



Queensland

ATP795 P

Surat Basin

## Lacerta-12

# Well Completion Report

<b>Originator:</b> Sherrin Nicholson	<b>Reviewed:</b> Mark Di Bacco	<b>Approved:</b> John Phillips
<b>Issue Date:</b>	<b>Revision:</b>	<b>Total Pages:</b> 16
<b>Regulatory Input:</b>		

## WELL CARD

<b>Well Name</b>	Lacerta 12		
<b>Location</b>	Longitude	149° 04' 40.85" E	
	Latitude	-26° 19' 04.67" S	
<b>Elevation</b>	GL	383.33m ASL	
	KB	384.23m ASL	
<b>Map</b>	1:250,000	Roma	
<b>Grid (AMG)</b>	Easting	707 427	
	Northing	7 087 434	
<b>Date Spudded</b>	4 <sup>th</sup> May 2007		13:30
<b>Date TD reached</b>			
<b>Pre Logging</b>	10 <sup>th</sup> May 2007		12:30
<b>Post Logging</b>	11 <sup>th</sup> May 2007		06:00
<b>Rig Released</b>	11 <sup>th</sup> May 2007		13:45
<b>Status</b>	Monitoring Well		
<b>Rig</b>	MDC Rig 123		
<b>Total Depth</b>	Driller	414.30m	
	Logger	414.10m	
<b>Plugs</b>	None		
<b>Casing</b>	<b>Size</b>	<b>Shoe</b>	
(a) Conductor	6 1/4"	6.0m	
(b) Surface	4 1/2"	102.0m	
<b>Type of Structure</b>	N/A		

## STRATIGRAPHIC UNITS PENETRATED

<b>Formation</b>	<b>Age</b>	<b>Depth (mGL)</b>	<b>Depth (mSS)</b>
Juandah A	Jurassic	77	+306
Juandah B	Jurassic	152	+231
Juandah C	Jurassic	194	+189
Juandah D	Jurassic	249	+134
Taroom	Jurassic	346	+37
<b>Logger's TD</b>	N/A	414.10	-31

## WIRELINE LOGS

<b>Run</b>	<b>Logging Tool</b>	<b>Description</b>	<b>Interval logged</b>
1	DD3	Gamma/Density/Neutron/Sonic/Res	414.10m(TD)-Surface
2	Scanner	Acoustic Scanner	414.10m(TD)-102.0m

## FORMATION TESTS

#	Interval / Formation (m)	Period (mins)	EMP IP/FP (psia)	EMIP FSIP (psia)	Fluid to surface (mins)	Max surface pressure (psia)	TC (mm )	BC (mm )	Rev Out	Result
1	141.95-174.30m									
2	344.45-414.30m									

## FULL HOLE CORES

#	Interval	Formation	Cut (m)	Recovery (%)
	103.1m-414.30m(TD)	Injune Creek Group	311.20	100

## PERFORATIONS

#	Interval	Formation	Shots / ft
	None		

## LOG INTERPRETATION

Interval	Formation	Net Pay Thickness	Porosity (%)	Sw (%)	Vsh (%)	Net Log Pay (m)
None						

## CORE ANALYSIS

Interval	Porosity (%)	Permeability (md)	So (%)	Sw (%)
None				

## SIDEWALL CORES

Depth	Lithology	Palynology (P) / Evaluation (E)
None		

## **SUMMARY**

Lacerta 12 is located in ATP 795P, approximately 40km northeast of the Roma township.

The primary objective of Lacerta 12 is to evaluate the CSG potential of the Jurassic Walloon Coal Measures in the area north of Roma. Lacerta 12 is a step-out corehole from the already confirmed Lacerta CSG productive area.

The closest wells with mappable Jurassic strata are Lacerta 2 and 3 drilled in 2006. Lacerta 12 is located approximately 1.8 and 5.0 kilometres respectively to the east, and is proposed to encounter equivalent formations that were intersected in these wells.

Lacerta 12 aims to fully evaluate the CSG potential of the Walloon coal measures in this area. This will be achieved by fully coring the entire Jurassic coal measures section, and conducting gas desorption testing on the prospective coal samples. Off bottom Drill Stem Tests (DSTs) are planned to be run during the drilling of the well. This will provide permeability data for the coals in the subsurface.

Lacerta 12 was spudded at 13:30 on the 4<sup>th</sup> of May 2007 and reached a total depth of 414.30m (TD) at 08:45 on the 10<sup>th</sup> of May 2007. Mitchell Drilling Contractor rig 123 was used to drill this hole to casing point at 102.0m and to total depth (414.3m). Wireline logs were run by Weatherford to the total depth.

Lacerta 12 encountered numerous prospective coal seams within the Walloon Coal Measures.

Lacerta 12 has been converted to a pressure monitoring well.

**Wellsite Geologist**  
**Card Prepared By**  
**Date**

Sherrin Nicholson  
Sherrin Nicholson  
27/11/07

# Table of Contents

## WELL DATA CARD

<b>1</b>	<b>SUMMARY .....</b>	<b>6</b>
<b>2</b>	<b>WELL HISTORY .....</b>	<b>8</b>
<b>2.1</b>	<b>General Data .....</b>	<b>8</b>
2.1.1	Well Name and Number .....	8
2.1.2	Surface Location .....	8
2.1.3	Elevations.....	8
2.1.4	Petroleum Tenement .....	8
2.1.5	Name of Operator.....	8
2.1.6	Other Participants.....	8
2.1.7	Date Drilling Commenced .....	8
2.1.8	Date Drilling Completed.....	8
2.1.9	Date Rig Released.....	8
2.1.10	Drilling Time to TD .....	8
2.1.11	Total Depth .....	8
2.1.12	Status.....	8
<b>2.2</b>	<b>Rig Data .....</b>	<b>9</b>
2.2.1	Drilling Contractor .....	9
2.2.2	Drilling Rig Details .....	9
<b>2.3</b>	<b>Drilling Data.....</b>	<b>10</b>
2.3.1	Hole Sizes & Depths .....	10
2.3.2	Casing & Cementing.....	10
2.3.3	Perforation Intervals.....	10
2.3.4	Drilling Fluids.....	10
2.3.5	Completion Fluid .....	10
<b>2.4</b>	<b>Logging and Testing .....</b>	<b>11</b>
2.4.1	Wellsite Geologist.....	11
2.4.2	Mudlogging.....	11
2.4.3	Ditch Cuttings .....	11
2.4.4	Coring .....	11
2.4.5	Testing.....	11
2.4.6	Wireline Logs.....	12
2.4.7	Temperature Surveys .....	12
<b>3</b>	<b>GEOLOGY .....</b>	<b>13</b>
<b>3.1</b>	<b>Regional Geology .....</b>	<b>13</b>
<b>3.2</b>	<b>Drilling Rationale .....</b>	<b>15</b>
<b>3.3</b>	<b>Stratigraphy .....</b>	<b>15</b>
<b>3.4</b>	<b>Coal Seams .....</b>	<b>16</b>

# List of Tables

Table 1.1 Hole sizes and depths.....	10
Table 1.2 Casing summary.....	10
Table 1.3 Drilling fluids.....	10
Table 2.1 Drill Stem Test Intervals.....	11
Table 2.2 Wireline logs.....	12
Table 3.1 Wells drilled in the vicinity of Lacerta 12 .....	15
Table 4.1 Geological Prognosis .....	15
Table 5.1 Coal Seam Intervals.....	16

# List of Figures

Figure 1.1 Lacerta 12 Location Map.....	7
Figure 2.1 Surat Basin Stratigraphy .....	14

# List of Attachments

Appendix 1	Daily Drilling Reports
Appendix 2	Daily Geological Reports
Appendix 3	Cuttings Descriptions
Appendix 4	Coal Bed Methane Report – ACS Laboratories
Appendix 5	DST Report
Appendix 6	Stratigraphic Core Log
Appendix 7	Well Location Survey Plan – MJ Hedges
Appendix 8	Field Core Box Photos – ACS Laboratories
Enclosure 1	Composite Log (LAS data included)

# 1 SUMMARY

Lacerta 12 is located in ATP 795P, approximately 40km northeast of the Roma township (Figure 1.1)

The primary objective of Lacerta 12 is to evaluate the CSG potential of the Jurassic Walloon Coal Measures in the area north of Roma. Lacerta 12 is a step-out corehole from the already confirmed Lacerta CSG productive area.

The closest wells with mappable Jurassic strata are Lacerta 2 and 3 drilled in 2006. Lacerta 12 is located approximately 1.8 and 5.0 kilometres respectively to the east, and is proposed to encounter equivalent formations that were intersected in these wells.

Lacerta 12 aims to fully evaluate the CSG potential of the Walloon coal measures in this area. This will be achieved by fully coring the entire Jurassic coal measures section, and conducting gas desorption testing on the prospective coal samples. Off bottom Drill Stem Tests (DSTs) are planned to be run during the drilling of the well. This will provide permeability data for the coals in the subsurface.

Lacerta 12 was spudded at 13:30 on the 4<sup>th</sup> of May 2007 and reached a total depth of 414.30m (TD) at 08:45 on the 10<sup>th</sup> of May 2007. Mitchell Drilling Contractor rig 123 was used to drill this hole to casing point at 102.0m and to total depth (414.3m). Wireline logs were run by Weatherford to the total depth.

Lacerta 12 encountered numerous prospective coal seams within the Walloon Coal Measures.

Lacerta 12 has been converted to a pressure monitoring well.

0 2.5 5  
kilometres

- Proposed Corehole
- Existing Corehole
- Existing Pilot Well

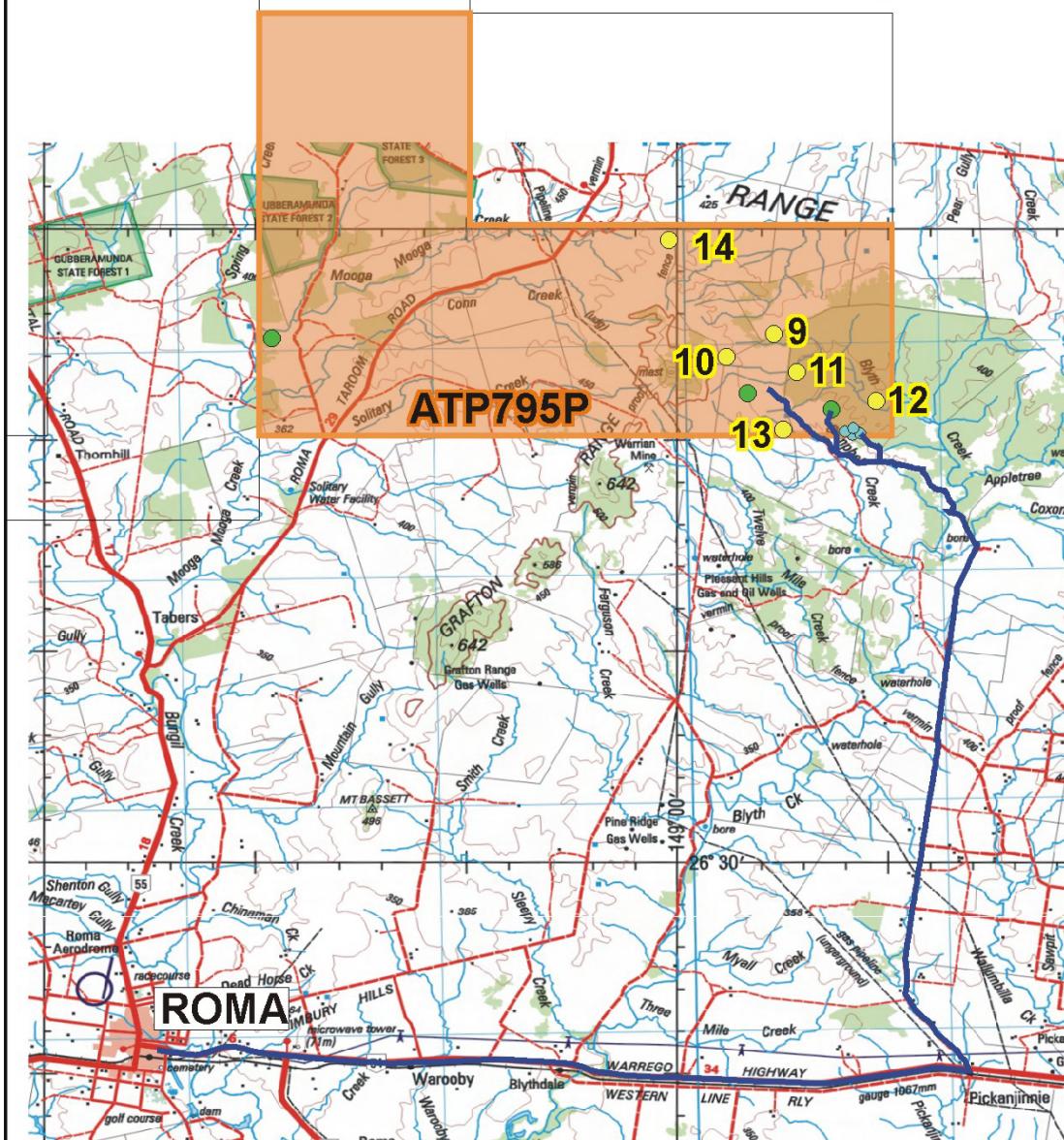


Figure 1.1 Lacerta 12 Location Map

## 2 WELL HISTORY

### 2.1 General Data

<b>2.1.1 Well Name and Number</b>	LACERTA 12
<b>2.1.2 Surface Location</b>	Longitude: 149°04'40.8487"East Latitude: -26°19'04.6740"South (Datum GDA94)
	Easting: 707 427.502 Northing: 7 087 434.616 (MGA GDA94)
<b>2.1.3 Elevations</b>	GL: 383.33m ASL KB: 384.23m ASL
<b>2.1.4 Petroleum Tenement</b>	ATP 795P
<b>2.1.5 Name of Operator</b>	Sunshine Gas Limited ABN 44 098 563 663 1 Eagle Street Level 19, Waterfront Place Brisbane QLD, 4000
<b>2.1.6 Other Participants</b>	None
<b>2.1.7 Date Drilling Commenced</b>	4 <sup>th</sup> May 2007
<b>2.1.8 Date Drilling Completed</b>	10 <sup>th</sup> May 2007
<b>2.1.9 Date Rig Released</b>	11 <sup>th</sup> May 2007
<b>2.1.10 Drilling Time to TD</b>	6 Days
<b>2.1.11 Total Depth</b>	Driller: 414.30m Logger: 414.10m
<b>2.1.12 Status</b>	Monitoring well

## 2.2 Rig Data

### 2.2.1 Drilling Contractor

Mitchell Drilling Contractors  
23 Limestone Street  
Darra, QLD 4074

### 2.2.2 Drilling Rig Details

#### Rig 123: UDR 1000 Semi-trailer mounted multipurpose exploration rig

<b>Pull Out</b>	120kN
<b>Water Pumps</b>	FMC L1622 (Bean) 140 GPM @ 7000 kpa
<b>Air Compressor</b>	Atlas Copco 455XRVS, silenced, 950 cfm/365 psi
<b>Mud Pump</b>	Tulsa TT150 160GPM @ 200psi
<b>Rod Break Out</b>	Hydraulic 48" Rigid Stillson
<b>Slips Table</b>	224mm opening
<b>Wireline Winch</b>	1000m of 5mm wire rope
<b>Depth Capacity</b>	Hole size                    Rod size                    Depth
	150mm hammer            89mm                    500m
	HQ                            96mm                    800m
<b>Prime Mover</b>	Mack Superliner 6x4
<b>Support Prime Mover</b>	Volvo FH12 6x4, 9m HQ rod trailer, 6m HSH rod trailer
<b>Well Control</b>	5 1/16" annular master control valve

## 2.3 Drilling Data

### 2.3.1 Hole Sizes & Depths

Table 1.1 Hole sizes and depths

From (m GL)	To (m GL)	Diameter
0	6	10 3/4"
6	103.1	5 1/2"
103.1	414.30	3.78"

### 2.3.2 Casing & Cementing

Table 1.2 Casing summary

Conductor	
Size	6 1/4"
Weight	
Shoe setting depth	6m
Quantity of cement	(Gypset x 1 unit)
Interval Cemented	Cemented to surface

Surface Casing	
Size	4 1/2"
Weight	
Shoe setting depth	102.0m
Quantity of cement	
Interval Cemented	103.1m – surface

### 2.3.3 Perforation Intervals

No perforations were shot in Lacerta 12.

### 2.3.4 Drilling Fluids

Table 1.3 Drilling fluids

Hole Section	Fluid Type	Weight (ppg)	Viscosity (cP)
0m – 103.1m	Fresh water	8.4	33
103.1m – 414.30m (TD)	Water/Liquid Polymer	8.4	34

### 2.3.5 Completion Fluid

The borehole was flushed with freshwater before running wireline logs.

## **2.4 Logging and Testing**

### **2.4.1 Wellsite Geologist**

Sherrin Nicholson

### **2.4.2 Mudlogging**

No mudlogging was conducted on Lacerta 12.

### **2.4.3 Ditch Cuttings**

Ditch cuttings were sampled and described at approximately 3m intervals from surface to casing point at 103.1m. No cuttings were collected over the coring interval.

### **2.4.4 Coring**

Full hole HQ3 size cores were cut from 103.1m to 414.30m (TD)

### **2.4.5 Testing**

Two Drill Stem Tests (DST) were conducted on selected coal seams within Lacerta 12. Off bottom drill stem tests were run during the drilling of Lacerta 12 (refer to appendix 5).

*Table 2.1 Drill Stem Test Intervals*

<b>DST #</b>	<b>Interval / Formation (m)</b>	<b>Period (mins)</b>	<b>EMP IP/FP (psia)</b>	<b>EMIP FSIP (psia)</b>	<b>Fluid to surface (mins)</b>	<b>Max surface pressure (psia)</b>	<b>Result</b>
1	141.95-174.30						Conclusive
2	344.45-414.30						Conclusive

#### **2.4.6 Wireline Logs**

Geophysical logging was performed over two runs.

Wireline logging runs are summarised in the table below. Refer to Enclosure 1 for composite wireline log prints.

*Table 2.2 Wireline logs*

<b>Run</b>	<b>Log (assembly sequence)</b>	<b>From (m GL)</b>	<b>To (m GL)</b>
1	Density/Caliper/Gamma/Resistivity	414.10	0
2	Acoustic Scanner	414.10	102.0

#### **2.4.7 Temperature Surveys**

A maximum temperature of 42° was recorded on Lacerta 12 at total depth (414.3m).

## **3 GEOLOGY**

### **3.1 Regional Geology**

The geology within the permit is essentially characterised by a faulted Devonian Crystalline Basement, unconformably overlain by Permian sediments of the western Bowen Basin. These Permian sediments are themselves unconformably overlain by Triassic and younger sediments of the Surat Basin.

Basement within the permit area is generally Devonian Timbury Hills formation metasediments. Permian sediments in the area generally consist of sequences of Black Alley Shale and Bandanna Formation Coal Measures and interbedded sandstones. These Permian sediments are unconformably overlain by the Triassic to Cretaceous Surat Basin sediments, commencing with the Rewan Formation, and progressing into Showgrounds Sandstone, a relatively thin Moolayember Formation, and the Precipice Sandstone. Overlying the Precipice Sandstone are the Evergreen Formation sediments, Hutton sandstone and the Injune Creek Group sediments. In areas towards the north of the permit, surface erosion has planed off the Gubberamunda Sandstone, however, towards the south it is still present, and overlies the Injune Creek Group sediments. The CSG prospective Walloon Coal Measures are the primary target of Lacerta 12, and are a constituent of the Injune Creek Group sediments. (see Figure 2.1)

The sediment package within the permit area is seen to shallowly dip towards the Roma Shelf to the south. In areas to the north of the permit, Permian sediments become progressively planed off by the Triassic unconformity surface. Most of the Bandanna Coal measures as seen from seismic are, however, still present within much of the permit area.

Structuring within the area is heavily controlled by pre-existing basement faulting. The most marked structural feature in the area is the northwest-southeast trending Hutton-Wallumbilla fault which has experienced numerous reactivation episodes. Thrust faulting has caused Permian sediments on the upthrown side (east) of the fault to be stripped off completely, leaving Triassic sediments directly overlying Devonian basement. Other smaller scale faulting to the west of the Hutton-Wallumbilla fault has caused elevated basement features that have set up anticlinal structuring within Permian and Triassic sediments. These structures have generally been the traditional conventional gas exploration targets within the area.

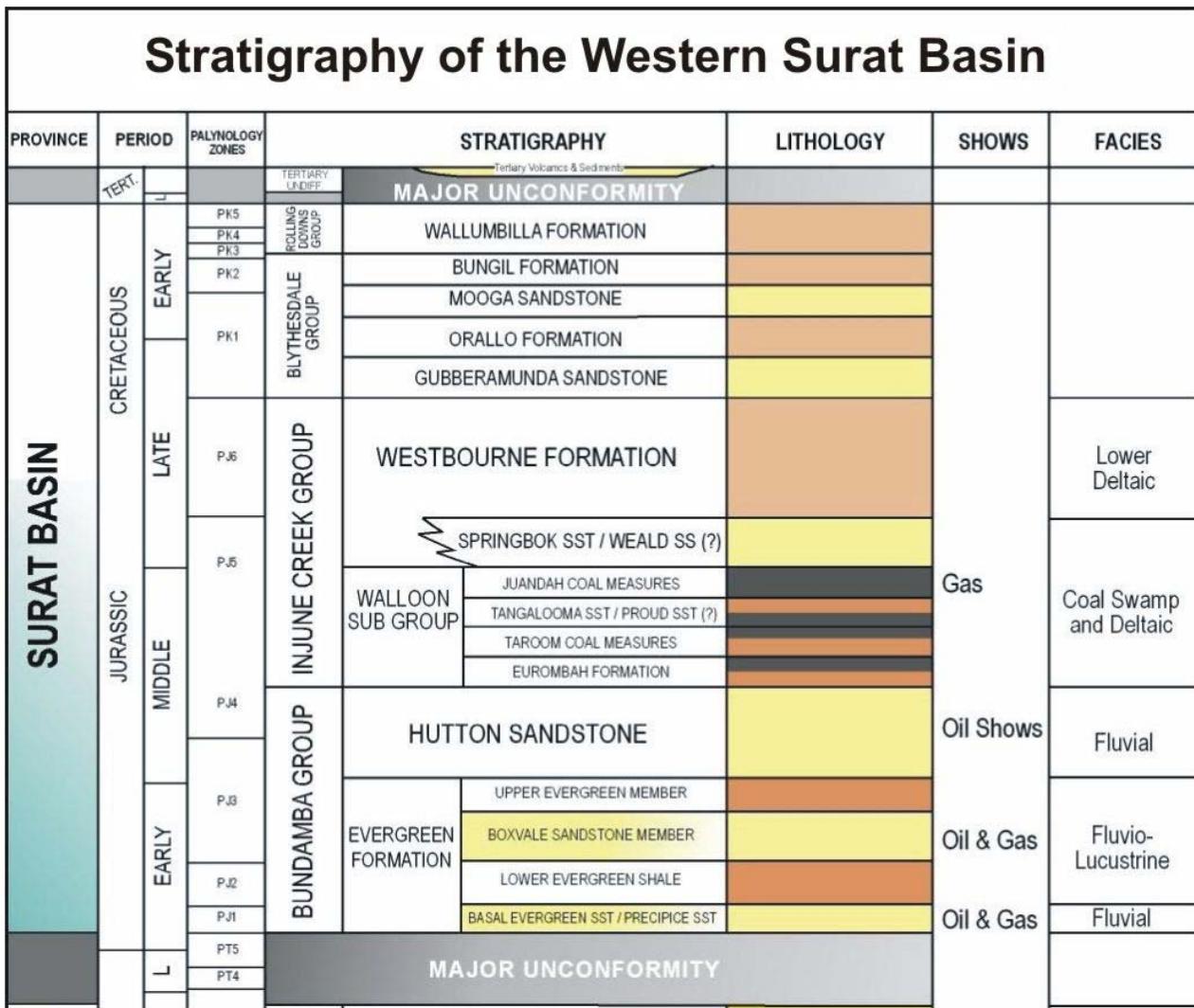


Figure 2.1 Surat Basin Stratigraphy

### 3.2 Drilling Rationale

The Walloon coal measures are a growing CSG exploration and production target within the Surat Basin. Previous wells drilled in the Lacerta area have confirmed the presence of favourable gas content and permeability. Lacerta 12 aimed to test the northerly continuation of these favourable CSG conditions.

*Table 3.1 Wells drilled in the vicinity of Lacerta 12*

Well Name	Date Drilled	Operator	TD (m GL)	Status	Comment
Solitary Creek 7	1929	ARO	1100	P&A	Conventional Gas/Oil
Mooga 1	1930	ARO	1087	P&A	Conventional Gas/Oil
Niella Northwest 1	1971	SUE	1145	P&A	Conventional Gas/Oil
Conn Creek 1	1987	CSR	916	P&A	Conventional Gas/Oil
Lacerta 2	2006	SHG	409	Suspended	CSG Core Hole
Lacerta 3	2006	SHG	577	Suspended	CSG Core Hole
Lacerta 4	2006	SHG	427	Suspended	CSG Core Hole
Lacerta 5	2006	SHG	436	Suspended	CSG Production Hole
Lacerta 6	2006	SHG	433	Suspended	CSG Production Hole
Lacerta 7	2006	SHG	433	Suspended	CSG Production Hole
Lacerta 8	2006	SHG	434	Suspended	CSG Production Hole
Lacerta 9	2007	SHG	420	Monitoring Well	CSG Core Hole
Lacerta 10	2007	SHG	588	Monitoring Well	CSG Core Hole
Lacerta 11	2007	SHG	420	Monitoring Well	CSG Core Hole

### 3.3 Stratigraphy

The stratigraphy is expected to be similar to that of the nearby Lacerta 2 well.

*Table 4.1 Geological Prognosis*

Age	Formation	Prognosed Top (m GL)	Actual Top (m GL)
Jurassic	Injune Creek Group	80m	54
Jurassic	Walloon Coal Measures	95m	77
	TD	410m	414.3

### 3.4 Coal Seams

Coal seam intervals in Lacerta 12 were identified from geological logging of core, and wireline log interpretation. The table below shows coal seam intervals and gross seam thickness intersected in the Walloon Subgroup.

#### Total Depth

Driller – 414.30m

Logger – 414.10m

*Table 5.1 Coal Seam Intervals*

Formation or Interval	Seam Name	Gross Interval		
		From (m GL)	To (m GL)	Thickness (m)
Juandah Coal Measures	Juandah A	77	120	43
	Juandah B	152	169	17
	Juandah C	194	235	41
	Juandah D	249	303	54
Taroom Coal Measures	Taroom	346	391	45

# **APPENDIX 1**

## **DAILY DRILLING REPORTS**

# Sunshine Gas Limited DAILY DRILLING REPORT 1

Well : Lacerta 12 Current Depth : 102.8 m No. Days : 1 RKB : 0.0 m	6:00 4-May-07 to	18:00 4-May-07	Permit : ATP - 795P Progress : 102.8 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 580 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2"	102.8 m GL			
Drilling Rep Days:		Brendan Turner	Toolpusher:	Frank Annann	Drilling Contractor:	Mitchell Drilling		
Drilling Rep Nights:		na	WellSite Geologist:	Sherrin Nicholson	Weather:	Fine		

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.
1	P	Travel	SURFACE DAMAGES		0
2 1/2	P	POOH	ROAD, LOC. & SURV.		0
1/2	U	Standby on logger	CONDUCT. / RATHOLE		0
2 1/2	P	Log hole with acoustic scanner - blockage at 400m, move rig and equipment	R.U. / R.D. / MOVE	10,000	10,000
1	P	Set up over Lacerta 12	RIG (DAYWORK)	2,960	2,960
4	P	Drill 6m, run PVC, drill to 102.8m	RIG (FTG. / TURNKEY)	7,420	7,420
1	P	Travel	FUEL	64	64
			MUD & SERVICES		0
			BITS / RMRS. / B.H.A.		0
			DIRECTIONAL EQUIPT.		0
			RENTAL EQUIPMENT	135	135
			LOG / MUDLOG / DST		0
			INSPECTION & REPAIR		0
			AIR PACK		0
			CEMENT & EQUIPT.		0
		<b>Rig released 10.00am</b>	TRANSPORTATION		0
		<b>Rig mobilisation to Lacerta 12</b>	SUPERVISION	600	600
			WATER CART		0
			INSURANCE / LEGAL		0
			OVERHEAD		0
			CASING & ACCESS.		0
			WELLHEAD EQUIPT.		0
			CASING EXIT SYSTEM		0
			HAUL-OFF		0
			STUCK & FISHING		0
			ACCOMMODATION & MEALS	500	500
			PROTECTIVE CASING		0
			SURFACE CASING		0
			CORE ANALYSIS	1,600	1,600
			PLUG & ABANDON		0
			MISCELLANEOUS		0
<b>12 1/2</b>	<b>TOTAL HRS. TODAY</b>		<b>TOTAL COST (\$):</b>	<b>23,279</b>	<b>23,279</b>

B.H.A.: 5 1/2" Bit, Stabilizer, Xover, Xover,

LENGTH: \_\_\_\_\_ m Since last inspection: \_\_\_\_\_ hrs.  
PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: \_\_\_\_\_ lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: \_\_\_\_\_ hrs. SCREEN SIZE: \_\_\_\_\_ mesh

DESANDER: \_\_\_\_\_ hrs.  DESILTER: \_\_\_\_\_ hrs.  OTHER: \_\_\_\_\_ hrs.

CENTRIFUGE: \_\_\_\_\_ hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER	
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL		

# Sunshine Gas Limited DAILY DRILLING REPORT 2

Well : Lacerta 12 Current Depth : 103.1 m No. Days : 2 RKB : 0.0 m	6:00 5-May-07 to	18:00 5-May-07	Permit : ATP - 795P Progress : 0.0 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2"	102.0 m GL			
Drilling Rep Days: Brendan Turner		Toolpusher: Frank Annand	Drilling Contractor: Mitchell Drilling		Last LOT:	Weather: Fine		
Drilling Rep Nights: na		WellSite Geologist: Sherrin Nicholson						

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.	
1	P	Travel	SURFACE DAMAGES		0	
1	P	Circulate hole	ROAD, LOC. & SURV.		0	
1/2	P	POOH	CONDUCT. / RATHOLE		0	
1 1/2	P	RIH with 4 1/2" steel casing to 102m	R.U. / R.D. / MOVE		10,000	
1/2	P	Mix cement and pump	RIG (DAYWORK)	4,120	7,080	
8 1/2	P	WOC	RIG (FTG. / TURNKEY)		7,420	
1	P	Travel	FUEL	64	128	
			MUD & SERVICES	1,290	1,290	
			BITS / RMRS. / B.H.A.		0	
			DIRECTIONAL EQUIPT.		0	
			RENTAL EQUIPMENT	135	270	
			LOG / MUDLOG / DST		0	
			INSPECTION & REPAIR		0	
			AIR PACK		0	
			CEMENT & EQUIPT.		0	
			TRANSPORTATION		0	
			SUPERVISION	600	1,200	
			WATER CART	1,000	1,000	
			INSURANCE / LEGAL		0	
			OVERHEAD		0	
			CASING & ACCESS.		0	
			WELLHEAD EQUIPT.		0	
			CASING EXIT SYSTEM		0	
			HAUL-OFF		0	
			STUCK & FISHING		0	
			ACCOMMODATION & MEALS	500	1,000	
			PROTECTIVE CASING		0	
			SURFACE CASING		0	
			CORE ANALYSIS	1,600	3,200	
			PLUG & ABANDON		0	
			MISCELLANEOUS		0	
14		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	9,309	32,588

B.H.A.: LENGTH: m Since last inspection: hrs.  
 PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: hrs. SCREEN SIZE: mesh

DESANDER: hrs.  DESILTER: hrs.  OTHER: hrs.

CENTRIFUGE: hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER		
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL			

# Sunshine Gas Limited DAILY DRILLING REPORT 3

Well : Lacerta 12 Current Depth : 174.3 m No. Days : 3 RKB : 0.0 m	6:00 6-May-07 to	18:00 6-May-07	Permit : ATP - 795P Progress : 71.0 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2"	102.0 m GL			
			Last LOT:					
Drilling Rep Days:	Brendan Turner	Toolpusher:	Frank Annand	Drilling Contractor:	Mitchell Drilling			
Drilling Rep Nights:	na	WellSite Geologist:	Sherrin Nicholson	Weather:	Fine			

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.
1	P	Travel	SURFACE DAMAGES		0
2 1/2	P	Dig cellar	ROAD, LOC. & SURV.		0
1 1/2	P	Nipple up BOP	CONDUCT. / RATHOLE		0
1/4	P	Pressure test BOP - 100PSI and 600PSI	R.U. / R.D. / MOVE		10,000
1/2	P	Ream cement from 92.90m	RIG (DAYWORK)	1,900	8,980
7	P	Drill 96mm HQ3 core from 103.1m - 174.3m	RIG (FTG. / TURNKEY)	8,700	16,120
1	P	Travel	FUEL	64	192
			MUD & SERVICES		1,290
			BITS / RMRS. / B.H.A.		0
			DIRECTIONAL EQUIPT.		0
			RENTAL EQUIPMENT	135	405
			LOG / MUDLOG / DST		0
			INSPECTION & REPAIR		0
			AIR PACK		0
			CEMENT & EQUIPT.		0
			TRANSPORTATION		0
			SUPERVISION	600	1,800
			WATER CART	500	1,500
			INSURANCE / LEGAL		0
			OVERHEAD		0
			CASING & ACCESS.		0
			WELLHEAD EQUIPT.		0
			CASING EXIT SYSTEM		0
			HAUL-OFF		0
			STUCK & FISHING		0
			ACCOMMODATION & MEALS	500	1,500
			PROTECTIVE CASING		0
			SURFACE CASING		0
			CORE ANALYSIS	1,600	4,800
			PLUG & ABANDON		0
			MISCELLANEOUS		0
13 3/4		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	13,999
					46,587

B.H.A.: 96mm HQ3 Drill bit, core barrel 7.2m

LENGTH: m Since last inspection: hrs.  
PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: hrs. SCREEN SIZE: mesh

DESANDER: hrs.  DESILTER: hrs.  OTHER: hrs.

