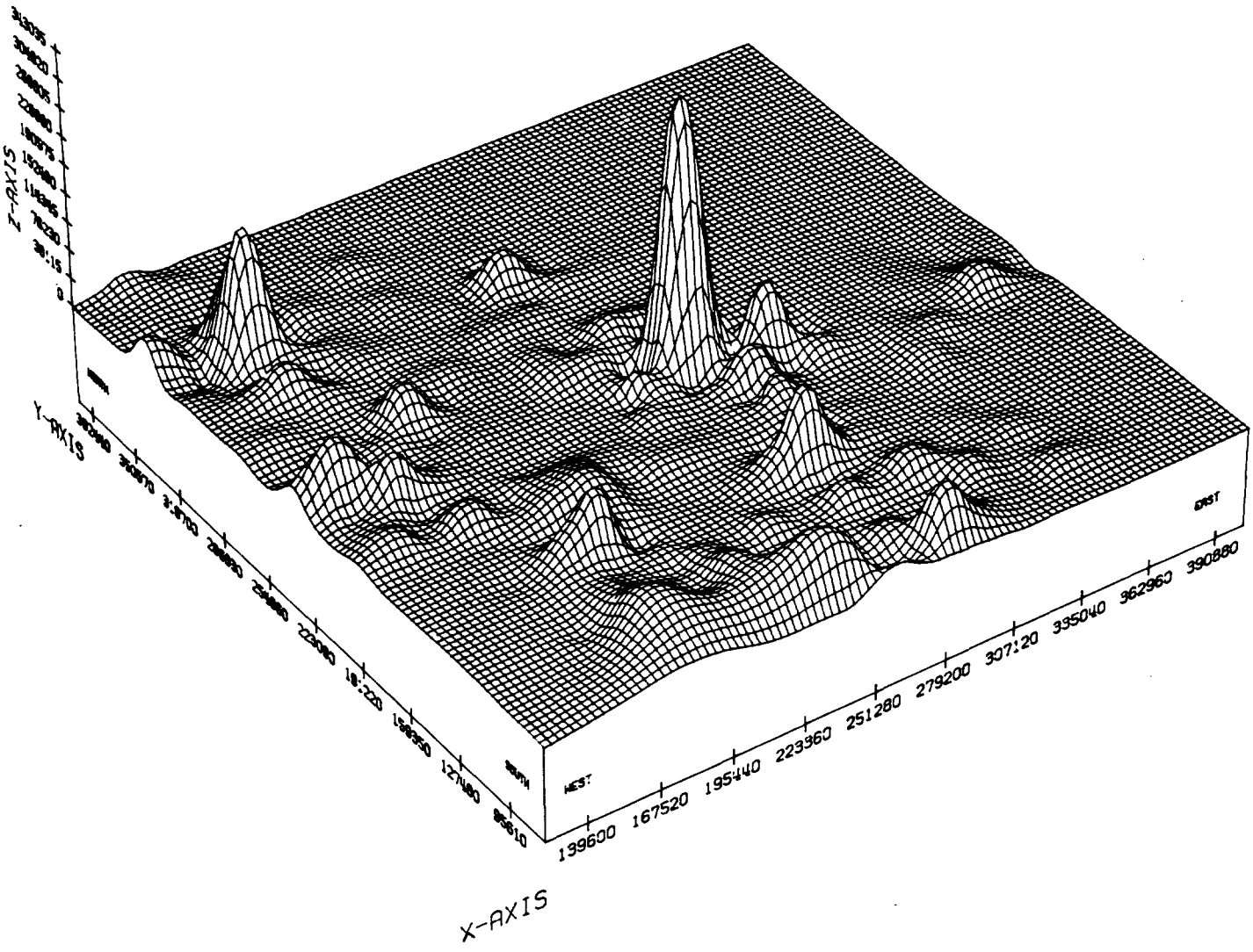
EUNICE MONUMENT SOUTH UNIT
MESH PERSPECTIVE ON 1981 OIL PRODUCTION

Figure 10



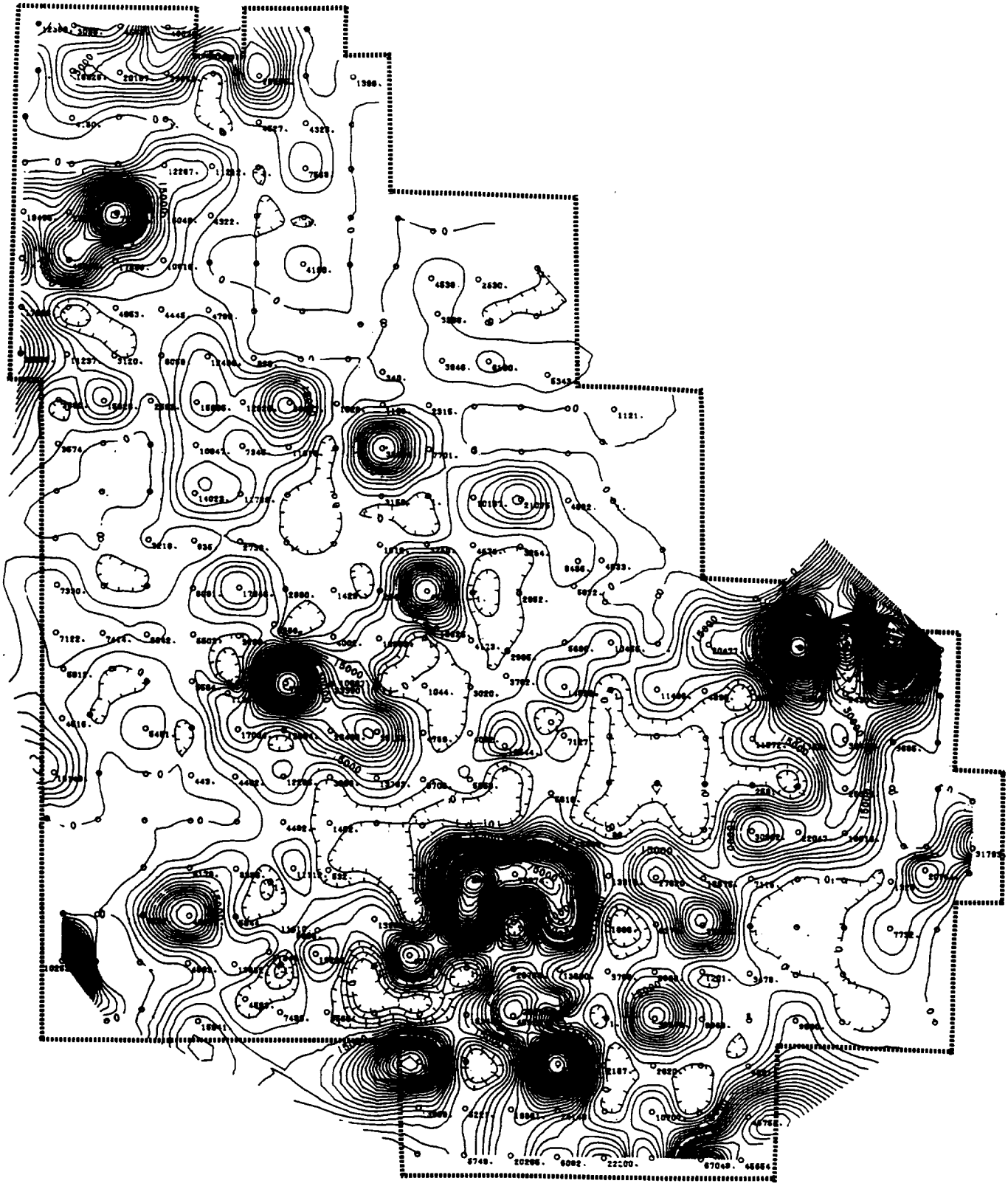
EUNICE MONUMENT SOUTH UNIT
CONTOUR ON 1981 WATER PRODUCTION
CONTOUR INTERVAL = 5000 BBL.
SCALE: 1" = 4000'

Figure 11



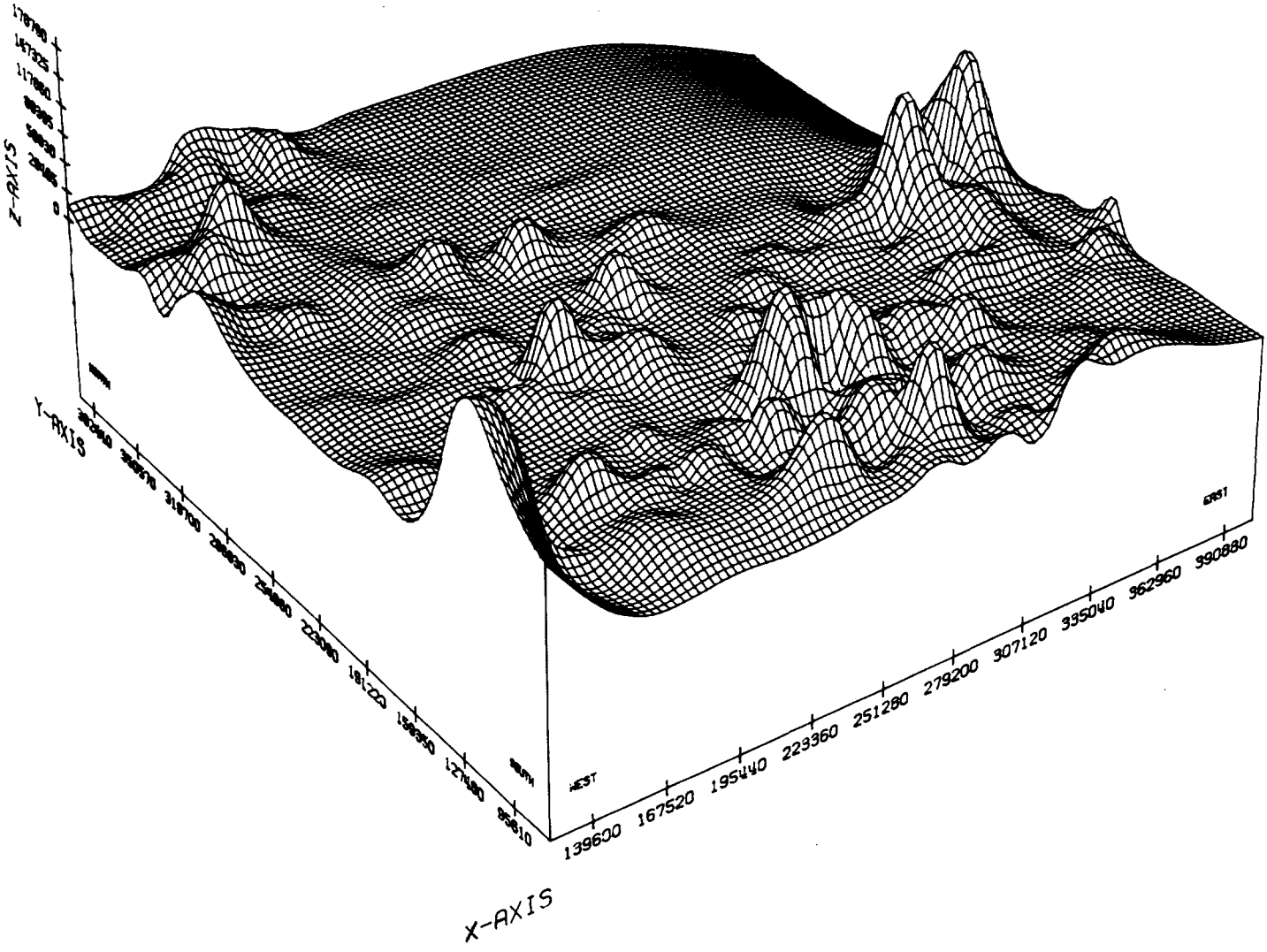
EUNICE MONUMENT SOUTH UNIT
MESH PERSPECTIVE ON 1981 WATER PRODUCTION

Figure 12



EUNICE MONUMENT SOUTH UNIT
CONTOUR ON 1981 GAS PRODUCTION
CONTOUR INTERVAL = 3000 MCF
SCALE : 1" = 4000'

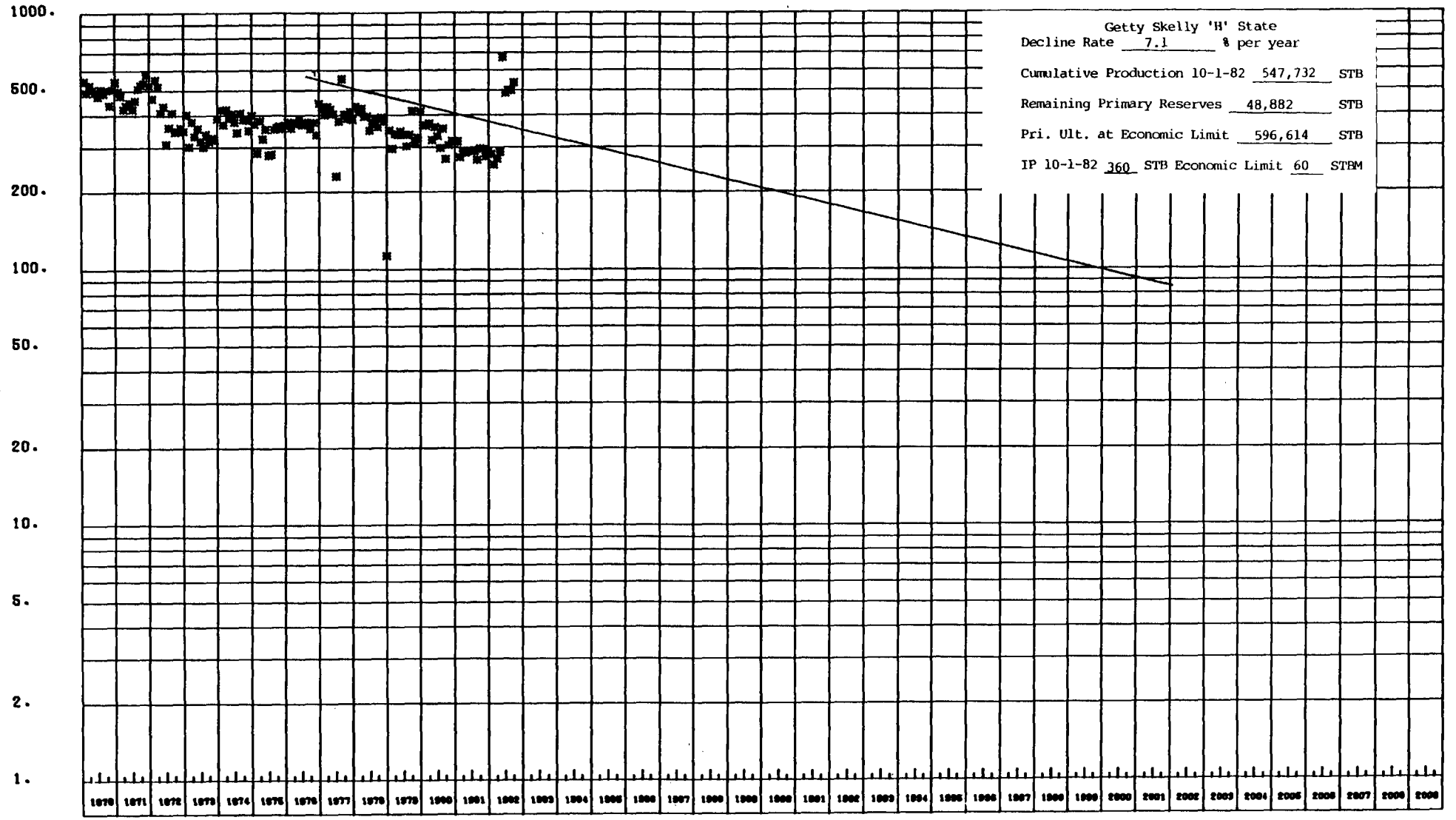
Figure 13



EUNICE MONUMENT SOUTH UNIT
MESH PERSPECTIVE 1981 GAS PRODUCTION

Figure 14

RATE VS TIME
TRACT 1



KHIE, SIBU PER MONTH

Figure 15

RATE VS TIME

TRACT 2

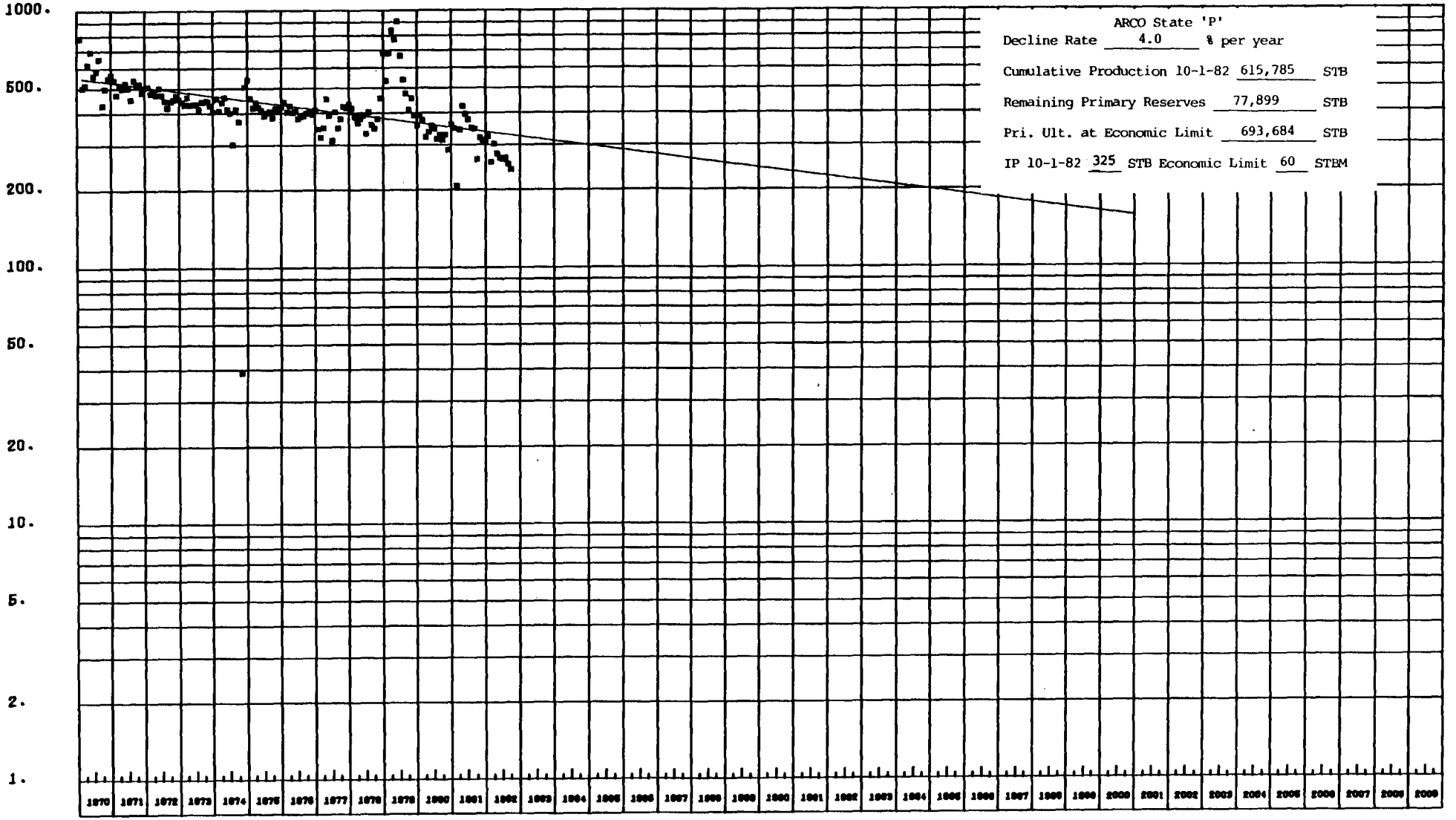


Figure 16

RATE VS TIME
TRACT 3

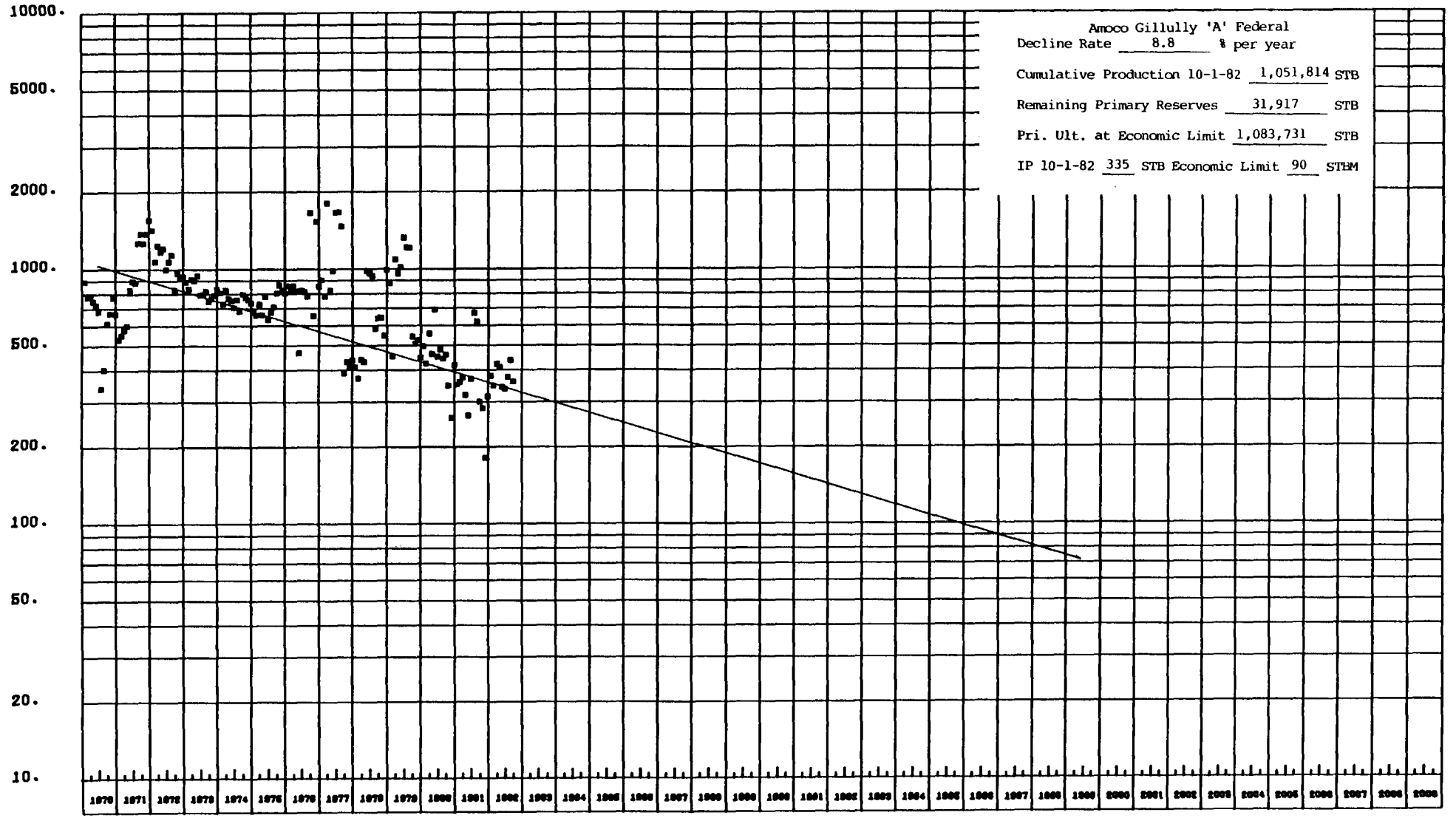


Figure 17

RATE VS TIME
TRACT 5

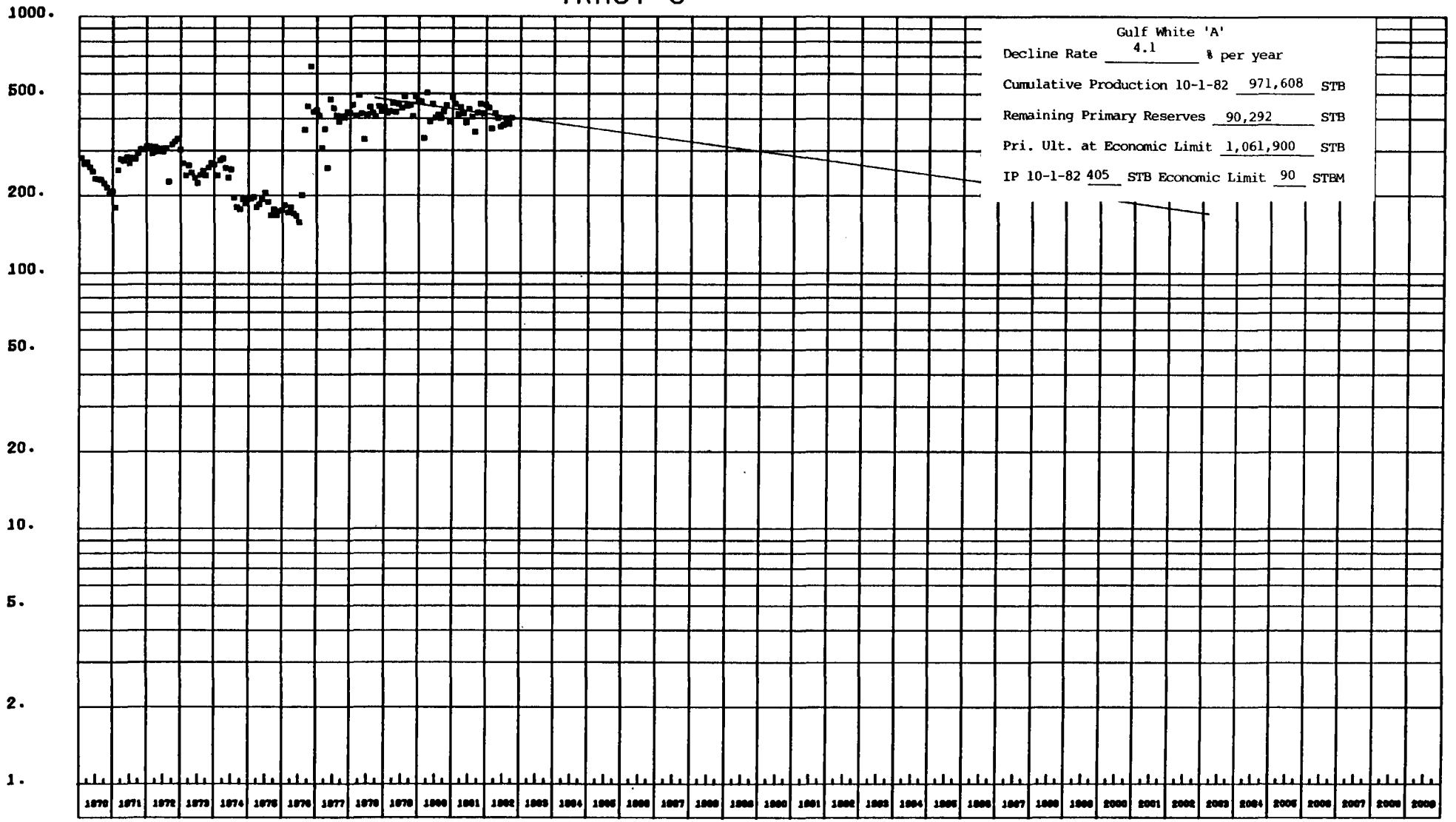


Figure 18

RATE VS TIME
TRACT 8

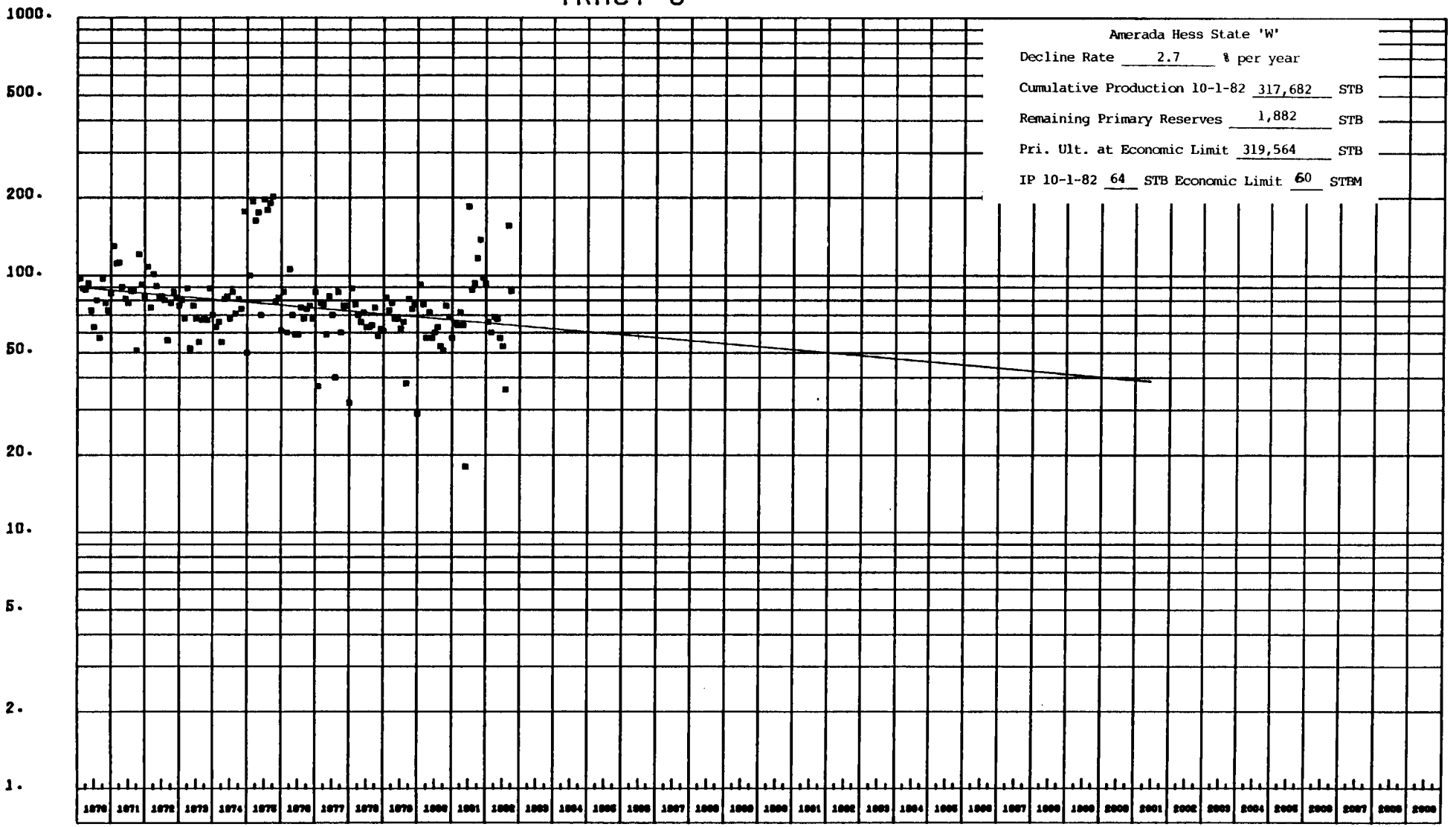
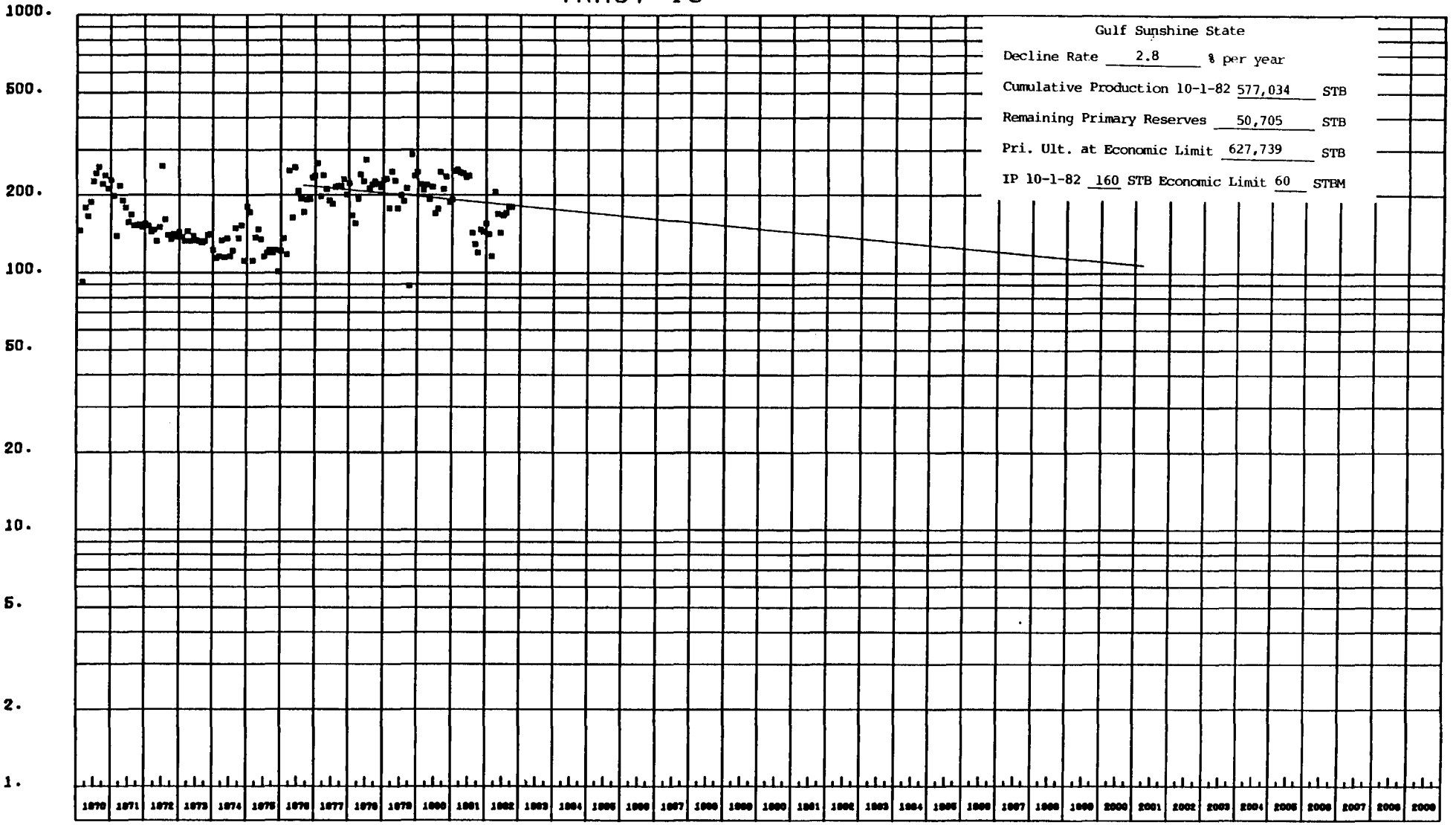


Figure 19

RATE VS TIME
TRACT 10



RATE, STBO PER MONTH

Figure 20

RATE VS TIME
TRACT 12

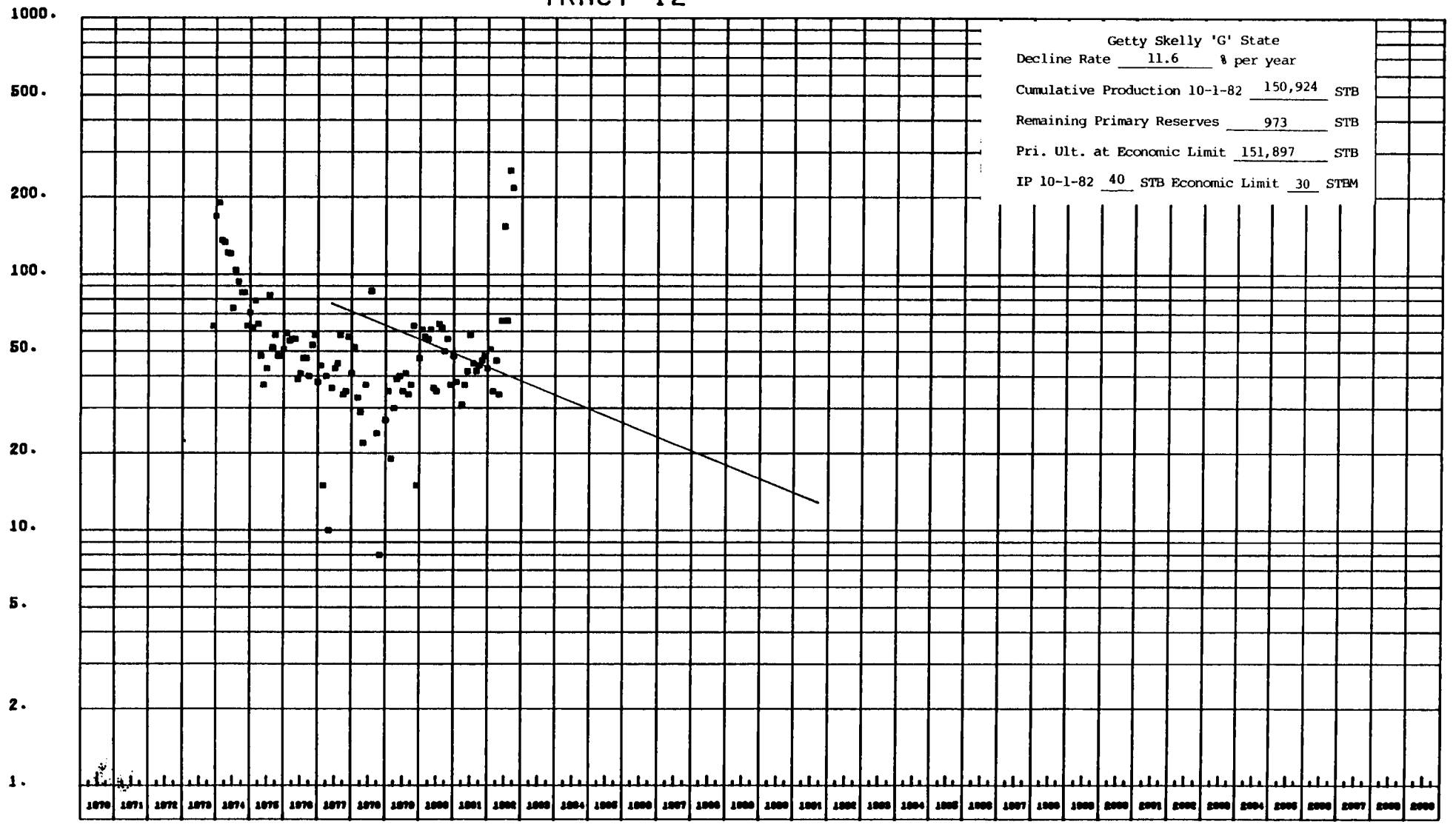
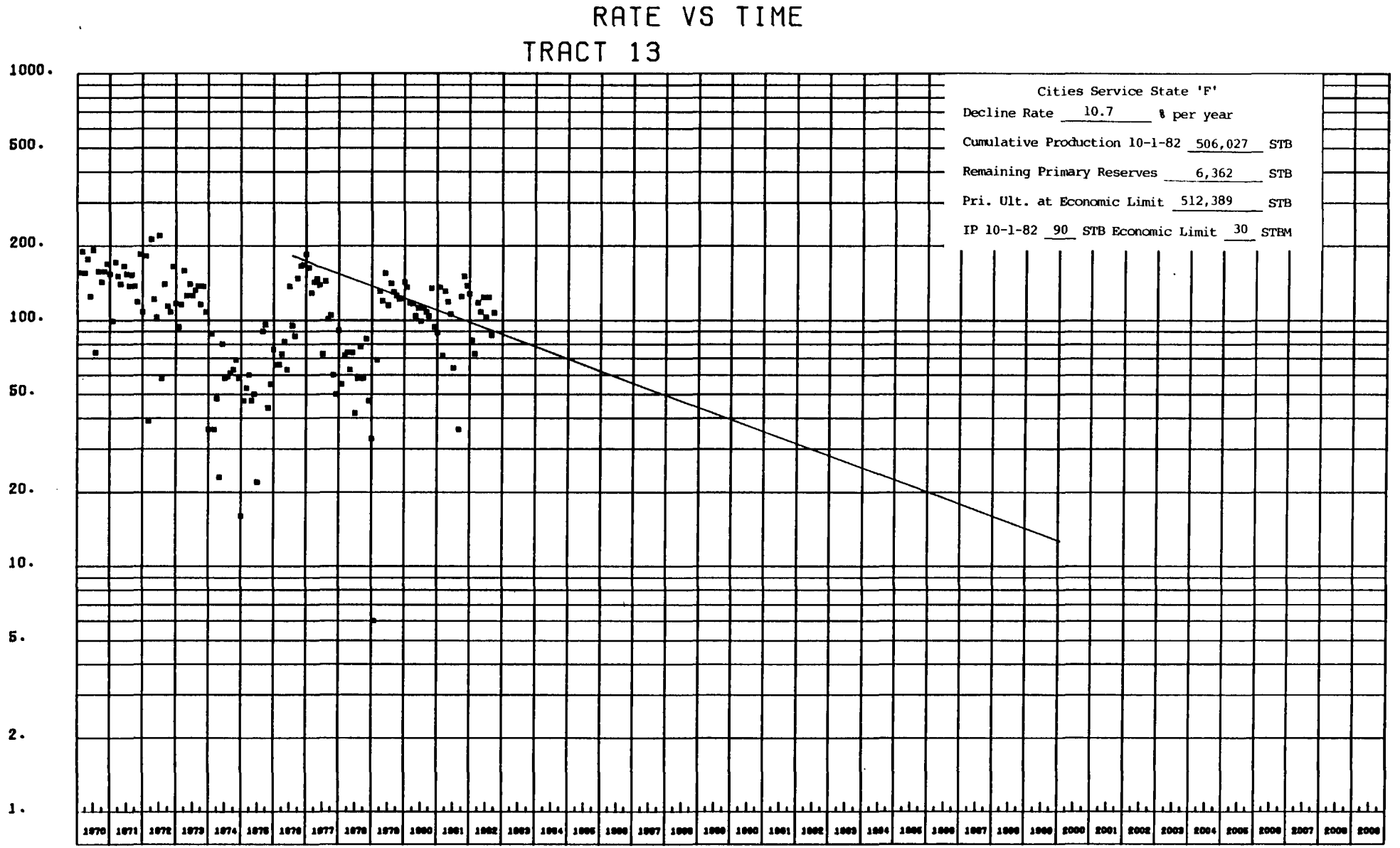


