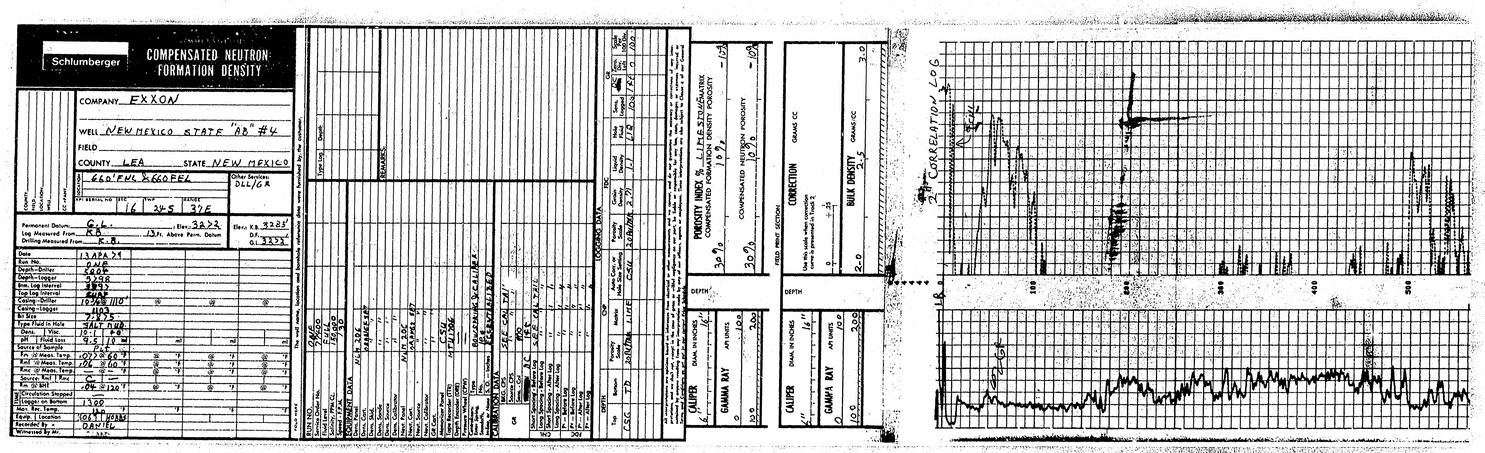
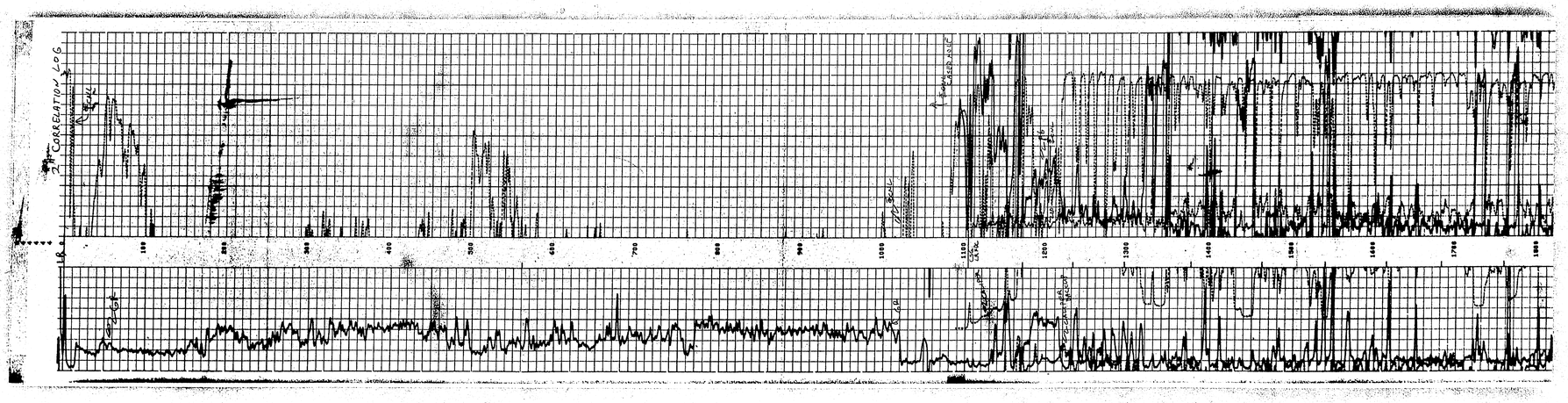
Case No.
6560

