



**End of Well Report  
for  
Apache Energy Ltd**

Rig: Ocean Patriot  
Well: Longtom-2  
Field: Exploration  
Country: Australia  
Job No: AU-FE-0003298447  
Date: 09-Nov-04  
API No:



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## General Information

Company:	Apache Energy Ltd	
Rig:	Ocean Patriot	
Well:	Longtom-2	
Field:	Exploration	
Country:	Australia	
API Number:		
Sperry-Sun Job Number:	AU-FE-0003298447	
Job start date:	09-Nov-04	
Job end date:	09-Nov-04	
North reference:	Grid	
Declination:	13.154	deg
Dip angle:	-68.616	deg
Total magnetic field:	59899.109	nT
Date of magnetic data:	09-Nov-04	
Wellhead coordinates N:	38 deg. 6 min 11.890 sec South	
Wellhead coordinates E:	148 deg. 19 min 0.920 sec East	
Vertical section direction:	Closure	deg
MWD Engineers:	T.Oborne	T.Sadler

Company Representatives: H.Everhart

Company Geologist:	J.Sonego	C.Mehnennitt
Lease Name:	VIC/P-54	
Unit Number:	174	
State:	Victoria	
County:		

## Operational Overview

Sperry-Sun Drilling Services were contracted by Apache Energy Ltd to provide Logging While Drilling (LWD) services for the drilling of exploration well Longtom-2 from the Ocean Patriot.

### 311mm Hole Section:

This hole section was drilled to 1009.0 mMDRT in one bit run using Sperry-Sun's Formation Evaluation tool suite (FEWD) comprising Dual Gamma Ray (DGR), Electromagnetic Wave Resistivity (EWR-P4), Acoustic Caliper (ACAL) and Bi-Modal Acoustic Sonic (BAT) for logging purposes and a Position Monitor (PM) for directional control.

### 216mm Hole Section:

This hole section drilled to well TD at 2422.0 mMDRT in two bit runs using Sperry-Sun's Quad Combo tool suite, comprising of DGR, EWR-P4, Stabilised Litho Density (SLD), Compensated Neutron Porosity (CNP), ACAL and BAT for logging purposes and a PM for directional control.

## Summary of MMDruns

[illegible]

