SURPRISE-1

WELL COMPLETION REPORT
(Interpretive)

EP 115
Amadeus Basin
Northern Territory

11th Oct. – 5th Dec. 2010

Central Petroleum Limited

Well Name:	Surprise-1
Well Classification:	Exploration
Interest Holders:	Central Petroleum Limited (Operator 100%)
Petroleum License:	EP 115, Northern Territory
Location:	Northing: 7377073m Easting: 601261m Latitude: 23º 42' 50.758S" South Longitude: 129º 59' 36.091"E East Australian Map Grid Zone : GDA 94, Zone 52
Ground Level (GL):	545m asl
Kelly Bushing (KB):	550.2m asl - Datum
Total Depth (KB):	2555m (interim)
Drilling Contractor:	MB Century Drilling
Drilling Rig:	Century Drilling Rig 7 (See Rig Specifications in Appendix 10)
Contractors:	Drilling Fluids: Australian Mud Company Mud Logging: Weatherford Wireline Logging: Weatherford Cementing: Viking Energy Earth Works/water carting: BJT Services
Spud Date:	11th October 2010
Total Depth Reached:	2nd December 2010
Rig Released:	5th December 2010
Well Status:	Plugged and Suspended.

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1.0 Introduction and Summary

Surprise-1 was drilled by Central Petroleum Ltd in EP-115 in the western part of the Amadeus Basin, Northern Territory, approximately 400km west of Alice Springs (Figure-1 & -2). The well was spudded on 11th October 2010 and reached interim TD of 2555m.

The primary aim of Surprise-1 was to test the hydrocarbon potential of a salt cored anticlinal structure mapped at the Pacoota and Stairway Sandstones. Secondary objective was to core the shales of the Horn Valley siltstone, a sequence which separates the Pacooota and Stairway sandstones, in order to obtain information regarding the potential shale gas in this area.

During drilling good oil shows were encountered in the Lower Stairway Formation and a core was cut over the interval 2546-2555m. The core recovered 8.38m of fair to good reservoir quality sandstone with excellent oil shows and free oil.

A wireline formation tester and sampler was run but due to the rig mechanical problems whilst attempting wireline formation testing the well was terminated, so the Horn Valley siltstone and the Pacoota sandstone were not penetrated.

On the 2nd December 2010 the well was halted due to mechanical problem with the rig's mast after attempts to rectify the problem failed. The well was plugged and suspended on the 5th December 2010. Daily drilling and geological reports are provided in Appendices 1 and 2.

Basic well results are summarised in the Well Index Sheet (Table-1).

Figure 1: Surprise-1 Location and Permit Map

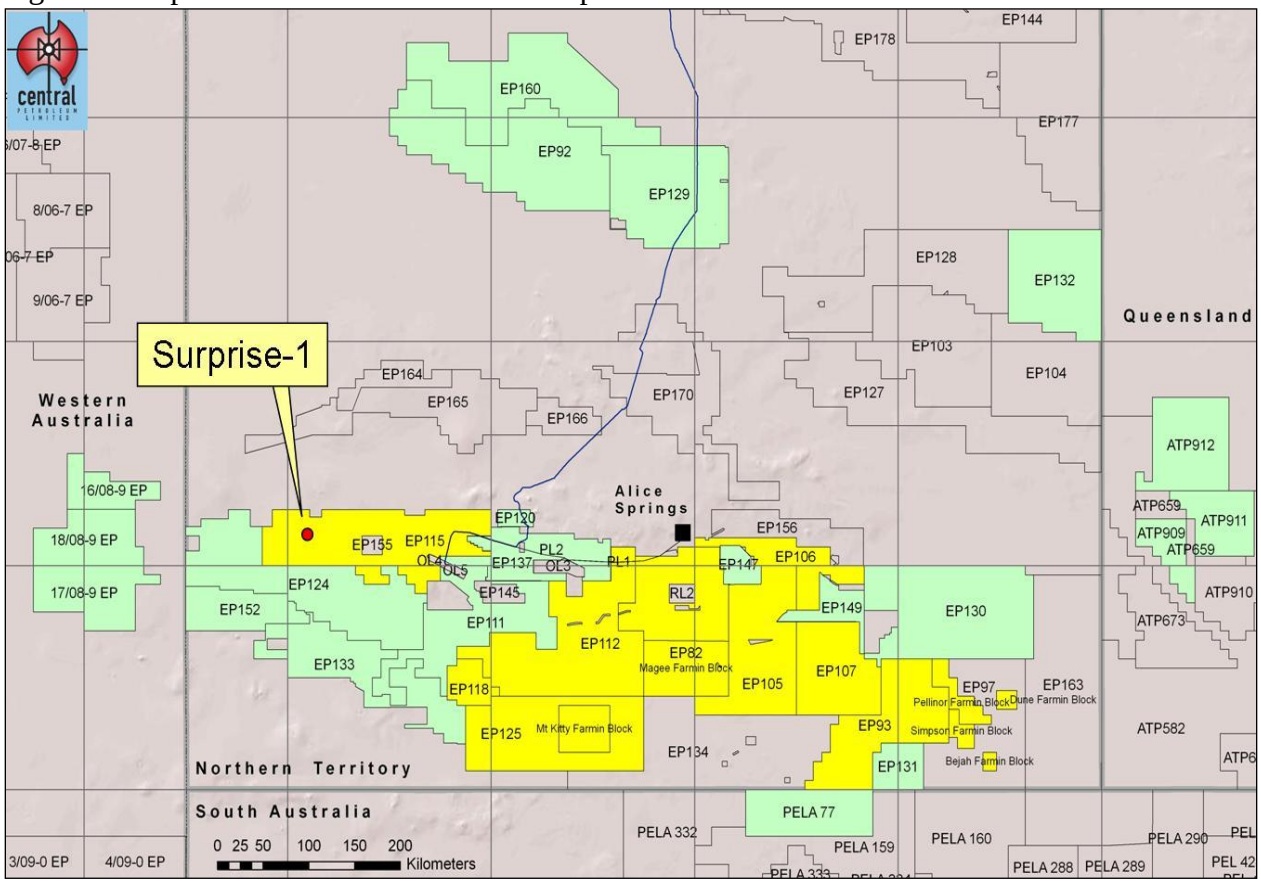
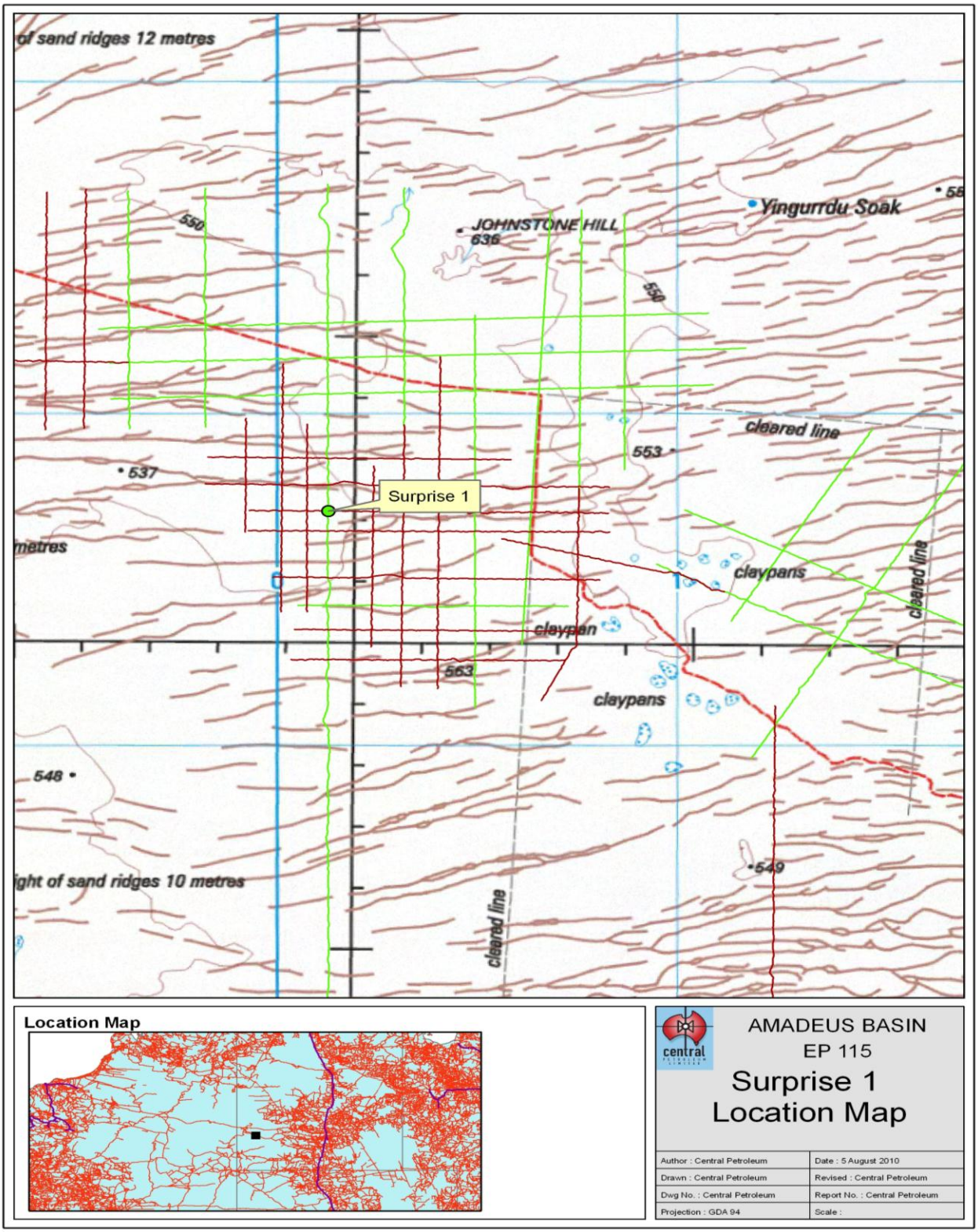