Large Exhibits

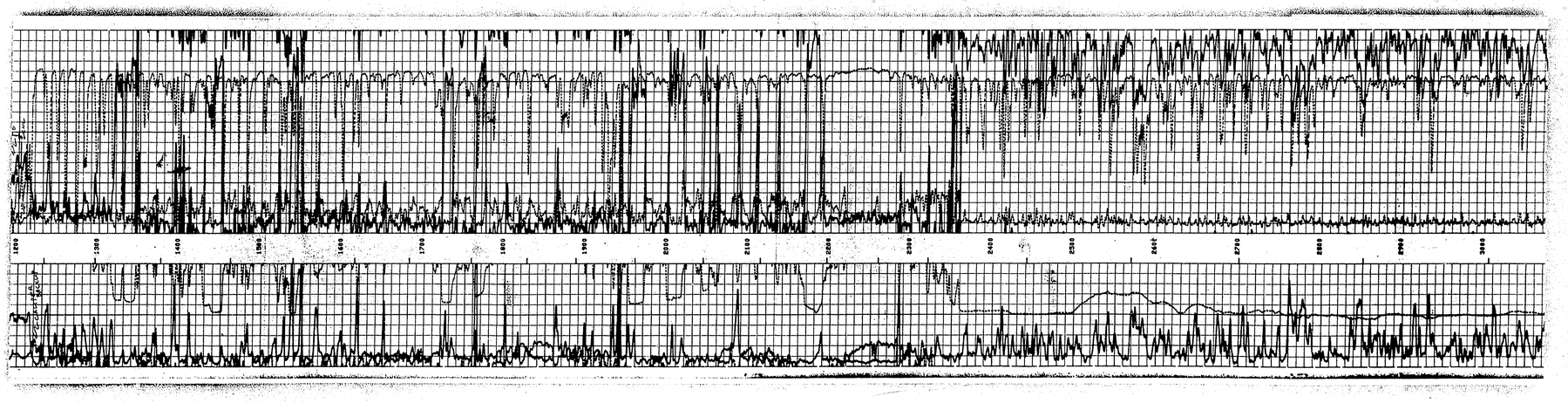



Schlumberger
COMPENSATED NEUTRON-FORMATION DENSITY
COMPANY EXXON
WELL NEW MEXICO STATE "AB" #4
FIELD
COUNTY LEA STATE NEW MEXICO
660' FNL & 660 FEL
Other Services: DLL/GR
Permanent Datum: G.L. Elev. 3232
Log Measured From KB 13 Ft. Above Perm. Datum
Drilling Measured From K.B.
Elev. K.B. 3245
D.F.
G.L. 3232
Date 13 APR 74
Run No. ONE
Depth-Driller 5600
Depth-Logger 5598
Btm. Log Interval 5593
Top Log Interval 4992
Casing-Driller 10 3/4@ 1110'
Casing-Logger 1103
Bit Size 7 7/8"
Type Fluid in Hole SALT GEL
Dens. / Visc. 10.1 / 48
pH / Fluid Loss 9.5 / 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source: Rmf / Rmc CAL / —
Rm @ BHT .074 @ 130 °F
Circulation Stopped 0300
Logger on Bottom 1300
Max. Rec. Temp. 130 °F
Equip. / Location 1061 / MIDLAND
Recorded By DANIEL
Witnessed By MR.
RUN NO. ONE
Bit Size 7 7/8"
Casing-Driller 10 3/4" @ 1110'
Casing-Logger 1103
Bottom Driller 5600
Bottom Logger 5598
Top Log Interval 4992
Type Fluid in Hole SALT GEL
Salinity, PPM Cl 190,000
Density / Visc. 10.1 / 48
pH / Fluid Loss 9.5 / 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf / Rmc CAL / —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
DENSITY DATA
MATRIX LIME
MATRIX DENSITY 2.71
FLUID DENSITY 1.0
HOLE CORR. CAL
NEUTRON DATA
NEUTRON TOOL SNP
MATRIX LIME
HOLE CORR. CAL
CASING DATA
1110' 10 3/4"
HOLE SIZE 7 7/8"
REMARKS
LOGGING DATA
1ST RUN
DEPTH Top 4992 Bottom 5598
CSG. Driller 10 3/4" @ 1110'
CSG. Logger 1103
Bit Size 7 7/8"
Type Fluid in Hole SALT GEL
Dens. Visc. 10.1 48
pH Fluid Loss 9.5 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
The well name, location and borehole information above were furnished by the customer.
DLL/GR
Run No. ONE
Date Logged 13 APR 74
Depth-Driller 5600
Depth-Logger 5598
Bottom Logged Interval 5593
Top Log Interval 4992
Open Hole Size 7 7/8"
Type Fluid in Hole SALT GEL
Salinity, PPM Cl 190,000
Density 10.1
Viscosity 48
Ph 9.5
Fluid Loss 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
GR
Scale 0 100
Hole Corr. CAL
Mud Type LSND
Mud Wt. 10.1
Fluid Loss 7.8
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
DSN
Scale 0 100
Hole Corr. CAL
Mud Type LSND
Mud Wt. 10.1
Fluid Loss 7.8
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
CDC
Scale 0 100
Hole Corr. CAL
Mud Type LSND
Mud Wt. 10.1
Fluid Loss 7.8
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
CSP
Scale 0 100
Hole Corr. CAL
Mud Type LSND
Mud Wt. 10.1
Fluid Loss 7.8
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
CSG. Driller 10 3/4" @ 1110'
CSG. Logger 1103
Bit Size 7 7/8"
Type Fluid in Hole SALT GEL
Dens. Visc. 10.1 48
pH Fluid Loss 9.5 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
LOGGING SCHEDULE
1ST RUN
DEPTH Top 4992 Bottom 5598
CSG. Driller 10 3/4" @ 1110'
CSG. Logger 1103
Bit Size 7 7/8"
Type Fluid in Hole SALT GEL
Dens. Visc. 10.1 48
pH Fluid Loss 9.5 10 cc
Source of Sample PIT
Rm @ Meas. Temp. .107 @ 68 °F
Rmf @ Meas. Temp. .124 @ 60 °F
Rmc @ Meas. Temp. — @ — °F
Source Rmf Rmc CAL —
Rm @ BHT .074 @ 130 °F
Time Since Circ. 5 HRS
Max. Rec. Temp. 130 °F
Equip. Location 1061 MIDLAND
Recorded By DANIEL
Witnessed By MR.
CALIPER
DIAM. IN INCHES
6" 16"
GAMMA RAY
API UNITS
0 100 200
POROSITY INDEX % LIME STD. ELECTRICAL
COMPENSATED NEUTRON POROSITY
30 0
COMPENSATED DENSITY POROSITY
30 0
DEPTH
FIELD PRINT SECTION
CORRECTION
GRAMS/CC
0 ± .25 .5
BULK DENSITY
GRAMS/CC
2.5
2.0
DEPTH
CALIPER
DIAM. IN INCHES
6" 16"
GAMMA RAY
API UNITS
0 100 200
2" CORRELATION LOG
100 200 300 400 500
DEPTH

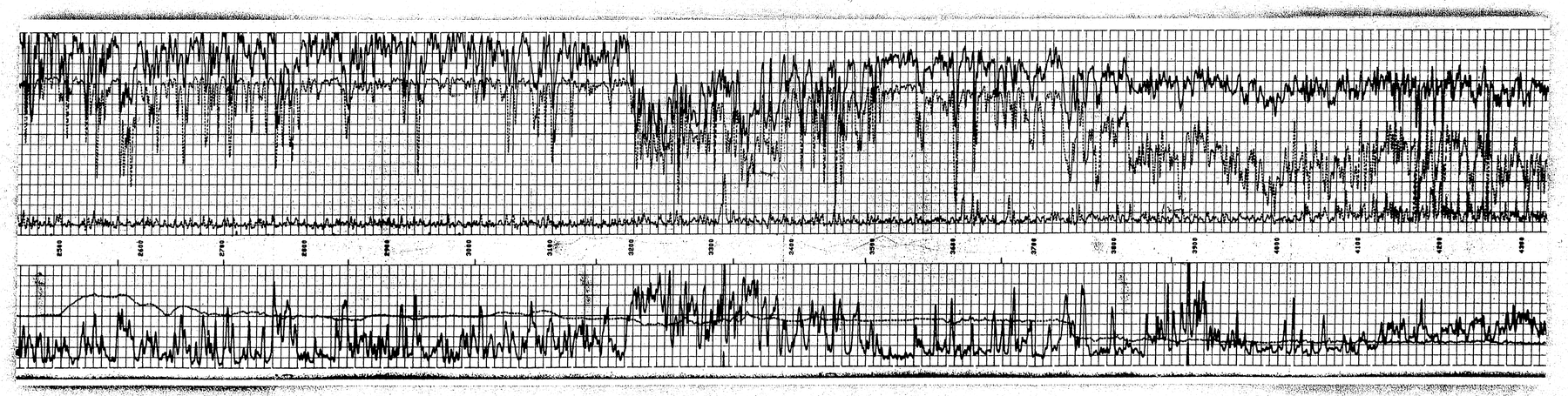

U.S.G.S. RECORDS
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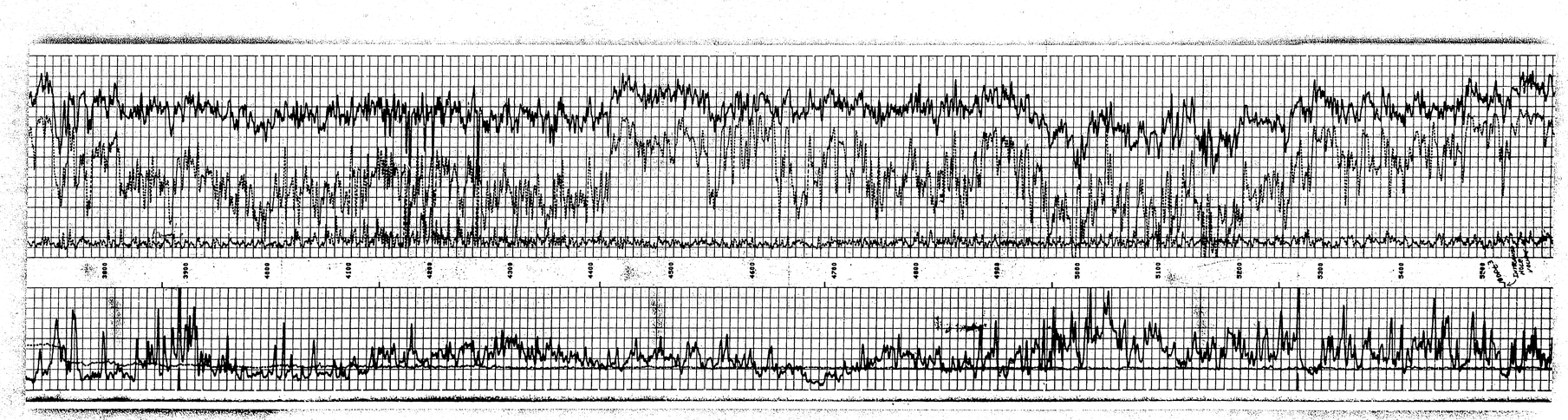


