

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES
1401 17TH STREET / SUITE 1400
DENVER, COLORADO 80202
303/298-1400 FAX 303/298-0757

SWD 8-21-95

CONSERVATION DIVISION
RECEIVED

1995 AUG 21 8 52

CERTIFIED MAIL - RETURN RECEIPT

August 2, 1995

Mr. Michael Stogner
New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87505

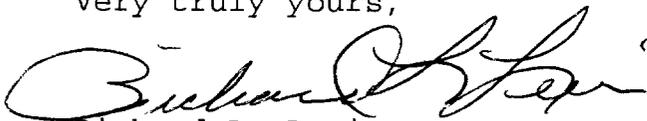
Re: Application to Inject
Frontier A#1 Well
SE/4 Section 8-T26N-R12W
San Juan County, New Mexico

Dear Mr. Stogner:

J. K. Edwards Associates, Inc. desires to plug back the referenced Gallup well to the Mesaverde formation and complete it as a water disposal well. The proposed injection well will be used for produced water from the Fruitland coal gas wells and Gallegos Gallup producers in the Gallegos field area.

Attached are original and one copy of the completed C-108. If additional information is required, please contact me at (303) 298-1400.

Very truly yours,



Richard L. Lewis
Contract Landman

RLL:ll
encls.

APPLICATION FOR AUTHORIZATION TO INJECT
Form C-108 Supplemental Data
Frontier 1-A Well

I. Water Disposal

II. J. K. Edwards Associates, Inc.
1401 17th Street, Suite 1400
Denver, CO 80202
Contact: J. Keith Edwards (303) 298-1400

III. Well data is attached.

IV. This is not an expansion of an existing project.

V. Map with area of review is attached.

VI.

VII. Data on proposed injection operations:

1. Average injection rate - 500 bwpd
Maximum injection rate - 1000 bwpd
2. Closed system. Water would be trucked or piped into tanks on locations.
3. Average injection pressure - ~~750~~ ^{742 MAX} psi
Maximum injection pressure - 1100 psi
4. Produced Fruitland Coal water with TDS of 2000 to 10000 ppm will be injected into the Mesaverde zone in the Frontier #1-A well. Analyses of coal water in the area are attached.
5. Chemical analysis of water in the Mesaverde zone will be submitted after plugging back the well from its current TD of 5100' in the Gallegos Gallup zone.

VIII. Geologic and Lithologic data on injection zone:

1. Injection zone - Point Lookout (Mesaverde) at approximately 3708' - 3922'.
2. Lithology - Point Lookout (Mesaverde) sands.
3. Overlying aquifer - Cliffhouse Menefee
Underlying aquifer - Mancos

APPLICATION FOR AUTHORIZATION TO INJECT C-108 FRONTIER 1-A
page 2

IX. Perforate and acidize prior to injection operations.

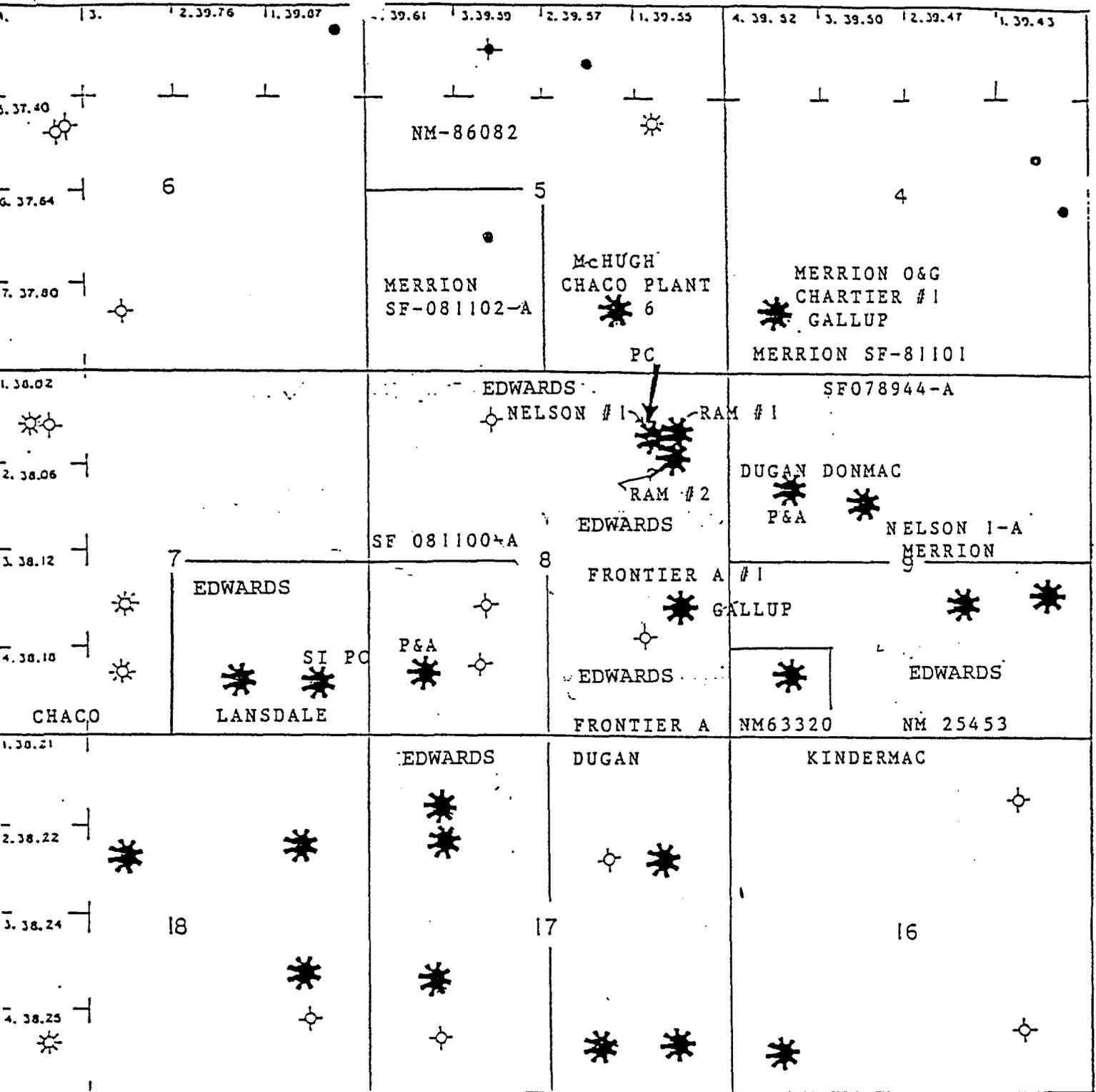
X. Logs traversing the Mesaverde zone have been submitted previously.

XI. No known sources of potable water exist in the immediate area of the well.

XII. Geologic studies of the area do not indicate fault communication between the proposed injection zone and any underground potential sources of drinking water.

XIII. Proof of notice is attached.

XIV. Certification is signed.



APPLICATION FOR AUTHORIZATION TO INJECT
FORM C-108 AREA OF REVIEW PROXIMITY MAP

INJECTION WELL DATA SHEET

Tubing Size 2-3/8" lined with _____ set in a _____
(type of internal coating)
feet
packer at _____

Other type of tubing / casing seal if applicable _____

Other Data

1. Is this a new well drilled for injection? Yes No

If no, for what purpose was the well originally drilled? _____

_____ Oil & Gas Producer-Gallup formation

2. Name of the injection formation Point Lookout (Mesaverde)

3. Name of Field or Pool (if applicable) Gallegos Gallup field

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e., sacks of cement or plug(s) used. 4892' - 4933' 2JSPP

4995' - 5025' 2JSPP

5. Give the names and depths of any over or underlying oil or gas zones (pools) in this area.

Fruitland, Pictured Cliffs, Mesaverde, Gallup

INJECTION WELL DATA SHEET

OPERATOR J. K. EDWARDS ASSOCIATES, INC. LEASE NM SF-080008 SECTION 8 TOWNSHIP 26N RANGE 12W
WELL NO. Frontier A#1 1750'FSL, 790'FEL

FOOTAGE LOCATION

Schematic

Well Construction Data

SEE ATTACHED

Surface Casing

Size 10-3/4" Cemented with 150 SX 3% Calc sx.

TOC surface feet determined by circulate to surf.

Hole Size 12-1/4"

Intermediate Casing

Size 7-5/8" Cemented with see* sx.

TOC 2225' feet determined by Temp Survey

Hole Size 9-7/8"

Long String

Size 5-1/2" Cemented with 150 SX reg & 150 SX pos sx.

TOC 3870' feet determined by top of liner

Hole Size 6-3/4"

Total Depth 5100'

Injection Interval

apx 3708 feet to apx 3922 feet
(perforated or open-hole; indicate which)

- * 100 SX reg
- 100 SX poz
- 50 SX Neat

WELL NAME: FRONTIER A NO. 1

LOCATION: 1750' FSL, 790' FEL, Sec. 8, T26N, R12W
COUNTY: San Juan STATE: New Mexico
LEASE: SF-080008 TYPE: Federal SURFACE:
OPERATOR: J.K. EDWARDS ASSOCIATES, INC.

GLE - 5989'
KBE - 5999'
KBM - 10'

SURFACE CASING:

HOLE SIZE: 12-1/4"
CASING: 10-3/4"
CSA: 173'
CEMENT: 150 SX 3%CAACL
CIRC TO SURFACE

FORMATION TOPS:

FRUITLAND: 917'
PICT CLIFFS: 1137'
LEWIS: 1453'
CLIFFHOUSE 2025'
MENELEE:
POINT LOOKOUT: 3708
MANCOS: 3922'
UPPER GALLUP: 4760

WELL DATA:

SPUD DATE: 8/08/57
ORIGINAL OWNER: EPNG/BED
IP: 1044 MCFD
ZONE: LOWER GALLUP
COMPL: SWF 40,000# SAND
WI: 100% NRI:
TUBING: 2-3/8"
ROD STRING: 3/4"
PUMP SIZE: 2 X 1-1/2"
PUMP JACK:
SPM: SL:

TOP CEMENT: 2225'
TEMP SURVEY

3870'

INTERMEDIATE CSG:

HOLE SIZE: 9-7/8"
SIZE: 7-5/8"
WT & GR: 25.4# J-55
CSA: 3930'
DEPTH: 3940'
CEMENT: 100 SX REG
100 SX POZ
50 SX NEAT

PERFORATIONS:

3708'
to
3922' 4897'-4933' 2JSPF
4995'-5025' 2JSPF

3940'

PROPOSED INT. INTERVAL

LINER:

HOLE SIZE: 6-3/4"
SIZE: 5-1/2"
WT & GR: 15.5#
LSA: (1233') 3870'-5106'
TD: 5100'

CEMENT: 150 SX REG, 150 SX POZ

-7-55 Spud date, Company tools, Rig #C-99302.
Ran 4 joints 9 5/8", 25.4#, Armco spiral weld casing (161') set at 171' with 125 sacks regular cement circulated to surface. Held 500# 30 minutes.

-10-55 DST #1: 1172-1226, op. 1 hr. 5 min., g-t-s 5 min. ggd. 108 MCF init. stab @ 124' MCF in 30 min, rec. 150' g-c-m, IFP 90#, FFP 120#, SIP 295# in 30 min. EH 560#.
DST #2: 1227-1314, op. 1 hr. 10 min. wk. blow air immed. decreased to v_y wk in 1 hr. by passed, no inc. in 10 min. SI 30 min. rec. 360' sl.g & fr w-c-m, IFP 60#, FFP 235#, SIP 295#, EH 595#.
Tight Hole.

-12-55 DST #3: 3035-3057, op. 25 min. Wk. blow air immed, died 25 min. by passed op. 15 min. wk blow air immed. died in 15 min. rec. 95' g-c-m, IFP 0#, FFP 90#, SIP 1110#, in 30 min. HH 1630#.

-15-55 DST #4: 3920-3958, op. 5 min. very weak blow air immed, died 2", by passed, op 5 min. weak blow air died 2 mm rec. 130' ϕ mud, IFP 0#, FFP 0#, SIP 90#, in 30 min HH 2150#.

-19-55 DST #5: 4599-4655, op. 15 min. wk. blow air immed. died 5 min. by passed, no blow rec. 8' ϕ mud. IFP 60#, FFP 60#, SIP 120#, in 30 min. HH 2490#.

-24-55 Ran Schlumberger ES & ML to 4707.

-25-55 Core #1: 4760-4774, rec. 12'8" of sl. sdy. sh w/no shows.

-26-55 Core #2: 4778-4798 rec. 20' interbed sd & sh w/vert fract asphaltic oil along fract.

-27-55 Core #3: 4860-4880 rec. 19'4" of sd & sh. Bottom 4" of core very sandy.

-28-55 Core #4: 4880-4900, rec. 20' sdy sh & ss w/vert fract 14 in. conglom ss @ 4885.

