

Company: University Of Utah

Well: FORGE 78B-32

Field: None

County: Beaver Country:

Platform Express  
Array Induction  
with Linear Correlation

County: Beaver				
Field: None	Lat: 38.500171, Long: -112.88221			
Location:				
Well: FORGE 78B-32				
Company: University Of Utah				
Location:	Lat: 38.500171, Long: -112.88221		Elev.: K.B. 5565.50 ft G.L. 5536.00 ft D.F.	
	Permanent Datum:	Ground Level	Elev.: 5536.00 f	
	Log Measured From:	Kelly Bushing	29.50 ft above Perm.Datum	
	Drilling Measured From:	Kelly Bushing		
API Serial No.	Max.Hole Deviation	Longitude:	Latitude:	
NRC 42-00090-03	0 deg	112° 52' 55.956" W	38° 30' 0.616" N	

Logging Date 30-Jul-2021

Run Number 1B

Depth Driller 9500.00 ft

Schlumberger Depth 9532.00 ft

Bottom Log Interval 9532.00 ft

Top Log Interval 8530.00 ft

Casing Driller Size @ Depth 7 in @ 8508.00 ft

Casing Schlumberger 8530 ft

Bit Size 5.75 in

Type Fluid In Hole Water

Density 8.3 lbm/gal

Fluid Loss PH 24 s

MUD PH 11

Source of Sample Flowline

RM @ Meas Temp 5.2 ohm.m @ 62 degF

RMF @ Meas Temp 4.42 ohm.m @ 62 degF

RMC @ Meas Temp 6.21 ohm.m @ 62 degF

Source RMF RMC Calculated

RM @ BHT RMF @ BHT 0.84 @ 419 0.71 @ 419

Max Recorded Temperatures 419 degF

Circulation Stopped 28-Jul-2021 20:00:00

Logger on Bottom 30-Jul-2021 02:17:00

Unit Number 9108

Recorded By CSTILES

Witnessed By Virgil Welch

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

- Header
- Disclaimer
- Contents
- Well Sketch
- Borehole Size/Casing/Tubing Record
- Remarks and Equipment Summary
- Depth Summary
- 1B 2" Induction
  - Integration Summary
  - Software Version
  - Composite Summary
  - Log ( 2in Induction )
  - Parameter Listing
- 1B 5" Induction
  - Integration Summary
  - Software Version
  - Composite Summary

9.4 Log ( 5in Induction )

9.5 Parameter Listing

10. 1B 5" Induction

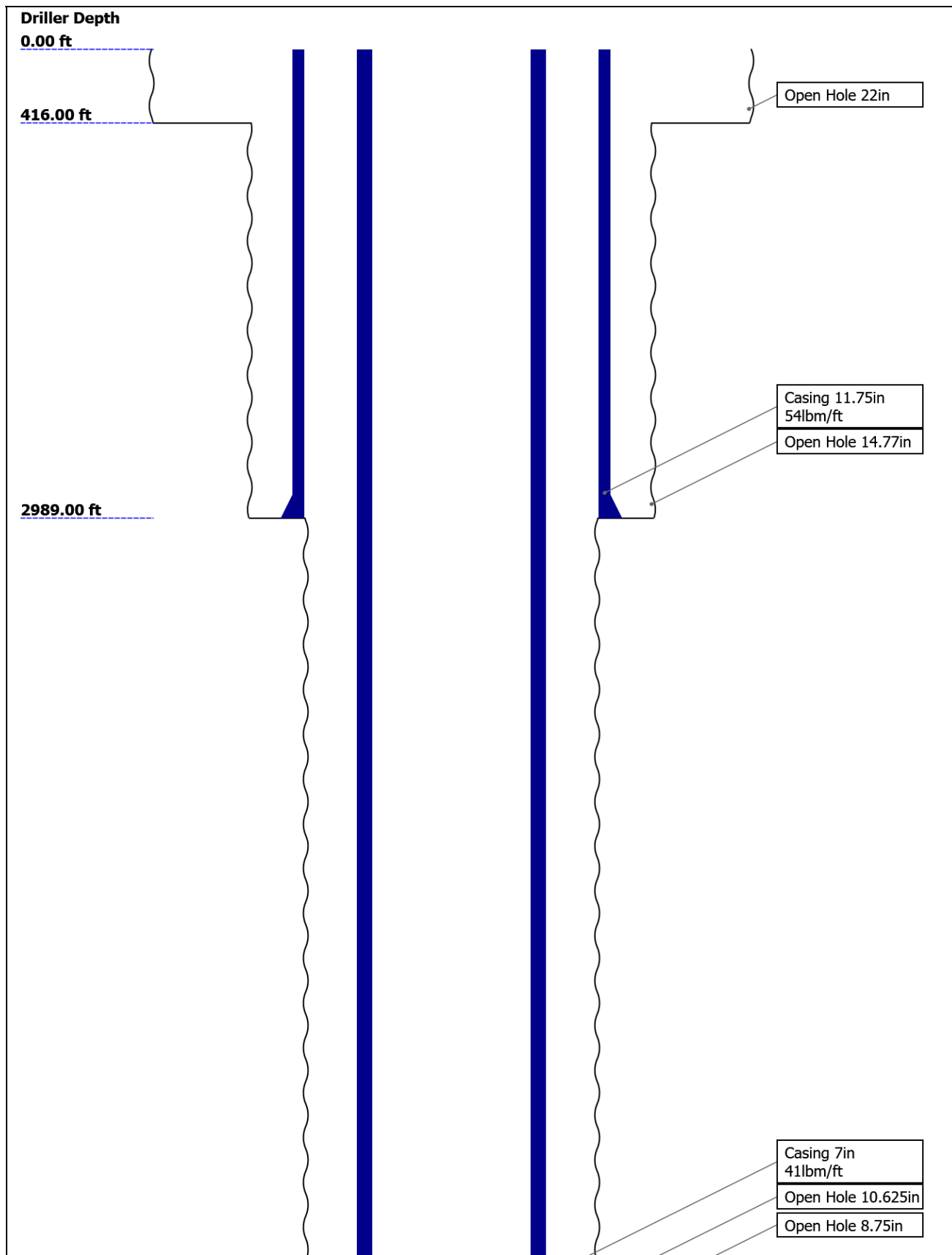
10.1 Composite Summary

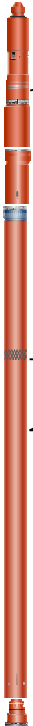
10.2 5in Induction RA

11. Calibration Report

12. Tail

## Well Sketch



1B: Toolstring				1B: Remarks		
<b>Equip name</b>	<b>Length</b>		<b>MP name</b>	<b>Offset</b>	Tool was run as per tool sketch	
LEH-MT	92.55				All logging intervals as per client request	
LEH-MT				Mud Tem perature	90.61	
AH-234	89.4					
QTGC-B	88.21					
UDFH-PL						
STGC-GR						
STGC-ACC						
Z:7						
STGC-B:81 21				GR	84.87	
			STGC Accelerometer	0.00 0.00		
QILE-A	77.54					

QCNT 69.9  
UDFH-PAT  
NPV-S  
QCNC-A:2  
NSR-L:4545

CNTM 63.94

CNL Porosity 60.54

AH-238[2] 57.98  
]

AH-238[1] 55.98  
]

QSLT-B:80 53.98  
22  
UDFH-PA  
QSTC-BB:8  
02  
QSAS-BB:8  
022  
UDFH-PP  
QSLC-BA:8  
002

CBL\_UP 46.32

VDL\_UP 45.32

RX\_ARRAY 43.82

VDL\_LOW 42.32

DT\_DDB 41.82

HC  
CBL\_LOW 41.32

QAIT-A:430.97  
UDFH-PLB  
SAIC-A:94  
QAIS-A:43  
AQRM



Power Supply 9.9  
Induction 9.9  
Temperature 9.9

SP 0.08  
Mid-Res 0.00  
Activity 0.00

Lengths are in ft  
Maximum Outer Diameter = 1.900 in  
Line: Sensor Location, Value: Gate Offset  
All measurements are relative to TOOL\_ZERO

Depth Summary

	1B		
--	----	--	--

Depth Measuring Device

Type	IDW-JA		
Serial Number	6160		
Calibration Date	30-Sep-2020		
Calibrator Serial Number	57		
Calibration Cable Type	7-46 AXS		
Wheel Correction 1	-9		
Wheel Correction 2	-7		

Tension Device

Type	CMTD-B/A		
Serial Number	946		
Calibration Date	02-Jun-2020		
Calibrator Serial Number	78165A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	8		
Calibration Peak Error	12		

## Logging Cable

Type	7-46A-XS		
Serial Number	1219083		
Length	18000.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		

### 1B: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		

## 1B

## 2" Induction

## Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	0	ft3

## Software Version

Acquisition System	Version
Maxwell 2021.1	11.1.211946.3100
Application Patch	Wireline_Hotfix-Mandatory-2021.1_11.1.213678
	Wireline_NPD-ThruBit-2021.1_11.1.213816

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1B	Log[4]:Up	Up	7538.68 ft	9553.06 ft	30-Jul-2021 1:59:13 AM	30-Jul-2021 2:41:25 AM	ON	22.92 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:University Of Utah

Well:FORGE 78B-32

1B: Log[4]:Up:S035

Description: AIT Basic Log Two    Format: Log ( 2in Induction )    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 30-Jul-2021 07:06:59

Channel	Source	Sampling
AT10	QA1T-A:QAIS-A:QAIS-A	3in
AT90	QA1T-A:QAIS-A:QAIS-A	3in
ATCO90	QA1T-A:QAIS-A:QAIS-A	3in
GR	QTGC-B:QTGC-B:STGC-B	6in
ICV	Borehole	6in PT

Borehole  
SP QAIT-A:QAIS-A:QAIS-A 6in  
TENS WLWorkflow 6in  
TIME\_1900 WLWorkflow 0.1in

