

Company: Esso Australia Pty Ltd.

Well: A-15
Field: Flounder
Rig : Prod4

Country: Australia

RST-C

Sigma Survey

12-Sep-2009

LOCATION

Gippsland
Basin
Bass Strait

Elev.: K.B. 35.20 m
G.L. -94.00 m
D.F. 35.20 m

Permanent Datum: M.S.L.
Log Measured From: D.F.
Drilling Measured From: D.F.

Elev.: 0.00 m
40.80 m above Perm. Datum

Prod4
Flounder
Gippsland
A-15
Esso Australia Pty Ltd.

State: Victoria

Max. Well Deviation 49 deg

Longitude 148 06'15.1"E

Latitude 038 18'45.24"S

Rig :
Field:
Location:
Well:
Company:

12-Sep-2009

Logging Date	12-Sep-2009		
Run Number	One		
Depth Driller	3149 m		
Schlumberger Depth	3072.2 m		
Bottom Log Interval	3072.2 m		
Top Log Interval	3050 m		
Casing Fluid Type	Production Fluids		
Salinity			
Density			
Fluid Level	870 m		
BIT/CASING/TUBING STRING			
Bit Size	9.875 in		
From	646 m		
To	3149 m		
Casing/Tubing Size	7.625 in		
Weight	46.7 lbn/ft		
Grade	N-80		
From	1296 m		
To	3149 m		
Maximum Recorded Temperatures	111 degC		
Logger On Bottom	12-Sep-2009	14:15	
Unit Number	889	Prod4	
Recorded By	O Darby		
Witnessed By	B Robinson		

	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	49 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			
Unit Number			
Recorded By			
Witnessed By			

Date Created: 10-SEP-2009 16:19:58

Logging Cable

Type:	2-32ZT
Serial Number:	207505
Length:	6421 M
<hr/>	
Conveyance Method:	Wireline
Rig Type:	Offshore Fixed

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	ExxonMobil Petrophysical Analysis
Reference Log Run Number:	
Reference Log Date:	8-sep-2008
Subsequent Trip Down Log Correction:	

1. IDW used as primary depth control
2. Z-Chart used as back-up
- 3.
- 4.
5. All depths are drillers depths
- 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.

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

REMARKS: RUN NUMBER 2

Maximum well deviation = 40.3 degrees at 1230m MDKB.

Objective:

Make up RST-A GR/CCL toolstring, RIH and position tools @ HUD, Correlate on depth. Start mintron and allow tool to stabilise for 15mins. With well shut-in, complete two passes over the interval 3050m to 3075.5m MDKB in sigma mode @

900 ft/hr. POOH









SBHP: 3330 Pisa

SBHT: 232 DegF

Crew : Andrew Hall & Chris Shiells.

RUN 1			RUN 2		
SERVICE ORDER #:		AusI08602234	SERVICE ORDER #:		
PROGRAM VERSION:		17C0-154	PROGRAM VERSION:		
FLUID LEVEL:		870 m	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1			RUN 2		
SURFACE EQUIPMENT					
WITM-A 806 PSC_16MHZ 806					
DOWNHOLE EQUIPMENT					
AH-SWBS-B 789 AH-SWBS-B 789		13.30			
AH-SWBS-B 788 AH-SWBS-B 788		12.61			
AH-SWBS-B 787 AH-SWBS-B 787		11.93			
AH-SWBS-B 786 AH-SWBS-B 786		11.24			
AH-SWBS-B 785 AH-SWBS-B 785		10.55			
MH-SWHS-A 759 MH-SWHS-A 759		9.87			
PSPT-A/B 827 PSC-A 806 PSPT-B 827 PSTC 806 PBMS-B 827 CQG_F_Mano 827 RTD Thermometer 827 GR 827 CCL 827 PBMS 827		9.54			
		9.54			
		8.41			
		7.48			
		7.37			
		7.25			
		7.02			
RST-C 0 RSCH-A 471 RSC-C 471 RSS-A 463 RSXH-A 500 RSX-C 500		7.02			

