

Company: IMPERIAL OIL RESOURCES

Well: IMP 13 N07-23 COLD LK 1-13-66-3

Field: MARIE

Province: AB MEASURED DEPTH

PRODUCTION ANALYSIS
TEMPERATURE LOG

TEMPERATURE LOG

Location:			
LSD: 8-13-66-3W4	Elev.: K.B. 616.00 m		
UWI: 106011306603W400	G.L. 610.95 m		
	D.F.		
Permanent Datum:	Ground Level	Elev.: 610.95	
Log Measured From:	Kelly Bushing	5.05 m	
Drilling Measured From:	Kelly Bushing	above Perm. Datum	
API Serial No.	Section:	Township:	Range:
0456795	08-13	066	03W4

Logging Date 24-Oct-2016

Run Number 1

Depth Driller 718.00 m

Schlumberger Depth 686.00 m

Bottom Log Interval 685.00 m

Top Log Interval 5.05 m

Casing Fluid Type Water

Salinity

Density 1198.26 kg/m3

Fluid Level -5000.00 m

BIT/CASING/TUBING STRING

Bit Size 215.90 mm

From 5.05 m

To 685.00 m

Casing/Tubing Size 88.900 mm

Weight 13.84 kg/m

Grade J55

From 4.37 m

To 696.37 m

Max Recorded Temperatures 185.79 degC

Logger on Bottom 24-Oct-2016 10:43:00

Unit Number 218

Recorded By ROB EVANS

Location: LLOYD PS

Witnessed By SCOT BRELAND

Disclaimer

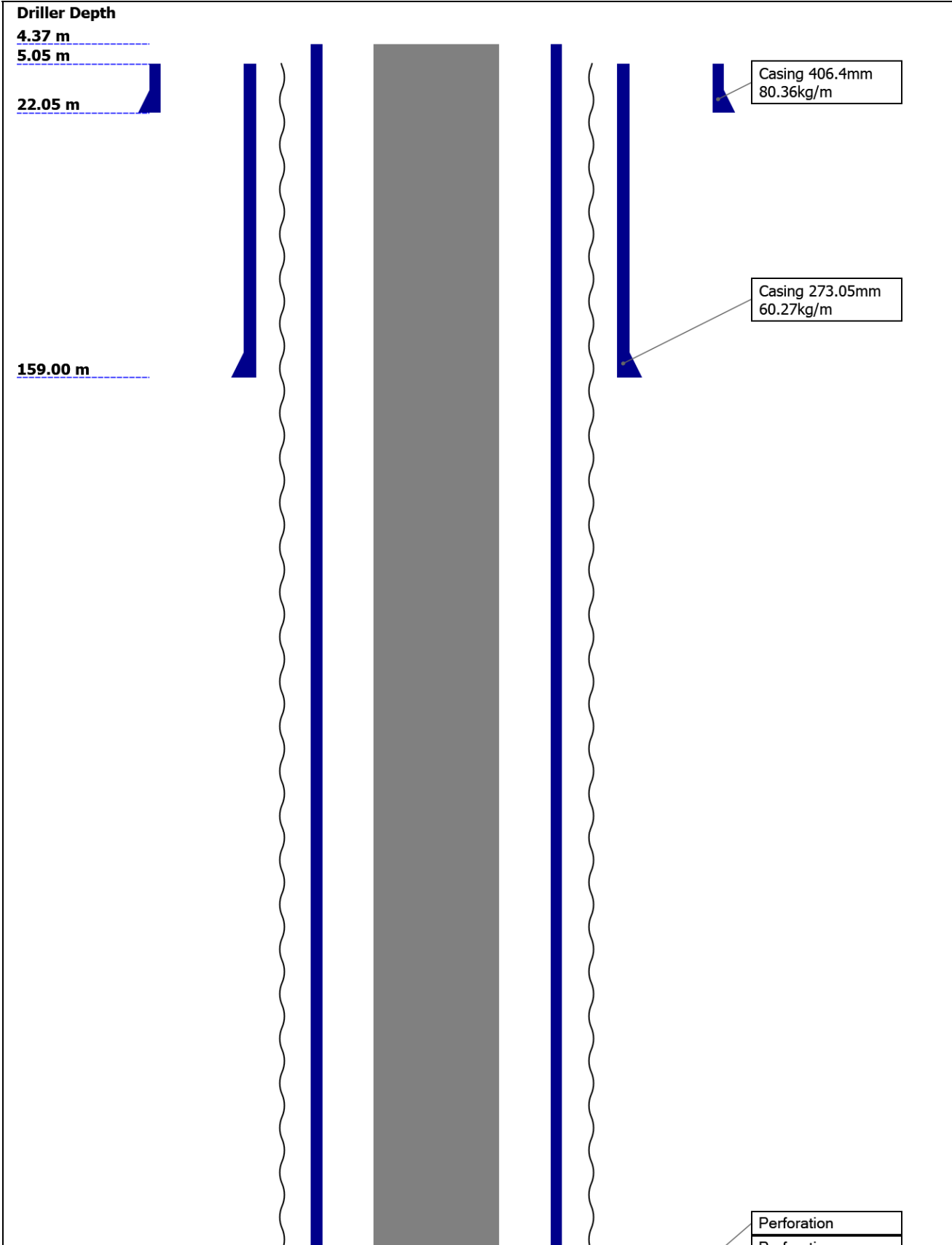
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (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.

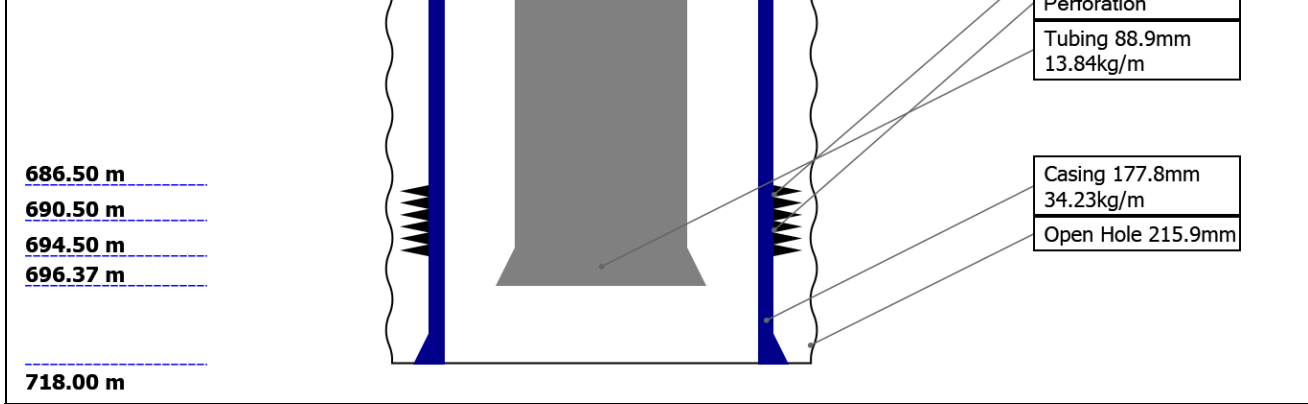
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 - 8.1 Integration Summary
 - 8.2 Software Version
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Well Sketch



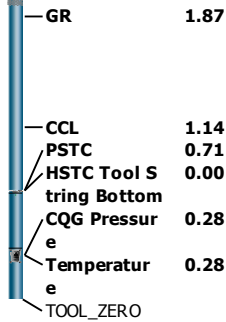


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (mm)	215.9					
Top Driller (m)	5.05					
Top Logger (m)	5.05					
Bottom Driller (m)	718					
Bottom Logger (m)	685					
Casing						
Size (mm)	406.4	273.05	177.8			
Weight (kg/m)	80.36	60.27	34.23			
Inner Diameter (mm)	390.388	255.27	161.797			
Grade	L80	J55	L80			
Top Driller (m)	5.05	5.05	4.37			
Top Logger (m)	5.05	5.05	4.37			
Bottom Driller (m)	22.05	159	718			
Bottom Logger (m)	22.05	159	718			
Tubing						
Size (mm)	88.9					
Weight (kg/m)	13.84					
Inner Diameter (mm)	75.997					
Grade	J55					
Top Driller (m)	4.37					
Top Logger (m)	4.37					
Bottom Driller (m)	696.37					
Bottom Logger (m)	696.37					

Remarks and Equipment Summary

1: Toolstring				1: Remarks		
Equip name	Length	MP name	Offset	WELL LOGGED AS PER CLIENT REQUEST		
PEH-E	3.99			NO CORRELATION LOG AVAILABLE		
				POR @ 495 MKB		
AH-38	3.48			WELL LOGGED FOR TEMPERATURE PROFILE		
HBMS-B:2814	3.39			CORRELATED TO BURST NIPPLE @ 669.47 - 669.70 MKB		
HUDH-A:2814				PSN TOP @ 688.89 MKB		
PSC-A:2814						
HSTC-A:2814						
HBMC-A:2814						
HTPS-A:2814						



Lengths are in m
Maximum Outer Diameter = 52.451 mm
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

1

MAIN PASS

Software Version

Acquisition System	Version
Maxwell 2016	6.0.53731.3100
Application Patch	Wireline_TestKit-EMIT-C-2016RC3_6.0.54288

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1	Log[2]:Up	Up	-0.32 m	686.14 m	24-Oct-2016 10:43:08 AM	24-Oct-2016 12:13:47 PM	ON	0.83 m	Yes