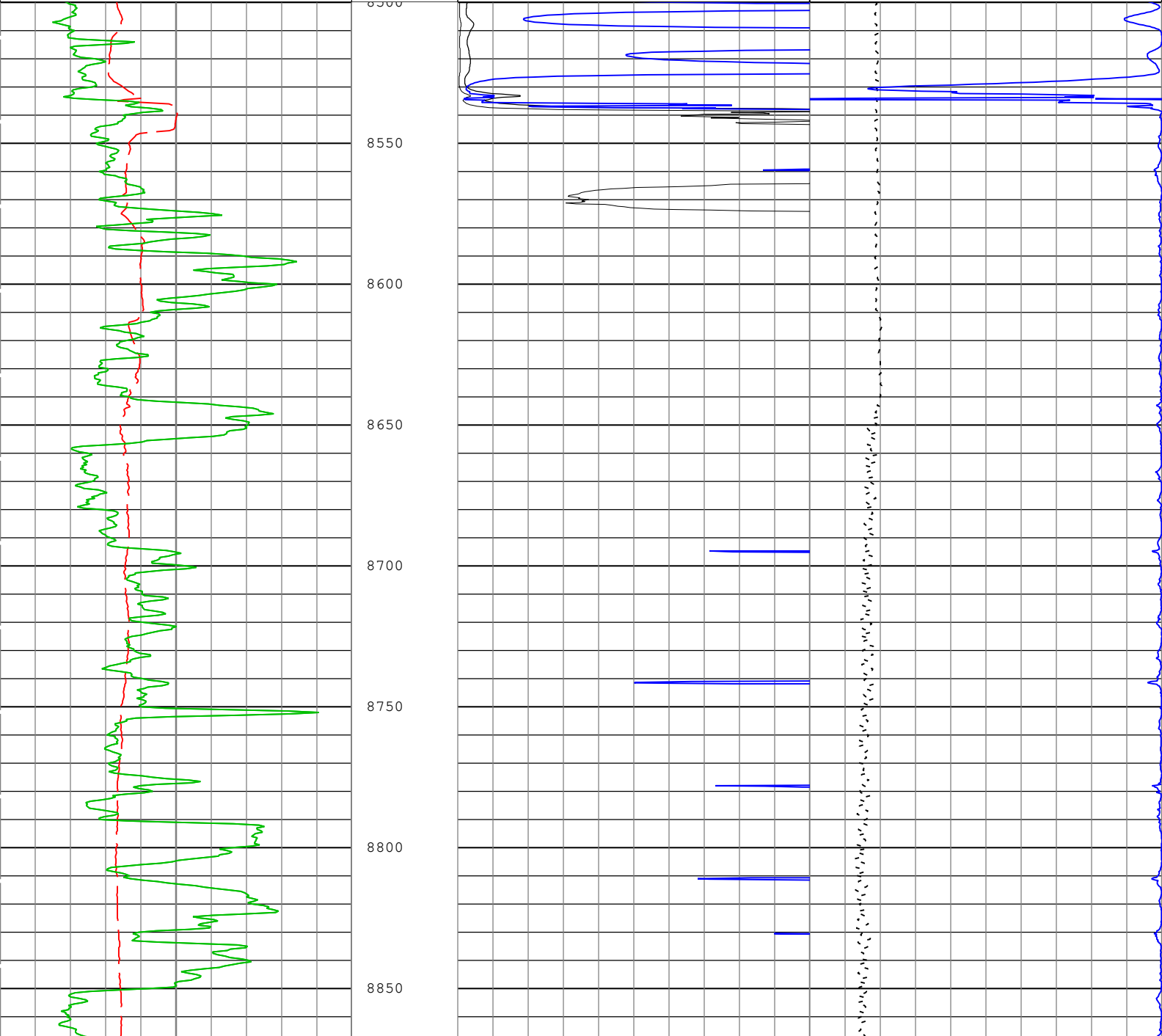
ICV - Integrated Cement Volume every 10.00 (ft3)  
ICV - Integrated Cement Volume every 100.00 (ft3)

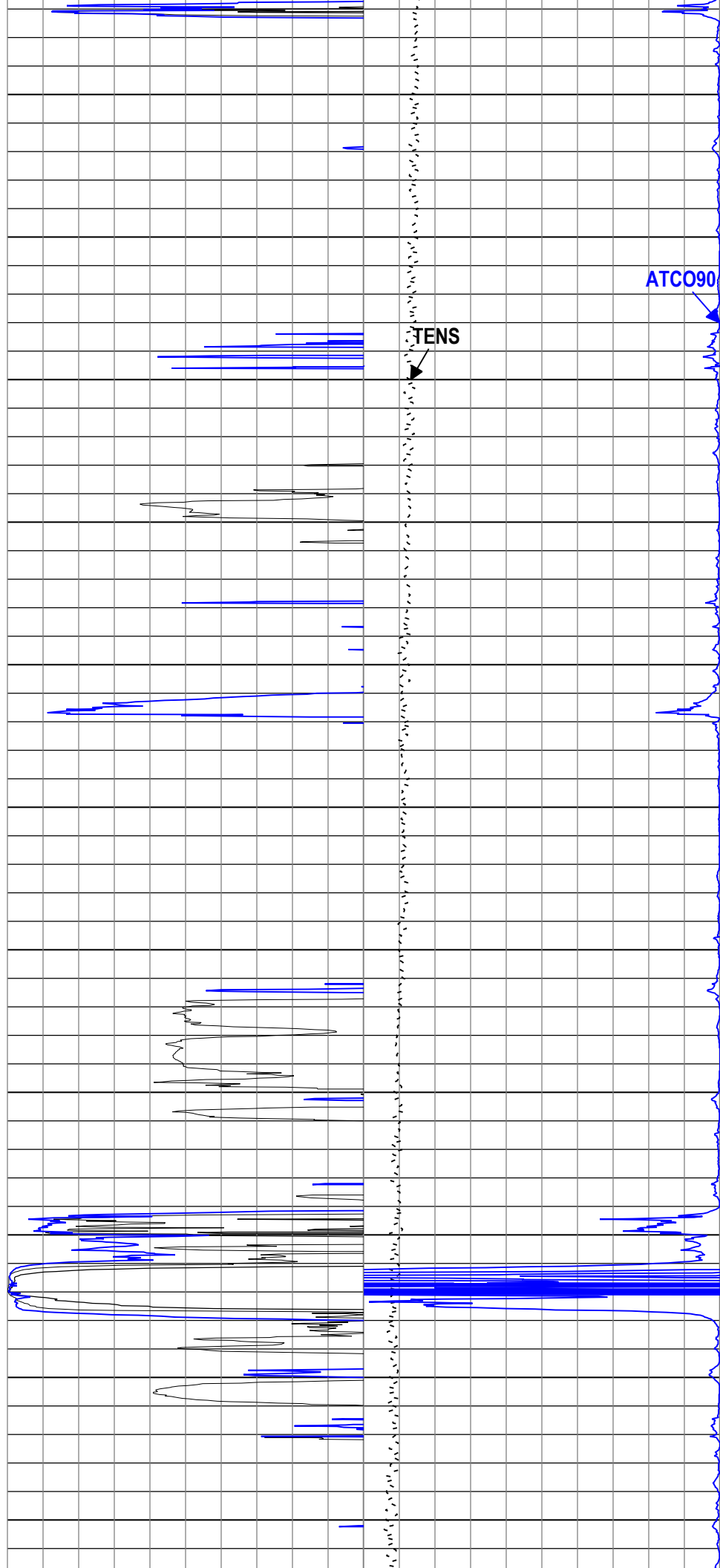
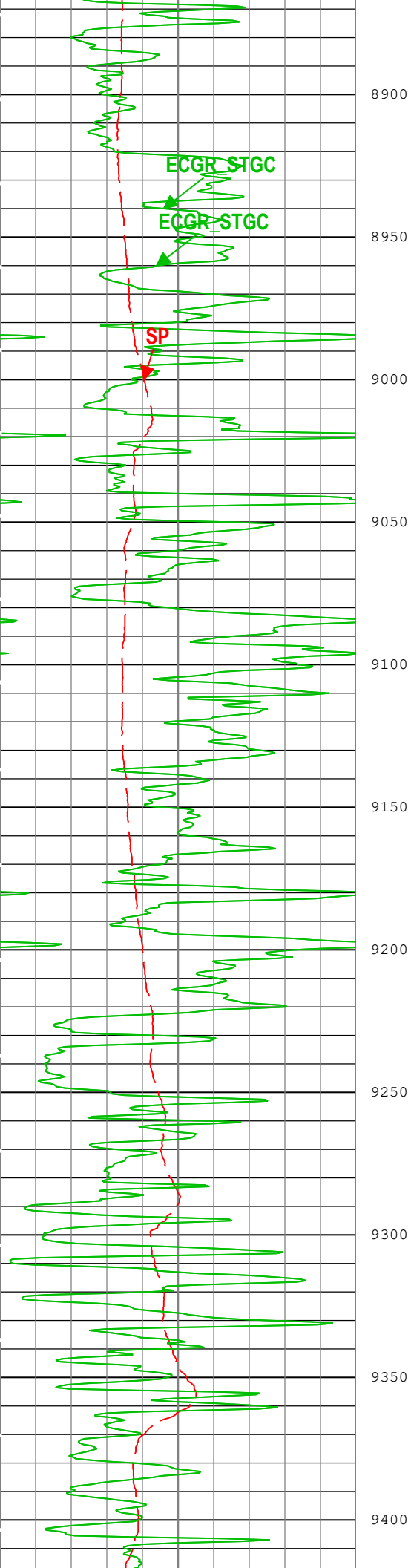
TIME\_1900 - Time Marked every 60.00 (s)

Spontaneous Potential (SP) QAIT-A  
-100 mV 200  
Gamma Ray (ECGR\_STGC) QTGC-B  
0 gAPI 200

