Schlumberger

Company: NGI Water Solutions DJ LLC

Well: NGL C5A

Field: Wattenberg

County: Weld State: Colorado

Platform Express

Triple Combo

County: Weld
Field: Wattenberg
Location: NESW Sec.29, T2N, R64W
Well: NGL C5A
Company: NGI Water Solutions DJ LLC

Location:				
NESW Sec.29, T2N, R64W SHL: 1974' FSL x 2431' FWL			Elev.: K.B.	4953.00 ft
			G.L.	4937.00 ft
			D.F.	4952.00 ft
Permanent Datum:	Ground Level	Elev.:	4937.00 f	
Log Measured From:	Kelly Bushing	16.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

API Serial No.	Section:	Township:	Range:
05-123-40973	29	2N	64W

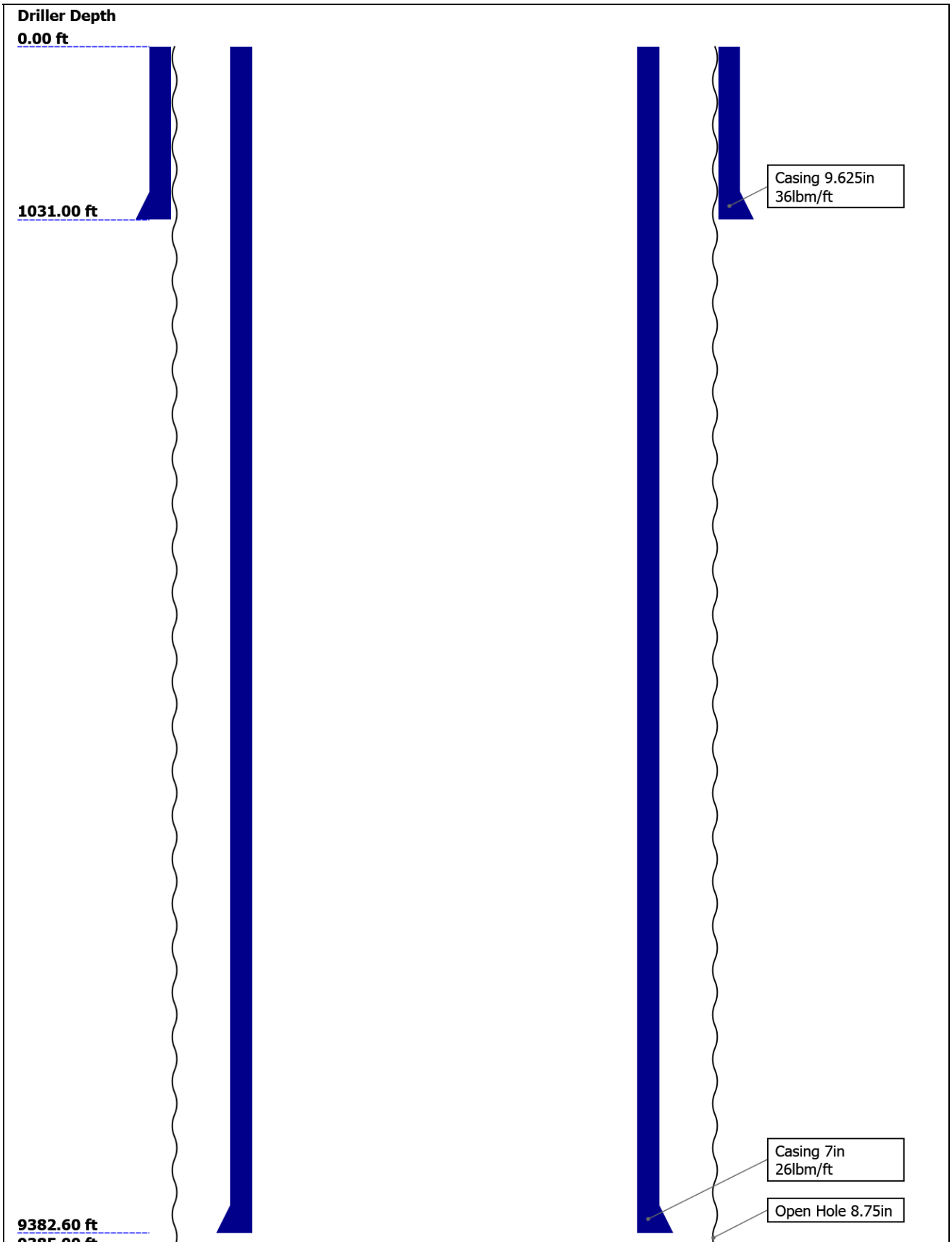
Logging Date			15-Oct-2015			
Run Number			Run 1			
Depth Driller			11130.00 ft			
Schlumberger Depth			11150.00 ft			
Bottom Log Interval			11150.00 ft			
Top Log Interval			9100.00 ft			
Casing Driller Size @ Depth			7 in @ 9382.60 ft			
Casing Schlumberger			9390.5 ft			
Bit Size			6.125 in			
Type Fluid In Hole			WBM			
MUD	Density	Viscosity	9 lbm/gal	28 s		
	Fluid Loss	PH	6 cm3	9.5		
	Source of Sample		Flowline			
RM @ Meas Temp			0.43 ohm.m @ 61 degF			
RMF @ Meas Temp			0.32 ohm.m @ 61 degF			
RMC @ Meas Temp			0.54 ohm.m @ 61 degF			
Source RMF	RMC		Calculated	Calculated		
RM @ BHT	RMF @ BHT		0.1 @ 272.3	0.08 @ 272.3		
Max Recorded Temperatures			272.3 degF			
Circulation Stopped	Time		14-Oct-2015	14:00:00		
Logger on Bottom	Time		15-Oct-2015	03:55:00		
Unit Number	Location:		9108	Ft. Morgan, CO		
Recorded By			Aleksei Bekhterev			
Witnessed By			Jackson Wehr			

Disclaimer

Contents

11.2 Log (KM 5in Triple Combo RA)
12. Calibration Report
13. Tail

Well Sketch



Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	8.75	6.125				
Top Driller (ft)	0	9385				
Top Logger (ft)	0	9385				
Bottom Driller (ft)	9385	11130				
Bottom Logger (ft)	9385	11150				
Casing						
Size (in)	9.625	7				
Weight (lbm/ft)	36	26				
Inner Diameter (in)	8.921	6.276				
Grade	N/A	N/A				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	1031	9382.6				
Bottom Logger (ft)	1031	9390.5				

Operational Run Summary

Parameter (unit)	Run 1					
Date Log Started	15-Oct-2015					
Time Log Started	02:42:53					
Date Log Finished	15-Oct-2015					
Time Log Finished	08:42:23					
Top Log Interval (ft)	9100.00					
Bottom Log Interval (ft)	11150.00					
Total Depth (ft)	11130.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	6.125					
Logging Unit Number	9108					
Logging Unit Location	Ft. Morgan, CO					
Recorded By	Aleksei Bekhterev					

Witnessed By	Jackson Wehr					
Service Order Number	CY37-00139					

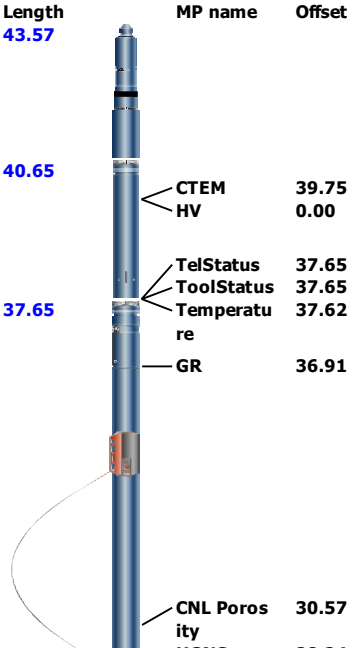
Borehole Fluids

Parameter(unit)	Run 1					
Fluid Type	Water					
Fluid Name	WBM					
Max Recorded Temperatures (degF)	272.3					
Source of Sample	Flowline					
Salinity (ppm)	0					
Density (lbm/gal)	9					
Funnel Viscosity (s)	28					
Fluid Loss (cm3)	6					
PH	9.5					
Date/Time Circulation Stopped	14-Oct-2015 14:00:00					
Date Logger on Bottom	15-Oct-2015					
Time Logger on Bottom	03:55:00					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	0.43 @ 61					
RMF @ Meas Temp (ohm.m@degF)	0.32 @ 61					
RMC @ Meas Temp (ohm.m@degF)	0.54 @ 61					
RM @ BHT (ohm.m@degF)	0.1 @ 272.3					
RMF @ BHT (ohm.m@degF)	0.08 @ 272.3					
RMC @ BHT (ohm.m@degF)	0.13 @ 272.3					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary

Run 1: Toolstring

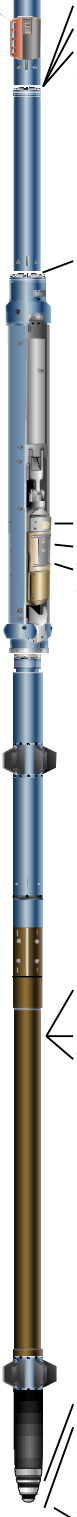
Equip name	Length
LEH-QT	**43.57**
LEH-QT	
DTC-H	**40.65**
ECH-KC	
DTC-H	
HGNS-H	**37.65**
HGNH	
NSR-F:5215	
NPV-N	
HACCZ-H:5736	
HGNS-H	
HMCA-H	



MP name	Offset
CTEM	**39.75**
HV	**0.00**
TelStatus	**37.65**
ToolStatus	**37.65**
Temperature	**37.62**
GR	**36.91**
CNL Porosity	**30.57**

Run 1: Remarks

Run 1: Remarks
This is subsequent trip in well
Toolstring ran as per tool sketch
Neutron corrections: Hole Size Correction (HSCO), Standoff Correction (SOCO)
Matrix zoning: Sandstone 2.65 g/cc 9750'-9100'; Dolomite 2.87 g/cc 10150'-9750' cont...
...cont Limestone 2.71 g/cc 10500'-10150'; Sandstone 2.68 g/cc TD-10500'
Correlation log: Platform Express (Schlumberger 09-Oct-2015)
Data adversely affected by the hole condition
Repeat analisys below 11040' is affected by cable stretch due to being stuck
Main pass data is invalid at 11094'-11030' due to being stuck
Crew: Gary Lapp, Mike Waite
Thank you for choosing Schlumberger Wireline!