All depths are referenced to toolstring zero

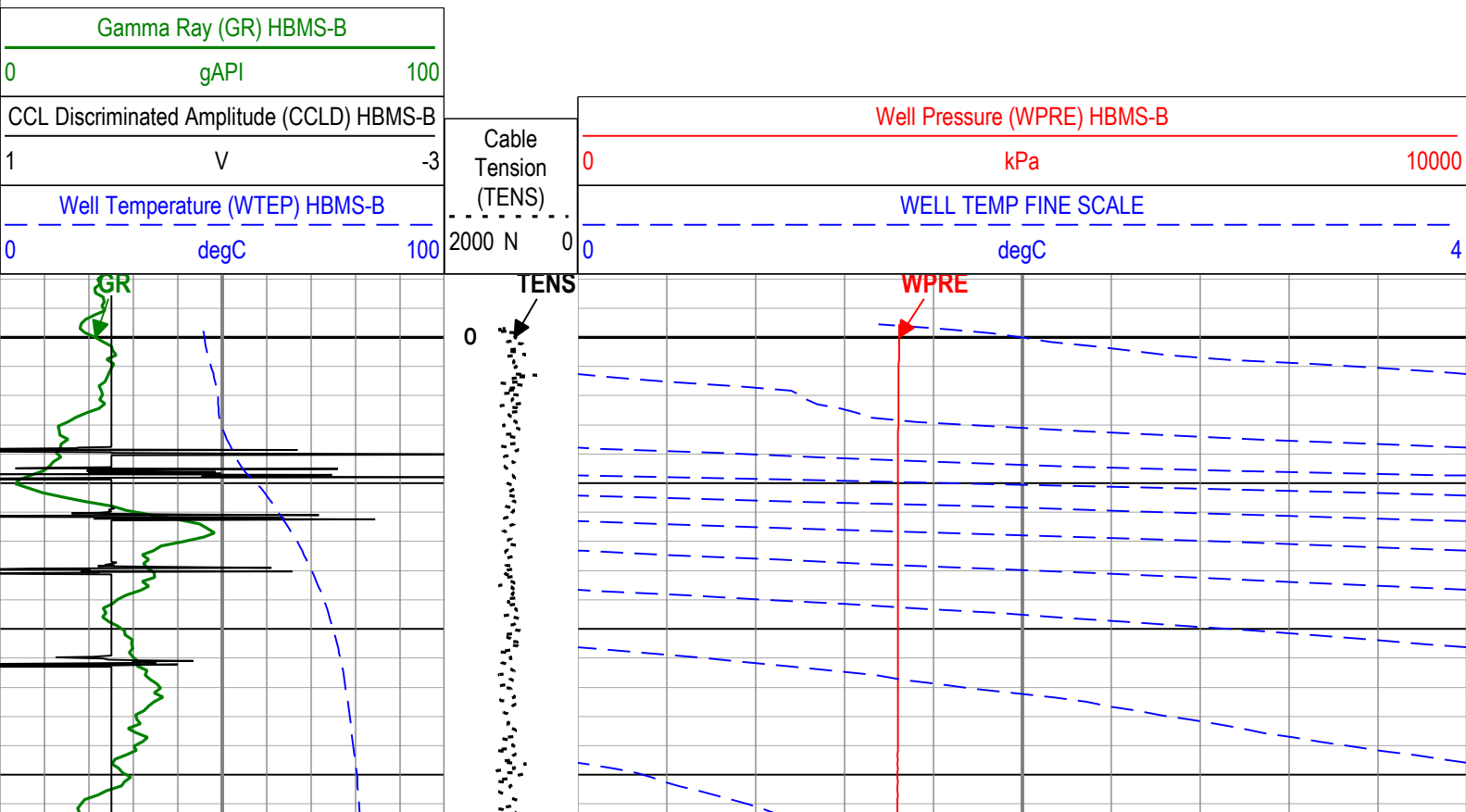
Log

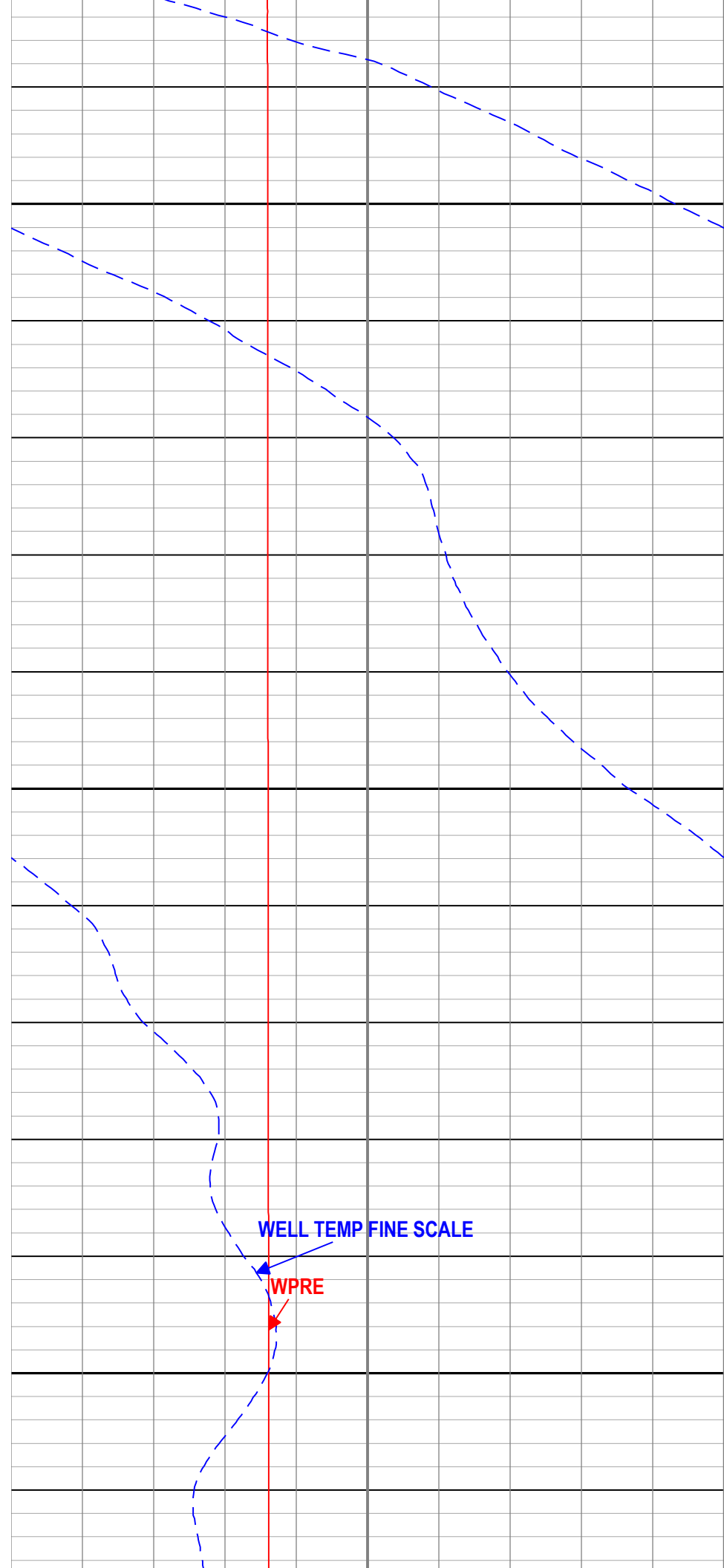
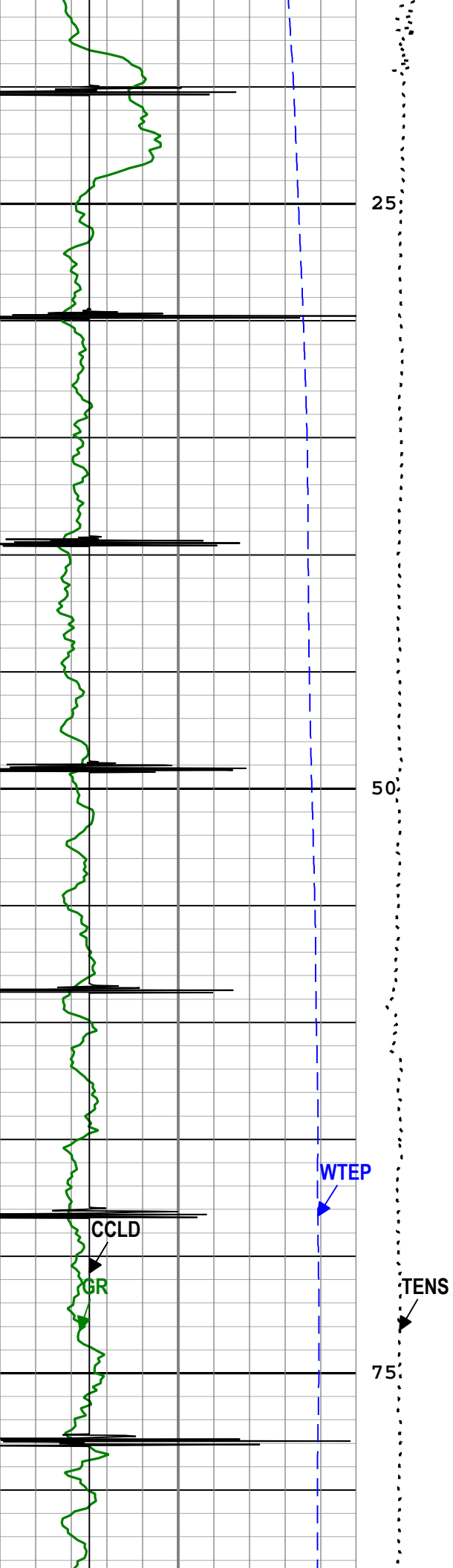
Company:IMPERIAL OIL RESOURCES Well:IMP 13 N07-23 COLD LK 1-13-66-3

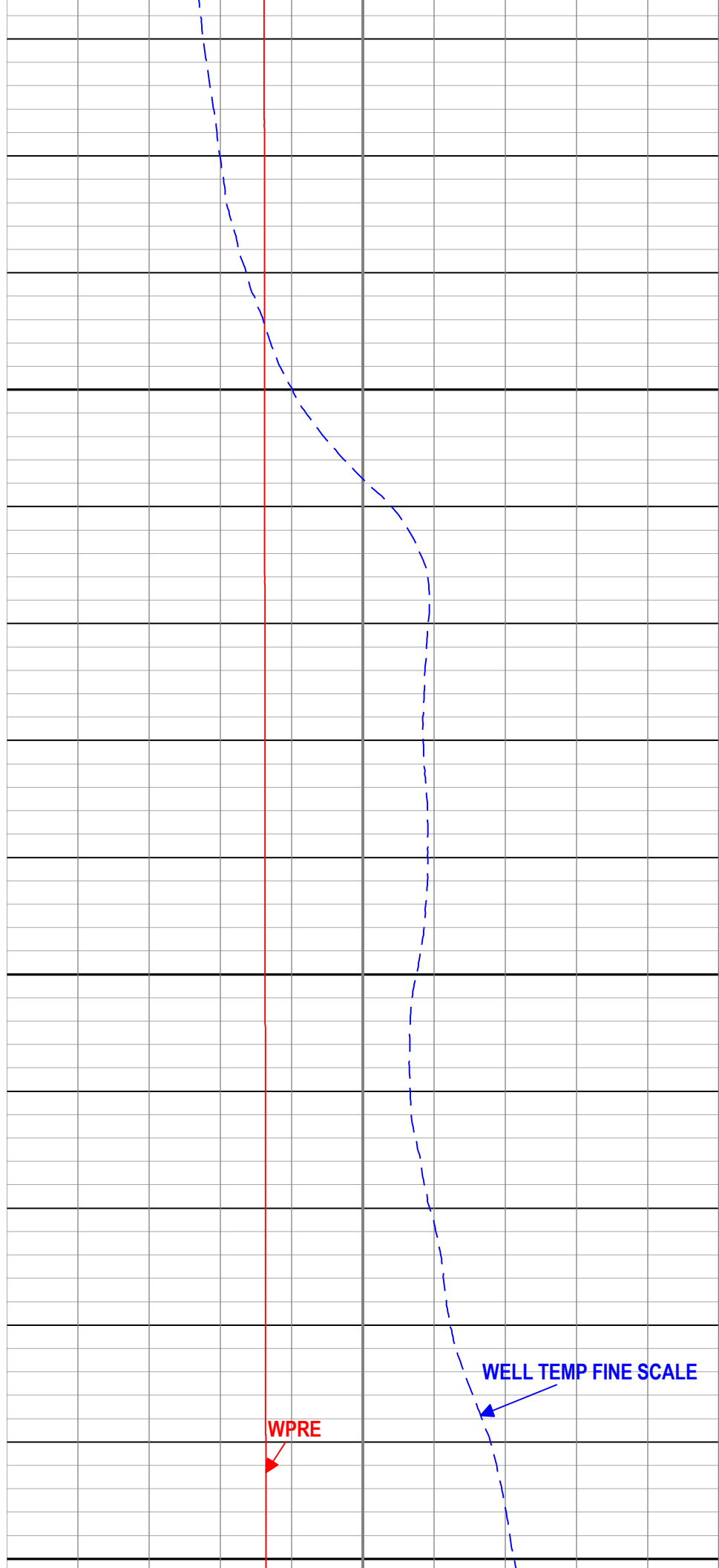
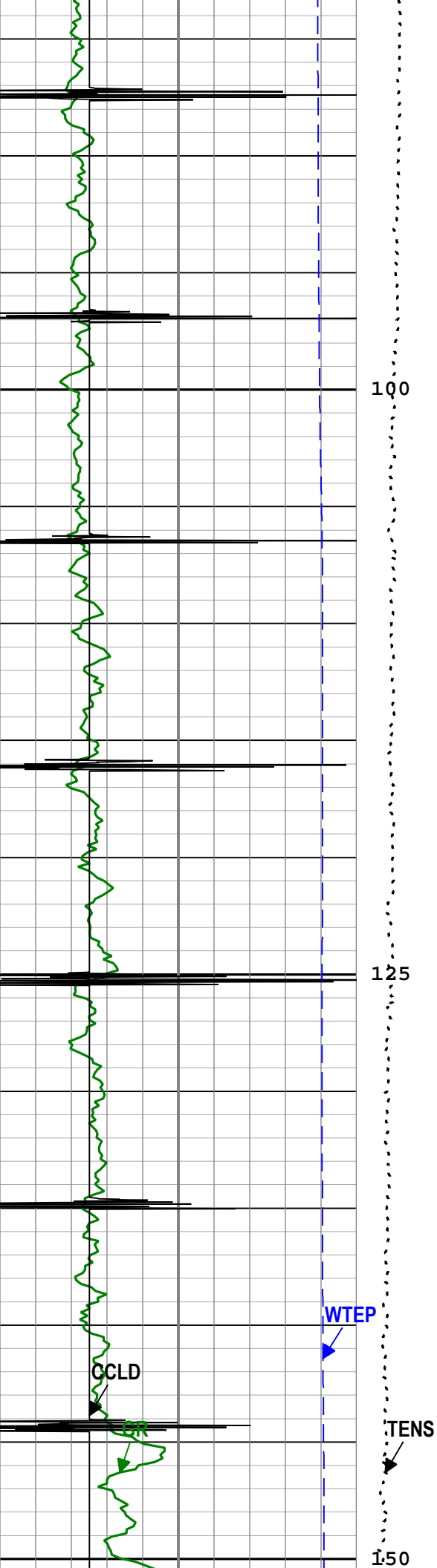
1: Log[2]:Up:S002

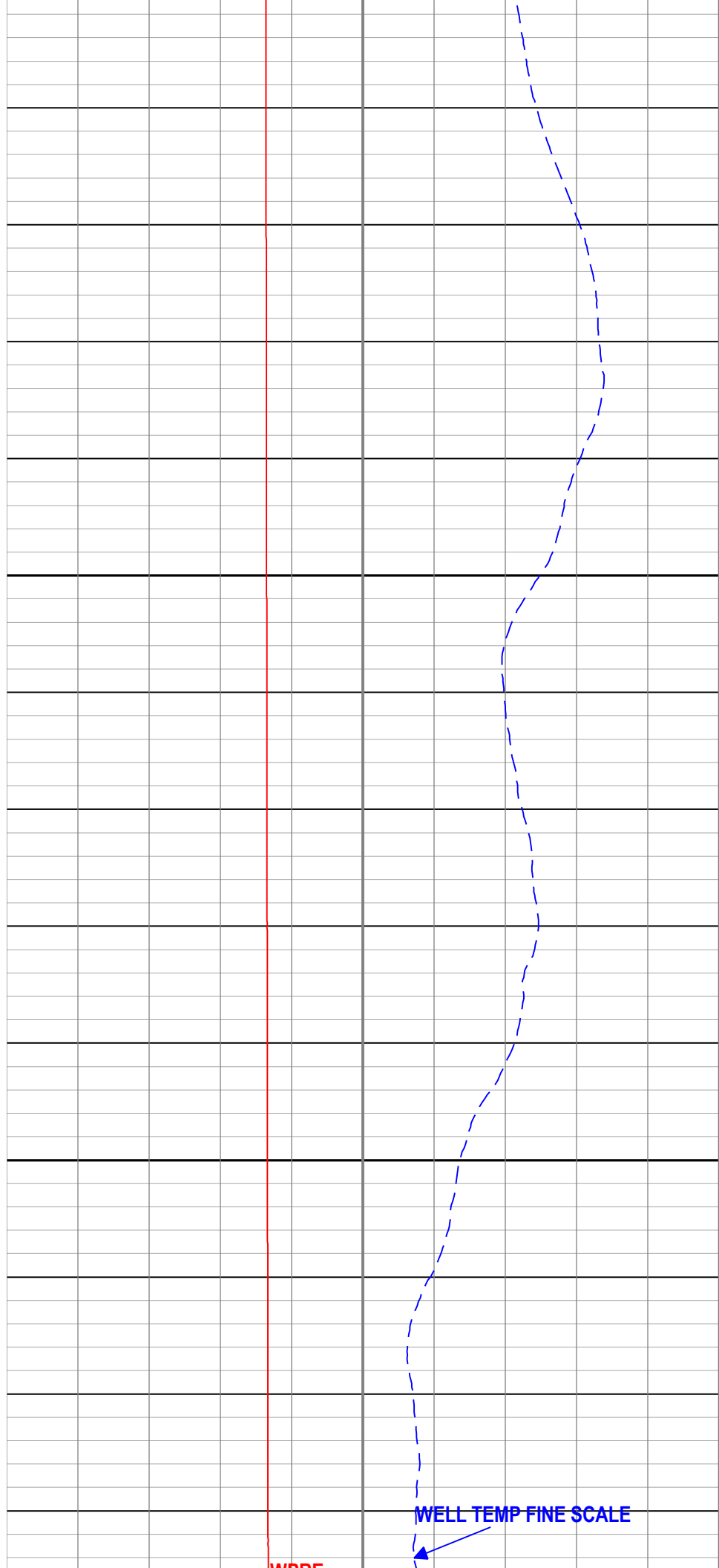
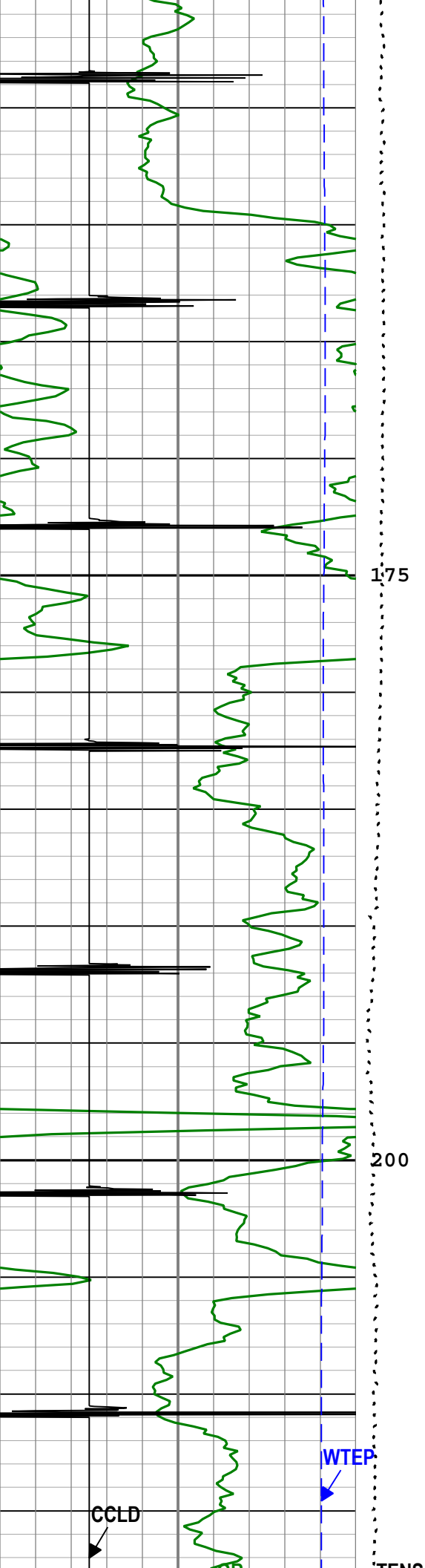
Description: PSP Depth Format: Log (TEMP DOWN PASS) Index Scale: 1:240 Index Unit: m Index Type: Measured Depth Creation Date: 24-Oct-2016 12:20:50