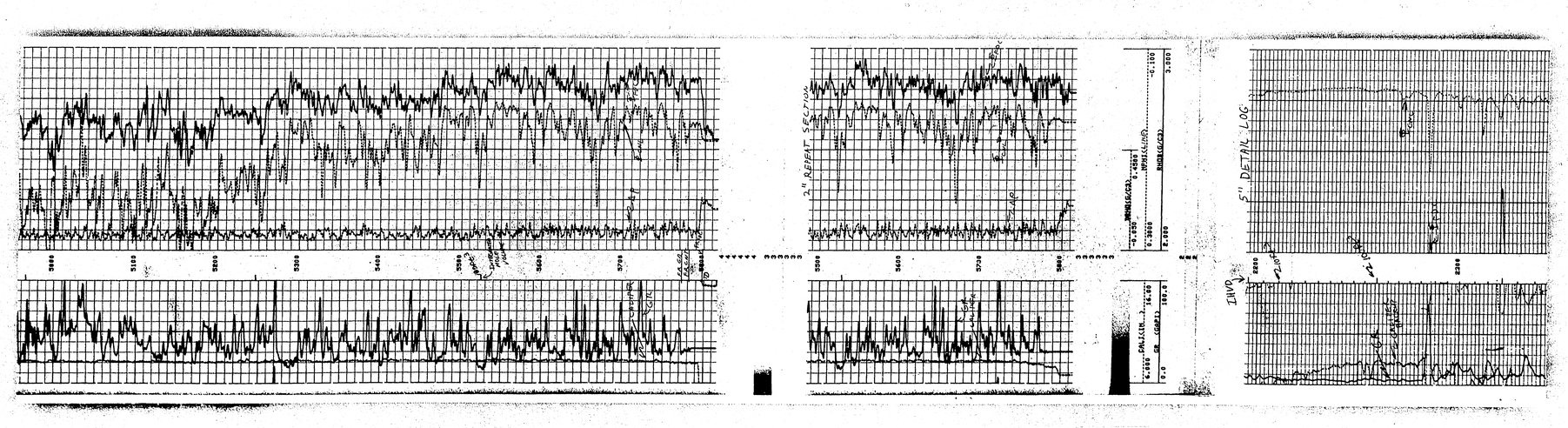
U.S.G.S. RECORDS
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V.P.R.C.F. RECOMMENDED
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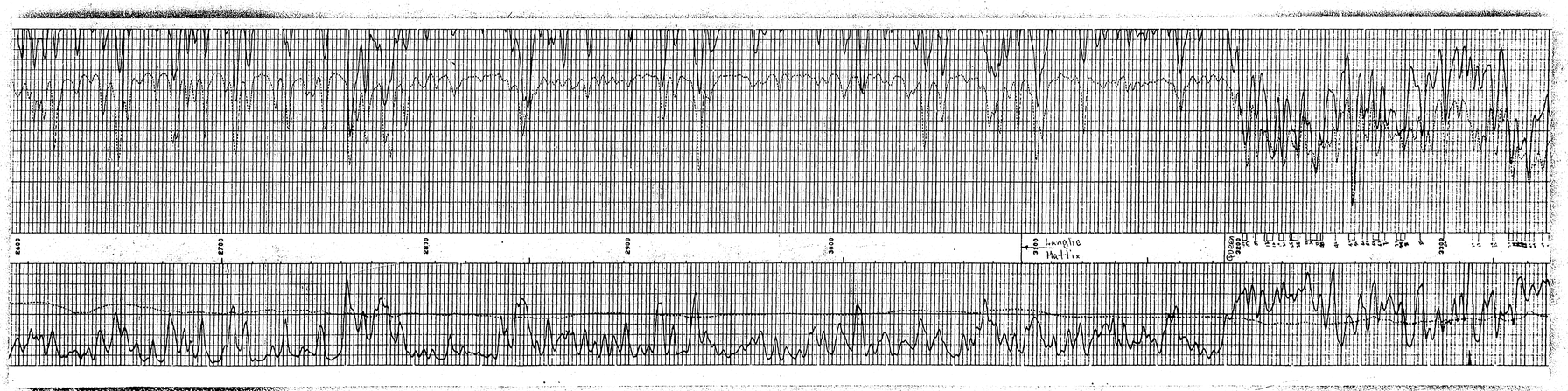


