

## **APPENDIX IV: LOG INTERPRETATION**

## **APPENDIX IV (a): LOG ANALYSIS**

# **West Mereenie 24 / 24ST1**

## **Log Analysis**

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# **WEST MEREENIE 24 / 24ST1**

## **LOG ANALYSIS**

### **1. SUMMARY**

West Mereenie 24 / 24ST1 was drilled as a 45° deviated Pacoota P3 Sandstone oil appraisal well in the Mereenie Field. Top hole section was drilled to 530m MD in July 2013 by the Boart Longyear WW07 rig, re-entered on 18<sup>th</sup> February 2013 by the Ensign 918 rig. The well reached a TD of 1329m MD at the top of the Pacoota P2 Sandstone on 22<sup>nd</sup> February 2013 before a down-hole fire ceased drilling. West Mereenie 24 was plugged back and side-tracked to West Mereenie 24ST1 @ 1218.5m MD on 4<sup>th</sup> March and reached a TD of 1540m MD in March 2014. West Mereenie 24 / 24ST1 is located on the northern flank of the western sub-culmination of the Mereenie Field. It was an appraisal step-out location west of West Mereenie 4 / 4DW1 well. The primary targets are the P3-120/130 (as was completed in WM 4DW1) plus it was prognosed to intersect additional pay in the lower P3 sands (P3-190/230/250) within the oil column, due to the 45° well design. Secondary objectives were to appraise the conventional gas reservoirs of the Upper and Lower Stairway Sandstone and the Pacoota P1 section. Final well trajectory shown in figure 1.

In addition to the standard wire-line logs, viz., PEX-HRLA-HNGS-SP; more sophisticated logging runs, viz., FMI-SonicScanner and GR-CMR<sup>+</sup> were conducted in order to evaluate the unconventional potential of the Middle Stairway Sandstone, Horn Valley Siltstone and the Pacoota P2 Sandstone.

Throughout the air-mist drilled section in West Mereenie 24, two gas flows were recorded above the gas measurement limit of 0.5 MMscf/d. One open-hole drill stem test was conducted in West Mereenie 24ST1 across the Pacoota P3-120/130 section on penetration, recording no fluids to surface. DST 1 across the P3-120/130 zones; recovered 0.9bbbls (42.8m) of oil cut mud (45° Deg API). Sample chamber contained 5L of slightly oil cut mud.

This is the final evaluation of West Mereenie 24 / 24ST1 for inclusion in the Well Completion Report. Two evaluation processes were used to interpret this well, first the deterministic method as documented in "Petrophysical Review of the Mereenie Field", (1996), by S. Clinch and secondly, a Mutimin petrophysical interpretation package (key log evaluations displayed on Well Evaluation Summary [WES] plot). The former process has been documented in this report.

A total of 4.5 mMD of proved (Category 1) oil pay was intersected in this well, along with 10.3 mMD of proved (Category 1) gas pay. A total of 11.2 mMD of proved & probable (Category 2) oil pay was intersected, along with a total of 30.1 mMD of proved & probable (Category 2) gas pay was intersected in sands that have been proven either to flow or have intersected significant gas peaks on the northern flank.

Table 1(a) & (b) summarises the sands and pay found in this well, as shown on the accompanying WES plot. The top and base of each sand cycle are listed together with average petrophysical properties for the sand as defined by three sets of cutoffs. The cutoffs detailing the three categories are presented in Table 8. Category 3; low permeability cutoffs are more reflective of Proved, Probable & Possible (3P) hydrocarbon in place (HIP), whereas Category 2; conventional cutoffs are more reflective of Proved & Probable (2P) HIP. Category 1; are based on more stringent criteria and reflect proved producibility (1P) HIP. Where appropriate, remarks (e.g. DST results) further qualify the interpretation. Category 1, 2 and 3 pay is totalled by formation in Table 1a & 1b below. Table 1c & 1d compares thicknesses in measured depth (MD), true stratigraphic thickness (TST) & true vertical depth (TVD).

**TABLE 1(a): Oil Pay  
(DENSITY POROSITY/ARCHIE SW)**

INTERVAL (loggers depth) (mMD)		NET SAND (mMD)	NET PAY (mMD)	AVE $\phi_T$ (%)	AVE SW <sub>T</sub> (%)	AVE Kint (md)	NET PAY INTERVALS / REMARKS
<b>Pacoota P3-70</b> (1421.4-1428.9)	Cat 1						OGOC intersected at the P3-70 top. No Fluorescence & low gas readings.
	Cat 2						
	Cat 3						
<b>Pacoota P3-90</b> (1428.9-1437.0)	Cat 1						Trace-10% v. dull to dull light green fluorescence with gas reading.
	Cat 2						
	Cat 3						
<b>Pacoota P3-120/130</b> (1437.0-1452.2)	Cat 1	1.85	1.85	10.0	24.2	6.98	DST 1:Recovered 0.9bbls of oil cut mud 60%-80% dull to mod. bright light green fluorescence with significant gas peak. Some depletion indicated on DST chart.
	Cat 2	5.64	5.64	9.0	23.3	4.37	
	Cat 3	5.89	5.89	8.9	23.2	4.22	
<b>Pacoota P3-150</b> (1452.5-1463.7)	Cat 1						Two zones, 10% dull to light green-yellow fluorescence with gas readings. Low perm.
	Cat 2	1.58	1.58	8.5	39.9	2.38	
	Cat 3	2.64	2.64	8.1	42.4	1.73	
<b>Pacoota P3-190</b> (1463.7-1481.6)	Cat 1						Two zones, Trace-10% v. dull to dull light green fluorescence with gas readings. Low perm.
	Cat 2						
	Cat 3						
<b>Pacoota P3 – 230</b> (1481.6-1496.5)	Cat 1	2.67	2.67	8.4	49.6	4.05	Trace-10% v. dull to dull pinpoint to spptd fluorescence with gas readings. Low K Some depletion indicated on MDT points.
	Cat 2	3.94	3.94	8.4	53.2	3.32	
	Cat 3	4.98	4.98	8.2	55.9	2.78	
<b>Pacoota P4</b> (1496.5-1540.0)	Cat 1						No Fluorescence & low gas readings.
	Cat 2	0.89	0.00	7.8	85.5	1.56	
	Cat 3	3.05	0.00	7.3	88.6	1.02	
<b>TOTALS</b>	<b>Cat 1</b>	<b>4.52</b>	<b>4.52</b>	<b>9.0</b>	<b>38.1</b>	<b>5.25</b>	
	<b>Cat 2</b>	<b>12.34</b>	<b>11.15</b>	<b>8.7</b>	<b>35.8</b>	<b>3.72</b>	
	<b>Cat 3</b>	<b>16.56</b>	<b>13.51</b>	<b>8.5</b>	<b>38.4</b>	<b>3.20</b>	

**TABLE 1(b): Gas Pay**  
**(DENSITY POROSITY/ARCHIE SW)**

INTERVAL (loggers depth) (mMD)		NET SAND (mMD)	NET PAY (mMD)	AVE $\phi_T$ (%)	AVE SW <sub>T</sub> (%)	AVE Kint (md)	NET PAY INTERVALS/ REMARKS
Upper Stairway (top) (867.0-902.6)	Cat 1						Gas readings commenced below 881m MD. No recorded gas flows/flares.
	Cat 2						
	Cat 3	2.38	2.38	6.0	53.5	0.16	
Basal Upper STW (902.6-930.2)	Cat 1						Increased gas peaks, main gas peak @ 916m. Tr dull to bright grn-white pin-point fluorescence No recorded gas flows/flares.
	Cat 2	6.58	6.58	6.5	71.3	0.36	
	Cat 3	7.93	7.93	6.4	72.5	0.31	
Lower Stairway 2 (1046.2-1108.2)	Cat 1						No gas flows on western flank. Minor gas recorded Sw calculations are anomalously high based on height above the FWL.
	Cat 2	4.32	4.32	7.2	93.1	0.34	
	Cat 3	6.96	6.96	7.2	94.5	0.24	
Lower Stairway 1 (1108.2-1139.4)	Cat 1						No gas flows on western flank. Minor gas peaks recorded on mudlog, peak @ 1124m. Tr dull green-white pin-point fluorescence No recorded gas flows/flares.
	Cat 2	2.97	2.97	8.2	67.2	0.99	
	Cat 3	4.27	4.27	7.9	70.9	0.71	
Pacoota P1-40 (1222.8-1243.2)	Cat 1						Gas flow recorded in crestal West Mereenie 18 well-bore. Gas peak recorded on Mudlog.
	Cat 2						
	Cat 3	0.79	0.79	4.4	15.2	1.03	
Pacoota P1-60 (1243.2-1248.0)	Cat 1						No gas peak recorded. No recorded gas flows/flares.
	Cat 2						
	Cat 3	0.25	0.25	7.2	56.7	0.07	
Pacoota P1-80 (1248.0-1254.9)	Cat 1						Gas peaks recorded, max. @ 1249m. Trace dull light green pin-point fluorescence. No recorded gas flows/flares.
	Cat 2						
	Cat 3	0.18	0.18	4.5	30.8	0.06	
Pacoota P1-110 (1254.9-1263.9)	Cat 1						Minor gas show.
	Cat 2						
	Cat 3						
Pacoota P1-200 (1274.6-1282.1)	Cat 1						Minor gas peaks recorded. No recorded gas flows/flares.
	Cat 2						
	Cat 3						
Pacoota P1-210 (1282.1-1290.1)	Cat 1						Gas peaks recorded, max. @ 1283.5m. Trace dull light green-white pin-point fluorescence. No recorded gas flows/flares.
	Cat 2						
	Cat 3	5.23	5.23	6.7	40.5	0.19	
Pacoota P1-240 (1290.1-1304.7)	Cat 1						Minor gas peaks recorded. No recorded gas flows/flares.
	Cat 2						
	Cat 3	1.47	1.47	7.3	39.4	0.16	
Pacoota P1-280 (1304.7-1310.7)	Cat 1	3.30	3.30	6.7	14.8	3.89	Zone severely depleted due to production and confirmed by MDT points. GTS @ 4.12MMCFD (5-6m moderately strong dark orange gas flare).
	Cat 2	3.53	3.53	6.6	15.2	3.66	
	Cat 3	3.58	3.58	6.5	15.3	3.61	
Pacoota P1-310 (1310.7-1324.1)	Cat 1	2.57	2.57	7.1	19.4	2.20	Zone depleted due to production and confirmed by MDT points. Gas peaks recorded.
	Cat 2	5.00	5.00	6.0	20.6	1.24	
	Cat 3	6.12	6.12	5.8	21.6	1.02	
Pacoota P1-350 (1324.1-1329.6)	Cat 1	2.39	2.39	5.8	18.8	1.41	Zone severely depleted due to production and confirmed by MDT points. GTS @ 8.9 MMCFD (6-8m strong dark orange gas flare).
	Cat 2	2.62	2.62	5.7	19.1	1.31	
	Cat 3	2.95	2.95	5.5	19.5	1.17	
Pacoota P2 # (1329.6-1400.6)	Cat 1						Gas peaks recorded, max. @ 1348m, 1389m, 1396m. Tr dull to bright light grn-white pin-point fluorescence.
	Cat 2						
	Cat 3	5.18	5.18	6.5	45.4	0.28	
Pacoota P3-10 (1400.6-1421.4)	Cat 1	2.01	2.01	6.3	32.9	0.60	Gas peaks recorded. Trace to 5% v. dull to dim light green fluorescence. OGOC intersected @ base of this unit.
	Cat 2	5.06	5.06	5.9	33.8	0.39	
	Cat 3	9.09	9.09	5.5	33.8	0.31	
TOTALS	Cat 1	10.26	10.26	6.5	20.3	2.25	
	Cat 2	30.07	30.07	6.5	50.2	1.04	
	Cat 3	56.39	56.39	6.4	50.7	0.65	# FLARE Mudlog indicates a possible oil zone



