

Company: Esso Australia Pty Ltd.

Well: A-4C

Field: Fortescue

Rig: Crane / Prod 4

Country: Australia

Base Line Gamma Ray Survey
RST-C Sigma Survey

Rig:Crane / Prod 4

Field:Fortescue

Location:Gippsland

Well:A-4C

Company:Esso Australia Pty Ltd.

LOCATION

Gippsland

Basin

Bas Strait

Elev.:K.B.42.29 m

G.L.-69.00 m

D.F.42.29 m

Permanent Datum:M.S.L.

Log Measured From:D.F.

Drilling Measured From:D.F.

State:Victoria

Max. Well Deviation61 deg

Longitude148 16 36.62 E

Latitude038 24 31.39 S

Logging Date	28-Jul-2009			
Run Number	One			
Depth Driller	3314 m			
Schlumberger Depth	3192.5 m			
Bottom Log Interval	3192.5 m			
Top Log Interval	3160 m			
Casing Fluid Type	Production Fluids			
Salinity				
Density				
Fluid Level	728 m			
BIT/CASING/TUBING STRING				
Bit Size	8.500 in			
From	2068.9 m			
To	3314 m			
Casing/Tubing Size	7.000 in			
Weight	26 lbm/ft			
Grade	L-80			
From	22.44 m			
To	3303.6 m			
Maximum Recorded Temperatures	224 degF			
Logger On Bottom	28-Jul-2009		8:00	
Unit Number	Location	Prod 4 / AUSL		
Recorded By	B.Donahoe, B.Parker			
Witnessed By	G Rimmer			

PVT DATA				Run 1	Run 2	Run 3
Oil Density						
Water Salinity						
Gas Gravity						
Bo						
Bw						
1/Bg						
Bubble Point Pressure						
Bubble Point Temperature						
Solution GOR						
Maximum Deviation	61 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: 30-JUL-2009 16:24:51

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-EB	Type:	PSDS/OSDS	Type:	2-32ZT
Serial Number:	6373	Serial Number:	325357	Serial Number:	207308
Calibration Date:	2-Dec-2008	Calibration Date:	20-Jul_2009	Length:	5100 M
Calibrator Serial Number:	30	Calibrator Serial Number:	1174	Conveyance Method:	Wireline
Calibration Cable Type:	2-23ZT	Number of Calibration Points:	10	Rig Type:	Offshore Fixed
Wheel Correction 1:	-1	Calibration RMS:	10		
Wheel Correction 2:	-2	Calibration Peak Error:	19		

Depth Control Parameters	
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Log Sequence:	Subsequent Log In the Well
Reference Log Name:	Solar Composite log
Reference Log Run Number:	Not provided
Reference Log Date:	11-Jun-2008

Depth Control Remarks	
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- | |
|---|
| <ol style="list-style-type: none">1. All Schlumberger Depth procedures followed.2. IDW used as primary depth reference. Z chart used as secondary3. CMTD used as primary tension device |
|---|

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OTHER SERVICES1
OS1: None
OS2:
OS3:

REMARKS: RUN NUMBER 1

Log Correlated to ExxonMobil Solar Composite Log, Supplied with Logging Program .

Objectives: RIH with RST and tag HUD (3192.5m MDKB). Complete two static passes over interval 3192.5m – 3160m MDKB at 900ft/hr

Maximum Well Deviation: 61deg @ 2075.2m MDKB.

Maximum recorded temperature 224 degF @ 3192.5m MDKB.

Bottom hole pressure recorded 3090 psia.

[illegible]

Schlumberger Crew : Rick Murray, Dan Halsted

RUN 1			RUN 2		
SERVICE ORDER #:		B69U-00008	SERVICE ORDER #:		
PROGRAM VERSION:		16C0-147	PROGRAM VERSION:		
FLUID LEVEL:		728 m	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1		RUN 2	
SURFACE EQUIPMENT			
WITM-A PSC_16MHZ			
DOWNHOLE EQUIPMENT			

