

Company: North East Natural Energy LLC

Well: Boggress 17H

Field: Wildcat

County: Monongalia State: West Virginia

LITHO-SCANNER

FIELD PRINT ONLY

County:	Monongalia	Lat and Long:		Elev.:	K.B.	1296.00 ft
Field:	Wildcat				G.L.	1268.00 ft
Location:					D.F.	1296.00 ft
Well:	Boggress 17H	Permanent Datum:	Ground Level	Elev.:	1268.00 f	
Company:	North East Natural Energy LLC	Log Measured From:	Kelly Bushing	28.00 ft	above Perm.Datum	
		Drilling Measured From:	Kelly Bushing			
		API Serial No.	District	Township:	Quad	
		47-061-01812-00-00	Clay	Core	Blacksville	
Logging Date	15-Apr-2019					

Run Number	1A					
Depth Driller	8400.00 ft					
Schlumberger Depth	8400.00 ft					
Bottom Log Interval	8400.00 ft					
Top Log Interval	2543.00 ft					
Casing Driller Size @ Depth	9.625 in @ 2538.00 ft					
Casing Schlumberger	2543 ft					
Bit Size	8.5 in					
Type Fluid In Hole	Water					
Density	9.5 lbm/gal					
Fluid Loss	PH					
MUD						
Source of Sample	Active Tank					
RM @ Meas Temp	0.04 ohm.m @ 103 degF					
RMF @ Meas Temp	0.03 ohm.m @ 103 degF					
RMC @ Meas Temp	0.04 ohm.m @ 102 degF					
Source RMF	RMC					
RM @ BHT	RMF @ BHT	0.04 @ 158	0.02 @ 158			
Max Recorded Temperatures	158 degF					
Circulation Stopped	Time	14-Apr-2019	23:00:00			
Logger on Bottom	Time	15-Apr-2019	09:04:00			
Unit Number	Location:	3703	Bradford, PA			
Recorded By		Elizabeth Morrone				
Witnessed By		BJ Varney				

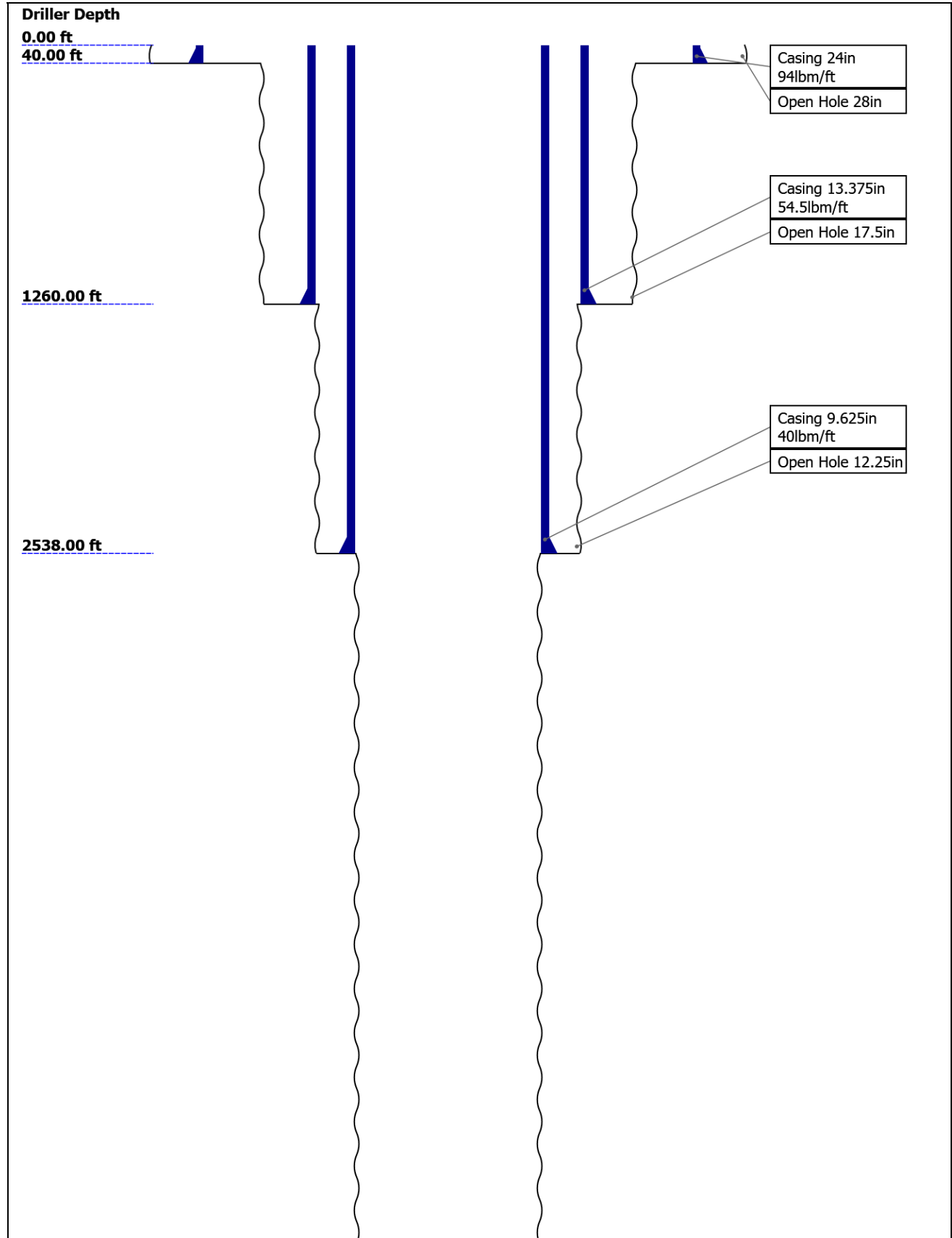
Disclaimer

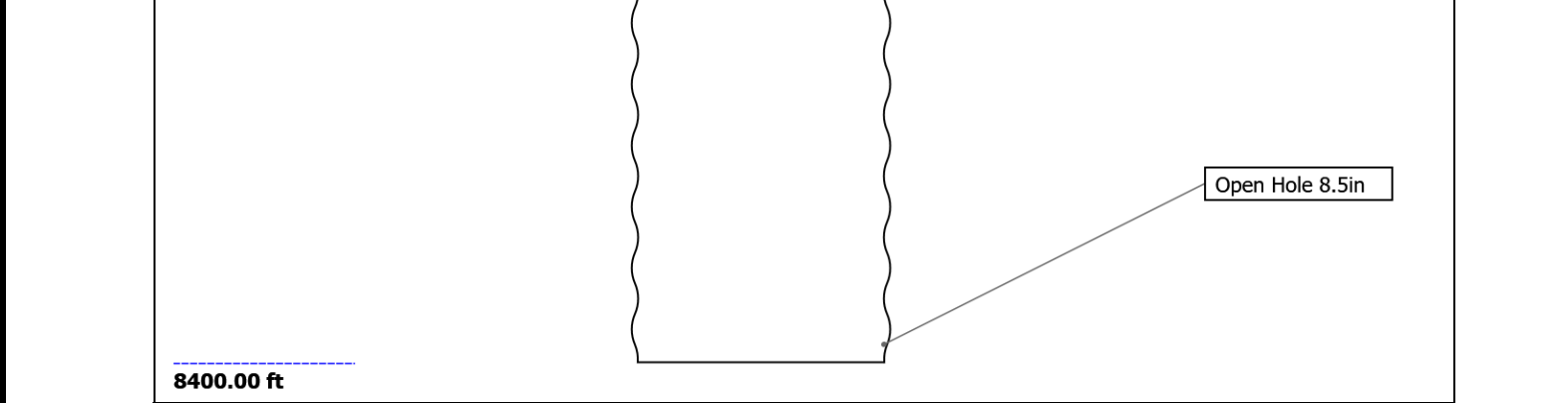
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA;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

Contents

- 1. Header
- 2. Disclaimer
- 3. Contents
- 4. Well Sketch
- 5. Borehole Size/Casing/Tubing Record
- 6. Remarks and Equipment Summary
- 7. Depth Summary
- 8. Composite1
 - 8.1 Integration Summary
 - 8.2 Software Version
 - 8.3 Composite Summary
 - 8.4 Log (NEXT Lithology1, Elements and TOC)
 - 8.5 Parameter Listing
- 9. Composite1
 - 9.1 Integration Summary
 - 9.2 Software Version
 - 9.3 Composite Summary

Well Sketch



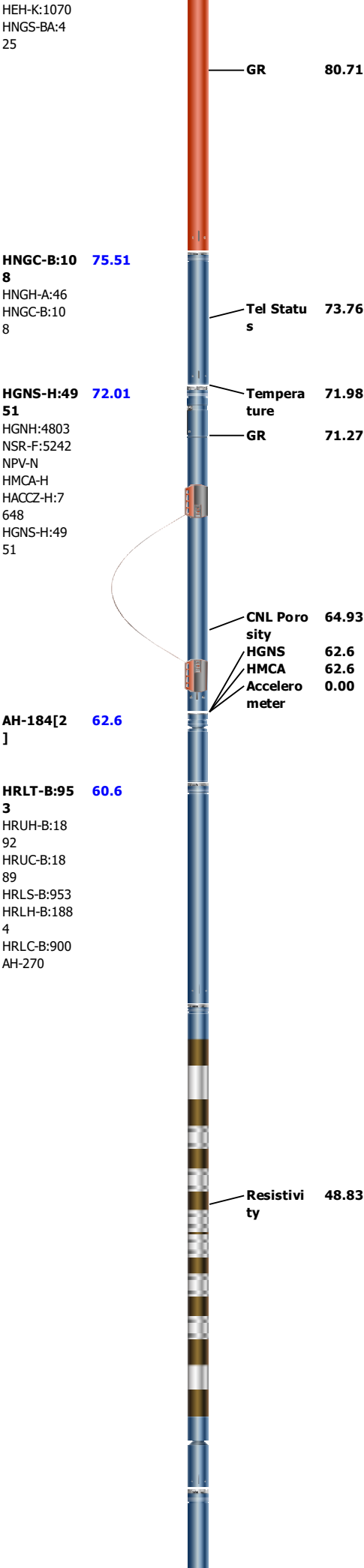


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	28	17.5	12.25	8.5		
Top Driller (ft)	0	40	1260	2538		
Top Logger (ft)	0	40	1260	2543		
Bottom Driller (ft)	40	1260	2538	8400		
Bottom Logger (ft)	40	1260	2543	8400		
Casing						
Size (in)	24	13.375	9.625			
Weight (lbm/ft)	94	54.5	40			
Inner Diameter (in)	23.272	12.615	8.835			
Grade	N/A	N/A	N/A			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	40	1260	2538			
Bottom Logger (ft)	40	1260	2543			