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

Client: Esso Australia Pty Ltd

Well: FLA A15

Field: Flounder

State: Victoria

Country: Australia

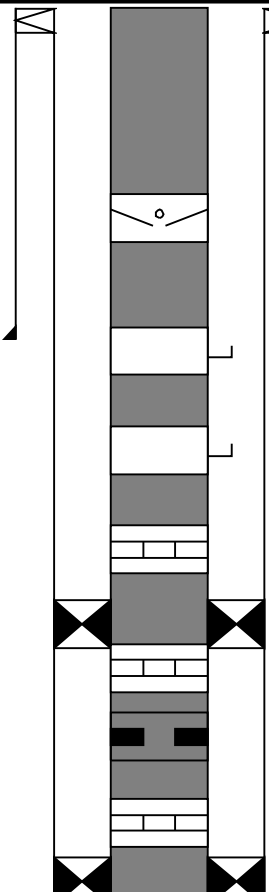
Drawing Date: 9/12/2009

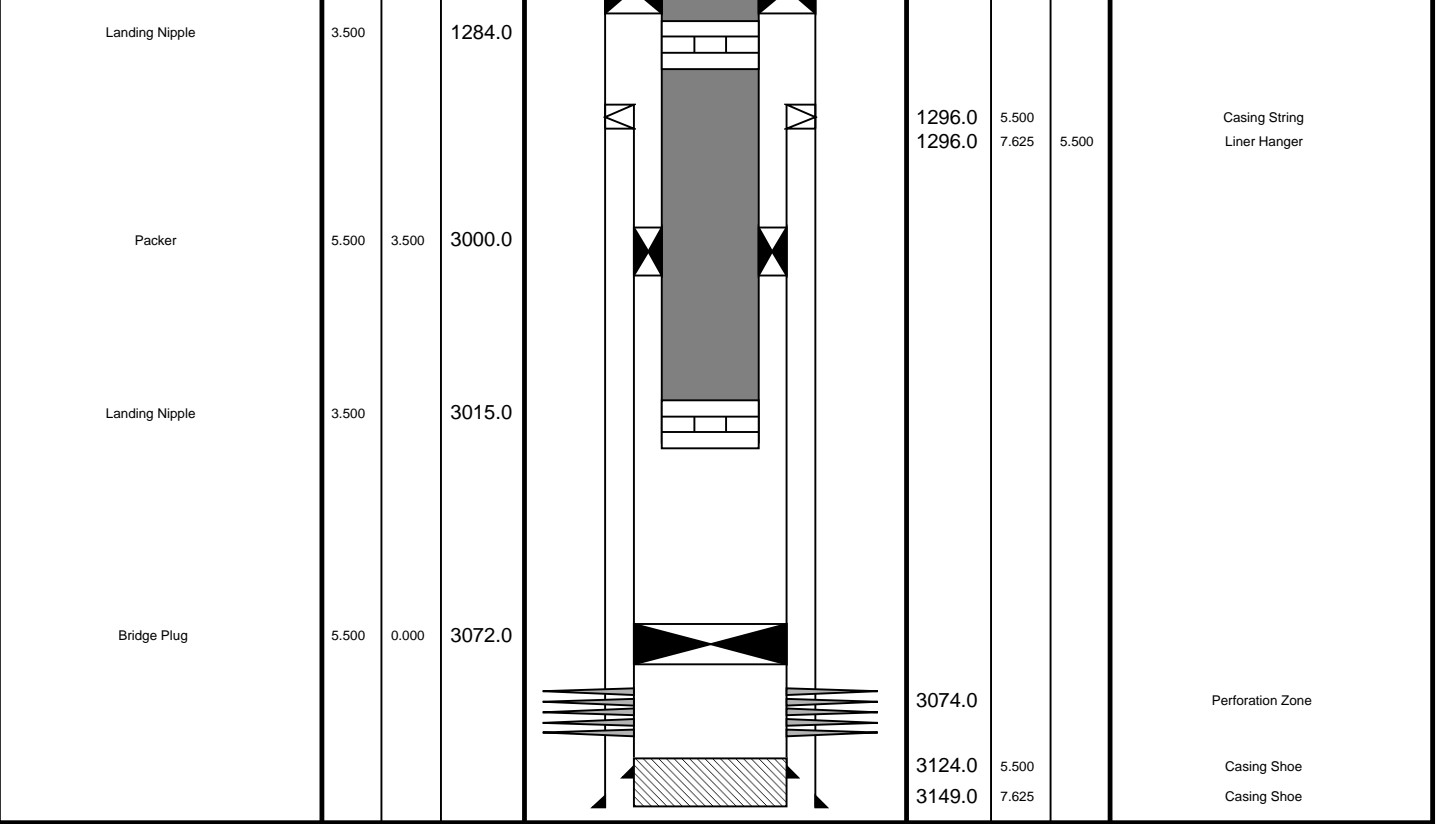
API #:

Rig Name: Prod 4 / Crane

Reference Datum: Mean Sea Level

Elevation: 34.2 m

Production String	(in)		(m)	Well Schematic	(m)		(in)	Casing String
	OD	ID	MD		MD	OD	ID	
Tubing	3.500		12.0		13.0 14.0	10.375 10.375	7.625	Casing String Liner Hanger
SSSV	3.500		457.0					
Gas Lift Mandrel	3.500		863.0		644.0	10.375		Casing Shoe
Gas Lift Mandrel	3.500		1210.0					
Landing Nipple	3.500		1226.0					
Packer	7.625	3.500	1238.0					
Nipple	3.500		1245.0					
Expansion joint	3.500		1249.0					
No Go Nipple	3.500		1266.0					
Packer	7.625	3.500	1269.0					



Job Events Summary

MAXIS Field Log

Schlumberger Job Event Summary						
		Time	Elapsed Time	Depth (M)		File
Simulated Log		12-Sep-2009 12:58	000:01			RST_PSP_007LUP
OP checked toolstring						
Log Pass (up)		12-Sep-2009 13:58	000:09	3074.5 -	2985.5	RST_PSP_013LUP
Correlation						
Log Pass (up)		12-Sep-2009 14:17	000:09	3074.2 -	3032.6	RST_PSP_014LUP
Sigma pass # 1						
Log Pass (up)		12-Sep-2009 14:34	000:08	3074.4 -	3035.4	RST_PSP_021LUP
Sigma pass # 2						

Company: Esso Australia Pty Ltd.

Well: A-15

Input DLIS Files

DEFAULT	RST_PSP_020PUP	FN:19	PRODUCER	12-Sep-2009 14:32	3074.2 M	3044.5 M
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Output DLIS Files

