

Company: Esso Australia Ltd.

Well: CBA F-4
Field: Fortescue
Rig: Cobia

Country: Australia

RST-A Sigma Survey
Pressure/Temperature
GR-CCL

Rig: Cobia
Field: Fortescue
Location: Gippsland
Well: CBA F-4
Company: Esso Australia Ltd.

LOCATION

Gippsland Basin Bass Strait	Elev.: K.B. 32.4 m G.L. -78 m D.F. 32.4 m
Permanent Datum: _____ Log Measured From: Kelly Bushing	Mean Sea Level _____ Elev.: 0 m _____ 32.4 m above Perm. Datum
Drilling Measured From: Kelly Bushing	
State: Victoria	Longitude 148°18'28.3"E Latitude 38°27'03.5"S

Logging Date	12-Mar-2006	Max. Well Deviation	55 deg
Run Number	1		
Depth Driller	3656 m		
Schlumberger Depth	3536.9 m		
Bottom Log Interval	3536.9 m		
Top Log Interval	3435 m		
Casing Fluid Type	Production Fluids		
Salinity			
Density			
Fluid Level	50 m		
BIT/CASING/TUBING STRING			
Bit Size	8.500 in		
From	12 m		
To	3656 m		
Casing/Tubing Size	7.675 in		
Weight	26.4 lbm/ft		
Grade	N-80		
From	12 m		
To	3606 m		
Maximum Recorded Temperatures	107 degC		
Logger On Bottom	12-Mar-2006	Time	12:38
Unit Number	1	Location	AUSL
Recorded By	Joel Hogan		
Witnessed By	Barrie White		

PVT DATA

Oil Density		Run 1	Run 2	R
Water Salinity				
Gas Gravity				
Bo				
Bw				
1/Bg				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation	55 deg			
CEMENTING DATA				
Primary/Squeeze		Primary		
Casing String No				
Lead Cement Type				
Volume				
Density				
Water Loss				
Additives				
Tail Cement Type				
Volume				
Density				
Water Loss				
Additives				
Expected Cement Top				

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		Time	
Unit Number		Location	
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 04-Mar-2006 9:42:23

Depth System Equipment

Depth Measuring Device	Tension Device	Logging Cable
Type: IDW-H Serial Number: 797 Calibration Date: 01-May-2005 Calibrator Serial Number: 1009 Calibration Cable Type: 2-32ZT Wheel Correction 1: -3 Wheel Correction 2: 2	Type: CMTD-C Serial Number: 1037 Calibration Date: 15-Feb-2006 Calibrator Serial Number: 1174 Calibration Gain: 1.38 Calibration Offset: 448.00	Type: 2-32ZT Serial Number: 4207 Length: 5002.07 M Conveyance Method: Wireline Rig Type: Offshore_Fixed

Depth Control Parameters

Log Sequence:	Subsequent Log In the Well
Reference Log Name:	ExxonMobil composite solar log
Reference Log Run Number:	Unknown
Reference Log Date:	Unknown

Depth Control Remarks

1. Correlated to ExxonMobil solar composite log provided by client
2. Used IDW as primary depth control
3. Used Z-Chart as secondary depth control
4.
5.
6.

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 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 SERVICES1 OS1: None OS2: OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
--	---

REMARKS: RUN NUMBER 1 Log correlated to solar composite log undated supplied by client.	REMARKS: RUN NUMBER 2
--	-----------------------

Purpose of log, to conduct an RST-A sigma mode survey over the interval HUD to 3435mMDKB, Two Passes well shut in, Ran in hole and correlated on depth, conducted two logging passes over the interval 3536.9mMDKB-3435mMDKB.	
---	--

SBHT-225degF, SBHP-3077psia.
 Gamma Ray base line recorded with no minitron activation,
 both logging passes recorded with minitron activated.

Schlumberger Crew: Jake Annear, Andy Hall.

Performed By Schlumberger.

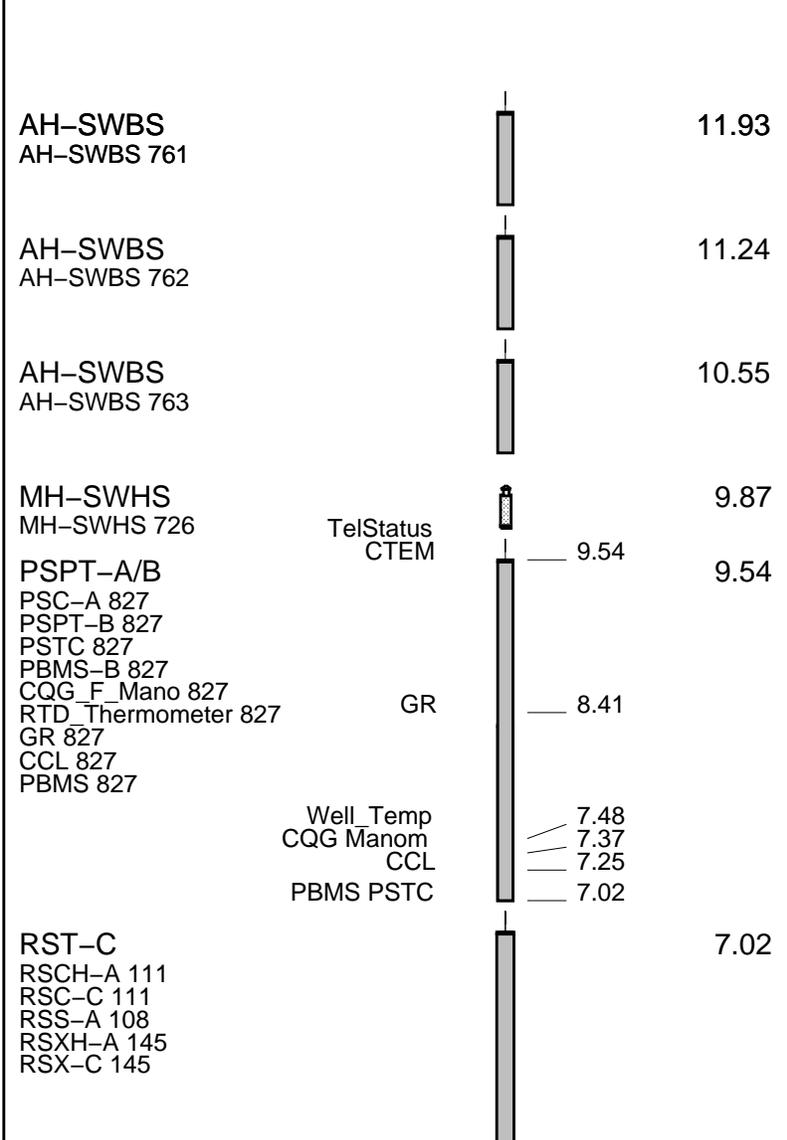
RUN 1			RUN 2		
SERVICE ORDER #:	46000465		SERVICE ORDER #:		
PROGRAM VERSION:	14C0-302		PROGRAM VERSION:		
FLUID LEVEL:	50 m		FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT
 WITM-A

DOWNHOLE EQUIPMENT



(This section is currently blank in the provided image.)

Packer

7.675

4.500

3386.0



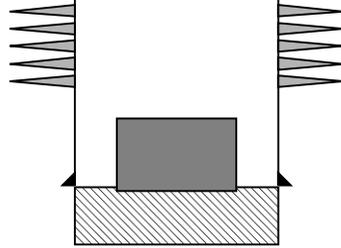
3437.0

Perforation Zone

Tubing

4.500

3539.0



3606.0

7.675

3546.0

Casing Shoe
PBDT

Schlumberger

TDT pass 2, 900ft/hr

MAXIS Field Log

Company: Esso Australia Ltd

Well: CBA F-4

Input DLIS Files

30-Mar-2006 10:39

Output DLIS Files

DEFAULT	RST_PSP_016PUP	FN:2	PRODUCER	30-Mar-2006 13:00	3537.8 M	3419.6 M
---------	----------------	------	----------	-------------------	----------	----------

