

GW -



INSPECTIONS & DATA

Dakota

6-21-95

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

24

Form 104--(Four on Township)

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

— OIL
— GAS

County, _____

Township _____ Range _____ Township _____ Range _____

Township _____ Range _____ Township _____ Range _____

DAKOTA

26

Form 124-1 (four on Township)

27

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

24

25

26

GLEN
CASTLE

CASTILE

County.

Township. Range.

Township. Range.

Township. Range.

Township. Range.

Form 114-1 (Four on Township)

24

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

County, _____

Township _____ Range _____ Township _____ Range _____

Township _____ Range 26 Township _____ Range 27

Form 104-1 (Four on Township)

CASTILE

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

24

25

26

CASTILE

DEL

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

24

Form 14-1 (Four on Township)

25

24

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

SERPENTINE
BENDS

25

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

1/31/89

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

WASHINGTON
RANCH

135

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

24

Form 104-1 (Four on Township)

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

WC

County, _____

Township _____

Range _____

Township _____

Range _____

Township _____

Range _____

Township _____

Range _____

24

Form 104—(Four on Township)

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36



WHITE
CITY

PERM

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

24

Form 104—(Four on Township)

25

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

DARK CANYON

24

25

CHARTERED
2000
HAPPY ROAD

26

ST

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Form 104—(Four on Township)

24

25

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30
31	32	33	34	35	36	31	32	33	34	35	36

CHLOKED CREEK

ROBERTSON RANCH

24

25

26

HT

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Form 104-1 (Four on Township)

24

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
CROOKED CREEK											
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
29	28	27	26	25		30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36

MOR

County, _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Township _____ Range _____

Form 104—(Four on Township)

24

25

24

25

26

6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
6	5	4	3	2	1	6	5	4	3	2	1
7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
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7	8	9	10	11	12	7	8	9	10	11	12
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19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36
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7	8	9	10	11	12	7	8	9	10	11	12
18	17	16	15	14	13	18	17	16	15	14	13
19	20	21	22	23	24	19	20	21	22	23	24
30	29	28	27	26	25	30	29	28	27	26	25
31	32	33	34	35	36	31	32	33	34	35	36

1 MILE POST

NM OIL CONSERVATION DEPT

Crawford
WELL LOG # *27 25 2-27*

REMOVED FROM FILE

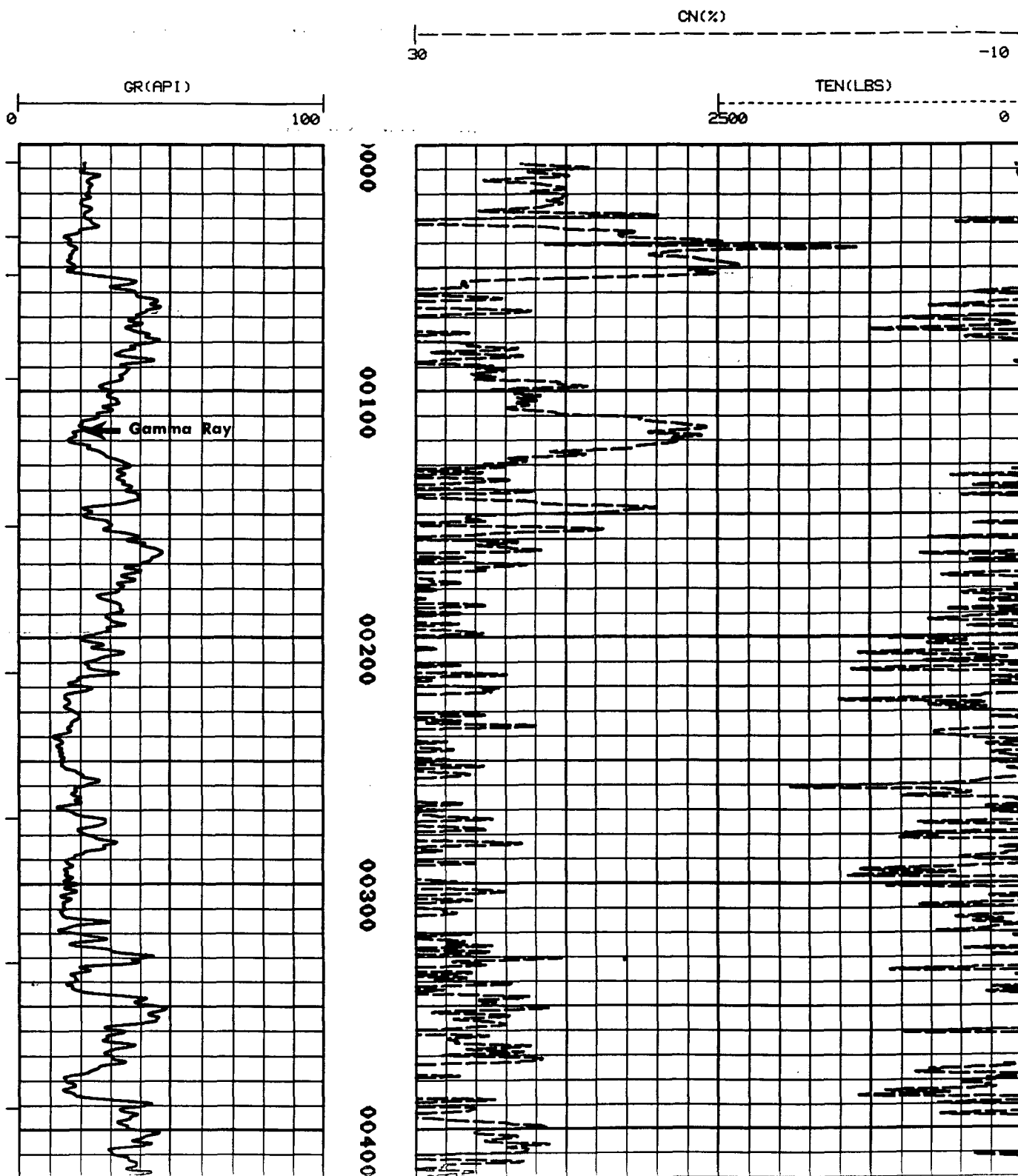
GW-006 **. BOX**

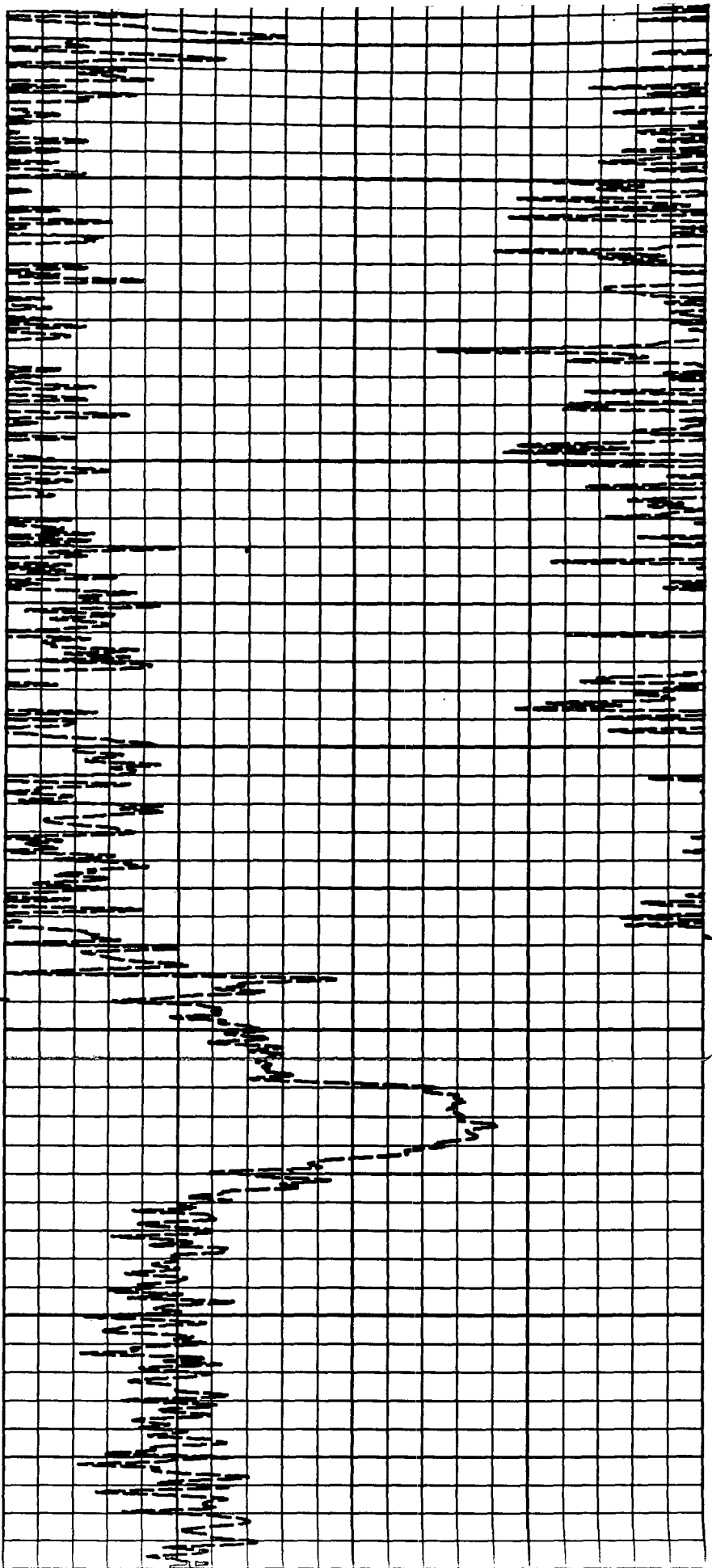
NUMBER *46*

RETURNED TO CUSTOMER

		Compensated Densilog[®] Compensated Neutron Gamma Ray			
FILE NO.		COMPANY <u>EL PASO NATURAL GAS COMPANY</u> WELL <u>EPNG NO. 10 W.I. FEDERAL</u> FIELD <u>WASHINGTON RANCH</u> COUNTY <u>EDDY</u> STATE <u>NEW MEXICO</u> LOCATION: <u>935' FNL & 2209' FEL</u> SEC <u>34</u> TWP <u>25-S</u> RGE <u>24-E</u>			
API NO.					
		Other Services DIFL BHC AL/GR			
Permanent Datum <u>GROUND LEVEL</u>		Elev. <u>3696</u> Log Measured from <u>K. B. 12</u> Ft. Above Permanent Datum Drilling Measured from <u>K. B.</u>		Elev. <u>3708</u> KB <u>3707</u> DF <u>2696</u> GL	
Date	12-27-81			RECEIVED JUL 13 1982 O. C. D. ARTESIA, OFFICE	
Run No.	ONE				
Service Order	06607				
Depth—Driller	6982				
Depth—Logger	6985				
Bottom Logged Interval	6982				
Top Logged Interval	SURFACE				
Casing—Driller	9 5/8 @ 800	@		@	@
Casing—Logger	802				
Bit Size	8 3/4				
Type Fluid in Hole	DRISPA/LOLID				
Density and Viscosity	8.7 51				
pH and Fluid Loss	9.8 8 cc		cc		cc
Source of Sample	FLOWLINE				
Rm @ Meas. Temp.	1.79 @ 62°F	@	°F	@	°F
Rmf @ Meas. Temp.	1.34 @ 62°F	@	°F	@	°F
Rmc @ Meas. Temp.	2.24 @ 62°F	@	°F	@	°F
Source of Rmf and Rmc	CALC CALC.				
Rm @ BHT	.80 @ 138°F	@	°F	@	°F
Time Since Circ.	4 HOURS				
Max. Rec. Temp. Deg. F.	138°F		°F		°F
Equip. No. and Location	6316 ROSWELL				
Recorded By	KRIEGER				
Witnessed By	CAMPBELL				

CON	VAR	LIMESTONE	30-0	6"-16"





