

OPEN FILE 84-14

ESTIMATED OIL AND GAS RESERVES FOR MESA COUNTY, COLORADO

Compiled by
A. H. Scanlon

Funded by the Department of Local Affairs--
Division of Commerce and Development



Colorado Geological Survey
Department of Natural Resources
State of Colorado
Denver, Colorado
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Acknowledgments

I would like to thank the staff of the Colorado Oil & Gas Conservation Commission (C.O.G.C.C.) who provided considerable assistance during the course of this compilation, and the staff of the Colorado Geological Survey, who assisted in the manuscript preparation.

However, I assume full responsibility for any errors or omissions in these tabulations. Users of this OPEN-FILE REPORT could provide a significant service if they would inform the Colorado Geological Survey of any misinformation or omissions.

This project was completed by the staff of the Colorado Geological Survey as part of a grant from the Department of Local Affairs - Division of Commerce and Development.

A. H. Scanlon
Senior Geologist

Contents

	<u>Page</u>
Introduction.....	1
Method of Approach.....	3
Oil Reserve Calculations	3
Gas Reserve Calculations	3
Results	4
Reference List	9

Tables

Table I Reserve Data for Mesa County	5
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Figures

Fig 1. County Location Map	2
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Appendix I- Field-Horizon Historical Production Decline Curves for Mesa County	10
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ESTIMATED OIL AND GAS RESERVES FOR MESA COUNTY, COLORADO

Introduction

This report is the twelfth* in a series of oil and gas reserve investigations undertaken for those counties in which oil and/or gas is currently being produced.

This study involves Mesa County, located on the central western edge of Colorado, partially bordering the Piceance Basin. Mesa County covers 3,334 square miles. In this county, oil and/or gas are produced from, in descending order of age, the Rollins Sandstone, Cozette Sandstone, Corcoran Sandstone, Mesaverde Sandstone, Frontier Sandstone, Mancos Shale, Dakota Sandstone, Buckhorn Sandstone, Cedar Mountain Shale, Morrison Sandstone, Saltwash Sandstone, and Entrada Sandstone.

There are 23 fields considered active producers as of December 31, 1983. Of these, one is classified as an oil field (based on cumulative gas-oil ratio (GOR) of <15:1), and the remaining 22 are classified as gas fields (based on cumulative GOR >15:1).

* Refer to:

- OPEN-FILE REPORT 84-3: Estimated Oil and Gas Reserves for Washington County, Colorado;
- OPEN-FILE REPORT 84-4: Estimated Oil and Gas Reserves for Rio Blanco County, Colorado.
- OPEN-FILE REPORT 84-5: Estimated Oil and Gas Reserves for Adams County, Colorado;
- OPEN-FILE REPORT 84-6: Estimated Oil and Gas Reserves for Weld County, Colorado;
- OPEN-FILE REPORT 84-7: Estimated Oil and Gas Reserves for Arapahoe County, Colorado;
- OPEN-FILE REPORT 84-8: Estimated Oil and Gas Reserves for Baca County, Colorado.
- OPEN-FILE REPORT 84-9: Estimated Oil and Gas Reserves for Cheyenne County, Colorado.
- OPEN-FILE REPORT 84-10: Estimated Oil and Gas Reserves for Garfield County, Colorado;
- OPEN-FILE REPORT 84-11: Estimated Oil and Gas Reserves for La Plata County, Colorado;
- OPEN-FILE REPORT 84-12: Estimated Oil and Gas Reserves for Moffat County, Colorado; and
- OPEN-FILE REPORT 84-13: Estimated Oil and Gas Reserves for Elbert County, Colorado.

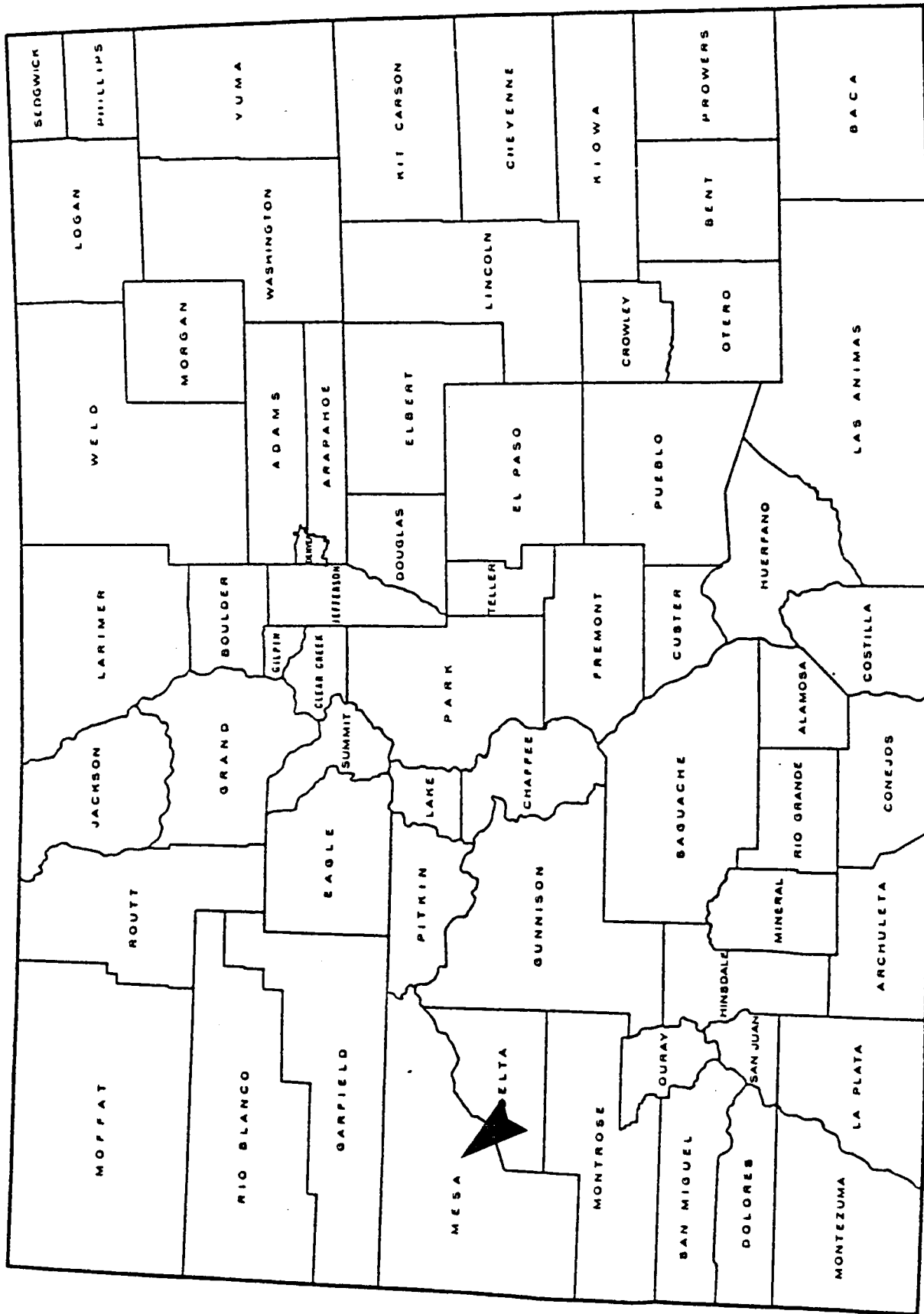


Figure 1. County Location Map

Method of Approach

Production decline curves are plotted for each currently producing horizon within each field, hereafter referred to as a field-horizon. There are 36 production decline curves plotted, one for each field-horizon. Production data were obtained from the C.O.G.C.C. annual production books. These books contain records of yearly production data, dating back to 1952. All production decline curves are plotted as rate (annual production in barrels of oil or MCF of gas) versus time (in years). The rate scale was adjusted to accommodate each field-horizon.

Oil Reserve Calculations

There is one oil field-horizon. This field-horizon, the White Water-Dakota, has only produced in 1982 and 1983. This short production history does not allow for a decline rate to be inferred, therefore no reserve estimates were made for this field. Several gas field-horizons have associated oil production. Only one of these (Bar X-Dakota/Morrison/Saltwash) has a long enough production history to obtain a reasonable decline rate. This decline rate was applied to the equation:

$$Rr = \frac{q1 - qf}{-\ln(1-dy)}$$

where: Rr = remaining reserves
q1 = current annual production
qf = final economic production rate
(see note below.)
-ln = negative natural log
dy = yearly decline rate (in percent)

The ultimate recoverable was then determined by adding the estimated reserves to the cumulative production. These values are listed in Table I.

Note: the final economic production rate used was one barrel of oil per day per well, for one year; therefore 365 barrels, multiplied by the number of wells needed to keep field production economic. In most cases this was one well. The number of wells used was determined at the discretion of the author.

For associated gas production, estimated reserves were calculated in the same manner as that described in the Gas Reserve Calculations section.

Gas Reserve Calculations

There are 35 gas field-horizons. Production histories have allowed for decline rates to be calculated for 8 of these. The remaining 27 gas field-horizons have not produced for a long enough time (less than 5 years) to determine reliable decline rates. Decline rates were determined for the previously mentioned 8 gas field-horizons (see Table I), and applied to the equation:

$$S = \frac{a(1-r^n)}{1-r}$$

Where: S = gas reserves
a = current annual gas production
r = (1-dy) where dy = annual decline rate
n = number of years -- 20 years was used
in all cases except where noted in
the remarks column of Table I.

Results can be found in Table I.

For the associated oil production, there this production was significant, the same method to determine estimated oil reserves was used, as discussed in the previous section. Whether oil production was considered significant or not was determined by the author. In all cases, if oil production indicated any kind of trend, reserves were calculated. A few cases arose where oil production, though a trend was indicated, did not exceed the economic limit (as discussed previously) of one barrel of oil per day per year, and therefore no reserve estimate was calculated, or an economic limit of zero was used.

Results

The following figures are for those field-horizons for which reserves could be calculated. Estimated oil reserves for Mesa County totaled 4,230 barrels, from Bar X-Dakota/Morrison/Saltwash Production. Estimated gas reserves for Mesa County totaled 46,360,284 MCF. Note that the gas reserve calculations are based on a 20-year projection, therefore they do not account for gas production after the year 2003.

These figures also do not account for production increases due to secondary and/or tertiary recovery not already in progress, or account for undiscovered reserves, nor do they reflect changes in economics or demand.

In six to seven years, roughly half of the estimated oil reserves in Mesa County will have been produced. Roughly one half of the estimated gas reserves for the next 20-year period are expected to be produced in seven to eight years.

In this county there are two classes of field-horizons: I) those with a long enough production history to calculate reserves with confidence, and II) those new field-horizons with essentially no production history, or for other reasons, reserves cannot be calculated.

To be able to calculate total county oil and gas reserves, it was necessary to apply the overall decline rates (11.4 percent per year for oil and 6.1 percent per year for gas) obtained from class I field-horizons to the current production from Class II field-horizons.

Using this approach on current production from Class II field-horizons (4,029 Bbls. of oil and 3,208,555 MCF of gas) additional reserves of 33,287 Bbls. of oil and 37,661,295 MCF of gas were obtained. This gives total county reserves (Class I and II) of 37,517 Bbls. of oil and 84,021,579 MCF of gas.

To insure that the reserve figures calculated for Class II are reasonable using this method, a comparison was made between the sources (producing horizons) of the Class I and Class II field-horizons. It was determined that there were significant differences in the sources of the gas production for the two groups. So many Class II field-horizons began producing within the last five years, it is difficult to apply the Class I decline rate to the Class II production with confidence. The reserve figures for Class II field-horizons are considered quite optimistic.

LIST OF ABBREVIATIONS USED IN TABLE OF RESERVE DATA

'a'	annual gas production
ABD.	abandoned
Approx.	approximate, approximately
Avg.	average, averaged
Bbls.	barrels
B.W.E.	Bottom Water Encroachment
calc.	calculate, calculated
Co.(s)	county (counties)
cond.	condensate
ck.	Creek
Cum.	cumulative
Dak.	Dakota Sandstone
Deplet.	Depletion
dy	annual decline rate
Econ.	Economic
Est.	Estimated
Exp.	Expansion
g	gas
Gas Exp.	Gas Expansion
G.C.E.	Gas Cap Expansion
G.E.	Gas Expansion
GOR	Gas-Oil Ratio
Inc.	Increase, increasing, increased
Inj.	Injection, injected
Lmtd.	Limited
MCF	Thousand cubic feet
Miss.	Mississippian
Mos.	Months
Mtn.	Mountain
N	North
N.P.	New Production or less than five years production, therefore, no reliable annual decline rate could be calculated to apply to the equations to calculate reserves.
No.	number, numbers, North
o	oil
P and A	Plug (ged) and Abandon (ed)
Poss.	Possible
Prod.	Production, produced
Proj.	Projection, projected
q	current annual production of oil
qf	final economic production of oil
react.	reactivated
Rr	Remaining reserves-oil
S	Remaining reserves-gas
S.G.D.	Solution Gas Drive
S.I.(SI)	Shut-in
So	South
W	West
W.D.	Water Drive
Yr or Yrs	Year or years

TABLE I
OPEN FILE 84-14
RESERVE DATA FOR MESA COUNTY

FIELD NAME/ PRODUCING HORIZON	LOCATION	DATE OF DISCOVERY	TYPE OF DRIVE	Dy	CUMULATIVE PRODUCTION 12/31/83		ESTIMATED RESERVES		ULTIMATE RECOVERABLE		REMARKS
					OIL (Bbls.) ()Condensate (Bbls.)	GAS (MCF)	OIL (Bbls.) ()Condensate (Bbls.)	GAS (MCF)	OIL (Bbls.) ()Condensate (Bbls.)	GAS (MCF)	
1. Bar X/Entrada	8S-104W	1953	W. D.		(598)	1,172,527					Prod. '80, '81, '82, SI 1983. N.P.
2. Bar X/Dakota- Morrison-Saltwash	8S-104W	1953	Depletion	11.4 -0 3.8 -9	21,978	4,617,169	4,230	1,224,110	26,208	5,841,279	Econ. Limit = 0
3. Bar X/Morrison	8S-104W	1953			1,511	493,513					Prod. '79-'83 N.P.
4. Bronco Flats/ Cedar Mountain	9S-99W	1979				155,919					N.P.
5. Bronco Flats/ Dakota	9S-99W	1979				523,131					N.P.
6. Bronco Flats/ Dakota-Morrison	9S-99W	1979				676,049					N.P.
7. Buzzard/Mesa- verde-Cozette- Corcoran	9S-94W	1958		10.9 -9		1,577,036		451,710		2,028,746	
8. Buzzard Creek/ Cozette-Corcoran	9S-93W	1955	Gas			49,600					Prod. '81- '83. N.P.
9. Buzzard Creek/ Mesaverde	9S-93W	1955	Gas	3.5 -9		4,873,749		2,178,269		7,052,018	
10. Cameo/Dakota	9S-99W	1961	Gas Exp.			143,311					Prod. 1961, 1982-83. N.P.
11. Coal Gulch/ Dakota	8S-101W	1966				33,016					Prod. 1983
12. Coal Gulch/ Mesaverde	8S-101W	1966				139,429		113,443		252,872	N.P.
13. Coon Hollow/ Mesaverde	8S-98W	1958	W. D. & Gas Exp.	7.5 -9		188,541					Prod. '81- '83. N.P.
14. Coon Hollow/ Rollins-Cozette	8S-98W	1958				135,692					Prod. '82, '83. N.P.
15. Coyote Wash/ Dakota-Morrison	8S-102W	1982				209,415					N.P.
16. DeBeque/ Mesaverde	8S-97W	1902				423,271					Prod. 1980- 1983. N.P.
17. Divide Creek/ Mesaverde	8S-91W	1956	Gas Exp.	5.0 -9		46,080,307		13,027,983		59,108,290	Prod. in Garfield Co.
18. Hancock Gulch/ Dakota	8S-99W	1979				5,537					Prod. '82, '83. N.P.

OPEN FILE 84-14
MESA COUNTY

FIELD NAME/ PRODUCING HORIZON	LOCATION	DATE OF DISCOVERY	TYPE OF DRIVE	Dy	CUMULATIVE PRODUCTION 12/31/82		ESTIMATED RESERVES		ULTIMATE RECOVERABLE		REMARKS
					OIL (Bb1s.) ()Condensate (Bb1s.)	GAS MCF	OIL (Bb1s.) GAS (MCF)	()Condensate (Bb1s.)	OIL (Bb1s.) GAS (MCF)	()Condensate (Bb1s.)	
19. Hunters Canyon/Dakota	8S-100W	1955			371,588						Prod. '81- '83. N.P.
20. HuntersCanyon/ Mesaverde	8S-100W	1955			2,764,317		4,590,102		7,354,419		
21. Lipan Wash/ Dakota	2N-2W	1973		5.4 -9	(79)	175,520					Prod. 1982, '83. N.P.
22. Peachtree/ Dakota-Morrison	9S-103W	1979			825						Tested in 1983. N.P.
23. Persigo Wash/ Buckhorn-Dakota- Morrison-Saltwash	10S-100W	1972		(2)	31,070						Prod. '82, '83. N.P.
24. Plateau/Mesa- verde-Dakota- Cozette-Corcoran	10S-96W	1958	Gas Exp.	6.9 -9	(2,684)	15,374,820	24,376,623		39,751,443		"
25. RobertsCanyon/ Dakota	9S-98W	1960		10.5 -9	472,995		272,066		745,061		Prod. 1963. P and A 10/64; Prod. in 1983; N.P. N.P.
26. Sheep Creek/ Cozette-Corcoran	9S-92W	1958			66,680						Prod. 1978-1983. Prod. 1964- '65; P and A 12-65; Prod. 1981-83; N.P.
27. Shire Gulch/ Corcoran	10S-96W	1960	Gas Exp.		984,629						
28. Shire Gulch/ Dakota-Morrison	10S-96W	1960			1,903,371 (Dakota Only)						
29. Shire Gulch/ Dakota-Frontier	10S-96W	1960			89,688						Prod. 1980- '83. N.P.
30. Shire Gulch/ Mancos	10S-96W	1960	Gas Exp.		34,257						Prod. 1981- '83. N.P.
31. Shire Gulch/ Mesaverde	10S-96W	1960			747,366						Prod. 1981- '83. N.P.

OPEN FILE 84-14
 MESA COUNTY

FIELD NAME/ PRODUCING HORIZON LOCATION	DATE OF DISCOVERY	TYPE OF DRIVE	Dy	CUMULATIVE PRODUCTION 12/31/82		ESTIMATED	RESERVES		ULTIMATE RECOVERABLE		REMARKS
				OIL (Bbls.) ()Condensate (Bbls.)	GAS MCF		OIL (Bbls.)	GAS (MCF)	OIL (Bbls.) ()Condensate (Bbls.)	GAS (MCF)	
32. South Canyon/ Dakota	1957	Gas Exp. & W.D.			14,981						Prod. 1981- '83; Also Prod. in Garfield Co. N.P. Prod. '81- '83; Also Prod. in Garfield Co. N.P.
33. South Canyon/ Dakota-Morrison	1957				84,787						
34. Vega/Cozette	1977		14.4 -9		189,597		125,978		315,575		
35. White Water/ Dakota	1974			1,636	11,637						Prod. '82- '83. N.P. Prod. 1982, Book has Est. Prod. for 1983. N.P.
36. Winter Flats/ Dakota	1982			(thru 12/82)	7,547						
COUNTY TOTAL OF ESTIMATED RESERVES											
											4,230 Bbls
											46,360,284 MCF

Reference List

Colorado Oil and Gas Conservation Commission Production Records and Injected Fluids - Water and/or Gas-File.

Crouch, M.C., III, editor, 1982 Oil and Gas Fields of Colorado, Nebraska and Adjacent Areas: Rocky Mountain Association of Geologists, vols. I and II, 791 pp.

Haun, J.D., Cardwell, A.L., Herrod, W.H. and Cronoble, J.M., 1976. Oil and Gas Reserves of Colorado in Colorado School of Mines Research Institute, Mineral Industries Bulletin, v. 19, #5.