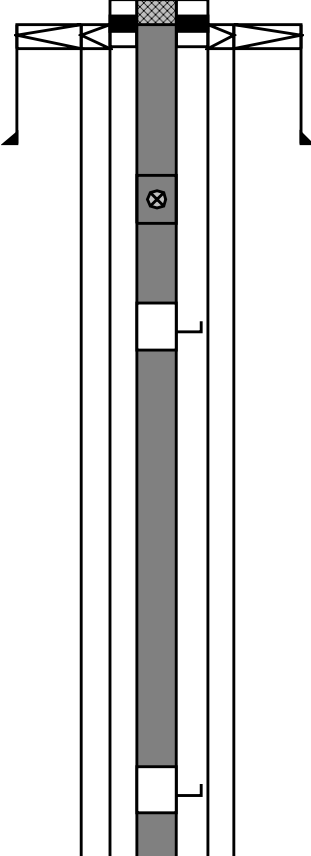
RSS-A 437
RSXH-A 500
RSX-C 490

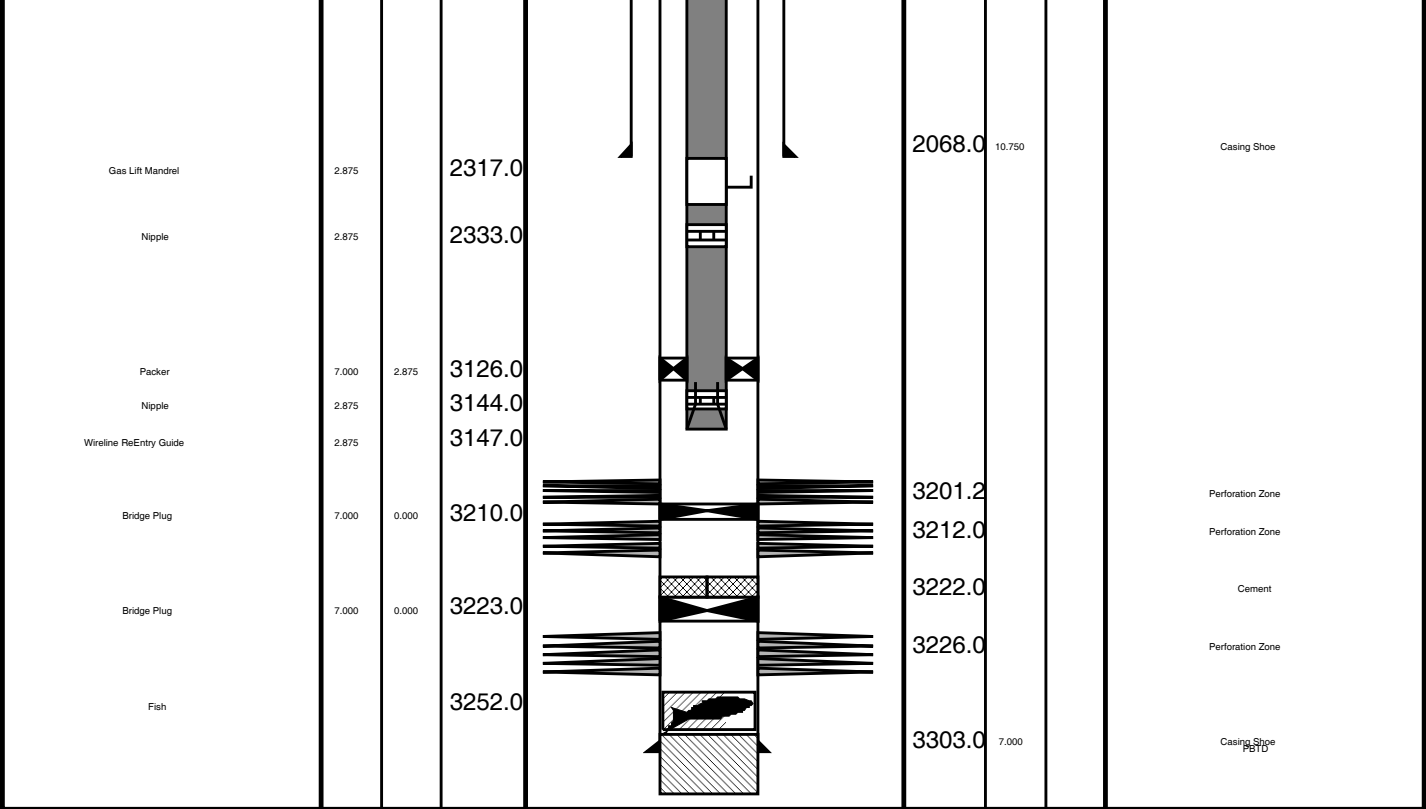
RSC-A Far
RSC-A PNG
RSC-A Nea
RSX-A PNG

4.24
4.09

Tension HV 0.00
TOOL ZERO

MAXIMUM STRING DIAMETER 1.72 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Production String	(m)		MD	Well Schematic	MD	(m)		Casing String
	OD	ID				OD	ID	
Tubing Hanger	7.000	2.875	21.5		21.5	7.000	7.000	Casing String
Tubing	2.875		21.5		22.0	20.000		Conductor Pipe
					22.0	10.750		Casing String
					22.0	20.000	10.750	Liner Hanger
					190.0	20.000		Casing Shoe
Shutin Valve	2.875		431.0					
Gas Lift Mandrel	2.875		699.0					
Gas Lift Mandrel	2.875		1656.0					

