Amungee NW-1

Well Completion Report
(Basic)

EP 98
Beetaloo Basin
Northern Territory

7th September – 21st October 2015

Origin Energy Resources Ltd

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1 Introduction and Summary

Amungee NW-1 was drilled by Origin Energy Resources Ltd in Exploration Permit EP98 in the Beetaloo Basin (Figure 1), Northern Territory, approximately 400m south of the Carpentaria Highway and 60km east of the town of Daly Waters and the Stuart Highway (Figure 2). Amungee NW-1 was the second well drilled in the 2015 Beetaloo well drilling programme. The well was spudded on 7 September 2015 and reached TD of 2609mMDRT on 16 October 2015. The well was plugged and abandoned. The rig was released on 21 October 2015.

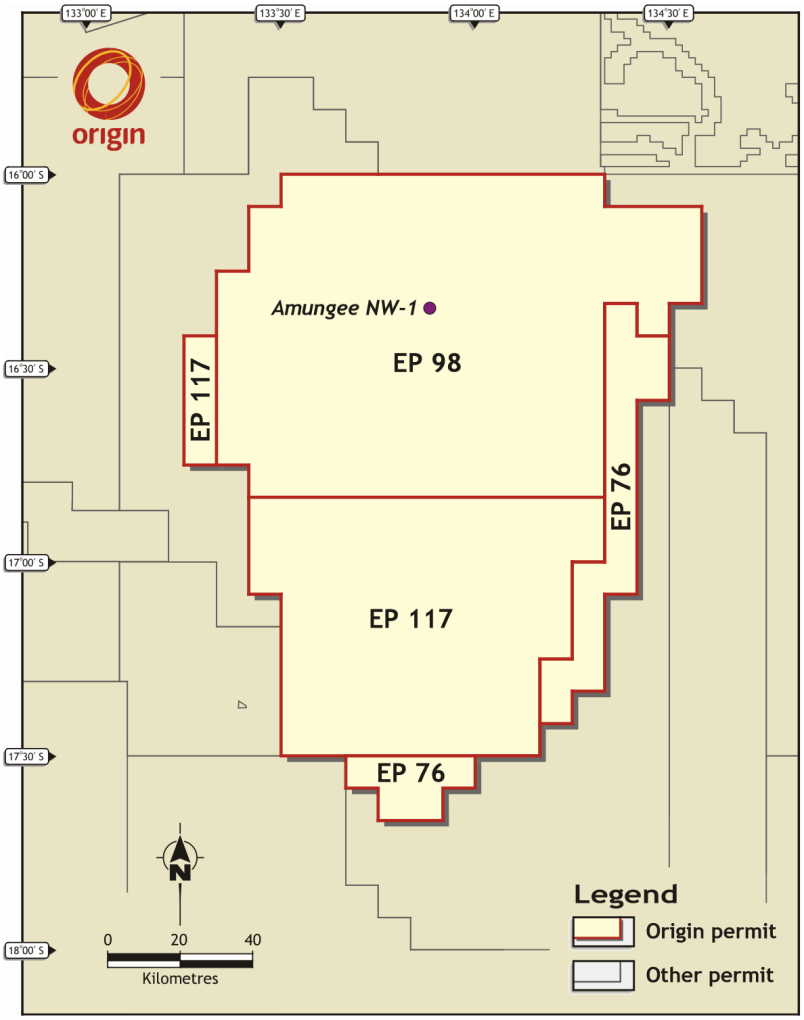

Figure 1. Amungee NW-1 Well Location and Permit Map

The aim of Amungee NW-1 was to test the potential of the Middle Velkerri Member organic rich mudstones as a regional shale gas play within the northern Beetaloo Basin, with primary focus on testing physical reservoir properties. A secondary aim was to collect full-bore 3.5" diameter core and sidewall cores throughout the Middle Velkerri Member to capture potential facies variability that may impact future well stimulation. A third aim was to perform two Extended Leak-off Tests (XLOT) to determine the breakdown pressures and fracture orientation of selected intervals within the Moroak Sandstone and Middle Velkerri Member and a Drill Stem Test (DST) to evaluate the potential of the Chambers River Sandstone.

