Schlumberger

Company: **JOGMEC**

Well: **AURORA/JOGMEC/NRCAN MALLIK 2L−38**
Field: **MALLIK**
Province: **NWT**

Province: NWT
Field: MALLIK
Location: GRID: 69−30−134−3(
Well: AURORA/JOGMEC/NRCAN MALLIK 2L−38
Company: JOGMEC

ENVIRONMENTAL MEASUREMENT
SONDE LOG (CALIPER)

LOCATION

GRID: 69−30−134−3(
UWID: 302 L38 69−30−134−301

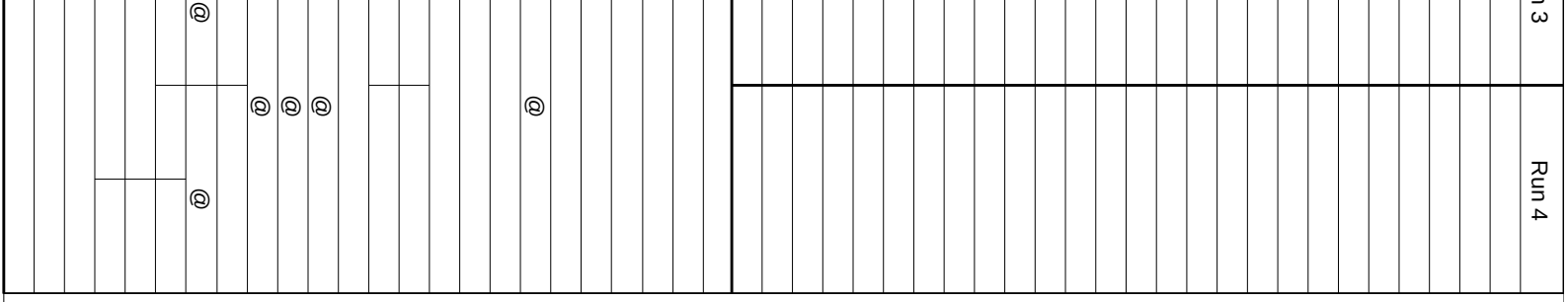
Elev.: K.B. 10.55 m
G.L. 1 m
D.F. 10.25 m

Permanent Datum: GROUND LEVEL — Elev.: 1 m
Log Measured From: KELLY BUSHING — 9.6 m above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.
1163

		Run 1	Run 2	Run
Logging Date	3−Mar−2007			
Run Number	ONE			
Depth Driller	1147 m			
Schlumberger Depth	1133 m			
Bottom Log Interval	1114.5 m			
Top Log Interval	677 m			
Casing Driller Size @ Depth	339.700 mm @ 677 m	@	@	
Casing Schlumberger	678 m			
Bit Size	361.950 mm			
Type Fluid In Hole	KCL POLYMER			
MUD Density / Viscosity	1120 kg/m3 / 63 s			
MUD Fluid Loss / PH	5 cm3 / 8.9			
MUD Source Of Sample	FLOWLINE			
RM @ Measured Temperature	0.113 ohm.m @ 21 degC	@	@	
RMF @ Measured Temperature	0.150 ohm.m @ 22 degC	@	@	
RMC @ Measured Temperature	0.158 ohm.m @ 21 degC	@	@	
Source RMF / RMC	PRESS / PRESS			
RM @ MRT / RMF @ MRT	0.154 @ 9 / 0.210 @ 9	@ / @	@ / @	
Maximum Recorded Temperatures	9 degC			
Circulation Stopped / Time	2−Mar−2007 / 19:00			
Logger On Bottom / Time	3−Mar−2007 / 08:30			
Unit Number / Location	1803 / NISKU, AB			
Recorded By	LANNY LAROCHE			
Witnessed By	TOKUJIRO TAKAYAMA			

	Run 1	Run 2	Run
Logging Date			
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: 3−MAR−2007 9:28:42

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46P−XS
Serial Number:	6423	Serial Number:	2565	Serial Number:	−999
Calibration Date:	09−JAN−2007	Calibration Date:	06−FEB−2007	Length:	6399.89 M
Calibrator Serial Number:	4	Calibrator Serial Number:	1111		
Calibration Cable Type:	7−46P−XS	Calibration Gain:	0.84	Conveyance Method:	Wireline
Wheel Correction 1:	−6	Calibration Offset:	−14.00	Rig Type:	LAND
Wheel Correction 2:	−7				

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:	0.40 M
Tool Zero Check At Surface:	0.20 M

Depth Control Remarks

1. SPEED CORRECTION NOT APPLIED ON WELLSITE
2. UPLOG CORRELATED TO DOWNLOG
3.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: AIT−TLD−HGNS−CMR−EMS	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
AIT LOGGED WITH 2.5in STANDOFF AND ECCENTERED WITH NON−CONDUCTIVE BOWSPRING	
TLD HAS LARGE HOLE KIT CALIPER INSTALLED	
HGNS HAS LARGE HOLE KIT INSTALLED	
CMR ECCENTERED WITH LARGE HOLE ECCENTRALIZER	
EMS HAS LARGE HOLE KIT INSTALLED	
BS = 12.25" FROM SC−900M	

BS = 14.25" FROM 900−1133M

BS = 9.875" FROM 1133−1147M

SLB ONLY LOGGED DOWN TO 1133M

REPEAT PERFORMED OVER 950−1050M

RIG: AKITA 62

CREW: JAMES MACDONALD / MARK KIMBALL / MIKE KLOC

RUN 1		RUN 2	
SERVICE ORDER #:	11709032	SERVICE ORDER #:	
PROGRAM VERSION:	14C0−302	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

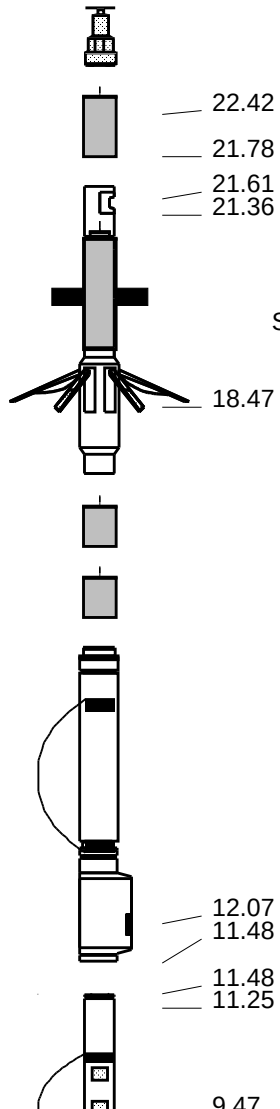
RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y 6710
NCT−B
CNB−AB
NCS−VB

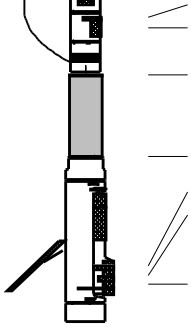
WITM (DTS)−A

DOWNHOLE EQUIPMENT



NSR−F 5196
HACCZ−H
HCNT−H
HGR
HRCC−H 4721
HRMS−H 4707
HRGD−H 4761
GLS−VJ 1904
MCFL Device−H
HILT Nucl. LS−H
HILT Nucl. SS−H
HILT Nucl. BS−H
BOW−SPR
NPV−N

Neutron N — 9.32
HGNS sens — 8.61
HRCC cart — 7.39
MCFL — 5.73
HILT cali — 5.59
HRDD−LS
HRDD−SS
HRDD−BS — 5.47



AIT−M
AMIS−A 175
AMRM−A

4.88
64 MM Standoff

Induction
Temperatu
Power Sup — 2.41
SP SENSOR — 0.03
DF
Cartridge HV
HTEN HMAS
Accelerom
Mud Resis
Tension — 0.00

TOOL ZERO

64 MM Standoff

MAXIMUM STRING DIAMETER 250 MM
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Schlumberger

MAIN PASS: ENVIRONMENTAL MEASUREMENT CALIPER

MAXIS Field Log

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03−Mar−2007 11:47	1134.3 M	622.9 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03−Mar−2007 11:51	1134.3 M	624.7 M
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03−Mar−2007 11:51	1134.3 M	624.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 63.80 M3

Cement Volume = 42.33 M3 (assuming 244.50 MM casing O.D.)

Computed from 1134.3 M to 677.1 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 14C0−302

MCM

AIT−M	14C0−302	HILTH−FTB	14C0−302
EMS−B	14C0−302	DTC−H	14C0−302

PIP SUMMARY

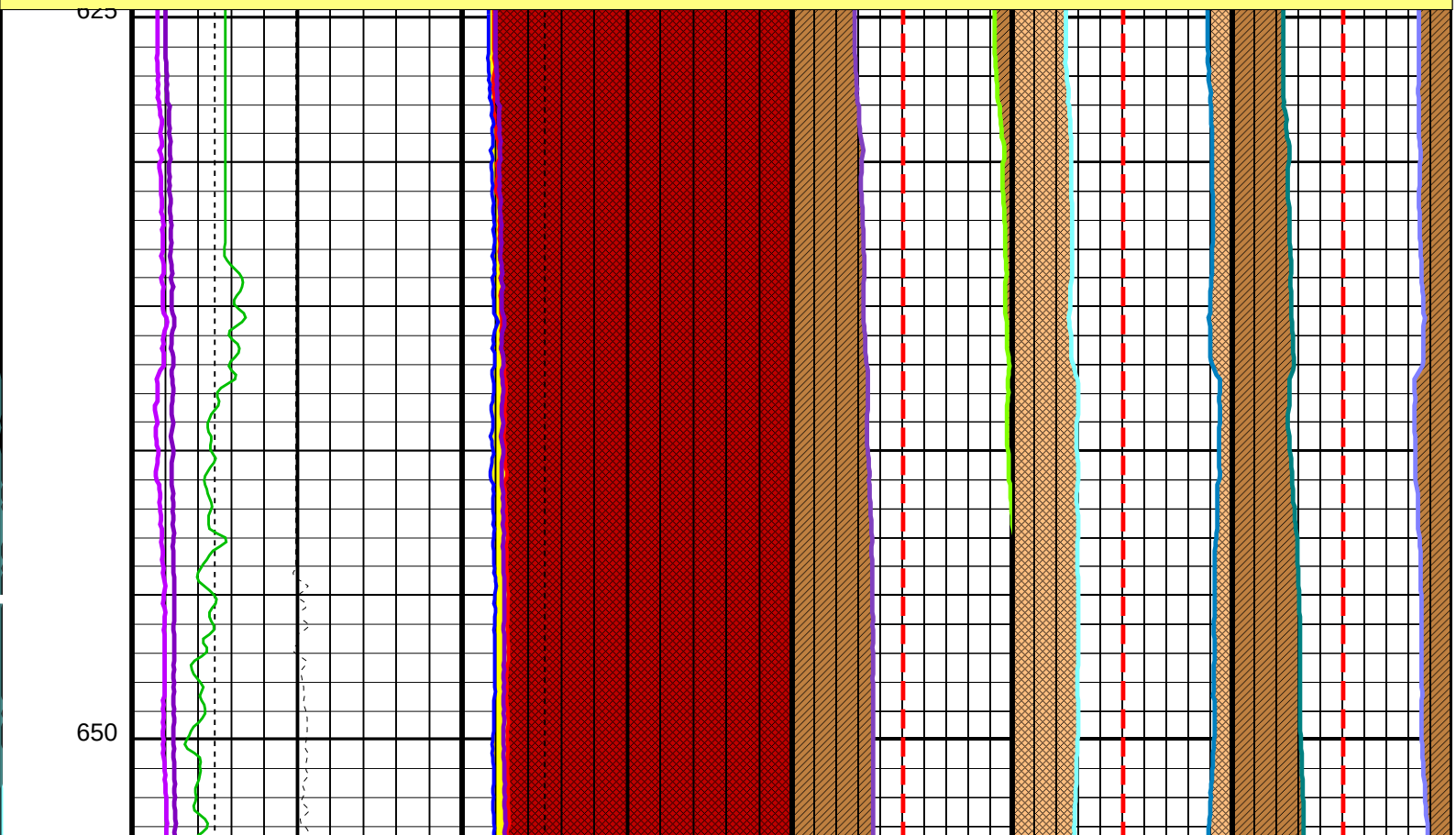
- **Integrated Hole Volume Minor Pip Every 0.1 M3**
- **Integrated Hole Volume Major Pip Every 1 M3**
  - **Integrated Cement Volume Minor Pip Every 0.1 M3**

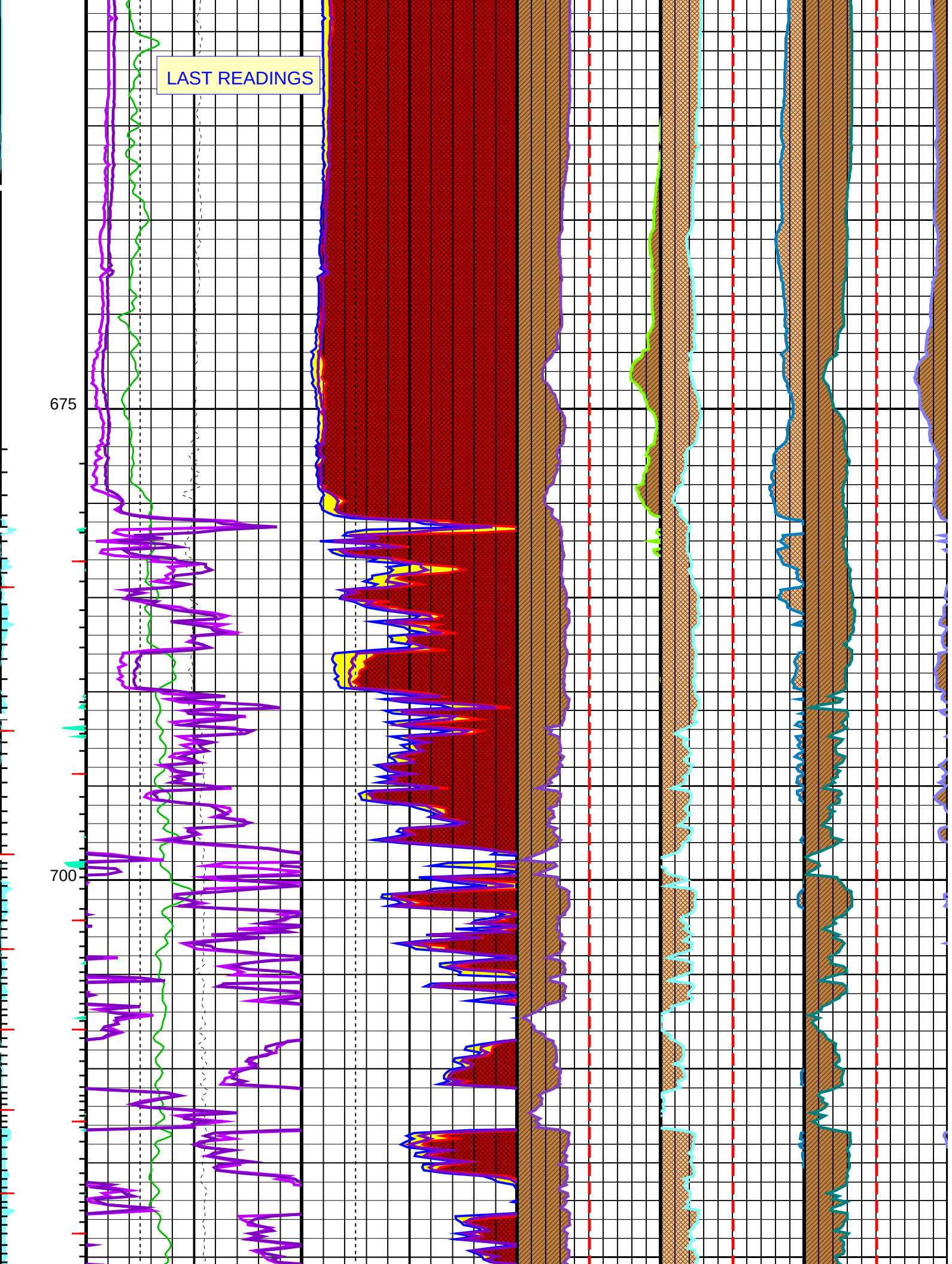
Integrated Cement Volume Major Pip Every 1 M3

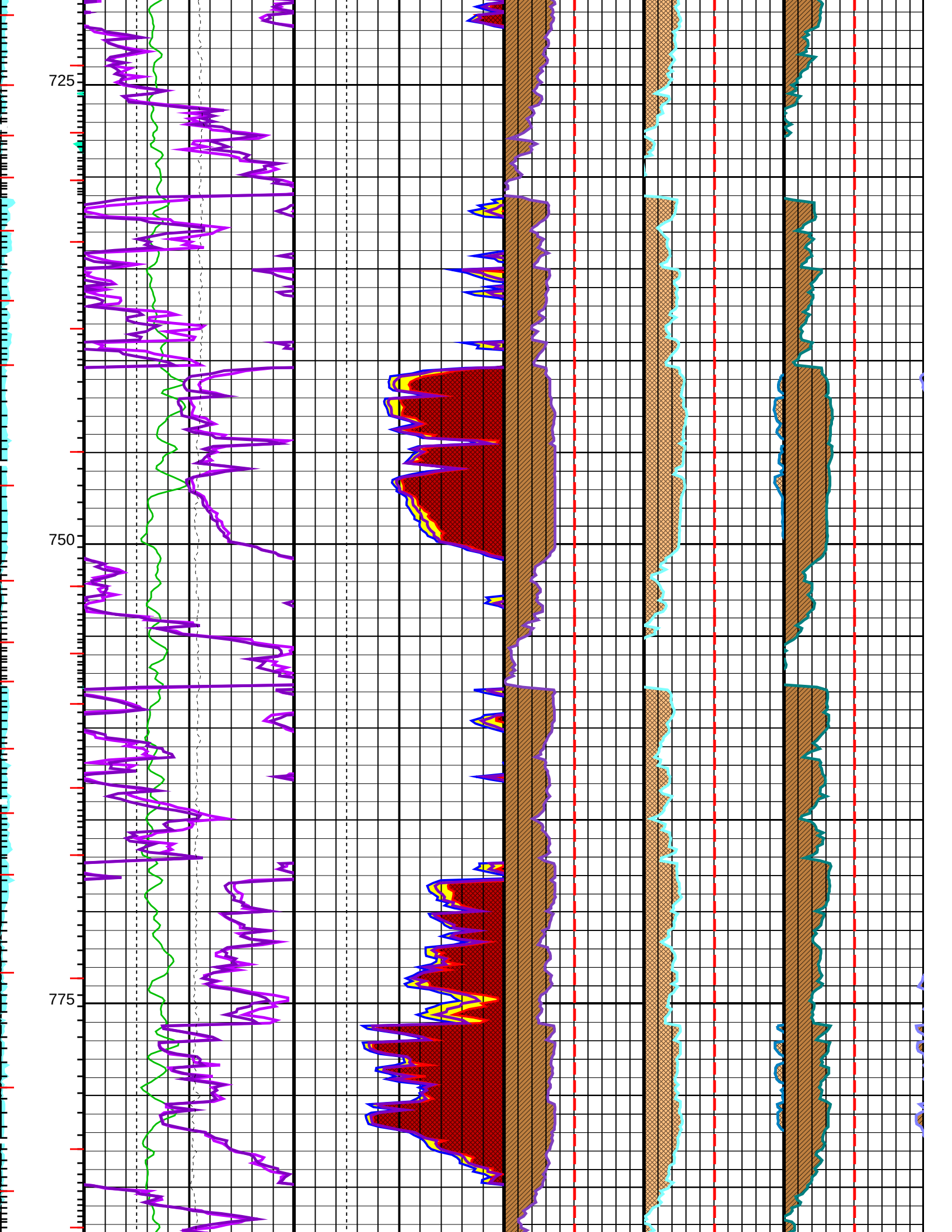
Time Mark Every 60 S

Standard deviation for HDAR From OSDV to D4T		Formation From HDMX to F2			
Probability Angle for HDMI (CHAM) (DEG) 90 240	Tension (TENS) 25000 (N) 0	HD difference From HDMI to HDMX	Formation From RD4 to RHT2	Formation From RD5 to LHT3	Formation From RHT3 to RD6
Probability angle for HDMI From D4T to CHAM	Hole Diameter from Area (HDAR) 300 (MM) 550	Hole Diameter from Area (HDAR) 300 (MM) 550	Formation From RHT2 to RD1	Formation From LHT3 to RD2	Formation From RD3 to RHT3
Fixed caliper flag From D4T to EFCF	Hole Diameter 1 (HD1) 300 (MM) 550	Hole Diameter Minimum (HDMI) 300 (MM) 550	Radius 4 (RD4) −250 (MM) 250	Radius 5 (RD5) −250 (MM) 250	Radius 6 (RD6) 250 (MM) −250
Oval Standard Deviation (OSDV) 23 () 3	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 300 (MM) 550	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) 300 (MM) 550	Bit Size (BS) 300 (MM) 550	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 ***