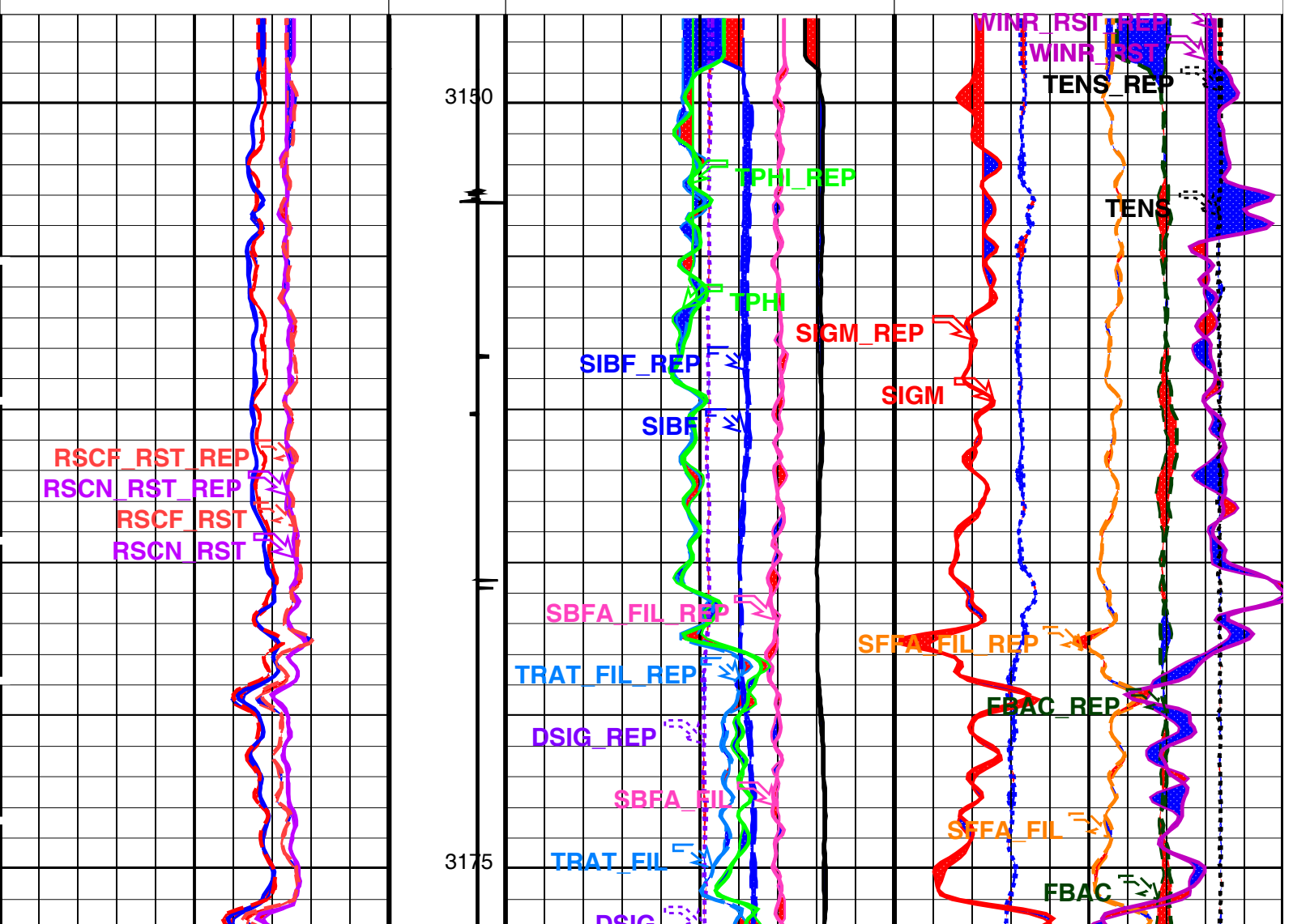
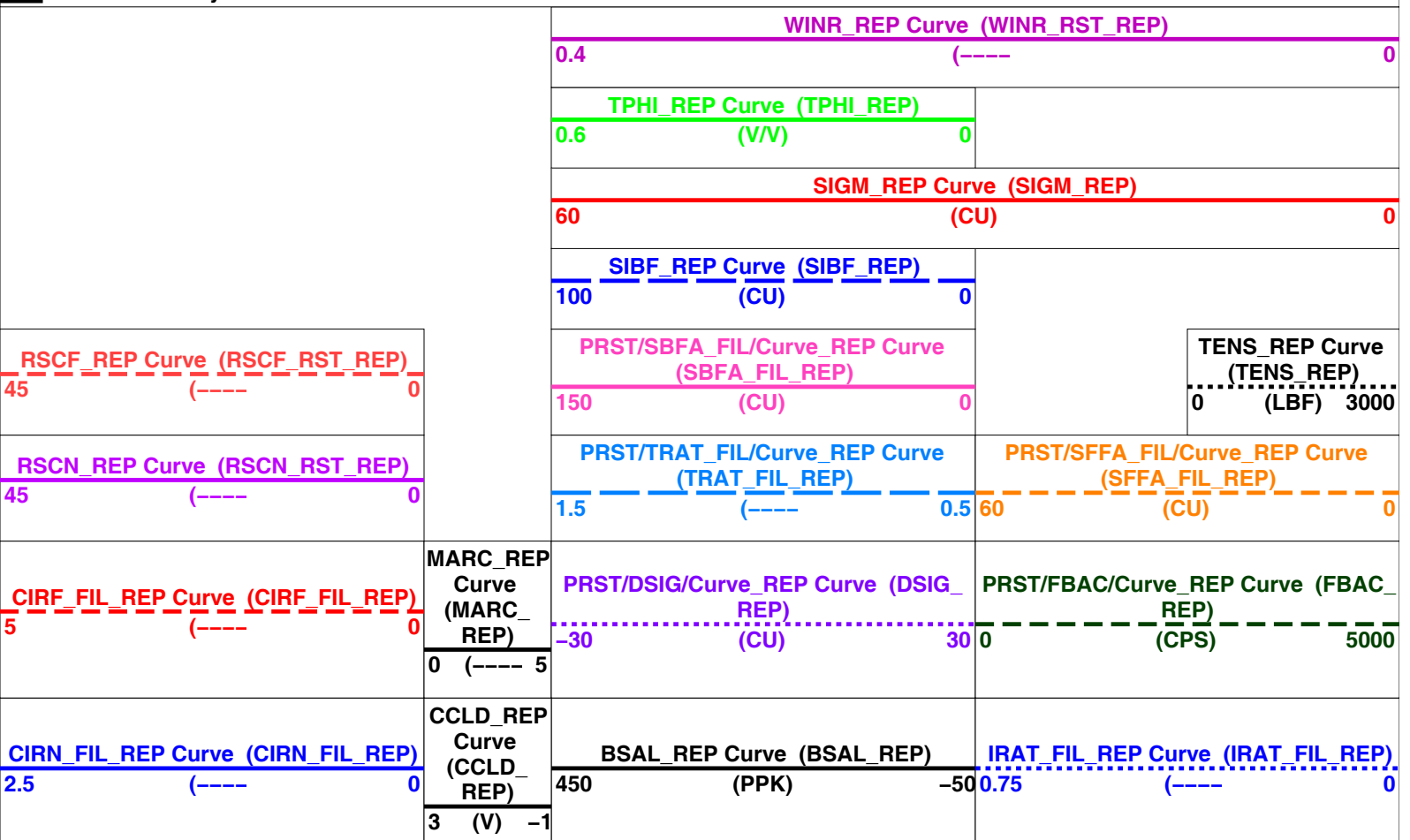


RST Static Pass
Repeat Analysis

MAXIS Field Log

Company: Esso Australia Pty Ltd. Well: A-4C

Input DLIS Files						
DEFAULT	RST_PSP_031LUP	FN:30	PRODUCER	29-Jul-2009 19:43	3196.4 M	3145.5 M
DEFAULT	RST_PSP_032LUP	FN:31	PRODUCER	29-Jul-2009 19:56	3195.7 M	3147.2 M
Output DLIS Files						
DEFAULT	RST_PSP_039PUP	FN:38	PRODUCER	29-Jul-2009 20:34	3196.4 M	3140.0 M
OP System Version: 16C0-147						
MCM						
RST-C	SRPC-3777-Q4_2008_OP16	PSPT-B	SRPC-3777-Q4_2008_OP16			



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-B: Production Services Logging Platform			
BHS	Borehole Status	CASED	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	-50000.00	PPM
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	0.0	M
DORL	Depth Offset for Repeat Analysis	0.0	M
PP	Playback Processing	NORMAL	

Format: RST_SIG_ANSW_REP

Vertical Scale: 1:200

Graphics File Created: 29-Jul-2009 20:34

OP System Version: 16C0–147						
MCM						
RST–C	SRPC–3777–Q4_2008_OP16		PSPT–B		SRPC–3777–Q4_2008_OP16	
Input DLIS Files						
DEFAULT	RST_PSP_031LUP	FN:30	PRODUCER	29–Jul–2009 19:43	3196.4 M	3145.5 M
DEFAULT	RST_PSP_032LUP	FN:31	PRODUCER	29–Jul–2009 19:56	3195.7 M	3147.2 M
Output DLIS Files						
DEFAULT	RST_PSP_039PUP	FN:38	PRODUCER	29–Jul–2009 20:34		

Schlumberger

RST Static Pass 2

MAXIS Field Log

Company: Esso Australia Pty Ltd.