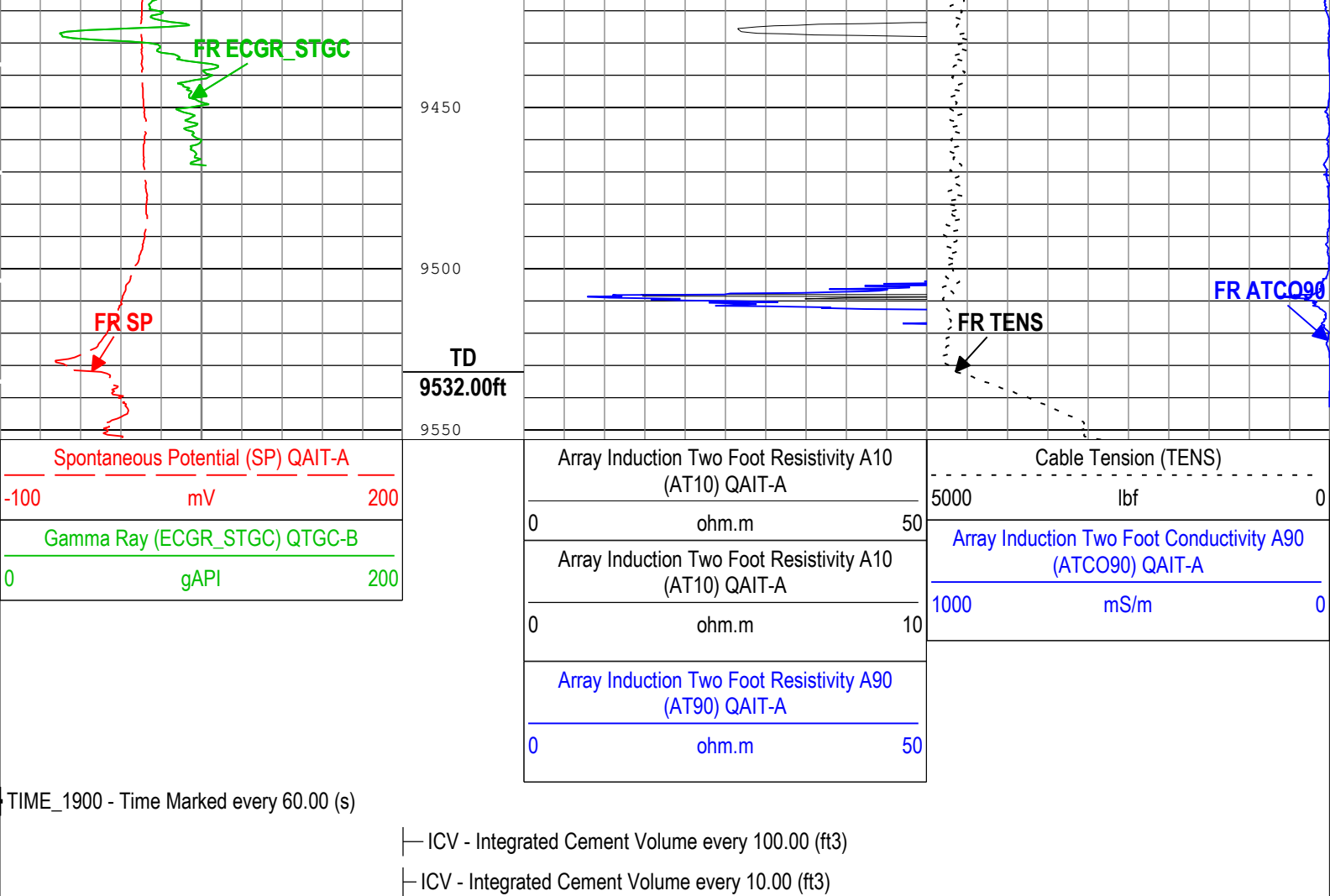
Array Induction Two Foot Resistivity A10  
(AT10) QAIT-A  
0 ohm.m 50  
Array Induction Two Foot Resistivity A10  
(AT10) QAIT-A  
0 ohm.m 10  
Array Induction Two Foot Resistivity A90  
(AT90) QAIT-A  
0 ohm.m 50

Cable Tension (TENS)  
5000 lbf 0  
Array Induction Two Foot Conductivity A90  
(ATCO90) QAIT-A  
1000 mS/m 0









Description: AIT Basic Log Two    Format: Log ( 2in Induction )    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 30-Jul-2021 07:06:59

## Channel Processing Parameters

### 1B: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	QAIT-A	Compute Electrical Diameter	
ASTA	Array Induction Tool Standoff	QAIT-A	0.25	in
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	8530	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	7	in
DFD	Drilling Fluid Density	Borehole	8.3	lbm/gal
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	BS(RT)	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SOCN	Standoff Distance of the Gamma Ray Tool	QTGC-B	0	in
SPDR	SP Drift Per Foot	QAIT-A	0	mV/ft
TPOS_STGC	Tool Position: Centered or Eccentered	QTGC-B	Eccentered	

### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	10.625	8500	8514
BS	8.75	8514	8530
BS	5.75	8530	8532

BS	5.75	8530	9532
----	------	------	------

All depth are actual.

## Tool Control Parameters

## 1B: Parameters

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

1B

## 5" Induction

## Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
ICV	Integrated Cement Volume	GCSE_UP_PASS, FCD	0	ft3
IHV	Integrated Hole Volume	GCSE_UP_PASS	184.59	ft3

## Software Version

Acquisition System	Version
Maxwell 2021.1	11.1.211946.3100
Application Patch	Wireline_Hotfix-Mandatory-2021.1_11.1.213678
	Wireline_NPD-ThruBit-2021.1_11.1.213816

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1B	Log[4]:Up	Up	7538.68 ft	9553.06 ft	30-Jul-2021 1:59:13 AM	30-Jul-2021 2:41:25 AM	ON	22.92 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:University Of Utah      Well:FORGE 78B-32

1B: Log[4]:Up:S035

Description: AIT Basic Log Two    Format: Log ( 5in Induction )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 30-Jul-2021 07:07:01

Channel	Source	Sampling
AT10	QAIT-A:QAIS-A:QAIS-A	3in
AT20	QAIT-A:QAIS-A:QAIS-A	3in
AT30	QAIT-A:QAIS-A:QAIS-A	3in
AT60	QAIT-A:QAIS-A:QAIS-A	3in
AT90	QAIT-A:QAIS-A:QAIS-A	3in
GR	QTGC-B:QTGC-B:STGC-B	6in
ICV	Borehole	6in - RT
IHV	Borehole	6in - RT
SP	QAIT-A:QAIS-A:QAIS-A	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME\_1900 - Time Marked every 60.00 (s)

—IHV - Integrated Hole Volume every 10.00 (ft3)

—IHV - Integrated Hole Volume every 100.00 (ft3)

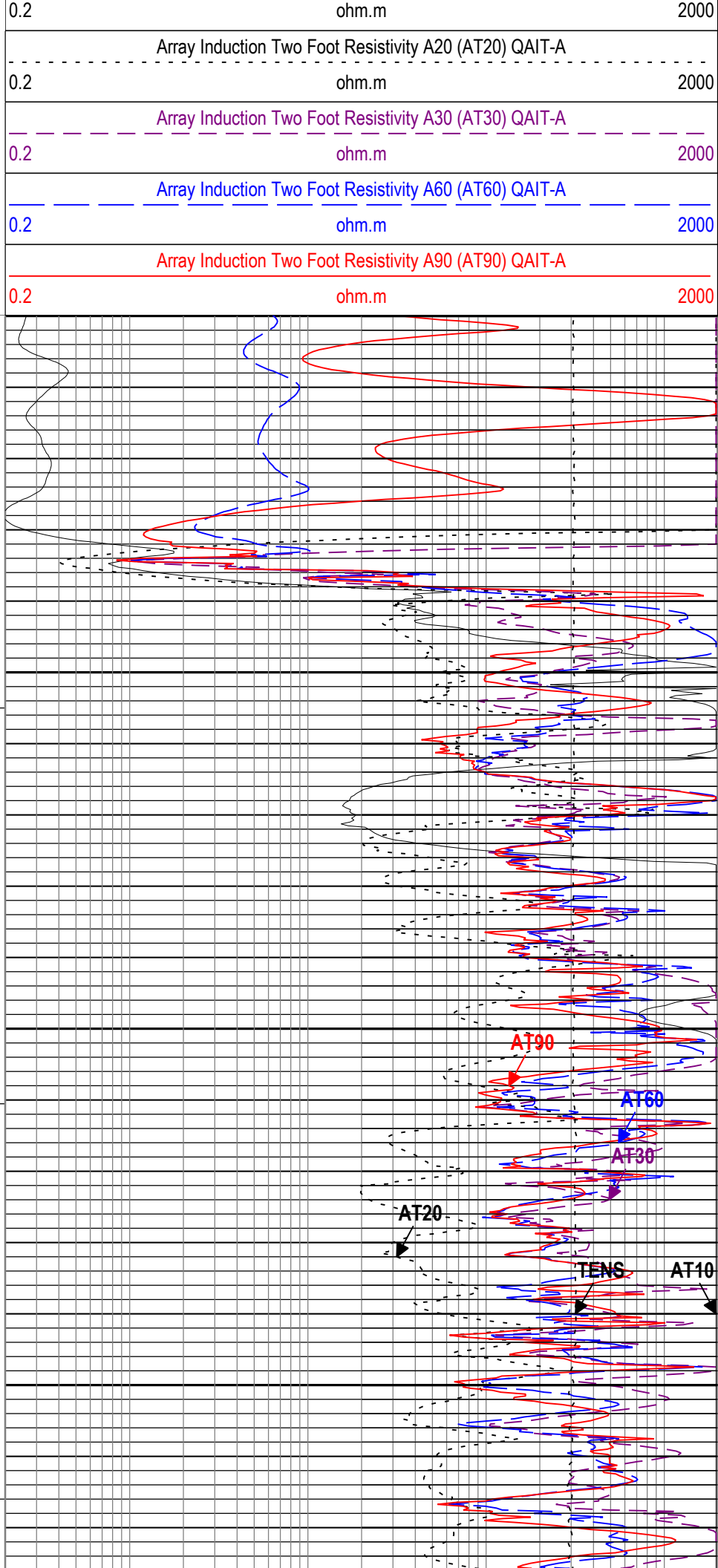
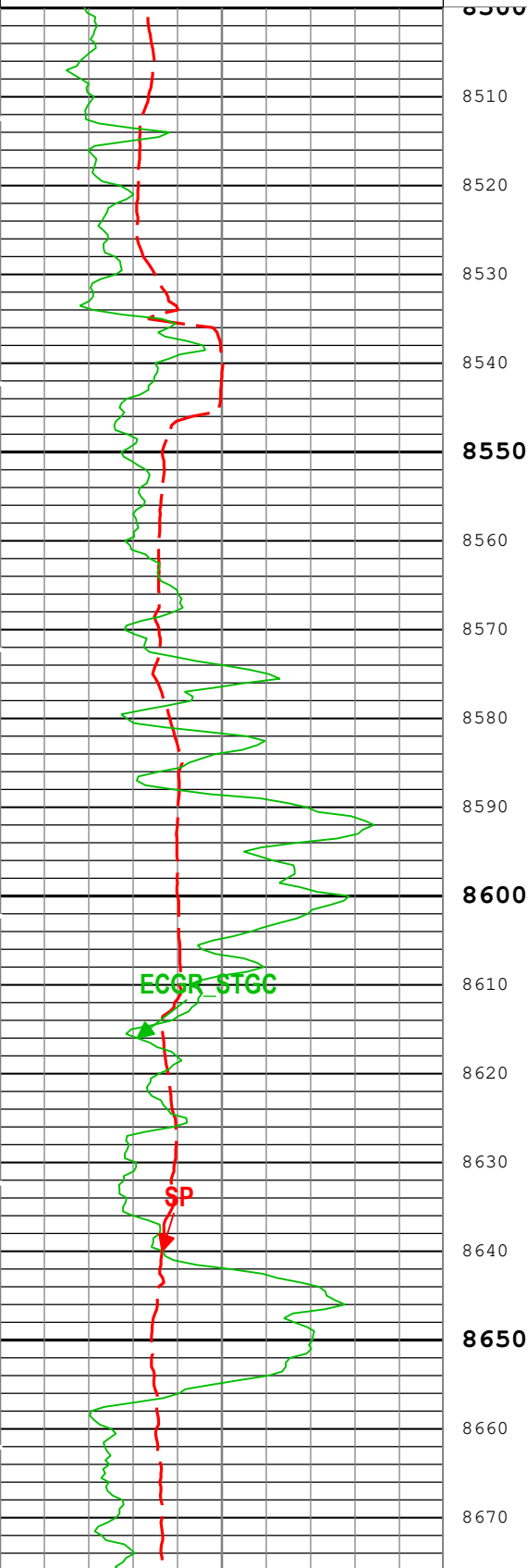
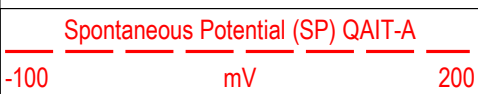
— ICV - Integrated Cement Volume every 10.00 (ft3)