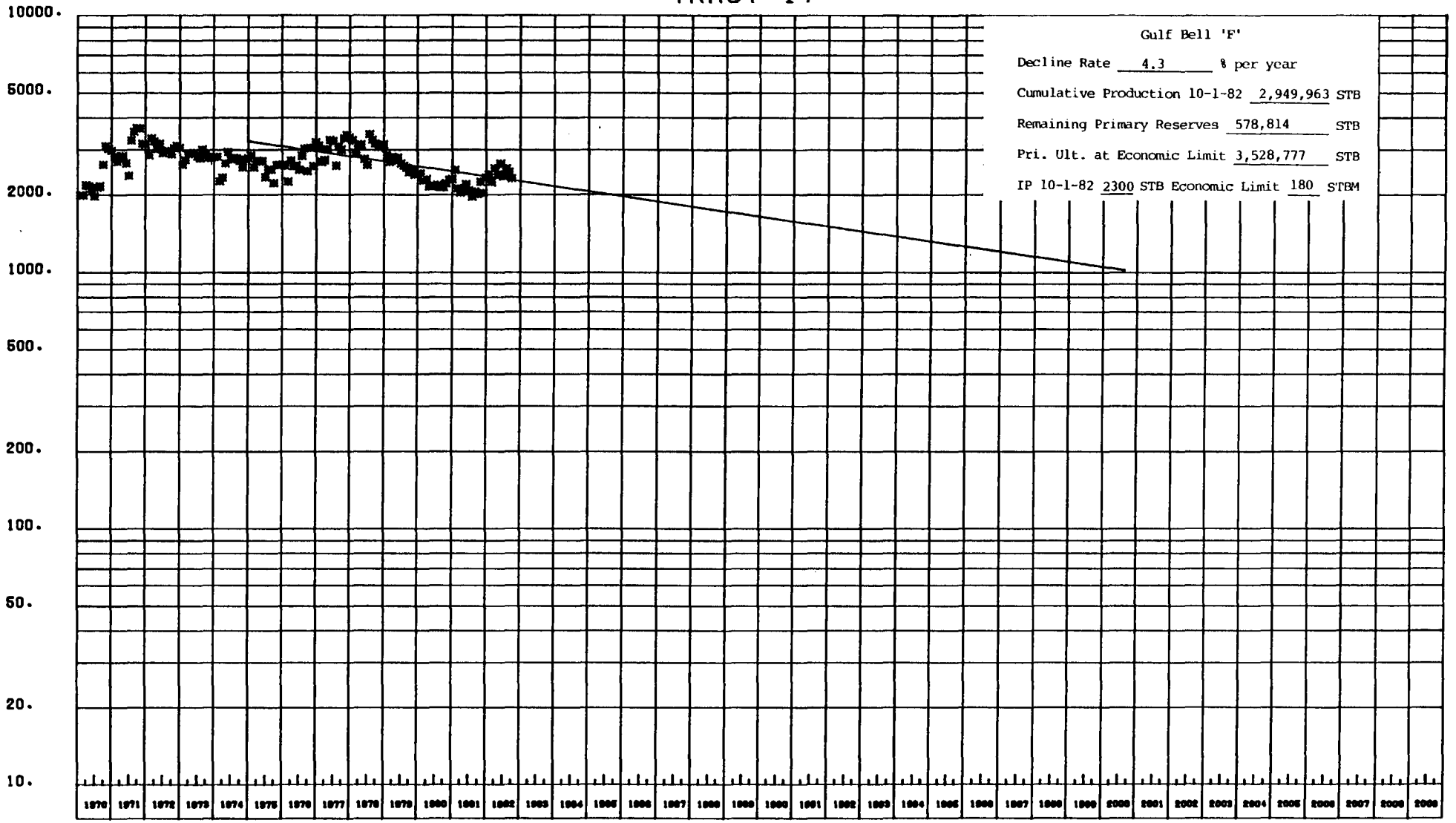
Figure 21



KHIT, SIBU PEK MUNIH

Figure 22

RATE VS TIME
TRACT 17



KHIL, SIBU PER MONTH

Figure 23

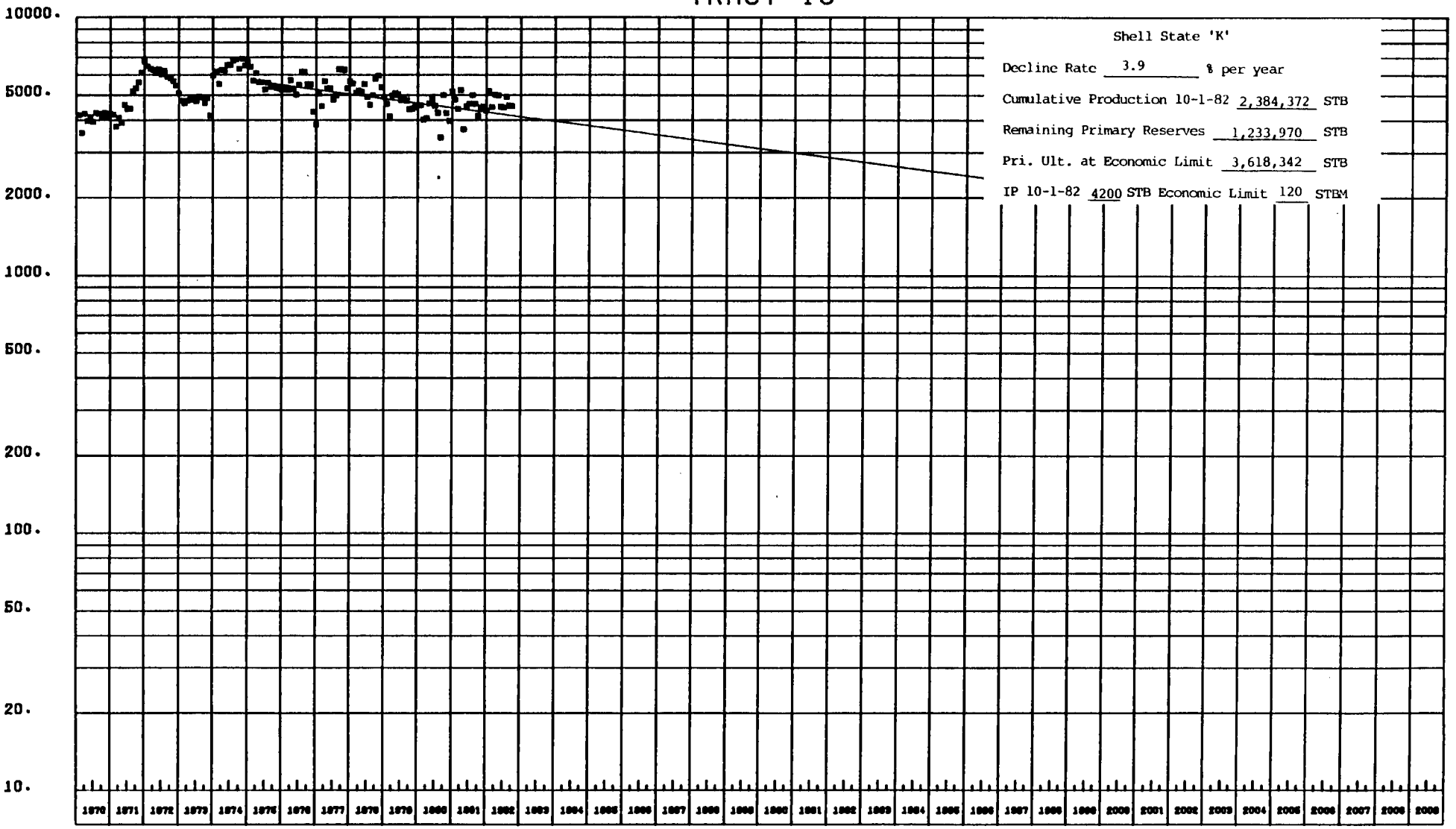
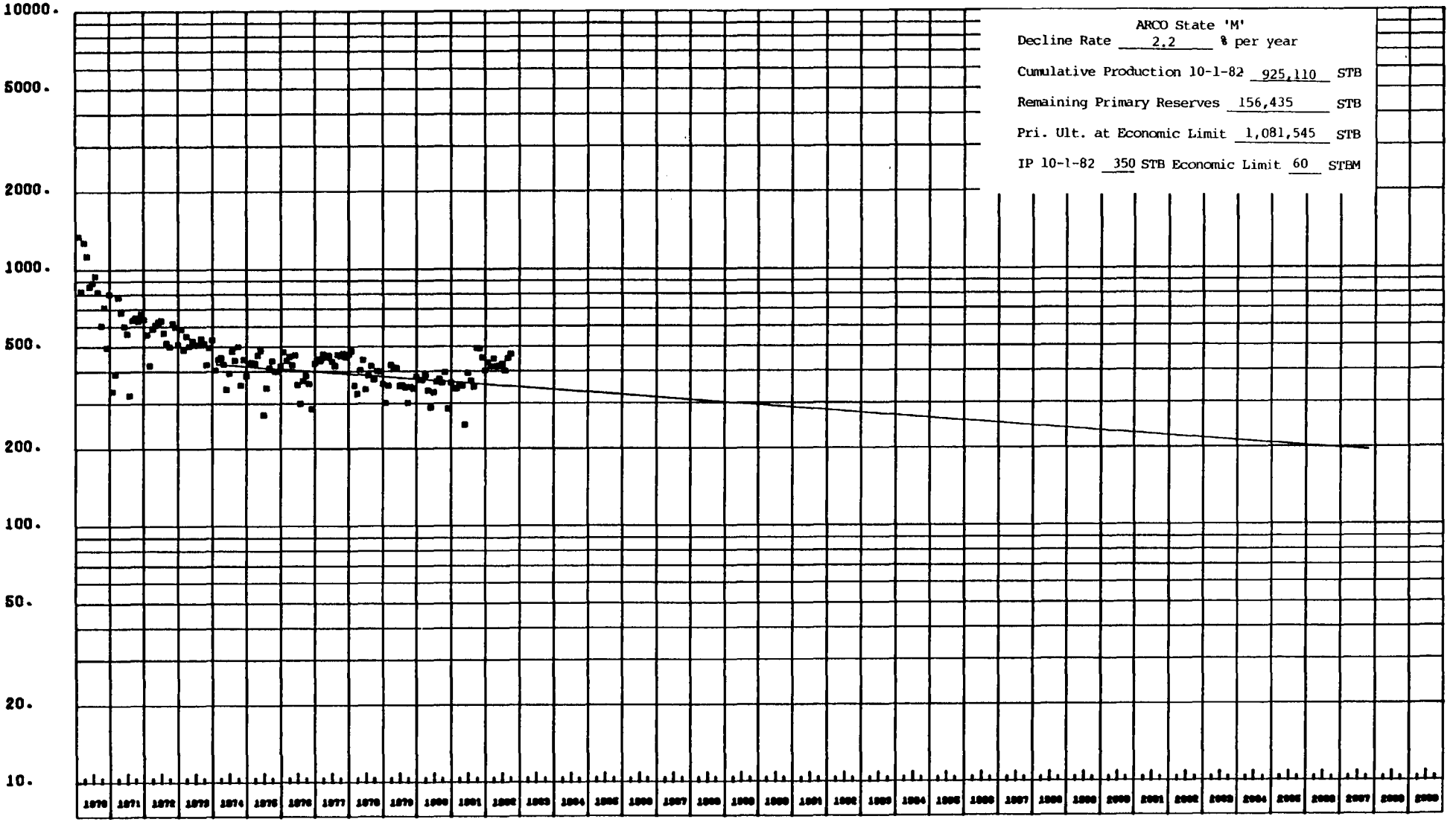

RATE VS TIME
TRACT 18
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.
Shell State 'K'
Decline Rate 3.9 % per year
Cumulative Production 10-1-82 2,384,372 STB
Remaining Primary Reserves 1,233,970 STB
Pri. Ult. at Economic Limit 3,618,342 STB
IP 10-1-82 4200 STB Economic Limit 120 STBM

Figure 24

RATE VS TIME
TRACT 19



KNIGHT, SIBU PEAK MUNIH

Figure 25

RATE VS TIME
TRACT 20

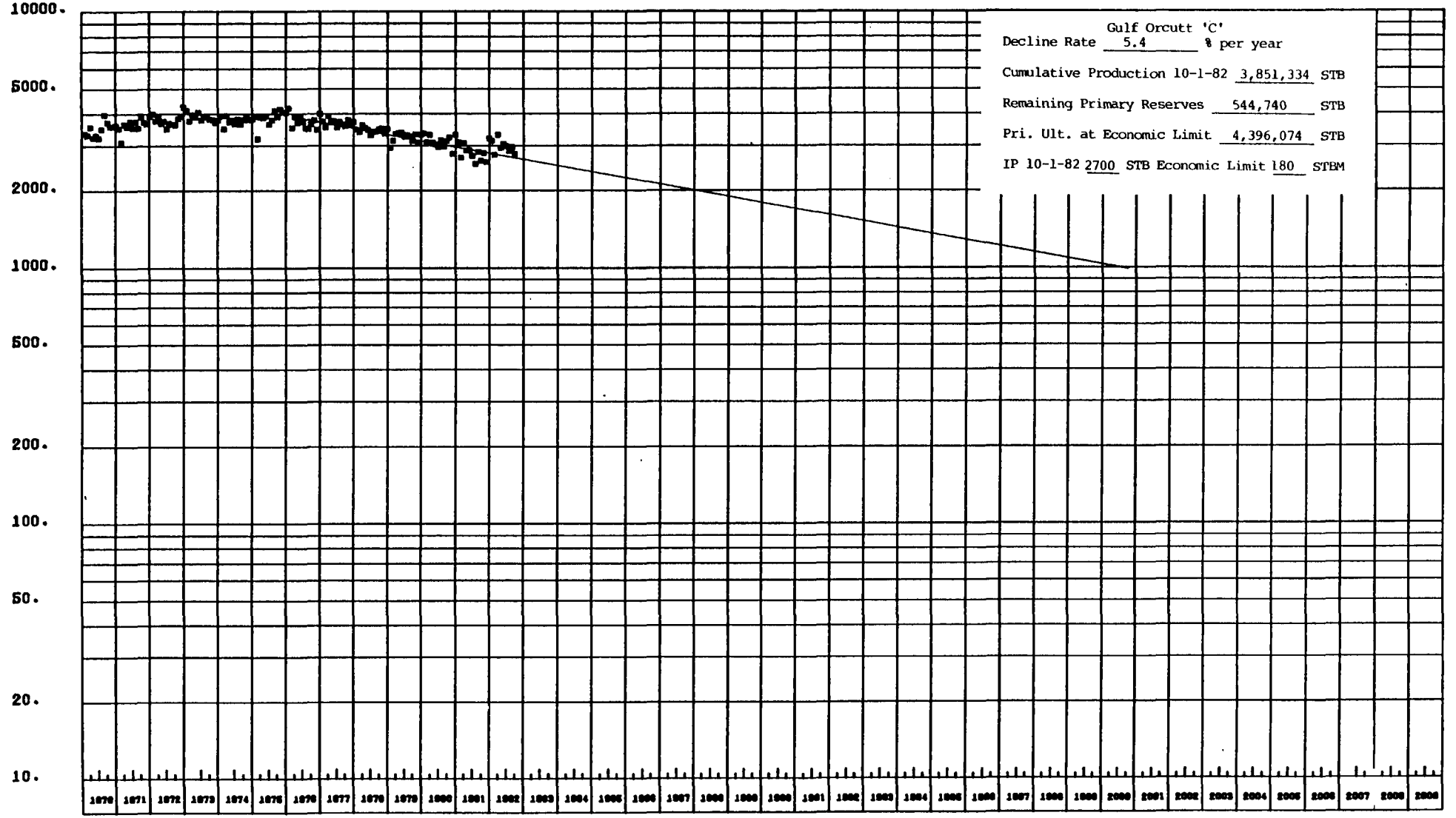


Figure 26

RATE VS TIME
TRACT 21

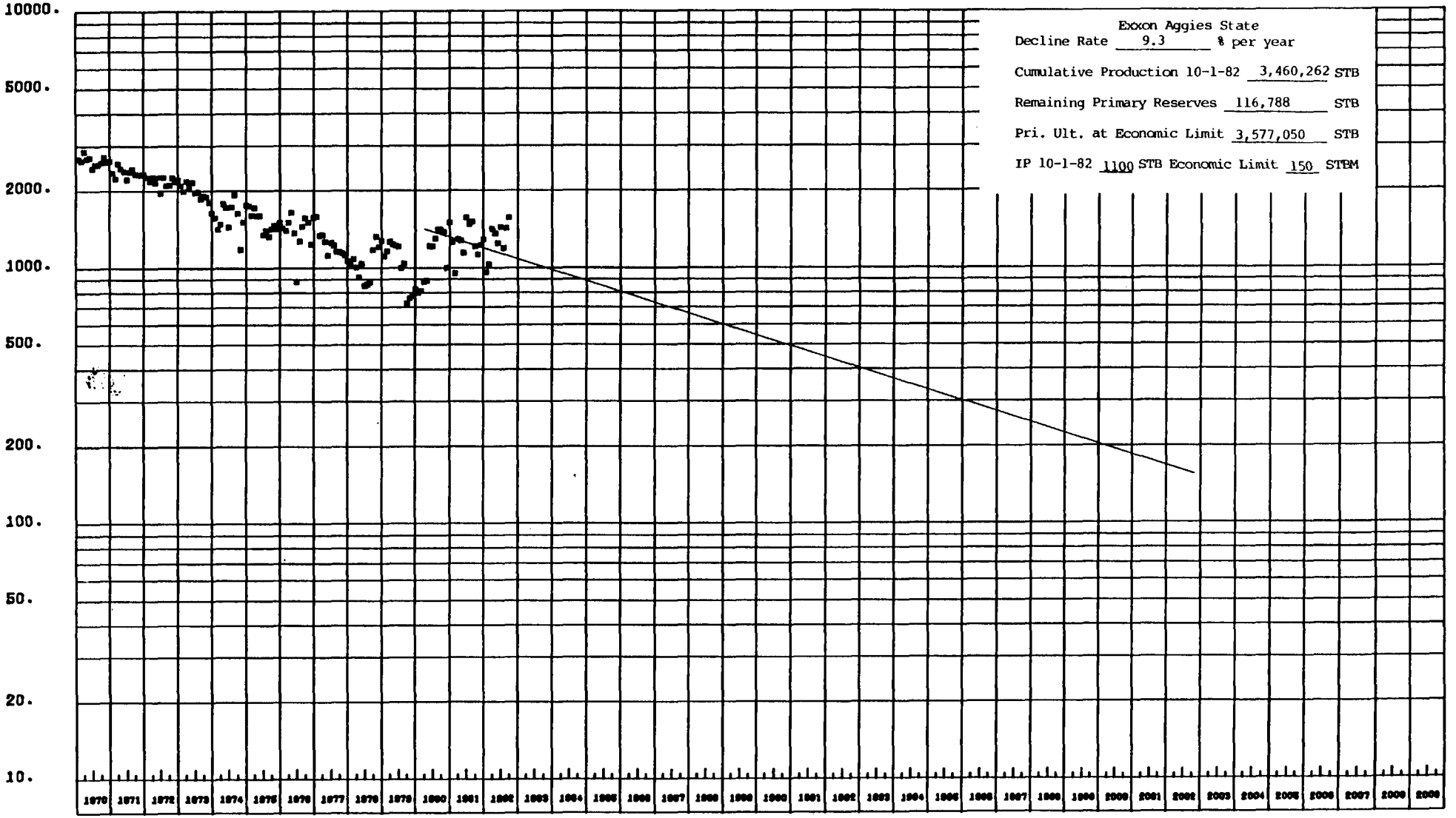


Figure 27

RATE VS TIME
TRACT 22

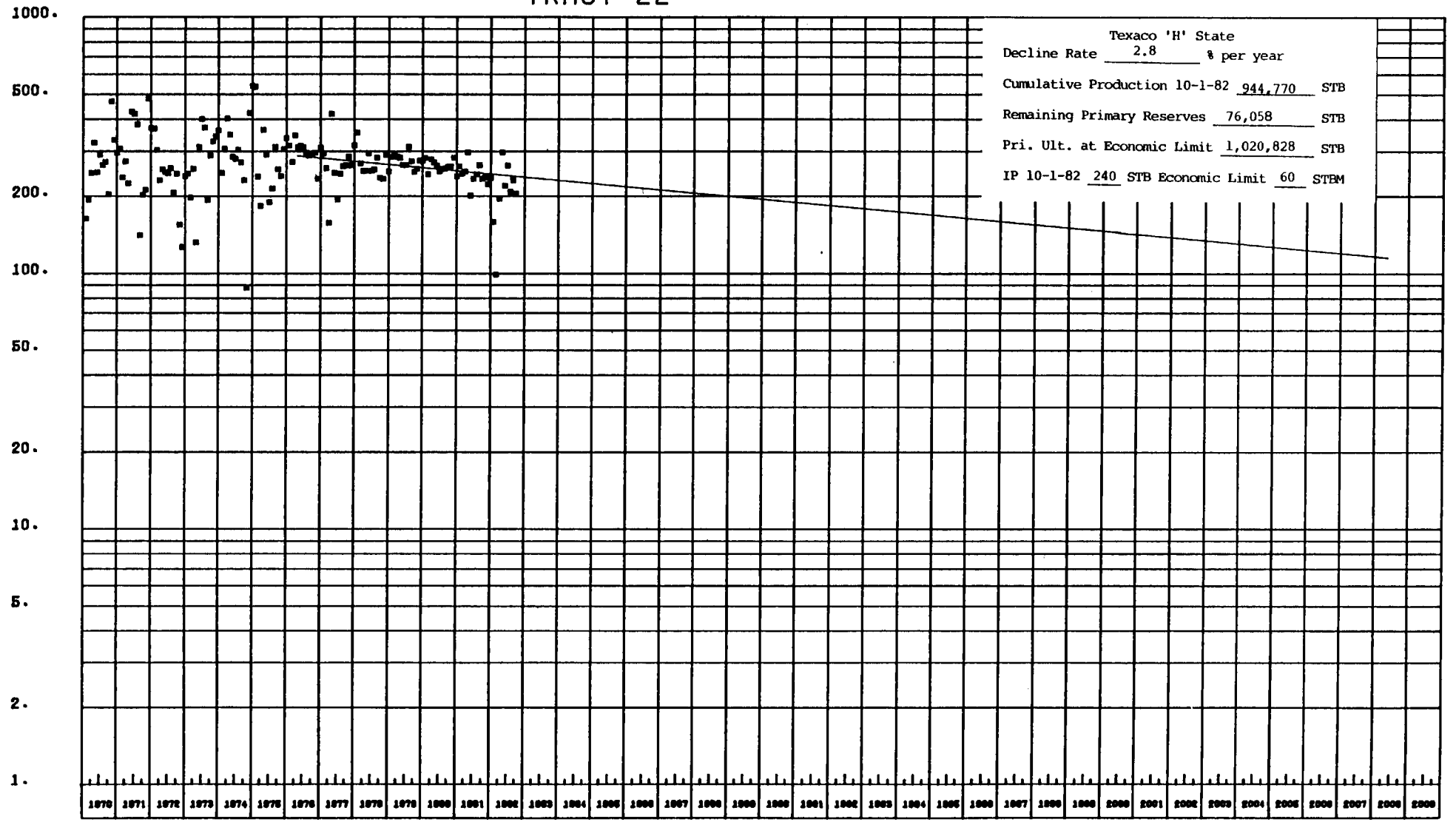


Figure 9R

RATE VS TIME
TRACT 24

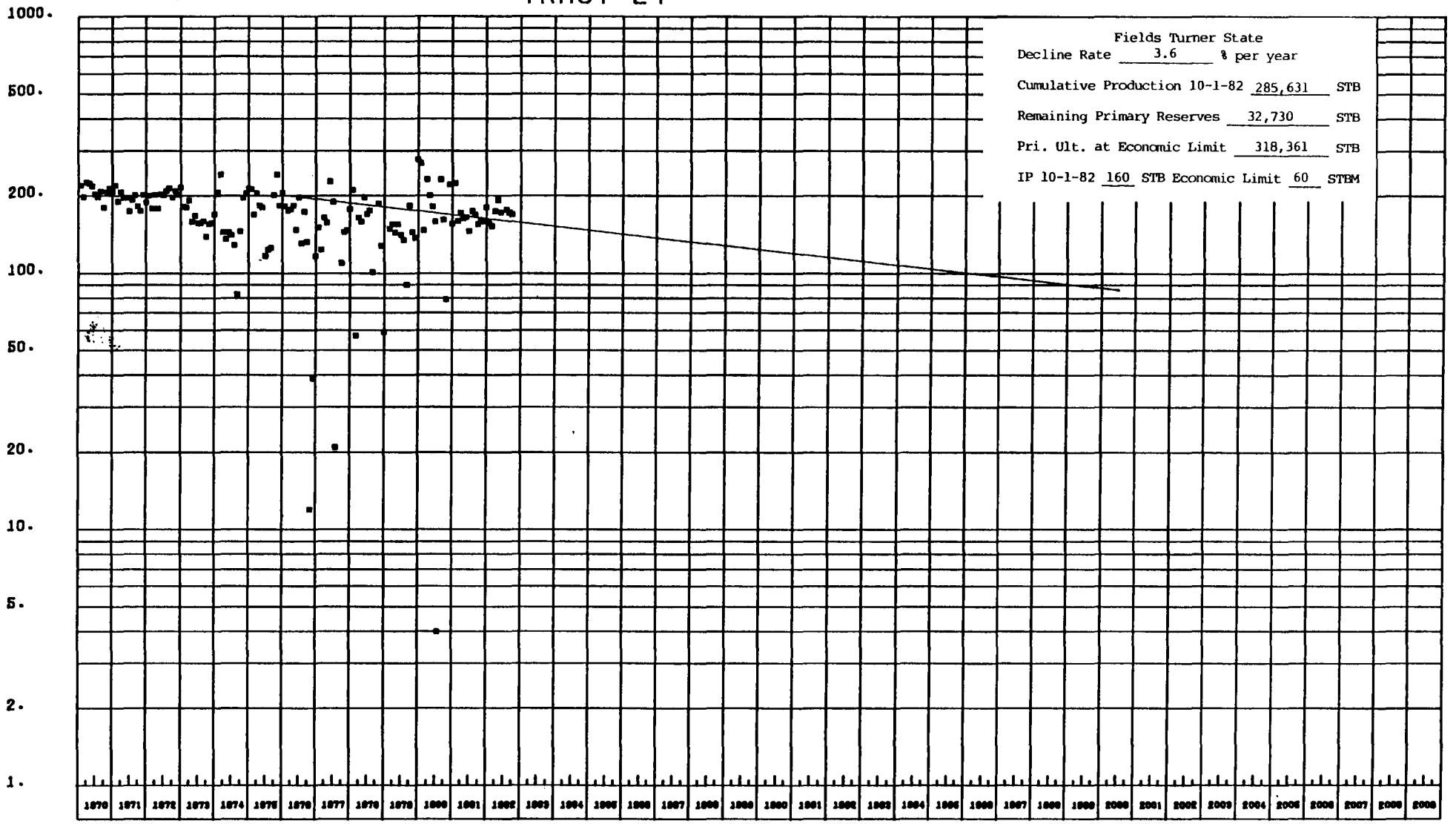


Figure 29

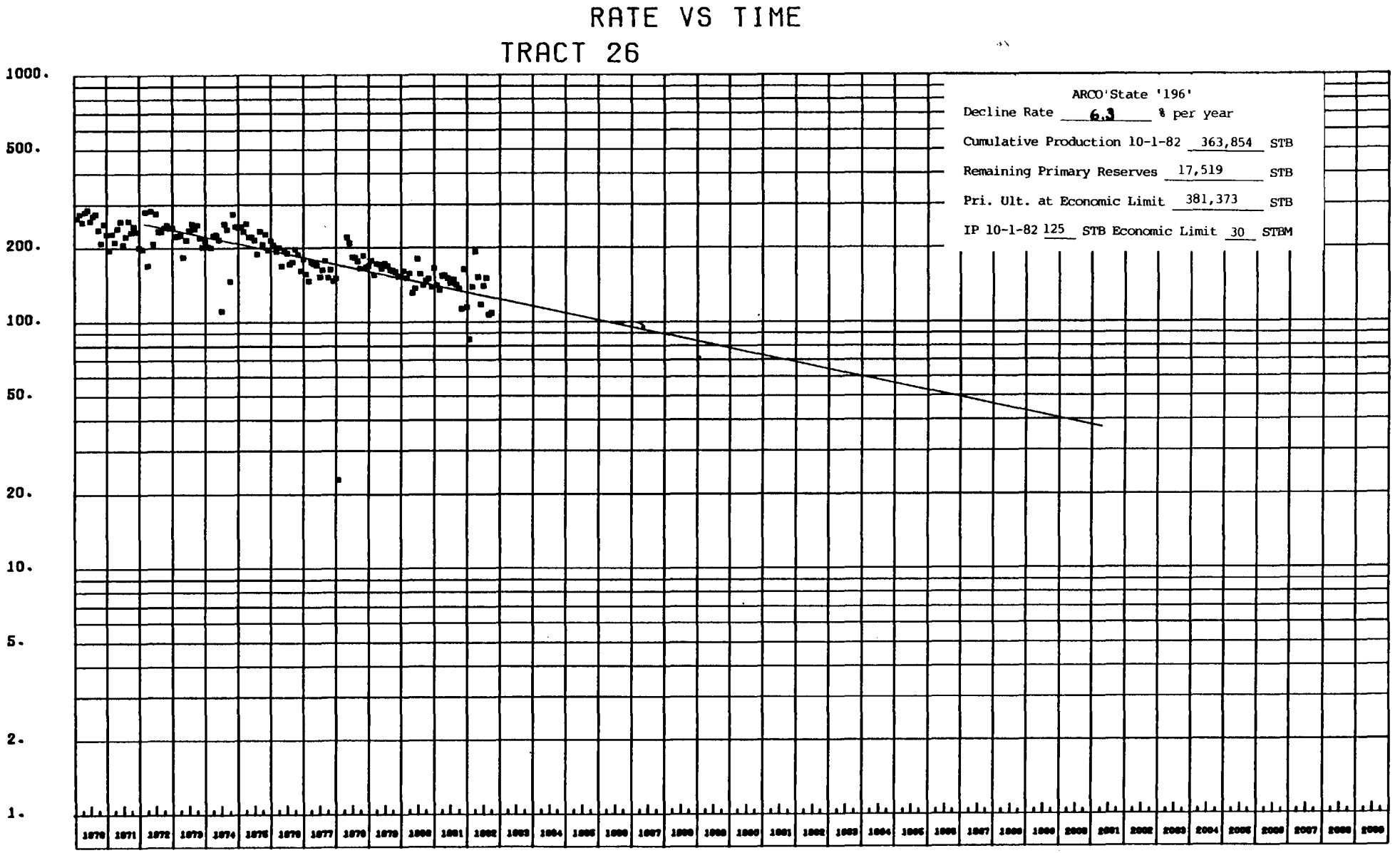
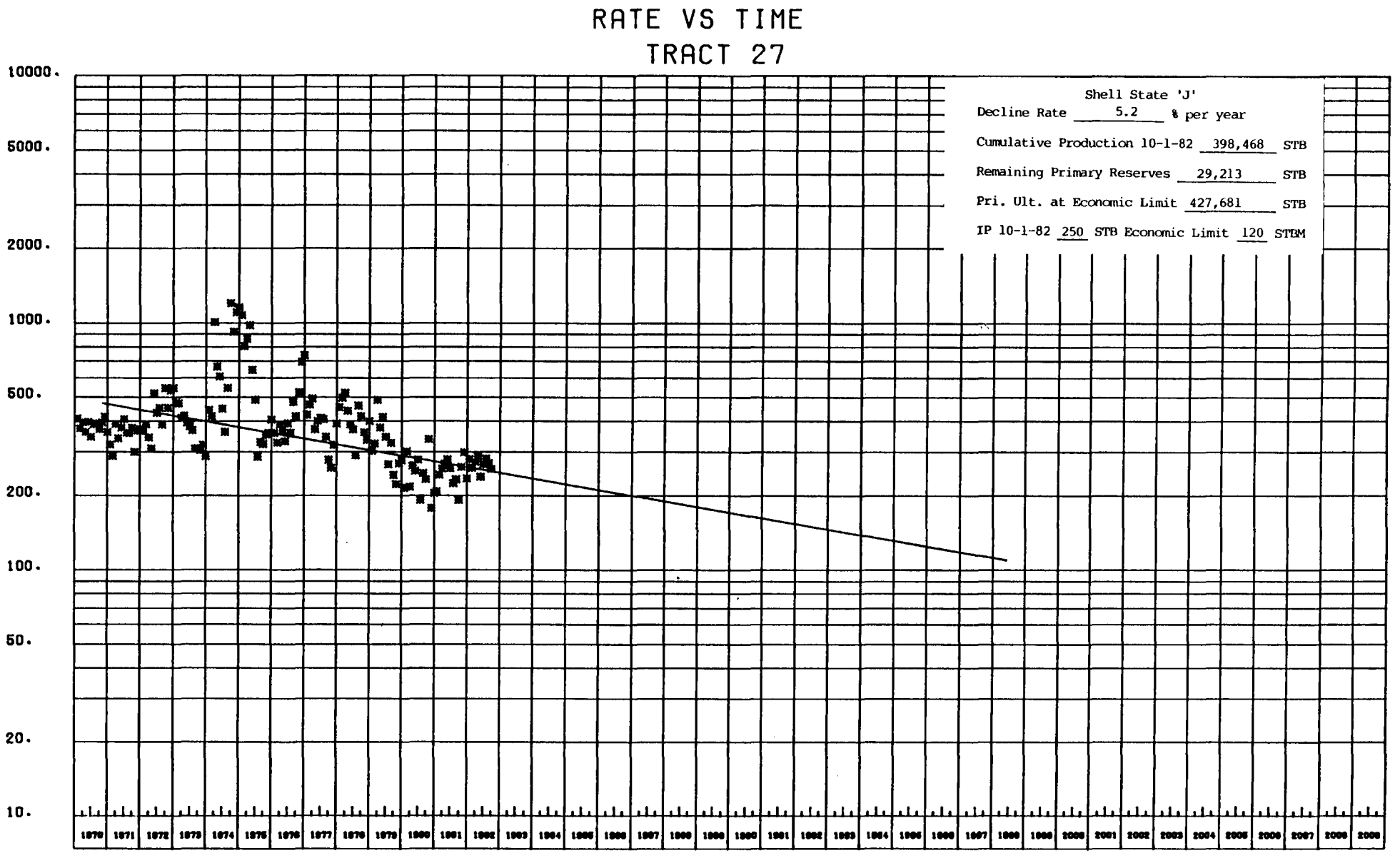

RATE VS TIME
TRACT 26
ARCO'State '196'
Decline Rate 6.3 % per year
Cumulative Production 10-1-82 363,854 STB
Remaining Primary Reserves 17,519 STB
Pri. Ult. at Economic Limit 381,373 STB
IP 10-1-82 125 STB Economic Limit 30 STBM
1000.
500.
200.
100.
50.
20.
10.
5.
2.
1.

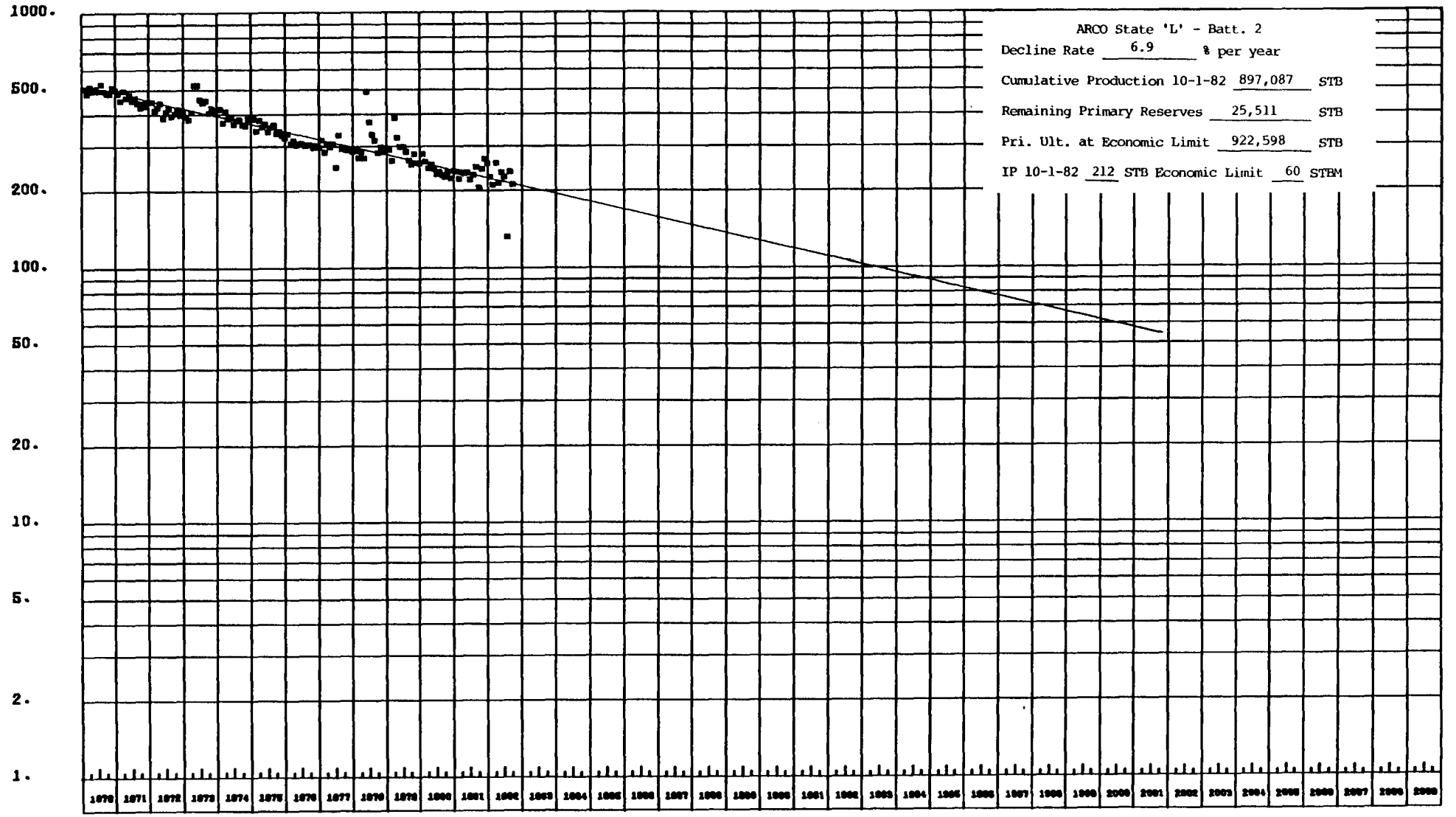
Figure 30



KNIGHT, SIBU PEAK MUNIH

Figure 31

RATE VS TIME
TRACT 28



KHIT, SIBU PER MUNIH

Figure 29

RATE VS TIME
TRACT 32

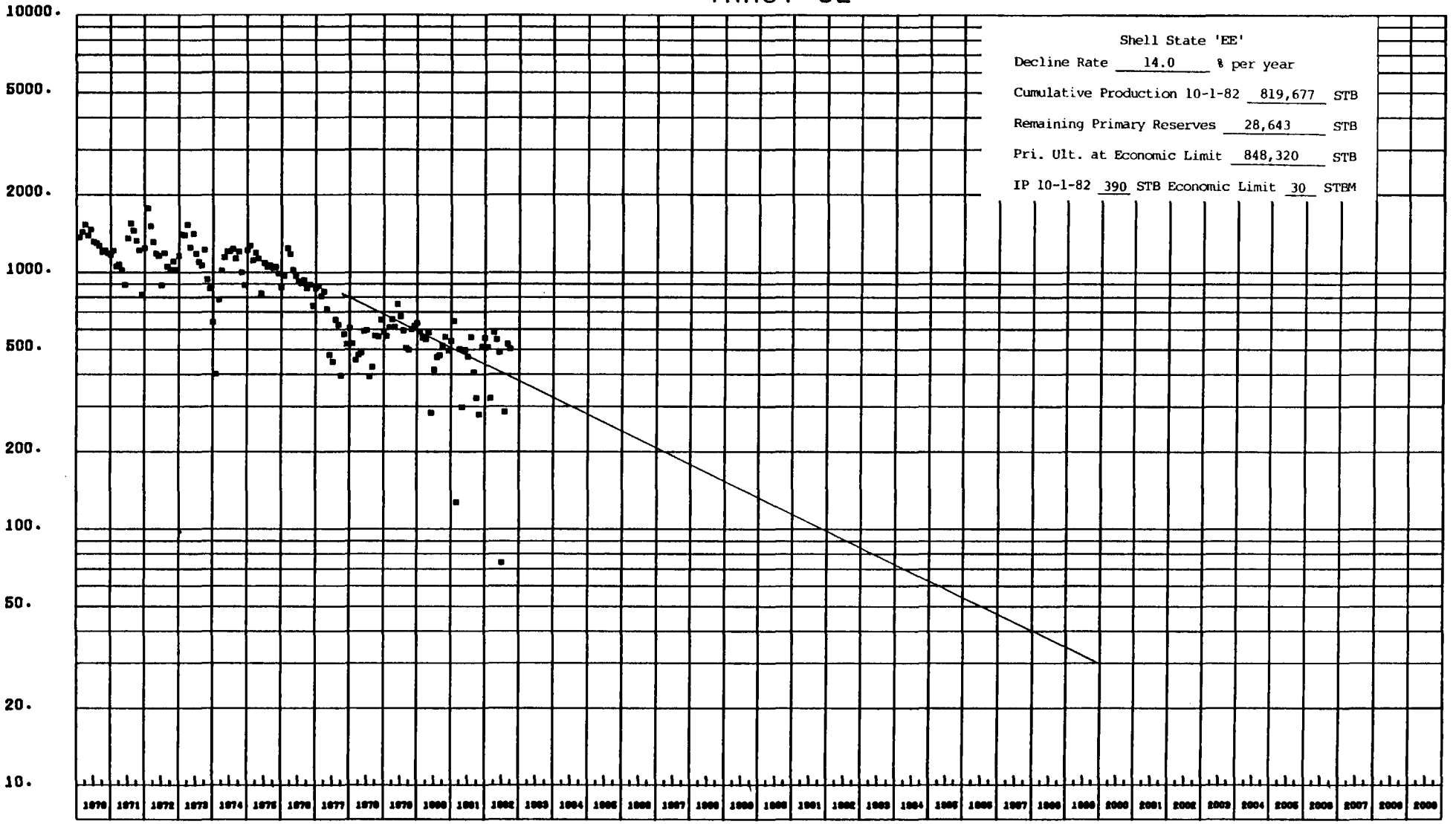


Figure 33

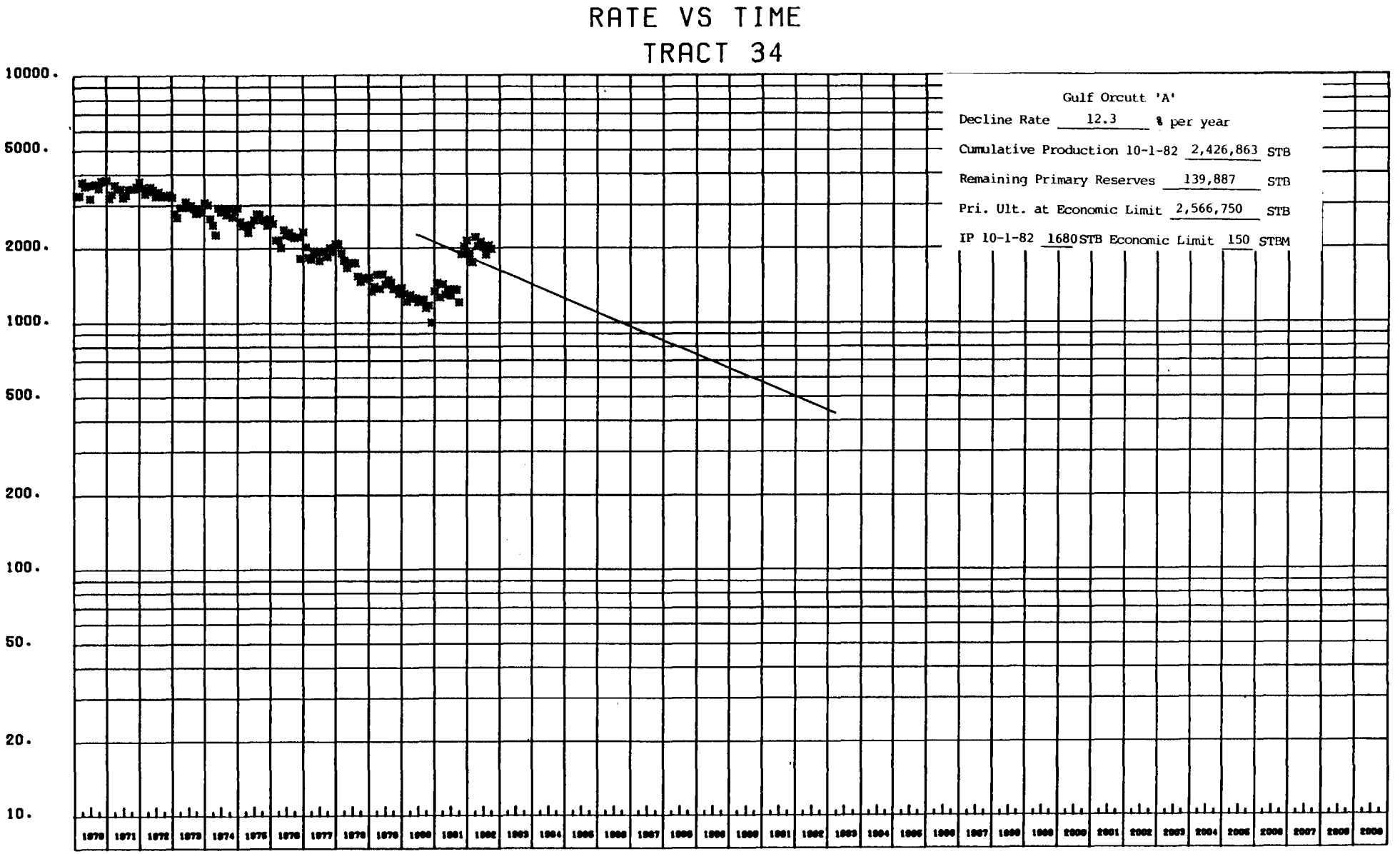

RATE VS TIME
TRACT 34
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.
Gulf Orcutt 'A'
Decline Rate 12.3 % per year
Cumulative Production 10-1-82 2,426,863 STB
Remaining Primary Reserves 139,887 STB
Pri. Ult. at Economic Limit 2,566,750 STB
IP 10-1-82 1680 STB Economic Limit 150 STBM
1970 1971 1972 1973 1974 1975 1976 1977 1978 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 2009

Figure 34

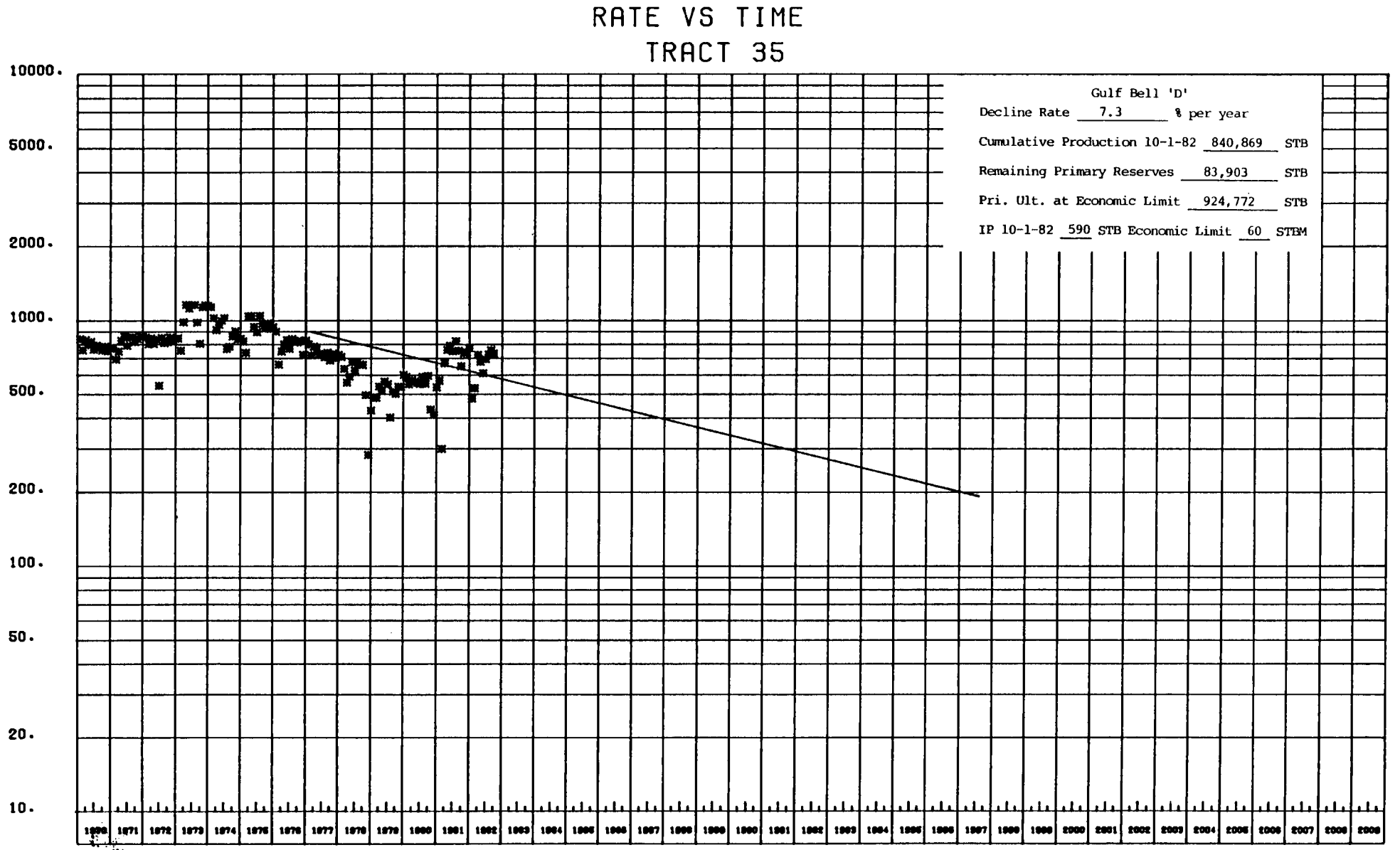
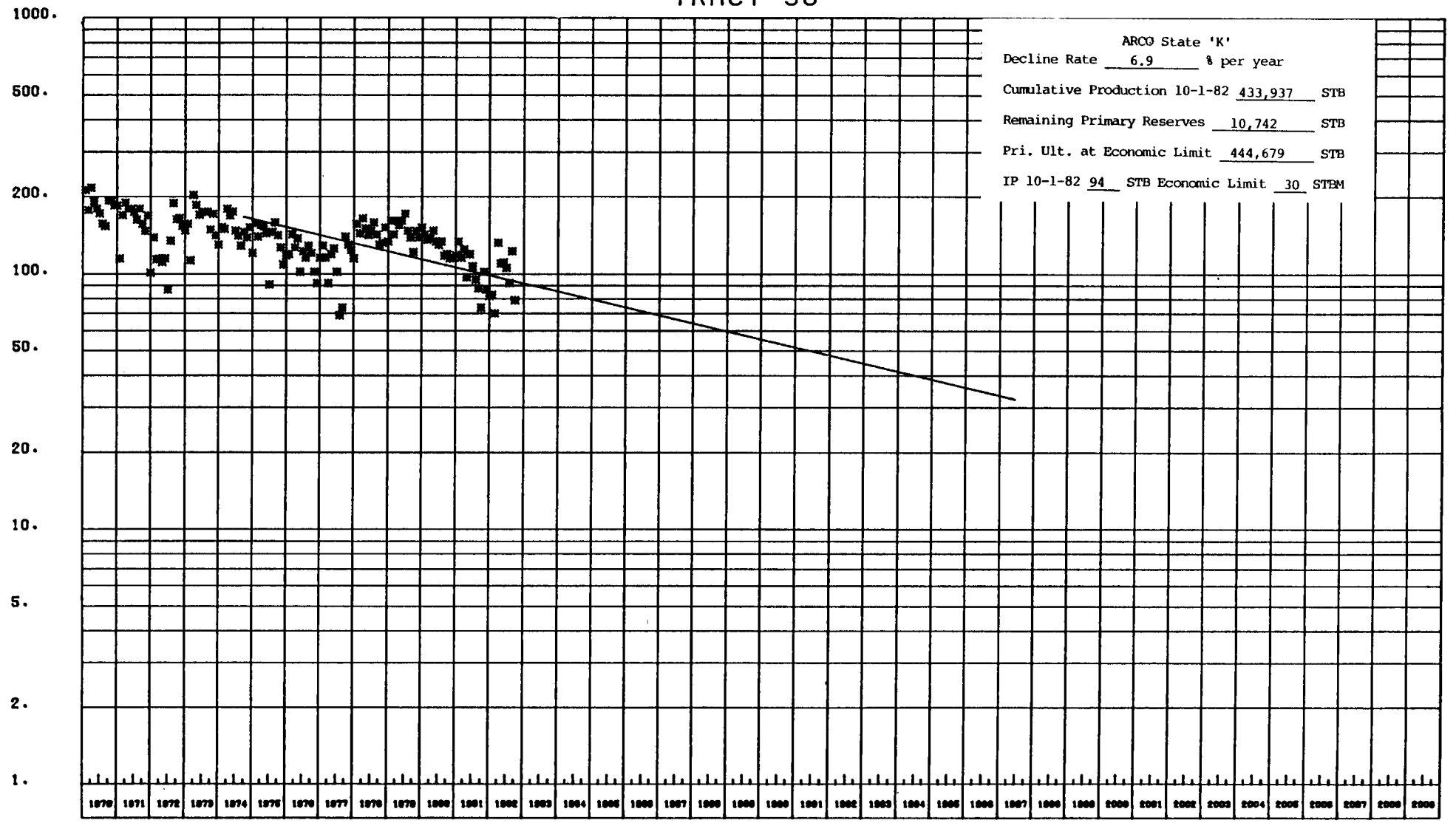

RATE VS TIME
TRACT 35
Gulf Bell 'D'
Decline Rate 7.3 % per year
Cumulative Production 10-1-82 840,869 STB
Remaining Primary Reserves 83,903 STB
Pri. Ult. at Economic Limit 924,772 STB
IP 10-1-82 590 STB Economic Limit 60 STBM
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.

