Schlumberger

Company: APACHE CANADA LTD.
Well: APACHE PARAMOUNT LAC MAUNOIR E-35
Field: NWT
Territory: NORTHWEST TERRITORIES *** MD ***

Territory: NORTHWEST TERRITORIES
Field: NWT
Location: LSD: E-35
Well: APACHE PARAMOUNT LAC MAUNOIR E-35
Company: APACHE CANADA LTD.

EMS CEMENT VOLUME

N.E.B. COPY

LSD: E-35
UWID: 300E356720125000

Elev.: K.B. 539.3 m
G.L. 532.6 m
D.F. 539 m

LOCATION

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING

Elev.: 532.6 m
6.7 m above Perm. Datum

API Serial No. 1075
Latitude 67D 14' 27.6" N
Longitude 125D 7' 15.8"

Logging Date	9-Mar-2005						
Run Number	ONE						
Depth Driller	1011 m						
Schlumberger Depth	1010.7 m						
Bottom Log Interval	987 m						
Top Log Interval	451.5 m						
Casing Driller Size @ Depth	244.500 mm @ 452 m						
Casing Schlumberger	451.5 m						
Bit Size	216.000 mm						
Type Fluid In Hole	SALT MUD						
MUD Density / Viscosity	1270 kg/m3	53 s					
MUD Fluid Loss / PH	10 cm3	8.5					
MUD Source Of Sample	FLOWLINE						
RM @ Measured Temperature	0.061 ohm.m @ 20 degC						
RMF @ Measured Temperature	0.056 ohm.m @ 15 degC						
RMC @ Measured Temperature	0.070 ohm.m @ 20 degC						
Source RMF / RMC	MUD PRESS	MUD PRESS					
RM @ MRT / RMF @ MRT	0.076 @ 12	0.061 @ 12	@	@			
Maximum Recorded Temperatures	12 degC						
Circulation Stopped / Time	9-Mar-2005	2:30					
Logger On Bottom / Time	9-Mar-2005	10:30					
Unit Number / Location	3052 NORMAN WELLS						
Recorded By	MICHEL LAPOINTE						
Witnessed By	ROBERT REID						

Logging Date	Run 1	Run 2	Run 3	Run 4
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth	@		@	
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
MUD Density / Viscosity				
MUD Fluid Loss / PH				
MUD Source Of Sample				
RM @ Measured Temperature	@		@	
RMF @ Measured Temperature	@		@	
RMC @ Measured Temperature	@		@	
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@	@	@	@
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

DEPTH SUMMARY LISTING

Date Created: 9-MAR-2005 12:12:14

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-39P-LXS
Serial Number:	1976	Serial Number:	1	Serial Number:	3052
Calibration Date:	29-DEC-2004	Calibration Date:	11-DEC-2004	Length:	3999.89 M
Calibrator Serial Number:	4	Calibrator Serial Number:	78130	Conveyance Method:	Wireline
Calibration Cable Type:	7-39P-LXS	Calibration Gain:	0.99	Rig Type:	LAND
Wheel Correction 1:	-2	Calibration Offset:	-690.00		
Wheel Correction 2:	-2				

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 M
Rig Up Length At Bottom:	0.00 M
Rig Up Length Correction:	0.00 M
Stretch Correction:	0.70 M
Tool Zero Check At Surface:	0.10 M

Depth Control Remarks

1.
2. PRIMARY DEPTH MEASUREMENT = IDW
3.
4. ALL LOGS CORRELATED TO DOWNLOG
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: FMI IMAGER	OS1:
OS2: DIPOLE SONIC	OS2:
OS3: EMS CEMENT VOLUME	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
DSI run with two CMEZ's and two 25.4 mm standoffs for centralization.	
Cement volume computed using EMS calipers, assuming a future casing diameter of 177.8 mm.	
DSI and GR logged to surface.	
PRINTS: 2 FIELD	
RIG: AKITA 51	
CREW: R. PROSSER	

RUN 1		RUN 2	
SERVICE ORDER #:	10829928	SERVICE ORDER #:	
PROGRAM VERSION:	12C0-301	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