HGNS 28.24
HMCA 28.24
Accelerom eter 0.00

HDRS-H 28.24
ECH-MEB
HRCC-H
HRMS-H
Long Spacing :28736
GSR-J:5471
Backscatter
HRGD-H:3933
Short Spacing
GPV-Q

HRCC 24.24

MCFL 18.81
Caliper 18.33
TLD Densi ty 17.94

AIT-M:1538 16.00
AMIS:1538
AMRM:1251

Power Sup ply 7.91
Induction 7.91
Temperatu re 7.91

SP 0.08
Mud Resist ivity 0.00
Head Tens ion
TOOL_ZERO

Lengths are in ft
Maximum Outer Diameter = 5.000 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

	Run 1		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		

Logging Cable			
Type	7-46A-XS		
Serial Number			
Length	17000.00 ft		
Conveyance Type	Wireline		
Rig Type	Land Rig		

Run 1:Depth Control Parameters		Depth Control Remarks
Log Sequence	Subsequent Trip To the Well	All Schlumberger depth policies followed
Reference Log Name		IDW used as primary depth device
Reference Log Run Number		Z-chart used as secondary depth reference
Reference Log Date		
Subsequent Trip Down Log Correction		

Run 1

5" Triple Combo

Software Version

Acquisition System	Version
Maxwell 2016	6.0.50725.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Main[3]:Up	Up	8809.53 ft	11172.46 ft	15-Oct-2015 4:17:54 AM	15-Oct-2015 8:00:23 AM	ON	0.94 ft	No

All depths are referenced to toolstring zero

Log

Company:NGI Water Solutions DJ LLC Well:NGL C5A

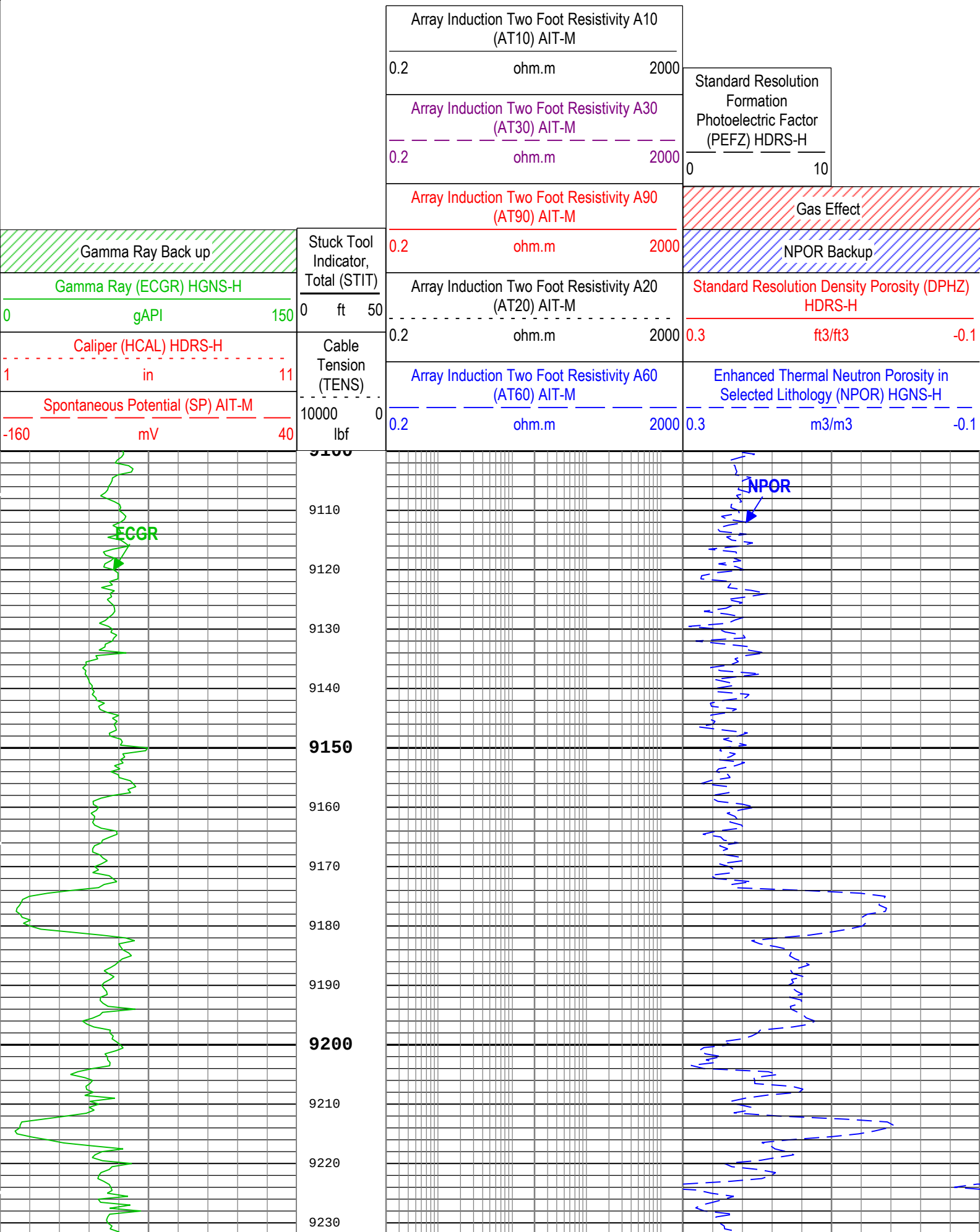
Run 1: Main[3]:Up:S023

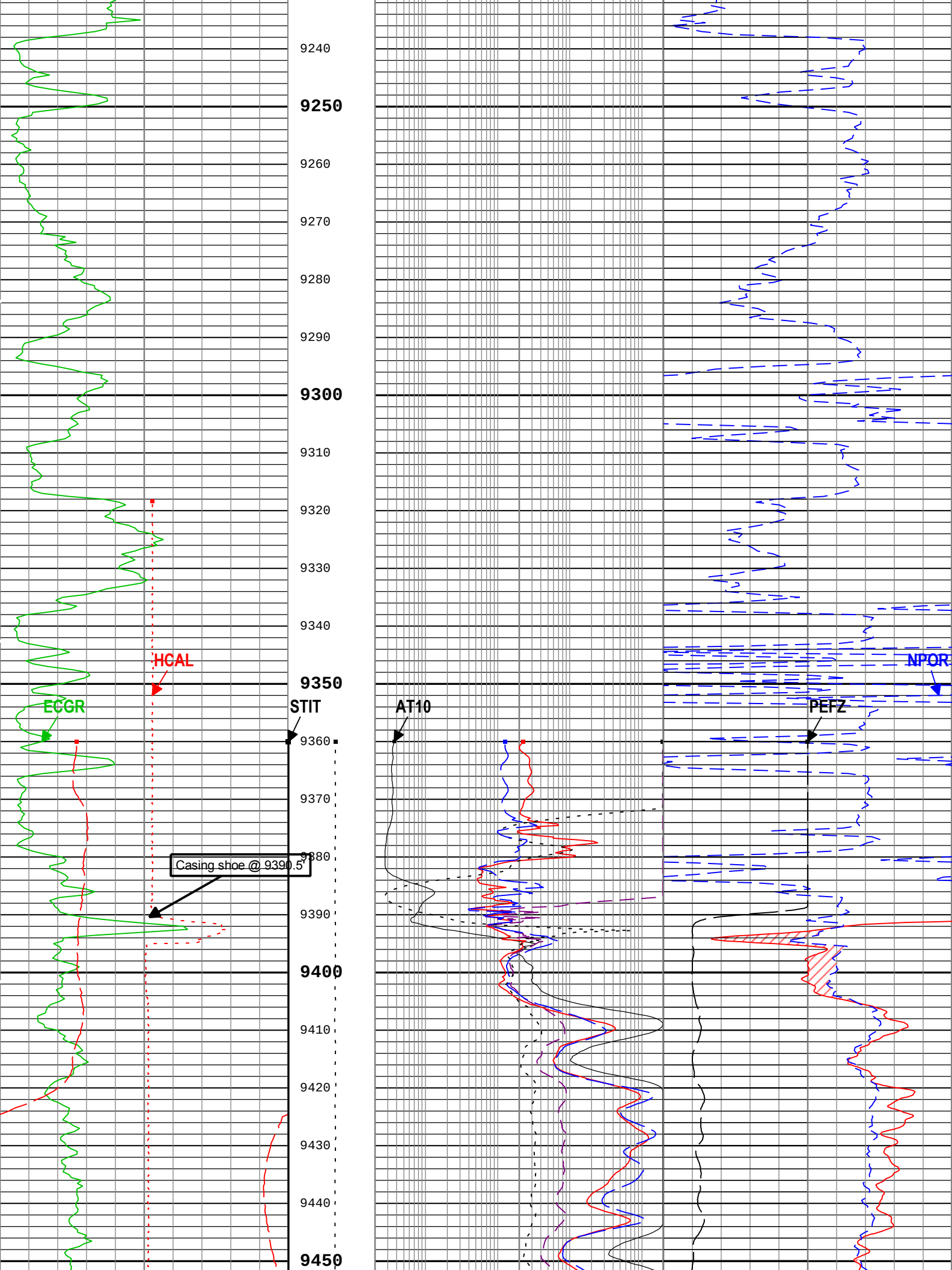
Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Oct-2015 08:45:23

Channel	Source	Sampling
AT10	AIT-M:AMIS:AMIS	3in
AT20	AIT-M:AMIS:AMIS	3in
AT30	AIT-M:AMIS:AMIS	3in
AT60	AIT-M:AMIS:AMIS	3in
AT90	AIT-M:AMIS:AMIS	3in
CALI	HDRS-H:HRCC-H:HRCC-H	1in
DPHZ	HDRS-H:HRMS-H:HRGD-H	2in
GR	HGNS-H:HGNS-H:HGNS-H	6in
NPOR	HGNS-H:HGNS-H:HGNS-H	6in
PEFZ	HDRS-H:HRMS-H:HRGD-H	2in
SP	AIT-M:AMIS:AMIS	6in
STIT	DepthCorrection	6in

TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME_1900 - Time Marked every 60.00 (s)

