

Company: Gulf Exploration LLC

Well: Black Powder #2

Field: Wattenberg

County: Weld State: Colorado

Platform Express

Micro Log

County:	Weld			
Field:	Wattenberg			
Location:	600' FSL & 1900' FWL			
Well:	Black Powder #2			
Company:	Gulf Exploration LLC			
Location:		600' FSL & 1900' FWL	Elev.:	K.B. 4861.00 ft
		Section 10, Township 7N, Range 63W		G.L. 4838.00 ft
				D.F. 4860.00 ft
Permanent Datum:		Ground Level	Elev.:	4838.00 f
Log Measured From:		Kelly Bushing	23.00 ft	above Perm.Datum
Drilling Measured From:		Kelly Bushing		
API Serial No.	Section:	Township:	Range:	
05-123-47681	10	7N	63W	
Logging Date	21-Aug-2020			

Run Number	1A		
Depth Driller	8900.00 ft		
Schlumberger Depth	8890.00 ft		
Bottom Log Interval	8890.00 ft		
Top Log Interval	7300.00 ft		
Casing Driller Size @ Depth	9.625 in @ 878.00 ft		
Casing Schlumberger	878 ft		
Bit Size	8.75 in		
Type Fluid In Hole	Water		
Density	9 lbm/gal	37 s	
Fluid Loss	PH 0 cm3	8.5	
MUD	Source of Sample	Active Tank	
RM @ Meas Temp	0.2 ohm.m @ 68 degF		
RMF @ Meas Temp	0.15 ohm.m @ 68 degF		
RMC @ Meas Temp			
Source RMF	RMC		
RM @ BHT	RMF @ BHT	0.07 @ 209 0.05 @ 209	
Max Recorded Temperatures	209 degF		
Circulation Stopped	Time 20-Aug-2020	22:00:00	
Logger on Bottom	Time 21-Aug-2020	04:30:00	
Unit Number	Location: 9108	Fort Morgan	
Recorded By	Caroline Ibrahim		
Witnessed By	Jeff Petty		

Disclaimer

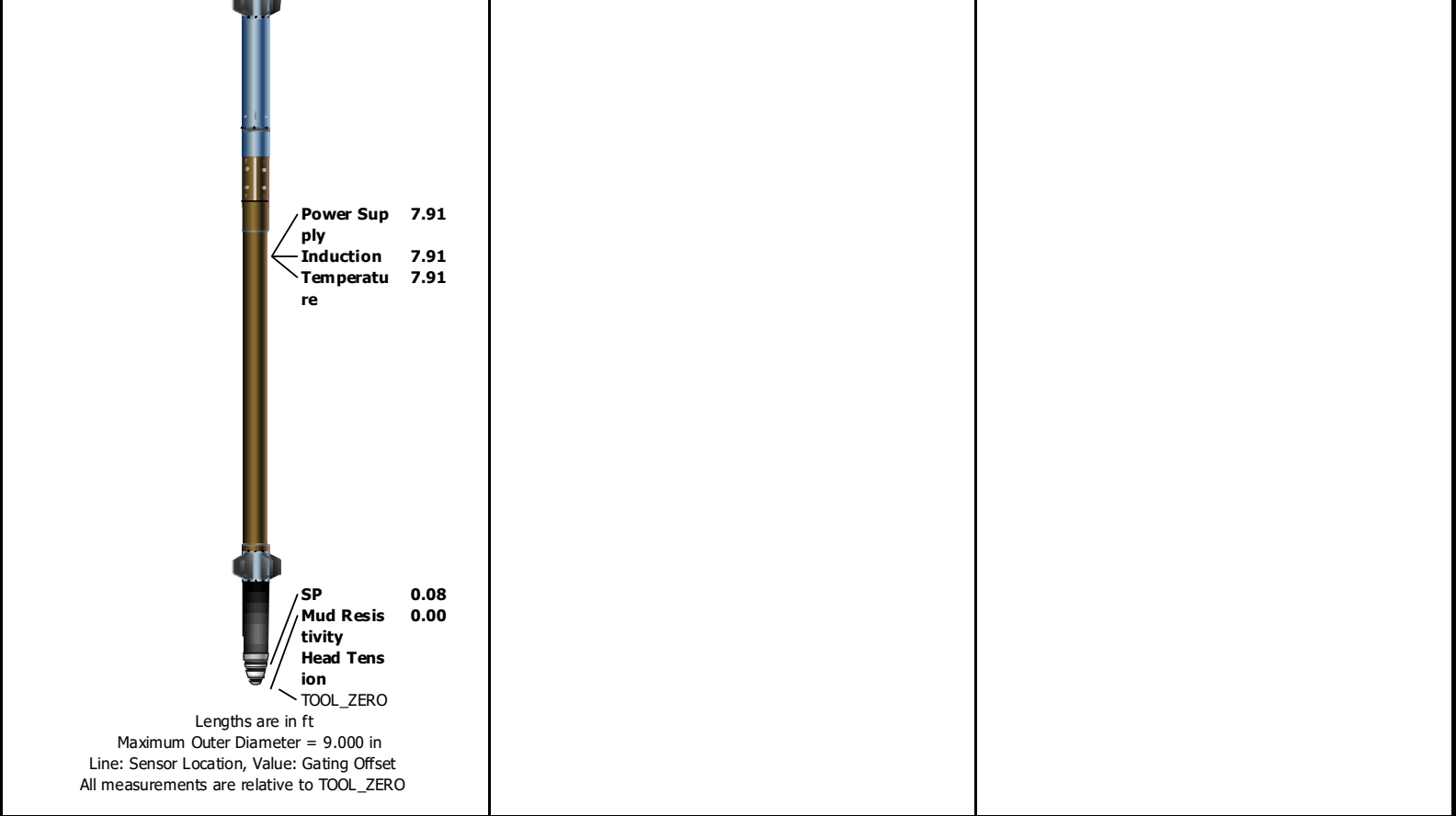
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Remarks and Equipment Summary

