UNDERGROUND INJECTION CONTROL

AREA PERMIT REAPPLICATION

FOR

GROUND RESOURCES, LLC

UIC PERMIT No. 2R08700008AP

TARIFF FIELD

Volume 3 of 4

Injector Well Data

(Part 2 of 2)

WVGES O&G Record Reporting System

WVGES GEOLOGY UNDERLIES IT ALL "Pipeline"

Select County: (087) Roane
Enter Permit #: 3660
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3660

Report Time: Thursday, April 30, 2020 9:21:05 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703660	Roane	3660	Smithfield	Tariff	Otter	38.653689	-81.209643	481758.5	4278368.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703660	10/-/1982	Original Loc	Completed	J Shamblin/W Loone	31					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703660	10/-/1982	-/-/-	1061	Ground Level	Tariff Timn	Big Injun (Price&eq	Big Injun (Price&eq	Service Well	Unsuccessful	Water Injection	Rotar	Acid+Frac	2190		2190		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703660	10/-/1982	Horizon	Injection	Vertical			2106	Big Injun (Price&eq	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703660	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Ground Resources LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703660	Pennzoil Company	1984	1,013	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703660	Ground Resources, LLC	2017	0												
4708703660	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703660	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703660	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703660	Original Loc	3rd Salt Sand	Well Record	1796	Reasonable	152	Reasonable	1061	Ground Level
4708703660	Original Loc	Blue Monday	Well Record	1952	Reasonable	20	Reasonable	1061	Ground Level
4708703660	Original Loc	Greenbrier Group	Well Record	1972	Reasonable	108	Reasonable	1061	Ground Level
4708703660	Original Loc	Big Lime	Well Record	1972	Reasonable	108	Reasonable	1061	Ground Level
4708703660	Original Loc	Big Injun (Price&eq	Well Record	2080	Reasonable	30	Reasonable	1061	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_
4708703660	336	2200		G D I C N *	Y	N	336	2144	336	2168	336	2153	340	2200					336	2200	Y	Y	N						

Comment: *logs: caliper, SP

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here
geologic log types:

FILENAME

Injection 3660

4708703660gdncz.tif
4708703660nicm.tif

INJECTOR 3660

d density (includes bulk density, compensated density, density porosity, grain density, matrix density, etc.)
e photoelectric adsorption (PE or Pe, etc.)
g gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l laterolog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron–SWN, etc.)
o other[1]
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential

mechanical log types:
b cement bond
c caliper
o other[1]
p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3660

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2080 Feet (top) 2110 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2201 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3660

12. Casing and Tubing Program

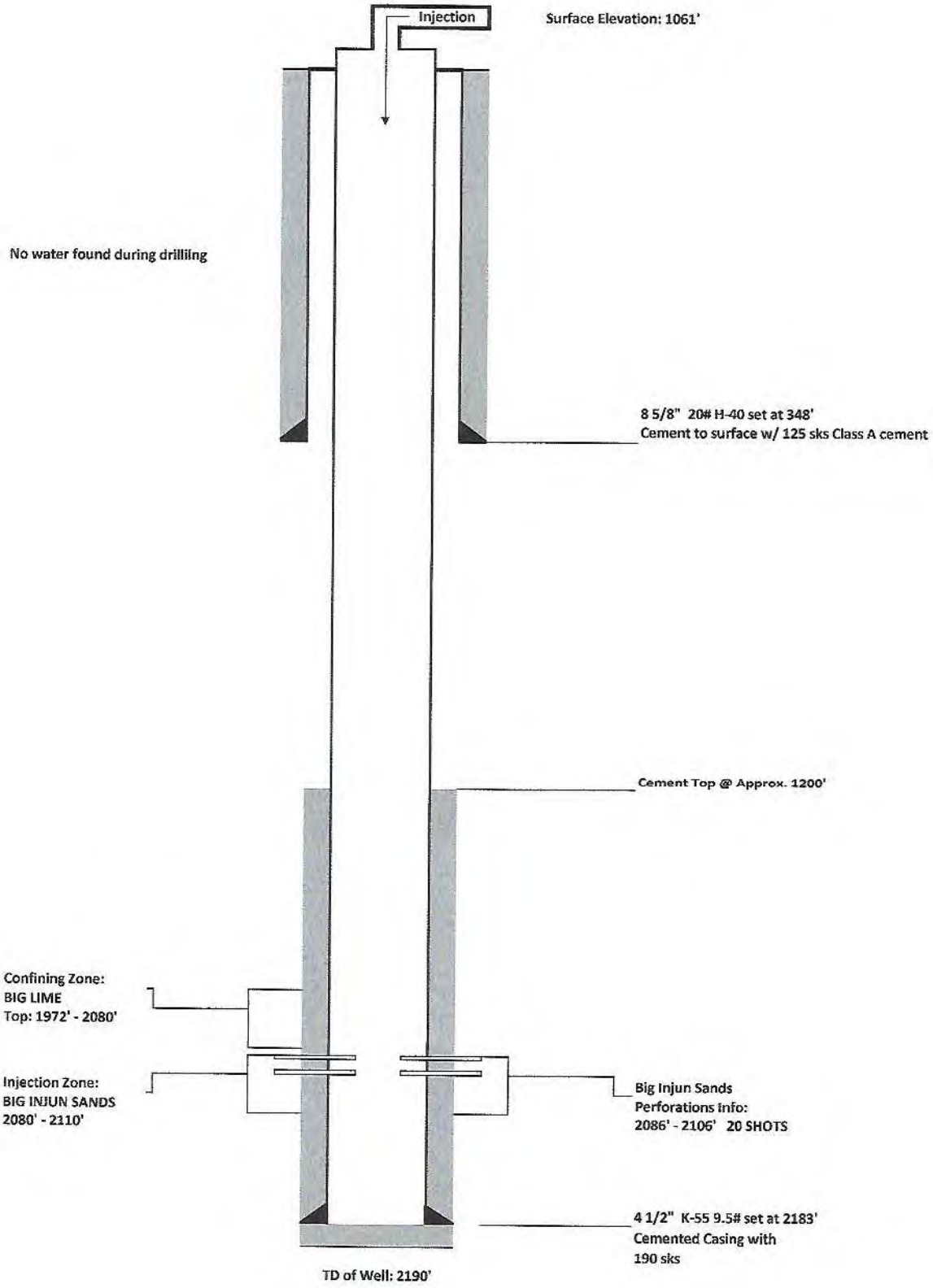
TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 5/8"		H-40	20#	348'	348'	125sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2183'	2183'	190sks
Tubing	NONE						
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

WELL SCHEMATIC

Looney 31
API 47-087-03660



3660
INJECTOR

RECEIVED

MAR 15 1983

OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

OG-10
Rev. 9-71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
Oil and Gas Division
WELL RECORD

Quadrangle Tariff 7.5'
Permit No. 087-3660-Li

Rotary X Oil X
Cable ____ Gas ____
Recycling ____ Comb. ____
Water Flood X Storage ____
Disposal ____ ____ (Kind)

Company Pennzoil Company
Address P.O. Box 1588, Parkersburg, WV 26101
Farm H. M. Looney Acres 480
Location (waters) Trace Fork
Well No. 31 Elev. 1061.39
District Smithfield County Roane
The surface of tract is owned in fee by
John E. Shamblin
Address Left Hand WV 25251
Mineral rights are owned by Keith Crihfield
Address P.O. Box 431, Spencer, WV
Drilling Commenced 10-1-82
Drilling Completed 10-6-82
Initial open flow WIW cu. ft. ____ bbls.
Final production ____ cu. ft. per day ____ bbls.
Well open ____ hrs. before test ____ RP.
Well treatment details:

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8	348	348	125 sks.
7			
5 1/2			
4 1/2	2183	2183	190 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Water Injection Well

Fracture: 11-17-82 w/250 gls. 15% HCL, 145 Bbls. 20# gel, 1500# 20/40 sa

Perf: 2086-2106

Coal was encountered at ____ Feet ____ Inches
Fresh water ____ Feet ____ Salt Water ____ Feet ____
Producing Sand Big Injun Depth ____

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Sand, Silt, Shale			0	1598		
Salt Sand			1598	1740		
Silt & Shale			1740	1764		
Salt Sand			1764	1787		
Silt & Sand			1787	1796		
Salt Sand			1796	1948		
Blue Monday			1948	1952		
Pencil Cave			1952	1972		
Big Lime			1972	2080		
Big Injun			2080	2110		
Pocono Shale			2110	2190		
Total Depth				2190		

ROANE 3660 Li

OG-10
Rev. - 9-71

RECEIVED
MAR 15 1983
OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
Oil and Gas Division
WELL RECORD

Rotary X Oil X
Cable ___ Gas ___
Recycling ___ Comb. ___
Water Flood X Storage ___
Disposal ___ (Kind)

Quadrangle Tariff 7.5'
Permit No. 087-3660-L1

Company Pennzoil Company
Address P.O.Box 1588, Parkersburg, WV 26101
Farm W. M. Looney Acres 480
Location (waters) Trace Fork
Well No. 31 Elev. 1061.39
District Smithfield County Roane
The surface of tract is owned in fee by
John F. Shamblin
Address Left Hand, WV 25251
Mineral rights are owned by Keith Crihfield
Address P.O.Box 431, Spencer, WV
Drilling Commenced 10-1-82
Drilling Completed 10-6-82
Initial open flow WIW cu. ft. X bbls.
Final production ___ cu. ft. per day ___ bbls.
Well open ___ hrs. before test ___ RP.
Well treatment details:
Water Injection Well
Fracture: 11-17-82 w/250 gls. 15% HCL, 145 Bbls. 20# gel, 1500# 20/40 sd
Perf: 2086-2106

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8	348	348	125 sks.
7			
5 1/2			
4 1/2	2183	2183	190 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Coal was encountered at ___ Feet ___ Inches
Fresh water ___ Feet ___ Salt Water ___ Feet ___
Producing Sand Big Injun Depth ___

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Sand, Silt, Shale			0	1598		
Salt Sand			1598	1740		
Silt & Shale			1740	1764		
Salt Sand			1764	1787		
Silt & Sand			1787	1796		
Salt Sand			1796	1948		
Blue Monday			1948	1952		
Pencil Cave			1952	1972		
Big Lime			1972	2080		
Big Injun			2080	2110		
Pocono Shale			2110	2190		
Total Depth				2190		

ROANE 3660 L1

FORM IV-37
(Obverse)
[08-78]

Date: July 20, 19 82
Operator's Well No. W. M. Looney #31
API Well No. 47 - 087
State County Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES, OIL AND GAS DIVISION

PRE-OPERATION CERTIFICATE
FOR LIQUID INJECTION OR WASTE DISPOSAL WELL

WELL OPERATOR Pennzoil Company
Address P.O. Box 1588
Parkersburg, WV 26101

DESIGNATED AGENT James A. Crews
Address P.O. Box 1588
Parkersburg, WV 26101

GEOLOGICAL TARGET FORMATION Big Injun Depth 2055 feet(top) to 2088 feet(bottom)

Virgin reservoir pressure in target formation 80 psig

Source of information on virgin reservoir pressure Est.

Perforation intervals Big Injun Intervals* Open-hole intervals

*Will pick zones to perforate from the log

MAXIMUM PROPOSED INJECTION OPERATIONS

Volume per hour: 6.25 BPH Bottom hole pressure: 1800 psig

DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED

Liquids to be injected for oil recovery under Code § 22-6-10a: Fresh Water

Wastes to be disposed of: Produced water from waterflood operations to be reinjected

Additives (slurry mediums, inhibitors, solvents, oxidizers, deoxidizers, etc.): Bactericides

SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

RECEIVED
JUL 21 1982
OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

FILTERS (IF ANY) Coal Filters

ADDITIONAL DRILLING AS PART OF THE CONVERSION

(Complete and submit Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change".)

DETAILS ON NEW CASING AND TUBING PROGRAM AS PART OF THE CONVERSION:

(To be completed below unless the new casing and tubing program is described on a Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change", submitted in connection with the permit to which this Form IV-37 pre-operation certificate relates.)

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	8-5/8	H40	20	X		290	290	Cement to surface	
Coal									Sizes
Intermediate									
Production	4-1/2	J55	9.5	X		2130	2130	Over Salt Sand	Depths set
Tubing									
Liners									Perforations: Top Bottom

(Continue on reverse side)

FORM IV-37
(Obverse)
[01-83]

Date: Mar. 11, 1983
Operator's
Well No. W.M. Looney 31
API Well No. 47 - 087 - 3660-
State County Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES, OIL AND GAS DIVISION

PRE-OPERATION CERTIFICATE
FOR LIQUID INJECTION OR WASTE DISPOSAL WELL

MAR 15 1983
OIL AND GAS
WV DEPARTMENT OF MINES

WELL OPERATOR Pennzoil Company DESIGNATED AGENT James A. Crews
Address P.O. Box 1588 Address P.O. Box 1588
Parkersburg, WV 26101 Parkersburg, WV 26101

GEOLOGICAL TARGET FORMATION Big Injun Depth 2055 feet(top) to 2088 feet(Bottom)

Virgin reservoir pressure in target formation 80 psig

Source of information on virgin reservoir pressure Estimated

Perforation intervals 2086-2106 Open-hole intervals 21

MAXIMUM PROPOSED INJECTION OPERATIONS

Volume per hour: 6.25 BPH Bottom hole pressure: 1800 psig

DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED

Liquids to be injected for oil recovery under Code § 22-4-10a: Fresh Water

Wastes to be disposed of: Produced water from waterflood operations to be reinjected

Additives (slurry mediums, inhibitors, solvents, oxidizers, deoxidizers, etc.):

Bactericides

Specific Gravity:

SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

FILTERS (IF ANY) Coal Filters

ADDITIONAL DRILLING AS PART OF THE CONVERSION

(Complete and submit Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change".)

DETAILS ON NEW CASING AND TUBING PROGRAM AS PART OF THE CONVERSION:

(To be completed below unless the new casing and tubing program is described on a Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change", submitted in connection with the permit to which this Form IV-37 preoperation certificate relates.)

NG OR NG TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
ictor									Kinds
water	8-5/8	H40	20	X		290	290	Cement to surface	
									Sizes
mediate									
ction	4-1/2	J55	9.5	X		2130	2130	Over Salt Sand	Depths set
s									
s									Perforations:

(continue on reverse side)

3660
Compensated
Neutron Formation
Density

Schlumberger

COMPENSATED NEUTRON-
FORMATION DENSITY

COMPANY PENNZOIL COMPANY
WELL WILLIAM LOONEY #31
FIELD
COUNTY ROANE STATE WEST VIRGINIA
LOCATION SMITHFIELD DISTRICT

COUNTY ROANE
FIELD WARFF
LOCATION SMITHFIELD DISTRICT
WELL WILLIAM LOONEY #31
COMPANY PENNZOIL COMPANY

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING 10 ft. Above Perm. Datum
Drilling Measured From: KELLY BUSHING
Elev.: K.B. 1071 D.F. 1070 G.L. 1061
Date
Run No.

Other Services: DIL/SFL

FOLD HERE

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

Service Order No.
Field
Dens. Panel
Dens. Det.
Dens. Source
Dens. Calibrator
Neut. Corr.
Neut. Source
Neut. Calibrator
Memorizer
Pressure
Data Setting Standoff
GR
B.K.G. CPS
T. C. - Cal

LOGGING DATA

DEPTH		CNP			FDC				GR	
Top	Bottom	Porosity Scale	Matrix	Auto Corr. or Hole Size Setting	Porosity Scale	Grain	Liquid	Hole Fluid	Sens.	T. C.

AFTER SURVEY TOOL CHECK SUMMARY

[redacted] 02/10/86
[redacted] FILE: ISN (VERSION 20.0 02/07/84)

DITB TOOL CHECK

	ZERO BEFORE	ZERO AFTER	PLUG BEFORE	PLUG AFTER	UNITS
ILD	0.0	-0.0	503.7	503.1	MMHO
ILM	0.0	-0.1	509.0	504.6	MMHO
SFL	0.0	-0.0	500.0	501.9	MMHO

ILD SONDE ERROR CORRECTION : 7.0 MMHO
ILM SONDE ERROR CORRECTION : 5.0 MMHO

CNTA TOOL CHECK

	JIG BEFORE	JIG AFTER
NRAT	2.104	2.106

POROSITY CHANGE (LIMS): -0.008

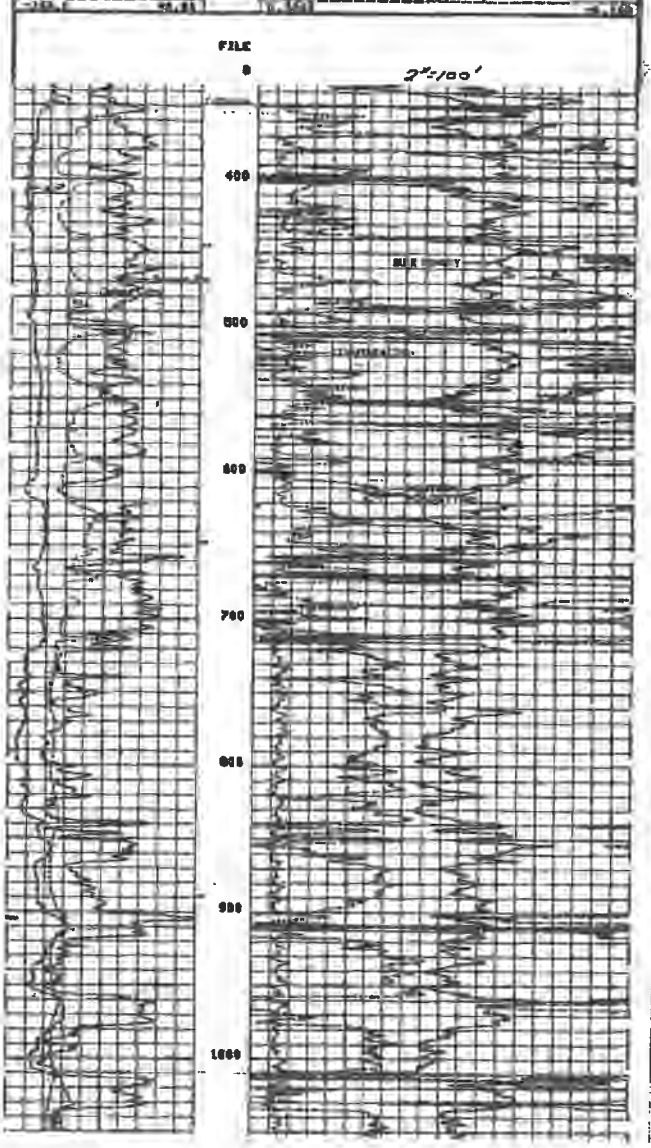
PETK TOOL CHECK

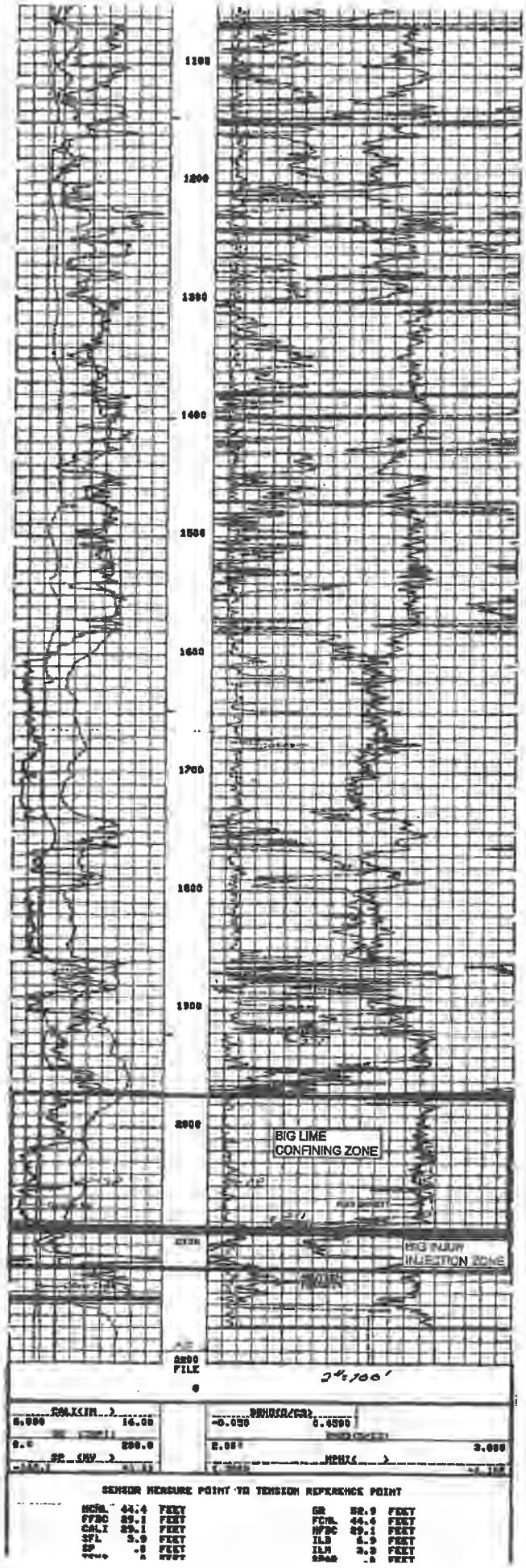
	JIG BEFORE	JIG AFTER	UNITS
FFDC	300	302	CPS
NFDC	483	480	CPS

FILE

CHANGED PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
WATR	SAND				




1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2200
FILE
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
CALIPER
16.00
SP (MV)
200.0
DENSITY(G/C3)
-0.050
0.4500
NEUTRON
3.000
SENSOR MEASURE POINT TO TENSION REFERENCE POINT
HCNL 44.4 FEET
FFDC 29.1 FEET
CALI 29.1 FEET
SFL 5.9 FEET
SP .0 FEET
GR 52.9 FEET
FCNL 44.4 FEET
NFDC 29.1 FEET
ILD 6.9 FEET
ILM 3.3 FEET

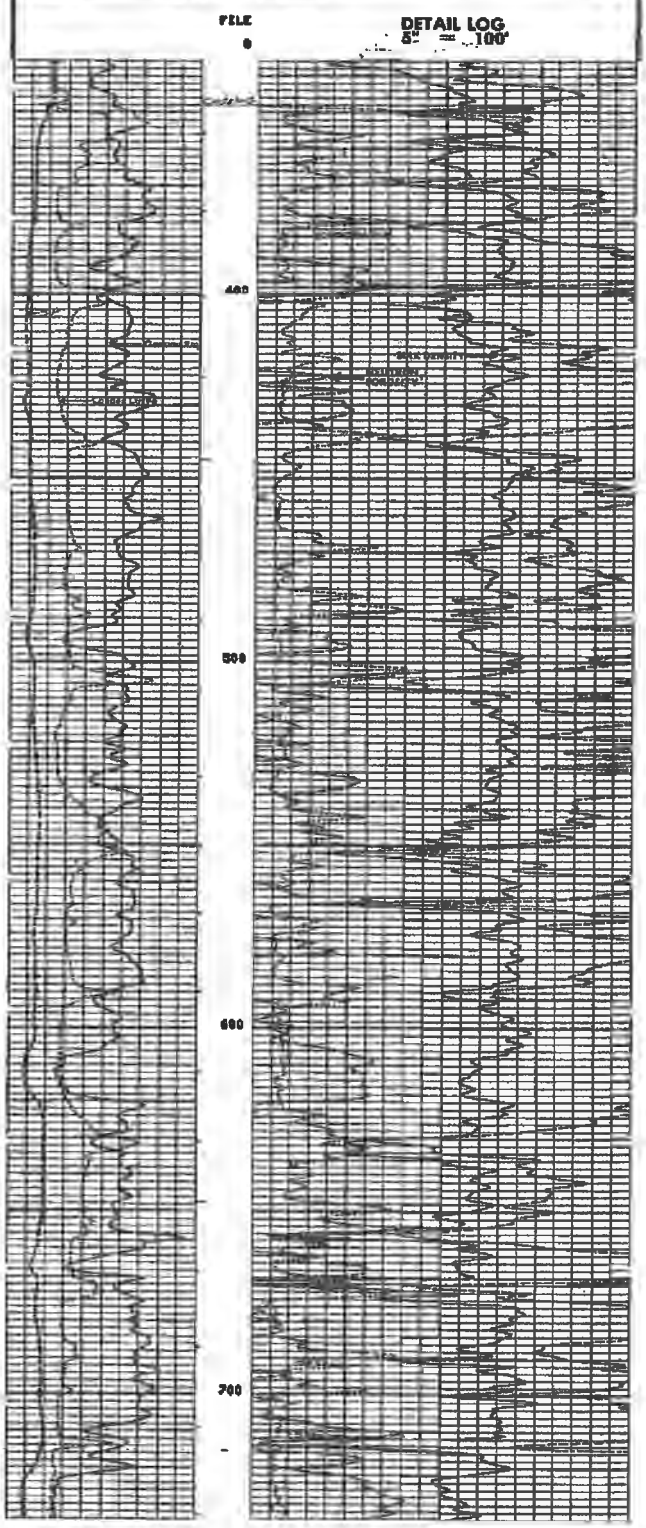
HRAT 44.4 FEET

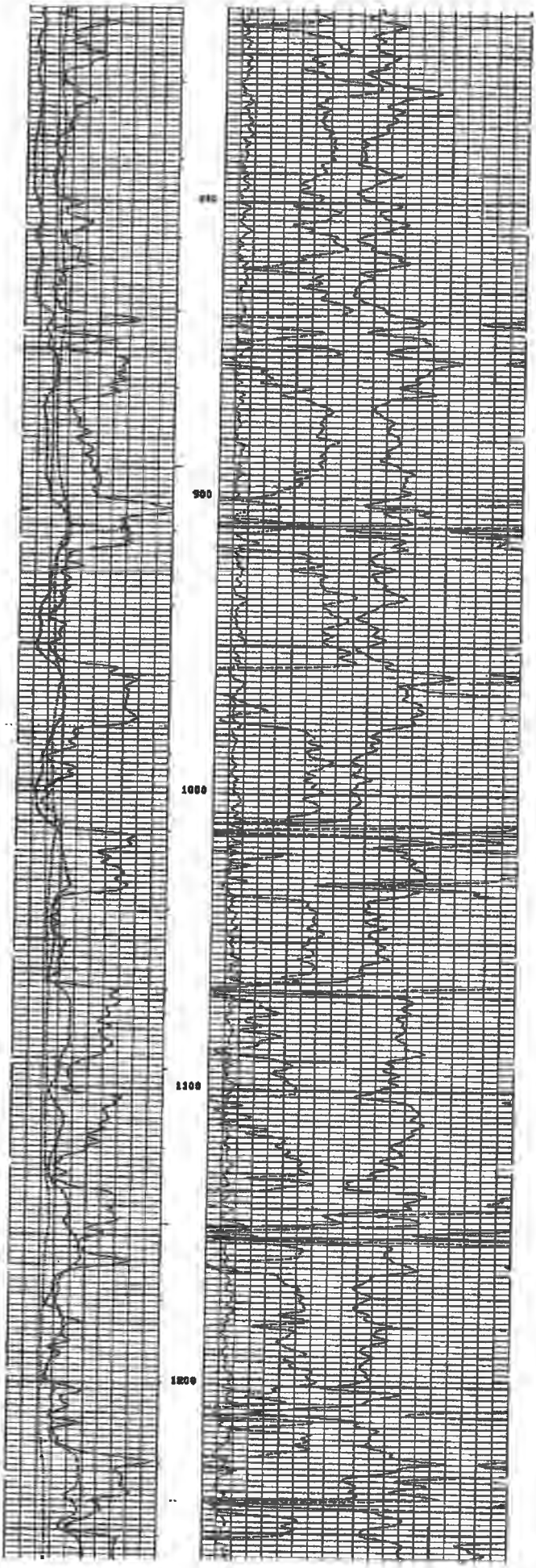
PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PSNR	2.620		BS	6.750	IN
MATR	SAND		MC	CAL.I	
MDEN	2.680	G/CS	FD	1.000	G/CS
BMF	MUTE		FDCC	ALLO	
SDR	1.000	OHMM	DSEC	7.500	MMHO
FPHI	DPHI		MSEC	5.000	MMHO
RO	0.0		BHS	OPEN	

CHANGED PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
MATR	SAND				

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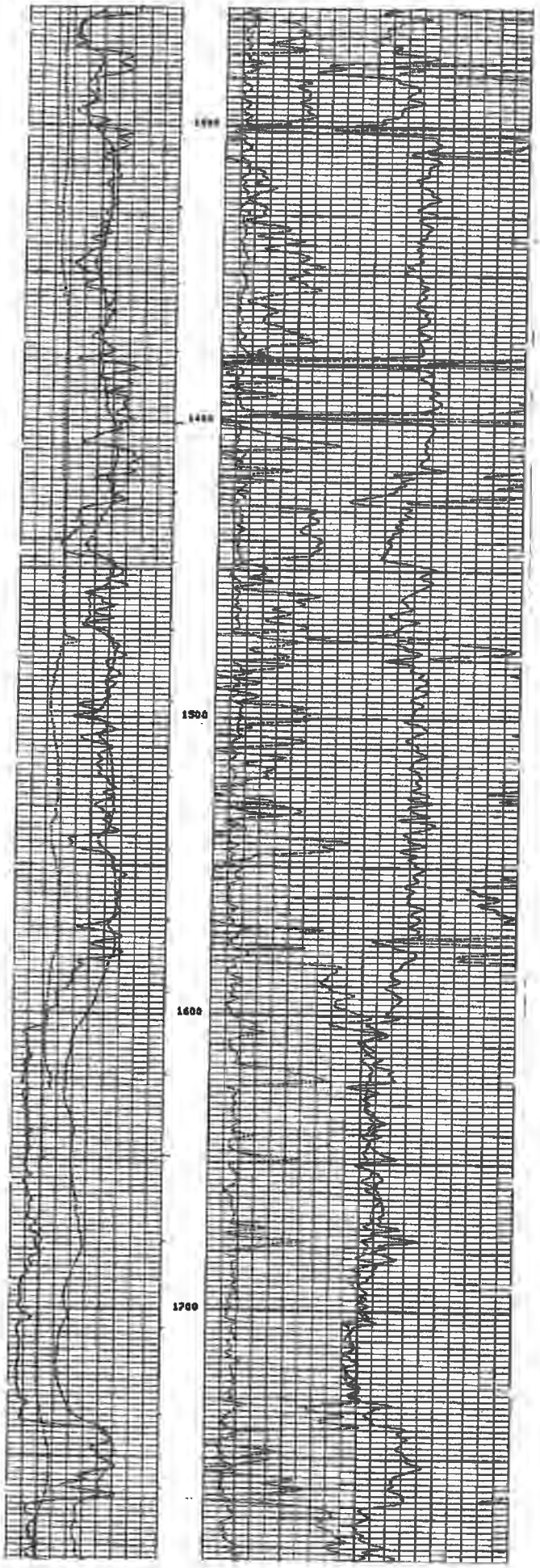
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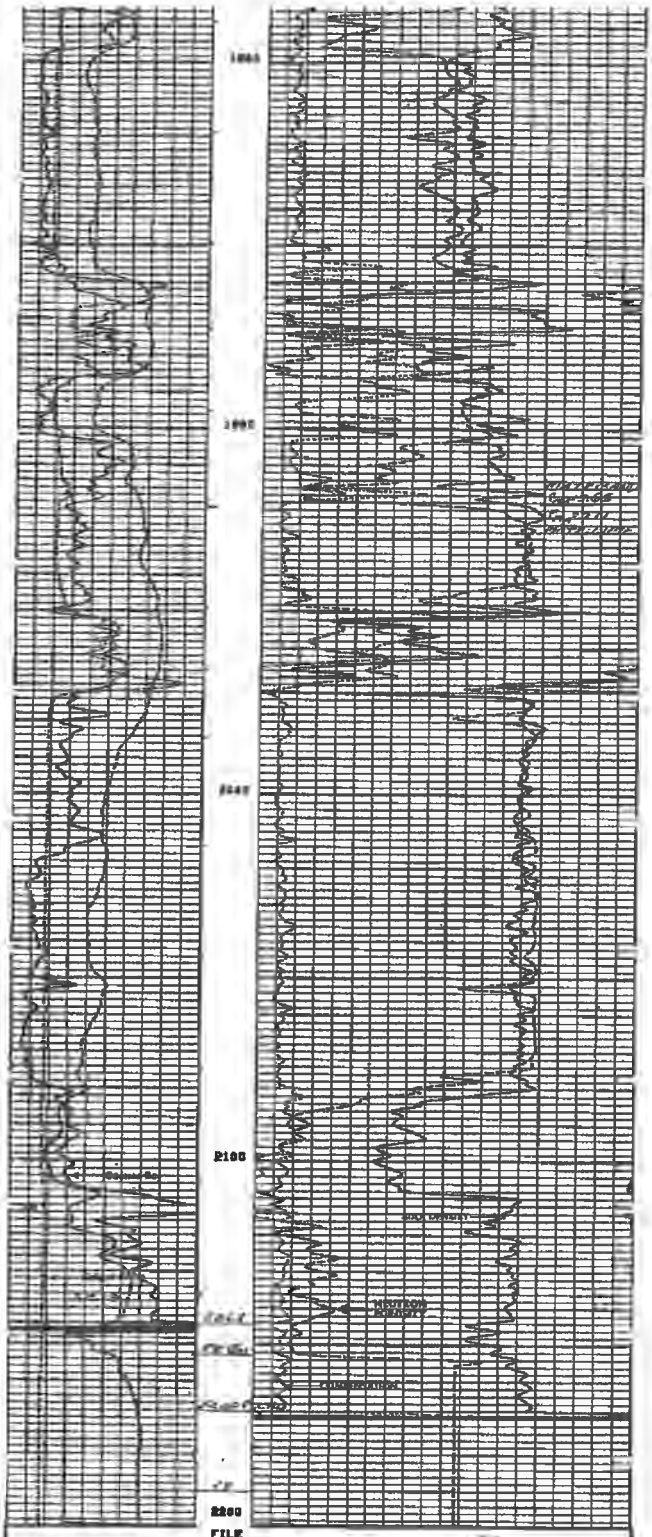


DETAIL LOG
5" = 100'

CALI (IN) 6.000 16.00

GR (API) 0.0 200.0

SP (MV) 0.000 0.4500

DRHO (G/C3) -0.050 0.4500

RHOB (G/C3) 2.000 3.000

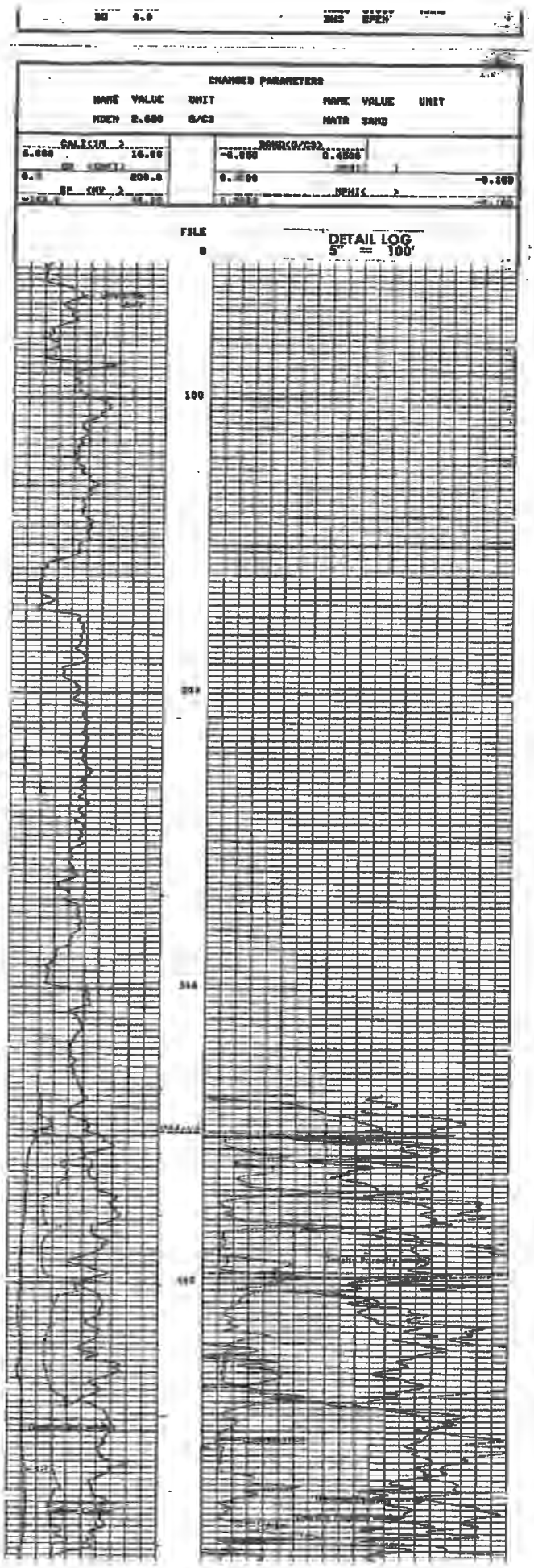
NPHI (%) 0.100 -0.100

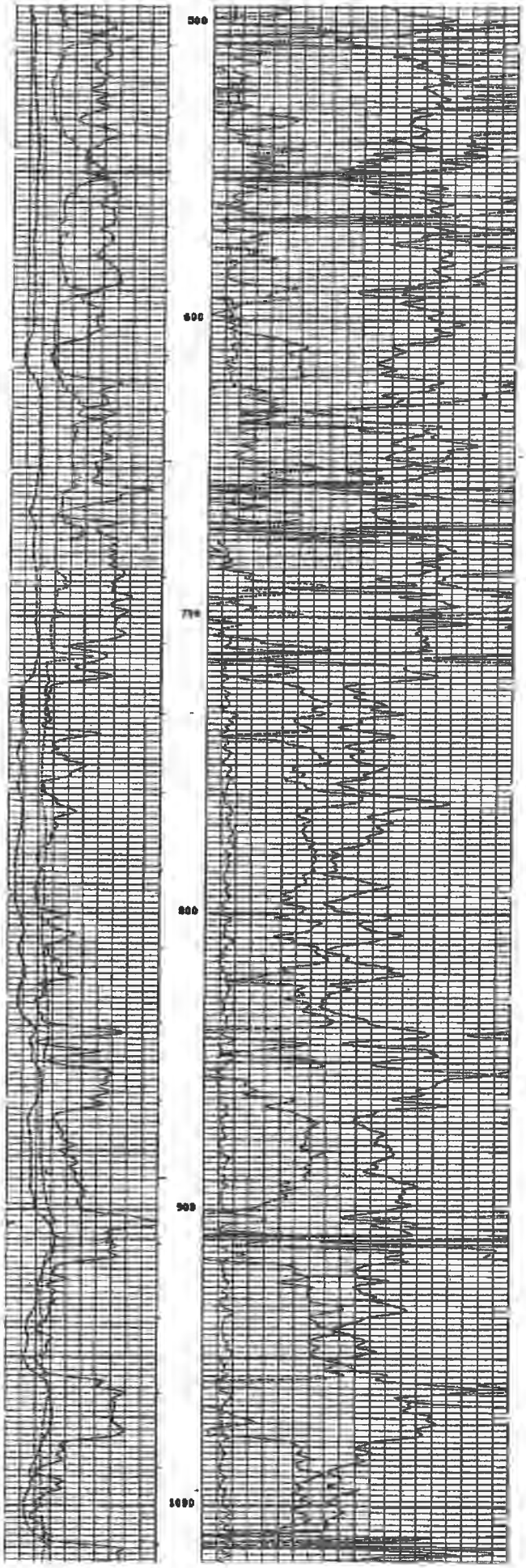
SENSOR MEASURE POINT TO TENSION REFERENCE POINT

MCML	44.4	FEET	GR	52.9	FEET
FFDC	89.1	FEET	FCNL	44.4	FEET
CALI	89.1	FEET	NFDC	89.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET
MRAT	44.4	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PSNR	0.000		BS	6.750	IN
MATR	SAND		MC	CALI	
MDEN	2.650	G/C3	FD	1.000	G/C3
MNF	WATE		FBCC	ALLD	
SNR	1.000	OHMM	DSEC	7.500	MMHO
FPHI	NPHI		MSEC	0.000	MMHO


CHANGED PARAMETERS
NAME VALUE UNIT
RDEN 2.600 G/C3
NAME VALUE UNIT
MATR SAND
CALIBR
16.00
200.0
RHOB(G/C3)
-0.050
0.4500
NPHI
-0.100
FILE
DETAIL LOG
5" = 100'
100
200
300
400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600
700
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900
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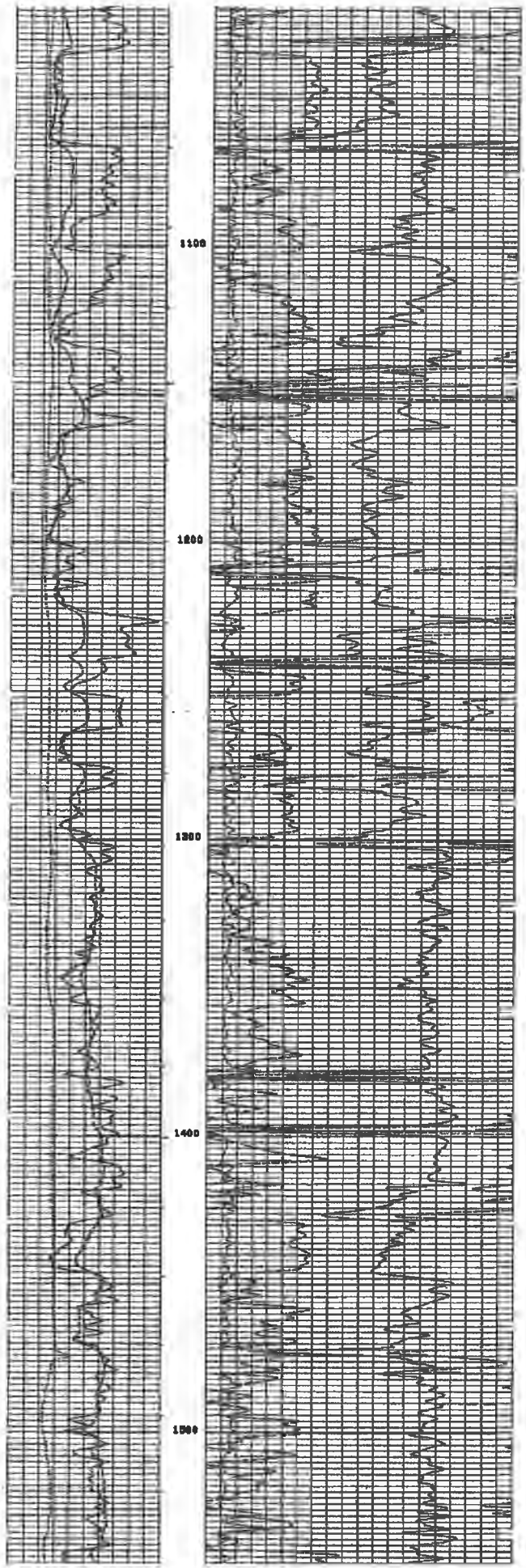
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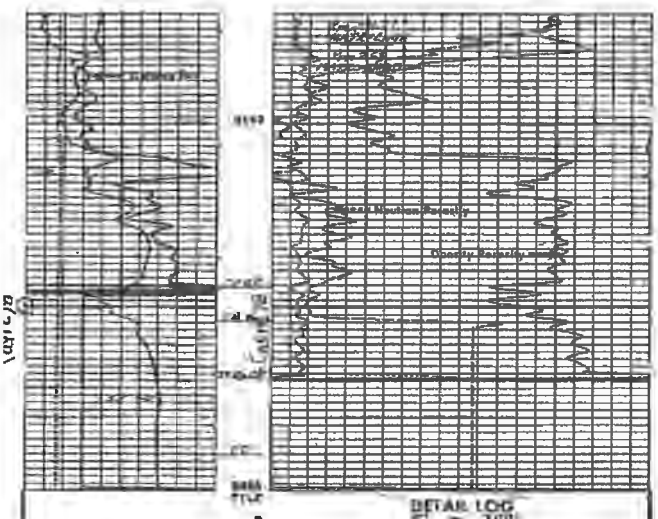
1200
1300
1400
1500

1600
1700
1800
1900
2000



DETAIL LOG
2" = 100'

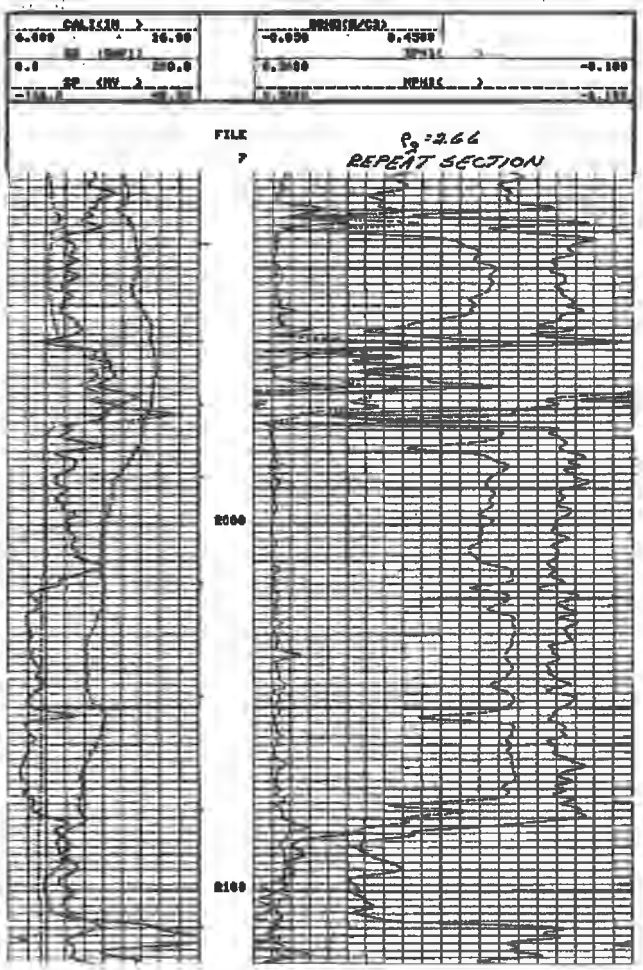
CALI(IN)		DRHO(G/C3)	
6.000	16.00	-0.050	0.4500
GR (API)		DPHI	
0.0	200.0	0.3000	-0.100
SP (MV)		NPHI	

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

MCNL	44.4	FEET	GR	52.9	FEET
FPDC	29.1	FEET	FCNL	44.4	FEET
CALI	29.1	FEET	NPDC	29.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	8.3	FEET
TEMB	.0	FEET	SPAR	.0	FEET
MRAT	44.4	FEET			

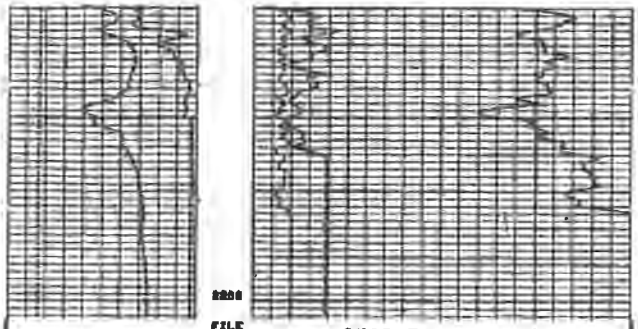
PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PSNR	2.520		BS	6.750	IN
MATR	SAND		HC	CALI	
MDEN	2.650	G/C3	FD	1.000	G/C3
BHF	WATE		FDCC	ALLO	
SNR	1.050	OHMM	DSEC	7.500	MMHO
TPHI	NPHI		MSEC	5.000	MMHO
DD	0.0		MMS	OPEN	



FILE 7

ρ_a = 2.66
REPEAT SECTION



FILE 7

REPEAT SECTION

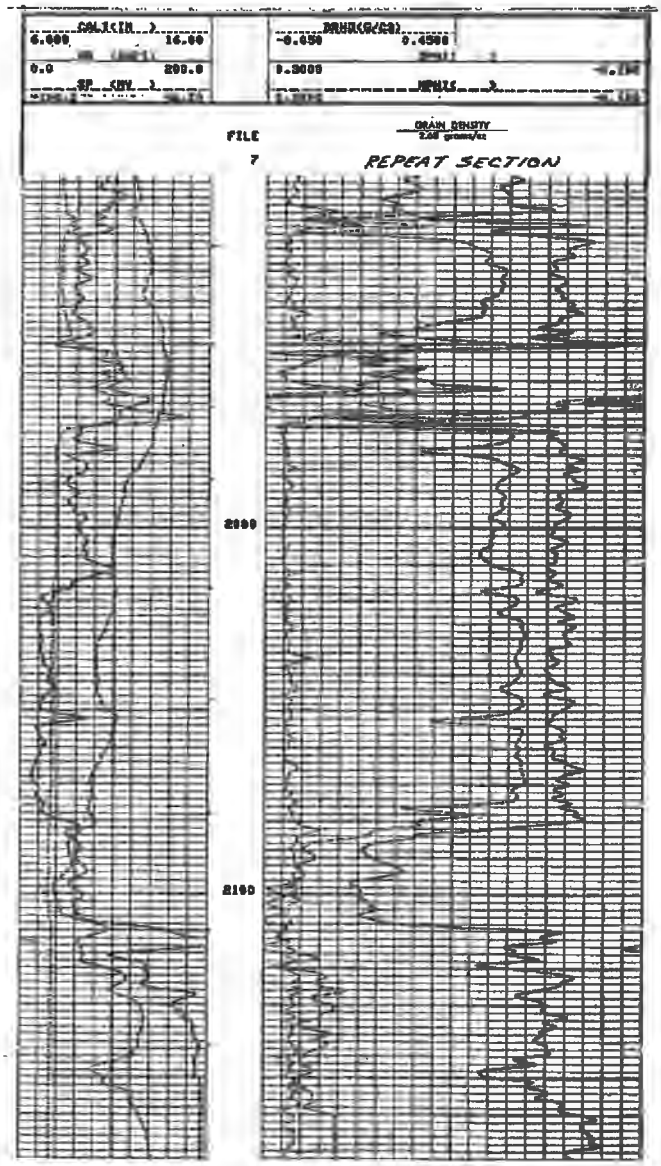
CALI(IN)		DRHO(G/C3)	
6.000	16.00	-0.050	0.4500
GR (API)		NPHI ( )	
0.0	200.0	0.3000	-0.150
SP (MV)		NPHIL ( )	
-100.0	50.00	0.3000	-0.150

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

HCNL	44.4	FEET	GR	82.9	FEET
FFDC	89.1	FEET	FCNL	44.4	FEET
CALI	89.1	FEET	NFDC	89.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET
MRAT	44.4	FEET			

PARAMETERS

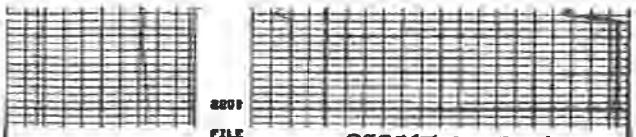
NAME	VALUE	UNIT	NAME	VALUE	UNIT
FSNM	8.820		BS	6.750	IN
MATR	SAND		HC	CALI	
MMDN	2.650	G/C3	FD	1.000	G/C3
DHF	WATE		FDCC	ALLE	
SBH	1.000	OHMM	SSEC	7.500	MMHO
FPHZ	SPHI		MSEC	5.000	MMHO
DS	0.0		BHS	OPEN	



FILE 7

GRAIN DENSITY 2.68 grams/cc

REPEAT SECTION



FILE 7

REPEAT SECTION

GRAIN DENSITY 2.68 grams/cc

CALI(IN)		DRHO(G/CC)	
6.000	16.00	-0.050	0.4000

SP (MV)		MPHI( )	
0.0	200.0	0.3000	-0.100

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

MCML	44.4	FEET	GR	88.9	FEET
FFDC	89.1	FEET	FCML	44.4	FEET
CALI	89.1	FEET	NFDC	89.1	FEET
SFL	8.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET
MRAT	44.4	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PIMR	2.220		BS	6.700	IN
MATR	SAND		MC	CALI	
MDEN	2.680	G/CC	FD	1.000	G/CC
BHF	WATE		FDCC	ALLB	
SZM	1.000	OHMM	SSEC	7.000	MMHO
FPHI	2PHI		MSEC	5.000	OHMM
SO	6.0		BHS	OPEN	

BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 02/10/06
PROGRAM FILE: ISH (VERSION 20.2 00/07/04)

DITB ELECTRONICS CALIBRATION SUMMARY

	MEASURED ZERO	MEASURED PLUS	CALIBRATED ZERO	CALIBRATED PLUS	UNITS
ILD	0.7	541.7	0.0	503.7	MMHO
ILM	0.6	484.6	0.0	509.0	MMHO
SFL	0.7	514.0	0.0	500.0	MMHO

ILD SONDE ERROR CORRECTION : 5.5 MMHO
ILM SONDE ERROR CORRECTION : 5.1 MMHO

SGTE DETECTOR CALIBRATION SUMMARY

	MEASURED BKGD	MEASURED JIG	CALIBRATED	UNITS
GR	49	199	165	GAPI

CHTA DETECTOR CALIBRATION SUMMARY

	TANK INPUT	TANK CALIBRATED	JIG MEASURED	JIG CALIBRATED
MRAT	2.220	2.150	2.195	2.124

PGTK DETECTOR CALIBRATION SUMMARY

	BLOCK INPUT	BLOCK CALIBRATED	JIG MEASURED	JIG CALIBRATED	UNITS
FFDC	722	337	703	338	CPS
NFDC	1140	528	1040	488	CPS

PGTK CALIPER CALIBRATION SUMMARY

	MEASURED SMALL	MEASURED LARGE	CALIBRATED SMALL	CALIBRATED LARGE	UNITS
CALI	10.1	16.0	6.0	18.0	IN

FILE

SHOP SUMMARY

PERFORMED: 02/09/13
PROGRAM FILE: SHOP (VERSION 22.2 02/06/00)

PGTK DETECTOR CALIBRATION SUMMARY

	BLOCK MEASURED	BLOCK CALIBRATED	JIG MEASURED	JIG CALIBRATED	UNITS
FFDC	722	337	718	338	CPS
NFDC	1140	528	1096	507	CPS

(PGS=229 , PDH=1196, GSR=5359, SFT =327)

SHOP SUMMARY

PERFORMED: 08/09/19
PROGRAM FILE: SHOP (VERSION 20.2 01/ 1/30)

CHTA DETECTOR CALIBRATION SUMMARY

	TANK MEASURED	TANK CALIBRATED	JIG MEASURED	JIG CALIBRATED
MRAT	2.220	2.150	2.226	2.163

(CNC=2094 , CHD=9185)

COMPANY PENNZOIL COMPANY
WELL WILLIAM LOONEY #37
FIELD TARIFF
COUNTY ROANE STATE WEST VIRGINIA

SCHL. FR 2150
SCHL. TO 2190
DRLR. TO 2190

Elev. KB 1071
DF 1070
GL 1061

3660
Dual
Induction-SFL

Schlumberger

DUAL INDUCTION SFL

COUNTY ROANE
FIELD TARIFF
LOCATION SMITHFIELD DIST
WELL WILLIAM LOONEY #31
COMPANY PENNZOIL COMPANY

COMPANY PENNZOIL COMPANY

WELL WILLIAM LOONEY #31

FIELD TARIFF

COUNTY ROANE STATE WEST VIRGINIA

LOCATION: SMITHFIELD DISTRICT
TARIFF 7.5' QUAD
API # 47-087-3660

API SERIAL NO. | SEC. | TWP | RANGE

Other Services:
FDC/CNL

Permanent Datum: GROUND LEVEL, Elev.: 1061
Log Measured From KELLY BUSHING 10 Ft. Above Perm. Datum
Drilling Measured From KELLY BUSHING

Elev.: K.B. 1071
D.F. 1070
G.L. 1061

Date	10/6/82			
Run No.	ONE			
Depth-Driller	2190			
Depth-Logger (Schl.)	2190			
Bot. Log Interval	2183			
Top Log Interval	349			
Casing-Driller	8 5/8 @ 349	@	@	@
Casing-Logger	349			
Bit Size	6 75			
Type Fluid in Hole	SHALE CK			
Dens. / Visc.	8.4 / 38			
pH / Fluid Loss	11 / ---ml	ml	ml	ml
Source of Sample	PIT			
Rm @ Meas. Temp.	2.06 @ 73°F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	--- @ °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	--- @ °F	@ °F	@ °F	@ °F
Source: Rmf / Rmc	---			
Rm @ BHT	1.99 @ 90°F	@ °F	@ °F	@ °F
TIME: Circulation Stopped	1400			
TIME: Logger on Bottom	1930			
Max. Rec. Temp.	90 EST °F	°F	°F	°F
Equip. / Location	101/34 3307			
Recorded By	WERKES			

FOLD HERE

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

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

Run No. ONE
Service Order No. 208413
Fluid Level ---
F.P.M. 30

...y pos. d	---
EQUIPMENT DATA	
anel	IEM1217
artridge	1197
onde	G-15
lemorizer Panel	M7B09
entralizer Type	S.O.
tand-off - Inches	1.5"
.R. Panel	BLM1155
CALIBRATION DATA	
BR	1.0
.D Sonde Error	7.5
.M Sonde Error	5.0
.E. Set In Hole - Depth	2010
.E Corr. - Hole Size	7.75
.R. Background	49
.R. Source	199
.C. - Cal.	---
LOGGING DATA	
BR	1.0
.D Sonde Error Log	5.0
.M Sonde Error Log	7.5
.R. Scale per 100 Div.	200
.S. - Y.C Log	---

REMARKS

All interpretations are opinions based on inferences from [illegible] 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 our General Terms and Conditions as set out in our current Price Schedule.

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 82/10/06
PROGRAM FILE: ISN (VERSION 20.2 60/07/24)

DITD TOOL CHECK

	ZERO BEFORE	ZERO AFTER	PLUS BEFORE	PLUS AFTER	UNITS
ILD	0.0	-0.0	503.7	503.1	MMHO
ILM	0.0	-0.1	509.5	506.6	MMHO
SFL	0.0	-0.0	500.0	501.9	MMHO

ILD SONDE ERROR CORRECTION : 7.5 MMHO
ILM SONDE ERROR CORRECTION : 5.0 MMHO

CNTA TOOL CHECK

	JIG BEFORE	JIG AFTER
NRAT	2.134	2.126

POROSITY CHANGE (LIME): -0.000

PGTK TOOL CHECK

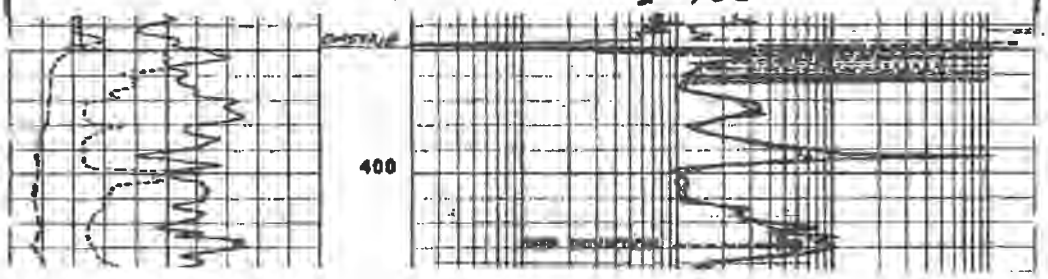
	JIG BEFORE	JIG AFTER	UNITS
FFDC	320	332	CPS
NFDC	485	488	CPS

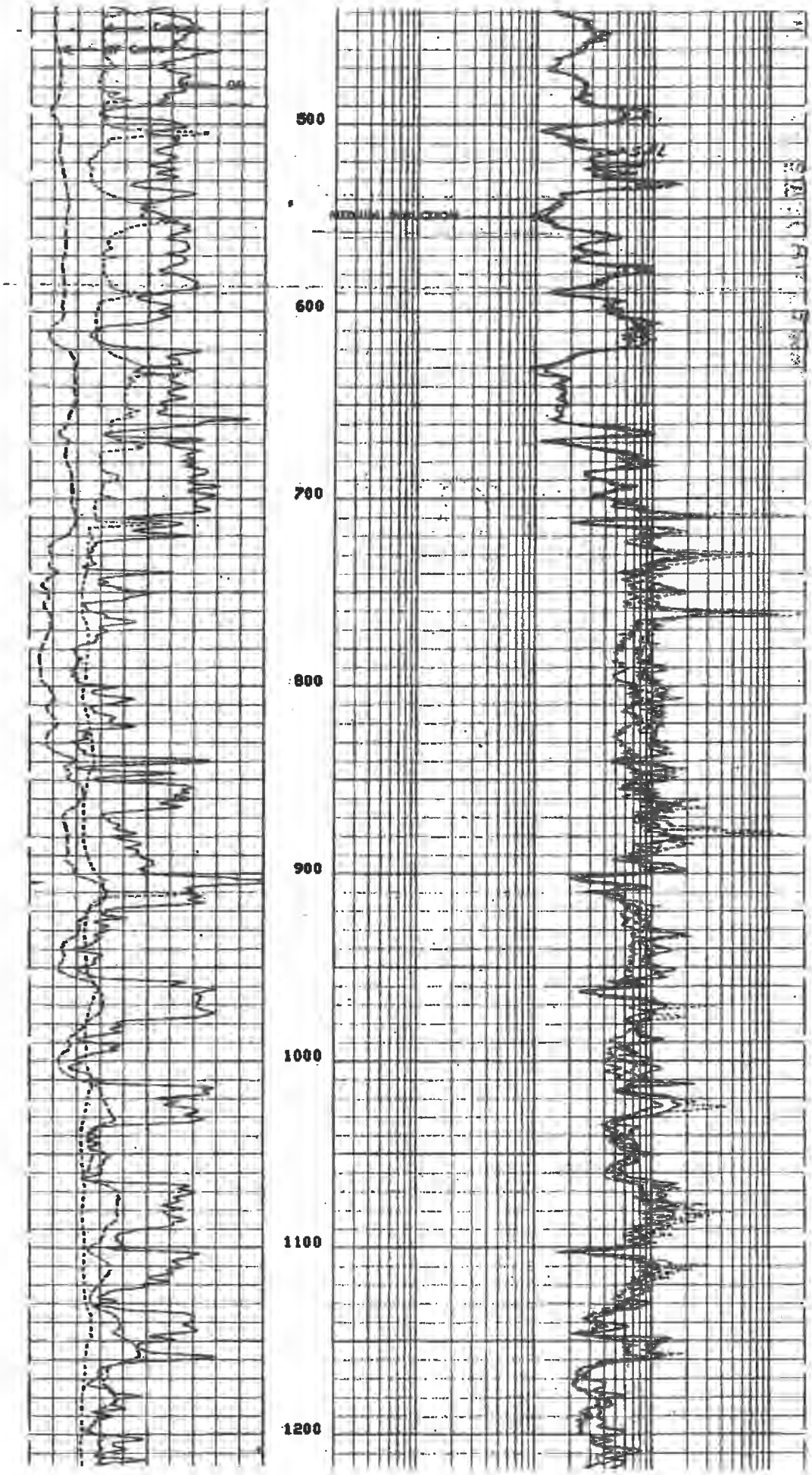
FILE 10

CALI(IN)		ILD (OHMM)	
6.000	16.00	0.2000	2000.
GR (GAPI)		ILM (OHMM)	
0.0	200.0	0.2000	2000.
SP (MV)		SFLU(OHMM)	
-160.0	40.00	0.2000	2000.

FILE 8

2"=100'

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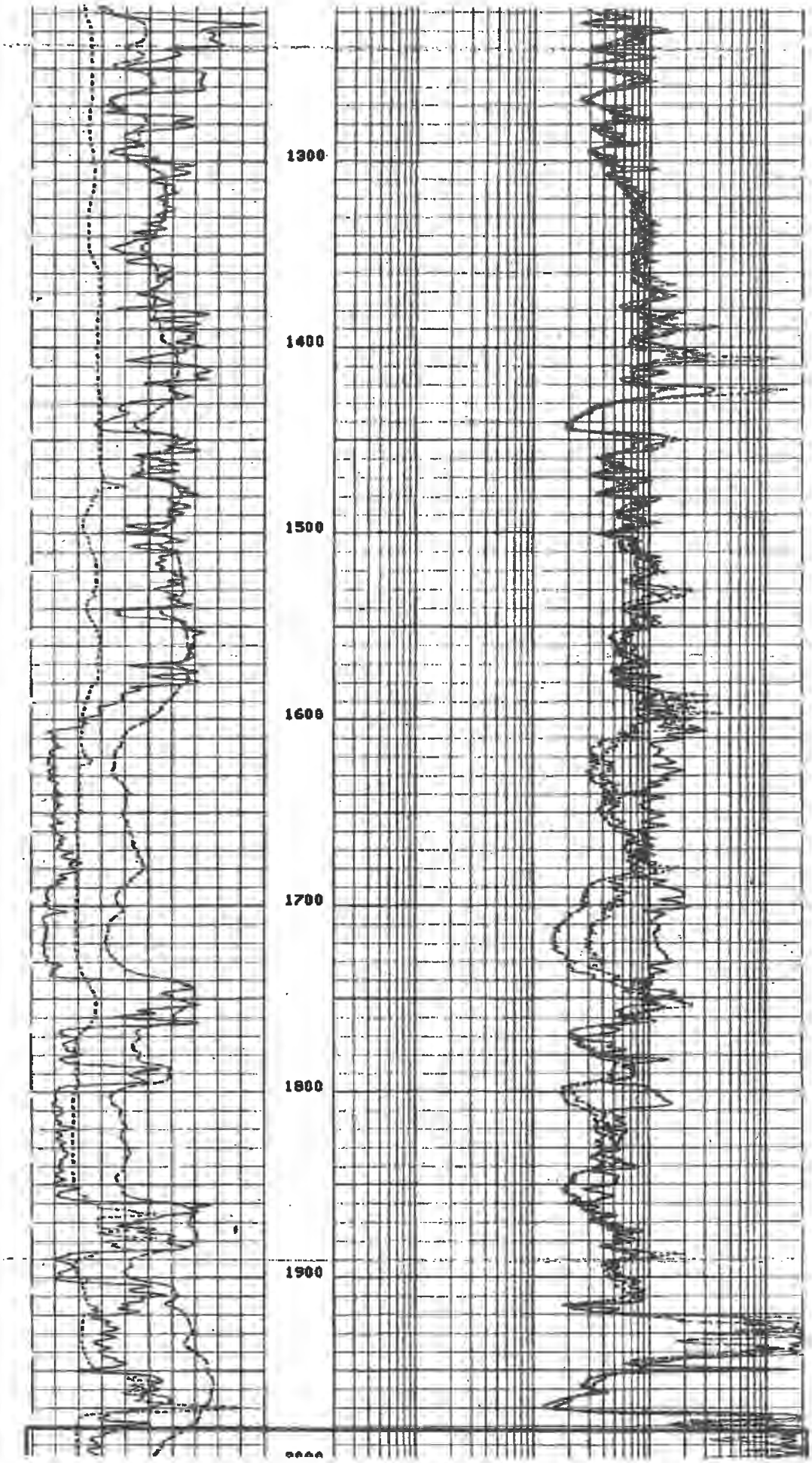
900
1000
1100
1200


1300
1400
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1700
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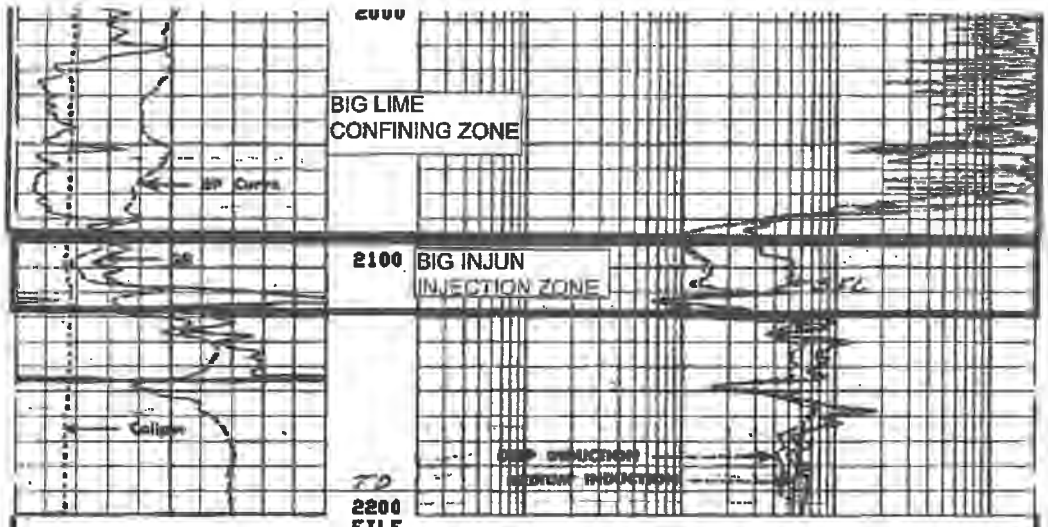


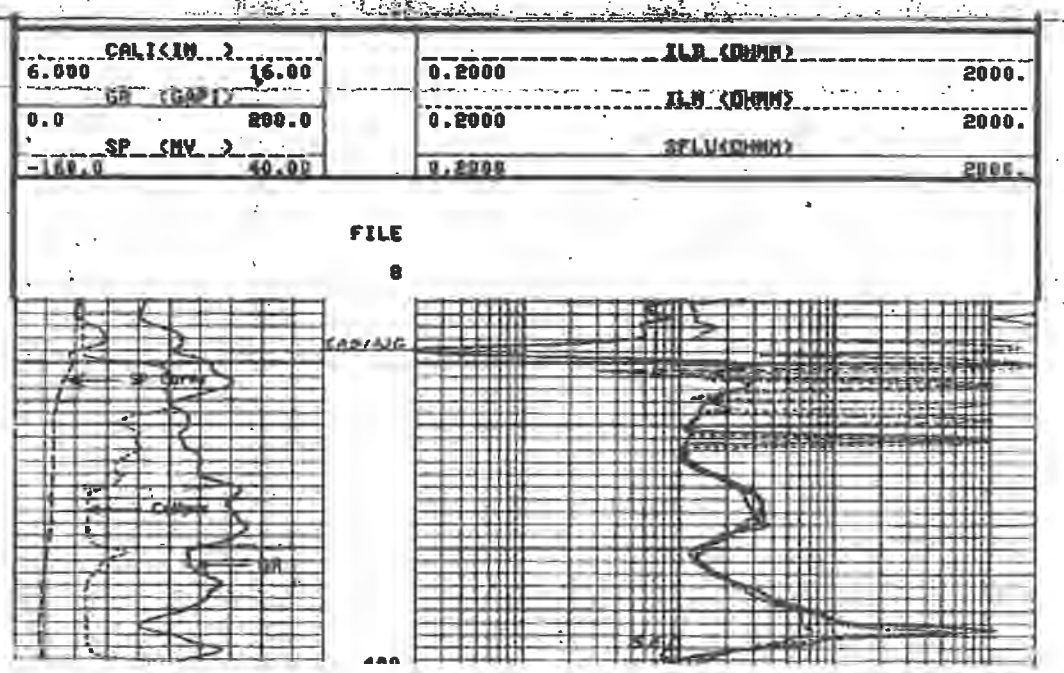
CALI(IN)		ILD (OHMM)	
6.000	16.00	0.2000	2000.
GR (GAPI)		ILM (OHMM)	
0.0	200.0	0.2000	2000.
SP (MV)		SFLU(OHMM)	
-160.0	40.00	0.2000	2000.

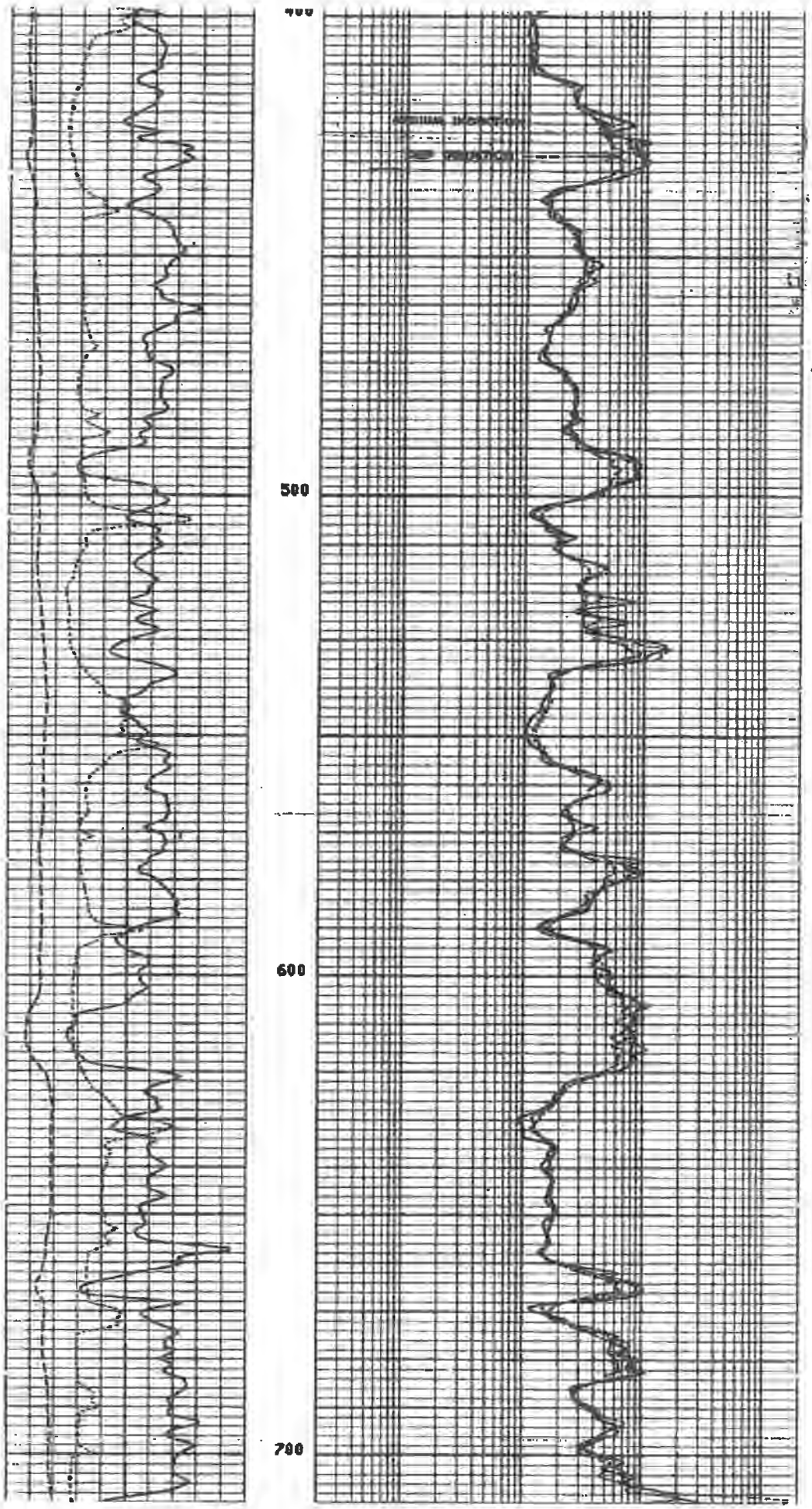
SENSOR MEASURE POINT TO TENSION REFERENCE POINT

NCNL	44.4	FEET	GR	52.9	FEET
FFDC	29.1	FEET	FCNL	44.4	FEET
CALI	29.1	FEET	NFDC	29.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET
NRAT	44.4	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
PSNR	2.220		BS	6.750	IN
MATR	SAND		HC	CALI	
MDEN	2.680	G/C3	FD	1.000	G/C3
BHF	WATE		FDCC	ALLD	
SBR	1.000	OHMM	DSEC	7.500	MMHO
FPHI	DPHI		MSEC	5.000	MMHO
DO	0.0		DHS	OPEN	

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600
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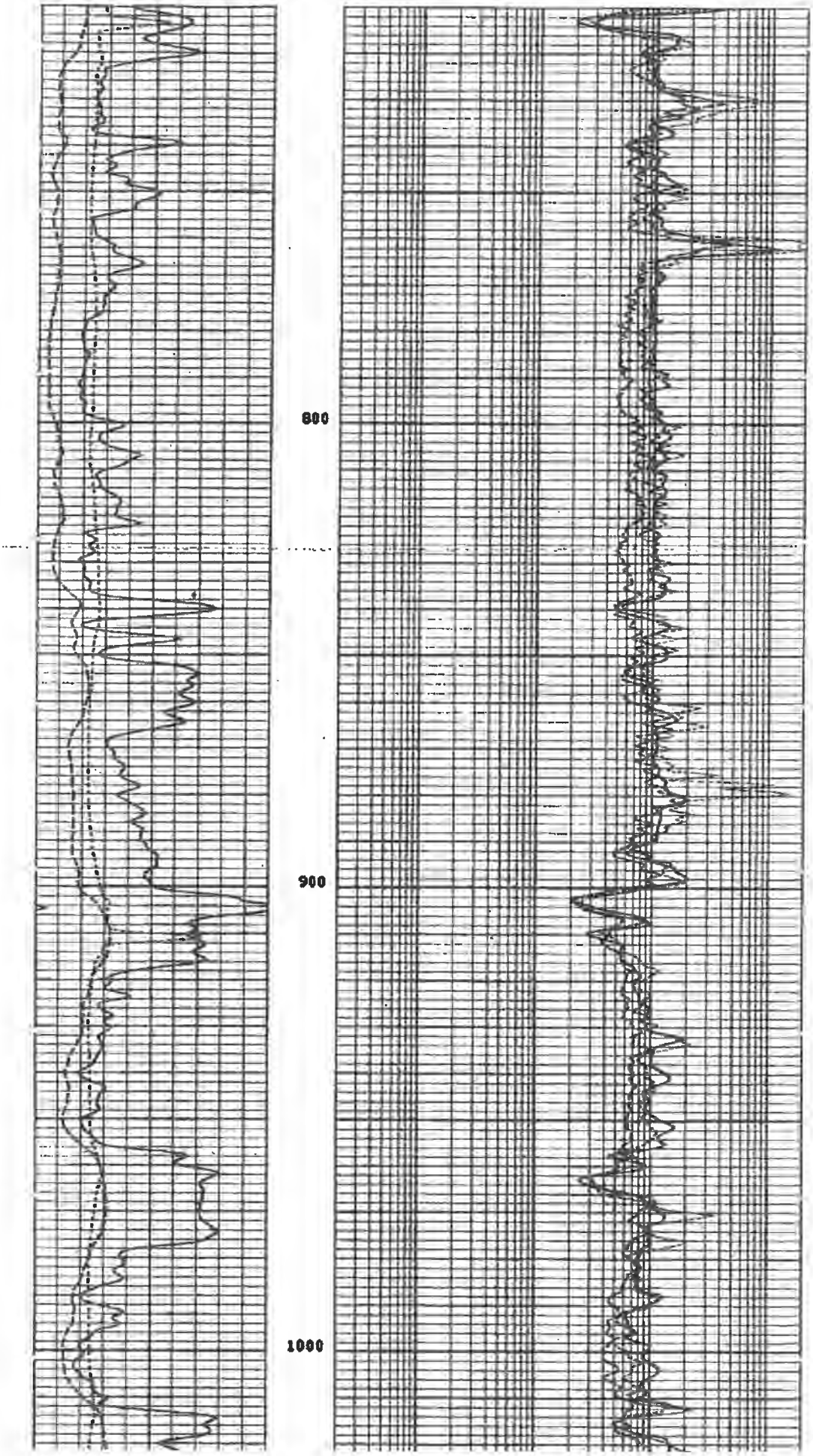
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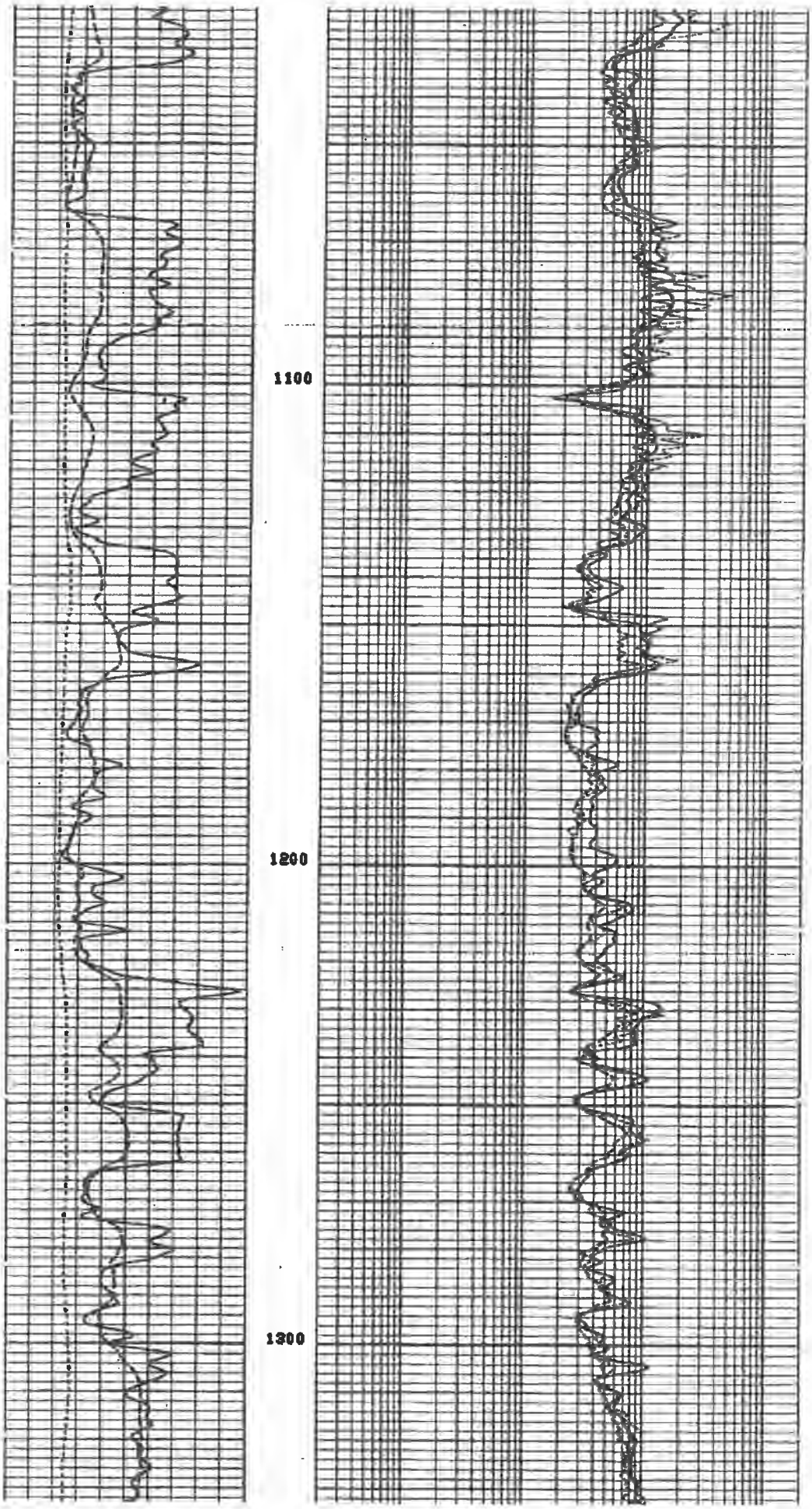
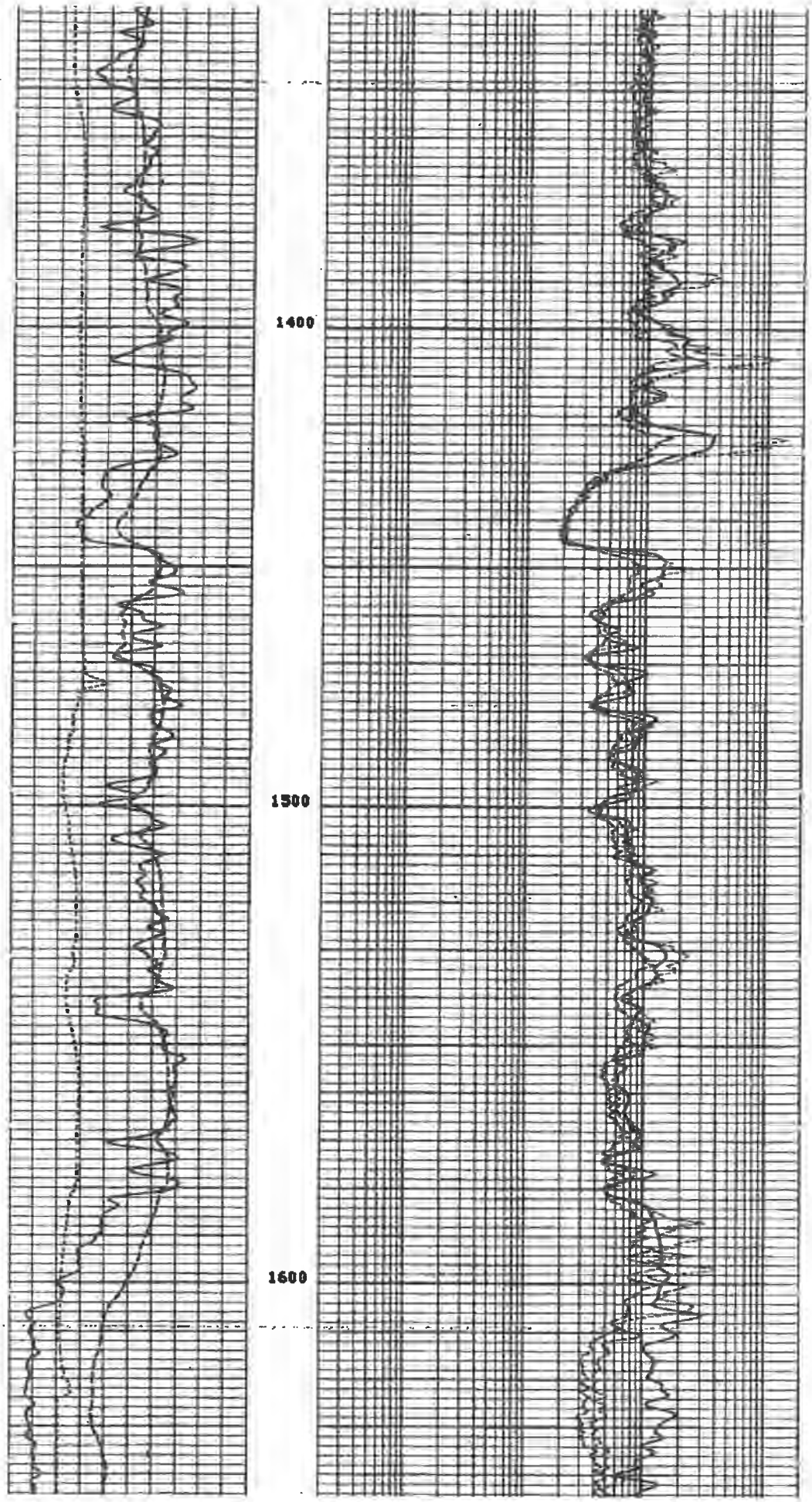
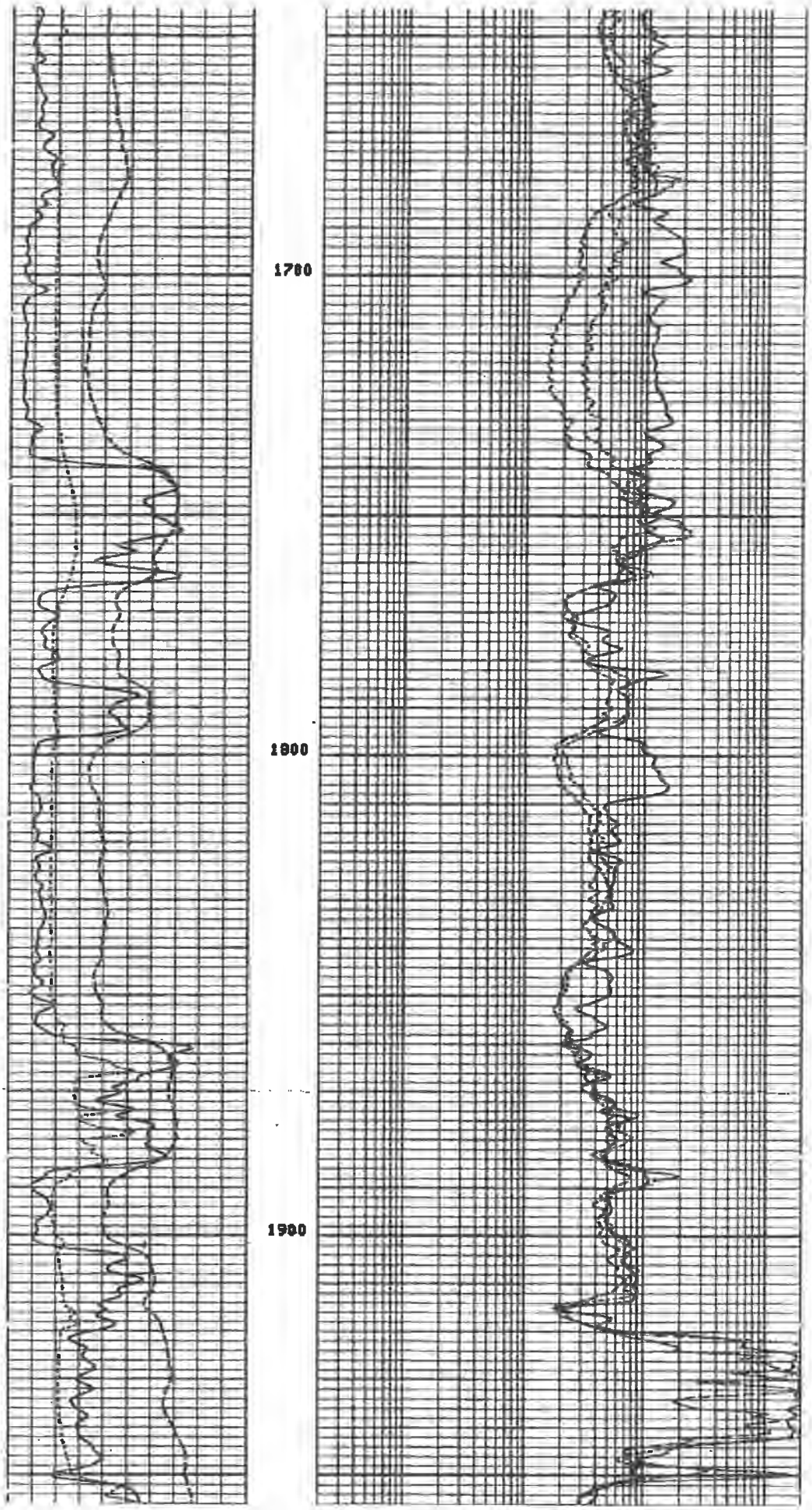
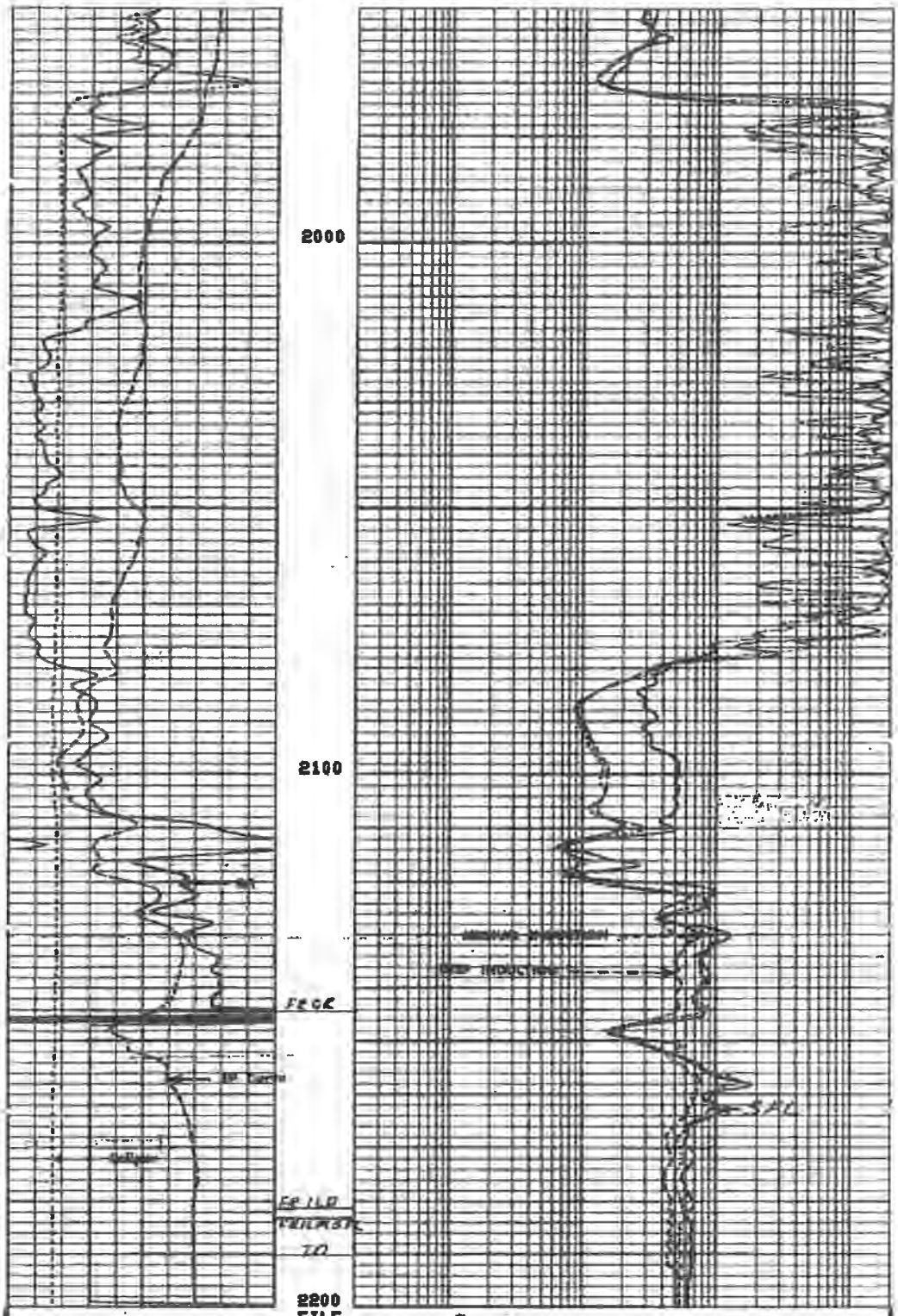
1000


1100
1200
1300


1400
1500
1600


1700
1800
1900



DETAIL LOG
5" = 100'

CALI(IN)		ILD (OHMM)	
6.000	16.00	0.2000	2000.
GR (GAPI)		ILM (OHMM)	
0.0	200.0	0.2000	2000.
SP (MV)		SFLU(OHMM)	
-160.0	40.00	0.2000	2000.

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

NCNL	44.4	FEET	GR	52.9	FEET
FFDC	29.1	FEET	FCNL	44.4	FEET
CALI	29.1	FEET	NFDC	29.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET

NGAT 44.4 FEET

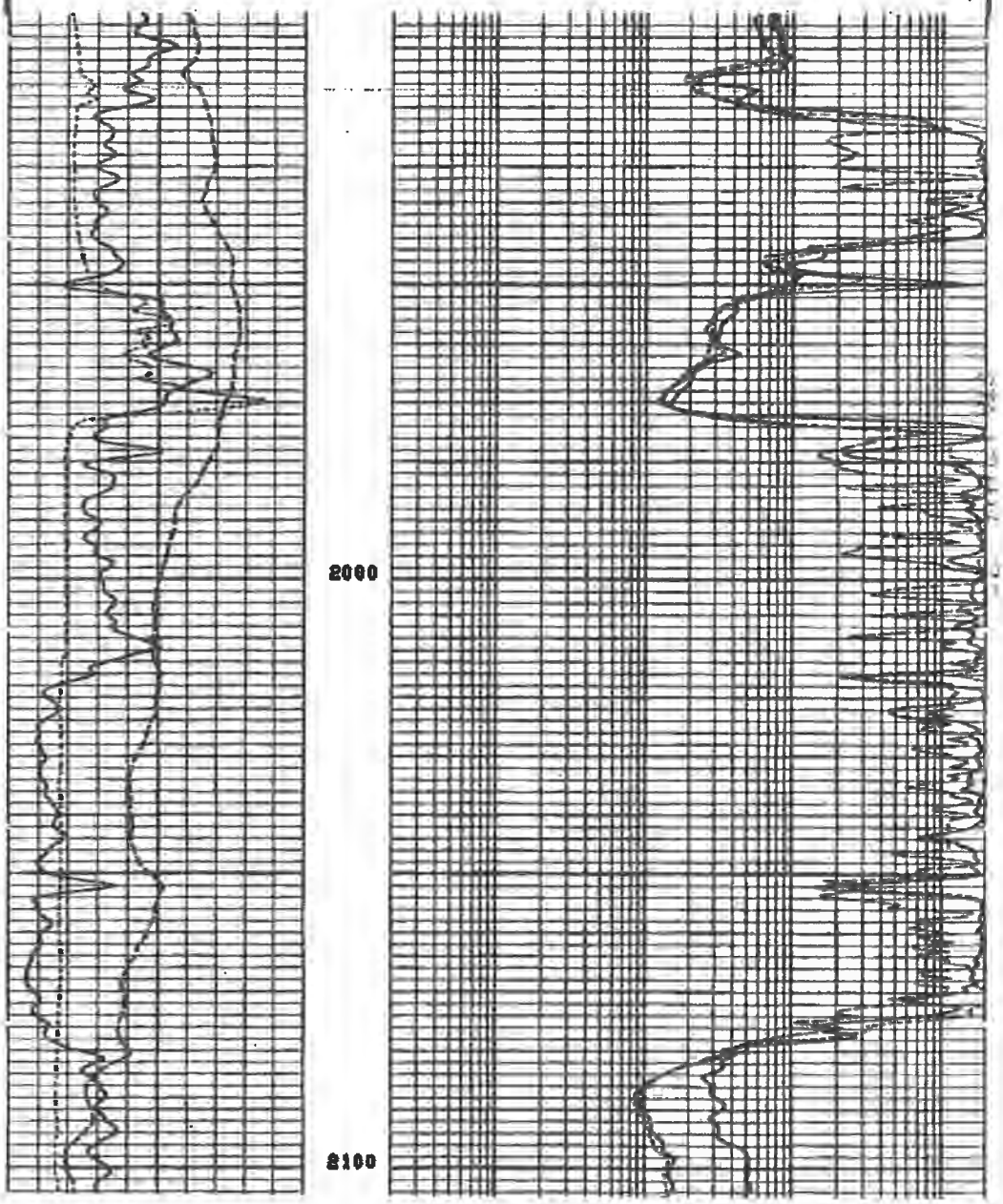
PARAMETERS

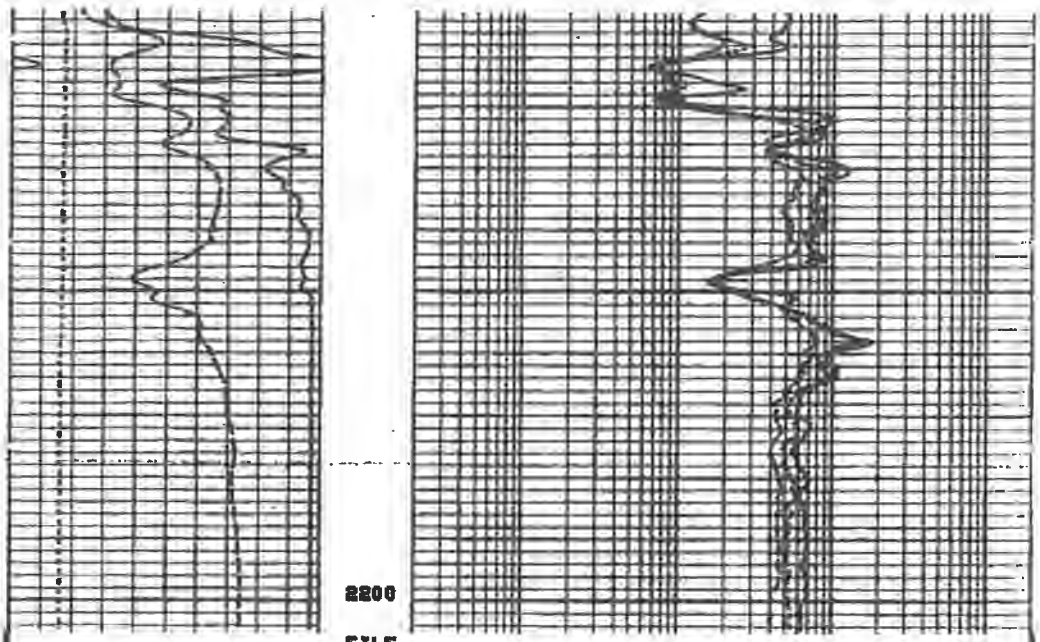
NAME	VALUE	UNIT	NAME	VALUE	UNIT
FSVR	2.220		BS	6.750	IN
MATR	SAND		HC	CALI	
MDEN	2.600	G/C3	FD	1.000	G/C3
BHF	WATE		FDCC	ALLO	
SBR	1.000	OHMM	DSEC	7.500	MMHO
FPHI	DPHI		MSEC	5.000	MMHO
DO	0.0		BHS	OPEN	

CALI(IN) 6.000 — 16.00	ILD (OHMM) 0.2000 — 2000.
GR (GAPI) 0.0 — 200.0	ILM (OHMM) 0.2000 — 2000.
SP (MV) -160.0 — 40.00	SFLU(OHMM) 0.2000 — 2000.

FILE 7

REPEAT SECTION





2200

FILE

7

REPEAT SECTION

CALI(IN)		ILD (OHMM)
6.000 — 16.00		0.2000 — 2000.
GR (GAPI)		ILM (OHMM)
0.0 — 200.0		0.2000 — 2000.
SP (MV)		SFLU(OHMM)
-160.0 — 40.00		0.2000 — 2000.

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

NCNL	44.4	FEET	GR	52.9	FEET
FFDC	29.1	FEET	FCNL	44.4	FEET
CALI	29.1	FEET	NFDC	29.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET
NRAT	44.4	FEET			

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
FSIZ	2.220		XI	6.750	IN
MATR	SAND		HC	CALI	
RDEN	2.680	G/C3	FB	1.000	G/C3
SNF	WATE		FBCC	ALLO	
SBR	1.000	OHMM	DSEC	7.500	MMHO
FPHI	DPHI		MSEC	5.000	MMHO
SO	0.0		SHO	OPEN	

BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 82/10/06
PROGRAM FILE: ISM (VERSION 20.2 60/07/24)

DITD ELECTRONICS CALIBRATION SUMMARY

	MEASURED ZERO	MEASURED PLUS	CALIBRATED ZERO	CALIBRATED PLUS	UNITS
ILD	0.7	541.7	0.0	503.7	MMHO
ILM	0.6	484.6	0.0	509.5	MMHO
SFL	0.7	514.0	0.0	500.0	MMHO

ILD SONDE ERROR CORRECTION : 5.5 MMHO
ILM SONDE ERROR CORRECTION : 8.1 MMHO

SGTE DETECTOR CALIBRATION SUMMARY

	MEASURED BKGD	MEASURED JIG	CALIBRATED	UNITS
GR	49	199	165	GAPI

CNTA DETECTOR CALIBRATION SUMMARY

	TANK INPUT	TANK CALIBRATED	JIG MEASURED	JIG CALIBRATED
NRAT	2.220	2.159	2.195	2.134

PGTK DETECTOR CALIBRATION SUMMARY

	BLOCK INPUT	BLOCK CALIBRATED	JIG MEASURED	JIG CALIBRATED	UNITS
FFDC	722	337	703	328	CPS
NFDC	1140	528	1048	485	CPS

PGTK CALIPER CALIBRATION SUMMARY

	MEASURED SMALL	MEASURED LARGE	CALIBRATED SMALL	CALIBRATED LARGE	UNITS
CALI	10.1	16.0	6.8	12.0	IN

FILE

5

SHOP SUMMARY

PERFORMED: 82/09/19
PROGRAM FILE: SHOP (VERSION 20.2 81/ 1/30)

DITB ELECTRONICS CALIBRATION SUMMARY

	TEST LOOP CALIBRATION MEASURED ZERO	MEASURED PLUS	CALIBRATED ZERO	CALIBRATED PLUS	TOOL CHECK CALIBRATED ZERO	CALIBRATED PLUS	UNITS
ILD	-6.0	524.8	0.0	500.0	0.0	504.2	MMHO
ILM	-3.3	469.8	0.0	500.0	0.0	509.5	MMHO

ILD ZONDE ERROR CORRECTION : 5.5 MMHO
ILM ZONDE ERROR CORRECTION : 8.1 MMHO

(IS:6-15 , IC:1197)

COMPANY PENNZOIL COMPANY
WELL WILLIAM LOONEY #31
FIELD TARIFF
COUNTY ROANE STATE WEST VIRGINIA

SCHL. FR 2183
SCHL. TD 2190
DRLR. TD 2190

Elev: KB 1071
DF 1070
GL 1061

"Pipeline"

Select County: (087) Roane
Enter Permit #: 3774
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3774

Report Time: Thursday, April 30, 2020 9:30:28 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703774	Roane	3774	Smithfield	Tariff	Otter	38.660524	-81.211871	481566.4	4279126.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703774	7/30/1983	Original Loc	Completed	Ferrell Booth	40					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703774	7/30/1983	-/-/-	1069	Ground Level	Tariff Tlmn	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2184		2184		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703774	7/30/1983	Horizon	Injection	Vertical	2086		2106	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703774	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Ground Resources LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703774	Pennzoil Company	1984	1,013	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703774	Ground Resources, LLC	2017	0												
4708703774	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703774	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703774	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703774	Original Loc	Little Lime	Well Record	1904	Reasonable	44	Reasonable	1069	Ground Level
4708703774	Original Loc	Blue Monday	Well Record	1948	Reasonable	8	Reasonable	1069	Ground Level
4708703774	Original Loc	Pencil Cave	Well Record	1956	Reasonable	15	Reasonable	1069	Ground Level
4708703774	Original Loc	Greenbrier Group	Well Record	1971	Reasonable	105	Reasonable	1069	Ground Level
4708703774	Original Loc	Big Lime	Well Record	1971	Reasonable	105	Reasonable	1069	Ground Level
4708703774	Original Loc	Big Injun (Price&eq)	Well Record	2075	Reasonable	36	Reasonable	1069	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_
4708703774	2	2181		G D C	Y	N	2	2176	384	2181									384	2176	Y	Y	N						

Comment: *logs: caliper

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

Injector 3774

FILENAME
4708703774gdc.tif

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

Injector 3774

There is no Plugging data for this well

There is no Sample data for this well

3774

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2076 Feet (top) 2111 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2184 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3774

12. Casing and Tubing Program

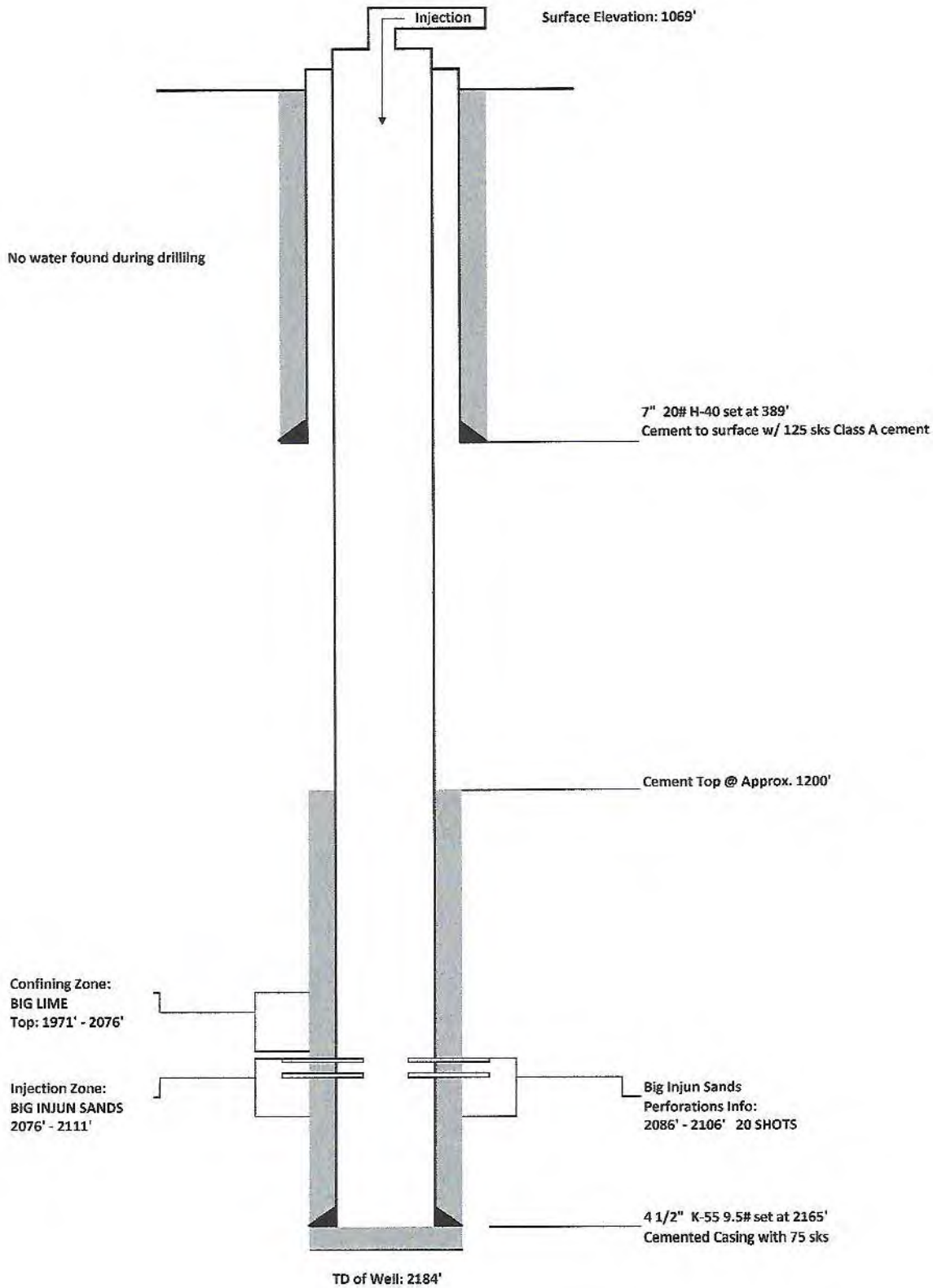
TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	389'	389'	125sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2165'	2165'	75sks
Tubing	NONE						
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

WELL SCHEMATIC

Looney 40
API 47-087-03774



CG-10
2m. - 9-31

RECEIVED
NOV 1 1983
OIL & GAS DIVISION
DEPT. OF MINES

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Quadrangle Tariff 7.5'

Permit No. 47-087-3774-Li

Rotary X Oil ___
Cable ___ Gas ___
Recycling ___ Comb. ___
Water Flood X Storage ___
Disposal ___ (Kind)

Company Pennzoil Company
Address P.O. Box 1588, Parkersburg, WV 26101
Farm W. M. Looney Acres 480
Location (waters) Sycamore Fork
Well No. 40 Elev. 1069.18'
District Smithfield County Roane
The surface of tract is owned in fee by
Ferrell Boothe
Address Left Hand, WV
Mineral rights are owned by Keith Crihfield
Address P.O.Box 431,Spencer, WV
Drilling Commenced 7-27-83
Drilling Completed 7-30-83
Initial open flow (WIW) cu. ft. ___ bbls.
Final production ___ cu. ft. per day ___ bbls.
Well open ___ hrs. before test ___ RP.
Well treatment details:

Casing and Tubing	Used in Drilling	Left in Well	Cement fill Cu. ft. (Sk
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	389	389	125 sks
5 1/2			
4 1/2	2165	2165	75 sks
3			
2			
Liners Used			

Attach copy of cementing record.

Fractured: 10/10/83 w/250 gls. 15% HCL, 160 bbls. 20# gelled water, 1500# 20/40 sd

Perf: 2086-2106/20H

Coal was encountered at NR Feet ___ Inches
Fresh water NR Feet ___ Salt Water NR Feet ___
Producing Sand ___ Depth ___

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Silt & Shale			0	76		
Silt & Sand			76	110		
Shale,Silt,Sand			110	1600		
Salt Sand			1600	1840		
Silt,Shale,Sand			1840	1904		
Little Lime			1904	1948		
Blue Monday			1948	1956		
Pencil Cave			1956	1971		
Big Lime			1971	2076		
Big Injun			2076	2111		
Pocono Shale			2111	2184		
Total Depth				2184		

JAN 23 1984

FORM IV-3
(Obverse)
[02-83]

DRILLING CONTRACTOR

1) Date: May 19 19 83
2) Operator's
Well No. W. M. Looney #40
3) SIC Code
4) API Well No. 47 - 087 - 3774
State County Permi
5) UIC Permit

STATE OF WEST VIRGINIA
LIQUID INJECTION OR WASTE DISPOSAL WELL PERMIT APPLICATION
For Both
DEPT. OF MINES, OFFICE OF OIL AND GAS, DNR, DIVISION OF WATER RESOURCES

6) WELL TYPE: Liquid Injection X / Disposal ___ / Gas Injection ___ /
7) LOCATION: Elevation 1069.18'
Watershed Sycamore Fork
District Smithfield
County Roane Quadrangle Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV 26101
9) ROYALTY OWNER Keith Crihfield
Address P. O. Box 431
Spencer, WV 25276
Acreage 480
0) SURFACE OWNER Ferrell Boothe
Address Left Hand, WV
Acreage 40
1) OIL AND GAS INSPECTOR TO BE NOTIFIED BEFORE DRILLING, AND 24 HOURS IN ADVANCE OF ANY MECHANICAL INTEGRITY TEST
Name Homer H. Dougherty
Address Linden Rt., Box 3A
Looneyville, WV
12) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV 26101
13) COAL OPERATOR NO COMMERCIAL COAL
Address
14) COAL OWNER(S) WITH DECLARATION ON RECORD:
Name
Address
Name
Address
15) COAL LESSEE WITH DECLARATION ON RECORD:
Name
Address

RECEIVED
MAY 20 1983
OIL & GAS DIVISION
DEPT. OF MINES

) The undersigned well operator is entitled to operate for liquid injection or waste disposal purposes at the above location under a deed ___ / lease X / other contract ___ / dated 12-14- ,19 1988 to the undersigned well operator from W. M. & Anna Looney . (If said deed, lease, or other contract has been recorded:) Recorded on ,19 , in the office of the Clerk of the County Commission of Roane County, West Virginia, in Lease Book 3 at page 390 . A permit is requested as follows:

) PROPOSED WORK: Convert ___ / Drill X / Drill deeper ___ / Fracture or stimulate ___ / Plug off old formation ___ / Other physical change in well (specify)

) Date of first liquid injection or waste disposal: ,19 .