**TABLE 1(c): Oil Pay****(DENSITY POROSITY/ARCHIE SW)**

INTERVAL (loggers depth) (mTVD)		NET SAND (mMD)	NET PAY (mMD)	NET SAND (mTST)#	NET PAY (mTST)#	NET SAND (mTVD)	NET PAY (mTVD)
<b>Pacoota P3-70</b> (1403.7-1409.6)	Cat 1						
	Cat 2						
	Cat 3						
<b>Pacoota P3-90</b> (1409.6-1415.8)	Cat 1						
	Cat 2						
	Cat 3						
<b>Pacoota P3-120/130</b> (1415.8-1427.5)	Cat 1	1.85	1.85	1.65	1.65	1.38	1.38
	Cat 2	5.64	5.64	5.03	5.03	4.20	4.20
	Cat 3	5.89	5.89	5.25	5.25	4.39	4.39
<b>Pacoota P3-150</b> (1427.5-1435.7)	Cat 1						
	Cat 2	1.58	1.58	1.38	1.38	1.15	1.15
	Cat 3	2.64	2.64	2.31	2.31	1.93	1.93
<b>Pacoota P3-190</b> (1435.7-1448.6)	Cat 1						
	Cat 2						
	Cat 3						
<b>Pacoota P3 – 230</b> (1448.6-1459.2)	Cat 1	2.67	2.67	2.26	2.26	1.90	1.90
	Cat 2	3.94	3.94	3.35	3.35	2.80	2.80
	Cat 3	4.98	5.03	4.23	4.23	3.58	3.58
<b>Pacoota P4</b> (1459.2-1490.1)	Cat 1						
	Cat 2	0.89	0.00	0.75	0.00	0.85	0.00
	Cat 3	3.05	0.00	2.56	0.00	2.17	0.00
<b>TOTALS</b>	<b>Cat 1</b>	<b>4.52</b>	<b>4.52</b>	<b>3.91</b>	<b>3.91</b>	<b>3.28</b>	<b>3.28</b>
	<b>Cat 2</b>	<b>12.34</b>	<b>11.15</b>	<b>10.51</b>	<b>9.51</b>	<b>8.78</b>	<b>8.15</b>
	<b>Cat 3</b>	<b>16.56</b>	<b>13.51</b>	<b>14.35</b>	<b>11.79</b>	<b>12.07</b>	<b>9.90</b>

# Structural dip of 13 degrees assumed for all horizons based on Ikon Science's Quicklook preliminary FMI interpretation.

**TABLE 1(d): Gas Pay  
(DENSITY POROSITY/ARCHIE SW)**

INTERVAL (loggers depth) (mTVD)		NET SAND (mMD)	NET PAY (mMD)	NET SAND (mTST)#	NET PAY (mTST)#	NET SAND (mTVD)	NET PAY (mTVD)
Upper Stairway (top) (865.9-901.4)	Cat 1						
	Cat 2						
	Cat 3	2.38	2.38	2.36	2.36	2.38	2.38
Basal Upper STW (901.4-928.9)	Cat 1						
	Cat 2	6.58	6.58	6.52	6.52	6.47	6.47
	Cat 3	7.93	7.93	7.85	7.85	7.89	7.89
Lower Stairway 2 (1044.7-1106.7)	Cat 1						
	Cat 2	4.32	4.32	4.23	4.23	4.34	4.34
	Cat 3	6.96	6.96	6.81	6.81	6.98	6.98
Lower Stairway 1 (1106.7-1137.9)	Cat 1						
	Cat 2	2.97	2.97	2.89	2.89	2.97	2.97
	Cat 3	4.27	4.27	4.16	4.16	4.27	4.27
Pacoota P1-40 (1221.1-1241.1)	Cat 1						
	Cat 2						
	Cat 3	0.79	0.79	0.79	0.79	0.78	0.78
Pacoota P1-60 (1241.1-1245.8)	Cat 1						
	Cat 2						
	Cat 3	0.25	0.25	0.25	0.25	0.25	0.25
Pacoota P1-80 (1245.8-1252.5)	Cat 1						
	Cat 2						
	Cat 3	0.18	0.18	0.18	0.18	0.17	0.17
Pacoota P1-200 (1271.5-1278.7)	Cat 1						
	Cat 2						
	Cat 3						
Pacoota P1-210 (1278.7-1286.4)	Cat 1						
	Cat 2						
	Cat 3	5.23	5.23	5.21	5.21	4.99	4.99
Pacoota P1-240 (1286.4-1300.2)	Cat 1						
	Cat 2						
	Cat 3	1.47	1.47	1.46	1.46	1.40	1.40
Pacoota P1-280 (1300.2-1305.8)	Cat 1	3.30	3.30	3.29	3.29	3.12	3.12
	Cat 2	3.53	3.53	3.52	3.52	3.33	3.33
	Cat 3	3.58	3.58	3.57	3.57	3.38	3.38
Pacoota P1-310 (1305.8-1318.4)	Cat 1	2.57	2.57	2.55	2.55	2.40	2.40
	Cat 2	5.00	5.00	4.96	4.96	4.69	4.69
	Cat 3	6.12	6.12	6.07	6.07	5.73	5.73
Pacoota P1-350 (1318.4-1323.5)	Cat 1	2.39	2.39	2.37	2.37	2.22	2.22
	Cat 2	2.62	2.62	2.60	2.60	2.43	2.43
	Cat 3	2.95	2.95	2.93	2.93	2.74	2.74
Pacoota P2 (1323.5-1386.7)	Cat 1						
	Cat 2						
	Cat 3	5.18	5.18	5.03	5.03	4.57	4.57
Pacoota P3-10 (1386.7-1403.7)	Cat 1	2.01	2.01	1.85	1.85	1.67	1.67
	Cat 2	5.06	5.06	4.66	4.66	4.18	4.18
	Cat 3	9.09	9.09	8.37	8.37	7.51	7.51
TOTALS	Cat 1	10.26	10.26	10.06	10.06	9.41	9.41
	Cat 2	30.07	30.07	29.35	29.35	28.41	28.41
	Cat 3	56.39	56.39	55.09	55.09	53.03	53.03

# Structural dip of 13 degrees assumed for all horizons based on Ikon Science's Quicklook preliminary FMI interpretation.

## 2. GENERAL DATA

### (a) Introduction

Open hole logs were acquired in one suite at a total depth of 1540m MD.  
Details of the logging run appear below:

**TABLE 2(a) - Logs Run**

<b>RUN</b>	<b>MNEMONICS</b>	<b>INTERVAL (mMD)</b>	<b>REMARKS</b>
<b>1</b>	<b>PEX</b> GR HNGS SP CALI RXOZ RLA1/2/3/4/5 TNPH RHOZ PEFZ HDRA	10 - 1514 515 - 1515 520 - 1511 527.6 - 1533 527.6 - 1522 527.6 - 1533 520 - 1527 520 - 1527 520 - 1527 520 - 1527	N.B: Dual axis, X-Y Density log run.
<b>2</b>	<b>GR-FMI-SSCAN</b> FMI DTCO DTSM DTST	840 - 1539 840 - 1539 840 - 1539 840 - 1539	
<b>3</b>	<b>GR-ECS-CMR+</b>	840 - 1539	
<b>4</b>	<b>GR-MDT</b>	-	Tool failed.
<b>5</b>	<b>GR-MDT</b>	911.6 - 1249.5	Packer rubber changed after 19 seal failures.
<b>6</b>	<b>GR-MDT</b>	917 - 1491.8	92 tests attempted: 15 valid, 15 curtailed, 62 seal failures.

(b) **Cores and Sidewall Cores**

No full hole cores or sidewall cores were taken from West Mereenie 24 / 24ST1.

(c) **Open Hole/Drill Stem Tests & MDT's**

Eight Open-hole flow tests and one open-hole drill stem test were successfully conducted in West Mereenie 24 / 24ST1 (Table 2c), with the results tabulated below:

92 pressure tests were attempted with 15 valid, 15 curtailed and 62 seal failures.

**TABLE 2(b) – OFT Results**

OFT	DEPTH* from (mMD)	DEPTH* to (mMD)	HOLE SIZE	REMARKS#
1	530	905	8 ¾ in	Gas @ 0.0 MMCFD (no gas flare)
2	530	930	8 ¾ in	Gas @ 0.0 MMCFD (no gas flare)
3	530	1046	8 ½ in	Gas @ 0.0 MMCFD (no gas flare)
4	530	1106	8 ½ in	Gas @ 0.0 MMCFD (no gas flare)
5	530	1141	8 ½ in	Gas @ 0.0 MMCFD (no gas flare)
6	530	1222	8 ½ in	Gas @ 0.0 MMCFD (no gas flare)
7	530	1306	8 ½ in	Gas @ 4.12MMCFD (5-6m moderately strong dark orange gas flare)
8	530	1329	8 ½ in	Gas @ 8.9 MMCFD (6-8m strong dark orange gas flare)

\* Depth in Drillers

# Minimum flow rate measurable is 0.50 MMcf/d

**TABLE 2(c) - DST Results**

DST	INTERVAL (mMD)	FORMATION	REMARKS
1	1444.1- 1463.0 (D) 1444.1- 1463.0 (L)  (L) = Loggers Depth (D) = Drillers Depth	P3-120/130	DST 1: NFTS Reverse Circulate: 0.9bbls (42.8m) of oil cut mud (45° deg API @ 60° deg F). Sample chamber contained 5L of slightly oil cut mud.

