BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

EXHIBIT NO. 2

CASE NO. 3212

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ARTESIA, NEW MEXICO

February 12, 1964

The Operators
South Part Red Lake Pool
Eddy County, New Mexico

Gentlemen:

This study was made to determine the merits of a waterflood operation in the South Part Red Lake Pool.

A waterflood project can be successful by a unitized operation of all the operators in the proposed area. Lease line cooperative type agreement will have inequities that will make them undesirable.

The opportunity to present this study to you in this joint meeting is appreciated.

Yours very truly,

Archie M. Speir

Archie M. Speir

AMS/jsp

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CONCLUSIONS

1 The pool is a depleted gas drive reservoir, all leases are near the economic limit.

2 The Premier Zone has a favorable waterflood history in other Pools of the vicinity.

3 The proposed area is the total reservoir and will offer the maximum efficiency.

4 Early water break-through can be tolerated for a successful operation.

5 Development spaced over a five year period offers the greatest advantages.

6 Investments, net balance, will be $137,030.00 on a 75% working interest basis; exclusive of water contractual costs and unitization expenses.

7 Cumulative Production Factor is the most equitable participation parameter for unitization.

8 Net income for a 75% working interest lease basis will be $1,999,780.00 in 14 years of operation.

RECOMMENDATIONS

1 A unit agreement for the area should be formed using API standard forms.

2 A waterflood project should be initiated and developed over a five year period.

3 Participation factors should be based solely on cumulative production.

DISCUSSION

GENERAL

This report is a study of the ecomonics of a waterflood project. The horizontal limits of the study are confined to the Premier Zone of the Grayburg Formation. The aerial limits are defined as the South Part of the Red Lake Pool.

The North Part of the Red Lake Pool has two waterflood projects. One operated by Kersey & Co., initiated in 1957 and one operated by Cima Capitan, Corp., initiated in 1963. There is an indicated seperation between the North Part and South Part of the Pool.

The first well drilled in the area was the Carper-Sivley No. 1 Russell Federal; drilled by the Empire Gas & Fuel Co. and completed on July 1, 1926. Drilling continued by Empire until November 1927 with the completion of eight producing wells. A second stage of development began in 1947 with the completion of the Barney Cockburn No. 5 Barrientos Federal on March 30 and continued into the late 50s. A total of 42 wells have produced from the subject zone in the proposed area.

GEOLOGY

The structure map of the top of the pay zone employs the depth to

the top of the pay as reported to the Oil Conservation Commission by the operators. This correlation point, no doubt, is not consistent through out the reservoir but is sufficiently uniform to show a reservoir continuity of the main pay zone. Figure 3 indicates three areas of maximum sand development, coinciding with the areas of greater initial potential. This map does not prove discontinuity of the sand members of the pay zone within the reservoir. It does indicate a change in the sand characteristics, such as the thickness, porosity and permeability.

Geological information on the area is very limited. Using that which is available as representive of the total area would be misleading and would distort the perspective.

A study of the production histories and the above maps give sufficient evidence for a successful waterflood operation. This is verified by other waterfloods in the Permian Basin.

PRODUCTION HISTORY The Unit Area consists of nineteen leases owned by nine operators. Forty wells are now producing from the Premier, two have been plugged and abandoned. A sufficient number of dry holes have been drilled to define the periphery of the proposed Unit Area.

As of November 1, 1963 the cumulative oil production was 1,026,220 barrels from the forty two wells. All leases have

declined to or near the economic limit.

Average cumulative production per well is 24,434 barrels. On an acreage basis this amounts to 855 barrels. The average per well recovery ranges from a low of 6352 to a high of 53,706 barrels; the average acreage recovery has a low of 158 to a high of 1430 barrels per acre.

Oil production data for the proposed area is comparable to the other Pools in Eddy County that have produced primarily from the Premier Zone. Water production is negligible. Gas production has not been regarded as the records are brief and inconsistent.

WATER INJECTION Rates of water injection calculations are based on the production rates, estimated net thichness of pay zone, and compared to projects in the surrounding area, Figure 5 is based on the above injection rate and primary oil production rates. Figure 4 is a hypothetical curve.

A major portion of the wells were completed with production casing set below the Artesian Water Zone at 1300 to 1500 feet; some being set as high as 900 feet; and the pay zone shot with TNT. All of the proposed injection wells of the pilot area are completed in this manner.

A workover to convert a producer, so completed, to an

injection well will require running a string of injection casing and cementing immediately above the upper most productive zone. An alternative would be to run a liner to case the 300 feet to 500 feet of open hole and inject down tubing set on a packer. Water Injection Plant design is for a maximum capacity of 5000 barrels per day at 1500 pounds per square inch pressure. Pilot operation will require the construction of a plant of one-half the maximum capacity. When expansion exceeds the original capacity then the remaining part will be constructed.

There is adaquate flexibility in design to allow for necessary changes that operational experience may indicate.

Secondary production is calculated to be 1,940,070 barrels. Assigning 20,000 barrels of primary production to each of the nine development wells (discussed later) gives a total primary production of 1,206,220 barrels, Ratio of recoveries is then 1.61;1. Total recovery of 2,966,290 barrels is 2472 barrels per acre. Table IV shows the rate of return.

DEVELOPMENT

Initial response is estimated to occur in twelve months. Hence, expenditures that are necessary at that time appear in the second year in table 3. If the response occurs in less than twelve months then that expense would be in the first year.

First year operational and maintanence expense is designed to

properly maintain only the wells in the pilot area (18). Conversion costs of $4,000.00 per injection well should be sufficient for a well planned program exercising proper economics.

Complete area development for twenty acre spacing, with modifications in the outer aerial limits, will reguire the drilling of nine wells. Four scheduled to be injection wells and five to be producing wells. The first development well will be drilled in the third year, and all completed by the end of the fourth year. Necessity of such drilling to be substantiated by operational experience of the Unit.

Full pool development will contain forty nine wells; twenty seven injection and twenty two production. A reentry of a plugged and abandoned well is treated the some economically as a well that is to be drilled anew.

COSTS Development costs are itemized in table 3. They total $446,000.00, to be spent over a five year period.

Development and operational costs of the first year, and one-half of the development costs of the second year will be new investment money. This will vary depending on an operators working interest percent. The remaining costs of the project will be defraied by the project income.

Operation and maintanence	Per well per month	$80.00
Pumping, supervision & G.O.E.	Per well Per month	75.00
Supply water, chemical treatment and plant operation	Per barrel injected	2½¢

ECONOMICS

Project life will be fourteen years under present economics. Certain economical procedures may be adopted in the later stages of operation so as to extend the life.

Net income on a 87½% working interest basis will be $2,629,755.00 in 15 years. Using the seventy five percent working interest base the net income will be $1,999,780.00 in 14 years

Stage development, as outlined in table 3 offers two important advantages. One, the initial investment is smaller; two, a tax advantage by the higher expenditures occuring at the time of the higher income.

UNITIZATION

Table 5 presents the four common considerations in determining each lease's participation percentage in a unit. It is strongly recommended that only cumulative production be considered for determining the participation. This recommendation is based on the following points:

The pool is well developed and is in the last stages of depletion by primary production.

Acreage factor has little meaning in a depleted reservoir. A most equitable factor is the acre-feet of productive reservoir. It also offers the most conflicts, and is near imposible to acquire for this area.

Present production rates will not be representative as they are more dependent on the resent workovers and maitanence procedures. Expenditures for such work is reflected in the cumulative production. Also; production histories show that any workover or well stimulation will yield a rapid return and decline steeply to near the original production rate. Such would be the case for the wells that are presently non-productive. A flush production rate could be obtainted for a short period; the rate and additional recovery would be dependent on the treatment.

Disregarding the well factor is most difficult to believe as being true equities. In depleted pools each well has returned the original investment to the limit of its ability. Per well recoveries are pratically independent of spacing. Closer spaced wells give a higher recovery on a per acre basis. Therefore, the leases with the lesser number of wells per acre have the greater amount of reserves remaining, but these same leases are the ones requiring the additional drilling. The fully developed leases share of the cost in the additional drilling is compensated for by their greater

share of the other leases reserves obtained by the higher participation factor received by the cumulative production percentage. Also, their own closer well spacing that gave a higher primary recovery will result in a lower secondary recovery.

The United States Department of Interior will not approve a unitization agreement where a cost factor, such as the number of wells, involves the royalty participation factor. If cost factors are used then two sets of participation factors must be used. One set for the royalty owners and one set for the working interest owner.

Table 1

WELL COMPLETION DATA

South Part Red Lake Pool

OPERATOR Lease & Well No.	Date Completed	Elev. Feet	Producing Interval	Initial Potential	Production Casing Size-Depth	Stimulation Treatment Type-Size
BURNHAM OIL CO.						
State B E-370						
1	3-29-48	3643	1690-1744	F- 75		TNT 160
C & H OIL CO.						
Malco Federal LC 067849						
1	6- 1-54	3543	1544-1565	F- 40	5½- 1545	
CARPER-SIVLEY JOINT ACCT.						
Magruder-Federal						
7	6- 5-47	3635	1630-1695	F- 50	7- 1350	TNT 220
8	7- 8-47	3636	1590-1660	F-100	7- 1335	TNT 150
9	3-22-48	3620	1555-1610	F- 75	7- 1320	TNT 180
10	5-11-48	3652	1743-1795	F-100	7- 1543	TNT 200
11	5-23-49	3616	1675-1735	F- 40	7- 1496	TNT 260
12	5- 1-58	3632	2140	P- 30	5½- 2348	
Russell-Federal						
1	7- 1-26	3615	1590-1609	F- 50	10- 1217	TNT 70
2	3-12-27	3610	1610-1660	F-100	8¼- 949	
3	9- 3-27		1595-1623		8¼- 947	
4	11-23-27	3621	1604-1624		8¼- 948	
State A						
1	11- 6-26	3603	1602-1622	F- 45	8¼- 849	TNT 40
3	3-18-27	3604	1605-1618	P- 30	6 5/8-1588	TNT 40
Wright-State						
1	3- 1-27	3591	1620-1630	P- 25	8¼- 949	TNT 40
3	5-29-48	3596	1650-1685	P- 58	7- 1480	TNT 100
COCKBURN, MAGGIE SUETTA						
Barrientos-Federal						
5	3-30-47	3618	1590-1660	F-150	7- 1318	TNT 140
6	6-10-47	3580	1600-1642	F-132	7- 1325	
HUDSON, WILLIAM M.						
State						
1	11-18-41	3620		F- 50		
DD	11-25-47		1708	P- 50		
Turner-State						
1	3-31-48	3599	1697-1710	F- 43		

Table 1
(continued)

OPERATOR Lease & Well No.	Date Completed	Elev. Feet	Producing Interval	Initial Potential	Production Casing Size-Depth	Stimulation Treatment Type-Size
HUTTER & WILBANKS						
Hudson-State						
1	5-13-48	3572	1672-1697	F- 25	7- 1445	TNT 200
Magruder-State						
2	9-15-47	3582	1617-1632	F- 46	7- 1382	TNT 80
3	10-17-47	3579	1631-1653	F- 89	7- 1414	
4	4- 9-49	3580	1631-1643	P- 45	7- 1400	TNT 160
TRIGG, JOHN H. CO.						
Harbold-Federal						
7	7-12-47	3594	1606-1629	F-240	7- 1317	TNT 60
8	8-14-47	3555	1585-1635	F- 46	7- 1295	TNT 180
10	8-31-47	3609	1568-1618	F-150	7- 1296	TNT 160
11	11-13-47	3582	1590-1620	F- 40	7- 1290	TNT 120
14	1- 1-55	3614	1596-1621	P- 22	5½- 1598	SOF 20000
15	10-12-55	3598	1560-1565	P- 17	5½- 1585	SOF 10000
Hill-Federal						
3	3-27-48	3662	1770-1820	P- 75	7- 1510	TNT 200
YATES, III et al						
Dooley-State						
1	1-15-48	3603	1690-1704	F-210	7- 1427	TNT 80
2	2-25-48	3651	1768-1790	F-200	7- 1500	TNT 70
3	4-15-48	3615	1730-1770	F- 70	7- 1540	TNT 160
4	2-15-49	3620	1712-1742	P- 60		TNT 140
BEDINGFIELD, J. E.						
State B-8818						
1	10-24-47	3597	1641-1672	F-120	7- 1285	TNT 100
4	1-26-49	3602	1659-1706	F- 65	7- 1407	TNT 200
State B-1059						
2	12-26-47	3629	1680-1717	F-140	7- 1300	TNT 100
5	3-25-49	3640	1728	F- 45	7- 1498	
State B-879						
3	3- 4-48	3619	1710-1752	F-272	7- 1444	TNT 120
Delhi-State						
11	12- 1-47	3589	1631	F- 67	7- 1420	
DD		3589	2006-2212	P- 17	5½- 2278	SOF 108360
Delhi-State						
12	12-30-47	3606	1668	F-168	7- 1420	

