



## **END OF WELL REPORT**

**Karoon Gas Australia Pty. Ltd.**

**MEGASCOLIDES 2**

**04/01/07 - 02/02/07**

**by**

**BAKER HUGHES INTEQ**

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# **Megascolides 2**

## **Final Well Report**

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## **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:	156.2mRT to MSL
Drill Floor Elevation:	5.2m
Surface Co-ordinates:	Lat: 38deg 14min 02.228sec
	Long: 145deg 53min 39.158sec
	Datum: GDA 94, Zone 55
Block:	PEP 162 / EL4537
Well Type:	Vertical Exploration
Spud date:	04/01/07
Total Depth:	2130m
TD Date:	08:50hrs, 31/01/07
Primary Objective:	Top Crayfish, 1672m RT
Well Status:	Plug and Abandon
Baker Hughes INTEQ Crew:	Shaharizad, Rio Marasigan, Bambang Budiarto Shantosh Kulkarni
Data Engineers:	Shaharizad, Rio Marasigan, Bambang Budiarto Shantosh Kulkarni
Karooon Gas Representatives:	Bruce Pilat, Chris Dann (Companyman), David Horner (Wellsite Geologist)

## **SECTION 2**



### **Drilling and Engineering**

BIT TABLE 2.1

<div></div>		<b>LOCATION / WELL NAME</b>				<b>Rotary Type Abbreviations</b>				<b>Geology Abbreviations</b>				<b>A - All Rows</b>				<b>Dull Grade &amp; Reason Pulled</b>				<div></div>							
		Australia (Victoria)/ Megascolides 2				TS - Top Drive System RT - Rotary Table PD - Positive Displacement Motor SB - Steerable PDM & Bent Sub M - suffix designates MWD				Sd - Sand Sst - Sandstone Lst - Limestone Slt - Silt Slst - Siltstone Cl - Clay Clst - Claystone Volc - Volcanics Sh - Shale Dol - Dolomite				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				DTF - Down Howl 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								PR - Penetration rate RG - Rounded Gauge SD - Shirt Tail Damage TD - Total / Csg Depth TQ - Torque TW - Twist Off WC - Weather Condition WT - Worn Teeth			
		<b>OPERATOR</b>				Mud Type Abbreviations PHG - Gel Sweeps AQ - Aquacol G - Gel PHPA - Polyacrylamide WB - Bentonite/polymer Mud																							
		Karoon Gas Australia Pty. Ltd.																											
<b>CONTRACTOR / RIG</b>																													
Century Energy Services Rig 11																													

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")												
								In	Out	m	hrs															I	O	D	L	B	G	O	R				
12½" HOLE SECTION																																					
1	NB1	Security	XS15	10826043	12.25		3x20	15	510	495	40.2	12.3	2-27	98-150	0.3-10.1	255.5	Yes	155-1745	164-780	0.8	Clst,Sst,Coal	9.1	WB	5,13	2	2	WT	A	E	I	SS	TD					
8½" HOLE SECTION																																					
2	NB2	Security	FM35532	10881881	8.5		5x11	510	1421	911	76.6	11.9	2-32	40-177	1-13	497.4	Yes	601-1277	371-492	3-5.75	Clst,Sst,Coal	8.6-8.8	WB	19,24	1	2	BF	N	X	I	WT	PR					
3	NB3	Security	FM36532	10825011	8.5		6x11	1421	1578	157	76.6	2.0	2-18	53-156	1-8	497.1	Yes	1010-1433	439-487	4.50	Clst,Sst,Coal	8.7-8.8	WB	20,21	1	0	CT	N	X	I	NO	PR					
4	NB4	Security	XS16D	743418	8.5		3x131	1578	1810	232	61.2	3.8	2-38	7-91	1-12	273.5	Yes	1332-1822	424-475	3.75	Clst,Sst,Sh.	8.8-9.2	WB	20,25	2	4	WT	S	E	I	SS	PR					
5	NB5	Security	EBXS12DS	10850552	8.5		1x13,2x14	1810	2018	208	63.8	3.3	1.8-3.8	74.0-91.0	5.6-12	273.5	Yes	1126-1822	424-475	6.75	Clst,Sst,	9.2	WB	20,25	2	3	WT	S	3	1	NO	TQ					
6	RR6	Security	SE3653	10825011	8.5		6x11	2018	2065	47	17.2	2.7	20-27	60-120	5.5-10.7	88.4	Yes	2200-2300	260-320	8.5	Clst,Coal, LST	9.3	WB	19-23	1	1	CT	N	X	I	NO	PR					
7	NB7	Security	EBXS16DS	10851000	8.5		3x13	2065	2130	65	19.6	2.9	24-35	50-80	10-Jun	96.9	YES	1729-2214	438-489	8.5	Bsmnt (undif)	9.40	WB	19-22	1	2	WT	S	3	IN	NO	TD					