CENTRIFUGE: hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER		
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL			

# Sunshine Gas Limited DAILY DRILLING REPORT 4

Well : Lacerta 12 Current Depth : 210.3 m No. Days : 4 RKB : 0.0 m	6:00 7-May-07 to	18:00 7-May-07	Permit : ATP - 795P Progress : 36.0 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2"	102.0 m GL			
Drilling Rep Days: Brendan Turner		Toolpusher: Frank Annand	Drilling Contractor: Mitchell Drilling		Last LOT:	Weather: Fine		
Drilling Rep Nights: na		WellSite Geologist: Sherrin Nicholson						

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.
1	P	Travel	SURFACE DAMAGES		0
1/2	P	Circulate and pull last stand	ROAD, LOC. & SURV.		0
3/4	P	POOH for DST	CONDUCT. / RATHOLE		0
3/4	U	Standby on DST	R.U. / R.D. / MOVE		2,500
3/4	P	RIH with DST tools	RIG (DAYWORK)	2,880	11,860
3 1/4	P	Run DST	RIG (FTG. / TURNKEY)	4,500	20,620
1/2	P	Reverse Circulate	FUEL	64	256
3/4	P	POOH with tools	MUD & SERVICES		1,290
1/2	P	RIH	BITS / RMRS. / B.H.A.		0
4 1/4	P	Drill from 174.3 - 210.3m	DIRECTIONAL EQUIPT.		0
1	P	Travel	RENTAL EQUIPMENT	135	540
			LOG / MUDLOG / DST	9000	9,000
			INSPECTION & REPAIR		0
			AIR PACK		0
			CEMENT & EQUIPT.		0
			TRANSPORTATION		0
			SUPERVISION	600	2,400
			WATER CART		1,500
			INSURANCE / LEGAL		0
			OVERHEAD		0
			CASING & ACCESS.		0
			WELLHEAD EQUIPT.		0
			CASING EXIT SYSTEM		0
			HAUL-OFF		0
			STUCK & FISHING		0
			ACCOMMODATION & MEALS	500	2,000
			PROTECTIVE CASING		0
			SURFACE CASING		0
			CORE ANALYSIS	1,600	6,400
			PLUG & ABANDON		0
			MISCELLANEOUS		0
14		TOTAL HRS. TODAY	0	ROTATING HRS. TODAY	TOTAL COST (\$): 19,279
					58,366

B.H.A.: LENGTH: m Since last inspection: hrs.  
 PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: hrs. SCREEN SIZE: mesh

DESANDER: hrs.  DESILTER: hrs.  OTHER: hrs.

CENTRIFUGE: hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER		
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL			

# Sunshine Gas Limited DAILY DRILLING REPORT 5

Well : Lacerta 12 Current Depth : 318.3 m No. Days : 5 RKB : 0.0 m	6:00 8-May-07 to	18:00 8-May-07	Permit : ATP - 795P Progress : 108.0 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2	102.0 m GL			
Drilling Rep Days: Brendan Turner		Toolpusher: Frank Annand	Drilling Contractor: Mitchell Drilling		Last LOT:	Weather: Fine and cool		
Drilling Rep Nights: na		WellSite Geologist: Sherrin Nicholson						

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.	
1	P	Travel	SURFACE DAMAGES		0	
1/2	P	Circulate hole, pull last run from previous day	ROAD, LOC. & SURV.		0	
11 1/4	P	Drill from 210.3 - 318.3m	CONDUCT. / RATHOLE		0	
1/4	P	Circulate	R.U. / R.D. / MOVE		2,500	
1	P	Travel	RIG (DAYWORK)	300	12,160	
			RIG (FTG. / TURNKEY)	14,260	34,880	
			FUEL	64	320	
			MUD & SERVICES		1,290	
			BITS / RMRS. / B.H.A.		0	
			DIRECTIONAL EQUIPT.		0	
			RENTAL EQUIPMENT	135	675	
			LOG / MUDLOG / DST		9,000	
			INSPECTION & REPAIR		0	
			AIR PACK		0	
			CEMENT & EQUIPT.		0	
			TRANSPORTATION		0	
			SUPERVISION	600	3,000	
			WATER CART		1,500	
			INSURANCE / LEGAL		0	
			OVERHEAD		0	
			CASING & ACCESS.		0	
			WELLHEAD EQUIPT.		0	
			CASING EXIT SYSTEM		0	
			HAUL-OFF		0	
			STUCK & FISHING		0	
			ACCOMMODATION & MEALS	500	2,500	
			PROTECTIVE CASING		0	
			SURFACE CASING		0	
			CORE ANALYSIS	1,600	8,000	
			PLUG & ABANDON		0	
			MISCELLANEOUS		0	
14		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	17,459	75,825

B.H.A.: LENGTH: m Since last inspection: hrs.  
 PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: hrs. SCREEN SIZE: mesh

DESANDER: hrs.  DESILTER: hrs.  OTHER: hrs.

CENTRIFUGE: hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER	
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL		

# Sunshine Gas Limited DAILY DRILLING REPORT 6

Well : Lacerta 12 Current Depth : 402.3 m No. Days : 6 RKB : 0.0 m	6:00 9-May-07 to	18:00 9-May-07	Permit : ATP - 795P Progress : 84.0 m AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
				4 1/2	102.0 m GL			
				Last LOT:	200 psi @ 105m KB			

## Present Operations @ Report Time :

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.
1	P	Travel	SURFACE DAMAGES		0
1/2	P	Circulate hole	ROAD, LOC. & SURV.		0
10	P	Drill from 318.3 - 402.3m	CONDUCT. / RATHOLE		0
1	P	Travel	R.U. / R.D. / MOVE		2,500
			RIG (DAYWORK)	200	12,360
			RIG (FTG. / TURNKEY)	11,111	45,991
			FUEL	64	384
			MUD & SERVICES		1,290
			BITS / RMRS. / B.H.A.		0
			DIRECTIONAL EQUIPT.		0
			RENTAL EQUIPMENT	135	810
			LOG / MUDLOG / DST		9,000
			INSPECTION & REPAIR		0
			AIR PACK		0
			CEMENT & EQUIPT.		0
			TRANSPORTATION		0
			SUPERVISION	600	3,600
			WATER CART		1,500
			INSURANCE / LEGAL		0
			OVERHEAD		0
			CASING & ACCESS.		0
			WELLHEAD EQUIPT.		0
			CASING EXIT SYSTEM		0
			HAUL-OFF		0
			STUCK & FISHING		0
			ACCOMMODATION & MEALS	500	3,000
			PROTECTIVE CASING		0
			SURFACE CASING		0
			CORE ANALYSIS	1,600	9,600
			PLUG & ABANDON		0
			MISCELLANEOUS (LOGGING)		0
12 1/2		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	14,210
					90,035

B.H.A.: LENGTH: m Since last inspection: hrs.  
 PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

## BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: hrs. SCREEN SIZE: mesh

DESANDER: hrs.  DESILTER: hrs.  OTHER: hrs.

CENTRIFUGE: hrs. REMARKS: \_\_\_\_\_

## MUD MIXED:

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER		
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL			

**Sunshine Gas Limited DAILY DRILLING REPORT 7**

Well : Lacerta 12 Current Depth : 414.3 m No. Days : 7 RKB : 0.0 m	6:00 10-May-07 to	18:00 10-May-07	Rig : Mitchell Rig 123 Progress : 12.0 m ROP : 12.0 m hr AFE Days : 10 Formation : Injune Creek Grp Proposed TD : 420 m	CASING	Depth	Weight	Depth KB	DEVIATION
	Permit : ATP - 795P	Rig : Mitchell Rig 123		4 1/2	102.0 m GL			
	Progress : 12.0 m	ROP : 12.0 m/hr						
	AFE Days : 10	Formation : Injune Creek Grp						
		Proposed TD : 420 m						
	Last LOT:							

**Present Operations @ Report Time :**

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.	
1	P	Travel	SURFACE DAMAGES		0	
3/4	P	Circulate hole	ROAD, LOC. & SURV.		0	
1	P	Drill from 402.3 - 414.3m(TD)	CONDUCT. / RATHOLE		0	
3/4	P	Circulate high viscosity pill	R.U. / R.D. / MOVE		2,500	
1 1/4	P	Pull up to shoe for wiper trip, RIH	RIG (DAYWORK)	3,760	16,120	
1/2	P	Circulate	RIG (FTG. / TURNKEY)	1,700	47,691	
1	P	POOH for loggers	FUEL	64	448	
6 3/4	P	Standby on logging - gamma, caliper, density, induction, acoustic scanner	MUD & SERVICES		1,290	
1	P	Travel	BITS / RMRS. / B.H.A.		0	
			DIRECTIONAL EQUIPT.		0	
			RENTAL EQUIPMENT	135	945	
			LOG / MUDLOG / DST	10,000	19,000	
			INSPECTION & REPAIR		0	
			AIR PACK		0	
			CEMENT & EQUIPT.		0	
			TRANSPORTATION		0	
			SUPERVISION	600	4,200	
			WATER CART		1,500	
			INSURANCE / LEGAL		0	
			OVERHEAD		0	
			CASING & ACCESS.		0	
			WELLHEAD EQUIPT.		0	
			CASING EXIT SYSTEM		0	
			HAUL-OFF		0	
			STUCK & FISHING		0	
			ACCOMMODATION & MEALS	500	3,500	
			PROTECTIVE CASING		0	
			SURFACE CASING		0	
			CORE ANALYSIS	1,600	11,200	
			PLUG & ABANDON		0	
			MISCELLANEOUS		0	
14		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	18,359	108,394

B.H.A.: LENGTH: m Since last inspection: hrs.

PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: \_\_\_\_\_ lb DRILL PIPE: \_\_\_\_\_

**BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:**

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: \_\_\_\_\_ hrs. SCREEN SIZE: \_\_\_\_\_ mesh

DESANDER: \_\_\_\_\_ hrs.  DESILTER: \_\_\_\_\_ hrs.  OTHER: \_\_\_\_\_ hrs.

CENTRIFUGE: \_\_\_\_\_ hrs. REMARKS: \_\_\_\_\_

**MUD MIXED:**

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER	
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL		

**Sunshine Gas Limited DAILY DRILLING REPORT 8**

Well : Lacerta 12  
 Current Depth : 414.3 m  
 No. Days : 8  
 RKB : 0.0 m  
 Drilling Rep Days: Brendan Turner  
 Drilling Rep Nights: na

6:00 11-May-07 to 18:00 11-May-07  
 Permit : ATP - 795P Rig : Mitchell Rig 123  
 Progress : 0.0 m ROP : 0.0 m/hr  
 AFE Days : 10 Formation : Injune Creek Grp  
 Proposed TD : 420 m

CASING	Depth	Weight	Depth KB	DEVIATION
4 1/2	102.0 m GL			

Last LOT:

Drilling Contractor: Mitchell Drilling

Weather: Fine

**Present Operations @ Report Time :**

HOURS	P/U	(LIST EVENTS IN CHRONOLOGICAL ORDER:)	COST (\$)	TODAY	CUMUL.
1	P	Travel	SURFACE DAMAGES		0
1	U	Standby on DST crew	ROAD, LOC. & SURV.		0
1	P	RIH with DST tools and rods	CONDUCT. / RATHOLE		0
3 1/2	P	Run DST	R.U. / R.D. / MOVE		2,500
1/2	P	Reverse circulate	RIG (DAYWORK)	4,200	20,320
1 3/4	P	POOH, EOH	RIG (FTG. / TURNKEY)		47,691
4 1/4	P	Pack up site for relocation to Blackwater	FUEL	64	512
1	P	Travel	MUD & SERVICES		1,290
			BITS / RMRS. / B.H.A.		0
			DIRECTIONAL EQUIPT.		0
			RENTAL EQUIPMENT	135	1,080
			LOG / MUDLOG / DST	8,000	27,000
			INSPECTION & REPAIR		0
			AIR PACK		0
			CEMENT & EQUIPT.		0
			TRANSPORTATION		0
			SUPERVISION	600	4,800
			WATER CART		1,500
			INSURANCE / LEGAL		0
			OVERHEAD		0
			CASING & ACCESS.		0
			WELLHEAD EQUIPT.		0
			CASING EXIT SYSTEM		0
			HAUL-OFF		0
			STUCK & FISHING		0
			ACCOMMODATION & MEALS	500	4,000
			PROTECTIVE CASING		0
			SURFACE CASING		0
			CORE ANALYSIS		11,200
			PLUG & ABANDON		0
			MISCELLANEOUS		0
14		TOTAL HRS. TODAY	ROTATING HRS. TODAY	TOTAL COST (\$):	13,499
					121,893

B.H.A.: LENGTH: m Since last inspection: hrs.  
 PU/ SO/ ROT: \_\_\_\_\_ / MAX. ALLOW. PULL: lb DRILL PIPE: \_\_\_\_\_

**BIT RECORD: HYDRAULICS: MUD RECORD @ LOSS SUMMARY:**

NUMBER	1	2	PUMP No.:	No. 1	No. 2	COMPANY:		BUCKET	HRS	\$ EST
SIZE, in.			STROKE, in.			DENSITY	ppg.	EQPT FAILURE		
TYPE			LINER, in.			VISCOSITY	sec/qt.	SURFACE		
SERIAL No.			S.P.M.			PV / YP	/	DOWNHOLE		
TFA			RATE, G.P.M.			API W/L.		EXECUTION		
W.O.B., lb.			PRESSURE, psi.			CAKE		CHG IN SCOPE		
R.P.M.			AV/DP, ft./min.			pH		PORE PRESS.		
DEPTH OUT, m.			AV/DC, ft./min.			GELS: I/10	/	STUCK PIPE		
DEPTH IN, m.			JET VEL., ft./sec.			CHLOR.	ppm.	GEOLOGIC		
FOOTAGE			BIT HHP.			CALCIUM	ppm.	OTHER		
HOURS			PUMP HHP.			EXC. LM.	ppb.			
R.O.P., m/hr.			E.C.D., ppg.			SOLIDS				
I.A.D.C. DULL GRADING:			H.S.I.			SAND				
TEETH:			PUMP #1:			KCL				
I: O: D: Loc.:			PUMP #2:			PHPA	/			
BEARINGS: B:			S.P.R. - #1:		SPM @	# Pf/Mf				
GAUGE: G:			S.P.R. - #2:		SPM @	# M.B.T.	ppb.			
REMARKS: O: R:			REMARKS:			EL. STAB.	v.			

SOLIDS CONTROL EQUIPMENT RUN:  SHALE SHAKER: \_\_\_\_\_ hrs. SCREEN SIZE: \_\_\_\_\_ mesh

DESANDER: \_\_\_\_\_ hrs.  DESILTER: \_\_\_\_\_ hrs.  OTHER: \_\_\_\_\_ hrs.

CENTRIFUGE: \_\_\_\_\_ hrs. REMARKS: \_\_\_\_\_

**MUD MIXED:**

KCL	BARITE	CAUSTIC	SODA ASH	PHPA	DESCO	OTHER	
Xanthan Gu	Pac-R	Pac-LV	Gel	Biocide G	OIL		

## **APPENDIX 2**

### **DAILY GEOLOGICAL REPORTS**

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	04-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	1	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	0	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	102.8m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	0M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	102.8M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** POOH, run acoustic scanner on Lacerta 13, blockage at 400m, log acoustic scanner from blockage, move site while logging, set up over Lacerta 12, drill 6m for PVC casing, cement, drill to 102.8m

**NEXT 24 HOURS:** Run casing, WOC

**CURRENT OPERATION @ 18:00 HRS:** Drilling to 102.8m

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m  
**ROP (Range):** 54.6m/hr  
**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 102.8m  
**ROP (Range):** 34.4m/hr  
**Av. ROP:** 34.4m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	05-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	2	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	1	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	103.1m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	103.1M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	0M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Circulate, POOH, RIH with 4 ½" steel casing to 102m, mix cement and pump, WOC

**NEXT 24 HOURS:** Dig cellar, nipple up BOP, RIH, pressure test BOP, ream cement, core

**CURRENT OPERATION @ 18:00 HRS:** WOC

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 103.1m

**ROP (Range):** 34.4m/hr

**Av. ROP:** 34.4m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	06-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	3	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	2	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	174.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	103.1M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	71M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Dig cellar, nipple up BOP, pressure test BOP, run to bottom, ream cement from 92.90m, reach core depth at 103.1m, drill to 174.3m

**NEXT 24 HOURS: DST**

**CURRENT OPERATION @ 18:00 HRS: Drilling**

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 174.3m

**ROP (Range):** 10.1m/hr

**Av. ROP:** 10.1m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands
3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present

**WELLSITE GEOLOGIST**



**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	07-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	4	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	3	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	210.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	174.3M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	36M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Circulate, POOH for DST, RIH with DST tools – packer at 142m, run DST, drill from 174.3 – 210.3m

**NEXT 24 HOURS:** Drilling

**CURRENT OPERATION @ 18:00 HRS:** Drilling

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 210.3m

**ROP (Range):** 8.5m/hr

**Av. ROP:** 8.5m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands
3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	08-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	5	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	4	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	318.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	210.3M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	108M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Circulate hole, drill from 210.3 – 318.3m

**NEXT 24 HOURS:** Drilling

**CURRENT OPERATION @ 18:00 HRS:** Drilling

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 318.3m

**ROP (Range):** 9.6m/hr

**Av. ROP:** 9.6m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands
3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	09-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	6	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	5	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	402.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	318.3M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	84M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Circulate hole, drill from 318.3 – 402.3m

**NEXT 24 HOURS:** Drilling

**CURRENT OPERATION @ 18:00 HRS:** Drilling

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 402.3m

**ROP (Range):** 8.4m/hr

**Av. ROP:** 8.4m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands
3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present

4	225.7	226.7	1m	100% coal with calcite infilling fractures, slightly crushed, mostly dull coal with minor bright bands
5	297.23	297.73	0.5m	All coal, some calcite infilling of fractures, carbonaceous at the top of the unit, minor bubbling
6	359.92	360.42	0.5m	Coal, slightly crushed, mostly C6, some bright bands throughout, bubbling around coal in surrounding siltstones
7	365.07	365.57	0.5m	Coal, some calcite infilling fractures, mostly dull coal, minor stoney coal,
8	378.92	379.44	0.52m	Coal, minor bubbling, some bright bands C3 middle of unit,

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	10-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	7	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	6	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	414.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	402.3M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	12M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Circulate, drill to 414.3m(TD), circulate high viscosity pill, pull out to shoe, RIH, Circulate hole, POOH, wireline logging – gamma, calliper, density, induction and acoustic scanner

**NEXT 24 HOURS: DST**

**CURRENT OPERATION @ 18:00 HRS: Logging**

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m  
**ROP (Range):** 54.6m/hr  
**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 414.3m  
**ROP (Range):** 12m/hr  
**Av. ROP:** 12m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands

3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present
4	225.7	226.7	1m	100% coal with calcite infilling fractures, slightly crushed, mostly dull coal with minor bright bands
5	297.23	297.73	0.5m	All coal, some calcite infilling of fractures, carbonaceous at the top of the unit, minor bubbling
6	359.92	360.42	0.5m	Coal, slightly crushed, mostly C6, some bright bands throughout, bubbling around coal in surrounding siltstones
7	365.07	365.57	0.5m	Coal, some calcite infilling fractures, mostly dull coal, minor stoney coal,
8	378.92	379.44	0.52m	Coal, minor bubbling, some bright bands C3 middle of unit,

**WELLSITE GEOLOGIST**

Sherrin Nicholson

**CONFIDENTIAL****LACERTA 12**

<b>Date:</b>	11-05-07	<b>Rig:</b>	Dominion Rig 123
<b>Report Number:</b>	8	<b>Bit Diameter:</b>	3 ½"
<b>Report Period:</b>	12hr	<b>Last Casing:</b>	4"
<b>Spud Date:</b>	04-05-07	<b>FIT:</b>	
<b>Days From Spud:</b>	7	<b>Mud Weight:</b>	8.4ppg
<b>Depth @ 18:00 Hrs:</b>	414.3m	<b>Viscosity:</b>	33sec/qt
<b>Lag Depth:</b>		<b>Mud Type:</b>	Water/Polymer
<b>Last Depth:</b>	414.3M	<b>Mud Chlorides:</b>	Na
<b>Progress:</b>	0M	<b>Est. Pore Pressure:</b>	Na
<b>Water Depth:</b>	Na	<b>DXC:</b>	Na
<b>KB:</b>	411.2	<b>Last Survey:</b>	Na
		<b>Deviation:</b>	Na

**OPERATIONS SUMMARY**

**12 HOUR SUMMARY:** Standby on DST crew, packer at 344.4m, RIH with DST tools, run DST, reverse circulate, POOH, EOH, Pack up site, pack up for relocation to Blackwater

**NEXT 24 HOURS:** Relocate to Blackwater

**CURRENT OPERATION @ 18:00 HRS:** Packing up site for mobilisation to Blackwater

**GEOLOGICAL SUMMARY****LITHOLOGY****Gubberamunda Sandstone**

**INTERVAL:** Surface to 24m

**ROP (Range):** 54.6m/hr

**Av. ROP:** 54.6m/hr

Clear yellow to orange fine – medium grained sands, loose, good porosity.

**Injune Creek Group Sediments – Jurassic.**

**INTERVAL:** 54 – 414.3m

**ROP (Range):** 12m/hr

**Av. ROP:** 12m/hr

Siltstone, sandstones, coal – Grey siltstone, sandstone light grey, fine to medium, clay matrix, some coaly fragments

**SAMPLES ON TEST**

Sample #	Top	Base	Sample length	Description
1	115.56	116.06	0.5m	Coal – Carbonaceous band middle of unit, mostly stoney coal, some minor bright bands, very minor bubbling
2	152.87	153.87	1m	Coal – Coherent, vertical calcite veins throughout, 100% coal, some thin stoney coal bands
3	154.62	155.62	1m	Coal – 100% coal, rare thin stoney coal bands, slightly crushed middle unit, bright bands throughout, bubbling present

4	225.7	226.7	1m	100% coal with calcite infilling fractures, slightly crushed, mostly dull coal with minor bright bands
5	297.23	297.73	0.5m	All coal, some calcite infilling of fractures, carbonaceous at the top of the unit, minor bubbling
6	359.92	360.42	0.5m	Coal, slightly crushed, mostly C6, some bright bands throughout, bubbling around coal in surrounding siltstones
7	365.07	365.57	0.5m	Coal, some calcite infilling fractures, mostly dull coal, minor stoney coal,
8	378.92	379.44	0.52m	Coal, minor bubbling, some bright bands C3 middle of unit,

**WELLSITE GEOLOGIST**

Sherrin Nicholson

## **APPENDIX 3**

### **CUTTING DESCRIPTION**



**Lacerta 12**  
**Cuttings Descriptions**

<b>Base Depth</b>	<b>Lithology</b>
3.8m	SOIL – dark brown, unconsolidated
6.8m	SAND – light orangey brown, loose / unconsolidated
18.8m	CLAY – rare pebbles throughout, light orangey brown in colour, friable / firm, highly weathered
24.8m	SANDSTONE – sandy, light grey in colour, very fine, slightly weathered, very fine grained
78.8m	SANDSTONE – siltstone bands throughout, dark grey in colour, fresh, fine to medium grained, moderately hard
81.8m	SANDSTONE – coaly fragments throughout, dark grey in colour, fine to medium grained, moderately hard
90.8m	SANDSTONE – siltstone bands, light grey in colour, fine to medium grained
103.1m	SANDSTONE – coaly fragments, light grey in colour, firm, medium grained

# **APPENDIX 4**

## **COAL BED METHANE REPORT**



**COAL BED METHANE ANALYSIS FINAL REPORT**  
**of**  
***LACERTA-12***  
**for**  
***SUNSHINE GAS LIMITED***  
**by**  
**ACS LABORATORIES PTY LTD**



13<sup>th</sup> November, 2007

Sunshine Gas Limited  
Level 19 Waterfront Place,  
1 Eagle Street,  
BRISBANE QLD 4000

Attention: Mark Di Bacco

**COAL BED METHANE ANALYSIS - FINAL REPORT 1009-06**

**LACERTA-12**

Please find enclosed final results of the coal bed methane study for the samples taken from the above well.

If ACS can assist you in any way, or if you require any further information, please do not hesitate to contact the undersigned.

**GREGORY COCHRANE**  
Supervisor – Field & Coal Bed Methane Services

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# C O N T E N T S

<u>CHAPTERS</u>	<u>Page</u>
SUMMARY	
1. DESCRIPTION OF EXPERIMENTS	
1.1 Gas Content by Seam Temperature Desorption .....	7
1.2 Compositional Analysis of Gas .....	9
1.3 Proximate Analysis .....	9
1.4 Dry and Ash Free Normalisation of Gas Content .....	10
1.5 Calculation of Desorption Coefficient .....	10
1.6 Adsorption Isotherm .....	11
1.7 Maceral Analysis .....	12
2. GAS DESORPTION RESULTS .....	13
3. MACERAL ANALYSES .....	22
4. ADSORPTION ISOTHERMS .....	25
5. DST WATER ANALYSIS .....	27
6. CORE SAMPLING TIMESHEET .....	30

## SUMMARY

This report outlines the methods and results of gas desorption testing and associated coal property analyses performed on coal seams located within the Juandah and Taroom Coal Measures of the Walloon Sub-Group intersected during exploration drilling by Sunshine Gas Limited in ATP 795P, Queensland undertaken in May, 2007.

ACS Laboratories Pty Ltd was contracted by Sunshine Gas Limited to provide a mobile field laboratory and field personnel to recover HQ3 core samples, provide core handling and conduct reservoir temperature desorption testing as per the Australian Standard, AS 3980. Further analysis was to take place at the ACS Brisbane based laboratory. The methodology adopted for all sampling and testing is detailed in Chapter 1. The modified gas content data and results of all associated gas and core analyses are presented in a series of tables and graphs in the Chapter 2.

The Lacerta-12 well was part of an appraisal program for coal bed methane and was cored from a depth of 103.10m to a total depth of 414.53m. Coal and carbonaceous shale samples selected by a third party were placed into desorption canisters and monitored for the determination of gas content. Subsequent to the desorption program, the coal material was slabbed. Sub-samples were then removed from one half of the core for residual gas, proximate, maceral and adsorption isotherm analyses.

The recovery of the core was generally good with the core being relatively consolidated over most of the coal intervals. The samples however were widely inconsistent with respect to coal content. Some samples consisted mainly of coal; others contained alternating coal and carbonaceous shale bands, while some samples contained significant amounts of non-carbonaceous material. The coal was dull with moderate banding, poorly developed cleating and in some instances was fractured with calcite infill. Occasional bands of tuffaceous silt were also present.

As received, total gas contents of the seams averaged;

Juandah A – 2.81 scc/g ( $m^3/t$ )  
Juandah B – 2.60 scc/g ( $m^3/t$ )  
Juandah C – 3.15 scc/g ( $m^3/t$ )  
Juandah D – 1.87 scc/g ( $m^3/t$ )  
Taroom – 3.40 scc/g ( $m^3/t$ )

Dry and ash free gas contents of the seams averaged;

Juandah A – 4.02 scc/g ( $m^3/t$ )  
Juandah B – 3.08 scc/g ( $m^3/t$ )  
Juandah C – 3.51 scc/g ( $m^3/t$ )  
Juandah D – 2.66 scc/g ( $m^3/t$ )  
Taroom – 4.13 scc/g ( $m^3/t$ )

The results were of good quality with no sign of canister leakage during the desorption testing.

The coals have varying ash contents though the results are skewed by the presence of non-coal material and carbonaceous shales. The moisture content of the Juandah coals appears to decrease with an increase in depth. Given that it is generally accepted that non-coal material does not contribute significantly to the overall gas content of a given coal seam, it was necessary for comparative purposes to normalise the gas content data to a dry, ash-free (DAF) basis.

The composition of the desorbed gases was determined by GC and reported on an air free basis. The desorbed gases were low in nitrogen with trace carbon dioxide.

The sorption time, or desorption coefficient, of the coal samples corresponds to the time taken to desorb 63% of the total desorbable gas volume. This measure is used as an independent estimate of the gas diffusion constants for coals. A number of factors can affect the rate of diffusion such as maceral type and the recovery / level of consolidation of the core. In this instance the latter was consistent across the three seams. The main influence on the coefficients of diffusion is from permeability in a distressed state i.e. a direct reflection of cleat development and fracturing (permeability). Taking into account lost gas and desorbed gas ( $Q_1 + Q_2$ ), the sorption times of the coals are considered to be relatively low.

The maceral analysis indicates that the coal consists mainly of Vitrinite (predominately Telocollinite and Desmocollinite), with minor Liptinite (predominately Suberinite) and trace Inertinite. It contains minerals consisting of shale with minor disseminated clays and trace carbonate, quartz and pyrite.

A drill stem test (DST) over the relevant coal seams recovered water to surface with no gas indicating that the coals are under-saturated with respect to gas at this location. The results of the adsorption isotherm confirm this.

The slabbed core is being stored in ACS Brisbane's core facility pending delivery of the core to Sunshine Gas Roma.

# GAS CONTENT RESULTS SUMMARY

**Client:** Sunshine Gas Limited  
**Well:** Lacerta-12

Sample #	Seam	Top Depth (m)	As Received Q1		As Received Q2		As Received Q3		As Received Q1 + Q2		As Received Total		DAF Q1		DAF Q2		DAF Q3		DAF Q1 + Q2		DAF Total		Sorption Time, Days (65%)	
			%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1	Juandah A	115.56	0.11	4	2.62	93	0.08	3	2.73		2.81	0.16	4	3.75	93	0.11	3	3.91		4.02		30.6		28.7
*2	Juandah B	152.87	0.04	3	1.04	85	0.15	12	1.08		1.23	0.06	3	1.51	84	0.22	12	1.57		1.79		13.4		12.6
3	Juandah B	154.62	0.03	1	2.50	96	0.07	3	2.53		2.60	0.04	1	2.96	96	0.08	3	3.00		3.08		19.2		18.9
4	Juandah C	225.70	0.09	3	2.96	94	0.10	3	3.05		3.15	0.10	3	3.30	94	0.11	3	3.40		3.51		9.9		9.4
5	Juandah D	297.23	0.03	2	1.79	96	0.05	3	1.82		1.87	0.05	2	2.54	95	0.07	3	2.59		2.66		15.2		14.8
6	Taroom	359.92	0.43	11	3.24	85	0.15	4	3.67		3.82	0.54	11	4.07	85	0.19	4	4.61		4.80		9.5		7.6
7	Taroom	365.02	0.13	4	2.77	93	0.08	3	2.90		2.98	0.15	4	3.22	93	0.09	3	3.37		3.46		7.2		6.7
*8	Taroom	378.92	0.04	1	1.88	70	0.78	29	1.92		2.70	0.05	1	2.51	70	1.04	29	2.56		3.60		14.9		14.7
Averages	Seam	Top Depth (m)	As Received Q1	%	As Received Q2	%	As Received Q3	%	As Received Q1 + Q2		As Received Total		DAF Q1	%	DAF Q2	%	DAF Q3	%	DAF Q1 + Q2		DAF Total		Q2	(Q1+Q2)
1	Juandah A	115.56	0.11	4	2.62	93	0.08	3	2.73		2.81	0.16	4	3.75	93	0.11	3	3.91		4.02		30.60		28.70
3	Juandah B	154.00	0.03	1	2.50	96	0.07	3	2.53		2.60	0.04	1	2.96	96	0.08	3	3.00		3.08		19.20		18.90
4	Juandah C	225.70	0.09	3	2.96	94	0.10	3	3.05		3.15	0.10	3	3.30	94	0.11	3	3.40		3.51		9.90		9.40
5	Juandah D	297.23	0.03	2	1.79	96	0.05	3	1.82		1.87	0.05	2	2.54	95	0.07	3	2.59		2.66		15.20		14.80
6,7	Taroom	369.67	0.28	8	3.01	88	0.12	3	3.29		3.40	0.35	8	3.65	88	0.14	3	3.99		4.13		8.35		7.15

\* Samples 2 and 8 were quick crush samples and as a result were not used in averaging the seams as they would skew the data.

## ***PROXIMATE ANALYSIS RESULTS SUMMARY***

**Client:** Sunshine Gas Limited

**Well:** Lacerta-12

Cannister #	Seam	Top Depth (m)	Ash	Moisture	Volatile Matter	Fixed Carbon
1	Juandah A	115.56	39.0	5.6	28.9	26.5
2	Juandah B	152.87	25.9	5.0	35.1	34.0
3	Juandah B	154.62	11.6	4.0	44.2	40.2
4	Juandah C	225.70	6.8	3.4	45.7	44.1
5	Juandah D	297.23	27.0	2.5	40.4	30.1
6	Taroom	359.92	17.5	2.8	39.4	40.3
7	Taroom	365.02	10.6	3.1	39.6	46.7
8	Taroom	378.92	21.8	3.1	37.0	38.1
Averages	Seam	Top Depth (m)	Ash	Moisture	Volatile Matter	Fixed Carbon
1	Juandah A	115.56	39.00	5.60	28.90	26.50
2,3	Juandah B	154.00	18.75	4.50	39.65	37.10
4	Juandah C	225.70	6.80	3.40	45.70	44.10
5	Juandah D	297.23	27.00	2.50	40.40	30.10
6,7,8	Taroom	369.67	16.63	3.00	38.67	41.70

# ***DESORBED GAS ANALYSIS RESULTS SUMMARY***

**Client:  
Well:**

Sunshine Gas Limited  
Lacerta-12

Cannister #	Seam	Top Depth (m)	Early			Late		
			Methane	Ethane	Nitrogen	Carbon Dioxide	Methane	Ethane
1	Juandah A	115.56	96.01	0.01	3.86	0.12	99.05	0.02
2	Juandah B	152.87	96.88	0.01	2.96	0.15	98.05	0.03
3	Juandah B	154.62	97.04	0.02	2.63	0.31	98.52	0.05
4	Juandah C	225.70	96.09	0.03	3.65	0.23	96.80	0.08
5	Juandah D	297.23	95.47	0.07	4.21	0.25	97.69	0.12
6	Taroom	359.92	96.10	0.06	3.55	0.29	96.75	0.15
7	Taroom	365.02	95.01	0.10	4.58	0.31	98.25	0.16
8	Taroom	378.92	96.22	0.05	3.51	0.22	98.06	0.16
Averages	Seam	Top Depth (m)	Methane	Ethane	Nitrogen	Carbon Dioxide	Methane	Ethane
1	Juandah A	115.56	96.01	0.01	3.86	0.12	99.05	0.02
2,3	Juandah B	154.00	96.96	0.02	2.80	0.23	98.29	0.04
4	Juandah C	225.70	96.09	0.03	3.65	0.23	96.80	0.08
5	Juandah D	297.23	95.47	0.07	4.21	0.25	97.69	0.12
6,7,8	Taroom	369.67	95.78	0.07	3.88	0.27	97.69	0.16

## ***CHAPTER 1***

### **DESCRIPTION OF EXPERIMENTS**

## **1. DESCRIPTION OF EXPERIMENTS**

### **1.1 Gas Content by Seam Temperature Desorption**

The gas desorption canisters that were used throughout the program were constructed of stainless steel or powder coated aluminium and designed to accommodate fully recovered HQ3 sized cores in a range of half or full metre lengths. The dead space above the sample, in the case of a partial recovery, was taken up by non porous rubber billets. The canisters were sealed by an 'O'-ring gasket and 'Camlock' lid, and came complete with an outlet valve, safety release valve, and pressure gauge rated to 1000 KPa..

