HALLIBURTON

Sperry Drilling Services

LWD End of Well Report

for

Nexus Energy Ltd

Culverin-1

Rig: Ocean Patriot

Field: Exploration

Country: Australia

Job No: AU-FE-0003951414

Date: 16th December 2005

HALLIBURTON

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General Information

Company:	Nexus Energy Ltd	
Rig:	Ocean Patriot	
Well:	Culverin-1	
Field:	Exploration	
Country:	Australia	
API Number:		
Sperry-Sun Job Number:	AU-FE-0003951414	
Job start date:	16-Dec-05	
Job end date:	07-Jan-06	
North reference:	Grid	
Declination:	13.402	deg
Dip angle:	-68.823	deg
Total magnetic field:	59972	nT
Date of magnetic data:	17-Dec-05	
Wellhead coordinates N:	38 deg. 24 min 8.140 sec South	
Wellhead coordinates E:	148 deg. 39 min 14.920 sec East	
Vertical section direction:	Closure	
MWD Engineers:	A. Oraekwuotu	S. Willis
	A. Rule	B. Haren
Company Representatives:	W. Westman	R. King
Company Geologist:	M. Woodmansee	R. Blackmore
Lease Name:	VIC/P56	
Unit Number:	182	
State:	Victoria	
Country:	Australia	

Operational Overview

Sperry Drilling Services (Halliburton) were contracted by Nexus Energy Ltd to provide Logging While Drilling (LWD) services for the drilling of exploration well Culverin-1, in permit VIC/P-56, from the semi-submersible drilling rig Ocean Patriot.

445mm (17 1/2") Hole Section:
This hole section was drilled in one bit run using Sperry's Directional Gamma While Drilling (DGWD) tool suite, comprising of a Gamma Module (GM) for Formation Evaluation and a Directional Monitor (DM) for directional control. This section was drilled to 1525.0 mMDRT.

311mm (12 1/4") Hole Section:
This hole section was drilled in four bit runs using Sperry's Formation Evaluation While Drilling (FEWD) tool suite, comprising of a Dual Gamma Ray (DGR), Electromagnetic Wave Resistivity (EWR-P4), Stabilized Litho Density (SLD), and Compensated Thermal Neutron Porosity (CTN) for reservoir evaluation. A Drillstring Dynamics Sensor (DDS) was used for drilling optimisation and a Directional Monitor (DM) for directional control. Culverin-1 was drilled to a well TD of 3758.0 mMDRT.

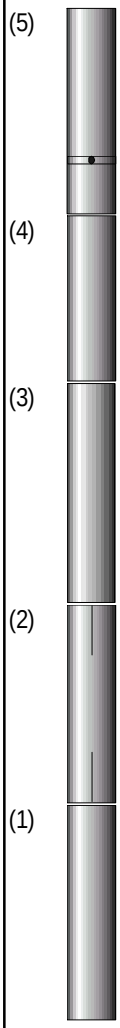
Summary of MWD runs

Run No.	Bit No.	Hole Size (mm)	MWD Service	Start Depth (m)	End Depth (m)	Drill/Wipe Distance (m)	Run Start Date Time	Run End Date Time	BRT Hrs.	Oper. Hrs.	Circ. Hrs.	Max. Temp. (degC)	Serv. Int.	Trip for MWD	Failure Type
0100	2	445.00	DIR-GR	650.00	650.00	0.00	18-Dec-05 00:54	18-Dec-05 03:54	3.00	3.00	0.42	18.00	Yes	Yes	SBM
0200	2	445.00	DIR-GR	650.00	1525.00	875.00	18-Dec-05 07:08	20-Dec-05 15:14	56.10	56.10	41.64	24.00	No	No	
0300	3	311.00	DIR-FE-NUKE	1525.00	3402.00	1877.00	24-Dec-05 00:20	30-Dec-05 19:04	162.72	162.72	127.83	56.00	No	No	
0400	4	311.00	DIR-FE-NUKE	3402.00	3571.00	169.00	30-Dec-05 23:36	02-Jan-06 05:19	53.72	53.72	32.66	75.00	No	No	
0500	5	311.00	DIR-FE-NUKE	3571.00	3571.00	0.00	02-Jan-06 09:36	03-Jan-06 09:18	23.70	23.70	4.66	55.00	Yes	Yes	Pulser
0600	6	311.00	DIR-FE-NUKE	3571.00	3758.00	187.00	03-Jan-06 12:52	07-Jan-06 17:22	100.50	100.50	63.22	58.00	No	No	HCIM
			TOTALS ==>			3108.00			399.74	399.74	270.43		2	2	