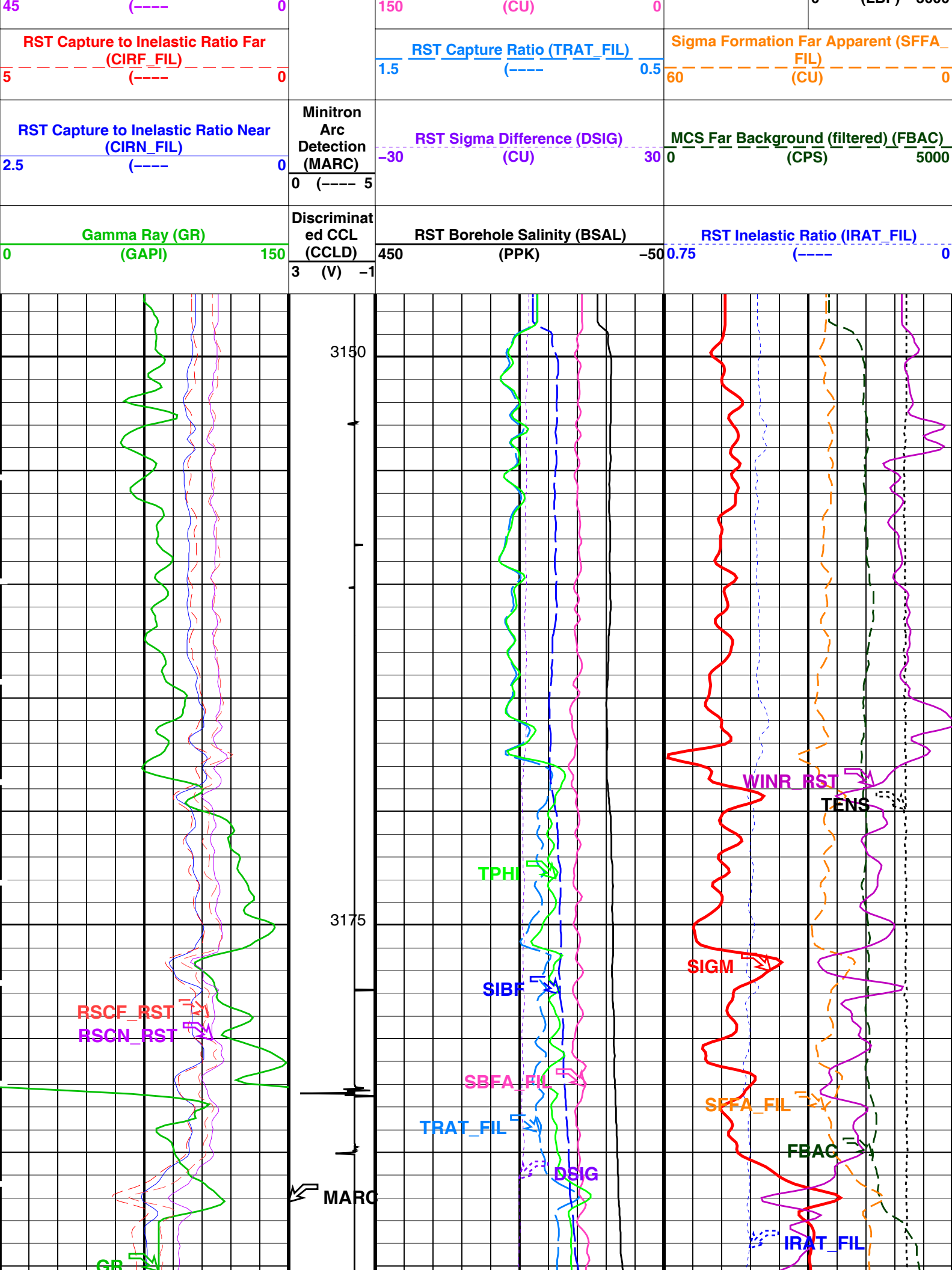
Well: A-4C

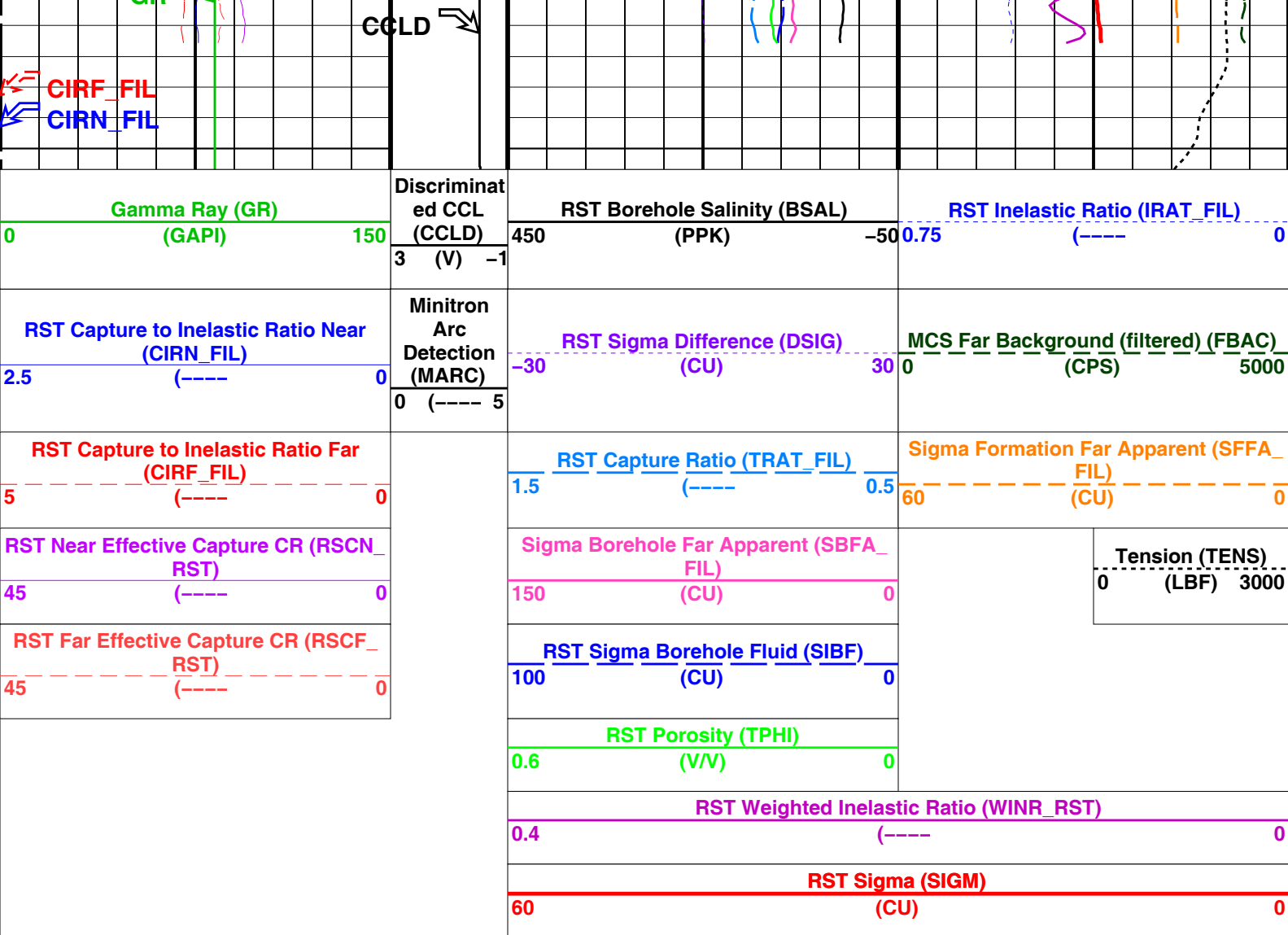
Output DLIS Files				
DEFAULT	RST_PSP_032LUP	FN:31	PRODUCER	29-Jul-2009 19:56
OP System Version: 16C0-147				
MCM				
RST-C	SRPC-3777-Q4_2008_OP16	PSPT-B	SRPC-3777-Q4_2008_OP16	

