



## **END OF WELL REPORT**

**Karoon Gas Australia Pty. Ltd.**

**MEGASCOLIDES 1 RE-ST1**

**07/12/06 - 28/12/06**

**by**

**BAKER HUGHES INTEQ**

The information, interpretations, recommendations, or opinions contained herein are advisory only and may be rejected. Consultant does not warrant their accuracy or correctness. Nothing contained herein shall be deemed to be inconsistent with, nor expand, modify or alter Consultants obligation of performance as provided for in a written agreement between the parties, or, if none, in Consultant's most recent price list.

# Megascolides 1 Re - ST1

## Final Well Report

<b>SECTION 1</b>	Well Summary	
<b>SECTION 2</b>	Drilling and Engineering	
	2.1	Bit Run Summaries (Bit Table)
	2.2	Bit Run Hydraulic Summaries (Bit Hydraulics Table)
<b>SECTION 3</b>	Survey Summary	
<b>SECTION 4</b>	Geology, Shows & Coring	
	4.1	Geology Summary and Shows
	4	Core Report
<b>SECTION 5</b>	Sampling Summary and Record of Distribution	
<b>SECTION 6</b>	Time Depth Curve	
<b>SECTION 7</b>	Appendices	
	Formation Evaluation Log	1 : 500
	Drilling Data Plot	1 : 500

## **SECTION 1**

### **Well Summary**



**1. WELL SUMMARY**

Rig Name:	Century Rig 11
Rig Type:	Land Rig Rotary Drive
Drilling Contractor:	Century Energy Services Pty. Ltd
Drilling Datum:	125.2mRT to MSL
Drill Floor Elevation:	5.2m
Surface Co-ordinates:	Lat: 38deg 13min 52.064sec Long: 145deg 52min 55.443sec Datum: MGA (94) Zone 55
Block:	PEP 162 / EL4567
Well Type:	Re-entry Side Track Vertical Exploration
Re-entry date:	14/12/06
Kicked off date:	19/12/06
Total Depth:	1980m
TD Date:	10:45hrs, 26/12/06
Primary Objective:	Crayfish Formation Equivalent (Oil/Gas)
Well Status:	Plug and Abandon
Baker Hughes INTEQ Crew:	Philip Pousai, Bambang Budiarto, Shaharizad, Rio Marasigan
Data Engineers:	Philip Pousai, Bambang Budiarto, Shaharizad, Rio Marasigan
Karooon Gas Representatives:	Chris Dann, Brian Holland, Bruce Pilat (Companyman), David Horner (Wellsite Geologist)

## **SECTION 2**



### **Drilling and Engineering**

BIT TABLE 2.1

		<b>LOCATION / WELL NAME</b>  Australia (Victoria)/ Megascoides 1 Re-ST1				<b>OPERATOR</b>  Karoon Gas Australia Pty. Ltd.				<b>CONTRACTOR / RIG</b>  Century Energy Services Rig 11				<b>Rotary Type Abbreviations</b> TS - Top Drive System RT - Rotary Table PD - Positive Displacement Motor SB - Steerable PDM & Bent Sub M - suffix designates MWD				<b>Mud Type Abbreviations</b> PHG - Gel Sweeps AQ - Aquacol G - Gel PHPA - Polyacrylamide WB - Bentonite/polymer Mud				<b>Geology Abbreviations</b> Sd : Sand Sst : Sandstone Lst : Limestone Sil : Silt Silst : Siltstone Cl : Clay Clst : Claystone Volc : Volcanics Sh : Shale Dol : Dolomite				<b>A - All Rows</b> BC - Broken Cone BHA - Bottomhole Assembly BU - Balled Up Bit CM - Condition Mud CP - Core Point DMF - Down Hole Motor Failure DP - Drill Plug DSF - Drill String Failure				<b>Dull Grade &amp; Reason Pulled</b> DTF - Down Hole Tool Failure E - Seals Effective F - Seals Failed FC - Flat Crested Wear G - Gage Rows H - Heel HP - Hole Problems HR - Hours on Bit I - In Gauge				<b>PR - Penetration rate</b> RG - Rounded Gauge SD - Shirt Tail Damage TD - Total / Csg Depth TQ - Torque TW - Twist Off WC - Weather Condition WT - Worn Teeth				<b>JD - Junk Damage</b> LIH - Left In Hole LOG - Run Logs LT - Lost Teeth M - Middle Rows MH - Mid Heel NO - No Dull Wear O - Out of Gauge PP - Pump Pressure																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
BHA No.	Bit No.	Vendor	Type	Serial Number	Size (in)	IADC Code	Nozzles (x 1/32")	Depth		Drilled		ROP (m/hr)	WOB (klb)	RPM (at bit)	TORQ. (kft-lb)	TBR (x1000)	RT	Pump Pr (psi)	Flow Rate (gpm)	Dev (deg)	Geology Formation	W ppg	Mud Type	PV,YP	IADC Dull Grade (G in 1/16")																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
8 1/2" HOLE SECTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1	NB1	Security	EBXSC15	10858843	8.5		3x20	0	534	534	7.5	71.3	0.12-4.5	50-73	0.5-0.65	18730	Yes	214-400	415-450	0.9	Cement	8.55	WB	1,1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