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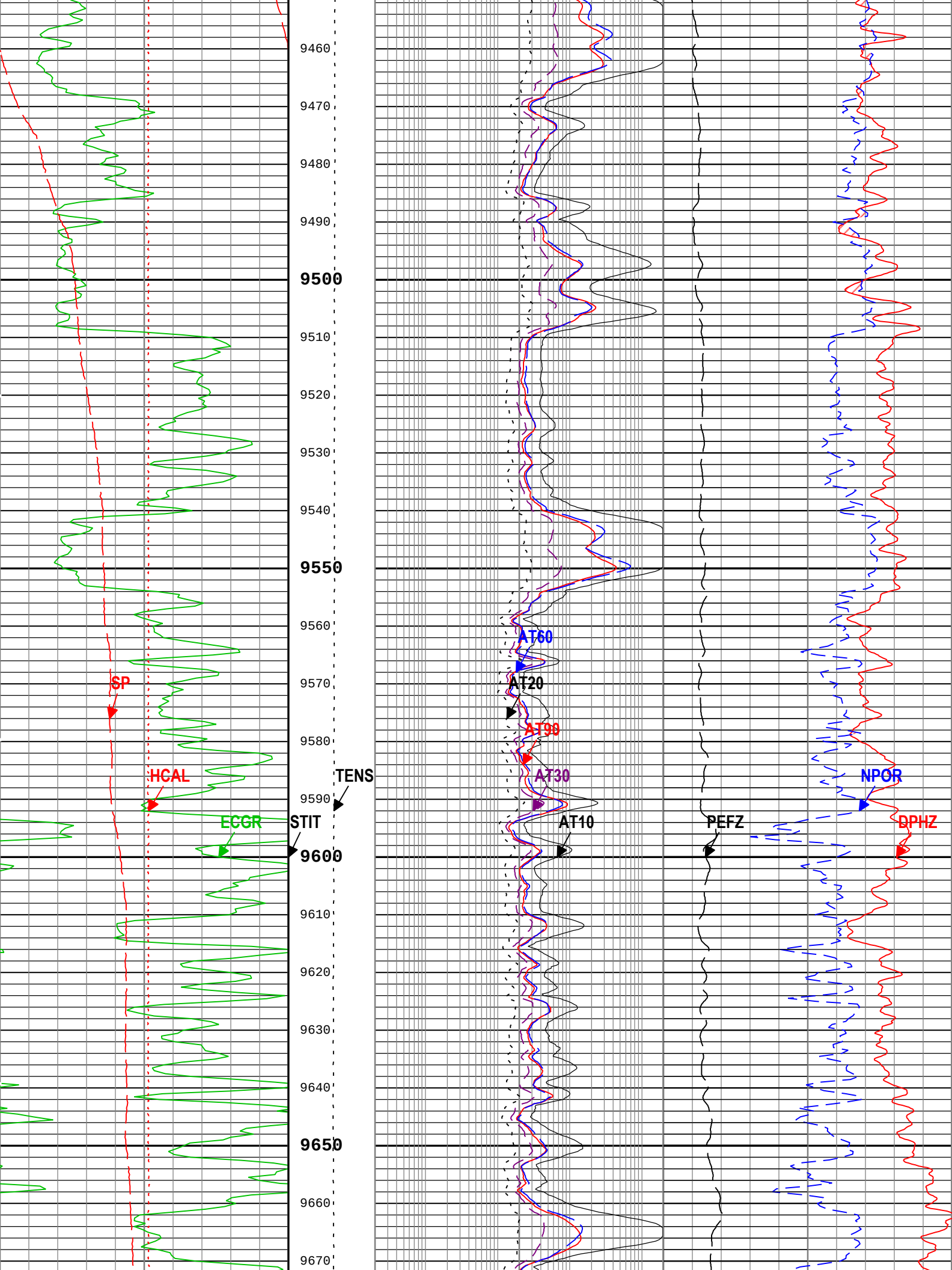
9250
9260
9270
9280
9290
9300
9310
9320
9330
9340
9350
9360
9370
9380
9390
9400
9410
9420
9430
9440
9450
HCAL
ECGR
STIT
AT10
NPOR
PEFZ
Casing shoe @ 9390.5'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9530
9540
9550
9560
9570
9580
9590
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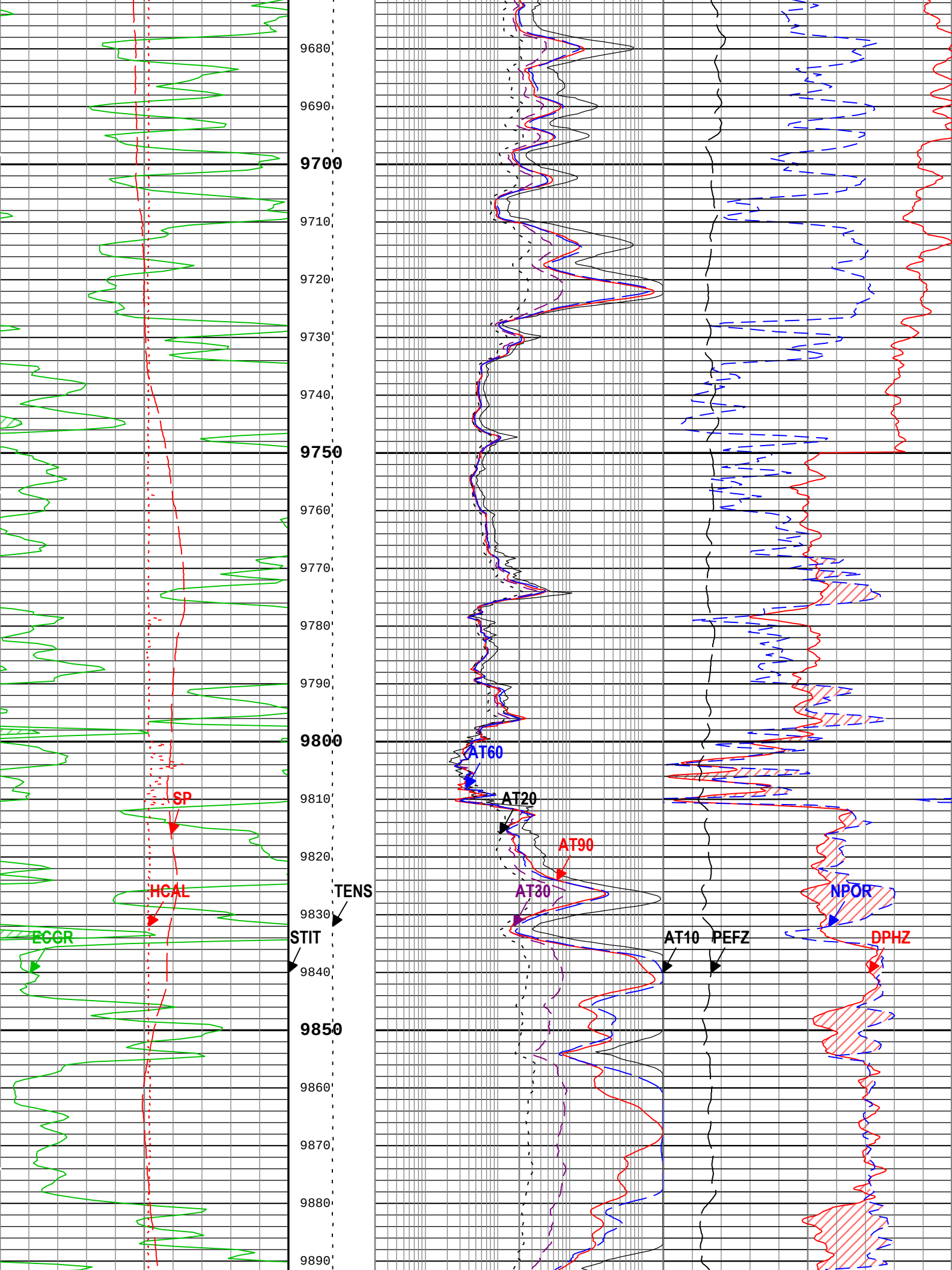
9610
9620
9630
9640
9650
9660
9670
SP
HCAL
ECGR
TENS
STIT
AT60
AT20
AT90
AT30
AT10
PEFZ
NPOR
DPHZ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9800
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9840
9850
9860
9870
9880
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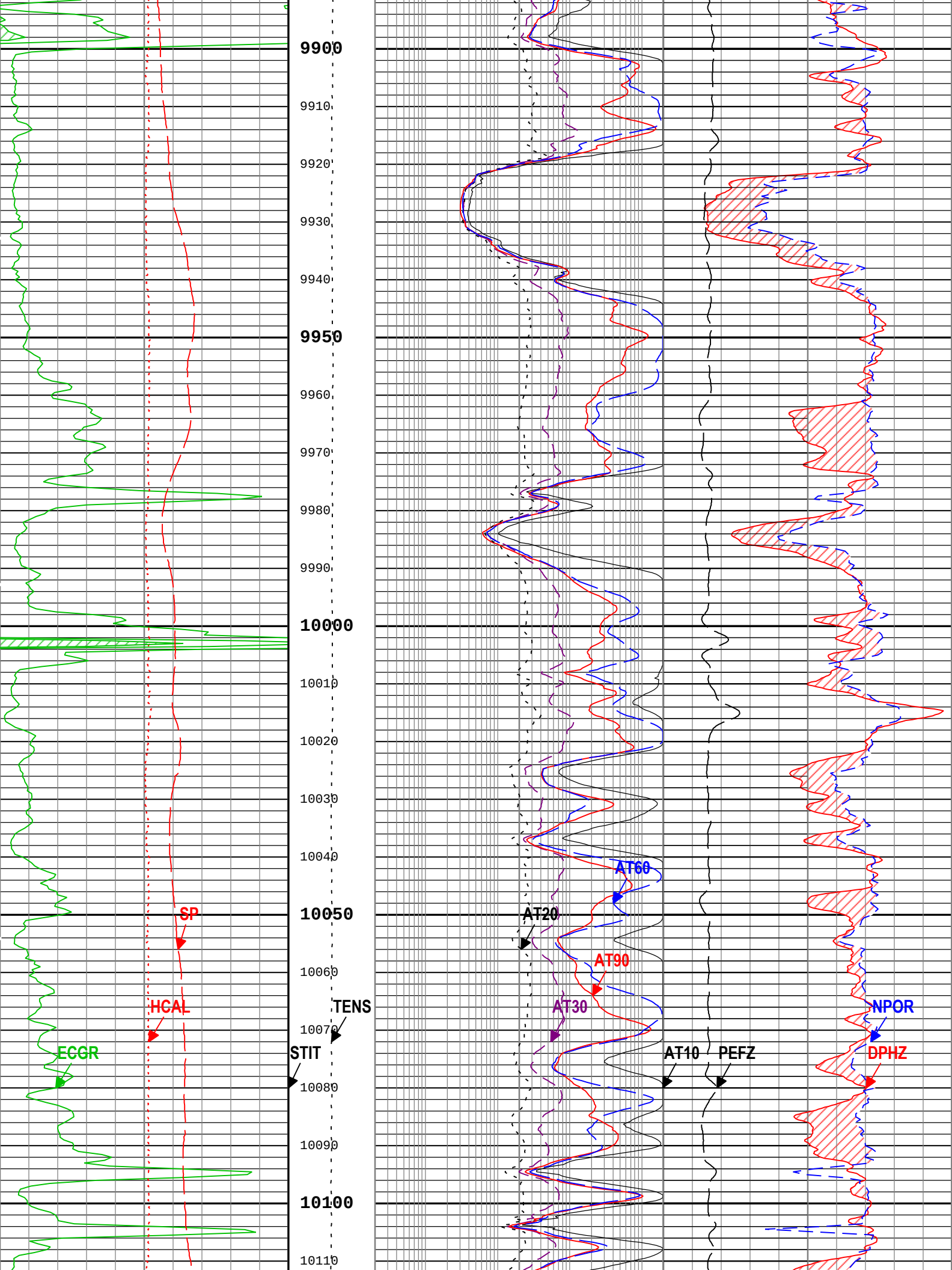
SP
HCAL
ECGR
TENS
STIT
AT60
AT20
AT90
AT30
AT10
PEFZ
NPOR
DPHZ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10070
10080
10090
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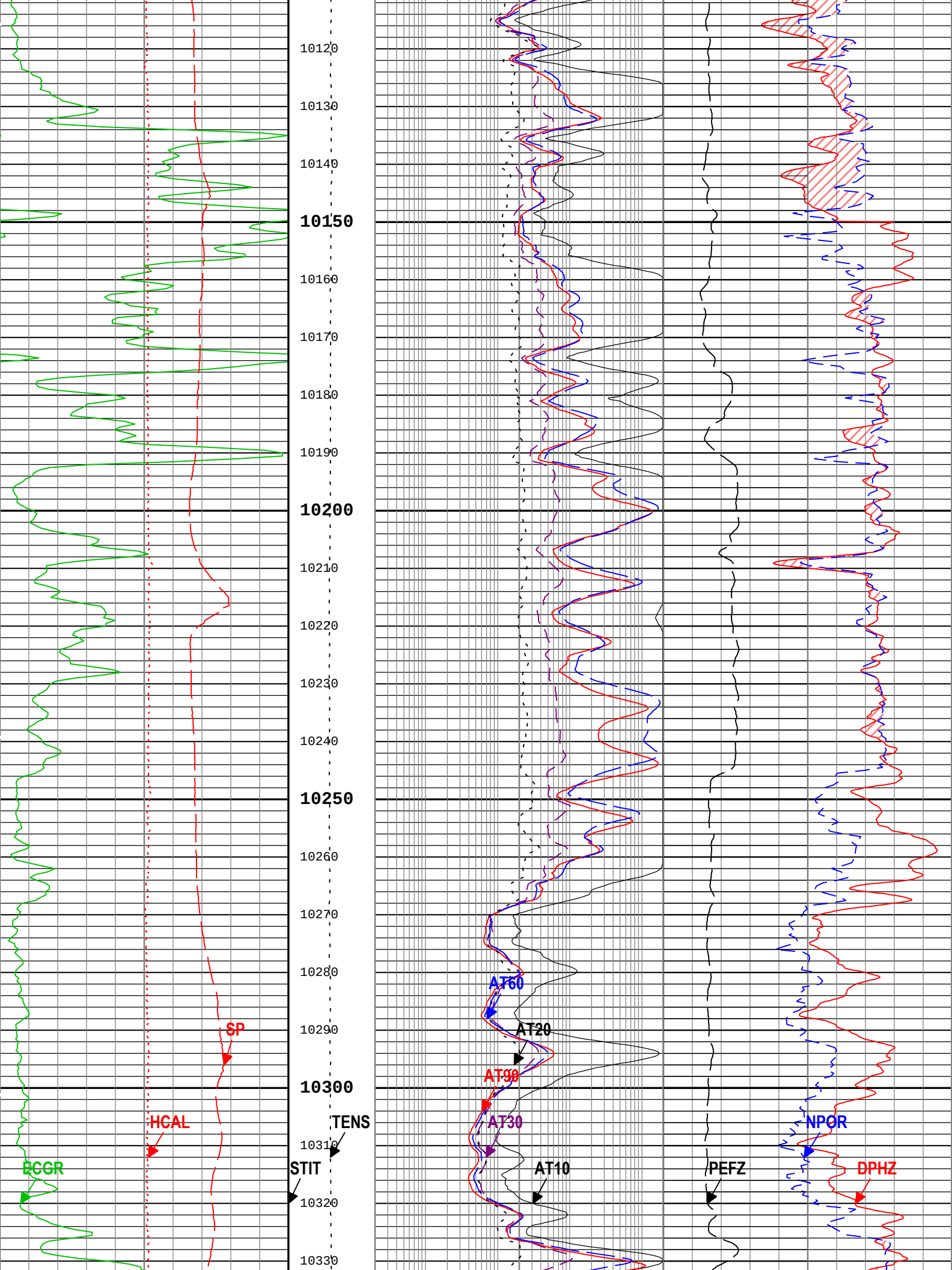
SP
HCAL
ECGR
TENS
STIT
AT60
AT20
AT90
AT30
AT10
PEFZ
NPOR
DPHZ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10290
10300
10310
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ECGR
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STIT
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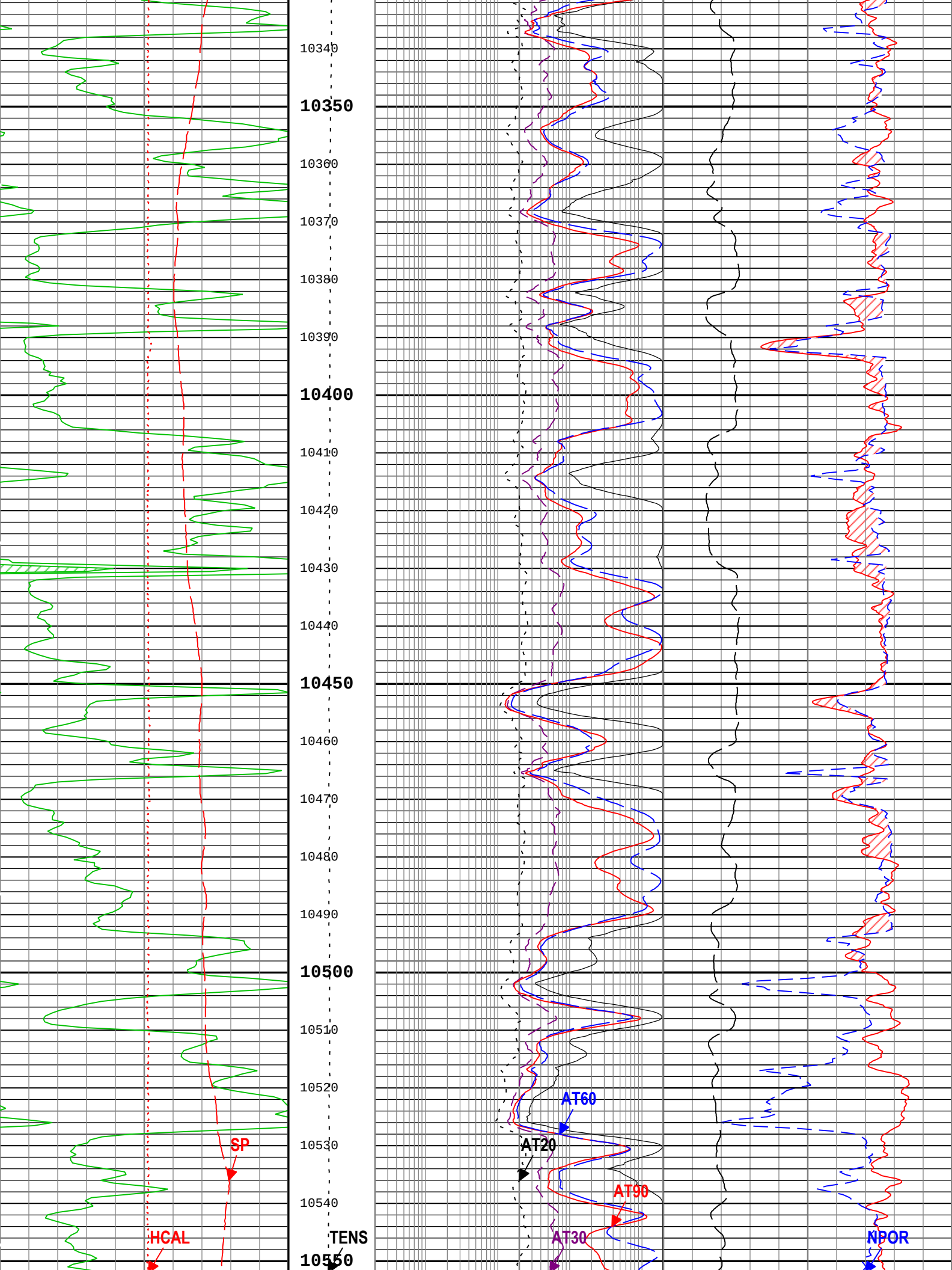
AT90
AT30
AT10
PEFZ
NPOR
DPHZ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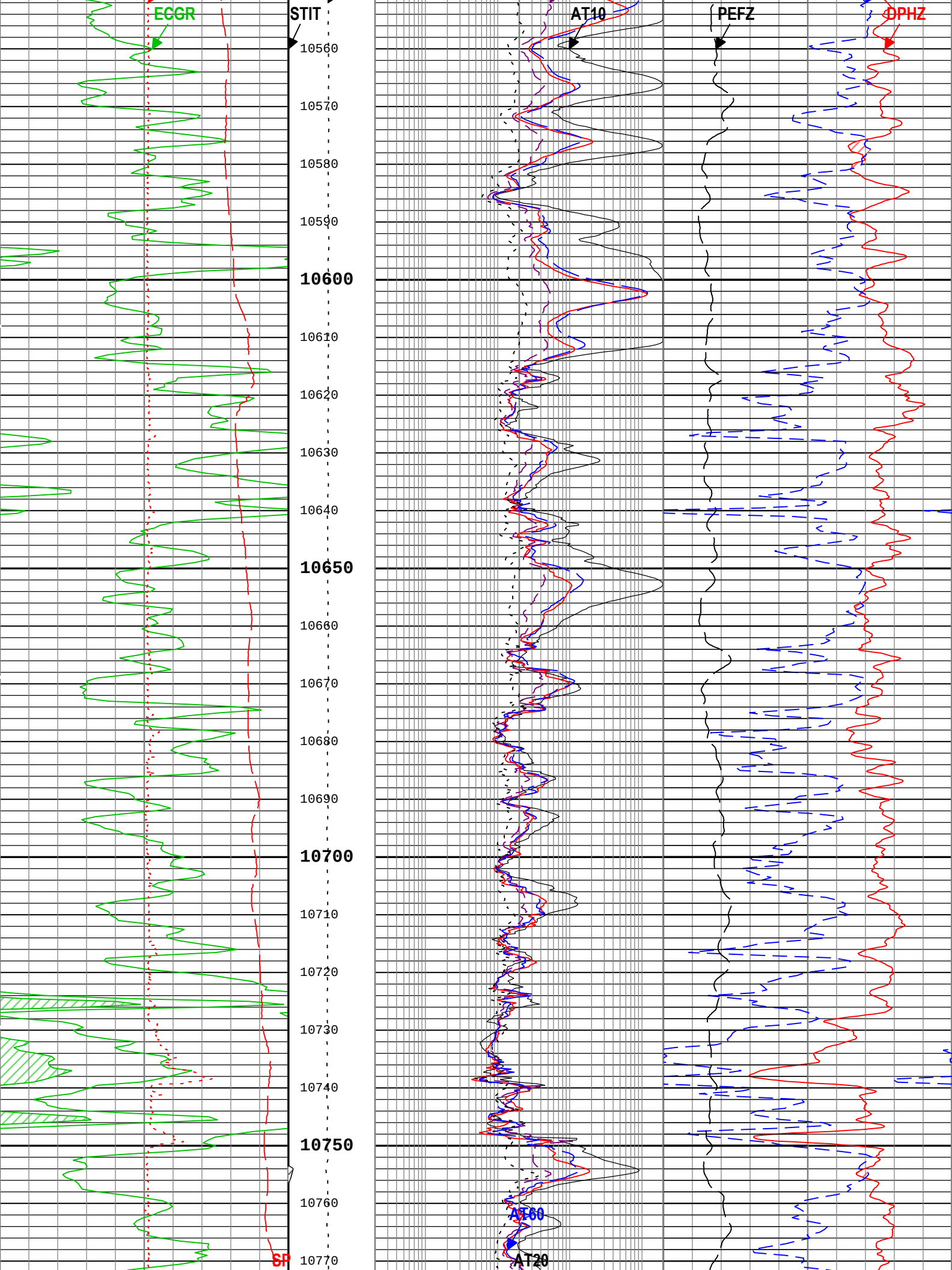
10550
SP
HCAL
TENS
AT60
AT20
AT90
AT30
NPOR