-29-55 DST #6: 4855-4900, op. 1 hr. 20 min. very strong blow air immed. g-t-s 4 min. Gdg. 930 MCF init. stab at 1009 MCF in 30 min. rec. 150' h-g-c-m, IFP 120#, FFP 120#, SIP 1515# in 30 min. HH 2490#.

-30-55 Core #5: 4900-4919, rec. 16'8" sdy sh. & sh.
DST #7: 4900-4919, op 1 hr. 15 min. wk. blow air immed. died 1 hr. 10 min. SI 30 min. Rec. 240' g-c-m, IFP 120#, FFP 235#, SIP 1430#, HH 2490#.

-1-55 Core #6: 4980-5000, rec. 10'5" tight brown sand.
DST #8: 4975-5002, op. 1 hr. 40 min. S BAI, g-t-s 3 min. ggd. 458 MCF init. stab @ 517 MCF in 30 min. rec. 80' g-c-m, IFP 128#, FFP 125#, SIP 1580#, in 30 min. HH 2585.

-2-55 Core #7: 5002-5022, rec. 4'7" of brn hd. tight. shaly quartzitic ss.

-3-55 Core #8: 5022-5042, rec. 17' of hd. tight brn. ss w/int. bedded dk. gry sh.
DST #9: 5001-5042, op. 1 hr. 30 min. S.B.A.I, g-t-s 18 min. ggd. 76 MCF init. 46 to 90 in heads thereafter. SI 30 min. Blew out 23 stands. Rec. undetermined amnt. highly gas and slightly oil cut mud. IFP 795#, FFP 1430#, SIP 1880#, EH 2510#.

-4-55 DST #10: 5003-5042, op. 4 hr. 30 min. SBAI g-t-s 21 min. ggd. 70 MCF in "heads" SI 45 min. No rec. reversed circ. IFP 5.5, FFP 1455, SIP 1795, EH 2510.

-5-55 DST #11: 5042-5089, Op. 2 hr. 20 min. Fair BAI decreased to very weak. SI 30 min. Rec. 420' g & sl o-c-m, IFP 140#, FFP 235#, SIP 1835#, HH 2530#.

-7-55 Core #9: 5280-5285, rec. 3 1/2' irreg. interbedded f-gr. ss & sh w/calcite.
Core #10: 5285-5305, rec. 17 1/2' of domin. sh. w/some ss in top 6'. Vert fract. in top 4'.

-8-55 Ran Schlumberger ES to 5422, TS & ML to T.D. 5420'.

-9-55 Ran 163 joints 7", 23#, & 20#, J-55 casing (5201') set at 5211'. Second stage cementing collar at 1503. Cemented first stage with 100 sacks regular cement and 100 sacks Pozmix, 100# Flocele & 4% Gel. Held 1000# 30 min. Top of cement on first stage by temperature survey at 3701'. P.B. total depth 5169'.

-10-55 Cemented second stage with 100 sacks regular cement, 100 sacks Pozmix, 100# Flocele & 4% Gel. Held 1000# 30 min. Top of cement on second stage by temp. survey at 190'.

-12-55 Blowing hole dry.

-13-55 Perf. 5022-5028 w/2 shots/ft. gaged 808 MCF/D 30 min. after perf.
Perf. 5016-5022 w/2 shots/ft. gaged 1580 MCF/D 30 min. after perf. Started making 2" stream of mud. Blew well for 3 hrs. 2" stream decreased to 1/2" - 1" of muddy water. Gaged 2780 MCF/D.

-14-55 Gaged 3640 MCF/D. Set Howco bridge plug at 5012'.
Perf. 5003-5009 w/2 shots/ft. gaged 3940 MCF/D after 7 hrs. blow.
Perf. 4997-5003 w/2 shots/ft. gaged 3780 MCF/D in 30 min.
Perf. 4991-4997 w/2 shots/ft. gaged 3880 MCF/D in 30 min.
Perf. 4987-4991 w/2 shots/ft. gaged 3880 MCF/D in 30 min.

5-15-55 Let pressure build up to max. 1100# in 2 hr. gaged 3970 MCF/D at 6:45 AM.
Gaged 4020 MCF @ 12 noon. Set Howco bridge plug at 4937'.
Perf. 4886-4888 w/2 shots/ft. gaged 405 MCF/D after 1 hr. 30 min.
Perf. 4888-4894 w/2 shots/ft. 1 hr. pr. up to 200#, blew down w/no increase in
gas. Ran Schlumberger (GR) 700' - 1500' & 4600-4935'.
5-16-55 Perf. 4894-4900 w/2 shots/ft. gaged 536 MCF/D.
Perf. 4900-4902 & 4882-86. Gas logged off. Blowing well.
5-17-55 Blowing dry. Pr. up for 2 hr. & blew down. Made 2" stream muddy water & decreased
to dripping off of flow line. Blew thru 2" swedge to 1" for 1 hr. small blow.
Wait on Schlumberger. Pressure up 1 hr. & blew 1 hr. small blow made 2 hr.
water test. No water or mud & no increase in gas.
5-18-55 Perf. 4886-4894 w/4 bullets/ft. Gaged 49 MCF/D in 1 hr. found mud & water at
approx. 2500'. Blowing well. Set DOC squeeze retainer @ 4735'. Squeezed perf.
4882' - 4902' w/100 sks DOC (95 sks. into formation) Breakdown pr. 700#, max.
pressure 1500#, final pressure 1400#.
5-20-55 Blowing csg. dry. Gaged 407 MCF/D.
Perf. 4850' to 4862' w/2 jet shots & 4 bullets/ft. gaged 486 MCF/D before perf.
and 500 MCF/D after perf. Drilled up bridge plug at 4937'.
5-21-55 Drilled bridge plug at 5012' & cleanout to 5169'. Gaged 4,600 MCF & ran 163
jts. 2" tubing (5041') landed at 5051'.
7-6-55 Date well was tested.

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES

1401 17TH STREET / SUITE 1400

DENVER, COLORADO 80202

303/298-1400 FAX 303/298-0757

Post-it* Fax Note	7671	Date	7-27-95	# of pages	2
To	MARY LOU	From	RICK LEWIS		
Co./Dept.		Co.	JKEAI		
Phone #	505-326-0234	Phone #	303 298-1400		
Fax #		Fax #			

July 27, 1995

Farmington Daily Times
Legal Department
P.O. Box 450
Farmington, NM 87499

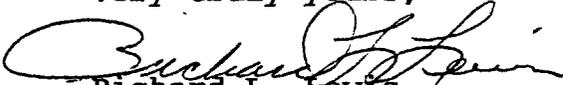
Re: Notice of Water Disposal Well

Gentlemen and Ladies:

Attached please find the referenced notice which J. K. Edwards Associates, Inc. would like run in the legal notice section of the Farmington Daily Times. Please run this notice for one day only and include in the next possible issue.

If you should have any questions, please do not hesitate to call me or Ms. Ann Fedlman at the above number.

Very truly yours,


Richard L. Lewis
Contract Landman

Needs to be filed in the legal section of the Farmington Daily Times and copy returned to J. K. Edwards, Associates, Inc.

NOTICE

J. K. Edwards Associates, Inc., 1401 17th Street, Suite 1400, Denver, CO 80202, (303)298-1400 whose agent is Keith Edwards, hereby notifies all interested parties that the following well is to be converted to a water disposal well. Injection will be into the Point Lookout (Mesaverde) interval at approximately 3708' - 3922'. Maximum well rate will be 1000 Bwpd at less than 1100 psi. Any request for information or any objections should be filed with the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, NM 87501 within 15 days of this notice.

Gallegos Gallup Field, Frontier 1-A, NE/4SE/4 Section 8, T26N-R12W, San Juan County, New Mexico.

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES

1401 17TH STREET / SUITE 1400

DENVER, COLORADO 80202

303/298-1400 FAX 303/298-0757

CERTIFIED MAIL - RETURN RECEIPT

August 2, 1995

Jerome P. McHugh & Associates
Nassau Resources, Inc.
Kindermac Partners
Attn: Land Department
650 South Cherry St., Suite 1225
Denver, CO 80222

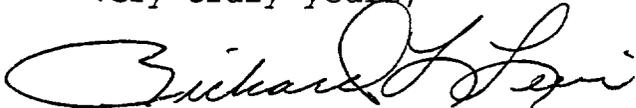
Re: Application to Inject
Frontier A#1 Well
SE/4 Section 8-T26N-R12W
San Juan County, New Mexico

Gentlemen and Ladies:

Pursuant to the regulations of the NMOCD, you are advised of JKEAI's intention to plug back the referenced well to the Mesaverde formation and use it as a salt water disposal well. I am enclosing a copy of the application for your reference.

Any request for information or any objections should be filed with the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, NM 87501 within 15 days of publication in the Farmington Daily Times.

Very truly yours,



Richard L. Lewis
Contract Landman

RLL:ll
encls.

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES

1401 17TH STREET / SUITE 1400

DENVER, COLORADO 80202

303/298-1400 FAX 303/298-0757

CERTIFIED MAIL - RETURN RECEIPT

August 2, 1995

MERRION OIL AND GAS CORPORATION
Attn: Land Department
610 Reilly Avenue
P.O. Box 840
Farmington, NM 87499

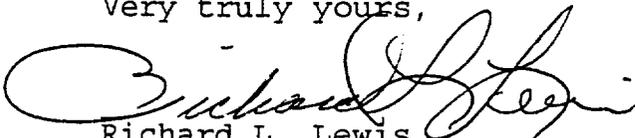
Re: Application to Inject
Frontier A#1 Well
SE/4 Section 8-T26N-R12W
San Juan County, New Mexico

Gentlemen and Ladies:

Pursuant to the regulations of the NMOCD, you are advised of JKEAI's intention to plug back the referenced well to the Mesaverde formation and use it as a salt water disposal well. I am enclosing a copy of the application for your reference.

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Very truly yours,


Richard L. Lewis
Contract Landman

RLL:ll
encls.

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES

1401 17TH STREET / SUITE 1400

DENVER, COLORADO 80202

303/298-1400 FAX 303/298-0757

CERTIFIED MAIL - RETURN RECEIPT

August 2, 1995

BUREAU OF LAND MANAGEMENT
FARMINGTON RESOURCE AREA
1235 La Plata Highway
Farmington, NM 87401

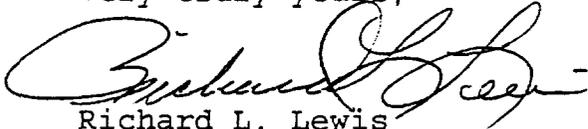
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Frontier A#1 Well
SE/4 Section 8-T26N-R12W
San Juan County, New Mexico

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Very truly yours,



Richard L. Lewis
Contract Landman

RLL:11
encls.

J.K. EDWARDS ASSOCIATES, INC.

OIL & GAS PROPERTIES

1401 17TH STREET / SUITE 1400

DENVER, COLORADO 80202

303/298-1400 FAX 303/298-0757

CERTIFIED MAIL - RETURN RECEIPT

August 2, 1995

DUGAN PRODUCTION COMPANY
Attn: Land Department
P.O. Box 420
Farmington, NM 87499

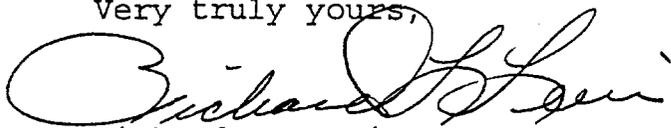
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Frontier A#1 Well
SE/4 Section 8-T26N-R12W
San Juan County, New Mexico

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Very truly yours,



Richard L. Lewis
Contract Landman

RLL:11
encls.

WALSH ENGINEERING & PRODUCTION

WORKOVER AND COMPLETION REPORT

Operator: J. K. EDWARDS & ASSOC. Well Name: FRONTIER A¹
 Date: 2/16/92 Report No: 1
 Field: LOWER GALLUP County: S.N. State: N.M. SE 8 T36N R12W
 Contractor: Palanco Bros. Supervisor: Paul Thomas

Work Summary:

M.O. of R.U. Palanco Bros. Rig. Disconnect production equipment and move out of the way. TOL w/ 12' polished rod, 2', 2' and 4' pony rod (5/8"); AND 197 5/8" rods. Coupling on last rod was corroded N.D. Well head and N.U. Rod, TOL w/ 71 stands of 2 3/8" tubing was free of oil at this point. P.U. now Box w/ 5/8" rods and T.H. screwed into parted rod. TOL w/ rods and pump recovered 1 more rod (198 total) and 12' RWBC pump. TOL w/ 11 more stands of 2 3/8" (164 JTS total), setting nipple, 4' perforated rod and plugged and anchored. Bottom of tubing was set at 5219' (Perms 1997-5025). P.U. Mt. Starts 5 1/2" retrievable bridge plug and packer and T.H. on 2 3/8" tubing. Run 20 stands and shut down for night.

