

Company: Esso Australia Pty Ltd.

Well: A-20a  
Field: Bream A  
Rig: Crane / Prod 4

Country: Australia

RST-C SIGMA  
Static & Flowing Survey

Rig: Crane / Prod 4	
Field: Bream A	
Location: Gippsland	
Well: A-20a	
Company: Esso Australia Pty Ltd.	
LOCATION	
Gippsland	Elev.: K.B. 32.82 m
Basin	G.L. -59.00 m
Bass Strait	D.F. 32.82 m
Permanent Datum: _____	Elev.: 0.00 m _____
Log Measured From: _____	32.82 m above Perm. Datum
Drilling Measured From: _____	
State: Victoria	Max. Well Deviation 57 deg
	Longitude 147 46'15"E
	Latitude 038 30'04"S

Logging Date	4-Nov-2009			
Run Number	1			
Depth Driller	2220 m			
Schlumberger Depth	2222 m			
Bottom Log Interval	2222 m			
Top Log Interval	2200 m			
Casing Fluid Type	Production Fluids			
Salinity				
Density				
Fluid Level	1875 m			
BIT/CASING/TUBING STRING				
Bit Size	8.500 in			
From	1123.2 m			
To	2326 m			
Casing/Tubing Size	7.000 in			
Weight	26 lbn/ft			
Grade	L-80			
From	12.2 m			
To	2321 m			
Maximum Recorded Temperatures	206 degF			
Logger On Bottom	4-Nov-2009		23:49	
Unit Number	889	AUSL / PROD 4		
Recorded By	S Gilbert.			
Witnessed By	B White			

Run 1				
PVT DATA				
Oil Density				
Water Salinity				
Gas Gravity				
Bo				
Bw				
1/Bg				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation				
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				
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				

## DEPTH SUMMARY LISTING

Date Created: 22-OCT-2009 3:04:54

### 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:	207505
Calibration Date:	13-Oct-2009	Calibration Date:	21-Oct-2009	Length:	6421 M
Calibrator Serial Number:	30	Calibrator Serial Number:	854	Conveyance Method: Wireline Rig Type: Rigless	
Calibration Cable Type:	2-32ZT	Number of Calibration Points:	9		
Wheel Correction 1:	0	Calibration RMS:	454		
Wheel Correction 2:	-2	Calibration Peak Error:	281		

### Depth Control Parameters

Log Sequence:	Subsequent Trip To the Well
Reference Log Name:	
Reference Log Run Number:	Solar Composite Log
Reference Log Date:	22-Oct-2008
Subsequent Trip Down Log Correction:	

### Depth Control Remarks

1. IDW used as primary depth control
2. Z Chart used as secondary depth control.
3. Full pressure gear used in rig up , surface Zero check incorrect.
4.
5.
6.

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OTHER SERVICES1
OS1: PowerJet Perforation
OS2: 7" Posiset Plug

REMARKS: RUN NUMBER 1
Log correlated to ExxonMobil composite supplied with logging program.
Maximum well deviation = 57deg @ 869.3m MDKB.
Objective: Conduct Static and Flowing RST-C SIGMA Survey over the interval
HUD to 2200m MDKB to determine a perforation interval .
HUD: 2222m MDKB
SBHT: 205.5degf @ 2210m MDKB

All Depth's are MDKB  
Crew :A Pratt , G Martin

RUN 1 SERVICE ORDER #: B297-00019 PROGRAM VERSION: 17C0-154 FLUID LEVEL: 1875 m					
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

RUN 1

RUN 2

## SURFACE EQUIPMENT

WITM-A  
PSC\_16MHZ

## DOWNHOLE EQUIPMENT

Well	Depth (m)	Temperature (°C)
SWBS-B 789	13.30	
SWBS-B 788	12.61	
SWBS-B 787	11.93	
SWBS-B 786	11.24	
SWBS-B 785	10.55	
SWHS-A 759	9.87	
PSPT-B	9.54	
PSC-A 827		7.48
PSPT-B 827		7.37
PSTC 806		7.25
PBMS-B 827		7.02
CQG_F_Mano 827		
RTD_Thermometer 827		
GR 827		
CCL 827		
PBMS 827		