Bitrun Summary

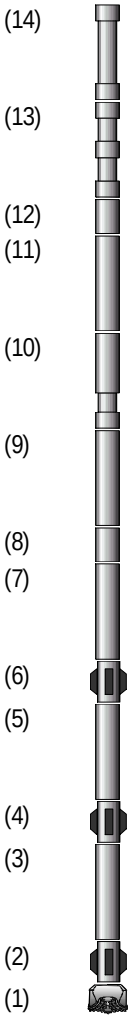
Run Time Data			Drilling Data			Mud Data				
MWD Run :	0100		Start Depth :	650.00	m	Mud Type :	Seawater			
Rig Bit No:	2		End Depth :	650.00	m	Weight / Visc :	1.04	sg /	N/A	spqt
Hole Size :	445.00	mm	Footage :	0.00	m	Chlorides :	N/A	ppm		
Run Start :	18-Dec-05 00:54		Avg. Flow Rate :	1150	gpm	PV / YP :		cp /		lhf2
Run End :	18-Dec-05 03:54		Avg. RPM :	N/A	rpm	Solids/Sand :		% /		%
BRT Hrs :	3.00		Avg. WOB :	N/A	klb	%Oil / O:W :		% /		
Circ. Hrs :	0.42		Avg. ROP :	N/A	m/hr	pH/Fluid Loss:	N/A	pH /	N/A	mptm
Oper. Hrs :	3.00		Avg. SPP :	N/A	psig	Max. Temp. :	18.00	degC		

MWD Schematics



5. Positive Pulser
   SN : 10608129
4. TM
   SN : 10505184
3. GM
   SN : 189039
   15.18 m From Bit
2. DM
   SN : 149865
   13.36 m From Bit
1. Battery Module
   SN : 115234

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
14.	Drill Pipe (E)	2000.00	139.700	121.361
13.	HWDP	138.22	161.000	76.000
12.	Cross Over Sub	1.16	200.000	74.000
11.	Drill Collar	17.71	203.200	71.438
10.	Drilling Jars	9.31	205.000	78.000
09.	Drill Collar	26.63	203.200	71.438
08.	Cross Over Sub	1.16	241.000	71.000
07.	Drill Collar	27.18	241.300	76.200
06.	Integral Blade Stabilizer	2.51	196.000	76.000
05.	MWD	9.87	241.000	74.000
04.	Integral Blade Stabilizer	2.51	192.000	76.000
03.	Pony collar	3.06	241.000	78.000
02.	Integral Blade Stabilizer	2.65	192.900	70.000
01.	Tricone Reed T-11	0.60	443.000	300.000

Comments

Ran into hole and performed a shallow pulse test at 95.0 mMDRT. Could not get valid surveys. POOH and picked up backup tool. See Service Interrupt Report.

MWD Performance

Tool OD / Type :	241.00	mm /	D/GWD	
MWD Real-time%:	0.00	%		
MWD Recorded%:	N/A	%		
Min. Inc. :	N/A	deg /	N/A	m
Max. Inc. :	N/A	deg /	N/A	m
Final Az. :	N/A	deg		
Max Op. Press. :	N/A	psig		

Bitrun Summary

Run Time Data

MWD Run :	0200
Rig Bit No:	2
Hole Size :	445.00 mm
Run Start :	18-Dec-05 07:08
Run End :	20-Dec-05 15:14
BRT Hrs :	56.10
Circ. Hrs :	41.64
Oper. Hrs :	56.10

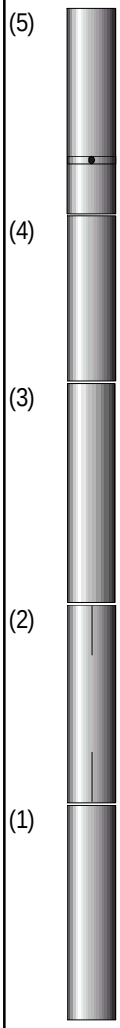
Drilling Data

Start Depth :	650.00	m
End Depth :	1525.00	m
Footage :	875.00	m
Avg. Flow Rate :	1100	gpm
Avg. RPM :	150	rpm
Avg. WOB :	15 .00	klb
Avg. ROP :	27.69	m/hr
Avg. SPP :	2540	psig

Mud Data

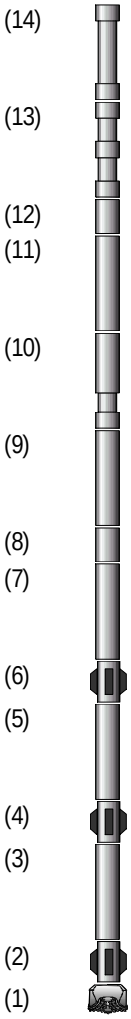
Mud Type :	Seawater			
Weight / Visc :	1.04	sg /	N/A	spqt
Chlorides :	N/A	ppm		
PV / YP :	1.00	cp /	1.00	lhf2
Solids/Sand :		% /		%
%Oil / O:W :		% /		
pH/Fluid Loss:	N/A	pH /	N/A	mptm
Max. Temp. :	24.00	degC		

