

Company: APACHE CANADA LTD.

Well: APACHE PARAMOUNT NOGHA B-23

Field: UNDEFINED

Province: NORTHWEST TERRITORIES

Province: NORTHWEST TERRITORIES

Field: UNDEFINED

Location: UWID: 300B236640125450

Well: APACHE PARAMOUNT NOGHA B-23

Company: APACHE CANADA LTD.

SONIC LOG

COMPRESSSIONAL & SHEAR

NEBCOPY

DIPOLE SONIC:

UWID: 300B236640125450

LSD: B-23

Elev.: K.B. 315.75 m
G.L. 311.27 m
D.F. 315.45 m

Permanent Datum: GROUND LEVEL

Log Measured From: KELLY BUSHING

Drilling Measured From: KELLY BUSHING

Elev.: 311.27 m

4.5 m above Perm. Datum

API Serial No. WID: 1998

Latitude: 66 DEG 32'

Longitude: 125 DEG 49'

Logging Date 13-Mar-2004

Run Number ONE

Depth Driller 1476 m

Schlumberger Depth 1475 m

Bottom Log Interval 1467 m

Top Log Interval 20 m

Casing Driller Size @ Depth 244.500 mm @ 604 m

Casing Schlumberger 604 m

Bit Size 216.000 mm

Type Fluid In Hole INVERT

Density 1200 kg/m3

Viscosity 240 s

Fluid Loss PH

Source Of Sample NO SAMPLE

RM @ Measured Temperature @

RMF @ Measured Temperature @

RMF @ Measured Temperature @

RMF @ Measured Temperature @

Source RMF NO SAMPLE

RM @ MRT @ 21

RMF @ MRT @ 21

Maximum Recorded Temperatures @

Circulation Stopped Time 14-Mar-2004 18:45

Logger On Bottom 15-Mar-2004 1:00

Unit Number 3052 NORMAN WELLS

Recorded By KELLY RONCIN

Witnessed By ROBERT REID

Run 1

Run 2

Run 3

Run 4

DEPTH SUMMARY LISTING

Date Created: 15-MAR-2004 7:06:10

Depth System Equipment

Depth Measuring Device

Type: IDW-B

Serial Number: 1976

Calibration Date: 16-SEP-2003

Calibrator Serial Number: 4

Calibration Cable Type: 7-39P

Wheel Correction 1: -3

Wheel Correction 2: -3

Tension Device

Type: CMTD-B/A

Serial Number: 3052

Calibration Date: 22-JAN-2004

Calibrator Serial Number: 2000

Calibration Gain: 1.16

Calibration Offset: -38.00

Logging Cable

Type: 7-39P

Serial Number: 2073

Length: 4999.94 M

Conveyance Method: Wireline

Rig Type: Land

Depth Control Parameters

Log Sequence: Subsequent Log In the Well

Reference Log Name: PLATFORM EXPRESS

Reference Log Run Number: ONE

Reference Log Date: 13-MAR-2004

Depth Control Remarks

1. CALIBRATED IDW WHEELS USED AS PRIMARY DEPTH CONTROL

2.

3.

4.

5.

6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES1

OS1: DSI-EMS-GR

OS2: PEX-AIT-LDT

OS3: VSP

OS4: HIRES

OS5: LOGNET

REMARKS: RUN NUMBER 1

DSI RAN CENTRALIZED WITH 2 CMEZ BELOW AND ONE ABOVE NAD EMS ABOVE

DSI RAN USING P&S AND UPPER DIPOLE MODES AS PER CLIENT REQUEST

LOWER DIPOLE RECORDED FOR LOG QUALITY PURPOSES

DSI TO BE RELABELED BY CLAGARY DCS

BOREHOLE STATUS CHANGED TO CASIED AT 595 M

DSI RECORDED TO 20 M AS PR CLIENT REQUEST

CVL COMPUTED USING EMS CALIPERS WITH FCD=177.8 MM

CLIENT REQUESTED 500:100 US/M ON 1:600 SCALE AND 300:100US/M ON 1:240

DSI CASIED HOLE DATA QUALITY POOR. WILL BE REPROCESSED BY DCS

OTHER SERVICES2

OS1:

OS2:

OS3:

OS4:

OS5:

REMARKS: RUN NUMBER 2

PRINTS: 1 FIELD 7 FINAL

OPERATORS: FRANK MACEACHERN / BRAD JORDAN

RIG: NABORS 62

MAX DEV: °0 DEGREES

SERVICE ORDER #: RUN 1

PROGRAM VERSION: 10764788

FLUID LEVEL: 11C0-305

LOGGED INTERVAL START STOP

SERVICE ORDER #: RUN 2

PROGRAM VERSION:

FLUID LEVEL:

LOGGED INTERVAL START STOP

EQUIPMENT DESCRIPTION

RUN 1

RUN 2

SURFACE EQUIPMENT

GSR-U/Y

WITM (DTS)-A

DOWNHOLE EQUIPMENT

LEH-QT 22.74

LEH-QT

DTC-H 21.85

ECH-KC 9302

DTCH0-A 8226

SGT-N

SGH-K 9396

SGC-TB 9586

SGD-TAA

EMS-B 19.26

EMC-B 8067

ECH-KH 8550

EMM-B 8062

Calipers 16.71

DSST-B 15.68

SPAC-B 8186

ECH-SD 8174

SMDR-BD 8286

SSIJ-BA 8043

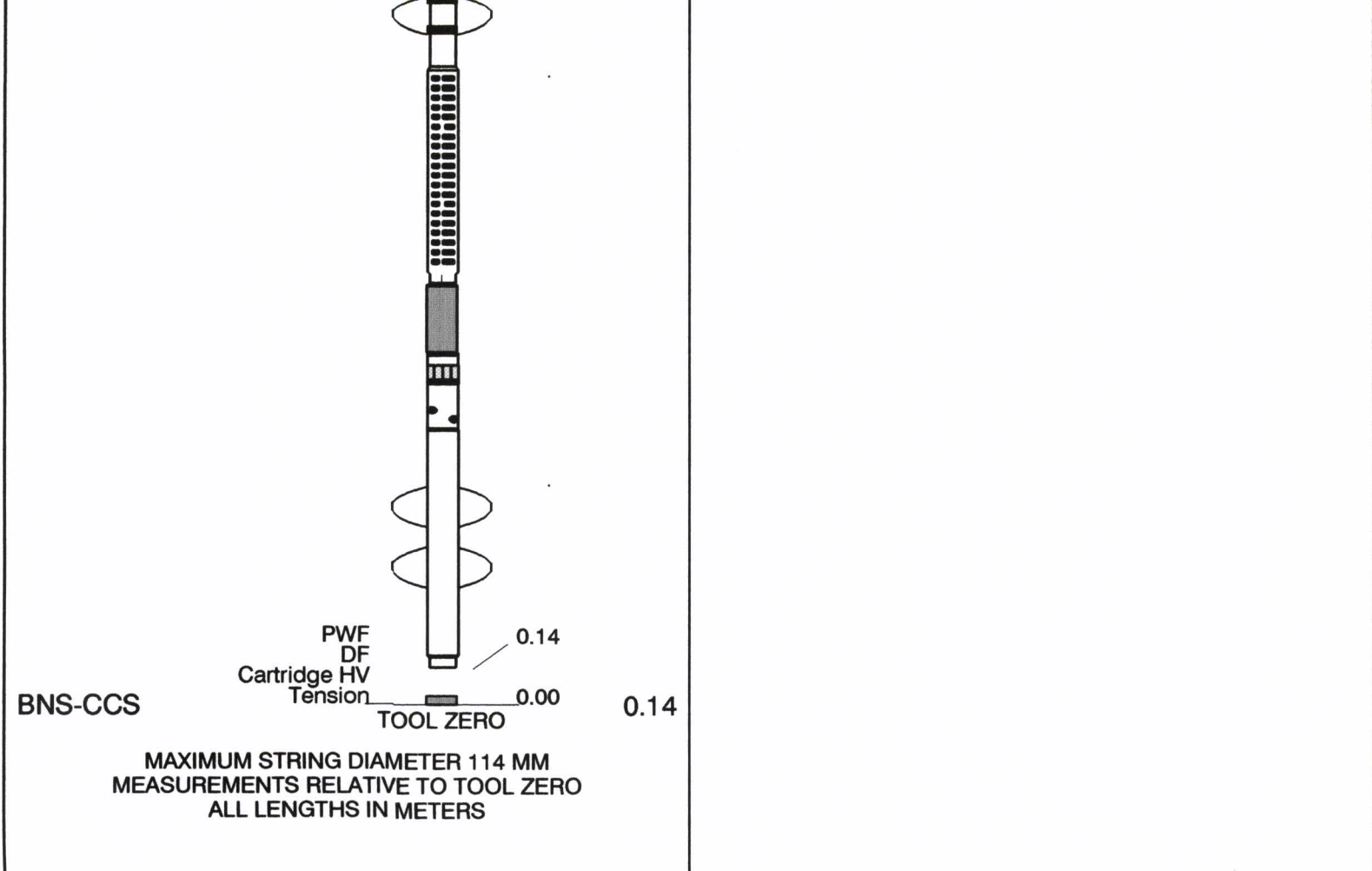
SMDX-AA 8180

CTEM

TelStatus

ToolStatus

Gamma Ray



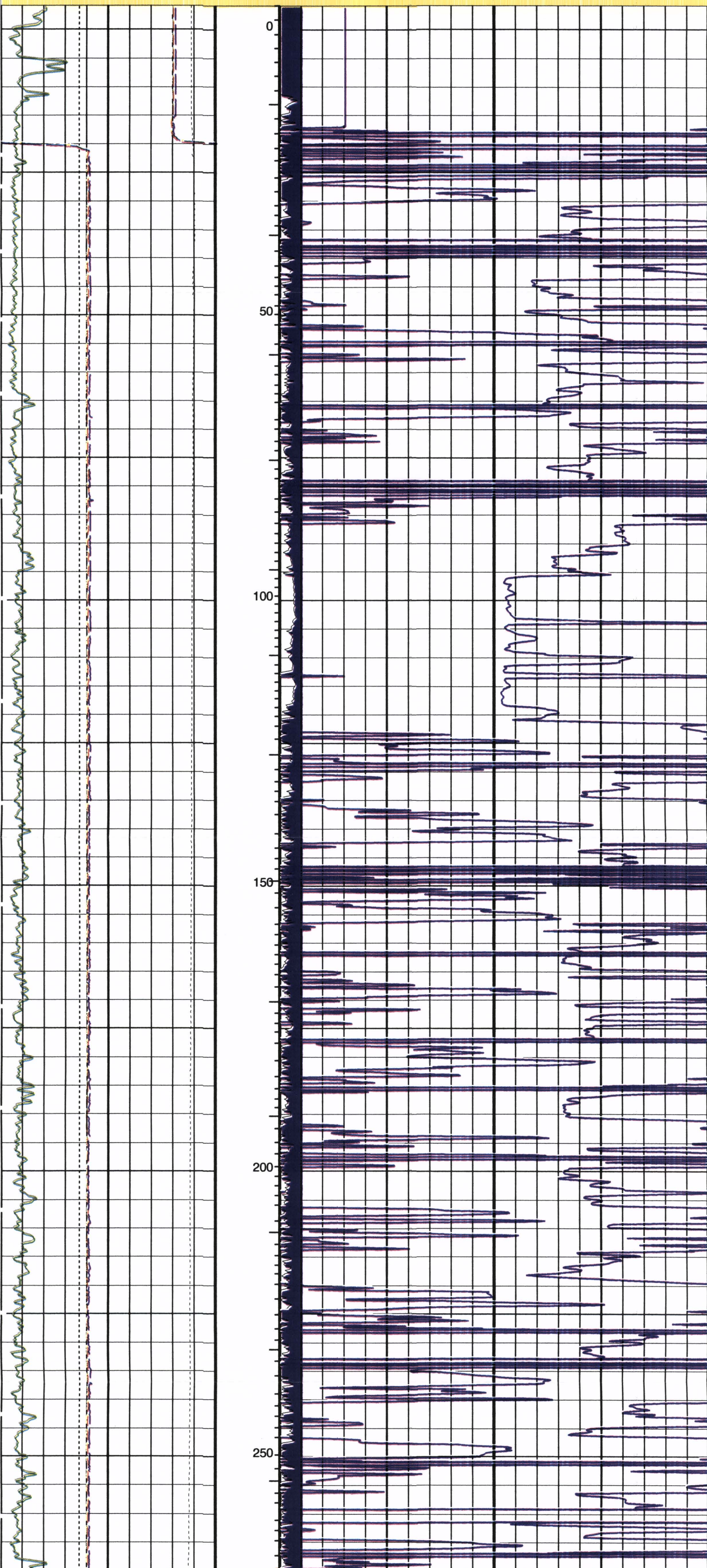
Input DLIS Files					
BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11	1479.5 M -4.6 M
Output DLIS Files					
DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31	1479.3 M -4.3 M
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16	1479.3 M -4.3 M

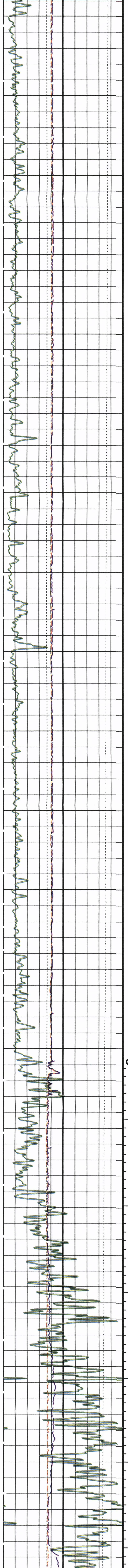
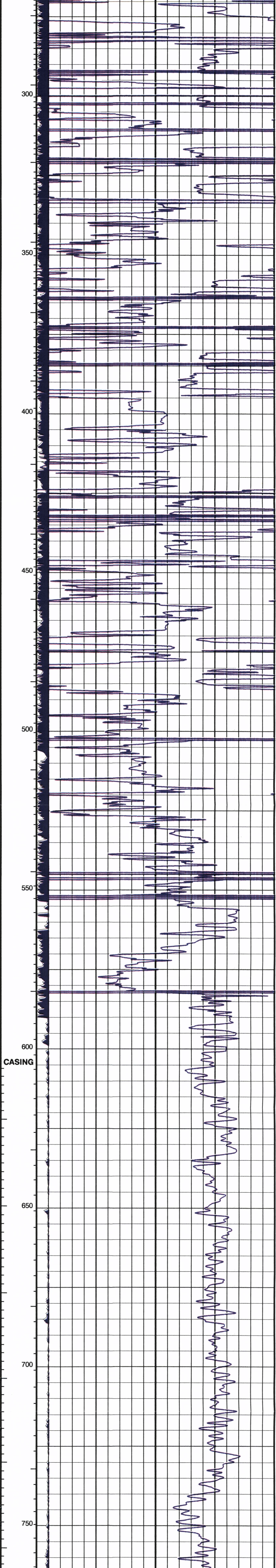
Integrated Hole/Cement Volume Summary	
Hole Volume =	32.68 M3
Cement Volume =	11.06 M3 (assuming 177.80 MM casing O.D.)
Computed from	1474.9 M to 604.1 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