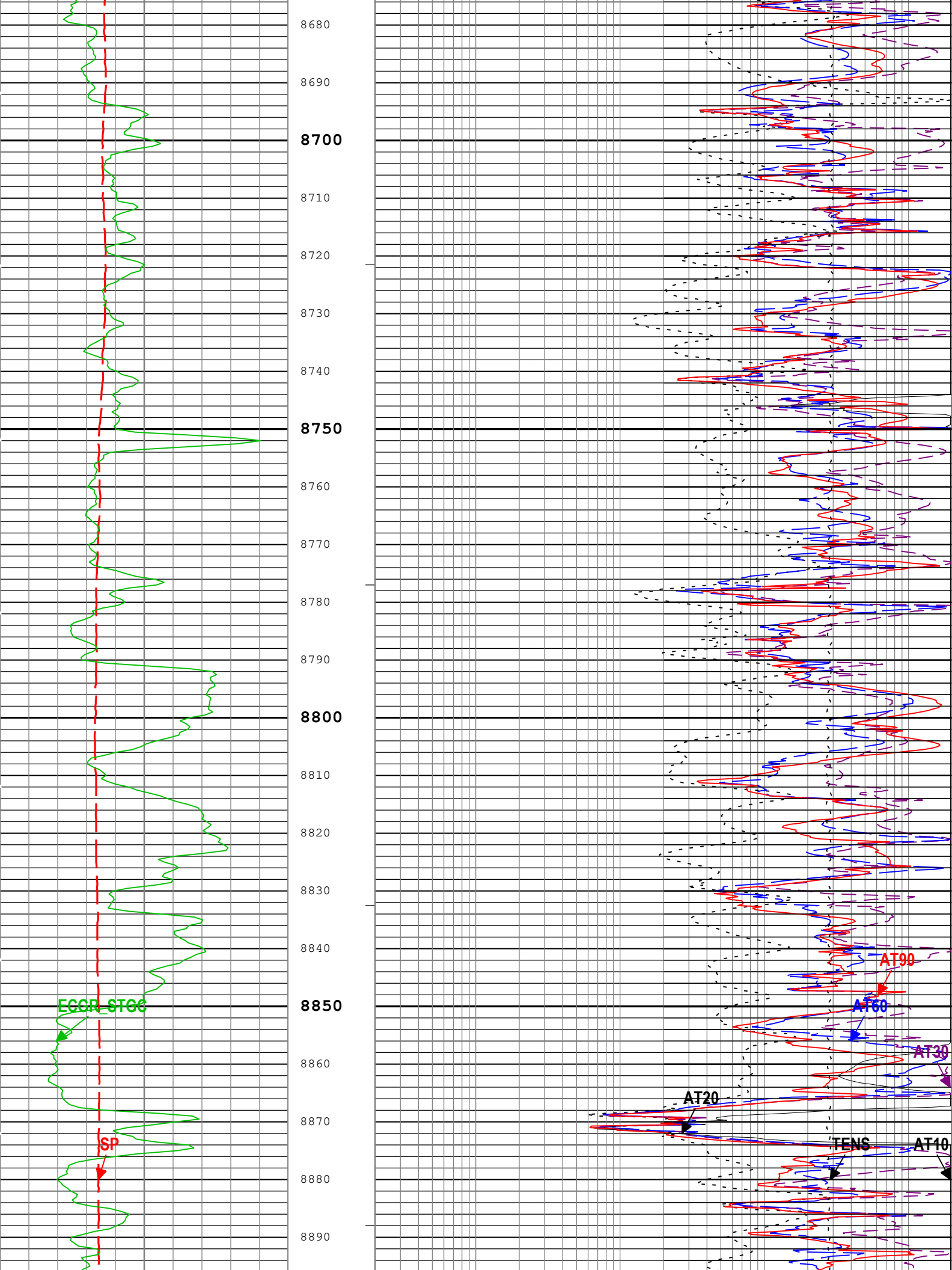
— ICV - Integrated Cement Volume every 100.00 (ft3)

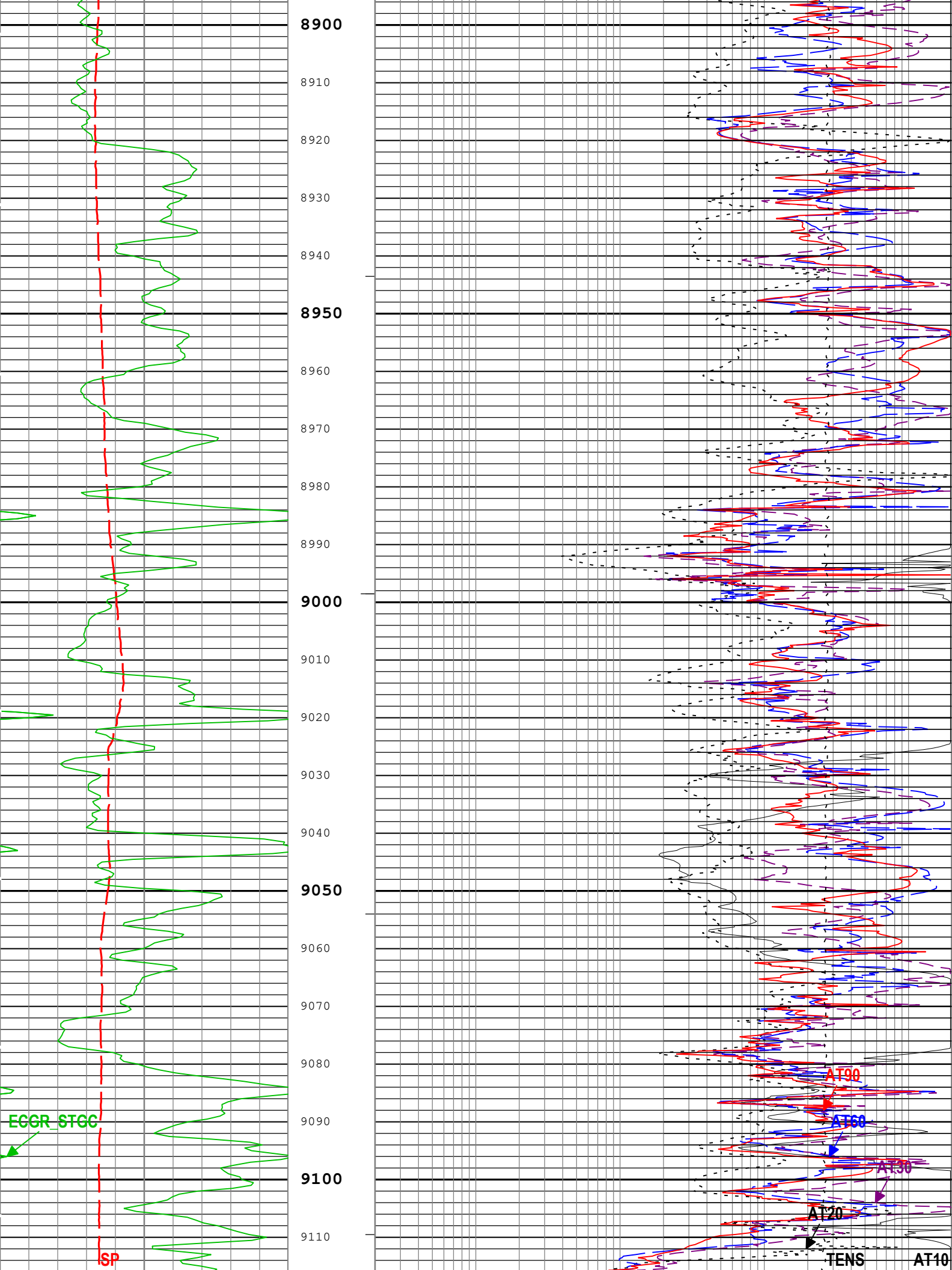
Cable Tension (TENS)