Daily Costs:

Item	Cost	Item	Cost
Road & Location		Tubulars	
Rig Cost	1400	Wellhead Equipment	
Equipment Rental		Subsurface Equipment	
Logging & Perforating		Artificial Lift Equipment	
Stimulation		Sucker Rods	
Testing		Tanks	
Cementing		Pressure Vessels	
Completion Fluids		Flowlines	
Contract Services		Installation/Labor	
Miscellaneous Supplies		Fittings, Valves, Etc...	
Engr. & Supervision	190	Meters, Lact. Etc...	
Trucking Fuel	300	Electrical Equipment	
Other		Total Daily Cost	1890
		Cumulative Cost	1890

Well Record

Pulled from well				Equipment				Run in well			
1"	7/8"	3/4"	5/8"	Sucker Rod Count				1"	7/8"	3/4"	5/8"
Rod subs				Pump				Rod subs			
API Pump Size								API Pump Size			
Depth				Tubing Bottom				Depth			
Length		Plugged or Open		Gas or fluid Anchor				Length		Plugged or Open	
Length		Size & No Holes		Perforated Nipple				Length		Size & No Holes	
Size		Type		Sealing Nipple				Size		Type	
Length		Joints		Tubing Coups				Length		Joints	
Tubing Subs				Anchor Catcher				Tubing Size		WT Grade Thread	
Type								Depth			
Type				Packer				How Set		Depth	

CHEMICAL & GEOLOGICAL LABORATORIES

Casper Farmington Glendive Sterling

WATER ANALYSIS REPORT

Field ... Bisti, New Mexico Well No. CBU No. 28
 Operator ... Sunray Mid-Continent Oil Company Location ... NW SW 9-25N-12W
 Sampled by Date
 Formation ... Gallup Depths 4750 - 4800 How sampled From treater
 Other pertinent data ... Sample No. 1

Analyzed by ... DM & DS Date ... October 2, 1959 Lab. No. 14747-1

CONSTITUENTS	PPM	MEQ.	MEQ.%	TOTAL SOLIDS IN PARTS PER MILLION:
Sodium - - - -	16,789	729.95	47.13	By evaporation..... 46,030
Calcium - - - -	608	30.34	1.96	After ignition..... 44,560
Magnesium - - -	162	13.32	0.86	Calculated..... 44,929
Sulfate - - - -	10	0.21	0.01	
Chloride - - - -	27,000	761.40	49.21	
Carbonate - - -	-	-	-	
Bicarbonate - -	732	12.00	0.78	
Hydroxide - - -	-	-	-	

PROPERTIES OF REACTION IN PERCENT:

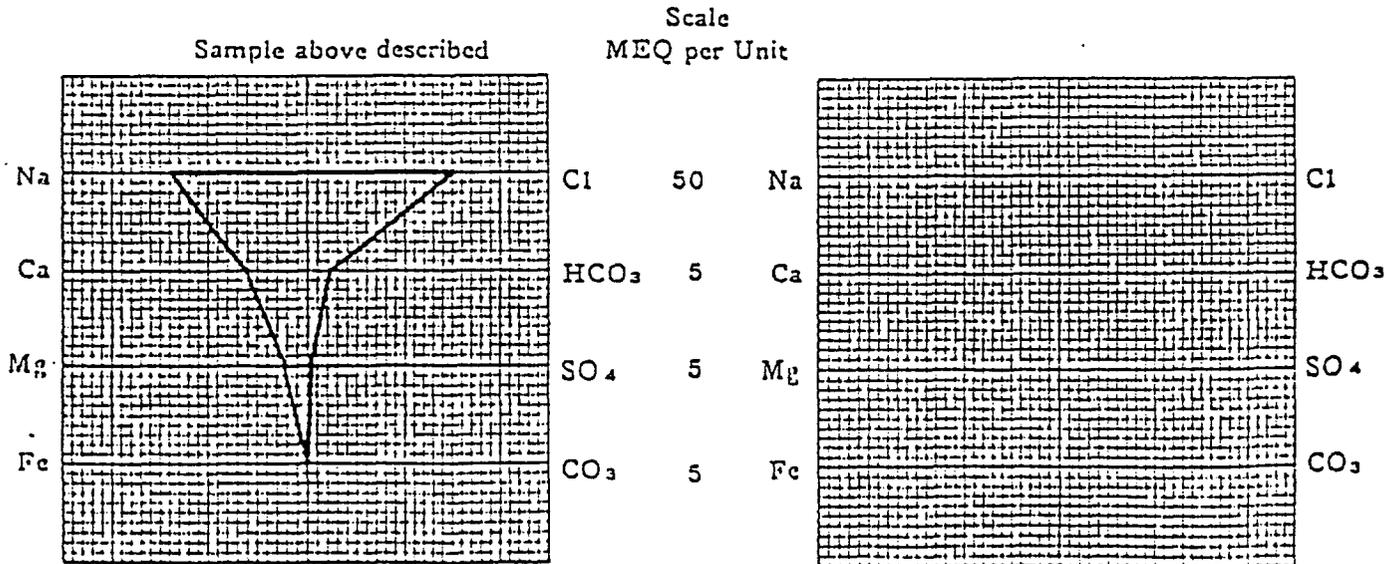
Primary salinity.....	94.36
Secondary salinity.....	4.08
Primary alkalinity.....	0.00
Secondary alkalinity.....	1.56
Chloride salinity.....	99.98
Sulfate salinity.....	0.02

Observed pH. 7.6 Resistivity @ 68°F. ohms/meter² 0.190

Remarks Sampled as known Gallup water.

Note: PPM=Milligrams per liter (1 PPM is equivalent to 0.0001% by weight). MEQ=Milliequivalents per liter. MEQ%=Milliequivalents per liter in percent.

WATER ANALYSIS PATTERN



CHEMICAL & GEOLOGICAL LABORATORIES

Casper Farmington Glendive Sterling

WATER ANALYSIS REPORT

Field Bisti, New Mexico Well No. CBU No. 29
 Operator Sunray Mid-Continent Oil Company Location NE SE 8-25N-12W
 Sampled by Date
 Formation Gallup Depths 4750 - 4800 How sampled From Treater
 Other pertinent data Sample No. 2

Analyzed by DM & DS Date October 2, 1959 Lab. No. 14747-2

CONSTITUENTS	PPM	MEQ.	MEQ.%	TOTAL SOLIDS IN PARTS PER MILLION:
Sodium - - - -	18,064	785.37	47.15	By evaporation..... 49,490
Calcium - - - -	646	32.24	1.94	After ignition..... 48,400
Magnesium - - -	185	15.21	0.91	Calculated..... 48,350
Sulfate - - - -	10	0.21	0.01	
Chloride - - - -	29,000	817.80	49.10	
Carbonate - - -	-	-	-	
Bicarbonate - -	903	14.81	0.89	
Hydroxide - - -	-	-	-	

PROPERTIES OF REACTION IN PERCENT:

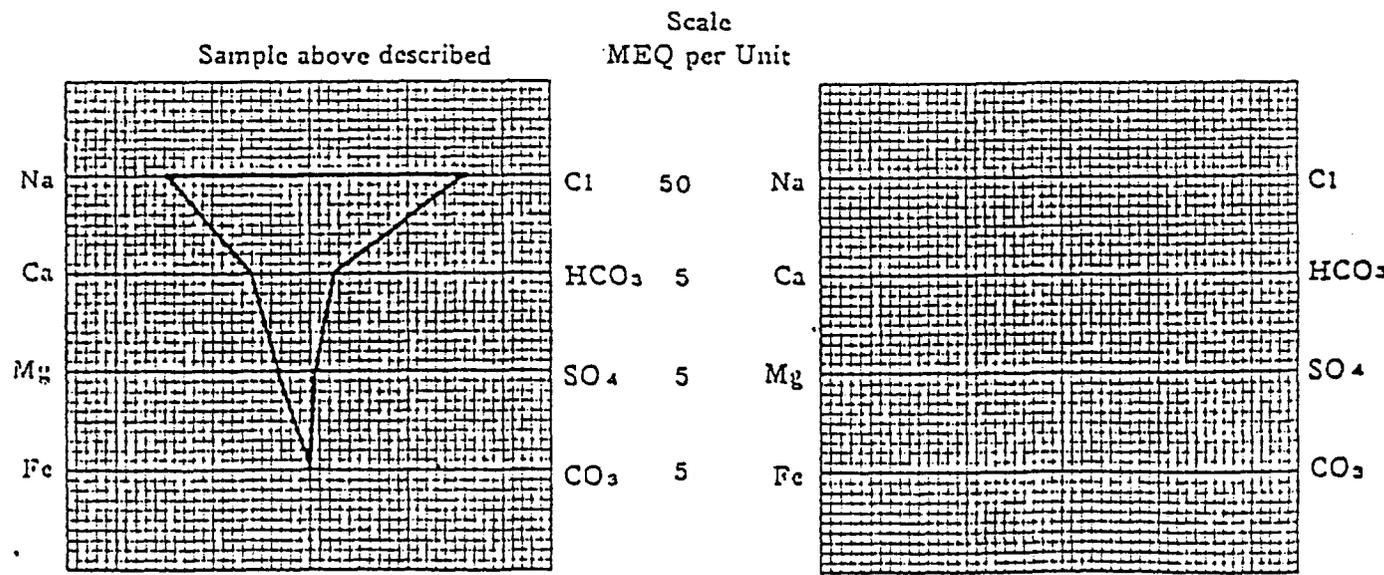
Primary salinity.....	94.30
Secondary salinity.....	3.92
Primary alkalinity.....	0.00
Secondary alkalinity.....	1.78
Chloride salinity.....	99.98
Sulfate salinity.....	0.02

Observed pH... 7.2 Resistivity @ 68°F. ohms/meter³ 0.165

Remarks... Correlates with Gallup water from this area and with water from CBU No. 28 sampled as known Gallup water.

Note: PPM=Milligrams per liter (1 PPM is equivalent to 0.0001% by weight). MEQ=Milliequivalents per liter. MEQ%=Milliequivalents per liter in percent.

WATER ANALYSIS PATTERN



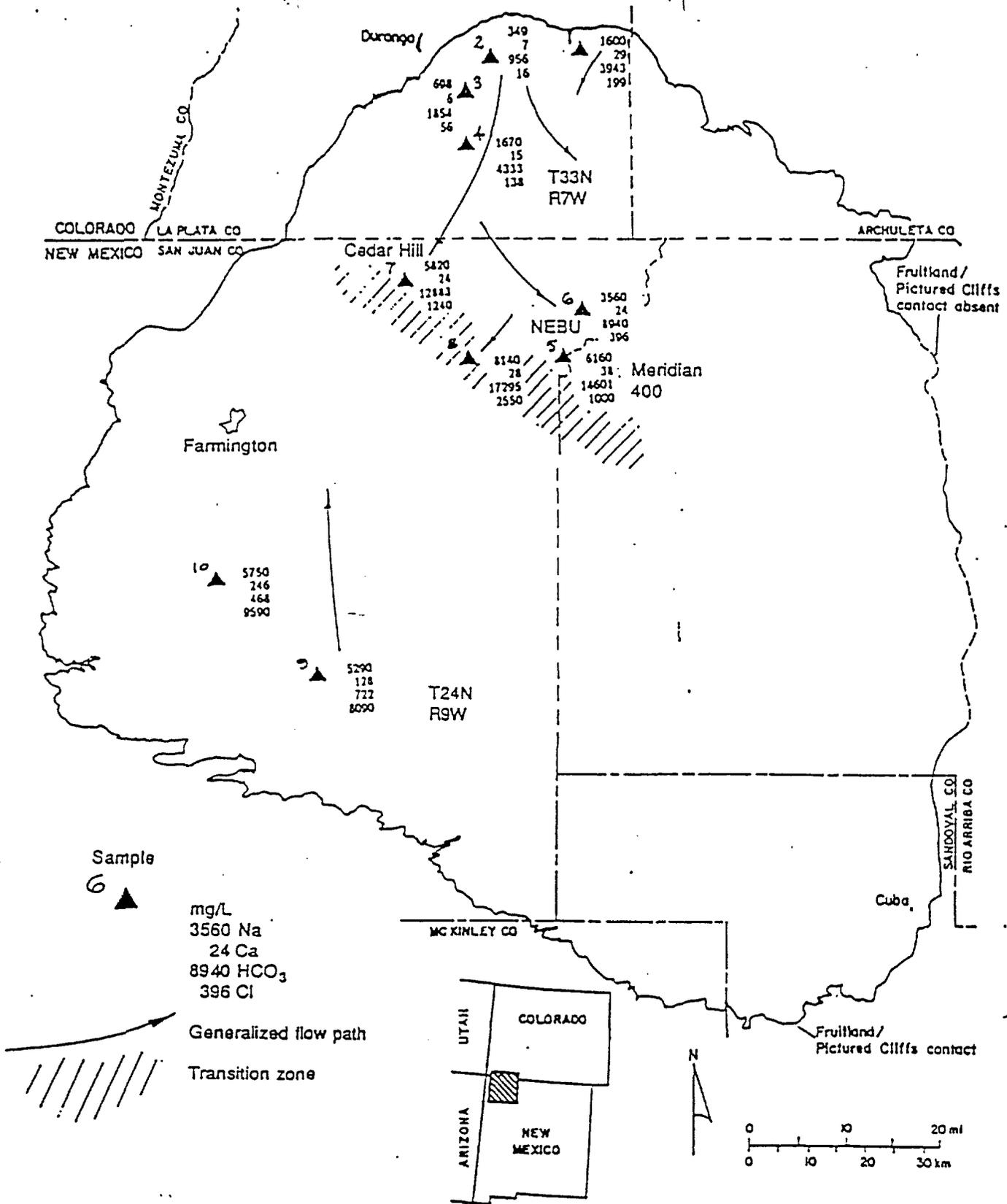


Figure 16. Location of GRI/BEG Fruitland coalbed water samples. In the north-central part of the basin, Na⁺ and HCO₃⁻ increase down flow path, reaching their highest concentration in the transition zone. Southern waters are enriched in Cl⁻ and Ca²⁺. The transition zone is a regional facies, potentiometric, pressure, and hydrochemical boundary. Complete chemical analyses in table 3.