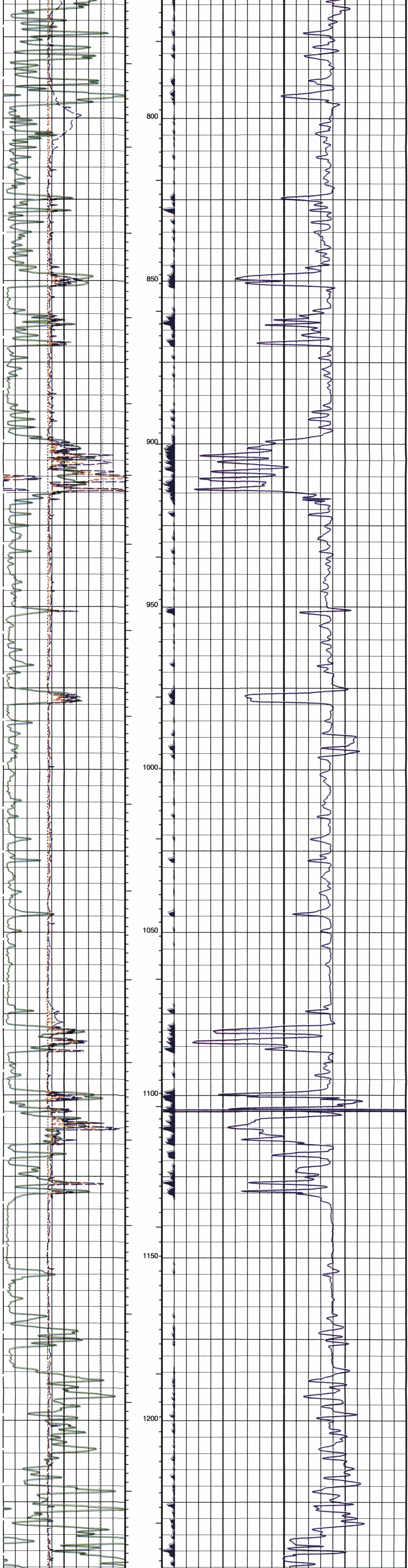
OP System Version: 11C0-305			
MCM			
DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305

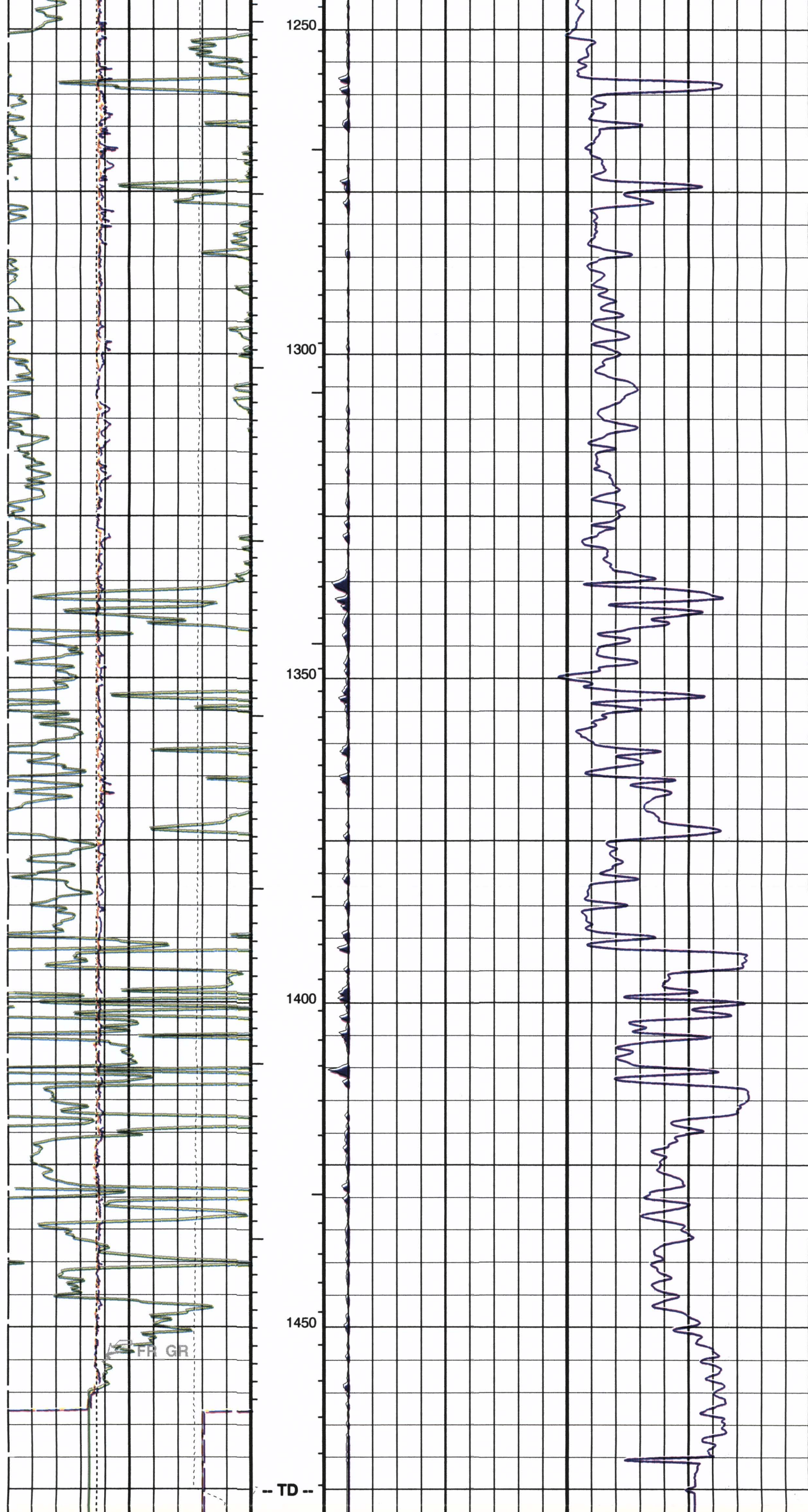
PIP SUMMARY			
T Integrated Hole Volume Minor Pip Every 0.1 M3			
T Integrated Hole Volume Major Pip Every 1 M3			
T Integrated Transit Time Minor Pip Every 1 MS			
T Integrated Transit Time Major Pip Every 10 MS			
Time Mark Every 60 S			
Tension (TENS)		25000 (N) 0	
Gamma Ray (GR)		0 (GAPI) 150	
Hole Diameter Maximum (HDMX)		125 (MM) 375	
Hole Diameter Minimum (HDMI)		125 (MM) 375	
Bit Size (BS)		125 (MM) 375	
Stuck Stretch (STIT)		0 (M) 20	
Delta-T Comp - P & S (DT4P)		500 (US/M) 100	

MAIN PASS: *** DIPOLE SONIC - DELTA-T ***









MAIN PASS: *** DIPOLE SONIC - DELTA-T ***

Bit Size (BS)		Stuck Stretch (STIT)	Delta-T Comp - P & S (DT4P)	
125	(MM)		375	500 (US/M) 100
		0 (M) 20		
Hole Diameter Minimum (HDMI)		Low Comp Coherence Flag		
125	(MM)		375	
Hole Diameter Maximum (HDMX)				
125	(MM)		375	
Gamma Ray (GR)				
0	(GAPI)		150	
Tension (TENS)				
25000	(N)		0	

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
 - Integrated Transit Time Minor Pip Every 1 MS
 - Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
DSST-B: Dipole Shear Imager - B		
BHS	Borehole Status	OPEN
CASF	Label Casing Function - Monopole P&S	50
COLL	Label Slowness Lower Limit - Monopole P&S Compressional	100 US/M
COUL	Label Slowness Upper Limit - Monopole P&S Compressional	700 US/M
DTF	Delta-T Fluid	620.079 US/M
FILG	Label Fill Gap Control - Monopole P&S	COMP_SHEAR
ITTS	Integrated Transit Time Source	DTCO
LFC	Label Formation Character - Monopole P&S	COMP_FIRST
MCS	Mean Casing Slowness	187.008 US/M
MTXG	Monopole Transmitter Geometry	4724 MM
NWI4	Number Waveform Items 4	8
RSMN	Label Shear/Compressional Minimum Ratio - Monopole P&S	1.4
RSMX	Label Shear/Compressional Maximum Ratio - Monopole P&S	2.12
RX1G	Receiver 1 Geometry	7468 MM
RX2G	Receiver 2 Geometry	7620 MM
RX3G	Receiver 3 Geometry	7772 MM
RX4G	Receiver 4 Geometry	7925 MM
RX5G	Receiver 5 Geometry	8077 MM
RX6G	Receiver 6 Geometry	8230 MM
RX7G	Receiver 7 Geometry	8382 MM
RX8G	Receiver 8 Geometry	8534 MM
SAS4	STC Sonic Array Status - Monopole P&S	255
SHLL	Label Slowness Lower Limit - Monopole P&S Shear	250 US/M
SHUL	Label Slowness Upper Limit - Monopole P&S Shear	700 US/M
SSW4	STC Source Waveform - Monopole P&S	WF SAM4
STLL	Label Slowness Lower Limit - Monopole Stoneley	590.551 US/M
STUL	Label Slowness Upper Limit - Monopole Stoneley	2559.06 US/M
TW14	STC Integration Time Window - Monopole P&S	500 US
EMS-B: Environment Measurement Sonde		
BHS	Borehole Status	OPEN
ECOF	EMS Caliper Offset	50.8 MM
EFC	EMS Fixed Caliper Operation	OFF
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
SGT-N: Scintillation Gamma-Ray - N		
BHS	Borehole Status	OPEN
HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL
STKT	STI Stuck Threshold	1.524 M
TDD	Total Depth - Driller	1476.00 M
TDL	Total Depth - Logger	1475.00 M
System and Miscellaneous		
BS	Bit Size	216.000 MM
DO	Depth Offset for Playback	-0.1 M
DORL	Depth Offset for Repeat Analysis	0.0 M
PP	Playback Processing	NORMAL
TD	Total Depth	1475 M

Format: SONI_S2 Vertical Scale: 1:600 Graphics File Created: 15-Mar-2004 06:31

OP System Version: 11C0-305

MCM

DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11
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Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11	1479.5 M	-4.6 M
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Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31	1479.3 M	-4.3 M
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16	1479.3 M	-4.3 M

Integrated Hole/Cement Volume Summary

Hole Volume = 22.60 M3

Hole Volume = 32.68 M3
Cement Volume = 11.06 M3 (assuming 177.80 MM casing O.D.)
Computed from 1474.9 M to 604.1 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 11C0-305

