Schlumberger

Company: **QGC A BG Group Business**
IPM Schlumberger
Well: **Cam 164**
Field: **CAM**
Rig: **Saxon 165** Country: **Australia**

Rig: Saxon 165
Field: CAM
Location: GDA−94 Zone 55
Well: Cam 164
Company: QGC A BG Group Business

Resistivity, Density, Neutron, GR Log
MultiExpress
1:500 Scale

LOCATION

GDA−94 Zone 55
Easting: 774238.696 m
Northing: 7098938.328 m

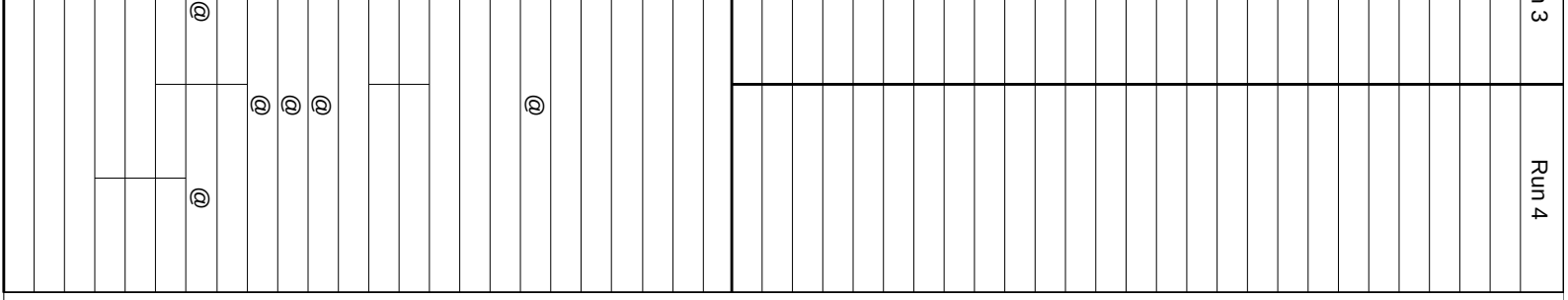
Elev.: K.B. 299.50 m
G.L. 295.00 m
D.F. 299.00 m

Permanent Datum: GROUND LEVEL Elev.: 295.00 m
Log Measured From: DRILL FLOOR 4.00 m above Perm. Datum
Drilling Measured From: DRILL FLOOR

State:	Max. Well Deviation	Longitude	Latitude
Queensland		149* 44' 39.65208" E	26* 12' 10.6404" S

	Run 1	Run 2	Run
Logging Date	4−Dec−2012		
Run Number	1		
Depth Driller	779.77 m		
Schlumberger Depth	780.2 m		
Bottom Log Interval	780.2 m		
Top Log Interval	10 m		
Casing Driller Size @ Depth	9.625 in @ 82 m	@	@
Casing Schlumberger	82.8 m		
Bit Size	8.500 in		
Type Fluid In Hole	KCl		
MUD Density / Viscosity	9 lbm/gal / 36 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	Active Tank		
RM @ Measured Temperature	1.000 ohm.m @ 27 degC	@	@
RMF @ Measured Temperature	0.750 ohm.m @ 27 degC	@	@
RMC @ Measured Temperature	1.250 ohm.m @ 27 degC	@	@
Source RMF / RMC	Calculated / Calculated		
RM @ MRT / RMF @ MRT	0.714 @ 46 / 0.536 @ 46	@ /	@
Maximum Recorded Temperatures	46 degC		
Circulation Stopped / Time	4−Dec−2012 / 4:15		
Logger On Bottom / Time	4−Dec−2012 / 10:43		
Unit Number / Location	3061 / AURM	/	
Recorded By	G.Jabbour/T.Taureka		
Witnessed By	Adam Rope		

	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: 4−DEC−2012 11:17:31

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46ZV−XS
Serial Number:	2001	Serial Number:	8034	Serial Number:	76144
Calibration Date:	17−Aug−2012	Calibration Date:	13−Nov−2012	Length:	2833 M
Calibrator Serial Number:	30	Calibrator Serial Number:	300286		
Calibration Cable Type:	7−46ZV−XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−7	Calibration RMS:	12	Rig Type:	LAND
Wheel Correction 2:	−6	Calibration Peak Error:	26		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	46.82 M
Rig Up Length At Bottom:	46.77 M
Rig Up Length Correction:	0.05 M
Stretch Correction:	0.30 M
Tool Zero Check At Surface:	

Depth Control Remarks

1. All Schlumberger depth procedures followed.
2. IDW used for primary depth control.
3. Z−Chart used for secondary depth control.
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: None	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Log objectives: To evaluate an 8.5" OH section.	
Toolstring ran as per toolsketch and logging program.	
Logging speed was 1800 ft/hr to aquire HiRes data.	
Main pass logged from TD to 20 m.	
No repeat pass requested by the client.	
Caliper check in casing within tolerance.	
Maximum recorded temperature is 46 degC from ITGN.	

Maximum recorded temperature is 40 degF from ARM.

RUN 1		RUN 2	
SERVICE ORDER #:	BSN8−00064	SERVICE ORDER #:	
PROGRAM VERSION:	19C1−222	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

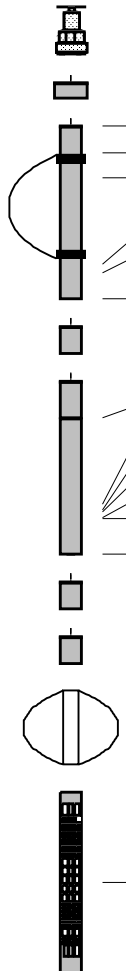
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

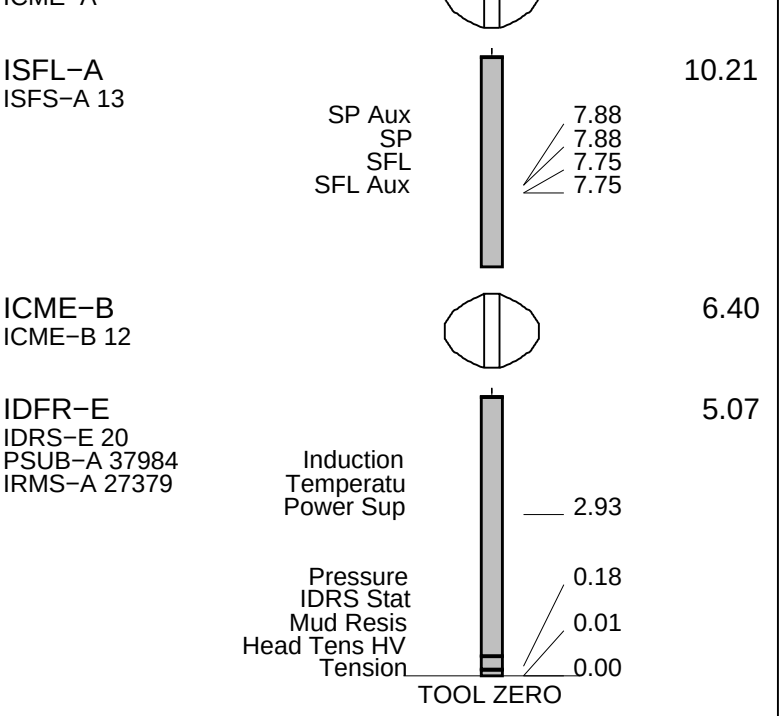
SURFACE EQUIPMENT

WITM−A
PSC_16MHZ

DOWNHOLE EQUIPMENT



LEH−QT LEH−QT		26.13
AH−307		25.24
ITGN−B PSC−ATS 14 PSTC−A 14 ITNH−B 14 ITNS−B 14 NNLS−C 6001 EME−I		24.97
AH−306		21.85
ILDT−B ICEC−B 15 IMCS−A 15 GGLS−C 3127 IPDP−A 15		21.36
AH−306		18.24
AH−306		17.76
ICME−A ICME−A		17.28
ISLT−C ISLS−B 13 ISLC−C 13 ISLH−B 13		15.94
ICME−A ICME−A		11.54



Schlumberger

Main Pass StdRes 1:500

MAXIS Field Log

Company: QGC A BG Group Business **Well: Cam 164**

Input DLIS Files

DEFAULT	**IDL_SFL_SLT_LDL_CNL_010LUP**	**FN:15**	**PRODUCER**	**04−Dec−2012 10:45**	**780.3 M**	**20.6 M**

Output DLIS Files

DEFAULT	**IDL_SFL_SLT_LDL_CNL_023PUP**	**FN:46**	**PRODUCER**	**04−Dec−2012 12:51**	**780.3 M**	**21.0 M**
RTB	**IDL_SFL_SLT_LDL_CNL_023PUP**	**FN:47**	**PRODUCER**	**04−Dec−2012 12:49**	**780.3 M**	**21.0 M**
CUST	**IDL_SFL_SLT_LDL_CNL_023PUC**	**FN:48**	**CUSTOMER**	**04−Dec−2012 12:51**	**780.3 M**	**21.0 M**

Integrated Hole/Cement Volume Summary

Hole Volume = 26.80 M3

Cement Volume = 7.95 M3 (assuming 7.00 IN casing O.D.)