Before transferral of canisters to the well site, each was accurately weighed and correctly labelled. The canisters were individually pressurised with compressed air to 400 KPa and monitored for any leakage prior to use. Following the pressure test, a vacuum was pulled on each canister and the canisters monitored for any air intake prior to use.

The principal field desorption apparatus was comprised of inverted measuring cylinders, associated fittings, and displacement baths containing an acidified solution incorporating 1% NaCl (by weight), 0.5% HCl (by volume) and a colouring additive (methyl red). Measuring cylinders for use in the mobile on-site laboratory were constructed of clear plastic with a maximum capacity of 2000 cubic centimetres. Each cylinder was supplied with two tap valves and associated clear plastic tubing that connected to the gas canisters and an electric vacuum pump respectively.

The water baths were constructed of standard 240 mm diameter PVC piping and end caps, and attached to an aluminium frame that supported the measuring cylinders. The measuring cylinders were arranged so that when the bath was filled with fluid, the open base was submerged approximately 2-4 cm below the height of water in the bath.

Digital thermometers (0.5°C accuracy) and calibrated barometers (0.5 KPa accuracy) were used throughout to monitor ambient atmospheric conditions at each recording point. Electronic 'stop watches' were utilised for the accurate timing of volume readings, and all weights were measured to an accuracy of 0.01 g using digital balances.

On recovery at surface, the cores were quickly washed, marked for orientation and depth and classified to enable desorption monitoring as detailed below. In order to assess the desorbable gas content of the coal seams encountered during drilling, all coal material was analysed. The sampling depths of the cores were derived from the continuous core depth record. This was maintained by means of the 'CBM Core Sampling Timesheet' which consisted of core numbers, driller's depths, core depths, and times that the core was penetrated, left bottom and reached surface (Chapter 6).

The procedure used throughout for gas desorption monitoring followed that outlined in the Australian Standard for the determination of desorbable gas content of coal seams - Direct method (AS 3980-1999). In summary, this procedure incorporated the following systematic steps.

Coring pre-determined depth intervals was carried out by means of a wire line retrievable, HQ3 (61.1mm), triple tube core barrels. The start time at which each core was penetrated, the time at which the core left bottom ( $t_b$  - time core retrieved), and the time at which the core arrived at surface ( $t_s$  - time at surface) were recorded. Time zero, or commencement of desorption for lost gas calculations, was taken as  $t_b$  where the coals were saturated with respect to gas, and as  $t_b-t_s/2$  where coals were undersaturated with respect to gas. Once the inner tube reached the surface, the drilling crew laid it out on the core table and pumped the slips (containing the core) out. The core was then quickly cleaned, orientated and any potential coal or carbonaceous shale identified. The samples were immediately placed in desorption canisters and weighed prior to being placed in seam temperature baths for gas content testing. The temperature used for the testing was taken from the mud returns. Upon connection of the canister to the desorption apparatus 'time on test' was recorded, and desorbed gas volumes read at the following intervals (subject to ongoing operations):

- Every 1 minute for 30 minutes
- Every 5 minutes for 1 hour
- Every 15 minutes for 1 hour
- Every 30 minutes for 4 hours
- Every 1 hour for 4 hours

After this schedule the readings were extended to a wider frequency, generally in the range of 6-24 hours, dependent on the volumes produced. At each reading, the following information was recorded on specifically designed data sheets, and subsequently entered into the computer:

- 1) Progressive volume of gas in the measuring cylinder
- 2) Water column height
- 3) Bath water height
- 4) Ambient temperature
- 5) Ambient atmospheric pressure
- 6) Reset value (where appropriate)

Data acquisition continued until desorption had reached equilibrium or flat lined i.e. no additional desorbed gas for five days. The coal was then carefully removed and slabbed with one half of the core used for the determination of residual gas content and proximate analysis.

The procedure adopted for residual gas analysis involved the weighing of a sub-sample to an accuracy of 0.01 g, with the optimal weight being in the range 15-300 g. The sample was initially broken in a hermetically sealed blender and subsequently crushed in a hermetically sealed ball mill to less than 212  $\mu\text{m}$  particle size. The gas volume released by this process was measured by the direct water displacement method and a volume, per unit mass of coal, calculated at standard temperature and pressure conditions.

## **1.2 Compositional Analysis of Gas**

To aid in the overall assessment of coal bed methane resources, samples of evolved gas were collected from each gas desorption canister. Inert gas was purged through the measuring cylinders and rubber hoses to minimise air contamination in desorption samples. A sub-sample of each desorbed gas was transferred into an evacuated stainless steel cylinder. The sampling procedure involved connecting the evacuated cylinder via a rubber hose to the measuring cylinder. The valve from the measuring cylinder was opened, filling the sample cylinder with the gas. The gases were analysed on a portable 'Varian Micro Gas Chromatograph' instrument.

## **1.3 Proximate Analysis**

A representative sub-sample of coal was removed from each desorption canister for proximate analysis. This sampling strategy was designed to:

- a) Calculate gas contents on a DAF basis for comparison purposes
- b) Determine the factors controlling variations in in-situ gas contents within a given seam

Every attempt was made to exclude all non-coal material from proximate analysis sampling, on the basis that these rocks did not contribute to the overall gas content of the coal seam in question.

The testing procedure adopted throughout for proximate analysis conformed to the appropriate Australian Standard for coal analysis and testing (AS 1038.3-1989). In summary, this procedure involved the drying of a known mass of coal in an oxygen-free (nitrogen flush) oven at 105-110°C for a period of between 1.5 to 3 hours. After removal from the oven, and subsequent to the sample being placed in a desiccator, the coal was weighed, and the loss of mass ascribed to inherent moisture.

The sample was then heated in a cylindrical silica crucible in a muffle furnace at 900°C for seven minutes. The loss of mass recorded during this process equated to the proportion of volatile matter present in the sample. Determination of ash content was achieved by combusting the coal until a constant mass was attained. This was achieved by heating the sample to 500°C for 30 minutes before increasing the temperature to 815°C, until combustion was complete. The percentage of ash was calculated from the mass of the residue remaining after incineration. The amount of fixed carbon was not determined directly, but represented the difference between the sum of all other components.

## 1.4 Dry and Ash Free Normalisation of Gas Content

As it is generally accepted that non-coal material does not contribute significantly to the overall gas content of a given coal seam, it was necessary for comparative purposes to normalise the gas content data to a dry, ash-free (DAF) basis. This was achieved by using the following equation:

$$DAF\ Gas\ Content = \frac{gas\ volume\ (scc/g)}{core\ wt\ (g) - \left( core\ wt \times \left( \frac{ash\ (\%) + moisture\ (\%)}{100} \right) \right)}$$

This equation was applied to the lost gas, desorbed gas, and residual gas components so that comparisons could be made between all the data gathered during the exploration program.

Whilst every attempt was made to remove non-coal partings from samples prior to weighing and preparation for proximate analysis, it was not always possible to isolate fine material. Consequently, the corresponding DAF gas content results may be artificially high.

## 1.5 Calculation of Desorption Coefficient

The sorption time, or desorption coefficient, of a coal sample corresponds to the time taken to desorb 63% of the total desorbable gas volume ( $Q_2$ ). This measure is used as an independent estimate of the gas diffusion constant for a given coal (see Close & Erwin 1989). Two methods for calculating sorption time are widely used in the literature, namely the sorption time method outlined by Close & Erwin (1989) and the more recently adopted GRI or modified sorption time method.

The sorption time method, as outlined by Close & Erwin (1989), was calculated using the following formulae:

$$V_{63\%} = Q_2 \times 0.63$$

$$Sorption\ time = TCS_{lbl} + (TCS_{ubl} - TCS_{lbl}) \times \frac{V_{63\%} - CDV_{lbl}}{CDV_{ubl} - CDV_{lbl}}$$

where:

- $TCS_{lbl}$  = time core sealed (lower bounding limit)
- $TCS_{ubl}$  = time core sealed (upper bounding limit)
- $CDV_{lbl}$  = cumulative desorbed volume (lower bounding limit)
- $CDV_{ubl}$  = cumulative desorbed volume (upper bounding limit)

The modified sorption time method is identical in approach to that outlined above, with the only difference being that this method incorporates the estimated lost gas volume into the cumulative desorbed volume and uses time zero (i.e. the commencement of desorption for lost gas calculations) as the starting point for elapsed time.

$$V_{63\%} = (Q1 + Q2) \times 0.63$$

By incorporating the lost gas into the equation, this method is considered to be a more reliable indicator of the desorption behaviour of a given coal.

## 1.6 Adsorption Isotherm

Coal sorption isotherms represent the relationship between gas storage capacity of a given coal sample and pressure, and are used to predict the maximum volume of gas that will be released from a coal seam as the reservoir pressure declines during long-term production (Mavor et al. 1990). When compared with measured gas contents and reservoir pressure, the sorption isotherm data also provides a guide as to the relative gas saturation of the coal and the bottom-hole pressure required to initiate significant methane desorption (critical desorption pressure).

A sub-sample of coal was selected by the client. Prior to the adsorption isotherm analysis, a slabbed section of the coal was crushed to less than 250 µm particle size and thoroughly mixed into a heterogeneous blend before sub-dividing a sub-sample for proximate analysis. Crushing the coal increased the surface area and accelerated the adsorption process.

Due to the influence of moisture on the sorptive capacity of coal (Joubert et al. 1973), the equilibrium moisture content of the remaining sample was then determined by a standardised procedure that involved placing the pre-weighed sample in a desiccator over a saturated solution of K<sub>2</sub>SO<sub>4</sub> until an equilibrium weight was attained. Once completed, the sample was placed in a test cell maintained at a temperature equivalent to the measured reservoir temperature, and pure methane was introduced into the system. As the test cell pressure was progressively increased, the amount of gas adsorbed was monitored and the results recorded.

This data was then interpreted by using the equation originally developed by Langmuir (1918) that describes the relationship between the gas storage capacity of coal and pressure. The equation is expressed as follows:

$$g = V_L (1 - a_d) \frac{P}{P + P_L}$$

Where  $g$  = gas storage capacity (scc/g),  $V_L$  = Langmuir Volume (scc/g),  $a_d$  = ash fraction (dry basis),  $P$  = pressure (MPa), and  $P_L$  = Langmuir pressure (MPa).

The Langmuir pressure and Langmuir volume are estimated by fitting the data to the following linearised equation.

$$\frac{P}{g} = a_0 + a_1 P$$

The Langmuir coefficients can then be derived from the intercept  $a_0$  and the slope of the line  $a_1$ , based on the following linear regression relationships.

$$V_L = \frac{1}{a_1 (1 - a_d)}$$

$$P_L = a_0 V_L (1 - a_d)$$

To determine the critical desorption pressure ( $P_c$ ) for a known gas content, the following relationship can be used.

$$P_c = \frac{P_L g_c}{V_L (1 - a_d) - g_c}$$

Where  $P_L$  = Langmuir pressure,  $V_L$  = Langmuir volume,  $a_d$  = the ash fraction (dry basis), and  $g_c$  = the DAF total gas content of the sample, including residual gas content (i.e. Q1 + Q2 + Q3).

The gas saturation level ( $g_s$ ) of a given coal was calculated as follows:

$$g_s = \frac{g_c \times 100}{\left( \frac{P_{Res} \times V_L}{P_{Res} + L_p} \right)}$$

It is generally agreed that the gas storage capacity of coal is a function of rank, temperature, the moisture content of the coal matrix, and pressure (Mavor et al. 1990, Hawkins et al. 1992). As coal rank can be assumed to be consistent vertically within a single seam, and the temperature used for adsorption experimentation is equivalent to reservoir temperature, the variable most likely to influence the determination of Langmuir constants is the moisture content of the sample. In order to approximate reservoir conditions, the equilibrium moisture procedure was adopted for this sample, and with all other variables remaining constant, the adsorption parameters measured should characterise the coal of interest.

## 1.7 Maceral Analysis

Sub-samples of coal were selected by the client for maceral analyses. The coal samples were crushed, sub-sampled and prepared as grain mounts.

## ***CHAPTER 2***

### **GAS DESORPTION RESULTS**

**ACS Laboratories Pty Ltd**  
**GAS DESORPTION DATA SUMMARY**

**WELL NAME:** Lacerta-12

**SAMPLE DETAILS**

<b>CAN DETAILS</b>		<b>DESORBED GAS</b>	
SAMPLE NO	1	USBM LOST GAS (scc/g)	162.9
SEAM NAME	Juandah A	USBM LOST GAS (scc/g)	0.11
DEPTH FROM (m)	115.56	DESORPTION TEMP (°C)	40.0
DEPTH TO (m)	116.06	DAF LOST GAS (scc/g)	0.16
THICKNESS (m)	0.5	DAF DESORBED GAS (scc/g)	3.75
COAL LENGTH (m)	0.5	DAF Q1 + Q2 (scc/g)	3.91
COAL WEIGHT (kg)	1.418	RAW DESORBED GAS (scc/g)	37.19
CORE DIAM (mm)	63	RAW DESORBED GAS (scc/g)	2.62
SAMPLE TYPE	Core	RAW TOTAL DESORBED (scc/g)	2.74
		DAF RESIDUAL GAS Q3 (scc/g)	0.11
		DAF TOTAL GAS Q1+2+3 (scc/g)	4.03

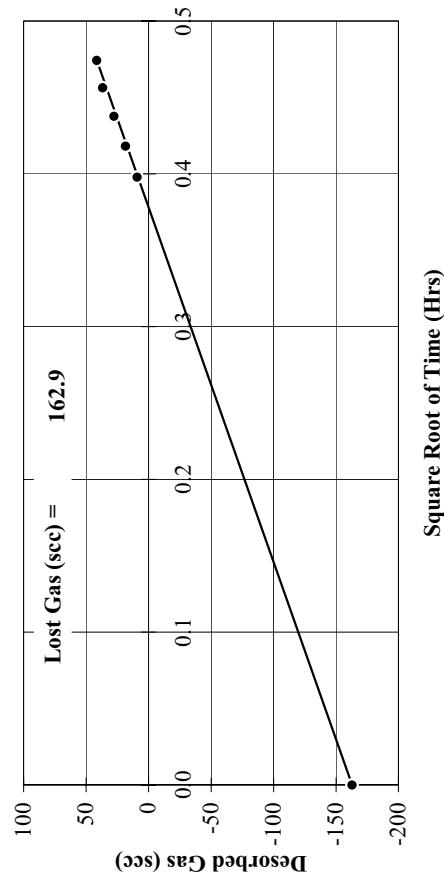
  

<b>CORE DETAILS</b>		<b>COAL ANALYSIS DATA</b>		<b>DESORPTION TIME</b>		<b>GAS ANALYSIS (Air-Free)</b>	
CORE PENETRATED	6/05/2007	Date	Time				
CORE LEFT BOTTOM	6/05/2007	14:53:00		25.9			
CORE AT SURFACE	6/05/2007	15:20:00	ASH (%)	35.1	ON TEST	Days	Late
CORE IN CANISTER	6/05/2007	15:23:00	VOLATILE MATTER (%)	4.1	63% Q2	CO2 (%)	0.24
CORE ON TEST	6/05/2007	15:25:00	INHERENT MOISTURE (%)	34.9	63% Q1+Q2	N2 (%)	0.69
TIME ZERO	6/05/2007	15:30:00	FIXED CARBON (%)			CH4 (%)	99.05
		15:21:30				C2H6 (%)	0.02

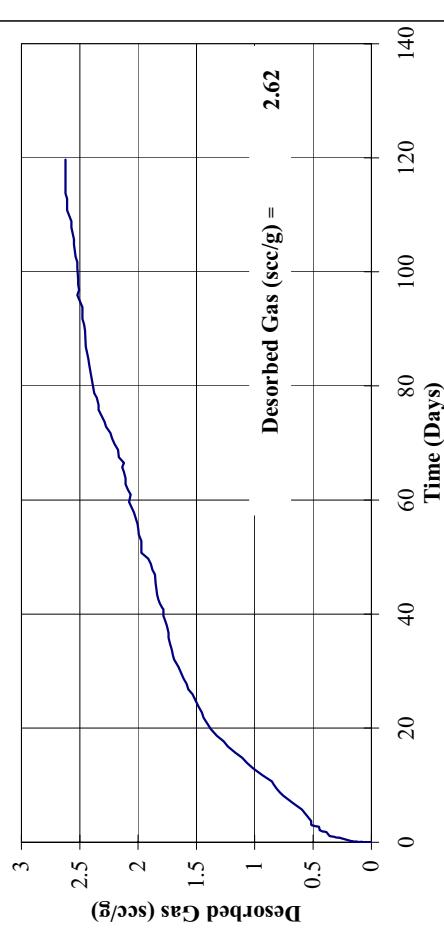
**CORE DETAILS**

CORE PENETRATED	6/05/2007	Date	Time	
CORE LEFT BOTTOM	6/05/2007	14:53:00		
CORE AT SURFACE	6/05/2007	15:20:00	ASH (%)	
CORE IN CANISTER	6/05/2007	15:23:00	VOLATILE MATTER (%)	
CORE ON TEST	6/05/2007	15:25:00	INHERENT MOISTURE (%)	
TIME ZERO	6/05/2007	15:30:00	FIXED CARBON (%)	
		15:21:30		

**LOST GAS PLOT**



**DESORBED GAS PLOT**



**ACS Laboratories Pty Ltd**  
**QUICK CRUSH GAS DESORPTION DATA SUMMARY**

**WELL NAME:** Lacerta-12

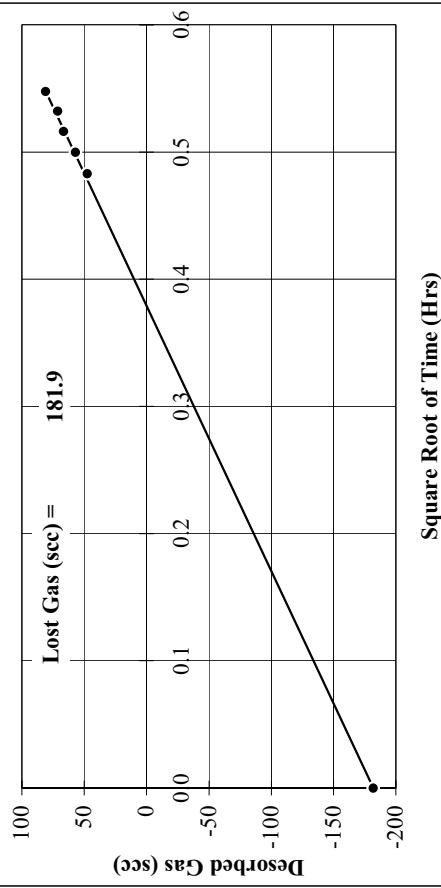
**SAMPLE DETAILS**

<b>CAN DETAILS</b>		<b>DESORBED GAS</b>	
SAMPLE NO	2	USBM LOST GAS (scc/g)	181.9
SEAM NAME	Juandah B	USBM LOST GAS (scc/g)	<b>0.04</b>
DEPTH FROM (m)	152.87	DESORPTION TEMP (°C)	40.0
DEPTH TO (m)	153.87	DAF LOST GAS (scc/g)	0.06
THICKNESS (m)	1.0	DAF DESORBED GAS (scc/g)	1.51
COAL LENGTH (m)	1.0	DAF Q1 + Q2 (scc/g)	1.57
COAL WEIGHT (kg)	4.195	RAW DESORBED GAS (scc/g)	43.77
CORE DIAM (mm)	63	RAW DESORBED GAS (scc/g)	<b>1.04</b>
SAMPLE TYPE	Core	RAW TOTAL DESORBED (scc/g)	1.09
		DAF RESIDUAL GAS Q3 (scc/g)	0.22
		DAF TOTAL GAS Q1+2+3 (scc/g)	1.79

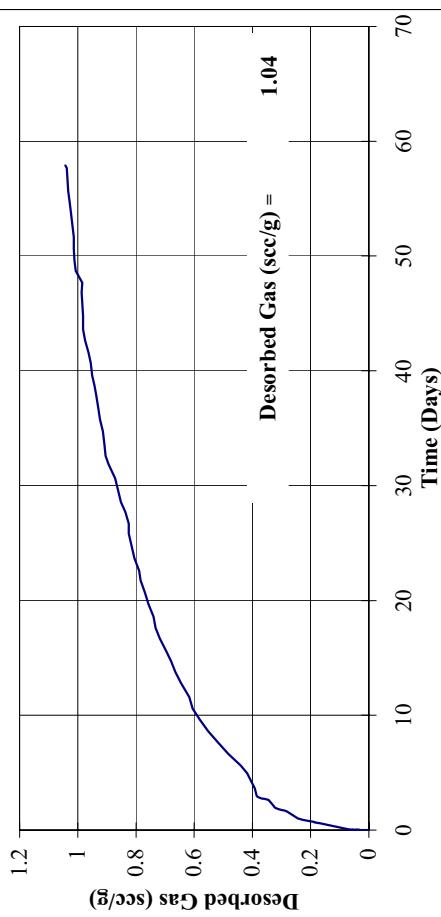
  

<b>CORE DETAILS</b>		<b>COAL ANALYSIS DATA</b>		<b>DESORPTION TIME</b>		<b>GAS ANALYSIS (Air-Free)</b>	
CORE PENETRATED	6/05/2007	Date	Time	25.9	Days	Late	
CORE LEFT BOTTOM	6/05/2007	17:50:00	ASH (%)	35.1	ON TEST	0.30	
CORE AT SURFACE	6/05/2007	17:52:00	VOLATILE MATTER (%)	5.0	63% Q2	0.15	
COAL IN CANISTER	6/05/2007	17:57:00	INHERENT MOISTURE (%)	34.0	63% Q1+Q2	2.96	
CORE ON TEST	6/05/2007	18:04:00	FIXED CARBON (%)			13.4	1.62
TIME ZERO	6/05/2007	17:51:00				12.6	98.05
						C2H6 (%)	0.03
							0.01

**LOST GAS PLOT**



**DESORBED GAS PLOT**



# ACS Laboratories Pty Ltd

## GAS DESORPTION DATA SUMMARY

**WELL NAME:** Lacerta-12

### SAMPLE DETAILS

	CAN NO	CAN LENGTH (m)	B	USBM LOST GAS (sec/g)	103.4	RESIDUAL GAS (sec/g)
SAMPLE NO	3	Juandah B		USBM LOST GAS (sec/g)	0.03	TOTAL RAW GAS (sec/g)
SEAM NAME		154.62	1.0		0.07	2.60
DEPTH FROM (m)	155.62	CAN WEIGHT (kg)	6.291			
DEPTH TO (m)		CAN + SAMPLE WT (kg)	9.562	DESORPTION TEMP (°C)		
THICKNESS (m)	1.0	SAMPLE WEIGHT (kg)	3.271		0.04	
COAL LENGTH (m)	1.0	CAN VOLUME (cc)	4400	RAW DESORBED GAS (sec)	7851	DAF LOST GAS (sec/g)
COAL WEIGHT (kg)	3.139	SAMPLE VOLUME(cc)	3117	RAW DESORBED GAS (sec/g)	2.50	DAF DESORBED GAS (sec/g)
CORE DIAM (mm)	63	CAN VOID SPACE (cc)	1283			DAF Q1 + Q2 (sec/g)
SAMPLE TYPE	Core	ESTIMATED VOID (cc)	0	RAW TOTAL DESORBED (sec/g)	2.53	DAF RESIDUAL GAS Q3 (sec/g)
						DAF TOTAL GAS Q1+2+3 (sec/g)

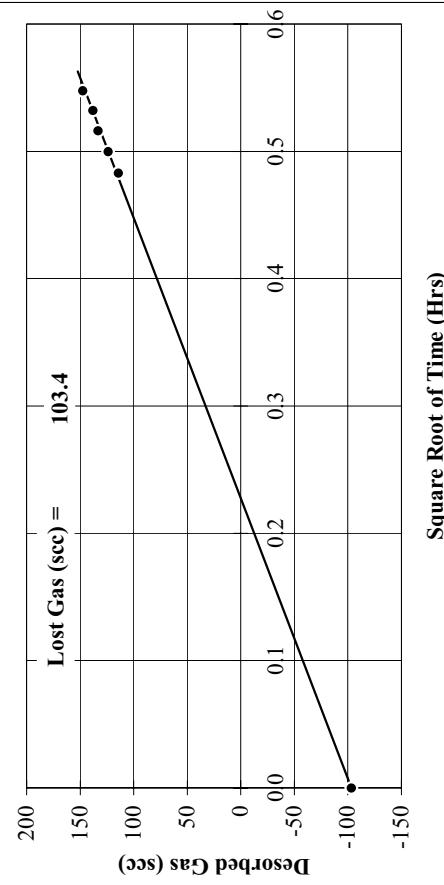
### CORE DETAILS

Date	Time	COAL ANALYSIS DATA	DESORPTION TIME	GAS ANALYSIS (Air-Free)
6/05/2007	17:34:00			
	17:50:00	ASH (%)		Late
6/05/2007	17:52:00	VOLATILE MATTER (%)	44.2	0.60
6/05/2007	17:57:00	INHERENT MOISTURE (%)	4.0	0.83
6/05/2007	18:04:00	FIXED CARBON (%)	63% Q2	98.52
6/05/2007	17:51:00		40.2	0.05
			63% Q1+Q2	
			11.6	0.31
			Days 119.6	2.63
			Days 19.2	97.04
			N2 (%)	C2H6 (%)
			18.9	0.02
			CH4 (%)	

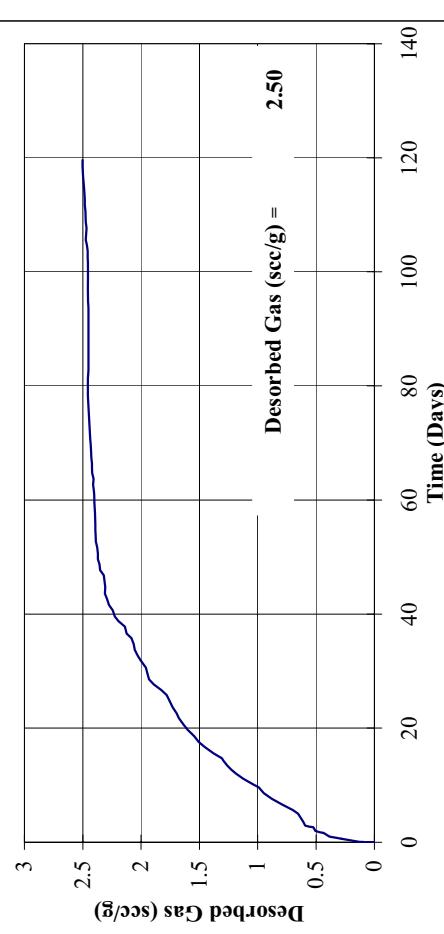
### CORE PENETRATED

CORE LEFT BOTTOM	6/05/2007	17:50:00	ASH (%)	11.6	Days
CORE AT SURFACE	6/05/2007	17:52:00	VOLATILE MATTER (%)	44.2	ON TEST
COAL IN CANISTER	6/05/2007	17:57:00	INHERENT MOISTURE (%)	4.0	63% Q2
CORE ON TEST	6/05/2007	18:04:00	FIXED CARBON (%)	40.2	63% Q1+Q2
TIME ZERO	6/05/2007	17:51:00			

### LOST GAS PLOT



### DESORBED GAS PLOT



# ACS Laboratories Pty Ltd

## GAS DESORPTION DATA SUMMARY

**WELL NAME:** Lacerta-12

### SAMPLE DETAILS

	CAN NO	D	USBM LOST GAS (sec)	RESIDUAL GAS (sec/g)
SAMPLE NO	4	Juandah C	1.0	<span style="border: 1px solid black; padding: 2px;">0.10</span>
SEAM NAME	225.70	CAN LENGTH (m)	6.425	<span style="border: 1px solid black; padding: 2px;">3.16</span>
DEPTH FROM (m)	226.70	CAN WEIGHT (kg)	10.015	
DEPTH TO (m)		CAN + SAMPLE WT (kg)	3.590	
THICKNESS (m)	1.0	SAMPLE WEIGHT (kg)	3.590	<span style="border: 1px solid black; padding: 2px;">0.10</span>
COAL LENGTH (m)	1.0	CAN VOLUME (cc)	4400	<span style="border: 1px solid black; padding: 2px;">3.30</span>
COAL WEIGHT (kg)	3.590	SAMPLE VOLUME(cc)	3117	<span style="border: 1px solid black; padding: 2px;">3.40</span>
CORE DIAM (mm)	63	CAN VOID SPACE (cc)	1283	
SAMPLE TYPE	Core	ESTIMATED VOID (cc)	0	

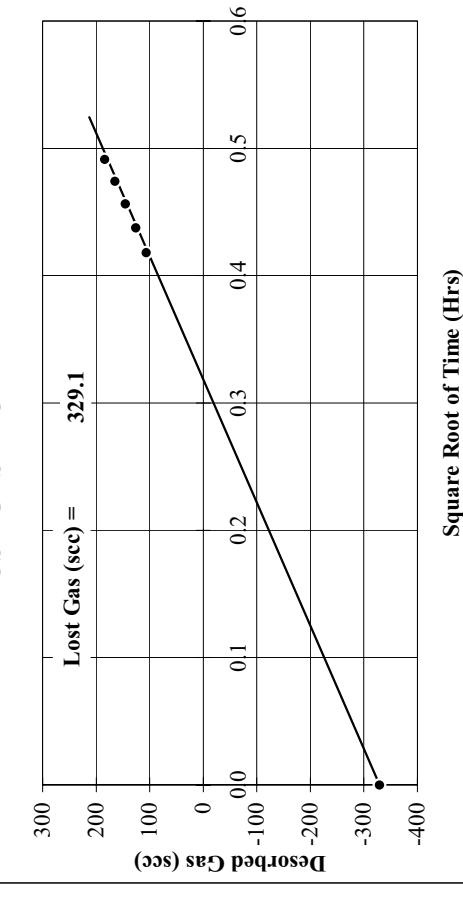
### CORE DETAILS

	Date	Time	ASH (%)	Days	Late
CORE PENETRATED	8/05/2007	9:07:00			
CORE LEFT BOTTOM	8/05/2007	9:37:00			
CORE AT SURFACE	8/05/2007	9:40:00	VOLATILE MATTER (%)	117.9	0.48
COAL IN CANISTER	8/05/2007	9:46:00	INHERENT MOISTURE (%)	9.9	2.64
CORE ON TEST	8/05/2007	9:48:00	FIXED CARBON (%)	63% Q2	96.09
TIME ZERO	8/05/2007	9:38:30		63% Q1+Q2	0.03

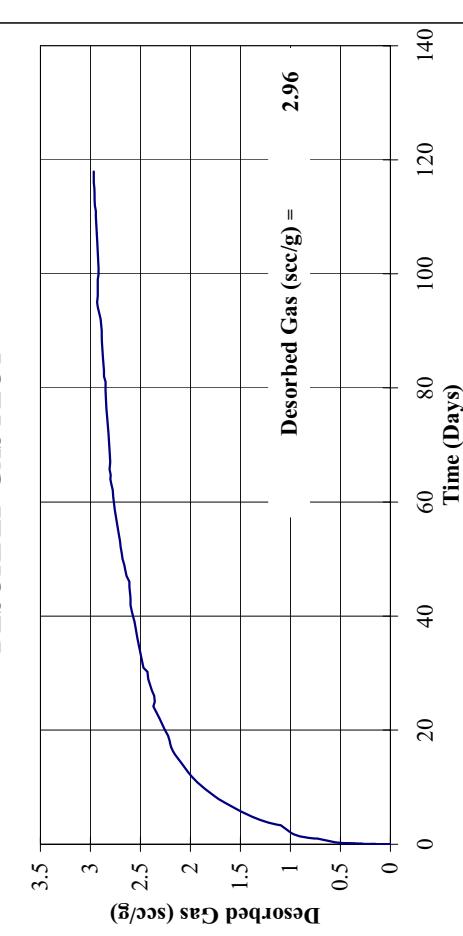
### COAL ANALYSIS DATA

	ON TEST	Days	Early
ASH (%)	45.7	117.9	0.23
VOLATILE MATTER (%)	3.4	9.9	3.65
INHERENT MOISTURE (%)	44.1	63% Q2	9.4
FIXED CARBON (%)		63% Q1+Q2	C2H6 (%)
			0.08

### LOST GAS PLOT



### DESORBED GAS PLOT



# ACS Laboratories Pty Ltd

## GAS DESORPTION DATA SUMMARY

**WELL NAME:** Lacerta-12

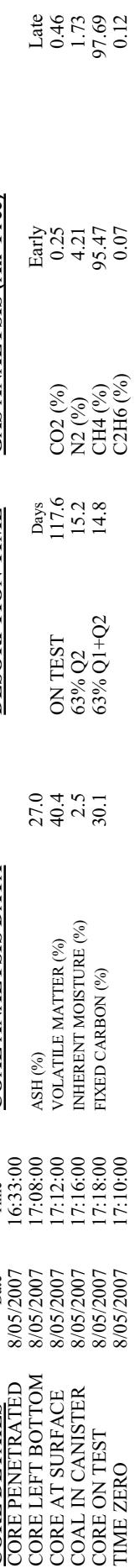
### SAMPLE DETAILS

<u>CAN DETAILS</u>		<u>DESORBED GAS</u>	
SAMPLE NO	5	G	63.6 RESIDUAL GAS (scc/g)
SEAM NAME	Juandah D	0.5 USBM LOST GAS (scc/g)	0.03 TOTAL RAW GAS (scc/g)
DEPTH FROM (m)	297.23	3.916 USBM LOST GAS (scc/g)	0.05 1.87
DEPTH TO (m)	297.73	5.892 DESORPTION TEMP (°C)	40.0 DAF LOST GAS (scc/g)
THICKNESS (m)	0.5	1.976 SAMPLE WEIGHT (kg)	0.05 2.54
COAL LENGTH (m)	0.5	2200 RAW DESORBED GAS (scc/g)	2.59
COAL WEIGHT (kg)	1.931	1559 RAW DESORBED GAS (scc/g)	DAF Q1 + Q2 (scc/g)
CORE DIAM (mm)	63	641 RAW TOTAL DESORBED (scc/g)	3457 1.79 DAF RESIDUAL GAS Q3 (scc/g)
SAMPLE TYPE	Core	0	0.07 DAF TOTAL GAS Q1+2+3 (scc/g)
			2.66