MCM

DSST-B
SGT-N

OP11-KP1
11C0-305

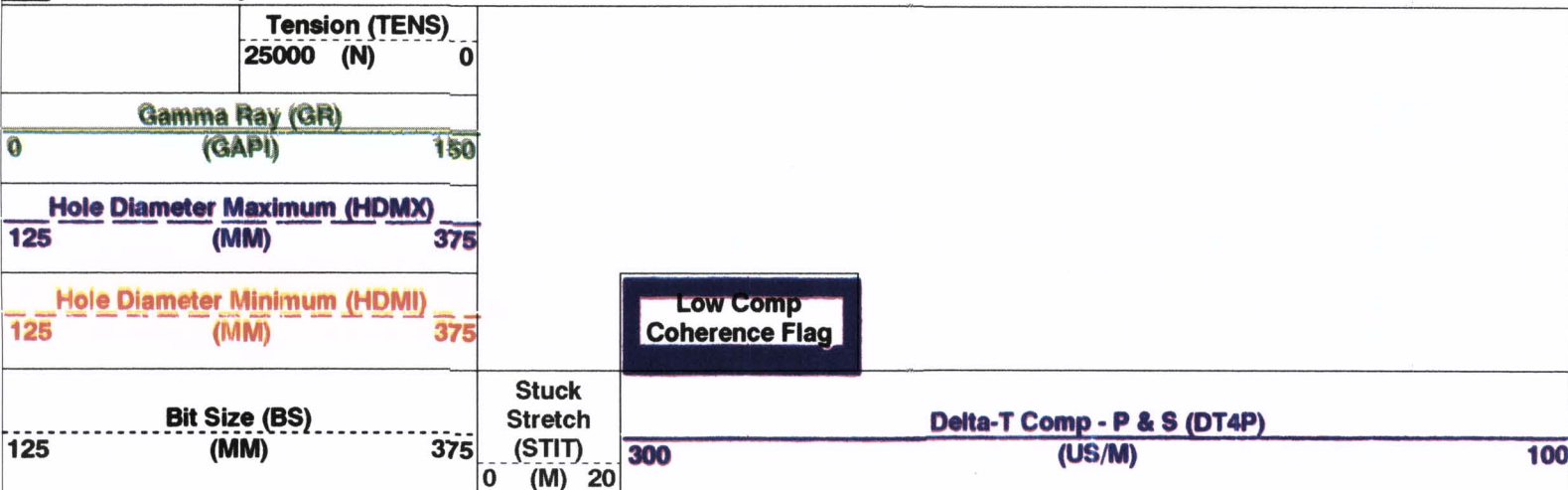
EMS-B
DTC-H

11C0-305
11C0-305

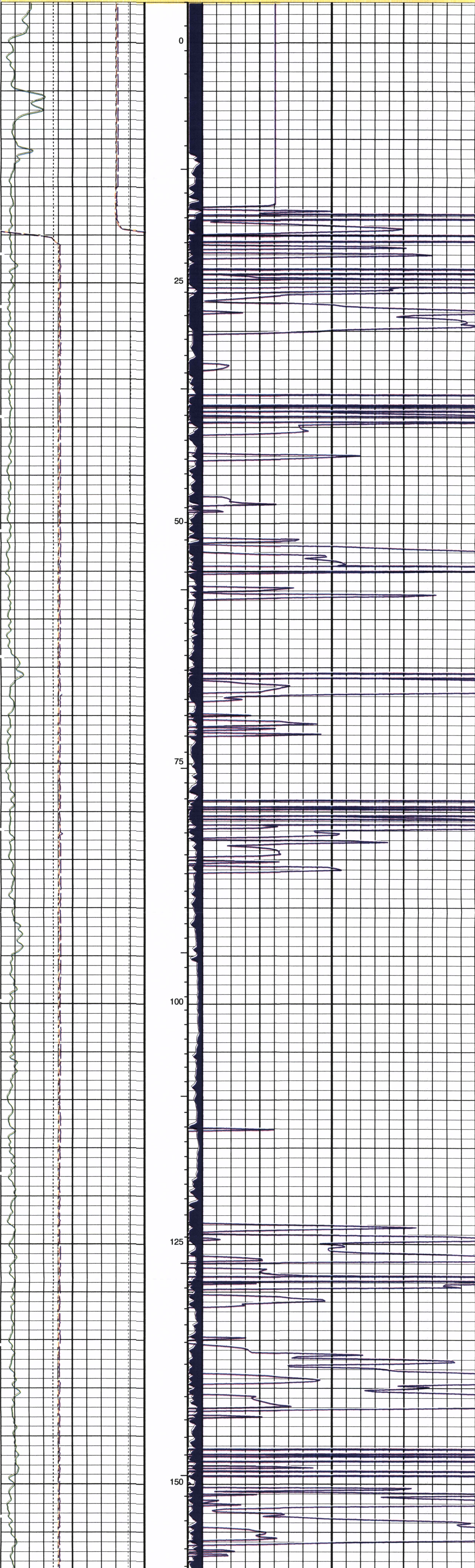
PIP SUMMARY

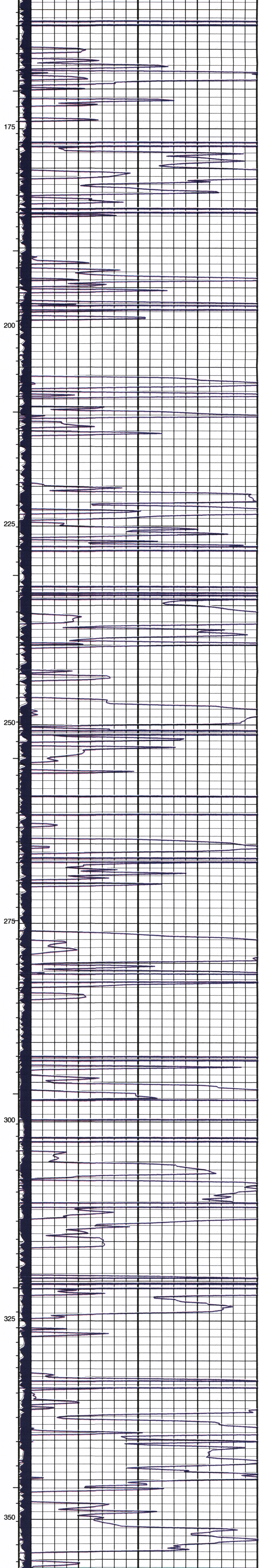
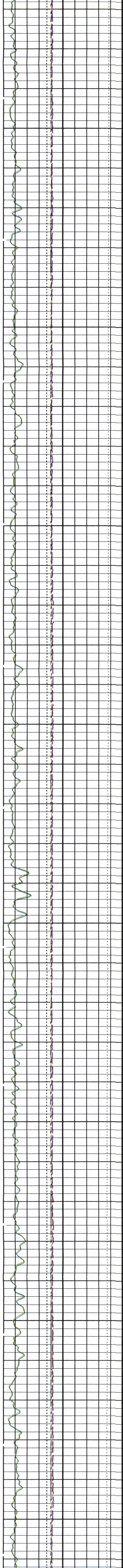
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
 - Integrated Transit Time Minor Pip Every 1 MS
 - Integrated Transit Time Major Pip Every 10 MS

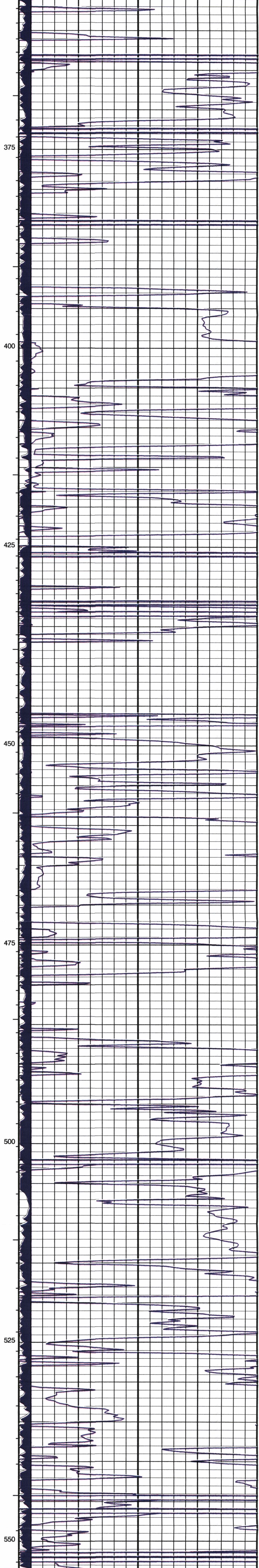
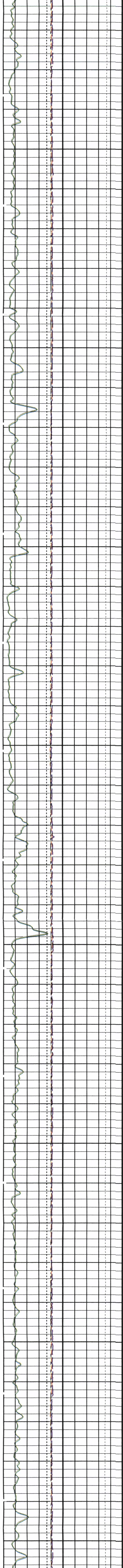
Time Mark Every 60 S

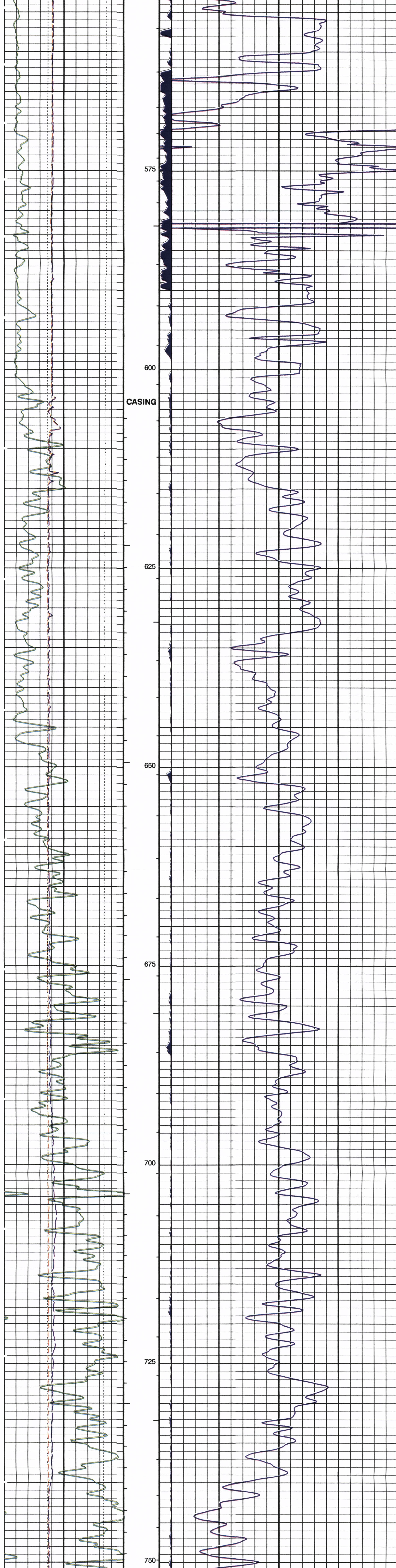


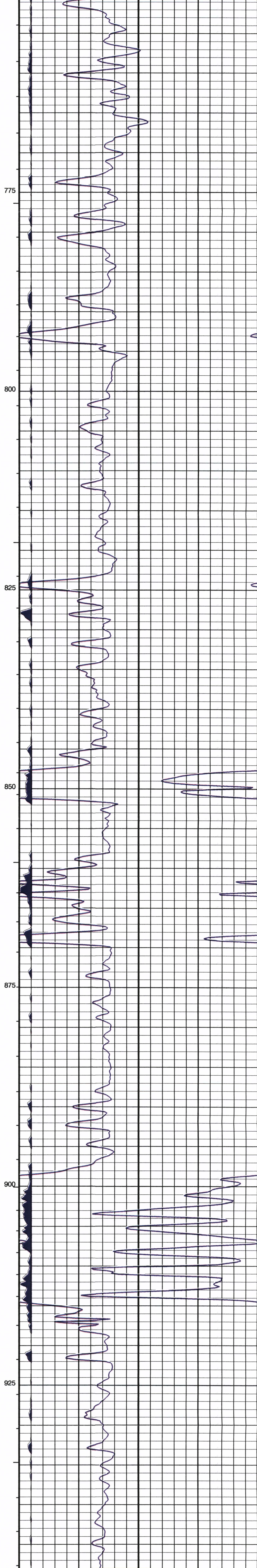
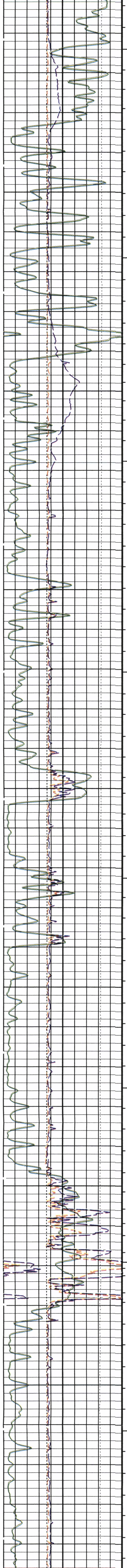
MAIN PASS: *** DIPOLE SONIC - DELTA-T ***

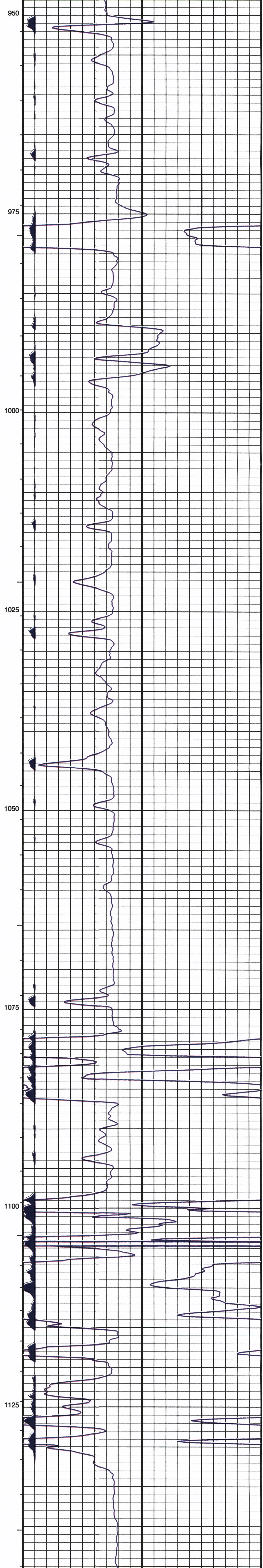
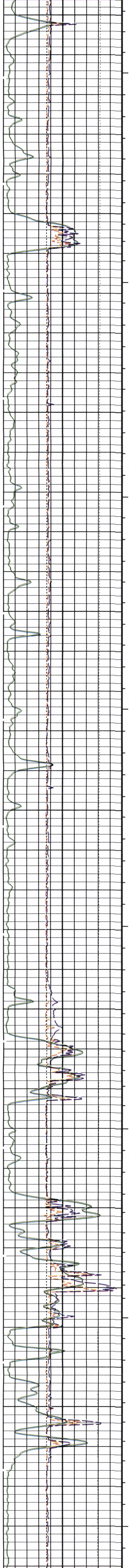


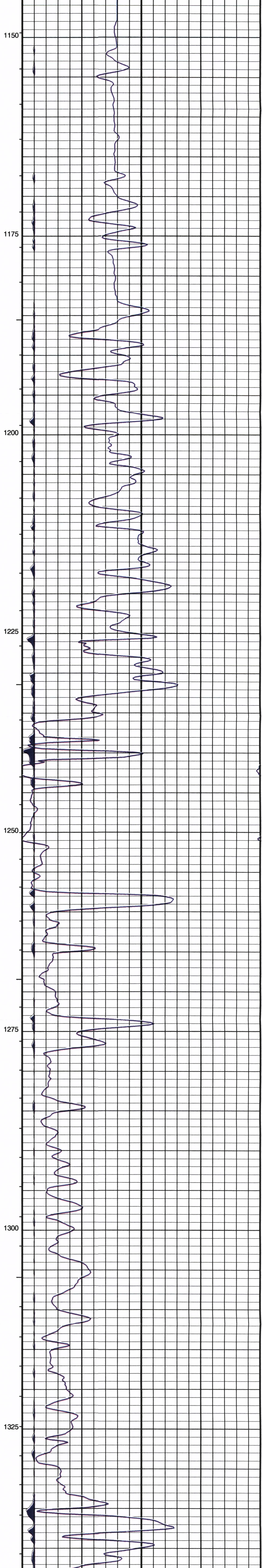
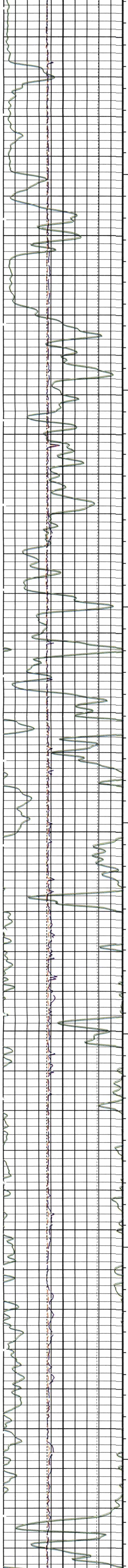