00200

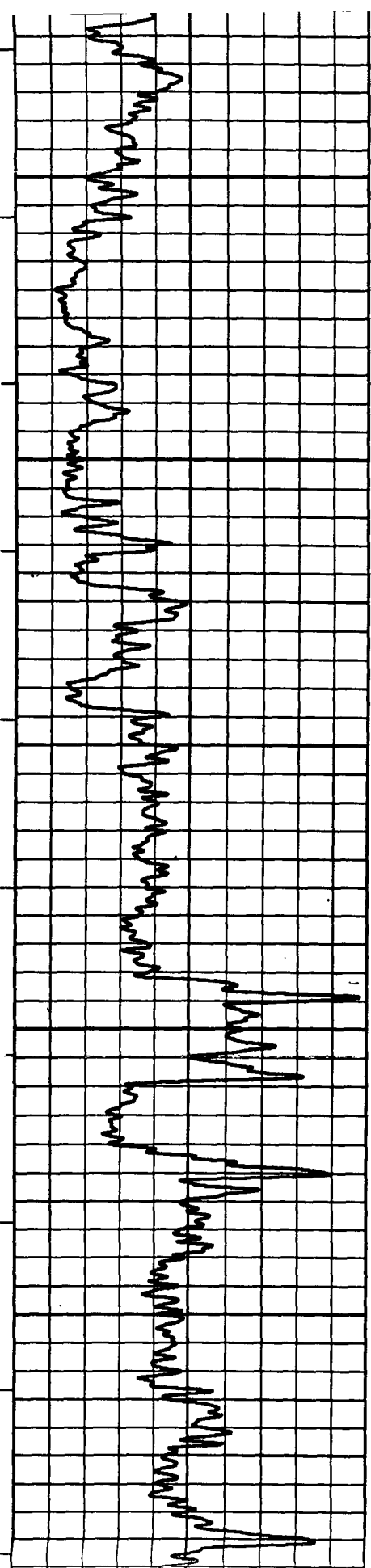
00300

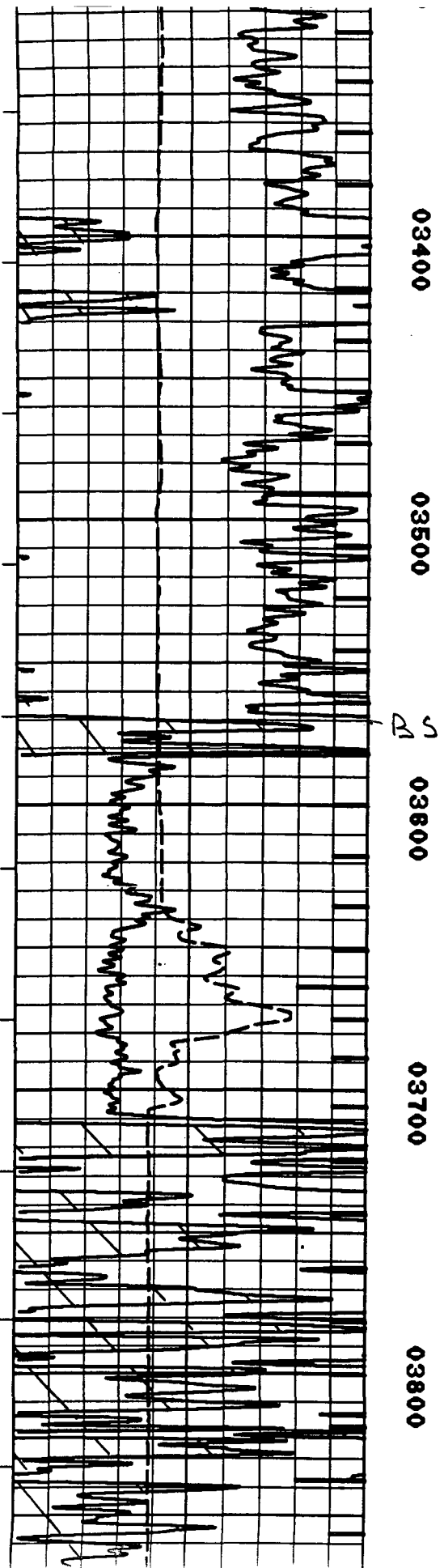
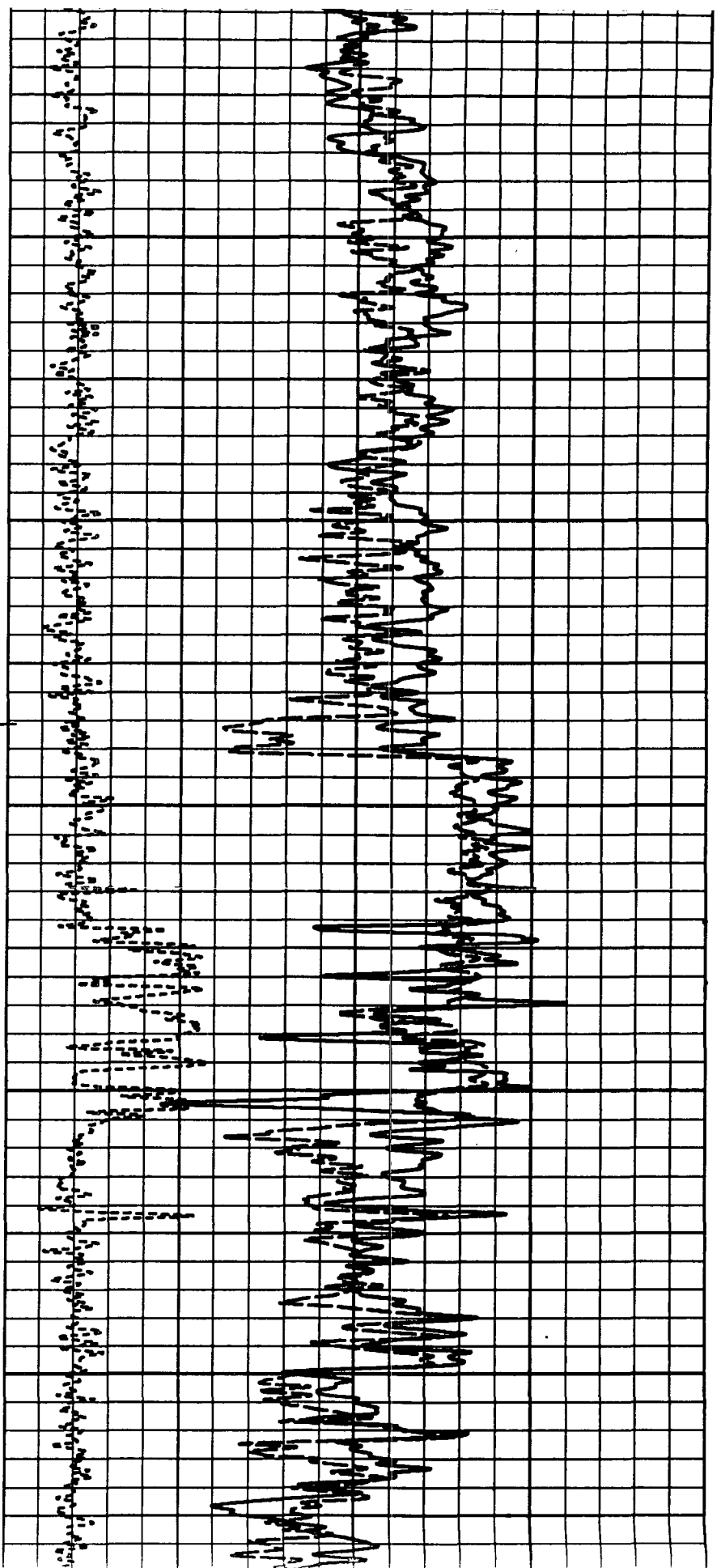
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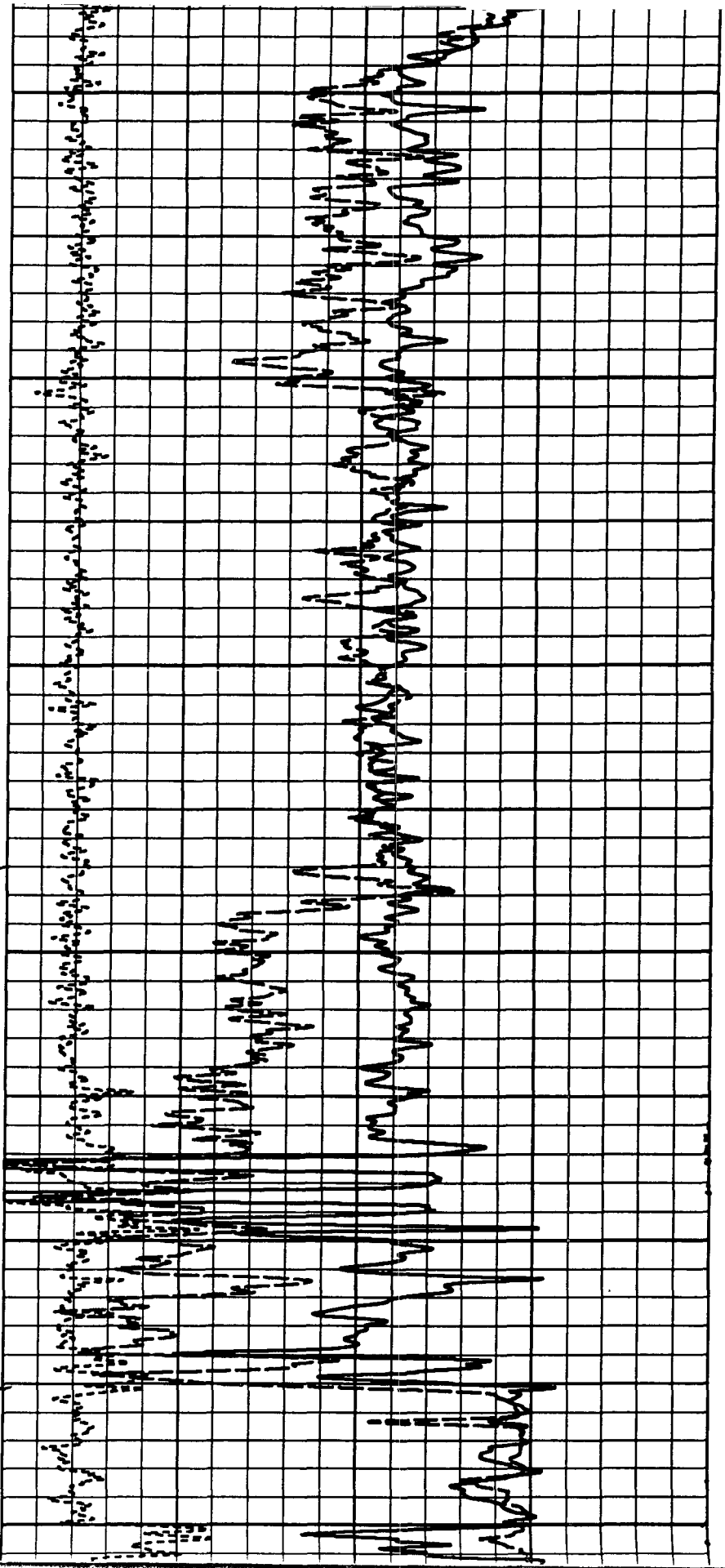
Delaware

00500

00600

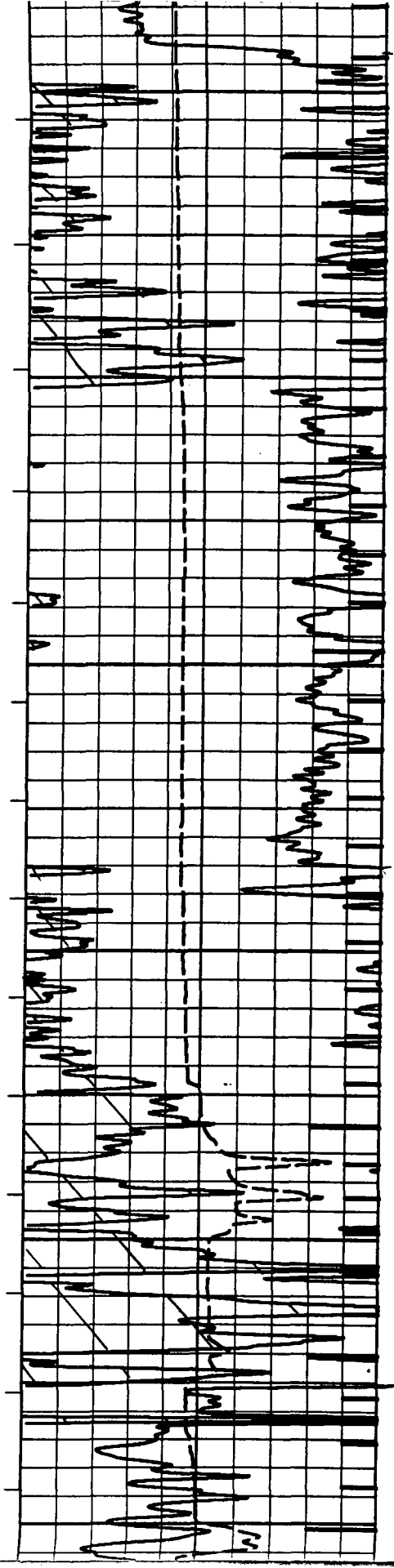


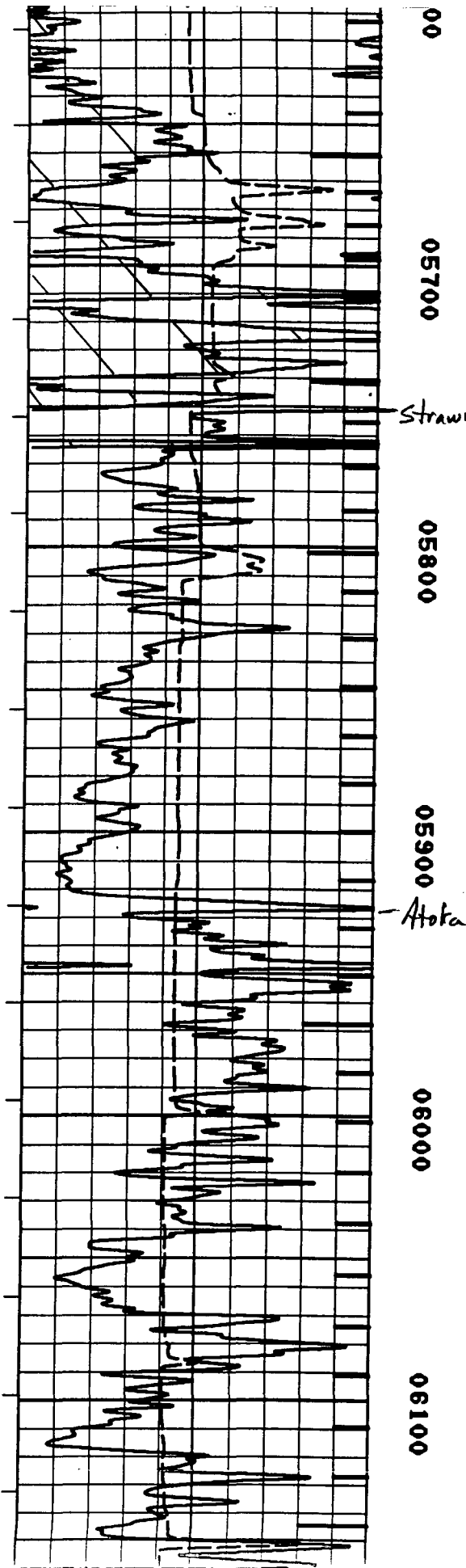
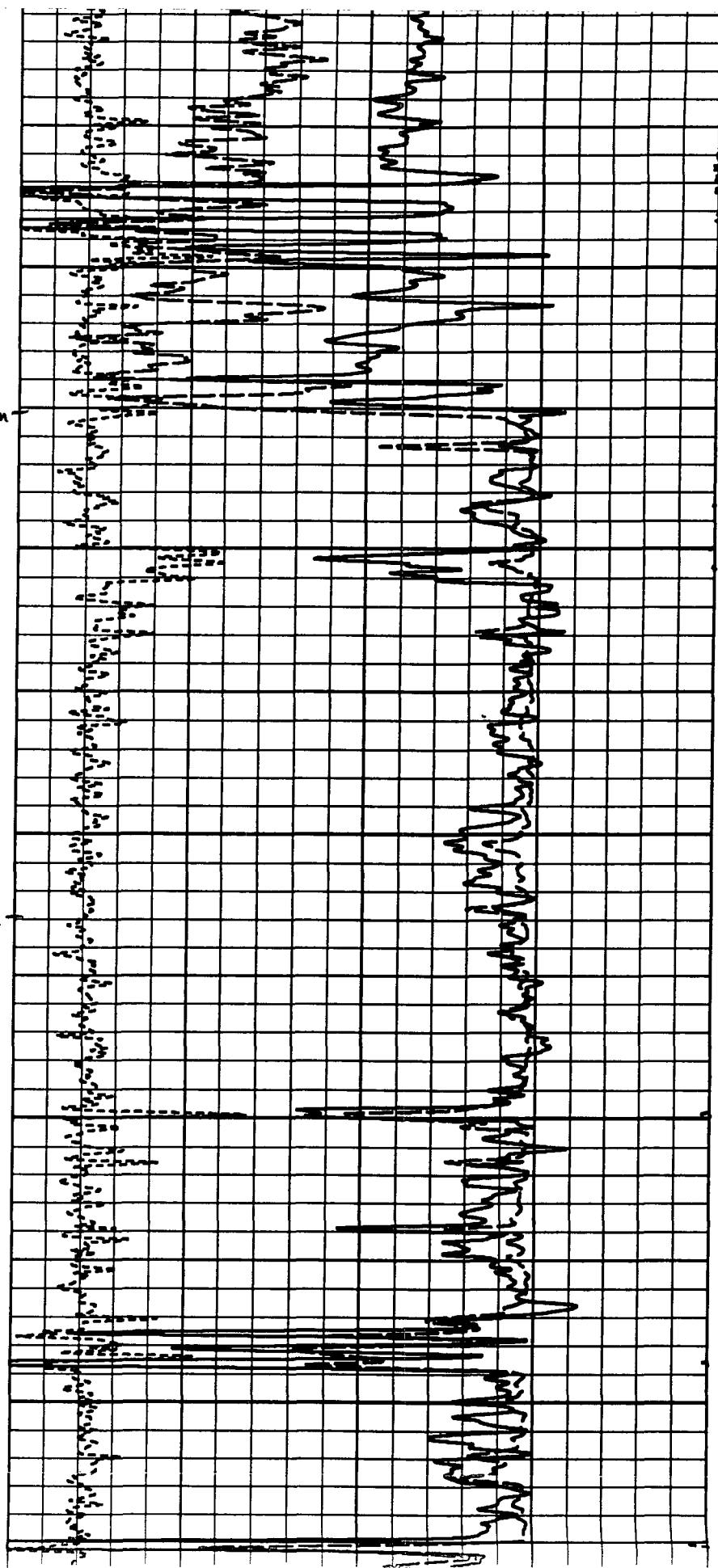