Figure 2: Surprise-1 location map and seismic lines.



2.0 General Data

Table 1: Surprise-1 Well Index Sheet.

WELL NAME: Surprise-1 **OPERATOR:** Central Petroleum Limited			**CLASSIFICATION :** Exploration			
Location: Latitude 23º 42' 50.758"S Longitude 129º 59'36.091"E GDA 94 Zone 52	**Rig Details:** Rig Name: MB Century Rig 7 Contractor: Century Drilling Rig Type: land		**Dates:** Spud Date: 11th Oct 2010 TD Date: 2nd Dec 2010 Rig Released: 5th Dec 2010			
Basin: Amadeus **Field:** Wildcat **Permit:** EP 115, Northern Territory, Australia.	**Depths:** Surface Elevation (asl): 545m Rig Datum, KB: 5.2m agl Total Depth: 2555m		**Status:** Capped and suspended			
Casing/Liner Details: Size Depth 20"Conductor 21.3m 13⅜" 493.82m 9⅝" 1443.4m	**Mud Details:** Mud Type KCL polymer mud 5.2 - 2555m.		**Trajectory:** Vertical (3 deg @ TD)			
Coring Details: Core#1: 2546.2 - 2555m rec	**Sidewall Cores:** No side wall coring was executed		**Cuttings Interval** **Sample Rate** 23m - 340m 10m 340m - 1300m 5m 1300m - 2546 3m			

FORMATION	**MD KB (m)**	**TVD KB (m)**	**Isopach TVD (m)**	**SubSea TVD (m)**	**TWT msec**	**Comments**
Undiff Recent alluvium	5.2	5.2	64.8	+545.0	Nd*	Recent-Quaternary
Undiff Pertnjara Group	70	70	710	+478.7		Mid- Late Devonian
Brewer/Hermannsburg	780	780	515.6	-231.3		Mid Devonian
Parkes Siltstone	1296	1296	461.4	-746.9		E Devonian
Mereenie Sandstone	1768	1758.5	513	-1208.3		Sil-E Devonian
Stokes Siltstone	2282	2271.5	172.7	-1721.3		E. Ordovician
Upr Stairway Sandstone	2450	2444.2	43.8	-1894.0		E. Ordovician
M Stairway Sandstone	2475	2488.0	51.5	-1937.8		E Ordovician
Lwr Stairway Sandstone	2542	2539.5	19	-1989.3		E Ordovician
Total Depth	2555	2550		-2004.8		

LOGGING

Date	Depth (m) From	Depth (m) To	Description	Remarks
3 Dec 10	2497.2 2475	2498.9 2526	FRT-GR (gamma interval)	Packer set 2497.2-2498.9m, tool stuck, attempt fish. Tool retrieved by crane
				Rig problems prevented further evaluation by logs

Depth at TD 2555mKB 2550mTVDKB	Latitude S	Longitude E	Max deviation 8.5º at 1638m Azi 89 º

Well Testing: No tests conducted as rig derrick problems caused well to be abandoned before adequate formation evaluation was possible.

3.0 Drilling

3.1 Summary of Drilling and Related Operations

The MB Century Rig 7 was rigged up on 11th October 2010 and the conductor hole was drilled to 7.2m MDRT with a 17 ½" drill bit. The mouse hole and rat hole were drilled and scabbards installed.

Surprise-1 was spudded at 1130 hours on 11th October 2010. The 17 ½" insert bit drilled the conductor hole with the kelly held straight by winch lines to 23m MDRT. Approximately 45 hours were lost while waiting on the 26" hole opener which got significantly delayed. During this period other rig up operations were completed and equipment for the future BHA's prepared.

The conductor hole was then opened to 26" with the hole opener which was made up with an 8" drill collar. This assembly was tripped out and the drill floor was rigged up to run the 20" conductor pipe.

