



DDS Drilling Dynamics Sensor

Country	: Australia
Field	: Casino
Location	: Lat: 38° 47' 43.68" South Long: 142° 44' 44.60" East
Well	: Casino-5
Company	: Santos Ltd
Rig	: Ocean Patriot
LOCATION	Company : Santos Ltd
	Rig : Ocean Patriot
	Well : Casino-5
	Field : Casino
	Country : Australia
DOE Number :	
Latitude : 38° 47' 43.68" South Longitude : 142° 44' 44.60" East UTM Easting = 651,604.40 m UTM Northing = 5,704,473.10 m	Other Services

Permanent Datum	: LAT	Elevation : 0.00 m	Elev.	KB
Log Measured From	: Drill Floor	21.50 m Above Permanent Datum	DF	21.50 m
Drilling Measured From	: Drill Floor		GL	
			WD	68.20 m
Depth Logged	: 665.00 m To 1,806.00 m	Unit No. : 197	Job No. :	AU-FE-000330537
Date Logged	: 16-Jun-05 To 28-Jun-05	Plot Type : Final		
Total Depth MD	: 1,806.00 m TVD: 1,801.96 m	Plot Date : 04-Jul-05		
Spud Date	: 16-Jun-05			
Run No.	Borehole Record (MD)		Borehole Record (MD)	
	Size	From	To	To
200	311.000 mm	665.00 m	1,160.00 m	
300	311.000 mm	1,160.00 m	1,392.00 m	
400	311.000 mm	1,392.00 m	1,730.00 m	
500	216.000 mm	1,730.00 m	1,806.00 m	
	Casing Record (MD)		Casing Record (MD)	
	Size	Weight	From	To
	762.000 mm	573.00 kgpm	89.70 m	133.00 m
	340.000 mm	107.00 kgpm	89.70 m	655.00 m
	244.000 mm	70.00 kgpm	89.70 m	1,719.80 m

WELL INFORMATION

MWD Run Number	200			
Date run completed	23-Jun-05			
Rig Bit Number	3			
Bit Size (mm)	311			
Tool Nominal OD (mm)	203			
Log Start Depth (MD, m)	665.0			
Log End Depth (MD, m)	1,160.0			
Drill or Wipe	Drilling			
Drill/Wipe Start Date and Time	22-Jun-05 12:00			
Drill/Wipe End Date and Time	24-Jun-05 15:16			
Min Inc (deg) @ Depth (MD, m)	0.56 @ 712.41			
Max Inc (deg) @ Depth (MD, m)	5.74 @ 1,067.61			
Bit TFA(in2) / Bit Type	1.052 / Smith GS04BDV			
Flow Rate (gpm)	990			
Max AV (mpm) / CV (mpm) @ MWD	92.9 / 125.9			
Fluid Type	KCI / Polymer			
Density (sg) / Viscosity (spqt)	1.2 / 55.00			
Filtrate CL (ppm)	42,000			
pH / Fluid Loss (mptm)	9 / 4.8			
PV (cp) / YP (lhf2)	15 / 26			
% Solids / % Sand	9 / 1			
% Oil / Oil:Water Ratio	0 / N/A			
Rm @ Measured Temp (degC)	0.12 @ 20.00			
Rmf @ Measured Temp (degC)	0.08 @ 20.00			
Rmc @ Measured Temp (degC)	0.17 @ 20.00			
Max Tool Temp (degC) / Source	49.40 / EWR			
Rm @ Max Tool Temp (degC)	0.07 @ 49.40			
Lead MWD Engineer	A.Rule			
Customer Representative	R.Buitenhuus			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM				
Software Version	68.18				
Sub Serial Number	198839				
Insert Serial Number	91232				
Logging String Serial Number	DM90072859				
Date and Time Initialized	22-Jun-05 05:44				
Date and Time Read	24-Jun-05 01:44				

Directional Sensor Information

Tool Type	PM				
Distance From Bit (m)	16.13				
Software Version	N/A				
Sub Serial Number	022759				
Sonde Serial Number	134019				
Sensor ID Number	500				
Survey String Serial Number	90074559				
Toolface Offset (deg)	N/A				