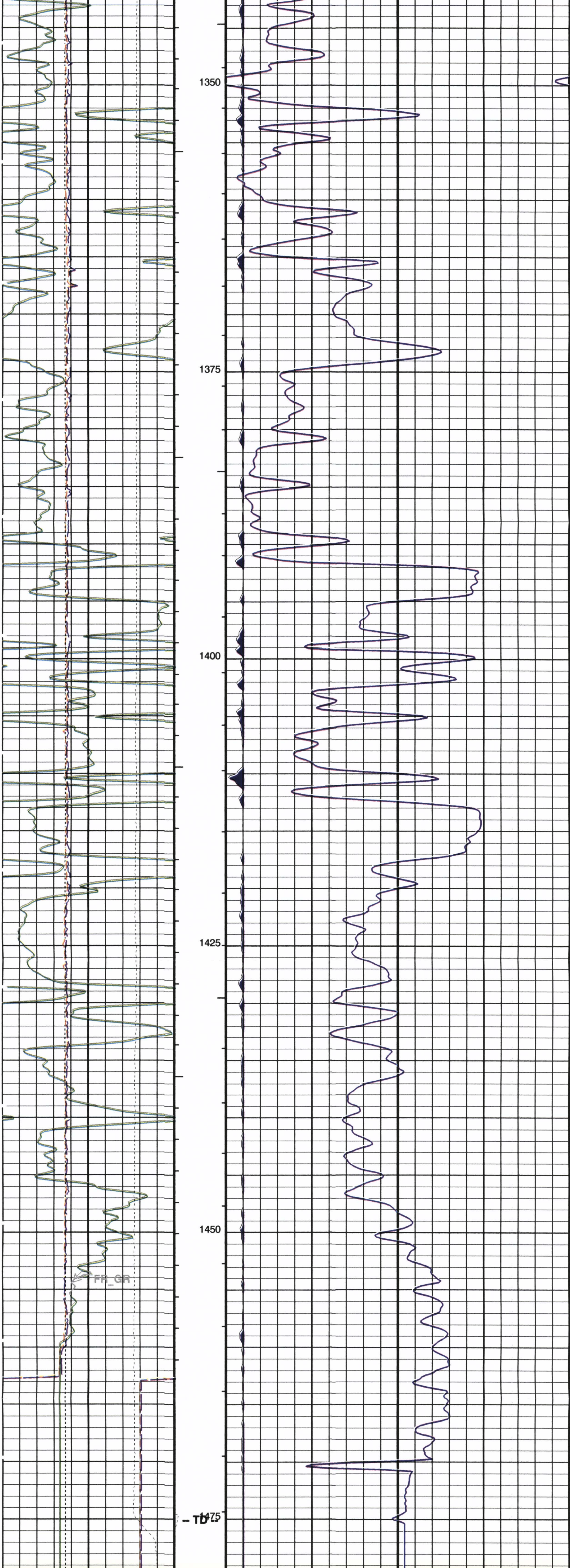












MAIN PASS: *** DIPOLE SONIC - DELTA-T ***

Bit Size (BS)		Stuck Stretch (STIT)	Delta-T Comp - P & S (DT4P)	
125 (MM)	375		300 (US/M)	100
Hole Diameter Minimum (HDMI)		Low Comp Coherence Flag		
125 (MM)	375			
Hole Diameter Maximum (HDMX)				
125 (MM)	375			
Gamma Ray (GR)				
0 (GAPI)	150			
Tension (TENS)				
25000 (N)	0			

PIPS SUMMARY	
└ Integrated Hole Volume Minor Pip Every 0.1 M3	
└ Integrated Hole Volume Major Pip Every 1 M3	
└ Integrated Transit Time Minor Pip Every 1 MS	
└ Integrated Transit Time Major Pip Every 10 MS	
Time Mark Every 60 S	

Parameters		
DLIS Name	Description	Value
DSST-B: Dipole Shear Imager - B		
BHS	Borehole Status	OPEN
CASF	Label Casing Function - Monopole P&S	50
COLL	Label Slowness Lower Limit - Monopole P&S Compressional	100 US/M
COUL	Label Slowness Upper Limit - Monopole P&S Compressional	700 US/M
DTF	Delta-T Fluid	620.079 US/M
FILG	Label Fill Gap Control - Monopole P&S	COMP_SHEAR
ITTS	Integrated Transit Time Source	DTCO
LFC	Label Formation Character - Monopole P&S	COMP_FIRST
MCS	Mean Casing Slowness	187.008 US/M
MTXG	Monopole Transmitter Geometry	4724 MM
NW14	Number Waveform Items 4	8
RSMN	Label Shear/Compressional Minimum Ratio - Monopole P&S	1.4
RSMX	Label Shear/Compressional Maximum Ratio - Monopole P&S	2.12
RX1G	Receiver 1 Geometry	7468 MM
RX2G	Receiver 2 Geometry	7620 MM
RX3G	Receiver 3 Geometry	7772 MM
RX4G	Receiver 4 Geometry	7925 MM
RX5G	Receiver 5 Geometry	8077 MM
RX6G	Receiver 6 Geometry	8230 MM
RX7G	Receiver 7 Geometry	8382 MM
RX8G	Receiver 8 Geometry	8534 MM
SAS4	STC Sonic Array Status - Monopole P&S	255
SHLL	Label Slowness Lower Limit - Monopole P&S Shear	250 US/M
SHUL	Label Slowness Upper Limit - Monopole P&S Shear	700 US/M
SSW4	STC Source Waveform - Monopole P&S	WF_SAM4
STLL	Label Slowness Lower Limit - Monopole Stoneley	590.551 US/M
STUL	Label Slowness Upper Limit - Monopole Stoneley	2559.06 US/M
TW14	STC Integration Time Window - Monopole P&S	500 US
EMS-B: Environment Measurement Sonde		
BHS	Borehole Status	OPEN
ECOF	EMS Caliper Offset	50.8 MM
EFC	EMS Fixed Caliper Operation	OFF
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
SGT-N: Scintillation Gamma-Ray - N		
BHS	Borehole Status	OPEN
HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers

LBFR	STI: Stuck Tool Indicator	Trigger for MAXIS First Reading Label	TDL
STKT		STI Stuck Threshold	1.524 M
TDD		Total Depth - Driller	1476.00 M
TDL		Total Depth - Logger	1475.00 M
System and Miscellaneous			
BS		Bit Size	216.000 MM
DO		Depth Offset for Playback	-0.1 M
DORL		Depth Offset for Repeat Analysis	0.0 M
PP		Playback Processing	NORMAL
TD		Total Depth	1475 M
Format: SONI_S5		Vertical Scale: 1:240	Graphics File Created: 15-Mar-2004 06:31

OP System Version: 11C0-305

MCM

DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11
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Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11		
BACKUP	DSI_EMS_024PUP	FN:54	PRODUCER	15-Mar-2004 06:00	1479.5 M	1253.5 M

Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16

OP System Version: 11C0-305

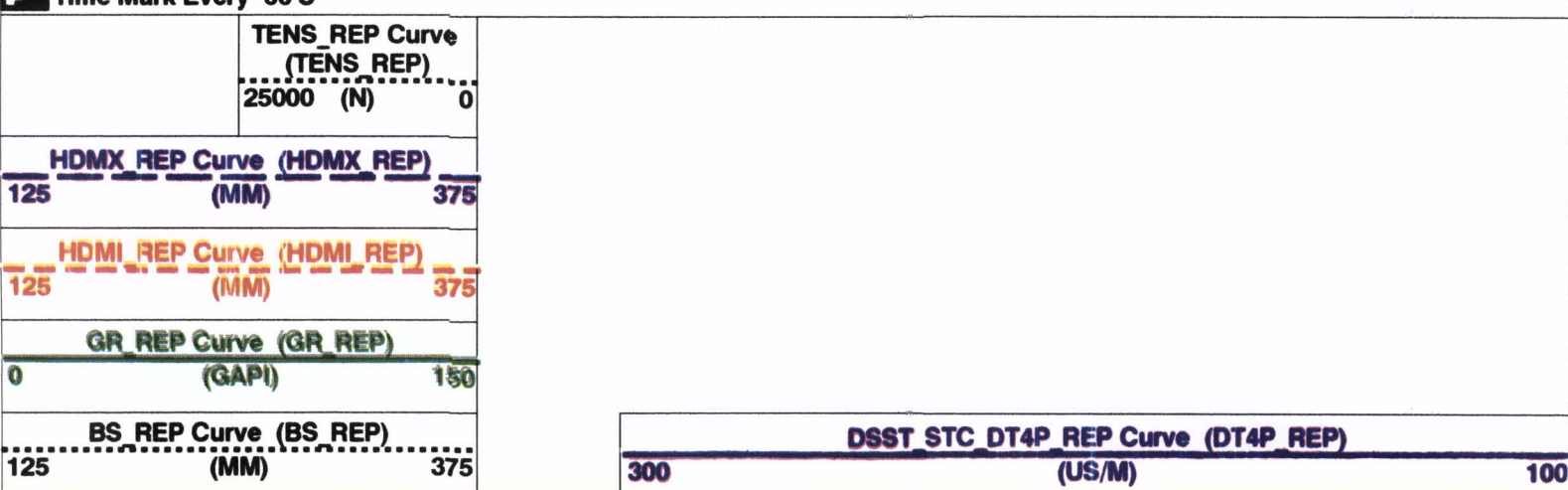
MCM

DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305

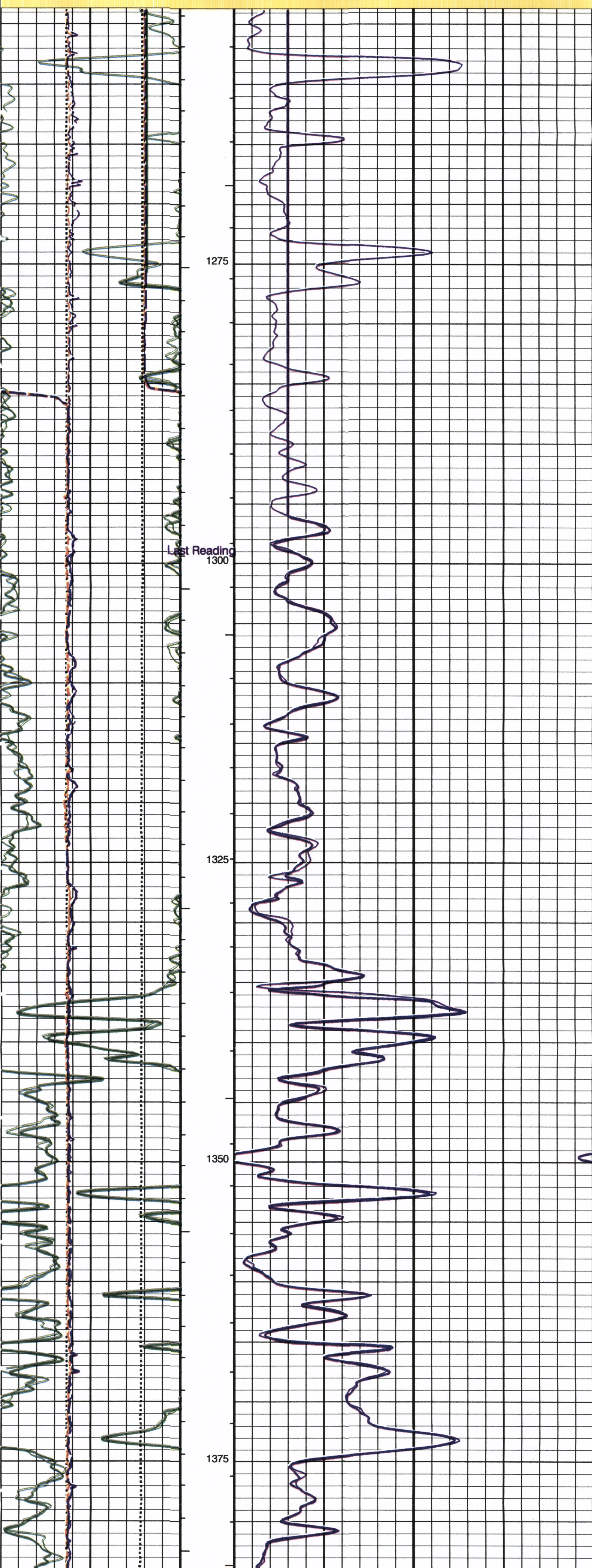
PIP SUMMARY

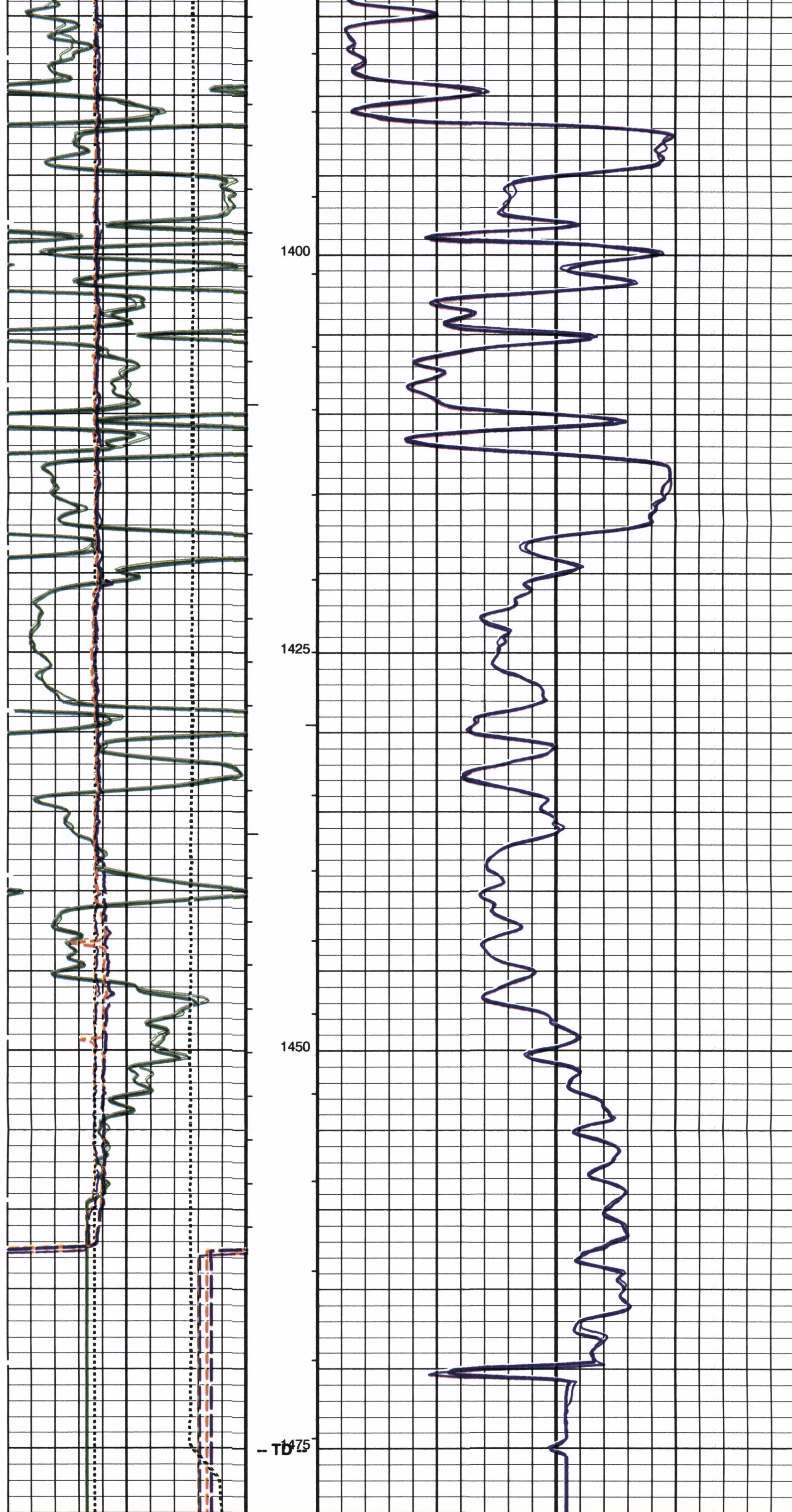
- └ Integrated Hole Volume Minor Pip Every 0.1 M3
- └ Integrated Hole Volume Major Pip Every 1 M3
 - └ Integrated Transit Time Minor Pip Every 1 MS
 - └ Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

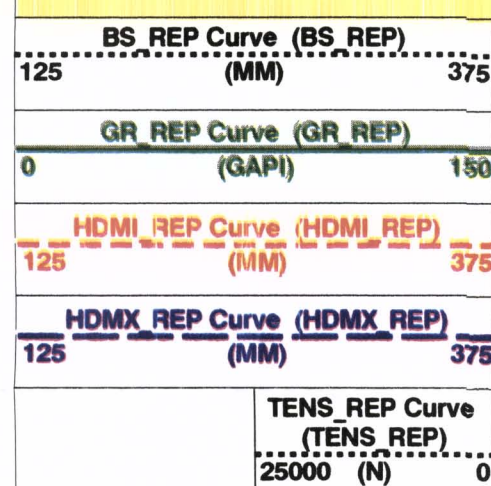


REPEAT ANALYSIS: *** DIPOLE SONIC ***





REPEAT ANALYSIS: *** DIPOLE SONIC ***



PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
 - Integrated Transit Time Minor Pip Every 1 MS
 - Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

Parameters		
DLIS Name	Description	Value
DSST-B: Dipole Shear Imager - B		
ITTS	Integrated Transit Time Source	DTCO
RX1G	Receiver 1 Geometry	7468 MM
RX2G	Receiver 2 Geometry	7620 MM
RX3G	Receiver 3 Geometry	7772 MM
RX4G	Receiver 4 Geometry	7925 MM
RX5G	Receiver 5 Geometry	8077 MM
RX6G	Receiver 6 Geometry	8230 MM
RX7G	Receiver 7 Geometry	8382 MM
RX8G	Receiver 8 Geometry	8534 MM
EMS-B: Environment Measurement Sonde		
ECOF	EMS Caliper Offset	50.8 MM
EFC	EMS Fixed Caliper Operation	OFF
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
System and Miscellaneous		
BS	Bit Size	216.000 MM
DO	Depth Offset for Playback	-0.1 M
DORL	Depth Offset for Repeat Analysis	0.0 M
PP	Playback Processing	NORMAL
TD	Total Depth	1475 M

Format: DSI_REP Vertical Scale: 1:240

Graphics File Created: 15-Mar-2004 06:31

OP System Version: 11C0-305

MCM

DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11		
BACKUP	DSI_EMS_024PUP	FN:54	PRODUCER	15-Mar-2004 06:00	1479.5 M	1253.5 M

Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31		
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16		

Input DLIS Files

BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER	15-Mar-2004 06:11	1479.5 M	-4.6 M
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Output DLIS Files

DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER	15-Mar-2004 06:31	1479.3 M	-4.3 M
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER	15-Mar-2004 06:16	1479.3 M	-4.3 M

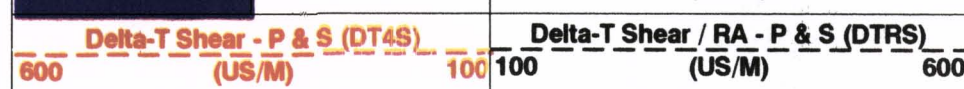
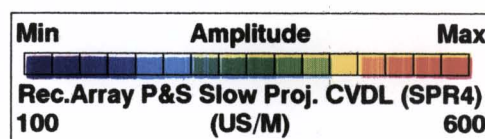
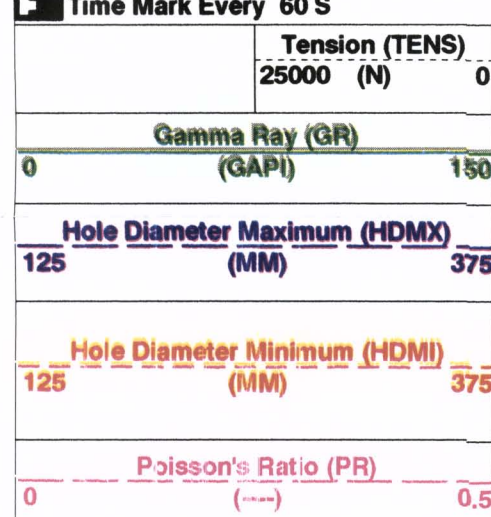
OP System Version: 11C0-305

MCM

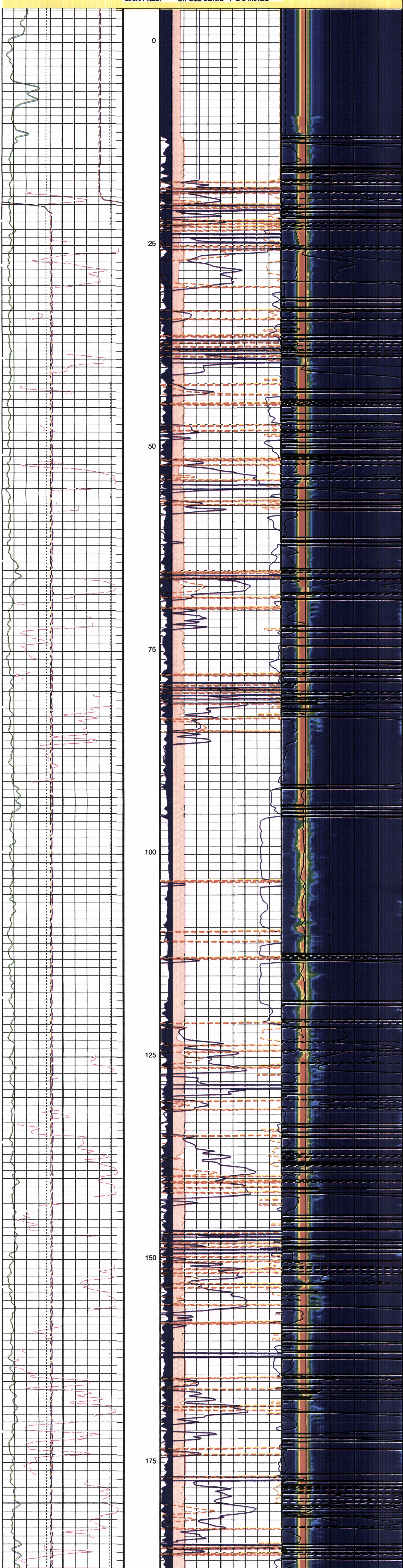
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SGT-N	11C0-305	DTC-H	11C0-305

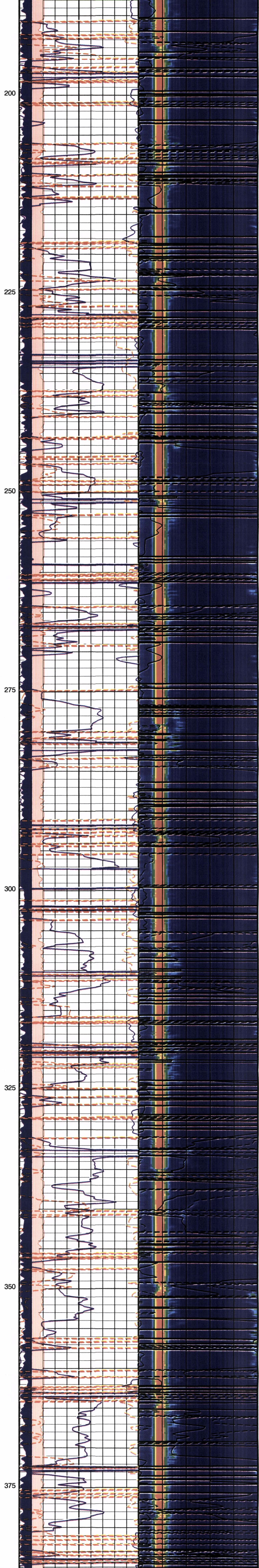
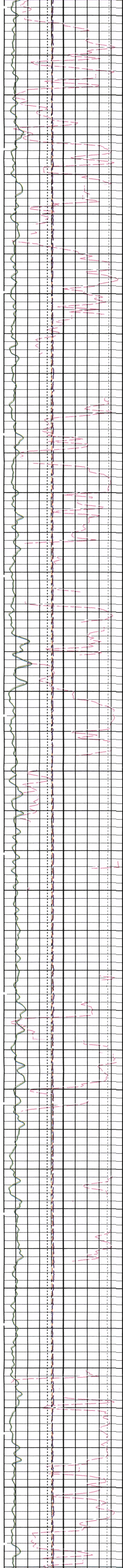
PIP SUMMARY

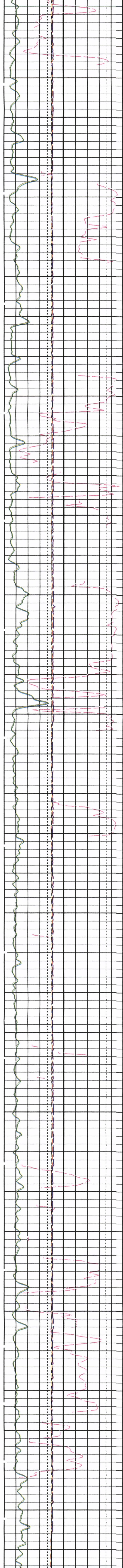
Time Mark Every 60 S



MAIN PASS: *** DIPOLE SONIC - P & S IMAGE ***







400

425

450

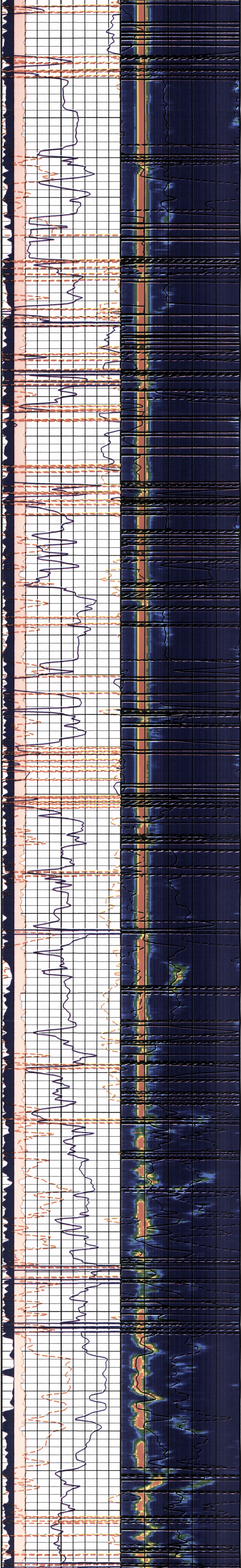
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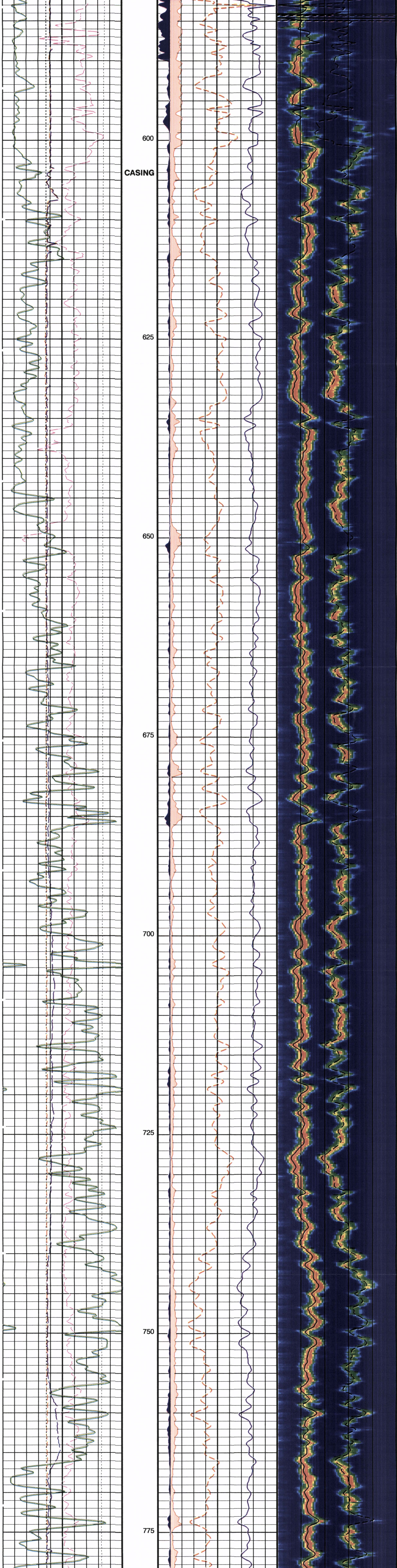
500

