Electric Wireline Operations
End of Well Report

Tibor - 1
SW Queensland/Australia

Prepared by:

Mohd Rothi Hamzah
afriQA Ltd
22 February 2013

Table of Contents

1. Introduction

This EOW report intended to serve as a permanent and accurate record of the Wireline Formation Evaluation program performed on exploration well Tibor-1. Tibor - 1 located in SW Queensland Block- ATP 539 and operated by Drillsearch Energy Limited.

An operational audit performed by afriQA Ltd, a specialist Wireline Operations Quality Assurance consultancy group. An audit performed for logging operations over the whole 8.5" hole section.

The main purpose of the audit was to ensure:

- The safety culture espoused by the Contractor was consistent with industry norms and compliant with both the Contractor's and the Clients own policies
- That the Formation Evaluation objectives met.
- The Formation Evaluation program completed in an efficient manner possible
- To assist with continuous improvement

In addition to the EOW report, a technical report for each logging operation performed on Tibor-1 completed and delivered by afriQA Ltd.

The Formation Evaluation program performed by Schlumberger. The afriQA audit performed by Mohd Rothi Hamzah.

2. Critical Formation Evaluation Objectives

The wireline logging programme was a fundamental part of the data acquisition required to achieve the FE objectives, namely the acquisition of appropriate wireline logs will fully evaluate the drilled section as per the detailed logging program.

The proposed Tibor-1 conventional oil & gas exploration well located in ATP-539P, in the Cooper/Eromanga Basin, SW Queensland. Tibor-1 is a commitment well for permit ATP 539P. It is located approximately 250km NE of Moomba (Figure 1).

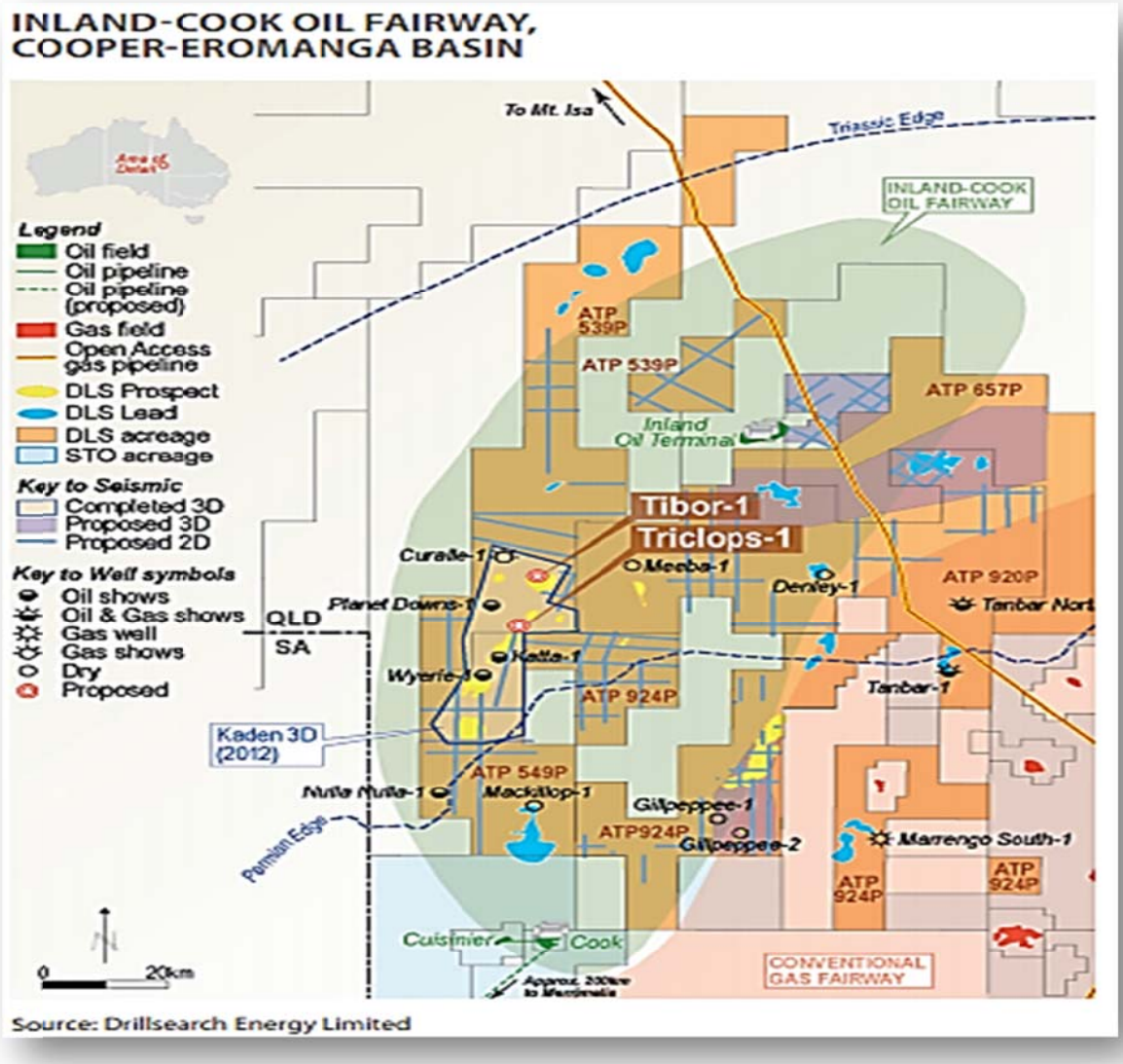


Figure 1.0 Tibor-1 Location Map

The closest offset wells that can be used to correlate Tibor-1 are Planet Downs -1, Katta-1 well, Meeba-1 and Curalle-1.

The well will test a fault related anticline with approximately 14m of independent closure. The location is approximately 52km SW of Inland Oil Field and 92km NE of Cook Oil Field.

The primary targets are the Middle Jurassic Hutton Sandstone and sands of the Late Jurassic Birkhead Formation. Secondary targets are sands of the Late Jurassic Namur Sandstone. There is potential for stacked pay as the closure extends from the Top of the Early Cretaceous Murta Formation to within the Middle Jurassic Hutton Sandstone.

The Hutton and Birkhead sands have expected average porosities of approximately 11%, and 10% respectively. Offset data indicates that the net to gross of the Hutton Sandstone ranges from 15 to 85%. The Birkhead Formation has variable net to gross, with sands typically <5m thick. The Birkhead sand exists within a shaley silty interval.

The aims of the Tibor-1 Oil Exploration well are to:

1. Drill a vertical well over the entire Cretaceous and most of the Jurassic section of the Eromanga Basin. The well will reach total depth (TD) within the Middle Jurassic Hutton Sandstone at 1738 m MDRT.
2. All sands from the Top Namur Sandstone to TD are potential targets.
3. Test the hydrocarbon prospectivity of a new play fairway within the "Inland Cook" region by demonstrating oil migration from the Yamma Yamma Depression into the western flank of the SWQ Eromanga Basin.
4. Evaluate the potential for economic oil in place (OIP) within Tibor-1.
5. Contribute to the current commitment of 2 wells within ATP 539P block
6. Run wireline logs including a minimum of Gamma Ray, Spectra Gamma Ray, Density, Neutron, Sonic, Resistivity, Dielectric and Seismic checkshot.

Having identified the presence of oil and/or associated liquids through mud logs and wireline logging in any one of the 2 primary targets, the next step is to establish the following key reservoir parameters to characterise the reservoir and enable reservoir development planning including estimates of the following for each oil bearing zone. This information is likely to be determined through a combination of wireline results and drill stem test (DST):

- Reservoir Fluid properties including gas composition and condensate yield for PVT modelling.
- Zone pressure and temperature
- Reservoir kh
- Skin and non-darcy skin parameters
- AOF and inflow potential of each zone

3. Safety

There were no **LTI's** during Schlumberger operations on Tibor -1.

The planning and execution of the well objectives in a safe and environmentally sound manner was a fundamental requirement of all aspects of the drilling programme. All operations were executed in accordance with the HSE management systems and the Schlumberger SOP.

In accordance with these overall objectives, specifically to the wireline logging activities, prior to individual operations, a toolbox talk was held at the worksite where the immediate operation was outlined, and any safety issues were discussed between the crews. The Wireline QA Supervisor was present at every Toolbox talk, and reviewed and approved the JSA in agreement with the worksite supervisors.

SAFETY	**PRE-JOB SAFETY MEETING HELD ADEQUATE FOR THE OPERATION**	✓
	CORRECT PPE WORN AT ALL TIMES	✓
	RA SOURCE HANDLING PROCEDURES CORRECTLY EXECUTED	✓
	BEFORE AND AFTER LOG SURVEYS COMPLETED	✓
	RA STORED IN A SAFE AREA CORRECTLY BARRIERE OFF	✓
	LIFTING PLAN IN PLACE FOR EQUIPMENT TRANSFER TO AND FROM THE CATWALK	✓
	SP GROUND CABLES FOR LOGGING IN GOOD CONDITION	✓
	SAFETY SWITCH OPERATIONAL	✓
	GENERAL SAFETY PROCEDURES ARE FOLLOWED AT ALL TIMES	✓

4. General Well Information

Background

The 12.25" open hole section on Tibor-1 was drilled from 10.6 m MDRT to 754.0 mMDRT. No basic formation evaluation wireline log was performed for this section. The hole was cased with 9 5/8" casing before commencing to drill the Tibor-1, 8.5" hole section. The 8.5" section was drilled from 754.0 mMDRT to a total depth (TD) of 1723.0 mMDRT at which point wireline log Run 1, 2 and 3 were completed.