Remarks and Equipment Summary

1A: Toolstring				1A: Remarks	
Equip name LEH-MT LEH-MT Length 99.63 MP name Offset The diagram shows a vertical toolstring with various components. The components are labeled with their names and offsets: - LEH-MT (99.63) - SAH-F (96.48) - AH-369 (91.63) - EDTC-B:92 (90.2) - EDTH-B:929 (1) - EDTG-B:794 (27) - EDTC-B:923 (1) - HNGS-BA:4 (25) The offsets are listed on the right side of the diagram: - CTEM 86.7 - ACCZ 0.00 - HV 0.00 - Gamma R 84.83 - ay - TelStatu 83.7 - s	Thank you for choosing Schlumberger!				
	Crew: Morrone, Kornacki, Shirley				
	Tool ran per tool sketch; 6" standoffs placed on HRUC and HRLC				



AH-184[1 36.4]

HDRS-H:3 34.4

791
ECH-MEB:3
963
HRCC-H:49
45
HRMS-H:37
91
Long Spacing
HRGD-H:39
21
GSR-J:5542
Short Spacing
Backscatter
GPV-Q

HRCC 30.4

MCFL 24.97
Caliper 24.48
TLD Density 24.09

NEXT-A:4 22.16

NEXH-A:4
PNG-G
NEXS-A:4

Spect 16.28

Status 14.87

ILE-F 8.46

BNS-STD 0.46

Head Tension
TOOL_ZERO

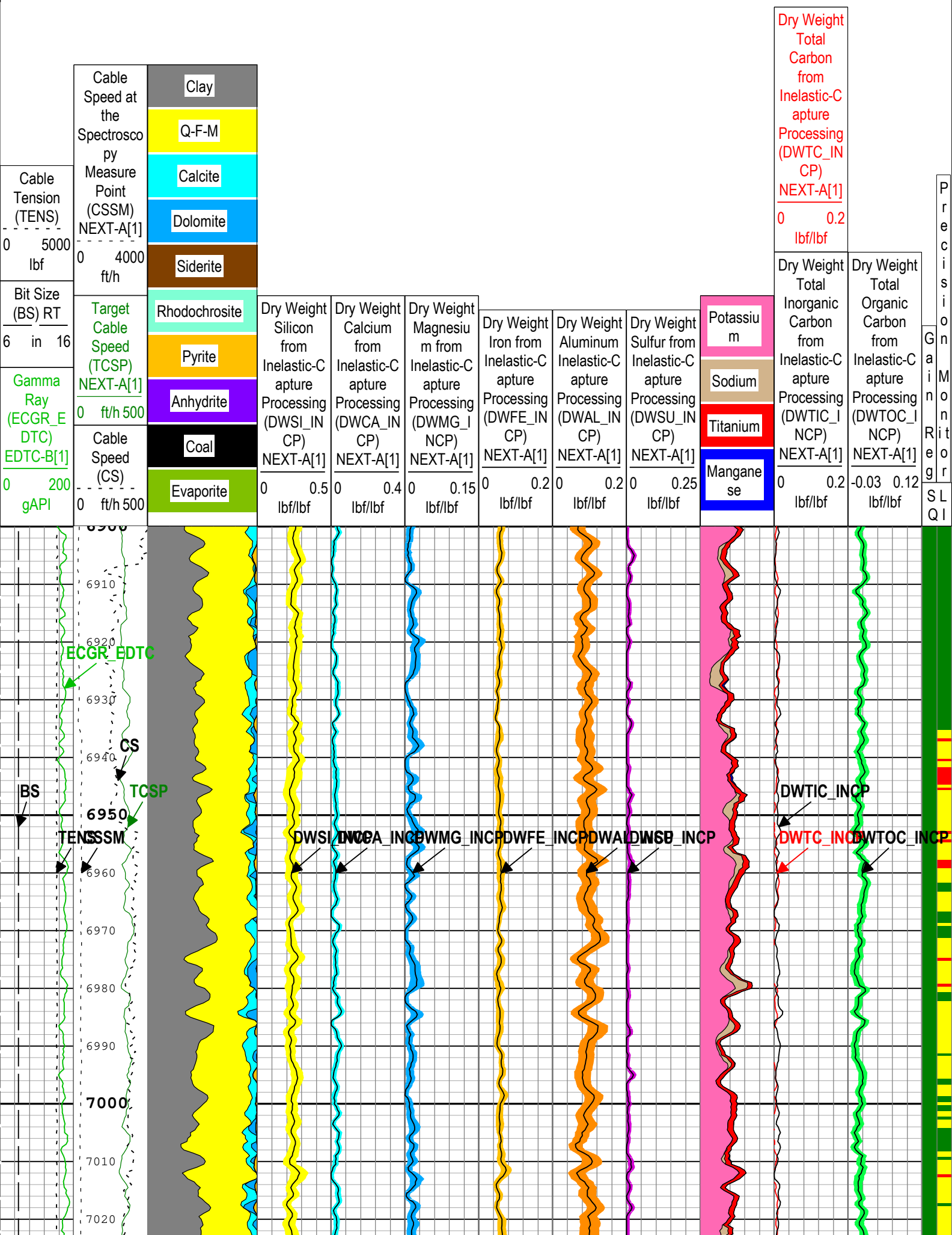
Lengths are in ft
Maximum Outer Diameter = 6.370 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