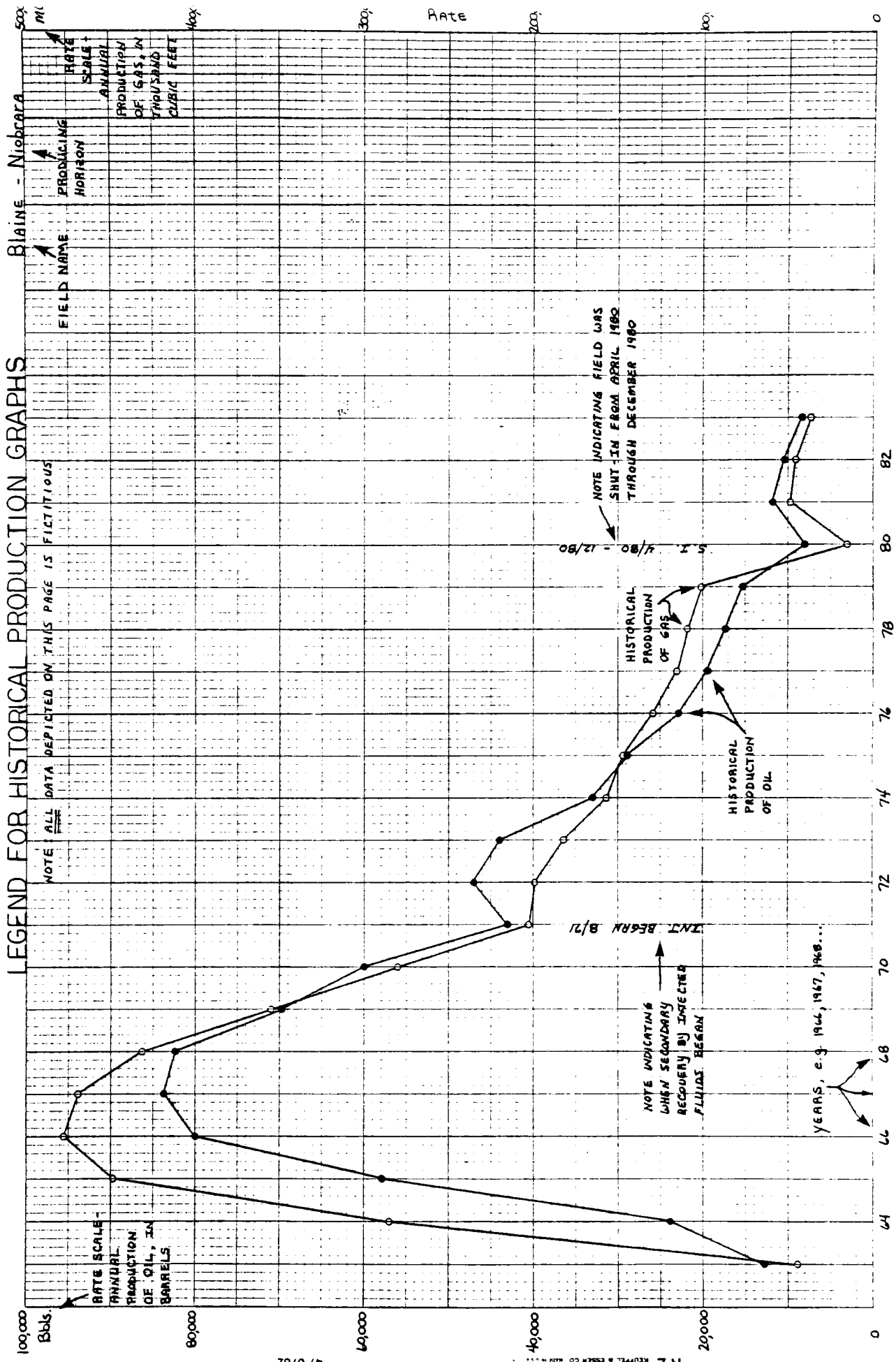
Parker, J.M., editor, 1961 Oil and Gas Field volume: Colorado-Nebraska: Rocky Mountain Association of Geologists, 389 pp.

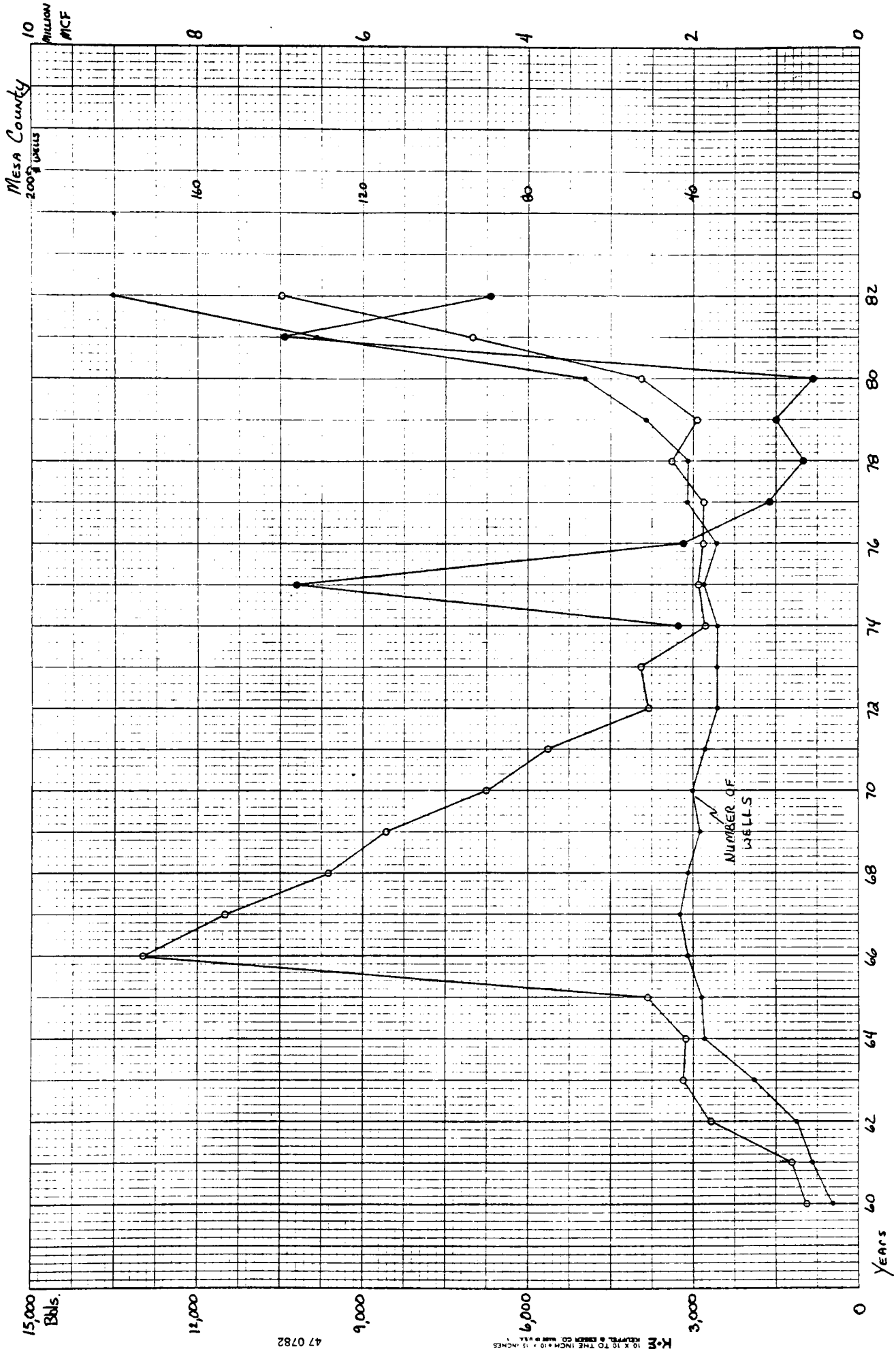
Appendix I

Historical production decline curve graphs for Mesa County. These graphs are presented in alphabetical order by Field name and then by producing horizons within each field.

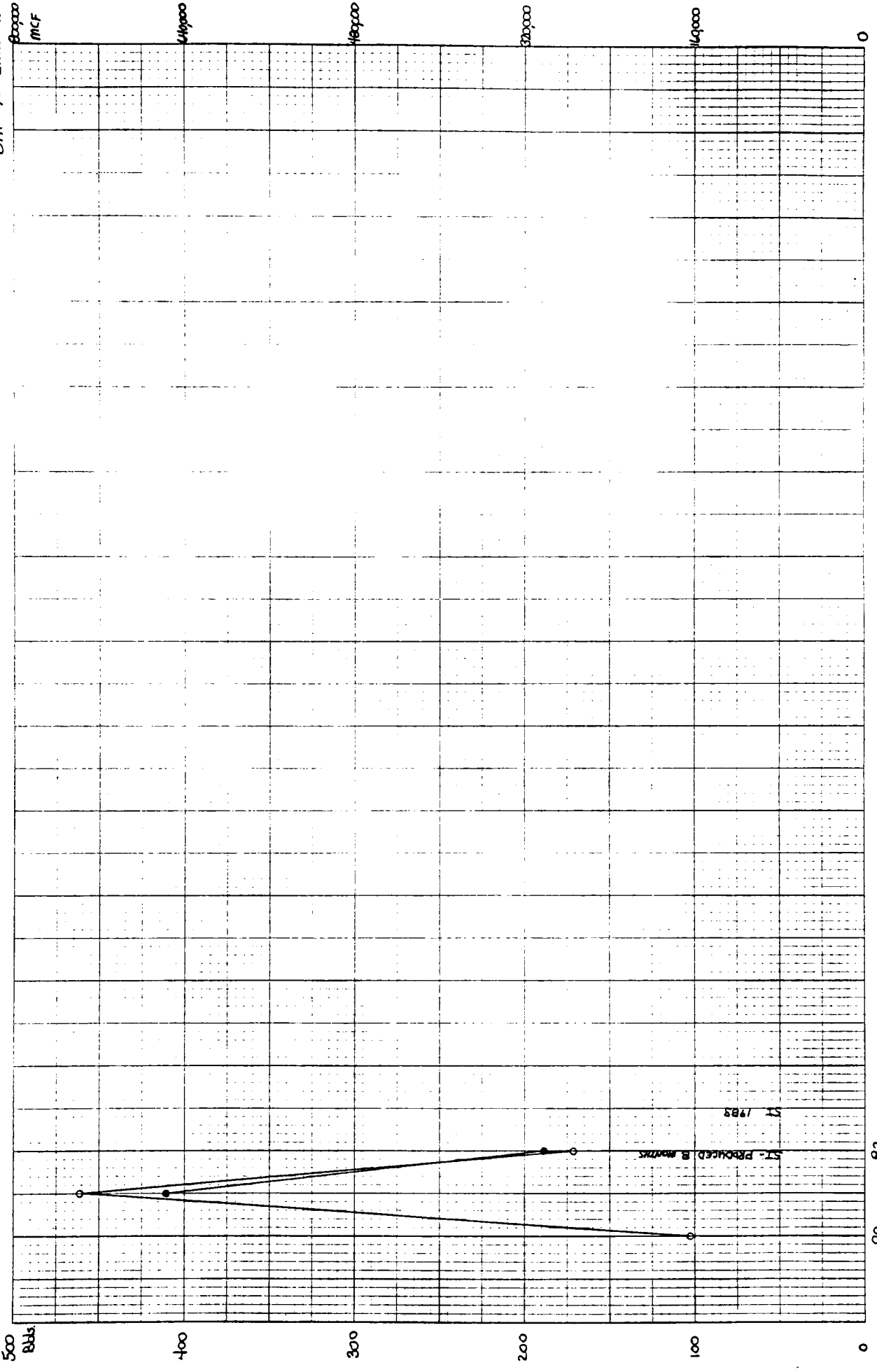
Note that only those fields actively producing as of 12-31-83 are included. Abandoned fields or field-horizons are not included.

LEGEND FOR HISTORICAL PRODUCTION GRAPHS



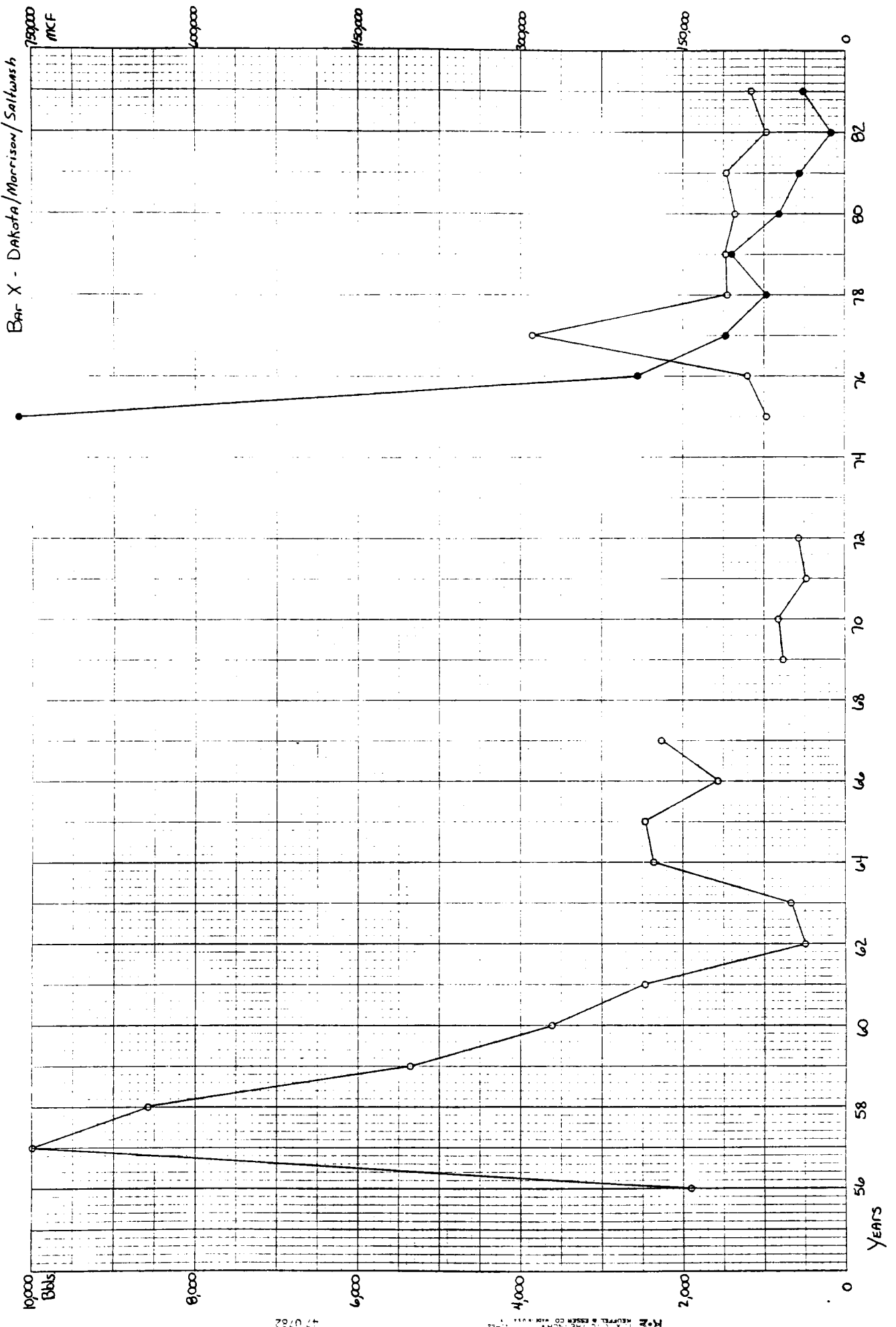


Bar X - Extenda

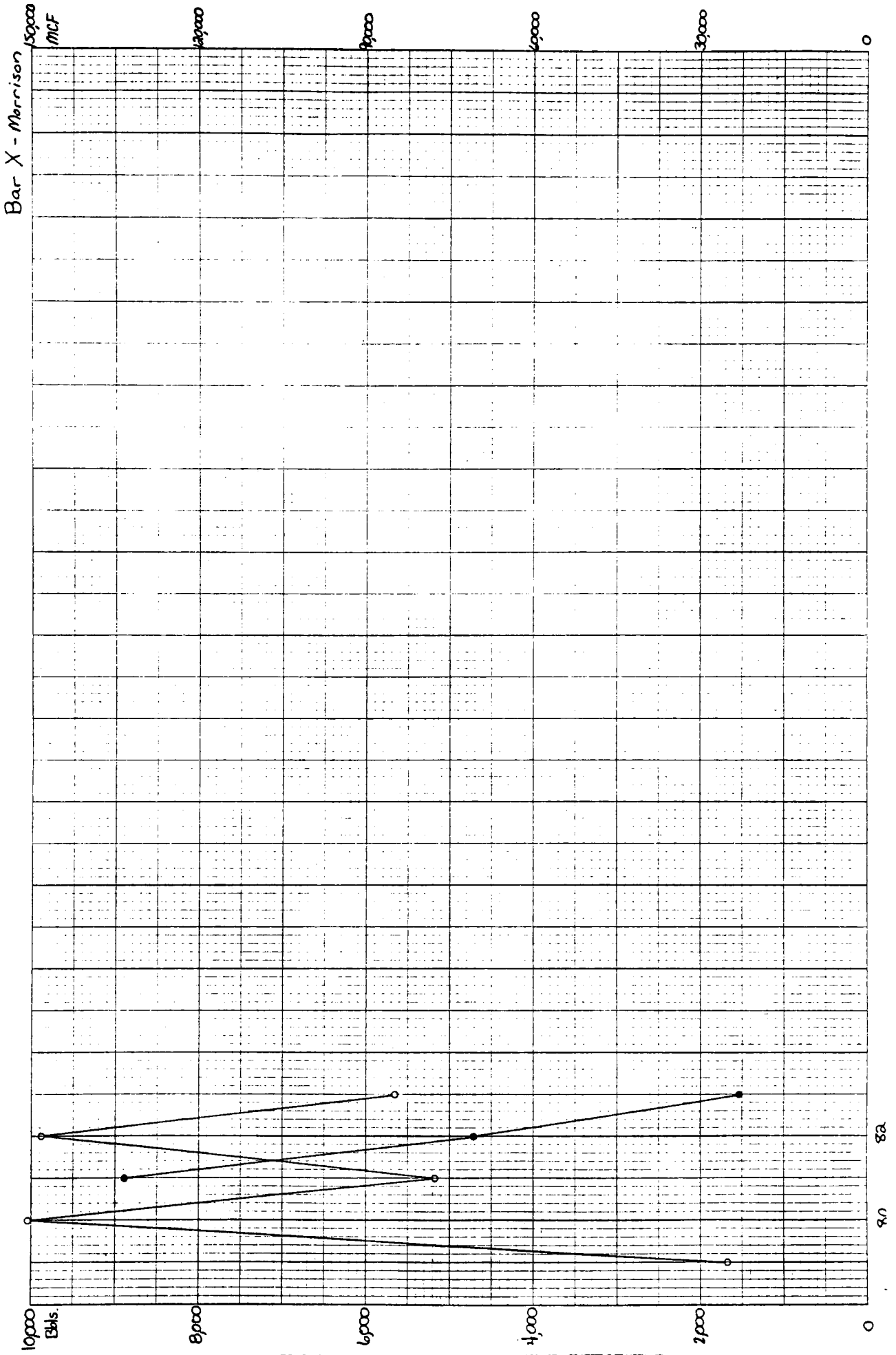


SI - PRODUCED BY WORKS
SI / 1985

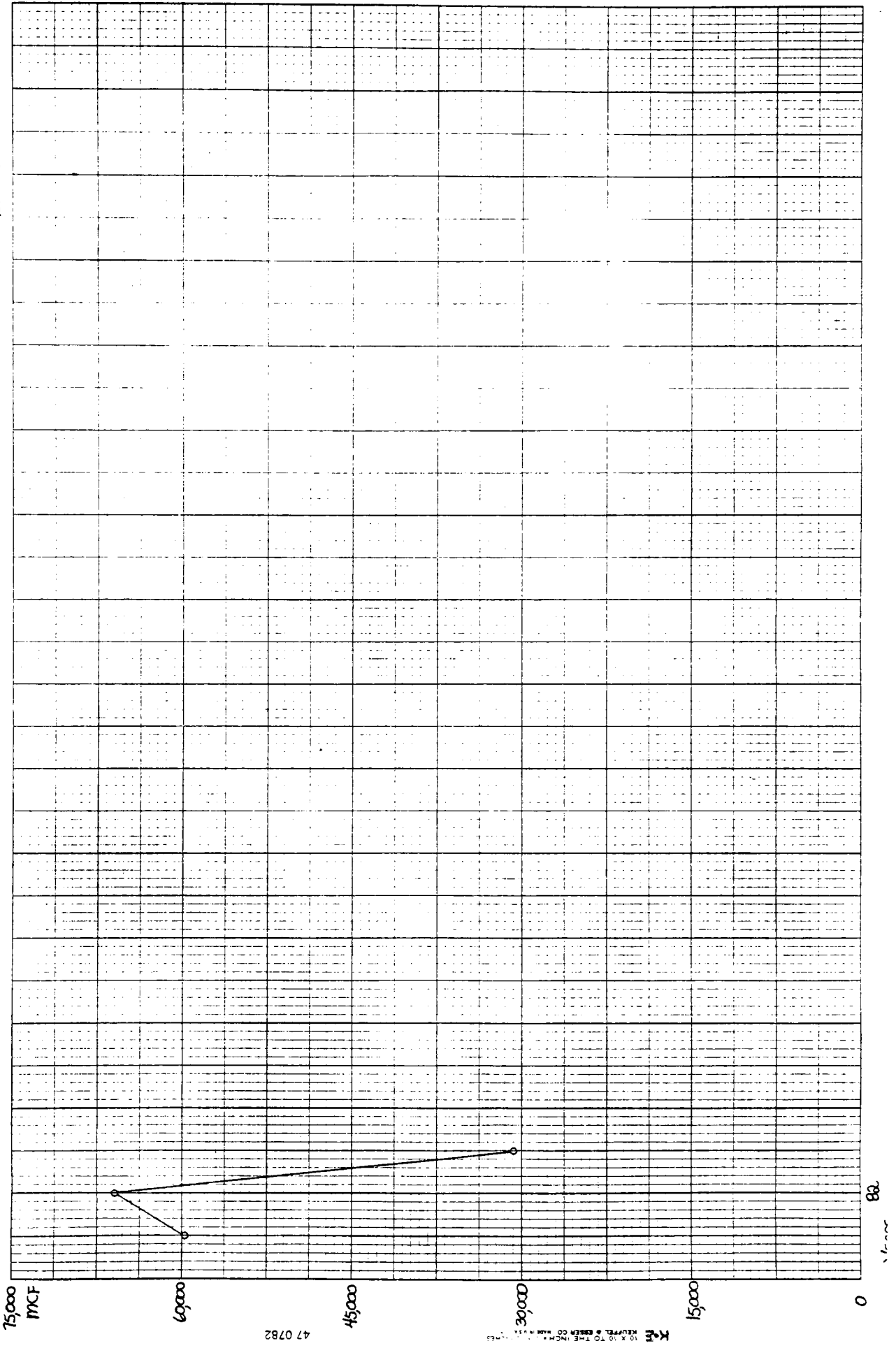
0 100 200 300 400 500
0 8 16 24 32 40 48 56 64 72 80 82
Years



