



BASIC WELL COMPLETION REPORT

NT EP-167 – Birdum Creek-1

Prepared For: NT Department of Mines & Energy
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Revision No: A




BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT: BC1-WCR-1604

REVISION: A

PAGE: Page 2 of 27

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Title:	Basic Well Completion Report_EP-167_Birdum Creek-1			
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Revision A		Initial Document	G&G and Engineering	G&G/Ops.
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Geology By:		Engineering By:		
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Approved For Submission By:	Tim Radburn			
APPROVALS				
Name	Position	Signature	Date	
Todd Hoffman	Geoscientist			
Tim Radburn	Executive Director			


	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 3 of 27

TABLE OF CONTENTS

1	WELL CARD (DATA SUMMARY SHEET)	4
2	WELL SCHEMATIC	9
3	CEMENTING	11
3.1	CONDUCTORS CEMENT.....	11
3.2	SURFACE AND PRODUCTION CASINGS CEMENT SUMMARY	11
4	CORES AND SAMPLING	12
5	EVALUATION LOGS	12
6	CORE PHOTOGRAPHY	12
7	WELL TRAJECTORY	12
8	BIT RECORD	12
9	MUD RECORD	13

APPENDICES

APPENDIX 1. CORES / SAMPLES DETAILS	14
APPENDIX 2. DEVIATION SURVEY.....	21
APPENDIX 3. BIT RECORD	21
APPENDIX 4. FLUID RECORD.....	22

ENCLOSURES


Enclosure 1. Wireline Logs

- Open Hole Logs:
 - Intermediate Log
 - TD Log
- Cased Hole Logs:
 - Cement Bond Log
 - Pre-frac Pulse Neutron / Perforation
 - Post-frac Pulse Neutron / Cross Dipole Sonic

Enclosure 2. Mud Log

Enclosure 3. Hydraulic Stimulation

Enclosure 4. Flowback

	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 4 of 27

1 WELL CARD (DATA SUMMARY SHEET)

GENERAL WELL INFORMATION	
Well Name and Number:	Birdum Creek-1
Designation:	Petroleum stratigraphic core well
Permit:	EP-167
Basin:	Roper Basin
Mapsheet (1:100K):	Larrimah
Graticular Block No:	[3110] (5 minute blocks)
Surveyed Location: (MGA94, Zone 53)	Latitude 15° 37' 49.7135"S (GDA94) Longitude 133° 08' 37.1602"E (GDA94) Easting 300,995.916mE (MGA94,Z53) Northing 8,271,069.799mN (MGA94,Z53)
Pastoral lease holder:	Cave Creek Station Pty Ltd Rohan Sullivan, Sally Anne Sullivan Thomas Stockwell, Beverly Stockwell
Property Description:	Parcel 3050 "Birdum Creek"
Seismic Reference:	Hidden Valley 2013 2D, Line PB13-04, SP 6600
Nearest Well:	Tarlee-S3 (2014), TD 1650.6 mKB (34 km West)
Surveyed Elevation:	178.78 mAMSL
Well Total Depth (TD): (True Measured Depth)	1935.0 mRT (Driller) 1936.23 mRT (Logger) True measured depth = true vertical depth
Spud Date:	03-Jun-2015
Reach TD Date:	13-Jul-2015
Rig Release Date:	19-Jul-2015
Suspended Date:	19-Oct-2015
Well Status/Result:	Cased and suspended / Hydrocarbon Shows



**BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1**

DOCUMENT: BC1-WCR-1604

REVISION: A

PAGE: Page 5 of 27

OPERATOR AND SERVICE CONTRACTORS

Operator and Titleholder:	Pangaea (NT) Pty Ltd – (Operator) EMG Northern Territory Holdings Pty Ltd
Operator Postal Address:	Locked Bag 1, 1 Farrer Place Sydney, NSW, 2000
Drilling Contractor:	Saxon Energy Services Australia Pty Ltd
Rig Name and Type:	Rig-187 (ATS-320)
Stimulation Contractor:	Halliburton
Well Testing Contractor:	Vause
Coiled Tubing Contractor:	Halliburton

CORED INTERVAL

From	To	Total Interval	Core Recovery
[mRT]	[mRT]	[m]	[%]
834.0	984.1	150.1	99.6
1529.5	1813.6	284.1	99.6



**BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1**

DOCUMENT: BC1-WCR-1604

REVISION: A

PAGE: Page 6 of 27

FINAL WELL CONSTRUCTION									
Interval	Hole Specifications			Casing Specifications					
	Hole Size	From	To	OD	Weight	Grade	Thread	Casing Top	Shoe Depth
	[in]	[mRT]	[mRT]	[in]	[lb/ft]			[mRT]	[mRT]
Conductor – 1	24	7.1	22.3	20	94.0		Welded	7.1	22.0
Conductor – Contingency	17-1/2	22.3	73.3	16	84.0		HWBCF	7.1	47.5
Conductor – 2	17-1/2	22.3	73.3	13-3/8	68.0	K-55	BTC	6.7	70.1
Surface	12-1/4	73.3	816.0	9-5/8	36.0	K-55	BTC	5.8	813.1
Production	8-1/2	816.0	1935	7	35.0	P-110	JFE FOX	5.0	1931.9

DRILLING MEDIUM				
Interval	Hole Size	From	To	Fluid System
	[in]	[mRT]	[mRT]	
Conductor – 1	24	7.1	22.3	N/A
Conductor – Contingency & 2	17-1/2	22.3	73.3	Dry Air
Surface	12-1/4	73.3	816.0	WBM – KCl / Polymer
Production	8-1/2	816.0	1935.0	WBM – KCl / Polymer



PANGAEA

BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT: BC1-WCR-1604

REVISION: A

PAGE: Page 7 of 27

LOGS FOR 12-1/4" OPEN HOLE SECTION	
Logging Run	Service
Run #1	Gamma Ray (GR) Spontaneous Potential (SP) Laterologs, Micro-resistivity Photo electric / Density / Caliper (Pe-Den-Cal) Neutron Sonic Maximum temperature
LOGS FOR 8-1/2" OPEN HOLE SECTION	
Logging Run	Service
Run #2	Gamma Ray (GR) & Spectral Gamma Ray (HNGS) Spontaneous Potential (SP) Laterologs, Micro-resistivity Photo electric / Density / Caliper (Pe-Den-Cal) Neutron & Pulse Neutron Maximum temperature
Run #3	Deviation Survey Resistivity Imager (FMI) Cross Dipole Sonic (SonicScanner)
Run #4	Nuclear Magnetic Resonance (CMR) Spectral Lithology (LithoScanner)
Run #5	Rotary Sidewall Core (MSCT)
Run # 6	Ultrasonic Borehole Imager (UBI)
Run # 7	Checkshot Survey



**BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1**

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 8 of 27

LOGS FOR 7" CASED HOLE SECTION	
Logging Run	Service
Cement Evaluation	Radial Bond Log Gamma Ray (GR) / Casing Collar Locator (CCL)
Pre-frac Pulse Neutron	Pulse Neutron Gamma Ray (GR) / Casing Collar Locator (CCL)
Perforation	Perforation with 3-3/8" 6SPF 34JL UltraJet 21.6gm HMX
Post-frac Pulse Neutron	Pulse Neutron Gamma Ray (GR) / Casing Collar Locator (CCL)
Post-frac X-Dipole	Cross Dipole Sonic (SonicScanner)

FORMATION TOPS						
Formation	Predicted Depth	Depth	Depth	Depth	Depth	Thickness
	(mRT)	(mRT)	(mGL)	(mTVD)	(mSS)	(m)
Surficial Sediments	-	No Samples taken during drilling of conductor hole				
Undifferentiated Cretaceous	-					
Antrim Plateau Volcanics	36.30	53.42	48.08	48.08	-140.58	101.32
Base Cambrian Unconformity	178.30	154.74	149.4	149.4	-39.26	-
Hayfield Mudstone	-	-	-	-	-	-
Jamison Sandstone	-	154.74	149.4	149.4	-39.26	97.25
McMinn Formation	178.30	251.99	246.65	246.65	57.99	481.42
Intra-Kyalla Sandstone	721.30	-	-	-	-	-
Sill	-	733.41	728.07	728.07	539.41	-
Kyalla Shale	-	818.59	813.25	728.07	624.59	282.17
Moroak Sandstone	908.30	982.85	977.51	977.51	788.85	117.91
Upper Velkerri	1044.30	1100.76	1095.42	1095.42	906.76	285.97
Middle Velkerri	1455.30	1386.73	1381.39	1381.39	1192.73	25.08
Derim Derim Sill	1386.30	1411.81	1406.47	1406.47	1217.81	100.22
Middle Velkerri Continued	-	1512.03	1506.69	1506.69	1318.03	422.97
TD	1843.30	1935.00	1929.66	1929.66	1741.00	-

2 WELL SCHEMATIC

Birdum Creek 1
 Well Suspension (Post-Frac)