PROPOSED WORK ORDER
THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-37 UPON COMPLETION

) Estimated depth of completed well 2150 feet Rotary X / Cable tools ___ /

) Approximate water strata depths: Fresh, ___ feet; salt, ___ feet.

) Approximate coal seam depths: ___ Is coal being mined in the area? Yes ___ / No X /

) GEOLOGICAL TARGET FORMATION Big Injun Depth 2074 feet(top) to 2109 feet(bottom)

a) Virgin reservoir pressure in target formation 80 psig; Source Estimated
b) Estimated reservoir fracture pressure ___ psig (BHFP)
c) Perforation intervals ___ Open-hole intervals Big Injun

) MAXIMUM PROPOSED INJECTION OPERATIONS
Volume per hour: 12 Bbls Bottom hole pressure: 2000 psig

) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED - PLUS ADDITIVES
Fresh Water

) SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

) FILTERS (IF ANY) Coal Filters

27) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS Cubic ft.	PACKERS
Conductor									Kinds
Fresh water	7				X	375 825	375825	Cement to surface	Neat
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2150	2150	Over Salt Sand	Depths
Tubing									
Liners									Perforation
									Top Bottom

28) Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed or delivered by hand to the above named coal operator, coal owner(s), and coal lessee on or before the day of the mailing or delivery of this Permit Application to the Department of Mines at Charleston, West Virginia.

The person signing this document shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Pennzoil Company
Well Operator

By Curtis C. Lewis

Its Supervisor, Surveying & Mapping

WAIVER

The undersigned coal operator _____ / owner _____ / lessee _____ / of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: _____, 19____.

By: _____

Its _____

OFFICE USE ONLY

PERMIT

ermit number 47-087-3774-LI

June 13 1983
Date

his permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector prior to the construction of roads, locations and pits for any permitted work. (Refer to No. 10)

In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.

Permit expires February 13, 1984 unless work is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing:	Fee:
Blanket				15359

Administrator, Office of Oil and Gas

3774
CDL

ALLEGHENY NUCLEAR SURVEYS, INC.

COMPENSATED DENSITY LOG

FILING NO.

PENNZOIL COMPANY
W. M. LOONEY #40
PERMIT # ROANE 3774 L
47-087

COMPANY PENNZOIL COMPANY

WELL W. M. LOONEY #40

FIELD SMITHFIELD DISTRICT

COUNTY ROANE STATE W.VA.

Location:

Sec. Twp. Rge.

Other Services:

Permanent Datum: GROUND LEVEL ; Elev. 1069.18 Elev.: K.B.
Log Measured From KELLY BUSHING 10 Ft. Above Perm. Datum D.F.
Drilling Measured From KELLY BUSHING G.L.

Date	7-30-83	7-30-83	7-30-83
Run No.	ONE	ONE	ONE
Type Log	GAMMA RAY	FDC	CALIPER
Depth—Driller	2180	2180	2180
Depth—Logger	2184	2184	2186
Bottom logged interval	2176	2182	2182
Top logged interval	0	385	385
Type fluid in hole	DRILLING FLUID		
Salinity, PPM Cl.			
Density			
Level	FULL		
Max rec. temp., deg F.			
Operating rig time			
Recorded by	M. TAYLOR		
Witnessed by	MR. PUTSCHER		

Run No.	Bit	Bore-Hole Record From	To	Casing Record Size	Wgt.	From	To
1	6¼			7"		383	0

THIS HEADING AND LOG CONFORMS TO API RP 33

FOLD HERE

Equipment Data

Run No.	Tool No.	Source No.	Panel No.	Logging Unit	Location
1	8008	CSV-589	3197	7	WESTON

Calibration Data

Run No.	Gamma Ray API Scale	Background CPS	Std. CPS	Ds CPS AT	Dl CPS AT	C.D.T. 2.0	3.0
1	200			0	940	2180	17	681	946

Logging Data

Run No.	Depths From	Depths To	Speed Ft/Min	GR TC	
1	T.D.		30	2	F.F. 1.09
					E.O. 2.68
					2.71

Remarks:

GAMMA RAY
API UNITS
0 200

CALIPER
HOLE SIZE - INCHES
6 16

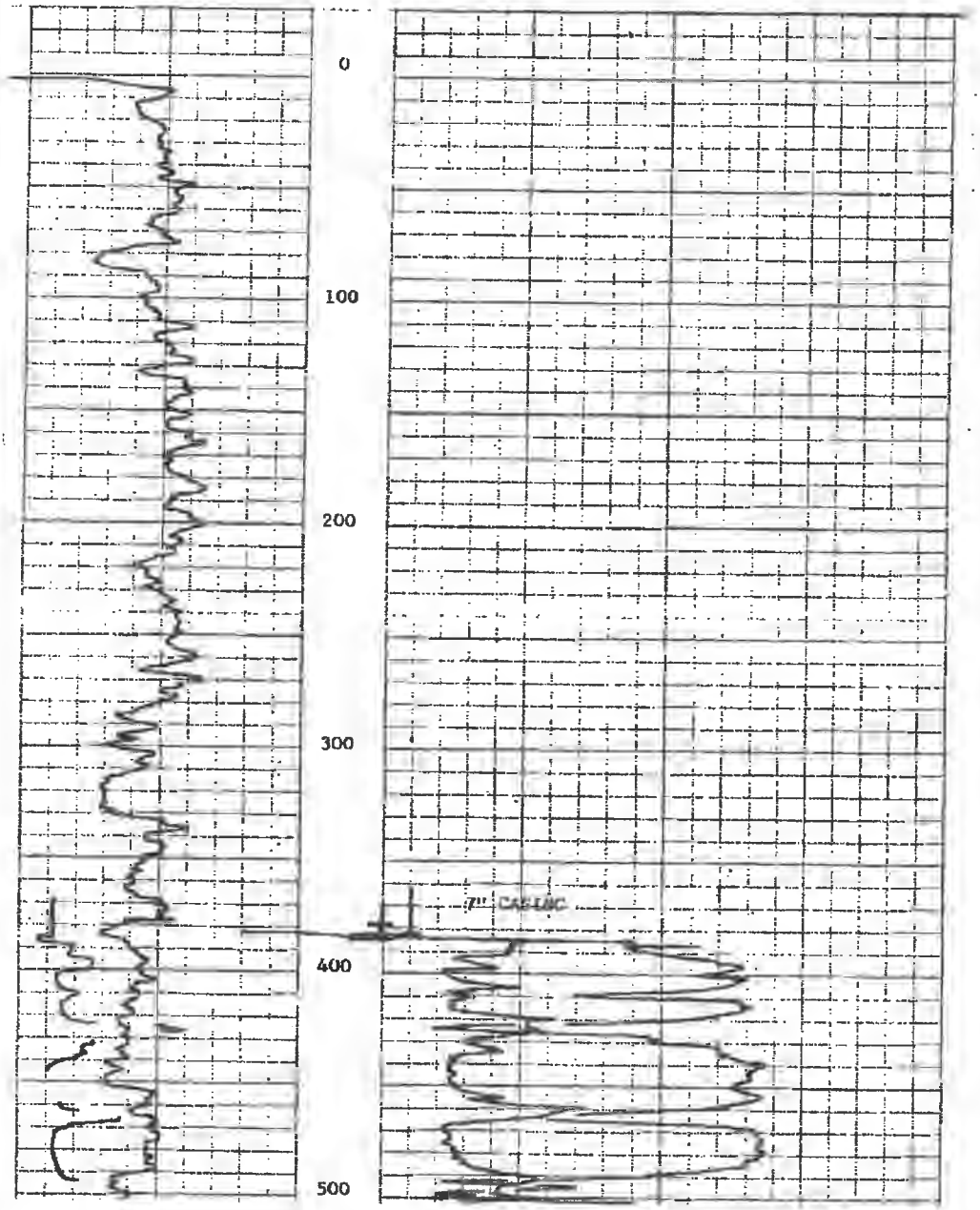
DEPTHS

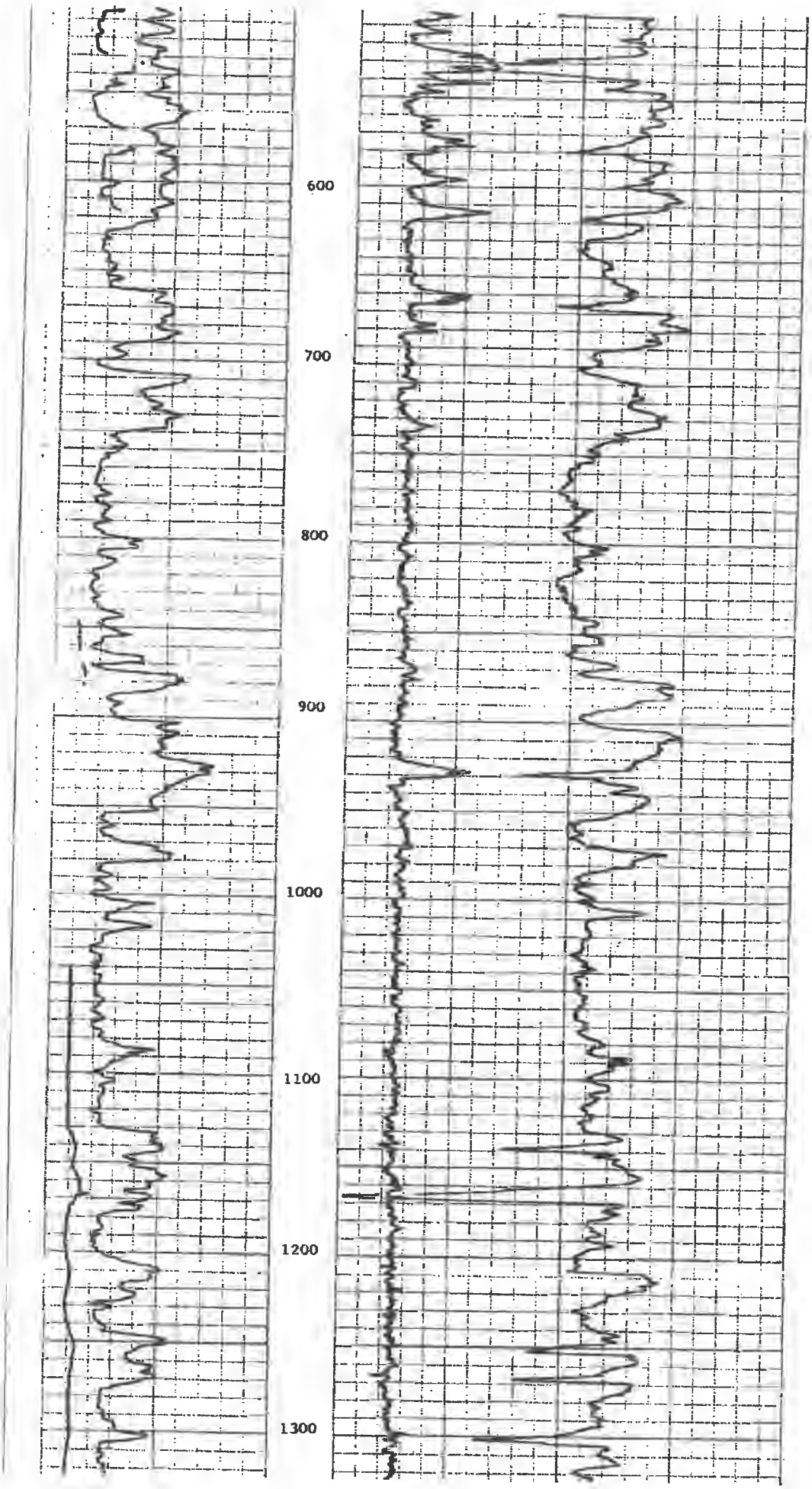
POROSITY
PERCENT
30 20 10 0 -10

BULK DENSITY
GRAMS/CC
2.0 2.5 3.0

CORRECTION
0 +.25

CORRECTION
0 +.25

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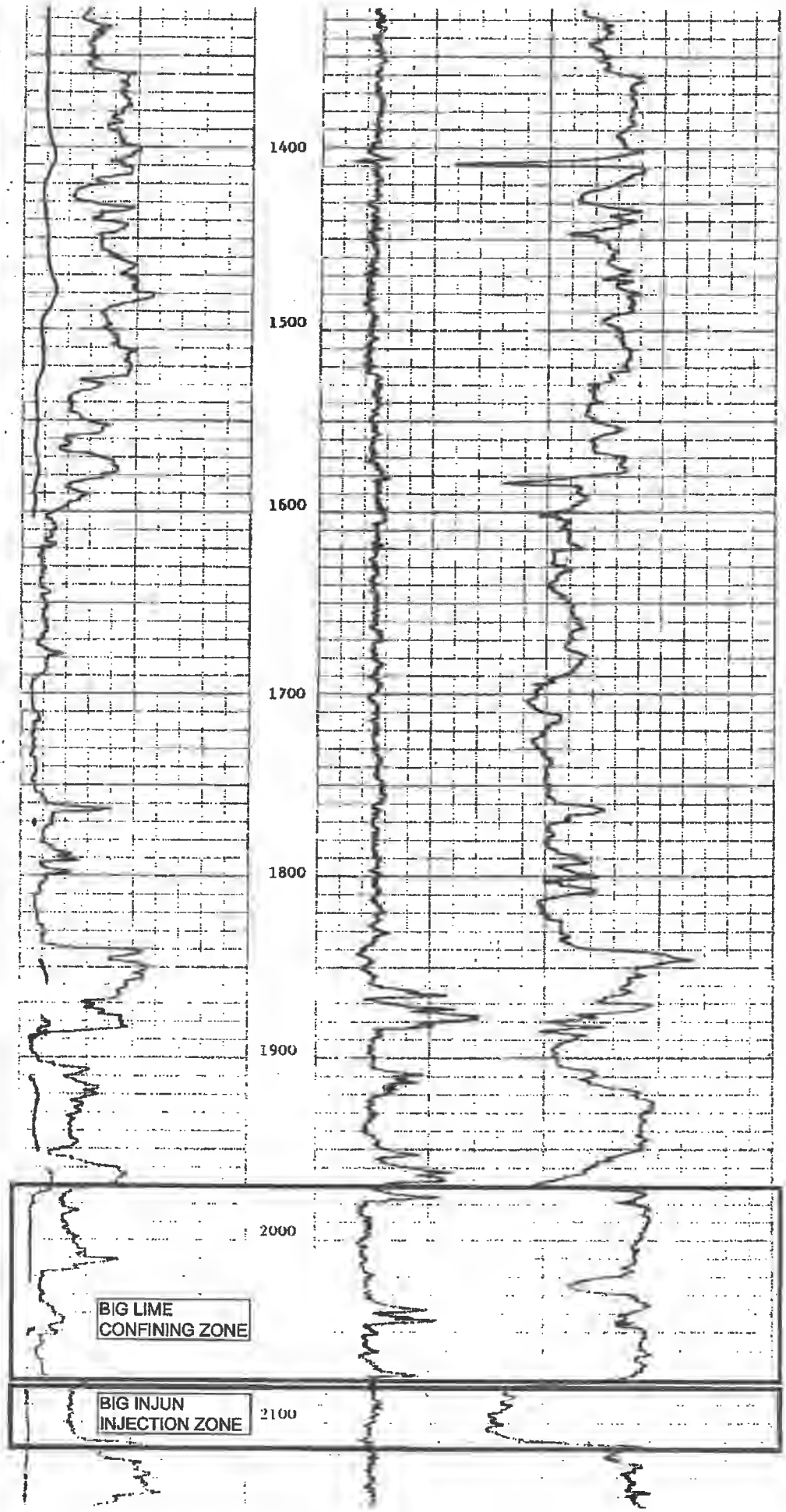
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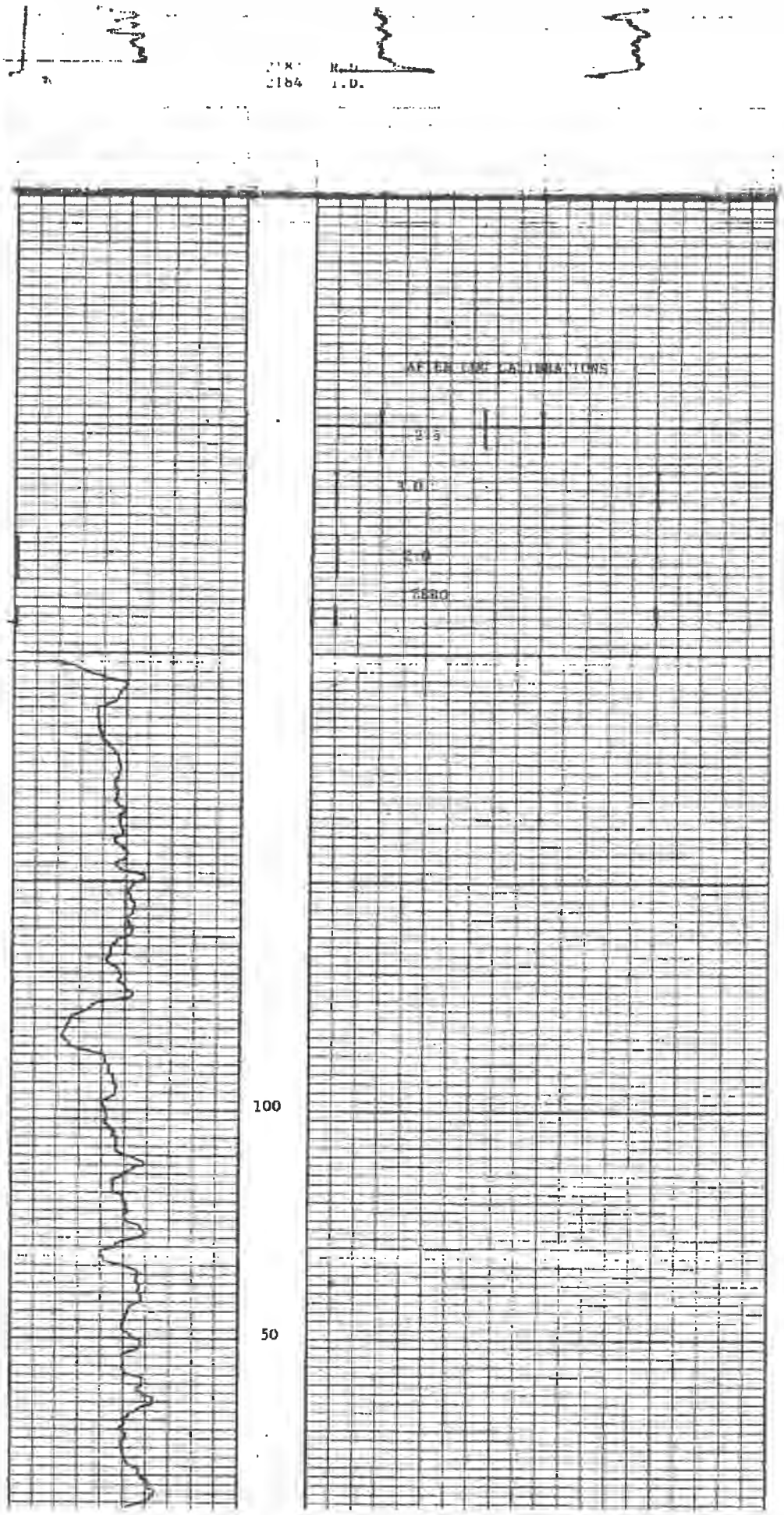
CONFINING ZONE
BIG INJUN
INJECTION ZONE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AFTER LOG CALIBRATIONS
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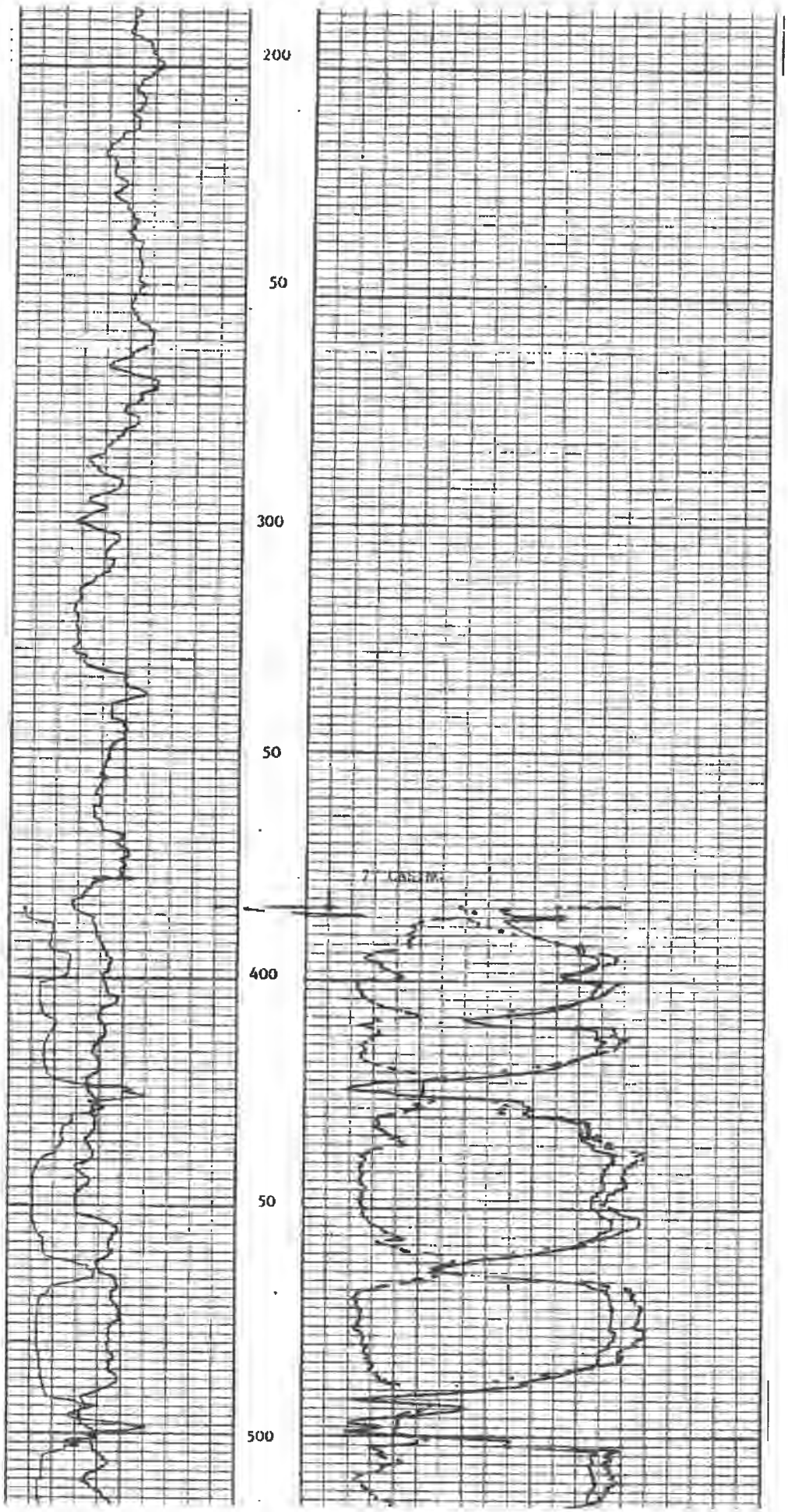
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7" Casing
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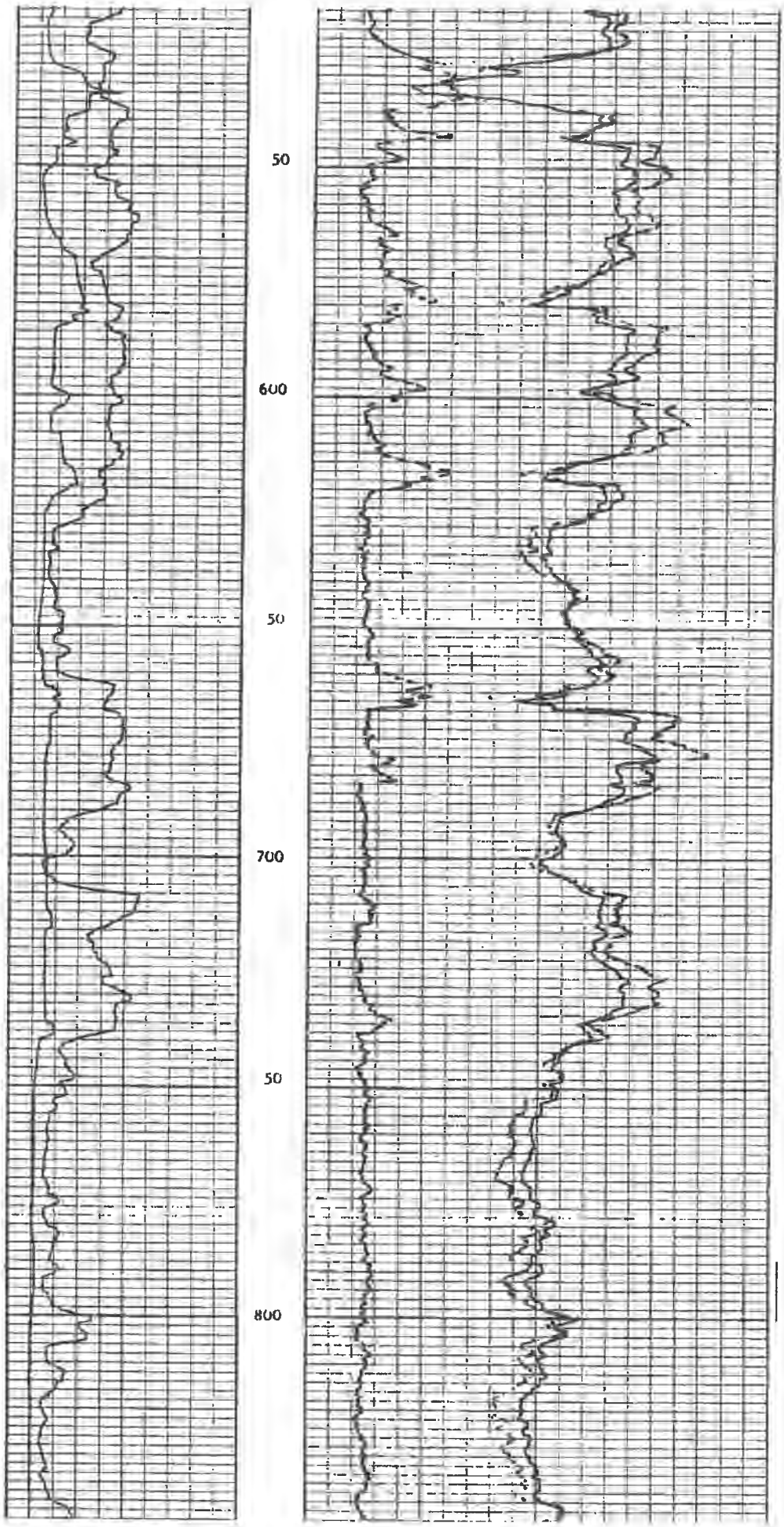
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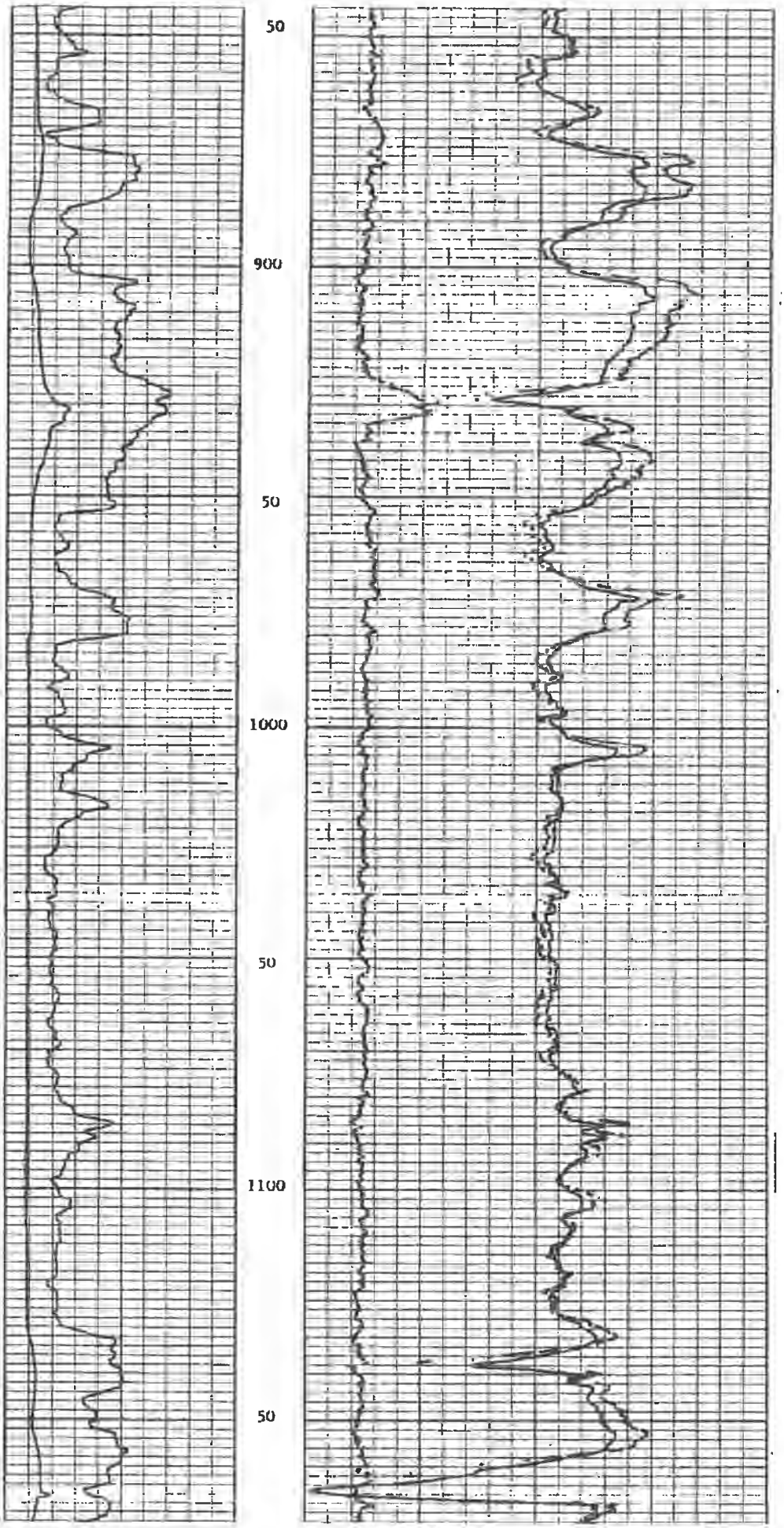
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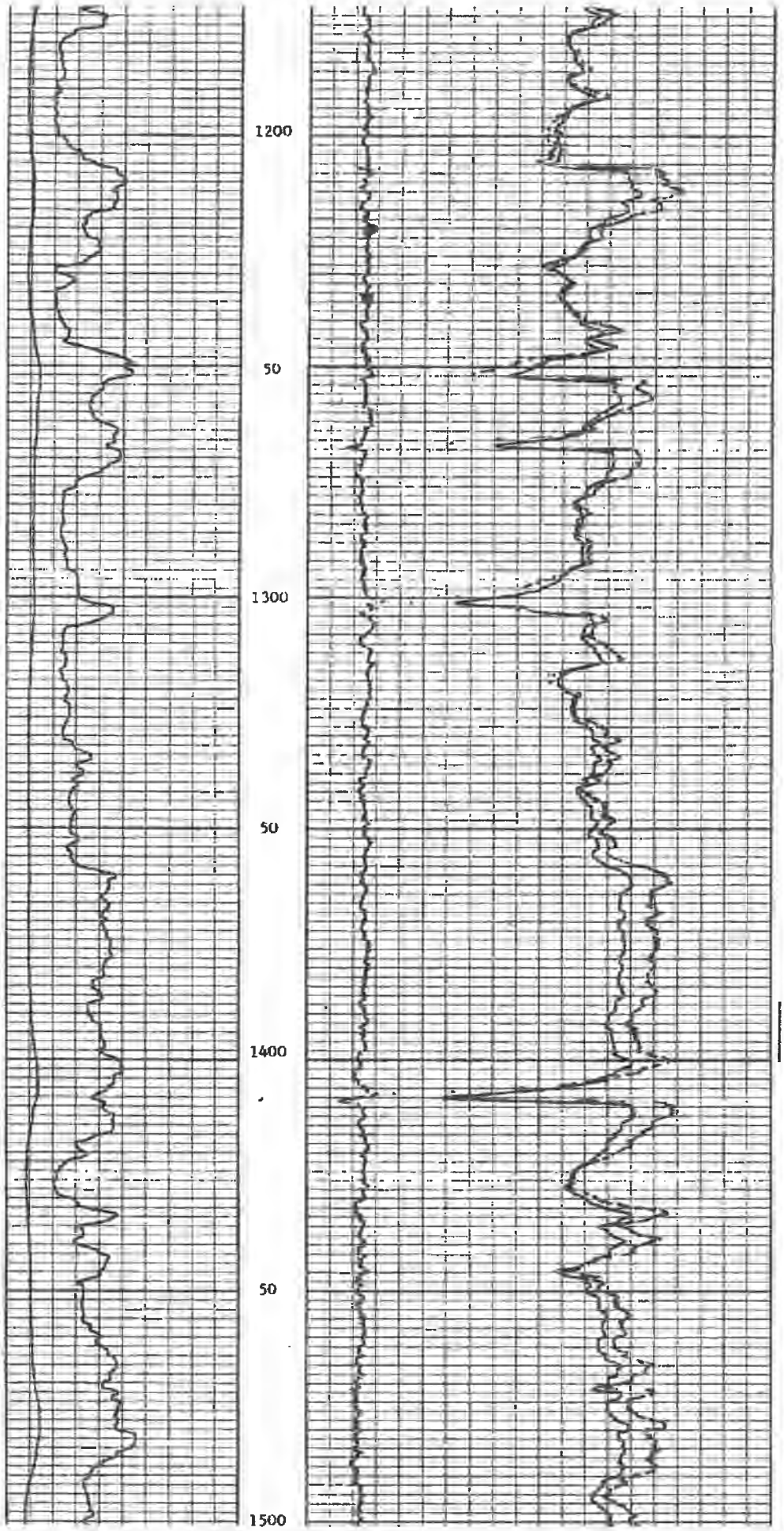
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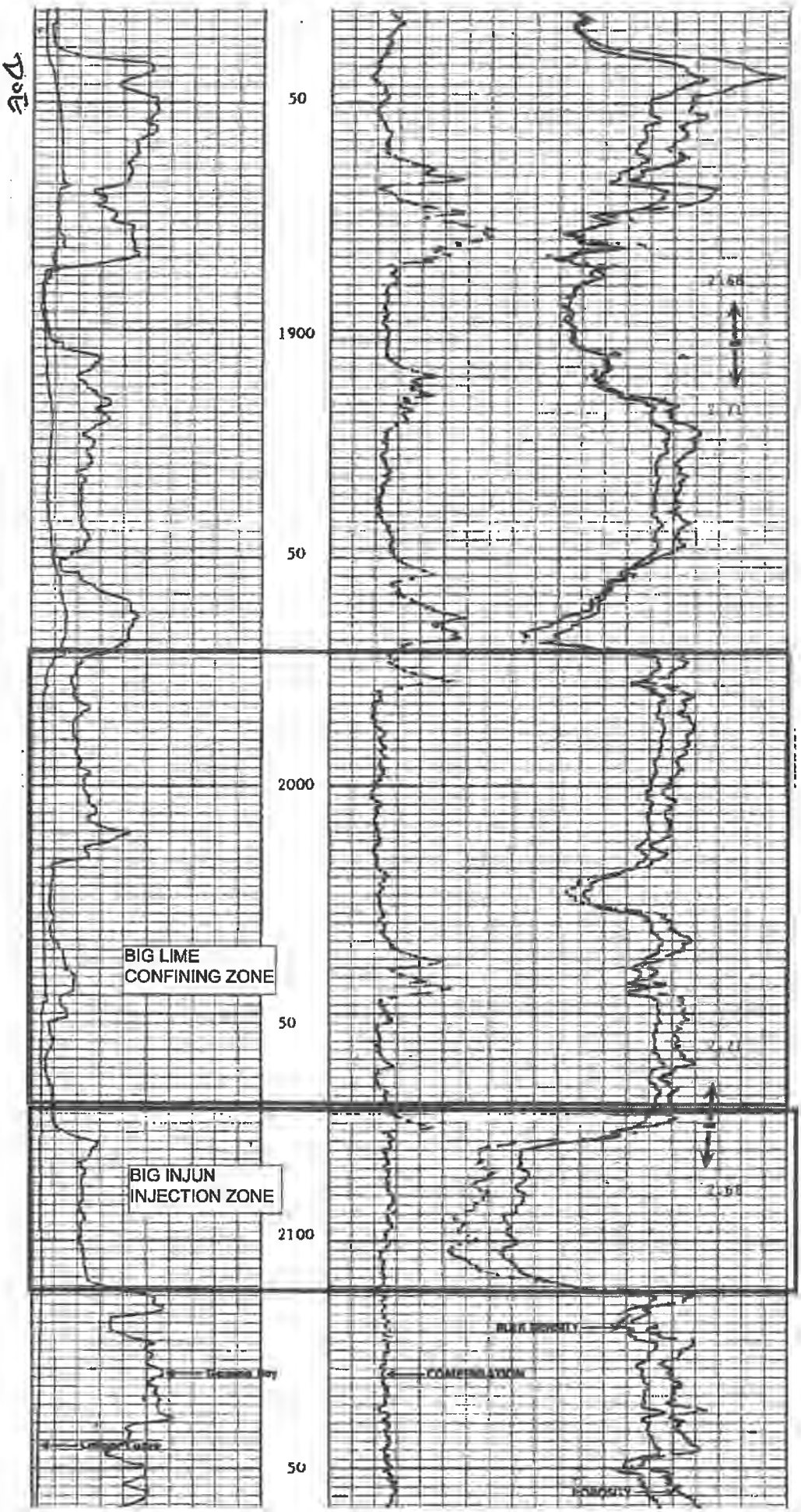
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CONFINING ZONE
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BIG INJUN
INJECTION ZONE
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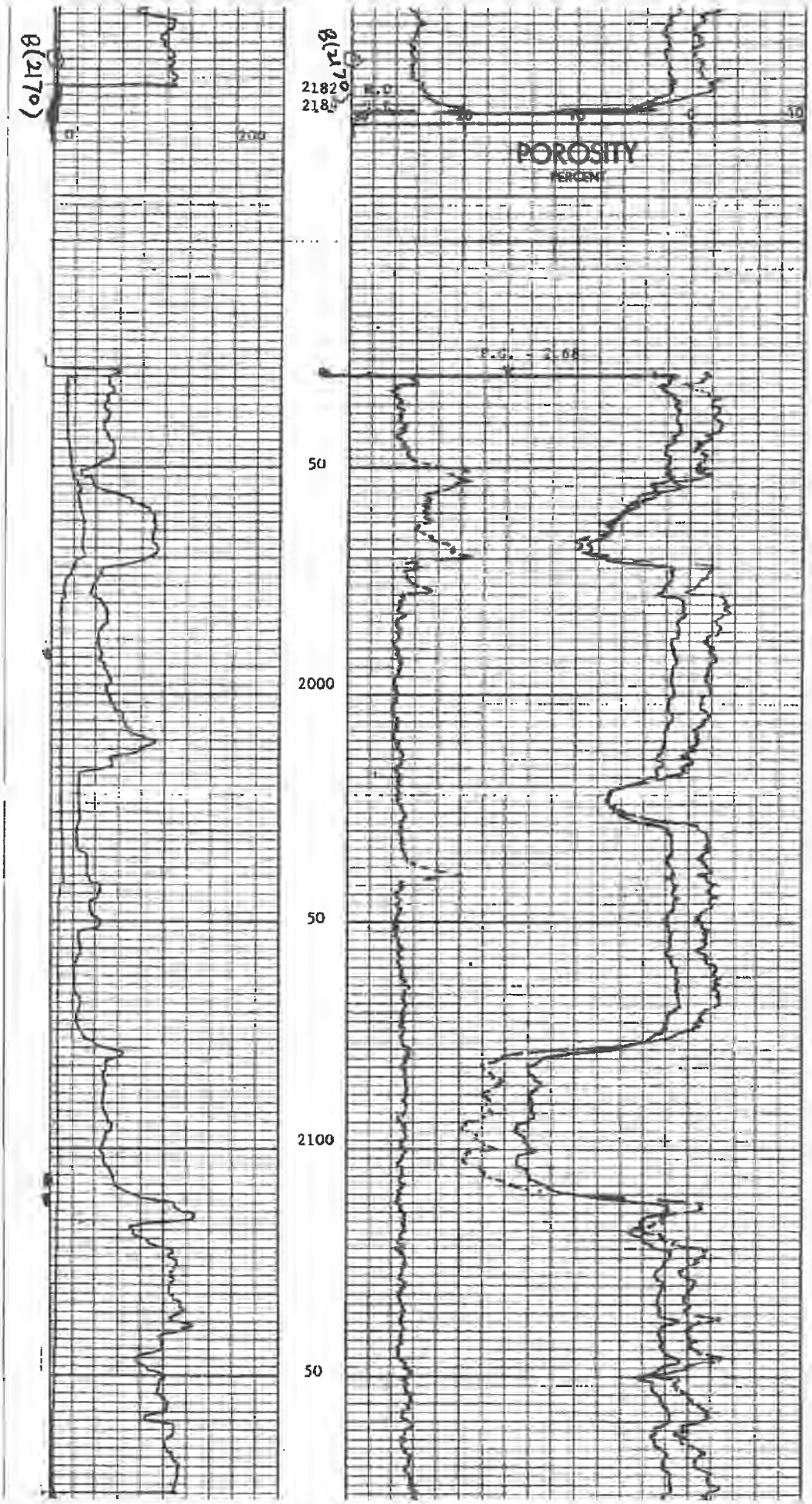
COMPENSATION
POROSITY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8(2170)
2182
2181
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POROSITY
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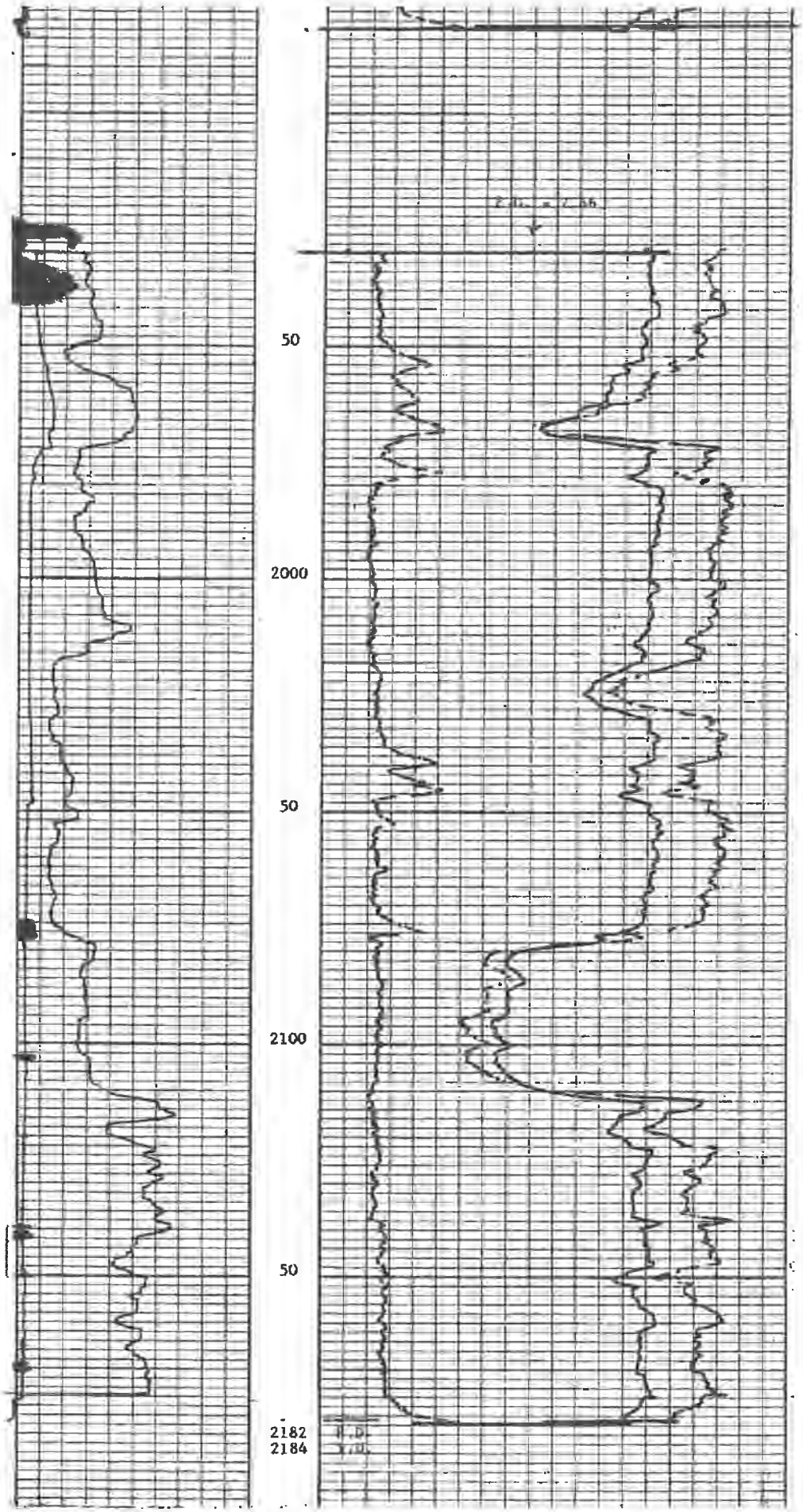
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6 — 16 HOLE SIZE - INCHES		0 — +.25 CORRECTION 2.0 GRAMS/CC. — 2.5 — 3.0 BULK DENSITY GRAMS/CC
CALIPER		30 — 20 — 10 — 0 — −10 POROSITY PERCENT
GAMMA RAY API UNITS 0 — 200	DEPTHS	

Company PENNZOIL COMPANY

Well W. M. LOONEY #40

Field SMITHFIELD DISTRICT

County ROANE State W.VA.

GO FR 0

GO TD 2184

DRLR TD 2180

Elev:

KB

DF

GL 1069.18

WVGES GEOLOGY UNDERLIES IT ALL
"Pipeline"

Select County: (087) Roane
Enter Permit #: 3775
Get Data | Reset

Select datatypes: (Check All)
Location, Production, Plugging, Owner/Completion, Stratigraphy, Sample, Pay/Show/Water, Logs, Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3775

Report Time: Thursday, April 30, 2020 9:31:08 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703775	Roane	3775	Smithfield	Tariff	Otter	38.654432	-81.208119	481891.3	4278450.2

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703775	7/22/1983	Original Loc	Completed	Doyle D Jones	70					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703775	7/22/1983	-/-/-	1055	Ground Level	Tariff(Timn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2156		2156		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703775	7/22/1983	Horizon	Injection	Vertical	2076		2090	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703775	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703775	Pennzoil Company	1984	1,030	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703775	Ground Resources, LLC	2017	0												
4708703775	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703775	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703775	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703775	Original Loc	3rd Salt Sand	Well Record	1552	Reasonable	295	Reasonable	1055	Ground Level
4708703775	Original Loc	Little Lime	Well Record	1900	Reasonable	40	Reasonable	1055	Ground Level
4708703775	Original Loc	Blue Monday	Well Record	1940	Reasonable	7	Reasonable	1055	Ground Level
4708703775	Original Loc	Pencil Cave	Well Record	1947	Reasonable	15	Reasonable	1055	Ground Level
4708703775	Original Loc	Big Lime	Well Record	1962	Reasonable	106	Reasonable	1055	Ground Level
4708703775	Original Loc	Greenbrier Group	Well Record	1962	Reasonable	106	Reasonable	1055	Ground Level
4708703775	Original Loc	Big Injun (Price&eq)	Well Record	2068	Reasonable	126	Reasonable	1055	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703775	8	2154		GDC*	Y	N	8	2150	320	2154									320	2154	Y	Y	N						

Comment: *logs: caliper, CCL, perforation depth

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Injector 3775

Injector 3775

FILENAME
4708703775gdc.tif
4708703775gpo.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:

- d density (includes bulk density, compensated density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:

- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

(4/25)

3775

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2068 Feet (top) 2094 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2156 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3775

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	326'	326'	110sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2150'	2150'	75sks
Tubing	NONE						
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

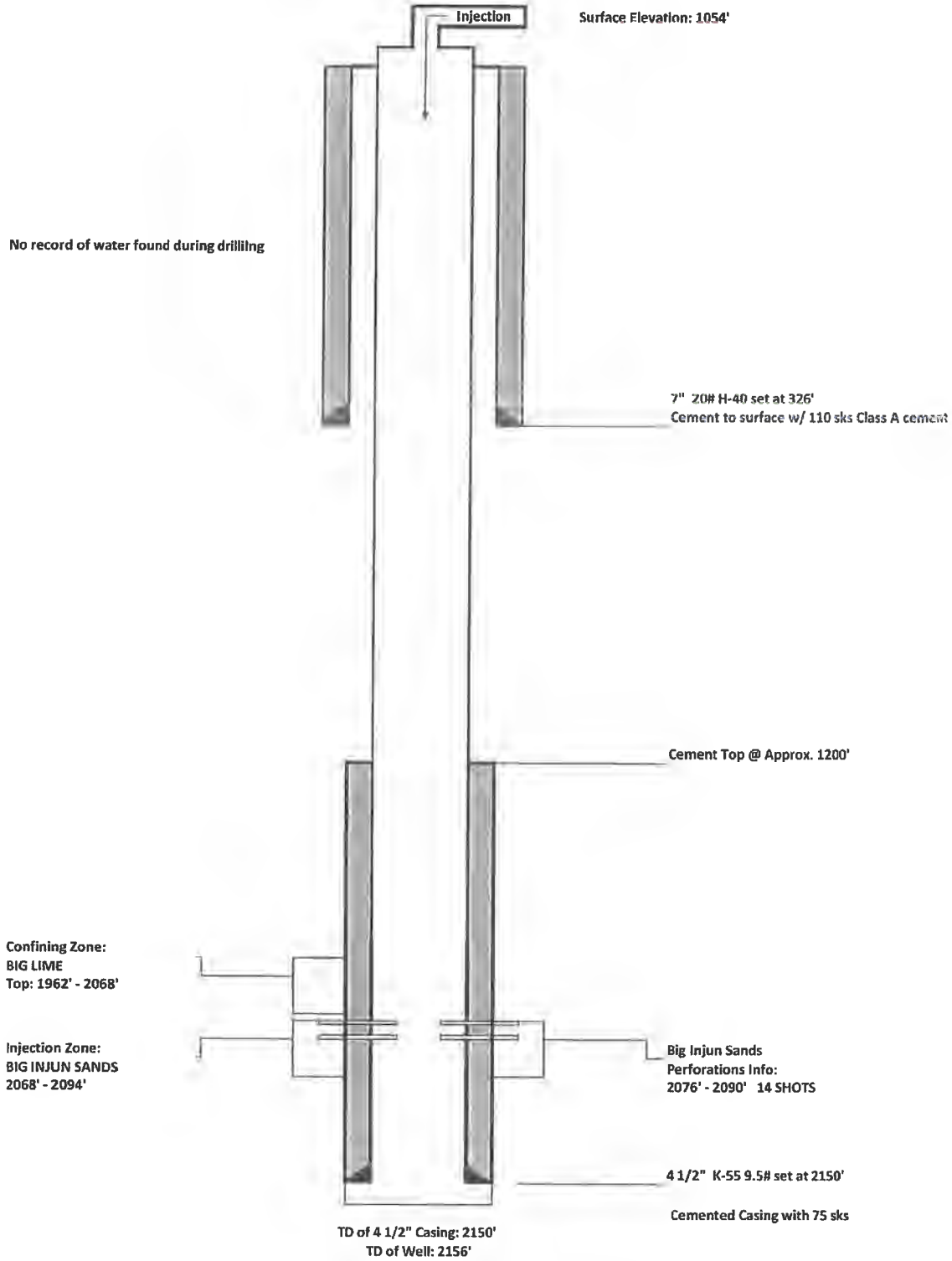
3775

WELL SCHEMATIC

TALLMAN

~~Looney~~ 70

API 47-087-03775



INJECTOR 3775

OG-10
Rev. - 9-71

RECEIVED
NOV 1 - 1983
OIL & GAS DIVISION
DEPT. OF MINES

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Quadrangle Tariff 7.5'

Permit No. 47-087-3775-Li

Rotary X Oil ___
Cable ___ Gas ___
Recycling ___ Comb. ___
Water Flood X Storage ___
Disposal ___ Kind ___

Company Pennzoil Company
Address P. O. Box 1588, Parkersburg, WV 26101
Farm P. A. Tallman Acres 2350
Location (waters) Sycamore Fork
Well No. 70 Elev. 1054.59
District Smithfield County Roane
The surface of tract is owned in fee by
Doyle Jones
Address Left Hand, WV
Mineral rights are owned by Anna Lee Collins
Address 1009 Main St., Point Pleasant, WV
Drilling Commenced 7-18-83
Drilling Completed 7-22-83
Initial open flow WIW cu. ft. ___ bbls.
Final production ___ cu. ft. per day ___ bbls.
Well open ___ hrs. before test ___ RP.
Well treatment details:

Casing and Tubing	Used in Drilling	Left in Well	Cement fill Cu. ft. (Sk
Size			
20-16			
Cond.			
13-10"			
9 5/8			
8 5/8			
7	326	326	110 sks
5 1/2			
4 1/2	2150	2150	75 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Fractured: 10/5/83, w/250 gls. 15% HCL, 160 BGW, 1500# 20/40 sd

Perf: 2076-2090/14H

Coal was encountered at NR Feet ___ Inches ___
Fresh water NR Feet ___ Salt Water NR Feet ___
Producing Sand ___ Depth ___

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Sand			0	80		
Shale			80	154		
Sand, Shale			154	1552		
Salt Sand			1552	1847		
Shale, Sand			1847	1900		
Little Lime			1900	1940		
Blue Monday			1940	1947		
Pencil Cave			1947	1962		
Big Lime			1962	2068		
Sand Injm			2068	2194		
Pocono Shale			2194	2156	E-log 35'	
Total Depth				2156		

1984

INJECTOR 3775

FORM IV-3
(Obverse)
[02-83]

DRILLING CONTRACTOR

1) Date: May 19 19 83
2) Operator's
Well No. P. A. Tallman, #70
3) SIC Code
4) API Well No. 47 - 087 - 3775
State County Perm
5) UIC Permit

STATE OF WEST VIRGINIA
LIQUID INJECTION OR WASTE DISPOSAL WELL PERMIT APPLICATION
For Both
DEPT. OF MINES, OFFICE OF OIL AND GAS, DNR, DIVISION OF WATER RESOURCES

6) WELL TYPE: Liquid Injection X / Disposal ___ / Gas Injection ___ /

7) LOCATION: Elevation 1054.59'
Watershed Sycamore Fork
District Smithfield
County Roane Quadrangle Tariff 7.5'

8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV 26101

9) ROYALTY OWNER Anna Lee Collins
Address 1009 Main Street
Point Pleasant, WV
Acreage 2350

0) SURFACE OWNER Doyle Jones
Address Left Hand, WV
Acreage

1) OIL AND GAS INSPECTOR TO BE NOTIFIED BEFORE DRILLING, AND 24 HOURS IN ADVANCE OF ANY MECHANICAL INTEGRITY TEST
Name Homer H. Dougherty
Address Linden Rt., Box 3A
Looneyville, WV

12) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV 2610

13) COAL OPERATOR NO COMMERCIAL COAL
Address

14) COAL OWNER(S) WITH DECLARATION ON RECORD:
Name
Address
Name
Address

RECEIVED
MAY 20 1983
OIL & GAS DIVISION
DEPT. OF MINES

15) COAL LESSEE WITH DECLARATION ON RECORD:
Name
Address

i) The undersigned well operator is entitled to operate for liquid injection or waste disposal purposes at the above location under a deed ___ / lease X / other contract ___ / dated May 21 ,19 06, to the undersigned well operator from P. A. Tallman, et ux . (If said deed, lease, or other contract has been recorded:) Recorded on ,19 , in the office of the Clerk of the County Commission of Roane County, West Virginia, in Lease Book 12 at page 26 . A permit is requested as follows:

) PROPOSED WORK: Convert ___ / Drill X / Drill deeper ___ / Fracture or stimulate ___ / Plug off old formation ___ / Other physical change in well (specify)

) Date of first liquid injection or waste disposal: ,19 .

PROPOSED WORK ORDER
THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-37 UPON COMPLETION

) Estimated depth of completed well 2130 feet Rotary X / Cable tools ___ /

) Approximate water strata depths: Fresh, feet; salt, feet.

) Approximate coal seam depths: Is coal being mined in the area? Yes ___ / No X /

) GEOLOGICAL TARGET FORMATION Big Injun Depth 2055 feet(top) to 2087 feet(bottom)
a) Virgin reservoir pressure in target formation 80 psig; Source Estimated
b) Estimated reservoir fracture pressure psig (BHFP)
c) Perforation intervals Big Injun* Open-hole intervals

) MAXIMUM PROPOSED INJECTION OPERATIONS Will pick zones to perforate from the log
Volume per hour: 12 Bbls. Bottom hole pressure: 2000 psig

) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED - PLUS ADDITIVES
Fresh Water

SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

) FILTERS (IF ANY) Coal Filters

INJECTOR 3775

27) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS Cubic ft.	PACKERS
Conductor									Kinds
Fresh water	7				X	310	310	Cement to Surface	None
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2130	2130	Over Salt Sand	Depths set
Tubing									
Liners									Perforations
									Top Bottom

28) Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed or delivered by hand to the above named coal operator, coal owner(s), and coal lessee on or before the day of the mailing or delivery of thie Permit Application to the Department of Mines at Charleston, West Virginia.

The person signing this document shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Pennzoil Company
Well Operator

By Curtis A. Lewis

Its Supervisor, Surveying & Mapping

WAIVER

The undersigned coal operator_____/ owner_____/ lessee_____/ of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date:_____,19____.

By:_____

Its_____

OFFICE USE ONLY

PERMIT

ermit number 47-087-3775-LI

June 13 19 83
Date

his permit covering the well operator and well location shown below is evidence of permission ranted to drill in accordance with the pertinent legal requirements subject to the conditions ontained herein and on the reverse hereof. Notification must be given to the District Oil d Gas Inspector prior to the construction of roads, locations and pits for any permitted ork. (Refer to No. 10)

addition, the well operator or his contractor shall notify the proper district oil and s inspector 24 hours before actual permitted work has commenced.

rmit expires February 13, 1984 unless work is commenced prior to that date d prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing:	Fee:
Blanket	OK			15355

Administrator, Office of Oil and Gas

TE: Keep one copy of this permit posted at the drilling location.

3775
CDL

ROA 3775

Basin Surveys, Inc.

COMPENSATED DENSITY LOG

FILING NO.
Permit# 47-037-
Rec. 3775

COMPANY: Kanzoil Company
WELL: [redacted]
FIELD: Sunshine District
COUNTY: Roane STATE: W.Va.

LOCATION: Sycamore F-R.
Quad: Tariff 7.5
Sec. TWP. RGE.

OTHER SERVICES:

Permanent Datum: Ground Level; Elev.: 1054.00
Log Measured From: Kelly Bushing 9 Ft. Above Perm. Datum
Drilling Measured From: Kelly Bushing

Elev.: K.B. [illegible]
D.F. 1053
G.L. [illegible]

Date	2-22-83		
Run No.	One		
Type Log	DR Density		
Depth—Driller	2360'		
Depth—Logger	2356'		
Bottom logged interval	2355'		
Top logged interval	326		
Type fluid in hole	Water - KCL		
Salinity, PPM Cl.	--		
Density	--		
Level	Full		
Max rec. temp deg F.	120		
Operating rig time	3 hrs		
Recorded by	Brown	Schwartz	
Witnessed by	Mr. Neal Fletcher		

Run No.	Bit	Bore-Hole Record From	To	Size	Wgt.	Casing Record From	To
One	6 3/4"	326	2360'	7"		Surface	326'

THIS HEADING AND LOG CONFORMS TO API RP 33

Equipment Data

Run No.	Tool No.	Source No.	Panel No.	Logging Unit	Location
One	2546	R-558	324	8417	Parkersburg

Calibration Data

Run No. | Gamma Ray | CPS

Background Count | Calibration Count

API Scale	Background	Sig. CPS	US CPS At	2.0	3.0	DS CPS At	2.0	3.0
1 - 200	35			278	3[illegible]		229	208

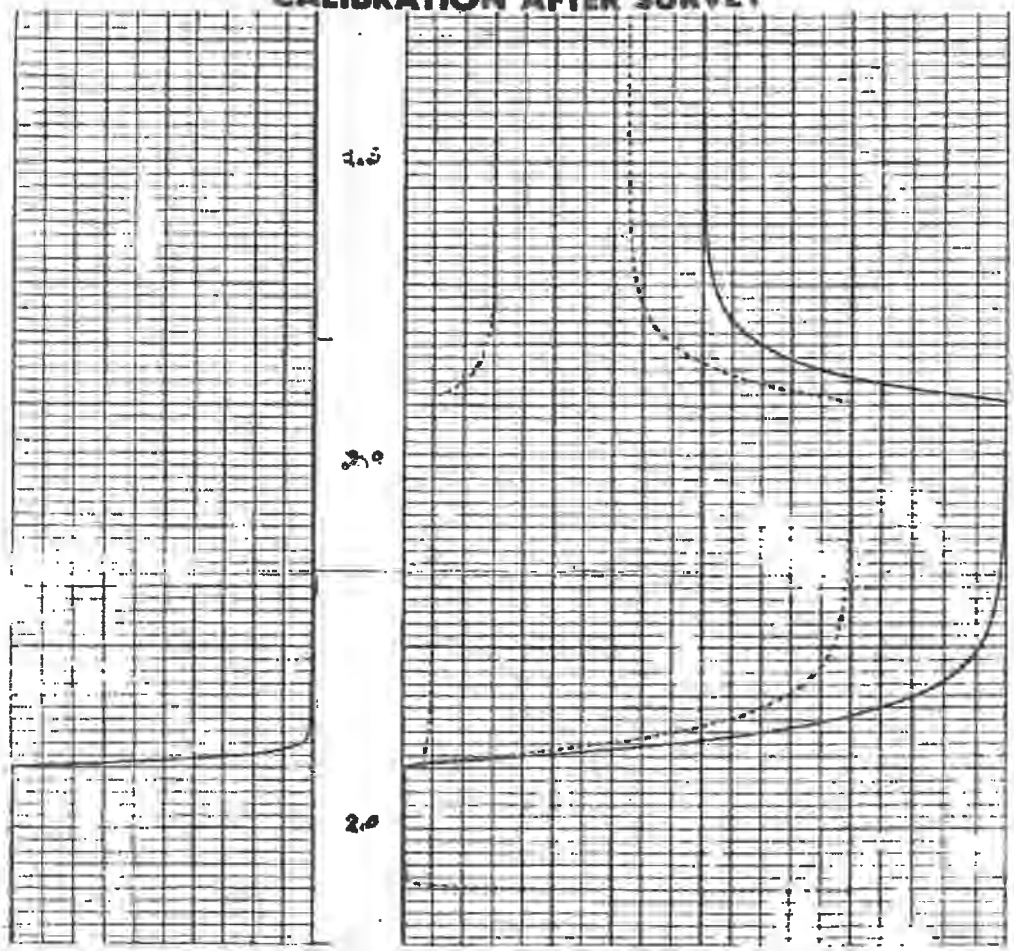
Logging Data

Run No.	Depths From	Depths To	Speed Ft/Min	GR TC	
	2155	326	26	2	2.68 - 2155 - 2066
					2.71 - 2066 - 1898
					2.68 - 1898 - 326

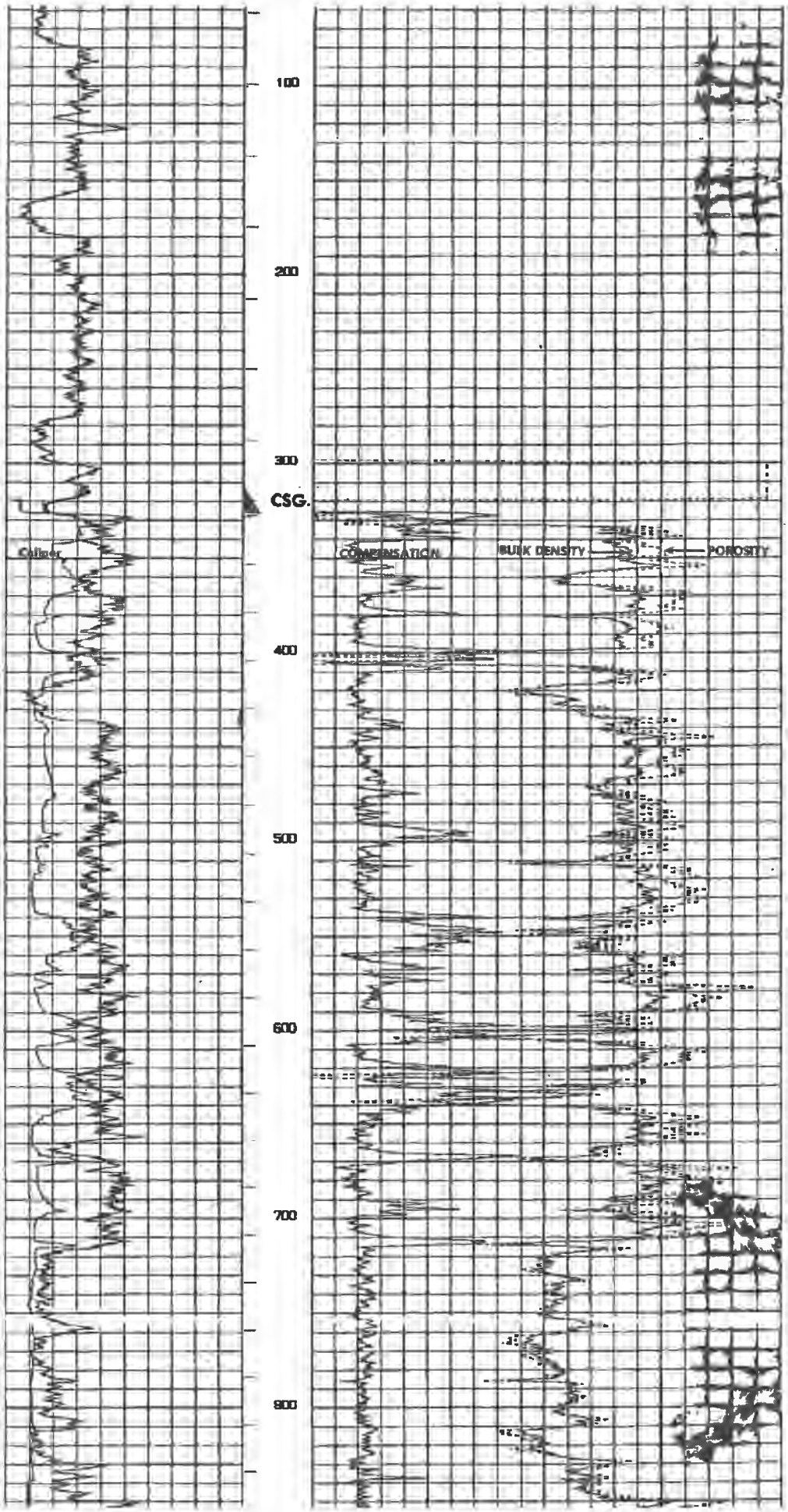
Remarks:

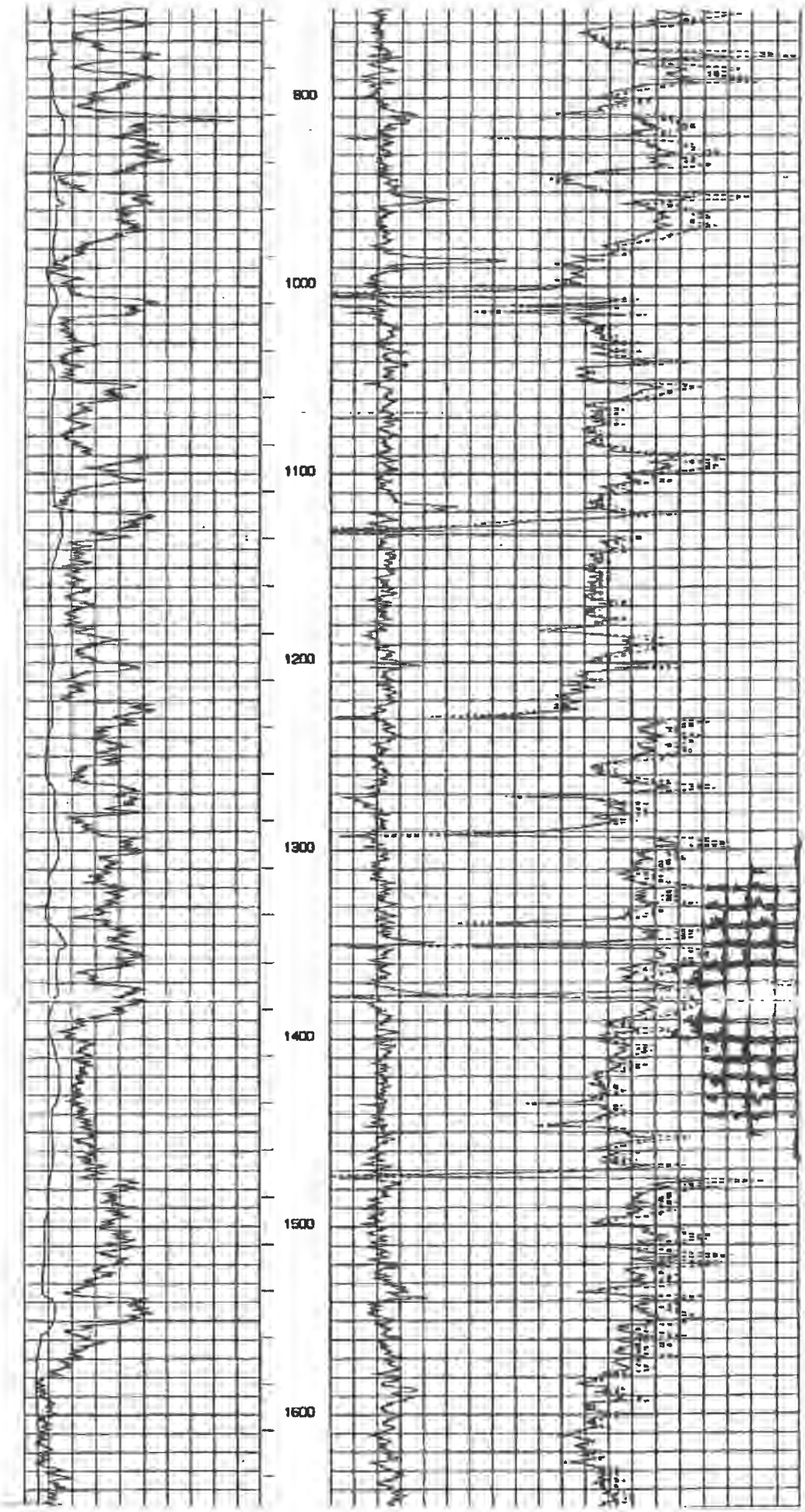
GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS/CC
0 — 200		POROSITY PERCENT: 30 20 10 0 -10
200 — 400		2.0 2.5 3.0
CALIPER		0 — 0.25
HOLE SIZE - INCHES: 6 — 16		CORRECTION GRAMS/CC.

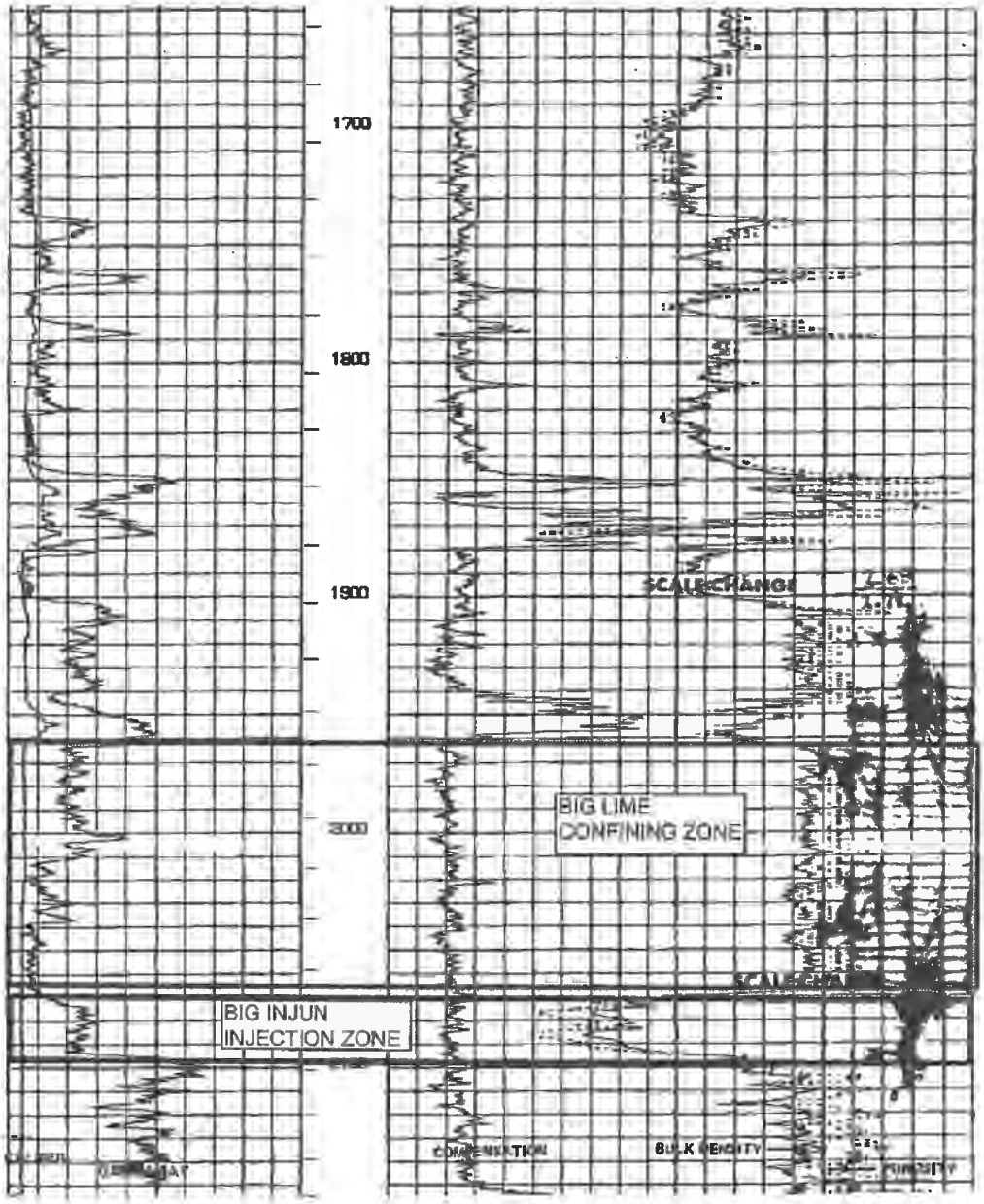
CALIBRATION AFTER SURVEY

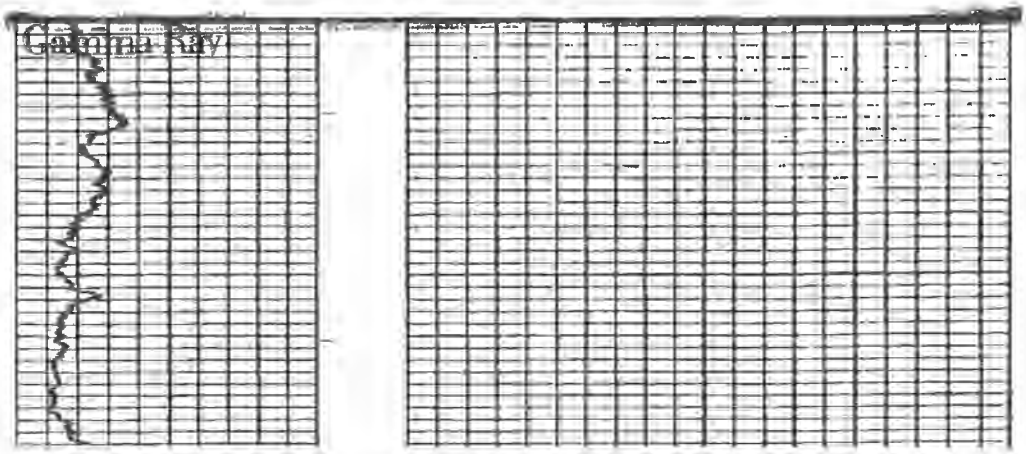


Gamma Ray


Caliper
100
200
300
CSG.
400
500
600
700
800
COMPENSATION
BULK DENSITY
POROSITY

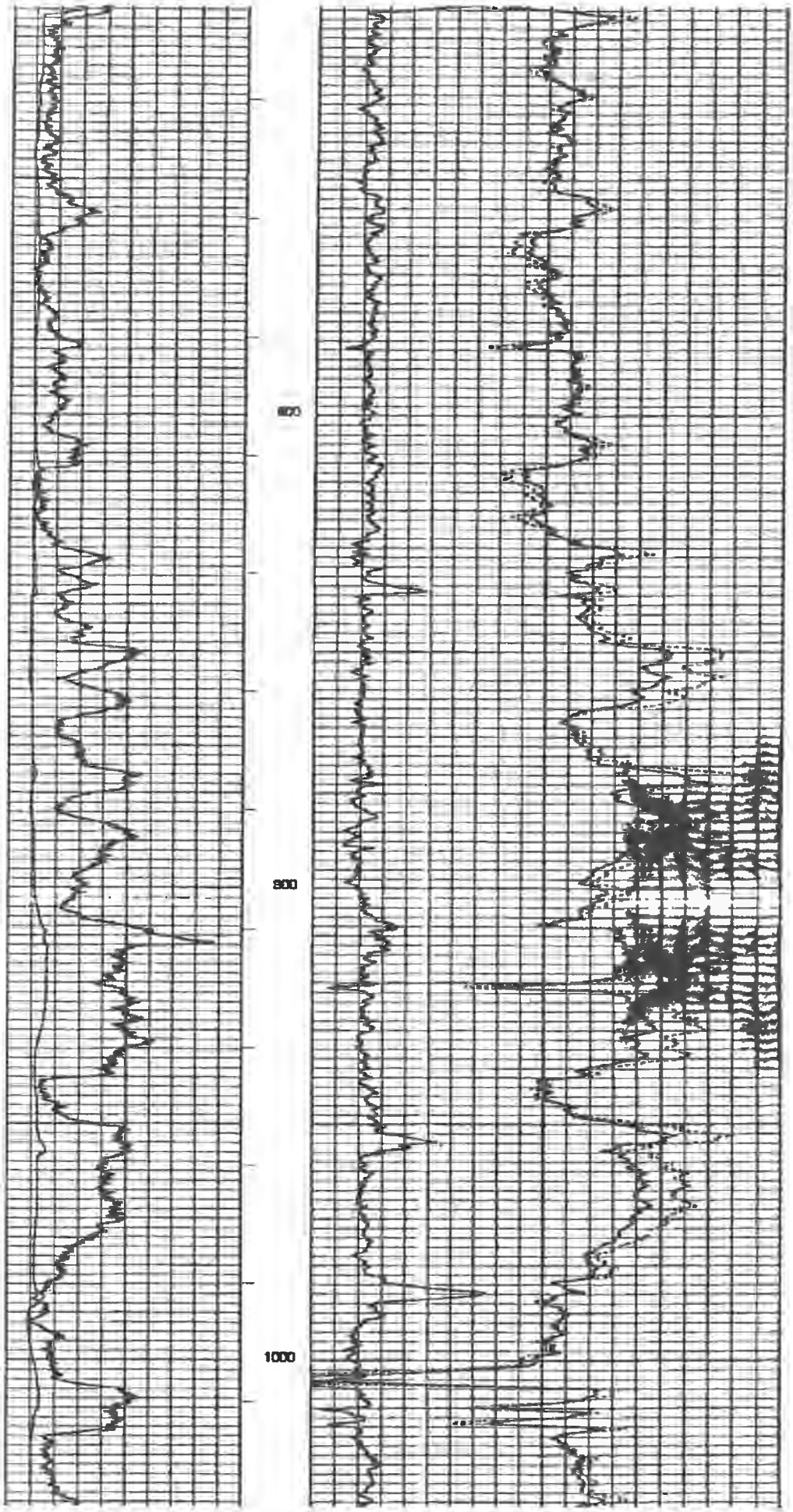

800
1000
1100
1200
1300
1400
1500
1600


1700
1800
1900
2000
SCALE CHANGE
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
CONVENTION
BULK DENSITY

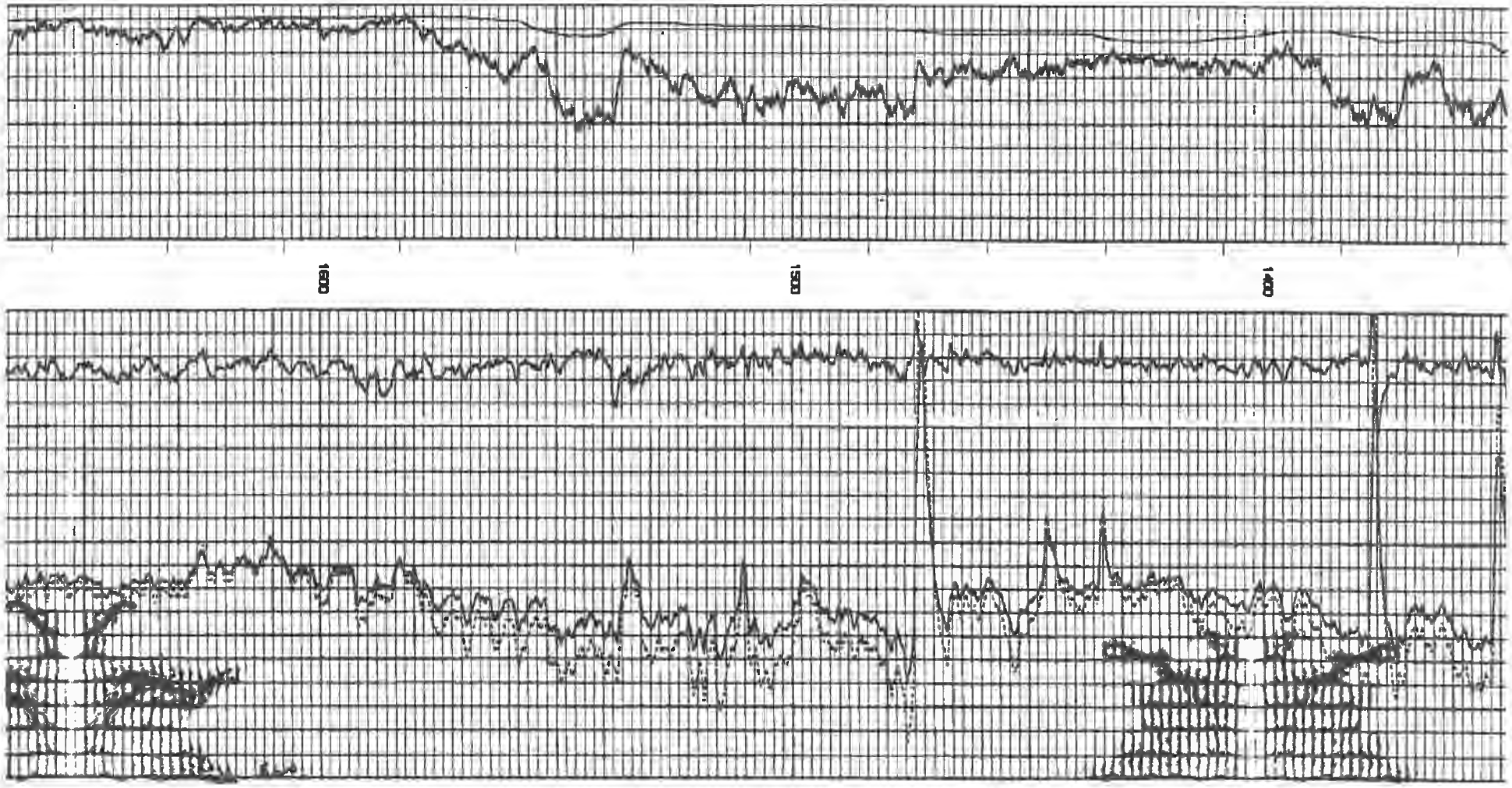

Gamma Ray

100
200
300
CSG.
CALIPER
BULK DENSITY
POROSITY

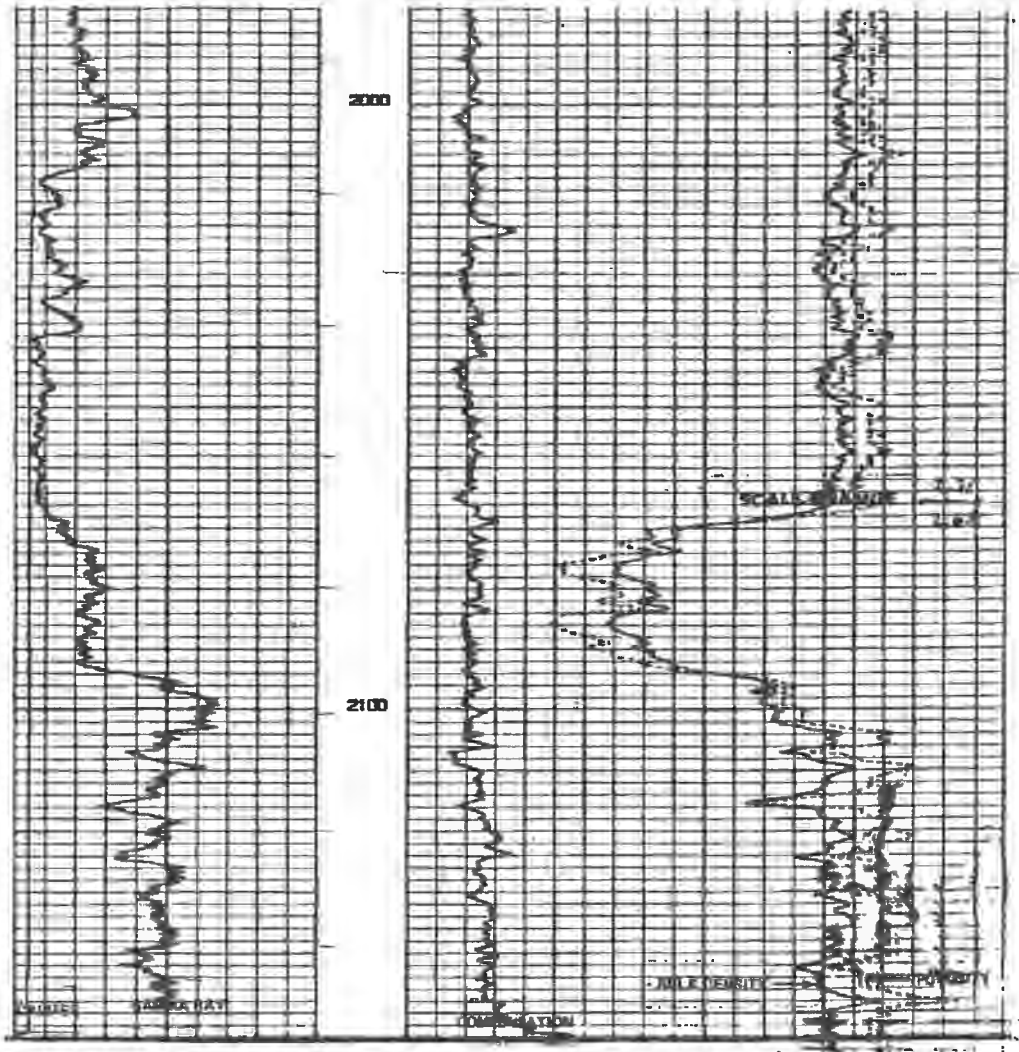
400
500
600
700


800
900
1000

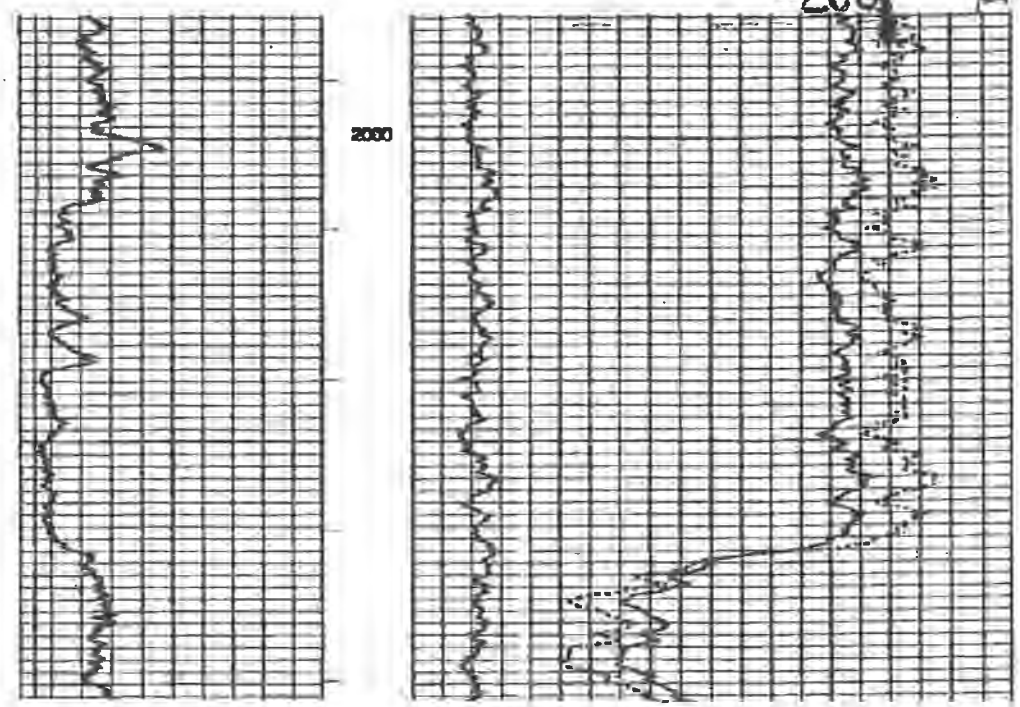
1300
1200
1100

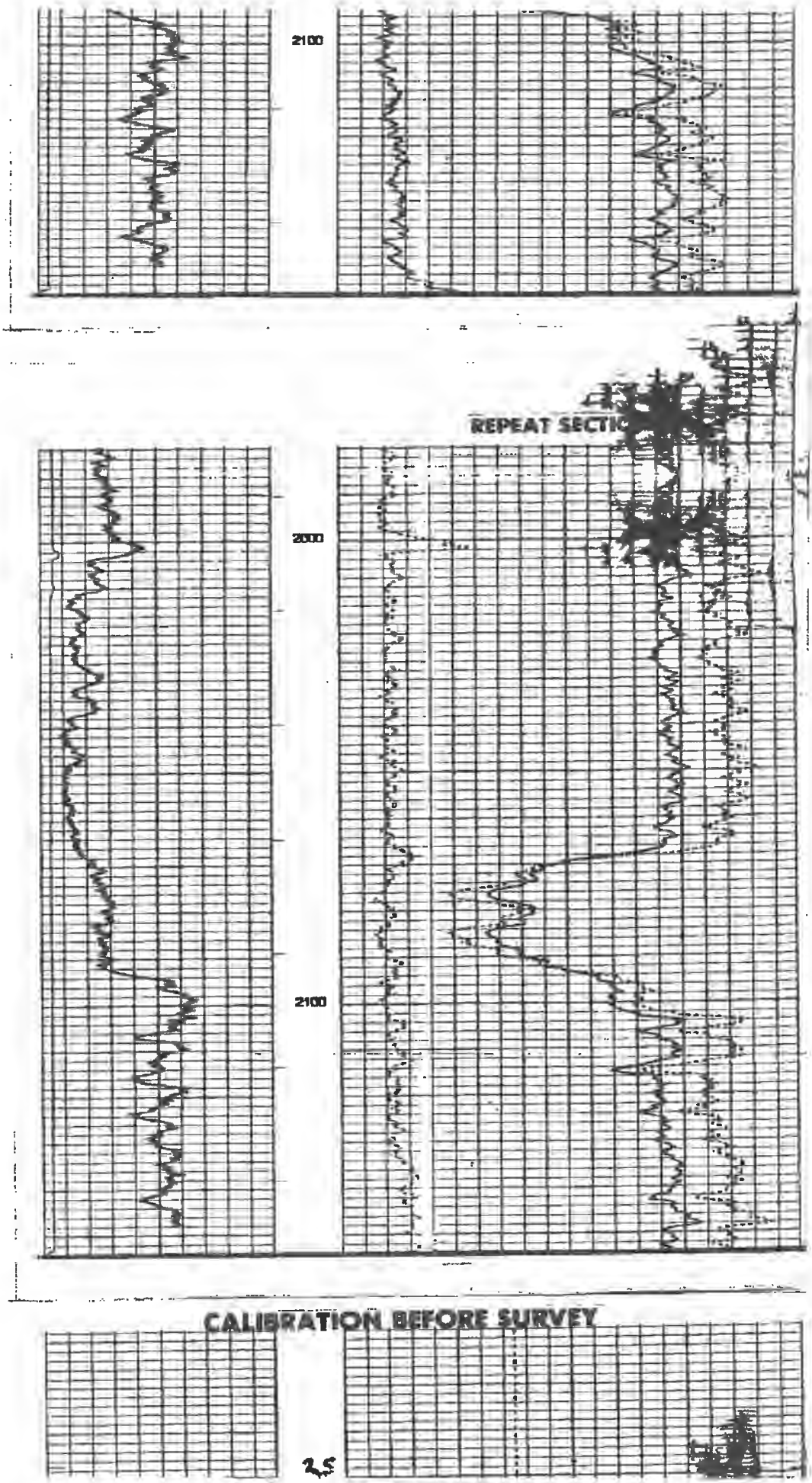

1400
1500
1600

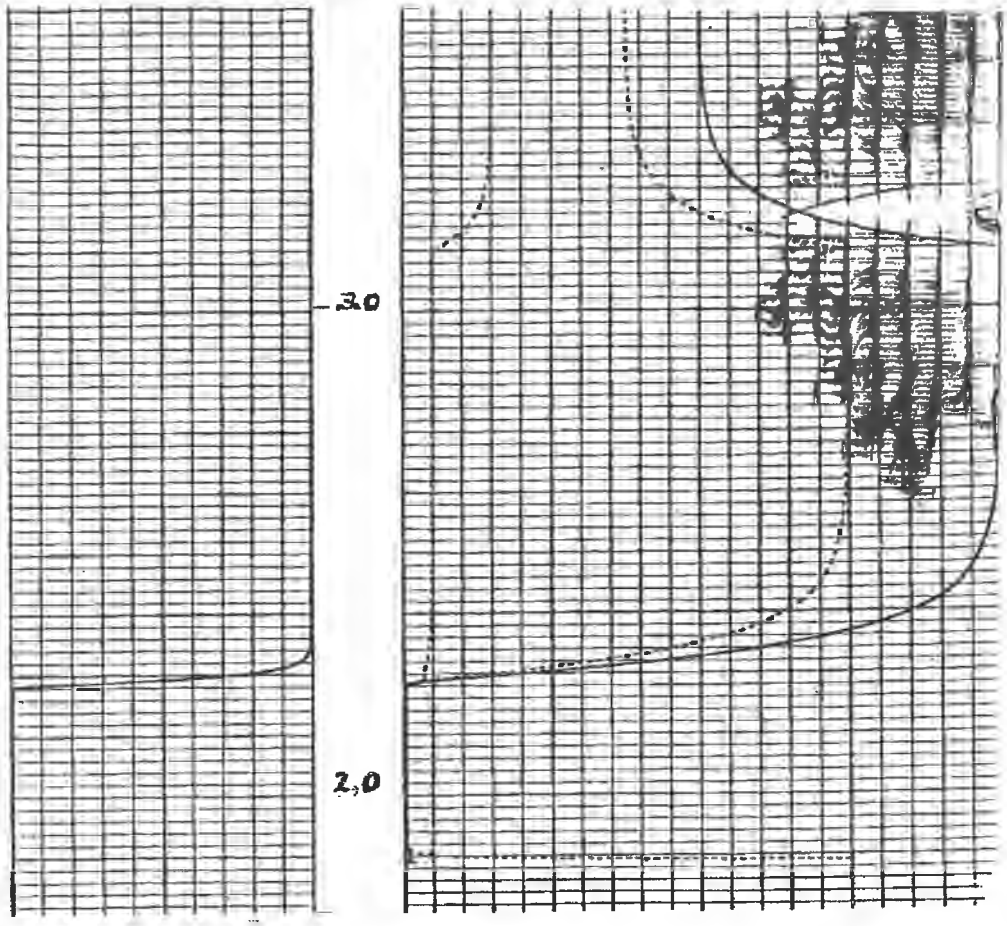
1700
1800
1900



REPEAT SECTION 268




2100
REPEAT SECTI
2000
2100
CALIBRATION BEFORE SURVEY
2,5



GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS, CC
0 — 200		POROSITY PERCENT
200 — 400		30 — 20 — 10 — 0 — -1
CALIPER		2.0 — 2.5 — 3.0
HOLE SIZE - INCHES 6 — 16		CORRECTION 0 — +.25

COMPANY Pennzoil Company

WELL R.A. Talman #70

FIELD Smithfield District STATE WVA

Grid: Tariff 7.5 COUNTY Ro[illegible]

Log FR 2155

Log TD 2156

DRLR TD 2160

Elev.

DF 1063

KB 1063

GR [illegible]

3775
Perf. Log

MOUNTAINEER
logging & perforating corp.

Gamma Ray - Casing Collars

COMPANY	Pennzoil Company		
WELL	[redacted]		
FIELD		DATE	10-5-83
COUNTY	Roane	STATE	W. Va.
LOCATION	Smithfield District		
TICKET NO.	159	PERMIT NO.	3775

RUN NO.	ONE	
TYPE LOG	GR/CCL	
BOTTOM LOGGED INTERVAL	2117	
TOP LOGGED INTERVAL	1900	

TOTAL DEPTH (CUSTOMER)	2155	ELEVATION	10
TOTAL DEPTH (MOUNTAINEER)	2117	PERM. DATUM	Gom
LOG CHECKED	FT.	ZERO POINT	Kel

TYPE CASING	K-55	SIZE	4½"	WEIGHT	9.!
TYPE FLUID	Water & Acid	LEVEL	200'		
WELL PRESSURE	0	NEW WELL	X	WORK OVER	

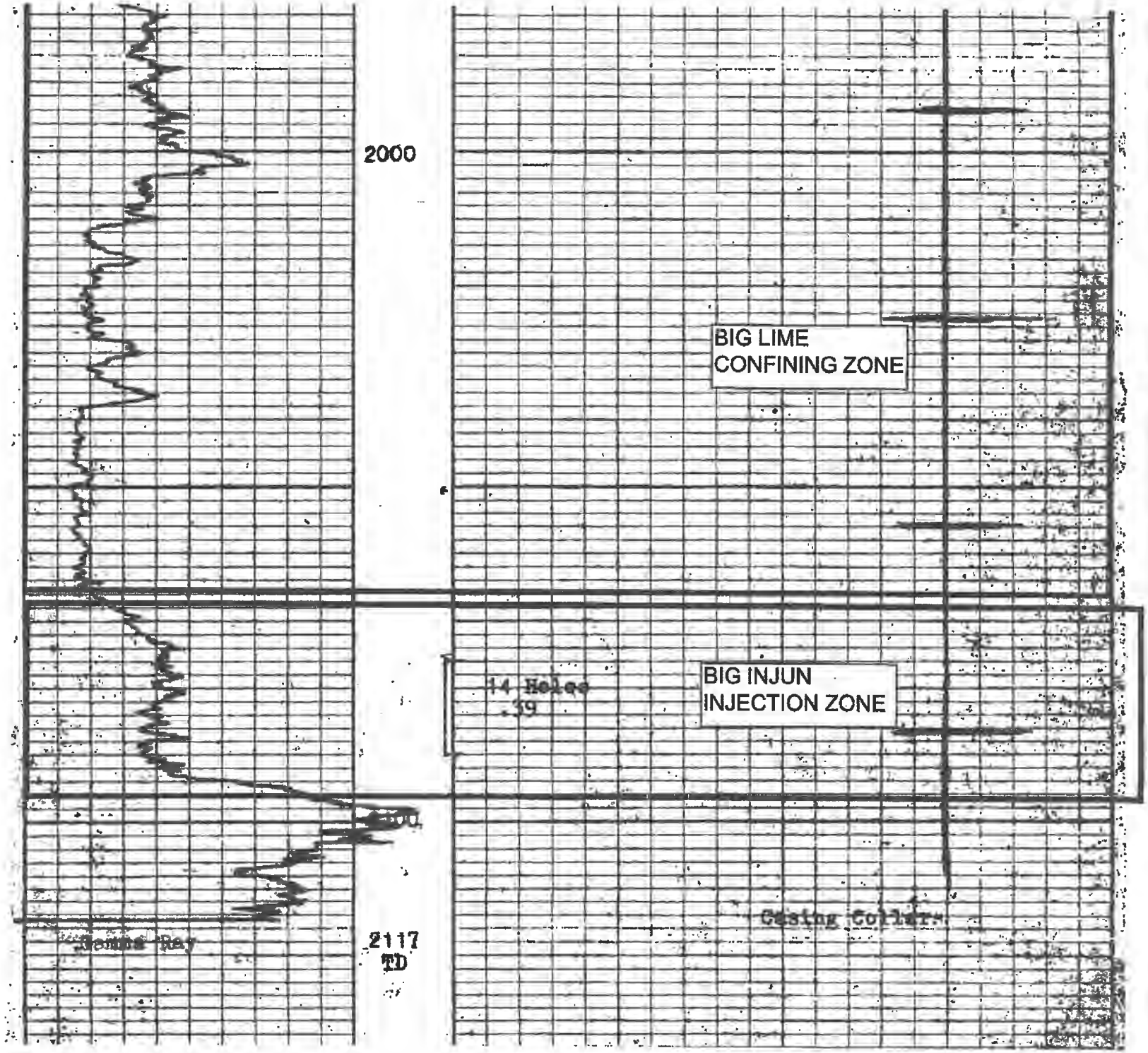
PLUGS
TYPE NA AT FT
MANUFACTURER

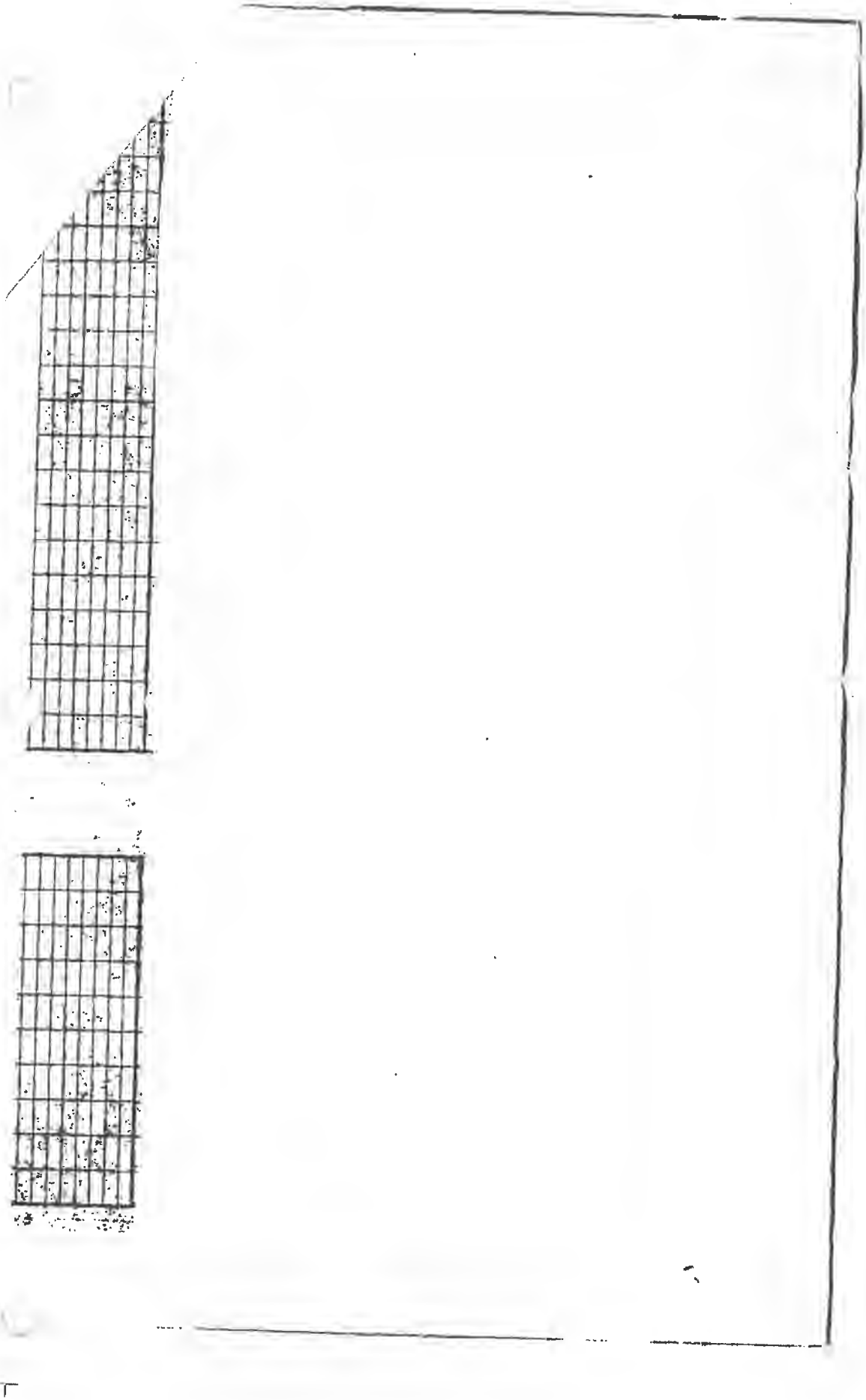
PERFORATING
GUN SIZE 3 1/8" GUN
RUN NO. FROM TO

			1	2076	20

REMARKS

ENGINEER Chamberlin WITNESSED BY Mr. Smith


2000
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
2117
TD



WVGES "Pipeline"

Select County: (087) Roane
Enter Permit #: 3776
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3776

Report Time: Thursday, April 30, 2020 9:31:41 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703776	Roane	3776	Smithfield	Tariff	Otter	38.656028	-81.20812	481891.6	4278627.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703776	7/12/1983	Original Loc	Completed	Delmas Conley	71					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703776	7/12/1983	-/-/-	1105	Ground Level	Tariff(Timn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2223		2223		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703776	7/12/1983	Horizon	Injection	Vertical	2128		2142	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703776	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Triad Hunter LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703776	Pennzoil Company	1984	1,030	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703776	Triad Hunter LLC	2017	0												
4708703776	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703776	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703776	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703776	Original Loc	3rd Salt Sand	Well Record	1612	Reasonable	288	Reasonable	1105	Ground Level
4708703776	Original Loc	Little Lime	Well Record	1950	Reasonable	38	Reasonable	1105	Ground Level
4708703776	Original Loc	Blue Monday	Well Record	1988	Reasonable	6	Reasonable	1105	Ground Level
4708703776	Original Loc	Pencil Cave	Well Record	1994	Reasonable	18	Reasonable	1105	Ground Level
4708703776	Original Loc	Big Lime	Well Record	2012	Reasonable	108	Reasonable	1105	Ground Level
4708703776	Original Loc	Greenbrier Group	Well Record	2012	Reasonable	108	Reasonable	1105	Ground Level
4708703776	Original Loc	Big Injun (Price&eq)	Well Record	2120	Reasonable	26	Reasonable	1105	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703776	100	2216		G D I C *	Y	N	100	2184	361	2190			370	2216					362	2216	N	Y	N						

Comment: *logs: caliper, tension, SP, CCL, perforation depth

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

INJECTION 3776

INJECTOR 3776

FILENAME
4708703776gdco.tif
4708703776gizg.tif
[illegible]

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:

- d density (includes bulk density, compensated density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron–SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:

- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL–casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

(4/25)

3776

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2120 Feet (top) 2146 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2223 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

3776

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 5/8"		H-40	20#	380'	380'	175sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2225'	2225'	140sks
Tubing	NONE						
Liners							

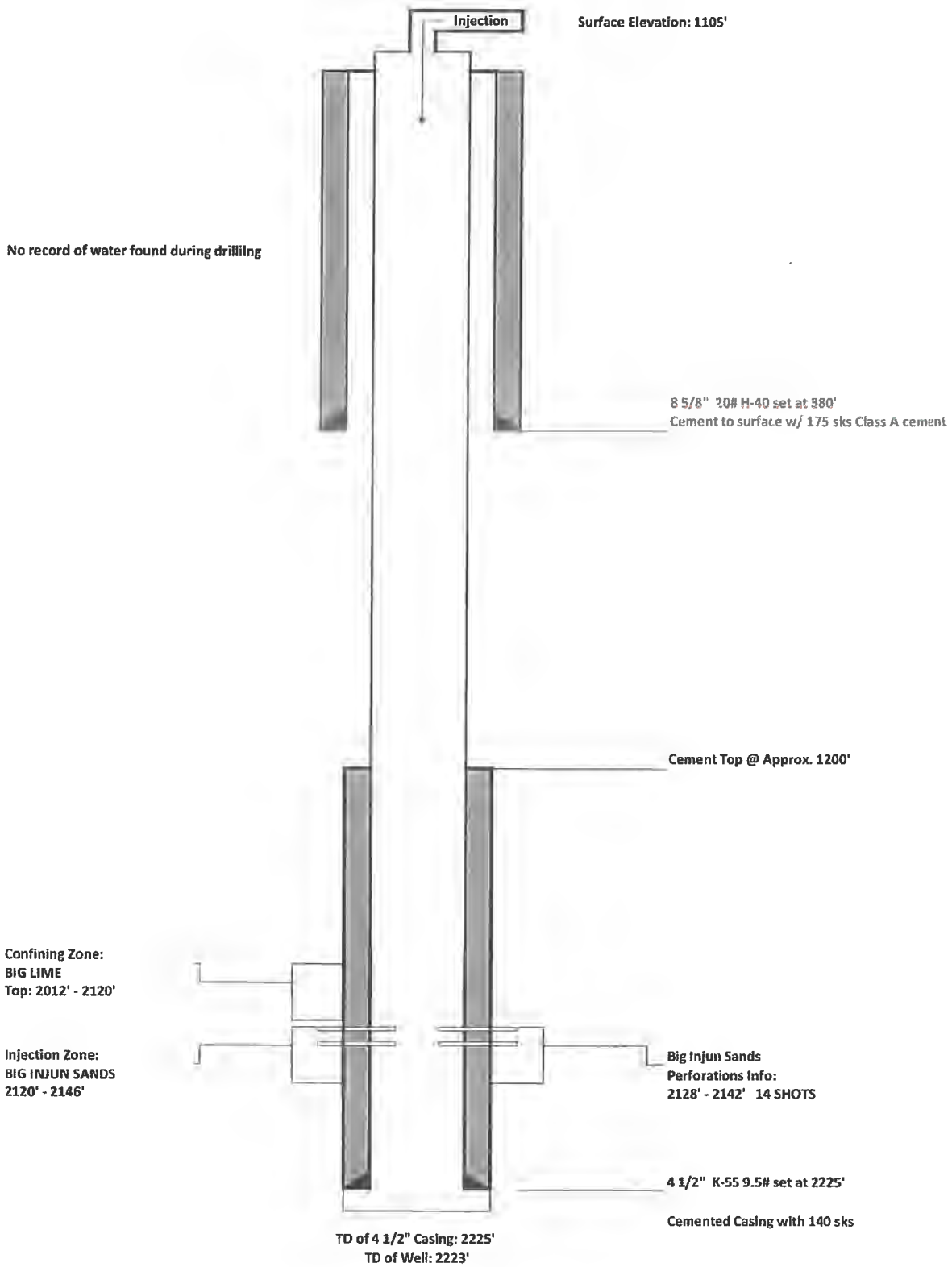
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3776

WELL SCHEMATIC

TALLMAN 71
API 47-087-03776



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
Oil and Gas Division

WELL RECORD

.3776
INJECTOR

Quadrangle Tariff 7.5'

Permit No. 47-087-3776-Li

Rotary X Oil ___
Cable ___ Gas ___
Recycling ___ Comb. ___
Water Flood X Storage ___
Disposal ___ (K)

Company Pennzoil Company
Address P.O.Box 1588, Parkersburg, WV 26101
Farm P. A. Tallman Acres 2350
Location (waters) Sycamore Fork
Well No. 71 Elev. 1104.87'
District Smithfield County Roane
The surface of tract is owned in fee by
Delmas Conley
Address Left Hand, WV
Mineral rights are owned by Anna Lee Collins
Address 1009 Main St., Point Pleasant, WV
Drilling Commenced 7-7-83
Drilling Completed 7-12-83
Initial open flow WIW cu. ft. ___ bbls.
Final production ___ cu. ft. per day ___ bbls.
Well open ___ hrs. before test ___ RP.
Well treatment details.

Casing and Tubing	Used in Drilling	Left in Well	Cement fill Cu. ft. (Sk
Size			
20-16			
Cond.			
13-10"			
9 5/8			
8 5/8			
7	380	380	175 sks.
5 1/2			
4 1/2			
3	2225	2225	140 sks.
2			
Liners Used			

Attach copy of cementing record.

Fractured: 9/29/83. Big Injun w/250 gls. 15% HCL, 160 BGW, 1500# 20/40 sd.