Bar X - Morrison
150000
MCF



Bronco Flats - Cedar Mountain



47 0782

K&E 10 X 10 TO THE INCH

00051
MCF

00069

00051

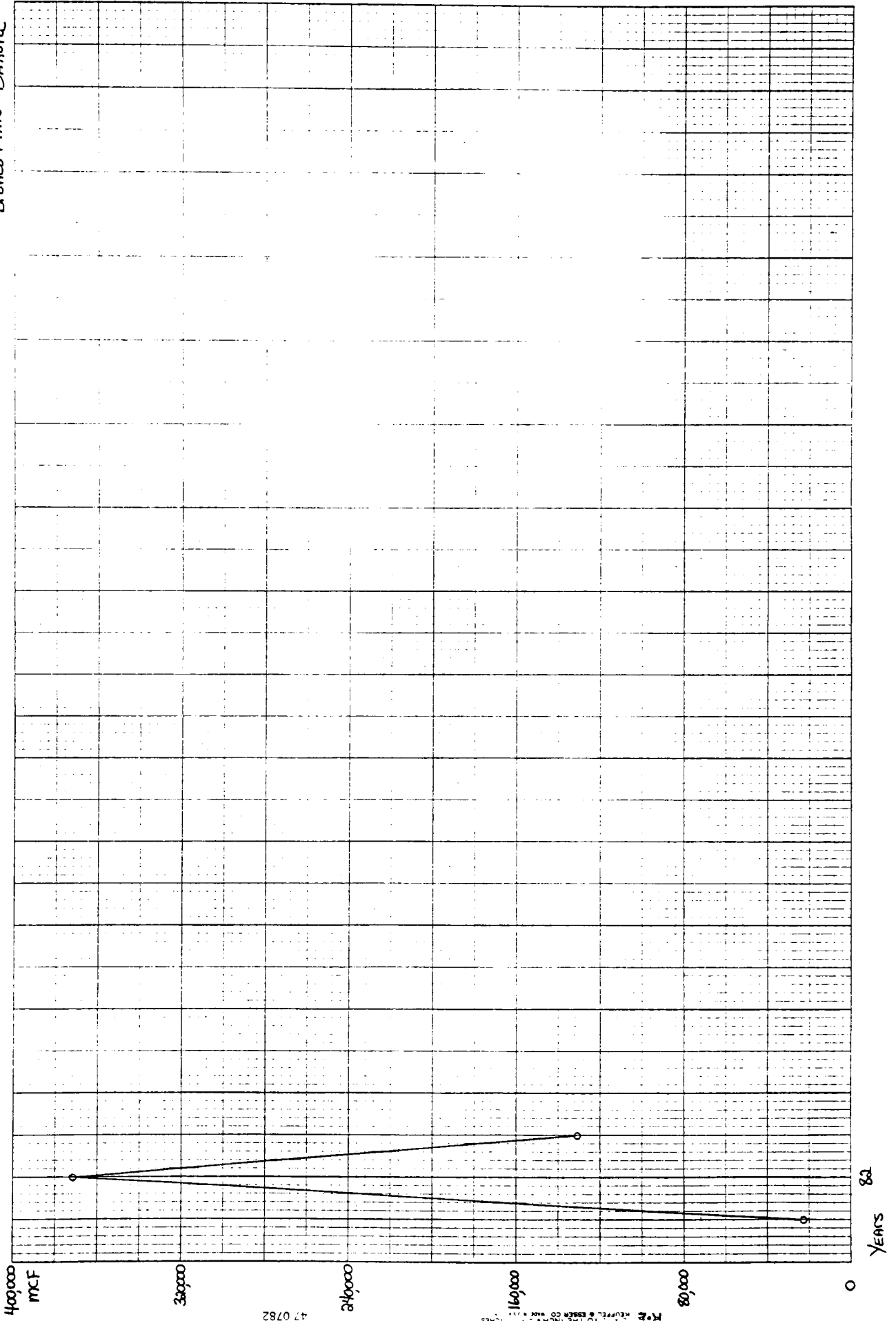
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00051

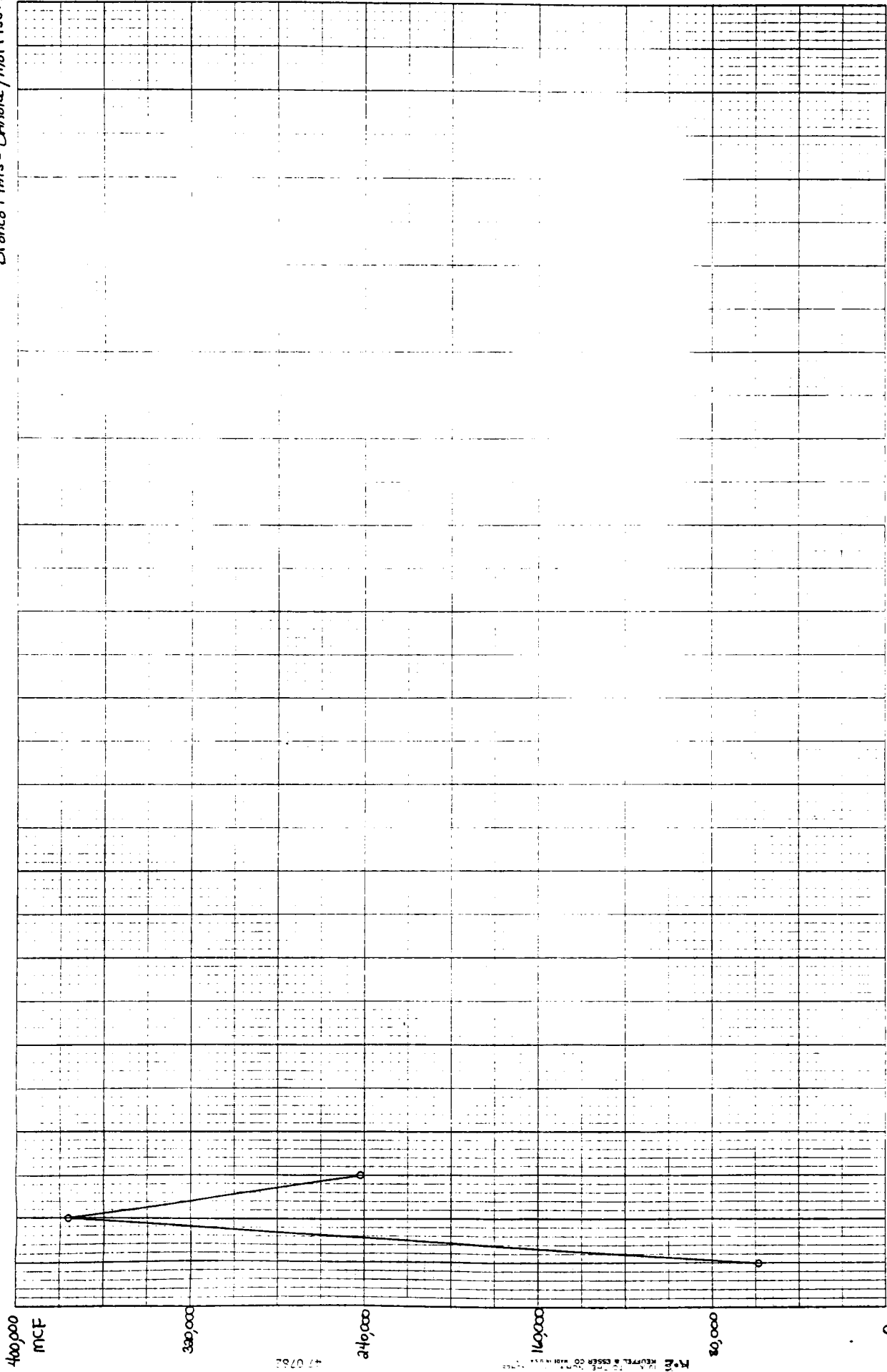
0

788
1999

Bronco Flats - Dakota



Bronco Flats - Dakota / Morrison



YEARS

MCF

0

100,000

200,000

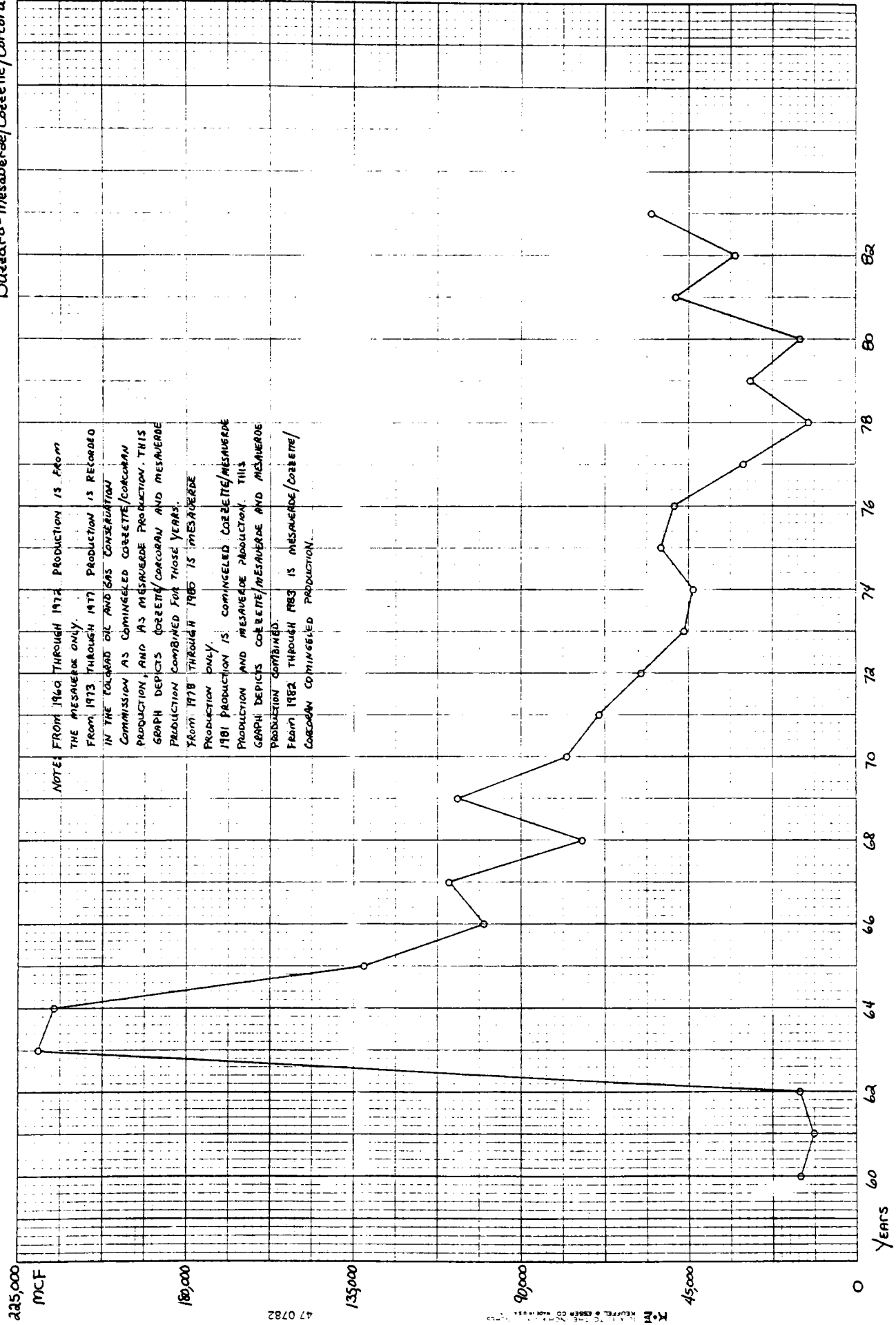
300,000

400,000

47 0782

M. S. REUFEL, ENGINEER OF MINNESOTA

Buzard - Mesaverde/Correite/Corcoran



NOTE: FROM 1960 THROUGH 1972 PRODUCTION IS FROM THE MESAVERDE ONLY.
 FROM 1973 THROUGH 1977 PRODUCTION IS RECORDED IN THE COLGARD OIL AND GAS CONSERVATION COMMISSION AS COMINGLED CORREITE/CORCORAN PRODUCTION, AND AS MESAVERDE PRODUCTION. THIS GRAPH DEPICTS CORREITE/CORCORAN AND MESAVERDE PRODUCTION COMBINED FOR THOSE YEARS.
 FROM 1978 THROUGH 1980 IS MESAVERDE PRODUCTION ONLY.
 1981 PRODUCTION IS COMINGLED CORREITE/MESAVERDE PRODUCTION AND MESAVERDE PRODUCTION. THIS GRAPH DEPICTS CORREITE/MESAVERDE AND MESAVERDE PRODUCTION COMBINED.
 FROM 1982 THROUGH 1983 IS MESAVERDE/CORREITE/CORCORAN COMINGLED PRODUCTION.

225,000
MCF

180,000

135,000

90,000

45,000

0

60

62

64

66

68

70

72

74

76

78

80

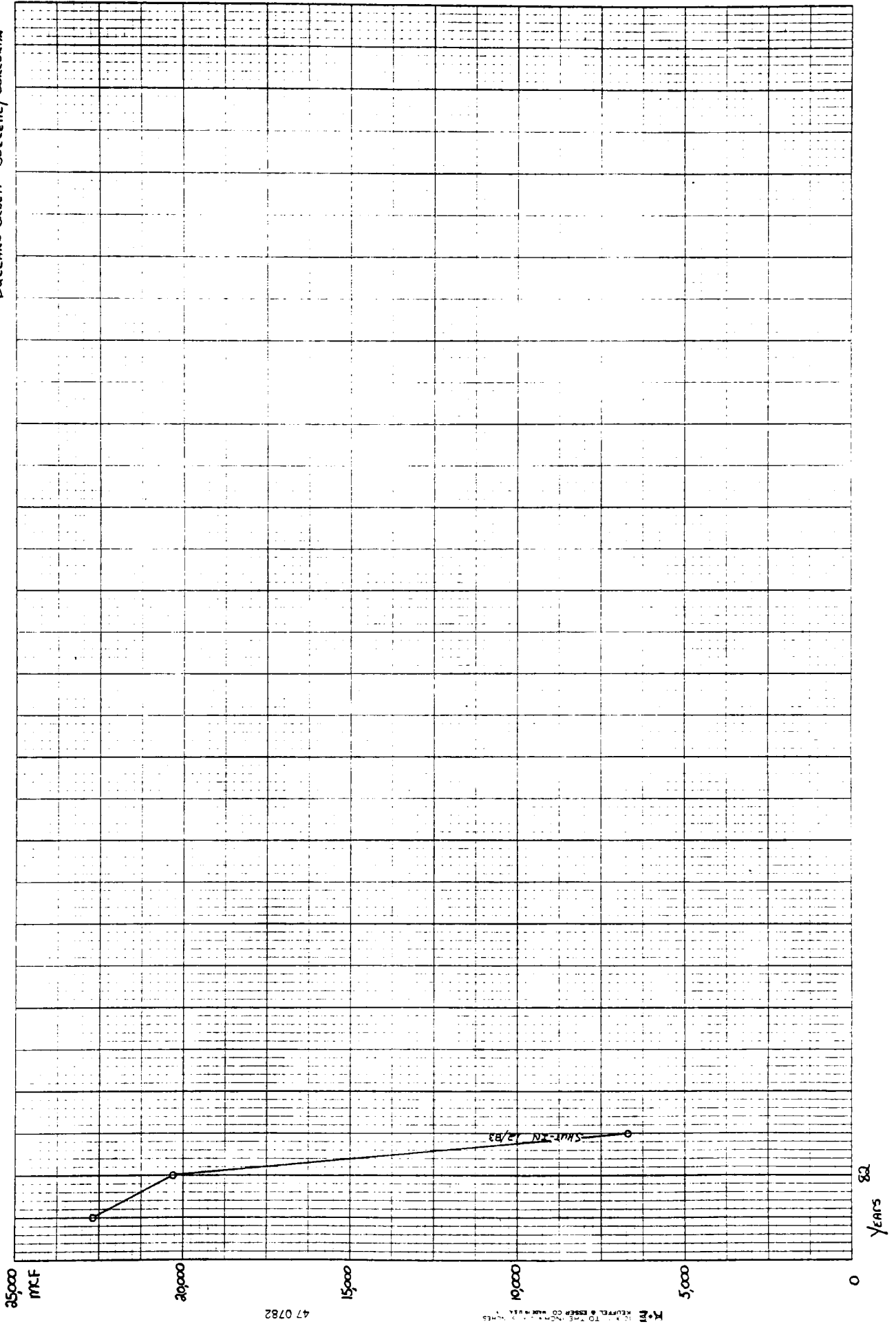
82

YEARS

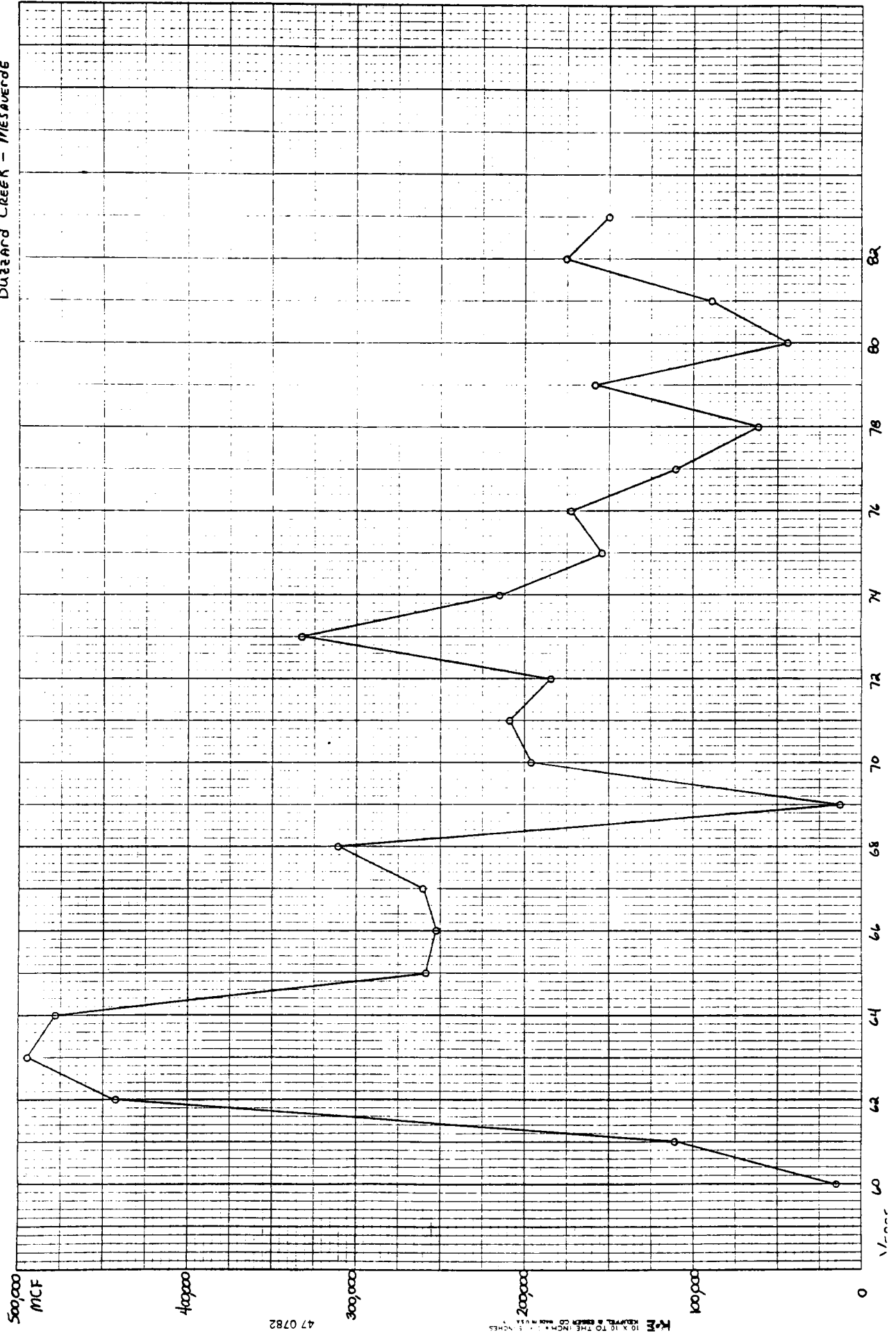
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© M. KEUFFEL & ESSER CO.