Note:- No bits' grading informations from the first BHA

## HYDRAULICS TABLE 2.2

		<div>Hydraulics Summary Table</div> <div>Megascolides 1 Re-ST1 Gippsland Basin</div>																			
Drill String							M - MWD N - Normal	T - Turbine P - Posidrive Motor	C - Core U - Under-Reamer	Power law used for hydraulics calculations.Robertson - Stiff Rheological Model											
BHA No.	Depth m	Hole Size in	Calc Size Hole	Jets / TFA x 1/32"	Drill String Items	W ppg	MUD TYPE	Flow Rate gpm	ECD ppg	Annular Velocities ft/min				Jet Vel ft/sec	HHP hhp	HHP /in <sup>2</sup> hp/in <sup>2</sup>	Impact Force lbf/in <sup>2</sup>	Bit Pr. Loss psi	%SPP Loss	Calc. SPP psi	Actual flowrate calc.
NB1	534	8.5	8.5	3x20	N	9.00	Waterbased	415-450	8.55	DP Casing	DP OH	DC OH	Crit	58.6	43.5	0.1	2	23	13.1	174	430
NB1RR1	1767	8.5	8.5	3x20	N	9.00	Waterbased	320-426	9.25	167.8	193.5	275.5	342.6	130	112	0.47	4.1	121	23.6	514	373
NB1RR2	1635	8.5	8.5	3x20	N	9.30	Waterbased	289-423	9.2	160	184.7	263	327	124	91	0.41	3.7	110	25.1	438	356
NB1RR3	1859	8.5	8.5	3x20	N	9.35	Waterbased	295-300	9.2	124.1	141.4	221.6	275.5	207.4	135.2	0.96	5.2	307	39.7	773	300
NB2	1881	8.5	8.5	5x11	N	9.25	Waterbased	308-377	8.9	140.7	160.3	251.1	312.3	235	196.3	1.36	6.5	384	38.7	991	340
CB1	1889	8.5	8.5	TFA = 1.01inch2	C	8.95	Waterbased	200-255	9.1	95.2	108.4	169.9	-	73.1	46.7	0.09	1.4	37	10.65	348	230
CB1RR1	1895	8.5	8.5	TFA = 1.01inch2	C	9.00	Waterbased	230-290	9.1	107.6	122.6	192	-	82.6	66.3	0.13	1.8	48	10.88	438	260
NB2RR1	1980	8.5	8.5	5x11	N	9.00	Waterbased	248-340	9.1	133.6	152.2	238.5	296.6	223.3	173.6	1.17	5.9	348	37.77	922	323

