

Company: Esso Australia Pty Ltd.

Well: COBIA F35
Field: FORTESCUE
Rig: Crane / Prod 4

Country: Australia

RST-C
Sigma Log
10-Mar-2010

LOCATION

Bass Strait

Elev.: K.B. 40.99 m
G.L. -79.00 m
D.F. 40.99 m

Permanent Datum: M.S.L.
Log Measured From: K.B.
Drilling Measured From: K.B.

Elev.: 0.00 m
40.99 m above Perm. Datum

Rig: Crane / Prod 4
Field: FORTESCUE
Location: Bass Strait
Well: COBIA F35
Company: Esso Australia Pty Ltd.

State: Victoria

Max. Well Deviation 67.4 deg

Longitude 148 16' 28.3" E

Latitude 38 24' 31.39" S

PVT DATA				Run 1	Run 2	R
Oil Density						
Water Salinity						
Gas Gravity						
Bo						
Bw						
1/Bg						
Bubble Point Pressure						
Bubble Point Temperature						
Solution GOR						
Maximum Deviation	67.4 deg					
CEMENTING DATA						
Primary/Squeeze						
Casing String No						
Lead Cement Type						
Volume						
Density						
Water Loss						
Additives						
Tail Cement Type						
Volume						
Density						
Water Loss						
Additives						
Expected Cement Top						

Logging Date	10-Mar-2010		
Run Number	One		
Depth Driller	4573 m		
Schlumberger Depth	4481 m		
Bottom Log Interval	4477 m		
Top Log Interval	4290 m		
Casing Fluid Type	Produced Fluid		
Salinity			
Density			
Fluid Level	717 m		
BIT/CASING/TUBING STRING			
Bit Size	9.875 in		
From	683 m		
To	4573 m		
Casing/Tubing Size	7.000 in		
Weight	26 lbn/ft		
Grade	L-80		
From	21.4 m		
To	4568.9 m		
Maximum Recorded Temperatures	108 degC		
Logger On Bottom	10-Mar-2010	9:15	
Unit Number	889	AUSL	
Recorded By	C. Rowand / W. Mackenzie		
Witnessed By	B. White		

Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Fluid Type			
Salinity			
Density			
Fluid Level			
BIT/CASING/TUBING STRING			
Bit Size			
From			
To			
Casing/Tubing Size			
Weight			
Grade			
From			
To			
Maximum Recorded Temperatures			
Logger On Bottom			
Unit Number			
Recorded By			
Witnessed By			

Date Created: 10-MAR-2010 12:42:51

Logging Cable

Type:	2-32ZT
Serial Number:	208558
Length:	5950 M
Conveyance Method:	Wireline
Rig Type:	Offshore Fixed

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	ExxonMobil Petro Analysis
Reference Log Run Number:	Composite
Reference Log Date:	
Subsequent Trip Down Log Correction:	-5.00 M

1. Rigged up on main deck using the platform crane
2. Tool Zero is referenced from the Tubing Hanger at 20.93m.
3. Depth correlated over the interval: 4340–4470m.
- 4.
- 5.
6. Tension: $a = 3.75 \text{ E-}5$, $b = 0.8051$ & $c = -129.5$

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.

OTHER SERVICES2
OS1:
OS2:
OS3:
OS4:
OS5:

All depths are MDKB.

Logging Parameters:
MATR = Sandstone, CSIZ = 7", CWEI = 26 lb/ft, BS = 9-7/8" , BSAL = -50000 ppm.

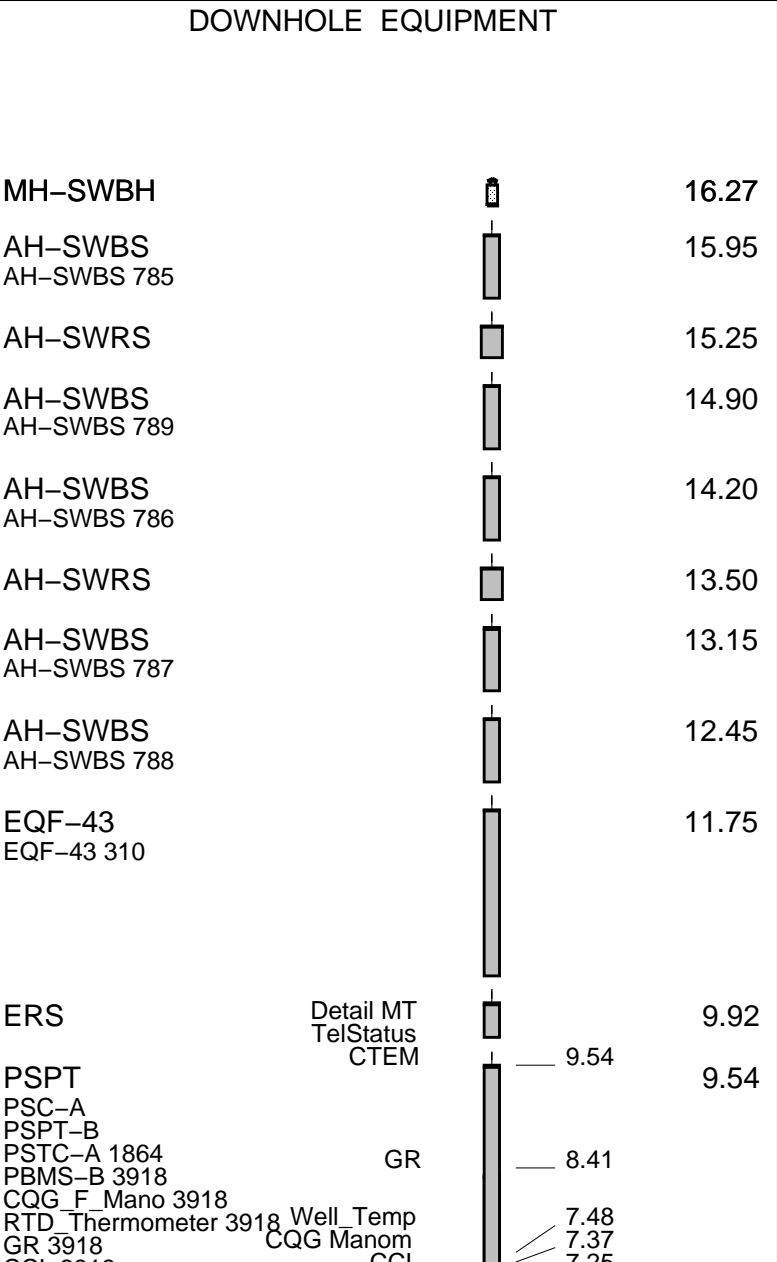
RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:			PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

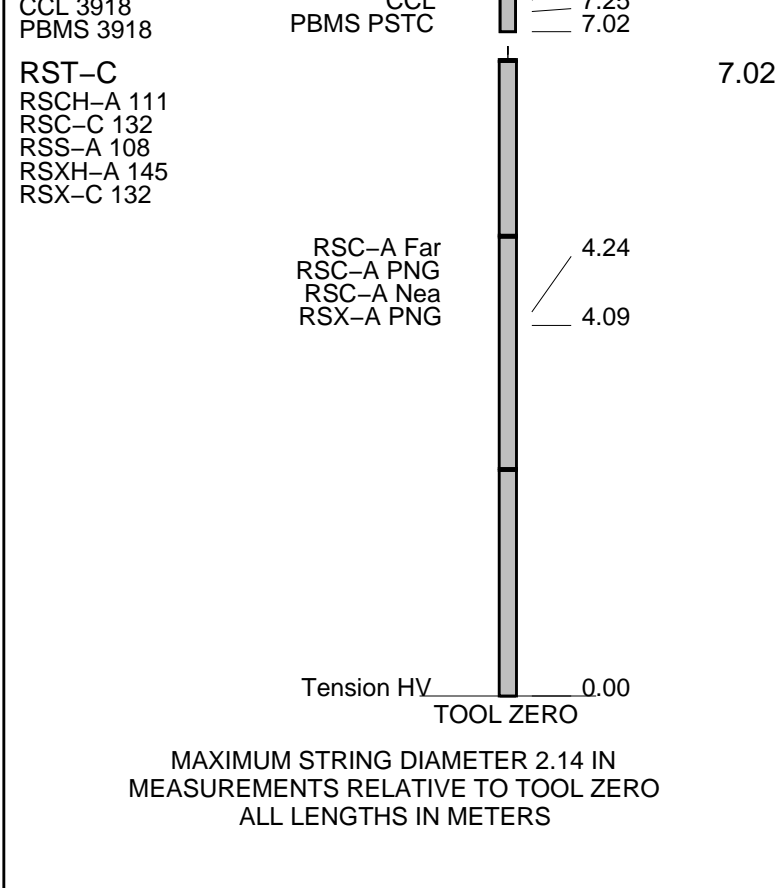
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		