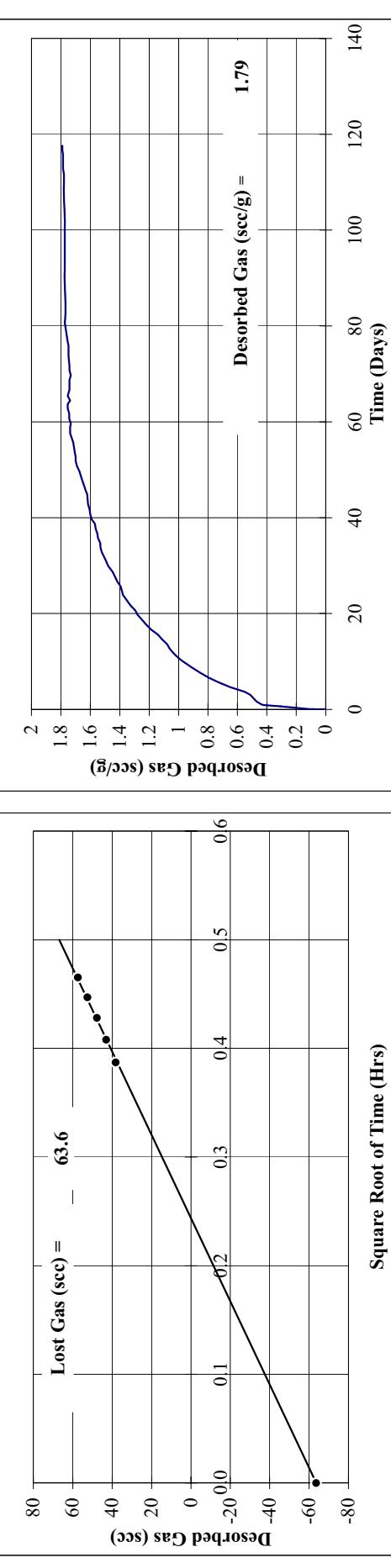
  

<u>CORE DETAILS</u>		<u>COAL ANALYSIS DATA</u>		<u>DESORPTION TIME</u>		<u>GAS ANALYSIS (Air-Free)</u>	
CORE PENETRATED	8/05/2007	Date	Time	27.0	Days	Late	
CORE LEFT BOTTOM	8/05/2007			ON TEST	117.6	0.46	
CORE AT SURFACE	8/05/2007	17:08:00	ASH (%)	2.5	63% Q2	15.2	
COAL IN CANISTER	8/05/2007	17:12:00	VOLATILE MATTER (%)	30.1	63% Q1+Q2	14.8	
CORE ON TEST	8/05/2007	17:16:00	INHERENT MOISTURE (%)			N2 (%)	1.73
TIME ZERO	8/05/2007	17:18:00	FIXED CARBON (%)			CH4 (%)	97.69
		17:10:00				C2H6 (%)	0.12

### LOST GAS PLOT



### LOST GAS PLOT



**ACS Laboratories Pty Ltd**  
**GAS DESORPTION DATA SUMMARY**

**WELL NAME:** Lacerta-12

**SAMPLE DETAILS**

<b>CAN DETAILS</b>		<b>DESORBED GAS</b>	
SAMPLE NO	6	CAN NO	USBM LOST GAS (scc)
SEAM NAME	Taroom	CAN LENGTH (m)	0.5
DEPTH FROM (m)	359.92	CAN WEIGHT (kg)	3.510
DEPTH TO (m)	360.42	CAN + SAMPLE WT (kg)	5.317
THICKNESS (m)	0.5	SAMPLE WEIGHT (kg)	1.807
COAL LENGTH (m)	0.5	CAN VOLUME (cc)	2200
COAL WEIGHT (kg)	1.636	SAMPLE VOLUME(cc)	1559
CORE DIAM (mm)	63	CAN VOID SPACE (cc)	641
SAMPLE TYPE	Core	ESTIMATED VOID (cc)	0
		RAW TOTAL DESORBED (scc/g)	700.8
		DAF TOTAL GAS Q1+2+3 (scc/g)	0.43
		RESIDUAL GAS (scc/g)	0.15
		TOTAL RAW GAS (scc/g)	3.82

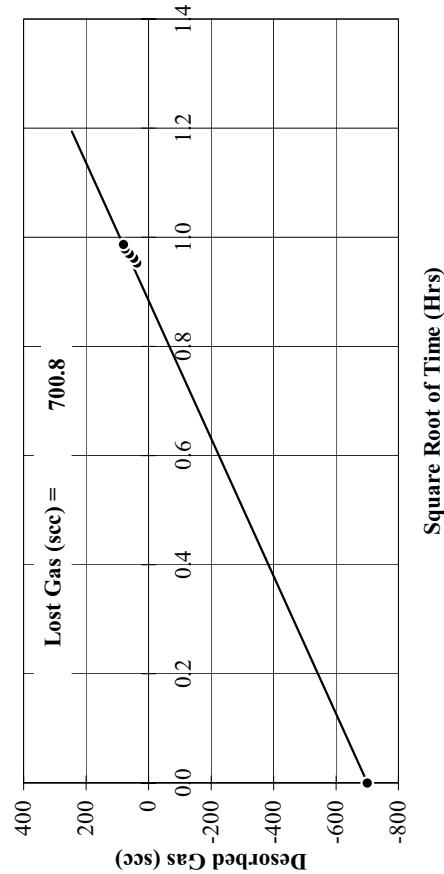
  

<b>CORE DETAILS</b>		<b>COAL ANALYSIS DATA</b>		<b>DESORPTION TIME</b>		<b>GAS ANALYSIS (Air-Free)</b>	
CORE PENETRATED	9/05/2007	Date	Time	17.5	Days	Late	
CORE LEFT BOTTOM	9/05/2007	13:07:00	ASH (%)	39.4	ON TEST	0.61	
CORE AT SURFACE	9/05/2007	13:12:00	VOLATILE MATTER (%)	2.8	63% Q2	2.49	
COAL IN CANISTER	9/05/2007	14:00:00	INHERENT MOISTURE (%)	40.3	63% Q1+Q2	96.10	
CORE ON TEST	9/05/2007	14:03:00	FIXED CARBON (%)	7.6	CH4 (%)	3.55	
TIME ZERO	9/05/2007	13:09:30			C2H6 (%)	0.06	

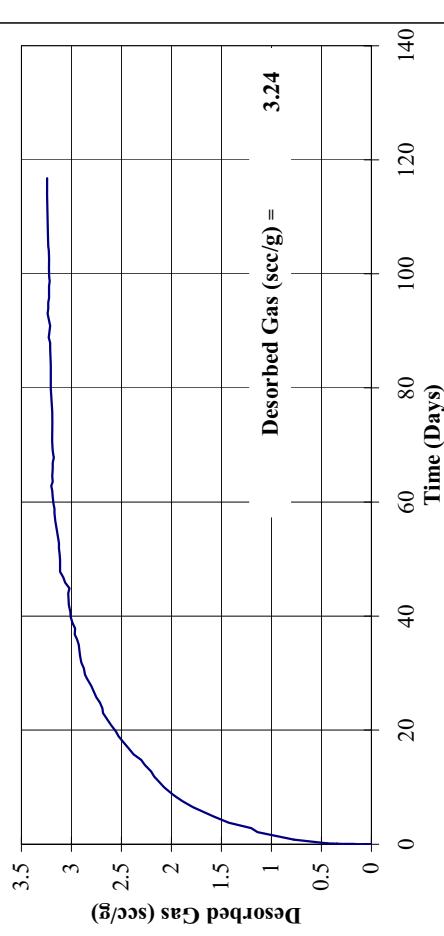
**CORE DETAILS**

CORE PENETRATED	9/05/2007	12:36:00		
CORE LEFT BOTTOM	9/05/2007	13:07:00	ASH (%)	
CORE AT SURFACE	9/05/2007	13:12:00	VOLATILE MATTER (%)	
COAL IN CANISTER	9/05/2007	14:00:00	INHERENT MOISTURE (%)	
CORE ON TEST	9/05/2007	14:03:00	FIXED CARBON (%)	
TIME ZERO	9/05/2007	13:09:30		

**LOST GAS PLOT**



**DESORBED GAS PLOT**



**ACS Laboratories Pty Ltd**  
**GAS DESORPTION DATA SUMMARY**

**WELL NAME:** Lacerta-12

**SAMPLE DETAILS**

	CAN NO	CAN LENGTH (m)	1	0.5	USBM LOST GAS (scc/g)	230.9	RESIDUAL GAS (scc/g)
SAMPLE NO	7	Taroom			USBM LOST GAS (scc/g)	0.13	TOTAL RAW GAS (scc/g)
SEAM NAME	365.07		3.524				0.08
DEPTH FROM (m)	365.57		5.364				2.98
DEPTH TO (m)	0.5		1.840				
THICKNESS (m)			2200				
COAL LENGTH (m)	0.5		1559				
COAL WEIGHT (kg)	1.791		641				
CORE DIAM (mm)	63		0				
SAMPLE TYPE	Core						

**CORE DETAILS**

Date	Time	ASH (%)	VOLATILE MATTER (%)	INHERENT MOISTURE (%)	FIXED CARBON (%)
9/05/2007	14:02:00				
9/05/2007	14:30:00				
9/05/2007	14:34:00				
9/05/2007	14:40:00				
9/05/2007	14:42:00				
9/05/2007	14:32:00				

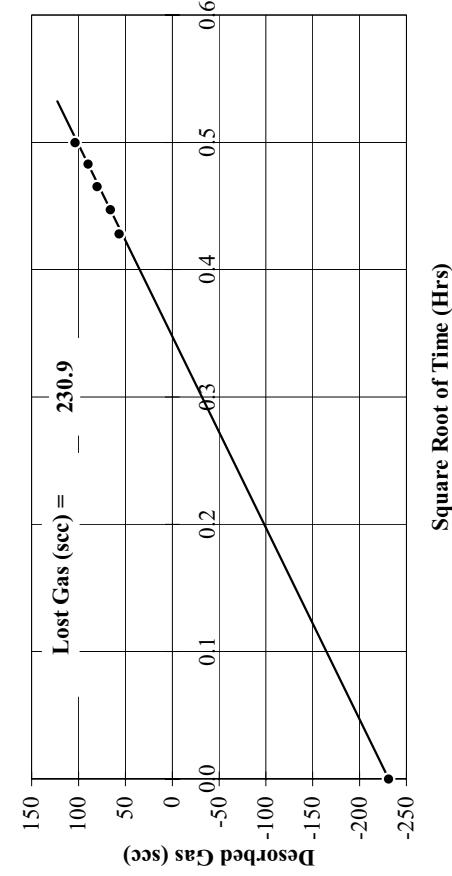
**COAL ANALYSIS DATA**

Days	ON TEST	CO2 (%)	N2 (%)	Early
39.6	63% Q2	7.2	4.58	0.31
3.1	63% Q1+Q2	6.7	95.01	1.20
46.7				0.10
				0.16

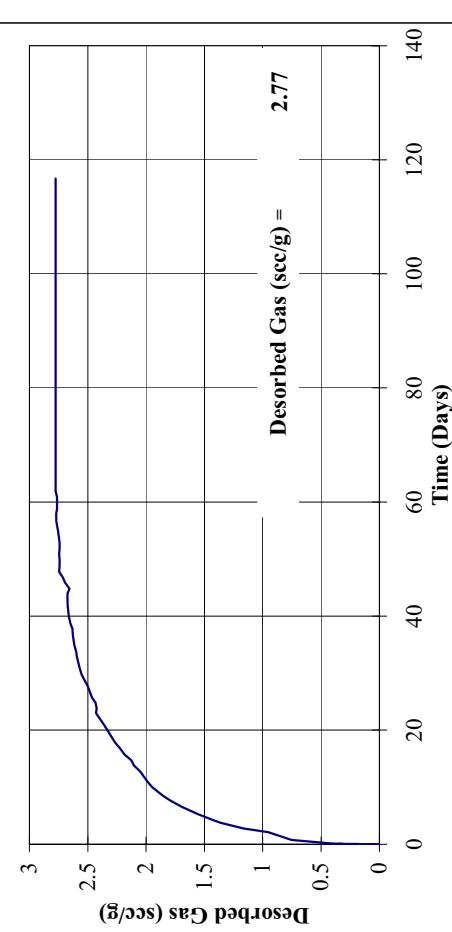
**DESORBED GAS**

DAF Q1 + Q2 (scc/g)	DAF RESIDUAL GAS Q3 (scc/g)	DAF TOTAL GAS Q1+2+3 (scc/g)
2.77	0.09	3.46

**LOST GAS PLOT**



**DESORBED GAS PLOT**



**ACS Laboratories Pty Ltd**  
**QUICK CRUSH GAS DESORPTION DATA SUMMARY**

**WELL NAME:** Lacerta-12

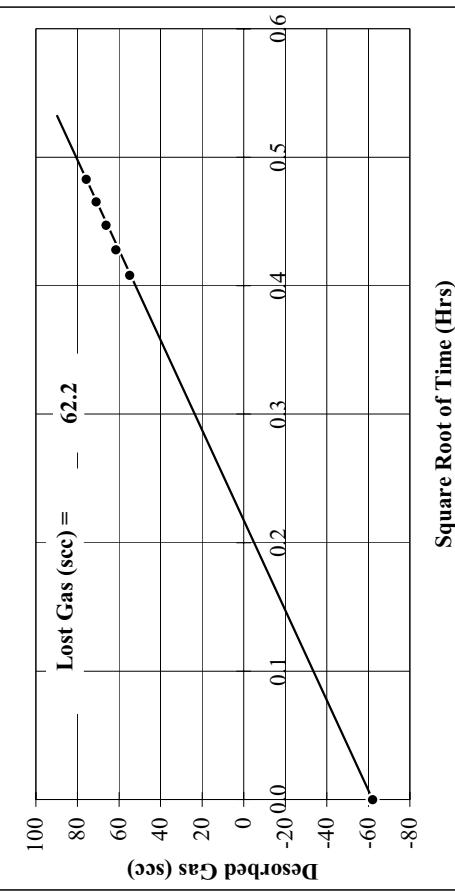
**SAMPLE DETAILS**

	CAN DETAILS	DESORBED GAS
SAMPLE NO	8	USBM LOST GAS (sec)
SEAM NAME	Taroom	USBM LOST GAS (sec/g)
DEPTH FROM (m)	378.92	DESORPTION TEMP (°C)
DEPTH TO (m)	379.42	RAW DESORBED GAS (sec)
THICKNESS (m)	0.5	RAW DESORBED GAS (sec/g)
COAL LENGTH (m)	0.5	DAF RESIDUAL GAS Q3 (sec/g)
COAL WEIGHT (kg)	1.718	DAF TOTAL GAS Q1+2+3 (sec/g)
CORE DIAM (mm)	63	DAF TOTAL GAS Q1 (sec/g)
SAMPLE TYPE	Core	DAF TOTAL GAS Q1+2+3 (sec/g)

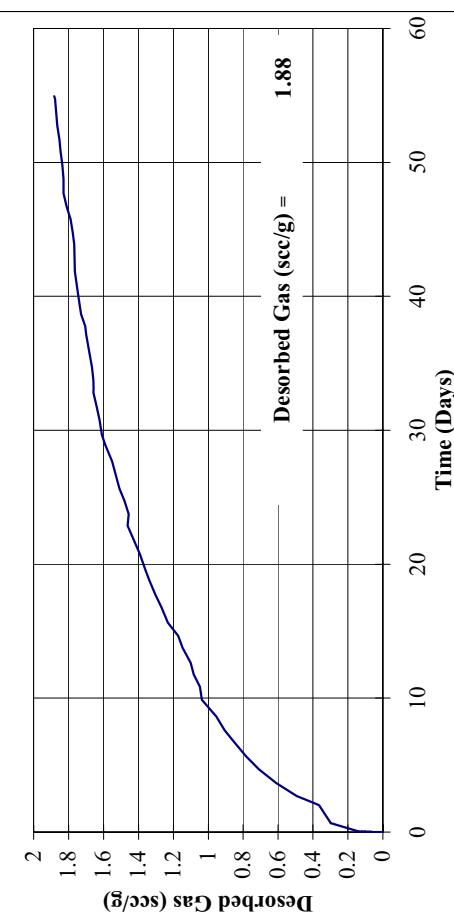
**CORE DETAILS**

	Date	Time	COAL ANALYSIS DATA	DESORPTION TIME	GAS ANALYSIS (Air-Free)
CORE PENETRATED	9/05/2007	16:02:00			
CORE LEFT BOTTOM	9/05/2007	16:30:00	ASH (%)	Days	Late
CORE AT SURFACE	9/05/2007	16:34:00	VOLATILE MATTER (%)	54.9	0.53
COAL IN CANISTER	9/05/2007	16:39:00	INHERENT MOISTURE (%)	14.9	1.25
CORE ON TEST	9/05/2007	16:41:00	FIXED CARBON (%)	3.1	98.06
TIME ZERO	9/05/2007	16:32:00		38.1	0.16

**LOST GAS PLOT**



**DESORBED GAS PLOT**



**Lacerta-12**

**8**

**Taroom**

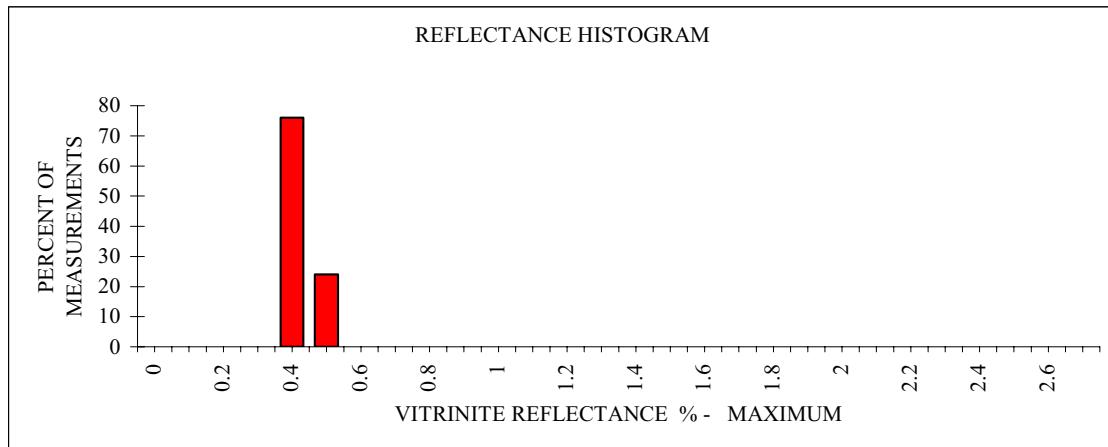
## ***CHAPTER 3***

### **MACERAL ANALYSES**

## **COAL PETROGRAPHY - VITRINITE REFLECTANCE**

CLIENT: Sunshine Gas Limited  
SAMPLE Lacerta-12  
Sample 3

REPORT 1009-06  
DATE 9/10/07



REFLECTANCE(AS2486; 546NM; OIL RI 1.518; STANDARDS 0.3% - 3.3%)

	Ro MAX%	No.	Mn%	MX%	S.D.	Rr% <sup>1)</sup>
TELOVITRINITE	0.47	38	0.41	0.54	0.04	0.44
DETROVITRINITE	0.46	12	0.44	0.47	0.01	0.43
ALL VITRINITE	0.47	50	0.41	0.54	0.03	0.44

### VITRINITE REFLECTANCE DISTRIBUTION

	V3	V4	V5	V6
TELOVITRINITE %		52	24	
DETROVITRINITE %		24		
ALL VITRINITE %		76	24	

	TOTAL
TELOVITRINITE %	76
DETROVITRINITE %	24
ALL VITRINITE %	100

1) Note Rr calculated from Rmax

## ***COAL PETROGRAPHY - VITRINITE REFLECTANCE***

CLIENT: Sunshine Gas Limited  
 SAMPLE Lacerta-12  
 Sample 3

Maceral Group	%	%mmf	Maceral Sub Group	Maceral	%	%mmf
ISO7404:BS6127:AS2856			Telovitrinite	Textinite		
				Texto-ulminite		
				Eu-ulminite		
				Telocollinitite	65.5	68.8
Vitrinite	81.5	85.7	Detrovitrinite	Attrinite		
				Densinite		
				Desmocollinitite	16.1	16.9
			Gelovitrinite	Corpogelinite		Trace
				Porigelinite		
				Eugelinite		
Liptinite	12.5	13.2		Sporinite	3.1	3.3
				Cutinite	1.1	1.2
				Resinite	2.4	2.5
				Liptodetrinite		
				Alginite		
				Suberinitite	5.9	6.2
				Fluorinitite		
				Exsudatinite		
				Bituminite		
			Telo-inertinite	Fusinite	0.2	0.2
				Semifusinite	0.4	0.4
				Funginitite		
Inertinite	1.1	1.2	Detro-inertinite	Inertodetrinite	0.6	0.6
				Micrinite		
			Gelo-inertinite	Macrinite		
Minerals	4.8				4.8	
-----	-----	-----			-----	-----
Points counted	100	100			100.0	100.0
		542				

COMMENTS: Minerals mainly disseminated clays, trace quartz, slight trace pyrite and carbonate. Minor shale.

## ***CHAPTER 4***

### **ADSORPTION ISOTHERM**

## ADSORPTION ISOTHERM AT 28°C

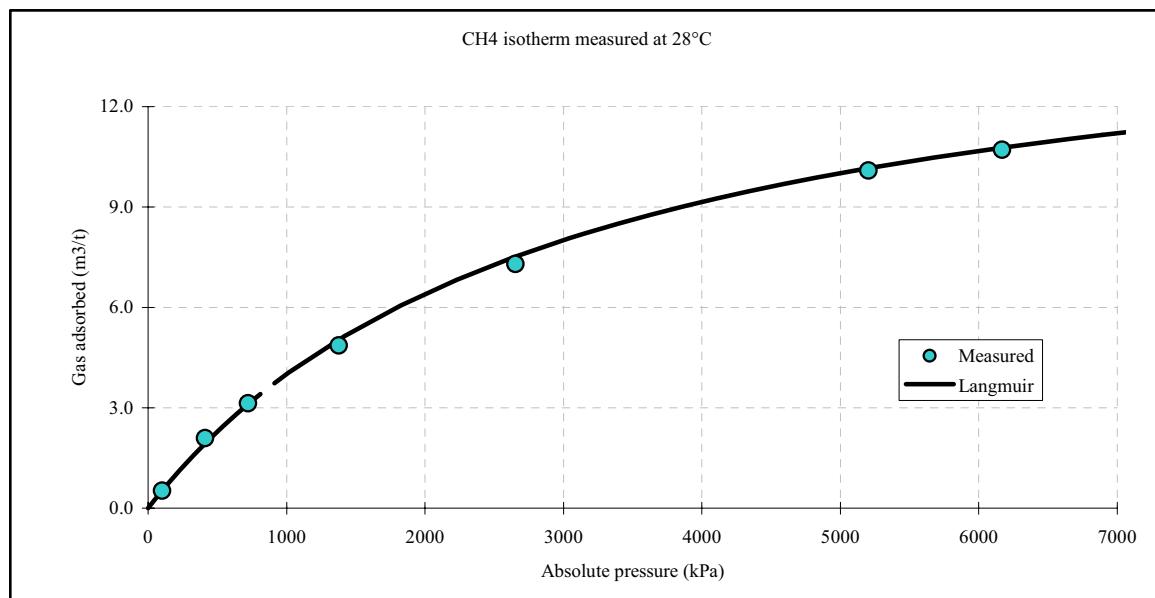
**CLIENT:** Sunshine Gas Limited  
**SAMPLE:** Lacerta-12 Sample 3  
**SAMPLE DEPTH:** 155.12m

**SEAM:** Juandah B  
**REPORT:** 1009-06

<i>Isotherm</i>		$C = V_L \cdot P / (P + P_L)$	
C: gas content, P: pressure			
V <sub>L</sub> and P <sub>L</sub> : Langmuir Volume and Pressure			
Gauge pressure (P) kPa	Gas adsorbed (C, m <sup>3</sup> /t) measured	Gas adsorbed (C, m <sup>3</sup> /t) fitted	
0	0.00	0.00	
310	1.57	1.41	
621	2.61	2.58	
1276	4.33	4.52	
2551	6.77	6.99	
5102	9.56	9.63	
6067	10.19	10.25	

Coal density (He, g/cc)	1.35	
<b>Proximate analysis (%)</b>		daf
Air dried		
moisture	7.5	-
Volatiles	43.2	52.17
Fixed C	39.6	47.83
Ash	9.7	-
Total	100.0	100.00

Isotherm Standard Deviation = 0.14m<sup>3</sup>/t



### Langmuir Isotherm Parameters

Gas adsorbed (desorbable)	Gas adsorbed (total gas)	V <sub>L</sub> (abs, daf)
V <sub>L</sub> (gauge) = 15.48 m <sup>3</sup> /t	V <sub>L</sub> (abs)= 16.01 m <sup>3</sup> /t	19.33
P <sub>L</sub> (gauge) = 3098 kPa	P <sub>L</sub> (abs)= 2997 kPa	
	Gas content at 1 atm.	0.52 m <sup>3</sup> /t

Abs. Pressure (kPa)	Total adsorbed gas (m <sup>3</sup> /t)
101.325	0.5
411.589	2.1
721.853	3.1
1376.856	4.9
2652.386	7.3
5203.447	10.1
6168.714	10.7

CH4 storage capacity of coal at seam depth (based on isotherm)
<b>5.21 m<sup>3</sup>/t</b>

## ***CHAPTER 5***

### **DST WATER ANALYSIS**

## **DST WATER ANALYSIS**

**Client :** Sunshine Gas Limited  
**Well:** Lacerta-12  
**Sample:** DST-2

<b>CHEMICAL COMPOSITION</b>					
		<b>Cations</b>		<b>Anions</b>	
	mg/L	meq/L		mg/L	meq/L
Sodium (Na):	1000	43.5	Chloride (Cl):	2190	61.7
Calcium (Ca):	36	1.8	Bi-Carbonate ( $\text{HCO}_3$ ):	572	11.4
Magnesium (Mg):	10	0.8	Sulphate ( $\text{SO}_4$ ):	65	1.4
Iron (Fe):	1.35	<0.1	Carbonate ( $\text{CO}_3$ ):	<1.0	<0.1
Potassium (K):	969	24.8	Fluoride (F):	<1.0	<0.1
			Hydroxide (OH):	<1.0	<0.1

Note: Bi-Carbonate, Carbonate and Hydroxide ions measured as  $\text{CaCO}_3$

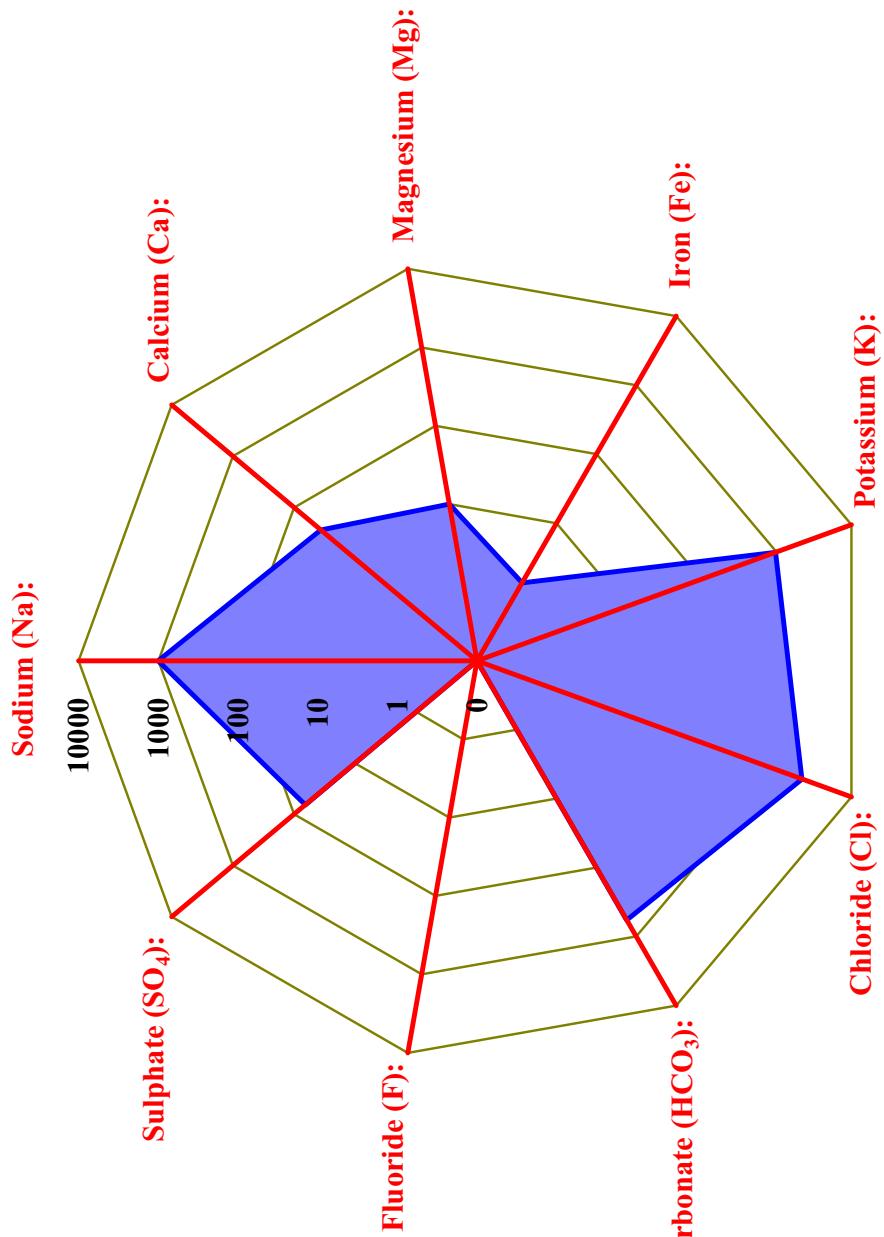
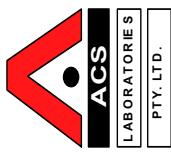
<b>DERIVED DATA</b>	<b>TOTAL AND BALANCE</b>
Total Dissolved Solids:	mg/L
Based on E.C.	6270
Calculated ( $\text{HCO}_3 = \text{CO}_3$ )	4620
Total Hardness (as $\text{CaCO}_3$ )	132
Total Alkalinity (as $\text{CaCO}_3$ )	572
Cations	71
Anions	74
Ion Balance (Diff*100/sum)	2.451
Sodium Adsorption Ratio	38
Difference (Anions - Cations)	4
Sum (Anions + Cations)	145

<b>OTHER ANALYSES</b>	
Resistivity	1.040 ohm.m @ 25 °C
Conductivity (E.C.)	9650 $\mu\text{S}/\text{cm}$ @ 25 °C
Reaction - pH	7.7
Density	1.0022 g/cm <sup>3</sup> at 15.6 °C

Client : Sunshine Gas Limited  
Well: Lacerta-12

## WATER ANALYSIS (mg/L)



## ***CHAPTER 6***

### **CORE SAMPLING TIMESHEET**

## ***CBM CORE SAMPLING TIMESHEET***

**Client:** Sunshine Gas Limited      **Well:** Lacerta-12  
**Job Number:** 1009-06      **Start Date:** 6/05/2007  
**Engineer:** DN

<b>Core No.</b>	<b>Top Depth (m)</b>	<b>Bottom Depth (m)</b>	<b>Time Core Penetrated</b>	<b>Time Core Left Bottom</b>	<b>Time Core Reached Surface</b>	<b>Date</b>
1	103.10	108.30	12:34:00	13:21:00	13:24:00	6/05/07
2	108.30	114.41	13:35:00	14:12:00	14:15:00	6/05/07
3	114.41	115.45	14:21:00	14:47:00	14:50:00	6/05/07
4	115.45	120.19	14:53:00	15:20:00	15:22:00	6/05/07
5	120.19	126.22	15:29:00	15:44:00	15:46:00	6/05/07
6	126.22	132.19	15:57:00	16:12:00	16:14:00	6/05/07
7	132.19	138.18	16:17:00	16:40:00	16:42:00	6/05/07
8	138.18	144.30	16:47:00	17:07:00	17:09:00	6/05/07
9	144.30	150.12	17:12:00	17:29:00	17:31:00	6/05/07
10	150.12	156.20	17:34:00	17:50:00	17:52:00	6/05/07
11	156.20	162.00	17:57:00	18:27:00	18:30:00	6/05/07
12	162.00	168.00	18:33:00	18:52:00	18:55:00	6/05/07
13	168.00	174.25	19:00:00	7:25:00	7:28:00	6/05/07
14	174.25	180.31	15:11:00	15:34:00	15:36:00	7/05/07
15	180.31	186.40	15:41:00	15:53:00	16:00:00	7/05/07
16	186.40	192.45	16:05:00	16:24:00	16:26:00	7/05/07
17	192.45	198.37	16:31:00	17:04:00	17:07:00	7/05/07
18	198.37	204.20	17:23:00	17:57:00	17:59:00	7/05/07
19	204.20	210.36	18:03:00	7:44:00	7:46:00	7/05/07
20	210.36	216.30	7:56:00	8:23:00	8:26:00	8/05/07
21	216.30	222.22	8:34:00	9:01:00	9:04:00	8/05/07
22	222.22	228.32	9:07:00	9:37:00	9:40:00	8/05/07
23	228.32	234.37	9:45:00	10:18:00	10:21:00	8/05/07
24	234.37	240.35	10:27:00	10:45:00	10:49:00	8/05/07
25	240.35	246.36	11:03:00	11:20:00	11:24:00	8/05/07
26	246.36	252.37	11:31:00	11:54:00	11:58:00	8/05/07
27	252.37	258.32	12:06:00	12:33:00	12:36:00	8/05/07
28	258.32	264.40	12:43:00	13:08:00	13:12:00	8/05/07
29	264.40	270.14	13:18:00	13:42:00	13:46:00	8/05/07
30	270.14	276.33	13:53:00	14:26:00	14:29:00	8/05/07
31	276.33	282.45	14:37:00	15:01:00	15:05:00	8/05/07
32	282.45	288.27	15:12:00	15:33:00	15:37:00	8/05/07
33	288.27	294.40	15:44:00	16:20:00	16:24:00	8/05/07
34	294.40	300.50	16:33:00	17:08:00	17:12:00	8/05/07
35	300.50	306.22	17:19:00	17:59:00	18:03:00	8/05/07
36	306.22	312.47	18:12:00	18:48:00	18:52:00	8/05/07
37	312.47	318.58	19:01:00	9:12:00	9:16:00	9/05/07
38	318.58	324.70	9:26:00	9:43:00	9:46:00	9/05/07
39	324.70	330.69	10:05:00	10:29:00	10:33:00	9/05/07
40	330.69	336.66	10:41:00	11:04:00	11:08:00	9/05/07

