

Spectral Gamma Ray

Company: DCP Midstream LP

Well: ZIA AGI D2

Field: AGI Devonian Exploration

County: Lea State: New Mexico

Spectral Gamma Ray

County: Lea			
Field: AGI Devonian Exploration			
Location: 1893' FSL & 950' FWL			
Well: ZIA AGI D2			
Company: DCP Midstream LP			
Location:	1893' FSL & 950' FWL	Elev.: K.B. 3574.00 ft	
	Section:19, Township: T 19S, Abstract:R32S	G.L. 3547.00 ft	
		D.F. 3573.00 ft	
Permanent Datum:	Ground Level	Elev.:	3547.00 f
Log Measured From:	Kelly Bushing	27.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section: 19	Township: T 19S	Abstract: R32S
30-025-42207			
Logging Date	11-Dec-2016		

Run Number 2A

Depth Driller 14750.00 ft

Schlumberger Depth 14770.00 ft

Bottom Log Interval 14770.00 ft

Top Log Interval 13635.00 ft

Casing Driller Size @ Depth 7 in @ 13622.00 ft

Casing Schlumberger 13635 ft

Bit Size 6 in

Type Fluid In Hole Fresh Water

Density Viscosity 8.4 lbm/gal 28 s

Fluid Loss PH 0 cm3 10

MUD Source of Sample Active Tank

RM @ Meas Temp 0.25 ohm.m @ 60 degF

RMF @ Meas Temp 0.13 ohm.m @ 60 degF

RMC @ Meas Temp

Source RMF Calculated

RM @ BHT 0.08 @ 206 0.06 @ 206

Max Recorded Temperatures 206 degF

Circulation Stopped 10-Dec-2016 12:30:00

Logger on Bottom 11-Dec-2016 08:15:00

Unit Number 2191 Midland

Recorded By J.Shtull

Witnessed By Jim Hunter

Disclaimer

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Borehole Fluids

Parameter(unit)	2A					
Fluid Type	Water					
Fluid Name	Fresh Water					
Max Recorded Temperatures (degF)	206					
Source of Sample	Active Tank					
Salinity (ppm)	1000					
Density (lbm/gal)	8.4					
Funnel Viscosity (s)	28					
Fluid Loss (cm3)	0					
PH	10					
Date/Time Circulation Stopped	10-Dec-2016 12:30:00					
Date Logger on Bottom	11-Dec-2016					
Time Logger on Bottom	08:15:00					
Source RMF	Calculated					
RMC						
RM @ Meas Temp (ohm.m@degF)	0.25 @ 60					
RMF @ Meas Temp (ohm.m@degF)	0.13 @ 60					
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.08 @ 206					
RMF @ BHT (ohm.m@degF)	0.06 @ 206					
RMC @ BHT (ohm.m@degF)	NaN @ 206					
Total Solid (%)						
High Gravity Solids (%)						

Remarks and Equipment Summary	
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2A: Toolstring				2A: Remarks
Equip name LEH-QC	Length 62.8	MP name	Offset	Thank you for choosing Schlumberger Wireline
				Toolstring ran as per tool sketch
				Logging program and intervals confirmed with client prior to job
DTC-H ECH-KC DTC-H	60.34	CTEM HV TelStatu s ToolStat us	59.44 0.00 57.34 57.34	Limestone matrix used
				AIT ran slick due to hole size
HNGS-BA:3 65 HEH-K:365 HNGS-BA:3 65	57.34			ILE used for eccentricization
				HGNS corrected for hole size and standoff correction
		GR	54.35	Correlation to previous log confirmed with on-site geologist at points: 13500, 13398
				Induction tool ran for resistivity as per client

request
Resistivity data out of tolerance due to borehole condition

HNGC-B:62 49.15
3
HNGH-A:41
04
HNGC-B:62
3

ILE-F 45.65

HGNS-B 37.65
HGNH:2978
NPV-N
NSR-F:5064
HMCA-B
HGNS-B
HACCZ-B:4
19

HDRS-H 28.24
ECH-MEB:4
916
HRCC-H
HRMS-H
GPV-Q
Long Spacing:28718
Short Spacing:27769
HRGD-H:39
22
GSR-J:5453
Backscatter
:26717