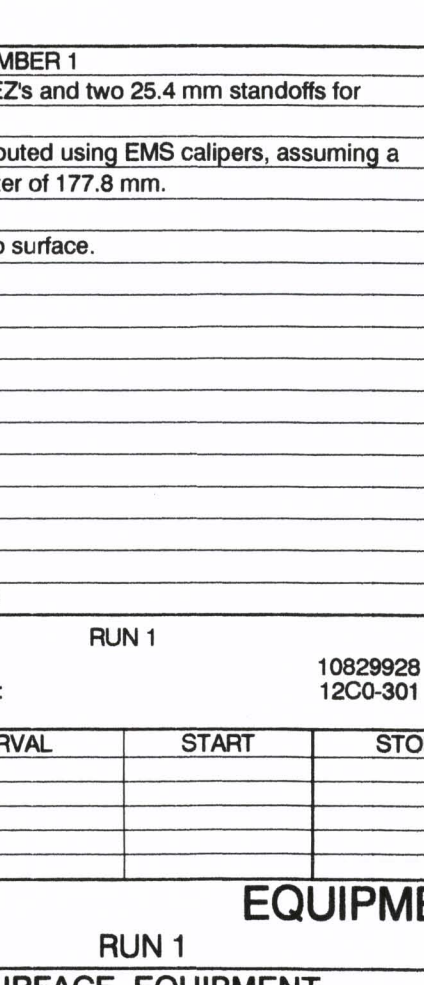
EQUIPMENT DESCRIPTION

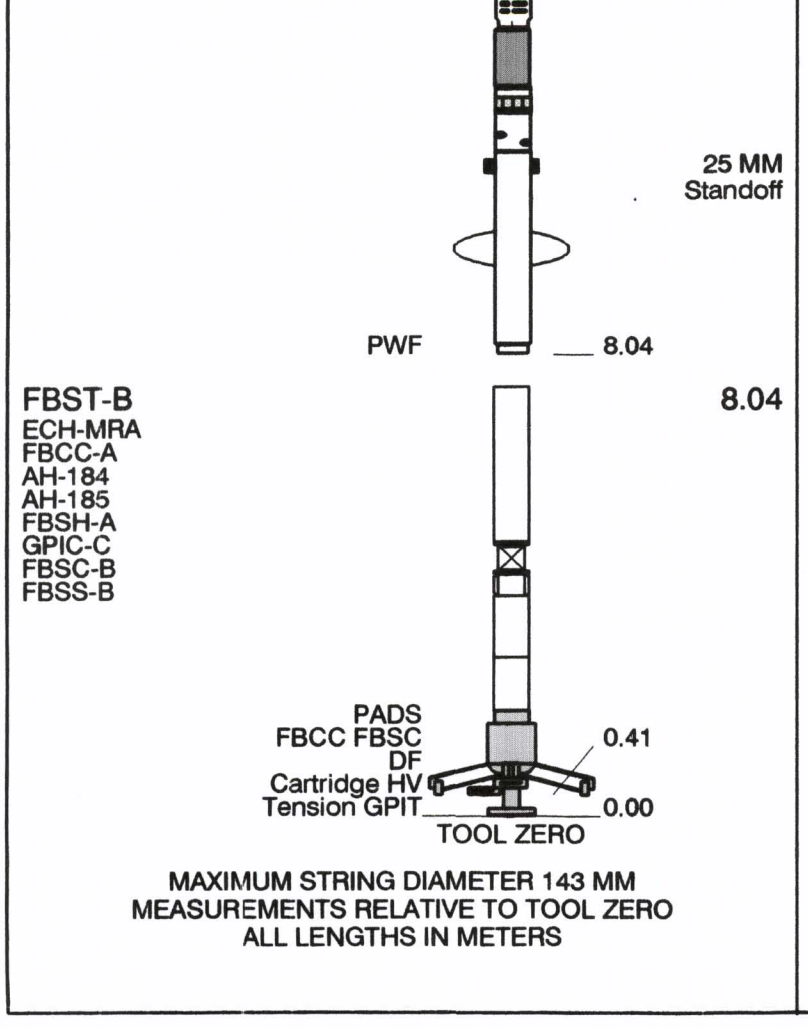
RUN 1 | RUN 2

SURFACE EQUIPMENT

GSR-U/Y
WITM (DTS)-A

DOWNHOLE EQUIPMENT



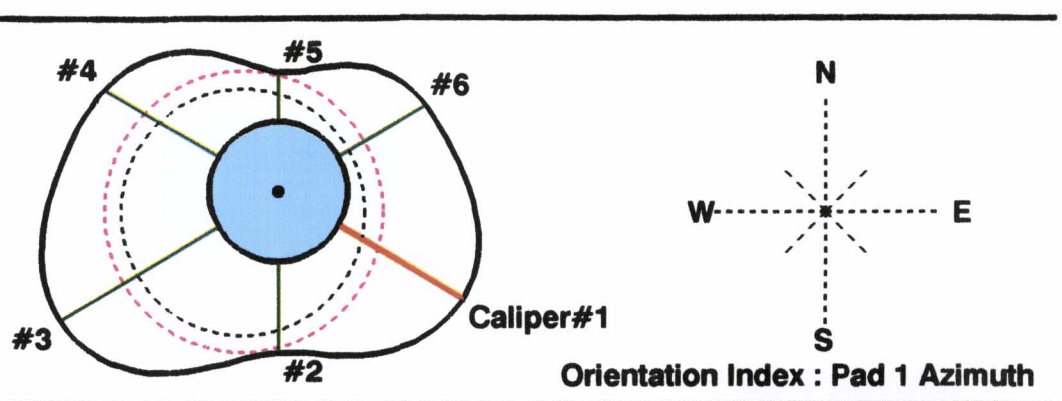


Graphics File Name: BORE_GRAPHIC_8.PDS | Graphics File Created: 09-Mar-2005 12:56

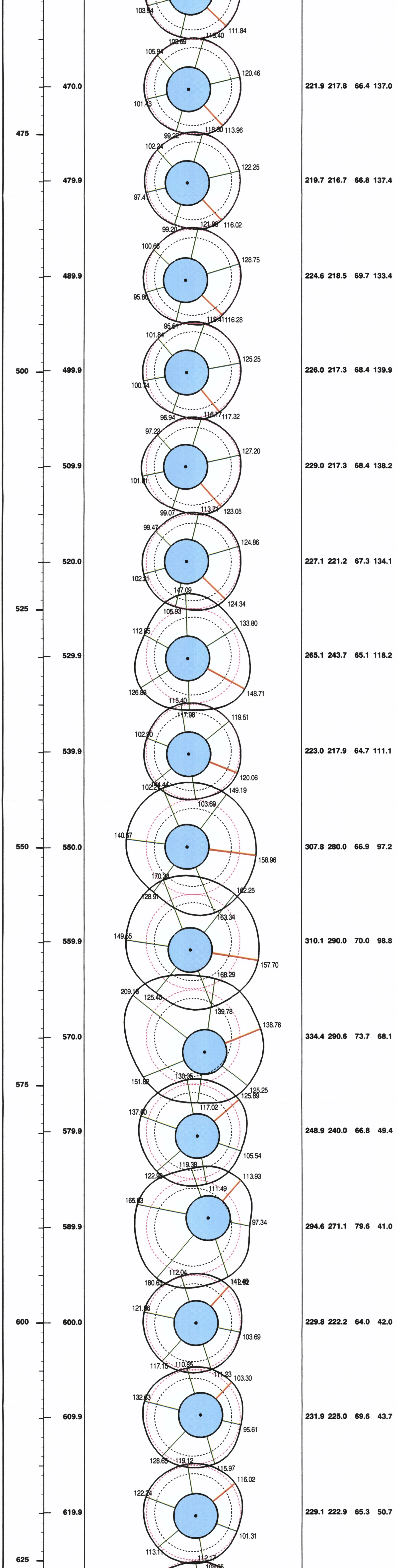
Borehole Cross Section

Parameters

DLIS Name	Description	Value
BGVS	Borehole Graphic Vertical Scale	D200_Metric
BGDI	Borehole Graphic Depth Interval	10_M
BGDM	Borehole Graphic Display Mode	Xsec_Tool_CalAll_Data
BGHW	Borehole Graphic Horizontal Width	500_MM
BGAI	Borehole Graphic Angle Index	Orinet_from_Pad_1_Azimuth
BGUN	Borehole Graphic Unit	METRIC