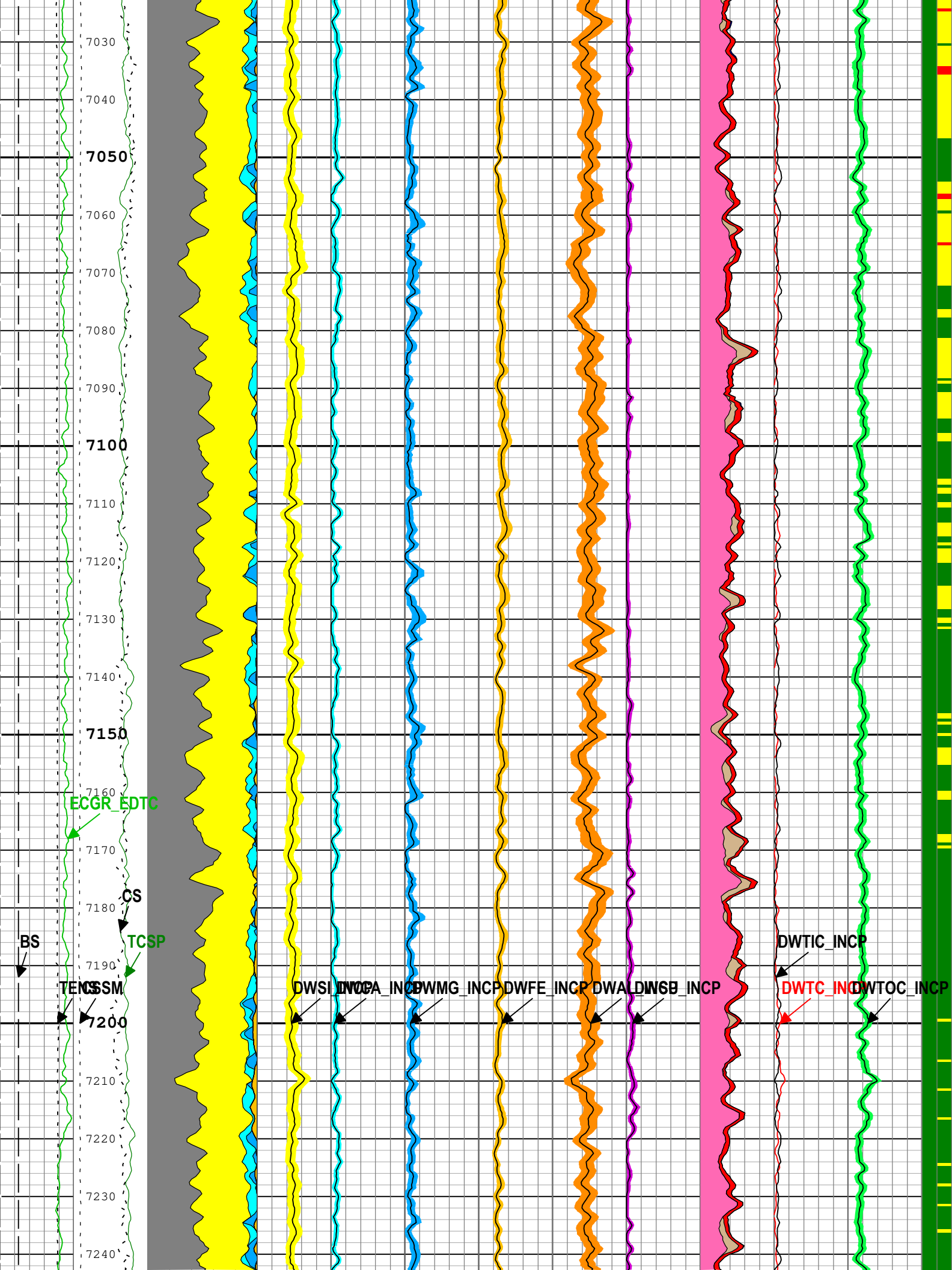
Depth Summary

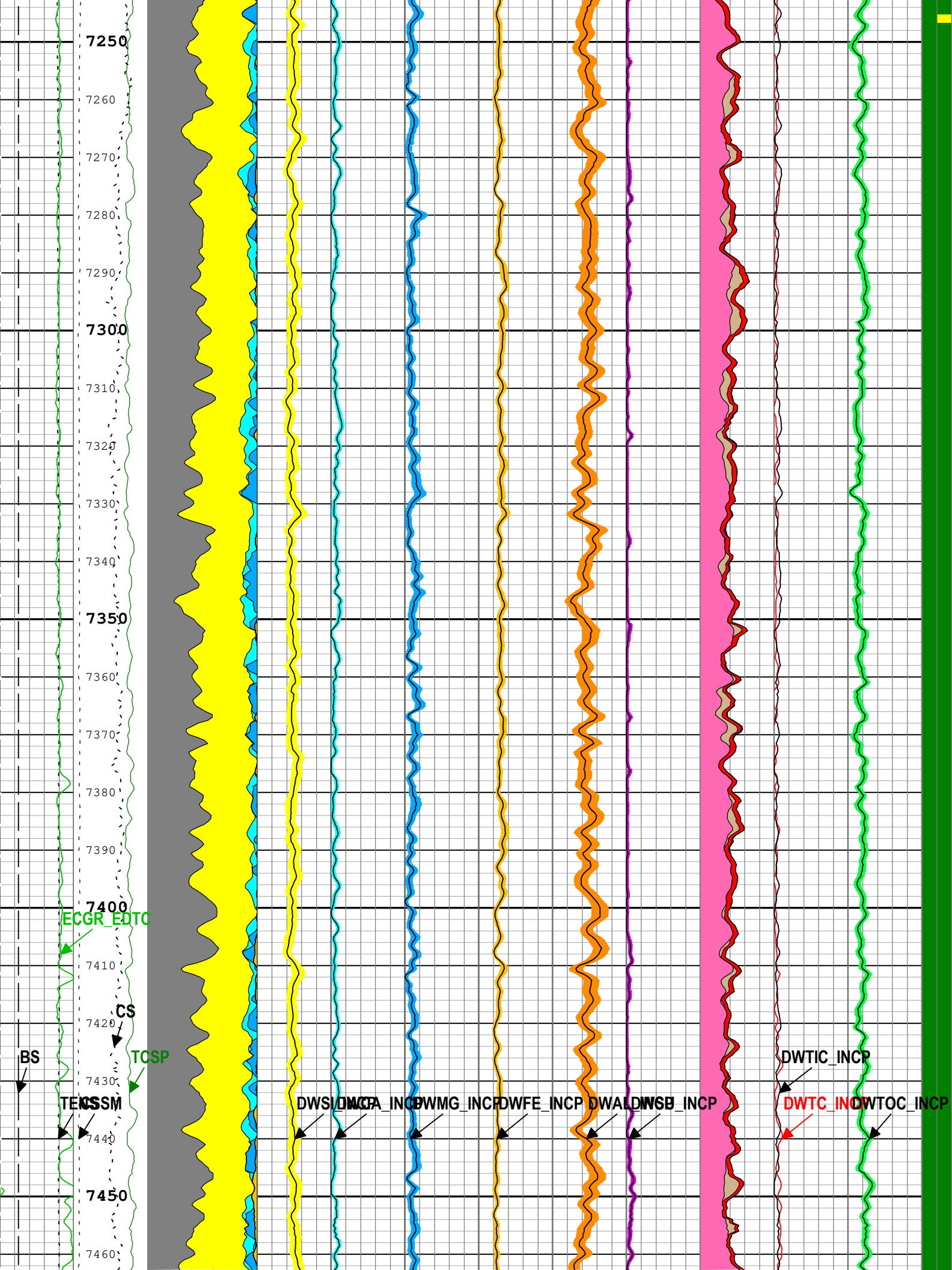
1A

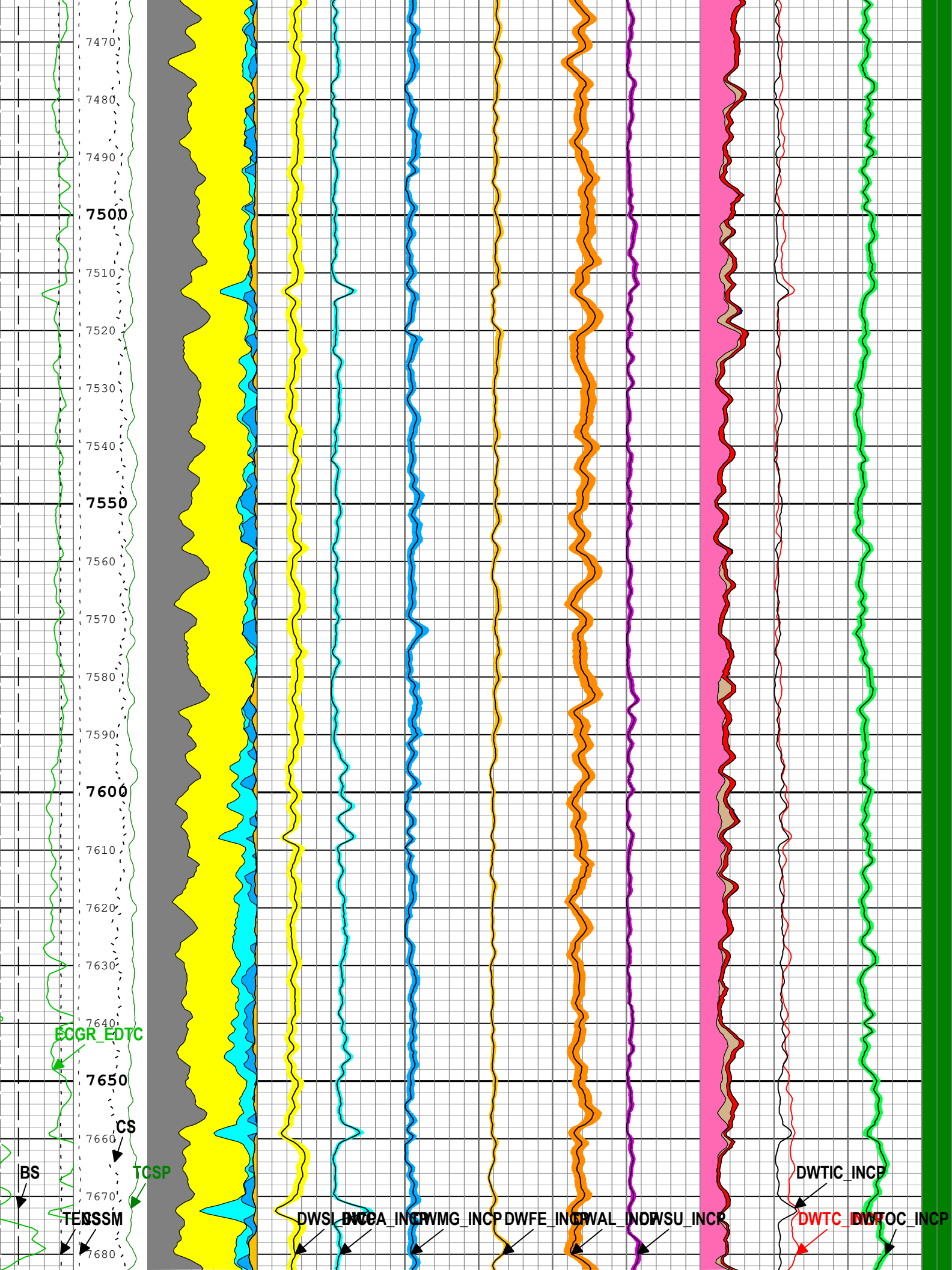
Depth Measuring Device

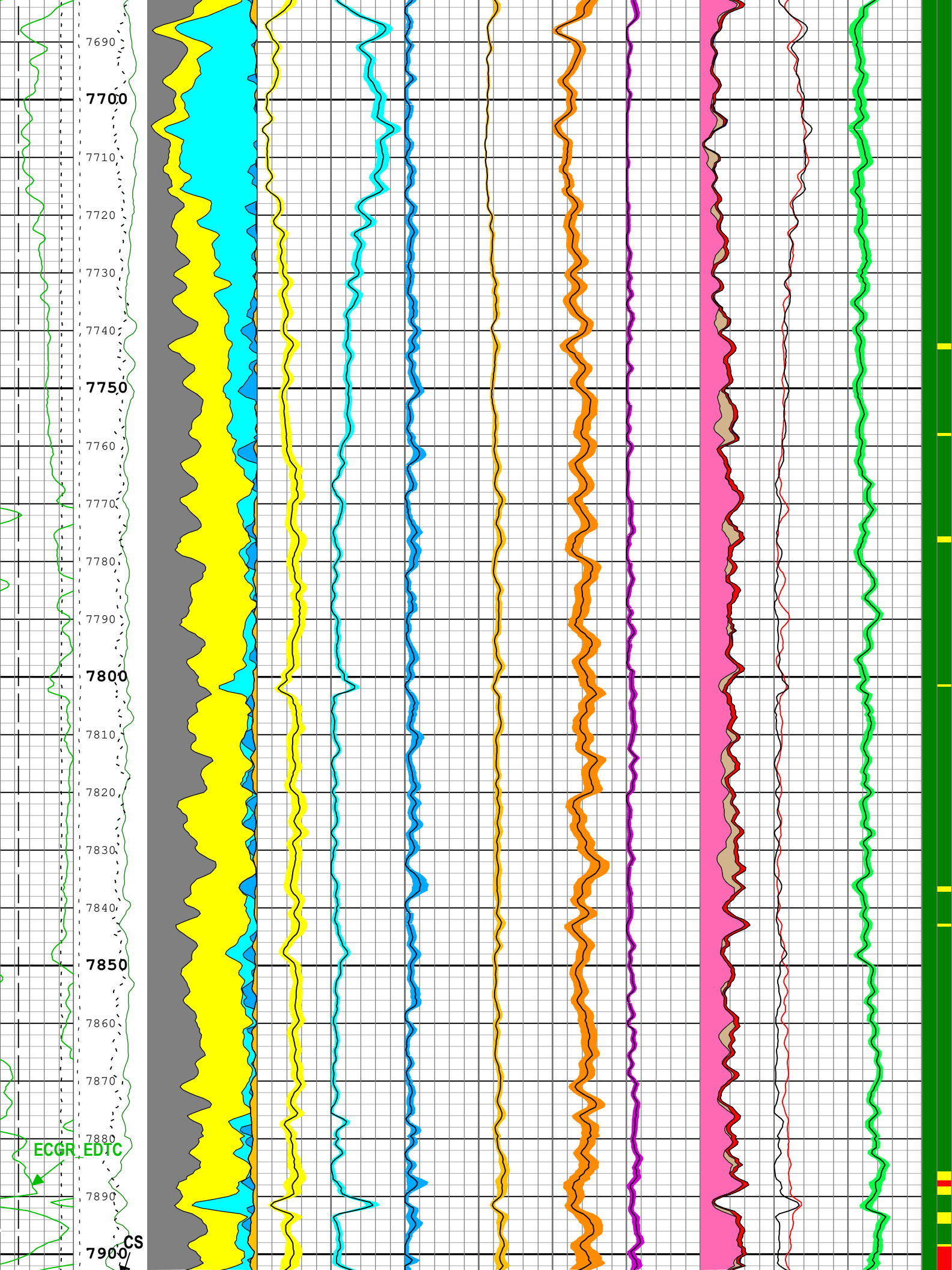
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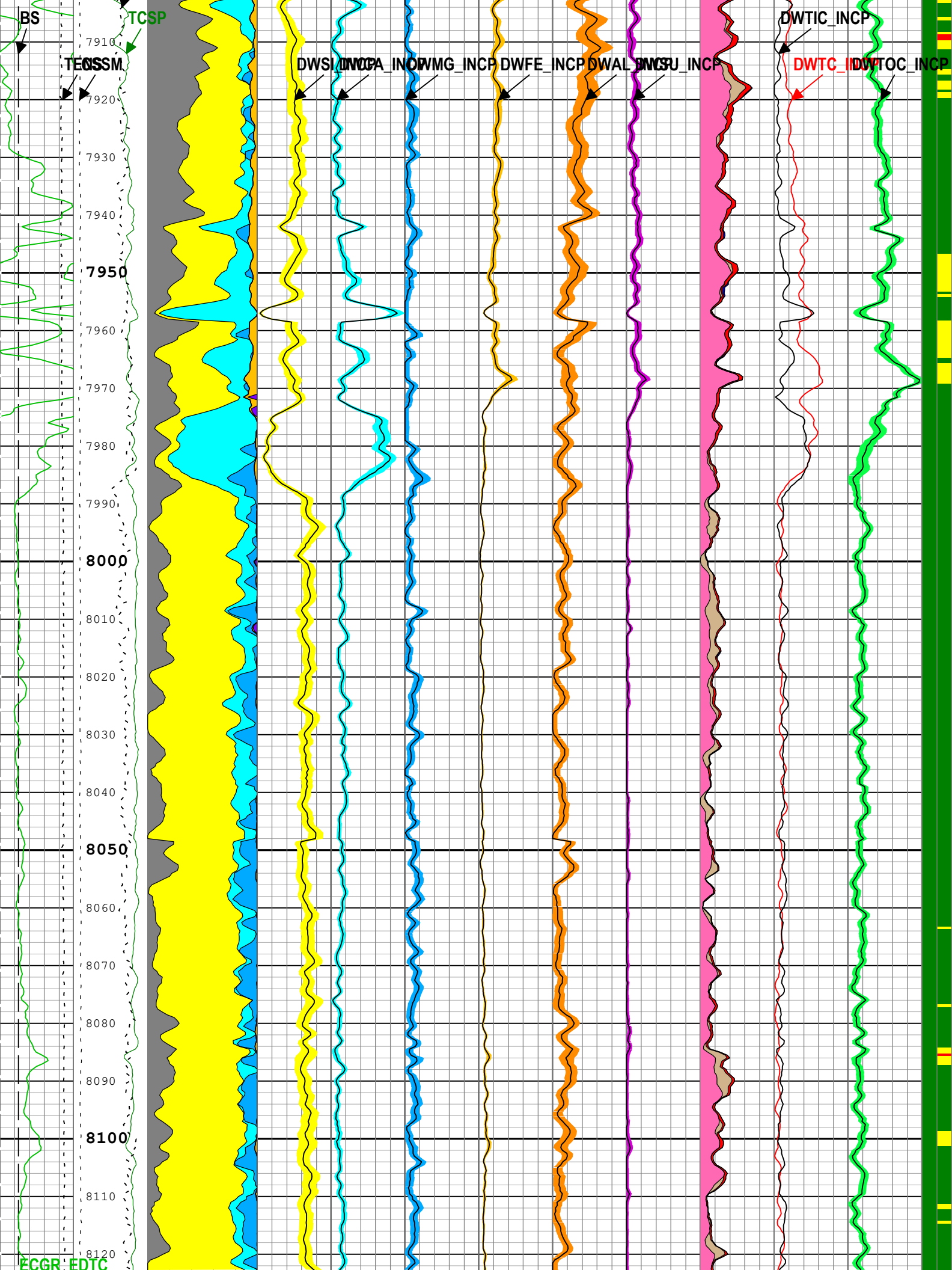