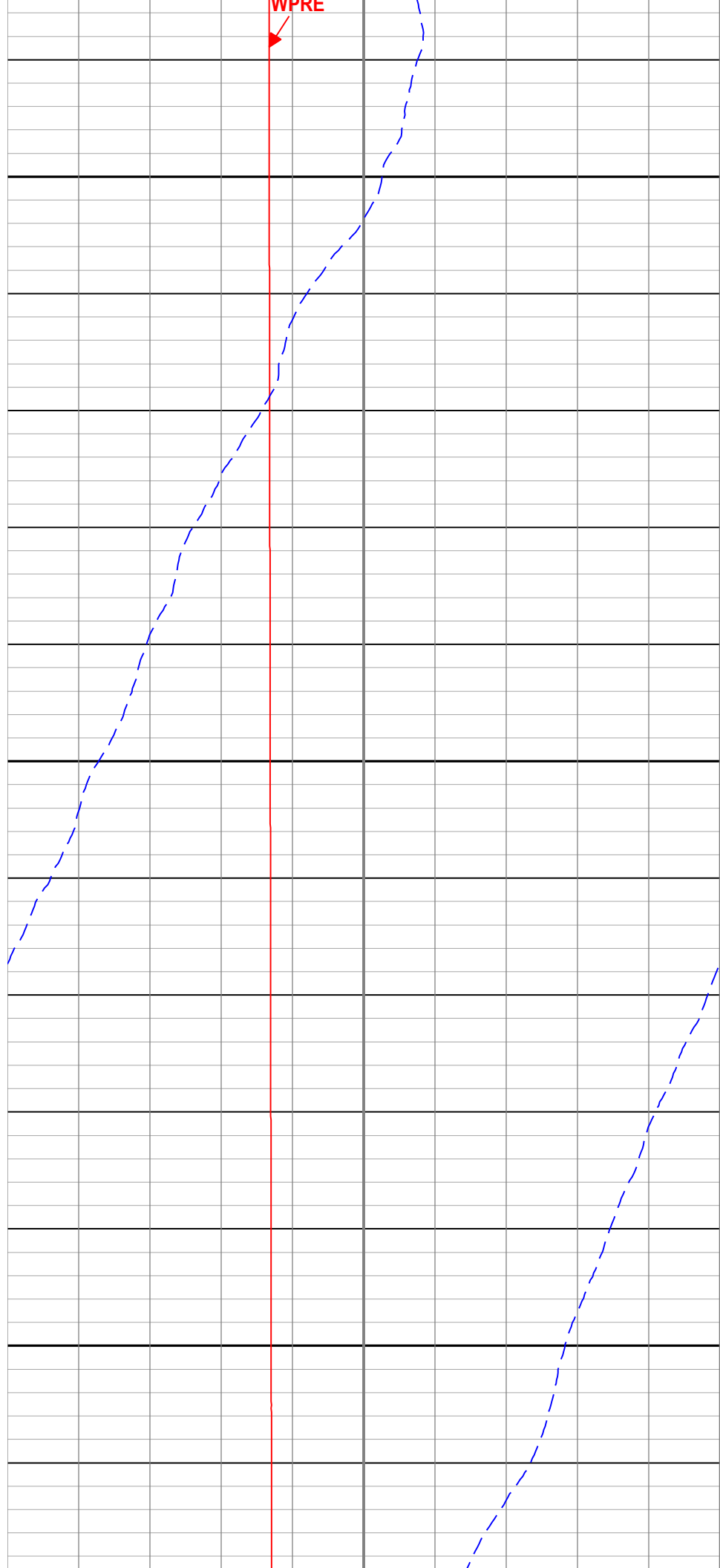
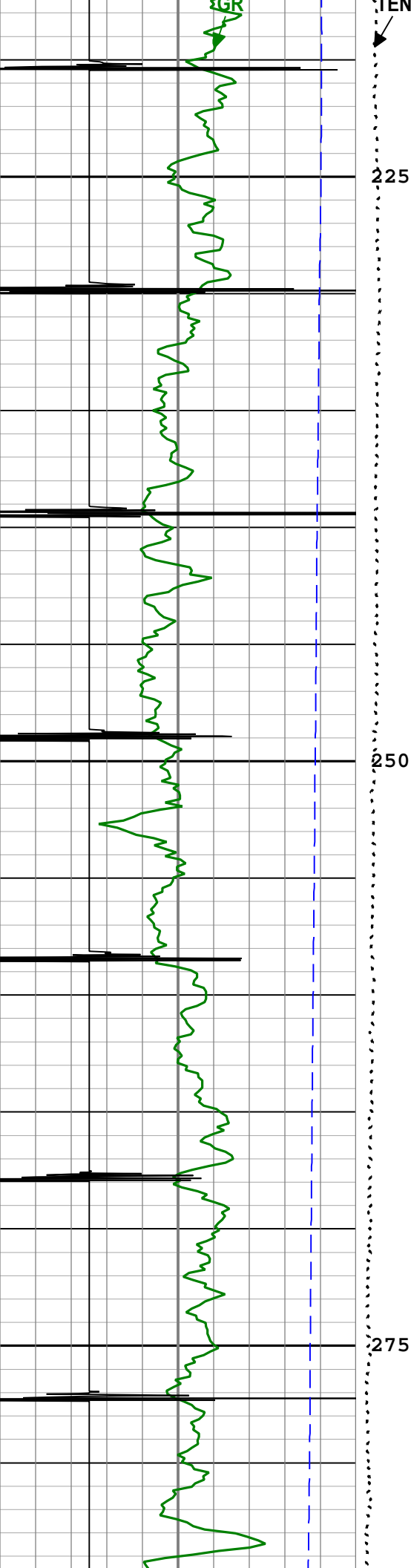
TIME_1900 - Time Marked every 60.00 (s)

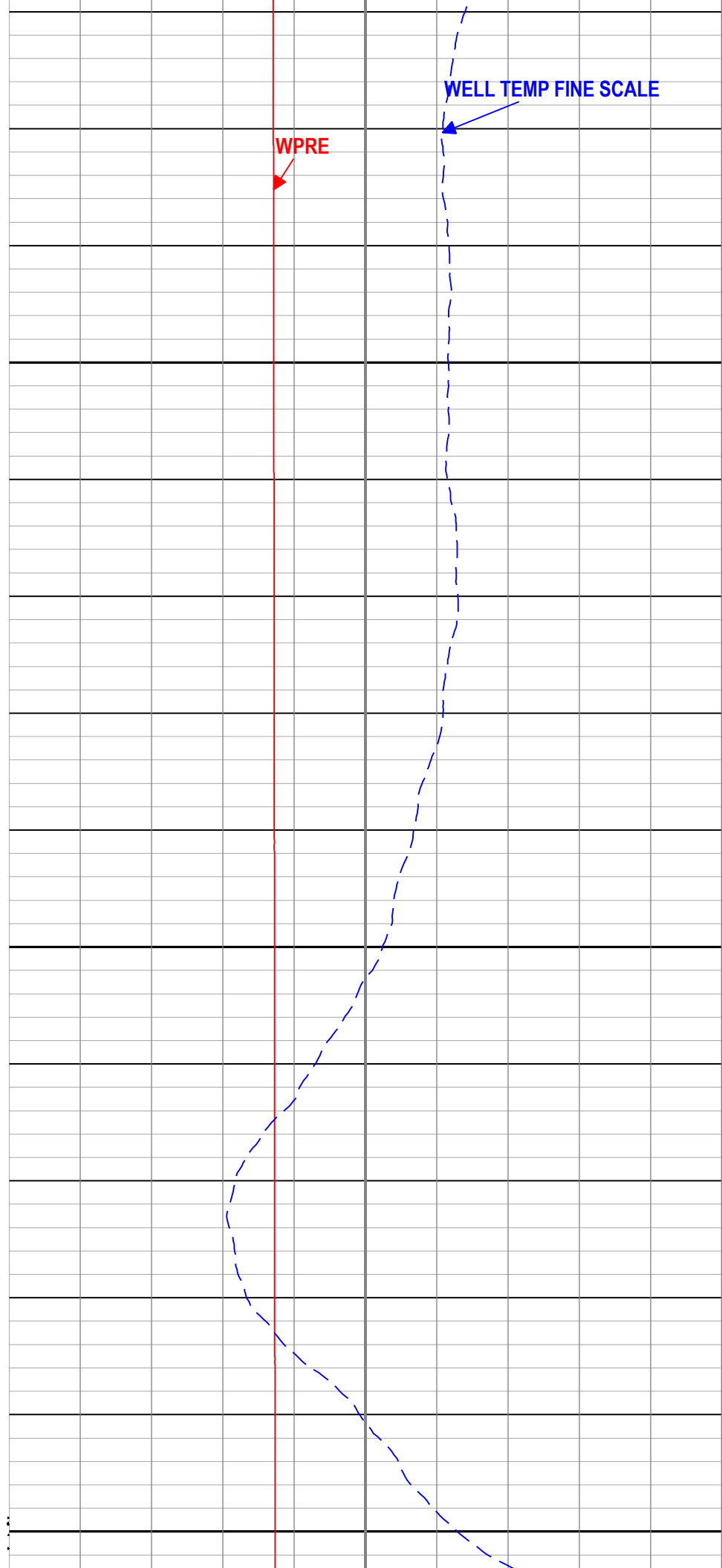
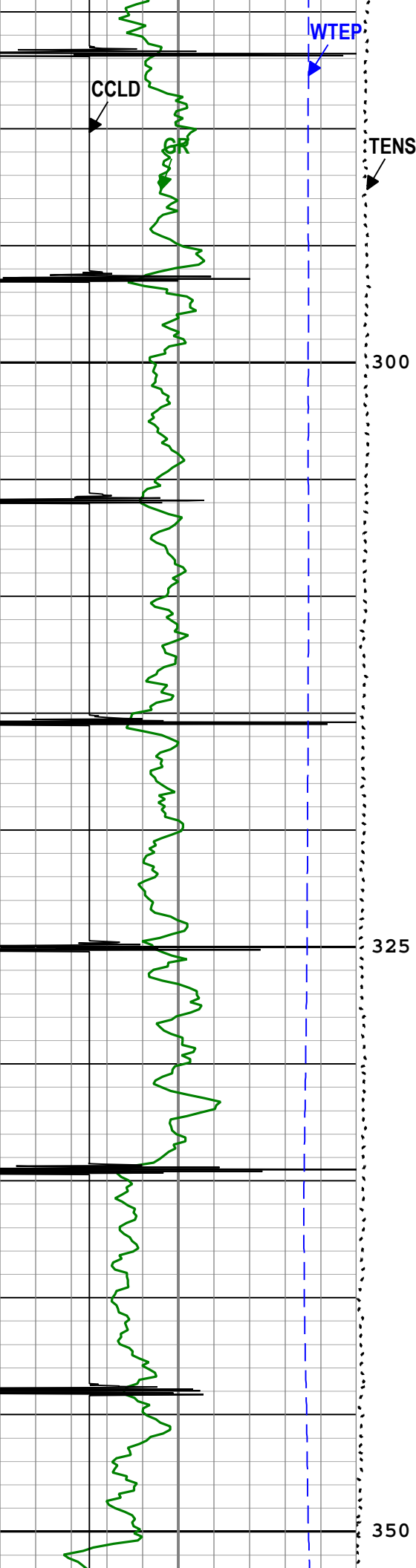