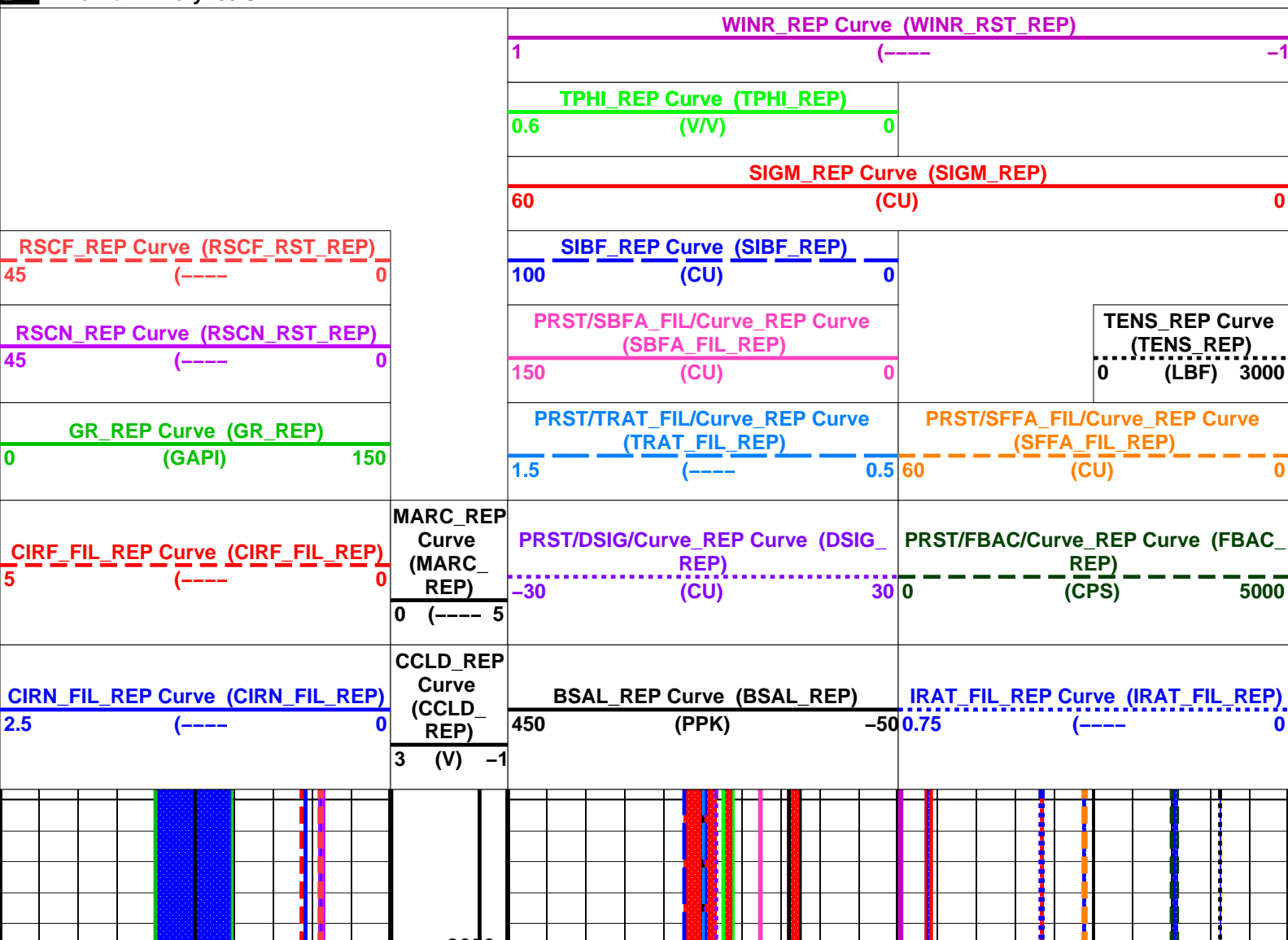
DEFAULT	RST_PSP_024PUP	FN:23	PRODUCER	12-Sep-2009 15:24	3074.4 M	3044.5 M
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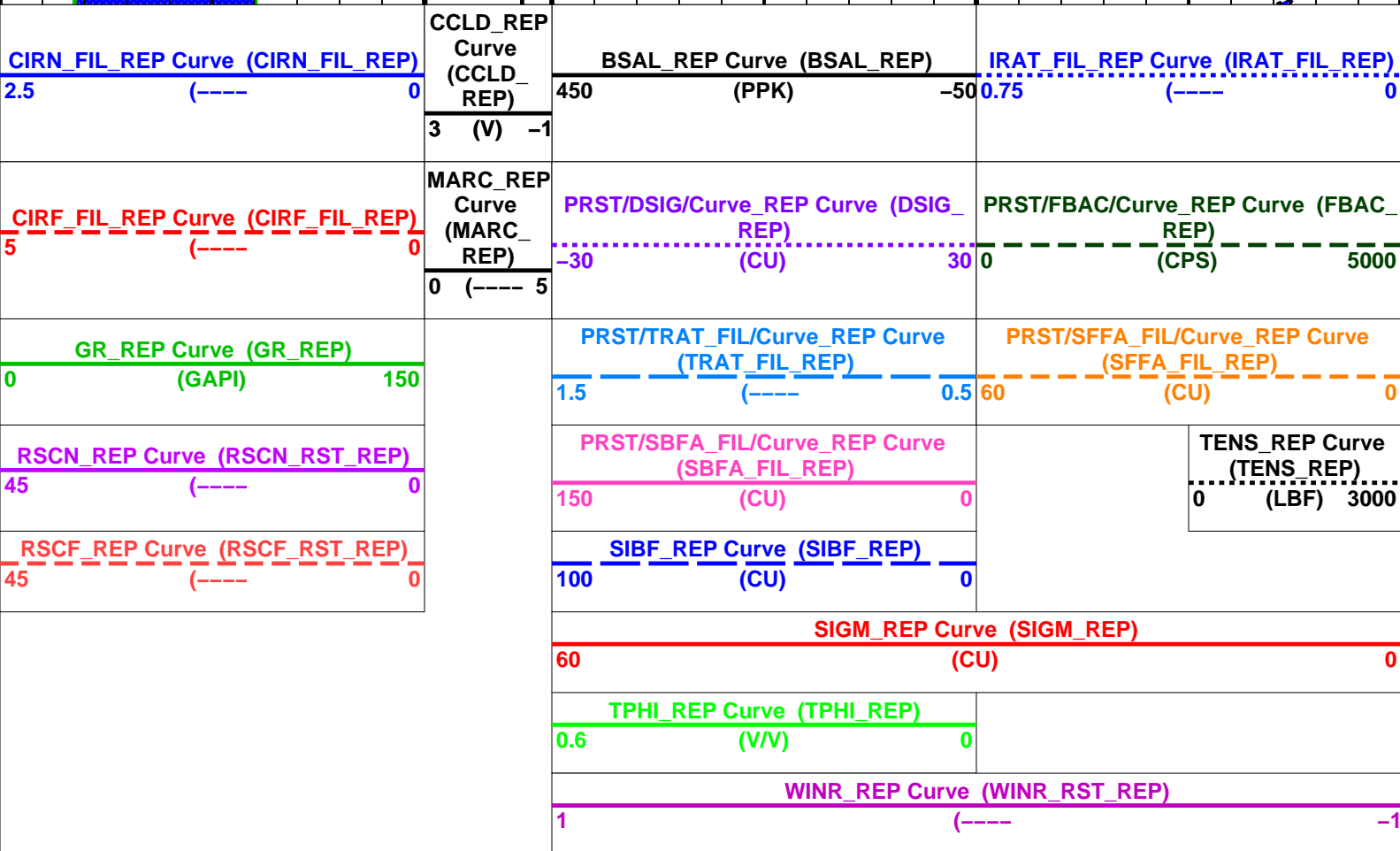
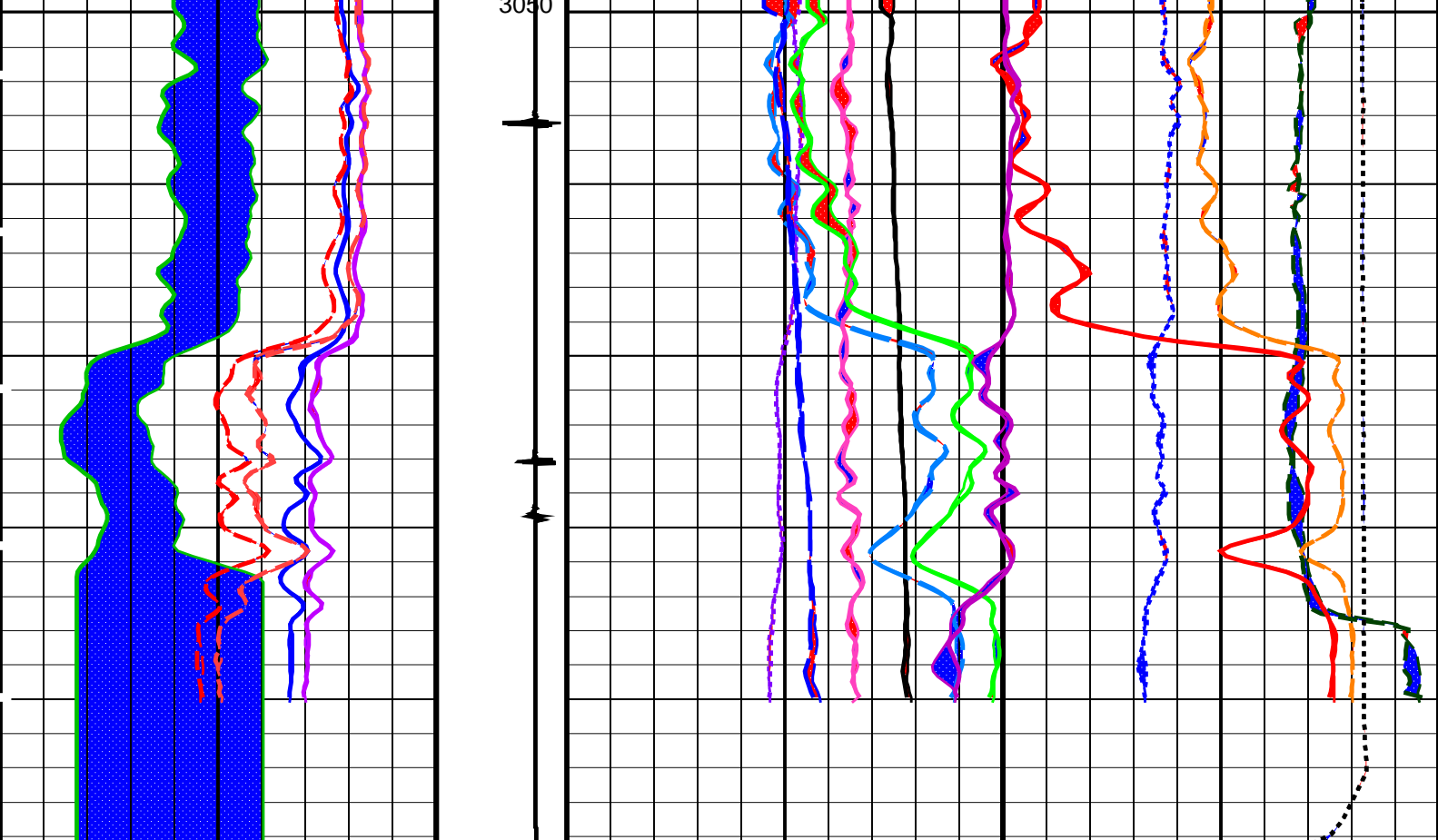
OP System Version: 17C0-154