F-Flowing-BPD
TNT-Nitro Shot-Quarts

P-Pumping-BPD
SOF-Sand Oil Fracture-Gallons

TABLE II

Investment Requirements and Unit Costs

Water Injection Plant		$40,000.00
Injection Well Conversion	23	92,000.00
Meter Runs & Wellhead Equipment		9,000.00
Water Distribution Lines		24,500.00
Lease Modernization		27,000.00
Producing Well Workover & Equipment Exchange		66,000.00
Drilling Program: Injection Wells	4	68,000.00
Producing Wells	5	100,000.00
Contingent		20,000.00
TOTAL		$446,000.00

Operation & Maintanence Per well per month	$80.00
Pumping, Supervision & G.O.E. Per well per month	75.00
Supply Water, Chemical Treatment & Plant Maintanence per 1000 barrels	25.00

TABLE III

Development Schedule

FIRST YEAR		
Plant, Pilot Stage	$20,000.00	
Well Conversion 6	24,000.00	
Distribution Lines, Injection	8,000.00	
Meter Runs & Wellhead Equipment	3,000.00	$ 55,000.00
SECOND YEAR		
Plant, Expansion	20,000.00	
Well Conversion 6	24,000.00	
Distribution Lines, Injection	9,000.00	
Meter Runs & Wellhead Equipment	3,000.00	
Lease Modernization	16,000.00	
Producing Well Workover & Equipment Exchange	16,500.00	88,500.00
THIRD YEAR		
Well Conversion 6	24,000.00	
Distribution Lines	7,500.00	
Meter Runs & Wellhead Equipment	3,000.00	
Lease Modernization	11,000.00	
Producing Well Workover & Equipment Exchange	16,500.00	
Drilling Program:		
Injection Wells 1	17,000.00	
Producing Wells 2	40,000.00	118,500.00
FOURTH YEAR		
Well Conversion 5	20,000.00	
Producing Well Workover & Equipment Exchange	16,500.00	
Drilling Program:		
Injection Wells 3	51,000.00	
Producing Wells 3	60,000.00	147,500.00
FIFTH YEAR		
Producing Well Workover & Equipment Exchange	16,500.00	
Contingent	20,000.00	36,500.00
TOTAL		$446,000.00

TABLE IV

Economic Analysis of a Waterflood Project

Year	Production Gross barrels	Total Costs dollars	Income - 87½% W.I. Gross* dollars	Income - 87½% W.I. Net dollars	Income -- 75% W.I. Gross dollars	Income -- 75% W.I. Net dollars
1	12,820	119,250	29,700	-89,530	25,500	-93,730
2	63,500	169,500	147,300	-22,200	126,200	-43,300
3	265,500	231,280	615,600	384,320	527,700	296,420
4	421,500	280,640	977,300	696,660	837,700	557,060
5	375,000	171,240	869,500	698,260	745,300	574,060
6	234,000	108,640	542,700	434,060	465,100	356,460
7	123,500	105,140	286,500	181,360	245,500	140,360
8	94,400	102,340	218,900	116,560	187,600	85,260
9	78,750	100,100	182,600	82,500	156,500	56,400
10	65,150	98,310	151,000	52,690	129,500	31,190
11	54,200	79,450	125,600	46,150	107,700	28,250
12	45,350	78,200	105,200	27,000	90,100	11,900
13	39,800	74,925	92,200	17,275	79,100	4,175
14	35,300	74,925	81,900	6,975	70,200	-4,725
15	31,200	74,925	72,600	-2,325	-0-	-0-
	1,940,070	$1,868,845	$4,428,600	$2,629,755	$3,793,700**	$1,999,780

* Income of $2.65 per barrel after taxes

** Total Costs for 14 years are $1,793,920

Total will not balance as the Income is to the nearest $100.00

No allowance has been made for salvage at the end of the flood.

TABLE V

OPERATOR Lease	Acreage		Wells		Cumulative Production		Present Production	
	No.	Factor	No.	Factor	Bbls.	Factor	10 Mo.	Factor
BURNHAM OIL CO.								
State B	40	3.333	1	2.500	20,012	1.950	112	0.902
C & H OIL CO.								
Malco-Federal	40	3.333	1	2.500	14,870	1.450	1208	9.734
CARPER-SIVLEY JOINT ACCOUNT								
Magruder-Federal	160	13.333	6	15.00	87,122	8.490	3298	26.575
Russell-Federal	80	6.667	4	10.00	96,213	9.375	231	1.861
State A	40	3.333	2	5.00	57,351	5.589	71	0.572
Wright-State	40	3.333	2	5.00	44,013	4.289	21	0.169
COCKBURN, MAGGIE SUETTA								
Barrientos-Federal	80	6.667	2	5.00	95,820	9.337	1339	10.790
HUDSON, WILLIAM M.								
State	40	3.333	1	2.50	21,448	2.090	52	0.419
Turner-State	40	3.333	1	2.50	21,004	2.047	120	0.967
RUTTER & WILBANKS								
Magruder-State	80	6.667	2	5.00	88,402	8.614	101	0.814
Hudson-State	40	3.333	1	2.50	6,325	0.616	816	6.575
TRIGG, JOHN H., CO.								
Harbold-Federal	160	13.333	6	15.00	153,280	14.936	1491	12.015
Hill-Federal	40	3.333	0	0.0	22,865	2.228	-0-	0.0
YATES, M. III, et. al.								
Dooley-State	120	10.000	4	10.00	87,008	8.478	958	7.720
BEDINGFIELD, J. E.								
State B-8318	40	3.333	2	5.00	36,441	3,550	460	3.707
State E-1059	40	3.333	2	5.00	54,803	5.340	491	3.956
State E-579	40	3.333	1	2.50	43,721	4.260	389	3.135
Delhi-State 11	40	3.333	1	2.50	53,706	5.233	1252	10.089
Delhi-State 12	40	3.333	1	2.50	21,815	2.126	-0-	0.0
AREA TOTAL	1200		40		1,026,220		12,410	

Table V-1

FACTORS APPLICABLE FOR PARTICIPATION IN A UNIT

OPERATOR	Cumulative Production Factor %	Acreage Factor %	Cumulative &, Acreage 50/50 Ratio Factor %	Cumulative & Acreage 75/25 Ratio Factor %
BURNHAM OIL CO.				
State B	1.95007	3.33333	2.64170	2.29589
C & H OIL CO.				
Malco-Federal	1.44901	3.33333	2.39117	1.92009
CARPER-SIVLEY JOINT ACCOUNT				
Magruder-Federal	8.48961	13.33333	10.91148	9.70054
Russell-Federal	9.37549	6.66667	8.02108	8.69828
State A	5.58857	3.33333	4.46095	5.02476
Wright-State	4.28885	3.33333	3.81109	4.04997
Company Total	27.74252	26.66667	27.20460	27.47355
COCKBURN, MAGGIE SUETTA				
Barrientos-Federal	9.33719	6.66667	8.00193	8.66956
HUDSON, WILLIAM M.				
State	2.09000	3.33333	2.71167	2.40083
Turner-State	2.04674	3.33333	2.69004	2.36839
Company Total	4.13674	6.66666	5.40171	4.76922
RUTTER & WILBANKS				
Magruder-State	8.61434	6.66667	7.64051	8.12742
Hudson-State	0.61634	3.33333	1.97484	1.29559
Company Total	9.23067	10.00000	9.61535	9.42301
TRIGG, JOHN H., CO.				
Harbold-Federal	14.93638	13.33334	14.13486	14.53562
Hill-Federal	2.22808	3.33333	2.78070	2.50439
Company Total	17.16446	16.66667	16.91556	17.04001
YATES, M., III, et al				
Dooley-State	8.47850	10.00000	9.23925	8.85888
BEDINGFIELD, J. E.				
State B-8318	3.55100	3.33333	3.44216	3.49658
State E-1059	5.34028	3.33333	4.33680	4.83854
State E-379	4.26040	3.33333	3.79686	4.02863
Delhi-State 11	5.23339	3.33333	4.28336	4.75838
Delhi-State 12	2.12577	3.33333	2.72955	2.42766
Company Total	20.51084	16.66665	18.58873	19.54979
AREA TOTAL	100.00000	99.99996	100.00003	100.00000

(3)

SOUTH RED LAKE GRAYBURG UNIT
Eddy County, New Mexico

Supplement OIL PRODUCTION HISTORIES to Report of February 12, 1964

YEAR Month	BURNHAM OIL CO. State B	C & H OIL CO. Malco Federal	COCKBURN, M. S. Barrientos Federal	CARPER DRILLING CO., INC. And T. J. SIVLEY Magruder Federal	Russell Federal	State A	Wright State
1963							
Nov	4	115	91	299	34	28	4
Dec	23	30	56	335	32	33	-
Cumulative to 1/1/64	20,012	15,015	95,967	87,756	96,279	57,412	44,017
1964							
Jan	-	54	62	142	32	22	-
Feb	10	93	223	311	27	19	-
Mar	8	156	137	316	39	15	-
Apr	11	130	86	282	26	16	-
May	31	65	105	217	30	18	-
June	13	56	108	246	35	24	-
July	--	107	131	237	33	12	-
Aug	1	114	116	218	32	4	-
Sept	6	103	128	274	15	15	-
Oct	6	80	92	268	41	17	-
Nov	9	68	135	262	26	23	-
Dec	12	78	60	251	27	22	-
Total	107	1,104	1,383	3,024	363	207	-
Cumulative to 1/1/65	20,119	16,119	97,350	90,780	96,642	57,619	44,017

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 3212

OIL PRODUCTION HISTORIES
(con't)

WRIGHT OIL CO., LIMITED

YEAR Month	Formerly J. E. BEDINGFIELD State B-8318	State E-1059	State E-379	Delhi 11	Delhi 12	Formerly JOHN H. TRIGG Harbold Federal	Hill Federal
1963							
Nov	66	65	9	129	-	149	-
Dec	51	50	14	124	-	176	-
Cumulative to 1/1/64	36,558	54,918	43,744	53,959	21,815	158,290	22,865
1964							
Jan	40	43	9	122	-	149	-
Feb	44	43	20	111	-	98	-
Mar	47	46	19	115	-	92	-
Apr	61	60	20	98	-	73	-
May	48	48	17	83	-	85	-
June	47	49	19	82	-	116	-
July	54	54	23	94	-	109	-
Aug	45	47	28	83	-	57	-
Sept	45	47	16	83	-	23	-
Oct	35	37	19	83	-	93	-
Nov	37	36	34	93	-	77	-
Dec.	38	37	24	90	-	124	-
Total	541	547	248	1,137	-	1,096	-
Cumulative to 1/1/65	37,099	55,465	43,992	55,096	21,815	159,386	22,865

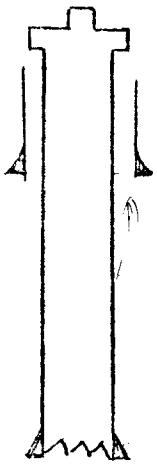
OIL PRODUCTIONS HISTORIES
(con't)

YEAR Month	ATLANTIC REFINING CO. (Formerly William Hudson) State	Turner State	RUTTER & WILBANKS Magruder State	Hudson State	M. YATES, III, et al Dooley State	POOL TOTAL
1963						
Nov	-	21	49	6	97	1,166
Dec	-	-	83	5	91	1,103
Cumulative to 1/1/64	21,448	21,025	89,340	5,654	87,196	1,033,297
1964						
Jan	-	33	114	7	113	842
Feb	-	29	97	55	95	1,265
Mar	-	29	89	16	99	1,223
Apr	-	41	85	15	91	1,095
May	-	53	74	16	93	983
June	-	19	67	19	33	933
July	-	32	77	15	85	1,063
Aug	-	31	74	16	91	957
Sept	-	34	57	3	76	925
Oct	-	58	66	15	96	1,006
Nov	-	34	62	6	83	986
Dec	-	48	59	7	84	970
Total	-	441	921	190	1,039	12,248
Cumulative to 1/1/65	21,448	21,466	90,261	5,844	88,235	1,045,545

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 3212

SOUTH RED LAKE GRAYBURG UNIT
Injection Well Casing Program
PILOT AREA

WRIGHT OIL CO., LTD.
Harbold No. 15

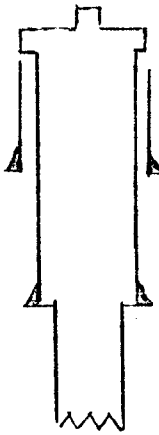


Pulled
7" Casing
set @ 989'
Top Cement Surface
Pay Zone Perforated
w/ 40 holes
1560 to 1565

5½" Casing
set @ 1585'
516 saxs cement

T.D.
1585'