MWD Schematics



5. Positive Pulser
   SN : 10608129
4. TM
   SN : 134334
3. GM
   SN : 83563
   15.18 m From Bit
2. DM
   SN : 185534
   13.36 m From Bit
1. Battery Module
   SN : 10528028

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
14.	Drill Pipe (E)	2000.00	139.700	121.361
13.	HWDP	138.22	161.000	76.000
12.	Cross Over Sub	1.16	200.000	74.000
11.	Drill Collar	17.71	203.200	71.438
10.	Drilling Jars	9.31	205.000	78.000
09.	Drill Collar	26.63	203.200	71.438
08.	Cross Over Sub	1.16	241.000	71.000
07.	Drill Collar	27.18	241.300	76.200
06.	Integral Blade Stabilizer	2.51	196.000	76.000
05.	MWD	9.87	241.000	74.000
04.	Integral Blade Stabilizer	2.51	192.000	76.000
03.	Pony collar	3.06	241.000	78.000
02.	Integral Blade Stabilizer	2.65	192.900	70.000
01.	Tricone Reed T-11	0.60	443.000	300.000

Comments

Drilled 17 1/2" hole from 650.0m to 1525.0 mMDRT. POOH to run 13 3/8" casing, BOP and riser. All recorded data recovered at surface.

MWD Performance

Tool OD / Type :	241.00	mm /	D/GWD	
MWD Real-time%:	95.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.03	deg /	1371.46	m
Max. Inc. :	1.26	deg /	681.95	m
Final Az. :	0.70	deg		
Max Op. Press. :	2263	psig		

Bitrun Summary

Run Time Data

MWD Run :	0300	
Rig Bit No:	3	
Hole Size :	311.00	mm
Run Start :	24-Dec-05 00:20	
Run End :	30-Dec-05 19:04	
BRT Hrs :	162.72	
Circ. Hrs :	127.83	
Oper. Hrs :	162.72	

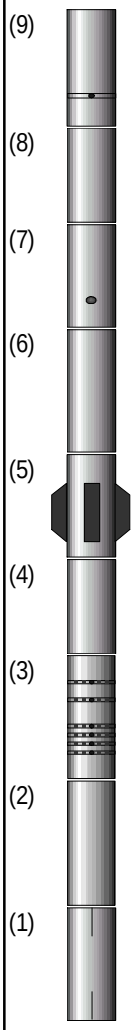
Drilling Data

Start Depth :	1525.00	m
End Depth :	3402.00	m
Footage :	1877.00	m
Avg. Flow Rate :	900	gpm
Avg. RPM :	150	rpm
Avg. WOB :	15.00	klb
Avg. ROP :	33.93	m/hr
Avg. SPP :	3005	psig

Mud Data

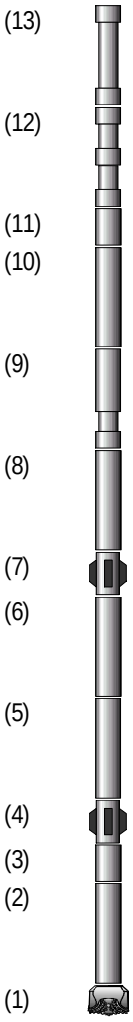
Mud Type :	MixSalt-Glydrill			
Weight / Visc :	1.22	sg /	57.00	spqt
Chlorides :	82000	ppm		
PV / YP :	17.00	cp /	30.00	lhf2
Solids/Sand :	10.5	% /	1.25	%
%Oil / O:W :		% /		
pH/Fluid Loss:	9.00	pH /	4.00	mptm
Max. Temp. :	56.00	degC		

MWD Schematics



9. Positive Pulser
   SN: 10608129
8. TM
   SN: 093281
7. CTN
   SN: 10507211
   30.97 m From Bit
6. ACAL
   SN: 10507211
   29.93 m From Bit
5. SLD
   SN: 157942
   25.66 m From Bit
4. HCIM
   SN: 093281
3. EWR-P4
   SN: 121609
   18.04 m From Bit
2. DGR
   SN: 172498
   15.73 m From Bit
1. DM
   SN: 185534
   13.13 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
13.	Drill Pipe (E)	3000.00	139.700	121.361
12.	HWDP	192.98	122.500	71.440
11.	Cross Over Sub	1.16	208.250	71.440
10.	Drill Collar	8.81	203.200	71.438
09.	Drilling Jars	9.31	200.400	73.600
08.	Drill Collar	8.68	196.850	71.440
07.	Integral Blade Stabilizer	2.10	202.000	71.440
06.	Drill Collar	9.06	203.200	71.438
05.	MWD	24.39	203.000	1.920
04.	Integral Blade Stabilizer	1.81	202.000	7.300
03.	Cross Over Sub	1.22	238.700	73.000
02.	9-5/8" SperryDrill Lobe 3/4 - 5 stage	8.58	244.602	154.000
01.	PDC Hycalog RSX-616M	0.25	311.150	73.000

Comments

Drilled out cement, shoe and 3m of formation. Perform a FIT. Drilled 12 1/4" hole from 1528.0 to 3402.0 mMDRT. POOH to change bit/BHA. All recorded data recovered at surface.