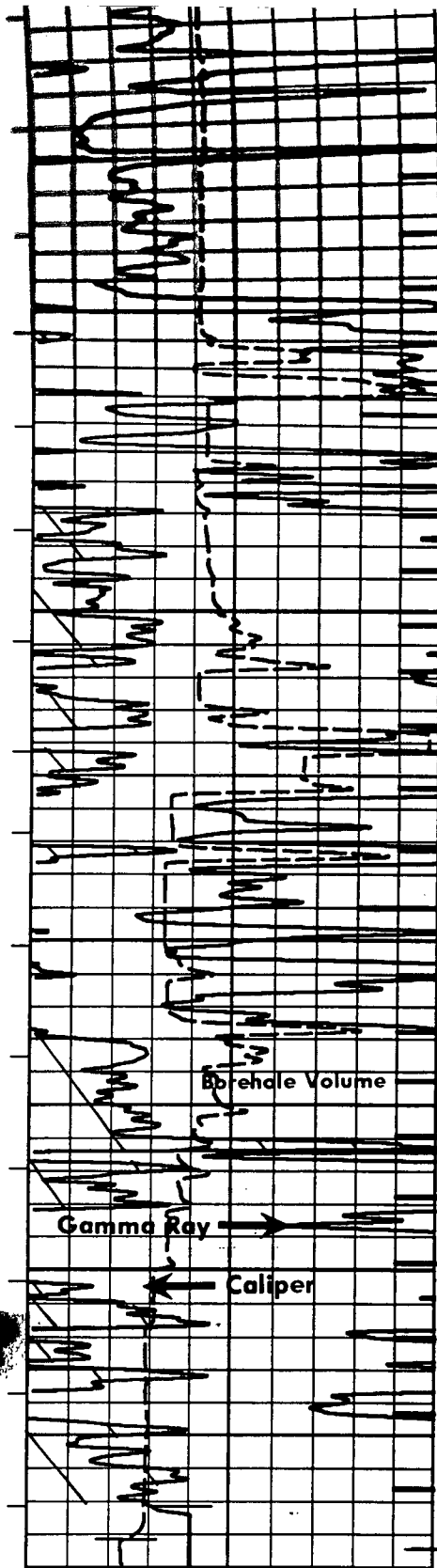


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Strawn



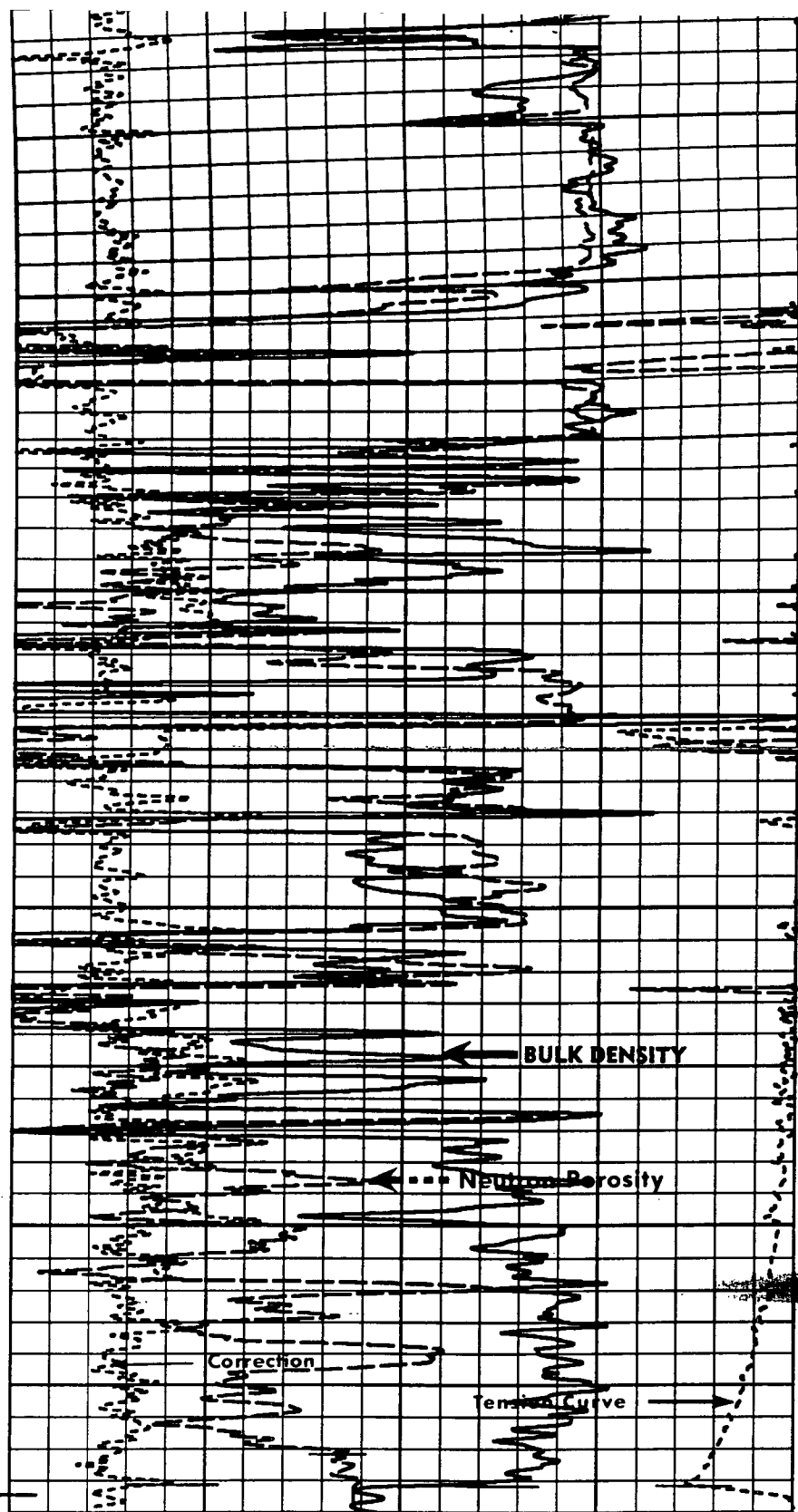




VOL (CUFT)

100 0

00690 00680 00670



CN(%)

30 -10

CORR (G/CC)

-0.2 1.8

Schlumberger

SIMULTANEOUS
**COMPENSATED NEUTRON-
FORMATION DENSITY**

COUNTY EDDY
FIELD WASHINGTON RANCH
LOCATION W.I. FEDERAL NO. 7
WELL W.I. FEDERAL NO. 7
COMPANY EL PASO NATURAL GAS

COMPANY EL PASO NATURAL GAS COMPANY

WELL W.I. FEDERAL NO. 7

FIELD WASHINGTON RANCH

COUNTY EDDY STATE NEW MEXICO

LOCATION 572' FWL & 2417' FSL

Other Services:

DIL/SFL
BHC

API SERIAL NO. SEC. TWP. RANGE
34 25S 24E

Permanent Datum: G.L.; Elev.: 3736
Log Measured From K.B., 12 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 3748
D.F. 3747
G.L. 3736

Date	10-31-81					RECEIVED			
Run No.	ONE								
Depth-Driller	7050								
Depth-Logger	7054					JUL 12 1982			
Btm. Log Interval	7051								
Top Log Interval	SURF.					O. C. D.			
Casing-Driller	9 5/8 @ 820	@		@		@	ARTESIA, OFFICE@		
Casing-Logger	822								
Bit Size	8.75								
Type Fluid in Hole	GEL MUD								
Dens.	8.9	46							
pH	10	9.8 ml		ml		ml		ml	
Source of Sample	MUD PJT								
Rm @ Meas. Temp.	2.90 @ 70°F	@	°F	@	°F	@	°F		
Rmf @ Meas. Temp.	2.65 @ 70°F	@	°F	@	°F	@	°F		
Rmc @ Meas. Temp.	@ °F	@	°F	@	°F	@	°F		
Source: Rmf Rmc	C								
Rm @ BHT	1.7 @ 122°F	@	°F	@	°F	@	°F		
Circulation Stopped	1900 10/30								
Logger on Bottom	0630 10/31								
Max. Rec. Temp.	122 °F		°F		°F		°F		
Equip. Location	8194 RSWL								
Recorded By	BATISTA								
Witnessed By	WOJCIK								

CHANGED PARAMETERS

NAME VALUE UNIT
BHS CASE

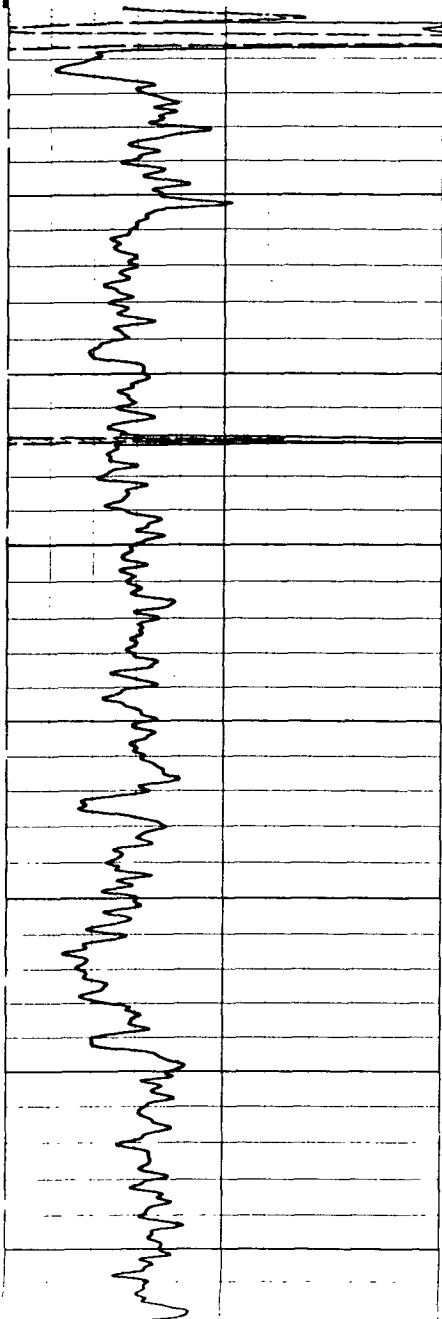
NAME VALUE UNIT
CSIZ 9.630 IN

CALI(IN)		DRHO(G/C3)	
6.000	16.00	-0.050	0.4500
GR (GAPI)		NPHI()	
0.0	100.0	0.3000	-0.100
GR (GAPI)		RHOB(G/C3)	
100.0	200.0	2.000	3.000