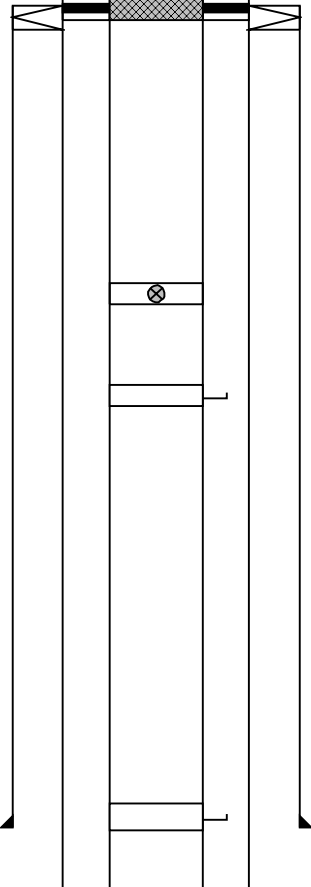
RST-C BLK-2	7.02
RSCH-A 111	
RSC-C 111	
RSS-A 108	
RSXH-A 108	
RSX-C 115	

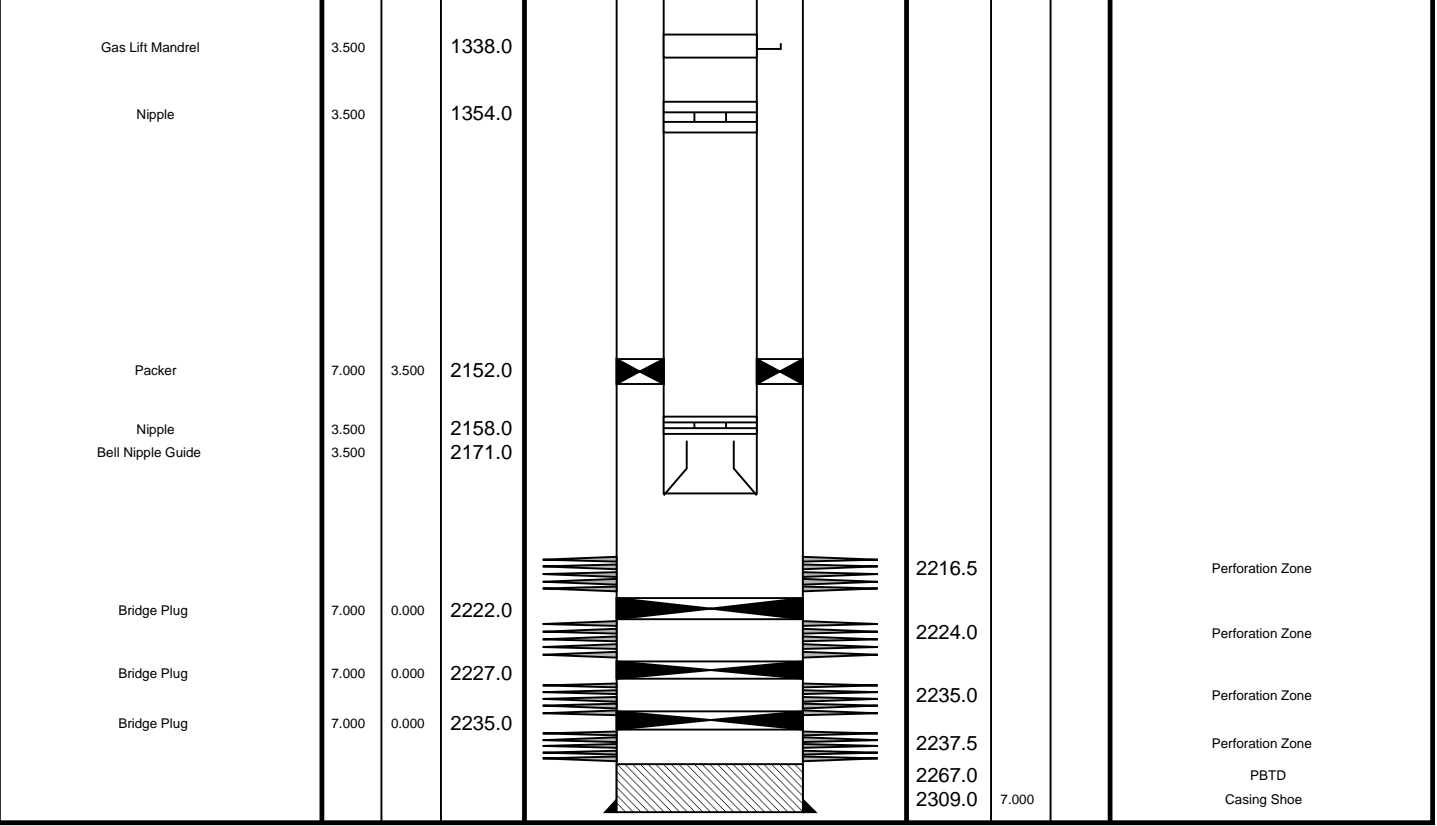
RSC-A Far  
RSC-A PNG  
RSC-A Nea  
RSX-A PNG