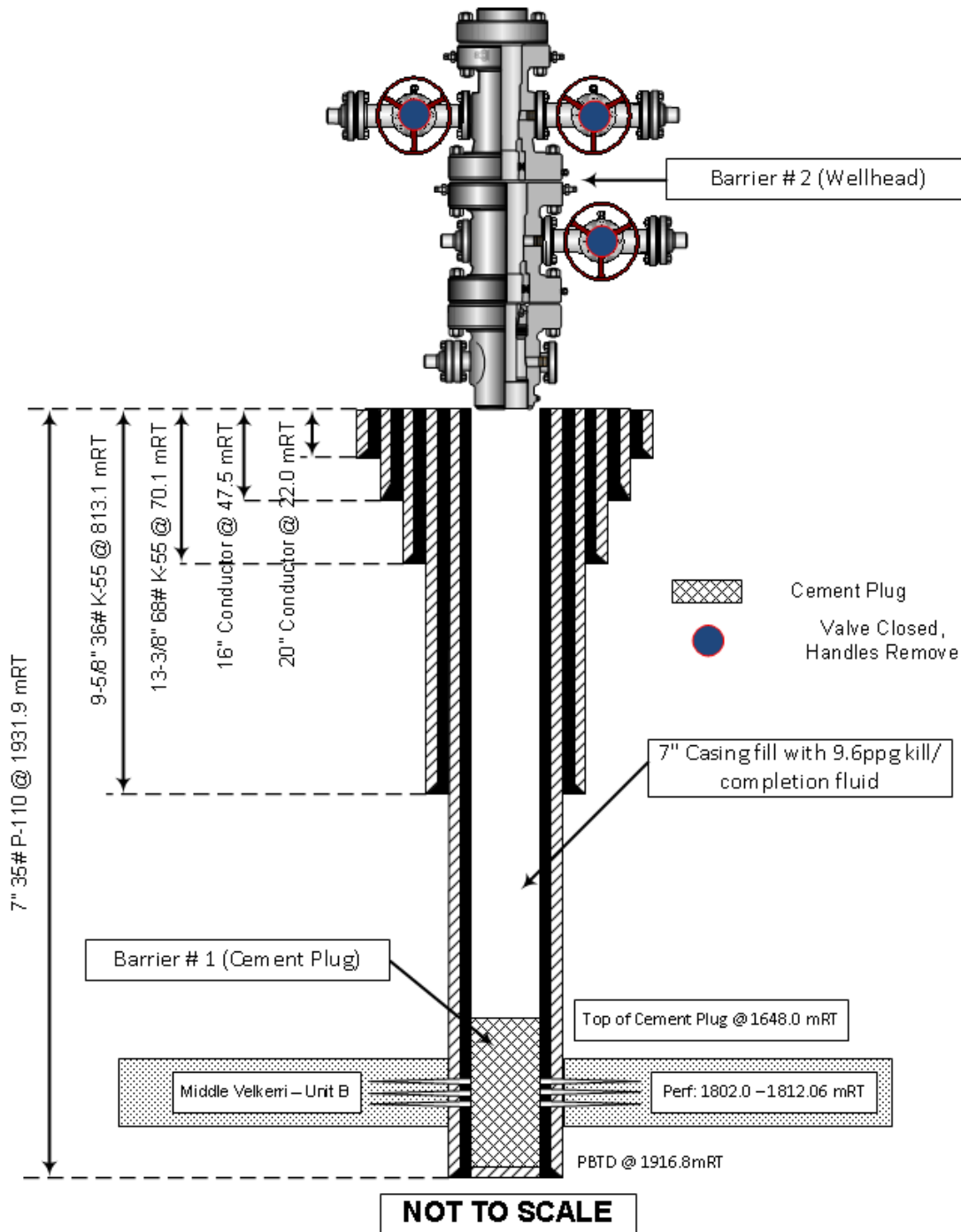


Figure 1: Current Birdum Creek-1 Well Schematic

Birdum Creek 1 P&A Diagram

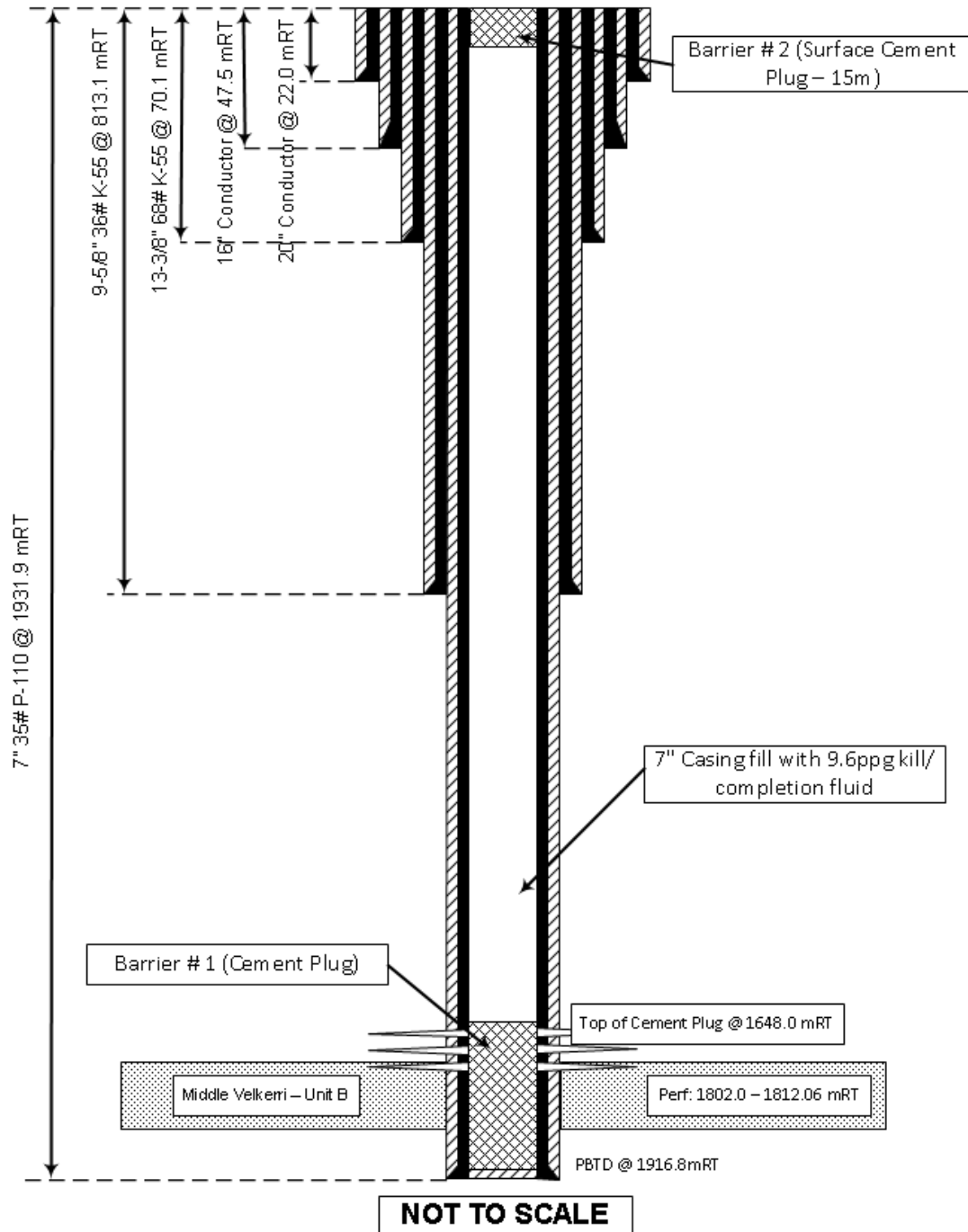



Figure 2: Proposed Birdum Creek-1 P&A Schematic*

* P&A operations planned for May 2016, per Figure 2.

	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 11 of 27


3 CEMENTING

3.1 Conductors Cement

The top hole section of Birdum Creek-1 was drilled and cemented using the mineral rig DDH-1 Foremost Rig-32. Before rigging up DDH1 Rig-32, the 24" conductor hole was drilled from 7.1 mRT (depth referenced to Saxon Rig-187 rotary table) to 22.3 mRT using an auger on sandy formation of the surface sediments. The hole was filled with water and the rig was then moved forward to run the 20" Conductor-1 casing with welded connections to a depth of 22.0 mRT. Mixed 152 sacks of 20 kg Class A cement and pumped 3400 L of 13.6 ppg cement slurry. The diverter was installed on top of the conductor and lined up to the flare pit. The 17-1/2" hole was drilled using an air hammer bit to the depth of 73.3 mRT, which is 21 m into the basalt rock of the Antrim Volcanic Plateau. When running in hole for reaming, tight hole conditions were observed as sand from the upper formation was falling in the hole. A 16" contingency conductor was run to a depth of 47.5 mRT. Mixed 94 sacks of 20 kg Class A cement and pumped 2000 L of 13.6 ppg cement slurry without observing cement to surface. The hole was then filled with water and a second cementing job was performed, mixing 58 sacks of 20 kg Class A cement and pumped 1000 L of 13.6 ppg cement slurry. Cement returns were observed at surface. A 9-5/8" air hammer bit was run to circulate and clean the hole. The 13-3/8" Conductor-2 casing was run to 70.1 mRT. Mixed 188 sacks of 20 kg Class A cement and pumped 4300 L of 13.5 ppg cement slurry, dropped the cement plug and displaced with 5000 L of water, bumped the plug and pressure tested to 400 psi. No returns were observed at surface, hence a top up job was performed by mixing 34 sacks of 20 kg Class A cement and pumped 600 L of 13.6 ppg cement slurry down the annulus.