Computed from 780.3 M to 21.2 M using data channel(s) CALI

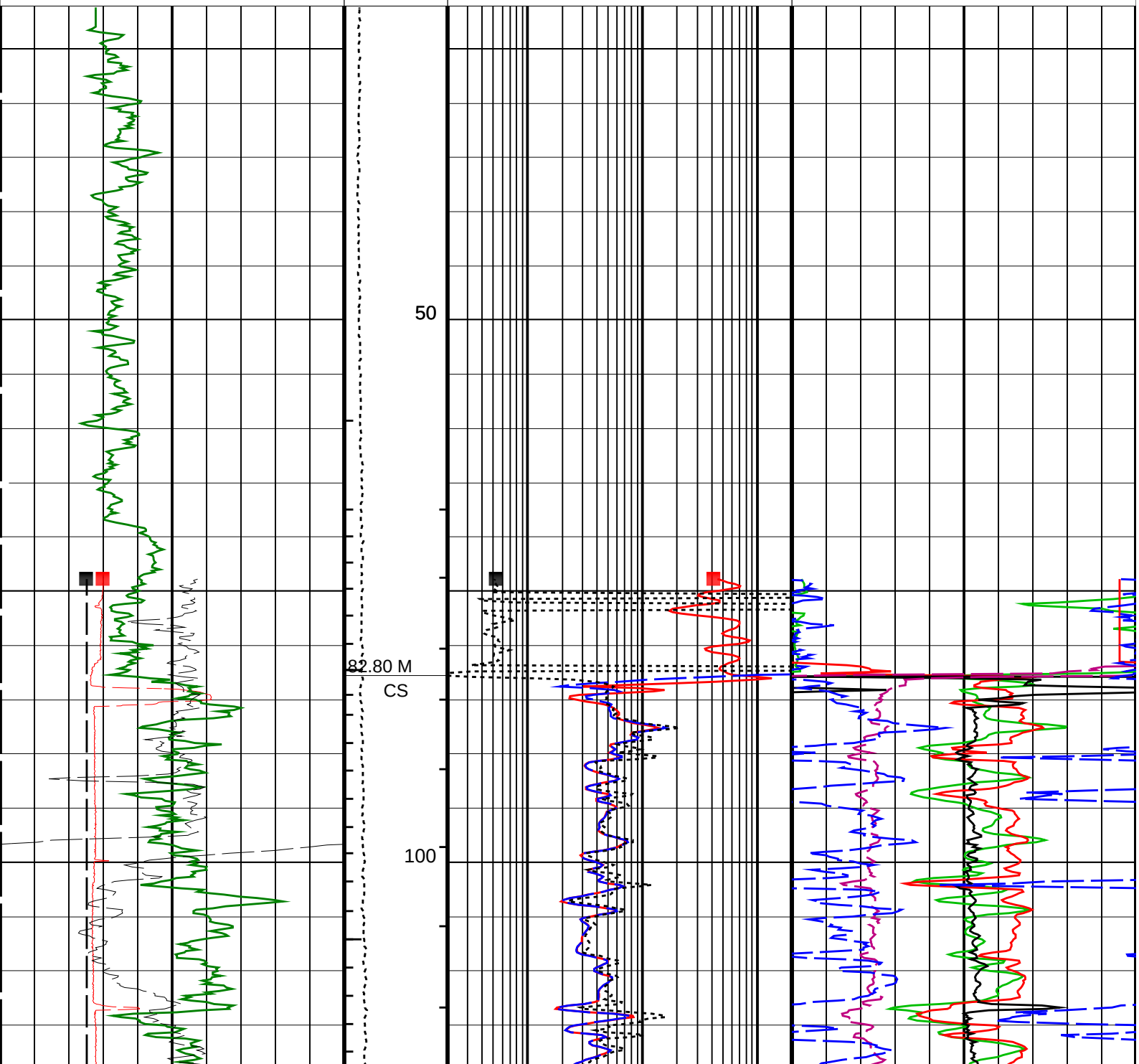
OP System Version: 19C1−222

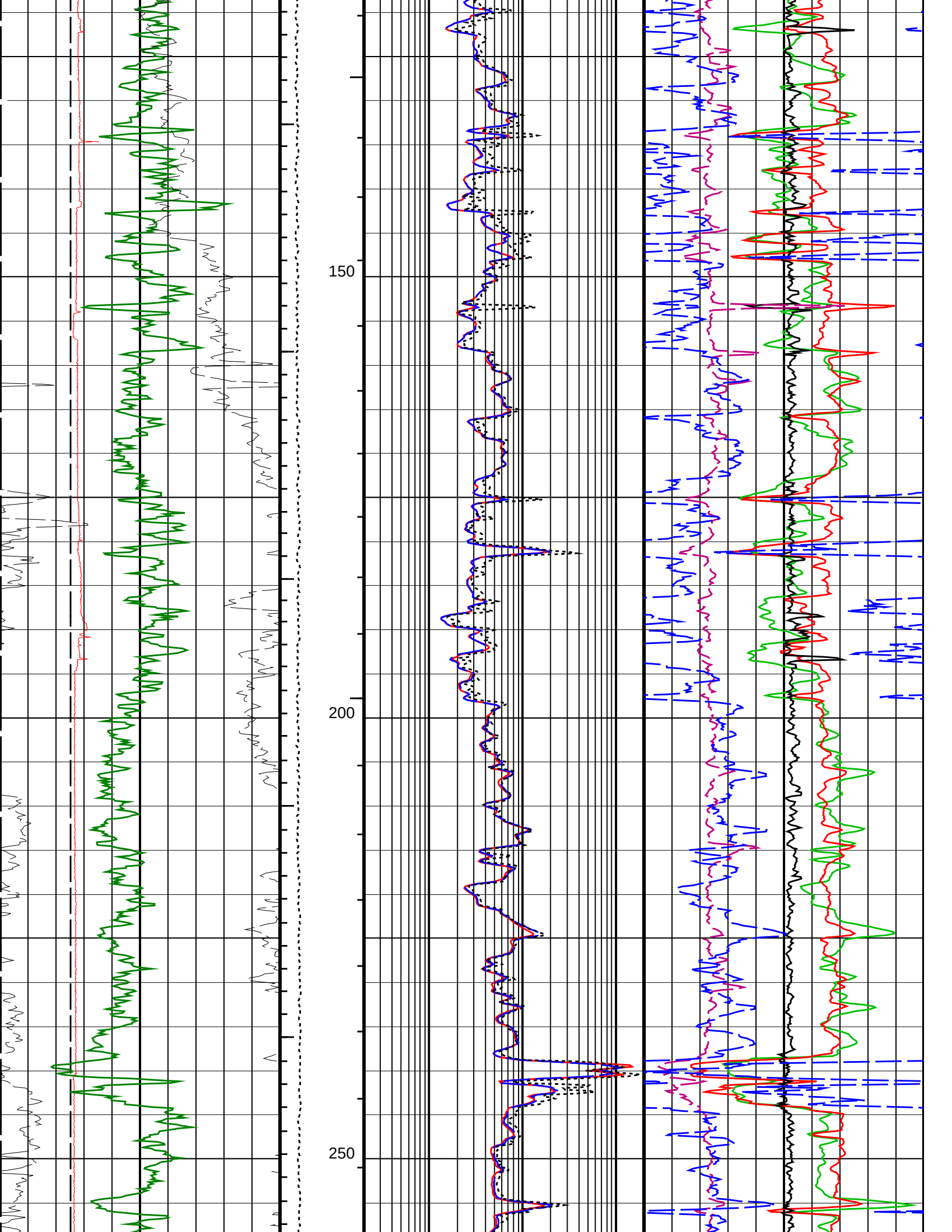
IDFR−E	**19C1−222**	**ISFL−A**	**19C1−222**
ISLT−C	**19C1−222**	**ILDT−B**	**19C1−222**
ITGN−B	**19C1−222**		

