

[illegible]

Company: **Origin Energy Resources Ltd.**

Well: Trefoil-1

Field: **Trefoil**

Rig: ENSCO 102

Country: **Australia**

FMI-DSI-HNGS

Natural GR Spectroscopy

1:500 Scale

ENSCO 102

Trefoil

GDA94 Zone 55

Trefoil-1

Company: Origin Energy Resources Ltd.

LOCATION			
GDA94 Zone 55	Elev.:	K.B.	39,9014 m
Northings 5,586,346 m		G.L.	-68.9 m
Eastings 361,028 m		D.F.	39,9014 m
Permanent Datum:	Mean Sea Level	Elev.:	0 m
Log Measured From:	Drill Floor (RT)	39.9 m	above Perm. Datum
Drilling Measured From:	Drill Floor (RT)		
State:	Max. Well Deviation	Longitude	Latitude
Tasmania	0.67 deg	145 22' 30.87"E	39 51' 41.58"S

[illegible]

Logging Date	24-Nov-2004					
Run Number	Suite-1, Run 8					
Depth Driller	3545.1 m					
Schlumberger Depth	3527 m					
Bottom Log Interval	3527 m					
Top Log Interval	2420.1 m					
Casing Driller Size @ Depth	9.625 in @ 2421 m				@	
Casing Schlumberger	2420.1 m					
Bit Size	8.500 in					
Type Fluid In Hole	Seawater/Drispac/Softex					
Density	Viscosity	9.4 lbm/gal		49 s		
Fluid Loss	PH	3.8 cm3		9.3		
Source Of Sample	Flowline					
RM @ Measured Temperature	0.206 ohm.m @ 25 degC				@	
RMF @ Measured Temperature	0.174 ohm.m @ 25 degC				@	
RMC @ Measured Temperature	0.280 ohm.m @ 25 degC				@	
Source RMF	RMC	Pressed	Pressed			
RM @ MRT	RMF @ MRT	0.061 @ 133	0.052 @ 133		@	@
Maximum Recorded Temperatures	133 degC					
Circulation Stopped	Time	24-Nov-2004		0.45		
Logger On Bottom	Time	1-Dec-2004		22:35		
Unit Number	Location	571 AU5L				
Recorded By	J. Robertson/C. Bassignana/M. Webb					
Witnessed By	Dave Cohen/Mark Tindale					

Logging Date					
Run Number					
Depth Driller					
Schlumberger Depth					
Bottom Log Interval					
Top Log Interval					
Casing Driller Size @ Depth		@			
Casing Schlumberger					
Bit Size					
Type Fluid In Hole					
Density	Viscosity				
Fluid Loss	PH				
Source Of Sample					
RM @ Measured Temperature		@			
RMF @ Measured Temperature		@			
RM C @ Measured Temperature		@			
Source RMF	RM C				
RM @ MRT	RMF @ MRT	@		@	@
Maximum Recorded Temperatures					
Circulation Stopped	Time				
Logger On Bottom	Time				
Unit Number	Location				
Recorded By					
Witnessed By					

RUN 4

Date Created: 2-DEC-2004 11:59:18

Logging Cable

Type:	7-46ZV-XS
Serial Number:	74172
Length:	7324.04 M
Conveyance Method:	Wireline
Rig Type:	Offshore Fixed

Log Sequence:	Subsequent Log In the Well
Reference Log Name:	SP-HRLA-PEX-CMR-GR Nuclear Resistivity Pri
Reference Log Run Number:	Suite-1, Run1
Reference Log Date:	24-Nov-2004

1. Subsequent run in hole. Log correlated to Schlumberger SP-HRLA-PEX-CMR-GR log, dated 24-Nov-0
2. Primary depth reference IDW-E
- 3.
- 4.
- 5.
- 6.

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 OF 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.







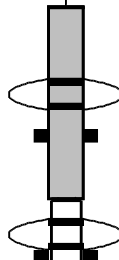
OS1: SP-HRLA-PEX-CMR-G
OS2: VSI-GR
OS3: MDT-GR
OS4: MSCT-GR
OS5:

Maximum recorded temperature was 133.3 degC from thermometers in logging head.

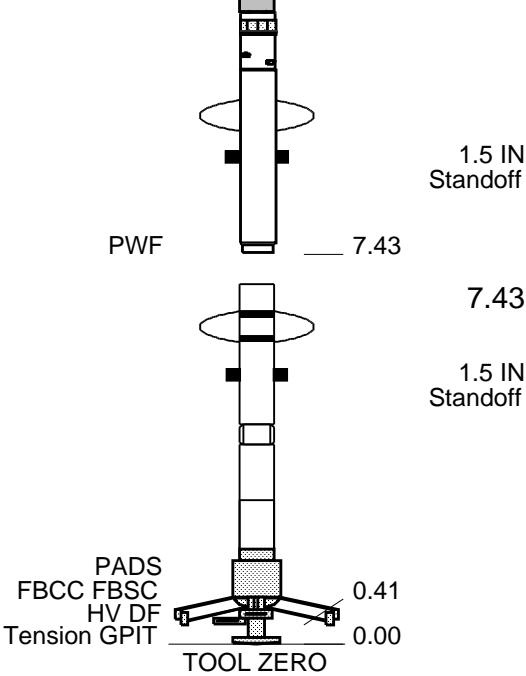
Maximum recorded temperature was 100 degC from bottom hole temperature logging tool.
Mud data taken from Baroid Mud Report, 23-NOV-2004, from flowline sample taken at 20:00.
Additional mud data: PV/YP = 49degC/51lbs/100ft2, Gels = 3/4/7 lbs/100ft2, LGS/HGS = 5.0/0.9%.

RUN 1					
SERVICE ORDER #:		12C0-301			
PROGRAM VERSION:		0 m			
FLUID LEVEL:					

EQUIPMENT DESCRIPTION

RUN 1				
SURFACE EQUIPMENT				
GSR-U 2003 WITM (DTS)-A 964				
DOWNHOLE EQUIPMENT				
LEH-QT 1519 LEH-QT 1519			32.36	
DTPC-A ECH-KJ 64 DTPC-A 64			31.47	
DTC-H 8457 ECH-KH DTCH0-A DTCH1-A	CTEM TelStatus ToolStatu 	<div></div> <div>28.40</div> <div>27.76</div>	29.64	
DTA-A 8351 ECH-KE 8351 DTA-A 8351			27.76	
HNGS-BA HNGS-BA 28 HNSH-BA 28	Upper_1 Lower_2 	<div></div> <div>25.84</div> <div>25.63</div>	26.55	
HNGC-A HNGH-A 3	HNGC Stat 	<div></div> <div>23.51</div>	24.05	
DSST-B SPAC-B 8056 ECH-SD 8038 SMDR-BD 8094 SSIJ-BA 8142 SMDX-AA 8063			22.98	
			1.5 IN Standoff	
			1.5 IN Standoff	