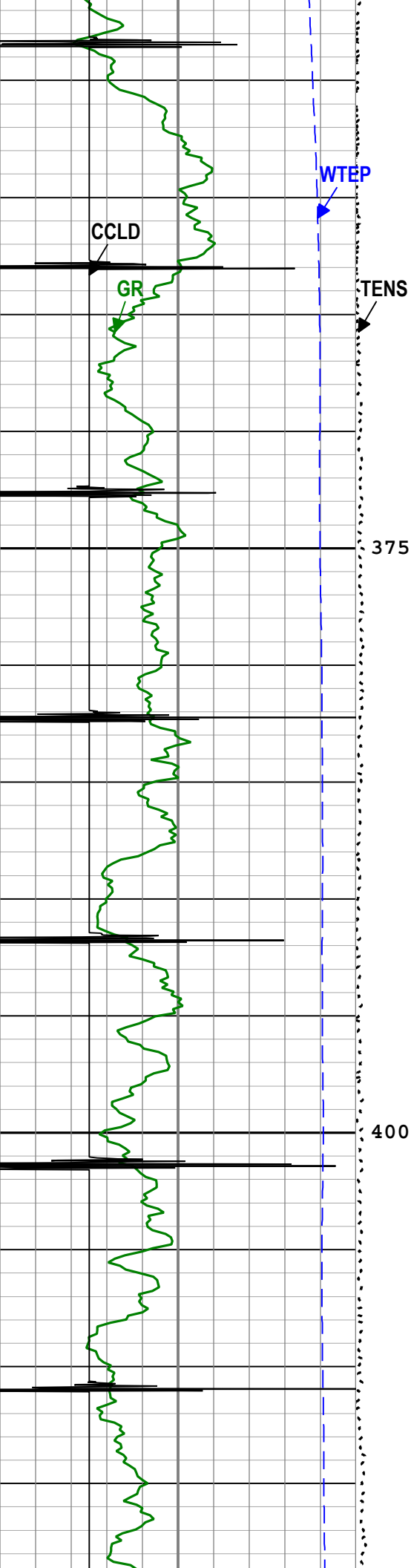


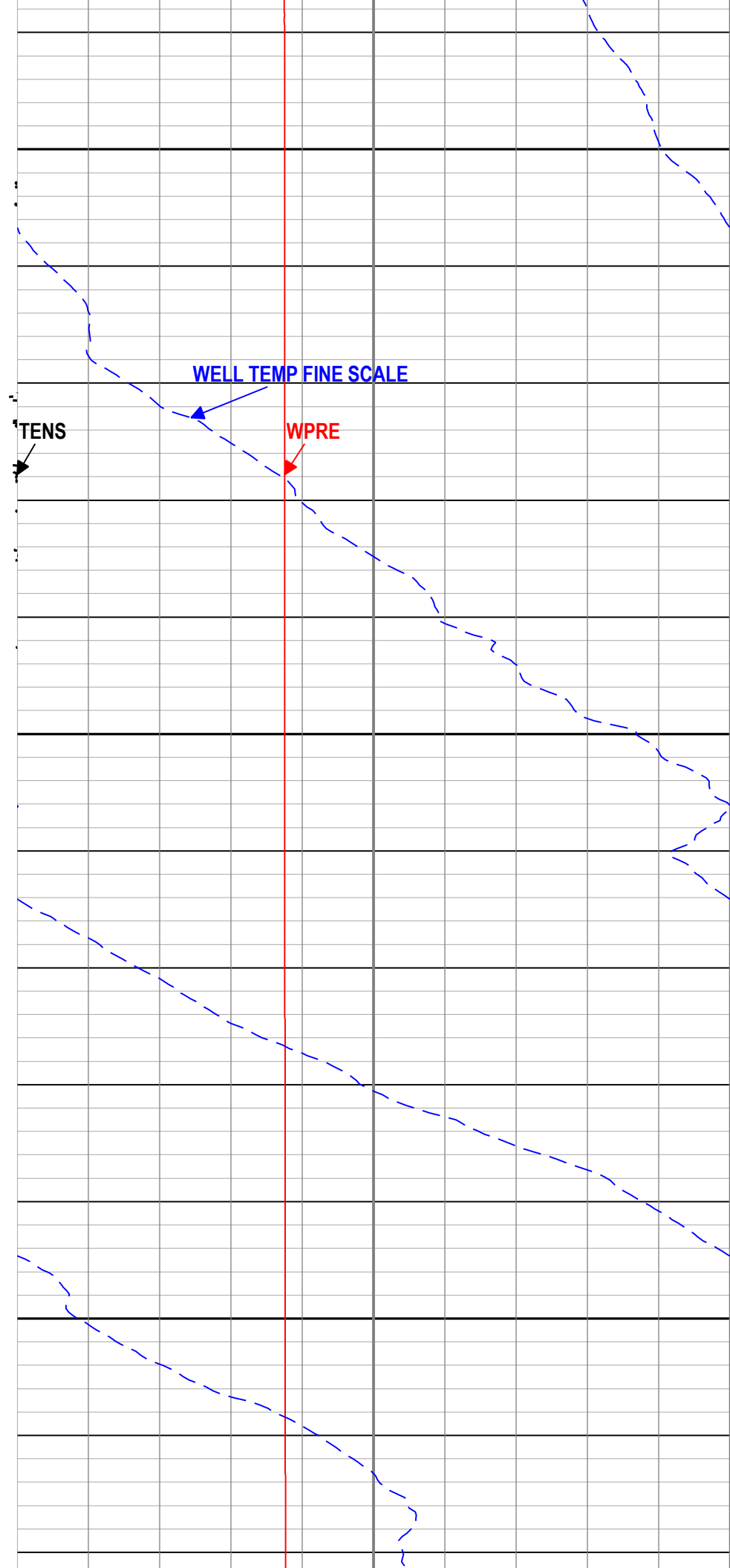
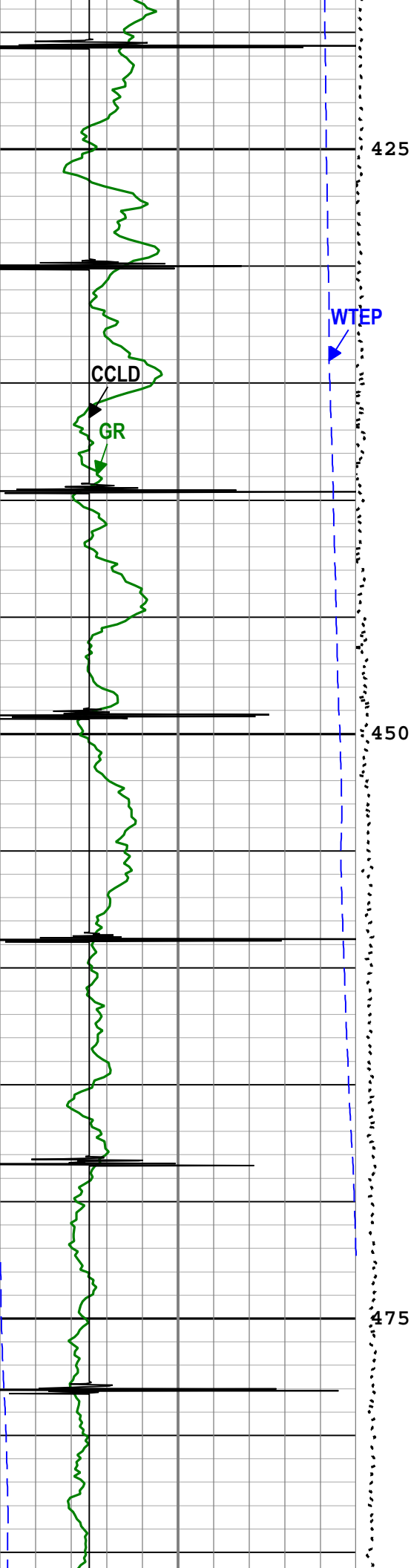


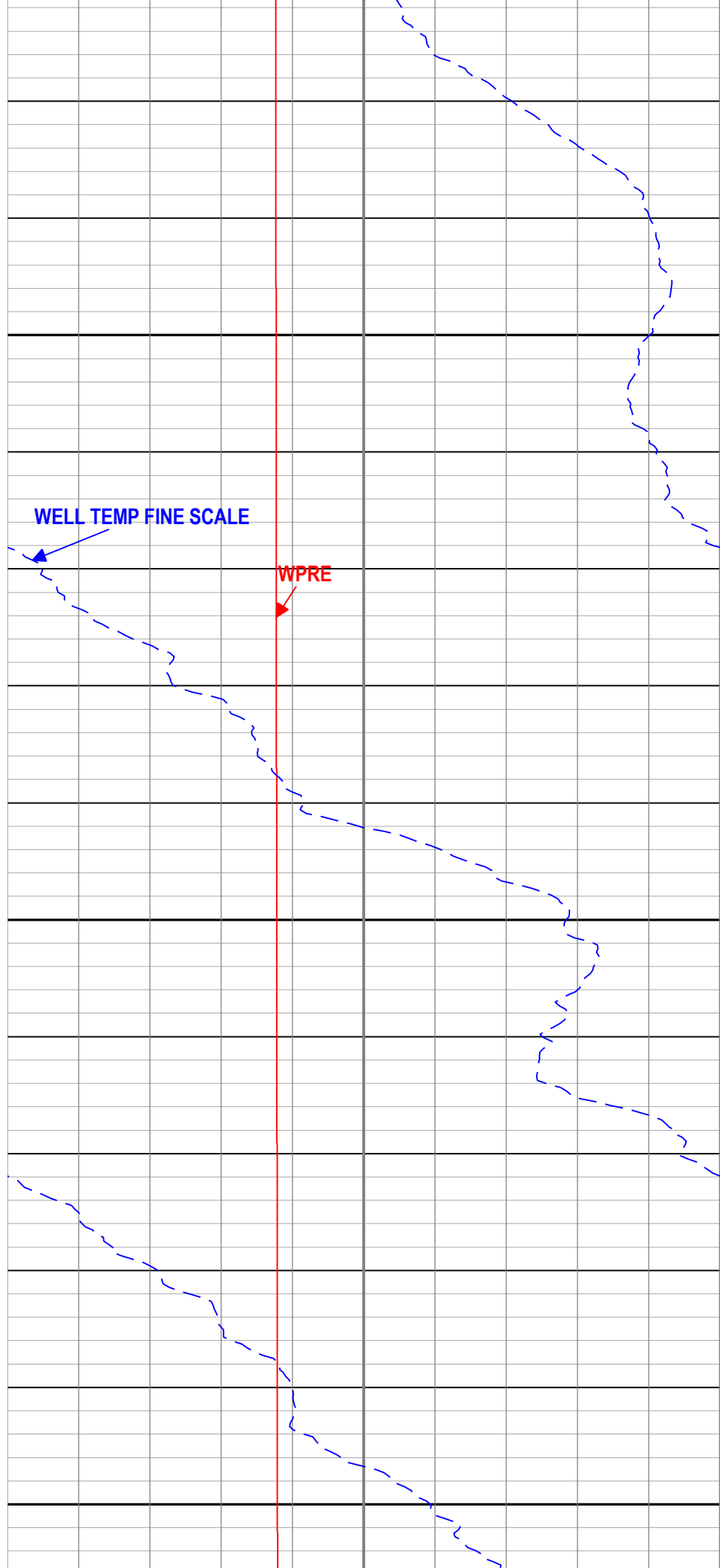
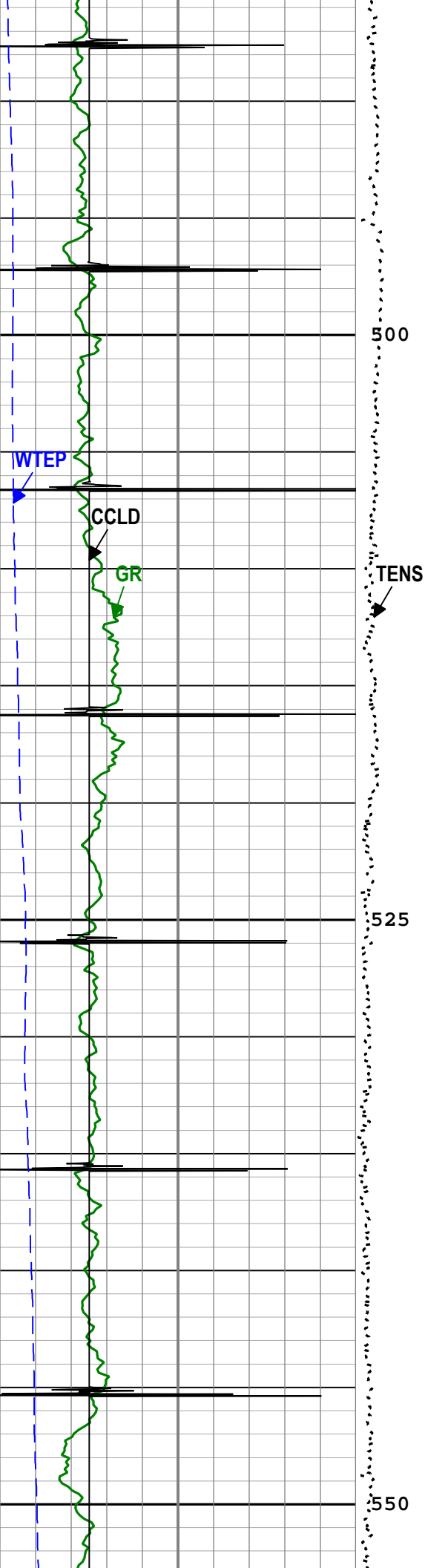


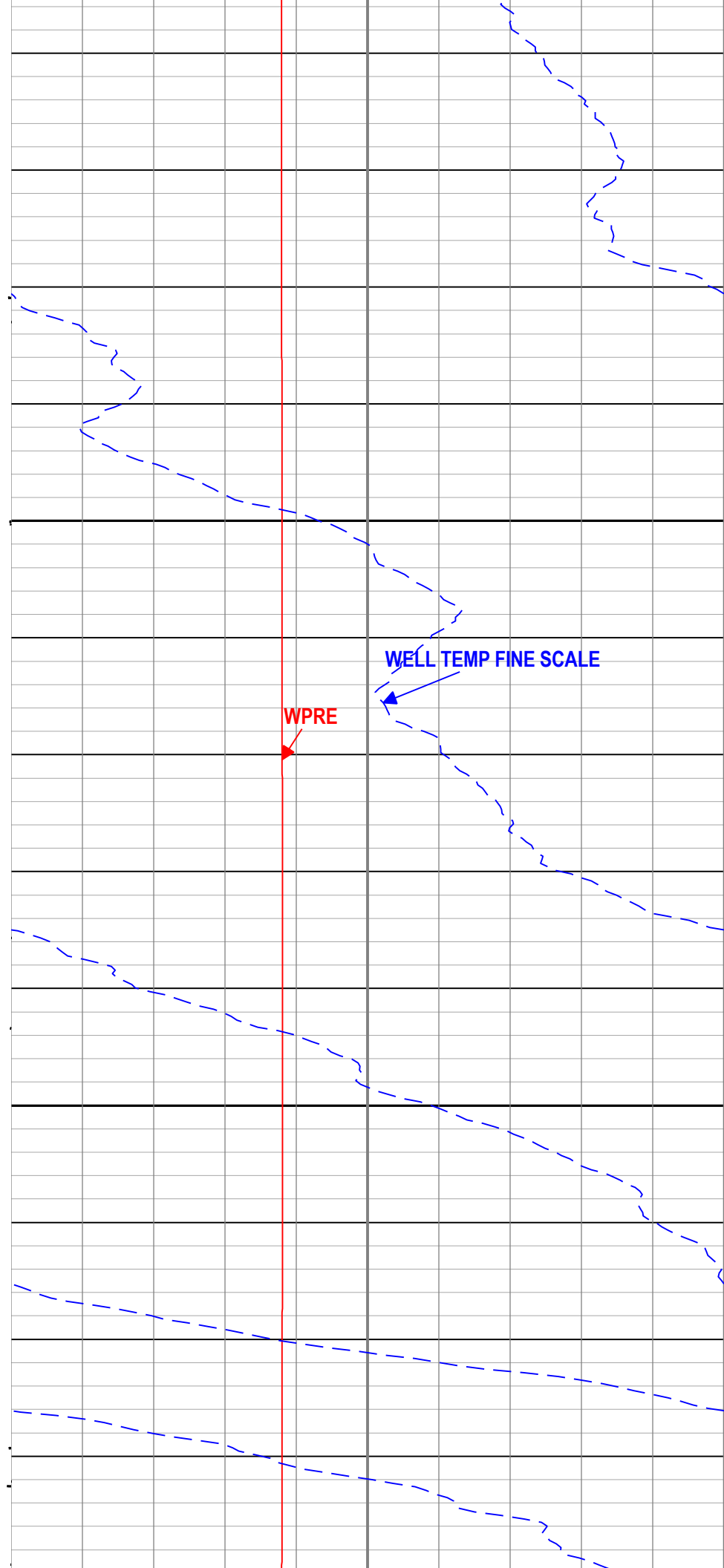
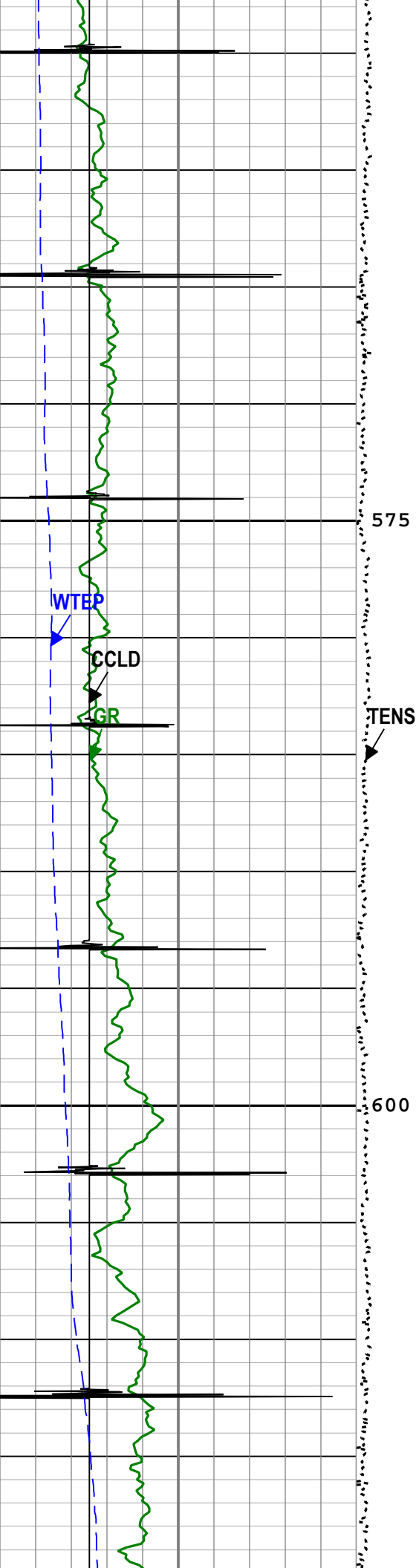