Buzzard Creek - Cozette/Corcoran



Buzzard Creek - Mesaverde

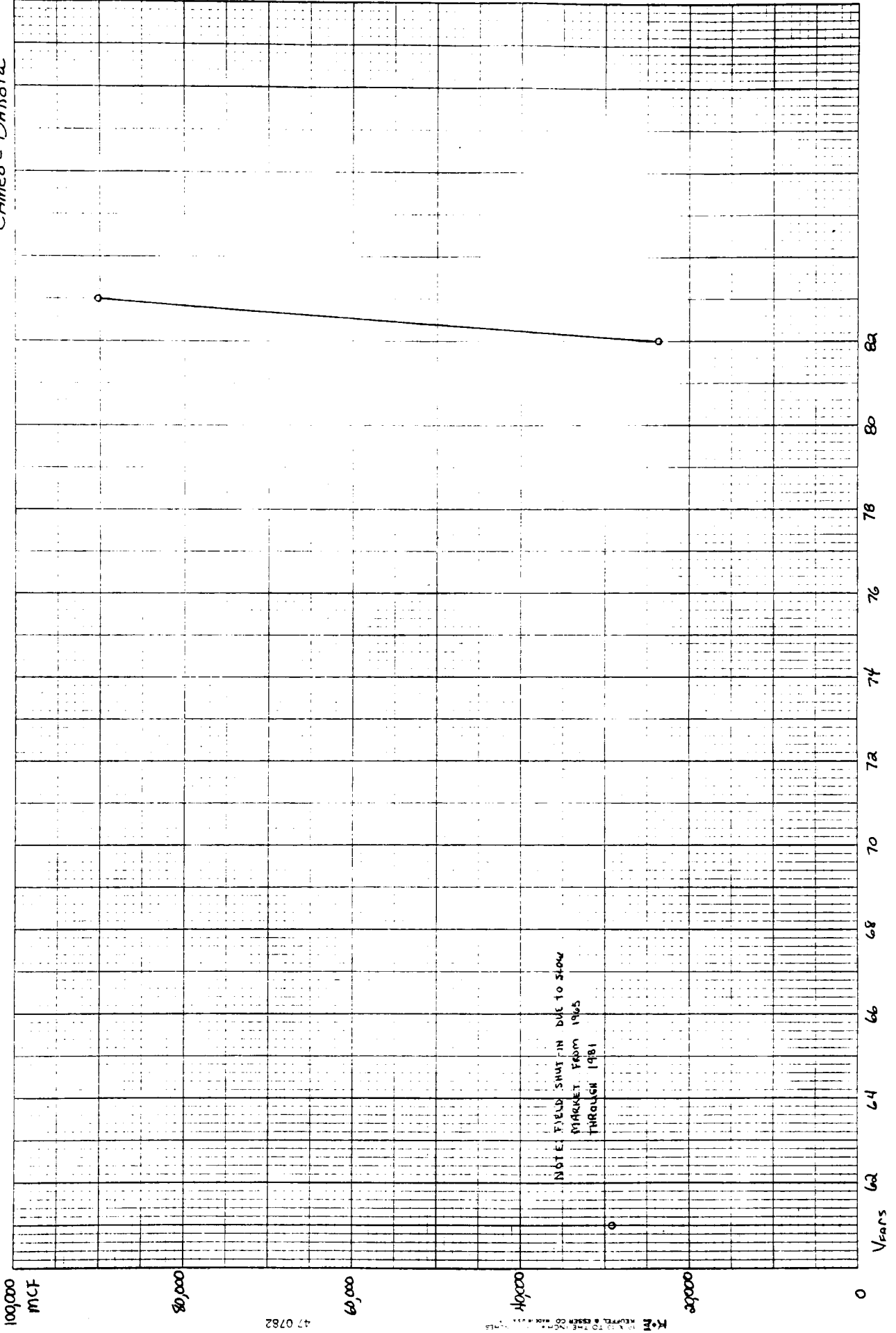


47 0782

K&M 10 X 10 TO THE INCH 1/4 INCHES

1/1988

CAMEO - DAKOTA



NOTE: FIELD SHUT-IN DUE TO SLOW MARKET FROM 1965 THROUGH 1981

100,000
MCF

80,000

60,000

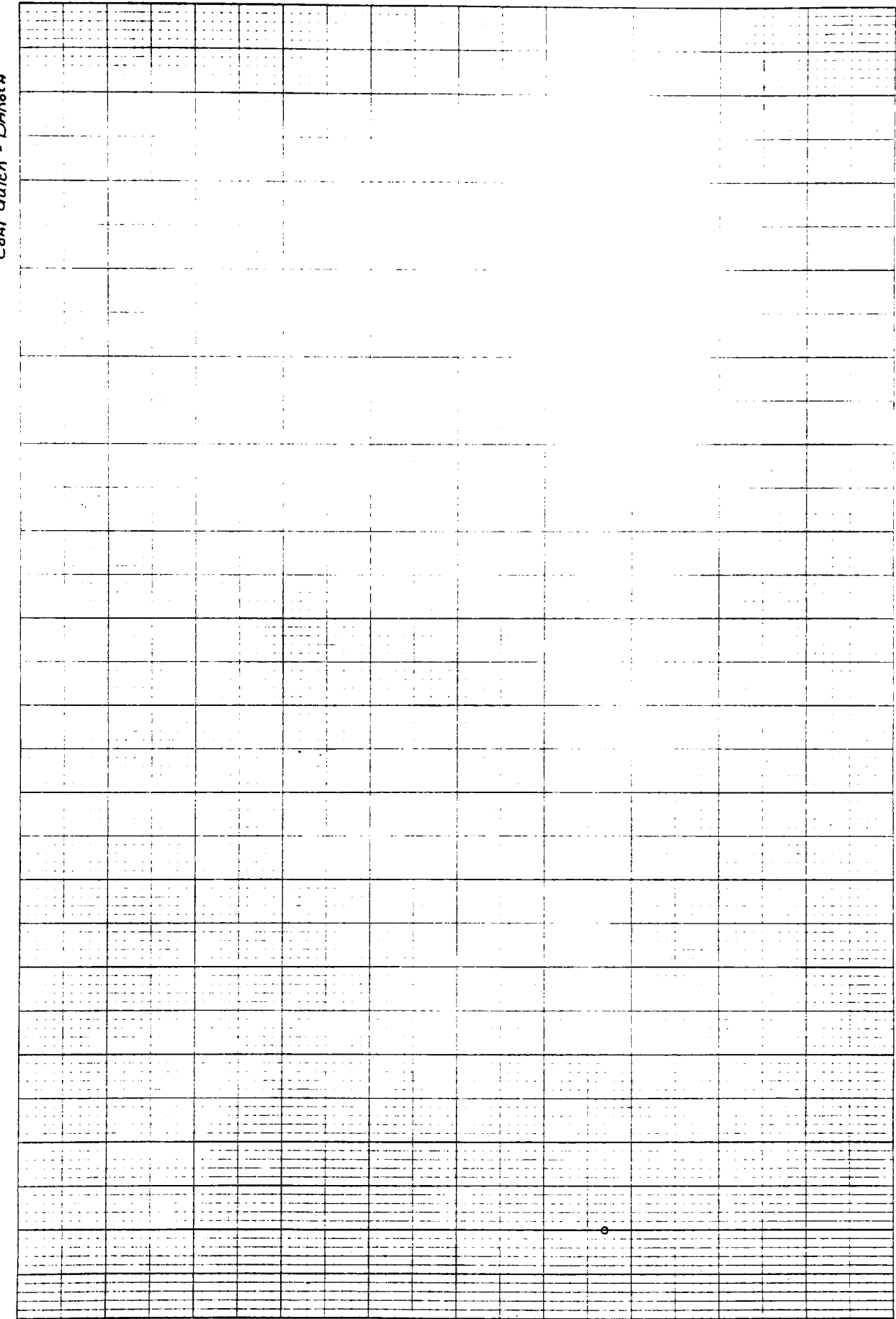
40,000

20,000

0

Years 62 64 66 68 70 72 74 76 78 80 82

Coal Gulch - Dakota

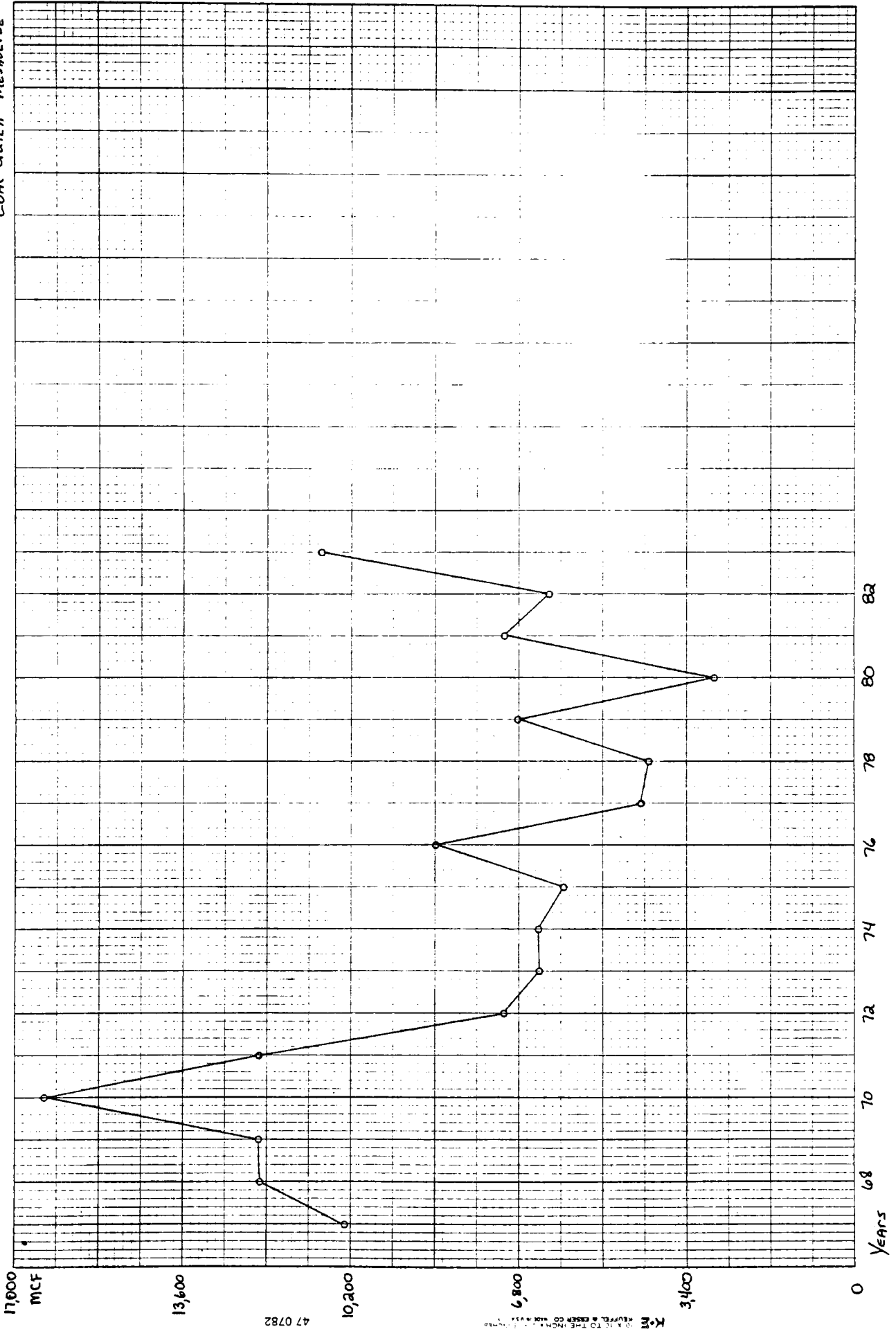


100000
MCF
90000
80000
70000
60000
50000
40000
30000
20000
10000
0

0
10
20
30
40
50
60
70
80
90

Years

Coal Gulch - Mesaverde



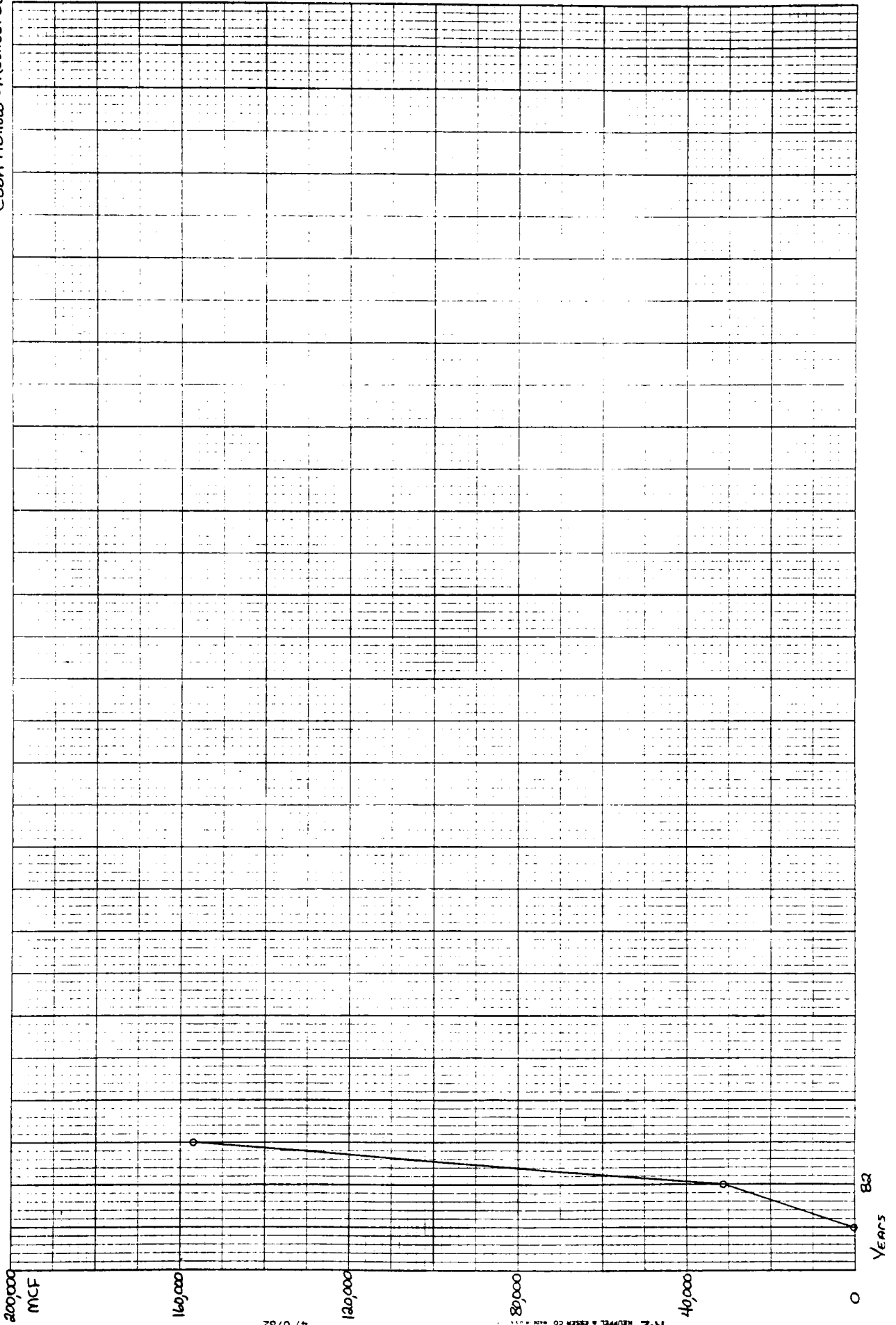
K-M
REFUEL & CRACK CO. MESAVERDE

47 0782

MCF

YEARS

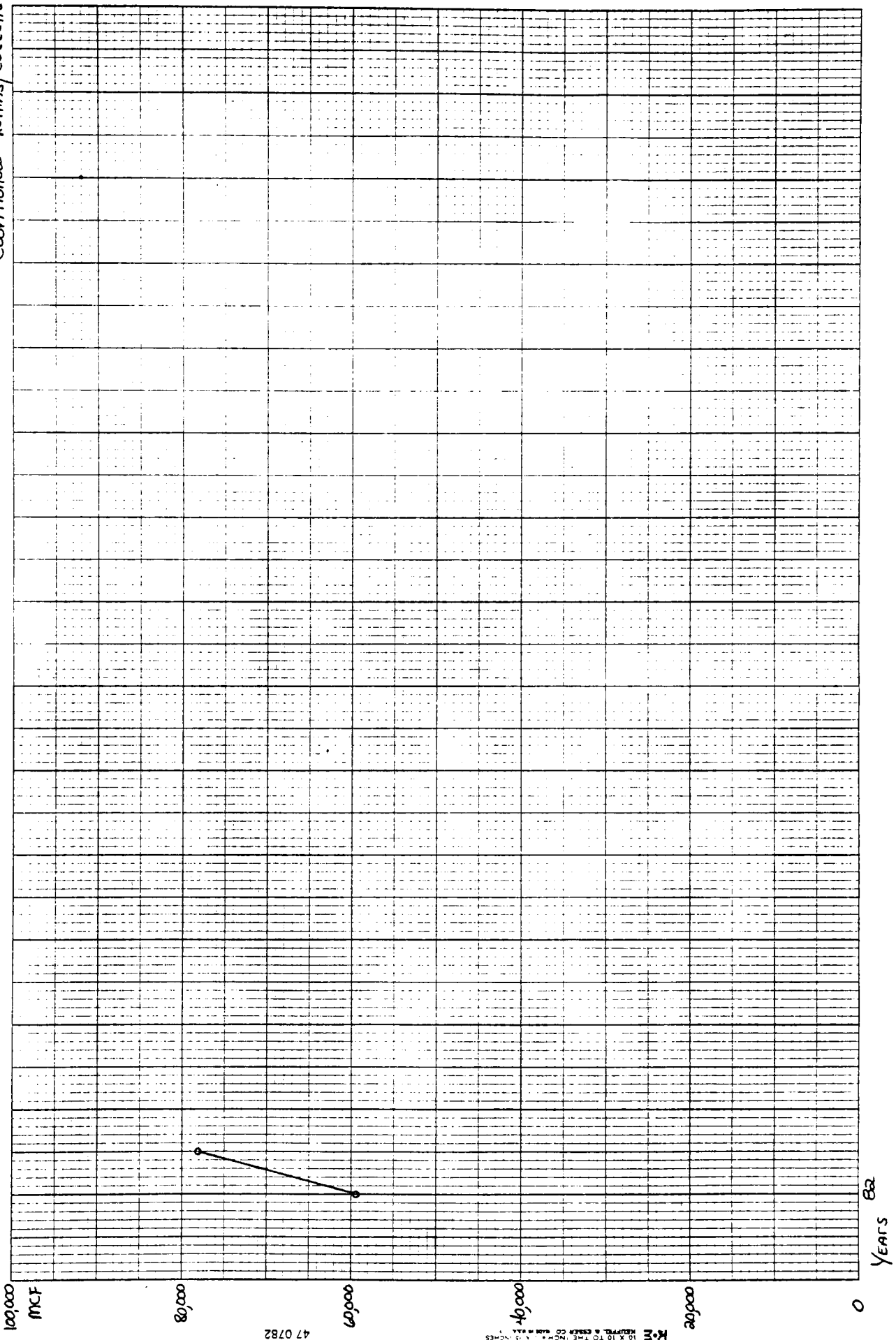
Coon Hollow - Mesaverde



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K&M
10 2 1 2 THE ROCKY
REDFIELD & EISEN CO. DENVER, CO.