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	(in)		(m)	Well Schematic	(m)	(in)		Casing String
	OD	ID	MD		MD	OD	ID	
Tubing	3.500		11.0		12.9	10.750		Casing String Casing String Liner Hanger
Tubing Hanger	7.000	3.500	10.0		12.2	7.000		
					12.2	10.750	7.000	
Shutin Valve	3.500		450.0					
Gas Lift Mandrel	3.500		595.0					
Gas Lift Mandrel	3.500		1154.0		1123.1	10.750		Casing Shoe



Job Events Summary

MAXIS Field Log

Schlumberger Job Event Summary						
		Time	Elapsed Time	Depth (M)		File
Log Pass (up)	4-Nov-2009 22:36	000:06	2223.4 - 2176.6	RST_PSP_009LUP		
Log Pass (up)	4-Nov-2009 22:51	000:08	2223.4 - 2184.3	RST_PSP_014LUP		
Station Log	4-Nov-2009 23:05	002:45	2216.0	RST_PSP_015LTP		
Log Pass (up)	5-Nov-2009 2:03	000:07	2223.8 - 2191.5	RST_PSP_017LUP		

Company: Esso Australia Pty Ltd.

Well: A-20a

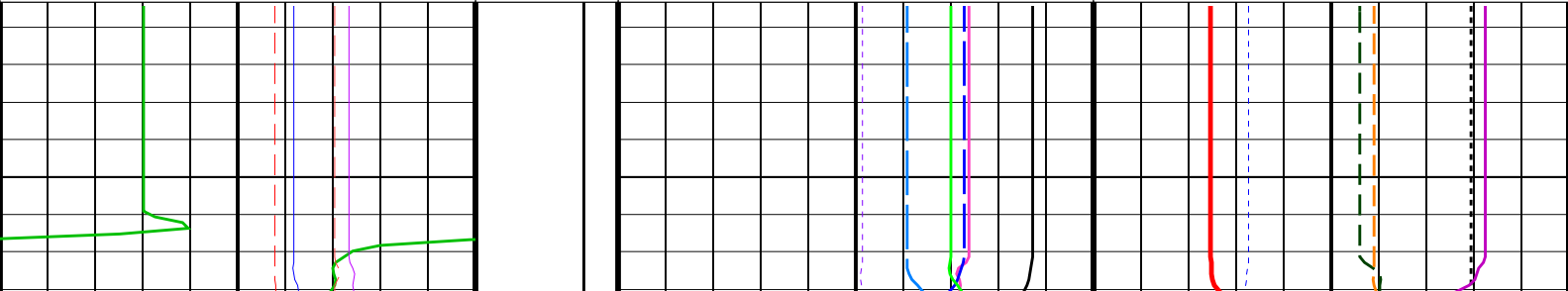
Input DLIS Files						
DEFAULT	RST_PSP_017LUP	FN:16	PRODUCER	05-Nov-2009 02:03	2223.8 M	2191.5 M
Output DLIS Files						
DEFAULT	RST_PSP_019PUP	FN:18	PRODUCER	05-Nov-2009 02:12	2223.1 M	2185.3 M