LAST READINGS
675
700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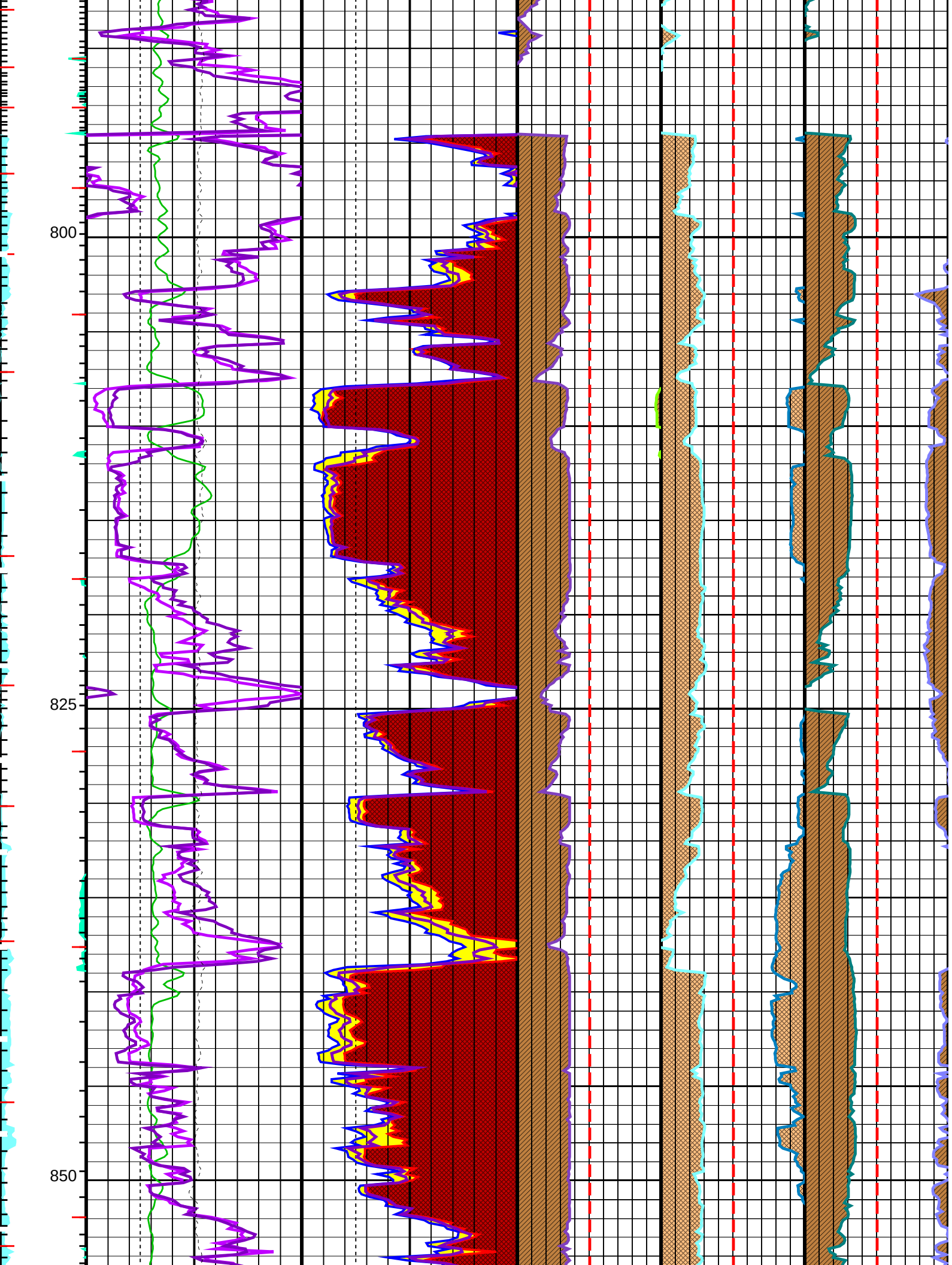
750
775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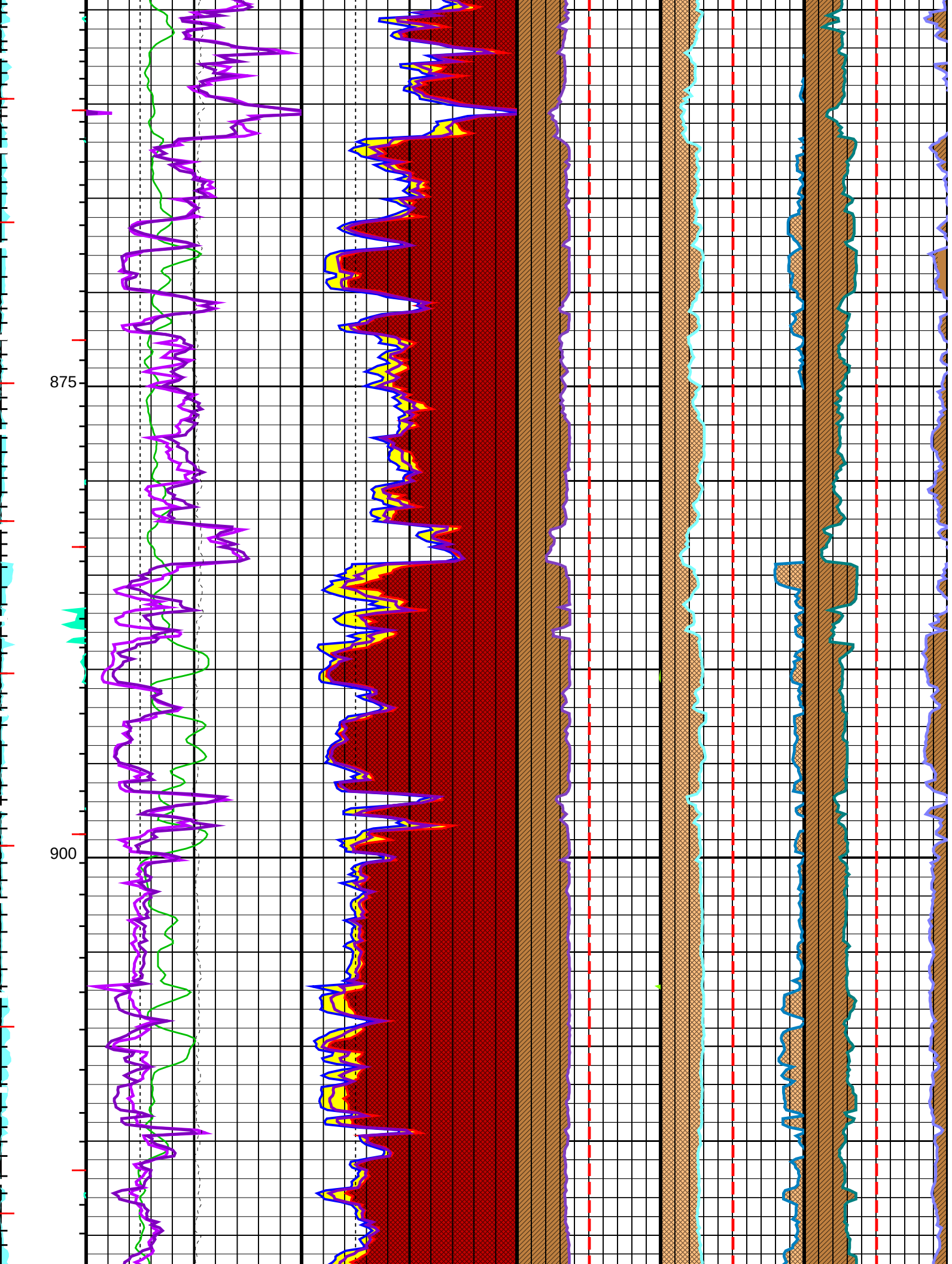
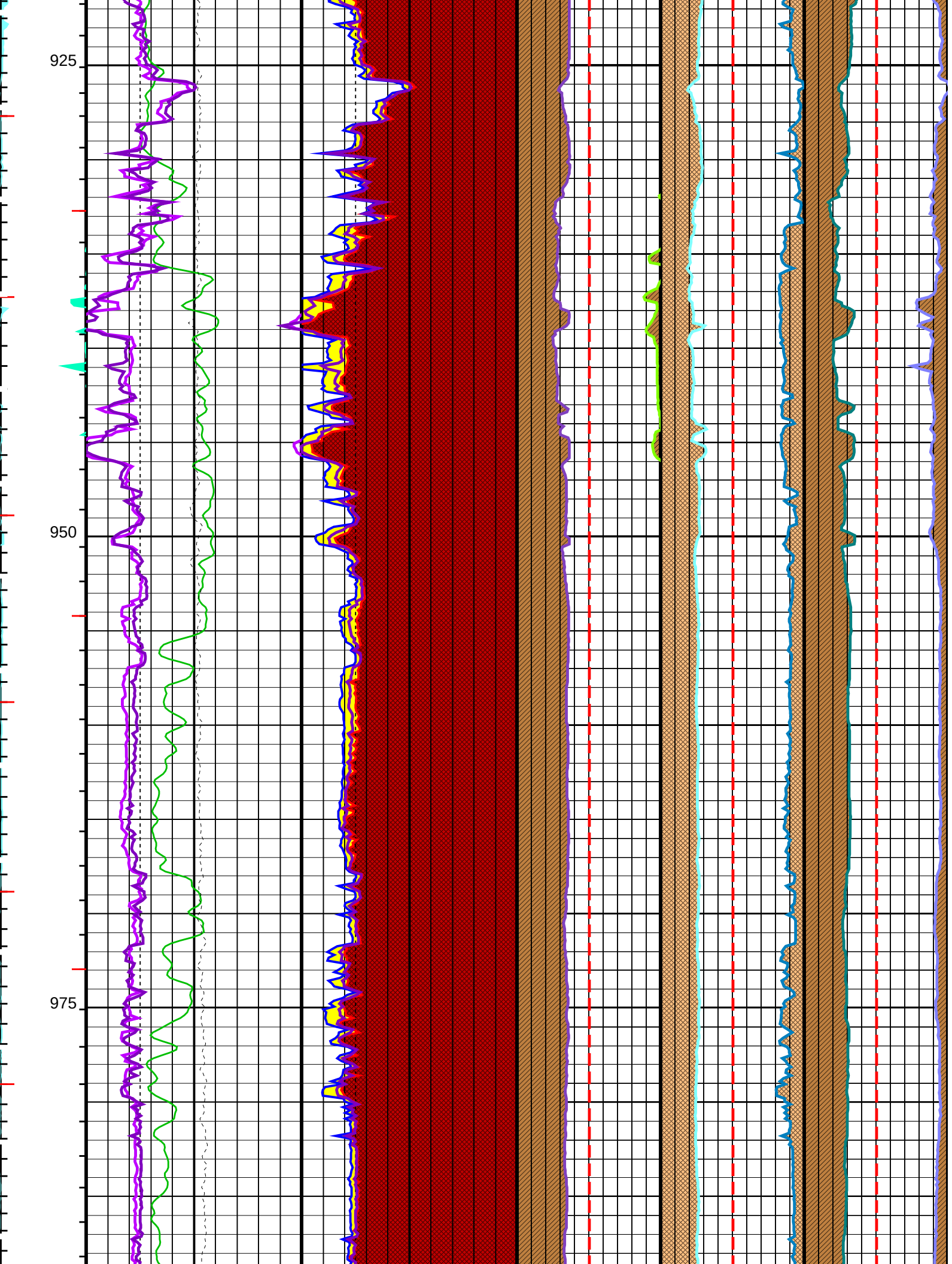
825
850


875
900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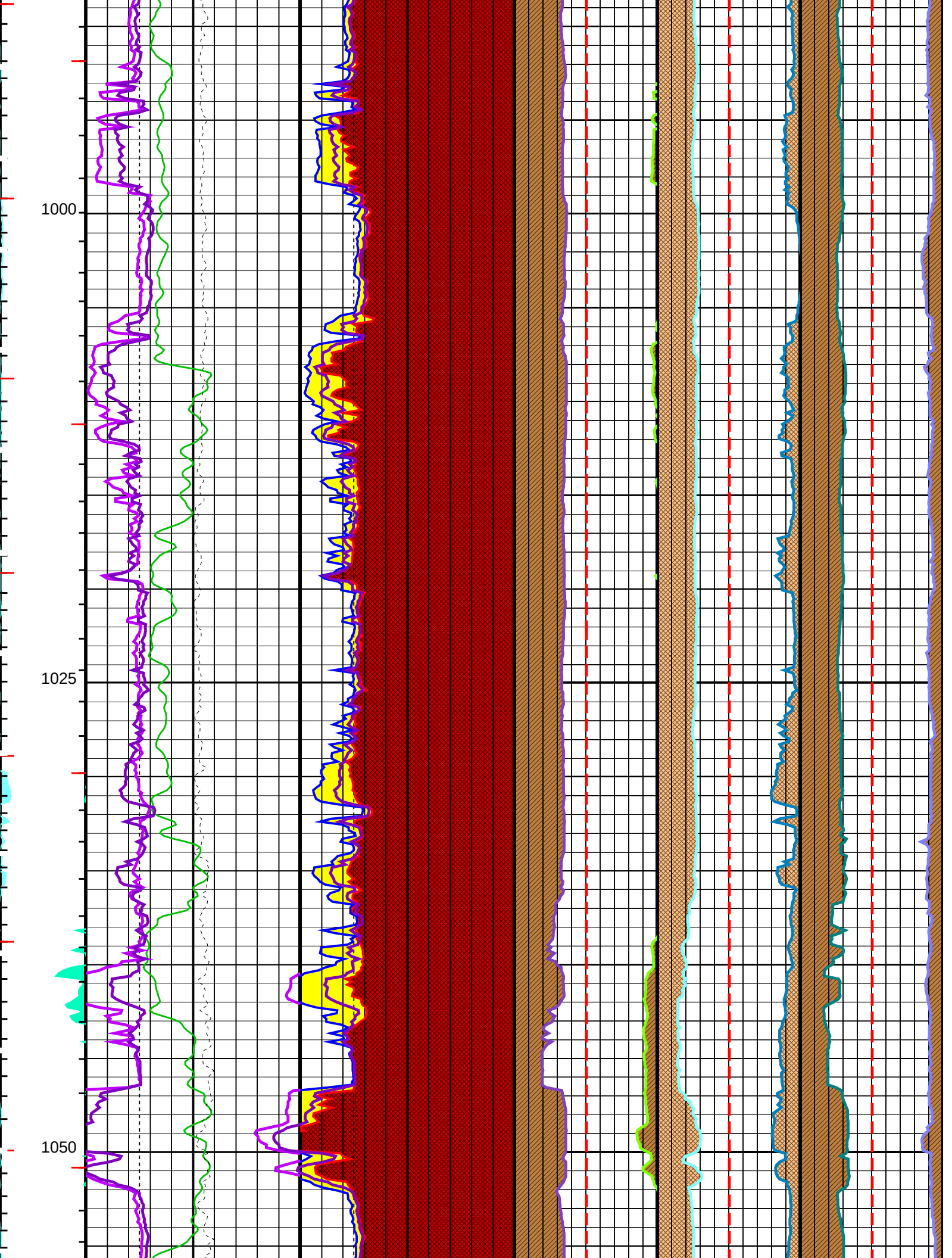
950
975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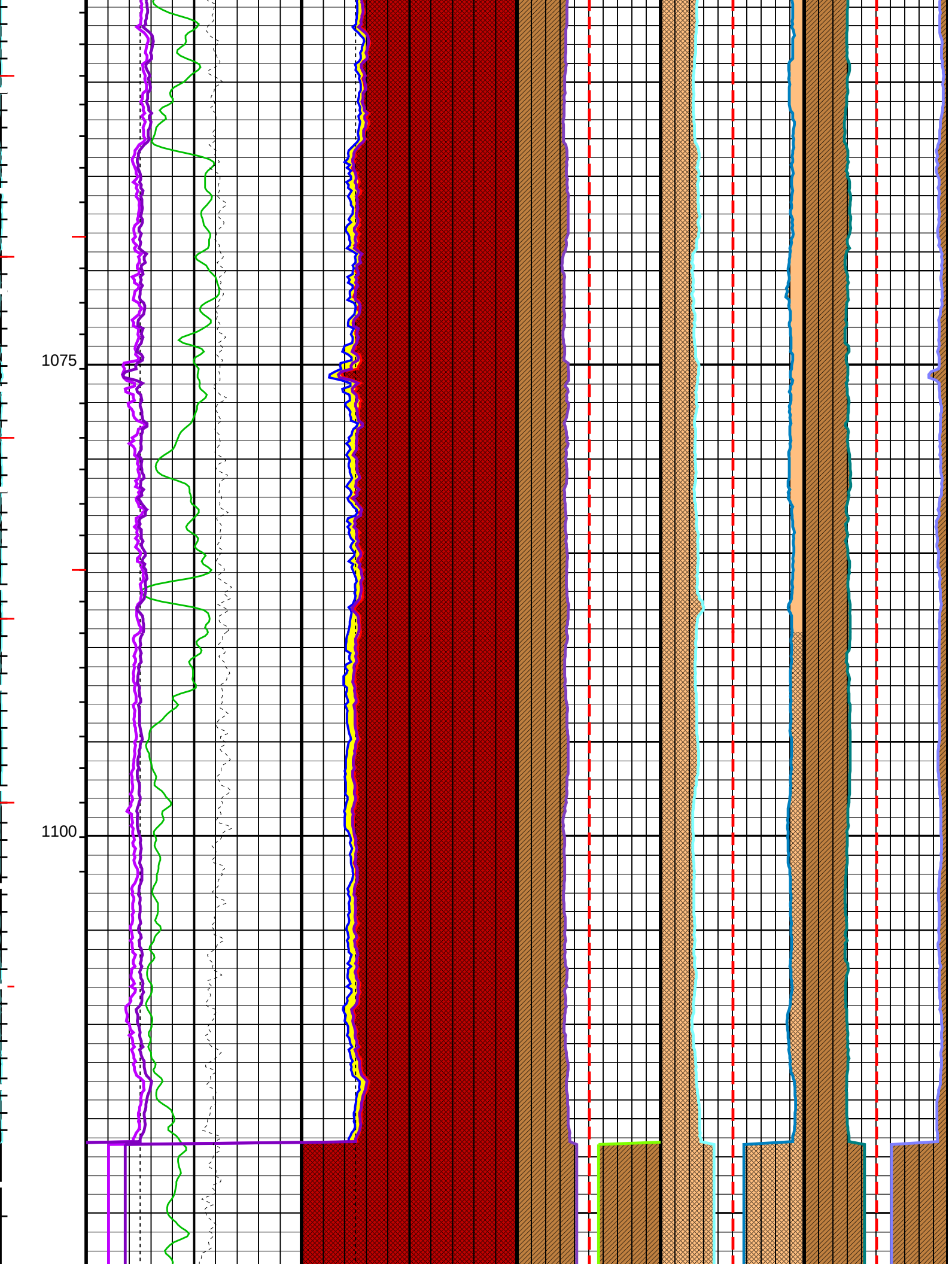
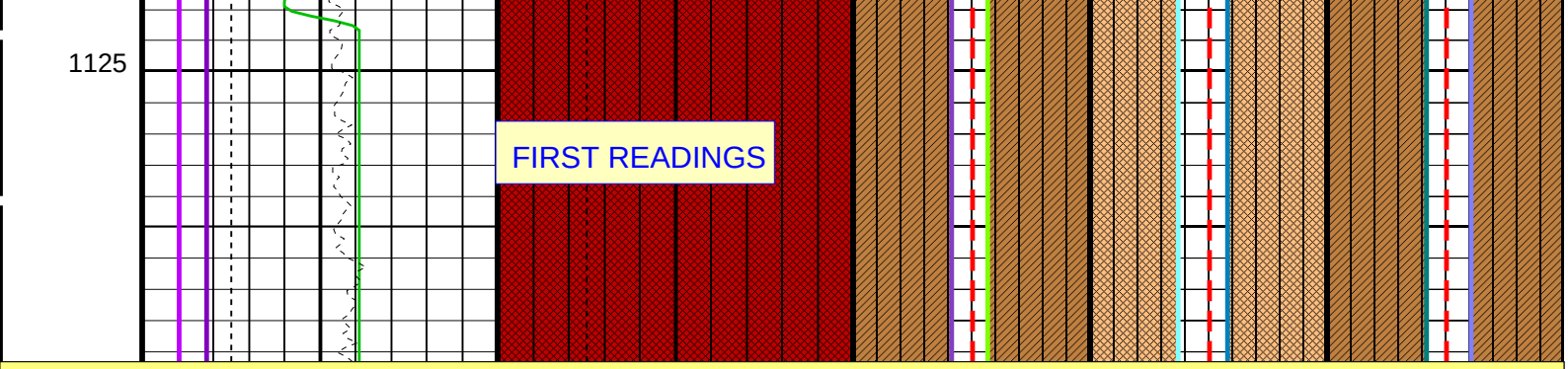