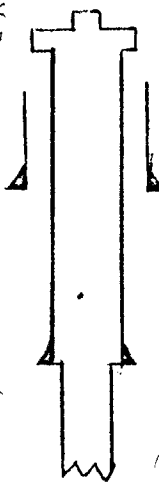
WRIGHT OIL CO., LTD.
Harbold No. 7



Pulled
8" Casing
set @ 933'
Top Cement 706'
7" Casing
set @ 1317'
50 saxs cement
Open Hole
1317 to 1629'
Pay Zone
1606 to 1629

T.D.
1650'

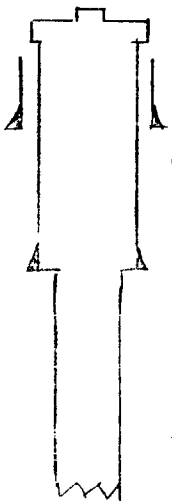
RUTTER & WILBANKS
Magruder No. 2



Pulled
8" Casing
set @ 943'
Top Cement 771'
7" Casing
set @ 1382'
50 saxs cement
Open Hole
1382 to 1634'
Pay Zone
1617 to 1632'

T.D.
1634'

CARPER DRILLING CO.
Magruder No. 8

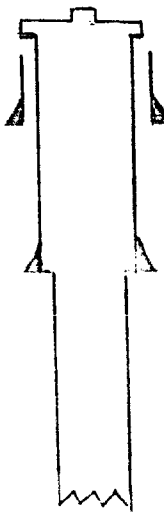


Pulled
8" Casing
set @ 833'
Top Cement 724'
7" Casing
set @ 1335'
50 saxs cement

Open Hole
1335 to 1665'
Pay Zone
1590 to 1660'

T.D.
1665'

CARPER DRILLING CO.
Magruder No. 7

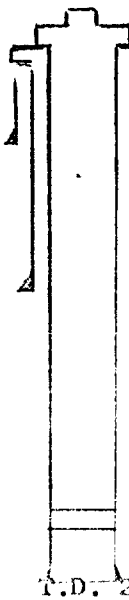


Pulled
8¼" Casing
set @ 818'
Top Cement
7" Casing
set @ 1350'
50 saxs cement

Open Hole
1350 to 1705'
Pay Zone
1630 to 1695'

T.D.
1705'

J. E. BEDINGFIELD
Delhi No. 11

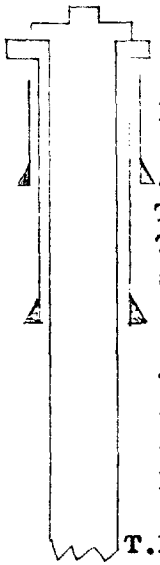


Pulled
8" Casing
set @ 963'
7" casing
set @ 1420'
20 saxs cement
Top Cement 1600'
5½" Casing
set @ 2278'
175 saxs cement
Pay Zone
1631 to 1670'
Cast Iron Bridge Plug
set @ 2000'

T.D. 2278'

SOUTH RED LAKE GRAYBURG UNIT
Injection Well Casing Program
EXPANDED AREA

WRIGHT OIL CO., LTD
Harbold No. 8

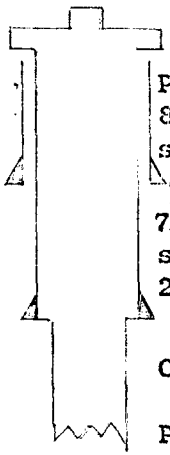


Pulled
8" Casing
set @ 900'
Top Cement 409'
7" Casing
set @ 1295'
50 saxs cement

4½" Casing
set @ 2365'
162 saxs cement
Pay Zone 1585 to 1635'

T.D. 2375'

J. E. BEDINGFIELD
State E-8318 No.1



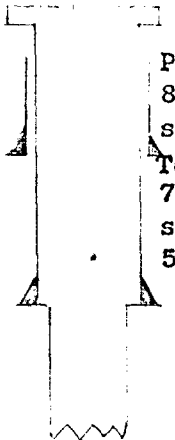
Pulled
8¼" casing
set @ 942'
Top Cement Surface
7" Casing
set @ 1290'
200 saxs cement

Open Hole 1290 to 1696'

Pay Zone 1647 to 1672'

T.D.
1696'

CARPER DRILLING CO.
Magruder No. 9

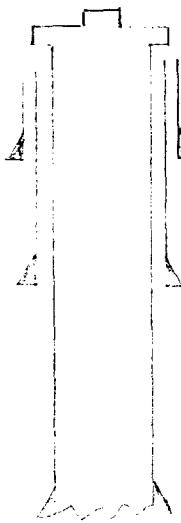


Pulled
8¼"Casing
set @ 924'
Top Cement 709'
7" Casing
set @ 1320'
50 saxs cement

Open Hole
1320 to 1610'
Pay Zone 1555 to 1610'

T.D. 1694'
PBD. 1610'

CARPER DRILLING CO.
Russell No. 1



12½" Casing
set @ 713'

10" Casing
set @ 1217'

Top Cement N.A.
Saxs Cement N.A.
6 5/8 " Casing
set @ 1630'
Pay Zone
1590 to 1609'

T.D.
1630

CARPER DRILLING CO.
Russell No. 4

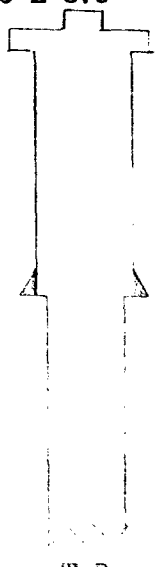
10" Casing
set @ 453'

8¼" Casing
set @ 948'
Top Cement N.A.
Saxs Cement N.A.
6 5/8" Casing
set @ 1574'

Pay Zone
1604 to 1624'

T.D.
162

J. E. BEDINGFIELD
State E-379 No. 3



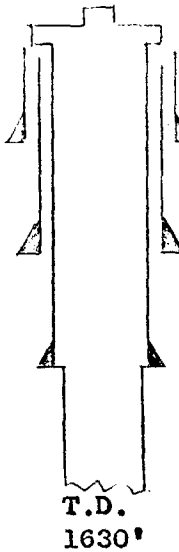
Top Cement 633'
7" Casing
set @ 1244'
50 saxs cement

Pay Zone
1710 to 1752'

T.D.
1772'

SOUTH RED LAKE GRAYBURG UNIT
Injection Well Casing Program
EXPANDED AREA

CARPER DRILLING CO.
State A No. 1



10" Casing
set @ 448'

8¼" Caaing
set @ 849

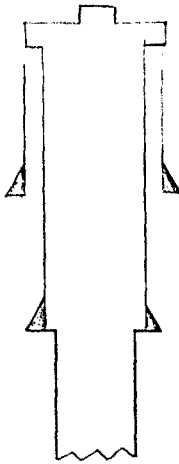
Top Cement N.A.
6 5/8" Casing
set @ 1576'

Open Hole 1576 to 1630'

Pay Zone 1602 to 1622'

T.D.
1630'

CARPER DRILLING CO.
Wright State No. 1



10" Casing
set @ 446'

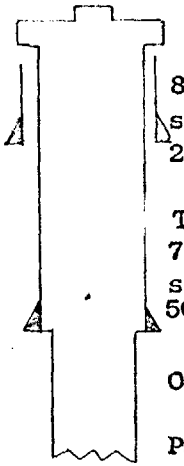
Top Cement N.A.
8¼" Casing
set @ 949'
Saxs Cement N.A.

Open Hole 949 to 1653'

Pay Zone 1620 to 1630'

T.D.
1653'

ATLANTIC REF. CO.
State No. 1



8 5/8" Casing
set @ 457'
25 saxs cement

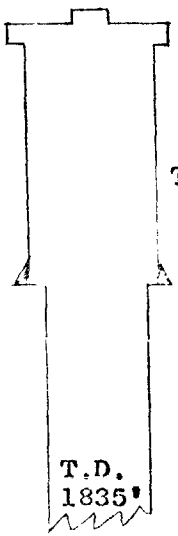
Top Cement 614'
7" Casing
set @ 1225'
50 saxs cement

Open Hole 1225 to 1708'

Pay Zone 1695 to 1705'

T.D.
1708'

WRIGHT OIL CO., LTD.
Hill No. 3



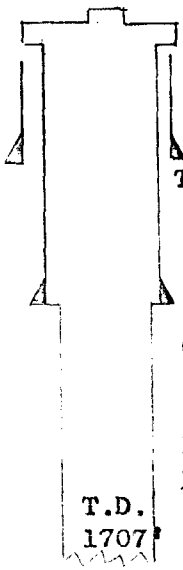
Top Cement 899'
7" Casing
set @ 1510'
50,saxs cement

Open Hole 1510 to 1835'

Pay Zone1770 to 1820

T.D.
1835'

RUTTER & WILBANKS.
Hudson No. 1



8 5/8" Casing
set @ 950'

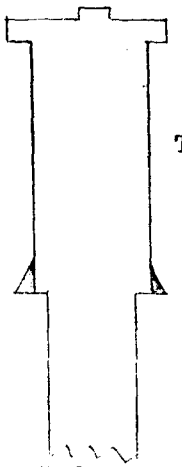
Top Cement 834'
7" Casing
set @ 1445 '
50 saxs cement

Open Hole 1445 to 1707'

Pay Zone
1672 to 1697'

T.D.
1707'

ATLANTIC REF. CO.
Turner No. 1



Top Cement 860'
7" Casing
set @ 1471'
50 saxs cement

Open Hole
1471 to 1742'

Pay Zone
1697 to 1710'

T.D.
1742'

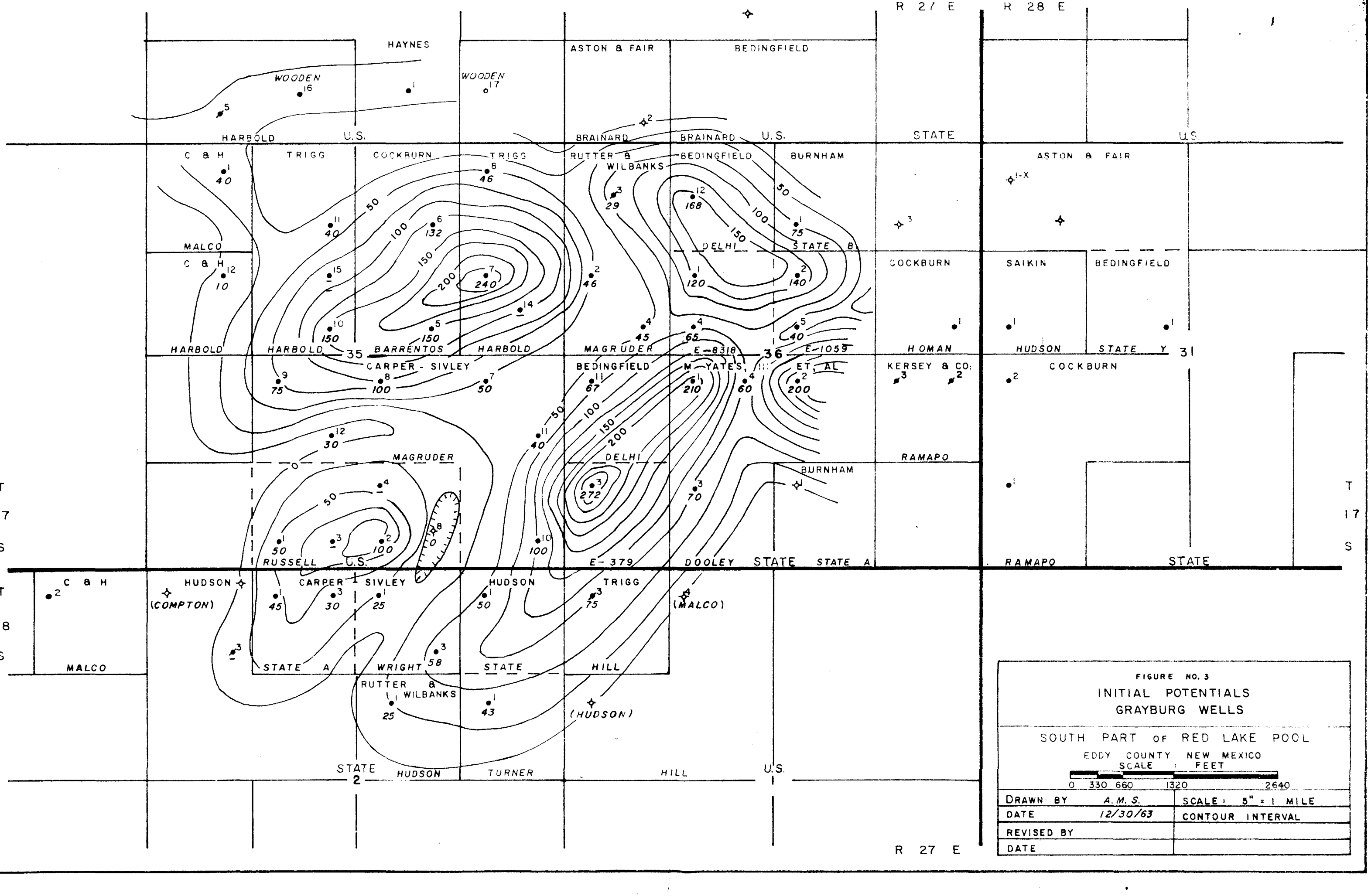


FIGURE NO. 3

INITIAL POTENTIALS
GRAYBURG WELLS

SOUTH PART OF RED LAKE POOL
EDDY COUNTY NEW MEXICO
SCALE : FEET
0 330 660 1320 2640

DRAWN BY A. M. S.	SCALE : 5" = 1 MILE
DATE 12/30/63	CONTOUR INTERVAL
REVISED BY	
DATE	

R 27 E R 28 E

HAYNES ASTON & FAIR BEDINGFIELD

WOODEN WOODEN

HARBOLD U.S. BRAINARD U.S. STATE U.S.