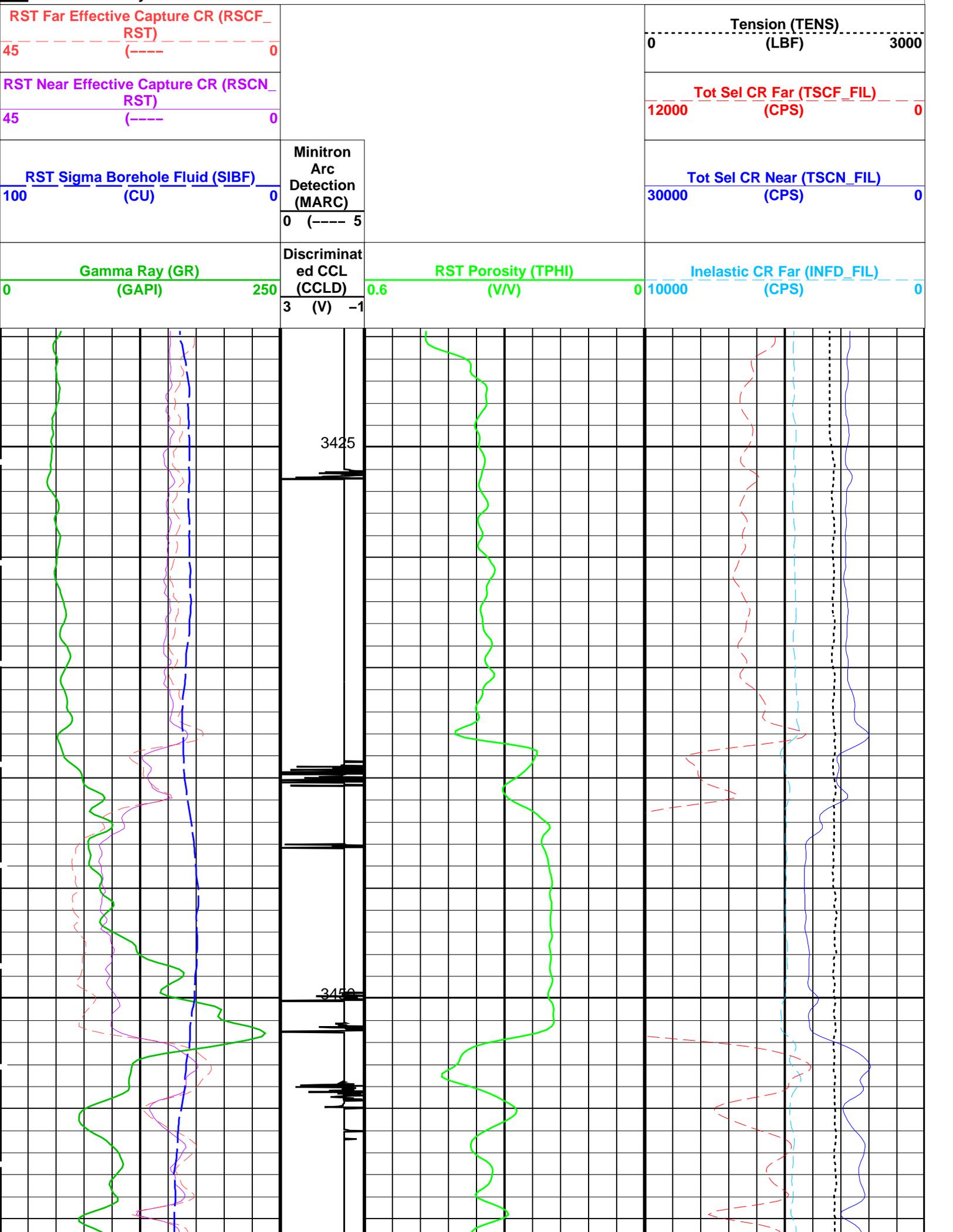
OP System Version: 13C0-300

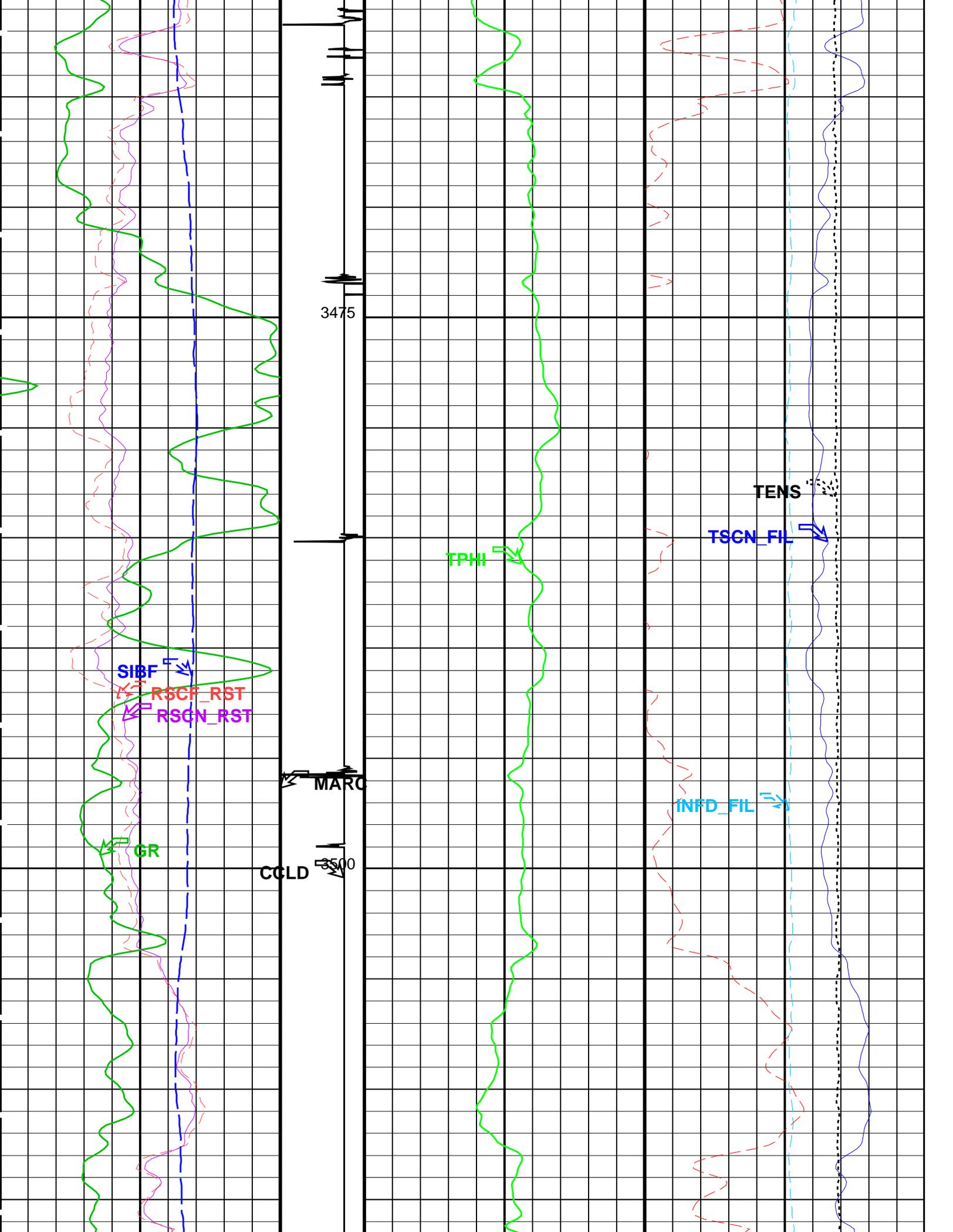
MCM

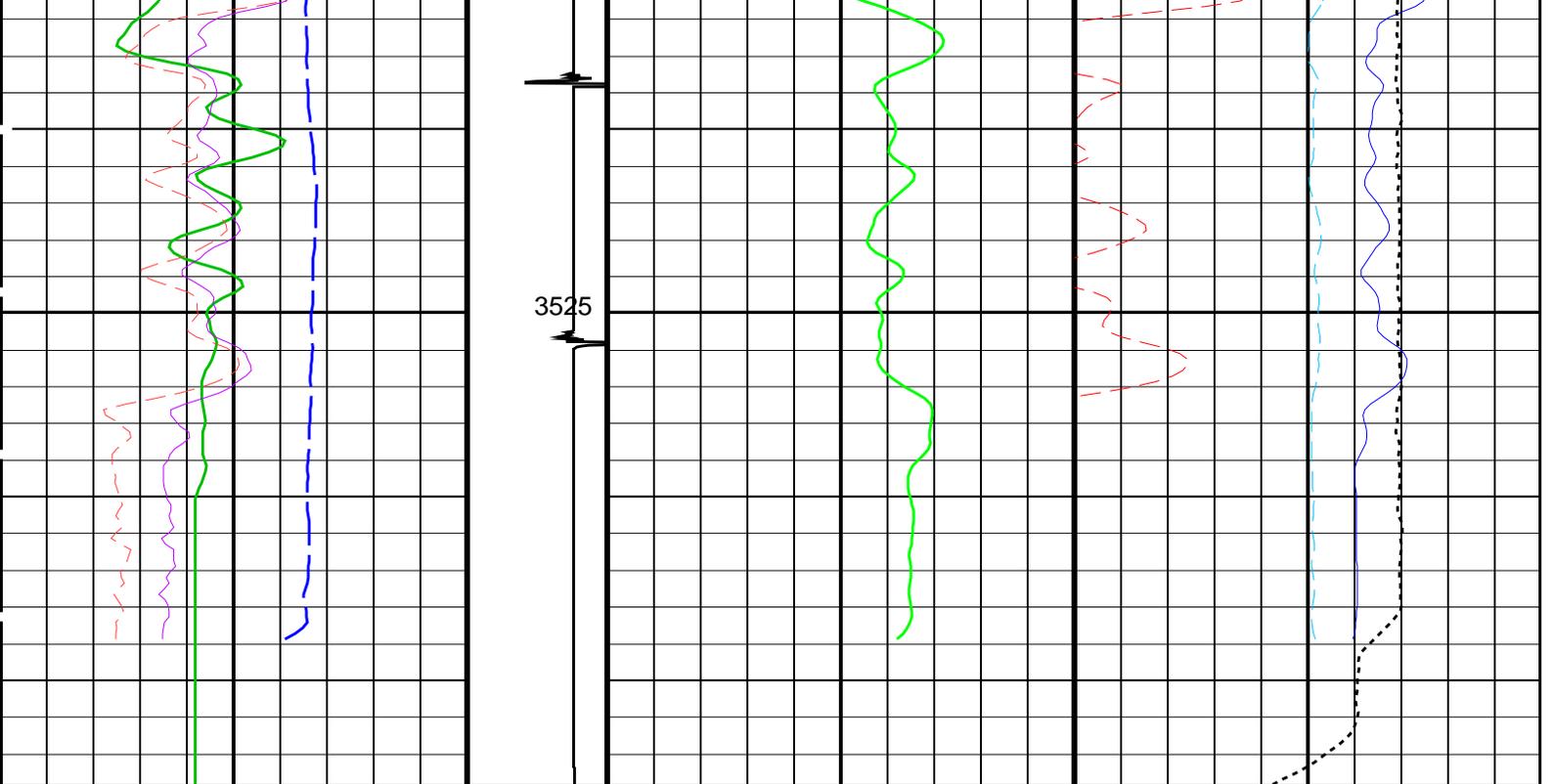
RST-C	13C0-300	PSPT-A/B	13C0-300
-------	----------	----------	----------