FILE

13

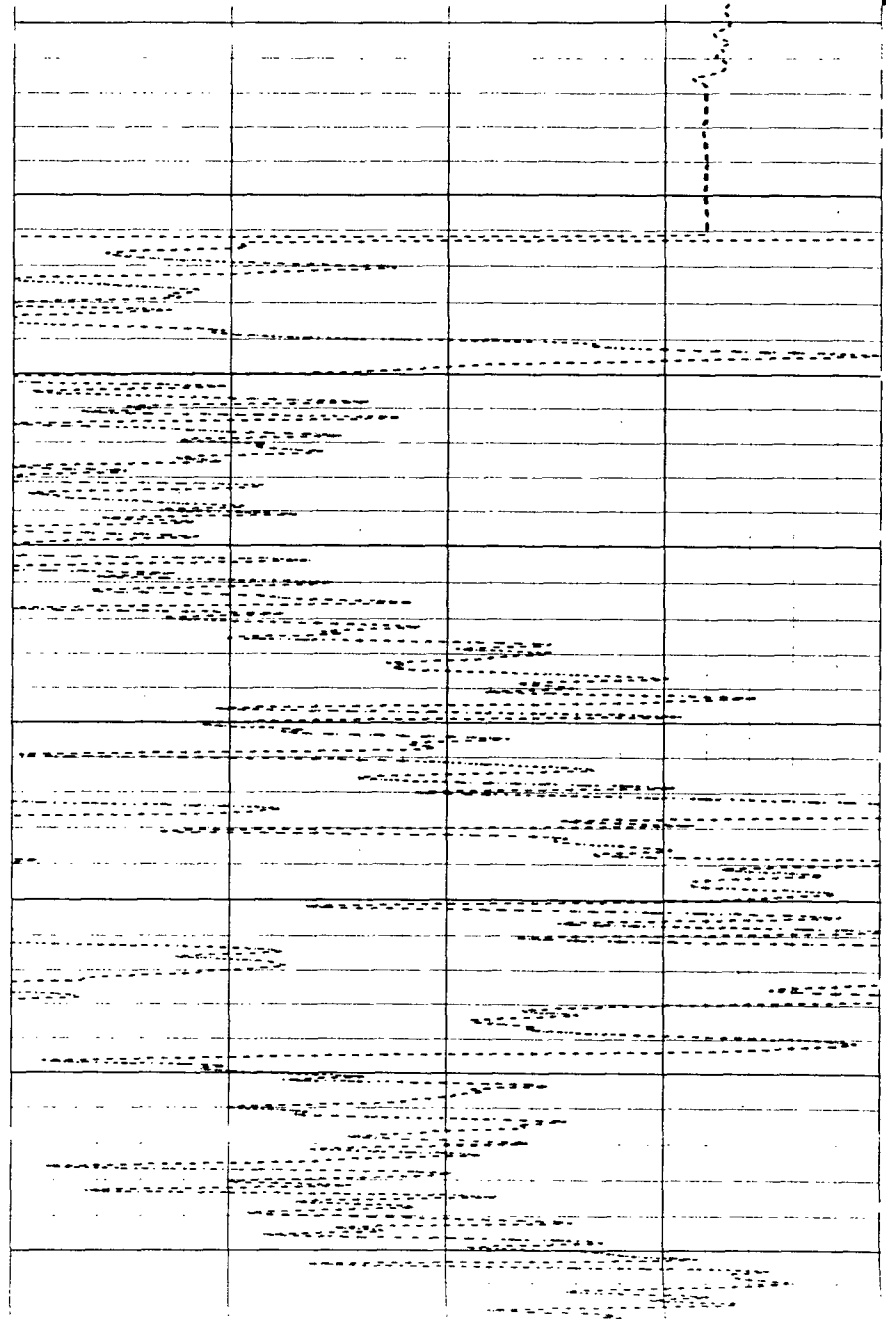
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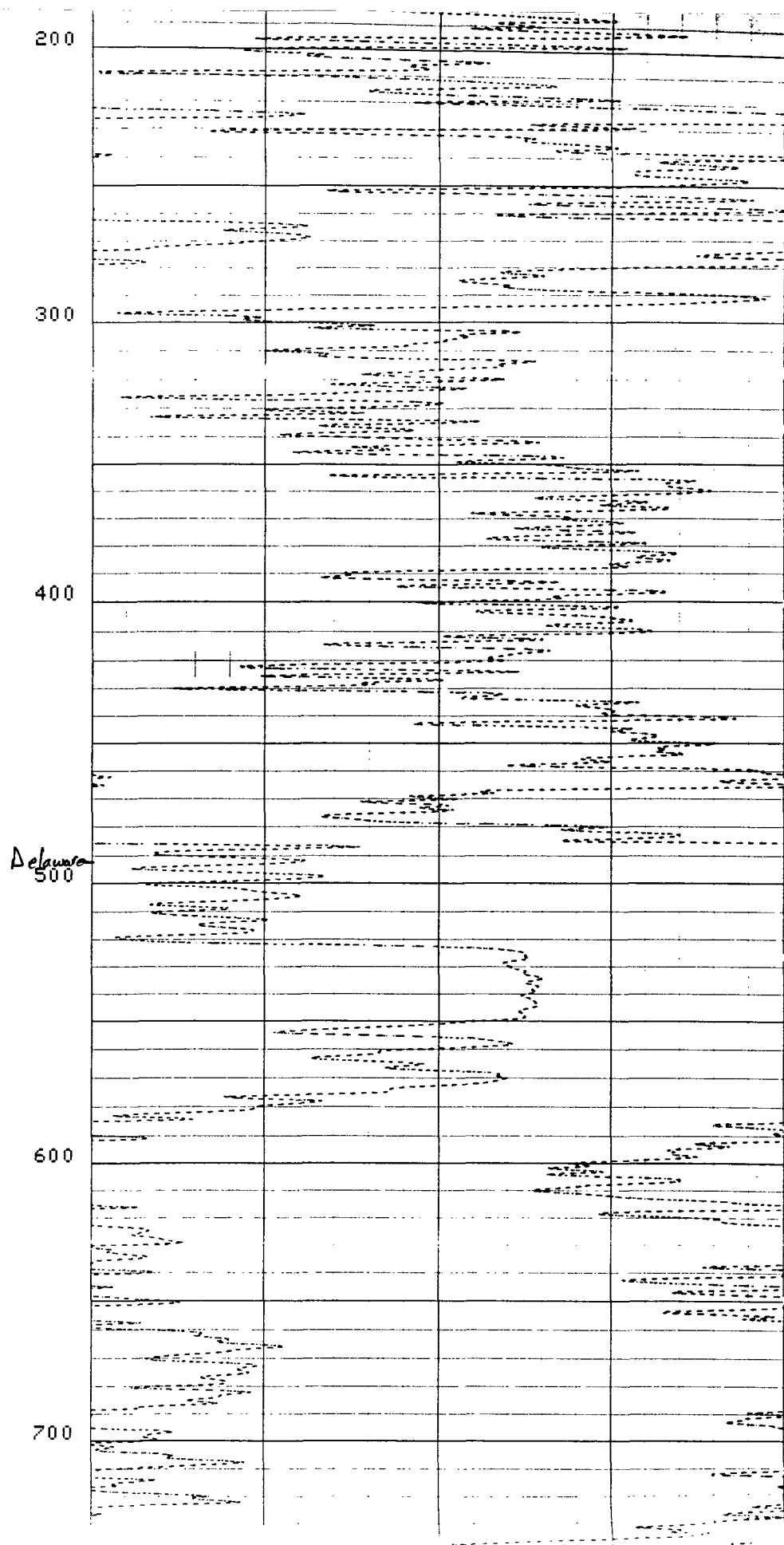
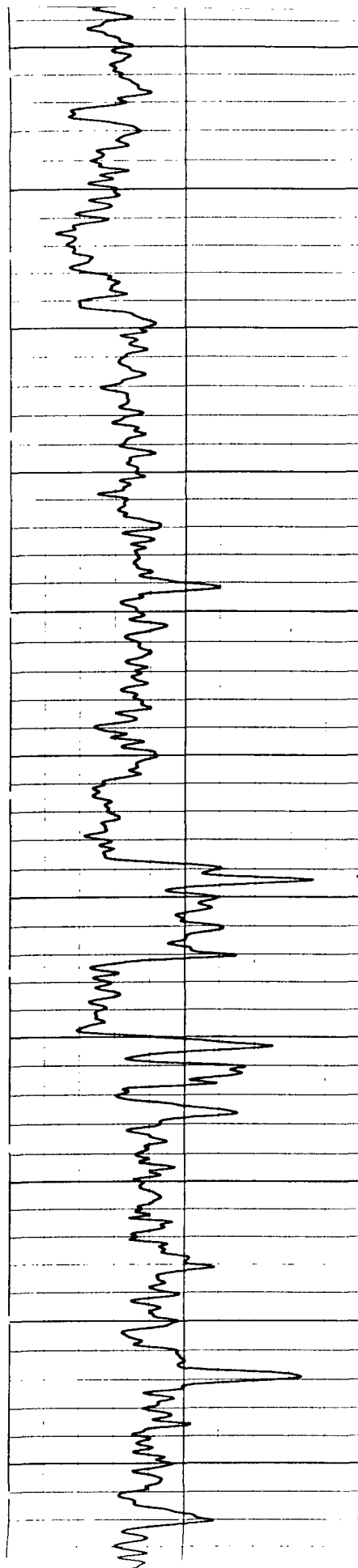


100

200

300





Schlumberger

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

(WITH CALIPER)

COUNTY **EDDY**
FIELD or LOCATION **WASHINGTON RANCH**
WELL **SOUTH CAVERNS UNIT "A" #1**
COMPANY **CITIES SERVICE**

COMPANY **CITIES SERVICE OIL COMPANY**

WELL **SOUTH CAVERNS UNIT "A" #1**

FIELD **WASHINGTON RANCH**

COUNTY **EDDY** STATE **NEW MEXICO**

Location: **1880' FSL & 1980' FWL,**

Other Services:

DIL

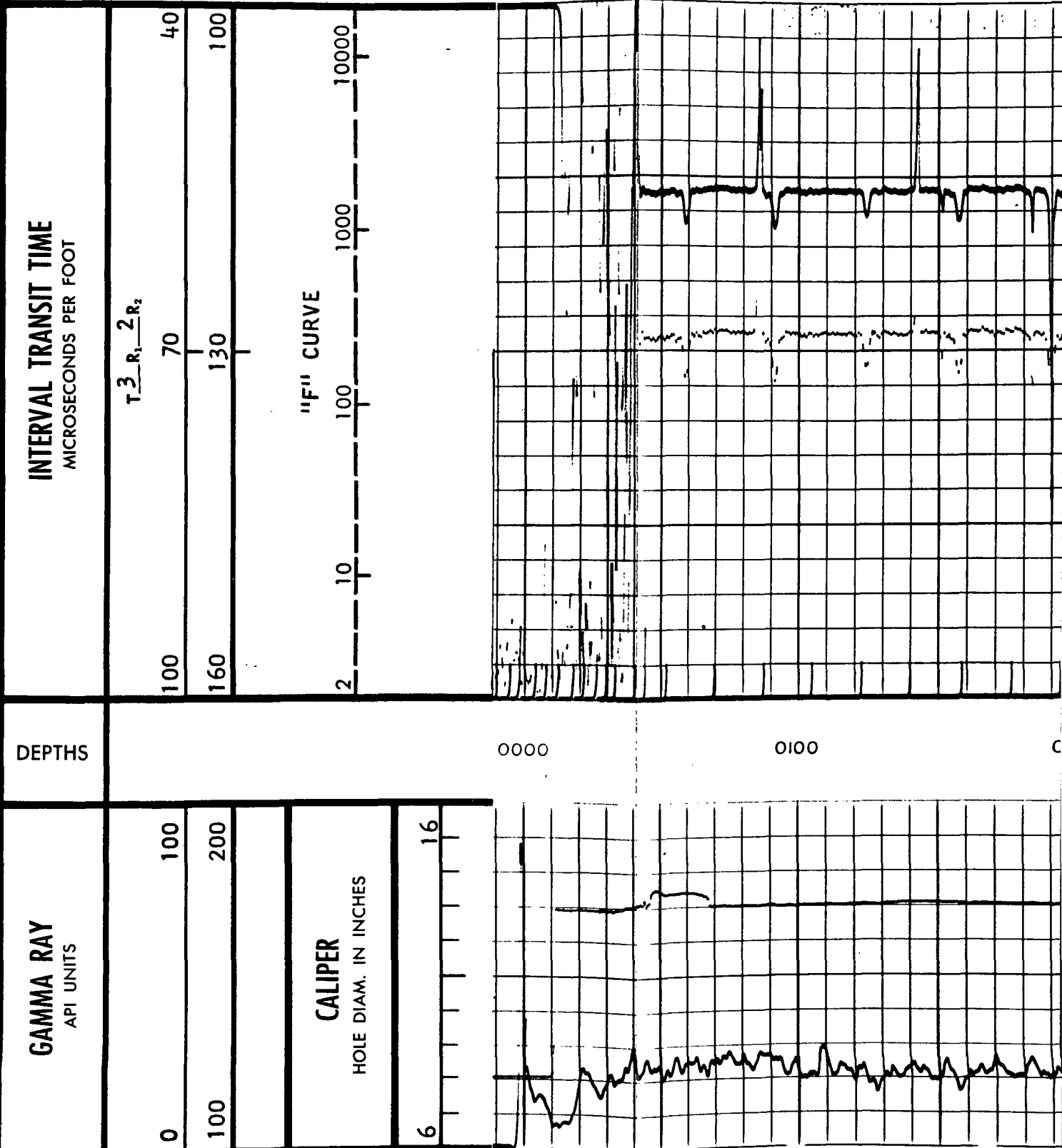
Sec. **21** Twp. **25-S** Rge. **24-E**

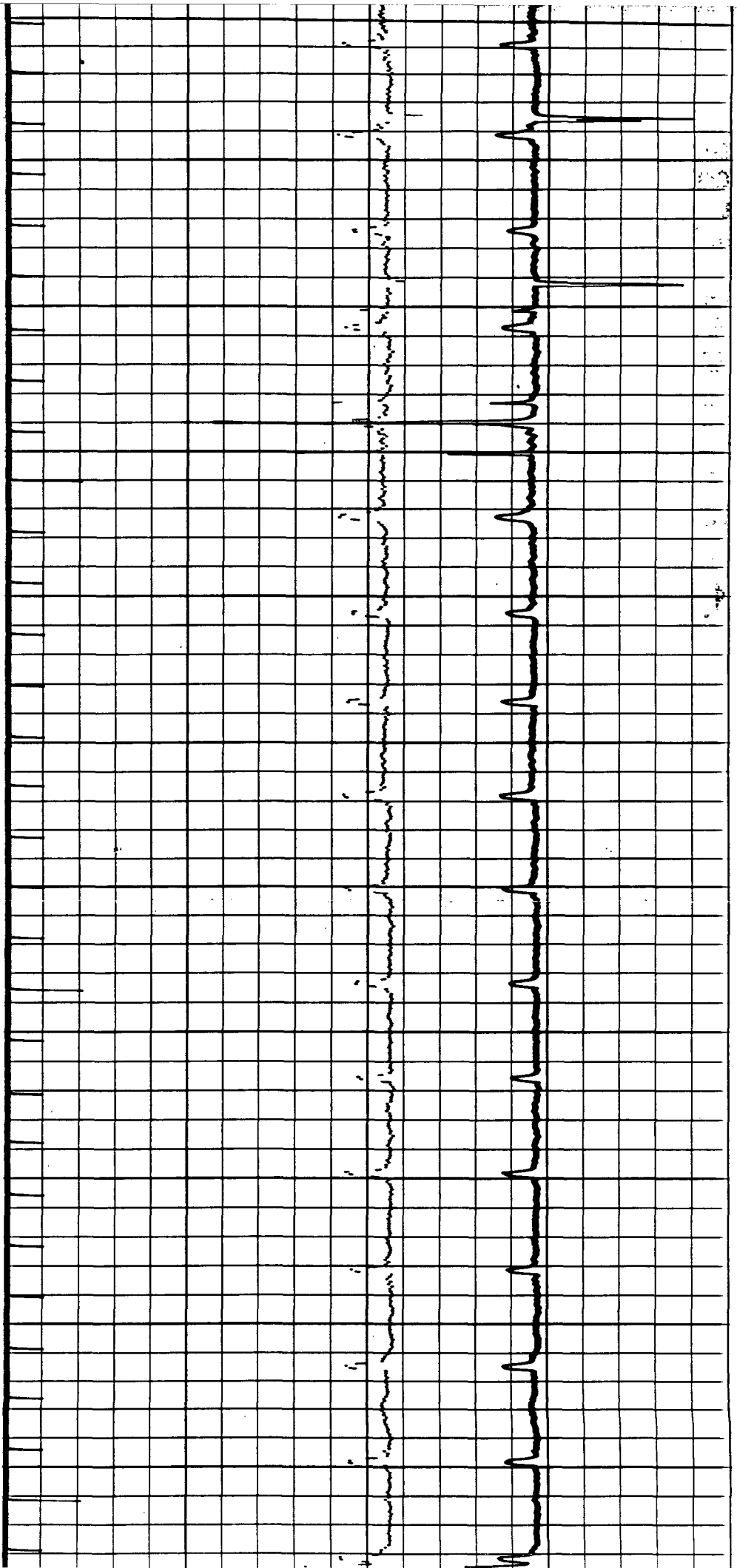
Permanent Datum: **G.L.**; Elev.: **3816**
Log Measured From **R.K.B.** **14.8** Ft. Above Perm. Datum
Drilling Measured From **R.K.B.**