Gamma Ray Sensor Information

Tool Type	DGR				
Distance From Bit (m)	12.75				
Recorded Sample Period (sec)	12				
Software Version	N/A				
Sub Serial Number	196051				
Insert/Sonde Serial Number	132474				

Drillstring Dynamics Sensor Information

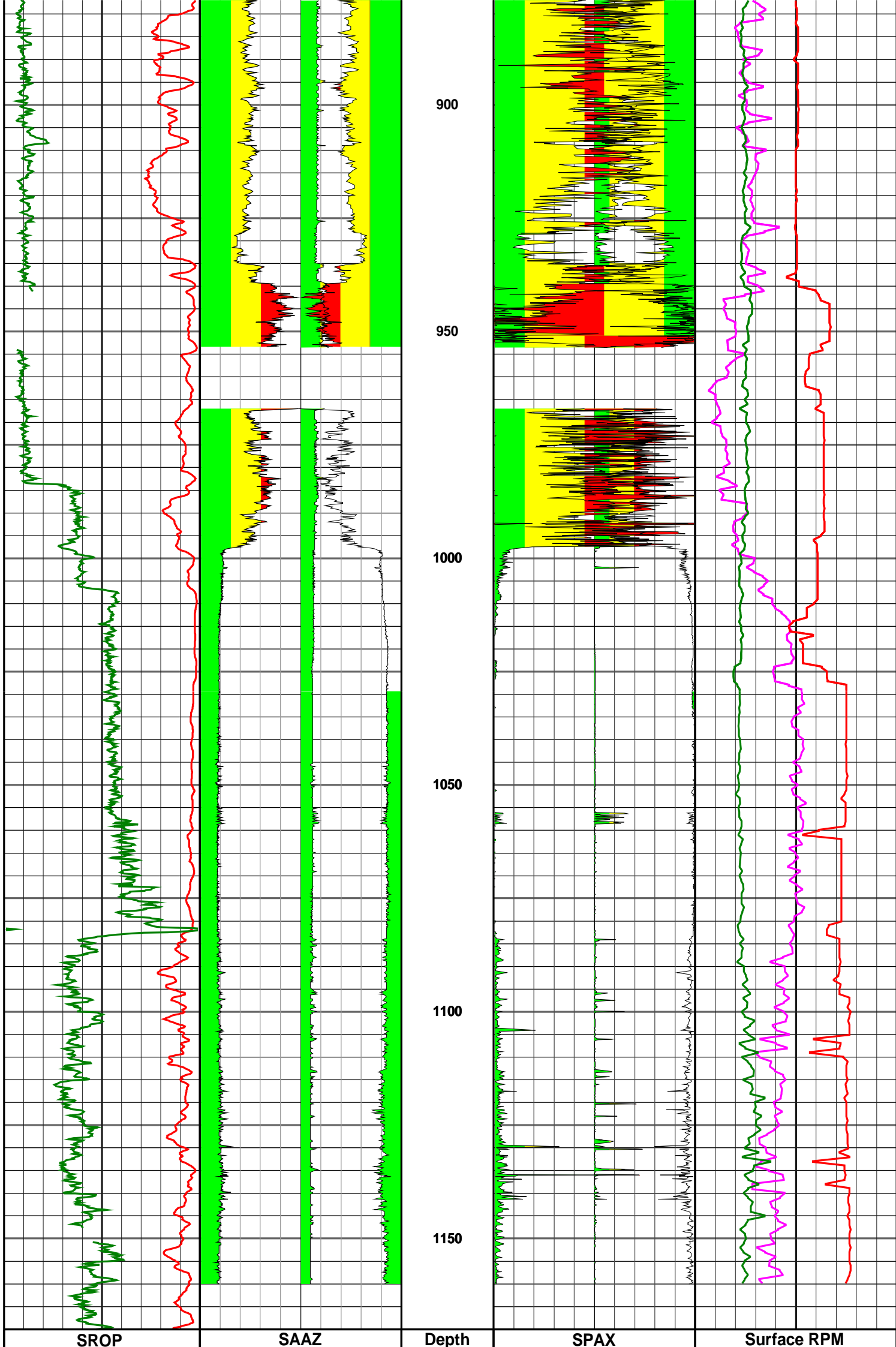
Tool Type	DDS				
Distance From Bit (m)	0				
Recorded Sample Period (sec)	12				
Software Version	0.37				
Sub Serial Number	196051				
Insert Serial Number	132474				
Sensor ID Number	699				