RST-C	17C0-154	PSPT-A/B	17C0-154
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PIP SUMMARY

Time Mark Every 60 S





PIP SUMMARY

Time Mark Every 60 S


Parameters

DLIS Name	Description	Value
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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-A/B: 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	7.625	IN
CWEI	Casing Weight	46.70	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: 12-Sep-2009 15:24

OP System Version: 17C0-154						
RST-C	17C0-154	PSPT-A/B		17C0-154		
Input DLIS Files						
DEFAULT	RST_PSP_020PUP	FN:19	PRODUCER	12-Sep-2009 14:32	3074.2 M	3044.5 M
Output DLIS Files						
DEFAULT	RST_PSP_024PUP	FN:23	PRODUCER	12-Sep-2009 15:24		



RST-C Sigma Pass # 2
3050m – 3072.5m MDKB

MAXIS Field Log

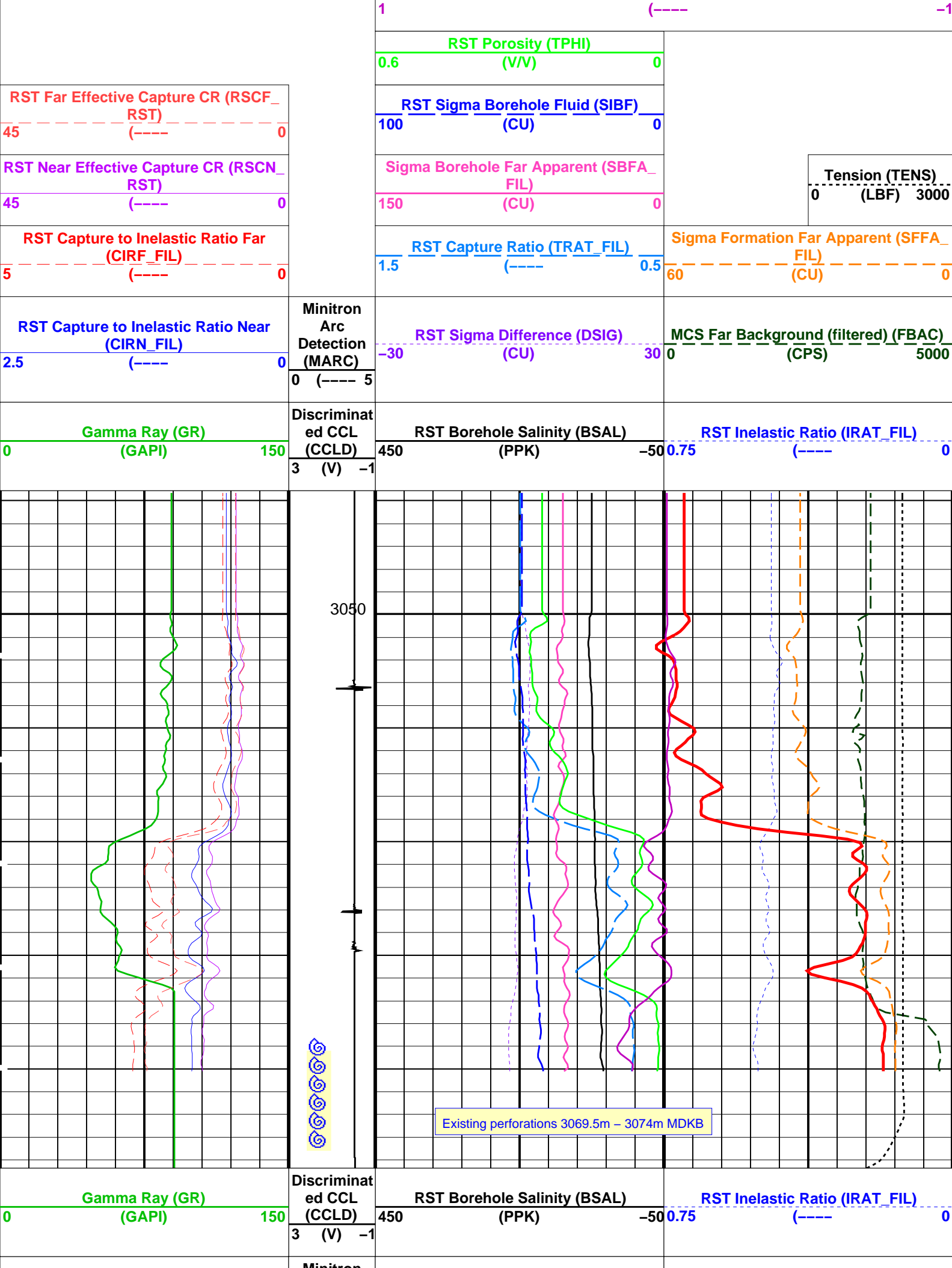
Company: Esso Australia Pty Ltd.
Well: A-15