MWD Performance

Tool OD / Type :	203.00	mm /	P4M	
MWD Real-time%:	96.25	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	0.33	deg /	1540.46	m
Max. Inc. :	4.30	deg /	2457.14	m
Final Az. :	54.03	deg		
Max Op. Press. :	5920	psig		

Bitrun Summary

Run Time Data

MWD Run :	0400	
Rig Bit No:	4	
Hole Size :	311.00	mm
Run Start :	30-Dec-05 23:36	
Run End :	02-Jan-06 05:19	
BRT Hrs :	53.72	
Circ. Hrs :	32.66	
Oper. Hrs :	53.72	

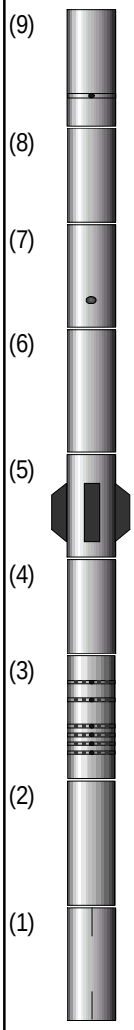
Drilling Data

Start Depth :	3402.00	m
End Depth :	3571.00	m
Footage :	169.00	m
Avg. Flow Rate :	850	gpm
Avg. RPM :	220	rpm
Avg. WOB :	21.00	klb
Avg. ROP :	0.00	m/hr
Avg. SPP :	3723	psig

Mud Data

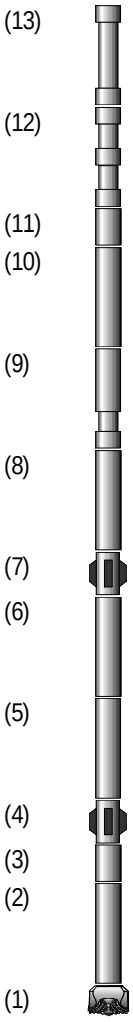
Mud Type :	MixSalt-Glydrill			
Weight / Visc :	1.22	sg /	62.00	spqt
Chlorides :	84000	ppm		
PV / YP :	17.00	cp /	33.00	lhf2
Solids/Sand :	10.5	% /	1.5	%
%Oil / O:W :	0	% /	N/A	
pH/Fluid Loss:	6.00	pH /	3.60	mptm
Max. Temp. :	75.00	degC		

MWD Schematics



9. Positive Pulser
   SN: 8483
8. TM
   SN: 093281
7. CTN
   SN: 10507211
   30.93 m From Bit
6. ACAL
   SN: 10507211
   29.89 m From Bit
5. SLD
   SN: 157942
   25.62 m From Bit
4. HCIM
   SN: 093281
3. EWR-P4
   SN: 121609
   18.00 m From Bit
2. DGR
   SN: 172498
   15.70 m From Bit
1. DM
   SN: 185534
   13.09 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
13.	Drill Pipe (E)	3000.00	139.700	121.361
12.	HWDP	192.98	122.500	71.440
11.	Cross Over Sub	1.16	208.250	71.440
10.	Drill Collar	8.81	203.200	71.438
09.	Drilling Jars	9.31	200.400	73.600
08.	Drill Collar	8.68	196.850	71.440
07.	Integral Blade Stabilizer	2.10	202.000	71.440
06.	Drill Collar	9.06	203.200	71.438
05.	MWD	24.39	203.000	1.920
04.	Integral Blade Stabilizer	1.81	202.000	7.300
03.	Cross Over Sub	1.22	238.700	73.000
02.	9-5/8" SperryDrill Lobe 3/4 - 4 stage	8.58	244.602	154.000
01.	PDC Hycalog RSX-616M	0.25	311.150	73.000

Comments

Wiped from 3320.0 to 3360.0 mMDRT with LWD. Drilled ahead 12 1/4" hole from 3402.0 to 3571.0 mMDRT. POOH due to pressure loss in drillstring. All recorded data recovered at surface.