3.2 Surface and Production Casings Cement Summary

	Surface Casing	Production Casing
Hole Size	12-1/4" (311 mm)	8-1/2" (216 mm)
Casing Size	9-5/8" (245 mm)	7" (178 mm)
Setting Depth	813.1 mRT	1931.9 mRT
Cement Type	Class G	Class G
Cement Top	Lead - Surface Tail – 666 mRT	Lead - Surface Tail – 1327 mRT
Yield	Lead - 2.15 ft ³ /sk Tail – 1.16 ft ³ /sk	Lead - 2.13 ft ³ /sk Tail - 1.16 ft ³ /sk
Volume	Lead – 211.0 bbl Tail – 57.0 bbl	Lead – 145.6 bbl Tail – 65.7 bbl
Basis of Calculation	Gauge + 10%	Gauge + 10%
Slurry Density	Lead - 12.5 ppg	Lead - 12.5 ppg

	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 12 of 27

	Tail - 15.8 ppg	Tail - 15.8 ppg
Bump Plug	680psi	2100psi
Additives	D-Air 3000L Econolite Liquid CFR-3 (PH)	D-Air 3000L Bentonite Halad-344 (PH) HR-5 (PH) Halad-413 (PH) CFR-3 (PH), HR-5 (PH)

4 CORES AND SAMPLING

The sampling program for Birdum Creek-1 comprised the following:

- Conventional coring
- Sidewall coring
- Cuttings collection
- Desorption
- Wax preservation of whole core
- Isotube sampling

Please see **Appendix 1** for details of the samples taken.

5 EVALUATION LOGS

Please see **Enclosure 1** for digital wireline log data.

Please see **Enclosure 2** for graphical mud log.

No measurement, logging or pressure while drilling logs were performed.

6 CORE PHOTOGRAPHY


n/a

7 WELL TRAJECTORY

Please see **Appendix 2** for deviation survey results.

8 BIT RECORD

Please see **Appendix 3** for bit record.

	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 13 of 27

9 MUD RECORD

Please see **Appendix 4** for mud record.



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 14 of 27

APPENDIX 1. CORES / SAMPLES DETAILS

CORE RUN DETAILS

Client: Pangaea Resources
Well: Birdum Creek-1
Job Number: AB-77345
Rig: Saxon 187
Permit: NT EP-167

Run No.	Start Drilling/Coring	Stop Drilling/Coring	At Surface	Top Depth	Bottom Depth	Drilled/Cored	Recovery	Loss/Gain	Recovery	Comments
	dd/mm/yyyy hh:m m	dd/mm/yyyy hh:m m	dd/mm/yyyy hh:m m	m	m	m	m	m	%	
1	19/06/2015 11:30	19/06/2015 17:00	19/06/2015 23:30	834.00	844.00	10.00	9	-1	89	Barrel jammed off, stuck down hole
2	21/06/2015 03:40	21/06/2015 11:40	21/06/2015 16:25	844.00	869.00	25.00	24	-1	96	Barrel jammed off
3	22/06/2015 02:00	22/06/2015 06:50	22/06/2015 12:48	869.00	899.00	30.00	31	1	102	D01-02
4	22/06/2015 22:00	23/06/2015 04:00	23/06/2015 10:15	899.00	941.79	42.79	39	-4	91	D03-04 Barrel jammed
5	23/06/2015 21:45	24/06/2015 00:10	24/06/2015 06:30	941.79	953.83	12.04	12	0	102	D05 Barrel jammed
6	24/06/2015 17:05	24/06/2015 20:50	25/06/2015 01:30	953.83	970.84	17.01	17	0	103	D06 Barrel jammed
7	25/06/2015 10:25	25/06/2015 14:10	25/06/2015 19:15	970.84	984.05	13.21	13	0	101	Drill ahead to Velkerri Fm
8	30/06/2015 17:50	01/07/2015 07:00	01/07/2015 16:55	1529.50	1544.73	15.23	14	-1	93	D07 Barrel jammed off
9	02/07/2015 06:10	02/07/2015 16:10	02/07/2015 23:55	1544.73	1568.38	23.65	25	2	107	D08 Barrel jammed off
10	03/07/2015 12:25	04/07/2015 03:15	04/07/2015 11:20	1568.38	1628.38	60.00	61	1	102	D09-D11 Core marked from Drillers depth, Rec'd 1569.92 - 1630.96
11	05/07/2015 05:26	05/07/2015 11:40	05/07/2015 20:35	1628.38	1688.38	60.00	60	0	101	D12-14
12	06/07/2015 10:25	06/07/2015 16:55	07/07/2015 01:00	1688.38	1719.93	31.55	31	0	100	D15-16 Barrel jammed off
13	07/07/2015 14:25	07/07/2015 18:15	08/07/2015 02:32	1719.93	1736.49	16.56	17	0	102	D17 Barrel jammed off
14	08/07/2015 17:00	08/07/2015 23:56	09/07/2015 08:50	1736.49	1758.70	22.21	22	0	100	D18 Barrel jammed off
15	09/07/2015 22:40	10/07/2015 02:50	10/07/2015 11:30	1758.70	1776.01	17.31	17	0	99	D19 Barrel jammed off
16	11/07/2015 02:26	11/07/2015 08:34	11/07/2015 17:00	1776.01	1813.65	37.64	39	1	103	D20-21 End of Core



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 15 of 27

SIDEWALL CORE DETAILS

Birdum Creek-1 Sidewall Cores					
MSCT Run	No	Depth (mRT)	Formation	Remarks	Recovered
1	1	951.2	Kyalla		Yes
	2	951.8	Kyalla		Yes
	3	966.2	Kyalla		Yes
	4	966.8	Kyalla		Yes
	5	986	Kyalla		Yes
	6	987	Kyalla		Yes
	7	1315	U. Velkerri		Yes
	8	1319	U. Velkerri		Yes
	9	1330	U. Velkerri		Yes
	10	1345	U. Velkerri		Yes
	11	1349	U. Velkerri		Yes
	12	1355	U. Velkerri		Yes
	13	1360	U. Velkerri		Yes
	14	1365	U. Velkerri		Yes
	15	1371	M. Velkerri		Yes
	16	1374	M. Velkerri		Yes
	17	1375	M. Velkerri		Yes
	18	1376.7	M. Velkerri		Yes
	19	1380	M. Velkerri		Yes - Broken
	20	1381	M. Velkerri		Yes - Broken
		1381.05		Re-attempt	Yes - Broken
	21	1382	M. Velkerri		Yes
	22	1387	M. Velkerri		Crushed
	23	1408	M. Velkerri	Last 3 points for desorption	Crushed
	24	1408.5	M. Velkerri		Lost
25	1409	M. Velkerri		Crushed	
2	26	1388	M. Velkerri		Yes
	27	1389.7	M. Velkerri		Yes
	28	1390	M. Velkerri		Yes
	29	1392	M. Velkerri		Yes
	30	1394	M. Velkerri		Yes
	31	1395	M. Velkerri		Yes
	32	1399	M. Velkerri		Yes - Broken
	33	1400	M. Velkerri		Yes
	34	1402	M. Velkerri		Yes
	35	1402.8	M. Velkerri		Yes - Broken
	36	1403	M. Velkerri		Yes
	37	1404	M. Velkerri		Yes
	38	1535	M. Velkerri		Yes
	39	1535.8	M. Velkerri		Yes
	40	1547.8	M. Velkerri		Yes
	41	1550	M. Velkerri		Yes
	42	1665.2	M. Velkerri		Yes
	43	1665.8	M. Velkerri		Yes
	44	1716.6	M. Velkerri		Yes
	45	1717.3	M. Velkerri		Yes
46	1735	M. Velkerri		Yes	
47	1735.6	M. Velkerri		Yes - Broken	
48	1680.5	M. Velkerri	Last 6 points	Yes	
49	1681	M. Velkerri		Yes	
50	1681.5	M. Velkerri		Yes	
23R	1407.9	M. Velkerri		Yes	
24R	1408.4	M. Velkerri		Yes	
25R	1408.9	M. Velkerri		Yes	



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 16 of 27

3	51	1026	Moroak SS		Yes
	52	1027	Moroak SS		Yes - Broken
	53	1033.5	Moroak SS		Yes
	54	1034	Moroak SS		Yes
	55	1815	M. Velkerri		Yes
	56	1817	M. Velkerri		Yes
	57	1819	M. Velkerri		Yes
	58	1820	M. Velkerri		Yes
	59	1821.8	M. Velkerri		Yes - Broken
	60	1823	M. Velkerri		Yes
	61	1824	M. Velkerri		Yes
	62	1826	M. Velkerri		Yes
	63	1829	M. Velkerri		Yes
	64	1835	M. Velkerri		Yes
	65	1840	M. Velkerri		Yes - Broken
	66	1843.1	M. Velkerri		Yes - Broken
	67	1845.2	M. Velkerri		Yes - Broken
	68	1851	M. Velkerri		Yes - Broken
	69	1855	M. Velkerri		Yes - Broken
	70	1860	M. Velkerri		Yes
71	1865	M. Velkerri		Yes	
72	1870	M. Velkerri		Yes	
73	1923	L.Velkerri		Yes	
74	1924	L.Velkerri		Yes	
75	1394.5	M. Velkerri	Last 3 points for desorption	Yes - Broken	
76	1395.5	M. Velkerri		Yes - Broken	
77	1396	M. Velkerri		Yes - Broken	