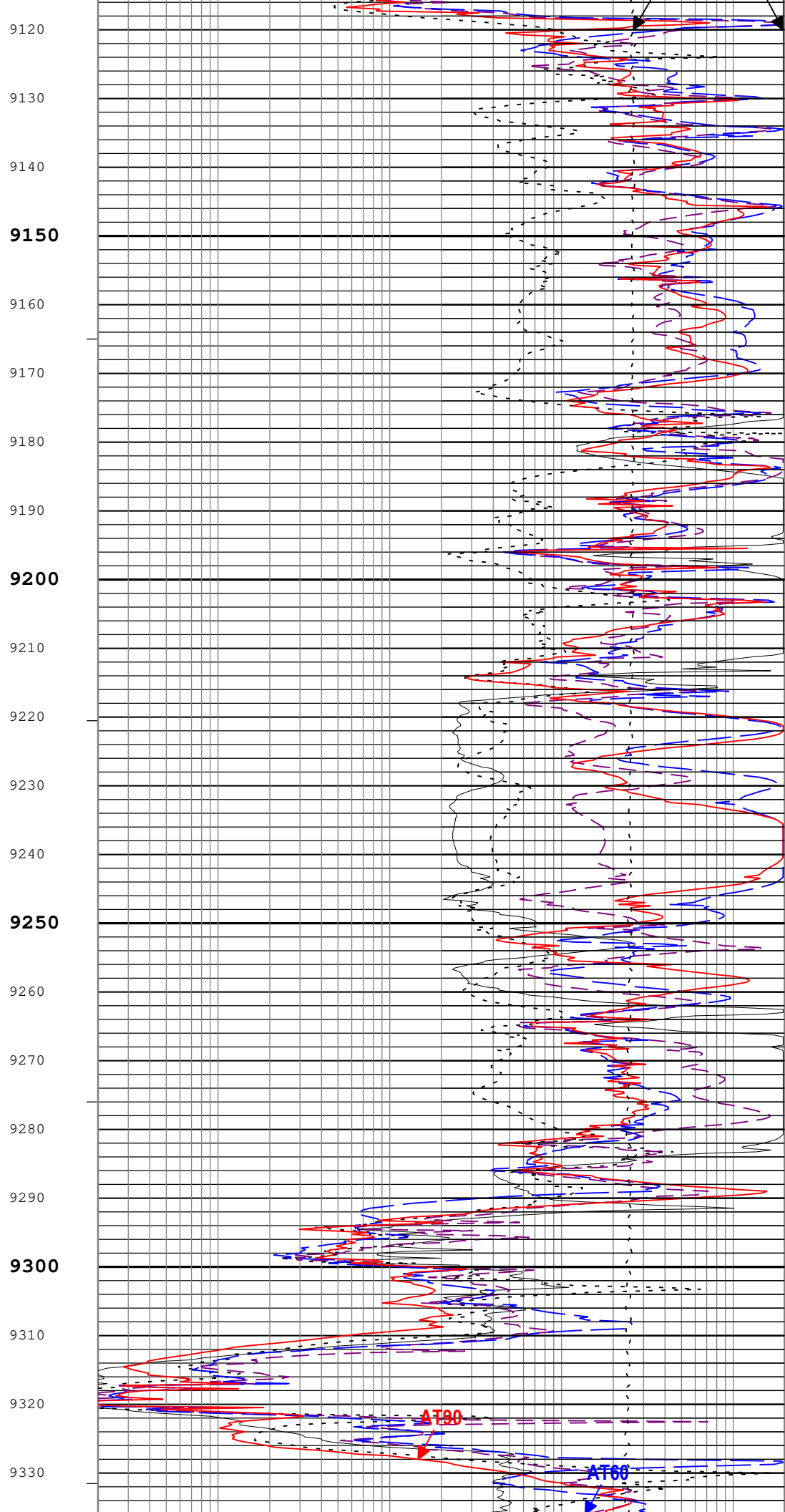
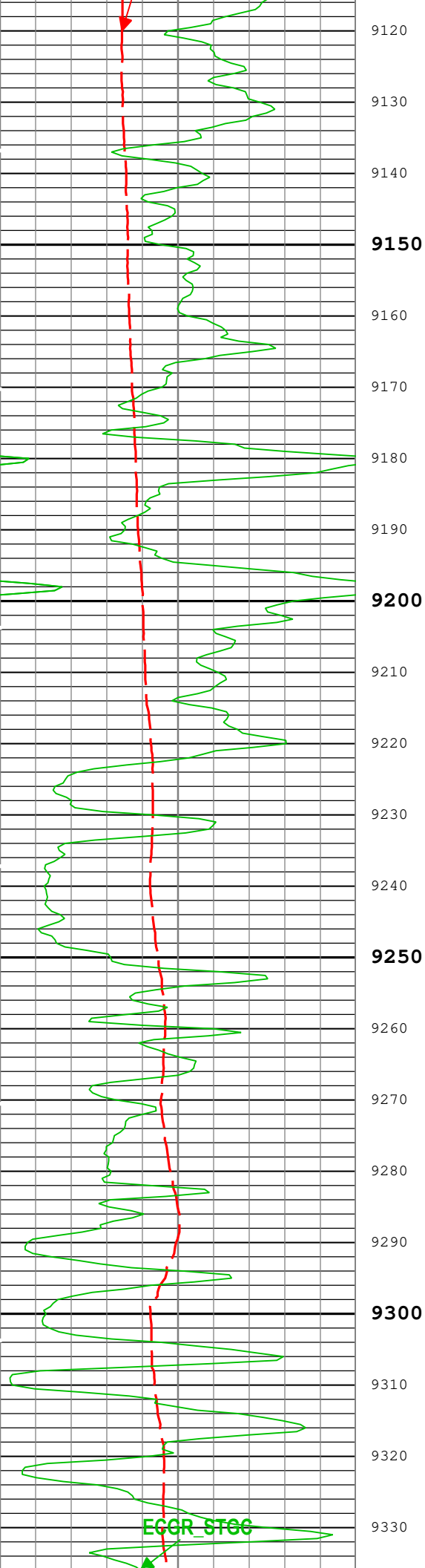
10000 lbf 0

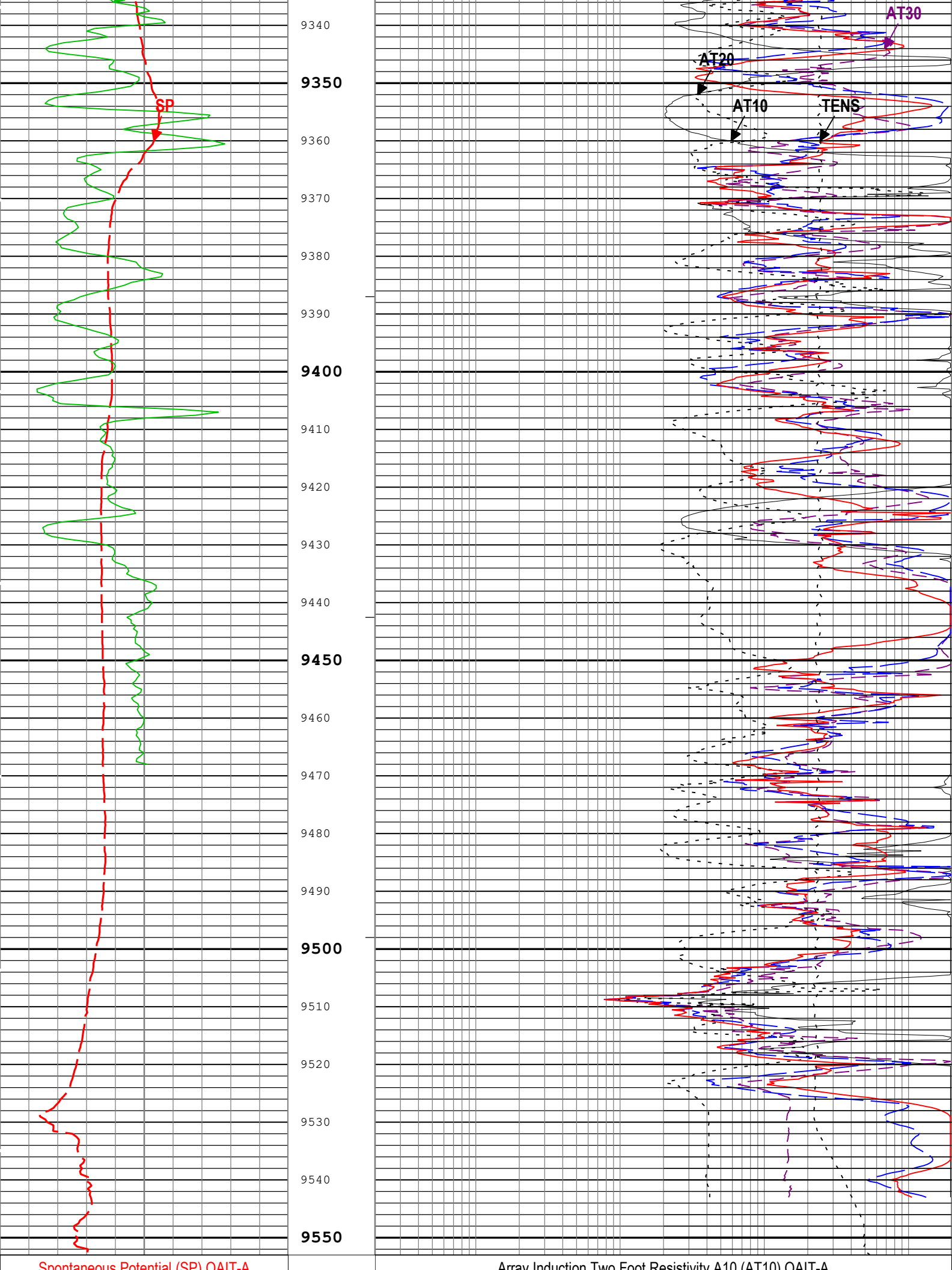
Array Induction Two Foot Resistivity A10 (AT10) QAIT-A











Spontaneous Potential (SP) QAIT		
-100	mV	200
Gamma Ray (ECGR_STGC) QTGC-B		
0	gAPI	200

0.2	ohm.m	2000
Array Induction Two Foot Resistivity A20 (AT20) QAIT-A		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A30 (AT30) QAIT-A		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A60 (AT60) QAIT-A		
0.2	ohm.m	2000
Array Induction Two Foot Resistivity A90 (AT90) QAIT-A		
0.2	ohm.m	2000

Cable Tension (TENS)		
10000	lbf	0

- └ ICV - Integrated Cement Volume every 100.00 (ft3)
- └ ICV - Integrated Cement Volume every 10.00 (ft3)
- └ IHV - Integrated Hole Volume every 100.00 (ft3)
- └ IHV - Integrated Hole Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log Two    Format: Log ( 5in Induction )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 30-Jul-2021 07:07:01

## Channel Processing Parameters

### 1B: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	QAIT-A	Compute Electrical Diameter	
ASTA	Array Induction Tool Standoff	QAIT-A	0.25	in
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	8530	ft
CSODDRL	Casing Outer Diameter - Zoned along driller depths	WLSESSION	7	in
DFD	Drilling Fluid Density	Borehole	8.3	lbm/gal
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	BS(RT)	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SOCN	Standoff Distance of the Gamma Ray Tool	QTGC-B	0	in
SPDR	SP Drift Per Foot	QAIT-A	0	mV/ft
TPOS_STGC	Tool Position: Centered or Eccentered	QTGC-B	Eccentered	

### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	10.625	8500	8514
BS	8.75	8514	8530
BS	5.75	8530	9532

All depth are actual.