ECGR
STIT
AT10
PEFZ
DPHZ
10560
10570
10580
10590
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10620
10630
10640
10650
10660
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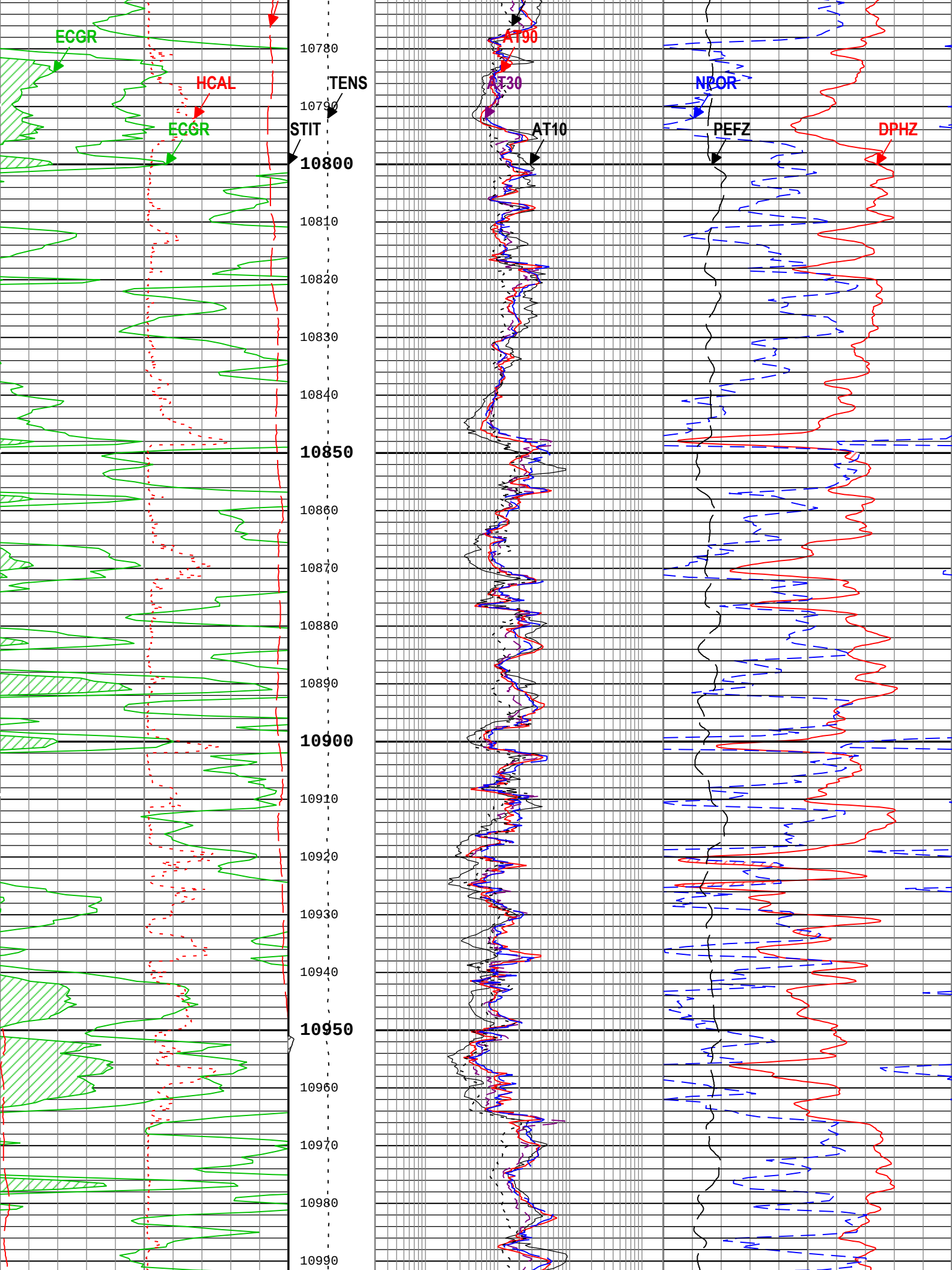
10680
10690
10700
10710
10720
10730
10740
10750
10760
SP
AT60
AT20
10770