TOTALS ==> 2311.00

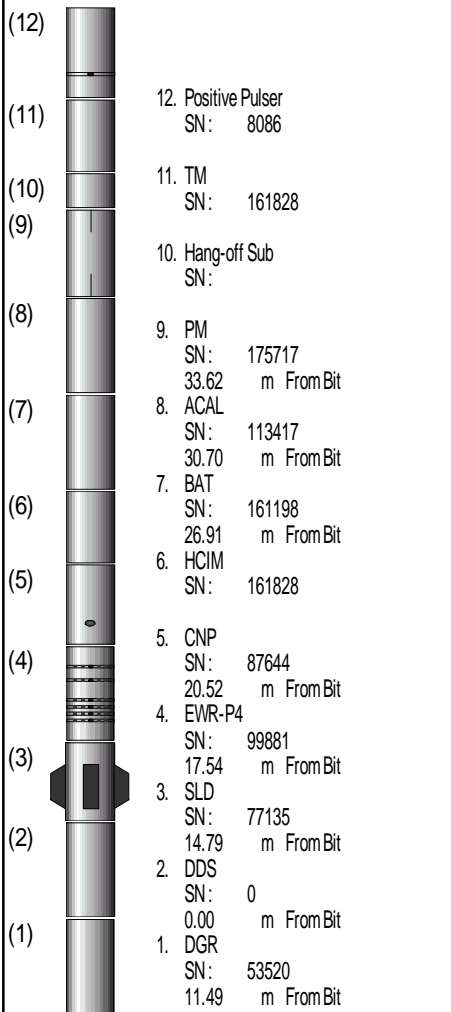
161.12      161.13      77.65

0 0

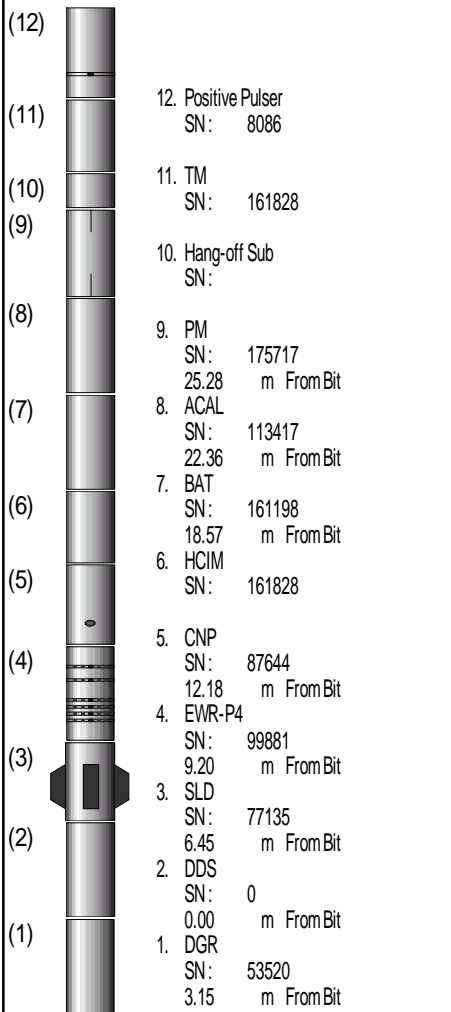
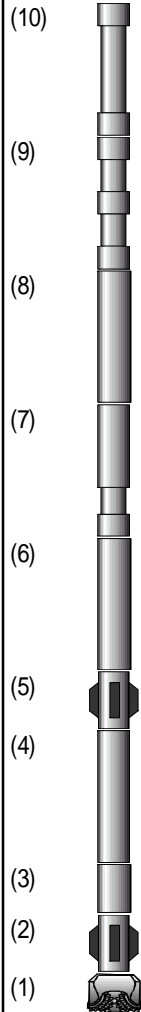
## Bitrun Summary

Run Time Data		Drilling Data		Mud Data			
MWD Run :	0100	Start Depth :	111.00 m	Mud Type :	Sea Water		
Rig Bit No:	2	End Depth :	1009.00 m	Weight / Visc :	1.04 sg / 1.06 spl		
Hole Size :	311.00 mm	Footage :	898.00 m	Chlorides :	42000 ppm		
Run Start :	11-Nov-04 09:40	Avg. Flow Rate :	910.00 gpm	PV / YP :	20.00 cp / 0.48 pa		
Run End :	12-Nov-04 09:57	Avg. RPM :	108.00 rpm	Solids/Sand :	9 % / N/A %		
BRT Hrs :	24.30	Avg. WOB :	15.00 klb	%Oil / O:W:	N/A % / N/A:91		
Circ. Hrs :	13.80	Avg. ROP :	85.30 m/hr	pH/Fluid Loss:	8.00 pH / 2.00 cptm		
Oper. Hrs :	24.30	Avg. SPP :	2280.00 psig	Max. Temp. :	26.00 degC		
MWD Schematics		BHA Schematics					
<div><div><div>(7)</div><div>(6)</div><div>(5)</div><div>(4)</div><div>(3)</div><div>(2)</div><div>(1)</div></div><div><div>7. 8 DGWD 650 System SN : 0.00 m From Bit</div><div>6. PM SN : 134019 30.19 m From Bit</div><div>5. ACAL SN : 141729 30.70 m From Bit</div><div>4. BAT SN : 136555 26.91 m From Bit</div><div>3. HCIM SN : 132884</div><div>2. DGR SN : 172498 17.71 m From Bit</div><div>1. EWR-P4 SN : 123481 14.68 m From Bit</div></div></div>		<div><div><div>(11)</div><div>(10)</div><div>(9)</div><div>(8)</div><div>(7)</div><div>(6)</div><div>(5)</div><div>(4)</div><div>(3)</div><div>(2)</div><div>(1)</div></div><div><div>Component</div><div>Length</div><div>O.D.</div><div>I.D.</div><div>(m)</div><div>(mm)</div><div>(mm)</div></div><div><div>11. HWDP139.07127.00076.200</div><div>10. Cross Over Sub1.13215.90073.025</div><div>09. Drill Collar27.05203.20073.025</div><div>08. Drilling Jars9.86209.55076.200</div><div>07. Drill collar45.82203.20071.438</div><div>06. MWD21.78203.20048.768</div><div>05. Float Sub0.78203.20076.200</div><div>04. Integral Blade Stabilizer2.31203.20076.200</div><div>03. Cross Over Sub0.87236.52576.200</div><div>02. 9-5/8" SperryDrill8.58244.60249.022</div><div>01. Hycalog PDC0.29311.15048.768</div></div></div>					
Comments				MWD Performance			
Drill 311mm hole section from 113.7 m MDRT to section TD @ 1009.0 mMDRT. All recorded data was recovered at surface.				Tool OD / Type : 203.00 mm / MPT			
				MWD Real-time%: 88.33 %			
				MWD Recorded%: 100.00 %			
				Min. Inc. : 0.25 deg / 795.70 m			
				Max. Inc. : 1.07 deg / 968.35 m			
				Final Az. : 52.66 deg			
Max Op. Press. : 1450 psig							