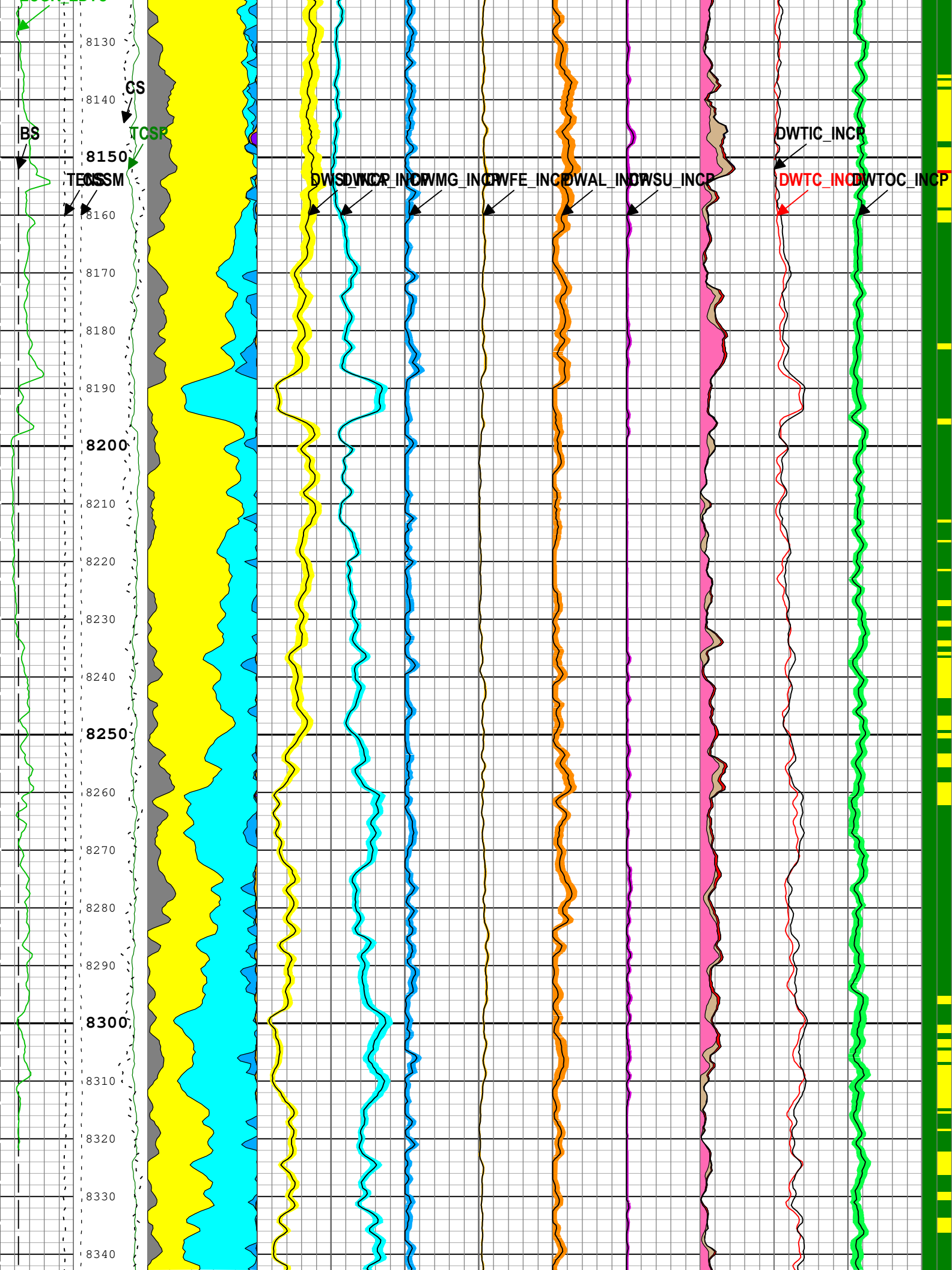


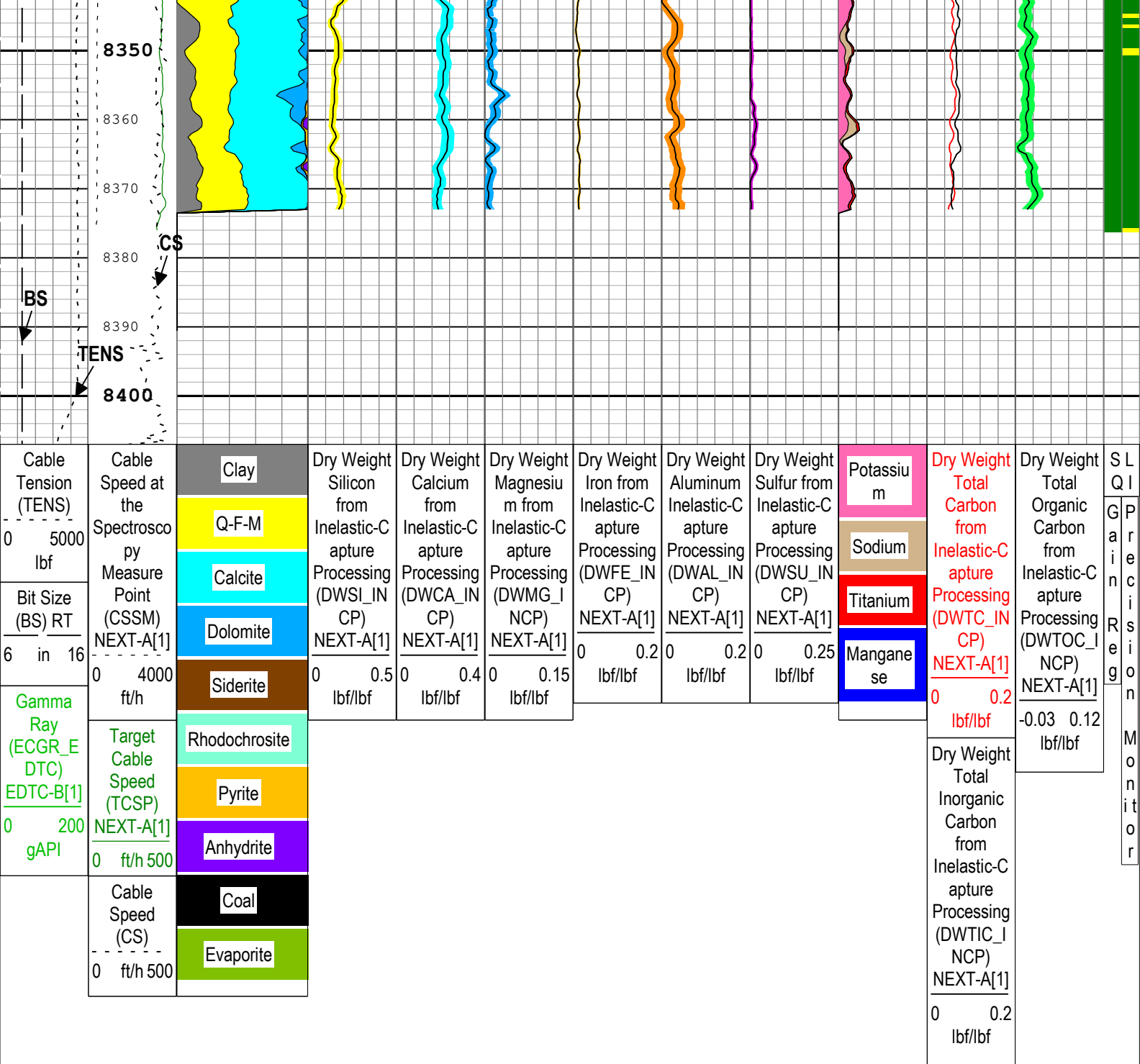












TIME_1900 - Time Marked every 60.00 (s)

Description: NEXT Lithology, Elements and TOC Format: Log (NEXT Lithology1, Elements and TOC) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Apr-2019 23:15:54

Channel Processing Parameters				
1A: Parameters				
Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.446	in
CBLO	Casing Bottom (Logger)	WLSESSION	2543	ft
CDEN	Cement Density	EDTC-B	2	g/cm3
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
CDSE_DOWNPASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	PS/DT	

GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(R1)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
SA_STK_BKG	Spectral Analysis Background Spectrum Stack Length	NEXT-A	15	
SA_STK_CAP	Spectral Analysis Capture Spectrum Stack Length	NEXT-A	3	
SPEC_BARIT_OPT	Barite Processing Option	NEXT-A	On	
SPEC_BH_CC_OPT	Borehole Carbon Correction Automatic Logic Option	NEXT-A	Manual	
SPEC_BH_CC_RBS	Borehole Carbon Correction Reference Bit Size	NEXT-A	8.5	in
SPEC_COAL_METH	Coal Processing Method	NEXT-A	Carbon	
SPEC_COAL_MIN	Minimum Coal Allowed	NEXT-A	0.1	lbf/lbf
SPEC_COAL_OPT	Coal Processing Option	NEXT-A	None	
SPEC_COAL_THR	Coal Processing Threshold	NEXT-A	0.05	lbf/lbf
SPEC_CPCLS_OPT	Capture Closure Model Option	NEXT-A	AlKNaMgMn	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	NEXT-A	2543	ft
SPEC_CSG_LOGIC	Automatic Casing Logic for Spectroscopy Processing	NEXT-A	Off	
SPEC_CSG_THR	Automatic Casing Depth Detection Logic Threshold	NEXT-A	0.5	
SPEC_CYAL_OFF	Capture Aluminum Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYCA_OFF	Capture Calcium Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYFE_OFF	Capture Iron Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYK_OFF	Capture Potassium Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_EPSI_ANH	Anhydrite Dielectric Permittivity	NEXT-A	6.7	
SPEC_EPSI_CLA	Clay Dielectric Permittivity	NEXT-A	5.8	
SPEC_EPSI_CLC	Calcite Dielectric Permittivity	NEXT-A	8.5	
SPEC_EPSI_COA	Coal Dielectric Permittivity	NEXT-A	2	
SPEC_EPSI_DOL	Dolomite Dielectric Permittivity	NEXT-A	7.5	
SPEC_EPSI_EVA	Salt Dielectric Permittivity	NEXT-A	5.9	
SPEC_EPSI_NHC	Nahcolite Dielectric Permittivity	NEXT-A	0	
SPEC_EPSI_PYR	Pyrite Dielectric Permittivity	NEXT-A	29	
SPEC_EPSI_QFM	Quartz+Feldspar+Mica (QFM) Dielectric Permittivity	NEXT-A	4.65	
SPEC_EPSI_RHD	Rhodochrosite Dielectric Permittivity	NEXT-A	6.8	
SPEC_EPSI_SID	Siderite Dielectric Permittivity	NEXT-A	7.7	
SPEC_FL_AL_ALP	Filter Length for Aluminum Alpha Processing	NEXT-A	13	
SPEC_FL_C	Filter Length for Dry Weight Carbon Processing	NEXT-A	1	
SPEC_FL_HPE	Filter Length for High Precision Elements	NEXT-A	3	
SPEC_FL_INOPT	Filter Length for Inelastic Closure Normalization Factor Optimization	NEXT-A	11	
SPEC_FL_IYDB	Filter Length for Inelastic Detector Background Yield	NEXT-A	7	
SPEC_FL_LPE	Filter Length for Low Precision Elements	NEXT-A	7	
SPEC_FL_MPE	Filter Length for Moderate Precision Elements	NEXT-A	5	
SPEC_FY2W_INEL	User Defined Inelastic Closure Normalization Factor	NEXT-A	0	
SPEC_IYC_SLOPE	Inelastic Carbon Yield Slope	NEXT-A	0	
SPEC_IYCA_OFF	Inelastic Calcium Yield Offset	NEXT-A	0	
SPEC_IYMG_OFF	Inelastic Magnesium Yield Offset	NEXT-A	0	
SPEC_IYS_OFF	Inelastic Sulfur Yield Offset	NEXT-A	0	
SPEC_IYSI_OFF	Inelastic Silicon Yield Offset	NEXT-A	0	
SPEC_KCL_FAC	Potassium Chloride Mud Correction Factor	NEXT-A	1	
SPEC_KCL_OPT	Potassium Chloride Mud Correction Option	NEXT-A	Off	
SPEC_LS_OPT	Cased Hole Iron Slowing Down Length Correction Option	NEXT-A	Off	
SPEC_LSD_FAC	Cased Hole Iron Slowing Down Length Correction Factor Denominator	NEXT-A	0.74	
SPEC_LSN_FAC	Cased Hole Iron Slowing Down Length Correction Factor Numerator	NEXT-A	0.6	
SPEC_NCYAL_OFF	Capture Aluminum Normalized Yield Offset	NEXT-A	0	
SPEC_NCYCA_OFF	Capture Calcium Normalized Yield Offset	NEXT-A	0.04	

SPEC_NCYFE_OFF	Capture Iron Normalized Yield Offset	NEXT-A	0.65	
SPEC_NCYK_OFF	Capture Potassium Normalized Yield Offset	NEXT-A	0	
SPEC_NCYMG_OFF	Capture Magnesium Normalized Yield Offset	NEXT-A	0	
SPEC_NCYMN_OFF	Capture Manganese Normalized Yield Offset	NEXT-A	0	
SPEC_NCYS_OFF	Capture Sulfur Normalized Yield Offset	NEXT-A	0	
SPEC_NCYSL_OFF	Capture Silicon Normalized Yield Offset	NEXT-A	0	
SPEC_NCYTI_OFF	Capture Titanium Normalized Yield Offset	NEXT-A	0	
SPEC_OBM_FLAG	Oil Base Mud Flag for Spectroscopy Processing	NEXT-A	Off	
SPEC_S_COR_FAC	Sulfur Correction Multiplier to Account for SrSO4 in Mud	NEXT-A	1	
SPEC_SIGM_FAC	Sigma Correction Factor for Iron from Casing	NEXT-A	-1	
SPEC_SIGM_OPT	Sigma Correction Option for Iron from Casing	NEXT-A	Off	
SPMS	Spectroscopy Precision Monitor Setting	NEXT-A	Precision	

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Composite 1

Software Version

Acquisition System	Version
Maxwell 2019	9.0.106845.3100

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[8]:Up	Up	8021.42 ft	8407.18 ft	15-Apr-2019 9:44:04 AM	15-Apr-2019 10:51:09 AM	ON	3.12 ft	Yes
1A	Log[9]:Up	Up	2500.63 ft	8126.68 ft	15-Apr-2019 10:57:49 AM	15-Apr-2019 4:11:56 PM	ON	4.17 ft	Yes
1A	Log[10]:Up	Up	7693.14 ft	8410.89 ft	15-Apr-2019 4:41:25 PM	15-Apr-2019 5:26:23 PM	ON	10.94 ft	Yes

All depths are referenced to toolstring zero

Log	Company:North East Natural Energy LLC Well:Boggess 17H Composite 1:S012
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Description: NEXT Lithology, Sigma, Maxtrix, Compacted Elements Format: Log (NEXT Lithology2, Sigma, Maxtrix, Compacted Elements) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Apr-2019 23:16:07

TIME_1900 - Time Marked every 60.00 (s)

Oxides Closure Normalization Factor from Inelastic-Capture Closure (FY2W_INCP) NEXT-A[1]

05

Elemental Statistical Uncertainty Factor from Inelastic-Capture Processing (ESUF_INCP) NEXT-A[1]

02

Clay

Q-F-M

Calcite

Dolomite

Siderite

Rhodochrosite

Pyrite

Epithermal Neutron Matrix from Elements from Inelastic-Capture Processing (ENGE_INCP) NEXT-A[1]

-0.2ft3/ft30.3

Matrix Density from

Photoelectric Factor from Elements from Inelastic-Capture Processing (PEGE_INCP) NEXT-A[1]