1075
1100



MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***

EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 300 (MM) 550	Bit Size (BS) 300 (MM) 550	EMS Tool Center (ETC1) 250 (MM) −250	EMS Tool Center (ETC2) 250 (MM) −250	EMS Tool Center (ETC3) 250 (MM) −250
Oval Standard Deviation (OSDV) 23 () 3	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 300 (MM) 550	Radius 1 (RD1) 250 (MM) −250	Radius 2 (RD2) 250 (MM) −250	Radius 3 (RD3) −250 (MM) 250
Fixed caliper flag From D4T to EFCF	Hole Diameter 1 (HD1) 300 (MM) 550	Hole Diameter Minimum (HDMI) 300 (MM) 550	Radius 4 (RD4) −250 (MM) 250	Radius 5 (RD5) −250 (MM) 250	Radius 6 (RD6) 250 (MM) −250
Probability angle for HDMI From D4T to CHAM	Hole Diameter from Area (HDAR) 300 (MM) 550	Hole Diameter from Area (HDAR) 300 (MM) 550	Formation From RHT2 to RD1	Formation From LHT3 to RD2	Formation From RD3 to RHT3
Probability Angle for HDMI (CHAM) (DEG) 90 240	Tension (TENS) 25000 (N) 0	HD difference From HDMI to HDMX	Formation From RD4 to RHT2	Formation From RD5 to LHT3	Formation From RHT3 to RD6
Standard deviation for HDAR From OSDV to D4T		Formation From HDMX to F2			

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	
ESCL	EMS Synthetic Caliper Log	OFF	
FCD	Future Casing (Outer) Diameter	244.5	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	244.5	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	System and Miscellaneous		

BS	Bit Size	361.950	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	1147	M

Format: EMS_Caliper1 Vertical Scale: 1:240 Graphics File Created: 03−Mar−2007 11:51

OP System Version: 14C0−302

MCM

AIT−M	14C0−302	HILTH−FTB	14C0−302
EMS−B	14C0−302	DTC−H	14C0−302

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03−Mar−2007 11:47	1134.3 M	622.9 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03−Mar−2007 11:51		
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03−Mar−2007 11:51		

Schlumberger

MAIN PASS: ENVIRONMENTAL MEASUREMENT HOLE DIAMETER

MAXIS Field Log

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03−Mar−2007 11:47	1134.3 M	622.9 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03−Mar−2007 11:51	1134.3 M	624.7 M
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03−Mar−2007 11:51	1134.3 M	624.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 63.80 M3

Cement Volume = 42.33 M3 (assuming 244.50 MM casing O.D.)

Computed from 1134.3 M to 677.1 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 14C0−302

MCM

AIT−M	14C0−302	HILTH−FTB	14C0−302
EMS−B	14C0−302	DTC−H	14C0−302

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

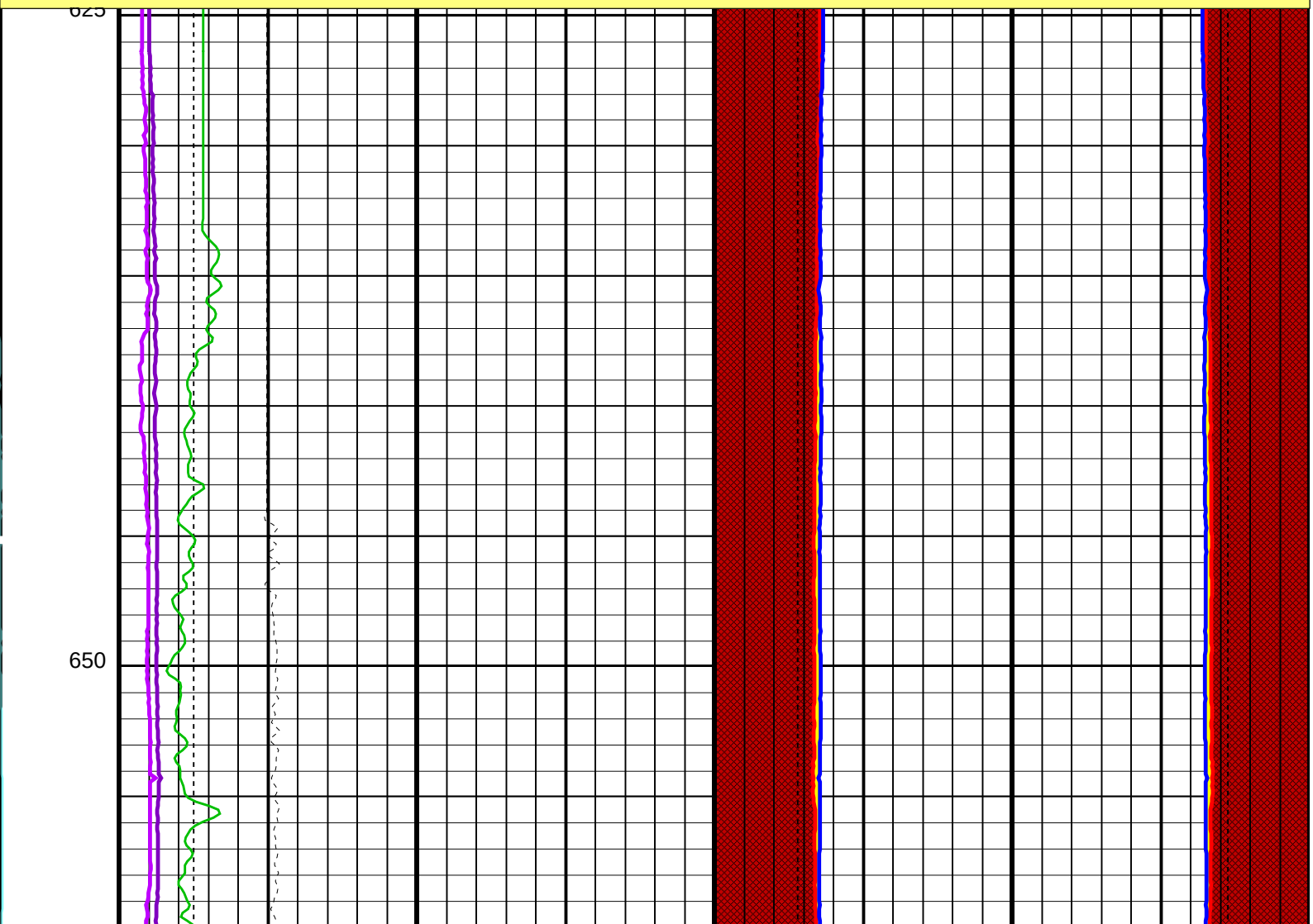
Time Mark Every 60 S

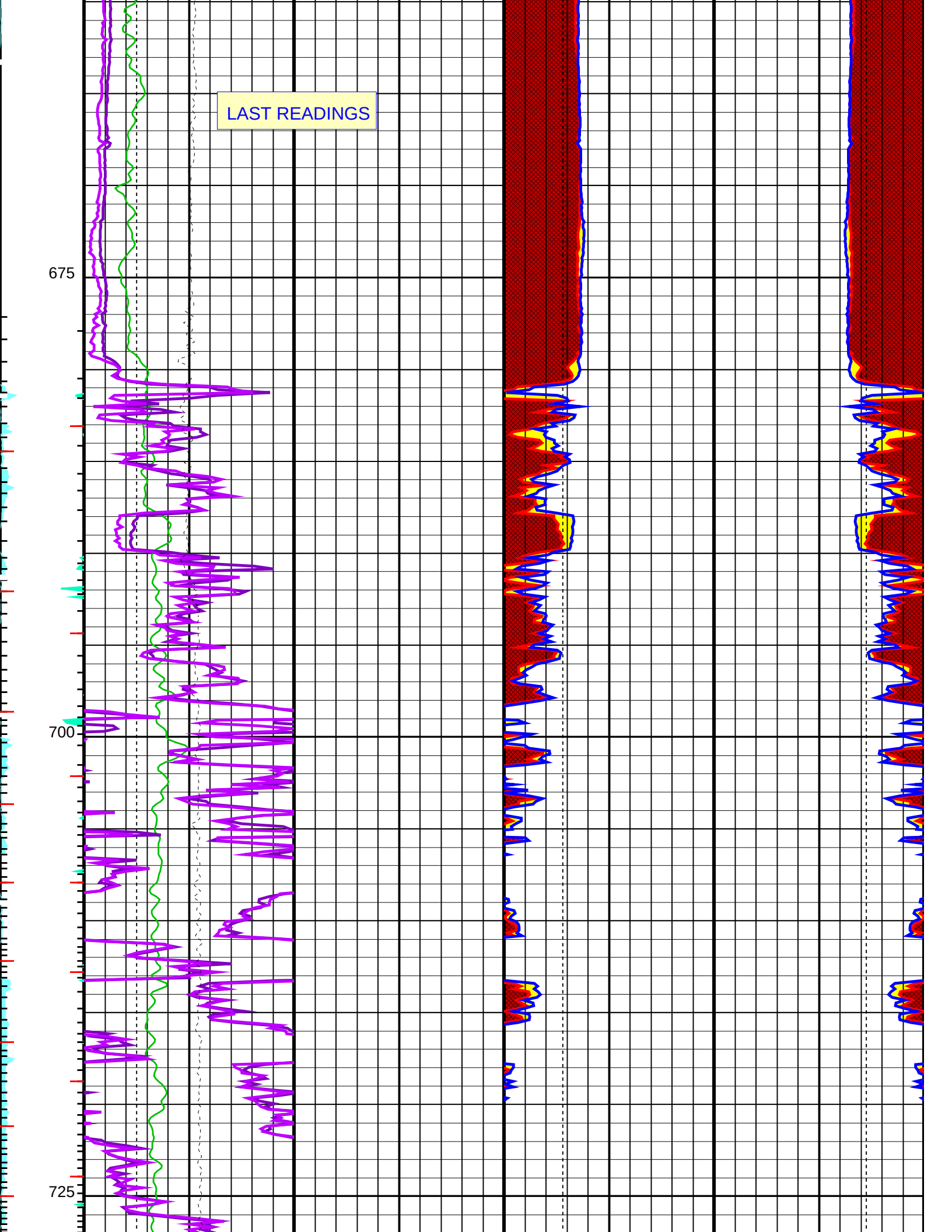
Standard deviation for HDAR From OSDV to

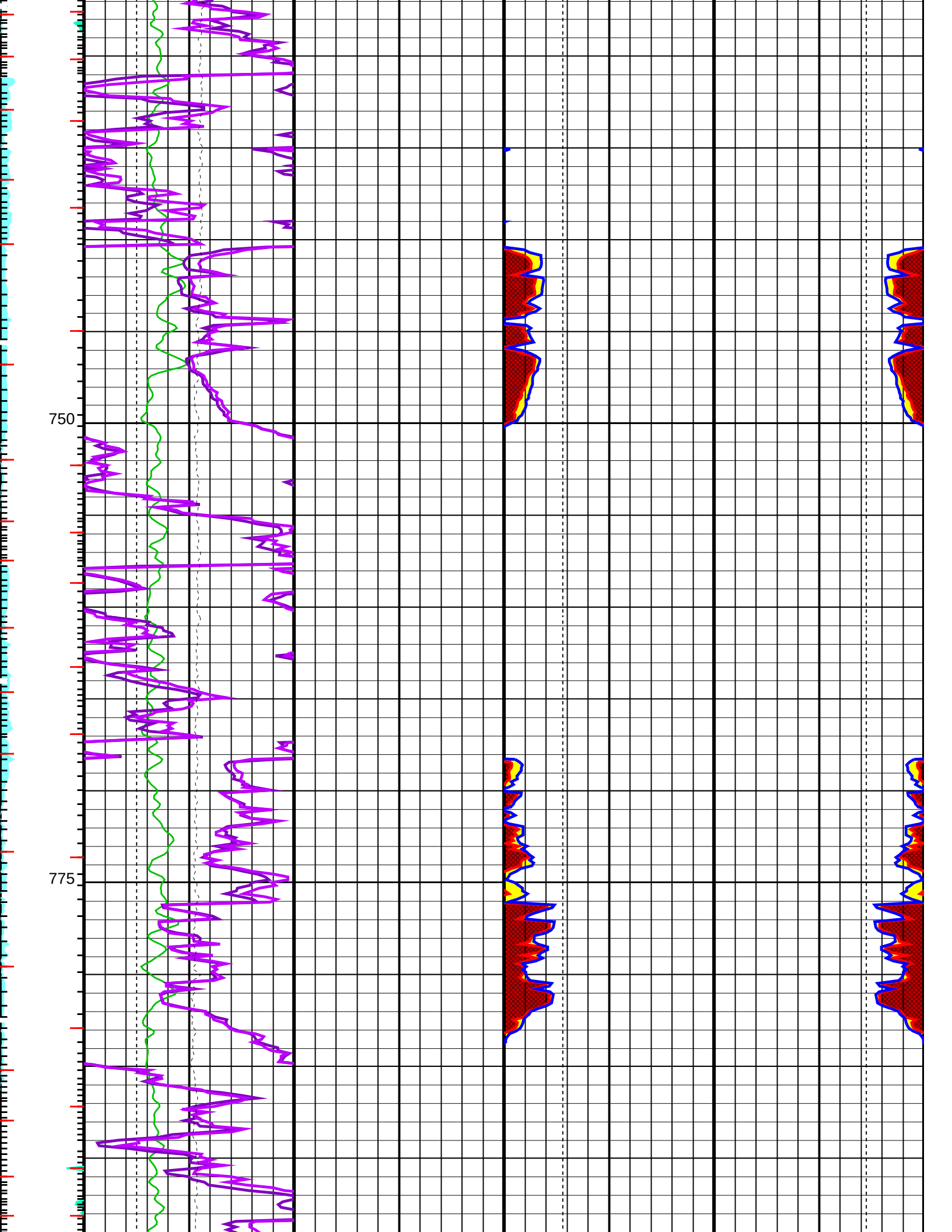
D4T

Probability Angle for HDMI (CHAM) (DEG) 90 240	Tension (TENS) 25000 (N) 0	Formation From F3 to HDMX_1	Formation From HDMX_2 to F4
Probability angle for HDMI From D4T to CHAM	Hole Diameter 1 (HD1) 300 (MM) 550	HD difference From HDMX_1 to HDMI_1	HD difference From HDMI_2 to HDMX_2
Fixed caliper flag From D4T to EFCF	Hole Diameter from Area (HDAR) 300 (MM) 550	Hole Diameter Minimum (HDMI) 500 (MM) 0	Hole Diameter Minimum (HDMI) 0 (MM) 500
Oval Standard Deviation (OSDV) 23 () 3	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 500 (MM) 0	Hole Diameter Maximum (HDMX) 0 (MM) 500
EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 300 (MM) 550	Bit Size (BS) 500 (MM) 0	Bit Size (BS) 0 (MM) 500

MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***




LAST READINGS
675
700
725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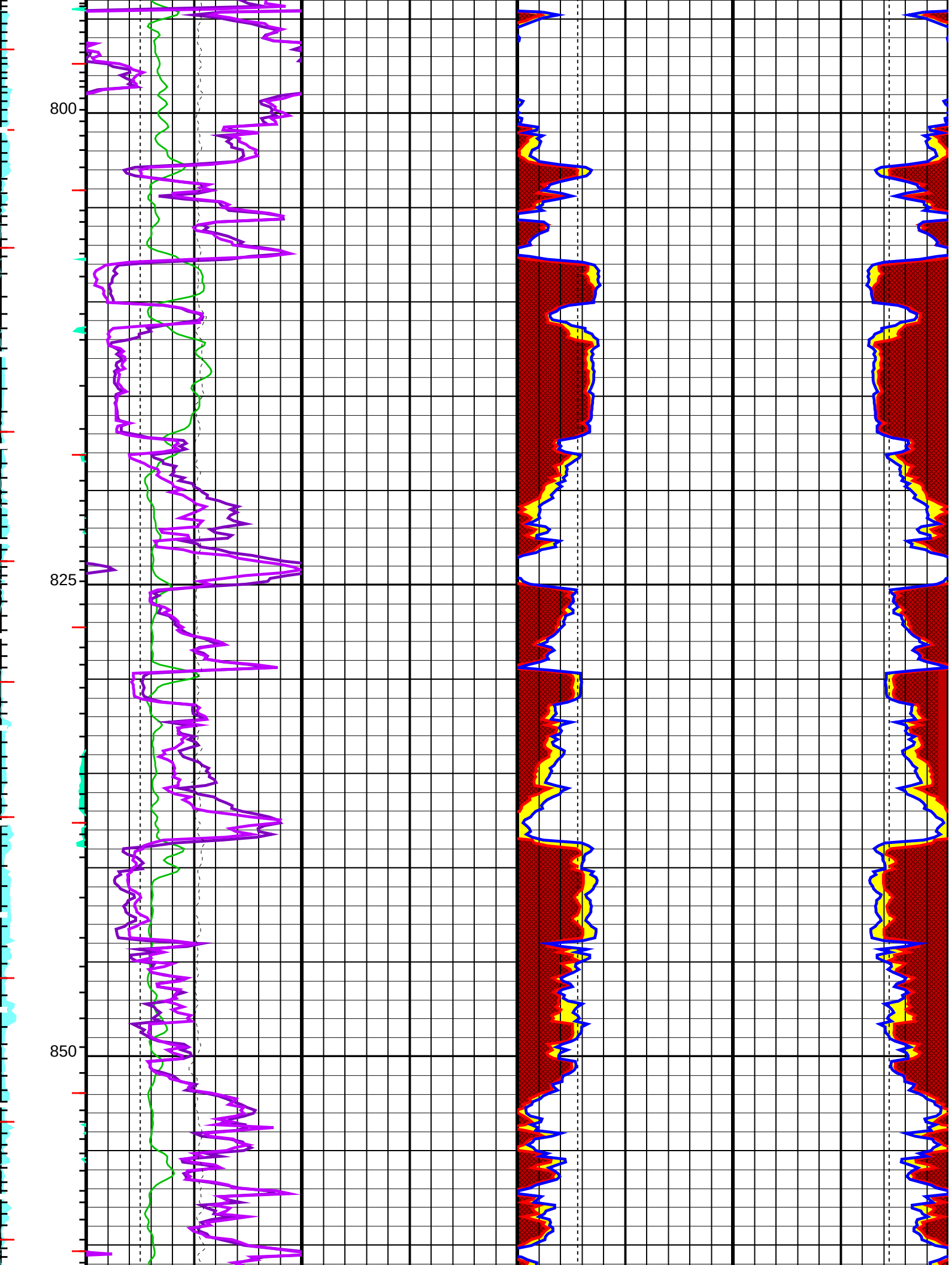
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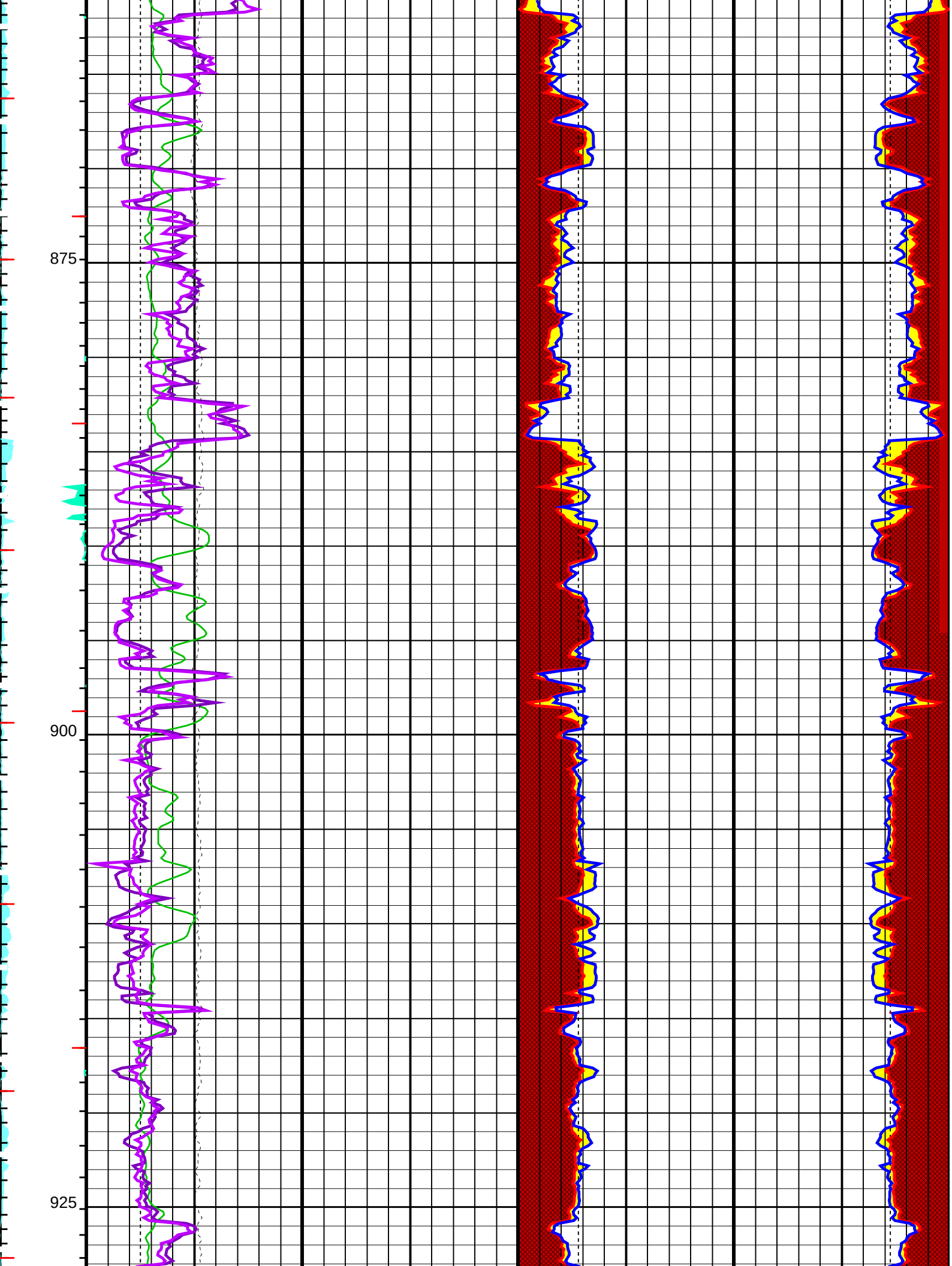
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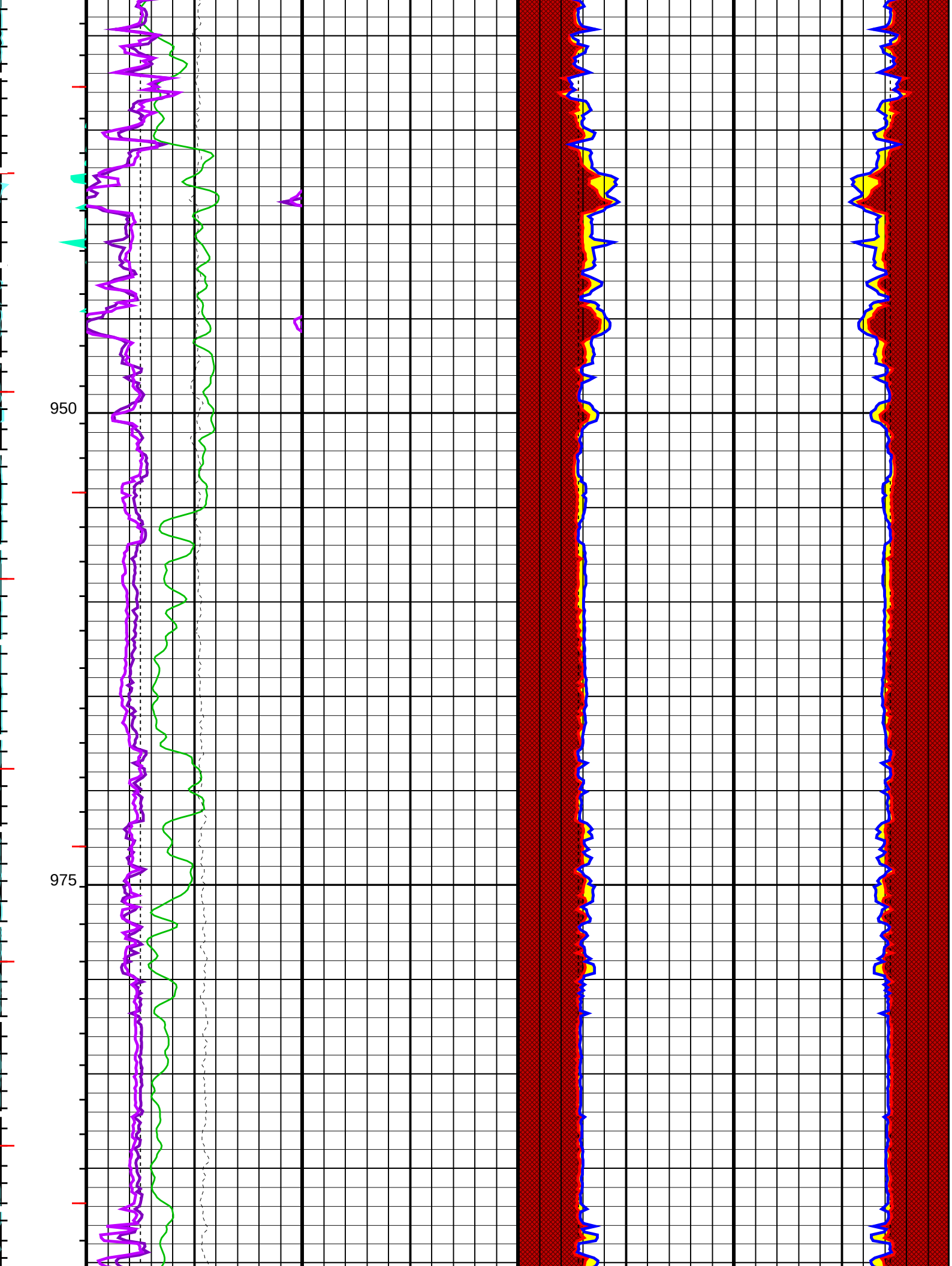
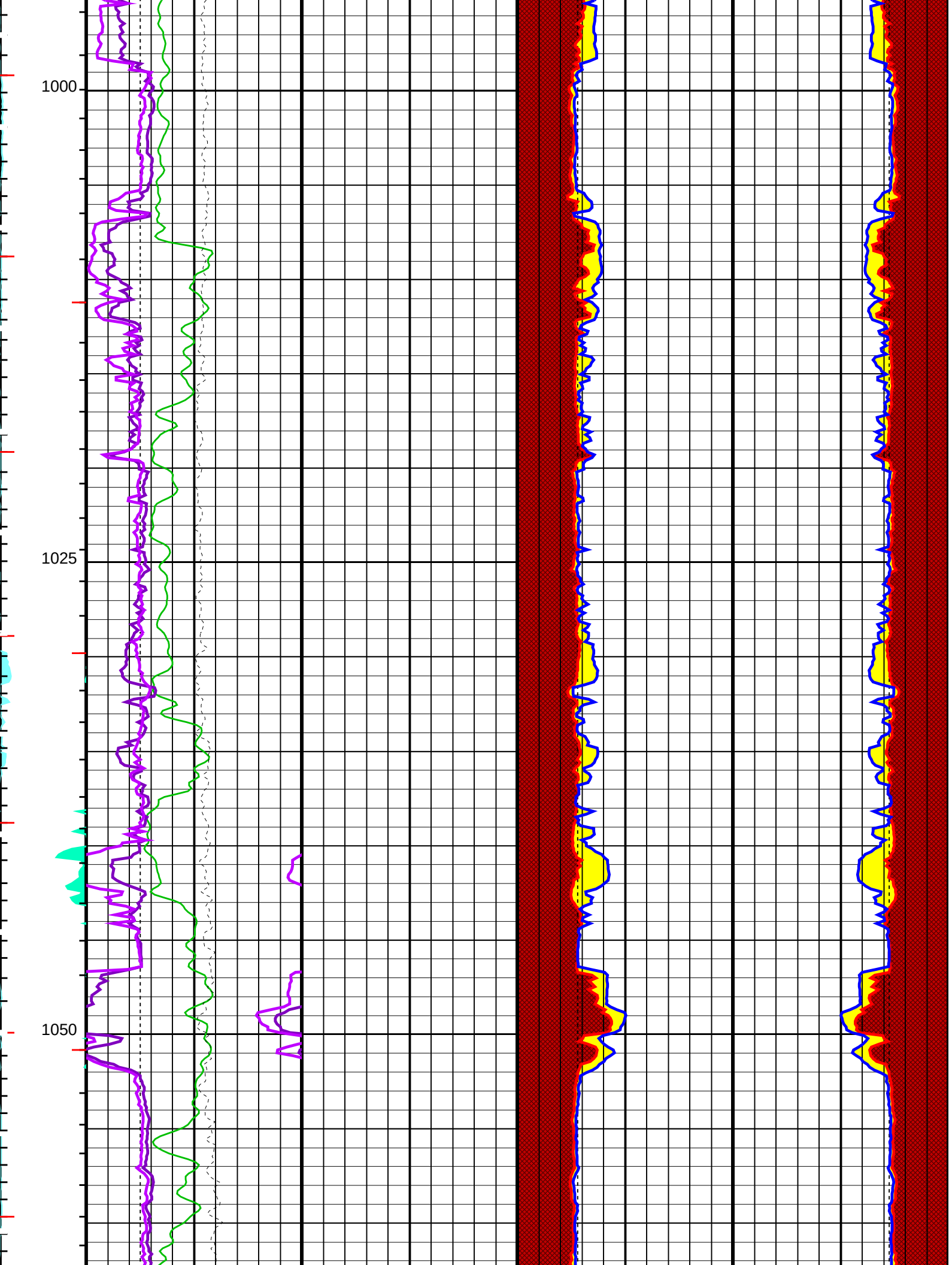
900
925


950
975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1025
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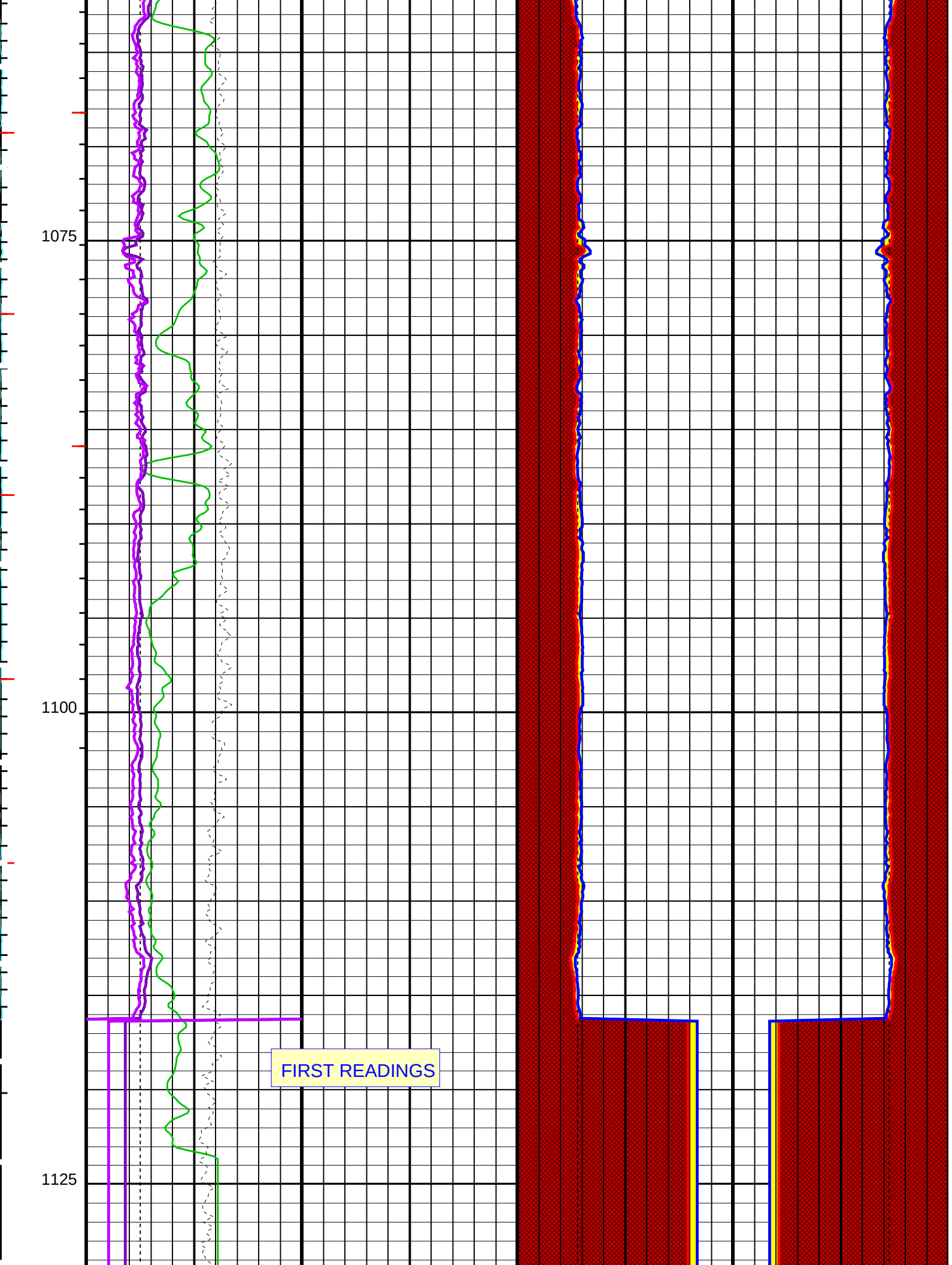
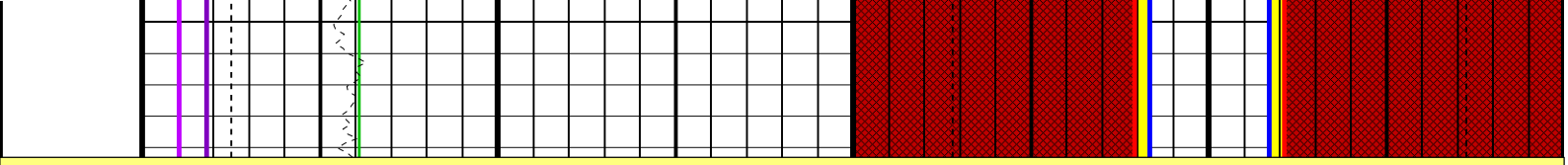