## **SECTION 3**

### **SURVEY SUMMARY**



# SURVEYS

## Megascolides 1 Re - ST1

Interval (m) Survey	Inclination Degrees	Azimuth Degrees	TVD (m)
52.90m	0.30	62.00	52.90
285.51m	0.90	62.01	285.50
641.95m	1.10	82.00	641.89
1035.91m	2.50	128.00	1035.39
1279.79m	2.90	125.00	1279.00
1448.63m	3.10	112.00	1447.62
1561.19m	3.00	99.00	1560.66
1636.23m	2.70	94.00	1634.95
1644.00m	3.00	72.00	1642.71
1693.64m	4.25	57.00	1692.25
1743.00m	4.00	57.00	1741.48
1819.00m	4.00	62.00	1817.30
1869.00m	4.00	52.00	1867.18
1980.00m	4.00	40.00	1977.91

## **SECTION 4**

### **GEOLOGY, SHOWS & CORING**

## 4.1 GEOLOGY AND SHOWS

MudLogging Services for Megascolides 1 Re-ST1 commenced from original hole at 1635m and kicked off to a total depth of 1980m. Samples were collected at 5m intervals from 1640m to 1980m.

The main object of re-entering the well was to fully evaluate the Crayfish Group equivalent quartzose reservoir encountered in Megascolides 1.

Megascolides 1 Re-ST1 (Karoo Gas Australia Pty. Ltd.) was spudded at 08:00 hrs on the 19th of December 2006. The depth was measured from Rotary Table with 5.2 m elevation measured from the ground level. Megascolides 1 Re-ST1 was drilled to a total depth of 1980m. Two core runs were taken from 1881m to 1889m and 1889m to 1895m respectively. The recovered cores were packed and air freighted to Brisbane for analysis.

Two sets of unwashed bulk samples

**1 x 250 mg unwashed sample for Department of Primary Industry (DPI):**

Sack #1 (1640-1980 m) 5 m interval

**1x 250 mg washed sample for Karoon Gas Pty Ltd.**

Sack #1 (1640-1980 m) 5 m interval

One set of samplex tray sample

**1x Samplex Tray Set for Karoon Gas Pty.Ltd.**

2 Card box (1640m-1980m)

The lithology intersected at Megascolides-1 Re-ST1 is summarized below started from 1635m. For more detailed descriptions of the cuttings, please refer to the appendix section (Formation Evaluation Log).

### 1635m- 1881 m

The formation consisted of interbedded claystone and sandstones and a very rare trace of Coal stringer towards the base of the section.

The Sandstone was light to medium green grey, very fine to fine, dominantly very fine, subangular to rounded, and moderately sorted. The grains were supported by abundant off white argillaceous matrix and strong silica and weak to moderate calcareous cement. The sandstone contained abundant off white altered feldspar grains, common altered green grey volcanogenic lithic grains, traces of quartz grains, red brown lithics, trace to common goethite grains and vein infill, trace black coaly detritus, and trace crystalline calcite vein infill. The sandstone was predominantly hard, with no visible porosity and no oil fluorescence.

The Claystone was medium green grey to medium brown grey to dark. The claystone was slightly to very silty and often very fine arenaceous in textures, containing altered feldspar grains, and at place very carbonaceous. Traces of black carbonaceous flecks, black coal detritus, micromicas, and calcite and goethite lined fractures were commonly present. The claystone was hard and subfissile.

Fluorescence @ 1645m – 1655m: The calcite vein infill (trace of total sample) has 40% bright patchy to solid light to medium yellow oil fluorescence giving a dull yellow white crush cut fluorescence with trace yellow white film residue.

Fluorescence @ 1660m – 1665m: The calcite vein infill (trace of total sample) has trace moderate bright patchy to solid light to medium yellow oil fluorescence giving a dull yellow white crush cut fluorescence with trace residue.

Fluorescence @ 1755m – 1765m: The vein infill material (1% of total sample) has trace bright patchy to solid light to medium yellow oil fluorescence giving a dull yellow white crush cut fluorescence with trace yellow white film residue.

Fluorescence @ 1790m – 1800m: The vein infill material (1% of total sample) has trace to 40% bright patchy to low white film residue.