PIP SUMMARY

Time Mark Every 60 S

		RST Sigma (SIGM)	
		60	(CU) 0
		RST Weighted Inelastic Ratio (WINR_RST)	
		0.4	(----) 0
		RST Porosity (TPHI)	
RST Far Effective Capture CR (RSCF_RST)		0.6	(V/V) 0
45		RST Sigma Borehole Fluid (SIBF)	
(----) 0		100	(CU) 0
RST Near Effective Capture CR (RSCN_RST)		Sigma Borehole Far Apparent (SBFA_FIL)	
		Tension (TENS)	
		0 (LBE) 3000	





PIP SUMMARY

Time Mark Every 60 S

Parameters			
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-B: Production Services Logging Platform			
BHS	Borehole Status	CASED	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	-50000.00	PPM
CWEI	Casing Weight	26.00	LB/F

Format: RST_SIG_ANSW Vertical Scale: 1:200 Graphics File Created: 29-Jul-2009 19:56

OP System Version: 16C0-147

MCM

RST-C SRPC-3777-Q4_2008_OP16 PSPT-B SRPC-3777-Q4_2008_OP16

Output DLIS Files



RST Static Pass 1

MAXIS Field Log

Company: Esso Australia Pty Ltd.

Well: A-4C

Output DLIS Files

DEFAULT

RST_PSP_031LUP

FN:30

PRODUCER

29-Jul-2009 19:43

3196.4 M

3145.5 M

OP System Version: 16C0-147
MCM

RST-C

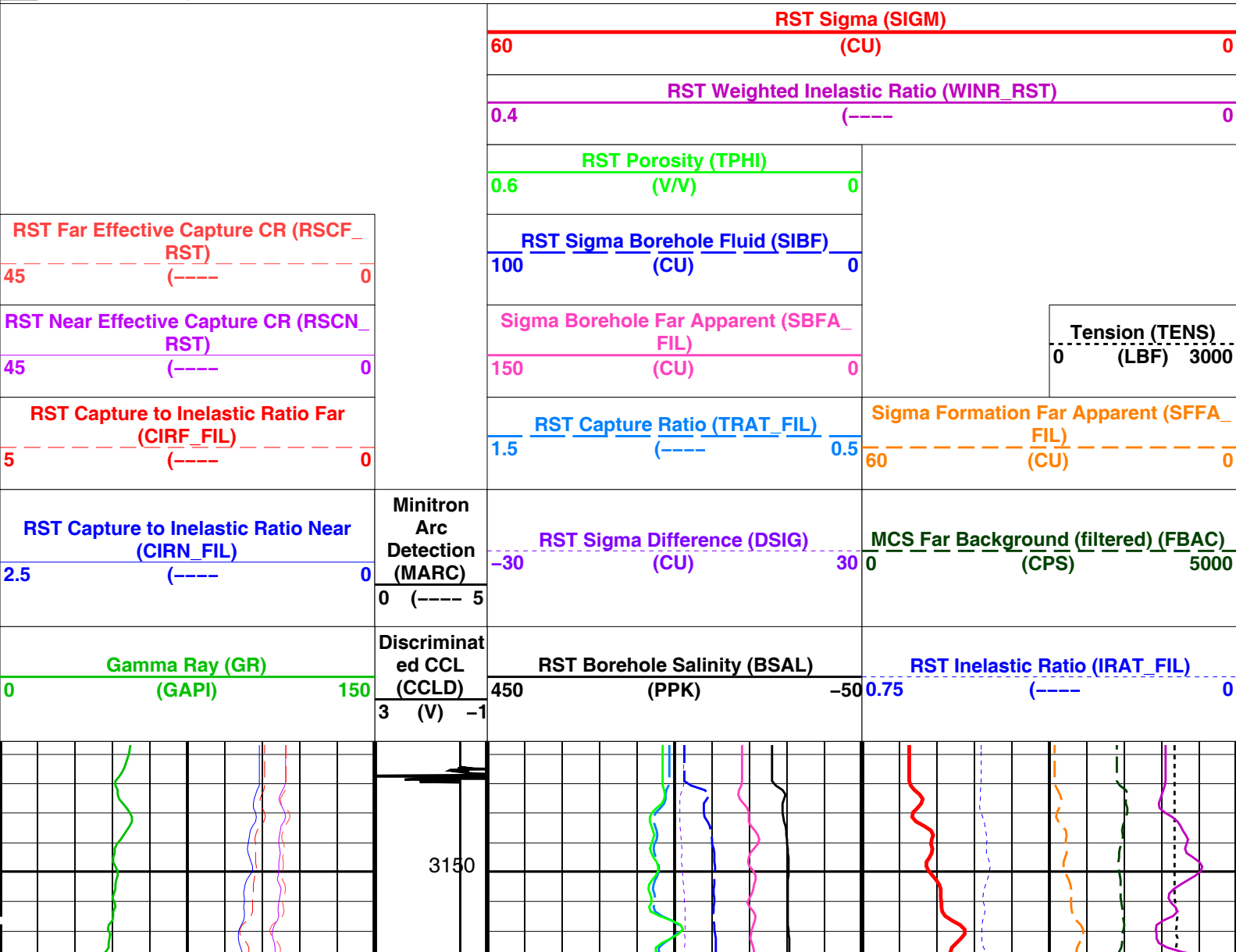
SRPC-3777-Q4_2008_OP16

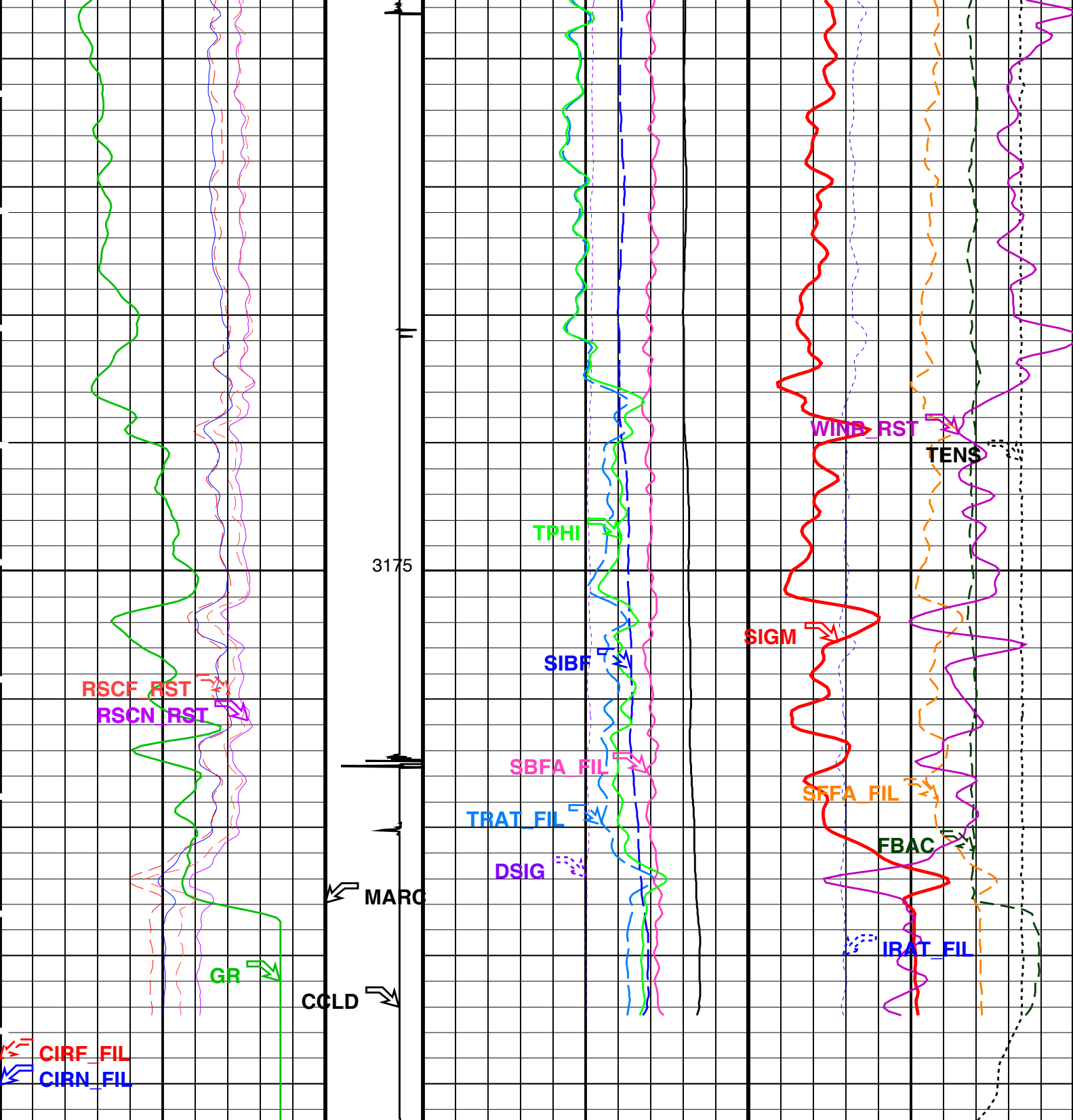
PSPT-B

SRPC-3777-Q4_2008_OP16

PIP SUMMARY

Time Mark Every 60 S





<div>Gamma Ray (GR)</div> <div>(GAPI)</div> <div>0150</div>	<div>Discriminat</div> <div>ed CCL</div> <div>(CCLD)</div> <div>3 (V) -1</div>	<div>RST Borehole Salinity (BSAL)</div> <div>(PPK)</div> <div>450-50</div>	<div>RST Inelastic Ratio (IRAT_FIL)</div> <div>(----</div> <div>0.750</div>
<div>RST Capture to Inelastic Ratio Near</div> <div>(CIRN_FIL)</div> <div>2.5 (----) 0</div>	<div>Minitron</div> <div>Arc</div> <div>Detection</div> <div>(MARC)</div> <div>0 (---- 5</div>	<div>RST Sigma Difference (DSIG)</div> <div>(CU)</div> <div>-3030</div>	<div>MCS Far Background (filtered) (FBAC)</div> <div>(CPS)</div> <div>05000</div>