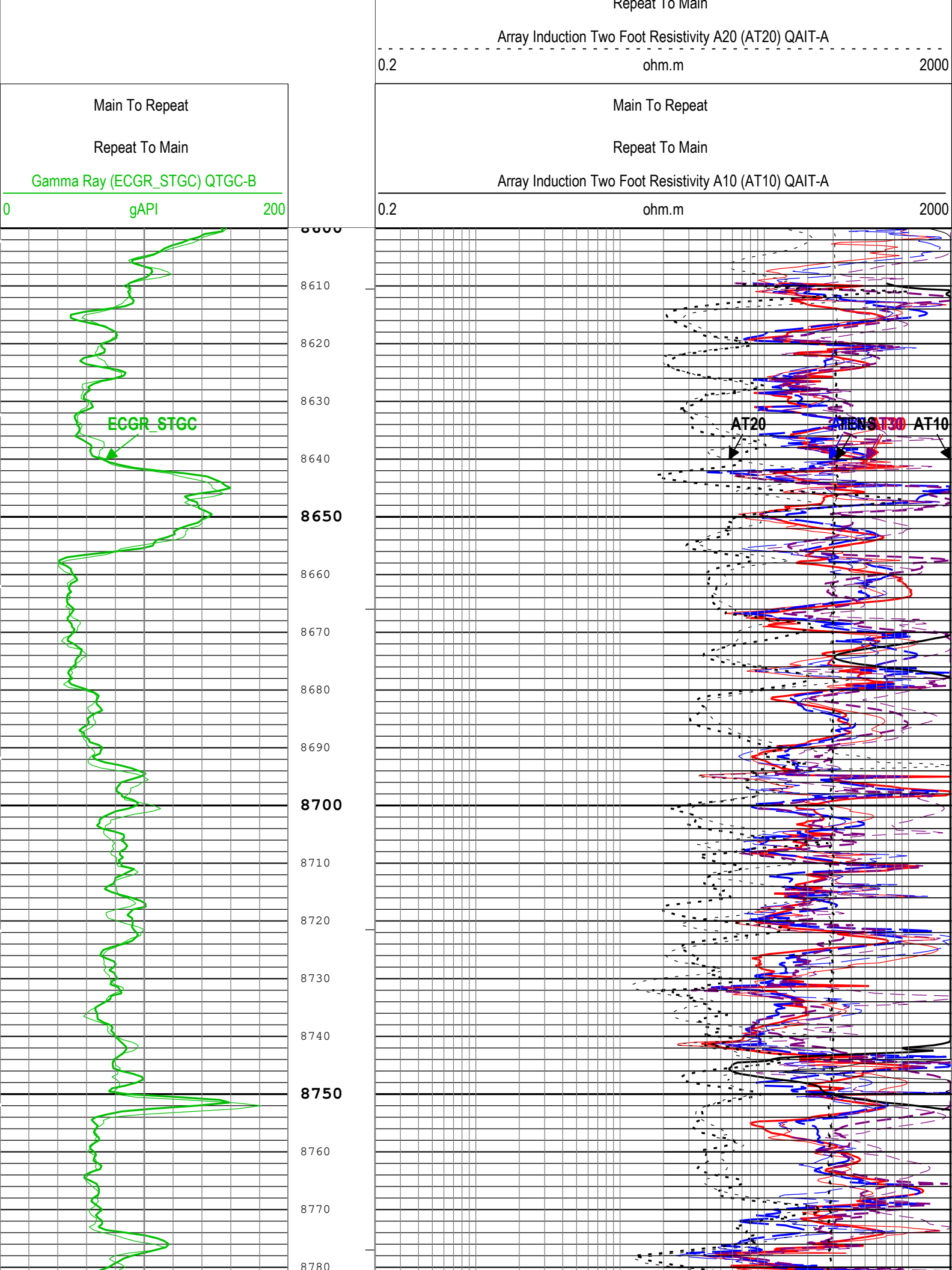
## Tool Control Parameters

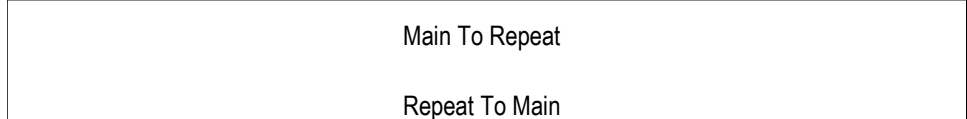
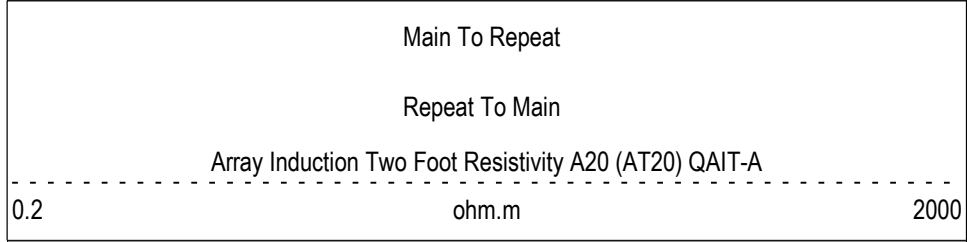
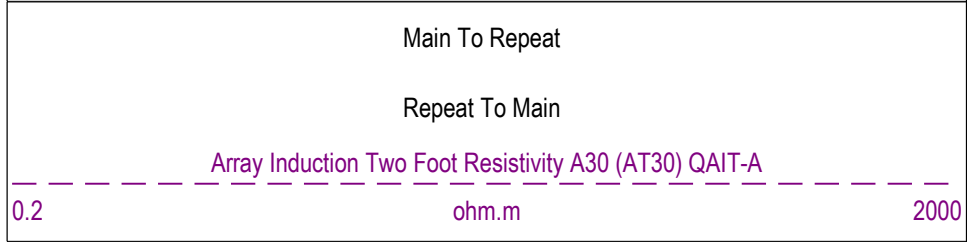
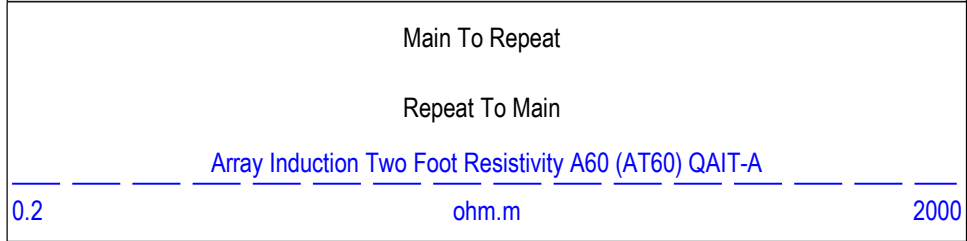
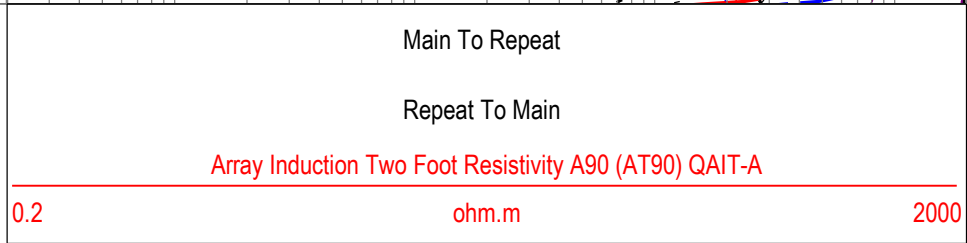
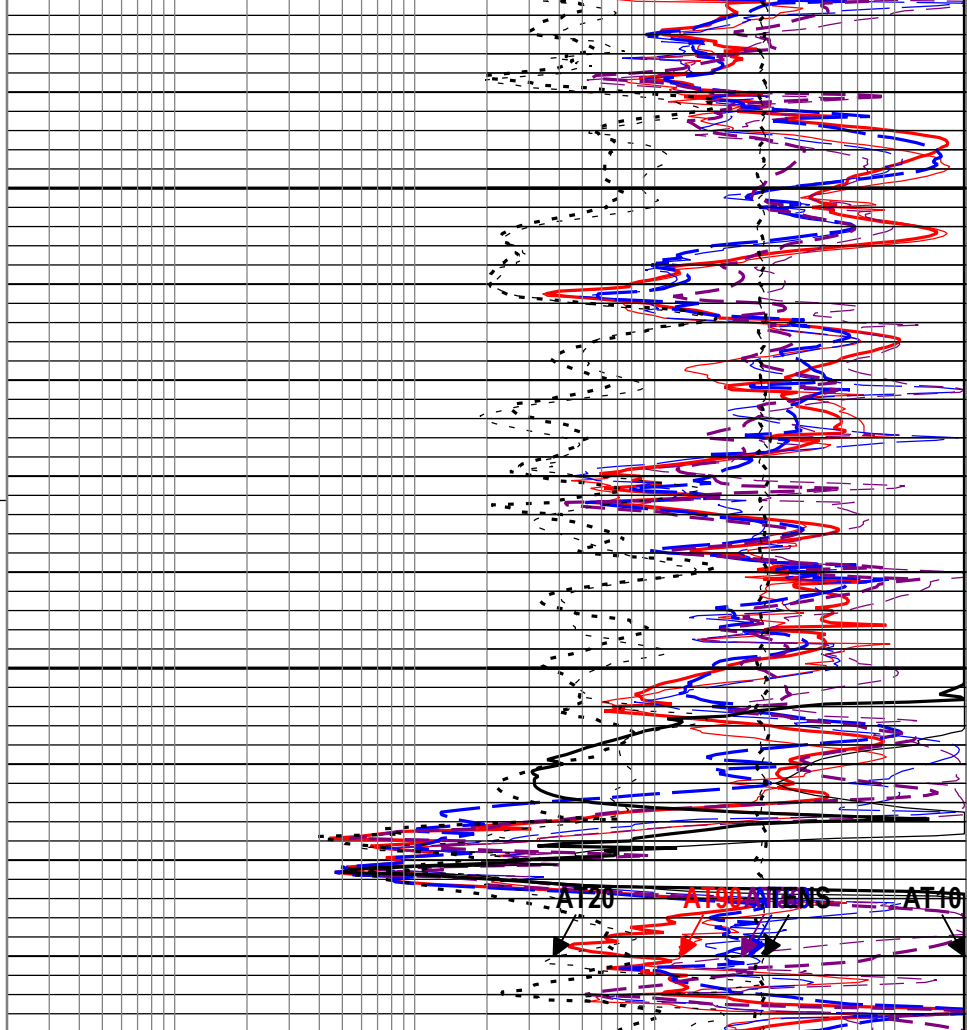
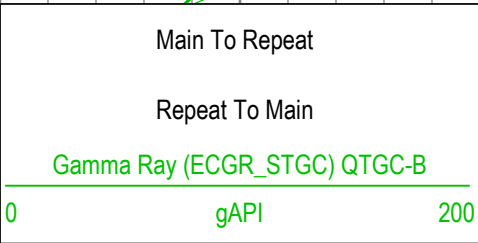
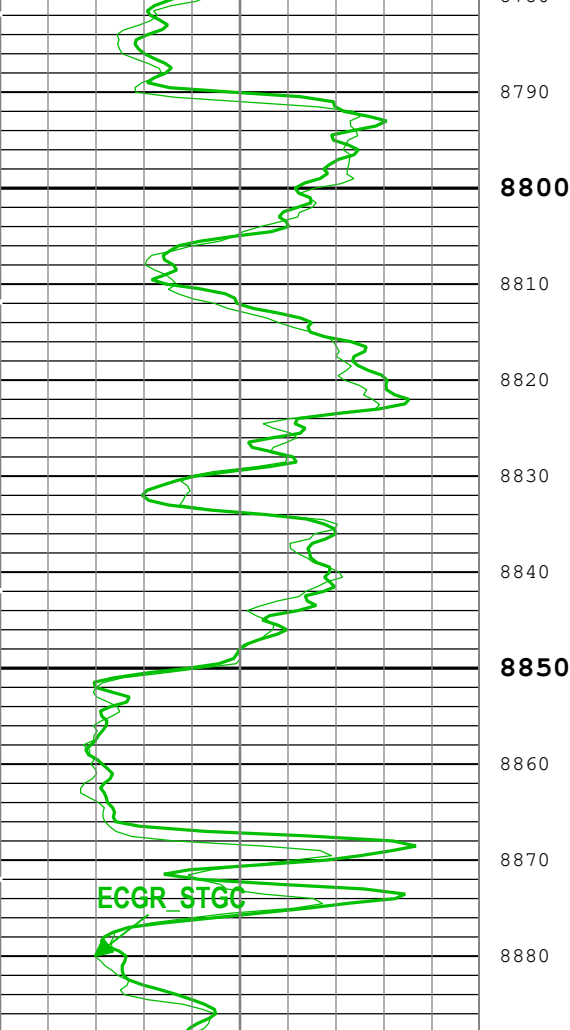
### 1B: Parameters