Table 3. Chemical analyses of produced Fruitland coalbed waters.

Sample Number	1	2	3	4	5	6	7	8	9	10
Well	Perry Land GUB 1	Shoemaker 1-34	Southern Uto 12U-1	Mayfield- Milton GU 1	NEBU 432	NEBU 218	Ealum Gas Com C 1R	Elliott Gas Com Y 1	Bisti Coal 36-1	Rick Wells 1
Location	3035N6W	3435N8W	1234N9W	133N9W	730N7W	1631N7W	3332N10W	930N9W	9625N12W	826N13W
Production Interval	1,304-1,480	1,896-2,026	2,400-2,478	2,530-2,747	3,004- 3,216 (Oil)	3,200- 3,346 (Oil)	2,777-2,813	2,790-2,944	1,074-1,092	1,383-1,427
Source	wellhead	wellhead	wellhead	separator ^a	separator ^a	wellhead	wellhead	wellhead	wellhead	wellhead
TDS	5,820	1,360	2,650	6,220	21,970	13,030	20,110	28,210	14,330	16,190
Na	1,600	349	698	1,670	6,160	3,560	5,820	8,140	5,290	5,750
K	9.9	4.3	5.8	5.4	19.5	13.2	33.3	53.1	22.5	27.5
Ca	28.8	6.5	5.8	15.1	37.7	24.4	23.6	28.1	128	246
Mg	6.2	1.2	1.2	4.2	27.4	17.3	15.5	15.1	36.4	57.7
Sr	4.3	0.6	0.7	5.0	17.7	13.2	12.3	19.4	6.9	12.3
Ba	6.5	0.7	1.1	6.1	62.9	21.1	36.2	51.5	8.4	7.6
Fe	0.12	0.80	0.04	0.05	0.64	0.72	1.24	0.59	0.57	2.37
Mn	0.06	0.03	0.03	0.01 ^b	0.01	0.01	0.03	0.01	0.49	0.15
Li	0.88	0.34	0.94	1.54	1.39	1.11	0.58	1.13	0.50	0.53
B	1.08	0.21	0.63	1.55	2.15	0.98	8.54	9.17	1.18	1.09
SIO ₂	21.0	22.8	26.1	31.5	26.6	27.1	24.7	26.1	12.5	15.0
Field alkalinity (as HCO ₃ ⁻)	3,943	956	1,854	4,333	14,601	8,940	12,883	17,295	722	468
Organic acids (as Cl ₃ COOH)	270	220	210	330	330	210	210	220	120	160
NH ₃	2.53	1.50	1.11	4.47	11.3	8.57	9.13	16.2	4.99	6.20
organic-N	0.39	0.78	0.85	1.04	1.45	1.59	0.85	1.50	0.60	0.48
Cl	199	16	56	138	1,000	396	1,240	2,550	8,090	9,590
SO ₄	<5 ^c	<5	<5	<5	<5	<5	<5	<5	<5	10.4
Br	0.85	0.14	0.50	0.76	4.65	3.49	3.99	6.19	7.64	8.68
I	0.38	0.10	0.33	1.13	0.41	0.11	0.52	0.87	0.60	0.56
Field pH	7.65	8.21	8.23	7.73	7.62	7.89	8.06	8.02	7.39	7.33
δ ¹⁸ O ^d	-14.0	-14.6	-14.6	-14.1	-7.4	-7.9	-7.7	-7.6	-10.8	-10.5
δD	-85	-98	-102	-85	-32	-43	-28	-36	-81	-80
δ ¹³ C ^e	+23.5	+17.5	+16.7	+24.0	+25.6	+24.7	+26.0	+24.9	+19.7	+19.5
Σ cations (meq/L)	71.94	15.73	30.92	74.03	273.71	158.30	257.14	359.07	240.27	268.10
Σ anions (meq/L)	70.28	16.13	31.98	74.95	267.66	157.78	246.25	355.55	239.98	278.33

^a flowing well; ^b near detection limit of 0.01 mg/L; ^c detection limit 5 mg/L; ^d δ¹⁸O and δD in per mil relative to SMOW; ^e δ¹³C of total dissolved carbonate species in per mil relative to PDB.

ANALYSIS NO. 53-35-91

FIELD RECEIPT NO. _____

FORM 45-1

API WATER ANALYSIS REPORT FORM

Company <u>Giant E&P</u>		Sample No.	Date Sampled <u>08-07-91</u>	
Field	Legal Description	County or Parish		State
Lease or Unit <u>Bish Coal 3</u>	Well # <u>#1</u>	Depth	Formation <u>Fruitland</u>	Water, B/D
Type of Water (Produced, Supply, etc.) <u>Produced</u>		Sampling Point		Sampled By

DISSOLVED SOLIDS

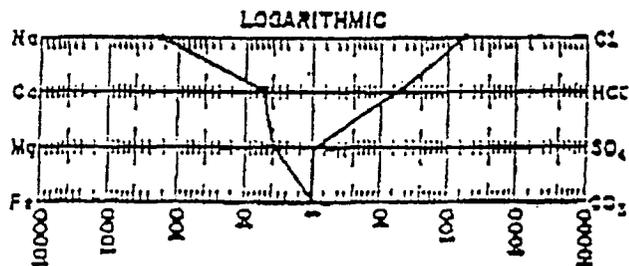
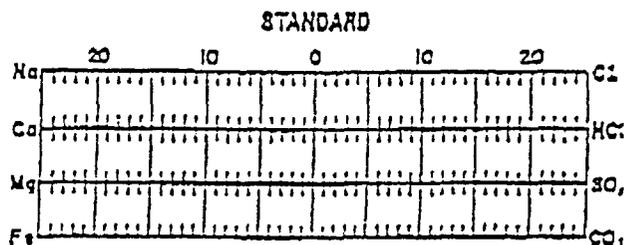
IONS	mg/l	me/l
Sulfate, Na (calc.)	<u>5473</u>	<u>237.95</u>
Sulfate, Ca	<u>140</u>	<u>7.00</u>
Magnesium, Mg	<u>61</u>	<u>3.00</u>
Sulfate, Ba	<u>—</u>	<u>—</u>
Potassium, K	<u>98</u>	<u>2.51</u>

OTHER PROPERTIES

pH	<u>7.25</u>
Specific Gravity, 60/60 F.	<u>1.010</u>
Resistivity (ohm-meters) <u>74</u> F.	<u>.44</u>
Total Hardness	<u>600</u>
_____	_____
_____	_____

IONS	mg/l	me/l
Sulfate, Cl	<u>8010</u>	<u>225.96</u>
Sulfate, SO ₄	<u>0</u>	<u>0</u>
Bicarbonate, CO ₃	<u>0</u>	<u>0</u>
Carbonate, HCO ₃	<u>1617</u>	<u>26.50</u>
Hydroxide, OH	<u>0</u>	<u>0</u>
_____	_____	_____

WATER PATTERNS — me/l



Total Dissolved Solids (calc.)	<u>15399</u>
Iron, Fe (total)	<u>25 ppm</u>
Sulfide, as H ₂ S	<u>neg</u>

REMARKS & RECOMMENDATIONS:

ANALYST: Lee

PLEASE REFER ANY QUESTIONS TO:

WESTERN CO. OF NORTH AMERICA
 KINGSTON, N.M.
 DAN AULT-District Engineer
 (505) 327-6222



OFFICE OCC
10/27 10:08

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES OF AMERICA
Geological Survey Form G-2
Serial number 2-2-2
Last Office of _____
Serial No. 000008
Date 10/27/57

RECEIVED

SUNDRY NOTICES AND REPORTS ON WELLS

NAME OF REPORTER TO BUREAU	EXPLANATORY REPORT OF SUPERVISOR
NAME OF REPORTER TO FIELD OFFICE	EXPLANATORY REPORT OF SUPERVISOR ON APPLICABLE
NAME OF REPORTER TO FIELD OFFICE	EXPLANATORY REPORT OF SUPERVISOR ON APPLICABLE
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NAME OF REPORTER TO FIELD OFFICE	EXPLANATORY REPORT OF SUPERVISOR ON APPLICABLE

October 31, 1957

Well No. 1-4 is located 1230 ft. from [D] and 192 ft. from [E] line of sec. 3

NE 1/4 Sec. 8 T. 2 N. R. 17 E. S. 12
Well No. _____ San Juan Co. New Mexico

The elevation of the device flow above sea level is 5929 ft.

DETAILS OF WORK

Intention to change name of El Paso Natural Gas Products Company
Fracture No. 2 to El Paso Natural Gas Products Company Fracture
No. 1A.



Company - El Paso Natural Gas Products Company
Address - 400 East 13th
Dundalk, New Mexico
ORIGINAL SIGNED BY: WILLIAM A. CLAENER
By _____
Title - Petroleum Engineer