1A: Toolstring				1A: Remarks
Equip name	Length	MP name	Offset	Tool was run as per tool sketch All logging intervals as per client request. Repeat TD-8550'. Main Pass TCOM TD-7300', Induction/ GR TD-surface Thank you for choosing Schlumberger Sandstone matrix used, 2.65 g/cc
LEH-QT LEH-QT	51.64			
EDTC-B EDTH-B EDTG-A EDTC-B	48.15			
HGNS-H HGNH NSR-F:5203 NPV-N HACCZ-H:153 7 HMCA-H HGNS-H	41.65	CTEM ACCZ HV Gamma Ra y TelStatus Temperatu re GR	44.65 0.00 0.00 42.78  41.65 41.62 40.91	
HDRS-H ECH-MEB HRCC-H HRMS-H GPV-Q Short Spacing HRGD-H:3967 Long Spacing GSR-J:5534 Backscatter	32.24	CNL Porosity HMCA HGNS Accelerometer  HRCC	34.58 32.24 32.24 0.00  28.24	
AH-184[2]	20.00	MCFL Caliper TLD Density	22.81 22.32 21.94	
AH-184[1]	18.00			
AIT-M:138 AMIS:138 AMRM:138	16.00			



Depth Summary

	1A		
Depth Measuring Device			
Type	IDW-B		
Serial Number	7234		
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type	7-39PI-XS		
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number	1703		
Calibration Date	20-Aug-2020		
Calibrator Serial Number	78135A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	11		
Calibration Peak Error	20		
Logging Cable			
Type	7-39PI-XS		
Serial Number	F719131		
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type			
1A:Depth Control Parameters		Depth Control Remarks	

Log Sequence	First Log In the Well	Schlumberger depth control procedures followed
Rig Up Length At Surface		IDW used as primary depth control system
Rig Up Length At Bottom		Z-Chart used as secondary depth control system
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

1A

## Main Pass 2"=100'

## Software Version

Acquisition System	Version
Maxwell 2020.0	10.0.202864.3100

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[3]:Up	Up	14.67 ft	8902.95 ft	21-Aug-2020 6:18:14 AM	21-Aug-2020 9:02:46 AM	ON	0.00 ft	No