AIT-M 16.00
AMIS
AMRM

Tel Status 47.4

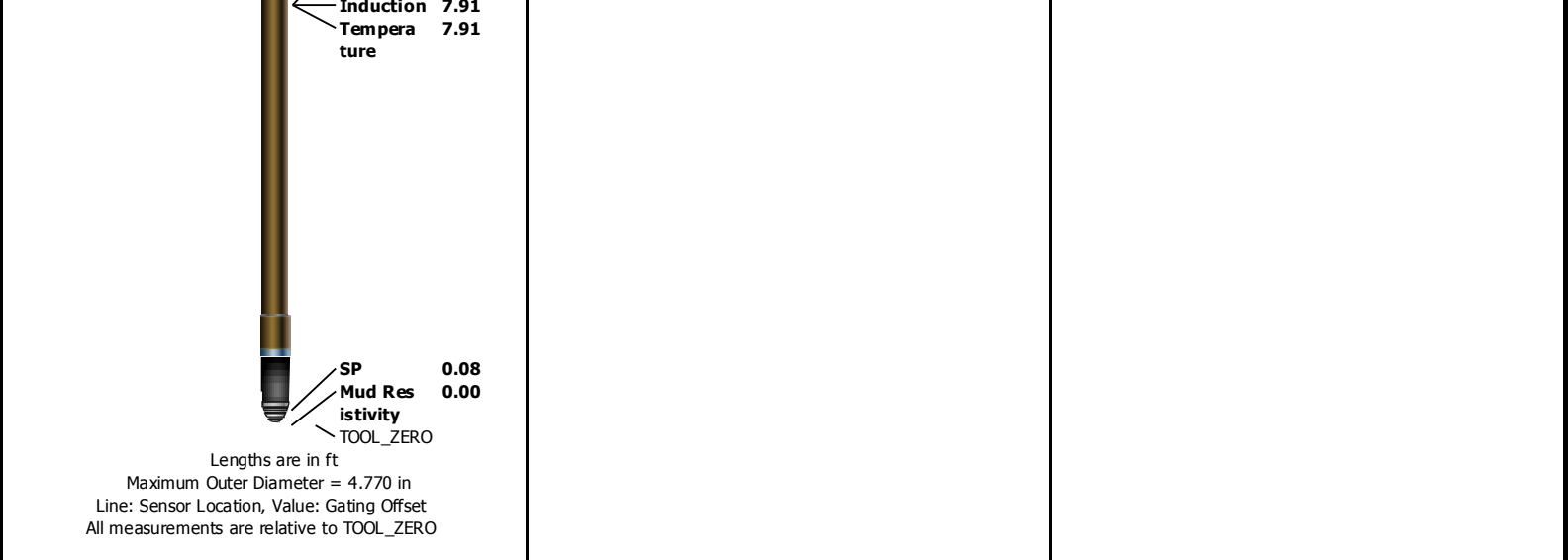
Temperature 37.62
GR 36.91

CNL Porosity 30.57
HGNS 28.24
HMCA 28.24
Accelerometer 0.00

HRCC 24.24

MCFL 18.81
Caliper 18.33
TLD Density 17.94

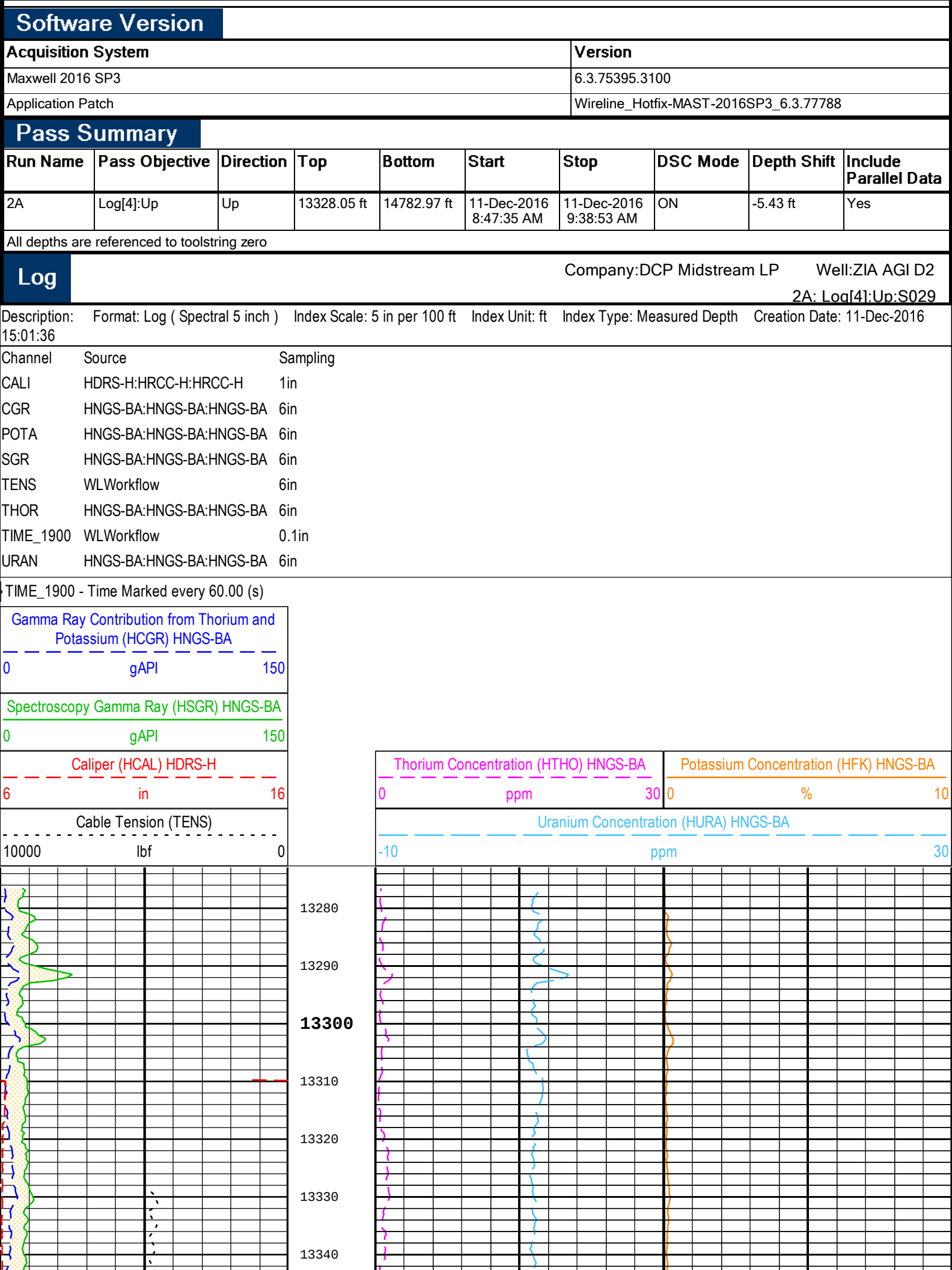
Power Supply 7.91

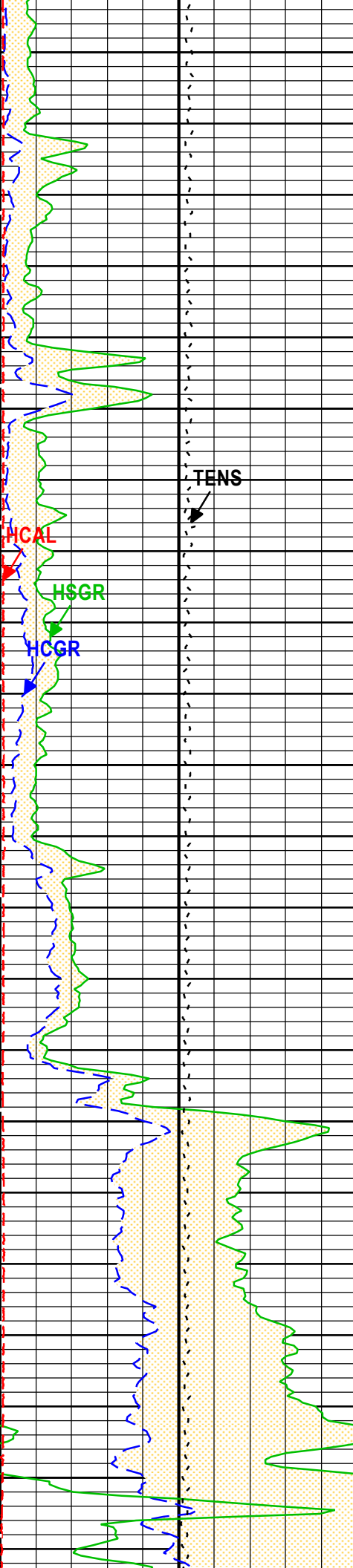


Depth Summary			
		2A	
Depth Measuring Device			
Type	IDW-B		
Serial Number	6609		
Calibration Date	03-Jun-2016		
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	-3		
Wheel Correction 2	-2		
Tension Device			
Type	CMTD-B/A		
Serial Number	3500		
Calibration Date	09-Dec-2016		
Calibrator Serial Number	13		
Number of Calibration Points	10		
Calibration Root Mean Square Error	10		
Calibration Peak Error	15		
Logging Cable			
Type	7-46P-XS		
Serial Number	U714051		
Length	22100.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		
2A:Depth Control Parameters		Depth Control Remarks	
Log Sequence	Subsequent Log In the Well	IDW used as primary depth control device	
Reference Log Name	"Platform Express" - D.Krebs	ZChart used as secondary depth control device	
Reference Log Run Number	1A	Correlation confirmed with onsite geologist	
Reference Log Date	29-Nov-2016		

2A

Main Pass 5" = 100'