Figure 35

RATE VS TIME
TRACT 36



WHITE, SIBU PEAK MUNIH

Figure 36

RATE VS TIME
TRACT 37

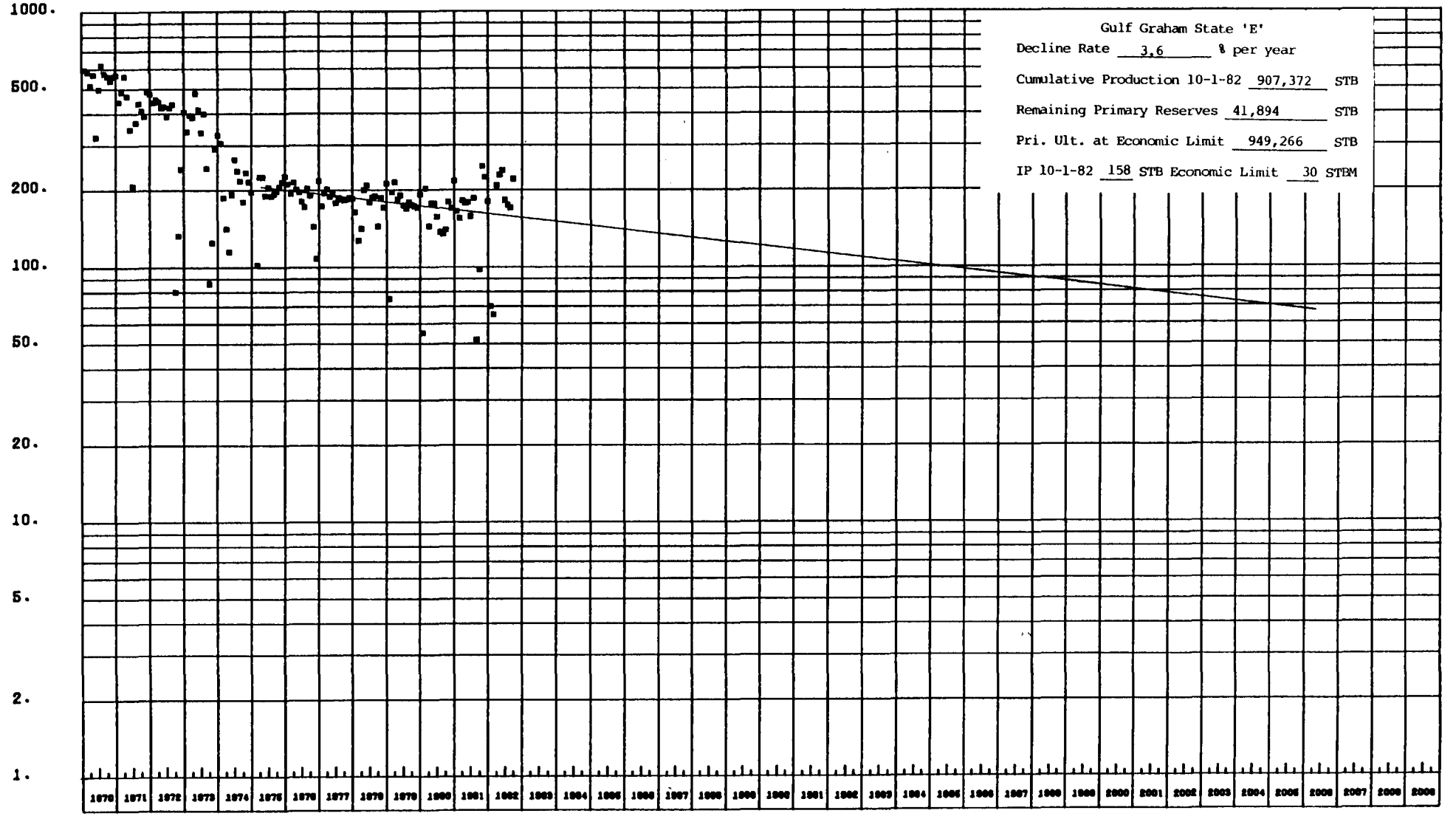
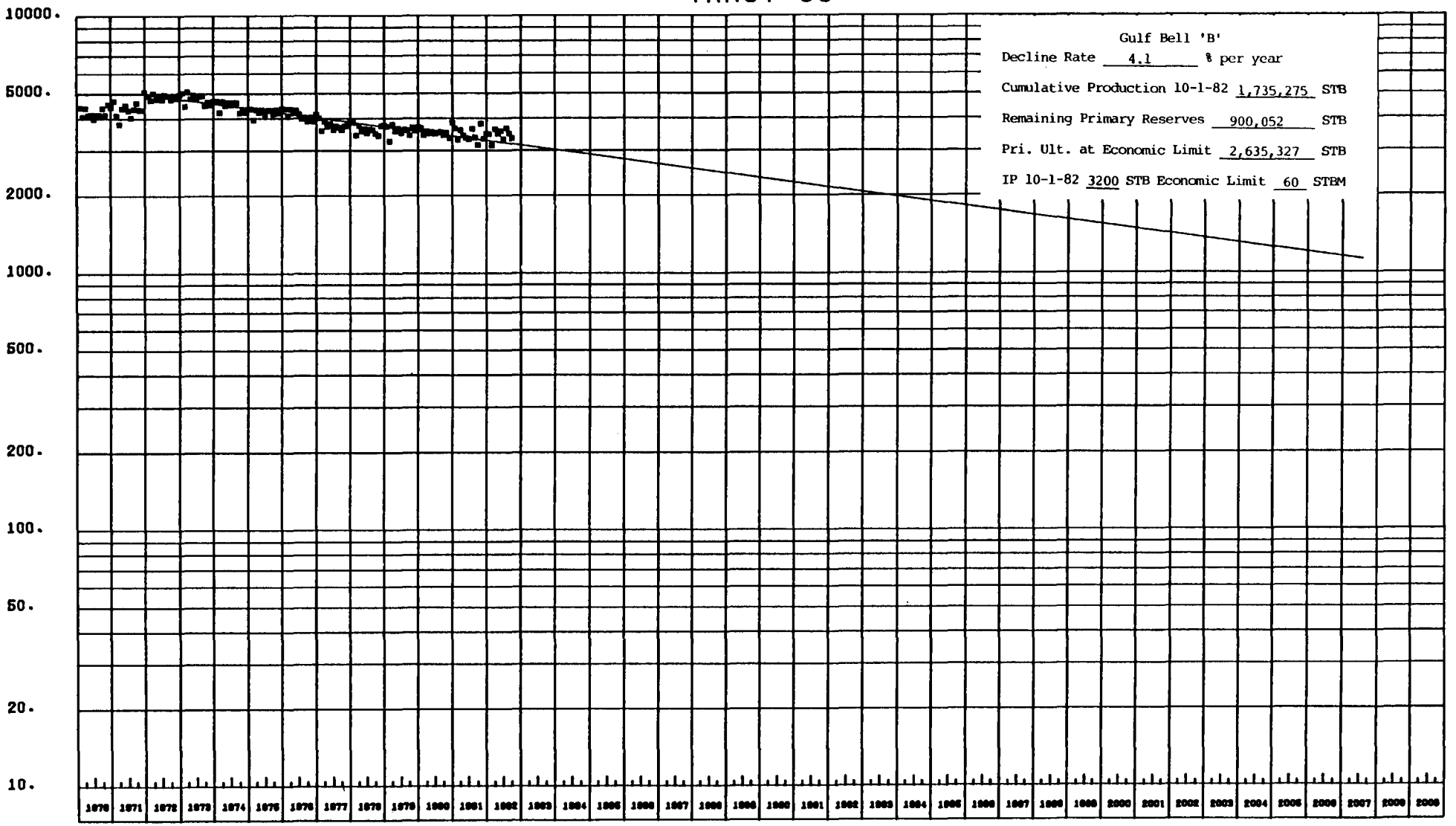


Figure 37

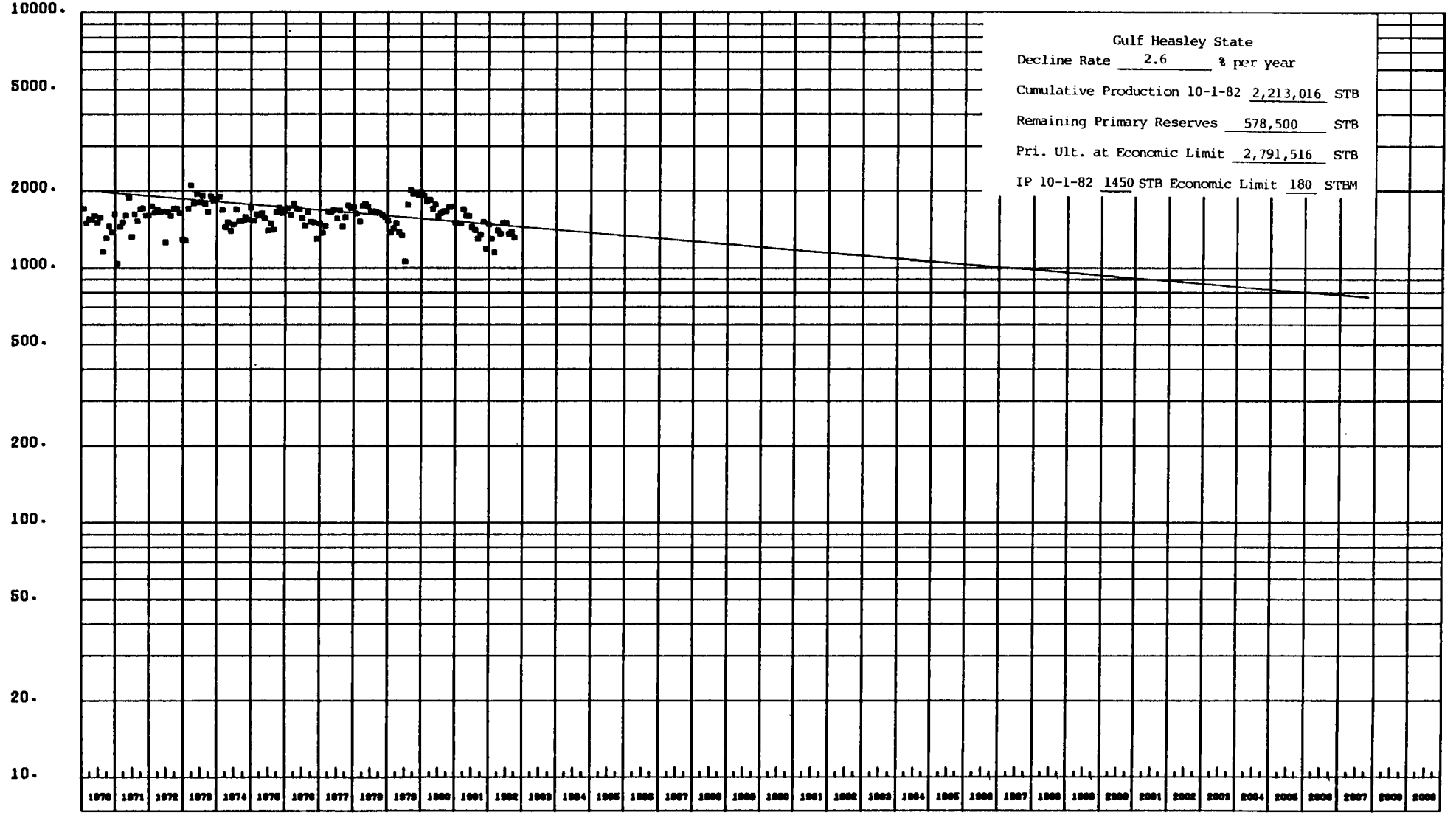
RATE VS TIME
TRACT 38



KNIGHT, SIBU PEAK MUNIH

Figure 38

RATE VS TIME
TRACT 39



KHIE, SIBU PEK MUNIH

Figure 39

RATE VS TIME
TRACT 40

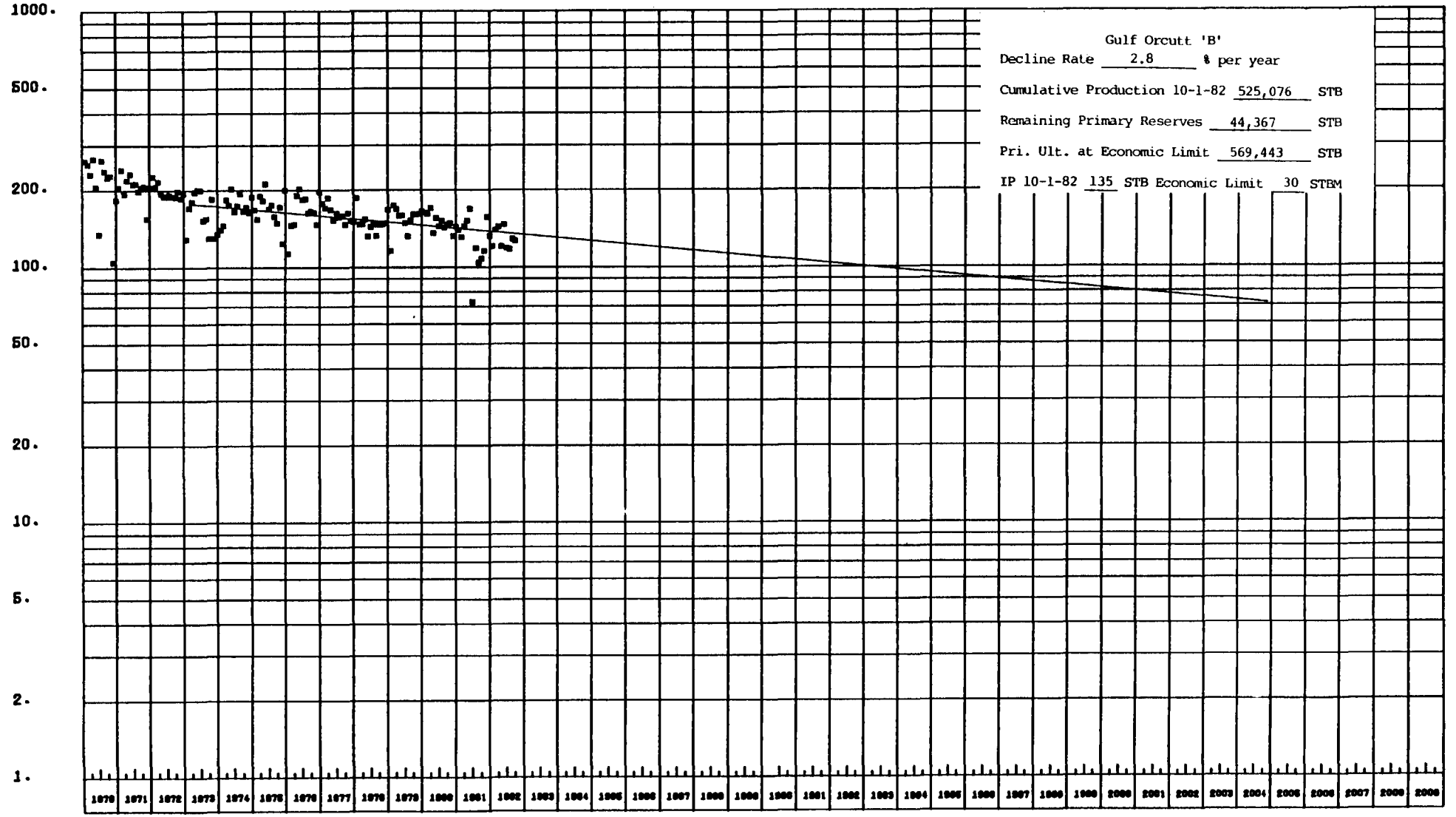
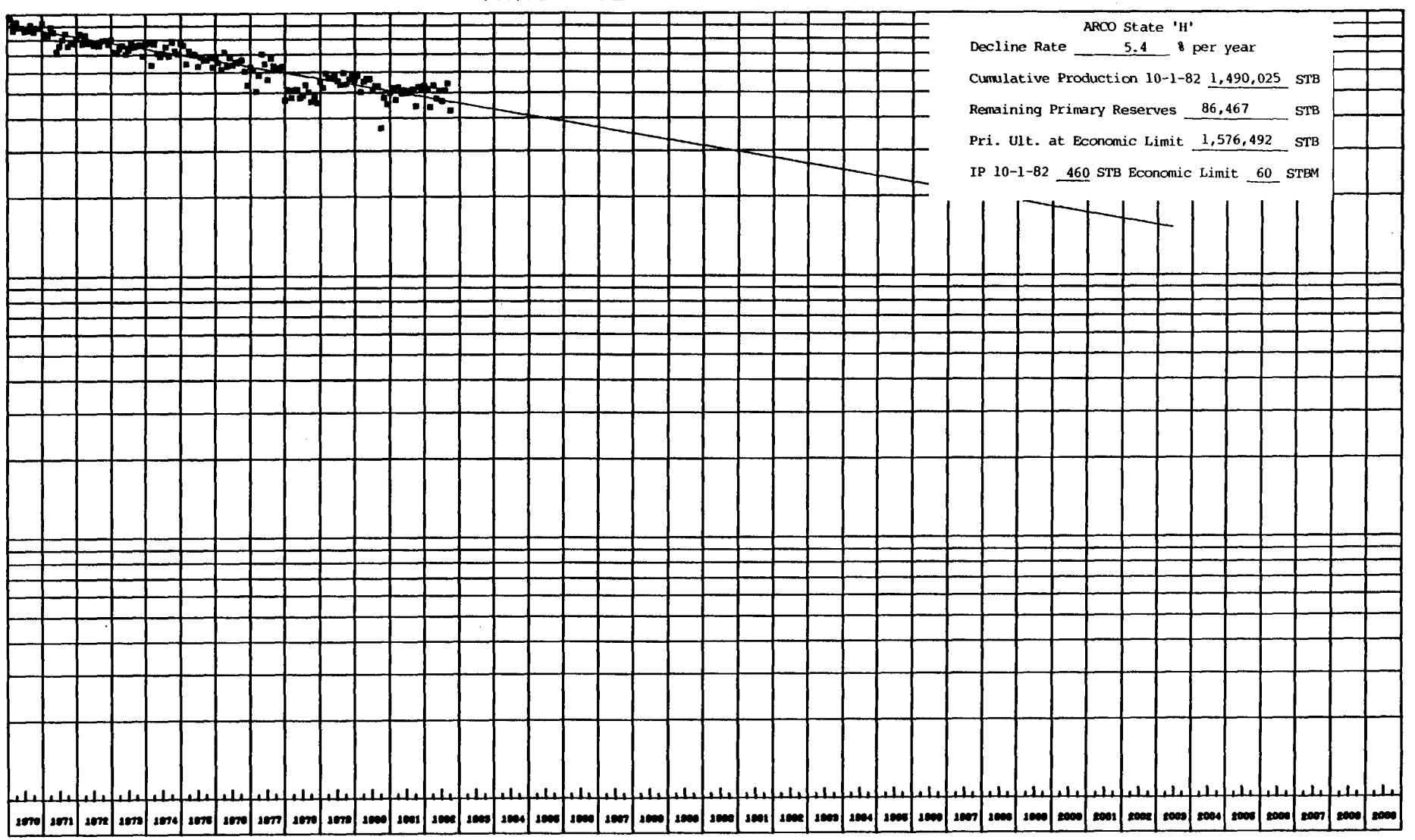


Figure 40

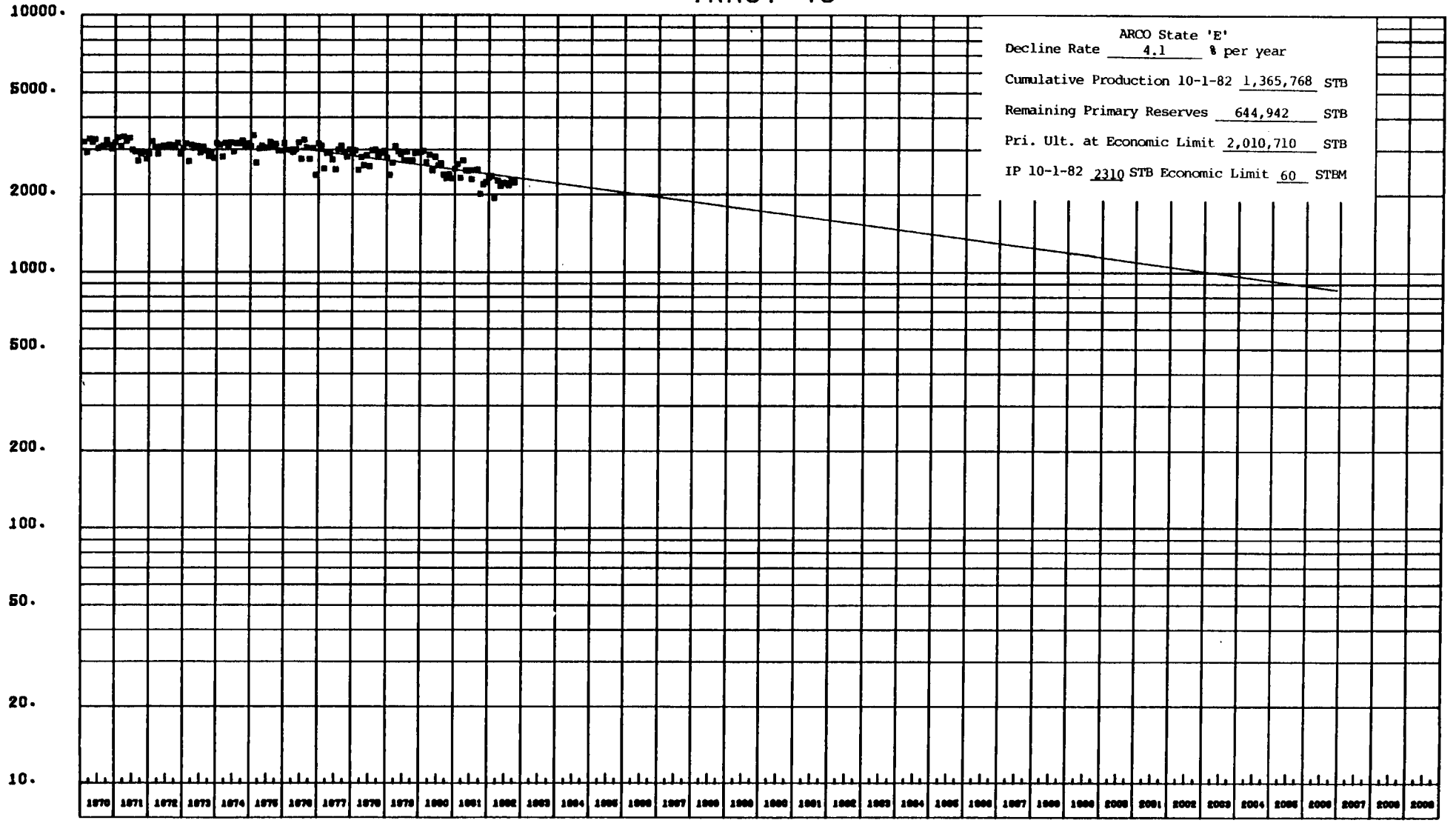
RATE VS TIME
TRACT 42



RATE, STBU PER MONTH

Figure 41

RATE VS TIME
TRACT 43



KHIE, SIBU PEK MUNIH

Figure 42

RATE VS TIME
TRACT 44

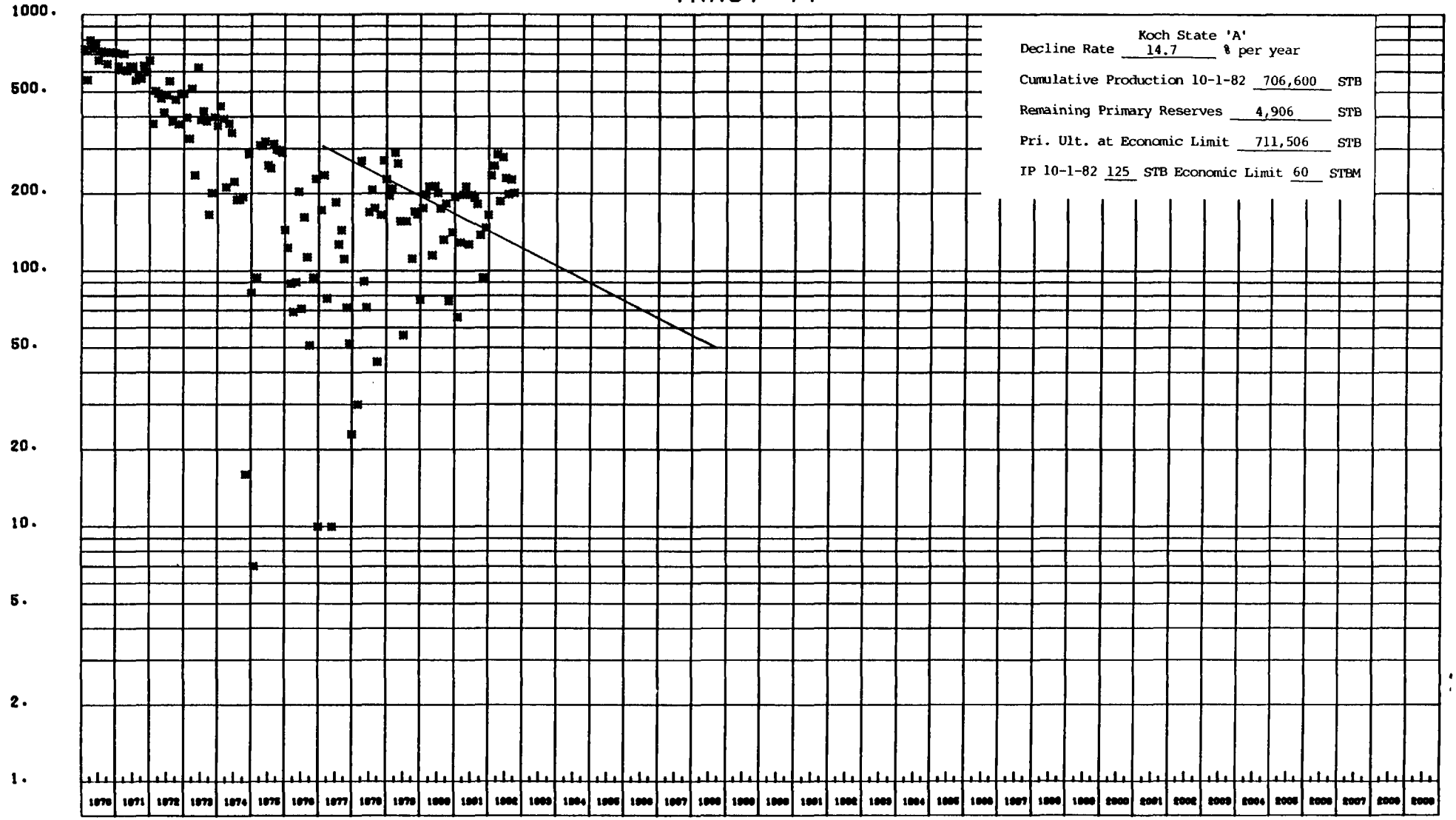


Figure 43

RATE VS TIME
TRACT 45

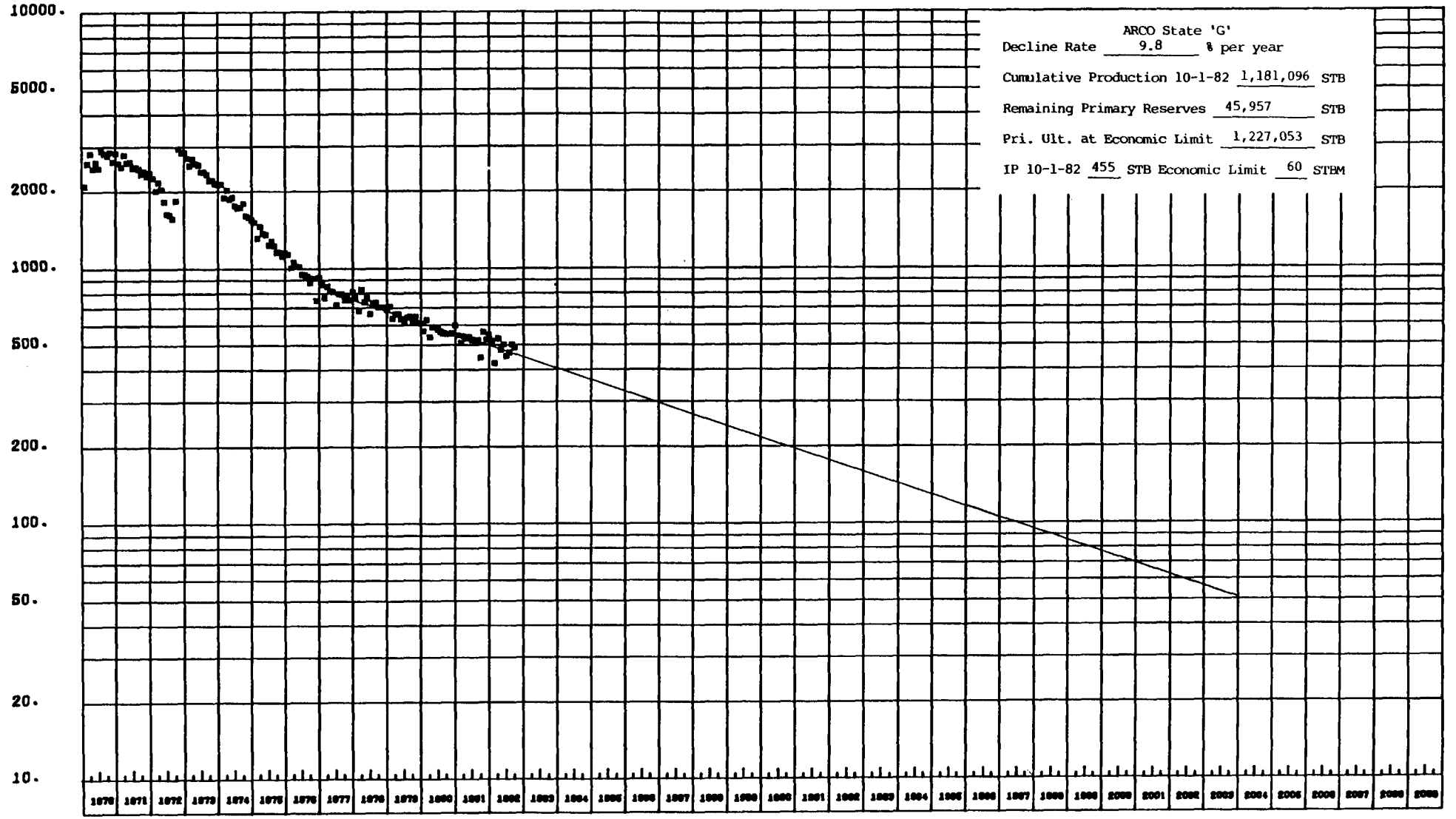
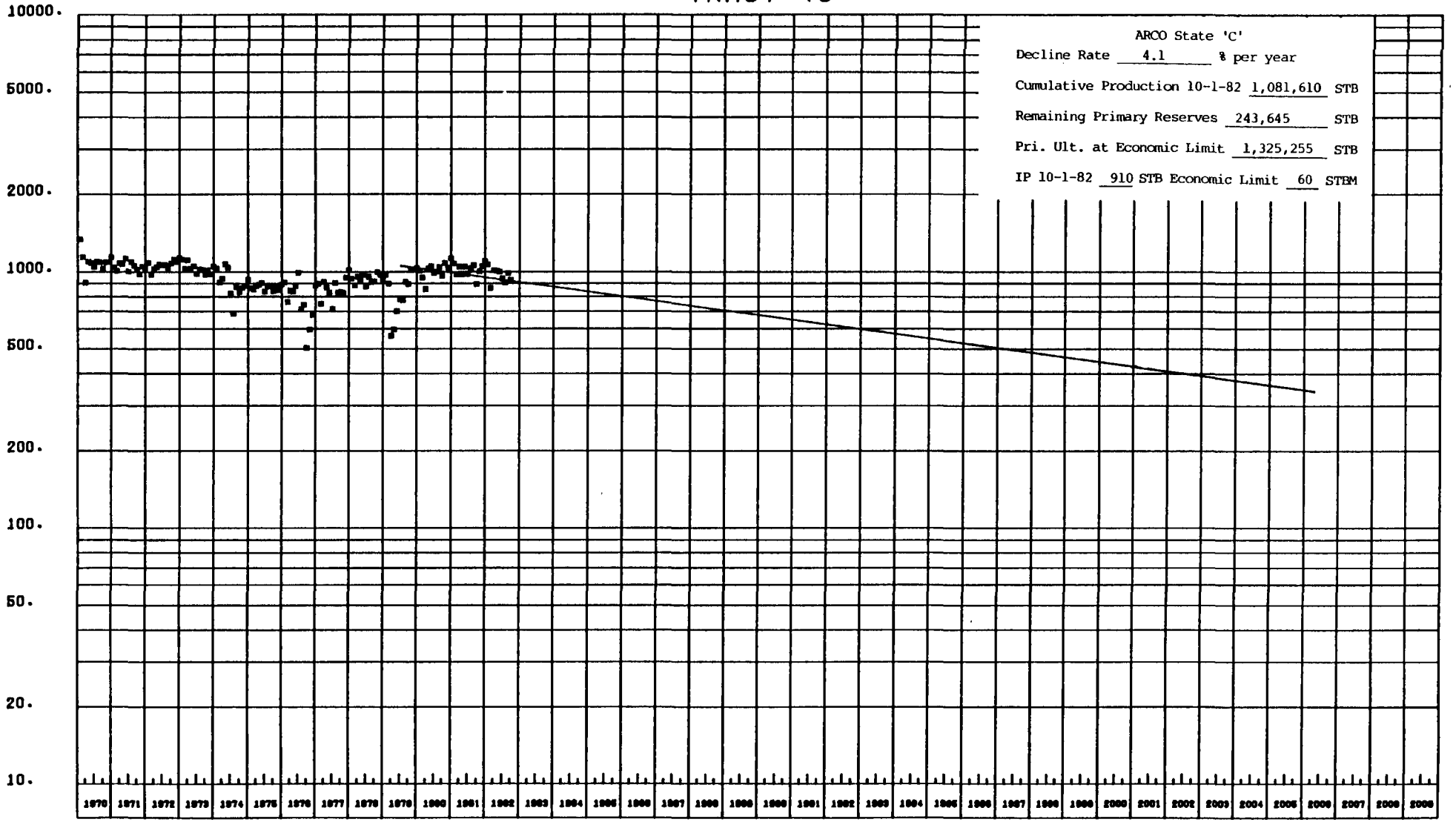


Figure 44

RATE VS TIME
TRACT 46



KHIL, SIBU PEK MUNIH

Figure 45

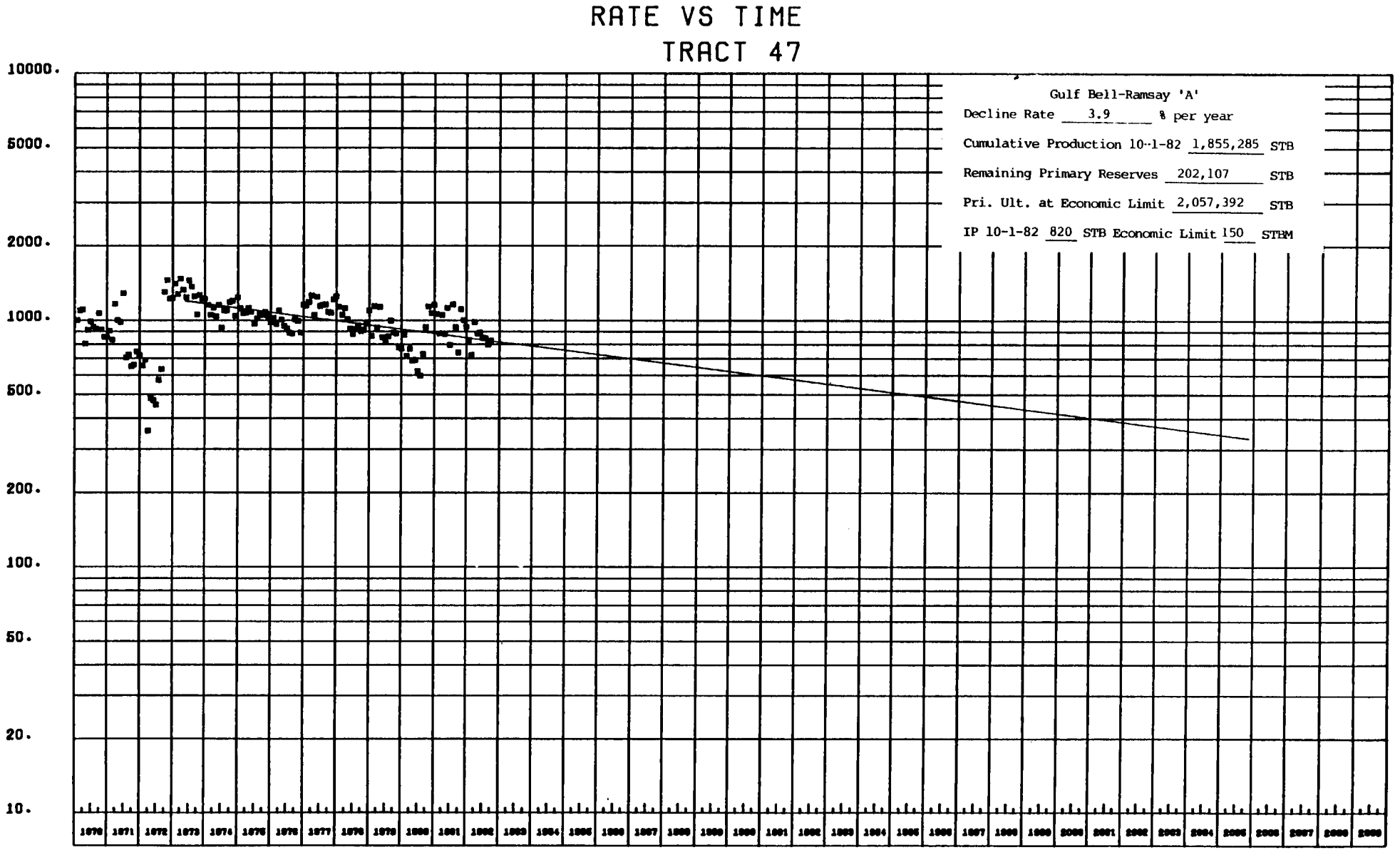

RATE VS TIME
TRACT 47
Gulf Bell-Ramsay 'A'
Decline Rate 3.9 % per year
Cumulative Production 10-1-82 1,855,285 STB
Remaining Primary Reserves 202,107 STB
Pri. Ult. at Economic Limit 2,057,392 STB
IP 10-1-82 820 STB Economic Limit 150 STBM
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.

Figure 46

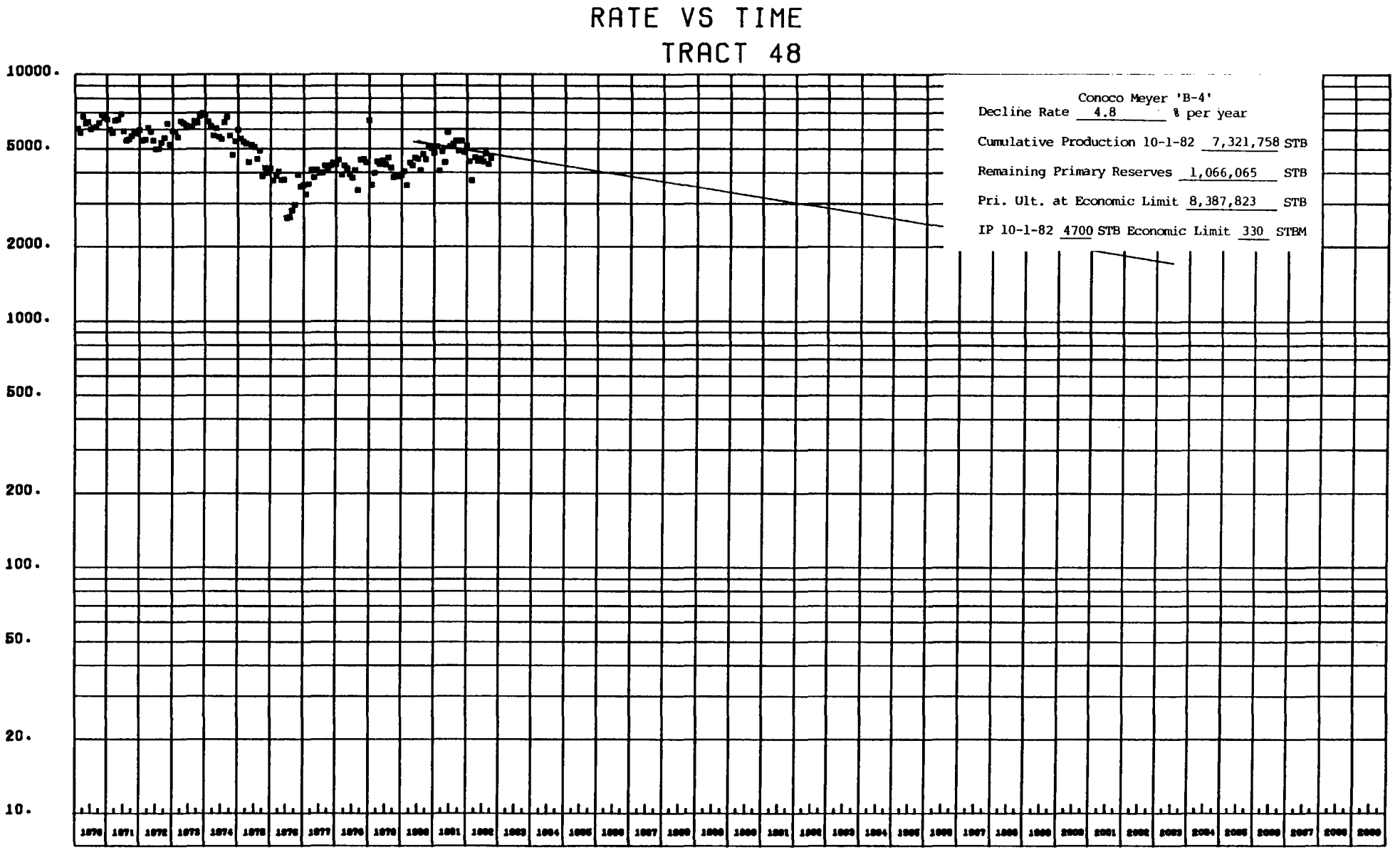

RATE VS TIME
TRACT 48
Conoco Meyer 'B-4'
Decline Rate 4.8 % per year
Cumulative Production 10-1-82 7,321,758 STB
Remaining Primary Reserves 1,066,065 STB
Pri. Ult. at Economic Limit 8,387,823 STB
IP 10-1-82 4700 STB Economic Limit 330 STBM
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.