ECGR
HCAL
ECGR
TENS
STIT
AT90
AT30
AT10
NPOR
PEFZ
DPHZ
10780
10790
10800
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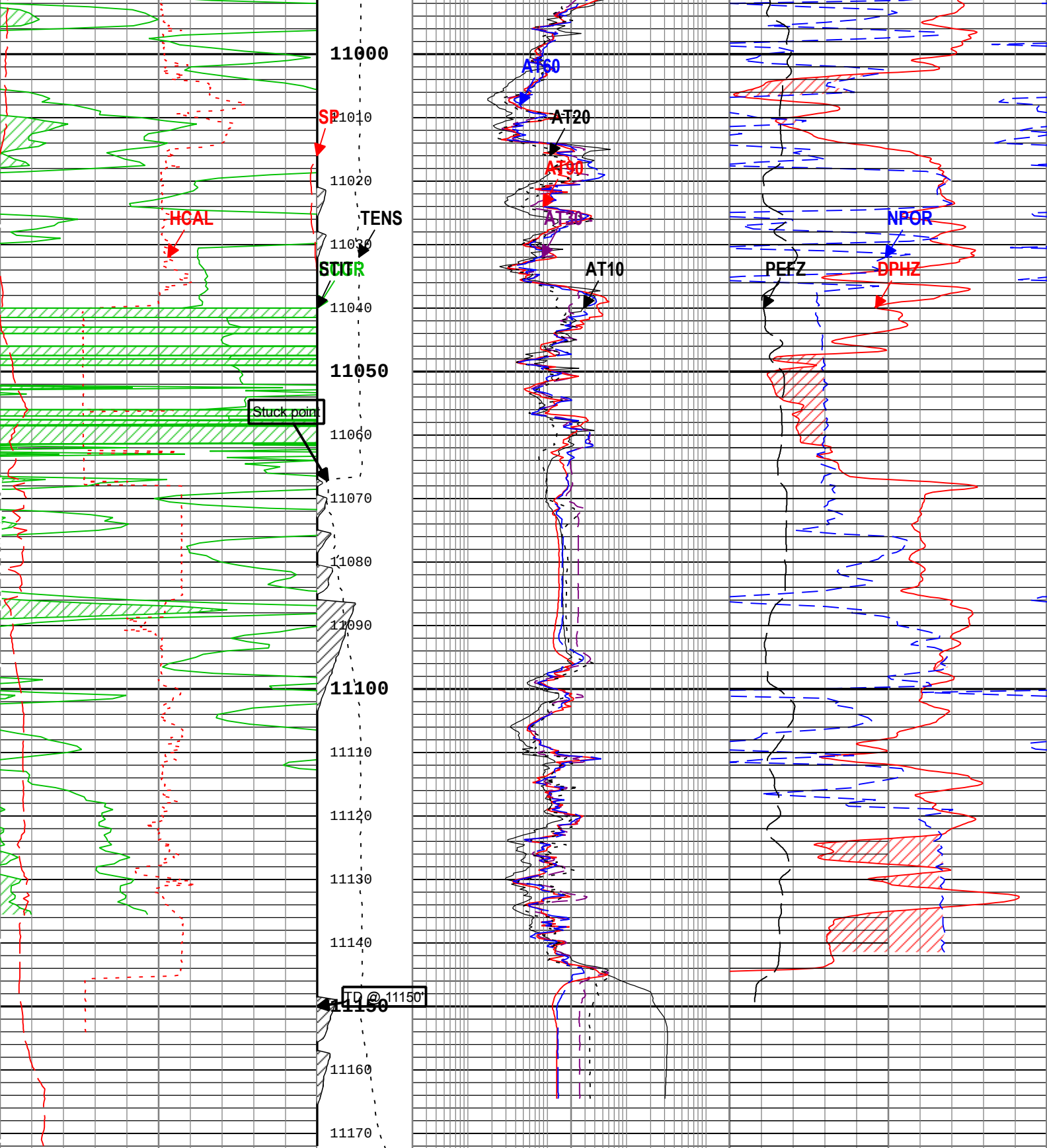
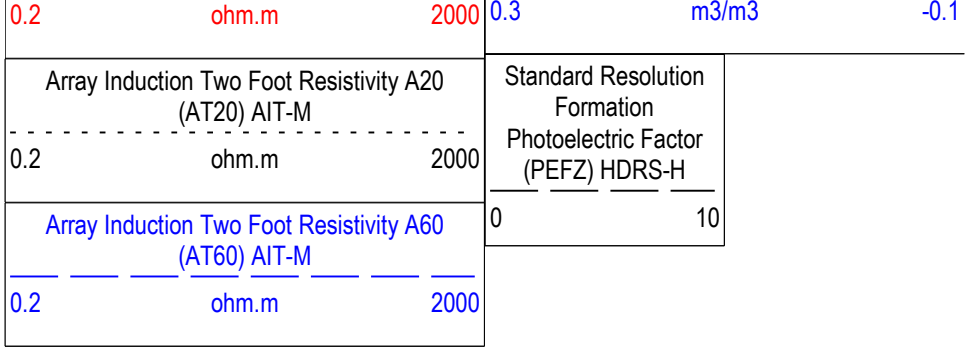
10980
10990