1075
1100
1125
FIRST READINGS



MAIN PASS: *** ENVIRONMENTAL MEASUREMENT ***

EMS Fixed Caliper Flag (EFCF) 0 () 20	Bit Size (BS) 300 (MM) 550	Bit Size (BS) 500 (MM) 0	Bit Size (BS) 0 (MM) 500
Oval Standard Deviation (OSDV) 23 () 3	Gamma Ray (GR) 0 (GAPI) 150	Hole Diameter Maximum (HDMX) 500 (MM) 0	Hole Diameter Maximum (HDMX) 0 (MM) 500
Fixed caliper flag From D4T to EFCF	Hole Diameter from Area (HDAR) 300 (MM) 550	Hole Diameter Minimum (HDMI) 500 (MM) 0	Hole Diameter Minimum (HDMI) 0 (MM) 500
Probability angle for HDMI From D4T to CHAM	Hole Diameter 1 (HD1) 300 (MM) 550	HD difference From HDMX_1 to HDMI_1	HD difference From HDMI_2 to HDMX_2
Probability Angle for HDMI (CHAM) (DEG) 90 240	Tension (TENS) 25000 (N) 0	Formation From F3 to HDMX_1	Formation From HDMX_2 to F4
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
- 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	
ESCL	EMS Synthetic Caliper Log	OFF	
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HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	244.5	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	System and Miscellaneous		
BS	Bit Size	361.950	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	1147	M

Format: EMS_HoleDiameter Vertical Scale: 1:240 Graphics File Created: 03−Mar−2007 11:51

QP System Version: 14C0−302

OP System Version: 14C0-302

MCM

AIT-M	14C0-302	HILTH-FTB	14C0-302
EMS-B	14C0-302	DTC-H	14C0-302

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03-Mar-2007 11:47	1134.3 M	622.9 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03-Mar-2007 11:51
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03-Mar-2007 11:51

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MAIN PASS: ENVIRONMENTAL MEASUREMENT HOLE PROFILE

MAXIS Field Log

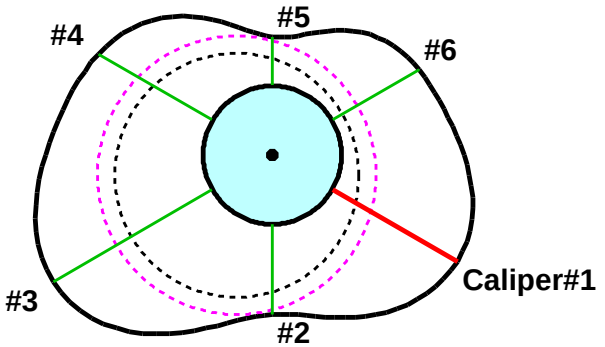
Graphics File Name: BORE_GRAPHIC_24.PDS

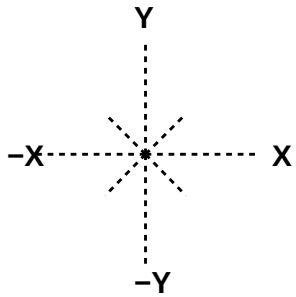
Graphics File Created: 03-Mar-2007 11:51

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	750_MM
BGAI	Borehole Graphic Angle Index	None
BGUN	Borehole Graphic Unit	METRIC





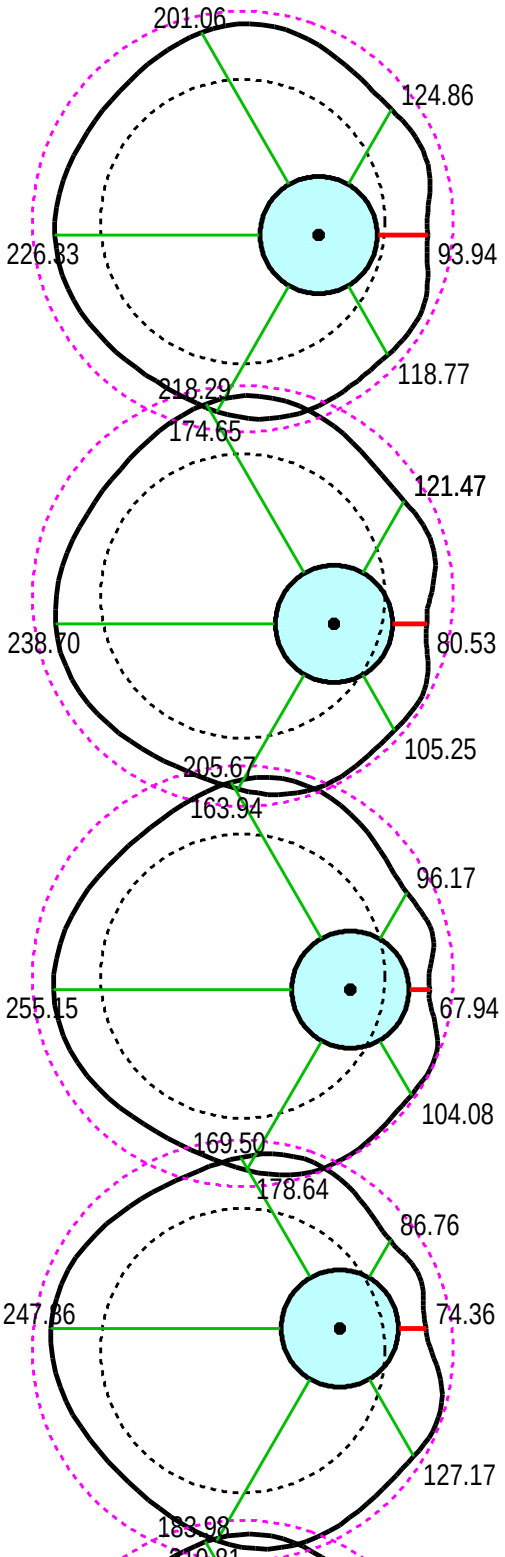
Orientation Index : None

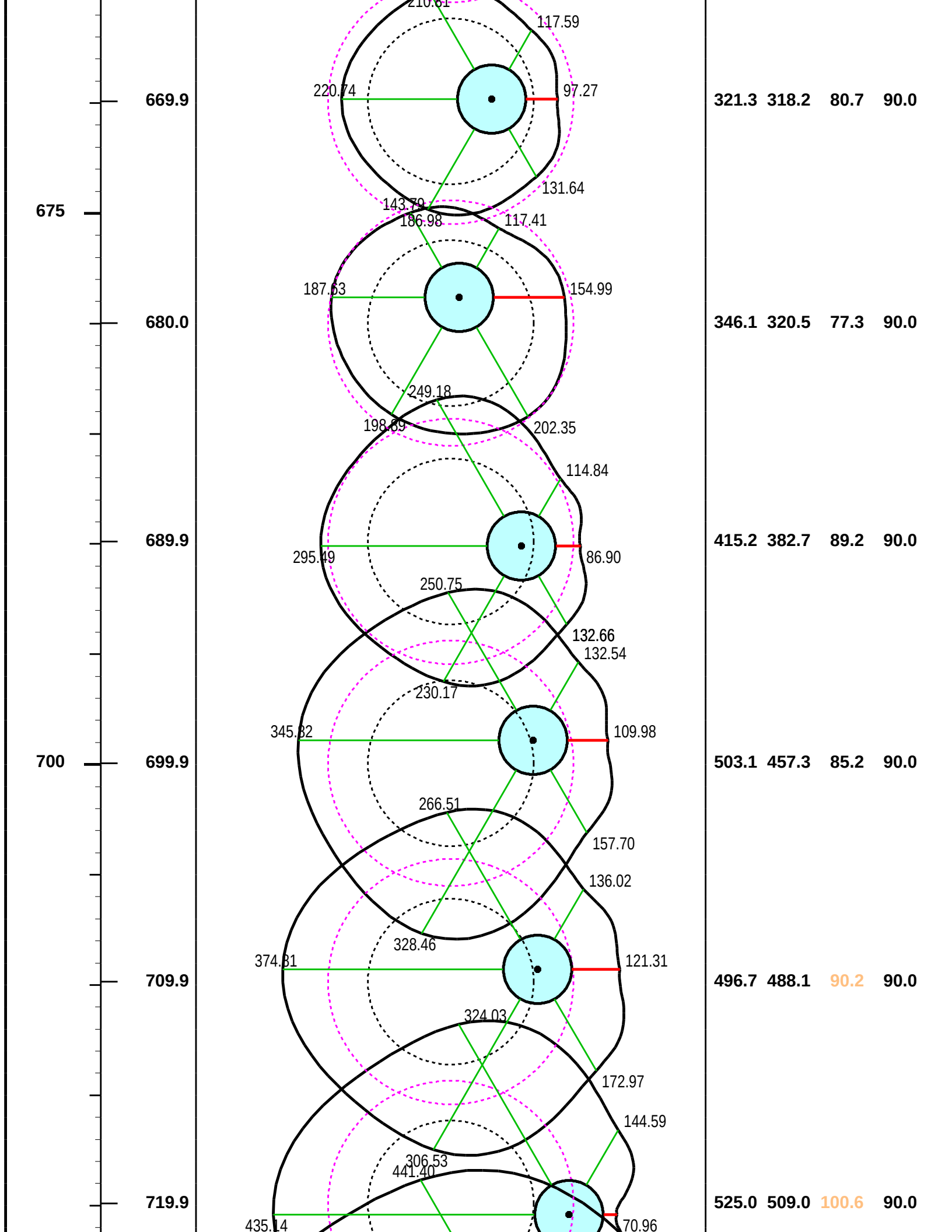
Depth (M)	Future Casing Diameter (FCD) -375.0 (MM) 375.0	Borehole Data DIA. Max (MM)	DIA. Min (MM)	Conf. Factor (DEG)	Orient Angle (DEG)
	Bit Size (BS)				

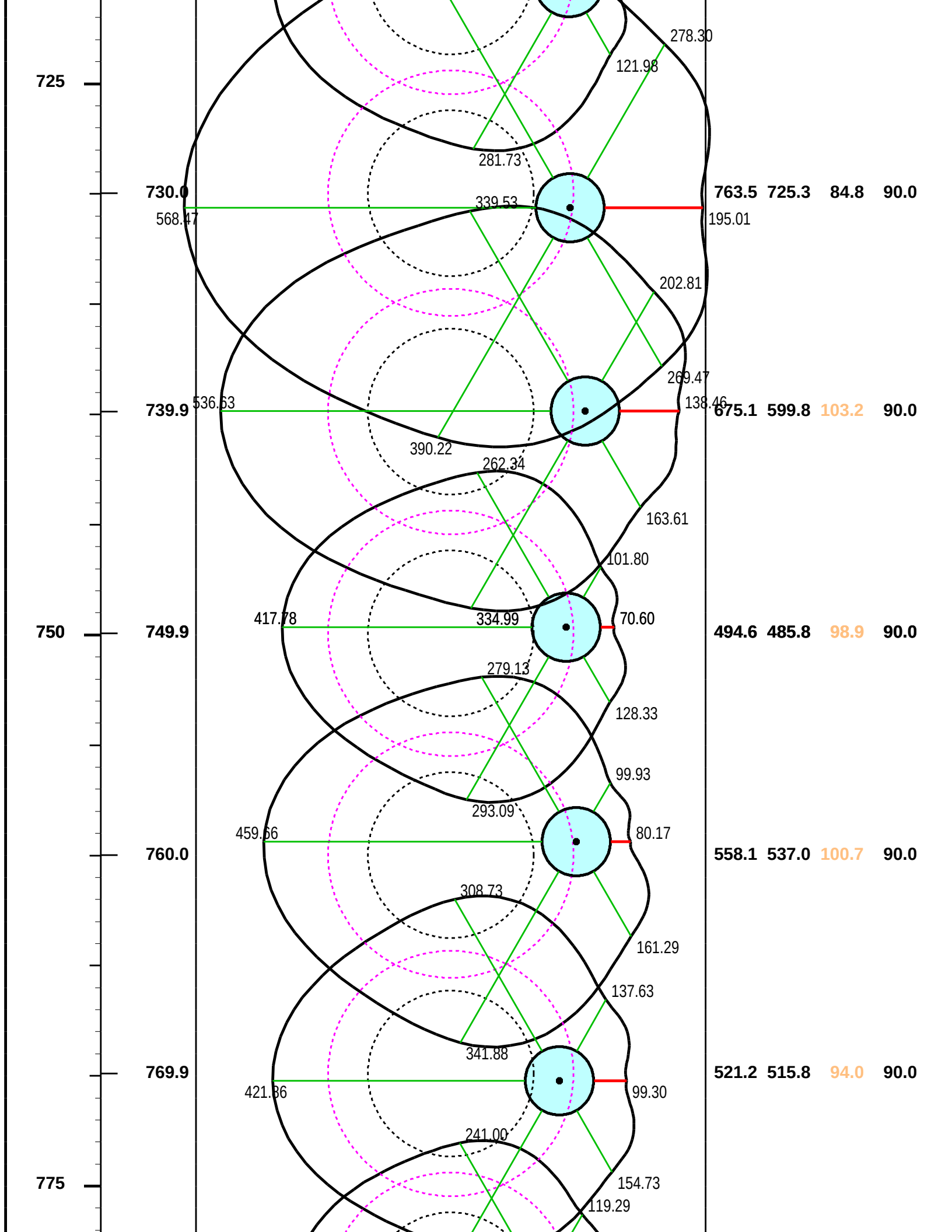
Bit Size (BS)

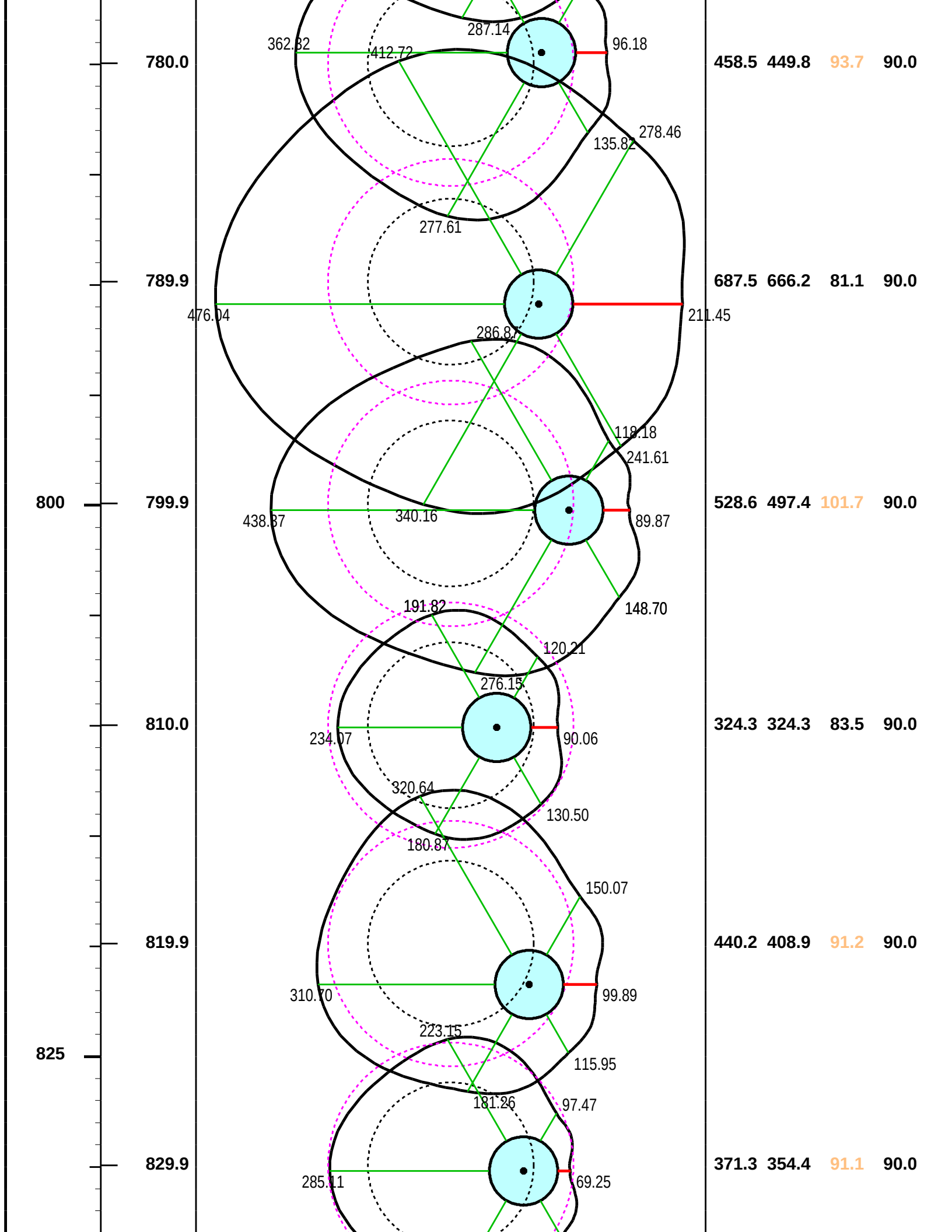
−375.0 (MM) 375.0

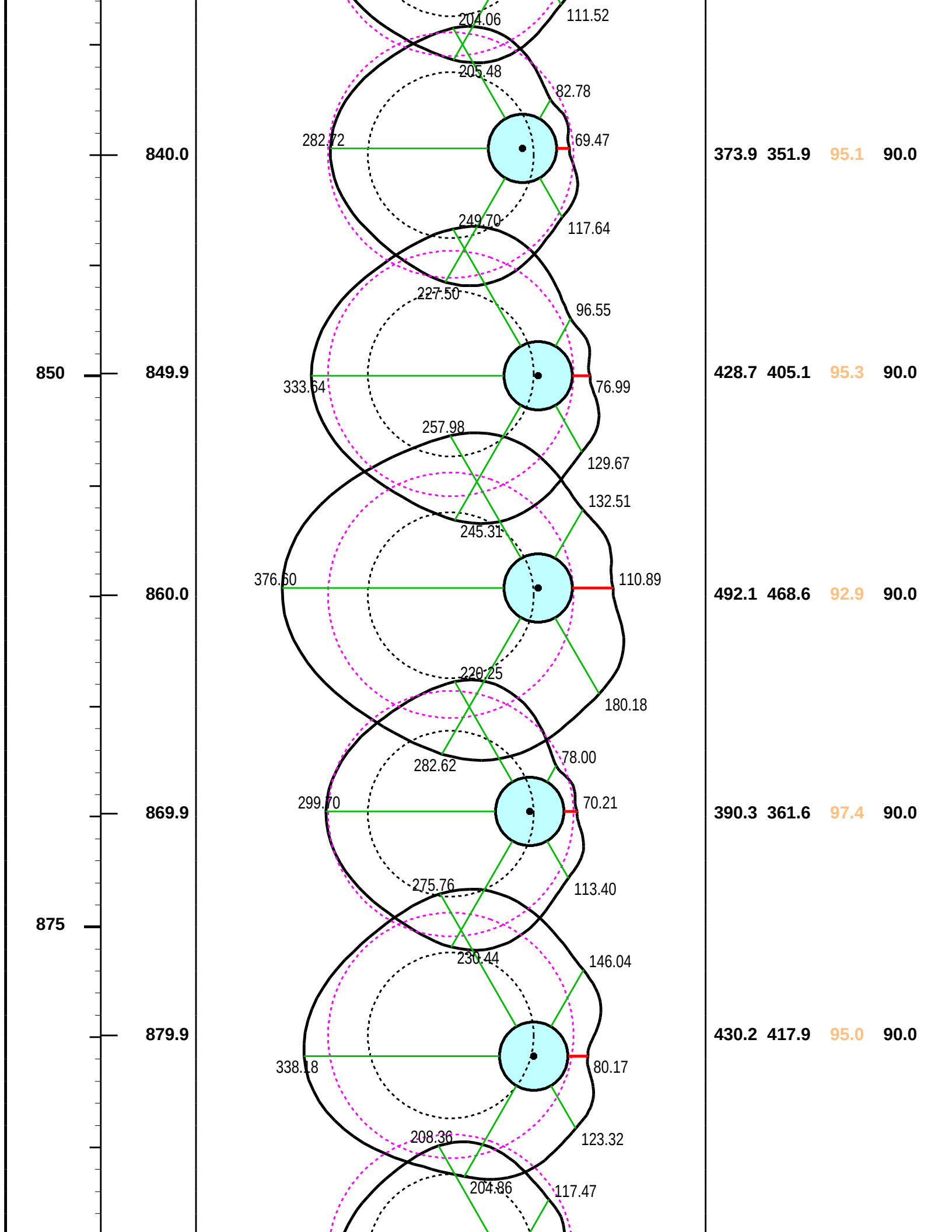
			(MM)	(MM)	(DEG)	(DEG)
625						
	630.0		325.6	321.2	82.3	90.0
	639.9		332.1	323.0	88.4	90.0
650	650.0		333.1	322.8	89.4	90.0
	659.9		330.3	324.5	91.1	90.0