### 3. HOLE CONDITIONS

#### (a) Drilling Overview

9 5/8" surface casing in West Mereenie 24 / 24ST1 was set at 530m. West Mereenie 24 was then drilled with an 8 3/4" bit to 950m and then an 8 1/2" bit to a total depth of 1329m. Well plugged back to 1218.5m and side-tracked with an 8 1/2" bit to a total depth of 1540m as West Mereenie 24ST1. Intervals of air and mud drilling are summarized below.

**TABLE 3 – Drilling Fluid Type**

INTERVAL(mMD)	FLUID TYPE	COMMENTS
530-1329	Air-Mist Drilled	Displaced the well to 8.8 ppg mud. @ 1218.5m MD and side-tracked.
1218.5-1540	Mud Drilled	and increased to 9.0 ppg mud. @ TD.

#### (b) Hole Conditions

Hole conditions in this well-bore are generally good over the majority of the hole.

#### (c) Bore Hole Fluids

At the time of logging the mud properties of West Mereenie 24/24ST1 were as follows:

**TABLE 4 – Mud Properties**

PARAMETERS	SUITE 1
KCl	0 %
NaCl	5.8%
MW	9.0 ppg
Rm	0.162 $\Omega$ m @ 16.3° C
Rmf	0.156 $\Omega$ m @ 16.3° C
Rmc	0.2025 $\Omega$ m @ 16.3° C
Barite	0 %

(d) **Temperature**

Table 5 summarises maximum temperatures recorded during wireline logging operations.

**TABLE 5 - Wireline Logging, Maximum Recorded Temperatures Suite 1**

<b>BHT (°C)</b>	<b>DEPTH (m)</b>	<b>TOOL</b>	<b>HOURS SINCE CIRC. STOPPED</b>
59.0 @ 1506.2m	1533	PEX-HNGS-HRLA, Nuclear Curves	19 hours 15 minutes
60.0 @ 1513.1m	1539	FMI-SSCAN	25 hours 45 minutes
65.0 @ 1522.9m	1539	ECS-CMR+	36 hours 45 minutes
61.1 @ 1481.5m	1492	MDT-GR	54 hours 30 minutes

**4. ENVIRONMENTAL CORRECTIONS**

Environmental corrections were applied by Santos using Paradigm's Geolog7 log interpretation package or were applied in the field by Schlumberger.

**Resistivity Curves (HRLA and MCFL)**

The High Resolution Laterolog Array output curves were environmentally corrected for hole size and invasion.

**Gamma Ray (HNGS)**

The Gamma Ray was corrected for borehole size and mud weight.

**Density Log (RHOZ)**

The density log (RHOZ) was corrected for borehole size and mud weight.

**Neutron Log (HTNP)**

The neutron log (HTNP) was corrected for borehole size, standoff, mud type, mud cake thickness, mud weight, temperature and pressure and borehole salinity.

## 5. INTERPRETATION PROCEDURES

The interpretation in Table 1(a) and 1(b) of the log analysis summary used Density porosity and Archie Sw. Vsh is calculated from Density-Neutron and Thorium-Potassium<sup>#</sup>. More information on the evaluation procedure can be found in the Petrophysical Review of the Mereenie Field (1996), except for #.

**TABLE 6 Density Porosity Evaluation**

Formation	Grain Density (g/cc)	Fluid Density Gas/Oil # (g/cc)	Fluid Density Water (g/cc)
Stairway (Upper)	2.664	0.60	1.0
Stairway (Basal Upper)	2.664	0.40	1.0
Stairway (Middle)	2.664	0.85	1.0
Stairway (Lower)	2.664	0.80	1.0
Horn Valley Shale	2.68	0.85	1.0
Pacoota P1-40/60	2.66	0.75/0.85	1.0
Pacoota P1-80	2.643	0.85	1.0
Pacoota P1-110	2.644	0.85	1.0
Pacoota P1-120/180	2.66	0.85	1.0
Pacoota P1-200	2.635	0.85	1.0
Pacoota P1-210	2.66	0.85	1.0
Pacoota P1-240	2.644	0.85	1.0
Pacoota P1-280	2.67	0.50	1.0
Pacoota P1-310	2.654	0.80	1.0
Pacoota P1-350	2.667	0.25	1.0
Pacoota P2	2.645	0.65	1.0
Pacoota P3-10	2.642	0.35	1.0
Pacoota P3-70/90	2.66	0.50/0.70	1.0
Pacoota P3-120/130	2.639	0.40	1.0
Pacoota P3-150	2.641	0.40	1.0
Pacoota P3-190	2.634	0.50	1.0
Pacoota P3-230/250	2.634	0.40	1.0
Pacoota P4	2.64	1.0	1.35

# Values used to obtain a reasonable match with CMR<sup>+</sup> porosities

**TABLE 7 - Evaluation Parameters**

PARAMETERS	Stairway and Horn Valley	All P1 and P2	P3-10, P3- 70/90 and P3- 120/130	P3-150 and P3- 190/230/250	P4
a	1	1	1	1	1
m	1.8	1.8	1.72	1.94	1.88
n	1.8	1.8	1.70	1.75	1.80
Rw @ 77 F	0.13	0.04	0.11	0.11	0.11
Vshale	D-N	D-N	D-N	D-N	D-N
Porosity	Density	Density	Density	Density	Density
Saturation	Archie	Archie	Archie	Archie	Archie

**TABLE 8 - Cut Off Parameters Used****Stairway Gas Cut Offs**

Parameter	High Perm (1P)		Conventional (2P)		Low Perm (3P)	
	Cut Off	Ka equ.	Cut Off	Ka equ.	Cut Off	Ka equ.
Log $\emptyset$	3.6	0.5	2.3	0.1	1.8	0.05
Gr*	60					
Sw	80		80		85*	

\* Approximated from the Thorium-Potassium Vsh Method

**Pacoota P1 Gas Cut Offs**

Parameter	High Perm (1P)		Conventional (2P)		Low Perm (3P)	
	Cut Off	Ka equ.	Cut Off	Ka equ.	Cut Off	Ka equ.
Log $\emptyset$	4.5	0.5	3.4	0.1	2.8	0.05
Vsh (DN)	50		50			
Sw	65		70		80*	

**Pacoota P3 Gas Cut Offs**

Parameter	High Perm (1P)		Conventional (2P)		Low Perm (3P)	
	Cut Off	Ka equ.	Cut Off	Ka equ.	Cut Off	Ka equ.
Log $\emptyset$	5.5	0.5	5.2	0.1	4.6	0.05
Gr*	120		120		125	
Sw	80		80		80*	

\* GR cut off only used for P3-10 and P3-70/90 sands only. Approximated from the Thorium-Potassium Vsh Method

**Pacoota P3 Oil Cut Offs**

Parameter	High Perm (1P)		Conventional (2P)		Low Perm (3P)	
	Cut Off	Ka equ.	Cut Off	Ka equ.	Cut Off	Ka equ.
Log $\emptyset$	6.8	5	6.2	1	5.5	0.5
Gr*	105		115		120	
Sw	55		55		55*	

\* GR cut off only used for P3-10 and P3-70/90 sands only. Approximated from the Thorium-Potassium Vsh Method

**Pacoota P4 Oil Cut Offs**

Parameter	High Perm (1P)		Conventional (2P)		Low Perm (3P)	
	Cut Off	Ka equ.	Cut Off	Ka equ.	Cut Off	Ka equ.
Log $\emptyset$	6.8	5	5.7	1	4.6	0.5
Vsh (DN)	25		25		25	
Gr*	40		40		40	
Sw	85		85		85*	

\* Approximated from the Thorium-Potassium Vsh Method



## 6. WES PLOT DESCRIPTION

This well evaluation summary (WES) plot displays key deterministic and Multimin outputs.

To the left of the plot are three tracks containing measured logs (Spectral gamma-ray logs, shale indicators and borehole indicators, and CMR<sup>+</sup> porosity logs). The next track contains information on perforations, cores cut and sidewall cores. To the right of the depth scales is a track containing DST's, OHT's, and RFT/MDT points. The next three tracks contain measured logs (resistivity plus Rt, both compressional and sheer sonic, and density-neutron porosity logs, including PEF).

To the right there are two tracks. The first contains deterministically log derived volume of shale calculations based on density-neutron (Vsh\_DN) and thorium-potassium (Vsh\_THOR\_POTA)<sup>#</sup> and also Multimin derived volume of shale (VOL\_WETCALY). Included in this track are total clay points derived from XRD data from cores. Second track contains the CMR<sup>+</sup> total and effective porosity logs.

The next seven tracks all contain essentially log derived curves. First track contains the density total ( $\phi_t$ ) and effective ( $\phi_e$ ) evaluated porosities over the zones of interest. It will also contain core porosity (corrected to overburden conditions) if core data is available, together with the CMR<sup>+</sup> porosity logs<sup>#</sup> (TCMR) for comparison purposes. The second track contains information on the Archie log derived saturations, as well as core derived saturations if core data is available and total gas curve (TGAS). Track 3 contains the Multimin derived porosities across the zones of interest (including TCMR for comparison), with track 4 containing information on the Multimin log derived saturations, as well as core derived saturations if core data is available and total gas curve (TGAS). Track 5 contains the Multimin derived volumes of gas, oil, water and clay bound water. In addition both clay (CBW<sup>#</sup>) and capillary (BVI/Swirr<sup>#</sup>) bound water, and free fluid volumes (FFV<sup>#</sup>) calculated from the CMR<sup>+</sup> logs.

Multimin derived lithology is presented in track 6. Track 7 contains permeabilities derived from the Coates FFI equation (KINT\_FFI) and those measured from the CMR<sup>+</sup> (Timur/Coates - KTIM). In addition, both pressure derived mobilities as well as core derived permeabilities if core data is available is shown in Track 7.