Figure 47

RATE VS TIME
TRACT 49

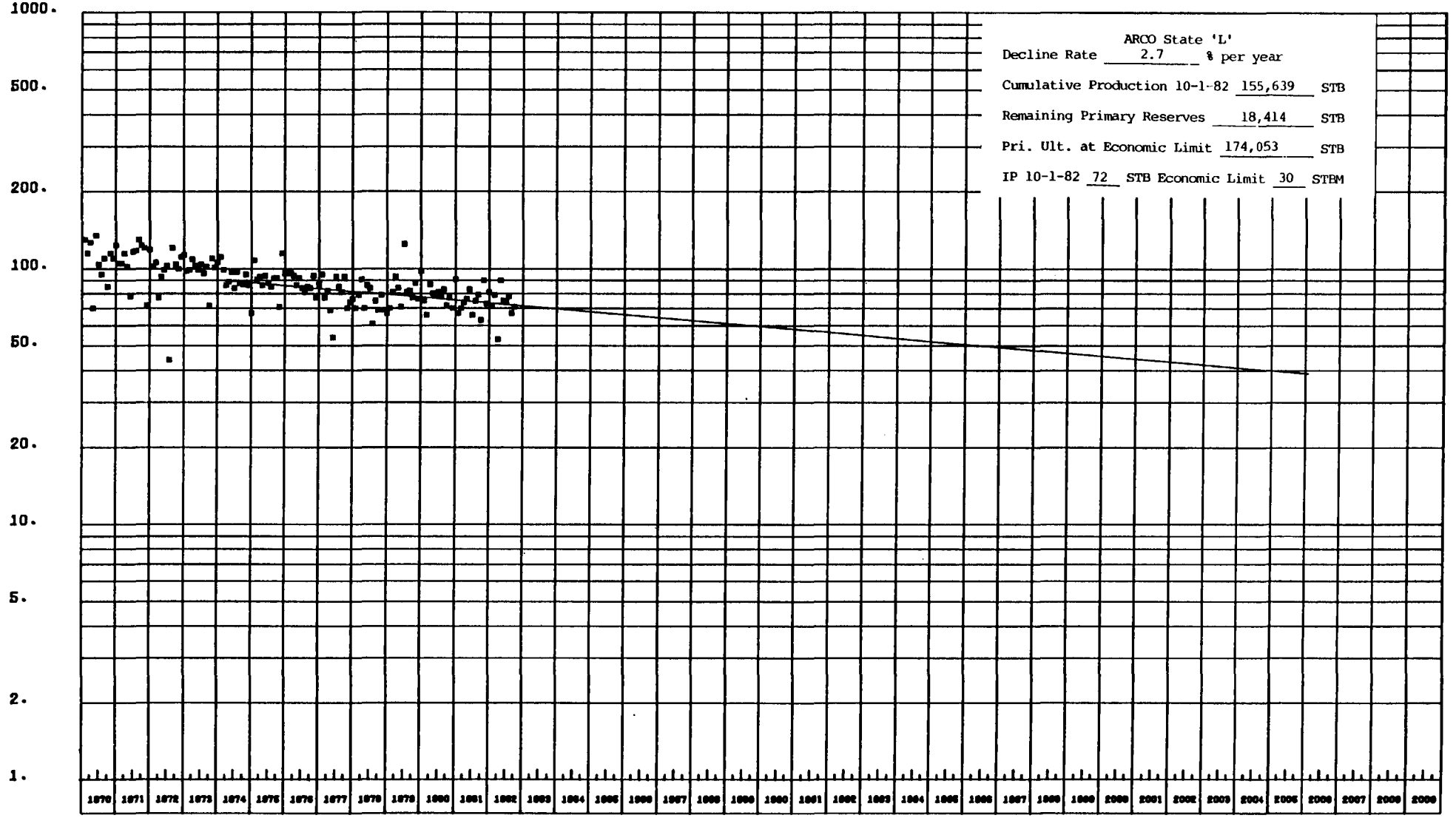


Figure 48

RATE VS TIME
TRACT 50

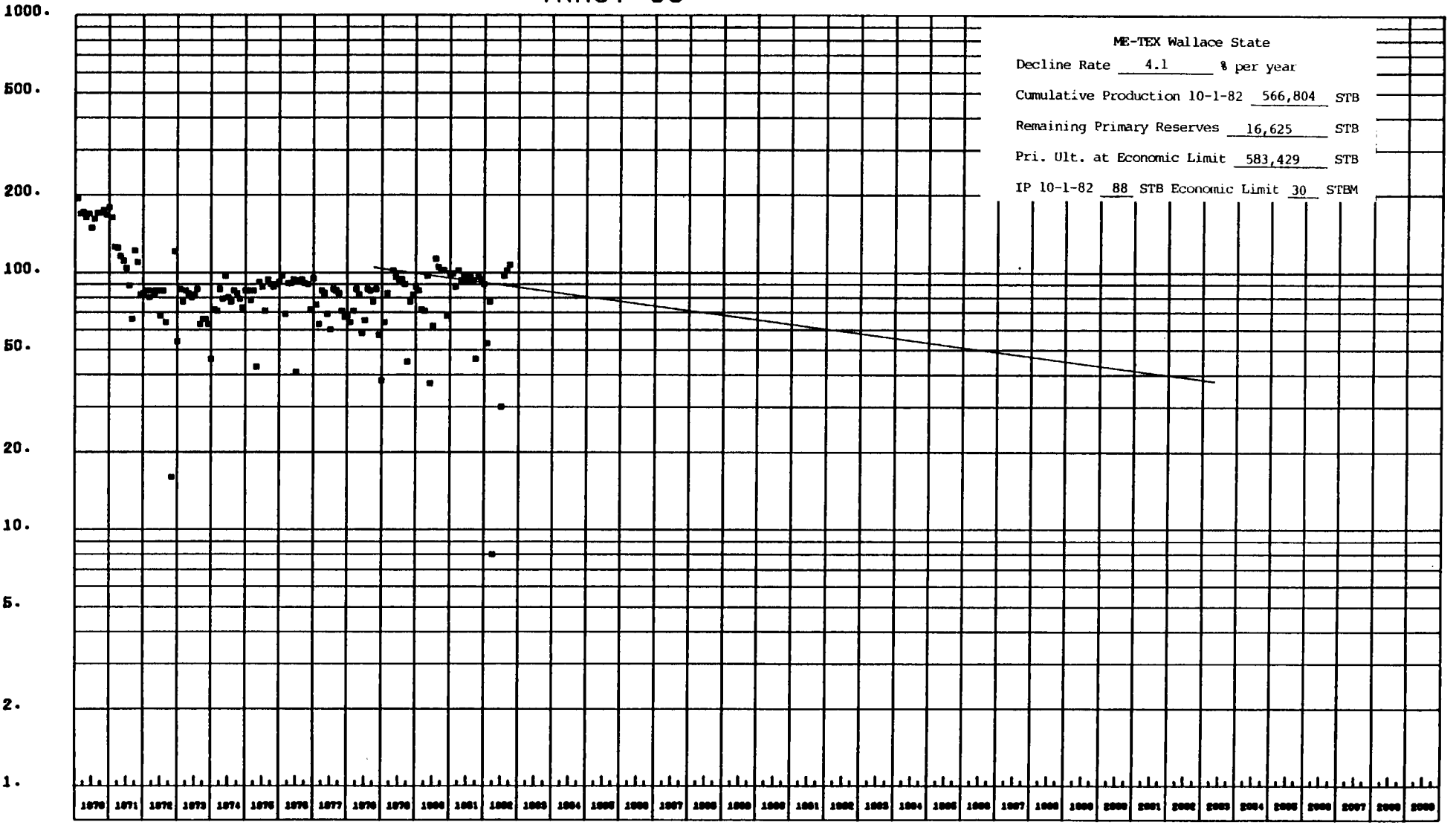
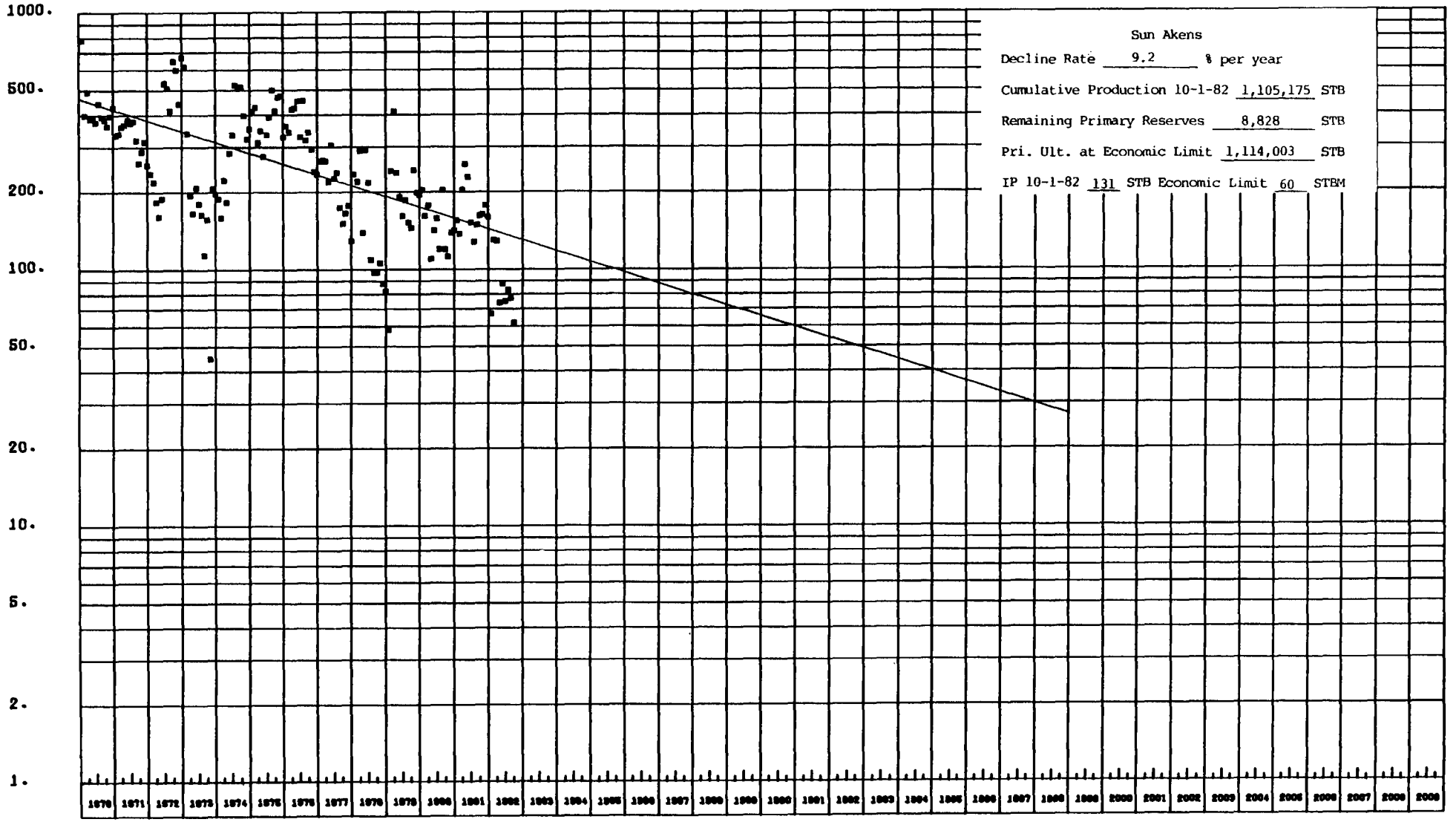


Figure 49

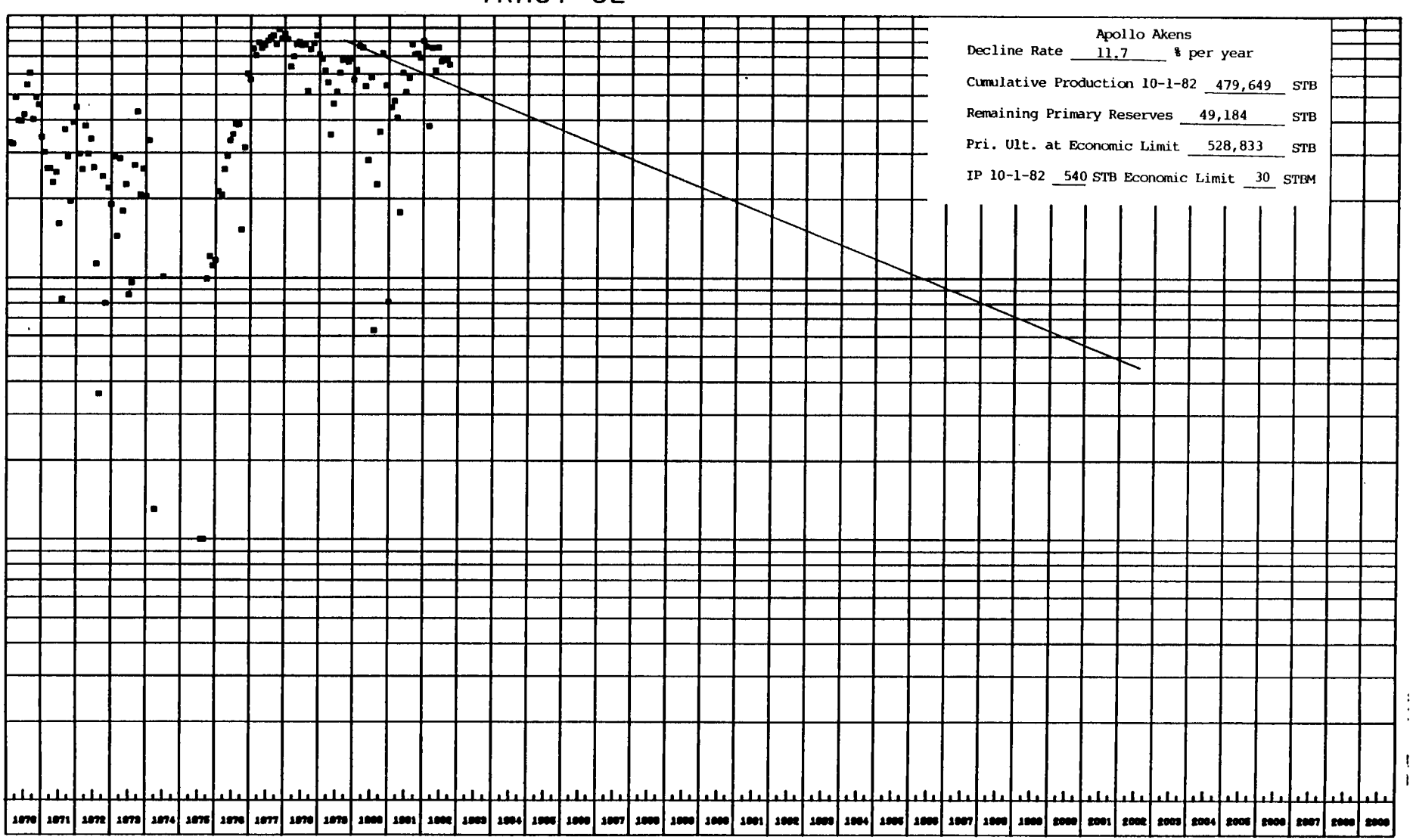
RATE VS TIME
TRACT 51



KHIE, SIBU PEK MUNIH

Figure 50

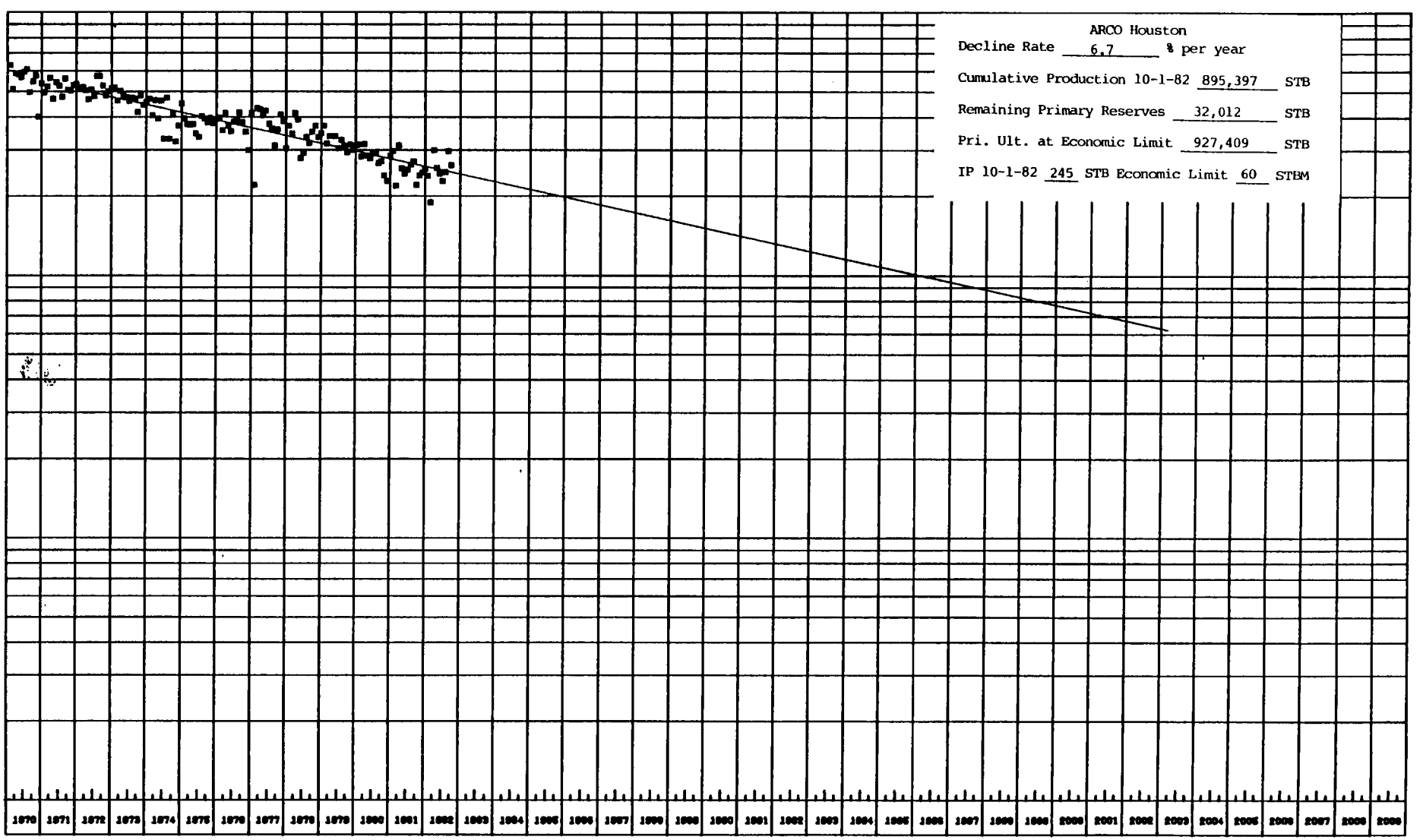
RATE VS TIME
TRACT 52



KHIT, SIBU PER MUNIH

Figure 51

RATE VS TIME
TRACT 53



KHIE, SIBU PER MUNIH

Figure 52

RATE VS TIME
TRACT 55

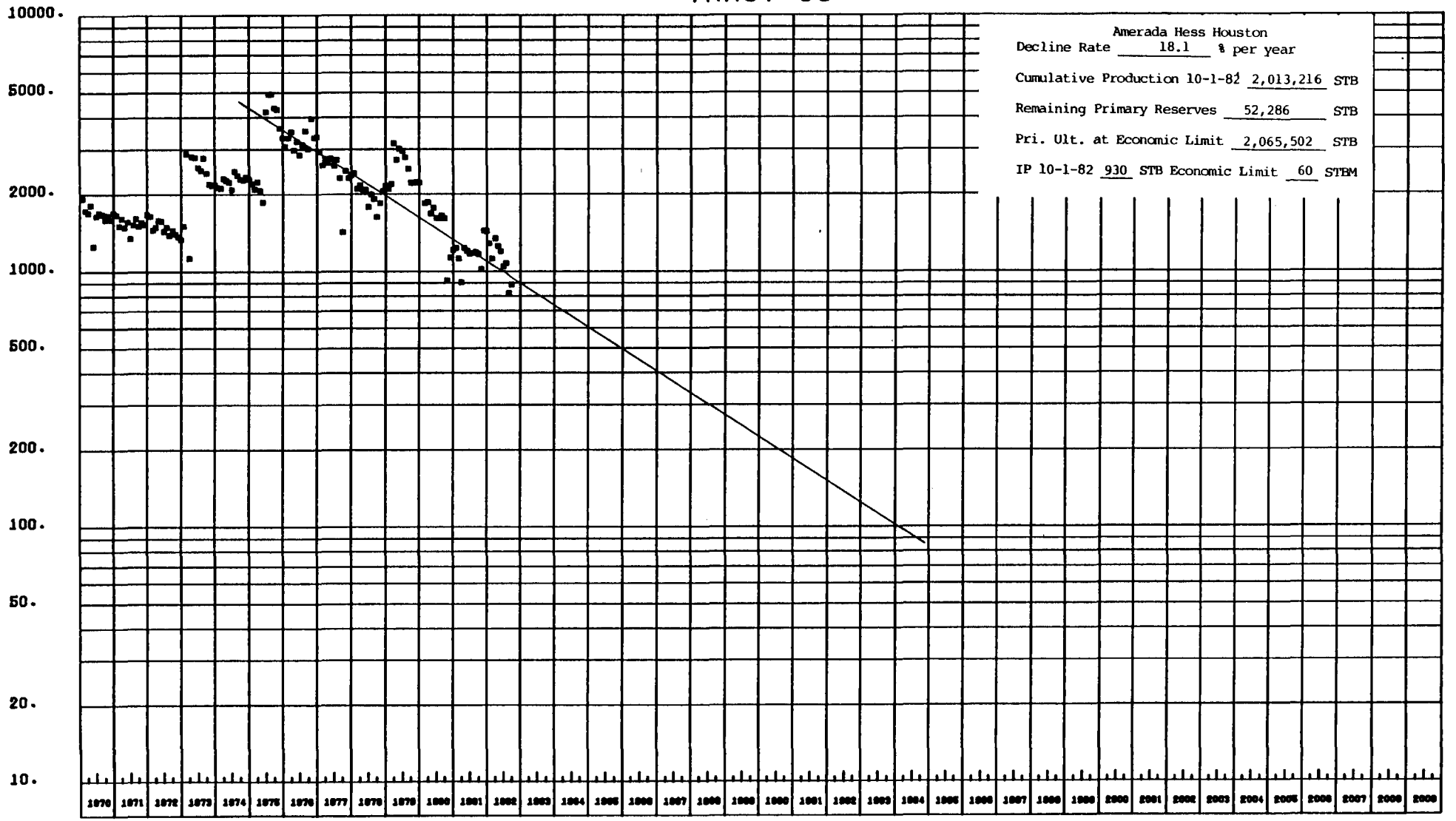


Figure 53

RATE VS TIME
TRACT 56

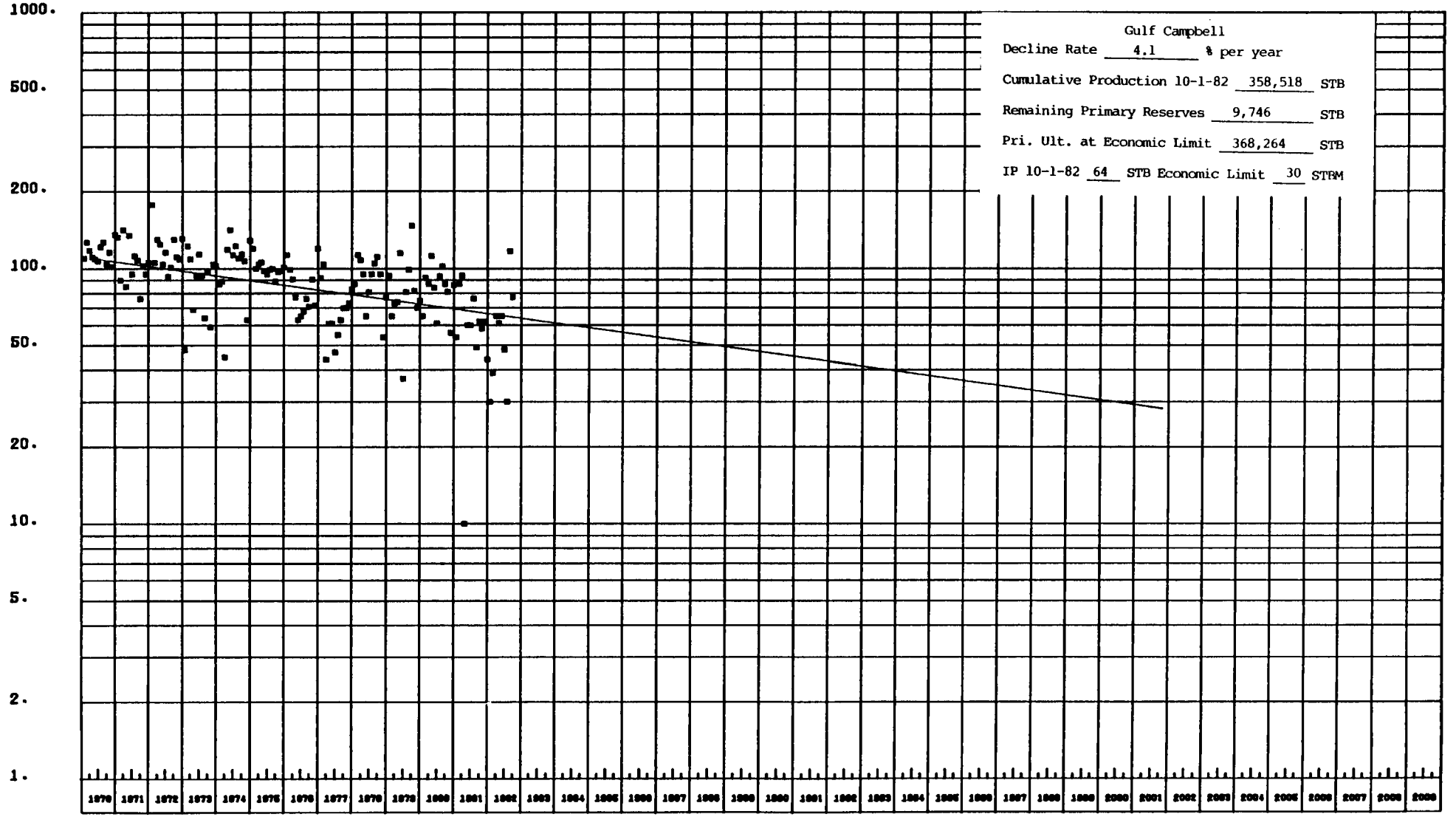
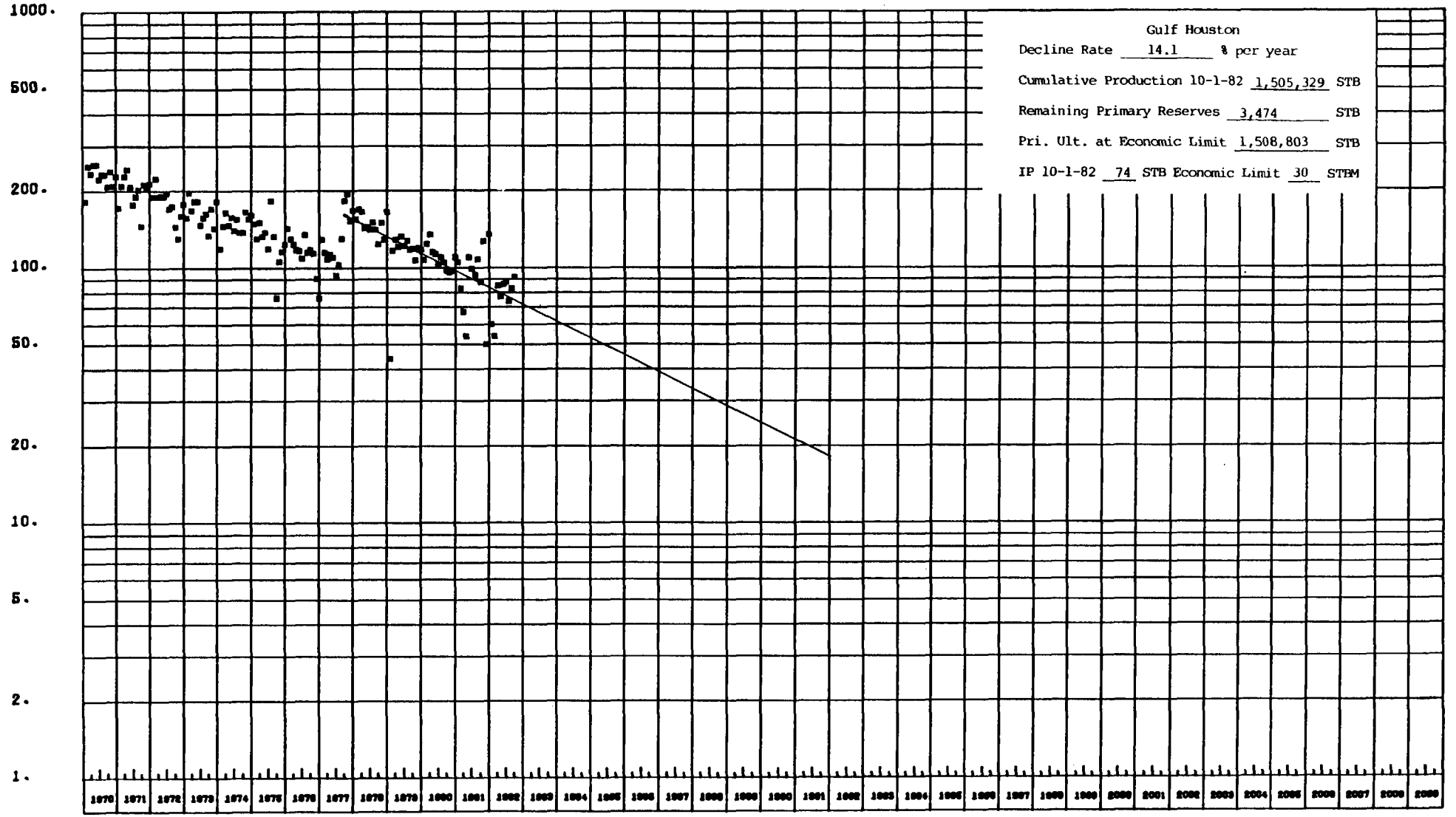


Figure 54

RATE VS TIME
TRACT 57



KHIC, SIDU PEK MUNIH

Figure 57

RATE VS TIME
TRACT 59

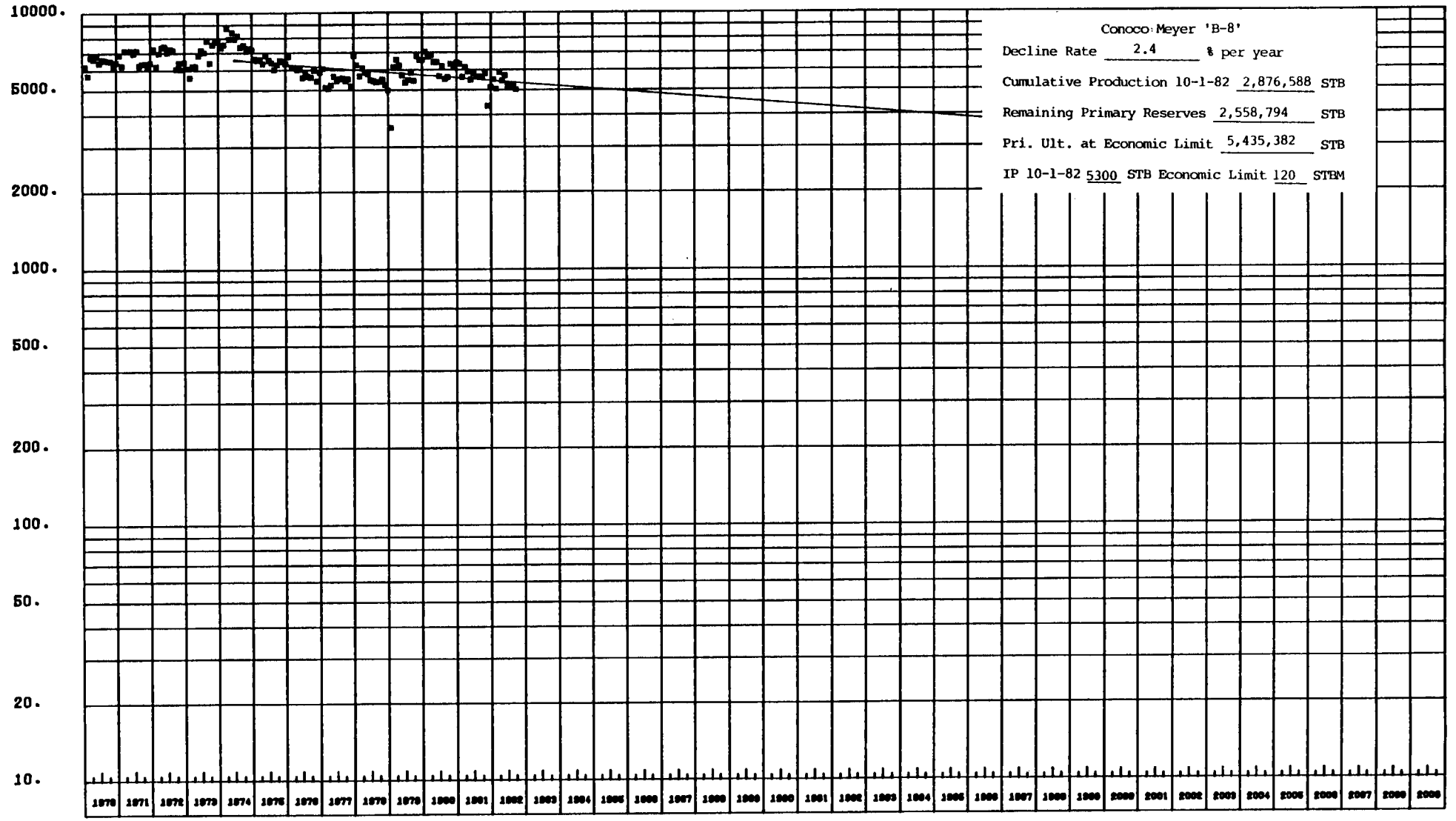
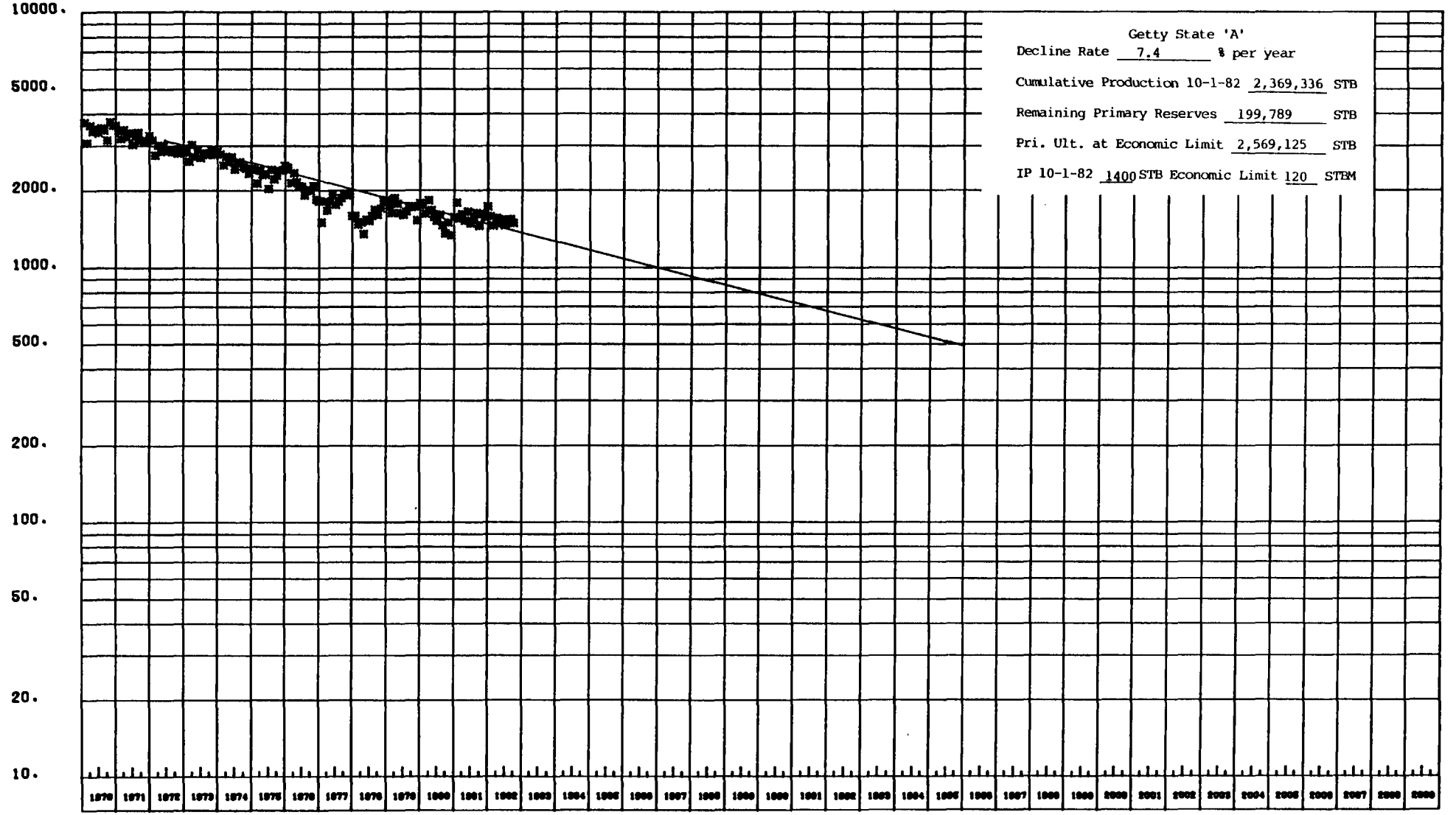