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









Array Induction Two Foot Resistivity A10 (AT10) QAIT-A

0.2ohm.m2000

Main To Repeat

Repeat To Main

Cable Tension (TENS)

10000lbf0

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

TIME\_1900 - Time Marked every 60.00 (s)

Description: AIT Basic Log TwoFormat: 5in Induction RAIndex Scale: 5 in per 100 ftIndex Unit: ftIndex Type: Measured DepthCreation Date: 30-Jul-2021 07:07:04

Channel Processing Parameters

1B: Parameters

Parameter	Description	Tool	Value	Unit
ABHM	Array Induction Borehole Correction Mode	QAIT-A	Compute Electrical Diameter	
ASTA	Array Induction Tool Standoff	QAIT-A	0.25	in
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	5.75	in
CBLO	Casing Bottom (Logger)	WLSESSION	8530	ft
DFD	Drilling Fluid Density	Borehole	8.3	lbm/gal
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	BS(RT)	
GRSE	Generalized Mud Resistivity Selection, from Measured or Computed Mud Resistivity	Borehole	AMF	
SOCN	Standoff Distance of the Gamma Ray Tool	QTGC-B	0	in
TPOS_STGC	Tool Position: Centered or Eccentered	QTGC-B	Eccentered	

Tool Control Parameters

1B: Parameters

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

Calibration Report

QAIT-A (Slim Hostile Array Induction Tool - A) Calibration - Run 1B

Primary Equipment :

Slim Hot Array Induction SondeQAIS-A43

Auxiliary Equipment :

QAIT Rm/SP Bottom NoseAQRM

Slim Array Induction Electronics CartridgeSAIC-A94

AIT Sonde Calibration - Test Loop Gain

Master (EEPROM):		03:47:46 11-Mar-2021					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Test Loop Gain - 0		Master	1.000	0.950	1.012	1.050	
Test Loop Phase - 0	deg	Master	0	-3.000	0.326	3.000	
Test Loop Gain - 1		Master	1.000	0.950	1.011	1.050	
Test Loop Phase - 1	deg	Master	0	-3.000	0.454	3.000	

Test Loop Phase - 1	deg	Master	0	-3.000	0.454	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 2		Master	1.000	0.950	1.016	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 2	deg	Master	0	-3.000	0.012	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 3		Master	1.000	0.950	1.011	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 3	deg	Master	0	-3.000	0.112	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 4		Master	1.000	0.950	1.008	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 4	deg	Master	0	-3.000	0.052	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 5		Master	1.000	0.950	1.017	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 5	deg	Master	0	-3.000	0.268	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 6		Master	1.000	0.950	1.025	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 6	deg	Master	0	-3.000	0.262	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Gain - 7		Master	1.000	0.950	1.023	1.050	<div><div></div><div></div><div></div><div></div><div></div></div>
Test Loop Phase - 7	deg	Master	0	-3.000	-0.272	3.000	<div><div></div><div></div><div></div><div></div><div></div></div>

## AIT Sonde Calibration - Sonde Error Correction

Master (EEPROM):		03:47:46 11-Mar-2021					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 0	mS/m	Master	-----	-1166.000	-535.925	-216.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 0		Master	-----	-2700.000	729.997	2700.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 1	mS/m	Master	-----	187.000	280.733	377.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 1		Master	-----	-625.000	139.282	625.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 2	mS/m	Master	-----	24.000	93.836	174.300	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 2		Master	-----	-350.000	16.560	350.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 3	mS/m	Master	-----	5.000	55.223	95.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 3		Master	-----	-250.000	102.589	250.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 4	mS/m	Master	-----	-2.000	19.493	40.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 4		Master	-----	-63.000	11.885	63.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 5	mS/m	Master	-----	-9.000	3.589	15.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 5		Master	-----	-50.000	13.356	50.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 6	mS/m	Master	-----	-2.000	3.067	10.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 6		Master	-----	-30.000	-11.403	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Real - 7	mS/m	Master	-----	-5.000	-0.098	5.000	<div><div></div><div></div><div></div><div></div><div></div></div>
Sonde Error Correction Quad - 7		Master	-----	-30.000	-1.876	30.000	<div><div></div><div></div><div></div><div></div><div></div></div>





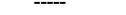


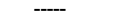




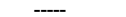

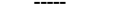
## AIT Mud Calibration - Mud Calibration Gain

Master (EEPROM):		03:47:46 11-Mar-2021					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Coarse Gain		Master	1.000	0.800	1.038	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>
Fine Gain		Master	1.000	0.800	1.039	1.200	<div><div></div><div></div><div></div><div></div><div></div></div>

## AIT Electronics Check - Thru Calibration Check

Master (EEPROM):		03:47:46 11-Mar-2021	Before (Measured):	01:05:49 30-Jul-2021	After:		
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 0	V	Master	-----	0.330	0.555	0.770	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.330	0.553	0.770	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.002	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 0	deg	Master	-----	137.000	-135.247	-103.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	137.000	-143.163	-103.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-7.916	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 1	V	Master	-----	0.594	0.992	1.386	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	0.594	0.988	1.386	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-0.004	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 1	deg	Master	-----	136.000	-136.315	-104.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before	-----	136.000	-144.242	-104.000	<div><div></div><div></div><div></div><div></div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		Before-Master	-----	-----	-7.927	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 2	V	Master	-----	0.312	0.521	0.728	<div><div></div><div></div><div></div><div></div><div></div></div>