Input DLIS Files						
DEFAULT	RST_PSP_021LUP	FN:20	PRODUCER	12-Sep-2009 14:34	3074.4 M	3035.4 M
Output DLIS Files						
DEFAULT	RST_PSP_022PUP	FN:21	PRODUCER	12-Sep-2009 14:42	3074.4 M	3044.5 M
OP System Version: 17C0-154						
RST-C	17C0-154	PSPT-A/B	17C0-154			

PIP SUMMARY

☐ Time Mark Every 60 S

		RST Sigma (SIGM)	
60		(CU)	0
		RST Weighted Inelastic Ratio (WINR_RST)	



<div>RST Capture to Inelastic Ratio Near (CIRN_FIL) 2.5 (----) 0</div>	<div>Arc Detection (MARC) 0 (----) 5</div>	<div>RST Sigma Difference (DSIG) (CU) -30 30</div>	<div>MCS Far Background (filtered) (FBAC) (CPS) 0 5000</div>
<div>RST Capture to Inelastic Ratio Far (CIRF_FIL) 5 (----) 0</div>		<div>RST Capture Ratio (TRAT_FIL) (----) 1.5 0.5</div>	<div>Sigma Formation Far Apparent (SFFA_FIL) (CU) 60 0</div>
<div>RST Near Effective Capture CR (RSCN_RST) (----) 45 0</div>		<div>Sigma Borehole Far Apparent (SBFA_FIL) (CU) 150 0</div>	<div>Tension (TENS) (LBF) 0 3000</div>
<div>RST Far Effective Capture CR (RSCF_RST) (----) 45 0</div>		<div>RST Sigma Borehole Fluid (SIBF) (CU) 100 0</div>	
		<div>RST Porosity (TPHI) (V/V) 0.6 0</div>	
		<div>RST Weighted Inelastic Ratio (WINR_RST) (----) 1 -1</div>	
		<div>RST Sigma (SIGM) (CU) 60 0</div>	

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-A/B: 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	7.625	IN
CWEI	Casing Weight	46.70	LB/F
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: RST_SIG_ANSW Vertical Scale: 1:200 Graphics File Created: 12-Sep-2009 14:42

OP System Version: 17C0-154			
RST-C	17C0-154	PSPT-A/B	17C0-154

Input DLIS Files					
DEFAULT	RST_PSP_021LUP	FN:20	PRODUCER	12-Sep-2009 14:34	3074.4 M 3035.4 M
Output DLIS Files					
DEFAULT	RST_PSP_022PUP	FN:21	PRODUCER	12-Sep-2009 14:42	

MAXIS Field Log

Company: Esso Australia Pty Ltd.

Well: A-15

Input DLIS Files

DEFAULT	RST_PSP_014LUP	FN:13	PRODUCER	12-Sep-2009 14:17	3074.2 M	3032.6 M
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Output DLIS Files

DEFAULT	RST_PSP_020PUP	FN:19	PRODUCER	12-Sep-2009 14:32	3074.2 M	3044.5 M
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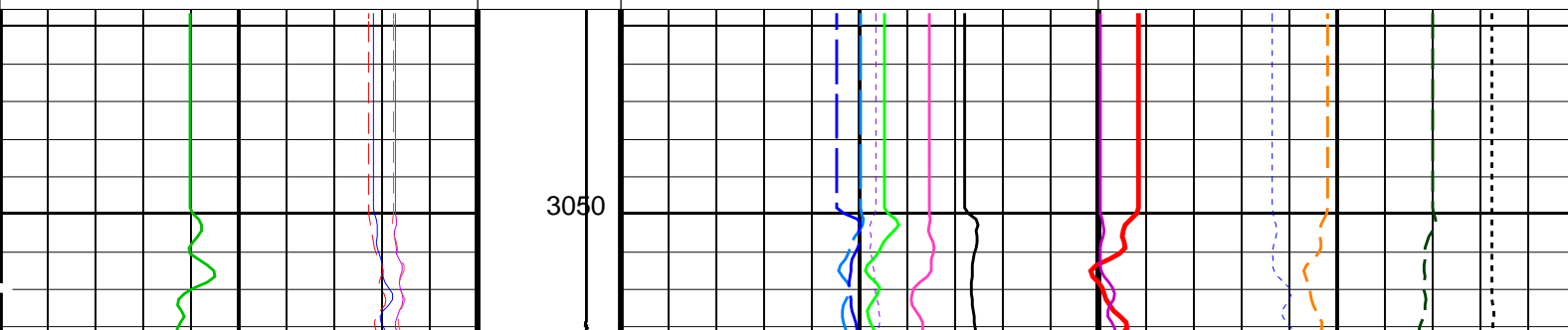
OP System Version: 17C0-154