Depth (M)	Future Casing Diameter (FCD) -250.0 (MM) 250.0 / Bit Size (BS) -250.0 (MM) 250.0	Borehole Data: DIA. Max (MM)	DIA. Min (MM)	Conf. Factor (DEG)	Orient Angle (DEG)
429.9	119.12, 116.28, 116.95, 106.46, 113.97, 108.93, 108.18	227.3	223.3	63.7	30.9
440.0	116.63, 108.02, 116.93, 108.58, 108.45	225.2	221.4	62.8	114.0
450 449.9	107.25, 106.71, 107.38, 114.62, 117.19, 113.97	226.4	221.6	63.2	236.7
459.9	117.94, 106.97, 114.67	218.8	217.1	63.3	133.1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525
550
575
600
625
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499.9
509.9
520.0
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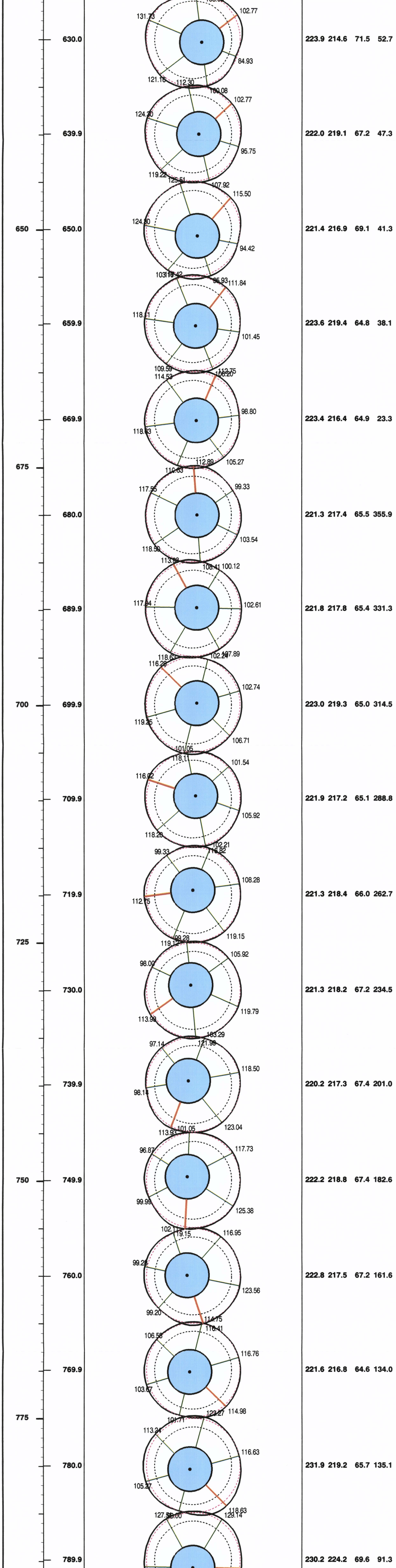
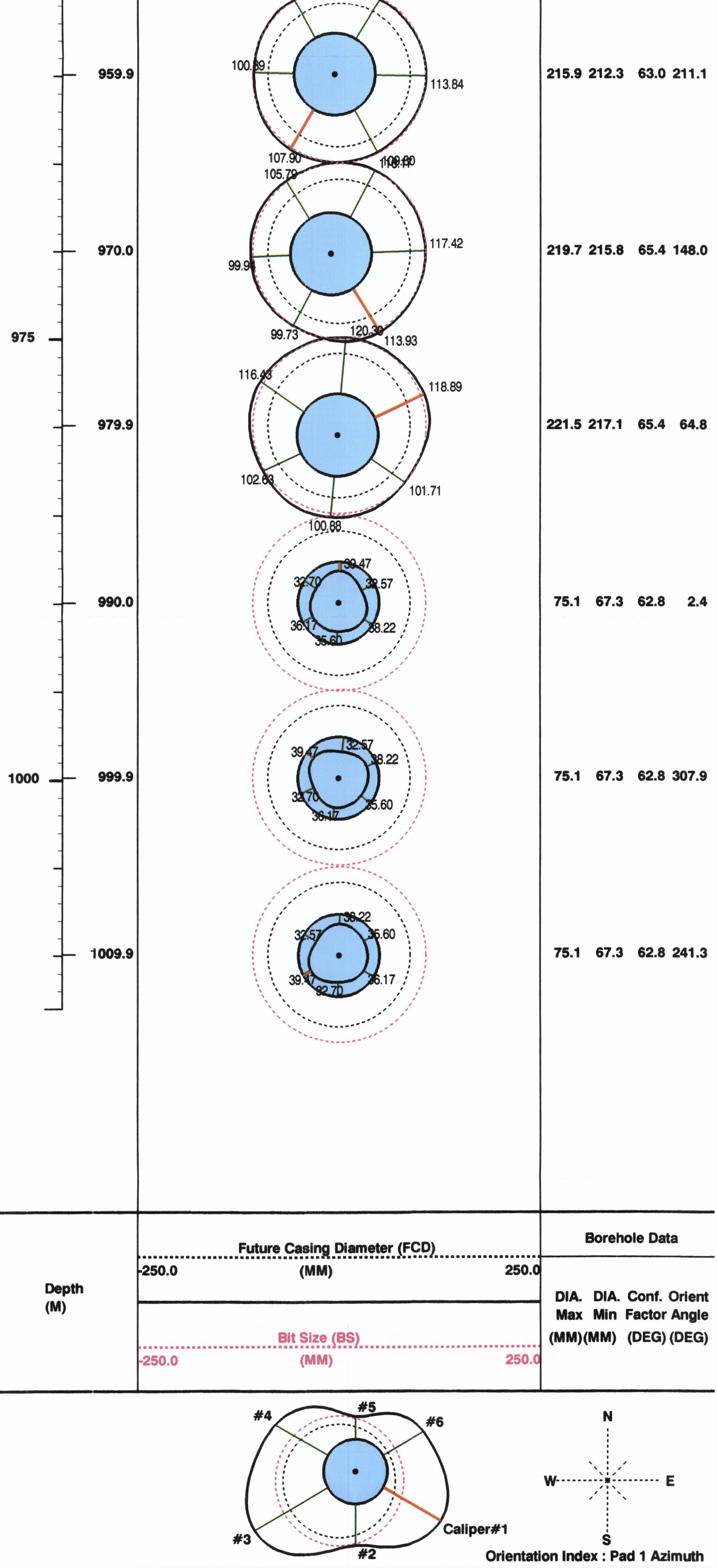
550.0
559.9
570.0
579.9
589.9
600.0
609.9
619.9
221.9 217.8 66.4 137.0
219.7 216.7 66.8 137.4
224.6 218.5 69.7 133.4
226.0 217.3 68.4 139.9
229.0 217.3 68.4 138.2
227.1 221.2 67.3 134.1
265.1 243.7 65.1 118.2
223.0 217.9 64.7 111.1
307.8 280.0 66.9 97.2
310.1 290.0 70.0 98.8
334.4 290.6 73.7 68.1
248.9 240.0 66.8 49.4
294.6 271.1 79.6 41.0
229.8 222.2 64.0 42.0
231.9 225.0 69.6 43.7
229.1 222.9 65.3 50.7



630.0	223.9	214.6	71.5	52.7
639.9	222.0	219.1	67.2	47.3
650.0	221.4	216.9	69.1	41.3
659.9	223.6	219.4	64.8	38.1
669.9	223.4	216.4	64.9	23.3
680.0	221.3	217.4	65.5	355.9
689.9	221.8	217.8	65.4	331.3
699.9	223.0	219.3	65.0	314.5
709.9	221.9	217.2	65.1	288.8
719.9	221.3	218.4	66.0	262.7
730.0	221.3	218.2	67.2	234.5
739.9	220.2	217.3	67.4	201.0
749.9	222.2	218.8	67.4	182.6
760.0	222.8	217.5	67.2	161.6
769.9	221.6	216.8	64.6	134.0
780.0	231.9	219.2	65.7	135.1
789.9	230.2	224.2	69.6	91.3

800	799.9	235.7	224.3	68.2	49.6
	810.0	224.3	218.9	65.7	19.0
	819.9	222.5	218.4	64.4	338.0
825					
	829.9	221.7	218.8	64.0	290.4
	840.0	227.8	222.9	63.7	248.2
850	849.9	221.9	217.2	62.5	203.3
	860.0	222.6	218.3	61.3	144.7
	869.9	222.2	217.9	62.8	79.6
875					
	879.9	223.8	219.7	65.1	16.9
	890.0	223.5	218.5	61.6	320.9
900	899.9	223.1	218.5	62.2	253.3
	909.9	223.0	218.5	63.4	182.2
	919.9	222.6	218.4	64.5	121.9
925					
	929.9	222.6	218.7	66.1	59.0
	940.0	214.7	207.4	67.4	0.7
950	949.9	218.8	214.2	61.5	261.4



Parameters

DLIS Name	Description	Value
BGVS	Borehole Graphic Vertical Scale	D200_Metric
BGDI	Borehole Graphic Depth Interval	10_M
BGDM	Borehole Graphic Display Mode	Xsec_Tool_CalAll_Data
BGHW	Borehole Graphic Horizontal Width	500_MM
BGAI	Borehole Graphic Angle Index	Orinet_from_Pad_1_Azimuth
BGUN	Borehole Graphic Unit	METRIC

Borehole Cross Section

Graphics File Name: BORE_GRAPHIC_8.PDS — Graphics File Created: 09-Mar-2005 12:56

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M

Integrated Hole/Cement Volume Summary

Hole Volume = 22.18 M3

Cement Volume = 8.88 M3 (assuming 177.80 MM casing O.D.)