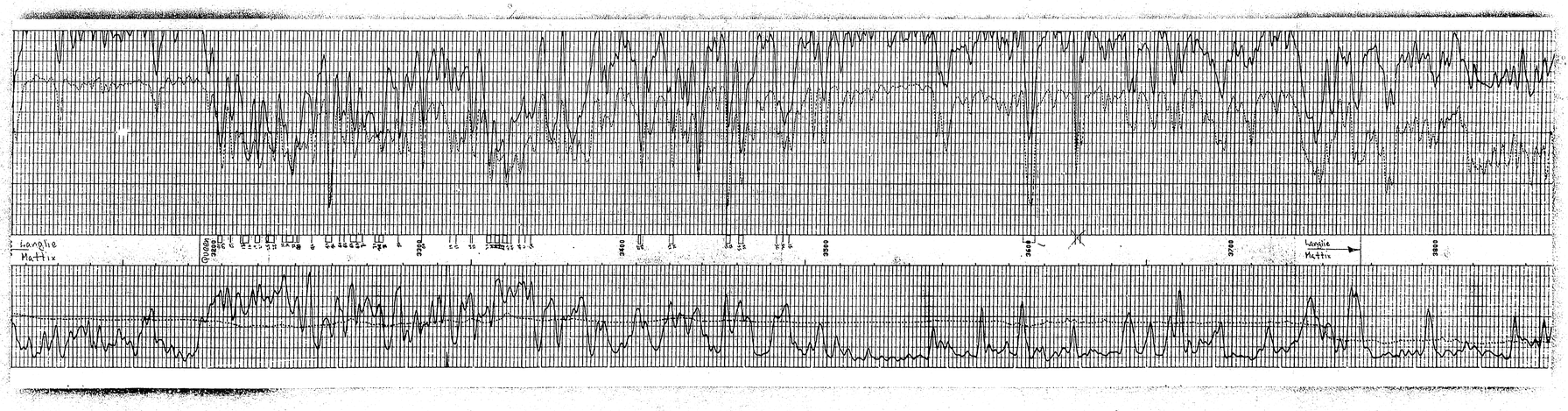


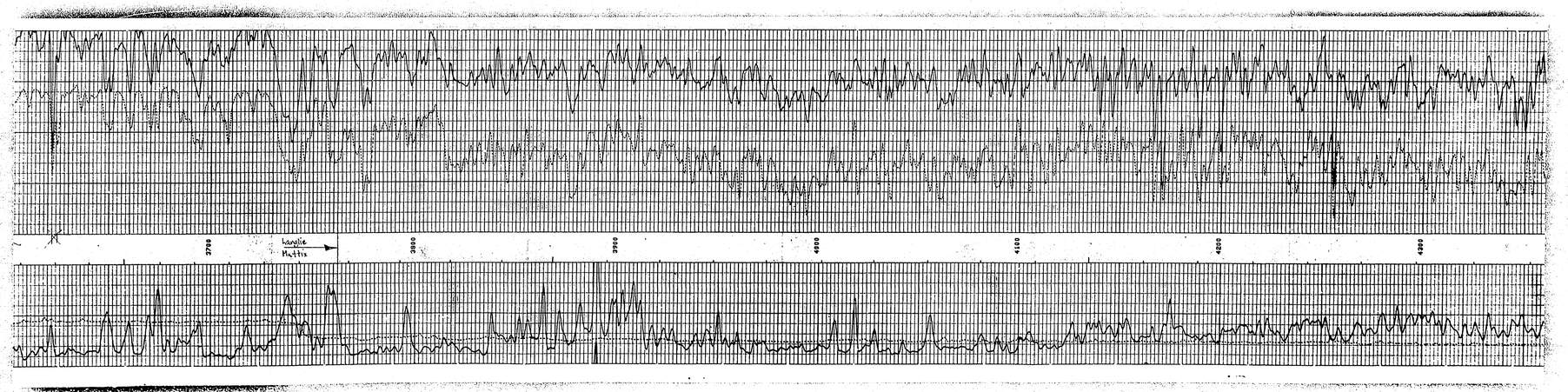

2" REPEAT SECTION
5" DETAIL LOG



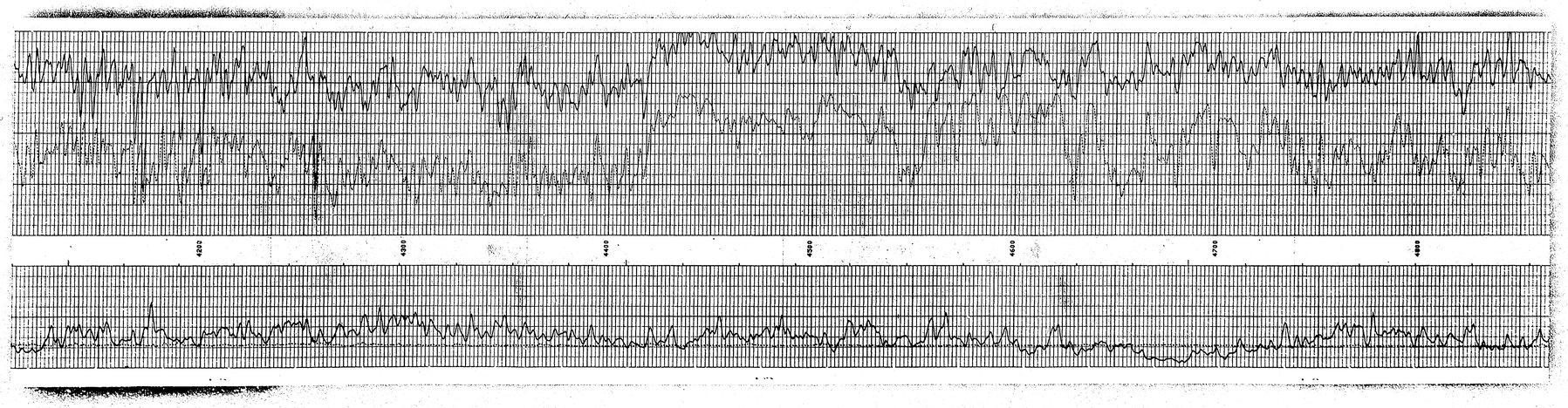
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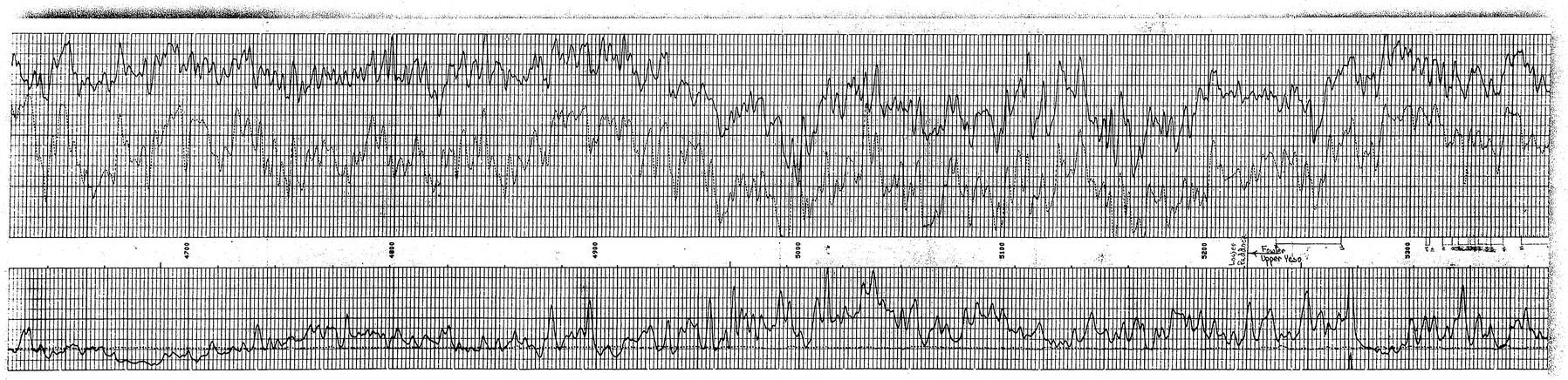

2610
2700
2810
2900
3000
3100
Langlie
Mattix
Queen
3220
3230
3250

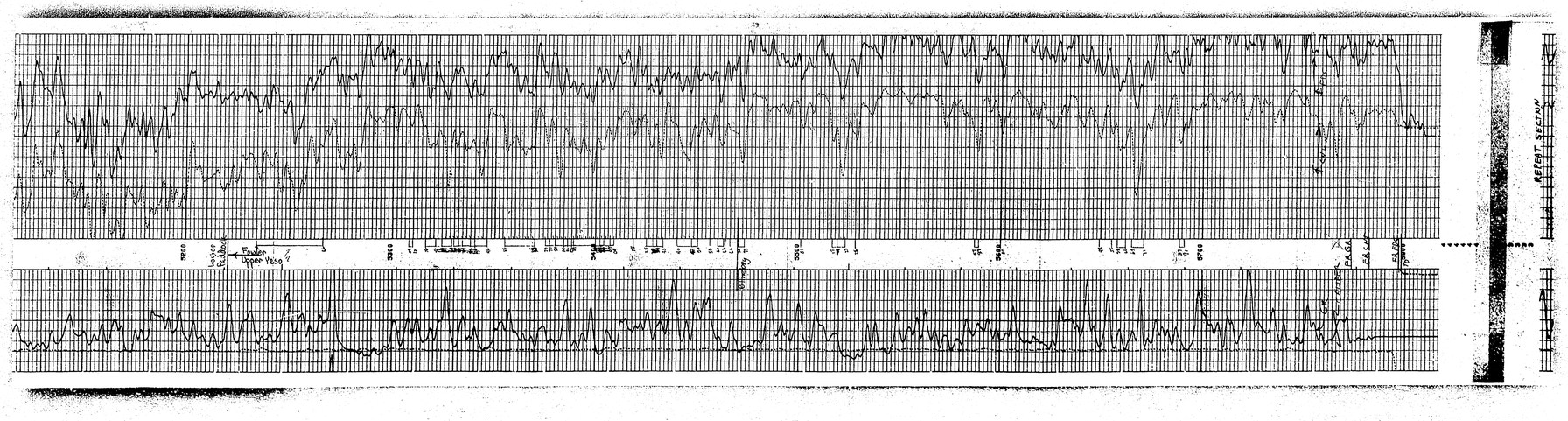

Lunglio
Mattix
3300
3400
3500
3600
3700
Lunglio
Mattix
3800


2700
Kandlie
Hattis
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3900
4000
4100
4200
4300




4200
4300
4400
4500
4600
4700
4800


4700
4800
4900
5000
5100
5200
Lower Reading
Fowler
Upper Vasa
5300


Lower Kalbaa
Fauler
Upper Yeso
Glorieta
Paddock
Blinebry
Drinkard
Tubb
Abo
Ellenburger
REPEAT SECTION

REPEAT SECTION
MAIN PASS
REPEAT SECTION
MAIN PASS
CALIPER
GR
CALIPER
GR
5790
5740
3800
3750
6.3000
6.3000
-0.100
-0.100
BEFORE SURVEY CALIBRATION SUMMARY
PERFORMED: 79/9/13
PROGRAM FILE: NGC (VERSION 18.4 79/10/ 9)
SGTE
DETECTOR CALIBRATION SUMMARY
MEASURED
BKGD
GR
JIG
CALIBRATED
UNITS
CNTA
DETECTOR CALIBRATION SUMMARY
TANK
CALIBRATED
JIG
MEASURED
CALIBRATED
HRAT
DETECTOR CALIBRATION SUMMARY
PGTE
BLOCK
CALIBRATED
JIG
MEASURED
CALIBRATED
UNITS
FDC
NFDC
CPS
CPS
PGTE
CALIPER CALIBRATION SUMMARY
MEASURED
CALIBRATED
UNITS
CALI
SMALL
LARGE
SMALL
LARGE
IN
AFTER SURVEY TOOL CHECK SUMMARY
PERFORMED: 79/9/13
PROGRAM FILE: NGC (VERSION 18.4 79/10/ 9)
CNTA
TOOL CHECK
JIG
MEASURED
CALIBRATED
HRAT
POROSITY CHANGE (LIMIT) -4.693
PGTE
TOOL CHECK
JIG
MEASURED
CALIBRATED
UNITS
FDC
NFDC
CPS
CPS

Schlumberger

SIMULTANEOUS
COMPENSATED NEUTRON-FORMATION DENSITY

COMPANY EXXON

WELL NEW MEXICO STATE "AB" #4

FIELD

COUNTY LEA STATE NEW MEXICO

660' FNL & 660 FEL

Other Services: DLL/GR

SEC 16 TWP 24S RGE 32E

Permanent Datum: G.L. Elev. 3222

Log Measured From: K.B. 13 Ft. Above Perm. Datum

Drilling Measured From: K.B.