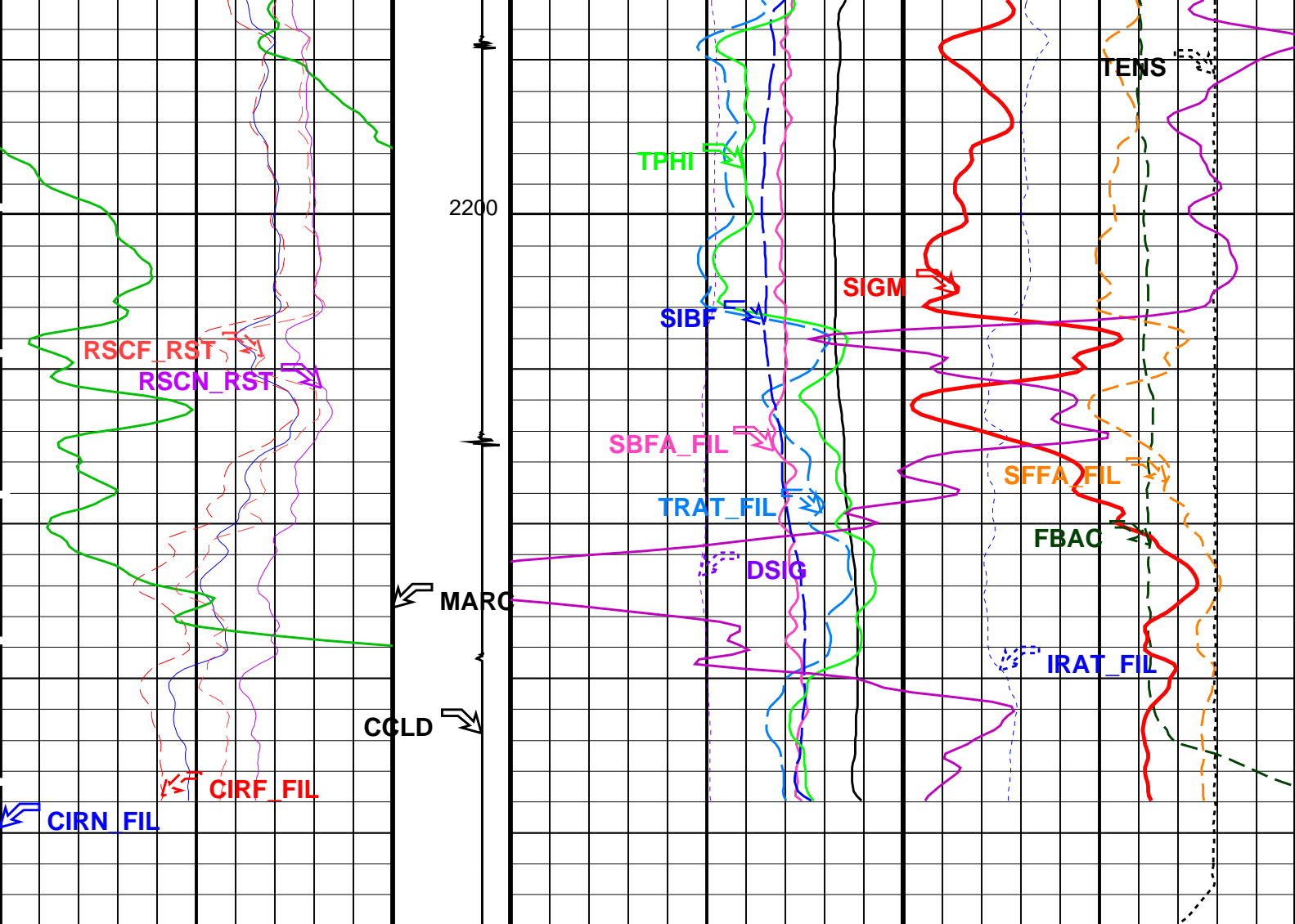
OP System Version: 17C0-154			
RST-C	17C0-154	PSPT-B	17C0-154

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





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

## 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
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
BSAL	Borehole Salinity	-50000.00
CWEI	Casing Weight	26.00
DO	Depth Offset for Playback	-0.7
PP	Playback Processing	NORMAL

Format: RST\_SIG\_ANSW Vertical Scale: 1:200 Graphics File Created: 05-Nov-2009 02:12