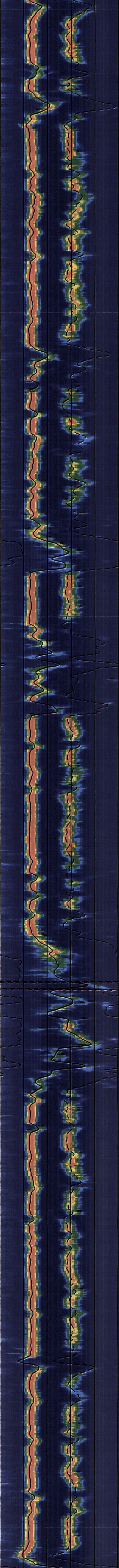
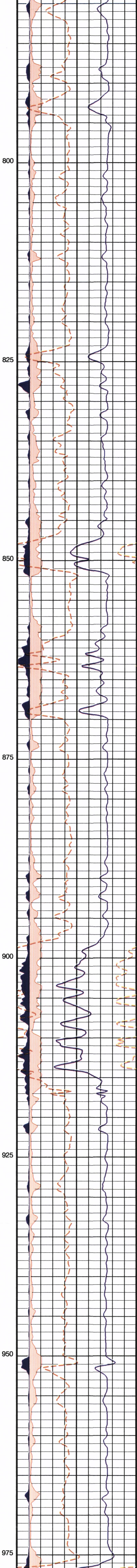
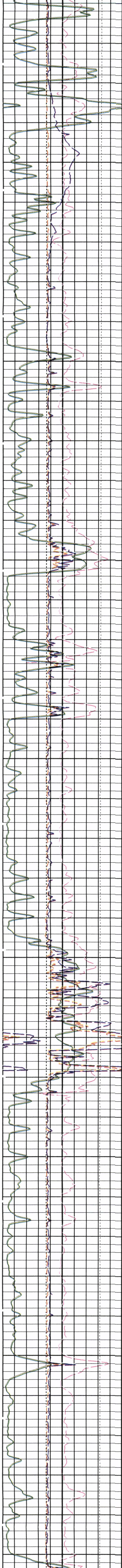
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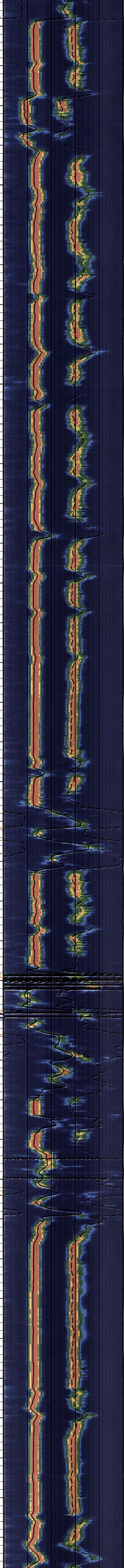
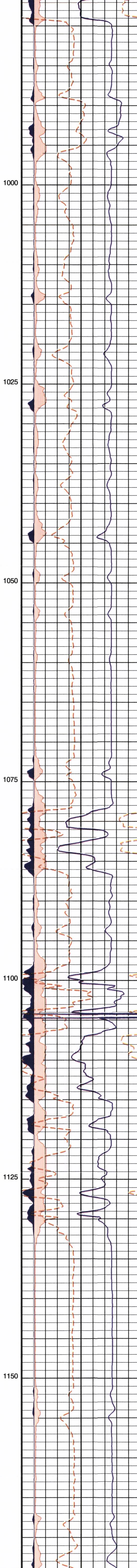
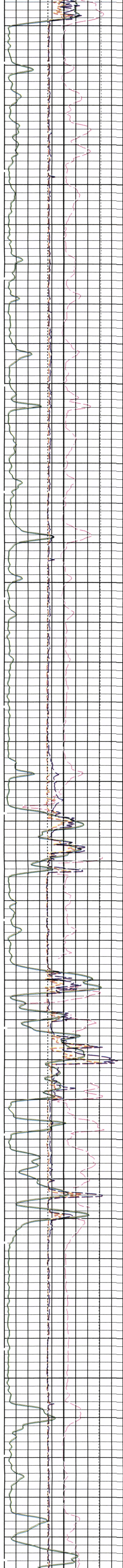
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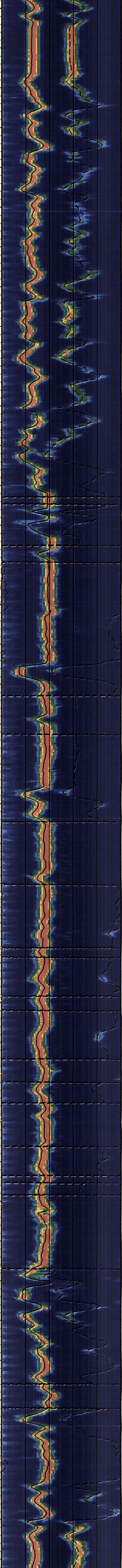
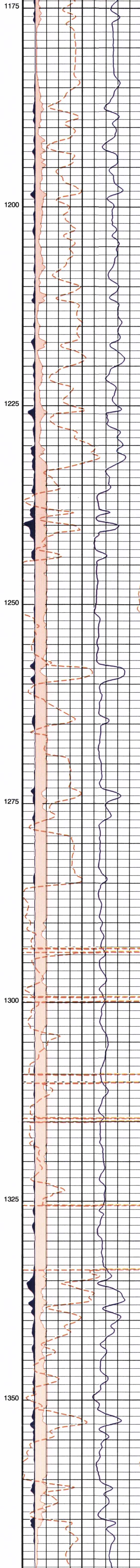
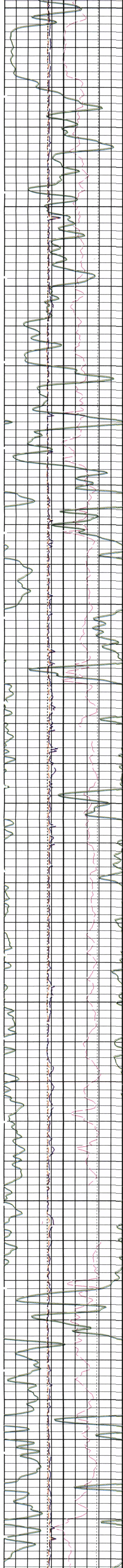
575

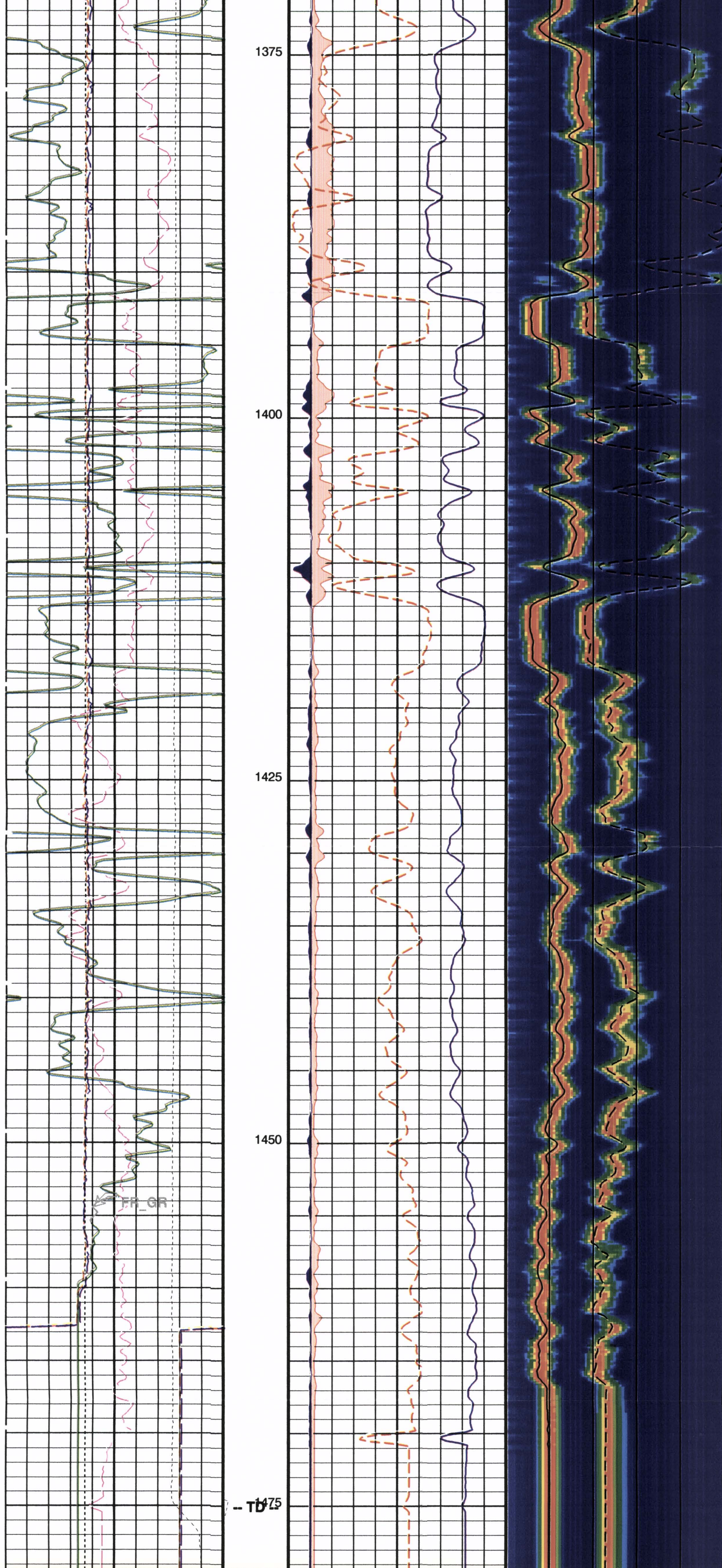












Bit Size (BS) (MM)		Stuck Stretch (STIT) (M)	Delta-T Comp - P & S (DT4P) (US/M)		Delta-T Comp / RA - P & S (DTRP) (US/M)	
125	375	0 20	600	100	100	600
Poisson's Ratio (PR) (---)			Delta-T Shear - P & S (DT4S) (US/M)		Delta-T Shear / RA - P & S (DTRS) (US/M)	
0	0.5		600	100	100	600
Hole Diameter Minimum (HDMI) (MM)		Low Comp Coherence Flag	Low Shear Coherence Flag		Min Amplitude Max Rec.Array P&S Slow Proj. CVDL (SPR4) (US/M)	
125	375				100	600
Hole Diameter Maximum (HDMX) (MM)						
125	375					
Gamma Ray (GR) (GAPI)						
0	150					
Tension (TENS) (N)						
25000	0					

PIP SUMMARY

Time Mark Every 60 S

Parameters		
DLIS Name	Description	Value
DSST-B: Dipole Shear Imager - B		
BHS	Borehole Status	OPEN
CASF	Label Casing Function - Monopole P&S	50
COLL	Label Slowness Lower Limit - Monopole P&S Compressional	100 US/M
COUL	Label Slowness Upper Limit - Monopole P&S Compressional	700 US/M
DDEX	Digitizing Delay 4	0 US
DSI4	Digitizing Delay X	0 US
DSIX	Digitizer Sample Interval 4	10 US
DTCS	Digitizer Sample Interval X	40 US
DTF	Compressional Delta-T Source for DTCS Channel	PS_COMP
DTSS	Delta-T Fluid	620.079 US/M
DWC4	Shear Delta-T Source for DTSS Channel	UPPER_DIPOLE
DWCX	Digitizer Word Count 4	512
FILG	Digitizer Word Count X	512
LFC	Label Fill Gap Control - Monopole P&S	COMP SHEAR
MCS	Label Formation Character - Monopole P&S	COMP FIRST
MTXG	Mean Casing Slowness	187.008 US/M
NW14	Monopole Transmitter Geometry	4724 MM
NW1X	Number Waveform Items 4	8
RSMN	Number Waveform Items X	0
RSMX	Label Shear/Compressional Minimum Ratio - Monopole P&S	1.4
RX1G	Label Shear/Compressional Maximum Ratio - Monopole P&S	2.12
RX2G	Receiver 1 Geometry	7468 MM
RX3G	Receiver 2 Geometry	7620 MM
RX4G	Receiver 3 Geometry	7772 MM
RX5G	Receiver 4 Geometry	7925 MM
RX6G	Receiver 5 Geometry	8077 MM
RX7G	Receiver 6 Geometry	8230 MM
RX8G	Receiver 7 Geometry	8382 MM
SAM4	Receiver 8 Geometry	8534 MM
SAMX	DSST Sonic Acquisition Mode 4 - High Frequency Monopole Mode for P&S	ODD
SAS4	DSST Sonic Acquisition Mode X - Both Dipoles or Monopole Mode for Expert	OFF
SBO4	STC Sonic Array Status - Monopole P&S	255
SBR4	STC Search Band Offset - Monopole P&S	500 US
SBW4	STC Baseline Removal - Monopole P&S	ON
SFC4	STC Search Bandwidth - Monopole P&S	2000 US
SFM4	STC Formation Character - Monopole P&S	SELECTABLE
SHLL	STC Filter - Monopole P&S	B3-20K
SHUL	Label Slowness Lower Limit - Monopole P&S Shear	250 US/M
SLL4	Label Slowness Upper Limit - Monopole P&S Shear	700 US/M
SST4	STC Slowness Lower Limit - Monopole P&S	100 US/M
SSW4	STC Slowness Step - Monopole P&S	6.56168 US/M
STLL	STC Source Waveform - Monopole P&S	WF_SAM4
STUL	Label Slowness Lower Limit - Monopole Stoneley	590.551 US/M
SUL4	Label Slowness Upper Limit - Monopole Stoneley	2559.06 US/M
SWD4	STC Slowness Upper Limit - Monopole P&S	1500 US/M
TBF4	STC Slowness Width - Monopole P&S	32.8084 US/M
TLL4	STC Time for Baseline Fill - Monopole P&S	300 US
TST4	STC Time Lower Limit - Monopole P&S	150 US
TUL4	STC Time Step - Monopole P&S	50 US
TWD4	STC Time Upper Limit - Monopole P&S	5110 US
TWI4	STC Time Width - Monopole P&S	1000 US
TWSX	STC Integration Time Window - Monopole P&S	500 US
EMS-B: Environment	Transmitter Waveform Select X	0
BHS	Measurement Sonde	OPEN
ECOF	Borehole Status	50.8 MM
EFC	EMS Caliper Offset	OFF
	EMS Fixed Caliper Operation	
BHS	SGT-N: Scintillation Gamma-Ray - N	OPEN
	Borehole Status	
LBFR	STI: Stuck Tool Indicator	TDL
STKT	Trigger for MAXIS First Reading Label	1.524 M
TDD	STI Stuck Threshold	1476.00 M
TDL	Total Depth - Driller	1475.00 M
	Total Depth - Logger	
System and Miscellaneous		
BS	Bit Size	216.000 MM
DO	Depth Offset for Playback	-0.1 M
DORL	Depth Offset for Repeat Analysis	0.0 M
PP	Playback Processing	NORMAL