The well was planned to be a vertical well. The well angle started to build up to 1.75 degrees when reaching 900 m. The decision to drill ahead with less weight on the bit and this did help to maintain

the well deviation around 2 degrees. At around 1500 m, the rig experienced high torque during drilling and decision taken to pull out of the hole. The rig crew suspected the bit has gone under gauge and gave problems to stabilizer to pass. On the surface, the bit and stabilizer diameter were OK, but the decision was made to run with a new 8 ½" PDC bit. The new bit drill to TD without any more problems.

The Hutton formation tops were found at 1623 m, and TD was then set at 1723m (-/+100m into Hutton)

General

Well	Tibor-1
Block	**ATP 539P**
Type	**Exploration**
Operator	**Drillsearch Energy Limited**
EWL Contractor	**Schlumberger**
Area	**Roma**
Latitude	**25° 52' 17.796" S**
Longitude	**141° 16' 19.413" E**
Drilling Supervisor	**Ray C.Wills**
Logging Engineer	**Mary Kate Henrikson/Tamara Svetlichnaya**
Logging Witness	**Mohd Rothi Hamzah/ Ian Wrightstone**

Rig data

Rig	**ENSIGN 918**	
KB-RT	**NA**	**m**
RT-GL	**5.15**	**m**
GL-MSL	**135.00**	**m**

Sub-surface well information

	Run 1: Tibor - 1
Bit Size	**8.5 in**
TD Driller	**1723.0 mMDRT**
TD Logger	**1723.5 mMDRT**
Casing Shoe Driller	**751.0 mMDRT**
Casing Shoe Logger	**750.0 mMDRT**
Circulation Stopped at TD	**19- Feb-2013 04:20**
Circulation Time	**60 min**
Max Well Deviation	**2.0 deg @ 932.0 mMDRT**
Casing size	**9 5/8 in**

Mud system

	Run 1:
Mud Type	3KCL-PHB-Polymer
Mud Weight	9.3 ppg
Mud Viscosity	46.0 sec
HPHT Fluid Loss	4.0 cc
PH	9.5
Corr Solids	4.0 %vol
Oil/Water Ratio	NA
CL (whole mud)	24,400 mg/l
Rmf @Temp	0.1300 @ 33.4°C
Rm @ Temp	0.1300 @ 33.4°C
Rmc @ Temp	0.5100 @ 33.4°C

5. Schlumberger tool mnemonics

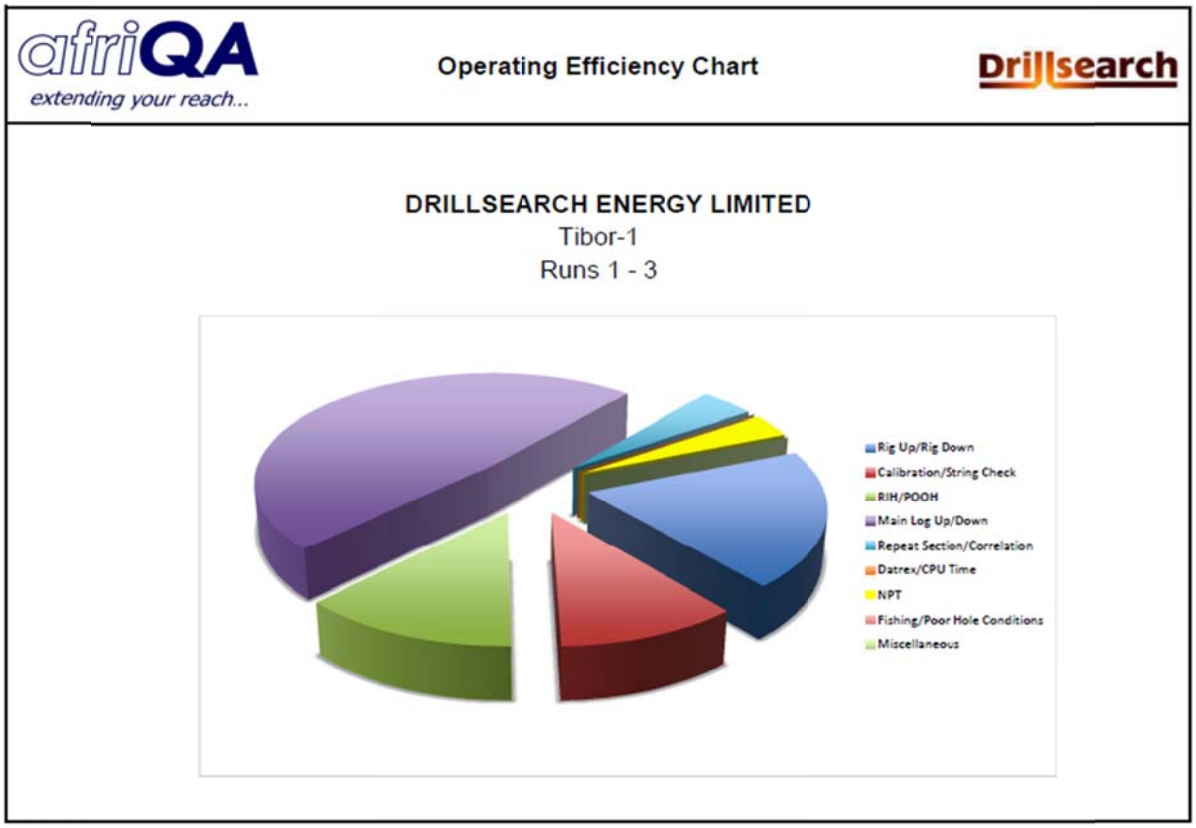
EDTC	Gamma Telemetry tool
HNGS	Natural Gamma Ray Spectrometry tool
HGNS	Highly Integrated Gamma Ray Neutron Sonde
PEX(TLD)	Platform Express (Three-Detector Lithology Density)
HRLA	High-Resolution Laterolog Array
MAST	Sonic Scanner (MISP)
ADT	Array Dielectric Tool
SP	Spontaneous Potential
PPC	Powered Caliper
GPIT	General Purpose Inclinometry Tool
VSI	Versatile Sonic Imager

6. Tibor -1 Run 1 Activity summary and Operating Efficiency

For a detailed account of the Activity Summary, please refer to the afriQA Operational Reports for each logging suite.

RUN	SERVICES	RIG UP	RIG DOWN	TOTAL	LOST TIME	BHT
		dd/mm hh:mm	dd/mm hh:mm	TIME	(Contractor)	°C
1	EDTC/PPC/HGNS/PEX/HRLA/ADT/SP	19/02 10:40	19/02 20:20	09:40	00:00	108.9
2	EDTC/PPC/MAST/PPC/GPIT	19/02 20:20	20/02 05:40	09:20	00:55	114.4
3	VSI-CHECKSHOT	20/02 05:40	20/02 13:40	08:00	00:00	118.9
	TOTAL TIME FOR WIRELINE OPERATIONS			**27:00**	**00:55**	
	OPERATING EFFICIENCY (1-LT/OT)x 100			**96.6 (%)**		

Tibor-1 Operating Efficiency Run 1, 2 and 3



6.1 Summary Run-1: EDTC/HGNS/HGNS/TLD/HRLA/ADT/SP

Run 1 completed in 9 hours and 40 min without NPT recorded.

Narrative

Job Hazard Analysis was done between the logging and drill crew prior to rigging up the sheave wheels. Discussion covered all aspects of logging operations and handling of radioactive sources. The logging crew consisted of an engineer and two operators. The rig crew were very helpful to organise the proper position of the lower sheave chain. The sheaves rig-up was done safely without any problems.

First run consisting of EDTC/PPC/HNGS/PEX/HRLA/ADT/SP was rig-up and made up vertically without any problem. After installing the thermometers and setting tool depth, the crew begin to install the radioactive sources. The tool string was then run in the hole to casing shoe.

The Schlumberger primary depth control procedures were followed closely. The first point of reference was taken around 100m. Running in hole speed was set to around 3600 ft/hr to avoid undesired depth slippage for the first run. HRLA and MCFL calibration performed below the casing shoe. The Density and Dielectric caliper were also verified inside casing prior to logging down.

Down log was logged from casing shoe to 17100 m to avoid areas around TD. Only HRLA, GR, Spectra GR, SP and TNPH data were valid as all calipers were closed. Another depth control observation was done during down log. The measurements indicated that the downlog depth could be used as depth references. Tools were pulled back to log repeat pass from 1670 to 1570 m for all sensors. This specific interval would cover top of Hutton sandstone and Birkhead sandstone. Upon completion of repeat pass, the tool was run in the hole to TD.

The main pass recorded in high resolution from total depth to 20m above casing shoe depth (750.0 m) at 1800 ft/hr. On the completion of the main pass, the tool string was pulled to surface. Logging crew removed the radioactive sources and engineer begin to perform the after log verifications. The crew started to rig down the tool string completely.

Summary

1. Run 1 was the 1st run in the hole and the down log would serve as the main depth reference log as per Schlumberger procedures.
2. Downlog logged from casing shoe to TD. The data were not presented
3. PPC was run below the cablehead as a short axis kit.
4. RXO data being a pad device was affected by washed out borehole.
5. Neutron was run in decentralized position. Neutron porosity was corrected for whole mud salinity of 41,277 (ppm) and logged in Limestone matrix.

6. RHOZ Density was corrected for borehole and mud density, and presented in Limestone Compatible scale.
7. The borehole volume and cement volume was computed from the CAL1 calliper (density tool). The density caliper has been reset to casing ID 0f 8.914".
8. Maximum reading BHT from thermometer was 108.9 deg C at 1691.0 mMDRT 11hrs 20 min after final TD circulation.
9. Bulk Density (RHOZ) and ADT data were affected badly by washed out and borehole rugosity.

