

4 CASE 5910: YATES PETROLEUM CORPORATION  
FOR GAS POOL CREATIONS AND DOWNHOLE  
COMINGLING, EDDY COUNTY, NEW MEXICO

Continued to May 25

Case Number

5910

Application

Transcripts

Small Exhibits

ETC.

CASE 5888: (Continued from April 20, 1977 Examiner Hearing)

Application of Dalport Oil Corporation for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its A. L. Christmas Well No. 3 to be drilled 330 feet from the South line and 2310 feet from the East line of Section 25, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico.

CASE 5910: (Continued from April 20, 1977 Examiner Hearing)

Application of Yates Petroleum Corporation for gas pool creations and downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of three Pennsylvanian gas pools in Townships 17 and 18 South, Ranges 24, 25, and 26 East, Eddy County, New Mexico, including the Richard Knob- and East Eagle Creek-Lower Penn Gas Pools with provisions in each for commingling Strawn, Atoka, and Morrow production in the wellbores of wells drilled therein, and the Eagle Creek Permo-Penn Gas Pool with provision for commingling Wolfcamp, Cisco, Canyon, and Strawn production in the wellbores of wells drilled therein.

CASE 5915: (Continued from May 11, 1977 Examiner Hearing)

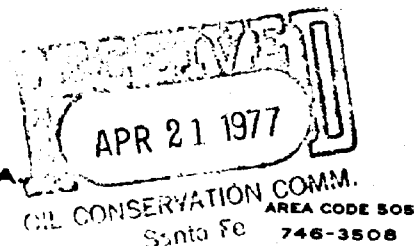
Application of C. W. Trainer for directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the directional drilling of his Boyd Well No. 1, the surface location of which would be 830 feet from the South line and 2130 feet from the West line of Section 13, Township 20 South, Range 32 East, Lea County, New Mexico. Applicant proposes to vertically drill said well to a depth of from 5100 feet to 7900 feet and to then directionally drill in a southerly direction, bottoming said well in the Morrow formation at a true vertical depth of approximately 13,500 feet within 200 feet of the center of Unit F of Section 24, Township 20 South, Range 32 East. The N/2 of said Section 24 would be dedicated to the well.

CASE 5917: (Continued from May 11, 1977 Examiner Hearing)

Application of Hanagan Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Round Mountain Well No. 1, to be located 2310 feet from the North line and 660 feet from the East line of Section 34, Township 21 South, Range 25 East, Catclaw Draw-Morrow Gas Pool, Eddy County, New Mexico, all of said Section 34 to be dedicated to the well.

A. J. LOSEE  
JOEL M. CARSON  
CHAD DICKERSON

LAW OFFICES  
LOSEE & CARSON, P.A.  
300 AMERICAN HOME BUILDING  
P. O. DRAWER 239  
ARTESIA, NEW MEXICO 88210



18 April 1977

Ms. Lynn Teschendorf, Attorney  
New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico 87501

Re: Application of Yates Petroleum Corporation  
for Downhole Commingling, Case No. 5910

Dear Ms. Teschendorf:

This will confirm our telephone conversation of this date  
in which we requested a continuance of the examiner hearing  
for the above case from April 20 to May 25, 1977.

Thank you in advance for your attention to this request.

Very truly yours,

LOSEE & CARSON, P.A.

A handwritten signature in dark ink, appearing to read "A. J. Losee".

A. J. Losee

AJL:jw

cc: Mr. Eddie Mahfood



CASE 5905: (This Case will be continued to the May 11, 1977, Examiner Hearing)

Application of Palmer Oil & Gas Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde and Dakota formations underlying the W/2 SE/4 and the E/2 SW/4 of Section 3, and the NW/4 of Section 10, and all mineral interests in the Pictured Cliffs and Fruitland formations underlying the NW/4 of Section 10, all in Township 31 North, Range 7 West, San Juan County, New Mexico, to be dedicated to a well to be drilled 1800 feet from the North line and 850 feet from the West line of said Section 10. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5906: (This Case will be continued to the May 11, 1977, Examiner Hearing)

Application of Palmer Oil & Gas Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde and Dakota formations underlying the W/2 SW/4 of Section 2, the E/2 SE/4 of Section 3, and the NE/4 of Section 10, all in Township 31 North, Range 7 West, San Juan County, New Mexico, to be dedicated to a well to be drilled 1525 feet from the North line and 1850 feet from the East line of said Section 10. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 5907: Application of Dome Petroleum Corporation for a special depth bracket allowable, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a special depth bracket allowable of 750 barrels of oil per day for the Papers Wash-Entrada Oil Pool, McKinley County, New Mexico.CASE 5908: Application of Dome Petroleum Corporation for a special depth bracket allowable, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a special depth bracket allowable of 750 barrels of oil per day for the Ojo Encino-Entrada Oil Pool, McKinley County, New Mexico.CASE 5909: Application of Dome Petroleum Corporation for pool creation and special depth bracket allowable, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the creation of the Snake Eyes-Entrada Oil Pool in Section 20, Township 21 North, Range 8 West, San Juan County, New Mexico, and the establishment of a special depth bracket allowable of 750 barrels of oil per day for said pool.CASE 5910: Application of Yates Petroleum Corporation for gas pool creations and downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of three Pennsylvanian gas pools in Townships 17 and 18 South, Ranges 24, 25, and 26 East, Eddy County, New Mexico, including the Richard Knob- and East Eagle Creek-Lower Penn Gas Pools with provisions in each for commingling Strawn, Atoka, and Morrow production in the wellbores of wells drilled therein, and the Eagle Creek Permo-Penn Gas Pool with provision for commingling Wolfcamp, Cisco, Canyon, and Strawn production in the wellbores of wells drilled therein.CASE 5898: (Continued from April 6, 1977, Examiner Hearing)

Application of Chace Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Ballard-Pictured Cliffs and South Lindrith Gallup-Dakota production in the wellbore of its Jicarilla 70 Well No. 3 located in Unit C of Section 33, Township 24 North, Range 4 West, Rio Arriba County, New Mexico. In the alternative, applicant seeks authority to commingle said production at the surface without prior measurement and waiver of the gas-oil ratio test requirement.

CASE 5911: Application of Odessa Natural Gas Company for special pool rules, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks the adoption of special pool rules for the Chacon-Dakota Oil Pool, Rio Arriba County, New Mexico, to provide for 160-acre spacing for oil wells and for reclassification of wells from oil to gas and the removal of such gas wells to the Basin-Dakota Pool.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5910  
Order No. R-5460

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR GAS POOL CREATION  
AND DOWNHOLE COMMINGLING, EDDY  
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 25, 1977, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 14th day of June, 1977, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks the creation of three Pennsylvanian gas pools in Townships 17 and 18 South, Ranges 24, 25, and 26 East, Eddy County, New Mexico, including the Richard Knob-Lower Pennsylvanian and East Eagle Creek-Lower Pennsylvanian Gas Pools with provisions in each for commingling Strawn, Atoka, and Morrow production in the wellbores of wells drilled therein, and the Eagle Creek Permo-Pennsylvanian Gas Pool with provision for commingling Wolfcamp, Cisco, Canyon, and Strawn production in the wellbores of wells drilled therein.

(3) That the application should be amended to provide for the creation of four gas pools to be designated the Eagle Creek Permo-Pennsylvanian Gas Pool, the Eagle Creek-Strawn Gas Pool, the East Eagle Creek Atoka-Morrow Gas Pool, and the Richard Knob Atoka-Morrow Gas Pool, to be described and defined as set out on Exhibit "A" attached to this order.

(4) That Permo-Pennsylvanian zones, Strawn zones, and Atoka-Morrow zones within the vicinity of said pools often cannot be commercially developed as single or dual completions because said zones are not highly productive or decline rapidly when placed on production.

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(5) That the establishment of an administrative procedure whereby production from any or all of the four pools set out in Finding No. 3 above may be commingled within the wellbore of a producing well therein should permit otherwise uneconomical wells and/or zones to be produced, thereby preventing waste.

(6) That such an administrative procedure should provide for approval by the Commission District Supervisor, safeguards to prevent crossflow between pools, prevention of placement of fluids on fluid-sensitive zones, and the protection of interest owners under each proration or spacing unit.

(7) That the Commission District Supervisor should approve any downhole commingling in said pools existing on the date of entry of this order, without formal application, if in his opinion such approval will not result in waste.

(8) That the proposed pool creations and administrative procedure will prevent waste and will not violate correlative rights.

(9) That the application should be approved.

**IT IS THEREFORE ORDERED:**

(1) That effective July 1, 1977, four gas pools are hereby created in Eddy County, New Mexico, said pools being designated the Eagle Creek Permo-Pennsylvanian Gas Pool, the Eagle Creek-Strawn Gas Pool, the East Eagle Creek Atoka-Morrow Gas Pool, and the Richard Knob Atoka-Morrow Gas Pool, and said pools being defined and described and having vertical limits as set out on Exhibit "A" attached to this order.

(2) That limited special rules and regulations are hereby adopted for each of said pools to provide for an administrative procedure for downhole commingling as follows:

**SPECIAL RULES AND REGULATIONS FOR THE EAGLE CREEK PERMO-PENNSYLVANIAN GAS POOL, THE EAGLE CREEK-STRAWN GAS POOL, THE EAST EAGLE CREEK ATOKA-MORROW GAS POOL AND THE RICHARD KNOB ATOKA-MORROW GAS POOL**

**RULE 1.** The District Supervisor of the Commission's district office at Artesia shall have the authority to approve the commingling within the wellbore of gas produced from two or more of the pools covered by these special rules where the following facts exist and the following conditions are met:

- (a) That the commingling is necessary to permit a zone or zones to be produced which would not otherwise be economically producible.

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- (b) That there will be no crossflow between the zones to be commingled.
- (c) That any zone which is producing from fluid-sensitive sands, which may be subject to damage from water or other produced liquids, is protected from contact from such liquids produced from other zones in the well.
- (d) The fluids from each zone are compatible with the fluids from the other(s), and combining the fluids will not result in the formation of precipitates which might damage any of the reservoirs.
- (e) That ownership of the zones to be commingled is common (including working interest, royalty, and overriding royalty).

**RULE 2.** To obtain approval for downhole commingling, the operator of the well shall submit the following to the Supervisor of the Commission's district office at Artesia:

- (a) Name and address of the operator.
- (b) Lease name, well number, well location, and names of the pools to be commingled.
- (c) A plat of the area showing the acreage dedicated to the well and the ownership of all offsetting leases.
- (d) A mechanical log of the well.
- (e) A diagrammatic sketch of the well showing casing, tubing, cement tops, perforations, and any downhole equipment.
- (f) Pressures and production for each zone to be commingled as determined from drill stem tests or potential tests following completion.
- (g) A formula for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such formula.
- (h) A description of the fluid characteristics of each zone showing that the fluids will not be incompatible in the well-bore.

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- (i) A statement that all offset operators and, in the case of a well on Federal land, the United States Geological Survey, have been notified in writing of the proposed commingling.

RULE 3. The District Supervisor may approve the proposed downhole commingling in the absence of a valid objection within 20 days after the receipt of the application if, in his opinion, there is no disqualifying disparity of bottomhole pressures or other reservoir characteristics, waste will not result thereby, and correlative rights will not be violated. The 20-day waiting period may be dispensed with upon receipt of waivers of objection from all parties mentioned in Rule 2, paragraph (i).

RULE 4. Upon such approval, the well shall be operated in accordance with the provisions of the administrative order which authorized the commingling, and allocation of the commingled production from the well to each of the producing zones shall be in accordance with the allocation formula set forth in the order.

RULE 5. The Secretary-Director may rescind authority to commingle production in the well-bore and require both zones to be produced separately, if, in his opinion, waste or reservoir damage is resulting thereby, or if any change of conditions render the installation no longer eligible for downhole commingling under the provisions of Rule 1, paragraphs (a) through (d).

RULE 6. The District Supervisor may waive the filing requirements of Rule 2(c), (d), (e), (f), (h), and (i) above for any well completed with two or more of the subject zones commingled in the well bore if such commingling had been accomplished on or before May 25, 1977, and if an application for approval of the same is filed with the District Supervisor on or before September 1, 1977.

IT IS FURTHER ORDERED:

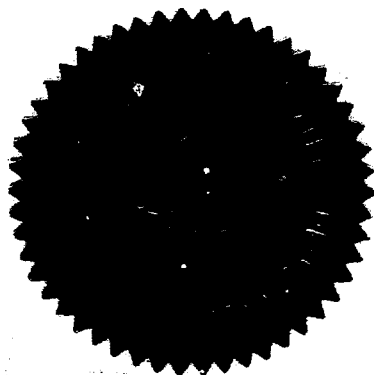
- (1) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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DONE at Santa Fe, New Mexico, on the day and year  
hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



*Phil R. Lucero*  
PHIL R. LUCERO, Chairman

*Emery C. Arnold*  
EMERY C. ARNOLD, Member

*Joe D. Ramey*  
JOE D. RAMEY, Member & Secretary

S E A L

jr/



EXHIBIT "A"

CASE NO. 5910 Order No. R-5460

Eagle Creek Permo-Pennsylvanian Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, NMPM  
Section 25: All

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM  
Section 24: All  
Section 25: W/2  
Sections 26 and 27: S/2  
Sections 29 and 30: All  
Sections 32 through 35: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM  
Section 4 through 7: All  
Section 8: N/2

Vertical Limits: Permo-Pennsylvanian formation

Discovery well: Yates Petroleum Corporation Federal CR Lease Well No. 1 in Unit M of Section 29, Township 17 South, Range 25 East, NMPM, Eddy County, New Mexico, completed in the Permo Pennsylvanian formation on September 24, 1973, through perforations from 6,999 feet to 7,174 feet.

Eagle Creek-Strawn Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, NMPM  
Section 25: All

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM  
Section 21: S/2  
Sections 25 through 27: S/2  
Sections 28 through 30: All  
Sections 32 and 33: All  
Sections 34 and 35: N/2  
Section 36: All

TOWNSHIP 17 SOUTH, RANGE 26 EAST, NMPM  
Section 30: S/2  
Section 31: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM  
Section 4: All

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM  
Section 6: W/2

Vertical Limits: Strawn formation

Discovery Well: Yates Petroleum Corporation State CY Lease Well No. 1 in Unit K of Section 32, Township 17 South, Range 25 East, NMPM, Eddy County, New Mexico, completed in the Strawn formation on January 31, 1974, through perforations from 7782 feet to 7786 feet.

East Eagle Creek Atoka-Morrow Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM  
Section 24 and 25: All  
Section 36: N/2

TOWNSHIP 17 SOUTH, RANGE 26 EAST, NMPM  
Section 30: S/2  
Section 31: All

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM  
Section 5: W/2  
Section 6: E/2

Vertical Limits: Atoka and Morrow formations

Discovery Well: Yates Petroleum Corporation ARCO EC State Lease Well No. 1 in Unit B of Section 36, Township 17 South, Range 25 East, NMPM, Eddy County, New Mexico, completed in the Atoka-Morrow formation on May 1, 1975, through perforations from 8,338 feet to 8,365 feet.

Richard Knob Atoka-Morrow Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM  
Section 29: W/2  
Section 32: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM  
Section 4: S/2  
Section 5: All  
Section 6: S/2  
Section 8: N/2

Vertical Limits: Atoka and Morrow formations

Discovery Well: Yates Petroleum Corporation Federal CR Lease Well No. 1 in Unit M of Section 29, Township 17 South, Range 25 East, NMPM, Eddy County, New Mexico, completed in the Atoka-Morrow formation on September 25, 1973, through perforations from 7,944 feet to 7,964 feet.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5910  
Order No. R-5460

APPLICATION OF YATES PETROLEUM  
CORPORATION FOR GAS POOL CREATION  
AND DOWNHOLE COMMINGLING, EDDY  
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 25, 1977,  
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this \_\_\_\_\_ day of June, 1977, the Commission, a  
quorum being present, having considered the testimony, the record,  
and the recommendations of the Examiner, and being fully advised  
in the premises,

FINDS:

(1) That due public notice having been given as required by  
law, the Commission has jurisdiction of this cause and the subject  
matter thereof.

(2) That the applicant, Yates Petroleum Corporation, seeks  
the creation of three Pennsylvanian gas pools in Townships 17 and  
18 South, Ranges 24, 25, and 26 East, Eddy County, New Mexico,  
including the Richard Knob-<sup>Lower Pennsylvanian</sup> and East Eagle Creek-Lower Pennsylvanian  
Gas Pools with provisions in each for commingling Strawn, Atoka,  
and Morrow production in the wellbores of wells drilled therein,  
and the Eagle Creek-Permo-Penn<sup>sylvanian</sup> Gas Pool with provision for  
commingling Wolfcamp, Cisco, Canyon, and Strawn production in  
the wellbores of wells drilled therein.

(3) That the application should be amended to provide for the creation of four gas pools to be designated the Eagle Creek Permo-Pennsylvanian Gas Pool, the Eagle Creek-Strawn Gas Pool, the East Eagle Creek Atoka-Morrow Gas Pool, and the Richard Knob Atoka-Morrow Gas Pool, to be described and defined as set out on Exhibit "A" attached to this order.

(4) That ~~the~~ Permo-Pennsylvanian zone<sup>s</sup>, ~~the~~ Strawn zone<sup>s</sup>, and ~~the~~ Atoka-Morrow zone<sup>s</sup> with<sup>in</sup> the vicinity of said pools often cannot be commercially developed as single or dual completions because said zones are not highly productive or decline rapidly when placed on production.

(5) That the establishment of an administrative procedure whereby production from any or all of the four pools set out in Finding No. 3 above may be commingled within the wellbore of a producing well therein should permit otherwise uneconomical wells and/or zones to be produced, thereby preventing waste.

(6) That such an administrative procedure should provide for approval by the Commission District Supervisor, safeguards to prevent crossflow between pools, prevention of placement of fluids on fluid-sensitive zones, and <sup>the</sup> protection ~~of~~ interest owners under each ~~one~~ *production unit or spacing unit*.

(7) That the Commission District Supervisor should approve any downhole commingling in said pools existing on the date of entry of this order, without formal application, if in his opinion such approval will not result in waste.

(8) That the proposed pool creations and administrative procedure will prevent waste and will not violate correlative rights.

(9) That the application should be approved.

IT IS THEREFORE ORDERED:

(1) That effective July 1, 1977, four gas pools are hereby created in Eddy County, New Mexico, said pools being designated the Eagle Creek Permo-Pennsylvanian Gas Pool, the Eagle Creek-Strawn Gas Pool, the East Eagle Creek Atoka-Morrow Gas Pool, and the Richard Knob Atoka-Morrow Gas Pool, and said pools being defined and described and having vertical limits as set out on Exhibit "A" attached to this order.

(2) That limited special rules and regulations are hereby adopted for each of said pools to provide for an administrative procedure for downhole commingling as follows:

SPECIAL RULES AND REGULATIONS FOR THE EAGLE CREEK PERMO-PENNSYLVANIAN GAS POOL, THE EAGLE CREEK-STRAWN GAS POOL, THE EAST EAGLE CREEK ATOKA-MORROW GAS POOL AND THE RICHARD KNOB ATOKA-MORROW GAS POOL

RULE 1. The District Supervisor of the Commission's <sup>district</sup> office at Artesia shall have the authority to <sup>approve the</sup> ~~grant an exception to~~ ~~Rule 303-A of the Commission Rules and Regulations to permit~~ commingling within the wellbore of gas produced from two or more of the pools covered by these special rules where the following facts exist and the following conditions are met:

- (a) That the commingling is necessary to permit a zone or zones to be produced which would not otherwise be economically producible.
- (b) That there will be ~~not~~ no crossflow between the zones to be commingled.
- (c) That any zone which is producing from <sup>fluid-</sup> sensitive sands, <sup>which may be</sup> subject to damage from water or other <sup>produced</sup> liquids, is protected from contact from such liquids produced from other zones in the well.

- (d) The fluids from each zone are compatible with the fluids from the other(s), and combining the fluids will not result in the formation of precipitates which might damage any of the reservoirs.
- (e) That ownership of the zones to be commingled is common (including working interest, royalty, and overriding royalty).

RULE 2. To obtain approval for downhole commingling, the operator of the well shall submit the following to the Supervisor of the Commission's district office at Artesia:

- (a) Name and address of the operator.
- (b) Lease name, well number, well location, and names of the pools to be commingled.
- (c) A plat of the area showing the <sup>acreage</sup> dedicated ~~to the well~~ <sup>to the well</sup> and the ownership of all offsetting leases.
- (d) A mechanical log of the well.
- (e) A ~~diagrammatic~~ diagrammatic sketch of the well showing casing, tubing, cement tops, perforations, and any downhole equipment.
- (f) Pressures and production for each zone to be commingled as determined from drill stem tests or <sup>potential</sup> ~~zone~~ tests following completion.
- (g) A formula for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such formula.



- (h) A description of the fluid characteristics of each zone showing that the fluids will not be incompatible in the well-bore.
- (i) A statement that all offset operators and, in the case of a well on Federal land, the United States Geological Survey, have been notified in writing of the proposed commingling.