The eighth track contains the flags relating to net sand and net pay. Three pairs of these flags are presented, the first pair (to the left) represent proved sand/pay, whilst the second pair (in the middle) represents probable sand/pay and the third pair (to the right) represents possible pay. The colour coding of the flags are as follows:

yellow	net sand
green	oil pay
red	gas pay
cyan	water

To the far right of the plot is information about net sand and net pay zones, lowest known oil / gas, highest known water, contact locations as well as formation tops.

$$\# V_{sh\_THOR\_POTA} = THOR\_POTA\_SEPARATION - (-10.16) / (-1.36 - (-10.16)),$$
 where  $THOR\_POTA\_SEPARATION = (THOR/10) - (10 - POTA/2)$   
 TCMR = Total Porosity from CMR ( $\phi_{tcmr}$ )  
 CMRP\_3MS = Effective porosity from CMR ( $\phi_{ecmr}$ )  
 CBW = TCMR - CMRP\_3MS  
 BVI/Swirr = BFV(Bound Fluid Volume) – CBW  
 FFV = CMRP\_3MS - BVI

## Appendix 1: Deterministic Method : Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Gas) in measured depth

```

*****
*
*   Pay Summary Report for lump GASPAY1
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
*****

```

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1304.700	1310.700	6.000	3.302	0.550	12.850	0.067	0.148	0.067	3.892
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1310.700	1324.100	13.400	2.565	0.191	5.646	0.071	0.194	0.068	2.201
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1324.100	1329.600	5.500	2.388	0.434	3.360	0.058	0.188	0.056	1.407
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1400.600	1421.400	20.800	2.007	0.096	1.204	0.063	0.329	0.065	0.600
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1437.000	1452.500	15.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1452.500	1463.700	11.200	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1481.600	1496.500	14.900	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
867.000	1540.000	673.000	10.262	0.015	23.060	0.065	0.203	0.064	2.247

## Appendix 1 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Gas)

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*****
*                                     *
*   Pay Summary Report for lump GASPAY2   *
*                                     *
*   Project : madd_drilling               *
*   User id  : graca                     *
*   Date    : 08-Aug-2014 16:25:45      *
*                                     *
*****

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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
902.600	930.200	27.600	6.579	0.238	2.370	0.065	0.713	0.060	0.360
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MERREENIE_24ST1]									
1046.200	1108.200	62.000	4.318	0.070	1.465	0.072	0.931	0.063	0.339
[Interval: LOWER STAIRWAY 1; Well: WEST_MERREENIE_24ST1]									
1108.200	1139.400	31.200	2.972	0.095	2.943	0.082	0.672	0.069	0.990
[Interval: HORN VALLEY SILSTONE; Well: WEST_MERREENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MERREENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MERREENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MERREENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1304.700	1310.700	6.000	3.531	0.588	12.915	0.066	0.152	0.066	3.658
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1310.700	1324.100	13.400	5.004	0.373	6.182	0.060	0.206	0.055	1.235
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1324.100	1329.600	5.500	2.616	0.476	3.421	0.057	0.191	0.055	1.308
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1400.600	1421.400	20.800	5.055	0.243	1.990	0.059	0.338	0.059	0.394
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	30.074	0.045	31.286	0.065	0.502	0.061	1.040



## Appendix 1(continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Gas)

```

*****
*
*   Pay Summary Report for lump GASPAY3
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
*****

```

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	2.388	0.067	0.387	0.060	0.535	0.054	0.162
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	7.925	0.287	2.469	0.064	0.725	0.059	0.312
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	6.960	0.112	1.657	0.072	0.945	0.061	0.238
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	4.267	0.137	3.039	0.079	0.709	0.065	0.712
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.787	0.039	0.813	0.044	0.152	0.041	1.033
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.254	0.053	0.018	0.072	0.567	0.062	0.070
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.178	0.026	0.010	0.045	0.308	0.041	0.056

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1282.100	1290.200	8.100	5.232	0.646	0.997	0.067	0.405	0.059	0.191
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1290.200	1304.700	14.500	1.473	0.102	0.234	0.073	0.394	0.059	0.159
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1304.700	1310.700	6.000	3.581	0.597	12.918	0.065	0.153	0.065	3.607
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1310.700	1324.100	13.400	6.121	0.457	6.266	0.058	0.216	0.052	1.024
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1324.100	1329.600	5.500	2.946	0.536	3.444	0.055	0.195	0.052	1.169
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1329.600	1400.600	71.000	5.182	0.073	1.437	0.065	0.454	0.055	0.277
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1400.600	1421.400	20.800	9.093	0.437	2.810	0.055	0.338	0.054	0.309
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	56.388	0.084	36.500	0.064	0.507	0.057	0.647