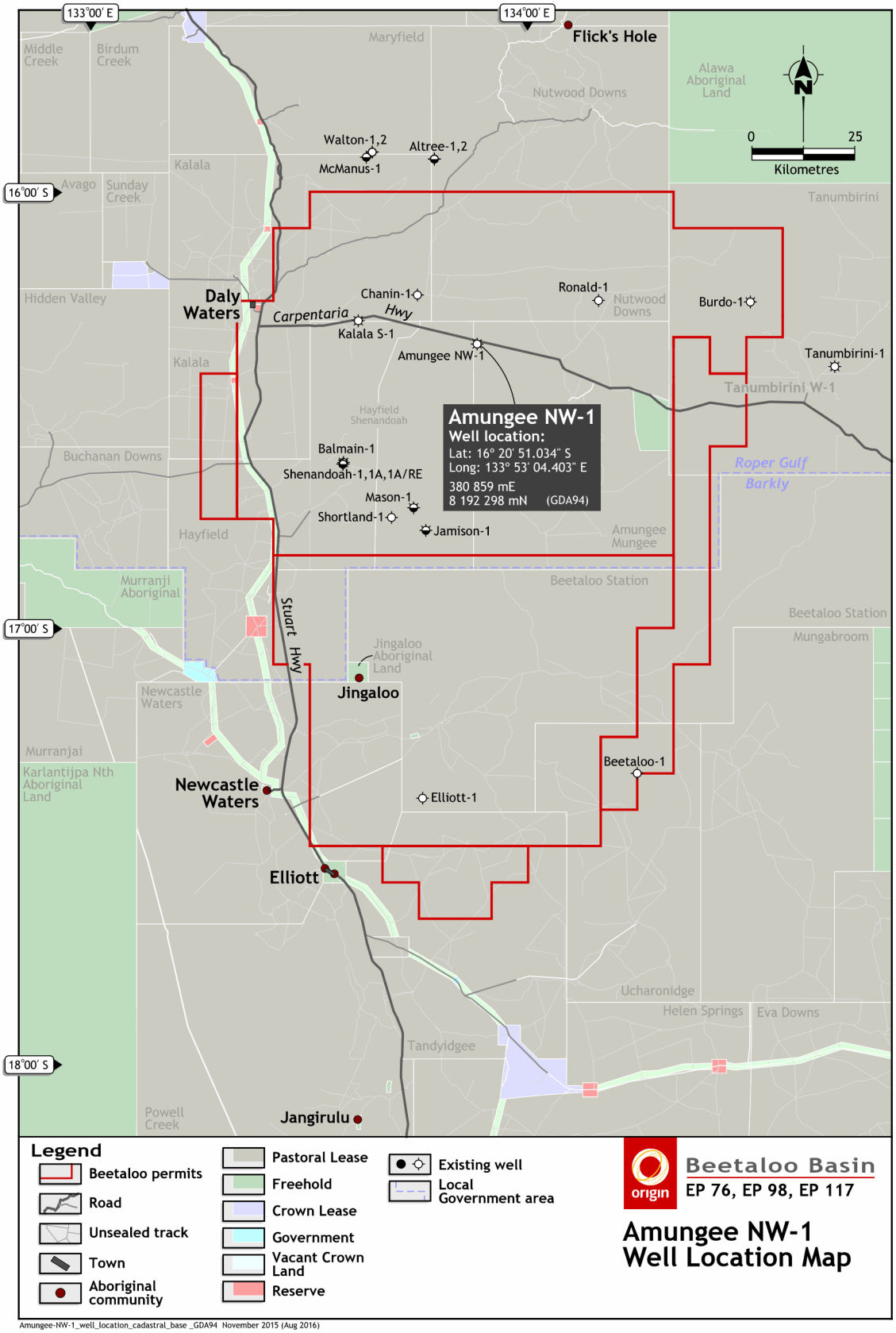

Figure 2. Amungee NW-1 Location in relation to pastoral leases in the Daly Waters/Beetaloo Basin area

2 Well Summary Sheet

Well Name:	Amungee NW-1
Classification:	Exploration
Permit:	EP98, Northern Territory
Well Path:	Vertical (6.5 deg. @ TD)
Location:	Latitude: 16° 20' 51.034" S / Longitude: 133° 53' 4.403" E Easting: 380 859 metres / Northing: 8 192 298 metres (GDA 94; UTM 53, Map Sheet: SE53 Newcastle Waters, Graticule Block Number 311)
Offset Well:	Chanin 1 ~18.6 km (heading -51° from Amungee NW-1) Kalala S-1 ~29.6 km (heading -80° from Amungee NW-1) Shenandoah 1A ~45 km (heading -134° from Amungee NW-1) Ronald 1 ~31.6 km (heading 70° from Amungee NW-1)
Seismic Control:	East-West Control: 2D Seismic Line - sh90-102. Shot point 1835 – projected ~424.9 m heading 180.1° from well to 2D line (degrees from true north) North-South Control: 2D Seismic Line - ma91-93. Shot point 2393 – projected ~38.3 m heading 86.6° from well to 2D line (degrees from true north)
Elevation:	260.562m (GL above MSL)
RT Elevation:	265.912m (above MSL)
Total Depth Driller:	2609.0 mMDRT
Total Depth Logger:	2611.0 mMDRT
Casing:	16” @ 118 mMDRT 10.75” @ 281.45 mMDRT 7.625” @ 1432.31 mMDRT
Spud:	07-September-2015 @ 06:00 hrs
Reached TD:	16-October-2015 @ 18:45 hrs
Rig Released:	21-October-2015 @ 00:00 hrs
Well Status:	Plugged and Abandoned
Abandoned:	21-October-2015 @ 00:00 hrs
PBTD:	1920 mMDRT
Permit Interests:	Origin Energy Resources Ltd (Operator - 35%) Sasol Petroleum International (35%) Falcon Oil & Gas (30%)
Rig Name/Type:	Saxon 185 / Land-Onshore
Drilling Contractor:	Saxon