CUTTINGS SAMPLE DETAILS

Washed and Dried Cuttings Set A (for Pangaea Records)			
Sample Bag	Depth (mRT)	No of Sample	Remarks
Cotton / Calico bag	70 – 166.3	10	Sample collected at every connection
Cotton / Calico bag	166.3 - 290	10	Sample collected at every connection
Cotton / Calico bag	290 – 420	10	Sample collected at every connection
Cotton / Calico bag	420 – 552.5	10	Sample collected at every connection
Cotton / Calico bag	552.5 – 630	10	After 600m sample interval 5m
Cotton / Calico bag	630 – 680	10	5m interval
Cotton / Calico bag	680 – 730	10	5m interval, Upto 730 Dan Geo hand carry
Cotton / Calico bag	730 – 780	10	5m interval
Cotton / Calico bag	780 – 816	8	780-815=5m interval,815-816m=1m interval
Cotton / Calico bag	816 - 860	10	816-819=3m,819-820=1m,820-830=5m,830-834=4m,834-840=6m,840-860=5m interval
Cotton / Calico bag	860 - 910	10	5m interval
Cotton / Calico bag	910 - 960	10	5m interval
Cotton / Calico bag	960 - 1010	10	5m interval, 980-984=4m, 984-990=6m
Cotton / Calico bag	1010 - 1060	10	5m interval
Cotton / Calico bag	1060 – 1110	10	5m interval
Cotton / Calico bag	1110 - 1160	10	5m interval
Cotton / Calico bag	1160 - 1210	10	5m interval
Cotton / Calico bag	1210 - 1260	10	5m interval
Cotton / Calico bag	1260 - 1310	10	5m interval Up to 1310m from 730m
Cotton / Calico bag	1310- 1360	10	5m interval
Cotton / Calico bag	1360- 1410	10	5m interval
Cotton / Calico bag	1410 - 1460	10	5m interval
Cotton / Calico bag	1460 - 1510	10	5m interval
Cotton / Calico bag	1510 – 1560	10	5m interval
Cotton / Calico bag	1560 – 1610	10	5m interval



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 17 of 27

Cotton / Calico bag	1610 – 1660	10	5m interval
Cotton / Calico bag	1660-1710	10	5m interval
Cotton / Calico bag	1710-1760	10	5m interval
Cotton / Calico bag	1760-1785	5	5m interval
Cotton / Calico bag	1785-1812	5	5m interval,(1805-1812) 7 m interval
Cotton / Calico bag	1812-1837	5	5m interval
Cotton / Calico bag	1837-1862	5	5m interval
Cotton / Calico bag	1862-1887	5	5m interval
Cotton / Calico bag	1887-1912	5	5m interval
Cotton / Calico bag	192-1935	5	5m interval

Washed and Dried Cuttings Set B (for NTGS Records)			
Sample Bag	Depth mRT	No of Sample	Remarks
Cotton / Calico bag	70 – 166.3	10	Sample collected at every connection
Cotton / Calico bag	166.3 - 290	10	Sample collected at every connection
Cotton / Calico bag	290 – 420	10	Sample collected at every connection
Cotton / Calico bag	420 – 552.5	10	Sample collected at every connection
Cotton / Calico bag	552.5 – 630	10	After 600m sample interval 5m
Cotton / Calico bag	630 – 680	10	5m interval
Cotton / Calico bag	680 – 730	10	5m interval
Cotton / Calico bag	730 – 780	10	5m interval
Cotton / Calico bag	780 – 816	8	780-815=5m interval,815-816m=1m interval
Cotton / Calico bag	816 - 1010	10	816-819=3m,819-820=1m,820-830=5m,830-834=4m,834-984=Coring,984-990=6m,990-1010=5m interval
Cotton / Calico bag	1010 - 1060	10	5m interval
Cotton / Calico bag	1060 - 1110	10	5m interval
Cotton / Calico bag	1110 - 1160	10	5m interval
Cotton / Calico bag	1160 -1210	10	5m interval
Cotton / Calico bag	1210 - 1260	10	5m interval
Cotton / Calico bag	1260 - 1310	10	5m interval
Cotton / Calico bag	1310 - 1360	10	5m interval
Cotton / Calico bag	1360 – 1410	10	5m interval
Cotton / Calico bag	1410 – 1460	10	5m interval
Cotton / Calico bag	1460 – 1510	10	5m interval
Cotton / Calico bag	1510 – 1529.5	4	5m interval
Cotton / Calico bag	1812 -- 1837	5	5m interval
Cotton / Calico bag	1837-1862	5	5m interval
Cotton / Calico bag	1862-1887	5	5m interval
Cotton / Calico bag	1887-1912	5	5m interval
Cotton / Calico bag	1912-1935	5	5m interval
Sample Bag	DEPTH mRT	No of Sample	REMARKS

Washed and Dried Cuttings Set C (for Pangaea Records)			
Sample Bag	Depth mRT	No of Sample	Remarks
Samplex Tray	70.0 – 120.0	5	Sample collected at every connection
Samplex Tray	120.0 – 166.3	5	Sample collected at every connection
Samplex Tray	166.3 – 224.5	5	Sample collected at every connection
Samplex Tray	224.5 – 290.0	5	Sample collected at every connection
Samplex Tray	290.0 – 354.0	5	Sample collected at every connection
Samplex Tray	354.0 – 420.0	5	Sample collected at every connection
Samplex Tray	420.0 – 485.0	5	Sample collected at every connection
Samplex Tray	485.0 – 552.5	5	Sample collected at every connection
Samplex Tray	552.5 – 605.0	5	After 600m sample interval 5m
Samplex Tray	605.0 – 630.0	5	5m interval
Samplex Tray	630.0 – 655.0	5	5m interval



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 18 of 27

Samplex Tray	655.0 – 680.0	5	5m interval
Samplex Tray	680.0 – 705.0	5	5m interval
Samplex Tray	705.0 – 730.0	5	5m interval
Samplex Tray	730.0 – 755.0	5	5m interval
Samplex Tray	755.0 – 780.0	5	5m interval
Samplex Tray	780.0 – 805.0	5	5m interval
Samplex Tray	805.0 – 825.0	5	805-810, 810-815, 815-819, 819-820, 820-825m interval
Samplex Tray	825.0 – 850.0	5	5m interval
Samplex Tray	850.0 – 875.0	5	5m interval
Samplex Tray	875.0 – 900.0	5	5m interval
Samplex Tray	900.0 – 925.0	5	5m interval
Samplex Tray	925.0 – 950.0	5	5m interval
Samplex Tray	950.0 – 975.0	5	5m interval
Samplex Tray	975.0 – 1000.0	5	5m interval
Samplex Tray	1000.0 – 1025.0	5	5m interval
Samplex Tray	1025.0 – 1050.0	5	5m interval
Samplex Tray	1050.0 – 1075.0	5	5m interval
Samplex Tray	1075.0 – 1100.0	5	5m interval
Samplex Tray	1100.0 – 1125.0	5	5m interval
Samplex Tray	1125.0 – 1150.0	5	5m interval
Samplex Tray	1150.0 – 1175.0	5	5m interval
Samplex Tray	1175.0 – 1200.0	5	5m interval
Samplex Tray	1200.0 – 1225.0	5	5m interval
Samplex Tray	1225.0 – 1250.0	5	5m interval
Samplex Tray	1250.0 – 1275.0	5	5m interval
Samplex Tray	1275.0 – 1300.0	5	5m interval
Samplex Tray	1300.0 – 1325.0	5	5m interval
Samplex Tray	1325.0 – 1350.0	5	5m interval
Samplex Tray	1350.0 – 1375.0	5	5m interval
Samplex Tray	1375.0 – 1400.0	5	5m interval
Samplex Tray	1400.0 – 1425.0	5	5m interval
Samplex Tray	1425.0 – 1450.0	5	5m interval
Samplex Tray	1450.0 – 1475.0	5	5m interval
Samplex Tray	1475.0 – 1500.0	5	5m interval
Samplex Tray	1500.0 – 1525.0	5	5m interval
Samplex Tray	1525.0 – 1550.0	5	5m interval
Samplex Tray	1550.0 – 1575.0	5	5m interval
Samplex Tray	1575.0 – 1600.0	5	5m interval
Samplex Tray	1600.0 – 1625.0	5	5m interval
Samplex Tray	1625.0 – 1650.0	5	5m interval
Samplex Tray	1650.0 – 1675.0	5	5m interval
Samplex Tray	1675.0 – 1700.0	5	5m interval
Samplex Tray	1700.0 – 1725.0	5	5m interval
Samplex Tray	1725.0 – 1750.0	5	5m interval
Samplex Tray	1750.0 – 1775.0	5	5m interval
Samplex Tray	1775.0 – 1800.0	5	5m interval
Samplex Tray	1800.0 – 1825.0	5	5m interval
Samplex Tray	1825.0 – 1850.0	5	5m interval
Samplex Tray	1850.0 – 1875.0	5	5m interval
Samplex Tray	1875.0 – 1900.0	5	5m interval
Samplex Tray	1900.0 – 1925.0	5	5m interval
Samplex Tray	1925.0 – 1935.0	5	5m interval

DESORPTION SAMPLE DETAILS

Birdum Creek-1 Desorption Samples				
Sample	Top depth (m)	Bottom Depth (m)	Length (m)	Formation
DS #1	879.3	879.6	0.3	Kyalla



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 19 of 27

DS #2	896.3	896.6	0.3	Kyalla
DS #3	914.3	914.6	0.3	Kyalla
DS #4	930.3	930.6	0.3	Kyalla
DS #5	951.31	951.61	0.3	Kyalla
DS #6	966.3	966.6	0.3	Kyalla
DS #7	1535.8	1536.1	0.3	Velkerri
DS #8	1549.3	1549.66	0.36	Velkerri
DS #9	1570.3	1570.6	0.3	Velkerri
DS #10	1586.8	1587.1	0.3	Velkerri
DS #11	1611.2	1611.5	0.3	Velkerri
DS #12	1647.3	1647.6	0.3	Velkerri
DS #13	1665.31	1665.61	0.3	Velkerri
DS #14	1680.78	1681.08	0.3	Velkerri
DS #15	1697.79	1698.09	0.3	Velkerri
DS #16	1716.7	1717	0.3	Velkerri
DS #17	1735.03	1735.33	0.3	Velkerri
DS #18	1753.31	1753.61	0.3	Velkerri
DS #19	1771.29	1771.59	0.3	Velkerri
DS #20	1788.3	1788.6	0.3	Velkerri
DS #21	1806.8	1807.08	0.28	Velkerri