Elev.: K.B. 3235' D.F. 3234' G.L. 3222'

Date	13 APR 79		
Run No.	ONE		
Depth-Driller	5805		
Depth-Logger	5798		
Btm. Log Interval	5793		
Top Log Interval	SURF		
Casing-Driller	10 3/4 @ 1110	@	@
Casing-Logger	1103		
Bit Size	7 7/8		
Type Fluid in Hole	SALT MUD		
Dens. / Visc.	10.1 / 30		
pH / Fluid Loss	9.5 / 10 ml	ml	ml
Source of Sample	MS		
Rm. @ Meas. Temp.	.077 @ 60 °F	@ °F	@ °F
Rmf @ Meas. Temp.	.06 @ 60 °F	@ °F	@ °F
Rmc @ Meas. Temp.	— @ — °F	@ °F	@ °F
Source: Rmf / Rmc	M / —		
Rm. @ BHT	.04 @ 120 °F	@ °F	@ °F
Circulation Stopped	—		
Logger on Bottom	1300		
Max. Rec. Temp.	120 °F	°F	°F
Equip. / Location	2081 / MIDLAND		
Recorded By	DANIEL		
Witnessed By	MR.		

Run and depth scales, location and borehole reference data were furnished by the customer.

Run No.	ONE								
Type Log	Depth								
Bit Size	7 7/8								
Casing Driller	10 3/4 @ 1110								
Casing Logger	1103								
Fluid Type	SALT MUD								
Fluid Loss cc.	10								
Source of Rmf & Rmc	M								
Rm @ Meas. Temp.	.077 @ 60 °F								
Rmf @ Meas. Temp.	.06 @ 60 °F								
Rmc @ Meas. Temp.	— @ — °F								
Source Rmf / Rmc	M / —								
Rm @ BHT	.04 @ 120 °F								
Time Since Circ.	4 HRS								
Max. Rec. Temp.	120 °F								
Equip. Location	2081 MIDLAND								
Recorded By	DANIEL								
Witnessed By	MR.								

REMARKS:

Run No.	ONE								
Service Order No.	124160								
Location	TATUM								
Recorded By	DANIEL								
Witnessed By	MR.								

FIELD DATA

Date	13 APR 79								
Run No.	ONE								
Depth-Driller	5805								
Depth-Logger	5798								
Btm. Log Interval	5793								
Top Log Interval	SURF								
Casing-Driller	10 3/4 @ 1110	@	@	@	@	@	@	@	@
Casing-Logger	1103								
Bit Size	7 7/8								
Type Fluid in Hole	SALT MUD								
Dens. / Visc.	10.1 / 30								
pH / Fluid Loss	9.5 / 10 ml		ml		ml		ml		ml
Source of Sample	MS								
Rm. @ Meas. Temp.	.077 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmf @ Meas. Temp.	.06 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmc @ Meas. Temp.	— @ — °F	@	°F	@	°F	@	°F	@	°F
Source: Rmf / Rmc	M / —								
Rm. @ BHT	.04 @ 120 °F	@	°F	@	°F	@	°F	@	°F
Circulation Stopped	—								
Logger on Bottom	1300								
Max. Rec. Temp.	120 °F		°F		°F		°F		°F
Equip. Location	2081 MIDLAND								
Recorded By	DANIEL								
Witnessed By	MR.								

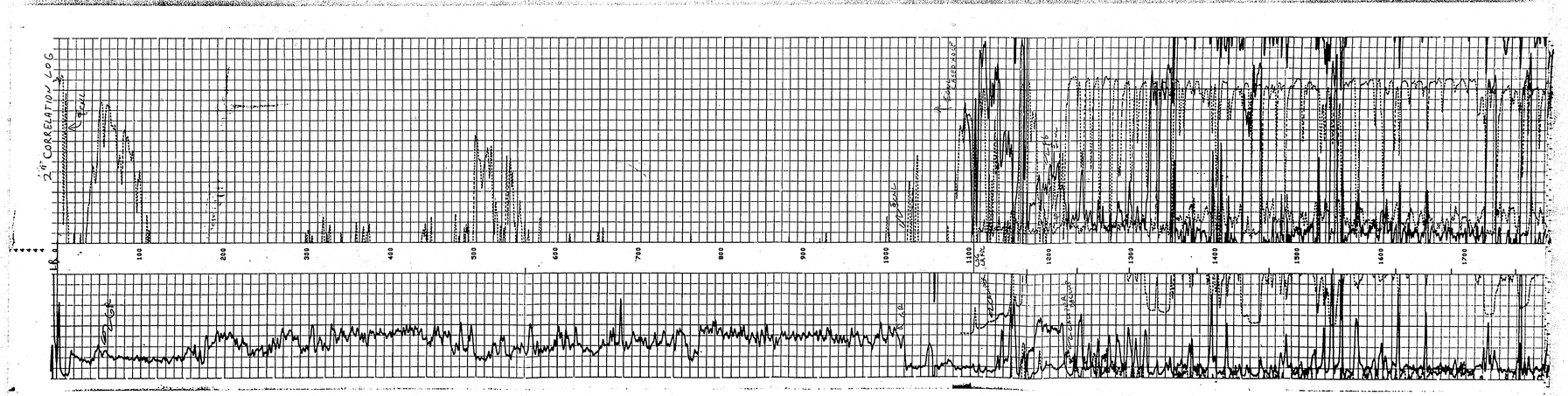
LOGGING DATA

Run No.	ONE								
Date	13 APR 79								
Type Log	DSN								
Depth-Driller	5805								
Depth-Logger	5798								
Btm. Log Interval	5793								
Top Log Interval	SURF								
Casing-Driller	10 3/4 @ 1110	@	@	@	@	@	@	@	@
Casing-Logger	1103								
Bit Size	7 7/8								
Type Fluid in Hole	SALT MUD								
Dens. / Visc.	10.1 / 30								
pH / Fluid Loss	9.5 / 10 ml		ml		ml		ml		ml
Source of Sample	MS								
Rm. @ Meas. Temp.	.077 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmf @ Meas. Temp.	.06 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmc @ Meas. Temp.	— @ — °F	@	°F	@	°F	@	°F	@	°F
Source: Rmf / Rmc	M / —								
Rm. @ BHT	.04 @ 120 °F	@	°F	@	°F	@	°F	@	°F
Circulation Stopped	—								
Logger on Bottom	1300								
Max. Rec. Temp.	120 °F		°F		°F		°F		°F
Equip. Location	2081 MIDLAND								
Recorded By	DANIEL								
Witnessed By	MR.								