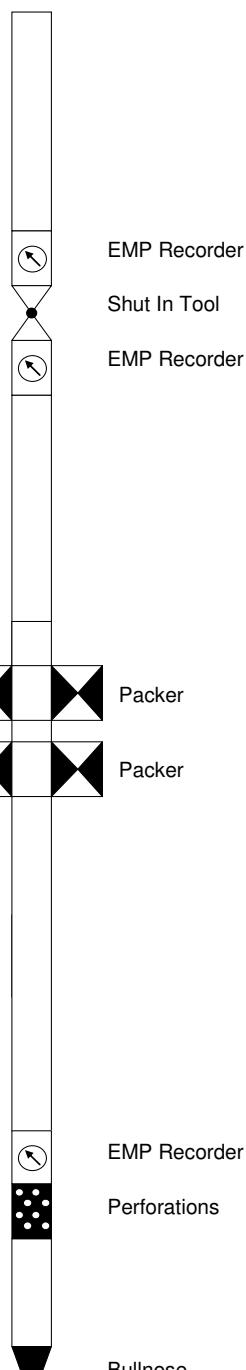
## ***CBM CORE SAMPLING TIMESHEET***

**Client:** Sunshine Gas Limited      **Well:** Lacerta-12  
**Job Number:** 1009-06      **Start Date:** 6/05/2007  
**Engineer:** DN

<b>Core No.</b>	<b>Top Depth (m)</b>	<b>Bottom Depth (m)</b>	<b>Time Core Penetrated</b>	<b>Time Core Left Bottom</b>	<b>Time Core Reached Surface</b>	<b>Date</b>
41	336.66	342.68	11:15:00	11:42:00	11:46:00	9/05/07
42	342.68	348.67	11:53:00	12:22:00	12:27:00	9/05/07
43	348.67	354.46	12:36:00	13:07:00	13:12:00	9/05/07
44	354.46	360.65	13:20:00	13:51:00	13:55:00	9/05/07
45	360.65	366.58	14:02:00	14:30:00	14:34:00	9/05/07
46	366.58	372.58	14:42:00	15:10:00	15:14:00	9/05/07
47	372.58	378.61	15:19:00	15:51:00	15:54:00	9/05/07
48	378.61	384.61	16:02:00	16:30:00	16:34:00	9/05/07
49	384.61	390.58	16:41:00	17:12:00	17:17:00	9/05/07
50	390.58	396.57	17:25:00	18:05:00	18:09:00	9/05/07
51	396.57	402.60	18:19:00	7:42:00	7:46:00	9/05/07
52	402.60	408.59	8:00:00	8:27:00	8:32:00	10/05/07
53	408.59	414.53	8:40:00	9:24:00	9:29:00	10/05/07

## **APPENDIX 5**

### **DST FIELD REPORTS**

	<p><u><b>Company:</b></u> Sunshine Gas  <u><b>Well Name:</b></u> Lacerta #12  <u><b>Well Location:</b></u> 71kms NNE Roma  <u><b>State:</b></u> QLD  <u><b>Date:</b></u> 7/05/2007  <u><b>Test Type:</b></u> Conventional - Bottom Hole  <u><b>Formation:</b></u> Injune Creek  <u><b>Interval:</b></u> 141.95 - 174.30m  <u><b>DST #:</b></u> 1</p>	 <p><b>Ticket #:</b> 1358  <b>TD:</b> 174.30m  <b>RT Elev:</b> 426.91  <b>GL Elev:</b> 426  <b>Tester:</b> J. Owen      K. Thorne</p>																																																																																			
 <p><b>EMP Recorder</b></p> <p><b>Shut In Tool</b></p> <p><b>EMP Recorder</b></p> <p><b>Packer</b></p> <p><b>Packer</b></p> <p><b>EMP Recorder</b></p> <p><b>Perforations</b></p> <p><b>Bullnose</b></p> <p><b>Test Tool String Simple Schematic</b></p>	<p>Total Tool to Bottom of Packers                          10.15 m  Tool in Interval    5.35 m  <b>Total Tool :</b>    <b>15.50</b> m  Drill Rods above Tool                                        135.00 m  Drill Rods in Interval                                        27.00 m</p> <p><b>TOTAL ASSEMBLY:</b>    <b>177.50</b> m</p> <p><b>72m WATER CUSHION = 8 x 9 m DRILL RODS</b></p> <table> <tr> <td><b>STICK UP:</b></td> <td style="text-align: right;"><b>-3.20</b></td> <td></td> </tr> <tr> <td>Drill Rods</td> <td style="text-align: right;">126.00</td> <td>-3.20 14 x 9m Drill Rods</td> </tr> <tr> <td>Cross Over</td> <td style="text-align: right;">0.26</td> <td>122.80</td> </tr> <tr> <td>Pump Out Sub</td> <td style="text-align: right;">0.26</td> <td>122.80</td> </tr> <tr> <td>Drop Bar Sub</td> <td style="text-align: right;">0.26</td> <td>123.06</td> </tr> <tr> <td>Cross Over</td> <td style="text-align: right;"></td> <td>123.32</td> </tr> <tr> <td>Drill Rod</td> <td style="text-align: right;">9.00</td> <td>123.32 1 x 9m Drill Rod</td> </tr> <tr> <td>Cross Over</td> <td style="text-align: right;">0.40</td> <td>132.32</td> </tr> <tr> <td>Drop Bar Catcher</td> <td style="text-align: right;">0.30</td> <td>132.72</td> </tr> <tr> <td><b>Fluid Rec</b></td> <td style="text-align: right;">WMG 8317</td> <td>0.92</td> </tr> <tr> <td>Shut In Tool</td> <td style="text-align: right;">1.59</td> <td>133.94</td> </tr> <tr> <td>Hydraulic Tool</td> <td style="text-align: right;">1.66</td> <td>135.53</td> </tr> <tr> <td><b>Inside Rec</b></td> <td style="text-align: right;">WMG 8318</td> <td>0.93</td> </tr> <tr> <td>Safety Joint</td> <td style="text-align: right;">0.60</td> <td>138.12</td> </tr> <tr> <td>Packer</td> <td style="text-align: right;">1.92</td> <td>138.72</td> </tr> <tr> <td>Packer</td> <td style="text-align: right;">1.31</td> <td>140.64</td> </tr> <tr> <td><b>DEPTH:</b></td> <td style="text-align: right;"><b>141.95</b></td> <td></td> </tr> <tr> <td>Stick Down</td> <td style="text-align: right;">0.91</td> <td>141.95</td> </tr> <tr> <td>Perforations</td> <td style="text-align: right;">1.50</td> <td>142.86</td> </tr> <tr> <td><b>Outside Rec</b></td> <td style="text-align: right;">WMG 8316</td> <td>1.52</td> </tr> <tr> <td>Perforations</td> <td style="text-align: right;"></td> <td>144.36</td> </tr> <tr> <td>Cross Over</td> <td style="text-align: right;">0.40</td> <td>145.88</td> </tr> <tr> <td>Drill Rods</td> <td style="text-align: right;">27.00</td> <td>146.28 3 x 9m Drill Rods</td> </tr> <tr> <td>Cross Over</td> <td style="text-align: right;">0.40</td> <td>173.28</td> </tr> <tr> <td>Perforations</td> <td style="text-align: right;"></td> <td>173.68</td> </tr> <tr> <td>Bullnose</td> <td style="text-align: right;">0.62</td> <td>173.68</td> </tr> <tr> <td><b>TOTAL DEPTH:</b></td> <td style="text-align: right;"><b>174.30</b></td> <td></td> </tr> </table>	<b>STICK UP:</b>	<b>-3.20</b>		Drill Rods	126.00	-3.20 14 x 9m Drill Rods	Cross Over	0.26	122.80	Pump Out Sub	0.26	122.80	Drop Bar Sub	0.26	123.06	Cross Over		123.32	Drill Rod	9.00	123.32 1 x 9m Drill Rod	Cross Over	0.40	132.32	Drop Bar Catcher	0.30	132.72	<b>Fluid Rec</b>	WMG 8317	0.92	Shut In Tool	1.59	133.94	Hydraulic Tool	1.66	135.53	<b>Inside Rec</b>	WMG 8318	0.93	Safety Joint	0.60	138.12	Packer	1.92	138.72	Packer	1.31	140.64	<b>DEPTH:</b>	<b>141.95</b>		Stick Down	0.91	141.95	Perforations	1.50	142.86	<b>Outside Rec</b>	WMG 8316	1.52	Perforations		144.36	Cross Over	0.40	145.88	Drill Rods	27.00	146.28 3 x 9m Drill Rods	Cross Over	0.40	173.28	Perforations		173.68	Bullnose	0.62	173.68	<b>TOTAL DEPTH:</b>	<b>174.30</b>		<p><b>STICK UP:</b></p>	<b>-3.20</b>	
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# FIELD REPORT

**Company:** Sunshine Gas  
**Well Name:** Lacerta #12  
**Well Location:** 71kms NNE Roma  
**State:** QLD  
**Date:** 7/05/2007  
**Test Type:** Conventional - Bottom Hole  
**Formation:** Injune Creek  
**Interval:** 141.95 - 174.30m  
**DST #:** 1



**Ticket #:** 1358  
**TD:** 174.30m  
**RT Elev:** 426.91  
**GL Elev:** 426  
**Tester:** J. Owen / K. Thorne

#### RECORDER DATA:

Rec #:	8317	8318	8316		
Range (psi):	10K	10K	10K		
Battery S/N:	M17002	M17004	M17001		
Depth (m):	133.02	137.19	144.36		
	PSIG	PSIG	PSIG		
Initial Hydrostatic:		194.35	204.19		
Initial Preflow:		93.41	104.70		
Final Preflow:		97.35	107.37		
Initial Shutin:	91.59	98.04	107.96		
Initial Flow:		97.58	107.56		
Final Flow:		97.90	107.94		
Final Shutin:	92.91	98.01	107.79		
Final Hydrostatic:		192.38	202.66		
Inside / Outside:	Fluid	Inside	Outside		

#### TIME DATA:

Preflow: 5 mins  
 Initial Shutin: 30 mins  
 Initial Flow: 20 mins  
 Final Shutin: 90 mins

Time Start	Time End
10:45	10:50
10:50	11:20
11:20	11:40
11:40	13:10
(24 hour time)	

**Pick Up Tools:** 9:40  
**RIH Pipe:** 10:00  
**On Depth:** 10:28  
**Open Tools:** 10:45  
**Time Pulled:** 13:10  
**Drop Bar:** 13:14  
**POOH Pipe:** 13:50  
**L/O Tools:** 14:10  
**Finish L/O Tools:** 14:30

#### TOOL DATA:

Tool Weight: 2 000 lb  
 Weight Set on Packers: Not Indicated lb  
 Weight Pulled Free: Not Indicated lb  
 Initial String Weight: Not Indicated lb  
 Hole Size: HQ (96mm) in  
 Bottom Hole Choke: 1/2 in

	OD (in)	ID (in)	Length (m)	Cap. (bbls/ft)
Drill Pipe 1:	3.5	3.06	135.00	0.0091
Drill Pipe 2:	-	-	-	-
HW Drill Pipe 1:	-	-	-	-
HW Drill Pipe 2:	-	-	-	-
Drill Collars 1:	-	-	-	-
Drill Collars 2:	-	-	-	-

**FLUID RECOVERY:**

_____	m of	Formation Fluid
_____	m of	_____
_____	m of	_____
_____	m of	_____

**MUD DATA:**

Mud Type:	KCl/Polymer
Weight:	8.4 ppg
Viscosity:	33 sec
W.L.	cc/30min
F.C.	/32"
Mud Drop:	N/A

**BLOW DESCRIPTION AND REMARKS:**

Preflow: **Weak to strong air blow in 1 minute.**

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Second Flow: **Weak airblow died off completley after 1 minute.**

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SAMPLE CHAMBER RECOVERY: N/A

SURFACE CHOKE SIZE: 1/8 in

Comments: **N/A****GENERAL DATA:**

Number of Packers: 2  
Packer Size: 3-1/2" x 30"

Packer S/N: NA  
Location: Top  
Condition OOH: Good

Packer S/N: NA  
Location: Bottom  
Condition OOH: Good

Prior operations: Drilling  
Wiper Trip Performed: Yes  
Amount of Fill (m): Nil  
Hole Condition: Good

Cushion Amount (m): 72m  
Cushion Type: Water  
Reversed Out: Yes  
Tool Chased: No

BHT (°F): 82.55  
Company Rep: Sherrin Nicholson  
Contractor: Mitchell Drilling  
Rig Number: 123

**GENERAL TEST COMMENTS:**

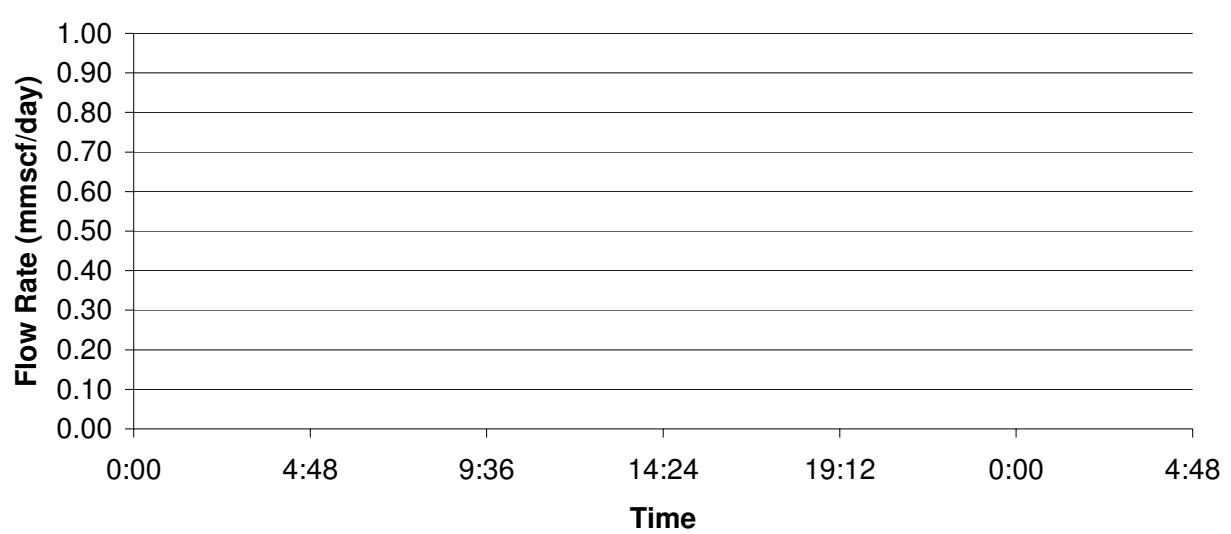
Inflow Water killed well by end of preflow.

GAS FLOW RATES:

TIME	CHOKE	psi	mmscf/d

TIME	CHOKE	psi	mmscf/d

**Flow Rate**



Sunshine Gas  
10/0-0-0W/  
Start Test Date: 2007/05/07

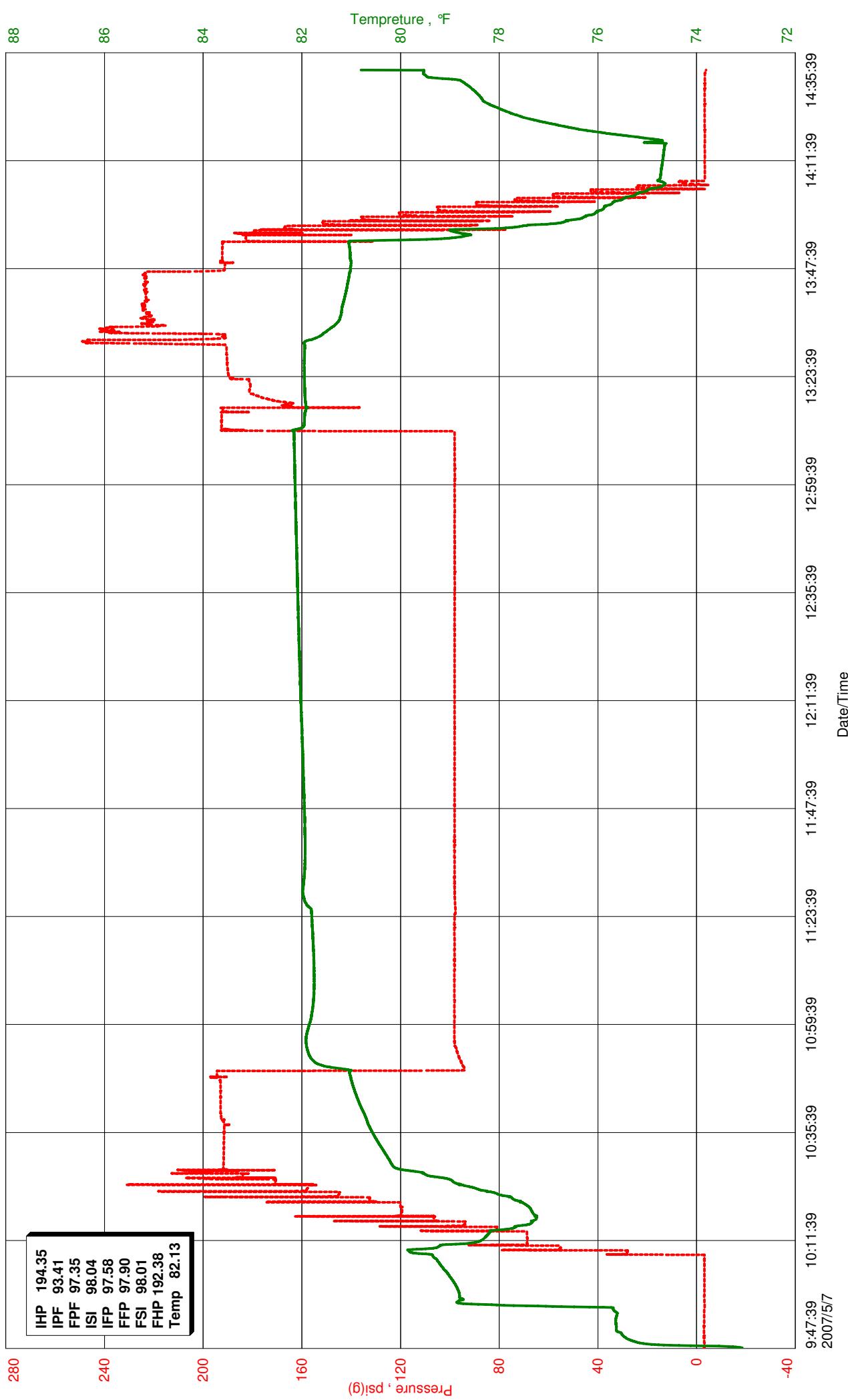
Lacerta #12  
Job Number: 1

## Fluid



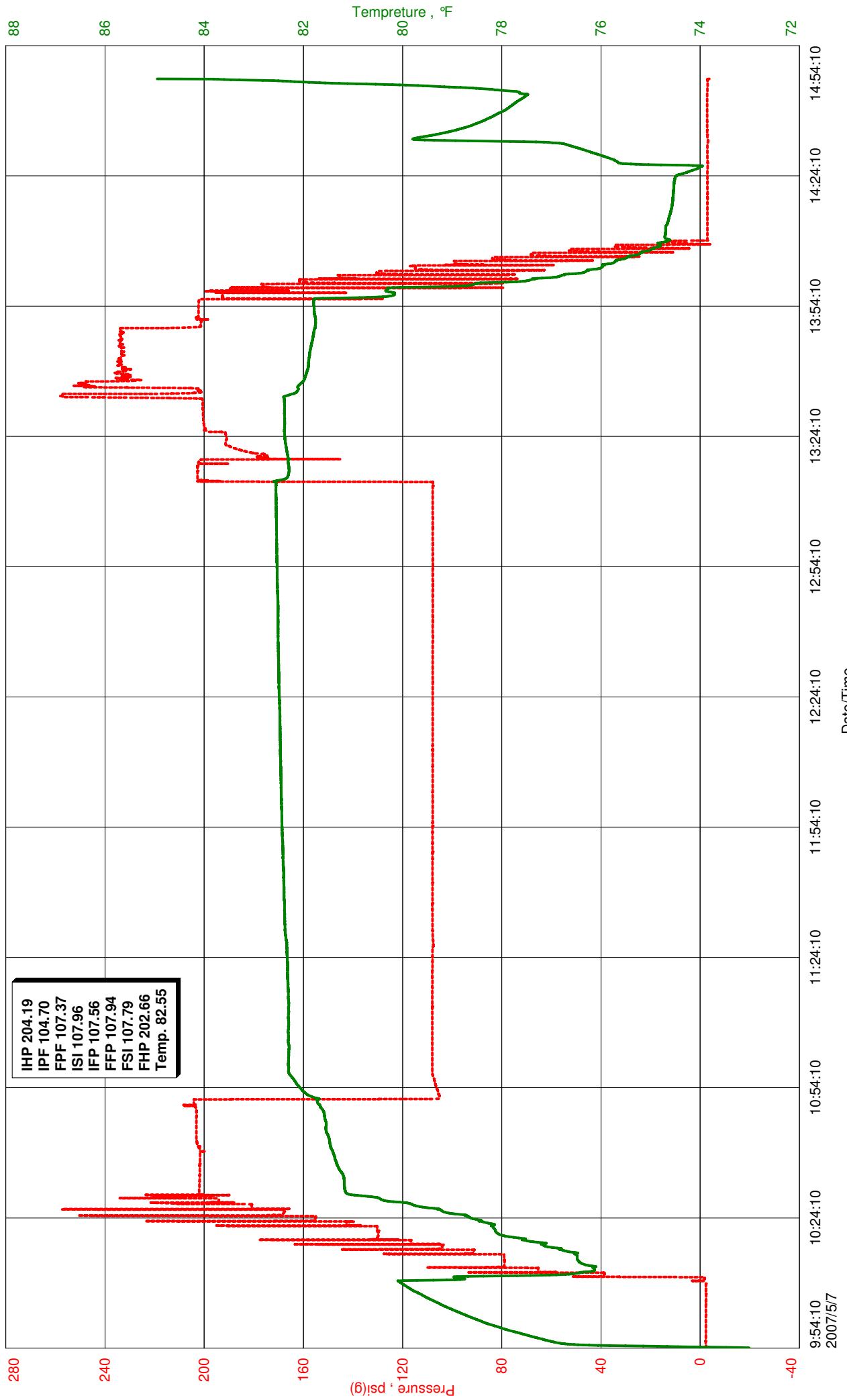
Sunshine Gas  
Start Test Date: 2007/05/07

Lacerta #12  
Job Number: 1  
Inside Recorder



Sunshine Gas  
Start Test Date: 2007/05/07

Lacerta #12  
Job Number: 1  
**Outside**



<p><b>Test Tool String Simple Schematic</b></p>	<p><b>Company:</b> Sunshine Gas  <b>Well Name:</b> Lacerta #12  <b>Well Location:</b> 71kms NNE Roma  <b>State:</b> QLD  <b>Date:</b> 11/05/2007  <b>Test Type:</b> Conventional - Bottom Hole  <b>Formation:</b> Injune Creek  <b>Interval:</b> 344.45 - 414.30m  <b>DST #:</b> 2</p>		
	<p><b>Ticket #:</b> 1359  <b>TD:</b> 414.30m  <b>RT Elev:</b> 386.9  <b>GL Elev:</b> 386  <b>Tester:</b> J. Owen      D .Mchugh</p>		
	Total Tool to Bottom of Packers	10.15 m	
	Tool in Interval	3.85 m	
	<b>Total Tool :</b>	<b>14.00</b> m	
	Drill Rods above Tool	336.00 m	
	Drill Rods in Interval	66.00 m	
	<b>TOTAL ASSEMBLY:</b>	<b>416.00</b> m	
	<b>72m WATER CUSHION = 8 x 9 m DRILL RODS</b>		
	<b>STICK UP:</b>	<b>-1.70</b>	
 Packer	Drill Rods	327.00	-1.70 36 x 9m - 1 x 3m Drill Rod
	Cross Over		325.30
 Packer	Pump Out Sub	0.26	325.30
	Drop Bar Sub	0.26	325.56
 EMP Recorder	Cross Over		325.82
	Drill Rod	9.00	325.82 1 x 9m Drill Rod
	Cross Over	0.40	334.82
	Drop Bar Catcher	0.30	335.22
	<b>Fluid Rec</b> WMG 8303	0.92	335.52
	Shut In Tool	1.59	336.44
	Hydraulic Tool	1.66	338.03
	<b>Inside Rec</b> WMG 6832	0.93	339.69
 EMP Recorder	Safety Joint	0.60	340.62
	Packer	1.92	341.22
	Packer	1.31	343.14
	<b>DEPTH:</b>	<b>344.45</b>	
	Stick Down	0.91	344.45
	Perforations		345.36
	<b>Outside Rec</b> WMG 8300	1.52	345.36
	Perforations		346.88
	Cross Over	0.40	346.88
	Drill Rods	66.00	347.28 7 x 9m - 1 x 3m Drill Rod
 Perforations	Cross Over	0.40	413.28
	Perforations		413.68
	Bullnose	0.62	413.68
	<b>TOTAL DEPTH:</b>	<b>414.30</b>	
	Bullnose		

## FIELD REPORT

**Company:** Sunshine Gas  
**Well Name:** Lacerta #12  
**Well Location:** 71kms NNE Roma  
**State:** QLD  
**Date:** 11/05/2007  
**Test Type:** Conventional - Bottom Hole  
**Formation:** Injune Creek  
**Interval:** 344.45 - 414.30m  
**DST #:** 2



**Ticket #:** 1359  
**TD:** 414.30m  
**RT Elev:** 386.9  
**GL Elev:** 386  
**Tester:** J. Owen / D .Mchugh

#### RECORDER DATA:

Rec #:	8303	6832	8300		
Range (psi):	10K	10K	10K		
Battery S/N:	B17263	B17261	B17262		
Depth (m):	335.52	339.69	345.36		
	PSIG	PSIG	PSIG		
Initial Hydrostatic:		462.88	462.21		
Initial Preflow:		197.51	232.41		
Final Preflow:		226.53	250.47		
Initial Shutin:	175.32	336.95	344.86		
Initial Flow:		232.46	256.60		
Final Flow:		314.50	323.93		
Final Shutin:	304.46	336.39	344.21		
Final Hydrostatic:		469.21	477.47		
Inside / Outside:					

#### TIME DATA:

Preflow: 5 mins  
 Initial Shutin: 30 mins  
 Initial Flow: 20 mins  
 Final Shutin: 90 mins

Time Start	Time End
9:37	9:42
9:42	10:12
10:12	10:32
10:32	12:02

(24 hour time)

**Pick Up Tools:** 8:10  
**RIH Pipe:** 8:35  
**On Depth:** 9:00  
**Open Tools:** 9:37  
**Time Pulled:** 12:02  
**Drop Bar:** 12:10  
**POOH Pipe:** 13:10  
**L/O Tools:** 14:00  
**Finish L/O Tools:** 14:38

#### TOOL DATA:

Tool Weight: 2 000 lb  
 Weight Set on Packers: Not Indicated lb  
 Weight Pulled Free: Not Indicated lb  
 Initial String Weight: Not Indicated lb  
 Hole Size: HQ (96mm) in  
 Bottom Hole Choke: 1/2 in

	OD (in)	ID (in)	Length (m)	Cap. (bbls/ft)
Drill Pipe 1:	3.5	3.06	336.00	0.0091
Drill Pipe 2:	-	-	-	-
HW Drill Pipe 1:	-	-	-	-
HW Drill Pipe 2:	-	-	-	-
Drill Collars 1:	-	-	-	-
Drill Collars 2:	-	-	-	-

**FLUID RECOVERY:**

_____	m of	Formation Fluid.
_____	m of	_____
_____	m of	_____
_____	m of	_____

**MUD DATA:**

Mud Type:	KCl/Polymer
Weight:	8.4 ppg
Viscosity:	33 sec
W.L.	cc/30min
F.C.	/32"
Mud Drop:	N/A

**BLOW DESCRIPTION AND REMARKS:**Preflow: \_\_\_\_\_

Weak to strong air blow in 2 minutes

Second Flow: Weak to strong air blow in 2 minutes.

SAMPLE CHAMBER RECOVERY: N/A

SURFACE CHOKE SIZE: 1/8 in

Comments: N/A**GENERAL DATA:**

Number of Packers: 2  
 Packer Size: 3-1/2" x 30"

Packer S/N: NA  
 Location: Top  
 Condition OOH: Good

Packer S/N: NA  
 Location: Bottom  
 Condition OOH: Good

Prior operations: Drilling  
 Wiper Trip Performed: Yes  
 Amount of Fill (m): Nil  
 Hole Condition: Good

Cushion Amount (m): 72m  
 Cushion Type: Water  
 Reversed Out: Yes  
 Tool Chased: No

BHT (°F): 103.73  
 Company Rep: Sherrin Nicholson  
 Contractor: Mitchell Drilling  
 Rig Number: 123

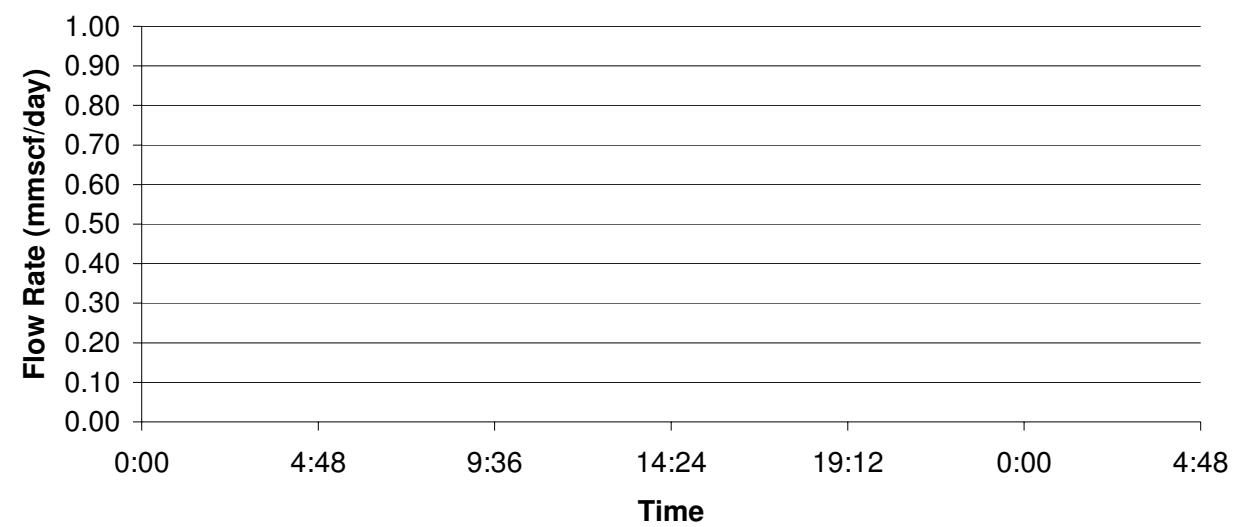
**GENERAL TEST COMMENTS:**

Moderate drop in the annulus throughout test.