PIP SUMMARY

Time Mark Every 60 S







Gamma Ray (GR) (GAPI)	Discriminat ed CCL (CCLD)	RST Porosity (TPHI) (V/V)	Inelastic CR Far (INFD_FIL) (CPS)
0 250	3 (V) -1	0.6	0 10000
RST Sigma Borehole Fluid (SIBF) (CU)	Minitron Arc Detection (MARC)		Tot Sel CR Near (TSCN_FIL) (CPS)
100 0	0 (---- 5)		30000 0
RST Near Effective Capture CR (RSCN_ RST)			Tot Sel CR Far (TSCF_FIL) (CPS)
45 (----) 0			12000 0
RST Far Effective Capture CR (RSCF_ RST)			Tension (TENS) (LBF)
45 (----) 0			0 3000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
RST-C: Reservoir Saturation Pro Tool C		
AIRB	Tractor Available in Tool String	NO
BHS	RST Air Borehole	No
BHT	Borehole Status	CASED
CSID	Bottom Hole Temperature (used in calculations)	100 DEGC
DFPC	Casing Size I.D.	6.875 IN
GCSE	Depth Filter Processing Constant	One
GDEV	Generalized Caliper Selection	BS
GGRD	Average Angular Deviation of Borehole from Normal	21 DEG
GRSE	Geothermal Gradient	0.018227 DC/M
GTSE	Generalized Mud Resistivity Selection	CHART_GEN 9
MATR	Generalized Temperature Selection	LINEAR_ESTIMATE
NORM_IRAT_RST	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
NORM_SIGM_RST	RST Normalized Inelastic Ratio	0.48
PTIER	RST Normalized Sigma	30 CU
PVL_PSNT_PRST	RST Tiered Presentation Selection	0_Customer
RGAI	RST PVL Peak Signal/Noise Threshold	3
SHT	Near/Far Gain Calibration Ratio	1
TIER_IC	Surface Hole Temperature	25 DEGC
TIER_SIGM	RST IC Acquisition Mode	0_CO_Yield_and_Spectrolith
	RST Sigma Acquisition Mode	0_RST_Sigma

PIP SUMMARY

Time Mark Every 60 S

		Tension (TENS)	
		0	3000
		(LBF)	

RST Far Effective Capture CR (RSCF_RST)		
45	(----)	0

RST Weighted Inelastic Ratio (WINR_RST)		
0.4	(----)	0

RST Near Effective Capture CR (RSCN_RST)		
45	(----)	0

RST Porosity (TPHI)		RST Inelastic Ratio (IRAT_FIL)	
0.6	(V/V)	0.75	(----)
		0	0

RST Sigma Borehole Fluid (SIBF)		
100	(CU)	0

RST Sigma (SIGM)		
60	(CU)	0

Gamma Ray (GR)		
0	(GAPI)	250

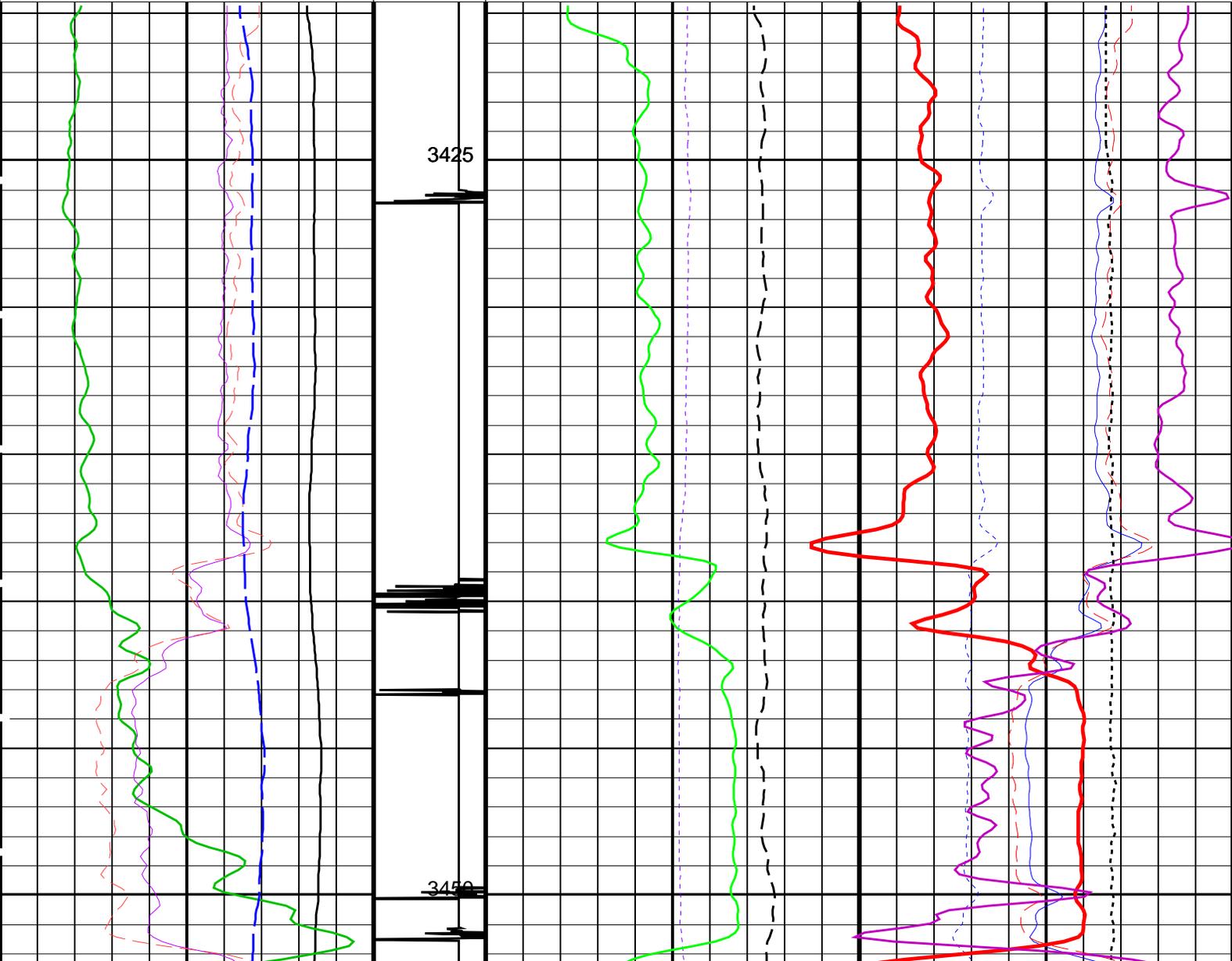
Minitron Arc Detection (MARC)	
0	(----) 5

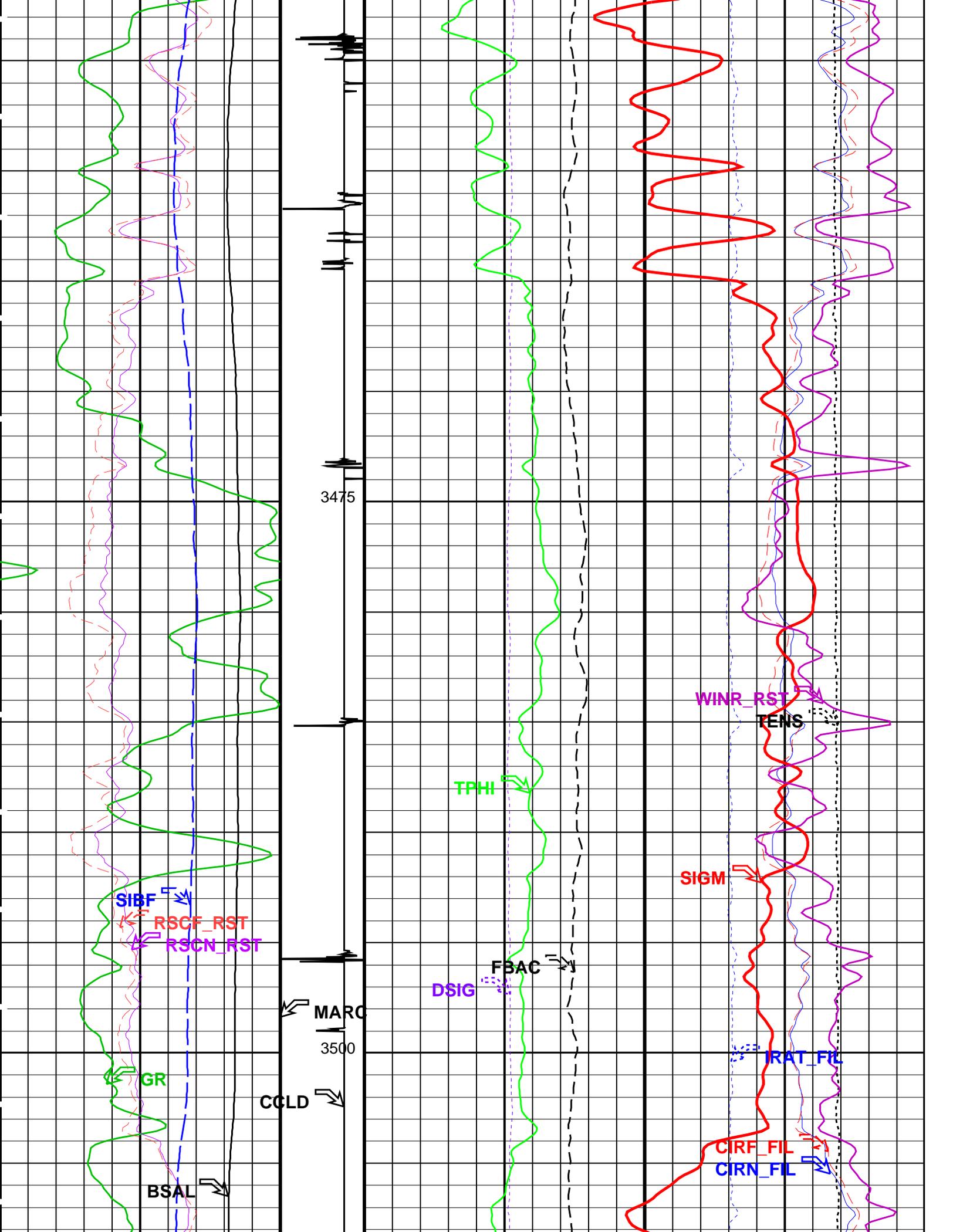
MCS Far Background (filtered) (FBAC)		RST Capture to Inelastic Ratio Far (CIRF_FIL)	
0	(CPS)	5	(----)
		0	0