C & H WRIGHT COCKBURN WRIGHT RUTTER & WILBANKS BEDINGFIELD BURNHAM ASTON & FAIR

MALCO DELHI STATE B

C & H COCKBURN SAIKIN BEDINGFIELD

PILOT AREA

HARBOLD HARBOLD BARRENTOS HARBOLD MAGRUDER E-8318 E-1059 HOMAN HUDSON STATE Y

35 36 31

HONDO O.&G.I/2 CARPER - SIVLEY BEDINGFIELD M. YATES, JR. ET, AL KERSEY & CO: COCKBURN

PAN AM. PET 1/2

PARTICIPATING AREA BOUNDARY

UNIT AREA BOUNDARY

MAGRUDER DELHI RAMAPO

CARPER-SIVLEY BURNHAM

T 17 S

RUSSELL U.S. E-379 DOOLEY STATE STATE A RAMAPO STATE

T 18 S

C & H ATLANTIC CARPER SIVLEY ATLANTIC WRIGHT

(COMPTON) (MALCO)

MALCO STATE A WRIGHT STATE HILL

RUTTER & WILBANKS (HUDSON)

STATE HUDSON TURNER HILL U.S.

R 27 E

LEGEND

INJECTION WELL

24 42 = 1008
11 14 = 154
1162

Maximum waterflood Allowable
9 Units /1 well, x 42 - 378
8 Units /2 wells, x 42 x 0.33 - 448
TOTAL - 826 bbls.

UNIT AREA & INJECTION PATTERN

SOUTH PART OF RED LAKE POOL

EDDY COUNTY NEW MEXICO

SCALE : FEET

0 330 660 1320 2640

DRAWN BY	A. M. S.	SCALE :	5" = 1 MILE
DATE	12/30/63	CONTOUR INTERVAL	
REVISED BY			
DATE			

Case 3212

R 27 E

R 28 E

1 & 2 in this area

1 Kersey & Co 2 mi more
2 Sims Capitan E. Hack K
Kersey
3 6 mi E.

HAYNES

WOODEN

WOODEN

ASTON & FAIR

BEDINGFIELD

HARBOLD U.S. BRAINARD BRAINARD U.S. STATE U.S.

C & H

WRIGHT

COCKBURN

WRIGHT

RUTTER & WILBANKS

BEDINGFIELD

BURNHAM

ASTON & FAIR

MALCO

DELHI

STATE B

C & H

COCKBURN

SAIKIN

BEDINGFIELD

HARBOLD HARBOLD BARRENTOS HARBOLD MAGRUDER E-8318 E-1059 HOMAN HUDSON STATE Y

35 36 31

HONDO O & G 1/2
PAN AM PET 1/2

CARPER - SIVLEY

BEDINGFIELD

M. YATES, ET, AL

KERSEY & CO.

COCKBURN

MAGRUDER

DELHI

RAMAPO

CARPER - SIVLEY

BURNHAM

T 17 S

RUSSELL U.S. E-379 DOOLEY STATE STATE A

RAMAPO STATE

C & H

ATLANTIC (COMPTON)

CARPER

SIVLEY

ATLANTIC

WRIGHT (MALCO)

T 18 S

MALCO

STATE A

WRIGHT

STATE

HILL

RUTTER & WILBANKS

(HUDSON)

STATE HUDSON TURNER HILL U.S.

LEGEND

INJECTION WELL

PROJECT BOUNDARY

MAXIMUM WATERFLOOD ALLOWABLE

9 UNITS /1 WELL, X 42 = 378 BBLS
8 UNITS /2 WELLS, X 42 X 1.33 = 448

TOTAL 826 BBLS

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 3212

R 27 E

PROJECT AREA & INJECTION PATTERN

SOUTH RED LAKE GRAYBURG UNIT

EDDY COUNTY NEW MEXICO

SCALE : FEET

0 330 660 1320 2640

DRAWN BY	A. M. S.	SCALE : 5" = 1 MILE	
DATE	12/30/63	CONTOUR INTERVAL	
REVISED BY	A M S		
DATE	2/22/65		

R 27 E R 28 E

HAYNES WOODEN 1964 1944 WOODEN ASTON & FAIR BEDINGFIELD

1950 1900

HARBOLD U.S. BRAINARD BRAINARD U.S. STATE U.S.

C & H TRIGG COCKBURN TRIGG RUTTER & WILBANKS BEDINGFIELD BURNHAM ASTON & FAIR

2000 1989 1940 1948 1940 1953 1914

1992 1980 1900 1950

MALCO DELHI STATE B

C & H 2035 2038 1984 1964 1950 1944 COCKBURN SAIKIN BEDINGFIELD

2050 2041 2009 1949 1932 1912 1975 2012 2093 2050

HARBOLD HARBOLD 35 BARRENTOS HARBOLD MAGRUDER E-8318 36 E-1059 HOMAN HUDSON STATE 31

CARPER - SIVLEY BEDINGFIELD M. YATES, ET, AL KERSEY & CO COCKBURN

2100 2075 2046 2005 1958 1913 1908 1883 1998 2025 1987 2050

1944 2000

MAGRUDER DELHI RAMAPO

BURNHAM

2050 2017 1909 1885 1929 1950

1900

T 17 S

2025 2007 2000 RUSSELL U.S. 1920 E-379 DOOLEY STATE STATE A RAMAPO STATE

T 18 S

C & H HUDSON CARPER SIVLEY HUDSON TRIGG

2000 2007 2002 2004 1971 1930 1885 (MALCO) 1840 1850

(COMPTON)

MALCO STATE A WRIGHT 1946 STATE HILL

RUTTER & WILBANKS

1950 1927 1902 (HUDSON) 1900 1850

STATE HUDSON TURNER HILL U.S.

2

R 27 E

FIGURE No. 2

STRUCTURE MAP

TOP MAIN PAY ZONE

PREMIER MEMBER GRAYBURG FORMATION

SOUTH PART of RED LAKE POOL

EDDY COUNTY NEW MEXICO

SCALE FEET

0 330 660 1320 2640

DRAWN BY A.M.S.	SCALE: 5" = 1 MILE
DATE 12/30/63	CONTOUR INTERVAL
REVISED BY	
DATE	

R 27 E

R 28 E

HAYNES

WOODEN

WOODEN

ASTON & FAIR

BEDINGFIELD

HARBOLD

U.S.

BRAINARD

BRAINARD

U.S.

STATE

U.S.

C & H

TRIGG

COCKBURN

TRIGG

RUTTER & WILBANKS

BEDINGFIELD

BURNHAM

ASTON & FAIR

MALCO

C & H

DELHI

STATE B

COCKBURN

SAIKIN

BEDINGFIELD

PILOT AREA

HARBOLD

HARBOLD

35

BARRENTOS

HARBOLD

MAGRUDER

E-8318

36

E-1059

HOMAN

HUDSON

STATE Y

31

CARPER - SIVLEY

BEDINGFIELD

M. YATES, III ET. AL

KERSEY & CO.

COCKBURN

MAGRUDER

DELHI

BURNHAM

RAMAPO

T 17 S

RUSSELL

U.S.

E-379

D'OOLEY

STATE

STATE A

RAMAPO

STATE

T 18 S

C & H

HUDSON

(COMPTON)

CARPER

SIVLEY

HUDSON

TRIGG

(MALCO)

MALCO

STATE A

WRIGHT

STATE

HILL

RUTTER & WILBANKS

(HUDSON)

STATE 2

HUDSON

TURNER

HILL

U.S.

R 27 E

LEGEND

- INJECTION WELL TO BE CONVERTED
- INJECTION WELL TO BE DRILLED
- PRODUCING WELL TO BE DRILLED

PROPOSED UNIT AREA.
INJECTION PATTERN & PILOT

SOUTH PART OF RED LAKE POOL

EDDY COUNTY NEW MEXICO

SCALE : FEET

0 330 660 1320 2640

DRAWN BY	A. M. S.	SCALE :	5" = 1 MILE
DATE	12/30/63	CONTOUR INTERVAL	
REVISED BY			
DATE			

FIGURE NO. 1

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
1955 MAR. JUNE SEPT. DEC.
1956 MAR. JUNE SEPT. DEC.
1957 MAR. JUNE SEPT. DEC.
1958 MAR. JUNE SEPT. DEC.
1959 MAR. JUNE SEPT. DEC.
1960 MAR. JUNE SEPT. DEC.
1961 MAR. JUNE SEPT. DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

95,820

MAGGIE SUETTA COCKBURN
BARRIENTOS FEDERAL LEASE
RED LAKE POOL

CUMULATIVE PRODUCTION X 1000

Figure No. 13

K+E 20 YEARS BY MONTHS 359-215L.
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
1955 MAR. JUNE SEPT. DEC.
1956 MAR. JUNE SEPT. DEC.
1957 MAR. JUNE SEPT. DEC.
1958 MAR. JUNE SEPT. DEC.
1959 MAR. JUNE SEPT. DEC.
1960 MAR. JUNE SEPT. DEC.
1961 MAR. JUNE SEPT DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

44,013

CARPER-SIVLEY JOINT ACCT
WRIGHT STATE LEASE
RED LAKE POOL

CUMULATIVE PRODUCTION x 1000

Figure No. 12

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

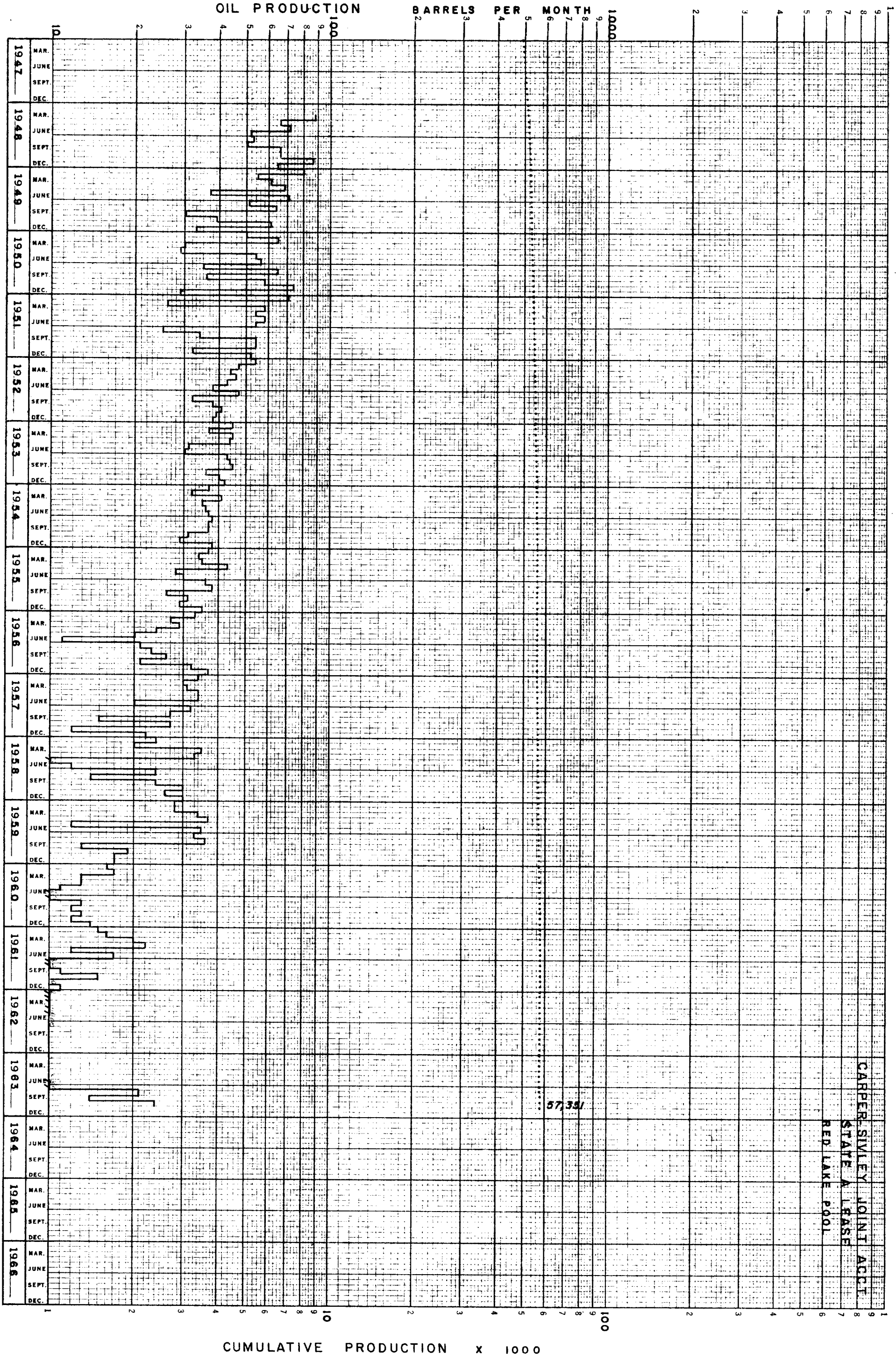


Figure No. 11

CARPER-SIVLEY JOINT ACCT.
RUSSELL FEDERAL LEASE
RED LAKE POOL

$6,213

OIL PRODUCTION BARRELS PER MONTH

CUMULATIVE PRODUCTION x 1000

1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966

MAR. JUNE SEPT. DEC.