**GAS FLOW RATES:**

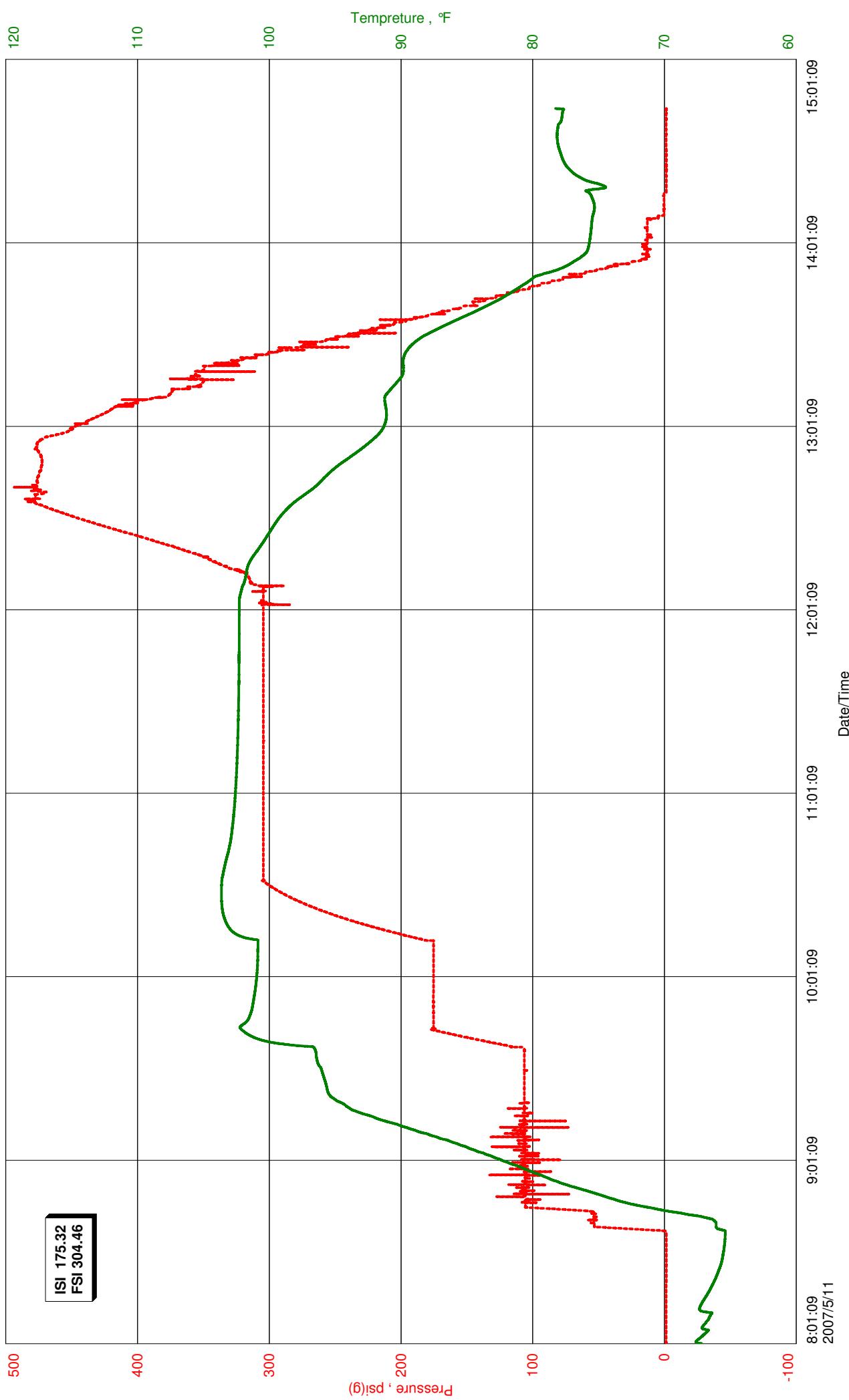
TIME	CHOKE	psi	mmscf/d

TIME	CHOKE	psi	mmscf/d

**Flow Rate**

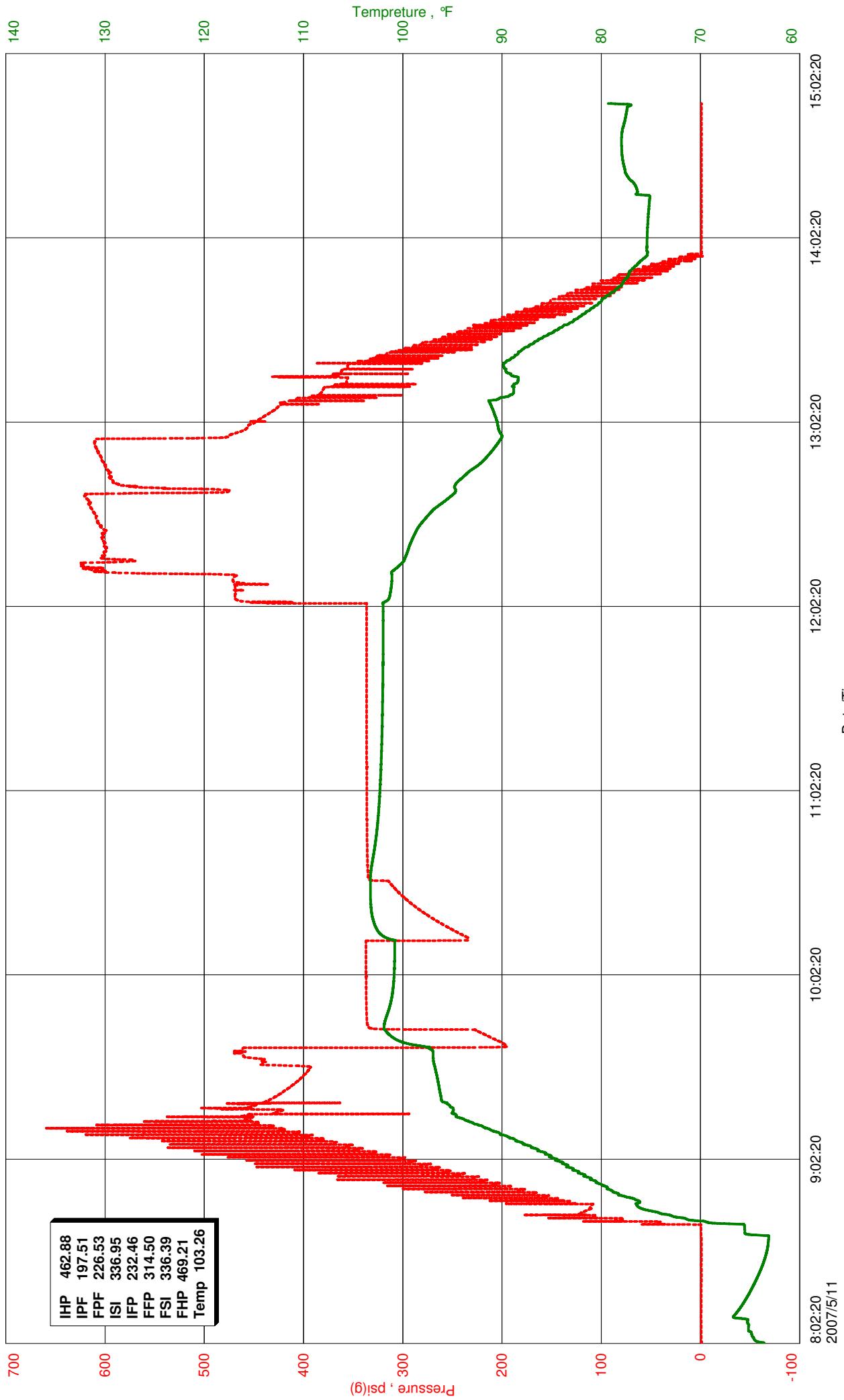
Sunshine Gas  
Start Test Date: 2007/05/11

Lacerta #12  
Job Number: 2



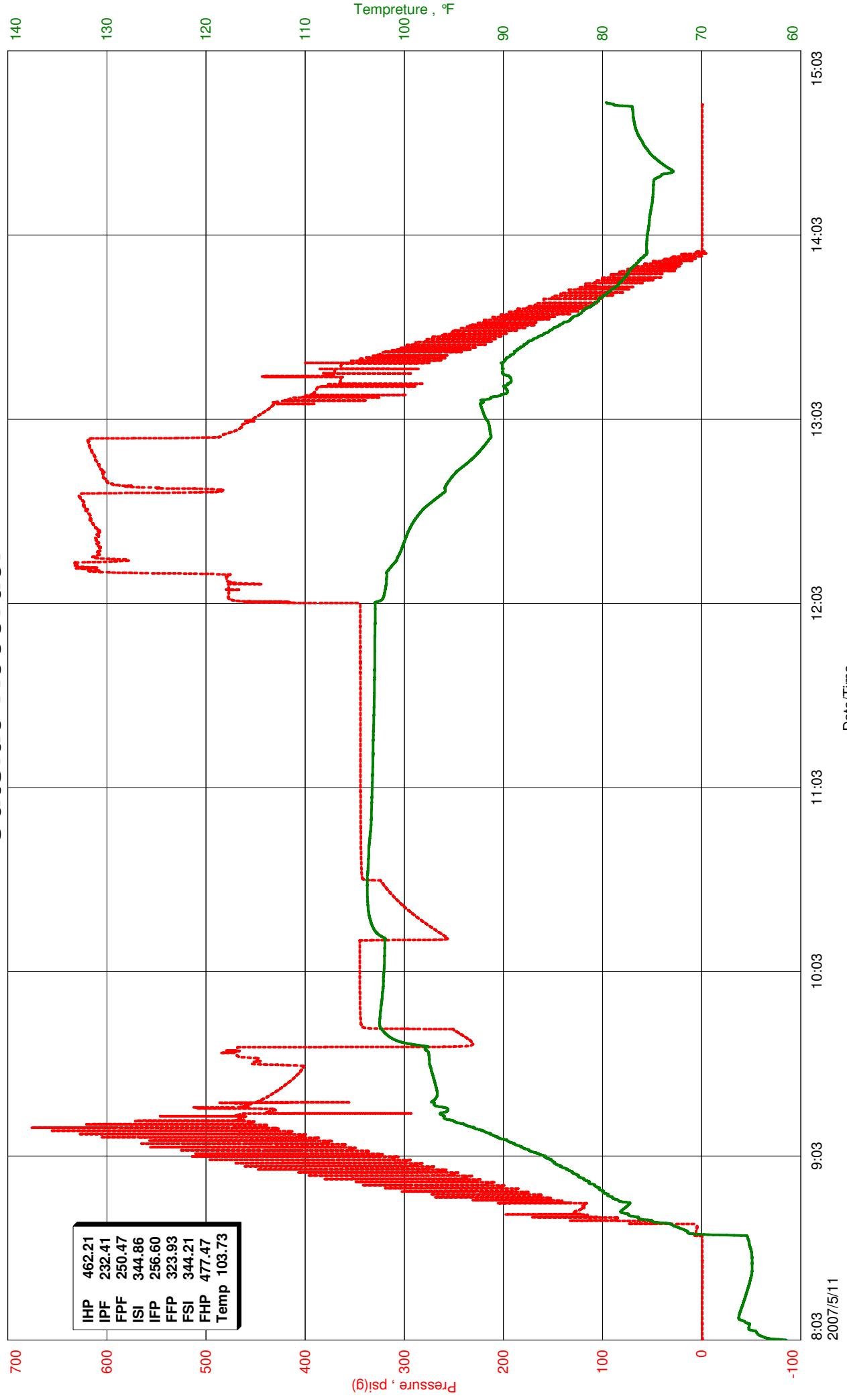
Sunshine Gas  
Start Test Date: 2007/05/11

Lacerta #12  
Job Number: 2  
**Inside Recorder**



Sunshine Gas  
Start Test Date: 2007/05/11

Lacerta #12  
Job Number: 2  
**Outside Recorder**



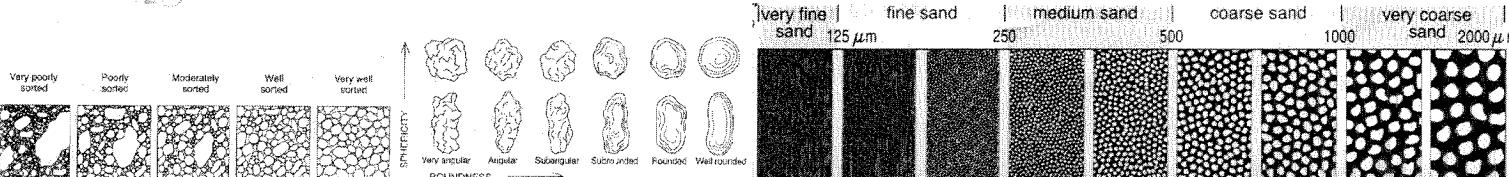
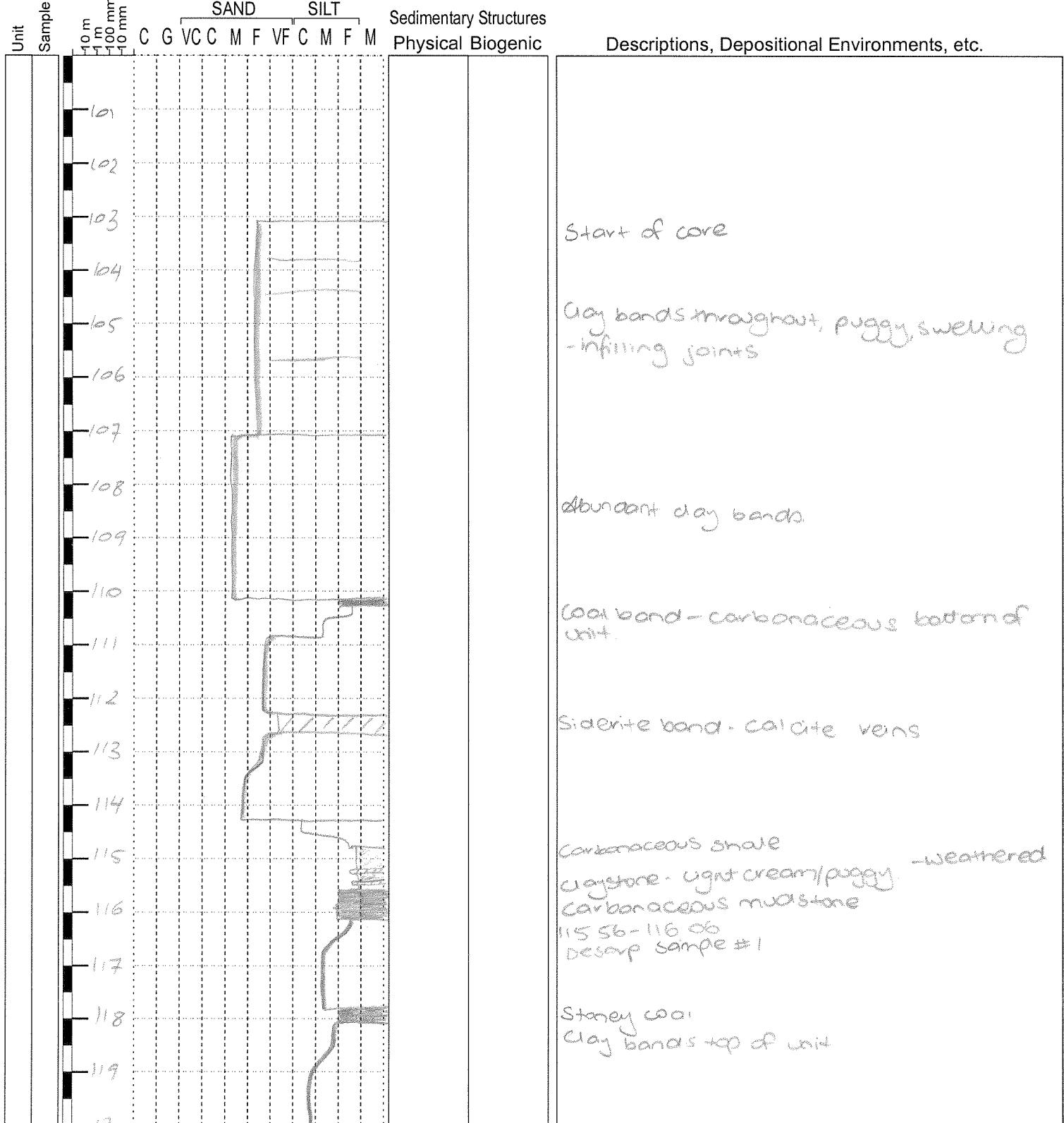
## APPENDIX 6

### STRATIGRAPHIC CORE LOG

# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator: SUNSHINE GAS
Long: E 70°44'43"	Date: 6/5/07 Page: 1 of 16
Lat: N 70°8'42.7"	Logged by: SN
Twp/Rge:	
Notes:	

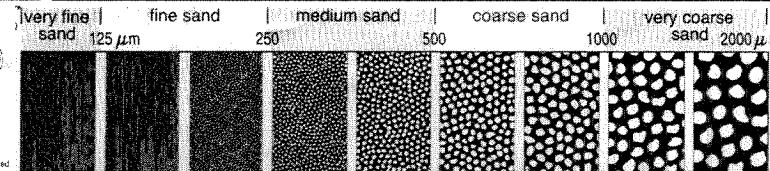
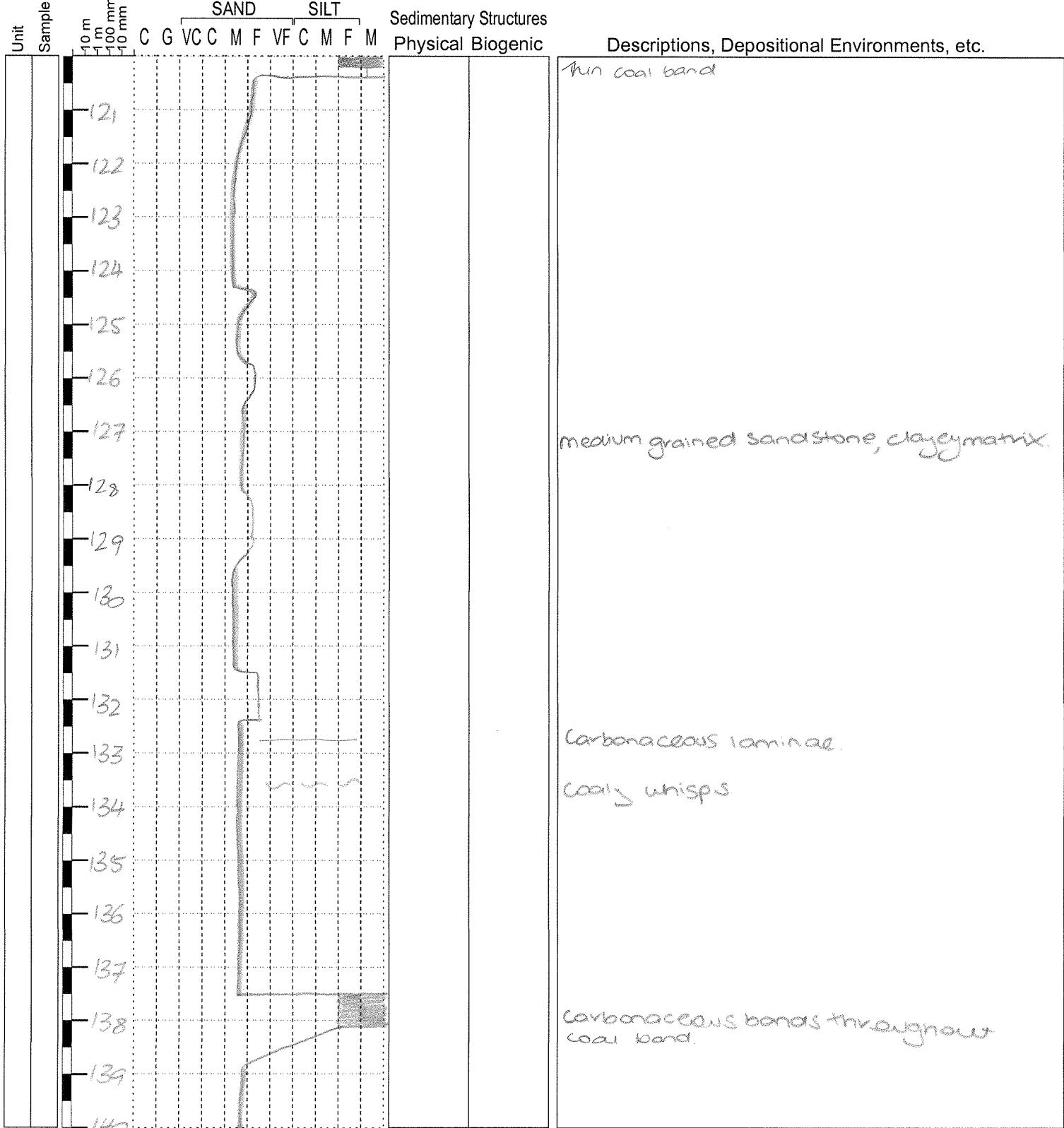
By Tobi Payenberg and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator: SMC
Long:	Date: Page: 2 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

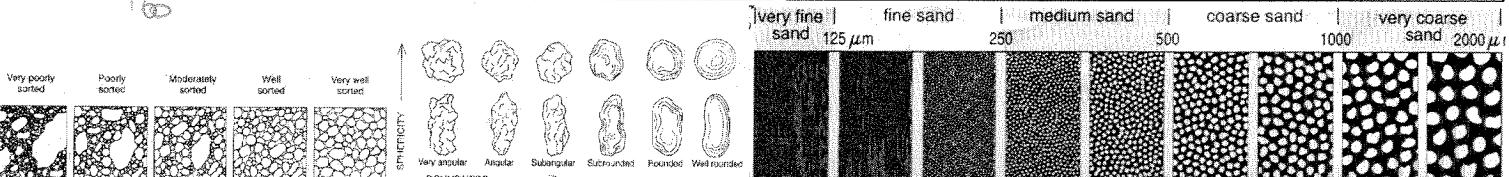
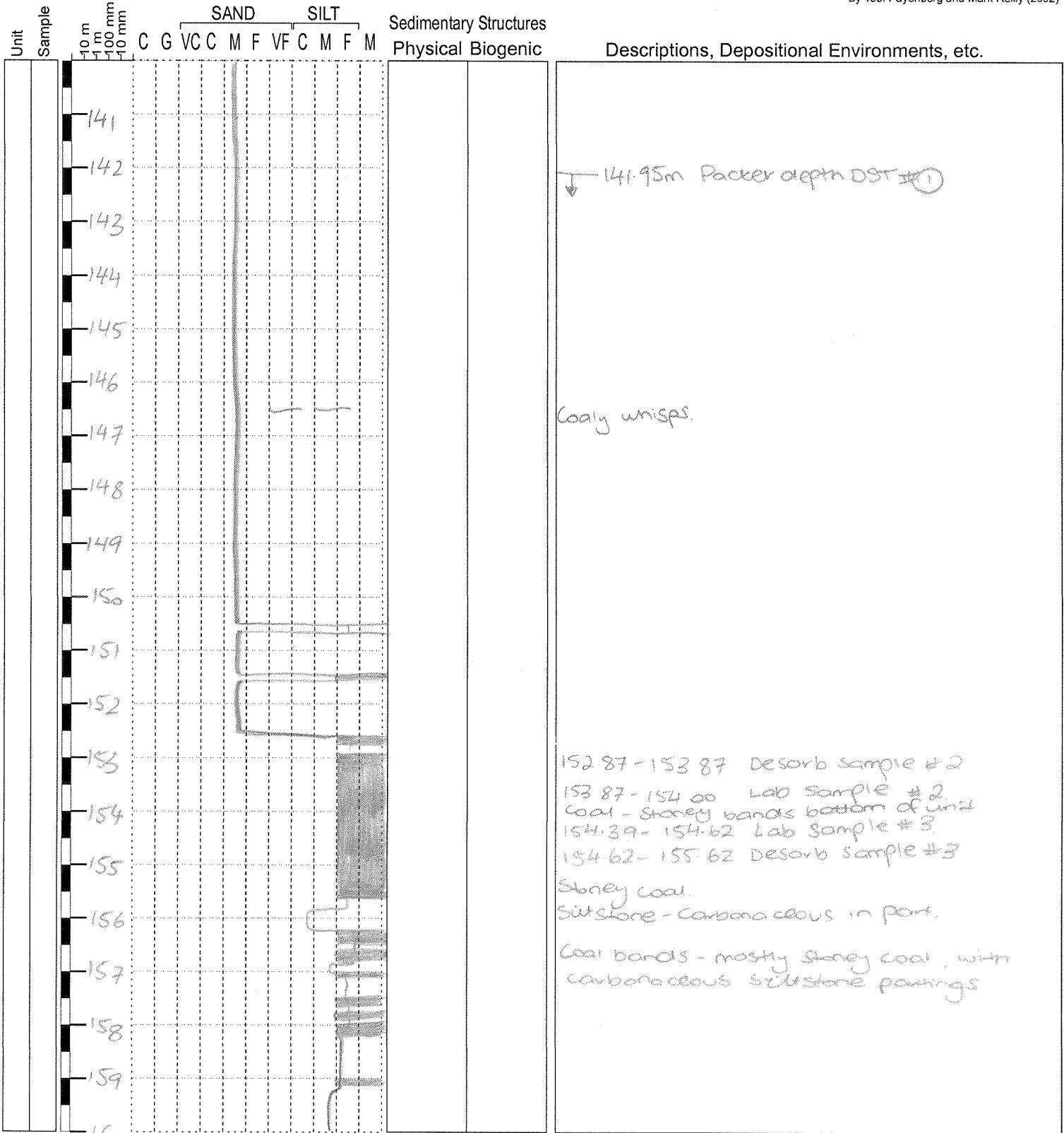
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator: SHG
Long:	Date: Page: 3 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

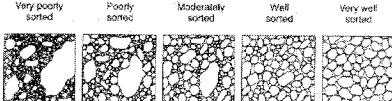
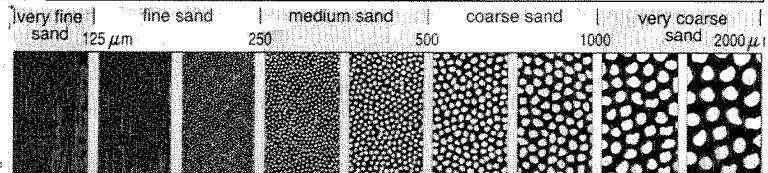
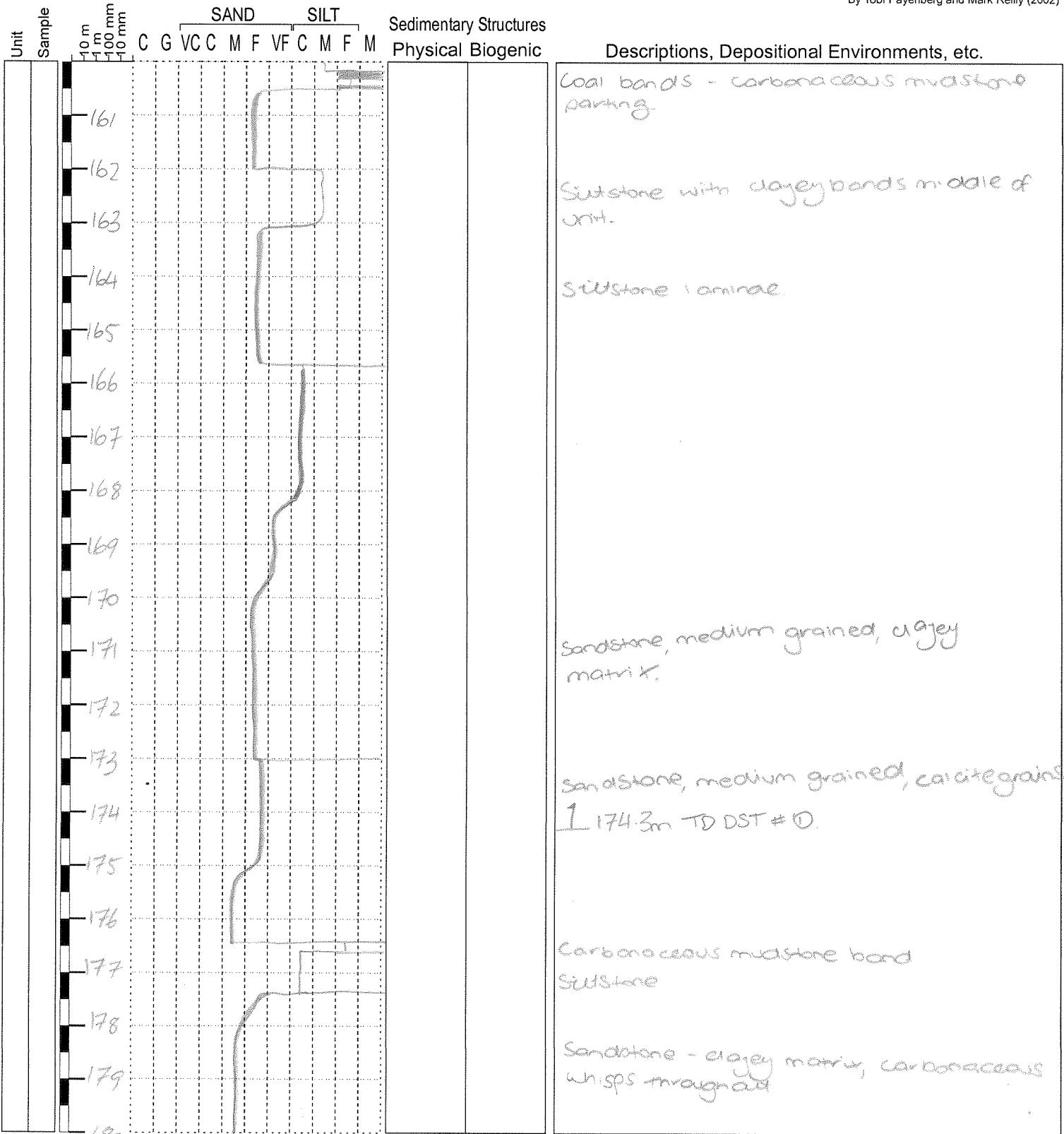
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 4 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

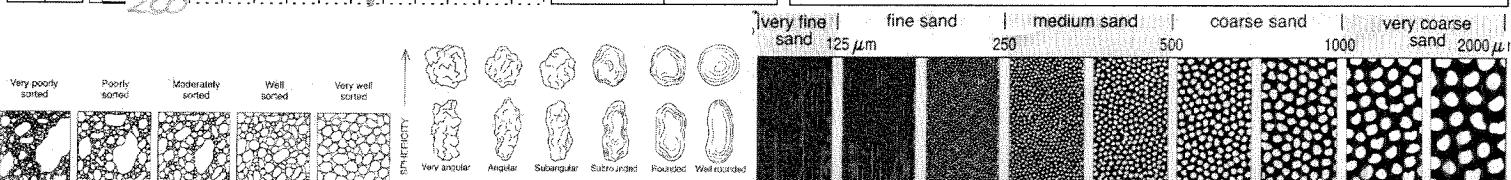
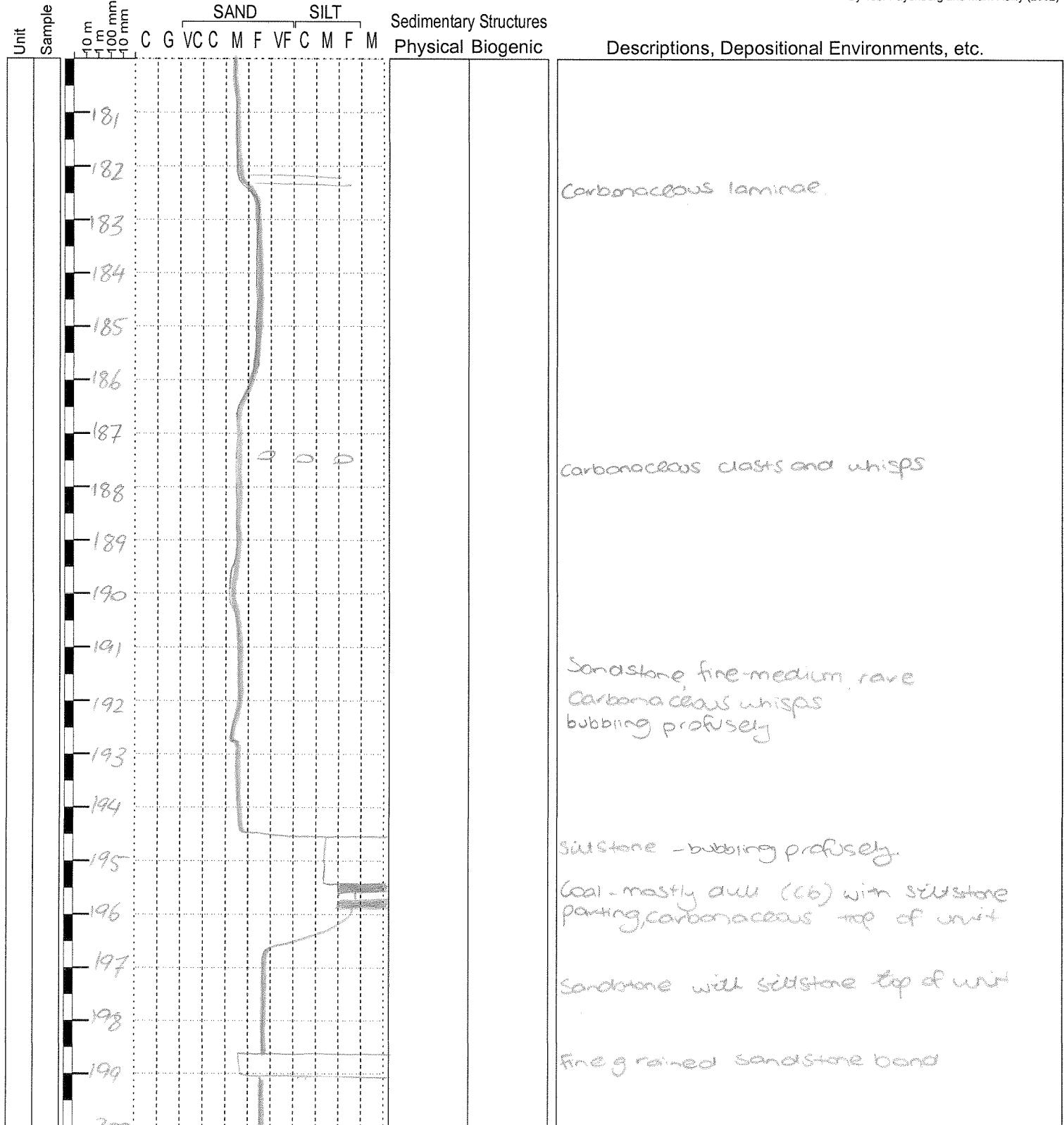
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: <b>LACERTA 12</b>	Operator:
Long:	Date: <b>5 of 16</b>
Lat:	Logged by: <b>SN</b>
Twp/Rge:	
Notes:	