<div>RST Capture to Inelastic Ratio Far</div> <div>(CIRF_FIL)</div> <div>5 (----) 0</div>		<div>RST Capture Ratio (TRAT_FIL)</div> <div>(----</div> <div>1.50.5</div>	<div>Sigma Formation Far Apparent (SFFA_</div> <div>FIL)</div> <div>(CU)</div> <div>600</div>
<div>RST Near Effective Capture GR (RSCN</div> <div></div> <div></div>		<div>Sigma Borehole Far Apparent (SBFA</div> <div></div> <div></div>	

RST Near Effective Capture CR (RSCF_RST)	45	(----	0
RST Far Effective Capture CR (RSCF_RST)	45	(----	0
Sigma Borehole Far Apparent (SBFA_FIL)	150	(CU)	0
RST Sigma Borehole Fluid (SIBF)	100	(CU)	0
RST Porosity (TPHI)	0.6	(V/V)	0
RST Weighted Inelastic Ratio (WINR_RST)	0.4	(----	0
RST Sigma (SIGM)	60	(CU)	0

Tension (TENS)	0	(LBF)	3000
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PIP SUMMARY
Time Mark Every 60 S

Parameters			
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-B: Production Services Logging Platform			
BHS	Borehole Status	CASED	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
System and Miscellaneous			
BS	Bit Size	8.500	IN
BSAL	Borehole Salinity	-50000.00	PPM
CWEI	Casing Weight	26.00	LB/F

Format: RST_SIG_ANSW	Vertical Scale: 1:200	Graphics File Created: 29-Jul-2009 19:43
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OP System Version: 16C0-147			
MCM			
RST-C	SRPC-3777-Q4_2008_OP16	PSPT-B	SRPC-3777-Q4_2008_OP16

Output DLIS Files			
DEFAULT	RST_PSP_031LUP	FN:30	PRODUCER 29-Jul-2009 19:43



GR Background Pass

MAXIS Field Log

Company: Esso Australia Pty Ltd.	Well: A-4C
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Input DLIS Files					
DEFAULT	RST_PSP_027LUP	FN:26	PRODUCER	29-Jul-2009 19:02	3194.8 M 3150.1 M