20" Casing

The 20" 133ppf K-55 LynxSA conductor casing was ran on 14th October 2010. The casing was landed on bottom at 21.3m MDRT. 93 sacks of Class G cement was used to cement the conductor pipe in place.

Drilling 17 ½" Surface Hole

The 17 ½" BHA was picked up with a 9 ½" X-Treme mud motor and a 17 ½" Reed insert bit. Drilling proceeded to 53m MDRT where a wireline survey was conducted. Drilling continued to 347m MDRT whereby a wireline survey was taken at 164m MDRT & 341m MDRT.

The BHA was tripped out due to the reduced rate of penetration and it was found that the centre jet was missing. A new 17 ½" Reed mill tooth bit was made up with the same BHA and also an additional 2 x 8" drill collars were picked up and tripped in. Drilling proceeded to section TD at 499m MDRT whereby a wireline survey was conducted. 50 barrels of high viscosity sweep was pumped downhole and the 17 ½" BHA was tripped out.

13 3/8" Casing

The 13 3/8" 54.5ppf K-55 BTC surface casing was ran on 19th October 2010. The casing was landed on bottom at 493.8m MDRT with the float shoe at 493.5m MDRT and the float collar at 481.9m MDRT.

The surface casing was cemented in place with 194bbls of 12.8ppg lead cement and 98bbls of 15.6ppg tail cement. Cement returns at surface started when they were 151bbls into the displacement and waited on cement for 5 hours.

The BOP's were nippled up and pressure tested on 21st October 2010, though there was some trouble with the BOP leaking.

Drilling 12 ¼" Intermediate Hole

The 12 ¼" BHA was picked up with the 9 ½" X-Treme mud motor and a 12 ¼" Reed insert bit. The shoe track was drilled out with 3m of new formation whereby a formation integrity test was performed. With 8.6ppg water in the hole and a maximum pressure of 1500psi was recorded without formation breakdown, gives an equivalent mud weight of 26.4ppg.

Drilling proceeded to 667m MDRT whereby a wireline survey was conducted. Drilling continued to 739m MDRT and the BHA was tripped out for a bit change. A new 12 ¼" Reed insert bit was picked up with an additional 6 x 6 ½" drill collars. Drilling proceeded to 971m MDRT whereby a wireline survey was carried out. Drilling then continued to 1,162m MDRT where the washpipe had to be replaced. The drill string was pulled to the last casing shoe.

The drill string was tripped in again and drilling recommenced to 1,210m MDRT. The drill string was observed to be turning to the left when the mud pumps were on idle during a connection. It was decided to trip out the drill string. The mud motor was checked at surface and it was found that fluid was bypassing the mandrel. The valve on the mud pump, stand pipe, upper kelly cock, lower kelly cock and full bore stabbing valve were pressure tested.

A new X-Treme mud motor was picked up with a new 12 ¼" Reed insert bit and tripped in. Drilling proceeded to 1,296m MDRT whereby a wireline survey was taken. Drilling continued to the section TD 1,447m MDRT whereby another wireline survey was taken. A wiper trip was conducted to 1,150m MDRT with some tight spot encountered from 1,358m MDRT to 1,320m MDRT. The drill string was tripped out and laid down.

9 5/8" Casing

The 9 5/8" 47ppf N-80 BTC Intermediate casing was ran on 3rd November 2010. The casing was landed on bottom at 1,443.44m MDRT with the float show at 1,442.9m MDRT and float collar at 1,430.9m MDRT.

The intermediate casing was cemented in place with 230bbls of 12.8ppg lead cement and 65bbls of 15.6ppg tail cement. Bled back 3bbls of cement and waited cement for 6 hours.

The BOPs were nippled up, 'B' section installed and BOP was pressure tested. The secondary seals on the 'B' section could not be pressure tested as the pressure was not being held.

Drilling 8 ½" Production Hole

The 8 ½" BHA was picked up with the 6 ¾" X-Treme LS mud motor and an 8 ½" Reed PDC bit. The shoe track was drilled out with 3m of new formation whereby a formation integrity test was performed. With 9.0ppg mud in the hole and a maximum pressure of 2,497psi was recorded, gives an equivalent mud weight of 19.9ppg.

Drilling proceeded to 1,658m MDRT whereby a wireline survey was conducted. Decision was made to pull the bit out of the hole to check it and change the BHA since the inclination was increasing. The bit was tripped in again with an 8 ½" stabilizer placed above the mud motor.

Drilling commenced to 1,708m MDRT whereby a wireline survey was taken indicating decreasing inclination. Drilling continued to 1,739m MDRT whereby another wireline survey was taken. Another 65m was drilled to 1,804m MDRT whereby a wireline survey was taken which indicated that inclination had decreasing further. Drilling proceeded to 1,881m MDRT whereby the drilling assembly was tripped out.

The weekly BOP pressure test was conducted. A new 8 ½" Reed PDC bit was tripped in and patterned with the downhole motor from 1,881-1,886m MDRT. Drilling proceeded to 2,169m MDRT whereby 3 wireline surveys had been conducted. The drilling assembly was tripped out and it was found that the mud motor had a 1 ¼" bearing play/movement.

A new 6 ¾" X-Treme LS mud motor was picked up and made up with an 8 ½" Reed insert bit. This assembly was tripped in and the interval between 2,156 – 2,169m MDRT was reamed. Drilling proceeded to 2,220m MDRT whereby the decision was made to trip the drilling assembly out due to increased and erratic torque.

A new 8 ½" Reed insert bit was made up and tripped in. Drilling commenced to 2,225m MDRT whereby it was decided to trip out due to low rate of penetration and to change BHA. The mud motor was broken out and a new BHA was prepared which was subsequently tripped in. Drilling proceeded to 228.9m MDRT whereby it was decided to trip out to pick up additional drill collars. The weekly BOP test was conducted with the Viking cementing unit.

The new BHA was tripped in but tight spots were encountered and at one of the spots, the drill string got stuck. The drilling jars were activated freeing the drill string and the section was reamed though this did not clear the tight spot. The drill string was tripped out and the near bit stabilizer was removed. The new drill bit was patterned and drilling proceeded to 2,289m MDRT whereby a wireline survey was conducted and the drill string tripped out for a bit and BHA change.

The 6 ¾" XL mud motor was made up with a re-run 8 ½" Reed PDC bit and tripped in. Drilling proceeded to 2,320m MDRT whereby it was decided to trip out due to low rate of penetration. The mud motor was laid down and an 8 ½" Halliburton Security insert bit was made up and tripped in. Drilling continued to 2,546.2m MDRT whereby a drilling break was encountered. A wiper trip was conducted and the drill string was tripped out to surface.

The weekly BOP pressure test was conducted. The coring assembly was picked up with the 8 ½" Christensen BHC405 PDC core bit and was tripped in. An 8.8m core was cut from 2,546.m to 2,555m MDRT. The coring assembly was slowly tripped out to last casing shoe and then tripped out normally to surface. The core was recovered and sectioned at surface. An operational meeting was held with Central Petroleum management on the forward plan.