SURFACE EQUIPMENT

WITM-A

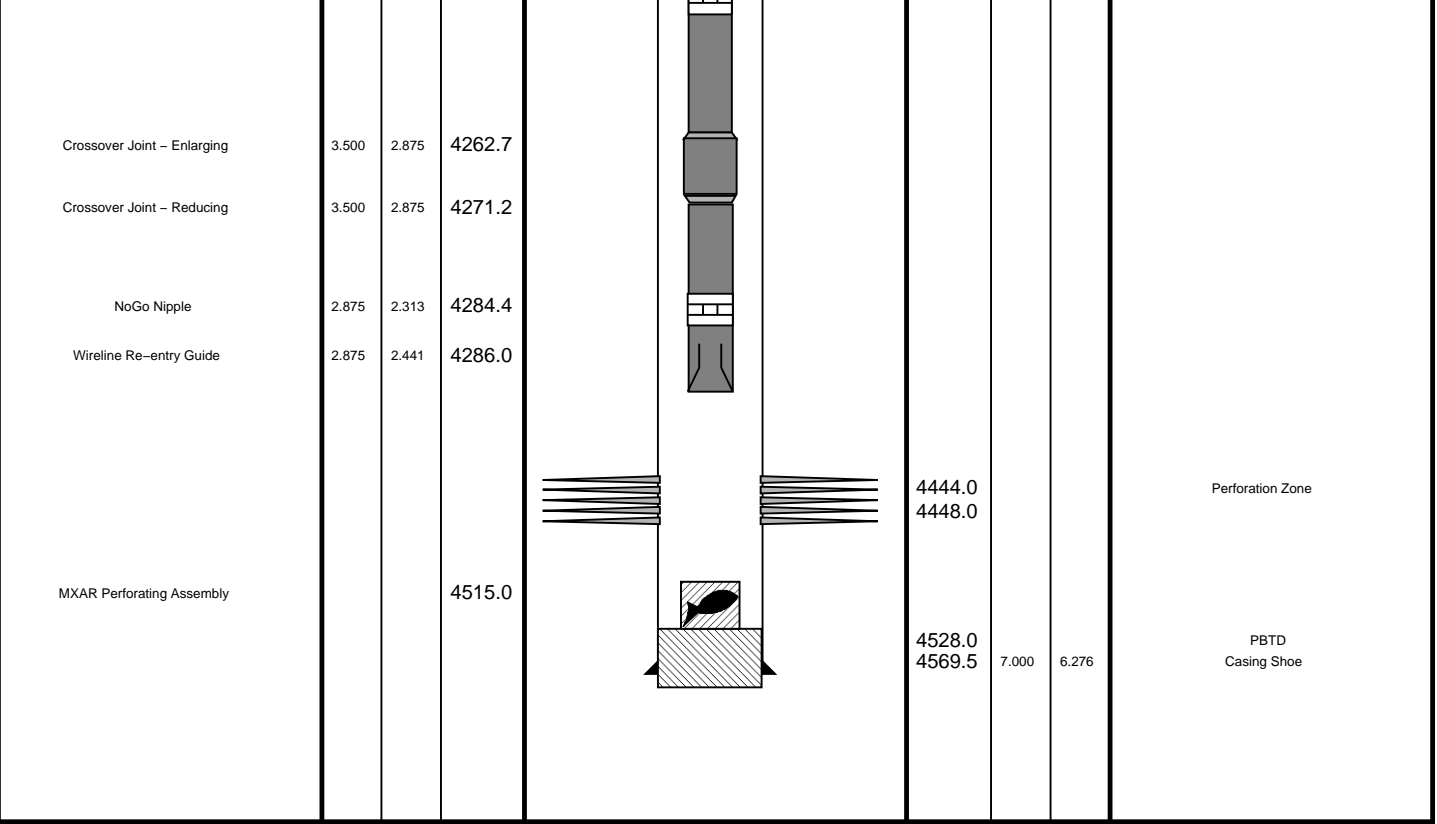
PSC_16MHZ





Client: Esso Australia Pty Ltd Well: CBA F35 Field: Halibut State: Victoria Country: Australia	Drawing Date: 2/23/2010 Rig Name: Crane / Prod4 Reference Datum: Mean Sea Level Elevation: 0.0 m
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Production String	(in)		(m)	Well Schematic	(m)		(in)	Casing String
	OD	ID			MD	OD	ID	
Tubing Hanger Crossover Joint – Reducing Tubing	7.000	3.500	20.9		21.4	7.000	6.276	Production Casing
	3.500	2.875	24.6		21.5	10.750	10.050	Surface Casing
	2.875	2.441	24.9		21.6	20.000	18.638	Conductor Casing
SSSV					201.3	20.000	18.638	Casing Shoe
	2.875	2.313	451.4		678.5	10.750	10.050	Casing Shoe
Side Pocket Mandrel	2.875	2.371	930.5					
Side Pocket Mandrel	2.875	2.371	1934.8					
Side Pocket Mandrel	2.875	2.371	2200.4					
Side Pocket Mandrel	2.875	2.371	2427.6					
Landing Nipple	2.875	2.441	2442.4					



All Depths are Drillers Depths
Not to Scale



Merged Sgima Passes
Shut In

MAXIS Field Log

Company: Esso Australia Pty Ltd. Well: COBIA F35

Input DLIS Files

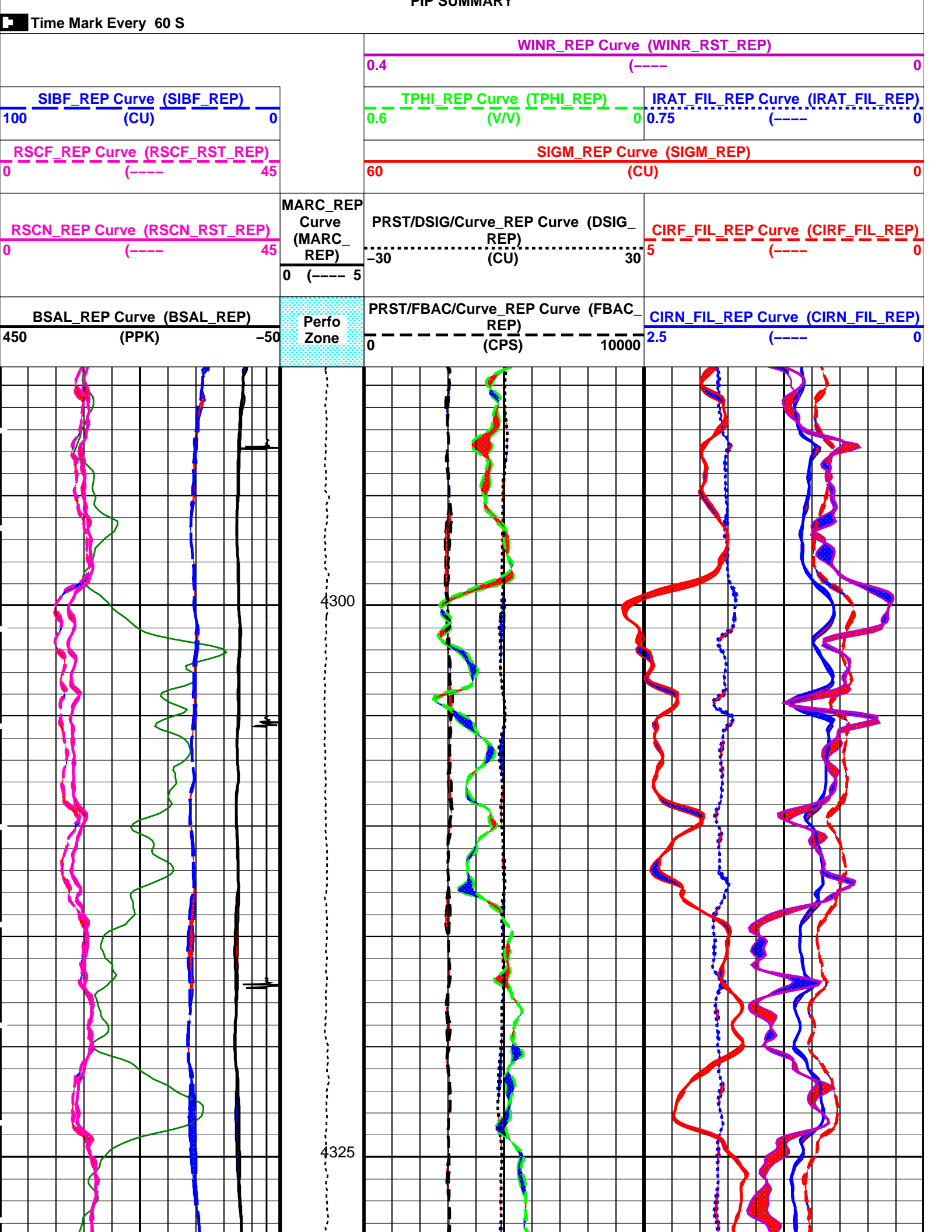
DEFAULT	RST_PSP_006PUP	FN:12	PRODUCER	10-Mar-2010 12:19	4485.0 M	4289.0 M
DEFAULT	RST_PSP_007PUP	FN:14	PRODUCER	10-Mar-2010 12:21	4485.0 M	4289.0 M

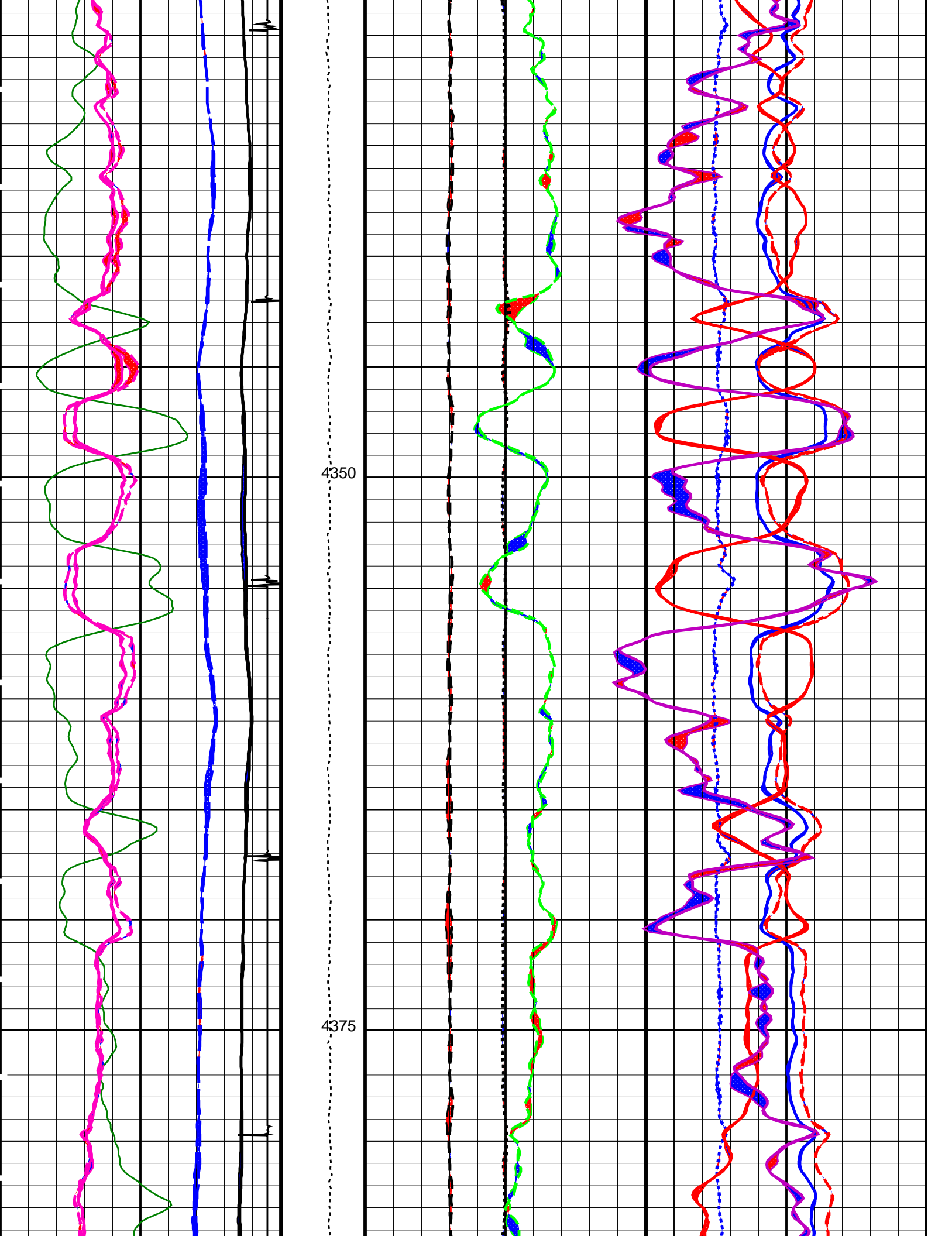
Output DLIS Files

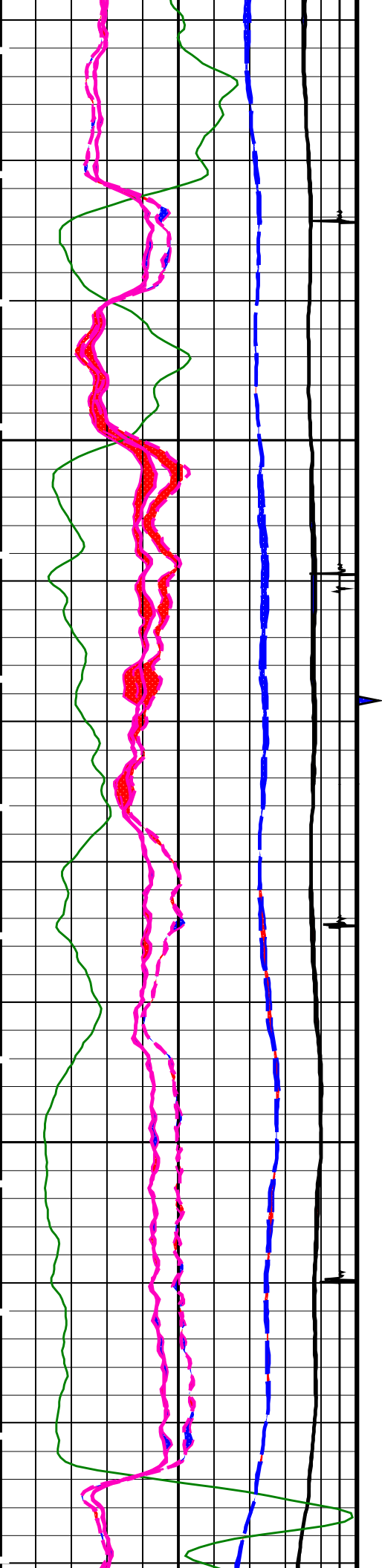
DEFAULT	RST_PSP_008PUP	FN:16	PRODUCER	10-Mar-2010 12:57	4477.1 M	4289.0 M
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OP System Version: 17C0-154

RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
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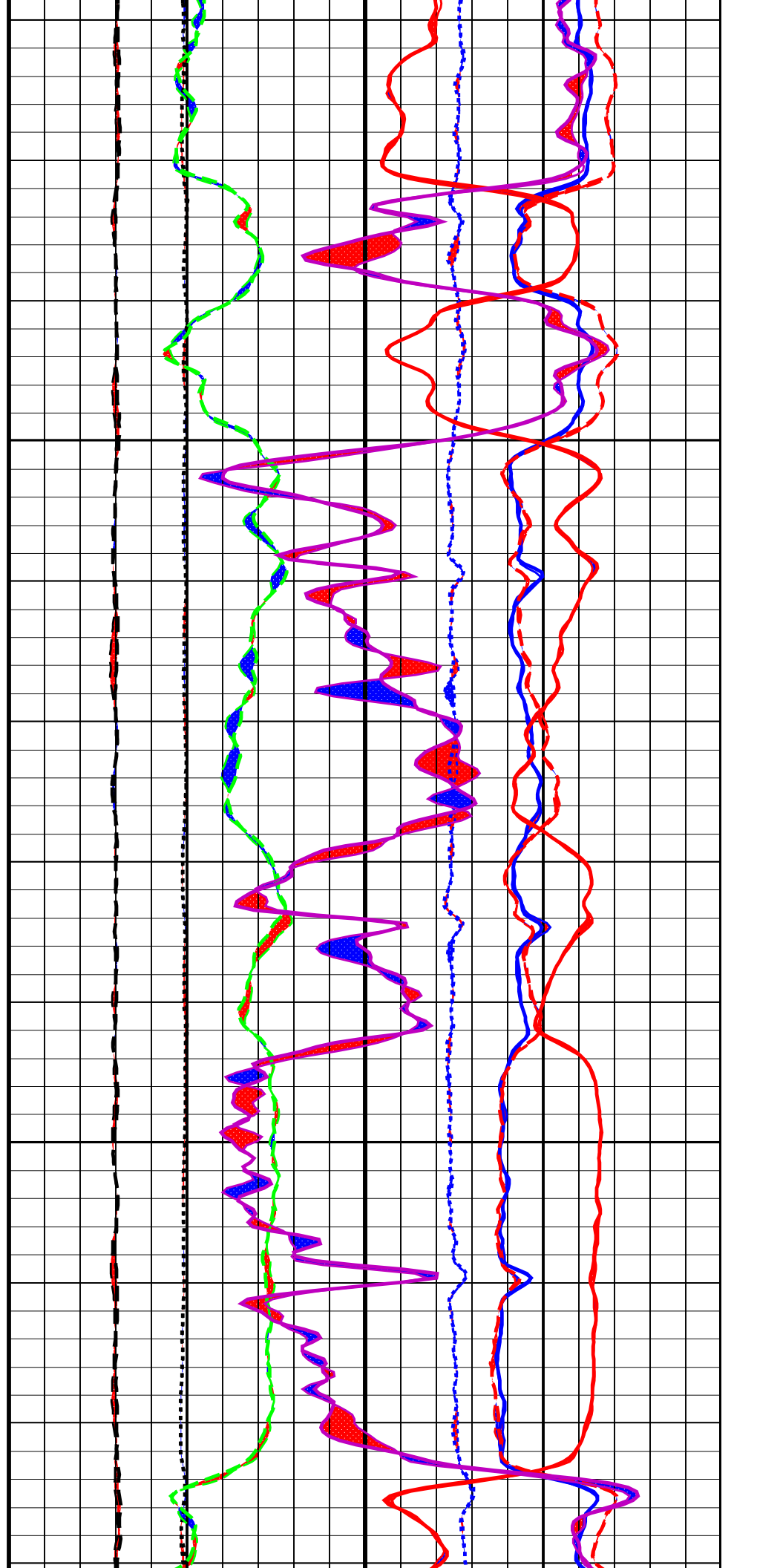


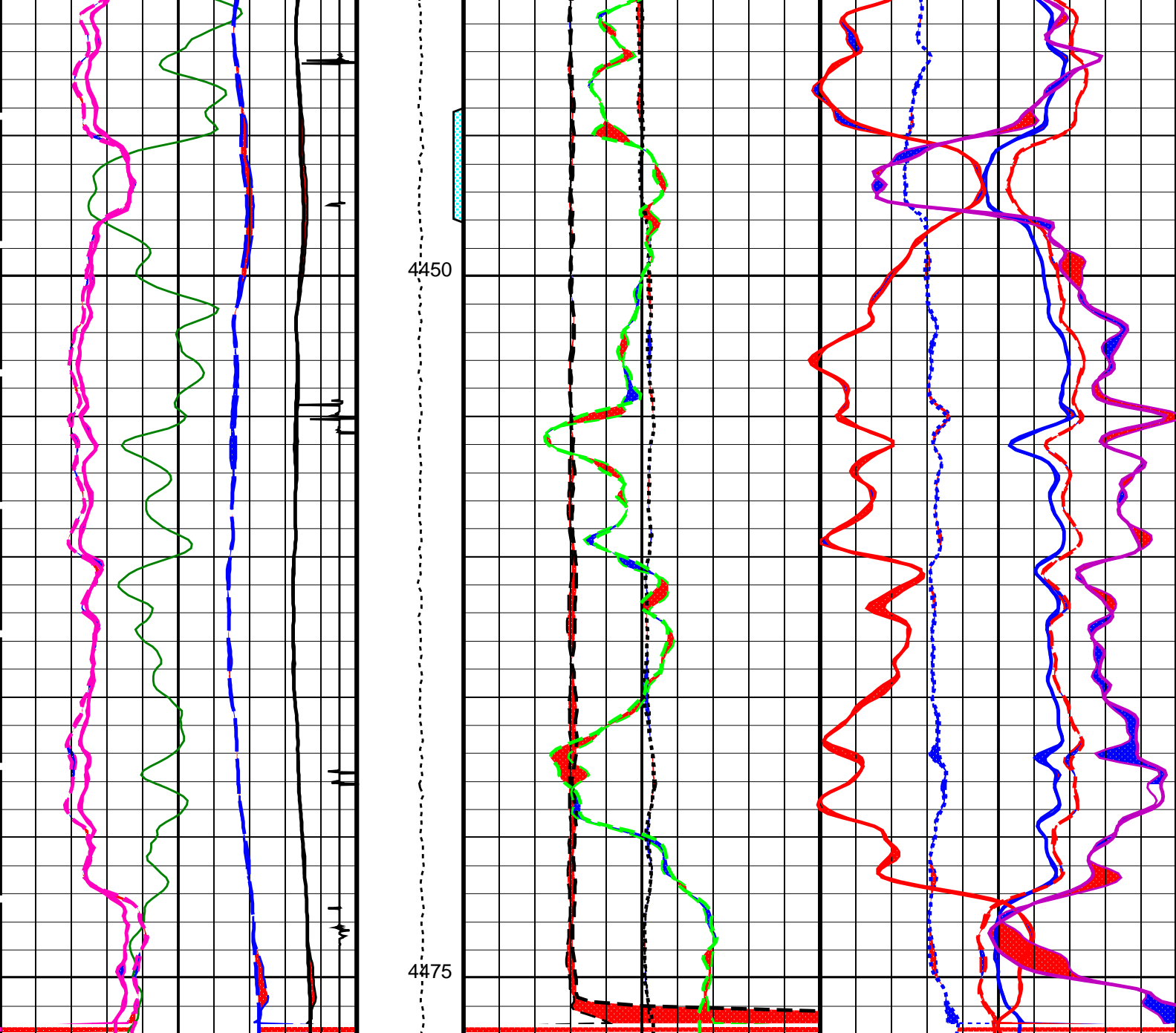




4400

4425





BSAL_REP Curve (BSAL_REP) 450 (PPK) -50	Perfo Zone	PRST/FBAC/Curve_REP Curve (FBAC_REP) 0 (CPS) 10000	CIRM_FIL_REP Curve (CIRM_FIL_REP) 2.5 (----) 0
RSCN_REP Curve (RSCN_RST_REP) 0 (----) 45		PRST/DSIG/Curve_REP Curve (DSIG_REP) -30 (CU) 30	CIRF_FIL_REP Curve (CIRF_FIL_REP) 5 (----) 0
RSCF_REP Curve (RSCF_RST_REP) 0 (----) 45	MARC_REP Curve (MARC_REP) 0 (----) 5	SIGM_REP Curve (SIGM_REP) 60 (CU) 0	
SIBF_REP Curve (SIBF_REP) 100 (CU) 0		TPHI_REP Curve (TPHI_REP) 0.6 (V/V) 0	IRAT_FIL_REP Curve (IRAT_FIL_REP) 0.75 (----) 0
		WINR_REP Curve (WINR_RST_REP) 0.4 (----) 0	

PIP SUMMARY

Time Mark Every 60 S

Format: RST_SIG_ANSW_REP Vertical Scale: 1:200

Graphics File Created: 10-Mar-2010 12:57

OP System Version: 17C0-154

RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
Input DLIS Files			
DEFAULT	RST_PSP_006PUP	FN:12	PRODUCER 10-Mar-2010 12:19 4485.0 M 4289.0 M
DEFAULT	RST_PSP_007PUP	FN:14	PRODUCER 10-Mar-2010 12:21 4485.0 M 4289.0 M
Output DLIS Files			
DEFAULT	RST_PSP_008PUP	FN:16	PRODUCER 10-Mar-2010 12:57