Gamma Ray Back up	Stuck Tool Indicator, Total (STIT)	Array Induction Two Foot Resistivity A10 (AT10) AIT-M
Gamma Ray (ECGR) HGNS-H	0 ft 50	0.2 ohm.m 2000
0 gAPI 150	Cable Tension (TENS)	Array Induction Two Foot Resistivity A30 (AT30) AIT-M
Caliper (HCAL) HDRS-H	10000 lbf 0	0.2 ohm.m 2000
1 in 11		Array Induction Two Foot Resistivity A90 (AT90) AIT-M
Spontaneous Potential (SP) AIT-M		
-160 mV 40		

Gas Effect	
NPOR Backup	
Standard Resolution Density Porosity (DPHZ) HDRS-H	
0.3 ft3/ft3 -0.1	
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H	



TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Oct-2015 08:45:23

Channel Processing Parameters

Run 1: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	AIT-M	Compute Mud Resistivity	
ASTA	Array Induction Tool Standoff	AIT-M	0.7	in
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BHT	Bottom Hole Temperature	Borehole	272.3	degF
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	0	ppm
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.138	in
CBLO	Casing Bottom (Logger)	WLSESSION	9390.5	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DFT_WATER	Drilling Fluid Water Type	Borehole	WBM	
DHC	Density Hole Correction	HDRS-H	Bit Size	
FD	Fluid Density	Borehole	1	g/cm3
FSAL	Formation Salinity	Borehole	0	ppm
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	CTEM	
HSCO	Hole Size Correction Option	HGNS-H	Yes	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	Depth Zoned	
MDEN	Matrix Density for Density Porosity	Borehole	Depth Zoned	g/cm3
MFST	Mud Filtrate Sample Temperature	Borehole	61	degF
RMFS	Resistivity of Mud Filtrate Sample	Borehole	0.32	ohm.m
SOCO	Standoff Correction Option	HGNS-H	Yes	
SPDR	SP Drift Per Foot	AIT-M	0	mV/ft
TD	Total Measured Depth	Borehole	11130	ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	9100	9385
BS	6.125	9385	11150
MATR	SANDSTONE	9100	9750

MATR	DOLOMITE	9750	10150
MATR	LIMESTONE	10150	10500
MATR	SANDSTONE	10500	11172.5
MDEN	2.65	9100	9750
MDEN	2.87	9750	10150
MDEN	2.71	10150	10500
MDEN	2.68	10500	11172.5

All depth are actual.

Tool Control Parameters

Run 1: Parameters

Parameter	Description	Tool	Value	Unit
HMCA_BOARD_TYPE	HMCA Board Type	HGNS-H	1	
HRGD_BOARD_TYPE	HRGD Board Type	HDRS-H	WITH_HET	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Run 1

5" Triple Combo

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Run 1	Repeat[2]:Up	Up	10793.03 ft	11171.41 ft	15-Oct-2015 4:01:02 AM	15-Oct-2015 4:08:31 AM	ON	13.77 ft	No
Run 1	Main[3]:Up	Up	8809.53 ft	11172.46 ft	15-Oct-2015 4:17:54 AM	15-Oct-2015 8:00:23 AM	ON	0.94 ft	No

All depths are referenced to toolstring zero

Log

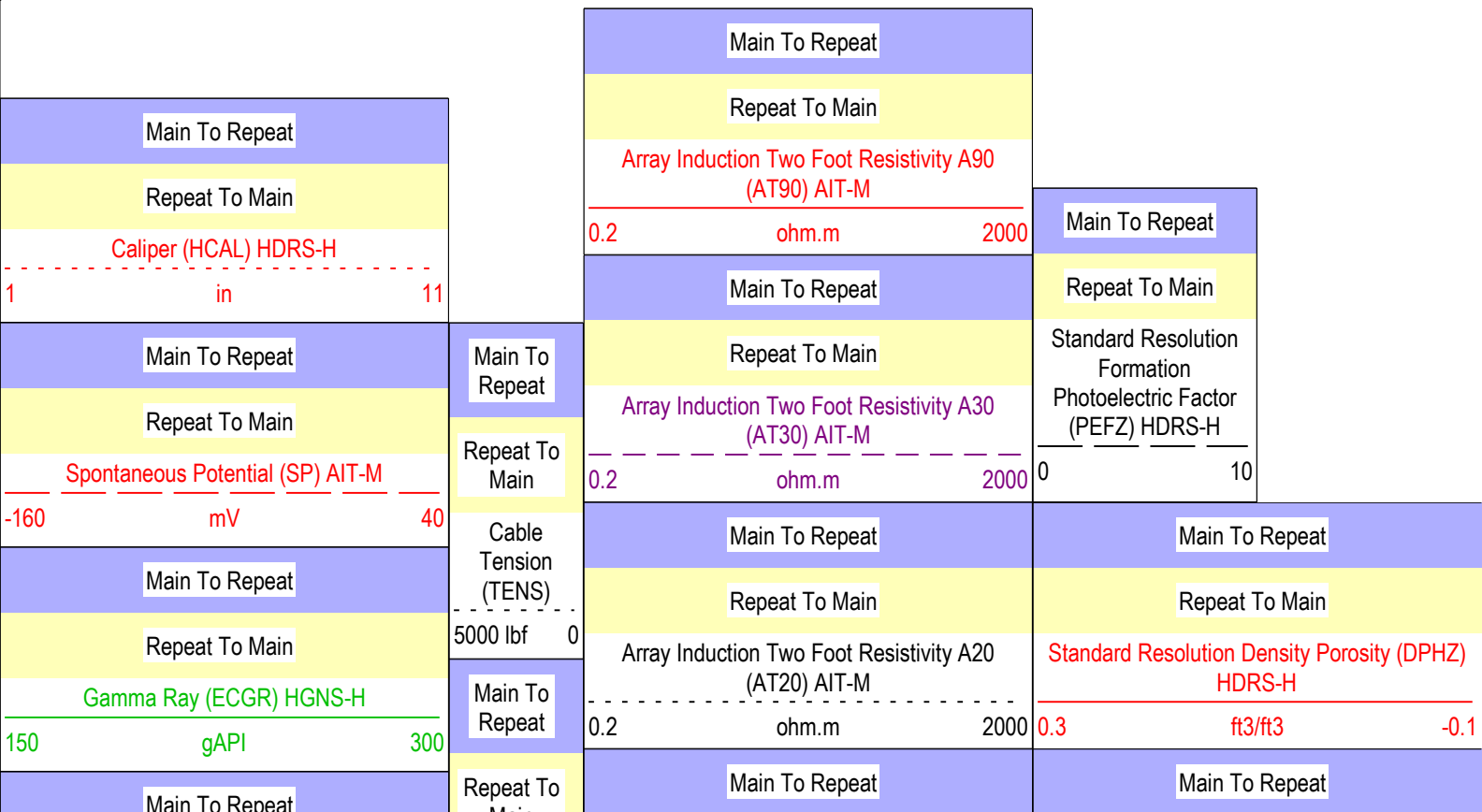
Company:NGl Water Solutions DJ LLC Well:NGL C5A

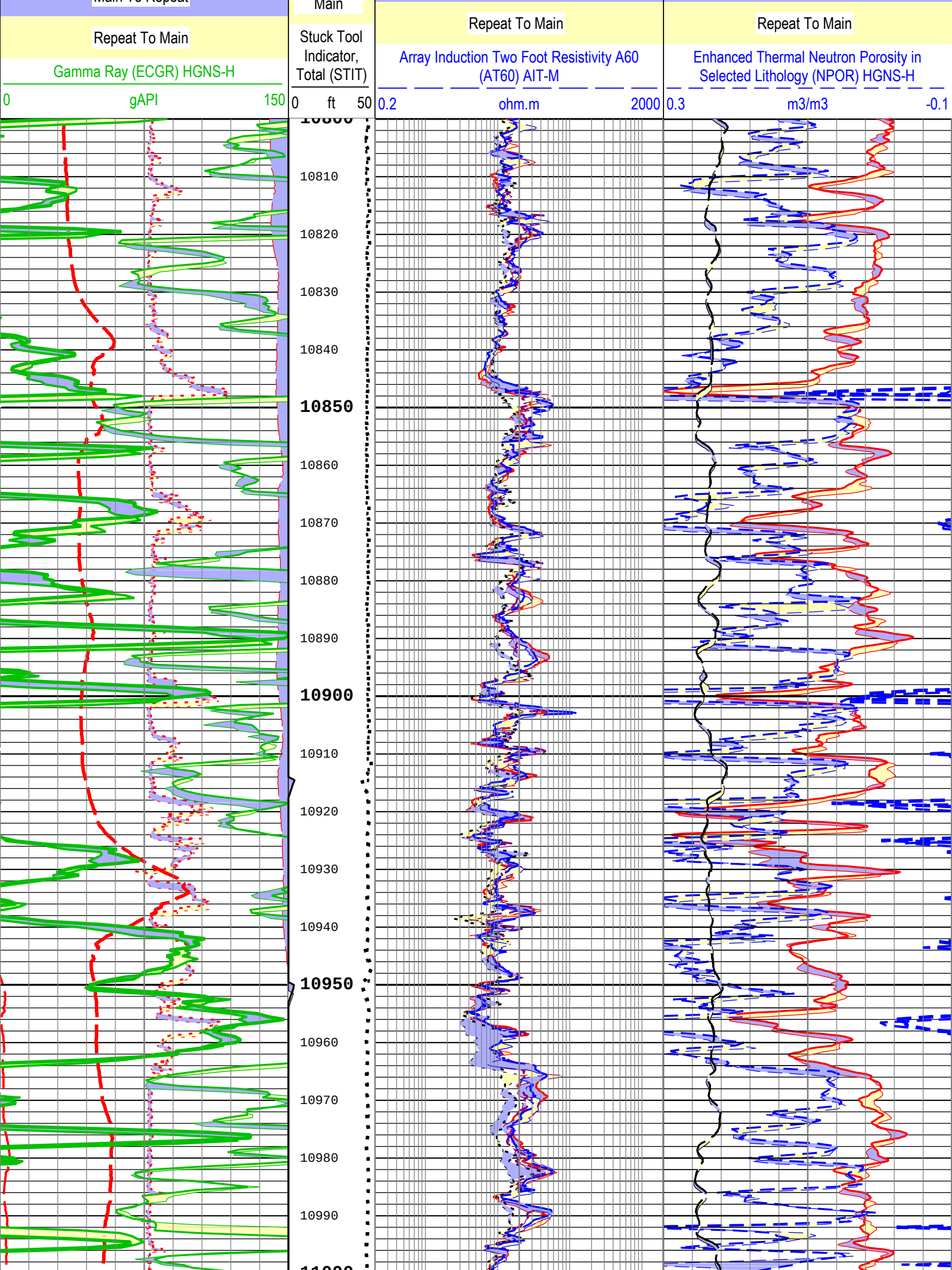
Run 1: Main[3]:Up:S023

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo RA) Index Scale: 5 in per 100 ft Index Unit: ft