Coon Hollow - Rollins / Cozzette



47 0782

K-2 10 X 10 TO THE INCH 1.5 INCHES REPRODUCED IN GREEN OR BLUE INK

100,000
MCF

000,000

000,000

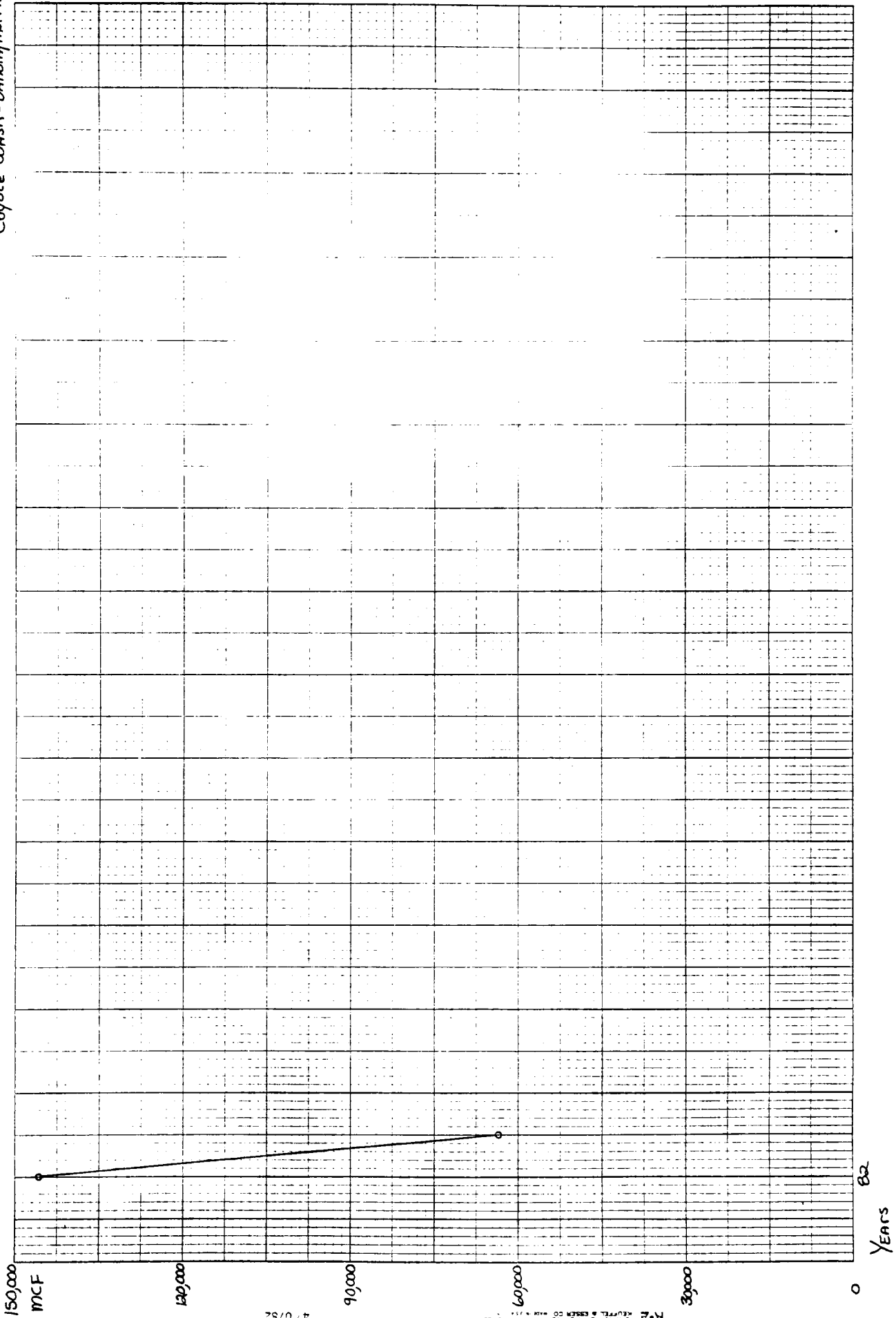
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0

YEARS

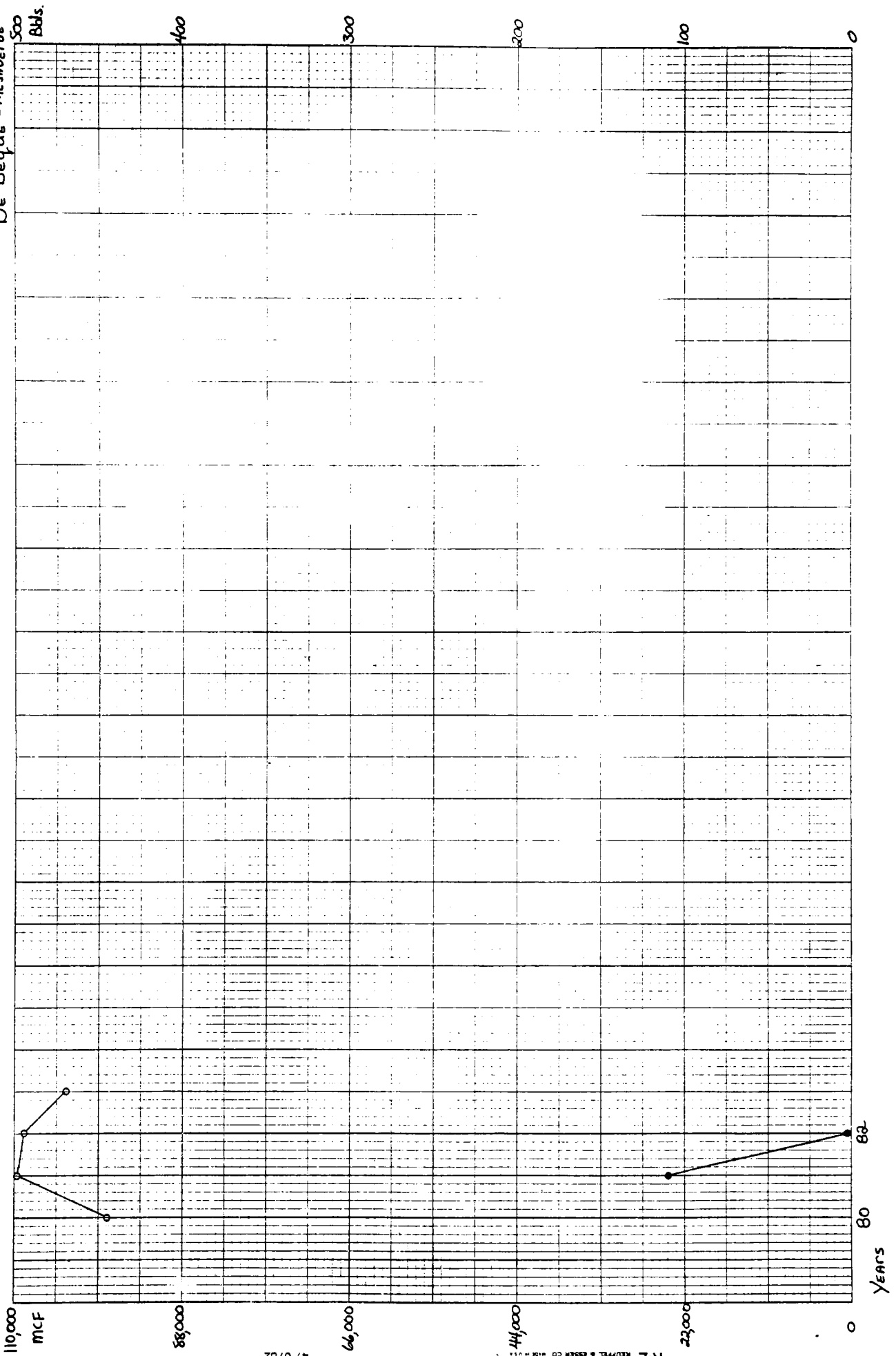
Coyote Wash - Dakota/Morrison



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R-E KEPT TO THE POINT OF THE

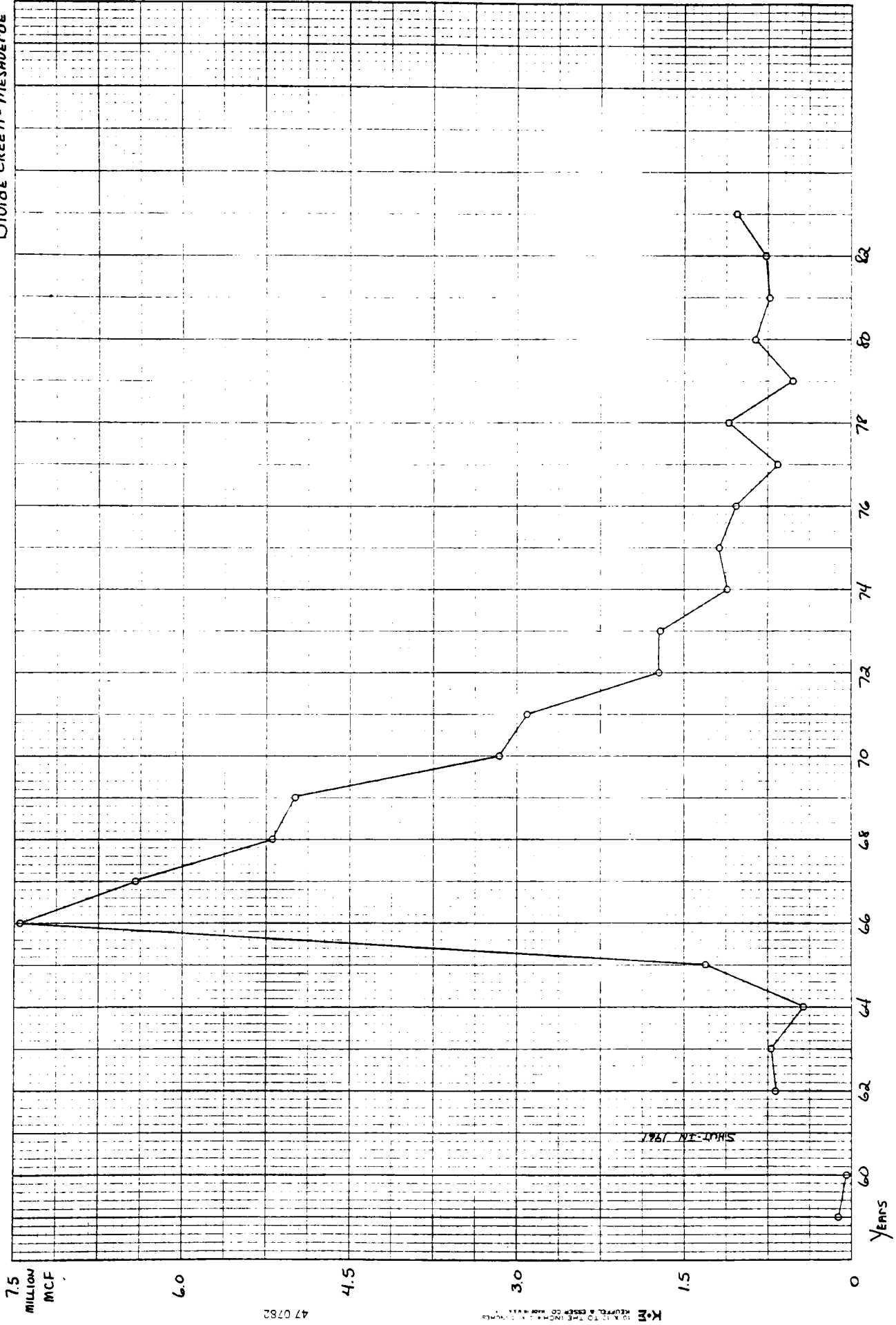
De Beque - Mesaurde
Bbls.



47 0782

K & M
KUMPTON & EISEN CO. 10 X 10 TO THE INCH
10 X 10 TO THE INCH

Divide Creek - Mesaverde

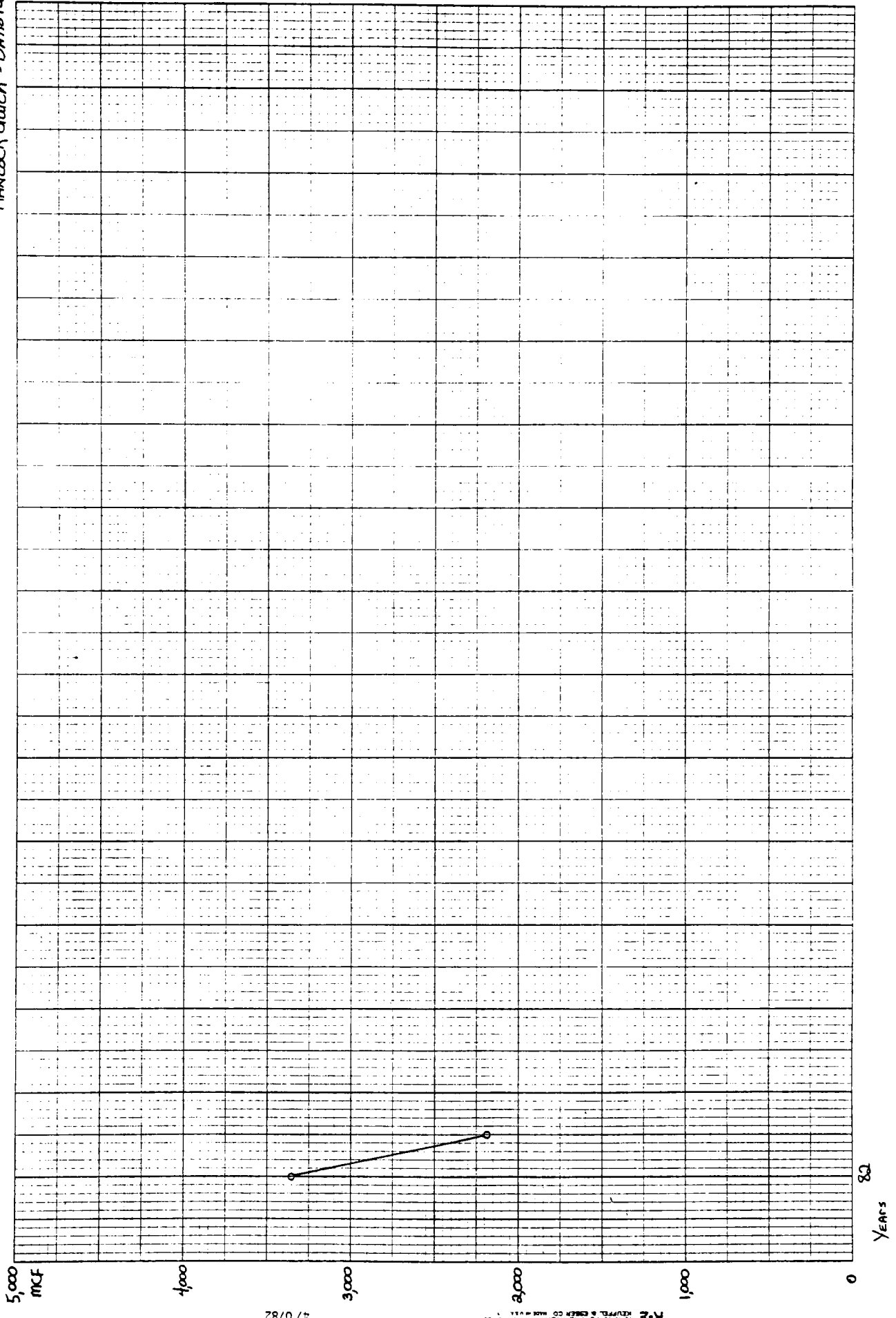


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K&M
KEUFFEL & ESSER CO. MINNAPOLIS, MINN.