RST Sigma Pass #2 Shut In

MAXIS Field Log

Company: Esso Australia Pty Ltd. Well: COBIA F35

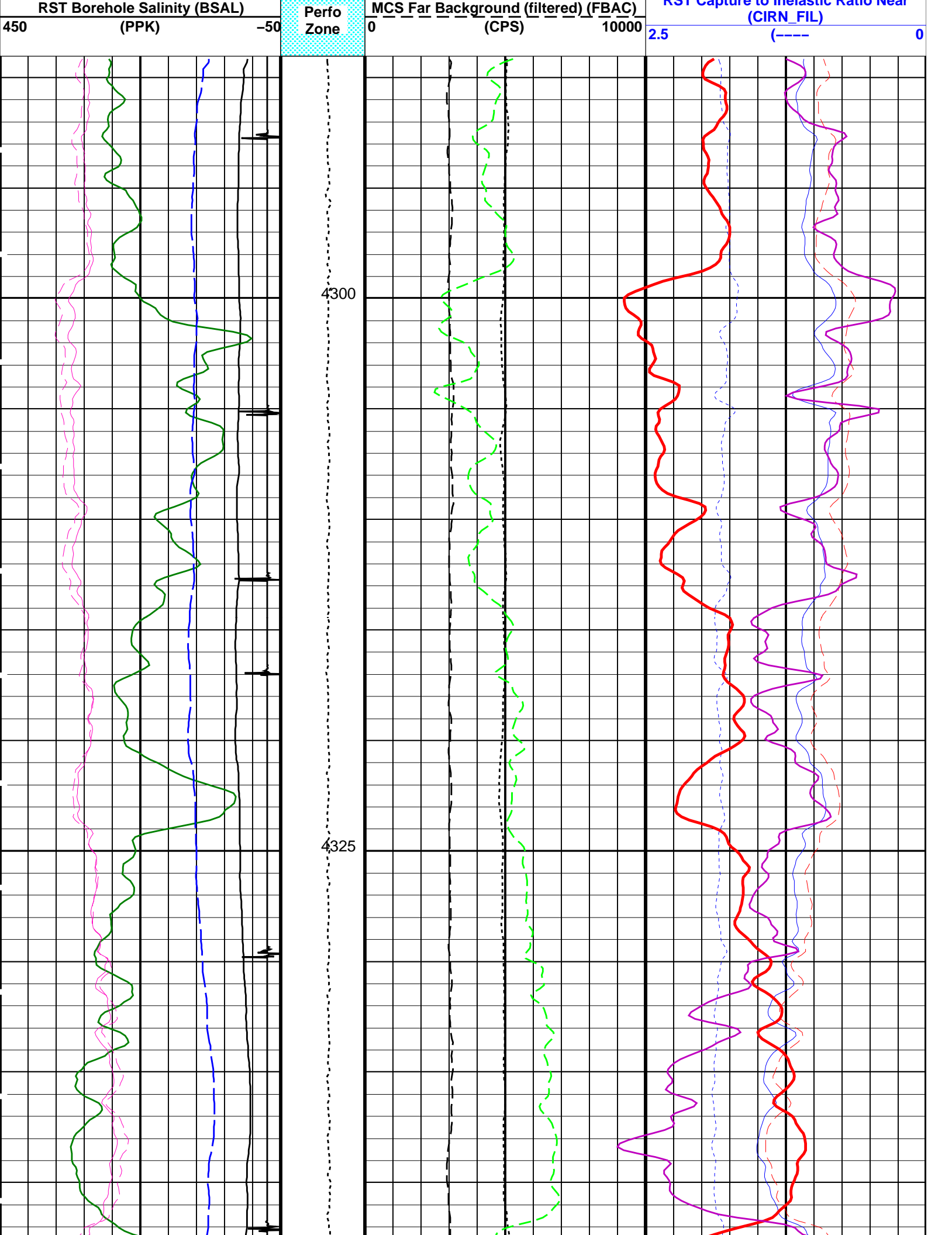
Input DLIS Files			
DEFAULT	RST_PSP_007LUP	FN:6	PRODUCER 10-Mar-2010 10:49 4488.5 M 4271.9 M
Output DLIS Files			
DEFAULT	RST_PSP_007PUP	FN:14	PRODUCER 10-Mar-2010 12:21 4485.0 M 4289.0 M
CUST	RST_PSP_007PUC	FN:15	CUSTOMER 10-Mar-2010 12:21 4485.0 M 4289.0 M

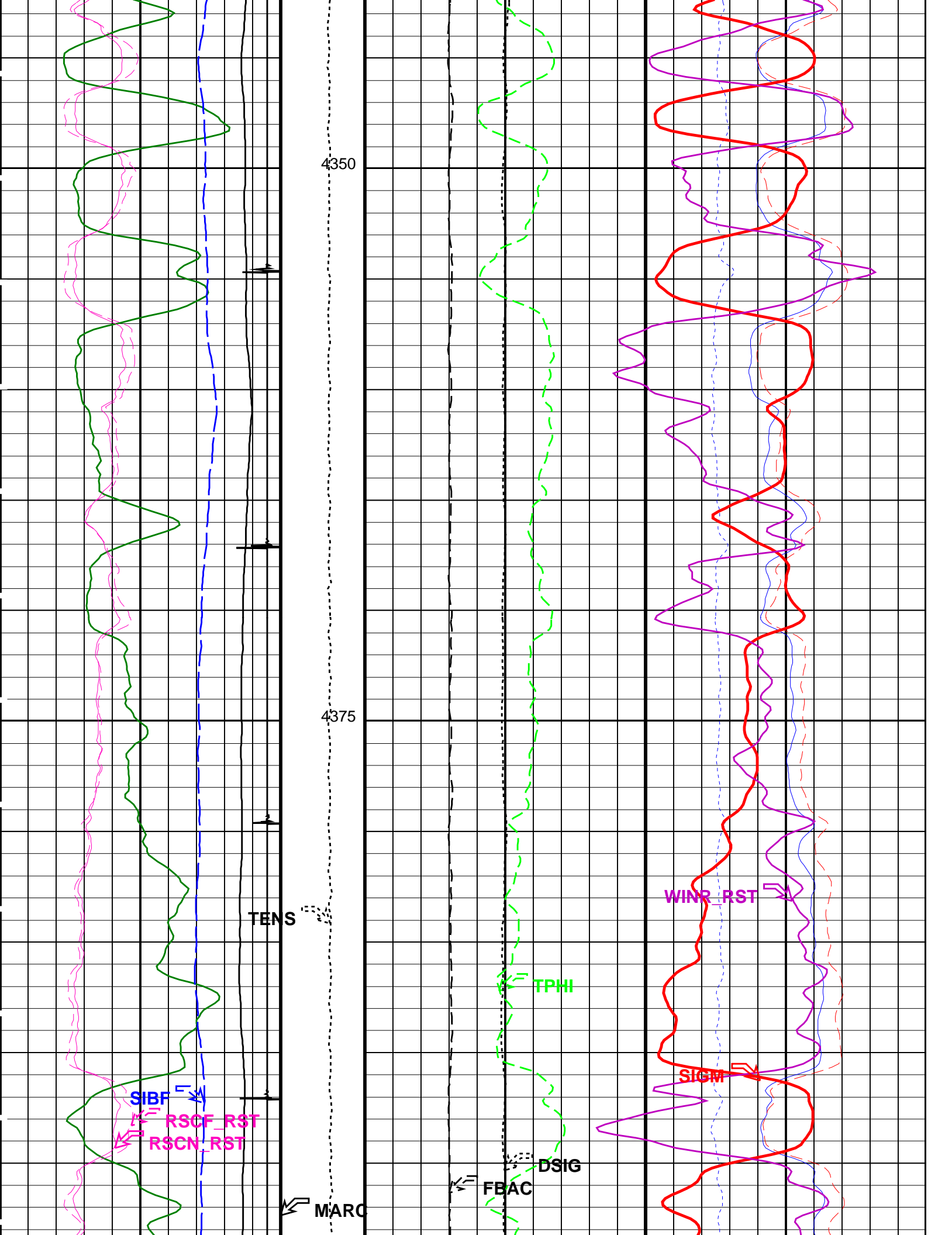
OP System Version: 17C0-154

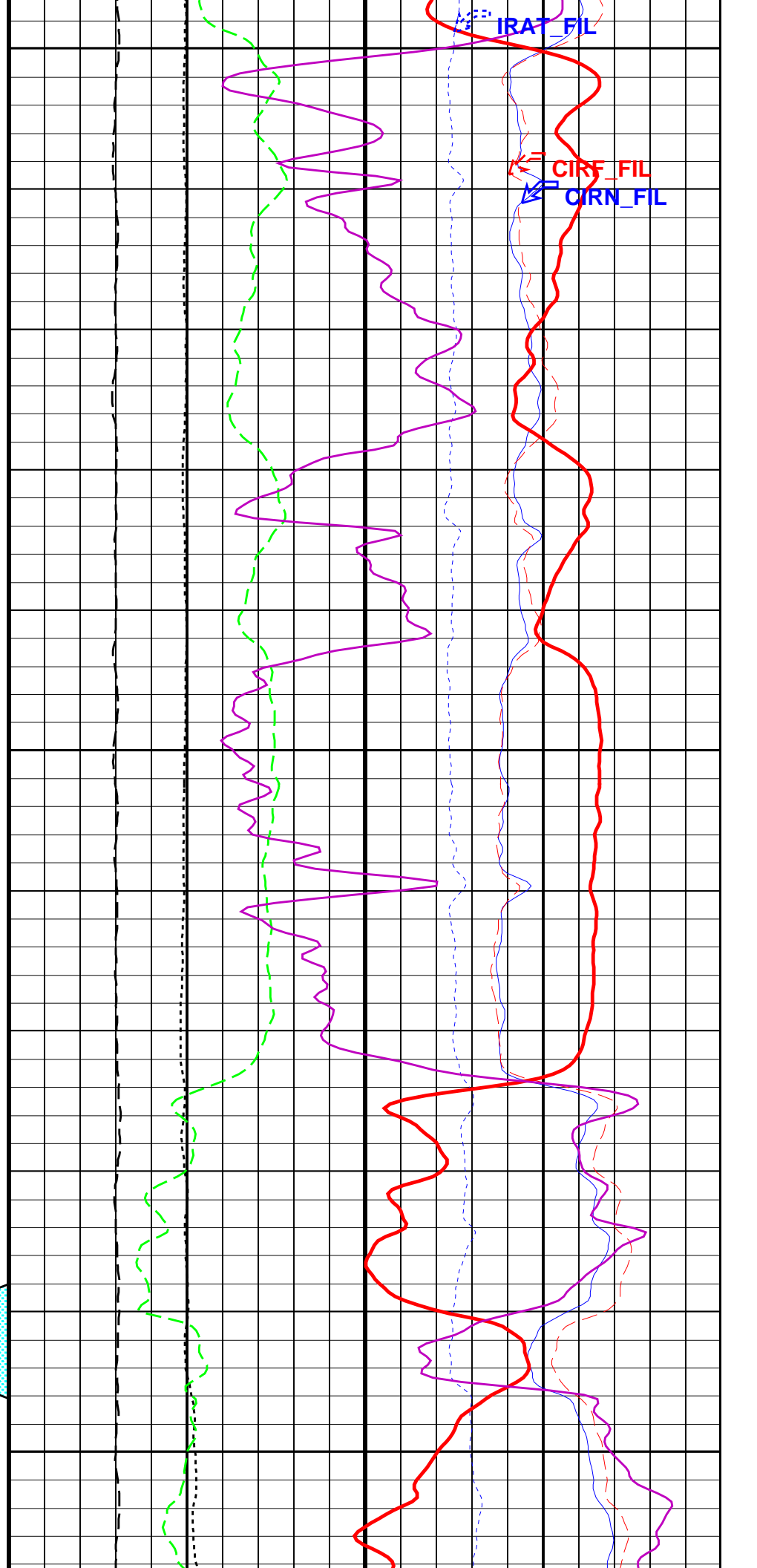
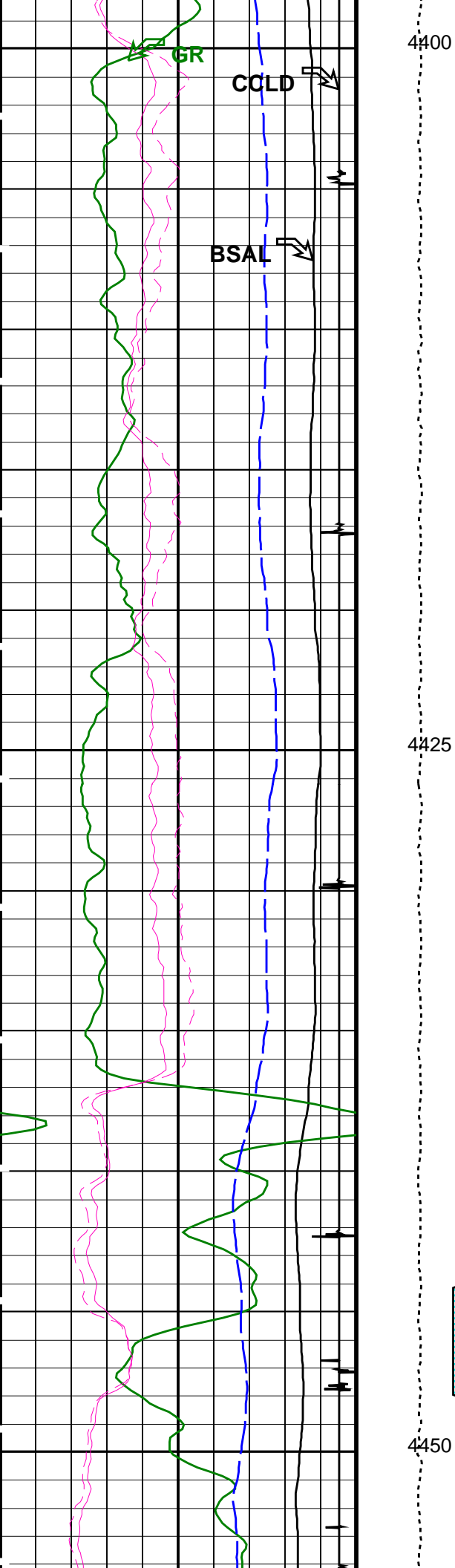
RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
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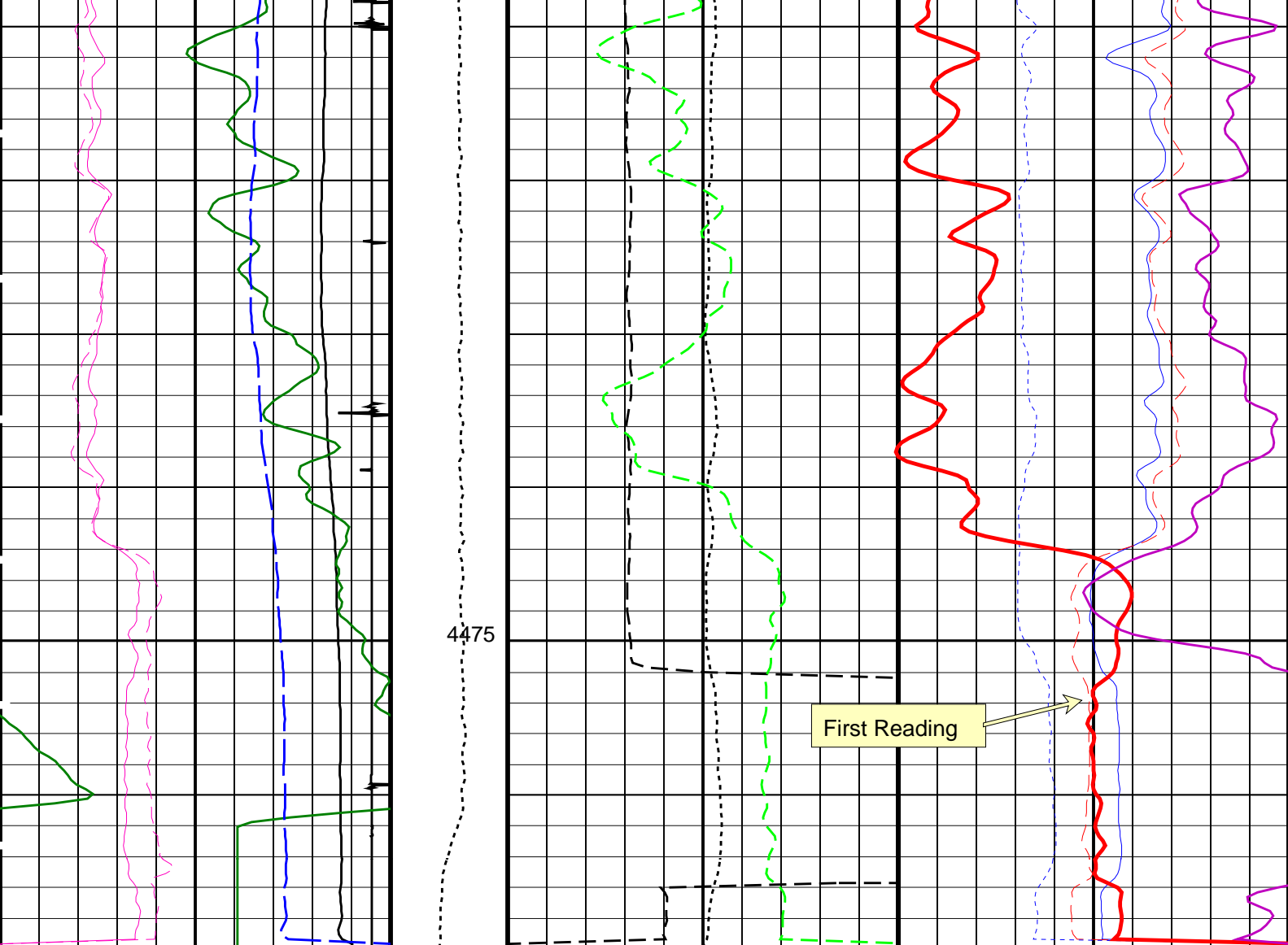
PIP SUMMARY