FBST-B
 ECH-MRA 4742
 FBCC-A 794
 AH-185 909
 FBSH-A 855
 GPIC-AC 735
 FBSC-B 858
 FBSS-B 830

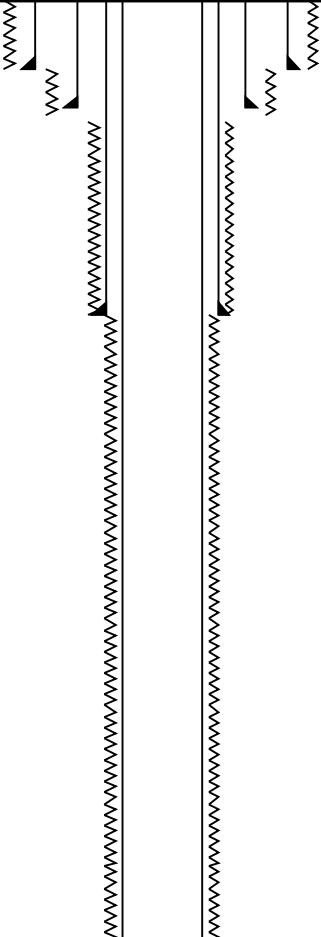


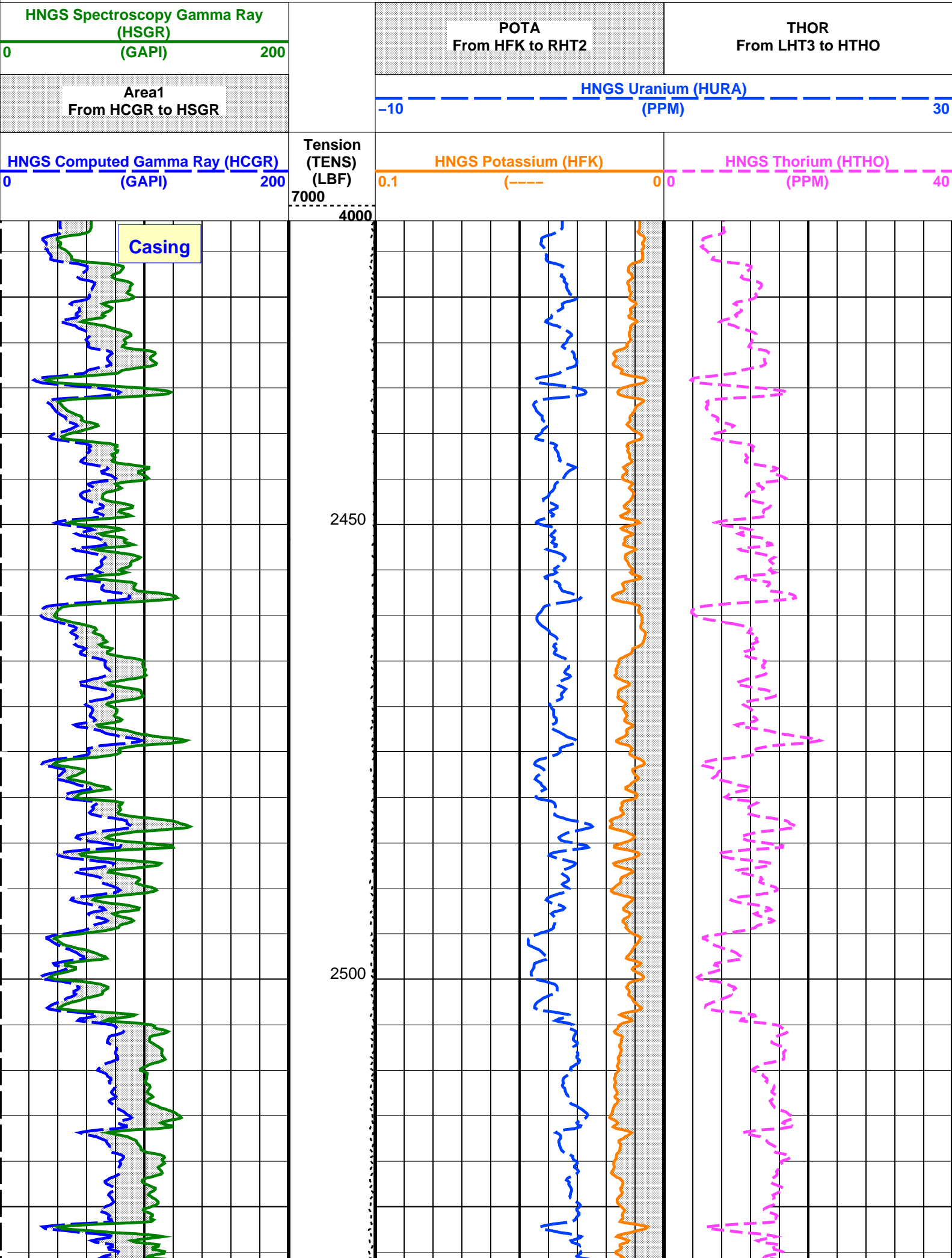
MAXIMUM STRING DIAMETER 6.63 IN
 MEASUREMENTS RELATIVE TO TOOL ZERO
 ALL LENGTHS IN METERS

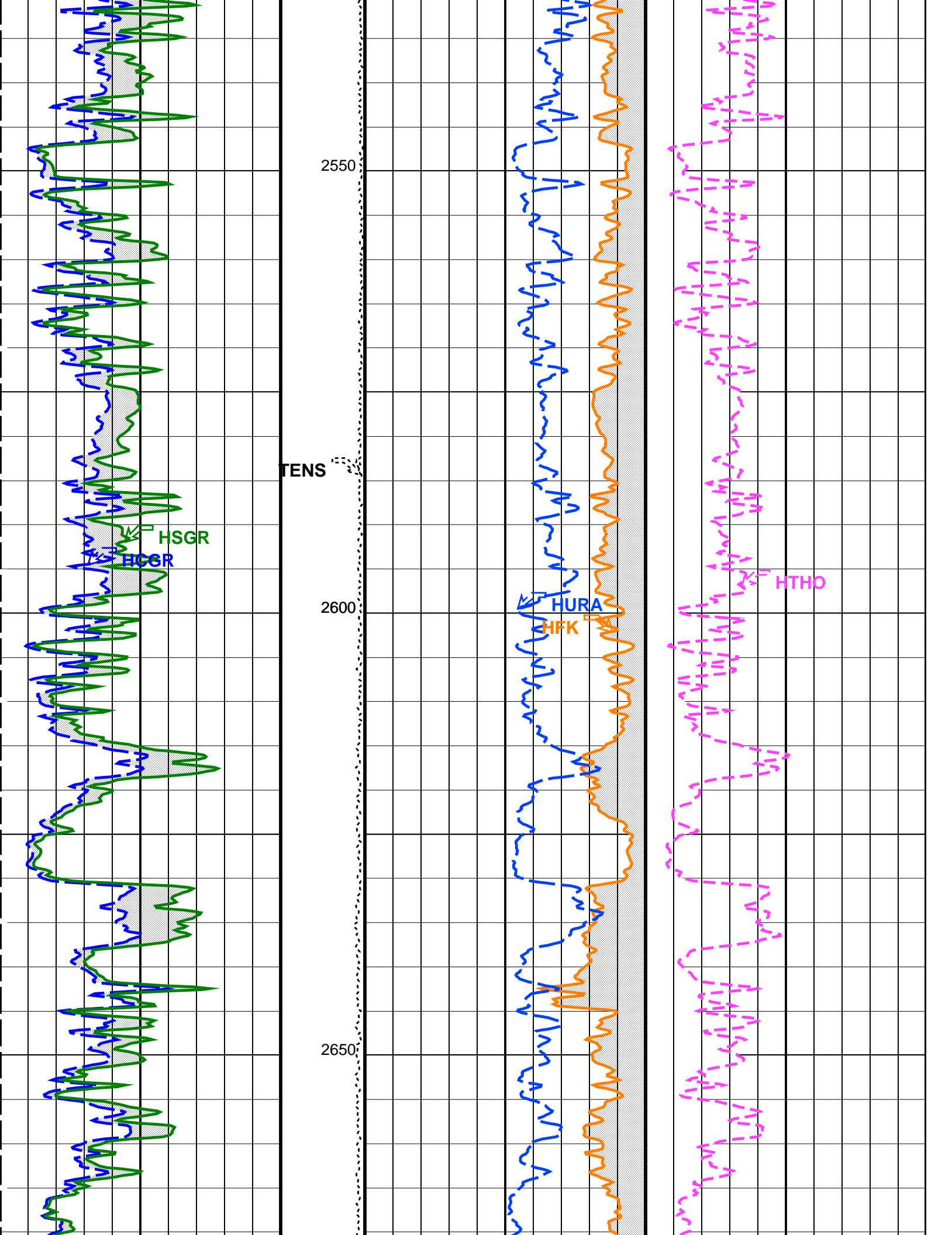
Client: Origin Energy Resources Ltd.
 Well: Trefoil-1
 Field: Trefoil
 State: Tasmania
 Country: Australia