Computed from 986.9 M to 451.6 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

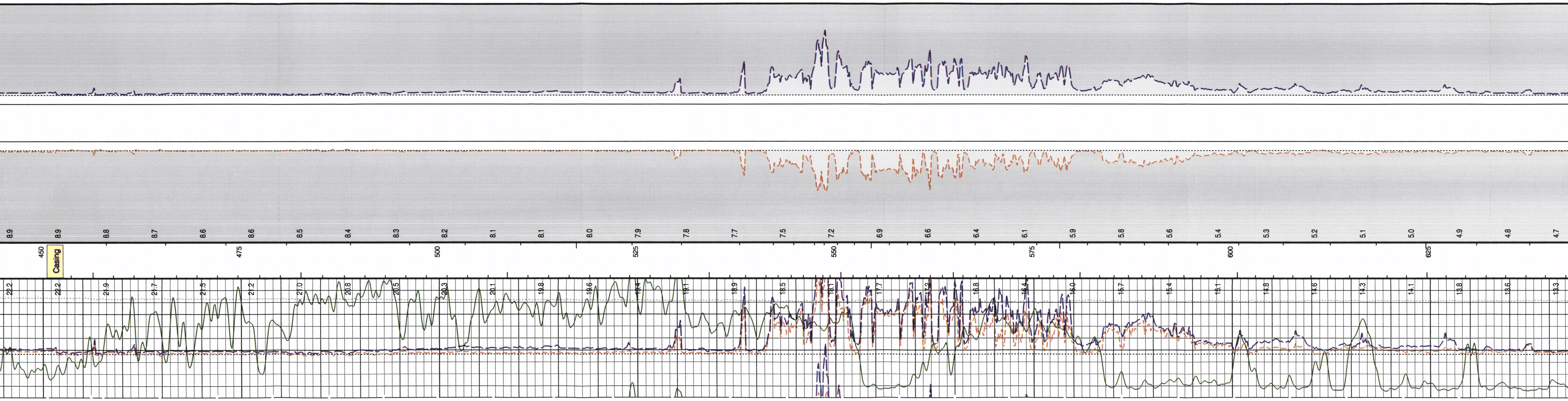
PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

	Formation Between LHT2 and HDMI_1	Formation Between HDMX_1 and RHT3
	Washout From HDMI_1 to BS2	Washout From BS3 to HDMX_1
	Tight Spot From BS2 to HDMI_1	Tight Spot From HDMX_1 to BS3
Hole Diameter Maximum (HDMX) 125 (MM) 375	Annulus From BS2 to FCD2	Annulus From FCD3 to BS3
Hole Diameter Minimum (HDMI) 125 (MM) 375	Future Casing	
Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Minimum (HDMI) 600 (MM) 100	Hole Diameter Maximum (HDMX) 100 (MM) 600
Bit Size (BS) 125 (MM) 375	FCD2 (FCD) 600 (MM) 100	FCD3 (FCD) 100 (MM) 600
Tension (TENS) 50000 (N) 0	Bit Size (BS) 600 (MM) 100	Bit Size (BS) 100 (MM) 600

*** CEMENT VOLUME LOG ***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5.0
4.9
4.8
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Casing
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550
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22.2
22.2
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13.3

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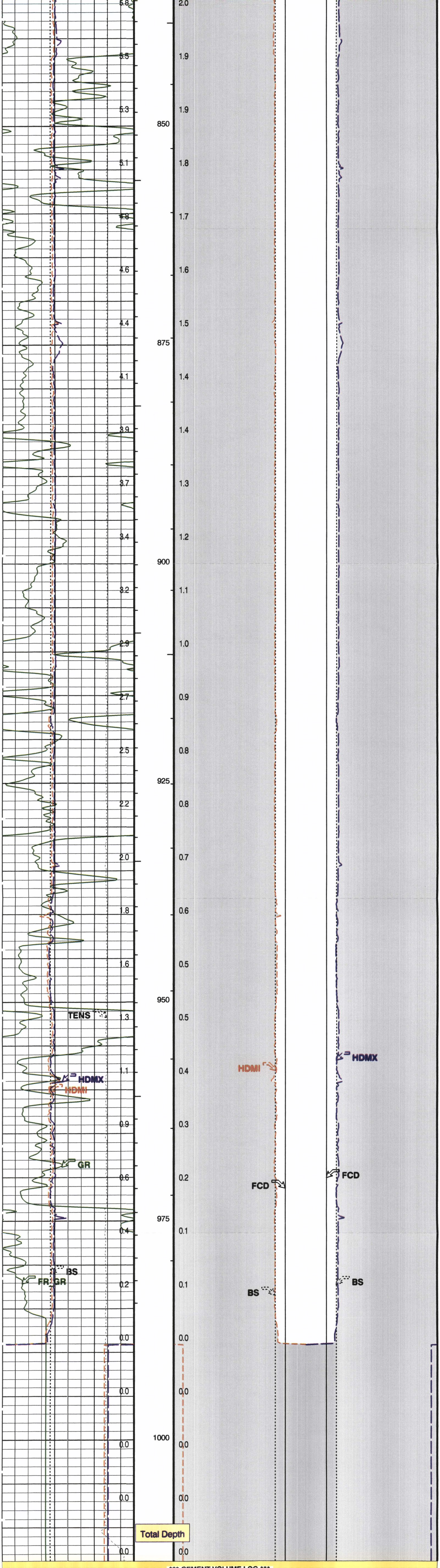


*** CEMENT VOLUME LOG ***

Tension (TENS)			Bit Size (BS)		Bit Size (BS)
50000	(N)	0	600 (MM) 100		100 (MM) 600
Bit Size (BS)			FCD2 (FCD)		FCD3 (FCD)
125	(MM)	375	600 (MM) 100		100 (MM) 600
Gamma Ray (GR)			Hole Diameter Minimum (HDMI)		Hole Diameter Maximum (HDMX)
0	(GAPI)	150	600 (MM) 100		100 (MM) 600
Hole Diameter Minimum (HDMI)			Future Casing		
125	(MM)	375			
Hole Diameter Maximum (HDMX)			Annulus From BS2 to FCD2		Annulus From FCD3 to BS3
125	(MM)	375			
			Tight Spot From BS2 to HDMI_1		Tight Spot From HDMX_1 to BS3

Washout From HDMI_1 to BS2	Washout From BS3 to HDMX_1
Formation Between LHT2 and HDMI_1	Formation Between HDMX_1 and RHT3

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	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	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
TDD	Total Depth - Driller	1011.00	M
TDL	Total Depth - Logger	1010.70	M
	System and Miscellaneous		
BS	Bit Size	216.000	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	NORMAL	
TD	Total Depth	987	M

Format: CVL Vertical Scale: 1:240 Graphics File Created: 09-Mar-2005 12:56

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M

Integrated Hole/Cement Volume Summary

Hole Volume = 22.18 M3

Cement Volume = 8.88 M3 (assuming 177.80 MM casing O.D.)