## Appendix 2: Deterministic Method: Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Oil)

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*****
*
*   Pay Summary Report for lump OILPAY1
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
*****

```

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1304.700	1310.700	6.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1310.700	1324.100	13.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1324.100	1329.600	5.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1400.600	1421.400	20.800	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	1.854	0.120	12.943	0.100	0.242	0.094	6.980
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	2.667	0.179	10.813	0.084	0.496	0.079	4.054
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	4.521	0.007	23.756	0.090	0.381	0.085	5.254

## Appendix 2 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Oil)

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*****
*
*   Pay Summary Report for lump OILPAY2
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
*****

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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREENIE_24ST1]									
1304.700	1310.700	6.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MEREENIE_24ST1]									
1310.700	1324.100	13.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MEREENIE_24ST1]									
1324.100	1329.600	5.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MEREENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREENIE_24ST1]									
1400.600	1421.400	20.800	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MEREENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-



DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1437.000	1452.500	15.500	5.639	0.364	24.615	0.090	0.233	0.084	4.365
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1452.500	1463.700	11.200	1.575	0.141	3.755	0.085	0.399	0.079	2.384
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1481.600	1496.500	14.900	3.937	0.264	13.052	0.084	0.532	0.078	3.315
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
867.000	1540.000	673.000	11.151	0.017	41.422	0.087	0.358	0.081	3.715

## Appendix 2 (continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Oil)

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*****
*                                     *
*   Pay Summary Report for lump OILPAY3   *
*                                     *
*   Project : madd_drilling               *
*   User id  : graca                     *
*   Date    : 08-Aug-2014 16:25:45      *
*                                     *
*****

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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1304.700	1310.700	6.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1310.700	1324.100	13.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1324.100	1329.600	5.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1400.600	1421.400	20.800	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	5.893	0.380	24.883	0.089	0.232	0.083	4.223
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	2.642	0.236	4.556	0.081	0.424	0.075	1.725
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	4.978	0.334	13.862	0.082	0.559	0.075	2.784
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	13.513	0.020	43.302	0.085	0.384	0.079	3.204

### Appendix 3: Deterministic Method: Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND1
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
*****

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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
902.600	930.200	27.600	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MERREENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MERREENIE_24ST1]									
1046.200	1108.200	62.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MERREENIE_24ST1]									
1108.200	1139.400	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MERREENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MERREENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MERREENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MERREENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1304.700	1310.700	6.000	3.302	0.550	12.850	0.067	0.148	0.067	3.892
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1310.700	1324.100	13.400	2.565	0.191	5.646	0.071	0.194	0.068	2.201
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1324.100	1329.600	5.500	2.388	0.434	3.360	0.058	0.188	0.056	1.407
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1400.600	1421.400	20.800	2.007	0.096	1.204	0.063	0.329	0.065	0.600
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	1.854	0.120	12.943	0.100	0.242	0.094	6.980
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	2.667	0.179	10.813	0.084	0.496	0.079	4.054
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	14.783	0.022	46.816	0.073	0.271	0.070	3.167

### Appendix 3 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND2   *
*
*   Project : madd_drilling             *
*   User id  : graca                   *
*   Date    : 08-Aug-2014 16:25:45    *
*
*****

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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	6.579	0.238	2.370	0.065	0.713	0.060	0.360
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	4.318	0.070	1.465	0.072	0.931	0.063	0.339
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	2.972	0.095	2.943	0.082	0.672	0.069	0.990
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40 Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.000	0.000	0.000	-	-	-	-



DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1282.100	1290.200	8.100	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1290.200	1304.700	14.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1304.700	1310.700	6.000	3.531	0.588	12.915	0.066	0.152	0.066	3.658
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1310.700	1324.100	13.400	5.004	0.373	6.182	0.060	0.206	0.055	1.235
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1324.100	1329.600	5.500	2.616	0.476	3.421	0.057	0.191	0.055	1.308
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1329.600	1400.600	71.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1400.600	1421.400	20.800	5.055	0.243	1.990	0.059	0.338	0.059	0.394
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	5.639	0.364	24.615	0.090	0.233	0.084	4.365
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	1.575	0.141	3.755	0.085	0.399	0.079	2.384
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	3.912	0.263	13.028	0.084	0.530	0.078	3.331
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	1.194	0.027	1.862	0.078	0.855	0.077	1.560
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	42.393	0.063	74.547	0.071	0.466	0.067	1.758

### Appendix 3 (continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND3
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 08-Aug-2014 16:25:45
*
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DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
867.000	902.600	35.600	2.388	0.067	0.387	0.060	0.535	0.054	0.162
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
902.600	930.200	27.600	7.925	0.287	2.469	0.064	0.725	0.059	0.312
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
930.200	1046.200	116.000	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1046.200	1108.200	62.000	6.960	0.112	1.657	0.072	0.945	0.061	0.238
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1108.200	1139.400	31.200	4.267	0.137	3.039	0.079	0.709	0.065	0.712
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1139.400	1222.800	83.400	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1222.800	1243.200	20.400	0.787	0.039	0.813	0.044	0.152	0.041	1.033
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1243.200	1248.000	4.800	0.254	0.053	0.018	0.072	0.567	0.062	0.070
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1248.000	1254.900	6.900	0.178	0.026	0.010	0.045	0.308	0.041	0.056

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1254.900	1263.900	9.000	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1263.900	1274.600	10.700	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1274.600	1282.100	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1282.100	1290.200	8.100	5.232	0.646	0.997	0.067	0.405	0.059	0.191
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1290.200	1304.700	14.500	1.473	0.102	0.234	0.073	0.394	0.059	0.159
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1304.700	1310.700	6.000	3.581	0.597	12.918	0.065	0.153	0.065	3.607
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1310.700	1324.100	13.400	6.121	0.457	6.266	0.058	0.216	0.052	1.024
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1324.100	1329.600	5.500	2.946	0.536	3.444	0.055	0.195	0.052	1.169
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1329.600	1400.600	71.000	5.182	0.073	1.437	0.065	0.454	0.055	0.277
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1400.600	1421.400	20.800	9.093	0.437	2.810	0.055	0.338	0.054	0.309
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1421.400	1428.900	7.500	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1428.900	1437.000	8.100	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1437.000	1452.500	15.500	5.893	0.380	24.883	0.089	0.232	0.083	4.223
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1452.500	1463.700	11.200	2.642	0.236	4.556	0.081	0.424	0.075	1.725
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1463.700	1481.600	17.900	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1481.600	1496.500	14.900	5.029	0.338	13.890	0.082	0.559	0.075	2.762
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1496.500	1540.000	43.500	3.048	0.070	3.114	0.073	0.886	0.072	1.022
[Well WEST_MERREENIE_24ST1]									
867.000	1540.000	673.000	73.000	0.108	82.944	0.068	0.496	0.062	1.136

#### Appendix 4: Deterministic Method: Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Gas) in true vertical depth

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*****
*
*   Pay Summary Report for lump GASPAY1
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 01-Aug-2014 16:50:51
*
*****

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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
901.386	928.861	27.475	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREENIE_24ST1]									
1044.665	1106.656	61.991	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREENIE_24ST1]									
1106.656	1137.856	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTTA P1-40; Well: WEST_MEREENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTTA P1-60; Well: WEST_MEREENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTTA P1-80; Well: WEST_MEREENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	2.830	0.500	12.179	0.068	0.144	0.069	4.303
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	2.343	0.187	5.791	0.072	0.191	0.069	2.472
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	1.860	0.364	3.701	0.059	0.173	0.057	1.990
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	1.662	0.098	1.029	0.063	0.324	0.064	0.619
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

DEPTH_TOP METRES	DEPTH_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	8.695	0.014	22.701	0.066	0.196	0.065	2.611



## Appendix 4 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Gas)

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*****