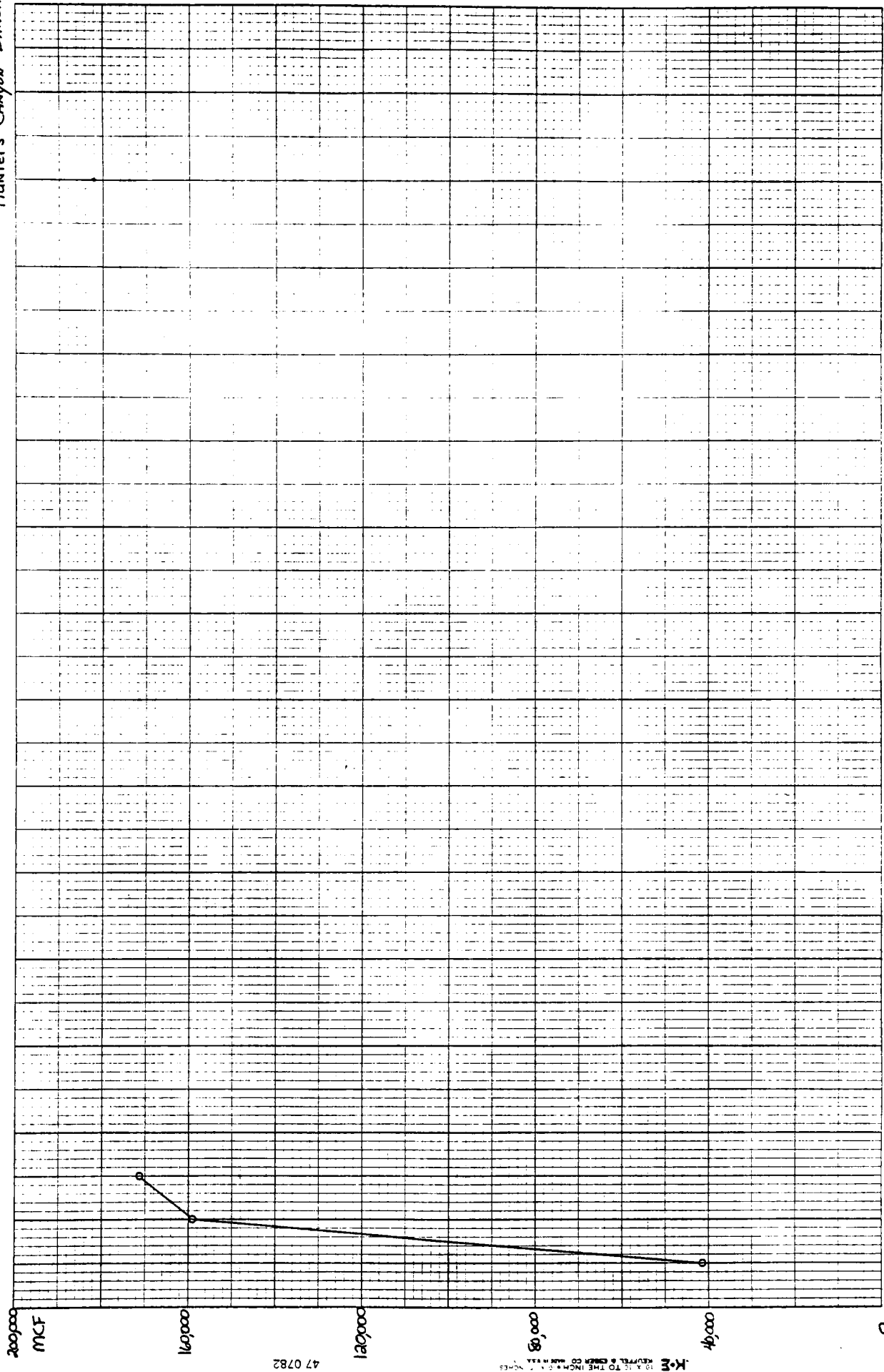
SHUT-IN 1981

Hancock Gulch - Dakota



47 0782

K-M
KENTON & BAKER CO. INCORPORATED
12 & 15 TO THE INCORPORATED



200,000
MCF

100,000

0

0

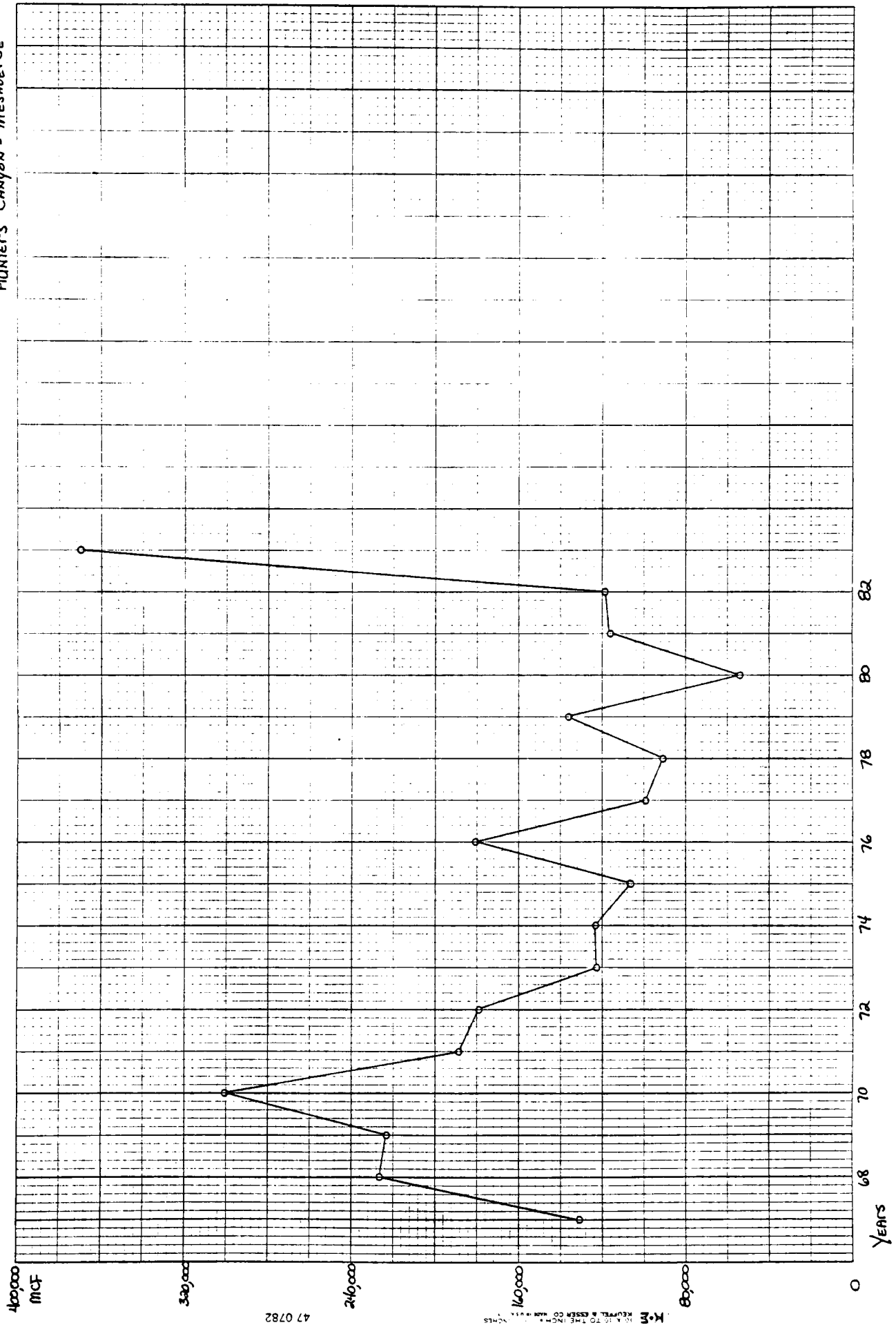
0

Years

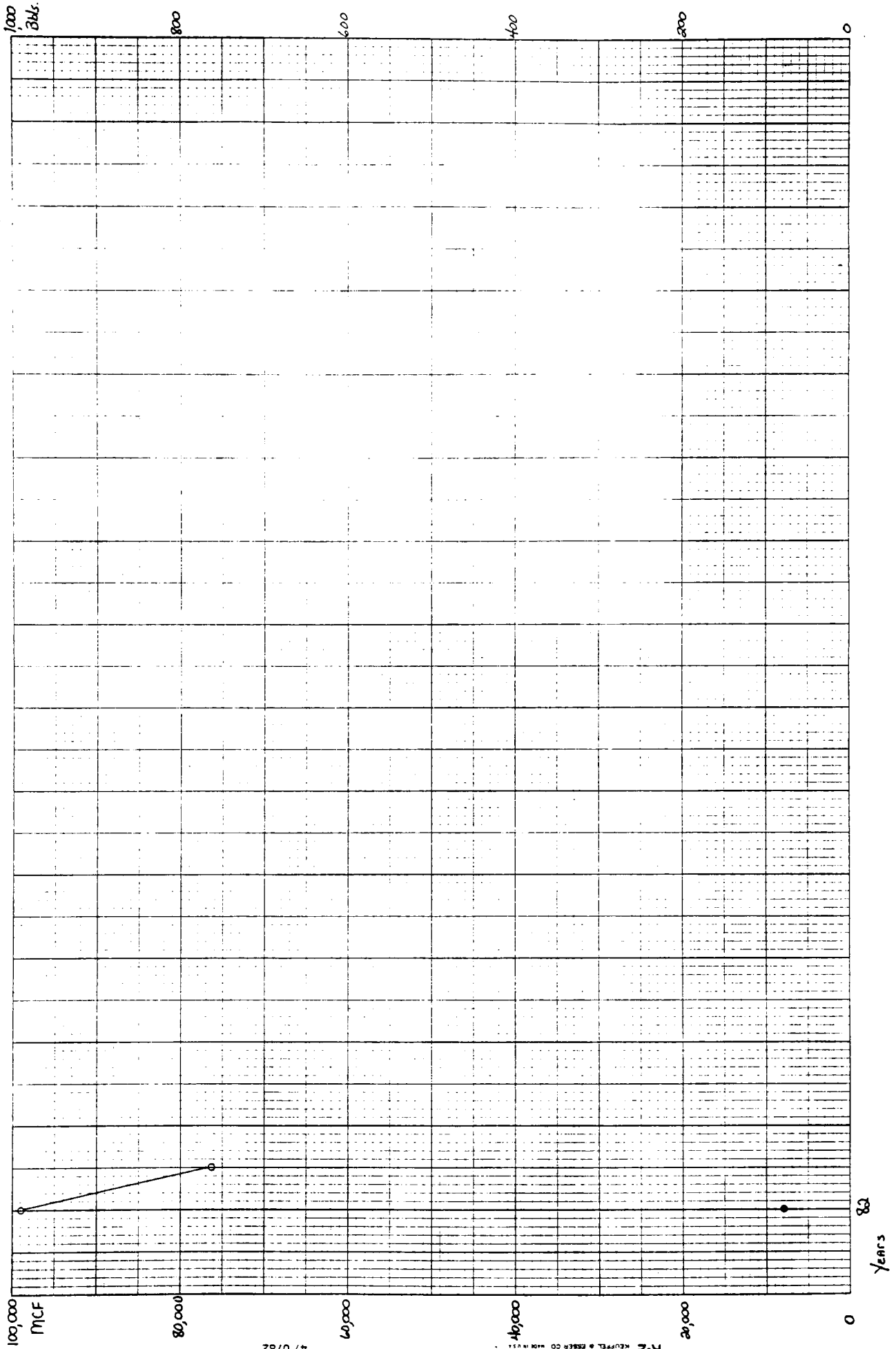
47 0782

K-E
10 X 10 TO THE INCH
KUPP & CO. CHEN CO. MADE IN U.S.A.

Hunters Canyon - Mesaverde



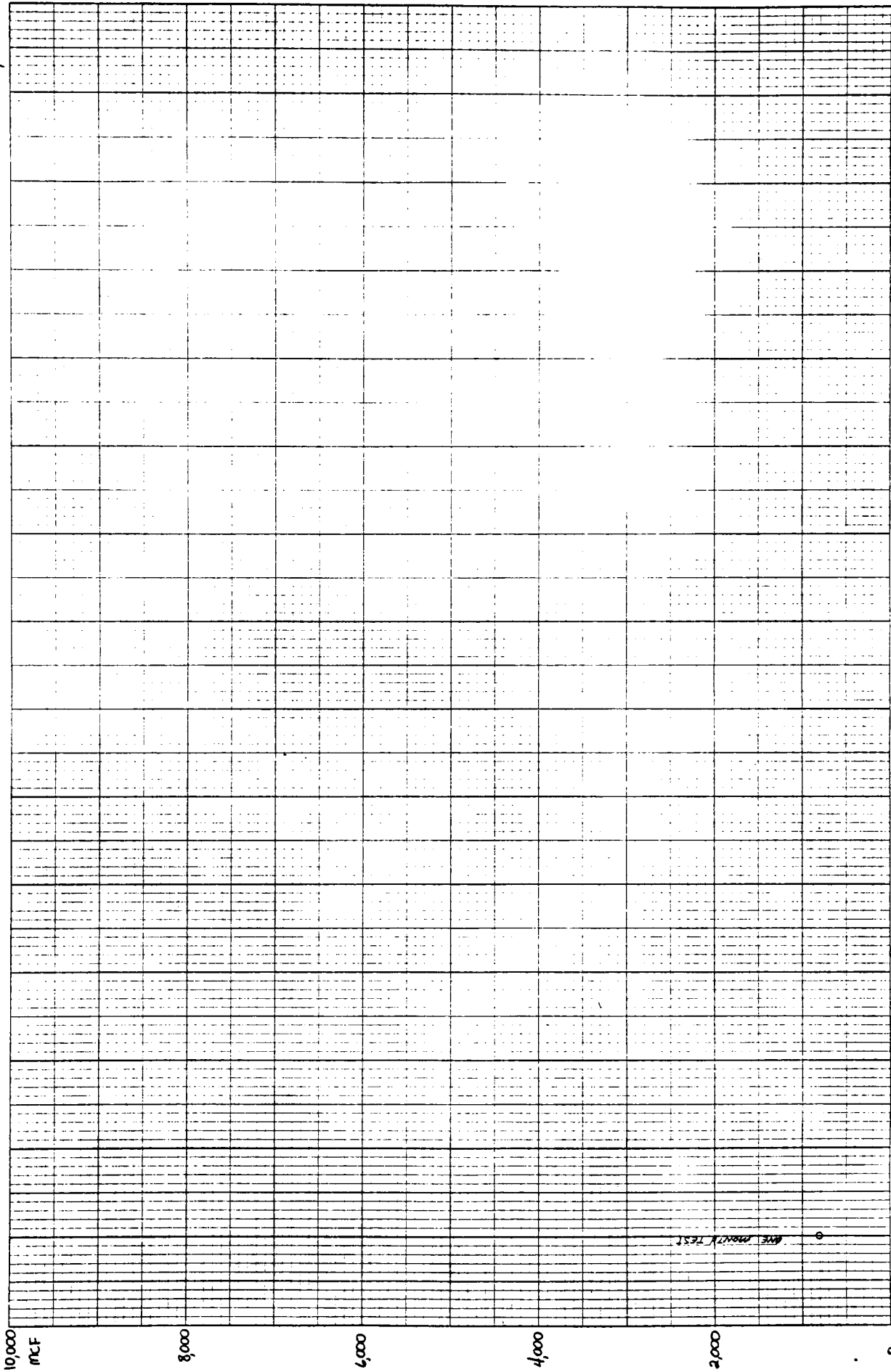
Lipan Wash - Dakota



47 0782

K-M
KEPPEL & BAKER CO. ENGINEERS

Peachtree - Dakota/Morrison

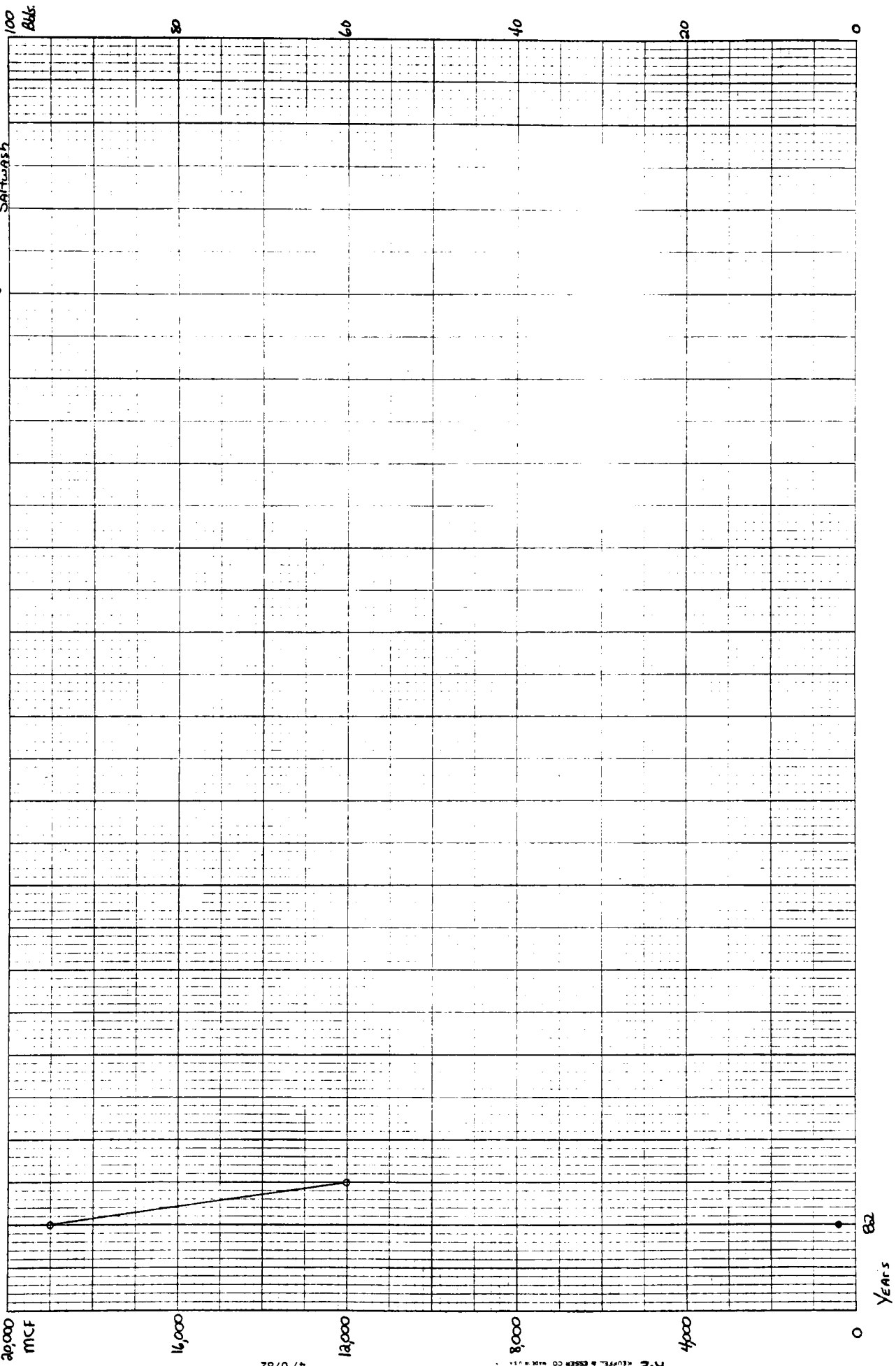


Years

47 0782

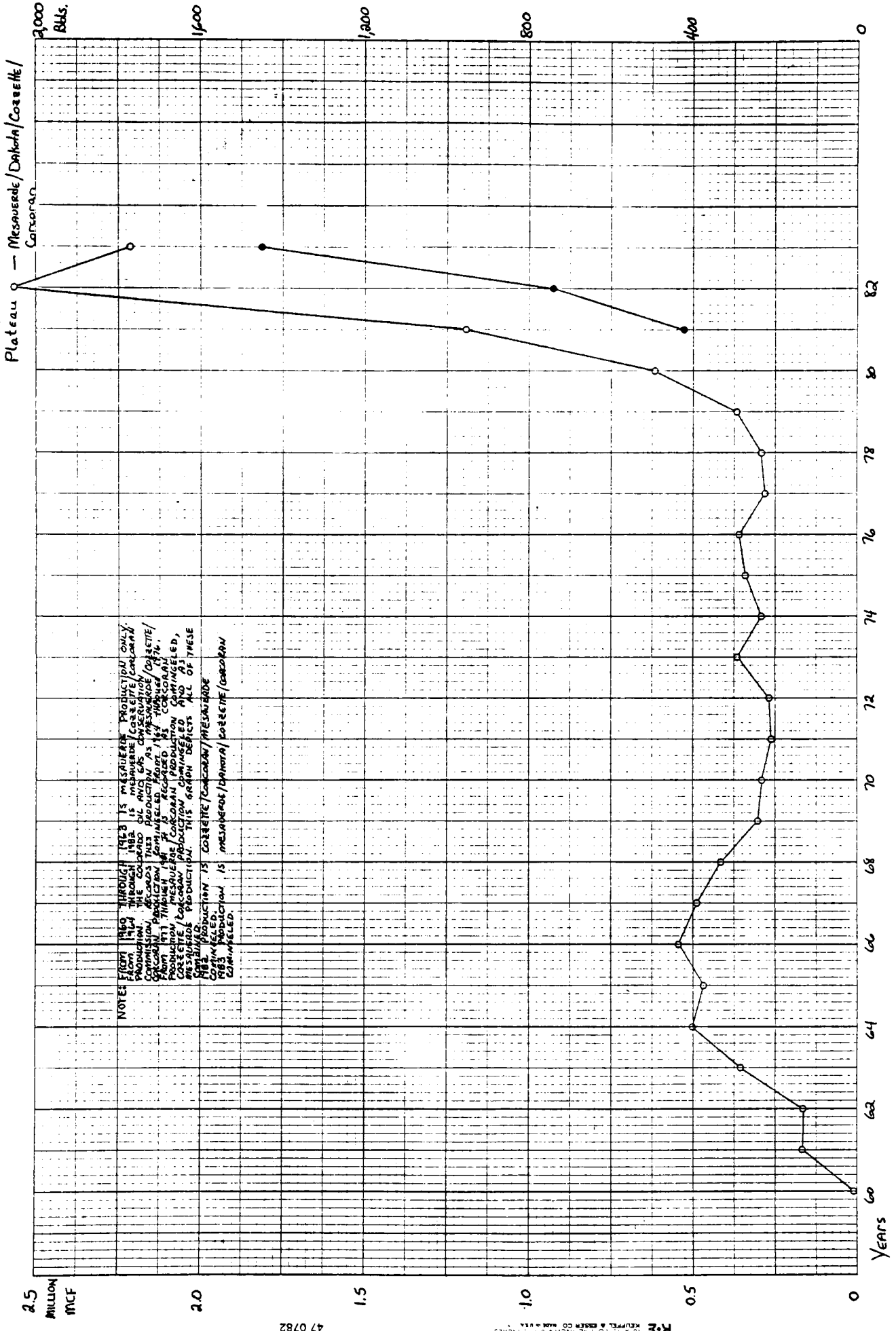
K-3
10 X 10 TO THE INCH • 2 X 2 INCHES
KEUFFEL & ESSER CO. MANHATTAN, N.Y.

Persigo Wash - Buckhorn/Dakota/Morrison/
Saltwash

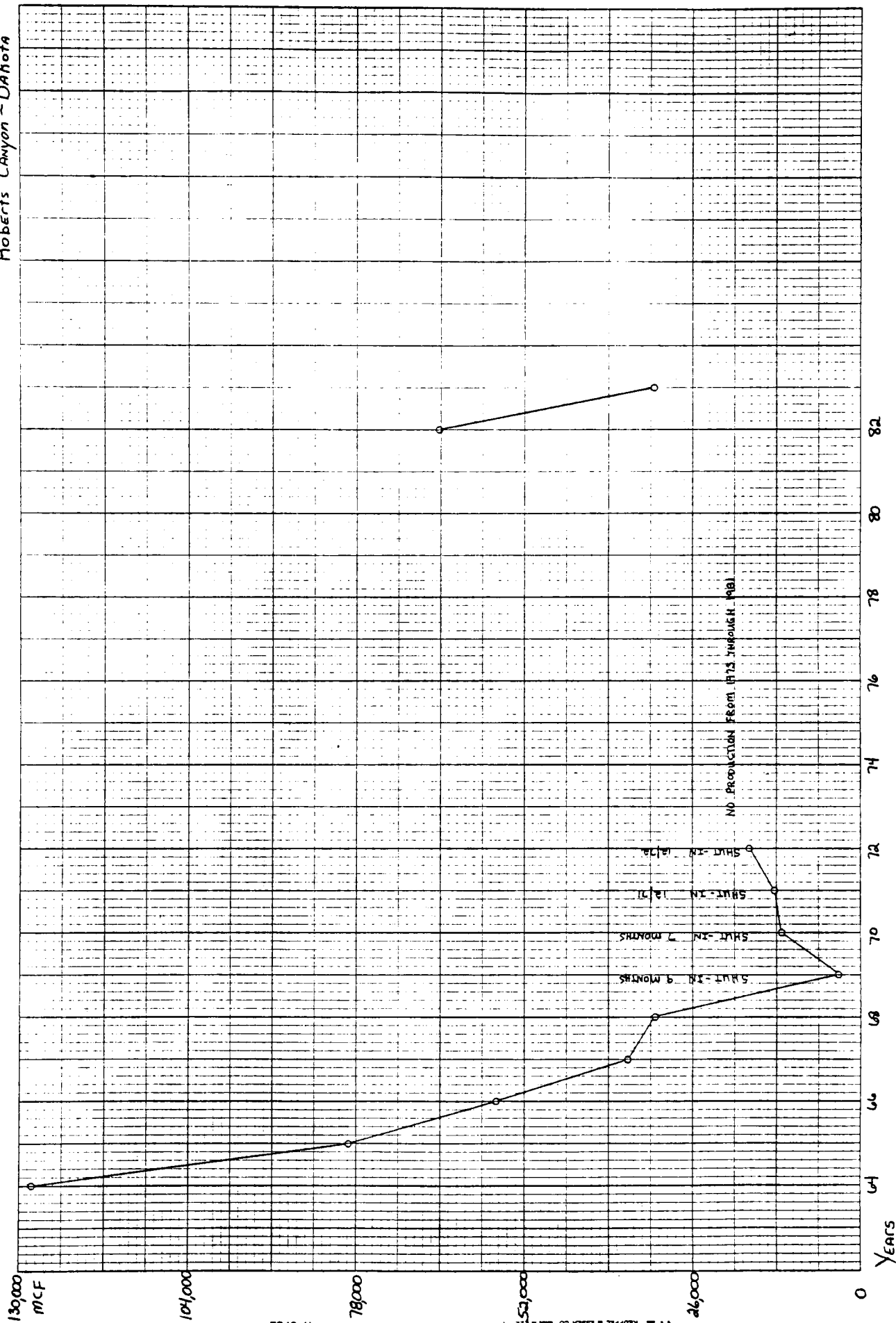


47 0782

K-E
KEUFFEL & ESSER CO. MADE IN U.S.A.