Computed from 986.9 M to 451.6 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

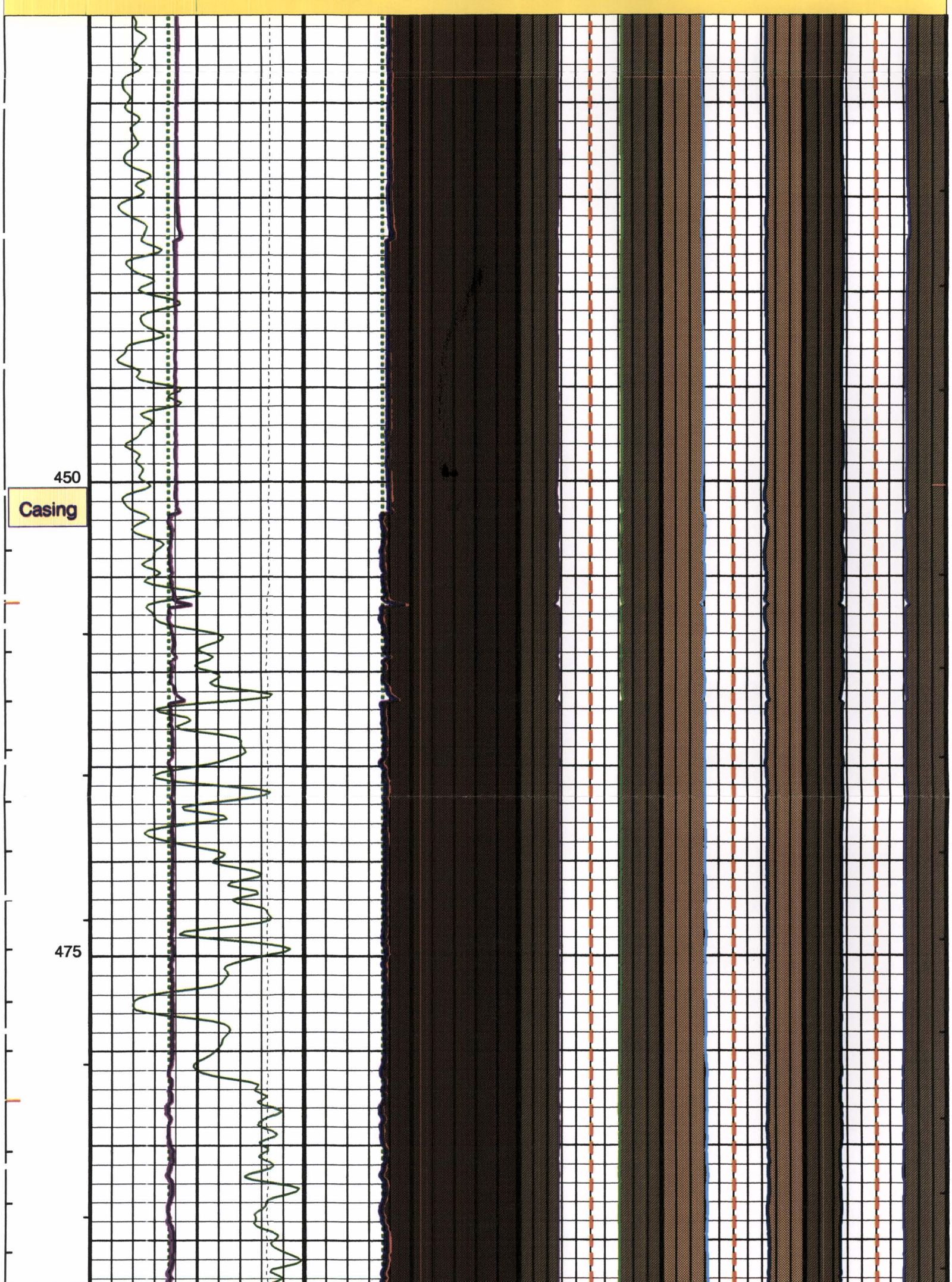
PIP SUMMARY

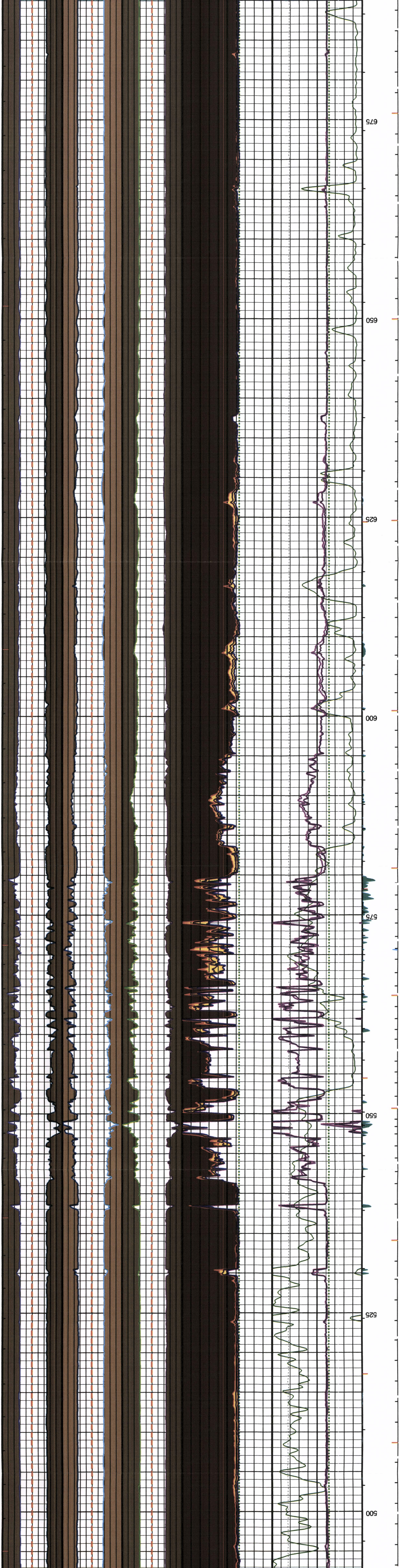
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Standard deviation for HDAR From OSDV to D4T					
Probability Angle for HDMI (CHAM) (DEG) 90 240					
Probability angle for HDMI From D4T to CHAM					
Fixed caliper flag From D4T to EFCF		Formation From HDMX to F2			
Oval Standard Deviation (OSDV) 23 () 3	Tension (TENS) 50000 (N) 0	HD difference From HDMI to HDMX	Formation From RD4 to RHT2	Formation From RD5 to LHT3	Formation From RHT3 to RD6
Tool/Tot. Drag From D4T to STIA	Hole Diameter from Area (HDAR) 125 (MM) 375	Hole Diameter from Area (HDAR) 125 (MM) 375	Formation From RHT2 to RD1	Formation From LHT3 to RD2	Formation From RD3 to RHT3
Cable Drag From D4T to STIT	Hole Diameter 1 (HD1) 125 (MM) 375	Hole Diameter Minimum (HDMI) 125 (MM) 375	Radius 4 (RD4) -250 (MM) 250	Radius 5 (RD5) -250 (MM) 250	Radius 6 (RD6) 250 (MM) -250
Stuck Stretch (STIT) 0 (M) 20	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 125 (MM) 375	Radius 1 (RD1) 250 (MM) -250	Radius 2 (RD2) 250 (MM) -250	Radius 3 (RD3) -250 (MM) 250
EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 125 (MM) 375	Bit Size (BS) 125 (MM) 375	EMS Tool Center (ETC1) 250 (MM) -250	EMS Tool Center (ETC2) 250 (MM) -250	EMS Tool Center (ETC3) 250 (MM) -250

MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***

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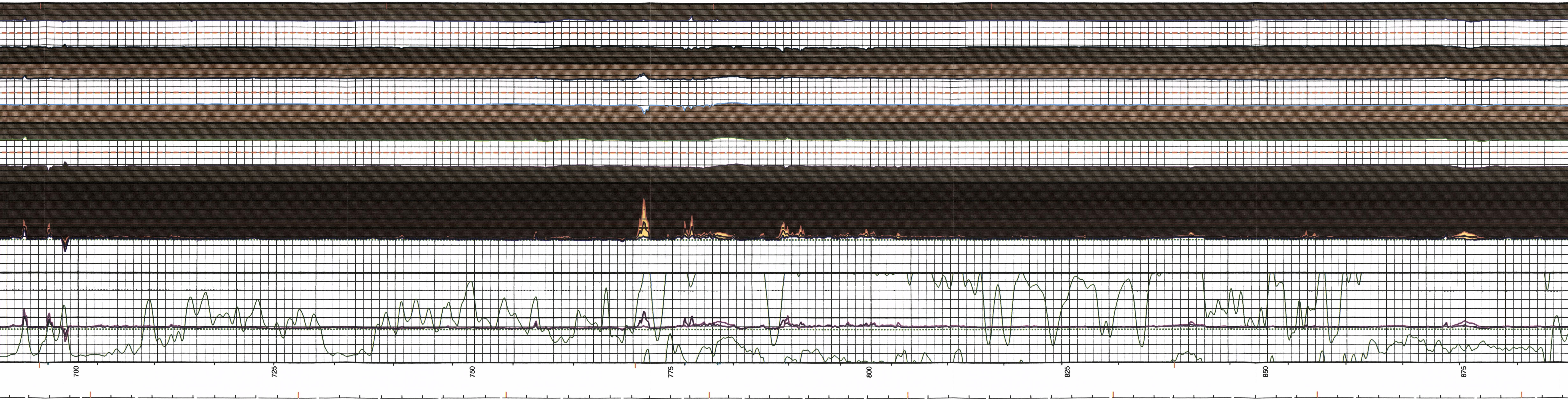
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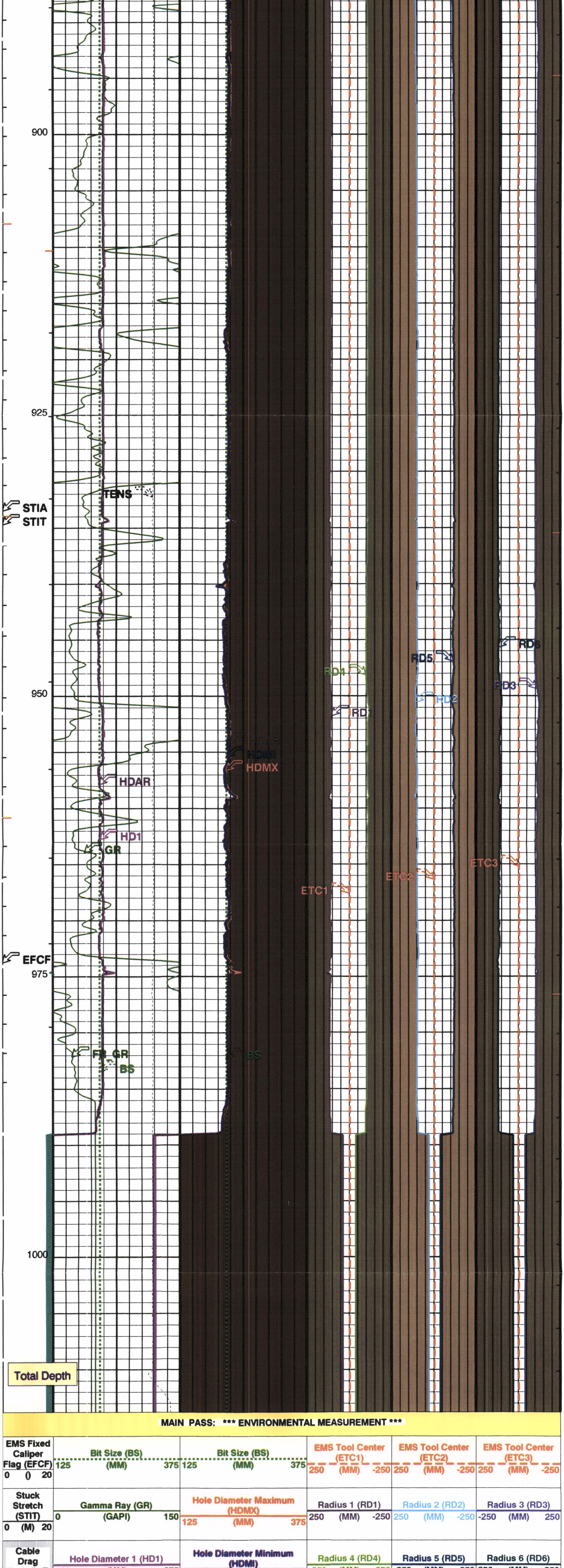


MAIN PASS: * ENVIRONMENTAL MEASUREMENT *****

EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 125 (MM) 375	Bit Size (BS) 125 (MM) 375	EMS Tool Center (ETC1) 250 (MM) -250	EMS Tool Center (ETC2) 250 (MM) -250	EMS Tool Center (ETC3) 250 (MM) -250
Stuck Stretch (STIT) 0 (M) 20	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 125 (MM) 375	Radius 1 (RD1) 250 (MM) -250	Radius 2 (RD2) 250 (MM) -250	Radius 3 (RD3) -250 (MM) 250
Cable Drag From D4T to STIT	Hole Diameter 1 (HD1) 125 (MM) 375	Hole Diameter Minimum (HDMI) 125 (MM) 375	Radius 4 (RD4) -250 (MM) 250	Radius 5 (RD5) -250 (MM) 250	Radius 6 (RD6) 250 (MM) -250
Tool/Tot. Drag From D4T to STIA	Hole Diameter from Area (HDAR) 125 (MM) 375	Hole Diameter from Area (HDAR) 125 (MM) 375	Formation From RHT2 to RD1	Formation From LHT3 to RD2	Formation From RD3 to RHT3
Oval Standard Deviation (OSDV) 23 () 3	Tension (TENS) 50000 (N) 0	HD difference From HDMI to HDMX	Formation From RD4 to RHT2	Formation From RD5 to LHT3	Formation From RHT3 to RD6
Fixed caliper flag From D4T to EFCF		Formation From HDMX to F2			
Probability angle for HDMI From D4T to CHAM					
Probability Angle for HDMI (CHAM) (DEG) 90 240					
Standard deviation for HDAR From OSDV to D4T					

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement 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		
ITTS	Integrated Transit Time Source	DTCO	
	EMS-B: Environment Measurement Sonde		
ECOF	EMS Caliper Offset	50.8	MM
EFC	EMS Fixed Caliper Operation	OFF	
ESCL	EMS Synthetic Caliper Log	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	

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	1011.00	M
TDL	Total Depth - Logger	1010.70	M
System and Miscellaneous			
BS	Bit Size	216.000	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	NORMAL	
TD	Total Depth	987	M

Format: EMS_Caliper1 Vertical Scale: 1:240 Graphics File Created: 09-Mar-2005 12:56

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56	1013.8 M	425.3 M

Integrated Hole/Cement Volume Summary

Hole Volume = 22.18 M3

Cement Volume = 8.88 M3 (assuming 177.80 MM casing O.D.)