PRESERVED CORE SAMPLES

Birdum Creek-1 Preserved Core Samples			
Sample	Top depth (m)	Bottom Depth (m)	Length (m)
Preserve #1	862	862.3	0.3
Preserve #2	879	879.3	0.3
Preserve #2	879.6	880	0.4
Preserve #4	896	896.3	0.3
Preserve #5	896.6	897	0.4
Preserve #6	914	914.3	0.3
Preserve #7	914.6	915	0.4
Preserve #8	930	930.3	0.3
Preserve #9	930.6	931	0.4
Preserve #10	951	951.31	0.31
Preserve #11	951.61	952	0.39
Preserve #12	966	966.3	0.3
Preserve #13	966.6	967	0.4
Preserve #14	1535.5	1535.8	0.3
Preserve #15	1536.1	1536.5	0.4
Preserve #16	1549	1549.3	0.3
Preserve #17	1549.66	1550.03	0.37
Preserve #18	1570	1570.3	0.3
Preserve #19	1570.6	1571	0.4
Preserve #20	1586.5	1586.8	0.3
Preserve #21	1587.1	1587.5	0.4
Preserve #22	1610.49	1610.79	0.3
Preserve #23	1610.79	1611.2	0.41
Preserve #24	1647	1647.3	0.3
Preserve #25	1647.6	1648	0.4
Preserve #26	1665	1665.31	0.31
Preserve #27	1665.61	1666	0.39
Preserve #28	1680.5	1680.78	0.28
Preserve #29	1681.08	1681.5	0.42
Preserve #30	1697.5	1697.79	0.29
Preserve #31	1698.09	1698.5	0.41
Preserve #32	1716.5	1716.7	0.2
Preserve #33	1717	1717.5	0.5
Preserve #34	1734.75	1735.03	0.28




**BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1**

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 20 of 27

Preserve #35	1735.33	1735.75	0.42
Preserve #36	1753	1753.31	0.31
Preserve #37	1753.61	1754	0.39
Preserve #38	1771.01	1771.29	0.28
Preserve #39	1771.59	1772	0.41
Preserve #40	1788	1788.3	0.3
Preserve #41	1788.6	1789	0.4
Preserve #42	1806.5	1806.8	0.3
Preserve #43	1807.08	1807.5	0.42

ISOTUBE SAMPLE DETAILS

Birdum Creek-1 Isotube Samples			
Sample Number	Depth (mMDRT)	Total Gas Unit	Date & Time
1	919.0	210.00	23 June 2015 @ 0050 hrs
2	929.5	273.00	23 June 2015 @ 0210 hrs
3	930.0	358.00	23 June 2015 @ 0220 hrs
4	935.0	394.00	23 June 2015 @ 0315 hrs
5	940.5	483.00	23 June 2015 @ 0405 hrs
6	1667.0	1,001.00	05 July 2015@1127 hrs
7	1785.0	470.00	11 July 2015@522hrs
8	1785.0	470.00	11 July 2015@522hrs

	BASIC WELL COMPLETION REPORT EP-167 BIRDUM CREEK-1	DOCUMENT:	BC1-WCR-1604
		REVISION:	A
		PAGE:	Page 21 of 27

APPENDIX 2. DEVIATION SURVEY

Birdum Creek-1 Deviation Survey Results			
Depth	Date/Time	Deviation	Azimuth
[mRT]		[deg]	[deg]
146.0	06-Jun-15 - 04:45	0.25	250.0
356.0	09-Jun-15 - 17:30	1.00	320.0
555.0	11-Jun-15 - 10:45	2.00	305.0
766.0	14-Jun-15 - 22:30	3.25	294.0
975.0	26-Jun-15 - 05:45	3.00	312.0
1174.0	27-Jun-15 - 03:45	2.75	303.0
1373.0	28-Jun-15 - 01:45	2.50	297.0
1930.0	13-Jul-15 - 16:15	4.90	307.0

A Wireline Logging Deviation Survey using the Schlumberger's General Purpose Inclinerometry Tool (GPIT) was performed. Data can be found in **Enclosure 1**.

APPENDIX 3. BIT RECORD

BIRDUM CREEK-1 BIT RECORD									
Bit Number	Size (in)	Make	Type	IADC Code or Specification	Serial Number	Nozzles (No. x 1/32in)	Depth In (m)	Depth Out (m)	Total Meters
1	12-1/4	Smith	TCI	617	RA1186	3 x 18, 1 x 14	70.1	816.0	745.9
2	8-1/2	Smith	GF30PS	537X	RA6823	3 x 20	816.0	834.0	18.0
3	8-1/2	Corpro	MCP572	M233	UD168001	2 x 24, 1 x 21	834.0	844.0	10.0
4	8-1/2	Corpro	MCP580	M343	6013220	2 x 25, 1 x 21	844.0	984.1	140.1
5	8-1/2	Smith	MSi813	M433	JH2005	8 x 12	984.1	1529.5	545.5
6	8-1/2	Corpro	MCP580	M343	6013223	3 x 22, 1 x 16	1529.5	1544.8	15.3
7(RR)	8-1/2	Corpro	MCP572	M233	VGO232320 9	3 x 23, 1 x 4	1544.8	1813.6	268.8
8(RR)	8-1/2	Smith	MSi813	M433	WUPX	8 x 12	1813.6	1935.0	121.4



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 22 of 27

APPENDIX 4. FLUID RECORD



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 23 of 27



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Drilling Fluids - Fluid Property Summary : Water-Based Fluid

From Report	001	On	05-29-2015	@(MD/TVD)	0.00 / 0.00	m	
To Report	052	On	07-19-2015	@(MD/TVD)	1,935.00 / 1,935.00	m	Drilled: 1,935.00 m

Fluid Name : KCl/Polymer

Report No	MD/TVD m	FL Temp °C	Density ppg	Funn Visc sec/qt	Rheology 50 °C					Filtration					Filtrate Analysis					MBT ppb eq.	Sand % by vol	Retort Analysis				Rheometer Dial Readings					
					PV cp	lbs ⁿ /100ft ²				API mL/30min	HTHP mL/30min	Cake API 32nd in	Temp °C	pH	Fm mL	Ff mL	Mf mL	Cl mg/l	Total Hardness mg/l			% by vol				800	300	200	100	6	3
						YP	10S	10M	30M													Corr Solid	LGS	NAP Base	Water						
004A	0/0		8.65	60	10	7	2	2	2	25.0		1		9	0.10	0.05	2.00	29,000	360	1.25	0.10	0.0	0.0	0.0	97.5	27.0	17.0	13.0	8.0	2.0	1.0
005A	0/0		8.65	32	4	1	1	1	1	18.0		1		9	0.22	0.05	1.30	28,000	320	1.25	0.10	0.1	0.1	0.0	97.5	9.0	5.0	3.0	2.0	1.0	1.0
006A	0/0		8.65	41	10	7	2	2	3	17.0		1		9.5	0.15	0.25	1.20	28,000	240	1.25	0.10	0.1	0.1	0.0	97.5	27.0	17.0	13.0	9.0	2.0	1.0
007A	91.00/91.00	30	8.65	37	5	7	1	2	2	14.0		1		9	0.30	0.09	0.40	24,000	240	1.25	0.10	0.4	0.4	0.0	97.6	17.0	12.0	9.0	6.0	2.0	1.0
007A	116.00/116.00	32	8.75	42	7	8	2	3	3	10.0		1		8.5	0.25	0.05	0.45	25,000	280	2.50	0.10	1.1	1.1	0.0	96.8	22.0	15.0	12.0	8.0	3.0	2.0
007A	123.00/123.00	36	8.70	41	7	8	2	3	4	10.0	0.0	1		9	0.40	0.10	0.40	24,000	320	3.75	0.10	0.8	0.8	0.0	97.2	22.0	15.0	12.0	8.0	3.0	2.0
008A	131.00/131.00	32	8.75	40	7	7	2	2	3	9.8	0.0	1		8.5	0.35	0.05	0.40	24,000	240	3.75	0.25	1.2	1.2		96.8	21.0	14.0	11.0	7.0	2.0	1.0
008A	139.00/139.00	36	8.80	40	7	8	2	2	3	9.8		1		9	0.55	0.05	0.45	25,000	200	5.00	0.25	1.5	1.5	0.0	96.4	22.0	15.0	12.0	9.0	2.0	1.0
008A	146.00/146.00	38	8.80	40	8	9	2	2	3	9.8		1		9	0.35	0.08	0.45	25,000	160	6.25	0.25	1.5	1.5	0.0	96.4	25.0	17.0	13.0	9.0	2.0	1.0
009A	220.00/220.00	37	8.95	38	8	8	2	3	4	9.0		1		9	0.40	0.10	0.55	23,000	200	5.00	0.50	2.8	2.8	0.0	95.3	24.0	16.0	13.0	9.0	2.0	1.0
009A	278.00/278.00	40	9.00	37	8	9	3	4	4	9.0		1		8.5	0.45	0.05	0.50	23,000	200	6.25	0.50	3.1	3.1		94.9	25.0	17.0	14.0	9.0	3.0	2.0
010A	278.38/278.38		8.90	39	7	7	2	3	3	9.0		1		8.5	0.45	0.05	0.60	24,000	240	5.00	0.50	2.3	2.3	0.0	95.7	21.0	14.0	11.0	8.0	2.0	1.0
011A	278.38/278.38		8.90	40	6	7	2	2	2	9.0		1		8.5	0.50	0.05	0.70	24,000	160	5.00	0.50	2.3	2.3	0.0	95.7	19.0	13.0	10.0	7.0	2.0	1.0
011A	278.38/278.38		8.85	38	6	8	2	2	3	9.0	0.0	1		9.5	0.60	0.30	1.00	24,000	80	3.75	0.25	1.9	1.9	0.0	96.1	20.0	14.0	11.0	7.0	2.0	1.0
012A	340.00/340.00		8.90	38	6	8	2	3	4	8.9		1		9	0.30	0.25	1.00	24,000	120	5.00	0.50	2.3	2.3	0.0	95.7	20.0	14.0	11.0	8.0	2.0	1.0
012A	381.00/381.00	41	8.90	37	7	9	2	3	4	9.0		1		8.5	0.40	0.15	1.00	23,000	160	5.00	0.50	2.4	2.4	0.0	95.7	23.0	16.0	13.0	9.0	3.0	2.0
012A	410.00/410.00	43	8.95	37	6	10	2	3	4	8.9		1		8.5	0.35	0.10	1.00	23,000	120	7.50	0.50	2.8	2.8		95.3	22.0	16.0	13.0	9.0	2.0	1.0
013A	472.00/472.00	44	8.95	37	7	10	3	4	4	9.0		1		9	0.35	0.10	1.00	24,000	160	7.50	0.10	2.7	2.7		95.3	24.0	17.0	14.0	10.0	3.0	2.0
013A	510.00/510.00	46	8.95	36	8	9	3	4	5	9.0		1		9	0.35	0.10	1.00	24,000	160	10.00	0.10	2.7	2.7		95.3	25.0	17.0	14.0	10.0	3.0	2.0
013A	522.00/522.00	48	9.00	35	8	8	2	3	3	10.0		1		8.5	0.30	0.13	1.00	23,000	120	10.00	0.10	3.1	3.1		94.9	24.0	16.0	13.0	9.0	3.0	2.0
014A	592.00/592.00	51	8.95	35	6	9	3	4	5	9.6		1		9	0.10	0.05	1.00	22,000	200	12.50	0.10	2.8	2.9		95.3	21.0	15.0	12.0	9.0	3.0	2.0
014A	613.00/613.00	51	9.00	35	6	8	2	3	4	9.8		1		9	0.40	0.10	1.00	22,000	200	12.50	0.25	3.2	3.2	0.0	94.9	20.0	14.0	12.0	8.0	2.0	1.0
014A	634.00/634.00	51	8.95	35	6	9	3	3	4	10.0		1		9	0.20	0.13	0.90	22,000	200	12.50	0.25	2.8	2.9		95.3	21.0	15.0	12.0	9.0	3.0	2.0
015A	694.00/694.00	52	8.95	35	7	7	3	3	4	11.0		1		9	0.30	0.10	1.00	20,000	200	15.00	0.25	3.0	3.0	0.0	95.3	21.0	14.0	12.0	8.0	3.0	2.0