Elev.: K.B. **3831**
D.F. **3830**
G.L. **3816**

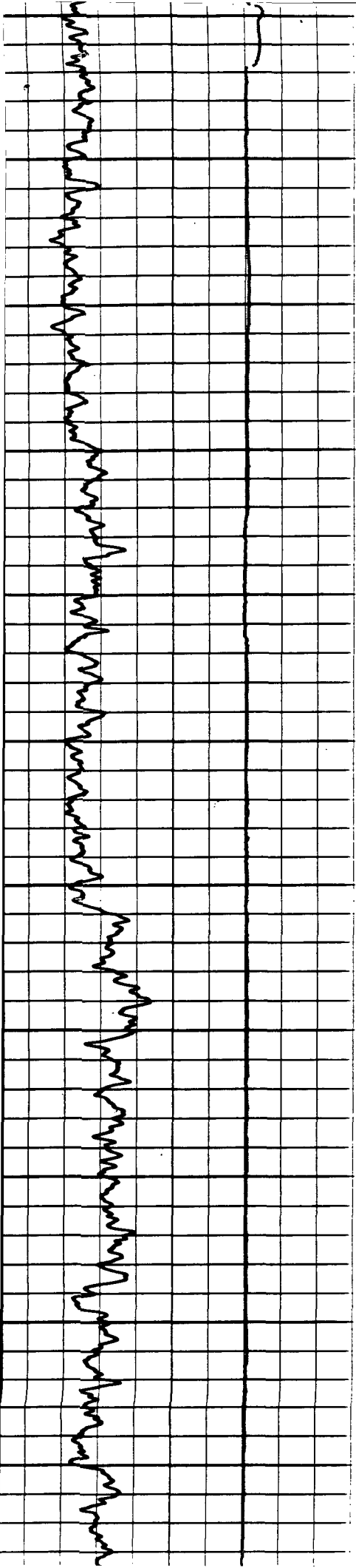
Date	3-21-74						
Run No.	ONE						
Depth—Driller	7550						
Depth—Logger	7554						
Btm. Log Interval	7552						
Top Log Interval	0						
Casing—Driller	13 3/8 @ 940			@	MAR 29 1974	@	
Casing—Logger	940						
Bit Size	7 7/8 TO 5660; 11 TO 940						
Type Fluid in Hole	MIL-GEL						
Fluid Level	FULL						
Dens.	Visc.	8.8	38				
pH	Fluid Loss	10.9	10 ml				
Source of Sample	*MILCHEM MUD REPORT						
R _m @ Meas. Temp.	*.35	@ 75 °F	@ °F	@ °F	@ °F	@ °F	@ °F
R _{mf} @ Meas. Temp.	@	°F	@ °F	@ °F	@ °F	@ °F	@ °F
R _{mc} @ Meas. Temp.	@	°F	@ °F	@ °F	@ °F	@ °F	@ °F
Source: R _{mf}	R _{mc}						
R _m @ BHT	*.18	@ 141 °F	@ °F	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	8 HOURS						
Max. Rec. Temp.	141	°F	°F	°F	°F	°F	°F
Equip.	Location	7646	HOBBS				
Recorded By	CREEK						
Witnessed By	INNES, KIEFFER						

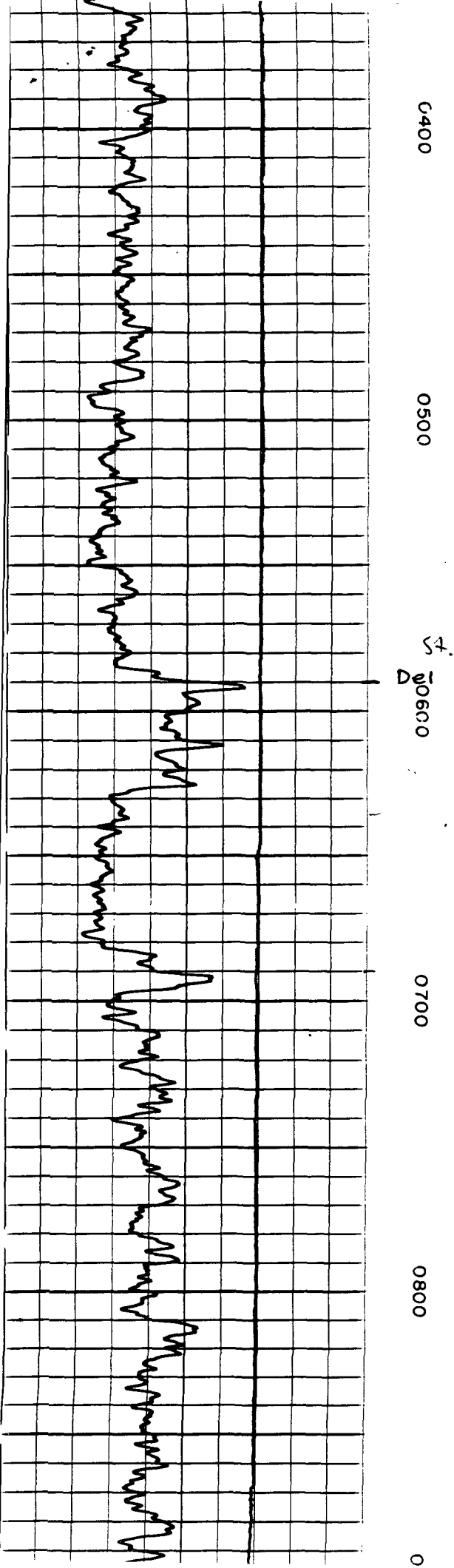
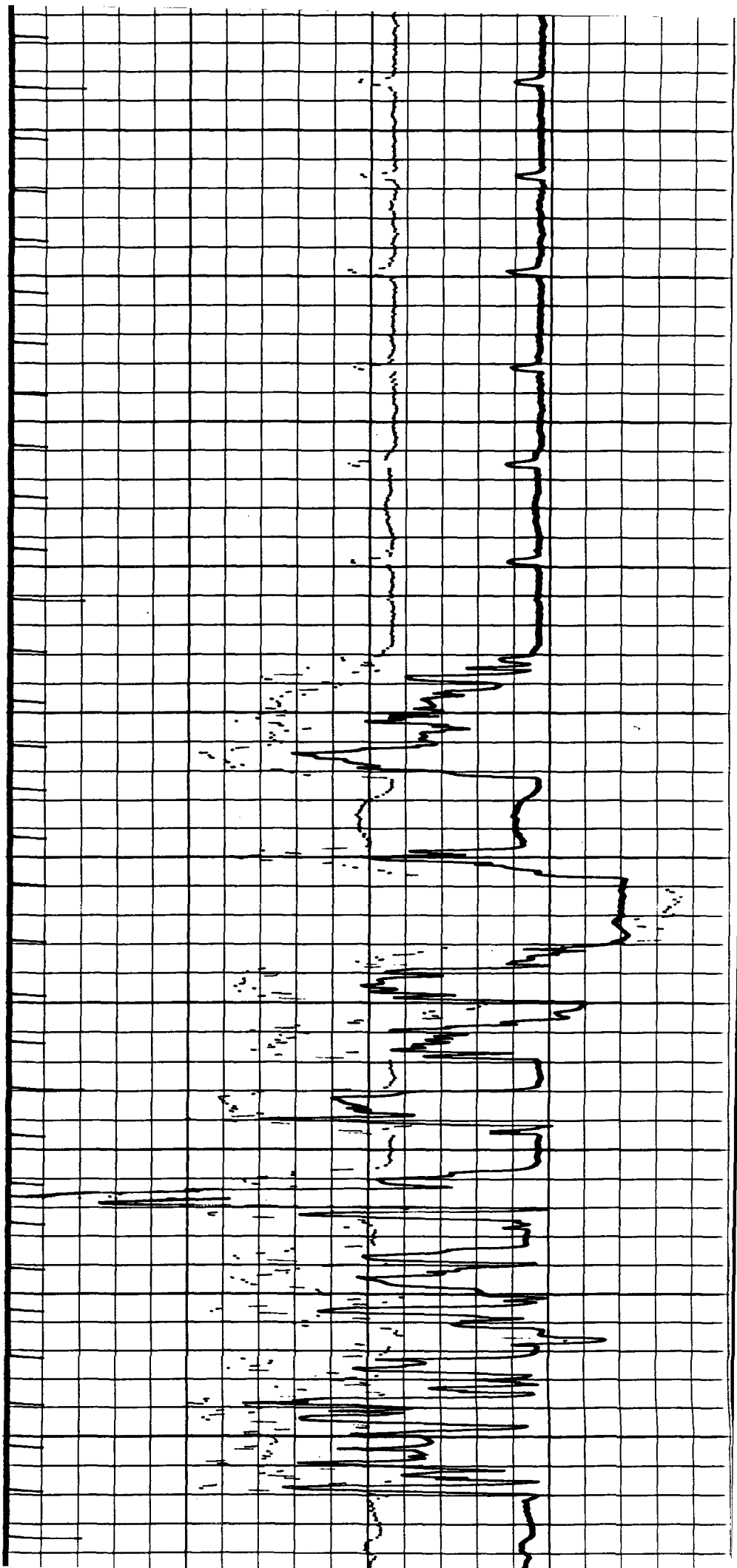
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.





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SCHLUMBERGER

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

COUNTY EDDY FIELD or LOCATION WILDCAT WELL GOVERNMENT M #1 COMPANY CITIES SERVICE CO.	COMPANY <u>CITIES SERVICE OIL COMPANY</u>		RECEIVED OCT 12 1973 B.C.C. ARTESIA OFFICE
	WELL <u>GOVERNMENT "M" #1</u>		
	FIELD <u>WILDCAT</u>		
	COUNTY <u>EDDY</u>	STATE <u>NEW MEXICO</u>	
LOCATION <u>660' FSL 660' FEL</u>		Other Services: FDC, IIL, ML CDD	
Sec. <u>28</u> Twp. <u>25-S</u> Rge. <u>24-E</u>			

Permanent Datum: G.L., Elev. 3766.5
 Log Measured From K.B. 13.5 Ft. Above Perm. Datum
 Drilling Measured From K.B.