Perf: 2128-2142/14H

Coal was encountered at NR Feet ___ Inches ___
Fresh water NR Feet ___
Producing Sand ___ Salt Water NR Feet ___
Depth ___

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Silt & Sand			0	397		
Shale			397	416		
Silt & Shale			416	476		
Silt & Sand			476	502		
Silt,Shale,Sand			502	1612		
Salt Sand			1612	1900		
Shale,Sand			1900	1950		
Little Lime			1950	1988		
Blue Monday			1988	1994		
Pencil Cave			1994	2012		
Big Lime			2012	2120		
Big Injun			2120	2146		
Pocono Shale			2146	2223		
Total Depth				2223		

TYPE FLUID IN HOLE:	CHLORIDE-CALCIUM
DENSITY:	8.4 LB/G
VISCOSITY:	27.0 S
PH:	7.0
FLUID LOSS:	6.2 C3
SOURCE OF SAMPLE:	FLOWLINE
RM:	0.244 OHMM AT 79.0 DEGF
RMF:	AT
RMC:	AT
SOURCE RMF/RMC:	/
RM AT BHT:	OHMM AT
RMF AT BHT:	AT
RMC AT BHT:	AT
TIME CIRC. STOPPED:	1200
TIME LOGGER ON BTM.:	1500
MAX. REC. TEMP:	
LOGGING UNIT NO:	8030
LOGGING UNIT LOC:	ST.ALBANS
RECORDED BY:	FOX
WITNESSED BY:	MR. BILL GREENLEE

REMARKS:

DENSITY-INDUCTION LOGGED ON SAME PASS
1.5" STANDOFF ON INDUCTION
CALIPER CLOSING SEE REMARKS

EQUIPMENT NUMBERS-

PGS 200	PDH 180	GSR J 5347	NLM 1168
DIC 543	DIS 1053	IEM 1317	

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 OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

FILE

6

CHANGED PARAMETERS

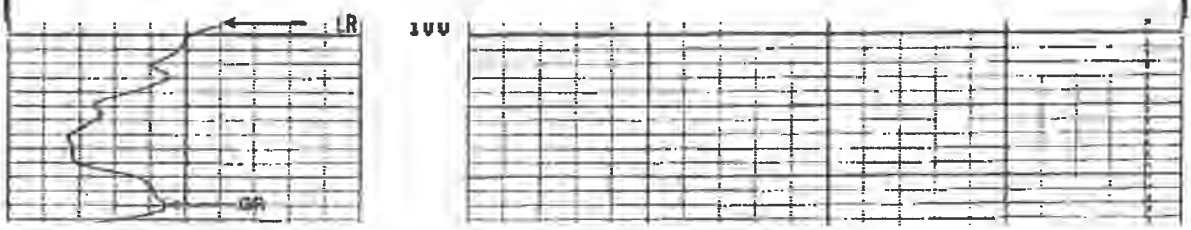
NAME	VALUE	UNIT	NAME	VALUE	UNIT
NDEN	2.68000	G/C3			

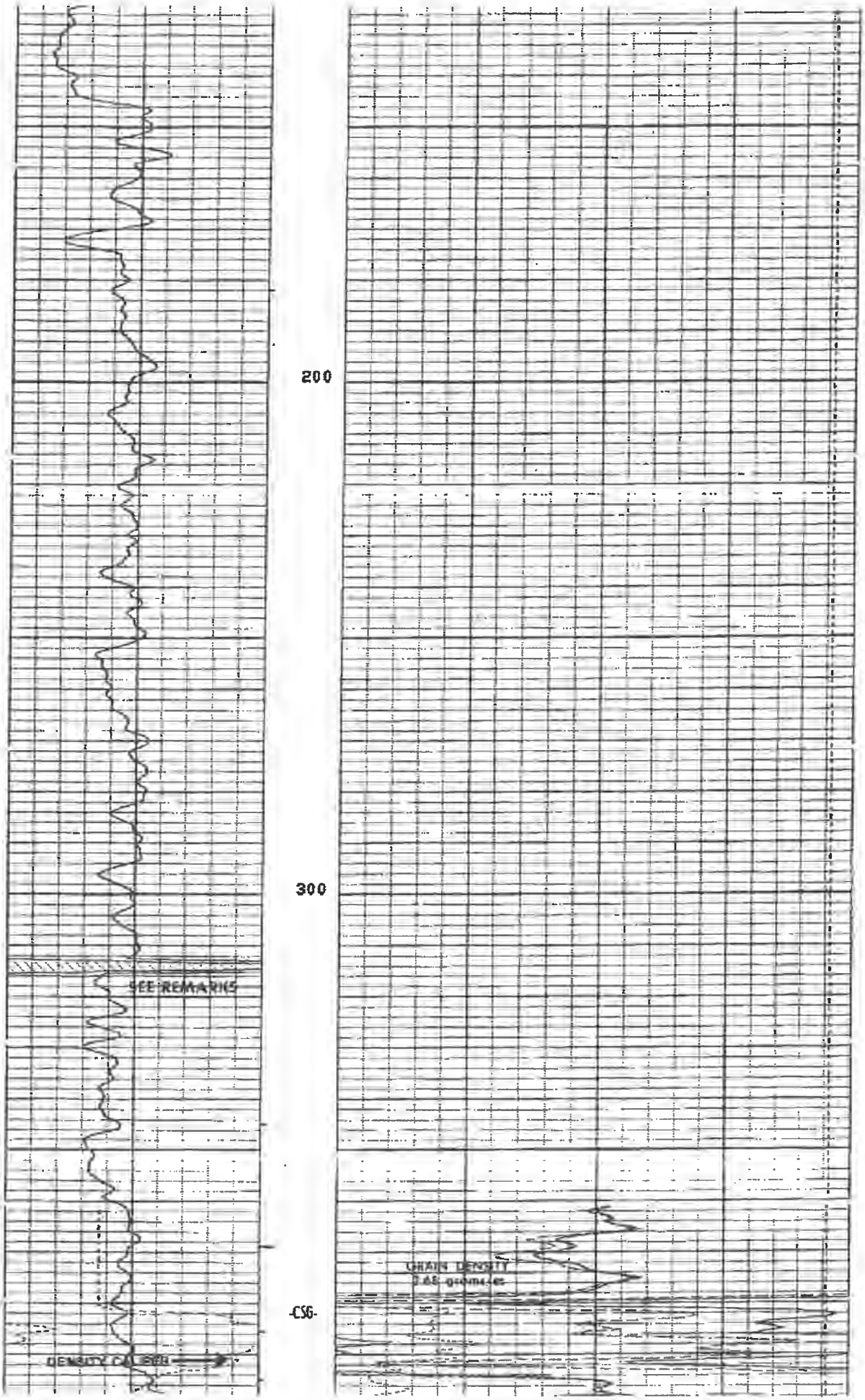
GR (GAPI)		
200.00	400.00	
GR (GAPI)		TENS(LB)
0.0	200.00	10000. 0.0

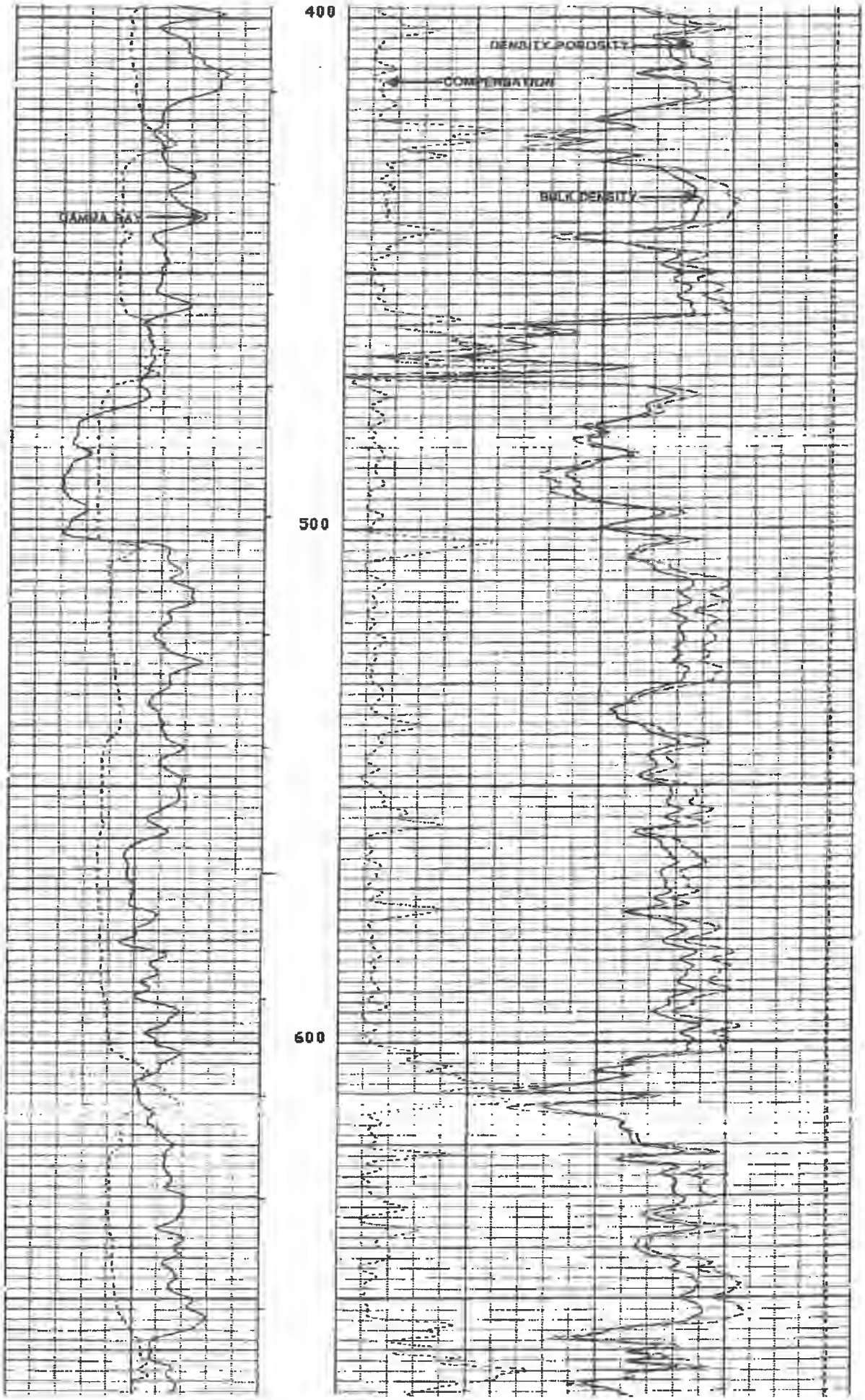
FILE

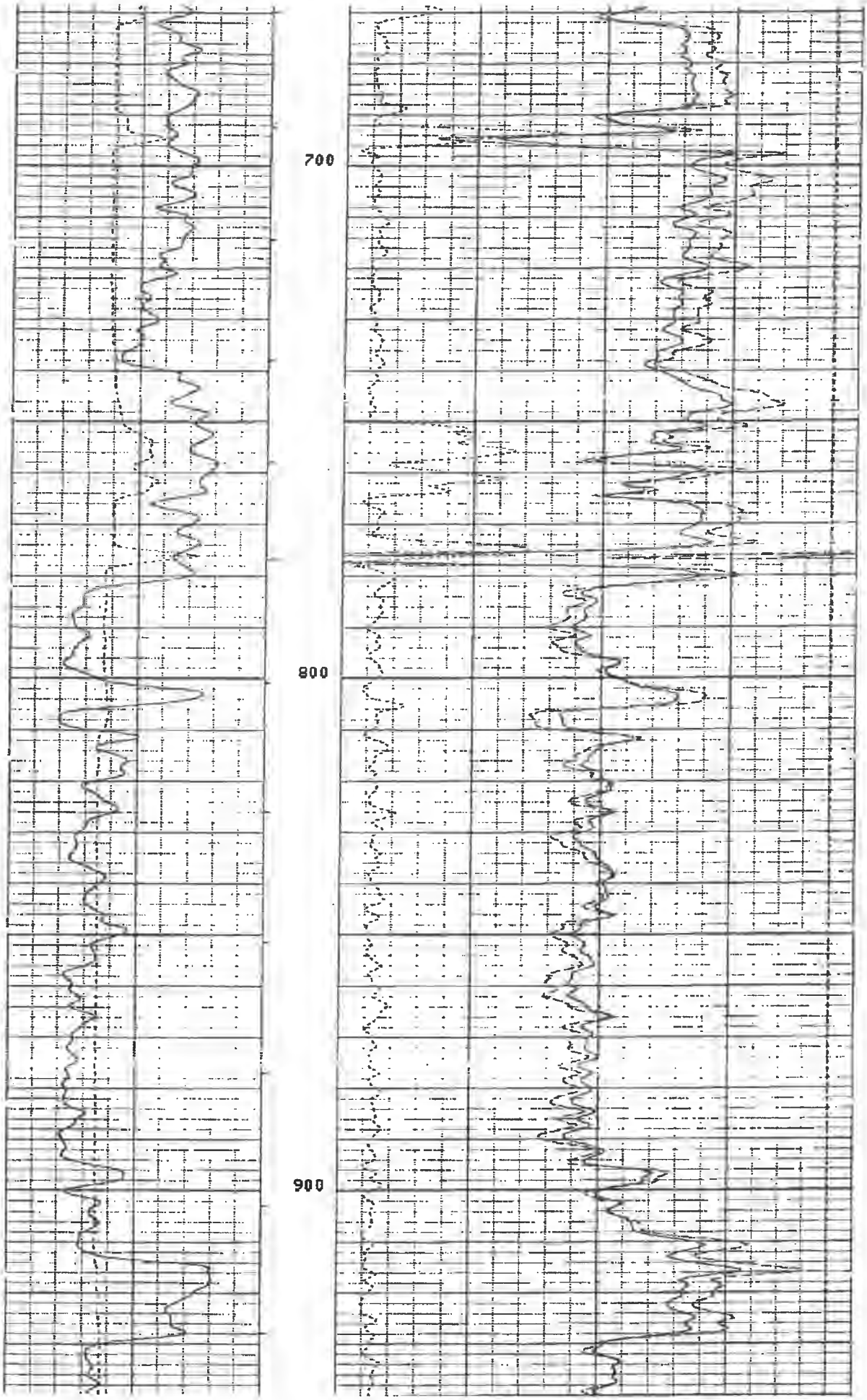
4

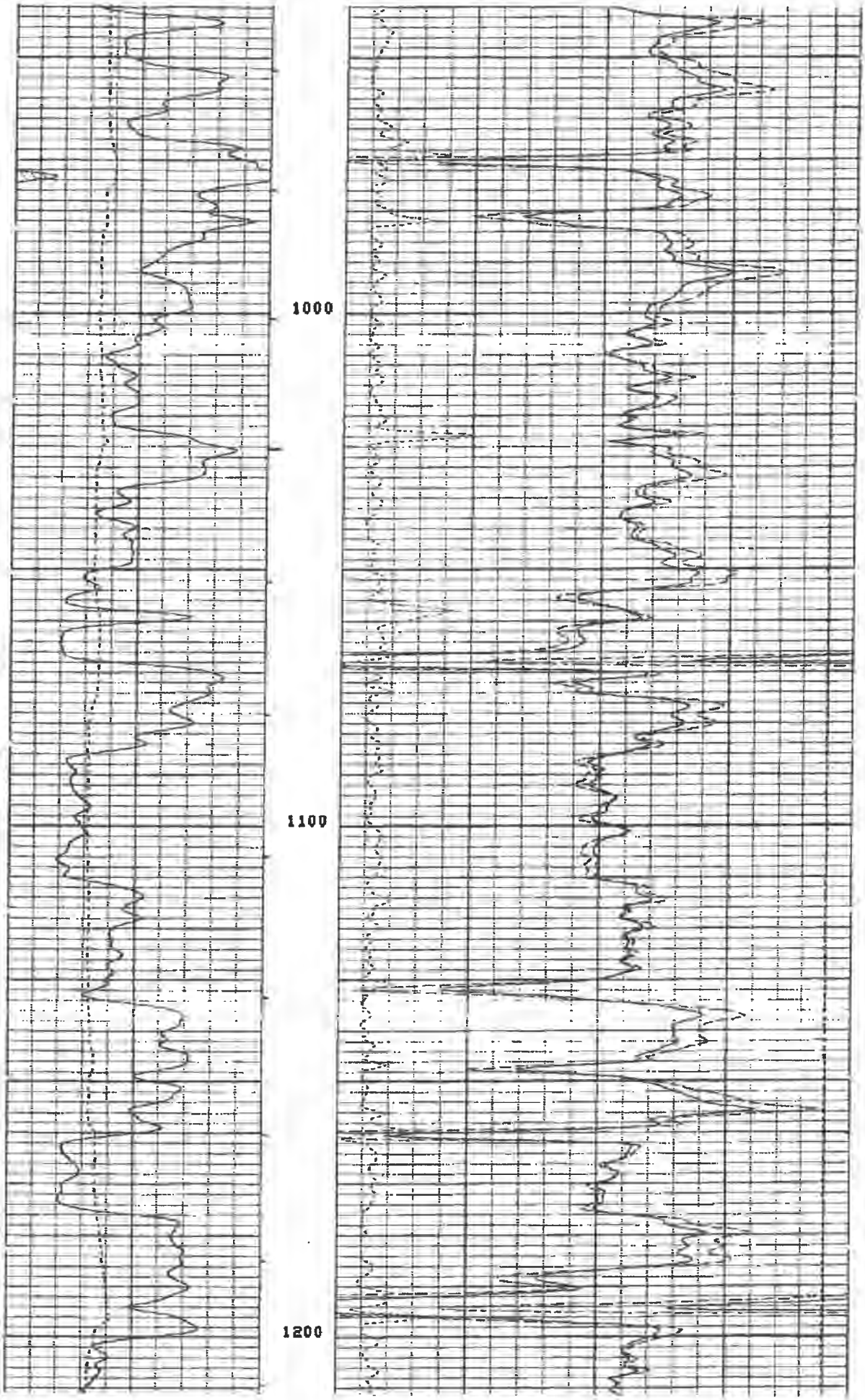
DETAIL LOG
5" = 100'

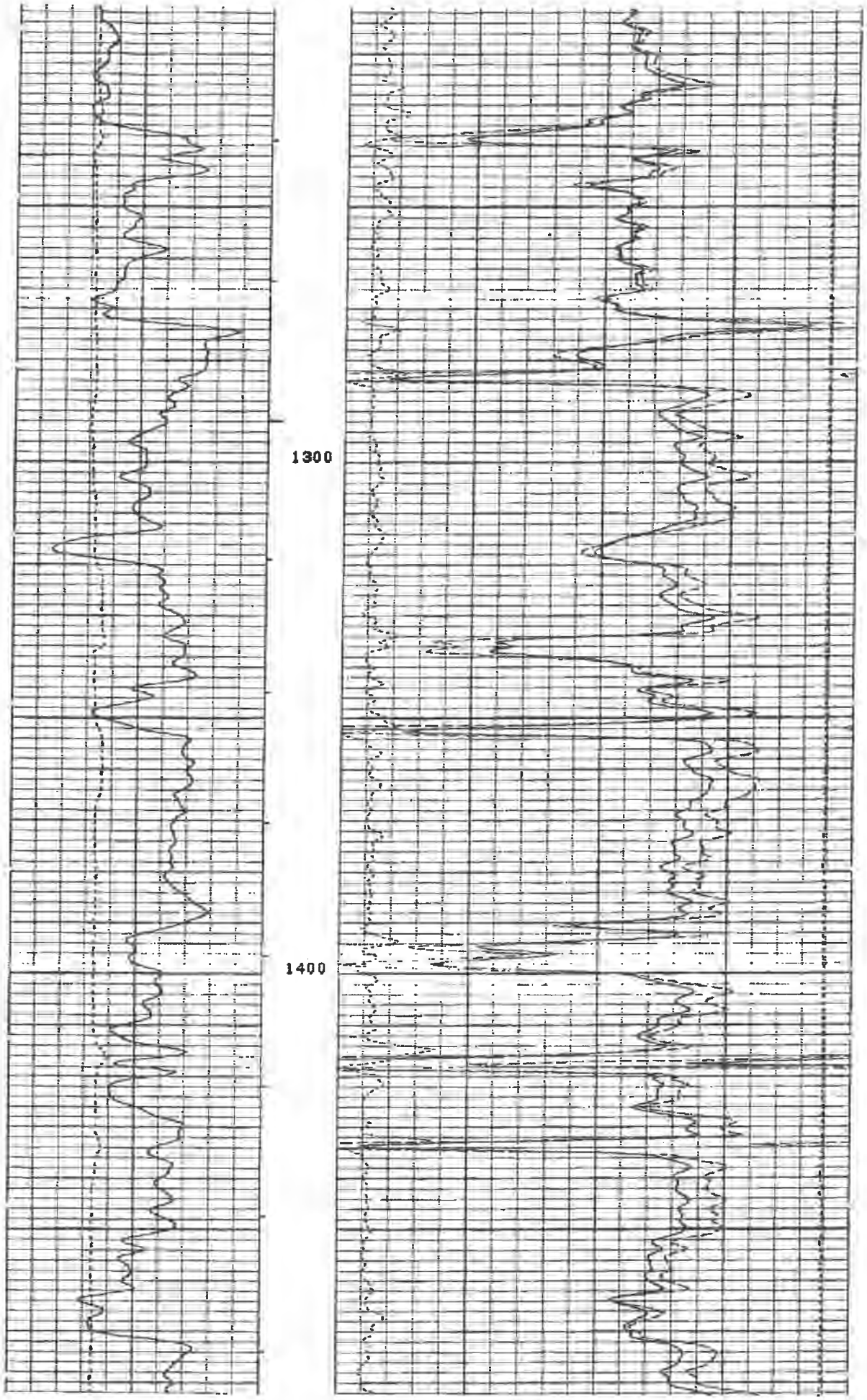


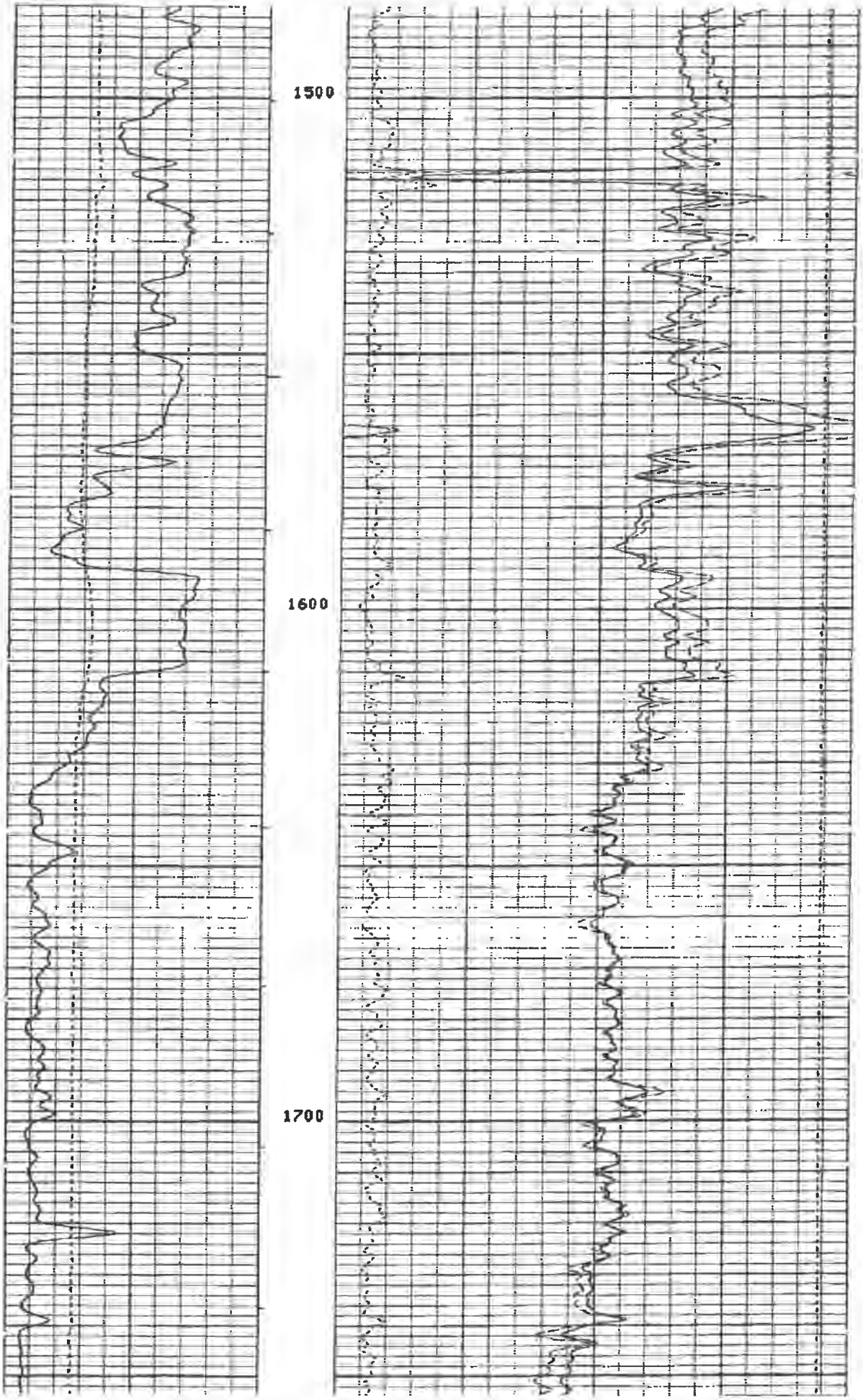

200
300
SEE REMARKS
-CSG-
DENSITY CALIBER
GRAIN DENSITY

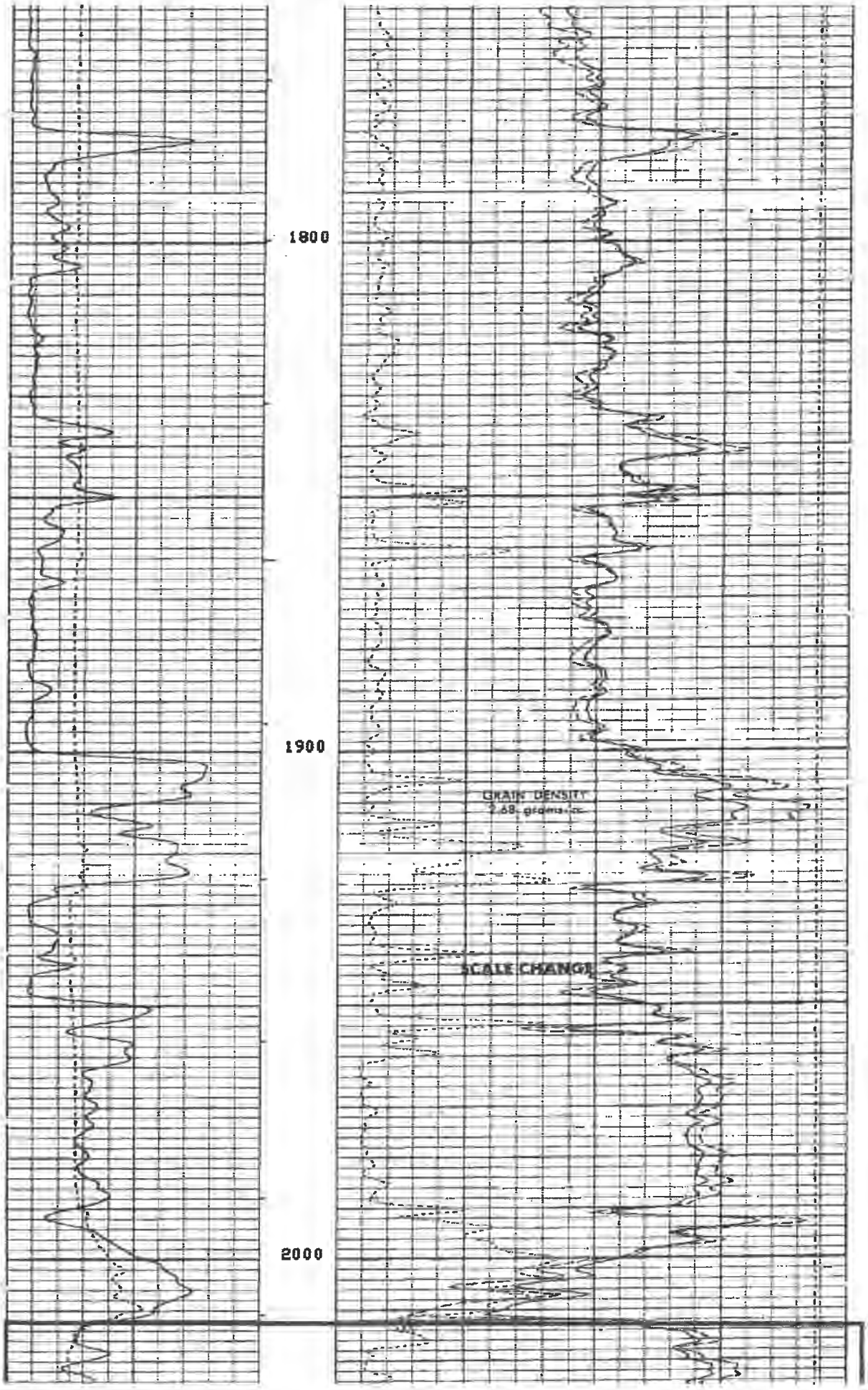

400
500
600
GAMMA RAY
DENSITY POROSITY
CORRELATION
BULK DENSITY

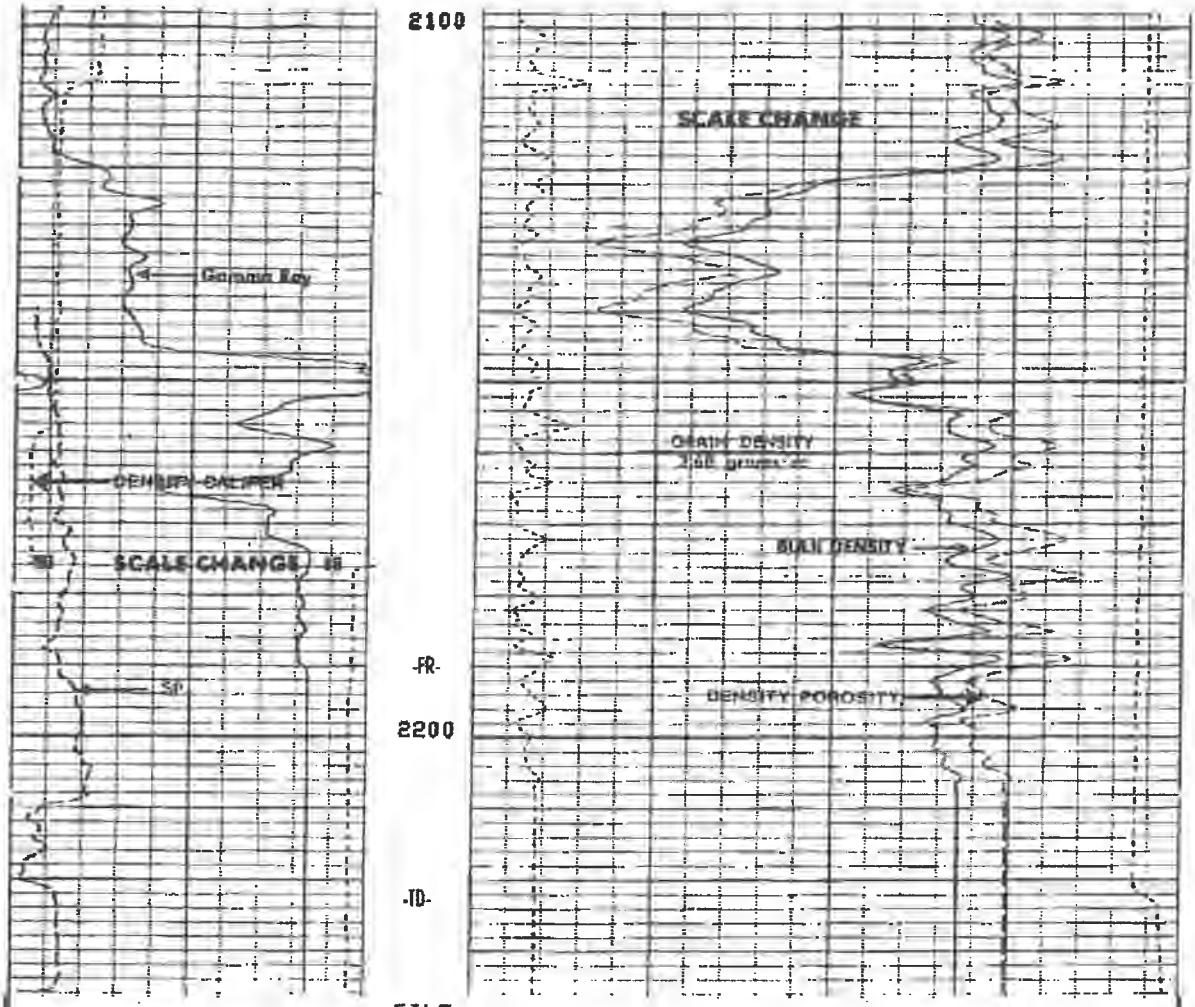

700
800
900


1000
1100
1200


1300
1400


1500
1600
1700


1800
1900
2000
GRAIN DENSITY
2.68 grams/cc
SCALE CHANGE



GR (GAPI) 200.00 400.00			
CALI(IN) 6.0000 16.000		DRHO(G/C3) -0.050 0.4500	TENS(LB) 10000. 0.0
GR (GAPI) 0.0 200.00		DPHI( ) 0.3000 -0.100	
SP (MV) -80.00 20.000		RHOB(G/C3) 2.0000 3.0000	

SENSOR MEASURE POINT TO TENSION REFERENCE POINT

FFDC	29.1	FEET	GR	45.7	FEET
CALI	29.1	FEET	NFDC	29.1	FEET
SFL	3.9	FEET	ILD	6.9	FEET
SP	.0	FEET	ILM	3.3	FEET
TENS	.0	FEET	SPAR	.0	FEET

PARAMETERS

NAME	VALUE	UNIT	NAME	VALUE	UNIT
FD	1.00000	G/C3	BS	0.0	IN
FDCC	ALLO		MDEN	2.68000	G/C3
DSEC	3.70000	MMHO	BHF	WATE	
MSEC	5.70000	MMHO	SBR	1.00000	OHMM
DO	0.0	F	BHS	OPEN	

BEFORE SURVEY CALIBRATION SUMMARY

PERFORMED: 83/07/12
PROGRAM FILE: PGTIND (VERSION 22.4 00/35/00)

DITD ELECTRONICS CALIBRATION SUMMARY

	MEASURED ZERO	MEASURED PLUS	CALIBRATED ZERO	CALIBRATED PLUS	UNITS
ILD	0.1	536.3	0.0	504.8	MMHO
ILM	-0.0	520.4	0.0	502.5	MMHO
SFL	-0.5	479.5	0.0	500.0	MMHO

ILD SONDE ERROR CORRECTION : 3.7 MMHO
ILM SONDE ERROR CORRECTION : 5.7 MMHO

SGTE DETECTOR CALIBRATION SUMMARY

	MEASURED BKGD	MEASURED JIG	CALIBRATED	UNITS
GR	29	166	160	GAPI

PGTK DETECTOR CALIBRATION SUMMARY

	BLOCK INPUT	BLOCK CALIBRATED	JIG MEASURED	JIG CALIBRATED	UNITS
FFDC	732	337	914	420	CPS
NFDC	1079	528	1247	610	CPS

PGTK CALIPER CALIBRATION SUMMARY

	MEASURED SMALL	MEASURED LARGE	CALIBRATED SMALL	CALIBRATED LARGE	UNITS
CALI	18.2	14.2	8.0	12.0	IN

FILE

2

SHOP SUMMARY

PERFORMED: 83/07/10
PROGRAM FILE: SHOP (VERSION 22.1 82/03/24)

PGTK DETECTOR CALIBRATION SUMMARY

	BLOCK MEASURED	BLOCK CALIBRATED	JIG MEASURED	JIG CALIBRATED	UNITS
FFDC	732	337	909	418	CPS
NFDC	1079	528	1256	614	CPS

(PGS:200 , PDH:180 , GSR:5347, SFT :8030)

AFTER SURVEY TOOL CHECK SUMMARY

PERFORMED: 83/07/12
PROGRAM FILE: PGTIND (VERSION 22.4 00/35/00)

DITD TOOL CHECK

	ZERO BEFORE	ZERO AFTER	PLUS BEFORE	PLUS AFTER	UNITS
ILD	0.0	0.0	504.8	507.2	MMHO
ILM	0.0	0.0	502.5	505.5	MMHO
SFL	0.0	0.2	500.0	496.6	MMHO

ILD SONDE ERROR CORRECTION : 5.5 MMHO
ILM SONDE ERROR CORRECTION : 7.3 MMHO

PGTK TOOL CHECK

--

JIG

	BEFORE	AFTER	UNITS
FFDC	420	421	CPS
NFDC	610	610	CPS

RHOB CHANGE (WATER): -0.000 G/C3

FILE

6

3776
GammaRay

MOUNTAINEER
logging & perforating corp.

Gamma Ray - Casing Collars

COMPANY	Pennzoil Company		
WELL	[redacted]		
FIELD	Tariff	DATE	9-29-83
COUNTY	Roane	STATE	W. Va.
LOCATION	Tariff Fork Watershed		
TICKET NO.	153	PERMIT NO.	NA

RUN NO.	One	
TYPE LOG	GR/CCL	
BOTTOM LOGGED INTERVAL	2183	
TOP LOGGED INTERVAL	1962	

TOTAL DEPTH (CUSTOMER)	2227	ELEVATION	1
TOTAL DEPTH (MOUNTAINEER)	2183	PERM.DATUM	Gr
LOG CHECKED	0 FT.	ZERO POINT	Ke

TYPE CASING	K-55	SIZE	4½"	WEIGHT	
TYPE FLUID	Water & Acid	LEVEL	NA		
WELL PRESSURE	0	NEW WELL	X	WORK OVER	

PLUGS
TYPE NA AT ____ FT ____
MANUFACTURER

PERFORATI
GUN SIZE 3 1/8" GUN
RUN NO. FROM T

			1	2128	2

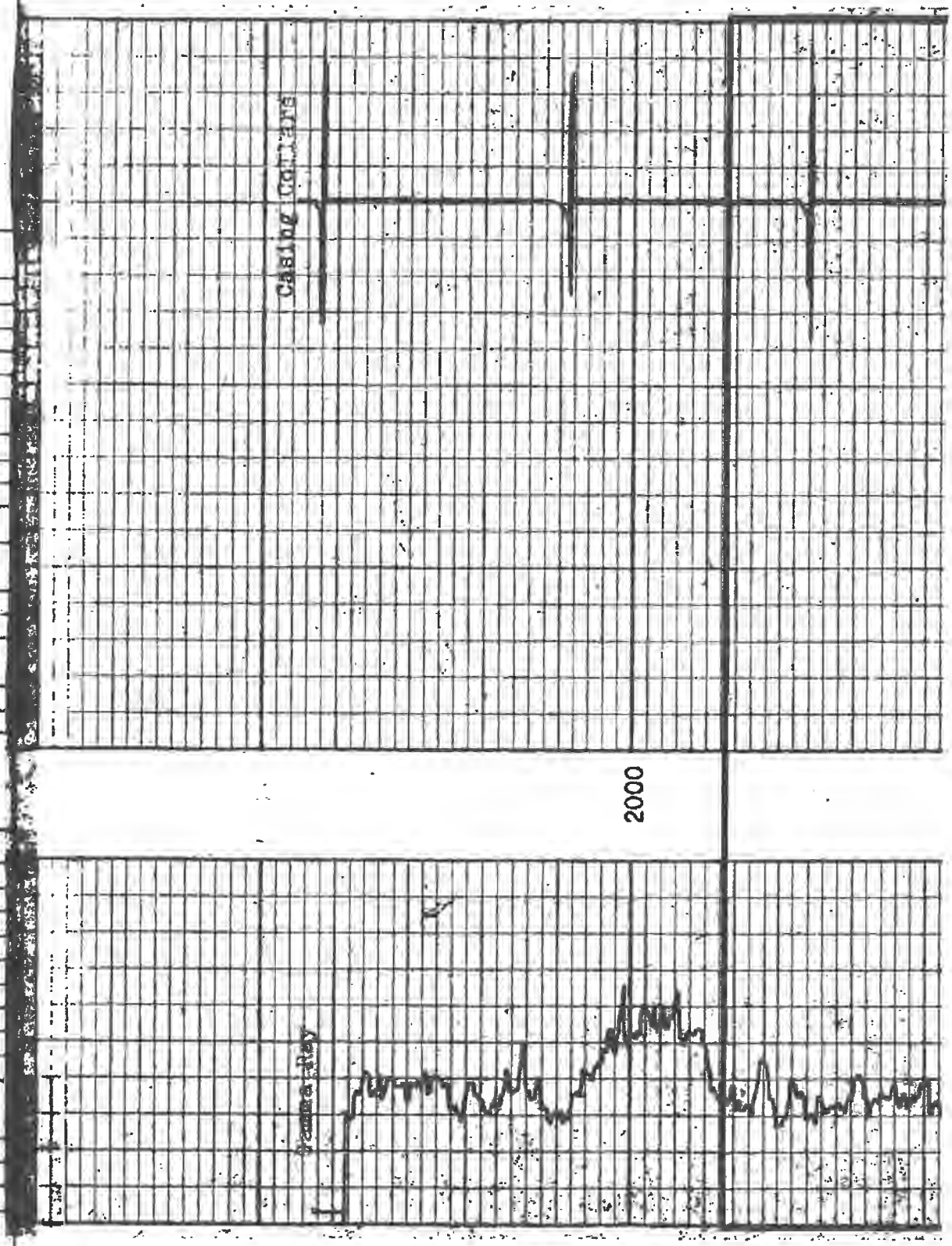
REMARKS

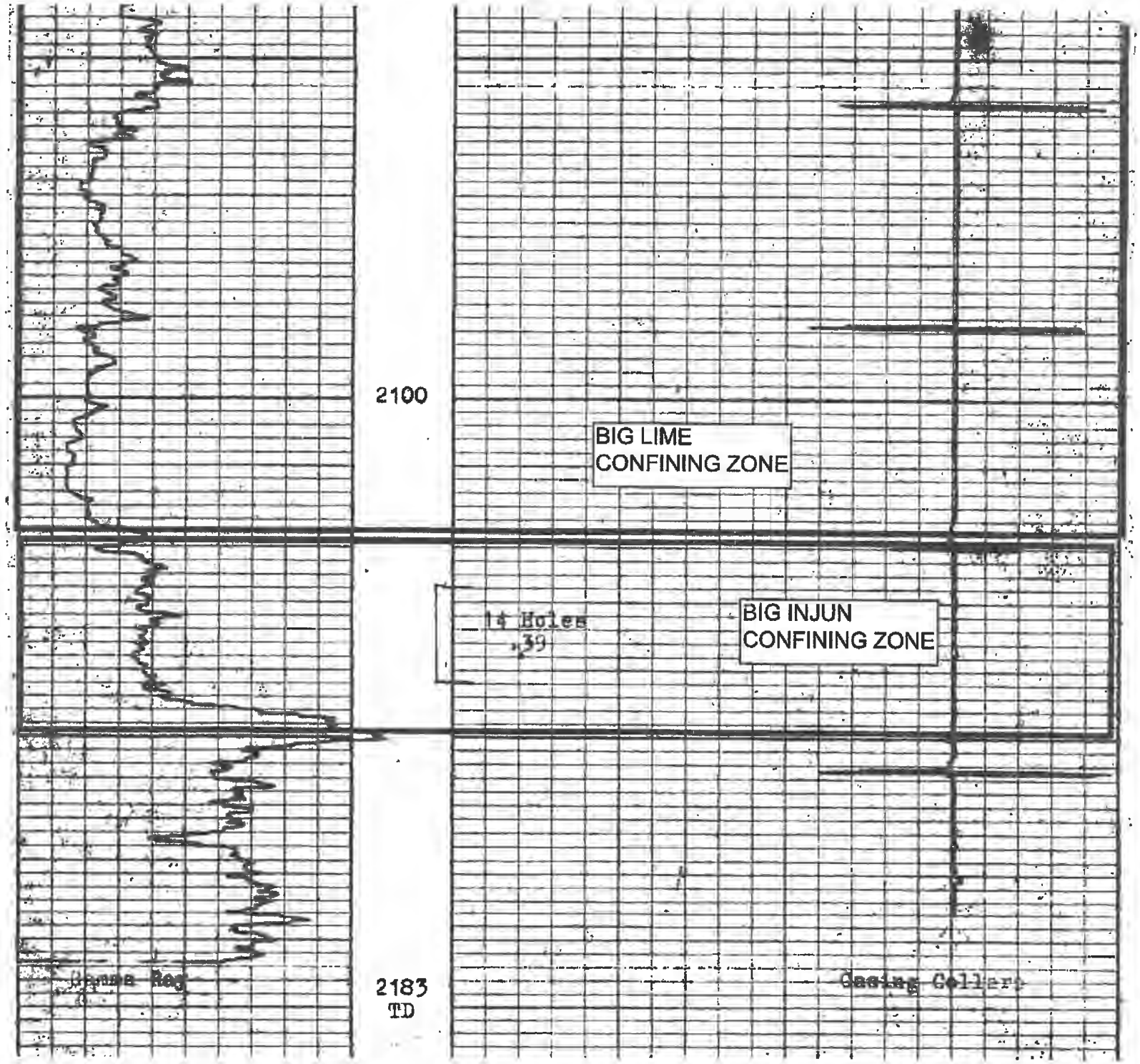
ENGINEER Chamberlin WITNESSED BY Mr. P

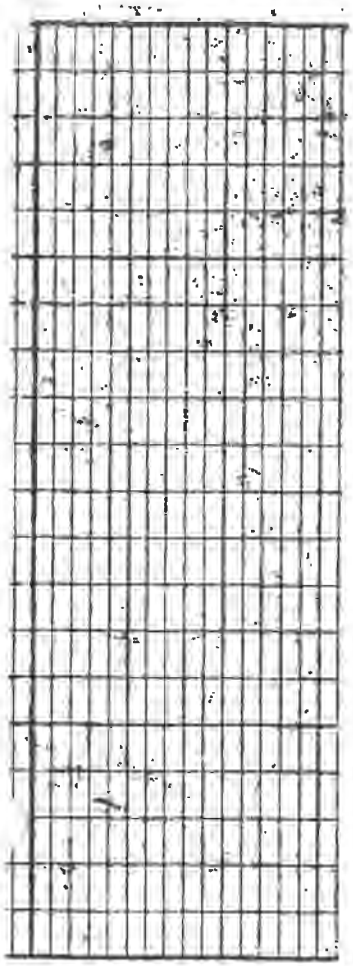
Q98
ound Level
lly Bushing
9.5

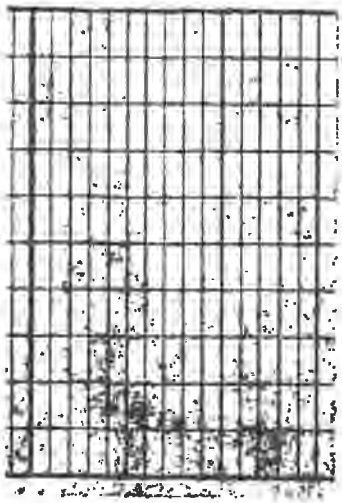
ING
TYPE HSC
NO. SHOTS
142 14

utcher




2100
BIG LIME
CONFINING ZONE
14 Holes
39
BIG INJUN
CONFINING ZONE
2183
TD





WVGES O&G Record Reporting System

WVGES GEOLOGY UNDERLIES IT ALL "Pipeline"

Select County: (087) Roane
Enter Permit #: 3778
Get Data | Reset

Select datatypes: (Check All)
☑ Location ☑ Production ☑ Plugging
☑ Owner/Completion ☑ Stratigraphy ☑ Sample
☑ Pay/Show/Water ☑ Logs ☑ Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3778

Report Time: Thursday, April 30, 2020 9:32:17 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703778	Roane	3778	Smithfield	Tariff	Otter	38.658493	-81.204792	482181.8	4278900.2

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703778	7/7/1983	Original Loc	Completed	Ray Elmore	73					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703778	7/7/1983	-/-/-	1098	Ground Level	Tariff(Tlmn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2222		2222		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703778	7/7/1983	Horizon	Injection	Vertical	2124		2132	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703778	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703778	Pennzoil Company	1984	1,030	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703778	Ground Resources, LLC	2017	0												
4708703778	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703778	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703778	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703778	Original Loc	3rd Salt Sand	Well Record	1643	Reasonable	127	Reasonable	1098	Ground Level
4708703778	Original Loc	Little Lime	Well Record	1940	Reasonable	43	Reasonable	1098	Ground Level
4708703778	Original Loc	Blue Monday	Well Record	1983	Reasonable	7	Reasonable	1098	Ground Level
4708703778	Original Loc	Pencil Cave	Well Record	1990	Reasonable	16	Reasonable	1098	Ground Level
4708703778	Original Loc	Big Lime	Well Record	2006	Reasonable	111	Reasonable	1098	Ground Level
4708703778	Original Loc	Greenbrier Group	Well Record	2006	Reasonable	111	Reasonable	1098	Ground Level
4708703778	Original Loc	Big Injun (Price&eq)	Well Record	2117	Reasonable	18	Reasonable	1098	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703778	20	2220		G D C	Y	N	20	2214	370	2220									370	2220	N	N	N						

Comment: *logs: caliper

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Injector 3778

INJECTOR 3778

FILENAME
4708703778gdc.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3778

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2117 Feet (top) 2135 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2222 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3778

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	375'	375'	20sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2215'	2215'	75sks
Tubing							
Liners							

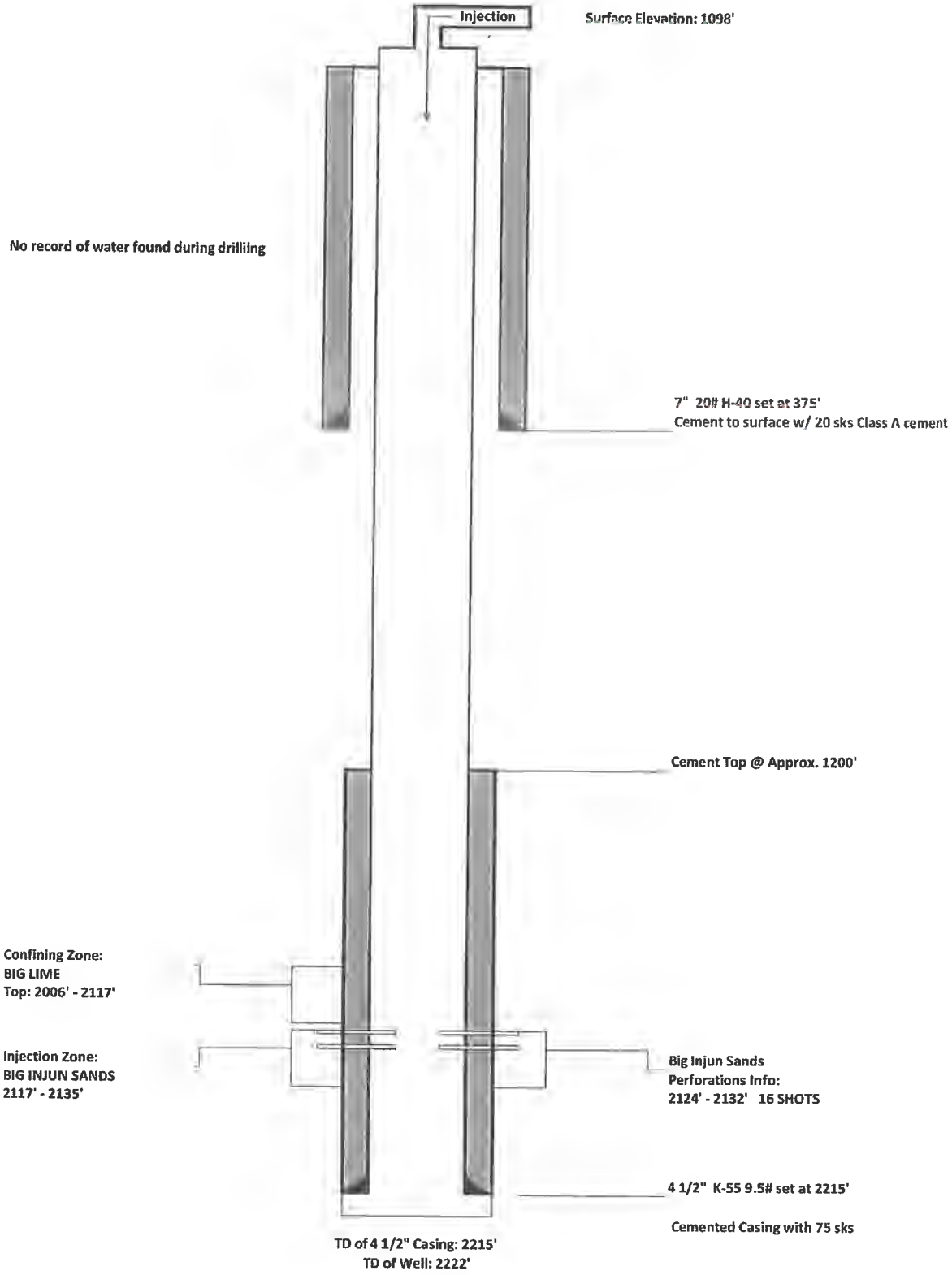
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing	NONE						
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3778

WELL SCHEMATIC

TALLMAN 73
API 47-087-03778



INJECTOR 3778

RECEIVED
NOV 1 - 1983
OIL & GAS DIVISION
DEPT. OF MINES

OG-10
Rev. - 9-71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Quadrangle Tariff 7.5'

Permit No. 47-087-3778-Li

Rotary X Oil ____
Cable ____ Gas ____
Recycling ____ Comb. ____
Water Flood X Storage ____
Disposal ____ ____ (Kind

Company Pennzoil Company
Address P.O. Box 1588, Parkersburg, WV 26101
Farm P. A. Tallman Acres 2350
Location (waters) Sycamore Fork
Well No. 73 Elev. 1098
District Smithfield County Roane
The surface of tract is owned in fee by
Ray Elmore
Address Left Hand, WV
Mineral rights are owned by Anna Lee Collins
Address 1009 Main St., Point Pleasant, WV
Drilling Commenced 7-3-83
Drilling Completed 7-7-83
Initial open flow ____ cu. ft. ____ bbls.
Final production ____ cu. ft. per day ____ bbls.
Well open ____ hrs. before test ____ RP.
Well treatment details:

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size			
20-16			
Cond.			
13-10"			
9 5/8			
8 5/8			
7	375	375	20 sks
5 1/2			
4 1/2	2215	2215	75 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Fractured: 9/29/83 Big Injun w/250 gls. 15% HCL, 160 BGW, 1500# 20/40 sd

Perf: 2184-32/16H

Coal was encountered at NR Feet ____ Inches
Fresh water NR Feet ____ Salt Water NR Feet ____
Producing Sand ____ Depth ____

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Silt & Shale			0	46		
Shale			46	80		
Sand			80	104		
Silt,Shale,Sand			104	1643		
Salt Sand			1643	1770		
Shale,Sand,Silt			1770	1940		
Little Lime			1940	1983		
Blue Monday			1983	1990		
Pencil Cave			1990	2006		
Big Lime			2006	2117		
Big Injun			2117	2135		
Pocono Shale			2135	2222		
Total Depth				2222		

JAN 3 1984

INJECTOR 3778

FORM IV-3
(Obverse)
[02-83]

DRILLING CONTRACTOR

1) Date: May 19 19 83
2) Operator's
Well No. P. A. Tallman #73
3) SIC Code
4) API Well No. 47 - 087 - 3778
State County Permit
5) UIC Permit

STATE OF WEST VIRGINIA
LIQUID INJECTION OR WASTE DISPOSAL WELL PERMIT APPLICATION
For Both
DEPT. OF MINES, OFFICE OF OIL AND GAS, DNR, DIVISION OF WATER RESOURCES

6) WELL TYPE: Liquid Injection X / Disposal ___ / Gas Injection ___ /

7) LOCATION: Elevation 1090.65'
Watershed Sycamore Fork
District Smithfield
County Roane Quadrangle Tariff 7.5'

8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV

9) ROYALTY OWNER Anna Lee Collins
Address 1009 Main Street
Point Pleasant, WV
Acreage 2350

0) SURFACE OWNER Ray Elmore
Address Left Hand, WV
Acreage 49

1) OIL AND GAS INSPECTOR TO BE NOTIFIED BEFORE DRILLING, AND 24 HOURS IN ADVANCE OF ANY MECHANICAL INTEGRITY TEST
Name Homer H. Dougherty
Address Linden Rt. Box 3A
Looneyville, WV

12) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV

13) COAL OPERATOR NO COMMERCIAL COAL
Address

14) COAL OWNER(S) WITH DECLARATION ON RECORD:
Name
Address
Name
Address

RECEIVED
20 1983
OIL & GAS DIVISION
DEPT. OF MINES

15) COAL LESSEE WITH DECLARATION ON RECORD:
Name
Address

) The undersigned well operator is entitled to operate for liquid injection or waste disposal purposes at the above location under a deed ___ / lease X / other contract ___ / dated May 21, 19 06, to the undersigned well operator from P. A. Tallman, et ux. (If said deed, lease, or other contract has been recorded:) Recorded on ___, 19___, in the office of the Clerk of the County Commission of Roane County, West Virginia, in Lease Book 12 at page 26. A permit is requested as follows:

) PROPOSED WORK: Convert ___ / Drill X / Drill deeper ___ / Fracture or stimulate ___ / Plug off old formation ___ / Other physical change in well (specify)

) Date of first liquid injection or waste disposal: ___, 19___.

PROPOSED WORK ORDER
THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-37 UPON COMPLETION

) Estimated depth of completed well 2180 feet Rotary X / Cable tools ___ /

) Approximate water strata depths: Fresh, ___ feet; salt, ___ feet.

) Approximate coal seam depths: ___ Is coal being mined in the area? Yes ___ / No ___ /

) GEOLOGICAL TARGET FORMATION Big Injun Depth 2109 feet (top) to 2138 feet (bottom)

a) Virgin reservoir pressure in target formation 80 psig; Source Estimated
b) Estimated reservoir fracture pressure ___ psig (BHFP)
c) Perforation intervals Big Injun* Open-hole intervals

) MAXIMUM PROPOSED INJECTION OPERATIONS *Will pick zones to perforate from the log
Volume per hour: 12 Bbls. Bottom hole pressure: 2000 psig

) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED - PLUS ADDITIVES
Fresh Water

SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

) FILTERS (IF ANY) Coal Filters

INJECTOR 3778

27) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS Cubic ft.	PACKERS
Conductor									
Fresh water	7				X	350	350	Cement to surface	Kinds Neat
Coal									
Intermediate									Sizes
Production	4-1/2	K55	9.5	X		2180	2180	Over Salt Sand	
Tubing									Depths se
Liners									
									Perforations
									Top Bottom

28) Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed or delivered by hand to the above named coal operator, coal owner(s), and coal lessee on or before the day of the mailing or delivery of thie Permit Application to the Department of Mines at Charleston, West Virginia.

The person signing this document shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Pennzoil Company
Well Operator

By Curtis A. Lowar

Its Supervisor, Surveying & Mapping

W A I V E R

The undersigned coal operator_____/ owner_____/ lessee_____/ of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date:_____,19____.

By:_____

Its_____

OFFICE USE ONLY

PERMIT

ermit number 47-087-3778-LI

June 13 19 83
Date

is permit covering the well operator and well location shown below is evidence of permission anted to drill in accordance with the pertinent legal requirements subject to the conditions ntained herein and on the reverse hereof. Notification must be given to the District Oil d Gas Inspector prior to the construction of roads, locations and pits for any permitted rk. (Refer to No. 10)

addition, the well operator or his contractor shall notify the proper district oil and s inspector 24 hours before actual permitted work has commenced.

mit expires February 13, 1984 unless work is commenced prior to that date d prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing:	Fee:
Blanket	D.K.	MJ	MJ	5358

Administrator, Office of Oil and Gas

TE: Keep one copy of this permit posted at the drilling location.

3778
CDL

ROA 3778

Basin Surveys, Inc.

COMPENSATED DENSITY LOG

FILING NO.

PERMIT # 47-087-3778

Roa. 3778

COMPANY PENNZOIL COMPANY

WELL P. A. TALLMAN #73

FIELD TARIFF

COUNTY ROANE STATE WV

LOCATION: SYCAMORE FORK

SEC ____ TWP ____ RGE ____

OTHER SERVICES: NONE

Permanent Datum: GROUND LEVEL ; Elev.: 1098

Log Measured From K. B. 8 Ft. Above Perm. Datum

Drilling Measured From K. B.

Elev.: K.B. 1098
D.F. 1097
G.L. 1090

Date	7/7/83		
Run No.	ONE		
Type Log	GR/CAL/CD		
Depth—Driller	2220		
Depth—Logger	2223		
Bottom logged interval	2221		
Top logged interval	375		
Type fluid in hole	KCL		
Salinity, PPM Cl.			
Density			
Level	FULL		
Max rec. temp., deg F.	N/R		
Operating rig time	2 HOURS		
Recorded by	B. STEWART		
Witnessed by	MR. PUTSCHER		

Run No.	Bore-hole Record Bit	From	To	Casing Record Size	Wgt.	From	To
ONE	6¼"	375	TD	7"			SURFACE

Equipment Data

Run No.	Tool No.	Source No.	Panel No.	Logging Unit	Location
ONE	1338	B-251	320	84149	PARKERSBURG

Calibration Data

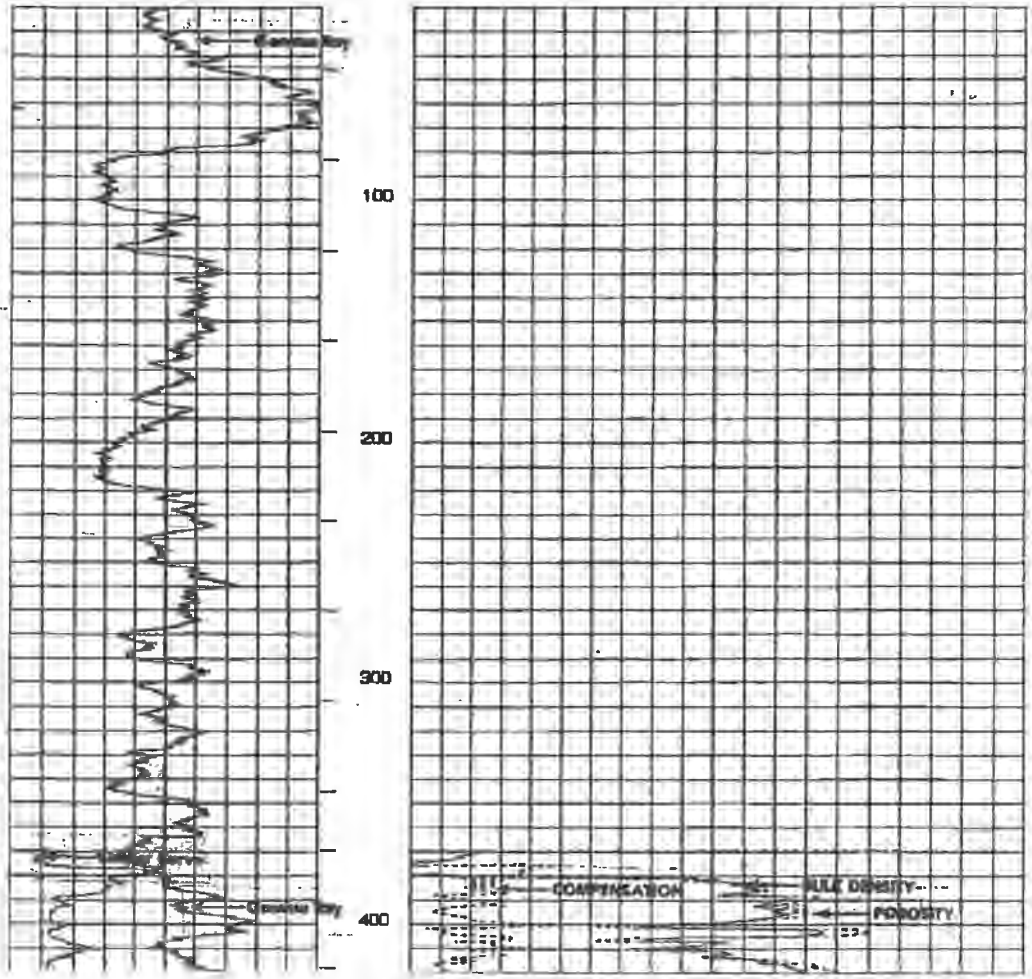
Run No.	Gamma Ray API Scale	Gamma Ray Background CPS	Gamma Ray Std. CPS	CDT Ds CPS AT	CDT 2.0	CDT 3.0	CDT Ds CPS AT	CDT 2.0	CDT 3.0
ONE	0 - 200	35			509	313		715	121

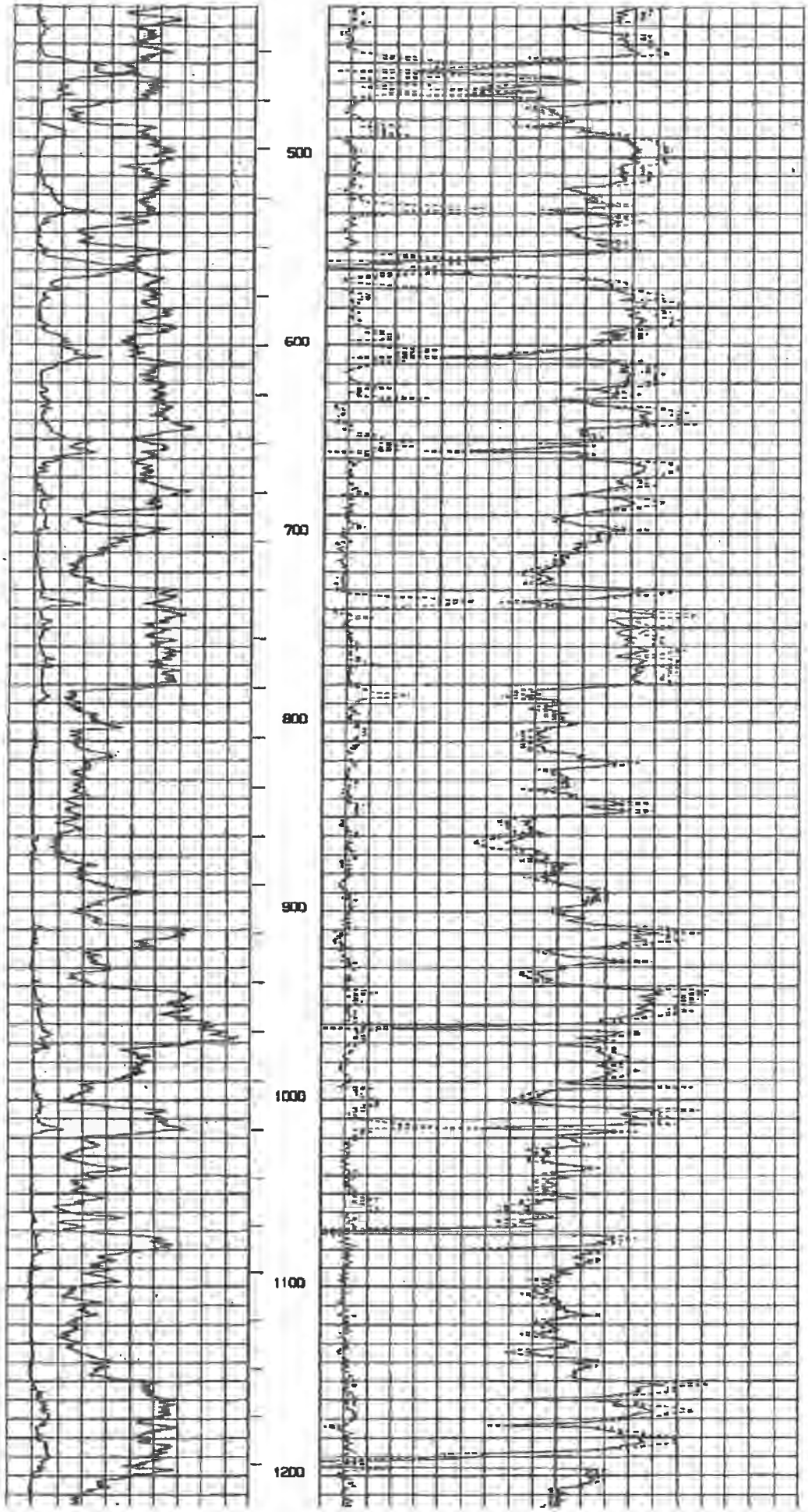
Logging Data

Run No.	Depths From	Depths To	Speed Ft/Min	GR TC	
ONE	2232	375	27'	2	Pgm 2.68 - 1947-375
					2232-2110
					Fg= 2.72 2110-1947

Remarks:

GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS/CC
0 — 200		30 — 20 — 10 — 0 — -10
CALIPER		POROSITY PERCENT
HOLE SIZE - INCHES 6 — 16		2.0 — 2.5 — 3.0
		CORRECTION GRAMS/CC. 0 — +.25

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1000
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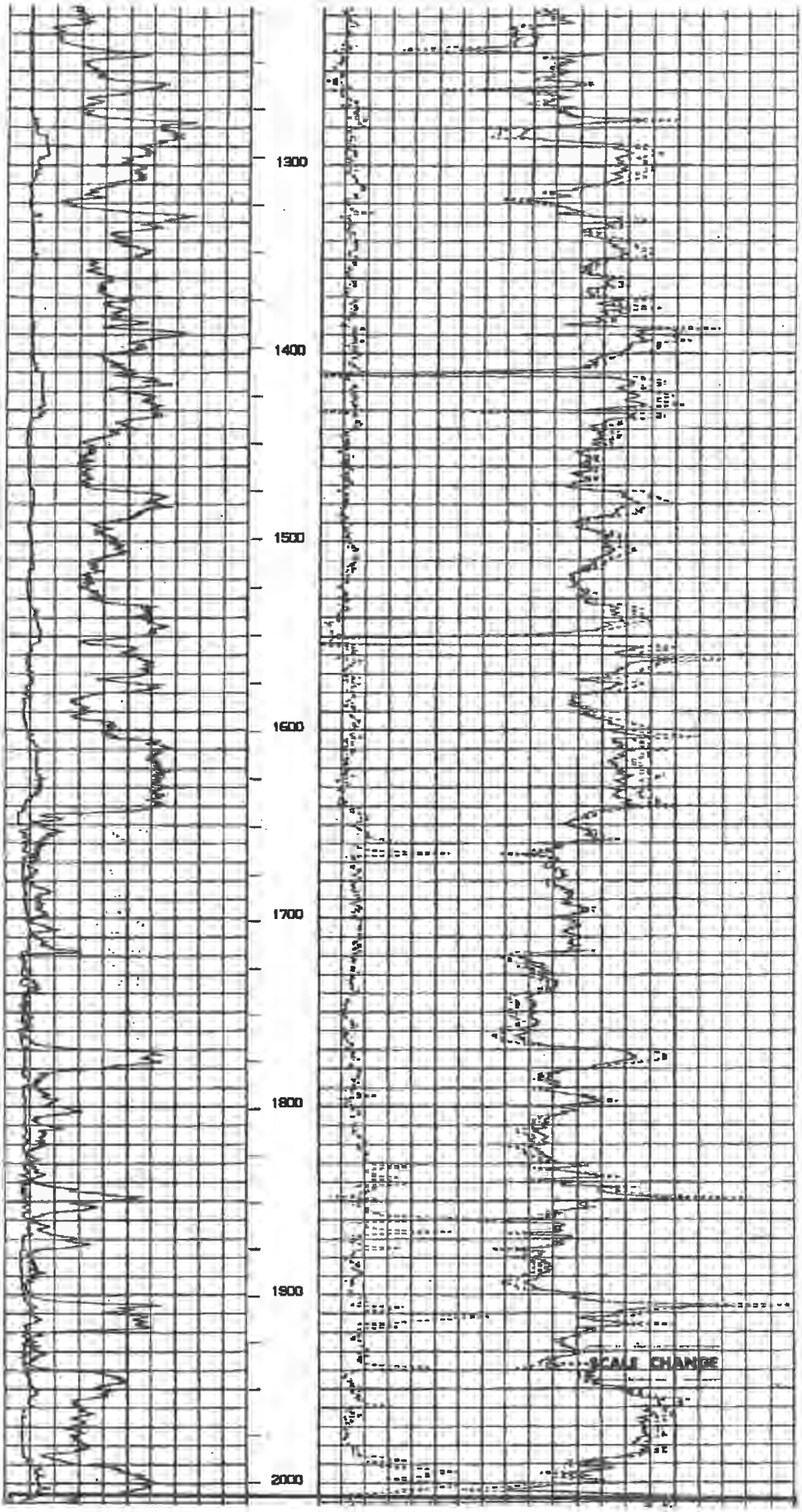
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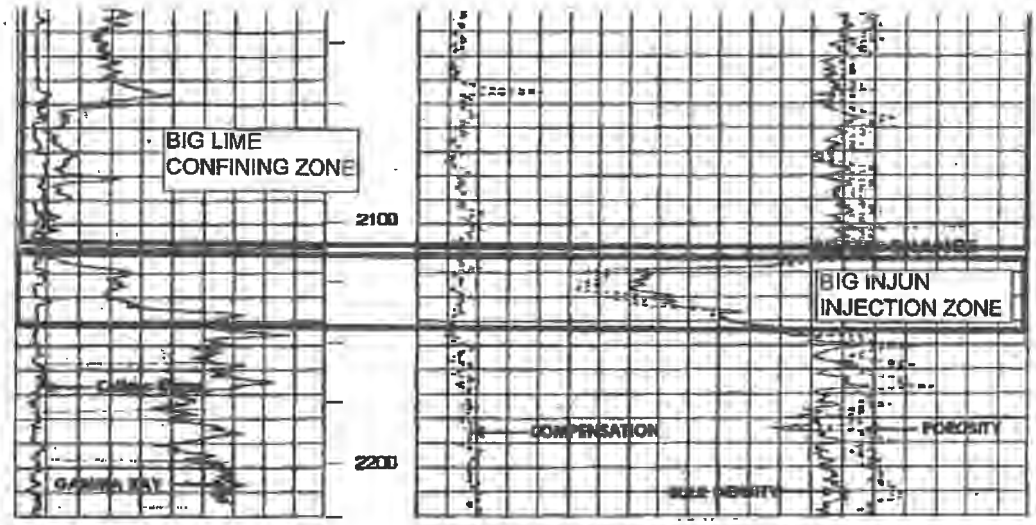
1800
1900
2000
SCALE CHANGE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CONFINING ZONE
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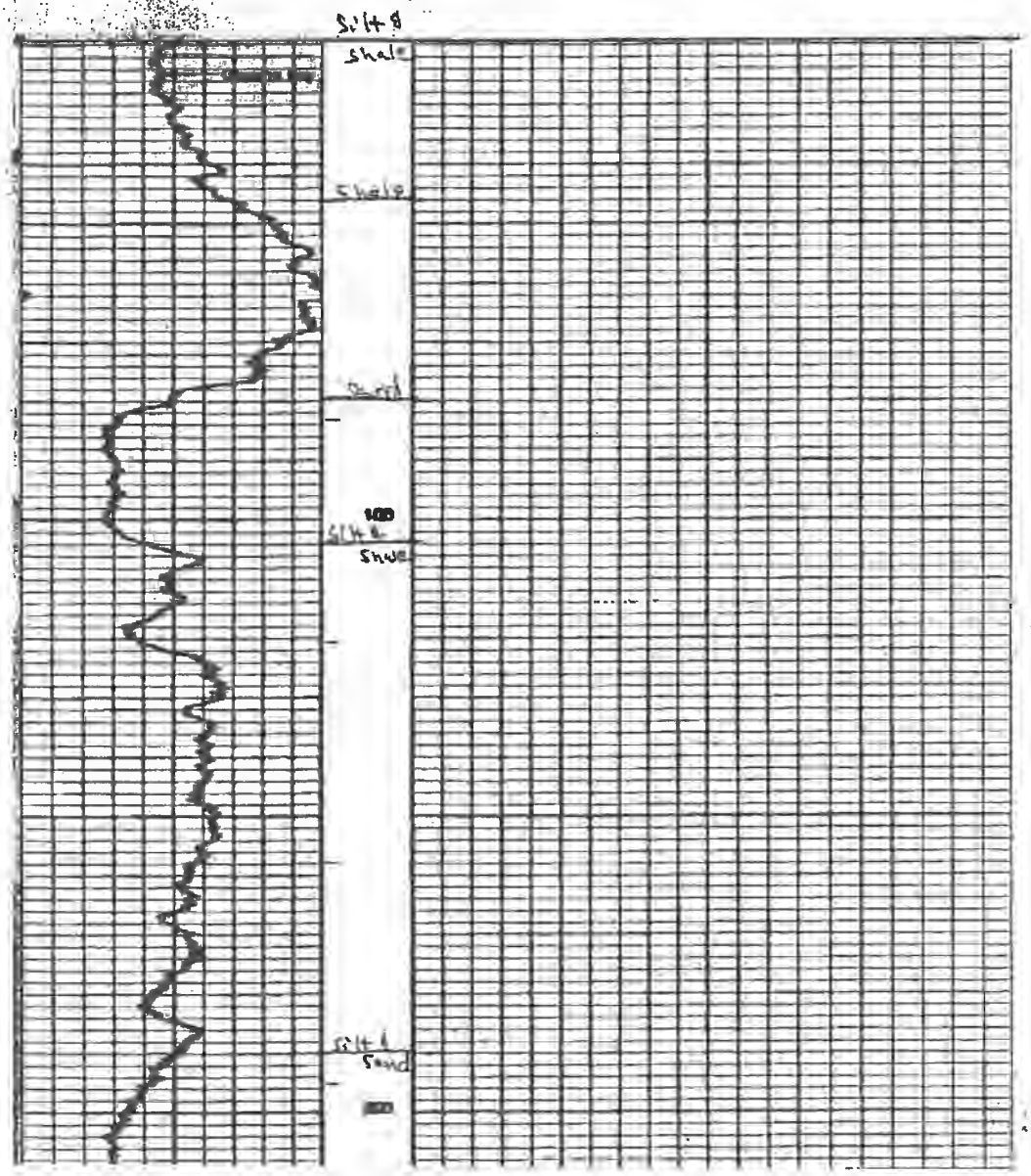
BIG INJUN
INJECTION ZONE
COMPENSATION
POROSITY
2200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Shale
Shale
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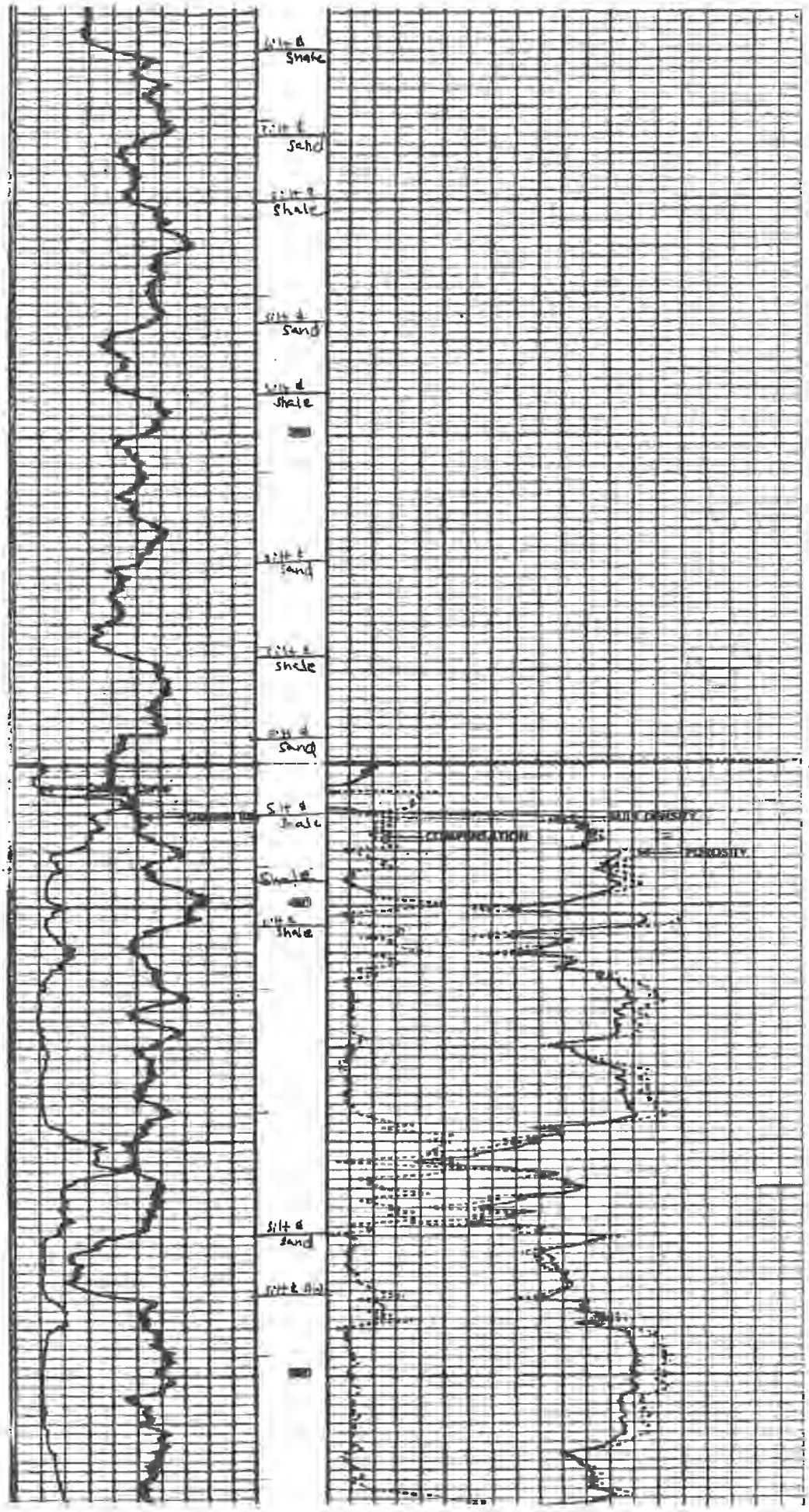
Silt &
Shale
Silt &
Sand
200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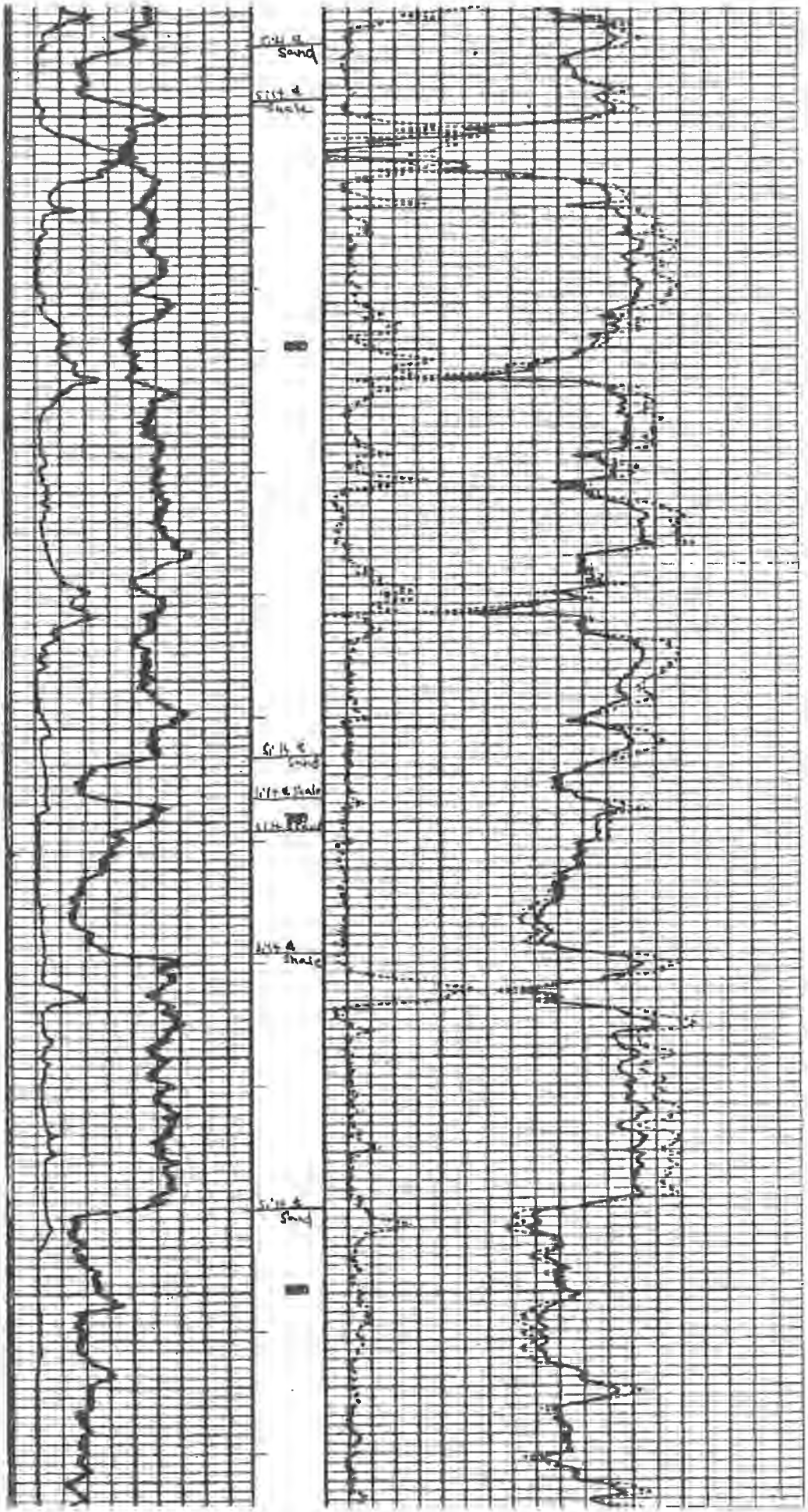
BULK DENSITY
POROSITY
Shale
Silt & Shale
Silt & Sand
Silt & Sand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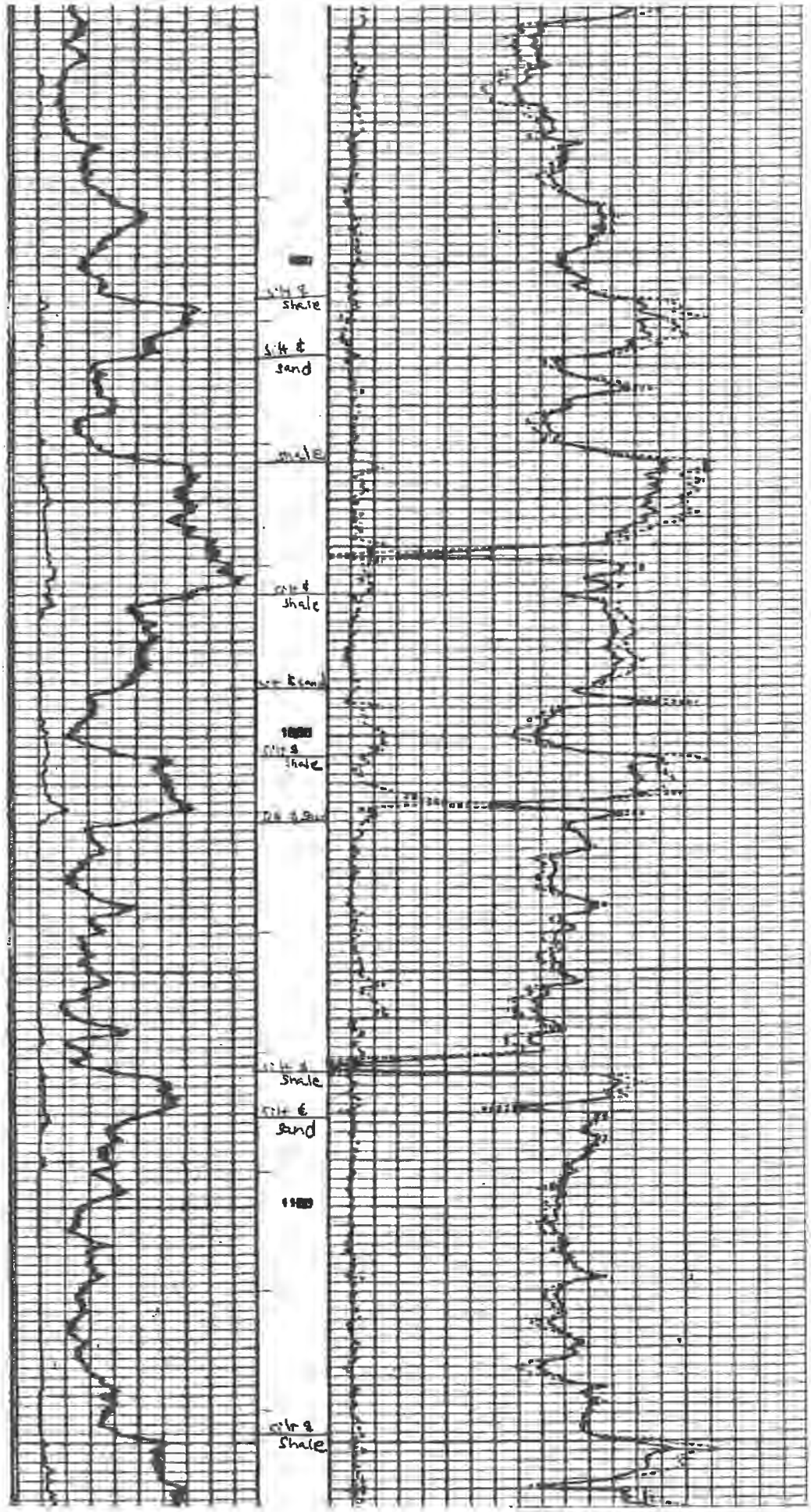
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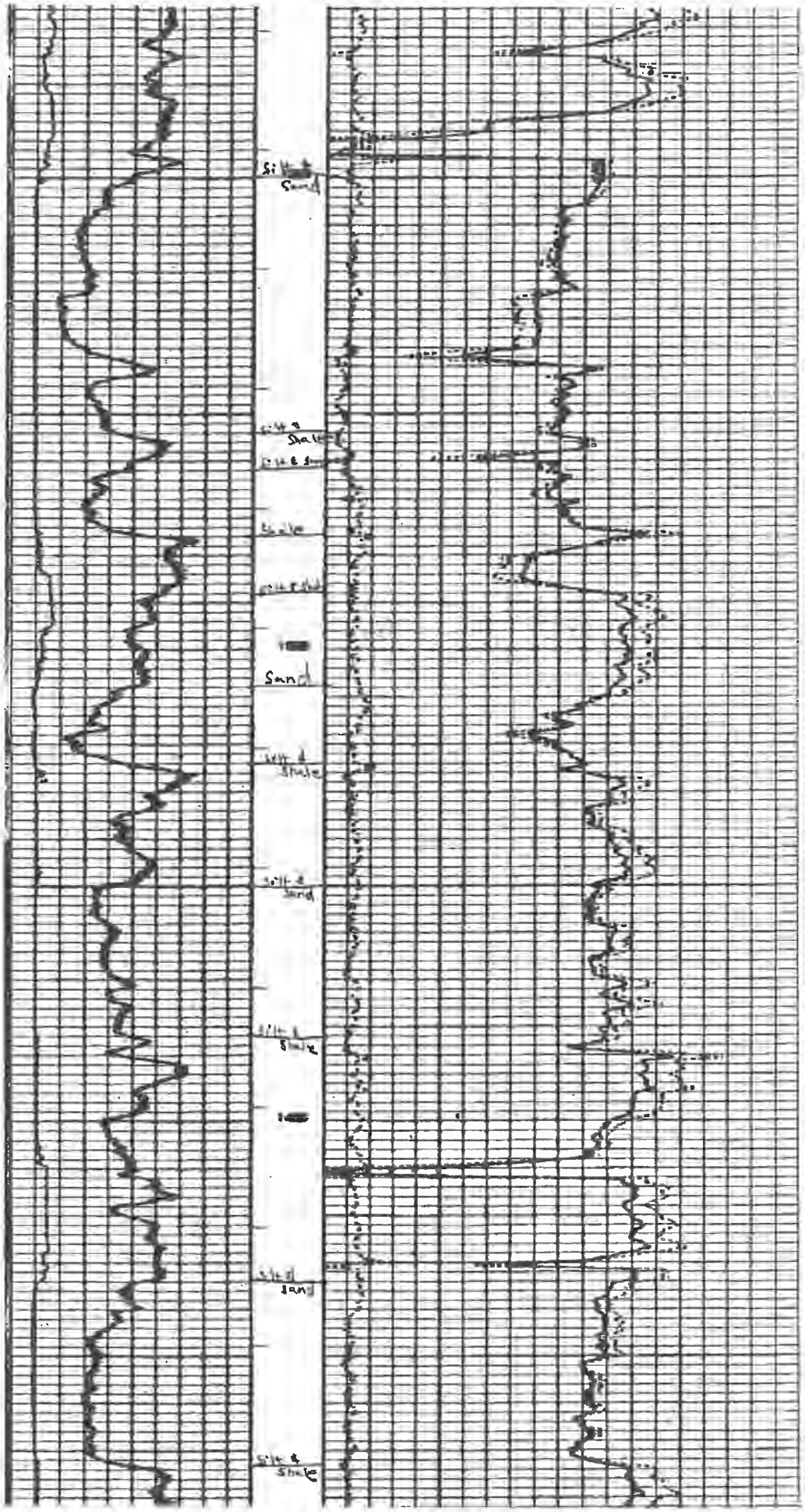
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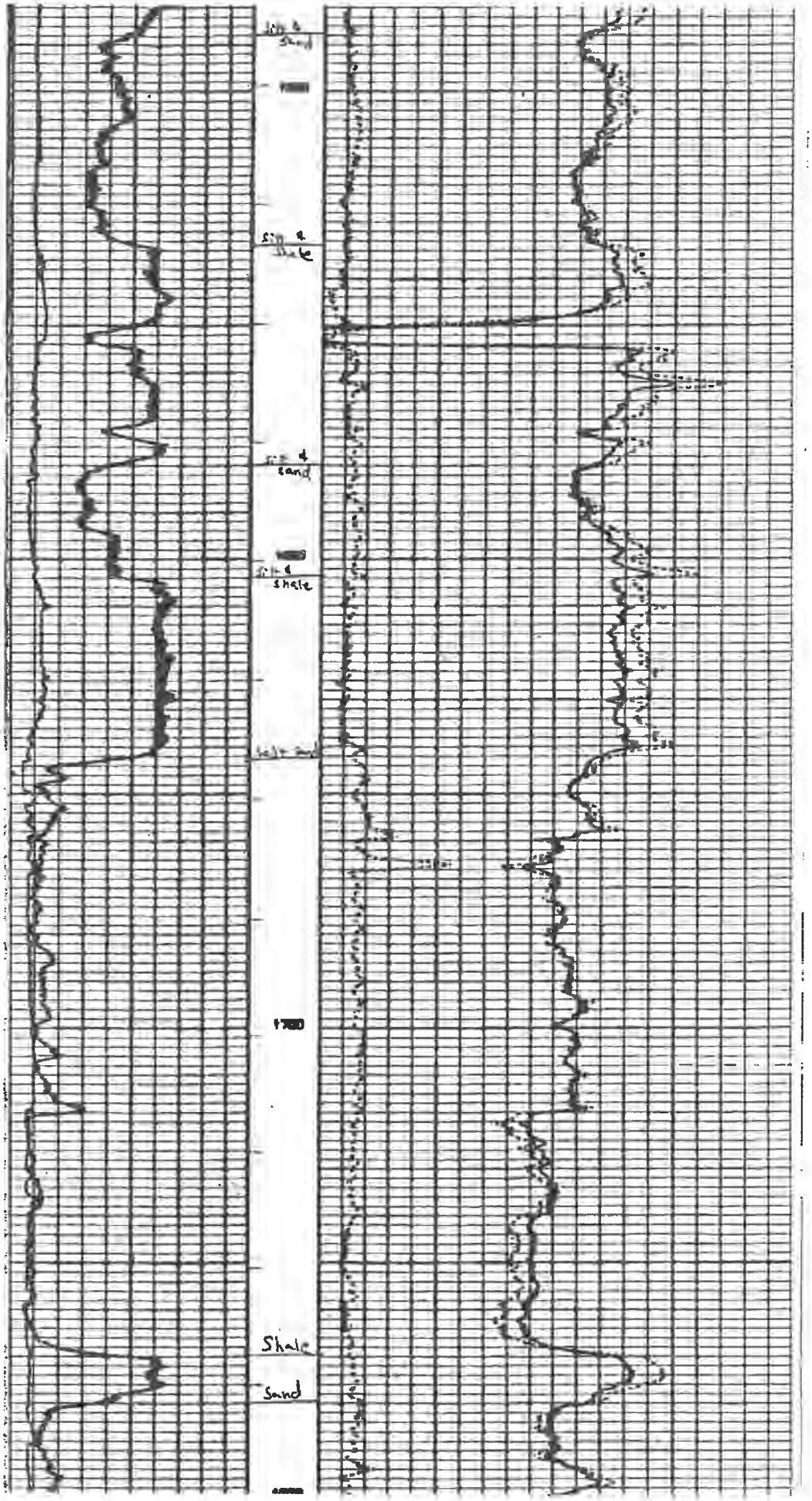
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Silt & Shale
Shale
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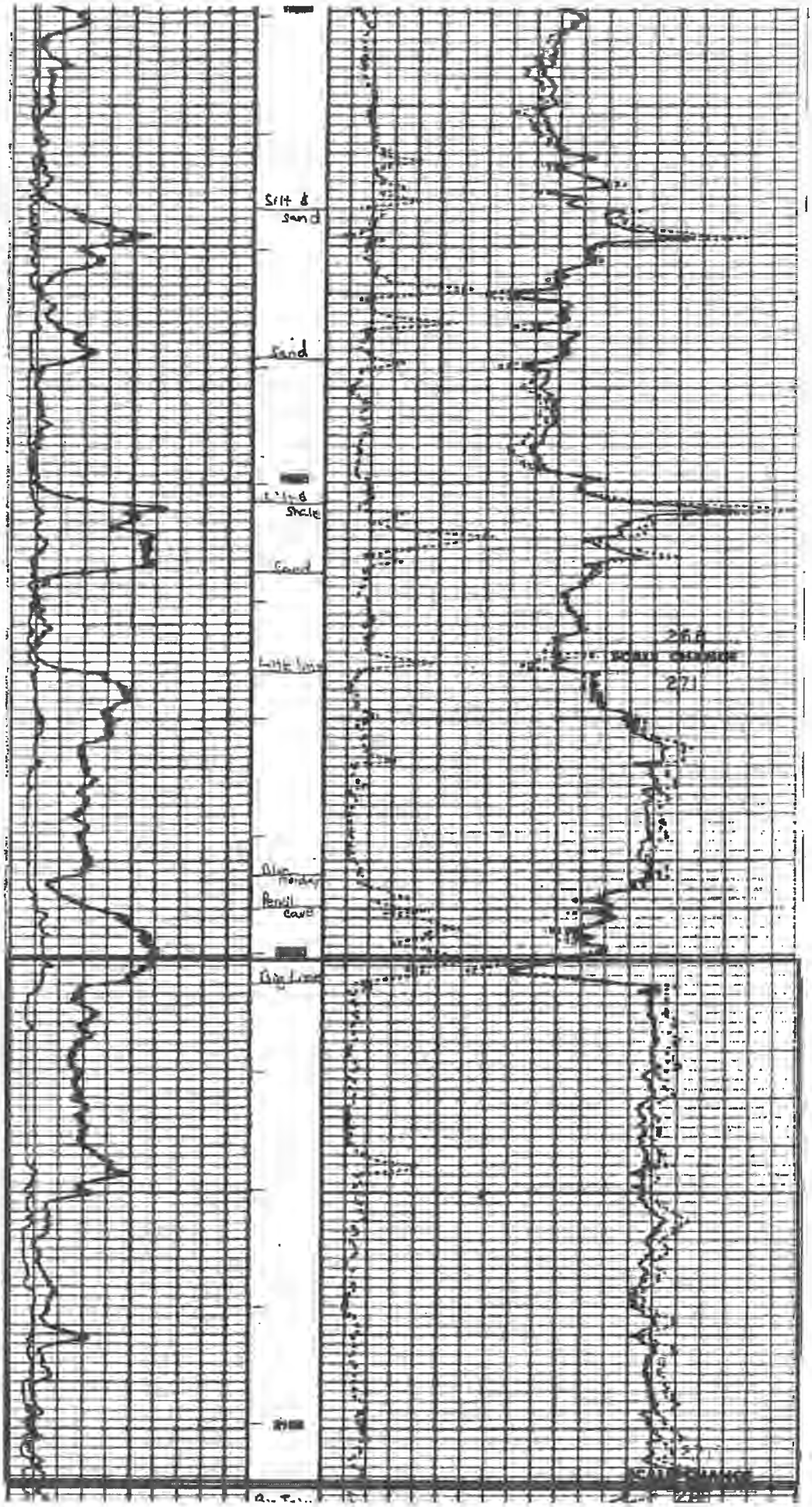
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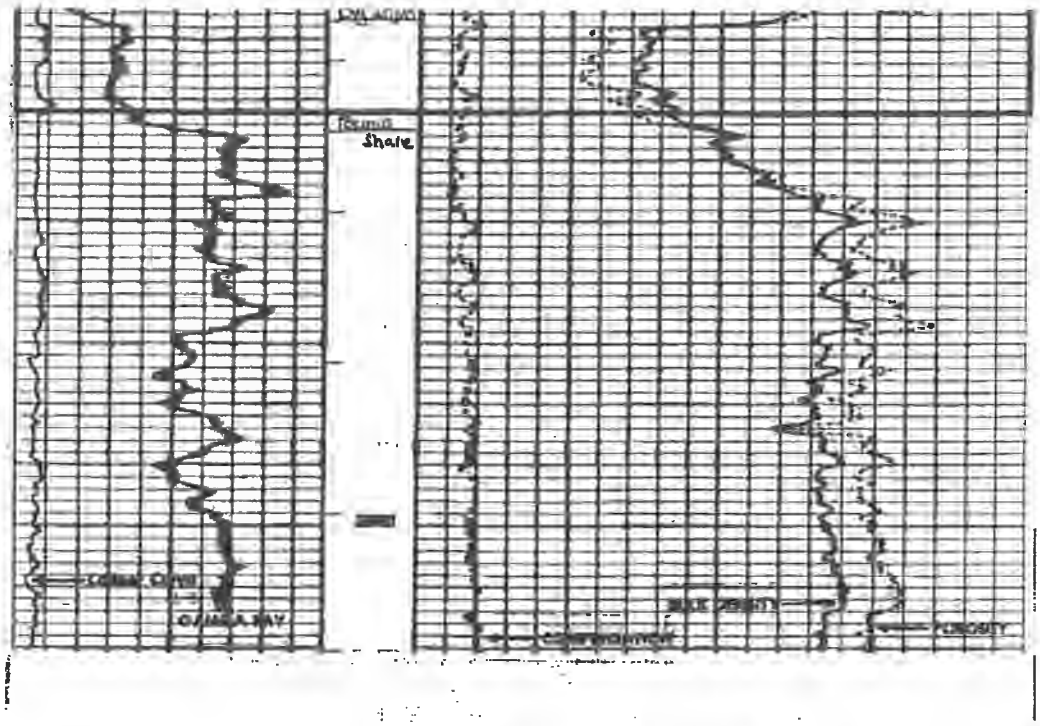
Pencil Cave
Big Lime
268
271



REPEAT SECTION

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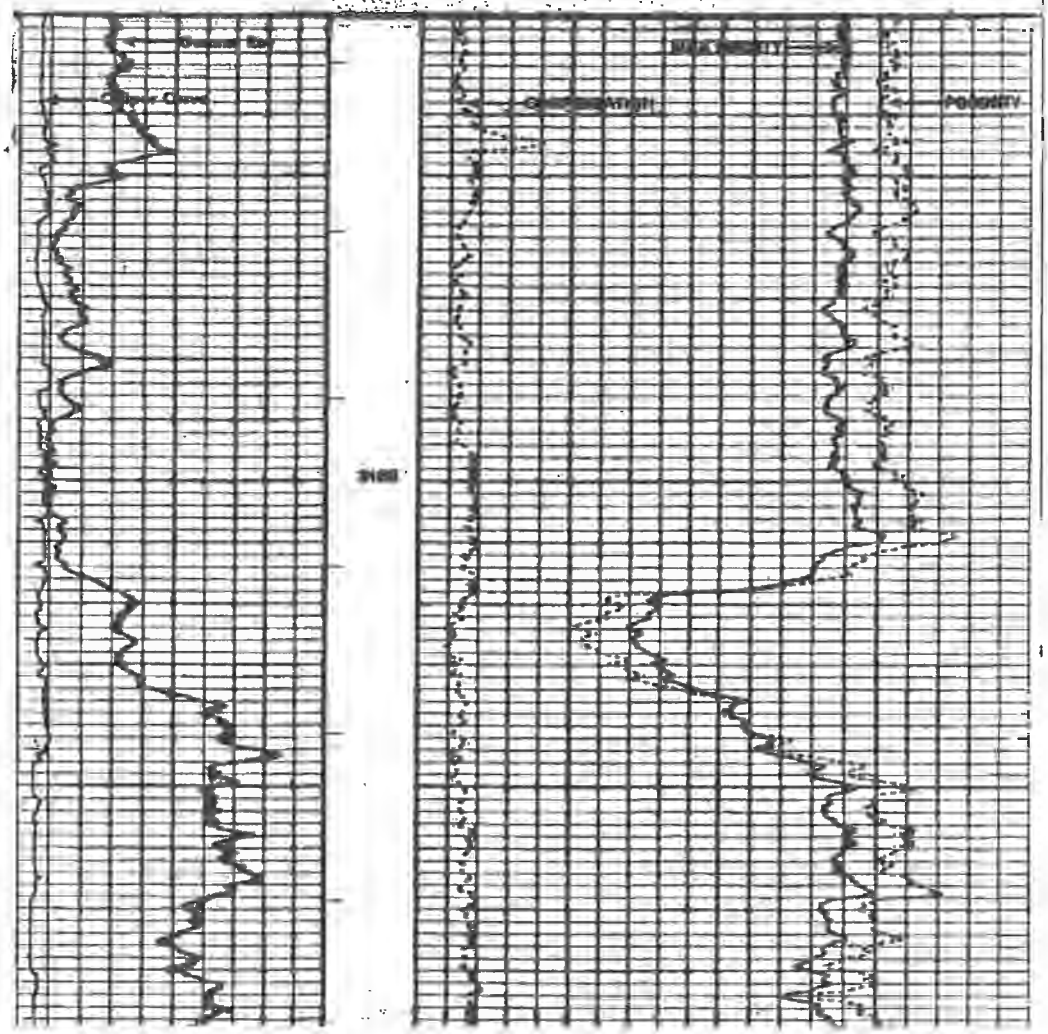

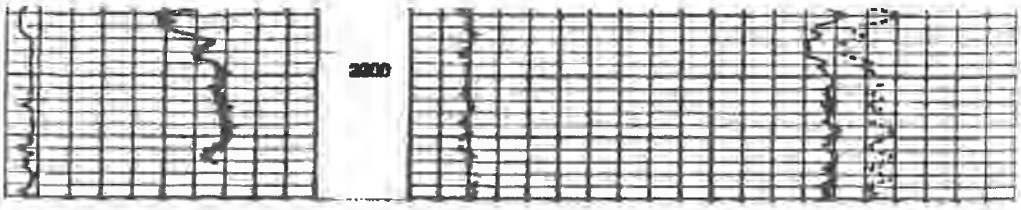

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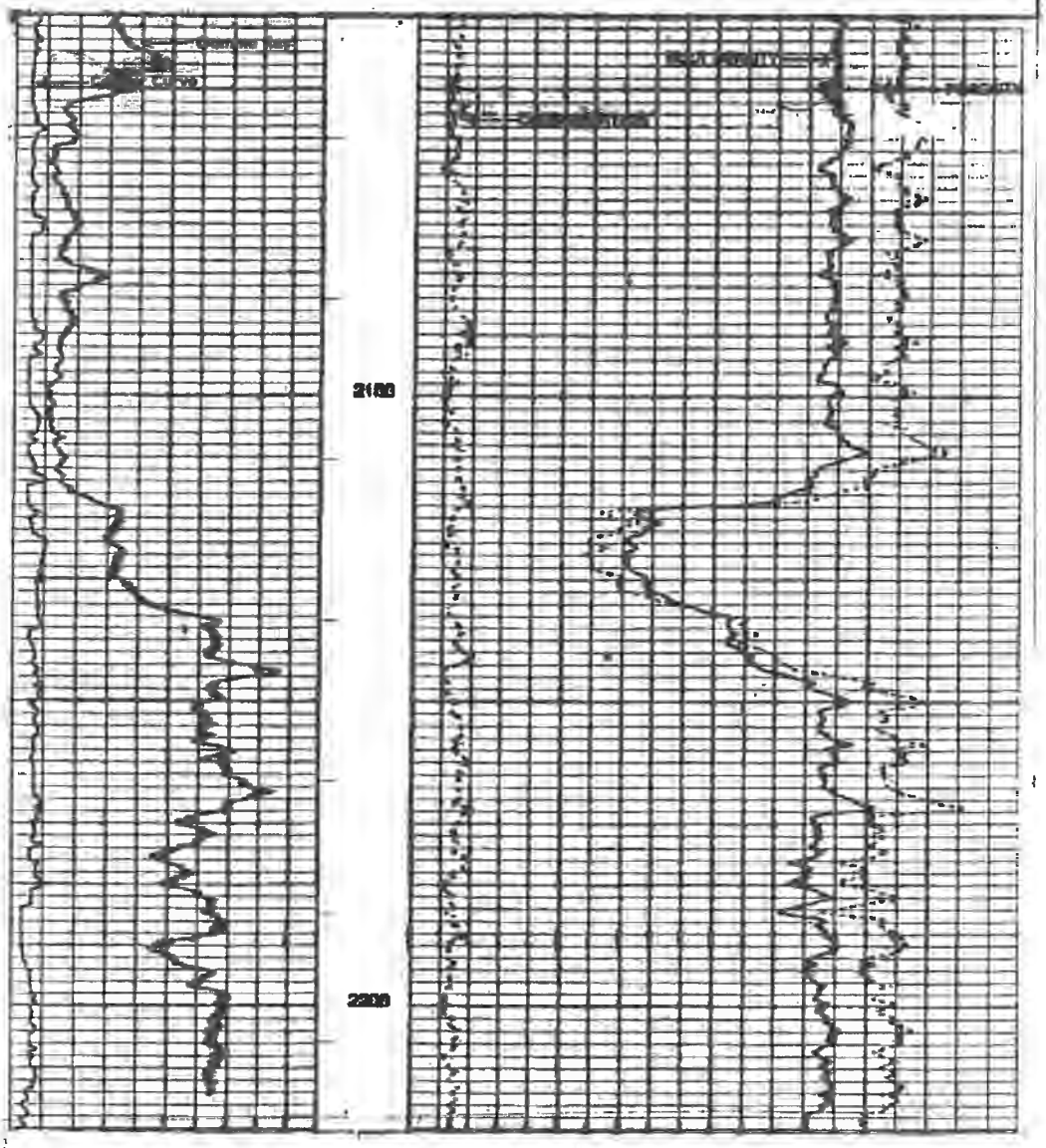
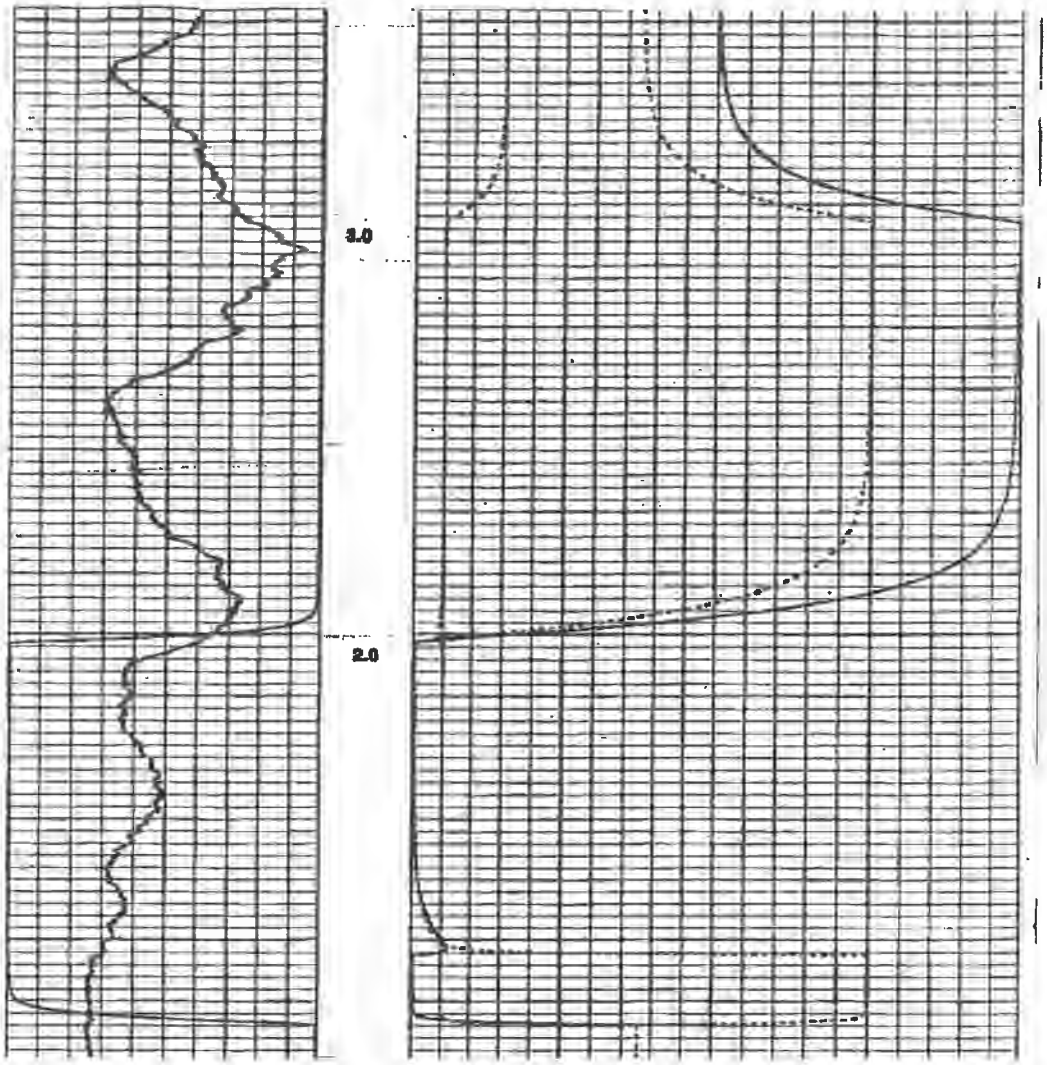
266



CALIBRATION BEFORE SURVEY



GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS/CC
0 — 20		20 — 10 — 0 — −10
CALIPER		POROSITY PERCENT 2.0 — 2.5 — 3.0
HOLE SIZE - INCHES 6 — 16		CORRECTION 0 — +.25

COMPANY PENNZOIL COMPANY

WELL P. A. TALLMAN #73

FIELD TARIFF STATE WV

SEC: COUNTY ROANE

Log FR 2221

Log TD 2222

DRLR TD 2220

Elev.