OBSERVATIONS AND LOG QUALITY CONTROL	
1. DEPTH CONTROL	**Run 1 down log was the main depth reference log**
2. RHOZ	**Good repeatable data recorded. Density corrections (HDRA) within expected range over gauge hole. Borehole rugosity (washout) affected density data badly.**
3. GR	**Good data recorded.**
4. TPHI	**Good repeatable data recorded. Corrected for whole mud salinity of 41,277 ppm. Borehole rugosity (washout) affected porosity data badly.**
5. HNGS	**Good data recorded.**
6. ADT	**Good data recorded. Proper QC cannot be done because of processing requirement. All the QC flags were OK.**
7. HRLA	**Good repeatable data recorded. Different invasion profile observed across the washout zones.**

6.2 Summary Run-2: EDTC/PPC/MAST(Sonic Scanner)/PPC/GPIT

Run 2 completed in 9 hours 20 Minutes with 55 minutes NPT recorded.

Narrative

On completion of Run 1, the crew prepared the PPC tool on the catwalk prior to rigging up. The crew had to set the top PPC arms to fully operational and performed caliper calibration. The crew spent a considerable amount of operating time (55 minutes) to do this. Once completed, the crew rig up all the tool string without at problems. The engineer set the tool zero and decided to run in the hole without function check the tools first. At 50m, the engineer failed to initialize the sonic scanner (MAST). This was the same problem seen during surface checkout and the engineer should have learnt from it. The engineer decided to pull back to surface to troubleshoot the problem. The sonic scanner started to work again after a while and proceed to run in hole.

Engineer stopped at casing shoe, to check the caliper reading and reset it to 9 5/8" casing ID. The sonic scanner was set to BHC mode and downlog logged from casing shoe to TD at 6000 ft/hr. No problem seen, and the formation compressional slowness was almost similar to the offset well (Planets Down-1). The repeat pass was done first, with sonic scanner set to standard mode. In standard mode, the sonic scanner will provide fullwave monopole and fullwave cross dipole. The GPIT tool was run to provide directional data for anisotropy processing. The main pass logged from TD to surface. No problem seen on the main pass and all formation slowness were good.

The sonic scanner data required more processing at Schlumberger data centre to produce more correct slowness.

Summary

1. Run 2 correlated to Run 1
2. Sonic scanner was logged in BHC mode for down log in order to log using faster logging speed at 6000 ft/hr.
3. Sonic scanner log in the standard sonic mode for repeat pass and main pass. Fullwave monopole, inline dipole and cross dipole recorded in this mode.
4. GPIT data and QC flags were all showing good inclinometry data: which were also recorded. GPIT also read good field intensity and field magnetometer for the well.
5. PPC caliper showing same borehole washout seen by the density tool. PPC is a 2-axis caliper.

OBSERVATIONS AND LOG QUALITY CONTROL	
1. Depth Control	**Run 2 down log tied into run 1**
2. GR	Good repeatable data recorded
3. MAST(Sonic Scanner)	Reasonable data recorded. Sonic fullwave and cross dipole need further processing in Schlumberger data centre.
4. GPIT	Good data recorded
5. PPC	Good data recorded

6.3 Summary Run-3: EDTC/VSI

Run 3 completed in 8 hours with no NPT recorded.

Narrative

On completion of Run 2, the seismic single level checkshot survey using VSI tool was rigged up. The VSI tool still uses the EDTC as its telemetry and gamma ray data. Schlumberger own vibrator used for the seismic source energy. The seismic engineer selected the best position for the vibrator in order to reduce the sonic energy travel through the surface casing. The maximum distance, the vibrator

from the rig floor are a 50 m radius. Once the tool and the vibrator were verified to be functioning, engineer started to run in hole. The zero depth of the tool string was 1.09 m above the geophone.

As per the SOP, several checkshot surveys were done as calibration points while running in hole. The same levels will be shot on the way up to reconfirm the tool functionality.

The requested checkshot levels were all the formation tops. This formation top depths were selected by the client, based on the first run and mud log. The first level was at total depth and the engineer positioned the tool at 1721.5 m. This depth was found not good, and the bad geophone coupling could be due to washed out. The engineer tried to slack the cable from the surface but not able to improve the signal received. The tool was then moving to 1721.0 m, and reasonably good data were obtained. The tool was then pulled up to the next level requested. All together 11 formation tops have been requested. In addition, the engineer also surveys the MSL depth (141.15m) and near to ground level (10.6 m). On each survey depth, at least 3 shots fired for data stacking to improve the signal to noise ratio.

The tool reach surface safely and rig down.

Summary

1. Run: 3 correlated to Run: 1 using gamma ray from the EDTC tool.
2. Checkshot level at MSL and GL were done as per standard operation requirement.
3. All formation top depths were given by the client before starting the operation.
4. Checkshots were done from the deepest shot depth to the shallowest depth.
5. The anchor was kept open from first shot depth to the last shot depth.
6. Stacking technique was used to increase the signal to noise ratio. At least 3 shots were fired to do this at each depth.

OBSERVATIONS AND LOG QUALITY CONTROL	
1. Depth Control	**Run 3 log tied into run 1**
2. GR	Good repeatable data recorded
3. VSI(Seismic Imager)	Reasonable good data recorded. Checkshot data need further processing in Schlumberger data centre.

Figure-1 Schlumberger Logging truck and satellite disk setup.

Figure-2 PPC-Powered Caliper used for short-axis kit.

Figure 3- MAST- Sonic Scanner receiver for monopole and dipole

Figure 4- VSI-Single level

Figure 5- CO2 Liquefied Gas use by HNGS detector.

7. Summary and Recommendations for continuous improvement

During the Tibor-1 wireline logging operations, there were NPT of 55 minutes recorded. The lost time happened on run2. The sonic scanner (MAST) failed to initialize properly upon powering up the tool. The same problem happened during surface checkout. The only way to solve this problem is by running cartridge internal diagnostic, which is not normal.

The short axis kit ran in run 1 was not working well. The density and ADT calipers still read bigger than PPC across washout zone.

Run 1 finished successfully and without any problems. The pad device and neutron tool was affected by the borehole rugosity and washout. The log can be monitored in town via the Interact, transmitted over the satellite system.

The Sonic scanner for run 2 was run in standard mode. In standard mode fullwave monopole and fullwave cross-dipole were recorded. GPIT was run in combination to provide directional data for

anisotropy processing. No shear from monopole in Wallumbilla formation due to soft formation. The shear slowness can be obtained using the inline dipole data. The last run, seismic checkshot completed without any problems at all.

The assigned engineers for this job were very knowledgeable in operating the logging system and logging tools. However they still need to read log real time.

Nevertheless, the advantages of Schlumberger system and logging tools are its reliability and easiness for engineers to operate.

7.1 Highlights:

1. No accidents recorded during the logging operation.
2. No environmental incidents recorded.
3. Good commitment shown by the wireline crew to perform the operation in a safe and efficient manner.
4. All formation evaluation objectives were met.
5. Satellite communication system work and log data successfully transferred via INTERACT after the run completed.
6. Witness can follow the log via the second screen.

7.2 Lowlights:

1. Full back up strings were not loaded out for the job. Only PEX(TLD) and VSI mobilized with full backup.
2. In real time, only log plot (PDs) can be transmitted via interact to base.
3. Fishing kit missing 3 5/8" spiral grapple. Only the 3 3/8" spiral grapple inside the kit.
4. Poor real time logging data QC.

7.3 Best practices and Continuous improvement:

1. Inspect all rig-up equipment before every load out or at the wellsite to ensure operational status
2. Mobilise QA/QC supervisor to assist with tool checks in SLB base. This will reduce the time required on site for an audit and in so, significantly reducing the direct cost due to equipment standby rates on site.
3. Perform pre-job logging plan review with SLB in ROMA or MOOMBA to ensure correct equipment is mobilised to the site for upcoming operations.
4. Initiate a customer rig book in aiding efficient hand-over between engineers in charge and being consistent to client requirements.
5. Request RITE maintenance history for the specific Schlumberger equipment being mobilised to site.

HEADING INFORMATION & RUN SUMMARY

afriQA extending your reach...

Drillsearch

Well	Tibor-1	Rig	Ensign 918		Mud Type	3KCL-PHB-Polymer	
Block	ATP 539	RKB	NA	m	Mud Weight	9.30	ppg
Type	Exploration	RT Elevation	5.15	m above GL	Mud Viscosity	46	s
Operator	Drillsearch Energy Limited	Ground Level	350.00	m above MSL	Fluid Loss	4	cc
EWL Contractor	Schlumberger	Bit Size	8.50	in	PH	9.5	
Area	SW Queensland	TD Driller	1723.00	m MDRT	Corr Solids	4.0	%vol
Latitude	25deg 52' 17.796" S	TD Logger	1723.50	m MDRT	Oil/Water Ratio	NA	
Longitude	141deg 16' 19.413" E	CSG Shoe Driller	751.00	m	Cl^- (whole mud)	25400	mg/L
Drilling Supervisor	Ray C. Miller	CSG Shoe Logger	750.00	m	Rmf @ temp	0.130	33.4 °C
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm	Rm @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Circulation time	60	min	Rmc @ temp	0.510	33.4 °C
Job start date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT			

SERVICES	RIG UP dd/mm hh:mm	RIG DOWN dd/mm hh:mm	TOTAL TIME	LOST TIME (due to Contractor)	LOST TIME (3rd party NPT)	TOP LOGGED INTERVAL (m)	BOTTOM LOGGED INTERVAL (m)
Run 1: ERCD/EDTC/SP/PPC/HNGS/PEX(TLD)/HRLA/ADT	19/02 10:40	19/02 20:20	9:40	00:00	00:00	750.0	1723.5
Run 2 - ERCD/EDTC/PPC/MAST/PPC/GPIT	19/02 20:20	20/02 05:40	9:20	00:55	00:00	10.0	1723.5
Run 3 Checkshot - 1 X VSI with Vibrosis	20/02 05:40	20/02 13:40	8:00	00:00	00:00	10.0	1721.5
TOTAL TIME FOR THE LOGGING JOB			27:00	0:55	0:00		
OPERATING EFFICIENCY (1-LT/OT)x 100			96.60%				

SCHLUMBERGER SERVICE QUALITY

The Schlumberger logging crew on the Ensign-918 for Tibor-1 performed well during the logging operation and showed good commitment. Unfortunately, due to intermittent tool initialization failure, the total operating efficiency was lower than expected 100%. The Schlumberger DCS support during the operation was of a high standard with good communication between the processing centre, the COMPANY office based personnel and the field. Good quality geological and Petro-physical data was recorded. The equipment failures need to be investigated, and error cause removal reports submitted. Refer to the summary sheet for a detailed breakdown of highlights and lowlights during the operations.