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 24 of 27



Birdum Creek 1 · PANGAEA RESOURCES PTY LTD - EBUS · SAXON ENERGY SERVICES · Saxon Rig 187 · WSE API(Copy)

Drilling Fluids - Fluid Property Summary : Water-Based Fluid

From Report	001	On	05-29-2015	@(MD/TVD)	0.00 / 0.00 m	Drilled: 1,935.00 m
To Report	052	On	07-19-2015	@(MD/TVD)	1,935.00 / 1,935.00 m	

Fluid Name : KCl/Polymer

Report No	MD/TVD m	FL Temp °C	Density ppg	Funn Visc sec/qt	Rheology °C					Filtration				Filtrate Analysis					MBT ppb eq.	Sand % by vol	Retort Analysis				Rheometer Dial Readings						
					PV op	lbf ^s /n/100R ²				API mL/30min	HTHP mL/30min	Cake API 32nd in	Temp °C	pH	Pm mL	Pf mL	Mf mL	Cl mg/l			Total Hardness mg/l	% by vol				800	300	200	100	6	3
						YP	10S	10M	30M													Corr Solid	LGS	NAP Base	Water						
015A	725.00/725.00	52	8.95	36	7	11	4	5	5	10.4		1		8.5	0.30	0.10	0.95	20,000	280	15.00	0.25	3.0	3.0	0.0	95.3	25.0	18.0	15.0	11.0	4.0	3.0
015A	737.00/737.00	53	8.95	35	7	10	3	3	4	10.4		1		9	0.15	0.15	0.95	20,000	160	12.50	0.25	3.0	3.0	0.0	95.3	24.0	17.0	14.0	10.0	3.0	2.0
016A	754.00/754.00	54	8.90	35	6	9	3	4	4	11.2		1		8.5	0.20	0.05	0.85	21,000	200	13.75	0.10	2.5	2.5	0.0	95.7	21.0	15.0	13.0	9.0	3.0	2.0
016A	760.00/760.00	52	8.95	35	6	9	3	4	5	12.0		1		8.5	0.20	0.05	0.75	21,000	240	15.00	0.10	2.9	2.9	0.0	95.3	21.0	15.0	13.0	10.0	3.0	2.0
016A	766.00/766.00	51	8.95	35	5	10	2	3	4	11.4		1		8.5	0.10	0.05	0.75	21,000	280	13.75	0.10	2.9	2.9	0.0	95.3	20.0	15.0	12.0	9.0	3.0	2.0
017A	783.00/783.00	52	8.90	34	6	9	3	3	4	10.3		1		8.5	0.30	0.05	0.90	19,000	160	13.75	0.10	2.7	2.7	0.0	95.7	21.0	15.0	12.0	9.0	3.0	2.0
017A	793.00/793.00	54	8.95	34	6	10	2	3	4	10.6		1		8.5	0.15	0.05	0.90	21,000	200	13.75	0.10	2.9	2.9	0.0	95.3	22.0	16.0	13.0	10.0	3.0	2.0
017A	805.00/805.00	54	8.95	34	6	11	3	3	4	10.4		1		8.5	0.15	0.05	0.80	23,000	200	12.50	0.10	2.8	2.8	0.0	95.3	23.0	17.0	14.0	10.0	3.0	2.0
018A	816.00/816.00		8.95	37	6	10	3	4	5	10.6		1		8.5	0.35	0.05	0.80	19,000	240	12.50	0.10	3.1	3.1	0.0	95.3	22.0	16.0	13.0	10.0	3.0	2.0
018A	816.00/816.00		8.95	37	7	8	3	4	4	10.4		1		8.5	0.35	0.05	0.85	20,000	240	12.50	0.10	3.0	3.0	0.0	95.3	22.0	15.0	13.0	9.0	3.0	2.0
019A	816.00/816.00		9.00	37	6	9	3	4	4	11.2		1		8.5	0.10	0.10	0.85	19,000	280	13.75	0.10	3.5	3.5	0.0	94.9	21.0	15.0	13.0	9.0	3.0	2.0
020A	816.00/816.00		8.85	38	7	6	2	2	3	8.2		1		8.5	0.15	0.10	0.85	19,000	280	11.25	0.10	2.3	2.3	0.0	96.1	20.0	13.0	11.0	7.0	2.0	1.0
020A	816.00/0		8.75	36	5	3	1	2	2	9.6		1		8.5	0.10	0.05	0.90	18,000	320	7.50	0.10	1.6	1.6	0.0	96.8	13.0	8.0	6.0	4.0	2.0	1.0
021A	819.00/819.00	38	8.80	34	5	5	1	2	2	12.0		1		10.5	1.60	0.28	1.15	17,000	200	11.25	0.10	2.1	2.1	0.0	96.4	15.0	10.0	8.0	6.0	2.0	1.0
021A	834.00/834.00	43	8.90	33	6	7	2	2	3	9.8		1		10.5	1.40	0.20	1.50	18,000	280	12.50	0.10	2.8	2.8	0.0	95.7	19.0	13.0	10.0	7.0	2.0	1.0
022A	834.00/834.00		8.90	38	6	6	1	2	2	9.2		1		10	1.15	0.20	1.20	18,000	280	12.50	0.10	2.8	2.8	0.0	95.7	18.0	12.0	10.0	7.0	2.0	1.0
022A	834.00/834.00	40	8.90	35	6	6	1	2	2	9.8		1		10	1.30	0.25	1.20	17,000	280	12.50	0.10	2.9	2.9	0.0	95.7	18.0	12.0	10.0	7.0	2.0	1.0
022A	844.00/844.00	43	8.90	35	6	8	2	2	3	9.5		1		10.5	2.00	0.30	1.35	17,000	320	12.50	0.10	2.9	2.9	0.0	95.7	20.0	14.0	11.0	7.0	2.0	1.0
023A	844.00/844.00		8.90	38	6	8	1	2	2	7.8		1		10.5	1.45	0.25	1.30	17,000	240	12.50	0.10	2.9	2.9	0.0	95.7	20.0	14.0	11.0	8.0	2.0	1.0
023A	844.00/844.00		8.90	39	7	8	1	2	2	9.0		1		10.5	1.45	0.25	1.20	17,000	280	12.50	0.10	2.9	2.9	0.0	95.7	22.0	15.0	12.0	8.0	2.0	1.0
024A	851.00/851.00	38	8.90	38	7	9	2	2	3	8.5		1		10	1.15	0.20		18,000	240	12.50	0.10	2.8	2.8	0.0	95.7	23.0	16.0	12.0	9.0	2.0	1.0
024A	868.00/868.00	40	8.95	38	8	8	2	2	3	8.0		1		10	1.15	0.13	1.15	18,000	280	12.50	0.10	3.2	3.2	0.0	95.3	24.0	16.0	13.0	9.0	2.0	1.0
024A	869.00/869.00		8.95	38	7	10	2	2	3	8.2		1		10.5	1.25	0.20	1.30	17,000	280	12.50	0.10	3.2	3.2	0.0	95.3	24.0	17.0	13.0	9.0	2.0	1.0
025A	897.00/897.00	39	8.95	40	9	9	2	2	3	7.6		1		10	1.10	0.15	1.15	17,000	240	13.75	0.10	3.2	3.2	0.0	95.3	27.0	18.0	15.0	10.0	2.0	1.0