DF 1097

KB 1098

GL 1090

"Pipeline"

Select County: (087) Roane

Enter Permit #: 3781

Get Data | Reset

Select datatypes: (Check All)

- Location
- Production
- Plugging
- Owner/Completion
- Stratigraphy
- Sample
- Pay/Show/Water
- Logs
- Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3781

Report Time: Thursday, April 30, 2020 9:33:05 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703781	Roane	3781	Smithfield	Tariff	Otter	38.657913	-81.211316	481614	4278837.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703781	9/28/1983	Original Loc	Completed	Pennzoil Company	39		W M Looney		Keith Crihfield	Pennzoil Company			
4708703781	-/-/-	Plugging	Permitted	Triad Hunter LLC	39		W M Looney		T A L Collins	Triad Hunter LLC			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703781	9/28/1983	8/5/1983	879	Ground Level	Tariff(Tlmn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	1991		1991		0	0	0	0			0	0	0
4708703781	-/-/-	-/-/-	938	Ground Level																					

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703781	9/28/1983	Water Flood	Injection	Vertical	1912	Big Injun (Price&eq)	1928	Big Injun (Price&eq)					

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703781	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Ground Resources LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703781	Pennzoil Company	1984	1,013	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703781	Ground Resources, LLC	2017	0												
4708703781	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703781	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703781	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703781	Original Loc	2nd Salt Sand	Well Record	1430	Reasonable	158	Reasonable	879	Ground Level
4708703781	Original Loc	3rd Salt Sand	Well Record	1620	Reasonable	60	Reasonable	879	Ground Level
4708703781	Original Loc	Little Lime	Well Record	1732	Reasonable	40	Reasonable	879	Ground Level
4708703781	Original Loc	Blue Monday	Well Record	1772	Reasonable	6	Reasonable	879	Ground Level
4708703781	Original Loc	Pencil Cave	Well Record	1778	Reasonable	17	Reasonable	879	Ground Level
4708703781	Original Loc	Big Lime	Well Record	1795	Reasonable	105	Reasonable	879	Ground Level
4708703781	Original Loc	Greenbrier Group	Well Record	1795	Reasonable	105	Reasonable	879	Ground Level
4708703781	Original Loc	Big Injun (Price&eq)	Well Record	1900	Reasonable	32	Reasonable	879	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703781	9	1989		G D,C	Y	N	9	1983	209	1989									209	1989	N	Y	N						

Comment: *logs: caliper

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save

Injector 3781

option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

INJECTION 3781

FILENAME
4708703781gdc.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3781

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 1900 Feet (top) 1932 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 1991 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3781

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	218'	218'	90sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	1979'	1979'	60sks
Tubing	NONE						
Liners							

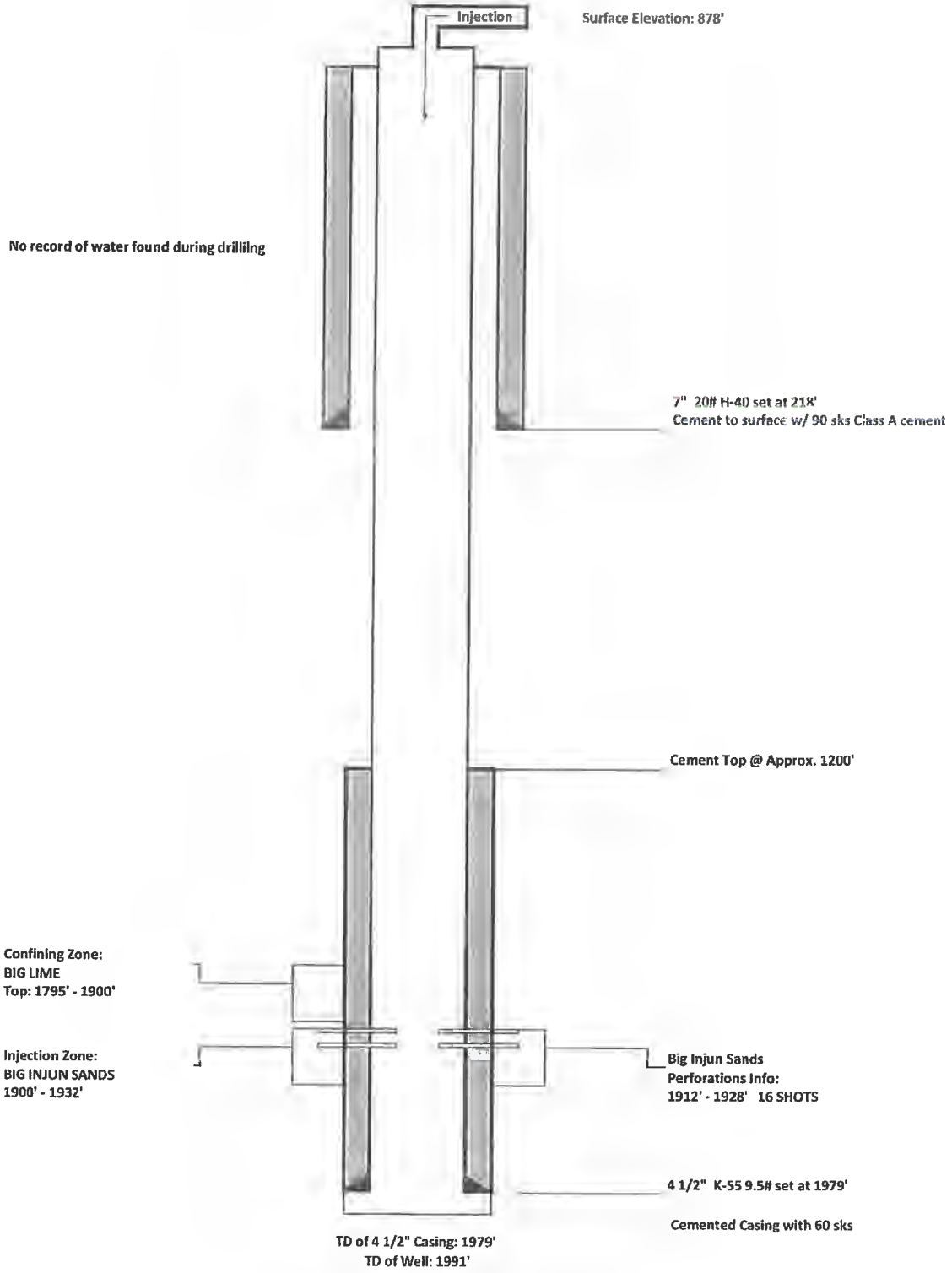
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3781

WELL SCHEMATIC

LOONEY 39
API 47-087-03781



3781
INJECTOR

OG-10
Rev. - 9-71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Rotary X Oil ____
Cable ____ Gas ____
Recycling ____ Comb. ____
Water Flood Y Storage ____
Disposal ____ ____ (Kind)

Quadrangle Tariff 7.5'

Permit No. 47-087-3781

Company Pennzoil Company
Address P.O.Box 1588, Parkersburg, WV 26101
Farm W. M. Loone Acres 480
Location (waters) Trace Fork
Well No. 39 Elev. 878.52
District Smithfield County Roane
The surface of tract is owned in fee by
Pennzoil Company
Address P.O.Box 1588, Parkersburg, WV 26101
Mineral rights are owned by Keith Crihfield
Address P.O.Box 431, Spencer, WV
Drilling Commenced 8-5-83
Drilling Completed 8-8-83
Initial open flow WIW cu. ft. ____ bbls.
Final production ____ cu. ft. per day ____ bbls.
Well open ____ hrs. before test ____ RP.
Well treatment details:

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	218	218	90 sks.
5 1/2			
4 1/2	1979	1979	60 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Fractured: 9/28/83 w/250 gls. 15% HCL, 160 bbls. 20# gel, 1500# 20/40 sd

Perf: 1912-1928/16H

Coal was encountered at ____ Feet ____ Inches
Fresh water ____ Feet ____ Salt Water ____ Feet ____
Producing Sand ____ Depth ____

RECEIVED
Office of Oil & Gas
MAR 1 6 2015
WV Department of Environmental Protection

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	Remarks
Silt, Sand, Shale			0	100		
Shale, Silt, Sand			100	1430		
Salt Sand			1430	1588		
Silty Sand			1588	1620		
Salt Sand			1620	1680		
Shale			1680	1706		
Sand			1706	1732		
Big Lime			1732	1772		
Blue Monday			1772	1778		
Pencil Cave			1778	1795		
Big Lime			1795	1900		
Big Injun			1900	1932		
Pocono Shale			1932	1991		
Total Depth				1991		

3781
CDL

Basin Surveys, Inc.

COMPENSATED DENSITY LOG

FILING NO.
Permit # 47-087-3781

COMPANY: PENNZOIL COMPANY
WELL: W.M. LOONEY # 39
FIELD: TARIFF
COUNTY: ROANE STATE: WV

LOCATION: TRACE FORK
Smithfield District
SEC ____ TWP ____ RGE ____

OTHER SERVICES: NONE

Permanent Datum: GROUND LEVEL ; Elev.: 878
Log Measured From KELLY BUSH. 8' Ft. Above Perm. Datum
Drilling Measured From KELLY BUSHING

Elev.: K.B. 886'
D.F. 885'
G.L. 878

Date	8-8-83		
Run No.	ONE		
Type Log	GR-CD-CAL		
Depth—Driller	1985		
Depth—Logger	1998'		
Bottom logged interval	1990'		
Top logged interval	210'		
Type Fluid in Hole	KCL		
Salinity, PPM Cl.	13,000		
Density	9.5		
Level	FULL		
Max rec. temp. deg F.	NOT RECORDED		
Operating rig time	2.5 hrs		
Recorded by	B. STEWART		
Witnessed by	BOOKER	PATSCHER	

Bit No.	Bit Type	Bore-Hole Record From	To	Size	Wgt.	Casing Record From	To
ONE	GRAY	878'	T.D.	7"	20lb	0.18	SURFACE

FIELD PRINT

THIS HEADING AND LOG CONFORMS TO API RP 33

FOLD HERE

Equipment Data

Run No.	Tool No.	Source No.	Panel No.	Logging Unit	Location
ONE	2358	23-259	3250	SHAF	PARKERSBURG

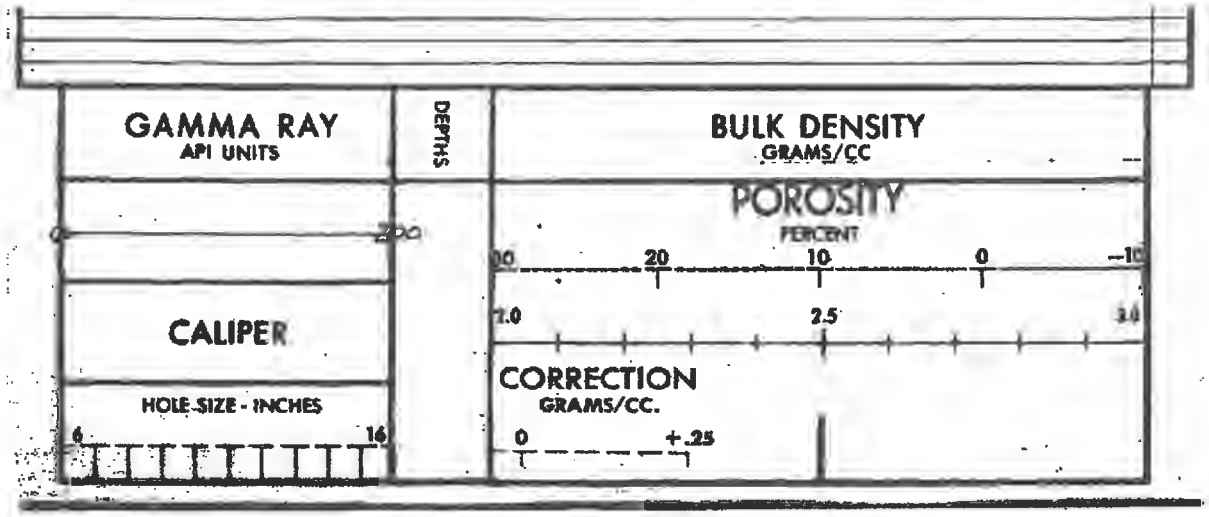
Calibration Data

Run No.	Gamma Ray API Scale	Background CPS	Std. CPS	Ds CPS AT	Dl CPS AT	CDT 2.0	3.0	2.0	3.0
ONE	0-200	35	[redacted]	387	299			756	127

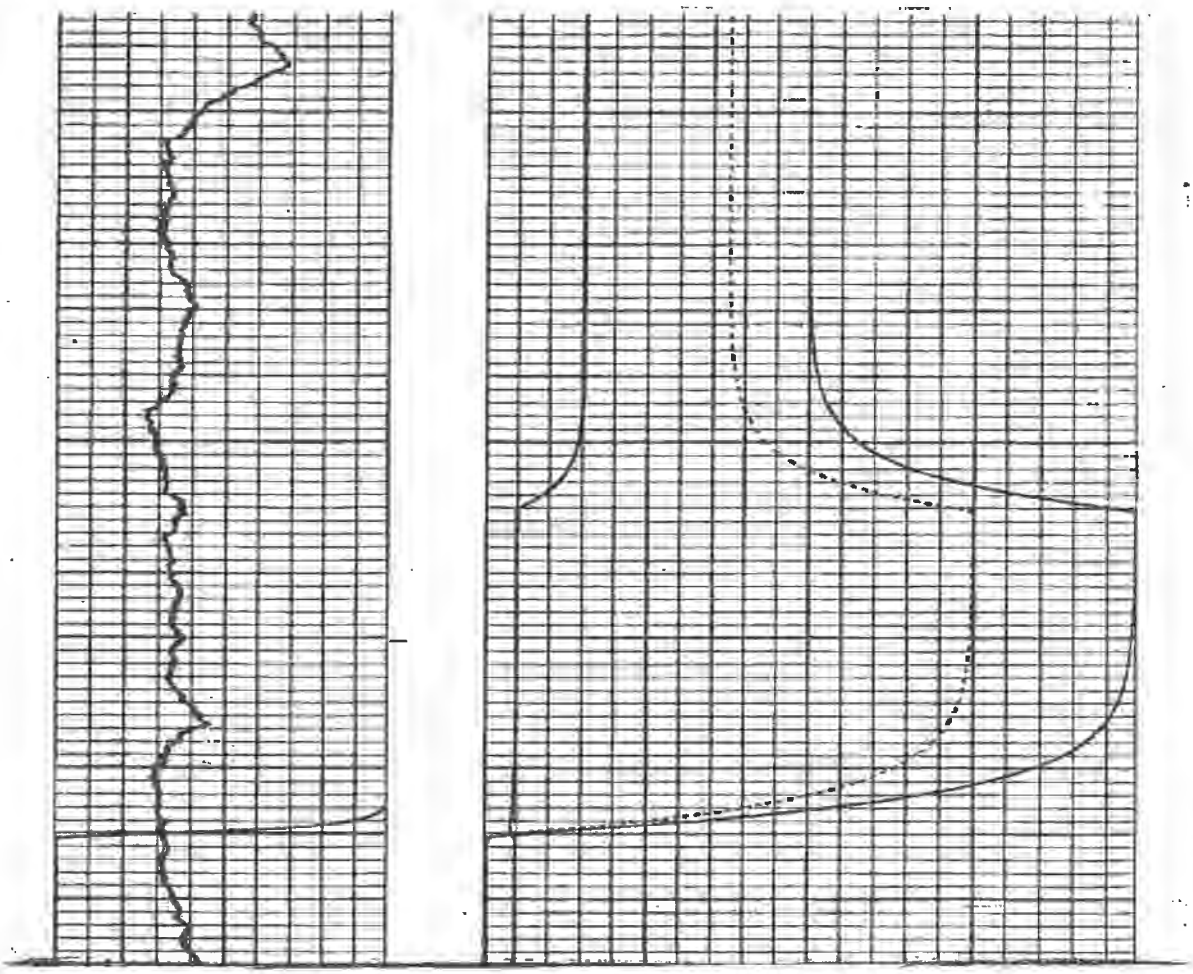
Logging Data

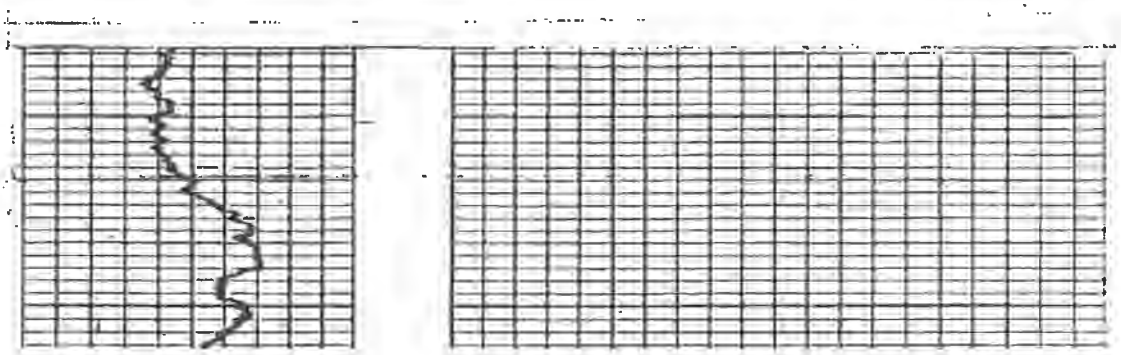
Run No.	Depths From	To	Speed Ft/Min	GR TC
ONE	1991	210'	20'	2

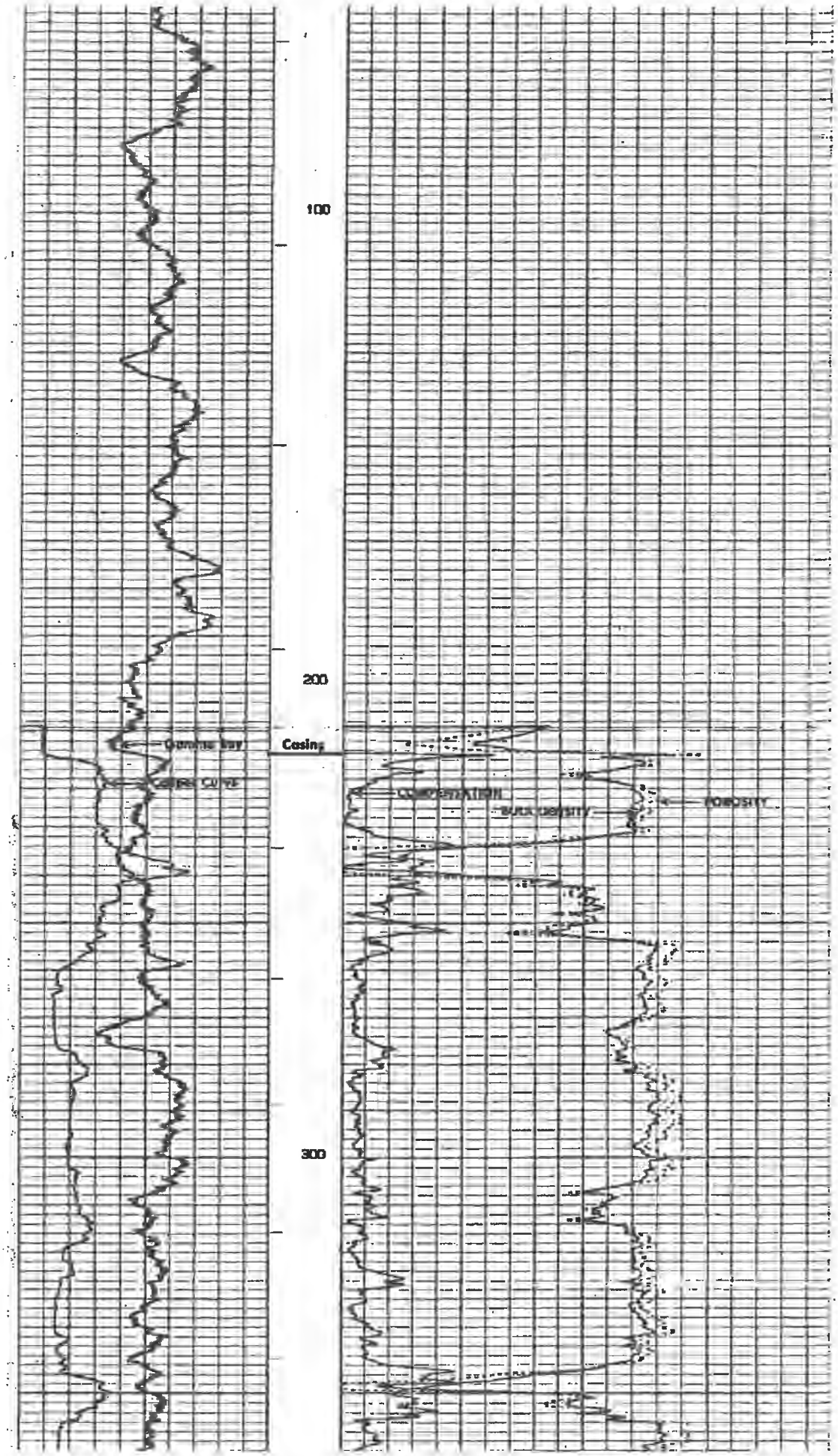
Remarks: Pg = 2.68 1991 - 1854
2.71 1854 - 1728
2.68 1728 - CASING

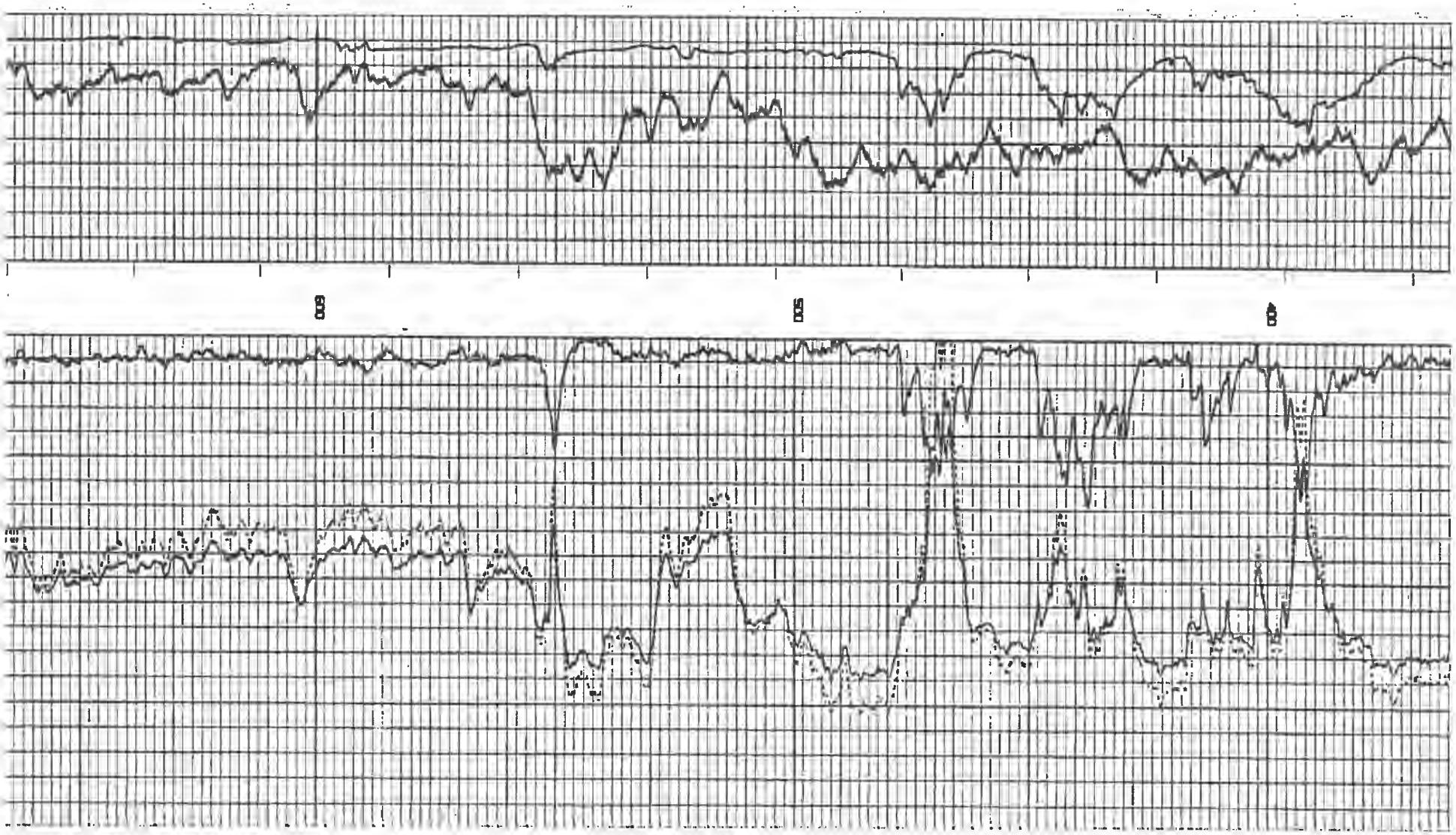


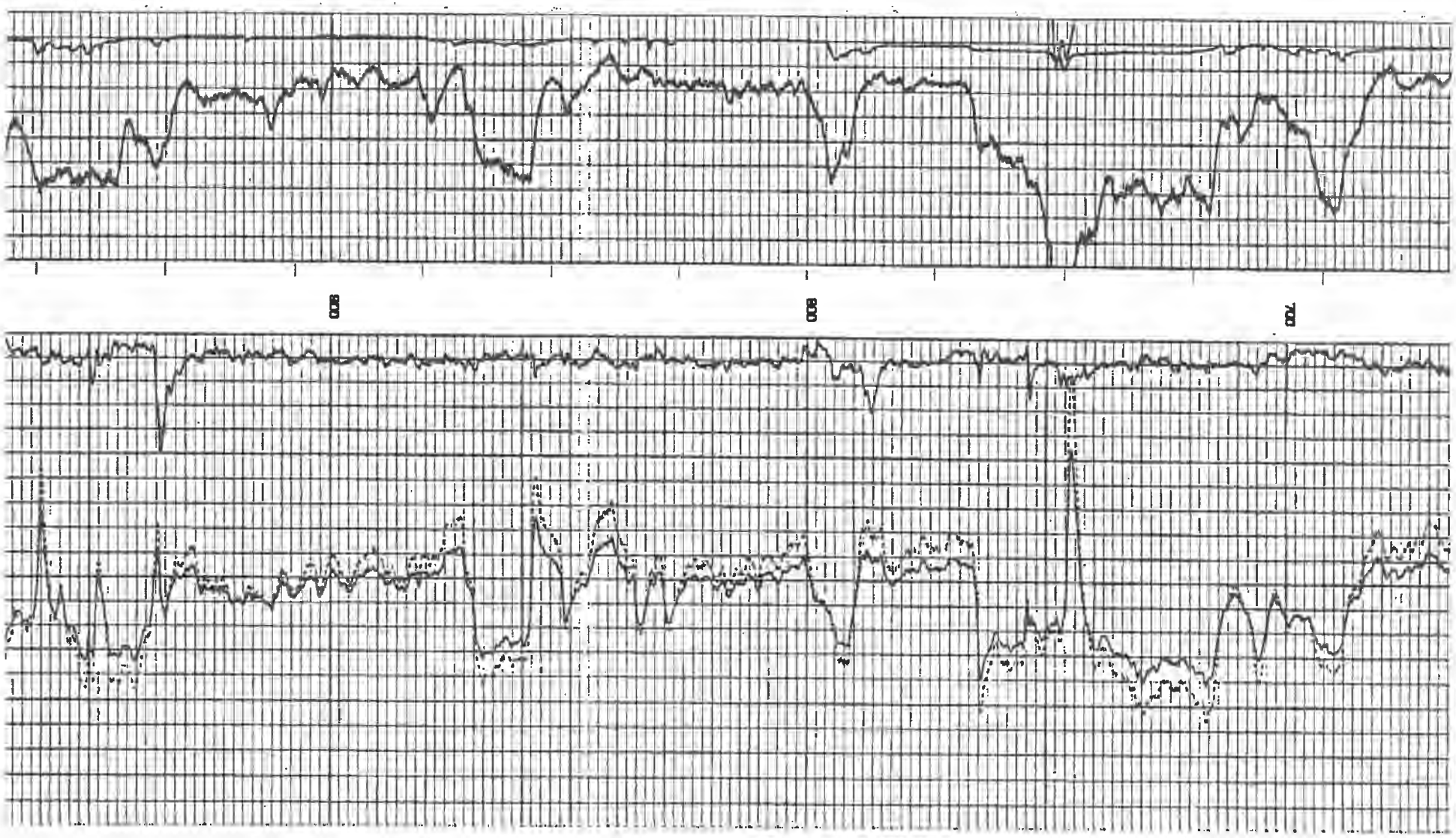
CALIBRATION AFTER SURVEY

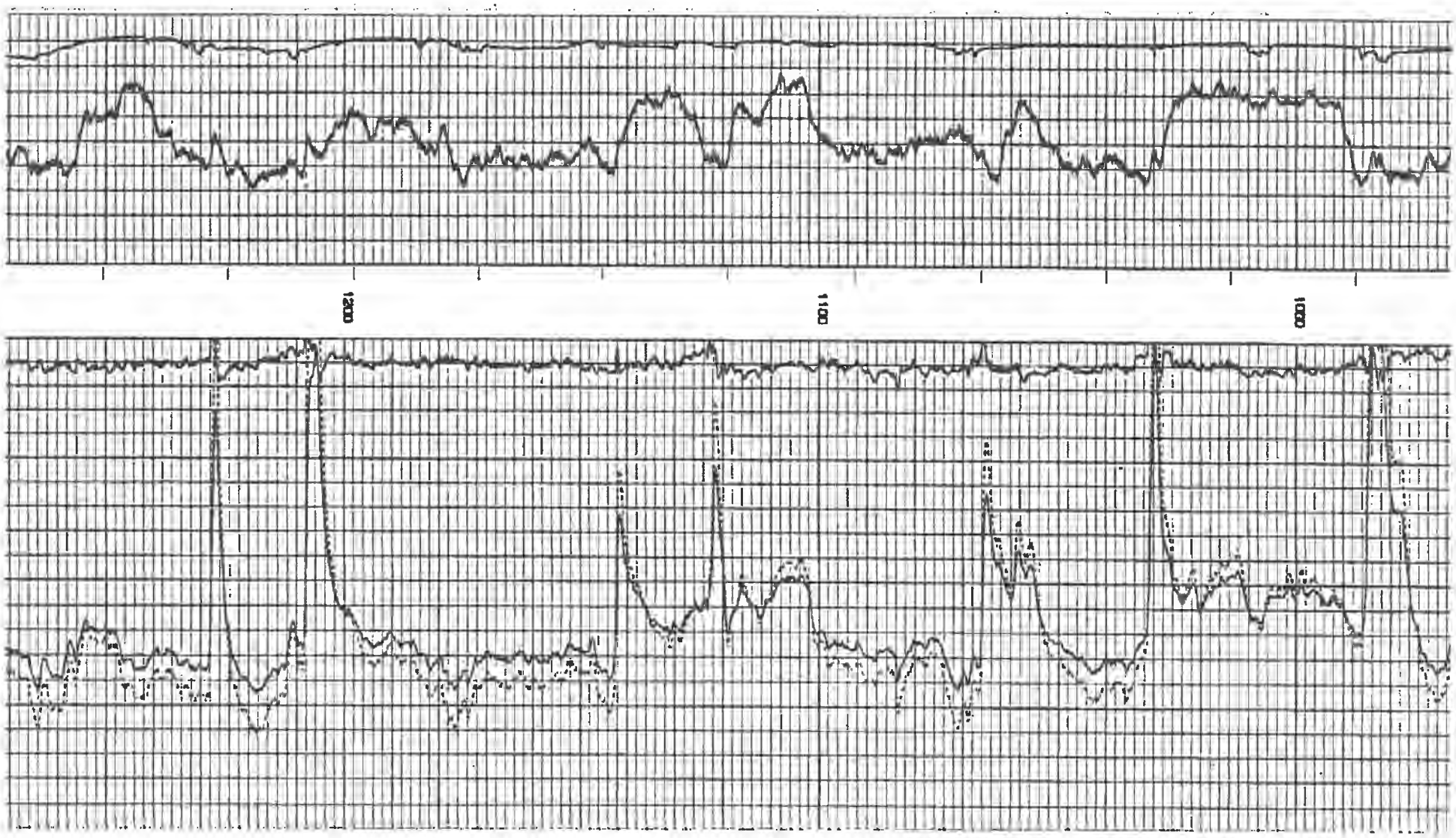





100
200
300
Gamma Ray
Caliper Curve
Casing
CORRELATION
BULK DENSITY
POROSITY


60
55
50


800
800
700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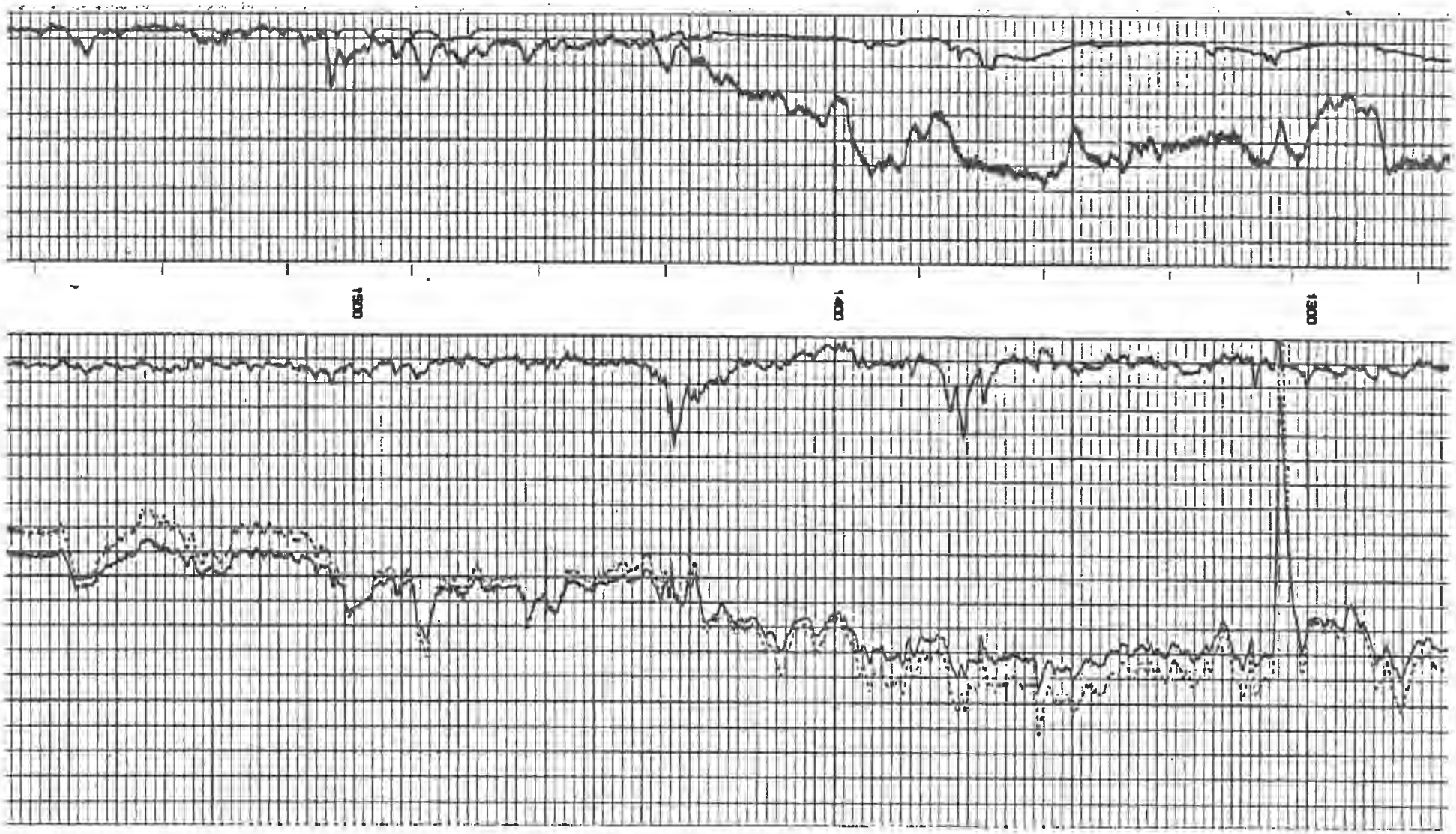
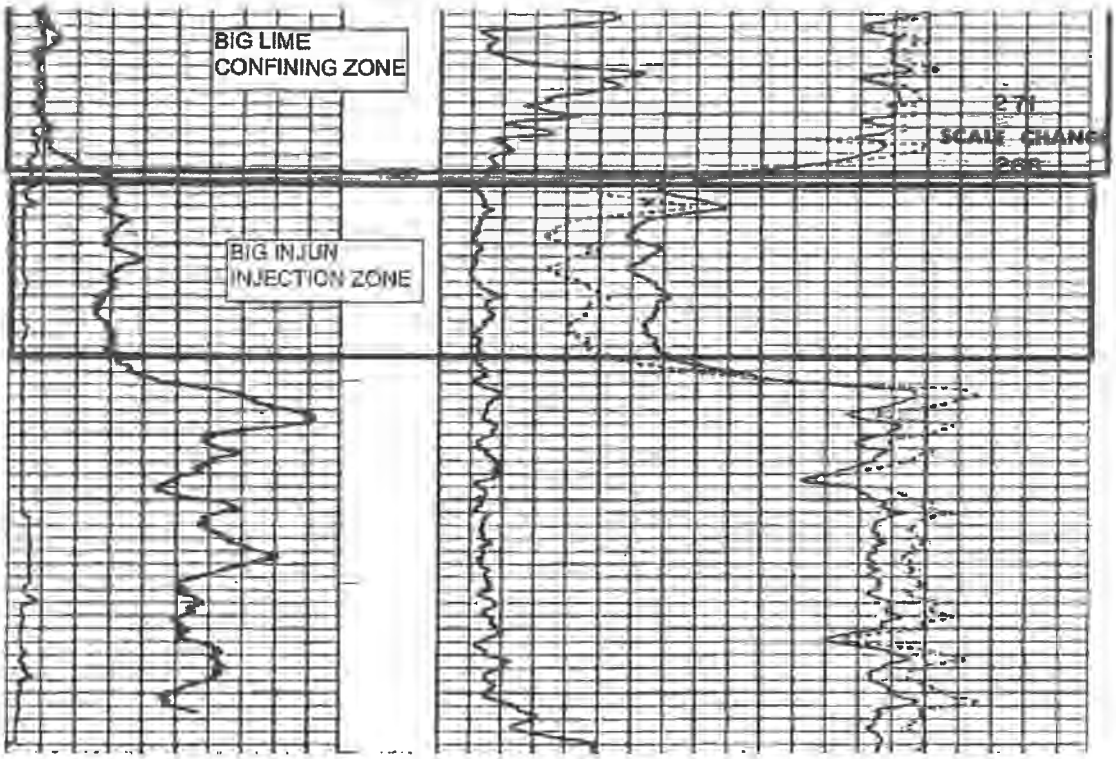
1100
1000


1500
1400
1300

1600
1700
1800
268
SCALE CHANGE
270



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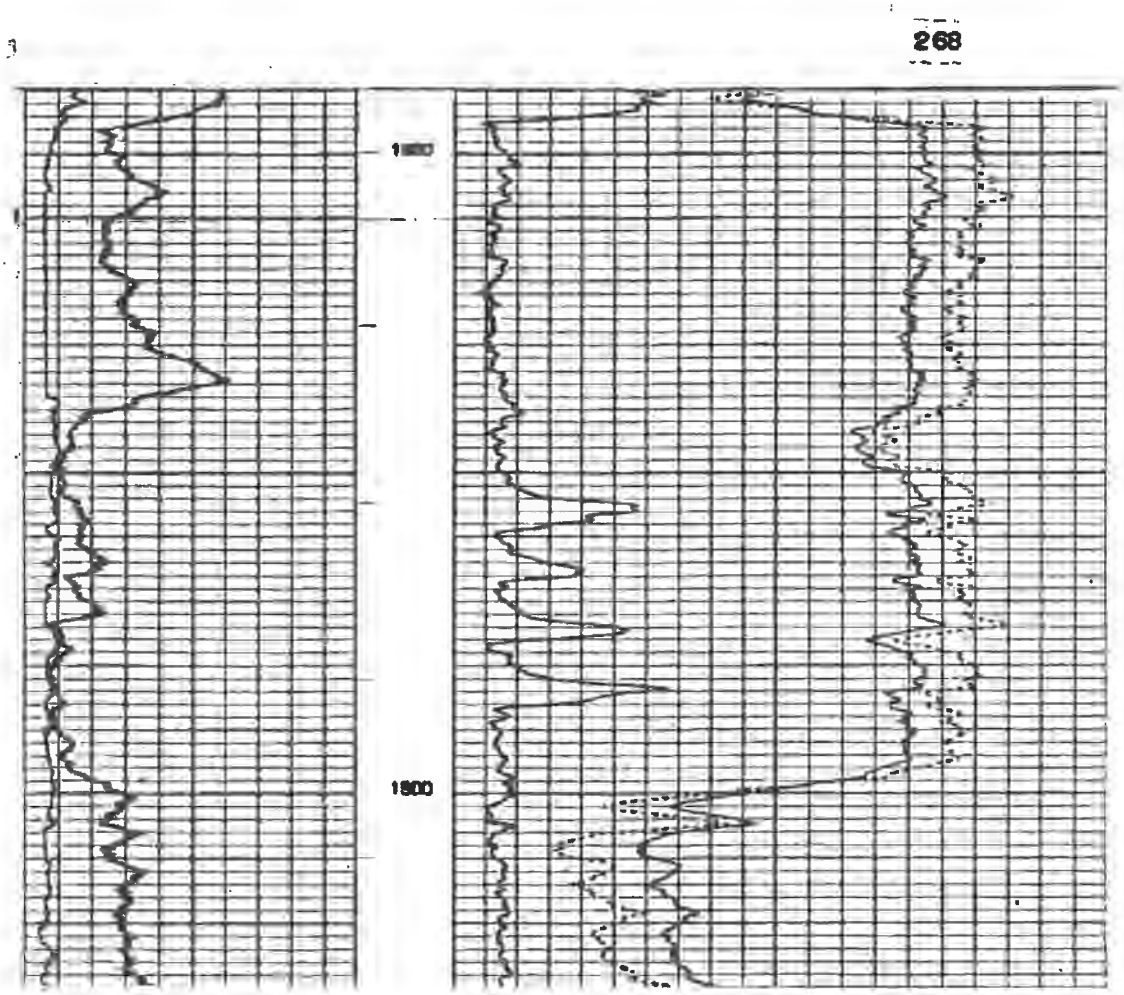

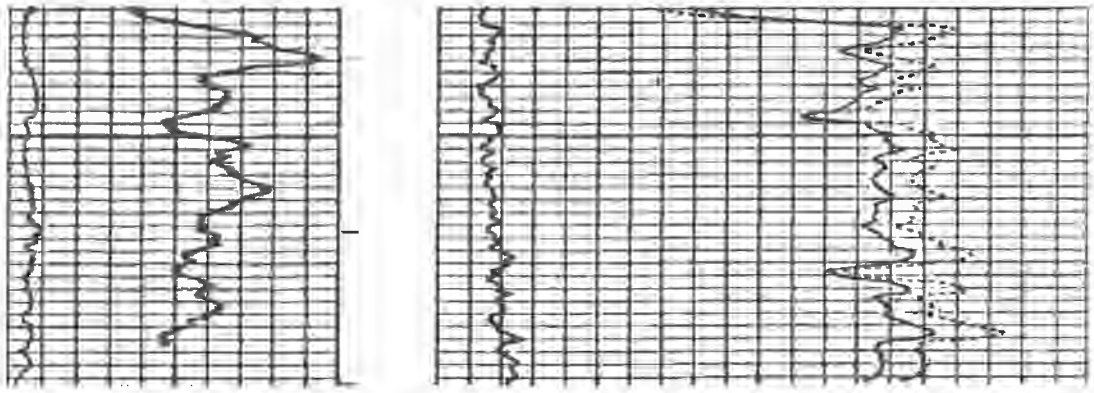

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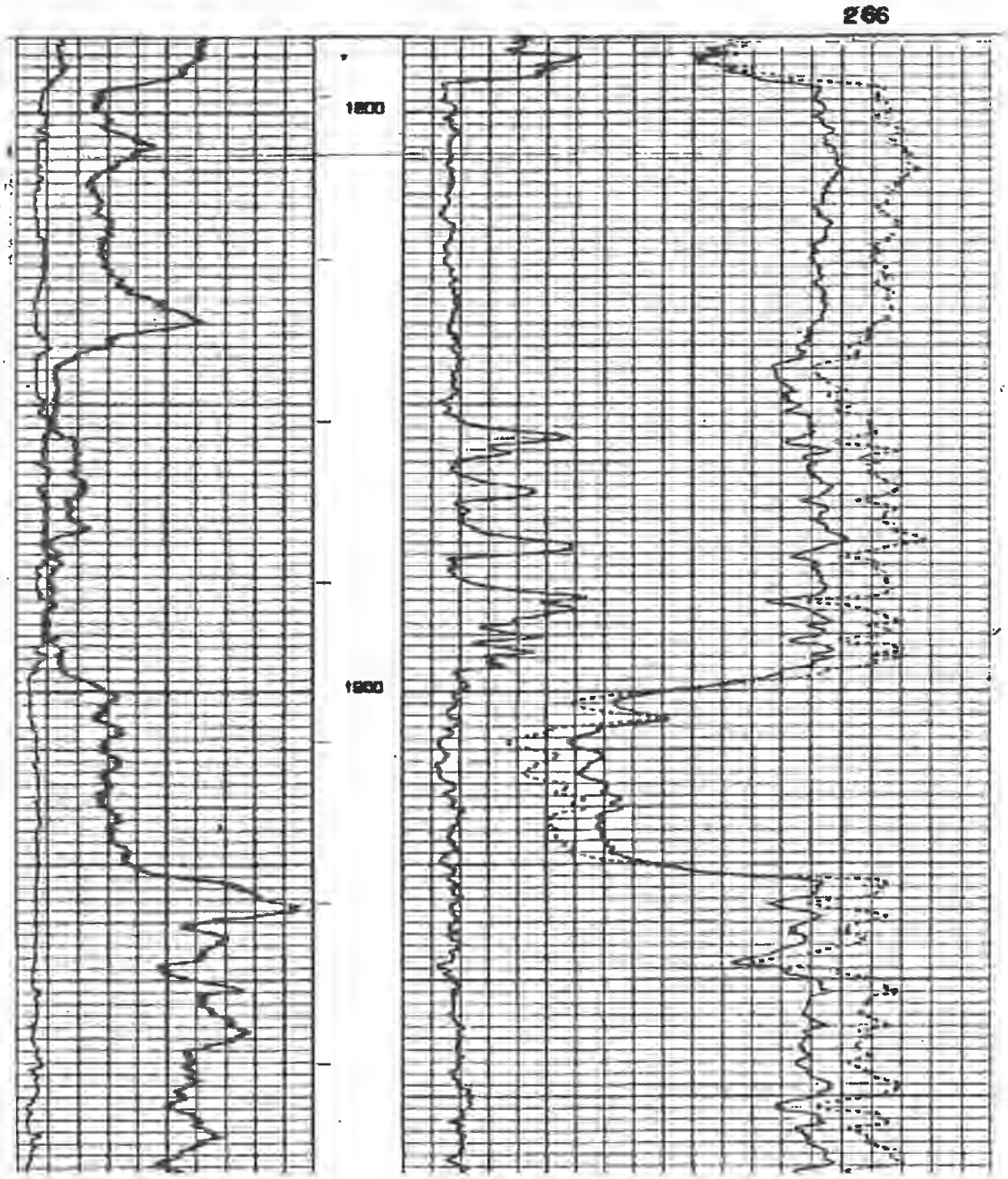
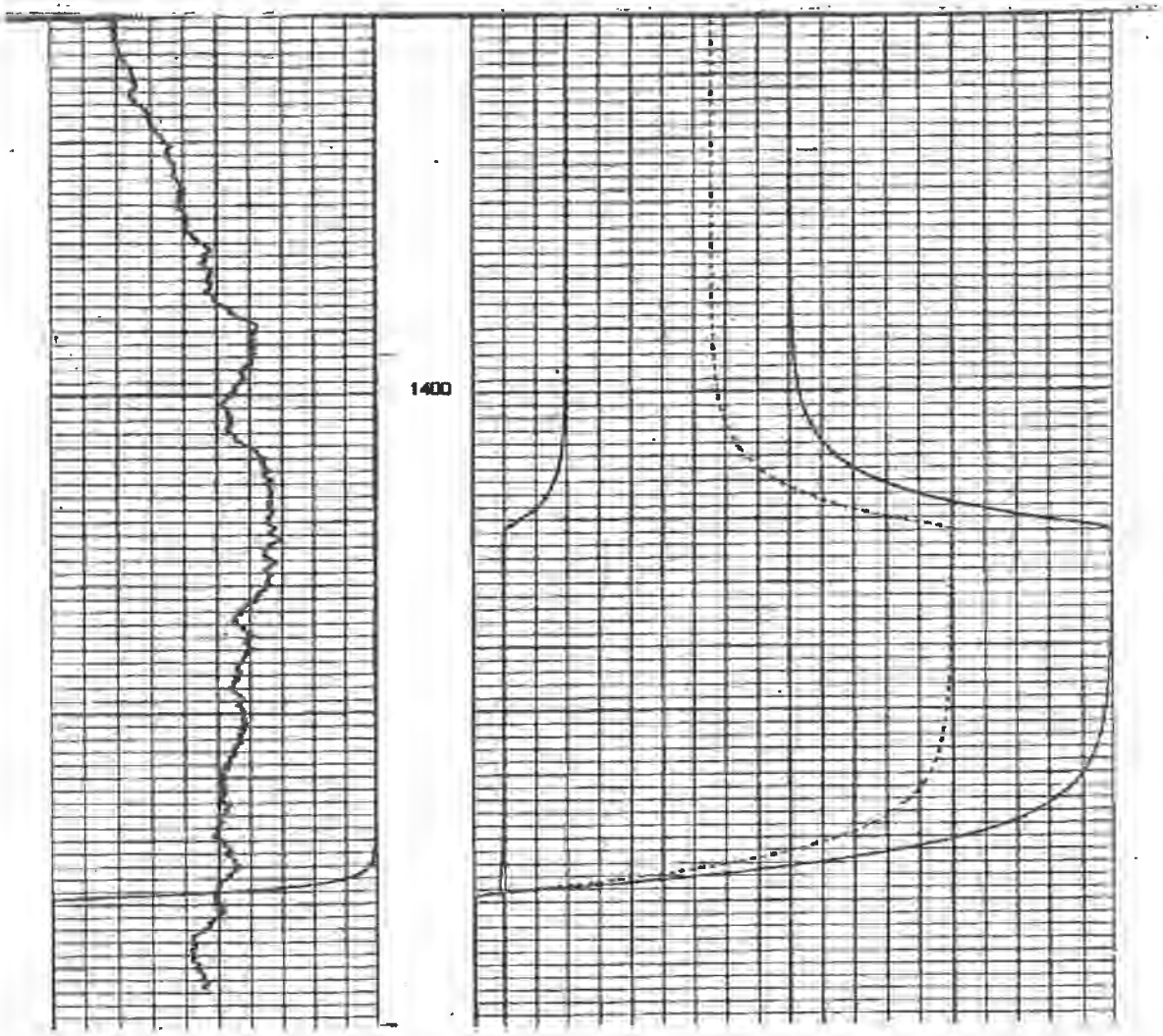


CALIBRATION BEFORE SURVEY



GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS/CC
0 — 100		30 — 20 — 10 — 0 — -10
CALIPER		POROSITY PERCENT 1.0 — 2.5 — 3.0
HOLE SIZE - INCHES 6 — 16		CORRECTION 0 — +.25

COMPANY Pennzoil Company

WELL W.M. Loony #39

FIELD Tariff STATE WV

SEC: COUNTY ROANE

Log FR 1990'

Log TD 1991'

DRLR TD 1985'

Elev.

DF 885'

KB 88[illegible]'

GL 878

WVGES GEOLOGY UNDERLIES IT ALL "Pipeline"

Select County: (087) Roane
Enter Permit #: 3875
Get Data | Reset

Select datatypes: (Check All)
Location, Production, Plugging, Owner/Completion, Stratigraphy, Sample, Pay/Show/Water, Logs, Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

Interior 3875

WV Geological & Economic Survey:

Well: County = 87 Permit = 3875

Report Time: Thursday, April 30, 2020 9:46:19 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703875	Roane	3875	Smithfield	Tariff	Otter	38.653852	-81.21335	481435.9	4278386.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703875	6/1/1984	Original Loc	Completed	Pennzoil	42					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703875	6/1/1984	-/-/-	1068	Ground Level	Tariff(Tlmn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2138		2138		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703875	6/1/1984	Water	Fresh Water	Vertical			65						0
4708703875	6/1/1984	Water	Salt Water	Vertical			1769						0
4708703875	6/1/1984	Horizon	Injection	Vertical	2075		2137	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703875	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Ground Resources, LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703875	Pennzoil Company	1984	1,013	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703875	Ground Resources, LLC	2017	0												
4708703875	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703875	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703875	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703875	Original Loc	Little Lime	Well Record	1910	Reasonable	40	Reasonable	1068	Ground Level
4708703875	Original Loc	Blue Monday	Well Record	1950	Reasonable	7	Reasonable	1068	Ground Level
4708703875	Original Loc	Pencil Cave	Well Record	1957	Reasonable	17	Reasonable	1068	Ground Level
4708703875	Original Loc	Greenbrier Group	Well Record	1974	Reasonable	117	Reasonable	1068	Ground Level
4708703875	Original Loc	Big Lime	Well Record	1974	Reasonable	101	Reasonable	1068	Ground Level
4708703875	Original Loc	Keener	Well Record	2075	Reasonable	16	Reasonable	1068	Ground Level
4708703875	Original Loc	Big Injun (Price&eq)	Well Record	2091	Reasonable	20	Reasonable	1068	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703875	8	2139		GDC*	Y	N	8	2132	417	2138									410	2138	Y	Y	N						

Comment: *logs: caliper, CCL, cement bond, formation bond

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if

using a 56k or slower dialup connection.

INJECTION 3875

FILENAME
4708703875dc.tif
4708703875gbo.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL–casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL–Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3875

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2091 Feet (top) 2111 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2138 Feet

3) Approximate water strata depths: Fresh 65' - 79' Feet Salt 1769' - 1857' Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3875

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	428'	428'	120sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2075'	2075'	60sks
Tubing	NONE						
Liners							

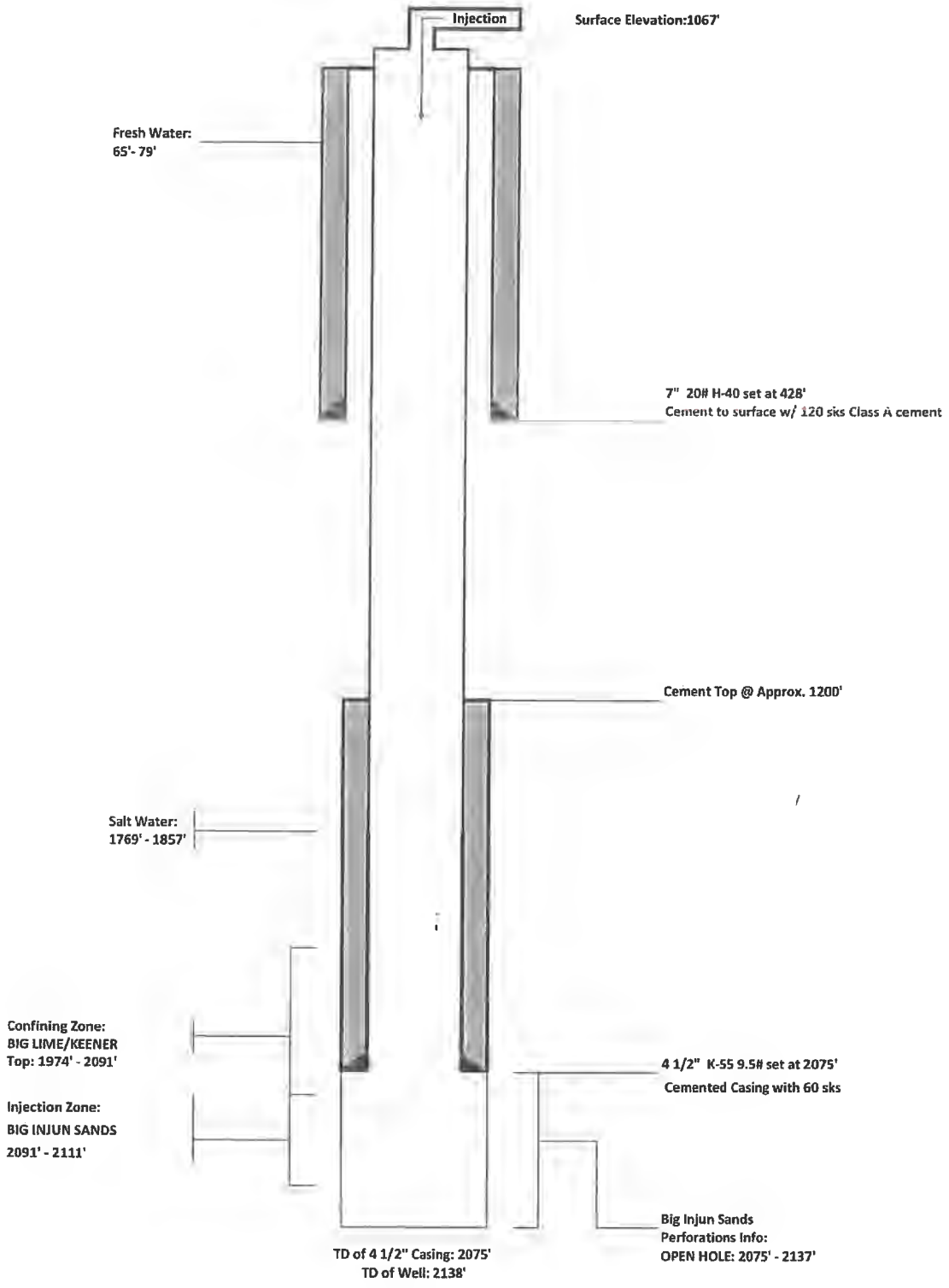
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3875

WELL SCHEMATIC

LOONEY 42
API 47-087-03875



INJECTOR 3875

IV-35
(Rev 8-81)

RECEIVED
DEC 7 - 1984
OIL & GAS DIVISION
DEPT. OF MINES

State of West Virginia
Department of Mines
Oil and Gas Division

Date December 4, 1984
Operator's
Well No. 42
Farm W. M. Looney
API No. 47 - 087 - 3875-Li

WELL OPERATOR'S REPORT OF DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil X / Gas ___ / Liquid Injection ___ / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow ___ /)

LOCATION: Elevation: 1067 Watershed Trace Fork
District: Smithfield County Roane Quadrangle Tariff 7.5'

COMPANY Pennzoil Company
ADDRESS P.O. Box 1588, Parkersburg, WV 26101
DESIGNATED AGENT James A. Crews
ADDRESS P.O. Box 1588, Parkersburg, WV 26101
SURFACE OWNER Pennzoil Company
ADDRESS P. O. Box 1588, Parkersburg, WV
MINERAL RIGHTS OWNER Keith Crihfield
ADDRESS P.O.Box 431, Spencer, WV 25276
OIL AND GAS INSPECTOR FOR THIS WORK Homer Doughert ADDRESS Linden Rt. Box 3-A, Looneyville, WV
PERMIT ISSUED 5-3-84
DRILLING COMMENCED 5-29-84
DRILLING COMPLETED 6-1-84
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	428	428	120 sks.
5 1/2			
4 1/2	2075	2075	60 sks.
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 2111 feet
Depth of completed well ___ feet Rotary X / Cable Tools ___
Water strata depth: Fresh 65-79 feet; Salt 1769-1857 feet
Coal seam depths: ___ Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation (Water Injection Well) Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion--)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

(Continue on reverse side)

DEC 26 1984

INJECTOR 3875

FORM IV-35
(REVERSE)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Big Injun: Open Hole 2075-2137

Fractured: w/250 gls. 12-3 reg. mud acid, 48 Bbls. 20# gel, 500# 20/40 sd

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Sand	0	94	
Silt & Shale	94	440	
Sand,Shale,Silt	440	1612	
Salt Sand	1612	1857	
Shale,Sand	1857	1910	
Little Lime	1910	1950	
Blue Monday	1950	1957	
Pencil Cave	1957	1974	
Big Lime	1974	2075	
Keener	2075	2091	
Big Injun	2091	2111	
Pocono Shale	2111	2138	
Total Depth		2138	

(Attach separate sheets as necessary)

Pennzoil Company
Well Operator

By: Curtis A Lewis

Date: 12-4-84

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."

INJECTOR 3875

FORM IV-3(B)
(Obverse)

FILE COPY

1) Date: April 12, 19 84
2) Operator's Well No. W. M. Looney #42
3) SIC Code
4 API Well NO. 47 - 087 - 3875-LI
State County Permit
5. UIC Permit No.

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
OFFICE OF OIL AND GAS, DEPARTMENT OF MINES, AND FOR
(CLASS II WELLS ONLY)
THE DIVISION OF WATER RESOURCES DEPARTMENT OF NATURAL RESOURCES

RECEIVED
APR 17 1984
OIL & GAS DIVISION
DEPT. OF MINES

6) WELL TYPE: Liquid injection X / Gas injection (not storage) / Waste disposal /
7) LOCATION: Elevation: 1067.77 Watershed: Trace Fork
District: Smithfield County: Roane Quadrangle: Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV 26101
9) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Homer Dougherty
Address Linden Rt., Box 3-A
Looneyville, WV
11) DRILLING CONTRACTOR:
Name
Address
12) PROPOSED WELL WORK: Drill X / Drill deeper / Redrill / Stimulate X /
Plug off old formation / Perforate new formation / Convert /
Other physical change in well (specify)
13) GEOLOGICAL TARGET FORMATION, Big Injun Depth 2065 feet(top) to 2090 feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 2145 ft.
15) Approximate water strata depths; Fresh, 367 feet; salt, feet.
16) Approximate coal seam depths:
17) Is coal being mined in the area? Yes / No X /
18) Virgin reservoir pressure in target formation 80 psig. Source Estimated
19) Estimated reservoir fracture pressure 2655 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 25 Bottom hole pressure 2000
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:
Fresh Water, Bactericides
22) FILTERS (IF ANY): Coal Filters
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	7				X	400	400	Cement to surface	
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2143	2143	Over Lower Salt Sand	Depths set
Tubing									
Liners									Perforations:
									Top Bottom

25) APPLICANT'S OPERATING RIGHTS were acquired from W. M. & Anna Looney
by deed / lease X / other contract / dated December 13, 1899, of record in the
Roane County Clerk's office in Lease Book 3 at page 190

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

INJECTOR 3875

FORM IV-3(B)
(Reverse)

FILE COPY

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-087-3875-LI

Ma 3 19 84
Date

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector, (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and (if required) construction and reclamation plan, subject to any modifications and conditions specified below.

Permit expires Ma 1986 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing	Fee
				7062

Administrator, Office of Oil and Gas

NOTE: Keep one copy of this permit posted at the drilling location.

PERMIT MODIFICATIONS AND CONDITIONS (IF ANY) TO THE PROPOSED WELL WORK

OFFICE USE ONLY

This part of Form IV-3(b) is to record the dates of certain occurrences and any follow-up inspections.

	Date		Date(s)
Application received		Follow-up inspection(s)	
Well work started		" "	
Total depth reached		" "	
Well Record received		" "	
Reclamation completed		" "	

OTHER INSPECTIONS

Reason:

Reason:

File

3875
Bond Cement
Gamma Ray

NL McCullou

BOND CEMENT AND-OR SONIC SEISMO
GAMMA RAY

FILING NO.

PERMIT #
47-087-3875-L

COMPANY PENNZOIL COMPANY
WELL W. M. LOONEY #42
FIELD TARIFF
COUNTY ROANE STA
LOCATION TRACE FORK
QUAD: TARIFF 7.5'

SEC. TWP. RGE.

PERMANENT DATUM	GROUND LEVEL ELEV.	1067'
LOG MEASURED FROM	8' ABOVE P.D.	
DRILLING MEASURED FROM	R.K.B.	
DATE	6/19/84	
RUN NO.	ONE	ONE
TYPE LOG	GAMMA RAY	BOND CEM
DEPTH DRILLER	2122'	
DEPTH--LOGGER	2138'	
BOTTOM LOGGED INTERVAL	2135'	2076'
TOP LOGGED INTERVAL	1244'	1250'
TYPE FLUID IN HOLE	WATER & OIL	
SALINITY PPM CL.	-	
DENSITY LB./GAL.	-	
LEVEL	100'	
MAX. REC. TEMP. DEG. F.	-	
OPR. RIG TIME	2 HOURS	
RECORDED BY	SMITH	
WITNESSED BY	MR. HARRY	
DISTRICT	CHARLESTON	

RUN NO.	BIT	BORE HOLE RECORD FROM	TO	CASI SIZE	WGT
	6 1/4"	428'	T.D.	7"	17#
				4 1/2"	

SIZE T.D.
SIZE 428'
NG RECORD FROM TO
ENT
ELEVATIONS: KB 1075' DF 1074' GL 1067'
OTHER SERVICES
TE WV
OGRAM LOG
194

HERE THIS HEADING AND LOG CONFORMS TO API. RECOMMENDED STANDARD PRACTICE RP 33

LOGGING AND EQUIPMENT DATA (BOND CEMENT LOG)

DATE RECORDED	6/19/84	TOOL MODEL NO.	GBCT-3.5-B
TIME STARTED		DIAMETER	3.5 X 2.0
TIME FINISHED		LENGTH	
LOGGED INTERVAL	2076'-1250'	BOND GAIN	50
LOGGED CEMENT TOP	1455'	BOOT MODEL NO.	

CEMENTING DATA

	1	2	SQUEEZE NO. 1	SQUEEZE NO. 2	SQUEEZE NO. 3
DATE AND HOUR SET					
SETTING TIME (HRS.)					
TYPE CEMENT					
SACKS USED					
PRECEDING FLUID					
% ADDITIVE					
% RETARDER					
SLURRY WEIGHT					
BREAKDOWN PRESSURE					
SURFACE MAX. PRESS.					
BOTTOM MAX. PRESS.					

GAMMA RAY

RUN NO.	ONE		
TOOL MODEL NO.	GBCT 3.5		
DIAM.	3.5		
DETECT. MODEL NO.			
TYPE	SCINT.		
LENGTH	3"		
DIST. TO N. SOURCE			

NEUTRON

RUN NO.			
LOG TYPE			
TOOL MODEL NO.			
DIAM.			
DETECT. MODEL NO.			
TYPE			
LENGTH			
SOURCE MODEL NO.			
SERIAL NO.			
SPACING			
TYPE			
STRENGTH			

GENERAL

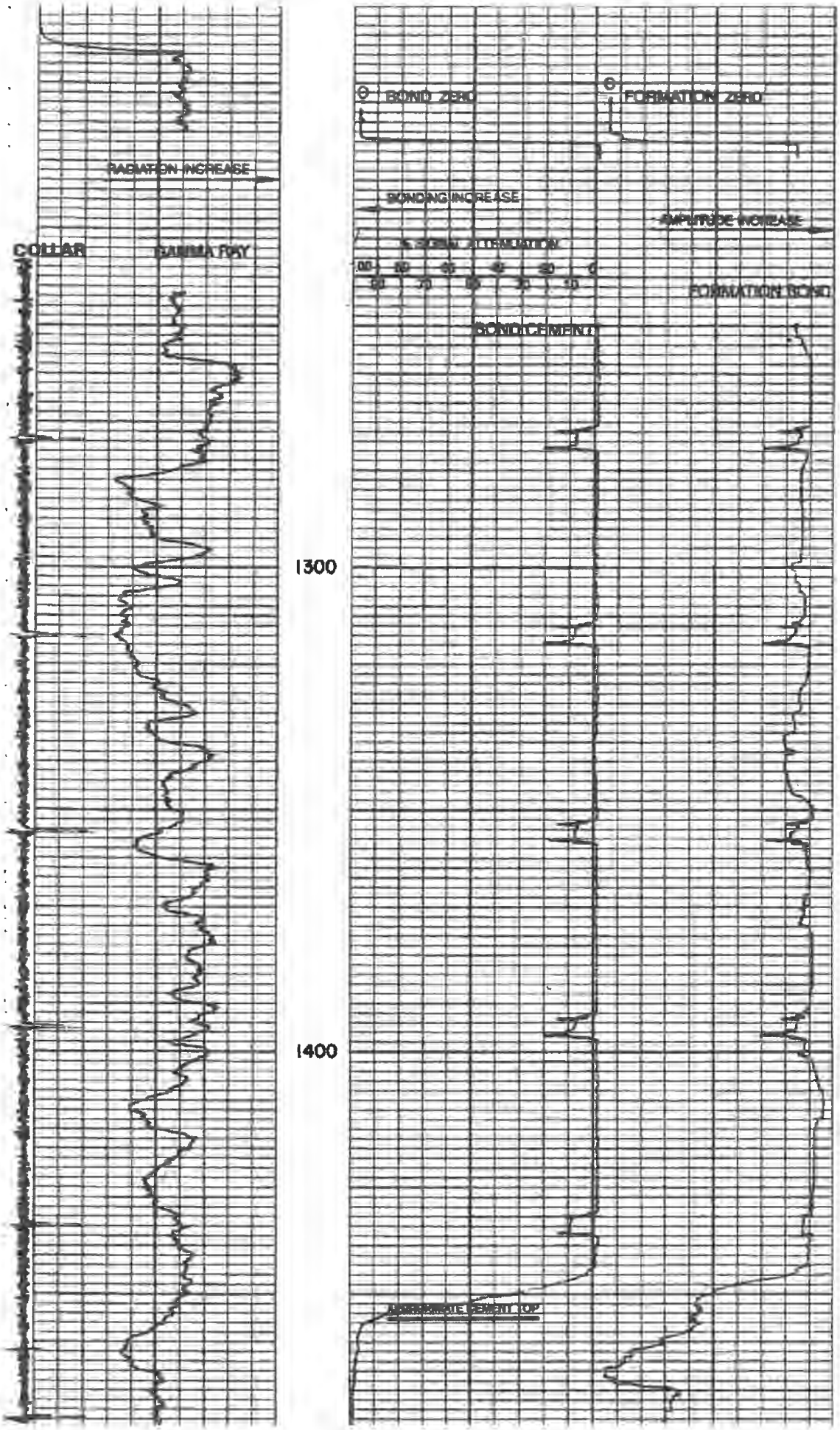
HOIST TRUCK NO.	1644		
INST TRUCK NO.	1644		
TOOL SERIAL NO.			
LOG TICKET NO.	45988		

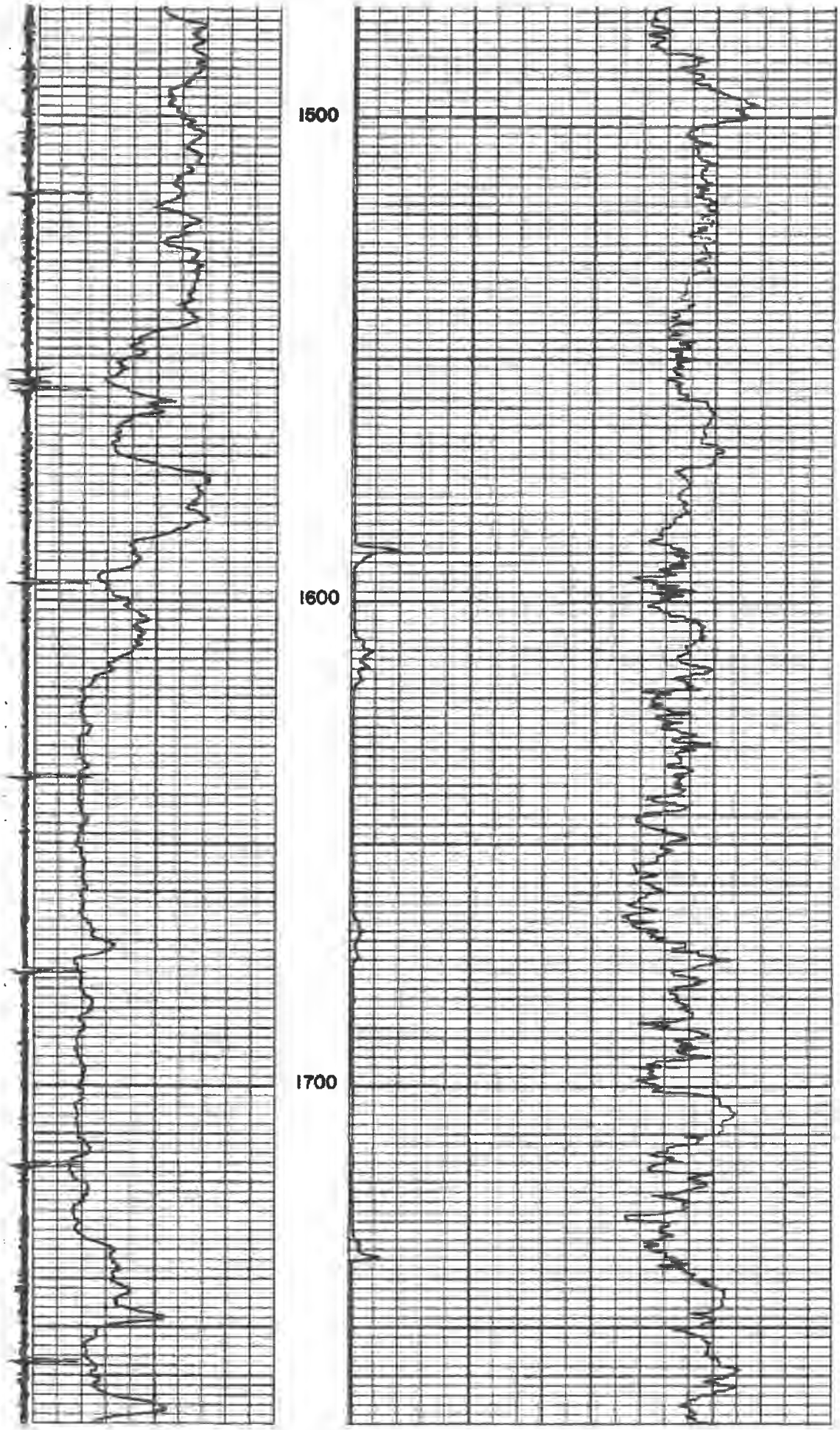
LOGGING DATA

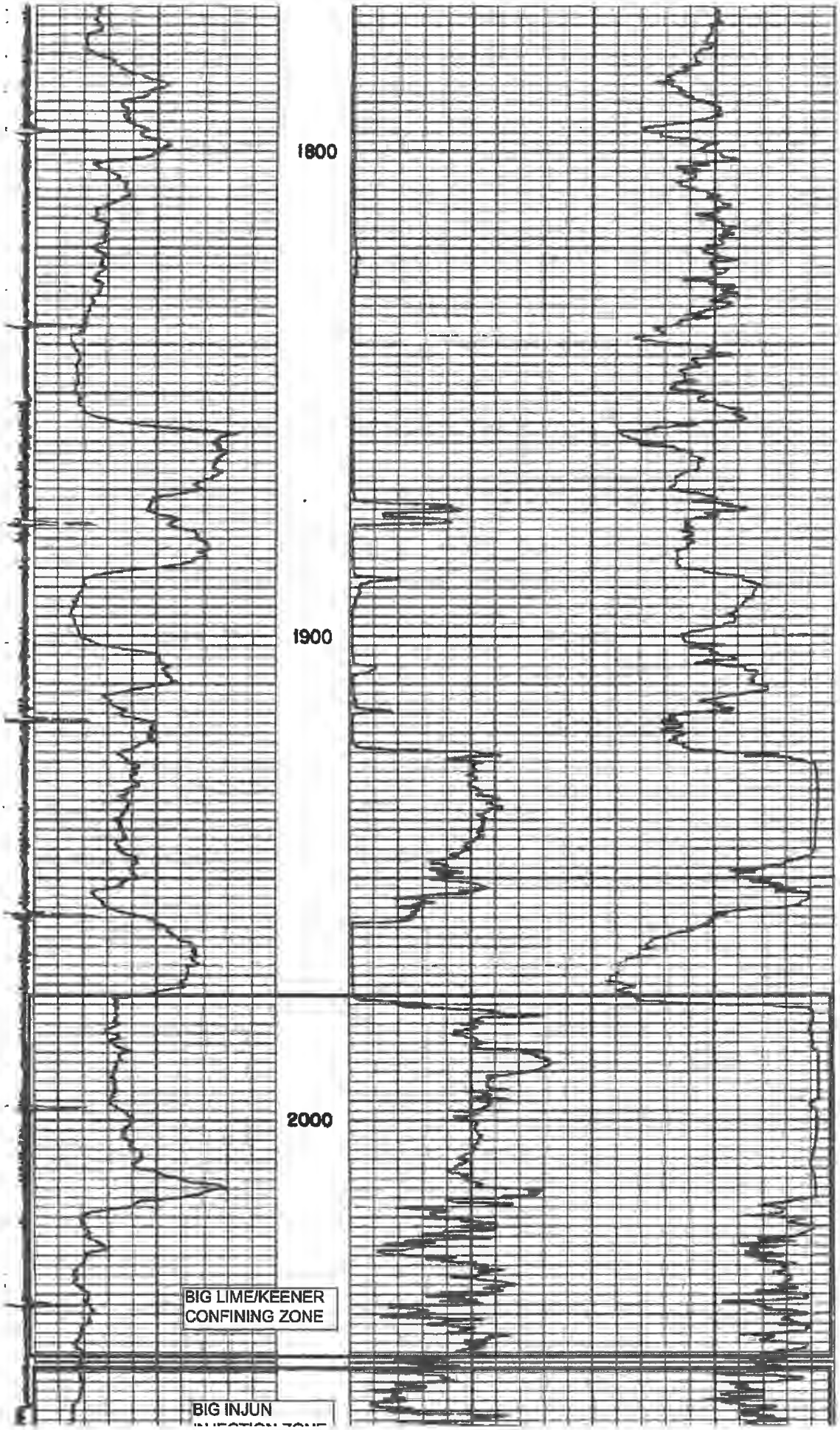
GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT./MIN.	T. C. SEC	SENS. SETTINGS	ZERO DIV. L. or R	API GR. UNITS PER LOG DIV.	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L. or R.	API N. UNITS PER LOG DIV.
ONE	2135'	1244'	30	3	R - 7(X1 D - 400 G - 500		21				

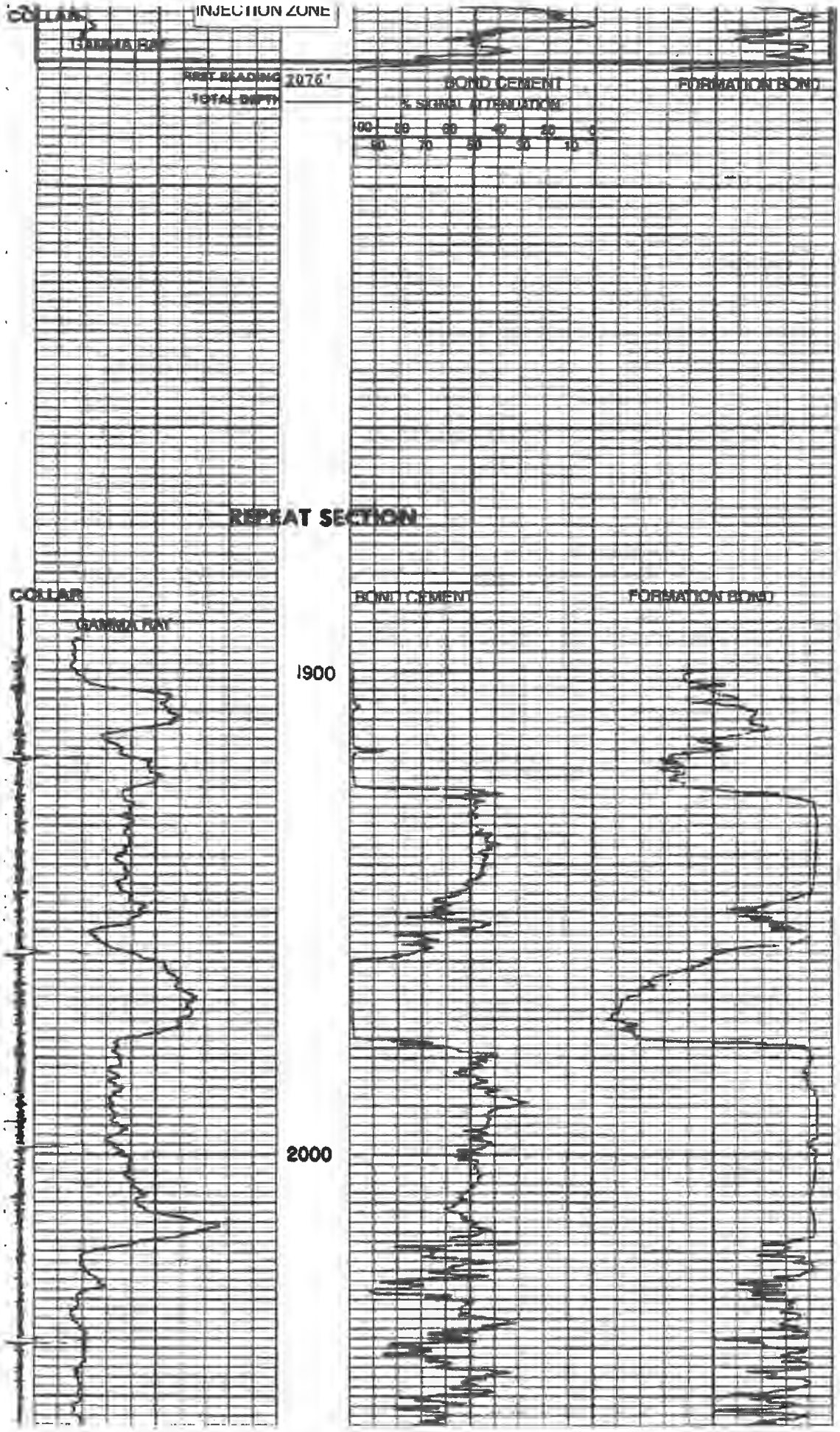
REMARKS:

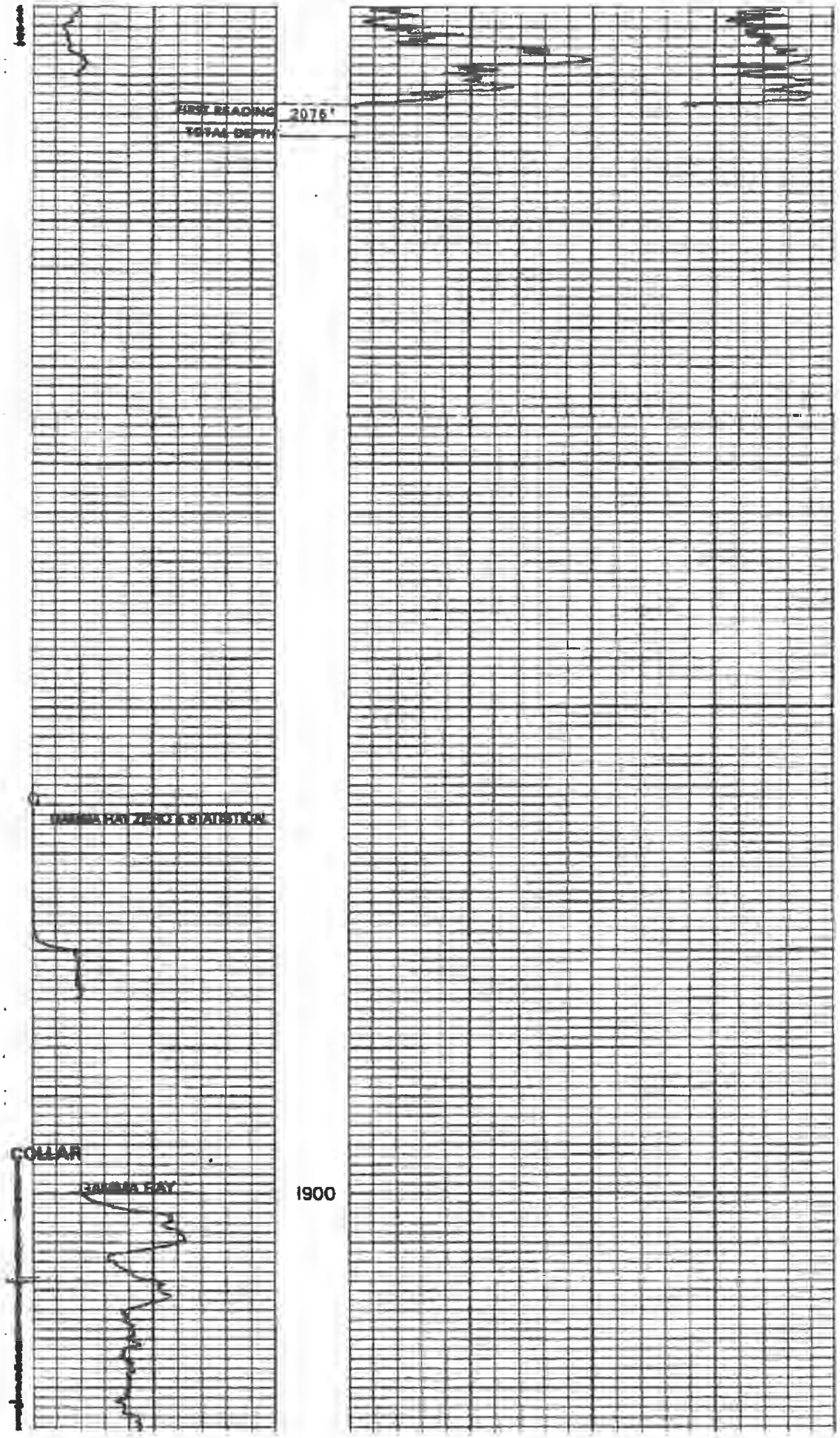
GAMMA RAY CONTINUATION

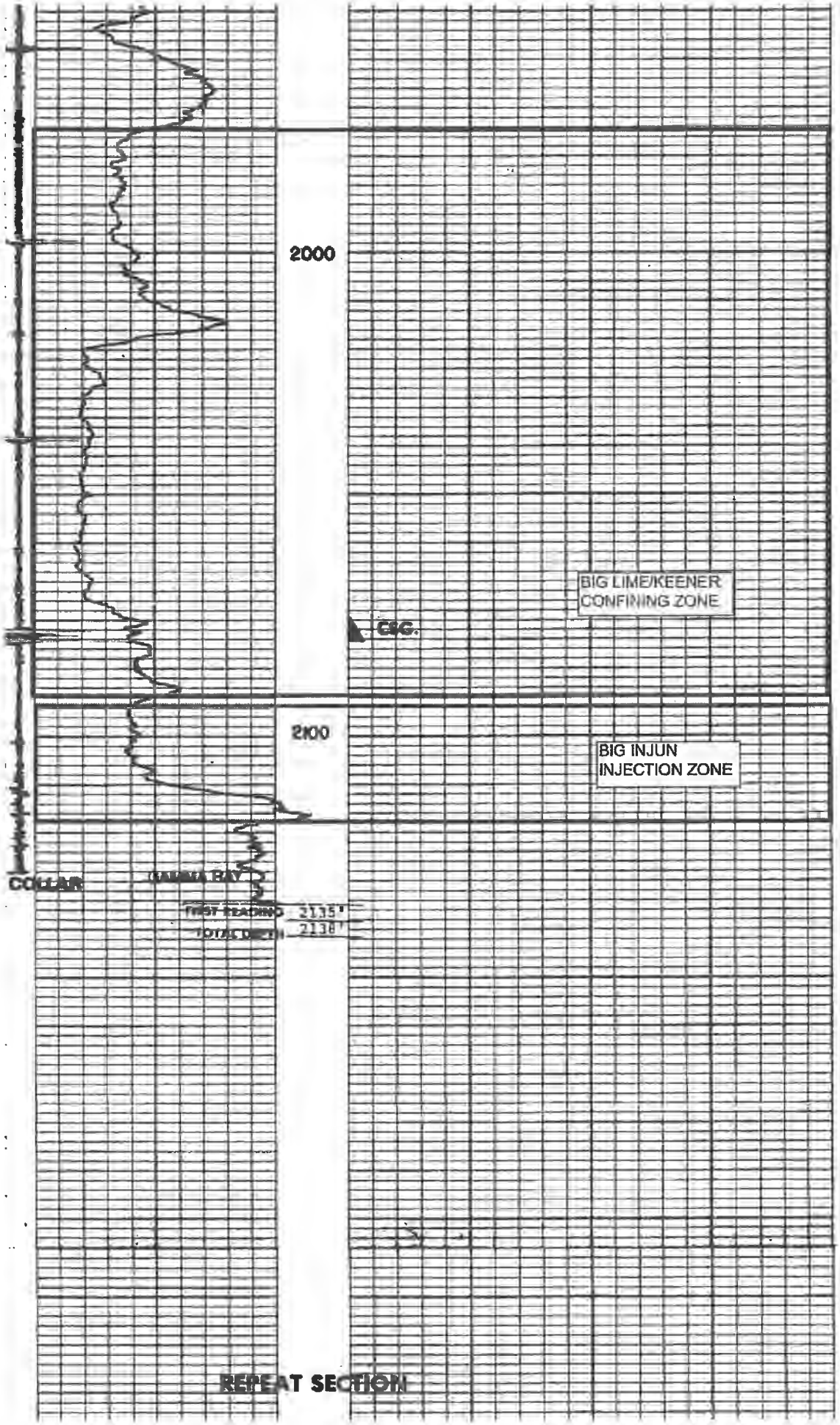

RADIATION INCREASE
COLLAR
GAMMA RAY
1300
1400
BOND ZERO
FORMATION ZERO
BONDING INCREASE
AMPLITUDE INCREASE
% SONIC ATTENUATION
100
90
80
70
60
50
40
30
20
10
0
FORMATION BOND
BOND CEMENT
APPROXIMATE CEMENT TOP

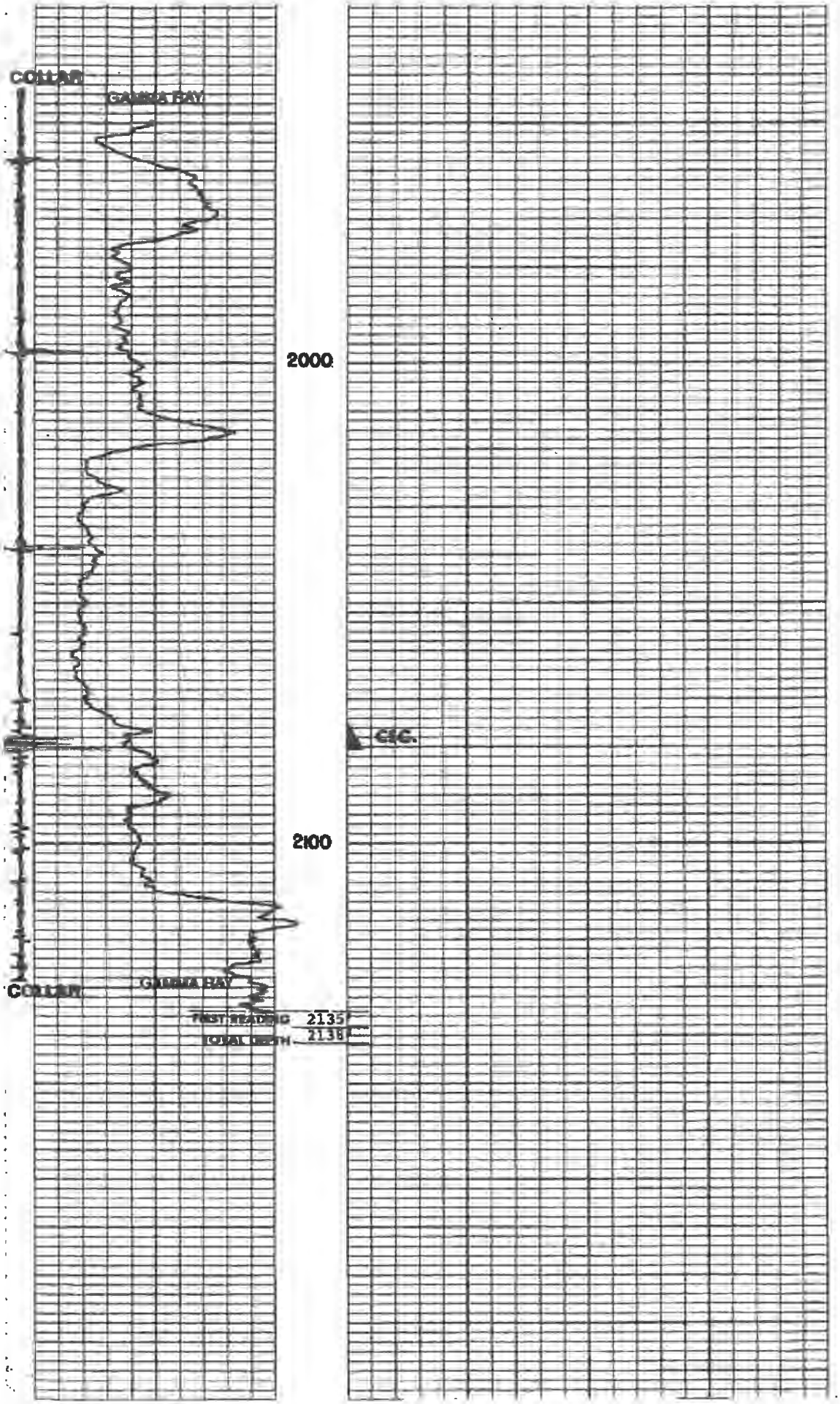

1500
1600
1700


1800
1900
2000
BIG LIME/KEENER
CONFINING ZONE
BIG INJUN


COLLAR
INJECTION ZONE
GAMMA RAY
FIRST READING 2076'
TOTAL DEPTH
BOND CEMENT
% SIGNAL ATTENUATION
100 90 80 70 60 50 40 30 20 10 0
FORMATION BOND
REPEAT SECTION
COLLAR
GAMMA RAY
BOND CEMENT
FORMATION BOND
1900
2000


FIRST READING
2076'
TOTAL DEPTH
GAMMA RAY ZERO & STATISTICAL
COLLAR
GAMMA RAY
1900


2000
BIG LIME/KEENER
CONFINING ZONE
CSG.
2100
BIG INJUN
INJECTION ZONE
COLLAR
GAMMA RAY
FIRST READING 2135'
TOTAL DEPTH 2138'
REPEAT SECTION


COLLAR
GAMMA RAY
2000
C/C.
2100
COLLAR
GAMMA RAY
FIRST READING 2135'
TOTAL DEPTH 2138'

"Pipeline"

Select County: (087) Roane
Enter Permit #: 3878
Get Data | Reset

Select datatypes: (Check All)
Location, Production, Plugging, Owner/Completion, Stratigraphy, Sample, Pay/Show/Water, Logs, Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3878

Report Time: Thursday, April 30, 2020 9:46:29 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703878	Roane	3878	Smithfield	Tariff	Otter	38.655448	-81.20516	482149	4278562.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703878	6/14/1984	Original Loc	Completed	Delmas Conley	76					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703878	6/14/1984	-/-/-	1050	Ground Level	Tariff (Timn)	Big Injun (Price&en)	Big Injun (Price&en)	Service Well	Unsuccessful	Water Injection	Rotary	Nat/Open H	2136		2136		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703878	6/14/1984	Water	Fresh Water	Vertical			59						0
4708703878	6/14/1984	Water	Salt Water	Vertical			1785						0
4708703878	6/14/1984	Horizon	Injection	Vertical	2060	Big Injun (Price&en)	2085	Big Injun (Price&en)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703878	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703878	Pennzoil Company	1984	1,030	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703878	Ground Resources, LLC	2017	0												
4708703878	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703878	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703878	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703878	Original Loc	Little Lime	Well Record	1898	Reasonable	40	Reasonable	1050	Ground Level
4708703878	Original Loc	Blue Monday	Well Record	1938	Reasonable	6	Reasonable	1050	Ground Level
4708703878	Original Loc	Pencil Cave	Well Record	1944	Reasonable	16	Reasonable	1050	Ground Level
4708703878	Original Loc	Greenbrier Group	Well Record	1960	Reasonable	110	Reasonable	1050	Ground Level
4708703878	Original Loc	Big Lime	Well Record	1960	Reasonable	110	Reasonable	1050	Ground Level
4708703878	Original Loc	Big Injun (Price&en)	Well Record	2070	Reasonable	18	Qstnble Pick	1050	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703878	2	2134		G D C,*	Y	N	2	2128	410	2134									410	2134	Y	Y	N						

Comment: *logs: caliper, CCL, cement bond, formation bond

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

INJECTION 3878

Injection 3878

FILENAME
4708703878gbo.tif
4708703878gdc.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3878

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2070 Feet (top) 2088 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2136 Feet

3) Approximate water strata depths: Fresh 59' - 78' Feet Salt 1785' - 1860' Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3878

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	419'	419'	100sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2075'	2075'	50sks
Tubing	NONE						
Liners							

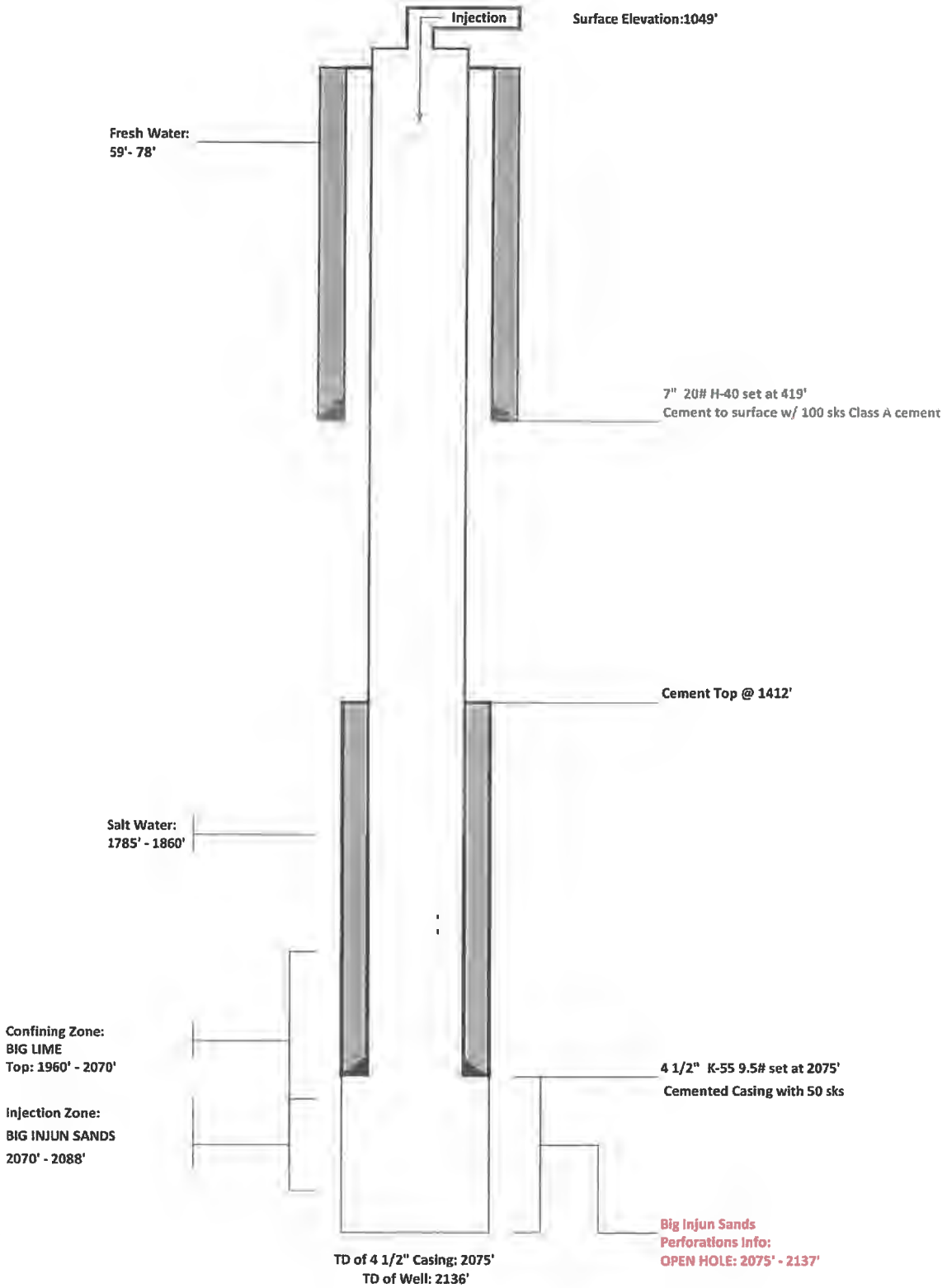
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3878

WELL SCHEMATIC

TALLMAN 76
API 47-087-03878



INJECTOR 3878

IV-35
(Rev 8-81)

RECEIVED
DEC 7 - 1984
OIL & GAS DIVISION
DEPT. OF MINES

State of West Virginia
Department of Mines
Oil and Gas Division

Date December 4, 1984
Operator's
Well No. 76
Farm P. A. Tallman
API No. 47- - 087 - 3878-Li

WELL OPERATOR'S REPORT OF DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil ___ / Gas ___ / Liquid Injection X / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow ___ /)

LOCATION: Elevation: 1049 Watershed Sycamore Fork
District: Smithfield County Roane Quadrangle Tariff 7.5'

COMPANY Pennzoil Company
ADDRESS P. O. Box 1588, Parkersburg, WV 26101
DESIGNATED AGENT James A. Crews
ADDRESS P.O. Box 1588, Parkersburg, WV 26101
SURFACE OWNER Delmas Conley
ADDRESS Left Hand, WV 25251
MINERAL RIGHTS OWNER Anna Lee Collins
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Homer Dougherty ADDRESS Linden Rt., Box 3-A, Looneyville WV
PERMIT ISSUED 5-3-84
DRILLING COMMENCED 6-11-84
DRILLING COMPLETED 6-14-84
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	419	419	100 sks.
5 1/2			
4 1/2	2075	2075	50 sks.
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 2070-2080 feet
Depth of completed well 2136 feet Rotary X / Cable Tools ___
Water strata depth: Fresh 59-78 feet; Salt 1785-1860 feet
Coal seam depths: ___ Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation Water Injection Well Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion--)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

DEC 26 1984

(Continue on reverse side)

INJECTOR 3878

FORM IV-35
(REVERSE)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water coal oil and gas
Sand	0	18	
Siltstone	18	58	
Sand	58	78	
Siltstone, Shale, Sand	78	1898	
Little Lime	1898	1938	
Blue Monday	1938	1944	
Pencil Cave	1944	1960	
Big Lime	1960	2070	
Big Injun	2070	2088	
Pocono Shale	2088	2136	
Total Depth		2136	

(Attach separate sheets as necessary)

Pennzoil Company
Well Operator

By: [illegible]

Date: 12-4-84

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."

INJECTOR 3878

FORM IV-3(B)
(Obverse)

FILE COPY

1) Date: April 12, 19 84
2) Operator's Well No. P. A. Tallman #76
3) SIC Code
4 API Well NO. 47 - 087 - 3878-LI
State County Permit
5. UIC Permit No.

RECEIVED
APR 17 1984
OIL & GAS DIVISION
DEPT. OF MINES

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
OFFICE OF OIL AND GAS, DEPARTMENT OF MINES, AND FOR
(CLASS II WELLS ONLY)
THE DIVISION OF WATER RESOURCES, DEPARTMENT OF NATURAL RESOURCES

6) WELL TYPE: Liquid injection X / Gas injection (not storage) ____ / Waste disposal ____ /
7) LOCATION: Elevation: 1049.86 Watershed: Sycamore Fork
District: Smithfield County: Roane Quadrangle: Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV 26101
9) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Homer Dougherty
Address Linden Rt. Box 3-A
Looneyville, WV
11) DRILLING CONTRACTOR:
Name
Address
12) PROPOSED WELL WORK: Drill X Drill deeper ____ Redril ____ Stimulate X /
Plug off old formation ____ / Perforate new formation ____ / Convert ____ /
Other physical change in well (specify)
13) GEOLOGICAL TARGET FORMATION, Big Injun Depth 2060 feet(top) to 2085 feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 2140 ft.
15) Approximate water strata depths; Fresh, 350 feet; salt, ____ feet.
16) Approximate coal seam depths:
17) Is coal being mined in the area? Yes ____ / No X /
18) Virgin reservoir pressure in target formation 80 psig. Source Estimated
19) Estimated reservoir fracture pressure 2655 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 35 Bottom hole pressure 2000
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:
Fresh Water, Bactericides
22) FILTERS (IF ANY): Coal Filters
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	7				X	380	380	Cement to surface	
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2138	2138	Over Lower Salt Sand	Depths set
Tubing									
Liners									Perforations:
									Top Bottom

25) APPLICANT'S OPERATING RIGHTS were acquired from P. A. Tallman, et ux
by deed ____ / lease X / other contract ____ / dated May 21, 19 06, of record in the
Roane County Clerk's office in Lease Book 12 at page 26

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

INJECTOR 3878

FORM IV-3(B)
(Reverse)

FILE COPY

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-087-3878-LI

May 3 19 84
Date

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector, (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and (if required) construction and reclamation plan, subject to any modifications and conditions specified below.

Permit expires May 3, 1986 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: BLANKET	Agent:	Plat:	Casing	Fee
				1758

Administrator, Office of Oil and Gas

NOTE: Keep one copy of this permit posted at the drilling location.

PERMIT MODIFICATIONS AND CONDITIONS (IF ANY) TO THE PROPOSED WELL WORK

OFFICE USE ONLY

This part of Form IV-3(b) is to record the dates of certain occurrences and any follow-up inspections.

	Date		Date(s)
Application received		Follow-up inspection(s)	
Well work started		"	"
Total depth reached		"	"
Well Record received		"	"
Reclamation completed		"	"

OTHER INSPECTIONS

Reason:

Reason:

File

3878
Cement Bond
Log

Box 3878

NL

BOND CEME

FILING NO.	
PERMIT # 47-087-3878	COMP
	WELL
	FIELD
	COUN
	LOCA
	SEC.
PERMANENT DATUM	GROU
LOG MEASURED FROM	K.
DRILLING MEASURED FROM	
DATE	
RUN NO.	
TYPE LOG	
DEPTH—DRILLER	
DEPTH—LOGGER	
BOTTOM LOGGED INTERVAL	
TOP LOGGED INTERVAL	
TYPE FLUID IN HOLE	
SALINITY PPM CL.	
DENSITY LB./GAL.	
LEVEL	
MAX. REC. TEMP. DEG. F.	
OPR. RIG TIME	
RECORDED BY	
WITNESSED BY	
DISTRICT:	

RUN	BORE HOLE RE	
NO.	BIT	FROM
	6¼"	419'

McCullough

NT AND-OR SONIC SEISMOGRAM LOG
GAMMA RAY

ANY PENNZOIL COMPANY

P. A. TALLMAN #76

SMITHFIELD DISTRICT

ITY ROANE STATE WV

TION

SYCAMORE FORK
QUAD.: TARIFF 7.5'

OTHER SERVICES:

TWP. RGE.

ND LEVEL ELEV. 1049'
8' ABOVE P.D.
K.B.

ELEVATIONS:
KB. 1057'
DF. 1056'
GL. 1049'

9-24-84
ONE
GAMMA RAY/BOND CEMENT
2138'
2063'
2059'
±200'
WATER
-
-
650'
-
1 HOUR
T. LAUGHERY
MR. SMITH
CHARLESTON

CORD TO	CASING RECORD SIZE	WGT.	FROM	TO
	7"	17#	SURF.	419'
T.D.	4½"	9½#	SURF.	T.D.

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP.33 A

FILE HERE

LOGGING AND EQUIPMENT DATA (BOND CEMENT LOG)

DATE RECORDED	9-24-84
TIME STARTED	10:30
TIME FINISHED	11:30
LOGGED INTERVAL	1200'-2059'
LOGGED CEMENT TOP	1412'
TOOL MODEL NO.	5549-0-0
DIAMETER	2"
LENGTH	4'
SPACING	
BOOT MODEL NO.	

CEMENTING DATA

	1	2	SQUEEZE NO. 1	SQUEEZE NO. 2	SQUEEZE NO. 3
DATE AND HOUR SET					
SETTING TIME (HRS.)					
TYPE CEMENT					
SACKS USED					
PRECEDING FLUID					
% ADDITIVE					
% RETARDER					
SLURRY WEIGHT					
BREAKDOWN PRESSURE					
SURFACE MAX. PRESS.					
BOTTOM MAX. PRESS.					

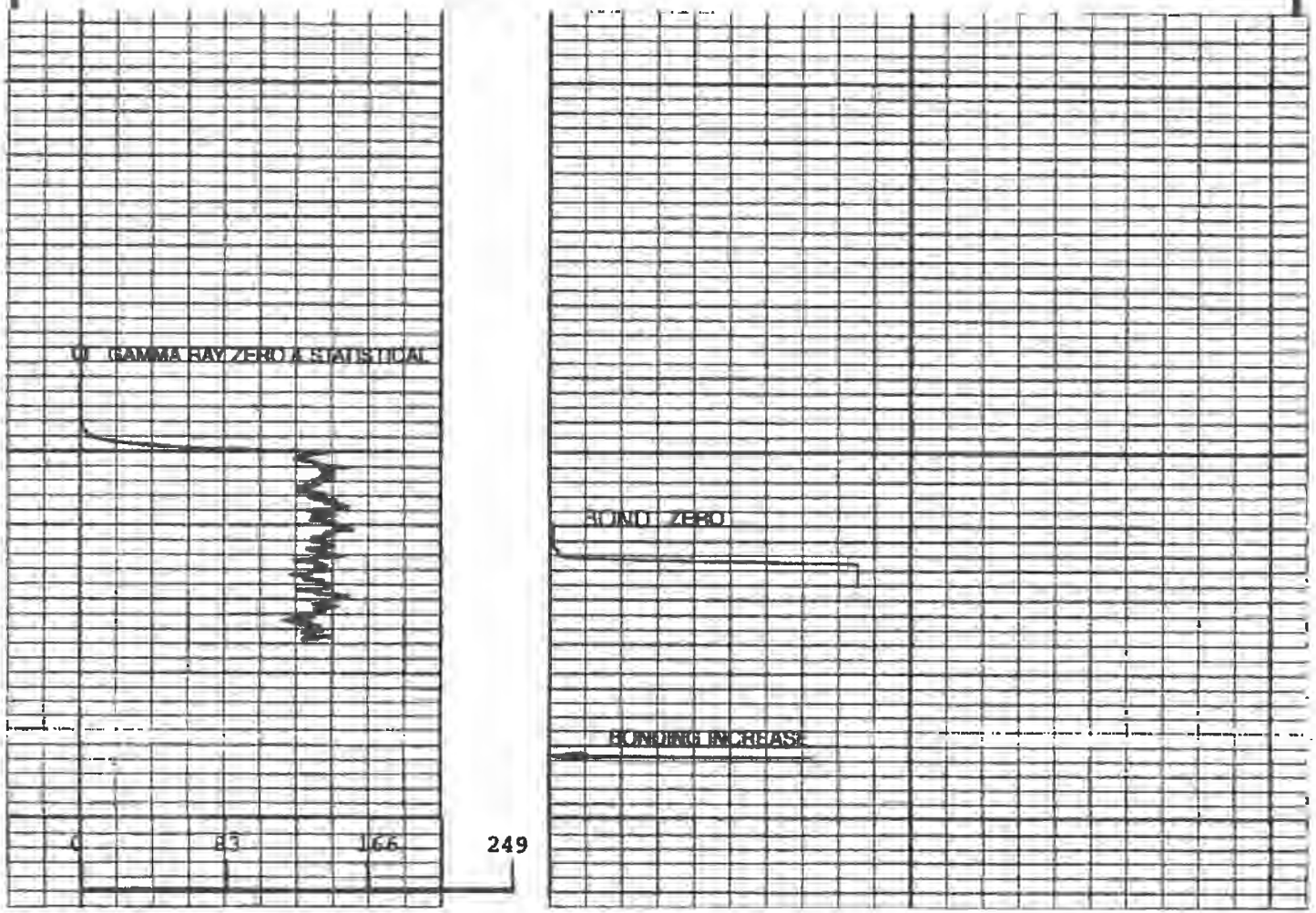
GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	
TOOL MODEL NO.	5549-0-0	LOG TYPE	
DIAM.	1.75"	TOOL MODEL NO.	
DETECT. MODEL NO.	SCINT.	DIAM.	
TYPE	4"	DETECT. MODEL NO.	
LENGTH		TYPE	
DIST. TO N. SOURCE		LENGTH	
GENERAL		SOURCE MODEL NO.	
		SERIAL NO.	