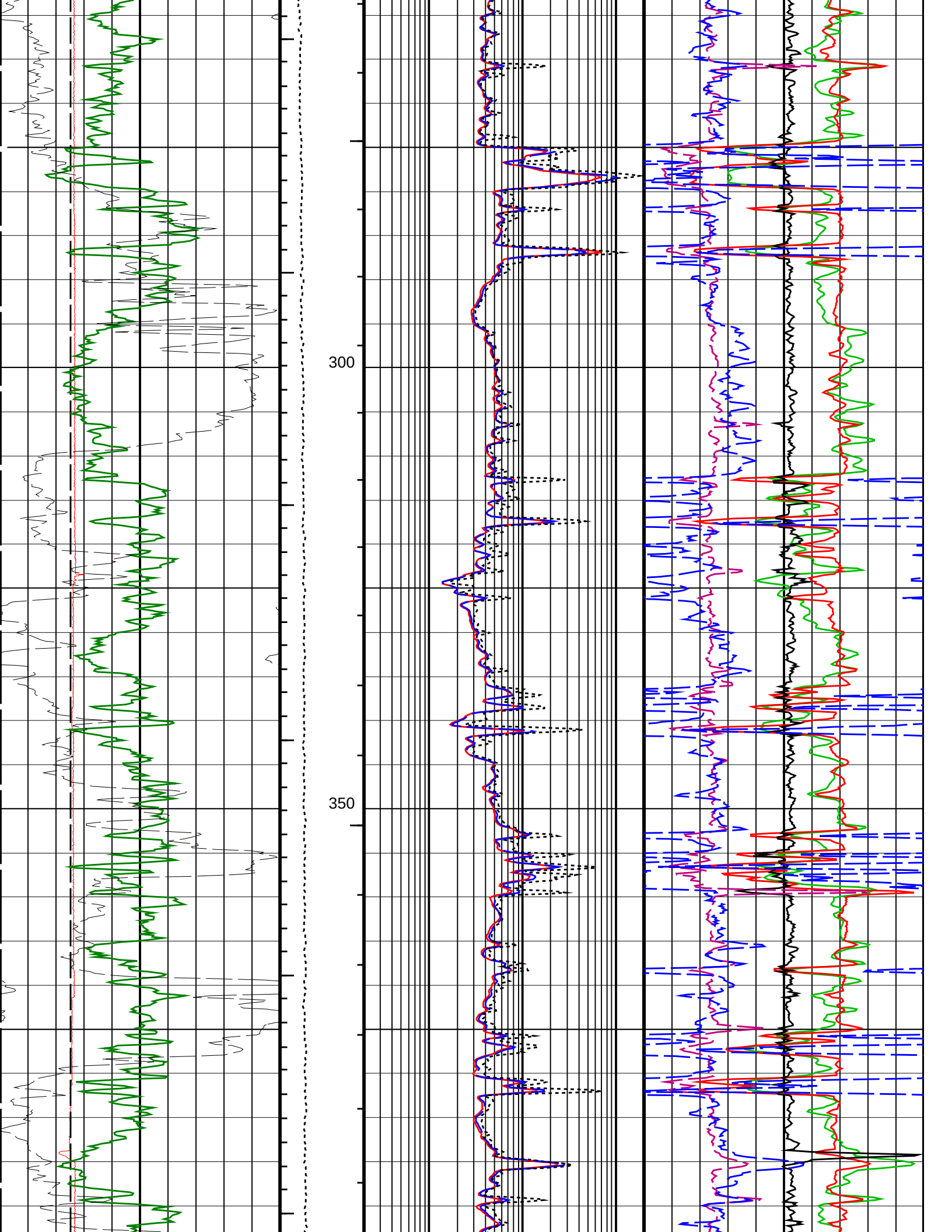
PIP SUMMARY

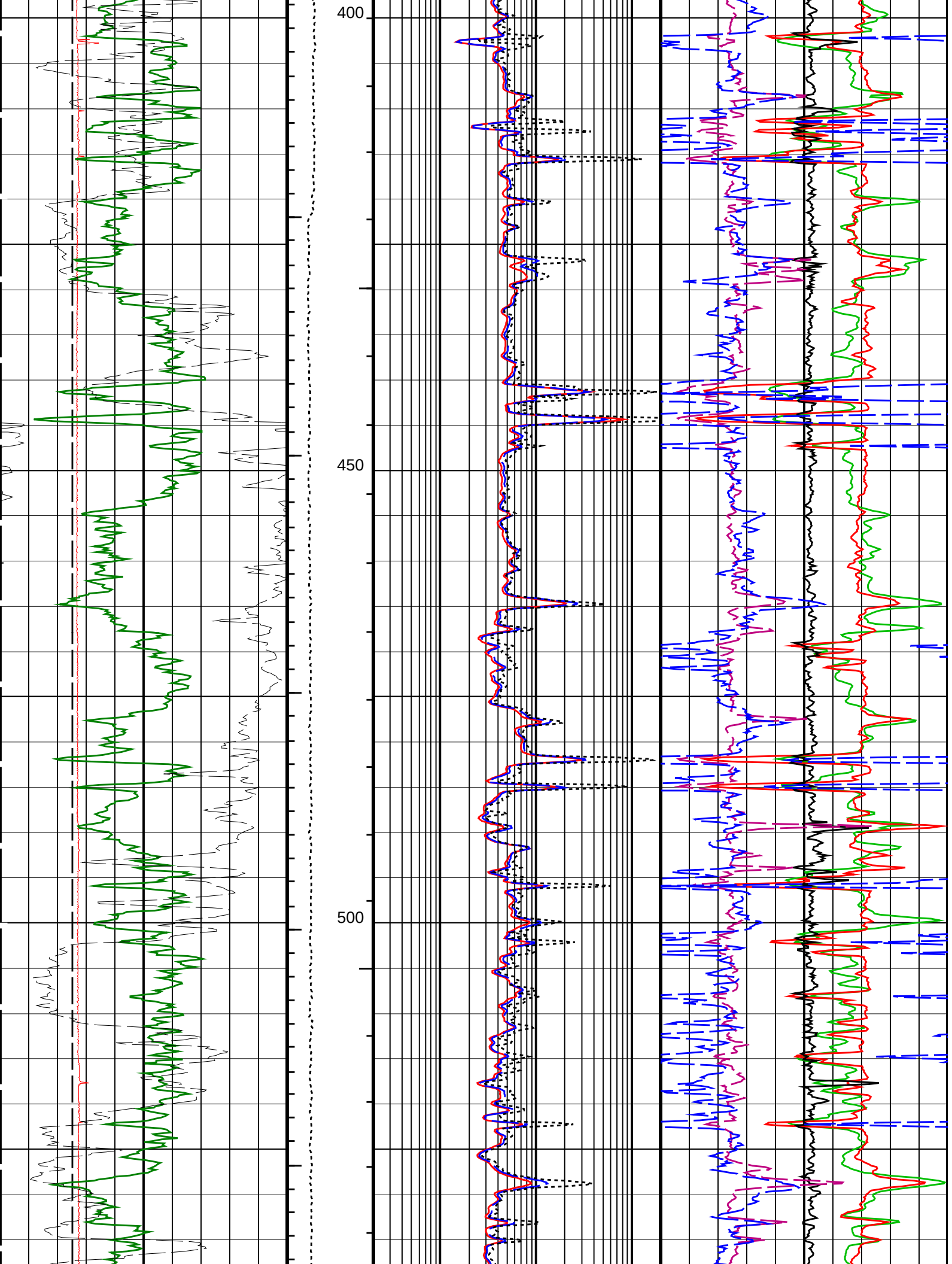
Integrated Hole Volume Minor Pip Every 0.1 M3
Integrated Hole Volume Major Pip Every 1 M3
Integrated Cement Volume Minor Pip Every 0.1 M3
Integrated Cement Volume Major Pip Every 1 M3
Time Mark Every 60 S