Fluorescence @ 1855m – 1860m: The vein infill material (trace of total sample) has 10% bright patchy to solid light to medium yellow oil fluorescence giving a dull yellow white crush cut fluorescence with trace yellow white ring residue.

The total gas ranged from 0.0020% to 0.0161% with and averaged of 0.0062%. Chromatograph analyzed methane (6-114ppm), ethane (0-9ppm), and propane (0-3ppm).

## **1881m – 1944 m**

The formation consisted of a massive Sandstone bed on the upper section and thick shale units covered the lower portion of the formation. The sandstone was light to medium grey to light brown grey, very fine to very coarse, dominantly medium to coarse, angular to subrounded, and very poorly sorted. The grains were supported by common white argillaceous matrix, strong silica and weak to moderate calcareous cements. The sandstone had quartzose, trace dark grey and red brown lithics, trace medium to dark grey clay clasts (up to 30mm in size), trace garnet (?) and common black coal detritus. The sandstone was hard and had poor visible porosity.

The coal was black, moderately argillaceous, and often strongly slickensided, with common micromica where argillaceous, vitreous, platy to subconchoidal fracture, hard and brittle.

The shale was very dark grey to dark brown grey to black in color. Shale was slightly silty and had trace to common fine black carbonaceous matter, trace calcite infill fractures, common micromica, hard and subfissile.

The total gas ranged from 0.0028% to 0.0553% with and averaged of 0.0245%. Chromatograph analyzed methane (12-169ppm), ethane (4-59ppm), propane (2-61 ppm), iso-butane (0-15ppm), normal butane (0-15ppm), iso-pentane (0-5ppm) and normal pentane (0-4ppm).

## **1944m – 1980mTD**

The highly weathered volcanics were off white to light brown and medium grey claystone. Cryptocrystalline texture was dominant and remnant of flow bandings was observable at places. The cutting was hard and brittle. Where less weathered, the volcanics were bright green to black, medium to dark green to black, cryptocrystalline with very fine spot of white clay and light brown grey vesicular in part. The cuttings contain chlorite? and common clear crystalline veins. It was hard and brittle.

The fluorescence from the calcite vein infill material (1% of total sample) has trace to 40% dull to bright solid to patchy yellow fluorescence giving a weak yellow white crush cut and thin yellow residual ring.

The total gas recorded 0.0064% to 0.0196% with and averaged of 0.011%. Chromatograph analyzed methane (26-85ppm), ethane (4-16ppm), propane (3-21 ppm), and traces of iso-butane and normal butane.

## 4.2 CORE REPORT

The coring operation was undertaken to cut core No. 1 and No. 2 from 1881.0m – 1895.0m (avg. 83% recovery). Core recovered in aluminium sleeves. An ACS technician cut core plugs and dispatch immediately to ACS Brisbane.

### Core No. 1

**Cut 1881.0 m –1889.0 m.**

**Recovered 1881.0 m-1887.6 m (6.6 m) or 82.5%**

1881.0-1882.1m

**CLAYSTONE** (95%) with minor laminated **SANDSTONE** (5%).

**CLAYSTONE:** dark grey to dark brown grey to grey black, very silty in part, very carbonaceous, common coaly detritus, trace of very fine altered feldspar grains in part, common micromica, hard, subfissile.

**SANDSTONE:** Light to medium grey, very fine to fine, dominantly very fine, angular to subrounded, moderately sorted, strong silica and weak calcite cements, abundant altered feldspar grains, common grey brown lithics, trace of quartz grains, common black coal detritus, hard, no visual porosity, no oil fluorescence.

1882.1-1883.4m

**CLAYSTONE** (80%) laminated and thinly interbedded with **SANDSTONE** (20%).

**CLAYSTONE:** dark grey to dark brown grey to grey black, very silty in part, very carbonaceous, common coaly detritus, trace of very fine altered feldspar grains in part, common micromica, hard, subfissile.