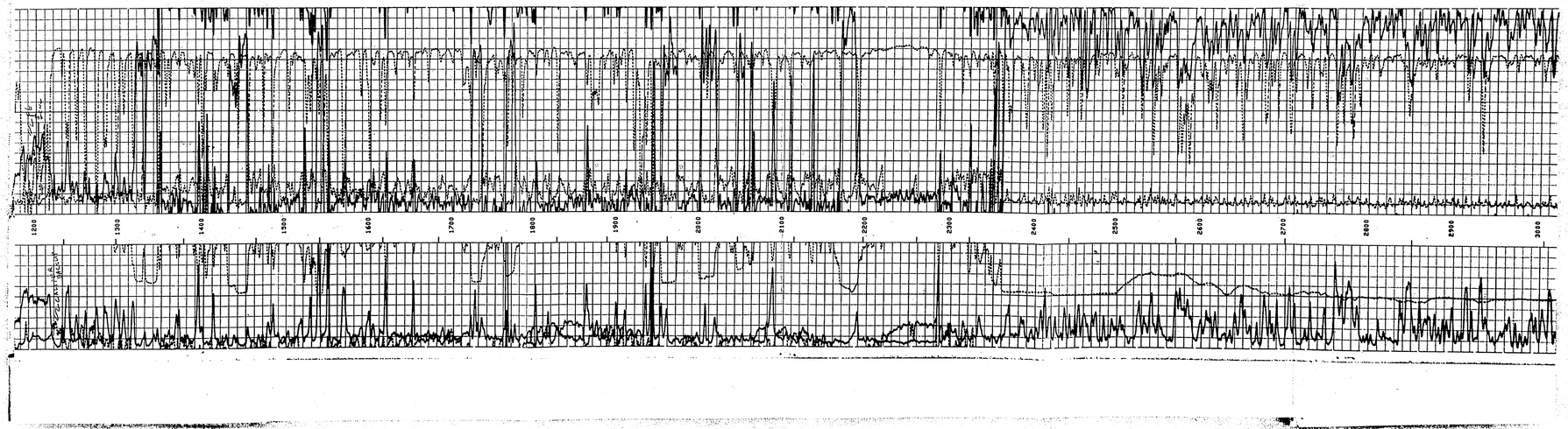
CORRELATION DATA

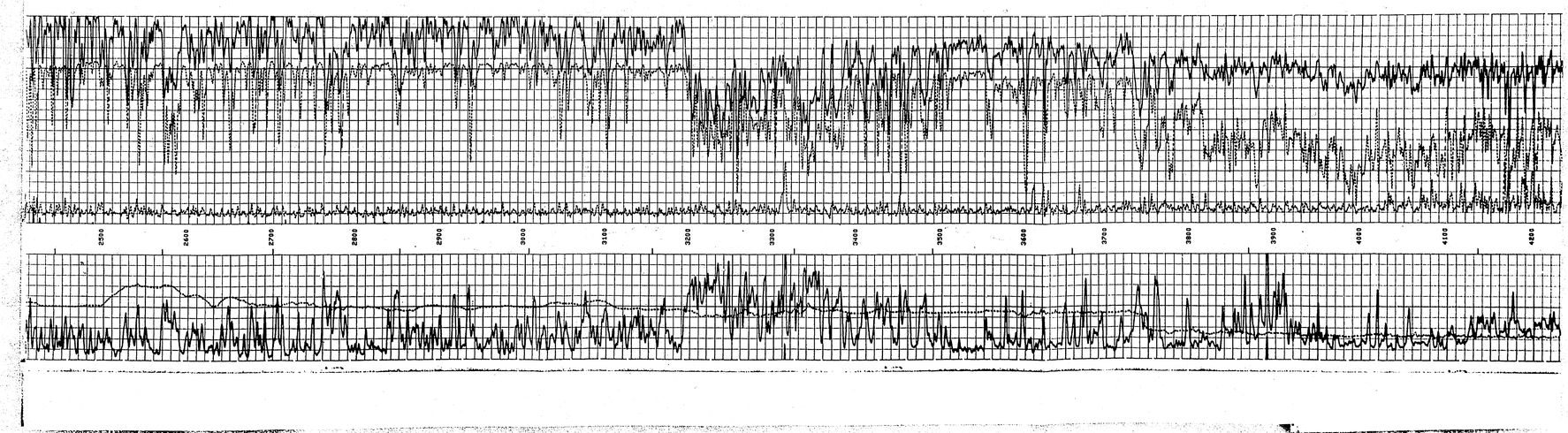
Run No.	ONE								
Date	13 APR 79								
Type Log	DSN								
Depth-Driller	5805								
Depth-Logger	5798								
Btm. Log Interval	5793								
Top Log Interval	SURF								
Casing-Driller	10 3/4 @ 1110	@	@	@	@	@	@	@	@
Casing-Logger	1103								
Bit Size	7 7/8								
Type Fluid in Hole	SALT MUD								
Dens. / Visc.	10.1 / 30								
pH / Fluid Loss	9.5 / 10 ml		ml		ml		ml		ml
Source of Sample	MS								
Rm. @ Meas. Temp.	.077 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmf @ Meas. Temp.	.06 @ 60 °F	@	°F	@	°F	@	°F	@	°F
Rmc @ Meas. Temp.	— @ — °F	@	°F	@	°F	@	°F	@	°F
Source: Rmf / Rmc	M / —								
Rm. @ BHT	.04 @ 120 °F	@	°F	@	°F	@	°F	@	°F
Circulation Stopped	—								
Logger on Bottom	1300								
Max. Rec. Temp.	120 °F		°F		°F		°F		°F
Equip. Location	2081 MIDLAND								
Recorded By	DANIEL								
Witnessed By	MR.								