Time Mark Every 60 S			
RST Far Effective Capture CR (RSCF_RST)		RST Weighted Inelastic Ratio (WINR_RST)	
0 (----) 45		0.4 (----)	0
RST Near Effective Capture CR (RSCN_RST)		RST Porosity (TPHI) (V/V)	
0 (----) 45		0.6 (----)	0
RST Sigma Borehole Fluid (SIBF) (CU)		RST Inelastic Ratio (IRAT_FIL) (----)	
100 (CU) 0		0.75 (----)	0
Gamma Ray (GR) (GAPI)	Minitron Arc Detection (MARC)	RST Sigma (SIGM) (CU)	
0 (GAPI) 150	0 (----) 5	60 (CU)	0
Discriminated CCL (CCLD) (V)	Tension (TENS) (LBF)	RST Sigma Difference (DSIG) (CU)	RST Capture to Inelastic Ratio Far (CIRF_FIL) (----)
-19 (V) 1	1000 3000	-30 (CU) 30	5 (----) 0
			RST Capture to Inelastic Ratio Near









RST Borehole Salinity (BSAL)		Perfo Zone	MCS Far Background (filtered) (FBAC)		RST Capture to Inelastic Ratio Near (CIRN_FIL)				
450	(PPK)		-50	0	(CPS)	10000	2.5	(----	0
Discriminated CCL (CCLD)			Tension (TENS) (LBF)	RST Sigma Difference (DSIG)		RST Capture to Inelastic Ratio Far (CIRF_FIL)			
-19	(V)		1	-30	(CU)	30	5	-----	0
		1000							
		3000							
Gamma Ray (GR)		Minitron Arc Detection (MARC)	RST Sigma (SIGM)						
0	(GAPI)		150	60	(CU)	0			
		0	(----	5					
RST Sigma Borehole Fluid (SIBF)			RST Porosity (TPHI)		RST Inelastic Ratio (IRAT_FIL)				
100	(CU)		0	0.6	(V/V)	0	0.75	(----	0
RST Near Effective Capture CR (RSCN_RST)			RST Weighted Inelastic Ratio (WINR_RST)						
0	(----		45	0.4	(----	0			
RST Far Effective Capture CR (RSCF_RST)									
0	(----	45							

PIP SUMMARY

Time Mark Every 60 S		
Parameters		
DI IS Name	Description	Value

DLIS Name	Description	Value	
RST-C: Reservoir Saturation Pro Tool C			
AIRB	RST Air Borehole	No	
BHS	Borehole Status	CASED	
BSALOPT	RST Borehole Salinity Option	Unknown	
BSFL	RST Borehole Salinity Filter Length	51	
DFPC	RST Depth Filter Processing Constant	One	
DFPC_TDTL	RST Depth Filter Processing Constant (TDT-like)	Two	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
NORM_IRAT_RST	RST Normalized Inelastic Ratio	0.48	
NORM_SIGM_RST	RST Normalized Sigma	30	CU
RGAI	Near/Far Gain Calibration Ratio	1	
TIER_SIGM	RST Sigma Acquisition Mode	0_RST_Sigma	
PSPT: Production Services Logging Platform			
BHS	Borehole Status	CASED	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
System and Miscellaneous			
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	-50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	0.3	M
PP	Playback Processing	NORMAL	

Format: RST_SIG_ANSW Vertical Scale: 1:200 Graphics File Created: 10-Mar-2010 12:21

OP System Version: 17C0-154

RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
Input DLIS Files			
DEFAULT	RST_PSP_007LUP	FN:6 PRODUCER	10-Mar-2010 10:49 4488.5 M 4271.9 M
Output DLIS Files			
DEFAULT	RST_PSP_007PUP	FN:14 PRODUCER	10-Mar-2010 12:21
CUST	RST_PSP_007PUC	FN:15 CUSTOMER	10-Mar-2010 12:21

Schlumberger

RST Sigma Pass #1 Shut In

MAXIS Field Log

Company: Esso Australia Pty Ltd. Well: COBIA F35

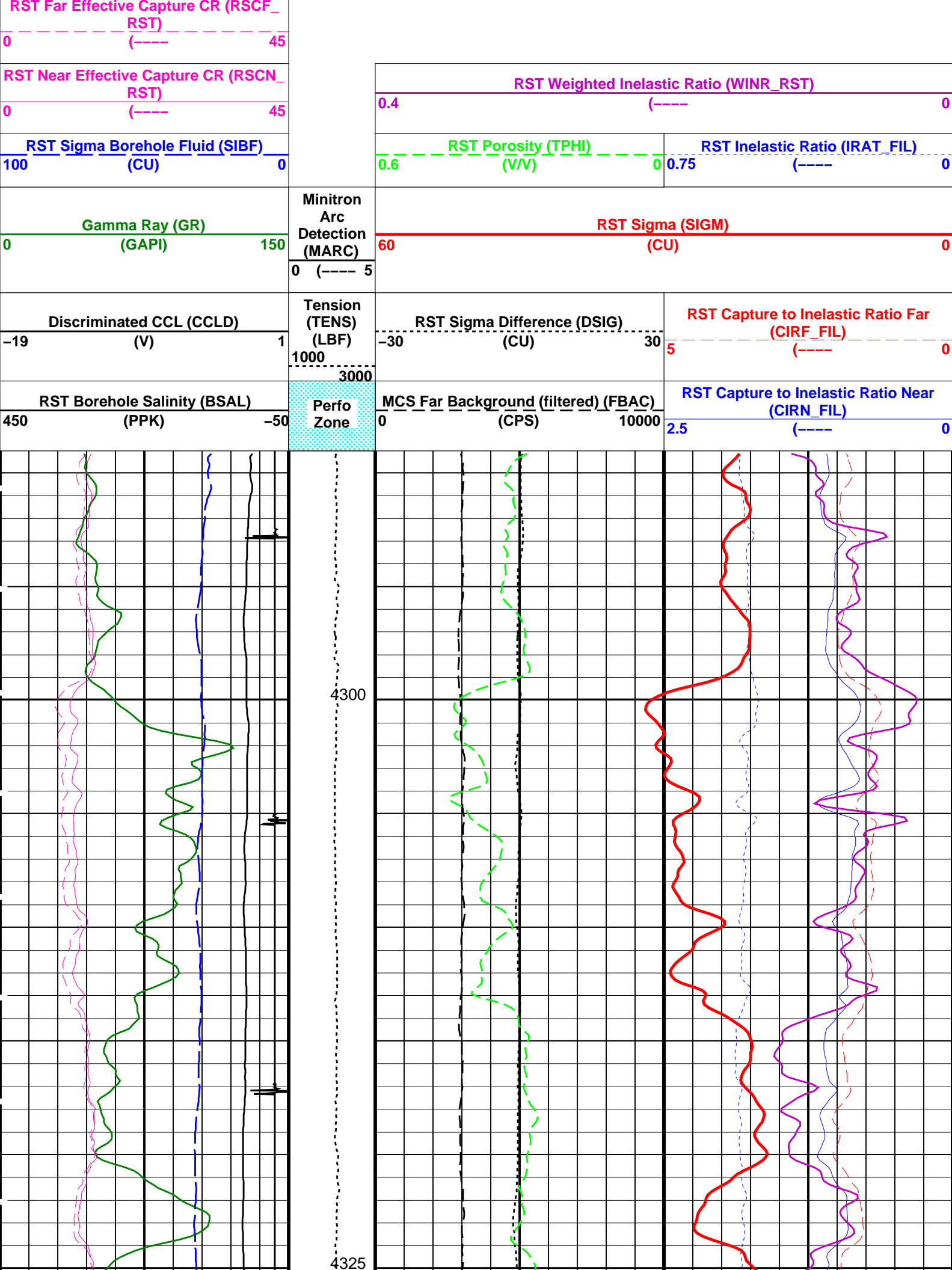
Input DLIS Files			
DEFAULT	RST_PSP_006LUP	FN:5 PRODUCER	10-Mar-2010 09:57 4488.9 M 4271.9 M
Output DLIS Files			
DEFAULT	RST_PSP_006PUP	FN:12 PRODUCER	10-Mar-2010 12:19 4485.0 M 4289.0 M
CUST	RST_PSP_006PUC	FN:13 CUSTOMER	10-Mar-2010 12:19 4485.0 M 4289.0 M