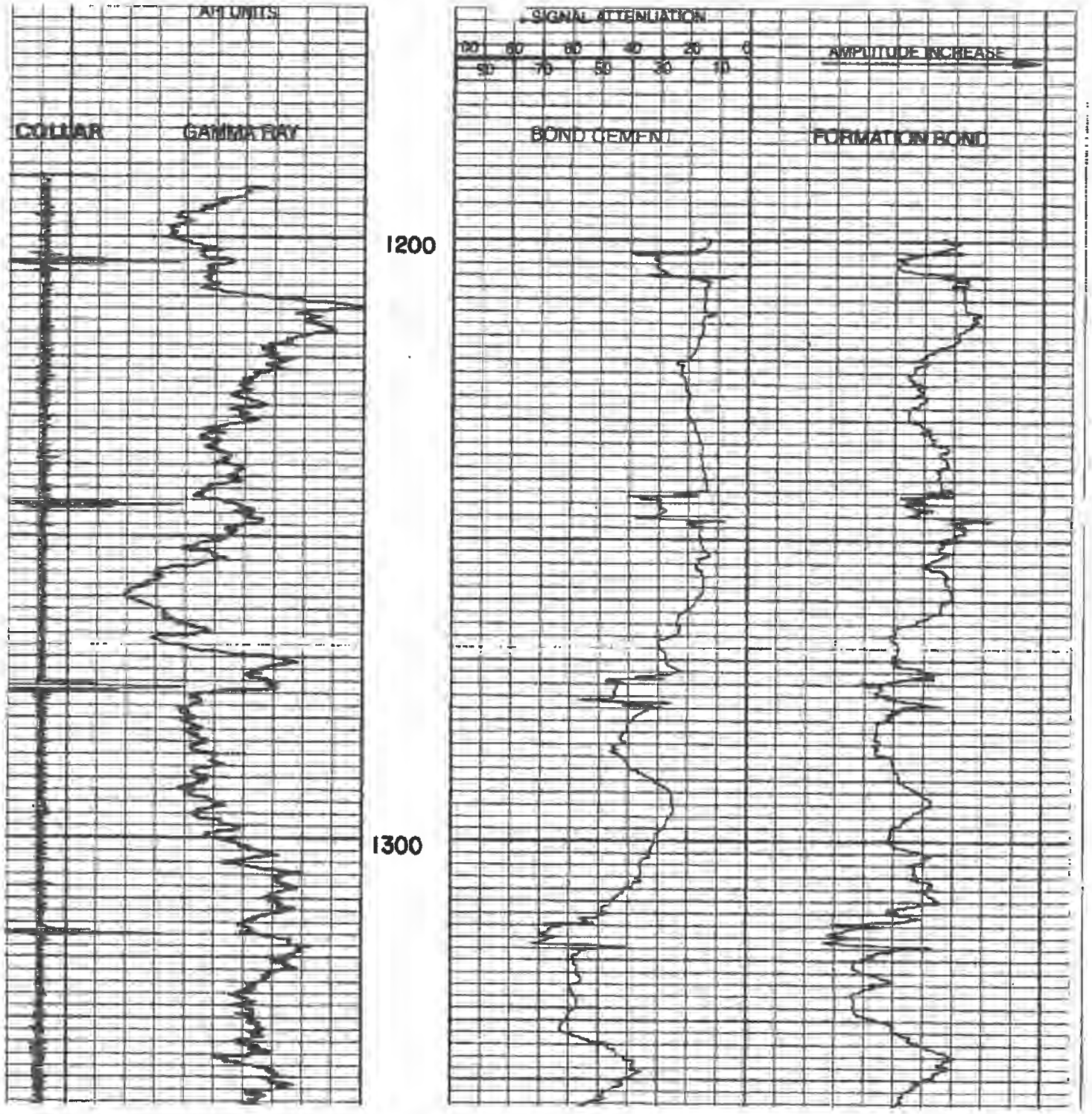
HOIST TRUCK NO.	1798	SPACING	
INST TRUCK NO.	1798	TYPE	
TOOL SERIAL NO.		STRENGTH	
LOG TICKET NO.	60086		

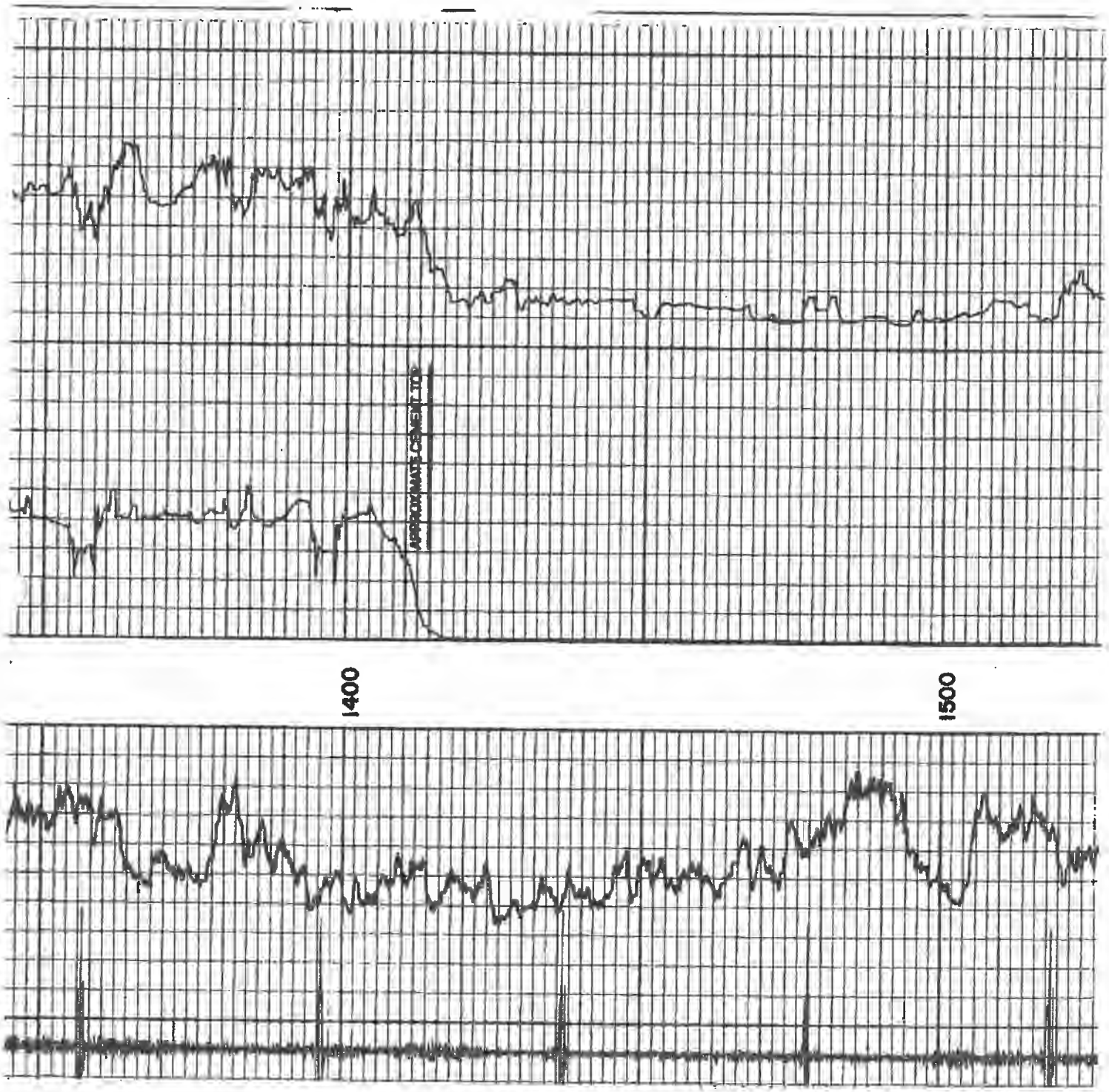
LOGGING DATA

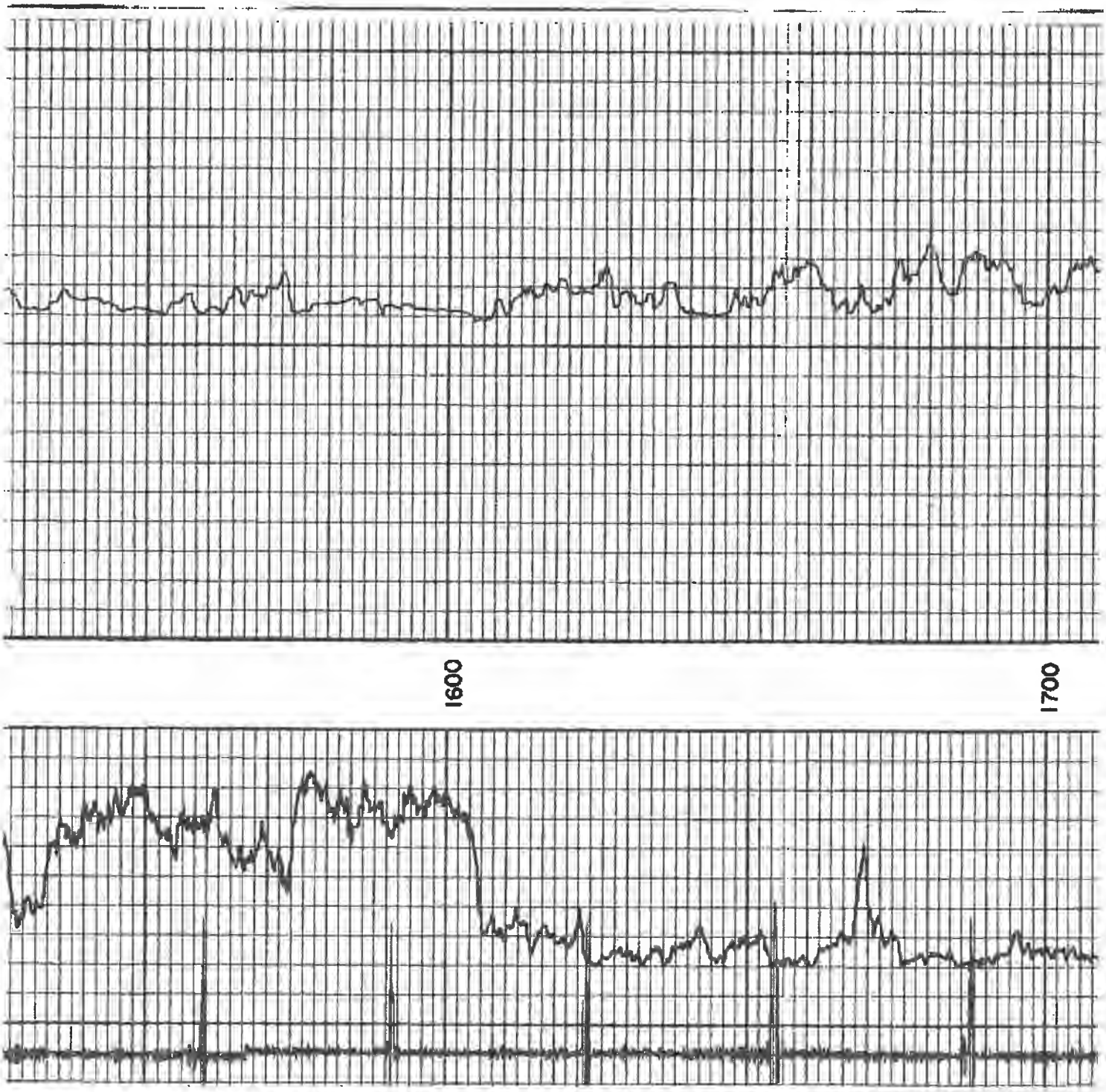
GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN.	T. C SEC.	SENS. SETTINGS	ZERO DIV. L. OR R.	API GR. UNITS PER LOG DIV.	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L. OR R.	API N. UNITS PER LOG DIV.
ONE	1200'	2059'	30'	2	R-3(X1) D-200 G-330	0	20.75				

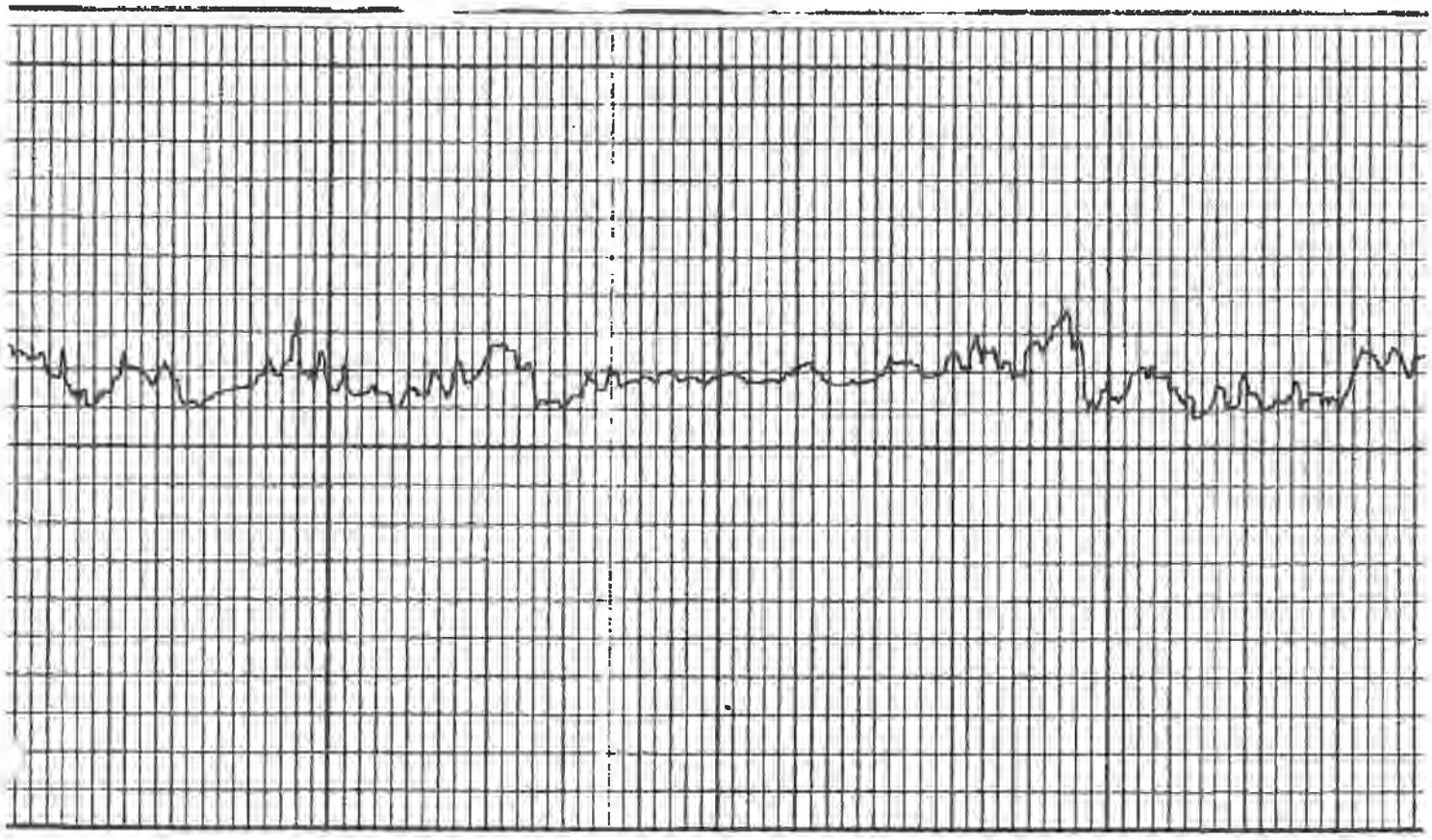
REMARKS: CORRELATED TO NL CDL 6-14-84.



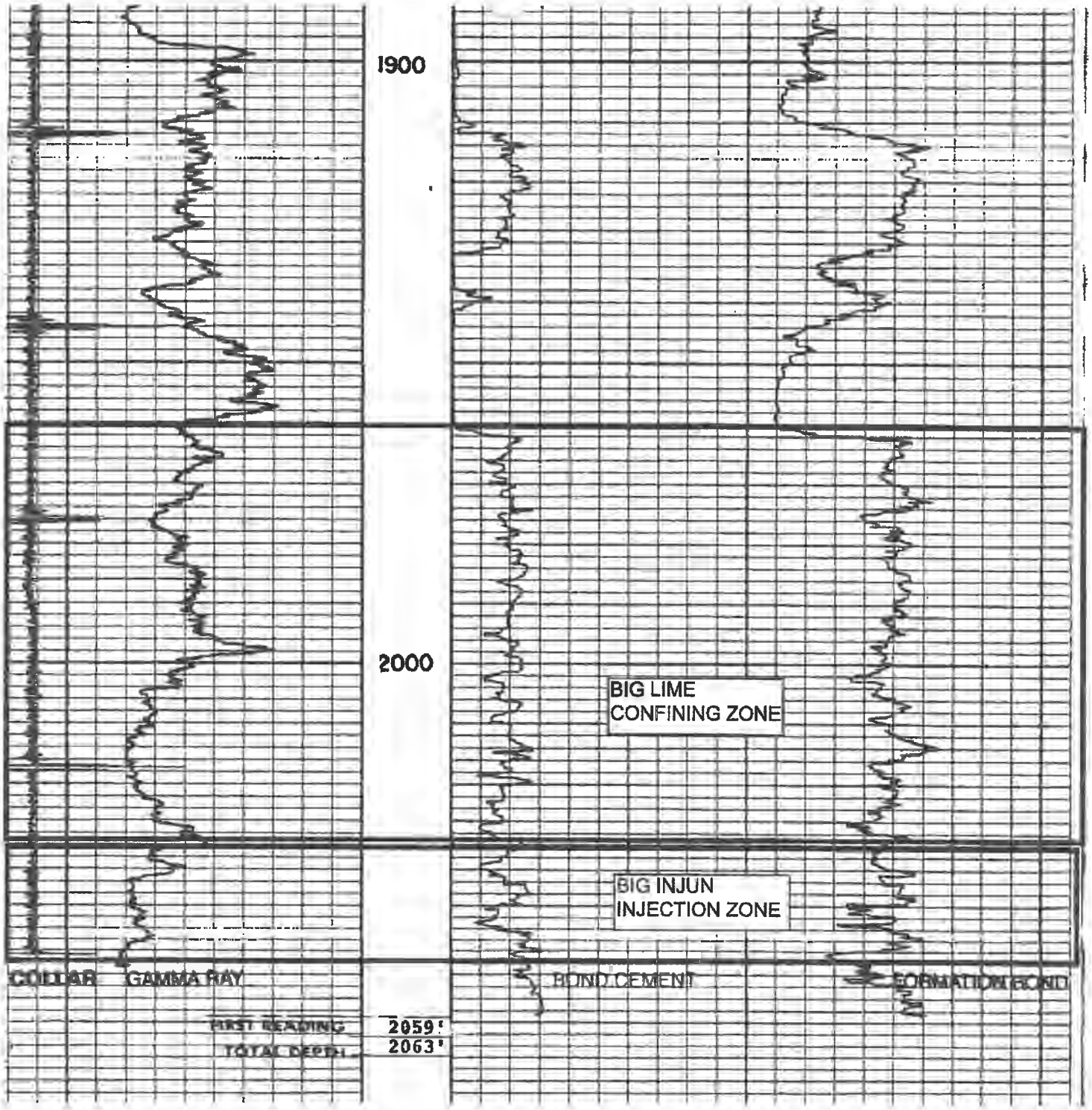

API UNITS
COLLAR
GAMMA RAY
1200
1300
SIGNAL ATTENUATION
100
80
60
40
20
0
90
70
50
30
10
AMPLITUDE INCREASE
BOND CEMENT
FORMATION BOND

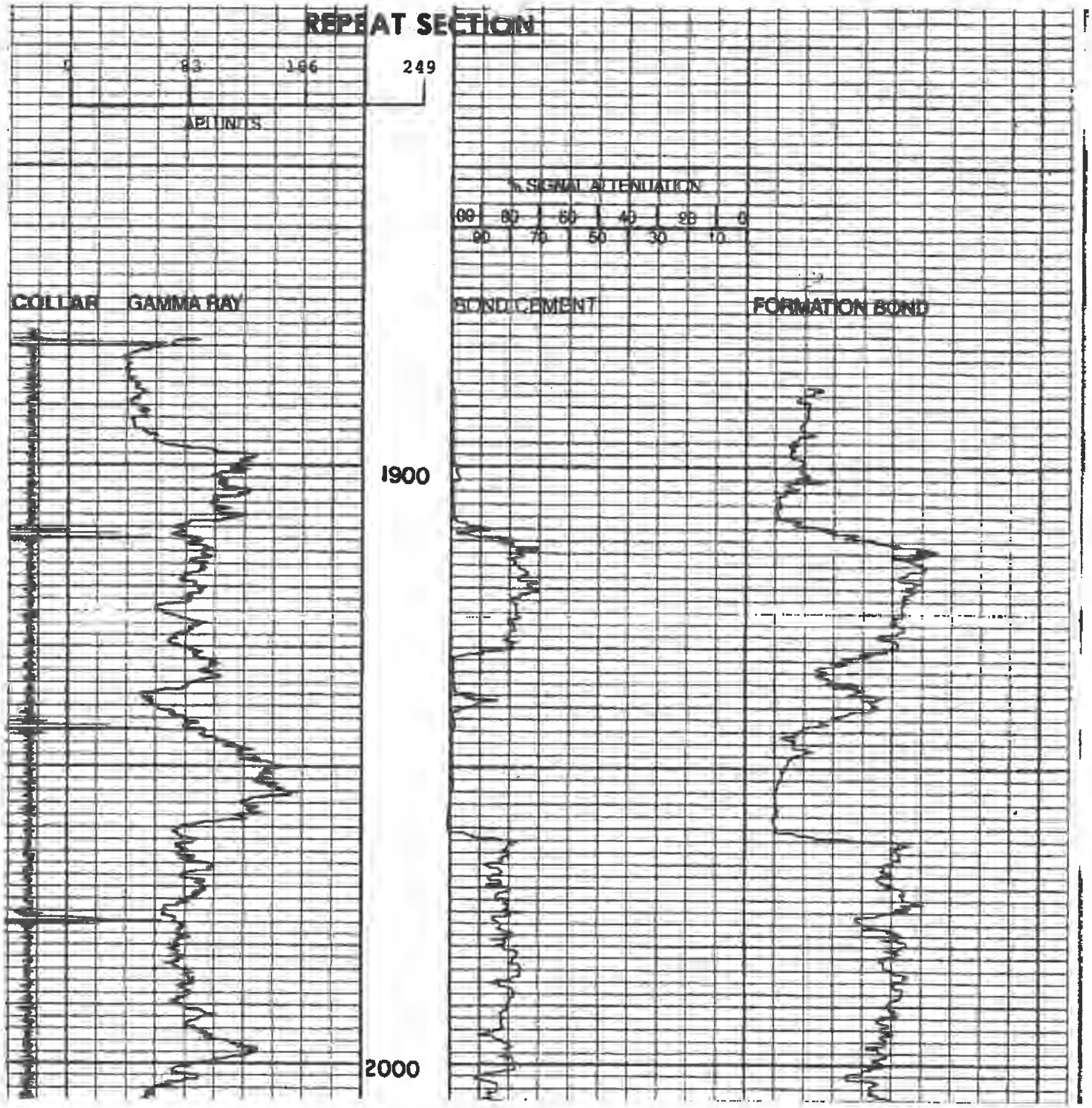

APPROXIMATE CEMENT TOP
1400
1500

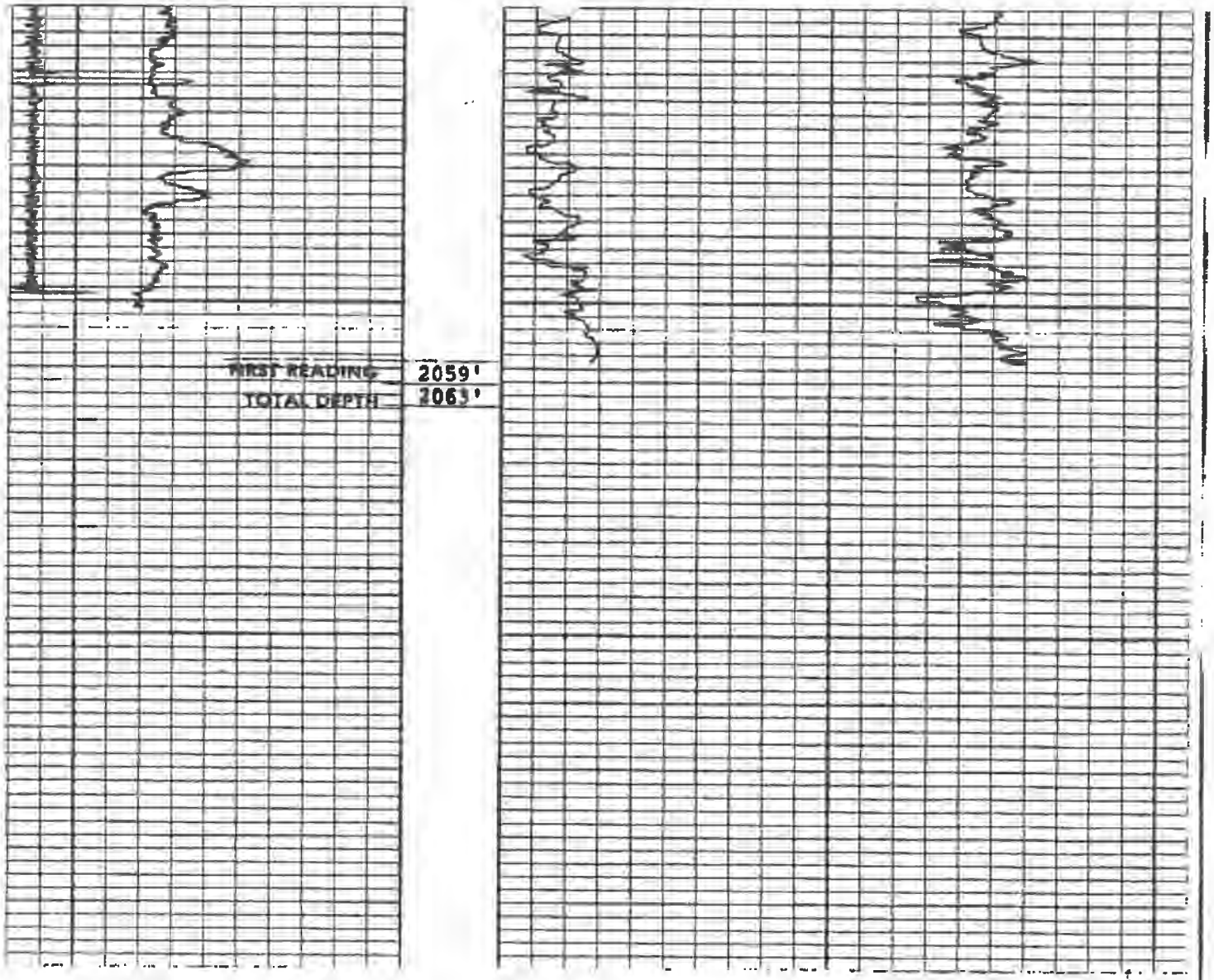

1600
1700



1800


1900
2000
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
COLLAR
GAMMA RAY
BOND CEMENT
FORMATION BOND
FIRST READING 2059'
TOTAL DEPTH 2063'


REPEAT SECTION
0
83
166
249
API UNITS
% SIGNAL ATTENUATION
100
80
60
40
20
0
90
70
50
30
10
COLLAR
GAMMA RAY
BOND CEMENT
FORMATION BOND
1900
2000


FIRST READING 2059'
TOTAL DEPTH 2063'

WVGES GEOLOGY UNDERLIES IT ALL "Pipeline"

Select County: (087) Roane
Enter Permit #: 3879
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3879

Report Time: Thursday, April 30, 2020 9:49:13 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703879	Roane	3879	Smithfield	Tariff	Otter	38.654577	-81.206085	482068.3	4278465.9

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703879	6/18/1984	Original Loc	Completed	Doyle D Jones	75					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703879	6/18/1984	-/-/-	1134	Ground Level	Tariff Timn	Big Injun / Price&eq	Big Injun Price&eq	Service Well	Unsuccessful	Water Injection	Rotary	Nat/Open H	2236		2236		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703879	6/18/1984	Water	Fresh Water	Vertical			72						0
4708703879	6/18/1984	Water	Salt Water	Vertical			1870						0
4708703879	6/18/1984	Horizon	Injection	Vertical	2140	Big Injun Price&eq	2165	Big Injun Price&eq	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703879	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703879	Pennzoil Company	1984	1,030	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703879	Ground Resources, LLC	2017	0												
4708703879	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703879	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703879	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703879	Original Loc	Little Lime	Well Record	1988	Reasonable	36	Reasonable	1134	Ground Level
4708703879	Original Loc	Blue Monday	Well Record	2024	Reasonable	4	Reasonable	1134	Ground Level
4708703879	Original Loc	Pencil Cave	Well Record	2028	Reasonable	20	Reasonable	1134	Ground Level
4708703879	Original Loc	Greenbrier Group	Well Record	2048	Reasonable	115	Reasonable	1134	Ground Level
4708703879	Original Loc	Big Lime	Well Record	2048	Reasonable	115	Reasonable	1134	Ground Level
4708703879	Original Loc	Big Injun Price&eq	Well Record	2163	Reasonable	17	Qstnble Pick	1134	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_
4708703879	804	2234		G D C *	Y	N	804	2234	804	2234									804	2234	N	Y	N						

Comment: *logs: dallper, CCL, cement bond, formation bond

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Injection 3879

INJECTOR 3079

FILENAME
4708703879gbo.tif
4708703879gdc.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3879

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2163 Feet (top) 2180 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2236 Feet

3) Approximate water strata depths: Fresh 72' - 85' Feet Salt 1870' - 1988' Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3879

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 3/4"		H-40	20#	481'	481'	125sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2165'	2165'	60sks
Tubing	NONE						
Liners							

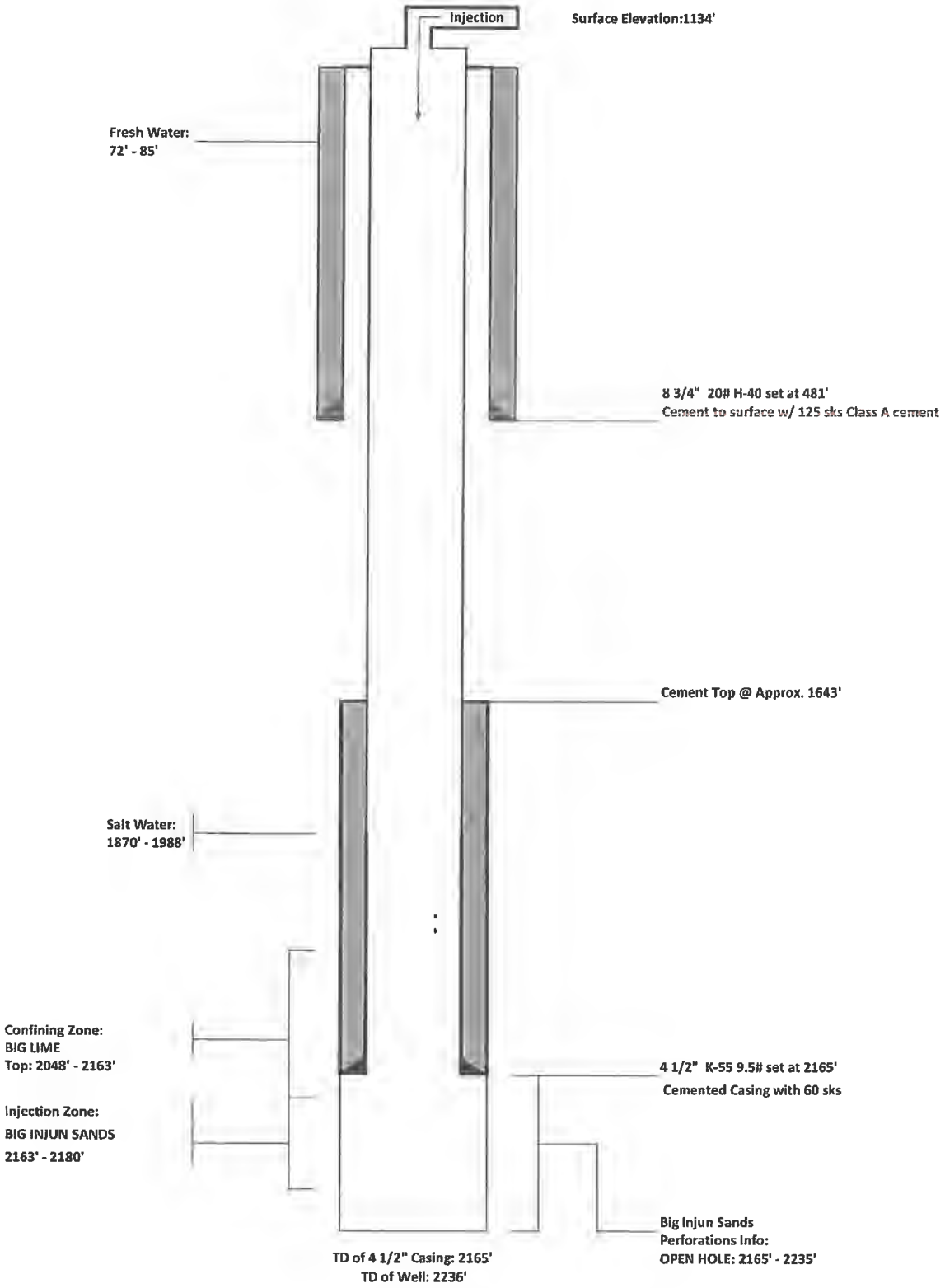
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3879

WELL SCHEMATIC

TALLMAN 75
API 47-087-03879



INJECTOR 3879

IV-35
(Rev 8-81)

Date December 4, 1984
Operator's
Well No. 75
Farm P. A. Tallman
API No. 47 - 087 - 3879-Li

State of West Virginia
Department of Mines
Oil and Gas Division

RECEIVED
DEC 7 - 1984
OIL & GAS DIVISION
DEPT. OF MINES

WELL OPERATOR'S REPORT OF DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil ___ / Gas ___ / Liquid Injection X / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow ___ /)

LOCATION: Elevation: 1134.1 Watershed Sycamore Fork
District: Smithfield County Roane Quadrangle Tariff 7.5

COMPANY Pennzoil Company
ADDRESS P.O. Box 1588, Parkersburg, WV 26101
DESIGNATED AGENT James A. Crews
ADDRESS P. O. Box 1588, Parkersburg, WV 26101
SURFACE OWNER Doyle D. Jones
ADDRESS P. O. Box 926, Spencer, WV 25257
MINERAL RIGHTS OWNER Anna Lee Collins
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Homer Dougherty ADDRESS Linden Rt., Box 3-A Looneyville WV
PERMIT ISSUED 5-3-84
DRILLING COMMENCED 6-15-84
DRILLING COMPLETED 6-18-84
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8x5/8 8-3/4	481	481	125 sks
7			
5 1/2			
4 1/2	2165	2165	60 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 2163-2180 feet
Depth of completed well 2236 feet Rotary X / Cable Tools ___
Water strata depth: Fresh 72-85 feet; Salt 1870-1988 feet
Coal seam depths: ___ Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation Water Injection Well Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion--)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

(Continue on reverse side)

DEC 26 1984

FORM IV-35
(REVERSE)

INJECTOR 3879

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Shale & Siltstone	0	790	
Sand	790	920	
Shale	920	938	
Sand,Shale,Siltstone	938	1641	
Salt Sand	1641	1988	
Little Lime	1988	2024	
Blue Monday	2024	2028	
Pencil Cave	2028	2048	
Big Lime	2048	2163	
~~Big Injun~~	2163	2180	
Pocono Shale	2180	2236	
Total Depth		2236	

(Attach separate sheets as necessary)

Pennzoil Company
Well Operator

By: Curtis A. Lucas

Date: 12-9-84

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."

INJECTOR 3879

FORM IV-3(B)
(Obverse)

FILE COPY

1) Date: April 12, 19 84
2) Operator's Well No. P. A. Tallman #75
3) SIC Code
4 API Well NO. 47 - 087 - 3879-LI
State County Permit
5. UIC Permit No.

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
OFFICE OF OIL AND GAS, DEPARTMENT OF MINES, AND FOR
(CLASS II WELLS ONLY)
THE DIVISION OF WATER RESOURCES, DEPARTMENT OF NATURAL RESOURCES

RECEIVED
APR 17 1984
OIL & GAS DIVISION
DEPT. OF MINES

6) WELL TYPE: Liquid injection X / Gas injection (not storage) / Waste disposal /
7) LOCATION: Elevation: 1134.13 Watershed: Sycamore Fork
District: Smithfield County: Roane Quadrangle: Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, WV 26101
9) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Homer Dougherty
Address Linden Rt., Box 3-A
Looneyville, WV
11) DRILLING CONTRACTOR:
Name
Address
12) PROPOSED WELL WORK: Drill X / Drill deeper / Redrill / Stimulate X /
Plug off old formation / Perforate new formation / Convert /
Other physical change in well (specify)
13) GEOLOGICAL TARGET FORMATION, Big Injun Depth 2140 feet(top) to 2165 feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 2220 ft.
15) Approximate water strata depths; Fresh, 434 feet; salt, feet.
16) Approximate coal seam depths:
17) Is coal being mined in the area? Yes / No X /
18) Virgin reservoir pressure in target formation 80 psig. Source Estimated
19) Estimated reservoir fracture pressure 2655 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 25 Bottom hole pressure 2000
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:
Fresh Water, Bactericides
22) FILTERS (IF ANY): Coal Filters
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	7				X	470	470	Cement to surface	
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2218	2218	Over Lower Salt Sand	Depths set
Tubing									
Liners									Perforations
									Top Bottom

25) APPLICANT'S OPERATING RIGHTS were acquired from P. A. Tallman, et ux
by deed / lease X / other contract / dated May 21, 19 06, of record in the
Roane County Clerk's office in Lease Book 12 at page 26

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

3879
Cement Bond
Gamma Ray
Log

NL McCullough

BOND CEMENT AND/OR SONIC SEISMOGRAM LOG
GAMMA RAY

FILING NO.

PERMIT #
47-087-3879LI

COMPANY PENNZOIL COMPANY

WELL P. A. TALLMAN #75

FIELD SMITHFIELD DISTRICT

COUNTY ROANE STATE WV

LOCATION
SYCAMORE FORK
QUAD.: TARIFF

SEC. TWP. RGE.

OTHER SERVICES:

ELEVATIONS:
KB 1144.1'
DF -
GL 1134.1'

PERMANENT DATUM	GROUND LEVEL ELEV. 1134.1'
LOG MEASURED FROM	K.B. 10' ABOVE P.D.
DRILLING MEASURED FROM	K.B.
DATE	9-24-84
RUN NO.	ONE
TYPE LOG	GAMMA RAY/BOND CEMENT
DEPTH—DRILLER	2234'
DEPTH—LOGGER	2183'
BOTTOM LOGGED INTERVAL	2179'
TOP LOGGED INTERVAL	1500'
TYPE FLUID IN HOLE	WATER
SALINITY PPM CL.	-
DENSITY LB./GAL.	-
LEVEL	200'
MAX. REC. TEMP. DEG. F.	-
OPR. RIG TIME	1 HOUR
RECORDED BY	T. LAUGHERY
WITNESSED BY	MR. SMITH
DISTRICT:	CHARLESTON

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
				7"	17#	SURF.	478'
				4½"		SURF.	T.D.

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-33-A

FOLD HERE

LOGGING AND EQUIPMENT DATA (BOND CEMENT LOG)

DATE RECORDED	9-24-84	TOOL MODEL NO. 5549-0-0
TIME STARTED	12:30 PM	DIAMETER 2"
TIME FINISHED	1:30 PM	LENGTH 4'
LOGGED INTERVAL	1500'-2179'	
LOGGED CEMENT TOP	1643'	

CEMENTING DATA

	1	2	SQUEEZE NO. 1	SQUEEZE NO. 2	SQUEEZE NO. 3
DATE AND HOUR SET					
SETTING TIME (HRS.)					
TYPE CEMENT					
SACKS USED					
PRECEDING FLUID					

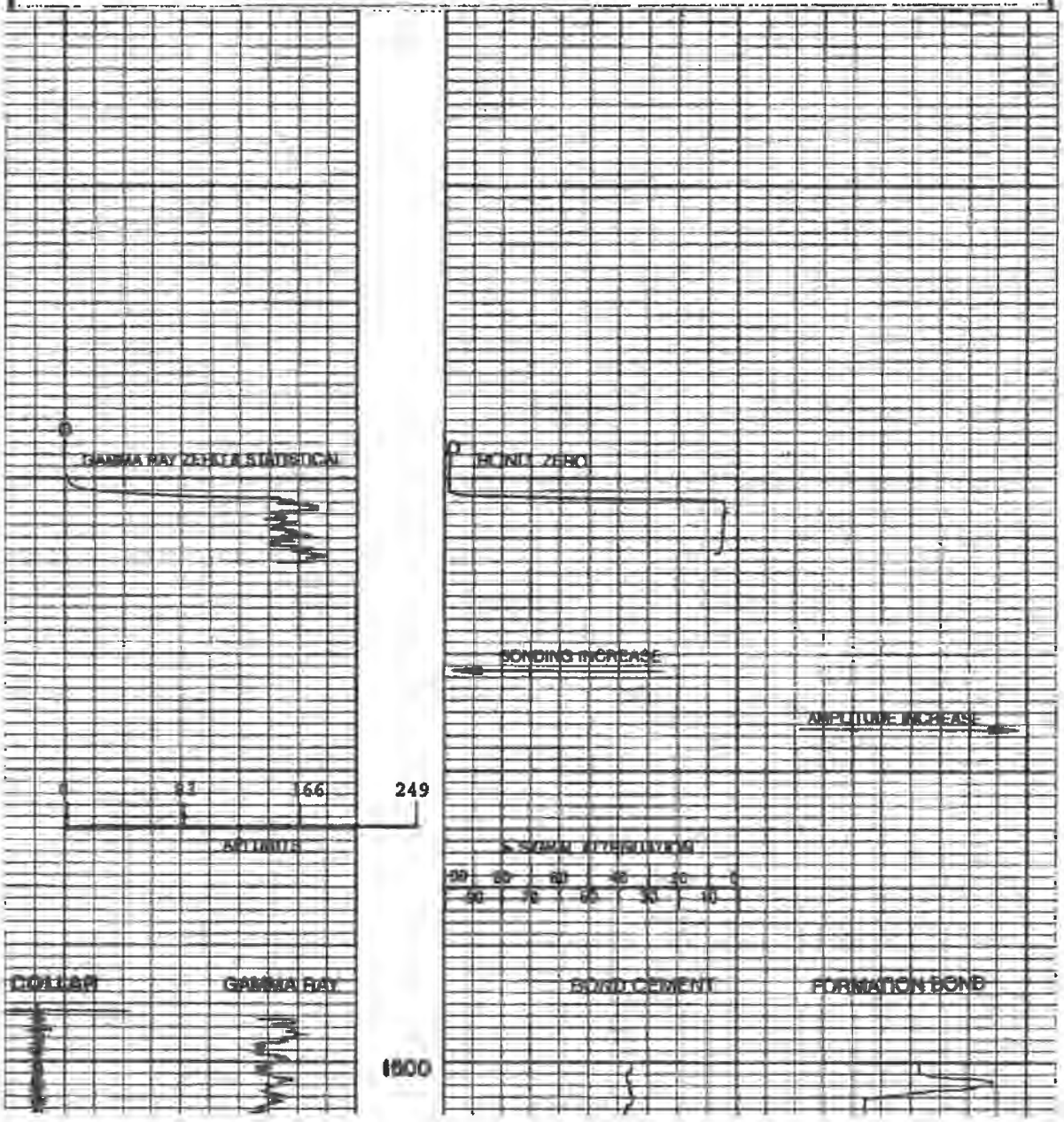
% ADDITIVE					
% RETARDER					
SLURRY WEIGHT					
BREAKDOWN PRESSURE					
SURFACE MAX. PRESS.					
BOTTOM MAX. PRESS.					

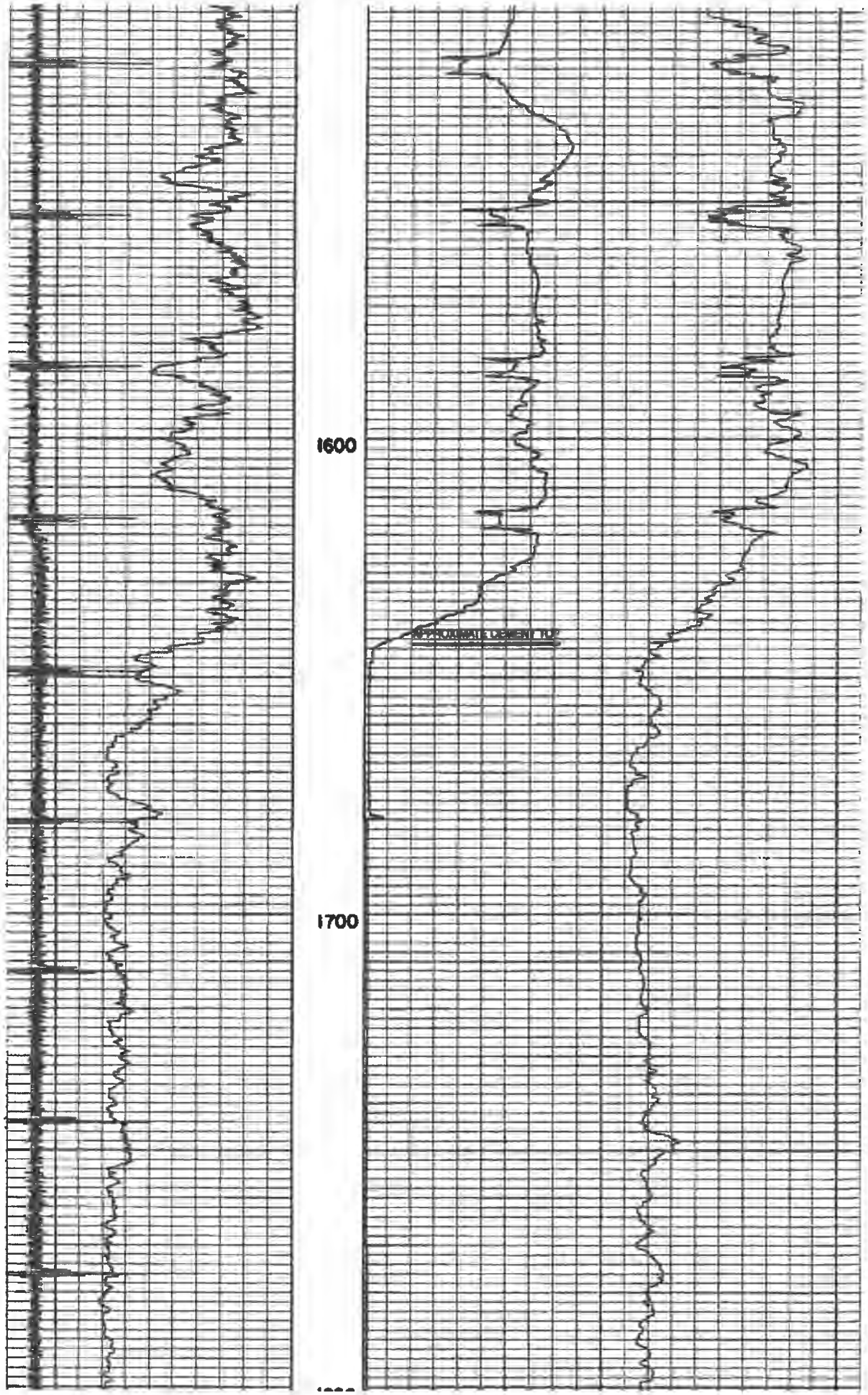
GAMMA RAY				NEUTRON			
RUN NO.	ONE			RUN NO.			
TOOL MODEL NO.	5549-D-0			LOG TYPE			
DIAM.	1.75"			TOOL MODEL NO.			
DETECT. MODEL NO.				DIAM.			
TYPE	SCINT.			DETECT. MODEL NO.			
LENGTH	4"			TYPE			
DIST. TO N. SOURCE				LENGTH			
				SOURCE MODEL NO.			
GENERAL				SERIAL NO.			
HOIST TRUCK NO.	1798			SPACING			
INST. TRUCK NO.	1798			TYPE			
TOOL SERIAL NO.				STRENGTH			
LOG TICKET NO.	60087						

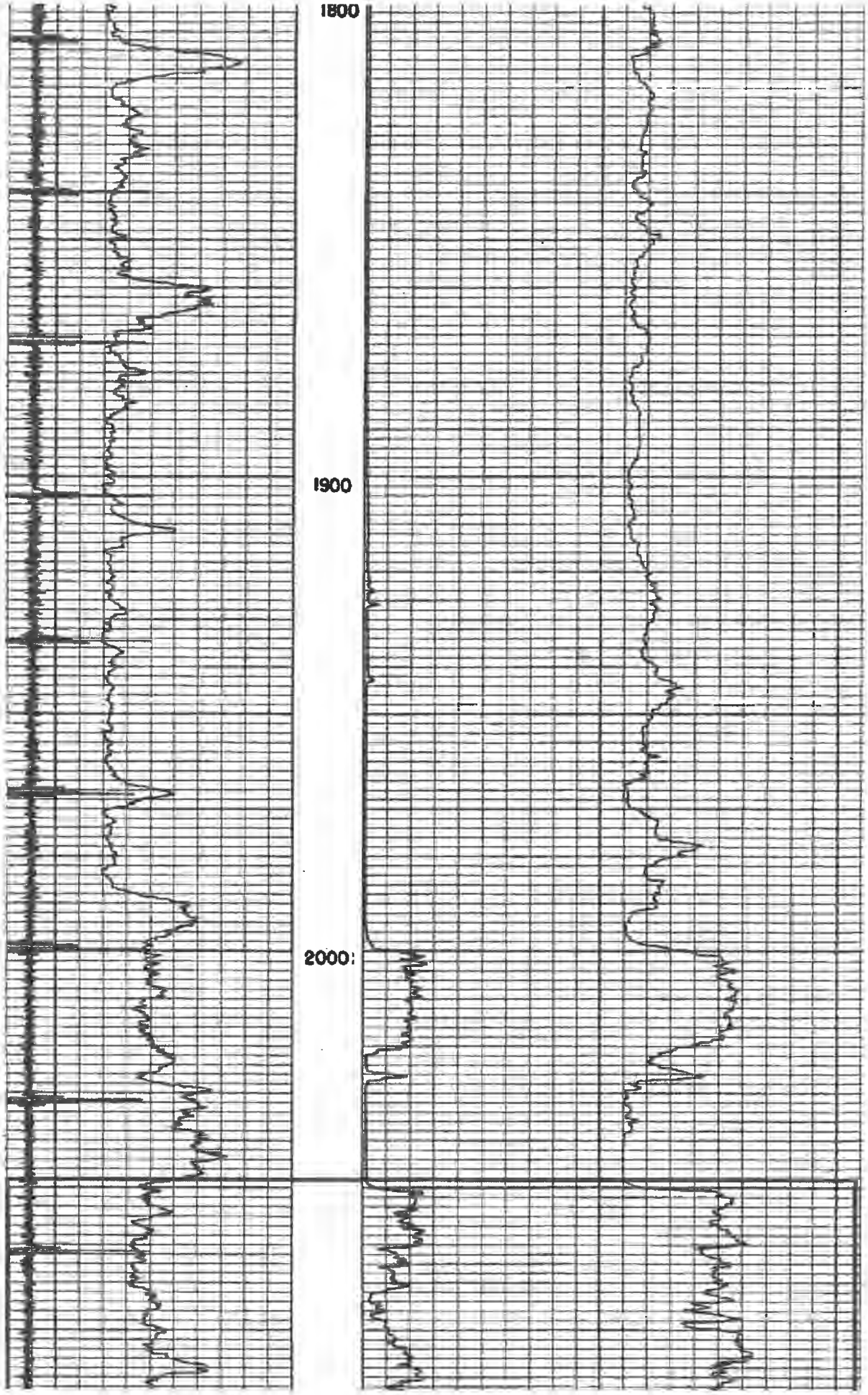
LOGGING DATA

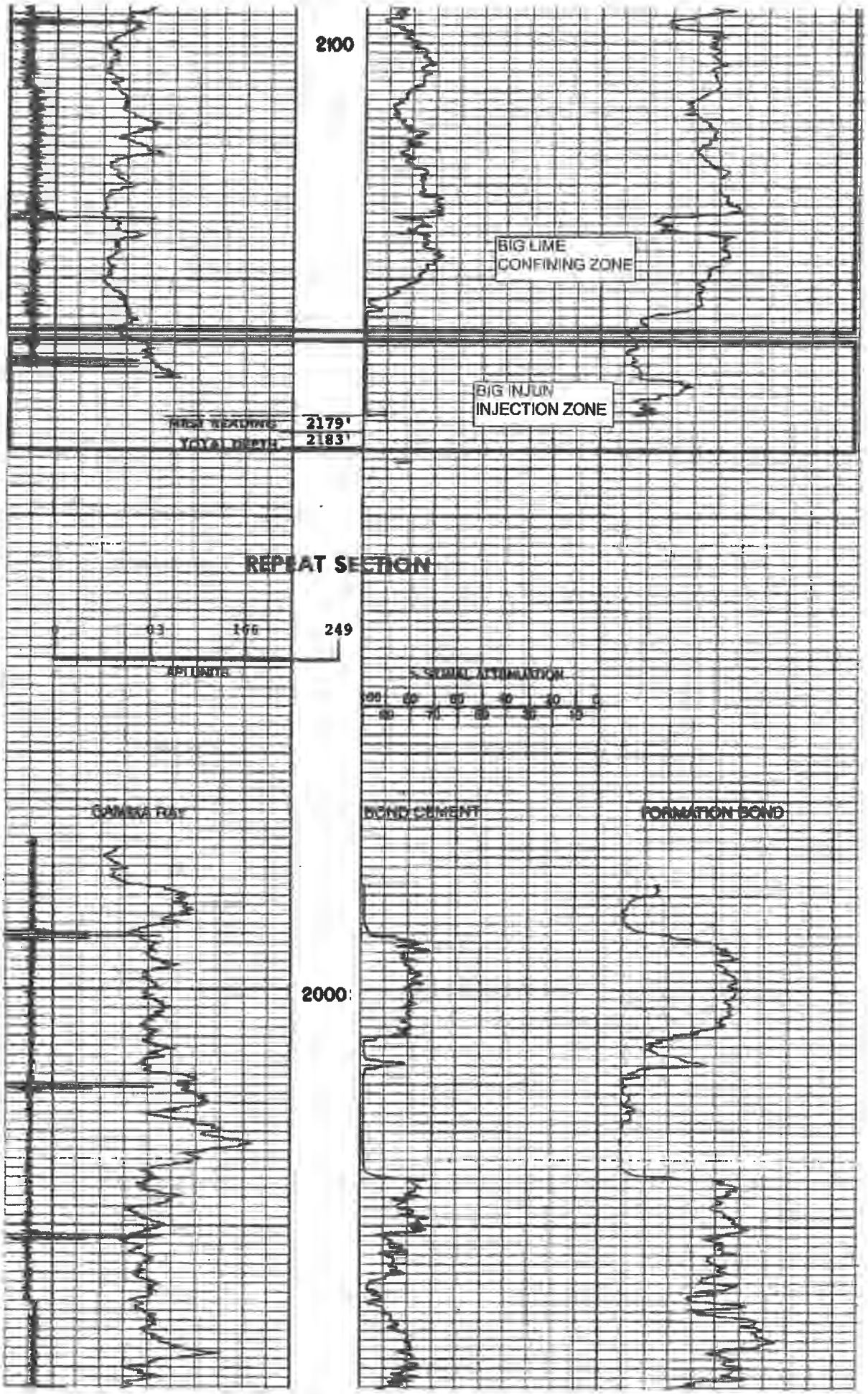
GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT./MIN.	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L. or R.	API GR. UNITS PER LOG DIV.	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L. or R	API N. UNITS PER LOG DIV.
ONE	1500'	2179'	32'	2	R-3(X1)	0	20.75				
					D-200						
					G-330						

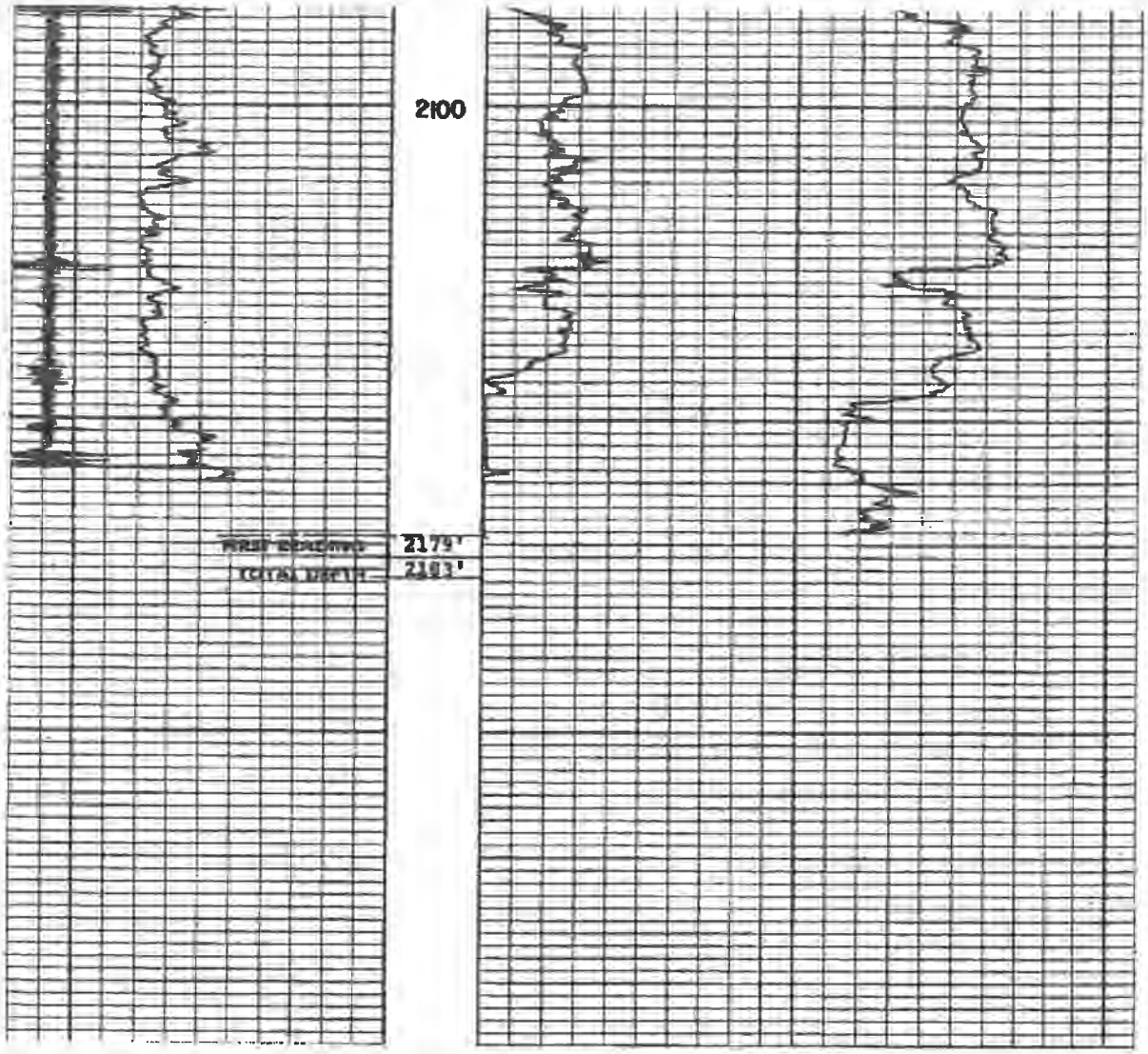
REMARKS: CORRELATED TO NL CDL 6-18-84.




1600
1700
APPROXIMATE CEMENT TOP


1800
1900
2000


2100
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
HIGH READING 2179'
TOTAL DEPTH 2183'
REPEAT SECTION
0
83
166
249
API UNITS
% SIGNAL ATTENUATION
100
90
80
70
60
50
40
30
20
10
0
GAMMA RAY
BOND CEMENT
FORMATION BOND
2000


2100
2179'
2183'

3879

CDL

COMPENSATED DENSITY LOG

RDA 3879

3879

BASIN SURVEYS

COMPANY: PENNZOIL COMPANY
WELL: P.A. TALLMAN 75
FIELD: SMITHFIELD DISTRICT
COUNTY: ROANE STATE: WV
PERMIT #: 47-087-3879LI
DATE: 10 JUNE 84

LOCATION
SYCAMORE FORK
TURNOFF GUAR.
SEC: MAP 90. TWP: [illegible] RGE: MAP 72

OTHER SERVICES
NONE

PERM. DATUM: GROUND LEVEL
LOG MF: KELLY BUSHING
DRILLING MF: KELLY BUSHING

ELEVATION
KB: 1144.1
DF: -
GL: 1134.1

[illegible]
TYPE FLUID IN HOLE [illegible]
[illegible]
DENSITY [illegible]
LEVEL FULL
MAX REC TEMP DEG F N/A
RECORDED BY CRITES. [illegible]
WITNESSED BY MR. SMITH

RUN NO.	BOREHOLE RECORD			CASING RECORD	
ONE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

RUN NO.	BOREHOLE RECORD				
ONE	444	312	[illegible]	44	

BORE HOLE RECORD

NUMBER	BIT	FROM	TO
ONE	6.25"	4"9	[illegible]

EQUIPMENT DATA

[illegible]	
PANEL NUMBER	[illegible]
LOGGING UNIT	[illegible]
LOCATION	[illegible]

CASING RECORD

NUMBER	SIZE	WGT	FROM	TO
ONE	7"O.D.	017	SURFACE	478

LOGGING DATA

RUN NUMBER	DEPTH FROM	DEPTH TO	SPEED FT/MIN	[illegible]
ONE	2514	SURFACE	30	[illegible]

REMARKS:

OPERATING RIG TIME: 2.25 HRS

REPEAT ONE 2.68 GM/CC
REPEAT TWO 2.66 GM/CC
MAIN LOG 2.68 GM/CC

Density Correction

0 .2

Caliper

6 INCHES 16

Density Porosity

PERCENTAGE

30 20 10 0 -10

Gamma Ray

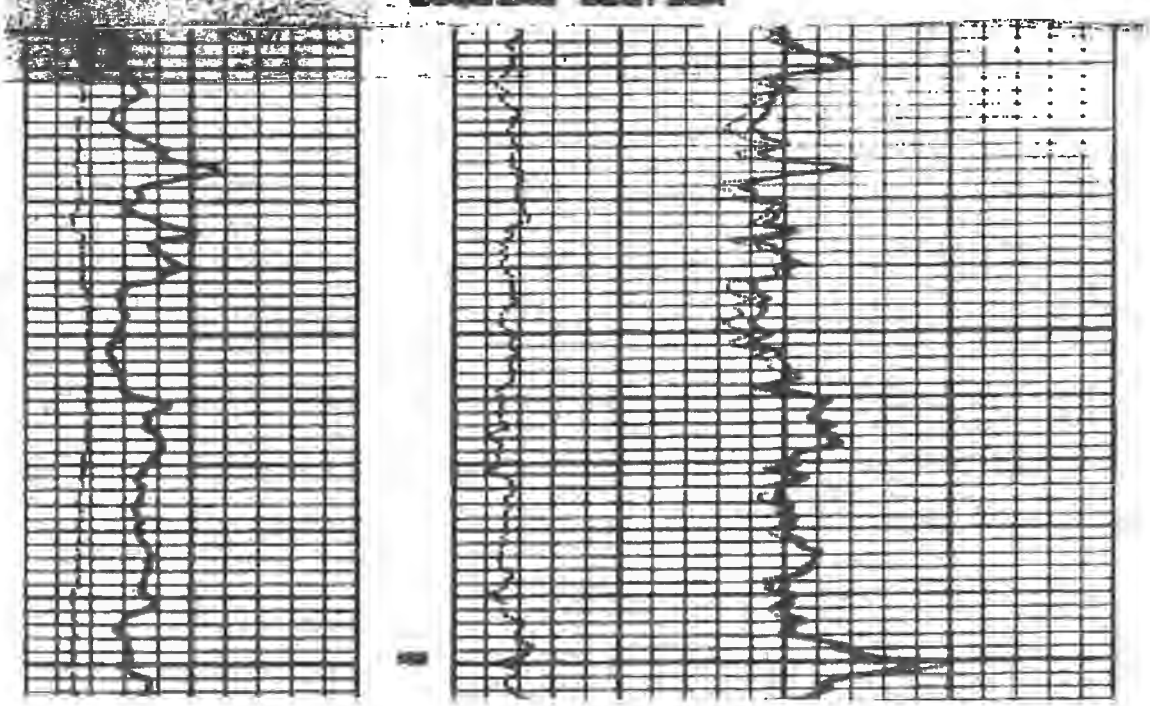
0 API 200

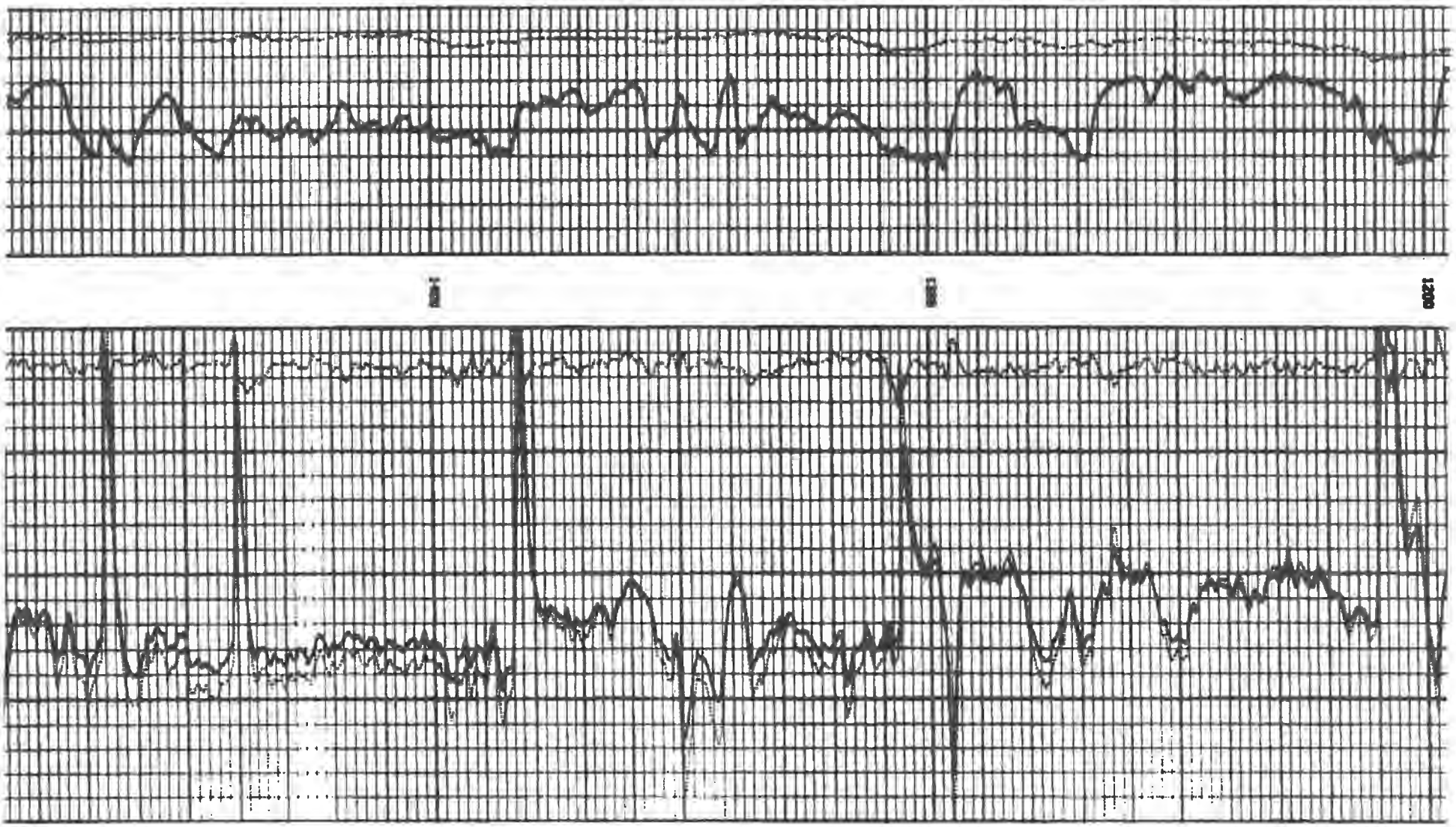
Bulk Density

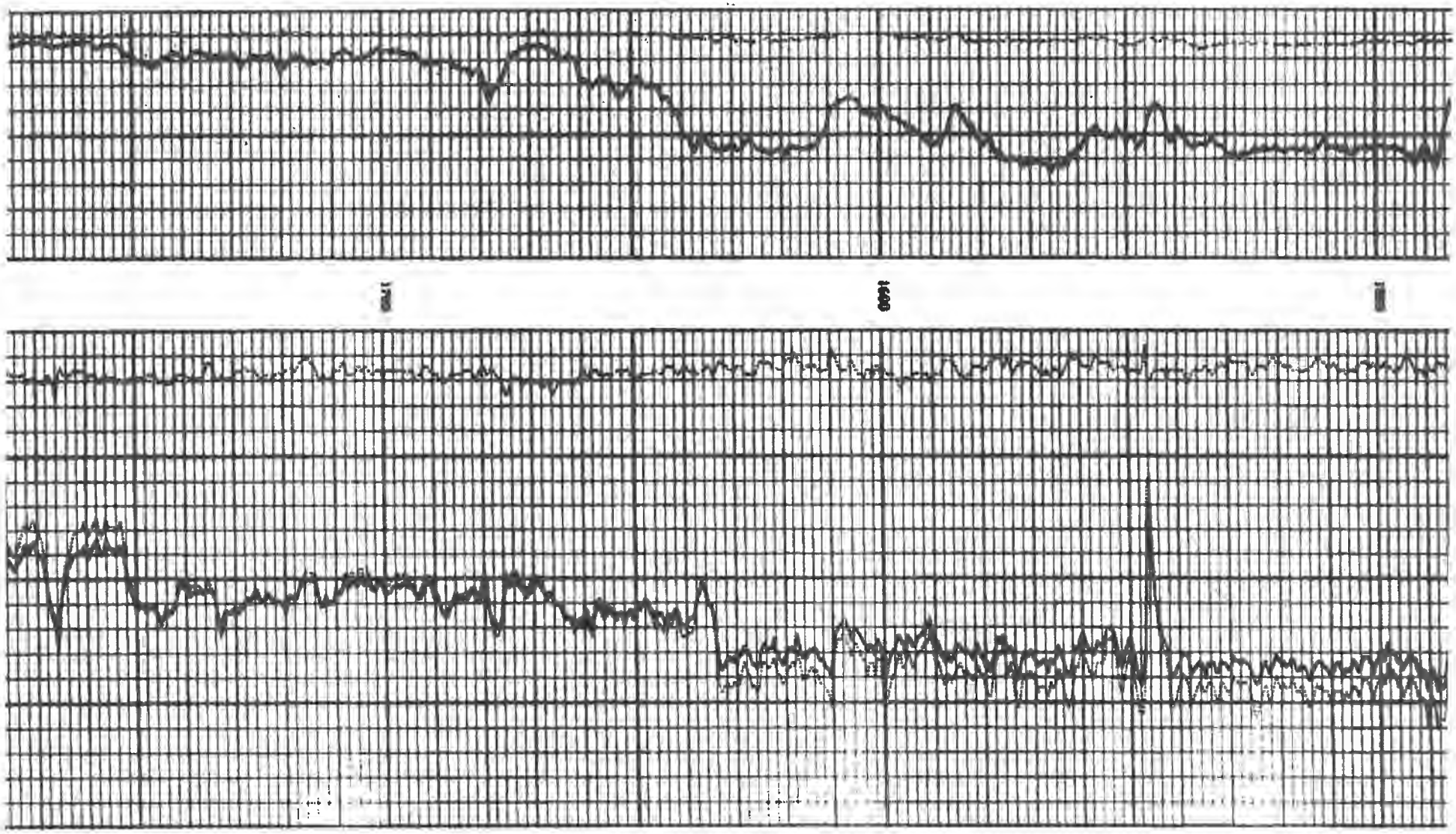
GRAMS/CC

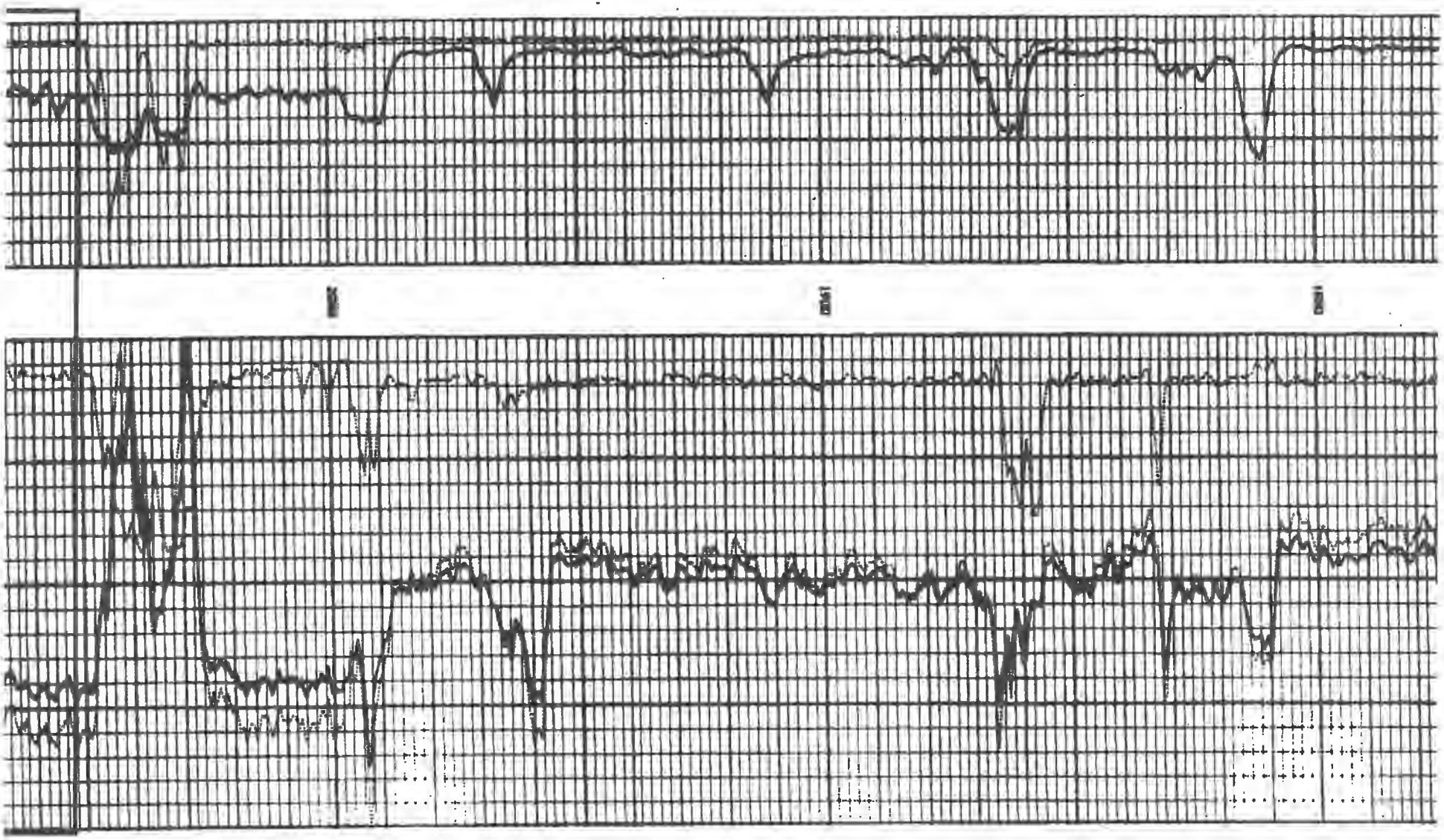
2.0 2.5 3.0

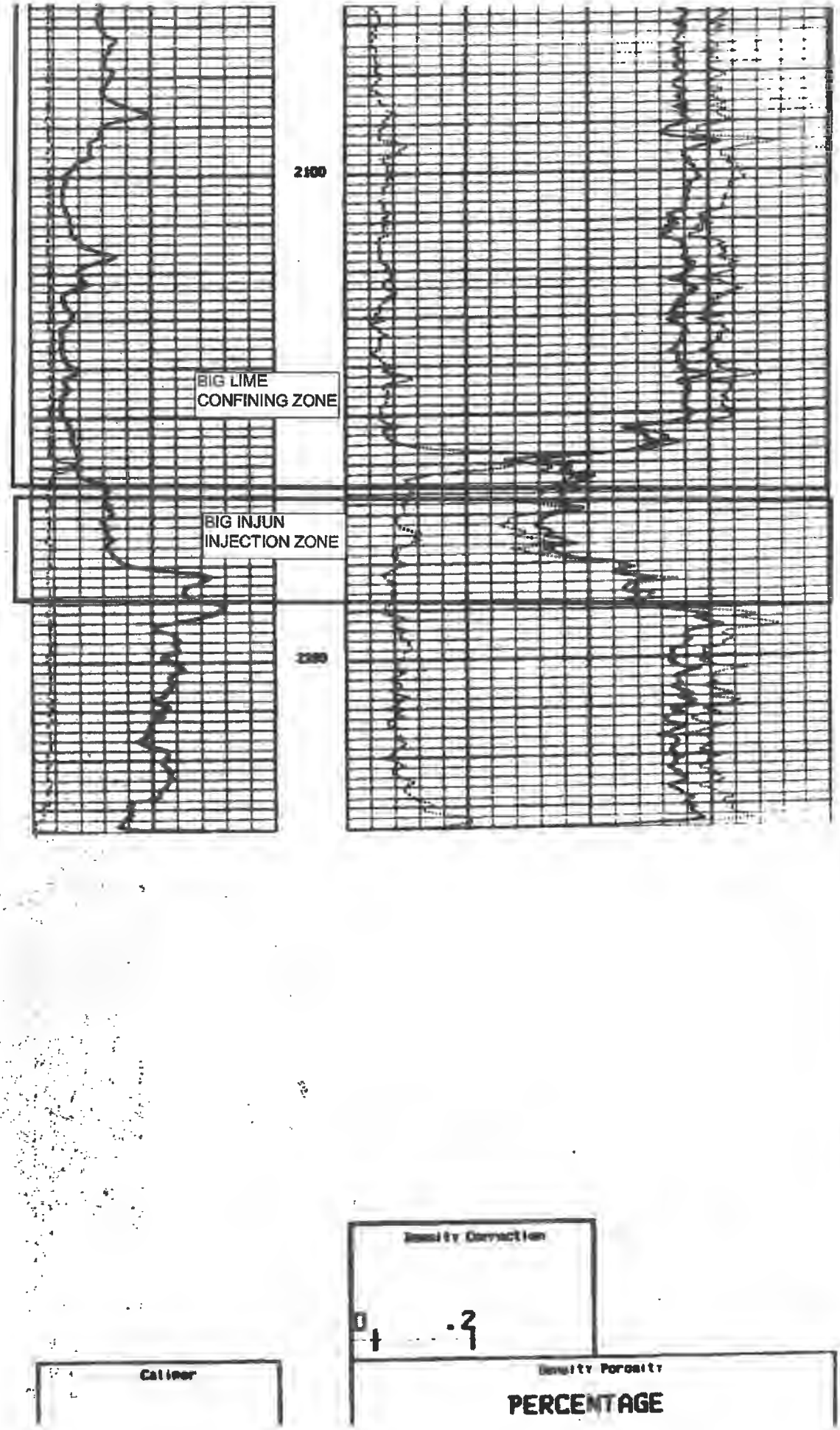
LOGGING SECTION

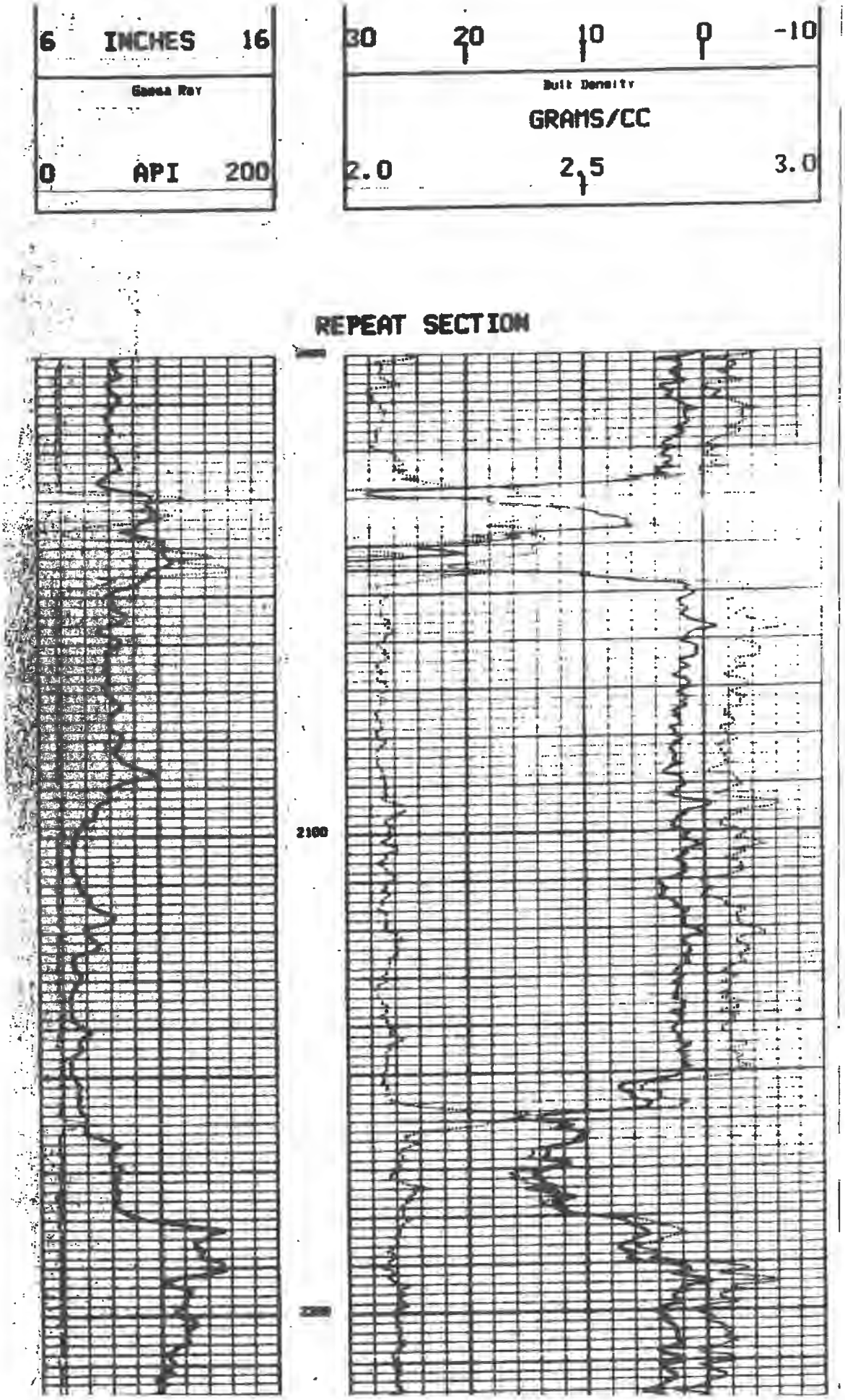


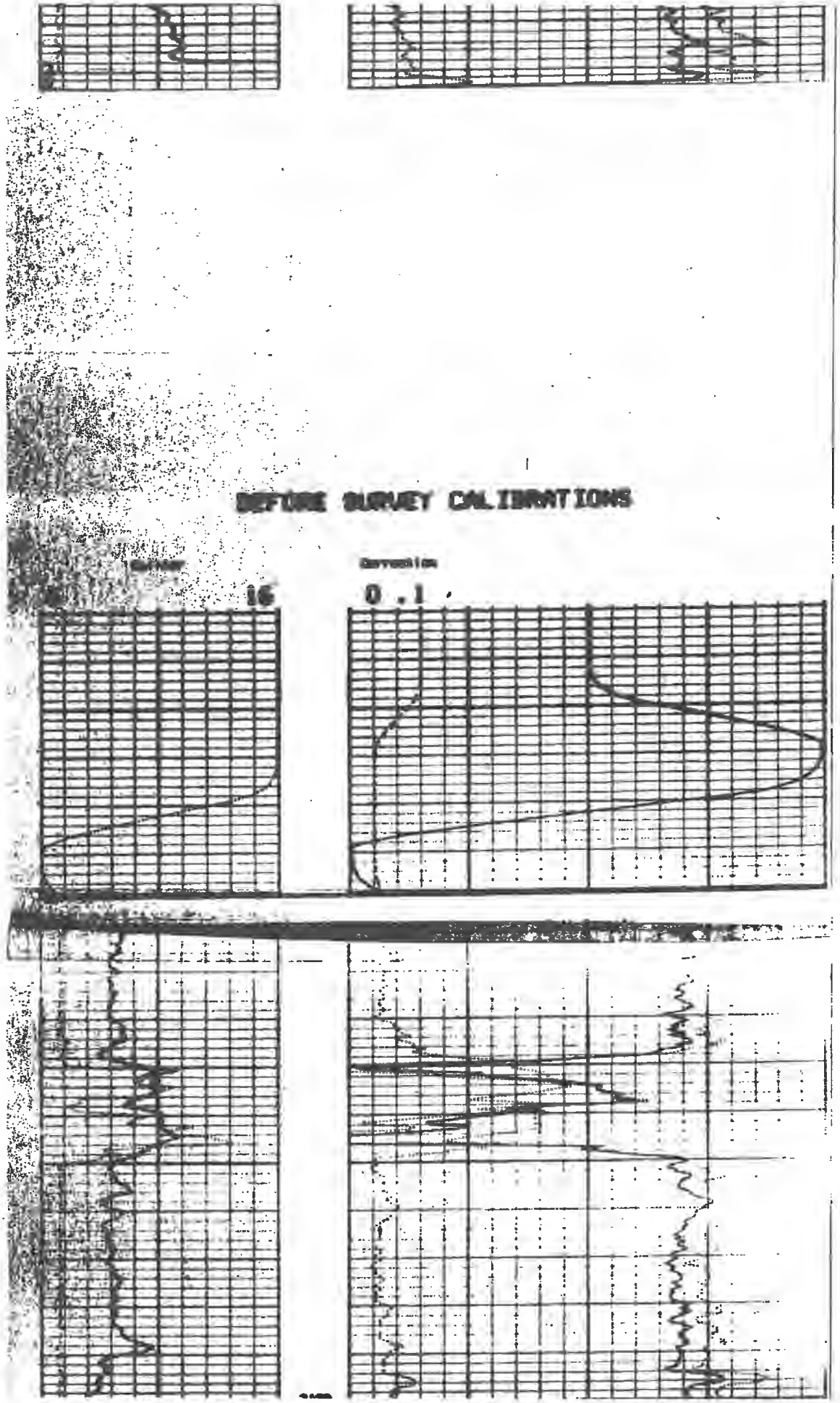

A
B
1200

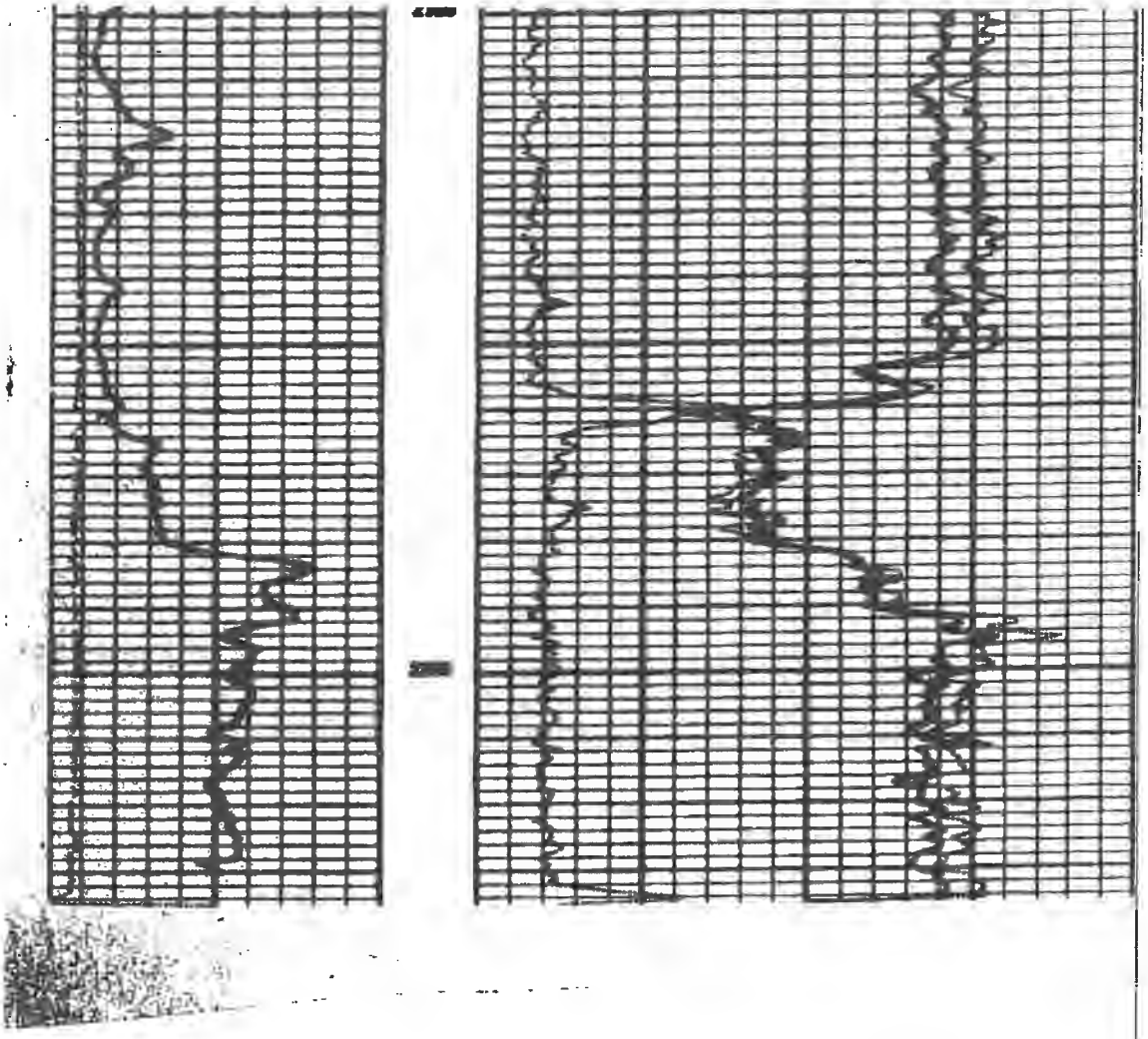





2100
BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
2200
Density Correction
0
.2
Caliper
Density Porosity
PERCENTAGE


6 INCHES 16
Gamma Ray
0 API 200
30 20 10 0 -10
Bulk Density
GRAMS/CC
2.0 2.5 3.0
REPEAT SECTION
2100


BEFORE SURVEY CALIBRATIONS
16
0.1



WVGES O&G Record Reporting System

"Pipeline"

Select County: (087) Roane
Enter Permit #: 3880
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 3880

Report Time: Thursday, April 30, 2020 9:50:19 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708703880	Roane	3880	Smithfield	Tariff	Otter	38.662409	-81.212611	481502.5	4279336.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708703880	6/10/1984	Original Loc	Completed	Ferrell Boothe	41					Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708703880	6/10/1984	-/-/-	1046	Ground Level	Tariff(Tlmn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Nat/Open H	2122		2122		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708703880	6/10/1984	Water	Fresh Water	Vertical			69						0
4708703880	6/10/1984	Water	Salt Water	Vertical			1783						0
4708703880	6/10/1984	Horizon	Injection	Vertical	2060	Big Injun (Price&eq)	2085	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703880	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Ground Resources, LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703880	Pennzoil Company	1984	1,013	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708703880	Ground Resources, LLC	2017	0												
4708703880	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703880	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708703880	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708703880	Original Loc	Little Lime	Well Record	1876	Reasonable	59	Reasonable	1046	Ground Level
4708703880	Original Loc	Blue Monday	Well Record	1935	Reasonable	7	Reasonable	1046	Ground Level
4708703880	Original Loc	Pencil Cave	Well Record	1942	Reasonable	16	Reasonable	1046	Ground Level
4708703880	Original Loc	Greenbrier Group	Well Record	1958	Reasonable	120	Reasonable	1046	Ground Level
4708703880	Original Loc	Big Lime	Well Record	1958	Reasonable	109	Reasonable	1046	Ground Level
4708703880	Original Loc	Keener	Well Record	2067	Reasonable	11	Reasonable	1046	Ground Level
4708703880	Original Loc	Big Injun (Price&eq)	Well Record	2078	Reasonable	22	Reasonable	1046	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708703880	6	2120		G D C*	Y	N	6	2115	414	2120									407	2120	Y	Y	N						

Comment: *logs: caliper, CCL, cement bond, formation bond

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if

INJECTOR 3880

Injector 3880

using a 56k or slower dialup connection.

FILENAME
4708703880gbo.tif
4708703880gdc.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

3880

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2078 Feet (top) 2100 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2122 Feet

3) Approximate water strata depths: Fresh 69' - 83' Feet Salt 1783' - 1825' Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

3880

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	7"		H-40	20#	432'	432'	100sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2070'	2070'	50sks
Tubing	NONE						
Liners							

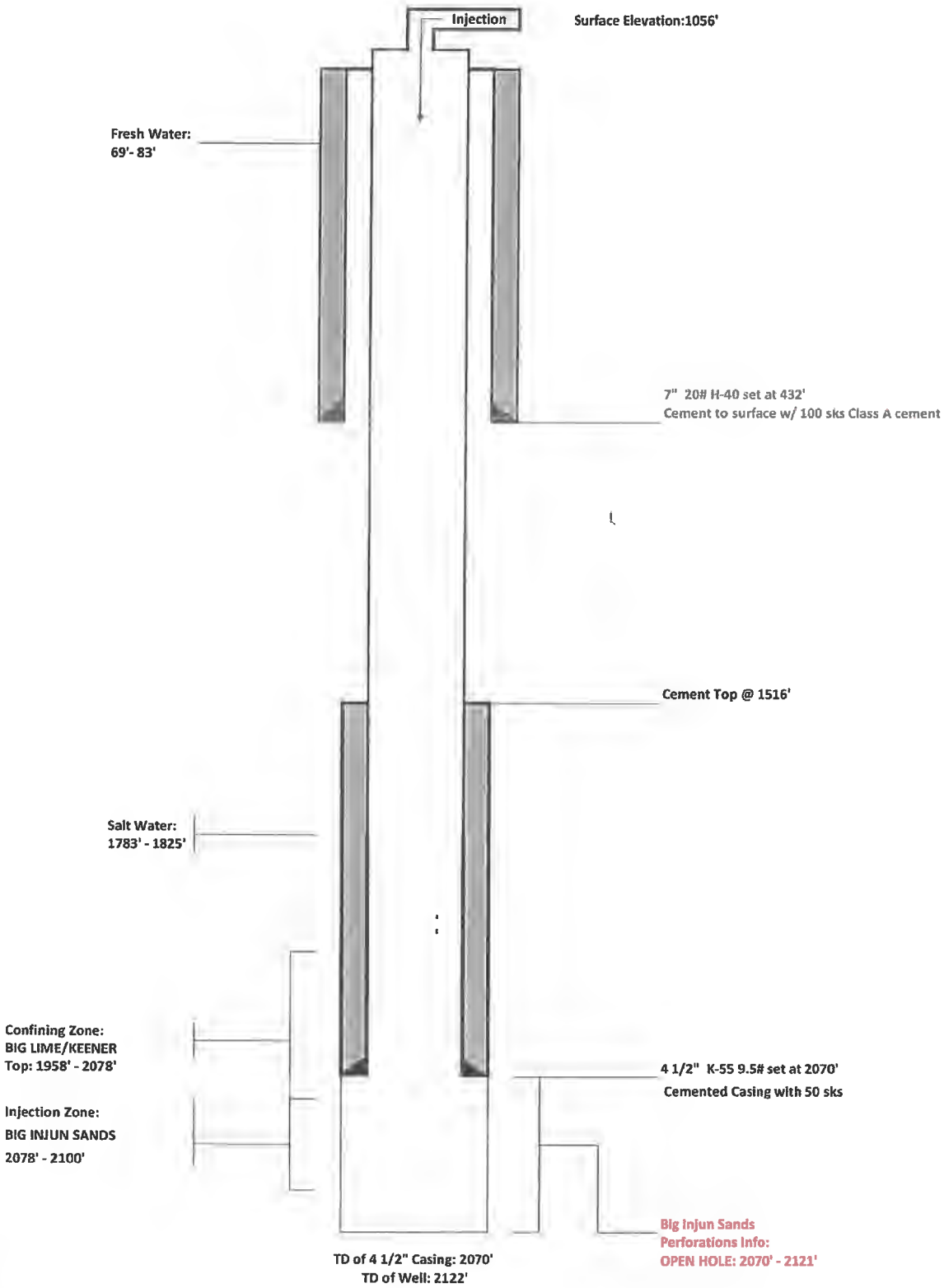
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

3880

WELL SCHEMATIC

LOONEY 41
API 47-087-03880



INJECTOR 3880

IV-35
(Rev 8-81)

RECEIVED
DEC 14 1984
OIL & GAS DIVISION
DEPT. OF MINES

State of West Virginia
Department of Mines
Oil and Gas Division

Date December 4, 1984
Operator's
Well No. 41
Farm W. M. Looney
API No. 47 - 087 - 3880-Li

WELL OPERATOR'S REPORT
OF
DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil X / Gas ___ / Liquid Injection ___ / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow ___ /)

LOCATION: Elevation: 1056.36 Watershed Trace Fork
District: Smithfield County Roane Quadrangle Tariff 7.5'

COMPANY Pennzoil Company
ADDRESS P. O. Box 1588, Parkersburg, WV 26101
DESIGNATED AGENT James A. Crews
ADDRESS P.O. Box 1588, Parkersburg, WV 26101
SURFACE OWNER Ferrell Boothe
ADDRESS Rt. 2, Box 74, Lefthand, WV 25751
MINERAL RIGHTS OWNER Keith Crihfield
ADDRESS P.O.Box 431 Spencer, WV 25276
OIL AND GAS INSPECTOR FOR THIS WORK Homer Dougherty ADDRESS Linden Rt. Box 3-A, Looneyville
PERMIT ISSUED 5-11-84
DRILLING COMMENCED 6-7-84
DRILLING COMPLETED 6-10-84
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	432	432	100 sks
5 1/2			
4 1/2	2070	2070	50 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 2100 feet
Depth of completed well 2122 feet Rotary ___ / Cable Tools ___
Water strata depth: Fresh 69-83 feet; Salt 1783-1825 feet
Coal seam depths: ___ Is coal being mined in the area? ___

OPEN FLOW DATA
Producing formation Water Injection Well Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion--)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

(Continue on reverse side)

DEC 26 1984

FORM IV-35
(REVERSE)

INJECTION 3880

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Silt & Shale	0	70	
Sand	70	84	
Shale & Silt	84	432	
Sand	432	446	
Shale	446	616	
Sand, Shale, Silt	616	1598	
Salt Sand	1598	1824	
Shale	1824	1876	
Little Lime	1876	1935	
Blue Monday	1935	1942	
Pencil Cave	1942	1958	
Big Lime	1958	2067	
Keener	2067	2078	
Big Injun	2078	2100	
Pocono Shale	2100	2122	
Total Depth		2122	

(Attach separate sheets as necessary)

Pennzoil Company
Well Operator

By: Curtis A Lemon

Date: 12-4-84

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."

FORM IV-3(B)
(Obverse)

FILE COPY

1) Date: April 12, 19 84
2) Operator's Well No. W. M. Looney #41
3) SIC Code
4 API Well NO. 47 - 087 - 3880-LI
State County Permit
5. UIC Permit No.

RECEIVED
APR 17 1984
OIL & GAS DIVISION
DEPT. OF MINES

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
OFFICE OF OIL AND GAS, DEPARTMENT OF MINES, AND FOR
(CLASS II WELLS ONLY)
THE DIVISION OF WATER RESOURCES, DEPARTMENT OF NATURAL RESOURCES

6) WELL TYPE: Liquid injection X / Gas injection (not storage) / Waste disposal /
7) LOCATION: Elevation: 1046.36 Watershed: Trace Fork
District: Smithfield County: Roane Quadrangle: Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P. O. Box 1588
Parkersburg, W. Va. 26101
9) DESIGNATED AGENT James A. Crews
Address P. O. Box 1588
Parkersburg, WV 26101
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Homer Dougherty
Address Linden Rt., Box 3-A
Looneyville, WV
11) DRILLING CONTRACTOR:
Name
Address
12) PROPOSED WELL WORK: Drill X / Drill deeper / Redrill / Stimulate
Plug off old formation / Perforate new formation / Convert /
Other physical change in well (specify)
13) GEOLOGICAL TARGET FORMATION, Big Injun Depth 2060 feet(top) to 2085 feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 2140 ft.
15) Approximate water strata depths; Fresh, 346 feet; salt, feet.
16) Approximate coal seam depths:
17) Is coal being mined in the area? Yes / No X /
18) Virgin reservoir pressure in target formation 80 psig. Source Estimated
19) Estimated reservoir fracture pressure 2655 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 25 Bottom hole pressure 2000
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES: Fresh Water
Bactericides
22) FILTERS (IF ANY): Coal Filters
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	7				X	400' ~~300~~	400' ~~300~~	Cement to surface	
Coal									Sizes
Intermediate									
Production	4-1/2	K55	9.5	X		2138	2138	Over Lower Salt Sand	Depths set
Tubing									
Liners									Perforations: Top Bottom

25) APPLICANT'S OPERATING RIGHTS were acquired from W. M. & Anna Looney
by deed / lease X / other contract / dated Dec. 13 ~~XX~~ 1899, of record in the
Roane County Clerk's office in Lease Book 3 at page 390

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

File

FORM IV-3(B)
(Reverse)

FILE COPY

INJECTOR 3880

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-087-3880-LI

May 11 19 84
Date

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector, (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and (if required) construction and reclamation plan, subject to any modifications and conditions specified below.

Permit expires May 11, 1986 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: BLANKET	Agent:	Plat:	Casing	Fee
				17461

Administrator, Office of Oil and Gas

NOTE: Keep one copy of this permit posted at the drilling location.

PERMIT MODIFICATIONS AND CONDITIONS (IF ANY) TO THE PROPOSED WELL WORK

OFFICE USE ONLY

This part of Form IV-3(b) is to record the dates of certain occurrences and any follow-up inspections.

	Date		Date(s)
Application received		Follow-up inspection(s)	
Well work started		" "	
Total depth reached		" "	
Well Record received		" "	
Reclamation completed		" "	

OTHER INSPECTIONS

Reason:

Reason:

File

3880

NL M

BOND CEMENT A

GA

FILING NO.	
	COMPANY
	WELL
	FIELD
	COUNTY
	LOCATION
	SEC.

PERMANENT DATUM	GROUND LE
LOG MEASURED FROM	K.B. 1
DRILLING MEASURED FROM	K.B.
DATE	9-2
RUN NO.	ONE
TYPE LOG	GAM
DEPTH—DRILLER	212
DEPTH—LOGGER	207
BOTTOM LOGGED INTERVAL	207
TOP LOGGED INTERVAL	140
TYPE FLUID IN HOLE	WAT
SALINITY PPM CL.	–
DENSITY LB./GAL.	–
LEVEL	50'
MAX. REC. TEMP. DEG. F.	–
OPR. RIG TIME	I H
RECORDED BY	T.
WITNESSED BY	MR.
DISTRICT:	CHA

RUN	BORE HOLE RECORD		
NO.	BIT	FROM	

McCullough

AND-OR SONIC SEISMOGRAM LOG
AMMA RAY

PENNZOIL COMPANY

W. M. LOONEY #41

SMITHFIELD DISTRICT

ROANE STATE WV

TRACE FORK
QUAD.: TARIFF 7.5'

OTHER SERVICES:

TWP. RGE.

EVEL ELEV. 1056.36'
0' ABOVE P.D.

ELEVATIONS:
KB 1056.36'
DF 1056.36'
GL 1046.36'

24-84
2
IMA RAY/BOND CEMENT
25'
79'
75'
00'
ER

IOUR
LAUGHERY
SMITH
ARLESTON

CASING RECORD

TO	SIZE	WGT.	FROM	TO
	4½"		SURF.	T.D.

FOLD HERE

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-33

LOGGING AND EQUIPMENT DATA (BOND CEMENT LOG)

DATE RECORDED	9-24-84		
TIME STARTED	4:00 PM		
TIME FINISHED	5:00 PM		
LOGGED INTERVAL	1400'-2075'		
LOGGED CEMENT TOP	1516'		
TOOL MODEL NO.			5549-0-0
DIAMETER			2"
LENGTH			4'
SPACING			
BOOT MODEL NO.			

CEMENTING DATA

	1	2	SQUEEZE NO. 1	SQUEEZE NO. 2	SQUEEZE NO. 3
DATE AND HOUR SET					
SETTING TIME (HRS.)					
TYPE CEMENT					
SACKS USED					
PRECEDING FLUID					
% ADDITIVE					
% RETARDER					
SLURRY WEIGHT					
BREAKDOWN PRESSURE					
SURFACE MAX. PRESS.					
BOTTOM MAX PRESS.					

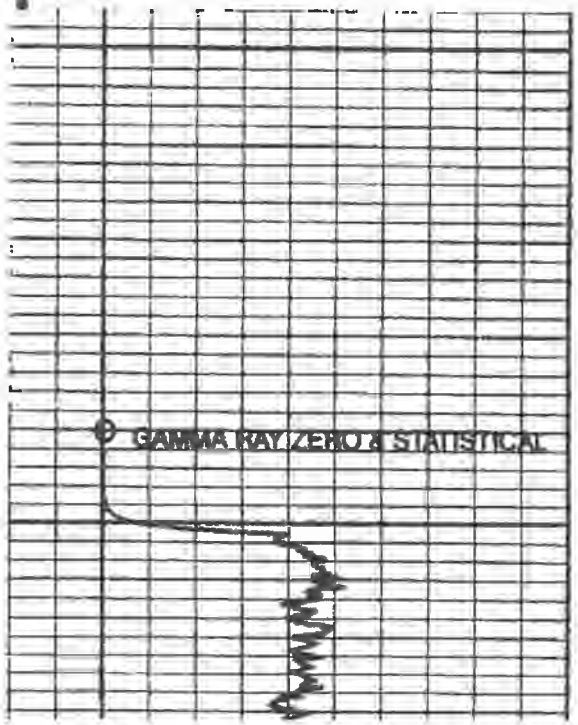
	GAMMA RAY	NEUTRON	
RUN NO.	ONE		
TOOL MODEL NO.	5549-0-0		
DIAM.	1.75"		
LOG TYPE			
TOOL MODEL NO.			

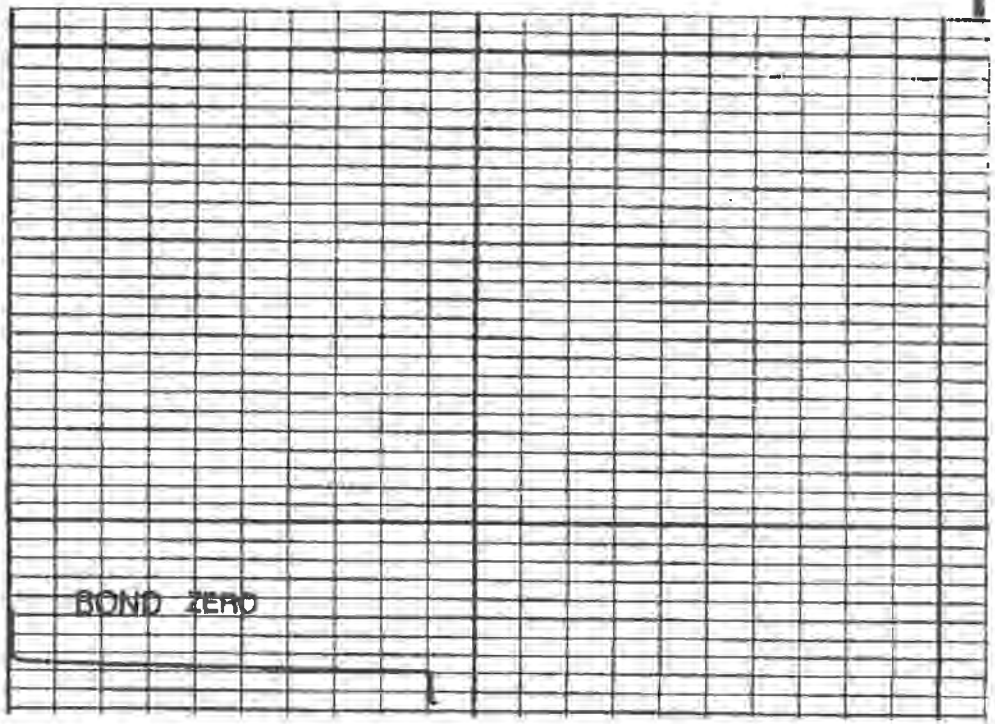
DETECT. MODEL NO.				DIAM.				
TYPE	SCINT.			DETECT. MODEL NO.				
LENGTH	4"			TYPE				
DIST. TO N. SOURCE				LENGTH				
				SOURCE MODEL NO.				
GENERAL				SERIAL NO.				
HOIST TRUCK NO.	1798			SPACING				
INST TRUCK NO.	1798			TYPE				
TOOL SERIAL NO.				STRENGTH				
LOG TICKET NO.	60089							

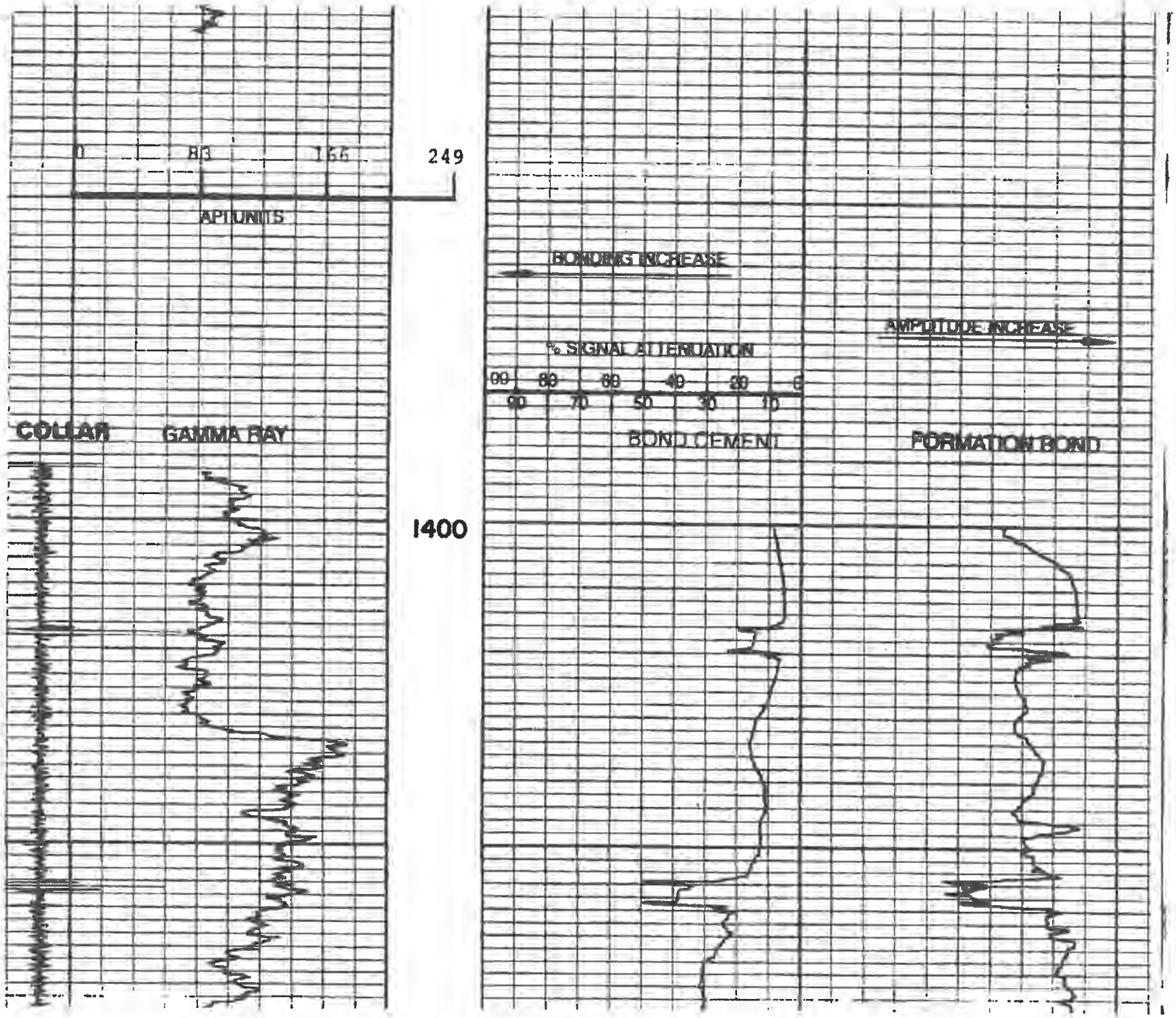
LOGGING DATA

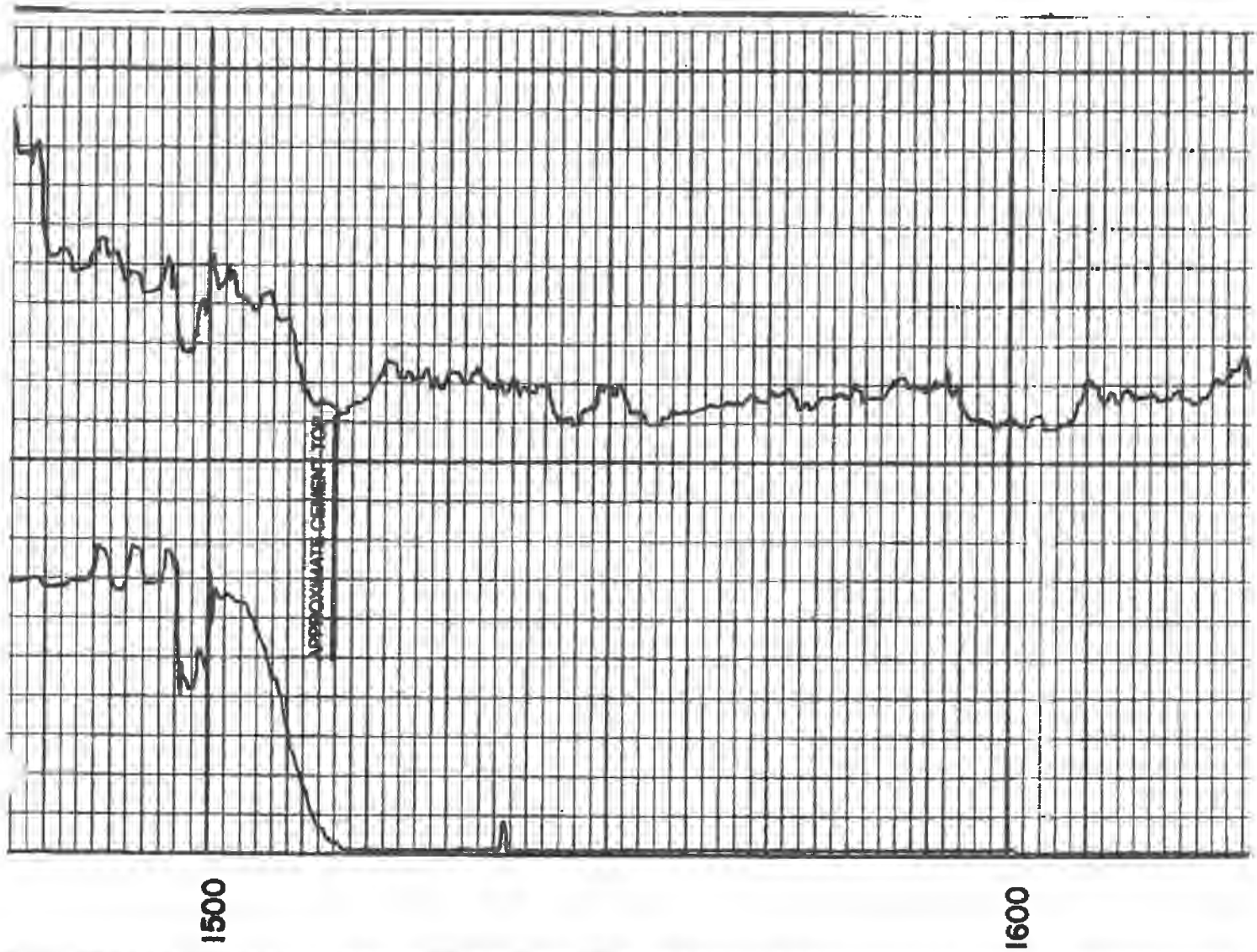
GENERAL				GAMMA RAY				NEUTRON			
RUN NO	DEPTHS FROM	DEPTHS TO	SPEED FT./MIN.	T. C. SEC	SENS. SETTINGS	ZERO DIV. L. OR R.	API GR. UNITS PER LOG DIV.	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L. OR R.	API N. UNITS PER LOG DIV.
ONE	1400'	2075'	30'	2	R-3 (X1)	0	20.75				
					D-200						
					G-330						

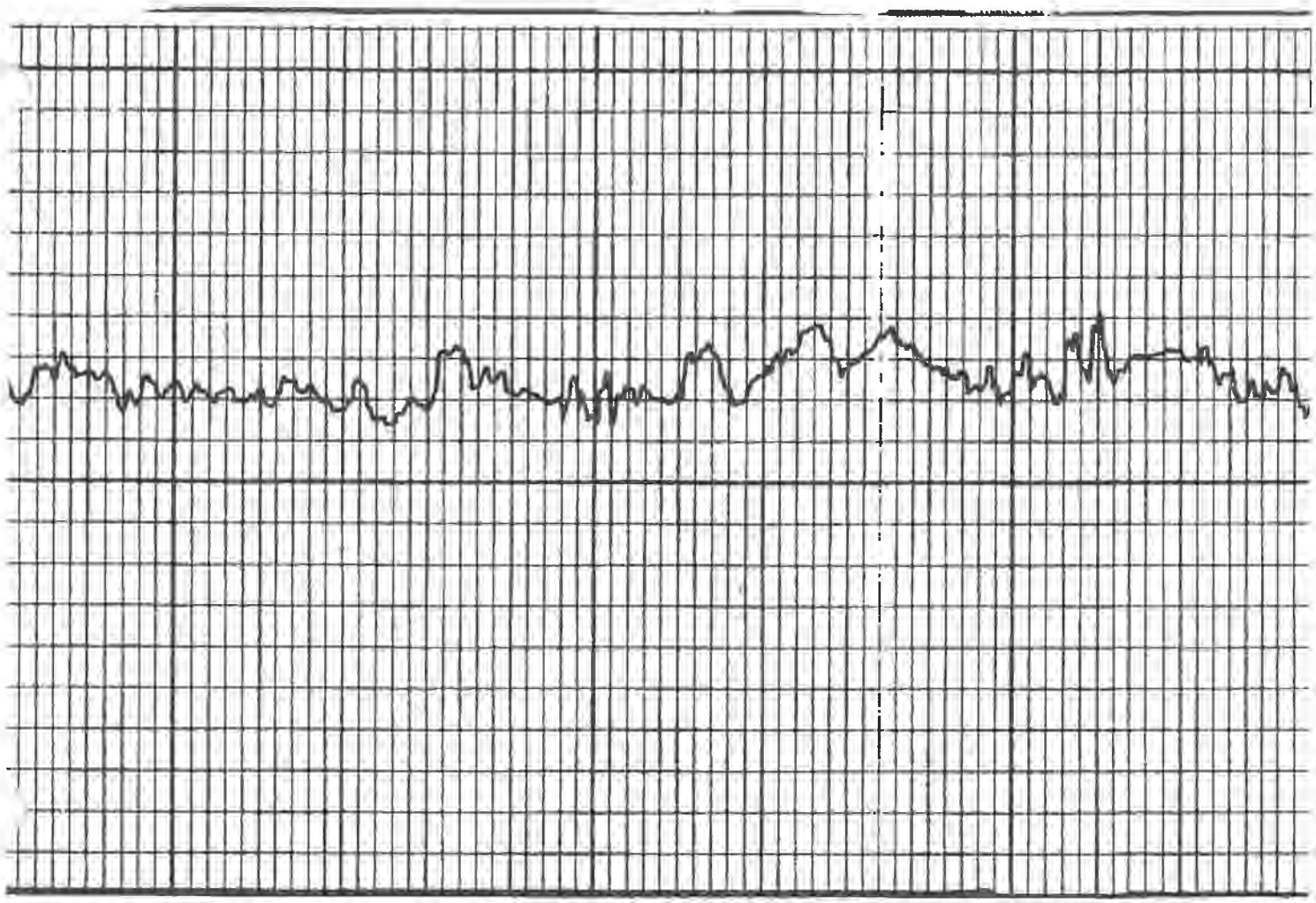
REMARKS: CORRELATED TO BASIN SURVEYS CDL 6-10-84.