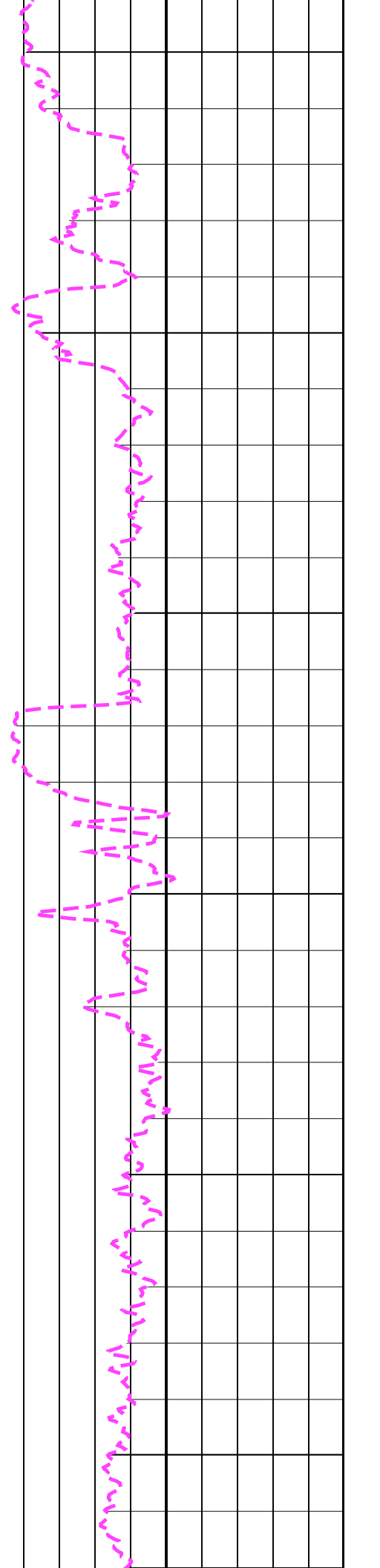
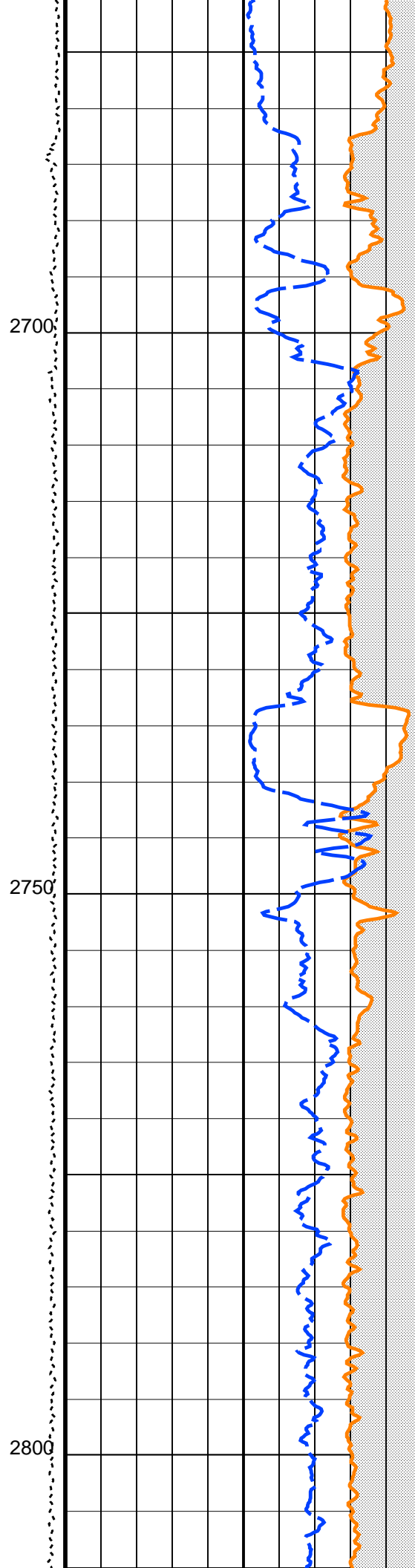
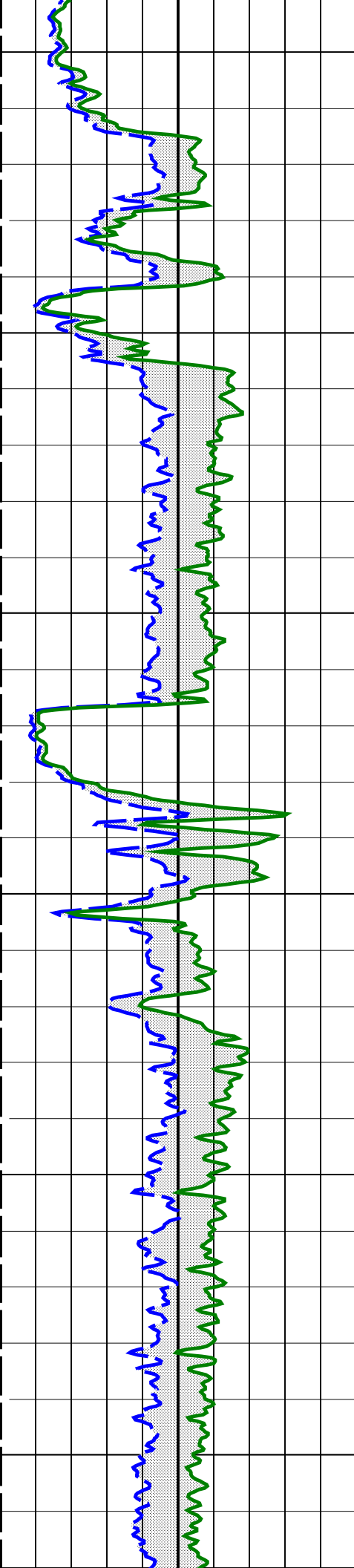
Rig Name: ENSCO 102
 Reference Datum: Mean Sea Level
 Elevation: 39.6 m