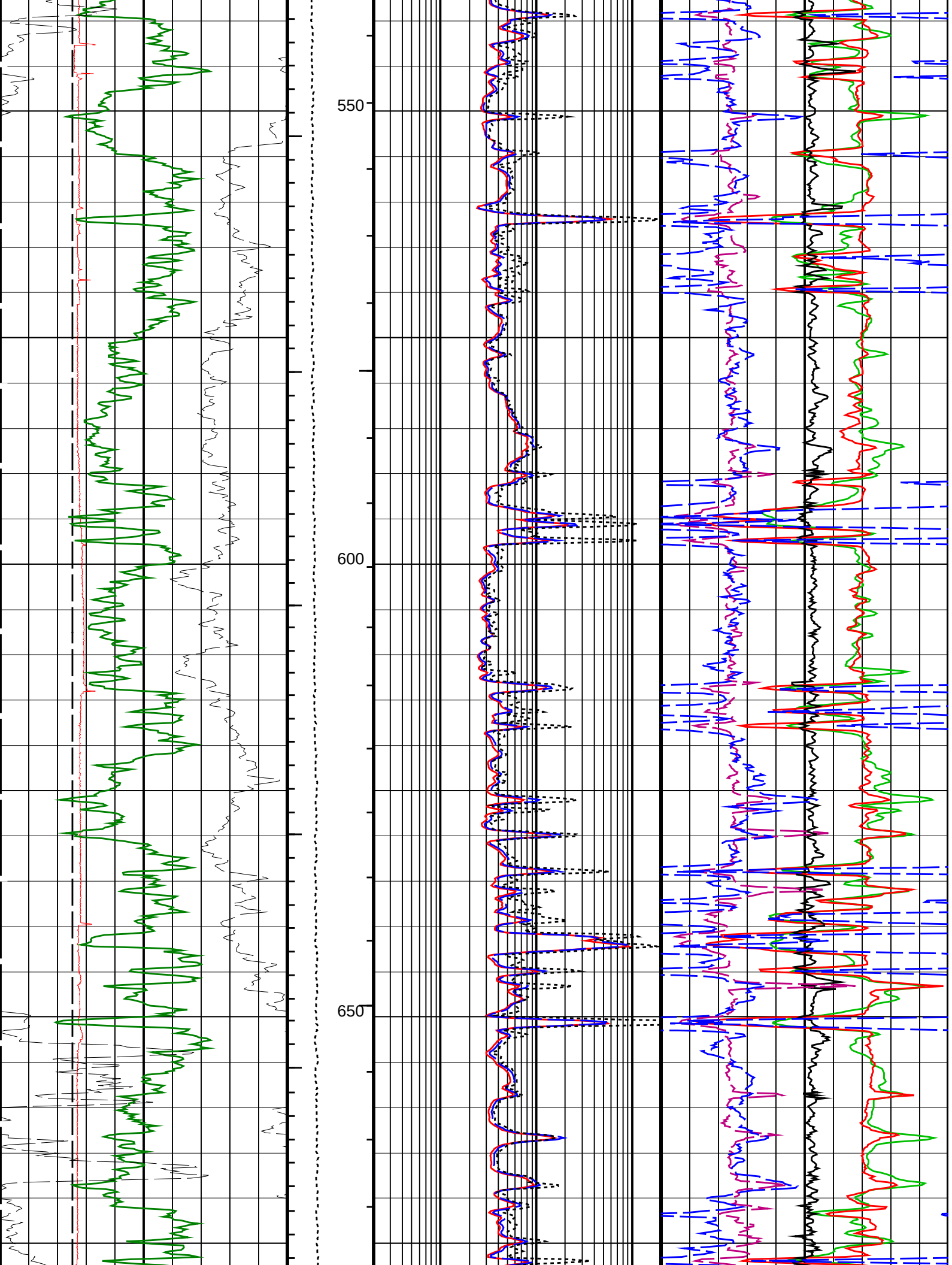
		Thermal Neutron Porosity (TNPH) 0.45 (V/V) −0.15
Gamma Ray (GR) 0 (GAPI) 150		Photoelectric Factor (PEF) 0 (−−−−) 10
Bit Size (BS) 6 (IN) 16	Borehole Corrected SFL (SFLB) 0.2 (OHMM) 200	Bulk Density Correction (DRHO) −0.25 (G/C3) 0.25
SP (SP) −80 (MV) 20	Induction Medium Resistivity (ILM2) 0.2 (OHMM) 200	Bulk Density (RHOB) 1 (G/C3) 3
Caliper (CALI) 6 (IN) 16	Tension (TENS) (LBF) 0 3000 / Induction Deep Resistivity (ILD2) 0.2 (OHMM) 200	Delta−T (DT) 180 (US/F) 60

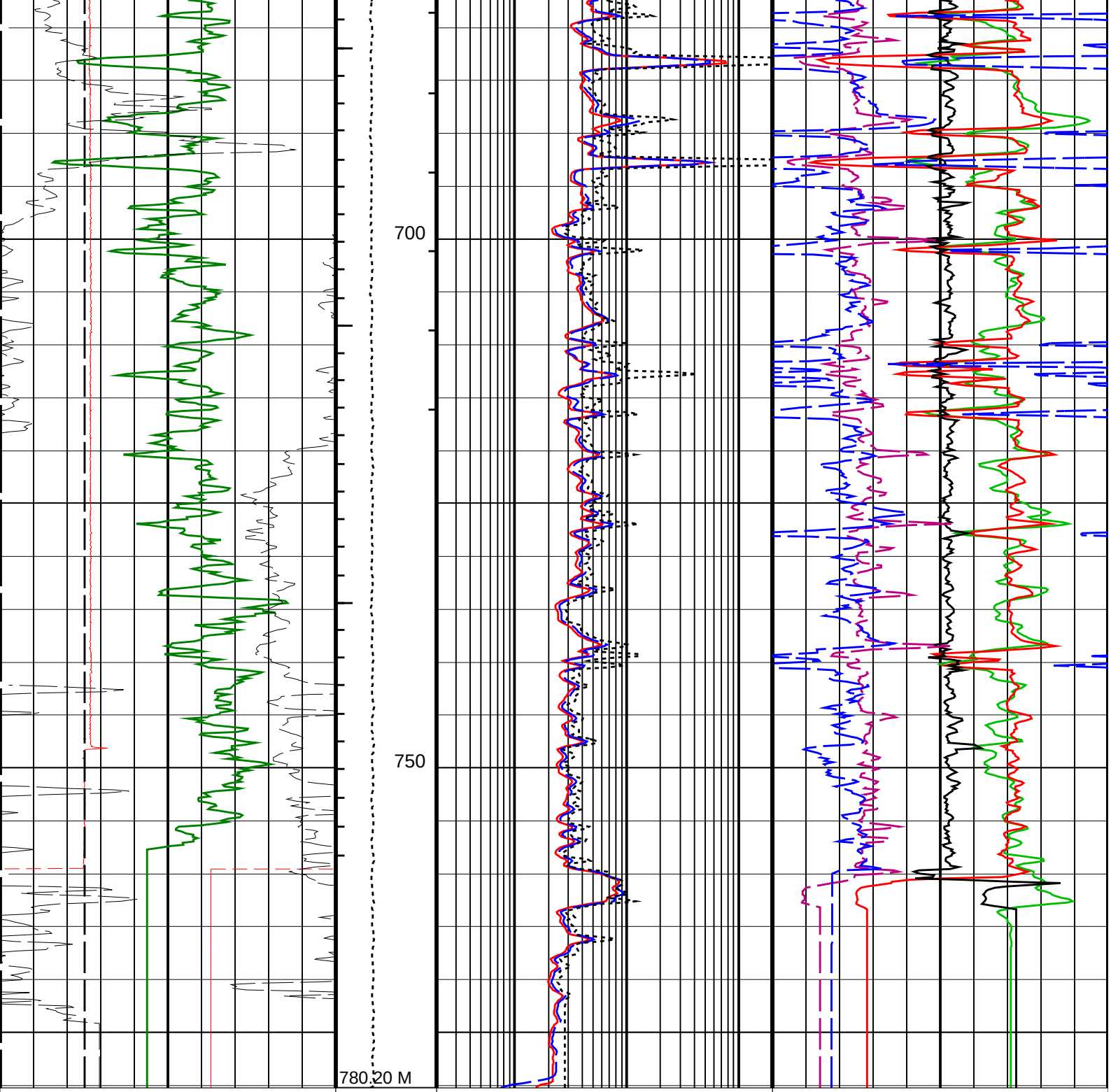



150
200
250


300
350


400
450
500


550
600
650



Caliper (CALI)	Tension (TENS)	Induction Deep Resistivity (ILD2)	Delta−T (DT)
6 (IN) 16	0 (LBF) 3000	0.2 (OHMM) 200	180 (US/F) 60
SP (SP)		**Induction Medium Resistivity (ILM2)**	**Bulk Density (RHOB)**
−80 (MV) 20		0.2 (OHMM) 200	1 (G/C3) 3
Bit Size (BS)		**Borehole Corrected SFL (SFLB)**	**Bulk Density Correction (DRHO)**
6 (IN) 16		0.2 (OHMM) 200	−0.25 (G/C3) 0.25
Gamma Ray (GR)			**Photoelectric Factor (PEF)**
0 (GAPI) 150			0 (−−−−) 10
			Thermal Neutron Porosity (TNPH)
			0.45 (V/V) −0.15