## OP System Version: 17C0-154

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

### Input DLIS Files

DEFAULT RST\_PSP\_017LUP FN:16 PRODUCER 05-Nov-2009 02:03 2223.8 M 2191.5 M

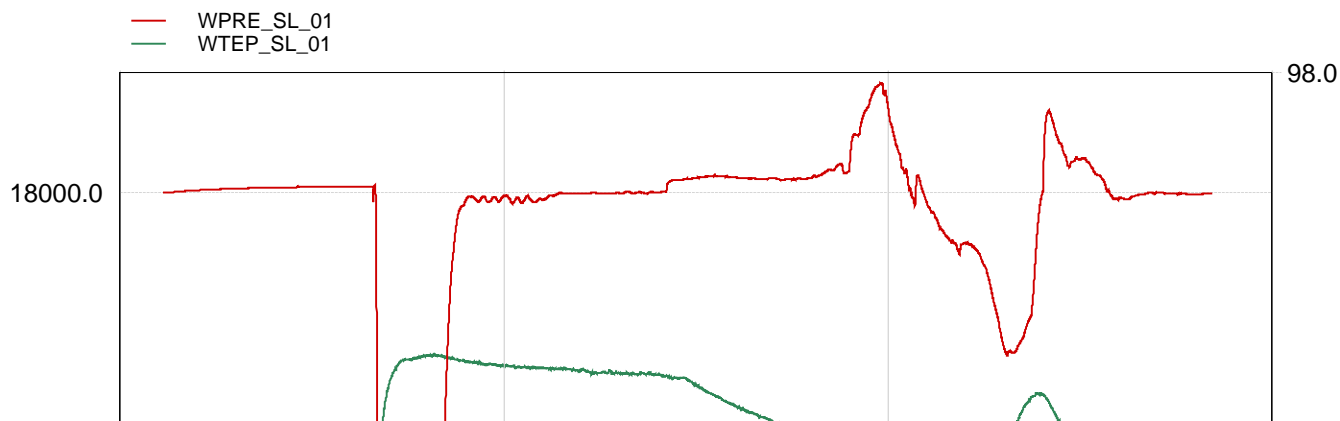
### Output DLIS Files

DEFAULT RST\_PSP\_019PUP FN:18 PRODUCER 05-Nov-2009 02:12

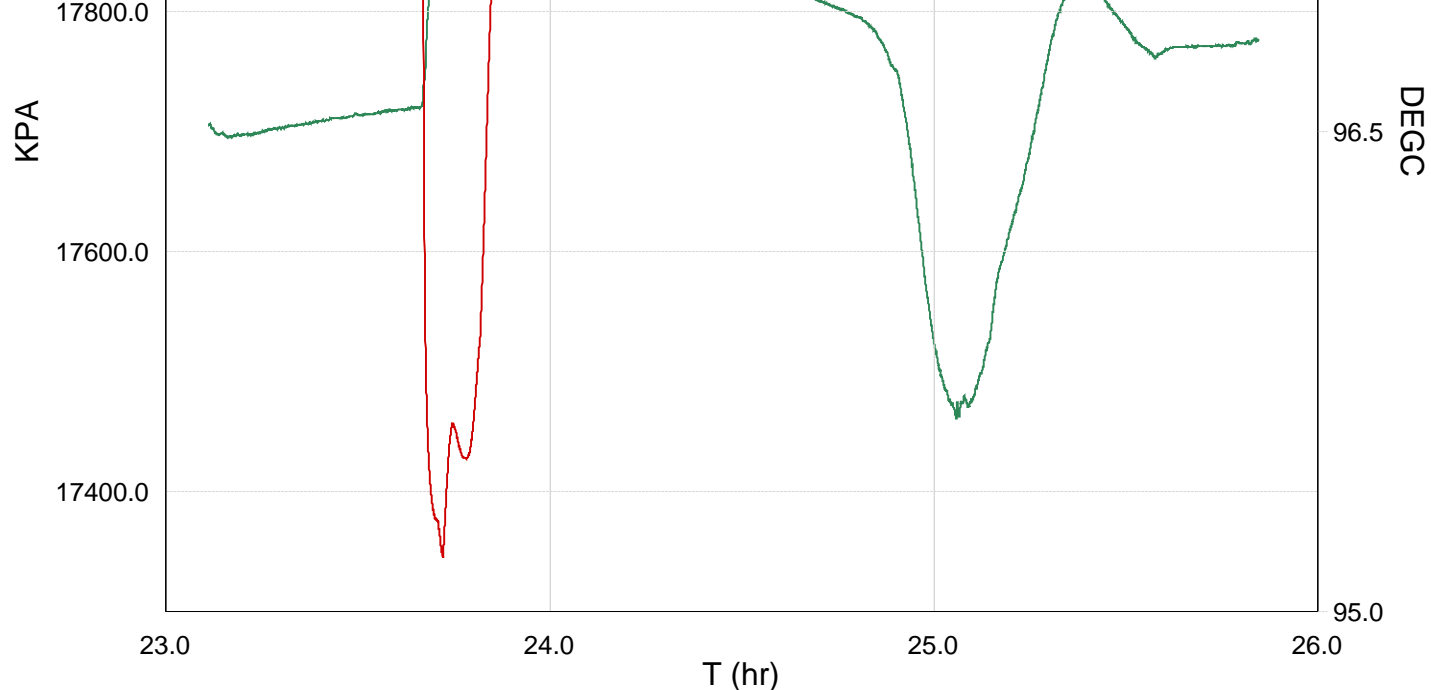
**Schlumberger**

Flow The Well Station Log

MAXIS Field Log







~VERSION INFORMATION  
TIME DEGF

PSIA

12600.0	205.7414	2610.6484
12780.0	205.6847	2610.7814
12960.0	205.6820	2610.9453
13140.0	205.6985	2611.0662
13320.0	205.7187	2611.1522
13500.0	205.7360	2611.2169
13680.0	205.7587	2611.2695
13860.0	205.7735	2611.3076
14040.0	205.7924	2611.3388
14220.0	205.8054	2611.3613
14400.0	205.8203	2611.3752
14580.0	205.8338	2611.3959
14760.0	206.6492	2520.4305
14940.0	206.7846	2531.3832
15120.0	206.8085	2532.1571
15300.0	206.7974	2589.2741
15480.0	206.7742	2609.7699
15660.0	206.7595	2610.0804
15840.0	206.7501	2610.2959