20 YEARS BY MONTHS
X 3 CYCLES
KEUFFEL & ESSER CO.
359-215L

Figure No 10

CARPER-SIVLEY JOINT ACCT.
MAGRUDER FEDERAL LEASE
RED LAKE POOL

97,122

OIL PRODUCTION BARRELS PER MONTH

CUMULATIVE PRODUCTION x 1000

1000 100 10

1 9 8 7 6 5 4 3 2

MAR. JUNE SEPT. DEC.

1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966

20 YEARS BY MONTHS
X 3 CYCLES
KEUFFEL & ESSER CO.
359-215L
MADE IN U.S.A.

Figure No 9

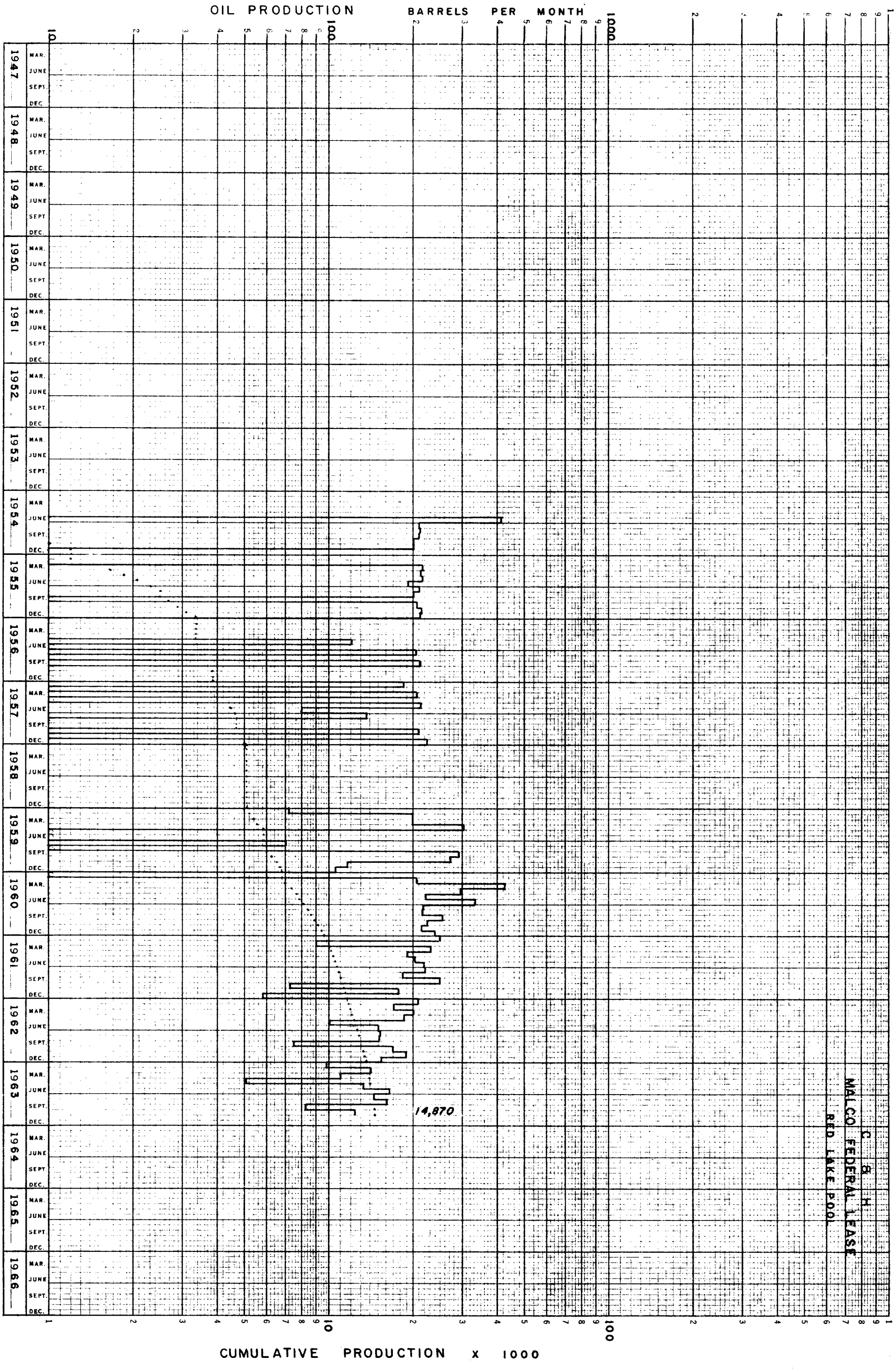


Figure No. 8

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
1955 MAR. JUNE SEPT. DEC.
1956 MAR. JUNE SEPT. DEC.
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1959 MAR. JUNE SEPT. DEC.
1960 MAR. JUNE SEPT. DEC.
1961 MAR. JUNE SEPT. DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

20,012

BURNHAM OIL CO.
STATE B LEASE
RED LAKE POOL

CUMULATIVE PRODUCTION x 1000

Figure No. 7

K+E 20 YEARS BY MONTHS 359-215L.
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

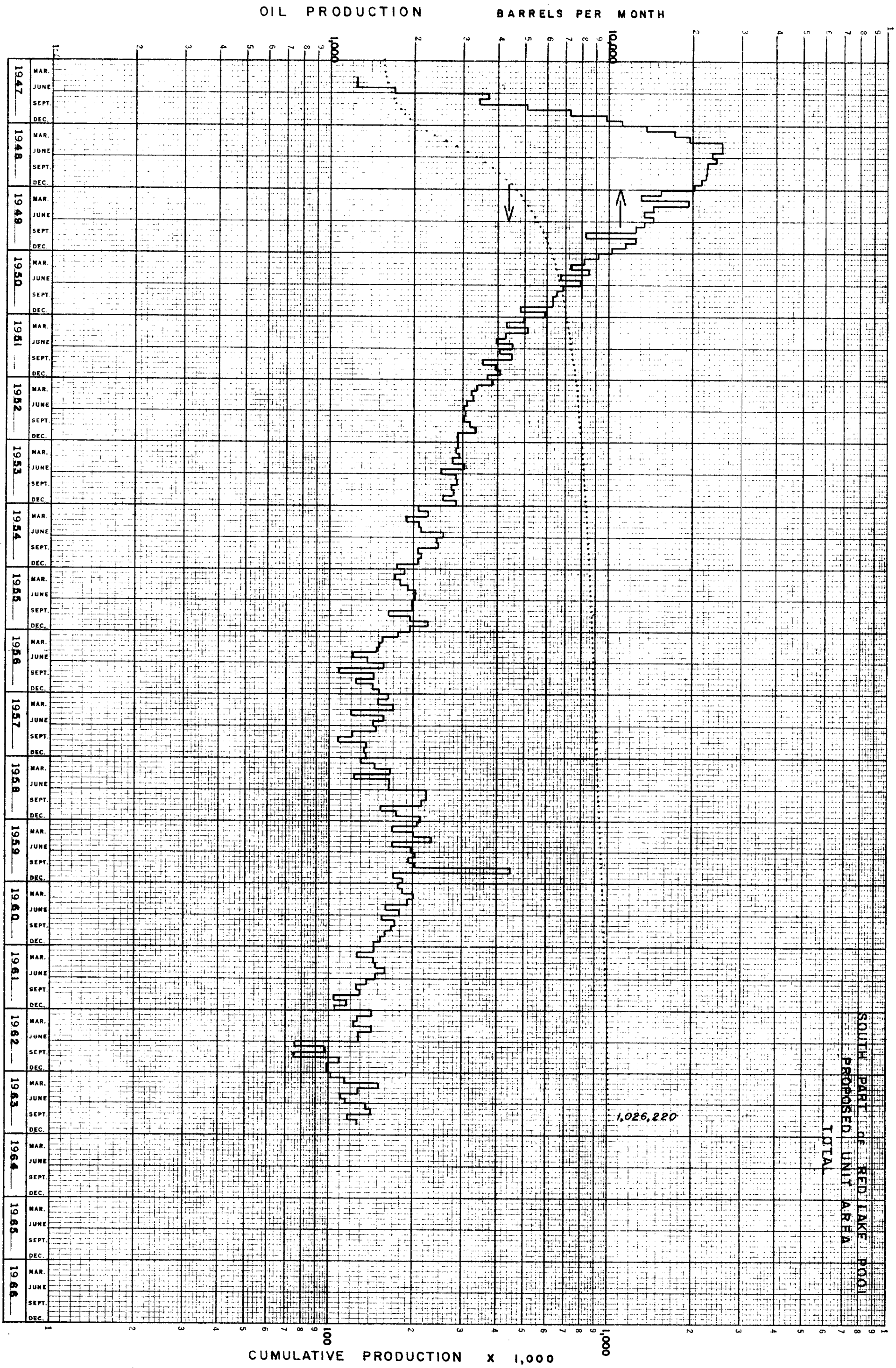

Figure No. 6

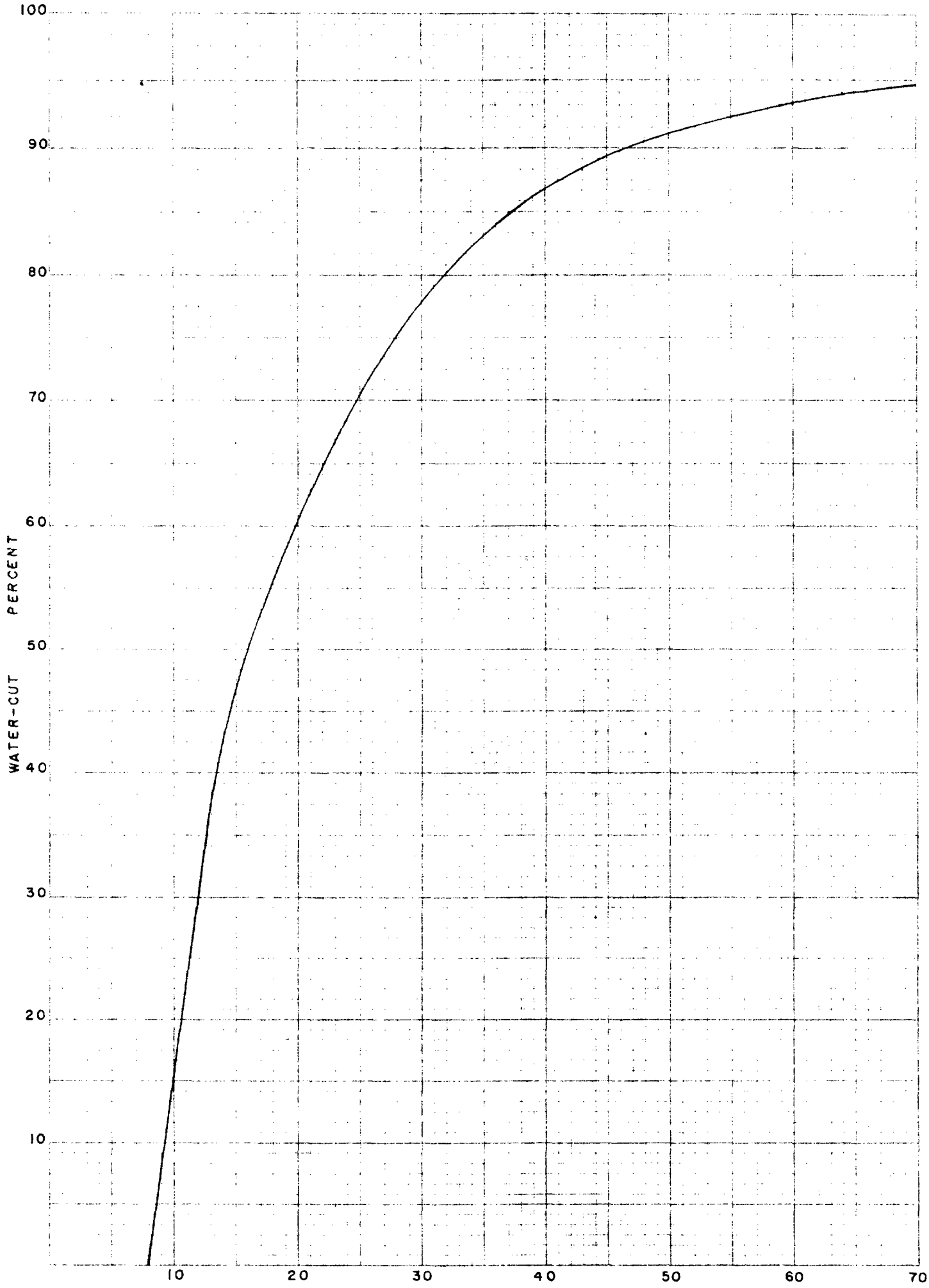
100
90
80
70
60
50
40
30
20
10
WATER-CUT PERCENT
10
20
30
40
50
60
70
OIL RECOVERY, PERCENT