RULE 3. The District Supervisor may approve the proposed downhole commingling in the absence of a valid objection within 20 days after the receipt of the application if, in his opinion, there is no disqualifying disparity of bottomhole pressures or other reservoir characteristics, waste will not result thereby, and correlative rights will not be violated. The 20-day waiting period may be dispensed with upon receipt of ~~waiver~~ waivers of objection from all parties mentioned in Rule 2, paragraph (i).

RULE 4. Upon such approval, the well shall be operated in accordance with the provisions of the administrative order which authorized the commingling, and allocation of the commingled production from the well to each of the producing zones shall be in accordance with the allocation formula set forth in the order ~~of the Commission~~.

RULE 5. The Secretary-Director may rescind authority to commingle production in the well-bore and require both zones to be produced separately, if, in his opinion, waste or reservoir damage is resulting thereby, or if any change of conditions render the installation no longer eligible for downhole commingling under the provisions of Rule 1, paragraphs (a) through (d).

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Order No. R-

RULE 6. The District Supervisor may waive the filing requirements of Rule 2 (c), (d), (e), (f), (h), and (i) above for any well completed with two or more of the subject zones commingled in the well bore if such commingling had been accomplished on or before May 25, 1977, and if an application for approval of the same is filed with the District Supervisor on or before September 1, 1977.

IT IS FURTHER ORDERED:

(1) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

EXHIBIT "A"

CASE NO. 5910

ORDER NO. R-

~~EAGLE CREEK PERMO~~

Eagle Creek Permo-Pennsylvanian Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, N.M.P.M.  
Section 25: All

TOWNSHIP 17 SOUTH, RANGE 25 EAST, N.M.P.M.  
Section 24: All  
Section 25: W/2  
Sections 26 and 27: S/2  
Sections 29 and 30: All  
Sections 32 through 35: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, N.M.P.M.  
Section 4 through 7: All  
Section 8: N/2

Vertical Limits: Permo-Pennsylvanian formation

Discovery Well: Yates Petroleum Corporation Federal CR Lease Well No. 1 in Unit M of Section 29, Township 17 South, Range 25 East, N.M.P.M., Eddy County, New Mexico, completed in the Permo Pennsylvanian formation on September 24, 1973, through perforations from 6,999 feet to 7,174 feet.

Eagle Creek-Strawn Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, N.M.P.M.  
Section 25: All

TOWNSHIP 17 SOUTH, RANGE 25 EAST, N.M.P.M.  
Section 21: S/2  
Sections 25 through 27: S/2  
Sections 28 through 30: All  
Sections 32 and 33: All  
Sections 34 and 35: N/2  
Section 36: All

TOWNSHIP 17 SOUTH, RANGE 26 EAST, N.M.P.M.  
Section 30: S/2  
Section 31: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, N.M.P.M.  
Section 4: All

TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.  
Section 6: W/2

Vertical Limits: Strawn formation

No

K

Discovery Well: ~~David Easken Yates 6 Federal Lease Well~~  
 No. 1 in Unit ~~of~~ Section ~~3~~, Township ~~17~~ South, Range 25  
 East, N.M.P.M., Eddy County, New Mexico, completed in the  
 Strawn formation on ~~June 31~~, 1974, through perforations  
 from ~~8,231 feet to 8,241 feet.~~

~~8,231 feet to 8,241 feet.~~  
 7782 feet to 7786 feet.

East Eagle Creek Atoka-Morrow Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, N.M.P.M.

Section 24 and 25: All

Section 36: N/2

TOWNSHIP 17 SOUTH, RANGE 26 EAST, N.M.P.M.

Section 30: S/2

Section 31: All

TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.

Section 5: W/2

Section 6: E/2

Vertical Limits: Atoka and Morrow formations

Discovery Well: Yates Petroleum Corporation ARCO EC State  
 Lease Well No. 1 in Unit B of Section ~~6~~, Township 17 South,  
 Range 25 East, N.M.P.M., Eddy County, New Mexico, completed  
 in the Atoka-Morrow formation on May 1, 1975, through  
 perforations from 8,338 feet to 8,365 feet.

Richard Knob Atoka-Morrow Gas Pool

Horizontal Limits:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, N.M.P.M.

Section 29: W/2

Section 32: All

TOWNSHIP 18 SOUTH, RANGE 25 EAST, N.M.P.M.

Section 5: All

Section 6: S/2

Section 8: N/2

Section 4: S/2

Vertical Limits: Atoka and Morrow formations

Discovery Well: Yates Petroleum Corporation Federal CR Lease  
 Well No. 1 in Unit M of Section 29, Township 17 South, Range 25  
 East, N.M.P.M., Eddy County, New Mexico, completed in the  
 Atoka-Morrow formation on September 25, 1973, through perforations  
 from 7,944 feet to 7,964 feet.



# OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO  
P. O. BOX 2088 - SANTA FE  
87501



DIRECTOR  
JOE D. RAMEY

LAND COMMISSIONER  
PHIL R. LUCERO  
June 15, 1977

STATE GEOLOGIST  
EMERY C. ARNOLD

Mr. A. J. Losee  
Losee & Carson  
Attorneys at Law  
Post Office Box 239  
Artesia, New Mexico 88210

Re: CASE NO. 5910  
ORDER NO. R-5460

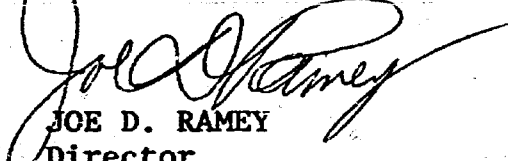
Applicant:

Yates Petroleum Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,

  
JOE D. RAMEY  
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC ☒  
Artesia OCC ☒  
Aztec OCC ☐

Other ☐  
☐



YATES BUILDING - 207 SOUTH 4TH ST.  
ARTESIA, NEW MEXICO - 88210

S. P. YATES  
PRESIDENT  
MARTIN YATES, III  
VICE PRESIDENT  
JOHN A. YATES  
VICE PRESIDENT  
B. W. HARPER  
SEC. - TREAS.

May 31, 1977

N.M.O.C.C.  
Box 2860  
Santa Fe, New Mexico 87501  
ATTN: Mr. Richard Stamets

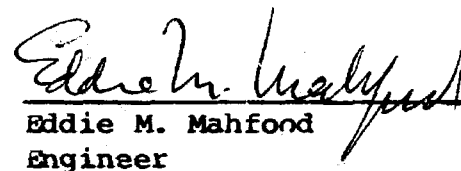
RE: Case 5910, Creation of  
New Pools

Dear Richard,

The discovery well for Richard Knob Lower Penn was Federal CR #1 in Unit M Section 29-T17S-R25E, for East Eagle Creek Lower Penn was Arco EC State #1 in Unit B Section 25-T17S-R25E, for Eagle Creek Strawn was State CY #1 in Unit F Section 32-T17S-R25E, and for Eagle Creek Permo-Penn the discovery well was Federal CR #1 in Unit M Section 29-T17S-R25E, all in Eddy County, New Mexico.

Yours truly,

YATES PETROLEUM CORPORATION

  
Eddie M. Mahford  
Engineer

EMM/pt



BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 20, 1977

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corpora- ) CASE  
tion for gas pool creations and down- ) 5910  
hole commingling, Eddy County, )  
New Mexico. )

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil	Lynn Teschendorf, Esq.
Conservation Commission:	Legal Counsel for the Commission
	State Land Office Building
	Santa Fe, New Mexico

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General Court Reporting Service  
825 Calle Mejia, No. 122, Santa Fe, New Mexico 87501  
Phone (505) 962-9212

1 MR. STAMETS: We will call next Case 5910.

2 MS. TESCHENDORF: Case 5910, application of Yates  
3 Petroleum Corporation for gas pool creations and downhole  
4 commingling, Eddy County, New Mexico.

5 The applicant requested that we continue this case  
6 to the May 25th hearing.

7 MR. STAMETS: Case 5910 will be continued to May 25th  
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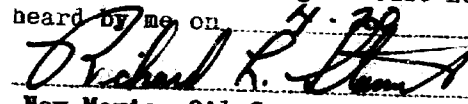
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General Court Reporting Service  
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Phone (505) 962-5212

REPORTER'S CERTIFICATE

1  
2 I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,  
3 do hereby certify that the foregoing and attached Transcript  
4 of Hearing before the New Mexico Oil Conservation Commission  
5 was reported by me, and the same is a true and correct record  
6 of the said proceedings to the best of my knowledge, skill and  
7 ability.

8  
9  
10   
11 Sidney F. Morrish, C.S.R.

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925 Calle Media, No. 122, Santa Fe, New Mexico 87501  
Phone (505) 962-5212

12  
13  
14  
15  
16 I do hereby certify that the foregoing is  
17 a complete record of the proceedings in  
18 the Examiner hearing of Case No. 5710  
19 heard by me on 4-29-77  
20   
21 , Examiner  
22 New Mexico Oil Conservation Commission  
23  
24  
25

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
May 25, 1977

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corpora- ) CASE  
tion for gas pool creations and down- ) 5910  
hole commingling, Eddy County, )  
New Mexico. )

BEFORE: Richard L. Stamets, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Lynn Teschendorf, Esq.  
Legal Counsel for the Commission  
State Land Office Building  
Santa Fe, New Mexico

For the Applicant: A. J. Losee, Esq.  
LOSEE & CARSON, P.A.  
Attorneys at Law  
300 American Home Building  
Artesia, New Mexico

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I N D E X

Page

EDDIE MAHFOOD

Direct Examination by Mr. Losee	3
Cross Examination by Mr. Stamets	19

EXHIBIT INDEX

Offered      Admitted

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1 MR. STAMETS: The hearing will please come to order.  
2 We will call at this time Case 5910.

3 MS. TESCHENDORF: Case 5910, application of Yates  
4 Petroleum Corporation for gas pool creations and downhole  
5 commingling, Eddy County, New Mexico.

6 MR. LOSEE: A. J. Losee appearing on behalf of the  
7 applicant. I have one witness, Mr. Mahfood.

8 MR. STAMETS: Mr. Mahfood has been previously sworn  
9 and will remain sworn in this case.

10  
11 EDDIE MAHFOOD

12 called as a witness, having been previously sworn, was examined  
13 and testified as follows:

14  
15 DIRECT EXAMINATION

16 BY MR. LOSEE:

17 Q Mr. Mahfood, will you briefly explain the purpose  
18 of this application in Case 5910?

19 A Yes, we have a large number of wells of low capacity  
20 multi-pay zones and they have not been assigned to any particular  
21 pool. We need to create a pool for them or more than one pool  
22 and we need special conditions for commingling these very  
23 poor zones to make a fairly commercial well.

24 Q Some special pool rules which permit administrative  
25 approval of the commingling?

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1 A Yes, sir.

2 Q In the area referred to in the application which is  
3 Townships 17 and 18 South, Ranges 24, 25 and 26 East, Eddy  
4 County, New Mexico, you propose the creation of four pools,  
5 do you not?

6 A Yes, sir.

7 Q And would you give the names of the pools and the  
8 affected zones?

9 A We need to create a Permo-Penn and we would create  
10 the Strawn and we would have the Richard Knob-Lower Penn and  
11 the East Eagle Creek-Lower Penn.

12 Q Oka<sub>1</sub>, would you please refer to what has been marked  
13 as Applicant's Exhibit One, which is a map of the area you  
14 have been discussing, and denoted Permo-Penn and explain what  
15 zones you propose to have covered in this pool?

16 A The zones proposed are the Canyon, the Cisco and  
17 the Wolfcamp.

18 Q And the proposed pool boundaries are outlined in  
19 red on this exhibit?

20 A In green, with a green crayon.

21 Q And Yates presently has wells completed in all three  
22 of these zones?

23 A Right and by these wells are the zones that they  
24 are completed in. In Section 35 of 17, 24 we have the Federal  
25 "CF" No. 1 which is a Wolfcamp completion and in Section 25 we

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1 have Upper Wolfcamp, I mean Wolfcamp and Upper Penn, I'm sorry,  
2 and this was also a dual completion in the Strawn. Not a dual  
3 completion but commingled completion in the Strawn and we  
4 need special consideration there for that commingling. In  
5 Section 29 of 17, 25 we have the Federal "CR" which is a dual  
6 completion in the Upper Penn and in the Atoka. We have in  
7 Section 32 --

8 Q Mr. Mahfood, rather than going through each well  
9 why don't we wait until you discuss the specific wells later  
10 on in your testimony and you can refer back to this map then.

11 Let's refer to the map that is marked Exhibit Two  
12 entitled "Eagle Creek-Strawn" and ask if that map contains  
13 the boundary of the proposed Strawn Pool?

14 A That is correct.

15 Q Does that include all of the Strawn wells in the  
16 area?

17 A In this area, yes.

18 Q In the five townships that we mentioned?

19 A That is correct.

20 Q Not the five, the three?

21 A Yes, sir.

22 Q And the boundary is colored in purple on that map?

23 A Yes.

24 Q Okay, turn to what has been marked as Exhibit Three and  
25 explain what pools you propose to create by that map?

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1 A On the left side of the map in pink we have the  
2 Richard Knob-Lower Penn. In solid color would be the Morrow  
3 and the Atoka. We have hatchured lines there for Strawn  
4 completions.

5 Q Mr. Mahfood, you do not intend, though, to have the  
6 Strawn as part of the Richard Knob-Lower Penn, do you?

7 A Well this would depend on the order, we might overlook  
8 this.

9 Q But as I understand it you do wish to overlook it?

10 A Yes, at this time.

11 Q All right, then what is your other pool?

12 A On the right side in solid color purple is the  
13 Eagle Creek-Lower Penn.

14 Q And you would propose to have what zones in that  
15 pool?

16 A The Morrow and the Atoka.

17 Q And all four of these pools are in the same area and  
18 in part overlay the other pools, is that correct?

19 A That is correct.

20 Q Okay, let's, without discarding the maps, let me  
21 ask you to refer to the series of production curves and pressure  
22 curves and you can refer back to the maps there which reflect a  
23 of the wells in this pool. They are marked collectively as  
24 Exhibit Four and would you pick out for me a typical Canyon  
25 well with its pressure curve and its production curve?

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1 A The Federal "CR" No. 1 in Section 29, 17 South,  
2 25 East is a typical Canyon completion. The pressure of the  
3 Canyon is outlined in yellow and the production capacity, the  
4 daily production, rather, is in the black. And we show the  
5 output on the line as four hundred and forty MCF per day and  
6 it has declined to approximately three hundred and ten MCF  
7 per day.

8 Q And what has the pressure gone from?

9 A This is at a pressure of approximately seventy-five  
10 pounds.

11 Q From an initial pressure of what?

12 A From an initial pressure of sixteen hundred pounds.

13 Q Okay, would you then point to a typical Cisco well?

14 A The Sowers "FB" No. 1 in Section 34, of 17, 25 would  
15 be a typical Cisco completion. We see again the pressure  
16 decline, the initial pressure, flowing pressure of eleven  
17 hundred pounds declined to two hundred and twenty-five pounds  
18 in three months and the initial production when we put this  
19 thing on the line at six hundred MCF per day and delivering  
20 approximately two hundred and sixty MCF per day after a two  
21 hundred and twenty-five pound pressure.

22 Q Would you give us a typical Wolfcamp production  
23 curve?

24 A The Mona "EW" in Section 27, 17 South, 25 East is  
25 a typical Wolfcamp completion. Again we see an initial

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1 flowing pressure of eighteen hundred and fifty pounds declining  
2 to the present pressure of a hundred and seventy-five pounds.

3 We see the initial rate of five hundred and forty MCF a day and  
4 and it's delivering three hundred and fifty MCF per day.

5 Q Would you turn to a well that is a typical Strawn  
6 completion?

7 A The Federal "GC" No. 1 in Section 32 of 17 South,  
8 25 East is a typical Strawn completion with an initial pressure  
9 of, a flowing pressure of fifteen fifty, decreasing to four  
10 hundred and seventy-five pounds and in less than three months.  
11 The initial rate of three hundred and ninety MCF per day decrea  
12 ing to eighty MCF per day in this period.

13 Q Would you turn to a well that is a typical Atoka  
14 completion?

15 A The Federal "CR" No. 1 is a dual completion in  
16 Section 29, 17 South, 25 East. This is typical Atoka productio  
17 The well went on line at a flowing pressure of nineteen hundred  
18 and fifty pounds and in two and a half months decreased to  
19 four hundred pounds flowing pressure. The initial production  
20 rate was one point one million and today it is averaging  
21 approximately four MCF per day.

22 Q Okay, to a typical Morrow completion, if you would?

23 A The Federal "EF" No. 1 in Section 6, 18 South,  
24 25 East is a typical Morrow production in this area. It went  
25 on line with an initial flowing pressure of eighteen hundred

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1 and fifty pounds and has decreased to seventy-five pounds and  
2 with the initial rate of approximately two hundred and eighty  
3 MCF per day and is delivering one hundred and thirty-five  
4 MCF per day.

5 Q Okay, now, Mr. Mahfood, you have testified as to  
6 our typical and they are not very good gas zones, are there  
7 some gas zones in some of these wells that are better than  
8 what you have referred to?

9 A Yes, we have some that are exceptional to these.

10 Q Are there any particular exceptions to what you have  
11 given us in the Canyon, Cisco and Wolfcamp?

12 A Yes, the Patterson is an exception in the Strawn  
13 zone.

14 Q But, Mr. Mahfood, are there any exceptions in the  
15 Cisco, the Canyon and the Wolfcamp, any materially better  
16 wells?

17 A No, in the Cisco, the Canyon and the Wolfcamp it  
18 varies, there are some exceptions to the Wolfcamp, no, we  
19 have no exceptional wells in these at the present time. We  
20 might in the Wolfcamp at a later time but at this time we don't  
21 have any exceptional wells.

22 Q None of these that are drilled are materially  
23 better than what you gave?

24 A That's right.

25 Q Now, in the Strawn you mentioned the Patterson "EL"

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1 No. 1 as being a better well, why don't you turn to that  
2 production curve and give us the flow rate on it?

3 A This well went on line at roughly seven hundred  
4 MCF a day and the initial flowing pressure was twenty-four  
5 hundred pounds and it declined and today it is delivering at  
6 a line pressure of six hundred and fifty pounds and approxi-  
7 mately eight hundred MCF a day.

8 Q So it has held up really?

9 A It has held up very well as one exception to the  
10 other Strawn wells in the area.

11 Q Okay, now, have you got any exception to the -- are  
12 there any better Atoka wells than the Federal "CR" No. 1?

13 A No, I don't think there is.

14 Q What about the Morrow?

15 A Yes, the Jackson "GM" is an exceptional well in the  
16 Morrow. It's in Section 24, 17 South, 25 East, the west half.  
17 We put this well on the line at six hundred and seventy MCF  
18 per day, the flowing pressure of twenty-three hundred pounds  
19 and this well is gradually cleaning itself up a little better.  
20 After two and a half months that is still flowing at two  
21 thousand pounds and roughly seven hundred MCF per day and we  
22 have opened up the well now and the pressure has dropped to  
23 five hundred and fifty pounds which is the line pressure and  
24 we are delivering one point eight million per day from this  
25 well.

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1 Q Okay, what about the Alderman "EN" is that a better  
2 Morrow well?

3 A The Alderman "EN" is not a good Morrow well. It  
4 went on line at two and a half million a day with a flowing  
5 pressure around twenty-two hundred pounds. The pressure has  
6 declined to roughly six hundred pounds and the delivery is  
7 still two point seven five million.

8 Q Okay, and the rest of this exhibit which is production  
9 and pressure curves on other wells in these four proposed pools  
10 are not different, as I understand it, from those five wells  
11 you initially referred to as typical?

12 A That is correct.

13 Q Will you turn to what has been marked as Exhibit Five  
14 being a collection of logs from certain wells in the field and  
15 explain by logs and well names the type of zones encountered?

16 A The Federal "GC" is the first one. We see two zones  
17 there, the Morrow and the Strawn. In order not to commingle  
18 the two zones we set a blanking plug on the Morrow and here is  
19 an example of why we should be commingling this Morrow zone as  
20 it is showing depletion just while we are testing it. The Strawn  
21 was actually a better well than the Morrow and to take advantage  
22 of the good prices at the moment we produced the Strawn.

23 Q Okay, now, you don't have the test result on this  
24 log, do you?

25 A No, I do not.

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1 Q But it is your recollection that the Morrow was  
2 depleting while you were testing it?

3 A That is correct.

4 Q Okay. Turn to your next log which according to my  
5 notes is the Federal "DR" and explain those three zones in  
6 that well?

7 A We have three zones perforated and completed in  
8 this well. We have the Strawn which potentialed for less  
9 than a hundred MCF per day. We perforated the Canyon and  
10 commingled the two and we still had roughly a hundred MCF per  
11 day. We came over and perforated the Cisco and commingled  
12 all three and we have seven hundred forty MCF per day from  
13 all three zones.

14 Q Now, as I understand it, that well is not on the  
15 line at this time?

16 A This is true.

17 Q The third log in this group of exhibits is the  
18 Gossett "EU" No. 1.

19 A In this we have Strawn and Wolfcamp zones completed  
20 in this well. Again we have the Strawn separated with a  
21 blanking plug and we have permission for a dual completion  
22 in this well but at the moment we have not put the Strawn  
23 on and perhaps it would have been better to commingle them  
24 both because that Strawn is not a very good well, from the  
25 logs you can see from looking at ten percent or less porosity

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1 and less than five feet of porosity in each of the zones.