13350

13360

13370

13380

13390

13400

13410

13420

13430

13440

13450

13460

13470

13480

13490

13500

13510

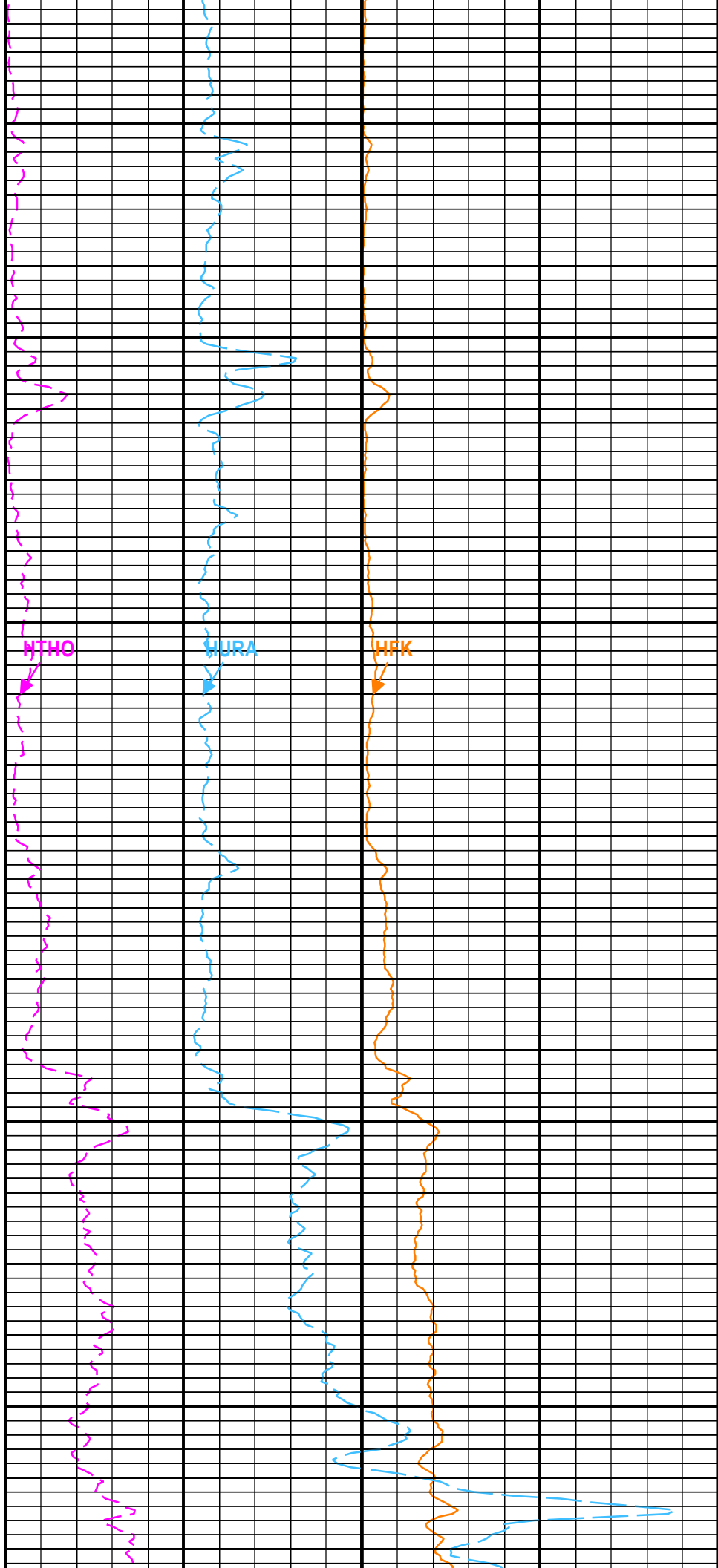
13520

13530

13540

13550

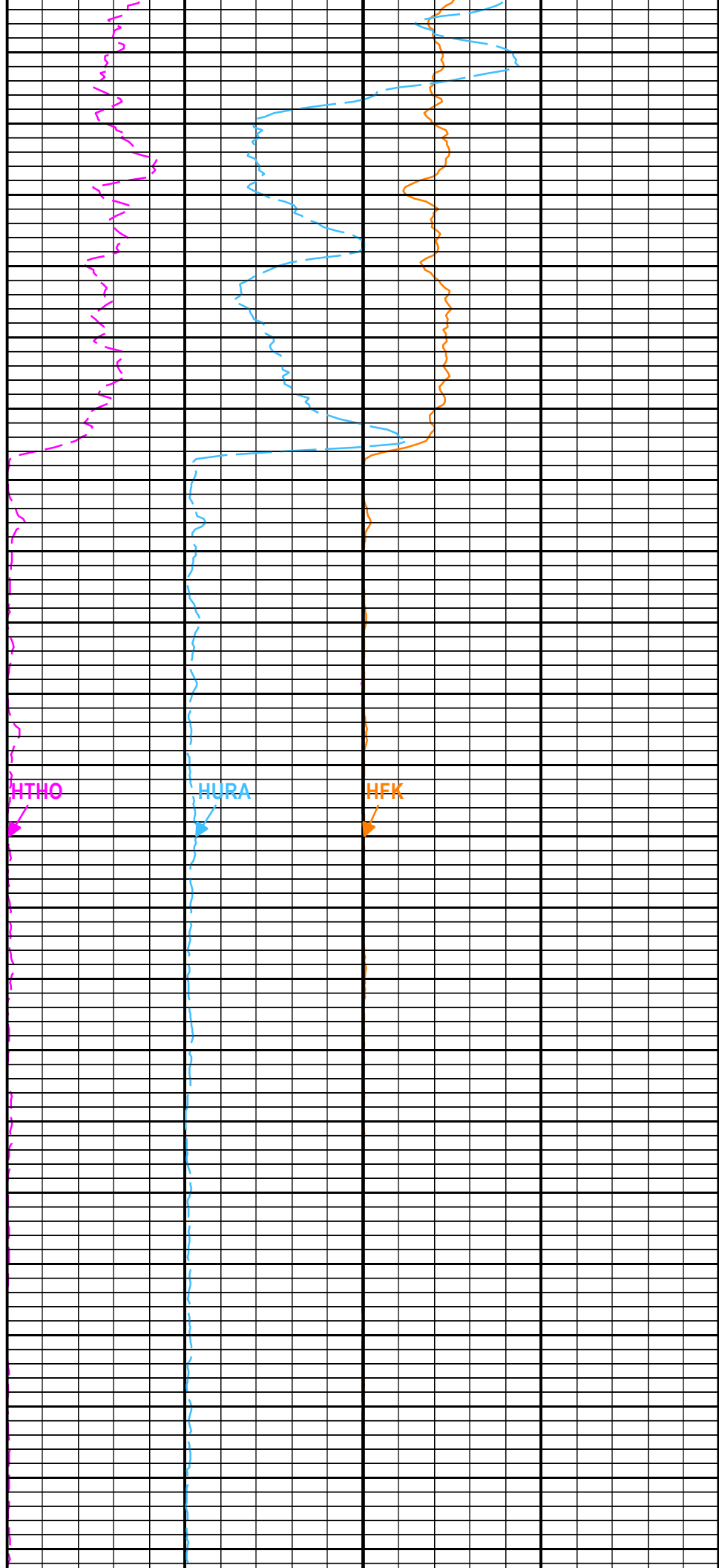
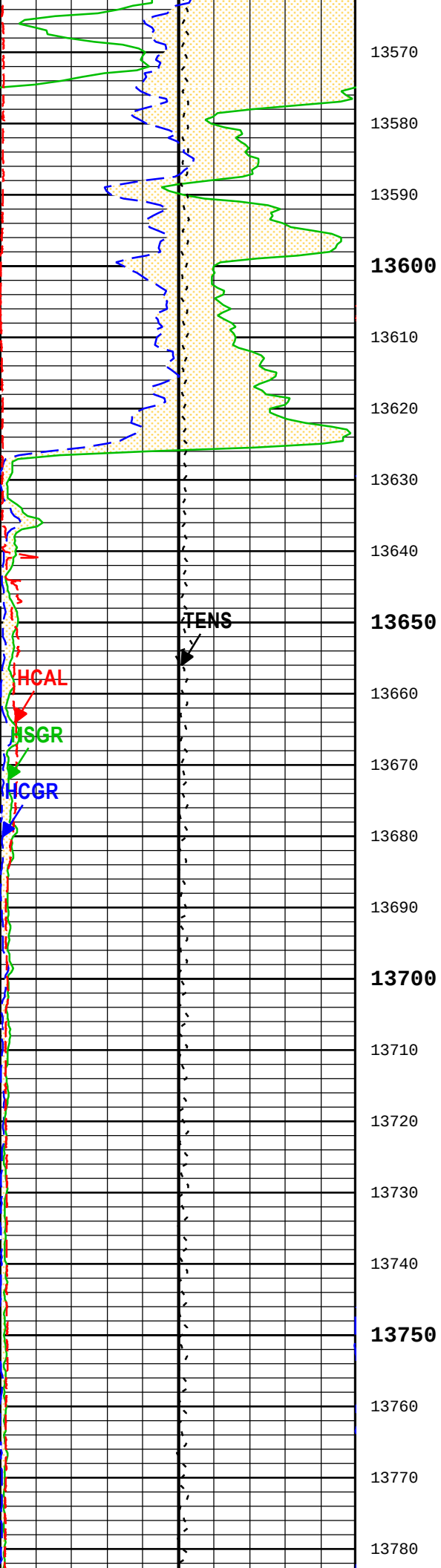
13560