3 Drilling

3.1 Summary of drilling and related operations

#	Start Date	End Date	Last 24hr Summary
1	07/09/2015	08/09/2015	• Rig on-hire to Amungee NW-1 on 07-September-2015 @ 06:00 hrs. • Spudded Amungee NW-1. • Drilled 18-1/2" conductor from 18.44 to 114 mRT. Drilled with no returns from 101 to 114 mRT.
2	08/09/2015	09/09/2015	• Drilled with no returns from 114 to 139 mRT. • Pulled out of hole from 139 to 95 mRT. • Back reamed out from 95 to 84 mRT. • Worked tight hole from 84 to 71.4 mRT.
3	09/09/2015	10/09/2015	• Worked stuck pipe from 71.4 to 71.2 mRT. Staged up over pull to 250 klbs, cycling in torque of 14 kft-lbs in and out. • Ran in 2-7/8" tubing from surface to 35.96 mRT. 18.76 m fill above top of 1st 17-1/2" stabilizer blade. • Washed down 2-7/8" tubing from 35.94 to 38.45 mRT. GPM = 300, SPP = 90 psi.
4	10/09/2015	11/09/2015	• Continue wiper trip from 123 to 139 mRT. Wash and ream as required. • Pull out of hole. • Rig up and run 16" conductor and cement same. • Wait on cement.
5	11/09/2015	12/09/2015	• Continued wiper trip from 123 to 139 mRT. Washed and reamed as required. • Pulled out of hole. • Rigged up and ran 16" conductor from surface to 97 mRT. Washed as required.
6	12/09/2015	13/09/2015	• Ran 16" conductor to 118 mRT. • Cemented 16" conductor. Mixed and pumped 55 bbl (273 sacks) of cement slurry at 16.0 ppg. No returns to surface. • Top up cement job. Mixed and pumped 88 bbl cement slurry at 16.0 ppg. Pumped in 8 bbl batches. 2 bbl cement to surface.
7	13/09/2015	14/09/2015	• Waited on cement to cure. • Cut 16" conductor and laid out same, installed 21-1/4" RCH. • Prepared 14-3/4" (TCI G25WCPS) BHA and ran in hole.
8	14/09/2015	15/09/2015	• Washed and reamed cement and shoe track from 116.91 to 118 mRT, washed and reamed from 118 to 122 mRT. • Tagged shoe at 117.34 mRT. Total losses at 118 mRT. • Drilled 14-3/4" surface hole from 139 to 226 mRT. Average ROP = 9.1 m/hr.
9	15/09/2015	16/09/2015	• Drilled 14-3/4" to 284.5 mRT TD. Average ROP = 7.24 m/hr. • Pulled back and ran survey at 270 mRT 1-1/4 °. POOH to surface. • Removed RCD and cut conductor. Installed base plate. • Held PJSM. Rigged up Weatherford casing handling tools.
10	16/09/2015	17/09/2015	• Ran 10-3/4" surface casing from surface to 281.47 mRT. • Cemented 10-3/4" surface casing. • Installed casing head on casing. • Nipple up BOPs.

11	17/09/2015	18/09/2015	• Nippled up BOPs. • Troubleshot pressure testing issues. • Pressure tested BOPs.
12	18/09/2015	19/09/2015	• Continued pressure test BOPs. • Re-tested BOPs due to unsatisfactory result. • RIH with drillout BHA. • Drilled out shoe track to 282 mRT.
13	19/09/2015	20/09/2015	• Drilled cement from 282 to 284.5 mRT. • Drilled new formation from 284.5 to 287 mRT. • Performed LOT to 38.2 EMW. Maximum surface pressure 1431 psi. • POOH to surface to pick up Hammer BHA. • Made up 9-7/8" hammer BHA and RIH to 245 mRT. • Installed RCD. • RIH from 245 mRT to tag bottom at 287 mRT. Unloaded well. • Drilled 9-7/8" intermediate hole from 287 to 314 mRT. • Circulated well with 2250 scfm due to water flows. • Drilled 9-7/8" intermediate hole from 314 to 321 mRT. • Pulled out of hole from 321 to 254 mRT. • Killed well. • Removed RCD, Installed bell nipple. • Flow checked well - static. Pulled out of hole from 254 mRT to surface to change BHA.
14	20/09/2015	21/09/2015	• Made up BHA and RIH to 299 mRT. Washed down to 321 mRT. • Drilled 9-7/8" intermediate hole from 321 to 589 mRT. • Serviced rig. • Drilled from 589 to 617 mRT.
15	21/09/2015	22/09/2015	• Drilled 9-7/8" intermediate hole from 617 to 958 mRT. • Serviced rig. • Drilled 9-7/8" intermediate hole from 958 to 986 mRT.
16	22/09/2015	23/09/2015	• Drilled 9-7/8" intermediate hole from 986 to 1130 mRT. • Serviced rig. • Drilled 9-7/8" intermediate hole from 1130 to 1318 mRT.
17	23/09/2015	24/09/2015	• Drilled 9-7/8" intermediate hole from 1318 to 1415 mRT.
18	24/09/2015	25/09/2015	• Drilled 9-7/8" intermediate hole from 1415 to 1435 mRT.
19	25/09/2015	26/09/2015	• Drilled 9-7/8" intermediate hole from 1435 to 1436.16 mRT TD. • Pumped 15 bbl hi-vis sweep, circulated 1.5 x bottoms up. • Ran deviation survey. • Pulled out of hole for DST from 1433 to 439 mRT. • Back reamed from 439 to 320 mRT. • Continued to pull out of hole from 320 mRT to surface. • Stand down for safety meeting. • Prepared, made up and RIH with DST tools.
20	26/09/2015	27/09/2015	• Made up and RIH with DST tools. • Tested Chambers River Sst. • Reverse circulated and pulled out of hole to 56 mRT.
21	27/09/2015	28/09/2015	• Broke down and laid out DST tools. • Pulled wear bushing. Made up jetting tool and flushed BOP and wellhead.