EQUIPMENT QA/QC

afriQA extending your reach... | Drillsearch

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.30	ppg	Rm @ temp	0.130	33.4 °C
Report Date	20-Feb-13	Suite	1		Rmc @ temp	0.510	33.4 °C

Equipment QC

Logging Run	Tool Type	Description	Primary Equipment Asset Number	CALIBRATED	Backup Equipment Asset Number	CALIBRATED	COMMENTS
Run 1: ECRD/EDTC/SP/PPC/HNGS/PEX(TLD)/HRLA/ADT	LEH-QT	Cable head	1183	NA			8k weak point
	ECRD	Electrical release cable head	1183	NA			
	SPA-A	Spontaneous Potential	9999	NA			
	AH-369	Mass Isolation sub	1890	NA			
	EDTC-BB	Down hole telemetry	8225	18 February 2013	8536	NA	Back-up: MDT
	EDTH-B	Down hole telemetry	8217		8537	NA	Back-up: MDT
	PPC-B	Powered Caliper	8075	19 February, 2013			
	AH-120	Knuckle Joint	838	NA			
	Adapter-Head	Spacer		NA			
	AH-184	Knuckle Joint	5998	NA			
	HEH-K	Spectral GR HNGS housing	19	NA			
	HNGS-BA	Spectral GR Sonde	19	11 January, 2013			
	HNGH-AA	Spectral GR housing	47				
	HNGC-BA	Spectral GR cartridge	221				
	HGNH-B	Neutron Gamma Ray	2954	14 February 2013			
	HGNS-H	Neutron Gamma Ray	3892				
	HRCC-H	Density Housing	4854				
	HRDD-BS	Density Back Scatter	41224	14 February, 2013			
	HRMS-H	Density Sonde	3931	14 February, 2013			
	HRGD-H	Density Pad	4967	14 February, 2013			
	AH-184	Mass Isolation sub	5954	NA			
	HRUC-B	Laterolog Upper cartridge	939				
	HRUH-B	Laterolog Upper housing	933				
	HRLS-B	Laterolog Sonde	928	19 February, 2013			
	HRLC-B	Laterolog Lower cartridge	920				
	HRLH-B	Laterolog Lower housing	915				
	AH-270	Mass Isolation sub	759	NA			
	HECH-KDB	ADT	772	NA			
	ADC-C	ADT	789				
	ADS-C	ADT	761				
	ADP-C	ADT	761	18 February, 2013			
Run 2: ECRD/EDTC/PPC/MAST/PPC/GPIT/SPACER	LEH-QT	Cable head	1183	NA			8k weak point
	ECRD	Electrical release cable head	1183	NA			
	SAH-F	Swivel	1890	NA			
	EDTC-BB	Down hole telemetry	8225	19 February 2013			
	EDTH-B	Down hole telemetry	8217	19 February, 2013			
	PPC	Positioning Powered Caliper	8075	19 February, 2013			
	ECH-SF	Sonic Scanner	8257	NA			
	MAPC-BA	Sonic Scanner	8265	NA			
	MAMS-BA	Sonic Scanner	8262	NA			
	MASS-BA	Sonic Scanner	8218	NA			
	MAXS-BA	Sonic Scanner	8221	NA			
	PPC-B	Postioning Powered Caliper	8291	19 February 2013			
	GPIH-B	GPIT	2816	18 February 2013			
	DHRU-F	GPIT	1823	NA			
	GPIC-H	GPIT	1823	NA			
Surface	OSLCG	Wireline logging truck	3144	NA	NA	NA	SMALL TYPE
	OSAO	Mobile Lab - MDT capable	NA	NA			SUPPLY BOX
	IDW	Depth measuring device	978	26-Oct-12	NA		
	7-46ZVXS	Wireline (LENGTH: 2945m)	75134	NA	NA	NA	ROPE SC: 10/2/13
	QBX	Vibro Truck	WZG 406	NA			

EQUIPMENT PREPARATION REMARKS

1. Only one (1) set of a complete string mobilized to the wellsite except extra TLD and VSI (Checkshot)

2. Standalone system was inside the logging truck. No backup system available or mobilized for this job. Second screen available for the client to use. The plotter machine installed inside the system was working.

3. The logging operations were based on DRY CASE programme inclusive of seismic checkshot run.

4. All pre-log verifications performed during pre-job check on the surface and before rig-up. Resistivity tools were checked without test harness. Only HRLA harness mobilized but not use during tool checkout.

5. MAST tool failed to initialize upon power up during checkout. The engineer has to do internal cartridge diagnostic test first and then the tool start to work properly. This is the same tool used on the last well, when the same problem seen. Several fast power up sequences managed to solve the problem.

6. All stand-offs diameter measured manually, and the tool diagram handed to the company representative before rig-up. Final OD for a tool with standoff was 8".

7. The HNGS (Spectra Gamma Ray) detector was cooled with liquified gas-CO2 before rig-up to 2 degC as per Schlumberger SOP.

8. MAST cross dipole operation was tested on the surface, but dipole waveforms and monopole waveforms were not tested because special shuck or half-trough was not mobilized.

9. All PPC setting levels were checked during surface test. Level 2 will be used for logging with MAST (Sonic Scanner)

10. Short axis mode will be utilised on the first run. Short axis modification consisting of PPC/Knuckle/Spacer/Knuckle connected between EDTC and HNGS.

EQUIPMENT QA/QC

Well	**Tibor-1**	**TD Driller**	**1723.00**	**m**	**CSG Shoe Driller**	**751.00**	**m**
Block	**ATP 539**	**TD Logger**	**1723.50**	**m**	**CSG Shoe Logger**	**750.00**	**m**
EWL Contractor	**Schlumberger**	**Bit Size**	**8.50**	**in**	**Circ Stopped at TD**	**19-Feb-13 04:20**	**dd/mm/yy hh:mm**
Job date	**19-Feb-13**	**Max Dev @ depth**	**2.00**	**deg @ 932 m MDRT**	**Circulation time**	**60**	**min**
Logging Engineer	**MaryKate Henrikson/Tamara Svetlichnaya**	**Mud Type**	**3KCL-PHB-Polymer**		**Rmf @ temp**	**0.13**	**33.4 °C**
Logging Witness	**Rothi Hamzah/Alan Wrightstone/B.Craig**	**Mud Weight**	**9.30**	**ppg**	**Rm @ temp**	**0.130**	**33.4 °C**
Report Date	**20-Feb-13**	**Suite**	**1**		**Rmc @ temp**	**0.510**	**33.4 °C**

Equipment QC

Logging Run	Tool Type	Description	Primary Equipment Asset Number	CALIBRATED	Backup Equipment Asset Number	CALIBRATED	COMMENTS
Run 3: MDT	LEH-QT	Cable head	1876				
	ECRD	Electrical release cable head	1876				
	EDTC-BB	Down hole telemetry	8536				
	EDTH-B	Down hole telemetry	8537				
	MRPC	MDT power cartridge	871				
	MRCH	MDT power cartridge housing	1083				
	MRMS	6 Tank sample carrier	75				
	MPSR	450cc Sample chamber	-				
	MPSR	450cc Sample chamber	-				
	MPSR	450cc Sample chamber	-				
	MPSR	450cc Sample chamber	-				
	MPSR	450cc Sample chamber	-				
	MPSR	450cc Sample chamber	-				
	MRPO	MDT Pump	541				
	MRSC	Sample chamber - large volume	612				Exit port
	MRFA	MDT Fluid analyser	8263				
	MRHY	MDT hydraulics	751				
	MRPQ	MDT probe section	541	8 February, 2012			CQG 3290
	MRPP	MDT Power panel					
	MRTM	MDT communications panel					
Run 4: ZO-VSI-CHECKSHOT	LEH-QT	Cable head	1183				
	ECRD	Electrical release cable head	1183				
	EDTC-BB	Down hole telemetry	8225		8536		
	EDTH-B	Down hole telemetry	8217	20 February 2013	8537		
	AH-199	Cross over	5035				
	VSPC-BA	VSP Power cartridge	8070		8073		
	VSCC-BB	VSP communication cartridge	8070		8073		
	VSIS-CA	VSI geophone	8313		8311		
	AH-244	Cross over	8071				
	VPO	Vib Pro vib control panel	1526				
	WSAM	Seismic acquisition panel	1747				
Run 5: MSCT	LEH-QT	Cable head					
	SGH-K	Gamma Ray	3322				
	MCCM	Rotary coring tool	239				
	MCEC-AA	Rotary coring tool	240				
	MDMU-AA	Rotary coring tool	8090				
	MCRCM	Rotary coring tool	691				
	MCPP	Power panel	239				