YING CORPORATION

TRICAL LOG
& INDUCTION LOG

Location of Well
1750' FR 5/L
SEC. 8-25N-12W

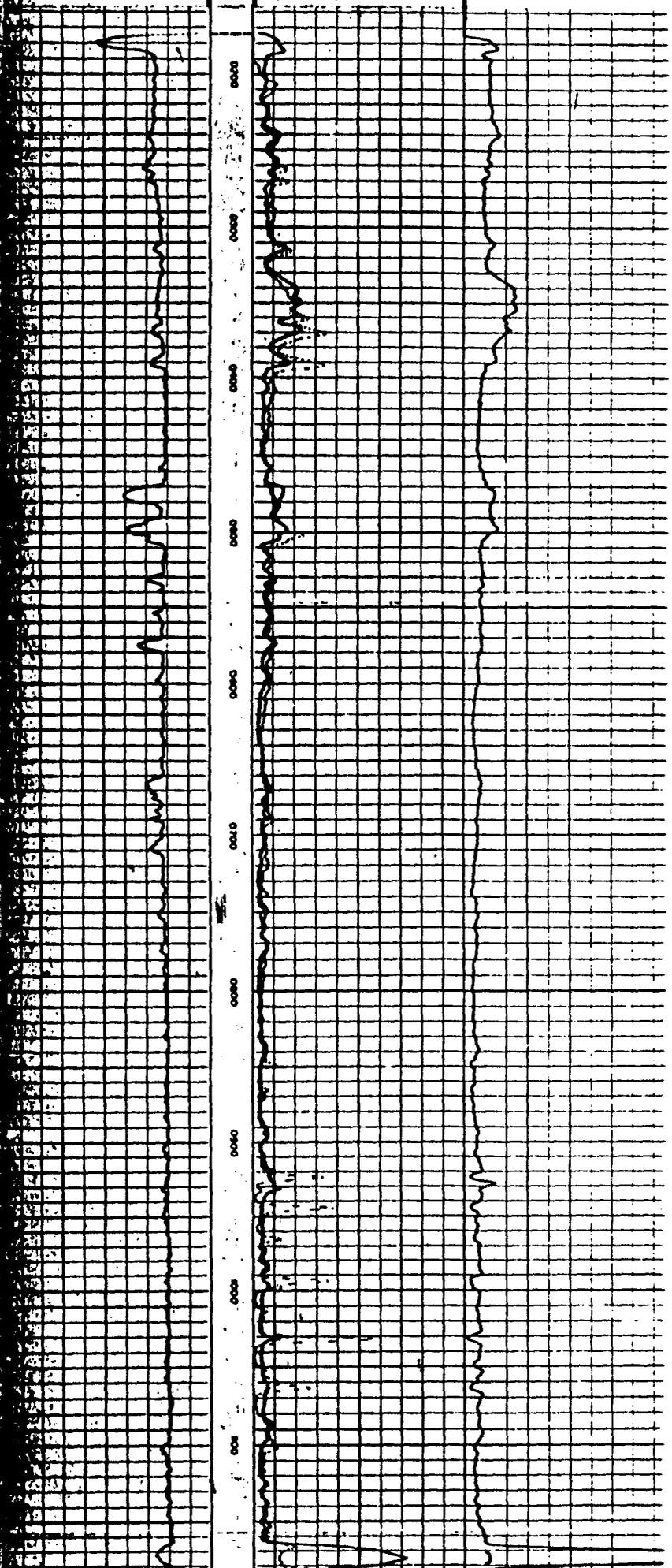
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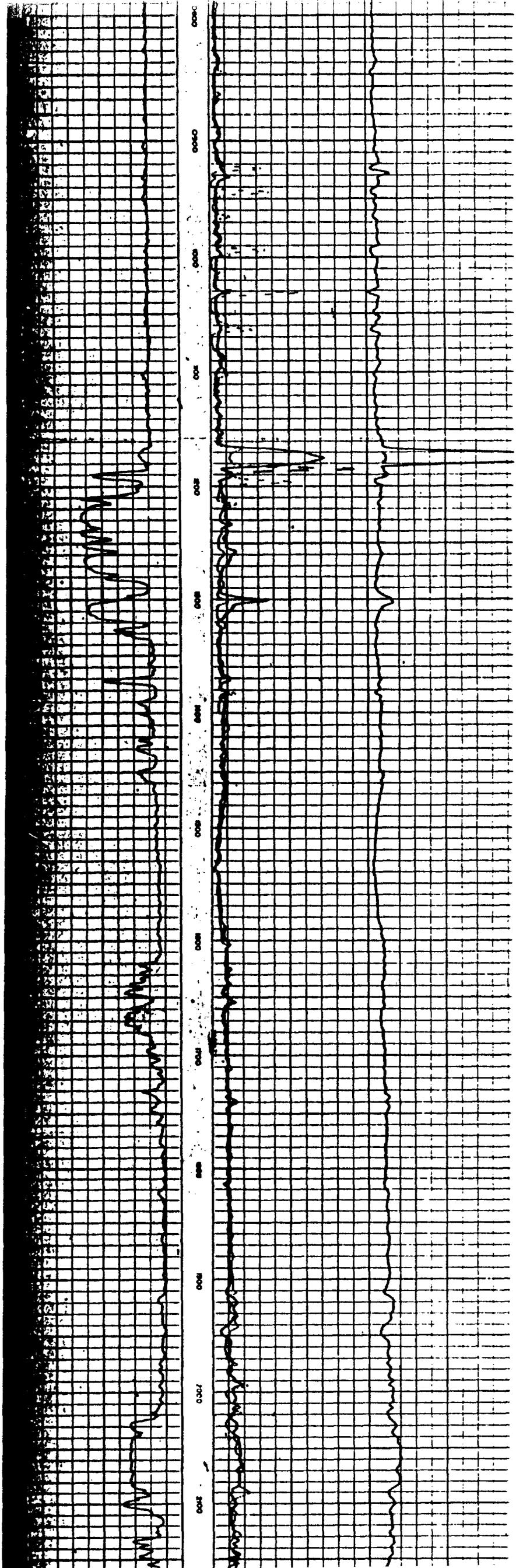
RECEIVED
D. J. BERRY
C. L. BERRY
P. O. BOX 111
MILLERSVILLE, MO.

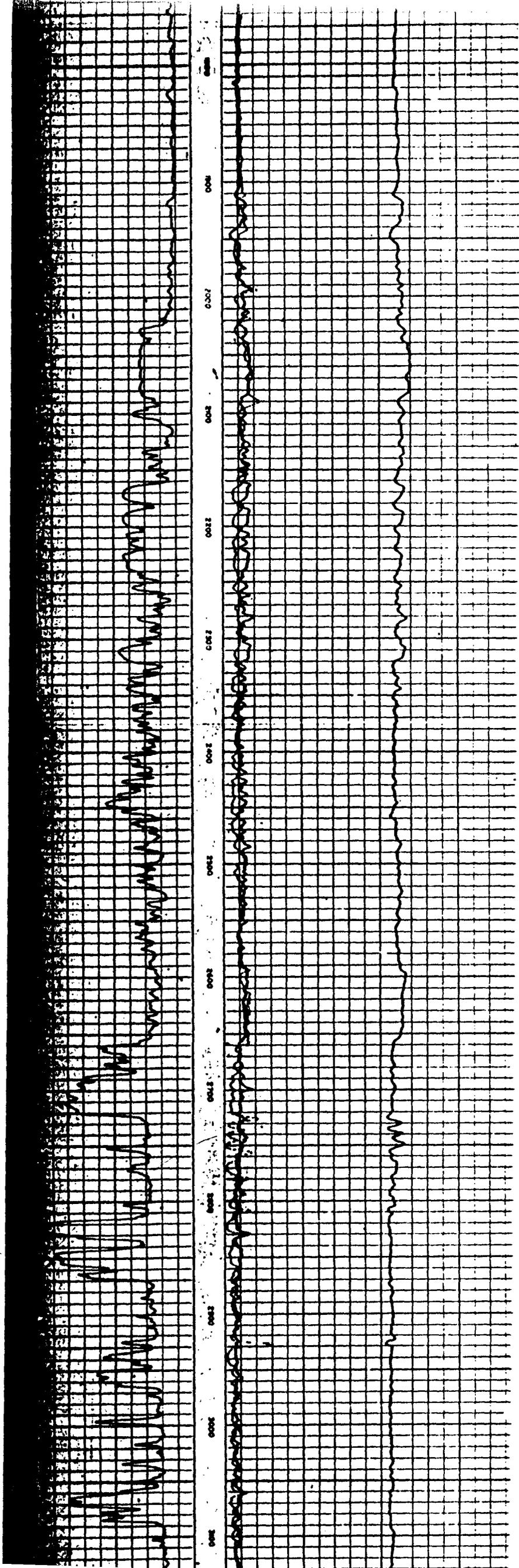
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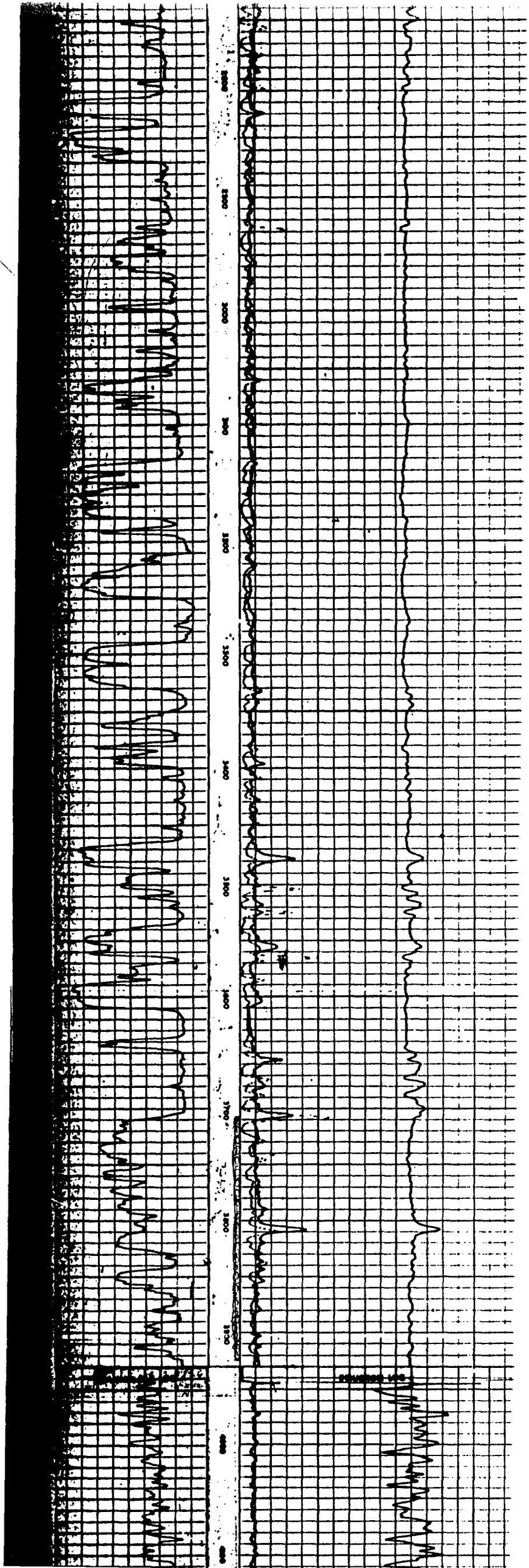
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DATE: ...
WELL DEPTH: ...
WELL TYPE: ...

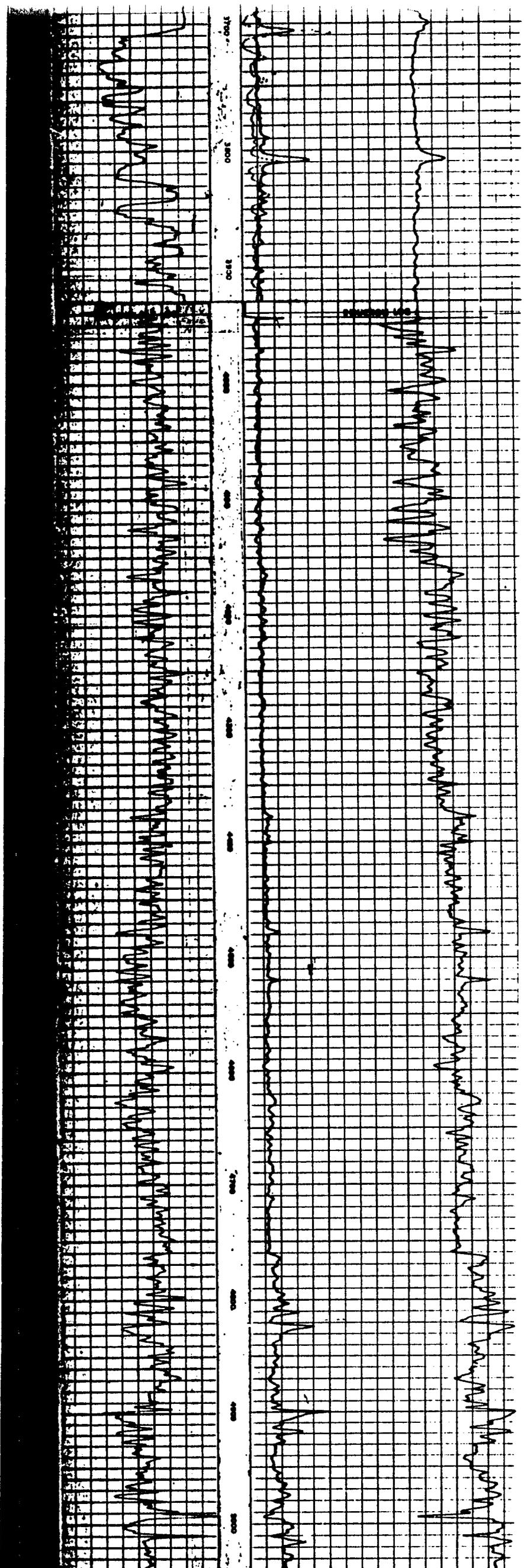
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		NORMAL	LONG NORMAL
-10	100'	1000	100
	110'	1000	100
	120'	LATERAL 100	
	130'	1000	