**SANDSTONE:** Light to medium grey, very fine to fine, dominantly very fine, angular to subrounded, moderately sorted, strong silica and weak calcite cements, abundant altered feldspar grains, common grey brown lithics, trace of quartz grains, common black coal detritus, hard, no visual porosity, no oil fluorescence.

**STRUCTURE:** Bedding - subhorizontal, common tight high angle calcite infilled fractures.

1883.4-1887.6m

**SANDSTONE** (100%) with minor laminations of slickensided **COAL** (trace).

**SANDSTONE:** light to medium grey to light brown grey, very fine to very coarse, dominantly medium to coarse, angular to subrounded, very poorly sorted, strong silica cement, weak to moderate calcareous cement, common white argillaceous matrix, quartzose, trace dark grey and red brown lithics, trace medium to dark grey clay clasts to 30mm, common black coal detritus, hard, poor visual porosity.

**COAL:** black, moderately argillaceous, often strongly slickensided, common micromica where argillaceous, vitreous, platy to subconchoidal fracture, hard, brittle.

**STRUCTURE:** Bedding – subhorizontal, common tightly cemented subvertical calcite infilled fractures.

**FLUORESCENCE:** The Sandstone has 50% patchy dull to moderately bright medium yellow to orange oil fluorescence, giving a dull to moderately bright light to medium yellow slow streaming to crush cut fluorescence, thin film residue.

**Core No. 2****Cut 1889.0 m –1895.0 m.****Recovered 1887.6 m-1892.61 m (5.01 m) or 83.5%****Recovered stump left in hole from Core No. 1 with core no. 2**

1887.6m-1889.0m

**SANDSTONE** (95%) with minor thin interbeds of **SHALE** (5%)**SHALE:** very dark grey to black, slightly silty, trace to common fine black carbonaceous matter, trace of calcite infilled fractures, common micromica, hard, subfissile.**SANDSTONE:** light to medium grey to light brown grey, very fine to very medium, occasionally coarse to very coarse, dominantly medium coarse, angular to subrounded, very poorly sorted, strong silica cement, weak calcareous cement, common white argillaceous matrix, quartzose, trace dark grey, red brown and green lithics, trace garnet (?) trace medium to dark grey clay clasts to 20mm, trace to common black coal detritus, hard, poor visual porosity.**FLUORESCENCE:** The Sandstone has 50% patchy dull to moderately bright medium yellow to orange oil fluorescence, giving a dull to moderately bright light to medium yellow slow streaming to crush cut fluorescence, thin film residue.**STRUCTURE:** Bedding – subhorizontal, trace tightly cemented subvertical calcite infilled fractures.

1890.03-1892.61m

Massive **SHALE** (100%)**SHALE:** very dark grey to dark brown grey to black, slightly silty, trace to common fine black carbonaceous matter, trace calcite infilled fractures, common micromica, hard, subfissile.**STRUCTURE:** Bedding – subhorizontal.

