

Company: CRESTONE PEAK RESOURCES OPERATING LLC

Well: Cosslett 1F 22H B168

Field: WATTENBERG

County: WELD State: COLORADO

CASING BOND LOG

CBL/VDL/GR/CCL

County:	WELD
Field:	WATTENBERG
Location:	NWNE 22 1N68W 6 PM
Well:	Cosslett 1F 22H B168
Company:	CRESTONE PEAK RESOURCES OPERATING LLC
Location:	
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section:
05-123-47675	22
	Township:
	1N
	Range:
	68W

Logging Date	24-Oct-2018
Run Number	ONE
Depth Driller	550.00 ft
Schlumberger Depth	525.00 ft
Bottom Log Interval	525.00 ft
Top Log Interval	10.00 ft
Casing Driller Size @ Depth	13.375 in @ 550.00 ft
Casing Schlumberger	525 ft
Bit Size	17.5 in
Type Fluid In Hole	Water
Density	8.4 lbm/gal
Fluid Loss	PH
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	0.07 @ 212 0.05 @ 212
Max Recorded Temperatures	
Circulation Stopped	Time
Logger on Bottom	Time
Unit Number	Location:
Recorded By	2377 Fort Morgan
Witnessed By	C-STILES

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.

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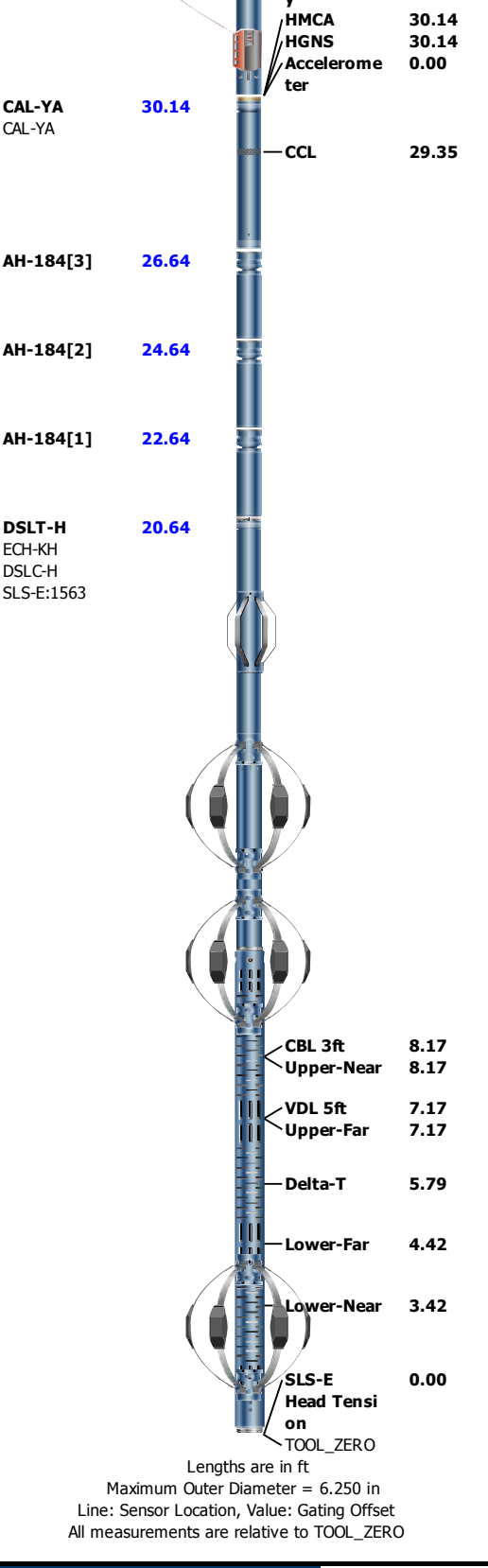
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Well Sketch

Driller Depth
0.00 ft





Depth Summary

ONE		
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Depth Measuring Device

Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

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

Type	7-46PI-XS		
Serial Number			
Length	20000.00 ft		
Conveyance Type	Wireline		
Rig Type			

Depth Control Remarks

Log Sequence	First Log In the Well	
Rig Up Length At Surface		
Rig Up Length At Bottom		
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

ONE

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	32.68 ft	527.29 ft	24-Oct-2018 8:31:57 PM	24-Oct-2018 8:48:21 PM	ON	1.00 ft	Yes

All depths are referenced to toolstring zero

Log	Company:CRESTONE PEAK RESOURCES OPERATING LLC	Well:Cosslett 1F 22H B168
		ONE: Log[4]:Up:S005