			• Picked up and rigged up casing tong and running equipment. • Ran 7-5/8" casing from surface to 1407 mRT. • Washed down from 1407 mRT to 1432 mRT • Circulated casing. • Cemented Intermediate casing. WOC.
22	28/09/2015	29/09/2015	• Waited on cement. • Pressure tested 7-5/8" casing to 500 psi for 10 min low and 5000 psi for 10 min high. • Well Acceptance Criteria #7 achieved. • Rigged down cementers. • Set casing slip and seal assembly. Cut casing. • Installed casing spool. • Attempted to pressure test tubing head seals - no test. • Nippled down casing spool, changed out damaged seal, nippled up tubing head. • Pressure tested tubing head seal. • Nippled up DSA, casing spool and BOP, installed flow line, kill line, accumulator lines, blooie line HCR. • Function tested and flushed BOP. • Made up test assembly, removed check valves and filled surface lines for testing.
23	29/09/2015	30/09/2015	• Pressure tested BOP and associated equipment.
24	30/09/2015	01/10/2015	• Completed pressure testing BOP. • Made up and RIH with drillout BHA. • Drilled out shoe track and 10 m new formation for FIT / XLOT. • Conducted FIT test with Halliburton pumping unit. FIT = 1330 psi, EMW = 15 ppg.
25	01/10/2015	02/10/2015	• Conduct XLOT test. • Unload well at 2000 SCFM. • Blew hole dry and monitored for water flow. • POOH for 6-3/4" hammer bit. • RIH 6-3/4" hammer bit. • Hammer drill 6-3/4" production hole.
26	02/10/2015	03/10/2015	• Hammer drilled 6-3/4" production hole from 1466 to 1574 mRT. • Displaced hole with 9.6 ppg mud. • POOH from 1574 mRT to surface.
27	03/10/2015	04/10/2015	• RIH 6-3/4" fluid motor BHA. • Conducted rig service. • Continued to RIH. • Flow checked, broke circulation. • Continued to RIH. • Light washed and reamed to bottom. • Drilled 6-3/4" production hole.
28	04/10/2015	05/10/2015	• Drilled 6-3/4" production hole from 1656 to 1780 mRT. Av ROP = 5.8 m/hr.
29	05/10/2015	06/10/2015	• Drilled 6-3/4" production hole from 1780 to 1886 mRT. Av ROP = 4.9 m/hr. Note Upper Velkerri at 1847 mRT.

30	06/10/2015	07/10/2015	• Drilled 6-3/4" production hole from 1886 to 1892 mRT. Av ROP = 1.5 m/hr • POOH for bit change due to low penetration rate. • RIH new 6-3/4" PDC bit 1414 mRT. • Slipped and cut drill line. • Continued to RIH from 1414 to 1892 mRT. • Drilled 6-3/4" production from 1892 to 1914 mRT. Av ROP = 6.2 m/hr
31	07/10/2015	08/10/2015	• Drilled 6-3/4" production from 1914 to 2089 mRT. Av ROP = 8.7 m/hr.
32	08/10/2015	09/10/2015	• Drilled 6-3/4" production from 2089 to 2194 mRT. Av ROP = 6.7 m/hr.
33	09/10/2015	10/10/2015	• Drilled 6-3/4" production hole to core point at 2239 mRT. • POOH for coring run. • RIH coring assembly.
34	10/10/2015	11/10/2015	• RIH coring assembly. • Cored 6-3/4" production hole to 2275 mRT. • POOH for DST run.
35	11/10/2015	12/10/2015	• POOH for DST run. • Laid out and cut core samples. • RIH DST assembly.
36	12/10/2015	13/10/2015	• RIH DST assembly. • Performed XLOT. • POOH DST.
37	13/10/2015	14/10/2015	• POOH DST. • Pressure tested BOPs. • Made up and RIH 6-3/4" drilling BHA.
38	14/10/2015	15/10/2015	• RIH to shoe. • Slipped and cut drill line. • Continued to RIH. • Drilled 6-3/4" production hole from 2275 to 2333 mRT.
39	15/10/2015	16/10/2015	• Drilled 6-3/4" production hole from 2333 to 2460 mRT. Av ROP = 6 m/hr.
40	16/10/2015	17/10/2015	• Drilled 6-3/4" production hole from 2460 to 2609 mRT - well TD. • Performed wiper trip. • Spotted logging pill. • Pulled out of hole for logging.
41	17/10/2015	18/10/2015	• Pulled out of hole for logging. • Wireline logs. • Logging run #1 - PEX-HRLA-HNGS-SP. • Logging run #2 - CMR-NEXT.
42	18/10/2015	19/10/2015	• Logging run #2 - CMR-NEXT. • Logging run #3 - Sidewall cores MSCT-GR.
43	19/10/2015	20/10/2015	• Logging run #4 - Sidewall cores MSCT-GR. 24 cores from 2422.2 to 2139.5 mRT. • Logging run #5 - FMI-SSCAN-PPC. • Conducted fire drill with all personnel on site. • RIH with cement stinger on 4" drill pipe. • Serviced rig. • Continued RIH for cement plug.

44	20/10/2015	21/10/2015	• RIH 2-7/8" cement stinger. • Pumped and displaced hi-vis pill. • Waited on cement program. • Mixed and pumped abandonment plug. • Waited on cement. • Mixed and pumped kick-off plug. • Pulled out of hole to surface. • Rig released from Amungee NW-1 at 00:00hrs on 21-October-2015.