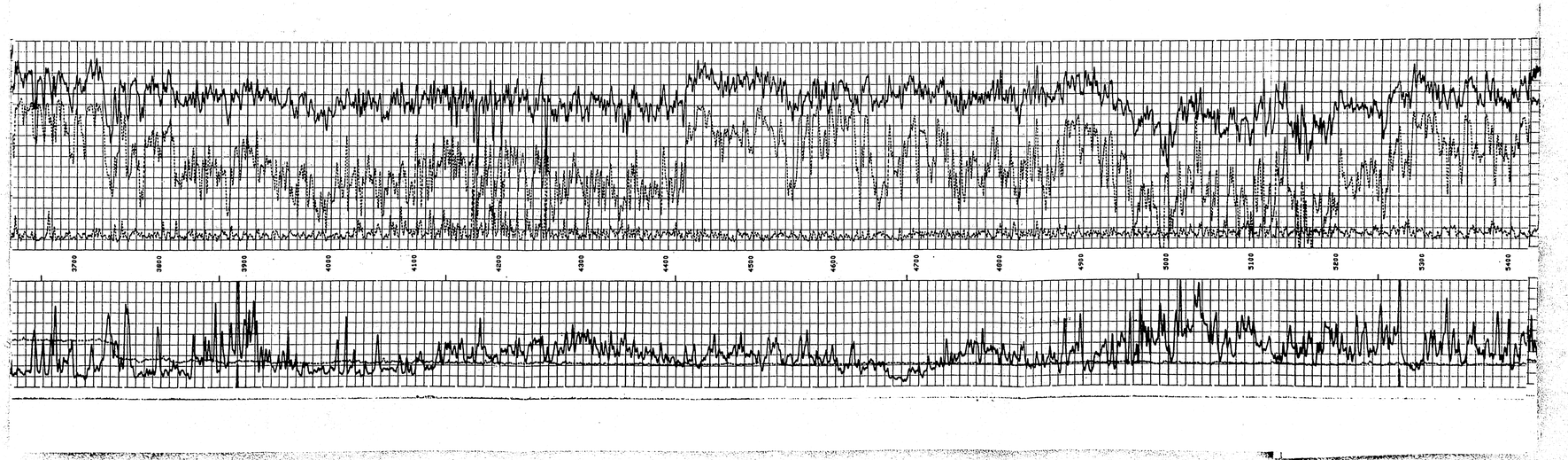
CASING



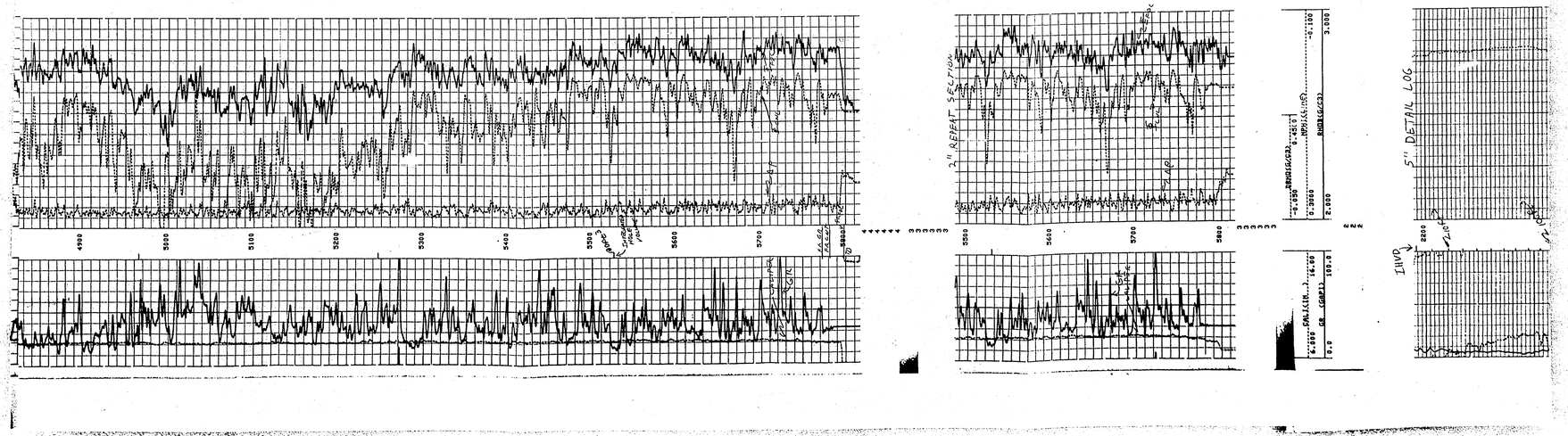
V.P.I.S.U. LIBRARIES
BEST AVAILABLE COPY


1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000


2550
2600
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4000
4100
4200



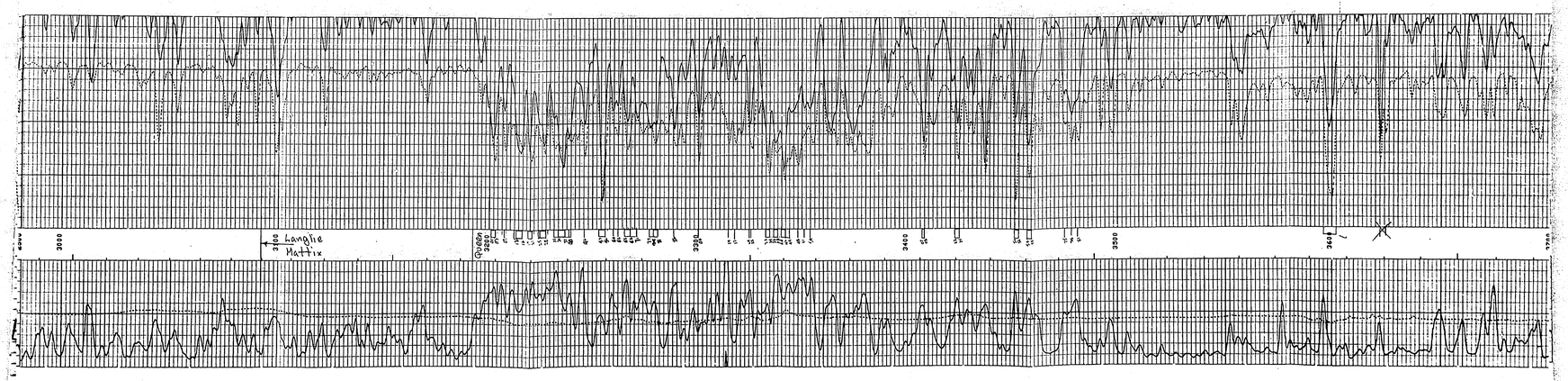
U.S.D.C.F. RESOURCES
BEST AVAILABLE COPY