*
*   Pay Summary Report for lump GASPAY2
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
*****
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	6.471	0.236	2.335	0.065	0.729	0.061	0.361
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	3.499	0.056	1.814	0.071	0.922	0.063	0.519
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	2.500	0.080	2.267	0.082	0.710	0.069	0.907
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	3.302	0.584	12.400	0.066	0.152	0.066	3.755
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	5.152	0.410	6.353	0.060	0.207	0.055	1.233
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	2.325	0.454	3.834	0.057	0.182	0.055	1.649
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	3.707	0.218	1.495	0.059	0.334	0.059	0.403
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	26.955	0.043	30.498	0.065	0.500	0.061	1.131

## Appendix 4(continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Gas)

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*****
*
*   Pay Summary Report for lump GASPAY3
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
*****
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	2.377	0.067	0.386	0.060	0.535	0.054	0.162
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	7.889	0.287	2.458	0.064	0.725	0.059	0.312
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	6.958	0.112	1.657	0.072	0.945	0.061	0.238
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	4.267	0.137	3.039	0.079	0.709	0.065	0.712
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.775	0.039	0.800	0.044	0.152	0.041	1.033
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.248	0.053	0.017	0.072	0.567	0.062	0.070
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.173	0.026	0.010	0.045	0.308	0.041	0.056

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1278.675	1286.400	7.726	4.992	0.646	0.951	0.067	0.405	0.059	0.191
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1286.400	1300.154	13.754	1.399	0.102	0.223	0.073	0.394	0.059	0.159
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1300.154	1305.813	5.658	3.379	0.597	12.186	0.065	0.153	0.065	3.607
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1305.813	1318.368	12.555	5.732	0.457	5.872	0.058	0.216	0.052	1.024
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1318.368	1323.482	5.115	2.740	0.536	3.203	0.055	0.195	0.052	1.169
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1323.482	1386.670	63.188	4.570	0.072	1.264	0.065	0.453	0.055	0.277
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1386.670	1403.680	17.009	7.506	0.441	2.329	0.055	0.338	0.054	0.310
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	0.000	0.000	0.000	-	-	-	-
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	53.005	0.085	34.394	0.064	0.517	0.058	0.649

## Appendix 5: Deterministic Method: Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Oil) in true vertical depth

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*****
*
*   Pay Summary Report for lump OILPAY1
*
*   Project : madd_drilling
*   User id : gracia
*   Date    : 11-Aug-2014 09:51:42
*
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-



[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]										
1415.838	1427.500	11.662	1.381	0.118	9.641	0.100	0.242	0.094	6.980	
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]										
1427.500	1435.714	8.215	0.000	0.000	0.000	-	-	-	-	
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]										
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-	
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]										
1448.552	1459.169	10.617	1.900	0.179	7.700	0.084	0.496	0.079	4.053	
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]										
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-	
[Well WEST_MERREENIE_24ST1]										
865.945	1490.142	624.197	3.281	0.005	17.340	0.091	0.378	0.085	5.285	

## Appendix 5 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Oil)

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*****
*
*   Pay Summary Report for lump OILPAY2
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1300.154	1305.813	5.658	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1305.813	1318.368	12.555	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1318.368	1323.482	5.115	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1386.670	1403.680	17.009	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MERREENIE_24ST1]									
1415.838	1427.500	11.662	4.203	0.360	18.347	0.090	0.233	0.084	4.365
[Interval: P3-150; Well: WEST_MERREENIE_24ST1]									
1427.500	1435.714	8.215	1.147	0.140	2.732	0.085	0.399	0.079	2.381
[Interval: P3-190; Well: WEST_MERREENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MERREENIE_24ST1]									
1448.552	1459.169	10.617	2.804	0.264	9.294	0.084	0.532	0.078	3.315
[Interval: PACOOTA SST. P4; Well: WEST_MERREENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MERREENIE_24ST1]									
865.945	1490.142	624.197	8.154	0.013	30.373	0.087	0.355	0.081	3.725

## Appendix 5 (continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Oil)

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*****
*
*   Pay Summary Report for lump OILPAY3
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
*****

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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	0.000	0.000	0.000	-	-	-	-
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	4.392	0.377	18.546	0.089	0.232	0.083	4.223
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	1.929	0.235	3.319	0.081	0.424	0.074	1.720
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	3.546	0.334	9.871	0.082	0.559	0.075	2.784
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	9.867	0.016	31.736	0.085	0.382	0.079	3.216

## Appendix 6: Deterministic Method: Sand and Pay Summary Report: Category 1 – High Permeability Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND1
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	0.000	0.000	0.000	-	-	-	-
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	0.000	0.000	0.000	-	-	-	-
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-



TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MERREENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MERREENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MERREENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MERREENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MERREENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MERREENIE_24ST1]									
1300.154	1305.813	5.658	3.115	0.551	12.122	0.067	0.148	0.067	3.891
[Interval: PACOOTA P1-310; Well: WEST_MERREENIE_24ST1]									
1305.813	1318.368	12.555	2.404	0.191	5.292	0.071	0.194	0.068	2.201
[Interval: PACOOTA P1-350; Well: WEST_MERREENIE_24ST1]									
1318.368	1323.482	5.115	2.221	0.434	3.124	0.058	0.188	0.056	1.407
[Interval: PACOOTA SST. P2; Well: WEST_MERREENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MERREENIE_24ST1]									
1386.670	1403.680	17.009	1.667	0.098	1.003	0.063	0.330	0.065	0.602
[Interval: P3-70; Well: WEST_MERREENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MERREENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	1.381	0.118	9.641	0.100	0.242	0.094	6.980
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	0.000	0.000	0.000	-	-	-	-
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	1.900	0.179	7.700	0.084	0.496	0.079	4.053
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.000	0.000	0.000	-	-	-	-
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	12.687	0.020	38.882	0.072	0.258	0.070	3.065

## Appendix 6 (continued): Deterministic Method: Sand and Pay Summary Report: Category 2 – Conventional Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND2
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
865.945	901.386	35.441	0.000	0.000	0.000	-	-	-	-
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
901.386	928.861	27.475	6.549	0.238	2.360	0.065	0.713	0.060	0.360
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREEENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREEENIE_24ST1]									
1044.665	1106.656	61.991	4.317	0.070	1.465	0.072	0.931	0.063	0.339
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREEENIE_24ST1]									
1106.656	1137.856	31.200	2.972	0.095	2.943	0.082	0.672	0.069	0.990
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREEENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA 1-40; Well: WEST_MEREEENIE_24ST1]									
1221.067	1241.124	20.057	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-60; Well: WEST_MEREEENIE_24ST1]									
1241.124	1245.806	4.681	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-80; Well: WEST_MEREEENIE_24ST1]									
1245.806	1252.510	6.704	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	3.331	0.589	12.183	0.066	0.152	0.066	3.658
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	4.686	0.373	5.793	0.060	0.206	0.055	1.236
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	2.433	0.476	3.181	0.057	0.191	0.055	1.307
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	4.175	0.245	1.651	0.059	0.339	0.059	0.395
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	4.203	0.360	18.347	0.090	0.233	0.084	4.365
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	1.147	0.140	2.732	0.085	0.399	0.079	2.381
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	2.786	0.262	9.277	0.084	0.530	0.078	3.330
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	0.850	0.027	1.326	0.078	0.855	0.077	1.560
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	37.448	0.060	61.257	0.071	0.479	0.066	1.636

## Appendix 6 (continued): Deterministic Method: Sand and Pay Summary Report: Category 3 – Low Permeability Cut-offs (Net Sand)

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*****
*
*   Pay Summary Report for lump SAND3
*
*   Project : madd_drilling
*   User id : graca
*   Date    : 11-Aug-2014 09:51:42
*
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TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: UPPER STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
865.945	901.386	35.441	2.377	0.067	0.386	0.060	0.535	0.054	0.162
[Interval: BASAL UPPER STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
901.386	928.861	27.475	7.889	0.287	2.458	0.064	0.725	0.059	0.312
[Interval: MIDDLE STAIRWAY SANDSTONE; Well: WEST_MEREENIE_24ST1]									
928.861	1044.665	115.804	0.000	0.000	0.000	-	-	-	-
[Interval: LOWER STAIRWAY 2; Well: WEST_MEREENIE_24ST1]									
1044.665	1106.656	61.991	6.958	0.112	1.657	0.072	0.945	0.061	0.238
[Interval: LOWER STAIRWAY 1; Well: WEST_MEREENIE_24ST1]									
1106.656	1137.856	31.200	4.267	0.137	3.039	0.079	0.709	0.065	0.712
[Interval: HORN VALLEY SILSTONE; Well: WEST_MEREENIE_24ST1]									
1137.856	1221.067	83.212	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-40; Well: WEST_MEREENIE_24ST1]									
1221.067	1241.124	20.057	0.775	0.039	0.800	0.044	0.152	0.041	1.033
[Interval: PACOOTA P1-60; Well: WEST_MEREENIE_24ST1]									
1241.124	1245.806	4.681	0.248	0.053	0.017	0.072	0.567	0.062	0.070
[Interval: PACOOTA P1-80; Well: WEST_MEREENIE_24ST1]									
1245.806	1252.510	6.704	0.173	0.026	0.010	0.045	0.308	0.041	0.056

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA P1-110; Well: WEST_MEREEENIE_24ST1]									