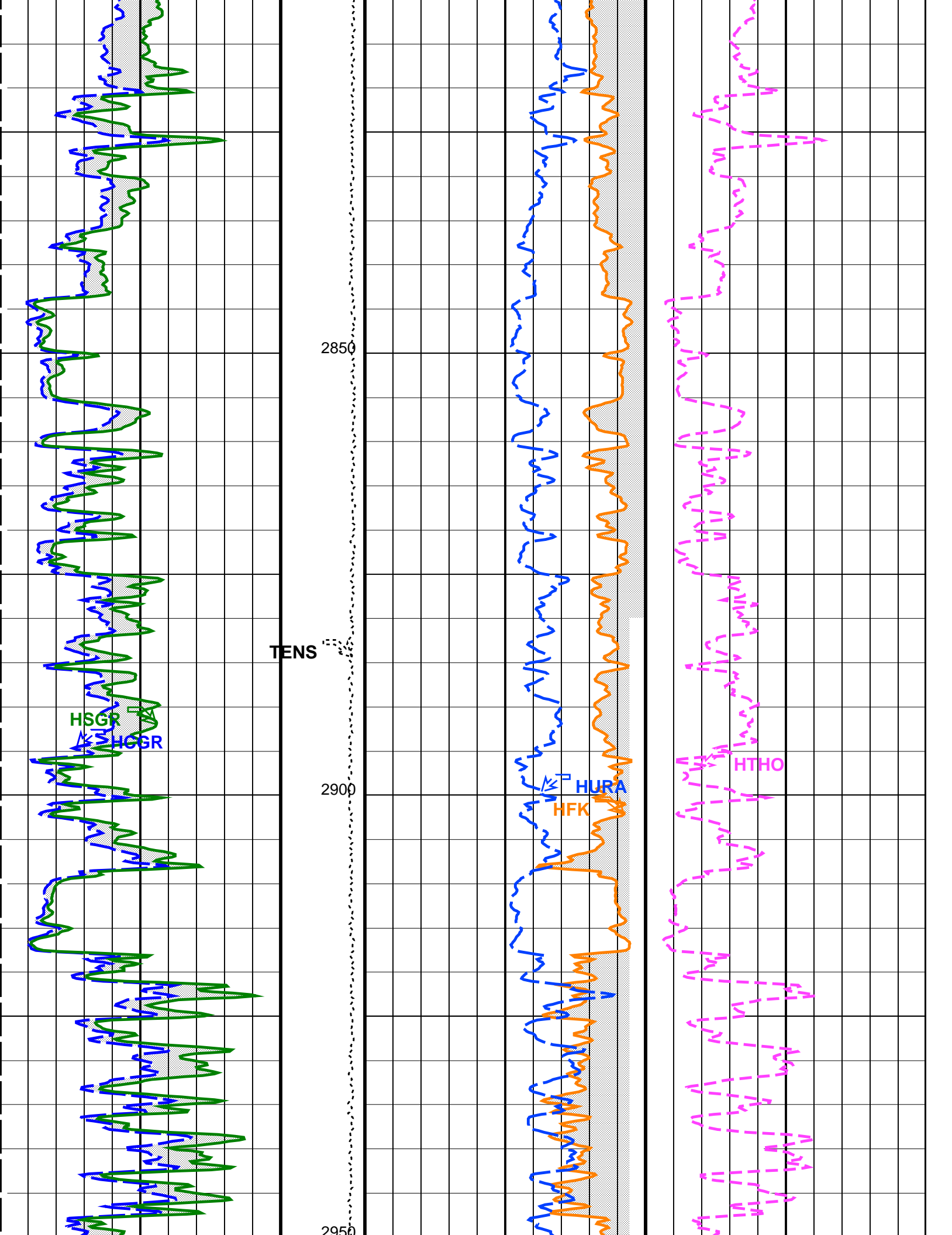
Drawing Date: 12/2/2004

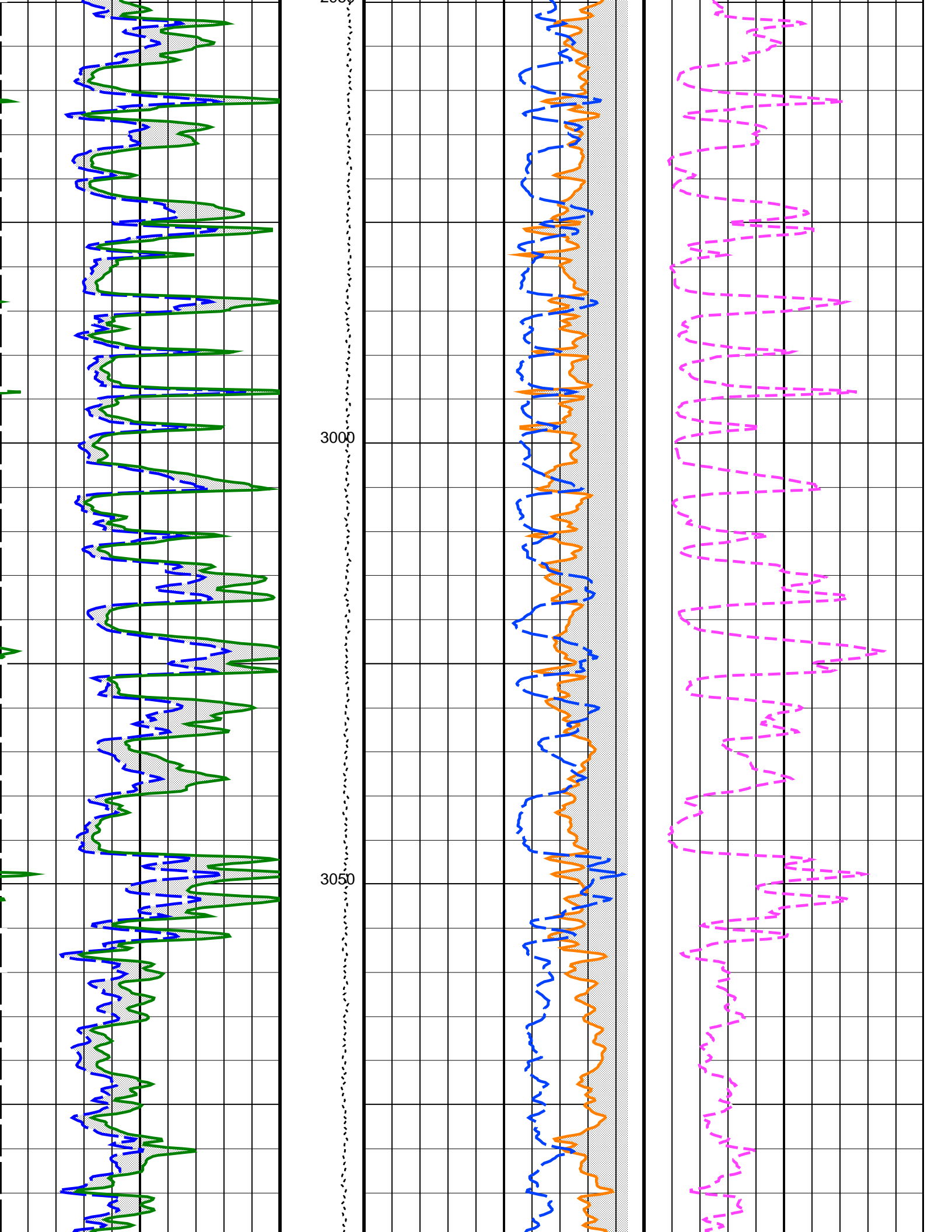
Production String	(in)		(m)	Well Schematic	(m)		(in)		Casing String
	OD	ID	MD		MD	OD	ID		
					0.0	36.000	<div>Borehole Segment</div> <div>Casing String, 310 lb/ft</div> <div>Casing Shoe</div> <div>Borehole Segment</div> <div>Casing String, 133 lb/ft</div> <div>Casing Shoe</div> <div>Borehole Segment</div> <div>Casing String, 54.5 lb/ft</div> <div>Casing Shoe</div> <div>Borehole Segment</div> <div>Casing String, 43.5 lb/ft</div>		
					0.0	30.000			
					142.6	30.000			
					142.6	26.000			
					0.0	20.000			
					214.6	20.000			
					214.6	16.000			
					0.0	13.375			
					659.6	13.375			
					659.6	12.250			
0.0	9.625								