Figure 56

RATE VS TIME
TRACT 60



MCF, SIBU PER MONTH

Figure 57

RATE VS TIME
TRACT 62

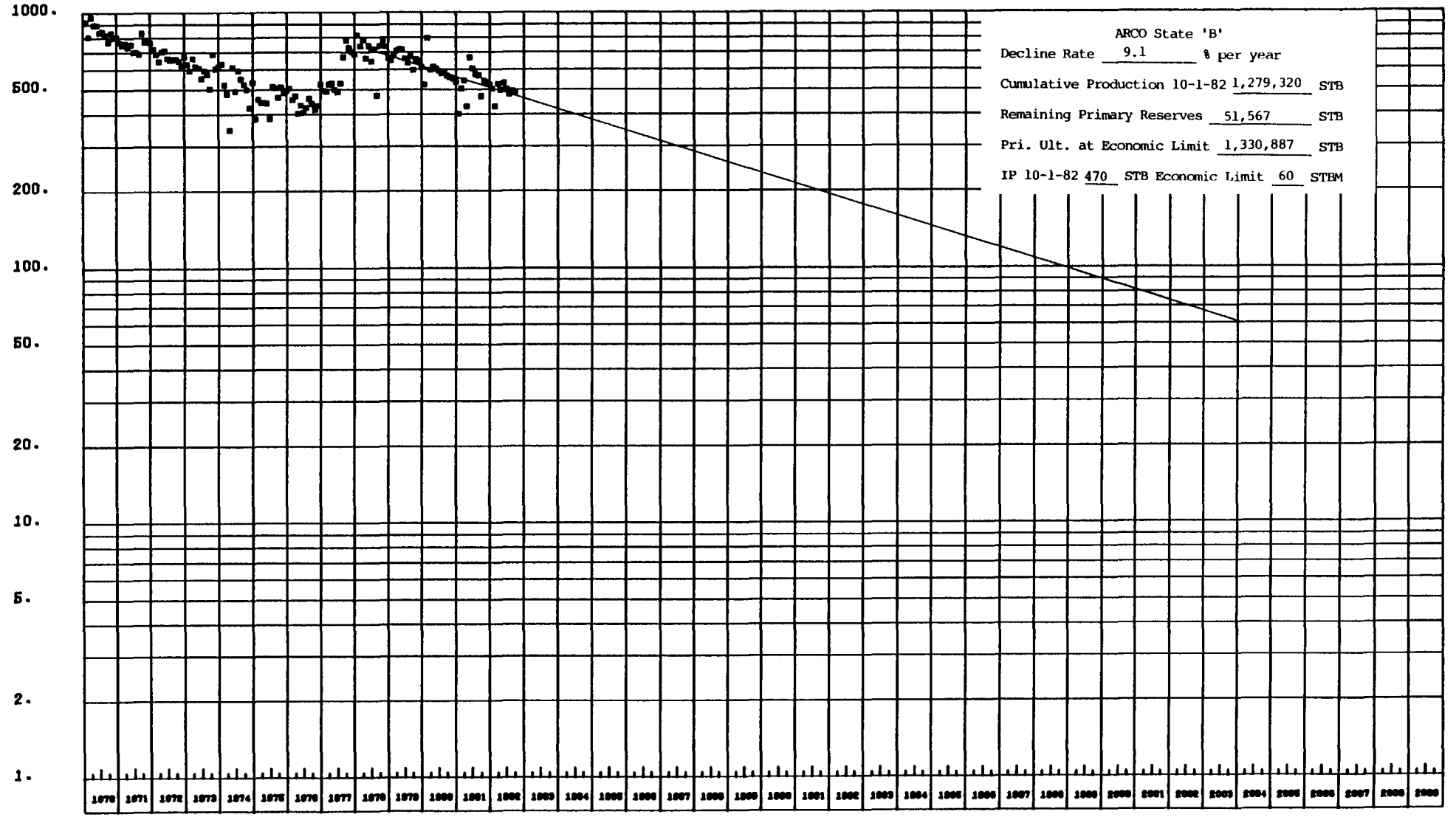


Figure 58

RATE VS TIME
TRACT 63

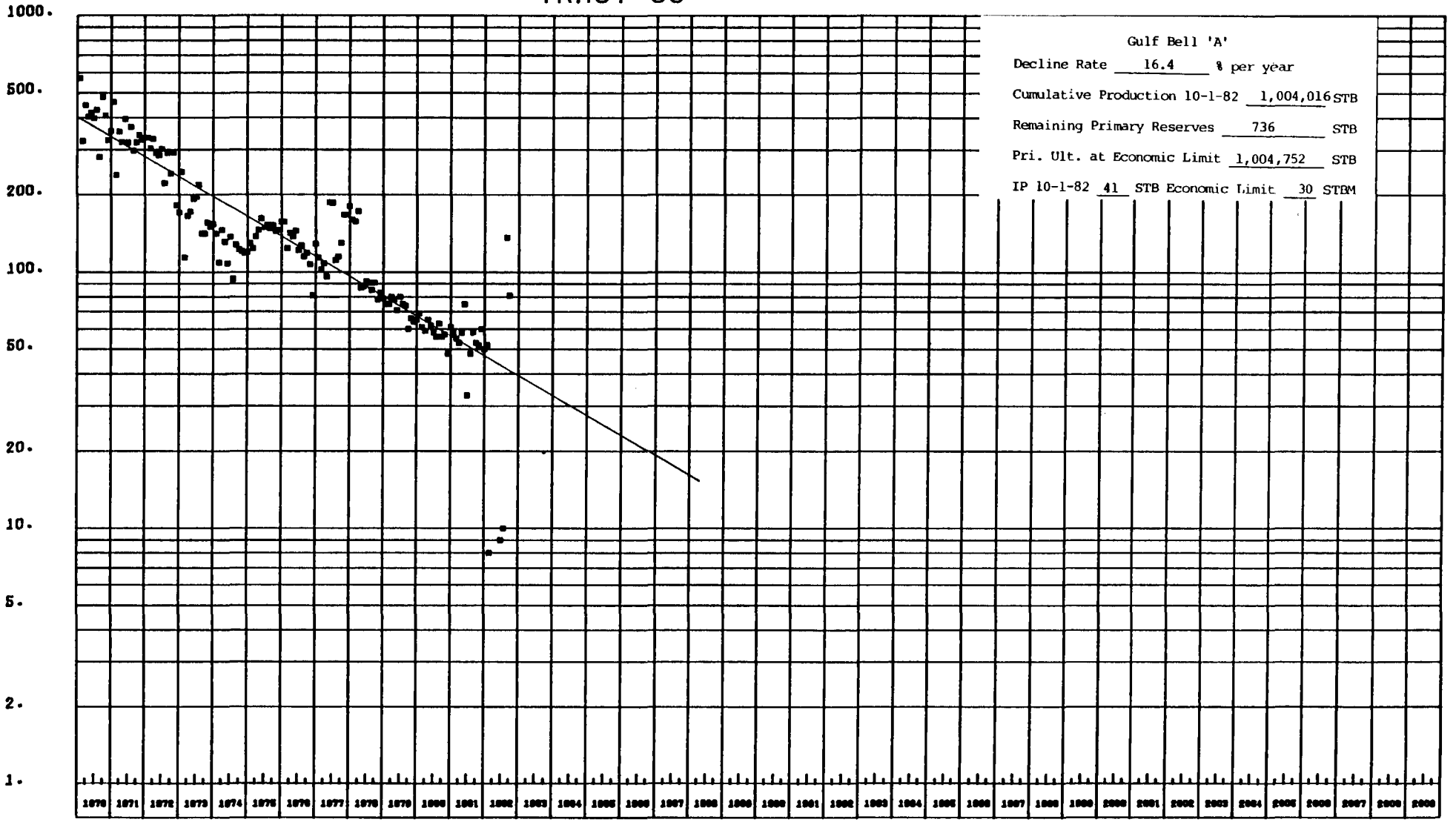


Figure 59

RATE VS TIME
TRACT 64

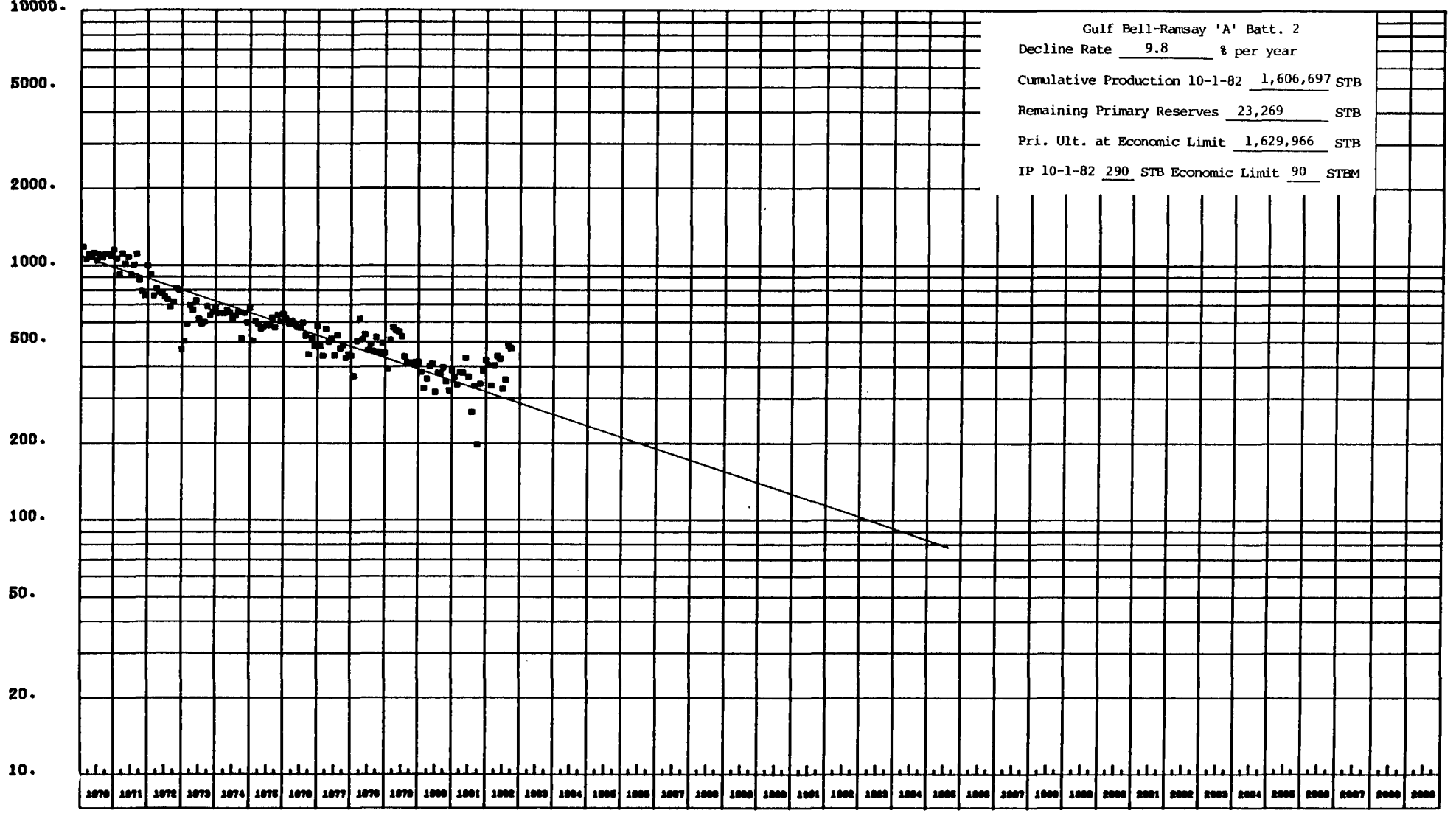


Figure 60

RATE VS TIME
TRACT 65

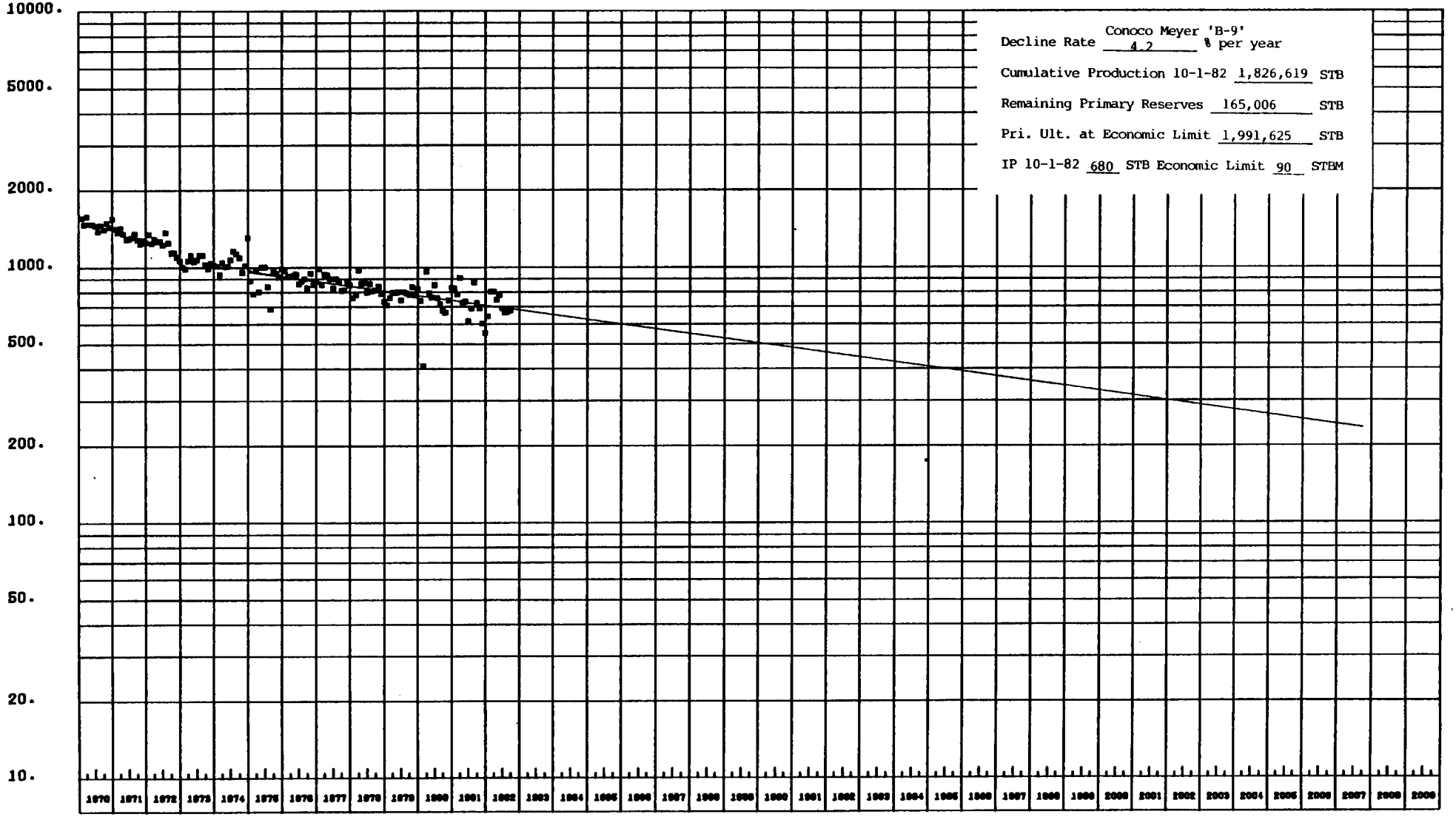
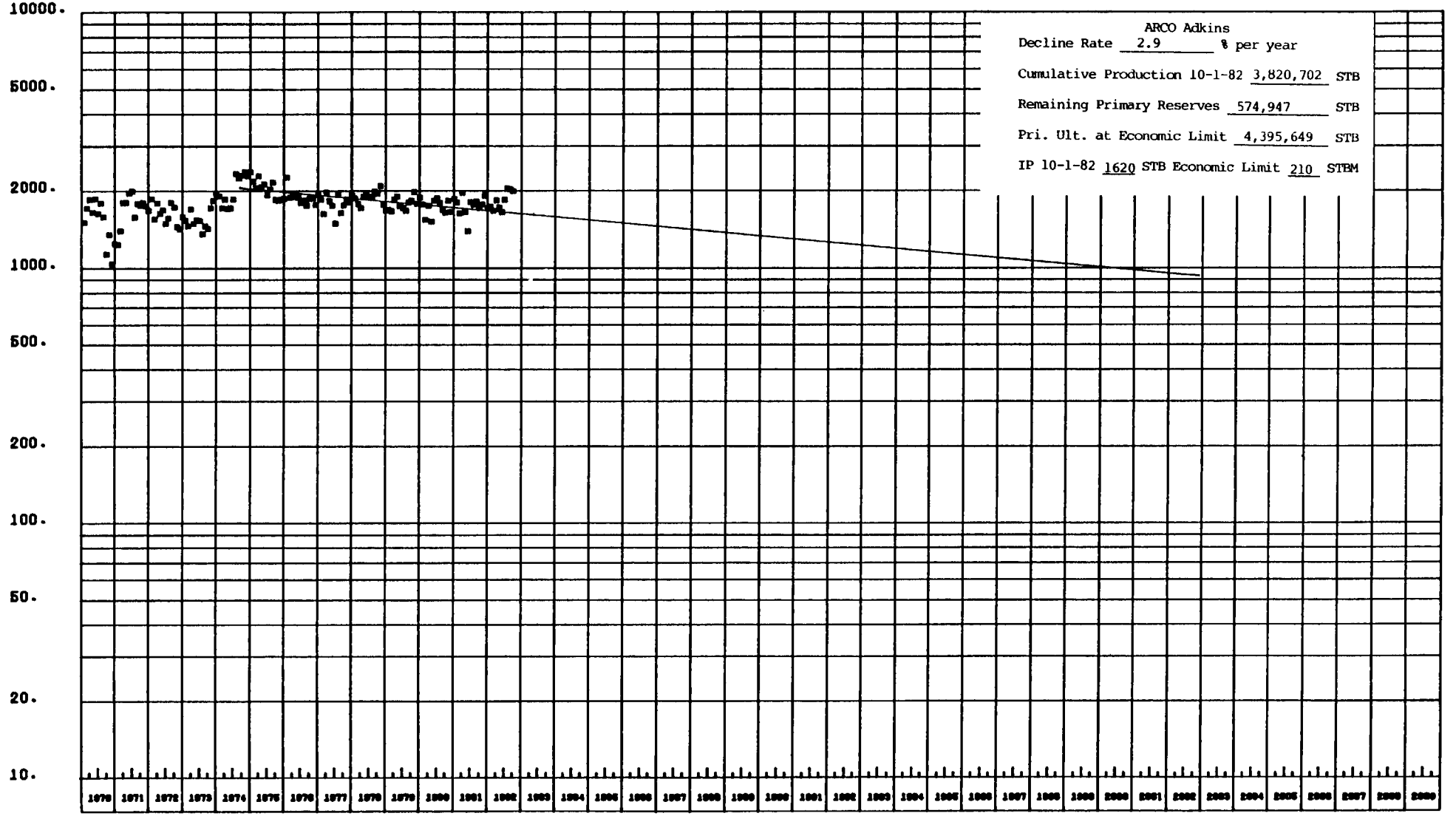


Figure 61

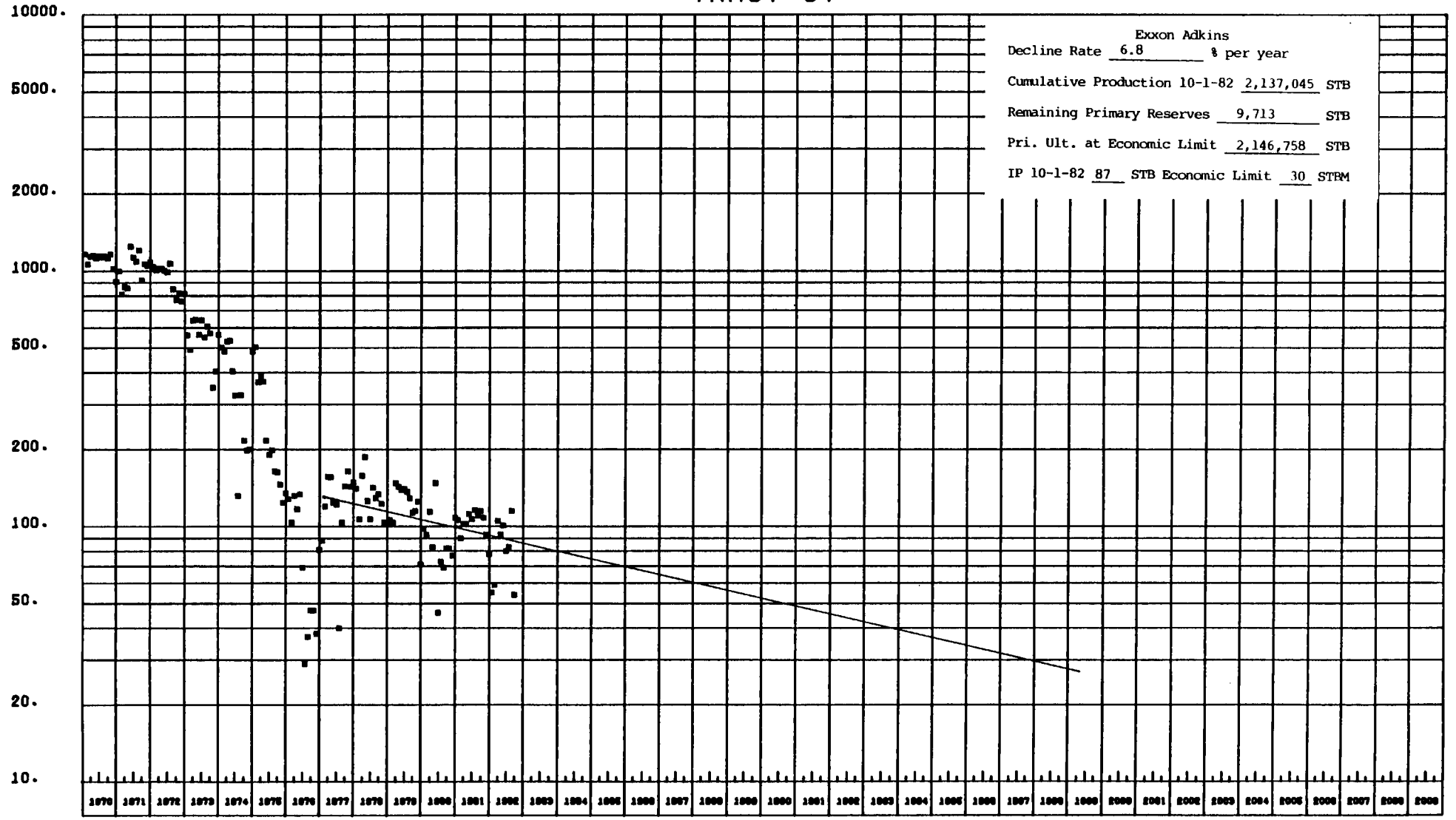
RATE VS TIME
TRACT 66



KHIE, SIBU PER MUNIH

Figure 69

RATE VS TIME
TRACT 67



RATE, BBL PER MONTH

Figure 63

RATE VS TIME
TRACT 68

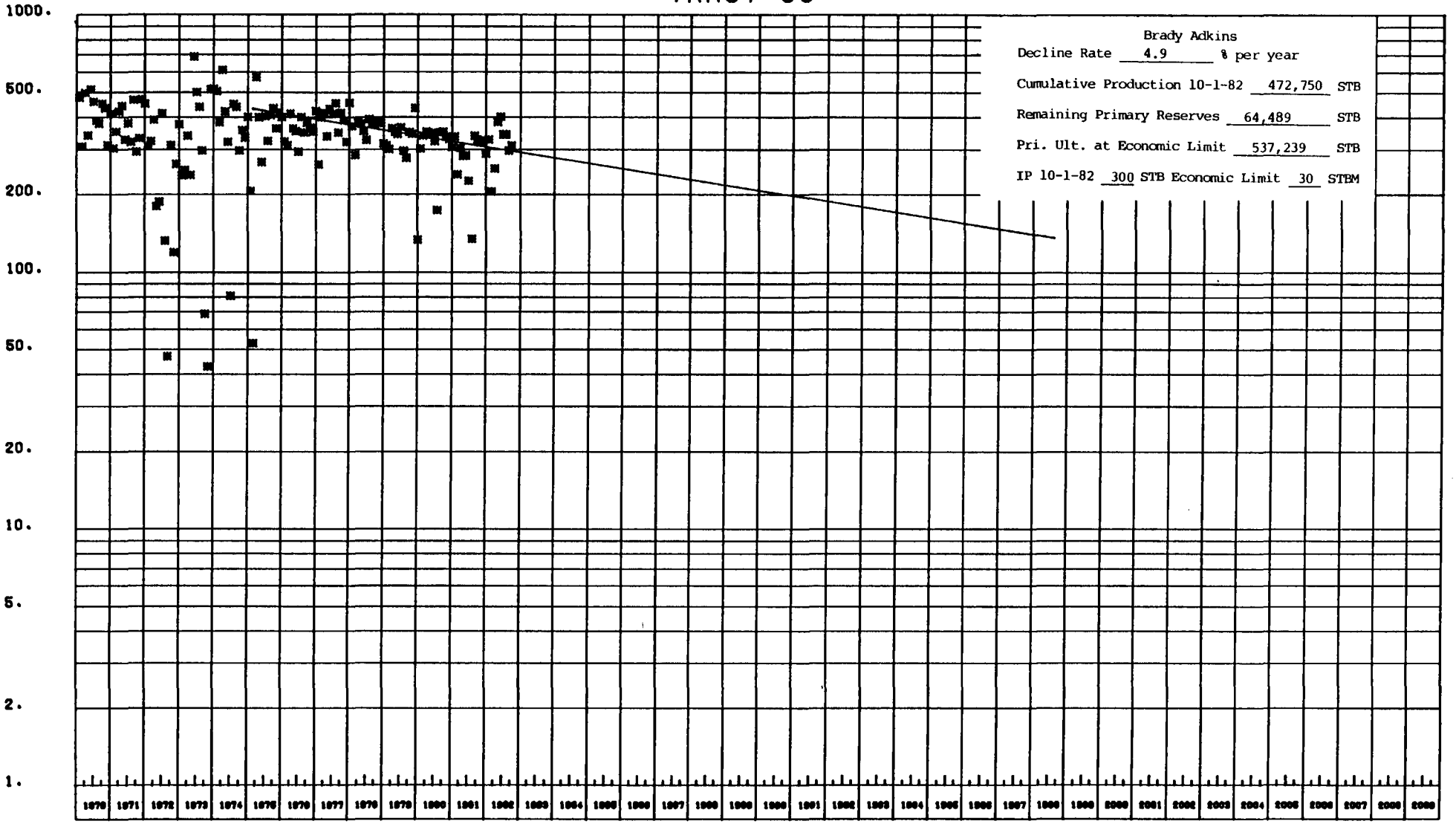


Figure 64

RATE VS TIME
TRACT 69

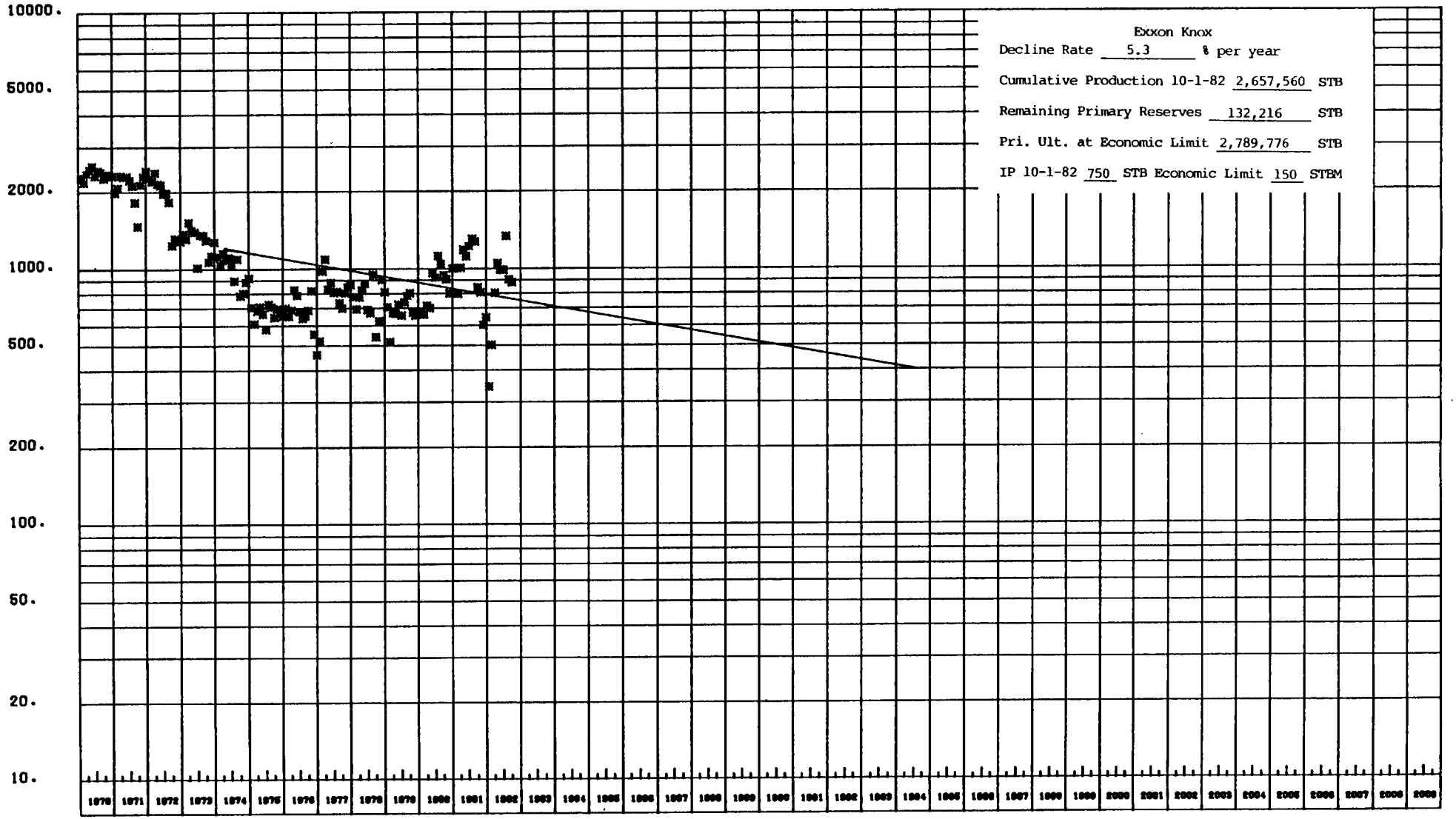
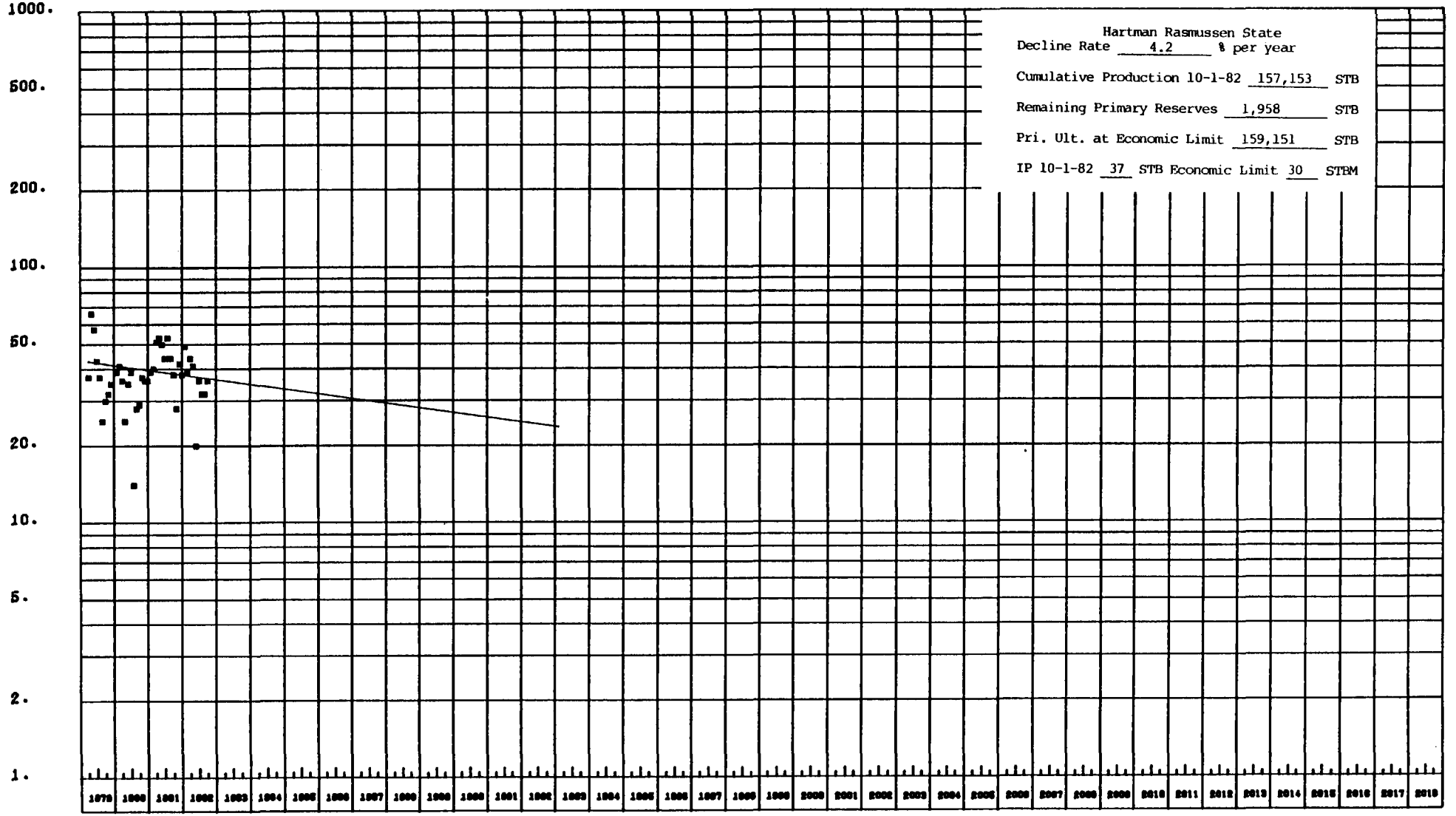


Figure 65

RATE VS TIME
TRACT 70



KHIE, SIBU PEK MUNIH

Figure 66

RATE VS TIME
TRACT 71

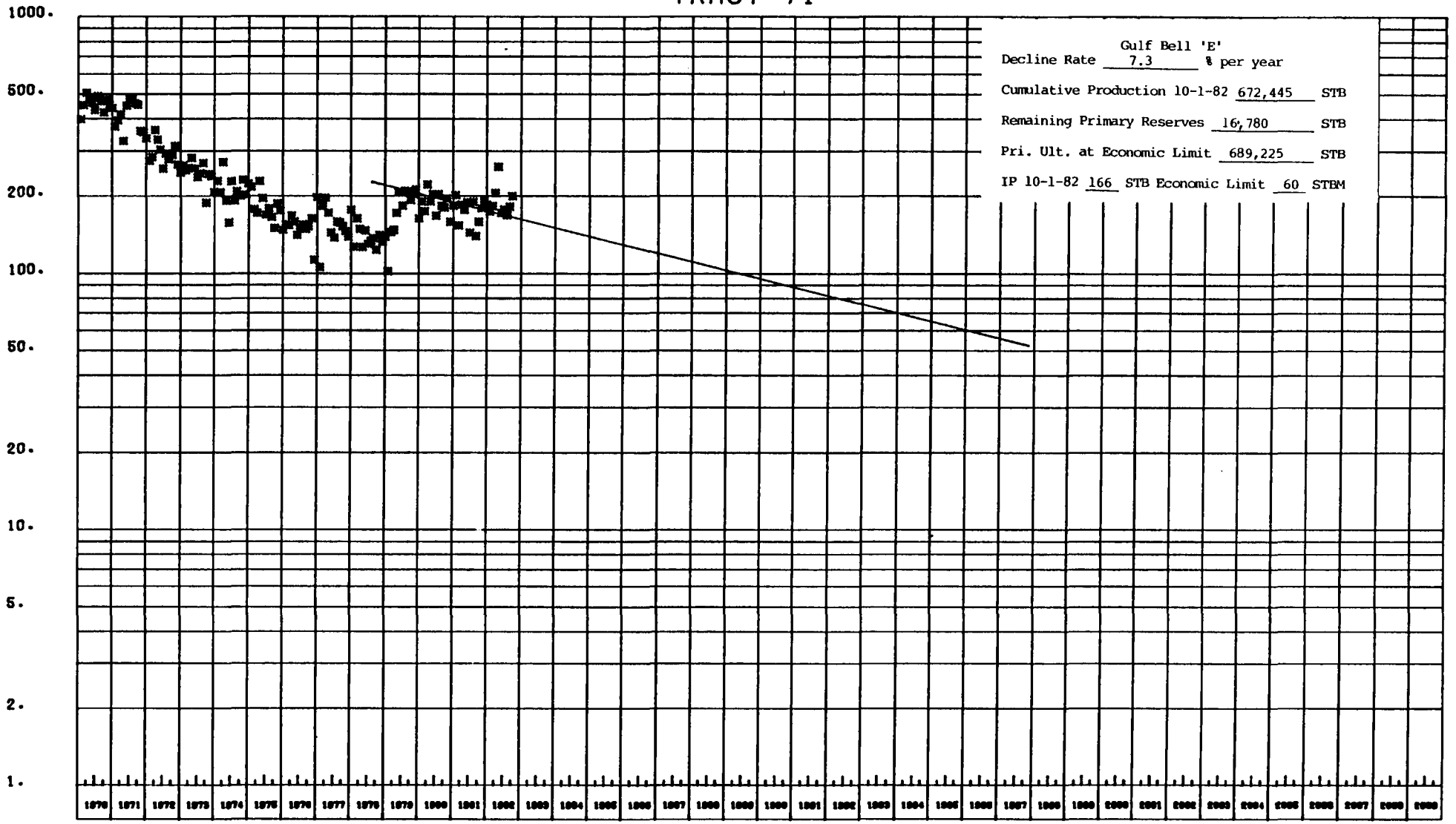
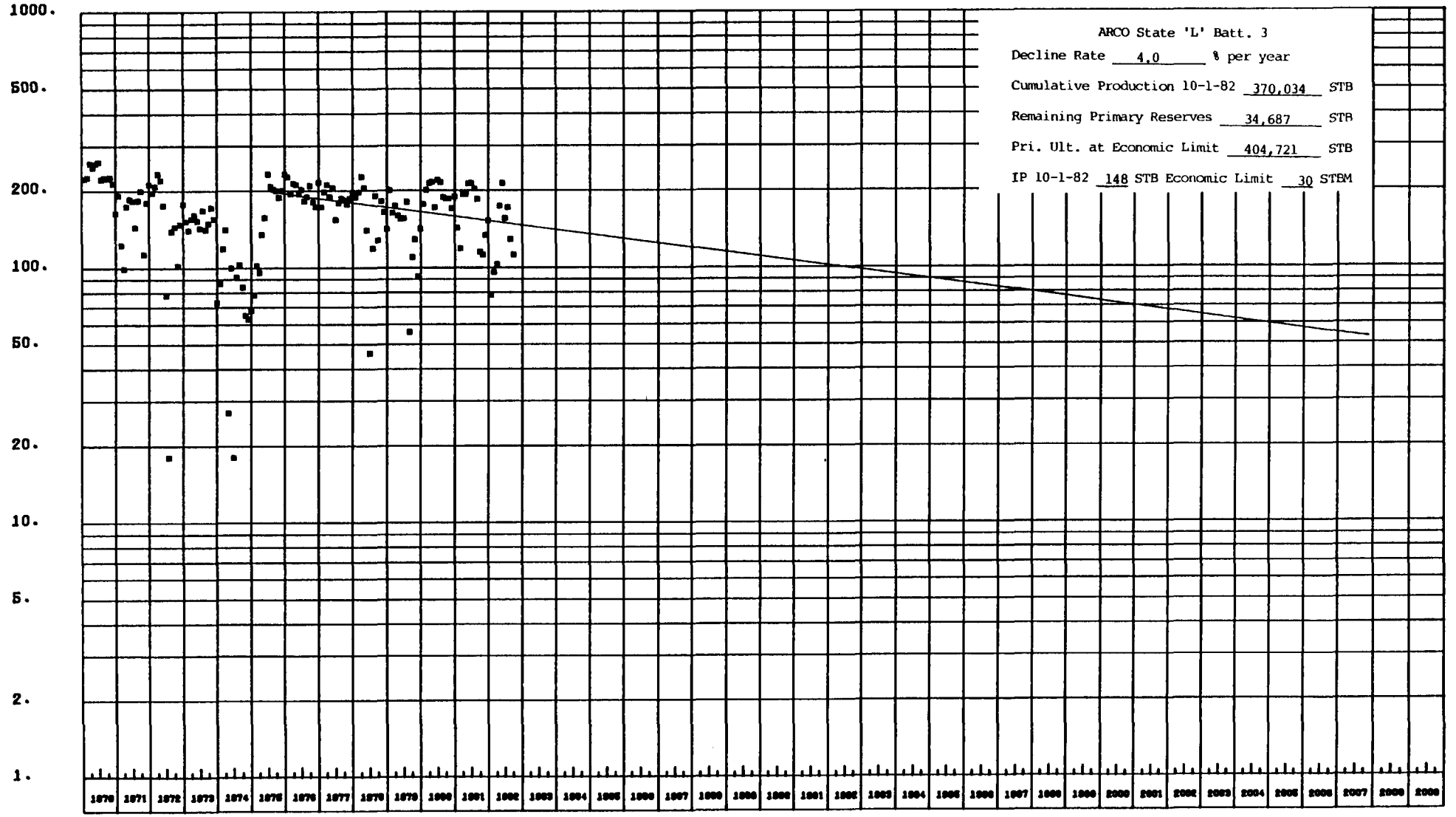