It was decided to run the flow rate tester (FRT) tool to procure a downhole sample of oil. The wireline unit was rigged up and the FRT was calibrated and function tested. The FRT was then tripped in and correlated to 2,500m MDRT, the first testing zone. The packers were pumped up

but there was indication that there was a leak. Attempts were made to free the FRT tool to re-seat it without success.

The wireline equipment and fishing tools were prepared for the FRT fishing operation. The Weatherford fishing assembly was tripped in to 2,500m MDRT and engaged the FRT tool which resulted in the loss of communication with the tool. It was suspected that the wireline had separated from the FRT tool while it was engaged. The tool was then tripped out of the hole slowly. The FRT too was laid out. It was then evident that the wireline was differentially stuck as the wireline could not be pulled out of the hole.

In an attempt to use the travelling blocks to pull the stuck wireline, the monkey board and mast twisted when the guy wires attached to the monkey board was removed to facilitate the removal of the upper wireline sheave on the 5th December 2010. Operations were halted immediately; the guy wires secured to full pipe bins and the mud losses in the well were monitored.

The well was monitored via the trip tank while an investigation was carried out and a forward plan formulated. 3 cranes from Mt. Isa arrived on site and commenced the removal of the racked drill pipe in the damaged monkey board. One of the cranes was then used to pull the stuck wireline free at 15,000 lbs, approximately 83.3% of the cables breaking strain.

The mast was scoped down and prepared for inspection. The choke manifold and BOP were pressure tested. While the mast was inspected, the well was monitored for losses. It was then decided to suspend the well and release the rig. An open hole packer and bridge plugs were mobilized to site by aircraft. However decision was then made to cancel the open hole packer and set cement plugs in the open hole section and use the bridge plug in the cased hole section.

The crane was used to pick up the drill pipe to be used as a cement stinger. The first cement plug was set at 2,370m MDRT. This plug consisted of 11.5bbls of 15.8ppg Class G cement. The next cement plug was set at 1,473m MDRT. This plug consisted of 14.2bbls of 15.8ppg Class G cement. The cement plug was tagged and the cementing string was pulled out to the surface.

The Halliburton 9 $^{5}/_{8}$" EZSV bridge plug was made up with the casing collar locator (CCL) and correlated on depth to 130m MDRT. With the CCL log giving inconclusive data, the assembly was tripped out to change the CCL sonde. The assembly was tripped in again and the bridge plug set on depth at 128m MDRT on 18th December 2010. 7.3bbls of 15.8ppg Class G cement was dumped on top of the bridge plug. Rig down operations began and the rig was released at 0900 hours on 19th December 2010.

Surprise-1 was the last of the three wells drilled in the Central Petroleum Limited 2010 Conventional Drilling Campaign.

3.2 Particulars of Drilling

3.2.1 Particulars of the equipment installed in or on the well

Other than casing, there is no other equipment that is installed in the well.

3.2.2 Casing and equipment including details of suspension.

Conductor Casing

- 20" conductor casing was set at 21.3m MDRT.

Surface Casing

- 13 $^{3}/_{8}$" surface casing was set at 493.8m MDRT.

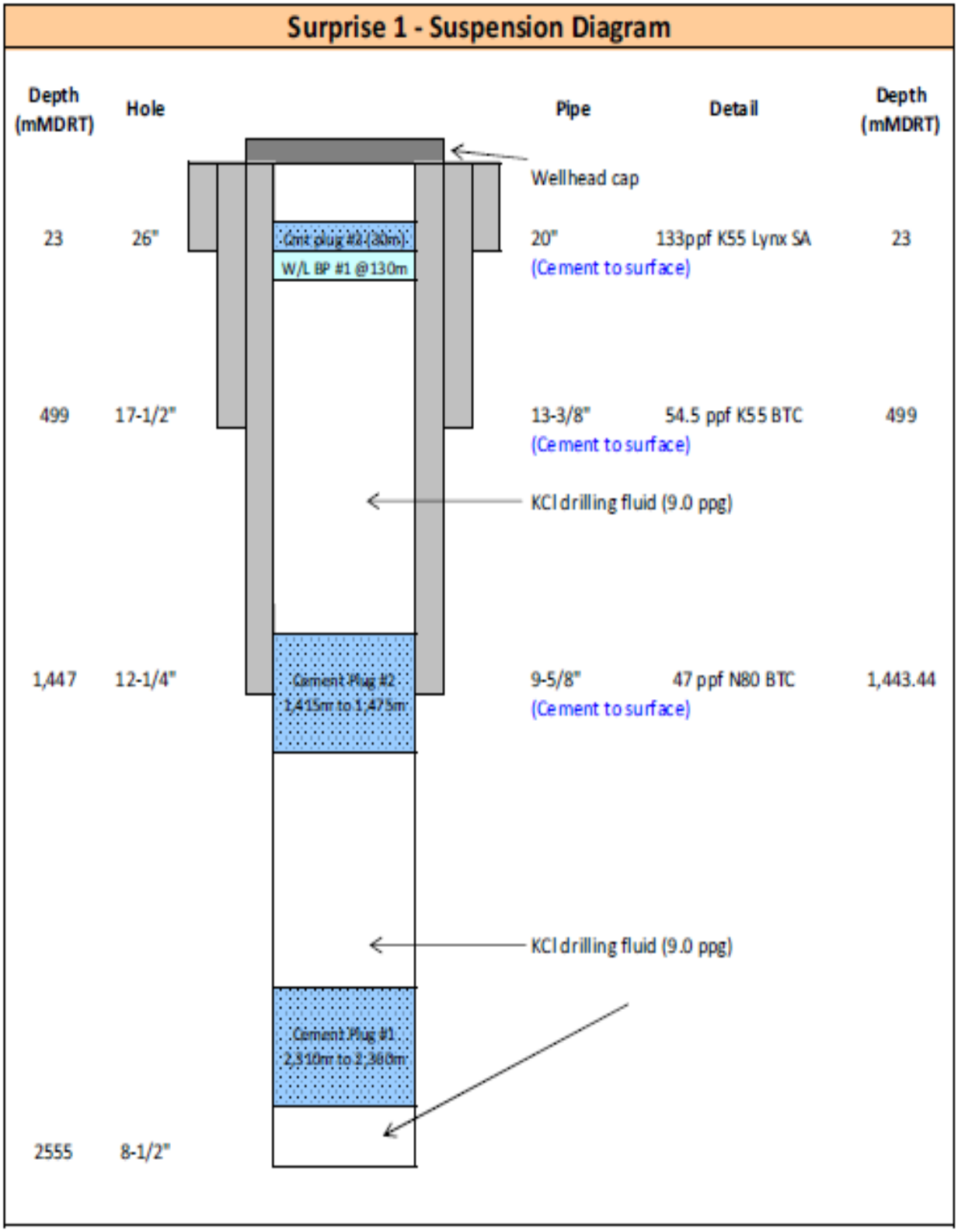
Intermediate Casing

- 9 $^{5}/_{8}$" intermediate casing was set at 1,443.44m MDRT.