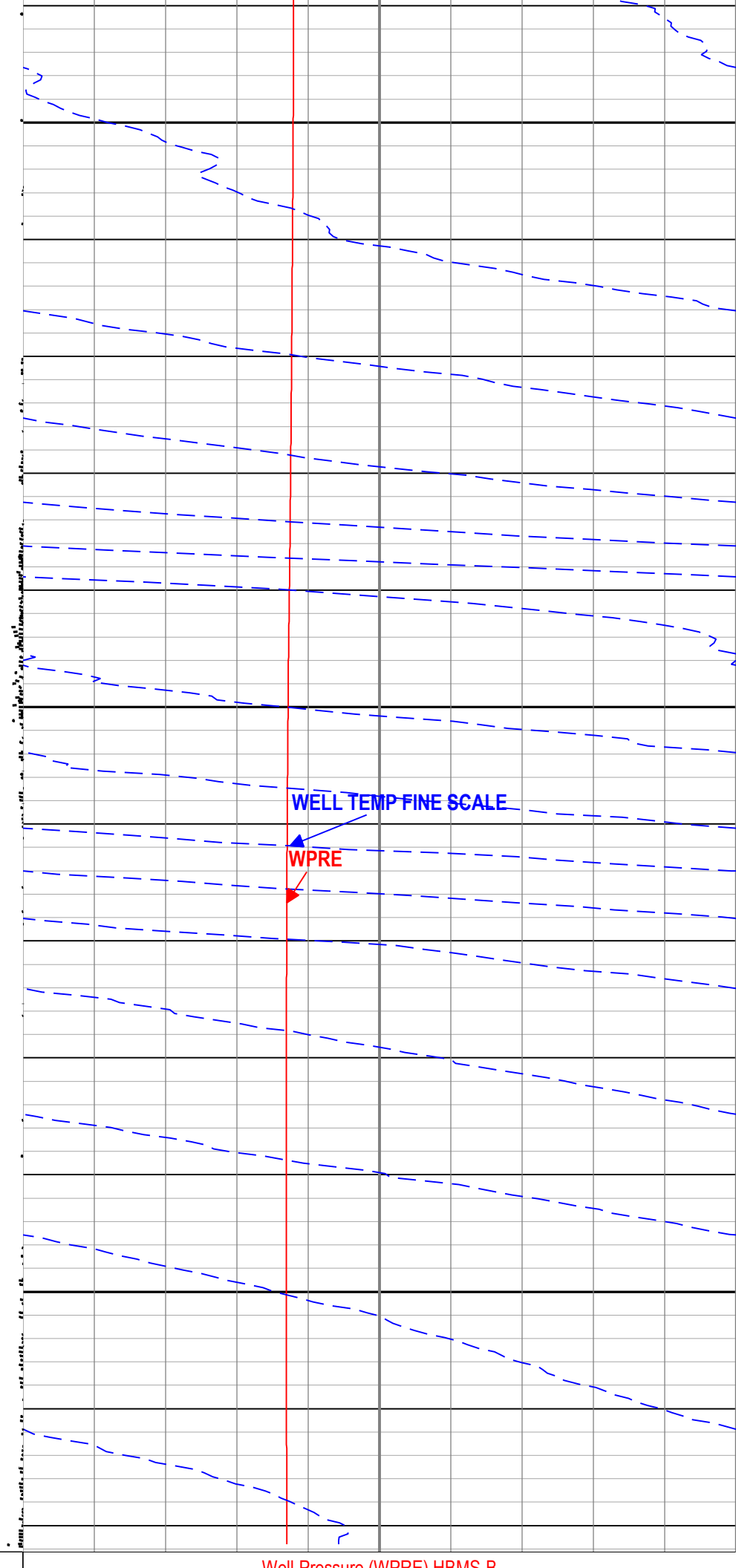
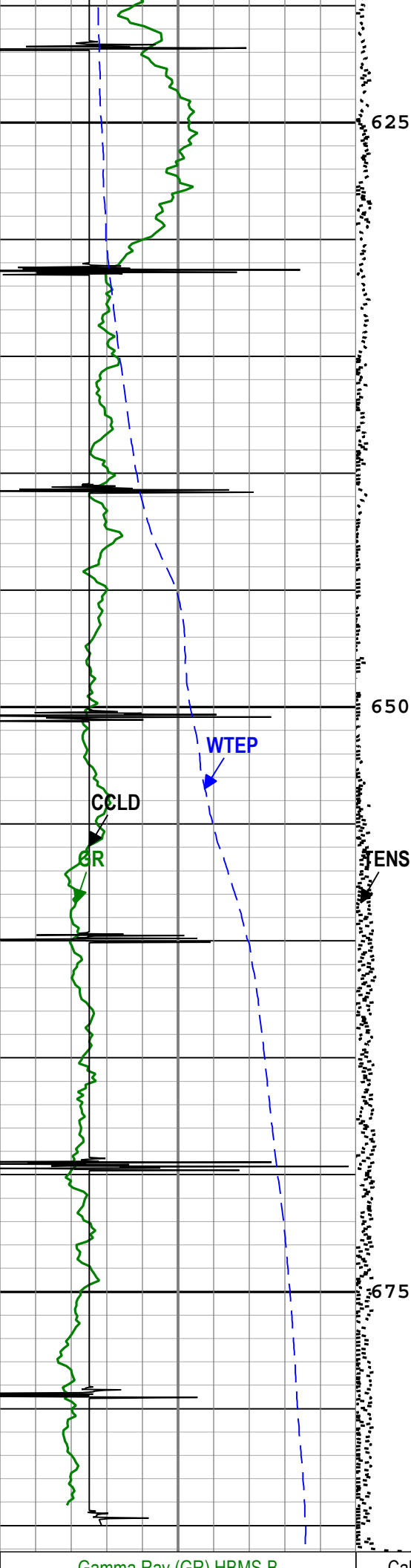












Gamma Ray (GR) HBMS-B			Cable Tension (TENS)	Well Pressure (WPRE) HBMS-B			
0	gAPI	100		0	kPa	10000	
CCL Discriminated Amplitude (CCLD) HBMS-B				WELL TEMP FINE SCALE			
1	V	-3	2000 N	0	degC	4	
Well Temperature (WTEP) HBMS-B							
0	degC	100					
TIME_1900 - Time Marked every 60.00 (s)							
Description: PSP Depth Format: Log (TEMP DOWN PASS) Index Scale: 1:240 Index Unit: m Index Type: Measured Depth Creation Date: 24-Oct-2016 12:20:50							

Channel Processing Parameters

Tool Control Parameters

1: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	5486.4	m/h
PCCG	PSP Downhole CCL Gain	HBMS-B	24 dB	

1

TEMPERATURE DOWN

Software Version

Acquisition System		Version
Maxwell 2016		6.0.53731.3100
Application Patch		Wireline_TestKit-EMIT-C-2016RC3_6.0.54288

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1	Log[1]:Down	Down	-0.80 m	496.00 m	24-Oct-2016 9:18:07 AM	24-Oct-2016 10:14:50 AM	ON	0.35 m	Yes

All depths are referenced to toolstring zero

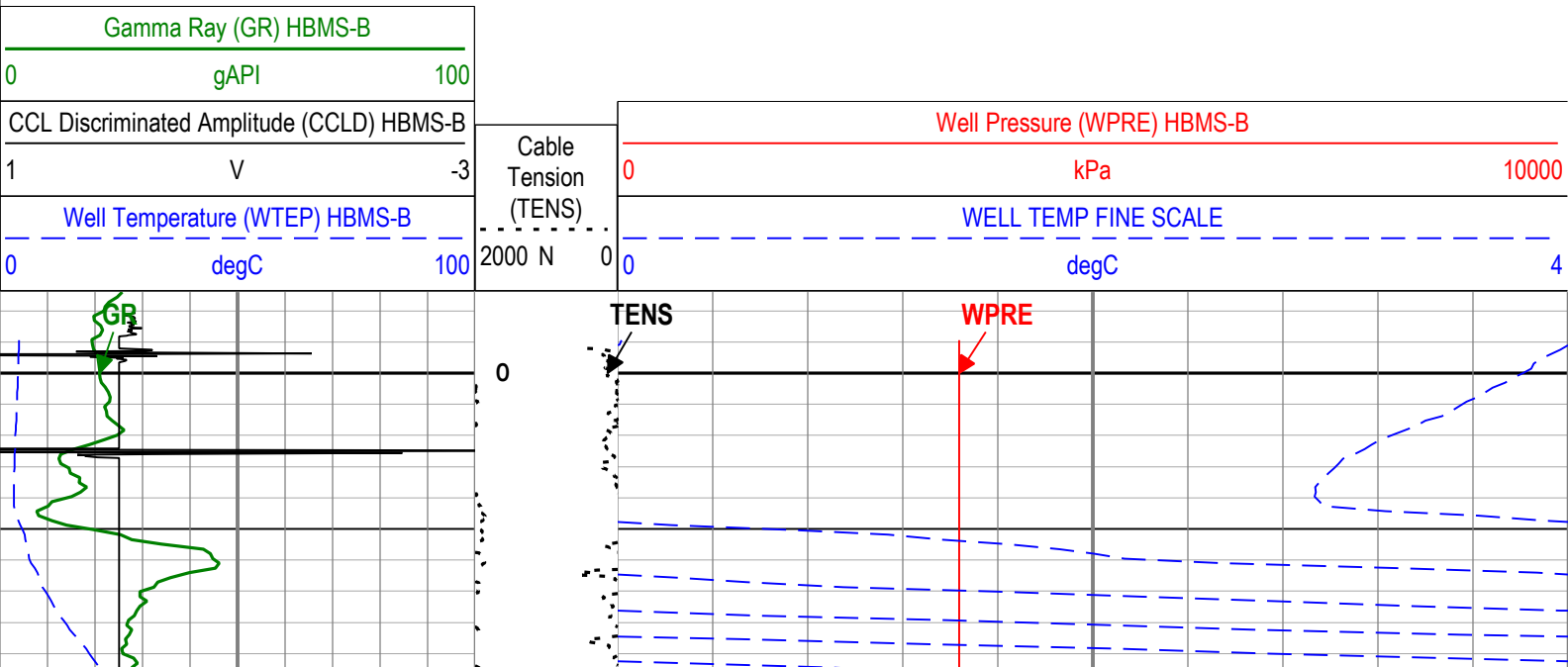
Log

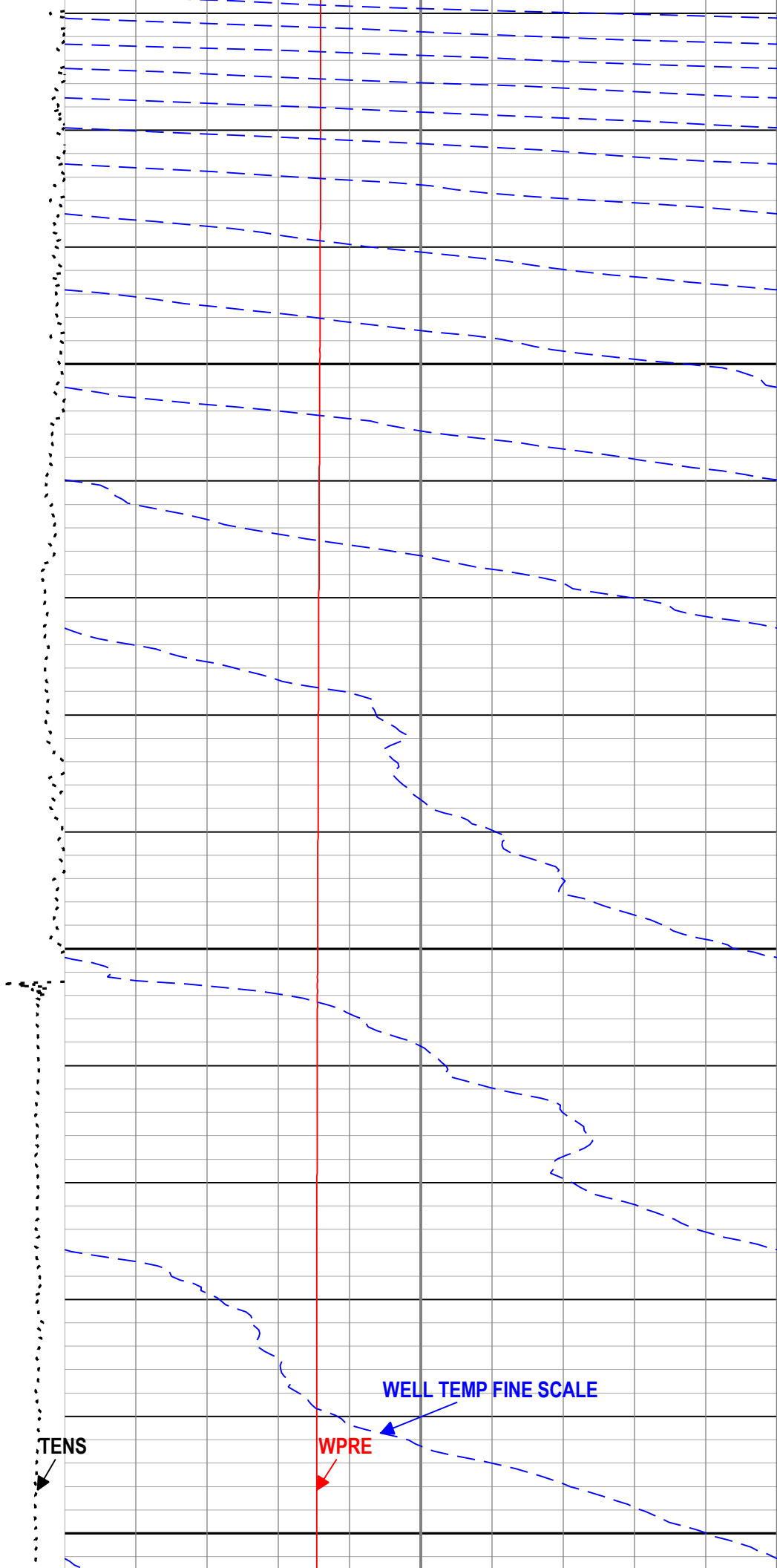
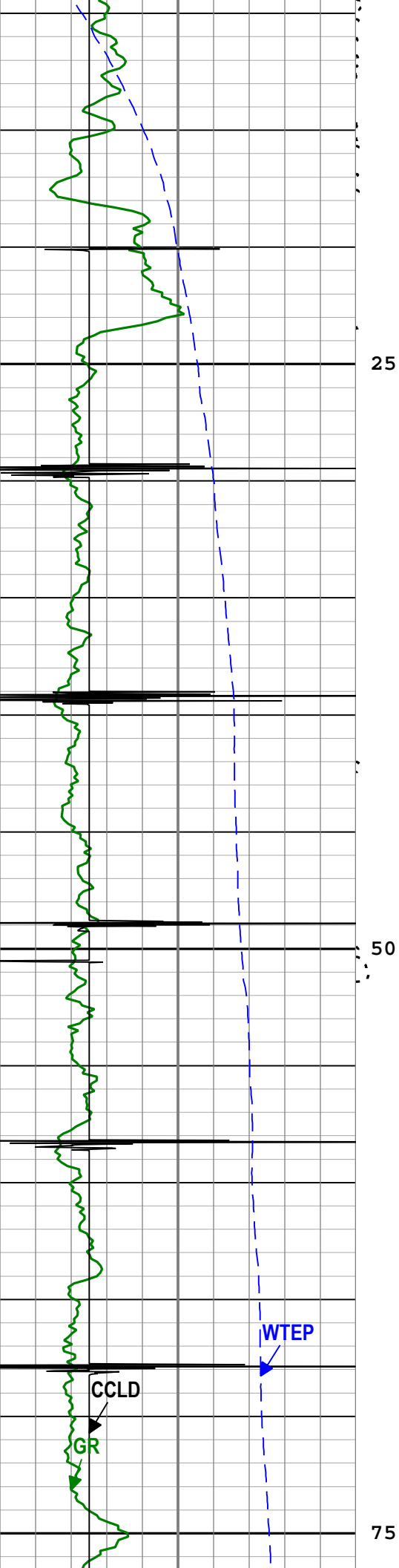
Company:IMPERIAL OIL RESOURCES Well:IMP 13 N07-23 COLD LK 1-13-66-3