MWD Performance

Tool OD / Type :	203.00	mm /	P4M	
MWD Real-time%:	100.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	3.32	deg /	3547.59	m
Max. Inc. :	3.59	deg /	3432.80	m
Final Az. :	49.95	deg		
Max Op. Press. :	6184	psig		

Bitrun Summary

Run Time Data

MWD Run :	0500	
Rig Bit No:	5	
Hole Size :	311.00	mm
Run Start :	02-Jan-06 09:36	
Run End :	03-Jan-06 09:18	
BRT Hrs :	23.70	
Circ. Hrs :	4.66	
Oper. Hrs :	23.70	

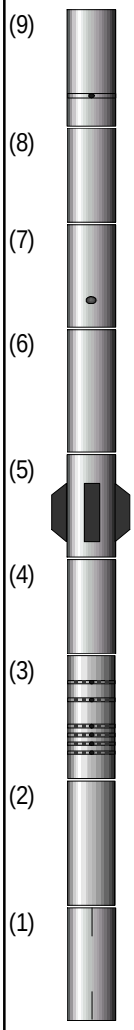
Drilling Data

Start Depth :	3571.00	m
End Depth :	3571.00	m
Footage :	0.00	m
Avg. Flow Rate :	900	gpm
Avg. RPM :	18	rpm
Avg. WOB :	N/A	klb
Avg. ROP :	N/A	m/hr
Avg. SPP :	3608	psig

Mud Data

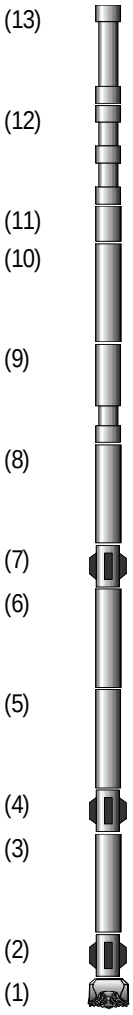
Mud Type :	MixSalt-Glydrill			
Weight / Visc :	1.22	sg /	62.00	spqt
Chlorides :	82000	ppm		
PV / YP :	18.00	cp /	27.00	lhf2
Solids/Sand :	10.5	% /	1.25	%
%Oil / O:W :		% /		
pH/Fluid Loss:	9.00	pH /	3.60	mptm
Max. Temp. :	55.00	degC		

MWD Schematics



9. Positive Pulser
   SN: 8351
8. TM
   SN: 093281
7. CTN
   SN: 10507211
   26.35 m From Bit
6. ACAL
   SN: 1
   25.31 m From Bit
5. SLD
   SN: 157942
   21.03 m From Bit
4. HCIM
   SN: 093281
3. EWR-P4
   SN: 121609
   13.41 m From Bit
2. DGR
   SN: 172498
   11.11 m From Bit
1. DM
   SN: 185534
   8.50 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
13.	Drill Pipe (E)	3000.00	139.700	121.361
12.	HWDP	138.22	122.500	71.440
11.	Cross Over Sub	1.16	208.250	71.440
10.	Drill Collar	8.81	203.200	71.438
09.	Drilling Jars	9.66	200.400	73.600
08.	Drill Collar	8.68	196.850	71.440
07.	Integral Blade Stabilizer	2.10	202.000	71.440
06.	Drill Collar	70.95	203.200	71.438
05.	MWD	24.39	203.000	1.920
04.	Integral Blade Stabilizer	1.81	203.000	73.000
03.	Pony collar	2.96	203.000	73.000
02.	Integral Blade Stabilizer	2.13	203.000	73.000
01.	Tricone Smith GF30BODVCP	0.33	311.000	73.000

Comments

Performed shallow pulse test while RIH. Good pulses/detection. Continued RIH. Washed and reamed hole. No pulses detected at surface. POOH to pick up backup tool. All recorded data recovered at surface. See Service Interrupt Report.

MWD Performance

Tool OD / Type :	203.00	mm /	P4M	
MWD Real-time%:	0.00	%		
MWD Recorded%:	100.00	%		
Min. Inc. :	N/A	deg /	N/A	m
Max. Inc. :	N/A	deg /	N/A	m
Final Az. :	N/A	deg		
Max Op. Press. :	4612	psig		

Bitrun Summary

Run Time Data

MWD Run :	0600	
Rig Bit No:	6	
Hole Size :	311.00	mm
Run Start :	03-Jan-06 12:52	
Run End :	07-Jan-06 17:22	
BRT Hrs :	100.50	
Circ. Hrs :	63.22	
Oper. Hrs :	100.50	

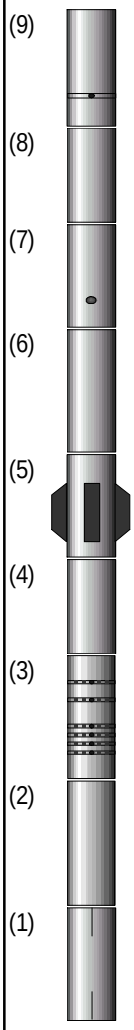
Drilling Data

Start Depth :	3571.00	m
End Depth :	3758.00	m
Footage :	187.00	m
Avg. Flow Rate :	795	gpm
Avg. RPM :	106	rpm
Avg. WOB :	34.00	klb
Avg. ROP :	3.40	m/hr
Avg. SPP :	4021	psig