2 Q Mr. Mahfood, what is the additional cost incurred  
3 in dually completing one of these typical wells over singly  
4 completing and commingling from the various zones?

5 A We are looking at approximately twenty thousand  
6 dollars or possibly thirty thousand.

7 Q Roughly what is that made up of?

8 A Of pipe and surface equipment.

9 Q What is the big surface equipment?

10 A The heater is the biggest item there, You are looking  
11 at fifteen thousand dollars for an extra heater but it is not  
12 only an economic problem but also two heaters will consume  
13 twice as much heating capacity, twice as much fuel.

14 Q Okay, turn to the next log in my list, it is the  
15 Caskey "EV".

16 A Well, we have the Strawn and the Atoka perforated  
17 together, commingled in the same zone. When we completed the  
18 Atoka we only had half a million on a one or two hour test. We  
19 perforated the Strawn and we got four point four million from  
20 all three zones, all three perforated zones, the two zones  
21 of Strawn and the Atoka. Today this is producing, I believe,  
22 six or seven MCF per day, half a million MCF per day.

23 Q After being on the line how long?

24 A Approximately two and a half months.

25 Q Practically all of these wells have been on two to

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1 three months?

2 A That is correct.

3 Q Okay, your next log is your State "CY" No. 1. Explain  
4 briefly what is shown by that log?

5 A This was a dual completion but I have just shown it  
6 all Penn on the log here, the Strawn and the Atoka perforations  
7 The Strawn was just a four-foot zone with an average of about  
8 six percent porosity and we weren't sure that we would get  
9 very much production from it so we put it with the Atoka to  
10 take advantage of it. Actually at the time of completion the  
11 key personnel did not know that it was the Strawn and separate  
12 from the Atoka.

13 Q Okay, Pal "DG" No. 1 is the next well, explain what  
14 is shown by that log?

15 A The Pal "DG" is showing the Upper Penn perforations  
16 in which one zone is the Wolfcamp and the other two zones are  
17 in the Cisco. I found that when the study was made we were  
18 considering a reef structure and not the identity of the  
19 different zones.

20 MR. STAMETS: While we are right here on this log,  
21 Mr. Mahfood, in your opinion does this show that this reef  
22 bank is a continuous structure across the time line and would  
23 not be practical to try and separate the Wolfcamp and the  
24 Cisco in this pool?

25 A In this particular log it looks like it is all one

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1 carbonate to me.

2 MR. STAMETS: So this is what you would be referring  
3 to in your Eagle Creek-Permo-Penn Pool?

4 A Yes, sir.

5 MR. STAMETS: Thank you.

6 Q (Mr. Losee continuing.) Before you leave that well,  
7 this is a dual well, is it not, and actually you have it  
8 dually completed and although that portion of your log only  
9 has the Permo-Penn?

10 A That is correct.

11 Q What is this well now down to?

12 A This well is down to three hundred MCF per day.

13 Q Okay, your last log is the Armstrong "S" No. 1?

14 A Yes, the Armstrong "CT" No. 1, we call the Armstrong  
15 Faskens-1. Fasken passed this well up as being uneconomical  
16 to produce, we took it over and perforated all of the possible  
17 delivery zones. We perforated several Atoka zones and one or  
18 two Morrow zones. I'm not sure just where the difference is  
19 between the Morrow and the Atoka but this well has been on  
20 line now for two or three years. As I recall it is some two  
21 hundred and thirty-seven million cubic feet of gas from it.

22 Q What is it now making?

23 A It is now making seventeen MCF per day.

24 Q Mr. Mahfood, as part of this application you suggested  
25 to the Examiner that provision be made in these special pool

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1 rules for administrative approval for the commingling between  
2 these four pools.

3 A Yes, sir.

4 Q Which really from a zone standpoint are made up of  
5 the Permo-Penn and the Strawn and the Lower Penn?

6 A That is correct.

7 Q Would you care to state to the Examiner what should  
8 be the conditions for administrative approval of such an  
9 application to commingle between these pools?

10 A Well, we would submit a plat, we would submit a  
11 copy of the log, we would submit any test data we have, any  
12 pressure data we might have and our criteria would be if a  
13 zone when we first perforated one individual zone or an  
14 individual pool in this well, if the deliverability from this  
15 well is not sufficient to have a pipeline connection it should  
16 be considered noncommercial and should be allowed to be  
17 commingled with one or more zones that will bring the  
18 deliverability up to a point that would attract a pipeline  
19 connection.

20 Q Now, you don't mean whether the well can be, what  
21 you are really saying is whether any particular zone in the  
22 well is uneconomical or that zone by itself will not attract  
23 a pipeline, is that correct?

24 A Yes, sir.

25 Q And that means that also there is not a so-called

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1 economical zone within the same pool?

2 A Yes, sir.

3 MR. STAMETS: Okay, I would like to clarify that.

4 Let's suppose that in the Atoka-Morrow it would be a well  
5 sufficient to attract a pipeline connection but in the Strawn  
6 that zone alone would not be sufficient, would you propose  
7 in that case to commingle those two?

8 A Yes, I sure would.

9 MR. STAMETS: Okay, thank you.

10 Q (Mr. Losee continuing.) Okay, now, what other  
11 criteria would be involved, other than the economics of  
12 producing it?

13 A Well, good engineering, we consider that the Morrow  
14 and the Pennsylvanian sand would be sensitive to water  
15 production so we have been setting a standing valve above  
16 the Morrow completions and sometimes above the Strawn  
17 completions. This would prevent any fluids from above  
18 invading the Lower Pennsylvanian sands.

19 Q What other criteria?

20 A Naturally we are concerned that there should be  
21 no cross flow from one zone to the other.

22 Q And your pressure data would give the factors for  
23 the Commission to make that determination?

24 A Yes.

25 Q Now, Mr. Mahfood, why don't you recommend to the

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1 Commission rather than whether the zone is economical a volume  
2 of gas or actually the calculated absolute open flow of the  
3 well or the zone when you complete it, why don't you recommend  
4 that as a standard?

5 A Because the full capacity of a well is not indicative  
6 of the reserve in that well. I have seen some wells with a  
7 four and a half million potential going off within two  
8 months, in about two months it's not delivering to the line  
9 anymore.

10 Q Well, you are talking about particularly in the  
11 area of these three pools, are you not?

12 A Well, yes, that's true and in this particular area  
13 here I'll have to stop and think about some of these -- well,  
14 there are some wells here that are just flat declined to a  
15 very low capacity. We have, let's see, the Artesian "EQ". There  
16 is one well that came on fairly strong and today it's deliver-  
17 ing less than a hundred MCF per day. That's probably the  
18 worst case we have. That is in Section 24, 17, 25, east half.

19 Q Okay, now, I believe it's, although not in the area  
20 of these three pools, but this morning you testified about  
21 two Morrow completions, one in the Cemetery Morrow a couple of  
22 miles or six or eight miles from this and the well went on,  
23 you can correct me if I'm wrong, at four point eight calcu-  
24 lated absolute open flow and it was down in two and a half  
25 months to less than a half a million?

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1 A. I'm already confused, on which well now?

2 Q. The Moore.

3 A. Four point eight.

4 Q. The Moore "FQ", what's it making now, do you recall?

5 A. The Moore is presently delivering one point one  
6 five million.

7 Q. Okay, it hasn't fallen as badly?

8 A. No, but it has fallen rather rapidly. It is the  
9 Hunter well that has dropped and is no longer delivering to  
10 a line.

11 Q. And it was --

12 A. I believe it was four point eight million potential.

13 Q. Is that not sometimes very typical of these small  
14 zoned or thin zoned pays out in the Pennsylvanian area?

15 A. I believe so because they have had quite a few with  
16 this experience.

17 Q. Were Exhibits One through Five prepared by you or  
18 under your supervision?

19 A. Yes, they were.

20 MR. LOSEE: I move their introduction.

21 MR. STAMETS: These exhibits will be admitted.

22 (THEREUPON, Applicant's Exhibits One through  
23 Five were admitted into evidence.)

24 CROSS EXAMINATION

25 BY MR. STAMETS:



1 Q I'll start at the beginning here and work my way  
2 down to the end. On your first plat, Exhibit Number One,  
3 which would be the Permo-Penn Pool?

4 A Yes, sir.

5 Q I would like to identify what acreage should be in  
6 that pool. It would appear to me that you would have the east  
7 half of Section 24, 17, 25 in the pool? Just to make everything  
8 match up, we would have to put the west half of Section 24 in  
9 there as well.

10 A Okay.

11 Q Now, Section 4 of 18, 25, why is that acreage in  
12 there?

13 A It's a new completion, Mr. Examiner, it's going to  
14 be in the Upper Penn.

15 Q Okay, what acreage is dedicated to that well?

16 A The south half.

17 Q Okay, then to sort of fill in it would be necessary  
18 to go ahead and take in the north half as well?

19 A Yes, sir.

20 Q Now, in Section 7 of 18, 25, why do you have  
21 the west half shown as in the pool?

22 A We have a location staked in that west half and we  
23 anticipate to make a Permo-Penn completion. We have not been  
24 drilling yet, though, Mr. Examiner.

25 Q But this is on this general Permo-Penn trend that is

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1 productive over a quite a bit of the area?

2 A Yes.

3 Q Okay, in Section 6, the north half, is that a similar  
4 situation?

5 A A similar situation in that the location has been  
6 approved for drilling.

7 Q Okay, how about Section 31?

8 A No, we don't have any location approved there yet. I  
9 guess that could be deleted, it's on the trend though.

10 Q Section 30, the south half, well, all of Section 30?

11 A The reason I suggest all of Section 30, we don't  
12 know when we drill there whether we will go horizontal or  
13 vertical.

14 Q It is necessary to take in at least part of Section  
15 30 to reach the well that is in the north half of Section 25?

16 A That is correct.

17 Q Now, what about the well that is located in the  
18 north half of Section 35 of 17, 24, what type of completion  
19 is that?

20 A It is completed in the limestone and there is some  
21 confusion as to whether that is basal Abo or Wolfcamp. I would  
22 rather call it a Wolfcamp completion.

23 MR. STAMETS: Go off the record a minute.

24 (THEREUPON, a discussion was held

25 off the record.)

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1 MR. STAMETS: Okay, go back on the record.

2 A I suggest that we omit the north half of Section 35,  
3 17, 24 until we resolve what zone that well is completed in.

4 Q (Mr. Stamets continuing.) Okay, thank you. Now,  
5 move on to Exhibit Number Two, this is the Eagle Creek-Strawn  
6 reservoir. Is there any necessity to take in the east half of  
7 Section 31 of 17, 26?

8 A Yes, those wells are layed down, they are horizontal  
9 three twenties. The Strawn is in the lower half section.

10 Q How about the north half of Section 25 of 17, 25?

11 A Actually we have no Strawn completions in that entire  
12 section. The entire section could be omitted I presume.

13 Q Okay, well, it doesn't appear to be a major problem  
14 at least.

15 A Mr. Examiner, I have not examined those logs to see  
16 if there is any Strawn pay in the Jackson well but it is  
17 possible.

18 Q Okay, what about the south half of Section 34, 17,  
19 25, is there any Strawn completion in there?

20 A The Sowers "FB" Well had four feet of Strawn pay in  
21 it which because of this question of commingling we did not run  
22 pipe on, we figured it was not commercial by itself. For that  
23 time, you know, when we could commingle it we would go ahead  
24 and run pipe on it.

25 MR. LOSEE: Is it standing up or laying down?

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1 A. The proration unit is vertical. Section 4, that is  
2 another new well. It is cased all the way to the Morrow and  
3 does have Strawn pay in it.

4 Q (Mr. Stamets continuing.) That's Section 4, 18,  
5 25?

6 A. That is correct. We have not perforated the Strawn  
7 or the Morrow.

8 Q But they are both present?

9 A. They are both present and cased.

10 Q And finally the two Atoka-Morrow pools, taking the  
11 Richard Knob first, how about the north half of Section 29,  
12 is that an Atoka-Morrow?

13 A. We have vertical. Here again this had -- well, we  
14 have vertical dedication here in the "CR" and on the "FV" both.  
15 On the "FV" we did not run pipe on that Strawn and Atoka  
16 for the same reason that they were both too marginal.

17 Q In other words those are plugged off below the  
18 Upper Penn or Permo-Penn production?

19 A. Yes.

20 Q Okay, well, in that case would there be any necessity  
21 to include that east half?

22 A. No, we could omit that east half.

23 Q Okay.

24 A. But, well, we need to tie it to the south half of  
25 Section 21.

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1 Q That well is completed only in the Strawn?

2 A That's correct.

3 Q So that would not be in this Atoka-Morrow Pool that  
4 we were just talking about?

5 A That is correct, okay, I beg your pardon.

6 Q Now, looking at the easternmost pool, you have two  
7 wells in Section 24, both of those are Morrow so that takes  
8 the whole section?

9 A Yes, sir, and Section 25 also.

10 Q And how about the west half of Section 6 of 18, 26,  
11 is there anything completed in the Atoka-Morrow there?

12 A No, sir, that can be omitted. I guess we should  
13 include the east half, however, to connect the west half of  
14 Section 5.

15 Q Okay, and the same thing would be true of Section 26  
16 and 35 of 17, 25?

17 A Yes, sir, those can be omitted.

18 Q Okay. Now, as to the administrative procedure -- one  
19 more question on the pools, the advertisement here was for  
20 the creation of three pools and I presume that later studies  
21 indicated to you that we need to create four pools?

22 A Yes, sir.

23 Q I presume you would like to amend your application  
24 for the creation of four pools?

25 A Yes, sir.

1 Q Do you know which wells are the discovery wells for  
2 those pools and if you don't could you furnish me with those  
3 in a few days?

4 A I sure will.

5 Q That will be a help. Now, as far as this administra-  
6 tive approval procedure is concerned, would it simplify  
7 matters if that could be done by the district supervisor?

8 A It certainly would.

9 Q And if he did not agree that this was a matter, you  
10 know, that would result in more conservation of natural gas  
11 and was something that could cause reservoir damage and he did  
12 not approve of it then you could go ahead and bring it up  
13 to a hearing.

14 A Yes, sir.

15 Q Now, when you are drilling these wells and you test  
16 these individual zones, I presume they are tested separately,  
17 how do you do that, with straddle packers or exactly how are  
18 you able to tell what the Strawn makes and then go on down and  
19 test the Atoka and Morrow?

20 A Well, when we are drilling, on the recommendation of  
21 geologists, we might run a drill stem test. However, if it  
22 looks real good the geologist doesn't call a test, we go ahead  
23 and run casing and perforate and test this on individual zones.

24 Q On completion then how would you test these various  
25 zones to determine what their pressures were and what their

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1 potentials were?

2 A. Okay, we will usually start at the bottom and perforate  
3 the bottom zone and then we will flow it on a half inch choke  
4 or a three-quarter inch choke at a relatively low pressure, I  
5 would say a hundred pounds or less and if it sustains flow then  
6 you know, you can determine from the flow rate whether it's  
7 economical or not but if the pressure falls off while you are  
8 testing it then you know right away it's an uneconomical zone  
9 or perhaps it might flow at the rate, a very low rate, and  
10 again, I guess anything less than a million a day would be a  
11 low rate.

12 Q Then what would your procedure be after you had  
13 tested the lower zone?

14 A Put the blanking plug on top of that packer or a  
15 standing valve, depending if you are going to commingle it and  
16 we go up to the next zone and perforate the next zone and test  
17 it. If it is in the same zone we will have commingled  
18 production, we have cumulative production then from both zones  
19 and if the total rate from both zones is less than a million  
20 it might be considered uneconomical for pipeline connection  
21 and we will go up to the next zone.

22 Q So in every case you would be able to tell the  
23 district supervisor what pressure you encountered in the  
24 formations and you would be able to give him an indication of  
25 the productive capacity of these separate formations?

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1 A Yes, sir, we can come up with some reasonable  
2 numbers.

3 Q And I presume you would also be able to recommend  
4 some allocation of production of the commingled streams on  
5 the individual pools?

6 A Yes, sir, this is difficult but I think we could  
7 come up with something reasonable.

8 Q And you would proceed to install a standing valve  
9 between any sensitive zone and any zone above that which  
10 might cause problems because of liquid production?

11 A That is correct.

12 MR. STAMETS: Any questions of the witness? He may  
13 be excused.

14 (THEREUPON, the witness was excused.)

15 MR. STAMETS: Is there anything further in this case?  
16 We will take the case under advisement.

17 MR. LOSEE: Thank you.  
18  
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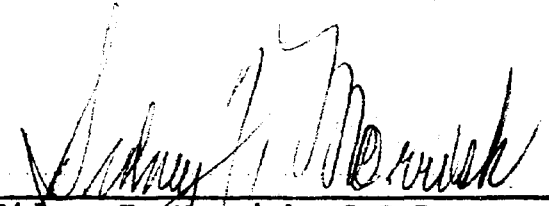
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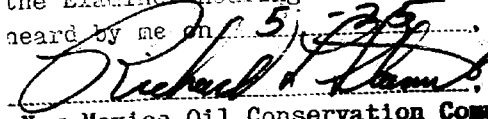
REPORTER'S CERTIFICATE

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I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,  
do hereby certify that the foregoing and attached Transcript  
of Hearing before the New Mexico Oil Conservation Commission  
was reported by me, and the same is a true and correct record  
of the said proceedings to the best of my knowledge, skill and  
ability.

  
Sidney F. Morrish, C.S.R.

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I do hereby certify that the foregoing  
a complete record of the proceedings in  
the Examiner hearing of Case No. 5910  
heard by me on 5-23-77 1977  
 Examiner  
New Mexico Oil Conservation Commission

Dockets Nos. 31-81 and 32-81 are tentatively set for October 7, and October 21, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 23, 1981

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM  
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner or Daniel S. Nutter, Alternate Examiner:

- CASE 7353: Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-5530, which authorized its Central Vacuum Unit Area Pressure Maintenance Project, to increase the total project area allowable, or as an alternative, to reclassify the project as a waterflood project.
- CASE 7354: Application of Corona Oil Company, for a pilot steam-enhanced oil recovery project, Guadalupe County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot steam-enhanced oil recovery project in the Santa Rosa formation by using two existing wells and three additional wells to be drilled to complete a five spot pattern located in the NE/4 NW/4 of Section 17, Township 11 North, Range 26 East.
- CASE 7355: Application of Doyle Hartman for directional drilling and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill his Bates Well No. 3, the surface location of which is 1635 feet from the South line and 1210 feet from the West line of Section 20, Township 25 South, Range 37 East, in such a manner as to bottom it at a depth of 3500 feet in the Jalmat Gas Pool at an unorthodox location 2310 feet from the South line and 1650 feet from the West line of Section 20. The SW/4 of said Section 20 would be dedicated to the well.
- CASE 7356: Application of S & I Oil Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the W/2 SW/4 of Section 12, Township 29 North, Range 15 West, Cha Cha-Gallup Oil Pool, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
- CASE 7357: Application of Union Oil Company of California for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Atoka and Morrow formations underlying the W/2 of Section 16, Township 22 South, Range 33 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
- CASE 7343: (Continued from September 9, 1981, Examiner Hearing)
- Application of Caribou Four Corners, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Cha Cha Gallup Oil Pool underlying the E/2 NW/4 of Section 18, Township 29 North, Range 14 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
- CASE 7358: Application of John Yuronka for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Langley Mattix Pool underlying the SW/4 of Section 6, Township 23 South, Range 37 East, to form four 40-acre tracts, each to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells, and a charge for risk involved in drilling said wells.

CASE 7359: Application of Energy Reserves Group for creation of a new gas pool and an unorthodox location, Roosevelt County, New Mexico.

Applicant, in the above-styled cause, seeks creation of a new Cisco gas pool for its Miller Com Well No. 1, located in Unit M of Section 12, Township 6 South, Range 33 East.

Applicant further seeks approval of an unorthodox location for its Miller "A" Well No. 1-Y, to be drilled 1600 feet from the South line and 1700 feet from the East line of Section 11 of the same township. The S/2 of said Section 11 to be dedicated to the well.

CASE 7345: (Continued from September 9, 1981, Examiner Hearing)

Application of Bass Enterprises Production Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Lovington Penn Pool underlying the N/2 NE/4 of Section 13, Township 16 South, Range 36 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7360: Application of L. J. Buck for salt water disposal, Lea County, New Mexico.

Applicant, in the above-styled cause seeks authority to dispose of produced salt water into the Seven Rivers formation in the interval from 3221 feet to 3250 feet in his Monco Well No. 2 in Unit M of Section 25, Township 25 South, Range 36 East.

CASE 7352: (Continued from September 9, 1981 Examiner Hearing)

Application of Yates Petroleum Corporation for designation of a tight formation, Eddy County, New Mexico. Applicant, in the above-styled cause, pursuant to Section 107 of the Natural Gas Policy Act 18-CFR Section 271.701-705, seeks the designation as a tight formation of the Permo-Penn and formation underlying all of the following townships:

Township 17 South, Ranges 24 thru  
26 East;

18 South, 24 and 25 East;

19 South, 23 thru 25 East;

20 South, 21 thru 24 East;

20 1/2 South, 21 and 22 East;

21 South, 21 and 22 East;

Also Sections 1 thru 12 in  
22 South, 21 and 22 East.