## HYDRAULICS TABLE 2.2

<div></div>		<div>Hydraulics Summary Table</div> <div>Megascolides 2   Gippsland Basin</div>																		<div></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	Hole Size	Calc Size	Jets / TFA	Drill String	W	MUD TYPE	Flow Rate	ECD	Annular Velocities ft/min				Jet Vel	HHP	HHP	Impact Force	Bit Pr. Loss	%SPP Loss	Calc. SPP	Actual flowrate
	m	in	Hole	x 1/32"	Items	ppg		gpm	ppg	DP Casing	DP OH	DC OH	Crit	ft/sec	hhp	/in <sup>2</sup> hp/in <sup>2</sup>	lb/in <sup>2</sup>	psi	psi	calc.	
NB1	510	12.25	12.25	3x20	N	9.10	Waterbased	164-780	9.3	101.4	110.5	129.2	-	203.9	243.7	0.9	4.8	294	41.1	715	585
NB2	1421	8.5	9.2	5x11	N	8.70	Waterbased	371-492	9	185.9	171.3	242.0	-	311.1	374.6	3.1	11.1	654	45.8	1428	450
NB3	1578	8.5	10.04	6x11	N	8.90	Waterbased	439-487	9.1	185.9	136.9	178.7	-	259.3	341.1	2.2	9.5	464	35.7	1301	450
NB4	1810	8.5	10.04	3x13	N	9	Waterbased	424-475	9.2	185.9	136.9	178.7	-	347.6	503.4	4.5	13.7	963	50.2	1301	450
NB5	2018	8.5	10.04	1x11,2x14	N	9	Waterbased	424-475	9.2	185.9	125.5	159.6	-	371.3	512.5	4.6	14.0	979	50.0	1954	450
RR6	2065	8.5	10.04	6x11	N	9.30	Waterbased	280-320	9.6	132.2	97.4	142.0	-	184.4	166.4	0.8	5.0	245	27.5	892	320
NB7	2130	8.5	10.04	3x13	N	9.45	Waterbased	430 - 450	9.7	180.9	133.3	194.3	-	361.4	517.7	4.4	13.7	958	47.2	2080	438

## **SECTION 3**

### **SURVEY SUMMARY**



# TOTCO SURVEYS

## Megascolides 2

Interval (m) Survey	Inclination Degrees	Azimuth Degrees	TVD (m)
67.00m	0.00	360.00	67.00
166.00m	1.25	360.00	165.99
204.00m	1.00	360.00	203.98
316.00m	1.50	360.00	315.96
419.00m	0.75	360.00	418.94
503.00m	1.00	360.00	502.93
705.00m	3.00	360.00	704.79
771.00m	3.00	7.00	770.70
884.00m	4.00	7.00	883.49
987.00m	5.00	357.00	986.17
1090.00m	5.50	347.00	1088.74
1193.00m	5.75	338.00	1191.25
1296.00m	4.75	357.00	1293.82
1399.00m	4.00	352.00	1396.52
1493.00m	4.50	350.00	1490.27
1596.00m	3.25	354.00	1593.03
1710.00m	3.00	47.00	1706.88
1821.00m	2.25	68.00	1817.77