RST Borehole Salinity (BSAL)		
450	(PPK)	-50

Discriminat ed CCL (CCLD)	
3	(V) -1

RST Sigma Difference (DSIG)		RST Capture to Inelastic Ratio Near (CIRN_FIL)	
-30	(CU)	30	(----)
		2.5	0





3475

3500

SIBF

RSCF_RST

RSCN_RST

GR

BSAL

MARC

CGLD

TPhi

DSIG

FBAC

SIGM

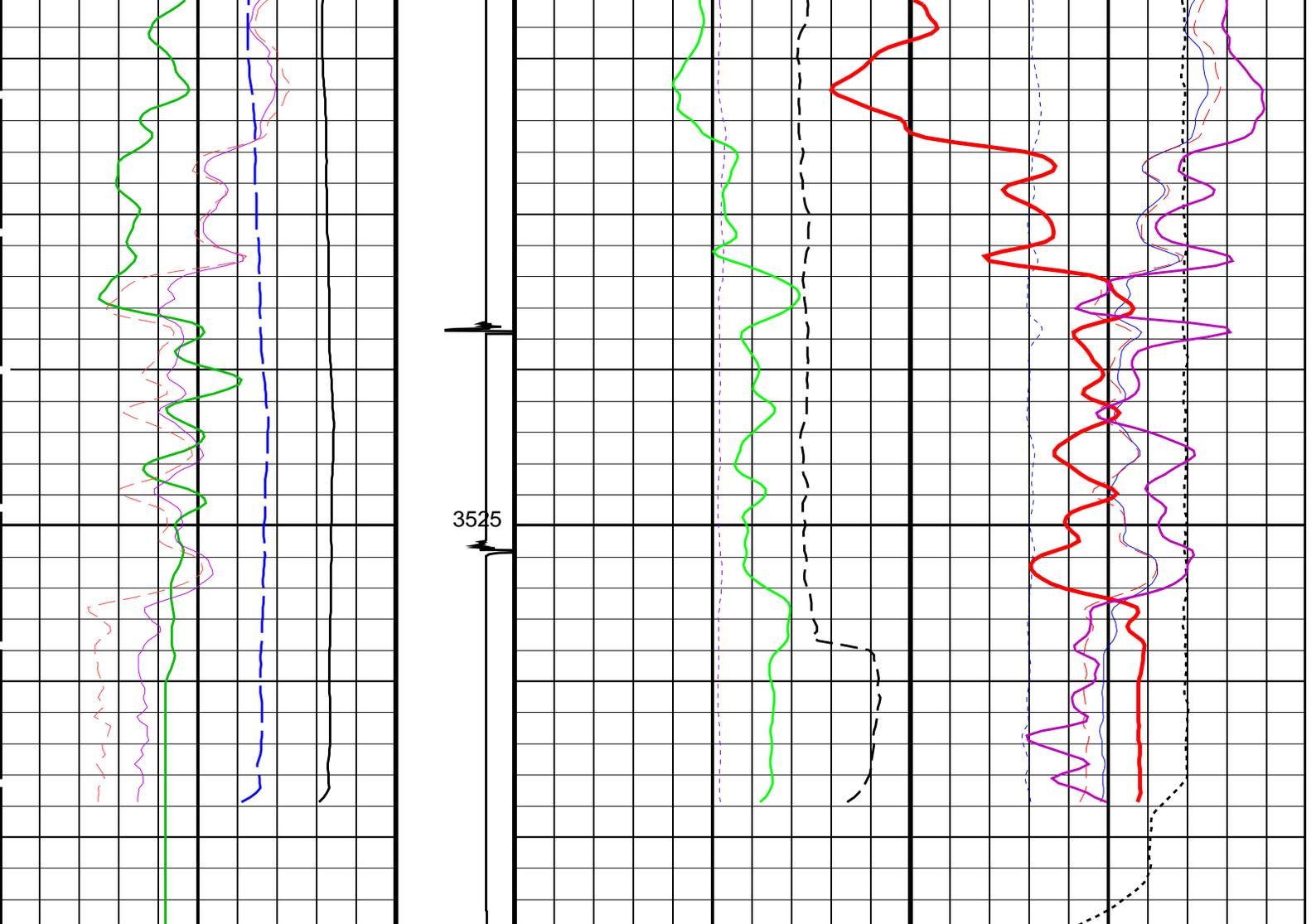
WINR_RST

TENS

IRAT_FIL

CIRF_FIL

CIRN_FIL



RST Borehole Salinity (BSAL) (PPK)	Discriminat ed CCL (CCLD) (V)	RST Sigma Difference (DSIG) (CU)	RST Capture to Inelastic Ratio Near (CIRN_FIL)
450 -50	3 -1	-30 30	2.5 0
Gamma Ray (GR) (GAPI)	Minitron Arc Detection (MARC)	MCS Far Background (filtered) (FBAC) (CPS)	RST Capture to Inelastic Ratio Far (CIRF_FIL)
0 250	0 5	0 5000	5 0
RST Sigma Borehole Fluid (SIBF) (CU)		RST Sigma (SIGM) (CU)	
100 0		60 0	
RST Near Effective Capture CR (RSCN_RST)		RST Porosity (TPHI) (V/V)	RST Inelastic Ratio (IRAT_FIL)
45 0		0.6 0	0.75 0
RST Far Effective Capture CR (RSCF_RST)		RST Weighted Inelastic Ratio (WINR_RST)	
45 0		0.4 0	
		Tension (TENS) (LBF)	
		0 3000	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
RST-C: Reservoir Saturation Pro Tool C		