All of the above containing a total of 315,000 acres more or less.

CASE 7329: (Readvertised)

Application of Loco Hills Water Disposal Company for an exception to Order No. R-3221, Eddy County, New Mexico

Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit the commercial disposal of produced brine into several unlined surface pits located in the N/2 SW/4 SW/4 of Section 16, Township 17 South, Range 30 East.

Dockets Nos. 31-81 and 32-81 are tentatively set for October 7, and October 21, 1981. Applications for hearing must be filed at least 20 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - SEPTEMBER 29, 1981

9 A.M. - OIL CONSERVATION DIVISION - MORGAN HALL  
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 7116: (DE NOVO)

Application of Southland Royalty Company for designation of a tight formation, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Dakota formation underlying portions of Township 31 and 32 North, Ranges 10, 11, 12, and 13 West, containing 93,840 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271.701-705.

Upon application of Consolidated Oil & Gas, Inc., this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 7361: Application of Southland Royalty Company for designation of a tight formation, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Dakota formation underlying all or portions of Township 31 North, Ranges 10 and 11 West, and Township 32 North, Ranges 10, 11, 12, and 13 West, containing 92,871 acres more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271. 701-705.

CASE 7362: Application of R. A. Mendenhall Associates, Ltd., for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Delaware Mountain Group formation underlying the NW/4 SE/4 of Section 10, Township 22 South, Range 27 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

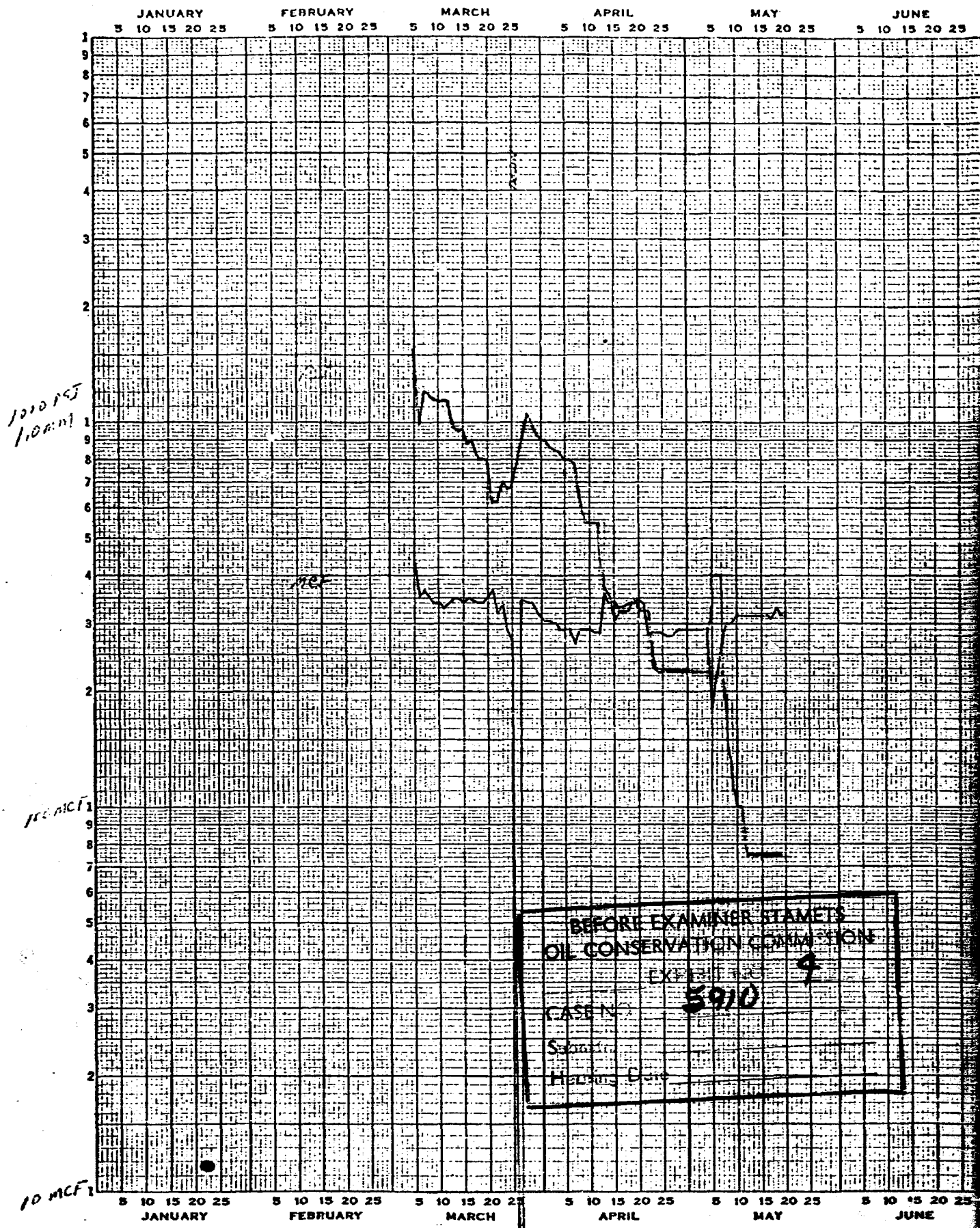
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# Federal CR#1, W12 29-17S-25E. Canyon



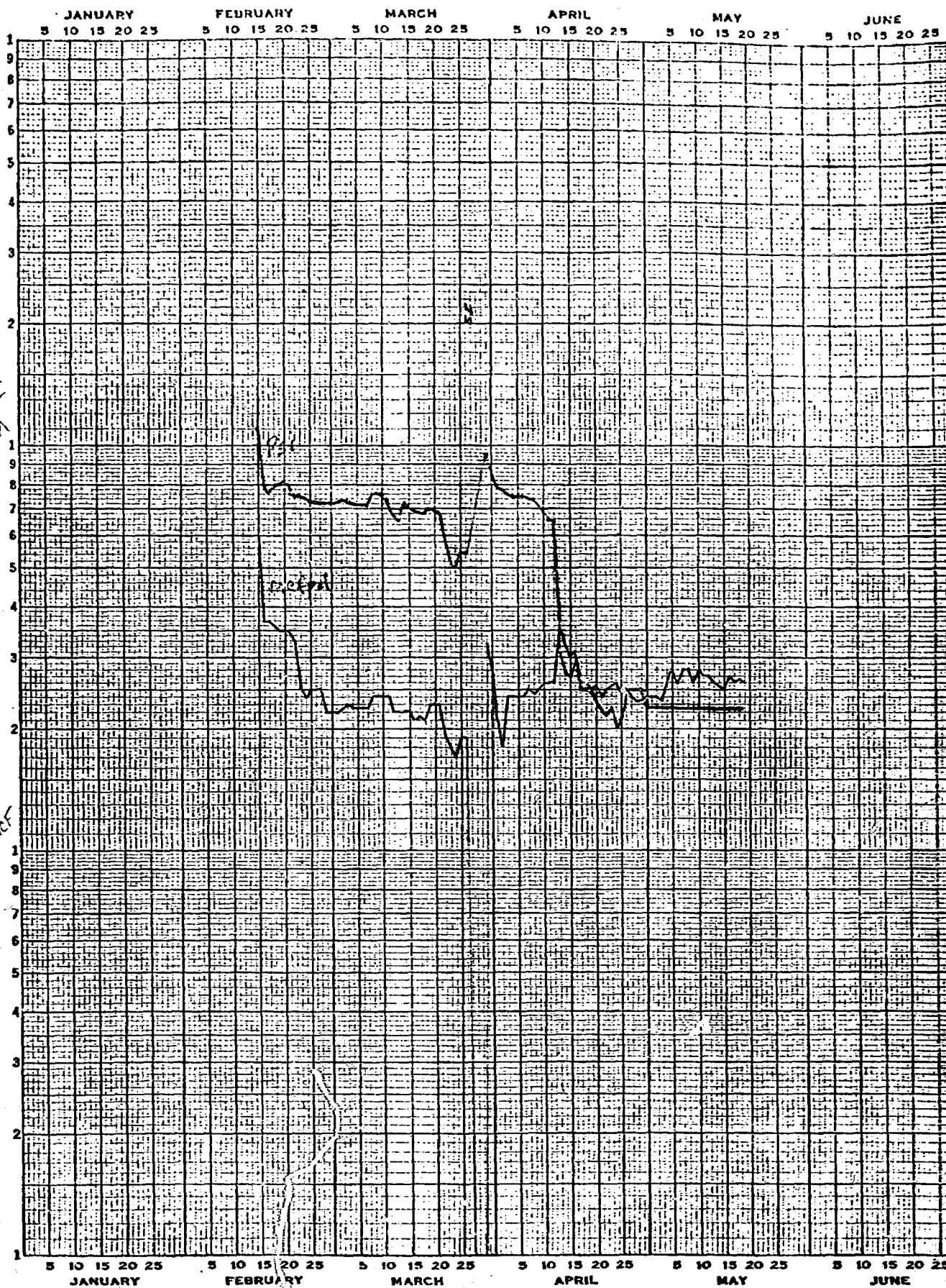
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MADE IN U.S.A.  
KEUFFEL & ESSER CO.

BEFORE EXAMINER STAMETS  
OIL CONSERVATION COMMISSION  
EXHIBIT 4  
CASE NO. 5910  
SIGNED \_\_\_\_\_  
Helding Date \_\_\_\_\_

1977 - 60 Day Sales



SOWERS "FB" W/2 34-17s-25E U. Penn

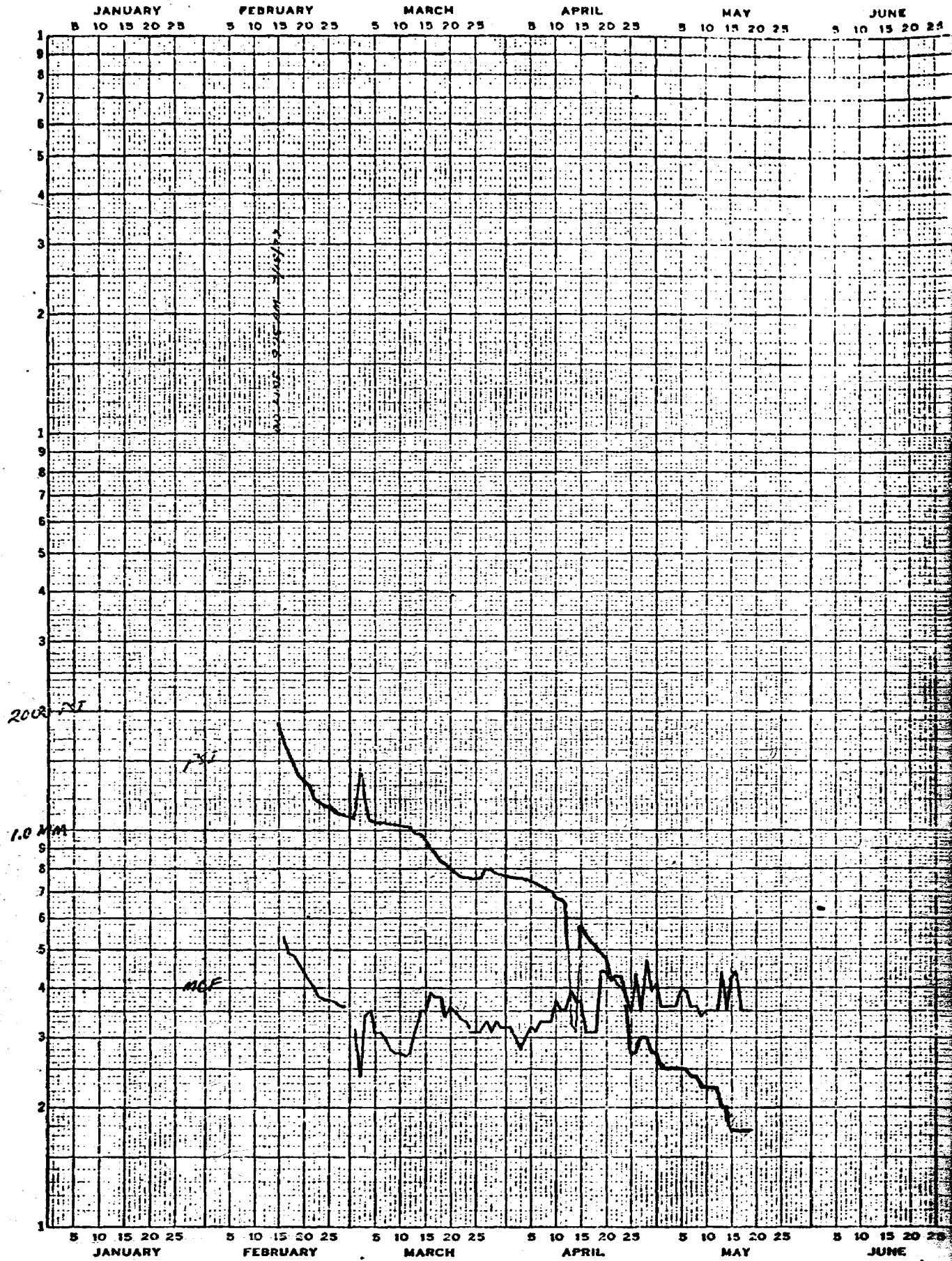


KEE 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

1977 - 60 Day Sales

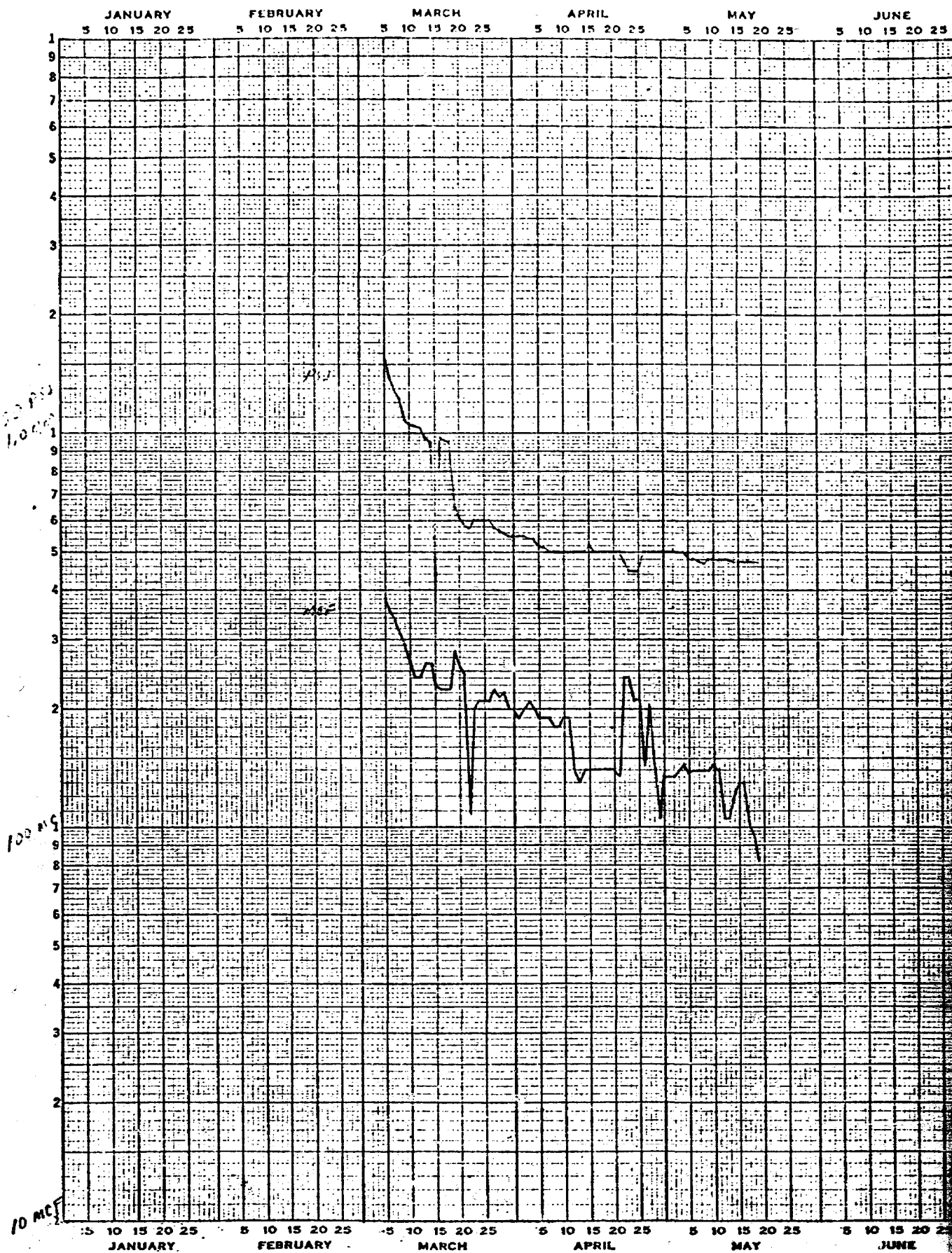
Motley "EW" S/2 27-173-25E Wolfcamp (or Ciseo?)

K&E 1 YEAR BY DAYS 47-6593  
X 3 LOG CYCLES  
KEUPPEL & ESSER CO.



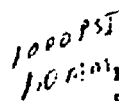
1977 - 60 Day Sales

Federal "GC" E/2 32-17s-25E, Strawn



47 6593  
1 YEAR BY DAYS  
X 3 LOG CYCLES  
KEUFFEL & ESSER CO.

1977 - 60 Day Sales

[illegible]