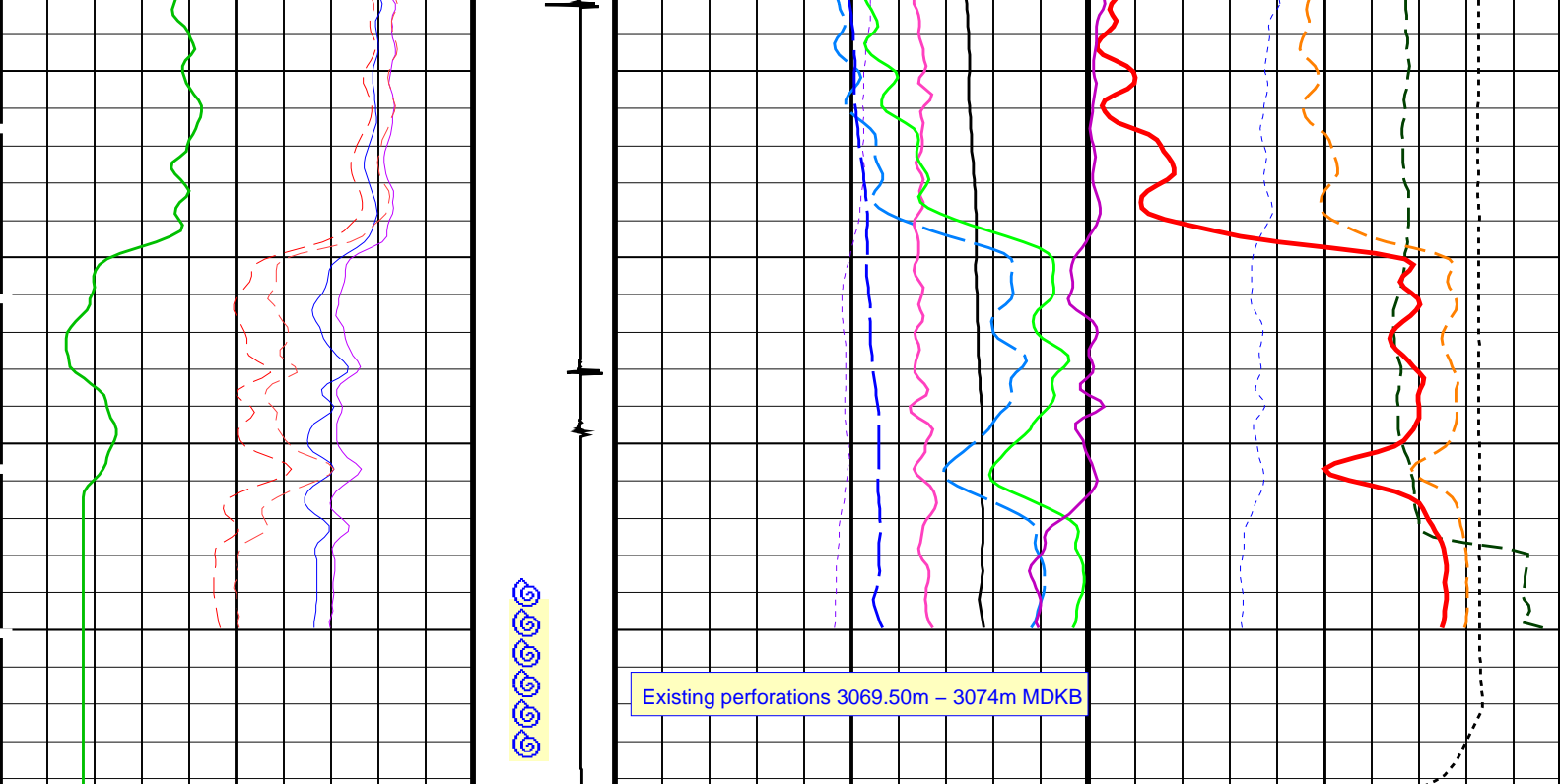
RST-C	17C0-154	PSPT-A/B	17C0-154
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PIP SUMMARY

Time Mark Every 60 S

		RST Sigma (SIGM)	
		60 (CU)	0
		RST Weighted Inelastic Ratio (WINR_RST)	
		1 (----	-1
		RST Porosity (TPHI)	
		0.6 (V/V)	0
		RST Sigma Borehole Fluid (SIBF)	
		100 (CU)	0
		Sigma Borehole Far Apparent (SBFA_FIL)	
		150 (CU)	0
		Tension (TENS)	
		0 (LBF)	3000
		RST Capture to Inelastic Ratio Far (CIRF_FIL)	
		5 (----	0
		RST Capture Ratio (TRAT_FIL)	
		1.5 (----	0.5
		Sigma Formation Far Apparent (SFFA_FIL)	
		60 (CU)	0
		RST Capture to Inelastic Ratio Near (CIRN_FIL)	
		2.5 (----	0
		RST Sigma Difference (DSIG)	
		-30 (CU)	30
		MCS Far Background (filtered) (FBAC)	
		0 (CPS)	5000
		Gamma Ray (GR)	
		0 (GAPI)	150
		RST Borehole Salinity (BSAL)	
		450 (PPK)	-50
		RST Inelastic Ratio (IRAT_FIL)	
		0.75 (----	0





<div>Gamma Ray (GR)</div> <div>0 (GAPI) 150</div>	<div>Discriminat ed CCL (CCLD)</div> <div>3 (V) -1</div>	<div>RST Borehole Salinity (BSAL)</div> <div>450 (PPK) -50</div>	<div>RST Inelastic Ratio (IRAT_FIL)</div> <div>0.75 (----) 0</div>	
<div>RST Capture to Inelastic Ratio Near (CIRN_FIL)</div> <div>2.5 (----) 0</div>		<div>Minitron Arc Detection (MARC)</div> <div>0 (---- 5</div>	<div>RST Sigma Difference (DSIG)</div> <div>-30 (CU) 30</div>	<div>MCS Far Background (filtered) (FBAC)</div> <div>0 (CPS) 5000</div>
<div>RST Capture to Inelastic Ratio Far (CIRF_FIL)</div> <div>5 (----) 0</div>		<div>RST Capture Ratio (TRAT_FIL)</div> <div>1.5 (----) 0.5</div>	<div>Sigma Formation Far Apparent (SFFA_FIL)</div> <div>60 (CU) 0</div>	
<div>RST Near Effective Capture CR (RSCN_RST)</div> <div>45 (----) 0</div>		<div>Sigma Borehole Far Apparent (SBFA_FIL)</div> <div>150 (CU) 0</div>	<div>Tension (TENS)</div> <div>0 (LBF) 3000</div>	
<div>RST Far Effective Capture CR (RSCF_RST)</div> <div>45 (----) 0</div>		<div>RST Sigma Borehole Fluid (SIBF)</div> <div>100 (CU) 0</div>		
		<div>RST Porosity (TPHI)</div> <div>0.6 (V/V) 0</div>		
		<div>RST Weighted Inelastic Ratio (WINR_RST)</div> <div>1 (----) -1</div>		
		<div>RST Sigma (SIGM)</div> <div>60 (CU) 0</div>		

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-A/B: 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	7.625	IN
CWEI	Casing Weight	46.70	LB/F
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: RST_SIG_ANSW

Vertical Scale: 1:200

Graphics File Created: 12-Sep-2009 14:32

OP System Version: 17C0-154						
RST-C	17C0-154	PSPT-A/B		17C0-154		
Input DLIS Files						
DEFAULT	RST_PSP_014LUP	FN:13	PRODUCER	12-Sep-2009 14:17	3074.2 M	3032.6 M
Output DLIS Files						
DEFAULT	RST_PSP_020PUP	FN:19	PRODUCER	12-Sep-2009 14:32		

Schlumberger

RST-C Sigma Correlation Pass

MAXIS Field Log

Company: Esso Australia Pty Ltd.