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	
	IDFR−E: iFlex Dual Formation Resistivity Tool		
ABLV	Array Induction Basic Logs Code Version Number	223	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Temp_On_Pres_On	
AFRSV	Array Induction Response Set Version for Four ft Resolution	03.00.02.00	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AIGS_SFL_IDFR	SFL Select Akima Interpolation Gating	On	
ATRSV	Array Induction Response Set Version for Two ft Resolution	03.00.02.00	
ATSE_IDFR	IDFR Temperature RTD Selection(Sonde Error Correction)	RTD1	
AULV	Array Induction User Level Control	Normal	
BHC_SIG_T	BHC Formation Conductivity Input	13R	
BHPRSRC_IDFR	IDFR Pressure Source	BHPR_IDFR	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	45.5	DEGC
DFT_IFLEX	Drilling Fluid Type	WATER	
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	IDFR_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISOD	Induction Standoff Outer Diameter	2.25	IN
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	36	DEGC
SPNV	SP Next Value	0	MV
	ISLT−C: iFlex Sonic Logging Tool		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	45.5	DEGC
CBLG	CBL Gate Width	50	US
DDE1	Digitizing Delay 1 − Upper Tx	40	US
DDE2	Digitizing Delay 2 − Lower Tx	40	US
DETE	Detection Peak	E2	
DFAD	DFAD Computation Control	DSP	
DFAD_INTERVAL_MODE	Detection Interval Mode for first arrival	TRACK	
DFT_IFLEX	Drilling Fluid Type	WATER	
DLSR	Depth Log Sampling Rate	TT1.5_WF6	
DSIN	Digitizing Sample Interval	10	US
DTCM	Delta−T Computation Mode	FULL	
DWCO	Digitizing Word Count	256	
GAI1	Gain Control 1 − Upper Tx	HIGH	
GAI2	Gain Control 2 − Lower Tx	HIGH	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	IDFR_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MAHTR	Manual High Threshold Refernce	40	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MNHTR	Minimum High Threshold Reference	30	
MODE	Sonic Firing Mode	STC_BHC_DT_256WF_1800FPH	
NMSG	Near Minimum Sliding Gate	140	US
NUMP	Number of Detection Passes	2	
NWI	Number of Waveform Items	6	
RATE	Sonic Firing Rate	12.5	HZ
SGAD	Sliding Gate Allow/Disallow	ON	
SGCW	Sliding Gate Closing Width	33	US
SGDT	Sliding Gate Delta−T	40	US/F
SGW	Sliding Gate Width	80	US
SHT	Surface Hole Temperature	36	DEGC
SLEV	Signal Level for Threshold Control	5000	
	ILDT−B: iFlex Litho Density Tool		
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	45.5	DEGC
DFT_IFLEX	Drilling Fluid Type	WATER	
DHNV_ICEC	ICEC Firmware Version	09.19.19	
DHNV_IPDP	IPDP Firmware Version	07.19.19	
FD	Fluid Density	1	G/C3
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	IDFR_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	

MDEN	Matrix Density	2.71	G/C3
PVN_ICEC	ICEC Computation Version	1.000	
PVN_IPDP	IPDP Computation Version	2.009	
SHT	Surface Hole Temperature	36	DEGC
TBHDS_ILDT	ILDT Tool Borehole Diameter Source	CALI	
ITGN−B: iFlex Telemetry Gamma Neutron Tool			
BARI_ITGN	Barite Mud Presence Flag	NO	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	45.5	DEGC
BSCO	Borehole Salinity Correction Option	YES	
CCCO	Casing & Cement Thickness Correction Option	NO	
DFT_IFLEX	Drilling Fluid Type	WATER	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	IDFR_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MWCO	Mud Weight Correction Option	YES	
NICO	Neutron Interference Correction Option	YES	
PTCO	Pressure Temperature Correction Option	YES	
PVN_ITGN	ITGN Computation Version	1.005	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	36	DEGC
SOCN	Standoff Distance	0	IN
SOCO	Standoff Correction Option	NO	
TBHDS	Tool Borehole Diameter Source	CALI	
TBHTS	Tool Borehole Temperature Source	GTSE	
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	45.5	DEGC
FCD	Future Casing (Outer) Diameter	7	IN
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	IDFR_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVCS	Integrated Hole Volume Caliper Selection	AUTOMATIC	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	36	DEGC
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	5200.00	PPM
CSIZ	Current Casing Size	9.625	IN
CWEI	Casing Weight	23.00	LB/F
DFD	Drilling Fluid Density	9.00	LB/G
DO	Depth Offset for Playback	0.3	M
FLEV	Fluid Level	−50000.00	M
MST	Mud Sample Temperature	26.70	DEGC
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	0.7500	OHMM
TD	Total Depth	−50000	M

Format: iFlex_StdRes_1 Vertical Scale: 1:500 Graphics File Created: 04−Dec−2012 12:51

OP System Version: 19C1−222

IDFR−E	19C1−222	ISFL−A	19C1−222
ISLT−C	19C1−222	ILDT−B	19C1−222
ITGN−B	19C1−222		

Input DLIS Files

DEFAULT	IDL_SFL_SLT_LDL_CNL_010LUP	FN:15	PRODUCER	04−Dec−2012 10:45	780.3 M	20.6 M

Output DLIS Files

DEFAULT	IDL_SFL_SLT_LDL_CNL_023PUP	FN:46	PRODUCER	04−Dec−2012 12:51
RTB	IDL_SFL_SLT_LDL_CNL_023PUP	FN:47	PRODUCER	04−Dec−2012 12:49
CUST	IDL_SFL_SLT_LDL_CNL_023PUC	FN:48	CUSTOMER	04−Dec−2012 12:51

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
iFlex Dual Formation Resistivity Tool Wellsite Calibration − Test Loop Gain Correction							
Master: 20−Nov−2012 9:24							
Test Loop Gain Correctio − 0	0	1.034	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.020	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.030	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.2961	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	−0.06079	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	−0.9152	N/A	N/A	N/A	N/A	V
iFlex Dual Formation Resistivity Tool Wellsite Calibration − Sonde Error Correction							
Master: 20−Nov−2012 9:36							
R Sonde Error Correction − 0	0	220.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	45.91	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	19.49	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	654.6	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	32.58	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−73.48	N/A	N/A	N/A	N/A	MM/M
iFlex Dual Formation Resistivity Tool Wellsite Calibration − Mud Gain Correction							
Master: 20−Nov−2012 8:38							
Asset Memory Data Mud Gain − C	1.000	0.9155	N/A	N/A	N/A	N/A	
Asset Memory Data Mud Gain − F	1.000	0.9146	N/A	N/A	N/A	N/A	
iFlex Dual Formation Resistivity Tool Wellsite Calibration − Mud Gain Correction							
Master: 20−Nov−2012 8:38							
Asset Memory Data Mud Gain − C	1.000	0.9155	N/A	N/A	N/A	N/A	
Asset Memory Data Mud Gain − F	1.000	0.9146	N/A	N/A	N/A	N/A	
iFlex Dual Formation Resistivity Tool Master Calibration − Pressue Offset							
Master: 20−Nov−2012 10:19							
Asset Memory Data Borehole Pre	0	8.451	−−	−−	−−	−−	KPAA
iFlex Litho Density Tool Wellsite Calibration − Detector Calibration							
Master: 20−Nov−2012 11:05 Before: 4−Dec−2012 9:56 After: 4−Dec−2012 12:37							
SS Window 1 Count Rate Master	1140	1108	1106	1104	−2.136	N/A	CPS
SS Window 2 Count Rate Master	1470	1415	1419	1414	−5.270	N/A	CPS
SS Window 3 Count Rate Master	760.0	734.6	730.5	736.4	5.903	N/A	CPS
SS Window 4 Count Rate Master	770.0	747.5	748.0	743.5	−4.536	N/A	CPS
LS Window 1 Count Rate Master	79.00	69.33	68.74	69.22	0.4721	N/A	CPS
LS Window 2 Count Rate Master	94.00	82.96	81.16	82.80	1.641	N/A	CPS
LS Window 3 Count Rate Master	280.0	236.4	236.1	236.6	0.5235	N/A	CPS
LS Window 4 Count Rate Master	146.0	124.1	125.8	124.4	−1.424	N/A	CPS
iFlex Litho Density Tool Wellsite Calibration − Detector Calibration							
Master: 20−Nov−2012 11:36							
SS Window 1 Count Rate Water L	27000	23030	N/A	N/A	N/A	N/A	CPS
SS Window 2 Count Rate Water L	23000	20400	N/A	N/A	N/A	N/A	CPS
SS Window 3 Count Rate Water L	13400	11930	N/A	N/A	N/A	N/A	CPS
SS Window 4 Count Rate Water L	11800	10450	N/A	N/A	N/A	N/A	CPS
LS Window 1 Count Rate Water L	1210	1060	N/A	N/A	N/A	N/A	CPS
LS Window 2 Count Rate Water L	1600	1350	N/A	N/A	N/A	N/A	CPS
LS Window 3 Count Rate Water L	2100	1798	N/A	N/A	N/A	N/A	CPS
LS Window 4 Count Rate Water L	530.0	444.3	N/A	N/A	N/A	N/A	CPS
iFlex Litho Density Tool Wellsite Calibration − Detector Calibration							
Master: 20−Nov−2012 12:30							
SS Window 1 Count Rate Water H	23000	16220	N/A	N/A	N/A	N/A	CPS
SS Window 2 Count Rate Water H	22000	17750	N/A	N/A	N/A	N/A	CPS
SS Window 3 Count Rate Water H	12800	10510	N/A	N/A	N/A	N/A	CPS
SS Window 4 Count Rate Water H	11300	9268	N/A	N/A	N/A	N/A	CPS
LS Window 1 Count Rate Water H	950.0	697.9	N/A	N/A	N/A	N/A	CPS
LS Window 2 Count Rate Water H	1380	1076	N/A	N/A	N/A	N/A	CPS