**KoZ**  
1 YEAR BY DAYS  
X 3 LOG CYCLES  
47 6593  
MADE IN U.S.A. •  
KEUFFEL & ESSER CO.

1000000

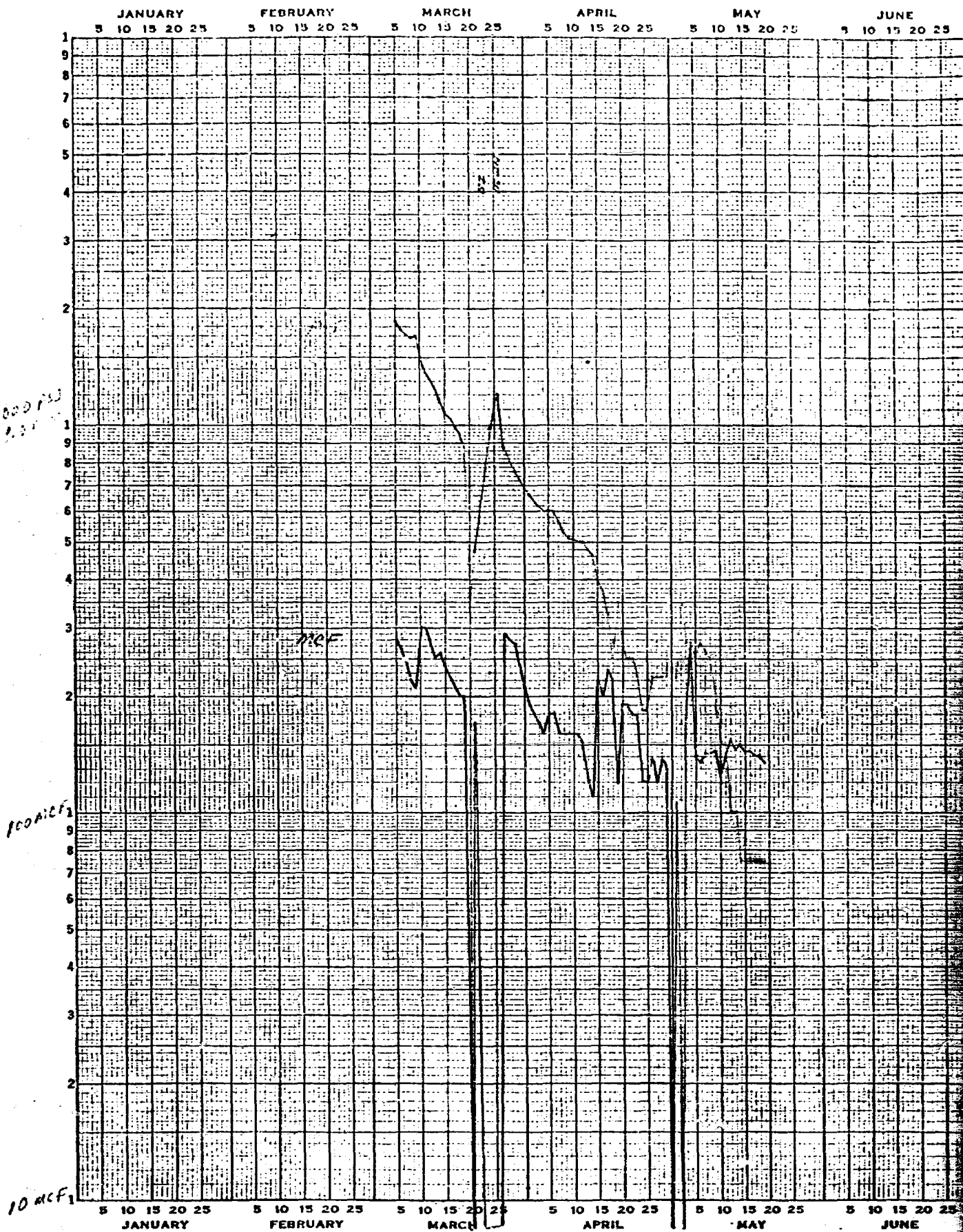
10 mcs

1977-60 Day Sales



Federal EF#1, S/2 6-18s-25E Morrow

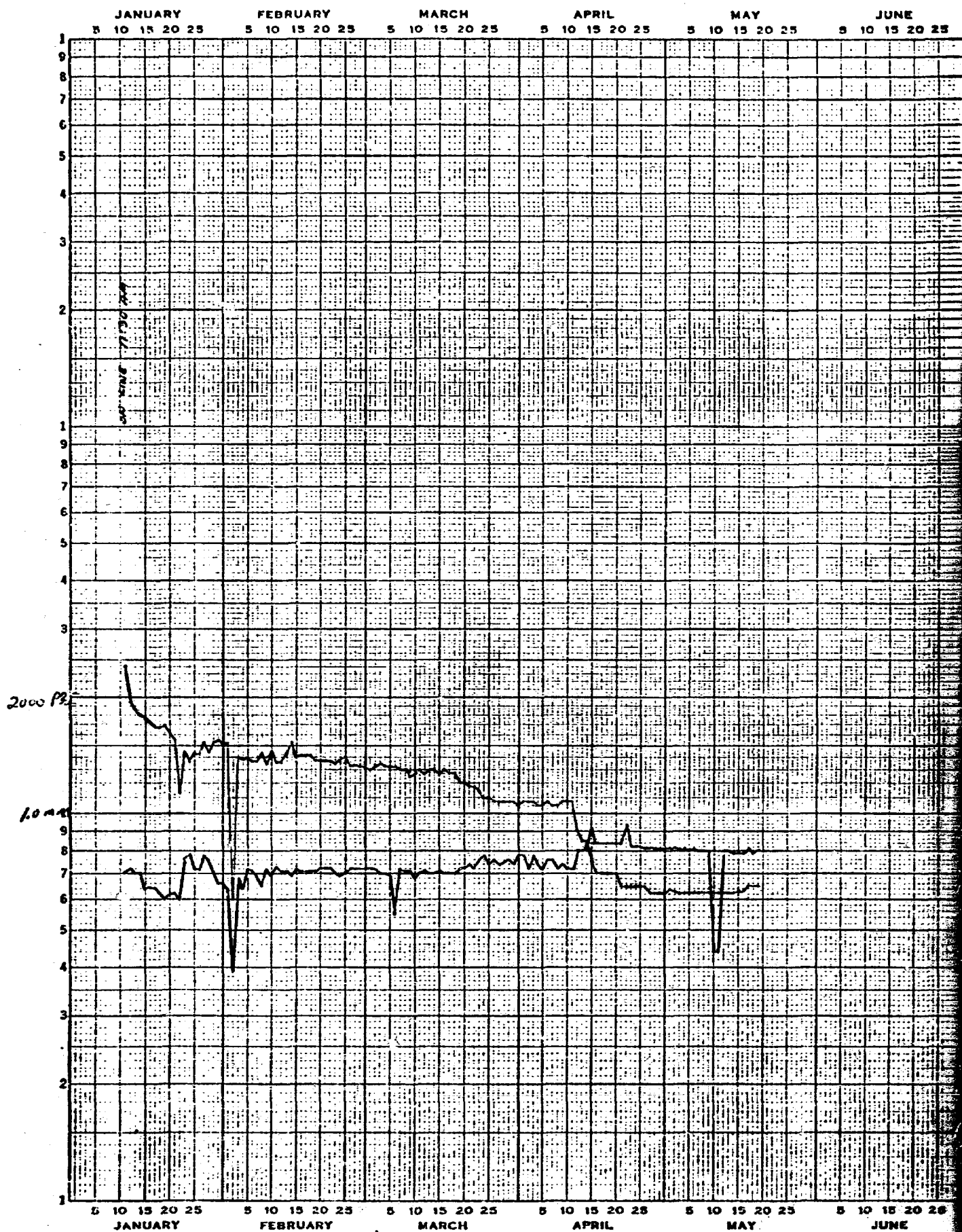
KE 1 YEAR BY DAYS  
47 6593  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



1977 - 60 Day Sales

Patterson EL #1, S/2 31-17S-25E, Strawn

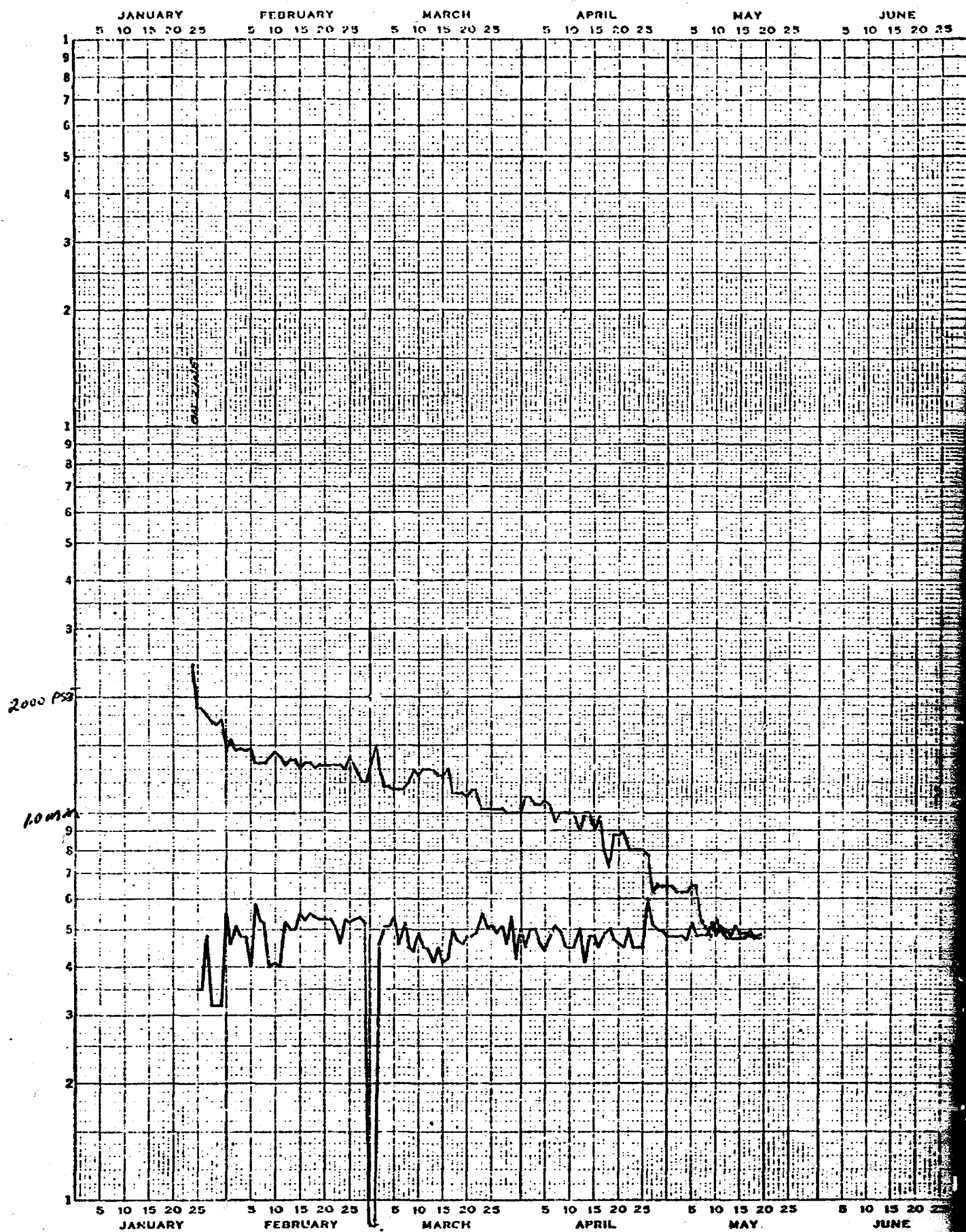
MOE 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
KEUFFEL & ESSER CO.



1977 - 60 Day Sales

ARCO "EC" 2  
S/2 36-17S-25E, Strawn

K&E 1 YEAR BY DAYS 47 6593  
K&E 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2  
MADE IN U.S.A.  
NEUFFEL & LEISER CO.

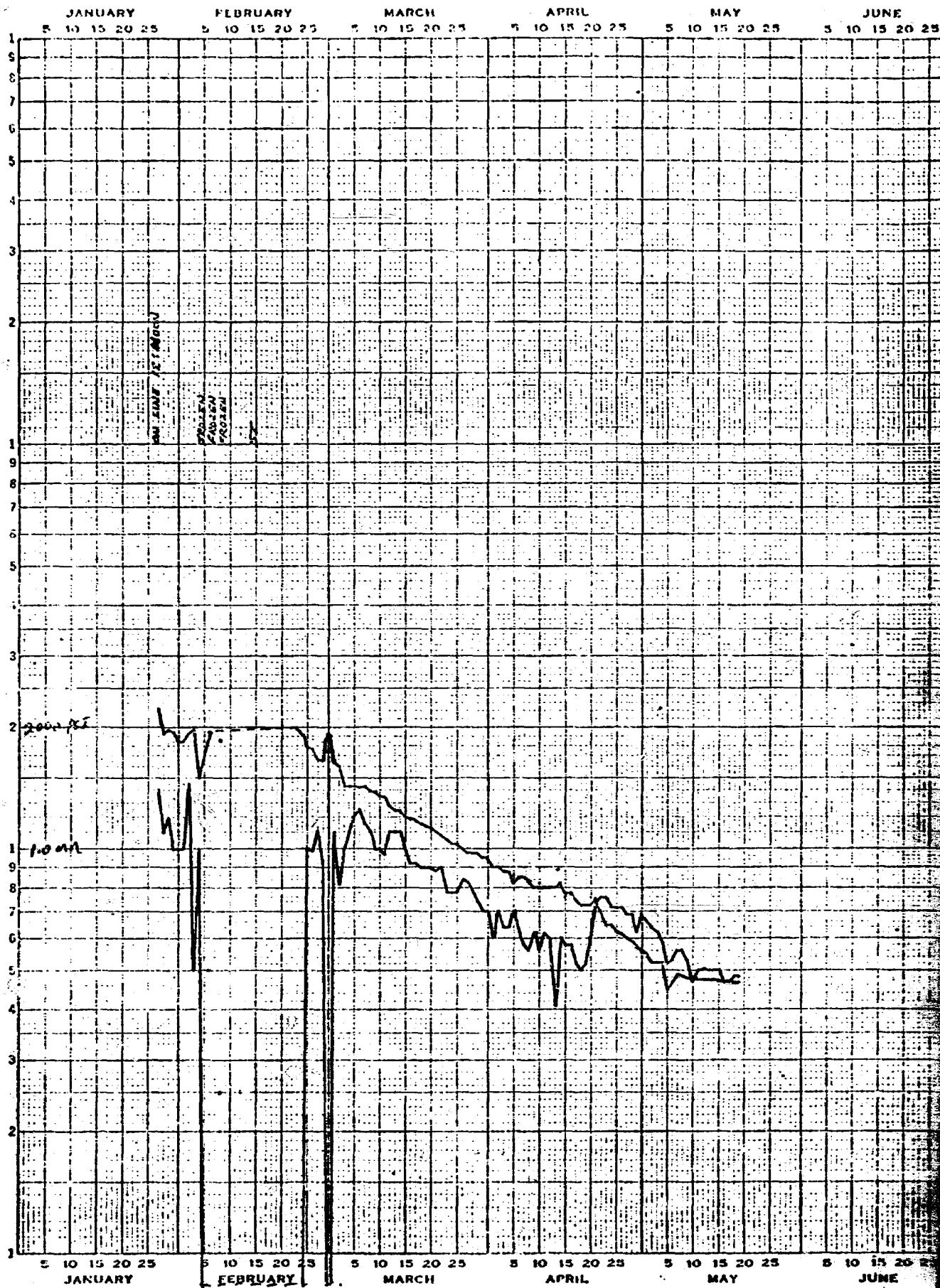


1977 - 40 Day Sol. c

CASKEY "EV"

S/2 30-175-26E, Strawn & Atolca

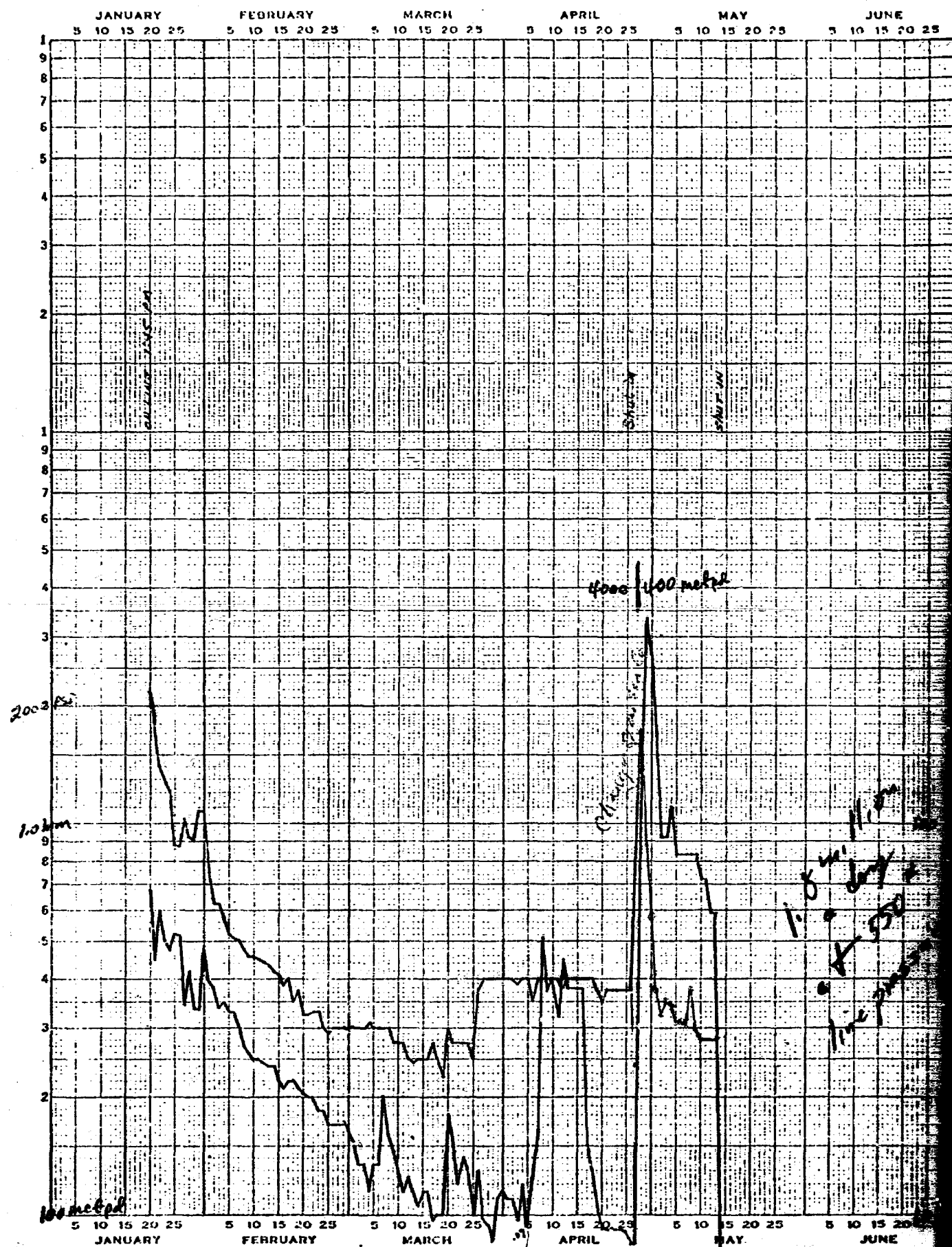
KEF 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



1977-60 Day Sales



E/2 24-175-25E, Morrow



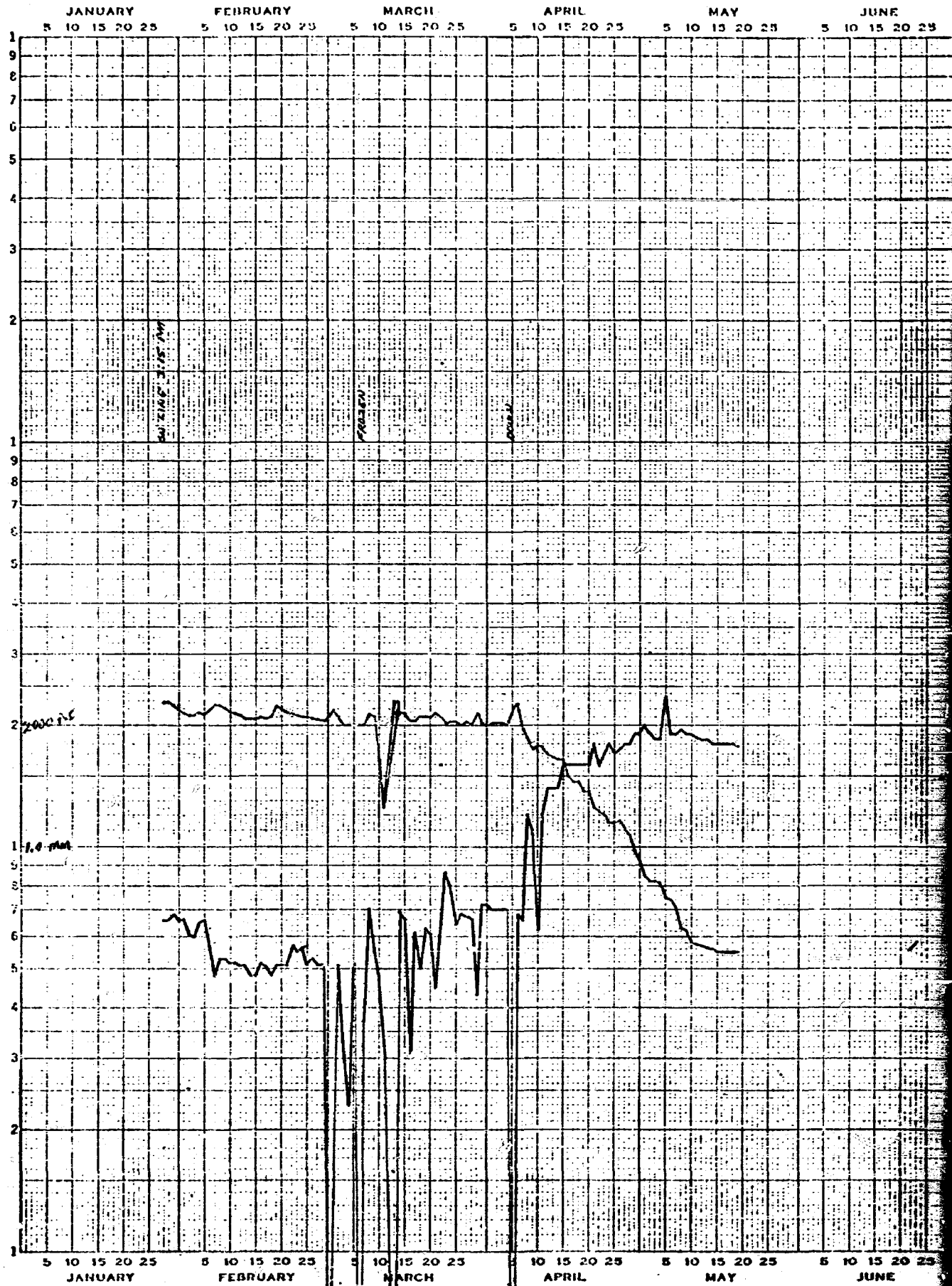
**KALF** 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES MADE IN U.S.A. •  
**KEUFFEL & ESSER CO.**

in No. Sales

JACKSON "GM"