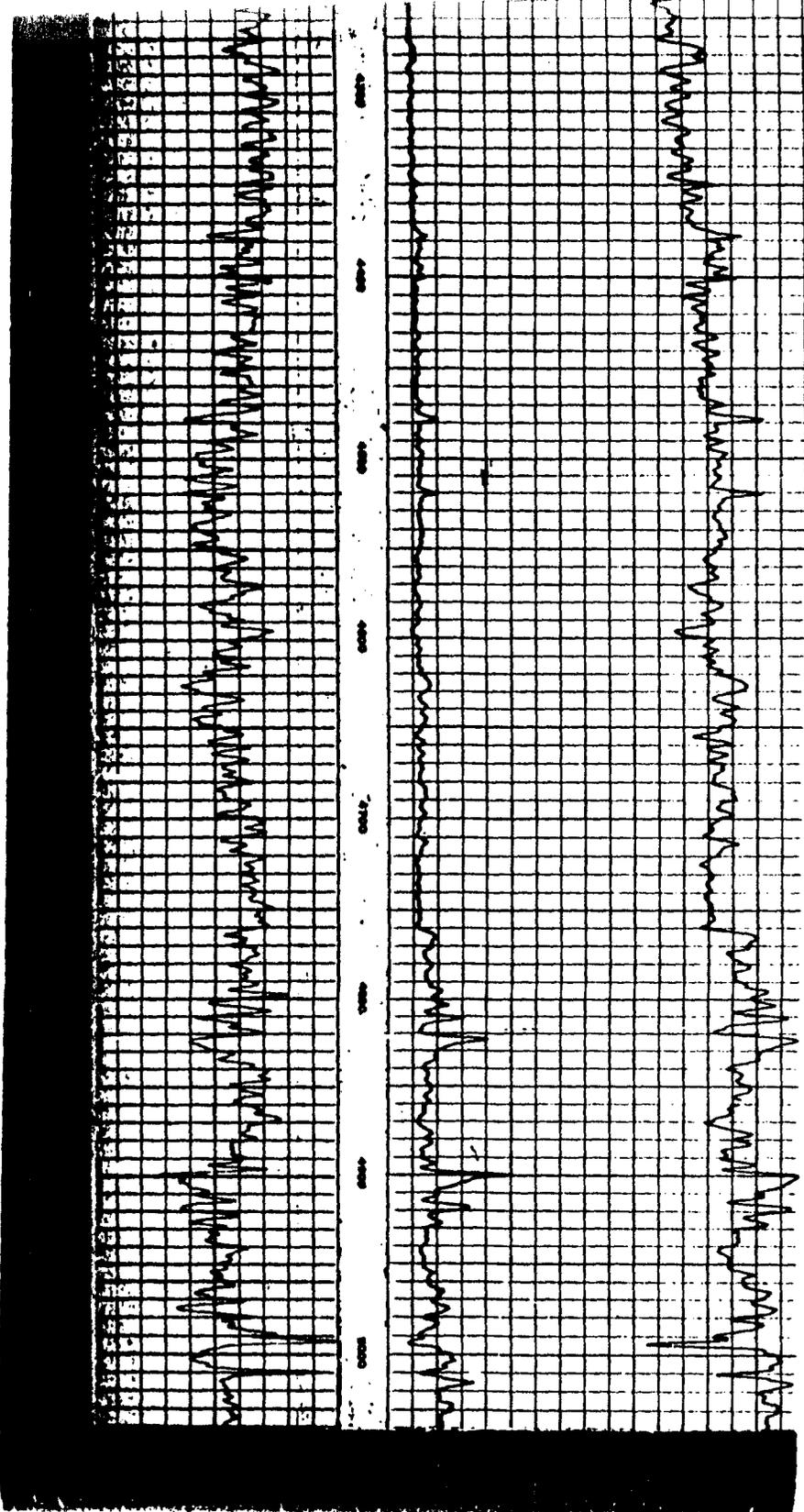


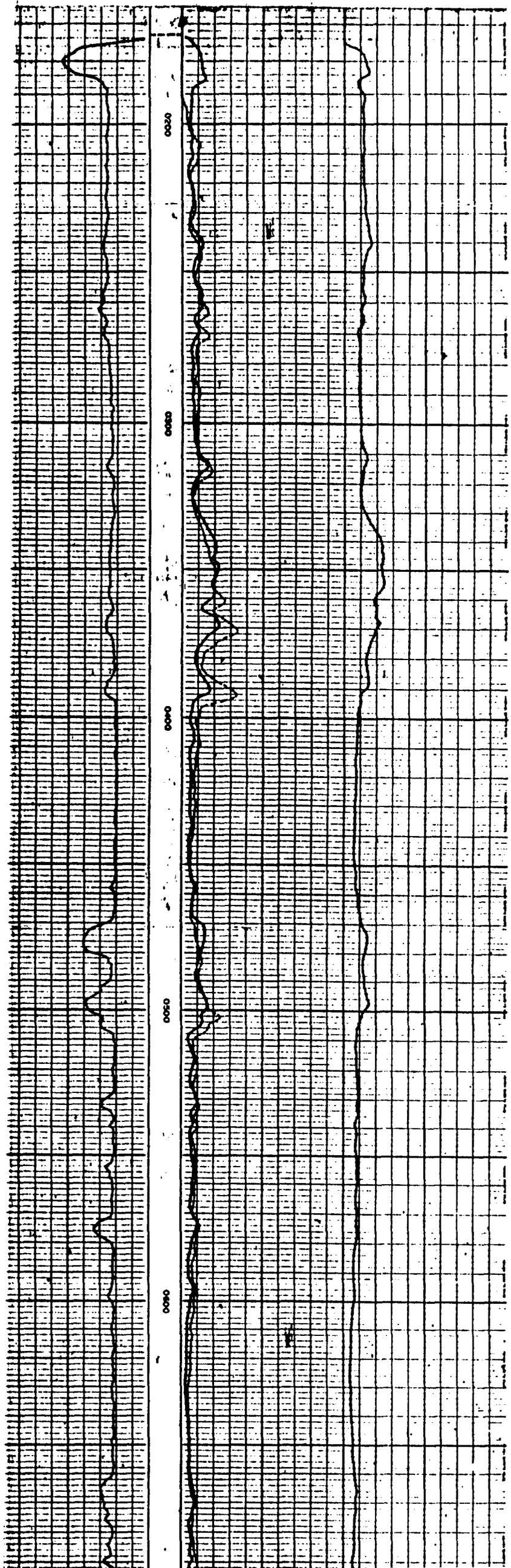


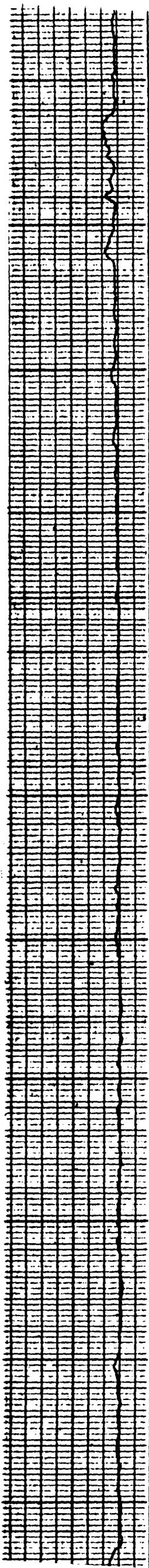












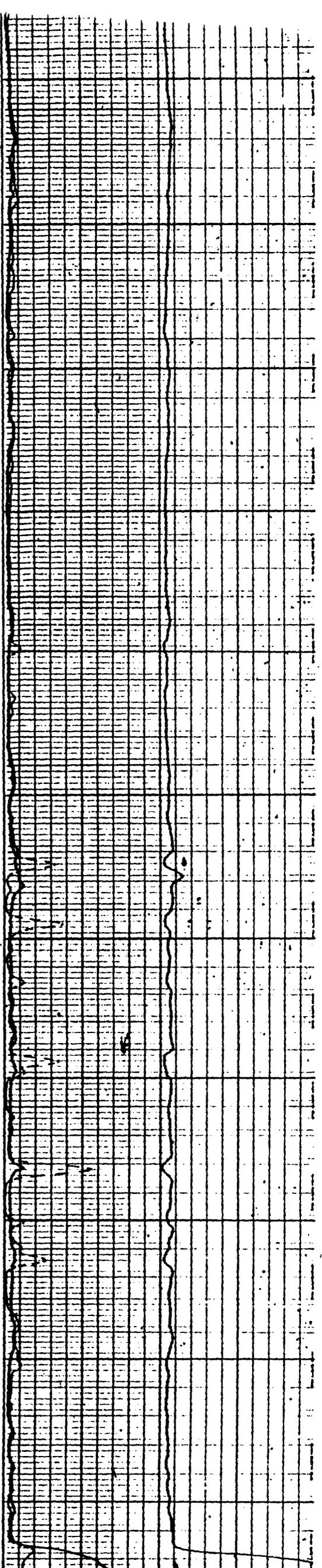
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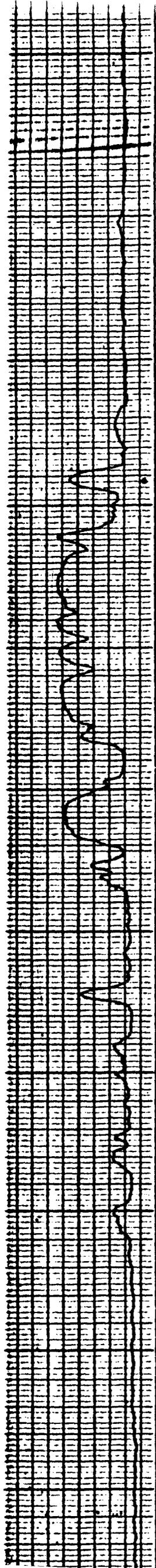
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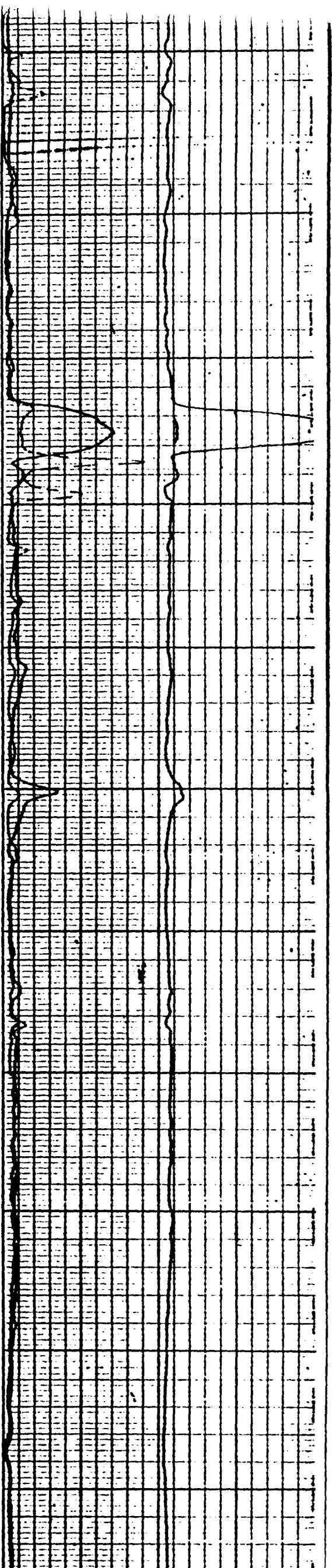
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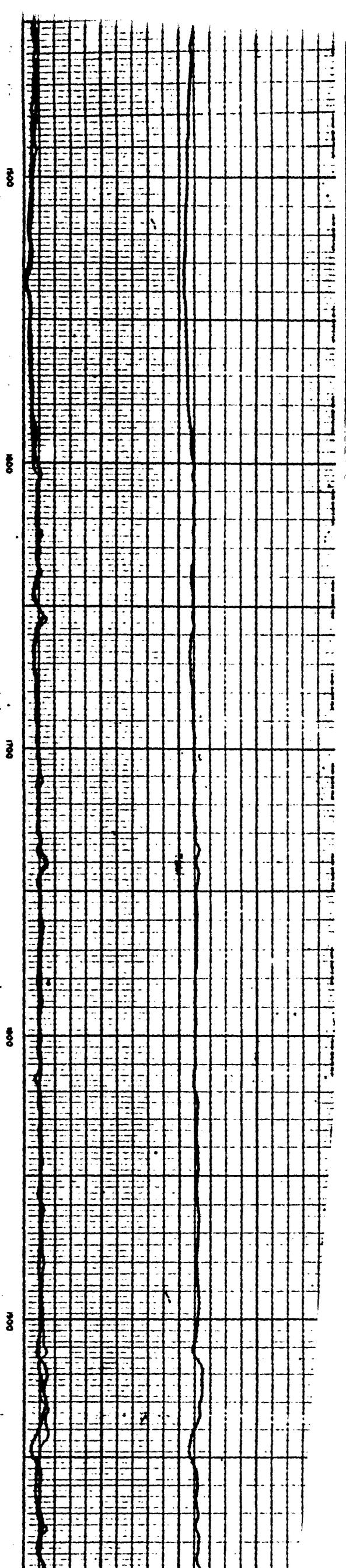
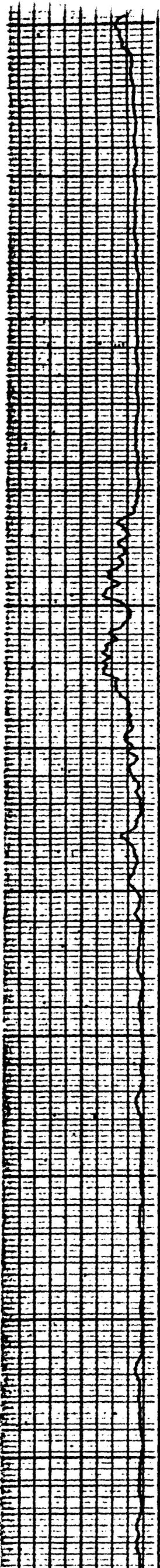
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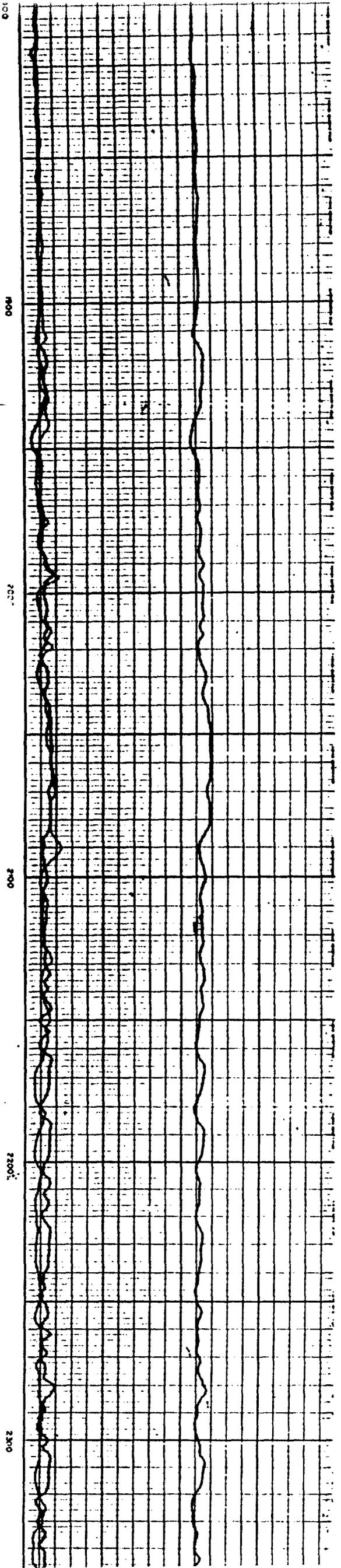
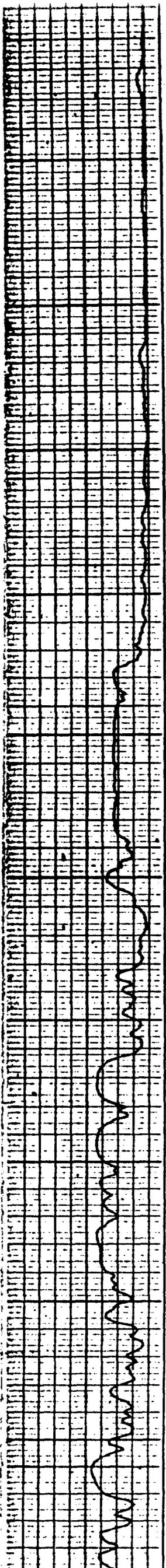
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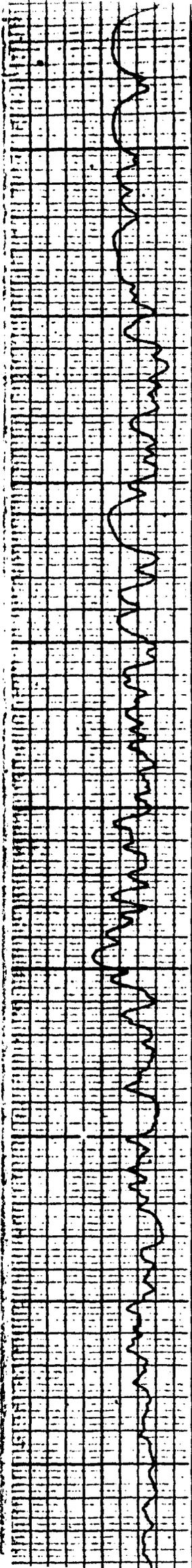
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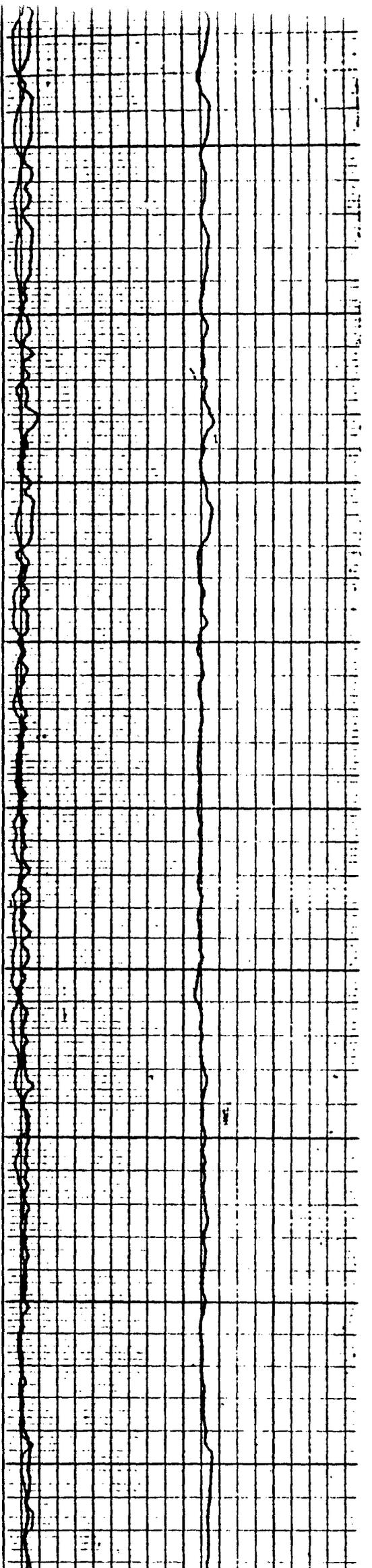