Input DLIS Files

30-Mar-2006 10:39

Output DLIS Files

DEFAULT RST_PSP_015PUP FN:1 PRODUCER 30-Mar-2006 12:59 3535.8 M 3413.2 M

OP System Version: 13C0-300

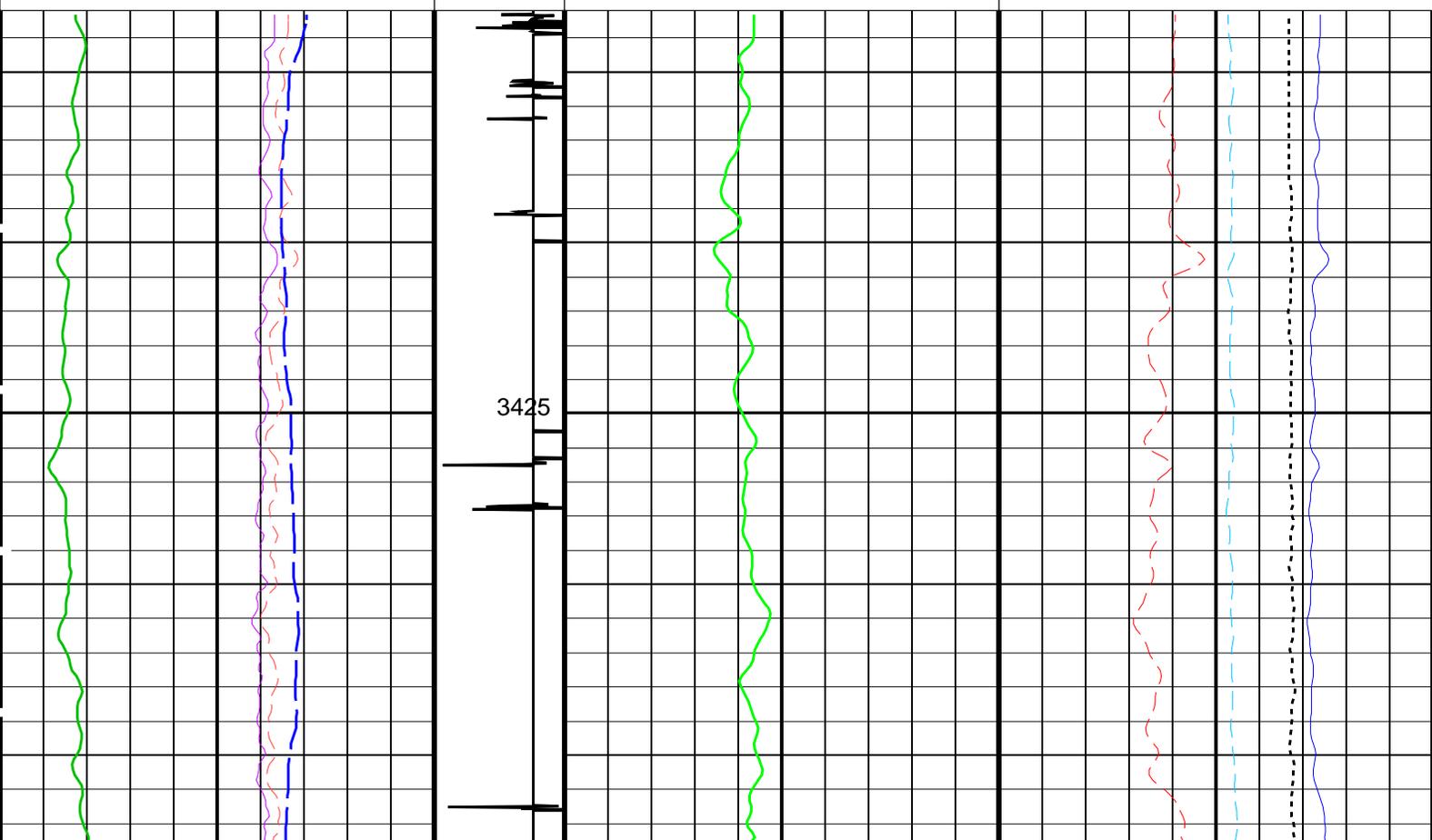
MCM

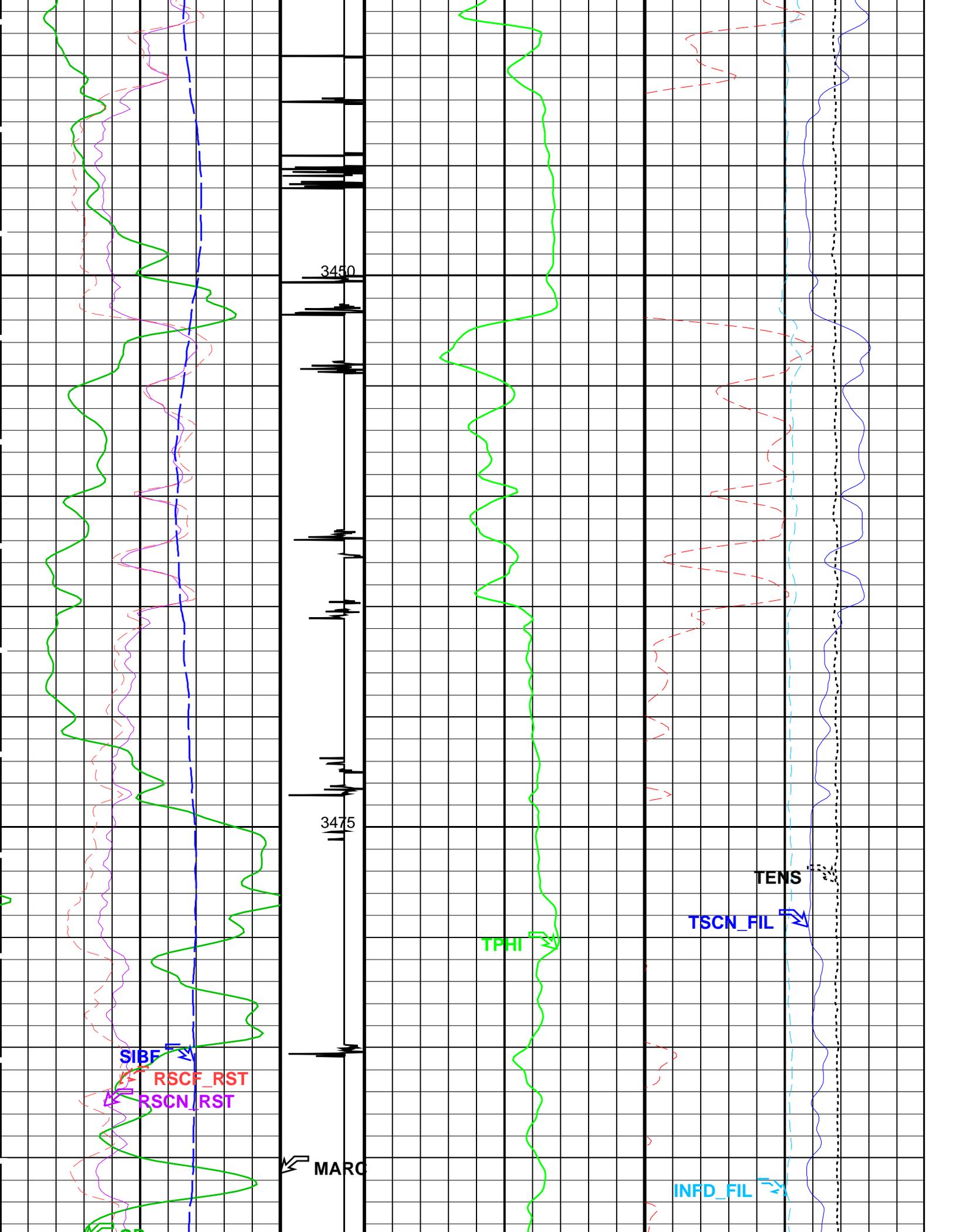
RST-C 13C0-300 PSPT-A/B 13C0-300

PIP SUMMARY

Time Mark Every 60 S

<p>RST Far Effective Capture CR (RSCF_RST) 45 (----) 0</p>		<p>Tension (TENS) 0 (LBF) 3000</p>
<p>RST Near Effective Capture CR (RSCN_RST) 45 (----) 0</p>		<p>Tot Sel CR Far (TSCF_FIL) 12000 (CPS) 0</p>
<p>RST Sigma Borehole Fluid (SIBF) 100 (CU) 0</p>	<p>Minitron Arc Detection (MARC) 0 (----) 5</p>	<p>Tot Sel CR Near (TSCN_FIL) 30000 (CPS) 0</p>
<p>Gamma Ray (GR) 0 (GAPI) 250</p>	<p>Discriminated CCL (CCLD) 3 (V) -1</p>	<p>RST Porosity (TPHI) 0.6 (V/V) 0</p> <p>Inelastic CR Far (INFD_FIL) 10000 (CPS) 0</p>