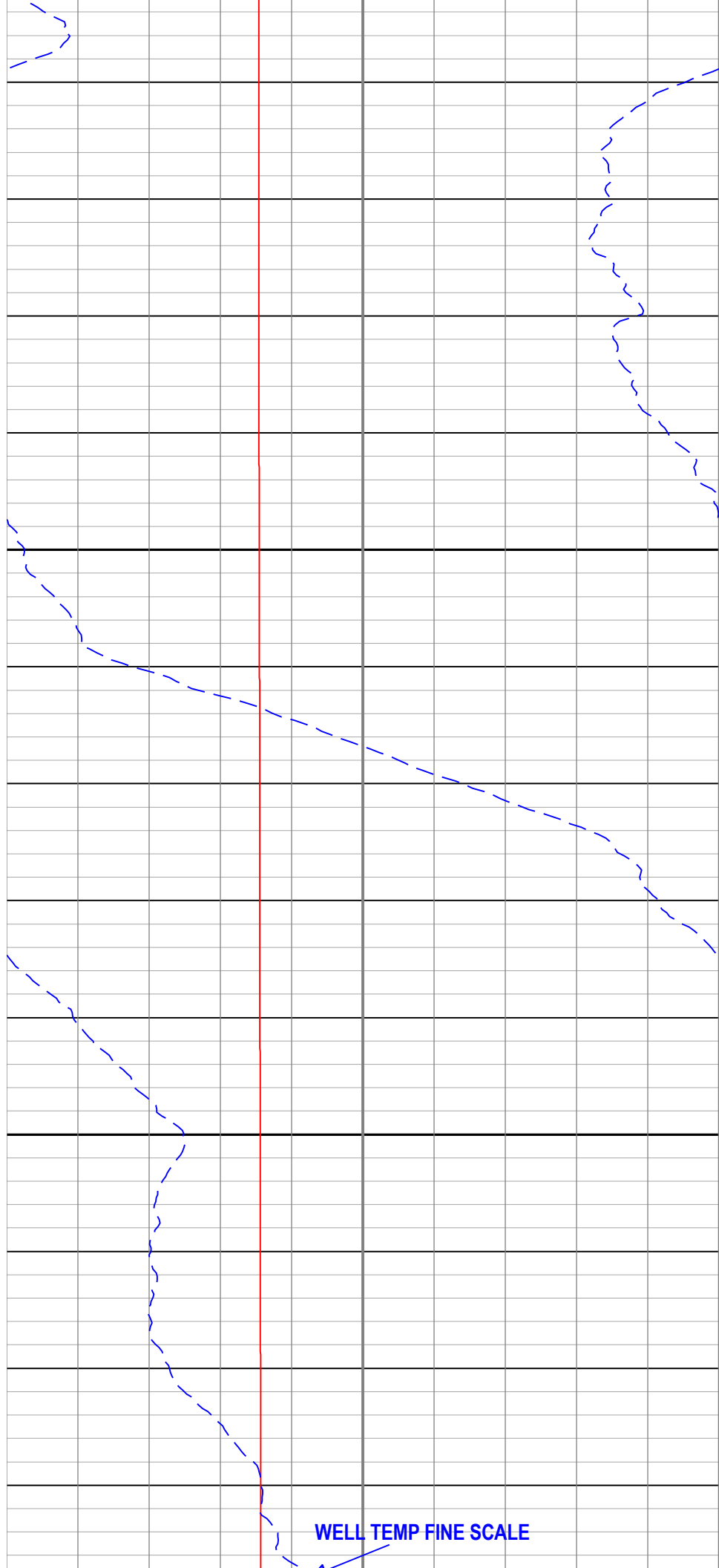
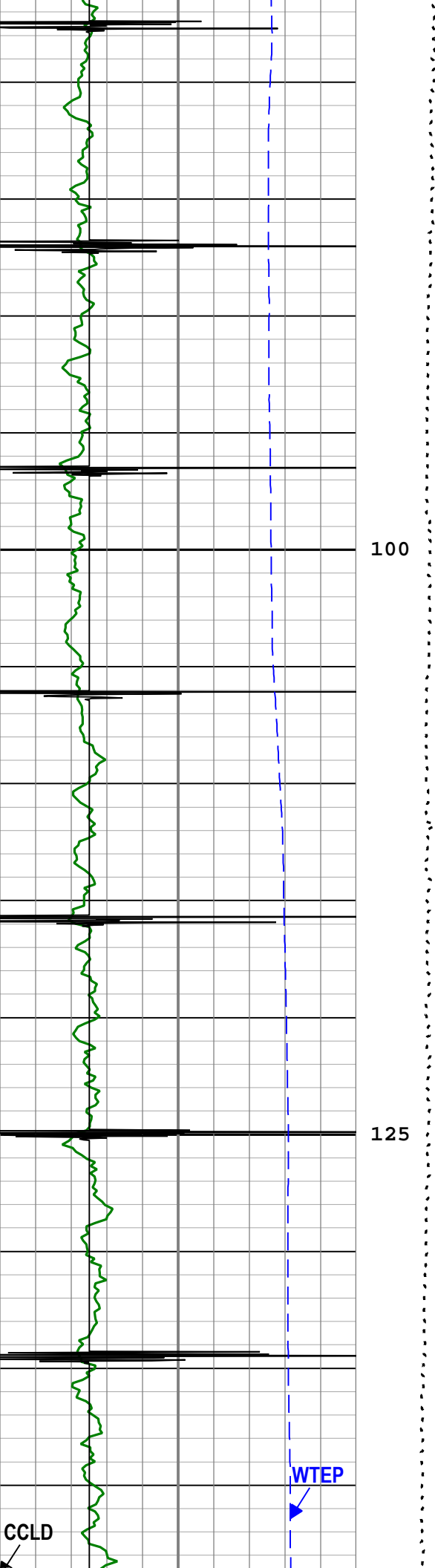
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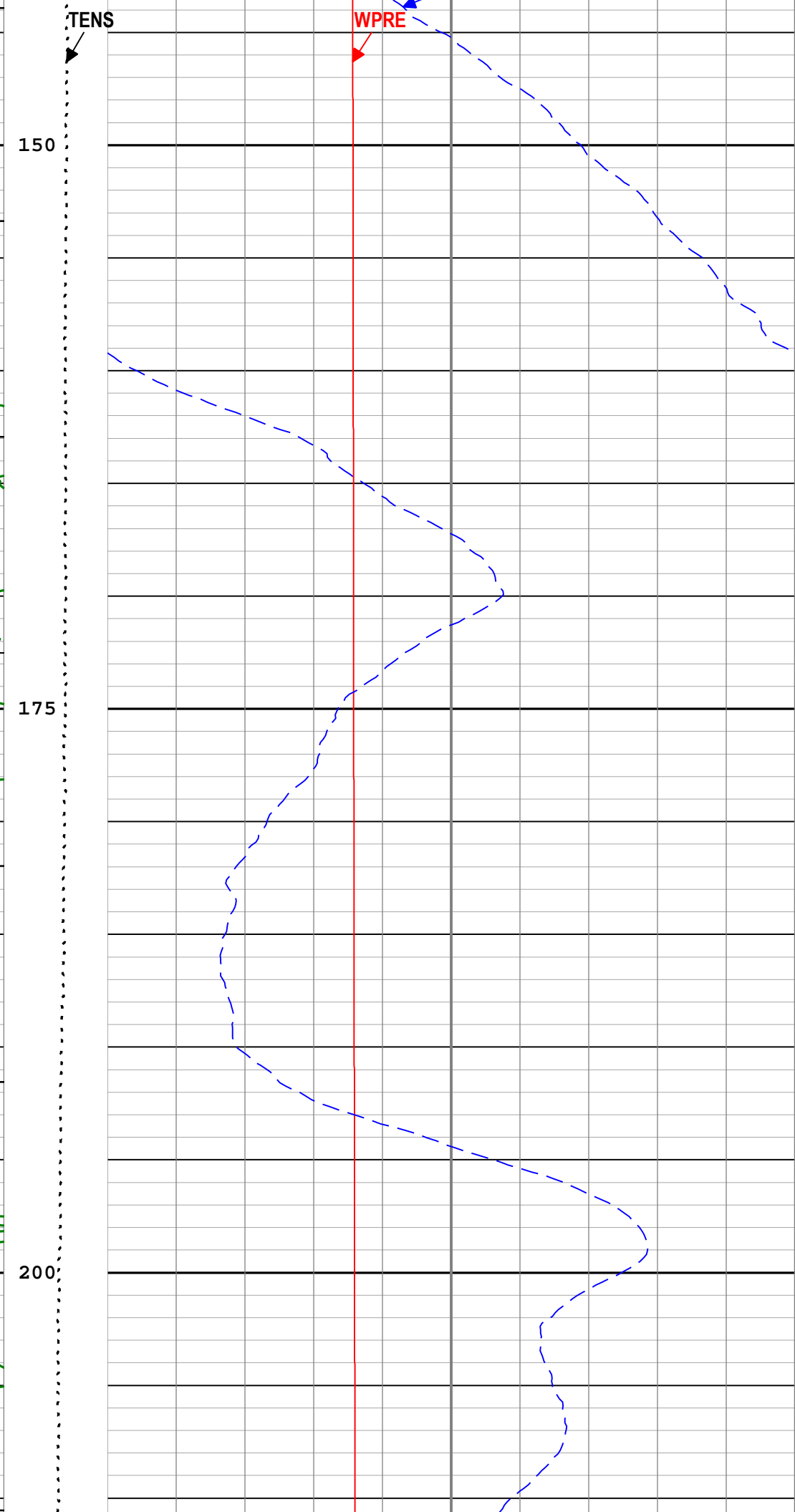
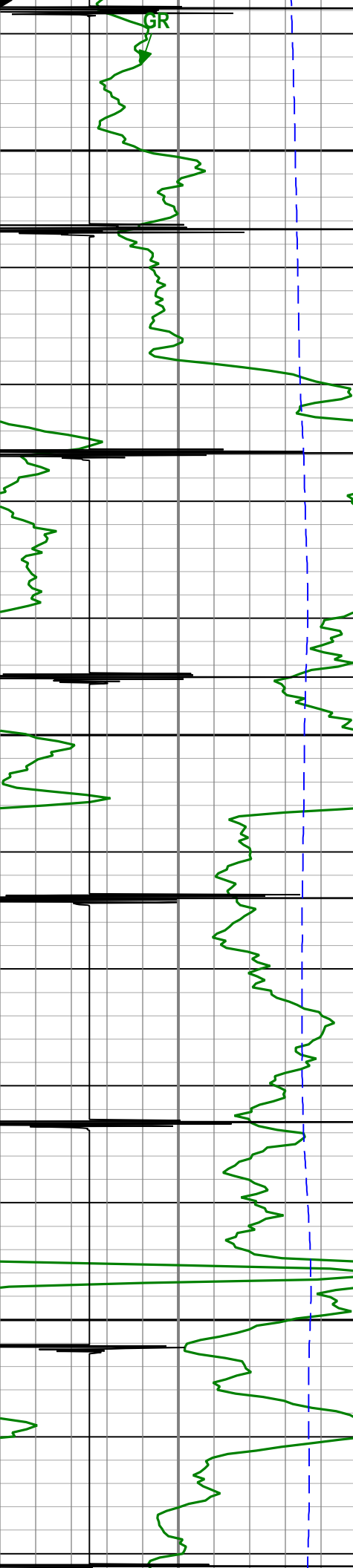
Description: PSP Depth Format: Log (TEMP DOWN PASS) Index Scale: 1:240 Index Unit: m Index Type: Measured Depth Creation Date: 24-Oct-2016 12:20:51