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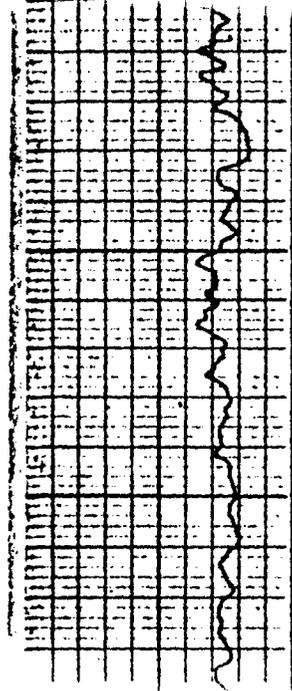
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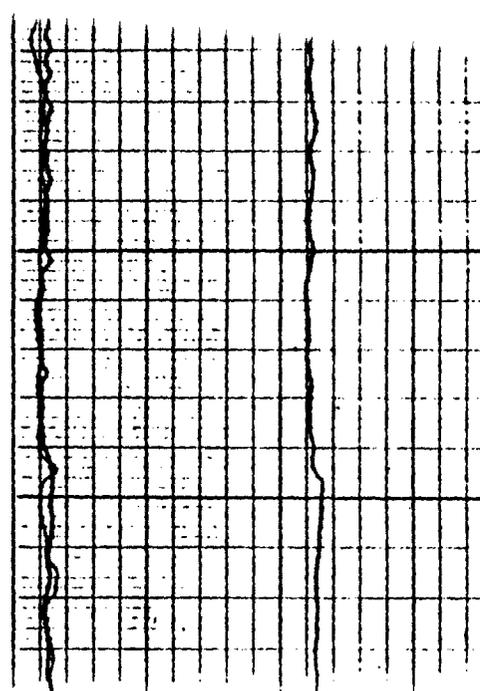
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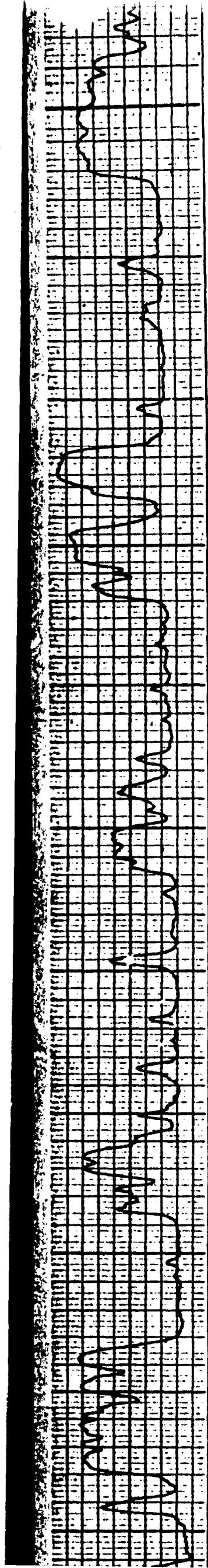
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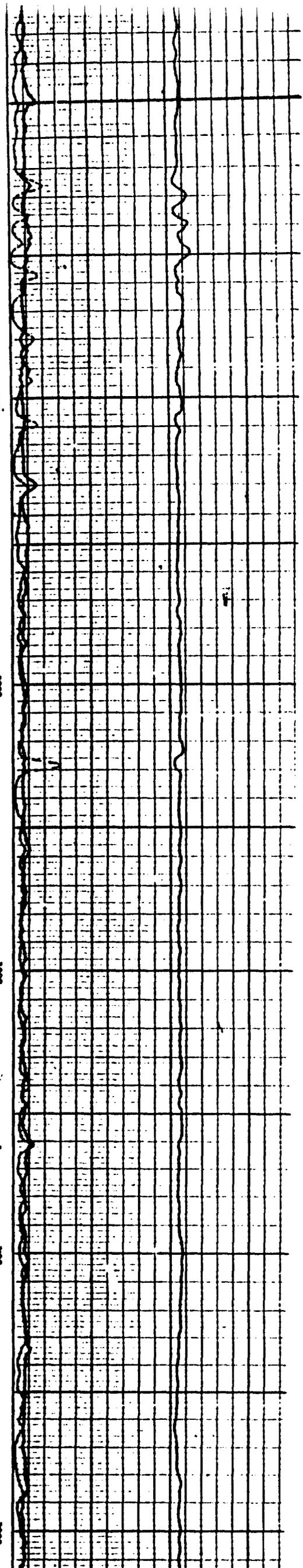
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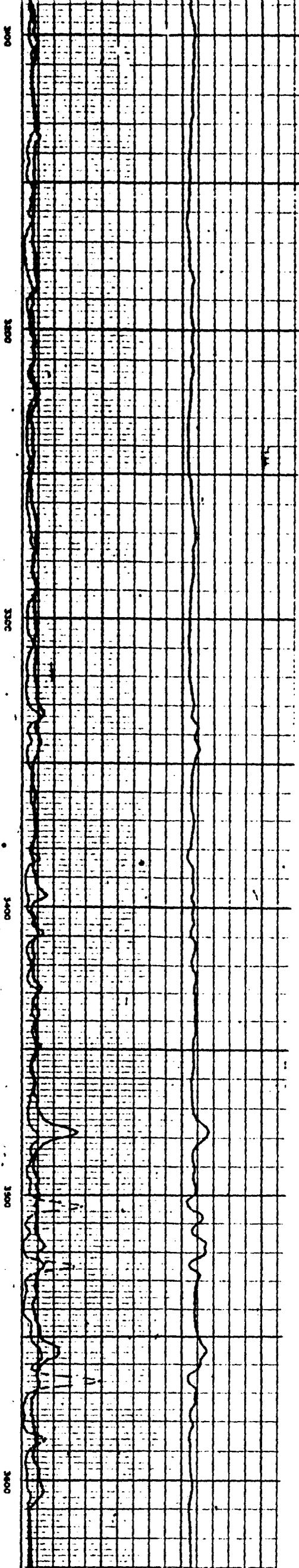
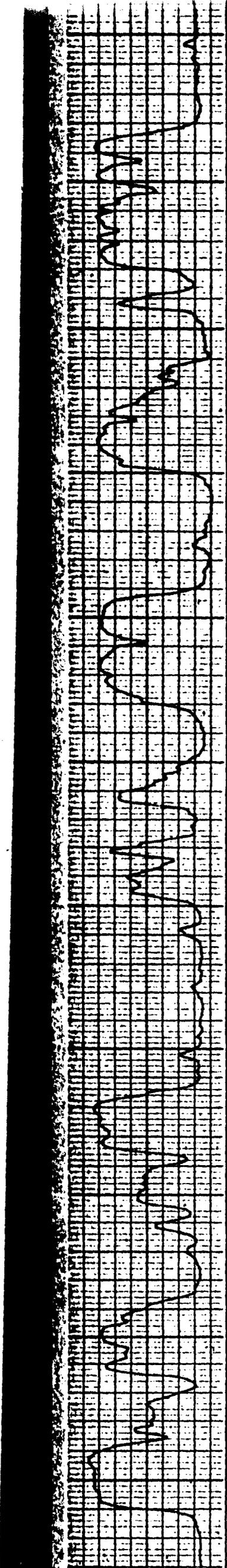
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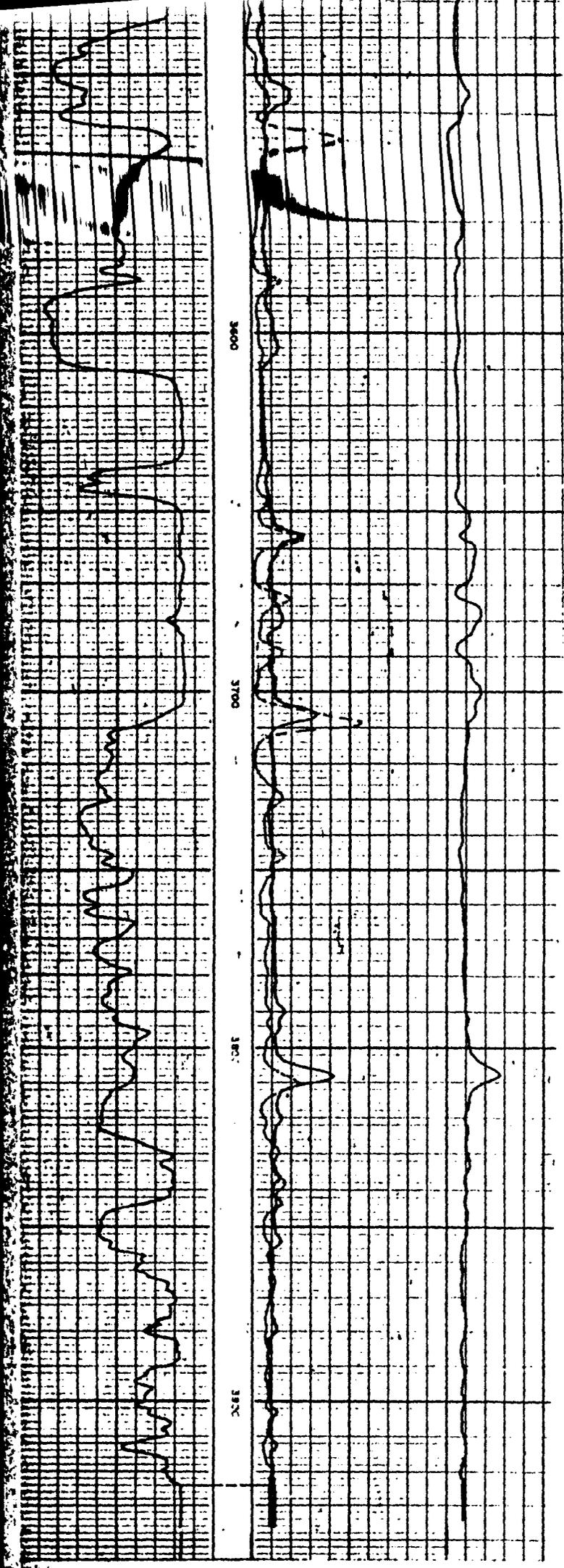
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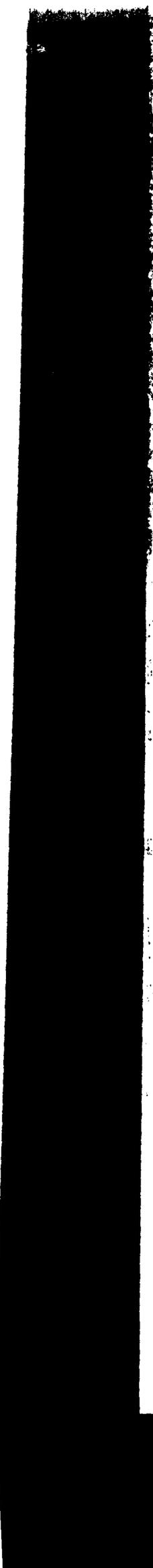
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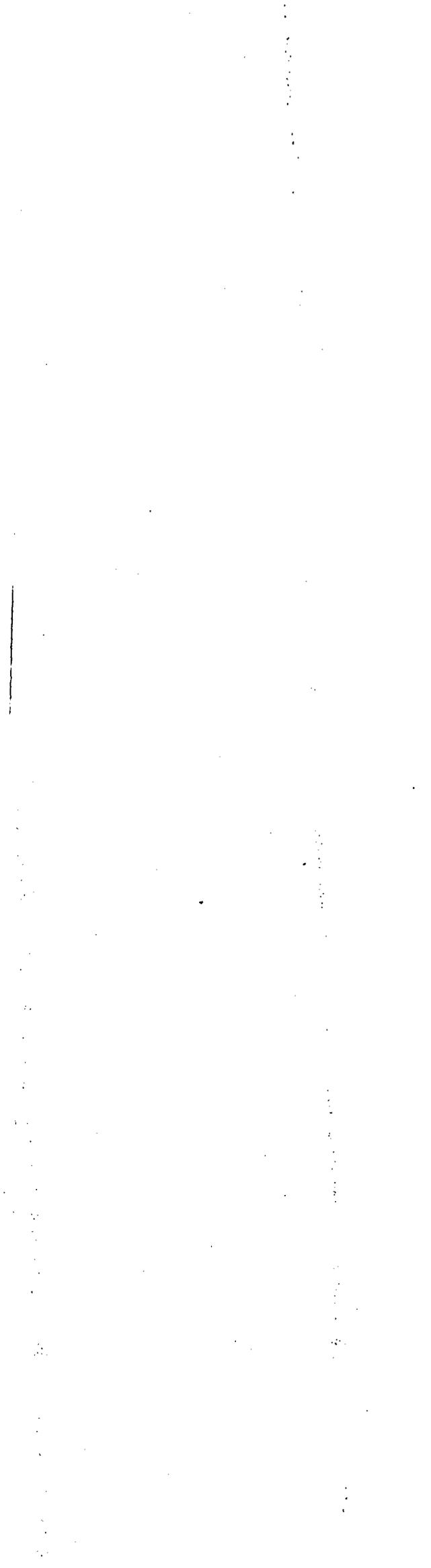