1252.510	1261.208	8.698	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-120/180; Well: WEST_MEREEENIE_24ST1]									
1261.208	1271.496	10.288	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-200; Well: WEST_MEREEENIE_24ST1]									
1271.496	1278.675	7.179	0.000	0.000	0.000	-	-	-	-
[Interval: PACOOTA P1-210; Well: WEST_MEREEENIE_24ST1]									
1278.675	1286.400	7.726	4.992	0.646	0.951	0.067	0.405	0.059	0.191
[Interval: PACOOTA P1-240; Well: WEST_MEREEENIE_24ST1]									
1286.400	1300.154	13.754	1.399	0.102	0.223	0.073	0.394	0.059	0.159
[Interval: PACOOTA P1-280; Well: WEST_MEREEENIE_24ST1]									
1300.154	1305.813	5.658	3.379	0.597	12.186	0.065	0.153	0.065	3.607
[Interval: PACOOTA P1-310; Well: WEST_MEREEENIE_24ST1]									
1305.813	1318.368	12.555	5.732	0.457	5.872	0.058	0.216	0.052	1.024
[Interval: PACOOTA P1-350; Well: WEST_MEREEENIE_24ST1]									
1318.368	1323.482	5.115	2.740	0.536	3.203	0.055	0.195	0.052	1.169
[Interval: PACOOTA SST. P2; Well: WEST_MEREEENIE_24ST1]									
1323.482	1386.670	63.188	4.570	0.072	1.264	0.065	0.453	0.055	0.277
[Interval: PACOOTA SST. P3-10; Well: WEST_MEREEENIE_24ST1]									
1386.670	1403.680	17.009	7.506	0.441	2.329	0.055	0.338	0.054	0.310
[Interval: P3-70; Well: WEST_MEREEENIE_24ST1]									
1403.680	1409.587	5.907	0.000	0.000	0.000	-	-	-	-
[Interval: P3-90; Well: WEST_MEREEENIE_24ST1]									
1409.587	1415.838	6.251	0.000	0.000	0.000	-	-	-	-

TVD_TOP METRES	TVD_BASE METRES	GROSS METRES	NET METRES	NET_TO_GROSS M/M	KINTH MDM	PHIT_AV V/V	SWT_AV V/V	PHIE_AM V/V	KINT_AM MD
[Interval: PACOOTA SST. P3 (120/130); Well: WEST_MEREEENIE_24ST1]									
1415.838	1427.500	11.662	4.392	0.377	18.546	0.089	0.232	0.083	4.223
[Interval: P3-150; Well: WEST_MEREEENIE_24ST1]									
1427.500	1435.714	8.215	1.929	0.235	3.319	0.081	0.424	0.074	1.720
[Interval: P3-190; Well: WEST_MEREEENIE_24ST1]									
1435.714	1448.552	12.838	0.000	0.000	0.000	-	-	-	-
[Interval: P3-230/250; Well: WEST_MEREEENIE_24ST1]									
1448.552	1459.169	10.617	3.582	0.337	9.891	0.082	0.559	0.075	2.761
[Interval: PACOOTA SST. P4; Well: WEST_MEREEENIE_24ST1]									
1459.169	1490.142	30.973	2.170	0.070	2.218	0.073	0.886	0.072	1.022
[Well WEST_MEREEENIE_24ST1]									
865.945	1490.142	624.197	65.078	0.104	68.367	0.067	0.504	0.061	1.051



## **APPENDIX IV (b): MDT PRESSURE SURVEY DATA**

## Santos

## PRESSURE SURVEY

Well **West Mereenie 24ST1**  
 Witness David Adderley / Vicki Chan  
 Engineer T. Svetlichnaya / A. Tran

RT: 754.4 m  
 Last circulated at : 11/03/2014 10:15 hrs

Gauge Type : Quartz (strain backup)  
 Probe/Packer Type : LD (Large Diameter)

Page : 1  
 Date : 13/03/2014 - 14/03/2014

	FORMATION	DEPTH RT MD m	DEPTH TVD RT m	DEPTH SUBSEA m	TEST RESULTS							INTERPRETATION					COMMENTS	
					HYDRO BEFORE PSIA	INITIAL DRAWDOWN PSIA	FINAL BUILD UP PSIA	FORM PRESS PSIA	HYDRO AFTER PSIA	TEMP Deg C	D/D MOB MD/CP	TYPE D/D	TEST TIME mins	RATE CHANGE PSI/MIN	TYPE BUILD UP	DEPL SC	FLUID TYPE	
Run 5	CORRELATION PASS 1	950															Add +0.1m	
1	Upper Stairway	911.6	910.3	-155.9	1422.6				1422.6	43.7			4				Seal Failure	
2	Upper Stairway	917.1	915.7	-161.3	1431.3				1431.3	44.4			4				Seal Failure	
3	Upper Stairway	916.7	915.3	-160.9	1430.7				1430.7	44.6			4				Seal Failure	
4	Upper Stairway	918.2	916.8	-162.4	1433.1				1433.1	44.9			5				Seal Failure	
5	Upper Stairway	918.4	917.0	-162.6	1433.5				1433.5	45.0			4				Seal Failure	
6	Upper Stairway	927.9	926.5	-172.1	1448.3				1448.1	45.1			5				Seal Failure	
7	Upper Stairway	928.3	926.9	-172.5	1448.8				1448.8	45.3			4				Seal Failure	
	CORRELATION PASS 2	1150															Subtract -0.1m	
8	Lower Stariway 2	1076.5	1074.9	-320.5	1679.6				1679.6	49.8			4				Seal Failure	
9	Lower Stariway 2	1076.0	1074.4	-320.0	1678.9				1678.9	49.8			4				Seal Failure	
10	Lower Stariway 2	1083.5	1081.9	-327.5	1690.5				1690.5	49.7			4				Seal Failure	
11	Lower Stariway 2	1084.0	1082.4	-328.0	1691.3				1691.3	49.6			4				Seal Failure	
12	Lower Stairway 1	1123.7	1122.1	-367.7	1752.8				1752.8	49.7			4				Seal Failure	
13	Lower Stairway 1	1124.0	1122.4	-368.0	1753.3				1753.3	50.0			4				Seal Failure	
14	Lower Stairway 1	1126.1	1124.5	-370.1	1756.7				1756.6	50.3			5				Seal Failure	
	CORRELATION PASS 3	1300															No depth shift	
15	Pacoota P1-40	1232.1	1230.2	-475.8	1918.6				1918.5	54.5			4				Seal Failure	
16	Pacoota P1-40	1232.3	1230.4	-476.0	1918.9				1918.8	55.2			4				Seal Failure	
17	Pacoota P1-80	1249.0	1246.7	-492.3	1943.9				1943.6	55.5			5				Seal Failure	
18	Pacoota P1-80	1249.5	1247.2	-492.8	1944.5				1944.5	55.8			4				Seal Failure	
19	Pacoota Shale Test	1242.0	1239.9	-485.5	1933.5				1933.5	56.0			4				Shale Test - Seal Failure	
Run 6	CORRELATION PASS 4	950															Add +0.2m	
20	Upper Stairway	917.0	915.6	-161.2	1430.9				1431.0	43.2			5				Seal Failure	
	CORRELATION PASS 5	1300															Subtract -0.1m	
21	Pacoota P1-40	1232.1	1230.2	-475.8	1918.4				1918.4	54.9			5				Seal Failure	
22	Pacoota P1-80	1249.7	1247.4	-493.0	1944.7				1944.6	55.4			4				Seal Failure	
23	Pacoota P1-80	1250.1	1247.8	-493.4	1945.2	473	558		1944.6	55.9		N	6.5	18	S		Curtailed	
24	Pacoota P1-80	1249.9	1247.6	-493.2	1944.8				1944.9	56.1			5				Seal Failure	
25	Pacoota P1-80	1251.3	1249.0	-494.6	1947.1				1947.0	56.2			7				Seal Failure	
26	Pacoota P1-210	1283.3	1279.7	-525.3	1994.2				1993.8	56.4			5				Seal Failure	
27	Pacoota P1-210	1283.0	1279.5	-525.1	1993.9				1993.6	56.5			5				Seal Failure	
	CORRELATION PASS 6	1350															No depth shift	
28	Pacoota P1-280	1305.8	1301.1	-546.7	2027.0	558.6	595.4	595.4	2026.7	56.6	0.59	N	5.5	<1	G	Depl	Good - Depleted	
29	Pacoota P1-280	1306.1	1301.3	-546.9	2027.2	564.6	595.3	595.3	2027.0	56.7	36	N	5	<1	G	Depl	Good - Depleted	
30	Pacoota P1-280	1307.2	1302.3	-547.9	2028.9	495.8	598.0	598.0	2030.5	56.9	7.54	N	5.5	<1	S	Depl	Good - Depleted	
31	Pacoota P1-280	1308.3	1303.4	-549	2030.6	573.7	597.7	597.7	2033.5	57.0	19.85	N	5	<1	G	Depl	Good - Depleted	
32	Pacoota P1-310	1313.8	1308.6	-554.2	2038.1				2038.1	56.9			4				Seal Failure	

# Santos

## PRESSURE SURVEY

**Well** West Mereenie 24ST1  
**Witness** David Adderley / Vicki Chan  
**Engineer** T. Svetlichnaya / A. Tran

RT: 754.4 m  
 Last circulated at : 11/03/2014 10:15 hrs

Gauge Type : Quartz (strain backup)  
 Probe/Packer Type : LD (Large Diameter)

Page : 1  
 Date : 13/03/2014 - 14/03/2014

	FORMATION	DEPTH RT MD m	DEPTH TVD RT m	DEPTH SUBSEA m	TEST RESULTS							INTERPRETATION					COMMENTS FLUID TYPE	
					HYDRO BEFORE PSIA	INITIAL DRAWDOWN PSIA	FINAL BUILD UP PSIA	FORM PRESS PSIA	HYDRO AFTER PSIA	TEMP Deg C	D/D MOB MD/CP	TYPE D/D	TEST TIME mins	RATE CHANGE PSI/MIN	TYPE BUILD UP	DEPL SC		
33	Pacoota P1-310	1314.1	1308.9	-554.5	2038.8				2038.8	56.9			4				Seal Failure	
34	Pacoota P1-310	1316.2	1310.9	-556.5	2041.8	216.4	298.8		2041.7	57.1		N	10	6	S		Curtailed	
35	Pacoota P1-310	1318.1	1312.7	-558.3	2044.5	247.6	1187.0	1187.0	2044.5	57.2	0.05	N	10	<1	S	Depl	Good - Depleted	
36	Pacoota P1-310	1320.6	1315	-560.6	2048.0				2048.0	57.1			5				Seal Failure	
37	Pacoota P1-310	1321.5	1315.9	-561.5	2049.4				2049.4	57.1			5				Seal Failure	
38	Pacoota P1-310	1321.3	1315.7	-561.3	2049.1	214.1	266.4		2049.1	57.1		N	5.5	6	S		Curtailed	
39	Pacoota P1-350	1325.9	1320.1	-565.7	2055.5	303.7	847.3	847.3	2055.6	57.1	1.11	N	5.5	<1	S	Depl	Good - Depleted	
40	Pacoota P1-350	1326.2	1320.3	-565.9	2056.0	241.8	852.6	852.6	2056.0	57.2	0.14	N	6.5	<1	S	Depl	Good - Depleted	
41	Pacoota P1-350	1327.0	1320.9	-566.5	2057.1	300.4	872.6	872.6	2057.1	57.2	0.84	N	4.5	<1	S	Depl	Good - Depleted	
	<b>CORRELATION PASS 7</b>	<b>1421.5</b>															<b>Add +0.1m</b>	
42	Pacoota P2	1348.5	1340.6	-586.2	2087.3				2087.2	57.2			5.5				Seal Failure	
43	Pacoota P2	1348.7	1340.8	-586.4	2087.4				2087.4	57.1			5				Seal Failure	
44	Pacoota P2	1388.8	1376.4	-622.0	2141.9				2141.9	57.1			4				Seal Failure	
45	Pacoota P2	1389.1	1376.7	-622.3	2142.3				2142.3	57.3			3.5				Seal Failure	
46	Pacoota P2	1391.7	1379	-624.6	2145.7				2145.6	57.4			4				Seal Failure	
47	Pacoota P2	1391.5	1378.8	-624.4	2145.5				2145.4	57.5			3.5				Seal Failure	
48	Pacoota P2	1395.7	1382.5	-628.1	2150.9	269.2	1968.6		2150.9	57.7		N	7	92	S	SC	Curtailed - Super Charged	
49	Pacoota P2	1395.5	1382.3	-627.9	2150.7	230.0	306.1		2150.8	57.7		N	4.5	25	S		Curtailed	
50	Pacoota P2	1396.8	1383.4	-629.0	2152.1				2152.1	57.8			4				Seal Failure	
51	Pacoota P3-10	1402.0	1388	-633.6	2159.0	232.9	1590.4	1590.4	2159.0	57.9	0.05	N	10	<1	S	Depl	Good - Depleted	
52	Pacoota P3-10	1408.3	1392.7	-638.3	2167.0	258.0	1495.6	1495.6	2167.0	58.0	0.14	N	7.5	<1	S	Depl	Good - Depleted	
	<b>CORRELATION PASS 8</b>	<b>1443</b>															<b>Add +0.1m</b>	
53	Pacoota P3-90	1432.0	1412	-657.6	2195.9				2195.9	58.3			4				Seal Failure	
54	Pacoota P3-90	1432.7	1412.5	-658.1	2196.9				2196.8	58.3			4				Seal Failure	
55	Pacoota P3-90	1432.5	1412.3	-657.9	2196.7				2196.6	58.5			4				Seal Failure	
56	Pacoota P3-90	1433.1	1412.9	-658.5	2197.2				2197.2	58.6			4				Seal Failure	
57	Pacoota P3-90	1432.9	1412.7	-658.3	2197.0				2196.9	58.7			3				Seal Failure	
58	Pacoota P3-120/130	1437.8	1416.7	-662.3	2203.0	2198.1	2198.2		2202.9	58.9			8				Seal Failure?	
59	Pacoota P3-120/130	1438.0	1416.9	-662.5	2203.3				2203.2	58.9			4				Seal Failure	
60	Pacoota P3-120/130	1445.8	1422.5	-668.1	2212.1				2212.0	59.1			4				Seal Failure	
61	Pacoota P3-120/130	1445.6	1422.3	-667.9	2211.9				2211.9	59.2			6				Seal Failure	
62	Pacoota P3-120/130	1447.0	1423.4	-669.0	2213.7				2213.6	59.3			5				Seal Failure	
63	Pacoota P3-120/130	1446.8	1423.2	-668.8	2213.4				2213.3	59.4			4.5				Seal Failure	
64	Shale test	1443.0	1420.3	-665.9	2208.8				2208.8	59.5			4				Shale Test - Good	
65	Pacoota P3-120/130	1448.0	1424.1	-669.7	2214.7				2214.6	59.5			4				Seal Failure	
66	Pacoota P3-120/130	1449.0	1424.9	-670.5	2215.9				2215.8	59.5			4				Seal Failure	
67	Pacoota P3-120/130	1448.6	1424.6	-670.2	2215.2				2215.1	59.5			4				Seal Failure	
68	Pacoota P3-120/130	1450.0	1425.6	-671.2	2216.9				2216.8	59.6			4.5				Seal Failure	
69	Pacoota P3-120/130	1450.5	1426	-671.6	2217.5				2217.4	59.6			4.5				Seal Failure	

# Santos

## PRESSURE SURVEY

**Well** West Mereenie 24ST1  
**Witness** David Adderley / Vicki Chan  
**Engineer** T. Svetlichnaya / A. Tran

RT: 754.4 m  
 Last circulated at : 11/03/2014 10:15 hrs

Gauge Type : Quartz (strain backup)  
 Probe/Packer Type : LD (Large Diameter)

Page : 1  
 Date : 13/03/2014 - 14/03/2014

	FORMATION	DEPTH RT MD m	DEPTH TVD RT m	DEPTH SUBSEA m	TEST RESULTS							INTERPRETATION					COMMENTS FLUID TYPE	
					HYDRO BEFORE PSIA	INITIAL DRAWDOWN PSIA	FINAL BUILD UP PSIA	FORM PRESS PSIA	HYDRO AFTER PSIA	TEMP Deg C	D/D MOB MD/CP	TYPE D/D	TEST TIME mins	RATE CHANGE PSI/MIN	TYPE BUILD UP	DEPL SC		
70	Pacoota P3-120/130	1451.4	1426.7	-672.3	2218.6				2218.5	59.7			4				Seal Failure	
	<b>CORRELATION PASS 9</b>	<b>1486</b>															<b>Add +0.25m</b>	
71	Pacoota P3-150	1454.0	1428.6	-674.2	2221.4				2221.4	59.8			4				Seal Failure	
72	Pacoota P3-150	1456.4	1430.4	-676.0	2224.0	197.1	2043.2		2224.0	59.8		N	10	18	S	SC	Curtailed - Super Charged	
73	Pacoota P3-150	1457.9	1431.5	-677.1	2225.6				2225.6	59.8		N	4	<1	S	SC	Seal Failure	
74	Pacoota P3-150	1457.6	1431.3	-676.9	2225.1	2205.7	2211.7		2224.9	59.9			10				Seal Failure?	
75	Pacoota P3-150	1457.4	1431.1	-676.7	2225.1				2225.1	59.9			5				Seal Failure?	
76	Pacoota P3-150	1460.3	1433.3	-678.9	2228.3				2228.2	59.9			4				Seal Failure	