16020.0	206.7406	2609.5928
16200.0	206.7421	2609.8022
16380.0	206.7333	2610.6104
16560.0	206.7256	2610.5652
16740.0	206.7100	2610.5373
16920.0	206.7072	2610.5948
17100.0	206.7020	2610.7270
17280.0	206.7023	2610.6488
17460.0	206.6803	2612.1951
17640.0	206.6397	2612.4190
17820.0	206.5796	2612.6799
18000.0	206.5251	2612.5123
18180.0	206.4826	2612.3801
18360.0	206.4371	2612.4146
18540.0	206.3931	2612.2451
18720.0	206.3432	2612.4607
18900.0	206.2511	2613.4189

19080.0	206.0411	2614.4780
19260.0	205.3700	2621.3101
19440.0	204.5014	2620.8288
19620.0	204.1475	2612.5280
19800.0	204.1951	2609.4889
19980.0	204.6238	2605.4249
20160.0	205.1660	2604.5166
20340.0	205.6095	2601.8594
20520.0	206.1601	2592.1481
20700.0	206.5032	2593.0592
20880.0	206.5851	2610.4032
21060.0	206.4212	2616.5422
21240.0	206.2840	2614.6018
21420.0	206.1705	2612.7713
21600.0	206.1539	2609.9052
21780.0	206.1763	2610.3580
21960.0	206.1791	2610.6386
22140.0	206.1780	2610.5223
22320.0	206.1964	2610.4518