Computed from 986.9 M to 451.6 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 0.1 M3
Integrated Hole Volume Major Pip Every 1 M3
Integrated Cement Volume Minor Pip Every 0.1 M3
Integrated Cement 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

Standard deviation for HDAR From OSDV to D4T

Probability Angle for HDMI (CHAM) (DEG) 90 240

Probability angle for HDMI From D4T to CHAM

Fixed caliper flag From D4T to EFCF

Oval Standard Deviation (OSDV) 23 () 3

Tension (TENS) 50000 (N) 0

Tool/Tot. Drag From D4T to STIA

Hole Diameter 1 (HD1) 125 (MM) 375

Cable Drag From D4T to STIT

Hole Diameter from Area (HDAR) 125 (MM) 375

Stuck Stretch (STIT) 0 (M) 20

Gamma Ray (GR) 0 (GAPI) 150

EMS Fixed Caliper Flag (EFCF) 0 () 20

Bit Size (BS) 125 (MM) 375

Deviation (DEVI) 0 (DEG) 50

Formation From F3 to HDMX_1

HD difference From HDMX_1 to HDMI_1

Hole Diameter Minimum (HDMI) 500 (MM) 0

Hole Diameter Maximum (HDMX) 500 (MM) 0

Bit Size (BS) 500 (MM) 0

Formation From HDMX_2 to F4

HD difference From HDMI_2 to HDMX_2

Hole Diameter Minimum (HDMI) 0 (MM) 500

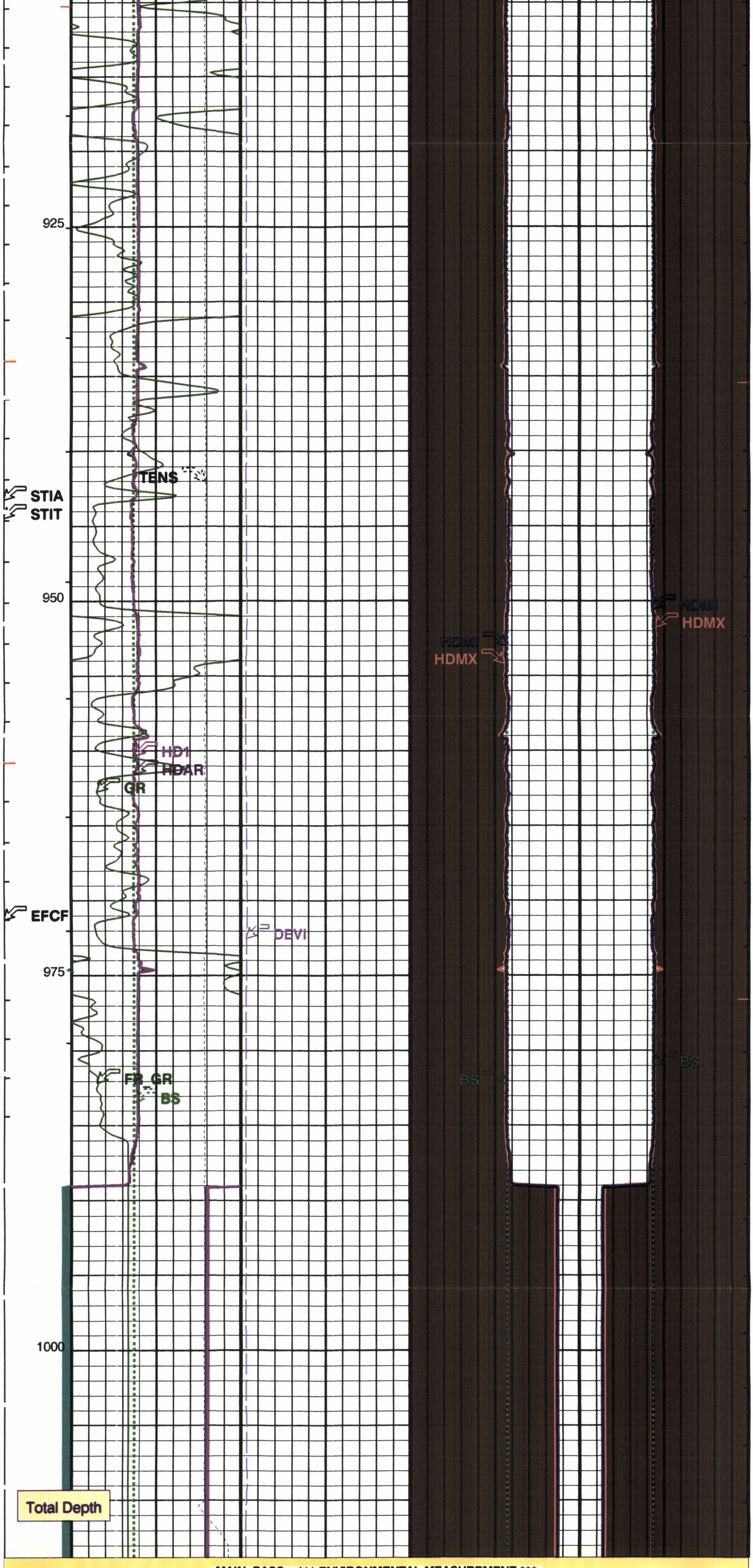
Hole Diameter Maximum (HDMX) 0 (MM) 500

Bit Size (BS) 0 (MM) 500

MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***


525
550
575
600
625
650
675
700

725
750
775
800
825
850
875
900



MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***

EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 125 (MM) 375	Deviation (DEVI) 0 (DEG) 50	Bit Size (BS) 500 (MM) 0	Bit Size (BS) 0 (MM) 500
Stuck Stretch (STIT) 0 (M) 20	Gamma Ray (GR) 0 (GAPI) 150		Hole Diameter Maximum (HDMX) 500 (MM) 0	Hole Diameter Maximum (HDMX) 0 (MM) 500
Cable Drag From D4T to STIT	Hole Diameter from Area (HDAR) 125 (MM) 375		Hole Diameter Minimum (HDMI) 500 (MM) 0	Hole Diameter Minimum (HDMI) 0 (MM) 500
Tool/Tot. Drag From D4T to STIA	Hole Diameter 1 (HD1) 125 (MM) 375		HD difference From HDMX_1 to HDMI_1	HD difference From HDMI_2 to HDMX_2
Oval Standard Deviation (OSDV) 23 () 3	Tension (TENS) 50000 (N) 0		Formation From F3 to HDMX_1	Formation From HDMX_2 to F4
Fixed caliper flag From D4T to EFCF				
Probability angle for HDMI From D4T to CHAM				
Probability Angle for HDMI (CHAM) (DEG) 90 240				
Standard deviation for HDAR From OSDV to D4T				