EQUIPMENT PREPARATION REMARKS

1. VSI was not checked during surface checkout. The crew still waiting for the vibrator to be at the rig site.

2. The checkshot will run as a single level tool.

3. MDT and MSCT were not operational check on surface.

PRE-JOB QA/QC CHECKS

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.13	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.30	ppg	Rm @ temp	0.130	33.4 °C
Report Date	20-Feb-13	Suite	1		Rmc @ temp	0.510	33.4 °C

Pre-Job QA/QC Checks		STATUS	COMMENTS
SURFACE EQUIPMENT	WIRELINE CONTINUITY AND INSULATION	Good	Checked at the base and was recorded on the cable sheet
	CABLEHEAD CONTINUITY AND INSULATION	NA	inside the truck
	WIRELINE LENGTH SUFFICIENT FOR LOGGING JOB	NA	Primary 75134 = 2945m;
	WIRELINE TORTURE TEST	NA	Not checked, readily installed with ERCD and ready to go. Build new rope socket in Roma-10th Feb 2013
	DEPTH ENCODER SURFACE CHECK	Good	IDW # 1933 Calibration date 26-Oct-2012.
	MULTI METER AND MEGGER IN GOOD WORKING ORDER	28/1/2013	
	GEIGER COUNTER IN GOOD WORKING ORDER	28 January, 2013	Calibration due date July 2013.
	RA SOURCE INSTALLATION TOOL IN GOOD WORKING ORDER	Good	
	SOURCE CATCHER IN GOOD WORKING ORDER	11/1/2013	Using makeup plate - Dual purposes
	LIFTING CAPS IN GOOD CONDITION AND CERTIFIED	Good	Certified in date
	TOOL STAND-OFFS CALIPERED FOR ACCURATE OD AND DIAGRAMS WITH CO-MAN	Good	Physically measured OK
	EQUIPMENT FUNCTIONALLITY CHECK ON PRIMARY AND BACK-UP SYSTEM	27/11/2012	CompleteBACK up tool supplied. BACKUP only- 1xvsi / 1x TLD
	COPY OF MASTER CALIBRATION ON PRIMARY AND BACK-UP SYSTEM	28 January, 2013	Verified during logging
	RIG-UP EQUIPMENT CERTIFICATION	Good	
	CABLE CUTTER AVAILABILITY	NA	Not checked
	WEAK POINT SELECTION	10/2/2013	8k weak point in ECRD.
CALIBRATIONS	SHOP CALIBRATION	Good	
	BEFORE LOG SURVEY	Good	
	AFTER LOG SURVEY	Good	
	CALIBRATION EQUIPMENT CONDITION	Good	
SAFETY	PRE-JOB SAFETY MEETING HELD ADEQUATE FOR THE OPERATION	Good	
	CORRECT PPE WORN AT ALL TIMES	Good	
	RA SOURCE HANDLING PROCEDURES CORRECTLY EXECUTED	Good	
	BEFORE AND AFTER LOG SURVEYS COMPLETED	Good	
	RA AND EXPLOSIVE BUNKERS STORED IN A SAFE AREA CORRECTLY BARRIERED OFF	Satisfactory	Under pipe rack-posted sign board only-not barriered off
	LIFTING PLAN IN PLACE FOR EQUIPMENT TRANSFER TO AND FROM CATWALK	Good	Picked up sources using rig tugger line.
	GROUND CABLES FOR EXPLOSIVE OPERATIONS IN GOOD CONDITION	NA	
	SAFETY SWITCH OPERATIONAL	NA	
	GENERAL SAFETY PROCEDURES FOLLOWED AT ALL TIMES	Yes	
FISHING	FISHING BOX INVENTORY UPDATED AND COMPLETE	29 January, 2013	Not checked-Short on time-Crew arrived late
	FISHING EQUIPMENT CERTIFIED AND IN GOOD CONDITION	29 January, 2013	Engineers confirmation only
	COPY OF FISHING OPERATING PROCEDURES IN THE FISHING BOX	NA	Engineers confirmation only
	FISHING HAND TOOLS IN GOOD OPERATING CONDITION	NA	Engineers confirmation only
	TWO UNUSED CABLE HEAD GRAPPLES AVAILABLE	Good	
	CABLE CLAMP IN GOOD CONDITION	Good	
TLC KIT	MALE WET CONNECT CHECKED FOR CONTINUITY AND INSOLATION	NA	
	FEMALE WET CONNECT CHECKED FOR CONTINUITY AND INSOLATION	NA	
	SIDE ENTRY SUB AVAILABLE AND CERTIFIED	NA	
	ALL RELEVANT CROSS-OVERS AVAILABLE AND CERTIFIED	NA	
	WET CONNECTS FUNCTION TESTED FOR LATCHING AND SYSTEM COMMUNICATION	NA	
	CABLE GUARD AVAILABLE	NA	
	TLC HAND TOOL IN GOOD CONDITION	NA	
	COPY OF TLC PROCEDURES AVAILABLE IN UNIT	NA	
UNIT	SYSTEM AND BACK-UP OPERATING CORRECTLY	NA	No back-up. Stand alone system
	WINCH IN OPERATIONAL CONDITION	Good	Need to remedy- brake catching the drum flange when drum moving downward.
	BACK-UP WIRELINE AVAILABLE ON LOCATION AND IN GOOD CONDITION	NA	
	ALL FLUID LEVELS CHECKED AND SATISFACTORY	Good	
	AC'S OPERATIONAL	Fair	Not enough and hot. only one unit available
	LIGHTS ADQUATE	Good	
	POWER PACK AND GENERATOR OPERATIONAL	Good	Not check-available for MSCT also
	UNIT CHECK SHEET COMPLETED BEFORE EVERY JOB	Not Done	Should be initiated by Engineer
WORKSHOP	RE-HEAD SPARE PARTS AVAILABLE	Good	
	BACK-OFF EQUIPMENT CHECKED, LABLED AND STORED READY STATE	NA	
	MECHANICAL SETTING TOOL OPERATIONAL, REDRESS KITS AVAILABLE	NA	
	BOP AVAILABLE, SERVICED AND IN READY STATE	NA	
	SQUEEZE GUNS AVAILABLE	NA	
	SPARE CABLE HEAD BUILD, CHECKED AND READY	NA	
	AC'S OPERATIONAL	NA	
	LIGHTS ADEQUATE	NA	
	GR/CCL TOOLS AVAILABLE FOR VARIOUS OPERTIONS AND HOLE ID's	NA	
	HAND TOOLS ADEQUATE	NA	

PRE-JOB QA/QC R E M A R K S

1. The Schlumberger crew arrived on site about 20hrs from rig up time. Only the first two (2) confirmed runs were surface check. VSI-Checkshot was not checked because vibrator still on the way

2. All down-hole equipment was checked on site as per the Equipment QC sheet

3. All rig-up equipment was checked on the site and all with certificates.

4. Successfully setup satellite communication at the wellsite. The crew does experienced a problem the first few hours.

5. RA survey was done prior to moving the sources to assigned secured location.

6. Cablehead was already made up, hence cable test only limited to insulation and continuity test.

SEQUENCE OF EVENTS RUN 1

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	22-Feb-13	Logging Suite	1		Rmc @ temp	0.510	33.4 °C

Start	End	Hrs	Code	Operation and Comments
dd/mm hh:mm	dd/mm hh:mm	(hh:mm)		***Run 1: ECRD/EDTC/SP/PPC/HNGS/PEX(TLD)/HRLA/ADT***
19/02 10:40	19/02 11:00	0:20	1	Conduct pre-job safety meeting on the drill floor with Schlumberger and rig crew. Work permit was issued, and general rig-up and rig-down were discussed. The discussion topic also includes radiation safety.
19/02 11:00	19/02 12:30	1:30	1	Rig up wireline equipment and make up Run 1 tool string-EDTC/SP/PPC/HNGS/HGNS/PEX/HRLA/ADT
19/02 12:30	19/02 12:45	0:15	2	Completed tool rig up and perform surface Tool check. Installed thermometers into the housing of cablehead prior to setting tool "zero depth". Zero tool string at 31.95 m (bottom cablehead) and getting ready to install radioactive sources.
19/02 12:45	19/02 13:00	0:15	2	Installed density and neutron sources. Rih slowly at 1000 ft/hr passing through BOP and to 100m depth for depth control test.
19/02 13:00	19/02 13:20	0:20	3	Stop at 100m and perform depth control I.e marking the cable in front of the IDW. The mark was then moved this mark to the rotary table depth. The depth mark at rotary table was 170.91m. Therefore, the cable distance between the IDW and the rotary table is 70.91 m. The next checkout will be closed to TD.
19/02 13:20	19/02 13:40	0:20	3	Continue running in the hole to 50 m below casing shoe for downhole tool check.
19/02 13:40	19/02 13:55	0:15	4	Opened and log up with caliper into casing shoe and inside casing. ADT caliper read 8.892" and density caliper read 8.594" before resetting to casing ID of 8.9". Reset calipers to nominal casing ID.
19/02 13:55	19/02 15:00	1:05	4	Record down log at 3600ft/hr from 750m to 1721m with SP/GR/SGR/CN/HRLA. All pad devices data were recorded but not usable because of closed calipers. Logging system cannot switch off data from tools if not required. Another depth control performed at 1650.0 m and the depth difference of 0.3m from surface reading.
19/02 15:00	19/02 15:05	0:05	3	Moved up to repeat pass interval. Opening calipers on the way up.
19/02 15:05	19/02 15:25	0:20	5	Record repeat pass at 1800 ft/hr. The PEX (Density, Neutron and Gamma Ray) was logged in Hi res mode (6 spf). No tension over pull experienced on this pass. The logging cable tension was reading 3800lbs, and the head tension was reading 2050lbs.
19/02 15:25	19/02 15:37	0:12	3	Stopped repeat pass and closed calipers. Then run back in the hole to TD for main pass.
19/02 15:37	19/02 17:35	1:58	4	Reached TD and slacked around 2 meters of cable. Opened caliper and start recording main pass with PEX in High Resolution mode. No over pull experienced during logging. The cable speed was maintained between 1400 to 1600 ft/hr. Total depth logger is at 1723.5 m.
19/02 17:35	19/02 18:20	0:45	3	Stopped main pass logging 20m above the 9 5/8" casing shoe. Closed calipers and pull out of the hole to the surface. Casing logger is at 750.0 m.
19/02 18:20	19/02 18:50	0:30	2	Reached surface removed thermometers and radioactive sources. The thermometers read 228, 228 and 226 degf.
19/02 18:50	19/02 19:10	0:20	2	Perform after log verifications and started rig down tool
19/02 19:10	19/02 20:20	1:10	1	Completed rig down run 1.
Total hours:		**9.67**	(decimal)	