3450

3475

SIBF

RSCF_RST

RSCN_RST

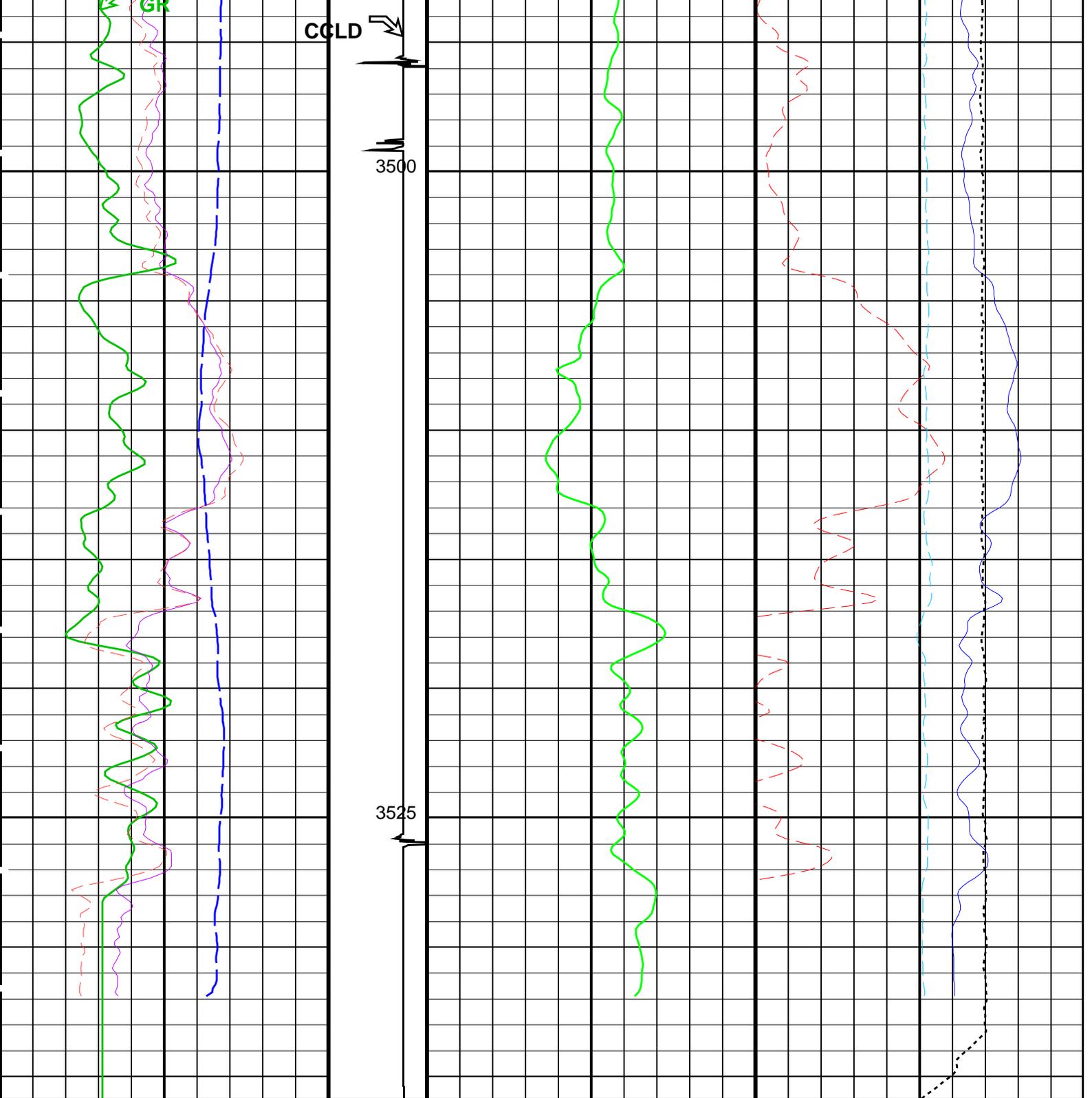
TPHI

TENS

TSCN_FIL

INFD_FIL

MARC



<p>Gamma Ray (GR) (GAPI)</p> <p>0 250</p>	<p>Discriminated CCL (CCLD) 3 (V) -1</p>	<p>RST Porosity (TPHI) (V/V)</p> <p>0.6</p>	<p>Inelastic CR Far (INFD_FIL) (CPS)</p> <p>0 10000</p>
<p>RST Sigma Borehole Fluid (SIBF) (CU)</p> <p>100 0</p>	<p>Minitron Arc Detection (MARC) 0 (---- 5</p>		<p>Tot Sel CR Near (TSCN_FIL) (CPS)</p> <p>30000 0</p>
<p>RST Near Effective Capture CR (RSCN_RST) (----)</p> <p>45 0</p>			<p>Tot Sel CR Far (TSCF_FIL) (CPS)</p> <p>12000 0</p>
<p>RST Far Effective Capture CR (RSCF_RST)</p>			<p>Tension (TENS) (LBE)</p> <p>0 3000</p>

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
RST-C: Reservoir Saturation Pro Tool C		
	Tractor Available in Tool String	NO
AIRB	RST Air Borehole	No
BHS	Borehole Status	CASED
BHT	Bottom Hole Temperature (used in calculations)	100
CSID	Casing Size I.D.	6.875
DFPC	Depth Filter Processing Constant	One
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	21
GGRD	Geothermal Gradient	0.018227
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
NORM_IRAT_RST	RST Normalized Inelastic Ratio	0.48
NORM_SIGM_RST	RST Normalized Sigma	30
PTIER	RST Tiered Presentation Selection	0_Customer
PVL_PSNT_PRST	RST PVL Peak Signal/Noise Threshold	3
RGAI	Near/Far Gain Calibration Ratio	1
SHT	Surface Hole Temperature	25
TIER_IC	RST IC Acquisition Mode	0_CO_Yield_and_Spectrolith
TIER_SIGM	RST Sigma Acquisition Mode	0_RST_Sigma
WOFSL_PRST	RST Desired WFL-Off Subcycle Length	0
WONSL_PRST	RST Desired WFL-On Subcycle Length	0
WSCOM_PRST	RST Station Log Comment	
PSPT-A/B: Production Services Logging Platform		
BHS	Borehole Status	CASED
BHT	Bottom Hole Temperature (used in calculations)	100
CSID	Casing Size I.D.	6.875
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	21
GGRD	Geothermal Gradient	0.018227
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
PBPO	PBMS Tool position on CAN	2
PCCG	PBMS CCL Gain	DB36
PSTP	PSTC Tool Position on CAN Bus	1
SHT	Surface Hole Temperature	25
System and Miscellaneous		
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth
BS	Bit Size	8.500
BSAL	Borehole Salinity	-50000.00
CSIZ	Current Casing Size	7.625
CWEI	Casing Weight	29.70
DFD	Drilling Fluid Density	-50000.00
DO	Depth Offset for Playback	0.0
MST	Mud Sample Temperature	-50000.00
PBVSADP	Use alternate depth channel for playback	NO
PP	Playback Processing	RECOMPUTE
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000
RW	Resistivity of Connate Water	1.0000
TD	Total Depth	-50000
TDD	Total Depth - Driller	-50000.00
TDL	Total Depth - Logger	-50000.00
TWS	Temperature of Connate Water Sample	100.00

Format: RST_TDTL_ANSW Vertical Scale: 1:200 Graphics File Created: 30-Mar-2006 12:59