Elev.: K.B. 3780
D.F. 3779
G.L. 3766.5

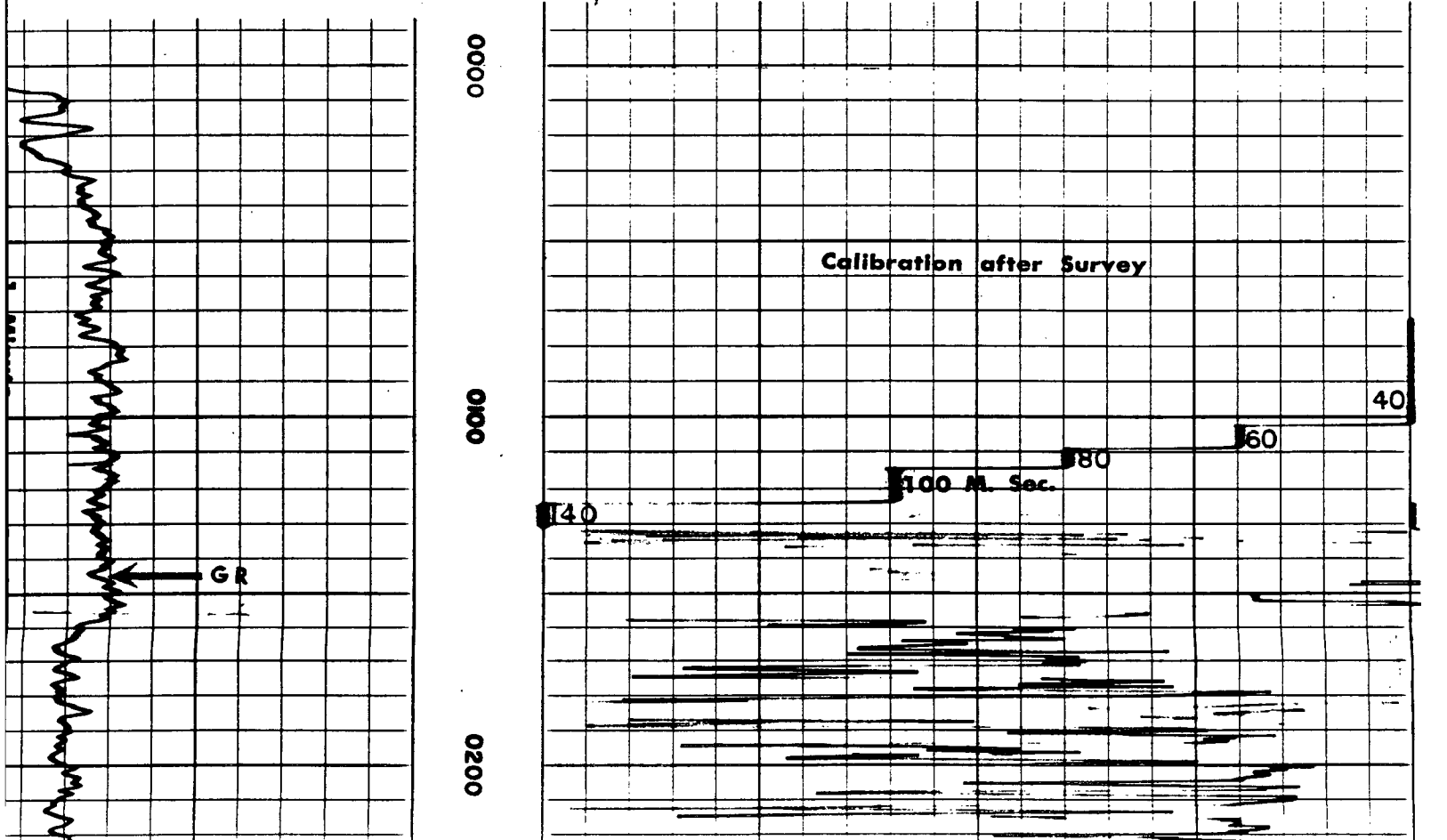
Date	4-6-67	4-17-67	5-19-67	
Run No.	ONE	TWO	THREE	
Depth—Driller	450	3849	7951	
Depth—Logger	449	3852	7948	
Btm. Log Interval	440	3843	7946	
Top Log Interval	0	0	3850	
Casing—Driller	@	13 3/8 @ 450	8 5/8 @ 3848	@
Casing—Logger		448	3850	
Bit Size	17 1/2"	11"	7 7/8	
Type Fluid in Hole	GEL	GEL	CHEM. AQUAGE	
Dens.		8.5	34	9.5
Visc.				52
pH				
Fluid Loss		ml	39 ml	10.5 2.6 ml
Source of Sample	PIT	CIRC.	CIR	
R _m @ Meas. Temp.	3.98 @ 80 °F	3.57 @ 77 °F	1.18 @ 77 °F	@ °F
R _{mf} @ Meas. Temp.	3.2 @ 80 °F	3.20 @ 71 °F	0.93 @ 74 °F	@ °F
R _{mc} @ Meas. Temp.	4.8 @ 80 °F	@ °F	1.33 @ 77 °F	@ °F
Source: R _{mf} R _{mc}	M M	M	M M	
R _m @ BHT	@ °F	2.84 @ 98 °F	0.61 @ 146 °F	@ °F
Time Since Circ.	2 HOURS		4 HOURS	
Max. Rec. Temp.	°F	98 °F	146 °F	°F
Equip. Location	2722 HOBBS	3722 HOBBS	3720 HOBBS	
Recorded By	LEFLER	OLSON	FREEMAN	
Witnessed By	HABORS	HYATT	KING & STROM	

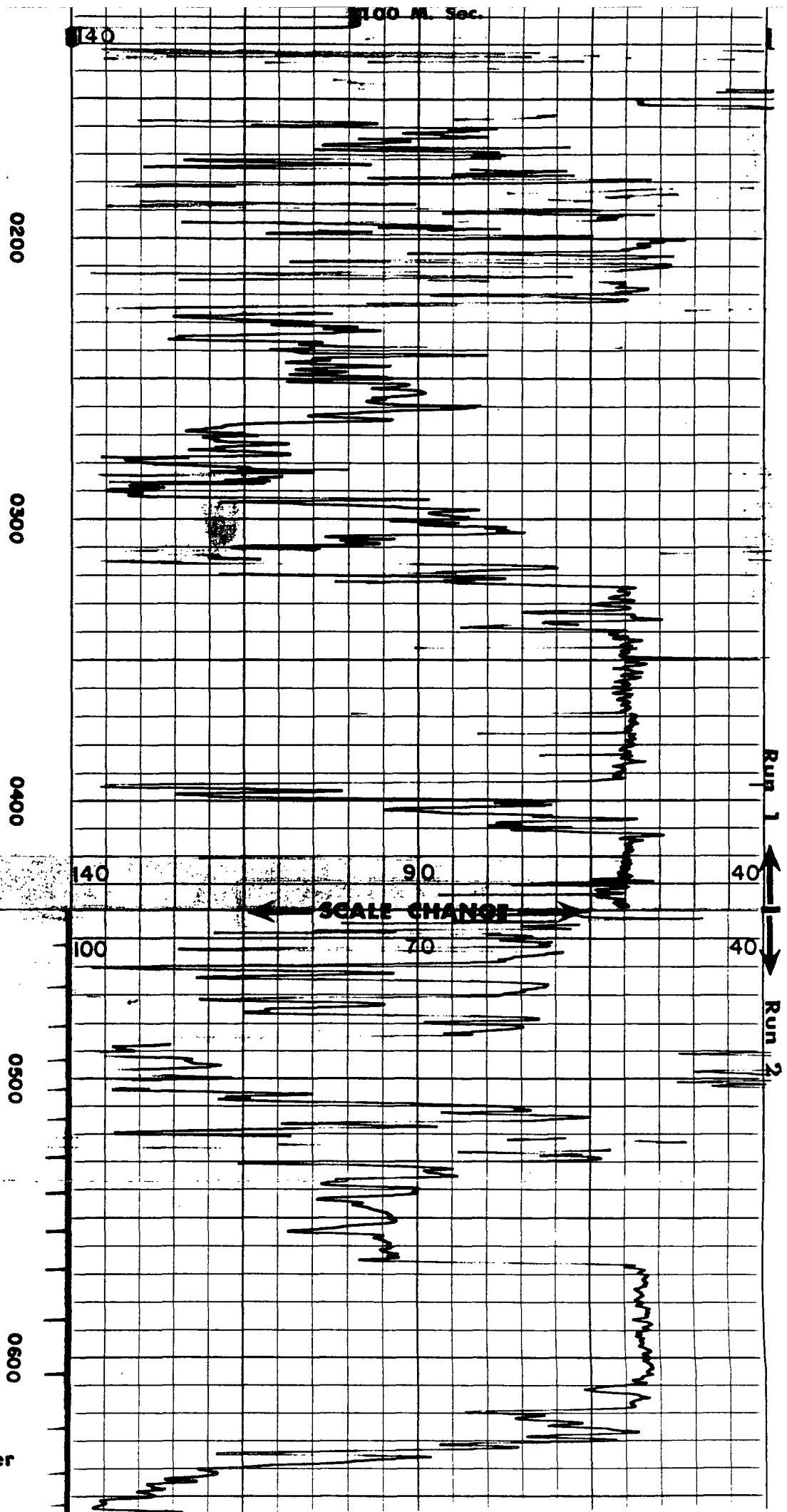
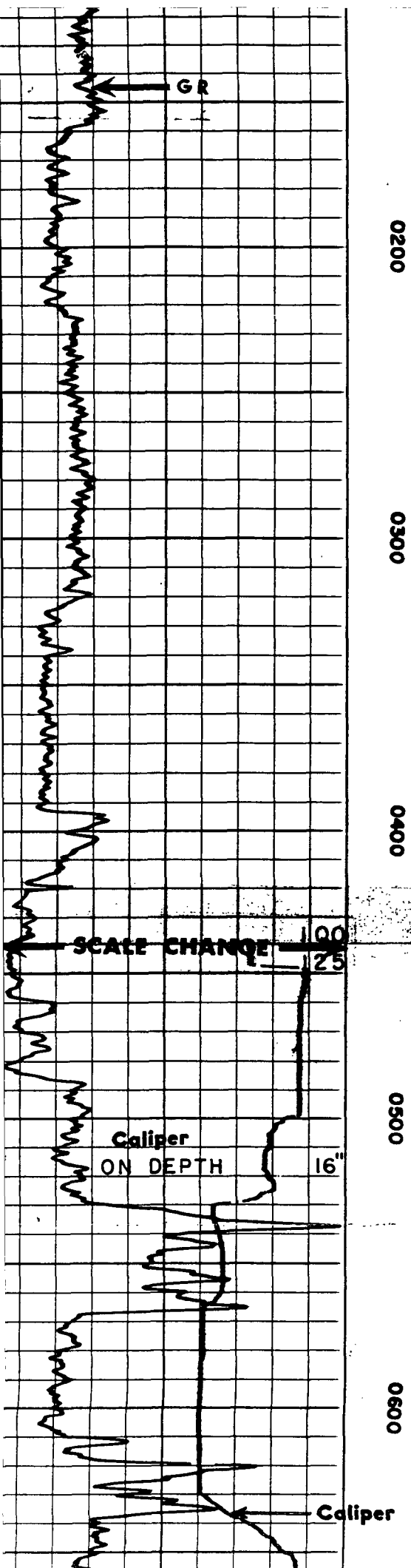
Fluid Loss		ml		Equipment Data				
ce of Sample				Run No.	Tool Type	Pad Type	Tool Pos.	Other
@ Meas. Temp.	@ °F	@ °F						
@ Meas. Temp.	@ °F	@ °F						
@ Meas. Temp.	@ °F	@ °F						
ce: R _{mt}	R _{mc}							
@ BHT	@ °F	@ °F						
@ BHT	@ °F	@ °F						
@ BHT	@ °F	@ °F						
: USED		S.O.:		SPRING GUIDE & CALIPER		SPRING GUIDE & CALIPER		
p. Used: CART. No.				SLC-105				
1	PANEL No.	SLP-C-452		RUN 2	SLP-C-251			
	SONDE No.			SLS-12				

BRATION:	BACKGND. CPS.	SOURCE CPS.	GALV. INCR. DIVISIONS	SENS. TAP (FOR CAL.)	SENS. TAP (RECORD)	TIME CONST.	RECORDING SPEED (FT./MIN.)	
MA RAY:	40	440	82.5	800	400			RUN 1
	40	445	82.5	800	500			RUN 2
	48	432	82.5	800	500	2/1	30/40/50	RUN 3

Velocity (feet per second) = $\frac{1,000,000}{\text{Interval Transit Time (microseconds per foot)}}$

GAMMA RAY API UNITS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
		T ₃ R ₁ L R ₂
100	RUN 1	140 90 40
200		240 190 140





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BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

COUNTY FIELD or LOCATION WELL COMPANY	COMPANY <u>Cities Service Oil Co.</u>
	WELL <u>Government "M" #3</u>
	FIELD <u>Washington Ranch (Morrow)</u>
	COUNTY <u>Eddy</u> STATE <u>N.M.</u>
	LOCATION <u>1980' FN+EL</u> <u>(G)</u>
	Sec. <u>27</u> Twp. <u>25-S</u> Rge. <u>24-E</u>
	Other Services: <u>ML, Dil,</u> <u>HDT</u>

Permanent Datum: <u>GL</u> , Elev. <u>3715</u>	Elev.: K.B. <u>3730</u>
Log Measured From <u>KB</u> , <u>15</u> Ft. Above Perm. Datum	D.F. <u>3729</u>
Drilling Measured From <u>KB</u>	G.I. <u>3715</u>

Date	<u>5-26-72</u>			
Run No.	<u>One</u>			
Depth—Driller	<u>7068</u>			
Depth—Logger	<u>7068</u>			
Btm. Log Interval	<u>7066</u>			
Top Log Interval	<u>6300</u>			
Casing—Driller	<u>5 1/2 @ 6500</u>			
Casing—Logger				
Bit Size	<u>4 3/4</u>			
Type Fluid in Hole	<u>Fresh mud</u>			
Dens.	<u>9.1</u>	<u>43</u>		
Visc.				
pH	<u>8.5</u>	<u>1.4 ml</u>		
Fluid Loss				
Source of Sample	<u>Circ</u>			
R _m @ Meas. Temp.	<u>1.72 @ 72°F</u>	@ °F	@ °F	@ °F
R _{mf} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R _{mc} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
Source: R _{mf} R _{mc}				
R _m @ BHT	<u>@ 134°F</u>	@ °F	@ °F	@ °F
Time Since Circ.	<u>7 hrs</u>			
Max. Rec. Temp.	<u>134 °F</u>	°F	°F	°F
Equip.	<u>7627 Hobbs</u>			
Location				
Recorded By	<u>WALLIS</u>			
Witnessed By	<u>Innes, Briscoe</u>			