Static SIGMA Pass

MAXIS Field Log

Company: Esso Australia Pty Ltd. Well: A-20a

Output DLIS Files

DEFAULT RST\_PSP\_014LUP FN:13 PRODUCER 04-Nov-2009 22:51 2223.4 M 2184.3 M

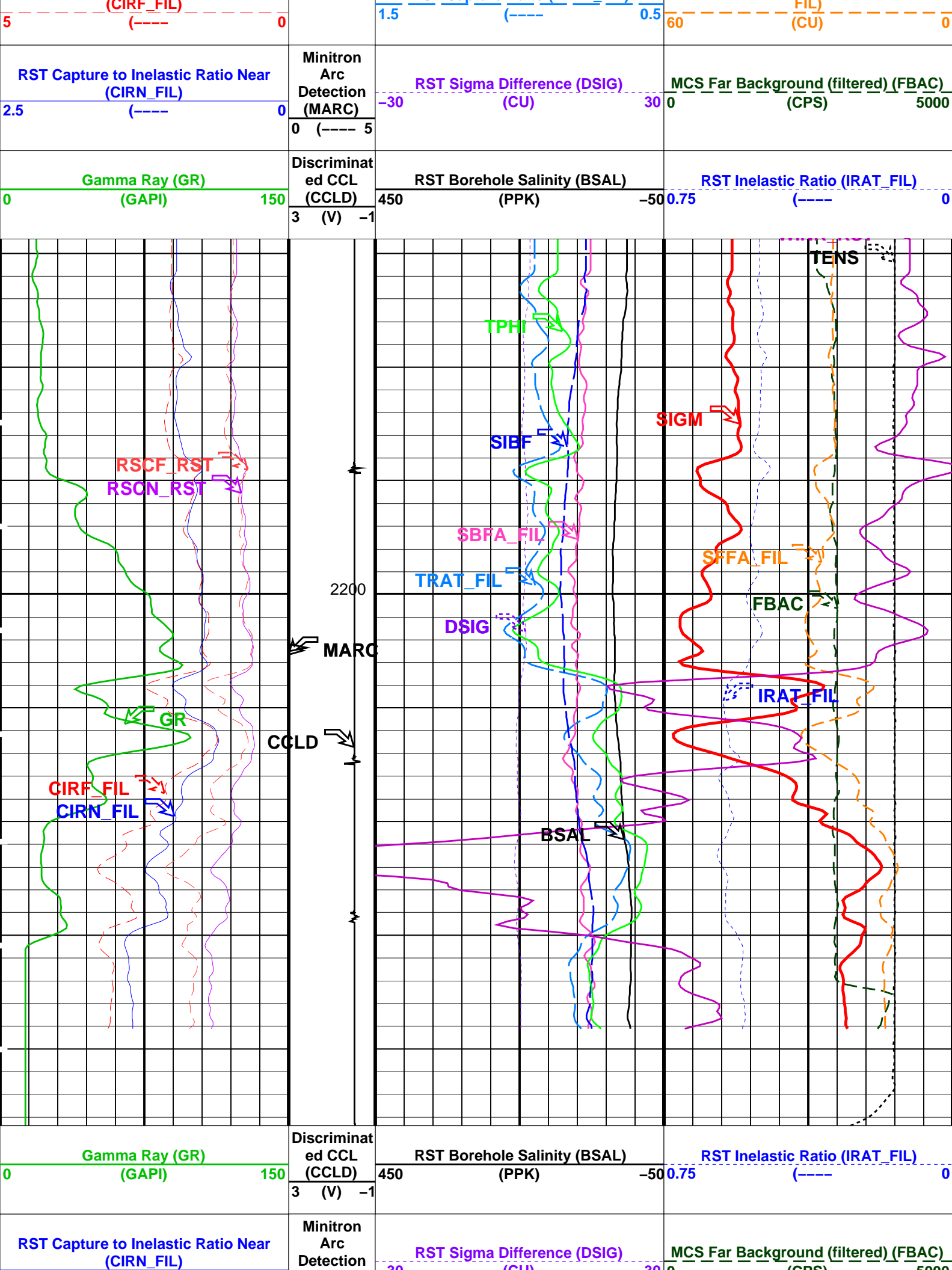
OP System Version: 17C0-154

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

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
	RST Sigma Borehole Fluid (SIBF)		
	100	(CU)	0
	Sigma Borehole Far Apparent (SBFA_FIL)		
	150	(CU)	0
RST Near Effective Capture CR (RSCN_RST)			Tension (TENS)
45	(----	0	0 (LBF) 3000
RST Capture to Inelastic Ratio Far (CIRF_FIL)	RST Capture Ratio (TRAT_FIL)	Sigma Formation Far Apparent (SFFA_FIL)	





Input DLIS Files						
DEFAULT	RST_PSP_009LUP	FN:8	PRODUCER	04-Nov-2009 22:36	2223.4 M	2176.6 M
Output DLIS Files						
DEFAULT	RST_PSP_013PUP	FN:12	PRODUCER	04-Nov-2009 22:43	2223.8 M	2171.5 M