<b>Interval (m) Survey</b>	<b>Inclination Degrees</b>	<b>Azimuth Degrees</b>	<b>Azimuth Degrees</b>
1915.00m	3.75	96.00	1911.64
2006.00m	6.75	79.00	2002.25
2053.00m	8.50	77.00	2048.83
2130.00m	8.50	77.00	2124.99

## **SECTION 4**

### **GEOLOGY & SHOWS**

## 4.1 GEOLOGY AND SHOWS

Mud Logging Services for Megascolides 2 commenced from the start of the 12-1/4" surface hole section to 510m. 9-5/8" casing was set prior to continue drill 8-1/2" TD at 2130m. Cuttings samples were collected at every 10m interval for the 12-1/4" hole section (15m to 510m). Samples were collected at 5m intervals from 515m to 2130m. The main object of drilling the well was to evaluate the reservoir section previously encountered in Megascolides -1.

Megascolides 2 (Karoo Gas Australia Pty. Ltd.) was spudded at 14:00 hrs on 4 January 2007. All depths were measured from the Rotary Table 5.2m from ground level. Megascolides 2 was drilled to a total depth of 2130m

One sets of washed dried bulk samples

### 1 x 250 mg washed & dried sample for Department of Primary Industry (DPI):

Cardboard box #1 (30m-510 m) 10 m interval  
 Cardboard box # 2 (510m-610m) 5 m interval  
 Cardboard box # 3 (610m-720m) 5 m interval  
 Cardboard box # 4 (720m-870m) 5 m interval  
 Cardboard box # 5 (870m-1020m) 5m interval  
 Cardboard box # 6 (1020m-1170m) 5m interval  
 Cardboard box # 7 (1170m-1320m) 5m interval  
 Cardboard box # 8 (1320m-1470m) 5m interval  
 Cardboard box # 9 (1470m-1620m) 5m interval  
 Cardboard box # 10 (1620m-1770m) 5m interval  
 Cardboard box # 11 (1770m-1920m) 5m interval

One set of cuttings in samplex trays

### 1x 50g Samplex Tray Set for Karoon Gas Pty. Ltd.

Wooden box # 1 (30m-510m) 10 m interval  
 (510m-1610m) 5m interval.  
 Wooden box # 2 (1610m- td m) 5m interval

The lithology intersected at Megascolides-2 is summarized below started from 15m. For more detailed descriptions of the cuttings, please refer to the appendix section (Formation Evaluation Log).

## Surface – 40 m approximately

This section of the hole was comprised of volcanic rocks weathered to various colors of claystone. The Weathered Volcanics at the upper part of this section were predominantly dark yellowish orange to grayish orange, occasionally light reddish brown to dark brown and occasionally pale yellowish orange. It was generally very soft to slightly firm, very dispersed and very sticky with commonly coarse to very coarse angular to sub angular feldspatic grains. The lower part of this section varied from light greenish gray to brownish grey. The formation remained very soft, very soluble and very sticky. It presented as amorphous to sub blocky claystone sourced from weathered volcanics. There were also traces of argillaceous dark brown to black carbonaceous material of earthy luster that was soft to slightly firm at the lower part of this section.

No significant gas peaks were observed. Chromatograph analysis ranged from 5-9ppm of methane

## **40m – 68m approximately**

The top of the Formation is comprised mainly of Claystone with occasional Sandstone. The claystone was light greenish grey to dark grey, amorphous to sub blocky. It was commonly very soft, very dispersed, very sticky and non calcareous. Traces of black, soft, formless and argillaceous carbonaceous material were also observed.