0
83
166
249
API UNITS
BONDING INCREASE
% SIGNAL ATTENUATION
99 80 60 40 20 0
90 70 50 30 10
AMPLITUDE INCREASE
COLLAR
GAMMA RAY
BOND CEMENT
FORMATION BOND
1400


APPROXIMATE CEMENT TOP
1500
1600



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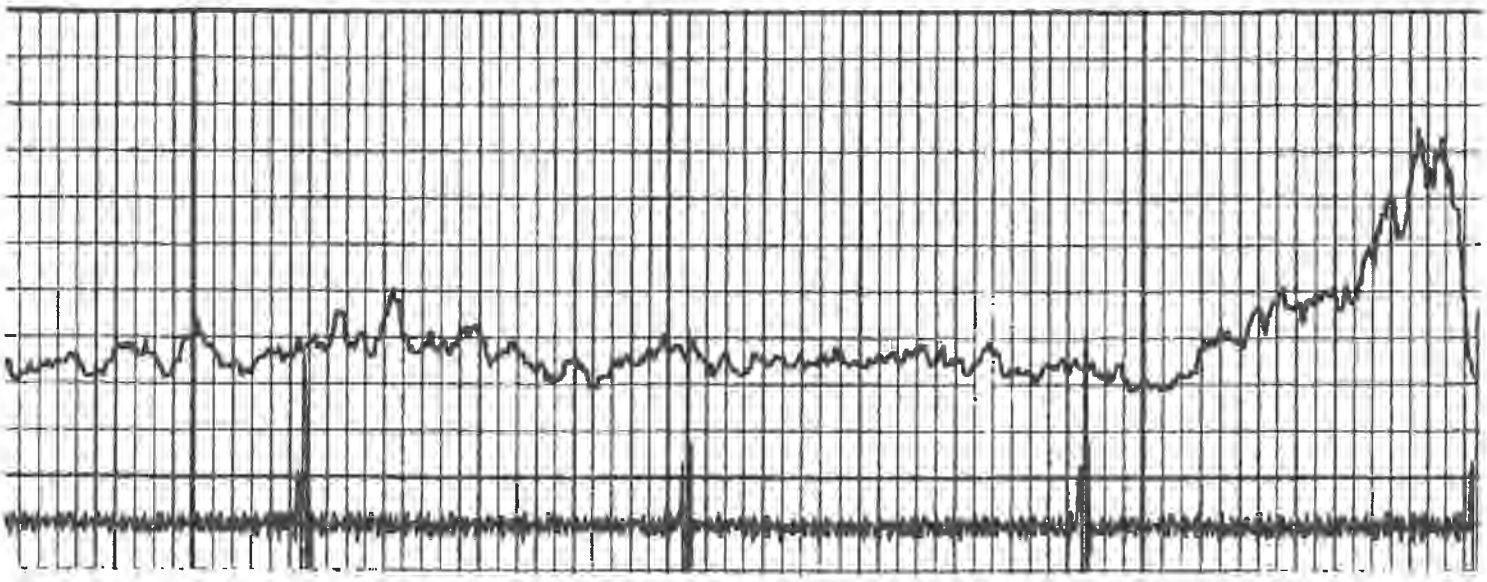
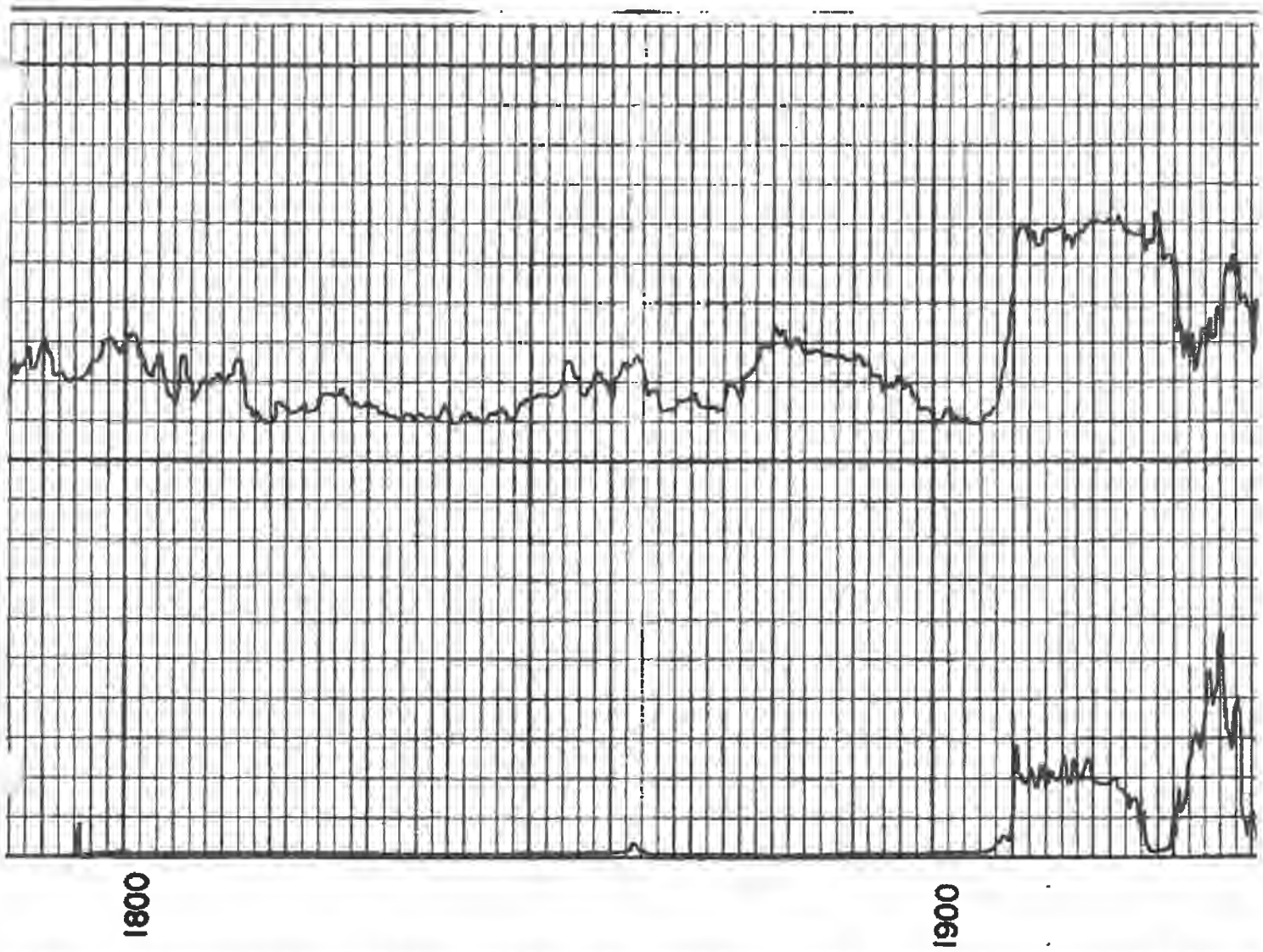
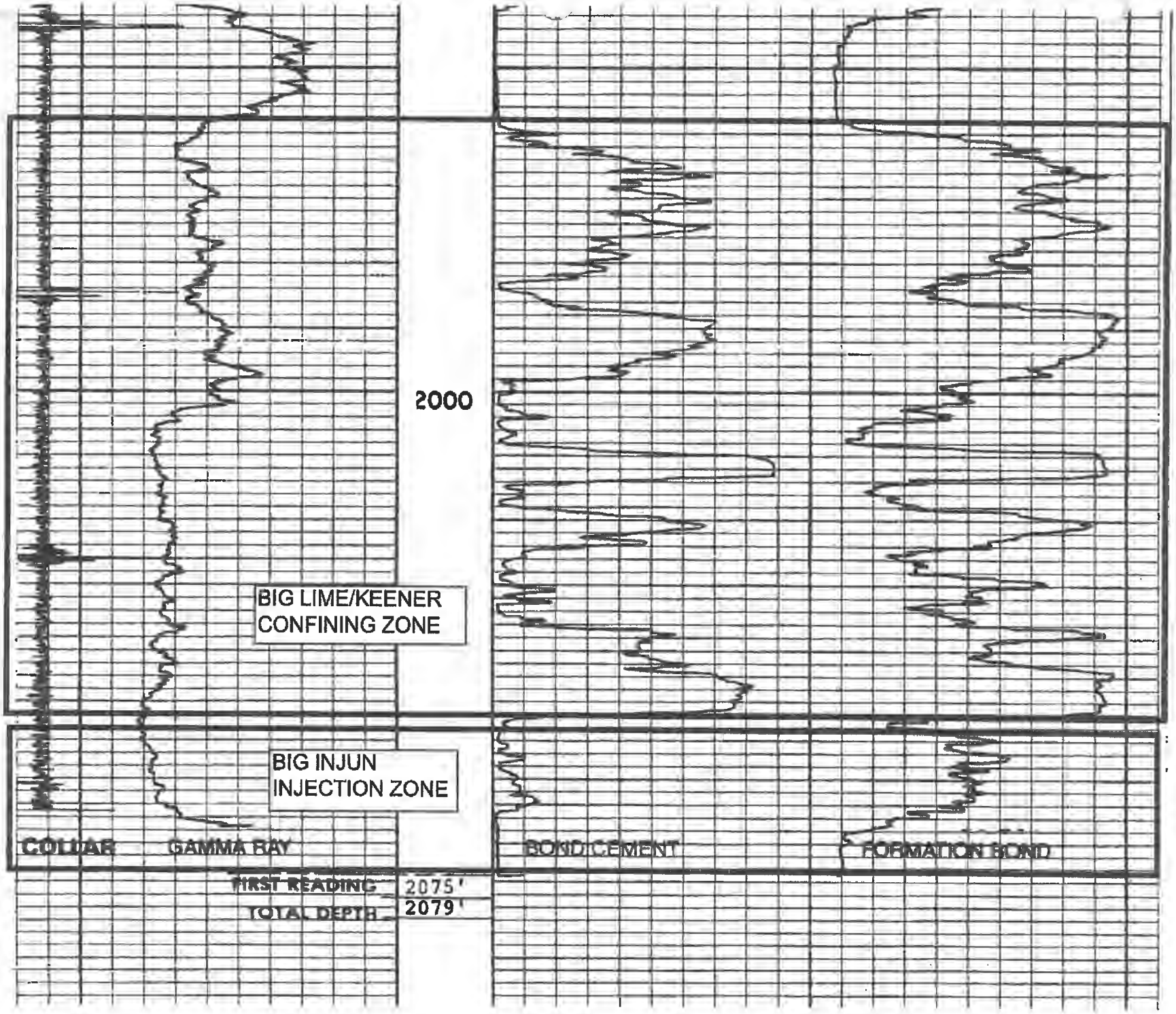
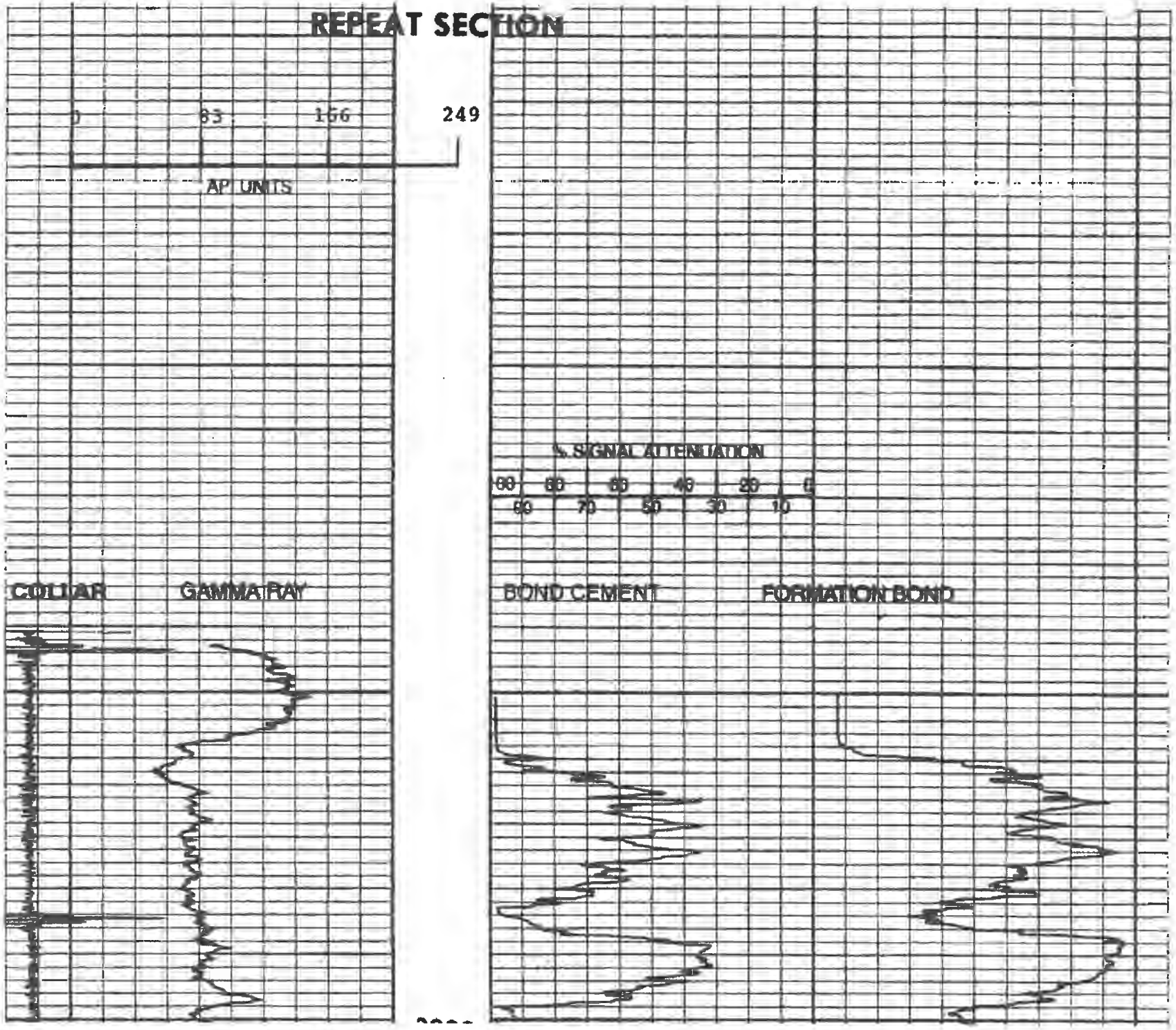
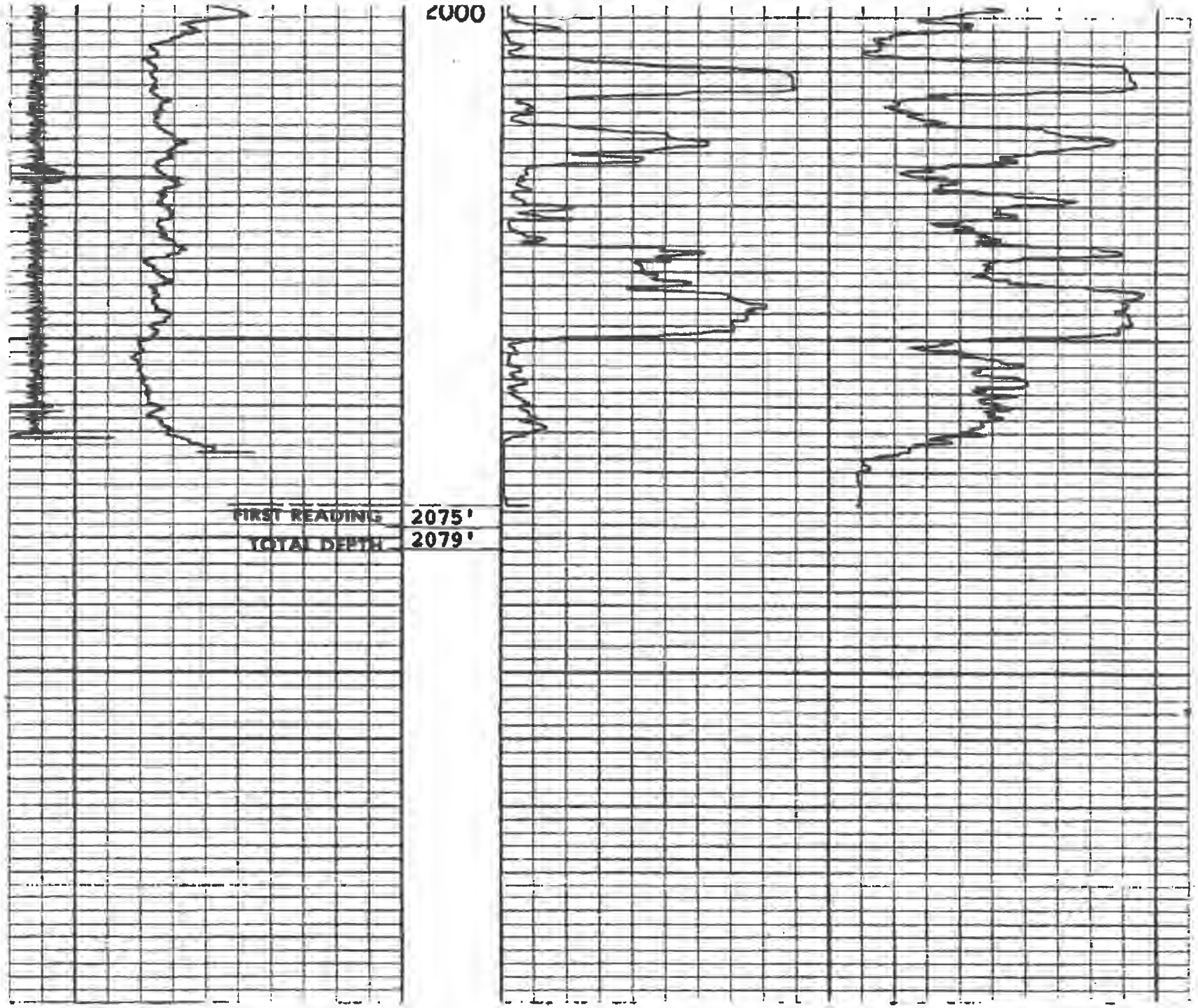



1800
1900


2000
BIG LIME/KEENER
CONFINING ZONE
BIG INJUN
INJECTION ZONE
COLLAR
GAMMA RAY
BOND CEMENT
FORMATION BOND
FIRST READING 2075'
TOTAL DEPTH 2079'

REPEAT SECTION




2000
FIRST READING 2075'
TOTAL DEPTH 2079'

Basi

COMPENSATED

FILING NO.	
PERMIT 47-087 3860LI	COMPANY PENNZO
	WELL W. M. L
	FIELD SMITHFIE
	COUNTY ROANE
	LOCATION: TRACE FORK
	Quad Rangle : TARIFF
	SEC TWP

Permanent Datum: GROUND LEVEL
Log Measured From KELLY BUSHING Ft.
Drilling Measured From KELLY BUSHING

Date	6-10-84
Run No.	ONE
Type Log	GR.CD.CAL
Depth—Driller	2125'
Depth—Logger	2122'
Bottom logged interval	2121
Top logged interval	BL
Type fluid in hole	(SOAPED) A
Salinity, PPM Cl.	
Density	
Level	
Max rec. temp., deg F.	NR
Operating rig time	2½ HR
Recorded by	D COWAN
Witnessed by	M.R.SMITH

Run No.	Bit	Bore-Hole Record From	To	Size
ONE	[illegible]	438	2125	7"

FIELD

Surveys, Inc

DENSITY LOG

IL COMPANY

OONEY #41

LD DISTRICT

STATE WVA

7.5'

RGE

OTHER SERVICES: NONE

; Elev.: 1046.36
e Perm. Datum

Elev.: K.B. 1056.36
D.F. 1056.36
G.L. 1046.36

R DRILLED

Casing Record

Wgt.	From	To
	SURFACE	422

DRAFT

THIS HEADING AND LOG CONFORMS TO API RP 33

FOLD HERE

Equipment Data

Tool No.	Source No.	Panel No.	Logging Unit	Location
4315	B-254	3253	84149	PARKERSBURG

Calibration Data

Gamma Ray

API Scale	Background CPS	Std. CPS
0-200	19	137

CDT

Ds CPS AT 2.0	Ds CPS AT 3.0	Dt CPS AT 2.0	Dt CPS AT 3.0
470	290	603	101

Logging Data

Depths From	Depths To	Speed Ft/Min	GR TC
2122	000	30	2

Pd 2.66 - 1ST REPEAT
Pb 2.68 - 2122'-2050'
Pd 2.71 - 2050'-1900'
Pd 2.68 - 1900'-422'

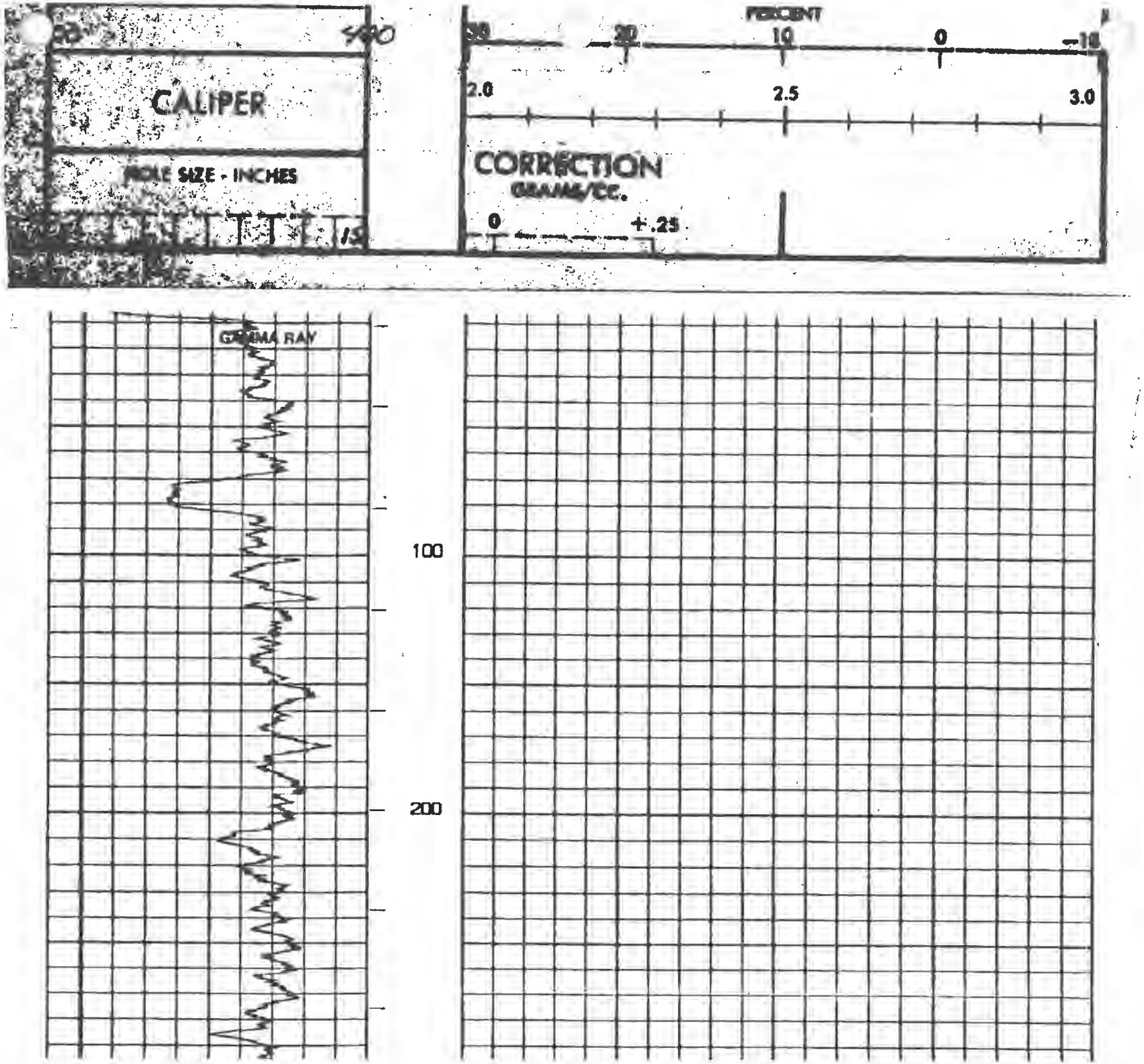
BULK DENSITY GRAMS/CC

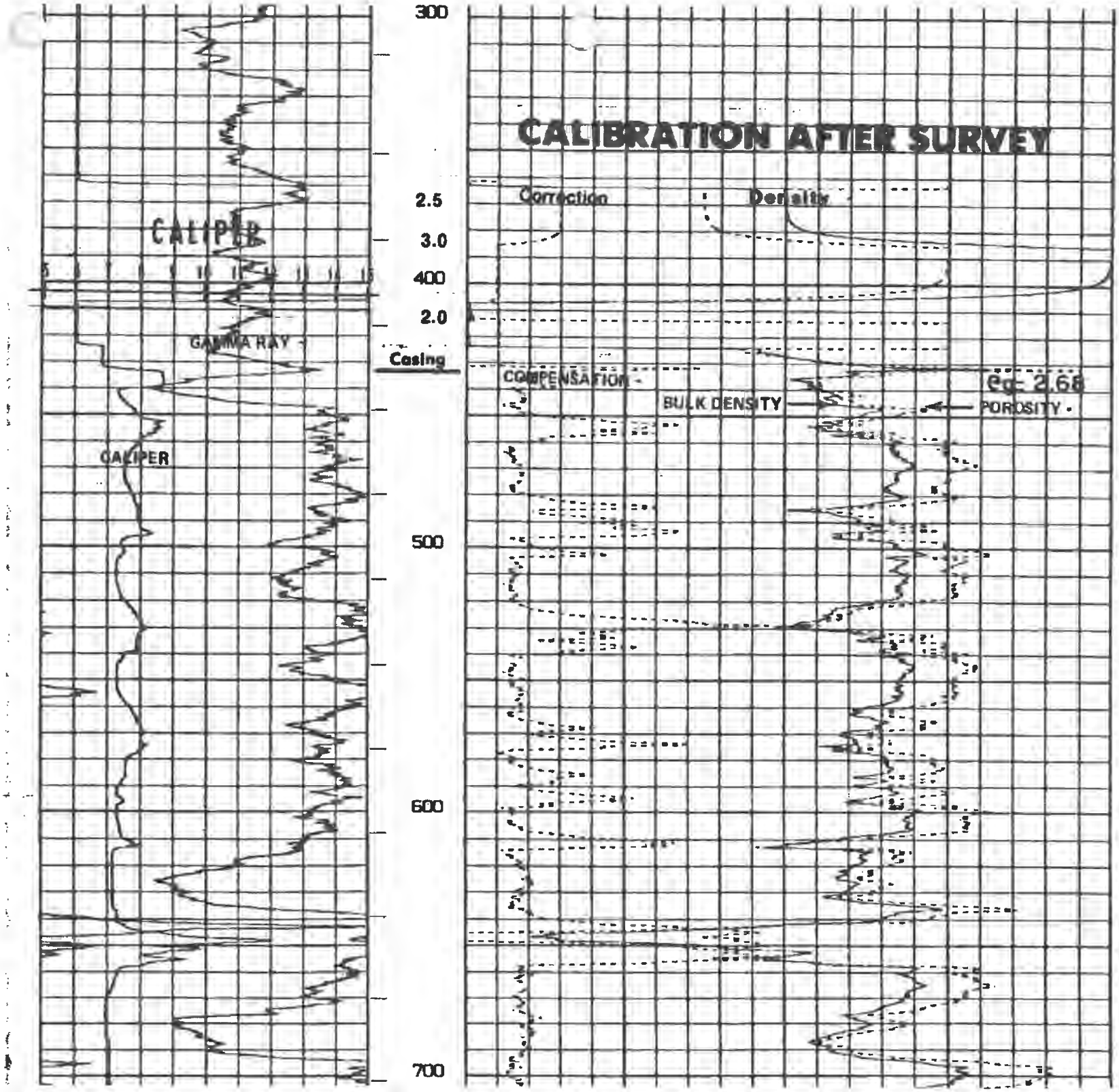
POROSITY

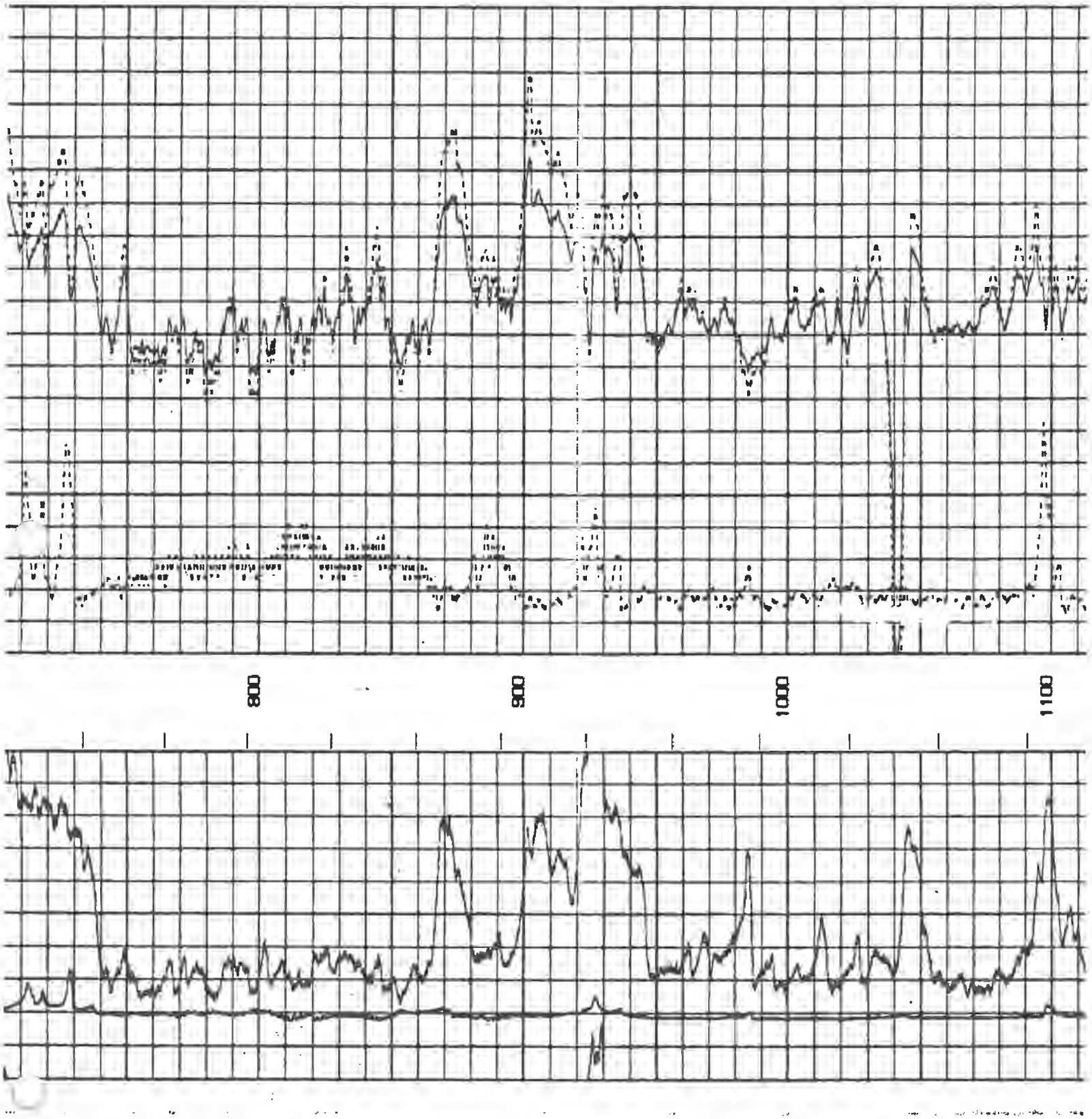
DEPTHS

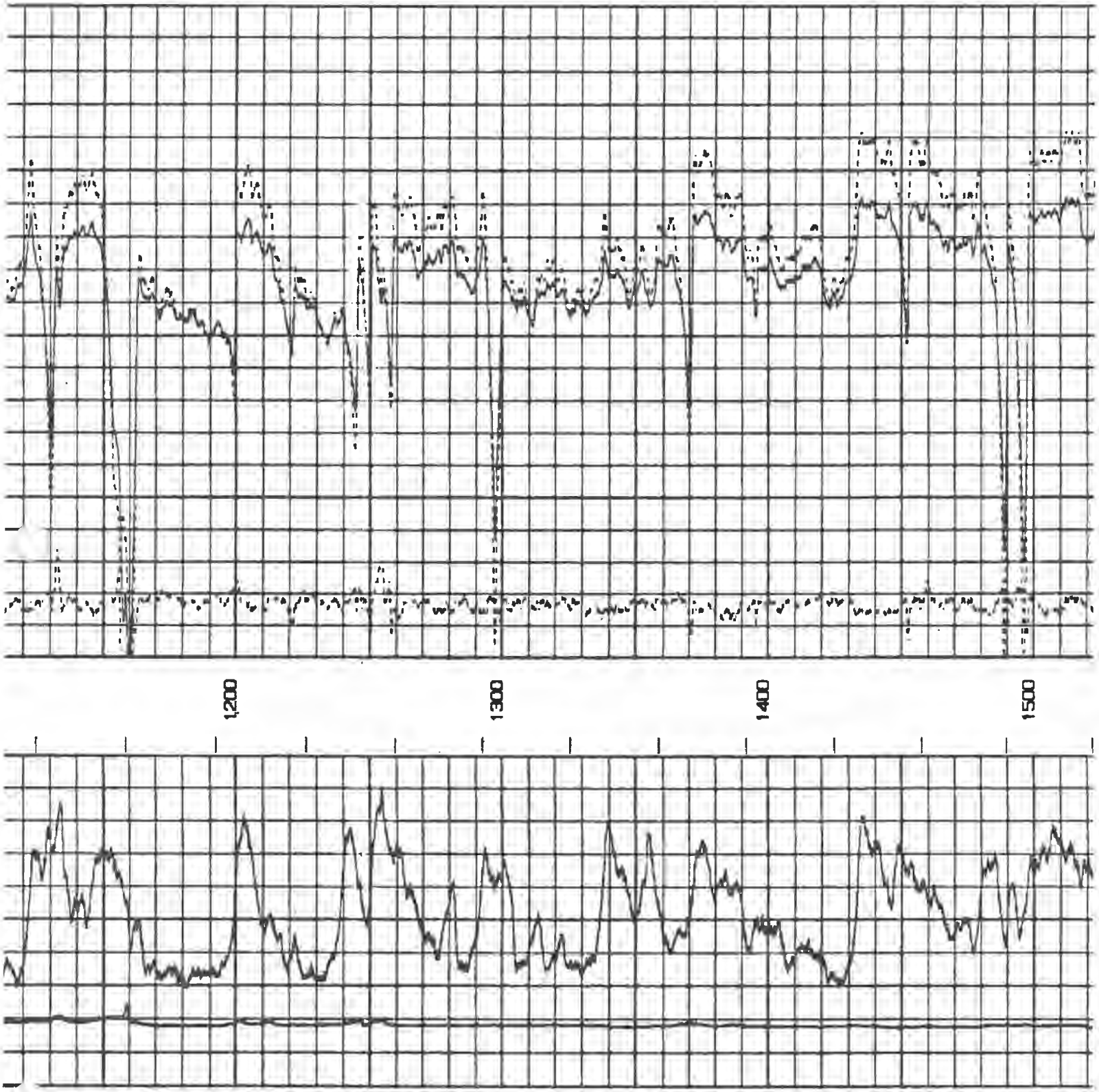
200

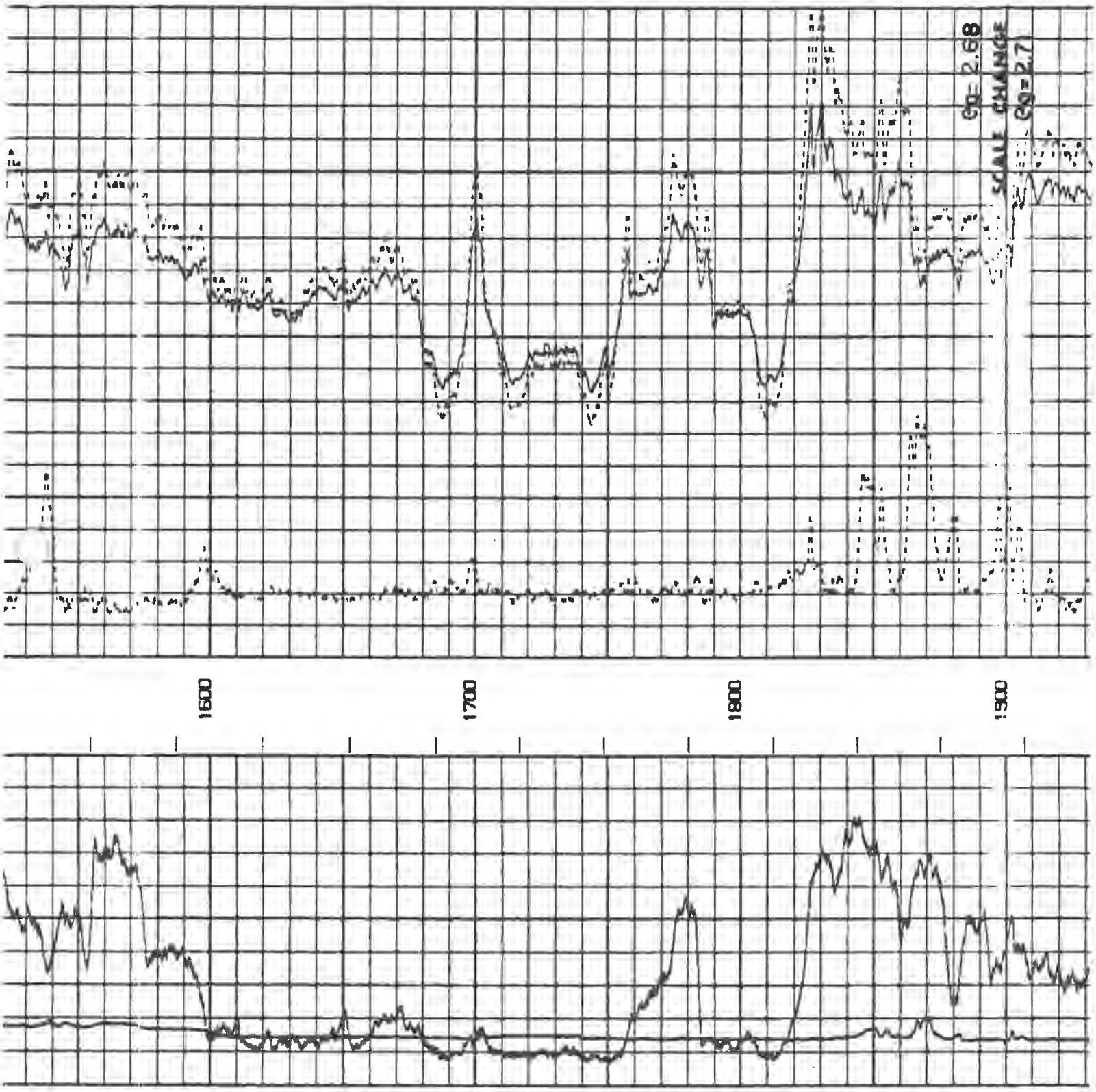
GAMMA RAY API UNITS

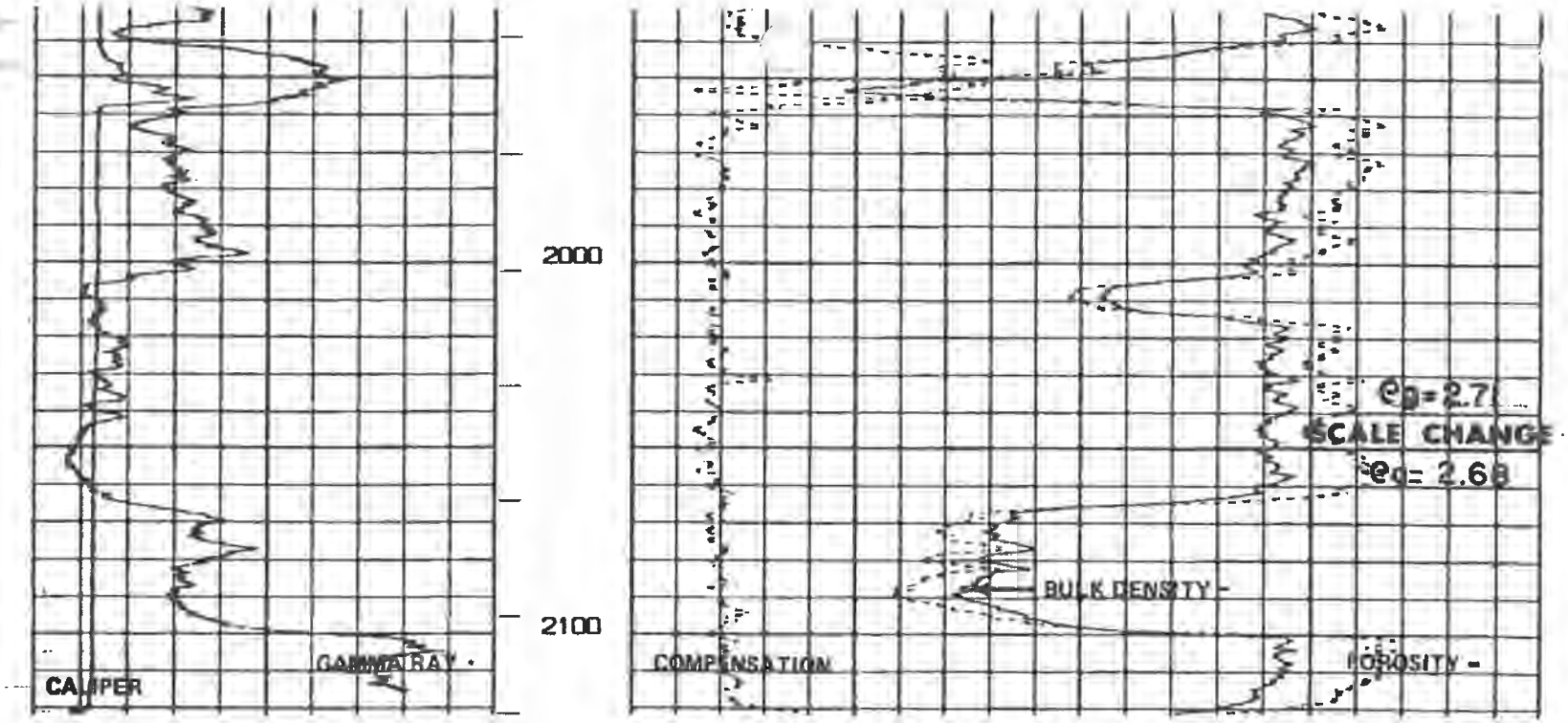

CALIPER
HOLE SIZE - INCHES
PERCENT
20
10
0
2.0
2.5
3.0
CORRECTION
GRAMS/CC.
0
+.25
GAMMA RAY
100
200

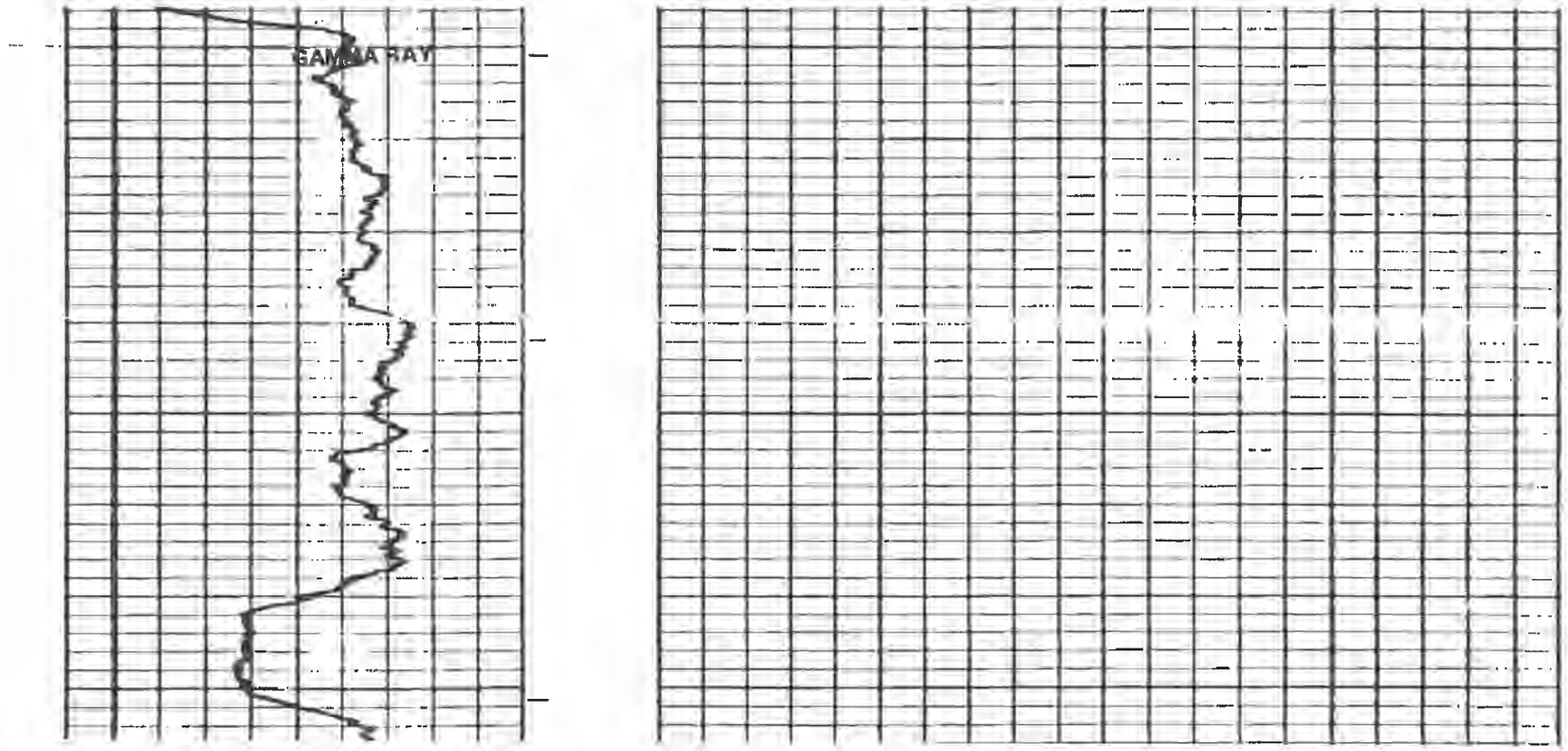

CALIPER
GAMMA RAY
CALIPER
300
400
500
600
700
Casing
CALIBRATION AFTER SURVEY
Correction
Density
2.5
3.0
2.0
COMPENSATION
BULK DENSITY
POROSITY
ρg= 2.68

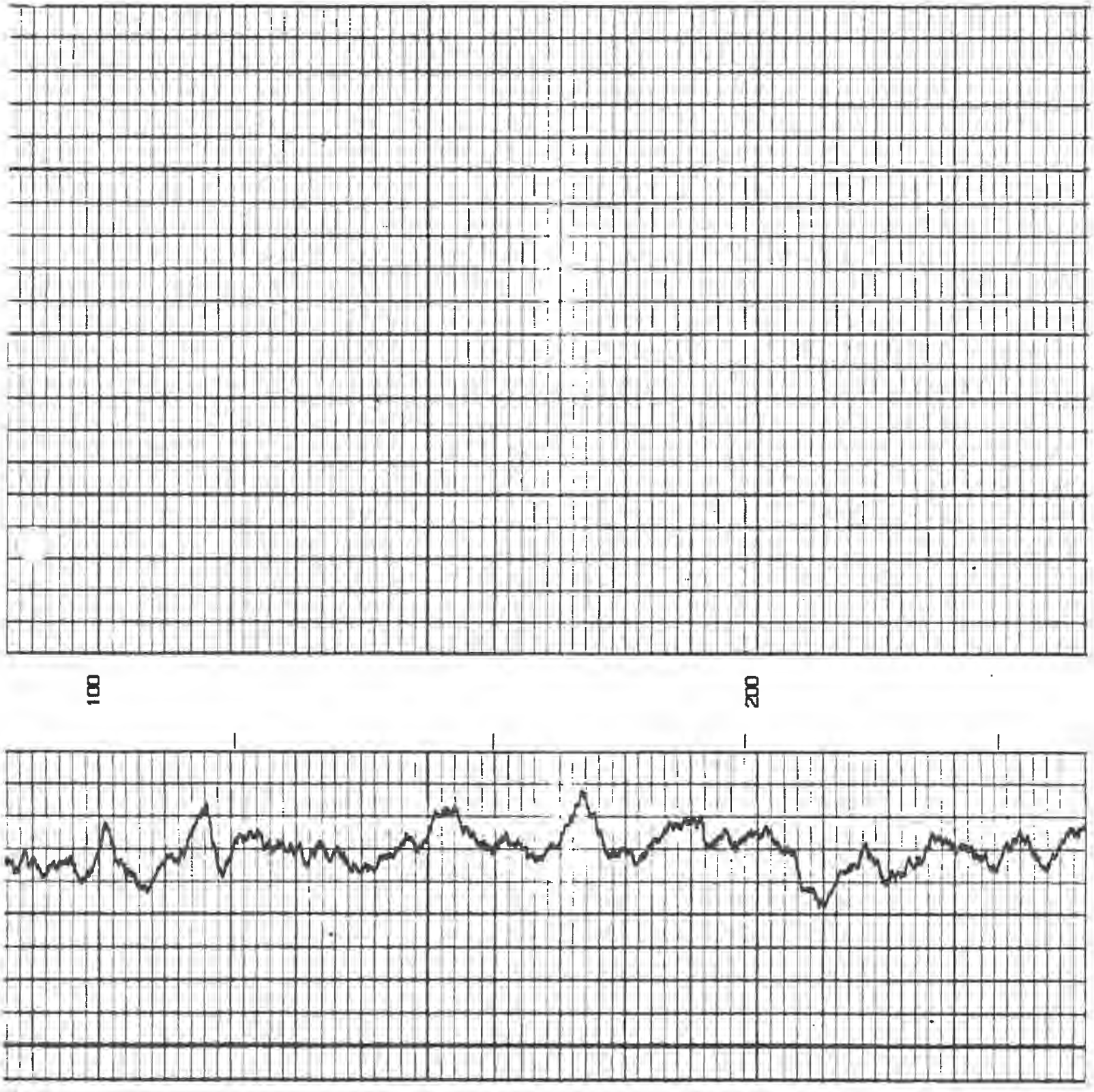

800
900
1000
1100

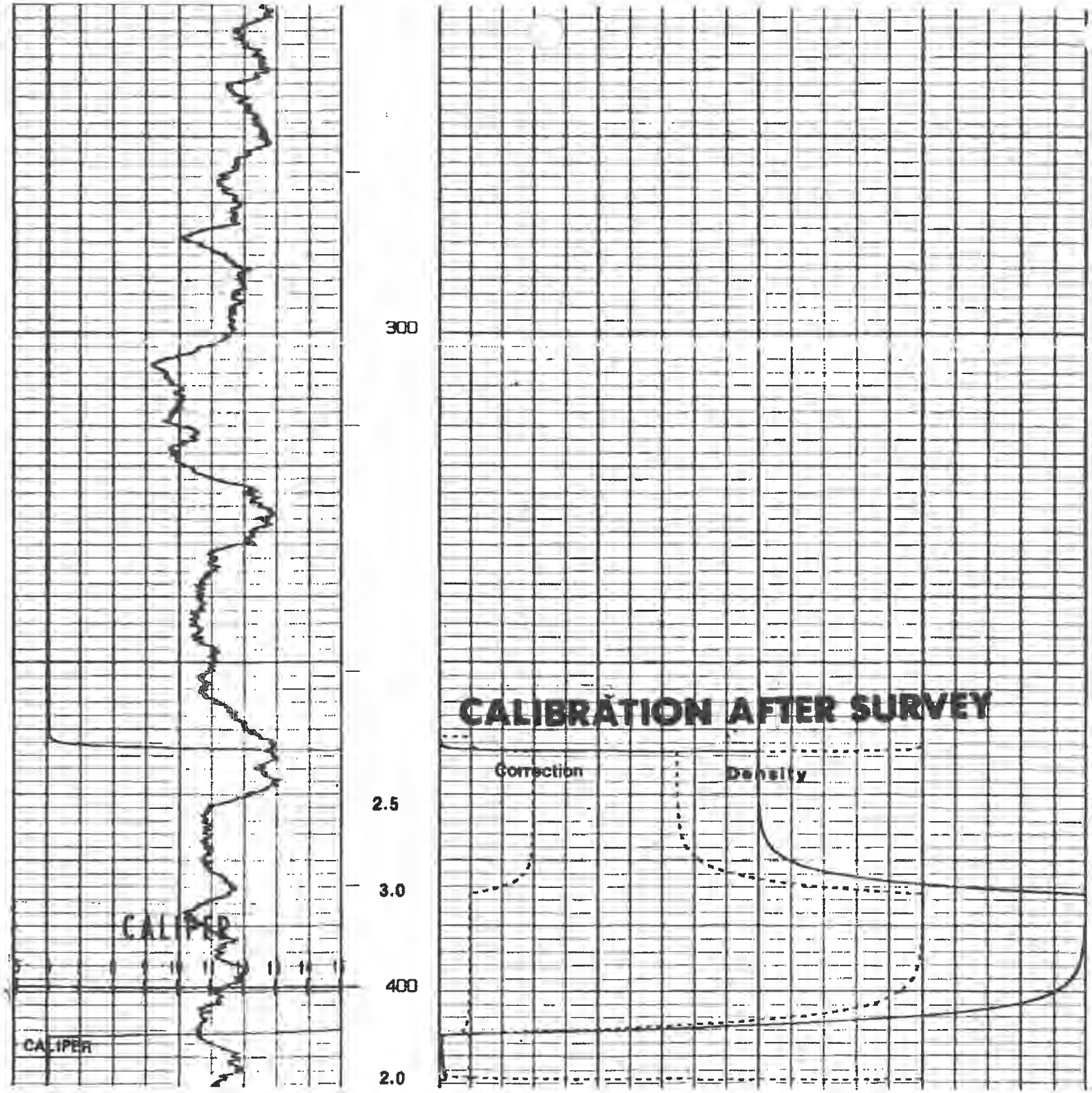

1200
1300
1400
1500

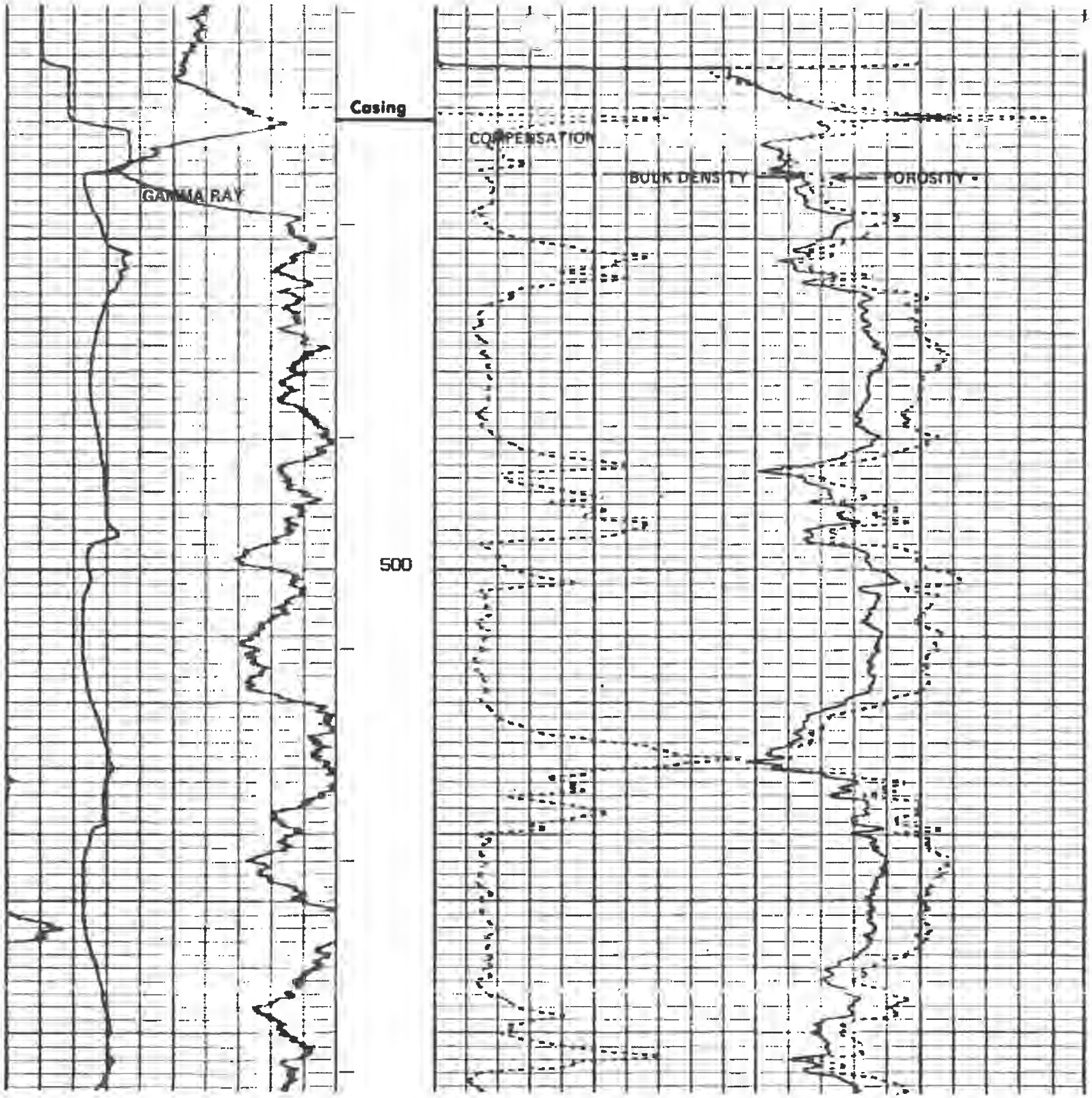

Go= 2.68
SCALE CHANGE
Go=2.7
1600
1700
1800
1900

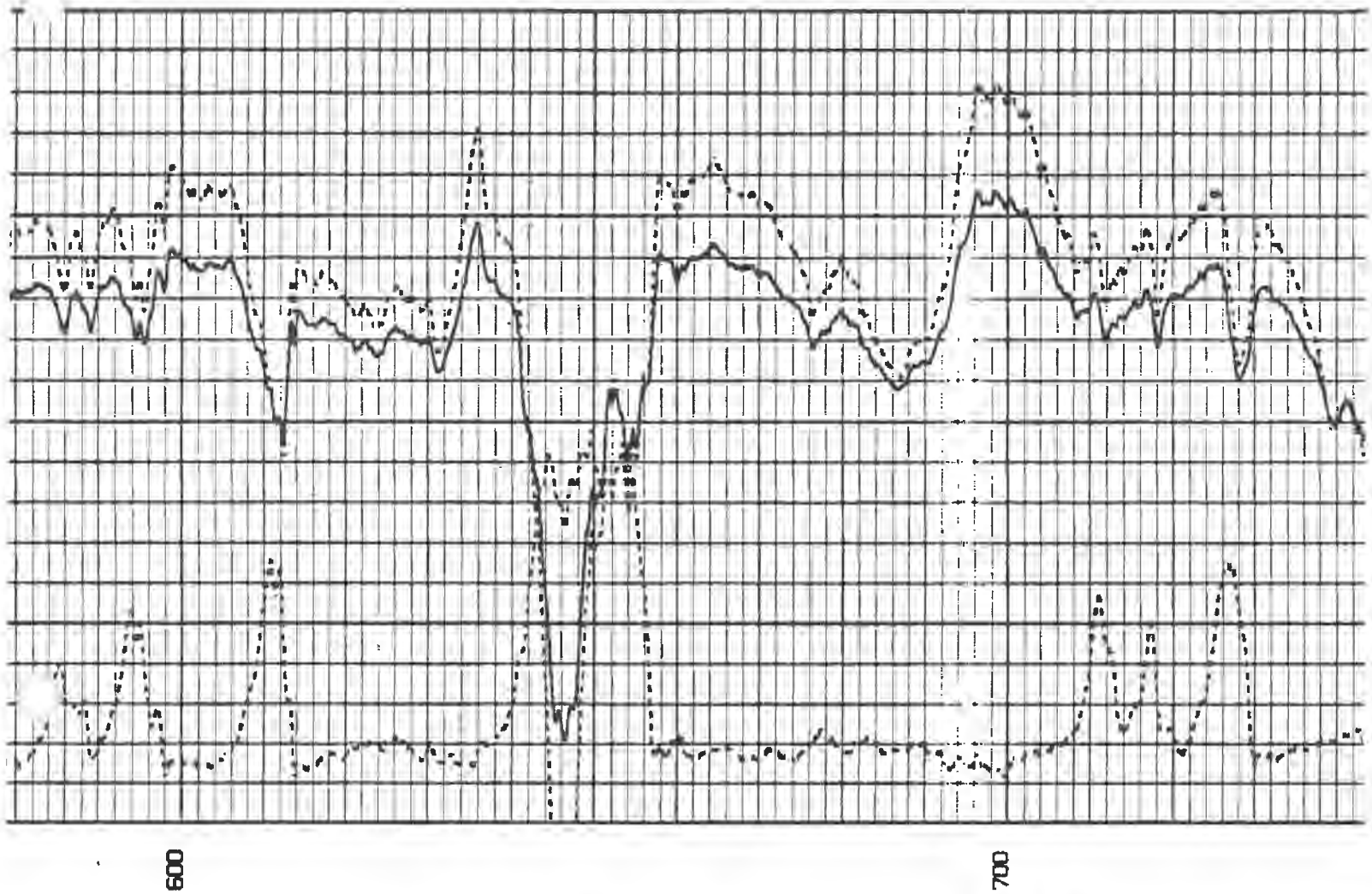

2000
2100
CALIPER
GAMMA RAY
COMPENSATION
POROSITY
BULK DENSITY
SCALE CHANGE
ρg=2.71
ρc= 2.68


GAMMA RAY


100
200


300
2.5
3.0
400
2.0
CALIPER
CALIPER
CALIBRATION AFTER SURVEY
Correction
Density


Casing
GAMMA RAY
COMPENSATION
BULK DENSITY
POROSITY
500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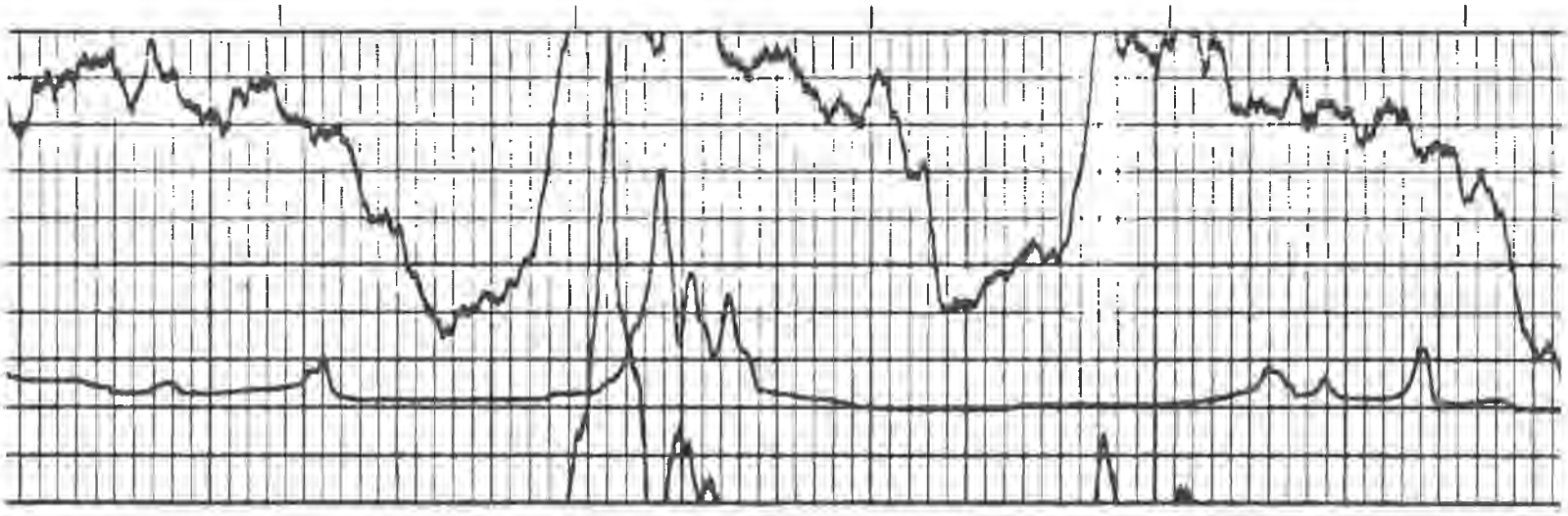
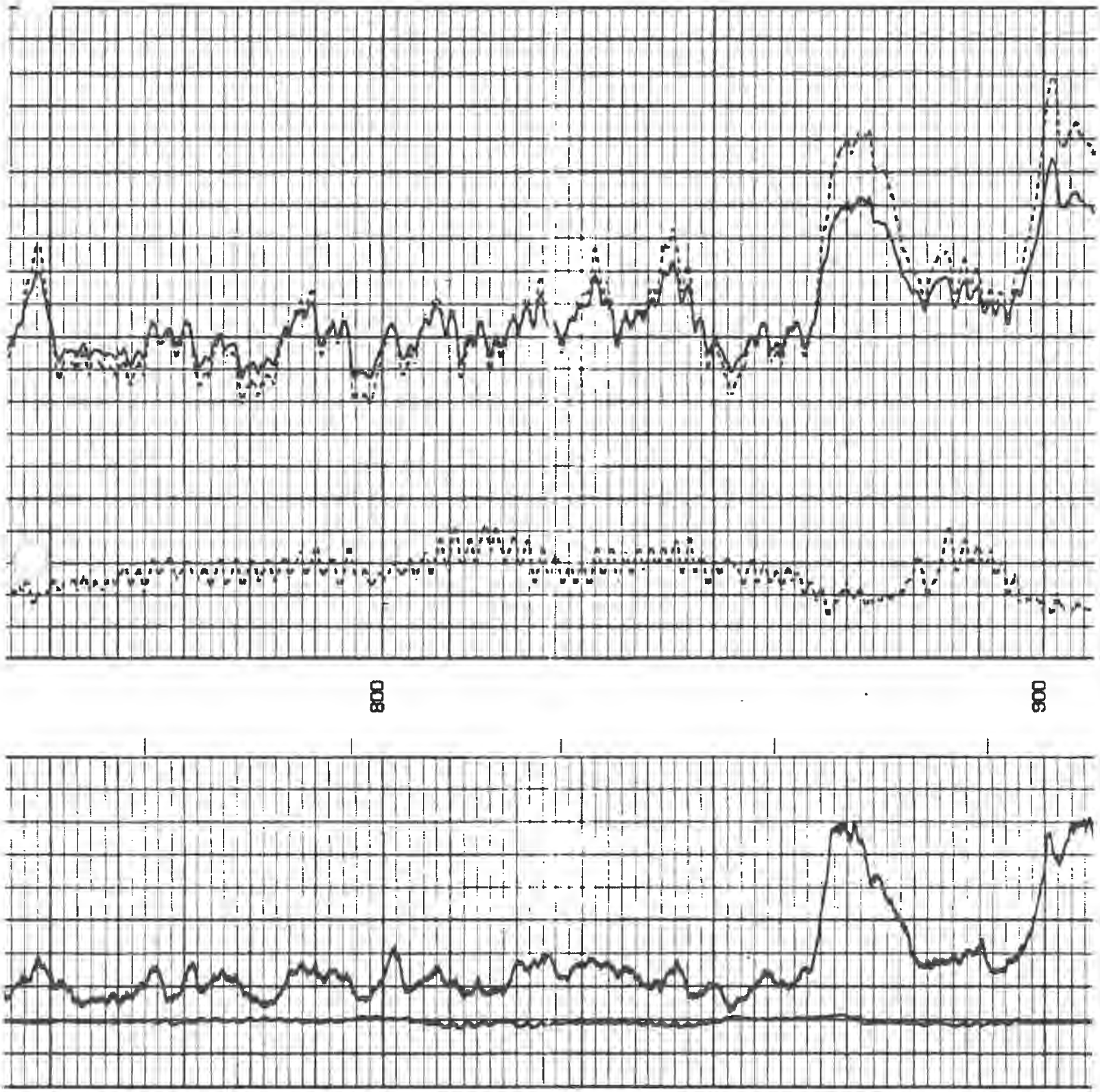
700

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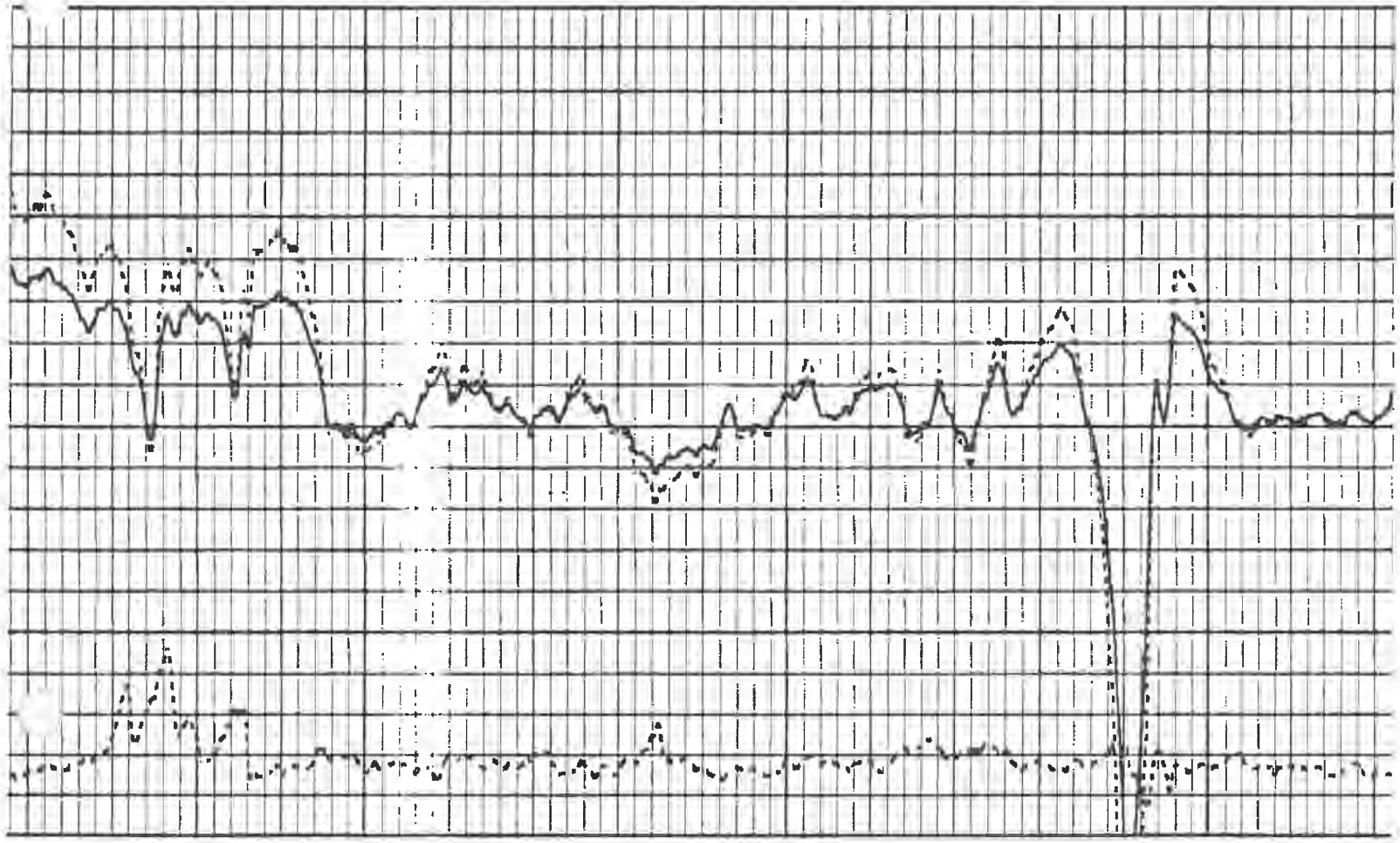

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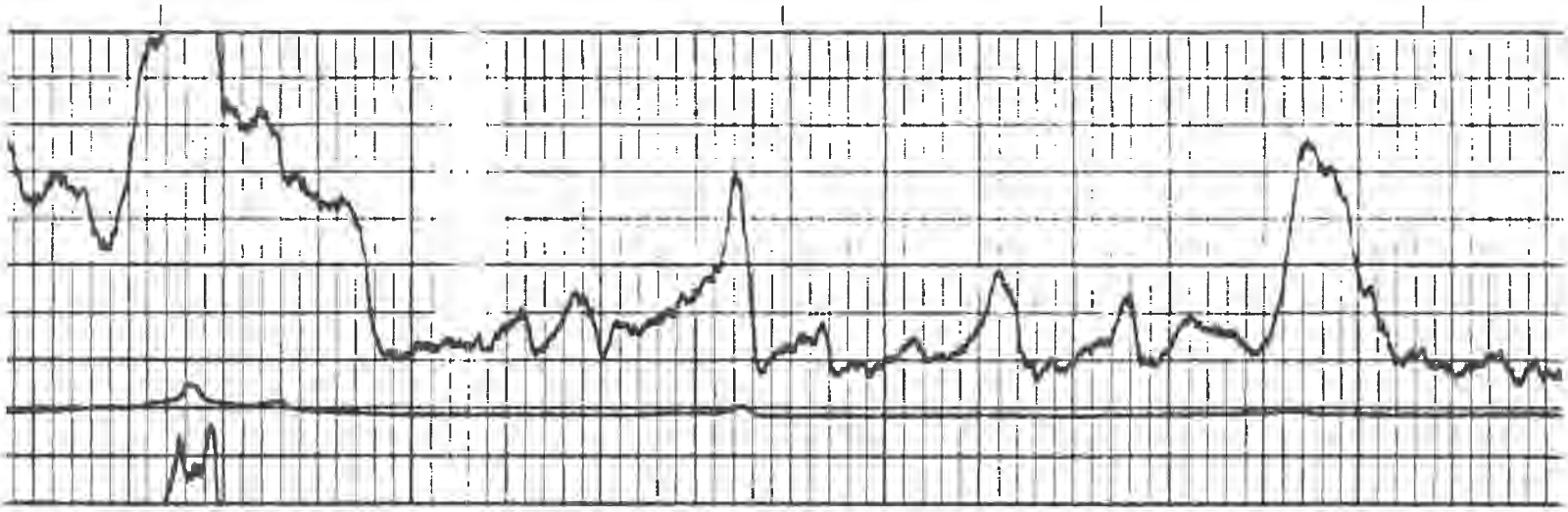

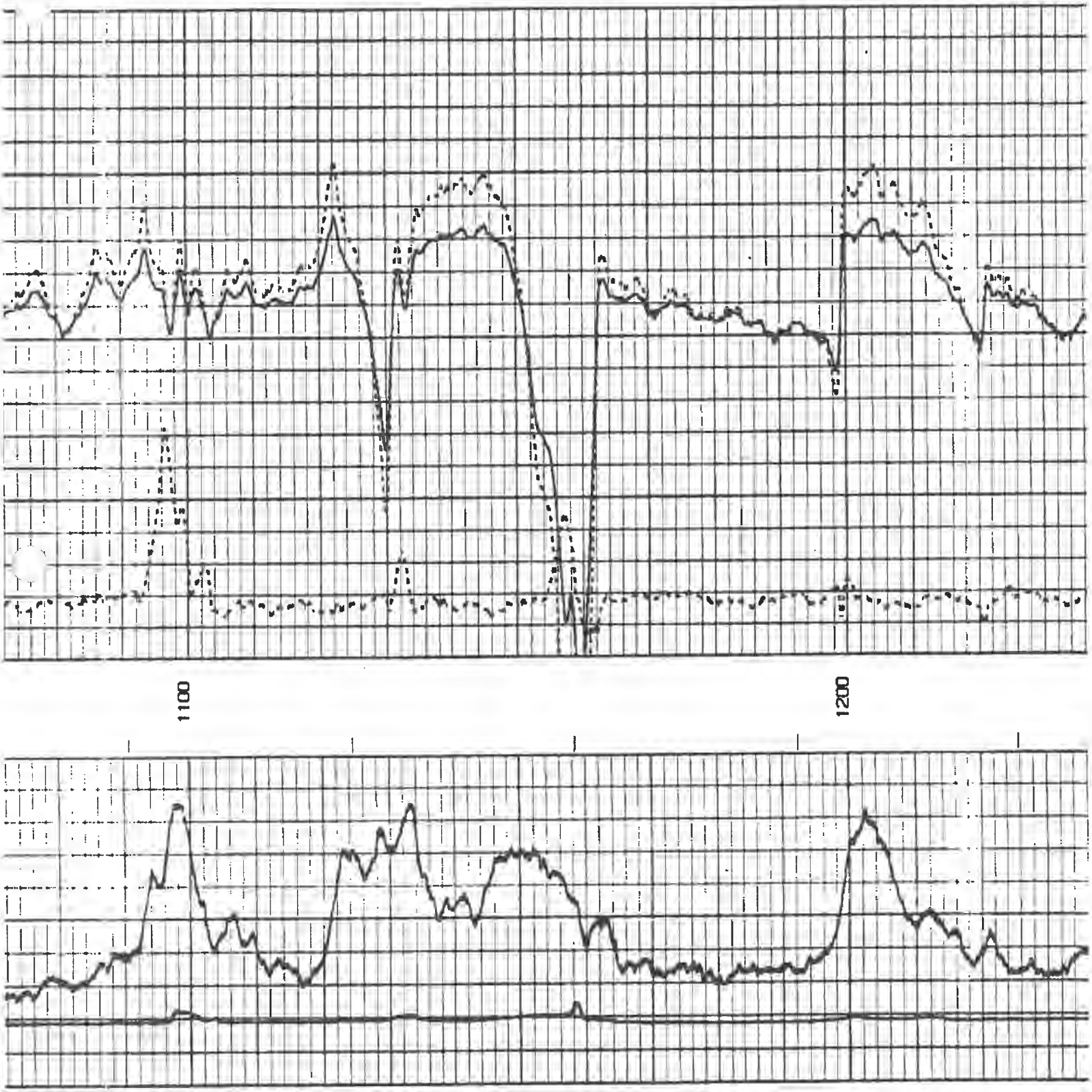
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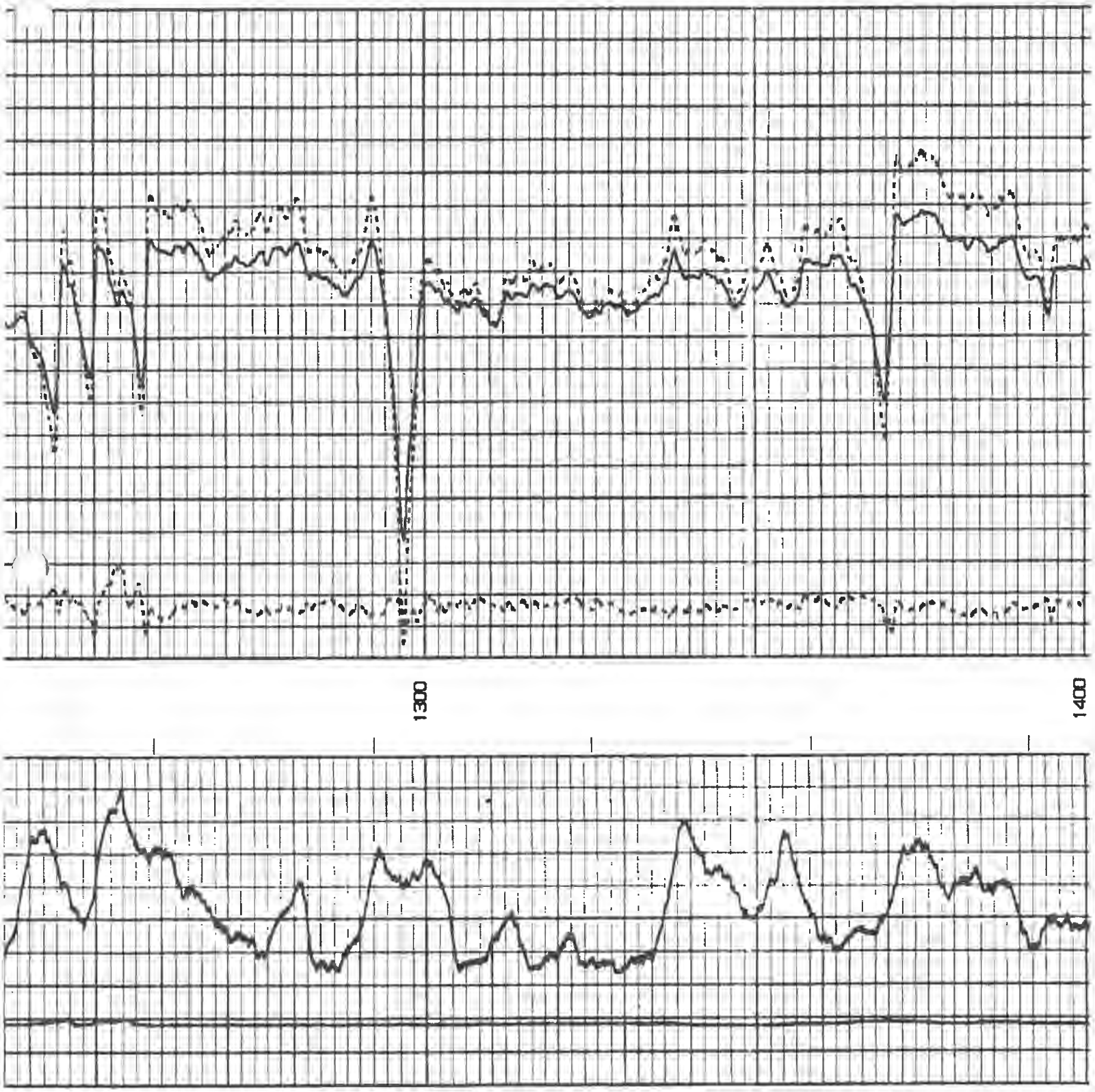
1200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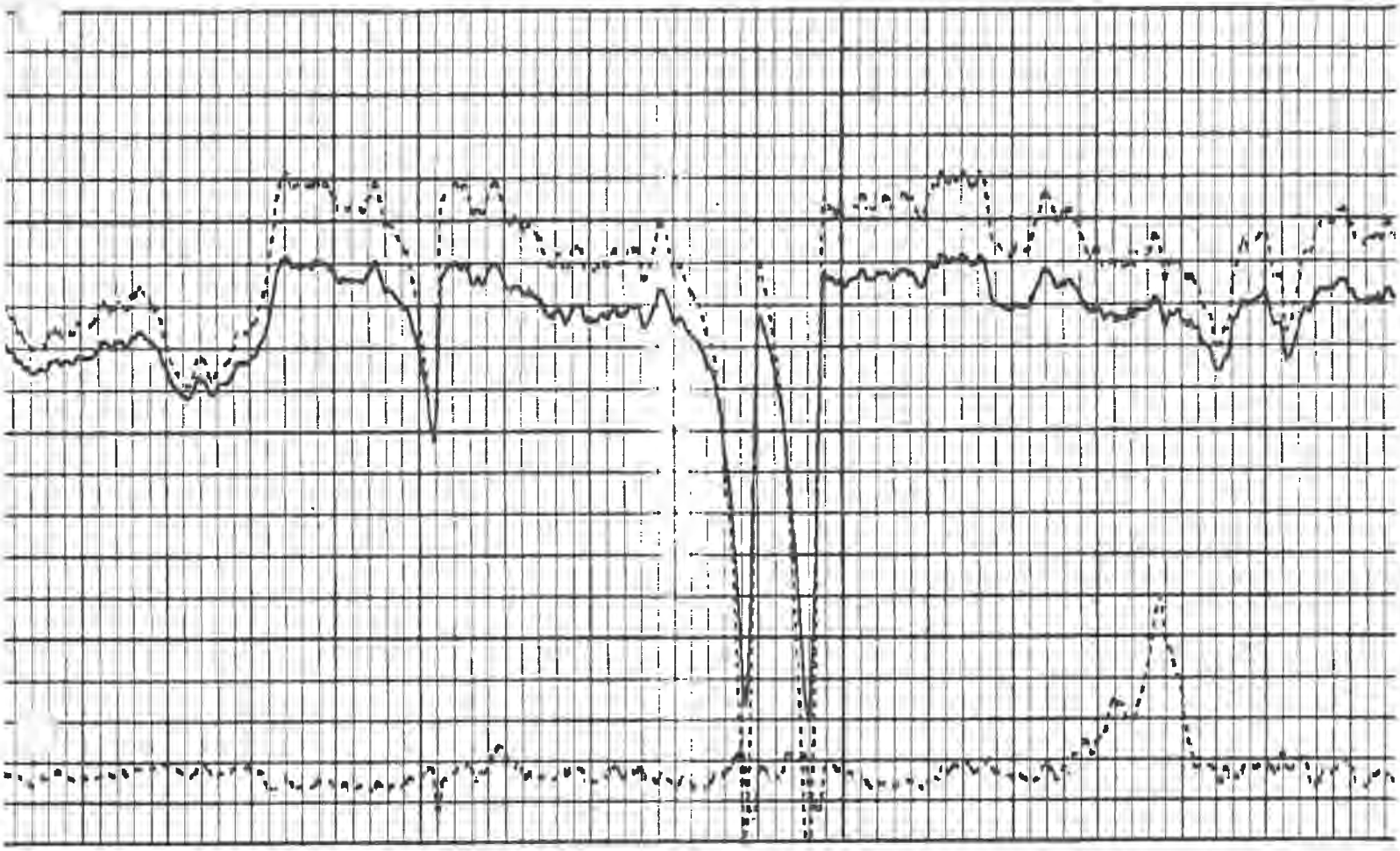
1400



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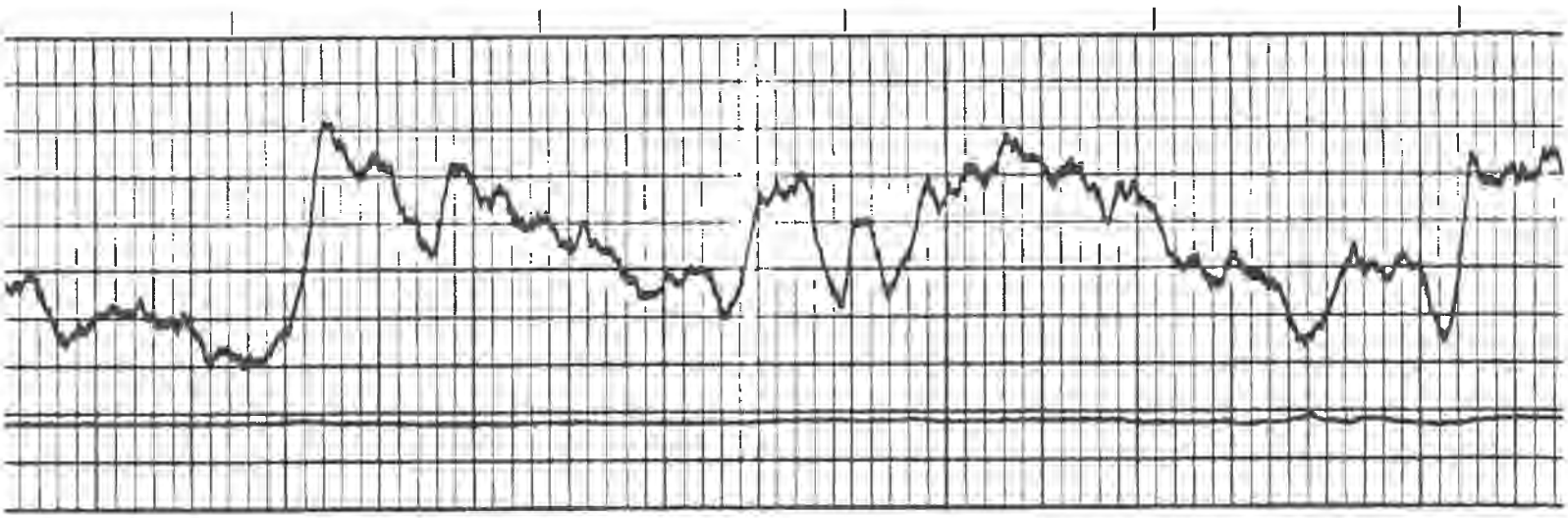

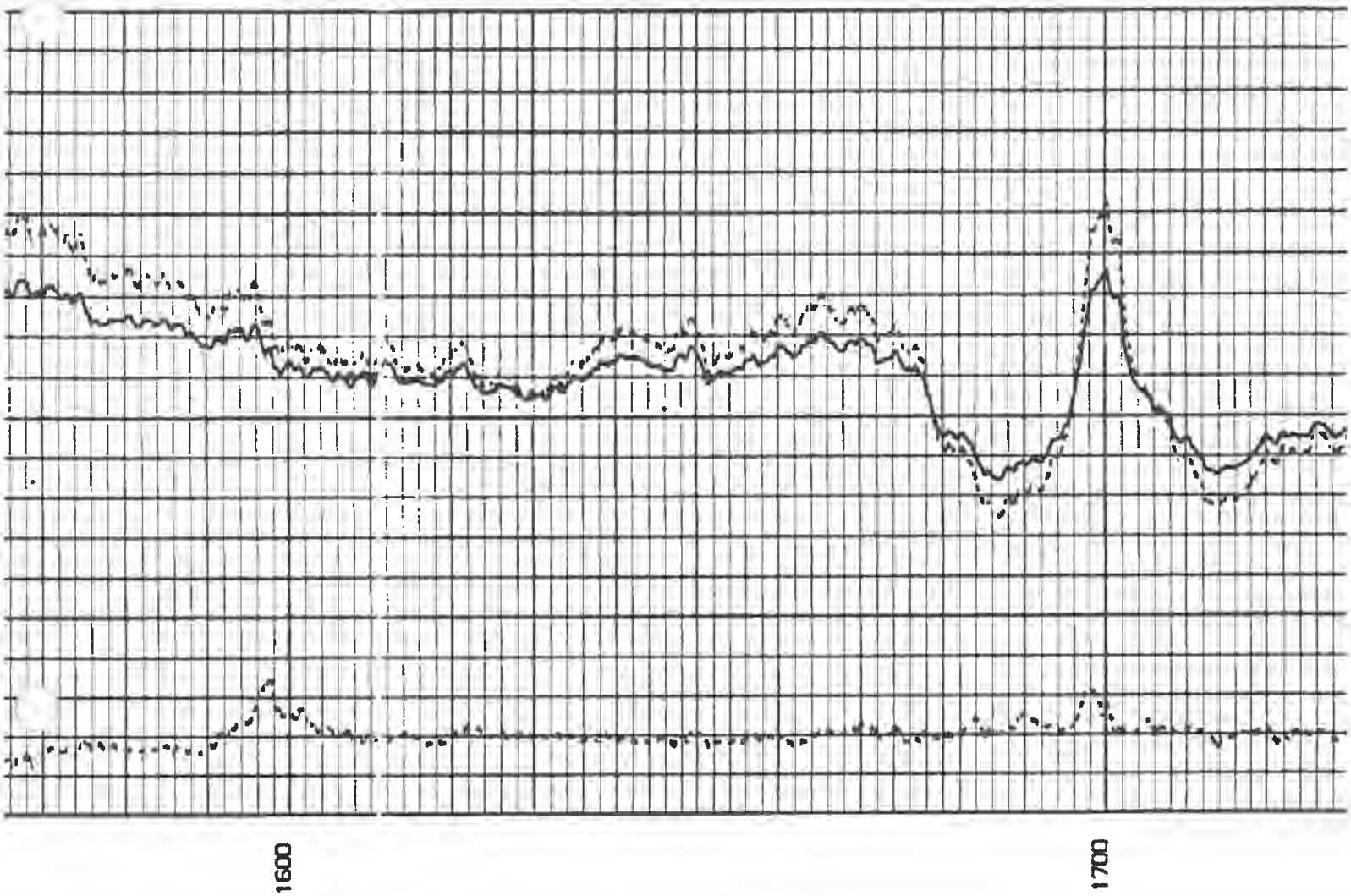
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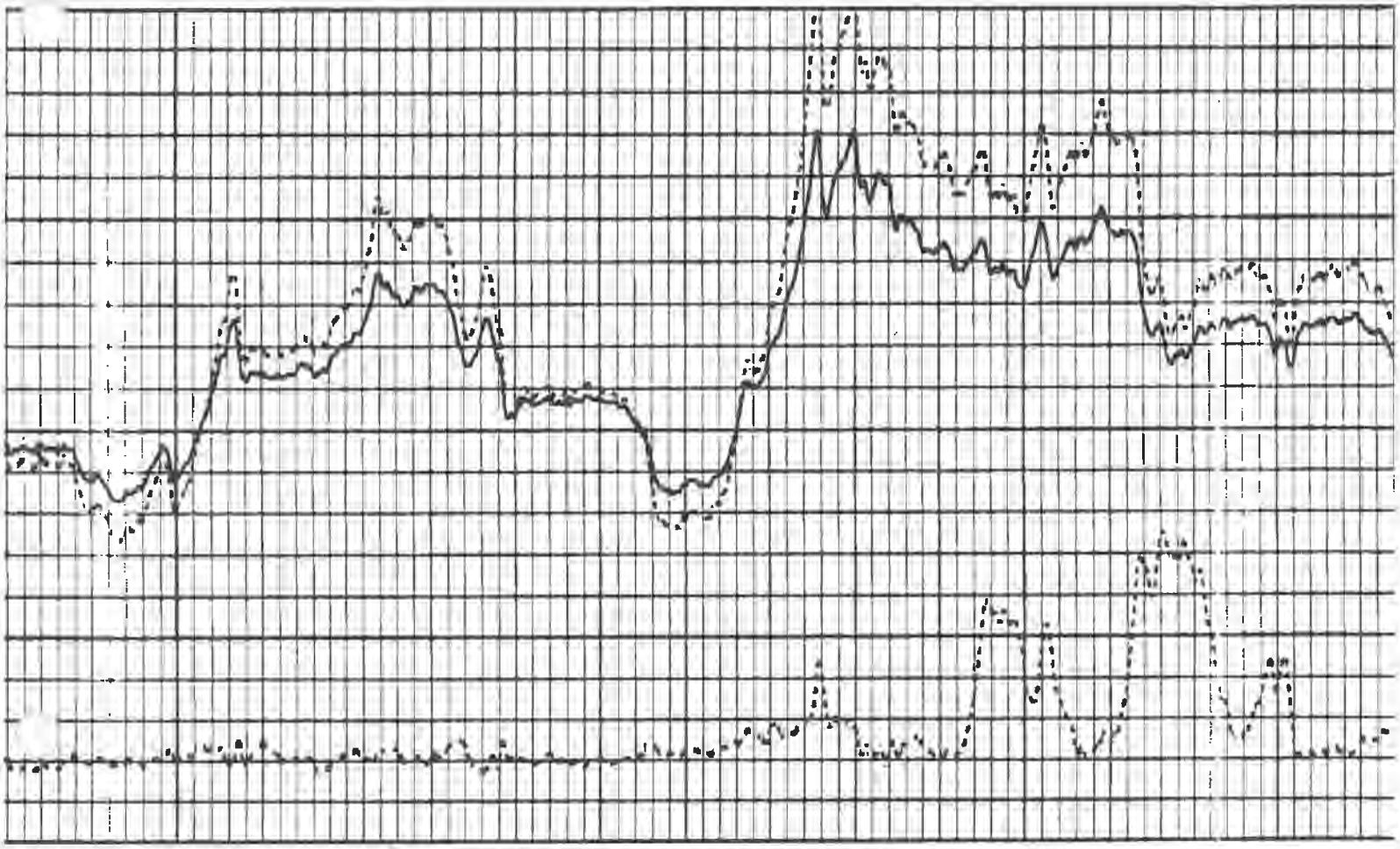

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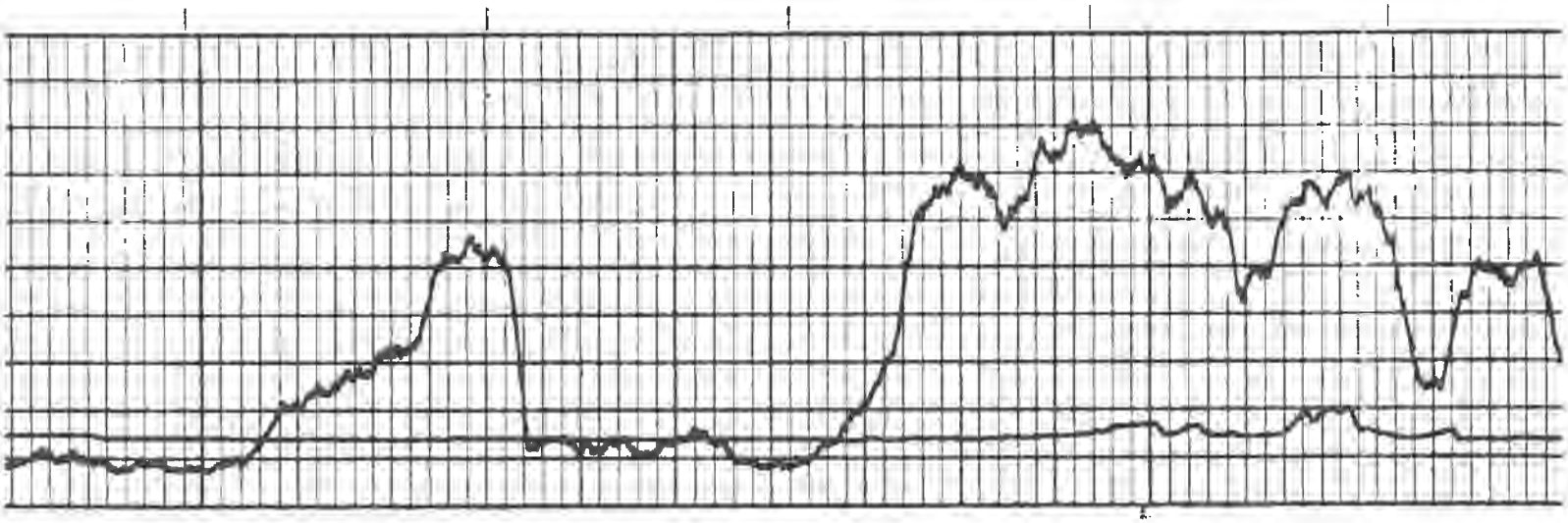

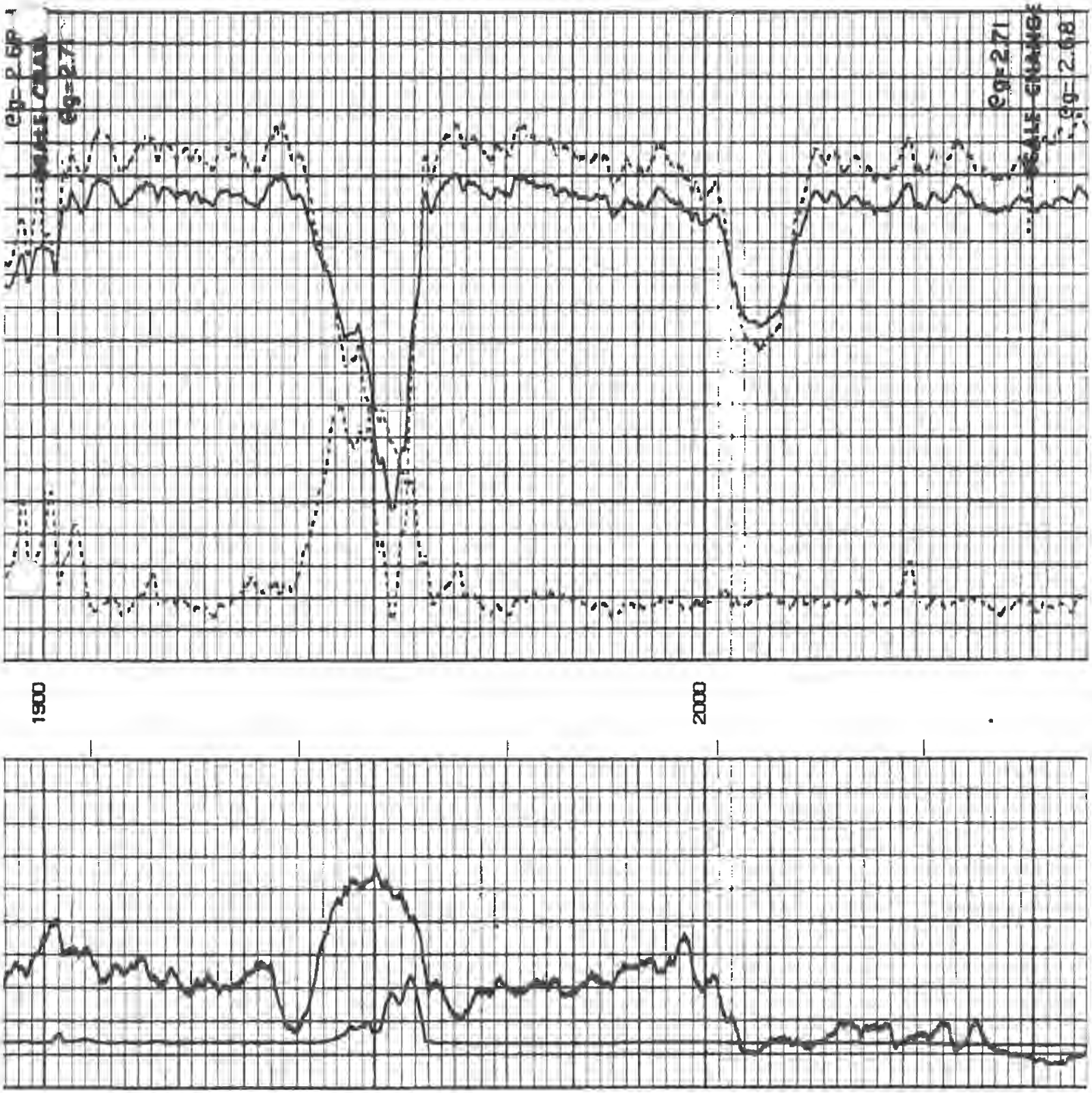
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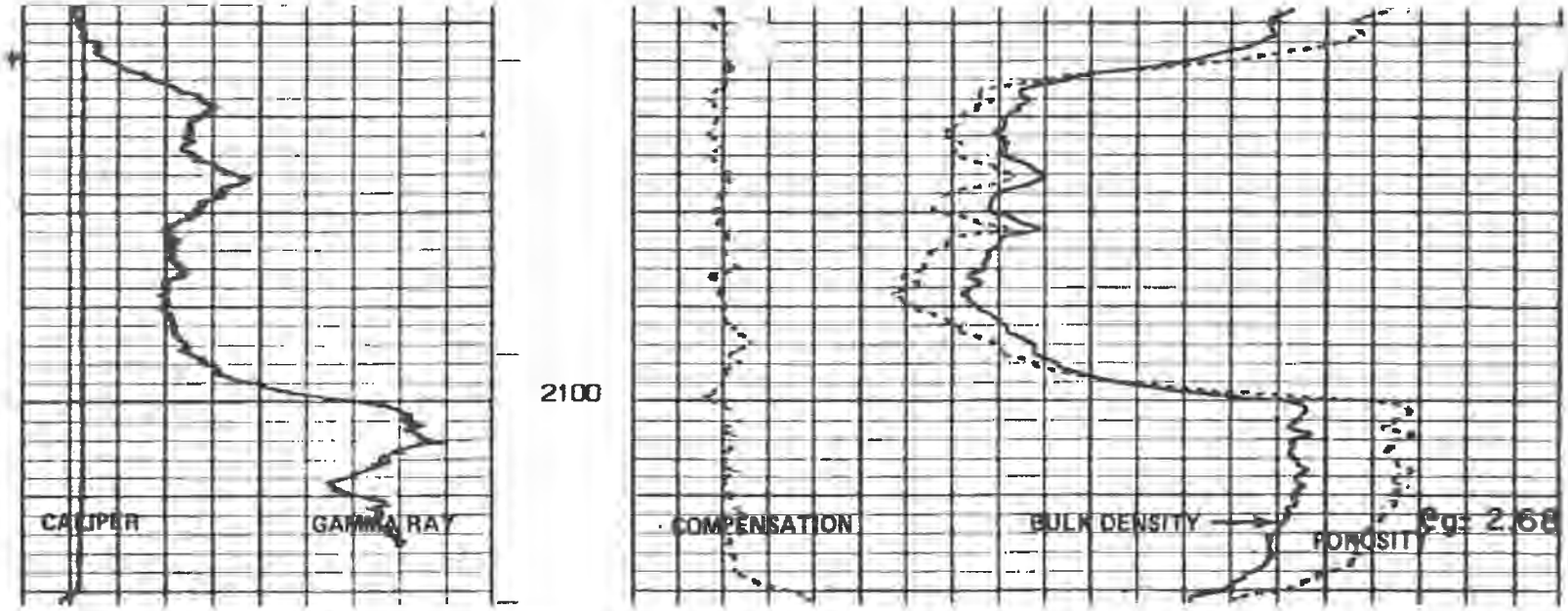
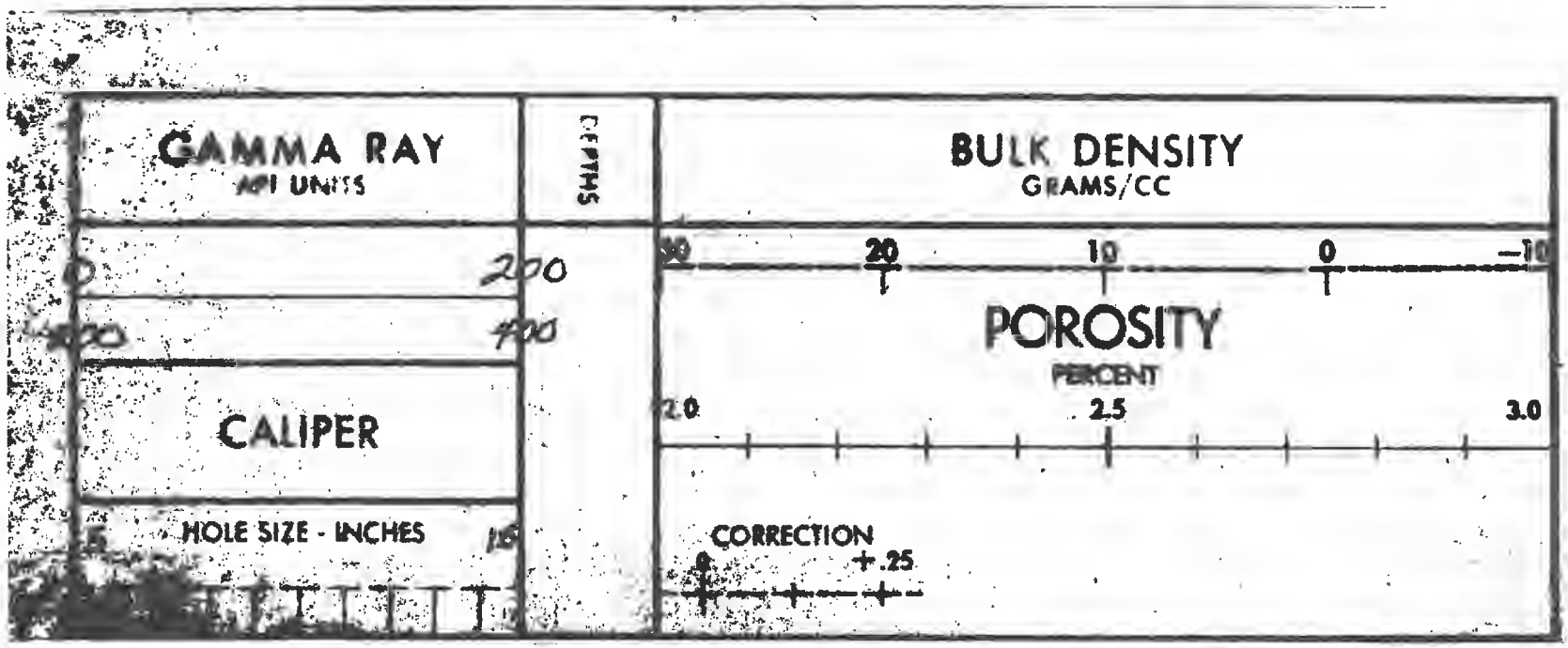
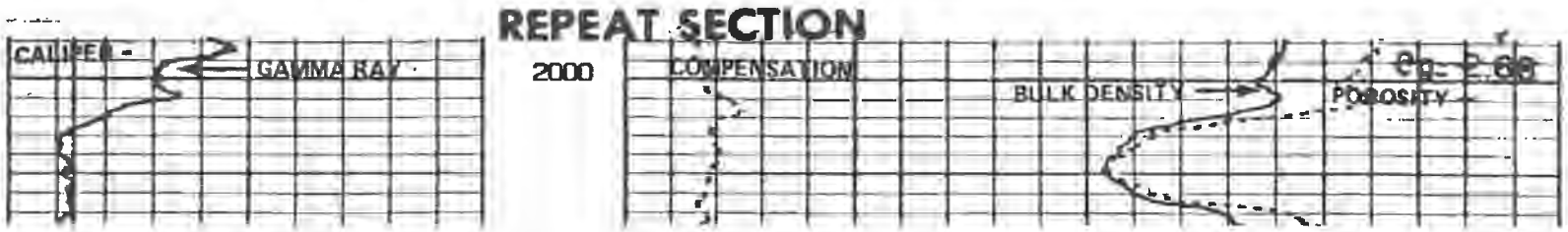
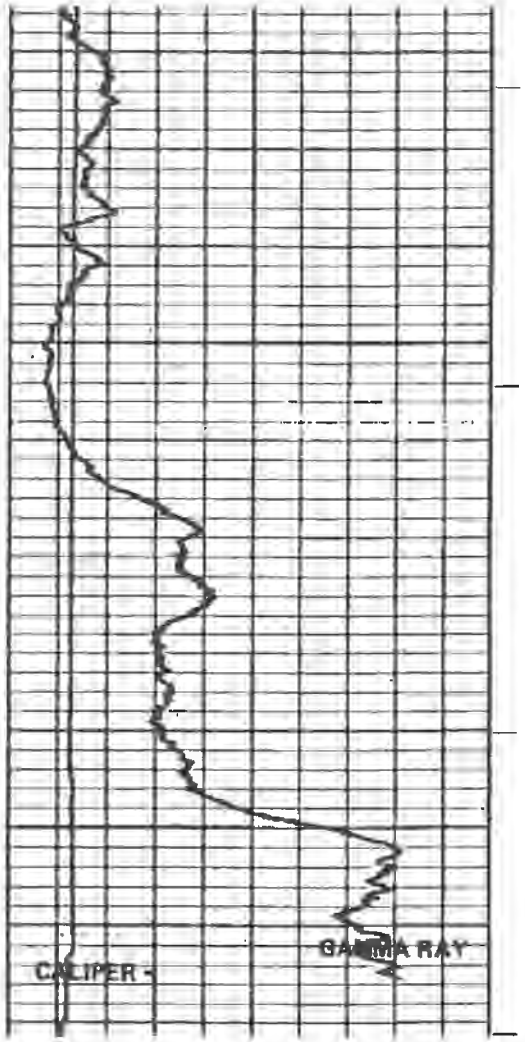
eg=2.68
1900
2000





REPEAT SECTION





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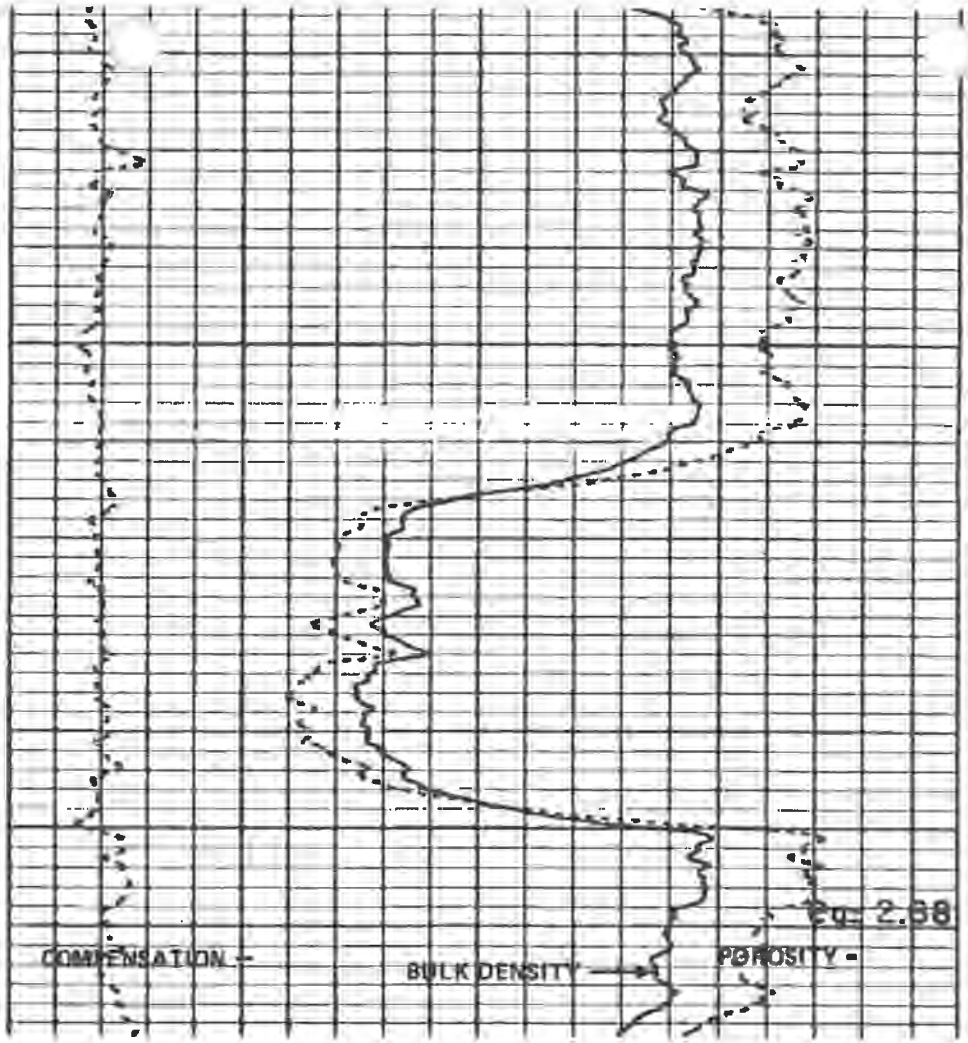
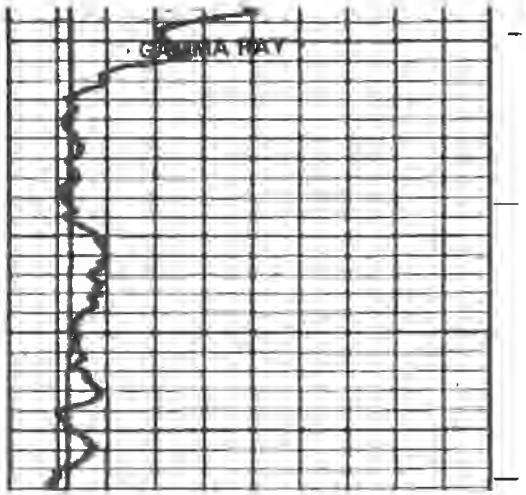
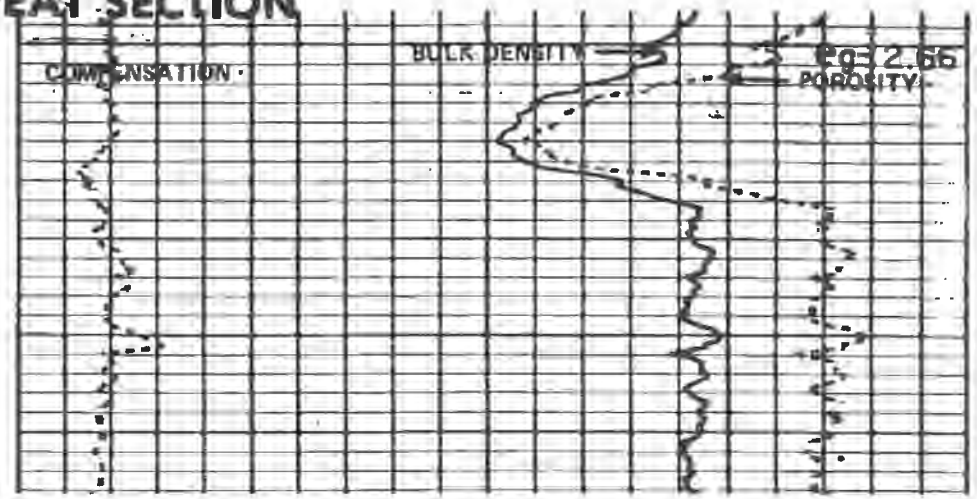
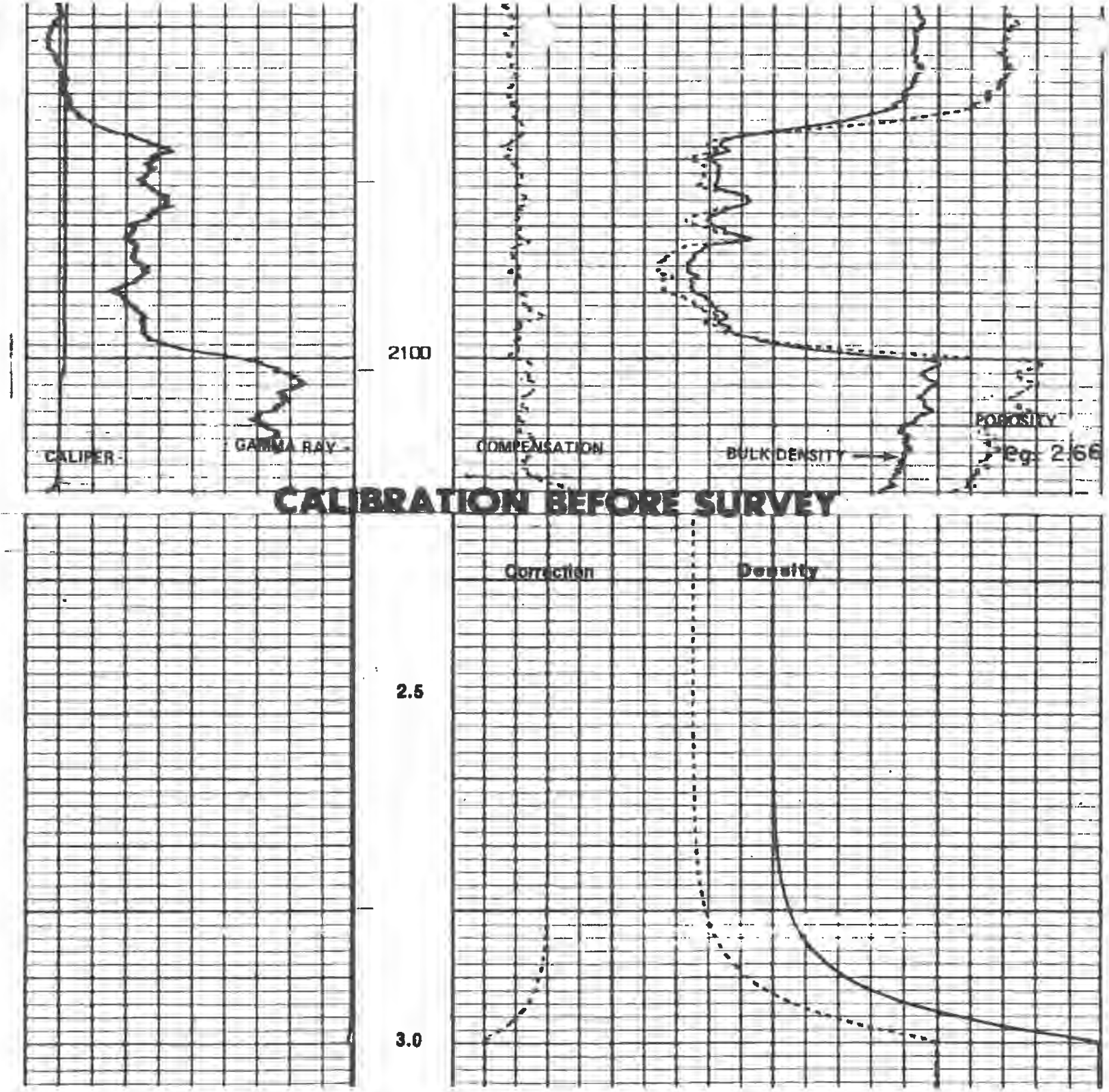


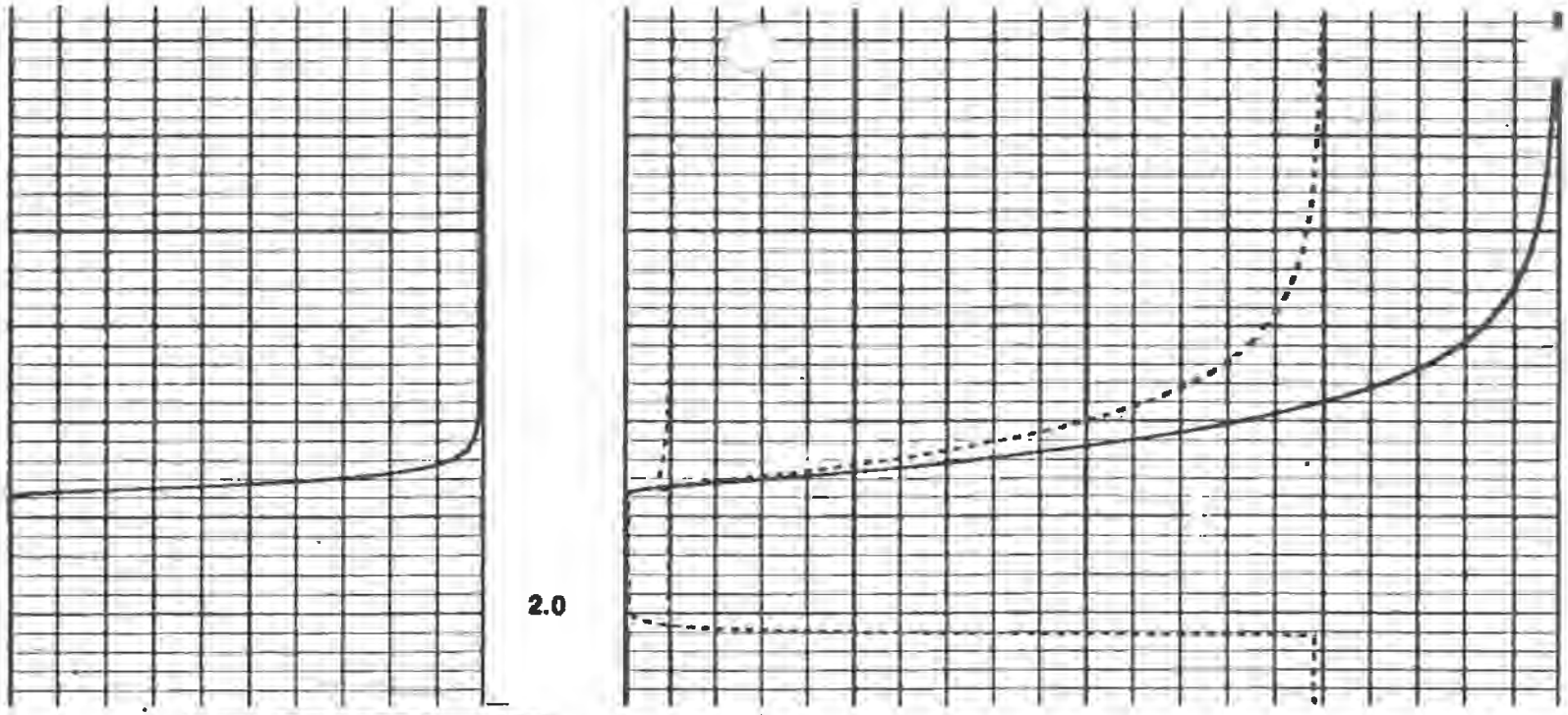
REPEAT SECTION

2099






2100
CALIPER
GAMMA RAY
COMPENSATION
BULK DENSITY
POROSITY
eg. 2.66
CALIBRATION BEFORE SURVEY
Correction
Density
2.5
3.0



GAMMA RAY API UNITS	DEPTHS	BULK DENSITY GRAMS/CC
0 — 200		POROSITY PERCENT
200 — 400		30 — 20 — 10 — 0 — −10
CALIPER		2.0 — 2.5 — 3.0
HOLE SIZE - INCHES		CORRECTION 0 — +.25
5 — 6		

COMPANY Pennzoil Company

WELL W. M. Looney #41

FIELD Smithfield District STATE WV

Log FR 2121

Log TD 2122

DRLR TD 2125

Elev.