FIGURE NO. 4

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

WATERFLOOD PERFORMANCE
YEARS AFTER
INITIAL WATER INJECTION

Figure No. 5

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION

BARRELS PER MONTHLY AVERAGE FOR YEAR

1927 MAR. JUNE SEPT. DEC.
1928 MAR. JUNE SEPT. DEC.
1929 MAR. JUNE SEPT. DEC.
1930 MAR. JUNE SEPT. DEC.
1931 MAR. JUNE SEPT. DEC.
1932 MAR. JUNE SEPT. DEC.
1933 MAR. JUNE SEPT. DEC.
1934 MAR. JUNE SEPT DEC.
1935 MAR. JUNE SEPT. DEC.
1936 MAR. JUNE SEPT. DEC.
1937 MAR. JUNE SEPT. DEC.
1938 MAR. JUNE SEPT. DEC.
1939 MAR. JUNE SEPT. DEC.
1940 MAR. JUNE SEPT. DEC.
1941 MAR. JUNE SEPT. DEC.
1942 MAR. JUNE SEPT. DEC.
1943 MAR. JUNE SEPT. DEC.
1944 MAR. JUNE SEPT. DEC.
1945 MAR. JUNE SEPT. DEC.
1946 MAR. JUNE SEPT. DEC.

SOUTH PART RED LAKE POOL
PROPOSED UNIT AREA
TOTAL
(PATON BROTHERS ONLY)

CUMULATIVE PRODUCTION X 1,000

Figure No. 4-1

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

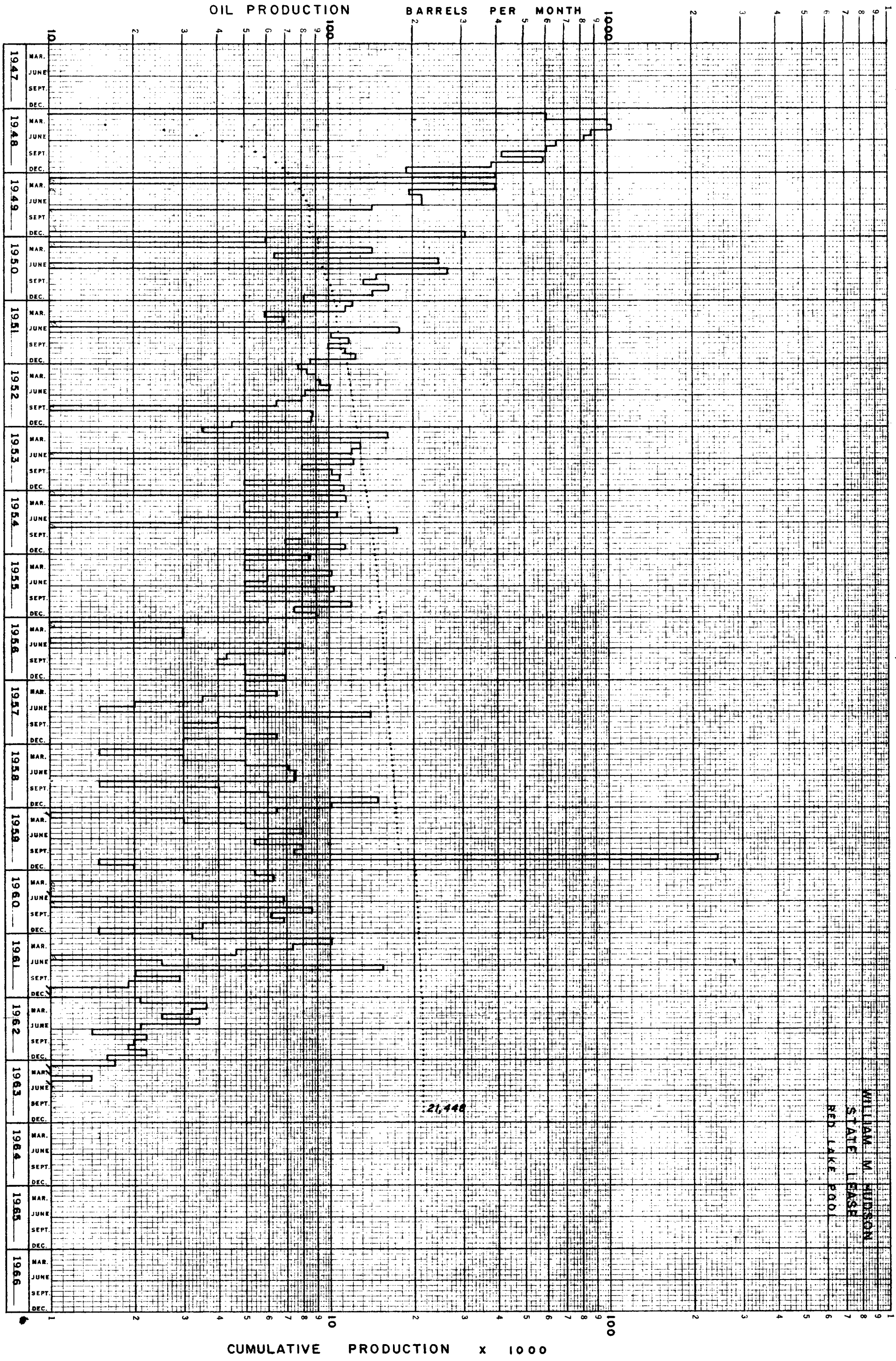

Figure No. 14

WILLIAM M. HUDSON
TURNER STATE LEASE
RED LAKE POOL

OIL PRODUCTION BARRELS PER MONTH

CUMULATIVE PRODUCTION x 1000

20,604

1000 100 10

1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966

MAR. JUNE SEPT. DEC.

KEUFFEL & ESSER CO. 359-215L
20 YEARS BY MONTHS
X 3 CYCLES

Figure No. 15

20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

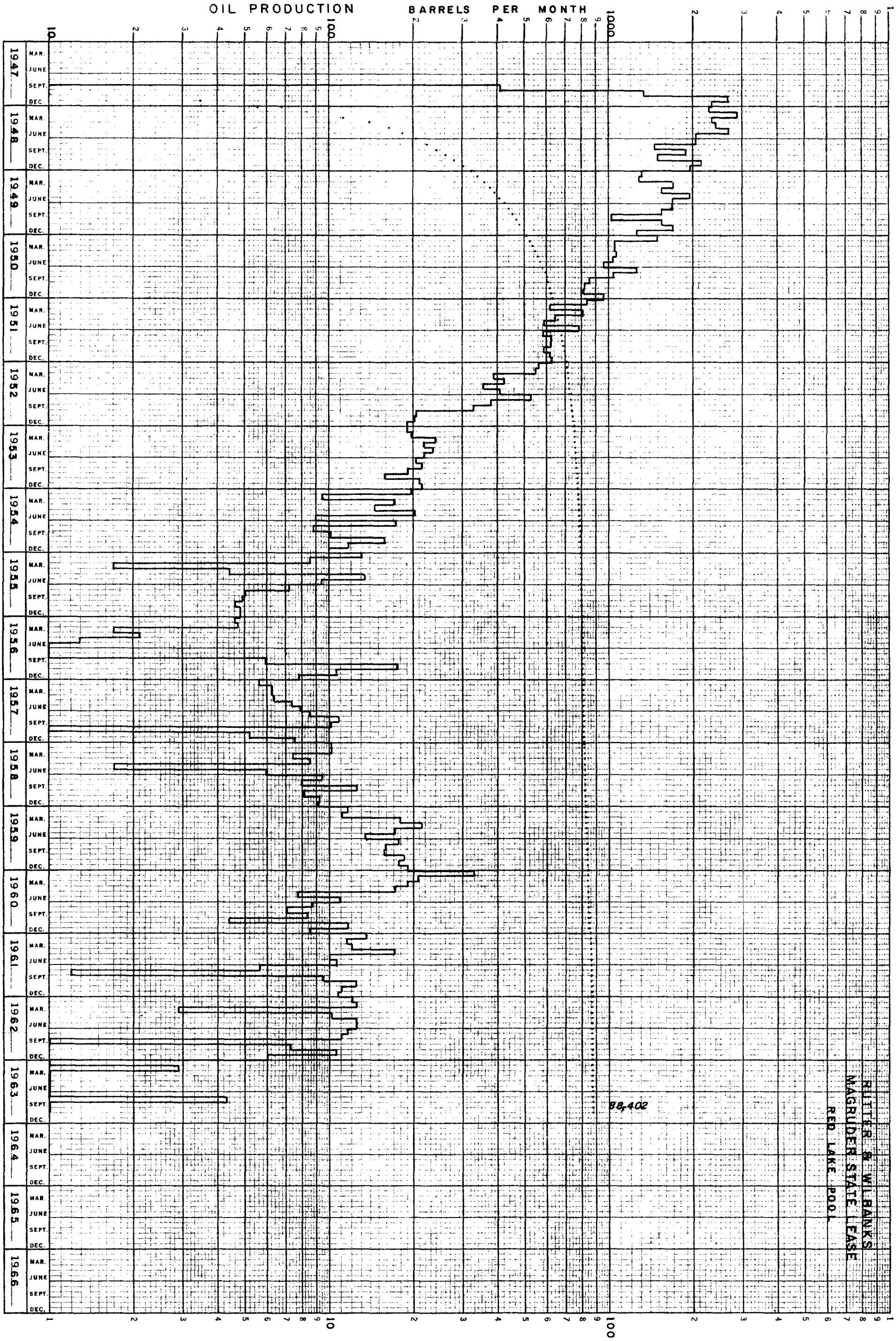

Figure No. 16

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

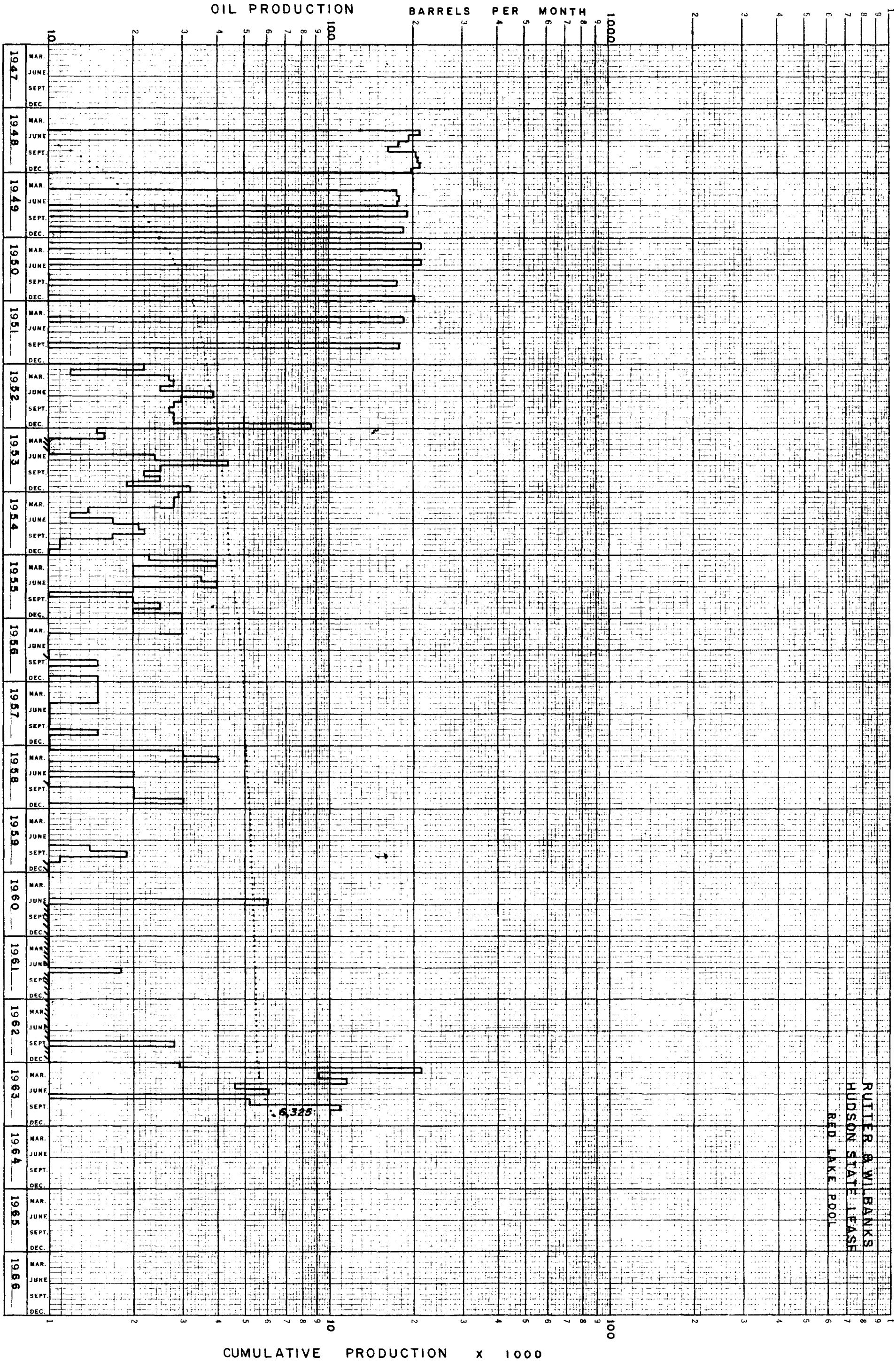

Figure No. 17

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
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1961 MAR. JUNE SEPT. DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