All depths are referenced to toolstring zero

## Log

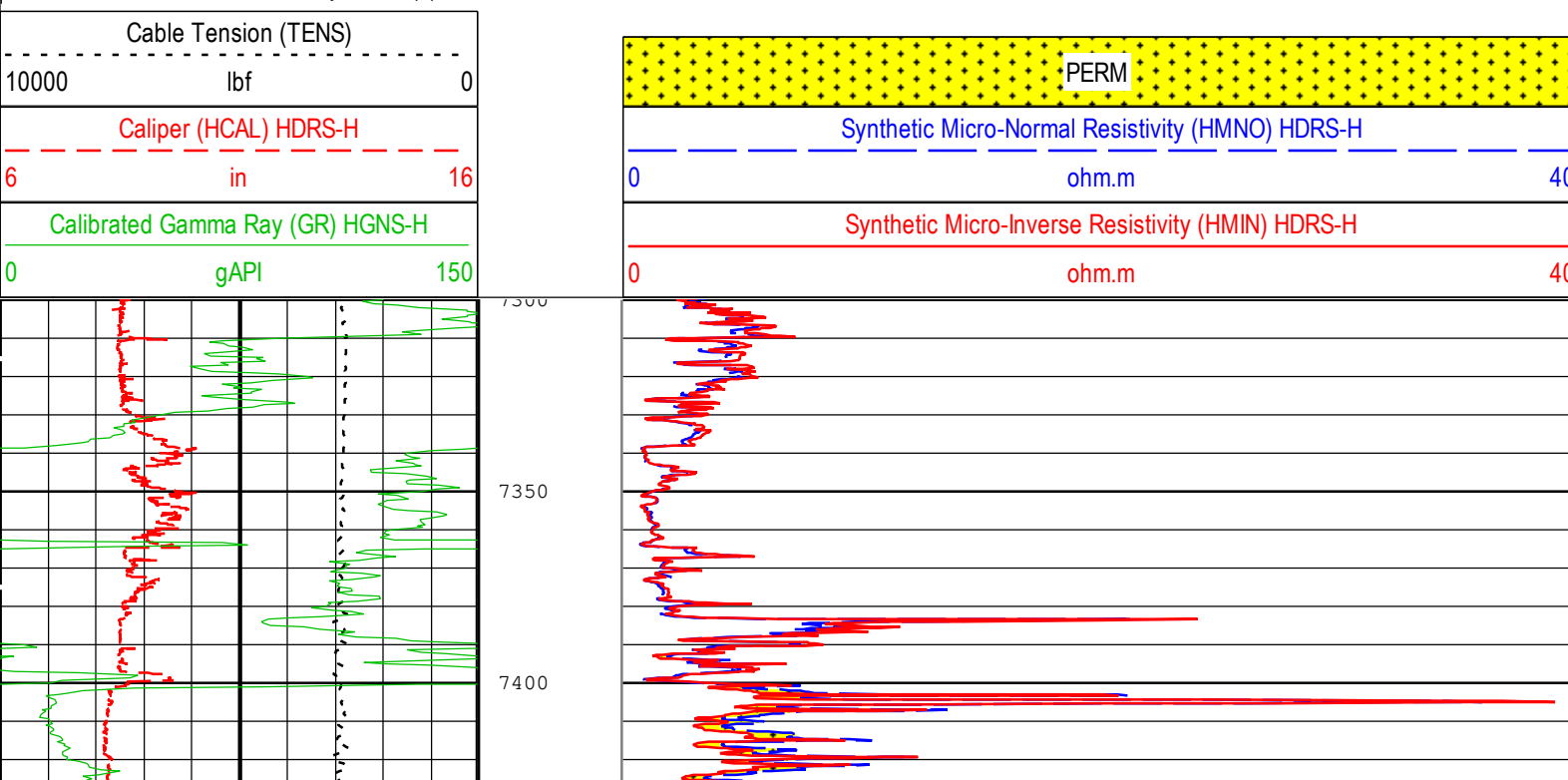
Company:Gulf Exploration LLC      Well:Black Powder #2