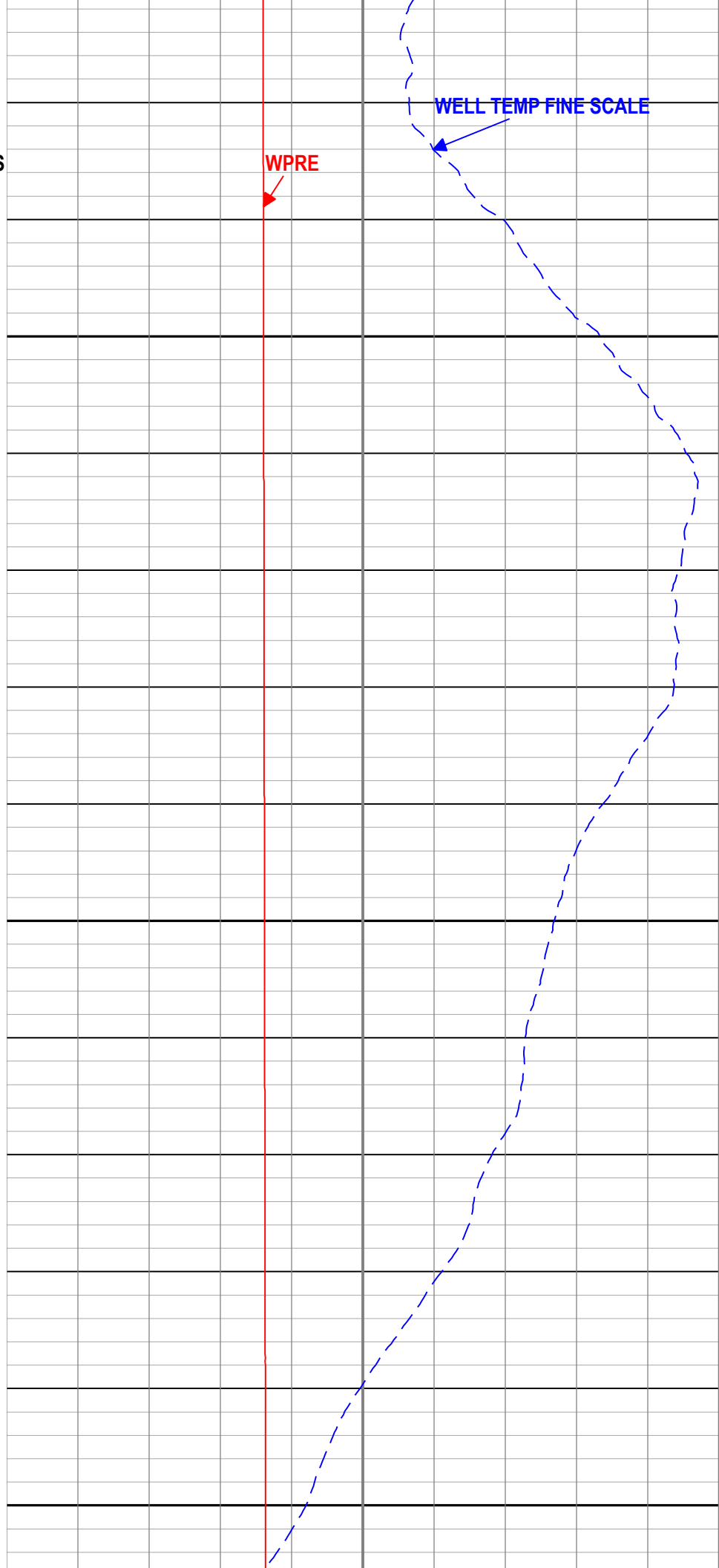
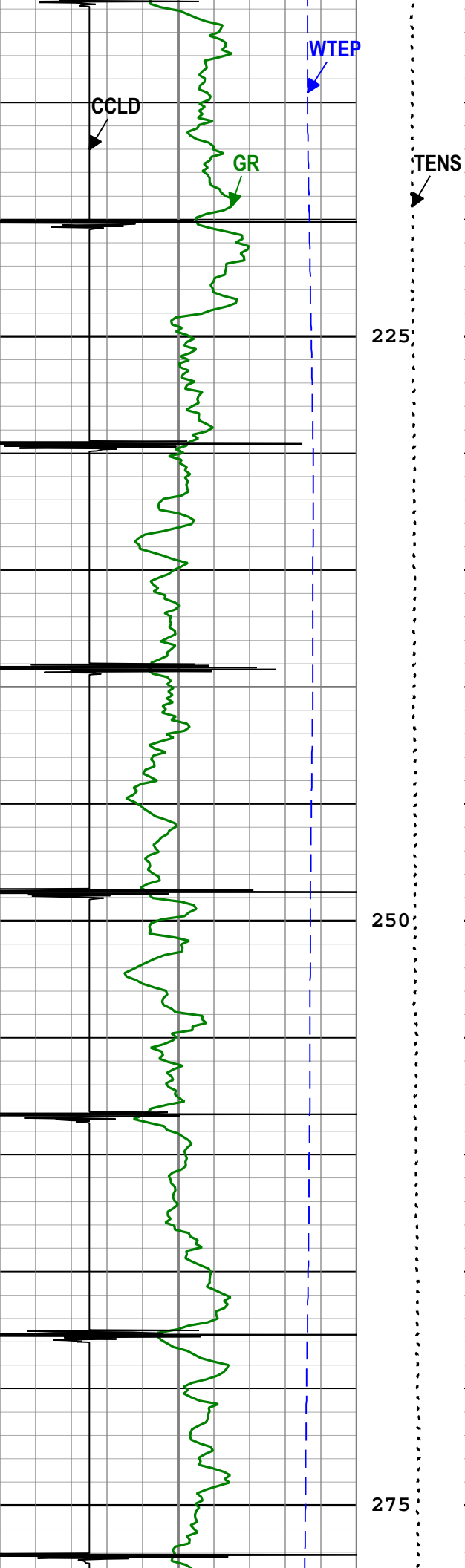
TIME_1900 - Time Marked every 60.00 (s)

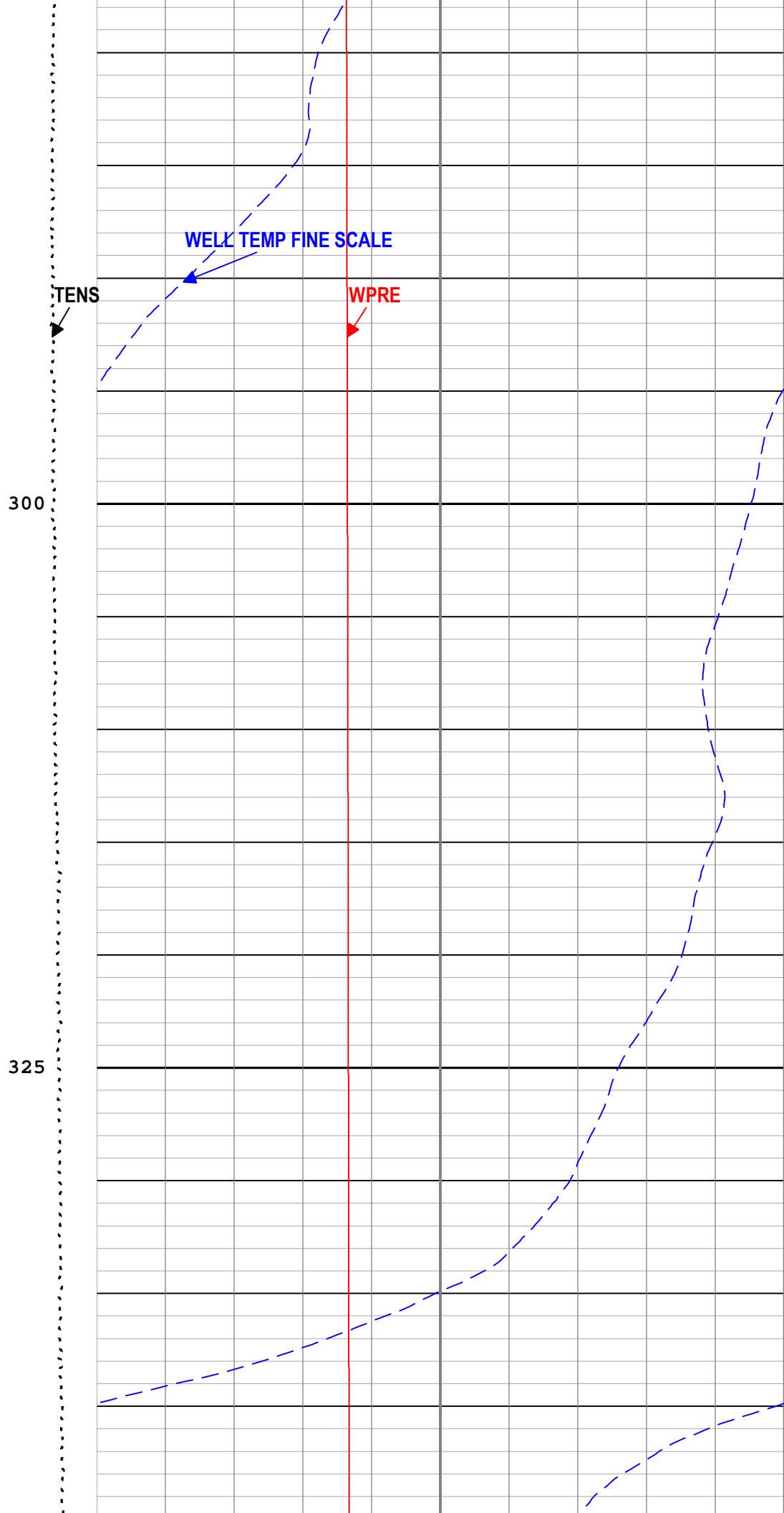
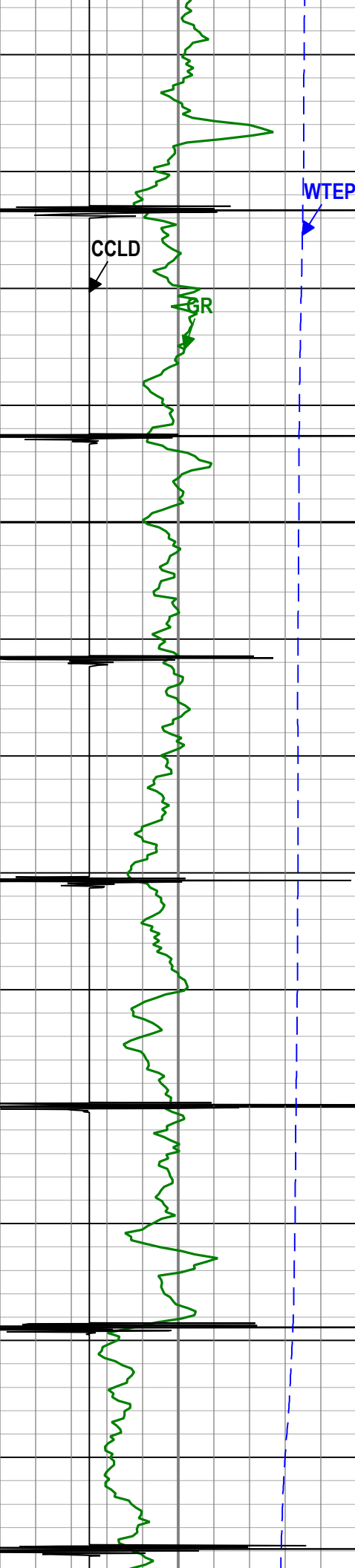