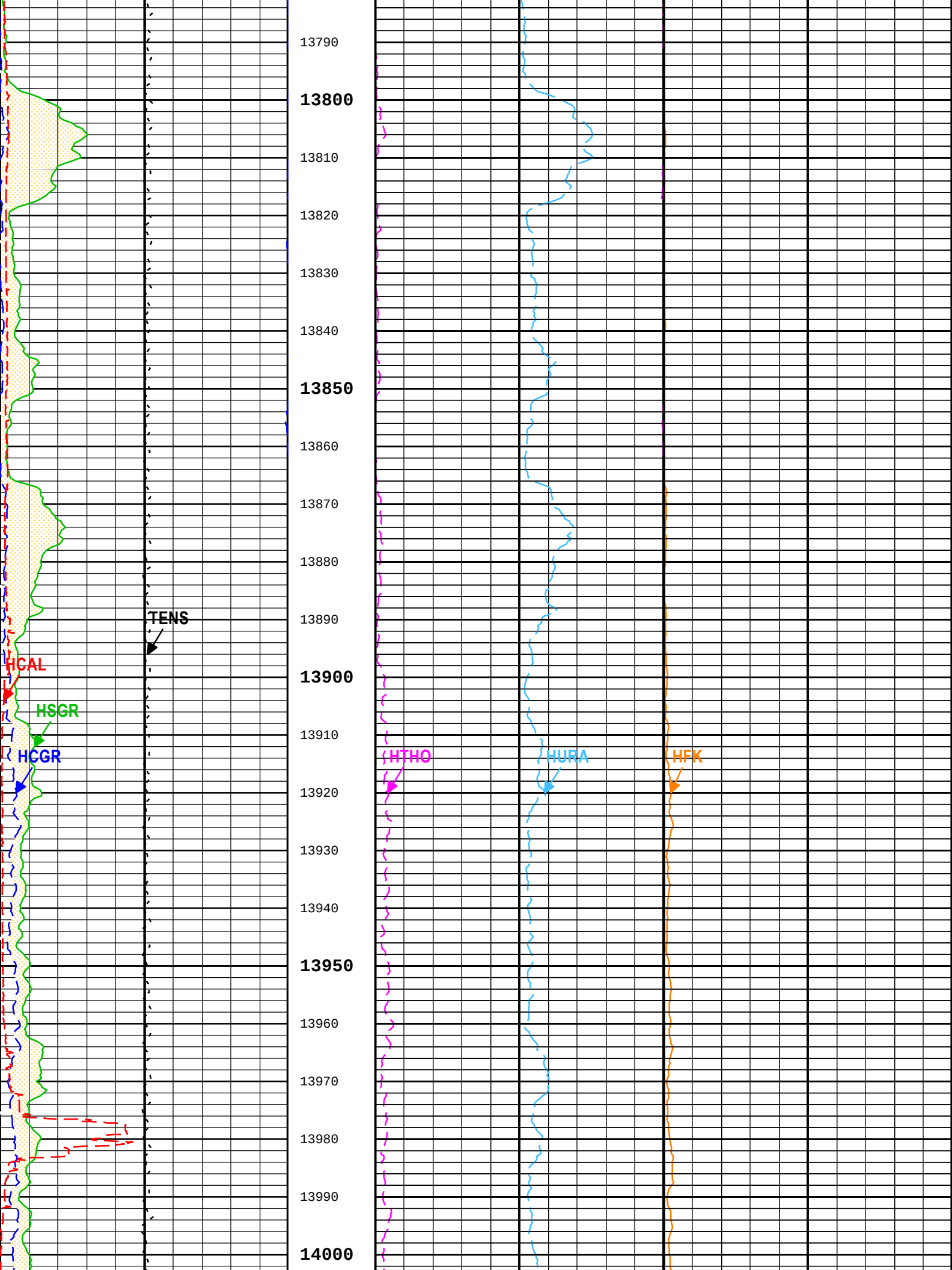


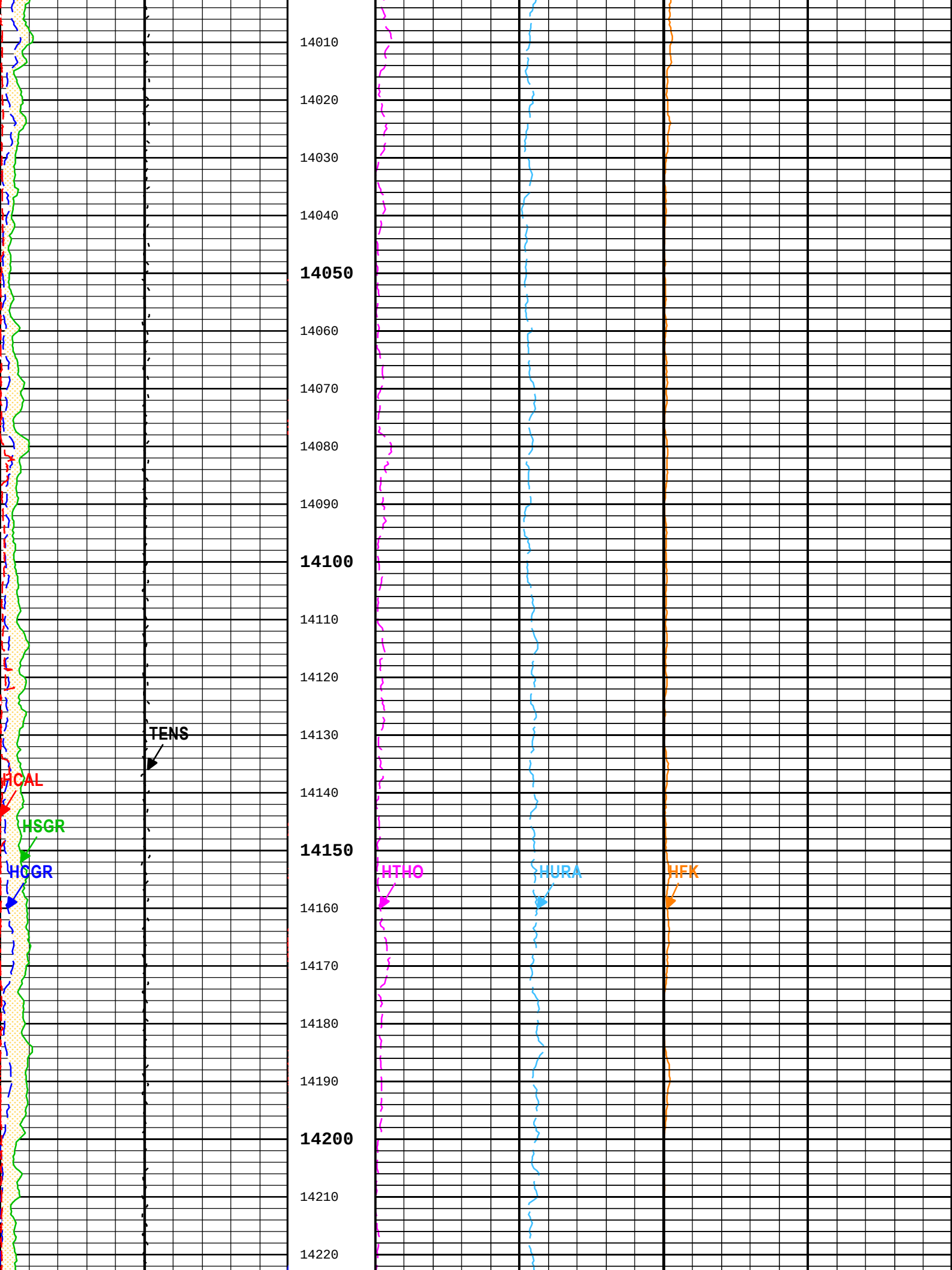
NTHO

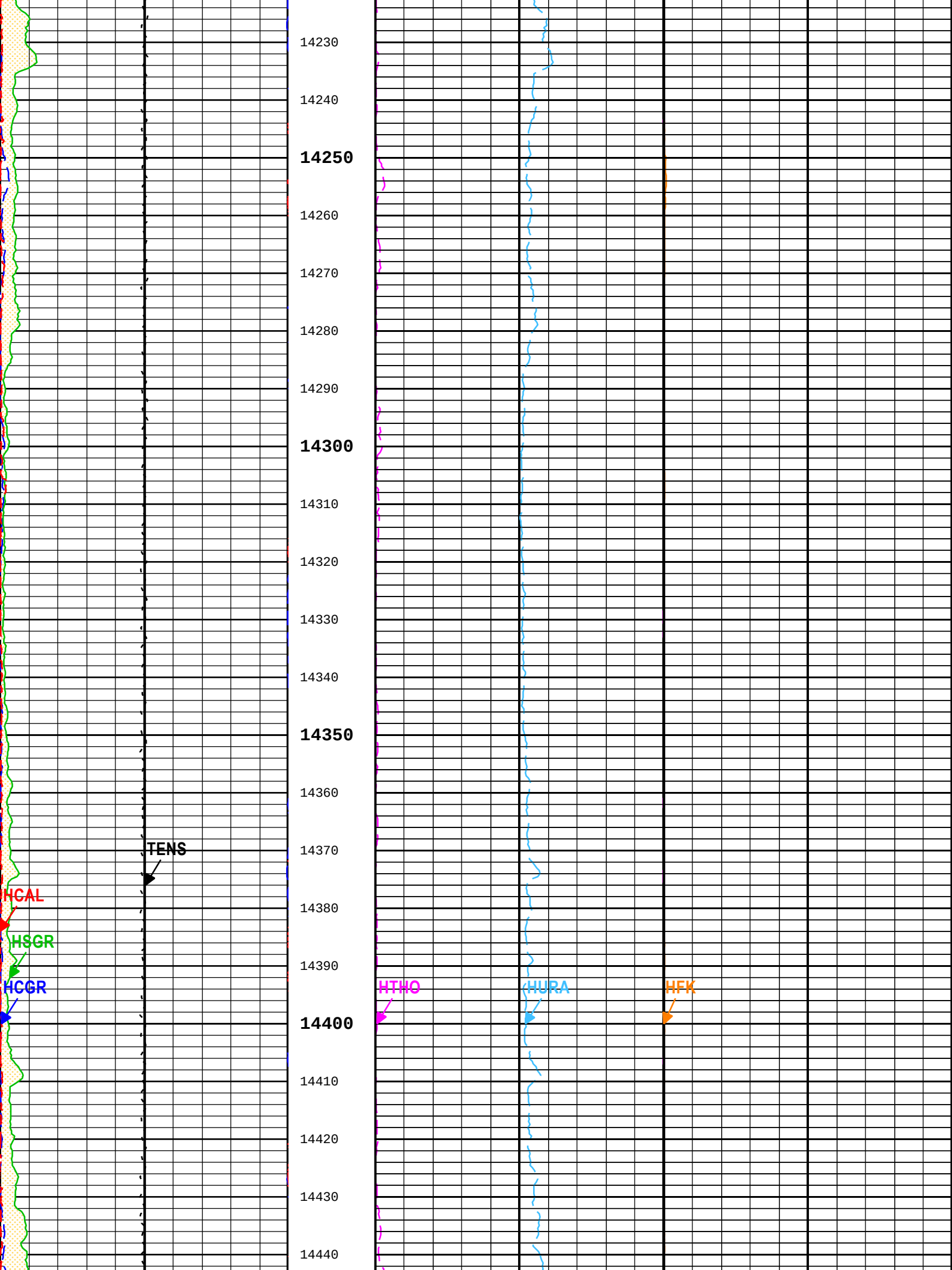
HURA

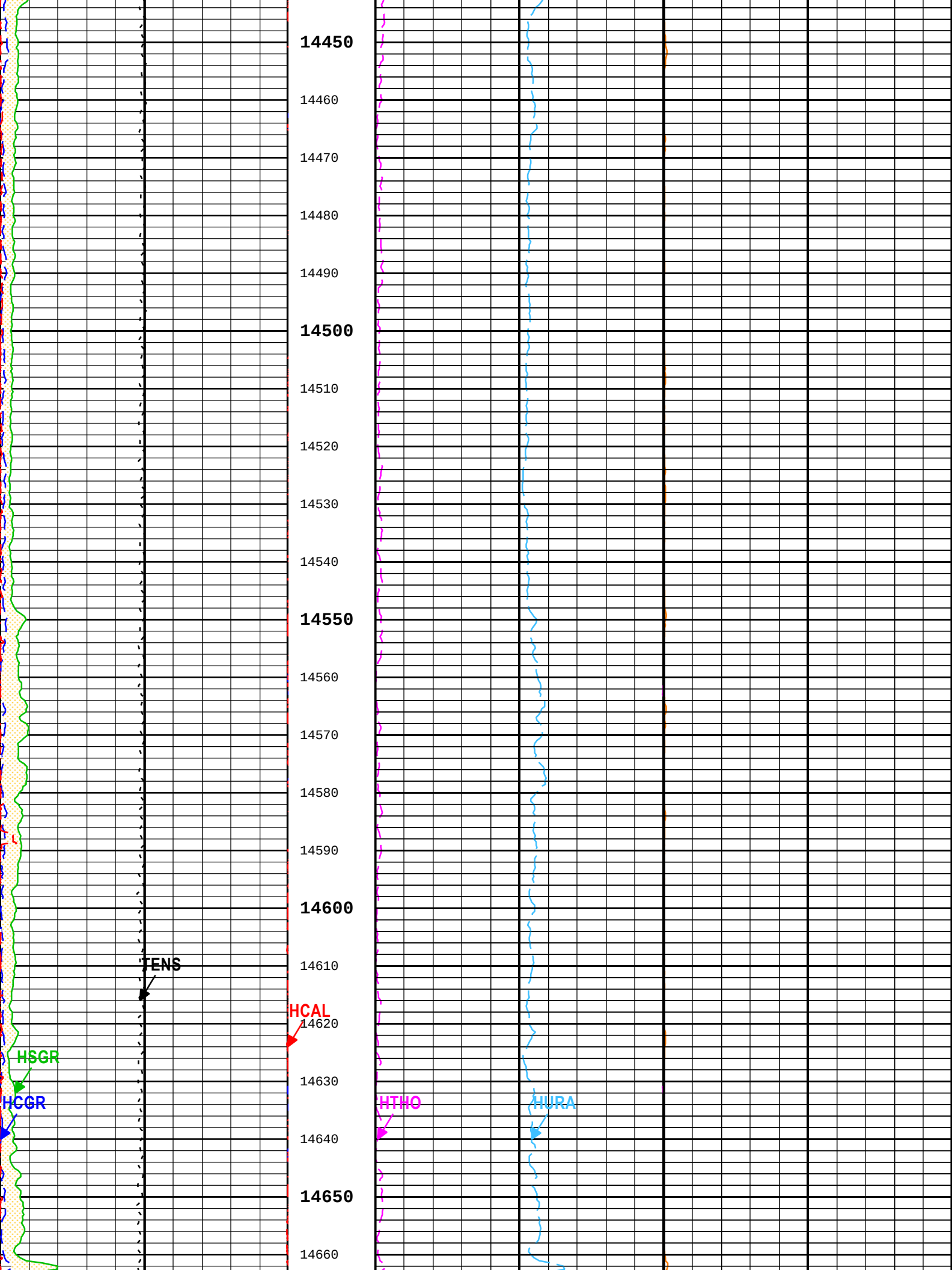
HFK

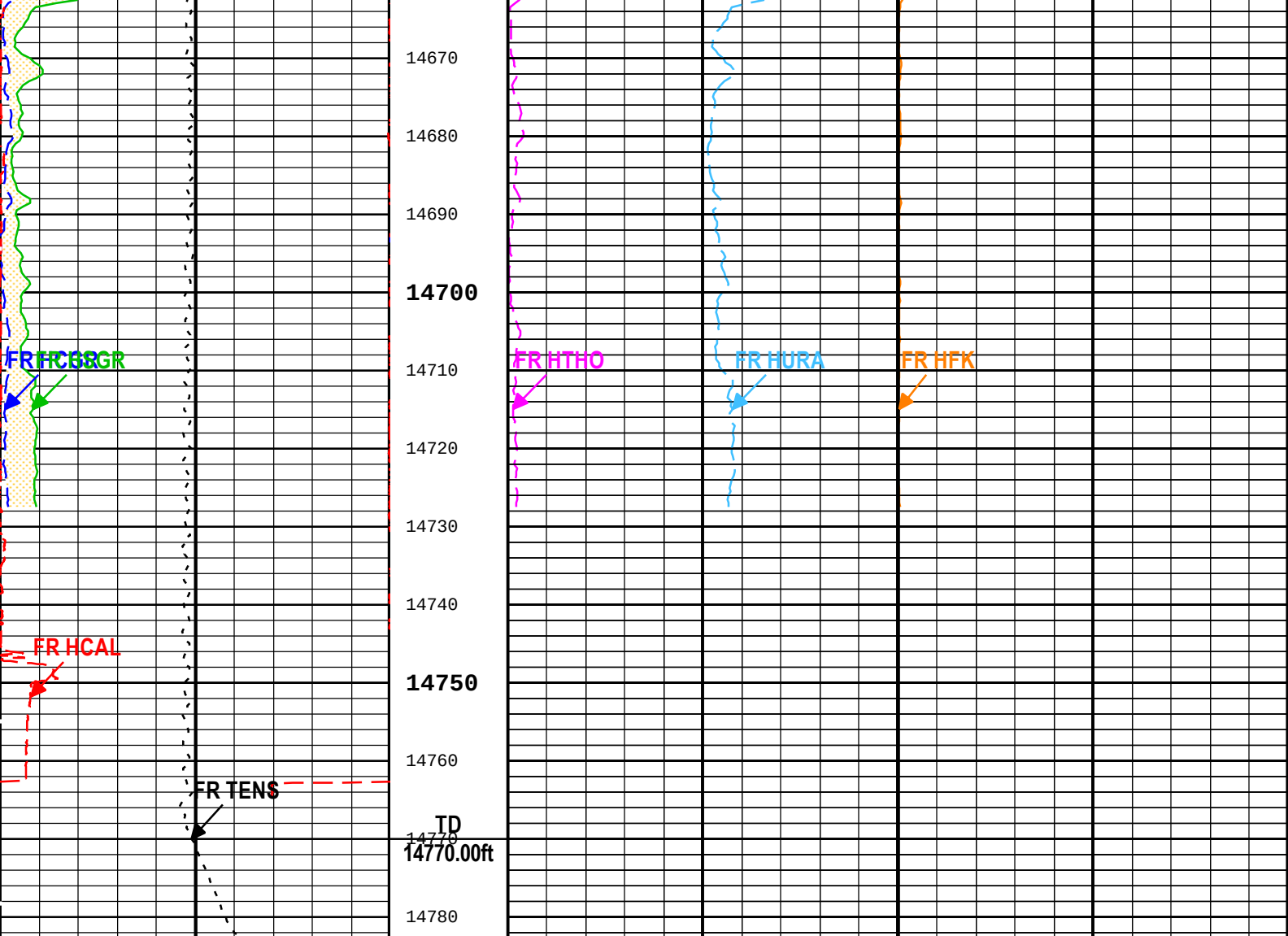












Gamma Ray Contribution from Thorium and Potassium (HCGR) HNGS-BA	Uranium Concentration (HURA) HNGS-BA	
0 gAPI 150	-10 ppm	30
Spectroscopy Gamma Ray (HSGR) HNGS-BA	Thorium Concentration (HTHO) HNGS-BA	Potassium Concentration (HFK) HNGS-BA
0 gAPI 150	0 ppm 30	0 % 10

Caliper (HCAL) HDRS-H
6 in 16
Cable Tension (TENS)
10000 lbf 0

TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Spectral 5 inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Dec-2016 15:01:36