Figure 67

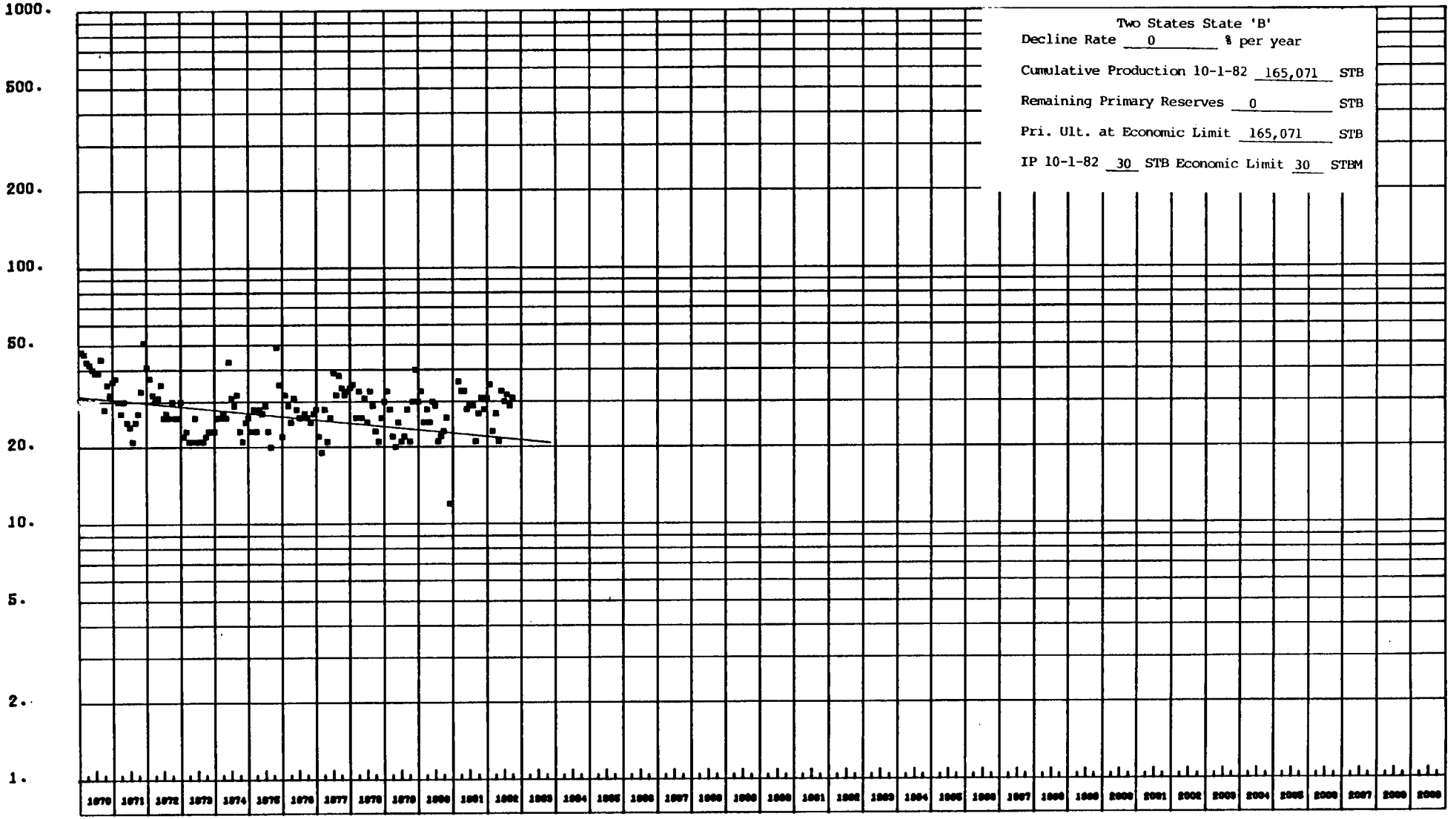
RATE VS TIME
TRACT 72



KHIE, SIBU PER MUNIH

Figure 69

RATE VS TIME
TRACT 73



KHIT, SIBU PEK TUNIN

Figure 69

RATE VS TIME
TRACT 75

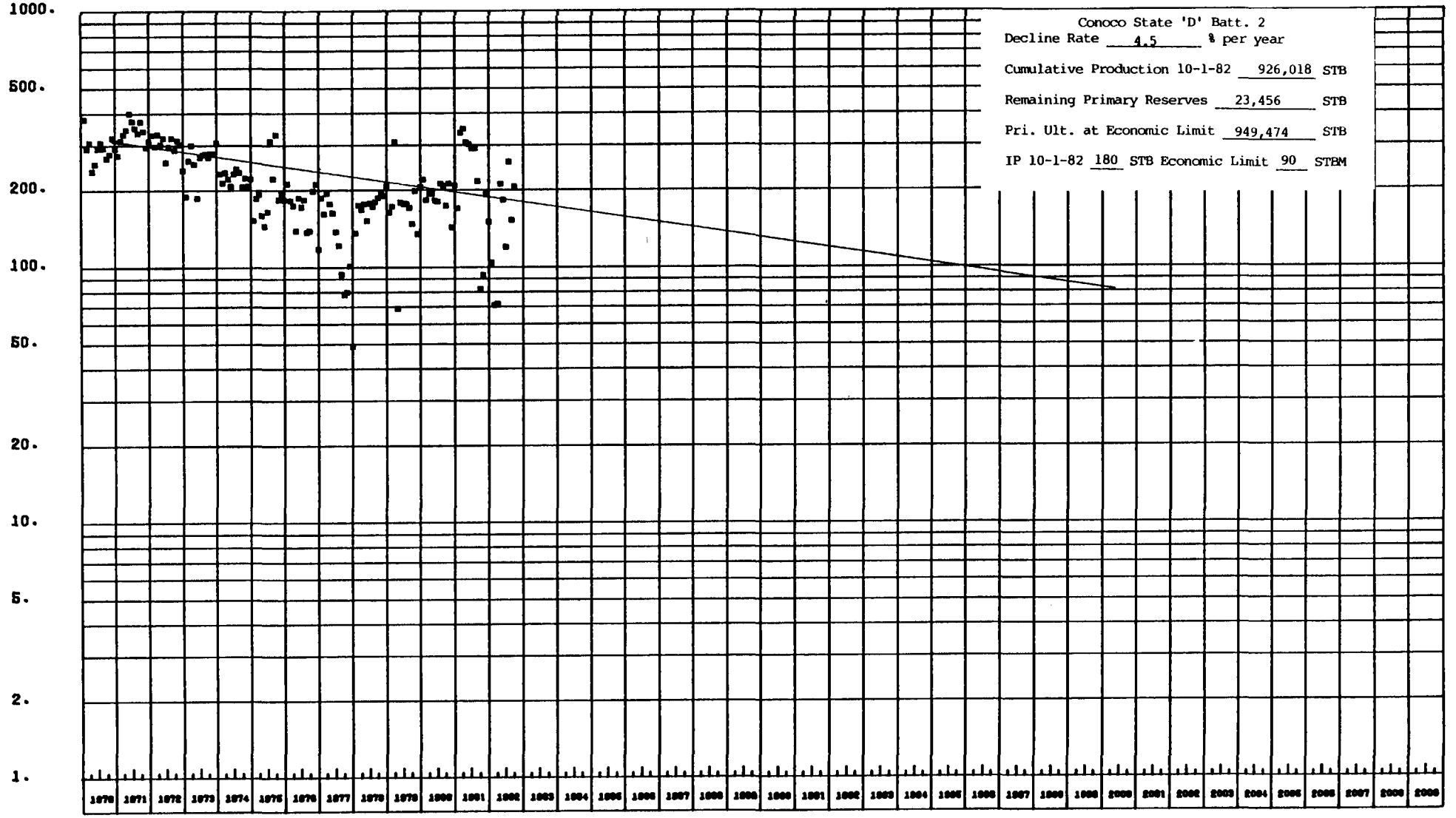


Figure 70

RATE VS TIME
TRACT 81

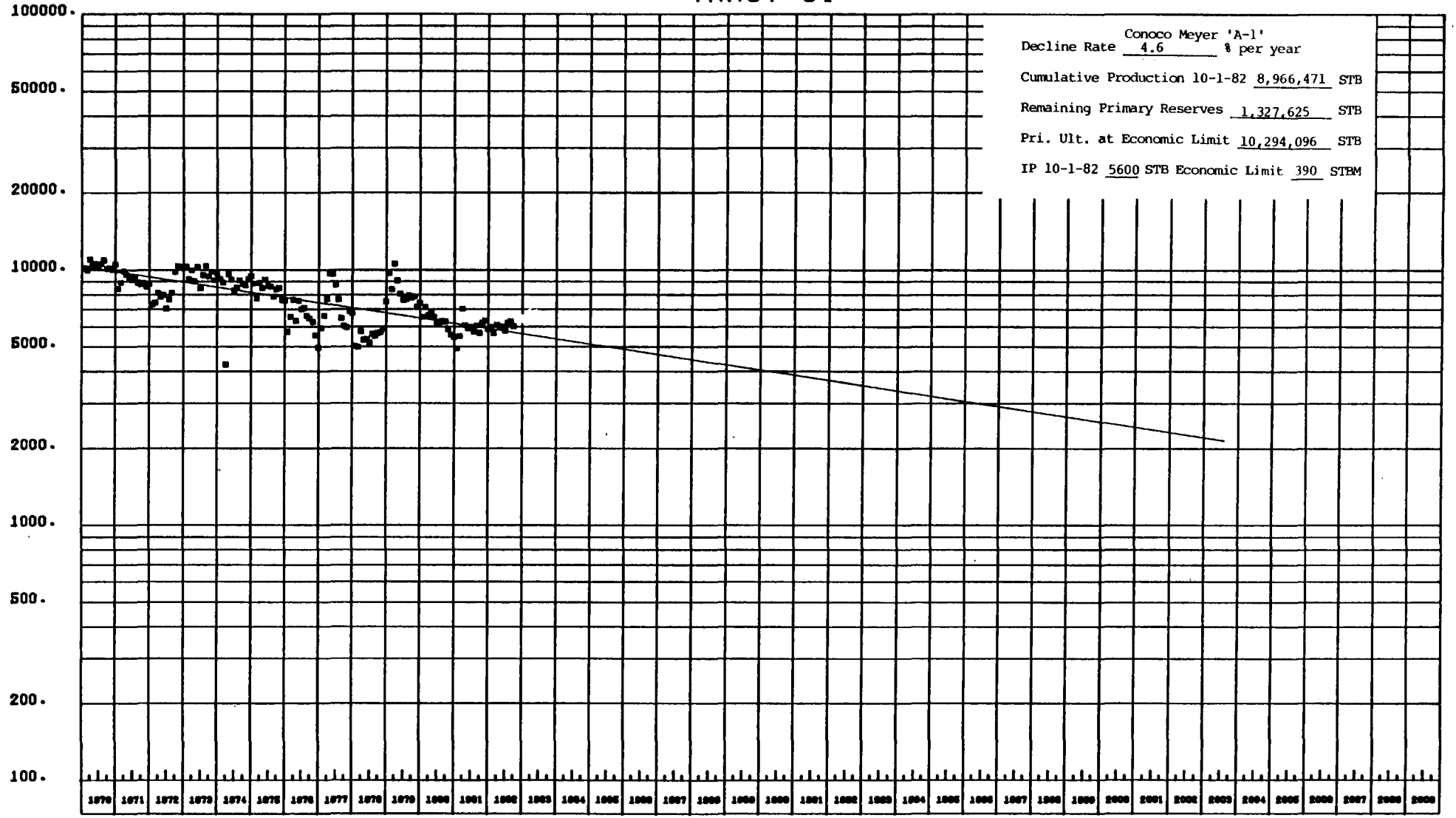


Figure 71

RATE VS TIME
TRACT 82

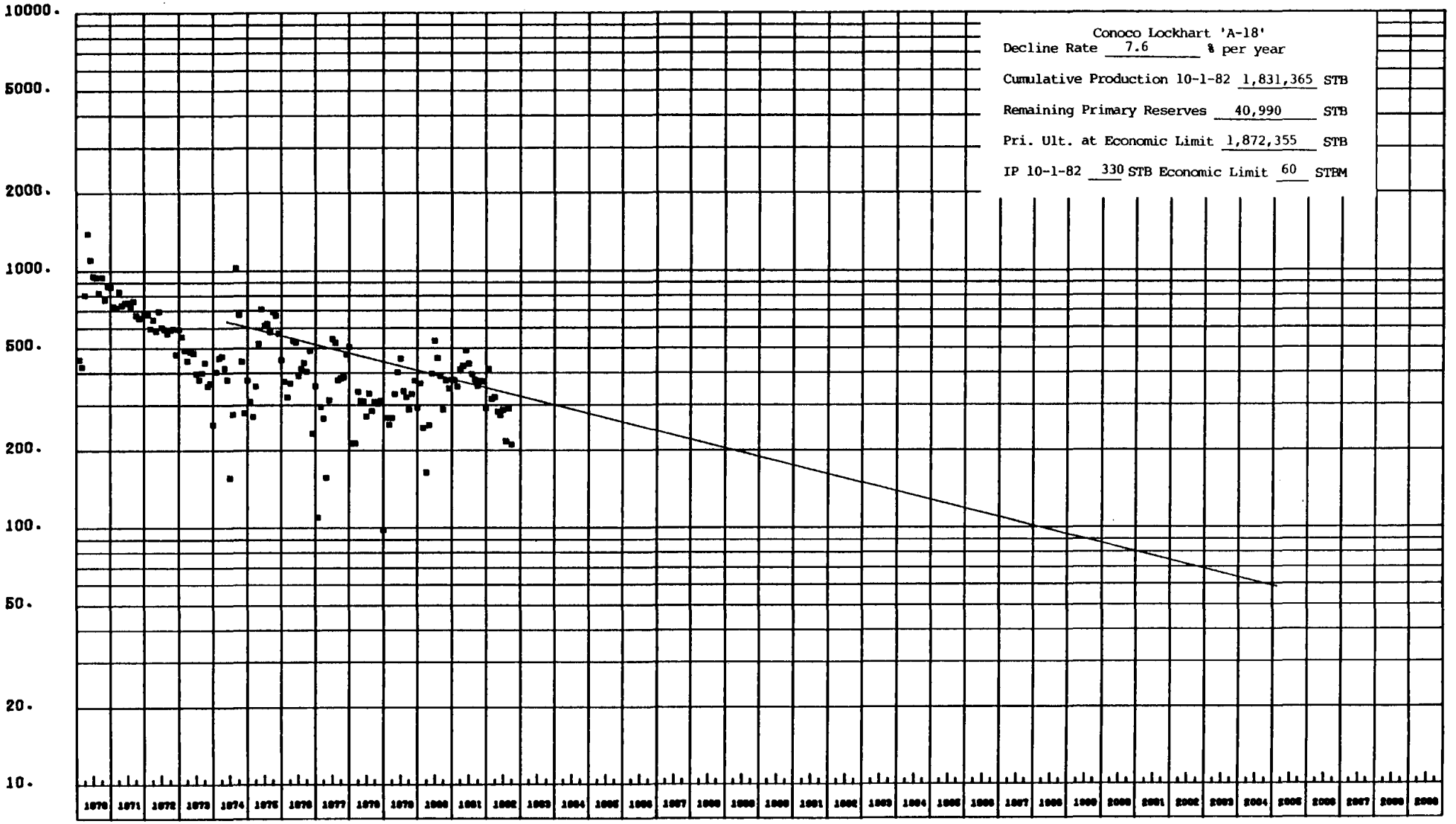
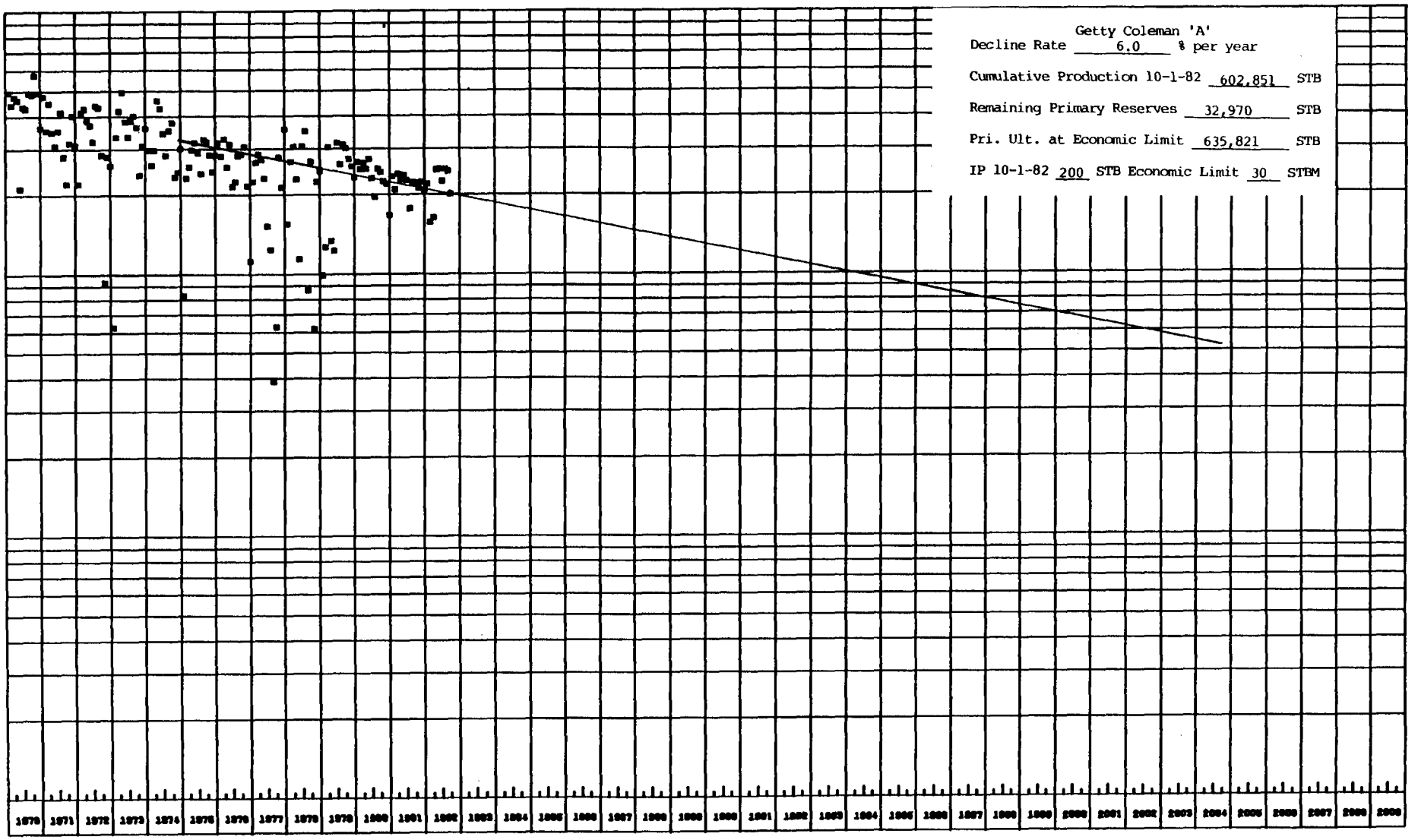


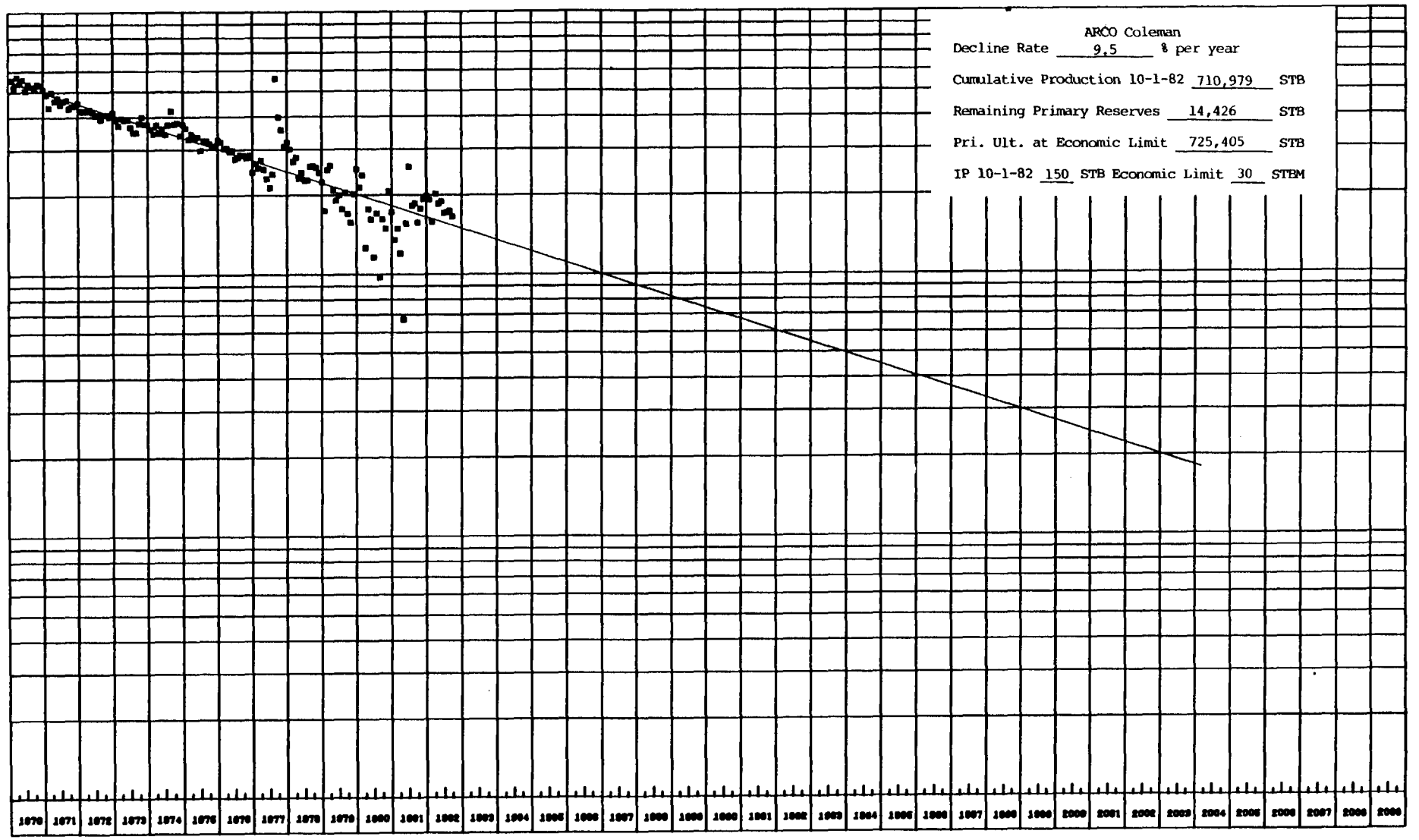
Figure 72

RATE VS TIME
TRACT 83



RATE, BBL PER MONTH

RATE VS TIME
TRACT 84



RATE, BBL PER MONTH

Exhibit 24

RATE VS TIME
TRACT 85

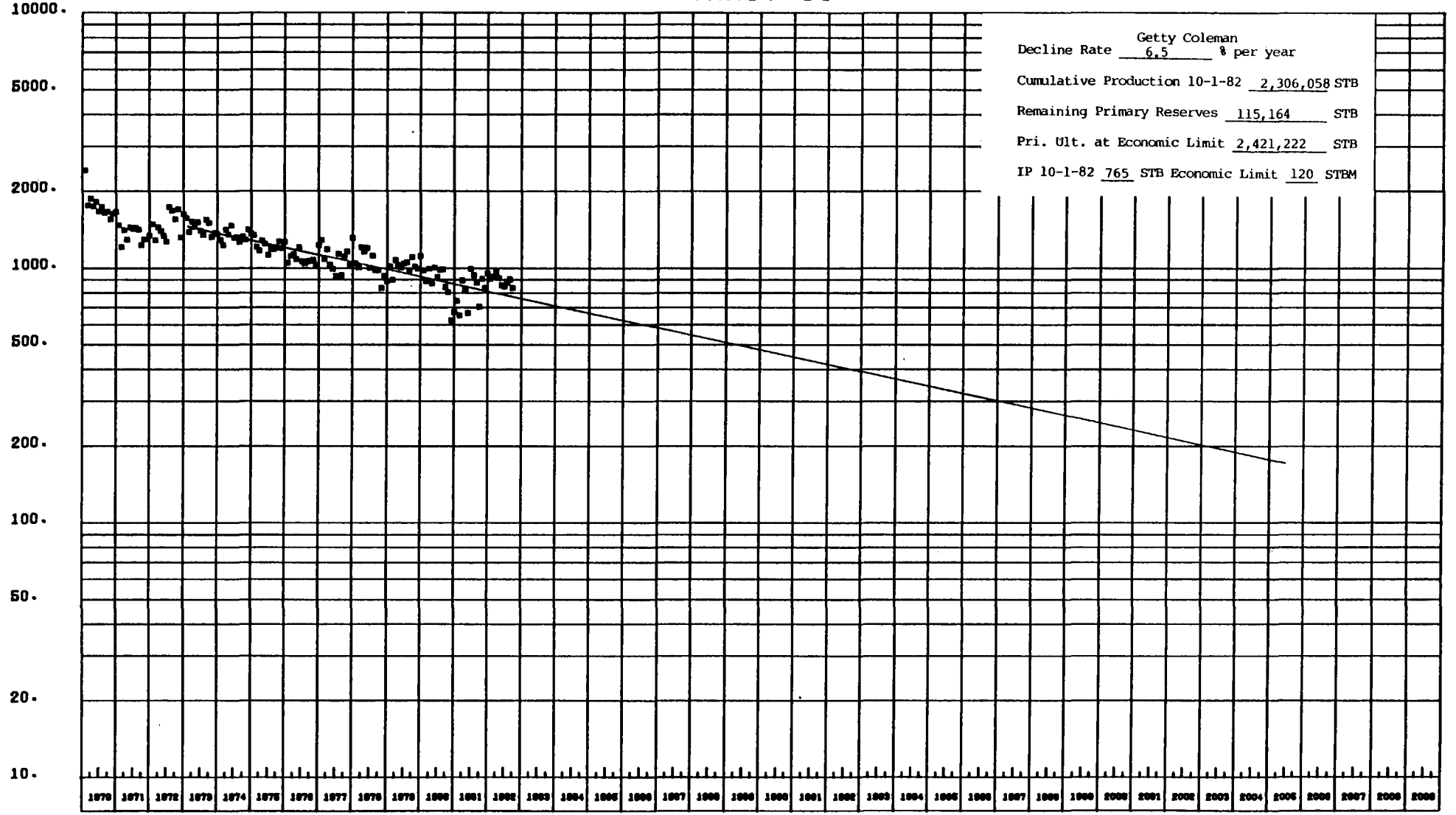
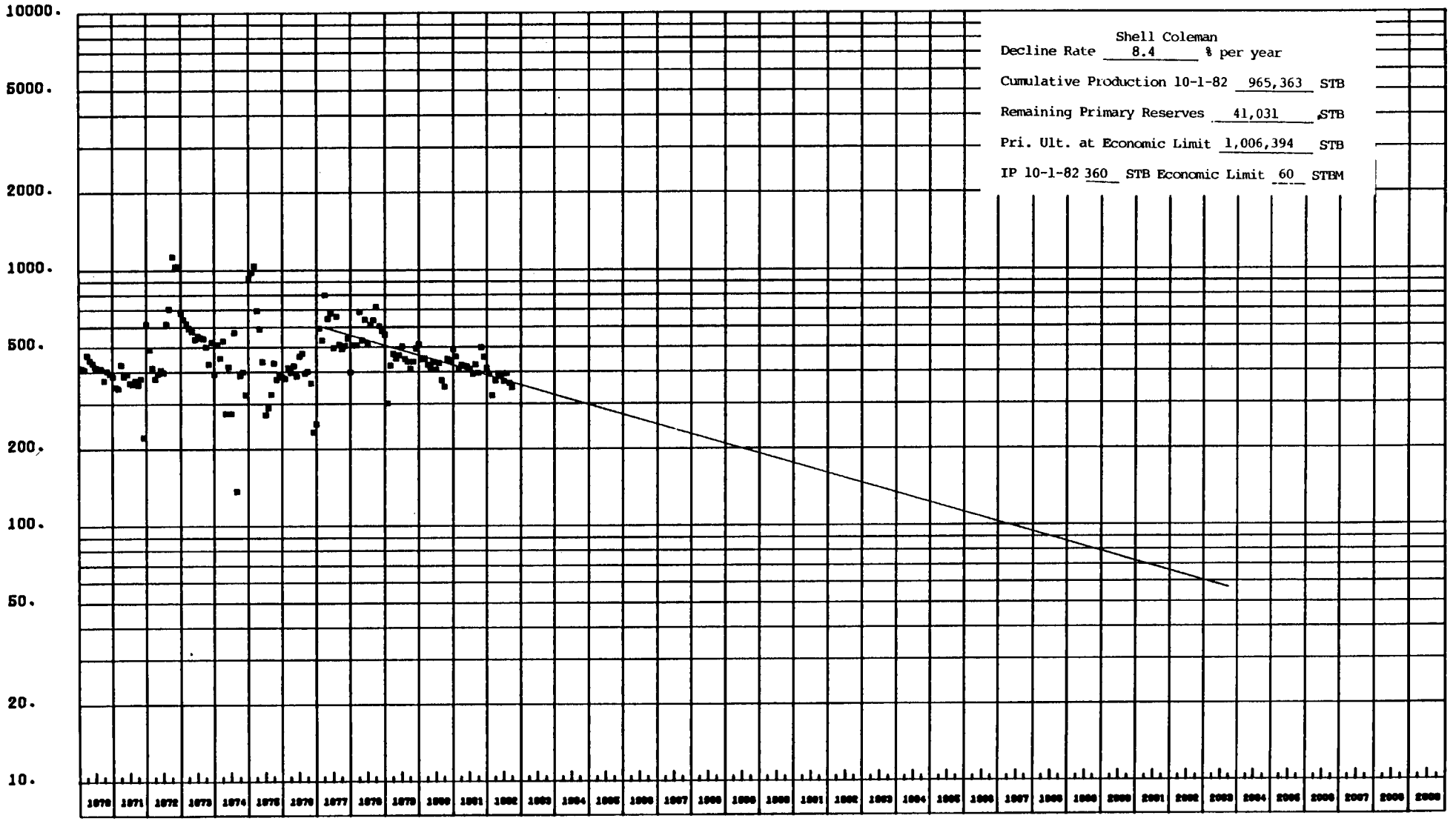


Figure 74

RATE VS TIME
TRACT 86



KHIE, SIOU FER IUNIN

Figure 76

RATE VS TIME
TRACT 88

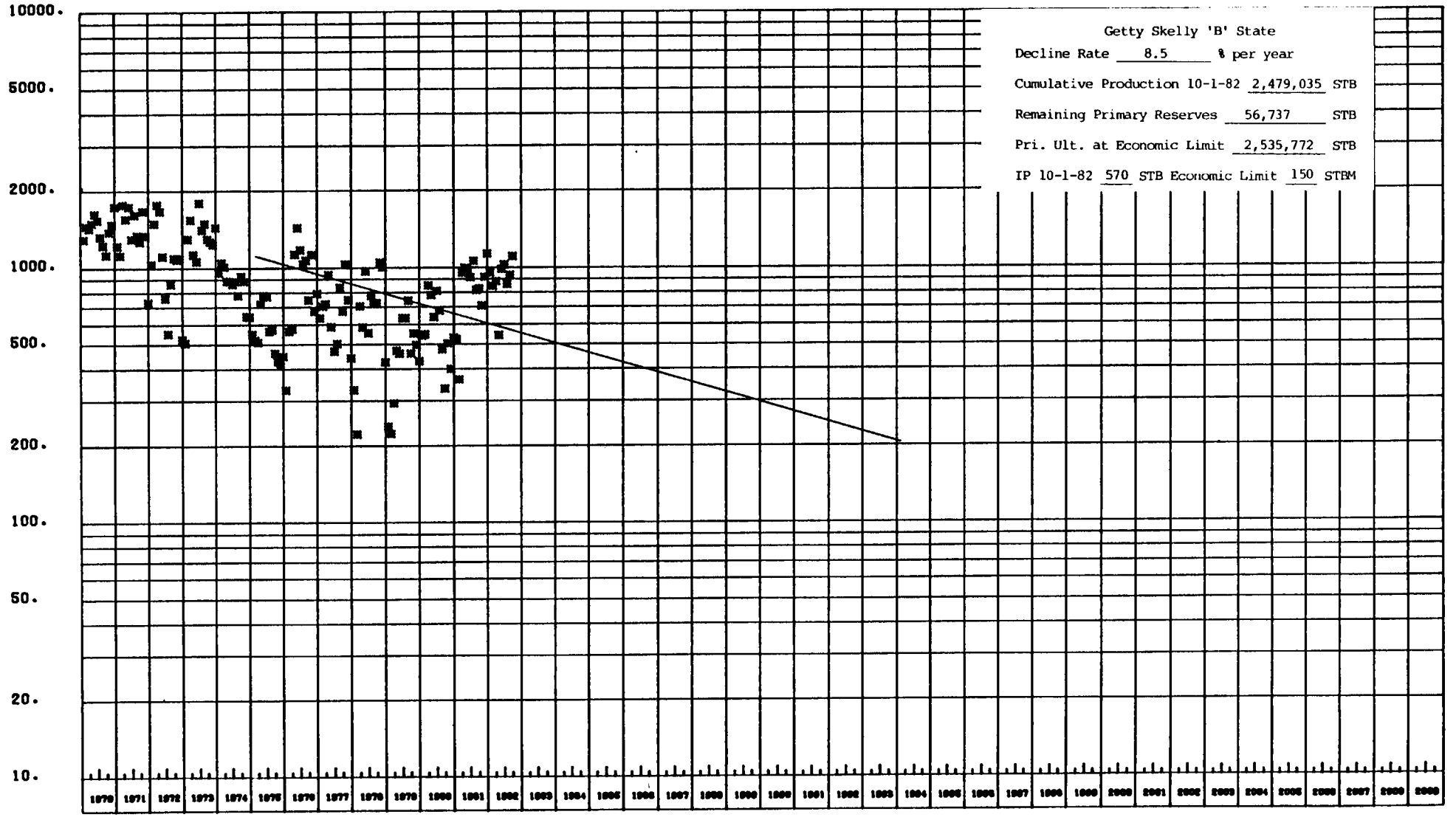


Figure 77

RATE VS TIME
TRACT 89

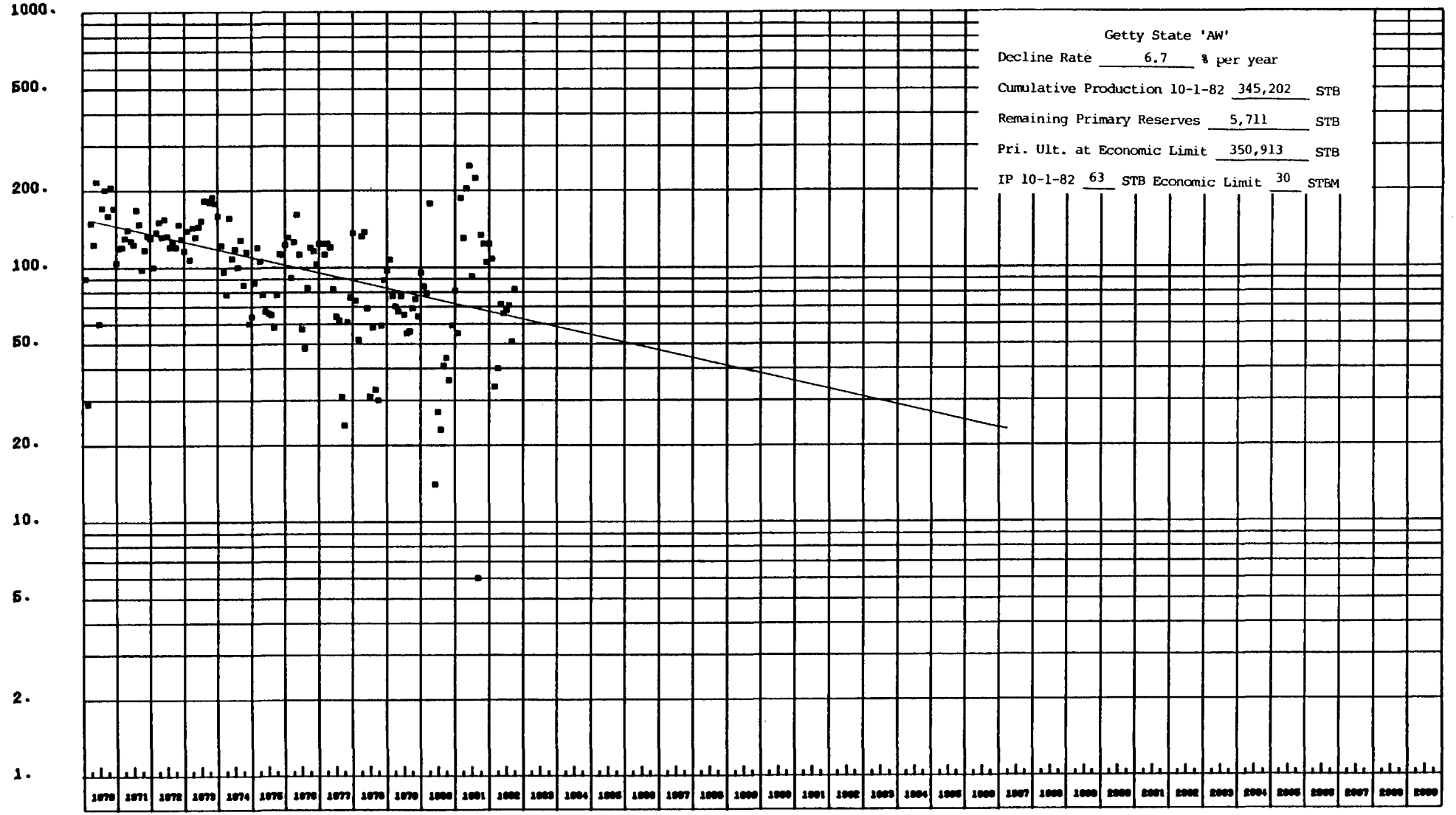
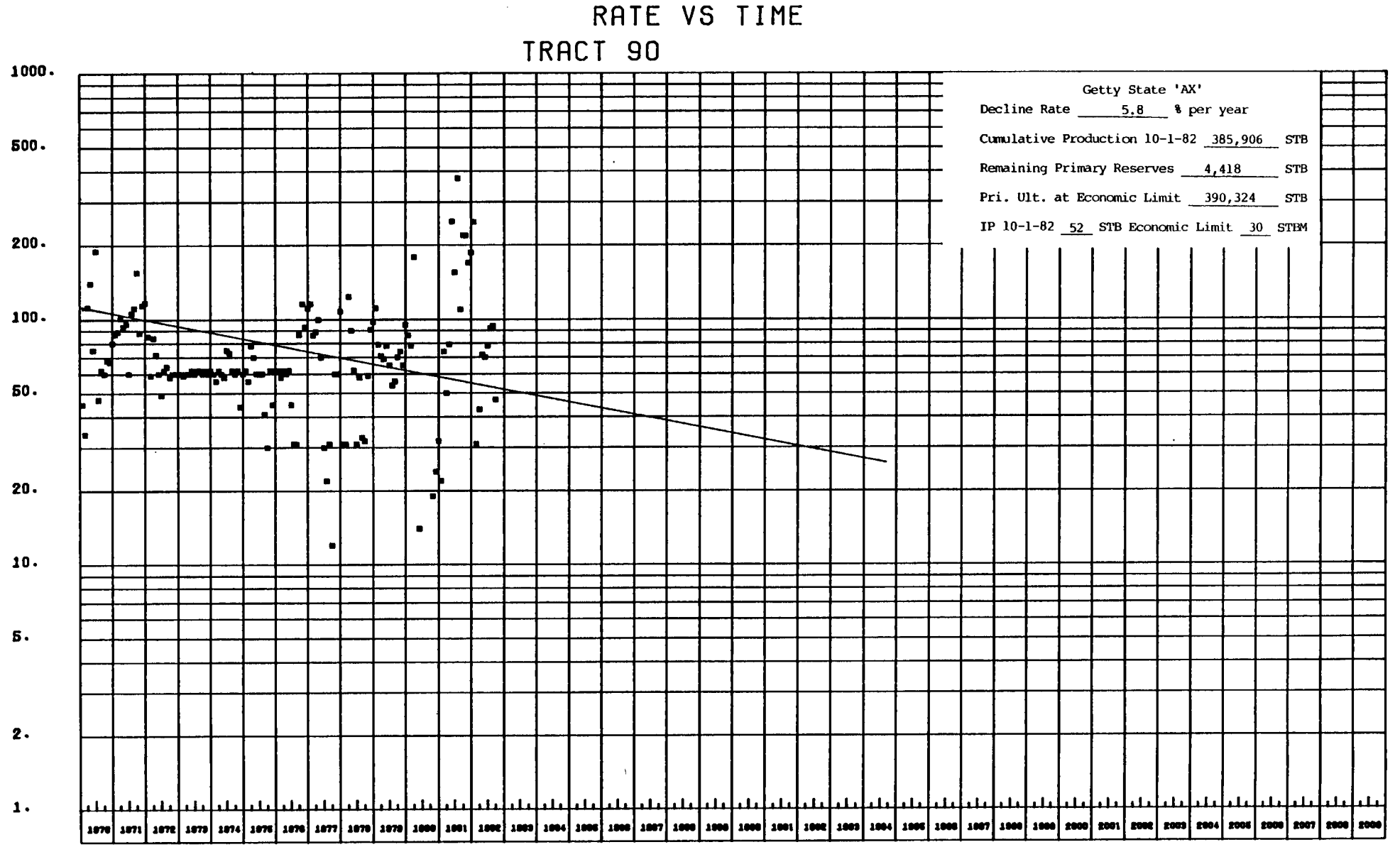


Figure 78



WHITE, SIBU PEAK MUNIN

Figure 79

RATE VS TIME
TRACT 91

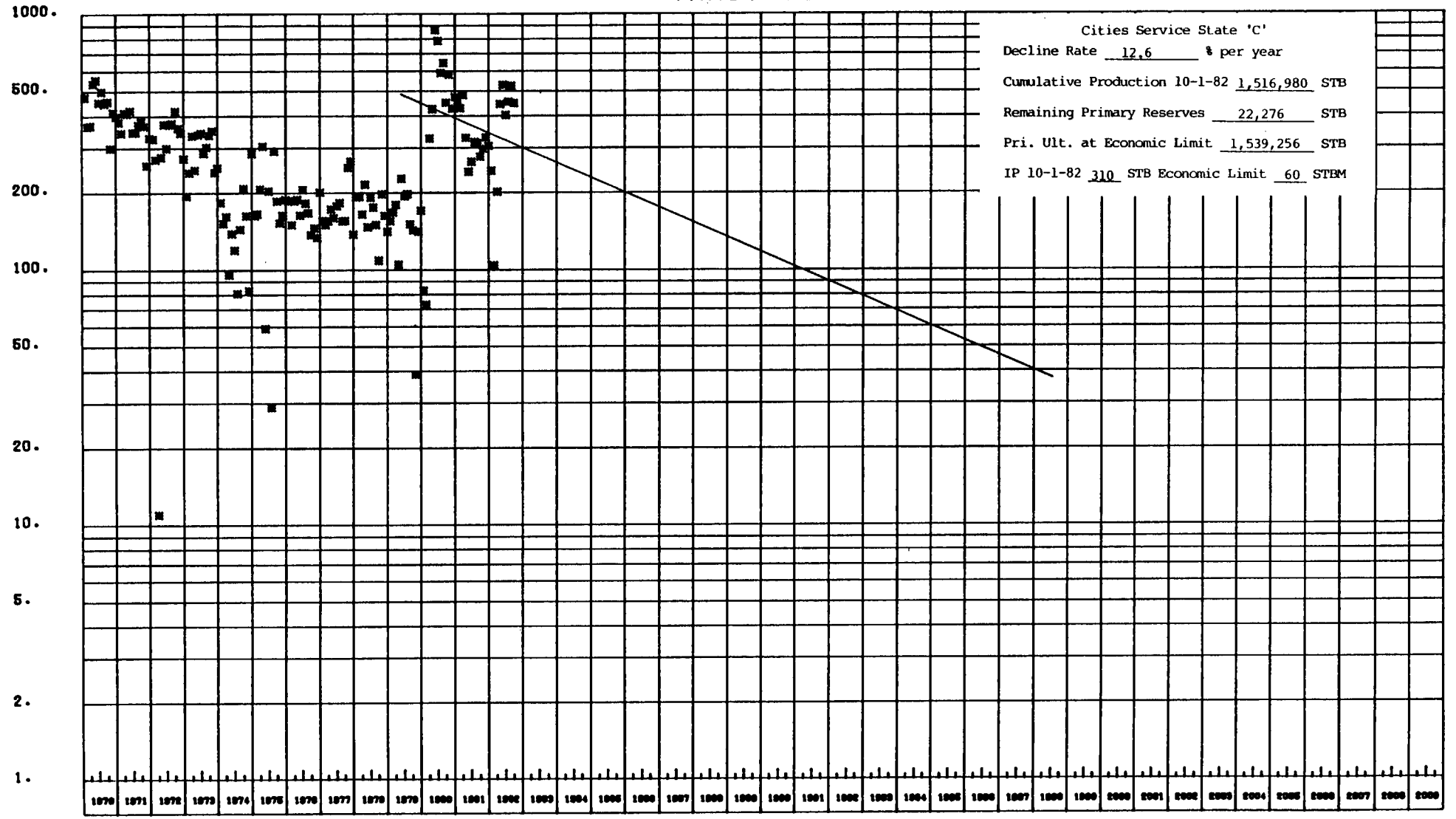
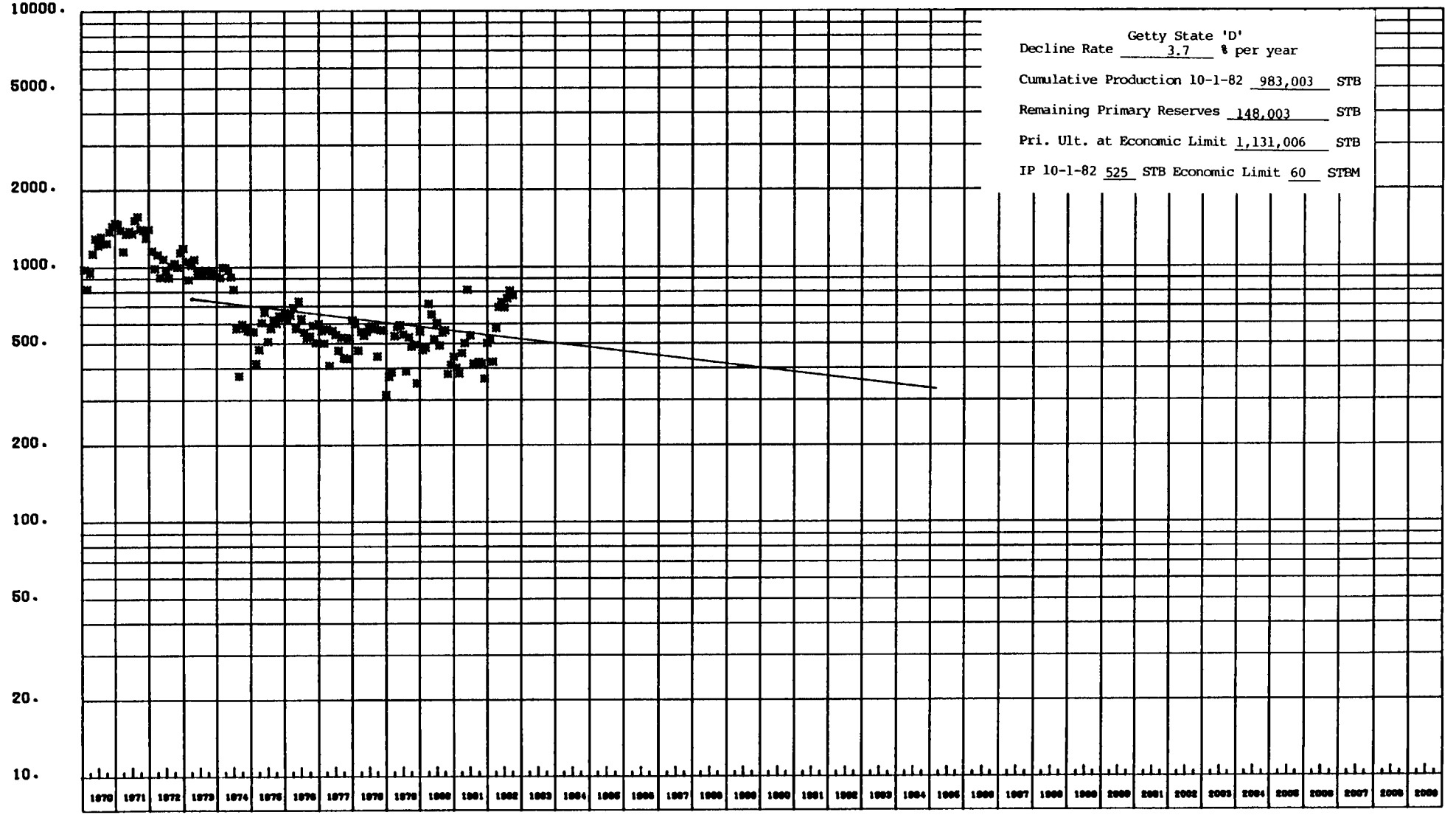


Figure 80

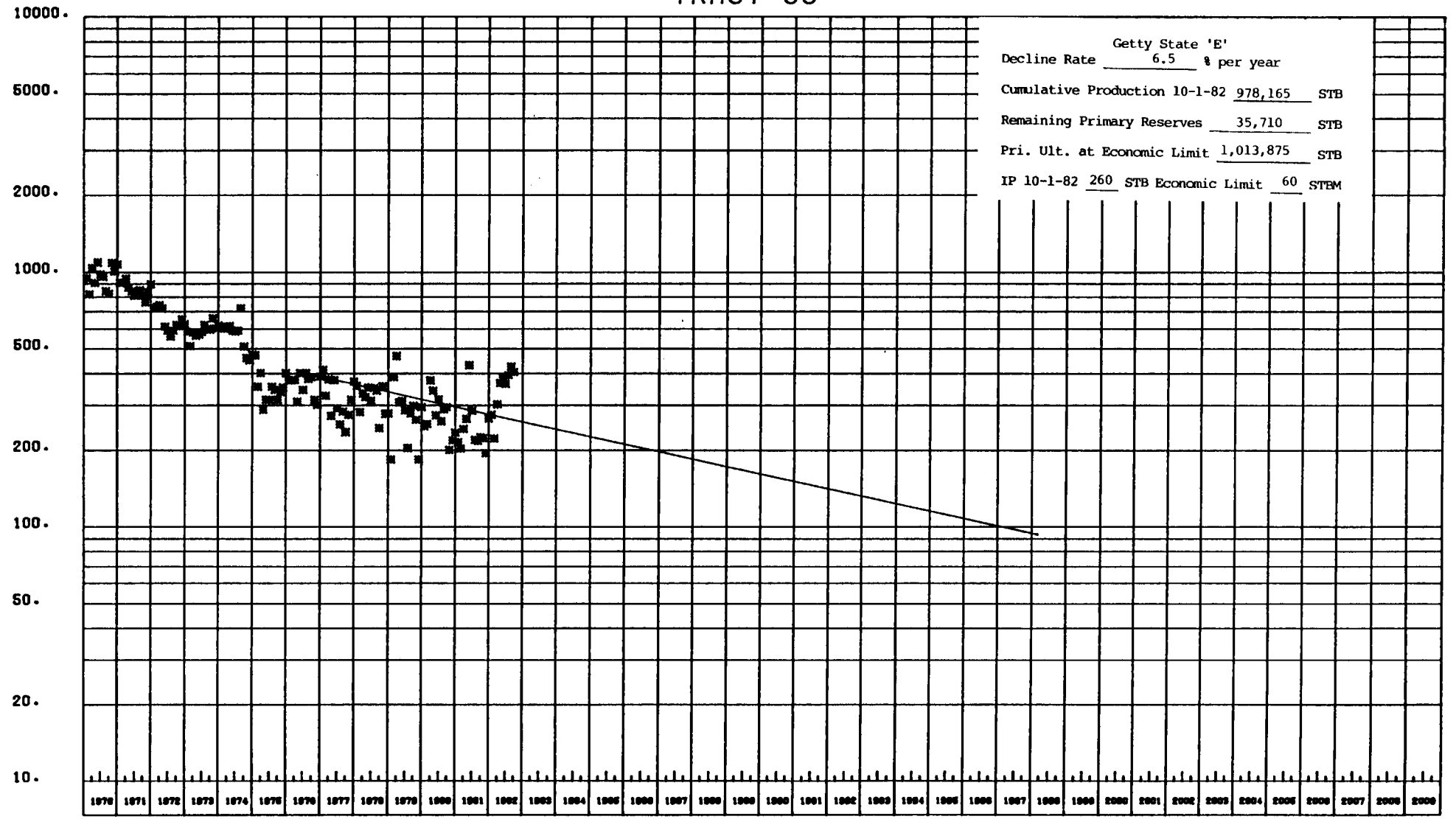
RATE VS TIME
TRACT 92



KHIE, SIBU PER MUNIH

Figure 81

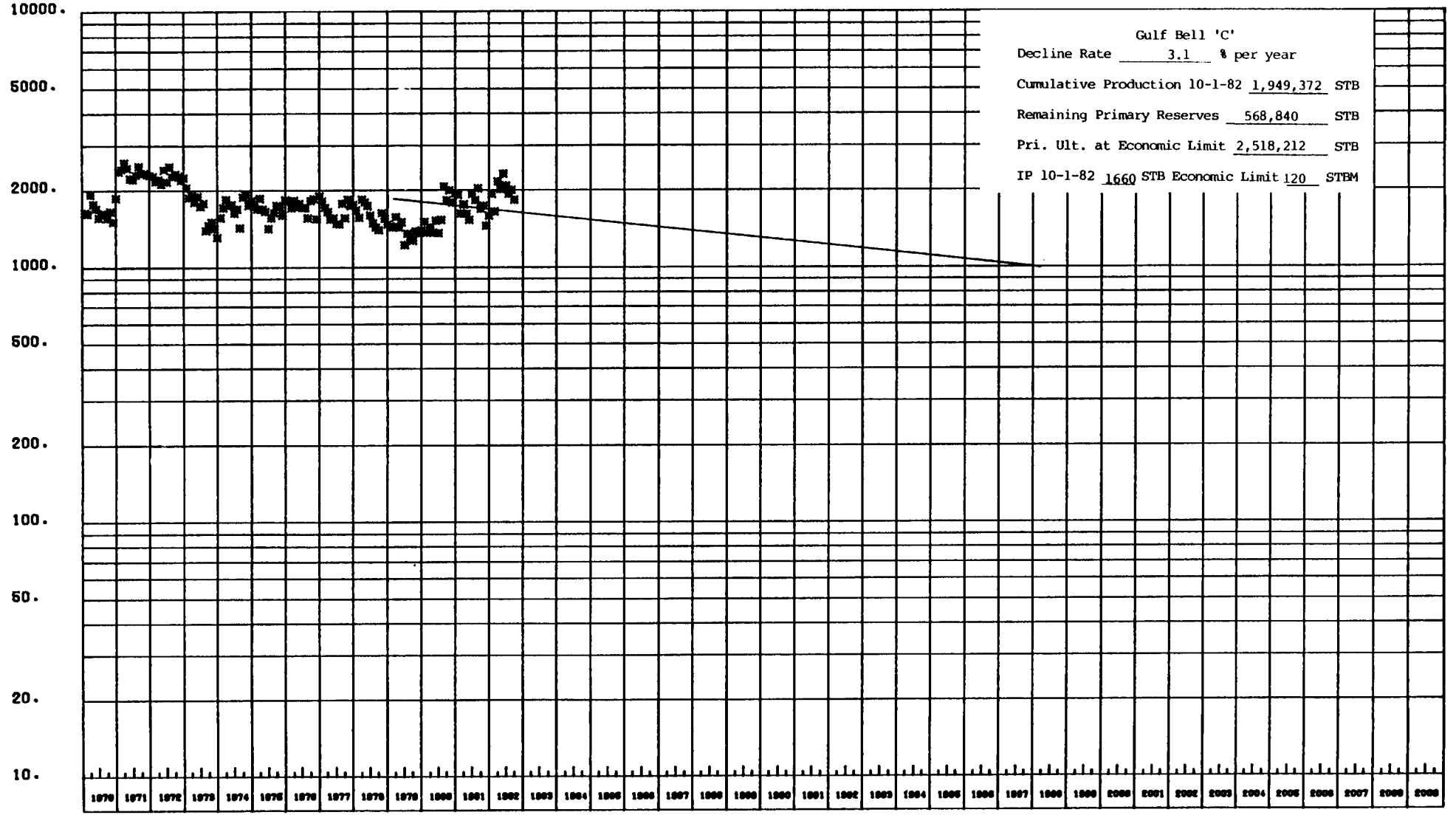
RATE VS TIME
TRACT 93



RATE, STBO PER MONTH

Figure 82

RATE VS TIME
TRACT 94



KHIE, SIBU PEK MUNIH

Figure 83

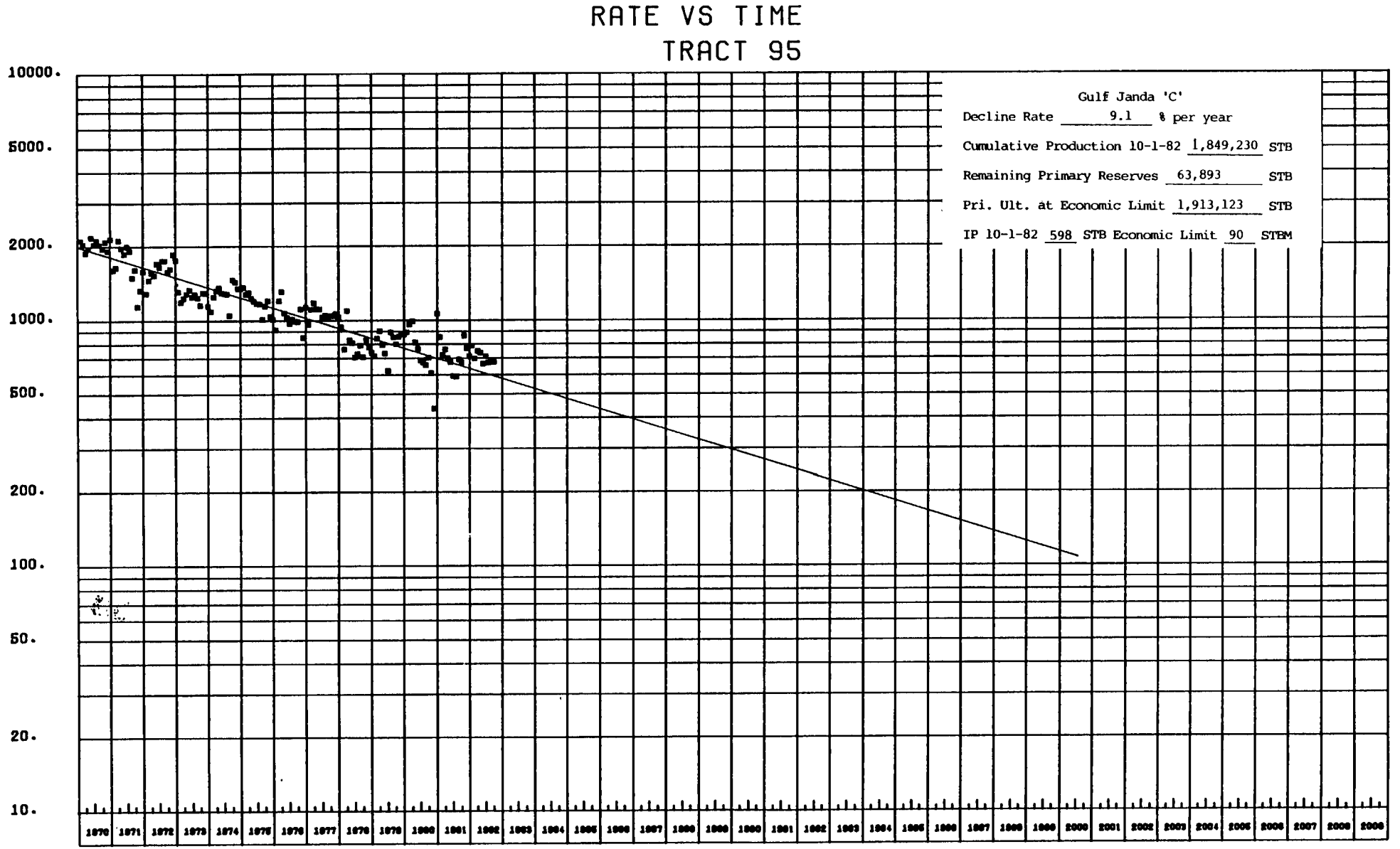

RATE VS TIME
TRACT 95
Gulf Janda 'C'
Decline Rate 9.1 % per year
Cumulative Production 10-1-82 1,849,230 STB
Remaining Primary Reserves 63,893 STB
Pri. Ult. at Economic Limit 1,913,123 STB
IP 10-1-82 598 STB Economic Limit 90 STBM
RATE, STBO PER MONTH
10000.
5000.
2000.
1000.
500.
200.
100.
50.
20.
10.