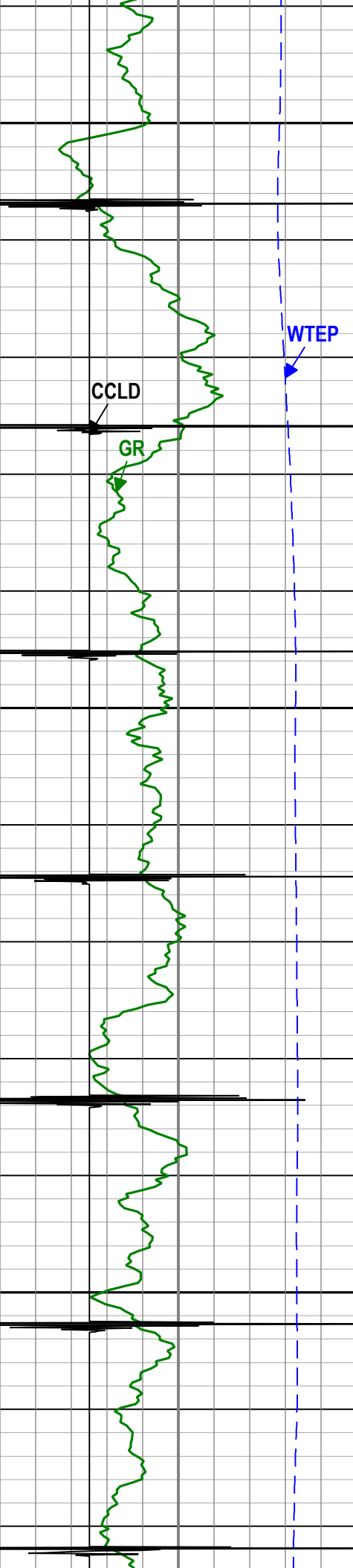












350

WTEP

CCLD

GR

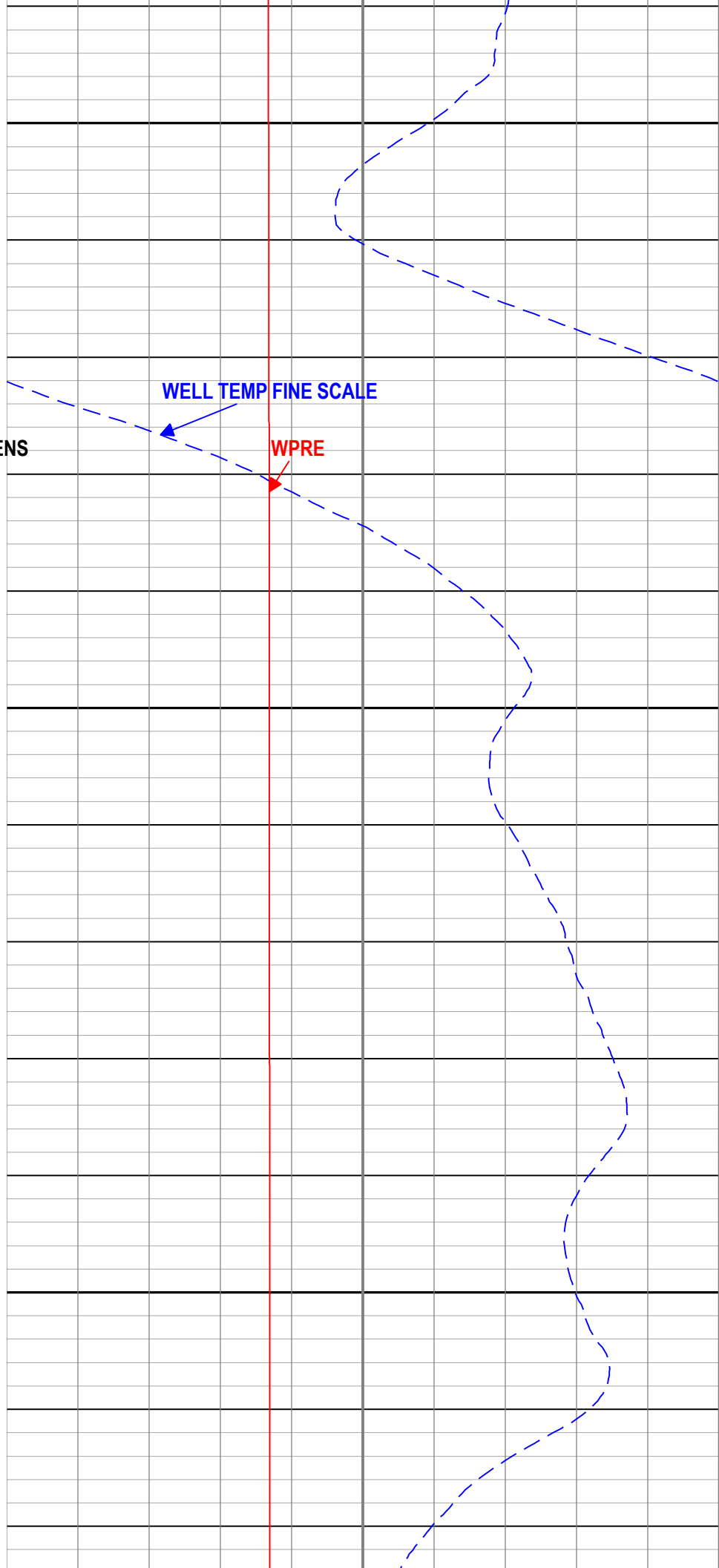
TENS

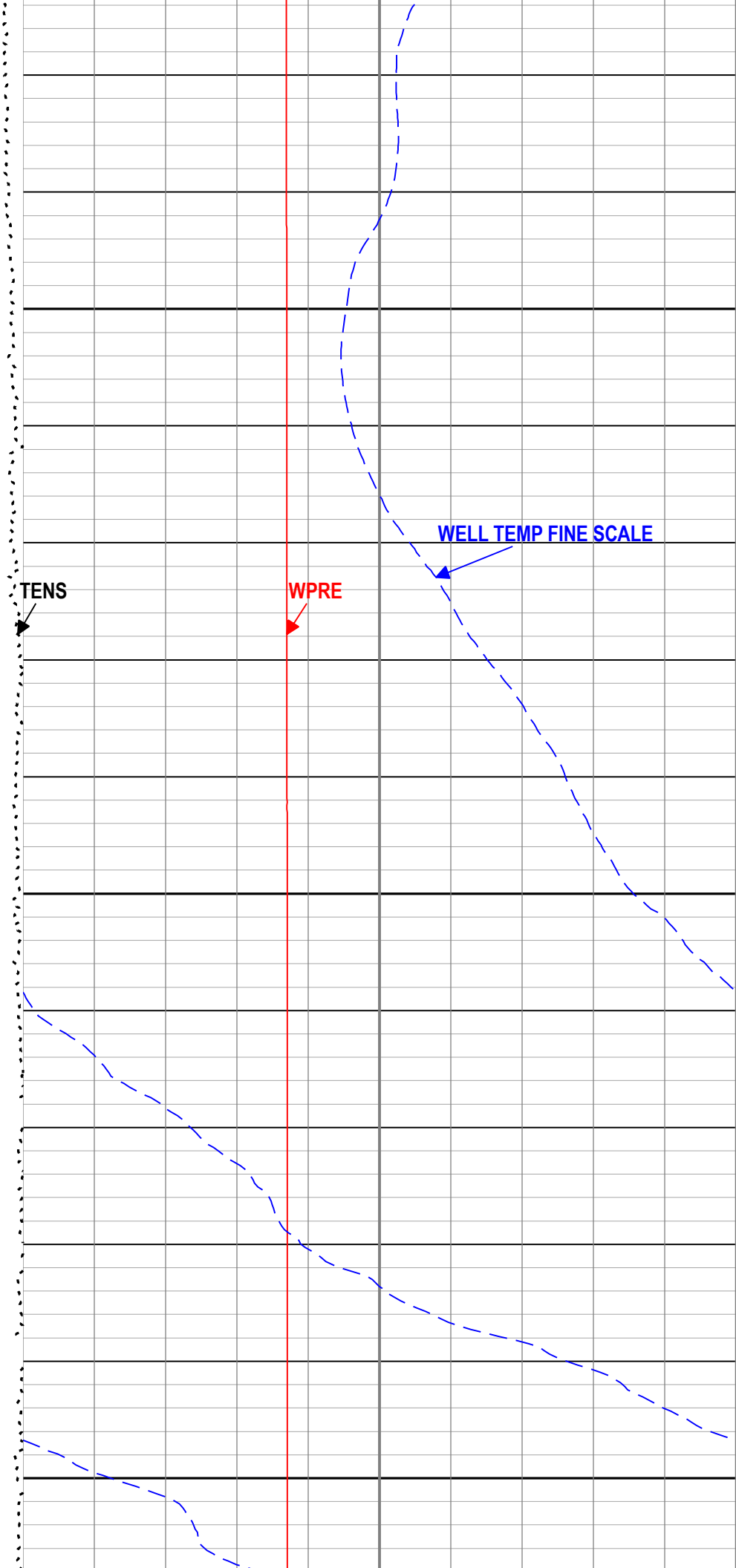
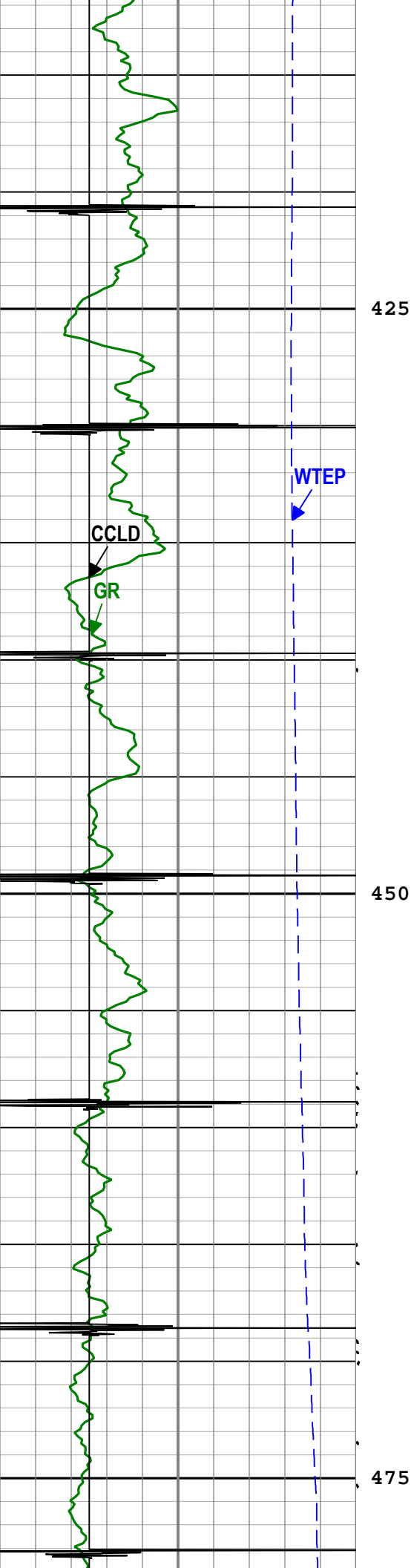
WELL TEMP FINE SCALE

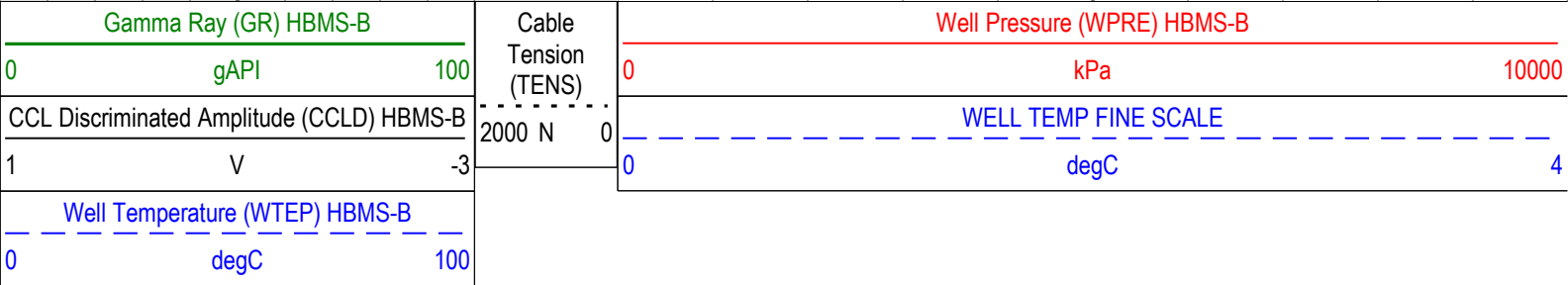
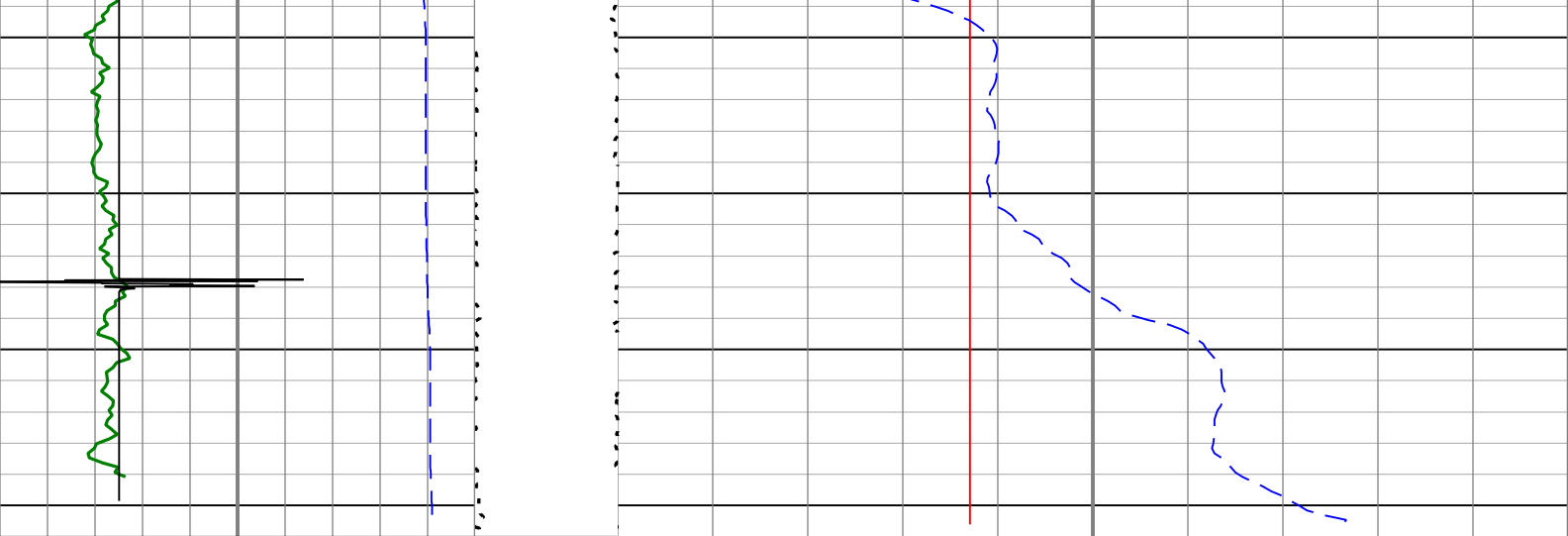
WPRE

375

400







TIME_1900 - Time Marked every 60.00 (s)

Description: PSP Depth Format: Log (TEMP DOWN PASS) Index Scale: 1:240 Index Unit: m Index Type: Measured Depth Creation Date: 24-Oct-2016 12:20:51

Channel Processing Parameters	
Tool Control Parameters	

1: Parameters				
Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	5486.4	m/h
PCCG	PSP Downhole CCL Gain	HBMS-B	24 dB	

Calibration Report			
HBMS-B (PSP HBMS-B Tool) Calibration - Run 1			
Primary Equipment :			
HBMC	HBMC-A	2814	
HTPS	HTPS-A	2814	
Calibration Parameter :			
JIG-BKGD			

PBMS Gamma Ray Check - HBMS Gamma Ray Accumulations							
Before:		After:					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
GR Zero Average - 0	gAPI	Before	----	----	----	----	
		After	----	----	----	----	
		After-Before	----	----	----	----	
GR Zero Standard Deviation - 0	gAPI	Before	----	----	----	----	
		After	----	----	----	----	
		After-Before	----	----	----	----	
GR Zero Accumulation - 0	gAPI	Before	----	----	----	----	
		After	----	----	----	----	
		After-Before	----	----	----	----	
GR Plus Average - 0	gAPI	Before	----	----	----	----	
		After	----	----	----	----	
		After-Before	----	----	----	----	
GR Plus Standard Deviation - 0	gAPI	Before	----	----	----	----	
		After	----	----	----	----	
		After-Before	----	----	----	----	

	gAPI	Before After After-Before	----- ----- -----	----- ----- -----	----- ----- -----	----- ----- -----	
GR Plus Max Deviation - 0	gAPI	Before After After-Before	----- ----- -----	----- ----- -----	----- ----- -----	----- ----- -----	
Jig-Background	gAPI	Before After After-Before	----- ----- -----	----- ----- -----	NOT DONE NOT DONE -----	----- ----- -----	

HBMS Gamma Ray Master Calibration						
Master (EEPROM): 18:00:00 08-Nov-2004						
PBMS_GR_MODEL GR Coefficients (Master)						
	Rt**0			Rt**1		
Rt**0	2000			2760		

HBMS Well Temp Master Calibration						
Master (EEPROM): 18:00:00 22-Jan-2009						
PBMS_RTD_THERM RTD Coefficients (Master)						
	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tt**0	222.6832	-437.029	192.7131	-30.10149	1.765409	0

HBMS CQG Master Calibration						
Master (EEPROM): 18:00:00 22-Jan-2009						
PBMS_P_GAUGE_PRES CQG Pressure Model Coefficients (Master)						
	Fb**0	Fb**1	Fb**2	Fb**3	Fb**4	Fb**5
Fc**0	7609.304	0.02135192	-1.584357E-07	-8.16788E-11	-1.499828E-15	-1.835433E-20
Fc**1	-1.076739	-1.311701E-05	-1.009642E-10	2.135793E-16	1.699682E-20	0
Fc**2	1.233041E-06	5.580883E-11	9.623179E-16	0	0	0
Fc**3	1.687505E-12	2.207179E-16	0	0	0	0
Fc**4	0	0	0	0	0	0
Fc**5	0	0	0	0	0	0
PBMS_P_GAUGE_TEMP CQG Temperature Model Coefficients (Master)						
	Fc**0	Fc**1	Fc**2	Fc**3	Fc**4	Fc**5
Fb**0	115.71	-0.0002994552	7.05261E-09	1.099301E-13	-9.285097E-18	-1.101411E-21
Fb**1	-0.005891024	1.74777E-08	2.345432E-13	-3.02633E-18	-7.047549E-22	0
Fb**2	-3.6164E-08	4.172693E-13	1.584701E-18	0	0	0
Fb**3	-2.721567E-13	9.516966E-18	0	0	0	0
Fb**4	0	0	0	0	0	0
Fb**5	0	0	0	0	0	0
PBMS_CQG_FCLK_FREQ CQG Clock Frequency Model Coefficients (Master)						
	(Fb'-Fc')**0	(Fb'-Fc')**1	(Fb'-Fc')**2	(Fb'-Fc')**3	(Fb'-Fc')**4	(Fb'-Fc')**5
(Fb'-Fc')**0	31087.12	0.00371583	5.971185E-07	-6.647913E-11	-5.011671E-16	5.965816E-21
PBMS_CQG_FCLK_TEMP CQG Clock Temperature Model Coefficients (Master)						
	(Fb'-Fc')**0	(Fb'-Fc')**1	(Fb'-Fc')**2	(Fb'-Fc')**3	(Fb'-Fc')**4	(Fb'-Fc')**5
(Fb'-Fc')**0	112.0599	-0.005594933	-3.930061E-08	4.961088E-13	8.652569E-17	-6.547065E-21

Company:	IMPERIAL OIL RESOURCES	Schlumberger
Well:	IMP 13 N07-23 COLD LK 1-13-66-3	
Field:	MARIE	
Province:	AB	
	MEASURED DEPTH	

PRODUCTION ANALYSIS
TEMPERATURE LOG