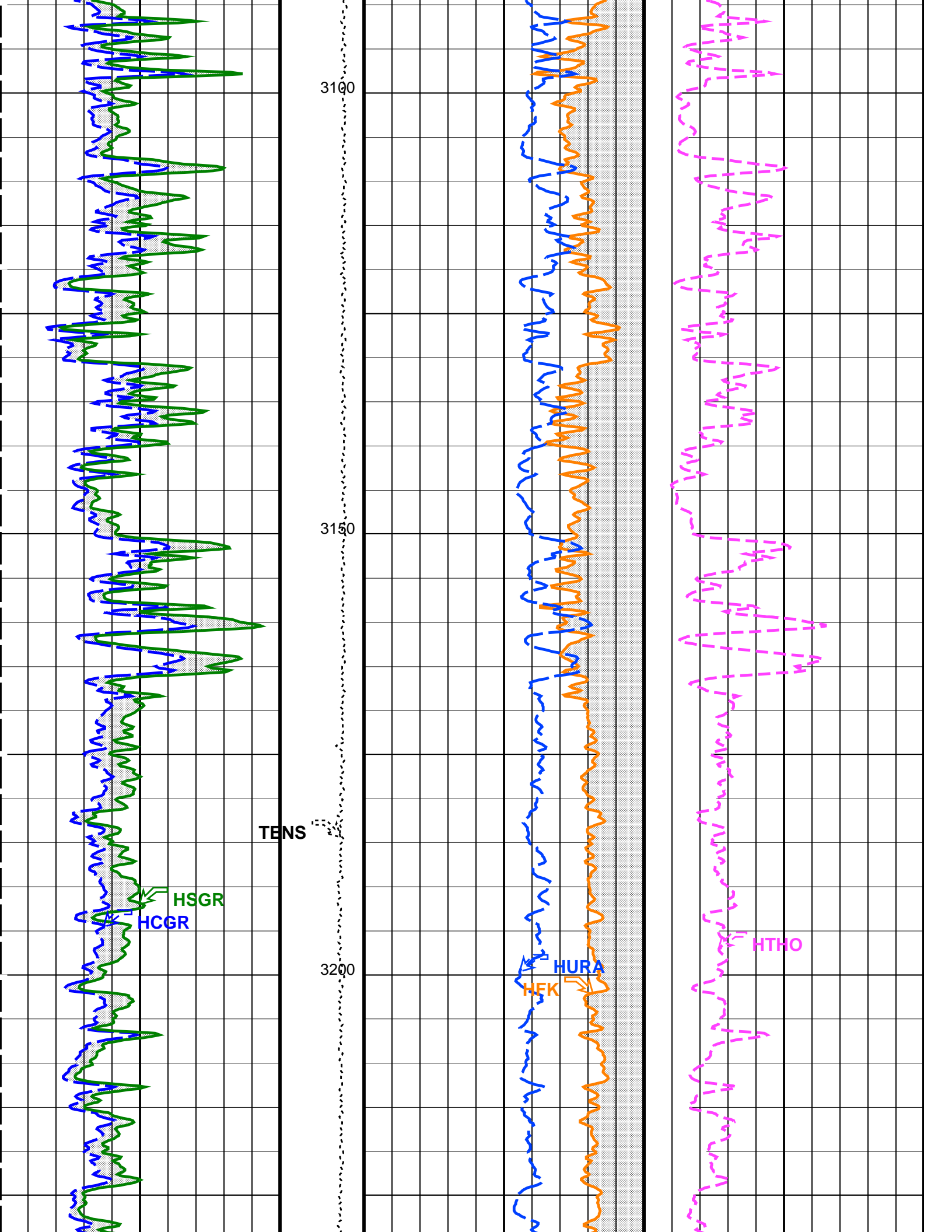


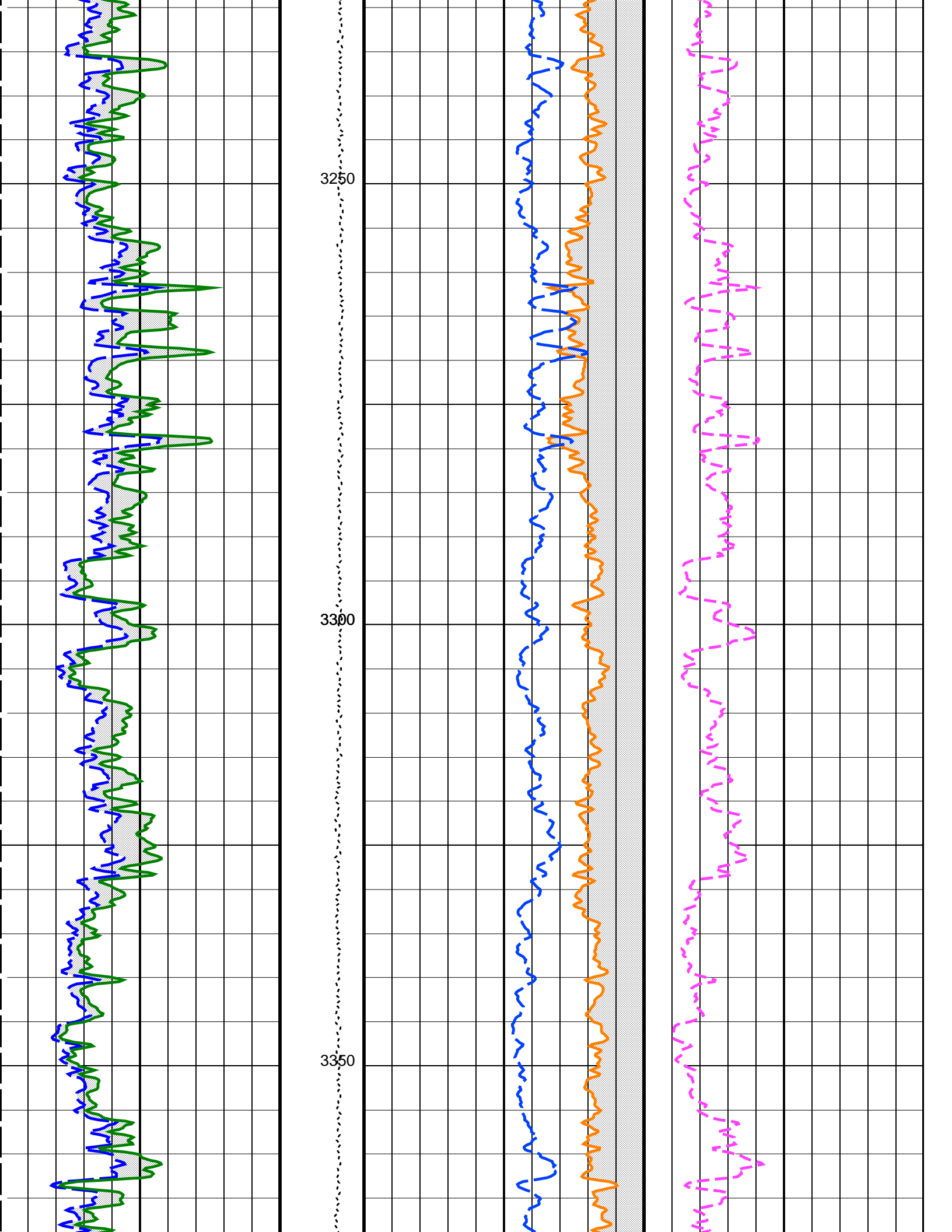


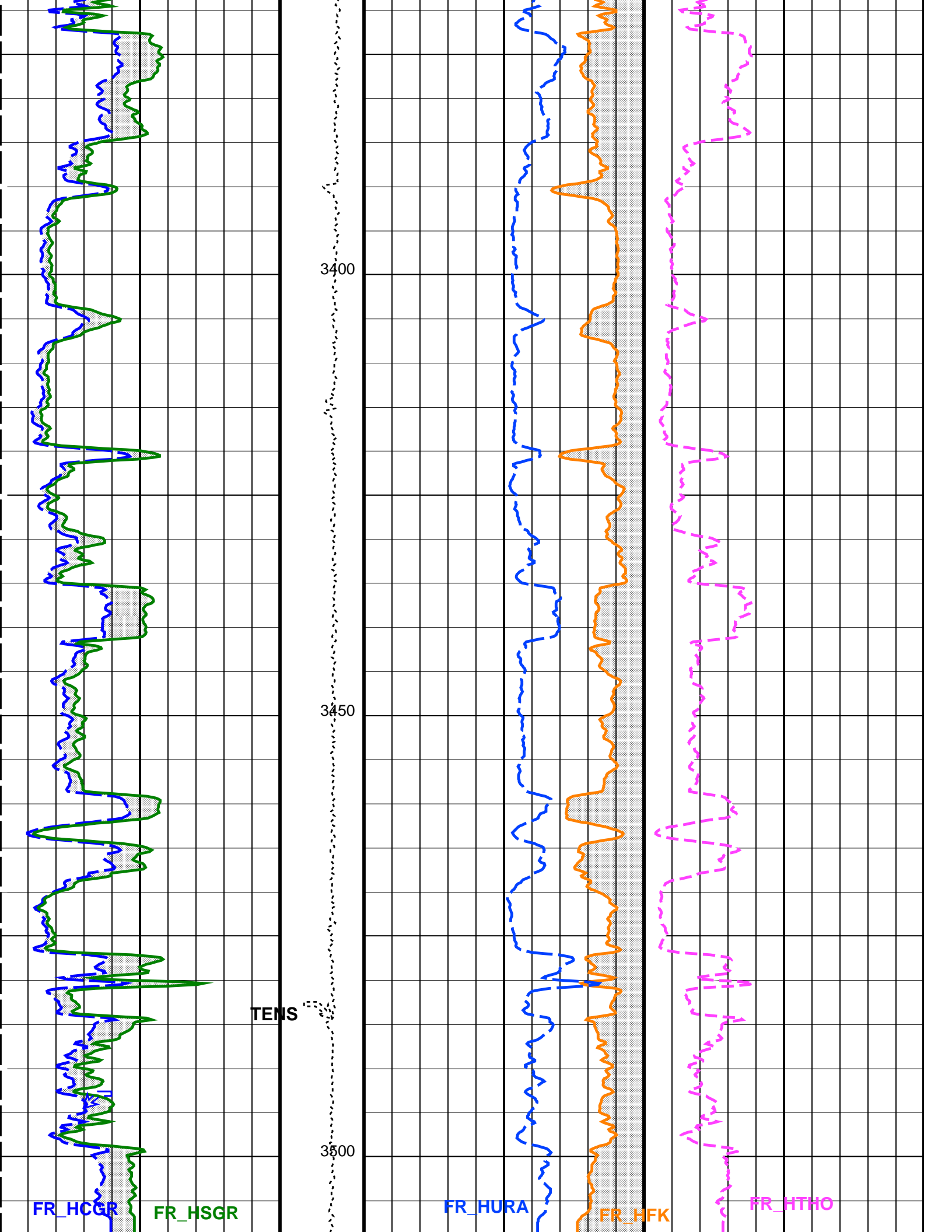


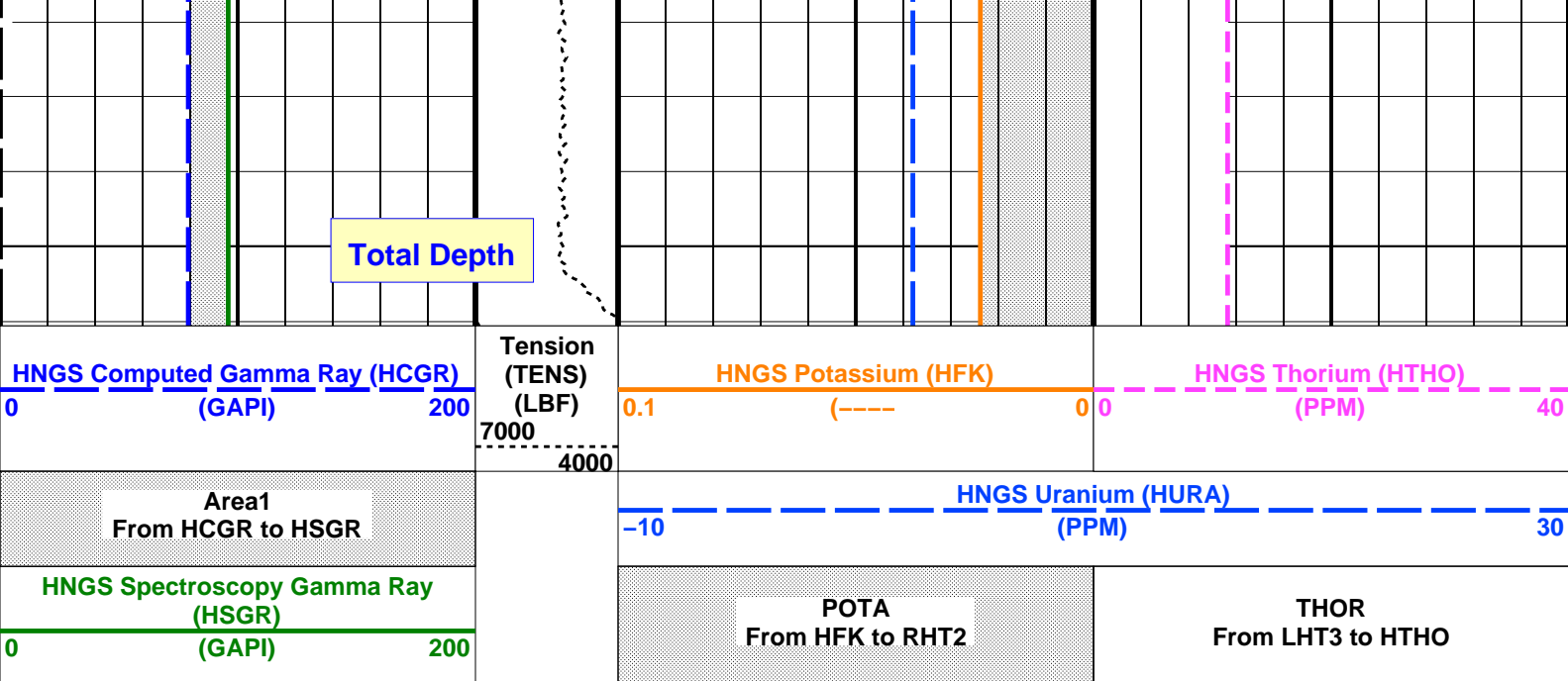












PIP SUMMARY
Time Mark Every 60 S

Parameters		
DLIS Name	Description	Value
BHS	DSST-B: Dipole Shear Imager - B	
GCSE	Borehole Status	OPEN
	Generalized Caliper Selection	BS
	HNGS-BA: Hostile Natural Gamma Ray Sonde	
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
CSD1	Inner Casing Outer Diameter	9.625 IN
CSD2	Outer Casing Outer Diameter	13.375 IN
CSW1	Inner Casing Weight	43.5 LB/F
CSW2	Outer Casing Weight	54.5 LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE
GCSE	Generalized Caliper Selection	BS
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW
HABK	HNGS Borehole Potassium Running Average	-0.00391936
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	NATU
HNPE	HNGS Processing Enable	YES
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3 CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3 CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES
TPOS	Tool Position	ECCE
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.998909
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.00683
	HOLEV: Integrated Hole/Cement Volume	
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
	System and Miscellaneous	
BS	Bit Size	8.500 IN
DFD	Drilling Fluid Density	9.40 LB/G
DO	Depth Offset for Playback	0.8 M
PP	Playback Processing	RECOMPUTE

Format: HNGS_Ratios_500 Vertical Scale: 1:500 Graphics File Created: 04-Dec-2004 17:03

OP System Version: 12C0-301			
MCM			
FBST-B	12C0-301	DSST-B	12C0-301
HNGC-A	12C0-301	HNGS-BA	12C0-301
DTA-A	12C0-301	DTC-H	12C0-301
DTPC-A	12C0-301		

Input DLIS Files

Output DLIS Files

Schlumberger

Repeat Analysis
(1:500)

MAXIS Field Log

Company: Origin Energy Resources Ltd.