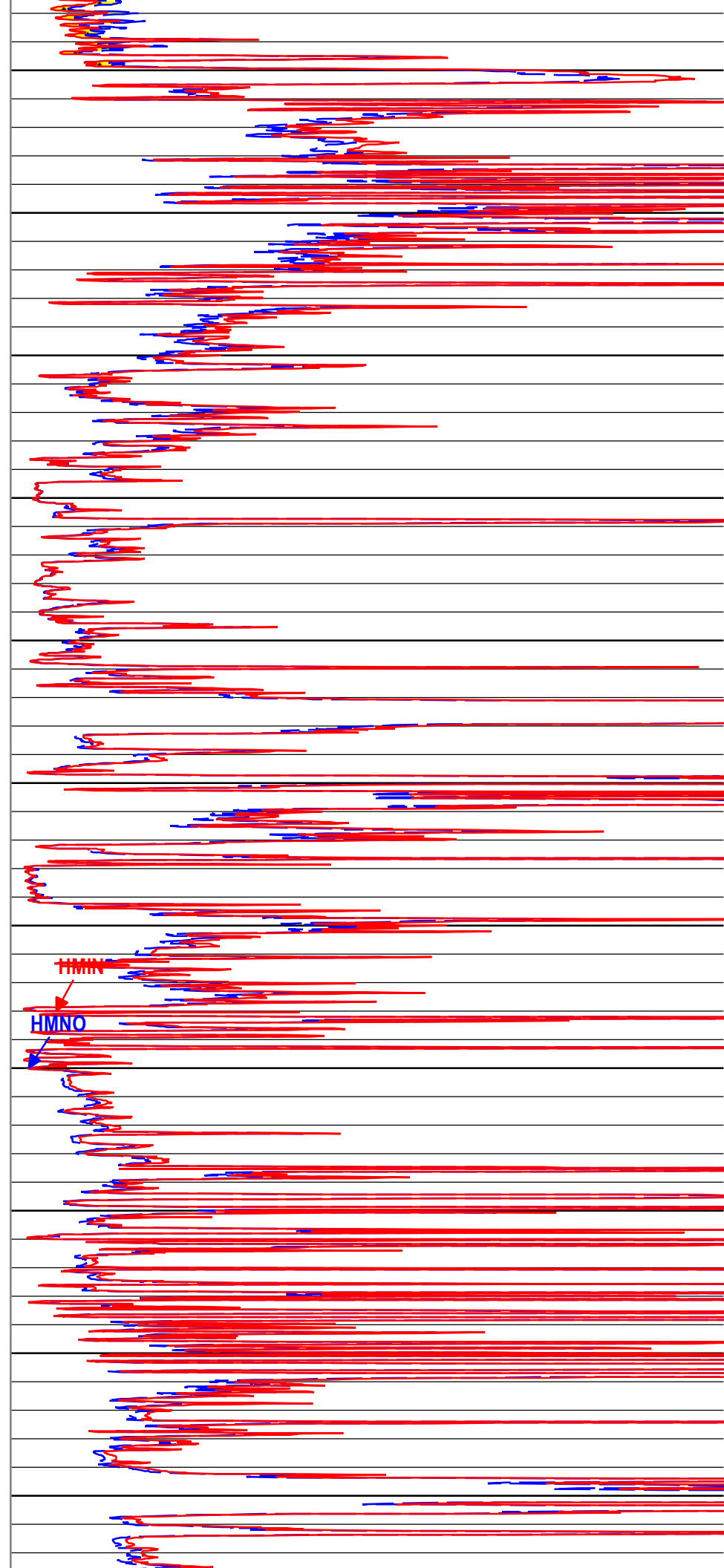
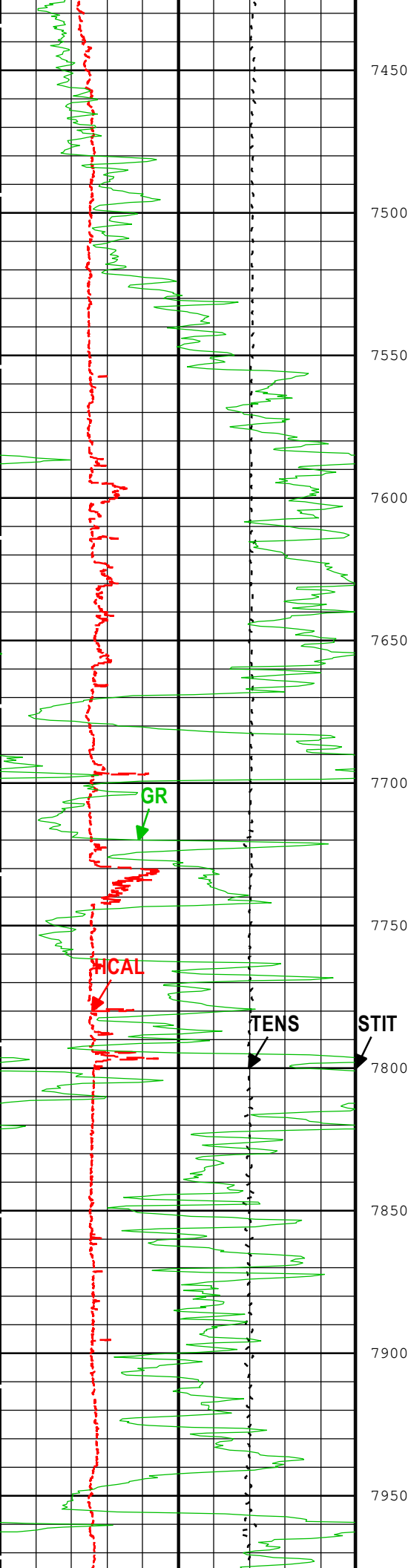
1A: Log[3]:Up:S003