Well: A-15

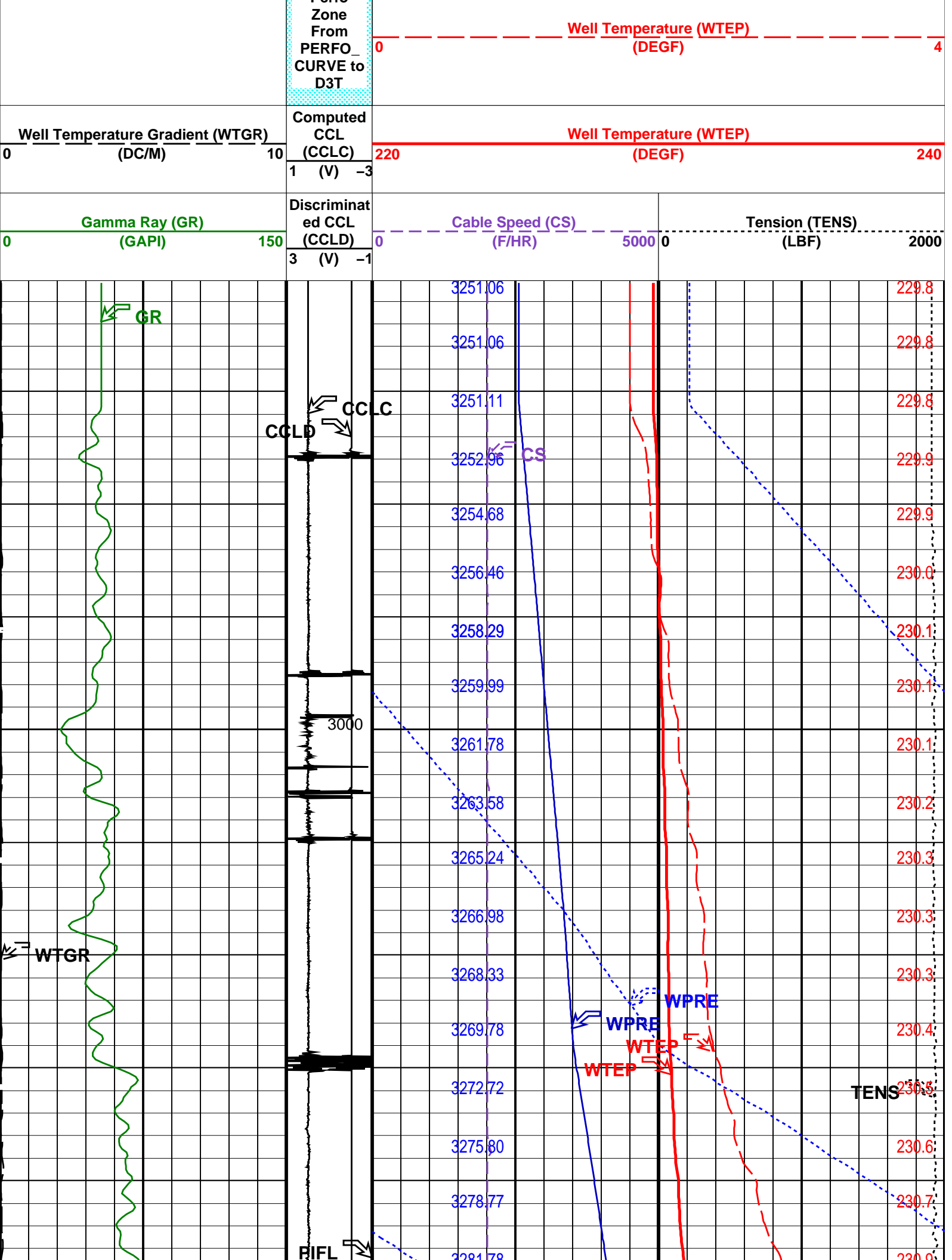
Input DLIS Files					
DEFAULT	RST_PSP_013LUP	FN:12	PRODUCER	12-Sep-2009 13:58	3074.5 M 2985.5 M
Output DLIS Files					
DEFAULT	RST_PSP_025PUP	FN:24	PRODUCER	12-Sep-2009 15:31	3074.5 M 2980.0 M

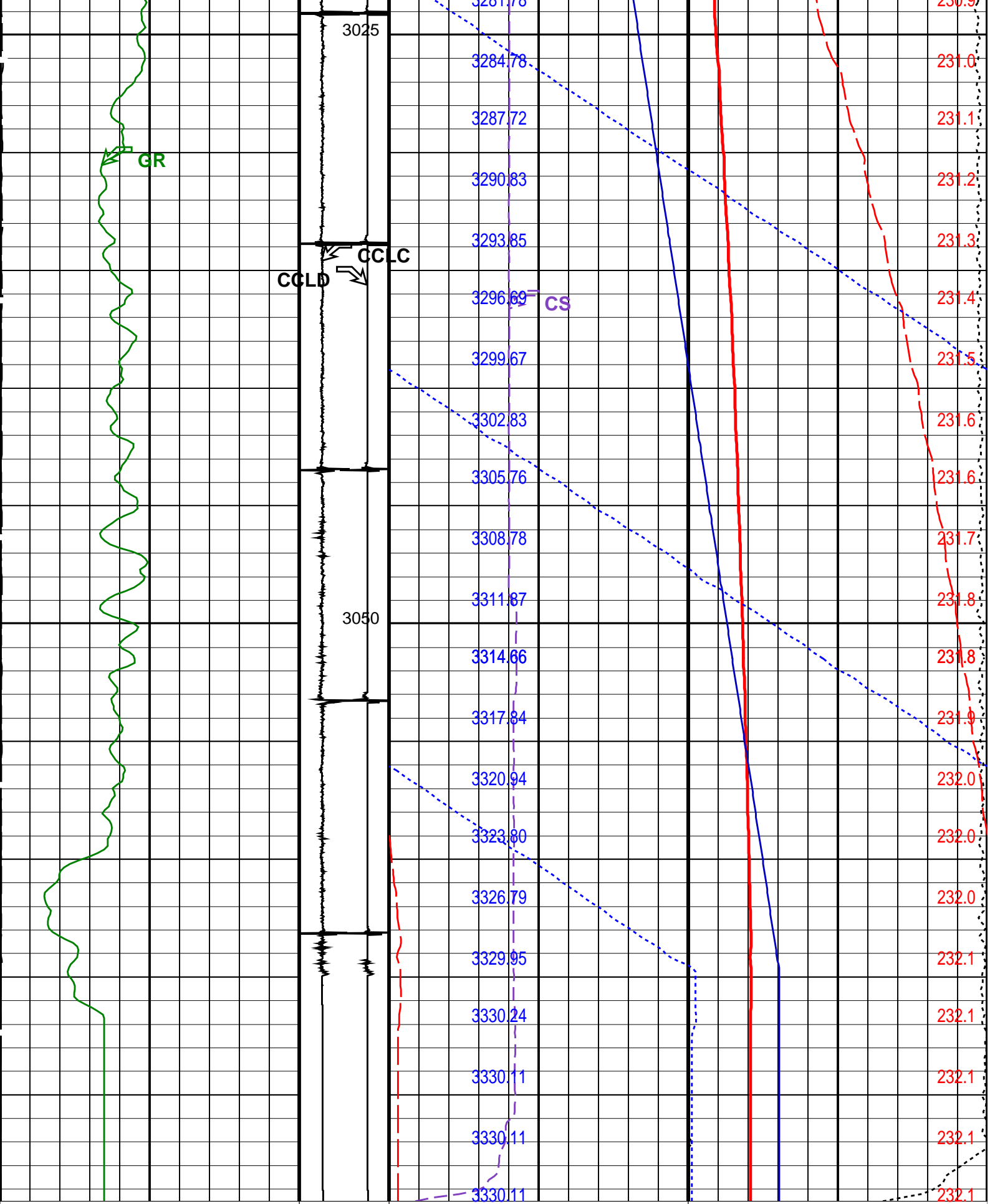
OP System Version: 17C0-154					
RST-C	17C0-154	PSPT-A/B	17C0-154		