Channel Processing Parameters

2A: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHK	Drilling Fluid Potassium Concentration	Borehole	0	%
BHS	Borehole Status (Open or Cased Hole)	Borehole	Depth Zoned	
BS	Bit Size	WLSESSION	6	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0.25	in
CBLO	Casing Bottom (Logger)	WLSESSION	13635	ft

DBCC	Barite Constant Correction Flag	HNGS-BA	None	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
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	
HCRB	Apply Borehole Potassium Correction	HNGS-BA	None	
HEMA	Hematite Presence Flag	Borehole	No	
SGRC	Standard Gamma Ray Correction Flag	HNGS-BA	Yes	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BHS	Cased	13273	13622
BHS	Open	13622	14783

All depth are actual.

Tool Control Parameters

2A: Parameters

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

2A

Repeat Pass 5" = 100'

Pass Summary

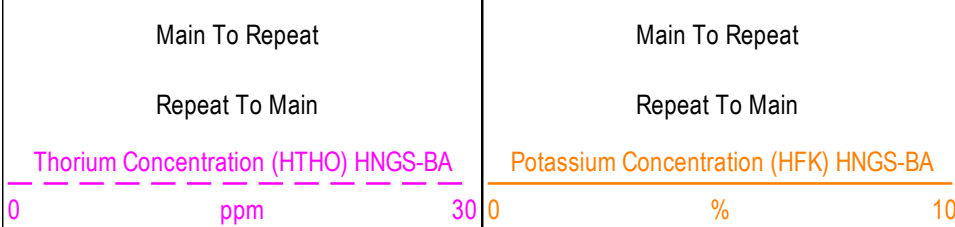
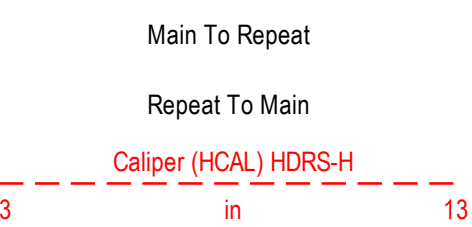
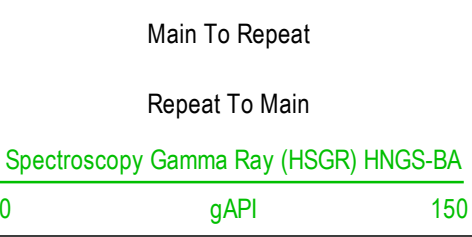
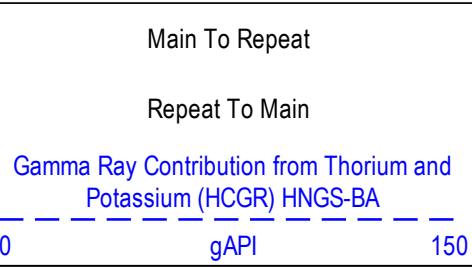
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
2A	Repeat[3]:Up	Up	14401.32 ft	14782.81 ft	11-Dec-2016 8:27:52 AM	11-Dec-2016 8:41:49 AM	ON	4.16 ft	Yes
2A	Log[4]:Up	Up	13328.05 ft	14782.97 ft	11-Dec-2016 8:47:35 AM	11-Dec-2016 9:38:53 AM	ON	-5.43 ft	Yes