Suspension

The well was suspended with the setting of 3 cement plugs (2,310m – 2,360m MDRT, 1,415m – 1,475m MDRT, 100m – 130m MDRT) and a wireline bridge plug at 130m MDRT. 9.0ppg KCl weighted fluid has been set between the plugs. A suspension flange has also been installed on the wellhead at surface.

Figure 3: Surprise-1 Suspension Diagram



3.2.3 Cementing operations

The following cementing operations were performed:

Conductor Casing – A 26" hole was drilled to 23m MDRT. The 20" 133ppf K-55 BTC conductor casing was cemented in place with 93 sacks of Class G cement on 14th October 2010.

Surface Casing – A 17 ½" hole was drilled to 499m MDRT. On 20th October 2010, the 13 3/8" 54.5ppf K-55 BTC surface casing was cemented in place with 12.8ppg lead cement consisting of 194bbls of Class G cement. This was followed by 98bbls of 15.6ppg tail cement consisting of Class G cement. The plug was bumped at 420psi. There were 108bbls of cement returns.

Intermediate Casing – A 12 ¼" hole was drilled to 1,447m MDRT. On 4th November 2010, the 9 5/8" 47ppf N-80 BTC intermediate casing was cemented in place with 12.8ppg lead cement consisting of 230bbls of Class G cement. This was followed by 61.3bbls of 15.6ppg tail cement consisting of Class G cement. The plug was bumped at 1,200psi. There were 15bbls of cement returns.

3.2.4 Bit Records

A record of drilling bits used on Surprise 1 is presented in Appendix 6.

3.2.5 Deviation Surveys

Deviation surveys were taken using a Magnetic Single Shot survey tool. Survey results are tabulated in Appendix 7. Maximum deviation was 8.5 deg at 1638m.

3.2.6 Drilling Fluids

26" Conductor Hole, 0m – 23m MDRT

Basic Gel Spud Mud

Mud weight was kept at 9.1ppg throughout this section. The mud engineer was not present on site during this section.

17 ½" Surface Hole, 23 – 499m MDRT

Basic Gel Spud Mud

Mud weight was kept between 9.1 – 9.4ppg to the section TD. The mud engineer arrived on site when the drilling of this section was underway.

12 ¼" Intermediate Hole, 499m – 1,447m MDRT

KCl PHPA Mud

Mud weight was kept between 8.6 – 9.2ppg to the section TD.

8 ½" Production Hole, 1,447m – 2,555m MDRT

KCl Polymer Mud (Pac-R)

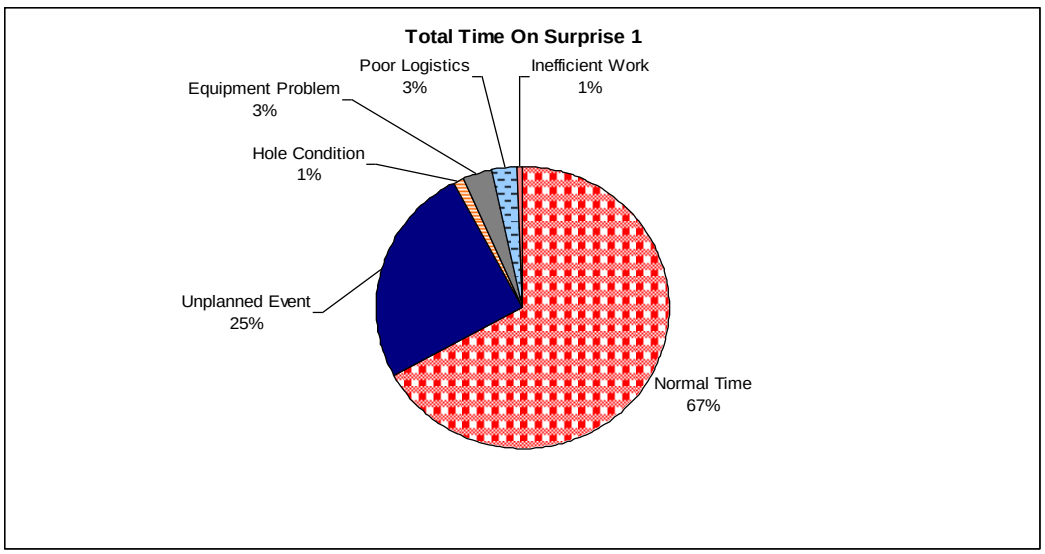
Mud weight was kept between 8.95 – 9.1ppg to the section TD. The API fluid loss had been reduced in an attempt to reduce filtrate invasion of the reservoir. During the drilling of this section, a dumping and diluting regime had to be practiced as solids control efficiency was reduced without a centrifuge on site. Solids were also pulverized by the drill bit forming colloidal solids which could only be removed through chemical means reducing the effectiveness of the centrifuge that was brought in at a later stage.

Further detail on the Drilling Fluid composition, performance and usage can be found in the Drilling Fluid Recap located in Appendix 8. A detailed daily record of drilling fluid properties can be found in the daily reports supplied by RMN Pty Ltd within this document.

3.2.7 Lost Time

A total of 433.5 hours were summed as actual lost time. The big items that contributed to the lost time were the damage of the monkey board and mast amounting to 238 hours. The next big item would be the time taken to fish out the stuck FRT tool amounting to 57.5 hours. The third big item would be time taken waiting on the 26" hole opener to arrive on site amounting to 45.5 hours. This is graphically illustrated on the following pie chart.

Figure 4: Surprise-1 Time breakdown



3.2.8 Water Supply

Water for drilling purposes and human consumption was taken from the high flow water bore past the Surprise 1 lease and the road side bore on the CPL private road, 30km from the Surprise 1 lease. Water from these bores was carted to the turkey's nest built at the well site where it was then pumped to the rig to be used as drill water. Water was also pumped to the RO plant at the camp to be treated for human consumption as the water had a high salt content.

4.0 Logging, Sampling and Testing

4.1 Cuttings Samples Inventory

Sample type	Interval mRT	frequency
Washed and air dried	24-340	10m
Washed and air dried	340-1300	5m
Washed and air dried	1300-2546	3m

4.2 Conventional Cores

One conventional core was cut in 8½" hole from 2546.2-2554.4m in aluminium sleeve. Total recovery was 8.2m. It was cut into 1m lengths at wellsite and chips were taken for eaxamination each meter. Rubber end plugs were placed on each tube of core and it was shipped to ACS Laboratories in Brisbane for core analysis, photography and slabbing. The core now resides at the Central petrleum office in South Perth, WA.

Core analysis results and photos are included in Appendix 3.

4.3 Sidewall Cores

There were no Sidewall cores taken in Surprise-1

4.4 Mudlogging

Mudlogging services were provided by Weatherford, which included monitoring of drilling parameters, continuous gas monitoring, pit level sensors and cuttings sampling and bagging. A mud log was provided at the end of the well, refer to Appendix 9.

4.5 Wireline Logging

No wireline logs were executed in Surprise-1 due to mechanical poblems.