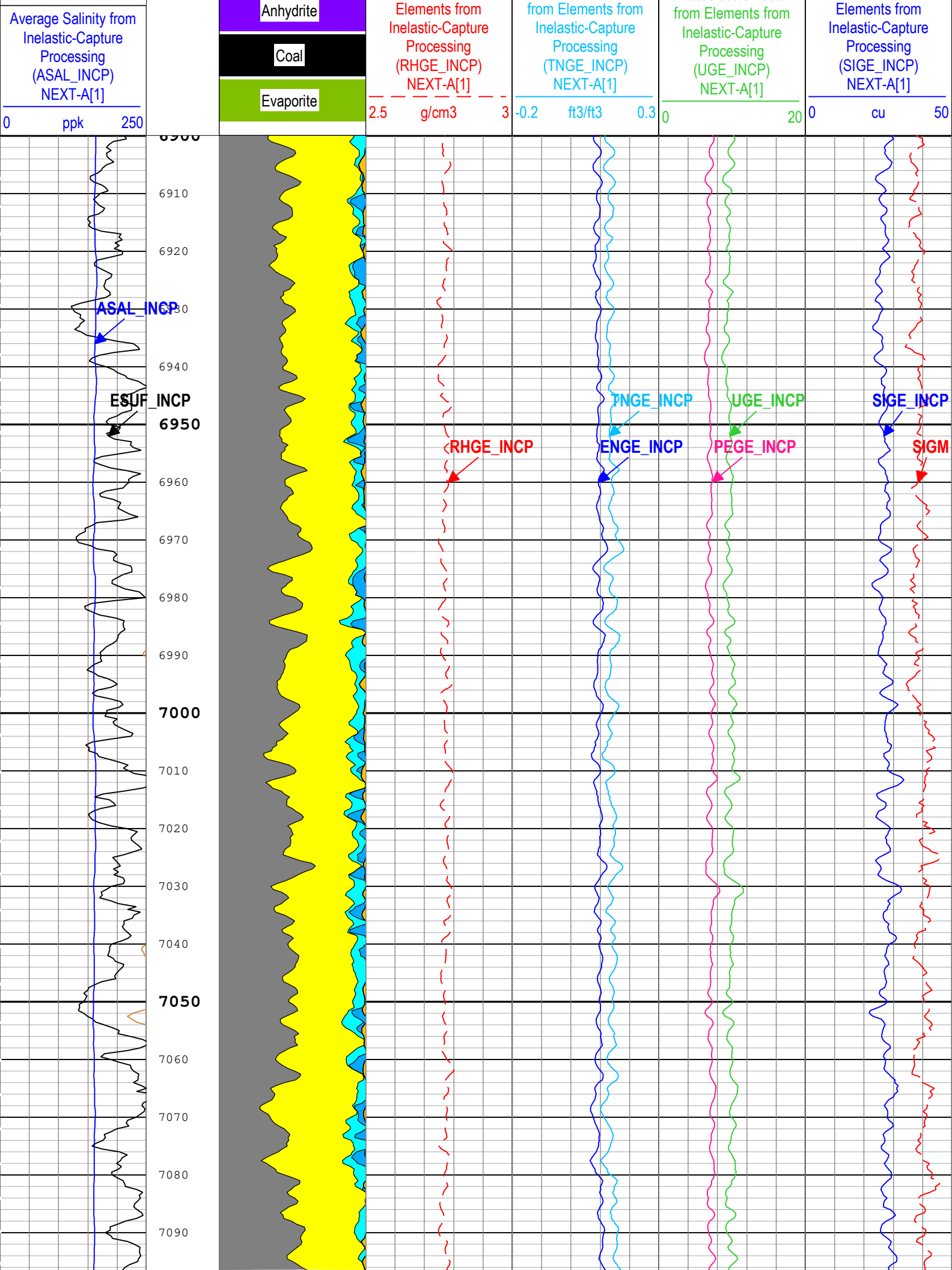
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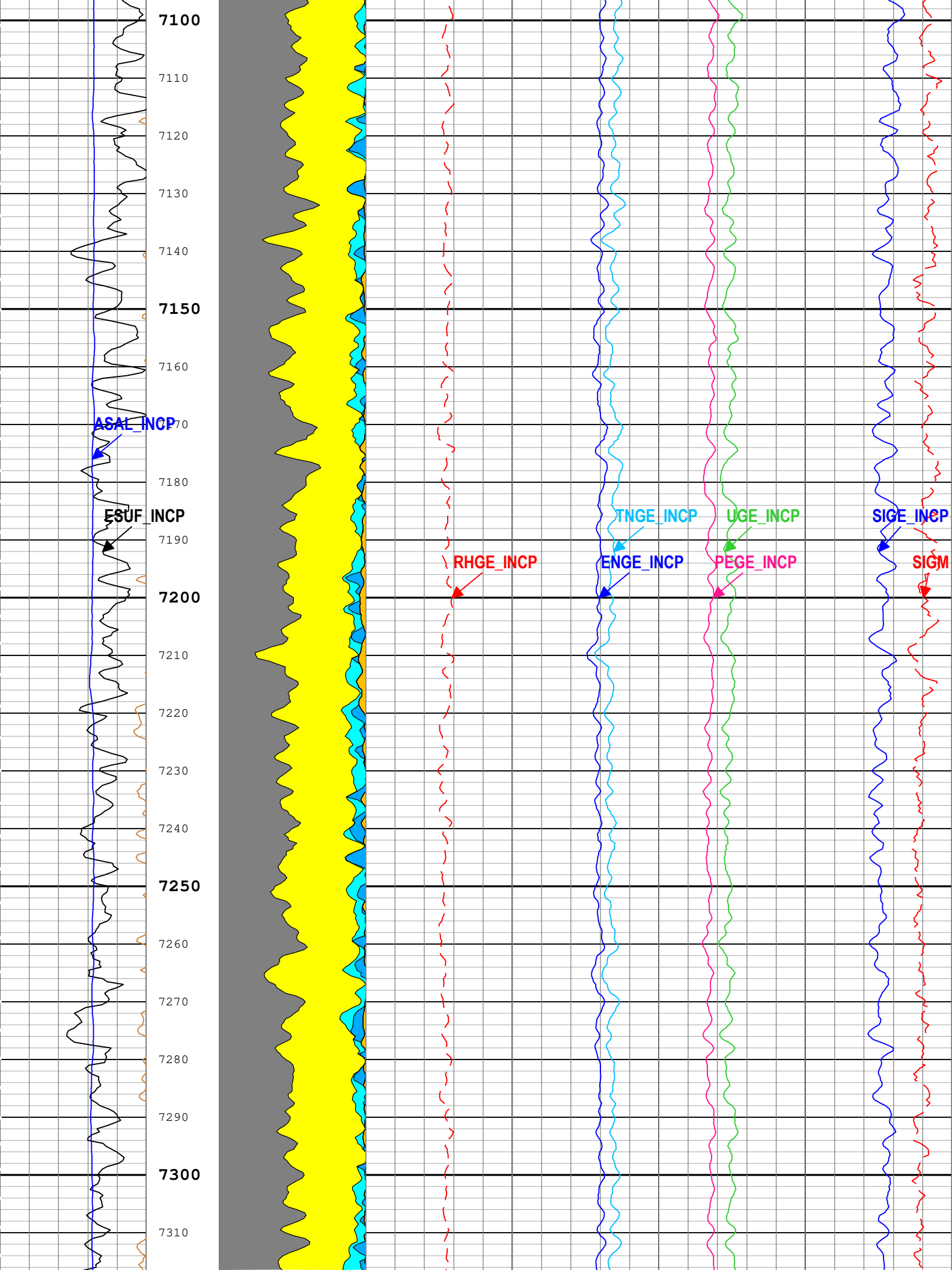
Volumetric Photoelectric Factor

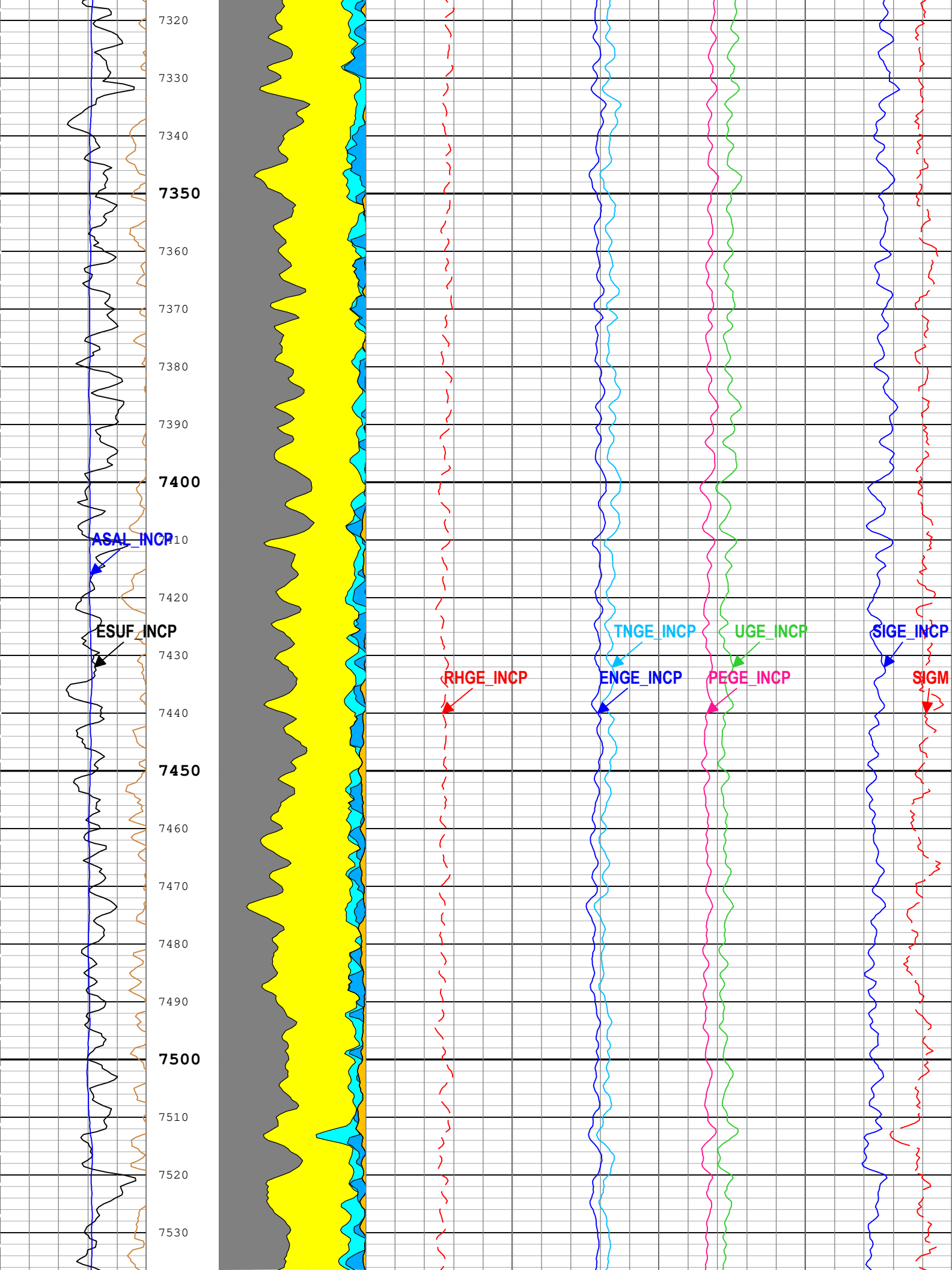
Formation Sigma (Neutron Capture Cross Section) (SIGM) NEXT-A[1]