Description: CBL_Fluid_Compensated Format: Log (Sonic Fluid-Compensated CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 24-Oct-2018 21:10:46

└ BIEP - Bond Index Event Pips DSLT-H

TIME_1900 - Time Marked every 60.00 (s)

Casing Collar Locator Amplitude (CCL) CAL-YA
-9 1

Gamma Ray (ECGR_EDTC) EDTC-B	
0	150
gAPI	

Borehole Diameter (GHD) RT

6 in 16

Transit Time for CBL (TT) DSLT-H

450 us 350

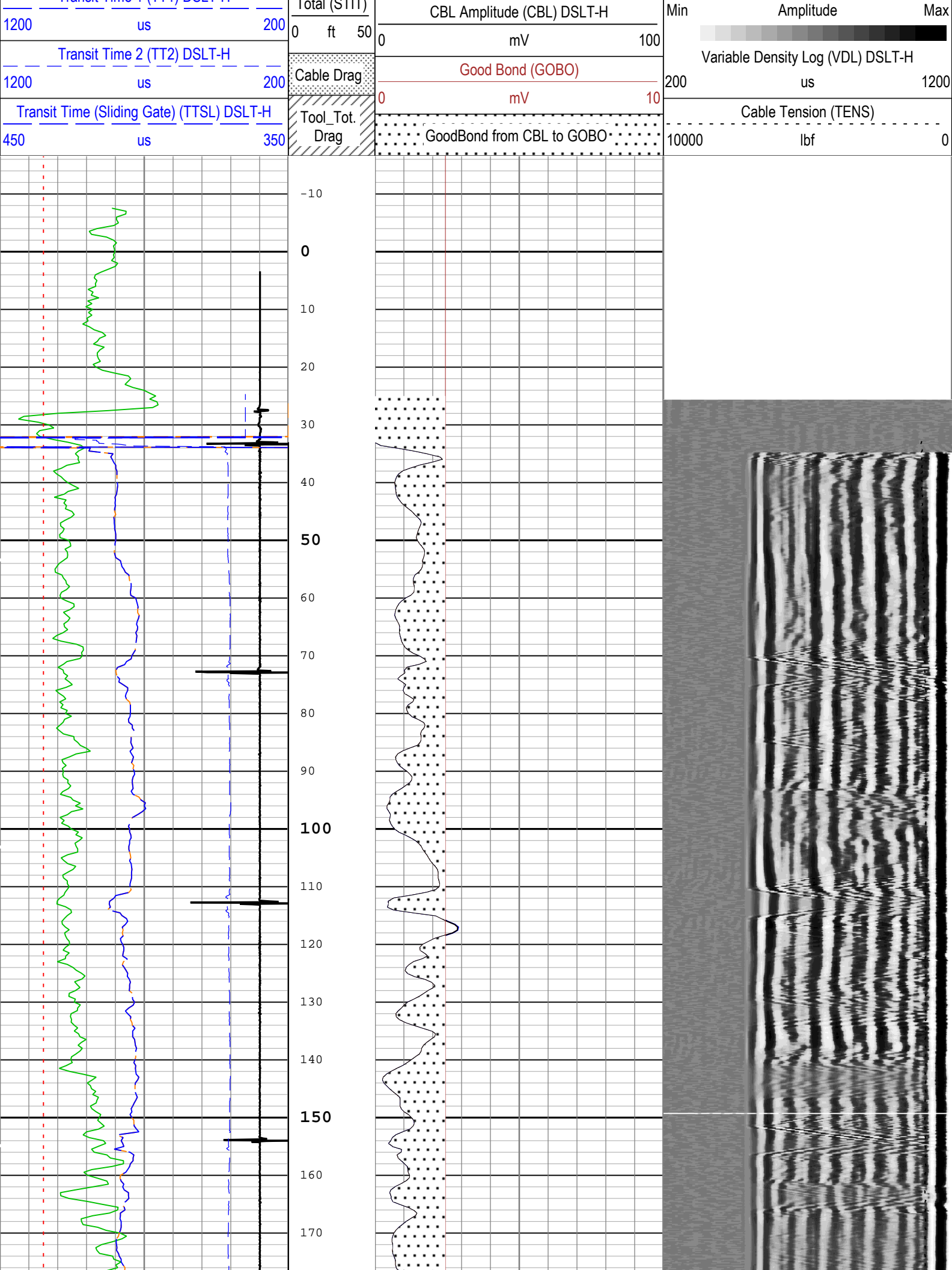
Transit Time 1 (TT1) DSLT-H

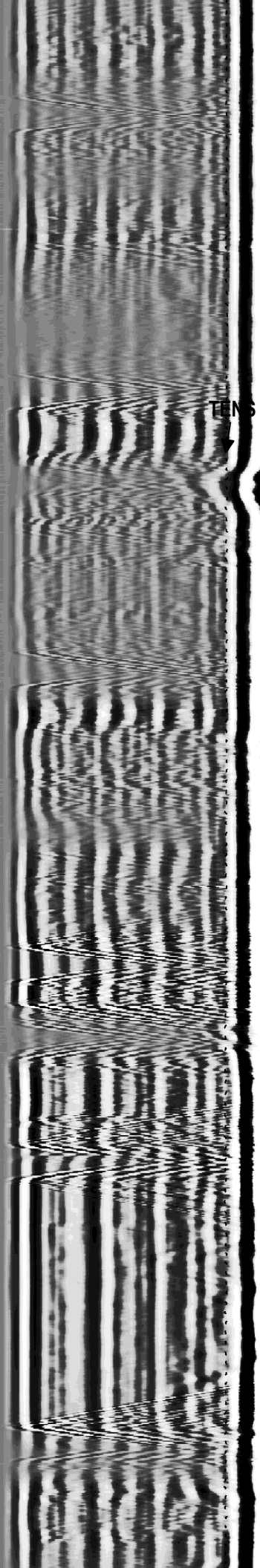
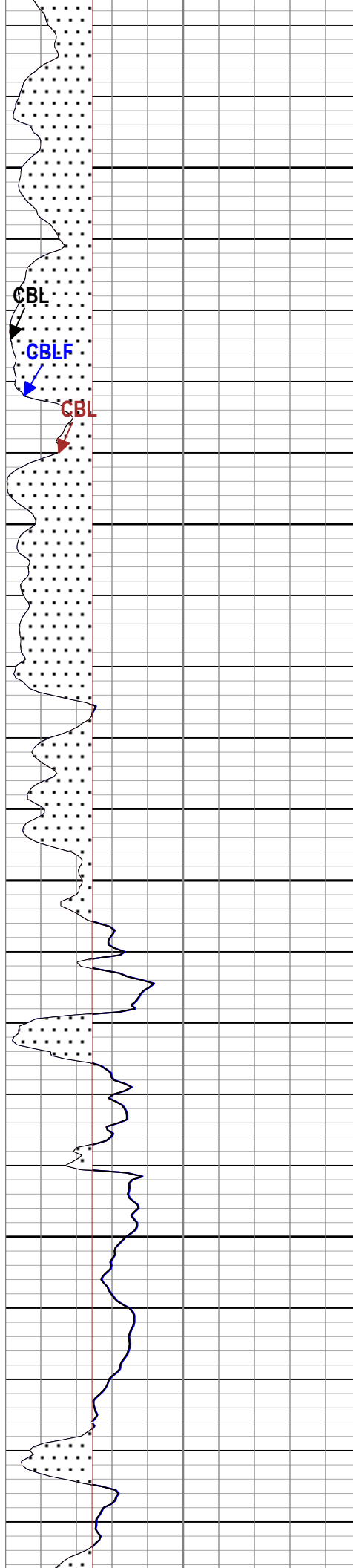
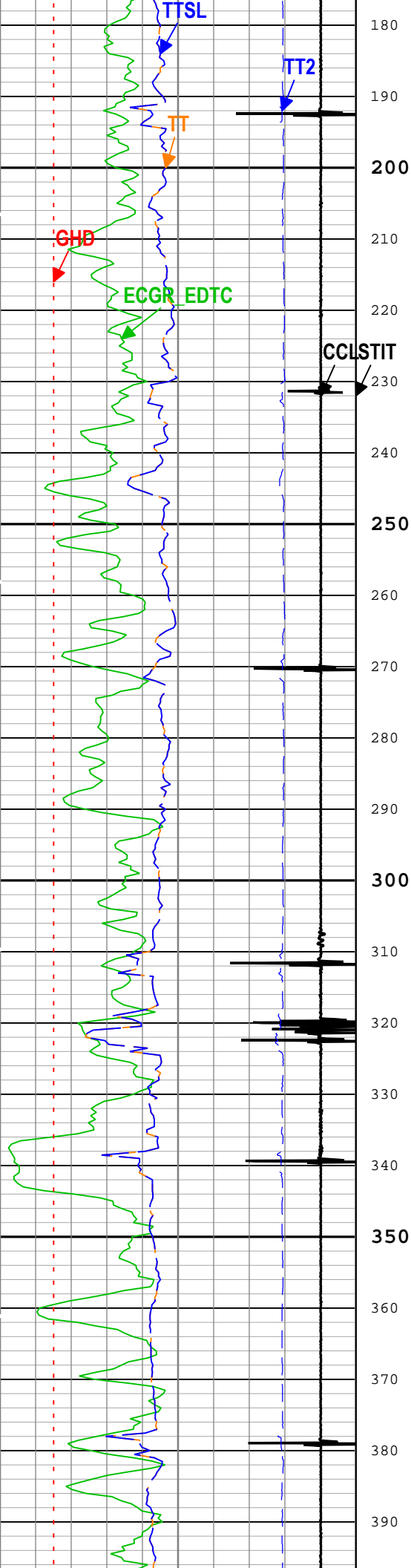
CBL Amplitude (CBL) DSLT-H	
0	100