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT: BC1-WCR-1604
 REVISION: A
 PAGE: Page 25 of 27



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Drilling Fluids - Fluid Property Summary : Water-Based Fluid

From Report 001 On 05-29-2015 @ (MD/TVD) 0.00 / 0.00 m
 To Report 052 On 07-19-2015 @ (MD/TVD) 1,935.00 / 1,935.00 m
 Drilled: 1,935.00 m

Fluid Name : KCl/Polymer

Report No	MD/TVD m	FL Temp °C	Density ppg	Funn Visc sec/qt	Rheology °C					Filtration				Filtrate Analysis					MBT ppb eq.	Sand % by vol	Retort Analysis				Rheometer Dial Readings						
					PV cp	lbf ^s /n/100ft ²				API mL/30min	HTHP mL/30min	Cake API 32nd in	Temp °C	pH	Pm mL	Pf mL	Mf mL	Cl mg/l			Total Hardness mg/l	% by vol				800	300	200	100	6	3
						YP	10S	10M	30M													Corr Solid	LGS	NAP Base	Water						
025A	899.00/899.00		8.95	42	9	9	2	2	3	7.6		1		10	1.15	0.12	1.20	17,000	280	13.75	0.10	3.2	3.2		95.3	27.0	18.0	14.0	10.0	2.0	1.0
026A	941.00/941.00		8.95	40	8	9	1	2	2	7.4		1		9.5	0.70	0.10	0.90	18,000	240	13.75	0.10	3.2	3.2		95.3	25.0	17.0	13.0	9.0	2.0	1.0
026A	941.00/941.00		8.95	39	9	10	2	2	3	7.6		1		9.5	0.68	0.12	0.70	18,000	240	13.75	0.10	3.2	3.2		95.3	28.0	19.0	14.0	10.0	2.0	1.0
027A	943.00/943.00	40	8.95	39	9	10	2	2		7.4		1		9.5	0.55	0.10	1.00	19,000	320	13.75	0.10	3.0	3.0		95.4	28.0	19.0	14.0	19.0	2.0	1.0
027A	953.00/953.00	30	9.00	39	8	7	2	2	2	7.0		1		9	0.45	0.10	1.00	18,000	240	13.75	0.10	3.5	3.4	0.0	95.0	23.0	15.0	12.0	8.0	2.0	1.0
027A	953.00/953.00	35	9.00	39	8	9	2	2	2	7.0		1		9	0.50	0.10	0.90	18,000	240	13.75	0.10	3.5	3.4	0.0	95.0	25.0	17.0	13.0	9.0	2.0	1.0
028A	970.84/970.84		8.85	42	8	7	2	2	3	7.0		1		9	0.50	0.05	0.90	18,000	240	13.75	0.10	2.4	2.3	0.0	96.1	23.0	15.0	11.0	8.0	2.0	1.0
028A	974.00/974.00	36	8.90	38	7	7	1	2	2	7.2		1		9	0.50	0.05	0.90	18,000	240	13.75	0.10	2.7	2.7	0.0	95.8	21.0	14.0	11.0	7.0	2.0	1.0
028A	984.05/984.05	42	8.95	40	9	7	2	2	2	7.4		1		9	0.50	0.05	0.85	18,000	240	13.75	0.10	3.1	3.1	0.0	95.4	25.0	16.0	12.0	8.0	2.0	1.0
029A	984.05/984.05	38	8.95	38	9	9	2	2	2	7.8		1		9	0.50	0.05	0.85	18,000	280	13.75	0.10	3.1	3.1	0.0	95.4	27.0	18.0	14.0	9.0	2.0	1.0
029A	037.50/1,037.50	49	8.95	37	7	6	2	2	3	8.0		1		9	0.50	0.05	0.90	19,000	280	13.75	0.10	3.0	3.0	0.0	95.4	20.0	13.0	10.0	7.0	2.0	1.0
029A	089.00/1,089.00	53	9.00	35	8	5	1	2	3	7.8		1		9	0.50	0.05	0.90	19,000	280	13.75	0.10	3.4	3.3	0.0	95.0	21.0	13.0	10.0	7.0	2.0	1.0
030A	200.00/1,200.00	54	9.30	36	9	8	2	4	6	10.5		1		9	0.45	0.05	0.90	20,000	360	15.00	0.25	5.4	5.1	0.0	93.0	26.0	17.0	13.0	9.0	2.0	1.0
030A	260.00/1,260.00	54	9.30	40	10	11	3	7	10	10.0		1		9	0.50	0.05	0.90	19,000	360	15.00	0.25	5.4	5.1	0.0	93.0	31.0	21.0	17.0	11.0	3.0	2.0
030A	324.00/1,324.00	56	9.30	40	10	11	4	9	13	11.0		1		9	0.35	0.05	1.00	17,000	280	15.00	0.10	5.6	5.3	0.0	93.0	31.0	21.0	17.0	12.0	3.0	2.0
031A	418.00/1,418.00	57	9.40	38	10	10	6	12	16	12.0		1		9	0.45	0.05	0.90	18,000	360	18.75	0.10	6.3	6.1	0.0	92.2	30.0	20.0	16.0	11.0	4.0	3.0
031A	447.00/1,447.00	61	9.40	38	8	11	7	16	20	13.4		1		9	0.40	0.05	0.85	18,000	360	20.00	0.10	6.5	6.5	0.0	92.0	27.0	19.0	15.0	10.0	4.0	3.0
031A	467.00/1,467.00	62	9.40	37	8	9	4	12	15	12.2		1		9	0.40	0.05	0.85	18,000	320	20.00	0.10	6.5	6.5	0.0	92.0	25.0	17.0	13.0	8.0	3.0	2.0
032A	517.00/1,517.00	62	9.40	38	11	8	5	11	14	12.0		1		9	0.35	0.05	0.80	18,000	320	20.00	0.10	6.3	6.1	0.0	92.2	30.0	19.0	15.0	10.0	3.0	2.0
032A	529.50/1,529.50	44	9.25	41	11	13	4	8	11	11.4		1		9	0.45	0.05	0.85	18,000	240	18.75	0.10	5.3	5.2	0.0	93.2	35.0	24.0	19.0	13.0	3.0	2.0
033A	529.50/1,529.50		8.90	38	9	7	2	4	5	9.4		1		9	0.60	0.12	1.40	14,000	160	13.75	0.10	3.1	3.1	0.0	95.7	25.0	16.0	12.0	8.0	2.0	1.0
033A	529.50/1,529.50		9.05	39	9	9	3	7	9	8.8		1		9	0.50	0.08	1.40	16,000	200	13.75	0.10	4.0	4.0	0.0	94.6	27.0	18.0	14.0	9.0	2.0	1.0
034A	543.60/1,543.60	60	9.10	38	10	9	3	6	8	9.2		1		9	0.40	0.05	1.00	16,000	240	15.00	0.10	4.4	4.4	0.0	94.2	29.0	19.0	15.0	10.0	2.0	1.0
034A	544.00/1,544.00	54	9.10	37	8	9	3	7	11	9.0		1		9	0.45	0.08	1.00	16,000	240	16.25	0.10	4.4	4.4	0.0	94.2	25.0	17.0	13.0	9.0	2.0	1.0



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 26 of 27



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Drilling Fluids - Fluid Property Summary : Water-Based Fluid

From Report	001	On	05-29-2015	@(MD/TVD)	0.00 / 0.00 m	
To Report	052	On	07-19-2015	@(MD/TVD)	1,935.00 / 1,935.00 m	Drilled: 1,935.00 m