RECEIVED

JUL 26 1972

B. E. S.
ARTESIA, OFFICE

GAMMA RAY
API UNITS

DEPTH

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT

0 100
100 200

100 70 40
160 130 100

T₃ R₁ 2 R₂

CALIPER

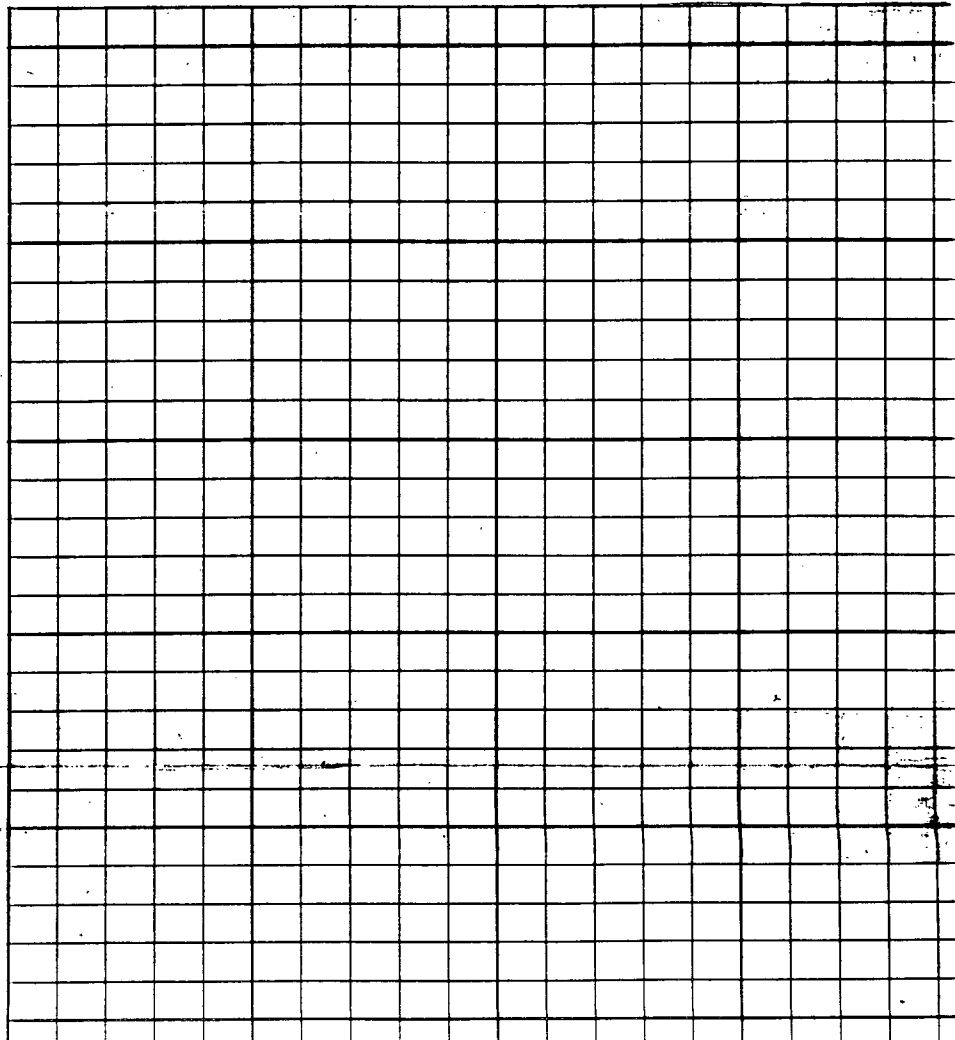
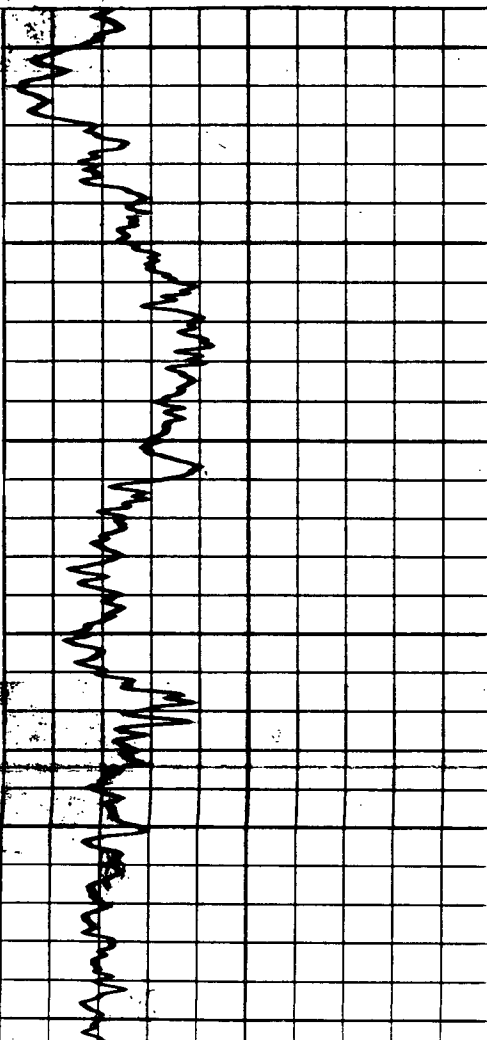
HOLE DIAM. IN INCHES

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ROSWELL OFFICE CO
Schlumberger

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

(WITH CALIPER)

26-255-24E

COMPANY Cities Service Oil Co.

NC CORR UB P&A

WELL Government "Q" #1

FIELD Washington Ranch

COUNTY Eddy N. Mex

Location: 1980' FSL & 660' FWL

Other Services:
DIL, PML

Sec. 26 Twp. 25-S Rge. 24-E

Permanent Datum: GL; Elev.: 3675

Log Measured From KB 12 Ft. Above Perm. Datum

Drilling Measured From KB

Elev.: K.B. 3687
D.F. 3686
G.L. 3675

Date	<u>9-14-73</u>				
Run No.	<u>042</u>				
Depth-Driller	<u>7260</u>				
Depth-Logger	<u>7194</u>				
Btm. Log Interval	<u>7192</u>				
Top Log Interval	<u>0</u>				
Casing-Driller	<u>133 @ 890</u>				
Casing-Logger	<u>895</u>				
Bit Size	<u>11" to 5000, 7/8 to 7208</u>				
Type Fluid in Hole	<u>Fresh mud</u>				
Fluid Level	<u>FULL</u>				
Dens.	Visc.	<u>8.9</u>	<u>42</u>		
pH	Fluid Los	<u>10.5</u>	<u>8</u> ml		
Source of Sample	<u>Circ</u>				
Rm @ Meas. Temp.	<u>1.42 @ 75°F</u>	@	°F	<u>O. @ D.</u>	°F
Rmf @ Meas. Temp.	<u>1.26 @ 82°F</u>	@	°F	<u>ARTESIA @ OFFICE</u>	°F
Rmc @ Meas. Temp.	<u>— @ — °F</u>	@	°F	<u>@</u>	°F
Source: Rmf	Rmc	<u>m</u>	<u>—</u>		
Rm @ BHT	<u>.80 @ 133°F</u>	@	°F	<u>@</u>	°F
Time Since Circ.	<u>10 hrs</u>				
Rec. Temp.	<u>133 °F</u>				
Location	<u>7679 Hobbs</u>				
By	<u>WALLS</u>				
By	<u>JAMES, Porter, Taylor, Daniel</u>				

RECEIVED
SEP 20 1973
U.S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

RECEIVED

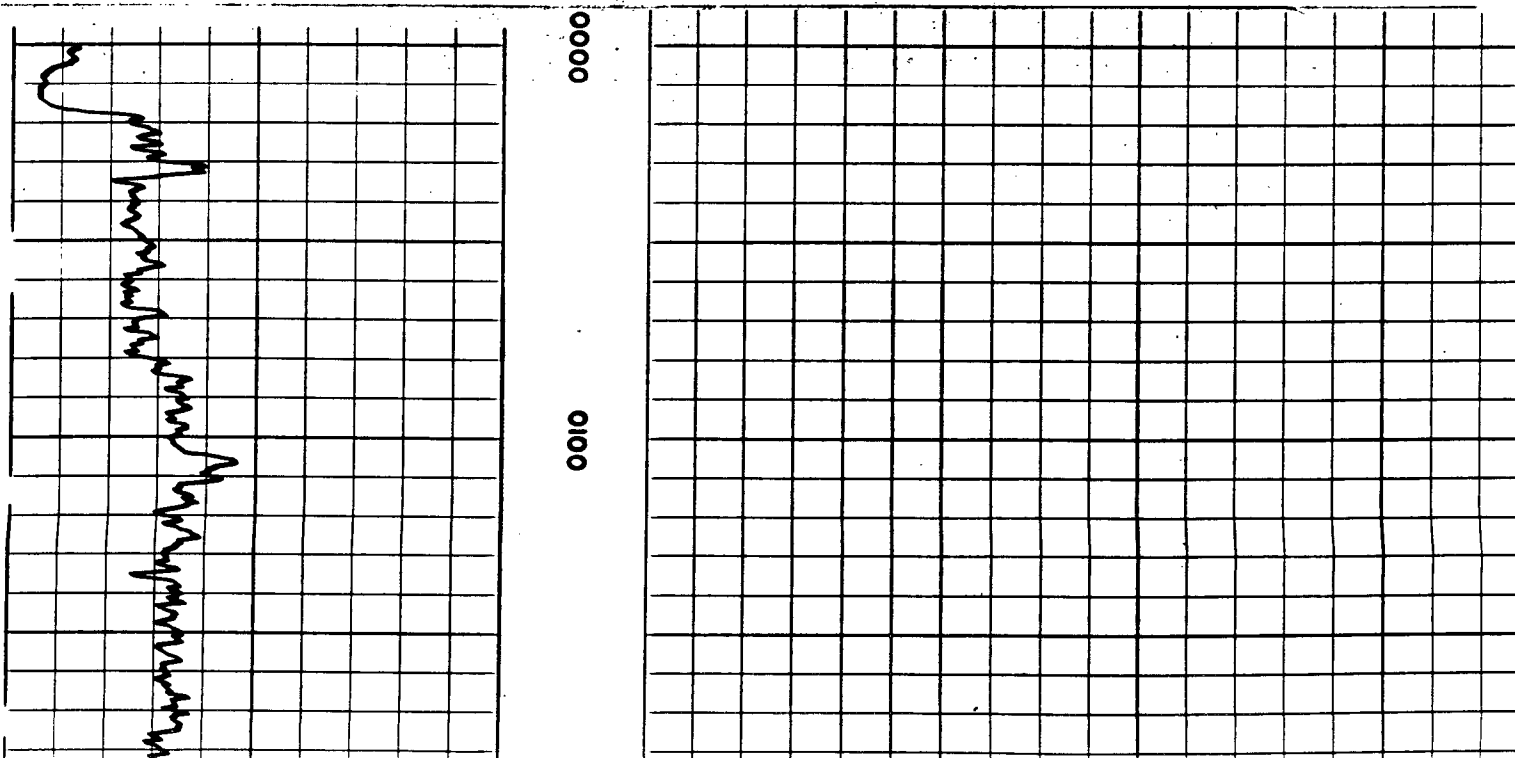
JAN - 8 1980

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

FOLD HERE

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or respc any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Sche

GAMMA RAY API UNITS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
0 100	100	$T \frac{3}{R_1} \frac{2}{R_2}$ 70 130
100 200		
CALIPER HOLE DIAM. IN INCHES		$F = \frac{1}{\phi^2}$ Formation Factor $\Delta t_{ma} = 4$ $\Delta t_f = 18$ $C \Delta t_{sh} = 1$
6 16		2 — — — 10 — — — 100 — — — 1000
		AMPLITUDE MILLIVOLTS 0