REMARKS

1. All depths are bit depths and referenced to the drillers pipe tally.
2. AV/CV is calculated at the MWD collar using the Powers Law for water based muds and is in m/min.
3. Curve mnemonics are:
SROP - Smoothed Rate of Penetration, m/hr
SGRC - SGRC - Smoothed Gamma Ray Combined, api
SAAX - Smoothed Average X-Axis Accelerometer, g's
SAAY - Smoothed Average Y-Axis Accelerometer, g's
SAAZ - Smoothed Average Z-Axis Accelerometer, g's
SPAX - Smoothed Peak X-Axis Accelerometer, g's
SPAY - Smoothed Peak Y-Axis Accelerometer, g's
SPAZ - Smoothed Peak Z-Axis Accelerometer, g's
WOB - Weight on Bit, klb
RPM - Surface Drillstring Revolutions Per Minute, rpm
TORQUE - Surface Torque, ft-klbs
4. No Data from 954.0 to 967.0 mMDRT due to the tool resetting itself after high vibration.

WARRANTY

HALLIBURTON ENERGY SERVICES (HES) WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HES CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING VENTURE, DRILLING RIG OR ITS CREW OR ANY OTHER THIRD PARTY. THE CUSTOMER HAS FULL RESPONSIBILITY FOR ALL DRILLING, COMPLETION AND PRODUCTION OPERATION. HES MAKES NO REPRESENTATIONS



500	0	-10	10	1:1000	0	200	0	200
m/hr			g		g		rev per min	
SGRC	0	20	SAAY		SPAY	0	Torque	20
api			g		g		foot-klb	
		0	SAAX		SPAZ	100	WOB	50
			g		g		kilo pounds	



DIRECTIONAL SURVEY REPORT

Santos Ltd
Casino-5
Casino
Victoria
Australia

AU-FE-0003530537

RT to LAT = 21.5m. Final survey projected to TD.