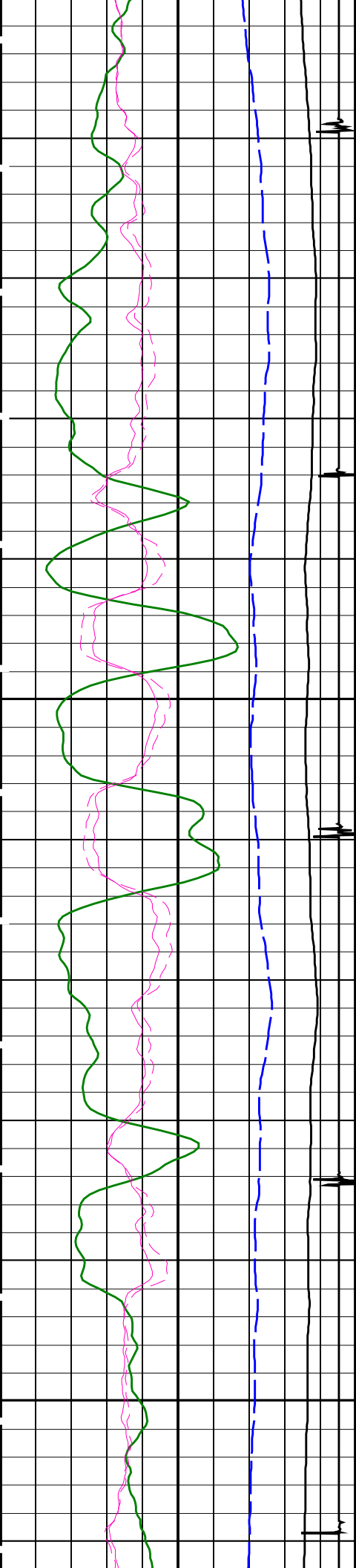
OP System Version: 17C0-154

RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
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PIP SUMMARY