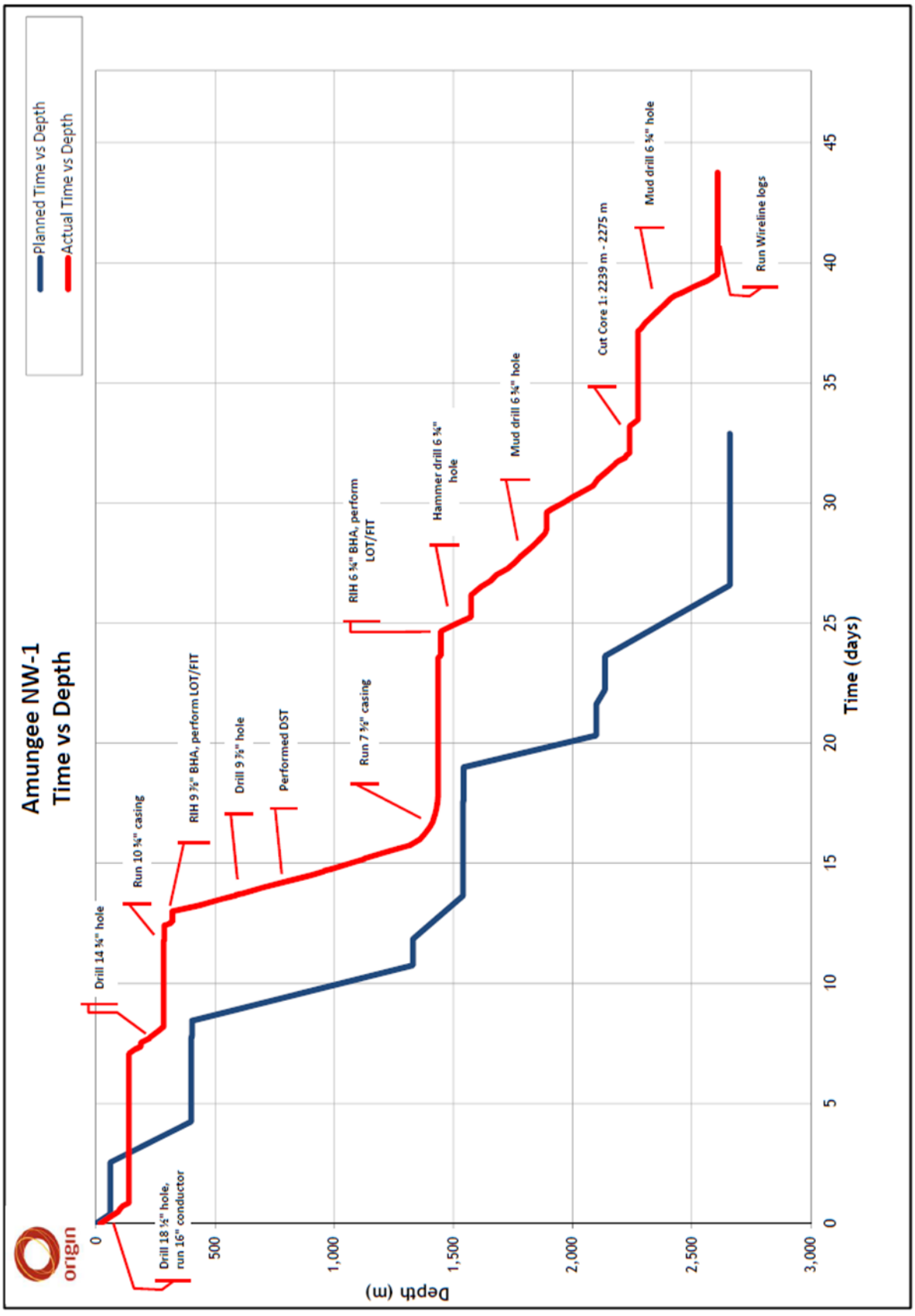

Figure 3. Amungee NW-1 Time vs Depth Chart

3.2 Drilling equipment installed in or on the well

The Saxon Energy Services Australia Rig 185 was used to drill Amungee NW-1. This rig is a 1200 hp AC hydraulic drive rig with a 178,000 daN (400,000 lbf) pull capacity. The rig pumps are 2 x AC/VFD HongHua HHF-1000 triplex pumps powered by AmeriMex Dominator 1150 hp AC electric motors. An air package consists 2 x screw compressors rated for 1400 CFM at 350psi and 1 x booster unit capable of 2800 CFM at 1600psi. The mud system consists three trailer mounted mud tank units rated for 767 bbl capacity complete with 2 x Derrick FLC 504 shale shakers, 1 x Derrick Vac-Flo 500 vacuum degasser and 1 x Derrick DE-1000 FHD centrifuge. The BOP system comprises 1 x 2M Drill Master Elite RFCD-2000, 1 x 5M T3-Energy 11" Annular, 1 x 5M T3-Energy Double Gate Ram (Blind & VBR), 1 x 5M Drilling Spool with 3-1/8" Choke Line and 2-1/16" Kill Line, 1 x 5M Cameron Choke Manifold, 1 x Control Technology 7 Station 14 Bottle Accumulator.

3.3 Casing and equipment installed in or on the well

Table 1 summarizes the casing and equipment installed in or on Amungee NW-1. Amungee NW-1 as drilled schematics showing the casing and equipment dimension is provided in Figure 4.