The Sandstones varied from off white to light yellow to grayish orange to yellowish brown. It was composed of coarse to very coarse grains that were angular to sub angular and was occasionally sub rounded and poor to moderately sorted. Traces of white to greenish grey argillaceous matrix (that was non calcareous), very weak silica cement and abundant transparent to translucent loose quartz grains were seen. Traces of dark grey to black carbonaceous materials were also found. No oil shows were observed. At lower parts of the section, the sandstone gradually became light grey to light olive grey to grey. The formation was dominantly composed of very coarse grains that were occasionally coarse, angular to sub angular, poor to moderately sorted, non calcareous and featured traces of argillaceous matrix with poor to no visual porosity and no hydrocarbon shows.

The lower section Claystones varied from light greenish grey to medium dark grey. It was very soft, very dispersed, very sticky, amorphous to sub blocky, very arenaceous in part and was grading to silty claystone. Traces of black carbonaceous material were been seen.

No significant gas peaks were recorded in this section. Chromatograph gas readings ranged from 10-12ppm.

## **68-820m approximately**

The formation consisted of interbedded claystone and sandstone with occasionally thin coal stringers towards the base of the section.

The upper Claystones of this formation varied from light greenish grey to brownish grey. They were generally very soft to slightly firm, moderately hard in part, dispersed, sticky, sub blocky to blocky, very arenaceous in part and grading to siltstone. The claystone was also slightly calcareous, sub fissile, with abundant carbonaceous detritus, traces of micro mica and traces pyrite.

The Sandstone at the upper section varied from light yellow to yellowish grey to olive grey to dark grey. They were occasionally light greenish grey to brownish grey, predominantly very fine to fine, occasionally medium to coarse in part, angular to sub angular, occasionally rounded in part, poor to moderately sorted, with very fine white to grey argillaceous matrix. It was slightly sticky, non calcareous with no visible cement and grading to siltstone. It was occasionally opaque in part, friable, with very poor to no visual porosity and no shows.

Occasionally thin Coal stringers and lamina were interbedded with Claystone and Sandstone. The Coal was argillaceous, dark brown to black, soft to slightly hard, sub platy to blocky fractured with an earthy to vitreous luster.

## **820-1884 m approximately**

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

Sandstone: The color ranged from light to medium green grey, very fine to fine, dominantly very fine, sub angular 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 were present. The sandstone was predominantly hard, with poor to moderately well sorted and inferred porosity was poor, trace oil fluorescence.

Claystone: The color varied was predominantly 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, micro micas, and calcite and goethite lined fractures were commonly present. The claystone was hard and sub fissile.

The total gas ranged from 0.020% to 0.630% with and averaged of 0.02%. Chromatograph analyzed methane (118-1256ppm), ethane (17-2373ppm), propane (0-324ppm). Iso butane (0-329ppm), normal butane (0-343ppm), iso pentane (0-341ppm), and normal pentane (0-350ppm)

## Fluorescence

Fluorescence (670m-685m): the calcite fracture infill material has 10% mod bright patchy light yellow fluorescence giving weak dull yellow white crush cut, trace residue.

Fluorescence (930m-935m): the calcite fracture infill material has trace moderately bright patchy light yellow fluorescence, weak dull white crush cut, trace residue

Fluorescence (1160-1180m): the calcite fracture infill material has 5% moderately bright-bright patchy light yellow-white fluorescence, weak dull milky white crush cut, trace residue.

Fluorescence (1240-1270m): the calcite fracture infill has 5-10% moderately bright-bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, trace residue.

Fluorescence (1280-1290 & 1300-1305m): the calcite fracture infill has trace moderately bright - bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue, trace medium dark brown oil staining on some calc crystallin surf.

Fluorescence (1310-1330 & 1335-1340m): the calcite fracture infill has 10-20% moderately bright - bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, thin ring residue, trace medium dark brown oil staining on some calc crystallin surf.

Fluorescence (1370-1375): The calcite fracture infill has 5% moderately bright –bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, trace residue.