LS Window 3 Count Rate Water H	2000	1578	N/A	N/A	N/A	N/A	CPS
LS Window 4 Count Rate Water H	500.0	400.0	N/A	N/A	N/A	N/A	CPS

iFlex Litho Density Tool Wellsite Calibration − Detector Calibration
Master: 20−Nov−2012 13:02

SS Window 1 Count Rate Magnesi	28000	23850	N/A	N/A	N/A	N/A	CPS
SS Window 2 Count Rate Magnesi	24000	21970	N/A	N/A	N/A	N/A	CPS
SS Window 3 Count Rate Magnesi	13500	12080	N/A	N/A	N/A	N/A	CPS
SS Window 4 Count Rate Magnesi	11000	9759	N/A	N/A	N/A	N/A	CPS
LS Window 1 Count Rate Magnesi	5400	4541	N/A	N/A	N/A	N/A	CPS
LS Window 2 Count Rate Magnesi	6900	5845	N/A	N/A	N/A	N/A	CPS
LS Window 3 Count Rate Magnesi	8500	7235	N/A	N/A	N/A	N/A	CPS
LS Window 4 Count Rate Magnesi	1500	1229	N/A	N/A	N/A	N/A	CPS

iFlex Telemetry Gamma Neutron Tool Wellsite Calibration − Background
Master: 20−Nov−2012 9:23 Before: 4−Dec−2012 9:58 After: 4−Dec−2012 12:38

Near Thermal Count Rate Master	27.00	25.62	26.52	26.17	−0.3491	N/A	CPS
Far Thermal Count Rate Master	10.00	10.70	10.47	9.184	−1.283	N/A	CPS
Epithermal Count Rate Master B	27.00	25.80	26.89	26.30	−0.5835	N/A	CPS

iFlex Telemetry Gamma Neutron Tool Wellsite Calibration − Tank Measurement
Master: 20−Nov−2012 9:23

Near Thermal Count Rate Tank M	7978	7617	N/A	N/A	N/A	N/A	CPS
Far Thermal Count Rate Tank Me	2847	2686	N/A	N/A	N/A	N/A	CPS
Epithermal Count Rate Tank Mea	813.0	769.7	N/A	N/A	N/A	N/A	CPS

iFlex Dual Formation Resistivity Tool / Equipment Identification

Primary Equipment:

iFlex Resitivity Mud Sensor	IRMS − A	27379
iFlex Resistivity Pressure Sub	PSUB − A	37984
iFlex Dual Formation Resistivity Sonde	IDRS − E	20

Auxiliary Equipment:

iFlex Dual Formation Resistivity Tool Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase V		
0	1.034	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	0.2961	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.020	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	−0.06079	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.030	0.9000 (Minimum)	1.000 (Nominal)	1.100 (Maximum)	−0.9152	−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 20−Nov−2012 9:24

iFlex Dual Formation Resistivity Tool Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	220.7	0 (Minimum)	150.0 (Nominal)	300.0 (Maximum)	654.6	−900.0 (Minimum)	0 (Nominal)	900.0 (Maximum)
1	45.91	0 (Minimum)	45.00 (Nominal)	90.00 (Maximum)	32.58	−300.0 (Minimum)	0 (Nominal)	300.0 (Maximum)
2	19.49	0 (Minimum)	15.00 (Nominal)	30.00 (Maximum)	−73.48	−150.0 (Minimum)	0 (Nominal)	150.0 (Maximum)

Master: 20−Nov−2012 9:36

iFlex Dual Formation Resistivity Tool Wellsite Calibration

Mud Gain Correction

Phase	Asset Memory Data Mud Gain − Coarse	Value	Phase	Asset Memory Data Mud Gain − Fine	Value
Master	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	0.9155	Master	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	0.9146

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

Master: 20−Nov−2012 8:38

iFlex Dual Formation Resistivity Tool Wellsite Calibration

Mud Gain Correction

Phase	Asset Memory Data Mud Gain − Coarse	Value	Phase	Asset Memory Data Mud Gain − Fine	Value
Master		0.9155	Master		0.9146
	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Master: 20−Nov−2012 8:38

iFlex Dual Formation Resistivity Tool Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase V
0	1.034	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)	0.2961	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.020	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)	−0.06079	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.030	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)	−0.9152	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 20−Nov−2012 9:24

iFlex Dual Formation Resistivity Tool Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	220.7	0 (Minimum) 150.0 (Nominal) 300.0 (Maximum)	654.6	−900.0 (Minimum) 0 (Nominal) 900.0 (Maximum)
1	45.91	0 (Minimum) 45.00 (Nominal) 90.00 (Maximum)	32.58	−300.0 (Minimum) 0 (Nominal) 300.0 (Maximum)
2	19.49	0 (Minimum) 15.00 (Nominal) 30.00 (Maximum)	−73.48	−150.0 (Minimum) 0 (Nominal) 150.0 (Maximum)

Master: 20−Nov−2012 9:36

iFlex Dual Formation Resistivity Tool Master Calibration

Mud Gain Correction

Phase	Asset Memory Data Mud Gain − Coarse	Value	Phase	Asset Memory Data Mud Gain − Fine	Value
Master		0.9155	Master		0.9146
	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)			0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Master: 20−Nov−2012 8:38

iFlex Dual Formation Resistivity Tool Master Calibration

Pressue Offset

Phase	Asset Memory Data Borehole Pressure Offset KPA	Value
Master		8.451
	−689.5 (Minimum) 0 (Nominal) 689.5 (Maximum)	

Master: 20−Nov−2012 10:19

iFlex Litho Density Tool / Equipment Identification

Primary Equipment:

Mechanical Control Sonde	IMCS − A	15
Gamma Gamma Logging Source	GGLS − C	3127
Powered Density Pad	IPDP − A	15
Caliper Electronics Cartridge	ICEC − B	15

Auxiliary Equipment:

iFlex Litho Density Tool Wellsite Calibration

Detector Calibration

SS Window 1 Count Rate Master Bkgd CPS	Value
Master	1108
Before	1106
After	1104

730.0 (Minimum) 1140 (Nominal) 1370 (Maximum)

SS Window 2 Count Rate Master Bkgd CPS	Value
Master	1415
Before	1419
After	1414

990.0 (Minimum) 1470 (Nominal) 1720 (Maximum)

SS Window 3 Count Rate Master Bkgd CPS	Value
Master	734.6
Before	730.5
After	736.4

490.0 (Minimum) 760.0 (Nominal) 900.0 (Maximum)

SS Window 4 Count Rate Master Bkgd CPS	Value
Master	747.5
Before	748.0
After	743.5

480.0 (Minimum) 770.0 (Nominal) 940.0 (Maximum)