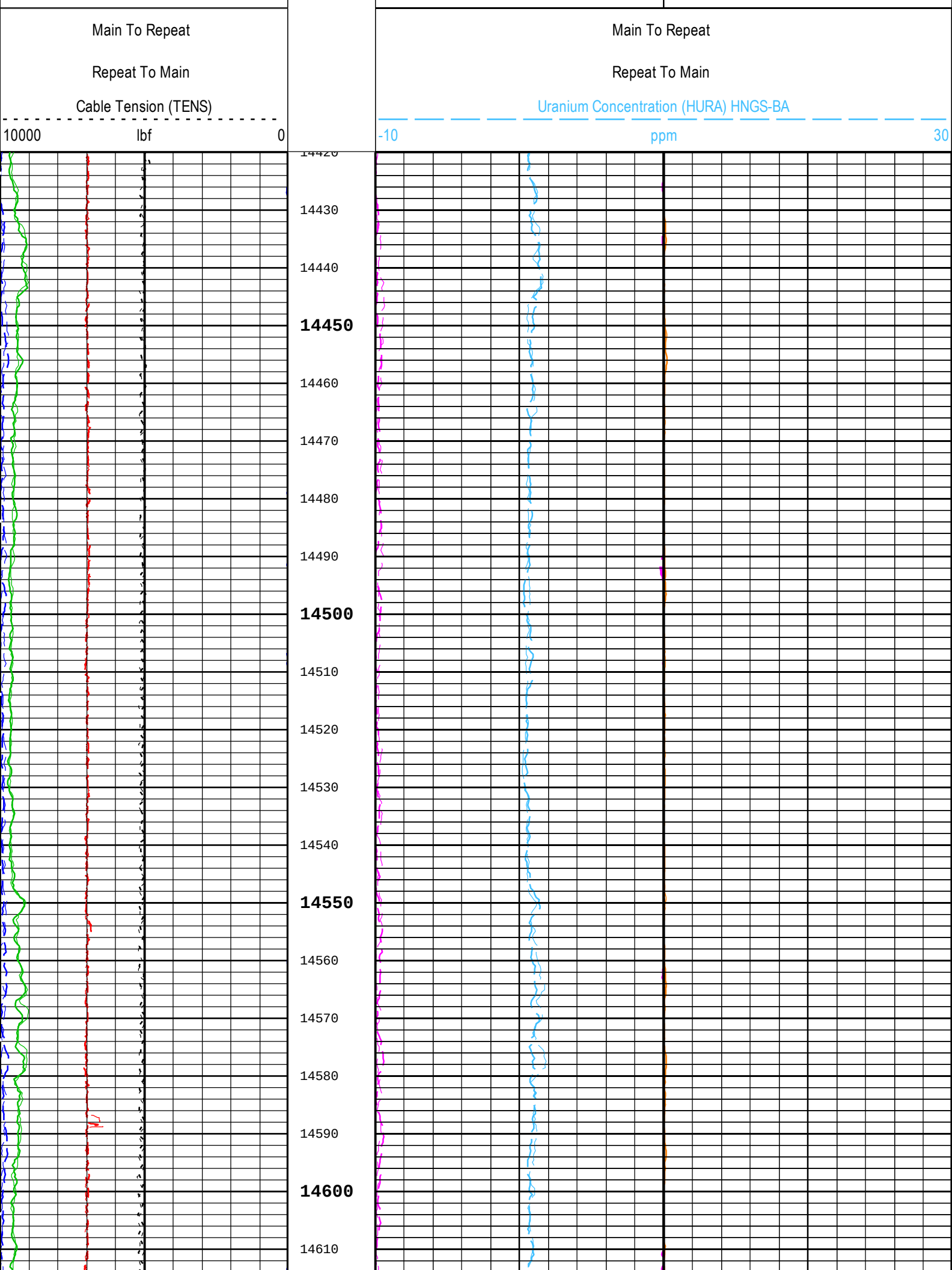
All depths are referenced to toolstring zero

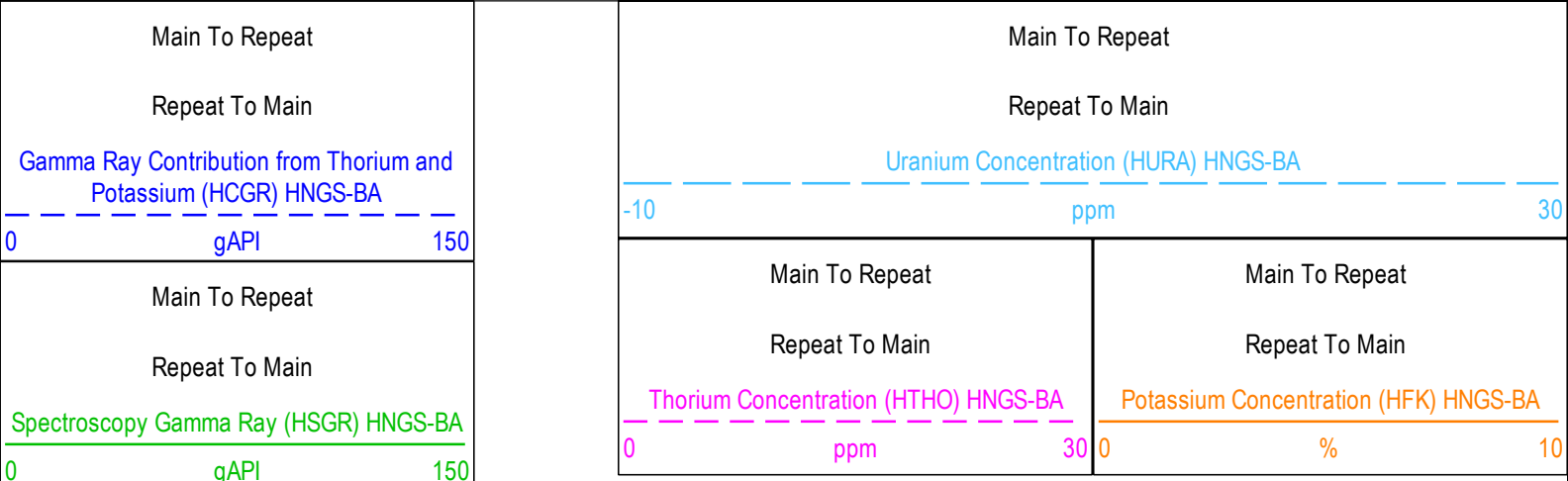
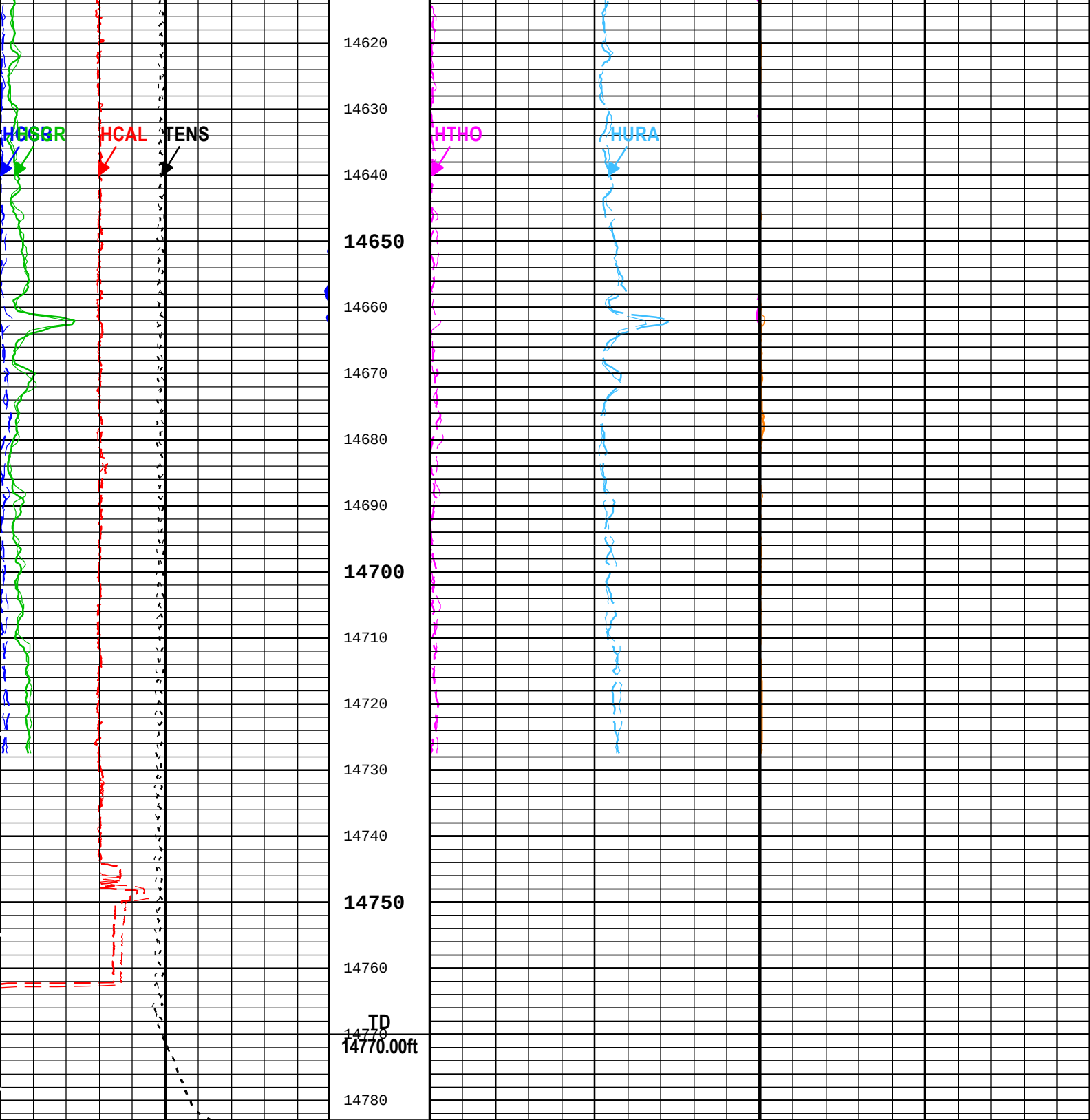
Log	Company:DCP Midstream LP Well:ZIA AGI D2 2A: Log[4]:Up:S029
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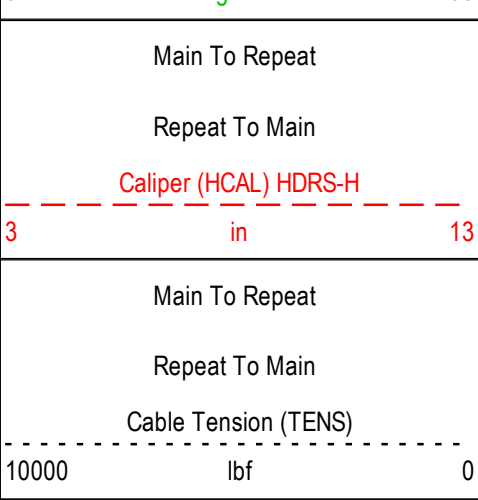
Description: Format: Log (Spectral 5 inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Dec-2016 15:01:38