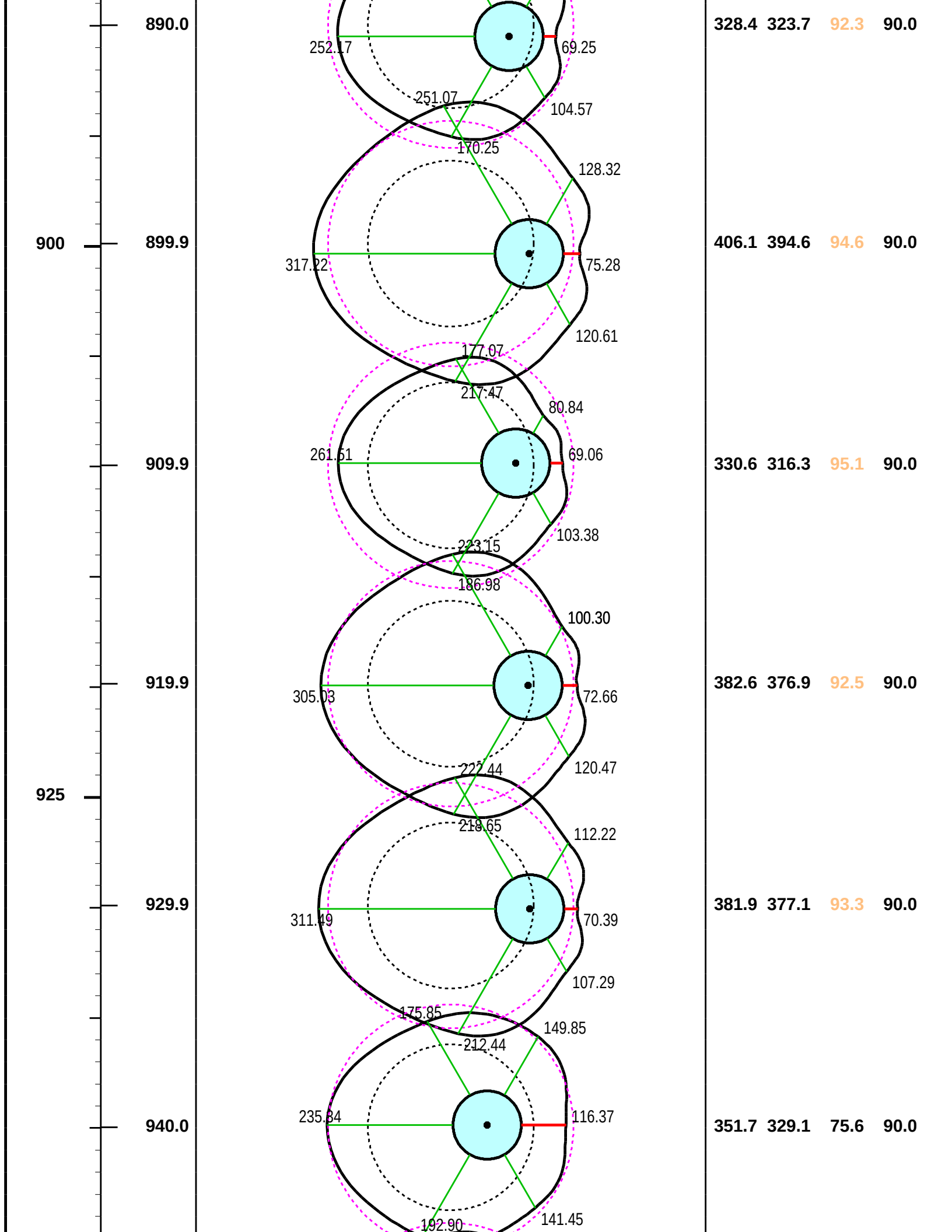


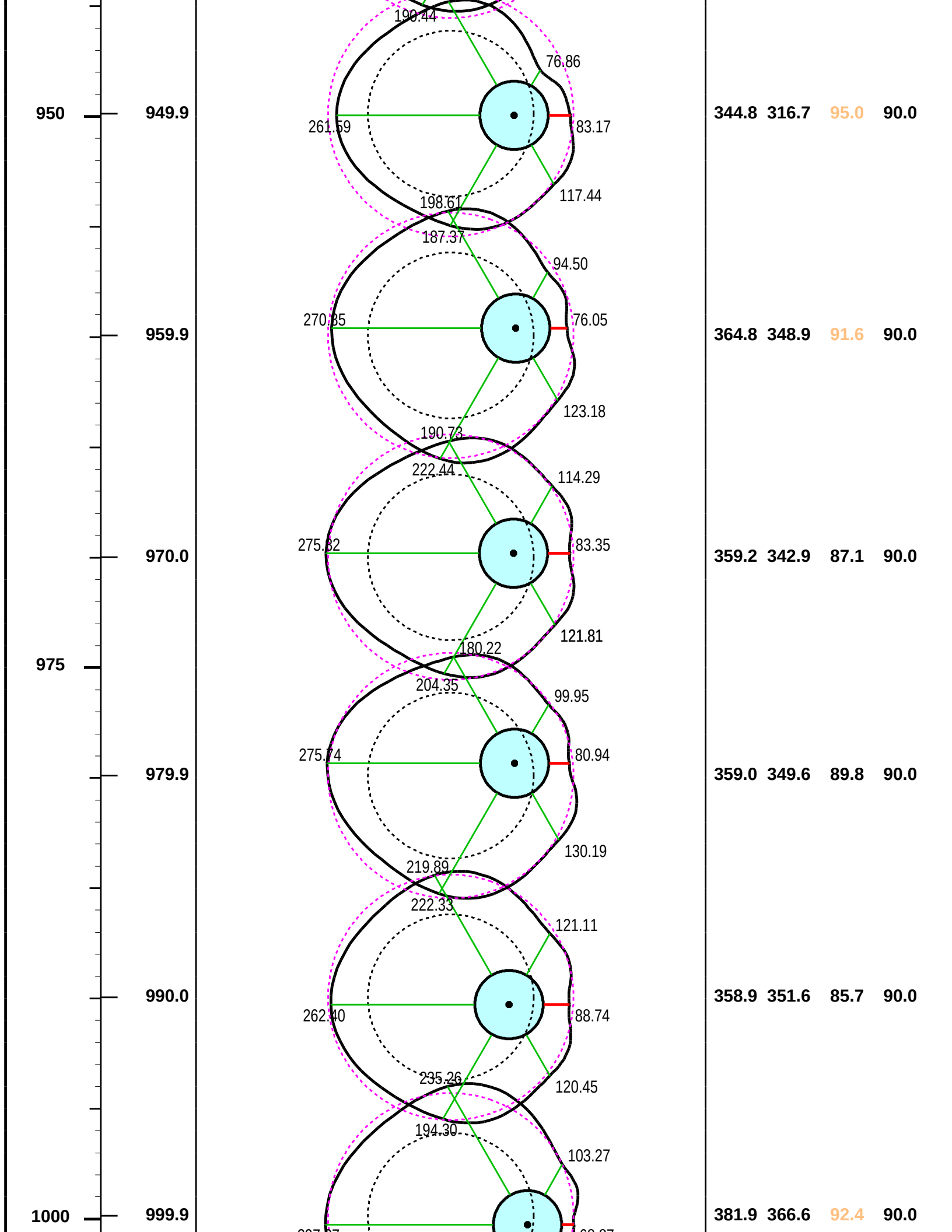

675
700
669.9
680.0
689.9
699.9
709.9
719.9
210.61
117.59
220.74
97.27
131.64
143.79
186.98
117.41
187.63
154.99
249.18
198.69
202.35
114.84
295.49
86.90
250.75
132.66
132.54
230.17
345.82
109.98
266.51
157.70
136.02
328.46
374.81
121.31
324.03
172.97
144.59
306.53
441.40
435.14
70.96
321.3 318.2 80.7 90.0
346.1 320.5 77.3 90.0
415.2 382.7 89.2 90.0
503.1 457.3 85.2 90.0
496.7 488.1 90.2 90.0
525.0 509.0 100.6 90.0

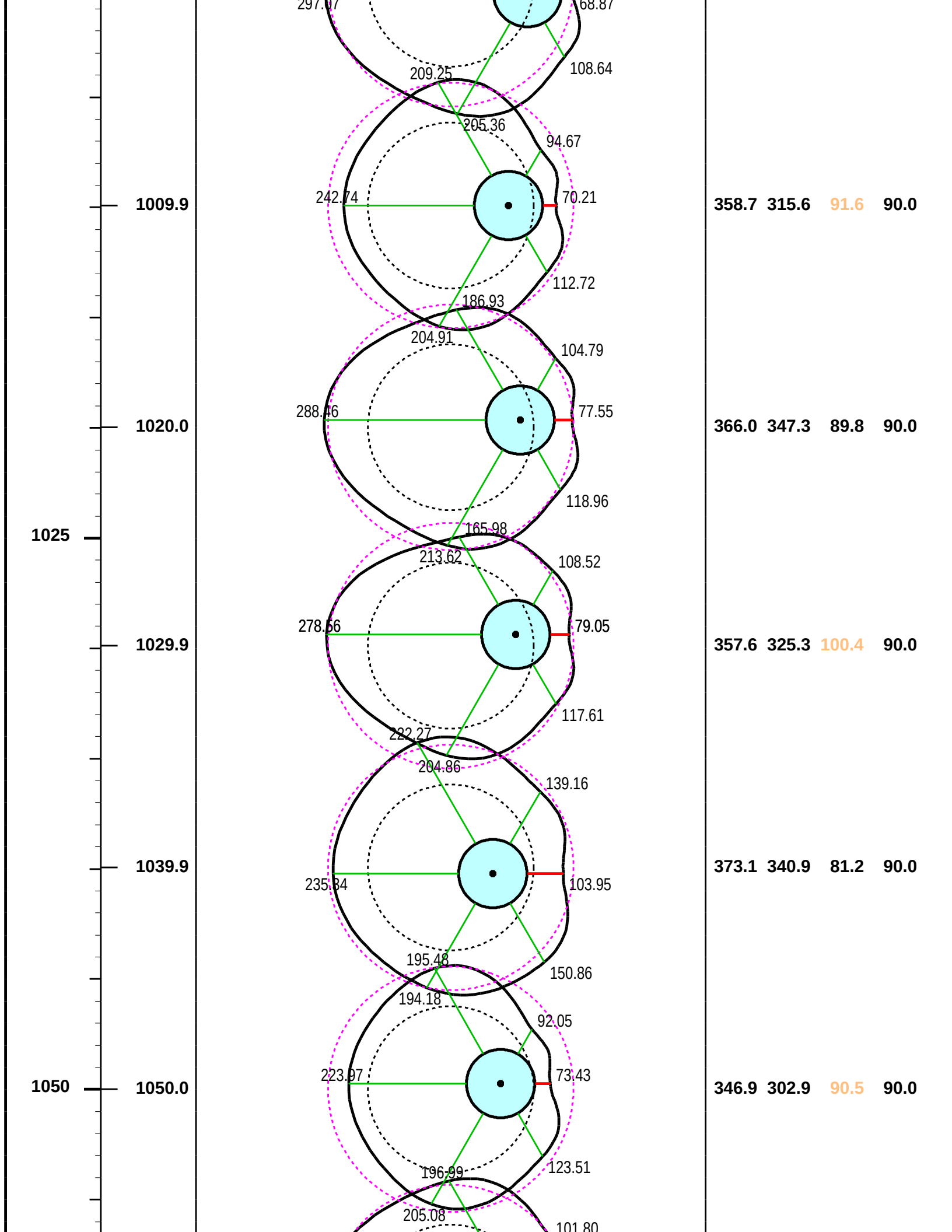

725
730.0
739.9
750
749.9
760.0
769.9
775
278.30
121.98
281.73
339.53
568.47
195.01
202.81
269.47
536.63
138.46
390.22
262.34
163.61
101.80
417.78
334.99
70.60
279.13
128.33
99.93
293.09
459.66
80.17
308.73
161.29
137.63
341.88
421.86
99.30
241.00
154.73
119.29
763.5 725.3 84.8 90.0
675.1 599.8 103.2 90.0
494.6 485.8 98.9 90.0
558.1 537.0 100.7 90.0
521.2 515.8 94.0 90.0


800
825
780.0
789.9
799.9
810.0
819.9
829.9
287.14
362.82
412.72
96.18
278.46
135.82
277.61
476.04
211.45
286.87
118.18
241.61
438.87
340.16
89.87
191.82
148.70
120.21
276.15
234.07
90.06
320.64
130.50
180.87
150.07
310.70
99.89
223.15
115.95
181.26
97.47
285.11
69.25
458.5 449.8 93.7 90.0
687.5 666.2 81.1 90.0
528.6 497.4 101.7 90.0
324.3 324.3 83.5 90.0
440.2 408.9 91.2 90.0
371.3 354.4 91.1 90.0

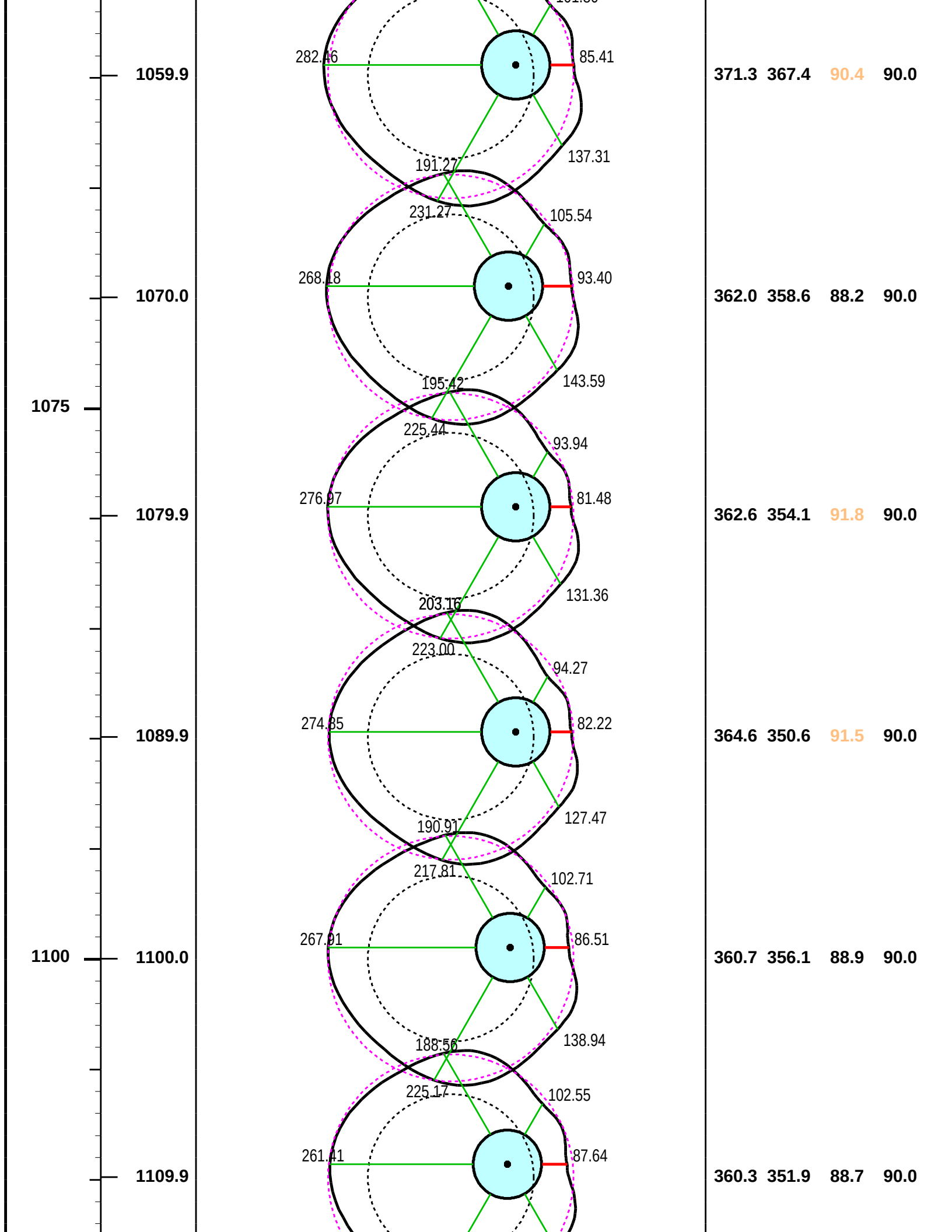

204.06
111.52
205.48
82.78
282.72
69.47
249.70
117.64
227.50
96.55
333.64
76.99
257.98
129.67
132.51
245.31
376.60
110.89
220.25
180.18
282.62
78.00
299.70
70.21
275.76
113.40
230.44
146.04
338.18
80.17
208.36
123.32
204.86
117.47
840.0
850
849.9
860.0
869.9
875
879.9
373.9 351.9 95.1 90.0
428.7 405.1 95.3 90.0
492.1 468.6 92.9 90.0
390.3 361.6 97.4 90.0
430.2 417.9 95.0 90.0