Fluorescence (1470-1485): The calcite fracture infill has trace to 5% moderately bright –bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, trace residue.

Fluorescence (1490-1505): The calcite fracture infill has trace to 5% moderately bright –bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, trace residue.

Fluorescence (1620-1630): the white crystallin calcite fracture infill (tr-5% of total sample) has 50%-80% bright patchy very pale yellow white fluorescence giving a weak instant followed by strong bright milky crush cut, thick rare yellow white fluorescence.

Fluorescence (1830-1855): The calcite fracture infill has trace to 20% moderately bright –bright patchy pale yellow fluorescence giving a weak dull yellow white crush cut, trace residue.

Fluorescence (2060-2065): The Marble(?) has trace dull - rare moderately bright patchy pale yellow white fluorescence giving a very weak milky white crush cut, trace residue.

## 1884m – 2060 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 sub rounded, 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 clastics (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 slickenside, with common micro mica where argillaceous, vitreous, platy to sub conchoidal 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 micro mica, hard and sub fissile.

The total gas ranged from 0.01% to 0.365% with and averaged of 0.004%. Chromatograph analyzed methane (19-1438ppm), ethane (4-769ppm), propane (2-175ppm), iso butane (0-15ppm), normal butane (0-20ppm), iso-pentane (0-9ppm) and normal pentane (0-4ppm).

## 2060m – 2130 m

This formation was light grey, the cutting was hard, homogeneous to speckled, mottled in part, cryptocrystalline to microcrystalline, trace flow or stress banding in part was observable at places, trace vesicular (?) in filled with brown yellow or green minerals, common micro to macro crystalline calcite in filled fractures and patches, common yellow orange and brown crypto to macro crystalline mineral in filled veins and patches, the cutting contains traces bright green serpentine (?) patches, non to occasionally very calcareous, it was hard

The fluorescence from the Marble vein has trace dull to rarely moderately bright patchy pale yellow white fluorescence giving a very weak milky white crush cut and trace residual ring.

The total gas recorded 0.01% to 0.98% with and averaged of 0.03%. Chromatograph analyzed methane (13-1544ppm), ethane (3-782ppm), propane (0-794ppm), iso-butane (0-786ppm) and normal butane (0-822ppm), iso pentane (0-775ppm) and normal pentane was (0-764ppm)

## **SECTION 5**

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



## 5.1 SAMPLING AND DISTRIBUTION

MEGASCOLIDES 2 Karoo Gas Australia		
Sample type	Interval	Descriptions
<b>SET: A</b> <b>Samplex trays (50g)</b> <b>for Karoon Gas</b> <b>Australia</b>	15m to 2130m (TD)	In two small Wooden boxes Box 1: 30m – 1610m Box 2: 1610m – 2130m (TD)
<b>SET:B</b> <b>Cloth bags (250g)</b> <b>washed and dried</b> <b>for DPI</b> <b>Australia</b>	30m to 2130m (TD)	Box #1intvl : 30 – 510 m Box#2 intvl : 510 – 610 m Box #3 intvl : 610 – 720 m Box #4 intvl : 720 – 870 m Box #5 intvl : 870 – 1020 m Box #6 intvl :1020 – 1170 m Box #7 intvl : 1170 – 1320 m Box #8 intvl : 1320 – 1470 m Box #9 intvl : 1470 – 1620 m Box #10 intvl : 1620 – 1770 m Box #11 intvl : 1770 – 1920 m Box #12 intvl : 1920 -2130m/TD