DF 1056.36

SEC _____ COUNTY KING

KB 1096.36
GI 1096.36

WVGES GEOLOGY UNDERLIES IT ALL "Pipeline"

Select County: (087) Roane

Enter Permit #: 4013

Get Data | Reset

Select datatypes: (Check All)

- Location
- Owner/Completion
- Pay/Show/Water
- Production
- Stratigraphy
- Logs
- Plugging
- Sample
- Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 4013

Report Time: Thursday, April 30, 2020 9:58:42 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708704013	Roane	4013	Smithfield	Tariff	[illegible]	38.647036	-81.216494	481160.6	4277631.2

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708704013	5/6/1986	Original Loc	Completed	Pennzoil Co		64				Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT
4708704013	5/6/1986	4/29/1986	1044	Ground Level	Tariff (Imn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2153		2153		0	0	0	0			0	0	0

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708704013	5/6/1986	Water	Salt Water	Vertical			1730						0
4708704013	5/6/1986	Horizon	Injection	Vertical	2064	Big Injun (Price&eq)	2078	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704013	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704013	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704013	Ground Resources, LLC	2017	0												
4708704013	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704013	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704013	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphic Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708704013	Original Loc	1st Salt Sand	Well Record	1487	Reasonable	34	Reasonable	1044	Ground Level
4708704013	Original Loc	2nd Salt Sand	Well Record	1539	Reasonable	156	Reasonable	1044	Ground Level
4708704013	Original Loc	3rd Salt Sand	Well Record	1730	Reasonable	155	Reasonable	1044	Ground Level
4708704013	Original Loc	Little Lime	Well Record	1885	Reasonable	32	Reasonable	1044	Ground Level
4708704013	Original Loc	Big Lime	Well Record	1940	Reasonable	106	Reasonable	1044	Ground Level
4708704013	Original Loc	Keener	Well Record	2046	Reasonable	15	Reasonable	1044	Ground Level
4708704013	Original Loc	Big Injun (Price&eq)	Well Record	2061	Reasonable	19	Reasonable	1044	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708704013	2	2152		G D.C.*	Y	N	2	2130	398	2152									398	2152	Y	Y	N						

Comment: *logs: caliper, bit size, CCL, perforation depth

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

INJECTOR 4013

INJECTOR 4013

FILENAME
4708704013gdco.tif
4708704013gpo.tif

geologic log types:
d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
e photoelectric adsorption (PE or Pe, etc.)
g gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l lateralog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
o other[1]
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential
mechanical log types:
b cement bond
c caliper
o other[1]
p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

4013

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 2061 Feet (top) 2080 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2153 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

4013

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 5/8"		H-40	20#	414'	414'	200sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2133'	2133'	80sks
Tubing	NONE						
Liners							

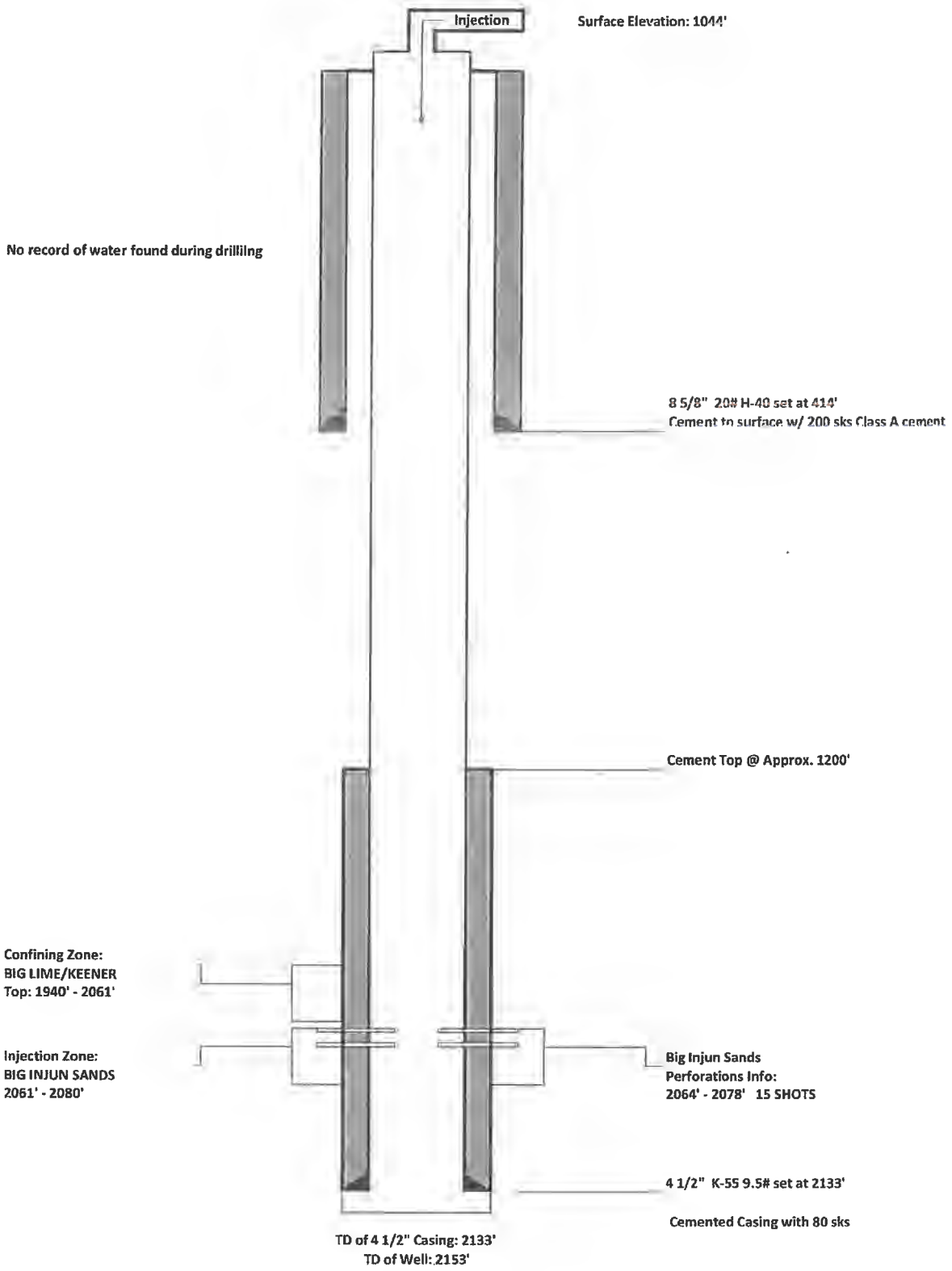
TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

4013

WELL SCHEMATIC

TALLMAN 64
API 47-087-04013



INJECTOR 4013

-35

State of West Virginia
DEPARTMENT OF ENERGY
Oil and Gas Division

Date October 23, 1986
Operator's
Well No. 64
Farm P.A. Tallman
API No. 47 - 087 - 4013-Li

WELL OPERATOR'S REPORT OF DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil X / Gas ___ / Liquid Injection ___ / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow ___ /)

LOCATION: Elevation: 1044.51' Watershed Trace Fork
District: Smithfield County Roane Quadrangle Tariff 7.5'

COMPANY Pennzoil Company
ADDRESS P.O. Box 1588, Parkersburg, WV 26102
DESIGNATED AGENT James A. Crews
ADDRESS P.O. Box 1588, Parkersburg, WV 26102
SURFACE OWNER Pennzoil Company
ADDRESS
MINERAL RIGHTS OWNER Anna Lee Collins
ADDRESS Point Pleasant, WV
OIL AND GAS INSPECTOR FOR THIS WORK Homer Dougherty ADDRESS Linden Rt. Box 3-A, Looneyville, WV
PERMIT ISSUED 4-14-86
DRILLING COMMENCED 4-29-86
DRILLING COMPLETED 5-06-86
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8	414	414	200 sks
7			
5 1/2			
4 1/2	2133	2133	50 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 2061 feet
Depth of completed well 2064 feet Rotary X / Cable Tools ___
Water strata depth: Fresh N/A feet; Salt 1730 feet
Coal seam depths: N/A Is coal being mined in the area? no

OPEN FLOW DATA
Producing formation WIW Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion—)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

(Continue on reverse side)

NOV 03 1986

6

INJECTOR 4013

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Fractured: 6-20-86

Perforated: 2064-2078/15H

Big Injun w/300 gls. 15% HCL, 145 bbls. 20# gelled water, 1500# 20/40 sd.

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
	0	30	
Sand	30	100	
Silty Shale	100	142	
Sand	142	364	
Silty Shale	364	398	
Silty Sand	398	434	
Silty Shale	434	450	
Sand	450	1487	
Shale, Sand	1487	1521	
1st Salt Sand	1521	1539	
Silt & Shale	1539	1695	
2nd Salt Sand	1695	1730	
Silt & Shale	1730	1885	
3rd Salt Sand	1885	1917	
Little Lime	1917	1922	
Blue Monday	1922	1940	
Pencil Cave	1940	2046	
Big Lime	2046	2061	
Keener	2061	2080	
Big Injun	2080	2153	
Pocono Shale			
Total Depth		2153	

(Attach separate sheets as necessary)

Pennzoil Company
Well Operator

By: Curtis A. Kenon

Date: 10-27-86

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."

INJECTOR 4013

FORM WW-3(B) **FILE COPY**
(Obverse)
7/85

RECEIVED
MAR 18 1986
DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

1) Date: March 17, 19 86
2) Operator's Well No. P.A. Tallman #64
3) SIC Code
4 API Well NO. 47 - 087 - 4013-LI
State County Permit
5. UIC Permit No.

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
DEPARTMENT OF ENERGY, OIL AND GAS DIVISION

6) WELL TYPE: Liquid injection X / Gas injection (not storage) / Waste disposal /
7) LOCATION: Elevation: 1044.51 Watershed: Trace Fork
District: Smithfield County: Roane Quadrangle: Tariff 7.5'
8) WELL OPERATOR Pennzoil Company
Address P.O.Box 1588
Parkersburg WV 26102
9) DESIGNATED AGENT James A. Crews
Address P.O.Box 1588
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Homer Dougherty
Address Linden Rt., Box 3-A
Looneyville,WV 25259
11) DRILLING CONTRACTOR:
Name
Address

12) PROPOSED WELL WORK: Drill X / Drill deeper / Redrill / Stimulate /
Plug off old formation / Perforate new formation / Convert /
Other physical change in well (specify)
13) GEOLOGICAL TARGET FORMATION, Big Injun Depth 2039 feet(top) to 2073 feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 2123 ft.
Approximate water strata depths: Fresh, n/a feet; salt, n/a feet.
16) Approximate coal seam depths: n/a
17) Is coal being mined in the area? Yes / No X /
18) Virgin reservoir pressure in target formation 80 psig. Source estimated
19) Estimated reservoir fracture pressure 2143 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 6.25 BPH Bottom hole pressure 1800
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES.
bacteriacides
22) FILTERS (IF ANY): Cartridge
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	8-5/8	H40	20	X		400	400	Cement to surface	
Coal									Sizes
Intermediate	4-1/2	J55	9.5	X		2123	2123	Thru Salt Sand	
Production									Depths set
Tubing									
Liners									Perforations:
									Top Bottom

25) APPLICANT'S OPERATING RIGHTS were acquired from P. A. Tallman
by deed / lease X / other contract / dated May 21, 19 06, of record in the
Roane County Clerk's office in Lease Book 12 at page 26

See the reverse side of the APPLICANT'S COPY for instructions to the well operator

File

FORM 25-226

47-087-04013
INJECTOR

COMPLETION REPORT AND PHYSICAL INVENTORY

CO.	DPT	AFE NO.	AFE OR LOCATION NAME	DATE	PAGE
01	1	70-20800	Tariff 1986 Expansion	01-16-87	1 OF 1

COMPANY	DIVISION	DISTRICT
PEPCO	Eastern	Parkersburg

WELL NAME AND NO.	FIELD OR AREA
P. A. Tellman #64	Tariff #8000

OPERATOR	COUNTY OR PARISH	STATE
PEPCO	Roane	West Virginia

PROJECT DESCRIPTION	LEASE NAME
Drill and complete one new water injection well.	Tariff Unit #1 10-09917
	FORMATION: Big Injun

DATE WORK STARTED	DATE WELL SPUDDED	TOTAL DEPTH DRILLED	LEASE NO.
04-08-86	04-30-86	2153	81216-50
DATE READY FOR SERVICE	**DATE WELL COMPLETED**	**PLUG BACK DEPTH**	**ASSOC. AFE NO.**
07-08-86	08-22-86	2101	
DATE PLACED IN SERVICE	**DATE RIG RELEASED**	**PRODUCTION DEPTH**	**BUDGET CODE**
07-08-86	05-07-86	2064 - 2078	7106

NON-PRODUCING LEASE(S) HELD BY PRODUCTION	LEASE NO.(S)	ACRES

ATR CO.	ACCOUNT MAJ	ACCOUNT SUB	* DISP.	* CONC.	DETAIL DESCRIPTION OF MATERIALS INSTALLED, ABANDONED OR REMOVED	QUANTITY	FOR ACCTG. USE ONLY AMOUNT
X	XXX	XXX	X	X			
					Material Installed		
1	145	440	0	A	8 5/8" OD 24.00# Casing	412.00	Ft.
1	145	440	0	A	4 1/2" OD 9.50 # Casing	2,144.12	Ft.
1	145	444	0	A	8 5/8" x 4 1/2" Casinghead	1.00	Ea.
1	145	491	0	A	Miscellaneous 8 5/8" float equipment	1.00	Lot
1	145	491	0	A	Miscellaneous 4 1/2" float equipment	1.00	Lot
1	146	456	0	A	1" OD XH Beveled line pipe	711.00	Ft.
1	146	463	0	A	1" Water meter	1.00	Ea.
1	146	469	0	A	Miscellaneous Material	1.00	Lot
1	146	469	0	B	54" Spiral Pipe	4.00	Ft.
1	146	469	0	A	1" OD XH Beveled line pipe	4.00	Ft.
1	146	469	0	D	12" OD Line pipe	39.00	Ft.
1	146	469	0	D	20" OD Line pipe	40.00	Ft.
1	146	469	0	A	Miscellaneous material	1.00	Lot

4013
Perforation
Depth Chart

Hitwell Surveys, Inc.

Perforation Depth Control

PERMIT NO.
47-087-4013

COMPANY PENNZOIL COMPANY

WELL P. A. TALLMAN #64

FIELD SMITHFIELD DIST.

COUNTY ROANE STATE W.VA.

LOCATION: TARIFF 7.5

SEC. TWP. DIST.

OTHER LOGS:

ELEVATIONS:
ED.
DF.
GL. 1050.51

PERMANENT DATUM GROUND LEVEL ELEV. 1044.5
LOG MEASURED FROM KELLY BUSHING
DRILLING MEASURED FROM KELLY BUSHING

DATE	6-20-86
RUN NO.	ONE
TYPE LOG	GR/CCL
DEPTH - DRILLER	2153'
DEPTH - LOGGER	2083'
BOTTOM LOGGED INTERVAL	2083'
TOP LOGGED INTERVAL	1850'
TYPE FLUID IN HOLE	H2O/ACID
SALINITY PPM Cl.	
DENSITY LB./GAL.	
LEVEL	1680'
MAX. REC. TEMP. - DEG. F	
EQUIP. ON TIME	1 HOUR
RECORDED BY	E. MONROE
WITNESSED BY	MR.N.PUTSCHER

BORE HOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO

THIS HEADING AND LOG CONFORM TO API STANDARD PRACTICE RP-33

EQUIPMENT DATA

GAMMA RAY	
RUN NO.	ONE
TOOL MODEL NO.	H-2
DIAM.	1.75"
DETECT. MODEL NO.	---
TYPE	SCINT
LENGTH	4

GENERAL	
HOIST TRUCK NO.	H-31
HOIST TRUCK NO.	H-31
TOOL SERIAL NO.	

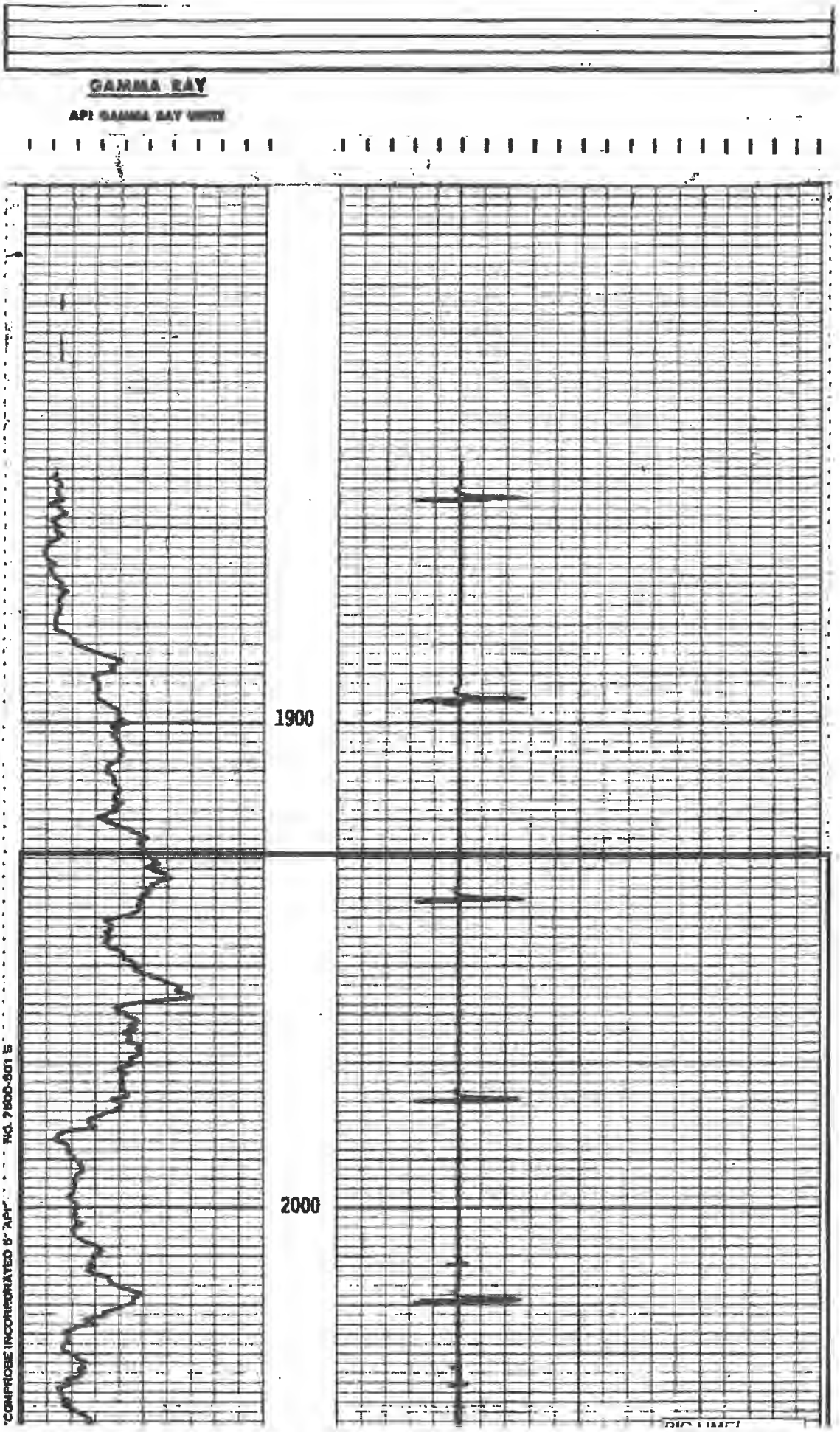
PERFORATIONS		
Type	To	From	No. Shots
H.S.I.	2089	2065	17

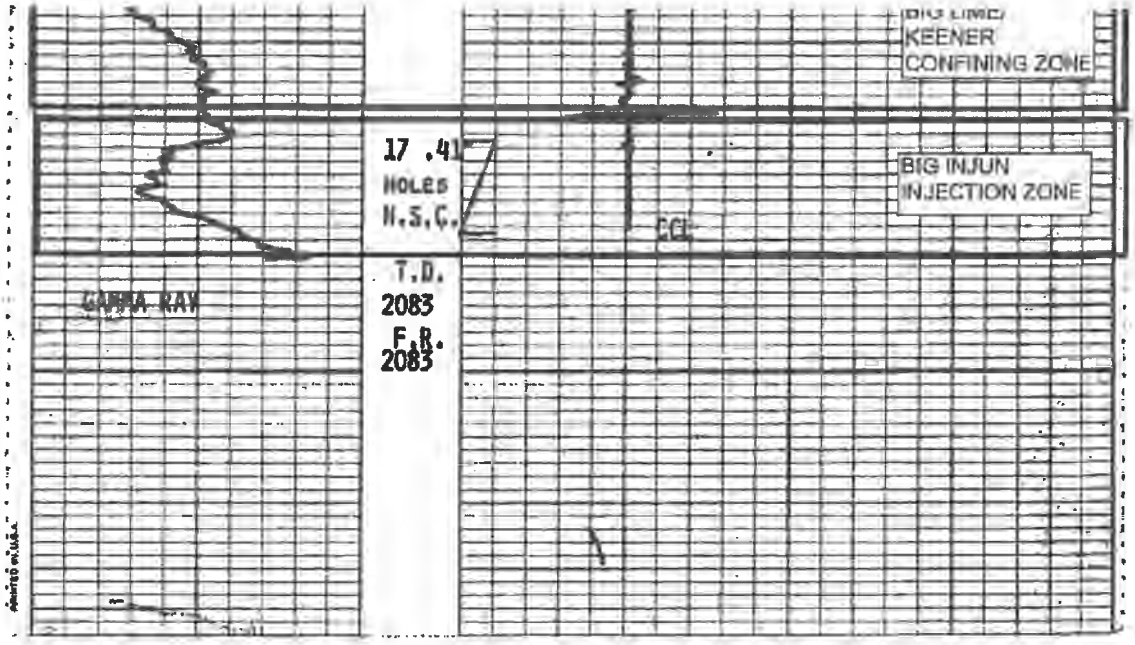
LOGGING DATA

GENERAL								GAMMA RAY	
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS. SETTINGS	TOOL LOG DIV.	SCALE API G.R. UNITS		
ONE	2083	1850	75	2	74	0-1	0-200		

SUPPLEMENTARY LITERATURE:

REMARKS:


GAMMA RAY
API GAMMA RAY UNITS
1900
2000
"COMPROBE INCORPORATED 5" API" NO. 7600-501 S


BIG LIME/
KEENER
CONFINING ZONE
17 .41
HOLES
N.S.C.
BIG INJUN
INJECTION ZONE
CCL
T.D.
2083
F.R.
2083
GAMMA RAY

4013
G/R-DEN
CAL
LOG

ROA 4013 4013

ALLEGHENY NUCLEAR SURVEYS INC.

PENNZOIL COMPANY
P.A. TALLMAN # 64
G/R-DEN-CAL

LOCATION TARIFF 7.5'
COUNTY ROANE
FIELD SMITHFIELD DISTRICT
WELL P. A. TALLMAN # 64
COMPANY PENNZOIL COMPANY

COMPANY PENNZOIL COMPANY
WELL P. A. TALLMAN # 64
FIELD SMITHFIELD DISTRICT
COUNTY ROANE
COUNTRY/STATE USA / WEST VIRGINIA
PERMIT NUMBER 47-087-4013

LOCATION				OTHER SERVICES
TARIFF 7.5'				NONE
LSD	SEC	TWP	RGE	

PERMANENT DATUM GROUND LEVEL . ELEVATION 1044.01'
LOG MEASURED FROM K.B.. 6 FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM K.B.

ELEVATIONS:
KB 1050.01'
DF 1050.01'
GL 1044.01'

DATE	24-MAY-84			
RUN NUMBER	ONE			
DEPTH-DRILLER	2183			
DEPTH-LOGGER	2183'			
FIRST READING	2183'			
LAST READING	SURFACE			
CASING-DRILLER	13". @ 5.5.			
CASING-LOGGER	416'			
BIT SIZE	6.75 INCHES			
TYPE FLUID IN HOLE	N/A			
DENSITY/VISC.				
PRIMARY LOSS				
SAMPLE SOURCE				
RM @ MEAS TEMP				
RMF @ MEAS TEMP				
RMC @ MEAS TEMP				
SOURCE: RMF/RMC				
RM @ BHT				
TIME SINCE CIRC	2 HOURS			
MAX REC TEMP	88 DEGREES			
EQUIPMENT/BASE	"384" / GAS			
RECORDED BY	V. CASTO			
WITNESSED BY	MR SMITH			

RUN	BOREHOLE RECORD			CASING RECORD			
NUMBER	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
ONE	6.75 INCHES	413'	2153'	5/8 INCHES	20 LB/FT	SURFACE	413'

EQUIPMENT	RUN 1	RUN 2	RUN 3	RUN 4
[illegible]	N13D13			

REMARKS

PENNZOIL COMPANY

P.A. TALLMAN # 64

C/R-DEN-CAL

WATERSHED: TRACE FORK

MATRIX DENSITY 2.65 GRAMS/CC

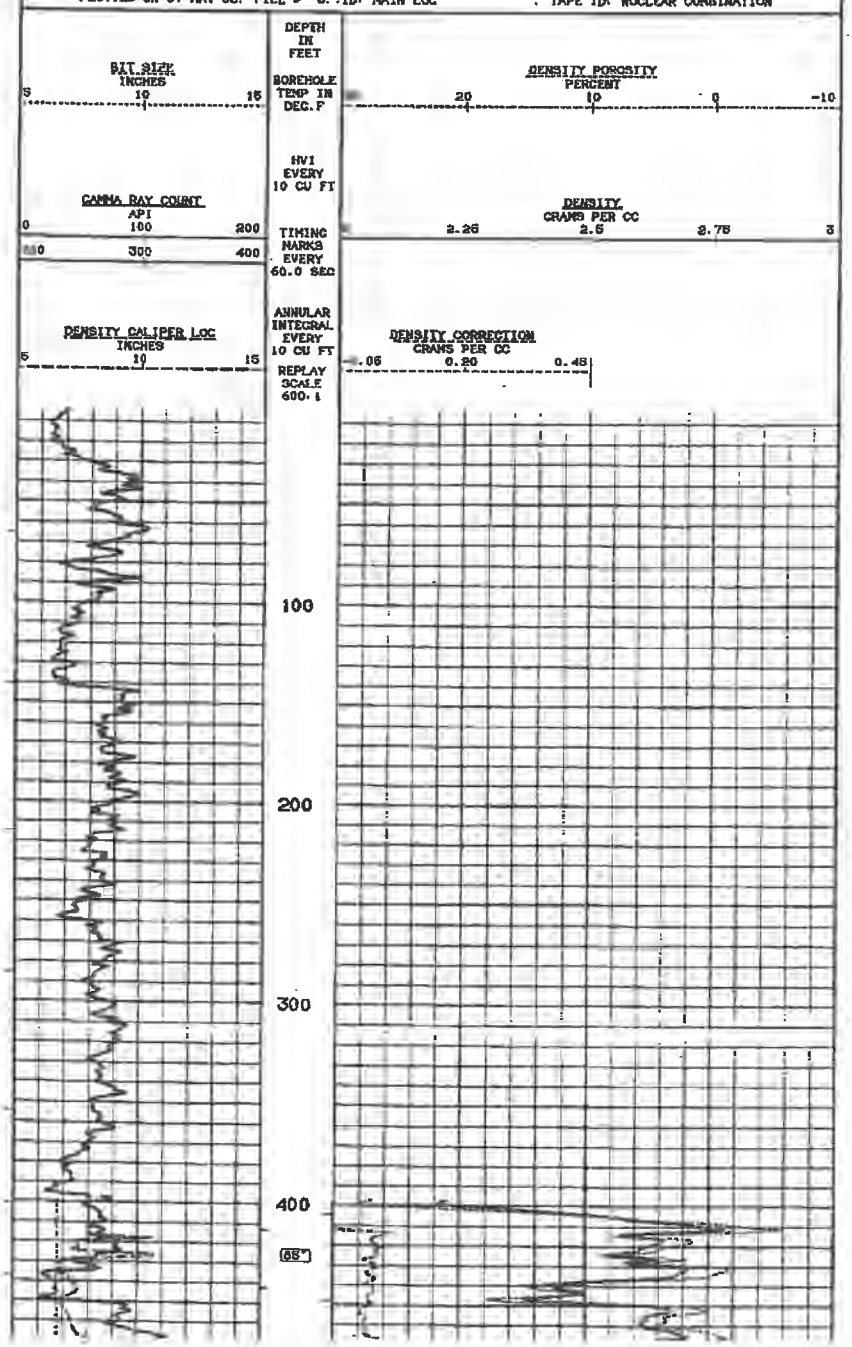
SYSTEM CONFIGURATION DATES: LOGGED 10-JAN-86 PROCESSED ..... PLOTTED 10-JAN-86

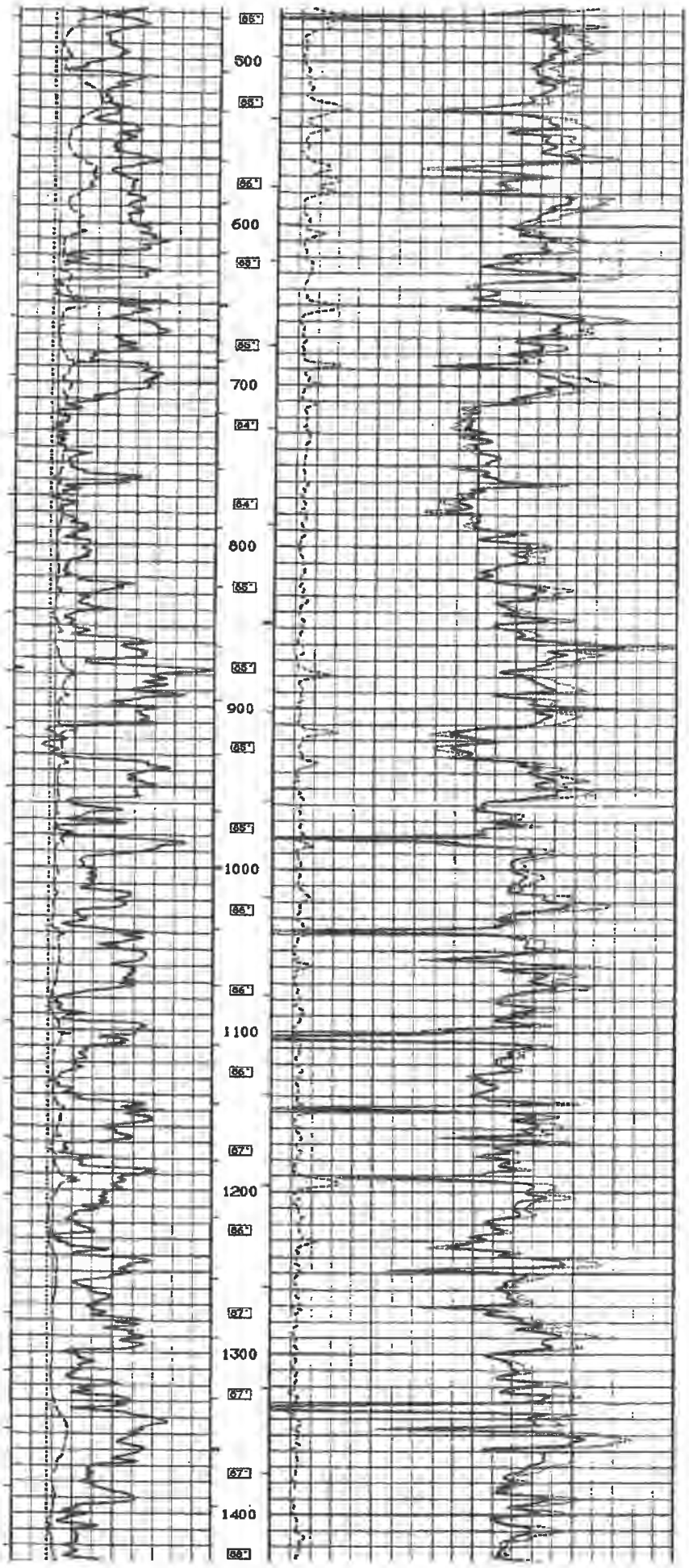
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, 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 OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

MAIN LOG

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 23:01:17

PLOTTED ON 07-MAY-86. FILE # 3. .ID: MAIN LOG . TAPE ID: NUCLEAR COMBINATION

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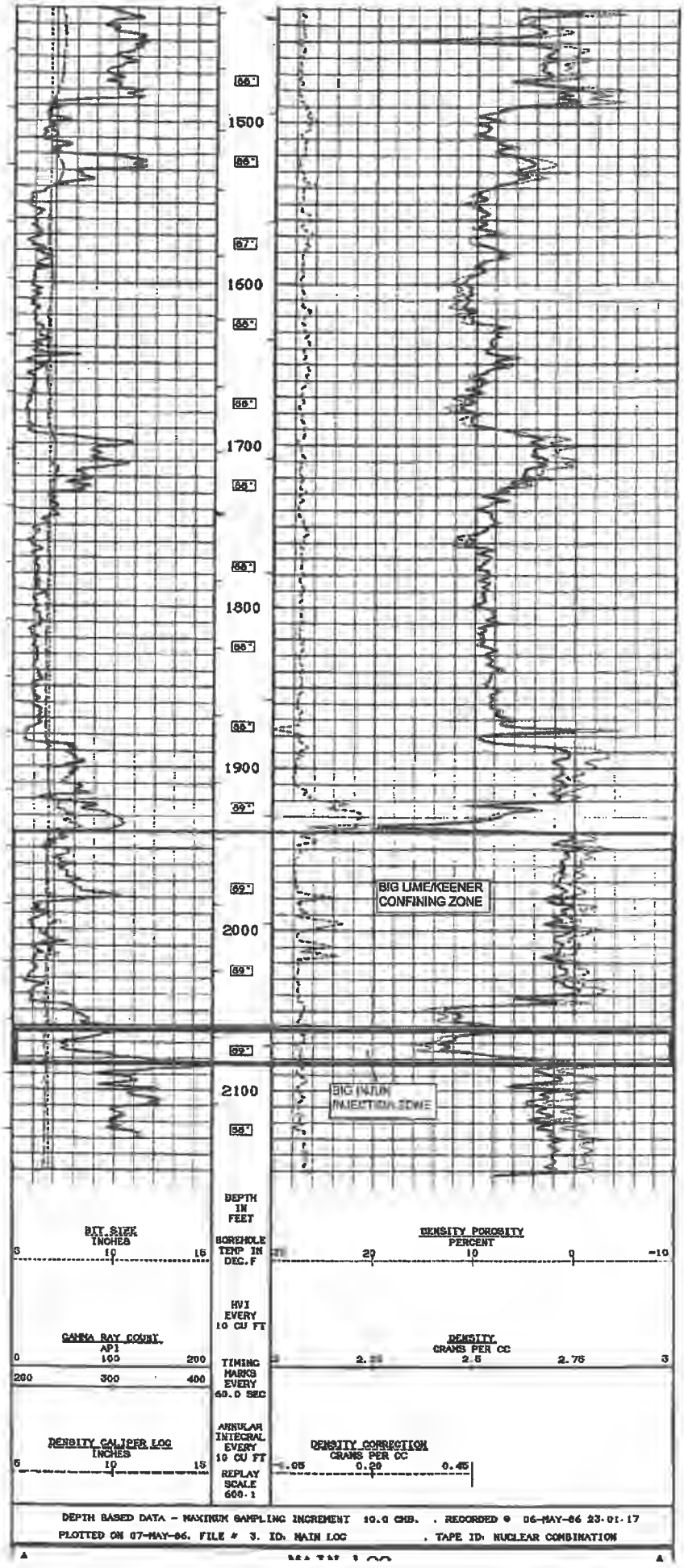
1300
67°
67°
1400
68°


1500
1600
1700
1800
1900
2000
2100
BIG LIME/KEENER
CONFINING ZONE
BIG INJUN
INJECTION ZONE
DEPTH
IN
FEET
BIT SIZE
INCHES
5
10
15
BOREHOLE
TEMP IN
DEG.F
HVI
EVERY
10 CU FT
GAMMA RAY COUNT
API
0
100
200
200
300
400
TIMING
MARKS
EVERY
60.0 SEC
DENSITY CALIPER LOG
INCHES
5
10
15
ANNULAR
INTEGRAL
EVERY
10 CU FT
REPLAY
SCALE
600:1
DENSITY POROSITY
PERCENT
20
10
0
-10
DENSITY
GRAMS PER CC
2.5
2.75
3
DENSITY CORRECTION
GRAMS PER CC
0.20
0.45
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MAIN LOG

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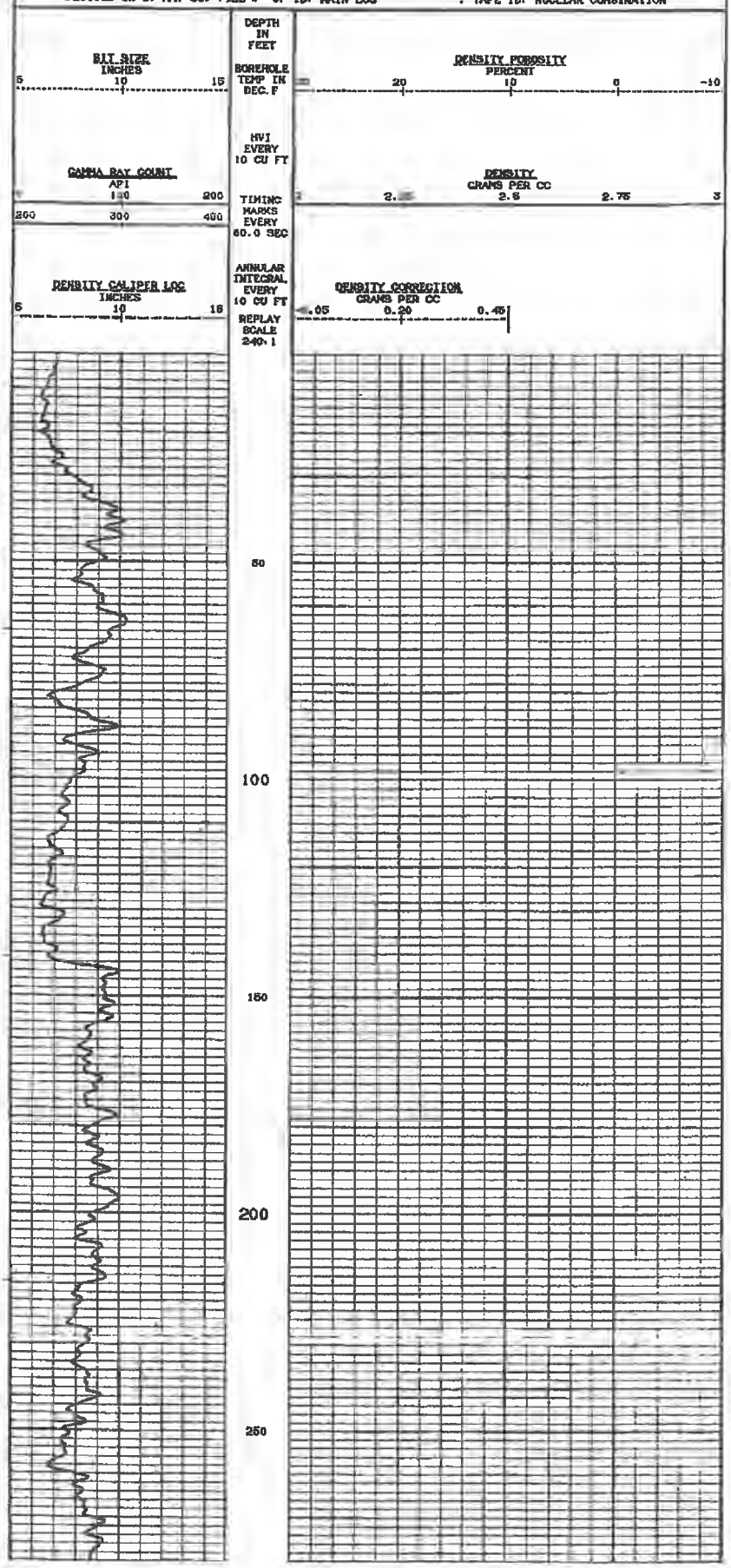
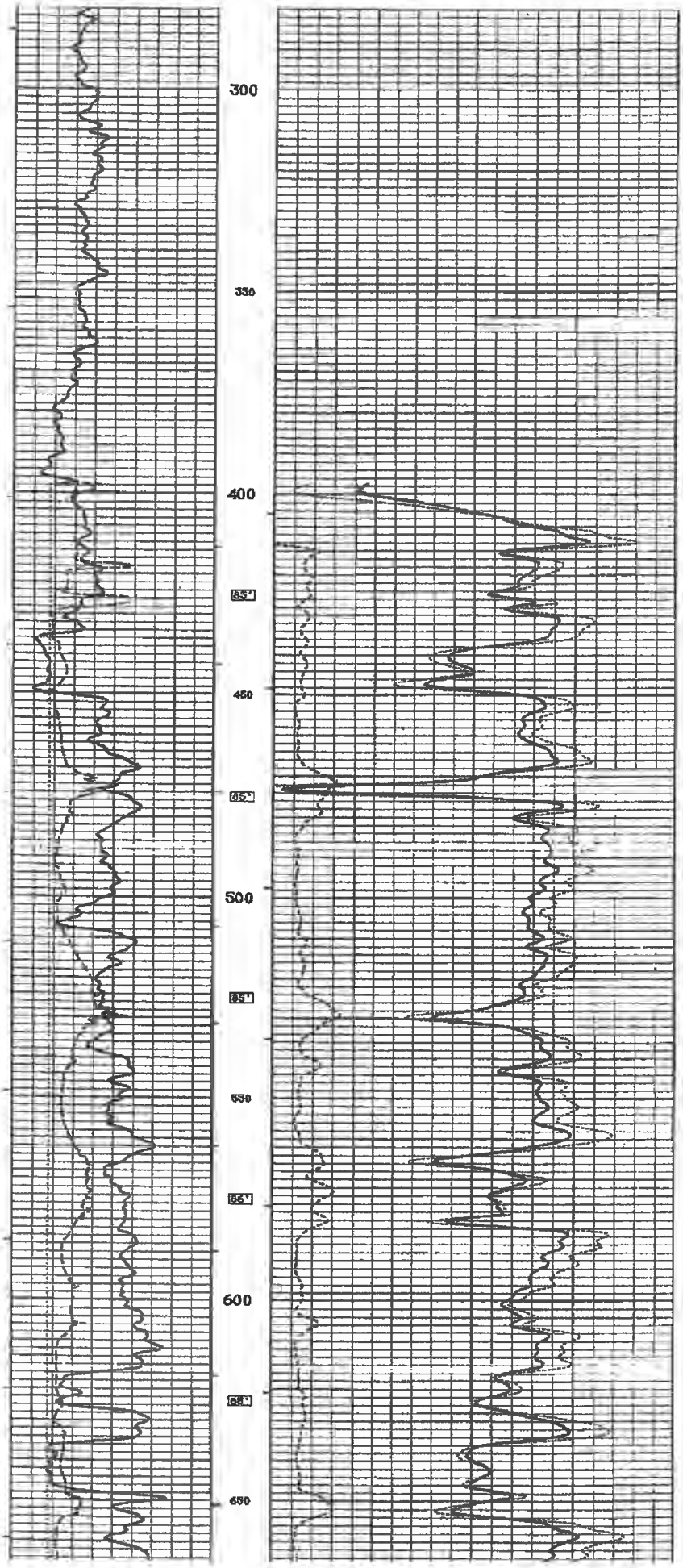
PLOTTED ON 07-MAY-86. FILE # 3. ID. MAIN LOG . TAPE ID. NUCLEAR COMBINATION

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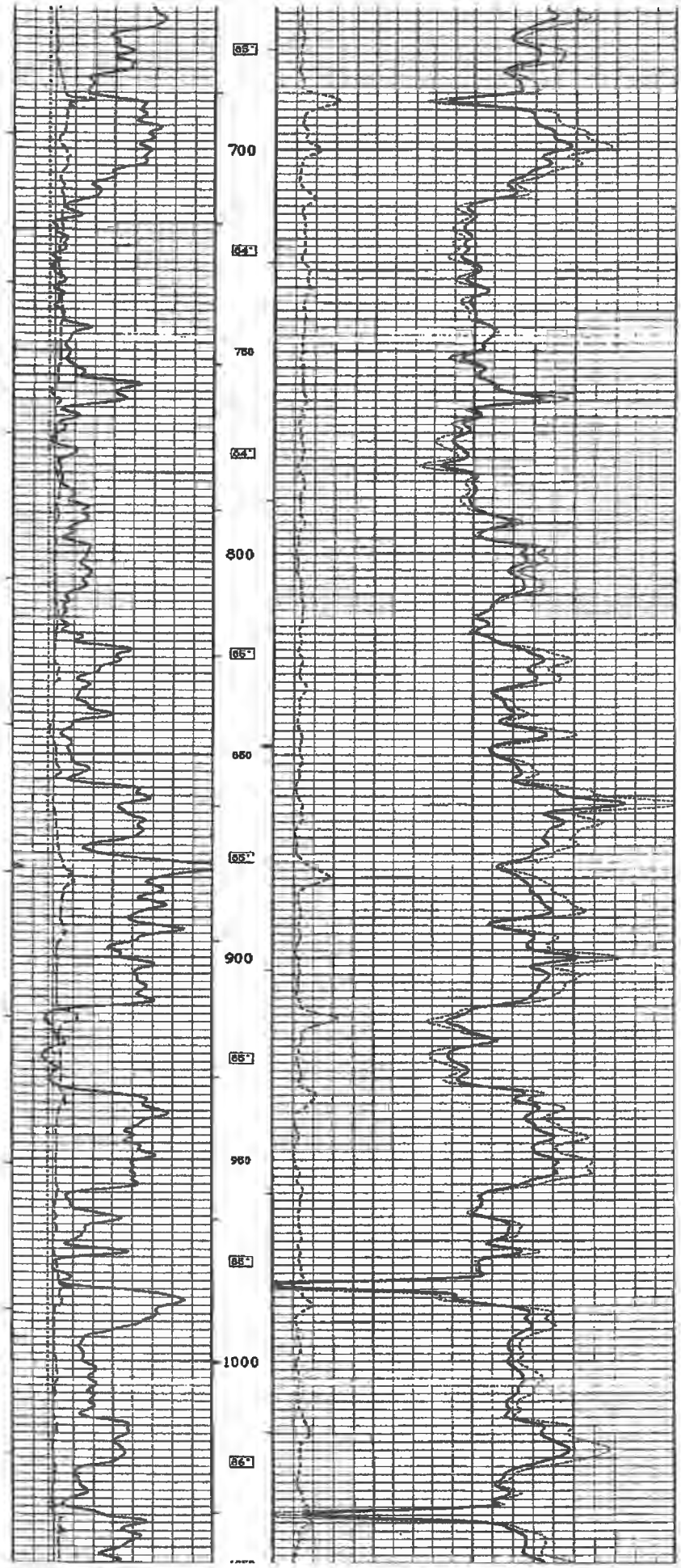
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900
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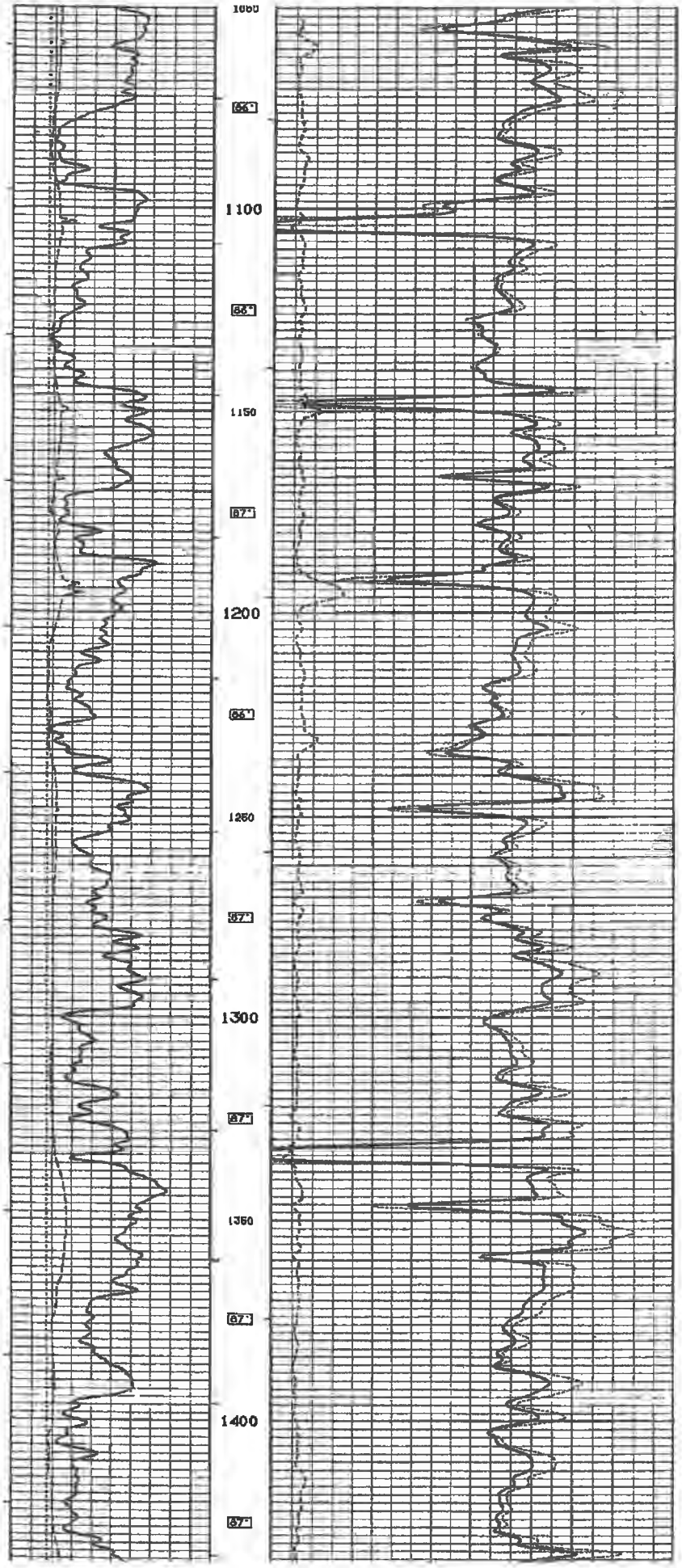
950
65°
1000
66°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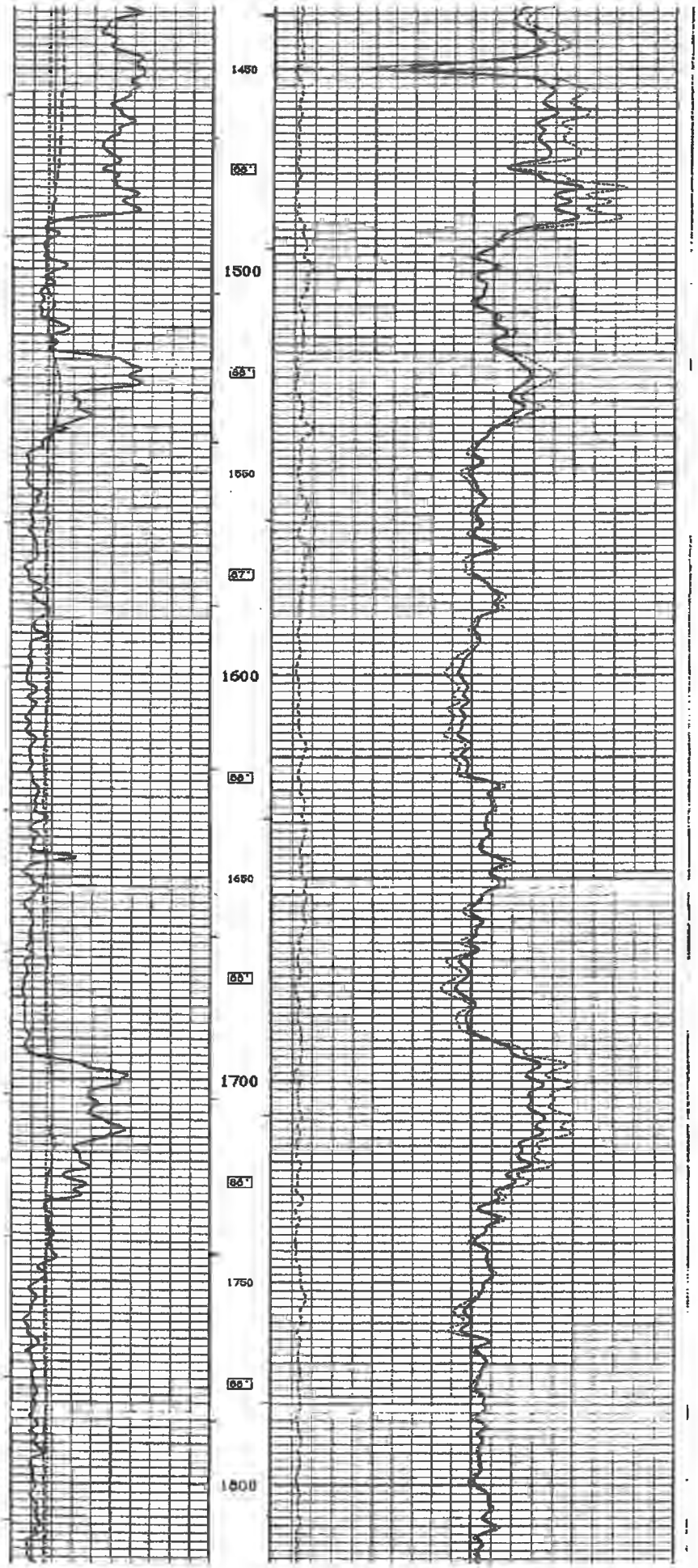
66°
1100
66°
1150
67°
1200
66°
1250
67°
1300
67°
1350
67°
1400
67°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1500
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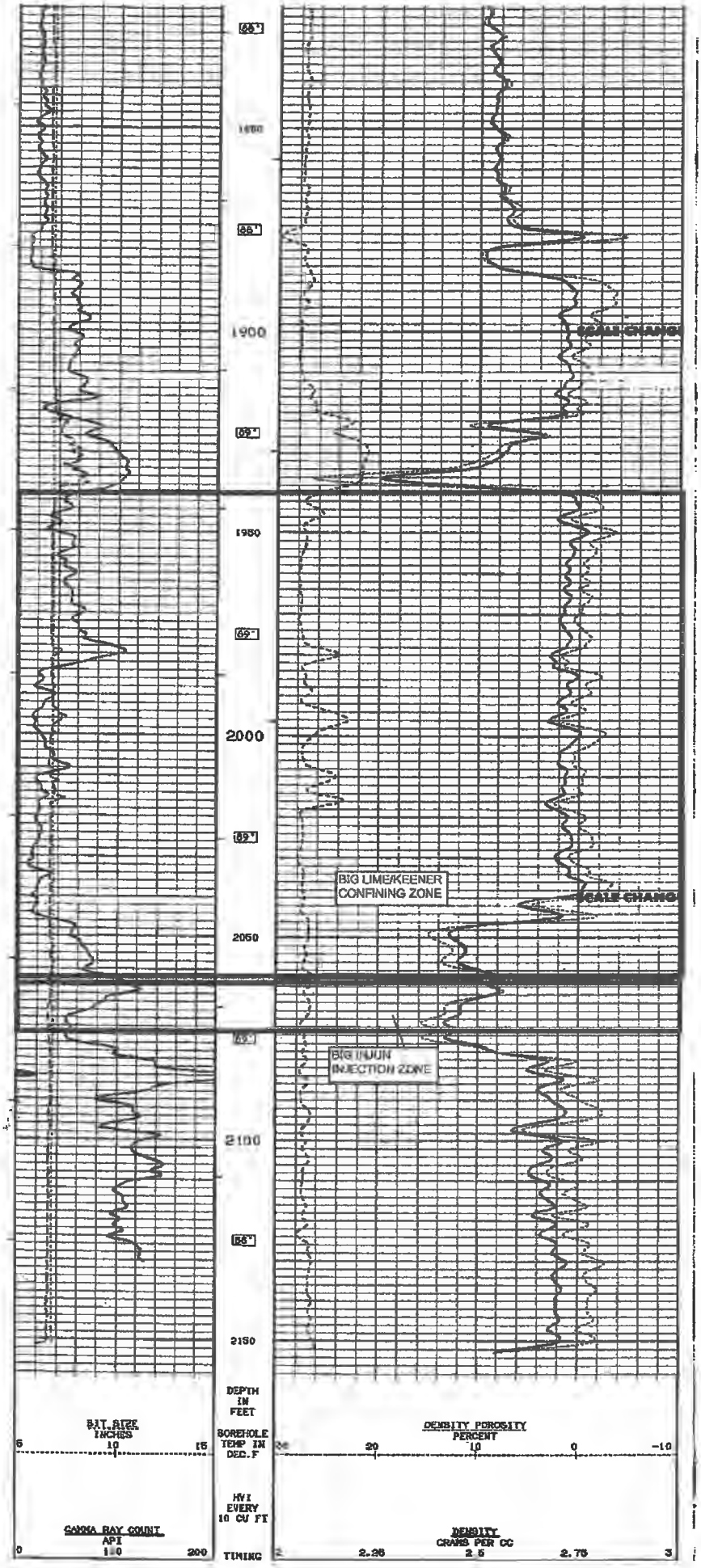
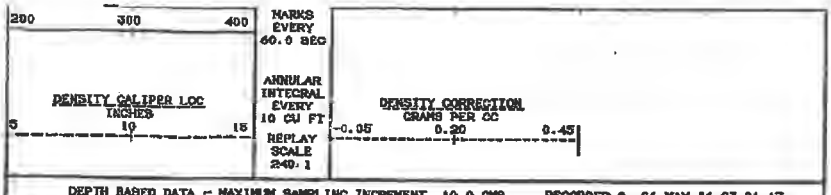
1550
67°
1600
68°
1650
65°
1700
66°
1750
66°
1800


65°
1850
65°
1900
65°
SCALE CHANGE
1950
65°
2000
65°
BIG LIME/KEENER
CONFINING ZONE
SCALE CHANGE
2050
65°
BIG INJUN
INJECTION ZONE
2100
65°
2150
DEPTH
IN
FEET
BIT SIZE
INCHES
5
10
15
BOREHOLE
TEMP IN
DEG. F
HVI
EVERY
10 CU FT
GAMMA RAY COUNT
API
0
100
200
TIMING
DENSITY POROSITY
PERCENT
20
10
0
-10
DENSITY
GRAMS PER CC
2
2.25
2.5
2.75
3



DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 23:01:17
PLOTTED ON 07-MAY-86. FILE # 3. ID: MAIN LOG . TAPE ID: NUCLEAR COMBINATION

MAIN LOG

BEFORE SURVEY CALIBRATION

GAMMA RAY COUNT RATE CALIBRATION

FIELD CALIBRATED ON 06-MAY-86 19:27

BACKGROUND COUNT	(CPS)	140
COUNT WITH CALIBRATOR	(CPS)	939
COUNT DUE TO CALIBRATOR	(CPS)	799
CALIBRATOR VALUE	(API)	550

NEUTRON DETECTOR CALIBRATION

BASE CALIBRATED ON 06-MAY-86

	NCRN(CPS)		NCRF(CPS)
TANK CALIBRATION READINGS	210		622
RATIO		0.2555	
CALIBRATOR VALUES	300		1006
CALIBRATED RATIO		0.2985	

DENSITY DETECTOR CALIBRATION

BASE CALIBRATED ON 28-MAR-86 15:07
FIELD CALIBRATED ON 06-MAY-86 19:17

BASE CALIBRATION

READING	ACTUAL(CPS) DCRN (NEAR)	DCRF (FAR)	CALIBRATOR(SOL) DCRN (NEAR)	DCRF (FAR)
1	16050	2262	21725	2233
2	26609	14713	30766	14806

FIELD CALIBRATOR AT BASE
16086 2266

FIELD CHECK
15231 2278

CALIPER ARM CALIBRATION

BASE CALIBRATED ON 28-MAR-86 14:46
FIELD CALIBRATED ON 06-MAY-86 19:06

BASE CALIBRATION READING FROM SONDE	2504	3963	5073	5871	6472
CALIPER SIZE (IN.)	13.96	11.62	9.65	7.99	6.00

FIELD CALIBRATION (IN.)

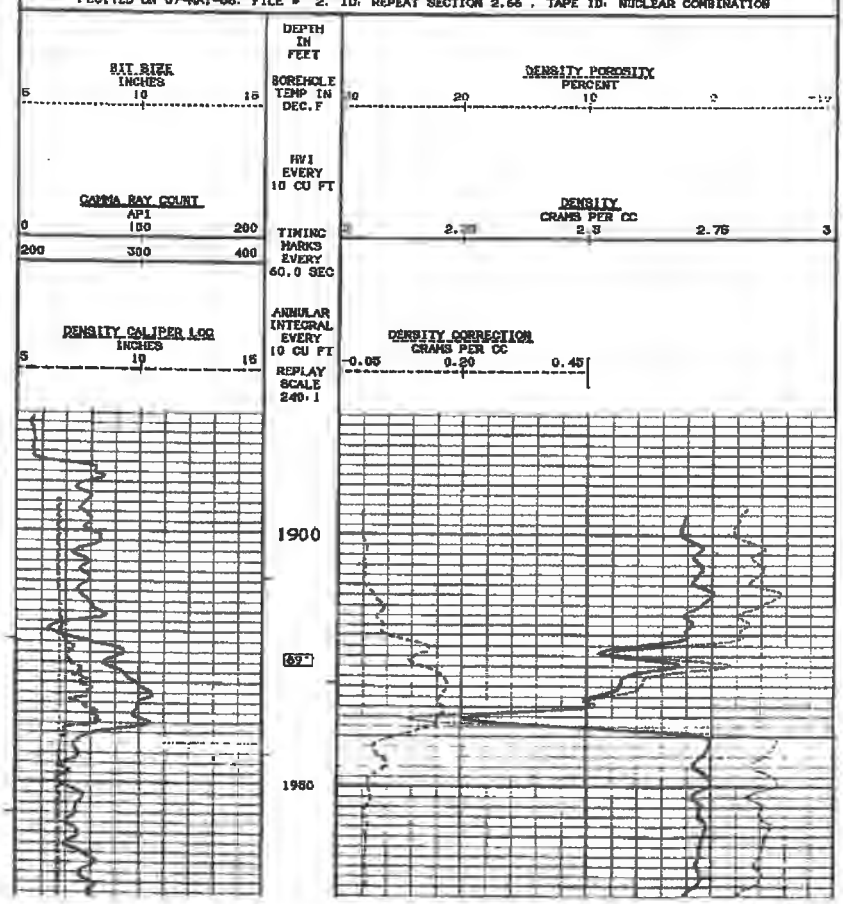
READING NO	CALIBRATOR SIZE	ACTUAL READING
1	6.00	6.00
2	11.62	11.80

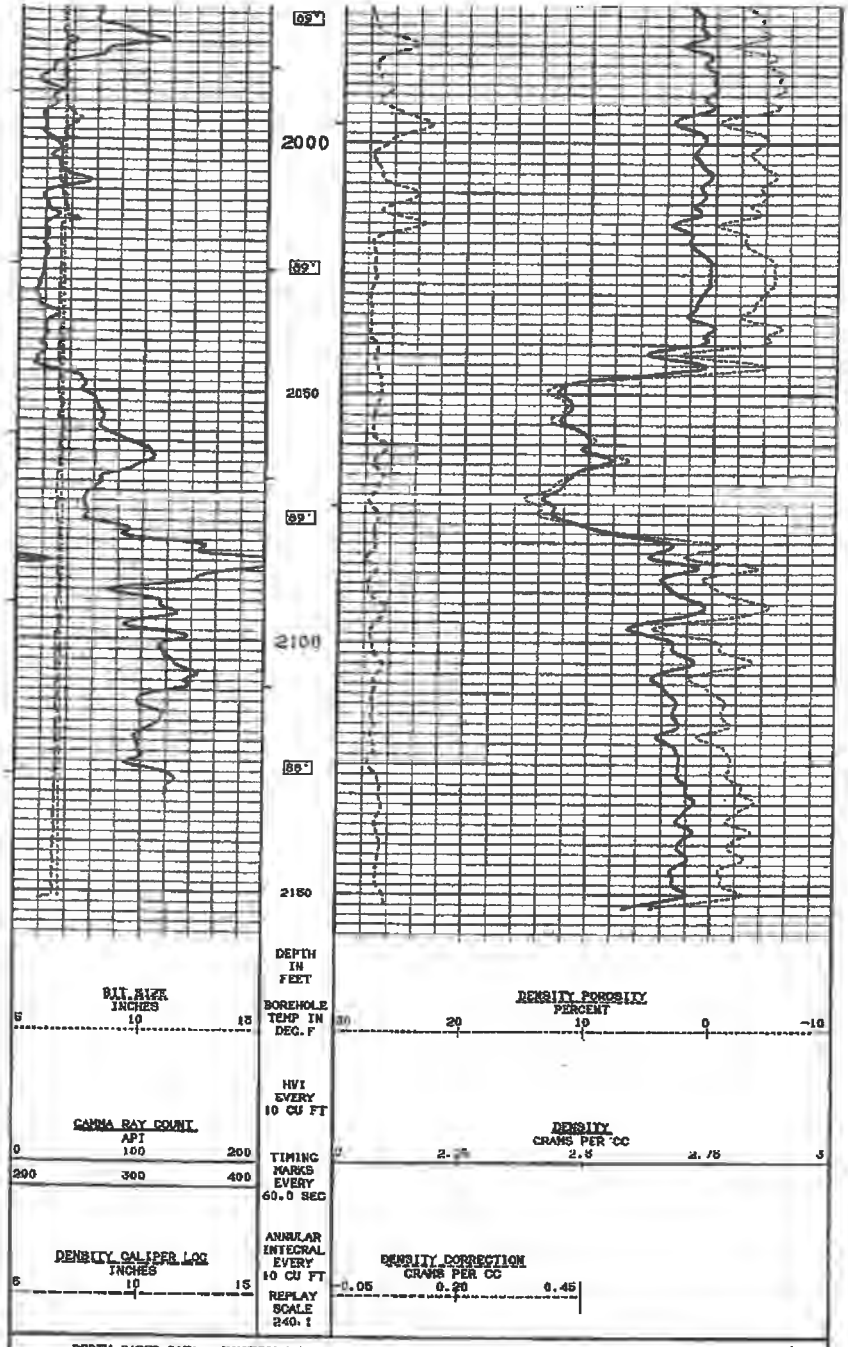
LOGGING PARAMETERS

MUDD	1.0000	G/CC
MWCP	1.1100	
MVD	1.2800	G/CC
FILD	1.0000	G/CC
MDEN (LOGING UPHOLE)	2.6600	2.7100 2.6600 G/CC
MDEP	2040.00	1900.00 FEET
BIT	6.75	INCHES
CRMF	1.0000	
CRCF	5.0000	
DVA	4.50	INCHES
RMNT	1.170	
BHCT	9.0000	

REPEAT SECTION 2.66

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 22:45:42
PLOTTED ON 07-MAY-86. FILE # 2. ID: REPEAT SECTION 2.66 . TAPE ID: NUCLEAR COMBINATION





DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 22:45:42
PLOTTED ON 07-MAY-86. FILE # 2. ID: REPEAT SECTION 2.66 . TAPE ID: NUCLEAR COMBINATION

REPEAT SECTION 2.66

BEFORE SURVEY CALIBRATION

GAMMA RAY COUNT RATE CALIBRATION

FIELD CALIBRATED ON 06-MAY-86 19:27

BACKGROUND COUNT	(CPS)	140
COUNT WITH CALIBRATOR	(CPS)	939
COUNT DUE TO CALIBRATOR	(CPS)	799
CALIBRATOR VALUE	(API)	300

NEUTRON DETECTOR CALIBRATION

BASE CALIBRATED ON 06-MAY-86

TANK CALIBRATION	NCRN(CPS)		NCRF(CPS)
READINGS	210		622
RATIO		0.2655	
CALIBRATOR VALUES	300		1005
CALIBRATED RATIO		0.2985	

DENSITY DETECTOR CALIBRATION

BASE CALIBRATED ON 26-MAR-86 13:07
FIELD CALIBRATED ON 06-MAY-86 19:17

BASE CALIBRATION

READING	ACTUAL(CPS) DCRN (NEAR)	DCRF (FAR)	CALIBRATOR(SDU) DCRN (NEAR)	DCRF (FAR)
1	16060	2289	21722	2893
2	26609	14713	30756	14586

FIELD CALIBRATOR AT BASE

16066	2286

FIELD CHECK

16231	2276

CALIPER ARM CALIBRATION

BASE CALIBRATED ON 26-MAR-86 14:46
FIELD CALIBRATED ON 06-MAY-86 19:06

BASE CALIBRATION

READING FROM SONDE	2934	3983	5073	5871	6472
CALIPER SIZE (IN.)	13.98	11.82	9.65	7.99	6.00

FIELD CALIBRATION (IN.)

READING NO	CALIBRATOR SIZE	ACTUAL READING
1	6.00	6.00
2	11.82	11.80

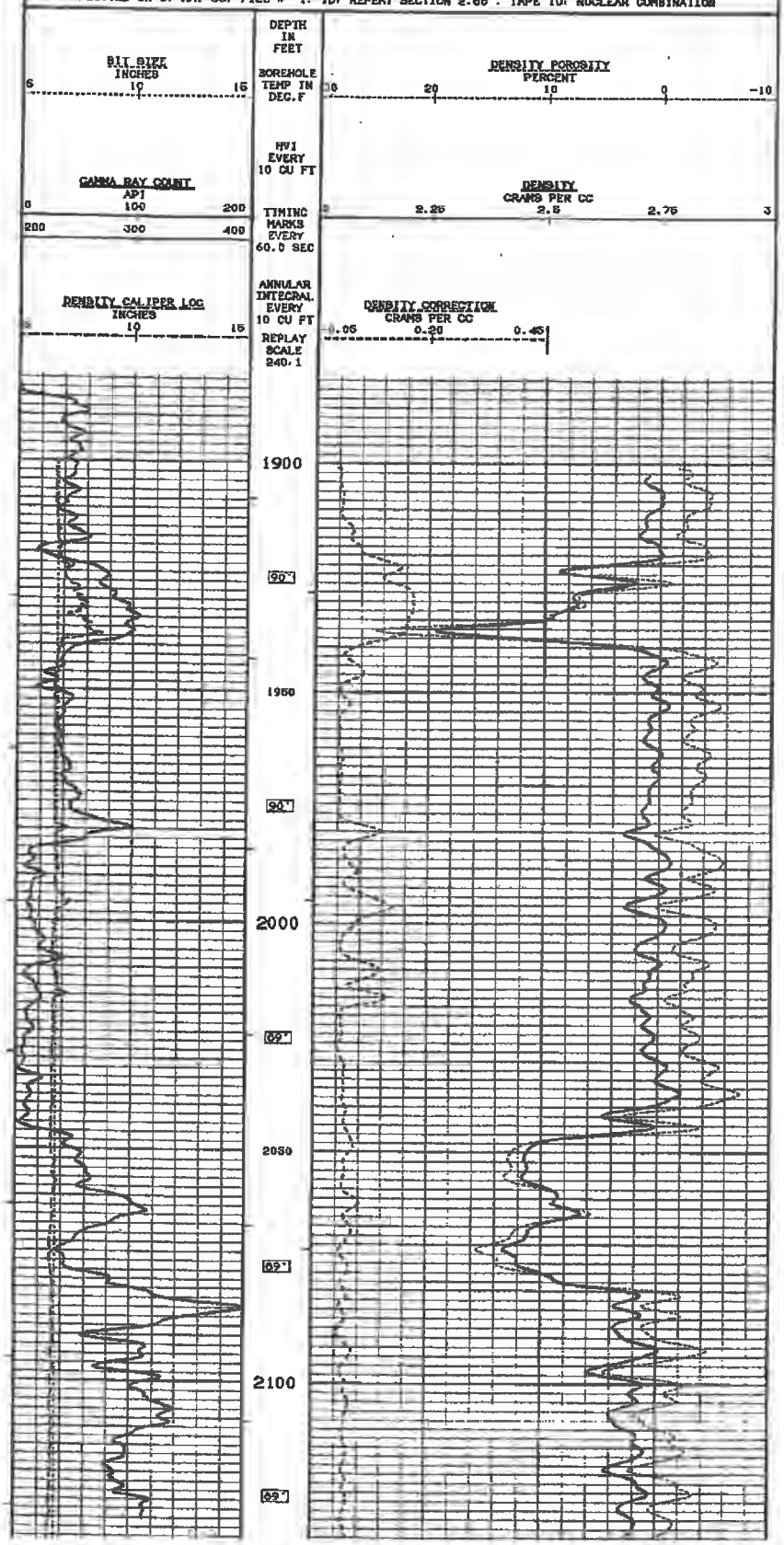
LOGGING PARAMETERS

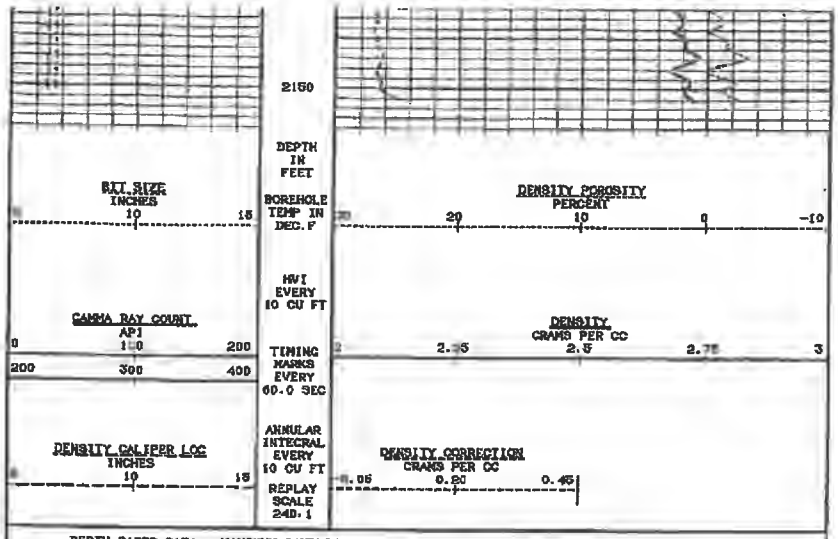
MUD	1.0000	G/CC
MSF	1.1100	
RW	1.2900	G/CC
FILD	1.0000	G/CC
MDEN (COING UPHOLE)	2.6500	G/CC
BIT	6.75	INCHES
CSGF	1.0000	
CSGT	5.0000	
HVA	4.80	INCHES
BMSP	1.1770	
BHCT	9.0000	

REPEAT SECTION 2.68

DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 22:31:17

PLOTTED ON 07-MAY-86. FILE # 1. ID: REPEAT SECTION 2.68 . TAPE ID: NUCLEAR COMBINATION





DEPTH BASED DATA - MAXIMUM SAMPLING INCREMENT 10.0 CMS. . RECORDED @ 06-MAY-86 22:31:17
PLOTTED ON 07-MAY-86. FILE # 1. ID. REPEAT SECTION 2.66 . TAPE ID. NUCLEAR COMBINATION

REPEAT SECTION 2.66

BEFORE SURVEY CALIBRATION

GAMMA RAY COUNT RATE CALIBRATION

FIELD CALIBRATED ON 06-MAY-86 19:27

BACKGROUND COUNT	(CPS)	140
COUNT WITH CALIBRATOR	(CPS)	535
COUNT DUE TO CALIBRATOR	(CPS)	395
CALIBRATOR VALUE	(API)	500

NEUTRON DETECTOR CALIBRATION

BASE CALIBRATED ON 06-MAY-86

TANK CALIBRATION	NCRN(CPS)		NCRF(CPS)
READINGS	210		622
RATIO		0.2555	
CALIBRATOR VALUES	300		1005
CALIBRATED RATIO		0.2985	

DENSITY DETECTOR CALIBRATION

BASE CALIBRATED ON 26-MAR-86 15:07
FIELD CALIBRATED ON 06-MAY-86 19:17

BASE CALIBRATION

READING	ACTUAL(CPS) DCRN (NEAR)	DCRF (FAR)	CALIBRATOR(SDU) DCRN (NEAR)	DCRF (FAR)
1	16000	2380	21936	2833
2	46609	14715	50706	14506

FIELD CALIBRATOR AT BASE

	16056	2256

FIELD CHECK

	16231	2276

CALIPER ARM CALIBRATION

BASE CALIBRATED ON 26-MAR-86 14:46
FIELD CALIBRATED ON 06-MAY-86 19:06

BASE CALIBRATION

READING FROM SONDE	2904	3983	5073	6071	6472
CALIPER SIZE (IN.)	13.90	11.62	9.85	7.99	6.00

FIELD CALIBRATION (IN.)

READING NO	CALIBRATOR SIZE	ACTUAL READING
1	6.00	6.00
2	11.62	11.60

LOGGING PARAMETERS

MUDD	1.0000	G/CC
MECF	1.1100	
MSD	1.2000	G/CC
FILD	1.0000	G/CC
MDEN (GOING UPHOLE)	2.6500	G/CC
BIT	6.75	INCHES
DMCI	0.0150	G/CC
CMPR	1.0000	
CMST	15.0000	
HWA	4.50	INCHES
DMRF	1.1770	
RMFT	5.0000	

COMPANY PENNZOIL COMPANY
WELL P. A. TALLMAN # 64
FIELD SMITHFIELD DISTRICT
COUNTY ROANE
COUNTRY/STATE USA / WEST VIRGINIA

WVGES O&G Record Reporting System

"Pipeline"

Select County: (087) Roane
Enter Permit #: 4078
Get Data | Reset

Select datatypes: (Check All)
Location | Production | Plugging
Owner/Completion | Stratigraphy | Sample
Pay/Show/Water | Logs | Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 4078

Report Time: Thursday, April 30, 2020 9:59:19 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708704078	Roane	4078	Smithfield	Tariff	Otter	38.653796	-81.214935	481298	4278381

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708704078	9/7/1988	Original Loc	Completed	Carl McGlothin	43		W M Looney	60218-50	Keith Crihfield	Pennzoil Company	2040	Big Injun (Price&eq)	
4708704078	6/1/1993	Worked Over	Completed	Carl McGlothin		43			Keith Crihfield	Pennzoil Products Company			
4708704078	-/-/-	Plugging	Cancelled	David King	43		W M Looney		T A L Collins	Triad Hunter LLC			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_
4708704078	9/7/1988	9/1/1988	904	Ground Level	Tariff(Timn)	Big Injun (Price&eq)	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac	2015		2015		0	0	0	0			0	0	
4708704078	6/1/1993	5/27/1993	904	Ground Level	Tariff(Timn)	Undf PRICE blw INJN	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Cable Tool	Acid+Frac	2015		0		0	0	0	0			0	0	
4708704078	-/-/-	-/-/-	968	Ground Level																					

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708704078	6/1/1993	Water Flood	Injection	Vertical	1933	Big Injun (Price&eq)	1939	Big Injun (Price&eq)	0	0			
4708704078	6/1/1993	Water Flood	Injection	Vertical	1948	Big Injun (Price&eq)	1958	Big Injun (Price&eq)	0	0			
4708704078	9/7/1988	Water Flood	Injection	Vertical	1933	Big Injun (Price&eq)	1958	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704078	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2003	64	8	6	7	2	7	8	4	4	7	4	5	2
4708704078	Triad Resources, Inc.	2004	10	0	0	0	10	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2005	5	5	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2007	5	0	0	0	0	0	0	0	0	0	0	0	5
4708704078	Triad Resources, Inc.	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2011	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2014	18	0	0	0	0	2	2	2	3	3	2	3	1
4708704078	Triad Hunter LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2016	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Ground Resources LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704078	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2003	377	25	24	25	26	28	30	28	28	30	38	50	45
4708704078	Triad Resources, Inc.	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2006	5	0	5	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Resources, Inc.	2008	2	0	0	0	0	0	0	0	0	0	0	0	2
4708704078	Triad Resources, Inc.	2009	2	0	0	0	0	0	0	0	0	0	0	0	2
4708704078	Triad Hunter LLC	2011	2	0	0	0	0	0	0	0	0	0	0	0	2
4708704078	Triad Hunter LLC	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2016	0												
4708704078	Ground Resources, LLC	2017	0												
4708704078	Ground Resources LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Injector 4078

Injector 4078

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704078	Triad Hunter LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704078	Triad Hunter LLC	2016	0												
4708704078	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704078	Triad Hunter LLC	2016	0												
4708704078	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708704078	Original Loc	Salt Sands (undiff)	Well Record	1630	Reasonable	134	Reasonable	904	Ground Level
4708704078	Original Loc	Little Lime	Well Record	1764	Reasonable	38	Reasonable	904	Ground Level
4708704078	Original Loc	Pencil Cave	Well Record	1802	Reasonable	18	Reasonable	904	Ground Level
4708704078	Original Loc	Big Lime	Well Record	1820	Reasonable	106	Reasonable	904	Ground Level
4708704078	Original Loc	Big Injun (Price&eq)	Well Record	1926	Reasonable	36	Reasonable	904	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708704078	240	2014		G D C *	Y	N	240	2004	262	2012									240	2014	Y	Y	N						

Comment: *logs: caliper, CCL, perforation depth

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

FILENAME
4708704078gdc.tif
4708704078gpo.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

4078

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 1926 Feet (top) 1962 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2015 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

APPENDIX A (cont.)

4078

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 5/8"		H-40	20#	262'	262'	CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2001'	2001'	120sks
Tubing	NONE						
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

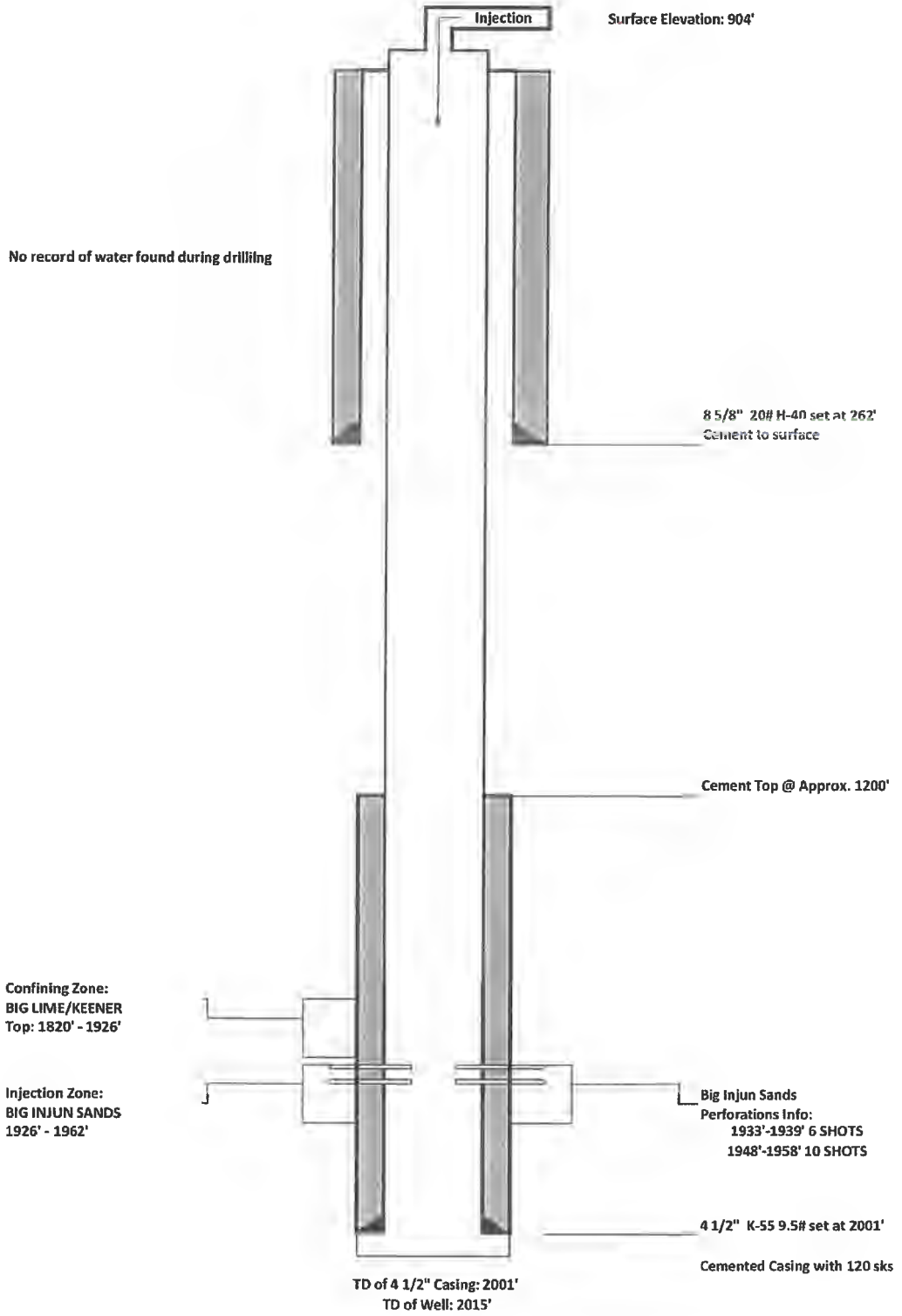
PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

4078

WELL SCHEMATIC

W.M. LOONEY 43

API 47-087-04078



4078

WR-35

27-Jun-88

API # 47- 87-04078

INJECTOR

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: McGLOTHLIN, CARL Operator Well No.: W.M. LOONEY 43

LOCATION: Elevation: 904.00 Quadrangle: TARIFF

District: SMITHFIELD County: ROANE
Latitude: 4700 Feet South of 38 Deg. 40Min. 0 Sec.
Longitude 1880 Feet West of 81 Deg. 12 Min. 30 Sec.

Company: PENNZOIL PRODUCTS COMPANY
P. O. BOX 5519
VIENNA, WV

Agent: JAMES A. CREWS

Inspector: HOMER DOUGHERTY
Permit Issued: 06/28/88
Well work Commenced: 9-1-88
Well work Completed: 9-7-88
Verbal Plugging
Permission granted on: _____
Rotary X Cable _____ Rig
Total Depth (feet) 2015
Fresh water depths (ft) _____

Salt water depths (ft) _____

Is coal being mined in area (Y/N)? N
Coal Depths (ft): _____

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
8-5/8	262	262	To surface
4-1/2	2001	2001	120 sks.

OPEN FLOW DATA

Producing formation Big Injun Pay zone depth (ft) 1926
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow * _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours
* Water Injection Well

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For Office of Oil & Gas
MAR 16 2015

For: PENNZOIL PRODUCTS COMPANY

By: _____

Date: November 7, 1988

4078

rforations: 1933-1939; 1948-1958

Frac w/250 gal. HF acid, 123 Bbls. gelled H_2O, 1000# 20/40 sand.

Sand	0-220
Shale	220-480
Sand	480-510
Shale	510-576
Sand	576-742
Shale	742-766
Sand	766-792
Shale	792-810
Sand	810-872
Shale	872-884
Sand	884-910
Shale	910-929
Sand & Shale	929-1126
Slate	1126-1316
Shale	1316-1373
Sand	1373-1401
Shale	1401-1421
Sand	1421-1571
Shale	1571-1584
Sand	1584-1598
Shale	1598-1603
nd	1603-1622
ale	1622-1630
Salt Sand	1630-1764
Little Lime	1764-1802
Pencil Cave	1802-1820
Big Lime	1820-1926
Big Injun	1926-1962
Pocono Shale	1962-2015

Recei
Office of
MAR 16 201

4078
GAMMA RAY
PERFORATION
LOG

YOUNG WIRELINE SERVICES

GAMMA RAY

CASING COLLARS

COMPANY Pennzoil
WELL W.M. Looney #43
FIELD Tariff Dist
COUNTY Rain STATE WVA

LOCATION:
SEC. Tariff TWP RGE.

OTHER SERVICES:
Permit No: 47-087-

Permanent Datum: Ground Level ; Elev.: 904'
Log Measured From Kelly Bushing 18 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Elev.: K.B. 918
D.F. 917
G.L. 904

Date	Oct 10 1988		
Run No.	one		
Type Log	GR CCL		
Depth—Driller	1995'		
Depth—Logger	1984'		
Bottom logged interval	1984'		
Top logged interval	1750'		
Type fluid in hole	H2O		
Salinity, PPM Cl.			
Density			
Level	Full		
Max rec. temp., deg. F.			
Operating rig time	Rot Mast		
Recorded by	Vanper		
Witnessed by	Mr Berry		

Run No.	Bit	Bore-Hole Record From	To	Casing Record Size	Wgt.	From	To
One	7 7/8"	268'	2005'	8 5/8"		0'	268'
				4 1/2"		0'	1988'

FORM 108

EQUIPMENT DATA

GAMMA RAY			
RUN NO.			
TOOL MODEL NO.			
DIAM.			
DETECT. MODEL NO.			
TYPE			
LENGTH			

GENERAL			
HOIST TRUCK NO.			
INST. TRUCK NO.			
TOOL SERIAL NO.			

PERFORATIONS			
Type	To	From	No. Shots

LOGGING DATA

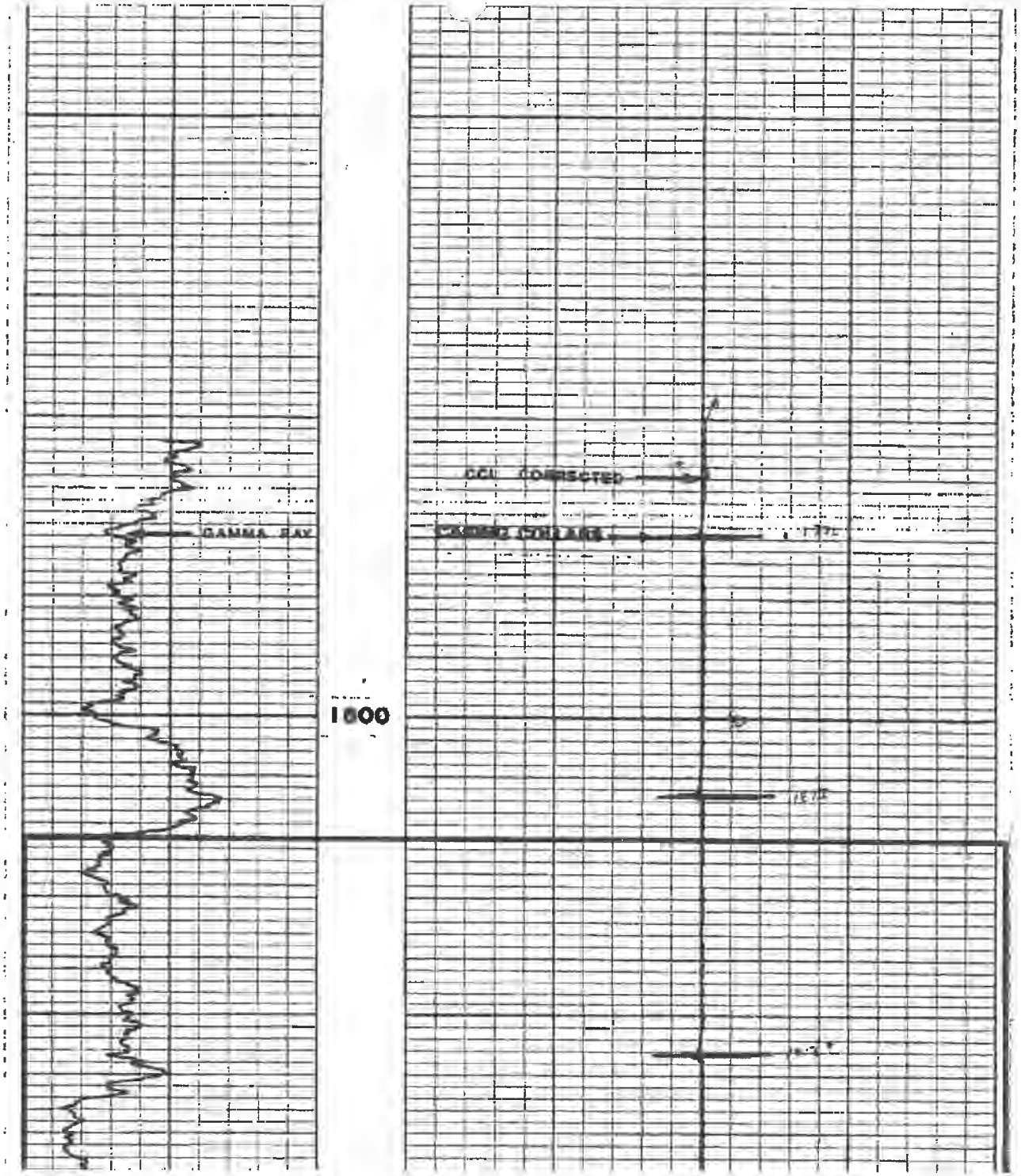
GENERAL				GAMMA RAY							
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	T.C. SEC.	SENS. SETTINGS	ZERO LOG DIV.	SCALE API G.R. UNITS				

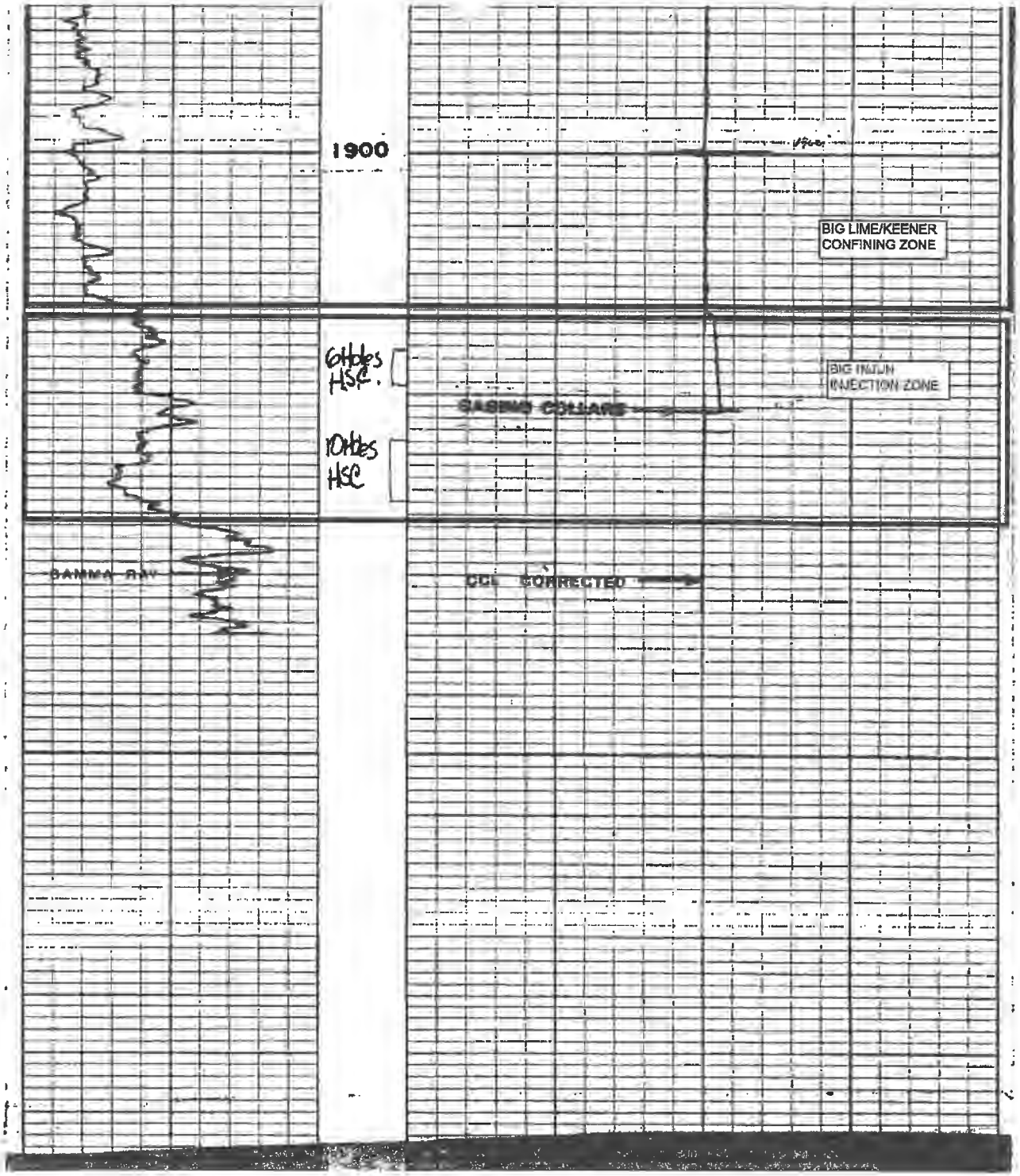
REFERENCE LITERATURE:

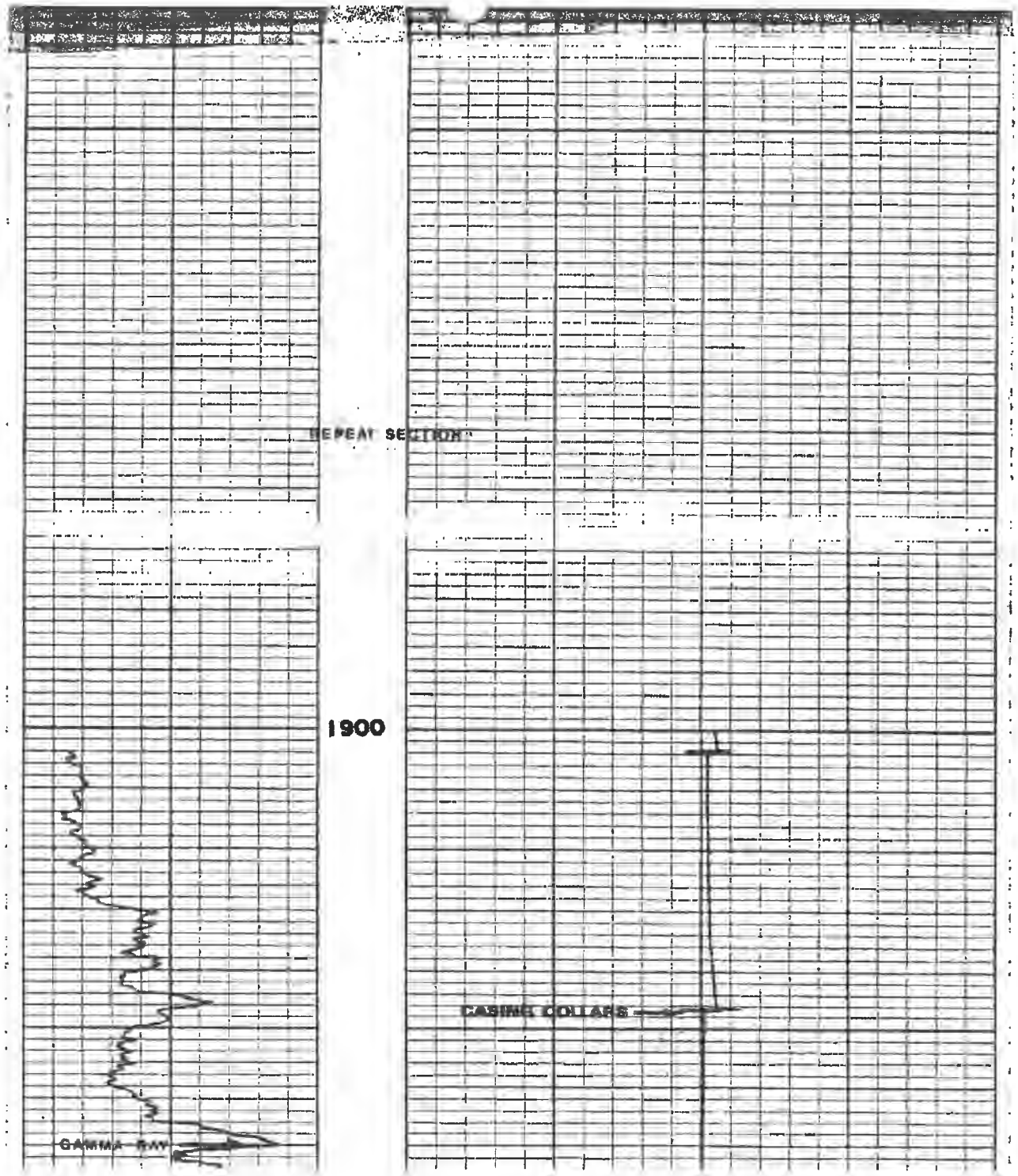
REMARKS:

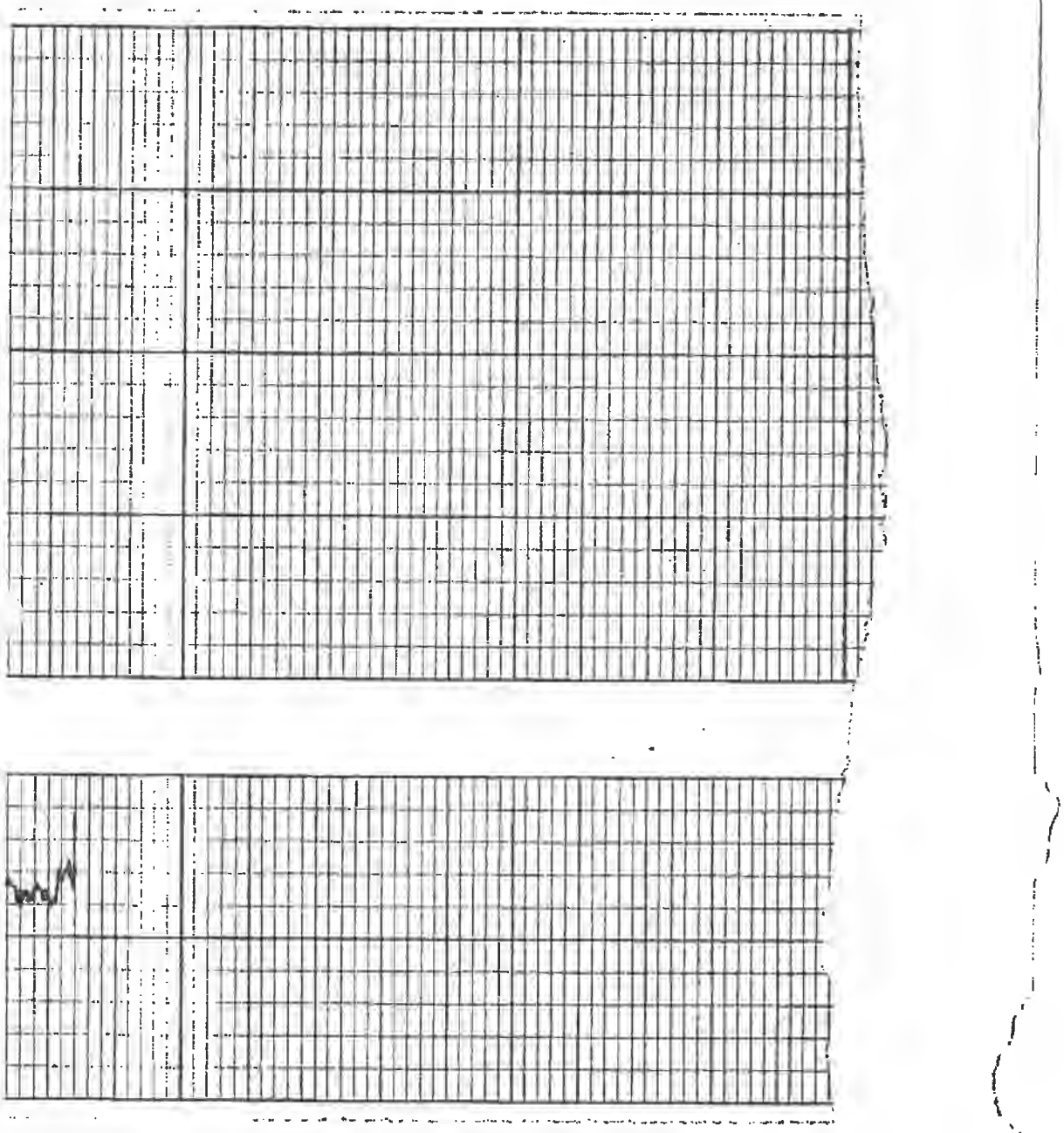
GAMMA RAY

[redacted]


GAMMA RAY
1000
CCL CORRECTED


1900
BIG LIME/KEENER
CONFINING ZONE
6Holes
HSC.
BIG INJUN
INJECTION ZONE
CASING COLLARS
10Holes
HSC
GAMMA RAY
CCL CORRECTED


REPEAT SECTION
1900
CASING COLLARS
GAMMA RAY



4078
GR-Density
Caliper Log

5/PC

GR DENSITY CAL

LOG

COMPANY:PENNZOIL COMPANY
WELL:W. M. LOONEY NO.43
FIELD:TARIFF
COUNTY:ROANE STATE:WV
PERMIT #:47-087-4078-LI
DATE:8-31-88

LOCATION
SMITHFIELD DIST.
TARIFF 7.5 QUAD

SEC:NA TWP:NA RGE:NA

OTHER SERVICES
NONE

PERM. DATUM:GL
LOG MF:RKB
DRILLING MF:RKB

ELEVATION
KB:912
DF:912
GL:904

GAMMA RAY CALIBRATION DATA

NUMBER	API SCALE	BGS CPS	STD CPS
ONE	0-----200	35	195

CPT CALIBRATION DATA

NUMBER	2.0 DSS CPS	3.0	2.0 B&LCPS	1.0

RUN NUMBER	ONE
DEPTH-DRILLER	2015
DEPTH-LOGGER	2014
BOTTOM INTERVAL	2012
TOP INTERVAL	SO
TYPE FLUID IN HOLE	KCL WATER
SALINITY	NA
DENSITY	NA
LEVEL	FULL

MAX REC TEMP DEG F	NA	ONE	1016	625	1116	189
RECORDED BY	ROTE					
WITNESSED BY	MR. PAUL KING					

BOREHOLE RECORD

NUMBER	BIT	FROM	TO
ONE	7 7/8	268	2015

EQUIPMENT DATA

RUN NUMBER	ONE		
TOOL NUMBER	2235		
SOURCE NUMBER	8255		
PANEL NUMBER	264		
LOGGING UNIT	84174		
LOCATION	CHAS.		