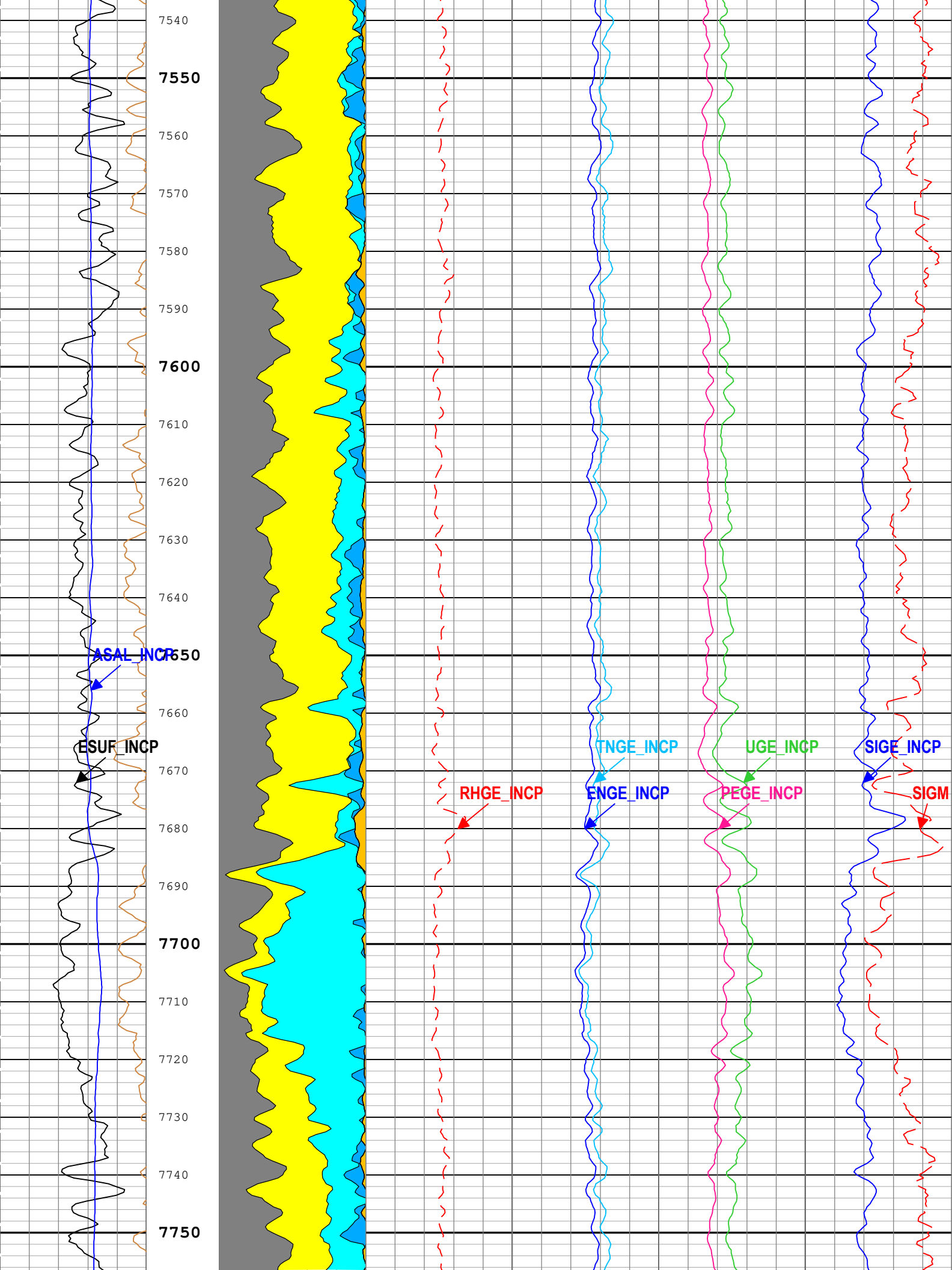
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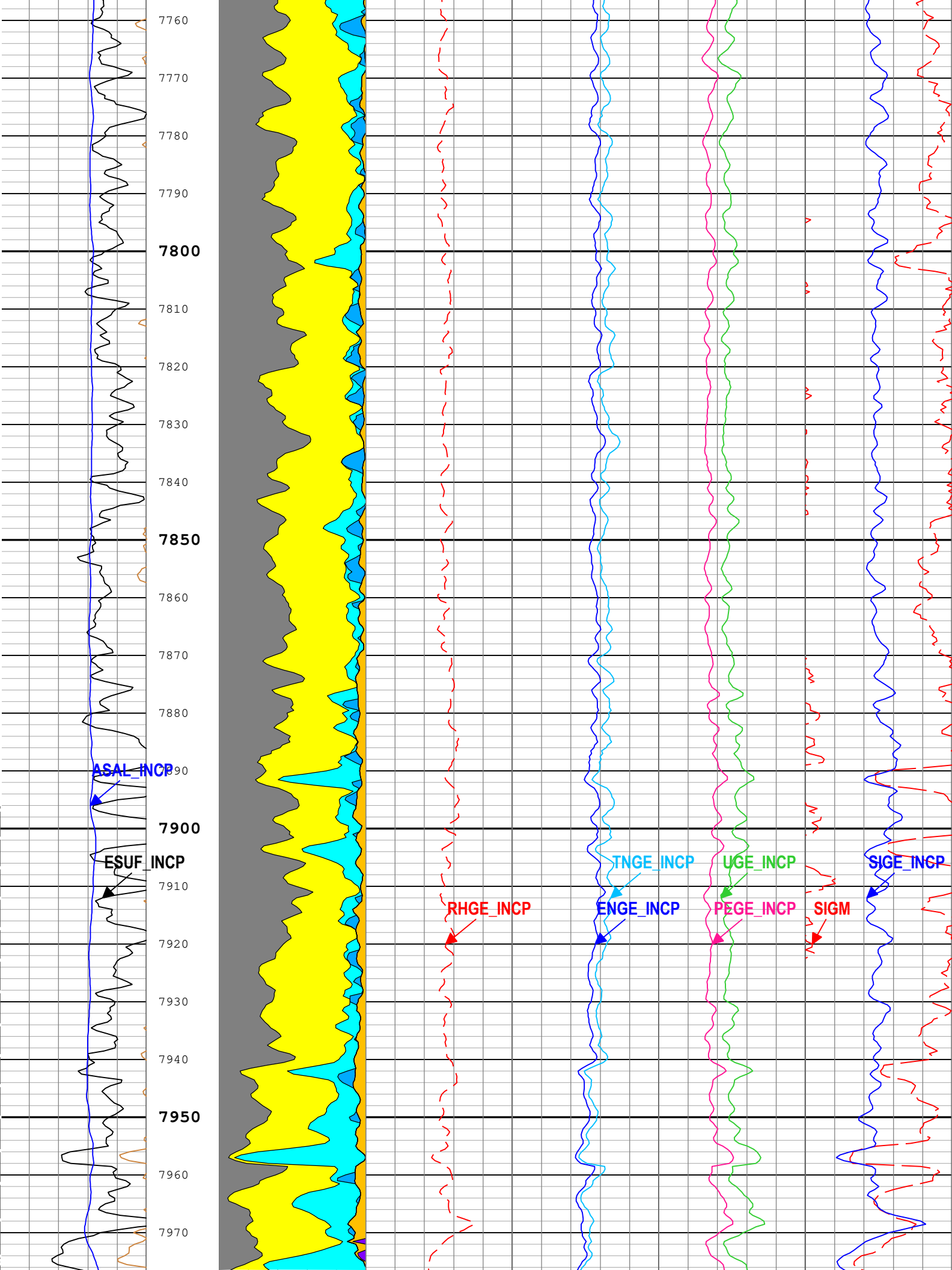
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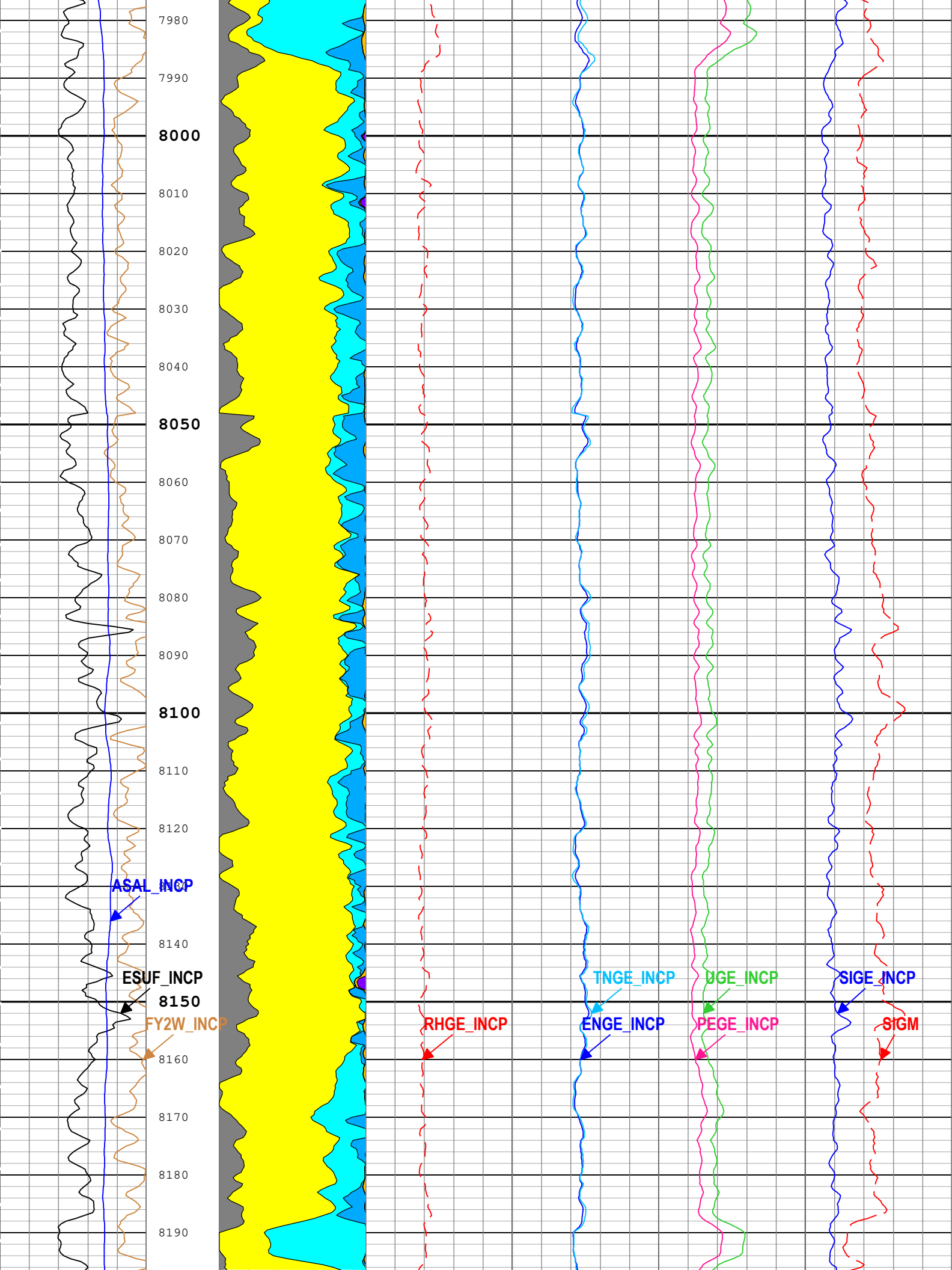