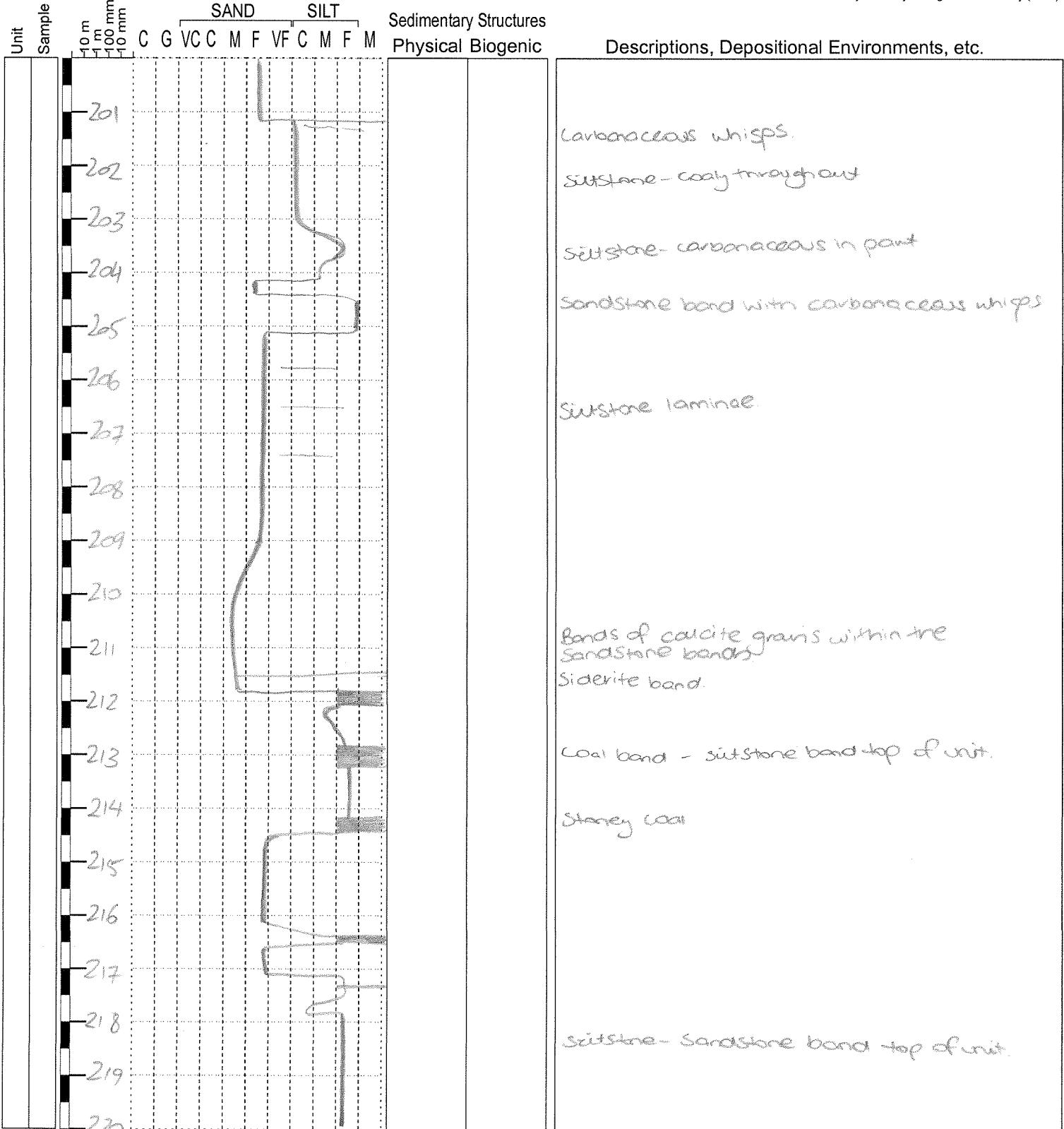
By Tobi Payenberg and Mark Reilly (2002)



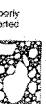
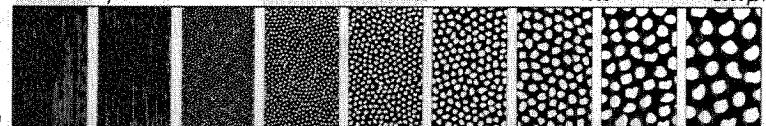
# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 6 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

By Tobi Payenberg and Mark Reilly (2002)



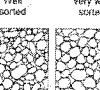
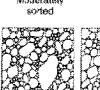
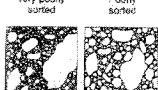
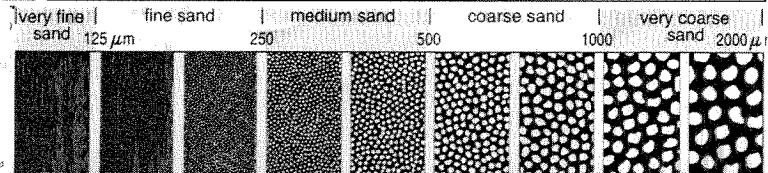
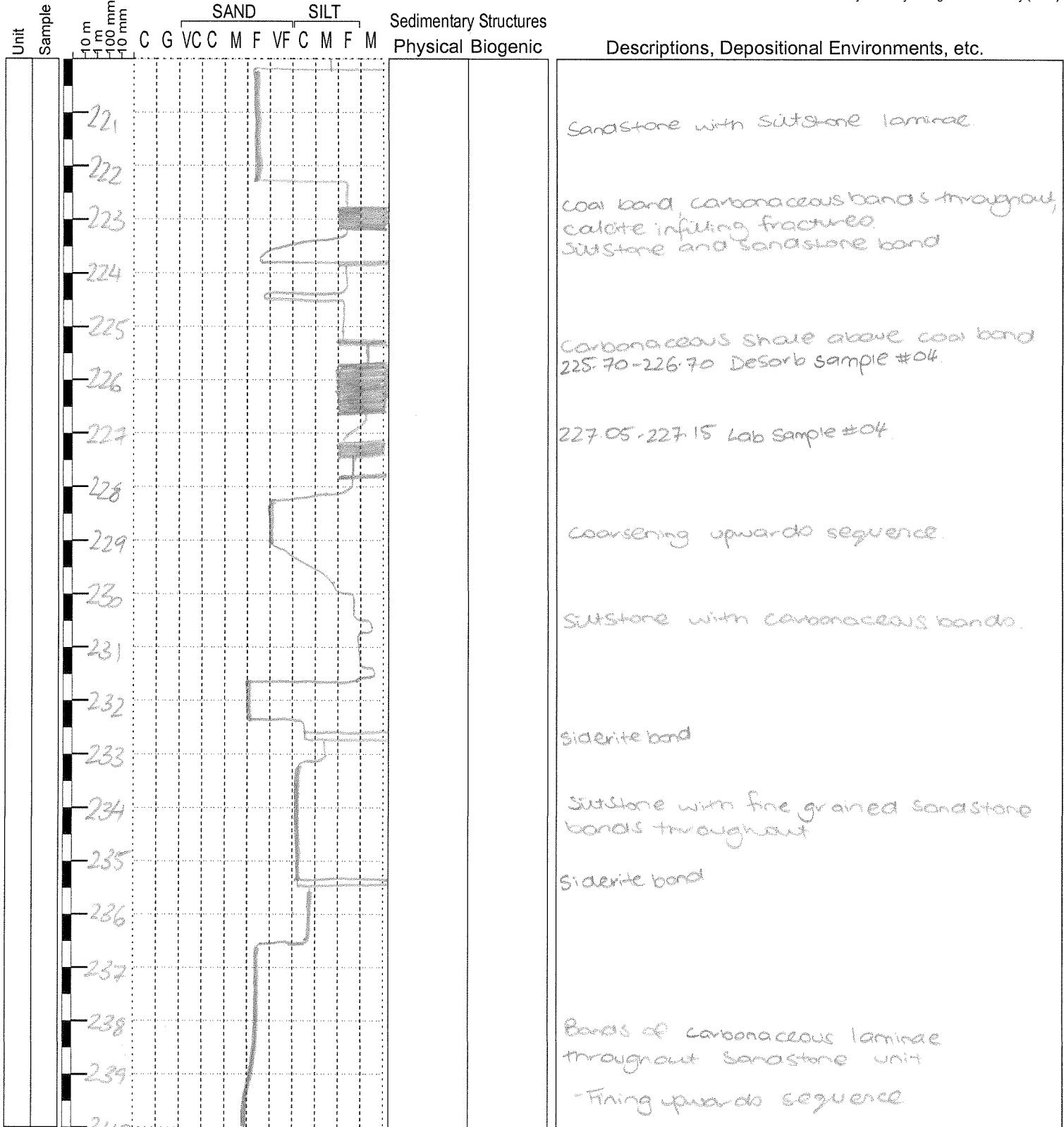
Very fine sand 125  $\mu$ m fine sand 250 medium sand 500 coarse sand 1000 very coarse sand 2000  $\mu$ m



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 7 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

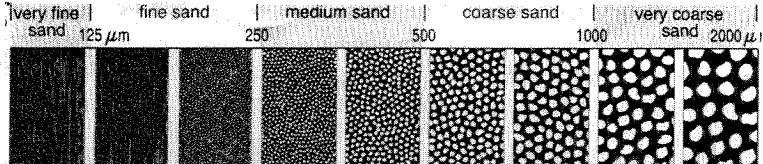
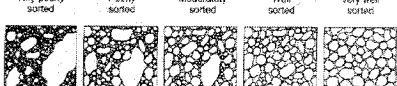
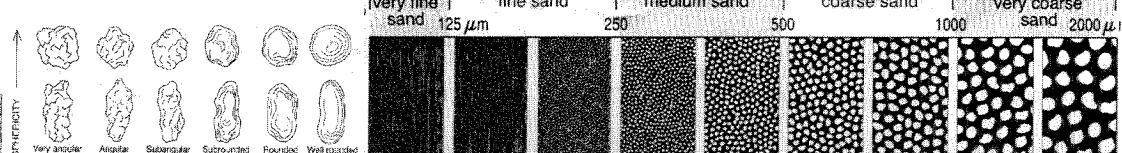
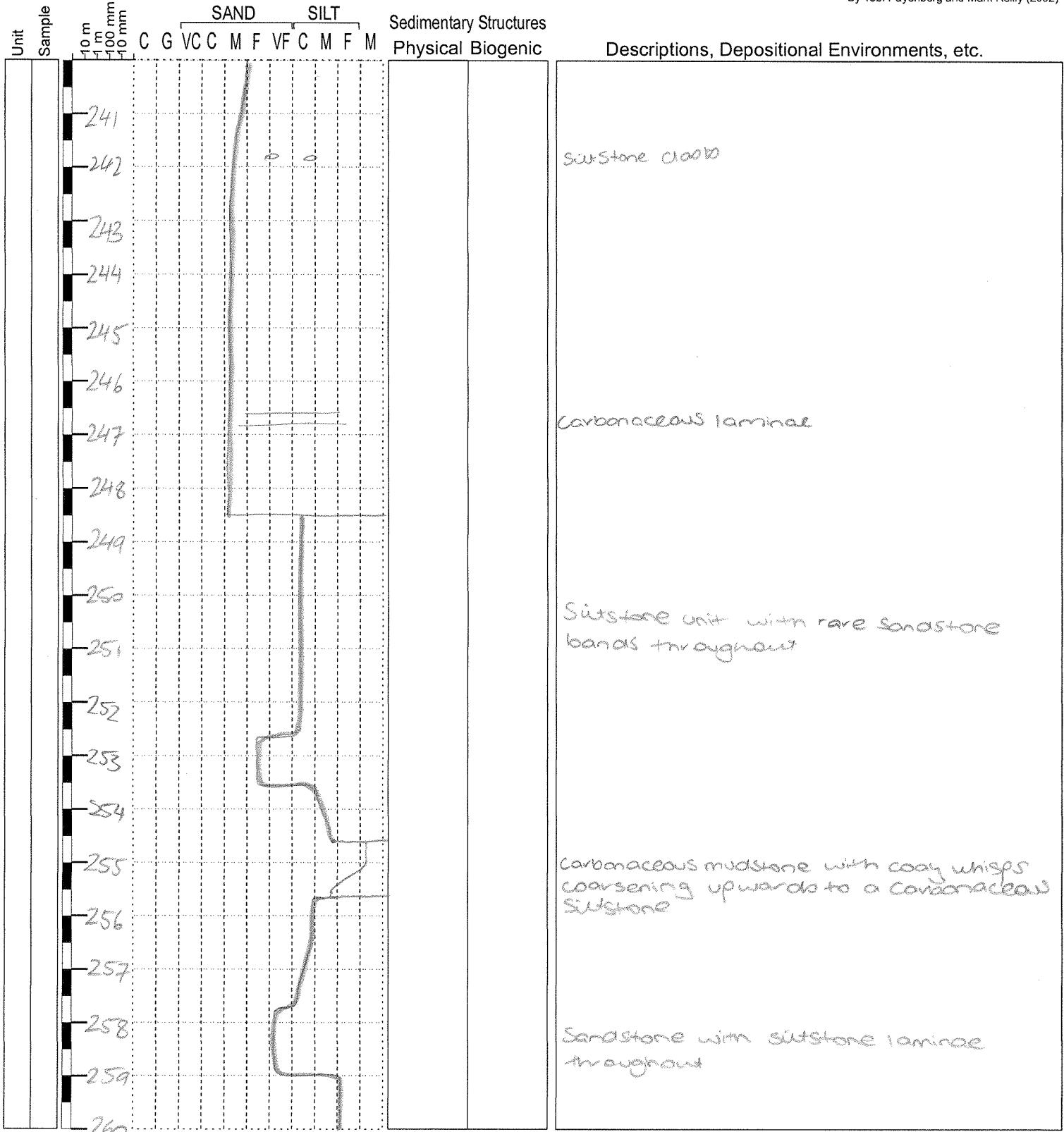
By Tobi Payenberg and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 8 of 16
Lat:	Logged by: SW
Twp/Rge:	
Notes:	

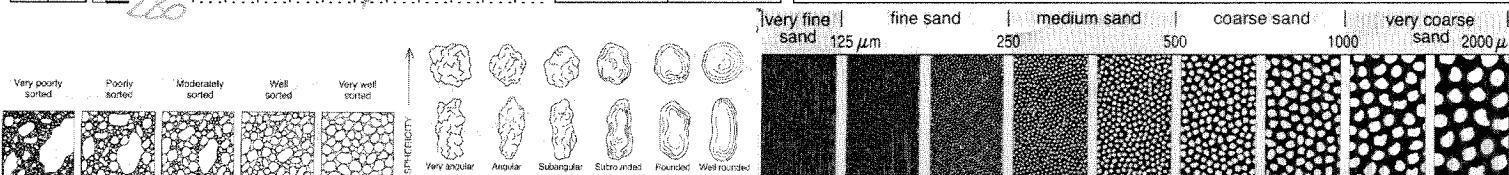
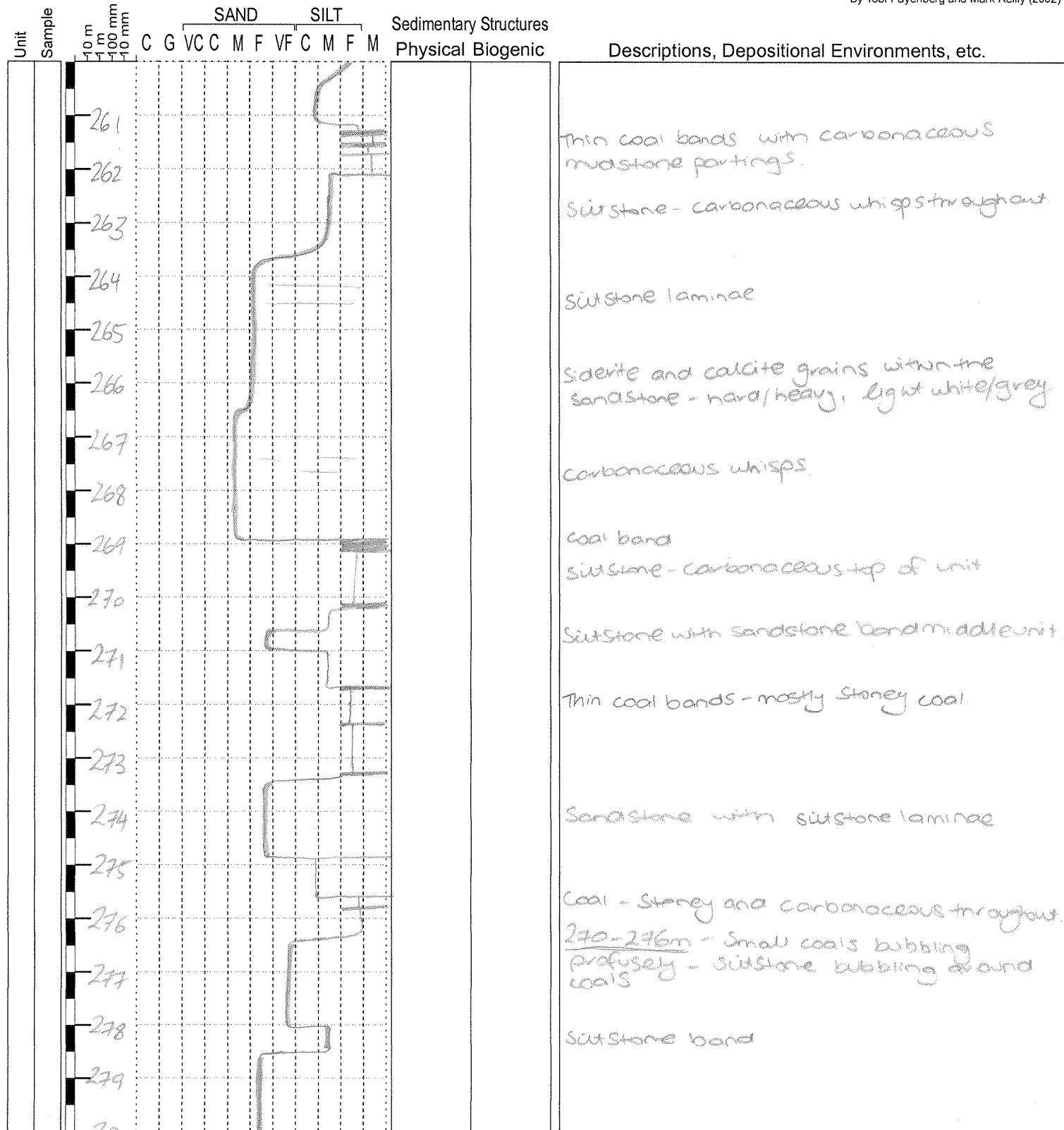
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACELTA 12	Operator:
Long:	Date: Page: 9 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

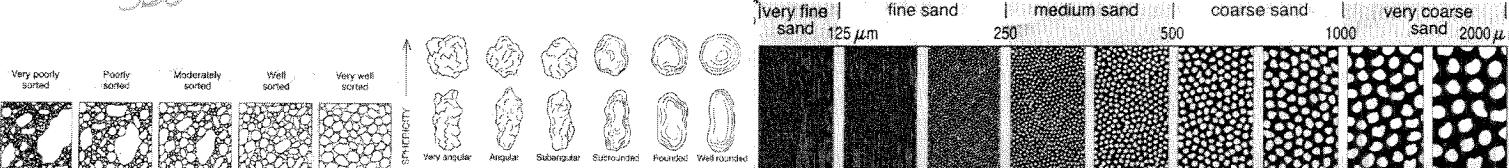
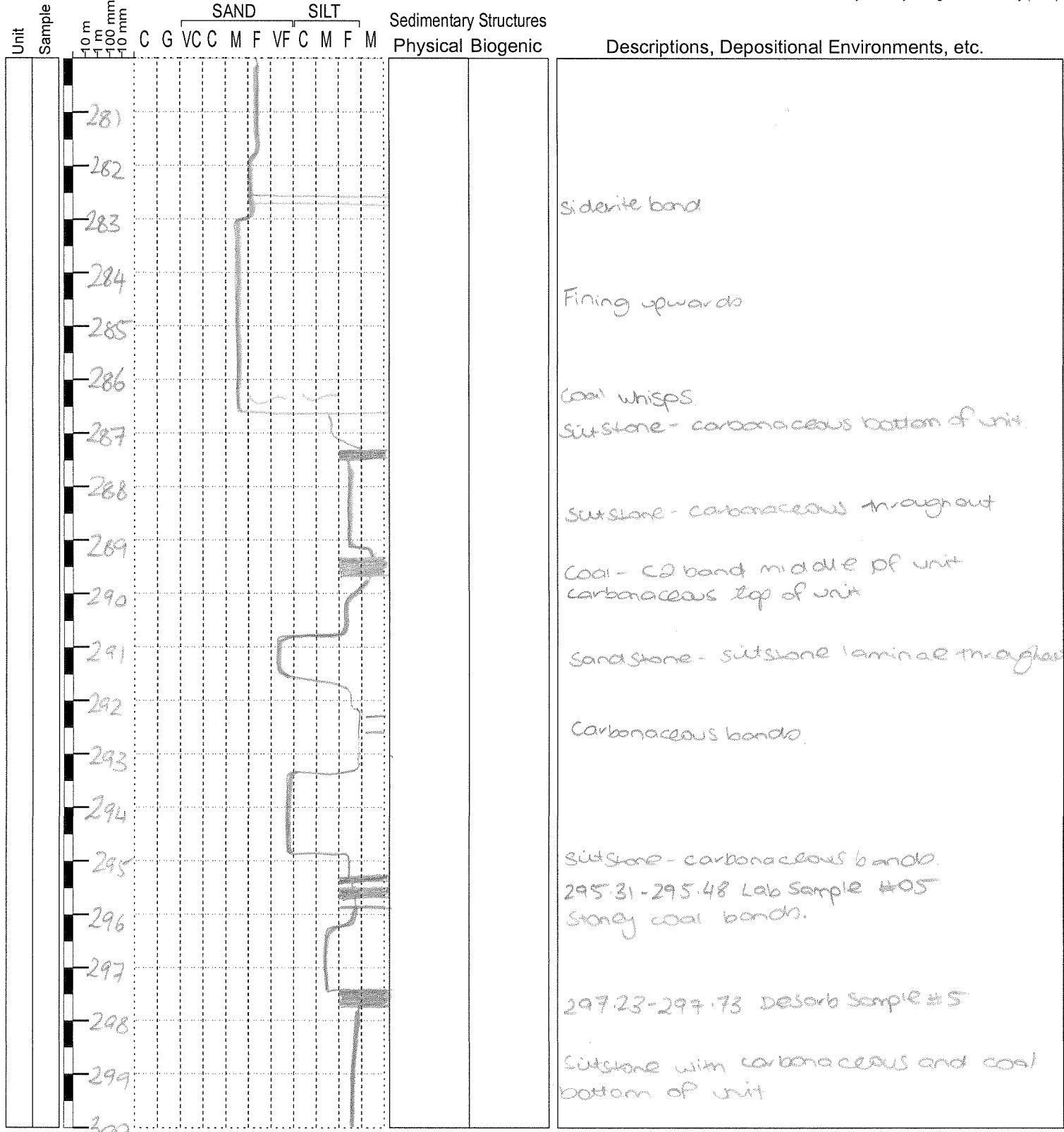
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 10 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

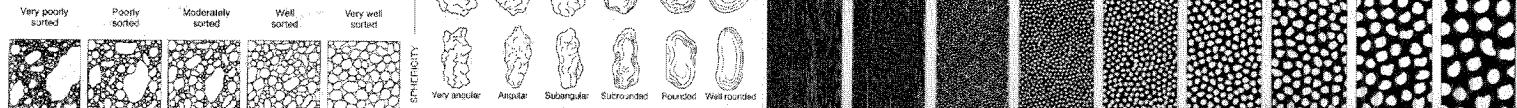
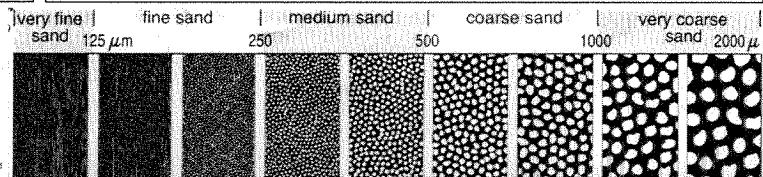
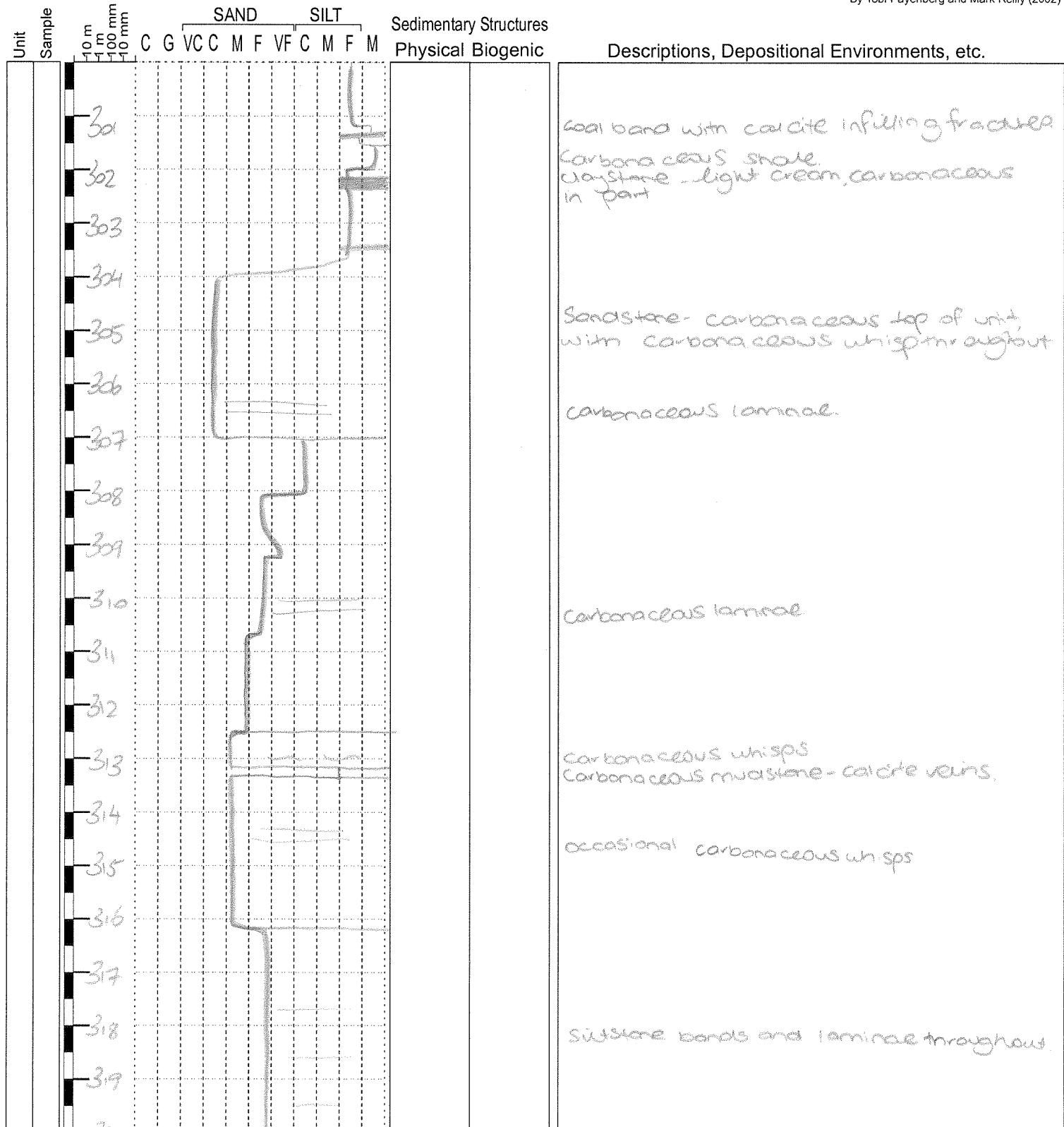
By Tobi Payenber and Mark Reilly (2002)



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 11 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

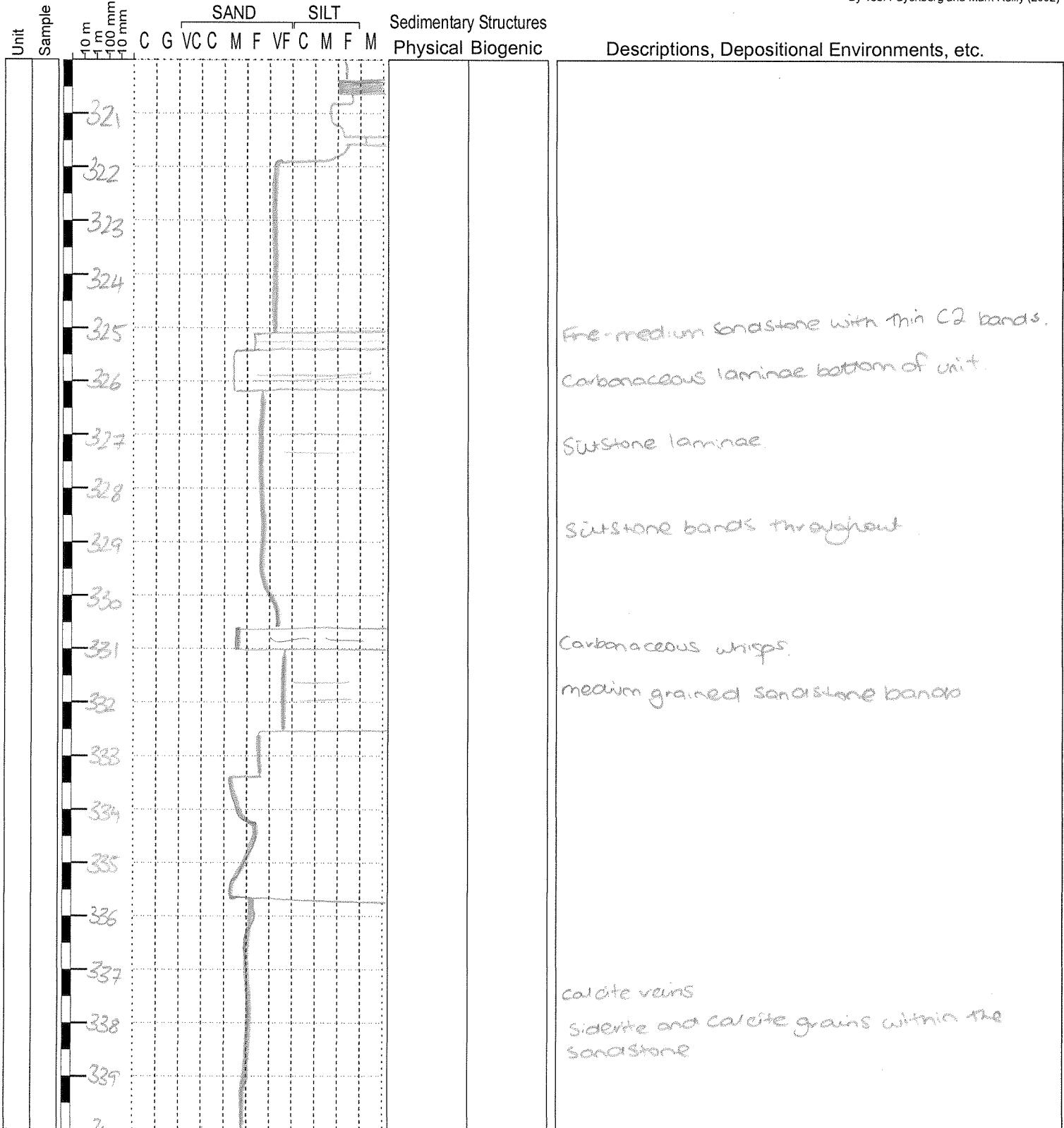
By Tobi Payenberg and Mark Reilly (2002)



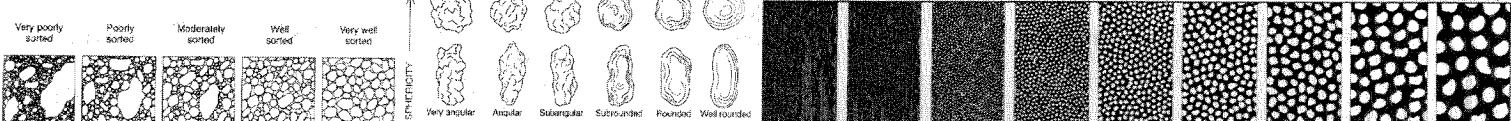
# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 12 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

By Tobi Payenberg and Mark Reilly (2002)



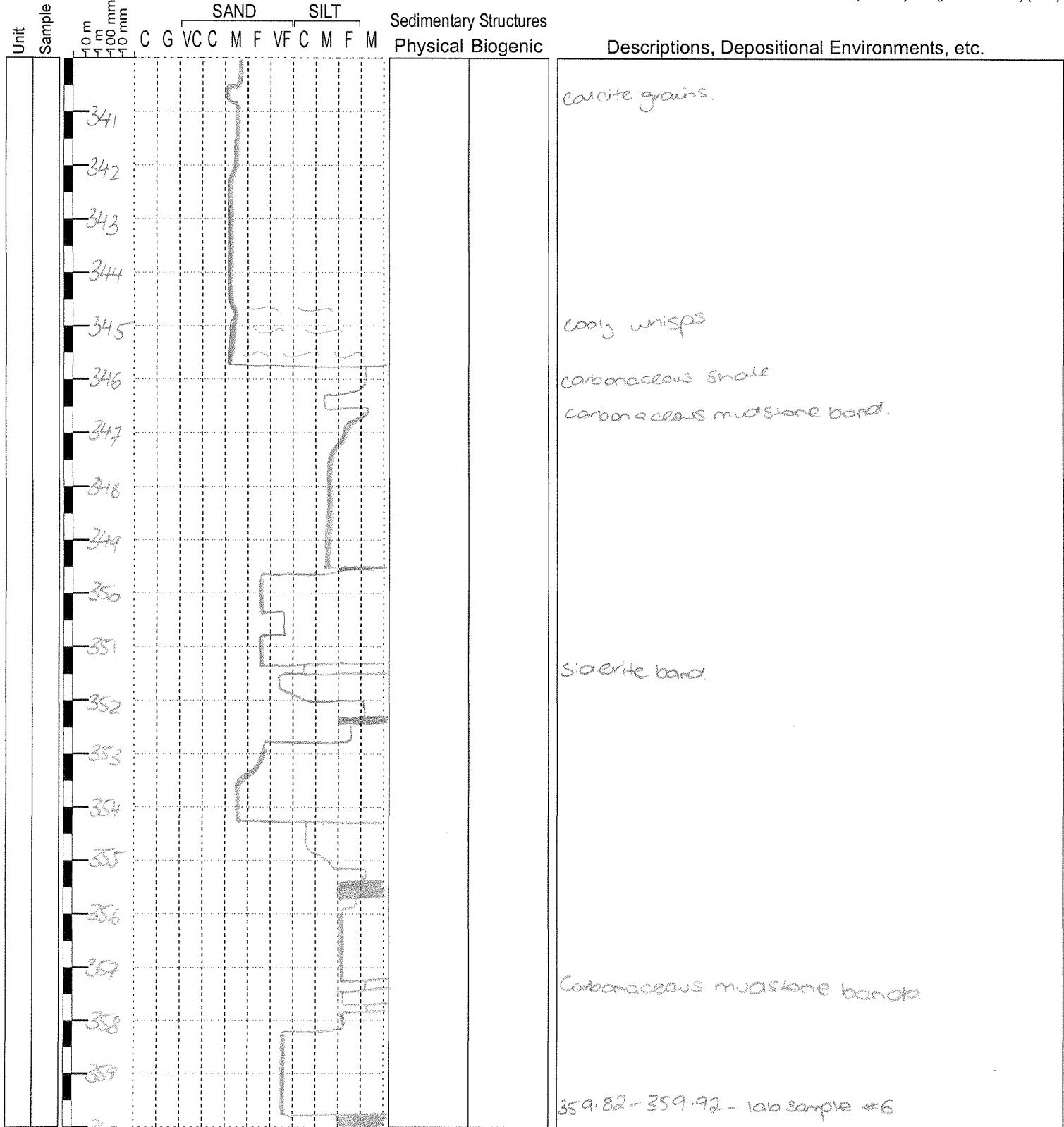
Very fine sand 125  $\mu$ m | fine sand 250 | medium sand 500 | coarse sand 1000 | very coarse sand 2000  $\mu$ m