Type	Size (")	Weight (ppf)	Grade	Thread	Depth (mMDRT)
Conductor	16	42	X42	Plain End	118.00
Surface Casing	10-3/4	40.5	K55	BTC	281.47
Intermediate Casing	7-5/8	29.7	P110	JFE FOX	1432.31
Production Casing	4-1/2	No casing installed			

Table 1. Amungee NW-1 casing details

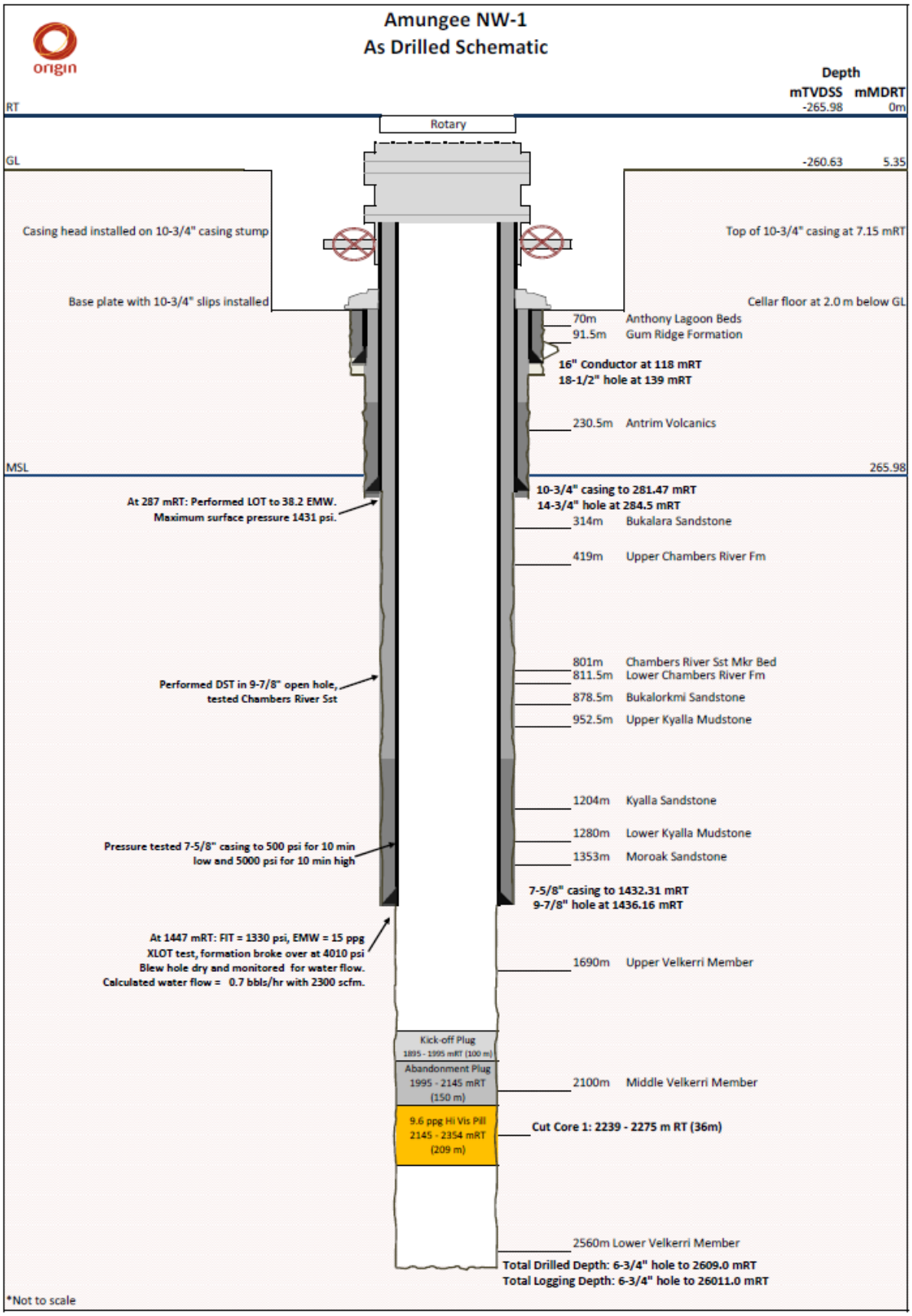

Figure 4. Amungee NW-1 as drilled schematic

3.4 Cementing operations carried out

String (") / Plug	Cement Type	Cement Additives	Slurry Vol (bbls)	Slurry Density (ppg)	Cmt to / from (mMDRT)	Test Press (psi)
Conductor	Class GP		55 primary 88 topup	16.0	101 - 118	-
Surface Casing Lead	Class G	Freshwater D-Air 3000L Econolite Liquid	88.7	12.5	7.8 - 182	1000
Surface Casing Tail	Class G	Freshwater D-Air 3000L	51.1	16.0	182 - 284.5	1000
Surface Casing Top Up	Class G	Freshwater D-Air 3000L	3 x batches 8 bbl 8 bbl 5 bbl	15.8	7.8 - 50	1000
Intermediate Casing Lead	Class G	Freshwater D-air 3000L Gascon 469 Halad-413-L HR-5	200	13.5	7.8 - 1286	5000
Intermediate Casing Tail	Class G	Freshwater D-Air 3000L Halad-413-L HR-5	33	15.8	1286 - 1432	5000
Kick-off Plug #1	Class G	Freshwater D-Air 3000L Halad-413-L HR-5 CFR-3	25.7	15.8	1985 -2145	-
Abandonment Plug	Class G	Freshwater D-Air 3000L Halad-413-L HR-5	17.6	16.5	2016 -2145	-

Table 2. Amungee NW-1 cementing operations

3.5 Bit Records

Bit records and drilling parameters are summarised in Appendix 1.

3.6 Drilling Fluids

Newpark Drilling Fluids were contracted to supply and maintain drilling fluids. After receiving 240bbl 9.3ppg recycled mud (previous well Kalala S-1) a total of 340bbls 8.4ppg PHPA Polymer Spud was made up to commence operations on Amungee NW 1. Initially while drilling the 18.5" conductor a PHPA Polymer Spud mud system was utilized with full returns until reaching 100.16m where total lost circulation occurred. The remainder of the interval was blind drilled with water down to a depth of 139m.