77	Pacoota P3-150	1461.9	1434.5	-680.1	2230.1	223.0	2124.9		2230.0	60.1		N	7	48	S	SC	Curtailed - Super Charged	
78	Pacoota P3-150	1463.1	1435.2	-680.8	2231.4	240.0	2028.4		2231.4	60.2		N	7	35	S	SC	Curtailed - Super Charged	
79	Pacoota P3-150	1463.3	1435.4	-681.0	2231.6	697.3	2043.6		2231.6	60.2		N	7.5	<1	S	SC	Curtailed - Super Charged	
80	Pacoota P3-190	1466.8	1437.9	-683.5	2235.4	221.7	1402.7		2235.2	60.4		N	10	105	S		Curtailed	
81	Pacoota P3-190	1466.6	1437.7	-683.3	2235.1	208.3	888.5		2235.2	60.5		N	9.5	122	S		Curtailed	
	<b>CORRELATION PASS 10</b>	<b>1501</b>															<b>Add +0.3m</b>	
82	Pacoota P3-190	1472.5	1442	-687.6	2241.5	229.4	2018.9		2241.5	60.5		N	10	13	S	SC	Curtailed - Super Charged	
83	Pacoota P3-190	1473.0	1442.4	-688.0	2242.1	191.8	1144.5		2242.1	60.6		N	10	25	S		Curtailed	
84	Pacoota P3-190	1474.6	1443.6	-689.2	2243.7				2243.7	60.5			5				Seal Failure	
85	Pacoota P3-190	1474.4	1443.4	-689.0	2243.6				2243.5	60.6			4				Seal Failure	
86	Pacoota P3-190	1476.0	1444.6	-690.2	2245.3				2245.3	60.6			3				Seal Failure	
87	Pacoota P3-230/250	1483.8	1450.1	-695.7	2254.0	214.9	417.0		2253.9	60.7		N	5.5	70	S		Curtailed	
88	Pacoota P3-230/250	1486.6	1452.1	-697.7	2257.1	244.6	1440.9		2257.2	60.9		N	10.5	3.3	S		Curtailed	
89	Pacoota P3-230/250	1486.8	1452.2	-697.8	2257.2	248.1	1412.6	1412.6	2257.3	60.9	0.26	N	7	<1	S	Depl	Good - Depleted	
90	Pacoota P3-230/250	1487.5	1452.7	-698.3	2257.9	225.2	1423.1	1423.1	2257.9	61.0	0.05	N	10	<1	S	Depl	Good - Depleted	
91	Pacoota P3-230/250	1489.6	1454.2	-699.8	2260.2	549.3	1412.6	1412.6	2260.3	61.0	1.29	N	6	<1	S	Depl	Good - Depleted	
92	Pacoota P3-230/250	1491.8	1455.8	-701.4	2262.4	249.7	1387.4	1387.4	2262.4	61.0	0.31	N	5.5	<1	S	Depl	Good - Depleted	

Expected Temp Gradient:	2.7	deg C/100m
Expected Water Gradient:	0.433	psi/ft
Mud Weight :	9	ppg
Mud Gradient:	0.468	psi/ft

Normal Drawdown : Pressure does not drop to zero  
 Limited Drawdown : Pressure drops to zero  
 Build Up types: Immediate, Rapid, Good, Slow.

RESULTS SUMMARY	
Tests Requested	59
Total Tests	92
Good Tests	15
Curtailed Tests	15
Seal Failures	62
Samples	0
Correlation Passes :	10

## **APPENDIX IV(c): FIELD ELECTRIC LOG REPORT**

# Santos

## FIELD ELECTRIC LOG REPORT

<b>WELL:</b>	West Meerenie 24ST1	<b>GEOLOGIST:</b>	David Adderley
<b>LOGGING ENGINEER:</b>	T. Svetlichnaya / A. Tran		Vicki Chan
<b>RUN NO:</b>	1-6		
<b>DRILLER DEPTH:</b>	1540m	<b>LOGGER'S DEPTH:</b>	1540m
<b>ARRIVED ON SITE:</b>	9/03/2014		
<b>ACTUAL LOG TIME:</b>	28.00 hrs	<b>LOST TIME LOGGER'S:</b>	9.75 hrs
<b>TOTAL TIME:</b>	55 (+5 tool prep) hrs	<b>LOST TIME OTHERS:</b>	2.5 hrs

TYPE OF LOG	PEX-HNGS-HRLA-SP	FMI-SONIC SCANNER	ECS-CMR-GR
TIME CIRC STOPPED	10:15 hrs 11-March-14	10:15 hrs 11-March-14	10:15 hrs 11-March-14
TIME TOOL RIG UP	01:00 hrs 12-Mar-14	09:15 hrs 12-Mar-14	17:00 hrs 12-Mar-14
TIME RUN IN HOLE	04:00 hrs 12-Mar-14	10:30 hrs 12-Mar-14	20:15 hrs 12-Mar-14
TIME ON BOTTOM/ START LOG	05:30 hrs 12-Mar-14	12:00 hrs 12-Mar-14	23:00 hrs 12-Mar-14
TIME TOOL RIG DOWN	09:15 hrs 12-Mar-14	17:00 hrs 12-Mar-14	07:00 hrs 13-Mar-14
TOTAL TIME	8:15	7:45	14:00

TYPE OF LOG	MDT-GR	MDT-GR	MDT-GR
TIME CIRC STOPPED	10:15 hrs 11-March-14	10:15 hrs 11-March-14	10:15 hrs 11-March-14
TIME TOOL RIG UP	07:00 hrs 13-Mar-14	10:45 hrs 13-Mar-14	16:15 hrs 13-Mar-14
TIME RUN IN HOLE	09:00 hrs 13-Mar-14	11:30 hrs 13-Mar-14	16:30 hrs 13-Mar-14
TIME ON BOTTOM/ START LOG	09:30 hrs 13-Mar-14	12:15 hrs 13-Mar-14	16:45 hrs 13-Mar-14
TIME TOOL RIG DOWN	10:45 hrs 13-Mar-14	16:15 hrs 13-Mar-14	08:00 hrs 14-Mar-14
TOTAL TIME	3:45	5:30	15:45

TYPE OF LOG			
TIME CIRC STOPPED			
TIME TOOL RIG UP			
TIME RUN IN HOLE			
TIME ON BOTTOM/ START LOG			
TIME TOOL RIG DOWN			
TOTAL TIME			

TYPE OF LOG	FROM	TO	TIME SINCE LAST CIRC	COMMENTS/REPEAT SECTION	BHT
<b>Run 1: PEX-HNGS-HRLA-SP</b>					
GR	1514m	10m	19.25 hrs	Log bulk shifted to tie intocasing sh	59.0 °C at 1506.2m
HNGS	1515m	515m			
HRLA	1533m	527.6m			
MCFL	1522m	527.6m			
CNL	1527m	520m			
TLD1	1529m	520m			
TLD2	1520m	520m			
SP	1511m	520m			
<b>Run 2: FMI-SSCAN</b>	1539m	840m	25.75 hrs	SSCAN in full acquisition mode from TD to 840m	60.0 °C at 1513.1m
<b>Run 3: ECS-CMR-GR</b>	1539m	840m	36.75 hrs	Logged TD - 840m at 410'/hr	65.0 °C at 1522.9m
<b>Run 4: MDT-GR</b>	-	-	-	No tests performed - tool failure	-
<b>Run 5: MDT-GR</b>	911.6m	1249.5m	-	Pulled out of hole and changed packer rubber after 19 seal failures Failures most likely not due to rubbe	-
<b>Run 6: MDT-GR</b>	917.0m	1491.8m	54.5 hrs	92 points: 15 good, 15 curtailed, 62 seal failures	61.1 °C at 1481.5m

**MUD DATA**

<b>MUD SYSTEM:</b>	NaCl	<b>MW:</b>	9		
<b>Rm:</b>	0.09 Ohm.M @ 50.0° C	<b>FV</b>	36		
<b>Rmf:</b>	0.08 Ohm.M @ 50.0° C	<b>PV/YP:</b>	7/13		
<b>Rmc:</b>	0.11 Ohm.M @ 50.0° C	<b>FL:</b>	7.2	<b>pH:</b>	9.0

**REMARKS / RECOMMENDATIONS:**

- 1) Schlumberger crew did not have radioactive licence for Northern Territory - unable to check Run 1 tools prior to job.
- 2) Rig waited on second logging crew to arrive from Roma (due to radioactive licence) and waited on logging unit to be spotted on location.
- 3) There is now a telephone in the wireline unit - however it does not work.
- 4) Air conditioners are now working well - recently repaired.
- 5) Temperature data from thermometers in the head is inconsistent, temperatures vary greatly between wells and runs.

**Run 1: PEX-HRLA-HNGS-SP**

- 1) Schlumberger unable to tool check Run 1 tools prior to job as first crew did not have radioactive licence (see lost time summary).  
Waited on loggers to perform tool checks at surface prior to rigging up.
- 2) Schlumberger depth control procedures followed involved: Zeroing at surface. Applying no correction while RIH recording down log.  
Applying no correction at TD. Logging up main pass with calipers open. Schlumberger procedures normally would then have meant tying into the down log. However a better depth match to the MWD GR resulted by tying into the casing shoe (+2.3m was applied to the log to match the casing shoe)
- 3) Drillers and loggers casing shoe 527.6m. Drillers and loggers TD 1540.0m.
- 4) High Resolution data (1750'/hr) was recorded from TD to 830m, standard resolution (3600'/hr) was recorded from 830m to csg shoe / surface.
- 5) SP curve was erratic in places - engineer could not find any problem with the tool while logging up.
- 6) Caliper 1 showed filter cake up to 0.25" in the Pacoota Sandstone, Caliper 2 indicated hole up to 0.5" under gauge - likely not real, due to tools sitting on low side of the hole.

**Run 2: FMI-Sonic Scanner**

- 1) Depth control tied into GR from run 1.
- 2) Initially logged up from TD to 1475m, then closed calipers and ran in hole to log up again - needed to perform a phase shift correction, 30 degree correction applied. This is done to enhance the contrast of the FMI image. Schlumberger calling this a repeat pass.

**Run 3: ECS-CMR-GR**

- 1) Performed 'mud filtrate station log' as one of the CMR calibrations between runs 2 and 3 (see lost time summary).
- 2) ECS calibration performed in casing, logged up from 500m.
- 3) A drop off test was performed at 1232.2m (antenna depth) prior to performing a frequency test (LFST) to tune the CMR tool.
- 4) Depth control tied into GR from run 1.

**Run 4: MDT-GR**

- 1) Performed a test point in the casing at 500m while running in hole.
- 2) Depth control tied into GR from run 1
- 3) A drop off test was performed at the first point - Good.
- 4) Prior to commencing the first point the 'iso-valves' would not open, these valves control the hydraulics that operate the piston.
- 5) After trying various things with direction from Schlumberger in town unsuccessfully, pulled out of hole to surface and changed out all the tools.

**Run 5: MDT-GR**

- 1) Performed a test point in the casing at 500m while running in hole.
- 2) Depth control tied into GR from run 1
- 3) A shale test was performed after observing 18 seal failures in a row, the shale test failed to get a seal. Pulled into the casing and successfully obtained a seal. Pulled out of hole to inspect the packer rubber - small amount of damage - changed rubber.
- 4) 19 points: 19 seal failures.

**Run 6: MDT-GR**

- 1) Ran in hole with a new MDT packer rubber.
- 2) Performed a test point in the casing at 500m while running in hole.
- 3) Depth control tied into GR from run 1
- 4) A shale test was performed after observing 10 seal failures in the past 11 points, the shale test obtained a good seal. Continue with MDT tests.
- 3) A 10 minute pre-test time limit was applied. A 1 psi/minute stabilisation criteria was used.
- 4) 92 points: 15 good, 16 curtailed, 61 seal failures.

**LOST TIME BREAKDOWN: Total: 9.75hrs lost time loggers**

Run 1: PEX-HNGS-HRLA, **2.25 + 5.0 = 7.25hrs lost time loggers**. While pulling the drill string out of hole 2.25hrs lost time while stopped at the casing shoe waiting on second logging crew with radioactive licence and waiting on logging unit to arrive on location. Once out of the hole with the drill string the wireline loggers took 5.0hrs to perform tool checks on Run 1 tools, prior to commencing rigging up. If the first crew had the appropriate radioactive licence the PEX tool checks could have been done earlier off the critical path resulting in no lost time.

14:00hrs 11-03-2014 to 16:15hrs = 2.25hrs, plus 20:00hrs 11-03-2014 to 01:00hrs 12-03-2014 = 5.0hrs.

Run 3: ECS-CMR-GR, **1.0hr lost time other**. From 17:00hrs to 18:00hrs 12/03/2014, performed a mud filtrate station log to calibrate the CMR tool. This calibration is normally done off-line prior to commencing logging operations. Schlumberger did not have enough time to do it then. First logging crew arrived in Mereenie on the 8th March, logging commenced on the 11th March.

Run 4: MDT-GR, **2.5hrs lost time loggers**. MDT tool was function tested successfully in casing while running in hole. While attempting to set the probe at the first point at 911.6m the iso-valves would not function. After trying to fault find the tools were pulled out of hole and changed to the backup MDT tool. 09:45hrs (Start Point #1 of Run 4) to 12:15hrs (Start Point #1 of Run 5) 13/03/2014.

Run 5: MDT-GR, **1.5hrs lost time other**. After 19 consecutive seal failures (including a shale test), pulled out of hole and performed a test in casing successfully, pulled out of hole and inspected packer minimal damage. Changed out packer rubber and ran in hole for Run 6: MDT-GR. 15:30hrs (started pulling out of hole Run 5) to 17:03hrs (at Point #20 of Run 6).

**WELLSITE LOG QUALITY CONTRL CHECKS**

LOF	Y	MUD SAMPLE RES	Y	TOOL NO./CODE CHECK	Y
OFFSET WELL DATA	Y	CABLE DATA CARD	Y	LOG SEQUENCE CONFIRM	Y

LOG TYPE	PEX-HRLA-HNGS	FMI-SSCAN	CMR-GR	COMMENTS
Casing Check	Y		Y	
Scale Check	Y	Y	Y	
Depth Casing Total	Y			Run 1 main log tied into casing shoe
Calibration OK	Y	Y	Y	
Repeatability	Y	Y	Y	
Logging Speed	1750'/hr	1200'/hr	410'/hr	
Offset well repeatability	Y			
Noisy/Missing Data	N	N	N	SP erratic in part
Rm Measurement	Y	Y	Y	
LLS/LLD/Check	Y			
PERF/RHOB Check	Y			
Caliper Check	Y	Y	Y	Run 1: Caliper 2 questionable in 45° hole
Log Header/Tail	Y	Y	Y	
Comments				
Print/Film Quality	Y	Y	Y	

**COMMENTS: Lost time issues on the first run highlight the importance of planning - First crew sent out need to have a radioactive licence for the NT.**

ENGINEERS COMMENTS (If this report has not been discussed with the Engineer state reason)