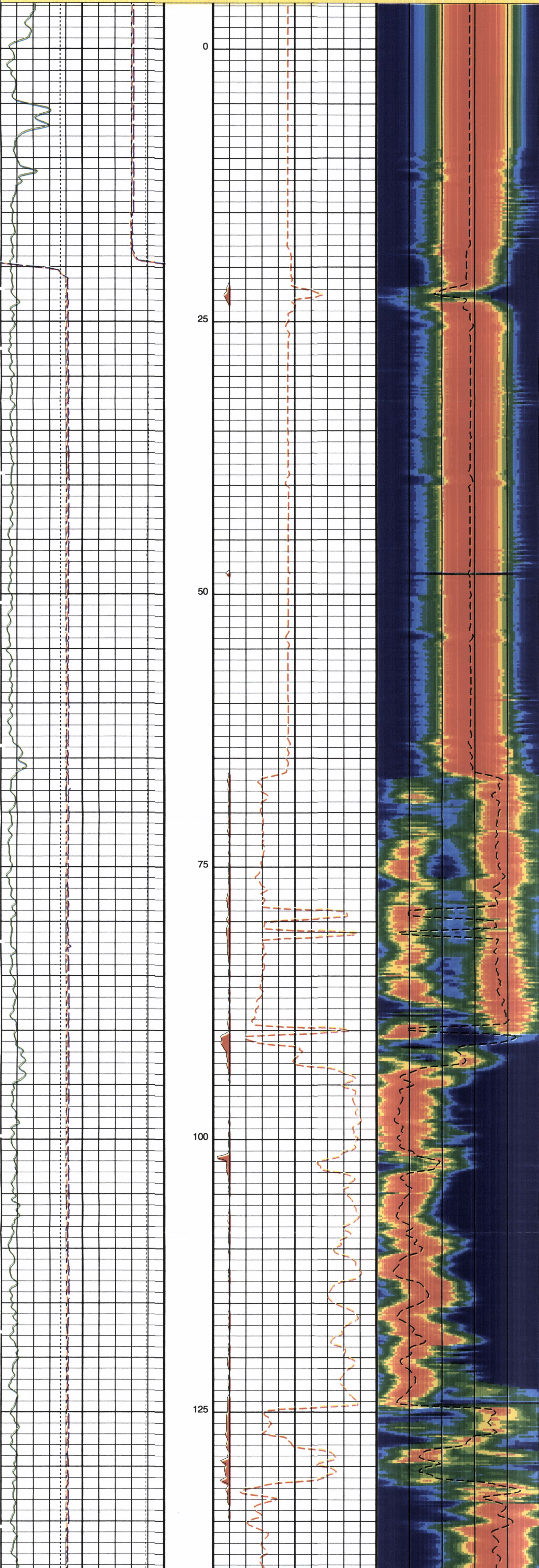
MCM			
DSST-B SGT-N	OP11-KP1 11C0-305	EMS-B DTC-H	11C0-305 11C0-305
Input DLIS Files			
BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER 15-Mar-2004 06:11
Output DLIS Files			
DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER 15-Mar-2004 06:31
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER 15-Mar-2004 06:16

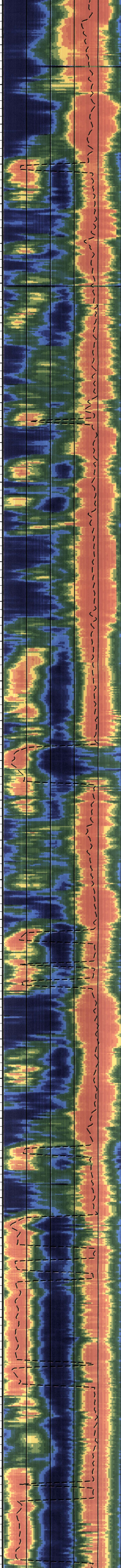
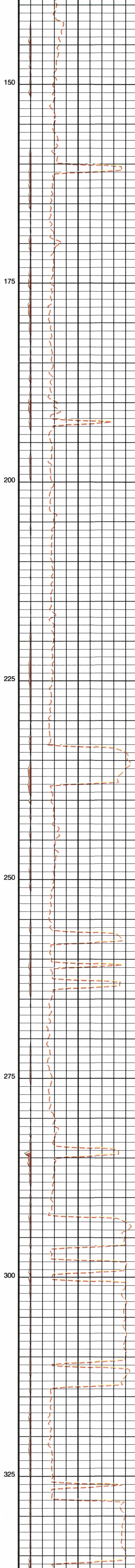
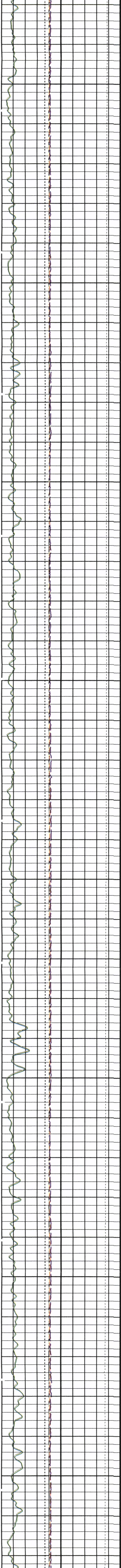
Input DLIS Files			
BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER 15-Mar-2004 06:11 1479.5 M -4.6 M
Output DLIS Files			
DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER 15-Mar-2004 06:31 1479.3 M -4.3 M
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER 15-Mar-2004 06:16 1479.3 M -4.3 M

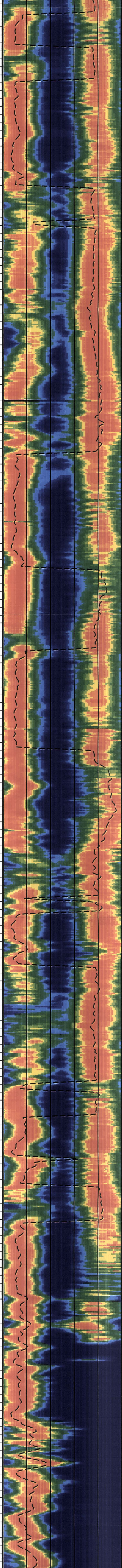
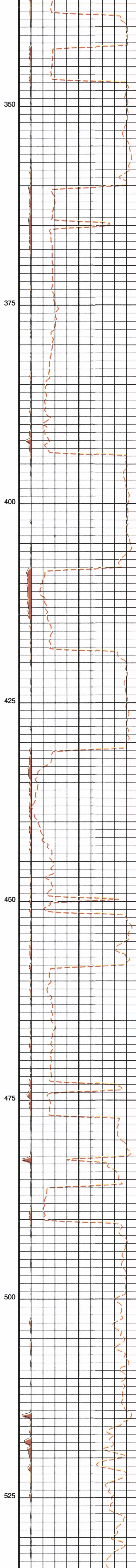
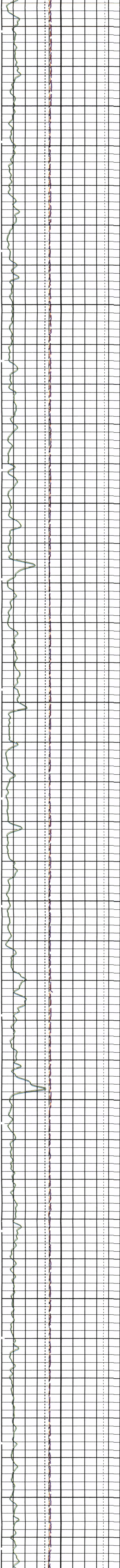
OP System Version: 11C0-305			
MCM			
DSST-B SGT-N	OP11-KP1 11C0-305	EMS-B DTC-H	11C0-305 11C0-305

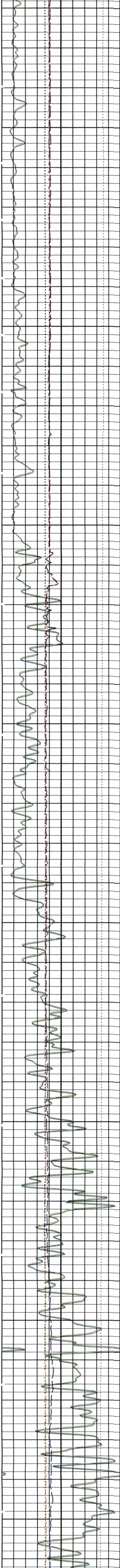
PIP SUMMARY			
Time Mark Every 60 S			
Tension (TENS)			
25000 (N)		0	
Gamma Ray (GR)			
0 (GAPI)		150	
Hole Diameter Maximum (HDMX)			
125 (MM)		375	
Hole Diameter Minimum (HDMI)			
125 (MM)		375	
Bit Size (BS)			
125 (MM)		375	
Stuck Stretch (STIT)		0 (M) 20	
Delta-T Shear - Upper Dipole (DT2)		1200 (US/M) 200	
Delta-T Shear / RA - Upper Dipole (DT2R)		200 (US/M) 1200	

MAIN PASS: *** DIPOLE SONIC - UPPER DIPOLE IMAGE ***

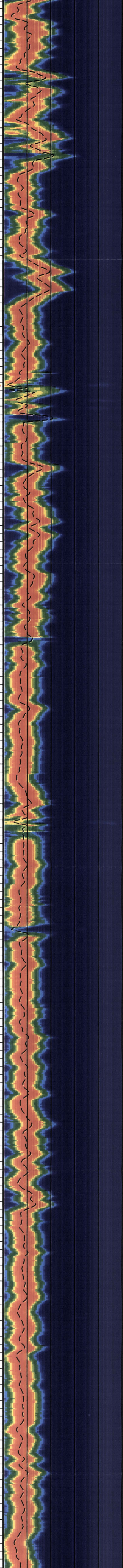
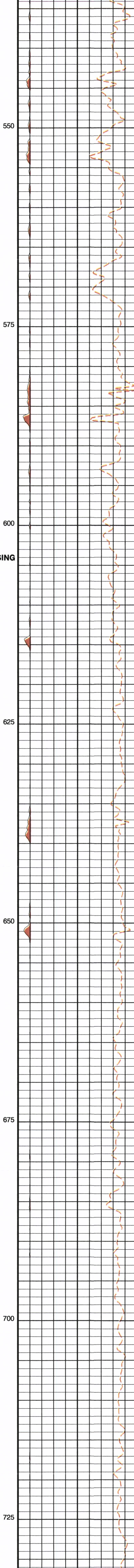


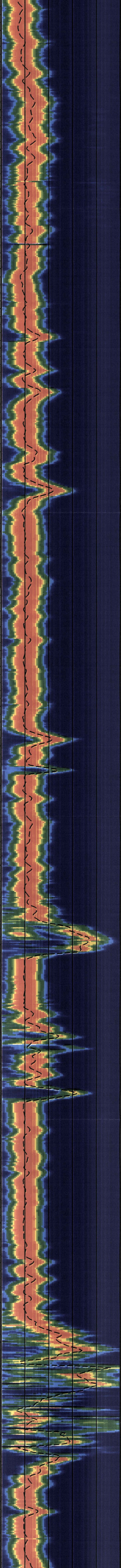
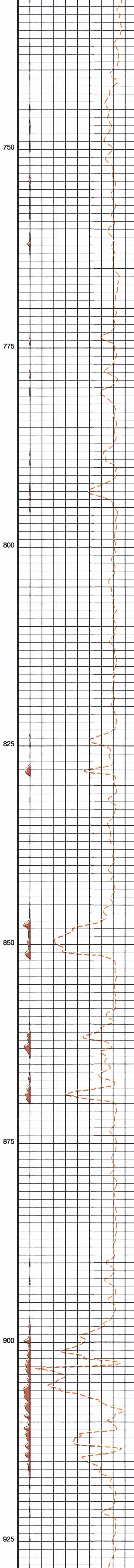
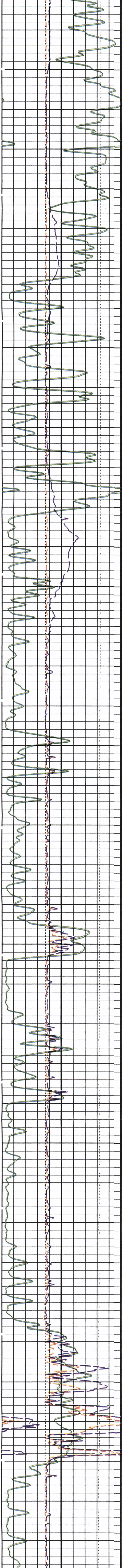