Fluid Name : KCl/Polymer

Report No	MD/TVD m	FL Temp °C	Density ppg	Funn Visc sec/qt	Rheology °C					Filtration				Filtrate Analysis					MBT ppb eq.	Sand % by vol	Retort Analysis				Rheometer Dial Readings						
					PV op	lbs/ft ² /100ft ²				API mL/30min	HTHP mL/30min	Cake API 32nd in	Temp °C	pH	Pm mL	Pf mL	Mf mL	Cl mg/l			Total Hardness mg/l	% by vol				600	300	200	100	6	3
						YP	10S	10M	30M													Corr Solid	LGS	NAP Base	Water						
034A	544.00/1,544.00	38	9.10	38	8	10	3	8	11	8.0		1		9.5	0.90	0.50	3.00	16,000	80	16.25	0.10	4.4	4.4	0.0	94.2	26.0	18.0	14.0	9.0	3.0	2.0
035A	544.00/1,544.00	43	9.00	38	11	11	3	5	7	9.0		1		9	0.40	0.05	1.10	17,000	320	16.25	0.10	3.6	3.5	0.0	95.0	33.0	22.0	17.0	11.0	2.0	1.0
035A	559.00/1,559.00	52	9.05	38	10	8	2	4	6	8.4		1		9	0.40	0.05	1.00	16,000	280	16.25	0.10	4.0	4.0	0.0	94.6	28.0	18.0	14.0	9.0	2.0	1.0
035A	568.00/1,568.00	54	9.10	38	8	8	2	7	9	8.8		1		9	0.40	0.05	1.00	16,000	280	17.50	0.10	4.4	4.4	0.0	94.2	24.0	16.0	12.0	8.0	2.0	1.0
036A	568.38/1,568.38		9.10	38	12	10	3	5	6	7.8		1		9	0.40	0.05	1.40	17,000	240	17.50	0.10	4.3	4.3	0.0	94.3	34.0	22.0	16.0	10.0	2.0	1.0
036A	570.90/1,570.90		9.05	40	10	8	3	7	10	8.0		1		9.5	0.55	0.10	2.10	17,000	160	17.50	0.10	4.0	3.9	0.0	94.6	28.0	18.0	14.0	9.0	2.0	1.0
037A	528.38/1,628.38		9.10	38	9	7	2	5	6	8.0		1		9	0.50	0.08	2.00	17,000	240	17.50	0.10	4.3	4.3	0.0	94.3	25.0	16.0	12.0	7.0	2.0	1.0
037A	528.38/1,628.38		9.10	38	7	7	2	4	5	8.0		1		9	0.50	0.08	2.10	17,000	240	17.50	0.10	4.3	4.3	0.0	94.3	21.0	14.0	11.0	7.0	2.0	1.0
038A	529.00/1,628.38	50	9.10	38	11	8	2	4	5	6.4		1		9	0.50	0.05	2.60	18,000	360	17.50	0.10	4.2	4.2	0.0	94.3	30.0	19.0	14.0	9.0	2.0	1.0
038A	585.00/1,685.00	50	9.10	38	10	7	2	4	5	7.8		1		9	0.50	0.05	2.40	18,000	240	17.50	0.10	4.2	4.2	0.0	94.3	27.0	17.0	12.0	8.0	2.0	1.0
039A	588.00/1,688.00		9.10	38	8	5	2	4	5	8.0	0.0	1		9	0.45	0.05	2.20	18,000	360	17.50	0.10	4.3	4.3	0.0	94.2	21.0	13.0	10.0	6.0	2.0	1.0
039A	585.00/1,685.00	45	9.10	38	8	7	2	4	5	7.6		1		9	0.45	0.05	2.20	18,000	400	15.00	0.10	4.2	4.2		94.3	23.0	15.0	11.0	7.0	2.0	1.0
039A	718.00/1,718.00	52	9.00	37	9	6	2	4	5	7.8		1		9	0.45	0.05	2.00	18,000	440	15.00	0.10	3.5	3.4		95.0	24.0	15.0	11.0	7.0	2.0	1.0
040A	719.93/1,719.93	32	8.95	38	7	7	3	7	8	8.4		1		8.5	0.35	0.05	1.80	18,000		15.00	0.10	3.1	3.1		95.4	21.0	14.0	11.0	7.0	2.0	1.0
040A	720.00/1,720.00	50	9.00	38	8	6	3	5	6	7.8		1		9	0.40	0.05	2.00	17,000	440	15.00	0.10	3.6	3.5		95.0	22.0	14.0	11.0	6.0	2.0	1.0
041A	736.49/1,736.49	30	9.00	38	8	5	2	4	5	7.8		1		9	0.35	0.05	2.00	17,000	440	15.00	0.10	3.6	3.5		95.0	21.0	13.0	10.0	6.0	2.0	1.0
041A	736.49/1,736.49	37	8.95	37	10	9	3	4	6	7.6		1		9	0.40	0.05	1.80	18,000	360	15.00	0.10	3.1	3.1	0.0	95.4	29.0	19.0	14.0	9.0	2.0	1.0
042A	758.70/1,758.70	30	8.95	37	9	6	3	7	9	8.0	0.0	1	0	9	0.35	0.05	2.40	17,000	440	15.00	0.10	3.2	3.2	0.0	95.4	24.0	15.0	12.0	8.0	2.0	1.0
042A	758.70/1,758.70	30	8.95	37	9	6	3	7	8	7.6	0.0	1		9	0.30	0.05	2.40	17,000	440	15.00	0.10	3.2	3.2	0.0	95.4	24.0	15.0	12.0	8.0	2.0	1.0
043A	776.01/1,776.01	28	8.95	37	7	4	2	3	4	8.2		1		9	0.35	0.05	2.00	16,000	400	15.00	0.10	3.3	3.2		95.4	18.0	11.0	8.0	5.0	2.0	1.0
043A	776.01/1,776.01	30	8.95	37	6	6	2	4	5	7.8		1		9	0.30	0.05	1.80	18,000	360	15.00	0.10	3.1	3.1	0.0	95.4	18.0	12.0	9.0	6.0	2.0	1.0
044A	795.00/1,795.00	45	8.90	37	7	5	2	4	5	7.6		1		9	0.35	0.05	1.70	17,000	400	15.00	0.10	2.8	2.8		95.7	19.0	12.0	8.0	6.0	2.0	1.0
044A	813.64/1,813.64		8.90	37	6	5	2	3	4	7.8		1		9	0.35	0.08	1.60	17,000	360	15.00	0.10	2.8	2.8		95.7	17.0	11.0	8.0	5.0	2.0	1.0
045A	813.64/1,813.64		8.90	36	5	5	2	3	4	7.8		1		8.5	0.30	0.05	1.60	16,000	360	13.75	0.10	2.9	2.9		95.7	15.0	10.0	7.0	4.0	2.0	1.0



BASIC WELL COMPLETION REPORT
EP-167
BIRDUM CREEK-1

DOCUMENT:	BC1-WCR-1604
REVISION:	A
PAGE:	Page 27 of 27

HALLIBURTON | Baroid

Birdum Creek 1 · PANGAEA RESOURCES PTY LTD - EBUS · SAXON ENERGY SERVICES · Saxon Rig 187 · WSE API(Copy)

Drilling Fluids - Fluid Property Summary : Water-Based Fluid

From Report	001	On	05-29-2015	@(MD/TVD)	0.00 / 0.00 m	
To Report	052	On	07-19-2015	@(MD/TVD)	1,935.00 / 1,935.00 m	Drilled: 1,935.00 m

Fluid Name : KCl/Polymer

Report No	MD/TVD m	FL Temp °C	Density ppg	Funn Visc sec/qt	Rheology °C				Filtration				Filtrate Analysis					MBT ppb eq.	Sand % by vol	Retort Analysis				Rheometer Dial Readings								
					PV cp	lbfs*in/100R2				API mL/30min	HTHP mL/30min	Cake API 32nd in	Cake HTHP	Temp °C	pH	Pm mL	Pf mL			Mf mL	Cl mg/l	Total Hardness mg/l	% by vol				600	300	200	100	6	3
						YP	10S	10M	30M														Corr Solid	LGS	NAP Base	Water						
045A	826.00/1,826.00	48	8.85	37	6	5	2	3	4	7.2		1		9	0.35	0.05	1.60	16,000	360	12.50	0.10	2.5	2.5		96.1	17.0	11.0	8.0	5.0	2.0	1.0	
045A	849.00/1,849.00	52	8.85	38	7	7	2	4	7	7.6		1		9	0.35	0.05	1.55	16,000	360	12.50	0.10	2.5	2.5		96.1	21.0	14.0	10.0	6.0	2.0	1.0	
046A	901.50/1,901.50	63	8.95	38	11	8	2	4	6	7.4		1		9	0.30	0.05	2.20	16,000	320	13.75	0.10	3.3	3.2		95.4	30.0	19.0	14.0	8.0	2.0	1.0	
046A	920.70/1,920.70	63	8.95	38	10	7	2	4	5	7.0		1		9	0.30	0.05	2.00	16,000	320	13.75	0.10	3.3	3.2		95.4	27.0	17.0	13.0	8.0	2.0	1.0	
046A	935.00/1,935.00		8.95	39	10	7	2	4	5	7.6		1		9	0.35	0.05	2.00	18,000	320	13.75	0.10	3.1	3.1		95.4	27.0	17.0	13.0	8.0	2.0	1.0	
047A	935.00/1,935.00		8.95	39	10	7	2	4	5	7.6		1		9	0.35	0.05	2.00	18,000	320	13.75	0.10	3.1	3.1		95.4	27.0	17.0	13.0	8.0	2.0	1.0	
048A	935.00/1,935.00		8.95	40	9	5	1	2	3	7.4		1		8.5	0.20	0.05	2.30	17,000	400	13.75	0.10	3.2	3.2		95.3	23.0	14.0	10.0	6.0	2.0	1.0	
049A	935.00/1,935.00		8.95	40	9	5	1	2	3	7.4		1		8.5	0.15	0.05	2.20	17,000	400	13.75	0.10	3.2	3.2		95.3	23.0	14.0	10.0	6.0	2.0	1.0	
049A	935.00/1,935.00		8.95	40	10	5	1	2	3	7.4		1		8.5	0.15	0.05	2.30	18,000	400	13.75	0.10	3.2	3.2		95.3	25.0	15.0	11.0	6.0	2.0	1.0	
050A	935.00/1,935.00		8.95	40	9	6	1	2	3	7.5		1		8.5	0.10	0.03	2.30	18,000	420	13.75	0.10	3.2	3.2	0.0	95.3	24.0	15.0	10.0	6.0	2.0	1.0	
050A	935.00/1,935.00		8.95	40	8	5	1	2	3	7.6		1		8.5	0.10	0.05	2.30	18,000	420	13.75	0.10	3.2	3.2		95.3	21.0	13.0	9.0	5.0	2.0	1.0	
051A	935.00/1,935.00	26	8.95	56	15	8	3	5	8	7.8		1		8	0.05	0.00	2.50	18,000	400	13.75	0.10	3.2	3.2		95.3	38.0	23.0	18.0	12.0	3.0	2.0	
051A	935.00/1,935.00	37	9.00	49	15	9	3	4	5	8.3		1		8	0.05	0.00	2.50	18,000	420	13.75	0.10	3.5	3.5		94.9	39.0	24.0	18.0	11.0	2.0	1.0	