Mud Data

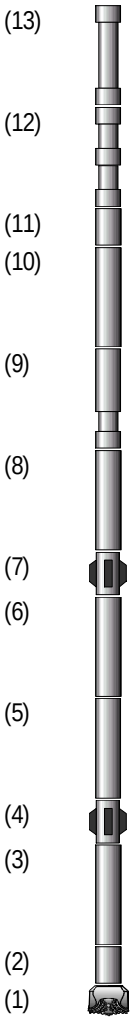
Mud Type :	MixSalt-Glydrill			
Weight / Visc :	1.22	sg /	59.00	spqt
Chlorides :	79000	ppm		
PV / YP :	15.00	cp /	30.00	lhf2
Solids/Sand :	10.5	% /	0.7	%
%Oil / O:W :	0	% /	N/A	
pH/Fluid Loss:	9.00	pH /	3.80	mptm
Max. Temp. :	58.00	degC		

MWD Schematics



9. Positive Pulser
   SN: 8483
8. TM
   SN: 160772
7. CTN
   SN: 194156
   31.43 m From Bit
6. ACAL
   SN: 194156
   30.39 m From Bit
5. SLD
   SN: 133722
   26.13 m From Bit
4. HCIM
   SN: 160772
3. EWR-P4
   SN: 205859
   18.53 m From Bit
2. DGR
   SN: 151081
   16.17 m From Bit
1. DM
   SN: 149865
   13.55 m From Bit

BHA Schematics



	Component	Length (m)	O.D. (mm)	I.D. (mm)
13.	Drill Pipe (E)	3000.00	139.700	121.361
12.	HWDP	138.22	122.500	71.440
11.	Cross Over Sub	1.16	208.250	71.440
10.	Drill Collar	8.81	203.200	71.438
09.	Drilling Jars	9.66	200.400	73.600
08.	Drill Collar	70.57	196.850	71.440
07.	Integral Blade Stabilizer	2.10	202.000	71.440
06.	Drill Collar	9.06	203.200	71.438
05.	MWD	24.38	203.000	1.920
04.	Integral Blade Stabilizer	1.81	203.000	73.000
03.	Drill Collar	9.04	203.200	71.438
02.	Bit Sub	1.10	216.000	71.440
01.	Tricone Smith GF30BODVCP	0.33	311.000	73.000

Comments

Drilled 12¼" hole with rotary assembly. High vibration, tool stopped pulsing at 3714.0 mMDRT. Drilled to TD, 3758.0 mMDRT, without LWD. All recorded data recovered at surface (except Gamma Ray and Resistivity data over the failed interval). See Service Interrupt Report.

MWD Performance

Tool OD / Type :	203.20	mm /	P4M	
MWD Real-time%:	76.00	%		
MWD Recorded%:	84.00	%		
Min. Inc. :	2.98	deg /	3641.38	m
Max. Inc. :	3.36	deg /	3555.34	m
Final Az. :	50.16	deg		
Max Op. Press. :	6500	psig		