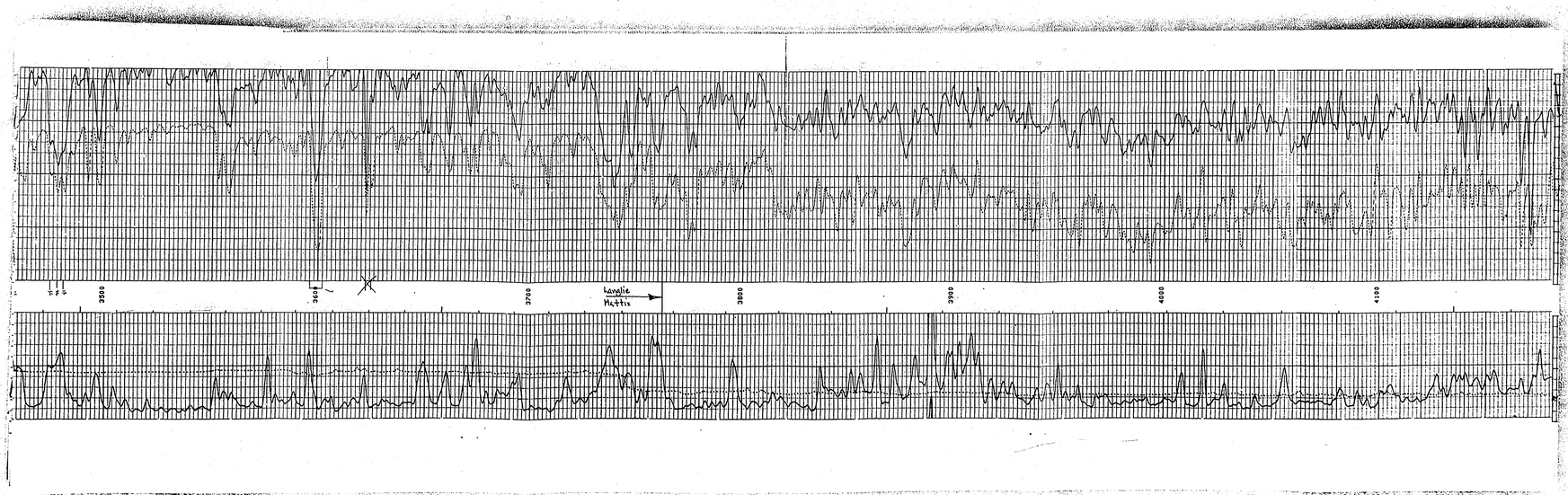

2" REPEAT SECTION
5" DETAIL LOG
4900
5000
5100
5200
5300
5400
5500
5600
5700
5800
5900
6000
6100
6200
6300
6400
6500
6600
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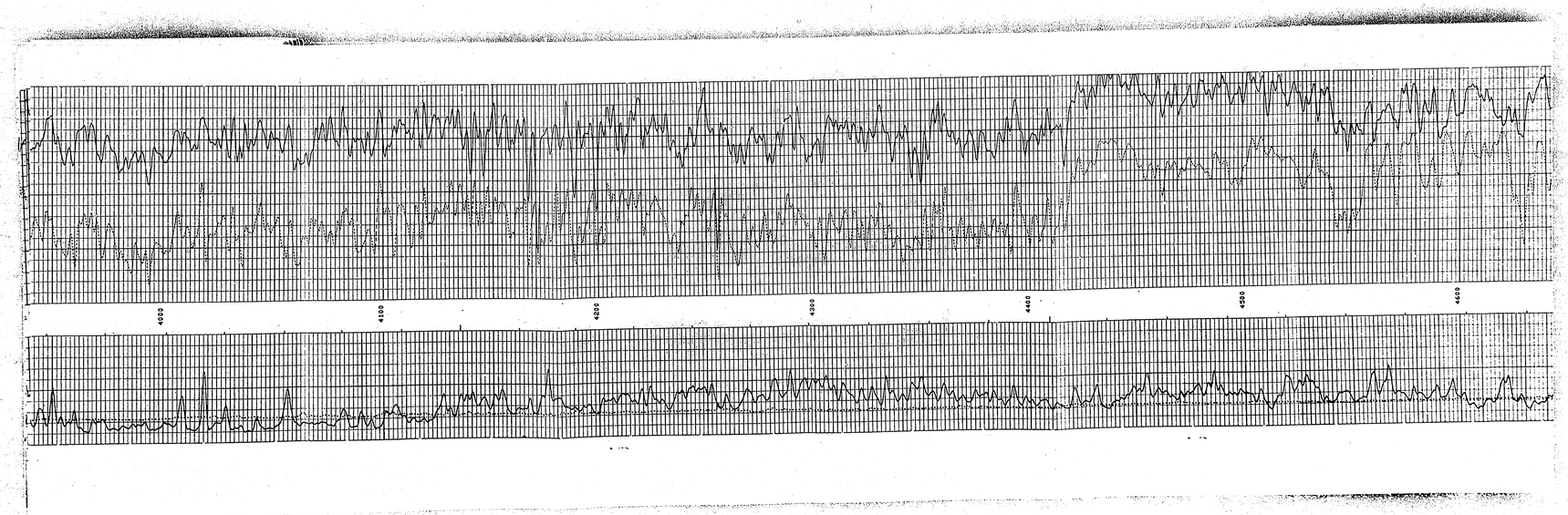
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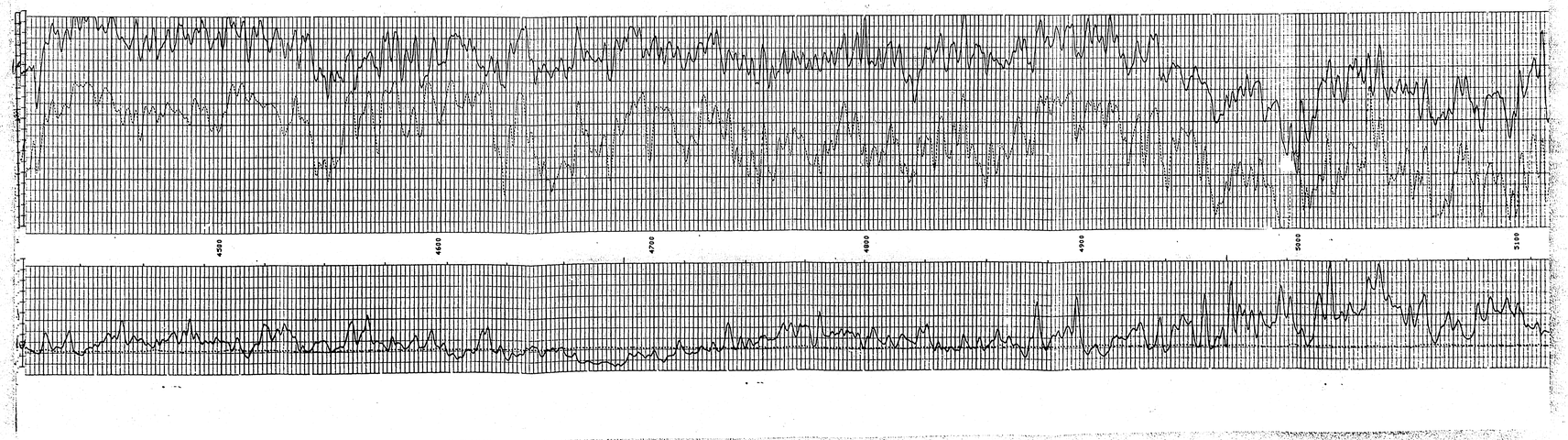
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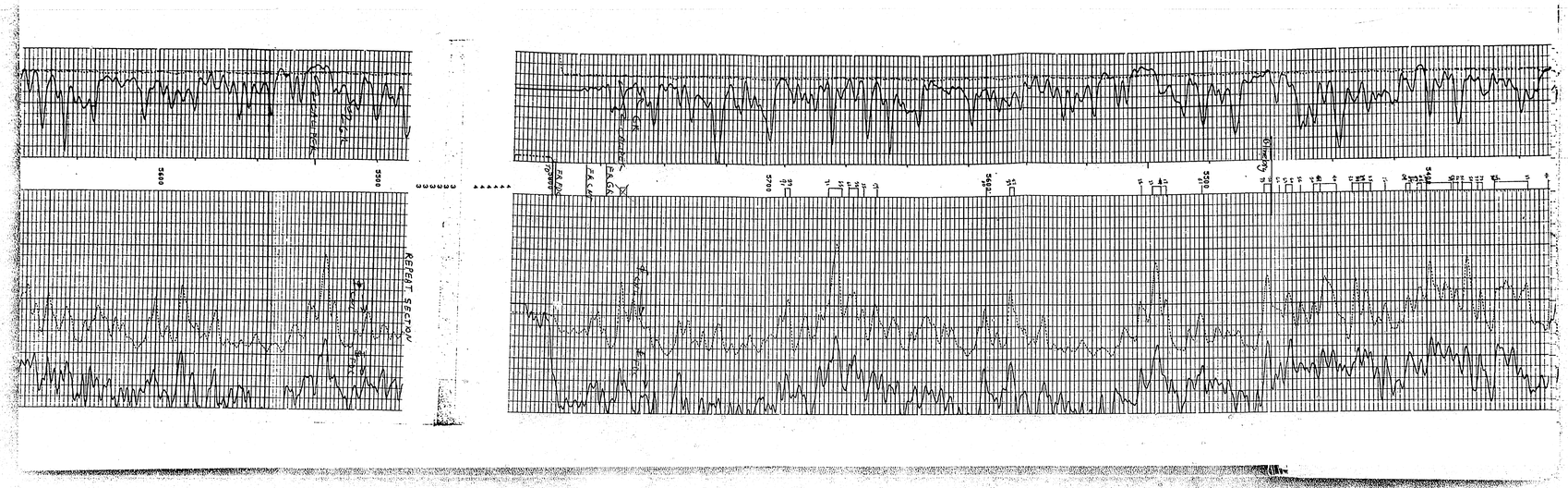


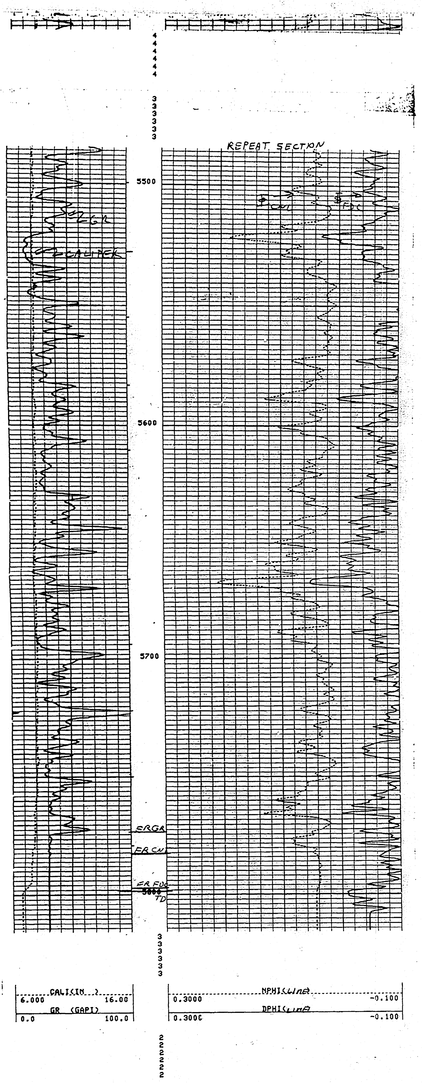
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BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 79/04/13
PROGRAM FILE: NUC (VERSION 12.4 78/12/ 0)

SGTE DETECTOR CALIBRATION SUMMARY

	MEASURED BKGD	JIG	CALIBRATED	UNITS
GR	19	187	164	GAPI

CNTA DETECTOR CALIBRATION SUMMARY

	TANK CALIBRATED	MEASURED	JIG CALIBRATED
MRAT	0.0	2.27	2.15

PGTE DETECTOR CALIBRATION SUMMARY

	BLOCK CALIBRATED	MEASURED	JIG CALIBRATED	UNITS
FFDC	0	484	336	CPS
NFDC	0	846	527	CPS

PGTE CALIPER CALIBRATION SUMMARY

	MEASURED SMALL	LARGE	CALIBRATED SMALL	LARGE	UNITS
CALI	7.2	16.9	8.0	12.0	IN

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 79/04/13
PROGRAM FILE: NUC (VERSION 12.4 78/12/ 0)

CNTA TOOL CHECK

	JIG BEFORE	AFTER
MRAT	2.15	2.12

POROSITY CHANGE (LIME): -0.003

PGTE TOOL CHECK

	JIG BEFORE	AFTER	UNITS
FFDC	336	335	CPS
NFDC	527	527	CPS