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement 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	
	FBST-B: Full-Bore Scanner - B		
SOFF	Standoff	0	MM
	DSST-B: Dipole Shear Imager - B		
ITTS	Integrated Transit Time Source	DTCO	
	EMS-B: Environment Measurement Sonde		
ECOF	EMS Caliper Offset	50.8	MM
EFC	EMS Fixed Caliper Operation	OFF	
ESCL	EMS Synthetic Caliper Log	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	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	1.524	M
TDD	Total Depth - Driller	1011.00	M
TDL	Total Depth - Logger	1010.70	M
	System and Miscellaneous		
BS	Bit Size	216.000	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	NORMAL	
TD	Total Depth	987	M

Format: EMS_HoleDiameter Vertical Scale: 1:240 Graphics File Created: 09-Mar-2005 12:56

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
EMS-B	12C0-301	SGT-N	12C0-301
DTC-H	12C0-301		

Input DLIS Files

DEFAULT	FMI_DSI_EMS_020LUP	FN:19	PRODUCER	09-Mar-2005 11:07	1013.8 M	0.0 M

Output DLIS Files

DEFAULT	FMI_DSI_EMS_034PUP	FN:37	PRODUCER	09-Mar-2005 12:56
FMI	FMI_DSI_EMS_034PUP	FN:38	PRODUCER	09-Mar-2005 12:56

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Full-Bore Scanner - B Wellsite Calibration - Caliper Calibration							
Before: 5-Mar-2005 14:09							
Caliper 1 Small Jig	203.2	N/A	205.8	N/A	N/A	N/A	MM
Caliper 2 Small Jig	203.2	N/A	199.5	N/A	N/A	N/A	MM
Caliper 1 Large Jig	304.8	N/A	297.8	N/A	N/A	N/A	MM
Caliper 2 Large Jig	304.8	N/A	293.5	N/A	N/A	N/A	MM
Full-Bore Scanner - B Wellsite Calibration - CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 9-Mar-2005 9:26							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	95	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	3	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	513	N/A	N/A	N/A	
Full-Bore Scanner - B Wellsite Calibration - CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 9-Mar-2005 9:26							
TEMPERATURE REFERENCE :	N/A	N/A	21	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	3	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	1	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	368	N/A	N/A	N/A	
Environment Measurement Sonde Wellsite Calibration - EMS Caliper Calibration							
Before: 22-Feb-2005 11:50							
Radius 1 Short Radius	101.6	N/A	95.99	N/A	N/A	5.080	MM
Radius 1 Long Radius	203.2	N/A	200.3	N/A	N/A	5.080	MM
Radius 2 Short Radius	101.6	N/A	84.78	N/A	N/A	5.080	MM
Radius 2 Long Radius	203.2	N/A	189.6	N/A	N/A	5.080	MM
Radius 3 Short Radius	101.6	N/A	82.86	N/A	N/A	5.080	MM
Radius 3 Long Radius	203.2	N/A	187.3	N/A	N/A	5.080	MM
Radius 4 Short Radius	101.6	N/A	81.48	N/A	N/A	5.080	MM
Radius 4 Long Radius	203.2	N/A	186.9	N/A	N/A	5.080	MM
Radius 5 Short Radius	101.6	N/A	87.25	N/A	N/A	5.080	MM
Radius 5 Long Radius	203.2	N/A	192.9	N/A	N/A	5.080	MM
Radius 6 Short Radius	101.6	N/A	80.38	N/A	N/A	5.080	MM
Radius 6 Long Radius	203.2	N/A	185.3	N/A	N/A	5.080	MM
Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration							
Before: 28-Feb-2005 12:40							
Gamma Ray (Jig - Bkg)	159.3	N/A	159.3	N/A	N/A	14.48	GAPI
Gamma Ray (Calibrated)	166.0	N/A	166.0	N/A	N/A	15.00	GAPI

Full-Bore Scanner - B / Equipment Identification

Primary Equipment:		
FullBore Scanner Sonde	FBSS - B	
FullBore Scanner Sonde Upper part	FBSH - A	
FullBore Scanner Sonde Cartridge	FBSC - B	
GPIT Cartridge - C	GPIC - C	
Insulating Sub	AH - 185	
Flex Joint	AH - 184	
FullBore Scanner Control Cartridge	FBCC - A	
Auxiliary Equipment:		
Electronics Cartridge Housing	ECH - MRA	

Full-Bore Scanner - B Wellsite Calibration

Caliper Calibration

Phase	Caliper 1 Small Jig MM	Value	Phase	Caliper 2 Small Jig MM	Value
Before	172.7 (Minimum) / 203.2 (Nominal) / 233.7 (Maximum)	205.8	Before	172.7 (Minimum) / 203.2 (Nominal) / 233.7 (Maximum)	199.5
Phase	Caliper 1 Large Jig MM	Value	Phase	Caliper 2 Large Jig MM	Value
Before	259.1 (Minimum) / 304.8 (Nominal) / 350.5 (Maximum)	297.8	Before	259.1 (Minimum) / 304.8 (Nominal) / 350.5 (Maximum)	293.5

Before: 5-Mar-2005 14:09

Environment Measurement Sonde / Equipment Identification

Primary Equipment:		
EMS Mechanical	EMM - B	8001
EMS Cartridge	EMC - B	8003
Auxiliary Equipment:		
Electronics Cartridge Housing	ECH - KH	8005

Environment Measurement Sonde Wellsite Calibration

EMS Caliper Calibration

Phase	Radius 1 Short Radius MM	Value	Phase	Radius 1 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	95.99	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	200.3
Phase	Radius 2 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	84.78	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	189.6
Phase	Radius 3 Short Radius MM	Value	Phase	Radius 3 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	82.86	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	187.3
Phase	Radius 4 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	81.48	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	186.9
Phase	Radius 5 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	87.25	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	192.9
Phase	Radius 6 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value
Before	76.20 (Minimum) / 101.6 (Nominal) / 127.0 (Maximum)	80.38	Before	177.8 (Minimum) / 203.2 (Nominal) / 228.6 (Maximum)	185.3

Before: 22-Feb-2005 11:50

Scintillation Gamma-Ray - N / Equipment Identification

Primary Equipment:		
Scintillation Gamma Cartridge	SGC - TB	9591
Scintillation Gamma Detector	SGD - TAA	
Auxiliary Equipment:		
Scintillation Gamma Housing	SGH - K	2453
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	Value
Before	0 (Minimum) / 30.00 (Nominal) / 120.0 (Maximum)	20.58	Before	144.8 (Minimum) / 159.3 (Nominal) / 173.8 (Maximum)	159.3	Before	151.0 (Minimum) / 166.0 (Nominal) / 181.0 (Maximum)	166.0

Before: 28-Feb-2005 12:40

Company:	APACHE CANADA LTD.
Well:	APACHE PARAMOUNT LAC MAUNOIR E-35
Field:	NWT
Territory:	NORTHWEST TERRITORIES

Schlumberger

*** MD ***

EMS CEMENT VOLUME