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
681.95	1.26	227.00	681.90	5.10 S	5.47 W	-5.10	TIE-IN
767.68	0.81	263.55	767.61	5.81 S	6.76 W	-8.73	0.27
825.04	0.93	254.57	824.97	5.98 S	7.62 W	-9.38	0.09
911.19	1.09	257.49	911.10	6.34 S	9.09 W	-10.57	0.06
1027.78	0.85	252.60	1027.68	6.84 S	11.00 W	-12.13	0.06
1056.46	0.79	254.04	1056.35	6.96 S	11.39 W	-12.46	0.07
1085.16	0.77	260.55	1085.05	7.05 S	11.77 W	-12.76	0.09
1113.81	0.62	255.11	1113.70	7.12 S	12.11 W	-13.02	0.18
1142.54	0.51	257.73	1142.43	7.19 S	12.38 W	-13.24	0.11
1171.11	0.43	257.64	1171.00	7.24 S	12.61 W	-13.42	0.08
1228.35	0.22	250.90	1228.23	7.32 S	12.93 W	-13.68	0.12
1257.08	0.17	244.39	1256.96	7.35 S	13.02 W	-13.76	0.05
1342.79	0.06	257.65	1342.67	7.42 S	13.18 W	-13.92	0.04
1371.46	0.03	247.14	1371.34	7.43 S	13.20 W	-13.93	0.03
1428.75	0.11	336.43	1428.63	7.38 S	13.24 W	-13.92	0.06
1486.03	0.16	21.18	1485.91	7.26 S	13.23 W	-13.82	0.06
1509.77	0.09	0.70	1509.65	7.21 S	13.22 W	-13.77	0.10
1525.00	0.09	0.70	1524.88	7.17 S	13.22 W	-13.74	0.24
1540.46	0.33	354.58	1540.34	7.10 S	13.23 W	-13.69	0.24
1569.11	0.36	350.12	1568.99	6.93 S	13.25 W	-13.57	0.04
1597.73	0.50	2.93	1597.61	6.71 S	13.26 W	-13.40	0.18
1626.44	0.63	1.96	1626.32	6.43 S	13.25 W	-13.17	0.14
1655.17	0.86	9.39	1655.05	6.06 S	13.21 W	-12.85	0.26
1683.81	1.15	21.61	1683.68	5.58 S	13.07 W	-12.39	0.38
1712.56	1.54	24.62	1712.43	4.96 S	12.80 W	-11.74	0.42
1741.12	1.85	23.41	1740.97	4.19 S	12.46 W	-10.91	0.33
1769.90	2.12	24.21	1769.74	3.28 S	12.05 W	-9.94	0.28
1798.49	2.39	23.17	1798.30	2.25 S	11.60 W	-8.85	0.28
1827.17	2.73	24.42	1826.96	1.08 S	11.09 W	-7.61	0.36
1855.78	2.98	24.43	1855.53	0.22 N	10.50 W	-6.22	0.27
1884.43	3.09	24.80	1884.14	1.60 N	9.87 W	-4.74	0.12
1913.08	3.07	24.58	1912.75	3.00 N	9.22 W	-3.24	0.02
1941.89	3.12	23.61	1941.52	4.42 N	8.59 W	-1.73	0.08
1970.98	3.18	24.11	1970.56	5.88 N	7.94 W	-0.17	0.07
1999.06	3.22	24.85	1998.60	7.31 N	7.29 W	1.36	0.06
2027.82	3.27	25.23	2027.31	8.79 N	6.60 W	2.95	0.06
2056.65	3.24	27.04	2056.09	10.26 N	5.88 W	4.56	0.11
2085.12	3.33	26.59	2084.52	11.72 N	5.14 W	6.16	0.10
2113.64	3.40	27.83	2112.99	13.21 N	4.37 W	7.81	0.10
2142.04	3.46	29.61	2141.34	14.70 N	3.56 W	9.49	0.13

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
2170.63	3.60	30.30	2169.87	16.22 N	2.68 W	11.23	0.15
2199.17	3.77	30.65	2198.35	17.80 N	1.75 W	13.05	0.18
2227.87	3.85	36.05	2226.99	19.39 N	0.70 W	14.95	0.38
2256.54	3.99	35.43	2255.59	20.98 N	0.44 E	16.91	0.16
2285.35	4.14	37.21	2284.33	22.63 N	1.65 E	18.95	0.20
2314.02	4.15	34.69	2312.93	24.31 N	2.87 E	21.02	0.19
2342.60	4.24	35.48	2341.43	26.02 N	4.07 E	23.11	0.11
2371.30	4.20	37.23	2370.05	27.72 N	5.32 E	25.22	0.14
2399.91	4.28	37.96	2398.58	29.39 N	6.61 E	27.34	0.10
2428.46	4.30	38.32	2427.05	31.07 N	7.93 E	29.47	0.04
2457.14	4.30	37.54	2455.65	32.77 N	9.25 E	31.62	0.06
2514.65	4.09	38.40	2513.01	36.09 N	11.84 E	35.83	0.11
2543.24	4.05	40.48	2541.53	37.66 N	13.13 E	37.86	0.16
2572.00	4.01	40.97	2570.22	39.19 N	14.45 E	39.88	0.05
2600.65	3.91	40.54	2598.80	40.69 N	15.74 E	41.85	0.11
2629.39	3.86	40.58	2627.47	42.17 N	17.01 E	43.80	0.05
2658.02	3.89	41.30	2656.04	43.63 N	18.28 E	45.73	0.06
2686.60	3.77	41.46	2684.55	45.06 N	19.54 E	47.63	0.12
2715.15	3.77	40.42	2713.04	46.48 N	20.77 E	49.51	0.07
2743.83	3.80	42.10	2741.66	47.90 N	22.02 E	51.40	0.12
2772.65	3.83	43.73	2770.41	49.30 N	23.32 E	53.31	0.12
2801.66	3.84	42.76	2799.36	50.72 N	24.65 E	55.24	0.07
2830.44	3.89	43.81	2828.07	52.13 N	25.98 E	57.17	0.09
2859.14	3.95	44.31	2856.71	53.54 N	27.35 E	59.12	0.08
2887.70	3.86	45.65	2885.20	54.92 N	28.72 E	61.05	0.14
2916.43	3.87	45.26	2913.86	56.27 N	30.10 E	62.96	0.03
2944.96	3.83	45.79	2942.33	57.61 N	31.47 E	64.86	0.06
2973.53	3.73	46.71	2970.84	58.92 N	32.83 E	66.72	0.12
3002.19	3.72	46.75	2999.44	60.19 N	34.18 E	68.56	0.01
3059.49	3.72	46.57	3056.62	62.74 N	36.89 E	72.23	0.01
3088.21	3.81	46.46	3085.28	64.04 N	38.25 E	74.09	0.10
3116.08	3.75	45.37	3113.08	65.32 N	39.57 E	75.91	0.10
3145.07	3.74	48.33	3142.01	66.61 N	40.95 E	77.77	0.20
3173.79	3.67	49.59	3170.67	67.83 N	42.35 E	79.59	0.11
3202.65	3.71	48.97	3199.47	69.04 N	43.76 E	81.41	0.06
3231.77	3.53	48.20	3228.54	70.26 N	45.14 E	83.22	0.20
3260.37	3.66	49.86	3257.08	71.43 N	46.49 E	84.97	0.17
3317.48	3.72	47.74	3314.07	73.86 N	49.26 E	88.58	0.08
3346.36	3.65	50.41	3342.89	75.07 N	50.66 E	90.40	0.19
3375.03	3.69	54.03	3371.50	76.20 N	52.11 E	92.17	0.25