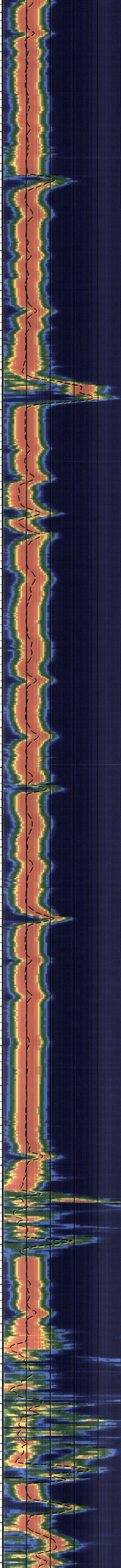
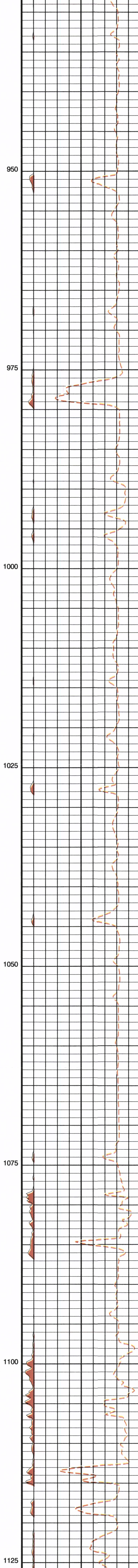
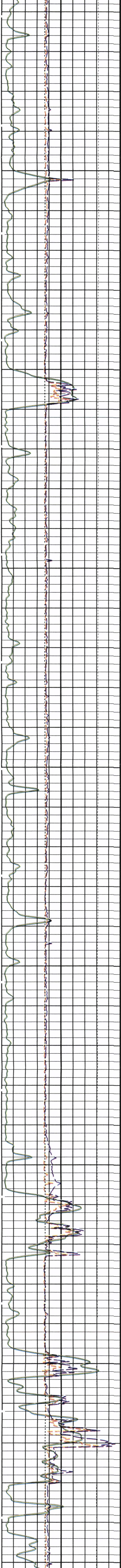


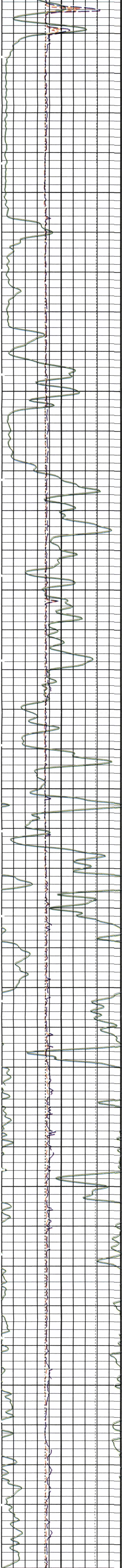


CASING









1150

1175

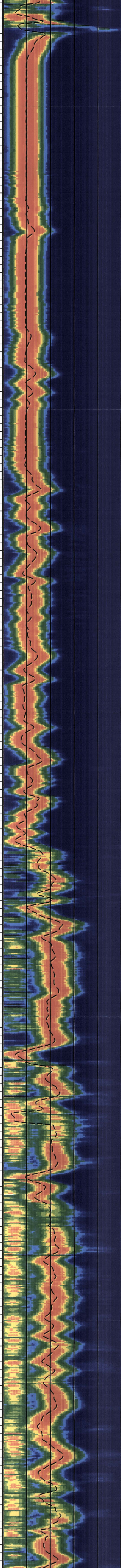
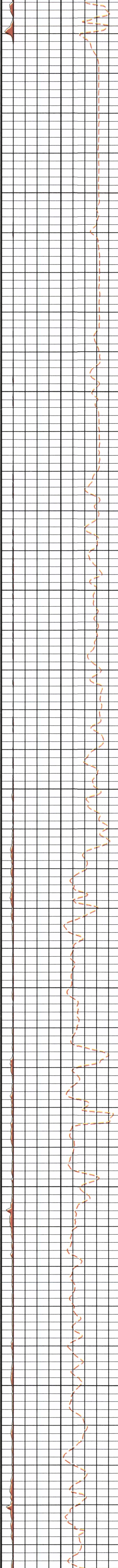
1200

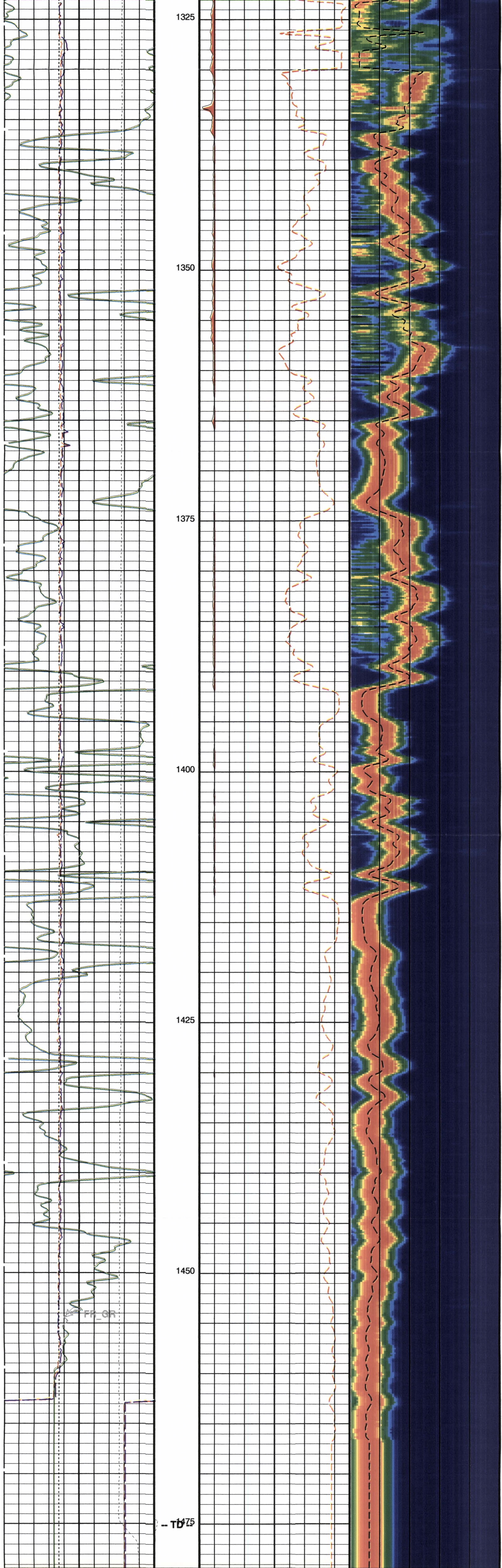
1225

1250

1275

1300





MAIN PASS: *** DIPOLE SONIC - UPPER DIPOLE IMAGE ***

Bit Size (BS) (MM)	Stuck Stretch (STIT) (M)	Delta-T Shear - Upper Dipole (DT2) (US/M)	Delta-T Shear / RA - Upper Dipole (DT2R) (US/M)
125	0	1200	200
375	20	200	1200
Hole Diameter Minimum (HDMI) (MM)	Low Shear Coherence Flag		Min Amplitude Max
125			200 1200
375			Rec.Array U.Dipole Slow Proj. CVDL (SPR2) (US/M)
Hole Diameter Maximum (HDMX) (MM)			
125			
375			
Gamma Ray (GR) (GAPI)			
0			
150			
Tension (TENS) 25000 (N)			
0			

Time Mark Every 60 S

Parameters		
DLIS Name	Description	Value
DSST-B: Dipole Shear	Imager - B	
DDE2	Digitizing Delay 2	0 US
DDEX	Digitizing Delay X	0 US
DLCS	Label Compressional Source - Dipole Shear	DONT_USE
DSHL	Label Slowness Lower Limit - Dipole Shear	200 US/M
DSHU	Label Slowness Upper Limit - Dipole Shear	2550 US/M
DSI2	Digitizer Sample Interval 2	40 US
DSIX	Digitizer Sample Interval X	40 US
DTCS	Compressional Delta-T Source for DTCO Channel	PS_COMP
DWC2	Digitizer Word Count 2	512
DWCX	Digitizer Word Count X	512
NWI2	Number Waveform Items 2	8
NWIX	Number Waveform Items X	0
RX1G	Receiver 1 Geometry	7468 MM
RX2G	Receiver 2 Geometry	7620 MM
RX3G	Receiver 3 Geometry	7772 MM
RX4G	Receiver 4 Geometry	7925 MM

RX5G	Receiver 5 Geometry	8077	MM
RX6G	Receiver 6 Geometry	8230	MM
RX7G	Receiver 7 Geometry	8382	MM
RX8G	Receiver 8 Geometry	8534	MM
SAM2	DSST Sonic Acquisition Mode 2 - Upper Dipole Mode	ODD	
SAMX	DSST Sonic Acquisition Mode X - Both Dipoles or Monopole Mode for Expert	OFF	
SAS2	STC Sonic Array Status - Upper Dipole	255	
SBO2	STC Search Band Offset - Upper Dipole	3000	US
SBW2	STC Search Bandwidth - Upper Dipole	8000	US
SFC2	STC Formation Character - Upper Dipole	SELECTABLE	
SFM2	STC Filter - Upper Dipole	B1-3K	
SLL2	STC Slowness Lower Limit - Upper Dipole	200	US/M
SST2	STC Slowness Step - Upper Dipole	13.1234	US/M
SSW2	STC Source Waveform - Upper Dipole	WF_SAM2	
SUL2	STC Slowness Upper Limit - Upper Dipole	2550	US/M
SWD2	STC Slowness Width - Upper Dipole	131.234	US/M
TBF2	STC Time for Baseline Fill - Upper Dipole	0	US
TLL2	STC Time Lower Limit - Upper Dipole	600	US
TST2	STC Time Step - Upper Dipole	200	US
TUL2	STC Time Upper Limit - Upper Dipole	15549.6	US
TWD2	STC Time Width - Upper Dipole	2000	US
TWI2	STC Integration Time Window - Upper Dipole	1600	US
TWSX	Transmitter Waveform Select X	0	
UTXG	Upper Dipole Transmitter Geometry	4115	MM
EMSB	EMS-B: Environment Measurement Sonde		
ECOF	EMS Caliper Offset	50.8	MM
EFC	EMS Fixed Caliper Operation	OFF	
STI	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.524	M
TDD	Total Depth - Driller	1476.00	M
TDL	Total Depth - Logger	1475.00	M
System	System and Miscellaneous		
BS	Bit Size	216.000	MM
DO	Depth Offset for Playback	-0.1	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	NORMAL	
Format: DSI_UD Vertical Scale: 1:240 Graphics File Created: 15-Mar-2004 06:31			
OP System Version: 11C0-305			
MCM			
DSST-B	OP11-KP1	EMS-B	11C0-305
SGT-N	11C0-305	DTC-H	11C0-305
Input DLIS Files			
BACKUP	DSI_EMS_026LUP	FN:60	PRODUCER 15-Mar-2004 06:11
Output DLIS Files			
DEFAULT	DSI_EMS_002PUP	FN:1	PRODUCER 15-Mar-2004 06:31
TRANSMIT	DSI_EMS_002PUP	FN:2	PRODUCER 15-Mar-2004 06:16

Calibration and Check Summary							
Measurement	Nominal	Master	Before	After	Change	Limit	Units
Environment Measurement Sonde Wellsite Calibration - EMS Caliper Calibration							
Before: 15-Mar-2004 4:43							
Radius 1 Short Radius	101.6	N/A	88.03	N/A	N/A	5.080	MM
Radius 1 Long Radius	203.2	N/A	192.0	N/A	N/A	5.080	MM
Radius 2 Short Radius	101.6	N/A	83.84	N/A	N/A	5.080	MM
Radius 2 Long Radius	203.2	N/A	188.6	N/A	N/A	5.080	MM
Radius 3 Short Radius	101.6	N/A	83.99	N/A	N/A	5.080	MM
Radius 3 Long Radius	203.2	N/A	187.4	N/A	N/A	5.080	MM
Radius 4 Short Radius	101.6	N/A	85.39	N/A	N/A	5.080	MM
Radius 4 Long Radius	203.2	N/A	189.0	N/A	N/A	5.080	MM
Radius 5 Short Radius	101.6	N/A	84.48	N/A	N/A	5.080	MM
Radius 5 Long Radius	203.2	N/A	186.6	N/A	N/A	5.080	MM
Radius 6 Short Radius	101.6	N/A	78.24	N/A	N/A	5.080	MM
Radius 6 Long Radius	203.2	N/A	183.6	N/A	N/A	5.080	MM
Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration							
Before: 15-Mar-2004 4:38							
Gamma Ray (Jig - Bkg)	150.5	N/A	150.5	N/A	N/A	13.68	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Environment Measurement Sonde / Equipment Identification			
Primary Equipment:			
EMS Mechanical	EMM - B	8062	
EMS Cartridge	EMC - B	8067	
Auxiliary Equipment:			
Electronics Cartridge Housing	ECH - KH	8550	

Environment Measurement Sonde Wellsite Calibration					
EMS Caliper Calibration					
Phase	Radius 1 Short Radius MM	Value	Phase	Radius 1 Long Radius MM	Value
Before		88.03	Before		192.0
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Phase	Radius 2 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value
Before		83.84	Before		188.6
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Phase	Radius 3 Short Radius MM	Value	Phase	Radius 3 Long Radius MM	Value
Before		83.99	Before		187.4
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Phase	Radius 4 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value
Before		85.39	Before		189.0
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Phase	Radius 5 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value
Before		84.48	Before		186.6
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Phase	Radius 6 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value
Before		78.24	Before		183.6
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	177.8 (Minimum)	203.2 (Nominal)	228.6 (Maximum)
Before: 15-Mar-2004 4:43					

Scintillation Gamma-Ray - N / Equipment Identification			
Primary Equipment:			
Scintillation Gamma Cartridge	SGC - TB	9586	
Scintillation Gamma Detector	SGD - TAA		
Auxiliary Equipment:			
Scintillation Gamma Housing	SGH - K	9396	
Gamma Source Radioactive	GSR - U/Y		

Scintillation Gamma-Ray - N Wellsite Calibration							
Detector Calibration							
Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI
Before		21.82	Before		150.5	Before	
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	136.8 (Minimum)	150.5 (Nominal)	164.2 (Maximum)	150.0 (Minimum)	165.0 (Nominal)
Before: 15-Mar-2004 4:38							

Company:

APACHE CANADA LTD.

Well:

APACHE PARAMOUNT NOGHA B-23

Field:

UNDEFINED

Province:

NORTHWEST TERRITORIES

Schlumberger

DIPOLE SONIC:

COMPRESSIONAL & SHEAR

SONIC LOG