Figure 84

RATE VS TIME
TRACT 96

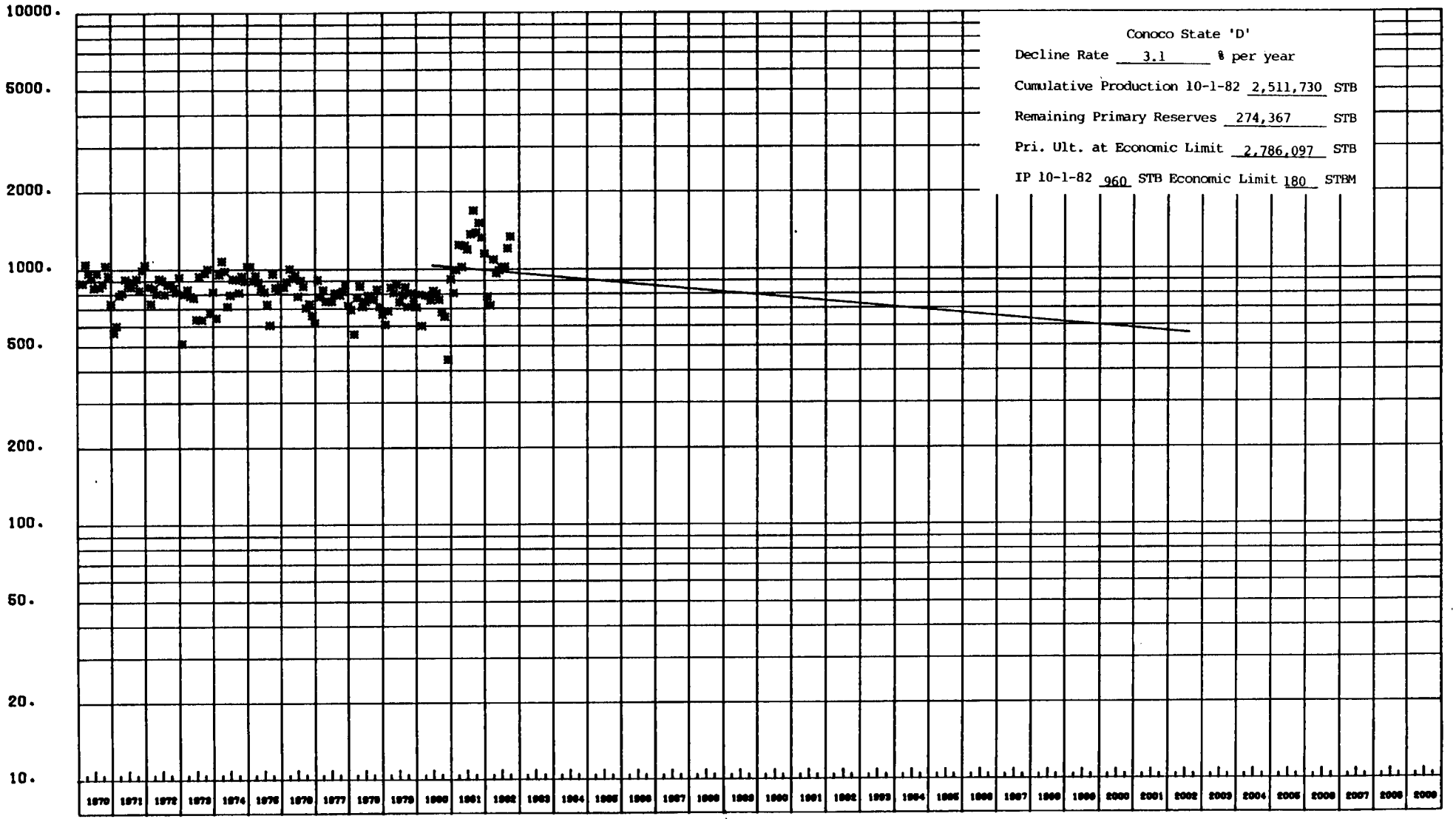


Figure 85

RATE VS TIME
TRACT 97

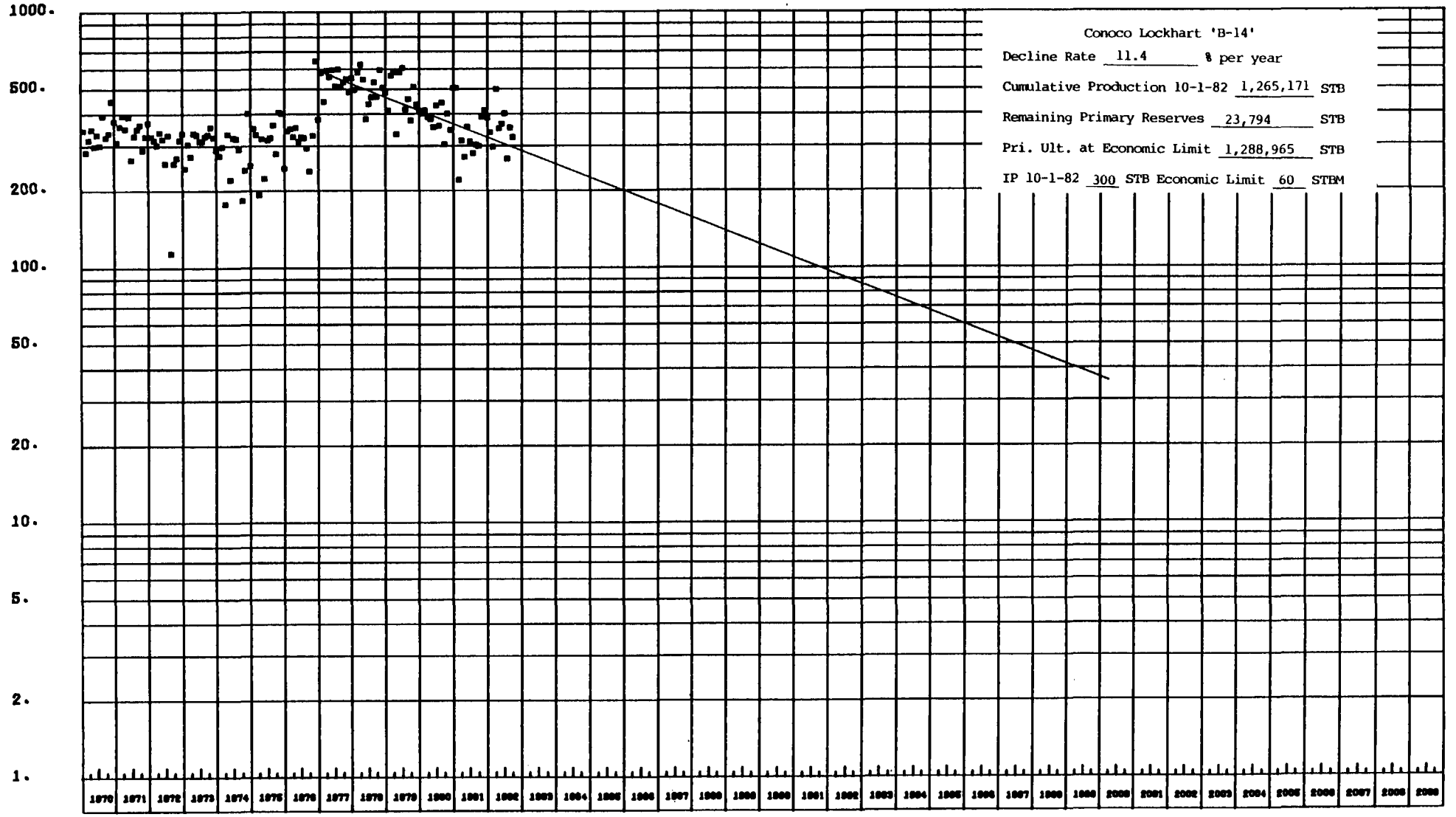


Figure 86

RATE VS TIME
TRACT 98

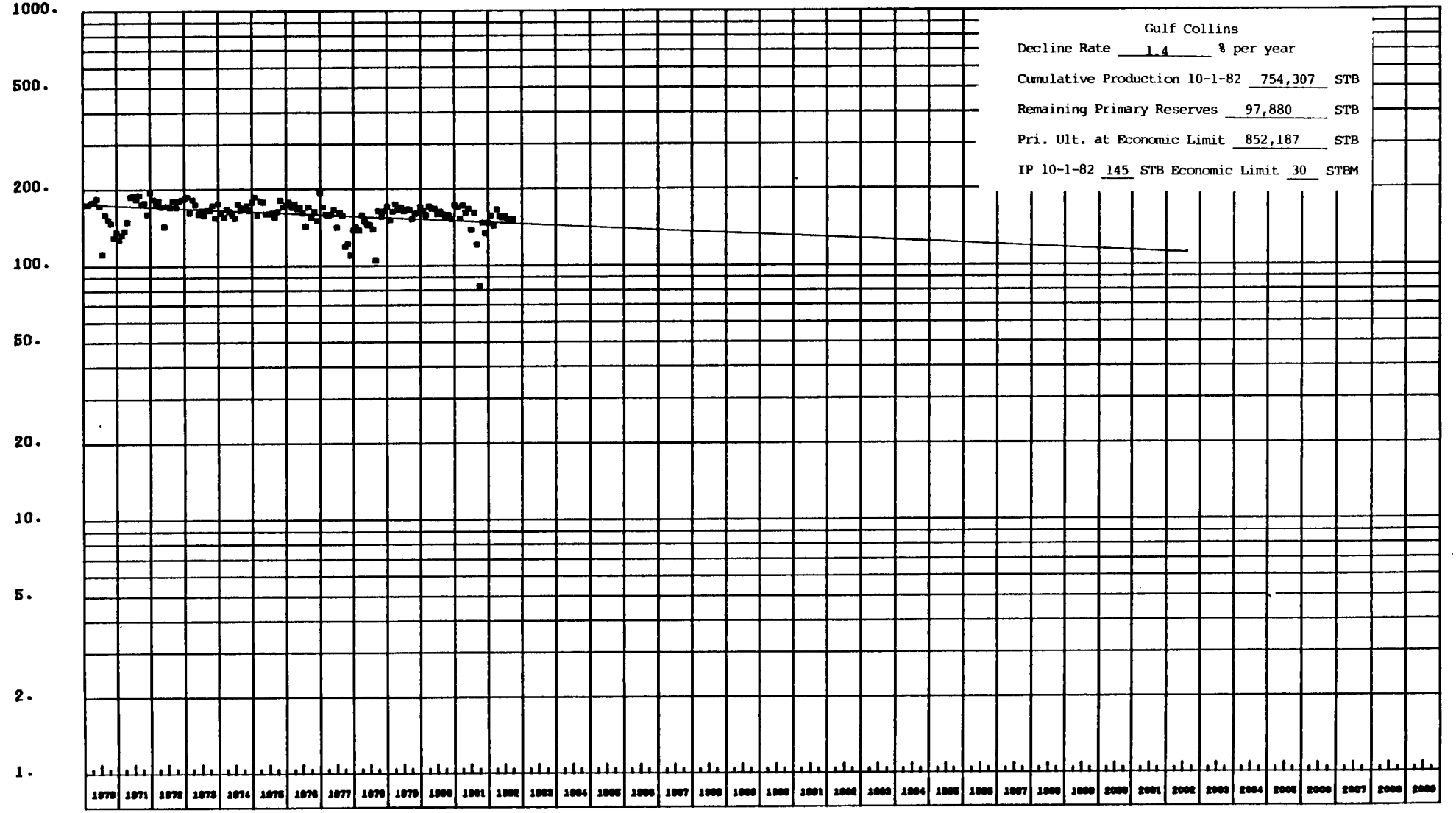


Figure 87

RATE VS TIME
TRACT 99

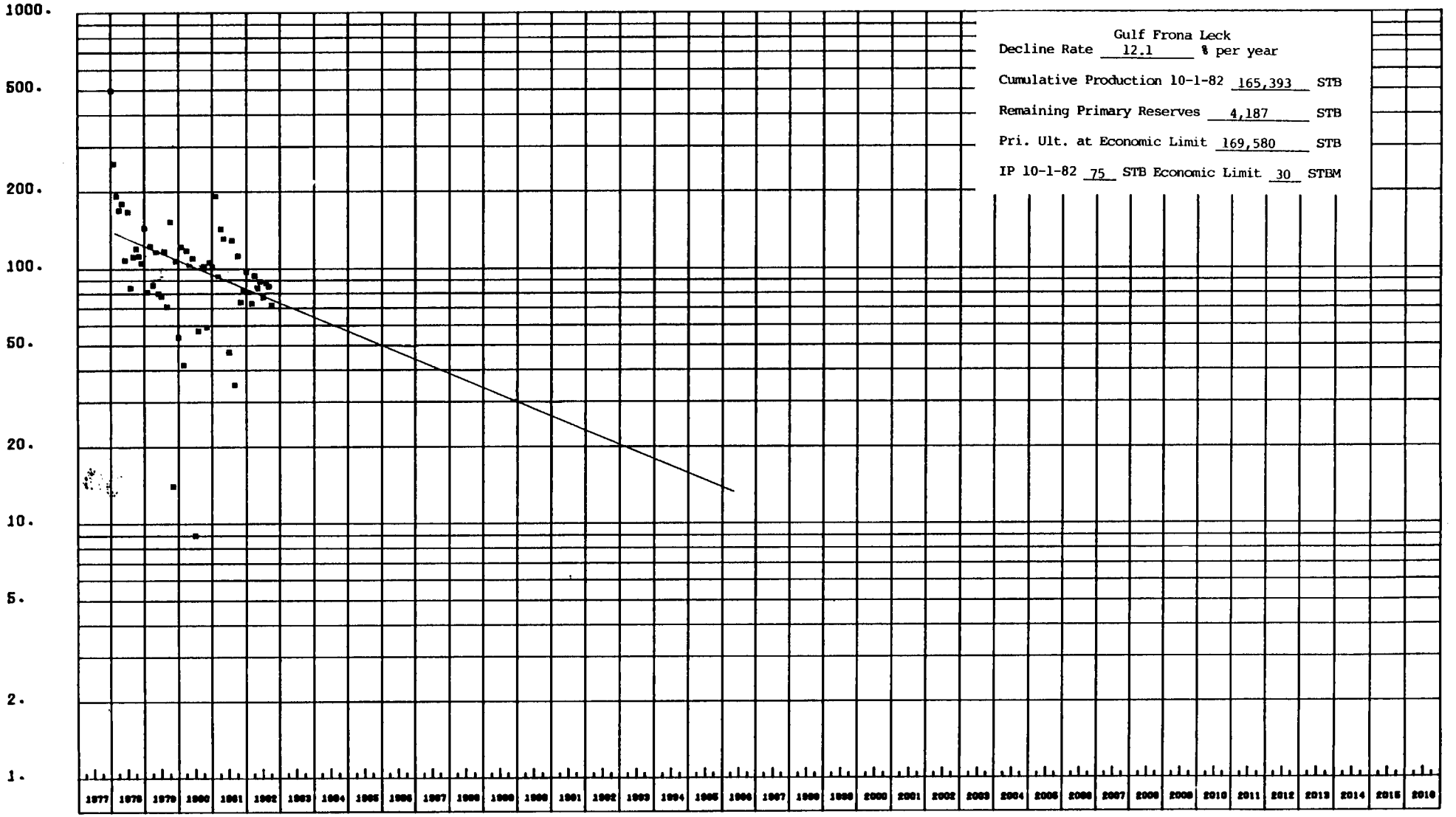


Figure 88

RATE VS TIME
TRACT 102

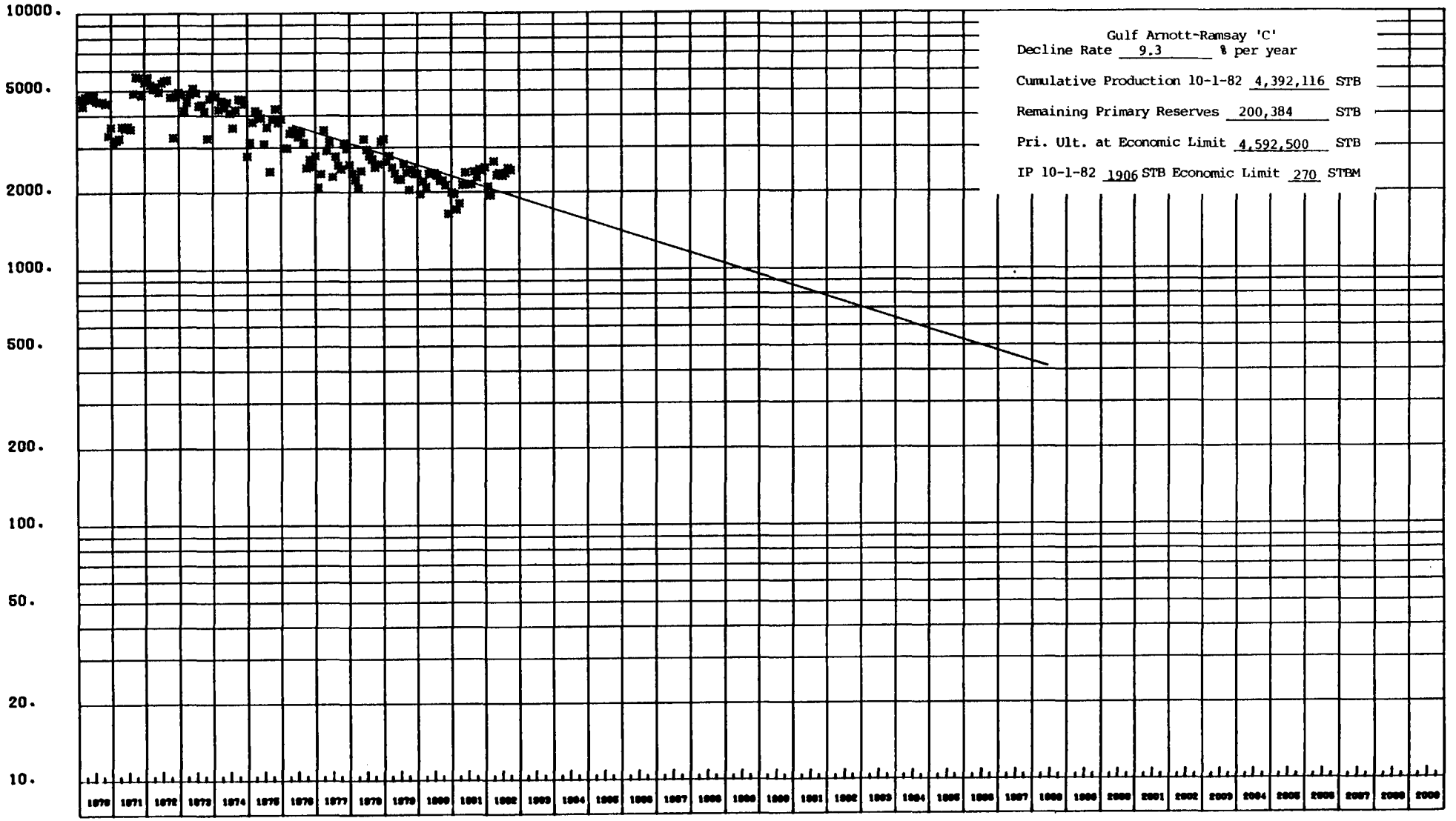


Figure 89

RATE VS TIME
TRACT 103

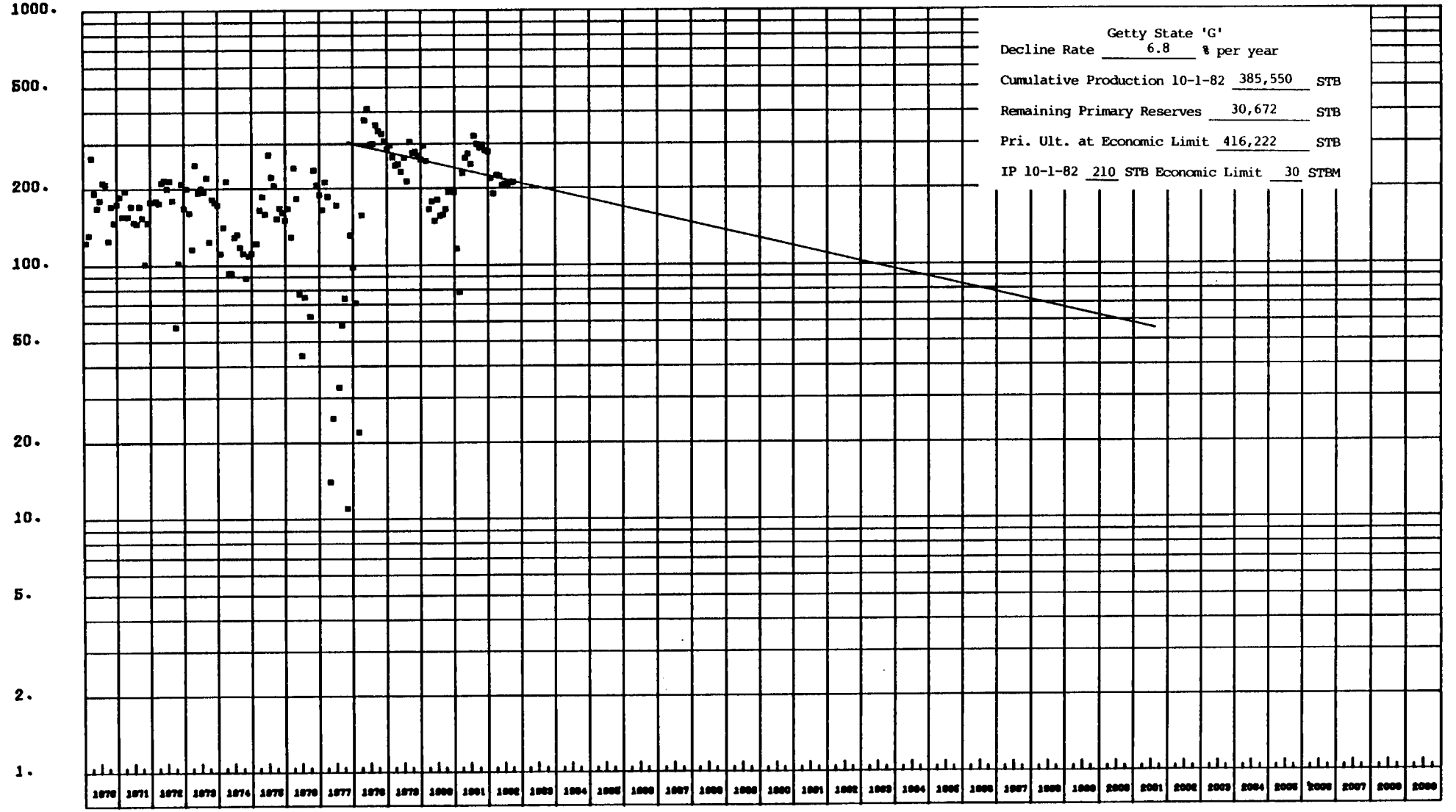


Figure 90

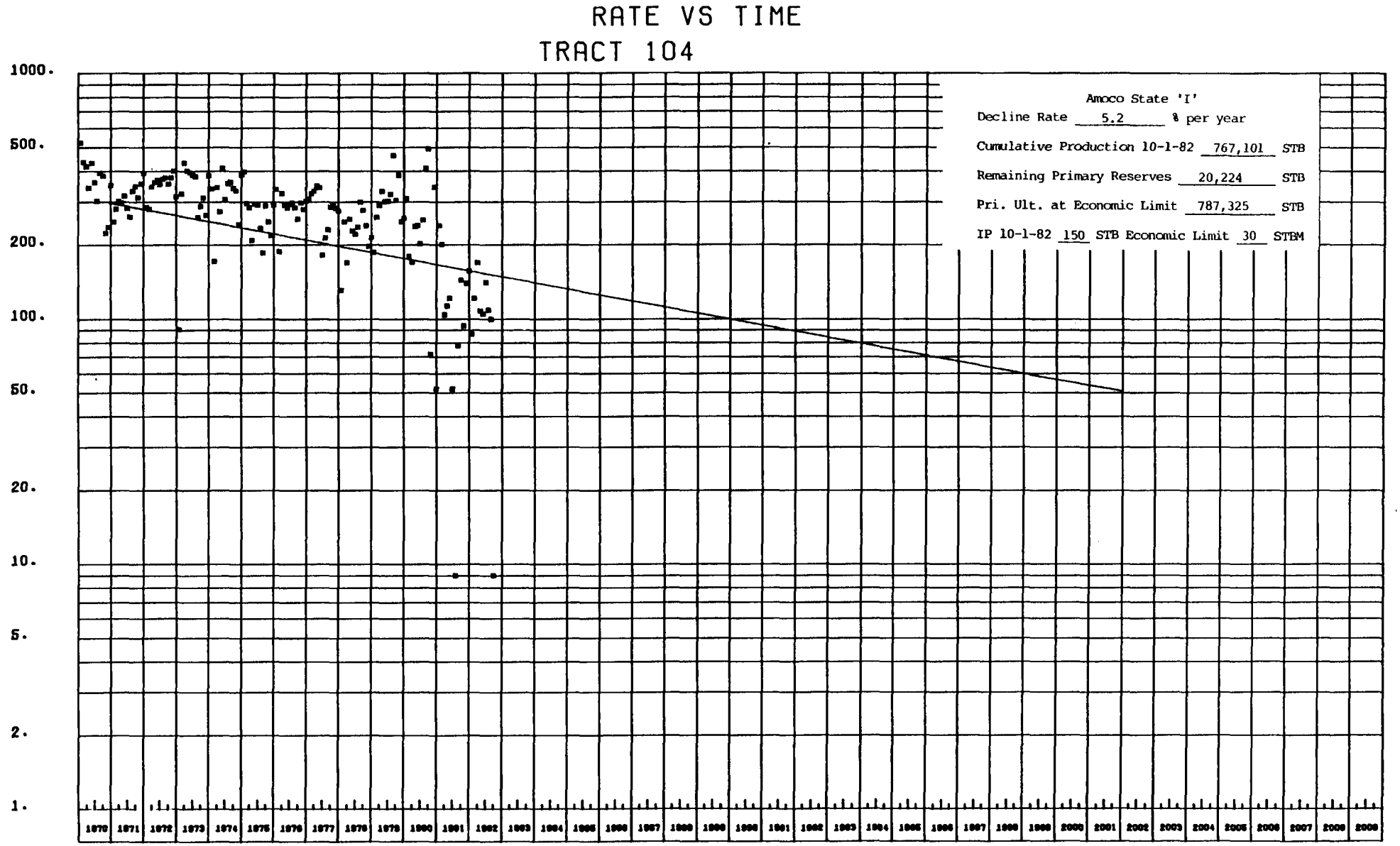

RATE VS TIME
TRACT 104
Amoco State 'I'
Decline Rate 5.2 % per year
Cumulative Production 10-1-82 767,101 STB
Remaining Primary Reserves 20,224 STB
Pri. Ult. at Economic Limit 787,325 STB
IP 10-1-82 150 STB Economic Limit 30 STBM
RATE, STBU PER MUNTH
1000.
500.
200.
100.
50.
20.
10.
5.
2.
1.
1970 1971 1972 1973 1974 1975 1976 1977 1978 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 2009

Figure 91

RATE VS TIME
TRACT 105

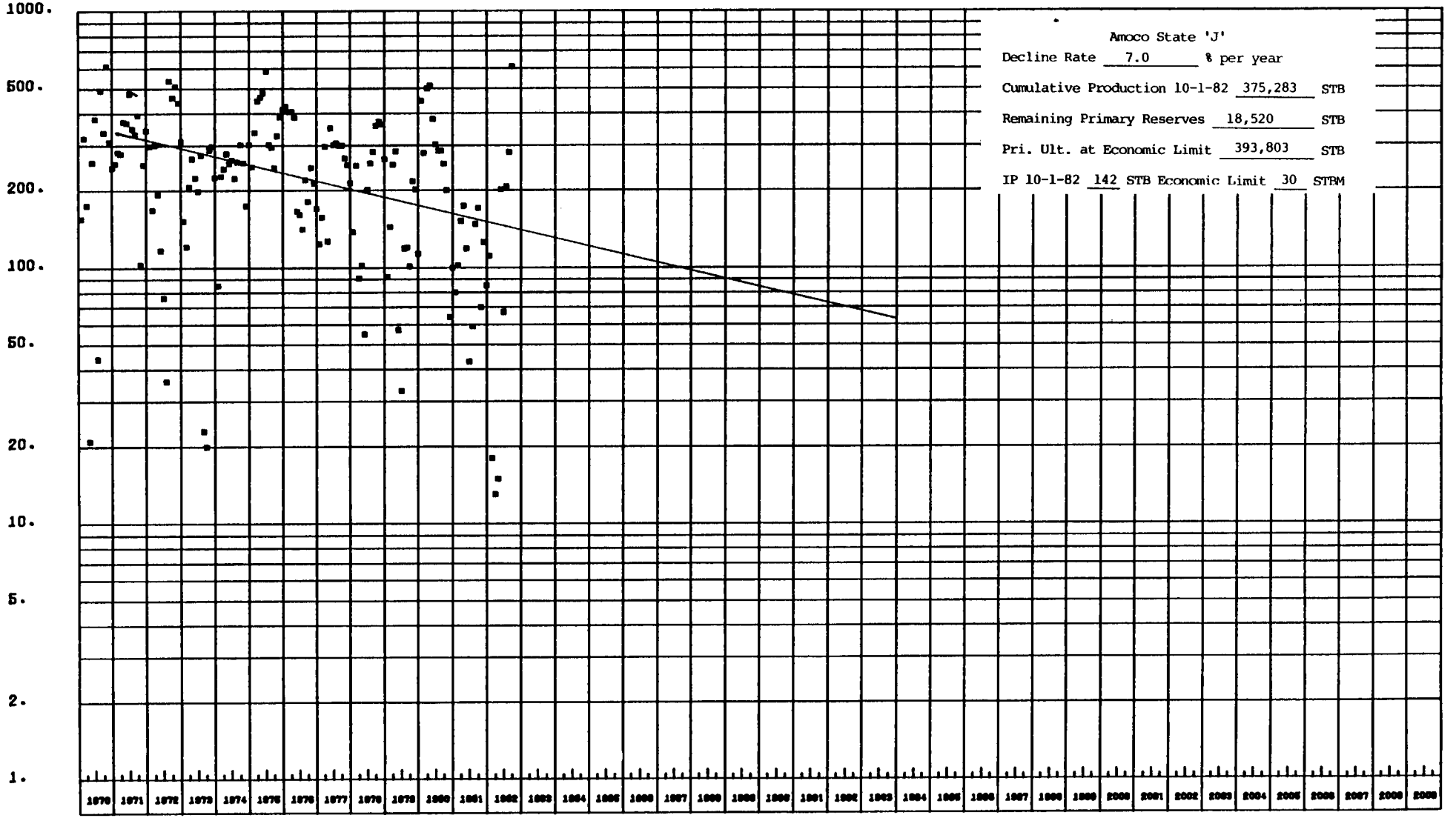


Figure 92

RATE VS TIME
TRACT 106

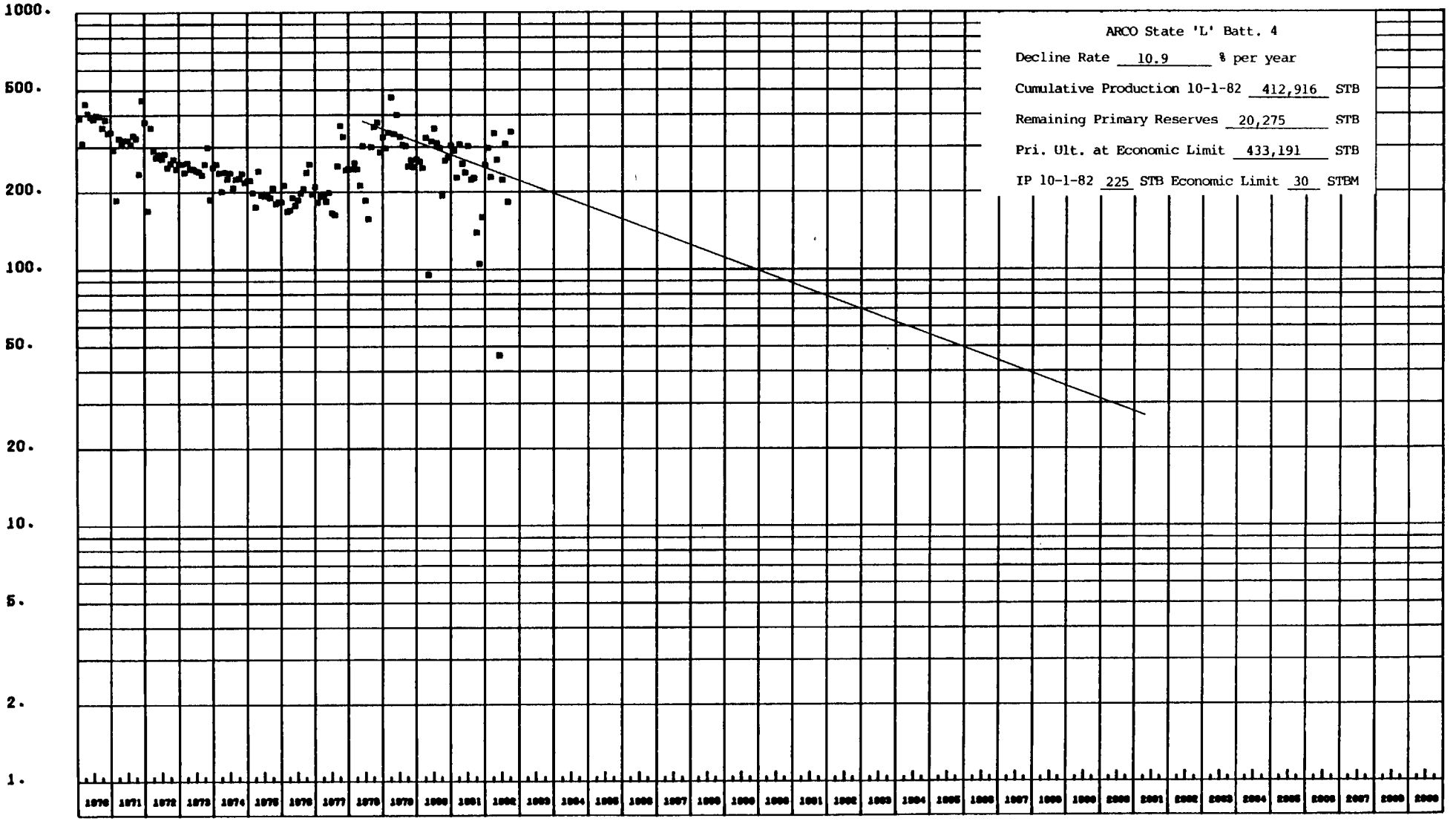


Figure 93

RATE VS TIME
TRACT 107

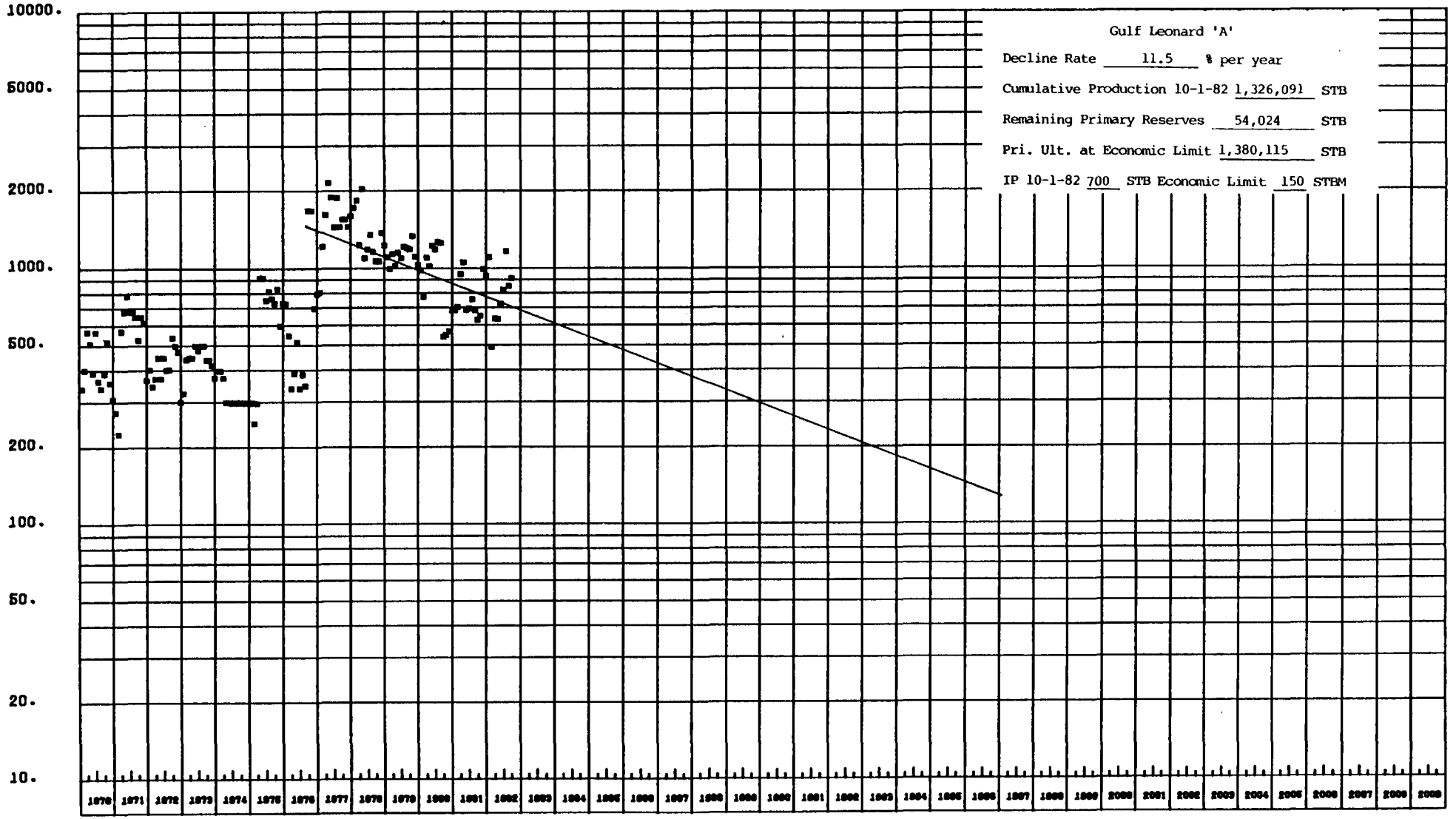


Figure 94

RATE VS TIME
TRACT 115

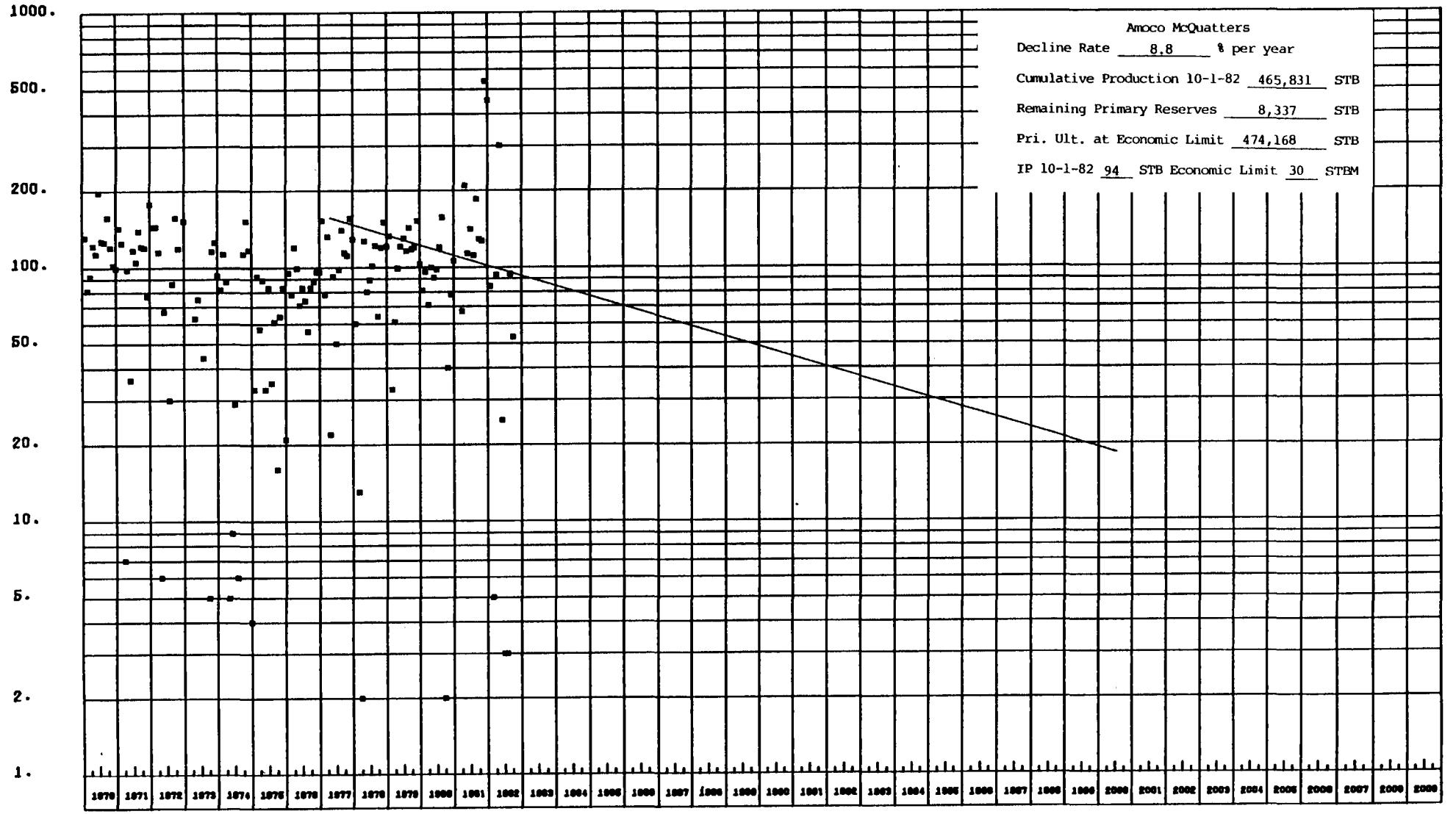


Figure 96

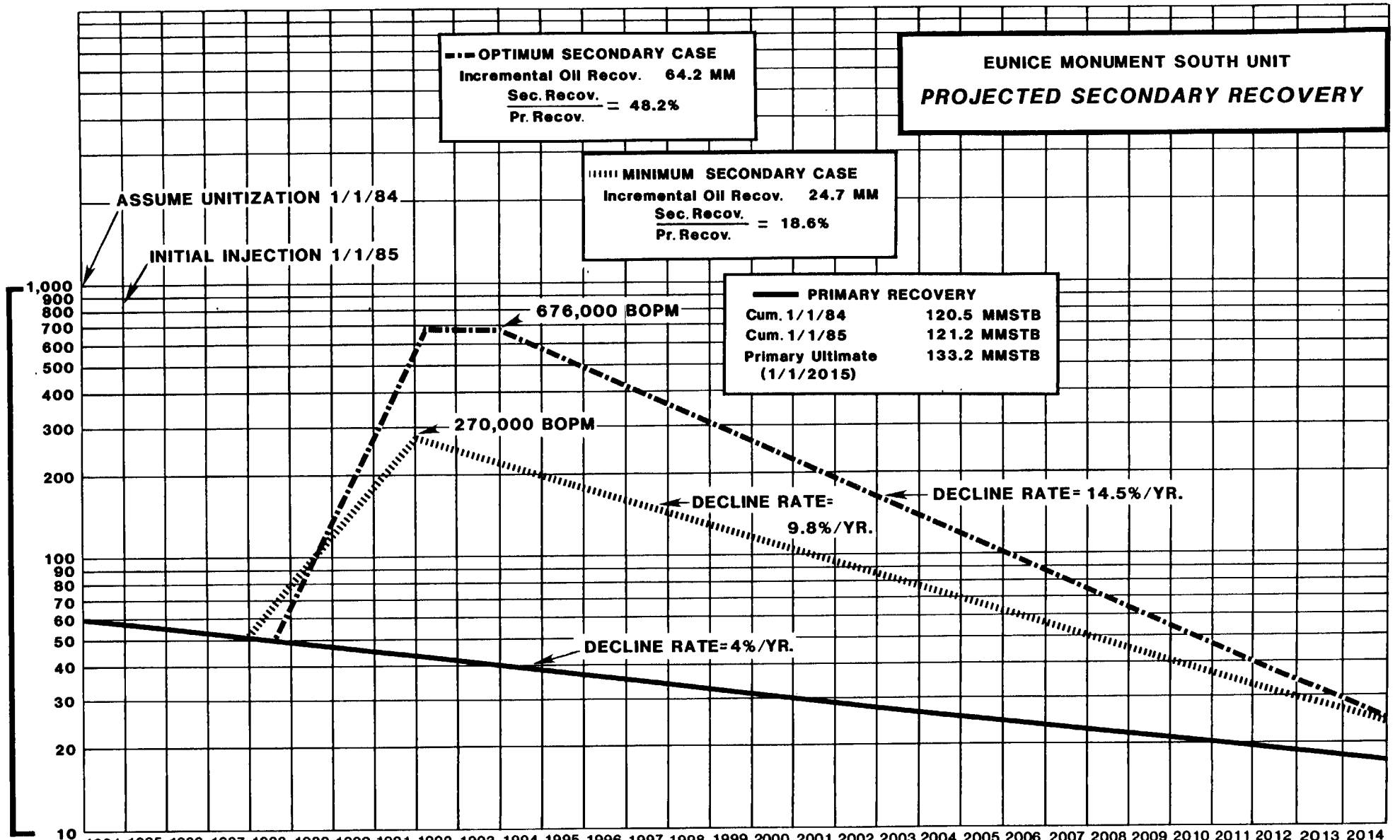
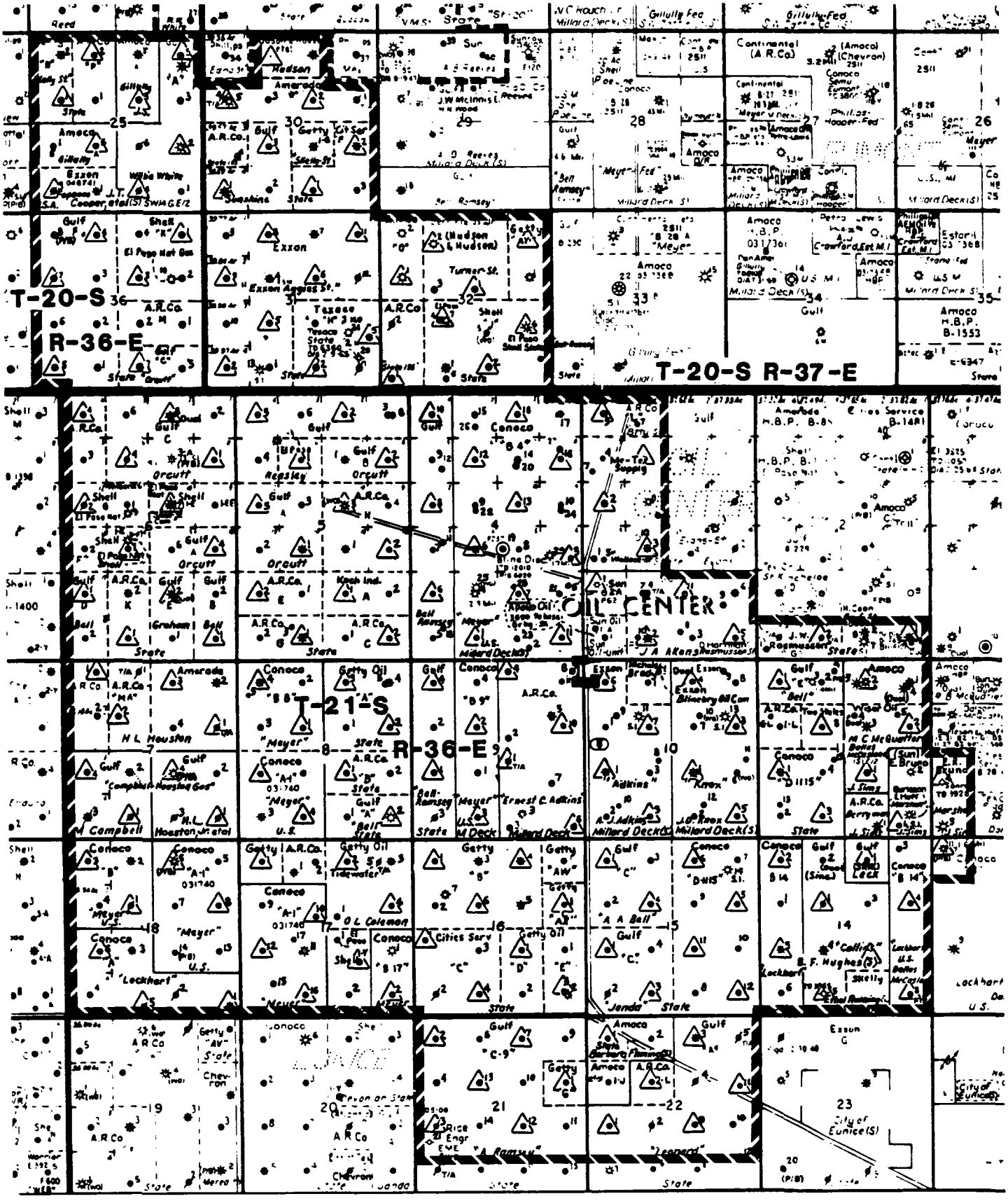