Directional Survey Data

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
3404.40	3.54	54.90	3400.81	77.27 N	53.62 E	93.95	0.17
3432.80	3.59	51.96	3429.16	78.33 N	55.04 E	95.64	0.20
3461.32	3.48	51.53	3457.62	79.41 N	56.42 E	97.35	0.12
3490.24	3.38	50.31	3486.49	80.50 N	57.76 E	99.03	0.13
3519.26	3.32	50.11	3515.46	81.59 N	59.06 E	100.68	0.06
3547.59	3.32	49.95	3543.75	82.64 N	60.32 E	102.29	0.01
3555.34	3.36	53.74	3551.48	82.92 N	60.68 E	102.72	0.87
3583.83	3.00	50.85	3579.93	83.89 N	61.93 E	104.25	0.41
3641.38	2.98	50.16	3637.40	85.80 N	64.24 E	107.18	0.02
3758.00	2.98	50.16	3753.86	89.68 N	68.90 E	113.09	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 37.53 DEGREES (GRID)
A TOTAL CORRECTION OF 14.43 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 3758.00 METRES
IS 113.09 METRES ALONG 37.53 DEGREES (GRID)

RT - LAT = 21.5m
Final Survey projected to TD.

Service Interrupt Report

MWD run number :	0100	Time/Date of Failure :	18-Dec-05 03:54
Rig Bit Number :	2	Depth at time of Failure :	95.00 m
MWD Run start time/date :	18-Dec-05 00:54	Lost Rig Hours :	3.00
MWD Run end time/date :	18-Dec-05 03:54		

Rig Activity

During MWD Shallow Pulse Test while running into hole to drill 17 1/2" hole.

Description of Failure

Could not get a valid survey during shallow pulse test.

Action Taken

Tried a few times to get a valid survey, but could not. POOH and picked up backup tool.

Operation Impact

Tripped for LWD tool failure.

Reason for Failure

Suspect the Battery Module would not function at low temperatures (less than 15 deg C). Post-Run confidence test also points to a suspect Directional Tool (DM). See Equipment Failure Report.

Service Interrupt Report

MWD run number :	0500	Time/Date of Failure :	02-Jan-06 21:00
Rig Bit Number :	5	Depth at time of Failure :	2400.00 m
MWD Run start time/date :	02-Jan-06 09:36	Lost Rig Hours :	21.00
MWD Run end time/date :	03-Jan-06 09:18		

Rig Activity

Running / reaming down to bottom after a bit trip.

Description of Failure

No pulses observed on surface while reaming down to bottom after bit trip.

Action Taken

Mode-switched tool using rig pumps, in a bid to reset tool but this did not help. Pulled out of hole and picked up back up tool.

Operation Impact

Tripped for LWD tool failure

Reason for Failure

Pulser failure. See Equipment Failure Report.

Service Interrupt Report

MWD run number :	0600	Time/Date of Failure :	06-Jan-06 03:32
Rig Bit Number :	6	Depth at time of Failure :	3714.00 m
MWD Run start time/date :	03-Jan-06 12:52	Lost Rig Hours :	0.00
MWD Run end time/date :	07-Jan-06 17:22		

Rig Activity

While drilling 12 1/4" hole.

Description of Failure

Lost communication with downhole tool while drilling. Observed extreme drillstring vibration.

Action Taken

Tried mode-switching tool to reset it, but this did not help.

Operation Impact

Could not obtain real time LWD data from 3714.0m to 3758.0mMDRT, could not recover recorded Gamma Ray and Resistivity data over same interval when the tool memory was read when out of hole.

Reason for Failure

Extreme drillstring vibration caused the HCIM (Downhole processor) failure. The non-magnetic stabilizer below the LWD tool in the BHA showed extreme wear. See Equipment Failure Report.