W/2 24-17S-25E, Morrow

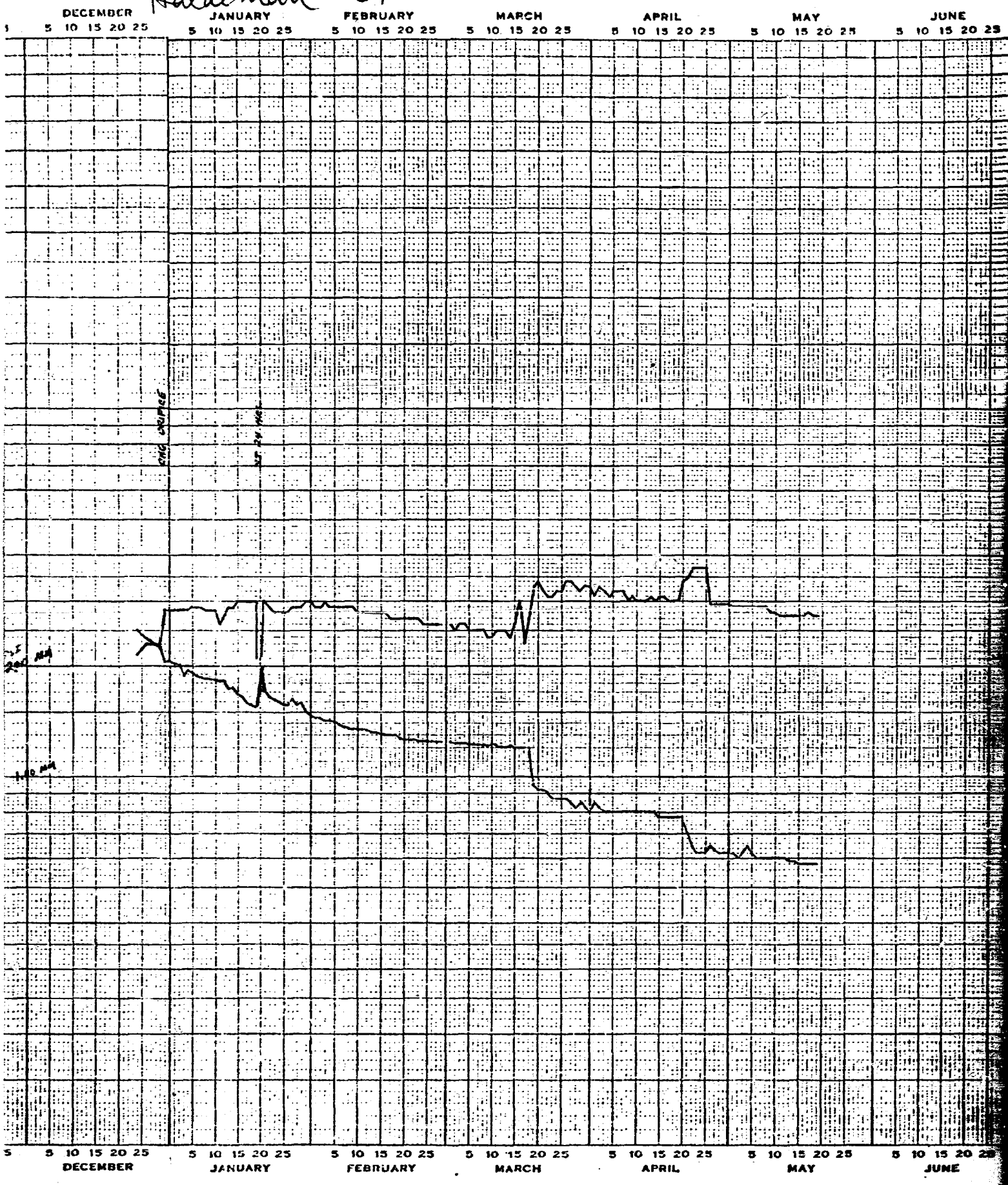
1 YEAR BY DAY  
47 6593  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



1000 - 10 New Sales

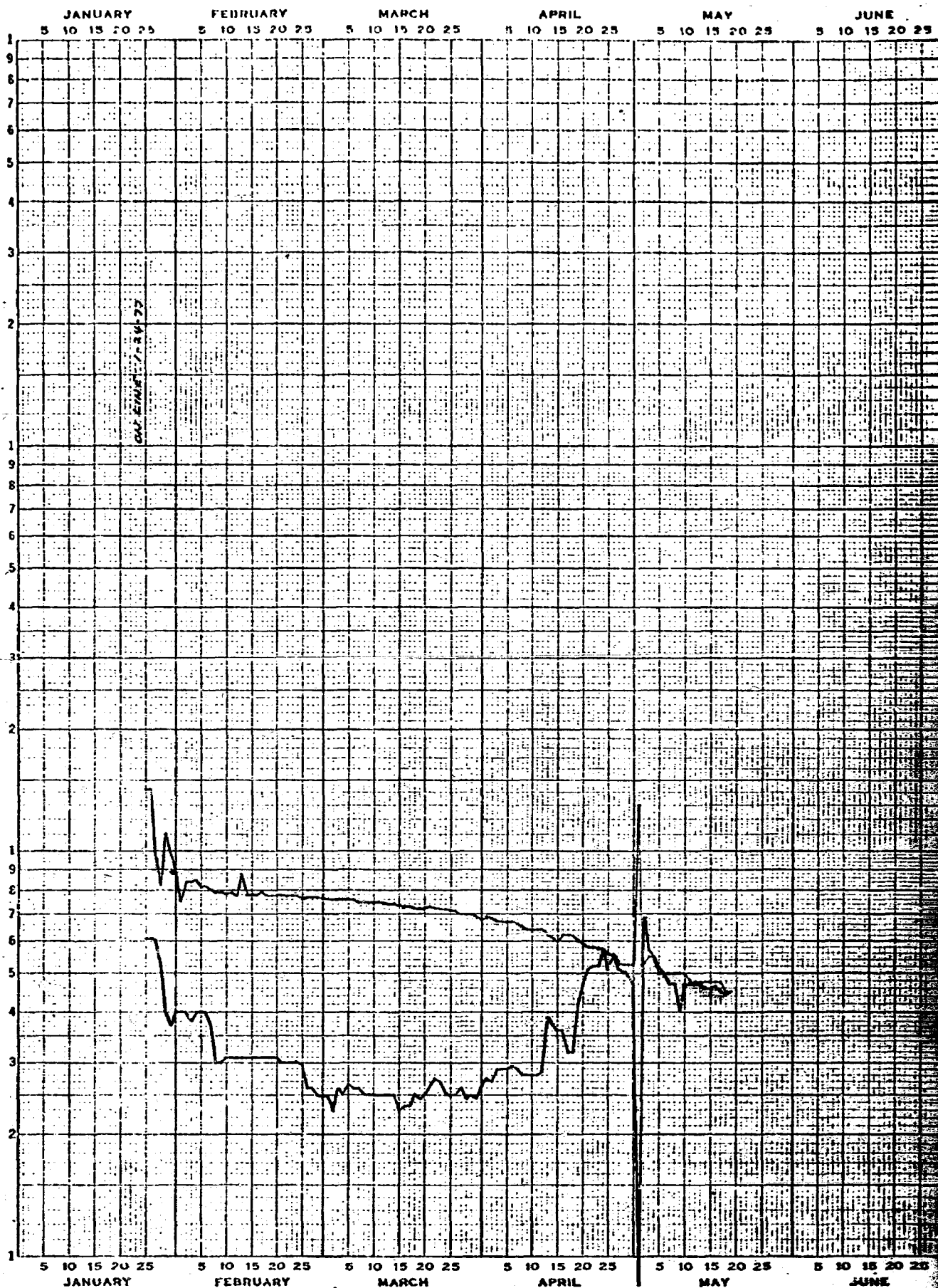
V/2 31-17s-26E. Morrow

Haldeman EN



Gossett "EU" #1, S/2 26-175-25E, Wolfcamp

1 YEAR BY DAYS  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

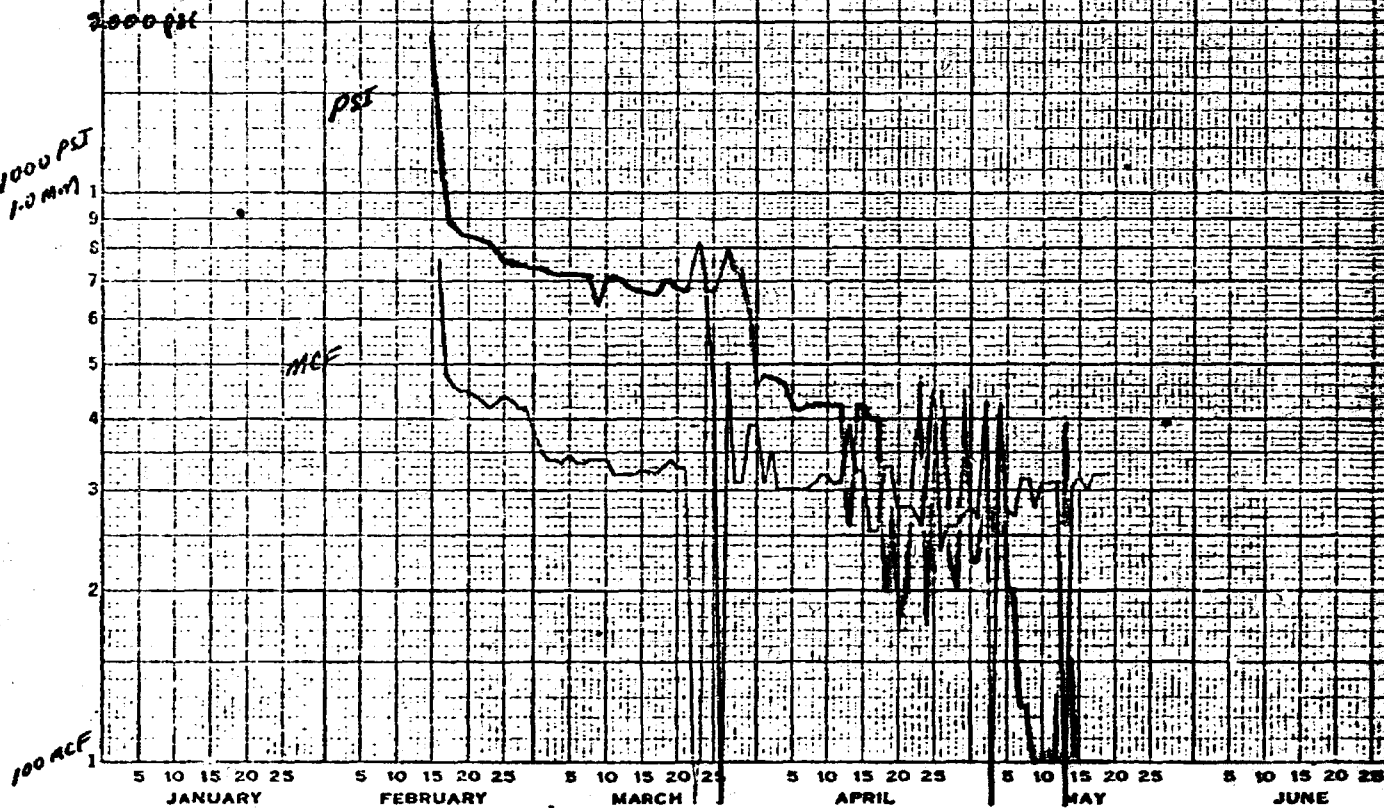


1977 - 60 Day Gas Sales



Powell "DG" 5/2 35-17s-25E, Wolfeamp & Cisco

K&E 1 YEAR BY DAYS 47 6593  
X 5 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



1977 - 60 Day Sales

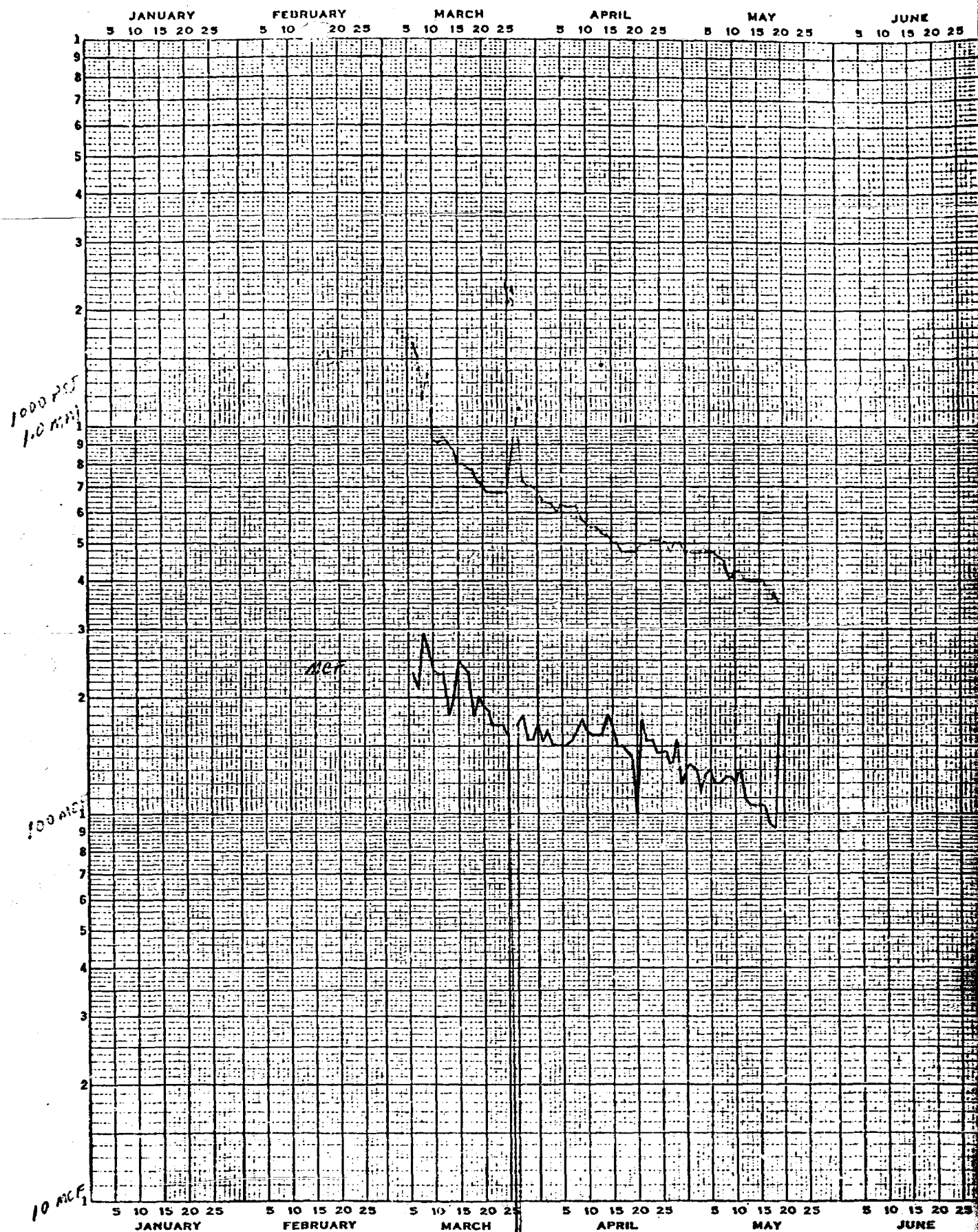
WIANSEAU, OK  
N/2 35-17S-25E, Upper Penn

1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.



1977-60 Day Sales

State CY 4 W/2 32-17s-25E, Wolfeamp & Cisco

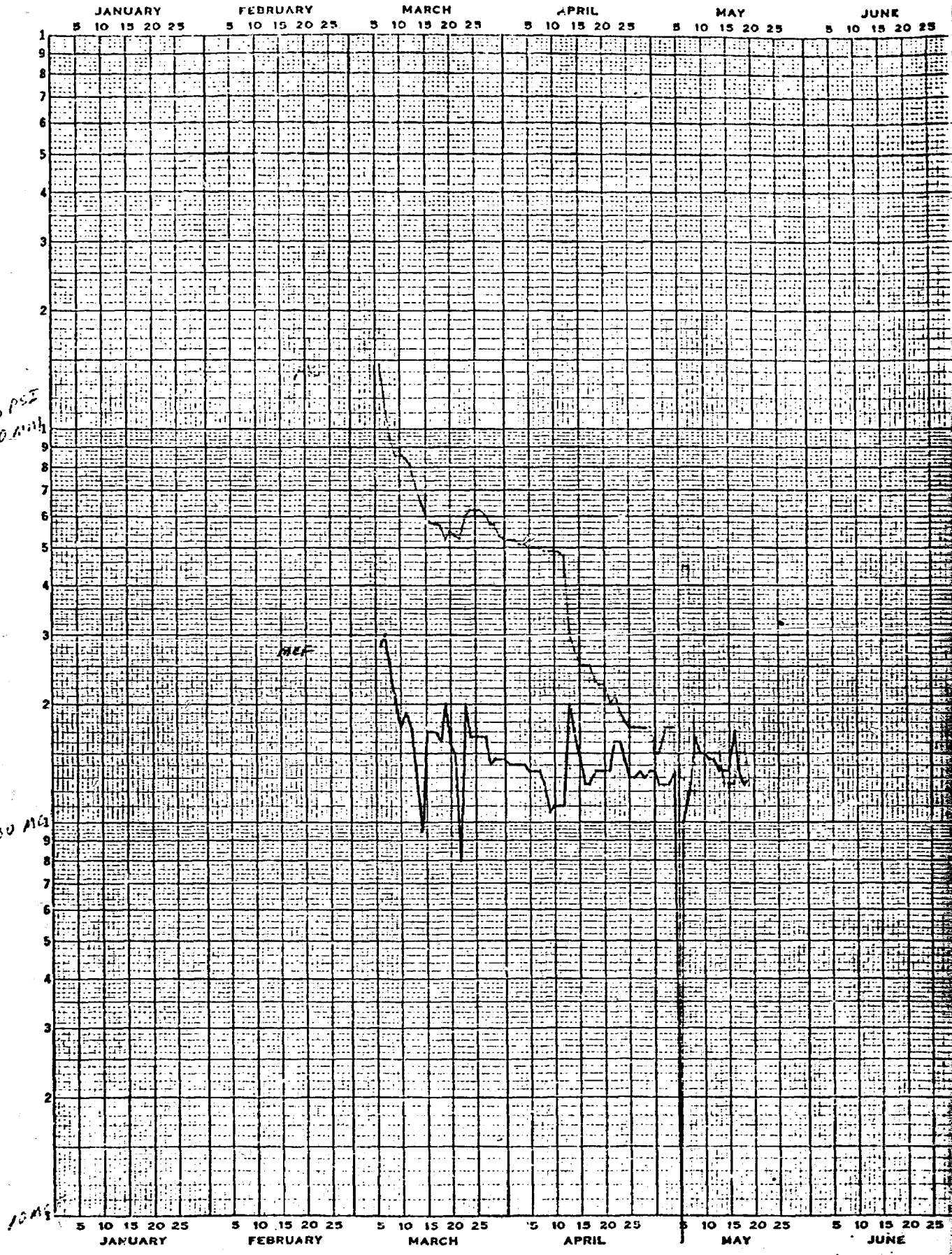


1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
KEUFFEL & ESSER CO.

1977-60 Day Sales

Gable 'FV', El2 29-17s-25E, Upper Penn

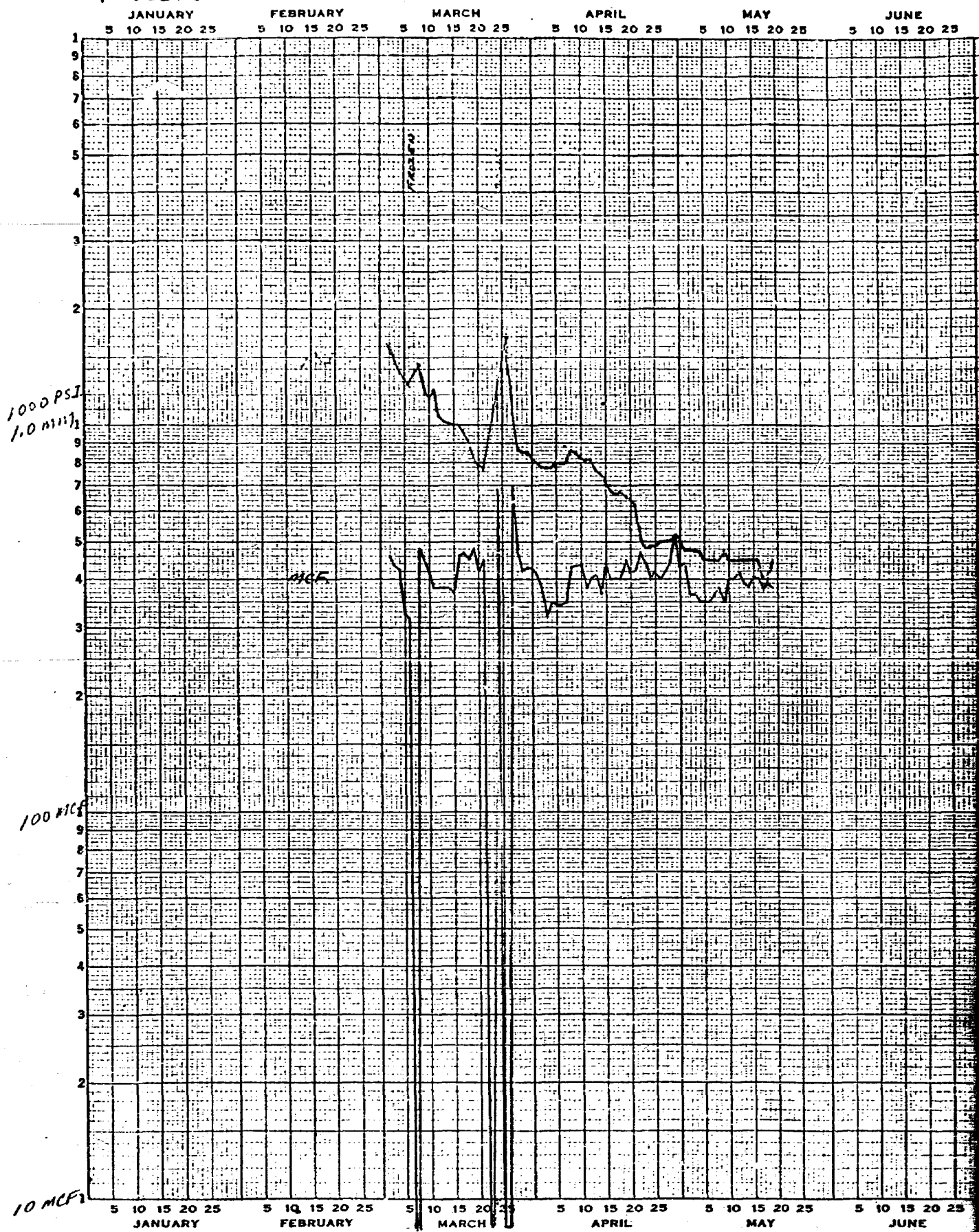
1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
KEUFFEL & ESSER CO.