A total of 1,024bbls 8.34ppg Mist fluid was made up to drilled the 14.75" Surface Hole with air/ mist/foam drilling to 284m depth in the cavernous nature of the limestone. Total circulation was lost during drilling this section.

The drilling fluids utilized for the 9.875" Intermediate hole was air/ mist fluid and water based Polymer Mud system. For the 6.75" section the interval was commenced from 1,436m down to FIT/ELOT depth 1,447m using 9.6ppg NaCl Polymer mud. From 1,447m down to 1,573m the section was hammer drilled using a Polymer/ Drill foam mist fluid from until returning to conventional drilling where a NaCl Polymer mud system was utilized for the remainder of 6.75" primary production hole from 1,573m down to section TD at 2,609m.

4 Geology

4.1 Formation Tops

Table 3 summarizes the prognosed vs. actual Formation Top depths for Amungee NW-1

FORMATION	Prognosed Depth		Actual Depth		Difference	COMMENTS
	(mMDRT)	(mTVDSS)	(mMDRT)	(mTVDSS)	(+/- mTVDSS)	
Undifferentiated Cretaceous	0	265.91	5.35	265.91	-	
Anthony Lagoon Beds	77	189	70	196	7 H	
Gum Ridge Formation	114	152	91.5	174	22 H	
Antrim Volcanics	239	27	**230.5	35.5	8.5 H	**No returns to surface
Bukalara Sandstone	392	-126	314	-48	78 H	
Chambers River Fm	397	-131	419	-153	22 L	
Bukalorkmi Sandstone	869	-603	878.5	-612.5	9.5 L	
Kyalla Formation	957	-691	952.5	-686.5	4.5 H	Secondary Target
Moroak Sandstone	1395	-1129	1353	-1087	42 H	
Velkerri Formation	1870	-1604	1690	-1424	180 H	
Upper Velkerri Member	1870	-1604	1690	-1424	180 H	
Middle Velkerri Member	2090	-1824	2100	-1834	10 L	Primary Target
Doleritic Sill	2402	-2136	-	-	-	
Lower Velkerri Member	2600	-2334	2560	-2294	40 H	
Total Depth	**2650**	**-2384**	**2609**	**-2343**	**41 H**	**Driller TD @ 2609m Wireline TD @ 2611m**

Table 3. Amungee NW-1 prognosed vs. actual Formation Top depths

4.2 Reservoir and Prospective Horizons

Amungee NW-1 geological objectives included the Middle Velkerri Member of the Velkerri Formation (primary) and the Kyalla Formation (secondary target).

The Middle Velkerri Member consists of three organic-rich mudstone/siltstone intervals separated by two organically poor finely interbedded, variable mud, silt and sand rich intervals. The three organic-rich intervals are referred to as the Middle Velkerri Member "A", "B" and "C" shale from oldest to youngest respectively. In Amungee NW-1, the top of the Middle Velkerri Member was intersected at 2100m and the formation drilled to a depth of 2560m.

The Kyalla Formation represents a silty mudstone with thin planar interbeds of siltstone and sandstone; however more significant intervals of fine sandstone up to 70 m in thickness are recorded in the lower half of the formation (Lanigan et al, 1994). In Amungee NW-1, the top of the formation was intersected at 952.5m and drilled to a depth of 1353m.

The lithological description of the Middle Velkerri Member and Kyalla Formation are summarized in Appendix 2

5 Formation Sampling

5.1 Drill Cuttings

Drill cuttings samples were collected over the interval from 5.35 to 2609mMDRT (Driller TD). Sampling intervals are as follow:

Cuttings Interval	Sample Rate	Comments
5.35 – 100m	10m	
100 – 284.5m	-	No returns to surface
284.5 – 420m	10m	
420 – 2035m	5m	
2035 – 2609m	3m	

Table 4. Drill Cuttings Interval and Sampling Rate Summary

Detailed drill cuttings lithological descriptions are enclosed in Appendix 2.

5.2 Fullbore Core

The well was continuously cored from 2239 to 2275.54 mMDRT. Core recovery was excellent retrieving a total of 36.54m of 3.5" diameter core. The core was cut utilising a 36m, 5-3/4" heavy duty core barrel complete with TSS and half-moon aluminium liners

A record of the coring run is detailed in the Corepro ALS Oil & Gas Final Well Report in Appendix 3. Core Photographs in natural light are enclosed in Appendix 3. Note that an exception to the submission of UV light photographs was submitted and granted by the Department due to minimal evidence of fluorescence in drill cuttings

5.3 Sidewall Cores

Schlumberger's rotary sidewall coring tool (MSCT) was run over the interval from 2586 to 2428.3mMDRT and 2422.2 to 2139.5mMDRT recovering a total of fifty sidewall cores (0.92" x 2"). Table 5 and Table 6 provide a general and depth summary of sidewall cores recovered per run. A detailed summary of sidewall core depth recovery and natural light photography are enclosed in Appendix 3. Note that an exception to the submission of UV light photographs was submitted and granted by the Department due to minimal evidence of fluorescence in drill cuttings

No.	Cored Interval Drillers Depth (mMDRT)	Recovery m (%)
Run 3	2586 - 2428.3	26 Cut / 20 Rec./3 Rubble/3 half-core
Run 4	2422.2 - 2139.5	24 Cut / 24 Rec.