Index Type: Measured Depth Creation Date: 15-Oct-2015 08:45:25

TIME_1900 - Time Marked every 60.00 (s)




Main
Repeat To Main
Gamma Ray (ECGR) HGNS-H
0
gAPI
150
Stuck Tool Indicator, Total (STIT)
0
ft
50
Repeat To Main
Array Induction Two Foot Resistivity A60 (AT60) AIT-M
0.2
ohm.m
2000
Repeat To Main
Enhanced Thermal Neutron Porosity in Selected Lithology (NPOR) HGNS-H
0.3
m3/m3
-0.1
10810
10820
10830
10840
10850
10860
10870
10880
10890
10900
10910
10920
10930
10940
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10960
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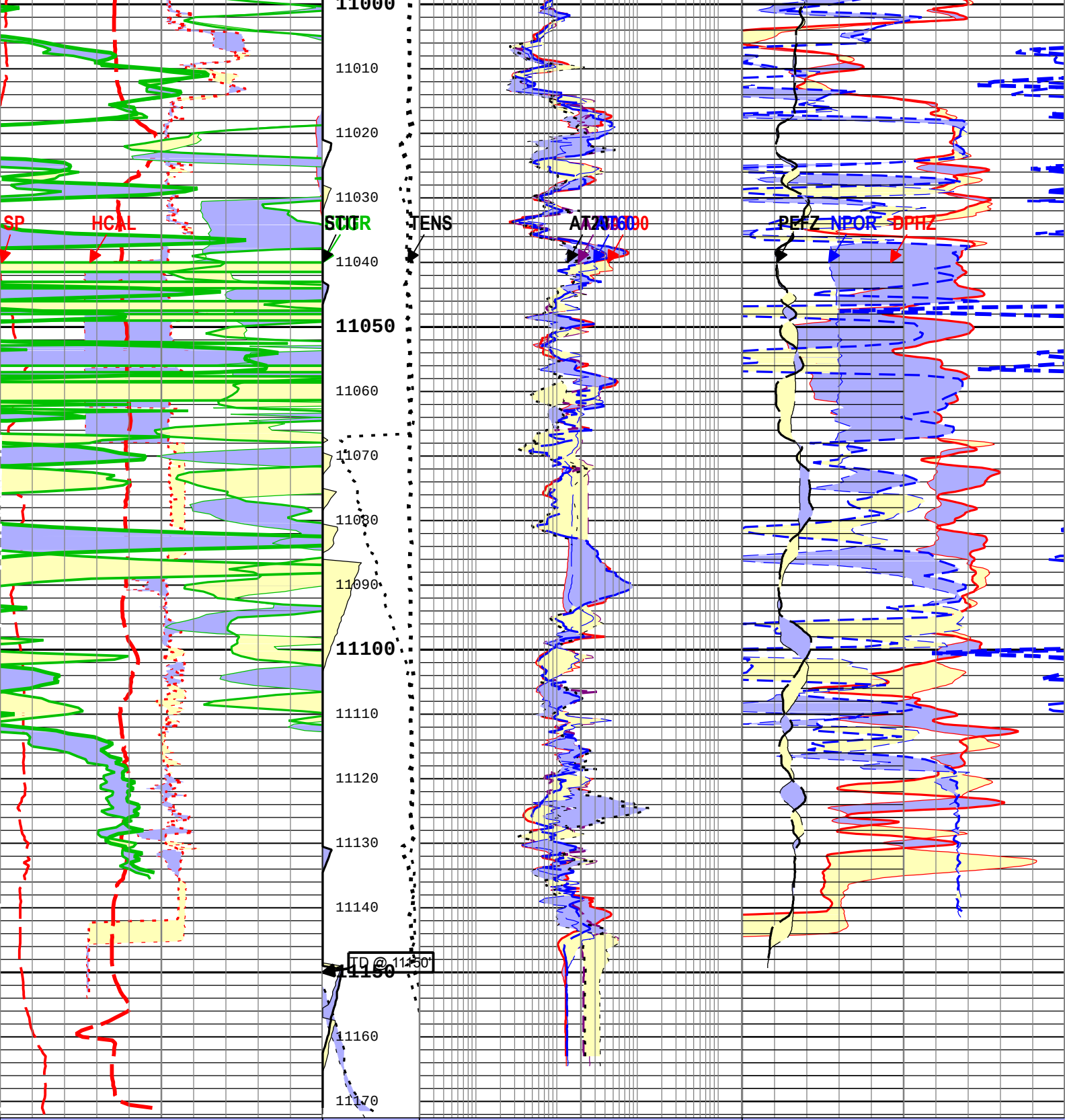
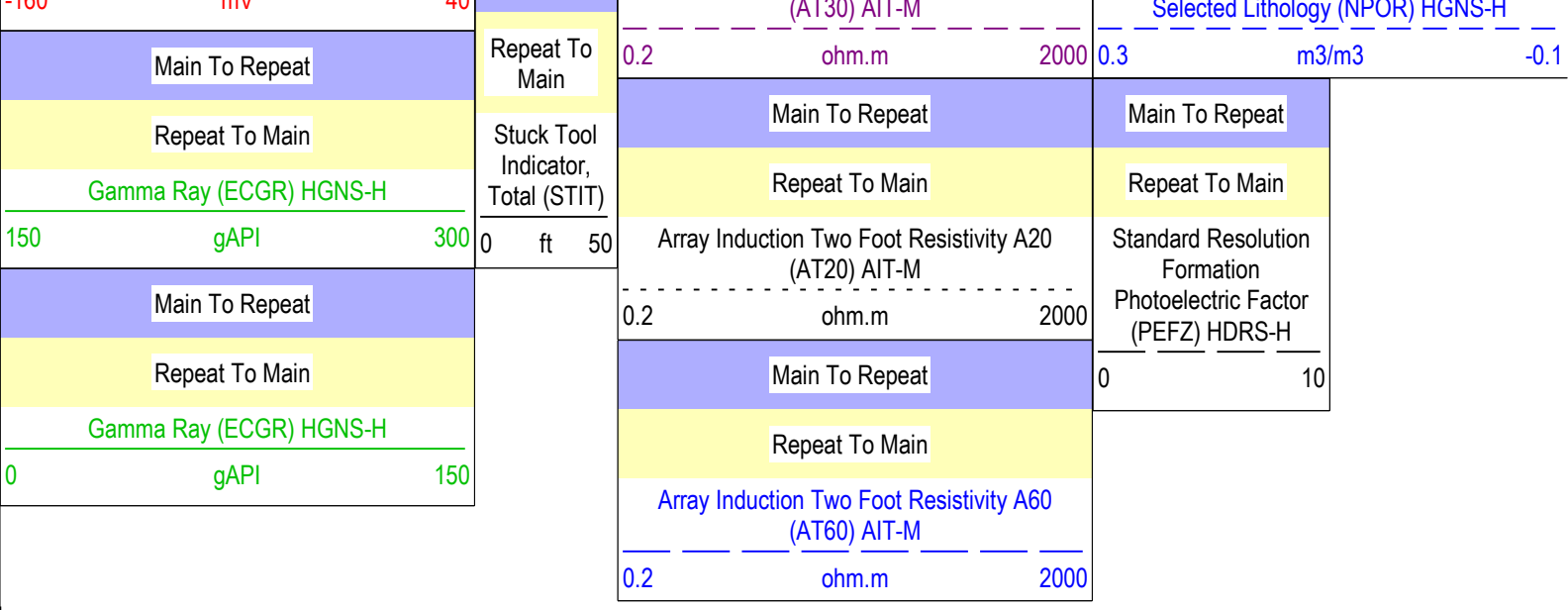


Main To Repeat	Main To Repeat	Main To Repeat
Repeat To Main	Repeat To Main	Repeat To Main
Caliper (HCAL) HDRS-H	Cable Tension (TENS)	Array Induction Two Foot Resistivity A90 (AT90) AIT-M
1 in 11	5000 lbf 0	0.2 ohm.m 2000
Main To Repeat		Main To Repeat
Repeat To Main		Repeat To Main
Spontaneous Potential (SP) AIT-M	Main To Repeat	Array Induction Two Foot Resistivity A30
160 mV 40		

Main To Repeat
Repeat To Main
Standard Resolution Density Porosity (DPHZ) HDRS-H
0.3 ft3/ft3 -0.1
Main To Repeat
Repeat To Main
Enhanced Thermal Neutron Porosity in



TIME_1900 - Time Marked every 60.00 (s)

Description: HGNS standard resolution porosities for Platform Express Format: Log (KM 5in Triple Combo RA) Index Scale: 5 in per 100 ft Index Unit: ft
Index Type: Measured Depth Creation Date: 15-Oct-2015 08:45:25

Calibration Report

AIT-M (Array Induction Tool - M) Calibration - Run 1

Primary Equipment :

File code for AIT-MA Sonde Tool Element	AMIS	1538

Auxiliary Equipment :

File code for AIT Bottom Nose Tool Element	AMRM	1251

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM): 11:28:18 30-Sep-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Test Loop Gain - 0		Master	1.000	0.950	1.045	1.050
Test Loop Phase - 0	deg	Master	0	-3.000	2.682	3.000
Test Loop Gain - 1		Master	1.000	0.950	1.012	1.050
Test Loop Phase - 1	deg	Master	0	-3.000	0.552	3.000
Test Loop Gain - 2		Master	1.000	0.950	1.021	1.050
Test Loop Phase - 2	deg	Master	0	-3.000	-0.213	3.000
Test Loop Gain - 3		Master	1.000	0.950	1.021	1.050
Test Loop Phase - 3	deg	Master	0	-3.000	0.022	3.000
Test Loop Gain - 4		Master	1.000	0.950	0.997	1.050
Test Loop Phase - 4	deg	Master	0	-3.000	0.035	3.000
Test Loop Gain - 5		Master	1.000	0.950	0.986	1.050
Test Loop Phase - 5	deg	Master	0	-3.000	-0.211	3.000
Test Loop Gain - 6		Master	1.000	0.950	1.033	1.050
Test Loop Phase - 6	deg	Master	0	-3.000	0.131	3.000
Test Loop Gain - 7		Master	1.000	0.950	1.011	1.050
Test Loop Phase - 7	deg	Master	0	-3.000	-0.116	3.000

AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM): 11:28:18 30-Sep-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Sonde Error Correction Real - 0	mS/m	Master	-----	-231.000	-18.541	119.000
Sonde Error Correction Quad - 0		Master	-----	-2250.000	-1668.751	2250.000
Sonde Error Correction Real - 1	mS/m	Master	-----	114.000	140.266	204.000
Sonde Error Correction Quad - 1		Master	-----	-625.000	75.932	625.000
Sonde Error Correction Real - 2	mS/m	Master	-----	66.000	118.522	156.000
Sonde Error Correction Quad - 2		Master	-----	-350.000	19.765	350.000
Sonde Error Correction Real - 3	mS/m	Master	-----	39.000	60.864	89.000
Sonde Error Correction Quad - 3		Master	-----	-250.000	-9.553	250.000
Sonde Error Correction Real - 4	mS/m	Master	-----	15.000	25.191	35.000

Sonde Error Correction Quad - 4		Master	-----	-63.000	14.704	63.000
Sonde Error Correction Real - 5	mS/m	Master	-----	4.000	14.280	24.000
Sonde Error Correction Quad - 5		Master	-----	-50.000	3.489	50.000
Sonde Error Correction Real - 6	mS/m	Master	-----	5.000	9.725	15.000
Sonde Error Correction Quad - 6		Master	-----	-30.000	5.888	30.000
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-2.126	5.000
Sonde Error Correction Quad - 7		Master	-----	-30.000	0.045	30.000

AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM): 11:28:18 30-Sep-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Coarse Gain		Master	1.000	0.800	1.055	1.200
Fine Gain		Master	1.000	0.800	1.054	1.200

AIT Electronics Check - Thru Calibration Check

Master (EEPROM): 11:28:18 30-Sep-2015 Before (Measured): 16:50:23 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Thru Cal Mag - 0	V	Master	-----	0.366	0.617	0.854
		Before	-----	0.366	0.617	0.854
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 0	deg	Master	-----	137.000	-174.089	-103.000
		Before	-----	137.000	-173.994	-103.000
		Before-Master	-----	-----	0.095	-----
Thru Cal Mag - 1	V	Master	-----	0.762	1.264	1.778
		Before	-----	0.762	1.264	1.778
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 1	deg	Master	-----	136.000	-175.134	-104.000
		Before	-----	136.000	-175.037	-104.000
		Before-Master	-----	-----	0.097	-----
Thru Cal Mag - 2	V	Master	-----	0.372	0.627	0.868
		Before	-----	0.372	0.627	0.868
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 2	deg	Master	-----	132.000	-178.500	-108.000
		Before	-----	132.000	-178.404	-108.000
		Before-Master	-----	-----	0.096	-----
Thru Cal Mag - 3	V	Master	-----	0.420	0.708	0.980
		Before	-----	0.420	0.708	0.980
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 3	deg	Master	-----	131.000	-179.225	-109.000
		Before	-----	131.000	-179.128	-109.000
		Before-Master	-----	-----	0.097	-----
Thru Cal Mag - 4	V	Master	-----	0.804	1.330	1.876
		Before	-----	0.804	1.330	1.876
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 4	deg	Master	-----	125.000	174.907	-115.000
		Before	-----	125.000	175.006	-115.000
		Before-Master	-----	-----	0.099	-----
Thru Cal Mag - 5	V	Master	-----	1.176	1.940	2.744
		Before	-----	1.176	1.940	2.744
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 5	deg	Master	-----	122.000	173.314	-118.000
		Before	-----	122.000	173.414	-118.000
		Before-Master	-----	-----	0.100	-----
Thru Cal Mag - 6	V	Master	-----	1.176	1.934	2.744
		Before	-----	1.176	1.934	2.744
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 6	deg	Master	-----	121.000	173.379	-119.000
		Before	-----	121.000	173.478	-119.000
		Before-Master	-----	-----	0.099	-----
Thru Cal Mag - 7	V	Master	-----	0.846	1.391	1.974
		Before	-----	0.846	1.391	1.974
		Before-Master	-----	-----	0.000	-----
Thru Cal Phase - 7	deg	Master	-----	115.000	172.460	-125.000
		Before	-----	115.000	172.579	-125.000

		Before-Master	-----	-----	0.119	-----	
SPA Zero	mV	Master		-50.000	-0.067	50.000	
		Before		-50.000	-0.049	50.000	
		Before-Master	-----	-----	0.018	-----	
SPA Plus	mV	Master		941.000	985.278	1040.000	
		Before		941.000	985.238	1040.000	
		Before-Master	-----	-----	-0.040	-----	
Temperature Zero	V	Master		-0.050	0.000	0.050	
		Before		-0.050	0.000	0.050	
		Before-Master	-----	-----	0.000	-----	
Temperature Plus	V	Master		0.870	0.913	0.960	
		Before		0.870	0.913	0.960	
		Before-Master	-----	-----	0.000	-----	

HDRS-H (HILT Density and Rxo Sonde, 150 degC) Calibration - Run 1

Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	
HILT Resistivity Gamma-Ray Density Device, 150 degC	HRGD-H	3933

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	28736
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5471
HILT High-Resolution Control Cartridge, 150 degC	HRCC-H	
HILT High-Resolution Mechanical Sonde, 150 degC	HRMS-H	

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)	8.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 16:03:14 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.34	10.00	
Large Ring	in	Before	12.00	9.00	11.60	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 16:13:32 24-Sep-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.594	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.690	1.696	
Pe Aluminum		Master	2.570	2.470	2.512	2.670	
Pe Magnesium		Master	2.650	2.550	2.637	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 16:13:32 24-Sep-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2062	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.4510	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3966	1.0000	
SS Max Deviation	%	Master	0	-2.5000	0.8911	2.5000	
LS Average Deviation	%	Master	0	-1.5000	1.1853	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.7355	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 16:13:32 24-Sep-2015 Before (Measured): 16:05:25 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7498		
		Before	0.7498	0.7123	0.7496	0.7873	
		Before-Master	-----	-----	-0.0002	-----	

BS Window Sum	1/s	Master	1		22859	
		Before	22859	21716	22853	24002
		Before-Master	-----	-----	-6	-----
SS Window Ratio		Master	1.0000		0.4882	
		Before	0.4882	0.4637	0.4882	0.5126
		Before-Master	-----	-----	0.0000	-----
SS Window Sum	1/s	Master	1		10721	
		Before	10721	10185	10705	11257
		Before-Master	-----	-----	-16	-----
LS Window Ratio		Master	1.0000		0.3020	
		Before	0.3020	0.2869	0.3017	0.3171
		Before-Master	-----	-----	-0.0003	-----
LS Window Sum	1/s	Master	1		1169	
		Before	1169	1110	1170	1227
		Before-Master	-----	-----	1	-----

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM): 16:13:32 24-Sep-2015 Before (Measured): 16:05:25 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS PM High Voltage	V	Master		1000	1654	2400
		Before		1000	1666	2400
		Before-Master	-----	-100	12	100
SS PM High Voltage	V	Master		1000	1499	2400
		Before		1000	1513	2400
		Before-Master	-----	-100	14	100
LS PM High Voltage	V	Master		1000	1283	2400
		Before		1000	1285	2400
		Before-Master	-----	-100	2	100

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM): 16:13:32 24-Sep-2015 Before (Measured): 16:05:25 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
BS Crystal Resolution	%	Master		5.00	11.05	25.00
		Before		5.00	11.17	25.00
		Before-Master	-----	-1.00	0.12	1.00
SS Crystal Resolution	%	Master		5.00	9.70	20.00
		Before		5.00	9.65	20.00
		Before-Master	-----	-1.00	-0.05	1.00
LS Crystal Resolution	%	Master		5.00	8.43	20.00
		Before		5.00	8.32	20.00
		Before-Master	-----	-1.00	-0.11	1.00

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured): 16:37:53 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Main Resistivity	ohm.m	Before	3875	3565	3878	4185
Deep Resistivity	ohm.m	Before	3830	3524	3811	4136
Shallow Resistivity	ohm.m	Before	3830	3524	3817	4136

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1

Primary Equipment :

HILT Gamma-Ray and Neutron Sonde, 150 degC	HGNS-H	

Auxiliary Equipment :

HGNS Accelerometer, 150 degC	HACCZ-H	5736
AmBe Neutron Logging Source	NSR-F	5215

Calibration Parameter :

Water Temperature	
Housing Size	
JIG-BKG (Jig minus background reference)	165

HGNS Accelerometer Calibration - Accelerometer Accumulations

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured): 02:53:12 15-Oct-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
AZ Vertical Measurement	ft/s2	Before	32.2	31.5	32.1	32.8

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Mar-2006

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Accelerometer Manufacturer		Master			QAT_160	
Accelerometer Reference Temperature	degF	Master		30.2	77.0	122.0
Accelerometer Coefficients - 0		Master	-----	-----	8083.000	-----
Accelerometer Coefficients - 1		Master	-----	-----	-8.467	-----
Accelerometer Coefficients - 2		Master	-----	-----	0.009	-----
Accelerometer Coefficients - 3		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 4		Master	-----	-----	2.721	-----
Accelerometer Coefficients - 5		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 6		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 7		Master	-----	-----	0.000	-----
Accelerometer Coefficients - 8		Master	-----	-----	298.700	-----
Accelerometer Coefficients - 9		Master	-----	-----	0.995	-----

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 18:02:56 29-Sep-2015 Before (Measured): 16:03:31 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Near Zero Measurement	1/s	Master	0	5.0	24.3	40.0
		Before	0	5.0	25.4	40.0
		Before-Master	-----	-3.6	1.1	3.6
Far Zero Measurement	1/s	Master	0	5.0	30.9	40.0
		Before	0	5.0	29.1	40.0
		Before-Master	-----	-4.6	-1.8	4.6
Near Plus Measurement	1/s	Master	6031.0	4700.0	5278.0	6900.0
		Before	-----	-----	-----	-----
		Before-Master	-----	-----	-----	-----
Far Plus Measurement	1/s	Master	2793.0	1900.0	2226.0	2900.0
		Before	-----	-----	-----	-----
		Before-Master	-----	-----	-----	-----
Near Corrected Plus Measurement	1/s	Master		4700.0	5307.0	6900.0
		Before	-----	-----	-----	-----
		Before-Master	-----	-----	-----	-----
Far Corrected Plus Measurement	1/s	Master		1900.0	2230.0	2900.0
		Before	-----	-----	-----	-----
		Before-Master	-----	-----	-----	-----

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 16:12:42 13-Oct-2015 Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
RGR Zero Measurement	gAPI	Before	30.0	0	78.2	120.0
RGR Plus Measurement	gAPI	Before	185.4	157.1	177.2	206.3
GR Calibration Gain		Before	0.89	0.80	0.93	1.05

Company:	NGI Water Solutions DJ LLC
Well:	NGL C5A
Field:	Wattenberg
County:	Weld

Schlumberger

State:	Colorado

Platform Express

Triple Combo