Logging Codes:

1. Rigging up, rigging down
2. Calibrations, tool checks
3. Running in, pulling out of hole
4. Logging up, logging down
5. Repeat Section, depth correlation
6. Data transmission, CPU time.
7. NPT due to wireline contractor
8. Drilling / wellbore conditions related NPT

REMARKS

1. Run 1 was the first run in the hole and will serve as the primary depth reference. First run depth control was done as per Schlumberger SOP.

2. All wireline depth was measured from RT - 5.15 m above GL. The GL was 135.0 m above MSL.

3. Well is almost vertical and run 1 was deployed on wireline. The maximum deviation recorded was 2.0 degrees at 932m.

4. Down log was performed and not presented. No downlog data were not used to splice to repeat and main pass for final data delivery.

5. The SP data was recorded for all logging passes. SP tool was the most bottom tool in the toolstring.

6. The HRLA was run stood off and logged at high resolution. Two sets of rubber fin standoffs were positioned below and above the sonde. The average fin width was about 1.5 inches. 4 fins were required to makeup one rubber fin stand-off.

7. Only internal check was done for HRLA. The sonde electrodes were not checked using the special test harness.

8. The density caliper (PEX) and ADT caliper read 8.594" and 8.892" inside casing during before log check. True casing ID = 8.914". Caliper data was corrected to true casing ID before BHV and CV calculations were completed. The density and ADT caliper calibrations were done on the surface during surface checkout. 8" and 12" caliper rings were used for calibrations.

9. Total hole volume = 39.55 m^3 computed from 1723.5m - 750 m using data from Density-arm calliper.

10. Total cement volume = 24.77 m^3 computed from 1723.5 m - 750 m using data from Density-arm calliper for 5 1/2" casing to set.

11. The borehole temperature from the maximum reading thermometers were 108.9 deg C, 108.9 deg C and 107.8 deg C at 1691.0 m after 11 hours 20 min final TD circulation stop.

12. ADTdata were not observed and QC properly during logging. All ADT data require further process in town to get the final ouput data. While logging only the diagnostic data flags were used, to ensure ADT working properly.

13. No tension overpull experienced while logging.

14. Radioactive installation and retrievable were done safely. Tugger line was used to bring the RA sources from catwalk to the rig floor.

OBSERVATIONS AND LOG QUALITY CONTROL

* DEPTH CONTROL:	Run1 will serve as the main depth reference file. Depth control SOP was done properly by the logging crew.
* EDTC:	Good repeatable data recorded. EDTC also give out additional GR data. This the shallowest GR data from the log
*HNGS	Data from Uranium(URAN), Potassium(POTA) and Thorium(THOR) responding normally over all the formations logged. Only at the interval between 975 m to 978 m, Uranium curve read higher than normal but the K, and TH showed no increment at all. Good repeaatble data recorded.
*HGNS	Good repeatble data recorded. All the parameters used for loggings were correct. Neutron porosity data were badly affected by the borehole rugosity and washout. Neutron was recorded in Limsetone Matrix. Borehole correction and mud salinity correction applied. Mud salinity used 41,277 ppm from the whole mud.
*TLD	Good repeatable data recorded. All the parameters used for loggings were correct. Density data were badly affected by the borehole rugosity and washout. The tool string was setup with short-axis mode. Mud weight and borehole correction applied to the density data. PEF value over the sandstone was around 2.0 (slightly on the high side). Limestone compatible scale used for presentation.
*MCFL	Good repeatable data recorded. RXO data read lower than HRLA due to borehole enlargement. RXO data were badly affected by the borehole rugosity and washout.
* HRLA:	Good repeatable data recorded. The shallowest HRLA resistivity (RLA1) read higher than the deepest resistivity (RLA5) due to borehole enlargement.
*ADT	ADT output data was not QC during logging. Data need further processing. All QC flags were good.
* SP:	Good data recorded.

SEQUENCE OF EVENTS RUN 2

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	22-Feb-13	Logging Suite	1		Rmc @ temp	0.510	33.4 °C

Start	End	Hrs	Code	Operation and Comments
dd/mm hh:mm	dd/mm hh:mm	(hh:mm)		***Run 2 - ECRD/EDTC/PPC/MAST/PPC/GPIT***
19/02 20:20	19/02 21:15	0:55	2	Crew work on one of the PPC tool arms back to normal standard operation. Function test 2 PPC calipers together and calibrate caliper.
19/02 21:15	19/02 22:00	0:45	1	Rig up run 2 -EDTC/PPC/MAST/PPC/GPIT and installed thermometers in cablehead.
19/02 22:00	19/02 22:10	0:10	3	Set zero @25.46 m and rih. No functional check on Sonic Scanner prior running in hole. Requested to check tool and experienced same tool initialization failure as seen on job preparation at the wellsite.
19/02 22:10	19/02 23:05	0:55	7	Engineer decided to move back to surface for troubleshoot the Sonic Scanner tool. Same initialization problem experienced during job preparation on surface. Tool initialization process solved and reset tool ZERO and continue running in the hole to casing shoe.
19/02 23:05	19/02 23:40	0:35	3	Running in the hole to casing shoe for PPC caliper check. Casing arrival while running in hole read 55us/ft
19/02 23:40	19/02 23:50	0:10	2	Reached the casing shoe and verify PPC calipers.
19/02 23:50	20/02 00:35	0:45	4	Log down sonic scanner in BHC mode at 6,000ft/hr from casing shoe to 1710.0 m
20/02 00:35	20/02 00:55	0:20	5	Moved up to repeat interval. Set the sonic scanner in standard full wave mode and logged repeat pass from 1670.0 m to 1570.0 m.
20/02 00:55	20/02 01:00	0:05	3	Stopped repeat pass and close PPC calipers. Run in the hole to TD for main pass.
20/02 01:00	20/02 04:55	3:55	4	Log main pass from TD to surface. Logging speed set in between 1400 to 1600 ft/hr. Sonic scanner set to standard fullwave mode.
20/02 04:55	20/02 05:00	0:05	2	On the surface and read thermometers. Thermometers read 238, 238 and 236 degF.
20/02 05:00	20/02 05:40	0:40	1	Rig down run 2.
Total hours:		**9.33**	(decimal)	

Logging Codes:

1. Rigging up, rigging down
2. Calibrations, tool checks
3. Running in, pulling out of hole
4. Logging up, logging down
5. Repeat Section, depth correlation
6. Data transmission, CPU time.
7. NPT due to wireline contractor
8. Drilling / wellbore conditions related NPT

REMARKS

1. Run 2 was tied into main pass of Run 1: SP/HNGS/PEX/HRLA/ADT.
2. Sonic scanner (MAST) and GPIT were run centralised using slipover centralizers and Powered Calipers(PPC)
3. Sonic scanner log in standard fullwave mode from TD to surface. Fullwave mode logging consisting of fullwave monopole, inline dipole and cross dipole.
4. Sonic scanner casing log can be used to evaluate the cement bond qualitatively behind the 9 5/8" casing.
5. General Positioning Inclinometry Tool is required to provide directional data for sonic cross dipole anisotropy processing
6. GPIT will not give valid data inside casing, hence not processing can be done for anisotropy determination.
7. PPC calipers were closed when logging inside casing.
8. Logging down from casing shoe to 1710m at 6,000 ft/hr. BHC mode was used for sonic scanner logging, whilst calipers were in a closed position.
9. The borehole temperature from the maximum reading thermometers were 114.4 deg C, 114.4 deg C and 113.3 deg C at 1697m after 22 hours 40 min final TD circulation

OBSERVATIONS AND LOG QUALITY CONTROL

*** DEPTH CONTROL:**	**Log correlated to Run 1 - SP/HNGS/PEX/HRLA/ADT**
*** EDTC:**	**Good repeatable GR data recorded.**
*** PPC:**	**Both PPC calipers work and good repeatable data recorded. Formation anisotropy can be seen from the behaviour of the orthogonal calipers of the PPC.**
*** MAST(Sonic Scanner):**	**Good repeatable data recorded. Shear arrival from monopole disappeared from about 1115m due to soft Wallumbilla Formation. The Shear arrival can be obtained from the dipole waveform arrival.**
*** GPIT:**	**Good repeatable data recorded. All the output positioning data from the tool were good as per the well location.**

SEQUENCE OF EVENTS RUN 3

afriQA extending your reach...