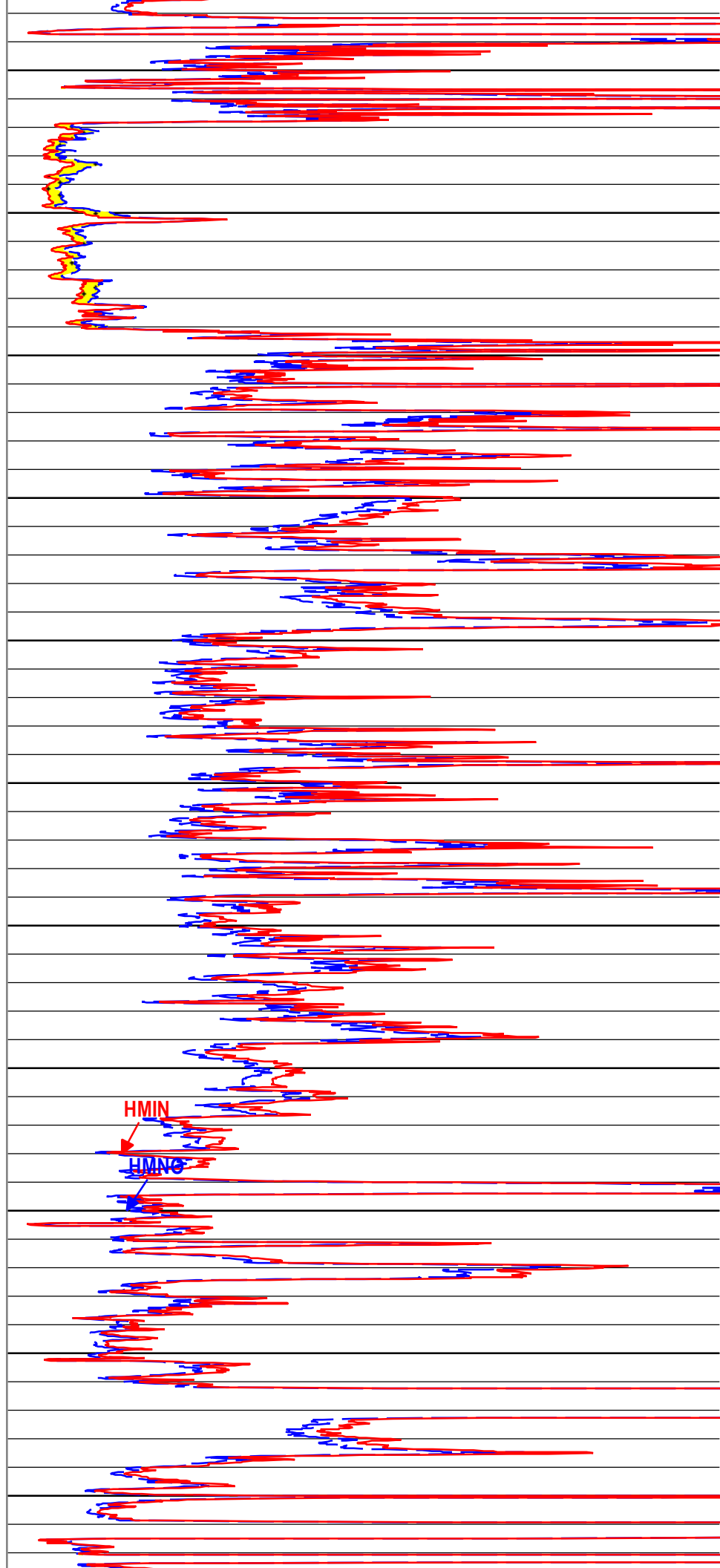
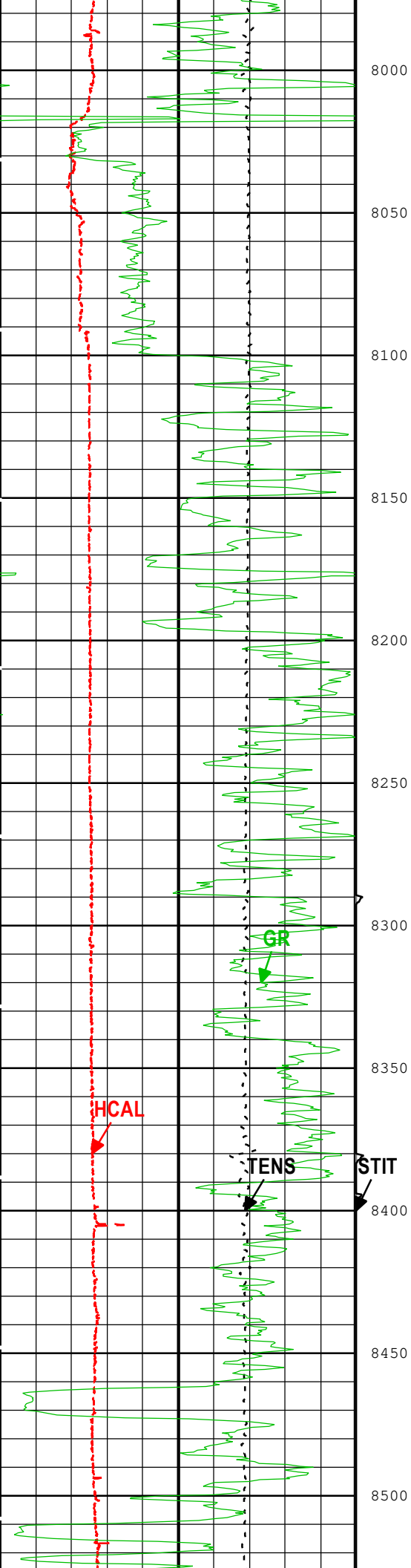
Description: HRLT BASIC LOG   Format: Log ( HRLA\_2\_inch )   Index Scale: 2 in per 100 ft   Index Unit: ft   Index Type: Measured Depth   Creation Date: 21-Aug-2020 09:14:35