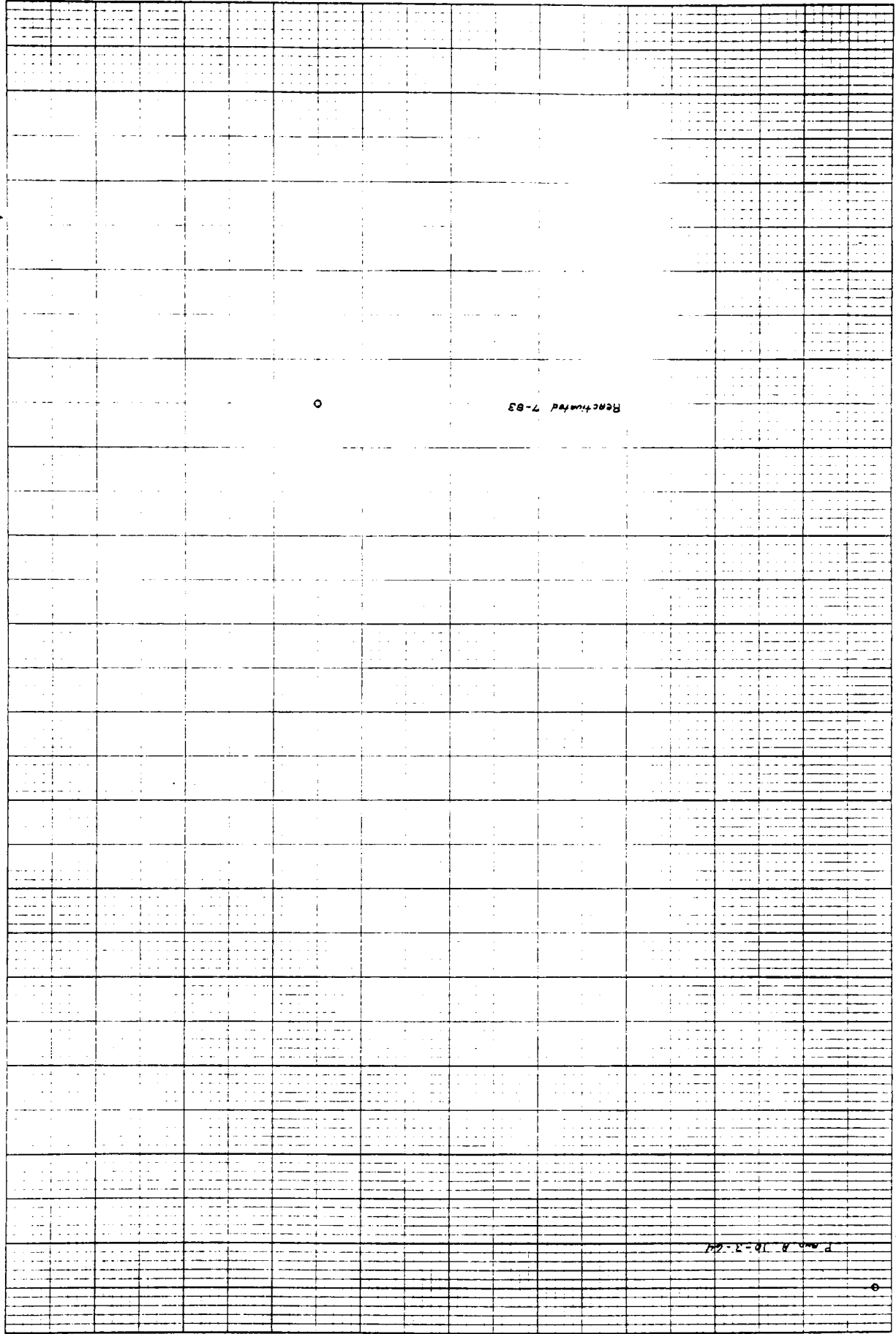
Roberts Canyon - Dakota



47 0782

K-M
10 X 10 TO THE INCH * 10 X 5 INCHES
KUMPER & BREN CO. INC. * 1971

SHEEP CREEK - COZZETTE / CORCORAN



10000
mcf

00008

00007

00004

00002

0

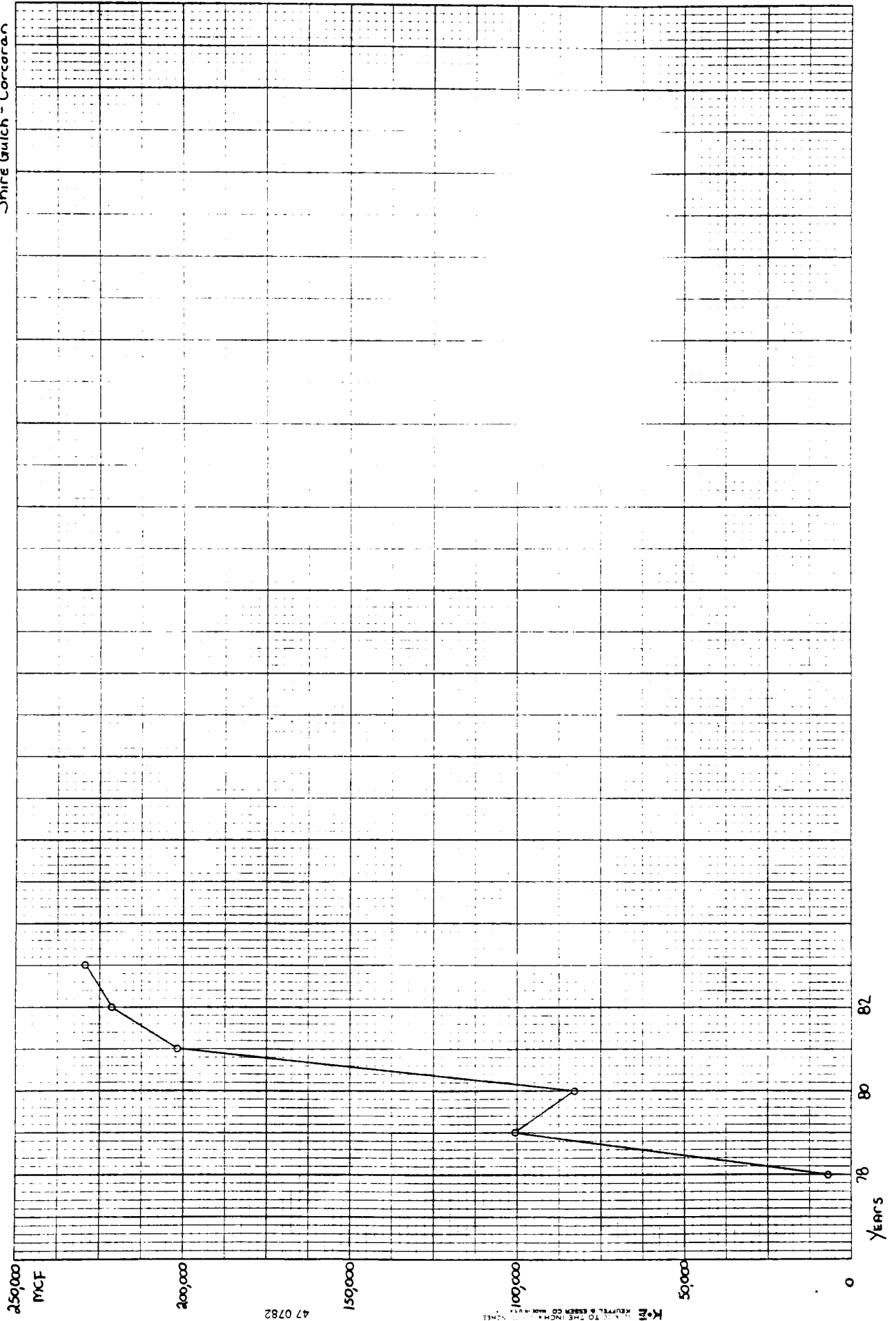
47 0782

K-E 10 X 10 TO THE INCH
HEMPLE & BERRY CO. MADE IN U.S.A.

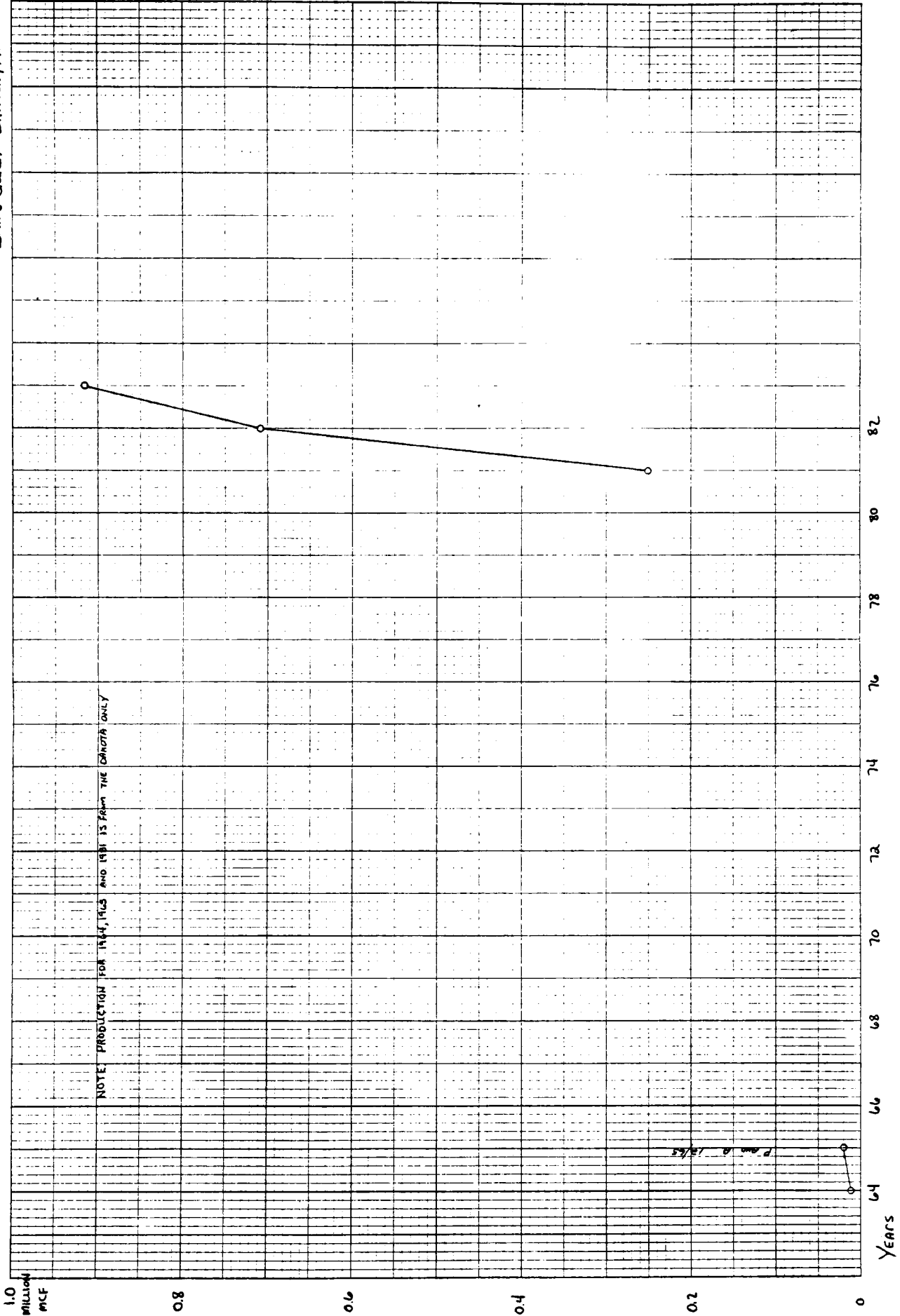
P. 10-2-74

RECHARTED 7-83

Shire Gulch - Corcoran



Shire Gulch - Dakota / Morrison

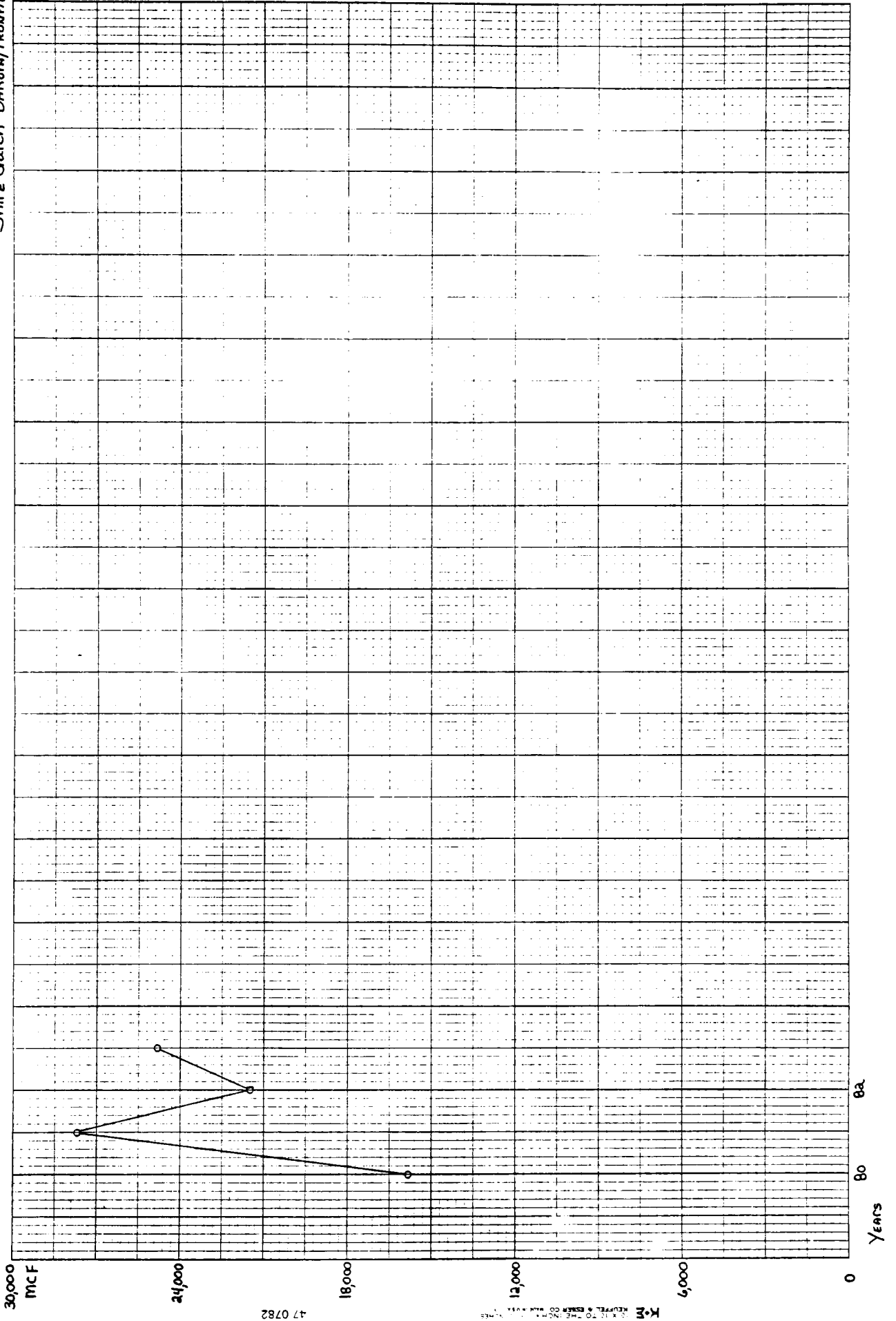


47 0782

K-M
REFUEL & ESSE OF MINNAPOLIS

P. No. A 12/85

Shire Gulch - Dakota/Frontier



47 0782

K.M. REUFEL & SONS CO. ENGINEERS

30,000
MCF

15,000

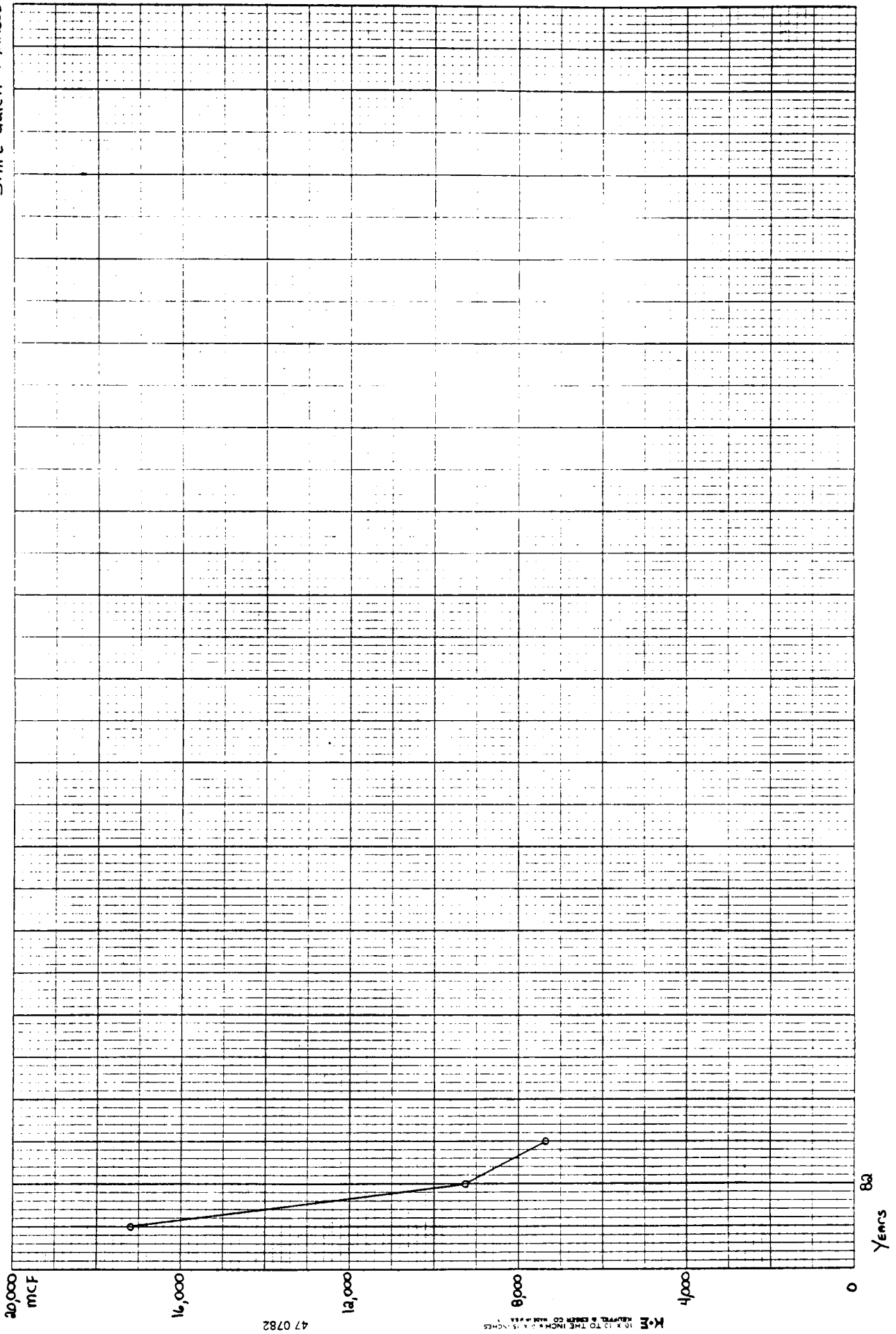
10,000

5,000

0

80
70
60
50
40
30
20
10
Years

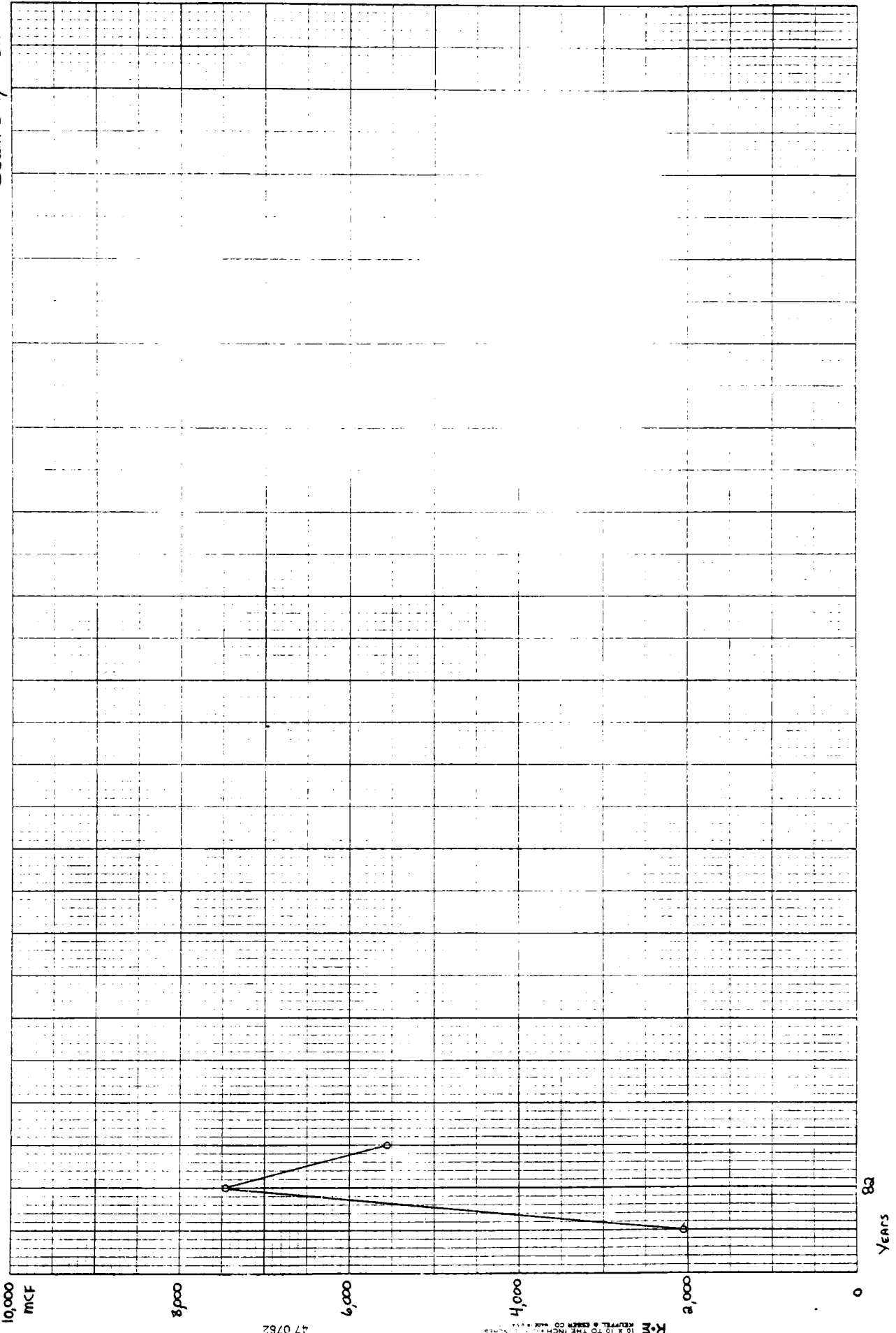
Shire Gulch - Mancos



47 0782

K-E
10 X 10 TO THE INCH • 2 X 1/2 INCHES
KENTON & BIRTH CO. MADE IN U.S.A.