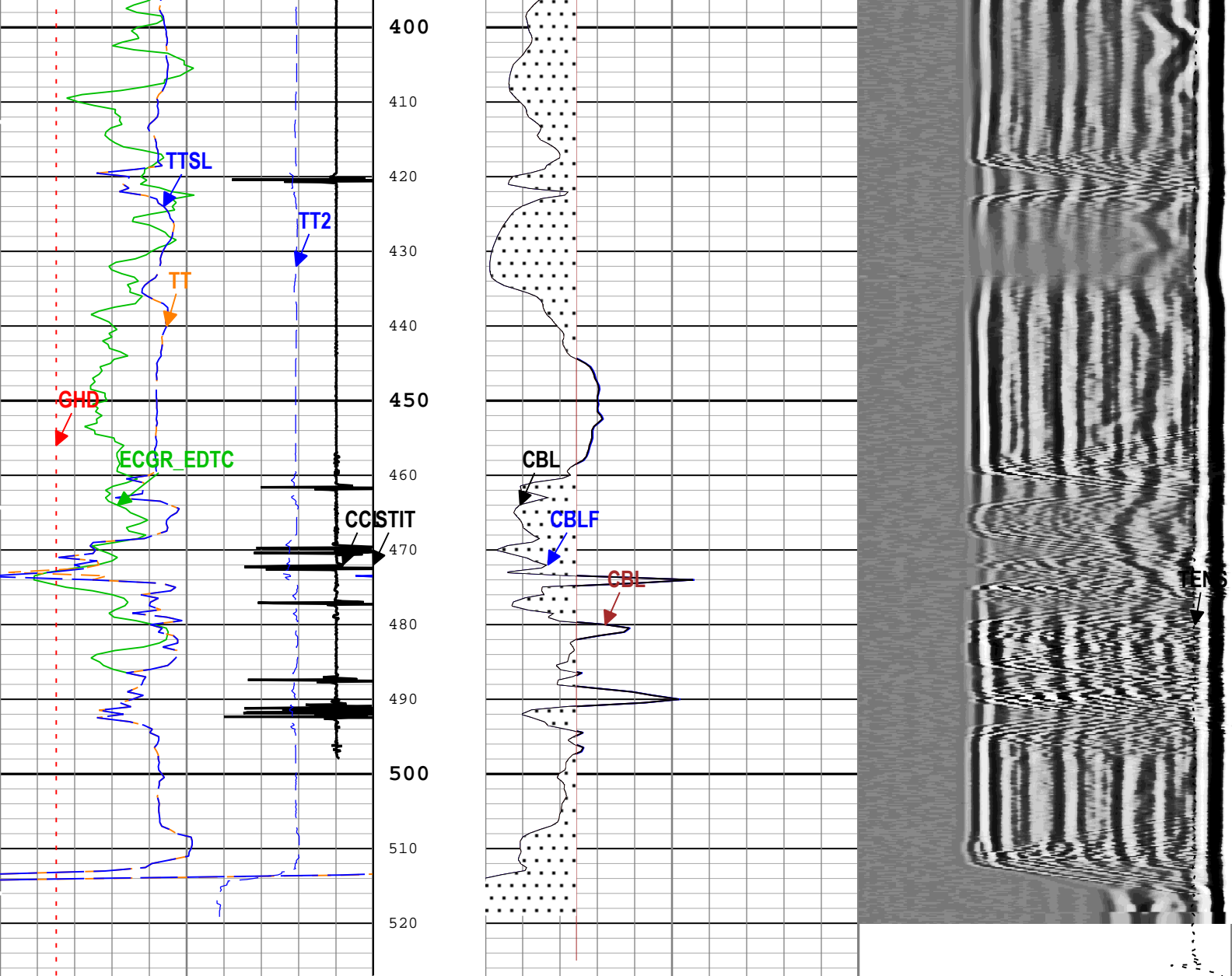
CBL Amplitude (Fluid Compensated) (CBLF)
DSLT-H