Output DLIS Files

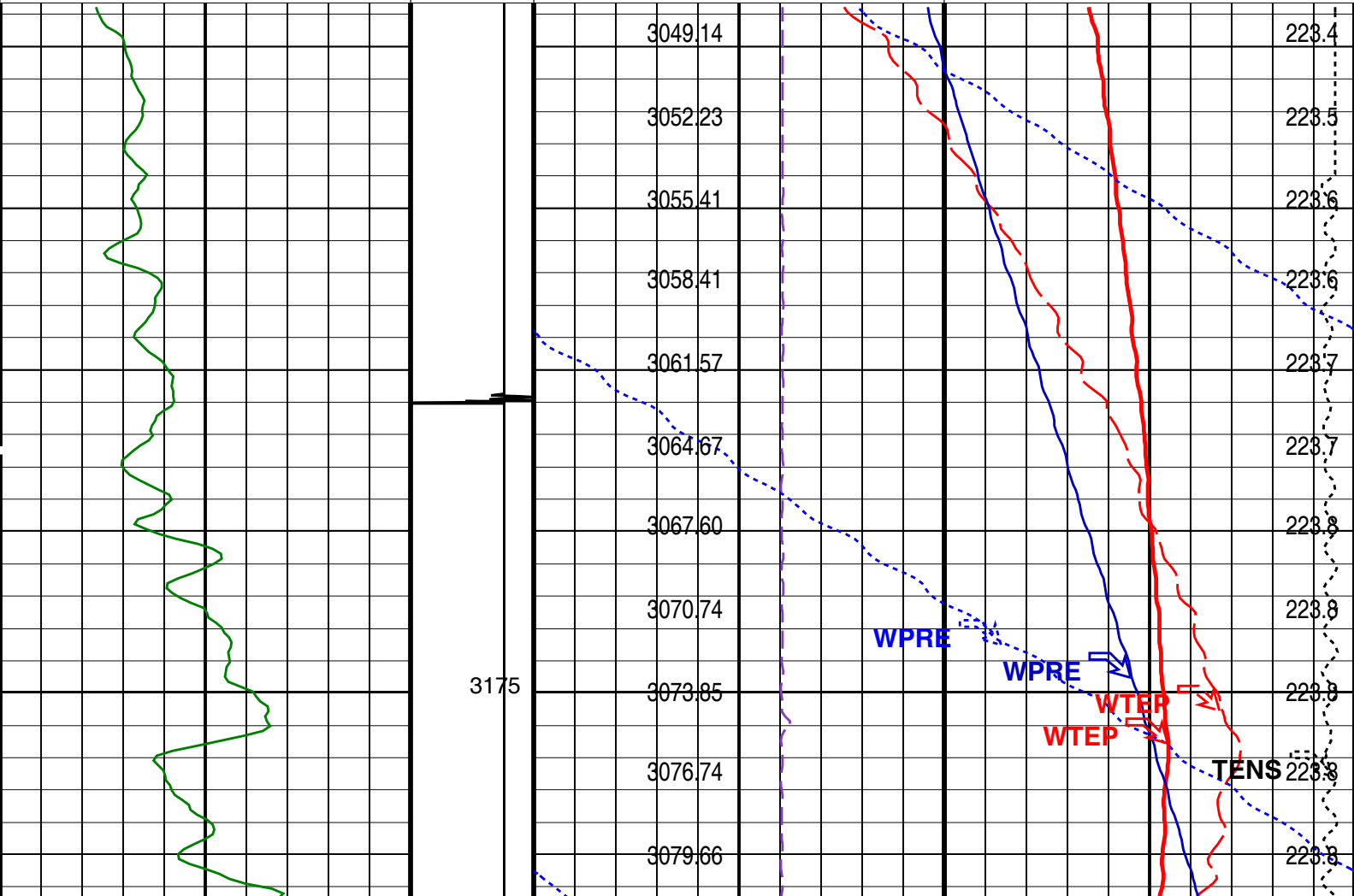
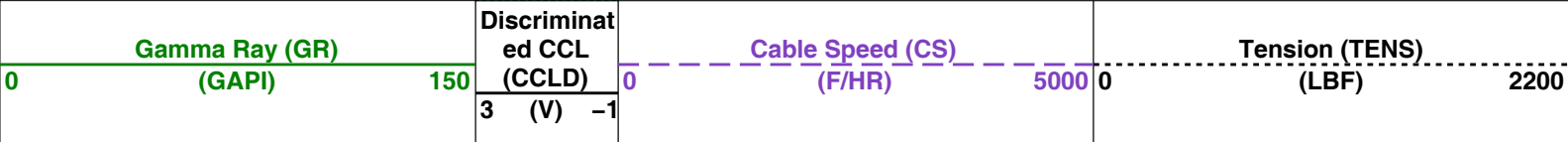
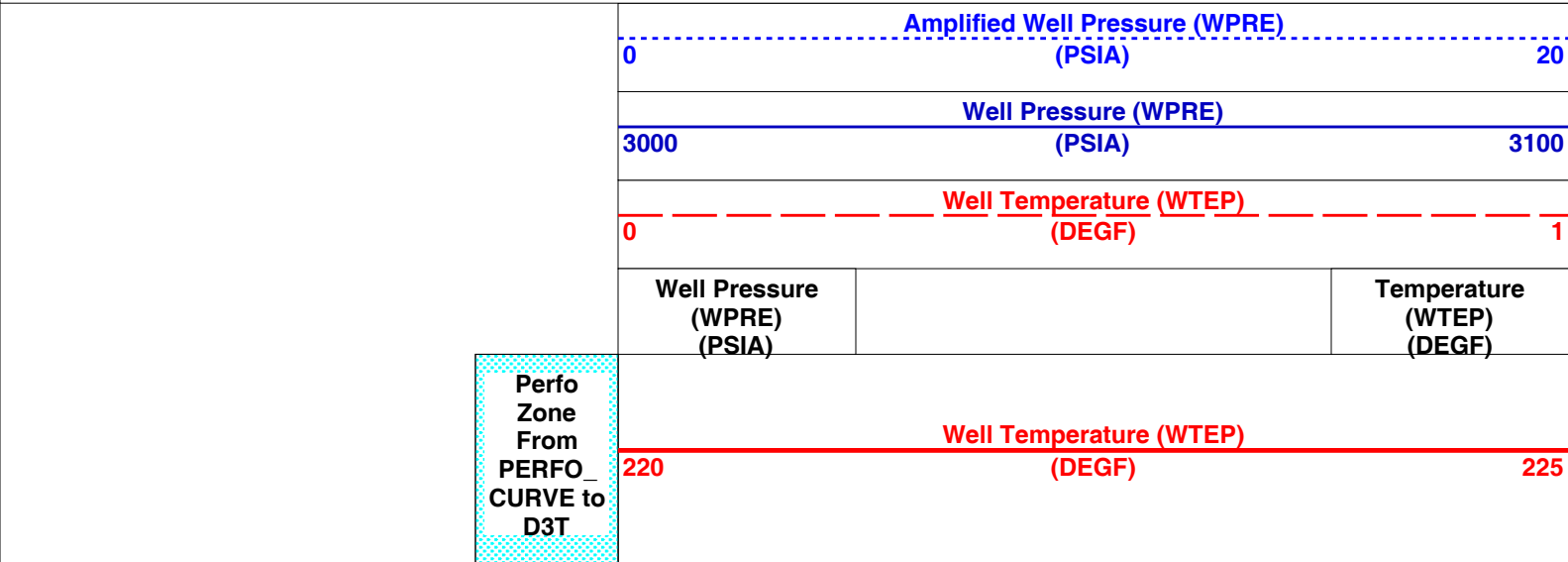
DEFAULT RST_PSP_051PUP FN:50 PRODUCER 01-Aug-2009 12:55 3198.3 M 3153.6 M