Well: Trefoil-1

Input DLIS Files

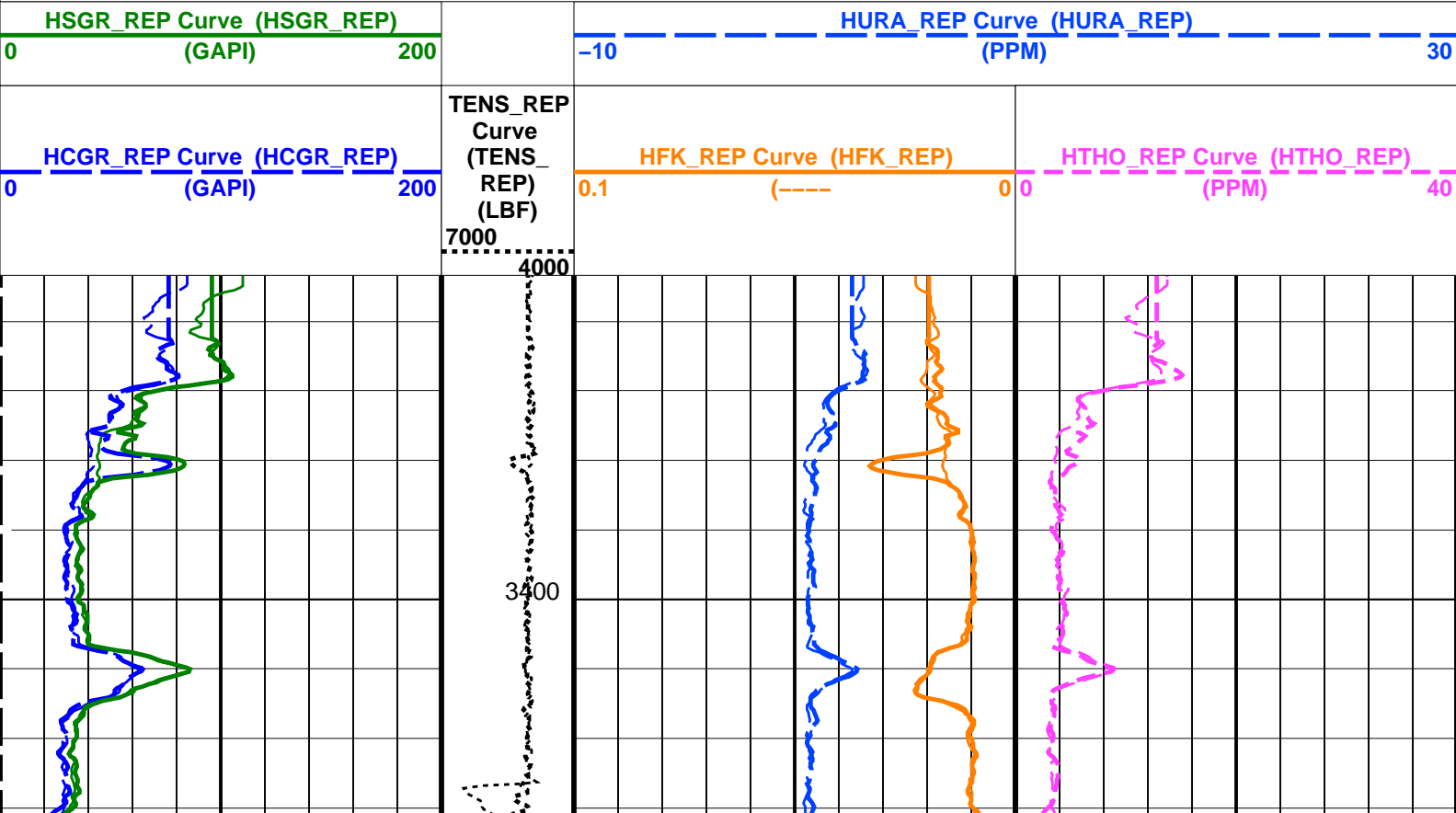
Output DLIS Files

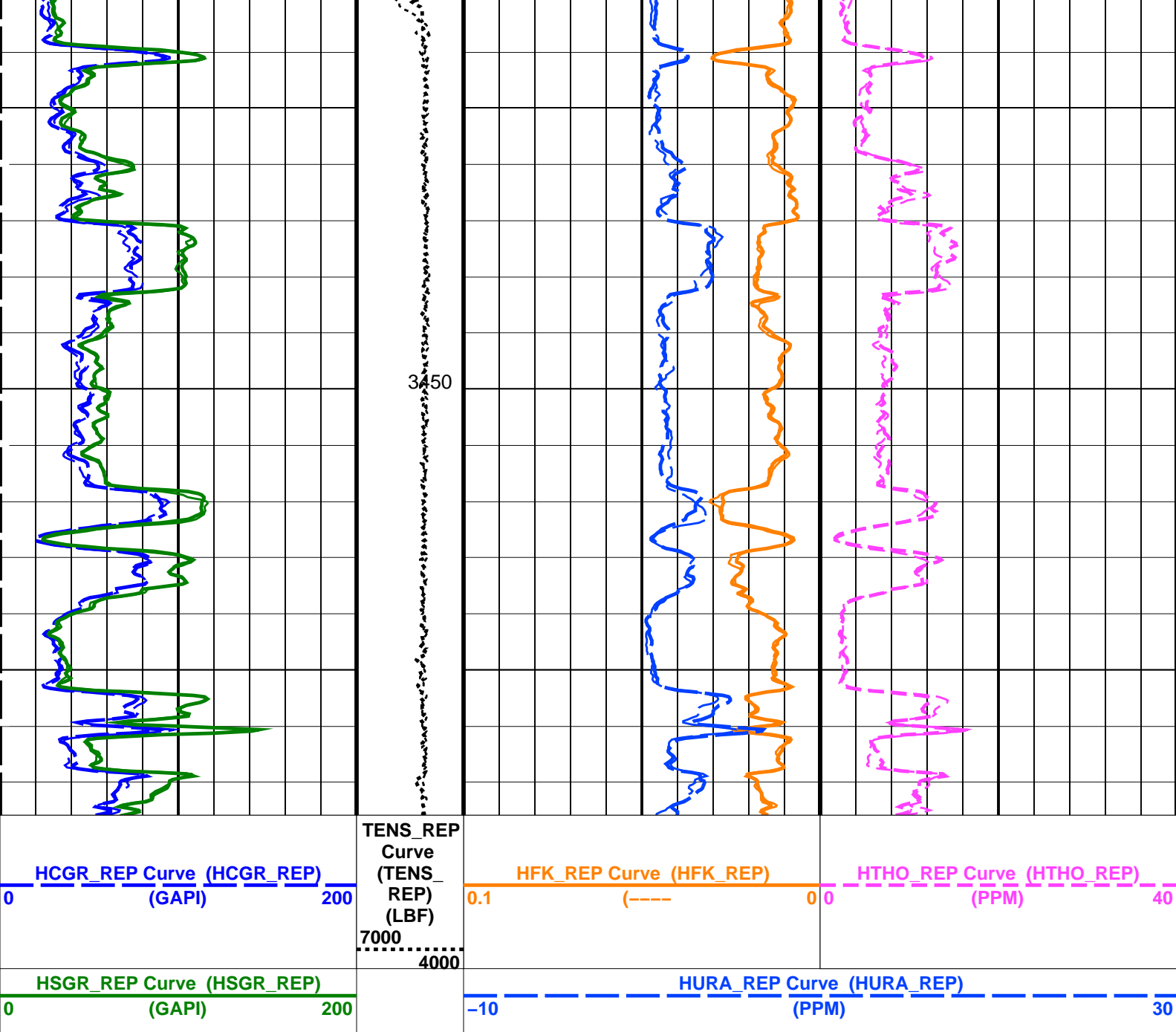
OP System Version: 12C0-301
MCM

FBST-B	12C0-301	DSST-B	12C0-301
HNGC-A	12C0-301	HNGS-BA	12C0-301
DTA-A	12C0-301	DTC-H	12C0-301
DTPC-A	12C0-301		

PIP SUMMARY

Time Mark Every 60 S





PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
DSST-B: Dipole Shear Imager – B			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
HNGBA: Hostile Natural Gamma Ray Sonde			
BAR1	HNGB Detector 1 Barite Constant	1	
BAR2	HNGB Detector 2 Barite Constant	1	
BHK	HNGB Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	9.625	IN
CSD2	Outer Casing Outer Diameter	13.375	IN
CSW1	Inner Casing Weight	43.5	LB/F
CSW2	Outer Casing Weight	54.5	LB/F
DBCC	HNGB Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGB Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGB Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGB Borehole Potassium Running Average	-0.00448684	
HALF	HNGB Alpha Filter Length	60	IN
HCRB	HNGB Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	NATU	

HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	ECCE	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0.998903	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	1.00638	
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
	System and Miscellaneous		
BS	Bit Size	8.500	IN
DFD	Drilling Fluid Density	9.40	LB/G
DO	Depth Offset for Playback	0.6	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	RECOMPUTE	

Format: HNGS_Ratios_500_REP Vertical Scale: 1:500 Graphics File Created: 04-Dec-2004 17:38

OP System Version: 12C0-301

MCM

FBST-B	12C0-301	DSST-B	12C0-301
HNGC-A	12C0-301	HNGS-BA	12C0-301
DTA-A	12C0-301	DTC-H	12C0-301
DTPC-A	12C0-301		

Input DLIS Files

DEFAULT	FMI_DSI_NGS_042PUP	FN:41	PRODUCER	04-Dec-2004 17:03	3530.3 M	2416.6 M
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Output DLIS Files

DEFAULT	FMI_DSI_NGS_050PUP	FN:49	PRODUCER	04-Dec-2004 17:38
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Schlumberger

Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Full-Bore Scanner – B Wellsite Calibration – Caliper Calibration							
Before: 21-Nov-2004 7:12							
Caliper 1 Small Jig	8.000	N/A	7.026	N/A	N/A	N/A	IN
Caliper 2 Small Jig	8.000	N/A	6.941	N/A	N/A	N/A	IN
Caliper 1 Large Jig	12.00	N/A	11.51	N/A	N/A	N/A	IN
Caliper 2 Large Jig	12.00	N/A	10.94	N/A	N/A	N/A	IN
Full-Bore Scanner – B Wellsite Calibration – CROUZET ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: 21-Nov-2004 5:10							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	95	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	6	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	292	N/A	N/A	N/A	
Full-Bore Scanner – B Wellsite Calibration – CROUZET MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: 21-Nov-2004 5:10							
TEMPERATURE REFERENCE :	N/A	N/A	31	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	92	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	12	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	173	N/A	N/A	N/A	

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 1 Check

Master: 20–Nov–2004 23:57 Before: 21–Nov–2004 7:15

Na 511 Peak Loc	40.00	40.59	40.47	N/A	N/A	1.000	
Na 511 Peak Res	15.50	17.06	18.36	N/A	N/A	2.000	%
High Voltage	1150	1286	1288	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	145.3	146.2	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	10.48	9.773	N/A	N/A	2.000	%
Temperature	15.50	19.43	19.78	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	21.72	21.01	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Detector 2 Check

Master: 20–Nov–2004 23:57 Before: 21–Nov–2004 7:15

Na 511 Peak Loc	40.00	40.58	40.62	N/A	N/A	1.000	
Na 511 Peak Res	15.50	16.30	16.18	N/A	N/A	2.000	%
High Voltage	1150	1245	1247	N/A	N/A	N/A	V
Na 1785 Peak Loc	142.6	145.2	144.8	N/A	N/A	7.000	
Na 1785 Peak Res	8.500	9.098	8.969	N/A	N/A	2.000	%
Temperature	15.50	20.06	20.28	N/A	N/A	N/A	DEGC
Na Count Rate	45.00	21.82	21.06	N/A	N/A	8.000	CPS

Hostile Natural Gamma Ray Sonde Wellsite Calibration – Ratio Of Detector 1 To Detector 2

Master: 20–Nov–2004 23:57 Before: 21–Nov–2004 7:15

Coincidence Count Rate Ratio	1.000	0.9940	0.9959	N/A	N/A	0.05000	
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Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration

Master: 20–Nov–2004 23:57

Na 511 Peak Set Point	40.00	42.00	--	--	--	--	
Th Peak Loc	209.6	208.8	--	--	--	--	
Th Peak Res	7.000	8.378	--	--	--	--	%
Background Count Rate	142.5	16.70	--	--	--	--	CPS
Gain Ratio	1.000	0.9789	--	--	--	--	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration

Master: 20–Nov–2004 23:57

Na 511 Peak Set Point	40.00	42.00	--	--	--	--	
Th Peak Loc	209.6	209.4	--	--	--	--	
Th Peak Res	7.000	7.666	--	--	--	--	%
Background Count Rate	142.5	15.85	--	--	--	--	CPS
Gain Ratio	1.000	0.9815	--	--	--	--	

Full-Bore Scanner – B / Equipment Identification

Primary Equipment:





FullBore Scanner Sonde	FBSS – B	830
FullBore Scanner Sonde Upper part	FBSH – A	855
FullBore Scanner Sonde Cartridge	FBSC – B	858
GPIT Cartridge – AC	GPIC – AC	735
Insulating Sub	AH – 185	909
FullBore Scanner Control Cartridge	FBCC – A	794

Auxiliary Equipment:

Electronics Cartridge Housing	ECH – MRA	4742
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Full-Bore Scanner – B Wellsite Calibration

Caliper Calibration

Phase	Caliper 1 Small Jig IN	Value	Phase	Caliper 2 Small Jig IN	Value
Before		7.026	Before		6.941
	6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)			6.800 (Minimum) 8.000 (Nominal) 9.200 (Maximum)	
Phase	Caliper 1 Large Jig IN	Value	Phase	Caliper 2 Large Jig IN	Value
Before		11.51	Before		10.94
	10.20 (Minimum) 12.00 (Nominal) 13.80 (Maximum)			10.20 (Minimum) 12.00 (Nominal) 13.80 (Maximum)	

Before: 21–Nov–2004 7:12

Hostile Natural Gamma Ray Cartridge – A / Equipment Identification

Primary Equipment:

HNGC Cartridge	HNGC – A	10
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Auxiliary Equipment:

HNGC Housing	HNGH – A	3
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Hostile Natural Gamma Ray Sonde / Equipment Identification		
Primary Equipment:		
HNGS Sonde	HNGS – BA	28
Auxiliary Equipment:		
HNGS Sonde Housing	HNSH – BA	28
Gamma Source Radioactive	GSR – U	2003

Hostile Natural Gamma Ray Sonde Wellsite Calibration																		
Detector 2 Check																		
Phase	Na 511 Peak Loc			Value	Phase	Na 511 Peak Res %			Value	Phase	High Voltage V			Value				
Master	<div><div></div></div>			40.58	Master	<div><div></div></div>			16.30	Master	<div><div></div></div>			1245				
Before	<div><div></div></div>			40.62	Before	<div><div></div></div>			16.18	Before	<div><div></div></div>			1247				
37.50 (Minimum)				40.00 (Nominal)	42.50 (Maximum)				12.00 (Minimum)	15.50 (Nominal)	19.00 (Maximum)				900.0 (Minimum)	1150 (Nominal)	1600 (Maximum)	
Phase	Na 1785 Peak Loc			Value	Phase	Na 1785 Peak Res %			Value	Phase	Temperature DEGC			Value				
Master	<div><div></div></div>			145.2	Master	<div><div></div></div>			9.098	Master	<div><div></div></div>			20.06				
Before	<div><div></div></div>			144.8	Before	<div><div></div></div>			8.969	Before	<div><div></div></div>			20.28				
135.0 (Minimum)				142.6 (Nominal)	150.3 (Maximum)				7.000 (Minimum)	8.500 (Nominal)	11.00 (Maximum)				-28.89 (Minimum)	15.50 (Nominal)	60.00 (Maximum)	
Phase	Na Count Rate CPS			Value														
Master	<div><div></div></div>			21.82														
Before	<div><div></div></div>			21.06														
10.00 (Minimum)				45.00 (Nominal)									100.0 (Maximum)					
Master: 20-Nov-2004 23:57												Before: 21-Nov-2004 7:15						

Hostile Natural Gamma Ray Sonde Master Calibration									
Detector 1 Calibration									

Phase	Na 511 Peak Set Point			Value	Phase	Th Peak Loc			Value	Phase	Th Peak Res %			Value				
Master				42.00	Master				208.8	Master				8.378				
38.00 (Minimum)				40.00 (Nominal)	201.0 (Minimum)				209.6 (Nominal)	5.000 (Minimum)				7.000 (Nominal)	9.000 (Maximum)			
Phase	Background Count Rate CPS			Value	Phase	Gain Ratio			Value									
Master				16.70	Master				0.9789									
20.00 (Minimum)				142.5 (Nominal)	0.9400 (Minimum)				1.000 (Nominal)						1.060 (Maximum)			
Master: 20–Nov–2004 23:57																		

Hostile Natural Gamma Ray Sonde Master Calibration														
Detector 2 Calibration														
Phase	Na 511 Peak Set Point			Value	Phase	Th Peak Loc			Value	Phase	Th Peak Res %			Value
Master				42.00	Master				209.4	Master				7.666
38.00 (Minimum) 40.00 (Nominal) 42.00 (Maximum)					201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)					5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)				
Phase	Background Count Rate CPS			Value	Phase	Gain Ratio			Value					
Master				15.85	Master				0.9815					
20.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)					0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)									
Master: 20–Nov–2004 23:57														

Company: **Origin Energy Resources Ltd.**

Schlumberger

Well: **Trefoil–1**
Field: **Trefoil**
Rig: **ENSCO 102**
Country: **Australia**

FMI–DSI–HNGS
Natural GR Spectroscopy
1:500 Scale