0 mV 100

Stuck Tool
Indicator,
Total/OTIT







Casing Collar Locator Amplitude (CCL) CAL-YA		Stuck Tool Indicator, Total (STIT)		CBL Amplitude (CBL) DSLT-H		Min	Amplitude	Max
-9	1	0	50	0	100	200	us	1200
Gamma Ray (ECGR_EDTC) EDTC-B		Cable Drag		CBL Amplitude (Fluid Compensated) (CBLF) DSLT-H		Variable Density Log (VDL) DSLT-H		
0	150	Tool Tot. Drag		0	100	Cable Tension (TENS)		
Borehole Diameter (GHD) RT				CBL Amplitude (CBL) DSLT-H				
6	16			0	100			
Transit Time for CBL (TT) DSLT-H				Good Bond (GOBO)				
450	350			0	10			
Transit Time 1 (TT1) DSLT-H				GoodBond from CBL to GOBO				
1200	200							
Transit Time 2 (TT2) DSLT-H								
1200	200							
Transit Time (Sliding Gate) (TTSL) DSLT-H								
450	350							

TIME_1900 - Time Marked every 60.00 (s)

— BIEP - Bond Index Event Pips DSLT-H

Description: CBL_Fluid_Compensated Format: Log (Sonic Fluid-Compensated CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 24-Oct-2018 21:10:46

Channel Processing Parameters

ONE: 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	17.5	in
CBLG	CBL Gate Width	DSLTH	98	us
CBLO	Casing Bottom (Logger)	WLSESSION	525	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLTH	Depth Zoned	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	1	
CDEN	Cement Density	EDTC-B	2	g/cm3
DETE	Delta-T Detection	DSLTH	E1	
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	BS(RT)	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLTH	Depth Zoned	mV
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLTH	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLTH	Depth Zoned	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLTH	Depth Zoned	mV
NMSG	Near Minimum Sliding Gate	DSLTH	350	us
SGAD	Sliding Gate Status	DSLTH	Off	
SGDT	Sliding Gate Delta-T	DSLTH	57	us/ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
CBRA	43	0	525
CBRA	0	525	527.33
GOBO_CURR	2.43	0	525
GOBO_CURR	0	525	527.33
MATT_CURR	11.3	0	525
MATT_CURR	0	525	527.33
MCI	21.68	0	525
MCI	0	525	527.33
MSA	1.19	0	525
MSA	0	525	527.33
MSA_CURR	1.19	0	525
MSA_CURR	0	525	527.33

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
MODE	DSLTH Acquisition Mode	DSLTH	CBL	
RATE	DSLTH Firing Rate	DSLTH	15 Hz	
DTFS	DSLTH Telemetry Frame Size	DSLTH	536	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3600	ft/h

Calibration Report

DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run ONE

Primary Equipment :							
Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL				SLS-E	1563		

CBL Normalization - CBL Accumulations

Master (Measured): 09:56:52 29-Mar-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Upper Far Amplitude		Master	4200.0	3200.0	3230.1		
Upper Near Raw Amplitude	mV	Master	33.000	27.000	33.807	43.000	
Lower Far Amplitude		Master	4200.0	3200.0	4360.3		
Lower Near Raw Amplitude	mV	Master	46.000	27.000	42.780	68.000	

CBL Normalization - CBL/VDL Coefficients

Master (Measured): 09:56:52 29-Mar-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for UT		Master	3.500	2.700	3.431	4.300	
CBL Correction Factor for LT		Master	2.500	1.700	2.712	4.300	
VDL Ratio between UT and LT for CBLB Mode		Master	1.000		1.350		

CBL Free Pipe Adjustment - Free Pipe Measurement

Before (Measured): 14:57:29 24-Oct-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude	mV	Before	60.00	15.00	51.53	174.00	
CBL Reference Amplitude (CBRA)	mV	Before			43.00		
Measurement Depth	ft	Before			360.12		

CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before (Measured): 14:57:29 24-Oct-2018							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	0.834	5.000	
Depth of Before Calibration	ft	Before			360.12		

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