OP System Version: 13C0-300

MCM

RST-C 13C0-300 PSPT-A/B 13C0-300

Input DLIS Files

30-Mar-2006 10:39

Output DLIS Files

DEFAULT RST_PSP_015PUP FN:1 PRODUCER 30-Mar-2006 12:59

Company: Esso Australia Ltd

Well: CBA F-4

Input DLIS Files

30-Mar-2006 10:39

Output DLIS Files

DEFAULT RST_PSP_015PUP FN:1 PRODUCER 30-Mar-2006 12:59 3535.8 M 3413.2 M

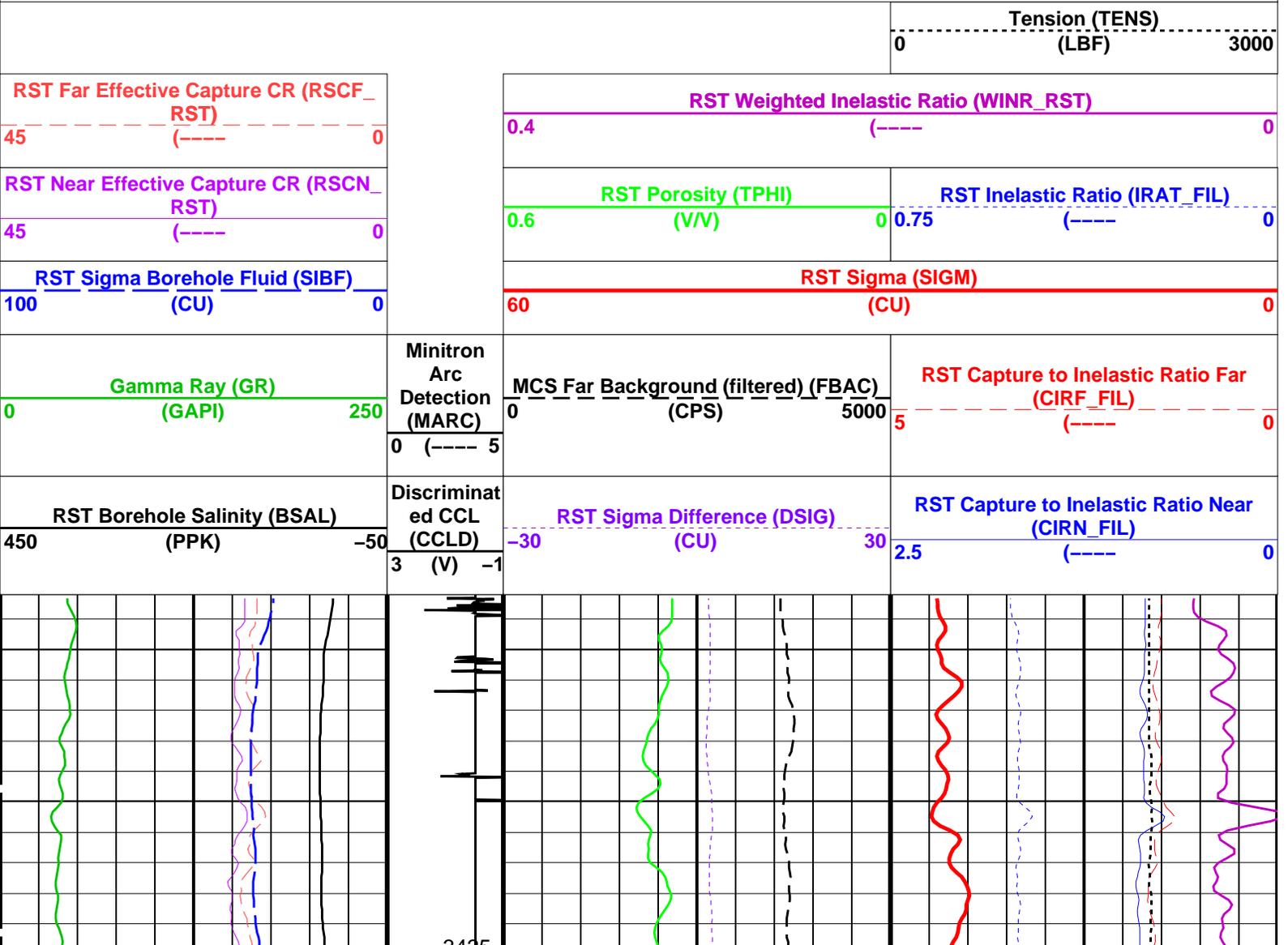
OP System Version: 13C0-300

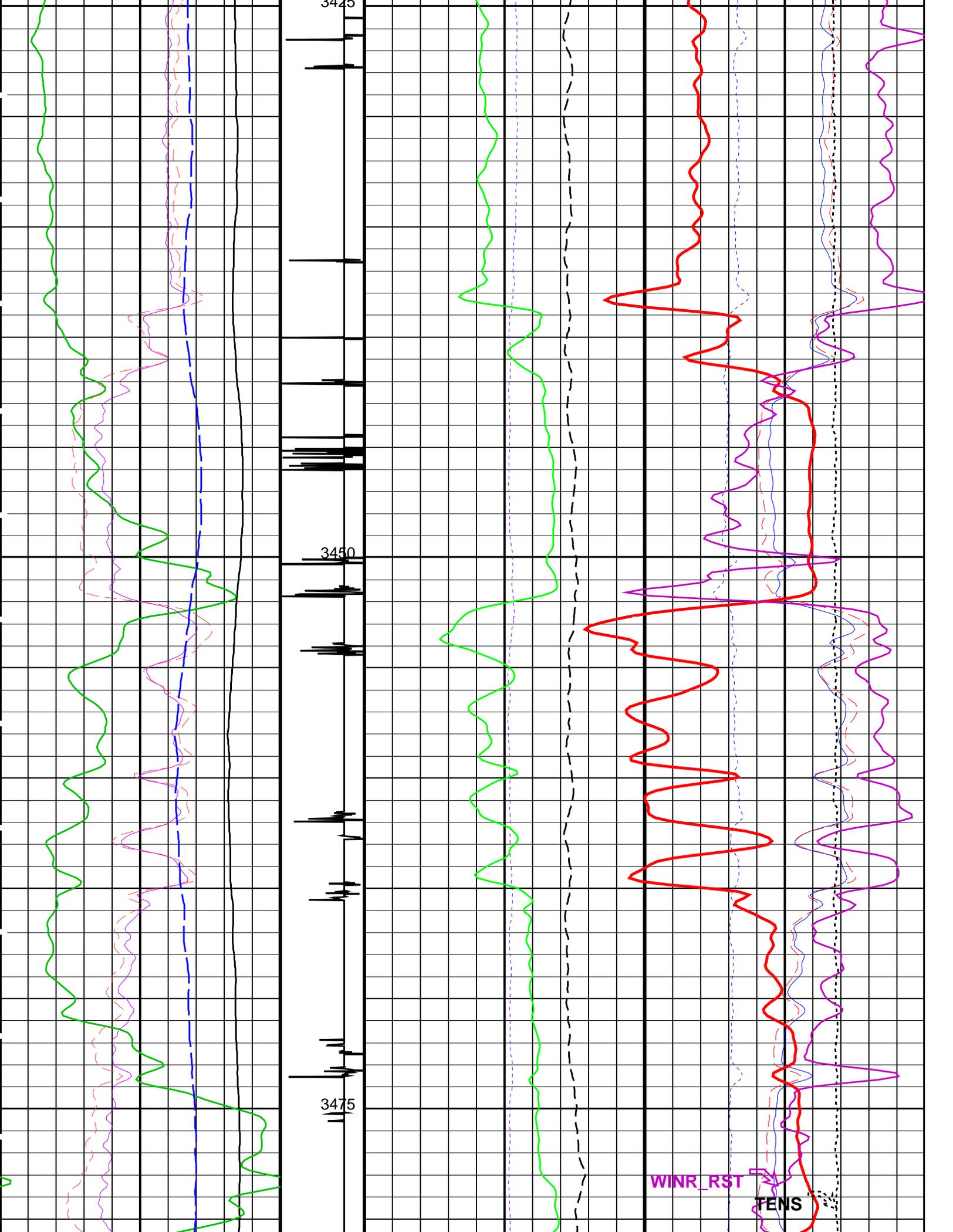
MCM

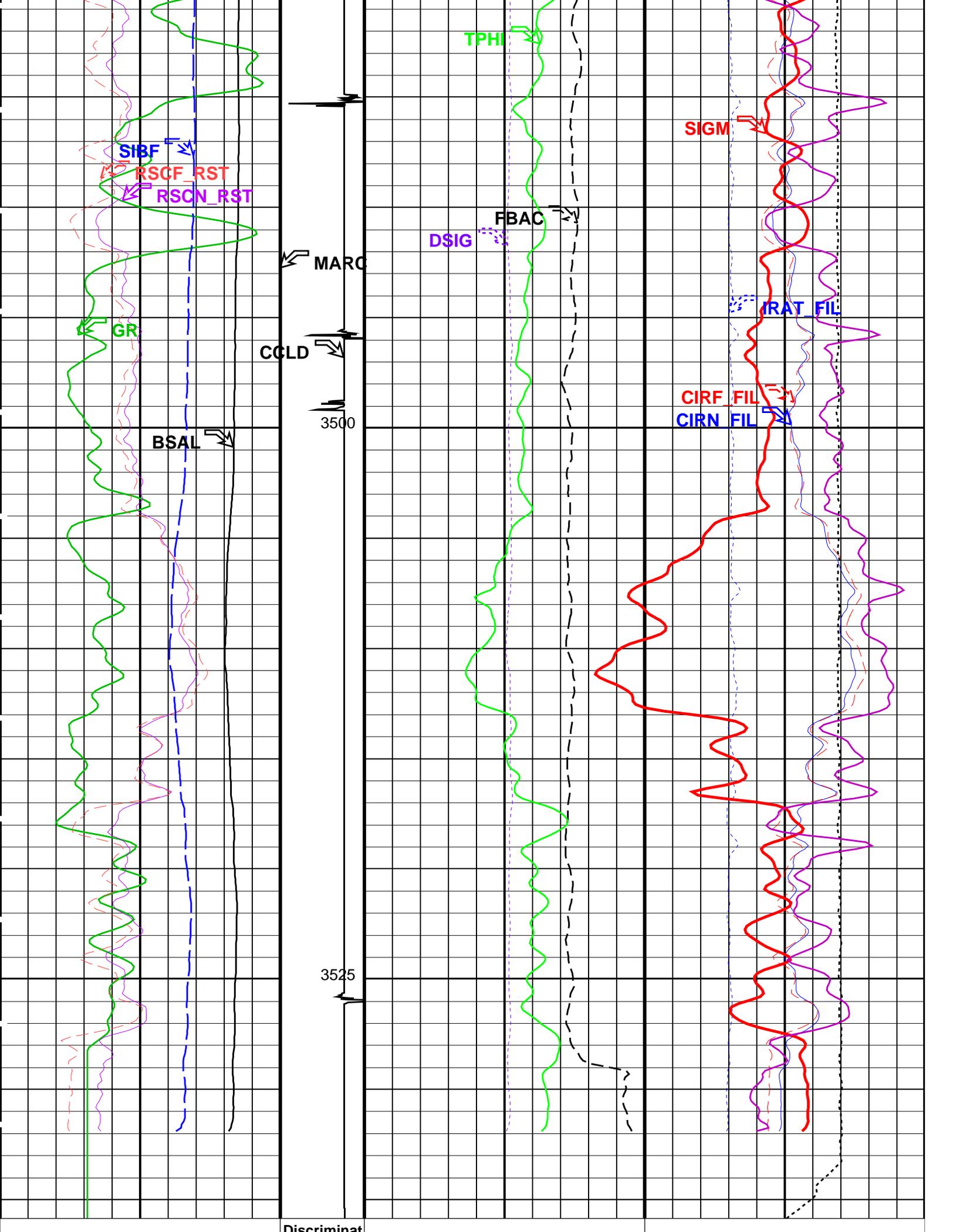
RST-C 13C0-300 PSPT-A/B 13C0-300

PIP SUMMARY

Time Mark Every 60 S







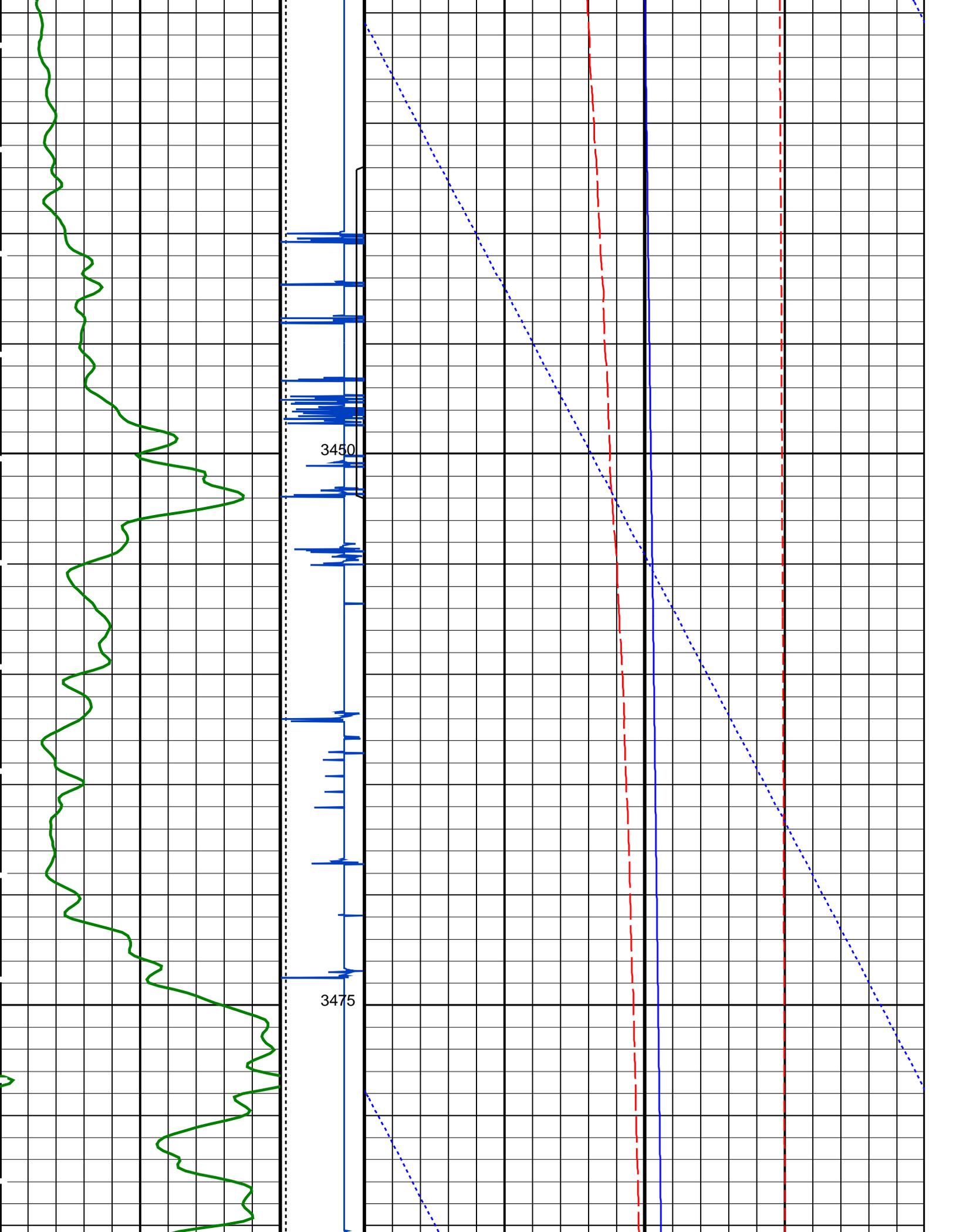
RST Borehole Salinity (BSAL) 450 (PPK) -50	Discriminat ed CCL (CCLD) 3 (V) -1	RST Sigma Difference (DSIG) -30 (CU) 30	RST Capture to Inelastic Ratio Near (CIRN_FIL) 2.5 (----) 0
Gamma Ray (GR) (GAPI) 250	Minitron Arc Detection (MARC) 0 (---- 5	MCS Far Background (filtered) (FBAC) 0 (CPS) 5000	RST Capture to Inelastic Ratio Far (CIRF_FIL) 5 (----) 0
RST Sigma Borehole Fluid (SIBF) 100 (CU) 0		RST Sigma (SIGM) 60 (CU) 0	
RST Near Effective Capture CR (RSCN_ RST) 45 (----) 0		RST Porosity (TPHI) 0.6 (V/V) 0	RST Inelastic Ratio (IRAT_FIL) 0.75 (----) 0
RST Far Effective Capture CR (RSCF_ RST) 45 (----) 0		RST Weighted Inelastic Ratio (WINR_RST) 0.4 (----) 0	
			Tension (TENS) 0 (LBF) 3000