CASING RECORD

NUMBER	SIZE	WGT	FROM	TO
ONE	8 5/8	NA	SURF	268

LOGGING DATA

RUN NUMBER	DEPTH FROM	DEPTH TO	SPEED FT/MIN	GR TC
GR/CD	2015	268	40	2
GR	268	50	40	2

REMARKS:

Ps= 2.68 FR TD TO 1920, Ps= 2.71 1920 TO 1750
Ps=2.68 FR 1750 TO 268. SECOND REPEAT Ps=2.66

OPERATING RIG TIME: 1.5

Density Correction
GRAMS/CC
0 +.2

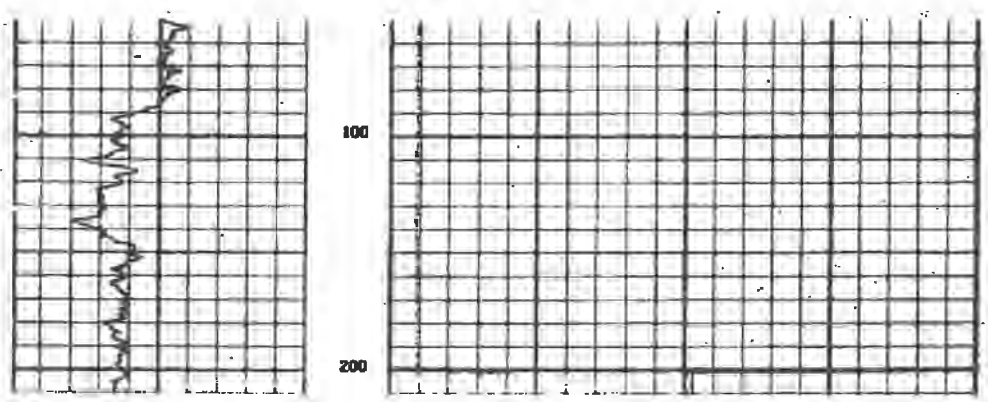
Gamma Ray
API UNITS
0 200

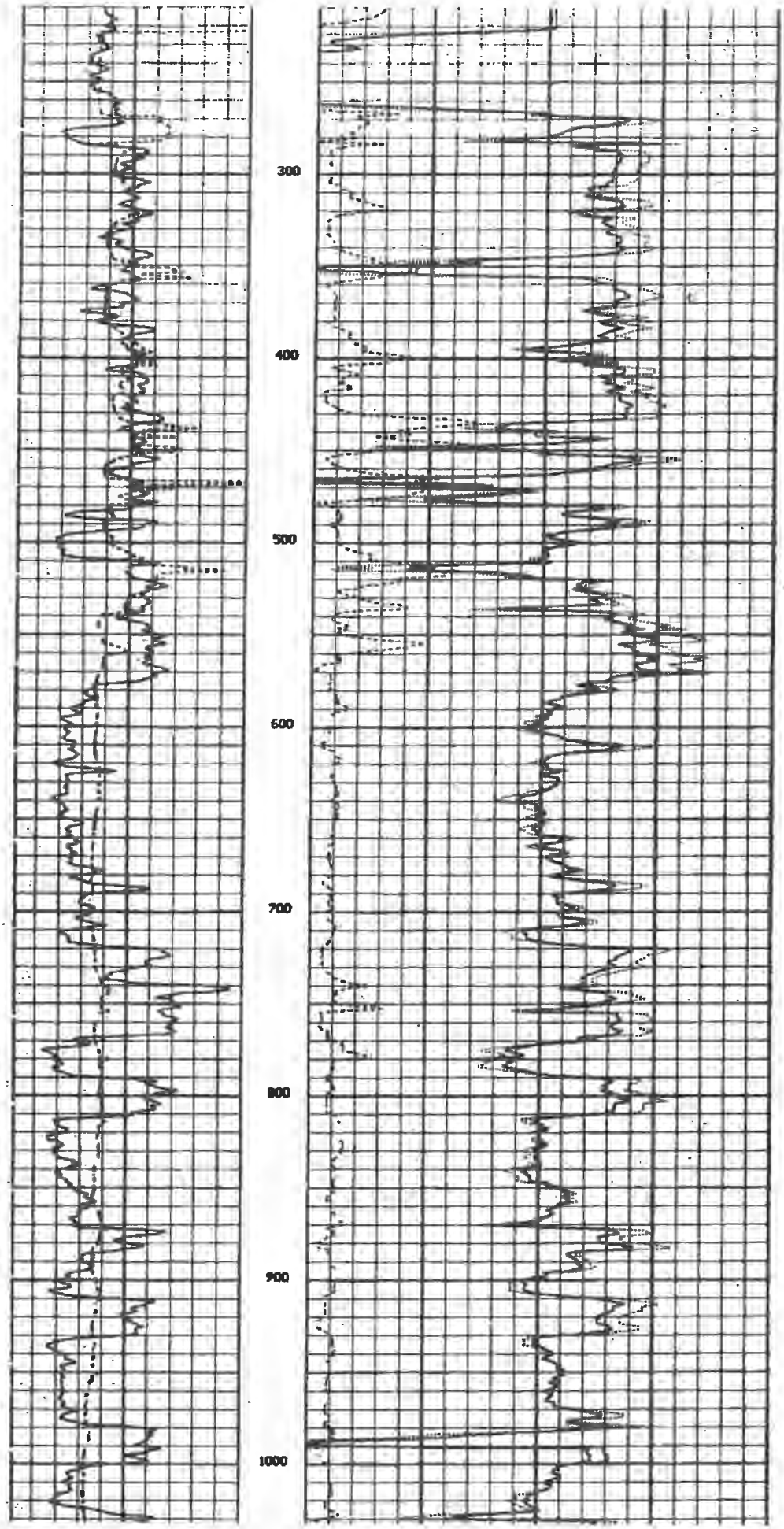
Caliper
INCHES
5 15

Density Porosity
POROSITY
30 20 10 0 -10

Bulk Density
GRAMS/CC
2.0 2.5 3.0

LOGGING SECTION

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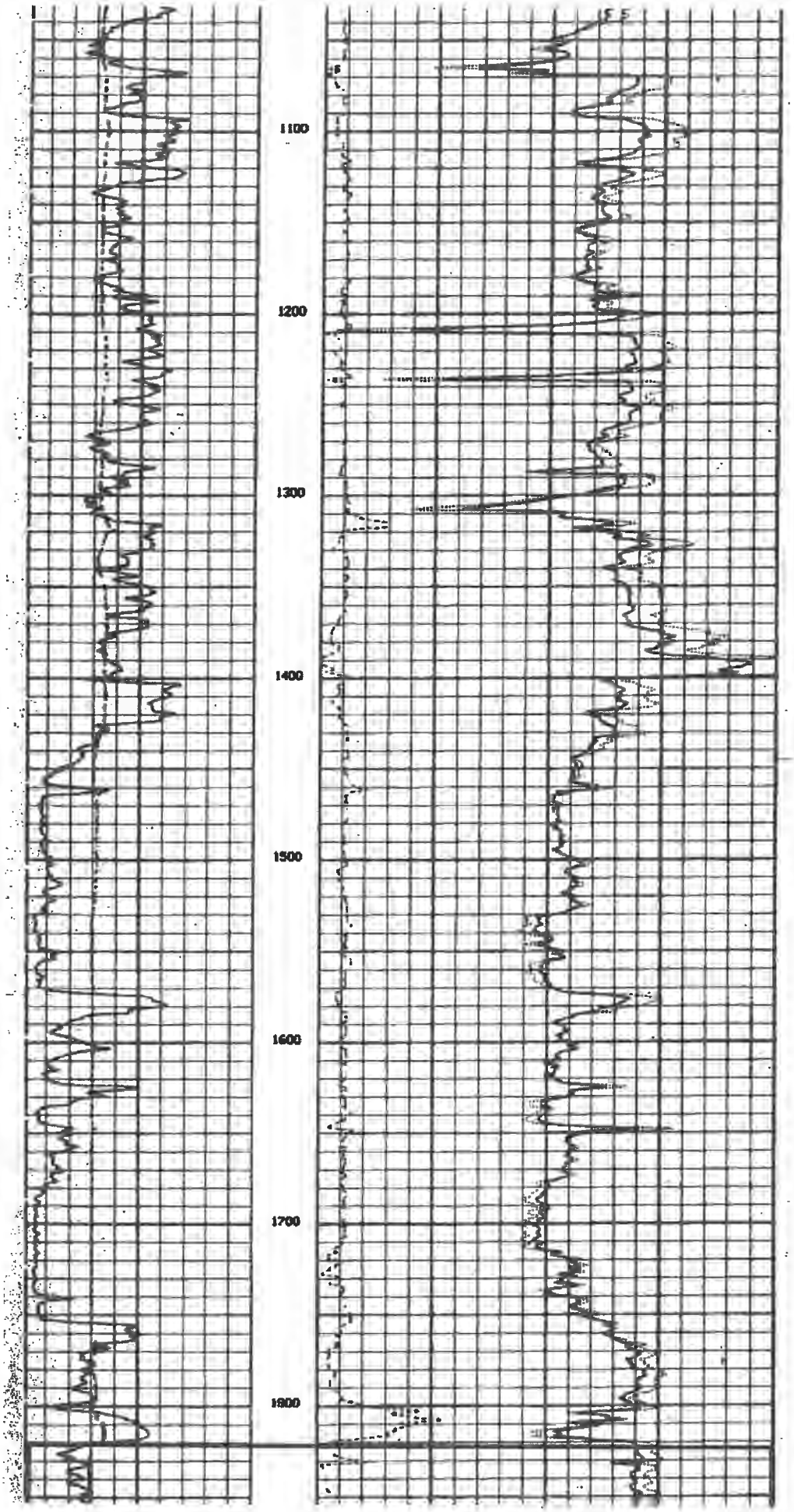
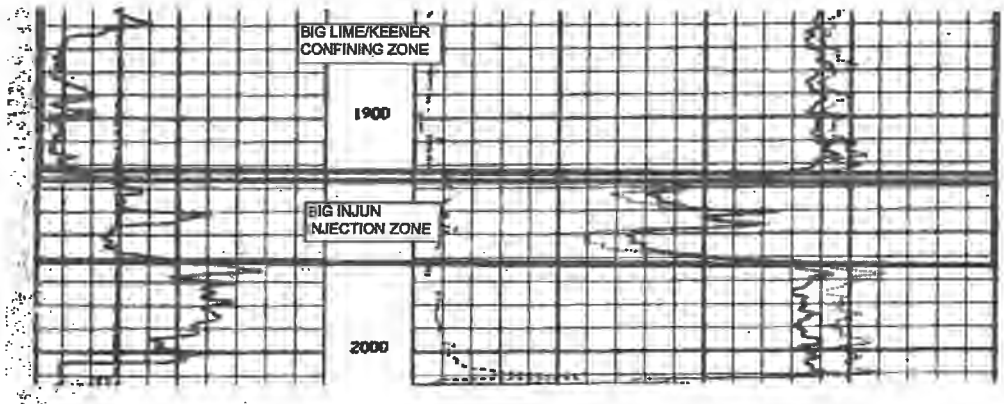
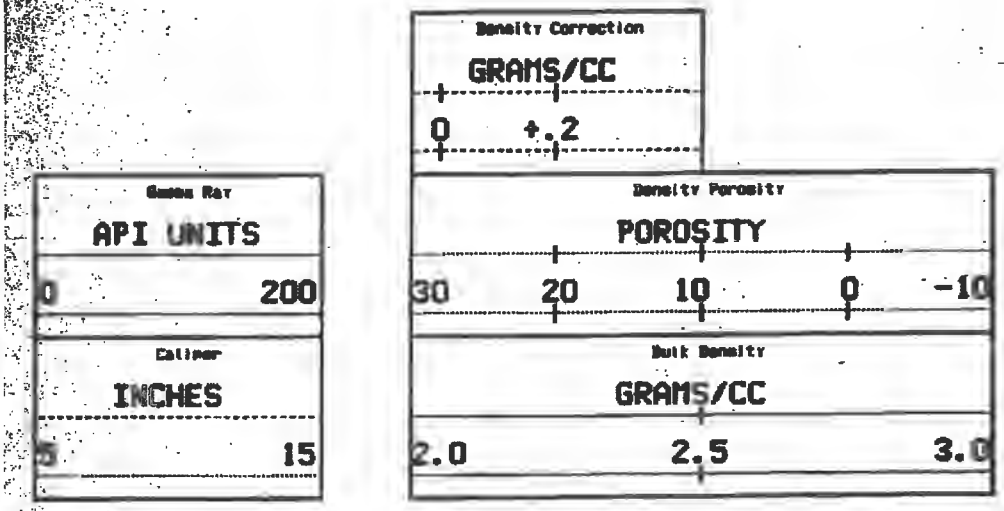
400
500
600
700
800
900
1000


1100
1200
1300
1400
1500
1600
1700
1800





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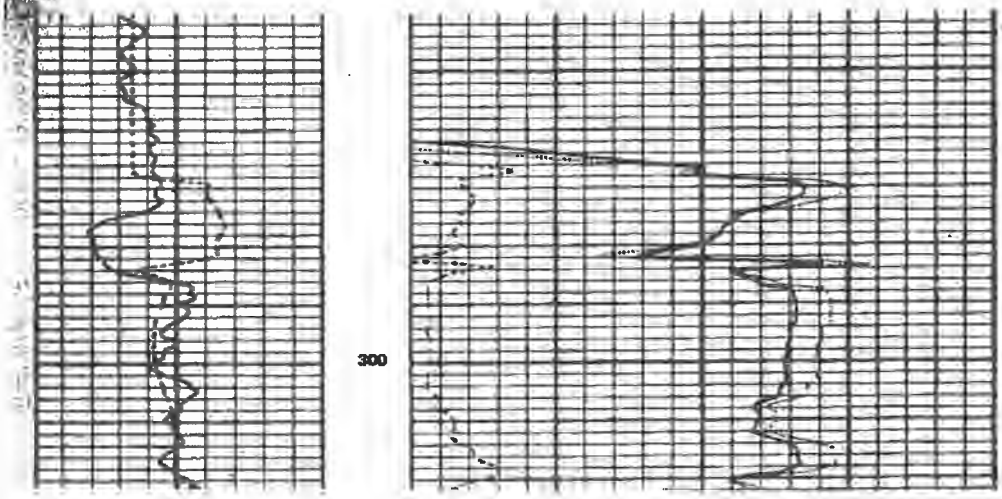
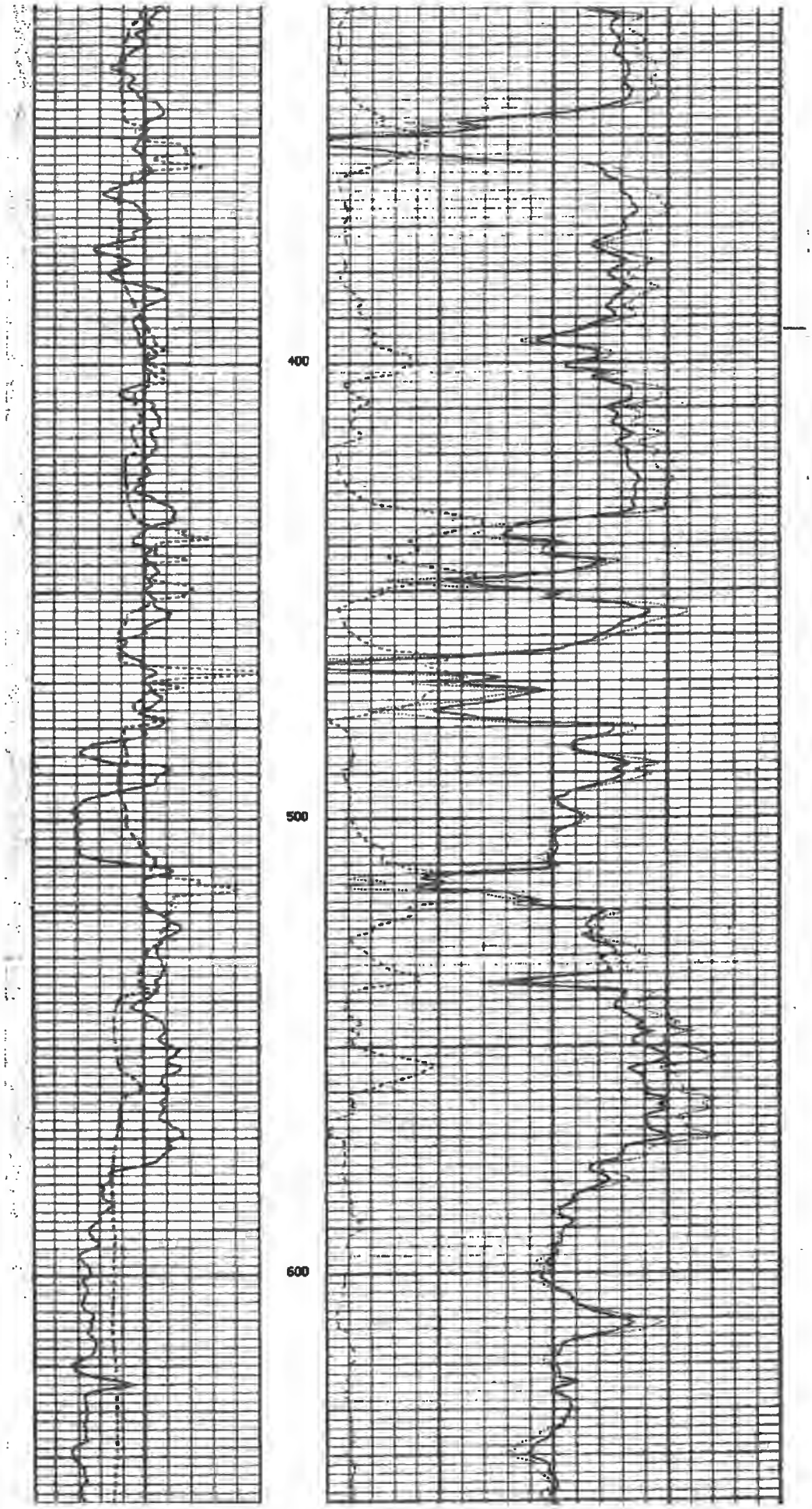
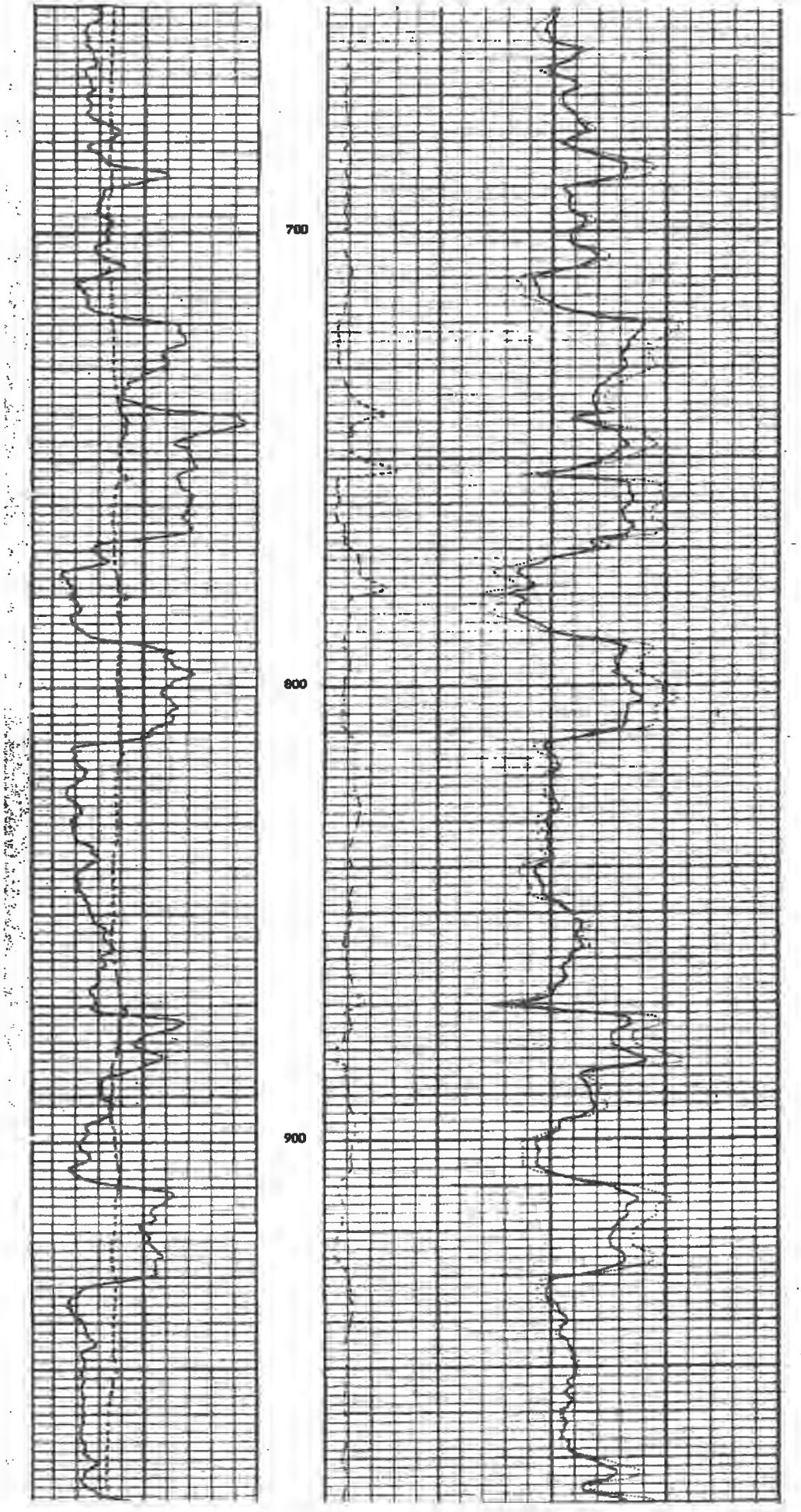
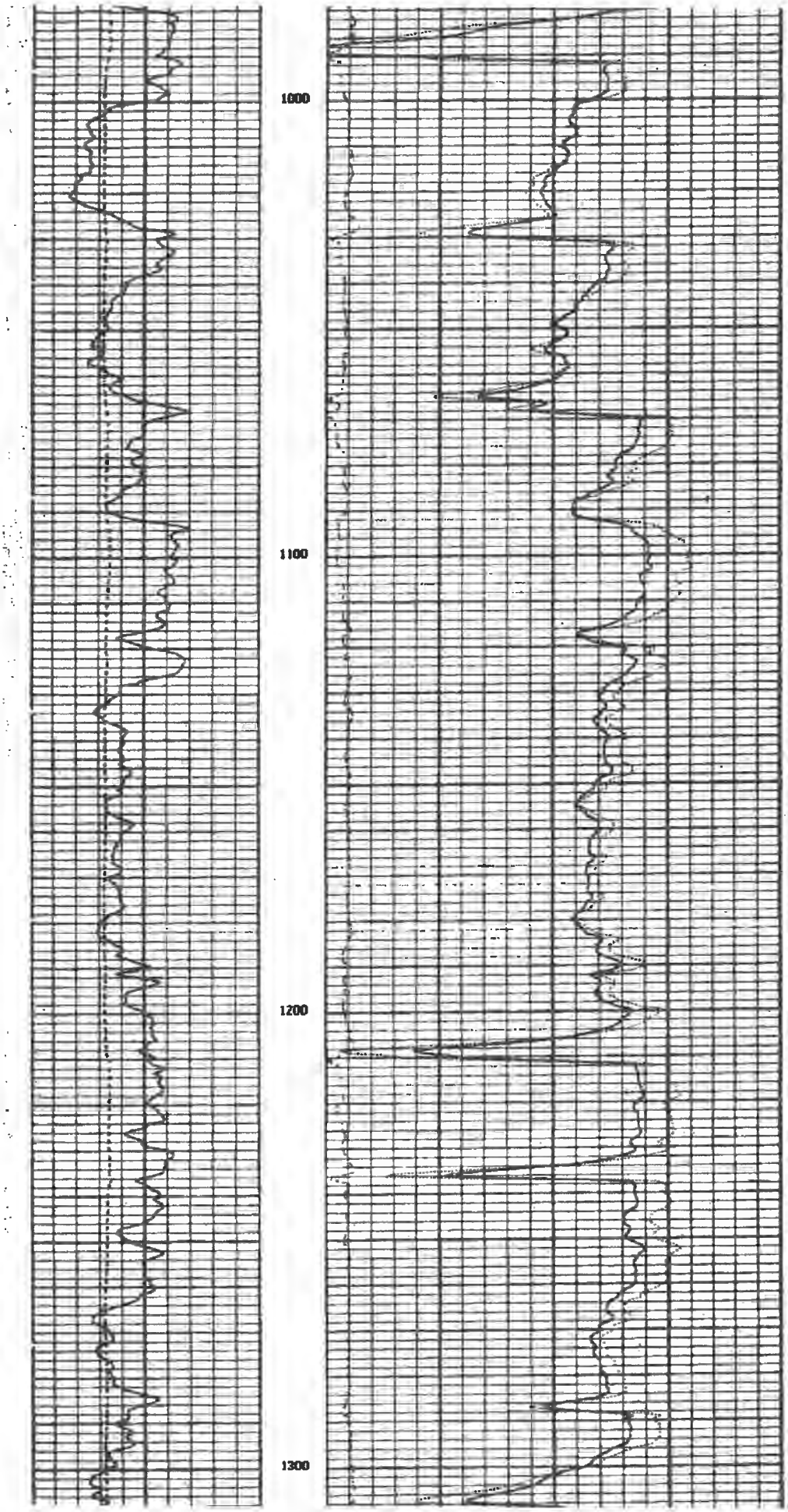
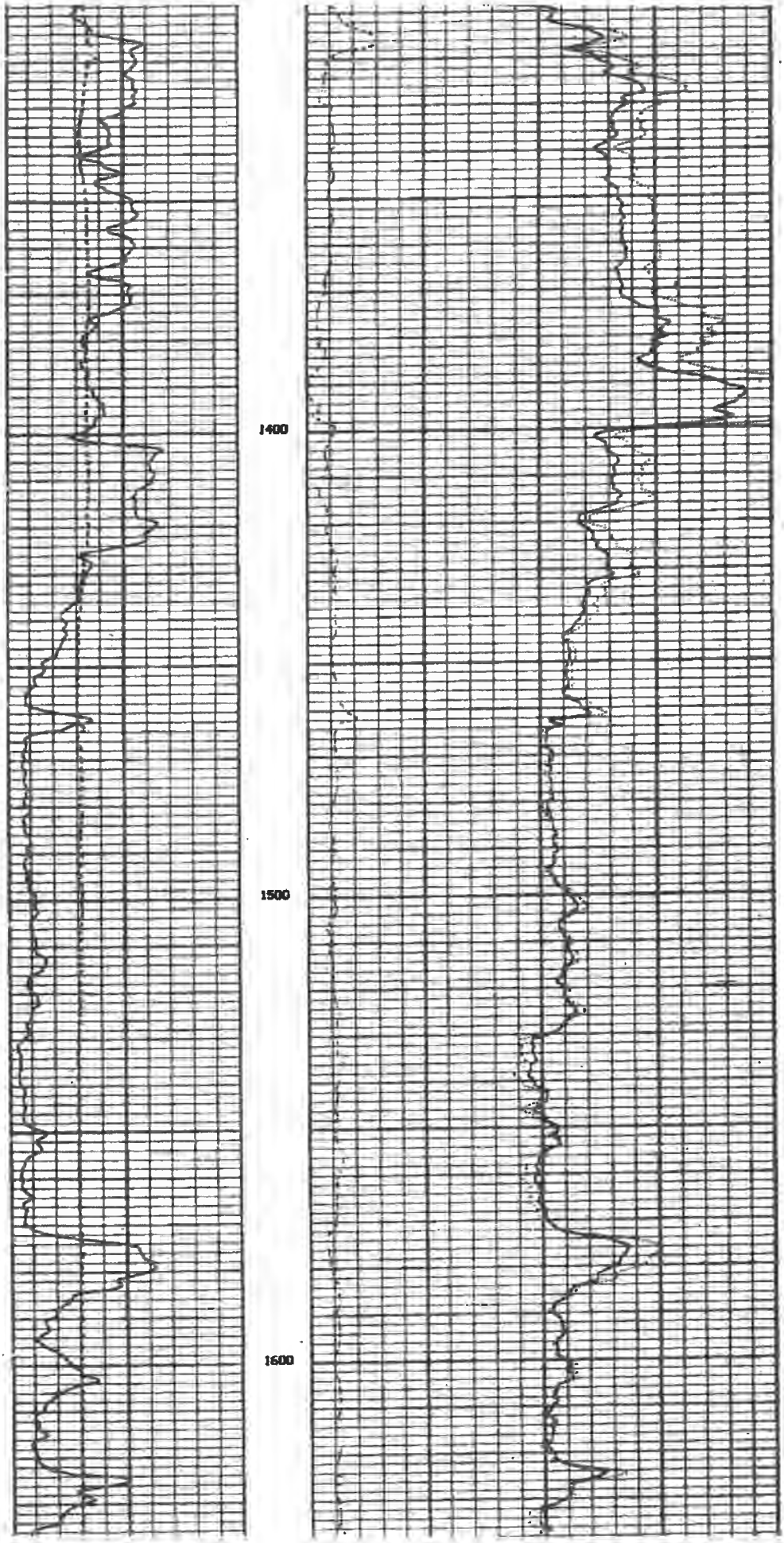
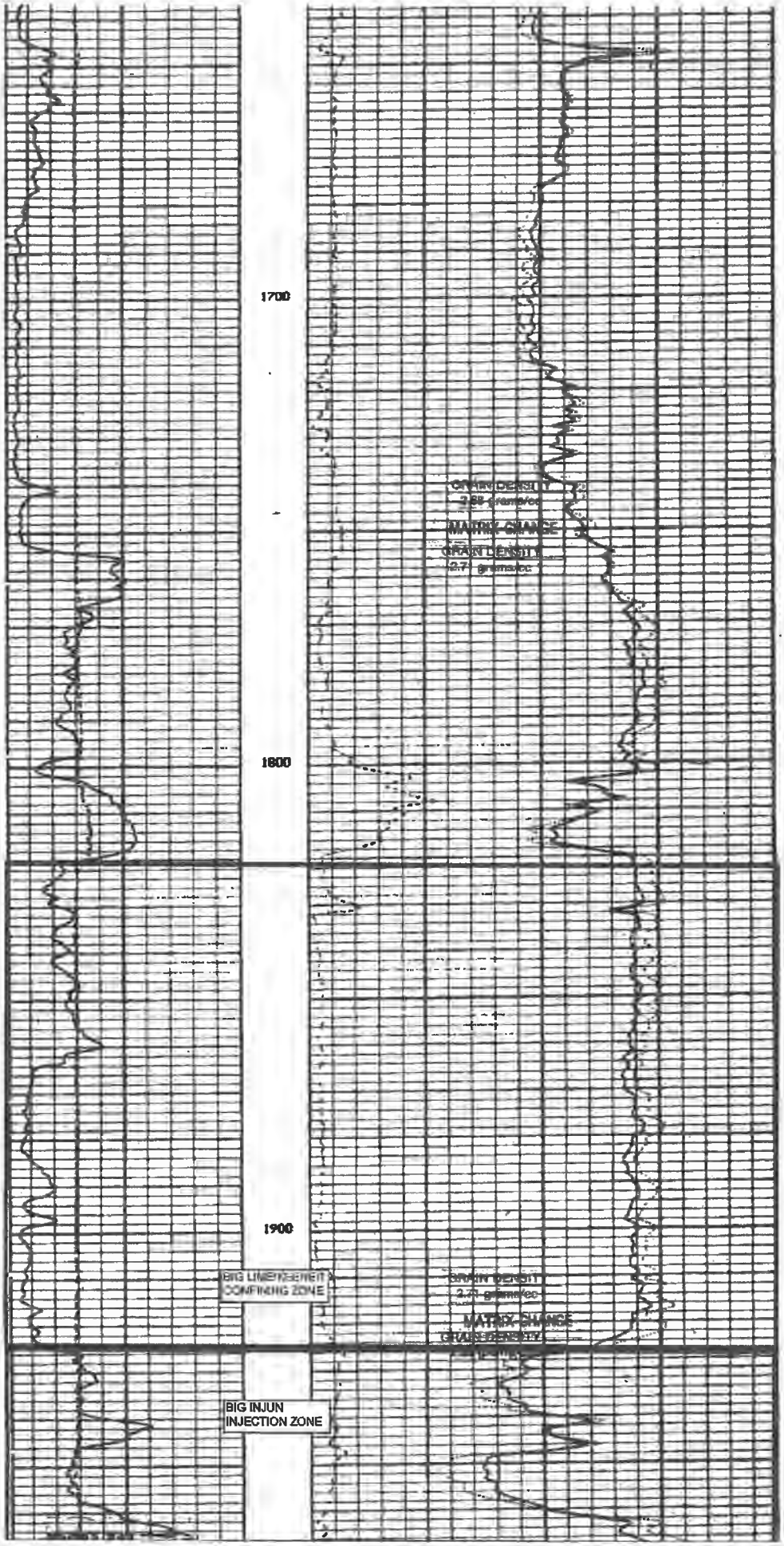


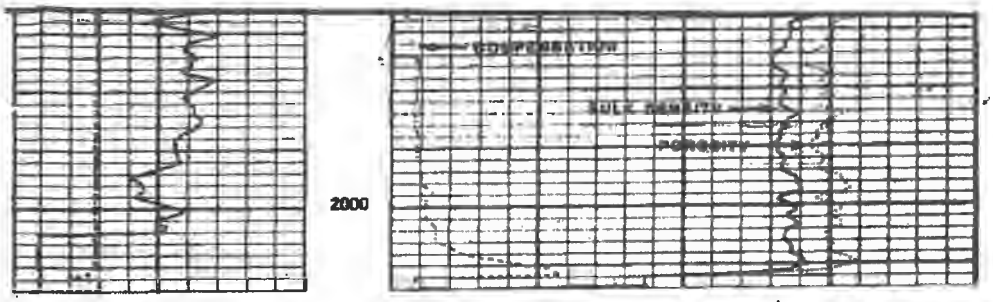

400
500
600


700
800
900


1000
1100
1200
1300


1400
1500
1600


1700
1800
1900
GRAIN DENSITY
2.71 grams/cc
MATRIX CHANGE
GRAIN DENSITY
2.71 grams/cc
BIG LIME/BEREA
CONFINING ZONE
GRAIN DENSITY
2.71 grams/cc
MATRIX CHANGE
GRAIN DENSITY
BIG INJUN
INJECTION ZONE



Density Correction
GRAMS/CC
0 +.2

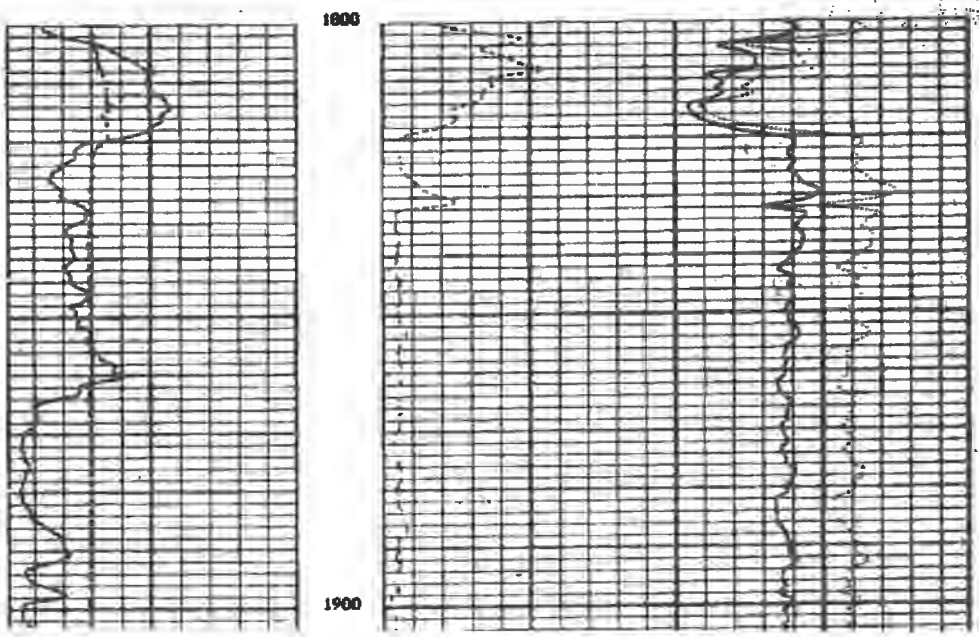
Gamma Ray
API UNITS
0 200

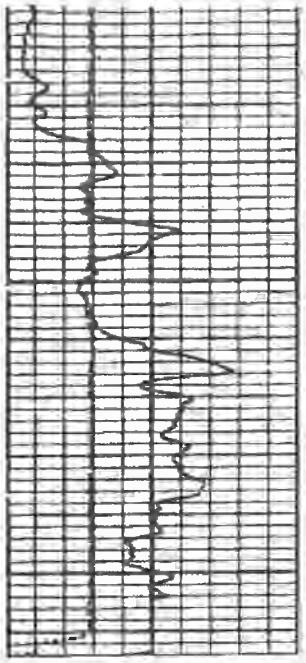
Density Porosity
POROSITY
30 20 10 0 -10

Caliper
INCHES
5 15

Bulk Density
GRAMS/CC
2.0 2.5 3.0

REPEAT SECTION





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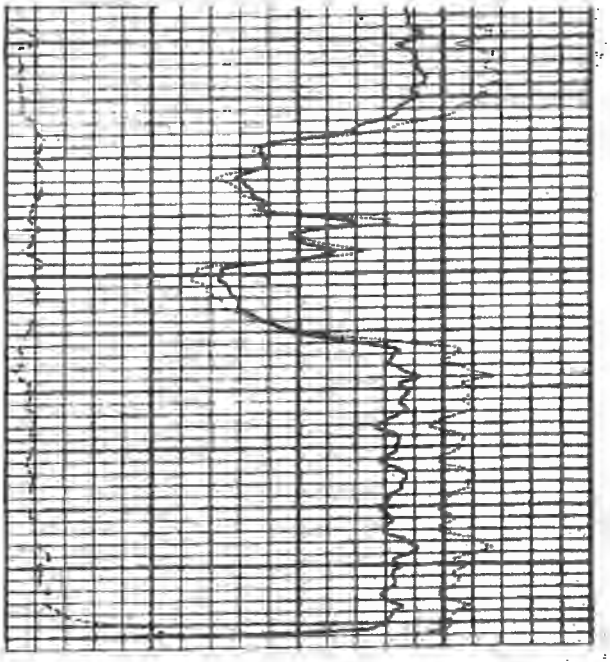


Density Correction

GRAMS/CC

0 +.2

Gamma Ray

API UNITS

0 200

Density Porosity

POROSITY

30 20 10 0 -10

Caliper

INCHES

5 15

Bulk Density

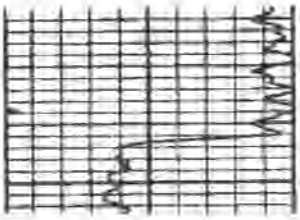
GRAMS/CC

2.0 2.5 3.0

BEFORE SURVEY CALIBRATIONS

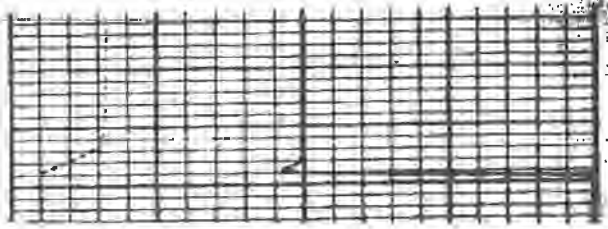
GAMMA RAY

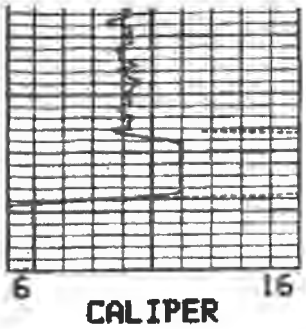
0 200

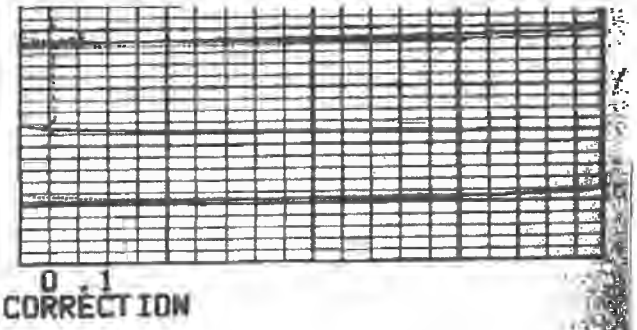


BULK DENSITY

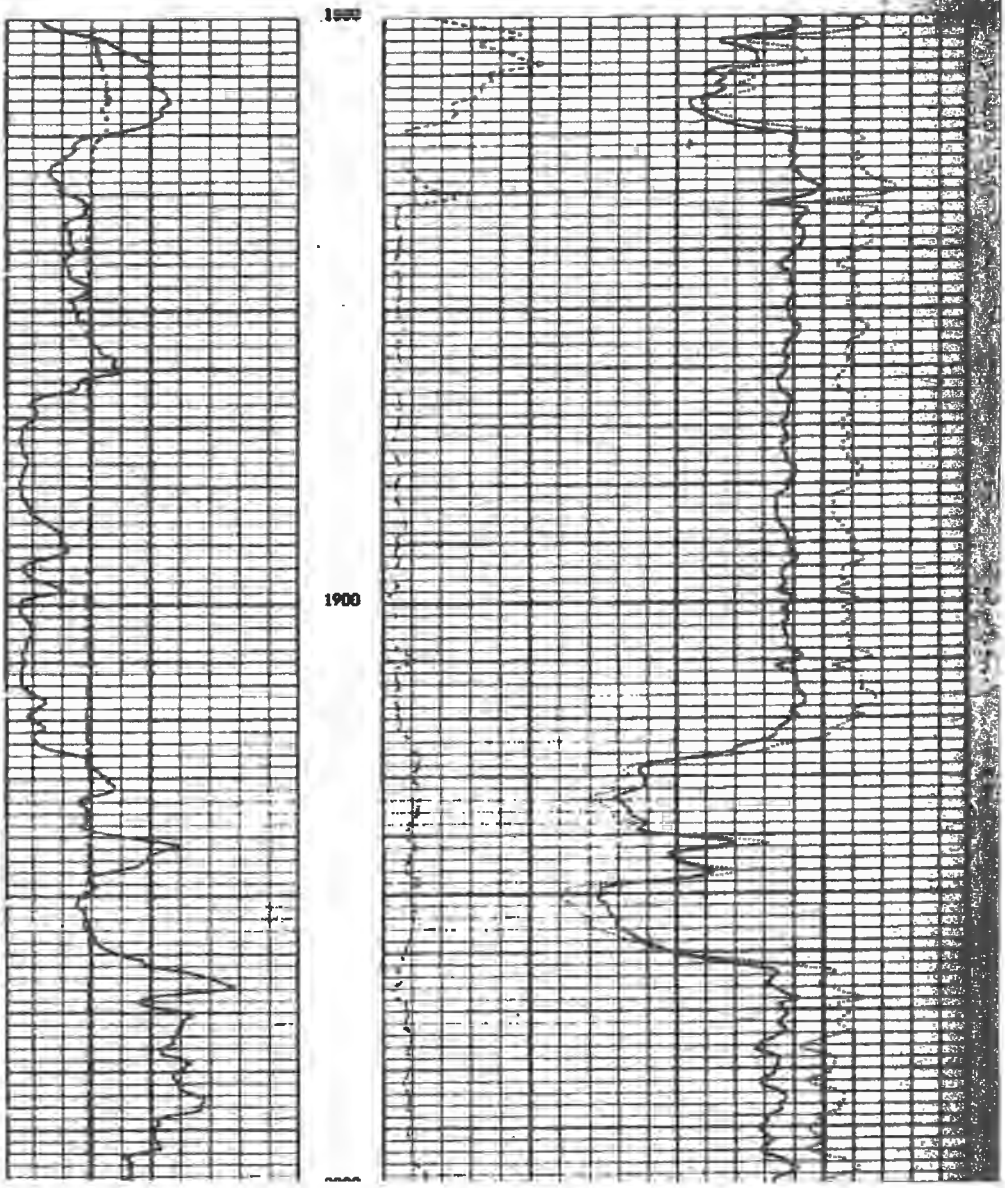
2.0 2.5 3.0

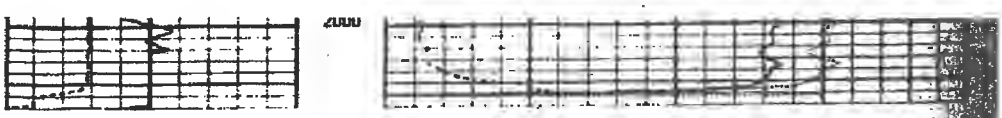






REPEAT SECTION





Density Correction

GRAMS/CC

0 +.2

Gamma Ray

API UNITS

0 200

Density Porosity

POROSITY

30 20 10 0

Caliper

INCHES

5 15

Bulk Density

GRAMS/CC

2.0 2.5

COMPANY:PENNZOIL COMPANY
WELL:W. M. LOONEY NO.43
FIELD:TARIFF
COUNTY:ROANE STATE:WV

"Pipeline"

Select County: (087) Roane
Enter Permit #: 4172
Get Data | Reset

Select datatypes: (Check All)
Location, Production, Plugging, Owner/Completion, Stratigraphy, Sample, Pay/Show/Water, Logs, Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 4172

Report Time: Thursday, April 30, 2020 10:00:14 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_7.5	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708704172	Roane	4172	Smithfield	Tariff	Otter	38.659778	-81.216183	481191	4279045

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708704172	10/25/1991	Dvtd Orgnl Loc	Completed	James C Lloyd	50				Keith Crihfield	Pennzoil Company		Big Injun (Price&eq)	
4708704172	-/-/-	Plugging	Cancelled	James Lloyd	50		W M Loone		T A L Collins	Triad Hunter LLC			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AF
4708704172	10/25/1991	10/3/1991	930	Ground Level	Tariff(Tlmn)	Undf PRICE blw INJN	Big Injun (Price&eq)	Service Well	Unsuccessful	Water Injection	Rotary	Acid+Frac		2087	2087		0	0	0	0			0	0	
4708704172	-/-/-	-/-/-	970	Ground Level																					

Comment: 10/25/1991 Drilled directionally N70 degrees 10 minutes W and 308ft from surface location to bottom hole.

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708704172	10/25/1991	Water Flood	Injection	Deviated	1975	Big Injun (Price&eq)	2008	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704172	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Ground Resources, LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Ground Resources, LLC	2018	44	0	0	44	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704172	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Pennzoil Products Company	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Triad Resources, Inc.	2002	0	0	0	0	0	0	0	0	0	0	0	0	0
4708704172	Ground Resources, LLC	2017	0												
4708704172	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704172	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) * 2019 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708704172	Ground Resources, LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708704172	Dvtd Orgnl Loc	1st Salt Sand	Well Record	1455	Reasonable	285	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	2nd Salt Sand	Well Record	1765	Reasonable	30	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	Little Lime	Well Record	1805	Reasonable	35	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	Pencil Cave	Well Record	1840	Reasonable	15	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	Big Lime	Well Record	1855	Reasonable	115	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	Big Injun (Price&eq)	Well Record	1970	Reasonable	40	Reasonable	930	Ground Level
4708704172	Dvtd Orgnl Loc	Undf PRICE blw INJN	Well Record	2010	Reasonable	0	Reasonable	930	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG_I
4708704172	20	2076		G D N I	Y	N	20	2066	280	2072	280	2076	280	2075							Y	Y	N						

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

FILENAME
4708704172gdnl.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- I Induction (includes dual induction, medium induction, deep induction, etc.)

INJECTOR 4172

l laterolog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
o other[1]
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential

mechanical log types:

b cement bond
c caliper
o other[1]
p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

INJECTOR 4172

There is no Plugging data for this well

There is no Sample data for this well

4172

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION BIG INJUN

Depth 1970 Feet (top) 2010 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2087 Feet

3) Approximate water strata depths: Fresh N/A Feet Salt N/A Feet

4) Approximate coal seam depths:

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 800 psig Source HISTORICAL/ESTIMATED

7) Estimated reservoir fracture pressure _____ psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 25

Injection volume (bbl/day) 200

Injection pressure (psig) 1000

Bottom hole pressure (psig) 2000

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Fresh water and/or produced water from the area and possible bactericides necessary to maintain water quality to improve oil recovery. Not using bactericides at this time, but will submit a MSDS for approval for any used in the future. Additives include Scale inhibitor and THDS (Cleaner).

Temperature of injected fluid: (°F) AMBIENT

10) FILTERS (IF ANY)

ANTHRACITE COAL FILTERS

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

NONE

4172

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor							
Fresh Water	8 5/8"		H-40	20#	305'	305'	100sks CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2"		K-55	9.5#	2060'	2060'	150sks
Tubing	NONE						
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

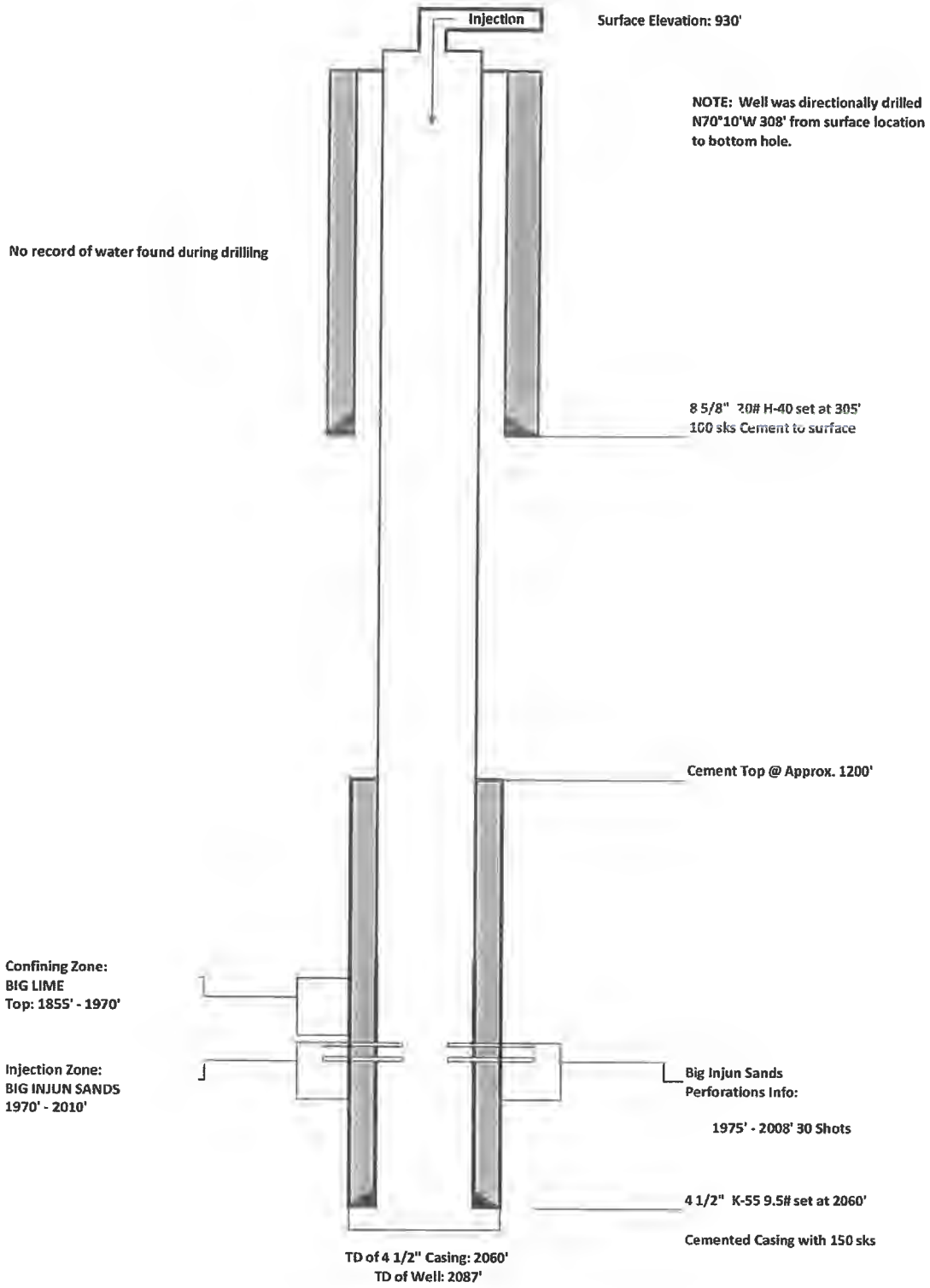
PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	NONE			
Sizes:				
Depths Set:				

4172

WELL SCHEMATIC

W.M. LOONEY 50

API 47-087-04172



WR-35

INJECTOR 4172

08-Aug-91

API # 47- 87-04172-S

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work 4708704172

Farm name: LLOYD, JAMES C. Operator Well No.: W.M.LOONEY #50

LOCATION: Elevation: 930.00 Quadrangle: TARIFF

District: SMITHFIELD County: ROANE
Latitude: 2500 Feet South of 38 Deg. 40Min. 0 Sec.
Longitude 2300 Feet West of 81 Deg. 12 Min. 30 Sec.

Company: PENNZOIL PRODUCTS COMPANY
P. O. BOX 5519
VIENNA, WV 26105-5519

Agent: JAMES A. CREWS

Inspector: HOMER DOUGHERTY
Permit Issued: 08/08/91
Well work Commenced: 10/3/91
Well work Completed: 10/25/91
Verbal Plugging
Permission granted on: _____
Rotary X Cable _____ Rig
Total Depth (feet) 2087'
Fresh water depths (ft) N/A

Salt water depths (ft) N/A

Is coal being mined in area (Y/N)? N
Coal Depths (ft): N/A

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
Size			
8 5/8"	305.06	305.06	100 Sks.
4 1/2"	2060.08	2060.08	150 Sks.

OPEN FLOW DATA

* Producing formation Big Injun Pay zone depth (ft) 1970-2010
Gas: Initial open flow - - MCF/d Oil: Initial open flow - - Bbl/d
Final open flow - - MCF/d Final open flow - - Bbl/d
Time of open flow between initial and final tests - - Hours
Static rock Pressure - - psig (surface pressure) after - - Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

*WELL IS A LIQUID INJECTION WELL

For: PENNZOIL PRODUCTS COMPANY

By: Timothy P. Roush

Date: January 21, 1992

4708704172

FRACTURE RECORD

87-4172

PERFORATED: Big Injun 1975 - 2008 w/30 Holes

FRACTURES: Big Injun w/250 Gal. HF Acid, 152 Bbl. gelled water and 1500 lbs. of 20/40 Sand

NOTE: This well was directionally drilled N70°10'W 308' from surface location to bottom hole.

WELL LOG

0 - 630	Sandy Shale
630 - 785	Sand
785 - 820	Shale
820 - 975	Sand
975 - 1035	Shale
1035 - 1070	Sand
1070 - 1090	Shale
1090 - 1455	Shaley Sand
1455 - 1740	1st Salt Sand
1740 - 1765	Shale
1765 - 1795	2nd Salt Sand
1795 - 1805	Shale
1805 - 1840	Little Lime
1840 - 1855	Pencil Cave
1855 - 1970	Big Lime
1970 - 2010	Big Injun
2010 - 2086	Pocono Shale
T.D. = 2087	

4708704172

WW-4B
Rev. 2/01

1) Date January 20, 2015
2) Operator's Well No. W.M. Looney # 50
3) API Well No. 47- 087 - 4172

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

4) Well Type: Oil ____/ Gas ____/ Liquid injection X / Waste disposal ____/
(If "Gas, Production ____ or Underground storage ____) Deep ____/ Shallow ____

5) Location: Elevation 930' GL Watershed Trace Fork
District Smithfield County Roane Quadrangle Tariff

6) Well Operator Triad Hunter, LLC
Address 125 Putnam Street
Marietta, Ohio 45750

7) Designated Agent Kim Arnold
Address P.O. Box 154
Waverly, WV 26184

8) Oil and Gas Inspector to be notified
Name Ed Gainer
Address P.O. Box 821
Spencer, WV 25276

9) Plugging Contractor
Name N/A
Address

10) Work Order: The work order for the manner of plugging this well is as follows:

150' - 200' Bottom hole plug in 4 1/2" casing. Class A per #5

100' - Cut plug (4.5" csg.) Estimated cement top @ 1300'.

100' - Elevation plug @ 925'

100' - Surface casing plug @ 325'.

100' - 150' Surface Plug inside 8 5/8" casing.

Note! 1. All cement plugs - Class A cement.

2. Gel spacers between all cement plugs.

3. No coal seams reported.

EREC T MONUMENT W/API # GCS 6/10/15

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector [signature] Date 3/9/15

06/12/2015

FRACTURE RECORD

87-4172

PERFORATED: Big Injun 1975 - 2008 w/30 Holes

FRACTURES: Big Injun w/250 Gal. HF Acid, 152 Bbl. gelled water and 1500 lbs. of 20/40 Sand

NOTE: This well was directionally drilled N70°10'W 308' from surface location to bottom hole.

WELL LOG

0 - 630	Sandy Shale
630 - 785	Sand
785 - 820	Shale
820 - 975	Sand
975 - 1035	Shale
1035 - 1070	Sand
1070 - 1090	Shale
1090 - 1455	Shaley Sand
1455 - 1740	1st Salt Sand
1740 - 1765	Shale
1765 - 1795	2nd Salt Sand
1795 - 1805	Shale
1805 - 1840	Little Lime
1840 - 1855	Pencil Cave
1855 - 1970	Big Lime
1970 - 2010	Big Injun
2010 - 2086	Pocono Shale
T.D. = 2087	

06/12/2015

4172
Merged
Composite
Log

YOUNG WIRELINE SERVICES

P.O. BOX 716
PIPLEY, WV. 26271

MERGED COMPOSITE LOG

FILING NO.	13248
	874172
COMPANY	PENNZOIL PRODUCTS CO.
WELL	W.M. LOONEY # 50
FIELD	SMITHFIELD DISTRICT
COUNTY	ROANE
STATE	W'
LOCATION	TRACE FORK TARIFF 7.5
OTHER SE	
SEC	
TWP	
RGE	

PERMANENT DATUM GROUND LEVEL ELEV 830
LOG MEASURED FROM KB .5 FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM KB

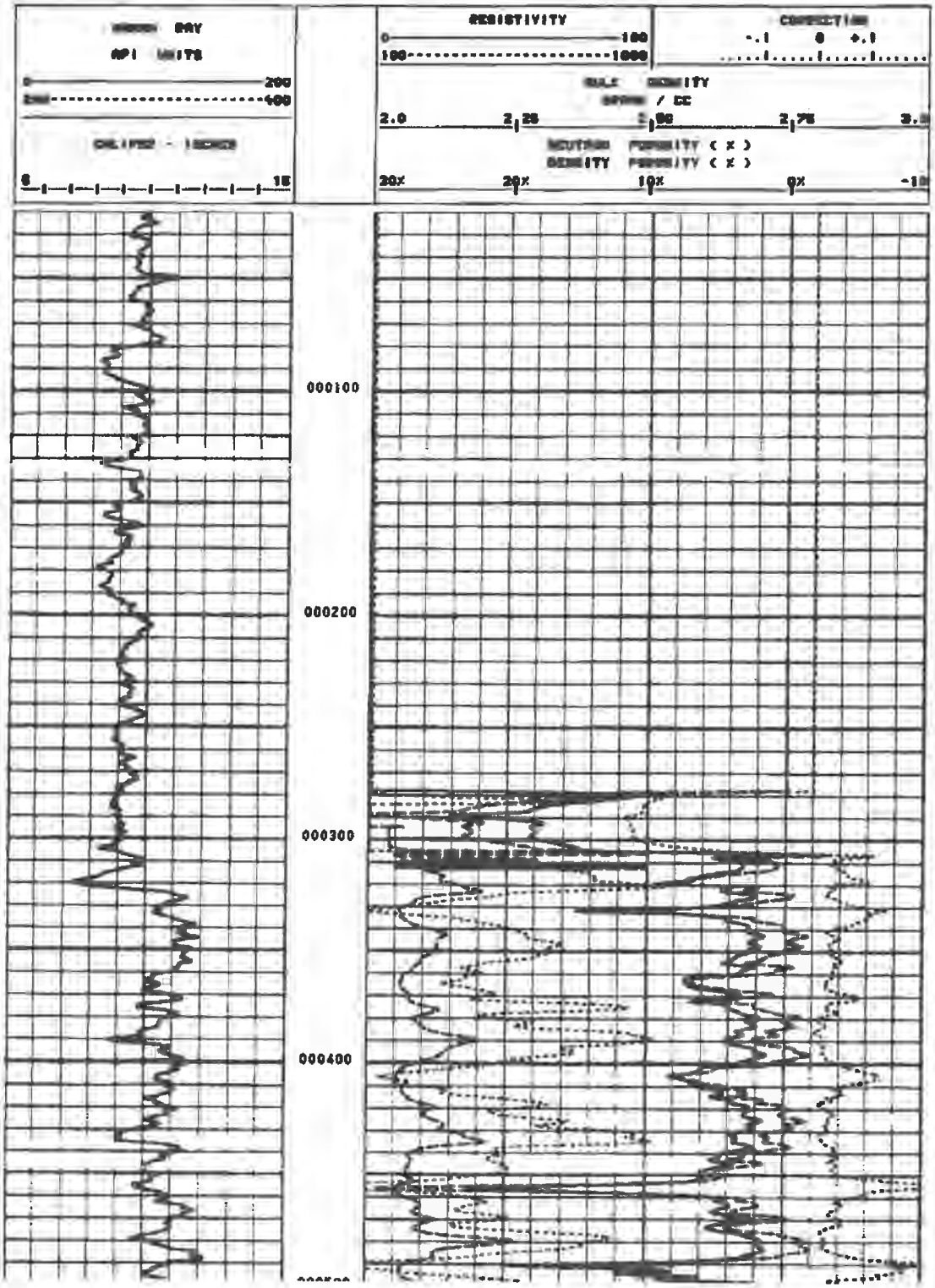
ELEVATI	
KB	830
DF	829
GL	830

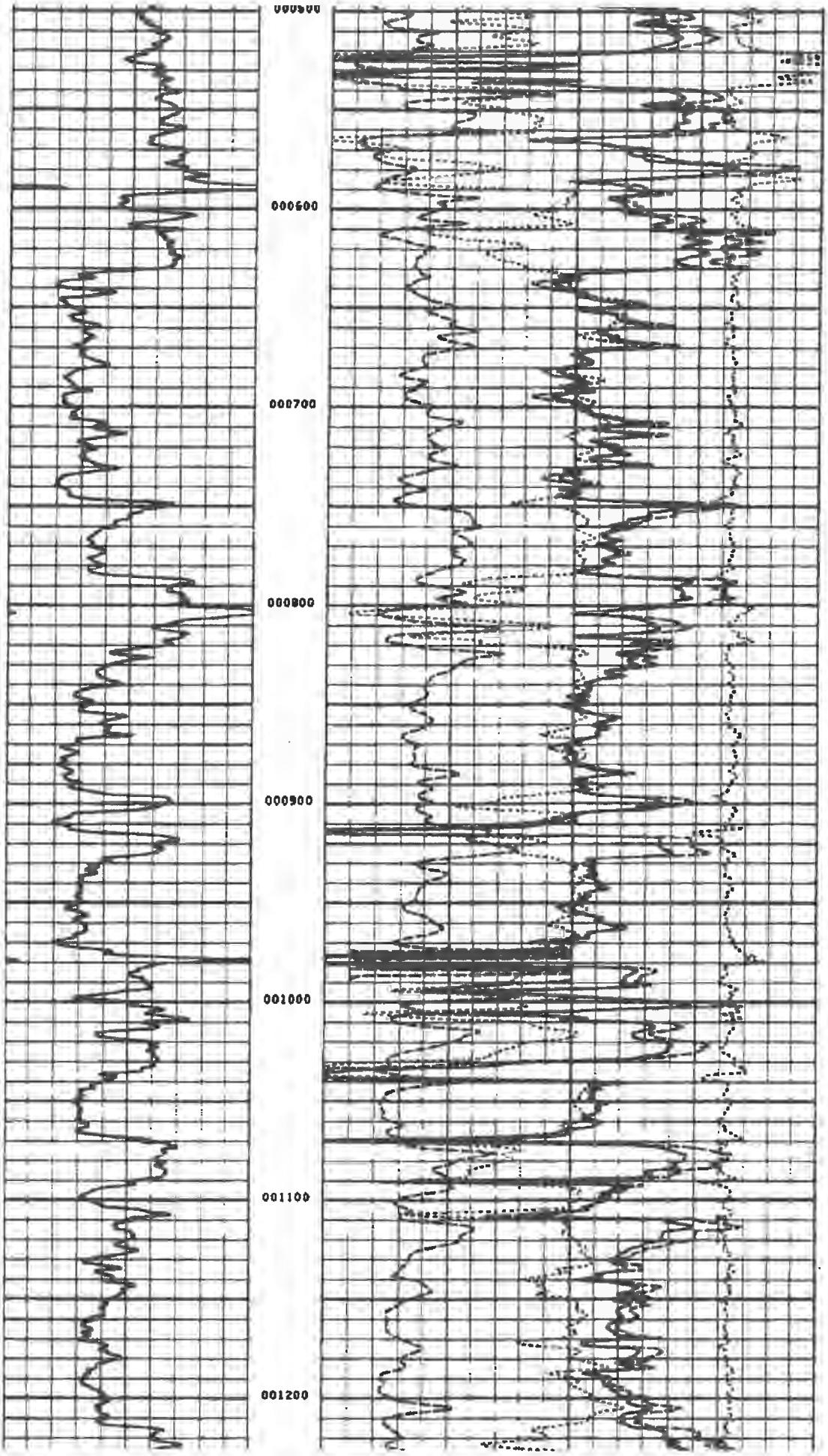
DATE	10-10-01		
RUN NO.	ONE		
DEPTH DRILLER	2000		
DEPTH LOGGER	2000		
BOTTOM LOGGED INT.	2078		
TOP LOGGED INT.	20		
CASING DRILLER	309		
CASING LOGGER	307		
BIT SIZE	5 7/8		
TYPE FLUID IN HOLE	H20		
DENSITY & VISCOSITY	N/A		
PH AND FLUID LOSS	N/A		
SOURCE OF SAMPLE	N/A		
RM @ MEAS. TEMP.	N/A		
RMF @ MEAS. TEMP.	N/A		
RMC @ MEAS. TEMP.	N/A		
SOURCE OF RMF & RMC	N/A		
RM @ BHT	N/A		
TIME SINCE CIRC.	4 HOURS		
MAX. REC. TEMP. F.	N/A		
EQUIP. NO. AND LOC.	126 / CHAS.		
RECORDED BY	D. CLARK		
WITNESSED BY	MR. CRAWLIGH		

PUMP NO.	TOOL NO.	PADDLE NO.	SOURCE NO.	TOOL TYPE	SCALE	UNITS / DIVISION
TWO	1[illegible]	002	S/R	[illegible]	10 - 100	10 OHMS/DIV
[illegible]	2218	262	CSV - J33	CDL	2.0 - 3.0	.05 GRMS / CC
	3008	3004	71-1-6408	SNP	0% - 30%	2% / DIV

REMARKS

PERMIT # 47-087-4172 S. 2.71 DENSITY MATRIX WAS ON REPEAT AT CUSTOMERS REQUEST.
2.71 DENSITY MATRIX RAN THRU LG. CALIPER SKITTED FROM LOG DUE TO MALFUCTION.

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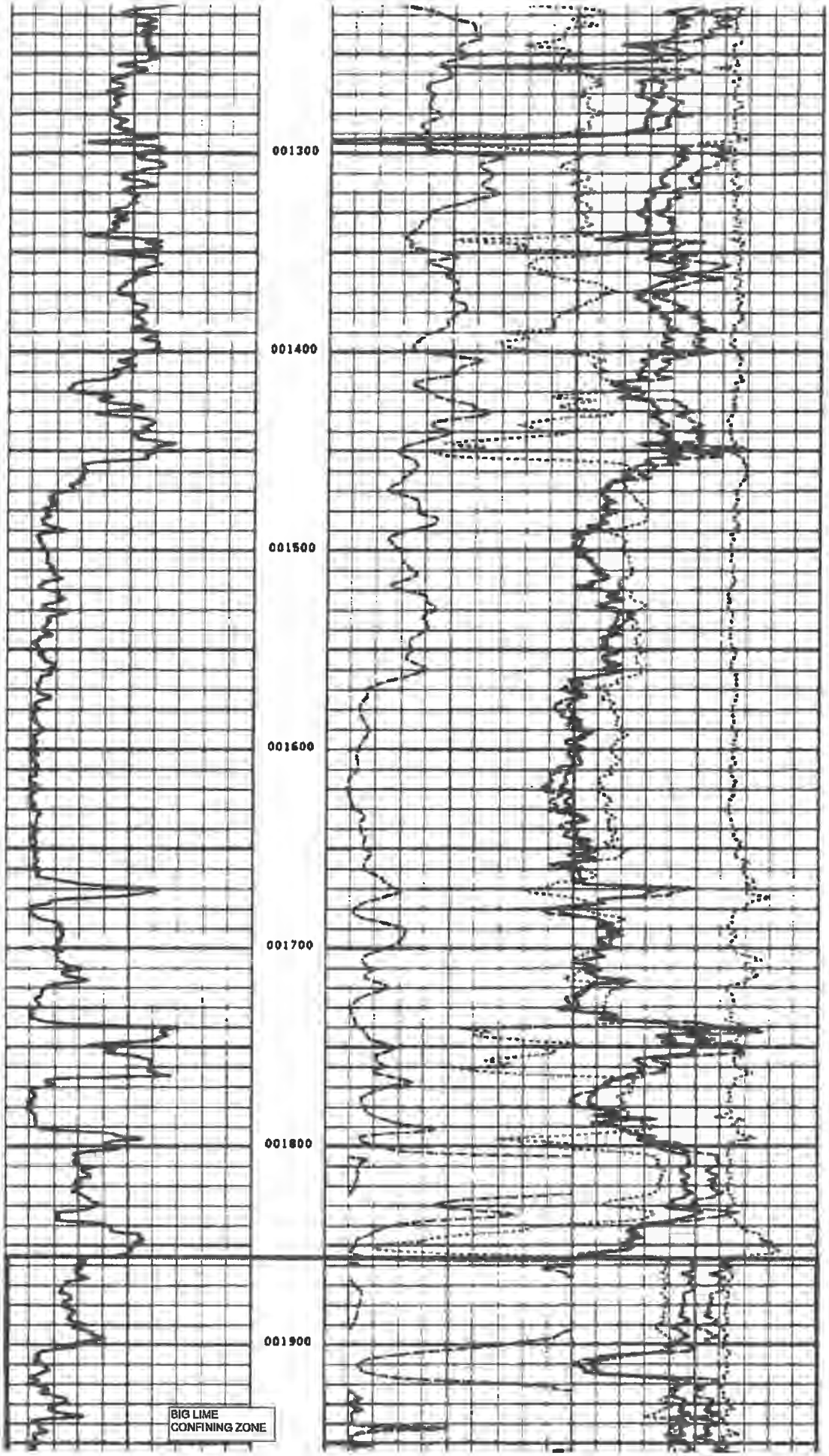
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001700
001800
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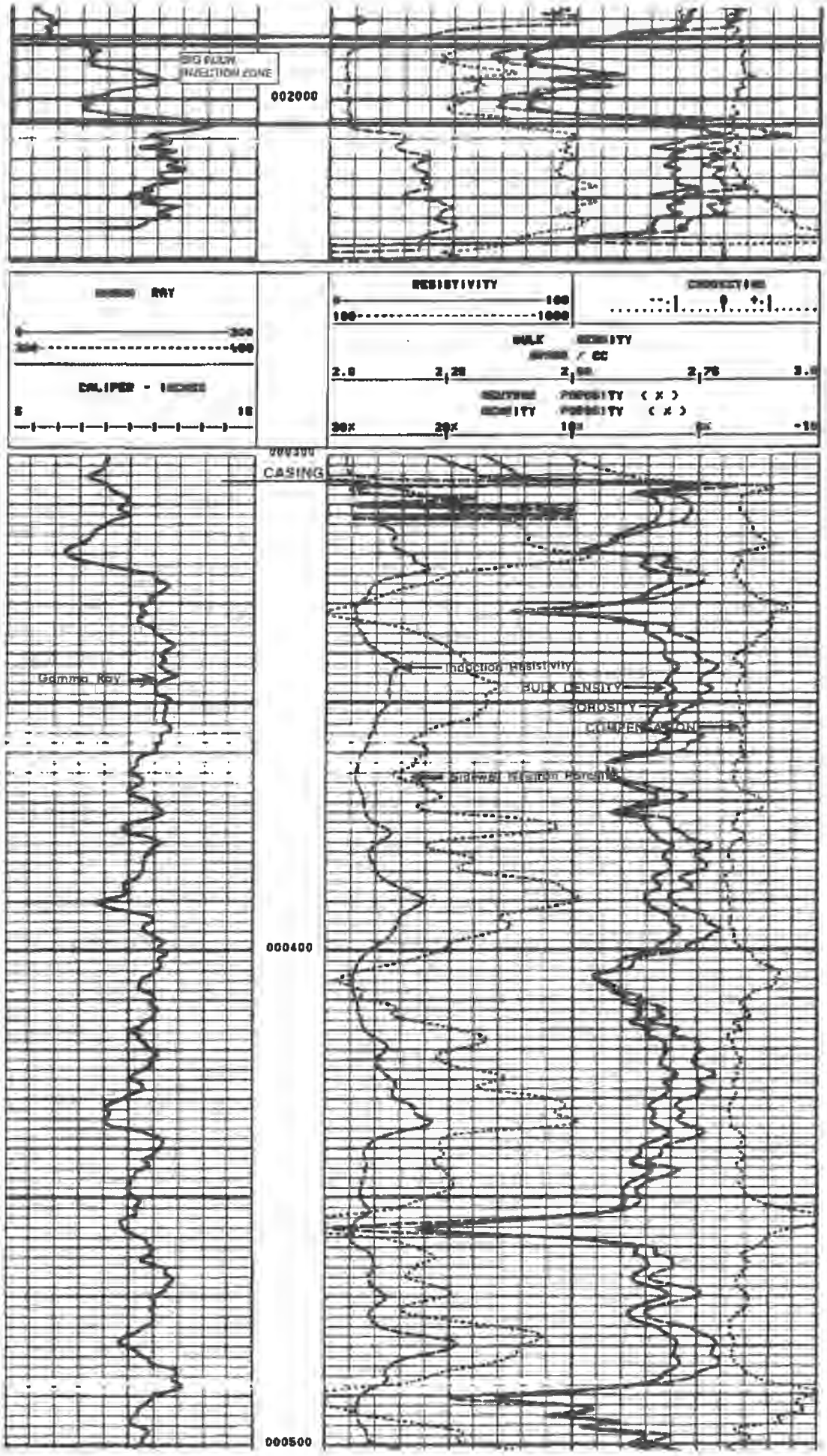
BIG LIME
CONFINING ZONE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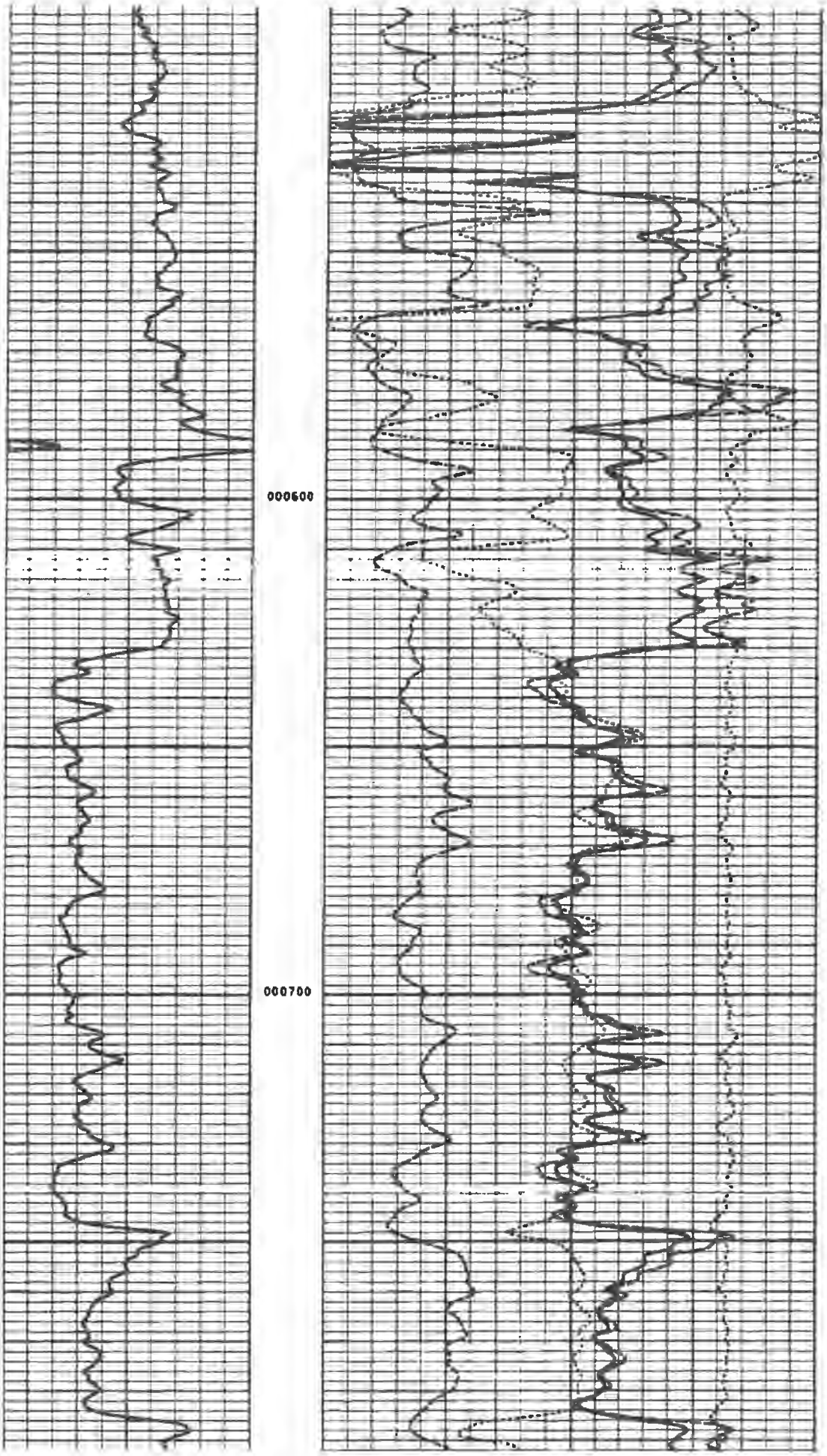
CALIPER
CASING
Gamma Ray
Induction Resistivity
BULK DENSITY
POROSITY
000400
000500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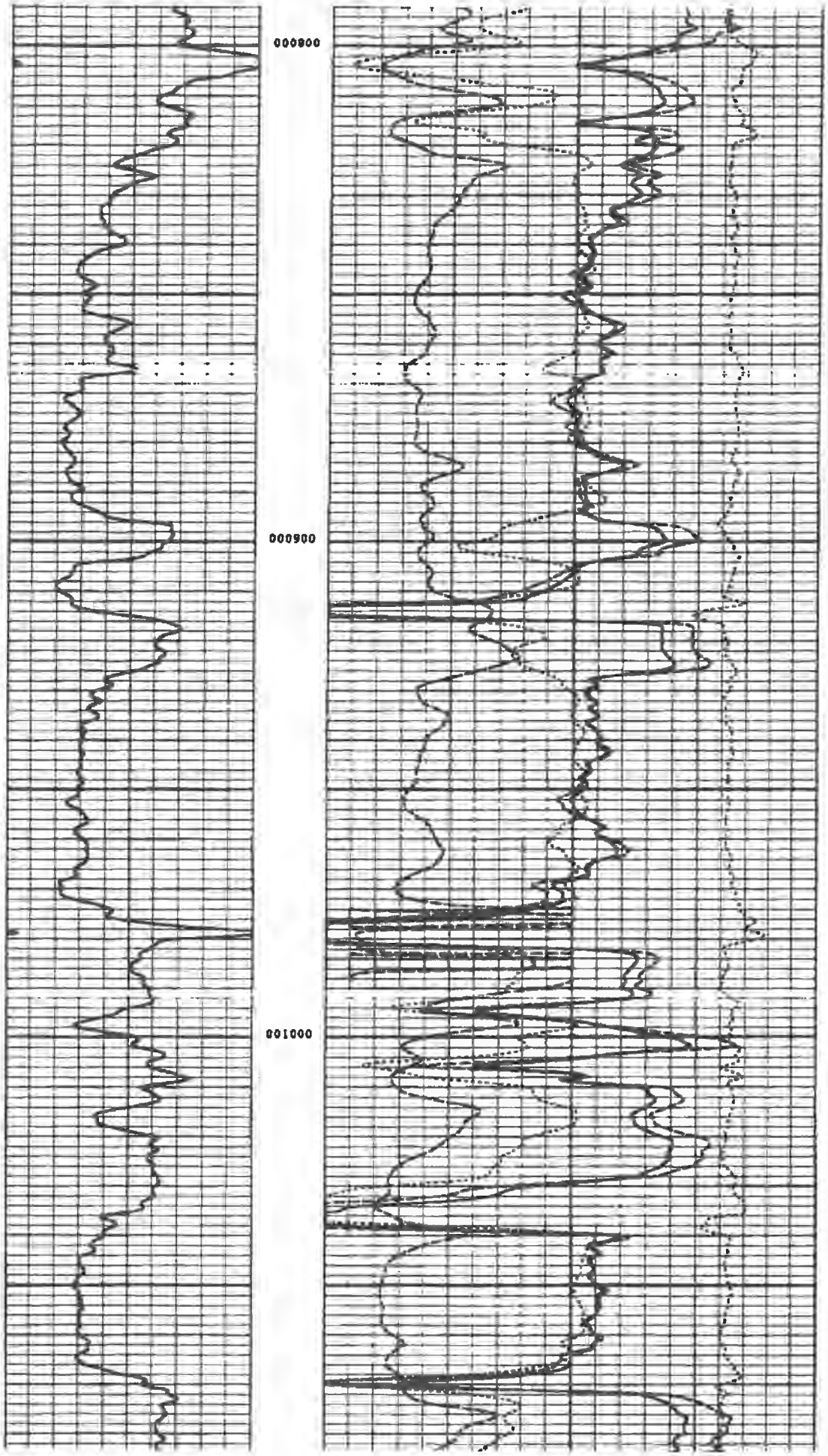
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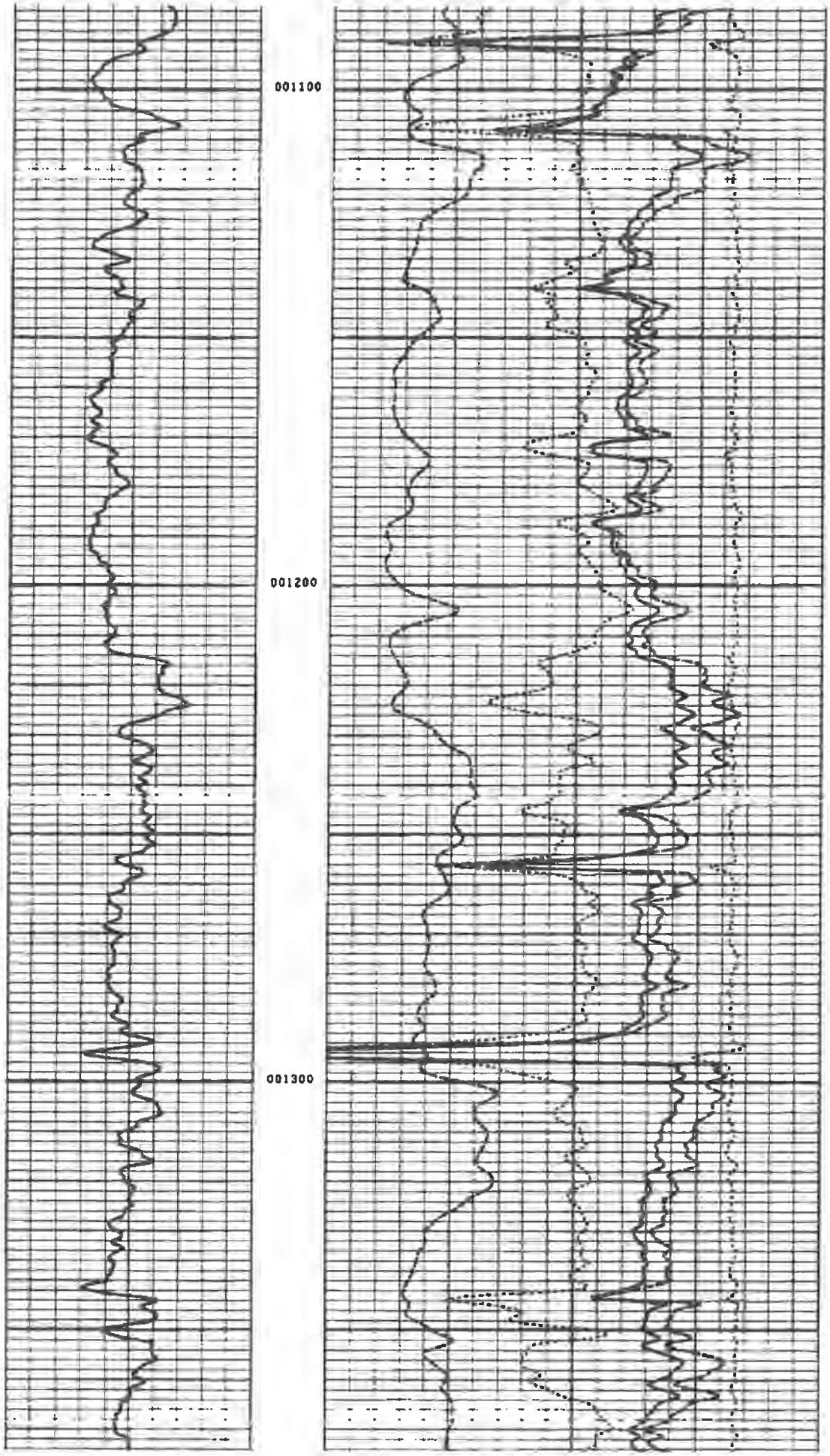
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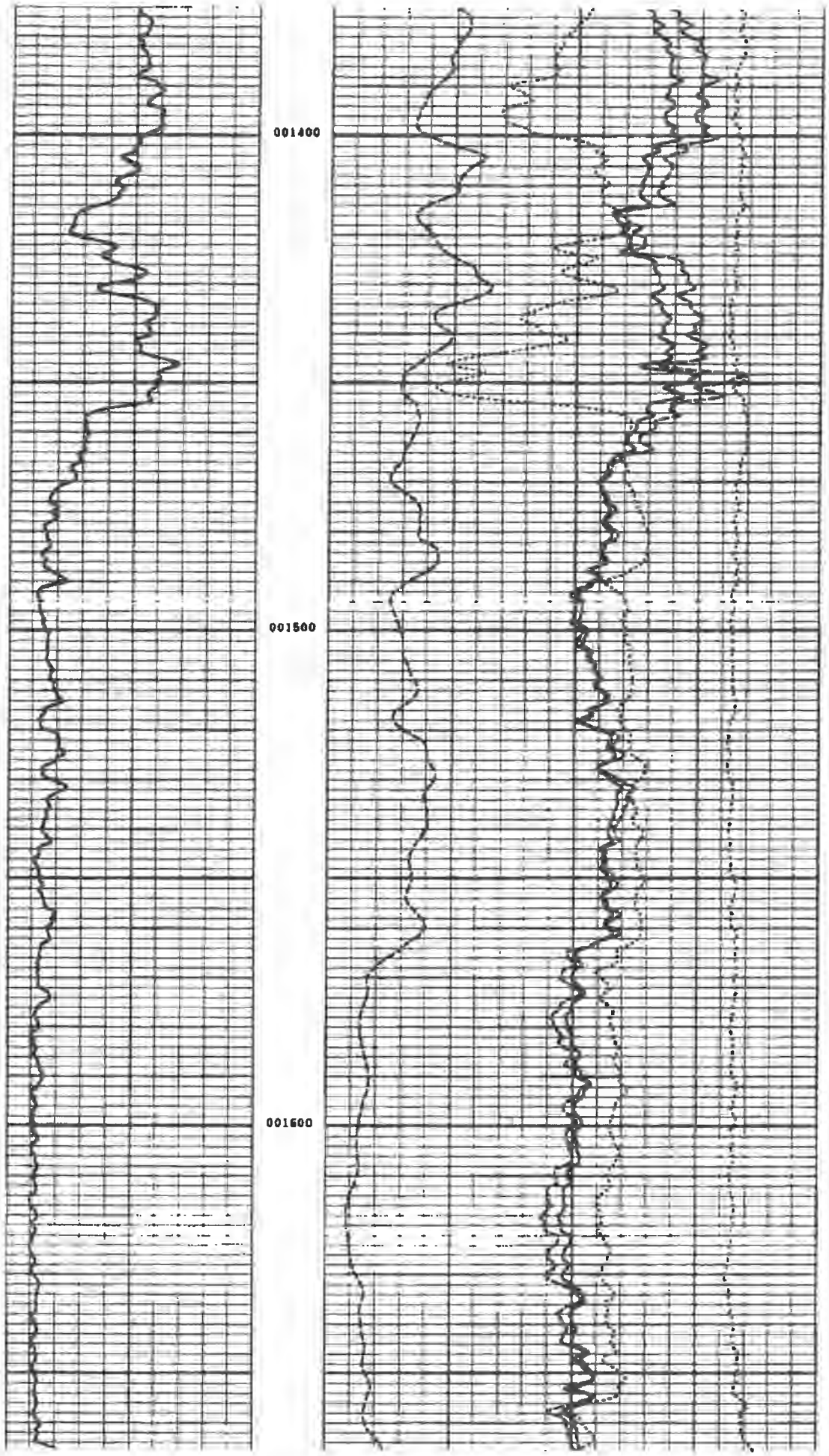
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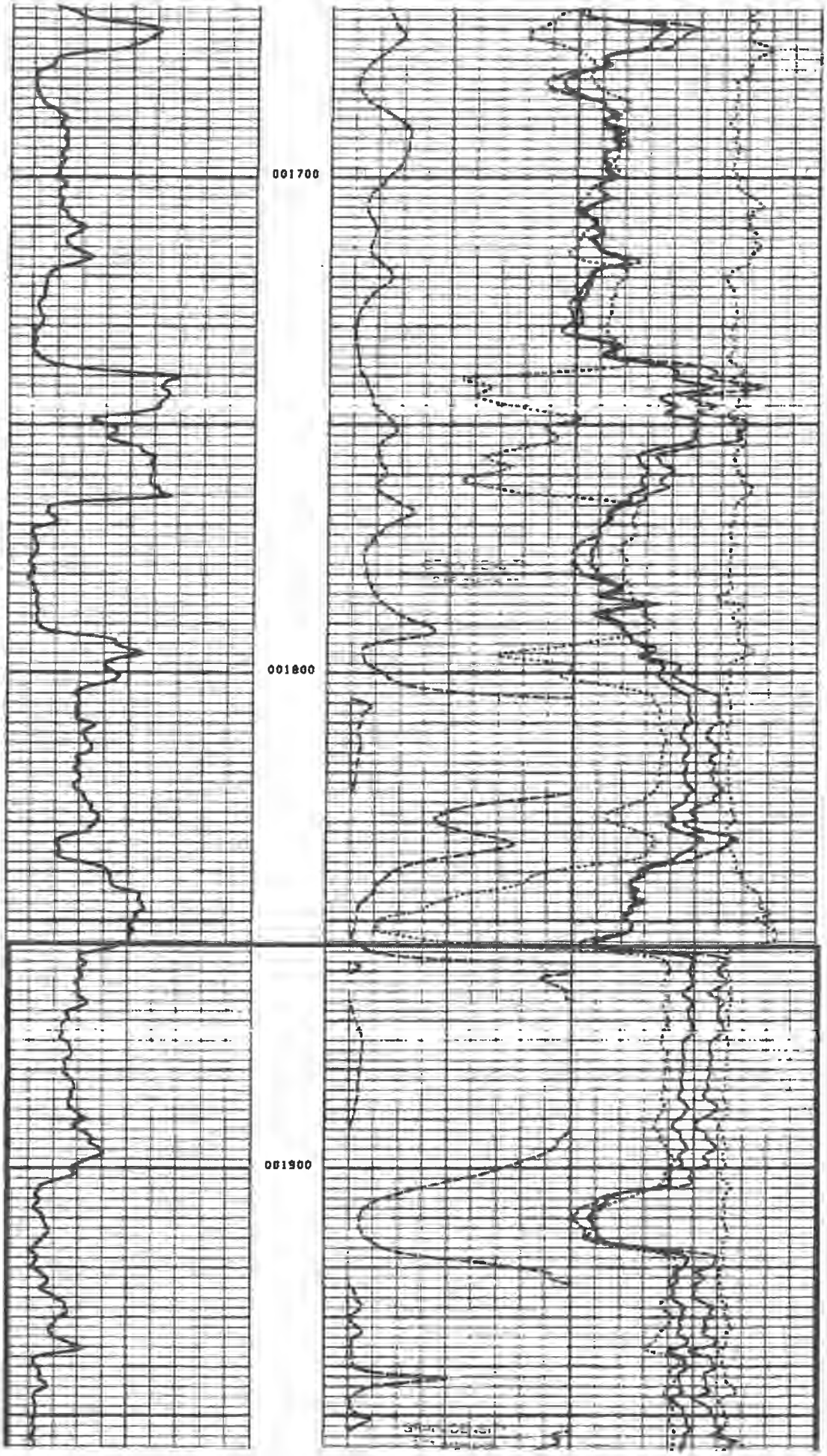
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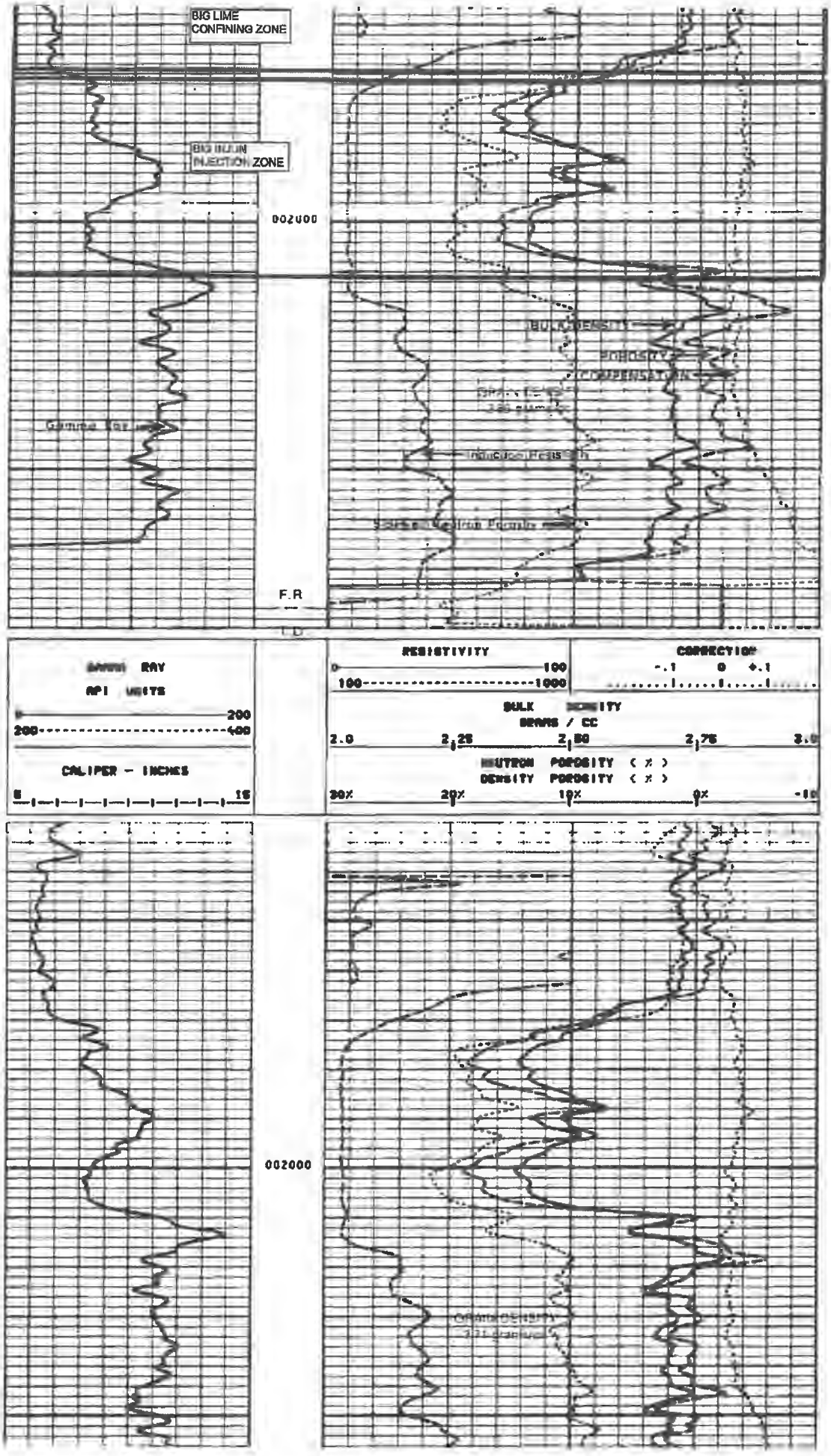
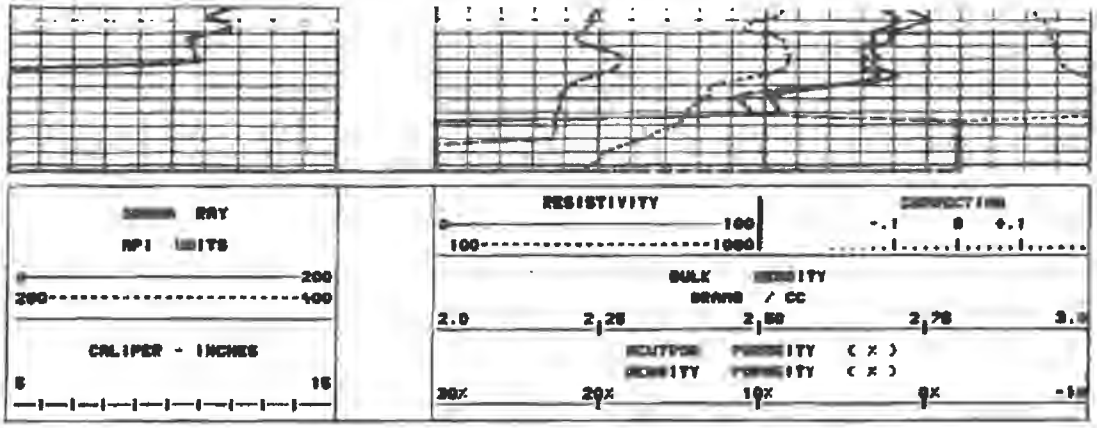
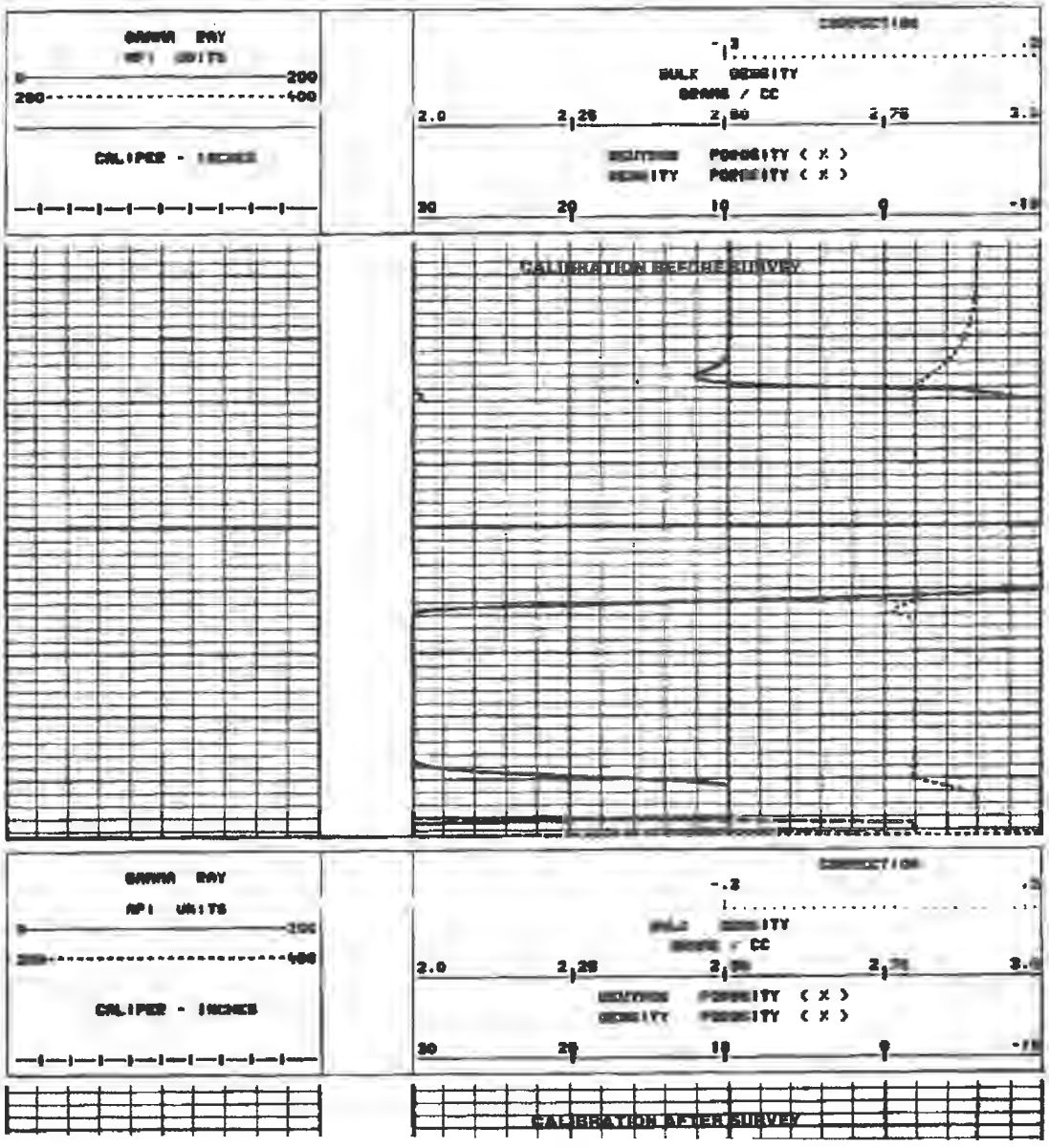

BIG LIME
CONFINING ZONE
BIG INJUN
INJECTION ZONE
002000
F.R
T.D
GAMMA RAY
API UNITS
0
200
200
400
CALIPER - INCHES
6
16
RESISTIVITY
0
100
100
1000
CORRECTION
-.1
0
+.1
BULK DENSITY
GRAMS / CC
2.0
2.25
2.50
2.75
3.0
NEUTRON POROSITY (%)
DENSITY POROSITY (%)
30%
20%
10%
0%
-10
002000


RESISTIVITY
100
100
1000
-.1
0
+.1
BULK
DENSITY
GRAMS / CC
2.0
2.25
2.50
2.75
3.0
NEUTRON
POROSITY
(%)
DENSITY
POROSITY
(%)
30%
20%
10%
0%
-10
GAMMA RAY
API UNITS
0
200
200
400
CALIPER - INCHES
6
16


CORRECTION
-.3
.3
BULK
DENSITY
GRAMS / CC
2.0
2.25
2.50
2.75
3.0
NEUTRON
POROSITY
(%)
DENSITY
POROSITY
(%)
30
20
10
0
-10
GAMMA RAY
API UNITS
0
200
200
400
CALIPER - INCHES
CALIBRATION BEFORE SURVEY
CORRECTION
-.3
.3
BULK
DENSITY
GRAMS / CC
2.0
2.25
2.50
2.75
3.0
NEUTRON
POROSITY
(%)
DENSITY
POROSITY
(%)
30
20
10
0
-10
GAMMA RAY
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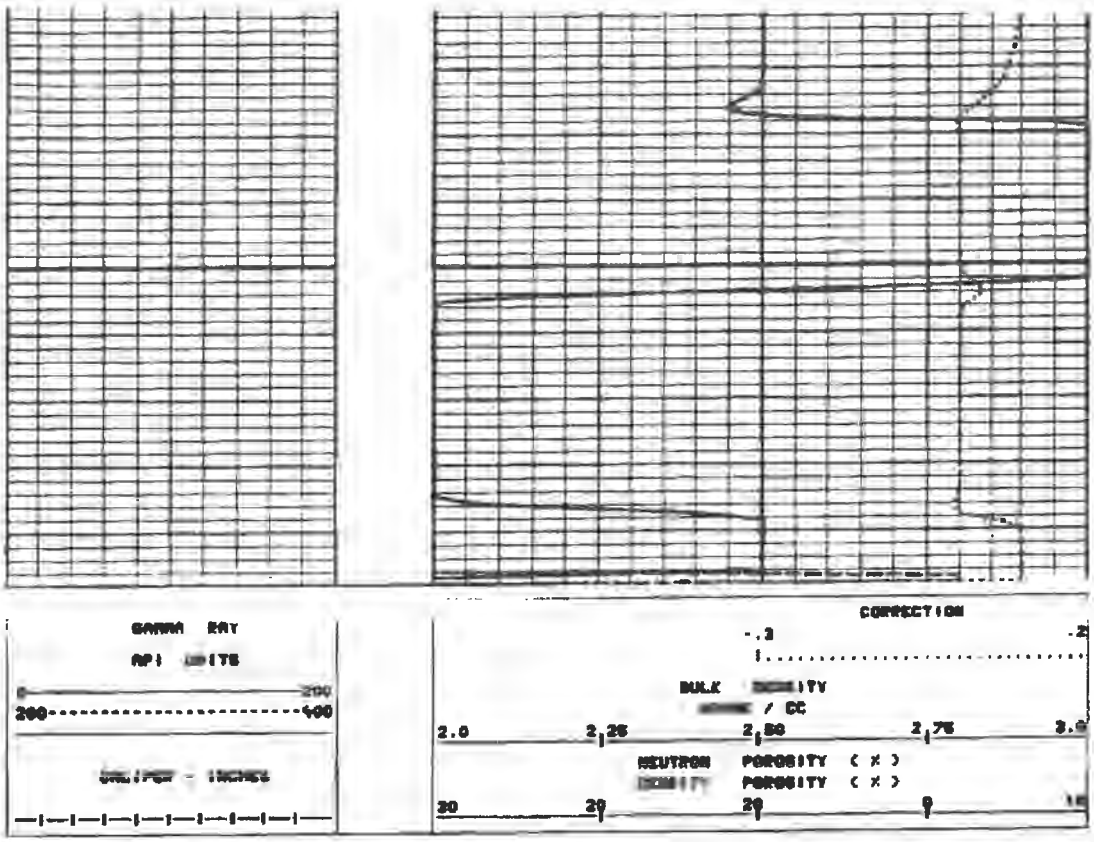
0
200
200
400
CALIPER - INCHES
CALIBRATION AFTER SURVEY


GAMMA RAY
API UNITS
0
200
200
400
CALIPER - INCHES
CORRECTION
-.2
.2
BULK DENSITY
G / CC
2.0
2.25
2.50
2.75
3.0
NEUTRON POROSITY (%)
DENSITY POROSITY (%)
30
20
10
0
10