1892.62-1895.0m

**NO RECOVERY**

## **SECTION 5**

### **Sampling Summary and Record of Distribution**

## 5.1 SAMPLING AND DISTRIBUTION

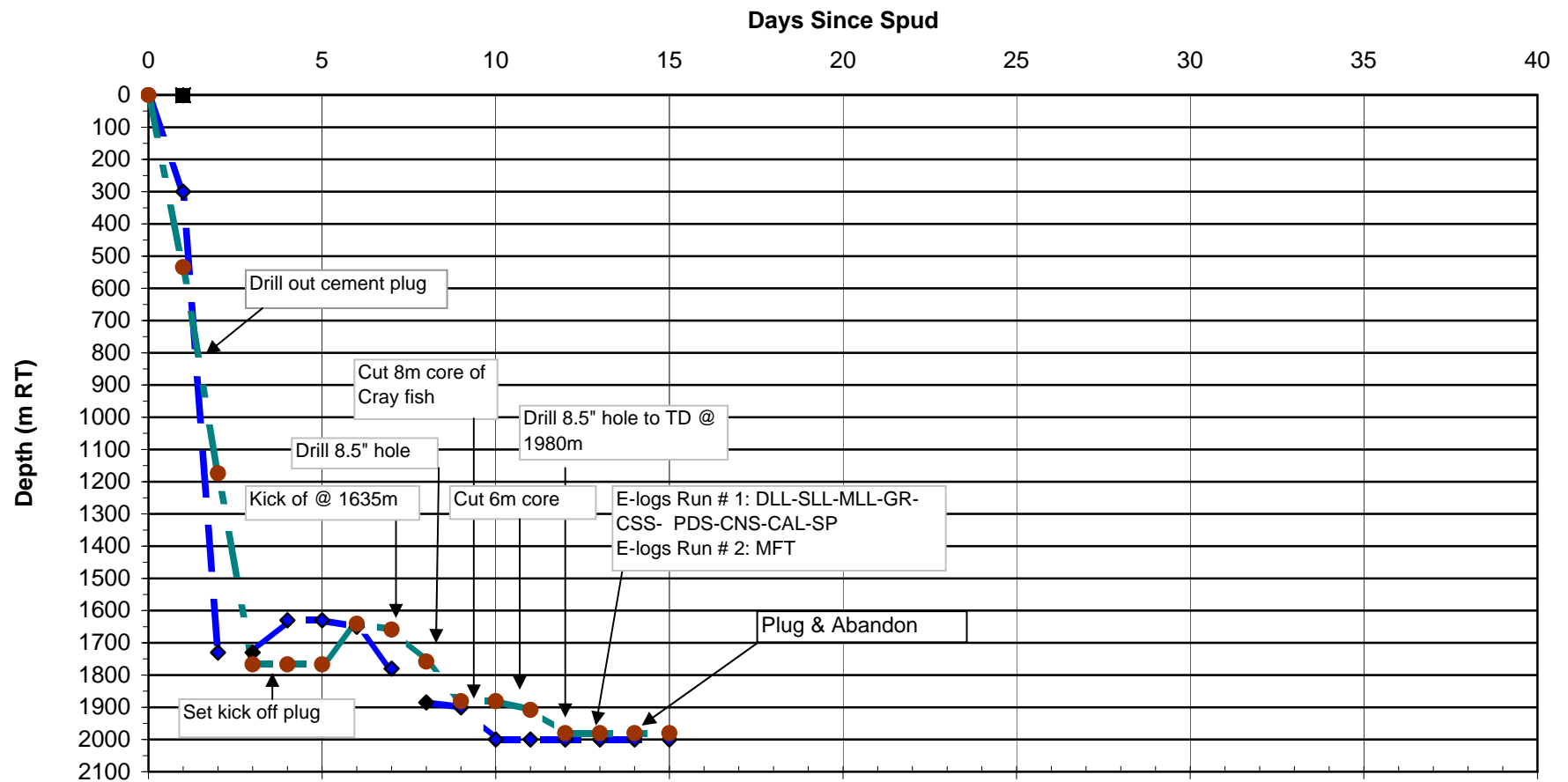
MEGASCOLIDES 1 Re -ST1 Karoo Gas Australia		
Sample type	Interval	Descriptions
SET A: Cloth bags (250g) washed and dried for KAROON GAS Australia	1645m to 1980m (TD) (every 5 m)	2 cardboard box Box 1/2:1645m-1800m Box 2/2:1805m-1980m
SET:B Cloth bags (250g) washed and dried for DPI Australia	1645m to 1980m (TD) (Every 5 m)	2 cardboard box Box 1/2:1645m-1800m Box 2/2:1805m-1980m
SET: C Samplex trays (50g) for Karoon Gas Australia	1640m to 1980m (TD) (Every 5 m)	In two small cardboard boxes Box 1: 1640m – 1865m Box 2: 1865m – 1980m (TD)



## **SECTION 6**

### **Time And Depth Curve**

# Karooon Gas Australia Megascolides 1 Re- ST1 Time vs. Depth Curve



## **APPENDIX**

**FORMATION EVALUATION LOG**  
1:500

# **DRILLING DATA PLOT**

1:500