4.6 Drill Stem Testing

No drill stem tests were conducted.

5.0 Geology and Formation Evaluation

5.1 Regional Geological Setting and Discussion of the Surprise Prospect

5.1.1 Structural Elements

The Amadeus Basin is apart of a series of Neoproterozoic intracratonic basins on the Australian continent that share their origins in the breakup of the supercontinent Rodinia. Strong stratigraphic ties have been made between the Officer, Ngalia and Georgina Basins, leading to them being referred to collectively as the Centralian Superbasin. The Amadeus Basin is a broad intracratonic structure in the north-westerly trending Amadeus Transverse Zone and is the product of a number of tectonic cycles. The basin was formed by a series of tectonic events incorporating a variety of mechanisms.

The Amadeus Basin is a multiphase rift-foreland basin with thrusting occurring in the Late Neoproterozoic and Devonian-Carboniferous eras. The basin hosts thick sequences of Proterozoic to Carboniferous sediments. The tectonic elements of the Amadeus Basin in the Neoproterozoic are shown in the following figure.

Figure 5: Amadeus Basin structural elements map

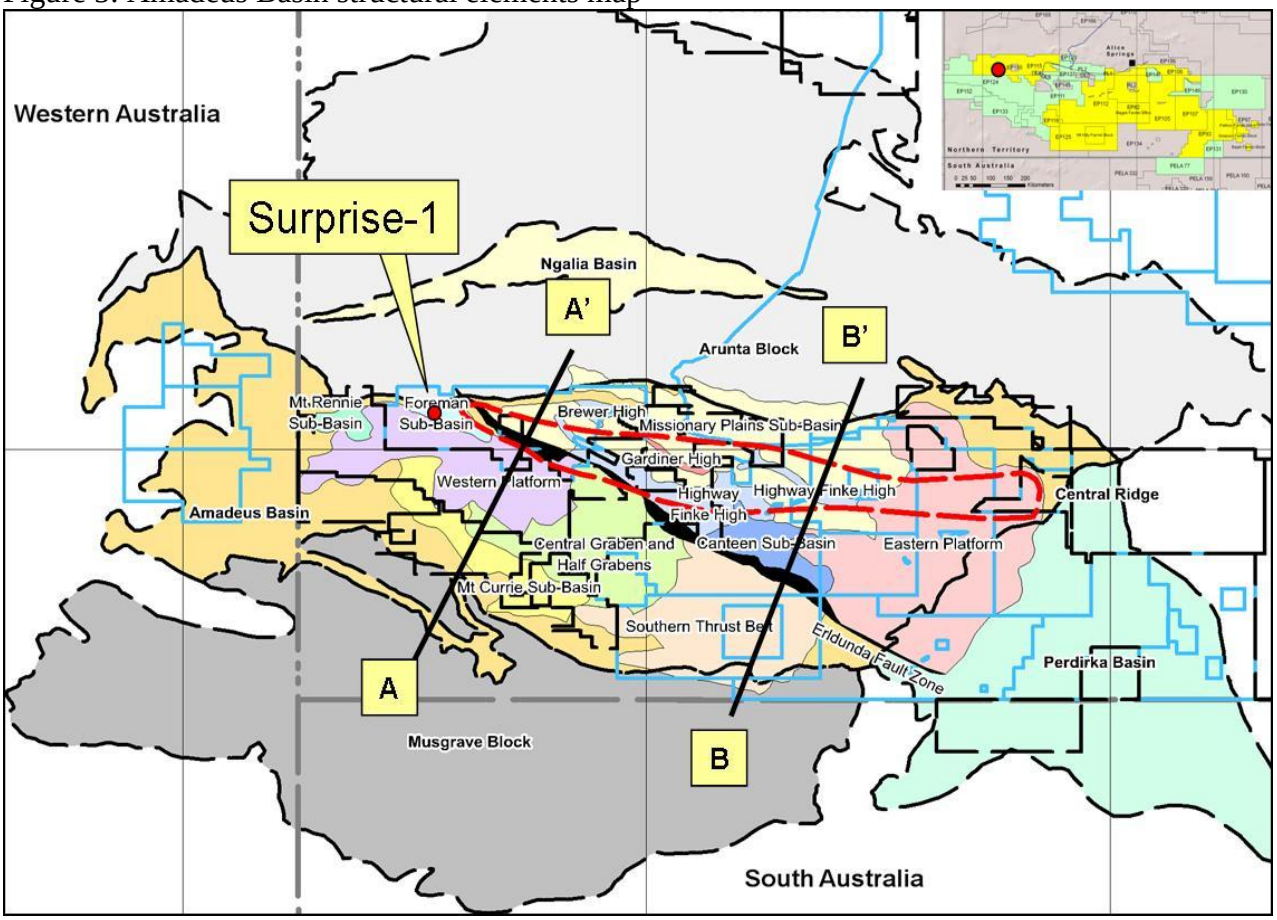
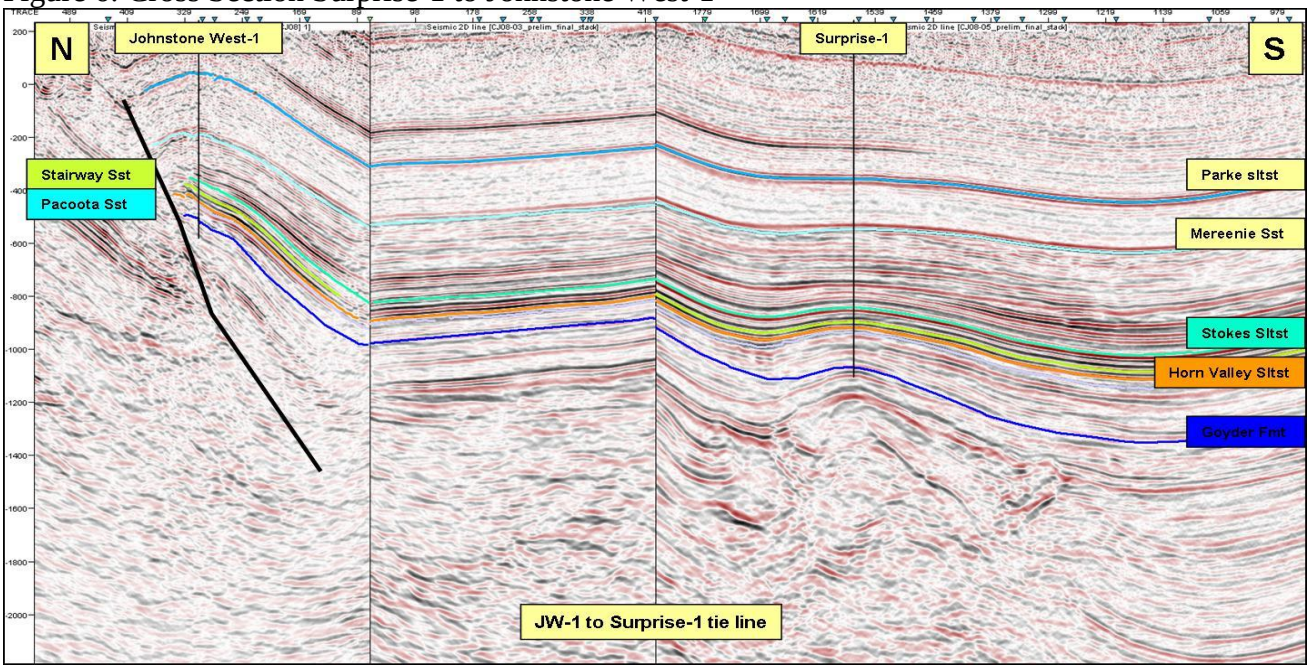


Figure 6: Cross Section Surprise-1 to Johnstone West-1



5.1.2 Lithology and Formation Tops

Table 2: Surprise-1 Formation tops, actual and predicted.