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
89.700	0.00	0.00	89.700	0.000 N	0.000 E	0.000	TIE-IN
153.320	0.87	155.19	153.318	0.438 S	0.203 E	-0.438	0.41
180.770	0.73	150.88	180.765	0.780 S	0.375 E	-0.780	0.17
236.210	1.06	149.10	236.198	1.529 S	0.810 E	-1.529	0.18
263.920	1.31	159.82	263.902	2.046 S	1.051 E	-2.046	0.36
292.770	1.22	161.34	292.745	2.647 S	1.263 E	-2.647	0.10
321.460	1.16	161.70	321.429	3.212 S	1.452 E	-3.212	0.06
350.140	1.12	162.94	350.103	3.755 S	1.626 E	-3.755	0.05
378.700	1.03	165.33	378.658	4.271 S	1.773 E	-4.271	0.11
407.390	0.99	169.70	407.344	4.764 S	1.882 E	-4.764	0.09
436.080	0.89	162.06	436.030	5.220 S	1.995 E	-5.220	0.17
464.750	0.86	161.47	464.697	5.636 S	2.132 E	-5.636	0.03
493.600	0.87	164.24	493.543	6.052 S	2.260 E	-6.052	0.04
522.350	0.23	169.75	522.292	6.318 S	2.330 E	-6.318	0.67
551.140	0.52	129.89	551.081	6.459 S	2.440 E	-6.459	0.39
579.900	0.54	127.68	579.840	6.626 S	2.648 E	-6.626	0.03
608.620	0.51	119.52	608.559	6.771 S	2.866 E	-6.771	0.08
636.960	0.54	120.09	636.898	6.900 S	3.091 E	-6.900	0.03
652.270	0.52	118.09	652.207	6.969 S	3.215 E	-6.969	0.05
712.410	0.56	146.86	712.344	7.343 S	3.616 E	-7.343	0.13
741.290	1.28	173.83	741.221	7.781 S	3.728 E	-7.781	0.85
800.770	1.61	179.35	800.682	9.272 S	3.808 E	-9.272	0.18
858.080	1.58	236.40	857.973	10.512 S	3.160 E	-10.512	0.80
891.650	3.06	238.12	891.515	11.241 S	2.014 E	-11.241	1.33
1006.820	3.06	237.46	1006.520	14.520 S	3.191 W	-14.520	0.01
1067.610	5.74	249.44	1067.127	16.462 S	7.406 W	-16.462	1.39
1150.270	5.53	253.03	1149.388	19.075 S	15.085 W	-19.075	0.15
1178.550	5.52	254.47	1177.536	19.837 S	17.699 W	-19.837	0.15
1207.090	5.50	252.55	1205.944	20.615 S	20.327 W	-20.615	0.20
1294.000	5.38	250.68	1292.462	23.213 S	28.148 W	-23.213	0.07
1322.590	5.29	252.03	1320.928	24.063 S	30.668 W	-24.063	0.16
1351.220	5.31	252.31	1349.436	24.873 S	33.186 W	-24.873	0.03
1377.530	5.17	251.91	1375.636	25.611 S	35.472 W	-25.611	0.16
1406.190	5.23	251.21	1404.178	26.433 S	37.937 W	-26.433	0.09
1434.970	5.43	251.49	1432.834	27.288 S	40.470 W	-27.288	0.21
1463.790	5.42	253.43	1461.525	28.109 S	43.068 W	-28.109	0.19
1492.550	5.42	251.34	1490.156	28.931 S	45.657 W	-28.931	0.21
1521.490	5.55	253.59	1518.964	29.763 S	48.293 W	-29.763	0.26
1550.140	5.55	251.90	1547.479	30.585 S	50.939 W	-30.585	0.17
1607.590	5.88	251.40	1604.644	32.386 S	56.367 W	-32.386	0.17
1636.210	5.89	252.97	1633.113	33.283 S	59.160 W	-33.283	0.17
1664.650	6.20	254.05	1661.395	34.133 S	62.033 W	-34.133	0.35
1693.360	6.37	251.89	1689.932	35.054 S	65.039 W	-35.054	0.30
1712.400	6.06	251.82	1708.860	35.696 S	66.998 W	-35.696	0.48
1734.430	6.14	252.76	1730.765	36.409 S	69.229 W	-36.409	0.17

Casino-5













<i>Measured Depth (metres)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (metres)</i>	<i>Latitude (metres)</i>	<i>Departure (metres)</i>	<i>Vertical Section (metres)</i>	<i>Dogleg (deg/30m)</i>
1763.180	5.90	251.71	1759.357	37.328 S	72.100 W	-37.328	0.28
1783.400	5.66	250.49	1779.474	37.987 S	74.026 W	-37.987	0.40
1806.000	5.66	250.49	1801.964	38.731 S	76.127 W	-38.731	0.00



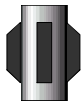






CALCULATION BASED ON MINIMUM CURVATURE METHOD

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 A DIRECTION OF 0.00 DEGREES (GRID)
A TOTAL CORRECTION OF 11.99 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 1806.000 METRES
IS 85.413 METRES ALONG 243.03 DEGREES (GRID)

MWD RUN 200 - BHA			MWD RUN 200 - MWD		
	Component Length (m)			Sensor Measure Point Distance To Bit (m)	
HWDP	138.370		Hang-off Sub		
Cross Over Sub	1.090				
Drill Collar	17.900		PM		16.130
Drilling Jars	9.200				
Drill Collar	88.990		HCIM		
Drill Collar	2.930				
Date Printed:04 July 2005			DGR		
					Page 2 of 2
					12.750

MWD		13.160			12.950
Integral Blade Stabilizer		2.080			
Drill Collar		3.040	EWR-P4		
Integral Blade Stabilizer		2.110			9.720
Tricone		.330		