Drillsearch

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	22-Feb-13	Logging Suite	1		Rmc @ temp	0.510	33.4 °C

Start	End	Hrs	Code	Operation and Comments
dd/mm hh:mm	dd/mm hh:mm	(hh:mm)		***Run 3: 1x VSI (CHECKSHOT)***
20/02 05:40	20/02 06:10	0:30	1	Rig-up Run 3 tool string
20/02 06:10	20/02 06:35	0:25	2	Function test vsi with the vibrator and Install thermometers in cable head.
20/02 06:35	20/02 06:55	0:20	4	Stop at 140.15m (MSL) to perform checkshot check point. Several shot were taken to improve signal to noise seen during data processing. Close anchor and move down to the next checkshot check point.
20/02 06:55	20/02 07:20	0:25	4	Stop at 633.0 m to perform the second checkshot check point. Several shots were taken to improve signal to noise during processing. Close anchor and run in the hole for GR correlation.
20/02 07:20	20/02 08:10	0:50	3	Stop at 1650m to start depth correlation with run:1
20/02 08:10	20/02 08:40	0:30	5	Perform depth correlation using GR (from EDTC). Depth shifted applied and moved to TD to do first checkshot level.
20/02 08:40	20/02 09:25	0:45	4	First checkshot level at 1721.5m. Geophone received data were noisy. Referencing to run:1, area around TD was full of washout zone. Several shots were made, but received data was still noisy. Moved tool up to 1721.0m to see if this depth can provide a better result. The data improved drastically, and several shots were attempted to improve signal to noise ratio.
20/02 09:25	20/02 11:35	2:10	4	Proceed shooting at the requested checkshot levels: 1622m, 1526m, 1456m, 1408m, 1315m, 1290.12m, 1210.6m, 978.19m, 940.47m and 750.0 m. Several shots were attempted every depth to improve signal to noise ratio when data are stack. When done moved up to 140.15 (MSL) for calibration checkshot.
20/02 11:35	20/02 12:35	1:00	4	Reached 140.15m to do this MSL checkshot.
20/02 12:35	20/02 12:55	0:20	4	Several shots attempted at 140.15m depth to improved data. When done moved to GL at 10.6m.
20/02 12:55	20/02 13:05	0:10	4	Performed the last checkshot level at 10.6m. Very noisy data observed and tried to remove the noise source. Several shots were attempted to improve signal to noise ration.
20/02 13:05	20/02 13:12	0:07	3	Out of the hole and removed thermometer for inspection. Thermometer read 246, 247 and 246 degF.
20/02 13:12	20/02 13:17	0:05	1	Start rigging down VSI tool and sheaves
20/02 13:17	20/02 13:40	0:23	1	Complete rig down and rign to Ensign.
Total hours:		**8.00**	(decimal)	

Logging Codes:

1. Rigging up, rigging down
2. Calibrations, tool checks
3. Running in, pulling out of hole
4. Logging up, logging down
5. Repeat Section, depth correlation
6. Data transmission, CPU time.
7. NPT due to wireline contractor
8. Drilling / wellbore conditions related NPT

REMARKS

1. Run 3 was tied into Run 1 depth at 1670 m.
2. Checkshot survey performed from the deepest to the shallowest level. Checkshot depth were all from the formation tops seen on run:1 and mud logging.
3. Several checkshot calibrations points were taken on the way in the hole. It values repeating within tolerances on the way out.
4. Checkshot Survey was also done at GL and MSL. Background noise increase as the depth get closer to surface.
5. Reduction in signal gain was used in order to interpret signal better as the depth get closer to surface.
6. The borehole temperature from the maximum reading thermometers were 118.9 degC, 118.9 degC and 119.4 degC at 1711m after 28 hours 20 min final TD circulation

OBSERVATIONS AND LOG QUALITY CONTROL

DEPTH CONTROL:	**Log correlated using GR curve to Run 1 - SP/HNGS/PEX/HRLA/ADT**
EDTC:	**Good repeatable GR data recorded.**
VSI	**Good checkshot survey data recorded. The velocity profile (Time vs TVD Depth plot) use to QC survey data real time.**

Operating Efficiency Chart

DRILLSEARCH ENERGY LIMITED

Tibor-1

Runs 1 - 3

LQC LOG PRESENTATIONS

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	20-Feb-13	Suite	1		Rmc @ temp	0.510	33.4 °C

LOG DATA		Run 1 HRLA/MCFL	Run 1 TLD/HGNS	Run 1 HNGS	Run 2 MAST
PRESENTATION	HEADING,INSERT,TAIL: Accuracy & completeness	OK	OK	OK	OK
	TD/FR/CSG - TOOL SKETCH (when applicable)	OK	OK	OK	OK
	MUD/RMF/TEMP:-WELL SKETCH (deviation) _TOOL/SOFTWARE TYPE/No.	OK	OK	OK	OK
	CURVE ID/SCALES	OK	OK	OK	OK
	PRINT QUALITY (digital copy)	OK	OK	OK	OK
	DATA FORMAT DELIVERY: LAS, ACROBAT PDF and PDS for LOGS and SEG-Y for VSP	OK	OK	OK	OK
	REMARKS	OK	OK	OK	OK
	LOGGING INCIDENTS- Wiper trips- Special circumstances affecting log	Note 1	Note 1	OK	OK
CALIBRATIONS	SHOP CALIBRATION - BEFORE SURVEY	OK	OK	OK	OK
	AFTER SURVEY	OK	OK	OK	OK
	TOP LOGGED INTERVAL	750.0 m	750 m	750 m	10 m
	BOTTOM LOGGED INTERVAL	1723.5 m	1723.5 m	1723.5 m	1723.5 m
OPERATING PROCEDURES	DEPTH MATCH/CONTROL: Overlap logs from separate runs	OK	OK	OK	Note 2
	LOGS ARE CORRECTED FOR BOREHOLE EFFECTS	OK	Note 6	Note 7	OK
	LOGGING SPEED	OK	OK	OK	OK
	LOGS ARE CORRECTED FOR ANY NOISE, SPIKES, etc…..	OK	OK	OK	OK
	CENTRALIZATION/STAND OFF	OK	OK	OK	OK
	SOFTWARE TYPE/CONSTANTS, SAMPLING RATE	Note 3	Note 3	Note 3	Note 3
	STANDARD SCALES	OK	OK	OK	OK
	REPEAT SECTION	OK	OK	OK	OK
	RESPONSE IN AGREEMENT WITH NEARBY WELLS	Note 4	OK	OK	OK
	LOG ANOMALIES/FAILURES	Note 4	OK	OK	OK
	GENERAL DATA QUALITY	OK	OK	OK	OK
	PRINT QUALITY	OK	OK	OK	OK
	DOCUMENTS IN FINAL PACKAGE IN AGREEMENT WITH CLIENT LIST	OK	OK	OK	OK

LOGGING ENVIRONMENT					
ENVIRONMENTAL EFFECTS	IRREGULAR TOOL MOTION	OK	OK	OK	OK
	BOREHOLE/CASING GEOMETRY	Note 5	Note 5	Note 5	Note 5
	Casing/tubing not to spec, damaged - Poor cementation - Multi-string casing/tubing	OK	OK	OK	OK
	HOLE/CASING FLUID				
	INTERFERENCE: External noise - Nearby casing - Debris - Fish	OK	OK	OK	OK
	Formation of unusual mineralogical composition or texture	OK	OK	OK	OK
	OUTSIDE TOOL SPECS: Temperature - Pressure - Hole size - Deviation	OK	OK	OK	OK

REMARKS L Q C LOG PRESENTATIONS

Please refer to SOE sheets for service specific LQC remarks

NOTE 1	Washed out areas advesrely affected the log data.
NOTE 2	Run 2 was depth matched to Run 1 between 1670 m and 1570 m.
NOTE 3	Run 1 and 2 were recorded in Maxwell.
NOTE 4	HRLA shallow resistivity measuring higher than the deep resistivity in washed out hole.
NOTE 5	There were sections of borehole break-out observed over the open hole interval.
NOTE 6	HGNS neutron corrected for hole size and borehole salinity only.
NOTE 7	Borehole k% applied to HNGS data.