153,280

JOHN H. TRIGG
HARBOLD FEDERAL LEASE
RED LAKE POOL

CUMULATIVE PRODUCTION X 1000

Figure No 18

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION BARRELS PER MONTH

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
1955 MAR. JUNE SEPT. DEC.
1956 MAR. JUNE SEPT. DEC.
1957 MAR. JUNE SEPT. DEC.
1958 MAR. JUNE SEPT. DEC.
1959 MAR. JUNE SEPT. DEC.
1960 MAR. JUNE SEPT. DEC.
1961 MAR. JUNE SEPT. DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

1 2 3 4 5 6 7 8 9 100 2 3 4 5 6 7 8 9 1000 2 3 4 5 6 7 8 9 1

22,860

P&A

HILL FEDERAL LEASE
JOHN M. TRIGG
RED LAKE POOL

1 2 3 4 5 6 7 8 9 10 2 3 4 5 6 7 8 9 100 2 3 4 5 6 7 8 9 1

CUMULATIVE PRODUCTION X 1000

Figure No. 19

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

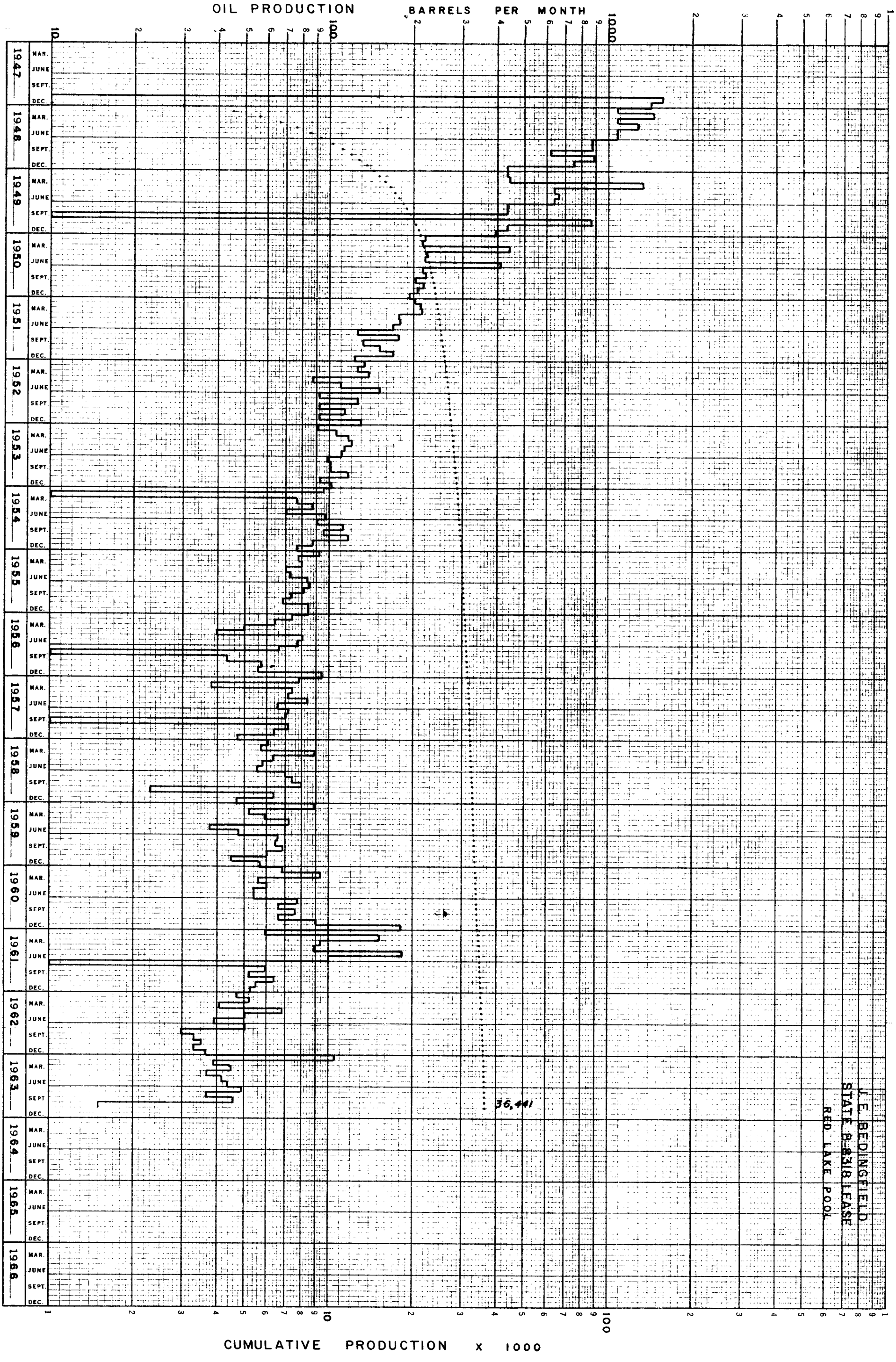

Figure No. 21

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

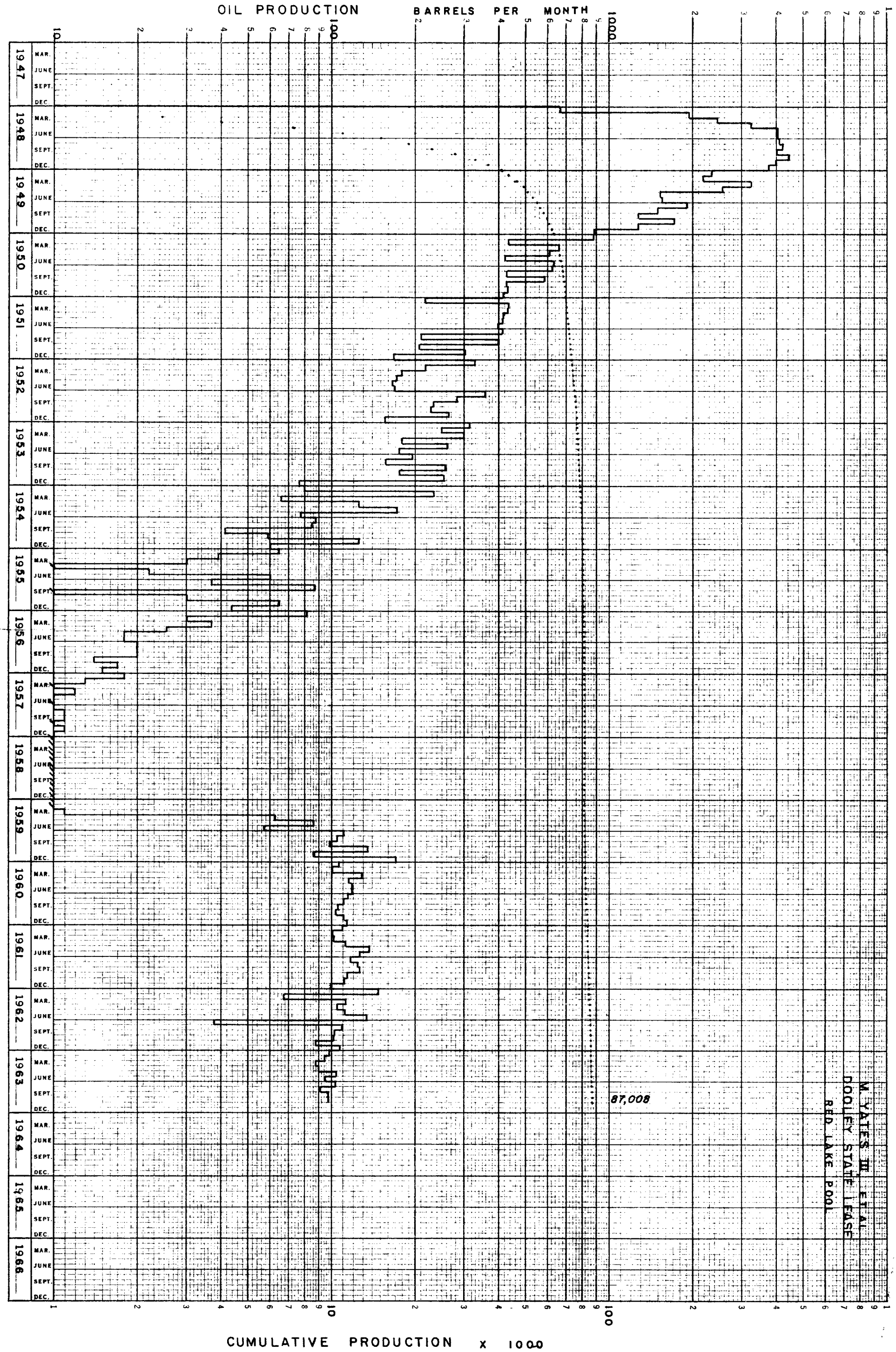

Figure No. 20

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

OIL PRODUCTION

BARRELS PER MONTH

10 2 3 4 5 6 7 8 9 100 2 3 4 5 6 7 8 9 1,000 2 3 4 5 6 7 8 9 10,000

1947 MAR. JUNE SEPT. DEC.
1948 MAR. JUNE SEPT. DEC.
1949 MAR. JUNE SEPT. DEC.
1950 MAR. JUNE SEPT. DEC.
1951 MAR. JUNE SEPT. DEC.
1952 MAR. JUNE SEPT. DEC.
1953 MAR. JUNE SEPT. DEC.
1954 MAR. JUNE SEPT. DEC.
1955 MAR. JUNE SEPT. DEC.
1956 MAR. JUNE SEPT. DEC.
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1960 MAR. JUNE SEPT. DEC.
1961 MAR. JUNE SEPT. DEC.
1962 MAR. JUNE SEPT. DEC.
1963 MAR. JUNE SEPT. DEC.
1964 MAR. JUNE SEPT. DEC.
1965 MAR. JUNE SEPT. DEC.
1966 MAR. JUNE SEPT. DEC.