1977-60 Day Sales



# Federal "CZ" N/2 8-18s-25E Upper Penn



K&E  
1 YEAR BY DAYS  
X 3 LOG CYCLES  
47 8593  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

1977 - 60 Day Sales

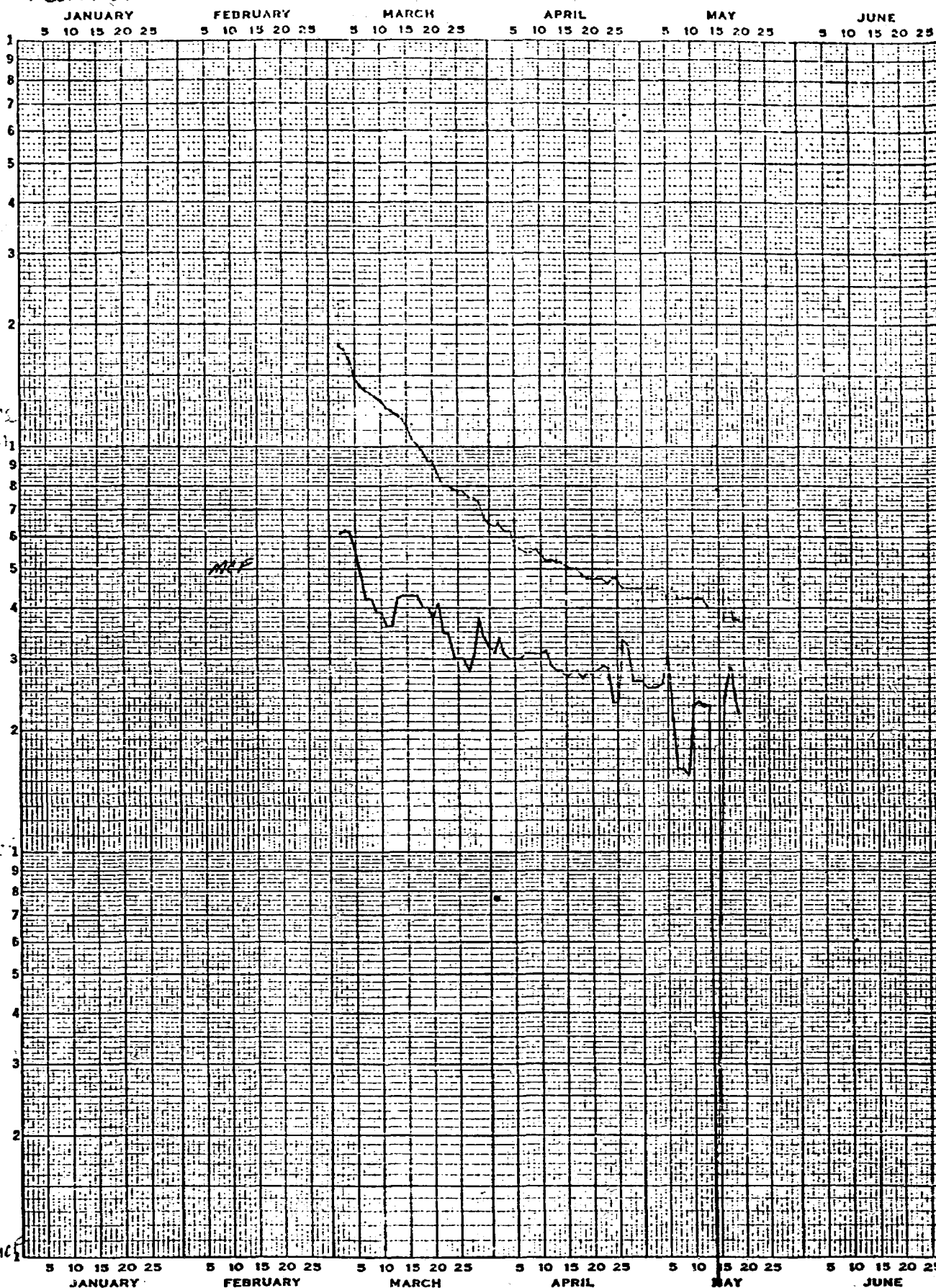
Federal "CX" E/2 7-18s-25E, Upper Penn

KOE 1 YEAR BY DAYS 47 6503  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

1000 ft  
1.0 mm

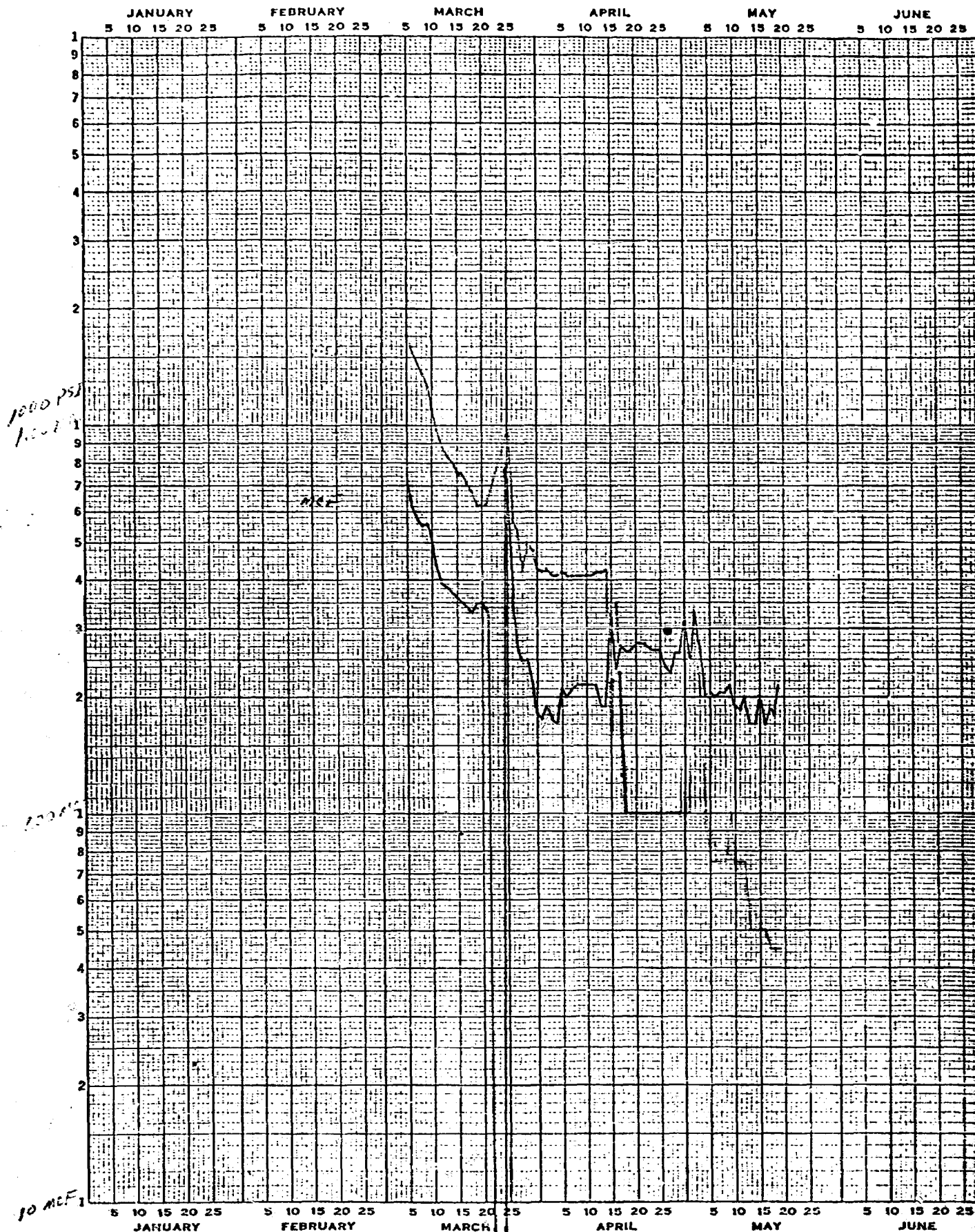
1000 ft

1000 ft



1977-60 Day Sales

Federal EF4, S/2 6-18s-25E, Upper Penn



1 YEAR BY DAYS  
47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
Kruppel & Esser Co.

1977 - 60 Day Sales

State DF 4,

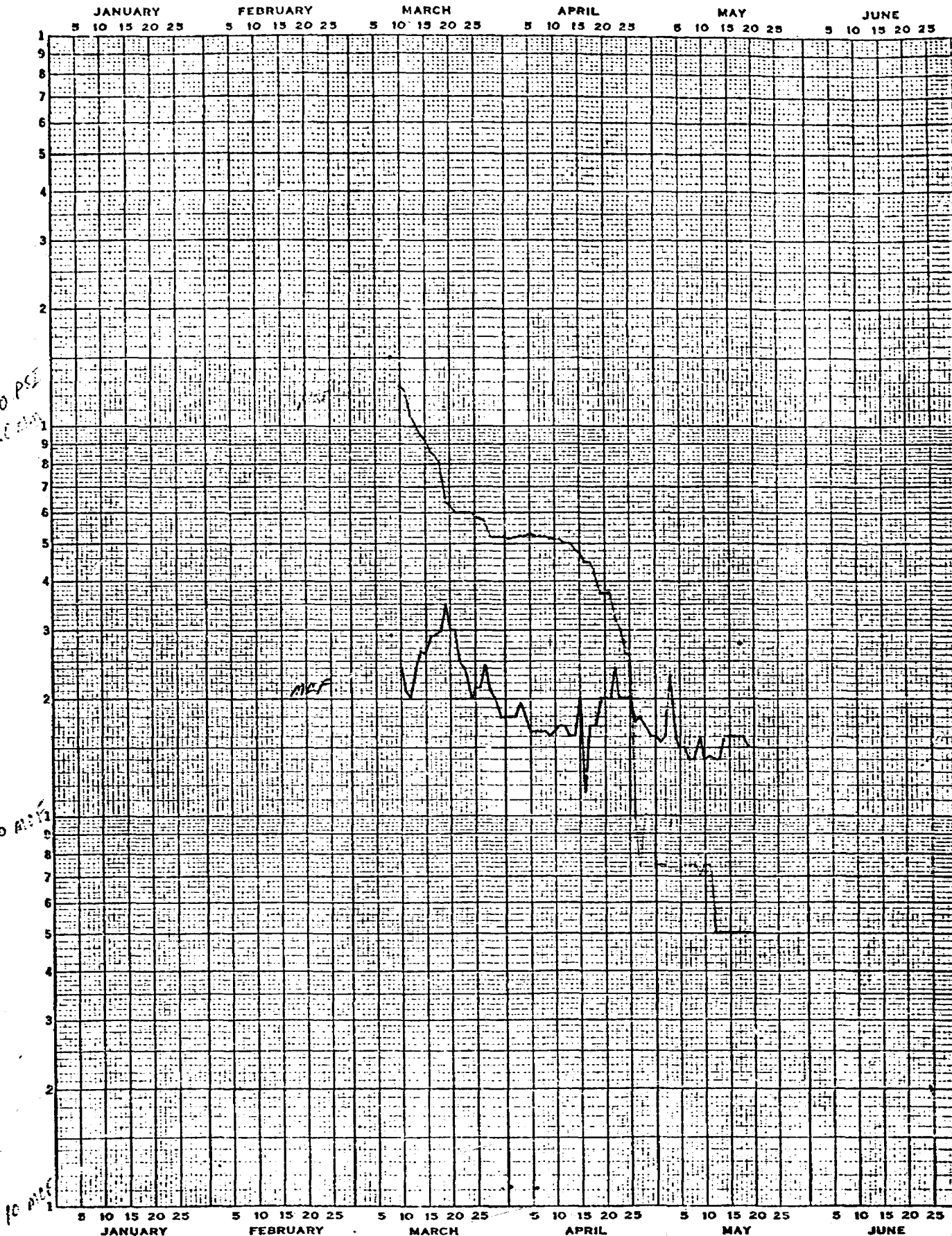
35-17s-24E, Wolfcamp

KE 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

1000 PSI  
ACROSS

100 PSI

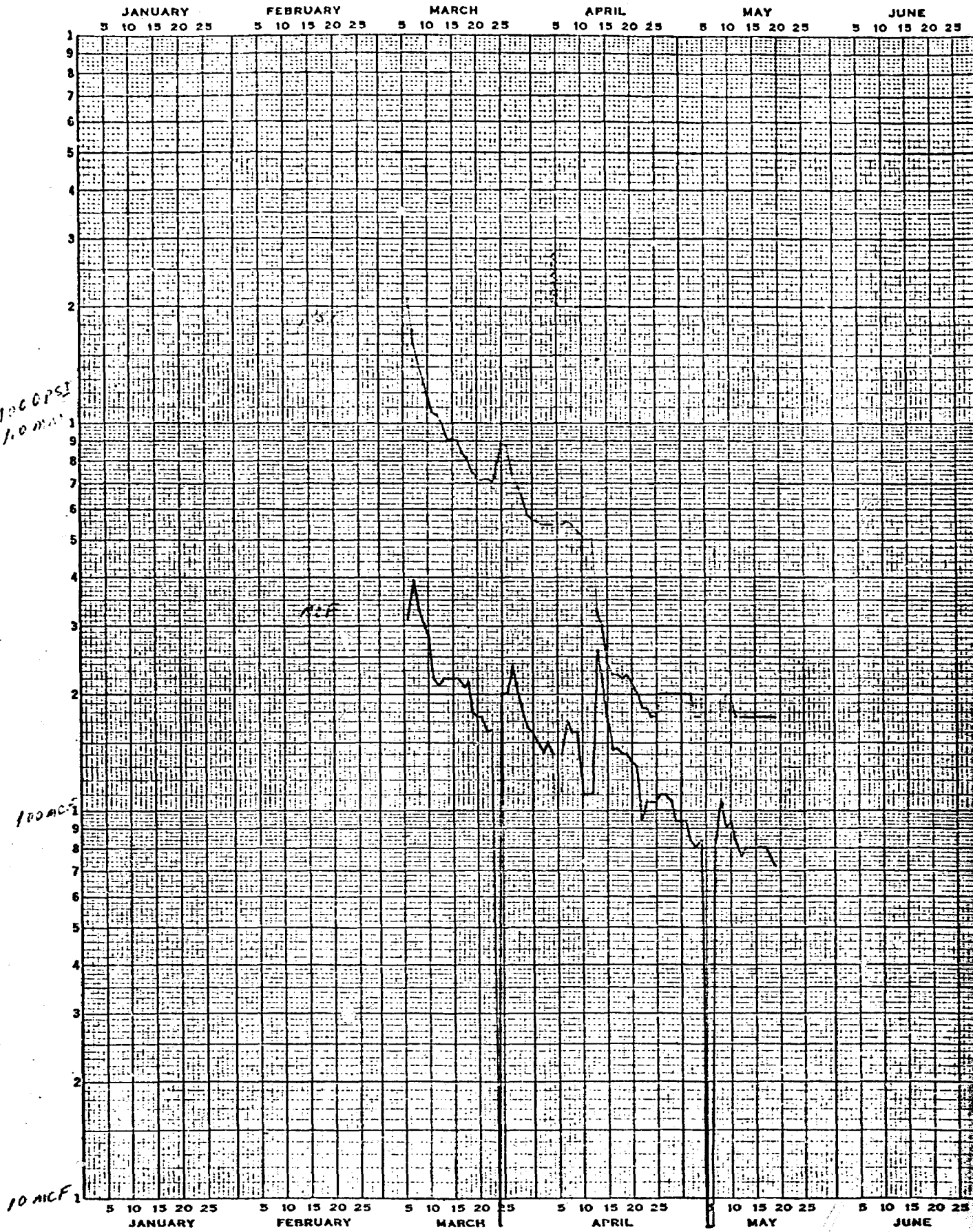
10 PSI



1977 - 60 Day Sales



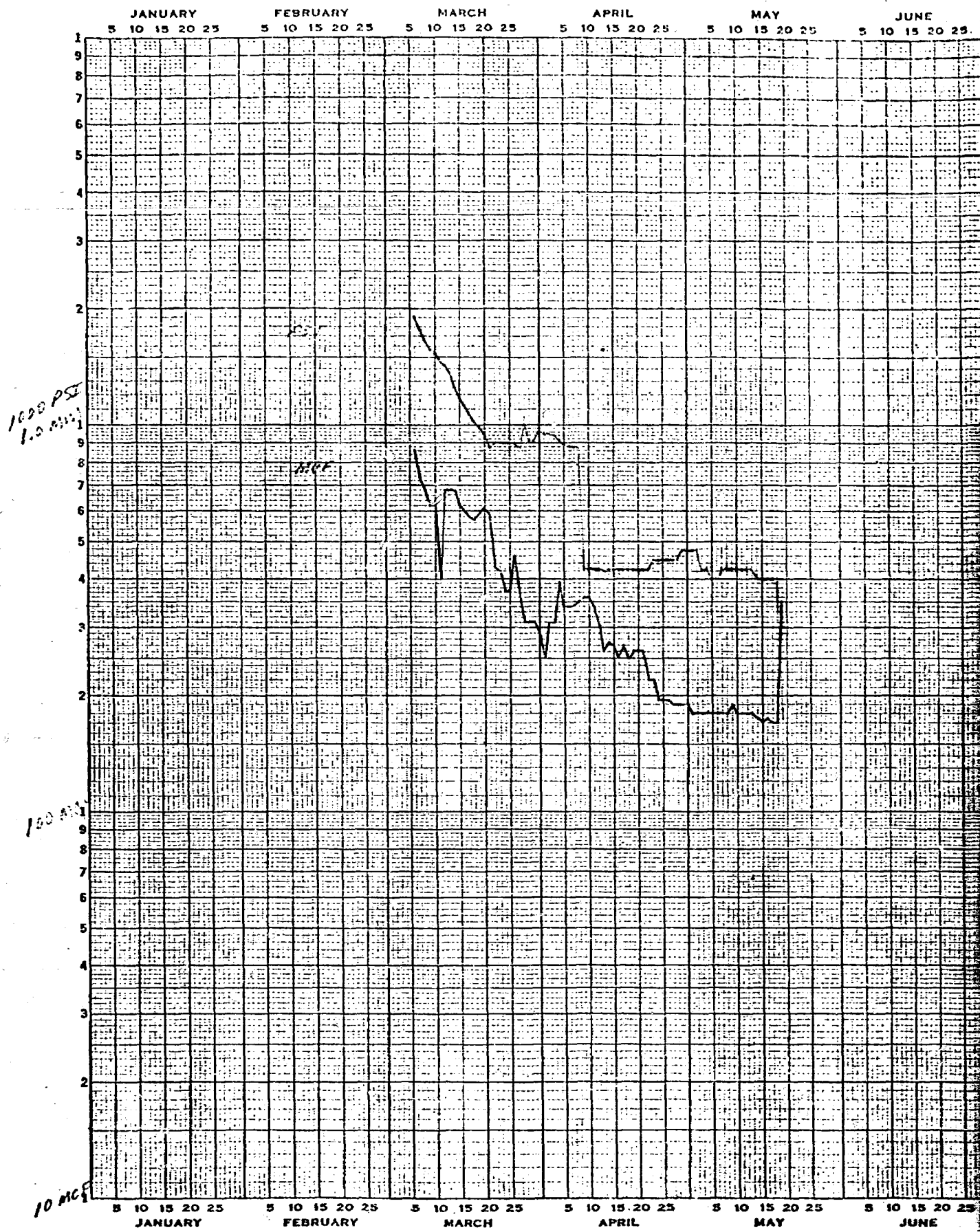
Federal BZ #12, S/2 21-175-25E, Strawn



1977-60 Day Sales

1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
KEUFFEL & ESSER CO.