Set “A” Hand carried by operation’s geologist Ross Tolliday on 01 February 2007

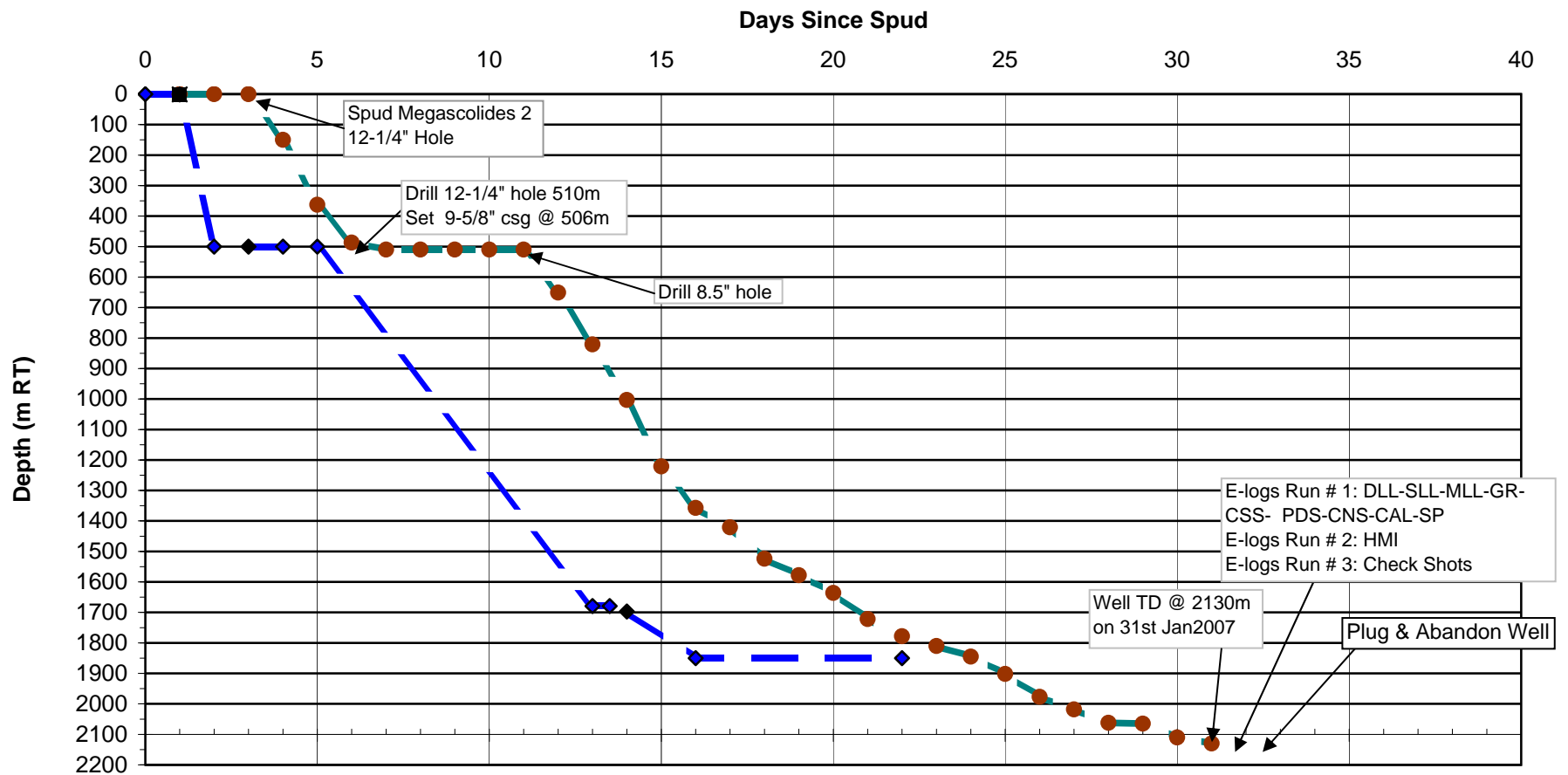
## Section 6

### Time and depth Curve

# Karooon Gas Australia

## Megascolides 2

### Time vs. Depth Curve



## **APPENDIX**

**FORMATION EVALUATION LOG**  
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# **DRILLING DATA PLOT**

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