Formation Top	Actual				Prognosis		
	Depth KB (m)	Depth GL(m)	Isopach (m)	TVDSS (m)	TVDSS m	TVDRT (m)	Hi/Lo (m)
Undifferentiated Surficial Sediments	5.2	0	64.8	+545	550	0	-
Undiff Perthjara Gp	70	64.8	710	480.2			-
Brewer / Hermannsberg	780	774.80	516	-229.8	-210	760	19.8H
Parkes Siltstone	1296	1290.8	472	-745.8	-754	1304	8.2H
Mereenie Sandstone	1768	1762.8	514	-1217.8	-1234	1784	16.2H
Stokes Siltstone	2282	2276.8	168	-1731.8	-1901	2451	169.2H
Upr Stairway Sandstone	2450	2444.8	25	-1899.8	-2031	2581	130.2H
Mid Stairway Sandstone	2475	2469.8	67	-1924.8			
Lwr Stairway Sandstone	2542	2536.8	-	1991.8			
Horn Valley Siltstone	np				-2106	2656	
Pacoota Sandstone	np				-2144	2694	
Goyder Formation	np				-2416	2966	
Total Depth	1666	1661.8		-1130.5			

Elevations: GL 545m ASL KB 5.2m AGL. Depths are driller's from mudlog. Np-not penetrated

5.1.3 Undifferentiated Recent Alluvium and Pertnjara Group

5.2-70m

This section comprised aeolian alluvium down to 70m. This is essentially the Quaternary to Recent dune deposits seen at surface, comprising white to light grey quartz grains stained yellow-orange and common reworked grey brown siltstone grains. The grains are fine to coarse and rounded, subspherical and frosted. There are abundant composite grains of quartz sand and siltstone grains weakly bound with yellow-orange iron oxide cement. Many grains are irregular and broken indicating it is possibly pebbly. Gypsum appeared in the form of white to offwhite, chalky, soft material. It is occasionally micro to coarsely crystalline and abundant in parts, commonly with a vuggy porosity possibly after halite crystals. it is probably distributed as nodular clumps, and often exposed at the surface in that manner.

70-230m

Firm bedrock was observed at 70m in the form of weathered arkosic sandstone. It is white to light grey, dark brown grey where silty and argillaceous, friable to firm, fine to coarse, subangular to subrounded, moderately sorted, with occasional pebbly conglomeratic lags. It is slightly calcareous and carbonaceous with common kaolin and mica flakes and lithic grains. Porosity is poor to fair. This is variably interbedded with claystone and siltstone and becomes predominantly interbedded sandstone and siltstone with depth.

The claystone is medium red brown, mottled greenish grey in parts, soft to firm, blocky, silty and micaceous. The siltstone is similar being medium to dark red brown, soft, blocky to subfissile, very argillaeous and very micaceous.

230-780m

This is predominantly a siltstone sequence with various thin interbeds of sandstone, claystone and gypsum.

The siltstone is medium grey brown to dark grey, soft to hard, generally blocky, argillaceous and sandy, grading to very fine sandstone in parts. It is micaceous and occasionally gypsiferous with occasionally carbonaceous laminae and coarse sandy laminatione.

Sandstone is generally light brown to light grey with clear to translucent white quartz grains, loose to friable, fine to very coarse, predominantly medium grained, subangular to rounded and poorly sorted. Grains are commonly frosted. It is slightly calcareous, with argillaceous and silty matrix, traces of mica and traces of crystalline pyrite. Porosity is generally poor. The claystone is light to medium grey, soft, blocky, silty, micromicaceous with traces of carbonaceous specks. Gypsum occurs as white chalky nodular material and coarsely crystalline fibrous material.

5.1.4 Brewer Conglomerate/Hermannsburg Sandstone

780-1296m

This section is stratigraphically part of the Pertnjara Group and is essentially similar to the overlying units. It comprises predominantly siltstone with thin sandstone and claystone interbeds and intergradations and minor limestone interbeds. The siltstone is medium brown to dark grey brown, firm to hard, blocky, argillaceous, sandy, slightly calcareous with common dark mica flakes. Sandstones are light grey green and dark brown, translucent in parts, loose to friable and

hard in parts, very fine to coarse, predominantly fine, subangular to rounded, poorly to moderately sorted, silty, argillaceous, slightly calcareous, with traces of feldspar grains, mica and microcrystalline pyrite. Porosity is generally very poor. Claystones are light grey, light yellowish brown and dark brown in places, soft to firm, blocky, silty, micromicaceous, calcareous in parts and occasionally with traces of gypsum.

5.1.5 Parke Siltstone (mid Devonian)

1296-1768m

The Parke Siltstone is predominantly a siltstone sequence although the top 25 m is predominantly very fine sandstone. It is pale red brown and grey-orange, firm to hard, fine to coarse, subangular to subrounded, moderately well sorted, trace calcareous cement, poor visible porosity. This is underlain by a thick siltstone/claystone sequence with minor gradations to sandstone.

The siltstone is medium grey and dark blue grey, hard to very hard, subfissile in part, interbedded with pale brown to dark red brown claystone, soft, calcareous and sandy. Claystone is the dominant lithology from 1400m to the base of the unit.

5.1.6 Mereenie Sandstone (early Devonian)

1768-2282m

This is a generally aeolian sand unit with some marginal marine argillaceous inundations. The sandstone is clear to translucent, commonly with red ferruginous staining. It is generally loose, fine to very coarse, predominantly medium, moderately sorted, spherical and frosted grains, commonly with ferruginous cement and good visible or inferred porosity. The claystones are white to pale grey, mottled orange in part, soft, occasionally sandy, micromicaceous. Some minor siltstone occurs toward the base of the interval. It is black, brittle, carbonaceous and pyritic.