## Bitrun Summary

Run Time Data		Drilling Data		Mud Data																																																																																																				
MWD Run :	0200	Start Depth :	1009.00 m	Mud Type :	KCl/Idecap																																																																																																			
Rig Bit No:	3	End Depth :	2312.00 m	Weight / Visc :	1.27 sg /	47.00 spl																																																																																																		
Hole Size :	216.00 mm	Footage :	1303.00 m	Chlorides :	48000 ppm																																																																																																			
Run Start :	14-Nov-04 08:42	Avg. Flow Rate :	550.00 gpm	PV / YP :	19.00 cp /	10.50 pa																																																																																																		
Run End :	18-Nov-04 04:40	Avg. RPM :	80.00 rpm	Solids/Sand :	11 % /	0.4 %																																																																																																		
BRT Hrs :	91.97	Avg. WOB :	10.00 klb	%Oil / O:W:	N/A % /	N/A:89																																																																																																		
Circ. Hrs :	36.60	Avg. ROP :	51.75 m/hr	pH/Fluid Loss:	8.70 pH /	4.20 cptm																																																																																																		
Oper. Hrs :	91.97	Avg. SPP :	3000.00 psig	Max. Temp. :	99.00 degC																																																																																																			
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		<table><thead><tr><th>Component</th><th>Length (m)</th><th>O.D. (mm)</th><th>I.D. (mm)</th></tr></thead><tbody><tr><td>12. Positive Pulser SN: 8086</td><td></td><td></td><td></td></tr><tr><td>11. TM SN: 161828</td><td></td><td></td><td></td></tr><tr><td>10. Hang-off Sub SN:</td><td></td><td></td><td></td></tr><tr><td>9. PM SN: 175717 33.62 m From Bit</td><td></td><td></td><td></td></tr><tr><td>8. ACAL SN: 113417 30.70 m From Bit</td><td></td><td></td><td></td></tr><tr><td>7. BAT SN: 161198 26.91 m From Bit</td><td></td><td></td><td></td></tr><tr><td>6. HCIM SN: 161828</td><td></td><td></td><td></td></tr><tr><td>5. CNP SN: 87644 20.52 m From Bit</td><td></td><td></td><td></td></tr><tr><td>4. EWR-P4 SN: 99881 17.54 m From Bit</td><td></td><td></td><td></td></tr><tr><td>3. SLD SN: 77135 14.79 m From Bit</td><td></td><td></td><td></td></tr><tr><td>2. DDS SN: 0 0.00 m From Bit</td><td></td><td></td><td></td></tr><tr><td>1. DGR SN: 53520 11.49 m From Bit</td><td></td><td></td><td></td></tr><tr><td>11. Drill Pipe (E)</td><td>100.00</td><td>127.000</td><td>108.610</td></tr><tr><td>10. HWDP</td><td>139.37</td><td>165.100</td><td>76.200</td></tr><tr><td>09. Drill Collar</td><td>18.79</td><td>165.100</td><td>73.025</td></tr><tr><td>08. Drilling Jars</td><td>9.51</td><td>171.450</td><td>76.200</td></tr><tr><td>07. Drill Collar</td><td>83.57</td><td>165.100</td><td>73.025</td></tr><tr><td>06. Integral Blade Stabilizer</td><td>1.63</td><td>171.450</td><td>69.850</td></tr><tr><td>05. MWD</td><td>27.60</td><td>171.450</td><td>69.850</td></tr><tr><td>04. Float Sub</td><td>0.50</td><td>171.450</td><td>69.850</td></tr><tr><td>03. Integral Blade Stabilizer</td><td>2.02</td><td>165.100</td><td>69.850</td></tr><tr><td>02. 6-3/4" SperryDrill</td><td>7.68</td><td>171.450</td><td>76.200</td></tr><tr><td>01. Reed PDC</td><td>0.23</td><td>215.900</td><td>76.200</td></tr></tbody></table>							Component	Length (m)	O.D. (mm)	I.D. (mm)	12. Positive Pulser SN: 8086				11. TM SN: 161828				10. Hang-off Sub SN:				9. PM SN: 175717 33.62 m From Bit				8. ACAL SN: 113417 30.70 m From Bit				7. BAT SN: 161198 26.91 m From Bit				6. HCIM SN: 161828				5. CNP SN: 87644 20.52 m From Bit				4. EWR-P4 SN: 99881 17.54 m From Bit				3. SLD SN: 77135 14.79 m From Bit				2. DDS SN: 0 0.00 m From Bit				1. DGR SN: 53520 11.49 m From Bit				11. Drill Pipe (E)	100.00	127.000	108.610	10. HWDP	139.37	165.100	76.200	09. Drill Collar	18.79	165.100	73.025	08. Drilling Jars	9.51	171.450	76.200	07. Drill Collar	83.57	165.100	73.025	06. Integral Blade Stabilizer	1.63	171.450	69.850	05. MWD	27.60	171.450	69.850	04. Float Sub	0.50	171.450	69.850	03. Integral Blade Stabilizer	2.02	165.100	69.850	02. 6-3/4" SperryDrill	7.68	171.450	76.200	01. Reed PDC	0.23	215.900	76.200
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				Min. Inc. :	1.38 deg /	1025.79 m																																																																																																		
				Max. Inc. :	13.75 deg /	2232.27 m																																																																																																		
				Final Az. :	40.70 deg																																																																																																			
				Max Op. Press. :	4240 psig																																																																																																			