TIME_1900 - Time Marked every 60.00 (s)









TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (Spectral 5 inch RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Dec-2016 15:01:38

Calibration Report

HNGS-BA (Hostile-environment Natural Gamma-ray Sonde) Calibration - Run 2A

Primary Equipment :					
	HNGS Sonde Element		HNGS-BA		365
Auxiliary Equipment :					
	Hostile Natural Gamma Ray Cartridge		HNGC-B		623
	HNGS Housing Element		HEH-K		365
					0
	Housing for the HNGC		HNGH-A		4104

Calibration History - Calibration History

Master:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
- 0		Master	-----	-----	-----	-----	

HNGS Background and Na22 Set Point Determination - Detector 1 Check

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	39.599	42.500	
		Before	40.000	37.500	39.663	42.500	
		Before-Master	-----	-----	0.064	-----	
Na 511 Peak Resolution	%	Master	15.500	12.000	14.429	19.000	
		Before	15.500	12.000	14.947	19.000	
		Before-Master	-----	-----	0.518	-----	
High Voltage DAC Value	V	Master			927.150		
		Before	1150.000	850.000	915.598	1600.000	
		Before-Master	-----	-----	-11.552	-----	
Na 1785 Peak Location		Master	142.650	135.000	141.059	150.300	
		Before	142.650	135.000	142.730	150.300	
		Before-Master	-----	-----	1.671	-----	
Na 1785 Peak Resolution	%	Master	8.500	6.500	7.897	11.000	
		Before	8.500	6.500	8.027	11.000	
		Before-Master	-----	-----	0.130	-----	
Temperature - 0	degF	Master	-----	-----	-----	-----	
		Before	59.900	-20.002	48.286	140.000	
		Before-Master	-----	-----	-----	-----	
Na Count Rate	CPS	Master	45.000	10.000	15.198	100.000	
		Before	45.000	10.000	15.251	100.000	
		Before-Master	-----	-----	0.053	-----	

HNGS Background and Na22 Set Point Determination - Detector 2 Check

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Location		Master	40.000	37.500	39.522	42.500	
		Before	40.000	37.500	39.559	42.500	
		Before-Master	----	----	0.037	----	
Na 511 Peak Resolution	%	Master	15.500	12.000	15.068	19.000	
		Before	15.500	12.000	12.881	19.000	
		Before-Master	----	----	-2.187	----	
High Voltage DAC Value	V	Master			1033.980		
		Before	1150.000	850.000	1017.323	1600.000	
		Before-Master	----	----	-16.657	----	
Na 1785 Peak Location		Master	142.650	135.000	141.390	150.300	
		Before	142.650	135.000	140.771	150.300	
		Before-Master	----	----	-0.619	----	
Na 1785 Peak Resolution	%	Master	8.500	6.500	7.811	11.000	
		Before	8.500	6.500	8.532	11.000	
		Before-Master	----	----	0.721	----	
Temperature - 0	degF	Master	----	----	----	----	
		Before	59.900	-20.002	47.005	140.000	
		Before-Master	----	----	----	----	
Na Count Rate	CPS	Master	45.000	10.000	15.231	100.000	
		Before	45.000	10.000	15.420	100.000	
		Before-Master	----	----	0.189	----	

HNGS Background and Na22 Set Point Determination - Ratio of Detector 1 to Detector 2

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Coincidence Count Rate Ratio		Master			0.994		
		Before	1.000	0.950	0.992	1.050	
		Before-Master	----	----	-0.002	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master	209.630	201.000	211.408	218.250	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Th Peak Resolution	%	Master	7.000	5.000	6.600	9.000	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Background Count Rate	CPS	Master			102.497		
		Before	142.500	10.000	107.013	265.000	
		Before-Master	----	----	4.516	----	
Gain Ratio		Master	1.000	0.940	1.016	1.060	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 2 Calibration

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Th Peak Location		Master	209.630	201.000	210.579	218.250	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Th Peak Resolution	%	Master	7.000	5.000	5.932	9.000	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
Background Count Rate	CPS	Master			102.163		
		Before	142.500	10.000	105.425	265.000	
		Before-Master	----	----	3.262	----	
Gain Ratio		Master	1.000	0.940	1.014	1.060	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

HNGS Background and Na22 Set Point Determination - Detector 1 Calibration

Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	41.000	43.500	

Na 511 Peak Set Point		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	
HNGS Background and Na22 Set Point Determination - Detector 2 Calibration							
Master (EEPROM):		17:10:47 28-Nov-2016		Before (Measured):		18:34:07 10-Dec-2016	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Na 511 Peak Set Point		Master	40.000	38.000	41.000	43.500	
		Before	----	----	----	----	
		Before-Master	----	----	----	----	

Company: DCP Midstream LP

Schlumberger

Well: ZIA AGI D2

Field: AGI Devonian Exploration

County:	Lea
State:	New Mexico
Spectral Gamma Ray	