LQC LOG PRESENTATIONS

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	MaryKate Henrikson/Tamara Svetlichnaya	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	20-Feb-13	Suite	1		Rmc @ temp	0.510	33.4 °C

LOG DATA		Run 2 PPC	Run 2 GPIT		
PRESENTATION	HEADING,INSERT,TAIL: Accuracy & completeness	OK	OK		
	TD/FR/CSG - TOOL SKETCH (when applicable)	OK	OK		
	MUD/RMF/TEMP:-WELL SKETCH (deviation) _TOOL/SOFTWARE TYPE/No.	OK	OK		
	CURVE ID/SCALES	OK	OK		
	PRINT QUALITY	OK	OK		
	DATA FORMAT DELIVERY: LAS, ACROBAT PDF and PDS for LOGS and SEG-Y for VSP	OK	OK		
	REMARKS	OK	OK		
	LOGGING INCIDENTS- Wiper trips- Special circumstances affecting log	OK	Note 1		
CALIBRATIONS	SHOP CALIBRATION - BEFORE SURVEY	OK	OK		
	AFTER SURVEY	OK	OK		
	TOP LOGGED INTERVAL	750 m	750		
	BOTTOM LOGGED INTERVAL	1273.5 m	1273.5 m		
OPERATING PROCEDURES	DEPTH MATCH/CONTROL: Overlap logs from separate runs	OK	OK		
	LOGS ARE CORRECTED FOR BOREHOLE EFFECTS	OK	OK		
	LOGGING SPEED	OK	OK		
	LOGS ARE CORRECTED FOR ANY NOISE, SPIKES, etc…..	OK	OK		
	CENTRALIZATION/STAND OFF	OK	OK		
	SOFTWARE TYPE/CONSTANTS, SAMPLING RATE	Note 2	Note 2		
	STANDARD SCALES	OK	OK		
	REPEAT SECTION	OK	OK		
	RESPONSE IN AGREEMENT WITH NEARBY WELLS	OK	OK		
	LOG ANOMALIES/FAILURES	OK	OK		
	GENERAL DATA QUALITY	OK	OK		
	PRINT QUALITY	OK	OK		
	DOCUMENTS IN FINAL PACKAGE IN AGREEMENT WITH CLIENT LIST	OK	OK		

LOGGING ENVIRONMENT					
ENVIRONMENTAL EFFECTS	IRREGULAR TOOL MOTION	OK	OK		
	BOREHOLE/CASING GEOMETRY	Note 3	Note 3		
	Casing/tubing not to spec, damaged - Poor cementation - Multi-string casing/tubing	OK	OK		
	HOLE/CASING FLUID	OK	OK		
	INTERFERENCE: External noise - Nearby casing - Debris - Fish	OK	OK		
	Formation of unusual mineralogical composition or texture	OK	OK		
	OUTSIDE TOOL SPECS: Temperature - Pressure - Hole size - Deviation	OK	OK		

REMARKS L Q C LOG PRESENTATIONS	
Please refer to SOE sheets for service specific LQC remarks	
NOTE 1	Run 2 was depth matched to Run 1.
NOTE 2	Run 2 was recorded in Maxwell.
NOTE 3	There were sections of borehole break-out observed over the open hole interval.

SUMMARY AND RECOMMENDATIONS

Well	Tibor-1	TD Driller	1723.00	m	CSG Shoe Driller	751.00	m
Block	ATP 539	TD Logger	1723.50	m	CSG Shoe Logger	750.00	m
EWL Contractor	Schlumberger	Bit Size	8.50	in	Circ Stopped at TD	19-Feb-13 04:20	dd/mm/yy hh:mm
Job date	19-Feb-13	Max Dev @ depth	2.00	deg @ 932 m MDRT	Circulation time	60	min
Logging Engineer	Mary Kate Henrickson/Tamara S.	Mud Type	3KCL-PHB-Polymer		Rmf @ temp	0.130	33.4 °C
Logging Witness	Rothi Hamzah/Alan Wrightstone/B.Craig	Mud Weight	9.3	ppg	Rm @ temp	0.130	33.4 °C
Report Date	20-Feb-13	Suite	1		Rmc @ temp	0.510	33.4 °C

RUN	SERVICES	RIG UP dd/mm hh:mm	RIG DOWN dd/mm hh:mm	TOTAL TIME	LOST TIME (due to Contractor)	LOST TIME (3rd Party NPT)	BHT °C	TEMP DEPTH m TVDBRT
Run 1: ERCD/EDTC/SP/PPC/HNGS/PEX(TLD)/HRLA/A		19/02 10:40	19/02 20:20	09:40	00:00	00:00	108.9	1691.0
Run 2 - ERCD/EDTC/PPC/MAST/PPC/GPIT		19/02 20:20	20/02 05:40	09:20	00:55	00:00	114.4	1697.0
Run 3 Checkshot - 1 X VSI with Vibrosis		20/02 05:40	20/02 13:40	08:00	00:00	00:00	118.9	1711.0
TOTAL TIME FOR WIRELINE OPERATIONS				27:00	0:55	00:00		
OPERATING EFFICIENCY (1-LT/OT)x 100				96.60%				

SUMMARY

Tibor-1: This is the second well for Drillsearch in this block ATP 539P. As usual being an exploration well, Tibor-1 is a vertical well. Based on the mud logging result, the total drill depth was shallower than planned when the Hutton Formation top came higher. Once again, based on the mud logging result, the Dry Case logging programme came to forced.. Only three (3) logging run attempted 1: Triple Combo/ADT 2: Sonic 3: Checkshot.

The crew of six (6) and all the logging equipment mobilized from Roma arrived to the wellsite on the 18th February24hrs before the rig up time. The only delay was on the seismic vibrator truck. The vibrator truck arrived at the wellsite the next day when the logging operation already started. The crew started checking the first two confirmed runs. The MDT and MSCT run were not check and kept inside the tool basket. The crew decided to check the VSI-Checkshot together with the vibrator and extremely confident that the tool will work. The surface checkout went well except the sonic scanner. The sonic scanner appeared not initializing properly. The only way to get it to work was by running diagnostic test to test the tool internal cartridge. The first run is setup differently, to position the TLD and ADT pads across the short axis (smaller ID).

On the job, no tool problem experienced for the first run – SP/HNGS/PEX/HRLA/ADT. Standard depth control process applied for the first run in hole. The technique was just comparing the difference in the distance from the IDW to the rotary table, near the surface and close to a total depth. Log down logged from casing shoe to 2710.0 m at 3600 ft/hr. The downlog data can be used to splice or merge with main pass log if required. Only pad device data were unusable because the calipers still remain in close position. Repeat log interval was logged from 1670 m to 1570 m. This selected interval will comprise of top Hutton sandstone and Birkhead sandstone. Main pass logged from the total depth to 9 5/8" casing shoe. Density, Gamma Ray Neutron and Laterolog logged in high resolution mode. Density, neutron and MCFL data quality were affected by borehole rugosity and washout. The short axis mode was not working for Hutton and Birkhead sandstone. All tool calibrations and verifications were all within tolerances.

The second run Sonic Scanner (MAST) failed again on tool initialization on surface. NPT recorded for this problem is 55 minutes. Two sets of PPC and slip-over centralizers utilised to keep the sonic scanner centralized in the borehole. Repeat pass logged over the same interval as the first run. Main pass logged, from TD to surface at 1800 ft/hr. The sonic scanner logged in standard mode for both passes. GPIT ran in combination with sonic scanner for anisotropy processing.
VSI-Checkshot was the third run. The vibrator used as the sonic energy source and positioned within 50m from the rig. A single level VSI tool used gamma ray for depth correlation from EDTC section. Several calibration shots attempted at different depth while running in hole to TD. All requested formation tops completed without serious problems. Several planned shot depths need to be revised due to poor signal close to washout zone. The MSL and GL checkshot performed as planned.

Total operating time (OT) of the whole operations is 27 hrs with NPT of 55 minutes.

HIGHLIGHTS INCLUDED

1. Successful setting up stattelite communication with schlumberger base.
2. Introduction of short-axis modification on first run to improve PEX and ADT across washout zone.
3. Good commitment shown by the logging crew during the entire operation.
4. Good quality geological and petrophysical data recorded. Most of the data read closely to the offset well.
5. Good collaboration between Schlumberger office based personnel and the field to process the ADT and Sonic scanner log.
6. Engineer making sure main pass was on depth to avoid delay in processing later. Engineer experience in data formating and deliverable process.
7. Engineer provide maintenance history for tools mobilized.
8. No HS&E issues during the entire operation.

LOWLIGHTS INCLUDED

1. Sonic scanner had same initialization problem and more serious this time. On Triclops-1 tool required several quick power up to get it to work. Same tool used for both wells.

2. Fishing kit only has one size spiral grapple, 3 3/8". The kit should be completed with 3 5/8" spiral grapple in it.

3. Interact communication only streaming logging PDs and not the actual logging data for the first two (2) runs.

4. All log data QCed base on the data flags. Green is good, and Red is bad. This stop the engineer from reading the displayed curves and take necessary actions required.

5. Engineer still struggles to understand the sonic scanner presentation and sonic show windows on the screen.

7. Standalone system with no backup wasn't desirable for a job that is far away from any wireline base. At the very least, the main CPU where the system program reside should have a backup.

8. Only one (1) set of tools was mobilized to location except another PEX(TLD) and VSI. Backup PEX(TLD) if run need new calibration in town. This tool still has old calibration saved inside it.

8. MCFL and HRLA checked without test box. Only HRLA test box available but not used during surface checkout.

9. PPC adjustment (previously used for short axis) and calibration tool long time to do (55 minutes), prior rigging up run 2.

10. The Radioactive storage area at the well site need better security. The shields need another long chain and safe-lock to secure to any structure at the well site. A copy of all radioactive materials should be given to rig superitendent.

RECOMMENDATIONS

1. Interact data streaming should be able to streaming the log data real time. Schlumberger base system should have the capability to manipulate log data. In this case, it will help the crew at the wellsite to concentrate on the logging operations better.

2. Cable head maintenance records and cable book need to be kept inside the logging truck at all times.

3. Tools mobilized to wellsite should have most up to-date calibration.

4. Fishing kit mobilized to wellsite should come with the inventory list.

5. ALARA should be followed closely during any type of radioactive usages at the wellsite. Ensure new operators trained to handle radioactive.

BEST PRACTICES

Ensure all runs are checked on primary and back-up surface system and that all calibrations are available on both systems.
Initiate a customer rig book in aiding efficient hand-over between engineer in charge and assisting the problem tracking process.
Assign dedicated crew chiefs to assist engineers during rig-up and rig-down operations, thus eliminating extended working hours.
All field logs to be QC'ed by afriQA witness before final field copies are distributed.
Unspliced and marked wirelines need to be assigned for all exploration projects.
Make use of dedicated field crews as far as practically possible to drive continuous improvement.
Schlumberger EIC/FSM must officially update the client once per week on all outstanding and close out action items assigned.