5.1.7 Stokes Siltstone (late Ordovician)

2282-2450m

This is an argillaceous unit, comprising mostly claystone in the upper section, becoming predominantly siltstone in the lower part. Minor sandstone and carbonate beds are also present. The claystone is medium to dark reddish brown, orange brown and medium grey in parts, moderately hard to hard, but occasionally soft and plastic?. It is slightly calcareous and dolomitic, subfissile, micaceous and silty. It becomes marly in places. Minor thin sandstone bands are medium grey brown, hard, siliceous, very fine to fine, subangular to rounded, moderately sorted with poor visible porosity. The siltstone that occurs towards the base of the interval is moderate red, pale red brown, hard to moderately friable. arenaceous with local to common argillaceous matrix, laminae in parts with very fine quartz sandstone, generally granular, moderately strong to strong dolomitic and siliceous cement, occasional lithics. Rare carbonate bands are dolomite, mottled pale pink and offwhite, occasionally medium dark grey, hard, with a coarsely crystalline (sucrosic) texture and silty to sandy in parts.

5.1.8 Upper Stairway Sandstone (Early Ordovician)

2450-2475m

This unit is a sandstone with interbedded siltstone claystone, dolomite and limestone. A good gas show with a weak oil show was observed in the lower sandy unit of this sequence.

The Upper sandstone unit is patchy pale pink with clear to translucent grains, also light to medium grey and dark reddish brown and hard. It is generally very fine to fine with some medium, angular to subrounded, moderately sorted, silica cemented, minor silt, trace lithic grains with poor visible porosity. This is in turn underlain by a dolomitic sandstone with dolomite bands. The dolomitic sandstone is offwhite to pale grey, red brown in parts, hard, very fine grained, angular to subrounded, well sorted, with strong dolomitic cement and poor visible porosity. The middle unit of this formation is mostly siltstone and claystone interbeds. The siltstone is described as being moderate red brown, medium grey, firm to brittle, argillaceous and occasionally sandy, subfissile, slightly dolomitic. The claystone is medium to dark grey, commonly red brown, moderately hard, silty to sandy, trace micromicaceous, slightly dolomitic.

The basal 10m of this unit is sandy and contains gas and displays oil fluorescence. The sandstone is clear to translucent, light grey to pale brown, moderately hard, very fine to coarse, predominantly fine, angular to subrounded, poor to moderate sorting, strong calcareous and siliceous cement, slightly dolomitic, with common interstitial brown bitumen grain coatings which were fluorescent.

5.1.9 Middle Stairway Sandstone (Early Ordovician)

2475-2542m

This unit comprises siltstone and sandstone interbeds and seems to provide an effective seal to the hydrocarbons contained in the lower Stairway sands underlying. The siltstone is dark grey, blocky to laminated (with fine sandstone), hard, siliceous, argillaceous, micaceous, trace pyrite and dolomitic. The sandstones are pale to medium grey, friable to hard, very fine to fine, angular to subrounded, well sorted, variable dolomitic cement, silty, trace pyrite, poor visible porosity. Traces of hydrocarbon fluorescence were observed.

5.1.10 Lower Stairway Sandstone (E Ordovician)

2542-2555m

The unit is composed of sandstone. Excellent oil shows prompted a decision to core from 2542m. Full recovery was obtained. The sandstone above the cored interval is clear to translucent and pale grey, friable to hard, fine to very coarse, angular to rounded, poorly sorted, well cemented with silica, trace pyrite, poor to good visible porosity. Good oil shows were observed and free oil was noted in the mud and petroliferous odour noted in the cuttings.

Note: Core was cut from 2546.2m to 2555m (driller's depth), however the core in the laboratory was marked from 2542 to 2554.8m.

The core was described from chip samples tsaken at 1m intervals. It was 100% sandstone, clear to translucent with pale brown patches and commonly light to medium grey. It is fine to very coarse, predominantly medium grained, angular to subrounded, poorly to moderately well sorted, generally very strong siliceous cement (quartz overgrowths), thin carbonaceous wavy laminae indicative of bioturbation is evident, with micro pyrite in parts, common mica flakes, occasional shale clasts, trace bituminous material, fair to good visual porosity. Good fluorescent shows were described with weak to strong petroliferous odour. An oil sample of approximately 1 litre was collected from the triptank after coring and a "small muddy oil sample was taken from the core trays" (possibly from interval 2551-2554m…daily report 2 Dec 2010).

5.2 Hydrocarbon Indications and Sample Analysis

5.2.1 Gas while drilling

Background gas was generally low comprising C1 only from surface to 2480mKB.Background gas was noted to rise steadily from this point and heavier components (up to C5+) were observed. Gas peaks were also noted over the interval 2493-2502m in sandstones accompanied by fluorescence in sandstones from 2497m. Components up to C5+ were recorded and it was described as a good gas and oil show. Background gas then remained low until the Lower Stairway Sandstone was intersected at 2542m. Gas then increased from 3 to 15 units with a peak at 2546.2m of 20 units, C1-C5+. The drill string was then pulled and coring commenced from 2546.2-2555m.

5.2.2 Fluorescent Hydrocarbon Shows

Fluorescence was first reported in cuttings from 2493m. However no solvent cut was observed and it was probably related to carbonate mineral fluorescence. Substantial fluorescence was then repored from 2499-2503m where it was 100% dull to occasionally moderately bright yellow, patchy to spotted, slow streaming pale blue cut, thin pale blue residue film. This was rated as a fair show.

The following interval, 2,503.0-2,506.0m, displayed 40% dull to occasionally moderately patchy to spotted bright yellow with slow streaming pale blue cut and thin pale blue residue film. This was rated as poor show.

In the interval 2,506.0-2,509.0m, 100%, dull to occasionally moderately bright yellow, patchy to spotted fluorescence was noted with a slow streaming to weak diffuse pale blue cut, thin pale blue residue film in sandstone with generally poor to tight porosity. It was estimated to be a poor to fair show. Fluorecence decreased to 10% with weak cut in the interval 2509-2512m and was a poor show. Susequent samples to 2525m showed only traces of fluorescence.

At 2542m, a drilling break was accompanied by increased background gas and hydrocarbon fluorescence. The fluorescence was initially 50% then 100%, dull to occasional moderately bright yellow, patchy to even, occasionally spotted, slow blooming to weak diffuse pale blue direct and crush cut (some samples had no direct cut), thin pale blue ring residue. This was a fair show. From 2,544.5-2,546.2m, 70-100% as above but gradually diminished to dull and very dull yellow, weak direct and crush cuts - a poor to fair show.

Coring then proceeded below 2542m and incomplete cuttings were obtained during coring. Examination of core chip samples indicted two zones of potential oil filled fractures from 2,547. -2,550.0m and 2,551.0-2554.0m. Both zones had multiple core break points. Bioturbation (irregular horizons) was tentatively identified.The lower zone had prominent break lines along these possible irregualg bedding planes.

5.2.3 Other Indications of Oil

The upper part of the core had lighter, brown oil coatings and lower zone black, more viscous oil coatings on core surface and in broken core gaps. The coring engineer interpreted fractured core zones similar to other drilled fracture zones where the core broke down hole. Core was coated in light brown oil from 2,547.0-2,550.0m and with black sticky oil in the slightly deeper zone from 2,551.0-2,554.0m).

6.0 Reference