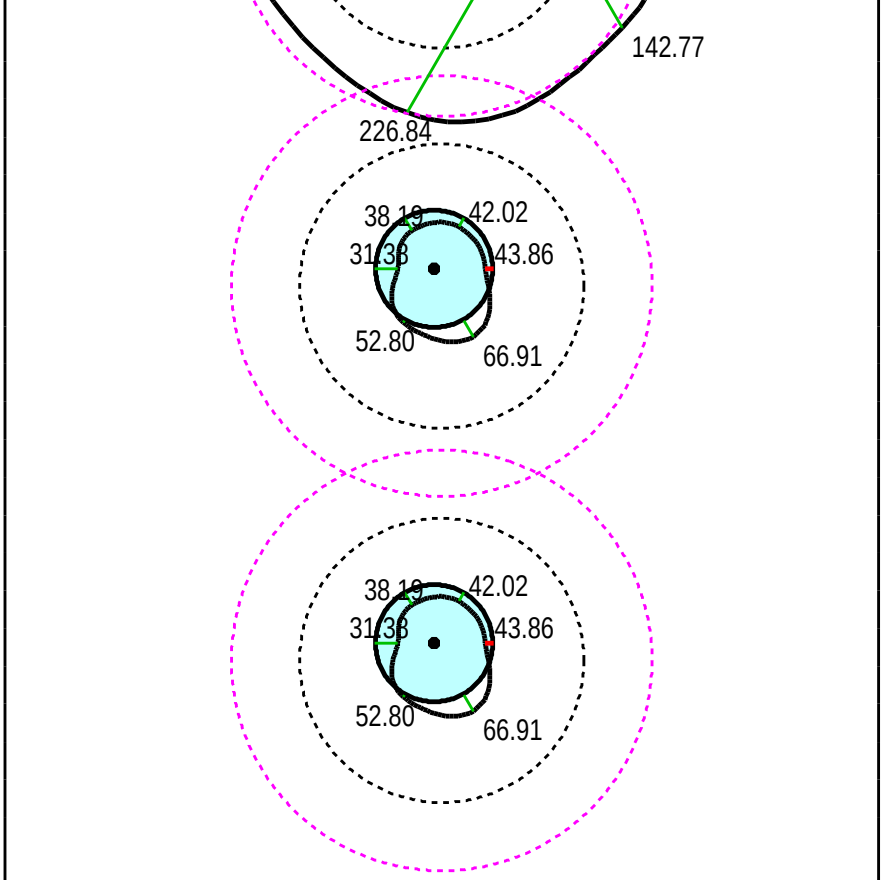

900
890.0
899.9
909.9
919.9
925
929.9
940.0
252.17
69.25
251.07
104.57
170.25
128.32
317.22
75.28
120.61
177.07
217.47
80.84
261.61
69.06
103.38
223.15
186.98
100.30
305.03
72.66
120.47
218.65
112.22
311.49
70.39
107.29
175.85
149.85
212.44
235.84
116.37
192.90
141.45
328.4 323.7 92.3 90.0
406.1 394.6 94.6 90.0
330.6 316.3 95.1 90.0
382.6 376.9 92.5 90.0
381.9 377.1 93.3 90.0
351.7 329.1 75.6 90.0


950
949.9
344.8 316.7 95.0 90.0
190.44
76.86
261.59
83.17
198.61
117.44
187.37
959.9
364.8 348.9 91.6 90.0
94.50
270.35
76.05
190.73
123.18
222.44
114.29
970.0
359.2 342.9 87.1 90.0
275.32
83.35
180.22
121.81
975
204.35
99.95
979.9
359.0 349.6 89.8 90.0
275.74
80.94
219.89
130.19
222.33
121.11
990.0
358.9 351.6 85.7 90.0
262.40
88.74
235.26
120.45
194.30
103.27
1000
999.9
381.9 366.6 92.4 90.0



	1009.9	358.7	315.6	91.6	90.0
	1020.0	366.0	347.3	89.8	90.0
	1029.9	357.6	325.3	100.4	90.0
	1039.9	373.1	340.9	81.2	90.0
	1050.0	346.9	302.9	90.5	90.0


1059.9
282.46
85.41
191.27
137.31
1070.0
231.27
105.54
268.18
93.40
195.42
143.59
1075
1079.9
225.44
93.94
276.97
81.48
203.16
131.36
1089.9
223.00
94.27
274.85
82.22
190.91
127.47
1100
1100.0
217.81
102.71
267.91
86.51
188.56
138.94
1109.9
225.17
102.55
261.41
87.64
371.3 367.4 90.4 90.0
362.0 358.6 88.2 90.0
362.6 354.1 91.8 90.0
364.6 350.6 91.5 90.0
360.7 356.1 88.9 90.0
360.3 351.9 88.7 90.0



Depth (M)		DIA. Max (MM)	DIA. Min (MM)	Conf. Factor (DEG)	Orient Angle (DEG)
1119.9		105.1	84.3	85.7	90.0
1125					
1129.8		105.1	84.3	85.7	90.0

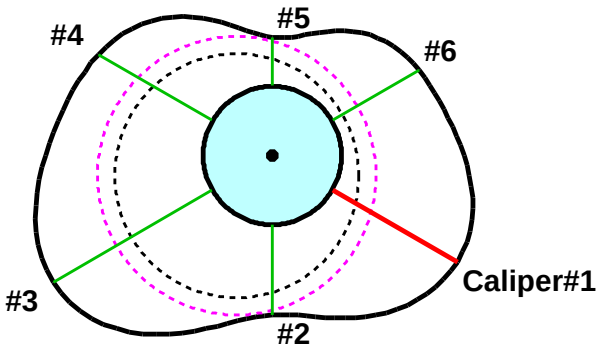
Future Casing Diameter (FCD)

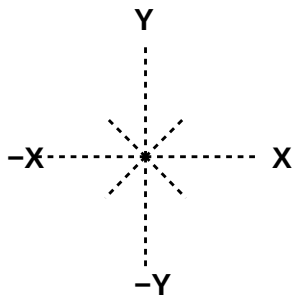
−375.0 (MM) 375.0

Bit Size (BS)

−375.0 (MM) 375.0

Borehole Data





Orientation Index : None

Parameters

DLIS Name	Description	Value

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	750_MM
BGAI	Borehole Graphic Angle Index	None
BGUN	Borehole Graphic Unit	METRIC

Borehole Cross Section

Graphics File Name: BORE_GRAPHIC_24.PDS

Graphics File Created: 03−Mar−2007 11:51

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03−Mar−2007 11:47	1134.3 M	622.9 M
DEFAULT	AIT_TLD_MCFL_CNL_067PUP	FN:78	PRODUCER	03−Mar−2007 10:38	1050.0 M	928.4 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03−Mar−2007 11:51
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03−Mar−2007 11:51

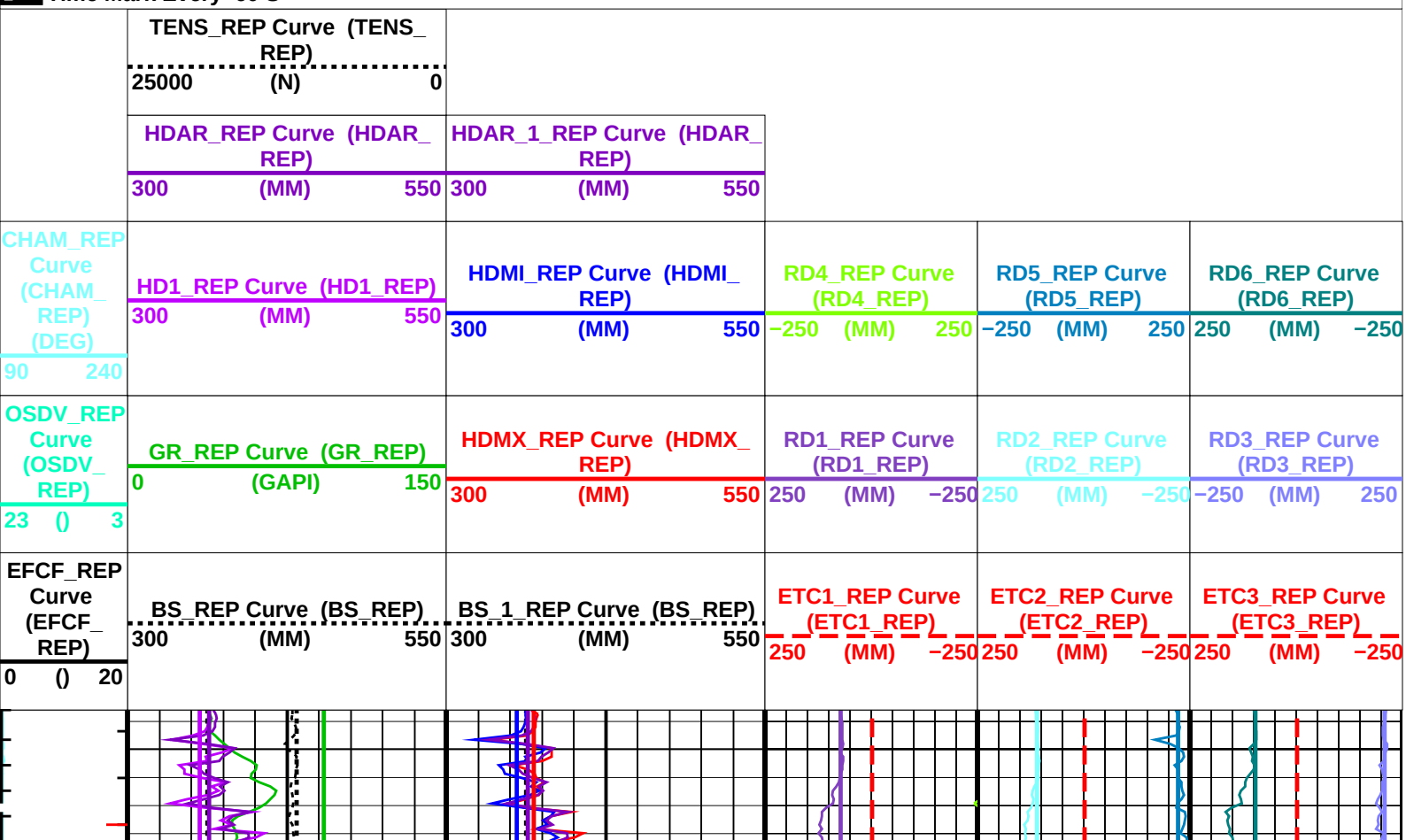
OP System Version: 14C0−302

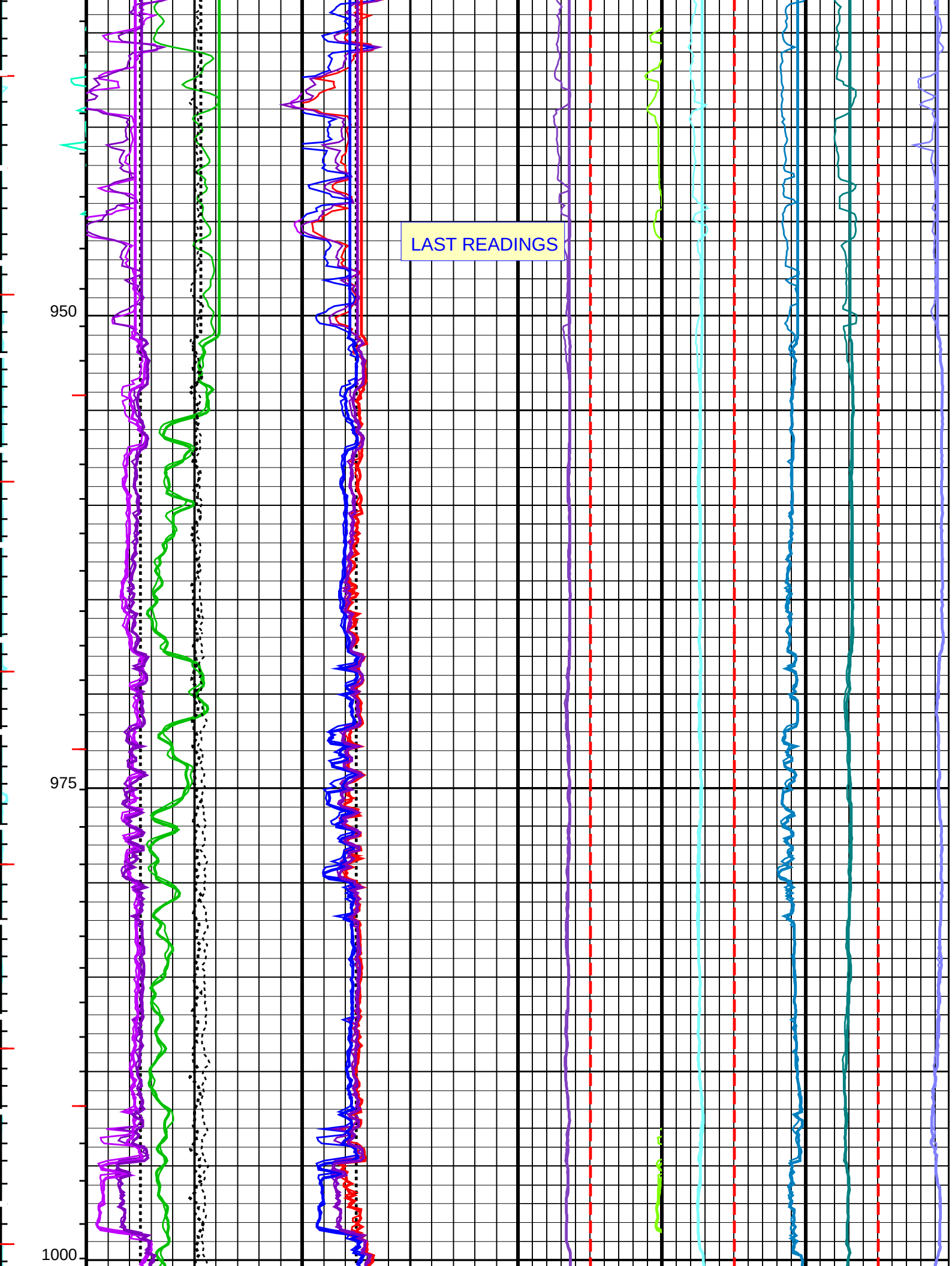
MCM

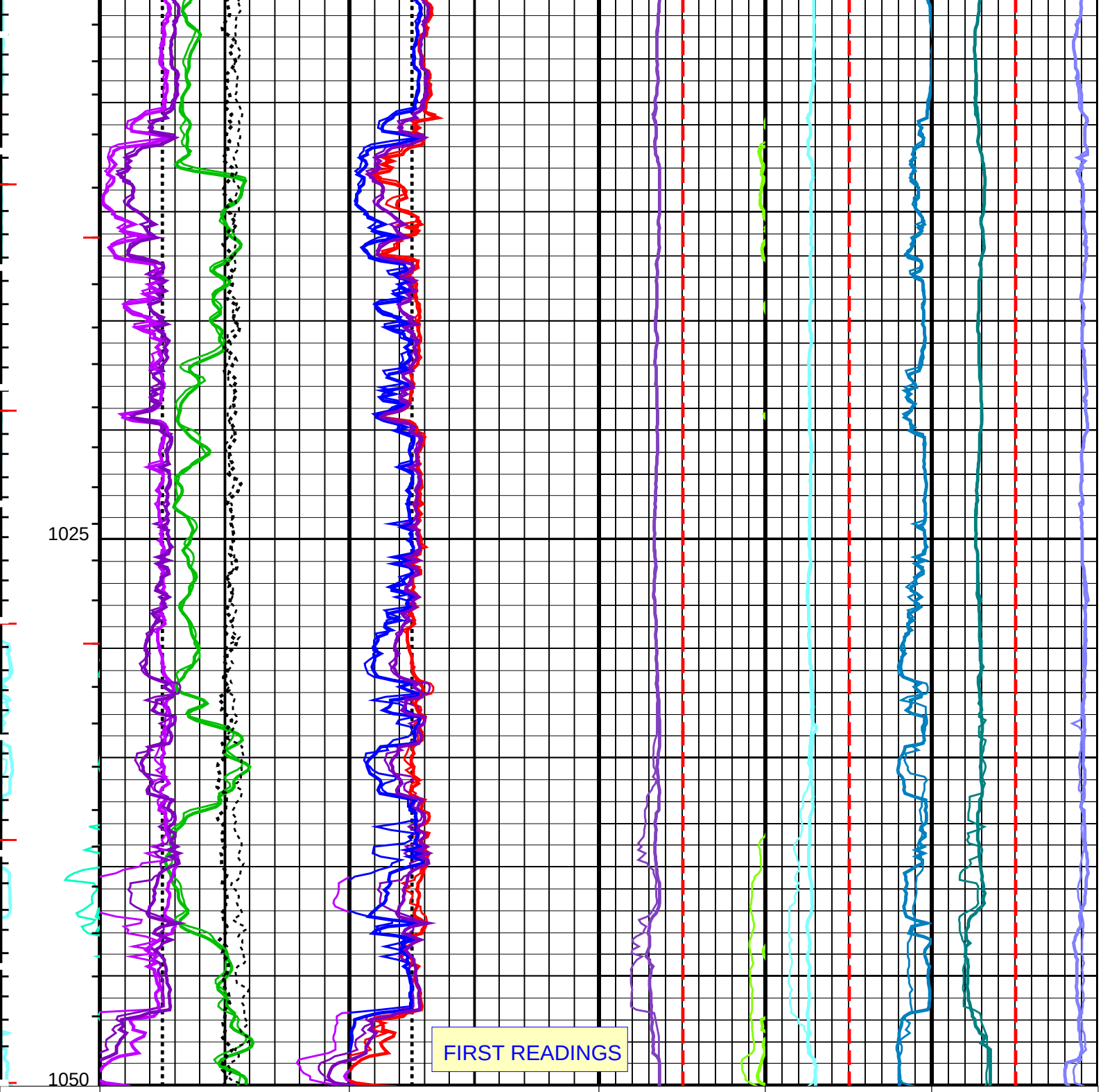
AIT−M	14C0−302	HILTH−FTB	14C0−302
EMS−B	14C0−302	DTC−H	14C0−302