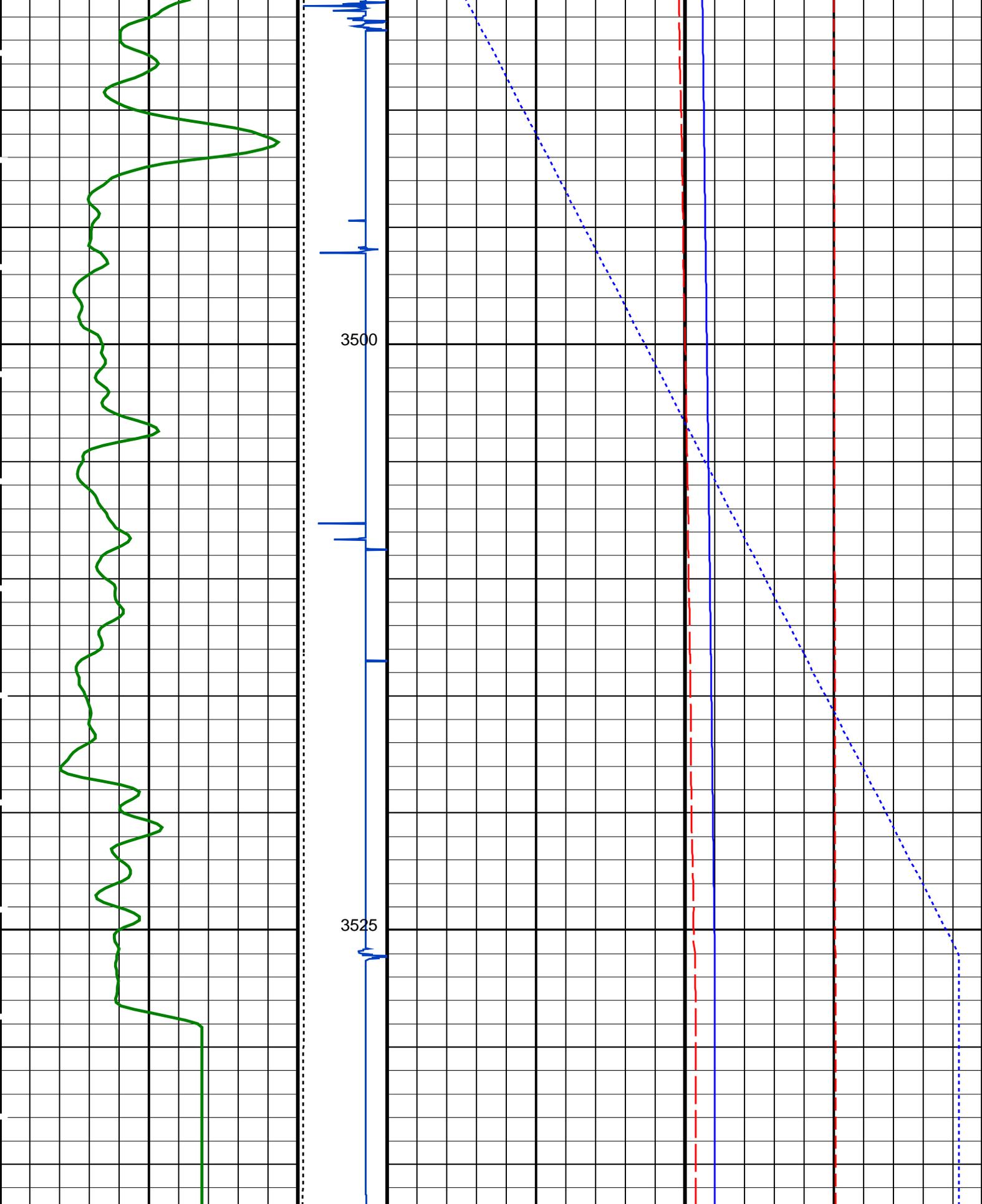
PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
RST-C: Reservoir Saturation Pro Tool C		
AIRB	Tractor Available in Tool String	NO
BHS	RST Air Borehole	No
BHT	Borehole Status	CASED
CSID	Bottom Hole Temperature (used in calculations)	100 DEGC
DFPC	Casing Size I.D.	6.875 IN
GCSE	Depth Filter Processing Constant	One
GDEV	Generalized Caliper Selection	BS
GGRD	Average Angular Deviation of Borehole from Normal	21 DEG
GRSE	Geothermal Gradient	0.018227 DC/M
GTSE	Generalized Mud Resistivity Selection	CHART_GEN 9
MATR	Generalized Temperature Selection	LINEAR_ESTIMATE
NORM_IRAT_RST	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
NORM_SIGM_RST	RST Normalized Inelastic Ratio	0.48
PTIER	RST Normalized Sigma	30 CU
PVL_PSNT_PRST	RST Tiered Presentation Selection	0_Customer
RGAI	RST PVL Peak Signal/Noise Threshold	3
SHT	Near/Far Gain Calibration Ratio	1
TIER_IC	Surface Hole Temperature	25 DEGC
TIER_SIGM	RST IC Acquisition Mode	0_CO_Yield_and_Spectrolith
WOFSL_PRST	RST Sigma Acquisition Mode	0_RST_Sigma
WONSL_PRST	RST Desired WFL-Off Subcycle Length	0
WSCOM_PRST	RST Desired WFL-On Subcycle Length	0
PSPT-A/B: Production Services Logging Platform		
BHS	Borehole Status	CASED
BHT	Bottom Hole Temperature (used in calculations)	100 DEGC
CSID	Casing Size I.D.	6.875 IN
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	21 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE
PBPO	PBMS Tool position on CAN	2
PCCG	PBMS CCL Gain	DB36
PSTP	PSTC Tool Position on CAN Bus	1
SHT	Surface Hole Temperature	25 DEGC
System and Miscellaneous		
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth
BS	Bit Size	8.500 IN
BSAL	Borehole Salinity	-50000.00 PPM
CSIZ	Current Casing Size	7.625 IN
CWEI	Casing Weight	29.70 LB/F
DFD	Drilling Fluid Density	-50000.00 LB/G
DO	Depth Offset for Playback	0.0 M
MST	Mud Sample Temperature	-50000.00 DEGF
PRYSADD	Use of alternate depth channel for playback	NO





Gamma Ray (GR)	Cable Speed (CS)	Well Temperature (WTEP)
(GAPI)	(F/HR)	(DEGF)
0 250	0 15000	0 300

Discriminat

ed CCL (CCLD)	0	Well Temperature (WTEP) (DEGF)	30
3 (V) -1			
	0	Well Pressure (WPRE) (PSIA)	2000
	0	Amplified Well Pressure (WPRE) (PSIA)	50

PIP SUMMARY

Time Mark Every 60 S

Format: PSP_1 Vertical Scale: 1:200

Graphics File Created: 12-Mar-2006 12:33

OP System Version: 13C0-300
MCM

RST-C PTC-2716-NUCL PSPT-A/B 13C0-300

Output DLIS Files

DEFAULT RST_PSP_007LUP FN:6 PRODUCER 12-Mar-2006 12:33

Company: **Esso Australia Ltd.**

Schlumberger

Well: **CBA F-4**
Field: **Fortescue**
Rig: **Cobia**
Country: **Australia**

RST-A Sigma Survey
Pressure/Temperature
GR-CCL