PIP SUMMARY

Time Mark Every 60 S

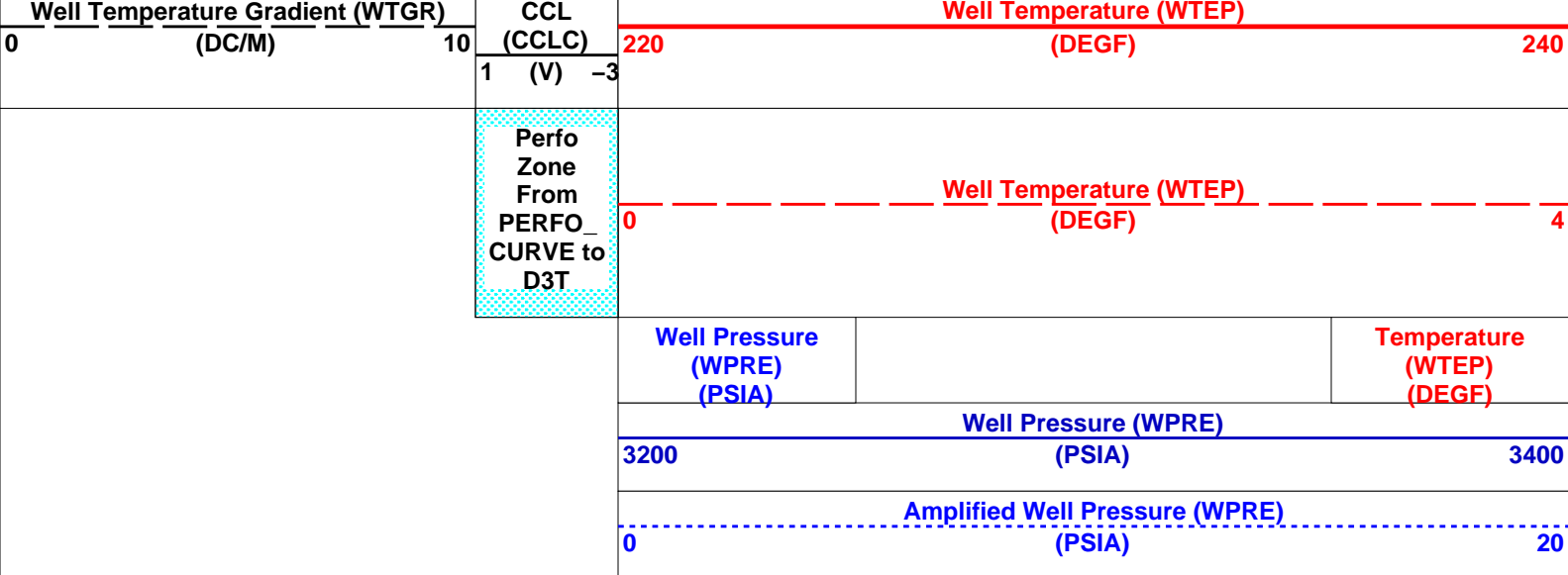
			Amplified Well Pressure (WPRE)	
			0	20
			(PSIA)	
			Well Pressure (WPRE)	
			3200	3400
			(PSIA)	
			Well Pressure (WPRE) (PSIA)	Temperature (WTEP) (DEGF)
Perfo				





Gamma Ray (GR) (GAPI)	Discriminat ed CCL (CCLD)	Cable Speed (CS) (F/HR)	Tension (TENS) (LBF)
0 150	3 (V) -1	0 5000	0 2000

Computed



PIP SUMMARY

Time Mark Every 60 S

Format: PSP_1 Vertical Scale: 1:200

Graphics File Created: 12-Sep-2009 15:31

OP System Version: 17C0-154

RST-C 17C0-154 PSPT-A/B 17C0-154

Parameters

DLIS Name	Description	Value
DO	System and Miscellaneous	0.0 M
PP	Depth Offset for Playback Playback Processing	NORMAL

Input DLIS Files

DEFAULT RST_PSP_013LUP FN:12 PRODUCER 12-Sep-2009 13:58 3074.5 M 2985.5 M

Output DLIS Files

DEFAULT RST_PSP_025PUP FN:24 PRODUCER 12-Sep-2009 15:31

Schlumberger

PBMS – GR Calibration

MAXIS Field Log

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: 13-Sep-2009 10:04 After: 13-Sep-2009 10:08





Gamma-Ray Jig-Bkg	110.0	N/A	106.2	108.7	2.486	N/A	GAPI
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Production Services Logging Platform / Equipment Identification

Primary Equipment:

Production Logging Platform (CQG-F)	PSPT – B	827	827
PSP Basic Measurement Sonde (CQG_F)	PBMS – B	827	827
PSP Basic measurement module	PBMS –	827	827
PSP CCL	CCL –	827	827
PSP GR	GR –	827	827
PSP RTD Well Temperature	RTD_ –	827	827
PSP Crystal Quartz Gauge Type F	CQG_ –	827	827
PSP Telemetry and bus master cartridge	PSTC –	806	806

Auxiliary Equipment:

Production Services Logging Platform Wellsite Calibration							
Detector Calibration							
Phase	Gamma-Ray Background	GAPI	Value	Phase	Gamma-Ray Jig-Bkg	GAPI	Value
Before			4.327	Before			106.2
After			4.023	After			108.7
0 (Minimum)			30.00 (Nominal)	95.00 (Minimum)			125.0 (Maximum)
Before: 13-Sep-2009 10:04				After: 13-Sep-2009 10:08			

Company: **Esso Australia Pty Ltd.**

Schlumberger

Well: **A-15**
Field: **Flounder**
Rig : **Prod4**
Country: **Australia**

RST-C
Sigma Survey
12-Sep-2009