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




LAST READINGS
950
975
1000



EFCF_REP Curve (EFCF_REP) 0 () 20	BS_REP Curve (BS_REP) 300 (MM) 550	BS_1_REP Curve (BS_REP) 300 (MM) 550	ETC1_REP Curve (ETC1_REP) 250 (MM) −250	ETC2_REP Curve (ETC2_REP) 250 (MM) −250	ETC3_REP Curve (ETC3_REP) 250 (MM) −250
OSDV_REP Curve (OSDV_REP) 23 () 3	GR_REP Curve (GR_REP) 0 (GAPI) 150	HDMX_REP Curve (HDMX_REP) 300 (MM) 550	RD1_REP Curve (RD1_REP) 250 (MM) −250	RD2_REP Curve (RD2_REP) 250 (MM) −250	RD3_REP Curve (RD3_REP) −250 (MM) 250
CHAM_REP Curve (CHAM_REP) (DEG) 90 240	HD1_REP Curve (HD1_REP) 300 (MM) 550	HDMI_REP Curve (HDMI_REP) 300 (MM) 550	RD4_REP Curve (RD4_REP) −250 (MM) 250	RD5_REP Curve (RD5_REP) −250 (MM) 250	RD6_REP Curve (RD6_REP) 250 (MM) −250

HDAR_REP Curve (HDAR_REP)			HDAR_1_REP Curve (HDAR_REP)		
300	(MM)	550	300	(MM)	550

TENS_REP Curve (TENS_REP)		
25000	(N)	0

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	
ESCL	EMS Synthetic Caliper Log	OFF	
FCD	Future Casing (Outer) Diameter	244.5	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	HOLEV: Integrated Hole/Cement Volume		
FCD	Future Casing (Outer) Diameter	244.5	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	System and Miscellaneous		
BS	Bit Size	361.950	MM
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	1147	M

Format: EMS_Caliper1_REP **Vertical Scale: 1:240** **Graphics File Created: 03−Mar−2007 11:51**

OP System Version: 14C0−302

MCM

AIT−M	14C0−302	HILTH−FTB	14C0−302
EMS−B	14C0−302	DTC−H	14C0−302

Input DLIS Files

DEFAULT	SPLICE_AIT_TLD_MCFL_089	FN:1	PRODUCER	03−Mar−2007 11:47	1134.3 M	622.9 M
DEFAULT	AIT_TLD_MCFL_CNL_067PUP	FN:78	PRODUCER	03−Mar−2007 10:38	1050.0 M	928.4 M

Output DLIS Files

DEFAULT	AIT_TLD_MCFL_CNL_091PUP	FN:110	PRODUCER	03−Mar−2007 11:51
CUST	AIT_TLD_MCFL_CNL_091PUP	FN:111	PRODUCER	03−Mar−2007 11:51

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CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units

Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase
Master: 9−Jan−2007 16:33 Before: 2−Mar−2007 21:07

Thru Cal Magnitude − 0	0	0.6106	0.6119	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.251	1.254	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6204	0.6215	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.6999	0.7012	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.310	1.313	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.909	1.912	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.905	1.909	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.370	1.372	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	194.5	192.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	193.4	191.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	189.7	188.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	189.0	187.4	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	182.7	181.1	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	181.0	179.4	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	181.1	179.5	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	180.5	178.8	N/A	N/A	N/A	DEG

Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary
Master: 9−Jan−2007 16:33 Before: 2−Mar−2007 21:07

Array Induction SPA Plus	991.0	992.5	992.9	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	−0.1065	−0.06589	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9193	0.9197	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	−0.0001016	−0.00007390	N/A	N/A	N/A	V

Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction
Master: 9−Jan−2007 16:33

Test Loop Gain Correctio − 0	0	1.044	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.044	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.026	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.018	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	1.005	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	1.004	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.025	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.7534	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.6562	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.06160	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.1409	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.1225	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	0.05437	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.4129	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	0.09432	N/A	N/A	N/A	N/A	DEG

Array Induction Tool − M Wellsite Calibration − Sonde Error Correction
Master: 9−Jan−2007 16:33

R Sonde Error Correction − 0	0	−18.53	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	176.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	101.8	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	56.95	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	23.72	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	11.78	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	9.211	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−2.205	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	186.1	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	−10.08	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	2.897	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−11.83	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	45.25	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	4.755	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	4.629	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	5.289	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 9−Jan−2007 16:33

Coarse − Mag, Real, Imag − 0	0	1.054	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	1.067	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	1.067	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	1.077	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	1.077	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	1.077	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 2−Mar−2007 21:28

BS Window Ratio	0.7427	N/A	0.7435	N/A	N/A	N/A	
BS Window Sum	29280	N/A	29240	N/A	N/A	N/A	CPS
SS Window Ratio	0.4849	N/A	0.4833	N/A	N/A	N/A	
SS Window Sum	13080	N/A	13060	N/A	N/A	N/A	CPS
LS Window Ratio	0.3035	N/A	0.2974	N/A	N/A	N/A	

LS Window Sum	1545	N/A	1536	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations							
Before: 2−Mar−2007 21:28							
BS PM High Voltage (Command)	1376	N/A	1352	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1421	N/A	1410	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1301	N/A	1310	N/A	N/A	N/A	V
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration							
Before: 2−Mar−2007 21:28							
BS Crystal Resolution	10.78	N/A	10.84	N/A	N/A	N/A	%
SS Crystal Resolution	8.916	N/A	8.780	N/A	N/A	N/A	%
LS Crystal Resolution	8.952	N/A	9.048	N/A	N/A	N/A	%
High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration							
Before: 2−Mar−2007 21:29							
Raw B0 Resistivity	3875	N/A	3870	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3819	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3828	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration							
Before: 2−Mar−2007 21:51							
HILT Caliper Zero Measurement	254.0	N/A	199.8	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	508.0	N/A	382.4	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration							
Before: 2−Mar−2007 21:25							
Gamma Ray Background	30.00	N/A	23.72	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkg)	185.1	N/A	185.1	N/A	N/A	16.83	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement							
Master: 10−Jan−2007 15:23 Before: 2−Mar−2007 21:23							
CNTC Background	26.53	26.53	26.48	N/A	N/A	3.980	CPS
CFTC Background	29.66	29.66	29.06	N/A	N/A	4.449	CPS
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement							
Master: 10−Jan−2007 15:23							
Thermal Near Corr. (Tank)	6031	6292	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2793	2647	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.377	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration							
Before: 3−Mar−2007 6:35							
Z−Axis Acceleration	9.810	N/A	9.812	N/A	N/A	N/A	M/S2
High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results							
Master: 14−Feb−2007 15:55							
Rho Aluminum	2596	2599	−−	−−	−−	−−	K/M3
Rho Magnesium	1686	1686	−−	−−	−−	−−	K/M3
Pe Aluminum	2.570	2.556	−−	−−	−−	−−	
Pe Magnesium	2.650	2.631	−−	−−	−−	−−	
High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary							
Master: 14−Feb−2007 15:55							
BS Average Deviation	0	0.2316	−−	−−	−−	−−	%
BS Max Deviation	0	0.7406	−−	−−	−−	−−	%
SS Average Deviation	0	0.2254	−−	−−	−−	−−	%
SS Max Deviation	0	1.106	−−	−−	−−	−−	%
LS Average Deviation	0	0.6026	−−	−−	−−	−−	%
LS Max Deviation	0	1.170	−−	−−	−−	−−	%
Combinable Magnetic Resonance Tool − B Master Calibration − Calibration Fixture Measurement							
Master: 3−Mar−2007 6:32							
Tool Temperature MCAL	27.00	25.19	−−	−−	−−	−−	DEGC
LOOP Measurement MCAL	2300	1870	−−	−−	−−	−−	
Hall Probe B0 MCAL	52.00	52.68	−−	−−	−−	−−	MTES
Cal. Fixture Amplitude MCAL	37.50	28.32	−−	−−	−−	−−	%
Environment Measurement Sonde Wellsite Calibration − EMS Caliper Calibration							
Before: 2−Mar−2007 22:46							
Radius 1 Short Radius	101.6	N/A	100.3	N/A	N/A	5.080	MM
Radius 1 Long Radius	152.4	N/A	160.0	N/A	N/A	5.080	MM
Radius 2 Short Radius	152.4	N/A	165.1	N/A	N/A	5.080	MM
Radius 2 Long Radius	101.6	N/A	100.0	N/A	N/A	5.080	MM
Radius 3 Short Radius	101.6	N/A	94.47	N/A	N/A	5.080	MM
Radius 3 Long Radius	152.4	N/A	155.7	N/A	N/A	5.080	MM
Radius 4 Short Radius	152.4	N/A	160.1	N/A	N/A	5.080	MM
Radius 4 Long Radius	101.6	N/A	104.3	N/A	N/A	5.080	MM
Radius 5 Short Radius	101.6	N/A	107.8	N/A	N/A	5.080	MM
Radius 5 Long Radius	152.4	N/A	165.1	N/A	N/A	5.080	MM
Radius 6 Short Radius	152.4	N/A	162.4	N/A	N/A	5.080	MM

Radius 6 Short Radius	152.4	N/A	162.4	N/A	N/A	5.080	MM
Radius 6 Long Radius	101.6	N/A	103.8	N/A	N/A	5.080	MM

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 18.0 DEGC.
Thermal Housing Size 85.725 MM.
NSR−F serial number 5196

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	175

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6106		0.6100	194.5		197.0
	Before	0.6119			192.9		
1	Master	1.251		1.270	193.4		196.0
	Before	1.254			191.8		
2	Master	0.6204		0.6200	189.7		192.0
	Before	0.6215			188.2		
3	Master	0.6999		0.7000	189.0		191.0
	Before	0.7012			187.4		
4	Master	1.310		1.340	182.7		185.0
	Before	1.313			181.1		
5	Master	1.909		1.960	181.0		182.0
	Before	1.912			179.4		
6	Master	1.905		1.960	181.1		181.0
	Before	1.909			179.5		
7	Master	1.370		1.410	180.5		175.0
	Before	1.372			178.8		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 9−Jan−2007 16:33 Before: 2−Mar−2007 21:07

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		992.5
Before		992.9
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		−0.1065
Before		−0.06589
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9193
Before		0.9197
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		−0.0001016
Before		−7.390E−00
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 9−Jan−2007 16:33 Before: 2−Mar−2007 21:07

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.044	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.7534	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.044	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.6562	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.026	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.06160	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.018	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.1409	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.005	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.1225	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	1.004	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.05437	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.013	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.4129	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.025	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.09432	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 9−Jan−2007 16:33

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	−18.53	−231.0 (Minimum) −56.00 (Nominal) 119.0 (Maximum)	186.1	−2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	176.7	114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)	−10.08	−625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	101.8	66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)	2.897	−350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	56.95	39.00 (Minimum) 64.00 (Nominal) 89.30 (Maximum)	−11.83	−250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	23.72	15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)	45.25	−63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	11.78	4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)	4.755	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)
6	9.211	5.000 (Minimum) 10.00 (Nominal) 15.00 (Maximum)	4.629	−30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	−2.205	−5.000 (Minimum) 0 (Nominal) 5.000 (Maximum)	5.289	−30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: 9−Jan−2007 16:33

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag	Value	Fine − Mag, Real, Imag
0	1.054	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	1.077	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)

1	1.067				1.077				
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	
2	1.067				1.077				
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	

Master: 9−Jan−2007 16:33

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6106		0.6100	194.5		197.0
1	Master	1.251		1.270	193.4		196.0
2	Master	0.6204		0.6200	189.7		192.0
3	Master	0.6999		0.7000	189.0		191.0
4	Master	1.310		1.340	182.7		185.0
5	Master	1.909		1.960	181.0		182.0
6	Master	1.905		1.960	181.1		181.0
7	Master	1.370		1.410	180.5		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)		Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)	

Master: 9−Jan−2007 16:33

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		992.5	Master		−0.1065
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)			−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	**Array Induction Temperature Plus V**	**Value**	**Phase**	**Array Induction Temperature Zero V**	**Value**
Master		0.9193	Master		−0.0001016
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 9−Jan−2007 16:33

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.044		0.7534	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.044		0.6562	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.026		0.06160	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.018		0.1409	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.005		0.1225	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	1.004		0.05437	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.013		0.4129	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.025		0.09432	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 9−Jan−2007 16:33

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−18.53				186.1			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	176.7				−10.08			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	101.8				2.897			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	56.95				−11.83			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.72				45.25			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	11.78				4.755			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.211				4.629			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−2.205				5.289			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 9−Jan−2007 16:33

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	1.054				1.077			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	1.067				1.077			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	1.067				1.077			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 9−Jan−2007 16:33

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − H	4707
HILT Rxo Gamma−ray Device	HRGD − H	4761
HILT Micro Cylindrically Focused Log Dev	MCFL − H	
GR Logging Source	GLS − VJ	1904
HILT High Res. Control Cartridge	HRCC − H	4721
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − H	4730
HILT Gamma−Ray Device	HGR −	
HILT Neutron Detector with Alpha Source	HCNT − H	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	6710

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				0.7435	Before				0.4833	Before				0.2974
	0.7056	0.7427	0.7799			0.4606	0.4849	0.5091			0.2883	0.3035	0.3186	

(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)	(Minimum)	(Nominal)	(Maximum)

Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		29240	Before		13060	Before		1536
27820 (Minimum)	29280 (Nominal)	30740 (Maximum)	12430 (Minimum)	13080 (Nominal)	13740 (Maximum)	1468 (Minimum)	1545 (Nominal)	1622 (Maximum)

Before: 2−Mar−2007 21:28

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1352	Before		1410	Before		1310
1276 (Minimum)	1376 (Nominal)	1476 (Maximum)	1321 (Minimum)	1421 (Nominal)	1521 (Maximum)	1201 (Minimum)	1301 (Nominal)	1401 (Maximum)

Before: 2−Mar−2007 21:28

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		10.84	Before		8.780	Before		9.048
9.775 (Minimum)	10.78 (Nominal)	11.78 (Maximum)	7.916 (Minimum)	8.916 (Nominal)	9.916 (Maximum)	7.952 (Minimum)	8.952 (Nominal)	9.952 (Maximum)

Before: 2−Mar−2007 21:28

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3870	Before		3819	Before		3828
3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: 2−Mar−2007 21:29

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value
Before		199.8	Before		382.4
190.5 (Minimum)	254.0 (Nominal)	317.5 (Maximum)	381.0 (Minimum)	508.0 (Nominal)	635.0 (Maximum)

Before: 2−Mar−2007 21:51

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		23.72	Before		185.1	Before		165.0
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	168.3 (Minimum)	185.1 (Nominal)	201.9 (Maximum)	150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: 2−Mar−2007 21:25

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		26.53	Master		29.66
Before		26.48	Before		29.06
5.000 (Minimum)	26.53 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	29.66 (Nominal)	40.00 (Maximum)

Master: 10−Jan−2007 15:23 Before: 2−Mar−2007 21:23

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		6292	Master		2647	Master		2.377
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 10−Jan−2007 15:23

High resolution Integrated Logging Tool−DTS

High resolution Integrated Logging Tool−DTS

Wellsite Calibration

Accelerometer Calibration

Phase	Z−Axis Acceleration M/S2			Value
Before				9.812
	9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)	

Before: 3−Mar−2007 6:35

High resolution Integrated Logging Tool−DTS Master Calibration

Inversion results

Phase	Rho Aluminum K/M3			Value
Master				2599
	2586 (Minimum)	2596 (Nominal)	2606 (Maximum)	

Phase	Rho Magnesium K/M3			Value
Master				1686
	1676 (Minimum)	1686 (Nominal)	1696 (Maximum)	

Phase	Pe Aluminum			Value
Master				2.556
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	

Phase	Pe Magnesium			Value
Master				2.631
	2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)	

Master: 14−Feb−2007 15:55

High resolution Integrated Logging Tool−DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %			Value
Master				0.2316
	−0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	

Phase	SS Average Deviation %			Value
Master				0.2254
	−1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	

Phase	LS Average Deviation %			Value
Master				0.6026
	−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)	

Phase	BS Max Deviation %			Value
Master				0.7406
	−1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	

Phase	SS Max Deviation %			Value
Master				1.106
	−2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	

Phase	LS Max Deviation %			Value
Master				1.170
	−3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)	

Master: 14−Feb−2007 15:55

High resolution Integrated Logging Tool−DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS			Value
Master				26.53
	5.000 (Minimum)	26.53 (Nominal)	40.00 (Maximum)	

Phase	CFTC Background CPS			Value
Master				29.66
	5.000 (Minimum)	29.66 (Nominal)	40.00 (Maximum)	

Master: 10−Jan−2007 15:23

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS			Value
Master				6292
	5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	

Phase	Thermal Far Corr. (Tank) CPS			Value
Master				2647
	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	

Phase	CNTC/CFTC (Tank)			Value
Master				2.377
	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 10−Jan−2007 15:23

Combinable Magnetic Resonance Tool − B / Equipment Identification

Primary Equipment:

CMR−B Sonde	CMRS − BA	182
CMR Cartridge	CMRC − BA	202

Auxiliary Equipment:

Combinable Magnetic Resonance Tool − B Master Calibration

Calibration Fixture Measurement

Phase	Tool Temperature MCAL DEGC			Value
Master				25.19
	10.00 (Minimum)	27.00 (Nominal)	44.00 (Maximum)	

Phase	LOOP Measurement MCAL			Value
Master				1870
	1500 (Minimum)	2300 (Nominal)	2900 (Maximum)	

Phase	Hall Probe B0 MCAL MTES			Value
Master				52.68
	50.00 (Minimum)	52.00 (Nominal)	55.00 (Maximum)	

Phase	Cal. Fixture Amplitude MCAL %			Value
Master				28.32

25.00 (Minimum)	37.50 (Nominal)	50.00 (Maximum)

Master: 3−Mar−2007 6:32

Environment Measurement Sonde / Equipment Identification

Primary Equipment:	
EMS Mechanical	EMM − B
EMS Long Caliper Extention	LONG −
EMS Cartridge	EMC − B
EMS Adaptor	EMA − B
Resistivity Meter	RES −
Auxiliary Equipment:	
Electronics Cartridge Housing	ECH − KH

Environment Measurement Sonde Wellsite Calibration

EMS Caliper Calibration

Phase	Radius 1 Short Radius MM	Value	Phase	Radius 1 Long Radius MM	Value
Before		100.3	Before		160.0
	76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)			127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)	

Phase	Radius 2 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value
Before		165.1	Before		100.0
	127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)			76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)	

Phase	Radius 3 Short Radius MM	Value	Phase	Radius 3 Long Radius MM	Value
Before		94.47	Before		155.7
	76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)			127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)	

Phase	Radius 4 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value
Before		160.1	Before		104.3
	127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)			76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)	

Phase	Radius 5 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value
Before		107.8	Before		165.1
	76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)			127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)	

Phase	Radius 6 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value
Before		162.4	Before		103.8
	127.0 (Minimum) 152.4 (Nominal) 177.8 (Maximum)			76.20 (Minimum) 101.6 (Nominal) 127.0 (Maximum)	

Before: 2−Mar−2007 22:46

Company: **JOGMEC**

Schlumberger

Well: **AURORA/JOGMEC/NRCAN MALLIK 2L−38**
Field: **MALLIK**
Province: **NWT**

ENVIRONMENTAL MEASUREMENT SONDE LOG (CALIPER)