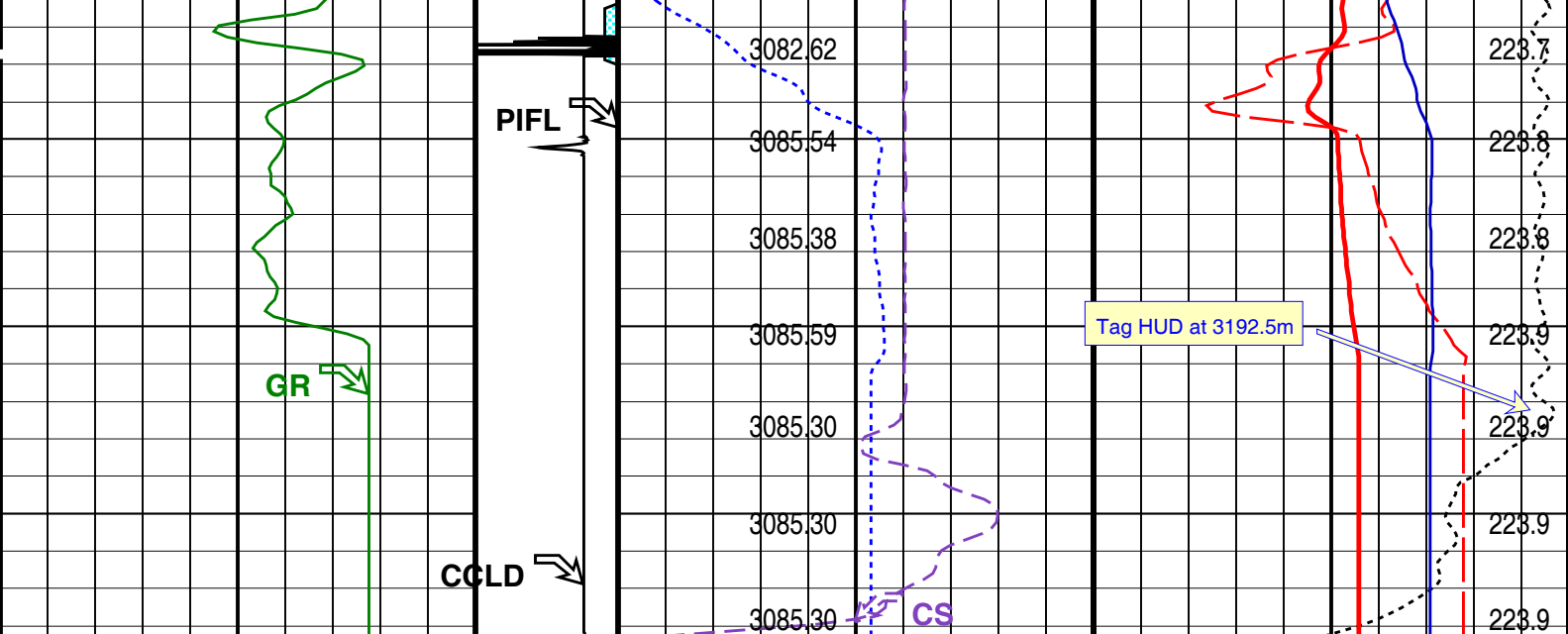
OP System Version: 16C0-147
MCM

RST-C SRPC-3777-Q4_2008_OP16 PSPT-B SRPC-3777-Q4_2008_OP16

PIP SUMMARY

Time Mark Every 60 S





Gamma Ray (GR) (GAPI)		Cable Speed (CS) (F/HR)		Tension (TENS) (LBF)	
0 150		0 5000		0 2200	
3 (V) -1					

Perfo Zone From PERFO_ CURVE to D3T	Well Temperature (WTEP)		
	220	(DEGF)	225
	Well Pressure (WPRE) (PSIA)		Temperature (WTEP) (DEGF)
	Well Temperature (WTEP)		
	0	(DEGF)	1
	Well Pressure (WPRE)		
	3000	(PSIA)	3100
Amplified Well Pressure (WPRE)			
0	(PSIA)	20	

PIP SUMMARY					
Time Mark Every 60 S					
Format: PSP_1_1 Vertical Scale: 1:200			Graphics File Created: 01-Aug-2009 12:55		

OP System Version: 16C0-147 MCM					
RST-C	SRPC-3777-Q4_2008_OP16	PSPT-B	SRPC-3777-Q4_2008_OP16		

Parameters				
DLIS Name		Description		Value
System and Miscellaneous				
DO		Depth Offset for Playback		3.5 M
PP		Playback Processing		NORMAL

Input DLIS Files					
DEFAULT	RST_PSP_027LUP	FN:26	PRODUCER	29-Jul-2009 19:02	3194.8 M 3150.1 M
Output DLIS Files					
DEFAULT	RST_PSP_051PUP	FN:50	PRODUCER	01-Aug-2009 12:55	

Company:

Esso Australia Pty Ltd.

Schlumberger

Well:

A-4C

Field:

Fortescue

Rig:

Crane / Prod 4

Country:

Australia

Base Line Gamma Ray Survey

RST-C Sigma Survey