## Bitrun Summary

Run Time Data		Drilling Data		Mud Data					
MWD Run :	0300	Start Depth :	2312.00 m	Mud Type :	KCl/Idecap				
Rig Bit No:	4	End Depth :	2422.00 m	Weight / Visc :	1.40 sg / 45.00 spl				
Hole Size :	216.00 mm	Footage :	110.00 m	Chlorides :	54000 ppm				
Run Start :	18-Nov-04 06:54	Avg. Flow Rate :	550.00 gpm	PV / YP :	21.00 cp / 16.50 pa				
Run End :	20-Nov-04 03:45	Avg. RPM :	120.00 rpm	Solids/Sand :	16 % / 0.65 %				
BRT Hrs :	44.86	Avg. WOB :	20.00 klb	%Oil / O:W:	N/A % / N/A:84				
Circ. Hrs :	27.25	Avg. ROP :	0.00 m/hr	pH/Fluid Loss:	9.00 pH / 4.80 cptm				
Oper. Hrs :	44.86	Avg. SPP :	3000.00 psig	Max. Temp. :	90.00 degC				
MWD Schematics		BHA Schematics							
						Component	Length (m)	O.D. (mm)	I.D. (mm)
(12)		(10)		10.	Drill Pipe (E)	100.00	127.000	108.610	
(11)	12. Positive Pulser SN: 8086	(9)		09.	HWDP	139.01	165.100	76.200	
(10)	11. TM SN: 161828	(8)		08.	Drill Collar	18.79	165.100	73.025	
(9)	10. Hang-off Sub SN:	(7)		07.	Drilling Jars	9.51	171.450	76.200	
(8)	9. PM SN: 175717 25.28 m From Bit	(6)		06.	Drill Collar	83.47	165.100	73.025	
(7)	8. ACAL SN: 113417 22.36 m From Bit	(5)		05.	Integral Blade Stabilizer	1.63	171.450	69.850	
(6)	7. BAT SN: 161198 18.57 m From Bit	(4)		04.	MWD	27.60	171.450	69.850	
(5)	6. HCIM SN: 161828	(3)		03.	Float Sub	0.50	171.450	69.850	
(4)	5. CNP SN: 87644 12.18 m From Bit	(2)		02.	Integral Blade Stabilizer	1.34	6.500	3.000	
(3)	4. EWR-P4 SN: 99881 9.20 m From Bit	(1)		01.	Security MR6520	0.25	8.500	3.000	
(2)	3. SLD SN: 77135 6.45 m From Bit								
(1)	2. DDS SN: 0 0.00 m From Bit								
	1. DGR SN: 53520 3.15 m From Bit								
Comments				MWD Performance					
Drilled from 2312.0 mMDRT to 2422.0 mMDRT, POOH to run wireline logs. SLD tool failed prior to running in hole for run 300 (See Failure Report 1).				Tool OD / Type :	171.00 mm / MPT				
				MWD Real-time%:	96.25 %				
				MWD Recorded%:	100.00 %				
				Min. Inc. :	11.96 deg / 2376.11 m				
				Max. Inc. :	13.36 deg / 2292.01 m				
				Final Az. :	45.76 deg				
				Max Op. Press. :	4700 psig				



## Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
78.30	0.00	0.00	78.30	0.00 N	0.00 E	0.00	TIE-IN
82.55	0.97	258.66	82.55	0.01 S	0.04 W	-0.03	6.83
112.76	0.85	147.07	112.76	0.24 S	0.16 W	-0.29	1.49
141.18	0.89	146.91	141.17	0.61 S	0.07 E	-0.36	0.05
167.69	1.01	154.86	167.68	0.99 S	0.28 E	-0.47	0.21
195.24	1.07	154.25	195.23	1.44 S	0.50 E	-0.62	0.06
280.64	0.94	157.28	280.61	2.80 S	1.11 E	-1.10	0.05
309.21	0.77	146.69	309.18	3.18 S	1.31 E	-1.21	0.24
337.70	0.79	157.77	337.67	3.53 S	1.49 E	-1.31	0.16
366.42	0.60	172.17	366.39	3.86 S	1.59 E	-1.47	0.27
424.64	0.46	168.46	424.60	4.39 S	1.67 E	-1.77	0.07
481.27	0.60	185.70	481.23	4.91 S	1.69 E	-2.11	0.11
566.25	0.73	188.21	566.20	5.88 S	1.57 E	-2.86	0.05
594.89	0.71	181.73	594.84	6.24 S	1.54 E	-3.13	0.09
623.80	0.70	174.98	623.75	6.60 S	1.55 E	-3.37	0.09
651.93	0.71	178.96	651.88	6.94 S	1.57 E	-3.59	0.05
680.50	0.56	173.05	680.45	7.26 S	1.59 E	-3.79	0.17
709.36	0.46	168.63	709.31	7.52 S	1.63 E	-3.94	0.12
738.17	0.32	152.68	738.11	7.70 S	1.69 E	-4.02	0.18
767.01	0.31	146.16	766.95	7.84 S	1.77 E	-4.05	0.04
795.70	0.25	96.83	795.64	7.91 S	1.87 E	-4.02	0.25
824.74	0.30	87.28	824.68	7.91 S	2.01 E	-3.93	0.07
853.15	0.47	59.73	853.09	7.85 S	2.18 E	-3.76	0.26
881.85	0.65	65.06	881.79	7.72 S	2.43 E	-3.49	0.20
910.57	0.94	47.41	910.51	7.49 S	2.76 E	-3.10	0.40
968.35	1.07	52.66	968.28	6.84 S	3.54 E	-2.08	0.08
1025.79	1.38	33.86	1025.71	5.94 S	4.35 E	-0.87	0.26
1055.31	1.47	38.91	1055.22	5.35 S	4.78 E	-0.15	0.16
1084.15	1.45	38.45	1084.05	4.78 S	5.24 E	0.58	0.02
1110.42	1.50	43.02	1110.31	4.27 S	5.69 E	1.25	0.14
1140.98	1.63	41.28	1140.86	3.65 S	6.25 E	2.08	0.14
1169.60	1.90	39.20	1169.46	2.98 S	6.81 E	2.95	0.29
1198.15	2.05	43.59	1198.00	2.24 S	7.46 E	3.93	0.22
1227.48	1.96	42.91	1227.31	1.49 S	8.17 E	4.96	0.10
1285.12	2.78	45.34	1284.90	0.21 N	9.83 E	7.34	0.43
1342.67	2.75	51.91	1342.38	2.04 N	11.91 E	10.11	0.17
1428.08	3.43	52.87	1427.67	4.85 N	15.56 E	14.69	0.24
1457.25	3.55	48.99	1456.78	5.97 N	16.94 E	16.46	0.27
1515.81	3.87	57.08	1515.22	8.24 N	19.97 E	20.22	0.31
1601.75	4.29	57.36	1600.94	11.54 N	25.11 E	26.23	0.15

## Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
1630.37	4.38	57.32	1629.48	12.71 N	26.93 E	28.36	0.10
1659.04	5.12	55.38	1658.05	14.03 N	28.90 E	30.70	0.79
1687.66	5.81	50.90	1686.54	15.67 N	31.07 E	33.41	0.85
1716.34	5.98	52.62	1715.07	17.49 N	33.39 E	36.34	0.26
1773.64	6.99	49.61	1772.01	21.56 N	38.41 E	42.80	0.56
1802.39	7.25	48.26	1800.53	23.90 N	41.10 E	46.36	0.32
1831.13	8.02	46.49	1829.02	26.49 N	43.90 E	50.17	0.84
1888.71	9.67	44.64	1885.91	32.69 N	50.22 E	59.02	0.87
1917.47	10.45	43.25	1914.23	36.31 N	53.70 E	64.04	0.85
1946.13	11.23	41.77	1942.38	40.29 N	57.34 E	69.41	0.86
1974.87	11.30	41.50	1970.56	44.48 N	61.07 E	75.00	0.10
2001.48	11.64	41.34	1996.64	48.45 N	64.57 E	80.27	0.38
2031.15	12.13	40.39	2025.68	53.07 N	68.57 E	86.34	0.54
2088.39	12.90	39.67	2081.56	62.57 N	76.54 E	98.65	0.41
2174.27	13.47	40.33	2165.17	77.57 N	89.14 E	118.10	0.21
2203.50	13.66	40.55	2193.59	82.79 N	93.58 E	124.91	0.20
2232.27	13.75	40.70	2221.54	87.97 N	98.02 E	131.68	0.09
2292.01	13.36	41.52	2279.61	98.52 N	107.23 E	145.61	0.22
2319.46	12.54	43.59	2306.37	103.05 N	111.38 E	151.74	1.03
2348.12	12.18	45.64	2334.36	107.42 N	115.69 E	157.87	0.59
2376.11	11.96	45.76	2361.73	111.51 N	119.88 E	163.72	0.24
2422.00	11.96	45.76	2406.63	118.14 N	126.70 E	173.23	0.00

## Directional Survey Data

CALCULATION BASED ON Minimum Curvature METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT

TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD

VERTICAL SECTION IS COMPUTED ALONG CLOSURE OF 47.00 DEGREES (GRID)

A TOTAL CORRECTION OF 13.97 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.

HORIZONTAL DISPLACEMENT(CLOSURE) AT 2422.00 METRES

IS 173.23 METRES ALONG 47.00 DEGREES (GRID)

Final survey is projected to TD.

RT-AHD=21.5m

## Service Interrupt Report

MWD run number :	0300	Time/Date of Failure :	18-Nov-04 23:56
Rig Bit Number :	4	Depth at time of Failure :	0.00 (metres)
MWD Run start time/date :	18-Nov-04 06:54	Lost Rig Hours :	0.00
MWD Run end time/date :	20-Nov-04 03:45		

### Rig Activity

Tripping in hole - ream tight spot.

### Description of Failure

SLD sensor started sending NO RESP.

### Action Taken

None

### Operation Impact

No density data for run 300.

### Reason for Failure

Unknown at rig site. SLD tool sent to Dampier R&M facility for further investigation.