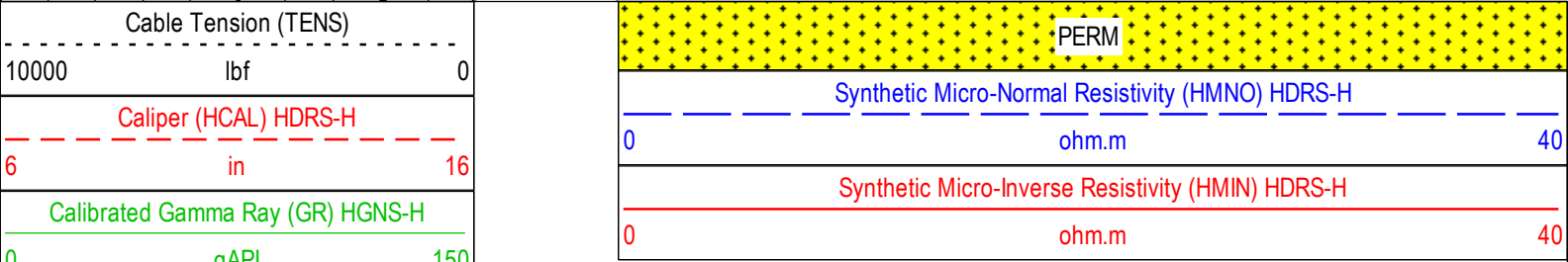
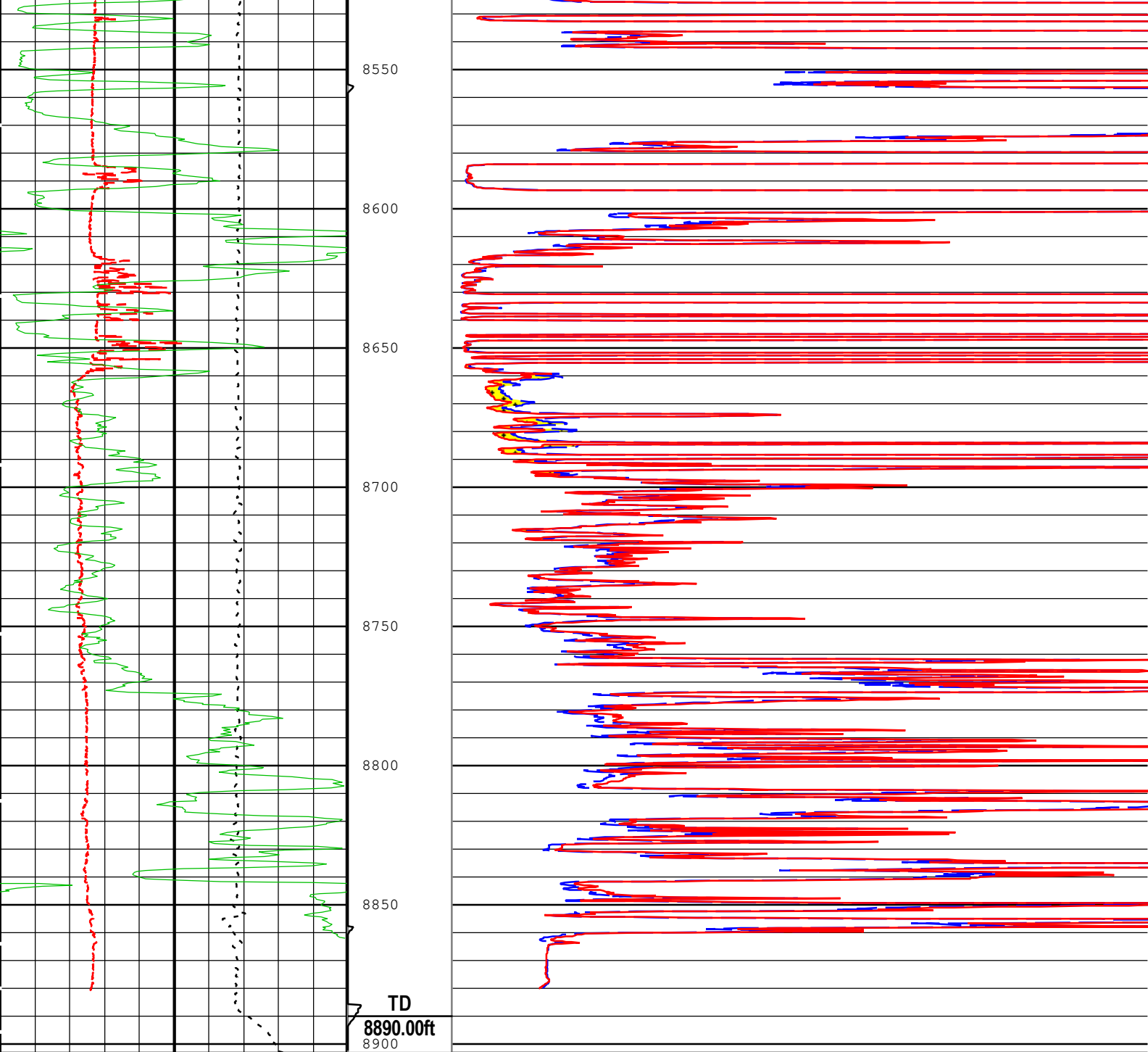
Channel	Source	Sampling
CALI	HDRS-H:HRCC-H:HRCC-H	1in
GR_CAL	HGNS-H:HGNS-H:HGNS-H	6in
SMIN	HDRS-H:HRMS-H:HRGD-H	2in
SMNO	HDRS-H:HRMS-H:HRGD-H	2in
STIT	DepthCorrection	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME\_1900 - Time Marked every 60.00 (s)