LS Window 1 Count Rate Master Bkgd CPS	Value
Master	69.33
Before	68.74
After	69.22

47.00 (Minimum) 79.00 (Nominal) 99.00 (Maximum)

LS Window 2 Count Rate Master Bkgd CPS	Value
Master	82.96
Before	81.16
After	82.80

54.00 (Minimum) 94.00 (Nominal) 121.0 (Maximum)

LS Window 3 Count Rate Master Bkgd CPS	Value
Master	236.4
Before	236.1
After	236.6

150.0 (Minimum) 280.0 (Nominal) 360.0 (Maximum)

LS Window 4 Count Rate Master Bkgd CPS	Value
Master	124.1
Before	125.8
After	124.4

83.00 (Minimum) 146.0 (Nominal) 190.0 (Maximum)

Master: 20−Nov−2012 11:05 Before: 4−Dec−2012 9:56 After: 4−Dec−2012 12:37

iFlex Litho Density Tool Wellsite Calibration

Detector Calibration

SS Window 1 Count Rate Water Low PE Insert CPS	Value
Master	23030

18000 (Minimum) 27000 (Nominal) 30000 (Maximum)

SS Window 2 Count Rate Water Low PE Insert CPS	Value
Master	20400

16000 (Minimum) 23000 (Nominal) 25000 (Maximum)

SS Window 3 Count Rate Water Low PE Insert CPS	Value
Master	11930

9800 (Minimum) 13400 (Nominal) 14500 (Maximum)

SS Window 4 Count Rate Water Low PE Insert CPS	Value
Master	10450

8600 (Minimum) 11800 (Nominal) 12900 (Maximum)

LS Window 1 Count Rate Water Low PE Insert CPS	Value
Master	1060

820.0 (Minimum) 1210 (Nominal) 1400 (Maximum)

LS Window 2 Count Rate Water Low PE Insert CPS	Value
Master	1350

1050 (Minimum) 1600 (Nominal) 1800 (Maximum)

LS Window 3 Count Rate Water Low PE Insert CPS	Value
Master	1798

1450 (Minimum) 2100 (Nominal) 2400 (Maximum)

LS Window 4 Count Rate Water Low PE Insert CPS	Value
Master	444.3

380.0 (Minimum) 530.0 (Nominal) 580.0 (Maximum)

Master: 20−Nov−2012 11:36

iFlex Litho Density Tool Wellsite Calibration

Detector Calibration

SS Window 1 Count Rate Water High PE Insert CPS	Value
Master	16220

16000 (Minimum) 23000 (Nominal) 26000 (Maximum)

SS Window 2 Count Rate Water High PE Insert CPS	Value
Master	17750

15000 (Minimum) 22000 (Nominal) 24000 (Maximum)

SS Window 3 Count Rate Water High PE Insert CPS	Value
Master	10510

9300 (Minimum) 12800 (Nominal) 13900 (Maximum)

SS Window 4 Count Rate Water High PE Insert CPS	Value
Master	9268

8200 (Minimum) 11300 (Nominal) 12400 (Maximum)

LS Window 1 Count Rate Water High PE Insert CPS	Value
Master	697.9

640.0 (Minimum) 950.0 (Nominal) 1100 (Maximum)

LS Window 2 Count Rate Water High PE Insert CPS	Value
Master	1076

930.0 (Minimum) 1380 (Nominal) 1600 (Maximum)

LS Window 3 Count Rate Water High PE Insert CPS	Value
Master	1578

1350 (Minimum) 2000 (Nominal) 2300 (Maximum)

LS Window 4 Count Rate Water High PE Insert CPS	Value
Master	400.0

360.0 (Minimum) 500.0 (Nominal) 550.0 (Maximum)

Master: 20−Nov−2012 12:30

iFlex Litho Density Tool Wellsite Calibration

Detector Calibration

SS Window 1 Count Rate Magnesium Low PE Insert CPS	Value
Master	23850

19000 (Minimum) 28000 (Nominal) 31000 (Maximum)

SS Window 2 Count Rate Magnesium Low PE Insert CPS	Value
Master	21970

17000 (Minimum) 24000 (Nominal) 27000 (Maximum)

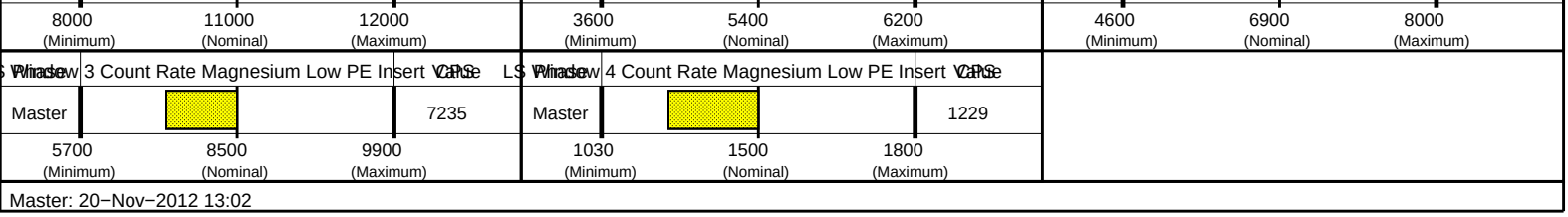
SS Window 3 Count Rate Magnesium Low PE Insert CPS	Value
Master	12080

9900 (Minimum) 13500 (Nominal) 14700 (Maximum)

SS Window 4 Count Rate Magnesium Low PE Insert CPS	Value
Master	9759

LS Window 1 Count Rate Magnesium Low PE Insert CPS	Value
Master	4541

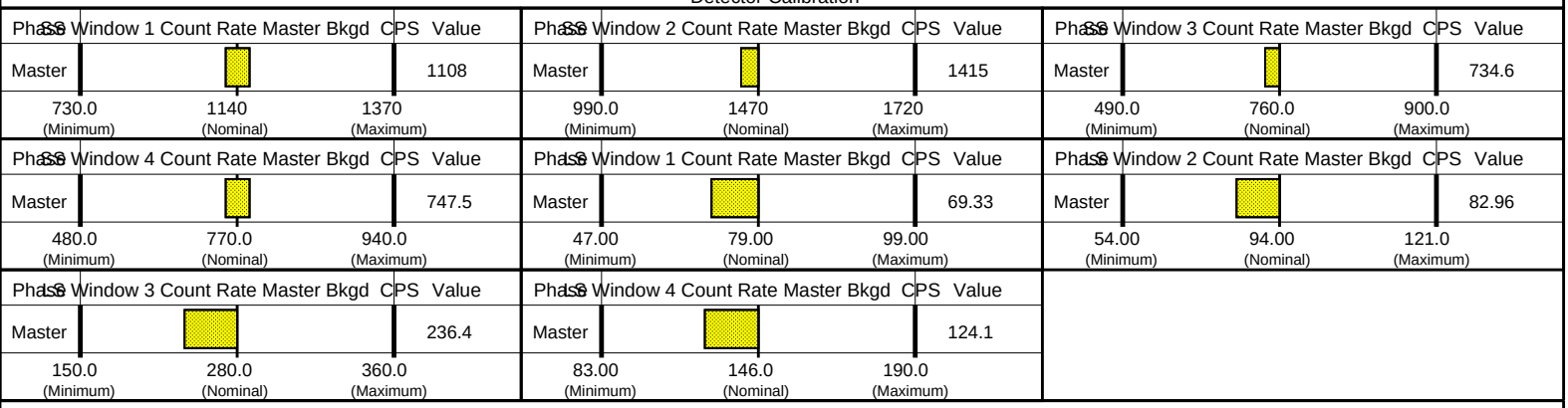
LS Window 2 Count Rate Magnesium Low PE Insert CPS	Value
Master	5845