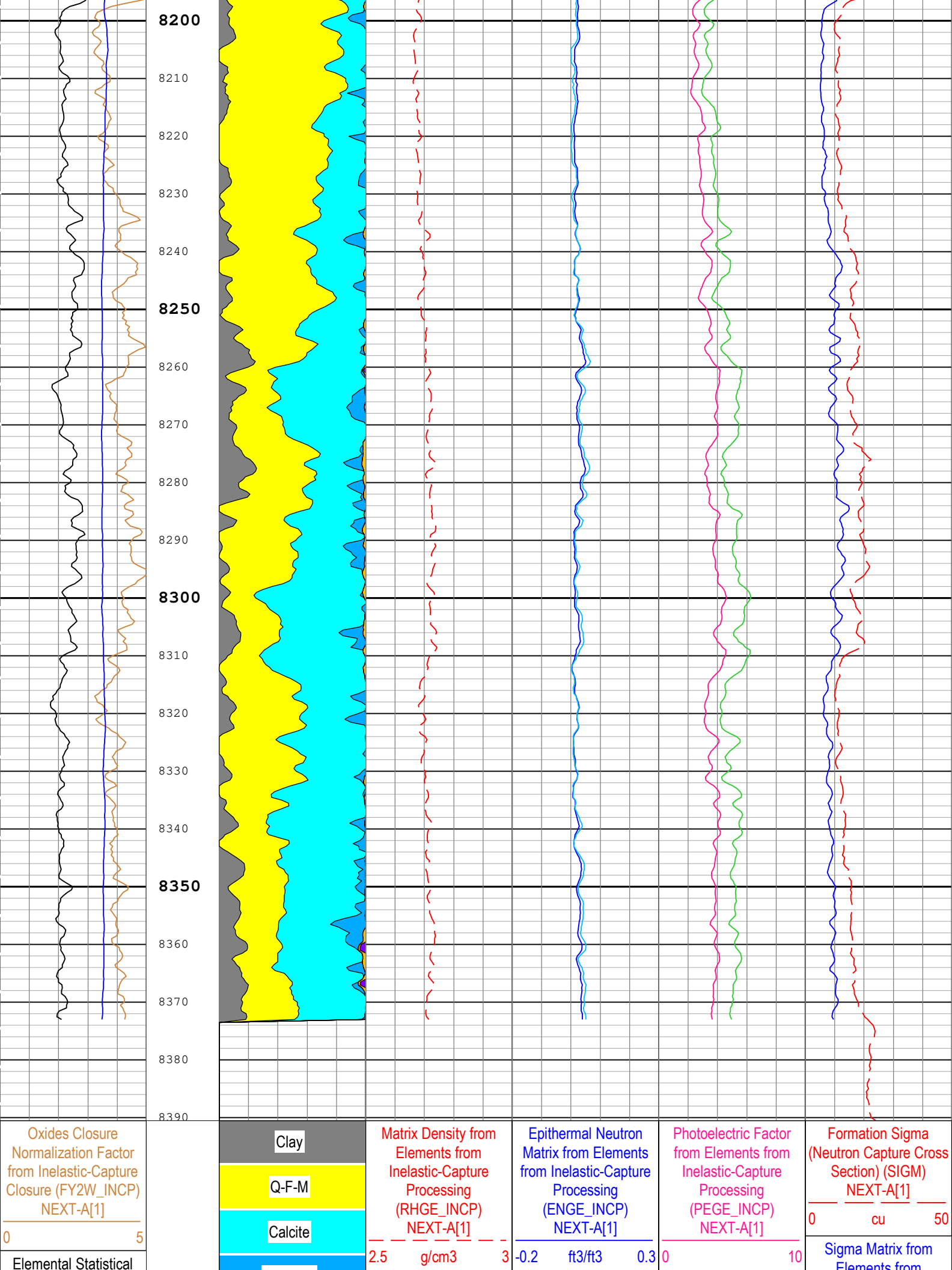


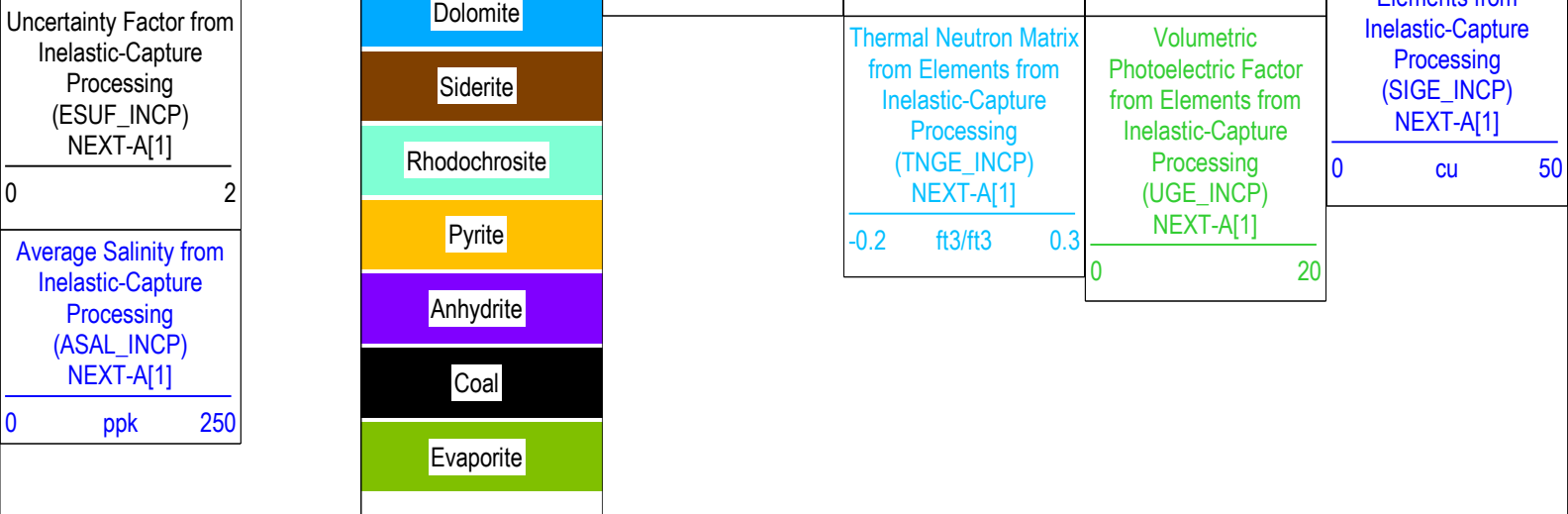












Description: NEXT Lithology, Sigma, Maxtrix, Compacted Elements Format: Log (NEXT Lithology2, Sigma, Maxtrix, Compacted Elements) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Apr-2019 23:16:07

Channel Processing Parameters				
1A: Parameters				
Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.446	in
CBLO	Casing Bottom (Logger)	WLSESSION	2543	ft
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
SA_STK_BKG	Spectral Analysis Background Spectrum Stack Length	NEXT-A	15	
SA_STK_CAP	Spectral Analysis Capture Spectrum Stack Length	NEXT-A	3	
SPEC_BARIT_OPT	Barite Processing Option	NEXT-A	On	
SPEC_BH_CC_OPT	Borehole Carbon Correction Automatic Logic Option	NEXT-A	Manual	
SPEC_BH_CC_RBS	Borehole Carbon Correction Reference Bit Size	NEXT-A	8.5	in
SPEC_COAL_METH	Coal Processing Method	NEXT-A	Carbon	
SPEC_COAL_MIN	Minimum Coal Allowed	NEXT-A	0.1	lb/ft ³ /lb/ft ³
SPEC_COAL_OPT	Coal Processing Option	NEXT-A	None	
SPEC_COAL_THR	Coal Processing Threshold	NEXT-A	0.05	lb/ft ³ /lb/ft ³
SPEC_CPCLS_OPT	Capture Closure Model Option	NEXT-A	AlKNaMgMn	
SPEC_CSG_DEPTH	Casing Depth for Spectroscopy Processing	NEXT-A	2543	ft
SPEC_CSG_LOGIC	Automatic Casing Logic for Spectroscopy Processing	NEXT-A	Off	
SPEC_CSG_THR	Automatic Casing Depth Detection Logic Threshold	NEXT-A	0.5	
SPEC_CYAL_OFF	Capture Aluminum Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYCA_OFF	Capture Calcium Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYFE_OFF	Capture Iron Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_CYK_OFF	Capture Potassium Yield Offset for Borehole Mud Correction	NEXT-A	0	
SPEC_EPSI_ANH	Anhydrite Dielectric Permittivity	NEXT-A	6.7	
SPEC_EPSI_CLA	Clay Dielectric Permittivity	NEXT-A	5.8	
SPEC_EPSI_CLC	Calcite Dielectric Permittivity	NEXT-A	8.5	
SPEC_EPSI_COA	Coal Dielectric Permittivity	NEXT-A	2	
SPEC_EPSI_DOL	Dolomite Dielectric Permittivity	NEXT-A	7.5	
SPEC_EPSI_EVA	Salt Dielectric Permittivity	NEXT-A	5.9	
SPEC_EPSI_NHC	Nahcolite Dielectric Permittivity	NEXT-A	0	

SPEC_EPSI_PYR	Pyrite Dielectric Permittivity	NEXT-A	29	
SPEC_EPSI_QFM	Quartz+Feldspar+Mica (QFM) Dielectric Permittivity	NEXT-A	4.65	
SPEC_EPSI_RHD	Rhodochrosite Dielectric Permittivity	NEXT-A	6.8	
SPEC_EPSI_SID	Siderite Dielectric Permittivity	NEXT-A	7.7	
SPEC_FL_AL_ALP	Filter Length for Aluminum Alpha Processing	NEXT-A	13	
SPEC_FL_C	Filter Length for Dry Weight Carbon Processing	NEXT-A	1	
SPEC_FL_HPE	Filter Length for High Precision Elements	NEXT-A	3	
SPEC_FL_INOPT	Filter Length for Inelastic Closure Normalization Factor Optimization	NEXT-A	11	
SPEC_FL_IYDB	Filter Length for Inelastic Detector Background Yield	NEXT-A	7	
SPEC_FL_LPE	Filter Length for Low Precision Elements	NEXT-A	7	
SPEC_FL_MPE	Filter Length for Moderate Precision Elements	NEXT-A	5	
SPEC_FY2W_INEL	User Defined Inelastic Closure Normalization Factor	NEXT-A	0	
SPEC_IYC_SLOPE	Inelastic Carbon Yield Slope	NEXT-A	0	
SPEC_IYCA_OFF	Inelastic Calcium Yield Offset	NEXT-A	0	
SPEC_IYMG_OFF	Inelastic Magnesium Yield Offset	NEXT-A	0	
SPEC_IYS_OFF	Inelastic Sulfur Yield Offset	NEXT-A	0	
SPEC_IYSI_OFF	Inelastic Silicon Yield Offset	NEXT-A	0	
SPEC_KCL_FAC	Potassium Chloride Mud Correction Factor	NEXT-A	1	
SPEC_KCL_OPT	Potassium Chloride Mud Correction Option	NEXT-A	Off	
SPEC_LS_OPT	Cased Hole Iron Slowing Down Length Correction Option	NEXT-A	Off	
SPEC_LSD_FAC	Cased Hole Iron Slowing Down Length Correction Factor Denominator	NEXT-A	0.74	
SPEC_LSN_FAC	Cased Hole Iron Slowing Down Length Correction Factor Numerator	NEXT-A	0.6	
SPEC_NCYAL_OFF	Capture Aluminum Normalized Yield Offset	NEXT-A	0	
SPEC_NCYCA_OFF	Capture Calcium Normalized Yield Offset	NEXT-A	0.04	
SPEC_NCYFE_OFF	Capture Iron Normalized Yield Offset	NEXT-A	0.65	
SPEC_NCYK_OFF	Capture Potassium Normalized Yield Offset	NEXT-A	0	
SPEC_NCYMG_OFF	Capture Magnesium Normalized Yield Offset	NEXT-A	0	
SPEC_NCYMN_OFF	Capture Manganese Normalized Yield Offset	NEXT-A	0	
SPEC_NCYS_OFF	Capture Sulfur Normalized Yield Offset	NEXT-A	0	
SPEC_NCYSI_OFF	Capture Silicon Normalized Yield Offset	NEXT-A	0	
SPEC_NCYTI_OFF	Capture Titanium Normalized Yield Offset	NEXT-A	0	
SPEC_OBM_FLAG	Oil Base Mud Flag for Spectroscopy Processing	NEXT-A	Off	
SPEC_S_COR_FAC	Sulfur Correction Multiplier to Account for SrSO4 in Mud	NEXT-A	1	
SPEC_SIGM_FAC	Sigma Correction Factor for Iron from Casing	NEXT-A	-1	
SPEC_SIGM_OPT	Sigma Correction Option for Iron from Casing	NEXT-A	Off	

Tool Control Paramaters

1A: Parameters

Parameter	Description	Tool	Value	Unit
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Company:	North East Natural Energy LLC	Schlumberger
Well:	Boggess 17H	
Field:	Wildcat	
County:	Monongalia	
Operator:	Wildcat	

LITHO-SCANNER

FIELD PRINT ONLY