TIME\_1900 - Time Marked every 60.00 (s)

Description: HRLT BASIC LOG    Format: Log ( HRLA\_2\_inch )    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 21-Aug-2020 09:14:35

## Calibration Report

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

#### Primary Equipment :

HILT High-Resolution Control Cartridge, 150 degC

HRCC-H

HILT Resistivity Gamma-Ray Density Device, 150 degC

HRGD-H

3967

#### Auxiliary Equipment:

**Auxiliary Equipment :**

HRDD Backscatter Detector	Backscatter	
HRDD Long Spacing Detector	Long Spacing	
HRDD Short Spacing Detector	Short Spacing	
Cesium 137 Gamma-Ray Logging Source	GSR-J	5534
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): 18:19:45 20-Aug-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	7.62	10.00	
Large Ring	in	Before	12.00	9.00	11.93	15.00	

**HDRS Density Calibration - Inversion Results**

Master (EEPROM): 10:03:48 28-Jul-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.600	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.685	1.696	
Pe Aluminum		Master	2.570	2.470	2.552	2.670	
Pe Magnesium		Master	2.650	2.550	2.623	2.750	

**HDRS Density Calibration - Deviation Summary**

Master (EEPROM): 10:03:48 28-Jul-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2348	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.7487	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.3750	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.2926	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.5925	1.5000	
LS Max Deviation	%	Master	0	-3.5000	1.5286	3.5000	

**HDRS Density Calibration - Background Summary**

Master (EEPROM): 10:03:48 28-Jul-2020 Before (Measured): 18:17:29 20-Aug-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7432		
		Before	0.7432	0.7060	0.7414	0.7803	
		Before-Master	----	----	-0.0018	----	
BS Window Sum	1/s	Master	1		21857		
		Before	21857	20764	21819	22950	
		Before-Master	----	----	-38	----	
SS Window Ratio		Master	1.0000		0.4936		
		Before	0.4936	0.4690	0.4936	0.5183	
		Before-Master	----	----	0.0000	----	
SS Window Sum	1/s	Master	1		9679		
		Before	9679	9195	9655	10163	
		Before-Master	----	----	-24	----	
LS Window Ratio		Master	1.0000		0.2972		
		Before	0.2972	0.2824	0.3027	0.3121	
		Before-Master	----	----	0.0055	----	
LS Window Sum	1/s	Master	1		1019		
		Before	1019	968	1016	1070	
		Before-Master	----	----	-3	----	

**HDRS Density Calibration - Photo-multiplier High Voltages**

Master (EEPROM): 10:03:48 28-Jul-2020 Before (Measured): 18:17:29 20-Aug-2020

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000.0	1520.8	2400.0	
		Before		1000.0	1496.8	2400.0	




		Before-Master	-----	-100.0	-24.0	100.0	<div><div></div><div></div><div></div><div></div><div></div></div>
SS PM High Voltage	V	Master		1000.0	1404.5	2400.0	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000.0	1405.0	2400.0	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100.0	0.5	100.0	<div><div></div><div></div><div></div><div></div><div></div></div>
LS PM High Voltage	V	Master		1000.0	1639.4	2400.0	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		1000.0	1619.3	2400.0	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-100.0	-20.1	100.0	<div><div></div><div></div><div></div><div></div><div></div></div>

## HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		10:03:48 28-Jul-2020		Before (Measured):		18:17:29 20-Aug-2020	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
BS Crystal Resolution	%	Master		5.00	10.66	25.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	10.60	25.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	-0.06	1.00	<div><div></div><div></div><div></div><div></div><div></div></div>
SS Crystal Resolution	%	Master		5.00	9.42	20.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	9.39	20.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	-0.03	1.00	<div><div></div><div></div><div></div><div></div><div></div></div>
LS Crystal Resolution	%	Master		5.00	9.81	20.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before		5.00	9.87	20.00	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-1.00	0.06	1.00	<div><div></div><div></div><div></div><div></div><div></div></div>

## HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		05:01:45 21-Aug-2020					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Main Resistivity	ohm.m	Before	3875	3565	3900	4185	<div><div></div><div></div><div></div><div></div><div></div></div>
Deep Resistivity	ohm.m	Before	3830	3524	3834	4136	<div><div></div><div></div><div></div><div></div><div></div></div>
Shallow Resistivity	ohm.m	Before	3830	3524	3846	4136	<div><div></div><div></div><div></div><div></div><div></div></div>

Company:	Gulf Exploration LLC	
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County:	Weld	
State:	Colorado	