Table 5. Summary of Rotary Sidewall Coring (MSCT) runs and recovery

No.	CORE NUMBER	DEPTH (m)
Run 3	1	2586
Run 3	2	2572
Run 3	3	2559.2
Run 3	4	2559
Run 3	5	2550.5
Run 3	6	2550.3
Run 3	7	2540.5
Run 3	8	2540.3
Run 3	9	2534
Run 3	10	2520
Run 3	11	2509.5
Run 3	12	2488.2
Run 3	13	2488
Run 3	14	2475.5
Run 3	15	2460.2
Run 3	16	2460
Run 3	17	2452.5
Run 3	18	2452.3
Run 3	19	2444.2
Run 3	20	2444
Run 3	21	2439.5
Run 3	22	2439.3
Run 3	23	2434.5
Run 3	24	2434.3
Run 3	25	2428.5

No.	CORE NUMBER	DEPTH (m)
Run 3	26	2428.3
Run 4	27	2422.2
Run 4	28	2422
Run 4	29	2404
Run 4	30	2389
Run 4	31	2371
Run 4	32	2353.5
Run 4	33	2318
Run 4	34	2300
Run 4	35	2286.5
Run 4	36	2286.3
Run 4	37	2278.5
Run 4	38	2278.3
Run 4	39	2239.2
Run 4	40	2239
Run 4	41	2230.2
Run 4	42	2230
Run 4	43	2222.5
Run 4	44	2222.3
Run 4	45	2210.2
Run 4	46	2210
Run 4	47	2190
Run 4	48	2181
Run 4	49	2158.5
Run 4	50	2139.5

Table 6. Sidewall Coring Depth Summary

5.4 Mud gas

A total of 97 Isojars and 100 Isotubes were collected for Amungee NW-1. Sampling intervals are summarized in Table 7. A detailed summary of mudgas depths is enclosed in Appendix 4

Depth Interval (mMDRT)	Sample type	Background Gas Sampling	Peak Gas Sampling
5.35 – 718.5	Isotubes / Isojars	No samples collected	No samples collected
718.5 – 1400	Isotubes / Isojars	1100-1200m collected every 50m 1200-1400m collected every 25m	At gas peaks over 10%
1400 - 1800	Isotubes / Isojars	No samples collected	At gas peaks over 10%
1800 - 2609	Isotubes / Isojars	1800-2050m collected every 50m 2050-2609m collected every 25m	At gas peaks over 10%

Table 7. Mudgas Sampling Summary

6 Formation Evaluation

6.1 Mudlogging

Geoservices (Schlumberger) provided mudlogging services for the drilling of Amungee NW-1. This included conventional mudlogging, formation evaluation, real time data monitoring, drilling analysis, as well as high resolution imaging and X-Ray fluorescence (XRF) on drilling cuttings over the interval from 5.35 to 2609 mMDRT. Mudlogging data, XRF raw values, HDRM cuttings photography, log displays and Geoservices End of Well Report are enclosed in Appendix 5.

6.2 Wireline Logging

The following wireline logs were run by Schlumberger at Amungee NW-1

LOGGING					
RUN #	Depth (m)		Description	Operator	Remarks
	From	To			
1	2611	Surface	HRLT-HDRS-HGNS-HNGS-EDTC-SP (PEX)	SLB	Repeat section: 2580 - 2510m. Added 1.27m Total Depth Logger 2611m
2	2611	2050	PPC-CMR-NEXT-EDTC (CMR-Lithoscanner)	SLB	Repeat section 2600 - 2530m.
3	2586	2428.3	Rotary Sidewall Coring (MSCT)	SLB	Cores 1 - 26 cut without event. Core 26 jammed, tool pulled out of hole.
4	2422.2	2139.5	Rotary Sidewall Coring (MSCT)	SLB	Cores 27 - 50 cut without event. 24 cut, 24 recovered.
5	2611	940	FBST-MAST-PPC-EDTC (FMI-SonicScanner)	SLB	FMI TD – 2603.2 -1432m Sonic Scan TD – 2595.4 - 940m Inclination TD – 2608m - Surface

Table 7. Summary of Wireline Logs

Field data, processed data and log displays for all wireline logs are provided in Appendix 6.

6.3 Hydrocarbon Indications

6.3.1 Gas detection whilst drilling

Continuous Mud Gas monitoring (percentage) and C_{1-n} – C_5 analysis was perform by Geoservices in Amungee NW-1. A summary of Gas detection whilst drilling is enclosed in Appendix 7

7 Formation Testing

7.1 Drill Stem Test (DST) - Chambers River Formation

Farley Riggs was mobilized on 24 September 2015 to run a Drill Stem Test on Amungee NW-1. An inflate tool assembly with 20.03 metres interval was made up for DST #1 and started running in the hole at 03:00hrs on 26 September 2015.

The tools were run into a test interval 795 to 815.03 metres. The packers were inflated and the test was conducted. A detailed list of the events is included in the Final report provided in Appendix 8.

This was a single test run. The results indicate a mechanically successful test.

The fluid gauge indicates 0 metres water cushion assuming fresh water. This same gauge shows a total pressure gain due to fluid of 32.75 psi during the flows. Assuming fresh water, this is equivalent to 23.05 metres of fluid.

During the initial flow, as tool was opened a weak blow was observed 2 inches below surface of bucket. Building slightly to 4 inches below surface before dropping to 3 inches on completion of preflow.

For the main flow, as tool was opened a weak blow was observed 2 inches below surface of bucket. Building rapidly to 9 inches below before dropping off. On completion of mainflow a very weak blow 2 inches below surface was observed.

At the conclusion of this test, the string was pulled out the hole.