54,903

1 2 3 4 5 6 7 8 9 10 2 3 4 5 6 7 8 9 100 2 3 4 5 6 7 8 9 1,000

CUMULATIVE PRODUCTION X 1000

J. E. BEDINGFIELD
BEDINGFELD STATE 6105 LEASE
WELL NO. 2 G-36-17-27
WELL NO. 6 G-36-17-27
RED LAKE POOL

Figure No. 22

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

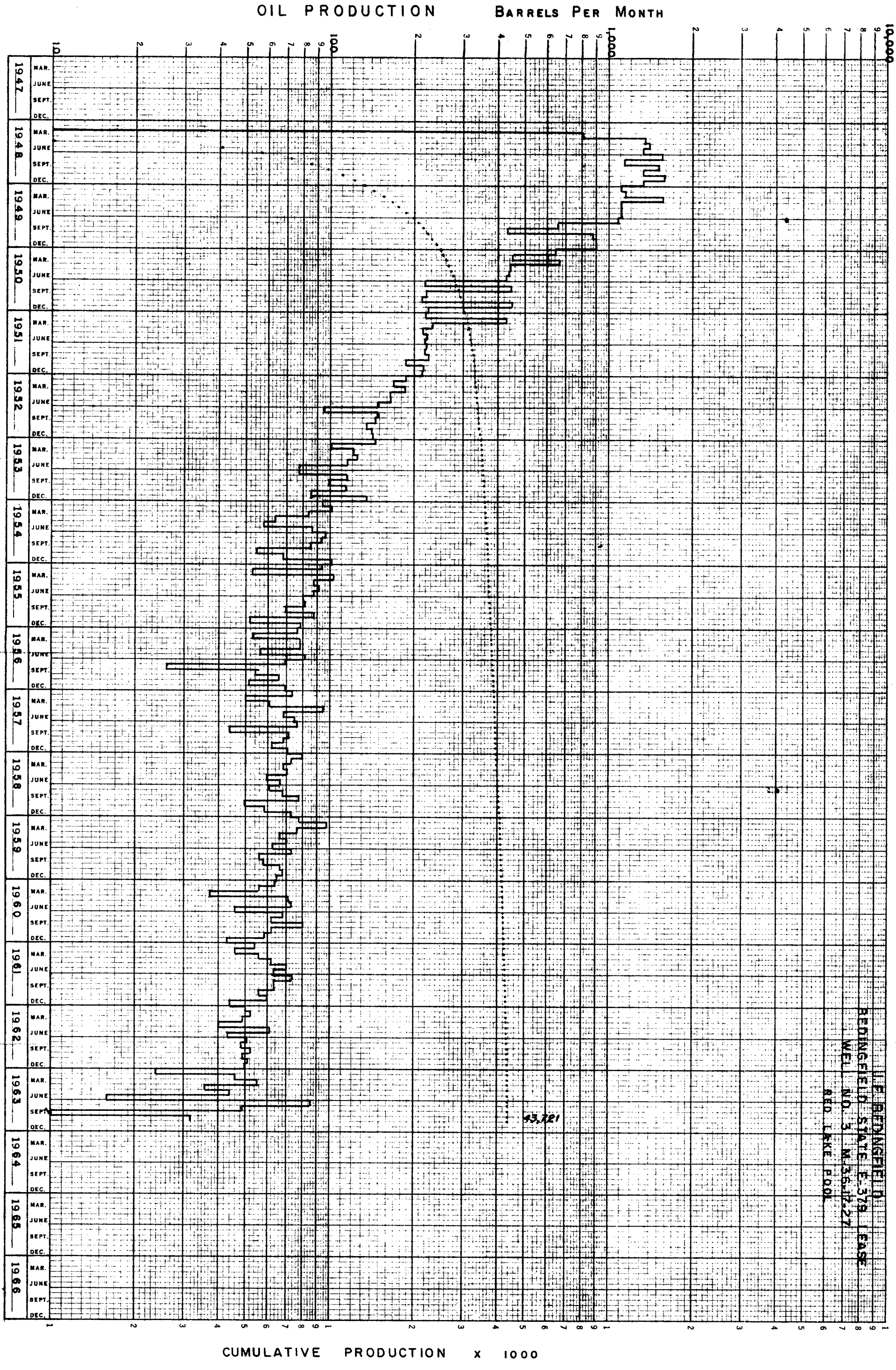

Figure No. 23

WELEX

RADIOACTIVITY LOG

COMPANY CARPER-SIVLEY-EMPIRE JOINT ACCOUNT

WELL MAGRUDER # 13

FIELD EMPIRE-ABO

COUNTY EDDY STATE NEW MEXICO

Location: 330' FSL 480' FEL SEC. 35 TWP. 17-S RGE. 27-E

Other Logs: GUARD FORXO

Permanent Datum: GROUND LEVEL Elev. 3641

Log Measured From: KELLY BUSHING

Drilling Measured From: KELLY BUSHING

Elevation: KB 3654 DF 3653 GL 3641

Type Log	GAMMA	N.GAMMA
Run No.	-	-
Date	3-28-60	3-28-60
Total Depth Driller	5840	5840
Present Depth Driller	5840	5840
Total Depth Welex	5845	5845
Survey Begins	5835	5845
Survey Ends	10	50
Mud Data	WATER BASE -	
Type Fluid In Hole	MUD	MUD
Salinity PPM Cl	-	-
Weight lb./gal.	9.3	9.3
Fluid Level	FULL	FULL
Max. Hole Temp.	105	105
Recorded By	P.C.HARRIS	
Witnessed By	MR. CLARK	

BORE HOLE RECORD				CASING RECORD			
Run	Bit	From	To	Size	Wgt.	From	To
	11"	0	1068	8-5/8"		0	1068
	7-7/8"	1068	5840				

*** Electric Log of the Type Well defining the Premier Sand-Grayburg Formation as set out in Section 2 paragraph (h).

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
CASE NO. 3212
EXHIBIT NO. 2

Top Queen Formation 1004'

Top Grayburg Formation 1430'

Premier

Top San-Andres Formation 1762'

CARPER-SIVLEY-EMPIRE JOINT ACCOUNT
MAGRUDER # 13
EMPIRE-ABO FIELD
EDDY COUNTY, NEW MEXICO

T.D.LOGGED 5845'
T.D.DRILLER 5840'
T.D.REACHED 5845'

K&E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

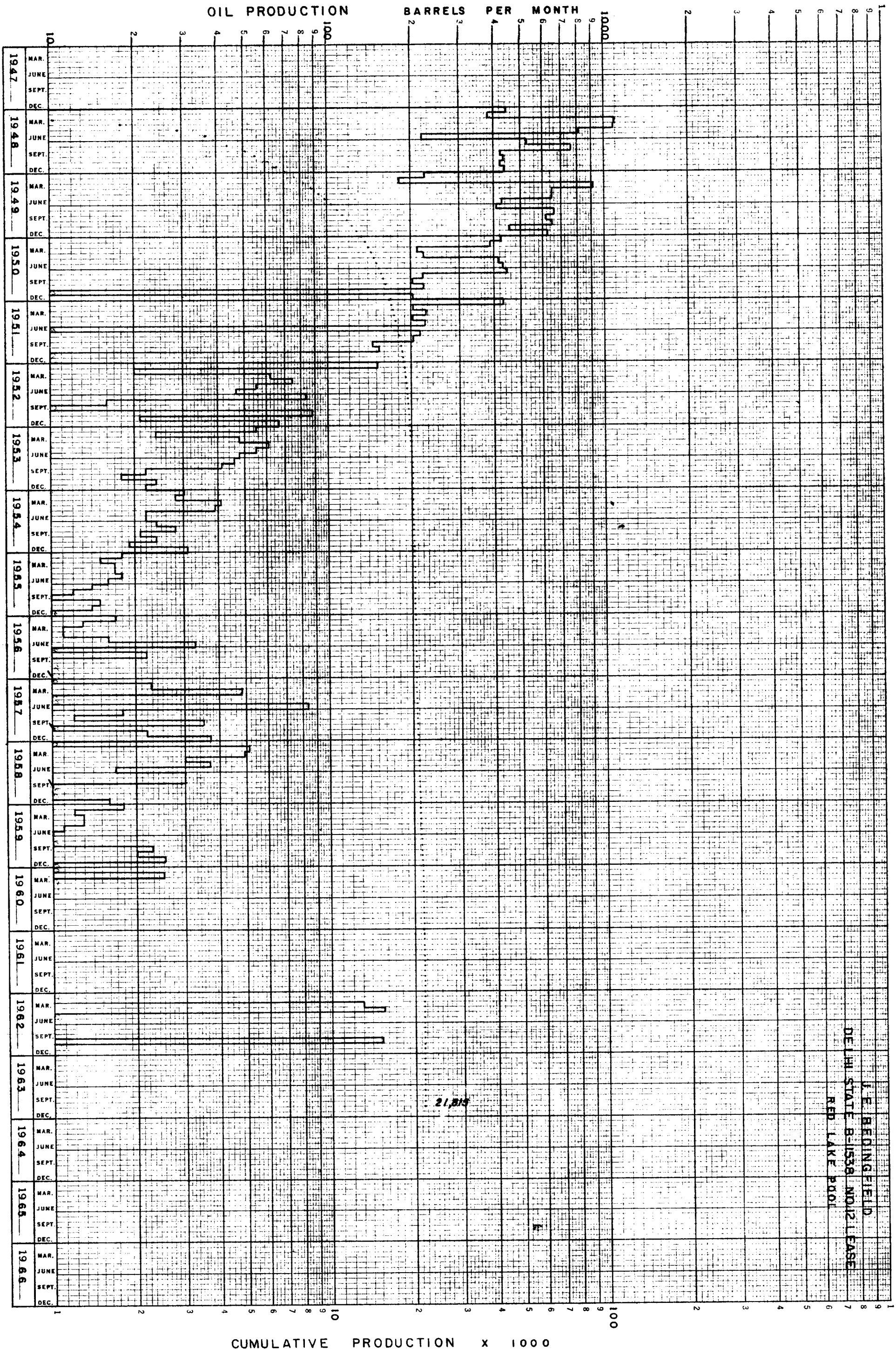

Figure No. 28

K+E 20 YEARS BY MONTHS 359-215L
X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

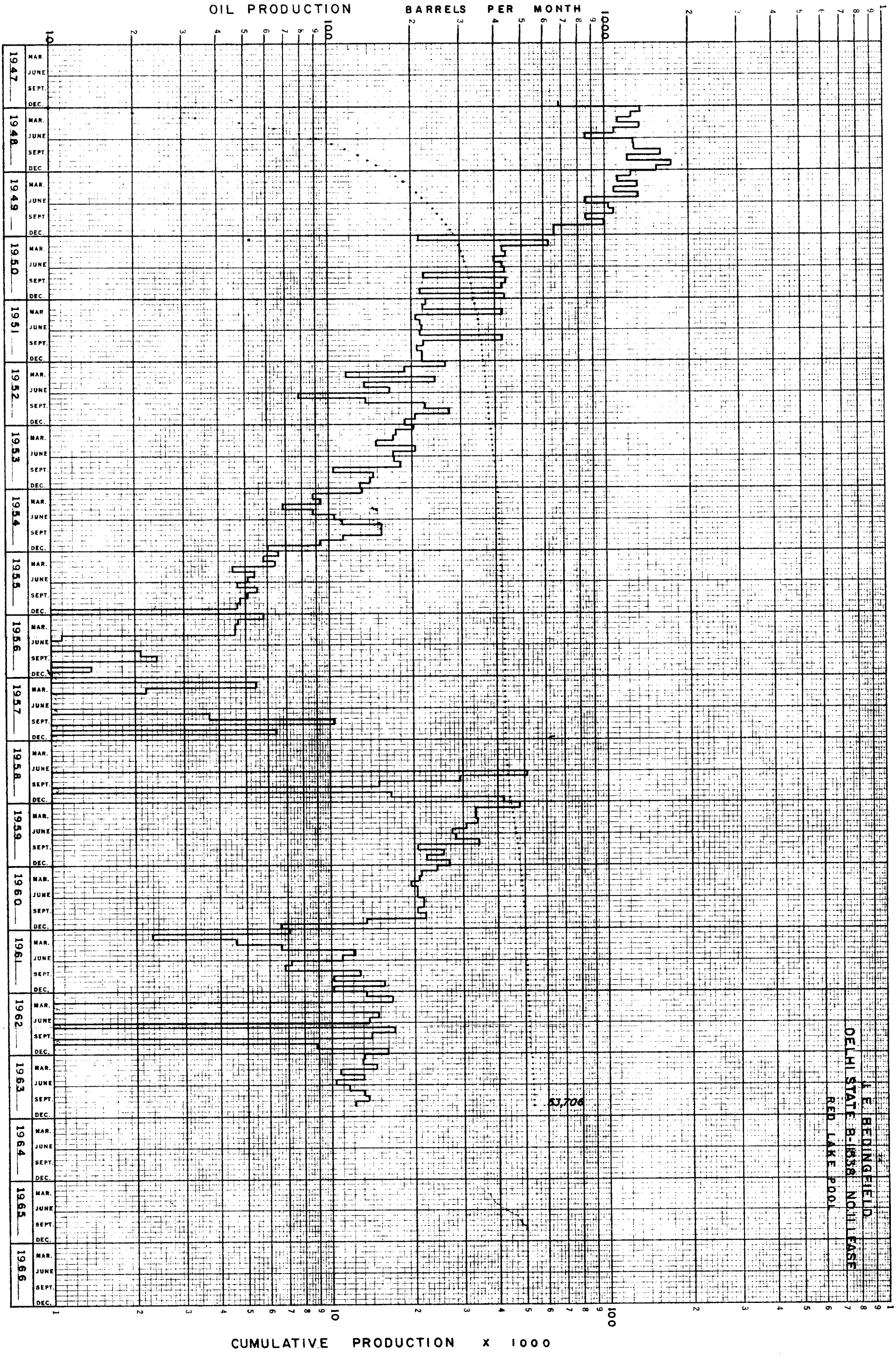

Figure No. 24