Master: 20−Nov−2012 13:02

iFlex Litho Density Tool Master Calibration

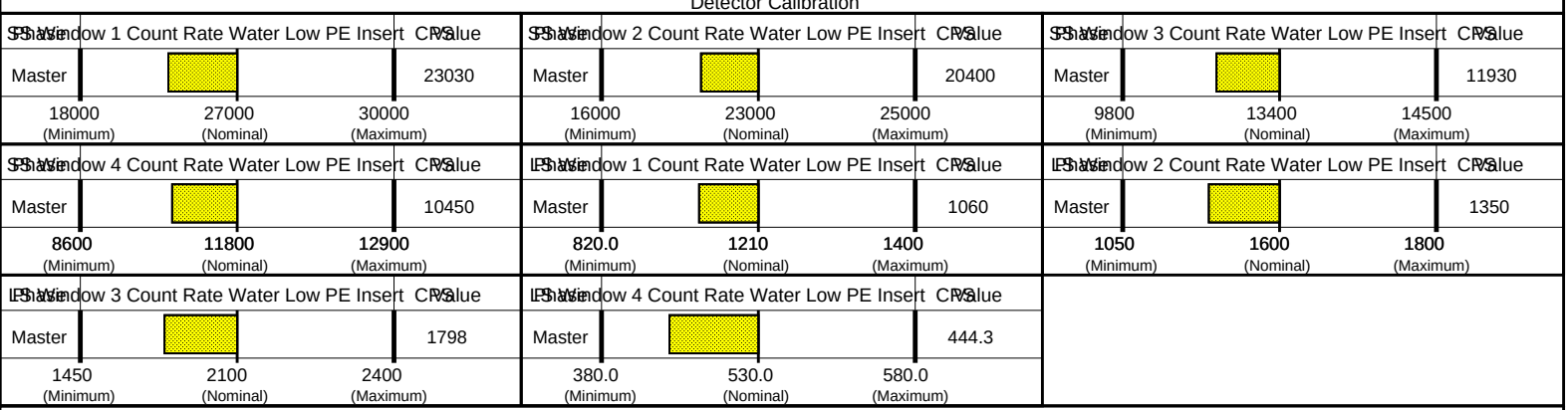
Detector Calibration



Master: 20−Nov−2012 11:05

iFlex Litho Density Tool Master Calibration

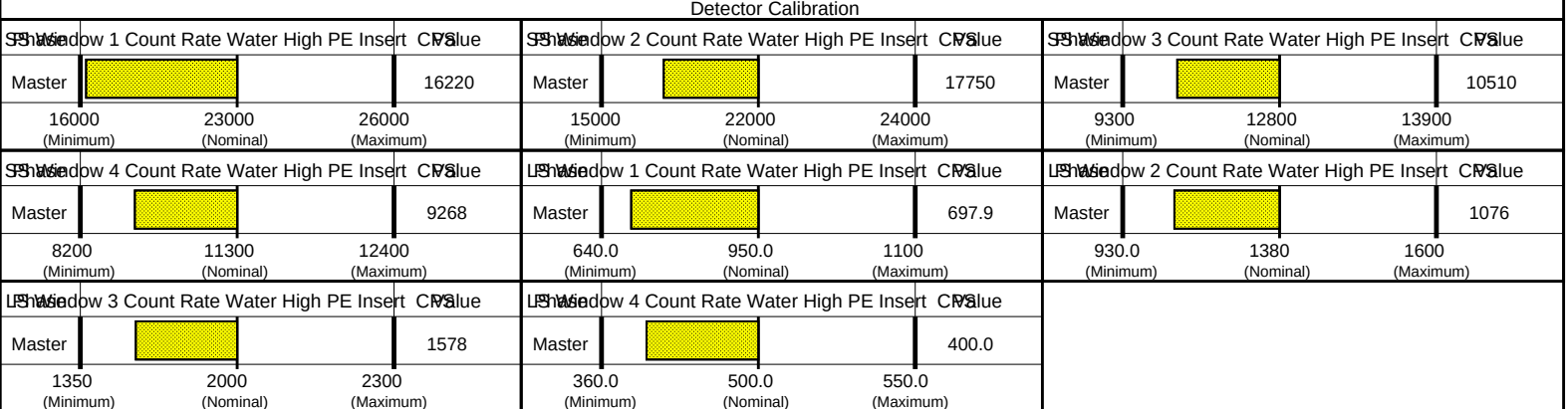
Detector Calibration



Master: 20−Nov−2012 11:36

iFlex Litho Density Tool Master Calibration

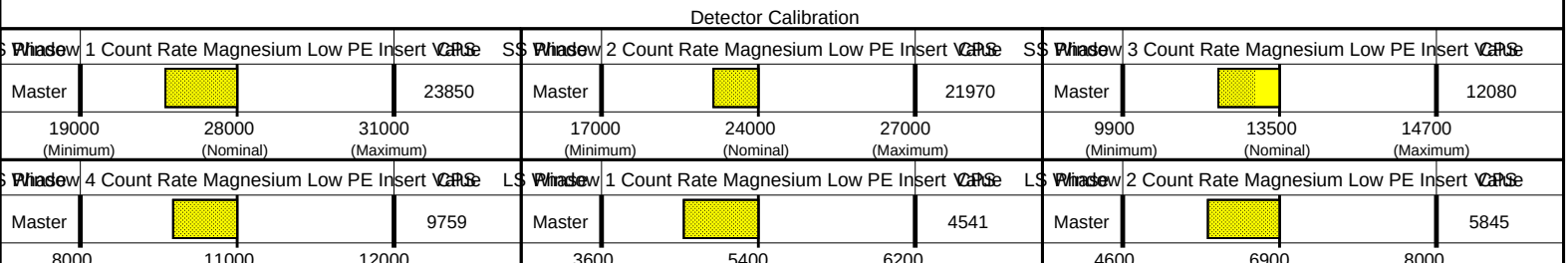
Detector Calibration



Master: 20−Nov−2012 12:30

iFlex Litho Density Tool Master Calibration

Detector Calibration



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

LS Window 3 Count Rate Magnesium Low PE Insert Value				LS Window 4 Count Rate Magnesium Low PE Insert Value			
			CPS				CPS
Master			7235	Master			1229
5700 (Minimum)	8500 (Nominal)	9900 (Maximum)		1030 (Minimum)	1500 (Nominal)	1800 (Maximum)	

Master: 20−Nov−2012 13:02

iFlex Telemetry Gamma Neutron Tool / Equipment Identification

Primary Equipment:

Telemetry Gamma Neutron Sonde	ITNS − B	14
Neutron Neutron Logging Source − contain	NNLS − C	6001
Telemetry Gamma Neutron Housing	ITNH − B	14
PSP Supply and Telemetry Cartridge	PSTC − A	14
PSP Telemetry Cartridge	PSC − ATS	14
PSC 16.384MHz oscillator	PSC_ −	

Auxiliary Equipment:

iFlex Telemetry Gamma Neutron Tool Wellsite Calibration

Background

Phase	Near Thermal Count Rate Master Bkgd	CPS	Value	Phase	Far Thermal Count Rate Master Bkgd	CPS	Value	Phase	Epithermal Count Rate Master Bkgd	CPS	Value
Master			25.62	Master			10.70	Master			25.80
Before			26.52	Before			10.47	Before			26.89
After			26.17	After			9.184	After			26.30
20.00 (Minimum)	27.00 (Nominal)	40.00 (Maximum)		7.000 (Minimum)	10.00 (Nominal)	17.00 (Maximum)		20.00 (Minimum)	27.00 (Nominal)	40.00 (Maximum)	

Master: 20−Nov−2012 9:23 Before: 4−Dec−2012 9:58 After: 4−Dec−2012 12:38

iFlex Telemetry Gamma Neutron Tool Wellsite Calibration

Tank Measurement

Phase	Near Thermal Count Rate Tank Meas	CPS	Value	Phase	Far Thermal Count Rate Tank Meas	CPS	Value	Phase	Epithermal Count Rate Tank Meas	CPS	Value
Master			7617	Master			2686	Master			769.7
7322 (Minimum)	7978 (Nominal)	8580 (Maximum)		2578 (Minimum)	2847 (Nominal)	3106 (Maximum)		746.0 (Minimum)	813.0 (Nominal)	881.0 (Maximum)	

Master: 20−Nov−2012 9:23

iFlex Telemetry Gamma Neutron Tool Master Calibration

Tank Measurement

Phase	Near Thermal Count Rate Tank Meas	CPS	Value	Phase	Far Thermal Count Rate Tank Meas	CPS	Value	Phase	Epithermal Count Rate Tank Meas	CPS	Value
Master			7617	Master			2686	Master			769.7
7322 (Minimum)	7978 (Nominal)	8580 (Maximum)		2578 (Minimum)	2847 (Nominal)	3106 (Maximum)		746.0 (Minimum)	813.0 (Nominal)	881.0 (Maximum)	

Master: 20−Nov−2012 9:23

Company: **QGC A BG Group Business**
IPM Schlumberger

Well: **Cam 164**
Field: **CAM**
Rig: **Saxon 165**
Country: **Australia**

Schlumberger

Resistivity, Density, Neutron, GR Log

MultiExpress
1:500 Scale