EUNICE MONUMENT SOUTH UNIT
PROJECTED SECONDARY RECOVERY
OPTIMUM SECONDARY CASE
Incremental Oil Recov. 64.2 MM
Sec. Recov. / Pr. Recov. = 48.2%
MINIMUM SECONDARY CASE
Incremental Oil Recov. 24.7 MM
Sec. Recov. / Pr. Recov. = 18.6%
PRIMARY RECOVERY
Cum. 1/1/84 120.5 MMSTB
Cum. 1/1/85 121.2 MMSTB
Primary Ultimate (1/1/2015) 133.2 MMSTB
ASSUME UNITIZATION 1/1/84
INITIAL INJECTION 1/1/85
676,000 BOPM
270,000 BOPM
DECLINE RATE= 14.5%/YR.
DECLINE RATE= 9.8%/YR.
DECLINE RATE=4%/YR.
Oil Production - MSTB/Month
1,000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
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 2009 2010 2011 2012 2013 2014

Figure 96



EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO
PROPOSED INJECTION PATTERN
△ - INJECTION WELL

0 1/2 1 MILE

Figure 97

PROPOSED EUNICE MONUMENT SOUTH UNIT
TYPICAL COMPLETION INTERVAL

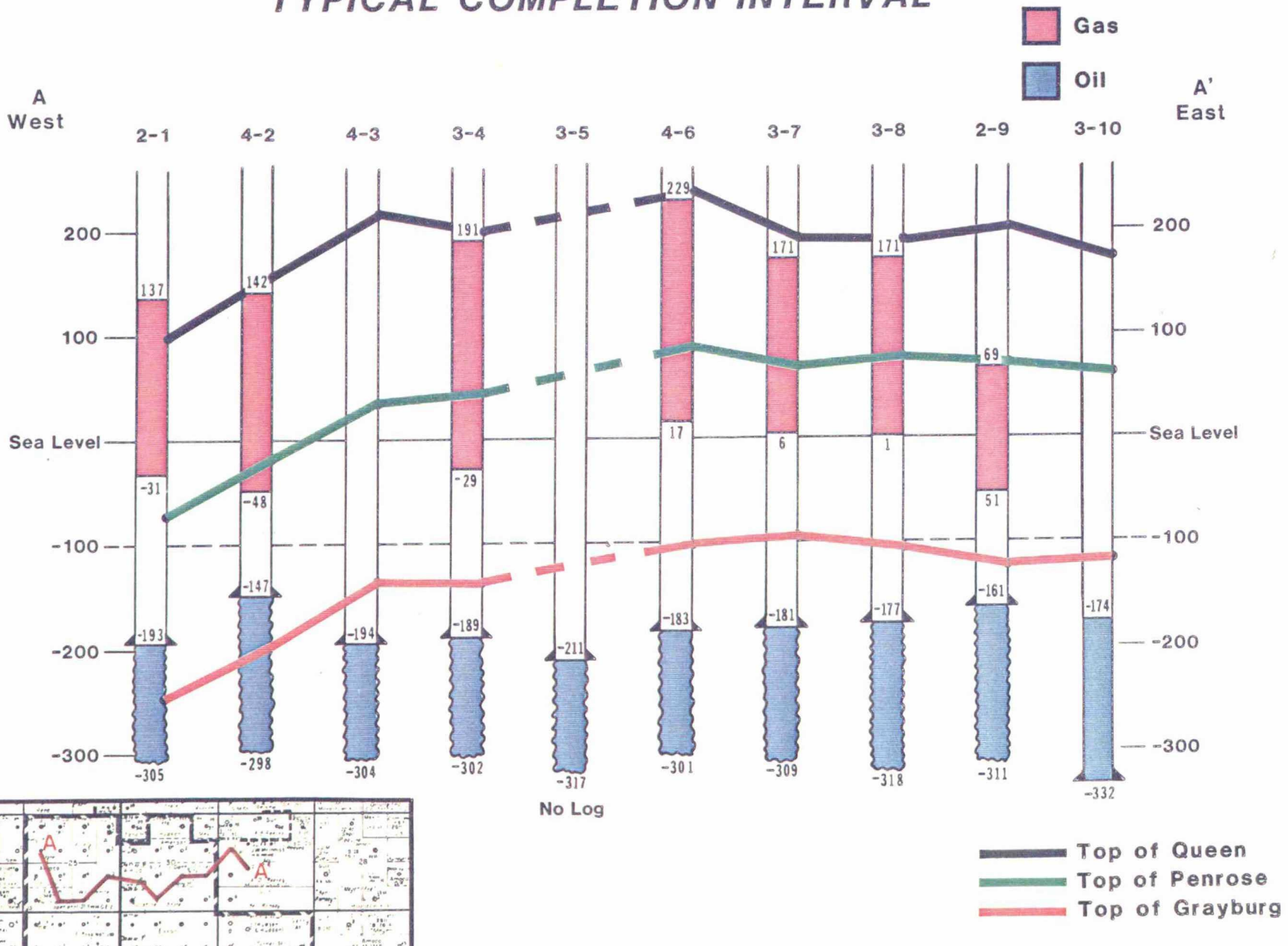
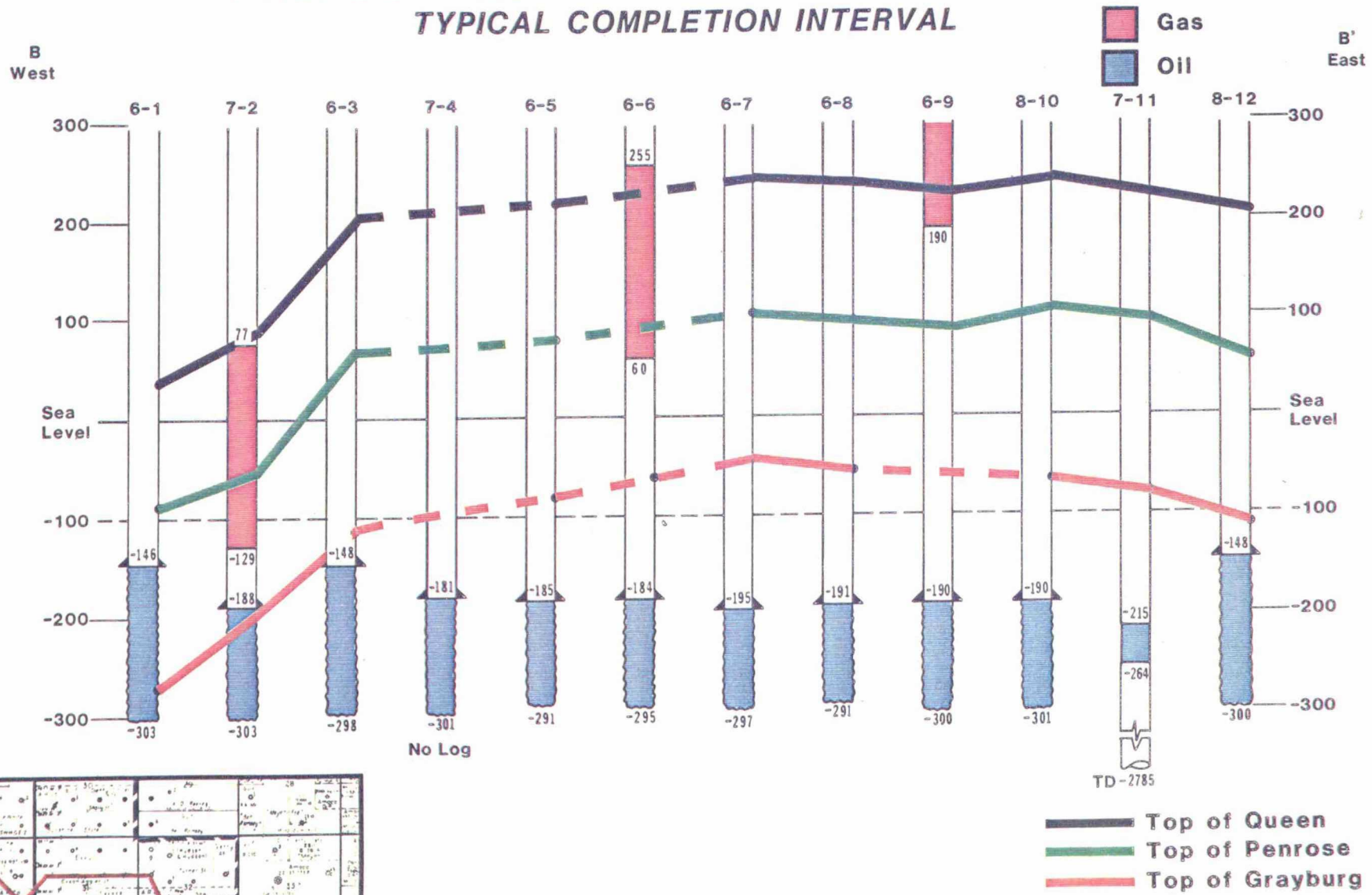


Figure 98

PROPOSED EUNICE MONUMENT SOUTH UNIT

TYPICAL COMPLETION INTERVAL



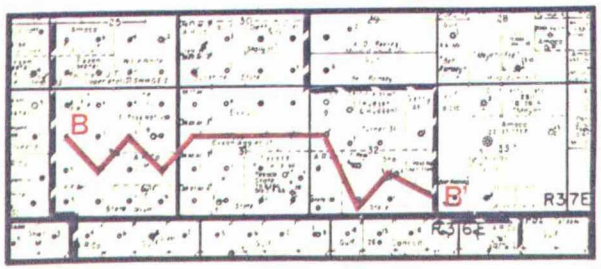
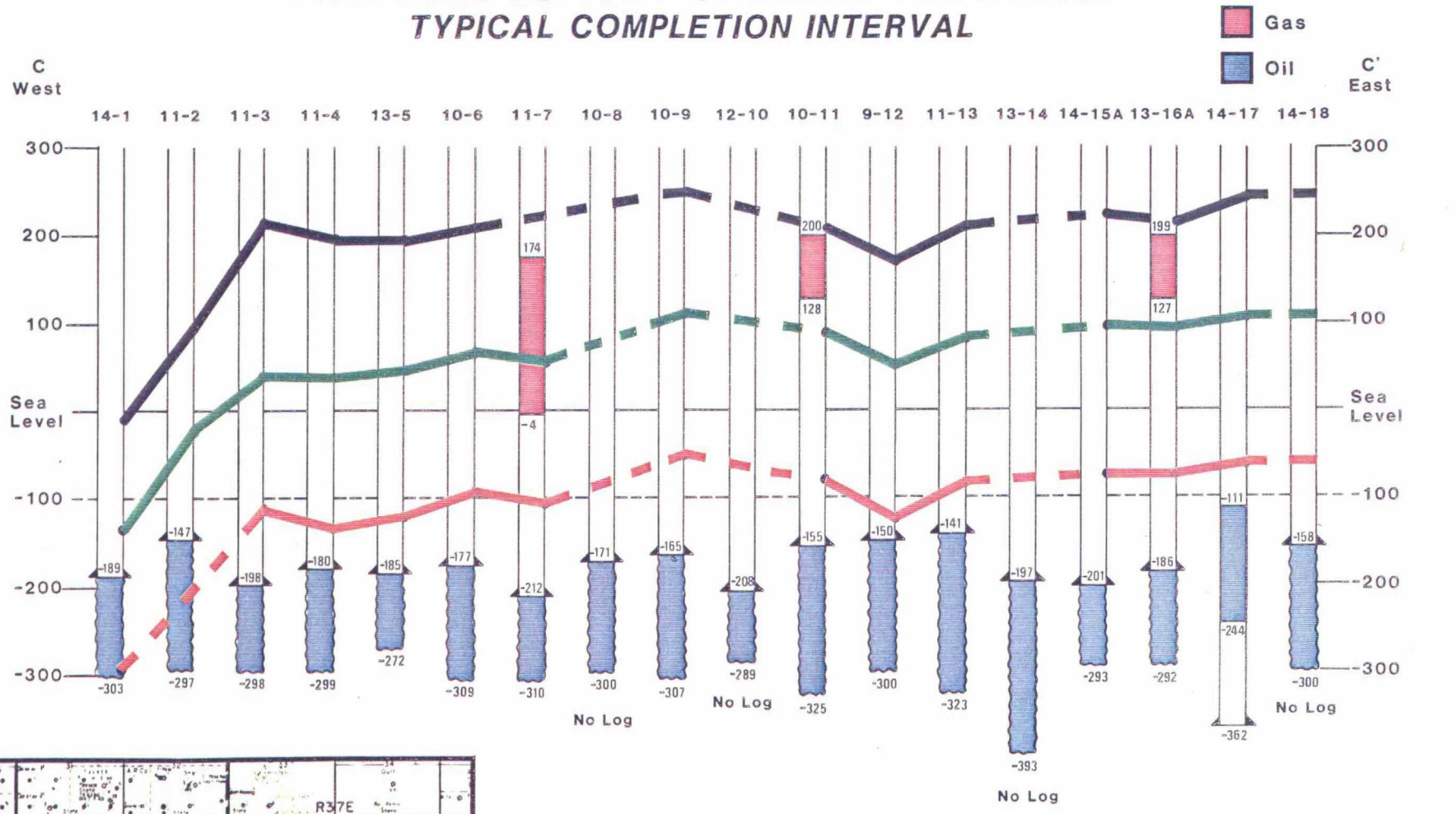


Figure 99

PROPOSED EUNICE MONUMENT SOUTH UNIT

TYPICAL COMPLETION INTERVAL



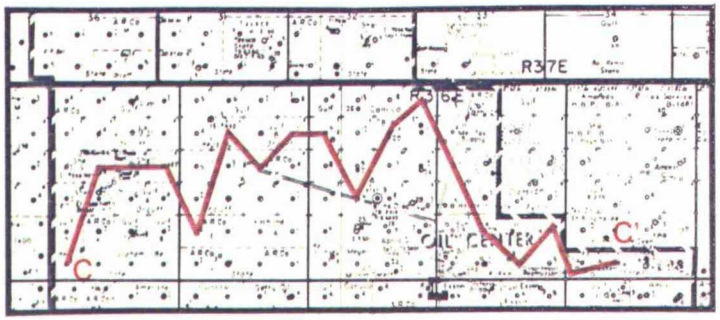
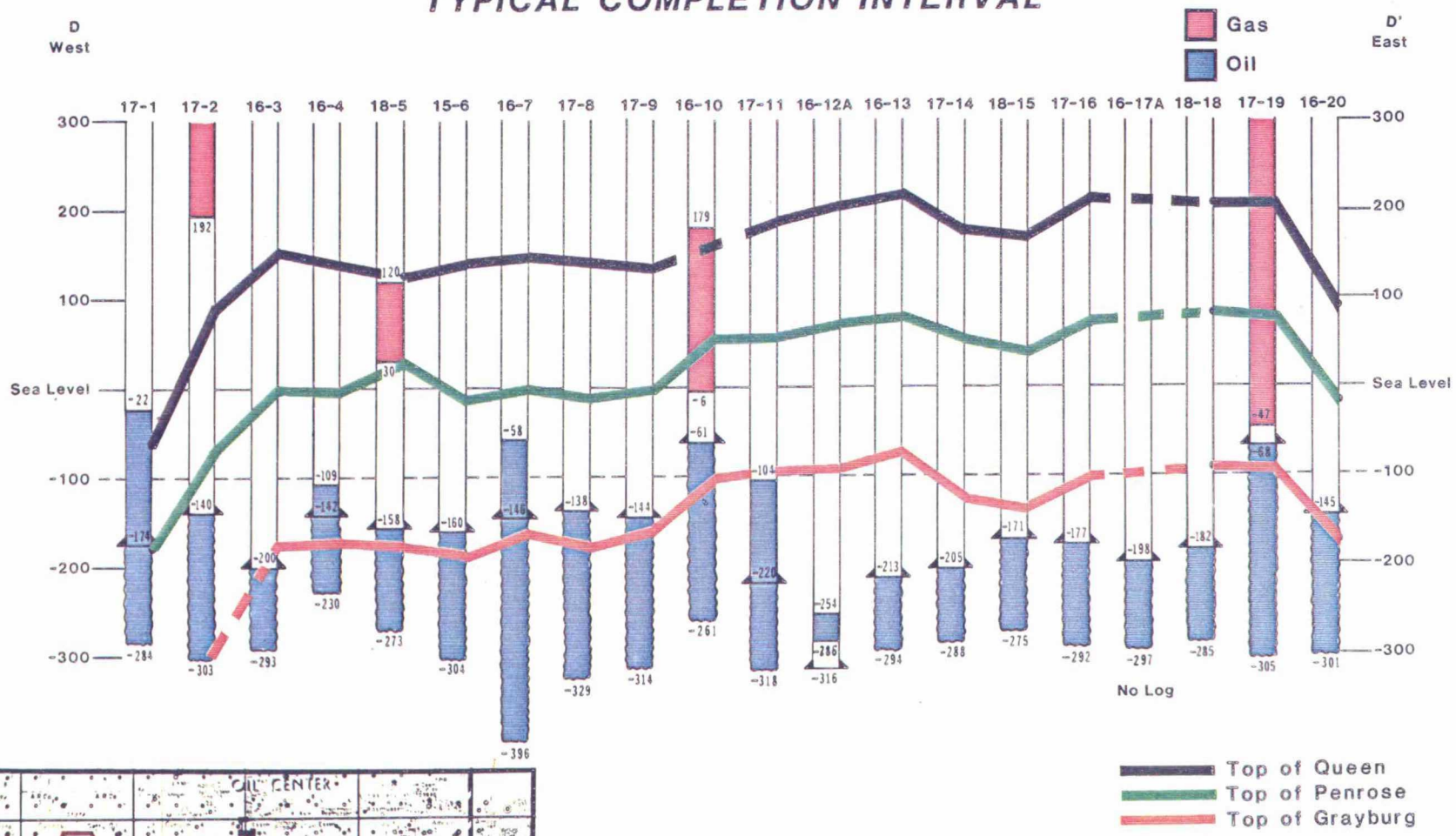


Figure 10

PROPOSED EUNICE MONUMENT SOUTH UNIT
TYPICAL COMPLETION INTERVAL



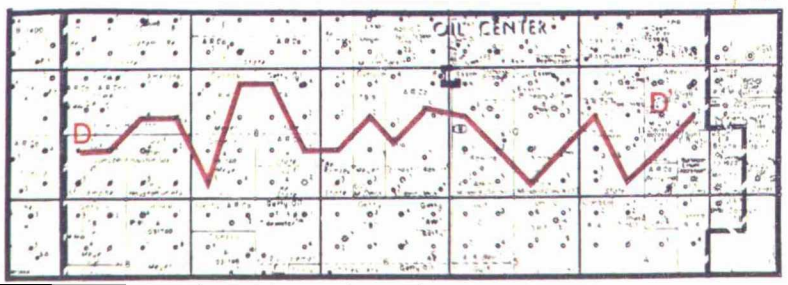
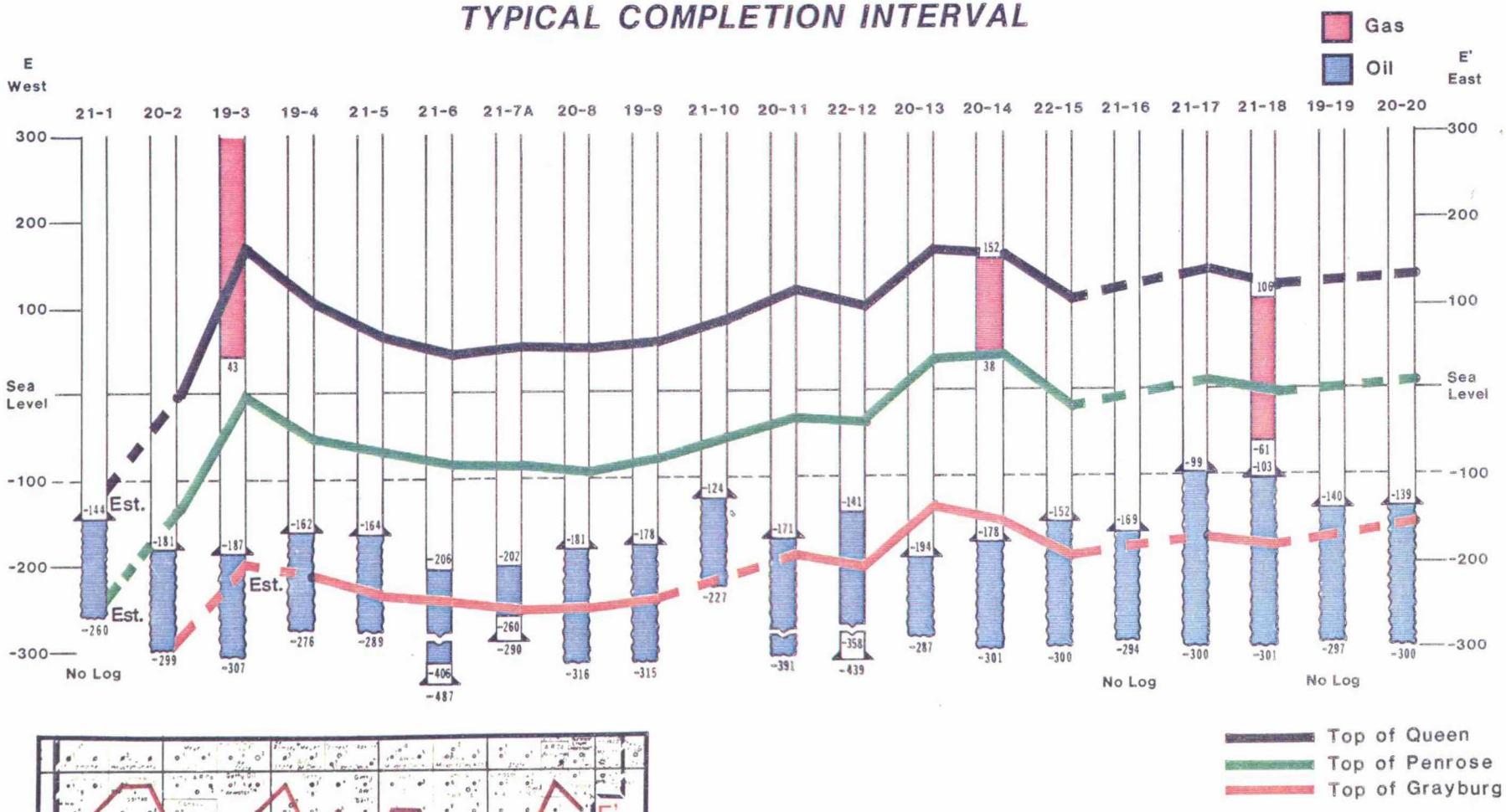


Figure 10

PROPOSED EUNICE MONUMENT SOUTH UNIT

TYPICAL COMPLETION INTERVAL



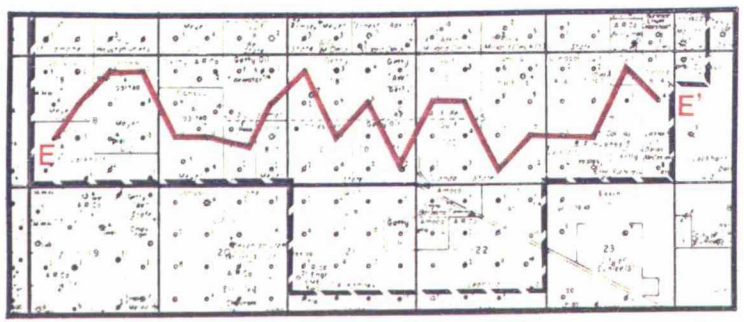


Figure 102

PROPOSED EUNICE MONUMENT SOUTH UNIT

TYPICAL COMPLETION INTERVAL

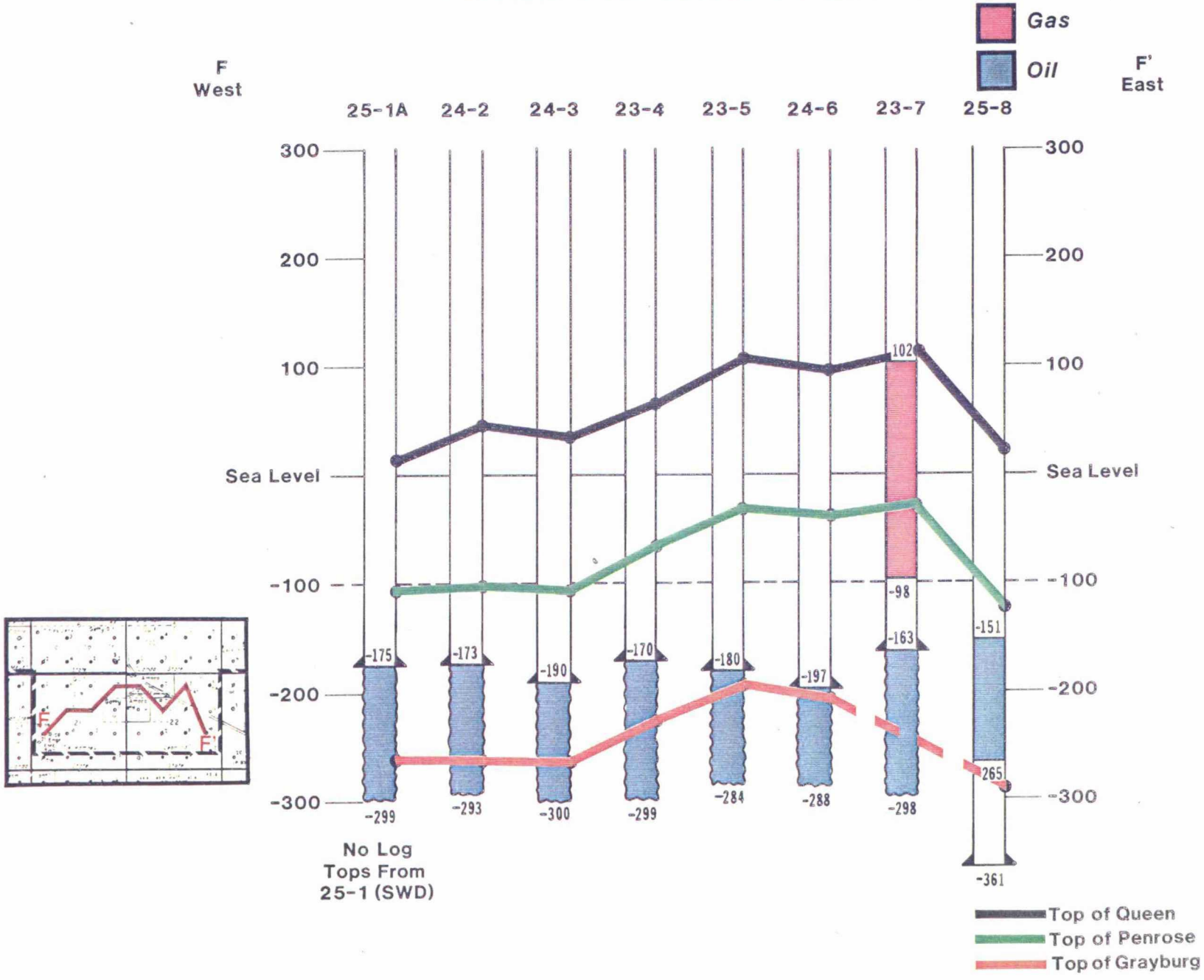
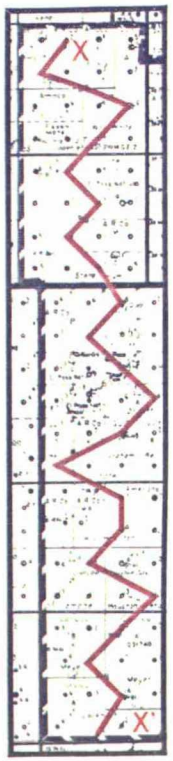


Figure 103

PROPOSED EUNICE MONUMENT SOUTH UNIT
TYPICAL COMPLETION INTERVAL



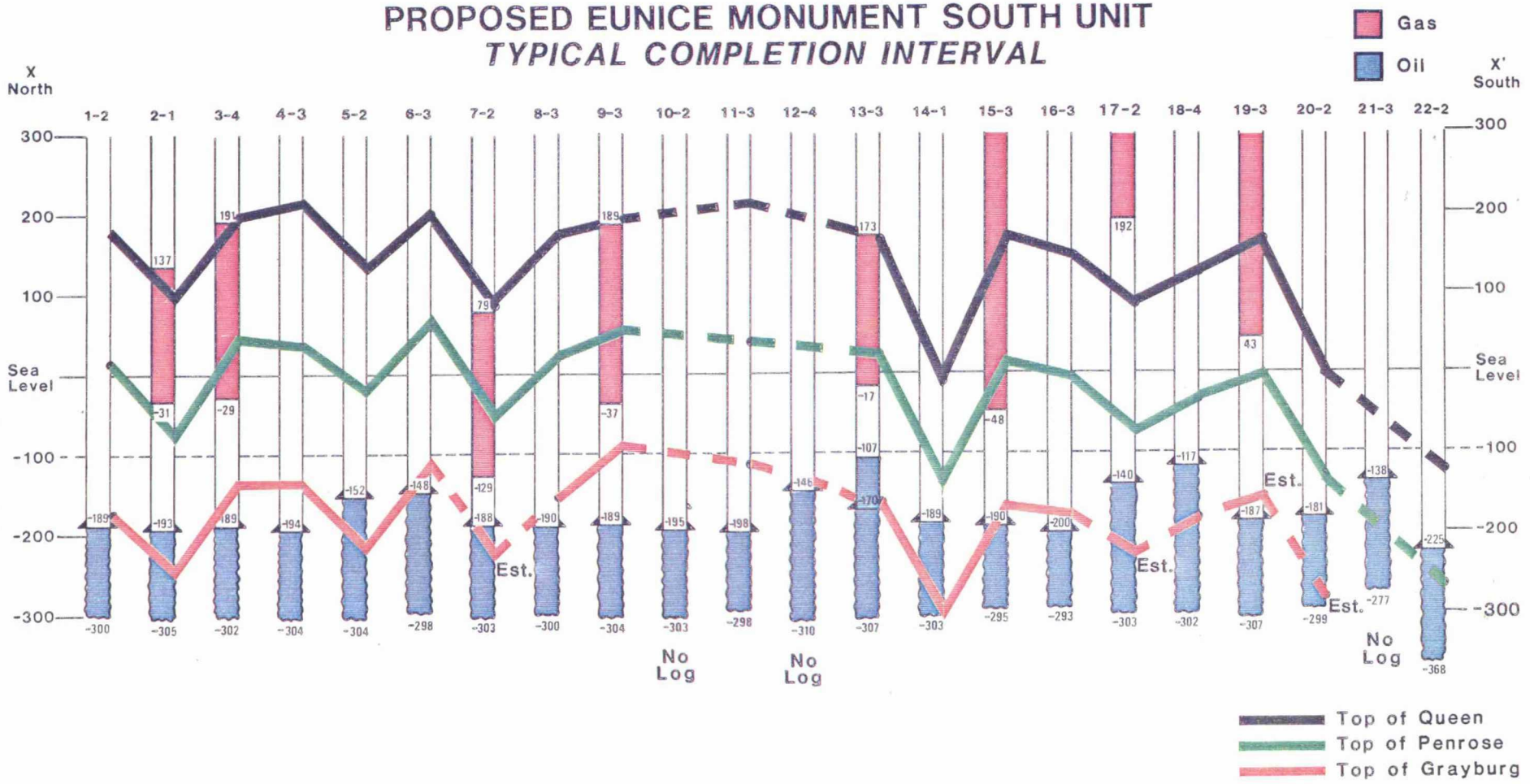
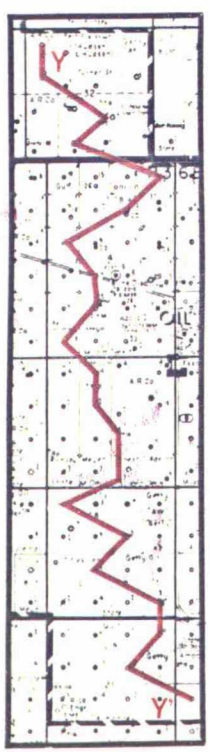
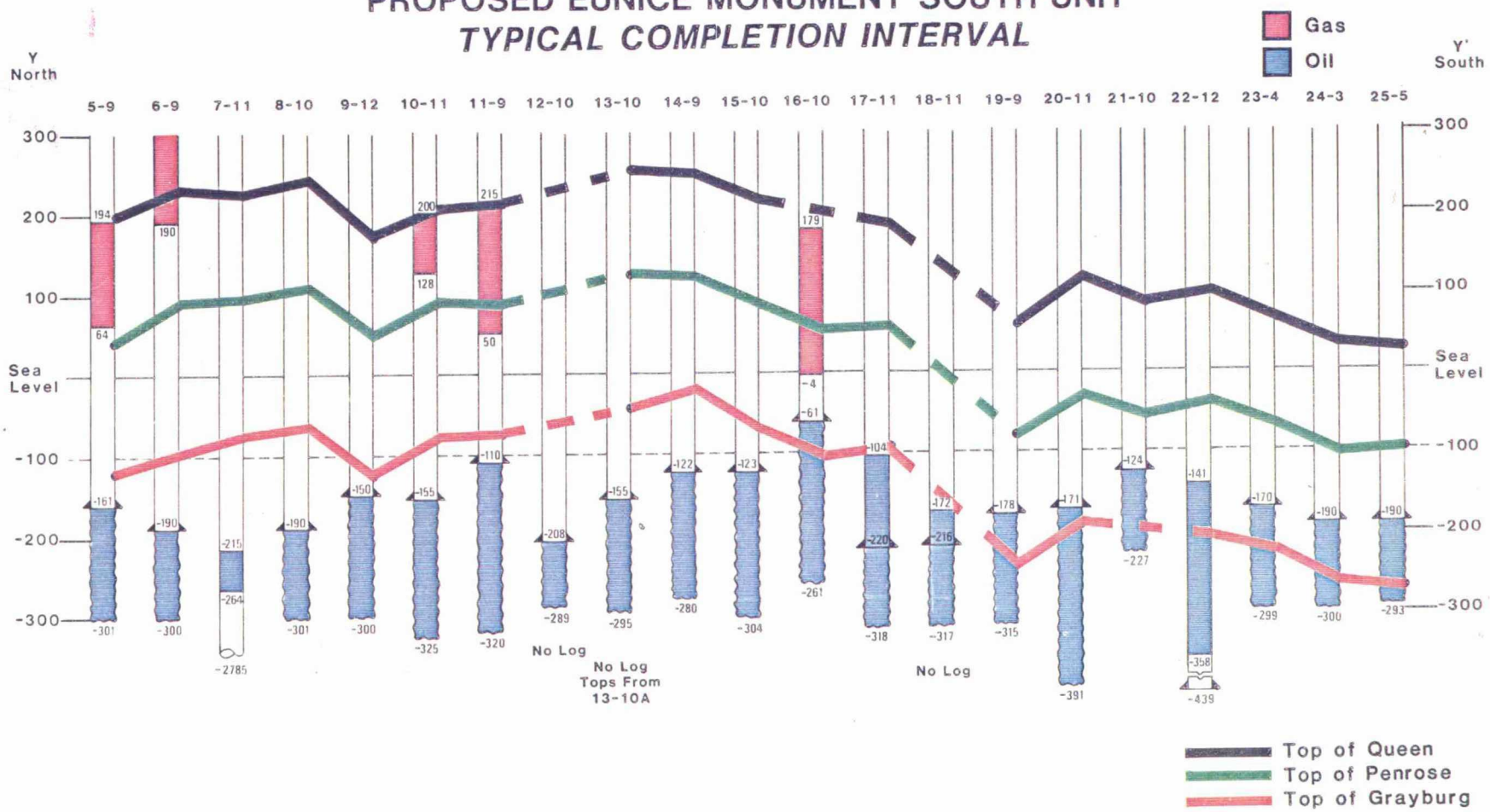


Figure 104

PROPOSED EUNICE MONUMENT SOUTH UNIT
TYPICAL COMPLETION INTERVAL





Top of Queen
Top of Penrose
Top of Grayburg

Figure 105

PROPOSED EUNICE MONUMENT SOUTH UNIT

TYPICAL COMPLETION INTERVAL

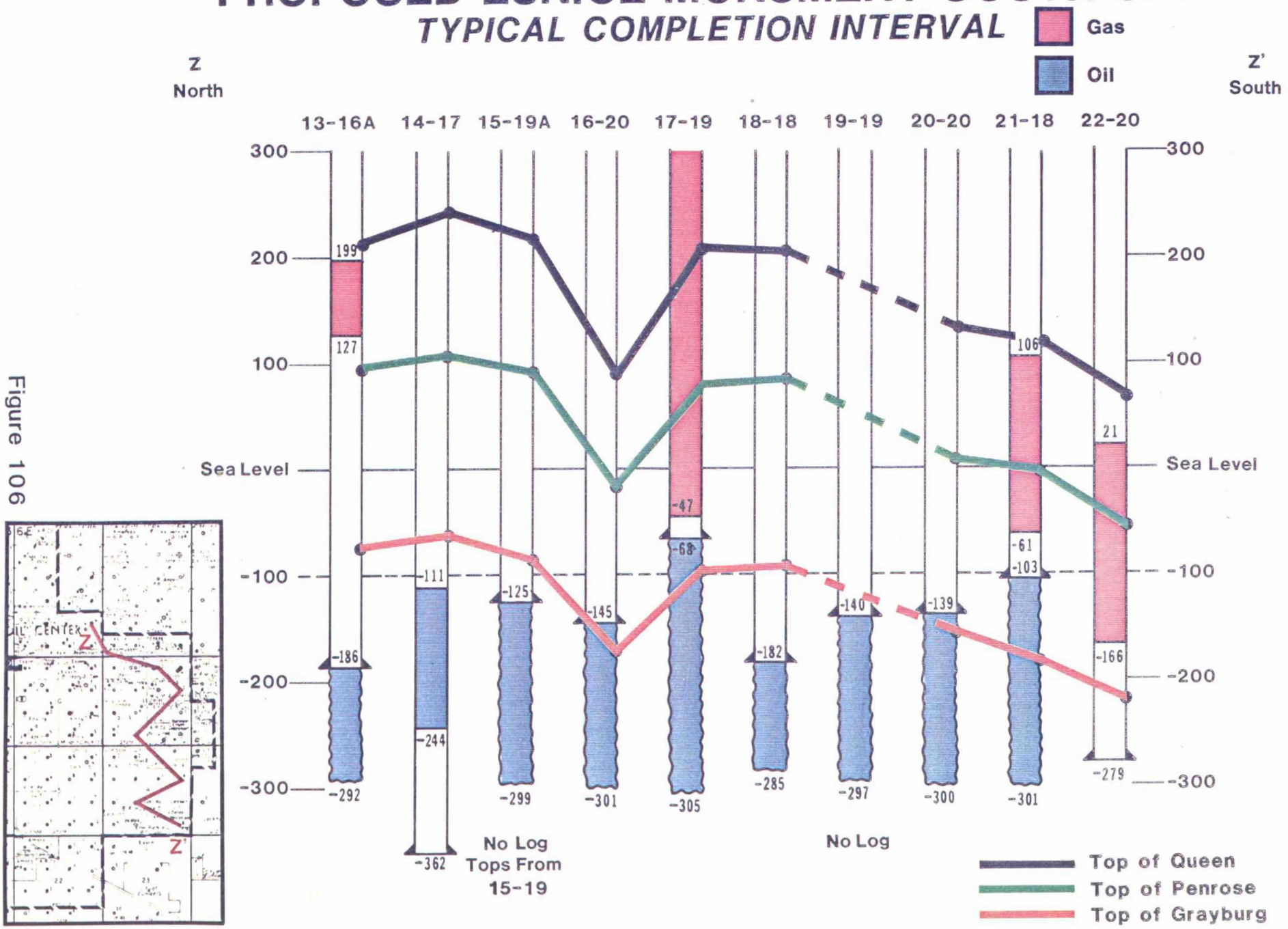


Figure 106