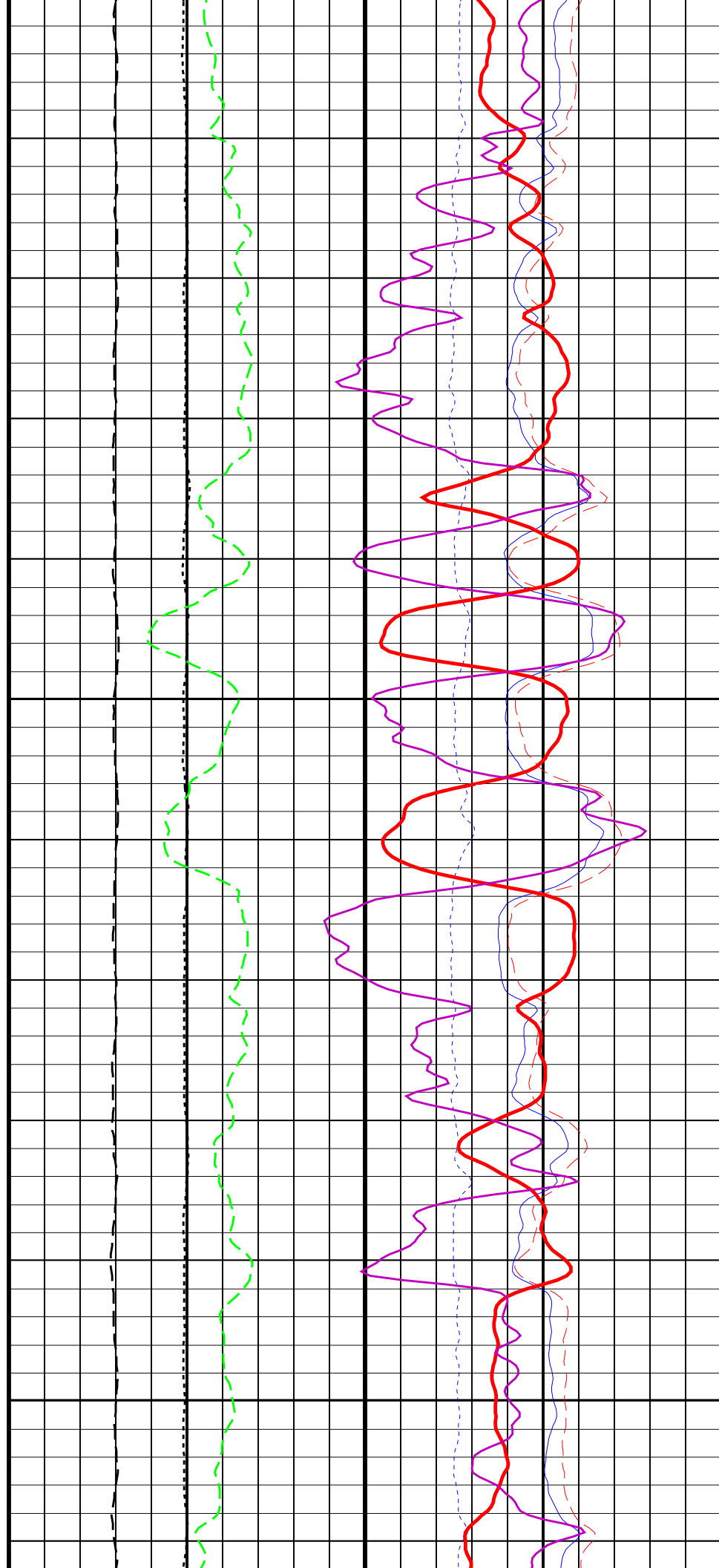
Time Mark Every 60 S

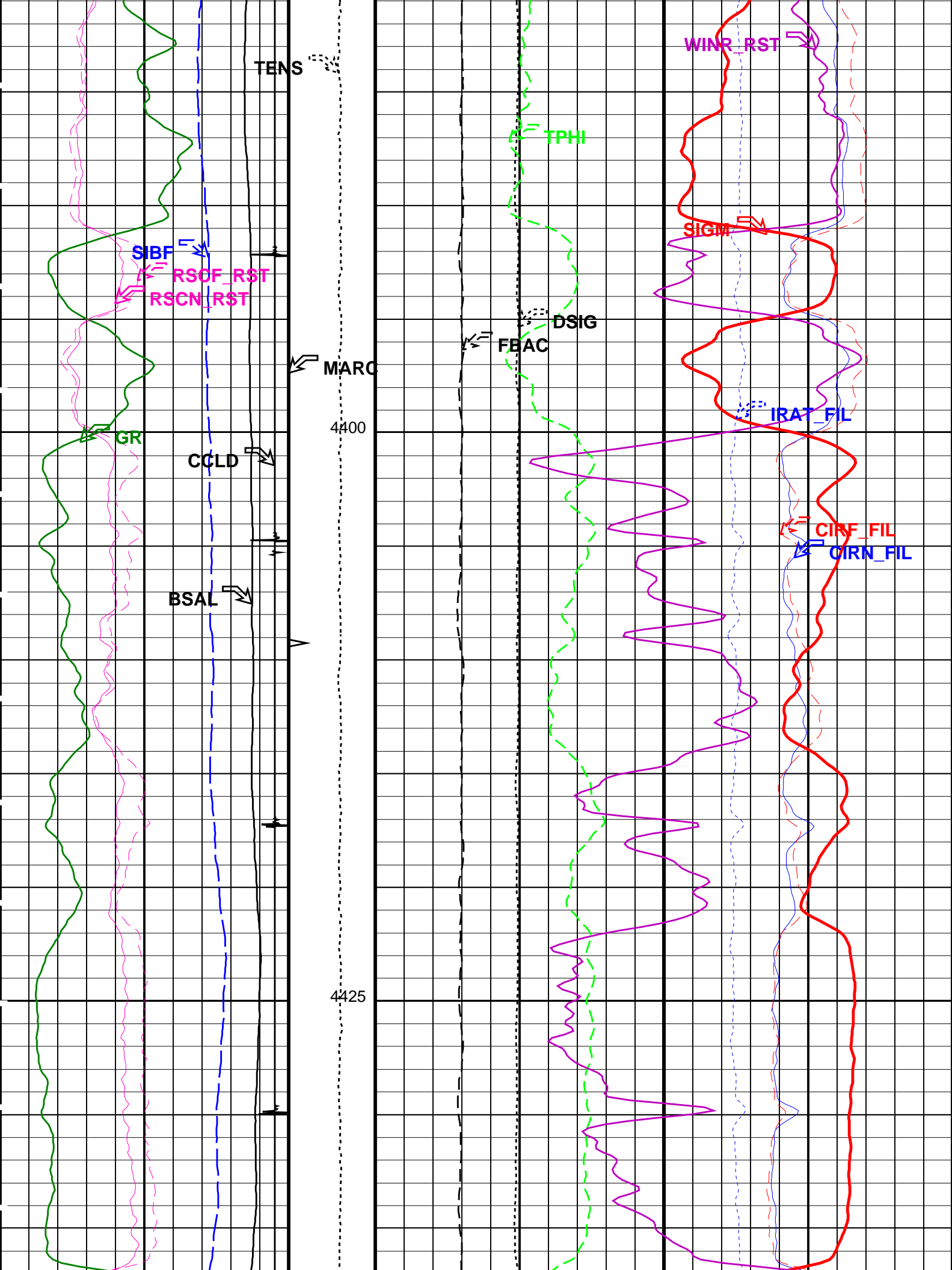


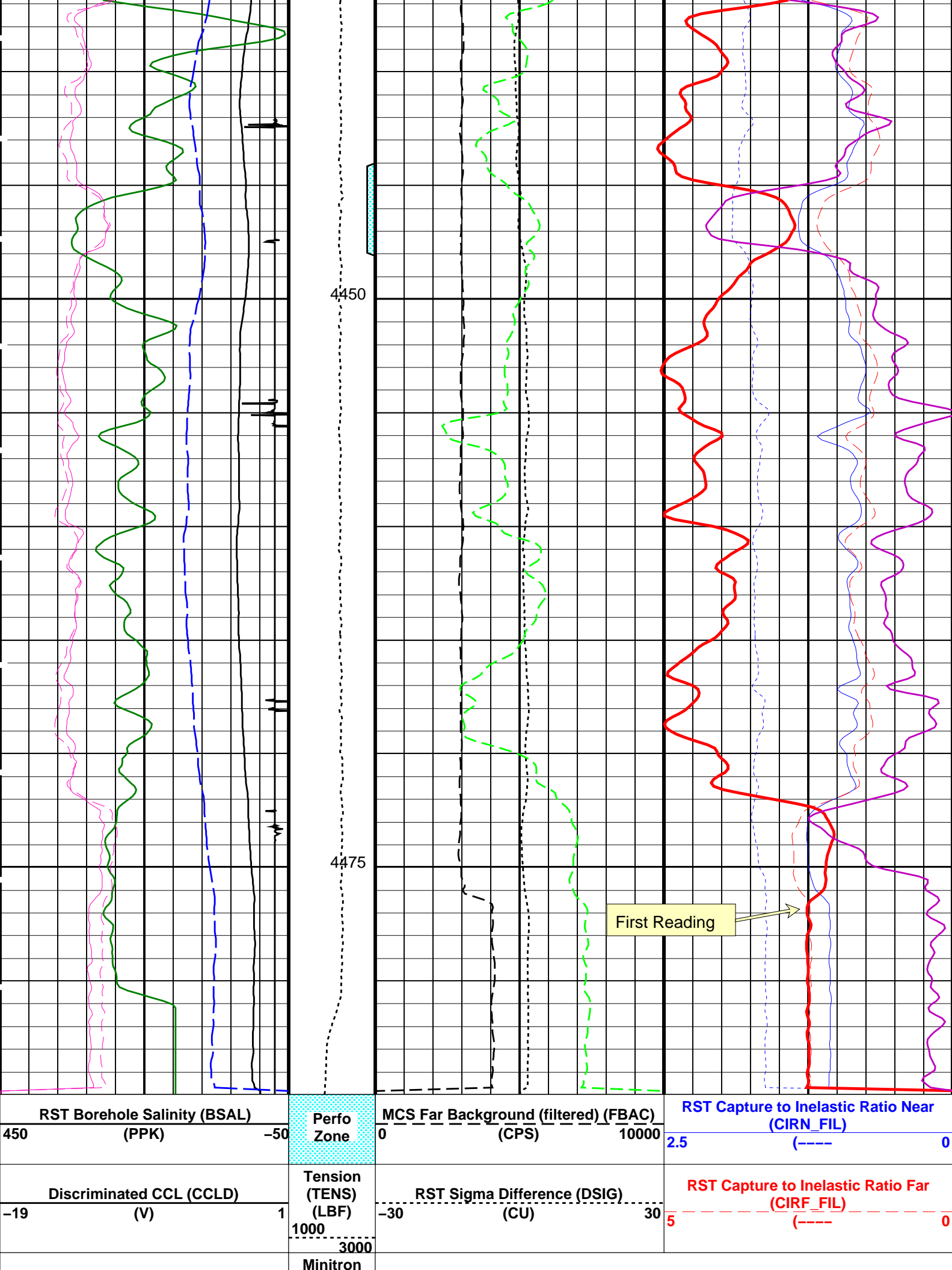


4350

4375







Input DLIS Files

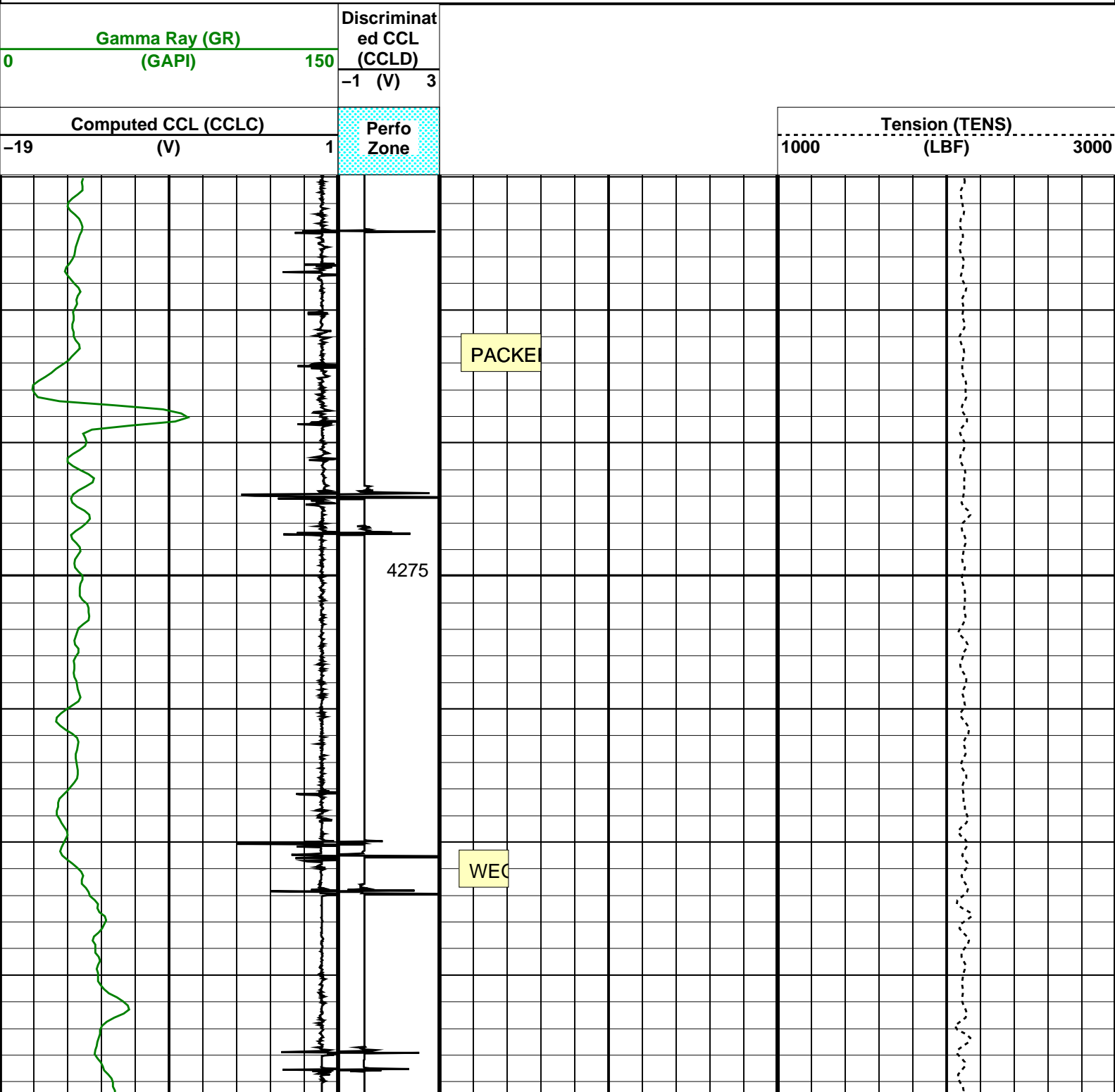
DEFAULT	RST_PSP_005LUP	FN:4	PRODUCER	10-Mar-2010 09:14	4494.0 M	4242.8 M
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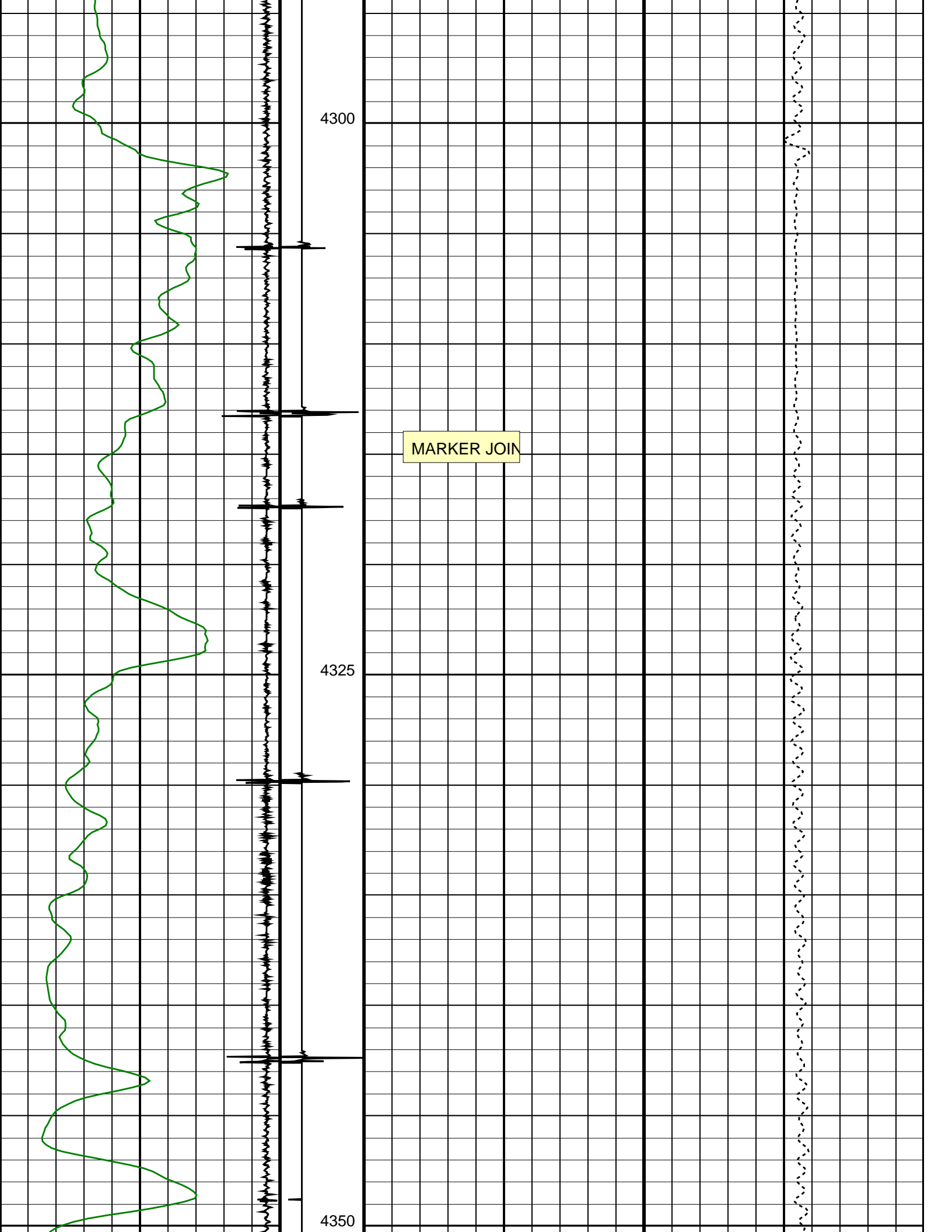
Output DLIS Files