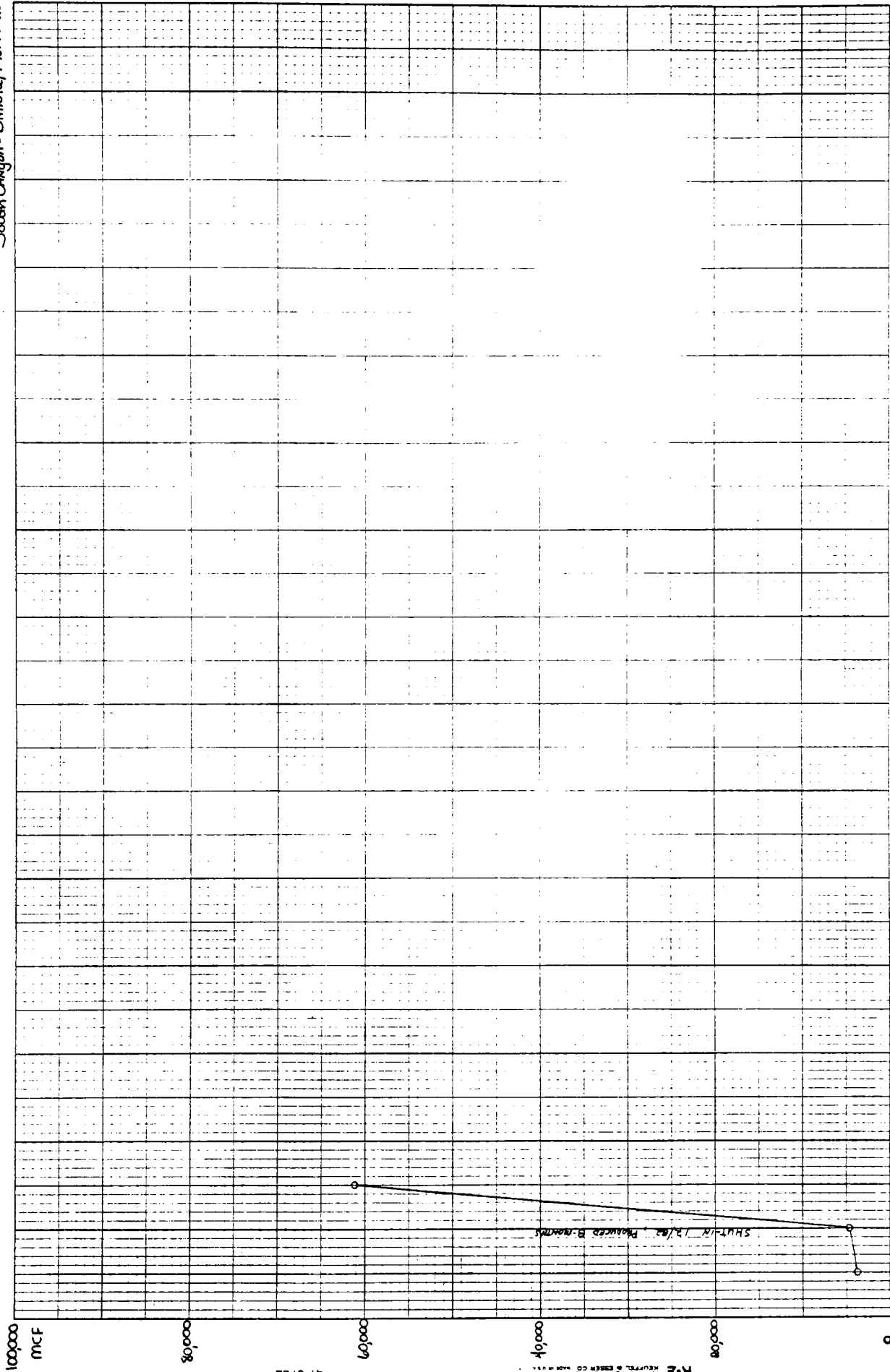
South Canyon - Dakota



47 0782

K-M
10 X 10 TO THE INCH
REYNOLDS & BERRY CO. MADE IN U.S.A.

South Canyon - Dakota/Morrison



47 0782

K-E
10 1/2 IN. TO THE INCH. X 1 1/2 IN. X 1 1/2 IN.
KUPPEL & EISEN CO. MAN. 1981

Years

0

000'00

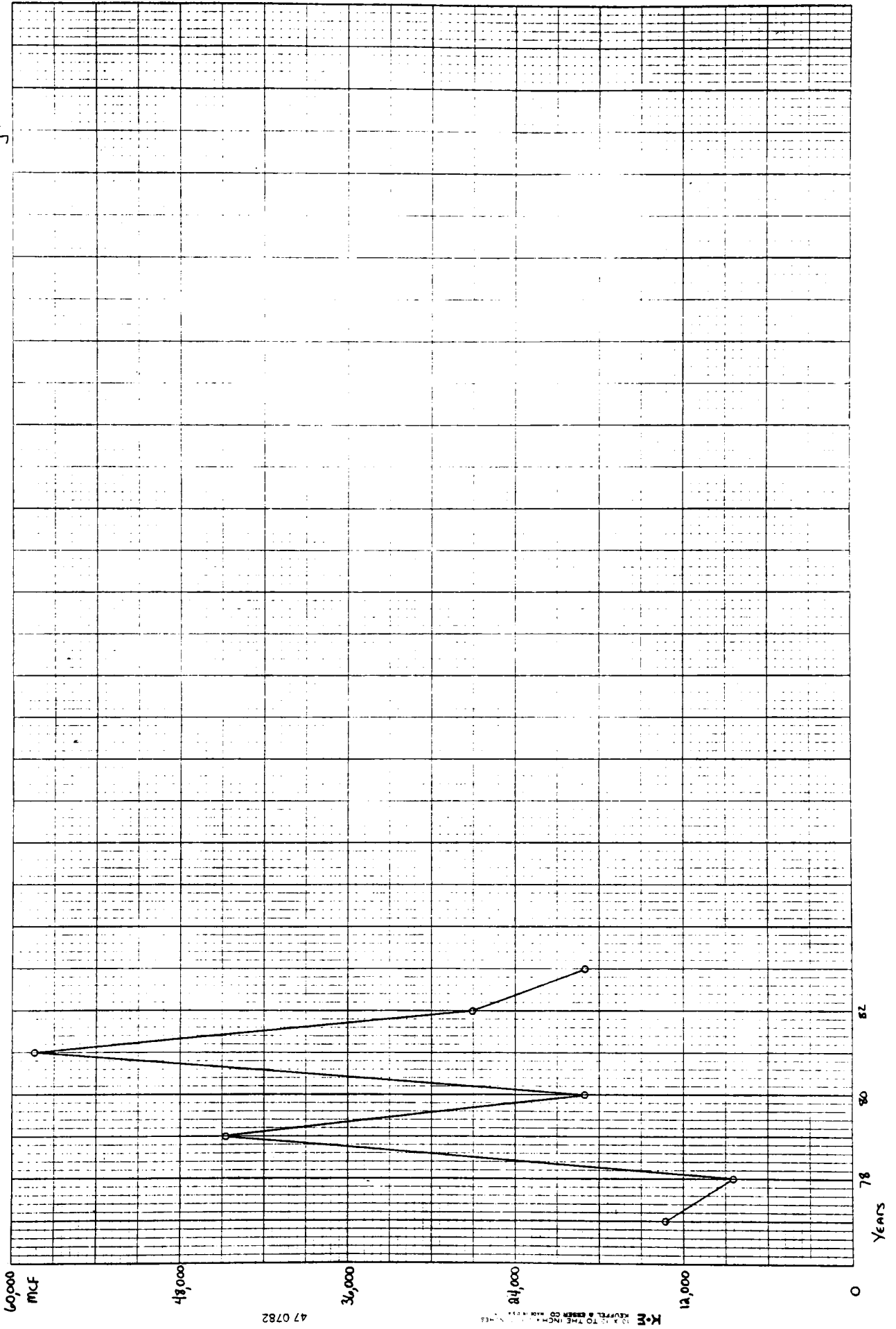
000'00

000'00

000'00

100000
MCF

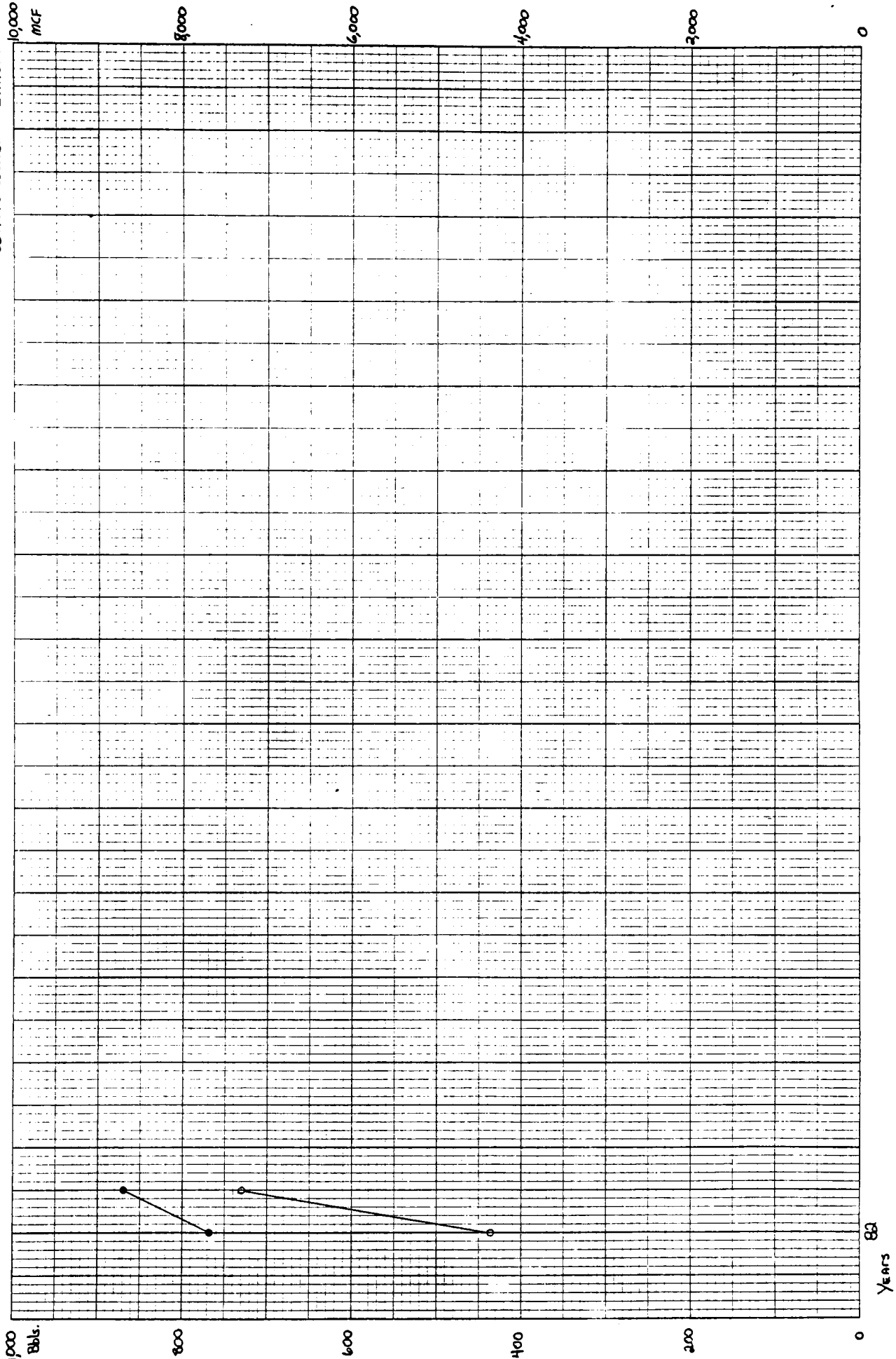
Vega - Cosette



47 0782

K-E
10.3 INCH TO THE INCH
KOPPEL & BERN CO. HANOVER, N.H.

White Water - Dakota



1000 Bbls.

8000

6000

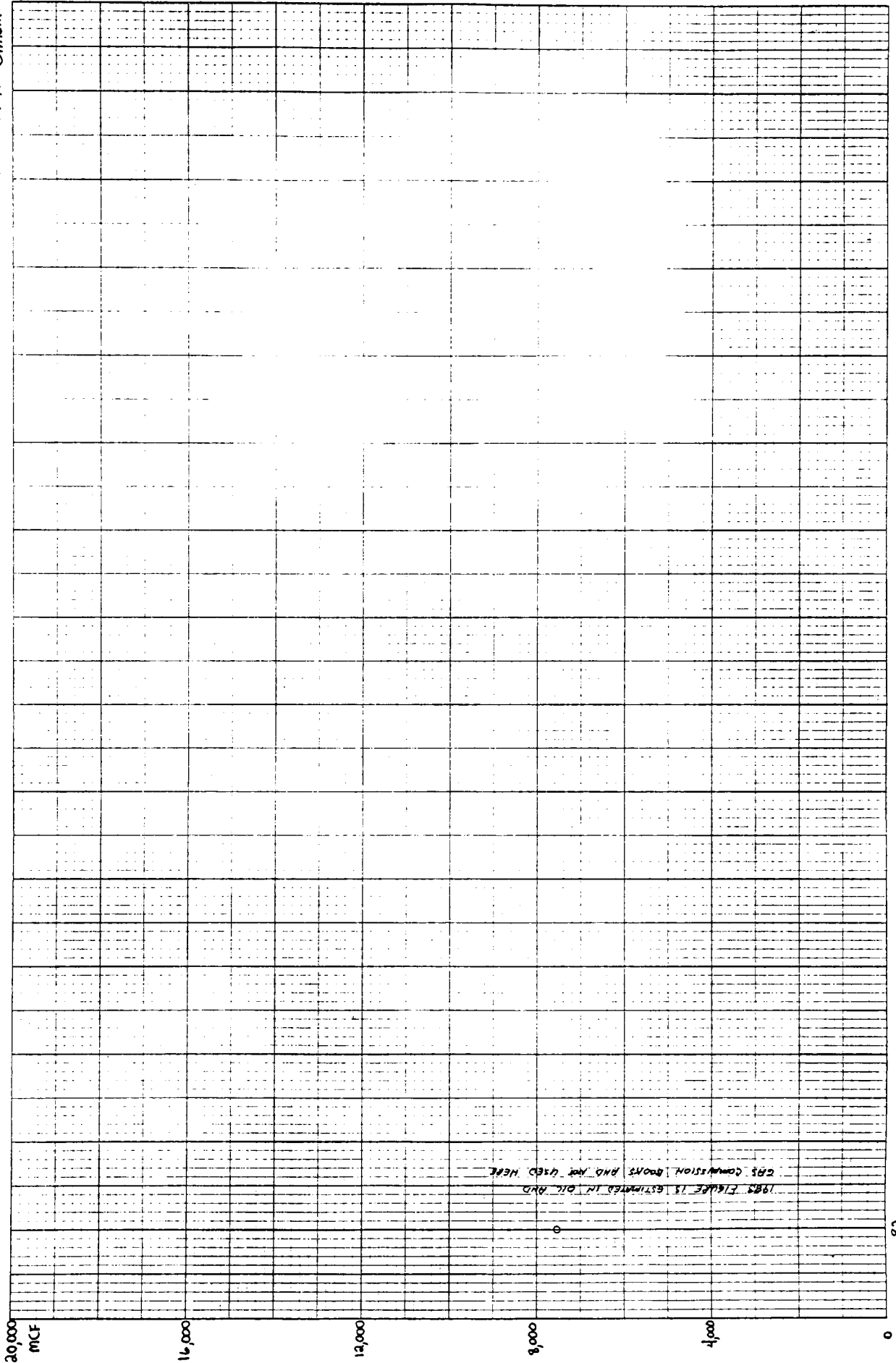
4000

2000

0

Years

Winter Flats - Dakota



1983 FLUID IS ESTIMATED IN OIL AND
CRS COMMISSION ROOMS AND NOT USED HERE

Years

Other Publications

INFORMATION SERIES 18--Oil and Gas fields of Colorado: Statistical Data through 1981.

MAP SERIES 22--Oil and Gas fields map of Colorado, 1983, (1:500,000).

OPEN-FILE REPORT 84-3: Estimated Oil and Gas Reserves for Washington County, Colorado;

OPEN-FILE REPORT 84-4: Estimated Oil and Gas Reserves for Rio Blanco County, Colorado.

OPEN-FILE REPORT 84-5: Estimated Oil and Gas Reserves for Adams County, Colorado;

OPEN-FILE REPORT 84-6: Estimated Oil and Gas Reserves for Weld County, Colorado;

OPEN-FILE REPORT 84-7: Estimated Oil and Gas Reserves for Arapahoe County, Colorado;

OPEN-FILE REPORT 84-8: Estimated Oil and Gas Reserves for Baca County, Colorado.

OPEN-FILE REPORT 84-9: Estimated Oil and Gas Reserves for Cheyenne County, Colorado.

OPEN-FILE REPORT 84-10: Estimated Oil and Gas Reserves for Garfield County, Colorado;

OPEN-FILE REPORT 84-11: Estimated Oil and Gas Reserves for La Plata County, Colorado;

OPEN-FILE REPORT 84-12: Estimated Oil and Gas Reserves for Moffat County, Colorado;

OPEN-FILE REPORT 84-13: Estimated Oil and Gas Reserves for Elbert County, Colorado;

OPEN-FILE REPORT 84-14: Estimated Oil and Gas Reserves for Mesa County, Colorado;

OPEN-FILE REPORT 84-15: Estimated Oil and Gas Reserves for Routt County, Colorado;

OPEN-FILE REPORT 84-16: Estimated Oil and Gas Reserves for Yuma County, Colorado.

The Colorado Geological Survey has other publications covering topics in mineral fuels, minerals, groundwater, geothermal, and engineering and environmental geology. For a current publication list please contact:

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