		Before	----	0.312	0.518	0.728	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.003	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 2	deg	Master	----	132.000	-141.557	-108.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	132.000	-149.513	-108.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-7.956	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 3	V	Master	----	0.384	0.633	0.896	<div><div></div><div></div><div></div><div></div></div>
		Before	----	0.384	0.629	0.896	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.004	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 3	deg	Master	----	131.000	-143.431	-109.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	131.000	-151.402	-109.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-7.971	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 4	V	Master	----	0.726	1.162	1.694	<div><div></div><div></div><div></div><div></div></div>
		Before	----	0.726	1.155	1.694	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.007	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 4	deg	Master	----	125.000	-152.689	-115.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	125.000	-160.734	-115.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-8.045	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 5	V	Master	----	1.068	1.683	2.492	<div><div></div><div></div><div></div><div></div></div>
		Before	----	1.068	1.673	2.492	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.010	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 5	deg	Master	----	122.000	-154.900	-118.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	122.000	-162.982	-118.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-8.082	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 6	V	Master	----	1.170	1.816	2.730	<div><div></div><div></div><div></div><div></div></div>
		Before	----	1.170	1.807	2.730	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.009	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 6	deg	Master	----	121.000	-156.659	-119.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	121.000	-164.785	-119.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-8.126	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Mag - 7	V	Master	----	0.852	1.330	1.988	<div><div></div><div></div><div></div><div></div></div>
		Before	----	0.852	1.318	1.988	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-0.012	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
Thru Cal Phase - 7	deg	Master	----	115.000	-156.577	-125.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	115.000	-165.043	-125.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	-8.466	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
SPA Zero	mV	Master	----	-50.000	-0.138	50.000	<div><div></div><div></div><div></div><div></div></div>
		Before	----	-50.000	-0.094	50.000	<div><div></div><div></div><div></div><div></div></div>
		After	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>
		Before-Master	----	----	0.044	----	<div><div></div><div></div><div></div><div></div></div>
		After-Before	----	----	----	----	<div><div></div><div></div><div></div><div></div></div>

SPA Plus	mV	Master	----	941.000	990.201	1040.000	
		Before	----	941.000	990.888	1040.000	
		After	----	----	----	----	
		Before-Master	----	----	0.687	----	
		After-Before	----	----	----	----	
Temperature Zero	V	Master	----	-0.050	0.000	0.050	
		Before	----	-0.050	0.000	0.050	
		After	----	----	----	----	
		Before-Master	----	----	0.000	----	
		After-Before	----	----	----	----	
Temperature Plus	V	Master	----	0.870	0.917	0.960	
		Before	----	0.870	0.918	0.960	
		After	----	----	----	----	
		Before-Master	----	----	0.001	----	
		After-Before	----	----	----	----	

QSLT-B (SlimXtreme Sonic Logging Tool - B) Calibration - Run 1B

Primary Equipment :

SlimXtreme Sonic Array Sonde Segment - BB

QSAS-BB

8022

## CBL Amplitude Normalization - CBL Accumulations

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Sonic Amplitude Upper Transmitter - Receiver 5 (SA_U5) - 0		Master	----	----	----	----		
Sonic Raw Amplitude Upper Transmitter - Receiver 1 (RA_U1) - 0	mV	Master	----	----	----	----		
Sonic Amplitude Lower Transmitter - Receiver 1 (SA_L1) - 0		Master	----	----	----	----		
Sonic Raw Amplitude Lower Transmitter - Receiver 5 (RA_L5) - 0	mV	Master	----	----	----	----		

### CBL Amplitude Normalization - CBL/VDL Coefficients

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for Upper Transmitter (CBCF_UT)		Master	0.500	----	NOT DONE	----	
CBL Correction Factor for Lower Transmitter (CBCF_LT)		Master	0.500	----	NOT DONE	----	
VDR Ratio between UT and LT for CBLB Mode (VDR)		Master	1.000	----	NOT DONE	----	

CBL Amplitude Free Pipe Adjustment - Free Pipe Measurements

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
CBL Amplitude (CBLF) - 0	mV	Before	----	----	----	----		
CBL Reference Amplitude (CBRA) - 0	mV	Before	----	----	----	----		
Measurement Depth (DEPTH) - 0	ft	Before	----	----	----	----		

CBL Amplitude Free Pipe Adjustment - CBL Amplitude Coefficients

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor (CBL_ADJUST_FACTOR)		Before	1.000	0.300	NOT DONE	3.000	
Depth of Before Calibration (BDEP)	ft	Before	----	----	NOT DONE	----	

## QCNT (SlimExtreme Compensated Neutron Tool) Calibration - Run 1B

Primary Equipment :

Compensated Neutron Cartridge SlimXtreme

QCNC-A

2

**Auxiliary Equipment :**

Doubly encapsulated AmBe radioactive source material

NSR-L

4545

Calibration Parameter :

## CNT Neutron Calibration - CNT Neutron Accumulations

Master (Measured): 20:46:51 17-Jul-2021		Before (Measured): 09:41:51 18-Jul-2021		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	----	0	0.668	5.000	
		Before	----	0	0.267	5.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.401	----	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	----	0	1.636	5.000	
		Before	----	0	0.999	5.000	
		After	----	----	----	----	
		Before-Master	----	----	-0.637	----	
		After-Before	----	----	----	----	
Near Plus Measurement	1/s	Master	7328.000	5600.000	5955.926	8700.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement	1/s	Master	1600.000	1300.000	1496.078	1900.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

## CNT Neutron Calibration - CNT Neutron Coefficients

Master (Measured): 20:46:51 17-Jul-2021		Before (Measured): 09:41:51 18-Jul-2021		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Corrected Plus Measurement	1/s	Master	7328.000	5600.000	5980.594	8700.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement	1/s	Master	1600.000	1300.000	1515.994	1900.000	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Gain		Master	1.000	0.797	1.225	1.304	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Gain		Master	1.000	0.842	1.055	1.231	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Computed Thermal Neutron Ratio Average		Master	4.240	3.740	3.945	4.740	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

## CNT Neutron Calibration - CNT Neutron Ratio R6 Measurement

Master (Measured): 20:46:51 17-Jul-2021		Before (Measured): 09:41:51 18-Jul-2021		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near R6 Measurement	1/s	Master	5000.000	4750.000	4999.806	5250.000	
		Before	5000.000	4750.000	4999.871	5250.000	
		After	----	----	----	----	
		Before-Master	----	----	0.065	----	
		After-Before	----	----	----	----	
Far R6 Measurement	1/s	Master	833.330	791.660	833.301	875.000	



		Before	833.330	791.660	833.323	875.000	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		Before-Master	-----	-----	0.022	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>
Ratio R6 Computed Ratio		Master	6.000	5.430	6.000	6.630	<div><div></div></div>
		Before	6.000	5.430	6.000	6.630	<div><div></div></div>
		After	6.000	5.430	NOT DONE	6.630	<div><div></div></div>
		Before-Master	-----	-----	0.000	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>
							<div><div></div></div>

## QTGC-B (SlimXtreme Telemetry Gamma-ray Cartridge - B (3.0 in. OD)) Calibration - Run 1B

Primary Equipment :			
STGC-B Cartridge	STGC-B	8121	
Auxiliary Equipment :			
Accelerometer	STGC-ACCZ	7	
Calibration Parameter :			
JIG-BKG (Jig minus background reference)	165		

## STGC Accelerometer Calibration - STGC Read EEPROM Coefficient

Master (EEPROM):		14:58:40 19-Jul-2021					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
Accelerometer Coefficients - 0		Master	0	-----	3.79700E+000	-----	<div><div></div></div>
Accelerometer Coefficients - 1		Master	0	-----	-3.90300E-003	-----	<div><div></div></div>
Accelerometer Coefficients - 2		Master	0	-----	2.97600E-005	-----	<div><div></div></div>
Accelerometer Coefficients - 3		Master	0	-----	-4.56300E-008	-----	<div><div></div></div>
Accelerometer Coefficients - 4		Master	0	-----	2.74030E+000	-----	<div><div></div></div>
Accelerometer Coefficients - 5		Master	0	-----	2.64830E-004	-----	<div><div></div></div>
Accelerometer Coefficients - 6		Master	0	-----	4.39200E-007	-----	<div><div></div></div>
Accelerometer Coefficients - 7		Master	0	-----	2.85580E-010	-----	<div><div></div></div>
Accelerometer Coefficients - 8		Master	0	-----	-2.73150E+002	-----	<div><div></div></div>
Accelerometer Coefficients - 9		Master	0	-----	1.00000E+000	-----	<div><div></div></div>

## STGC Gamma-Ray Calibration - Gamma-Ray Coefficients

Before (Measured):		09:32:58 18-Jul-2021 Expired by 10 days		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
Gamma-Ray Gain		Before	1.000	0.900	1.029	1.100	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>

## STGC Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured):		09:32:58 18-Jul-2021 Expired by 10 days		After:			
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
RGR Background Measurement	gAPI	Before	-----	0	77.109	120.000	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>
RGR Plus Measurement	gAPI	Before	191.400	172.260	185.968	210.540	<div><div></div></div>
		After	-----	-----	NOT DONE	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>

## STGC Gamma-Ray Plateau Check - Gamma-Ray Plateau Check

Before:		After:					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div></div>
RGR Zero Plateau Check - 0	gAPI	Before	-----	-----	-----	-----	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>
RGR Plus Plateau Check - 0	gAPI	Before	-----	-----	-----	-----	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>
RGR Minus Plateau Check - 0	gAPI	Before	-----	-----	-----	-----	<div><div></div></div>
		After	-----	-----	-----	-----	<div><div></div></div>
		After-Before	-----	-----	-----	-----	<div><div></div></div>

LEH-MT (Logging Equipment Head - MT, 3-3/8 inch 31 pin HPHT with Tension and Temperature Sensor (Need STGC/HTGC to process temperature signal)) Calibration - Run 1B

Primary Equipment :  
Logging Equipment Head - MT, 3-3/8 inch 31 pin HPHT with Tension and Temperature Sensor (Need STGC/HTGC to process temperature signal) LEH-MT

HTEN Master Calibration - HTEN Master Calibration

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
HTEN Shop Gain		Master	1.000	0.800	NOT DONE	4.500		
HTEN Shop Offset	lbf	Master	0	-1000.000	NOT DONE	1000.000		

HTEN Before Calibration - HTEN Before Calibration

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
RHTE Zero Measurement - 0	lbf	Before	----	----	----	----		
RHTE Plus Measurement - 0	lbf	Before	----	----	----	----		
HTEN Gain - 0		Before	----	----	----	----		
HTEN Offset - 0	lbf	Before	----	----	----	----		

Company:

University Of Utah

Well:

FORGE 78B-32

Field:

None

County:

Beaver

Schlumberger

Country:

Platform Express

Array Induction

with Linear Correlation