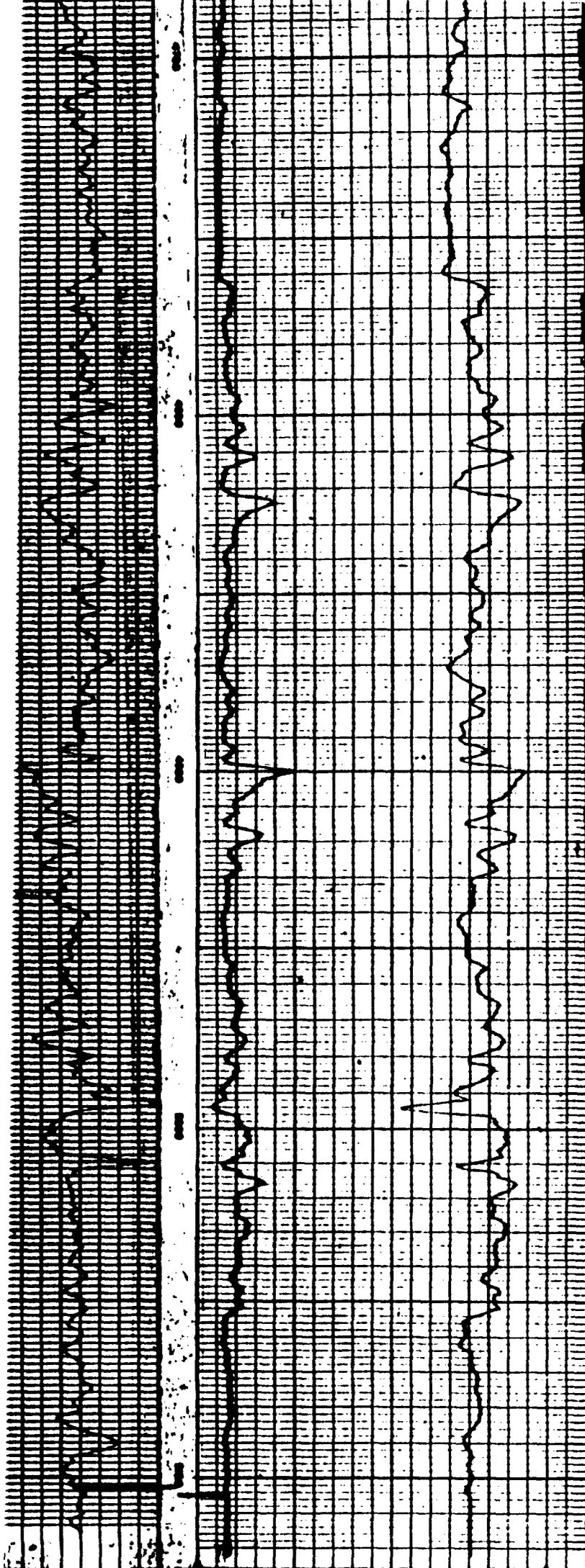


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ORDER NO. 1188
 ORDER NO. 1188
 EL PASO NATURAL GAS COMPANY
 FRONTIER 22
 SAN JUAN, NEW MEXICO
 SEC. 8-22N-12W
 T12N R.1E

AUG 23 1995

AFFIDAVIT OF PUBLICATION

No. 35102

STATE OF NEW MEXICO

County of San Juan:

ROBERT LOVETT being duly sworn says: That he is the Classified Manager of **THE DAILY TIMES**, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said **DAILY TIMES**, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Monday, July 31, 1995

and the cost of publication was: \$18.37

Robert Lovett

On 8/13/95 **ROBERT LOVETT** appeared before me, whom I know personally to be the person who signed the above document.

Mary A. Sneed

My Commission Expires March 21, 1998



COPY OF PUBLICATION



NOTICE

J.K. Edwards Associates, Inc., 1401 17th Street, Suite 1400, Denver, CO 80202, (303) 288-1400 whose agent is Keith Edwards, hereby notified all interested parties that the following well is to be converted to a water disposal well. Injection will be into the Point Lookout (Mesaverde) interval at approximately 3708' - 3822'. Maximum well rate will be 1000 Bwpd at less than 1100 psi. Any request for information or any objections should be filed with the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, NM 87501, within 15 days of this notice.

Gallegos Gallup Field, Frontier 1-A, NE/4SE/4 Section 8, T26N-R12W, San Juan County, New Mexico.

Legal No. 95102 published in The Daily Times, Farmington, New Mexico, Monday, July 31, 1995.

Post-it* Fax Note	7671	Date	9-7-95	# of pages	3
To	BEN STONE		From	RICK LEWIS	
Co./Dept.			Co.	J. K. EDWARDS ASS	
Phone #			Phone #		
Fax #	RES FRONTIER		Fax #	A #1	

SENDER:
 Complete items 1 and/or 2 for additional services.
 Complete items 3, and 4a & b.
 Print your name and address on the reverse of this form so that we can return this card to you.
 Attach this form to the front of the mailpiece, or on the back if space does not permit.
 Write "Return Receipt Requested" on the mailpiece below the article number.
 The Return Receipt will show to whom the article was delivered and the date delivered.

is your RETURN ADDRESS completed on the reverse side?

3. Article Addressed to:
**BUREAU OF LAND MANAGEMENT
 FARMINGTON RESOURCE AREA
 1235 LA PLATA HIGHWAY
 FARMINGTON NM 87401**

4a. Article Number
P879-671562

4b. Service Type
 Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery
8-9-95

5. Signature (Addressee)


6. Signature (Agent)


8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service

SENDER:
 Complete items 1 and/or 2 for additional services.
 Complete items 3, and 4a & b.
 Print your name and address on the reverse of this form so that we can return this card to you.
 Attach this form to the front of the mailpiece, or on the back if space does not permit.
 Write "Return Receipt Requested" on the mailpiece below the article number.
 The Return Receipt will show to whom the article was delivered and the date delivered.

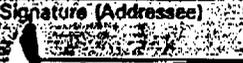
is your RETURN ADDRESS completed on the reverse side?

3. Article Addressed to:
**DUGAN PRODUCTION COMPANY
 ATTN LAND DEPARTMENT
 PO BOX 420
 FARMINGTON NM 87499**

4a. Article Number
P879-671563

4b. Service Type
 Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery
8-7-95

5. Signature (Addressee)


6. Signature (Agent)


8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

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SENDER:
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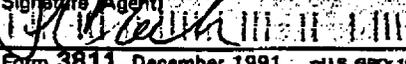
3. Article Addressed to:
**MR MICHAEL STOGNER
 NEW MEXICO OIL CONSERVATION
 2040 S PACHECO
 SANTA FE NM 87505**

4a. Article Number
P879-671564

4b. Service Type
 Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery
8/7

5. Signature (Addressee)


6. Signature (Agent)


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- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number. The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

**MR FRANK CHAVEZ
NEW MEXICO OIL CONSERVATION
1000 RIO BRAZOS ROAD
AZTEC NM 87410**

4a. Article Number
P 8791674E65

4b. Service Type

Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery
8-7-95

5. Signature (Addressee)
[Signature]

6. Signature (Agent)
[Signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number. The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

**JEROME P MCHUGH & ASSOCIATES
NASSAU RESOURCES INC
KINDERMAC PARTNERS
ATTN LAND DEPARTMENT
650 SOUTH CHERRY ST SUITE 1225
DENVER CO 80222**

4a. Article Number
P 8791671S45

4b. Service Type

Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)
[Signature]

6. Signature (Agent)
[Signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number. The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- Addressee's Address
- Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

**MERRION OIL & GAS CORP
ATTN LAND DEPARTMENT
610 REILLY AVENUE
PO BOX 840
FARMINGTON NM 87499**

4a. Article Number
P 8791671S67

4b. Service Type

Registered Insured
 Certified COD
 Express Mail Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)
[Signature]

6. Signature (Agent)
[Signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 **DOMESTIC RETURN RECEIPT**