State CY4, W/2 32-17s-25E, Atoka & Strawn



1977 - 60 Day Silos

KE 1 YEAR BY DAYS 47 6593  
X 3 LOG CYCLES  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

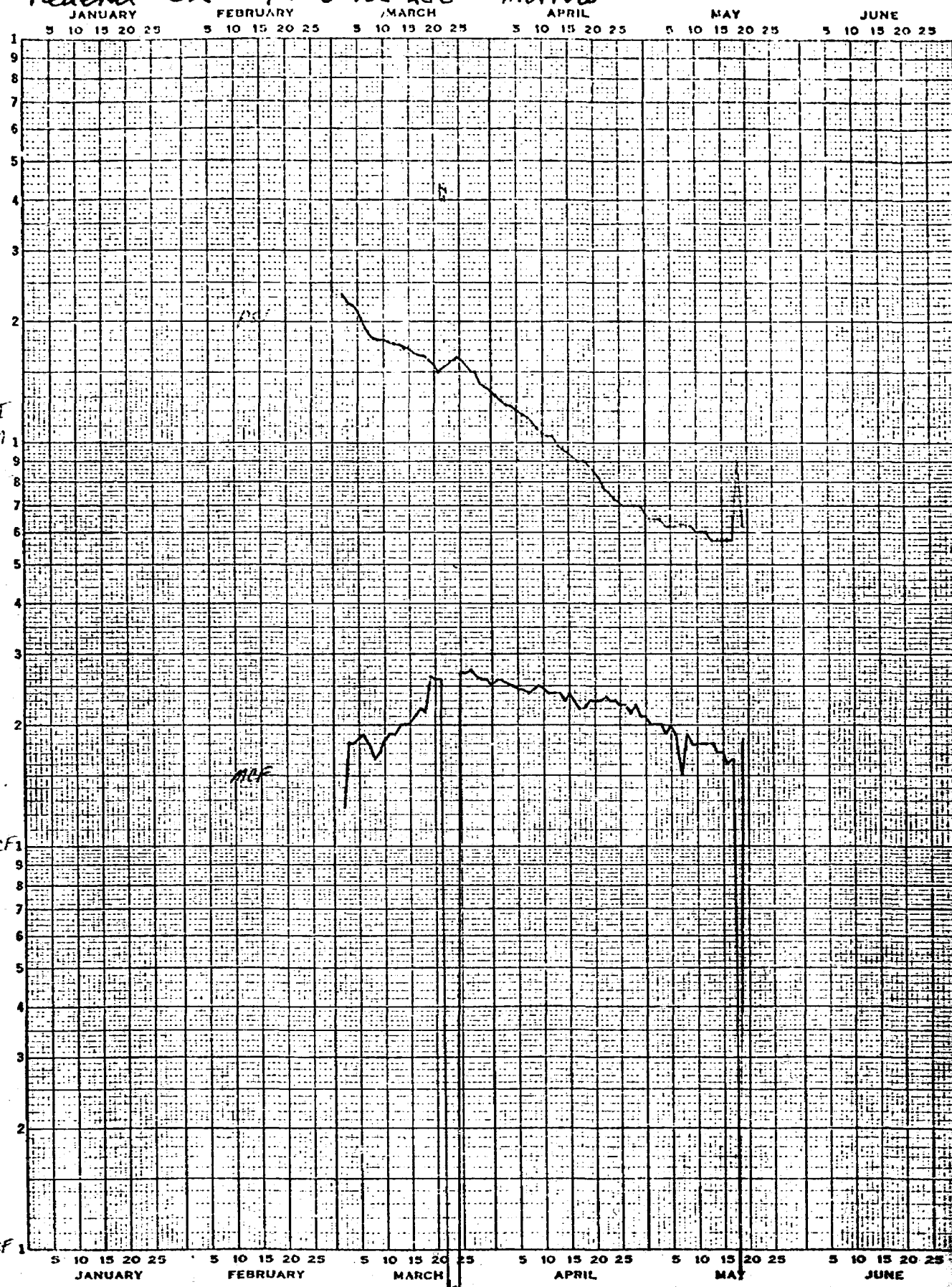
Federal CZ N/2 8-18S-2SE Morrow

K&E 1 YEAR BY DAYS 47 6593  
MADE IN U.S.A.  
KEUFFEL & ESSER CO.

1000 PSI  
10.0 mm

1.0 MMCF

100 MMCF



1977 - 60 Day Sales



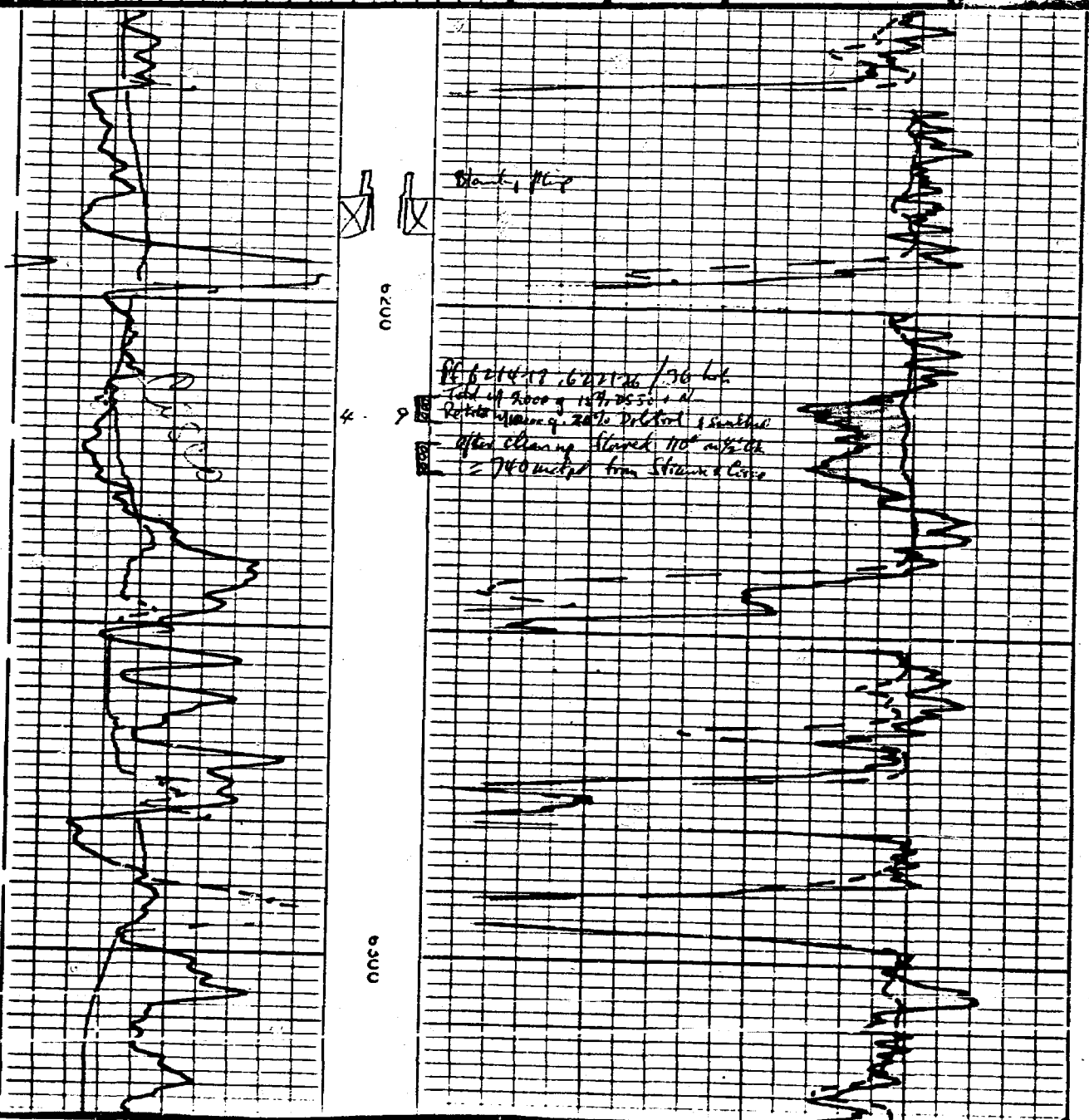


Schlumberger

COMPENSATED NEUTRON  
FORMATION DENSITY

Model - 7400-0401

COMPANY VATES PETROLEUM CORPORATION	
WELL FEDERAL CR #1	
FIELD MIDCAT	
COUNTY EDDY STATE NEW MEXICO	
LOCATION 2050' EARL F 660' ELL	
API SERIAL NO	SEC TWP RANGE
25	175 34E
Other Services: DCL-KXO	
Permanent Datum: G.L. Elev: 3693	
Log Measured From: 153 15 Ft. Above Perm. Datum	
Drilling Measured From: K.B.	
Elev: K.B. 3728	
D.F. 3693	
G.L. 3693	
Date	11-24-76
Run No.	046
Depth-Driller	8200
Depth-Logger	8195
Str. Log Interval	8194
Top Log Interval	8194
Casing-Driller	858 @ 1003
Casing-Logger	858 @ 1003
Casing Logger	858 @ 1003
Str. Size	7 7/8
Type Fluid in Hole	Flashed Oil
Dens. Visc	9.3 42
API Fluid Loss	11 3.6 ml
Source of Sample	P.T.
Rm. & Meas. Temp.	135 @ 74 F
Rm. & Meas. Temp.	34 @ 74 F
Rm. & Meas. Temp.	155 @ 74 F
Source Rmt Rmt	21 C
Rm. & BMT	22 @ 128 F
Circulation Stopped	1400
Logger on Bottom	2050
Rec. Temp.	128 F
Location	7645 Hobbs
By	JACKSON
ed By Mr.	P. K.





COMPENSATED  
ELEVATION DESIGN

COUNTY FIELD LOCATION S.D. #41965

COMPANY YATES Petroleum Corp.

WELL GOSSETT "EU" #1

FIELD UNDESIGNATED

COUNTY EDDY STATE NEW Mexico

LOCATION 1650' ECL & 1980' EWL

ART SECT. NO. 26 SEC. 17-5 RANGE 25 E

Other Services: DCL/Rxo

Permanent Datum: G.L. Elev: 3498

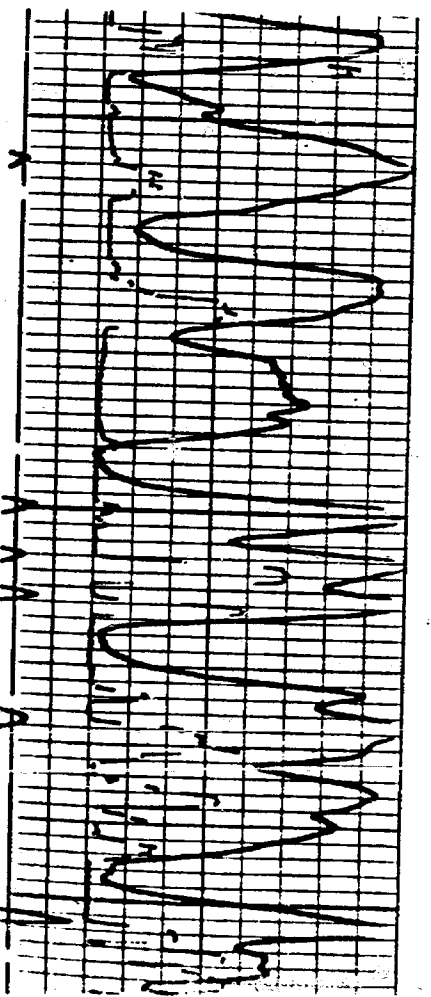
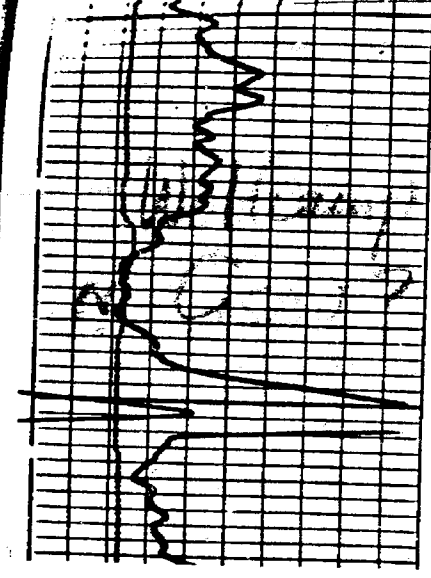
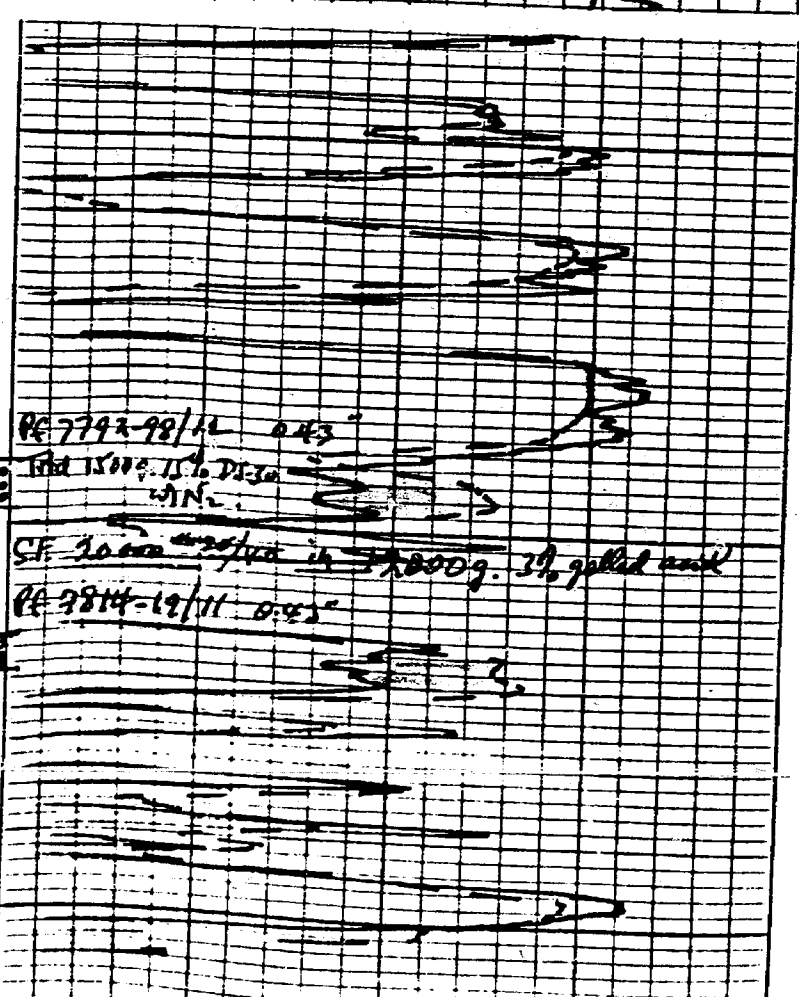
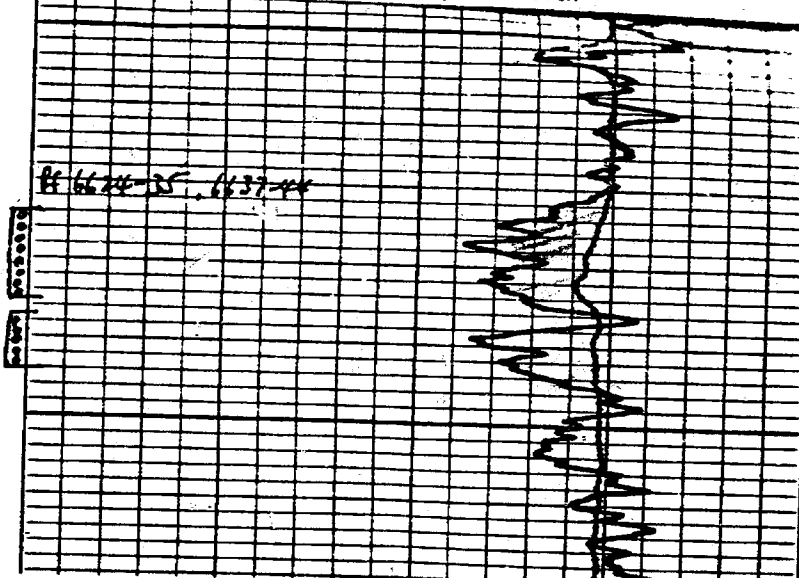
Log Measured From: K.B. 17 ft. Above Perm. Datum

Drilling Measured From: K.B.

Date 10-12-75

Run No.	ONE
Depth-Driller	8420
Depth-Logger	8423
Top Log Interval	9922
Casing-Driller	858 @ 1220
Casing-Logger	1222 @
Bit Size	7 7/8
Type Fluid in Hole	Flossac-Duradark
Depth	92 33
Depth of Seals	2 12.6 mi
Source of Seals	P.T.
Run 1 Meas. Temp.	165 @ 77 F
Run 2 Meas. Temp.	149 @ 75 F
Run 3 Meas. Temp.	148 @ 77 F
Surface Temp.	131 C
Run 1 Meas. Temp.	131 @ 1900
Run 2 Meas. Temp.	131 @ 1900
Run 3 Meas. Temp.	131 @ 1900
Surface Temp.	131 C
Run 1 Meas. Temp.	131 @ 1900
Run 2 Meas. Temp.	131 @ 1900
Run 3 Meas. Temp.	131 @ 1900
Surface Temp.	131 C

The well name, location and borehole reference data were furnished by the customer.





**8100**

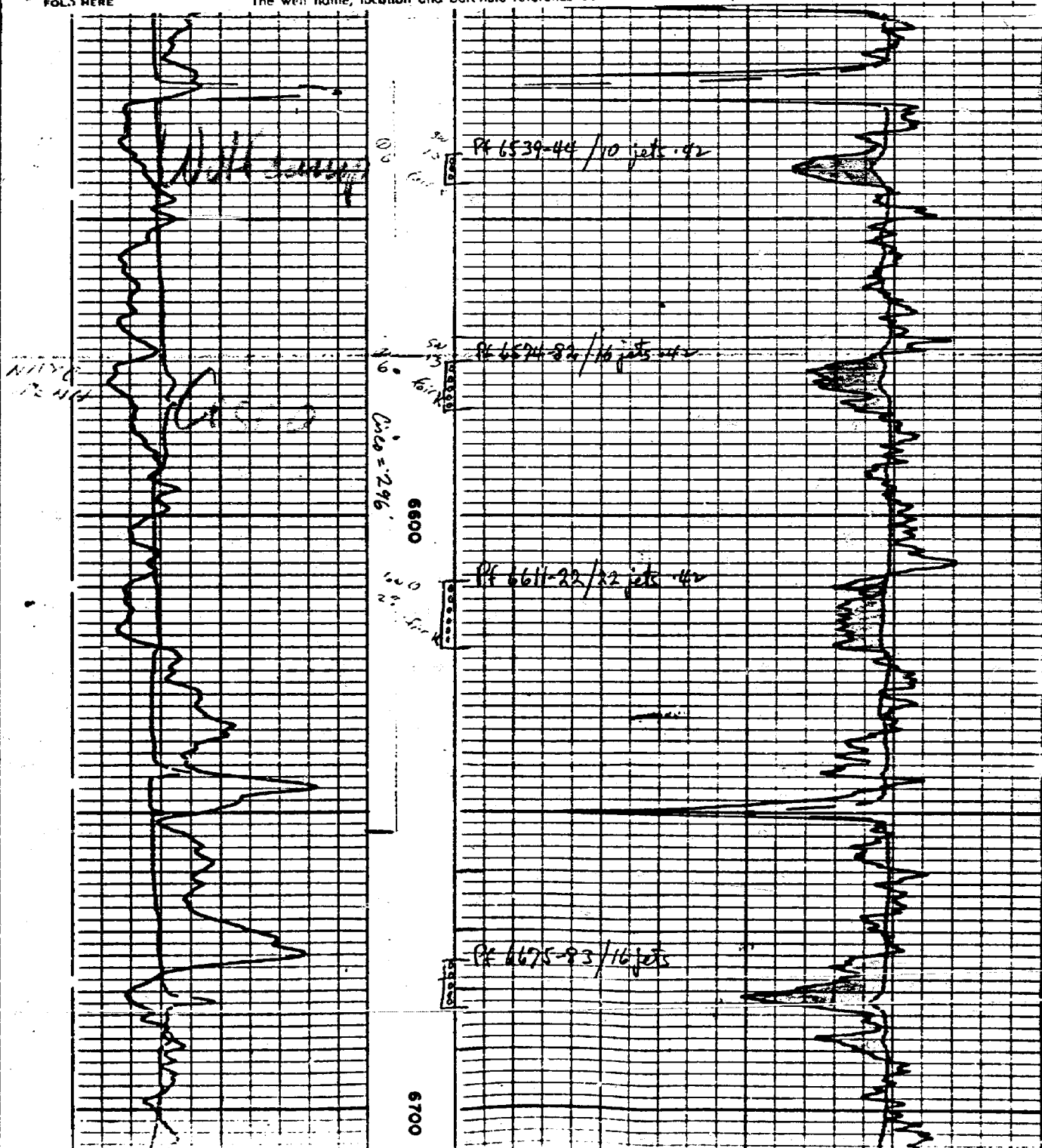


# COMPENSATED NEURON- FORMATION DENSITIES

Permanent Datum: 66; Elev: 3490  
 Log Measured from KA, ft. Above Perm. Datum  
 Dig. Measured from KA  
 Elev: K.B. 3505  
 Df: 3490  
 G.L. 3490

[illegible]

The well name, location and borehole reference data were furnished by the customer.



# COMPENSATED FORMATION

[illegible]