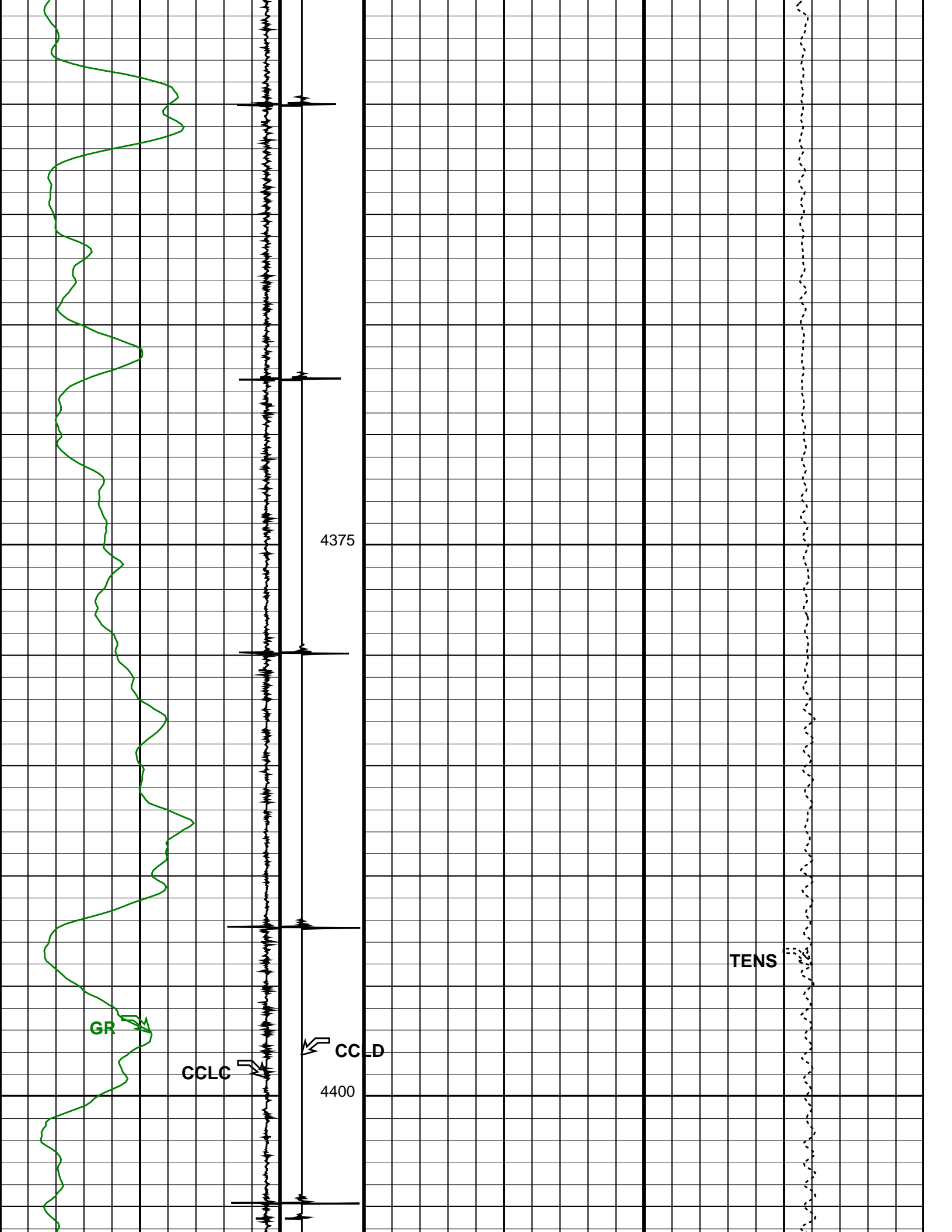
DEFAULT	RST_PSP_005PUP	FN:10	PRODUCER	10-Mar-2010 11:49	4485.0 M	4259.9 M
CUST	RST_PSP_005PUC	FN:11	CUSTOMER	10-Mar-2010 11:49	4485.0 M	4259.9 M

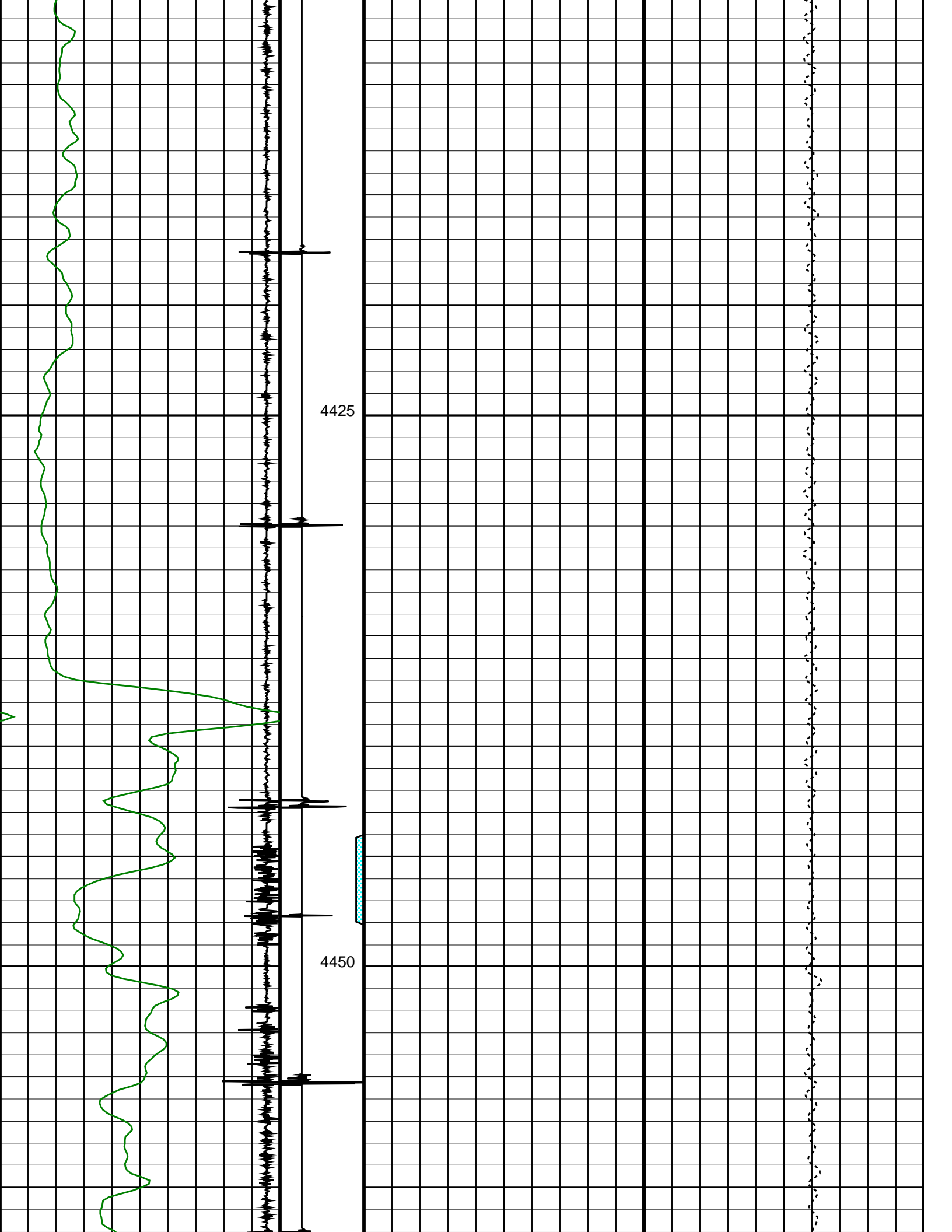
OP System Version: 17C0-154

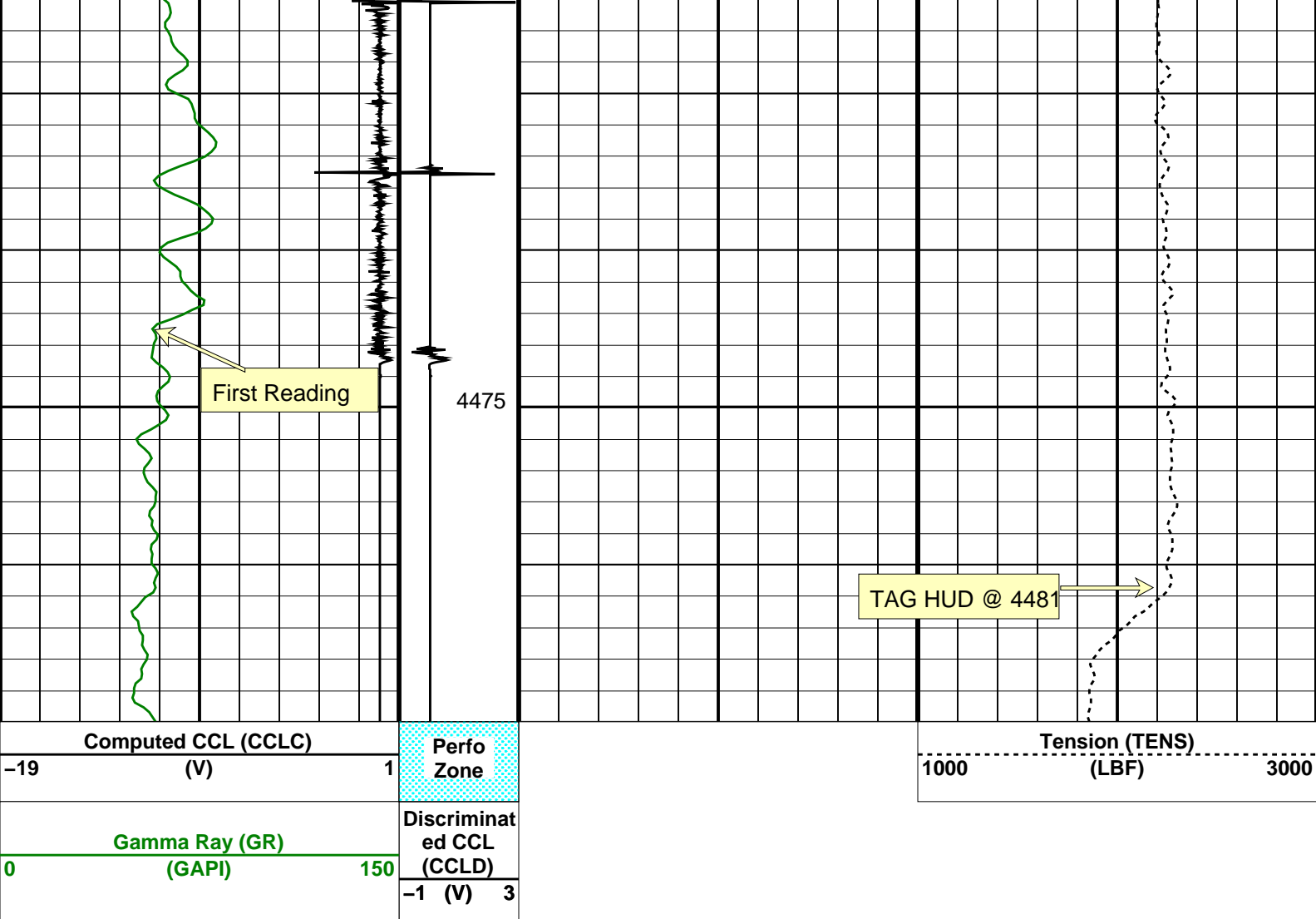
RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
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Parameters

DLIS Name	Description	Value
DO	System and Miscellaneous	0.7 M
PP	Depth Offset for Playback	NORMAL
	Playback Processing	

Format: CORRELATION Vertical Scale: 1:200 Graphics File Created: 10-Mar-2010 11:49

OP System Version: 17C0-154

RST-C ERS	SRPC-3870_Q3_2009_OP17_V3 17C0-154	PSPT	SRPC-3870_Q3_2009_OP17_V3
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Input DLIS Files

DEFAULT	RST_PSP_005LUP	FN:4	PRODUCER	10-Mar-2010 09:14	4494.0 M	4242.8 M
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Output DLIS Files

DEFAULT	RST_PSP_005PUP	FN:10	PRODUCER	10-Mar-2010 11:49
CUST	RST_PSP_005PUC	FN:11	CUSTOMER	10-Mar-2010 11:49

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
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Production Services Logging Platform Wellsite Calibration – Detector Calibration

Before: 8–Mar–2010 15:31

Gamma–Ray Jig–Bkg	125.0	N/A	132.4	N/A	N/A	N/A	GAPI
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Production Services Logging Platform / Equipment Identification



Primary Equipment:

Production Logging Platform (CQG–F)	PSPT – B	
PSP Basic Measurement Sonde (CQG_F)	PBMS – B	3918
PSP Basic measurement module	PBMS –	3918
PSP CCL	CCL –	3918
PSP GR	GR –	3918
PSP RTD Well Temperature	RTD_ –	3918
PSP Crystal Quartz Gauge Type F	CQG_ –	3918
PSP Telemetry and bus master cartridge	PSTC – A	1864

Auxiliary Equipment:

Production Services Logging Platform Wellsite Calibration

Detector Calibration

Phase	Gamma–Ray Background	GAPI	Value	Phase	Gamma–Ray Jig–Bkg	GAPI	Value
Before			3.773	Before			132.4
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)		110.0 (Minimum)	125.0 (Nominal)	140.0 (Maximum)	

Before: 8–Mar–2010 15:31

Company: **Esso Australia Pty Ltd.****Schlumberger**Well: **COBIA F35**Field: **FORTESCUE**Rig: **Crane / Prod 4**Country: **Australia**

RST–C

Sigma Log

10–Mar–2010