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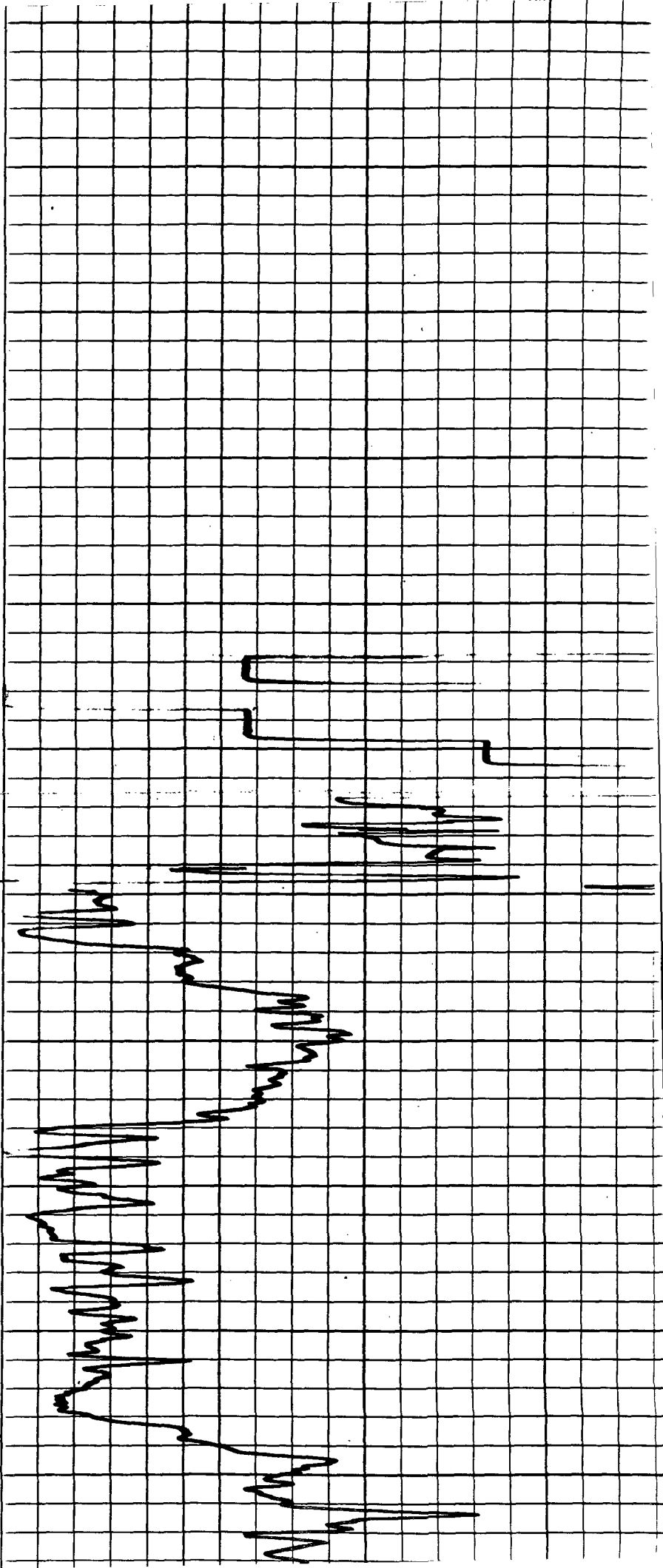
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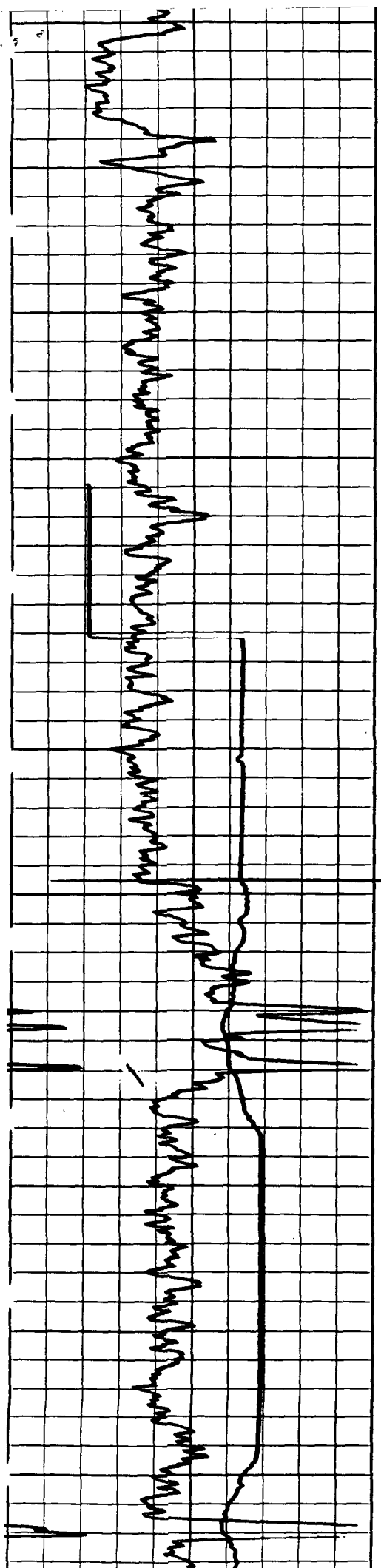
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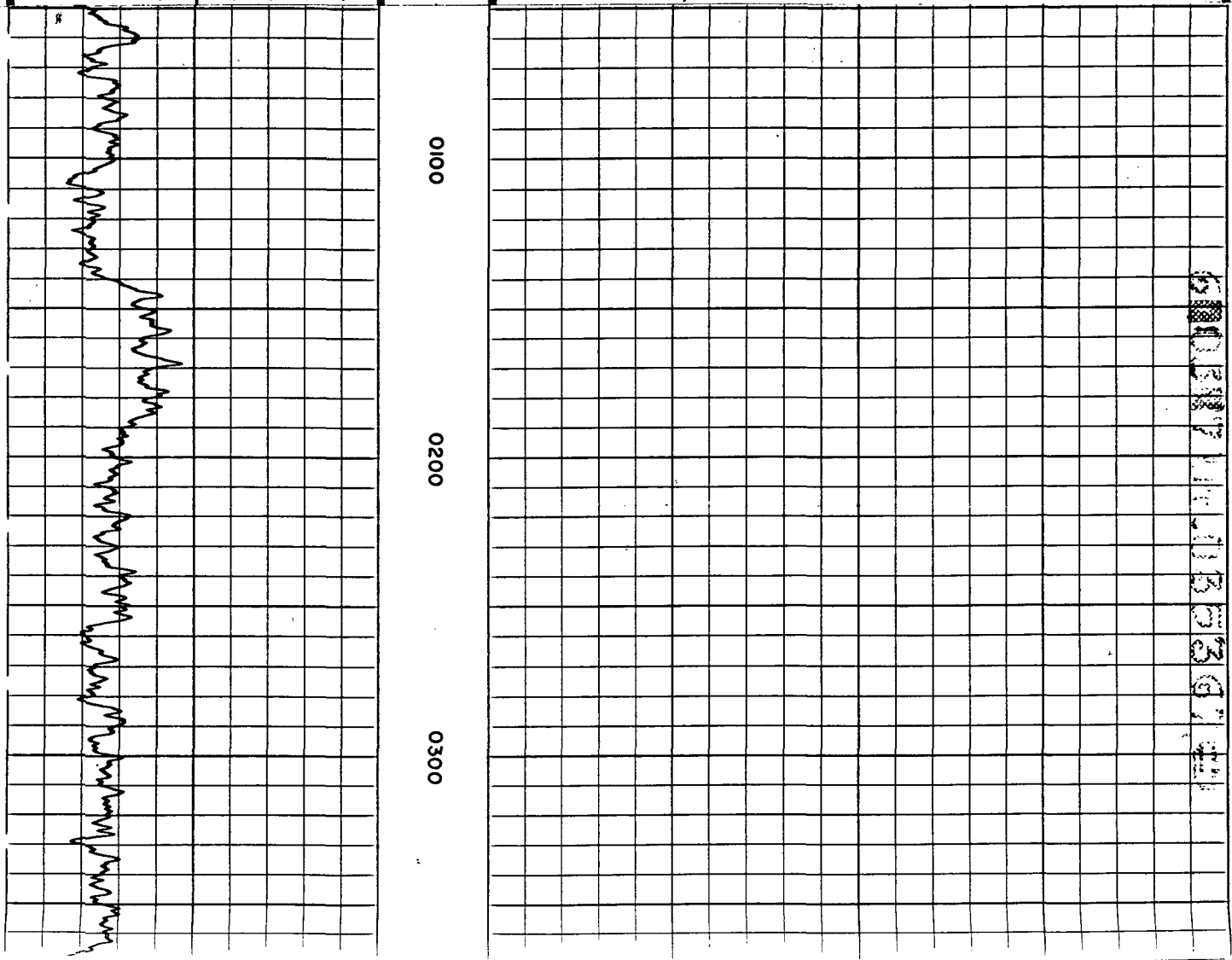


SCHLUMBERGER**BOREHOLE COMPENSATED
SONIC LOG - GAMMA RAY**

COUNTY <u>EDDY</u> FIELD or LOCATION <u>WILDCAT</u> WELL <u>CITIES FEDERAL #1</u> COMPANY <u>BLACK RIVER CORP.</u>	COMPANY <u>BLACK RIVER CORPORATION</u>		RECEIVED <u>FEB 3 1972</u> <u>O. B. L.</u> <u>ARTESIA, N.M.</u>		
	WELL <u>CITIES FEDERAL #1</u>				
	FIELD <u>WILDCAT</u>		COUNTY <u>EDDY</u> STATE <u>NEW MEXICO</u>		
	LOCATION <u>1650' FNL & 1650' FWL</u>		Other Services:		
	Sec. <u>34</u> Twp. <u>25-S</u> Rge. <u>24-E</u>		DIL, ML, HDT		
Permanent Datum: <u>G.L.</u> , Elev. <u>3725</u>				Elev.: K.B. <u>3741</u>	
Log Measured From <u>K.B.</u> , <u>16</u> Ft. Above Perm. Datum				D.F. <u>3740</u>	
Drilling Measured From <u>K.B.</u>				G.L. <u>3725</u>	
Date	<u>6-1-71</u>	CONFIDENTIAL			
Run No.	<u>ONE</u>				
Depth—Driller	<u>7045</u>				
Depth—Logger	<u>7036</u>				
Btm. Log Interval	<u>7034</u>				
Top Log Interval	<u>50</u>				
Casing—Driller	<u>8 5/8@1005</u>				
Casing—Logger	<u>1000</u>				
Bit Size	<u>7 7/8</u>				
Type Fluid in Hole	<u>FRESH WATER</u>				
	<u>GEL, CHEM</u>				
Dens.	<u>9</u>	<u>48</u>			
pH	<u>11</u>	<u>6 ml</u>	<u>ml</u>	<u>ml</u>	<u>m</u>
Fluid Loss					
Source of Sample	<u>PIT</u>				
R _m @ Meas. Temp.	<u>.93 @ 88 °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>
R _{ml} @ Meas. Temp.	<u>1.06 @ 88 °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>
R _{mc} @ Meas. Temp.	<u>1.23 @ 83 °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>
Source: R _{ml} R _{mc}	<u>M</u>	<u>M</u>			
R _m @ BHT	<u>.60 @ 136 °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>	<u>@ °F</u>
Time Since Circ.	<u>4 HOURS</u>				
Max. Rec. Temp.	<u>136 °F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>
Equip.	<u>7627/HOBBS</u>				
Location					
Recorded By	<u>BIRKHEAD, OSBORNE</u>				
Witnessed By	<u>MILLER</u>				

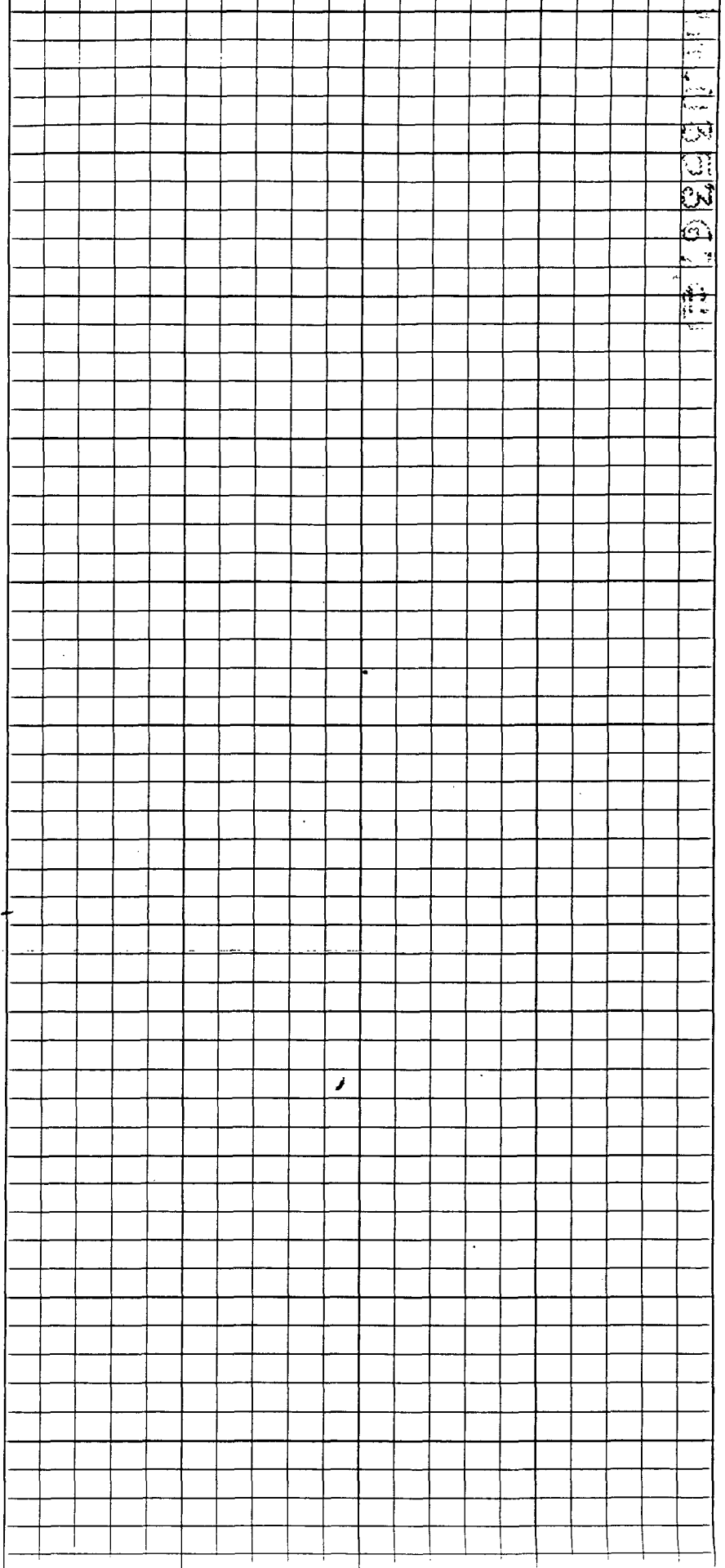
GAMMA RAY:	30	420	100	0-100	0-100	2/1	35/50
Velocity (feet per second) = $\frac{1,000,000}{\text{Interval Transit Time (microseconds per foot)}}$							

GAMMA RAY API UNITS		DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT	
0	100		T ₃ R ₁ 2 R ₂	
100	200		100	40
			160	100
CALIPER HOLE DIAM. IN INCHES				
6	16			



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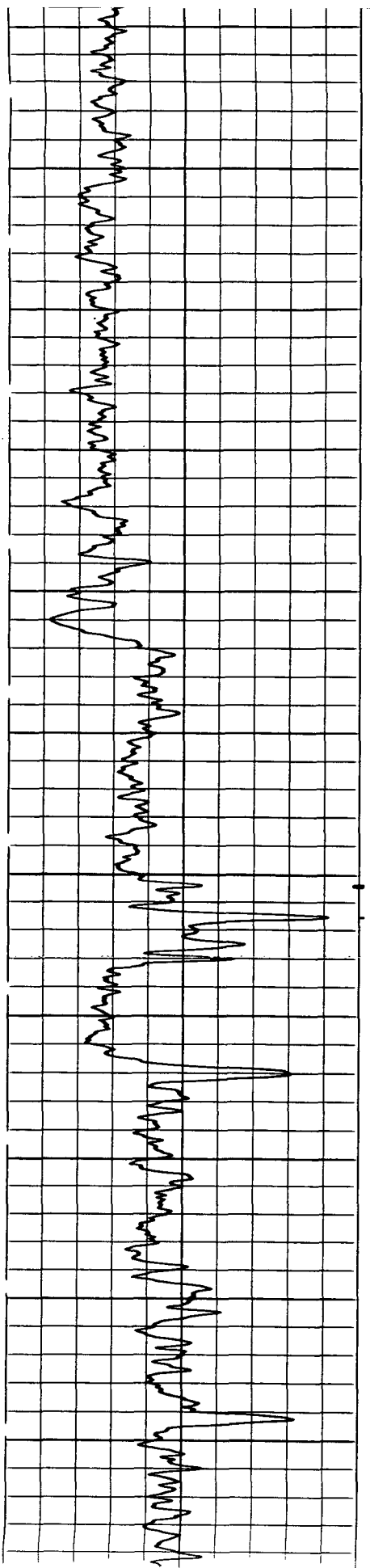


EXHIBIT A

ITEM ANALYSIS DESCRIPTION

ITEM PRICE

025 Cations and Anions
(General Chemistry) Method:
From 40 CFR 136.3
List of approved
inorganic test
procedures.

Analysis

Method

Fluoride	340.2
Bromide	300.0
Calcium	200.7
Potassium	200.7
Magnesium	200.7
Sodium	200.7
Bicarbonate	310.1
Carbonate	310.1
Chloride	325.2
Sulfate	375.2
Total dissolved solids	160.1
Cation/Anion Balance (5%)	--
Ph	150.1
Conductivity	120.1

AIK GRP
+ PH

7 Nitrate
7 Silicon

In Water \$ 160.00

026 Nitrogen Method: SDWA

Nitrate
Nitrite
Ammonia
Total Kjeldahl Nitrogen

Cost for Suite: In Water \$ 81.00

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