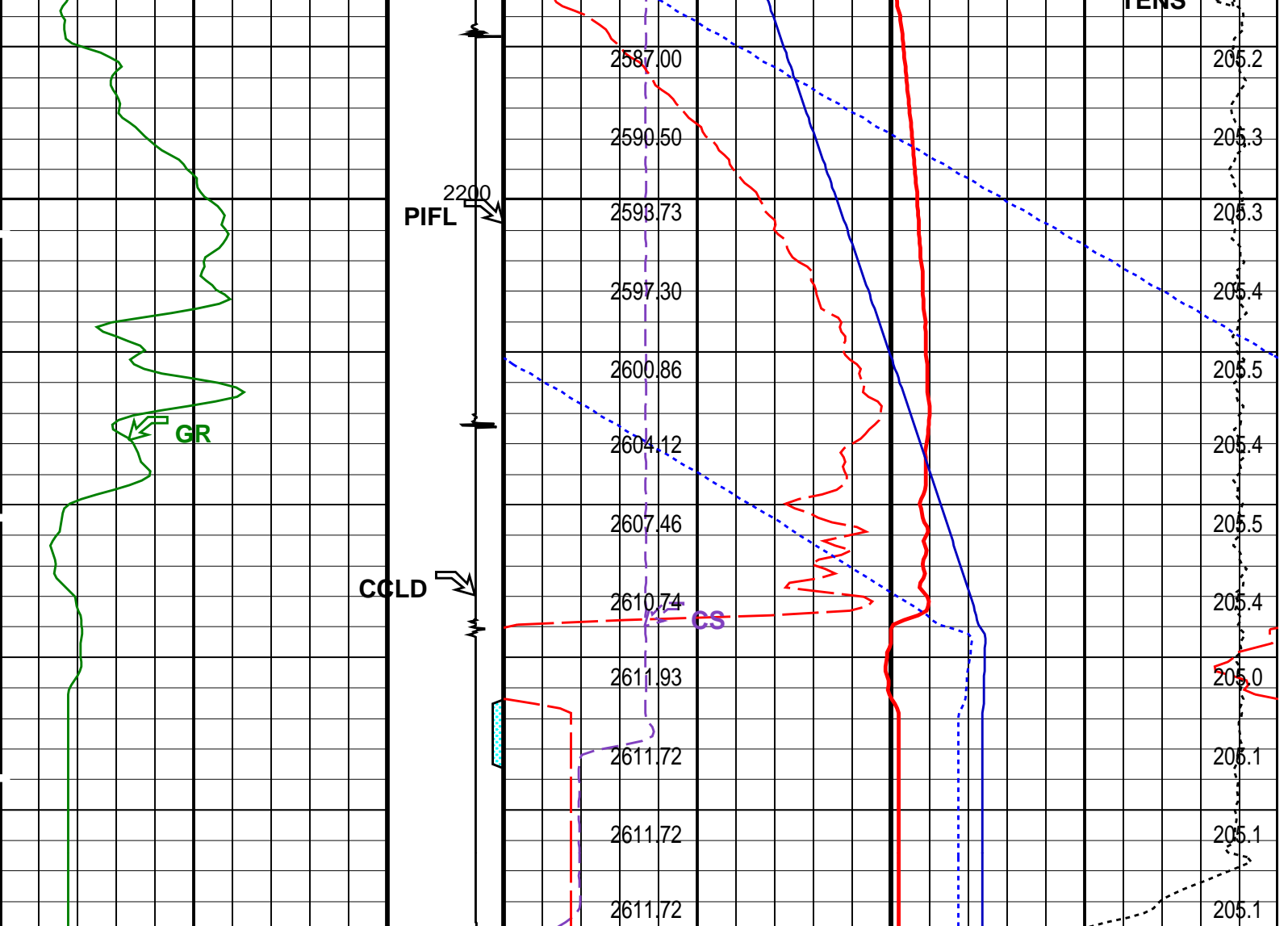
OP System Version: 17C0-154						
RST-C	17C0-154	PSPT-B	17C0-154			

PIP SUMMARY						
Time Mark Every 60 S						

Perfo Zone From PERFO_ CURVE to D3T	Amplified Well Pressure (WPRE)	
	0	20
	Well Pressure (WPRE)	
	2550	2650
	Well Temperature (WTEP)	
	0	1
	Well Pressure (WPRE) (PSIA)	Temperature (WTEP) (DEGF)
Well Temperature (WTEP)		
200	210	

Gamma Ray (GR) (GAPI)		Discriminat ed CCL (CCLD)		Cable Speed (CS) (F/HR)		Tension (TENS) (LBF)	
0150		3(V)-1		05000		02000	





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

Perfo Zone From PERFO_ CURVE to D3T	Well Temperature (WTEP) (DEGF)		
	200		210
	Well Pressure (WPRE) (PSIA)		Temperature (WTEP) (DEGF)
	Well Temperature (WTEP) (DEGF)		
	0		1
Well Pressure (WPRE) (PSIA)			
2550 2650			
Amplified Well Pressure (WPRE) (PSIA)			
0 20			

PIP SUMMARY		
Time Mark Every 60 S		
Format: PSP_1_1	Vertical Scale: 1:200	Graphics File Created: 04-Nov-2009 22:43

Parameters						
DLIS Name		Description			Value	
DO PP	System and Miscellaneous					
	Depth Offset for Playback		0.4 M			
	Playback Processing		NORMAL			
Input DLIS Files						
DEFAULT	RST_PSP_009LUP	FN:8	PRODUCER	04-Nov-2009 22:36	2223.4 M	2176.6 M
Output DLIS Files						
DEFAULT	RST_PSP_013PUP	FN:12	PRODUCER	04-Nov-2009 22:43		

Company:	Esso Australia Pty Ltd.	Schlumberger
Well:	A-20a	
Field:	Bream A	
Rig:	Crane / Prod 4	
Country:	Australia	
	RST-C SIGMA	
	Static & Flowing Survey	