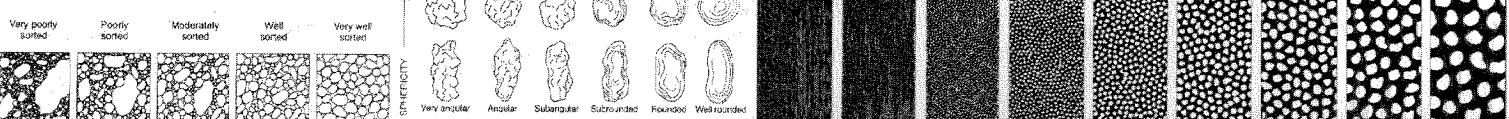
# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 13 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

By Tobi Payenber and Mark Reilly (2002)



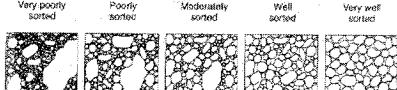
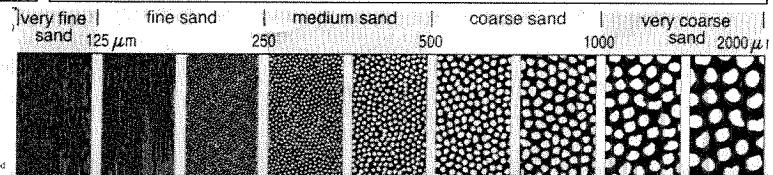
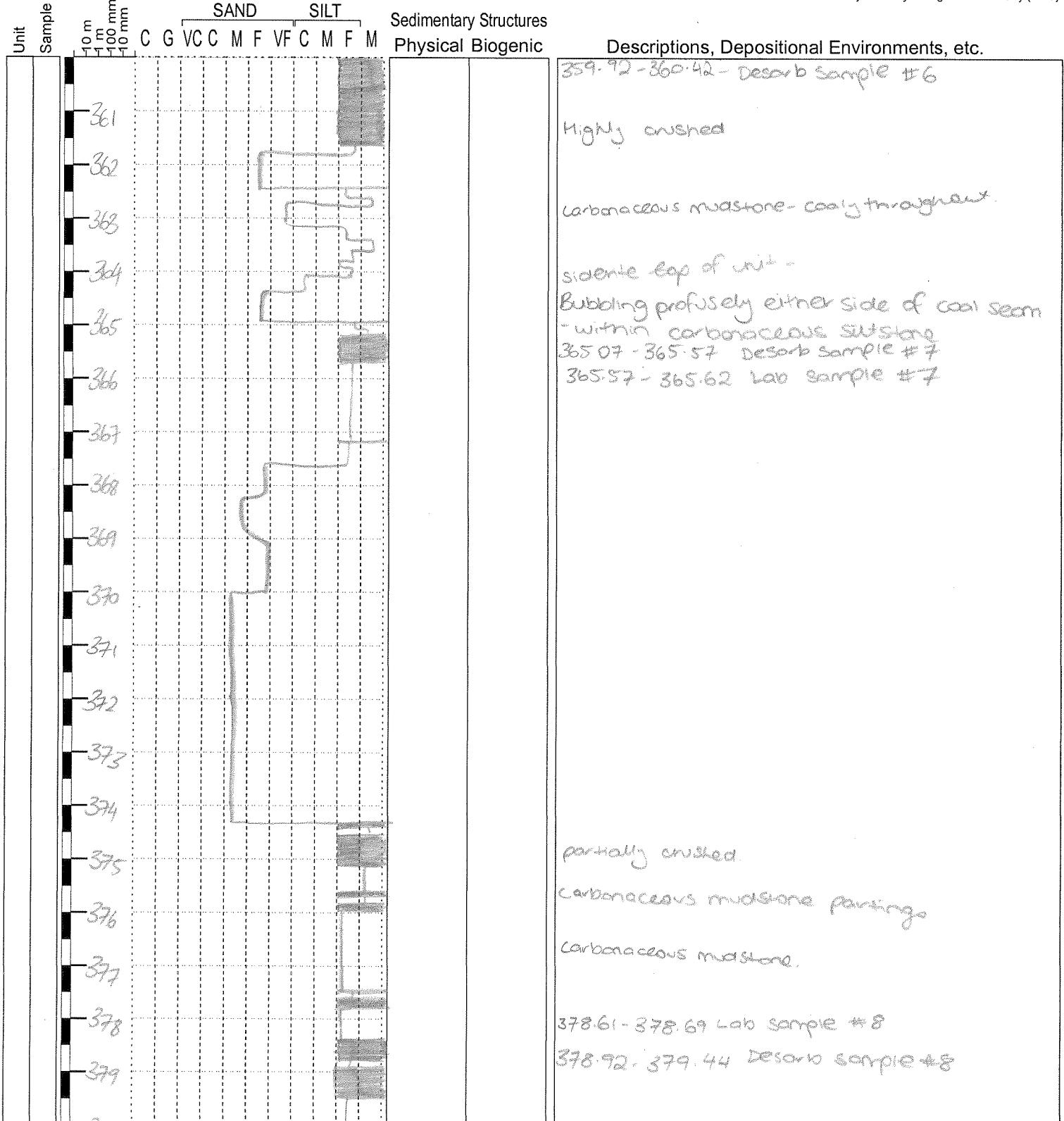
359.82 - 359.92 - 100 sample #6



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12	Operator:
Long:	Date: Page: 14 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

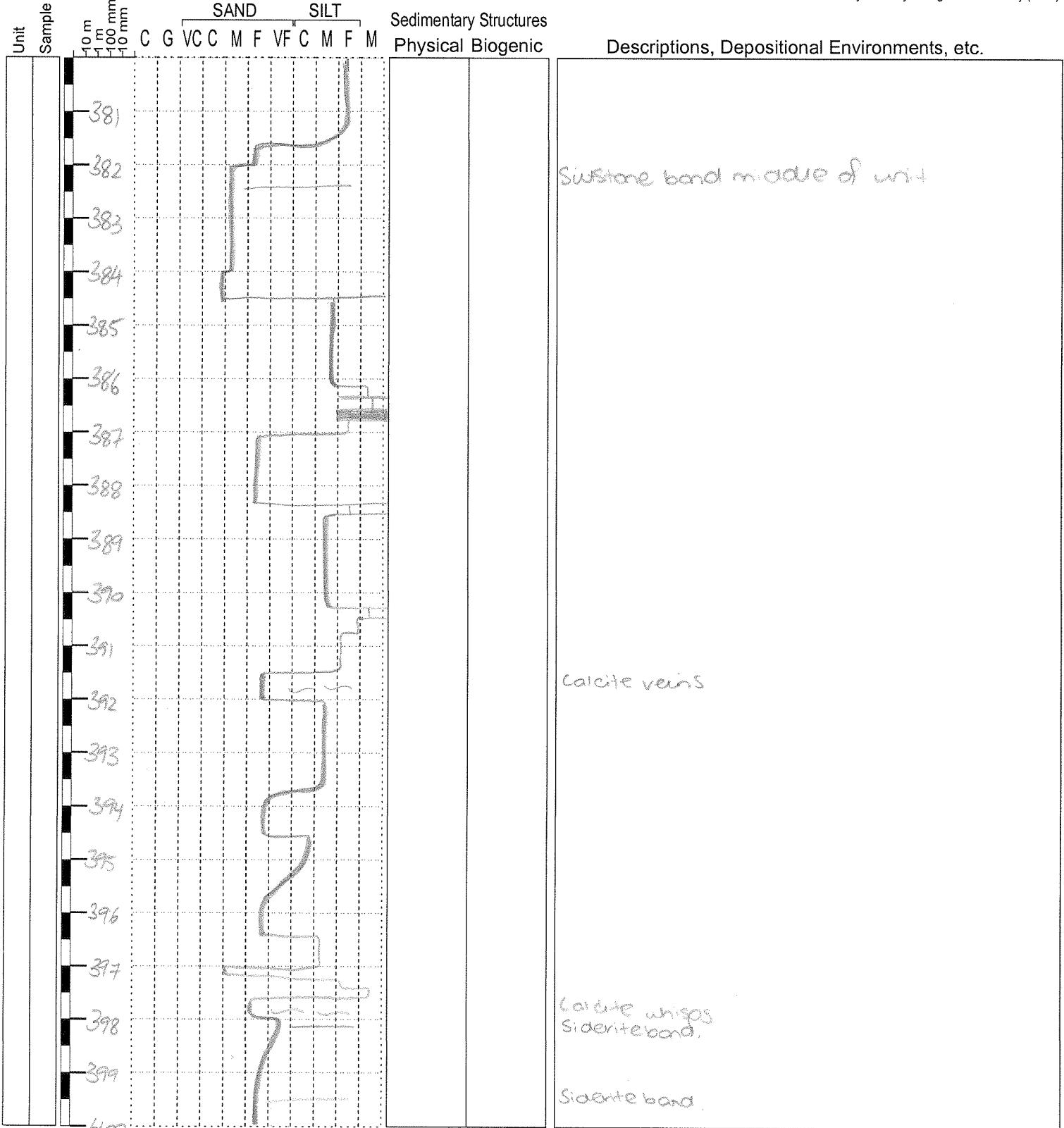
By Tobi Payenber and Mark Reilly (2002)



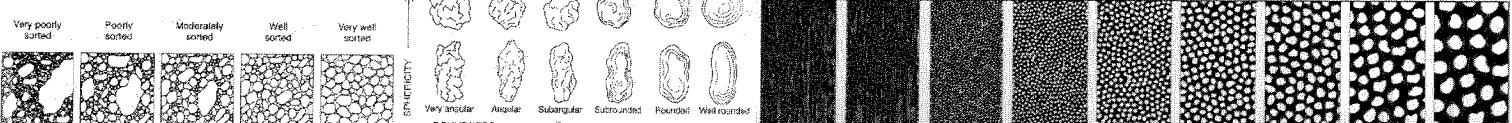
# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12.	Operator:
Long:	Date: Page: 15 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

By Tobi Payenberg and Mark Reilly (2002)



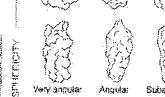
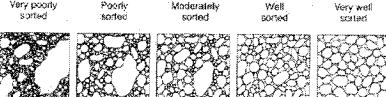
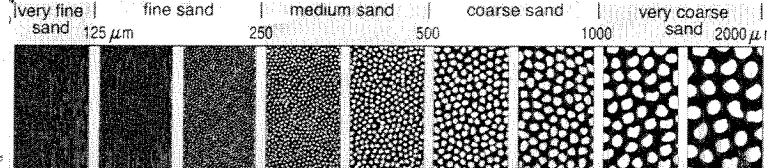
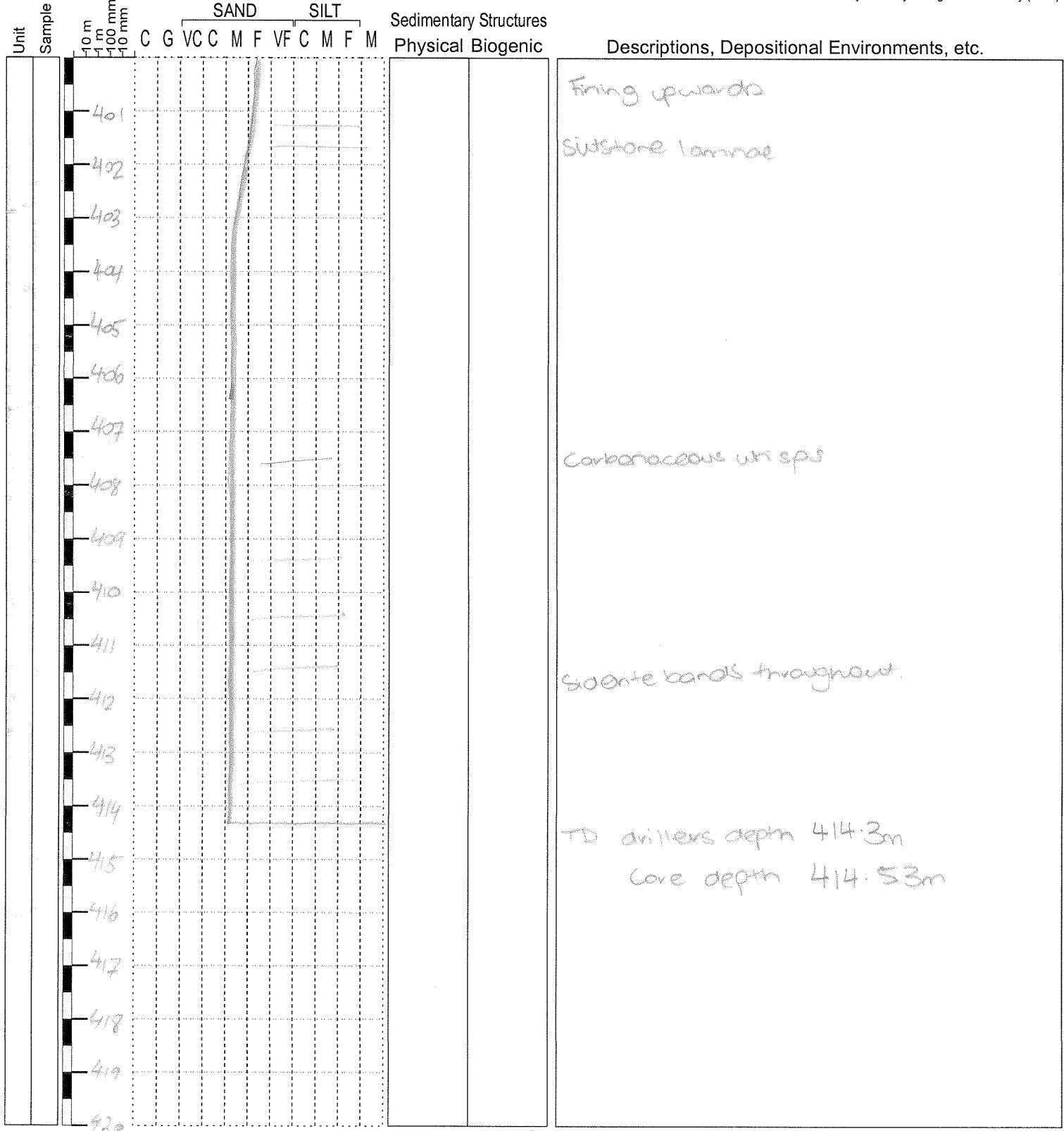
Very fine sand 125  $\mu\text{m}$  fine sand 250 medium sand 500 coarse sand 1000 very coarse sand 2000  $\mu\text{m}$



# Stratigraphic Log Sheet

API#:	Depth:
Name: LACERTA 12.	Operator:
Long:	Date: Page: 16 of 16
Lat:	Logged by: SN
Twp/Rge:	
Notes:	

By Tobi Payenberg and Mark Reilly (2002)



## **APPENDIX 7**

### **WELL LOCATION SURVEY**

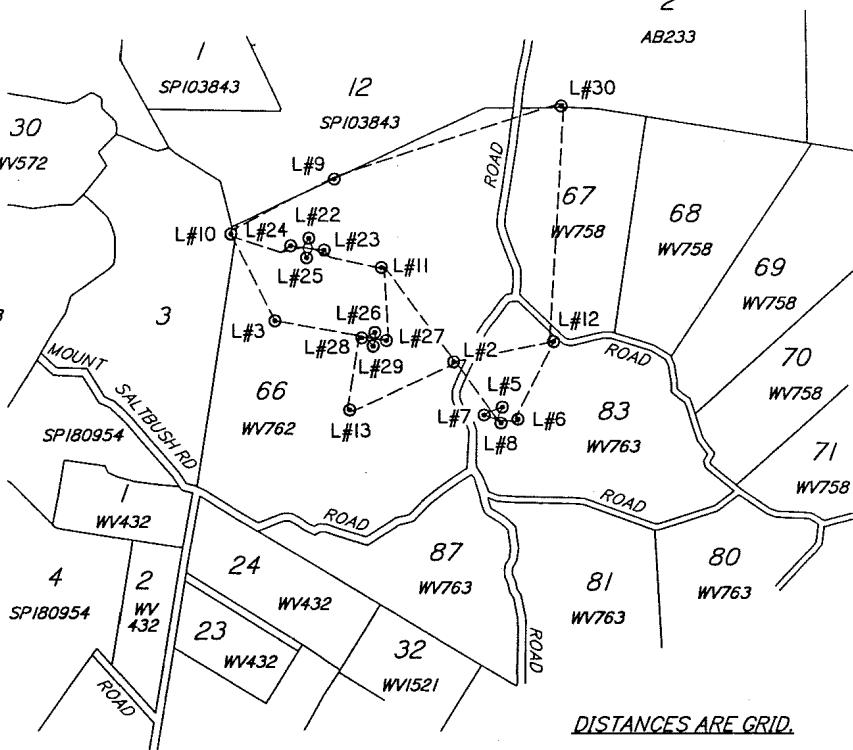
2000 0 2000 4000 6000 8000 10000 12000 14000 16000

Coordinates and Levels obtained by  
Static GPS traverse from LACERTA #3 BM2

Bench Marks are deep driven Iron  
Star Pickets with Witness posts

## GEOGRAPHIC COORDINATES (AGD84)

STN	DESCRIPTION	LATITUDE	LONGITUDE
3	LACERTA #28	S 26°19'09"7488	E 149°02'31"5385
5	LACERTA #26	S 26°19'06"4351	E 149°02'40"1507
6	LACERTA #29	S 26°19'14"4985	E 149°02'39"1388
8	LACERTA #27	S 26°19'11"1479	E 149°02'47"7348
12	LACERTA #11	S 26°18'28"4492	E 149°02'43"7642
15	LACERTA #24	S 26°18'18"5422	E 149°02'05"9328
17	LACERTA #22	S 26°18'11"8010	E 149°01'55"7261
18	LACERTA #25	S 26°18'23"2208	E 149°01'54"4217
20	LACERTA #23	S 26°18'16"3134	E 149°01'43"9245
23	LACERTA #10	S 26°18'09"9479	E 149°01'04"6938
26	LACERTA #9	S 26°17'36"5798	E 149°02'11"8216
29	LACERTA #30	S 26°16'51"5349	E 149°04'39"3735
32	LACERTA #12	S 26°19'10"3271	E 149°04'36"8212
35	LACERTA #6	S 26°19'56"2185	E 149°04'14"6383
38	LACERTA #8	S 26°19'58"6240	E 149°04'03"7790
40	LACERTA #5	S 26°19'49"1599	E 149°04'04"4206
41	LACERTA #7	S 26°19'53"9747	E 149°03'52"6649
44	LACERTA #13	S 26°19'52"0201	E 149°02'24"4480



DISTANCES ARE GRID.

## DERIVED M.G.A. COORDINATES (GDA94)

STN	DESCRIPTION	EASTING	NORTHING	ZONE
1	LACERTA #3 BM2	702 374.127	7 087 819.436	55
2	LACERTA #28 BM1	703 908.722	7 087 547.210	55
3	LACERTA #28	703 953.099	7 087 507.802	55
4	LACERTA #26,28,29 BM2	704 026.258	7 087 515.298	55
5	LACERTA #26	704 193.570	7 087 606.006	55
6	LACERTA #29	704 161.578	7 087 358.292	55
7	LACERTA #26,27,29 BM1	704 206.625	7 087 485.326	55
8	LACERTA #27	704 401.616	7 087 457.635	55
9	LACERTA #27 BM2	704 436.966	7 087 488.417	55
10	LACERTA #2 BM2	705 633.269	7 087 101.557	55
11	LACERTA #11 BM1	704 361.889	7 088 792.187	55
12	LACERTA #11	704 312.303	7 088 773.461	55
13	LACERTA #11 BM2	704 262.628	7 088 769.372	55
14	LACERTA #23 BM2	703 379.627	7 088 961.324	55
15	LACERTA #23	703 267.765	7 089 094.920	55
16	LACERTA #22,23,25 BM1	703 061.240	7 089 119.432	55
17	LACERTA #22	702 987.916	7 089 306.838	55
18	LACERTA #25	702 946.206	7 088 955.957	55
19	LACERTA #22,24,25 BM2	702 874.125	7 089 140.214	55
20	LACERTA #24	702 658.381	7 089 173.107	55
21	LACERTA #24 BM1	702 477.030	7 089 055.841	55
22	LACERTA #10 BM1	701 534.174	7 089 359.499	55
23	LACERTA #10	701 573.258	7 089 386.041	55
24	LACERTA #10 BM2	701 576.688	7 089 445.701	55
25	LACERTA #9 BM1	703 367.652	7 090 376.315	55
26	LACERTA #9	703 451.461	7 090 383.761	55
27	LACERTA #9 BM2	703 493.458	7 090 440.337	55
28	LACERTA #30 BM1	707 513.788	7 091 743.731	55
29	LACERTA #30	707 566.966	7 091 704.948	55
30	LACERTA #30 BM2	707 613.889	7 091 745.241	55
31	LACERTA #12 BM1	707 353.301	7 087 412.147	55
32	LACERTA #12	707 427.502	7 087 434.616	55
33	LACERTA #12 BM2	707 459.469	7 087 482.680	55
34	LACERTA #6 BM1	706 739.056	7 086 045.672	55
35	LACERTA #6	706 789.608	7 086 032.134	55
36	LACERTA #6 BM2	706 802.798	7 085 983.312	55
37	LACERTA #5,7,8 BM2	706 409.056	7 086 024.196	55
38	LACERTA #8	706 487.276	7 085 962.928	55
39	LACERTA #5,7,8 BM1	706 307.969	7 086 178.778	55
40	LACERTA #5	706 509.734	7 086 253.913	55
41	LACERTA #7	706 181.353	7 086 110.946	55
42	LACERTA #2 BM1	705 680.750	7 087 051.888	55
43	LACERTA #13 BM1	703 797.093	7 086 187.669	55
44	LACERTA #13	703 735.891	7 086 209.982	55
45	LACERTA #13 BM2	703 696.323	7 086 252.174	55
46	LACERTA #3 BM1	702 340.425	7 087 881.089	55

SHEET 1 OF 3

I, Dennis Lee hereby certify that I have the Company has surveyed the location of the petroleum well as shown on this plan, that the survey was performed in accordance with the Petroleum and Gas (Production and Safety) Act 2004 and associated Regulations and Standards and achieves the accuracies of the Standards and the survey was completed on 17/07/2007.

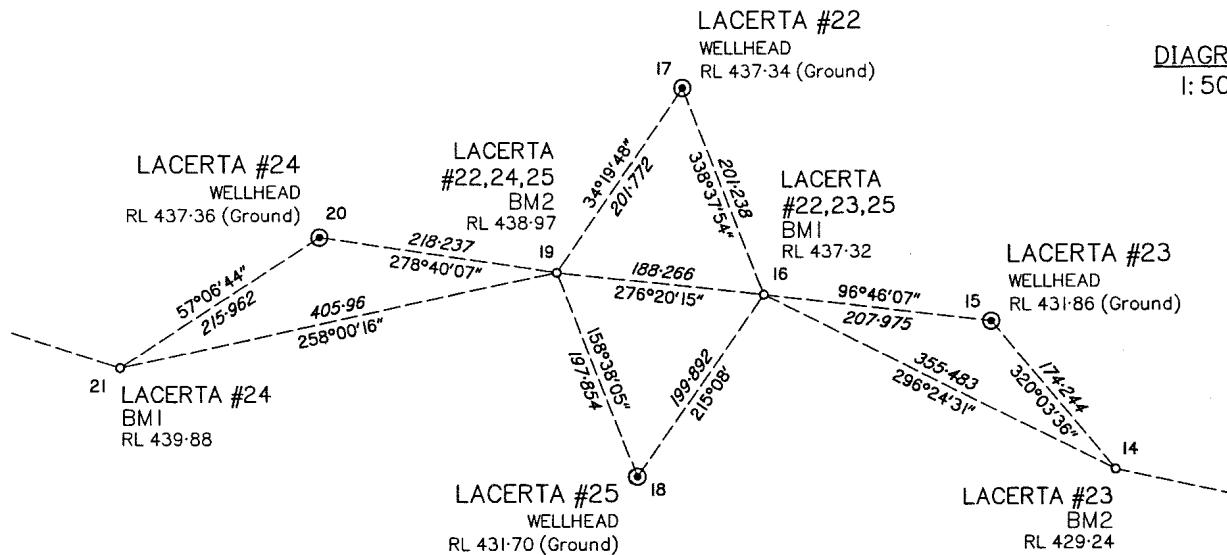
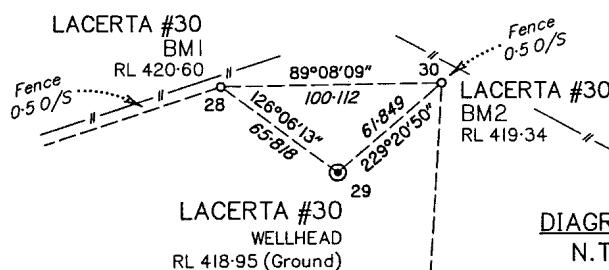
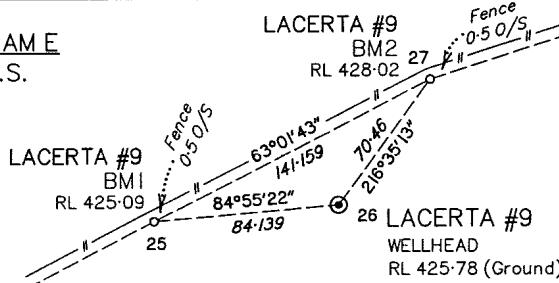
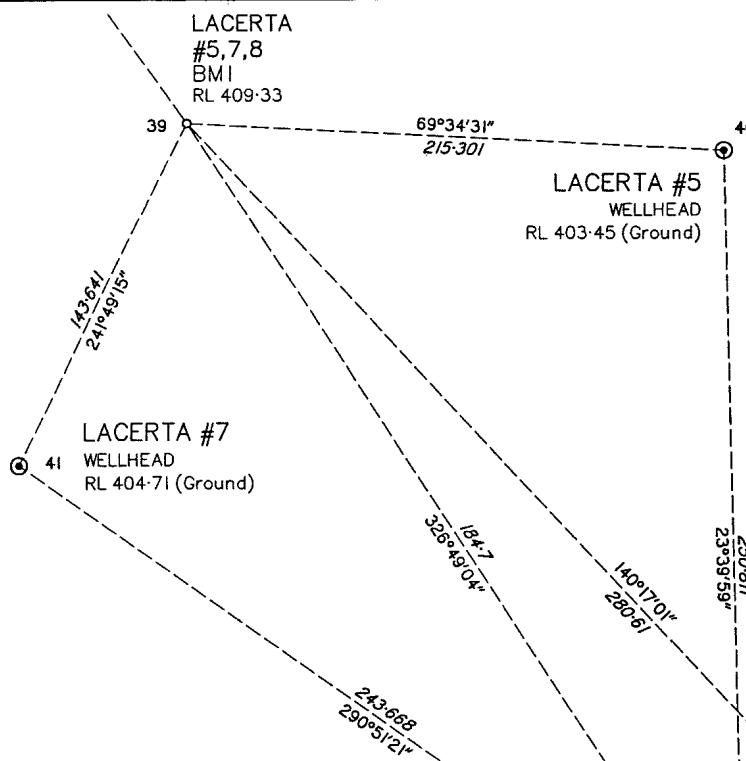
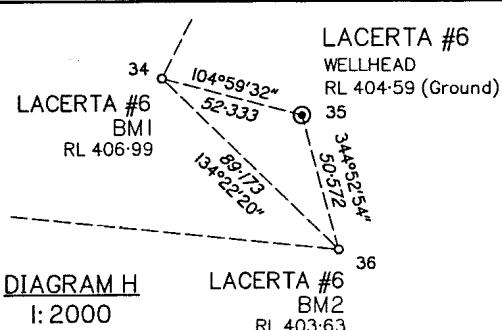
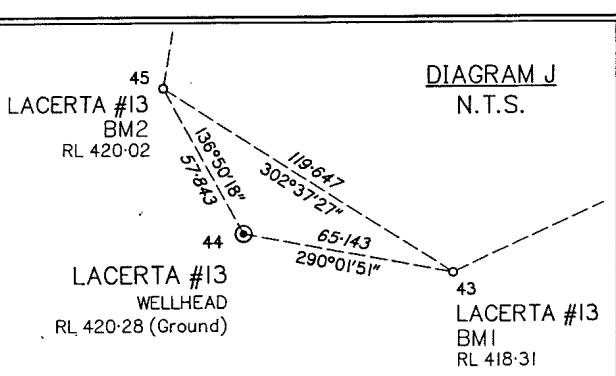
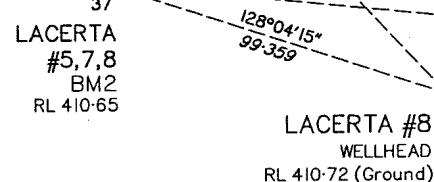
Signature of Surveyor

Date 12-09-2007

CATALOGUED	APPROVED	REGISTERED	Chief Surveyor
..	..	..	..

LOCALITY	MINING RESOURCES		
Mooga	PLAN OF Lacerta #5-13 & Lacerta #22-30		
Approx. LAT. S 26° 18' 25" LONG. E 149° 02' 45"	PARISH... COUNTY... MINING DISTRICT... DILGINBILLY WALDEGRAVE Brisbane		
FIELD NOTES LODGED	MERIDIAN MGA		
DRAWN BY TJL 7388	SCALE 1:100000 MP		
DEPARTMENT OF NATURAL RESOURCES AND MINES, QUEENSLAND			

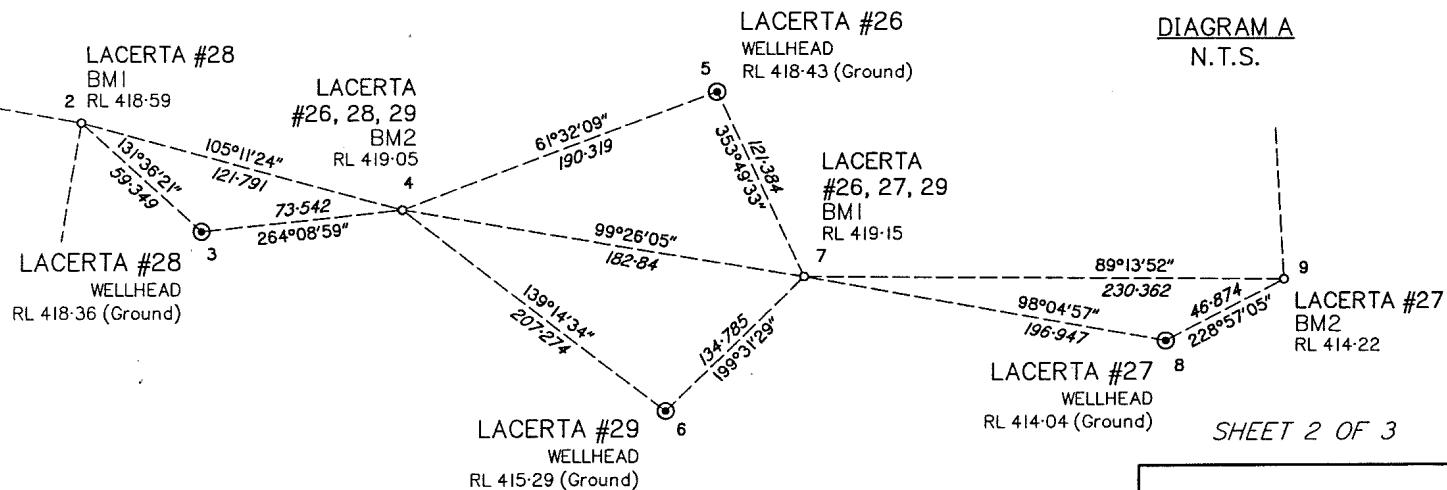
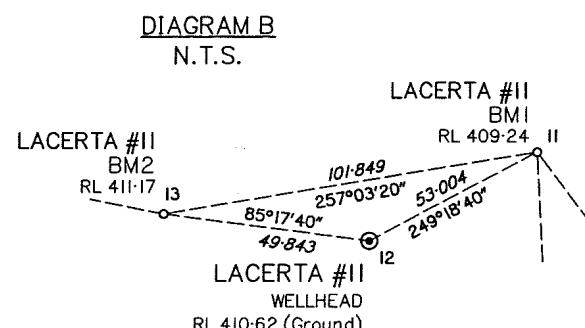
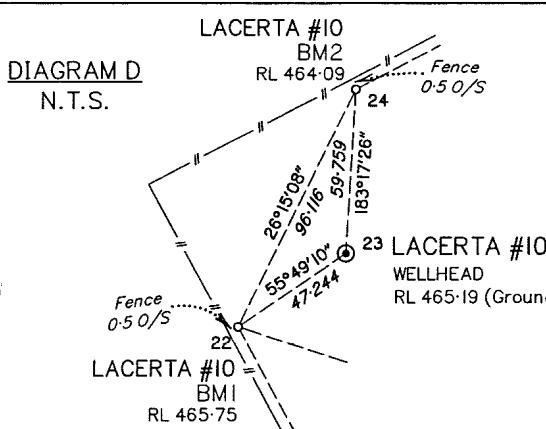
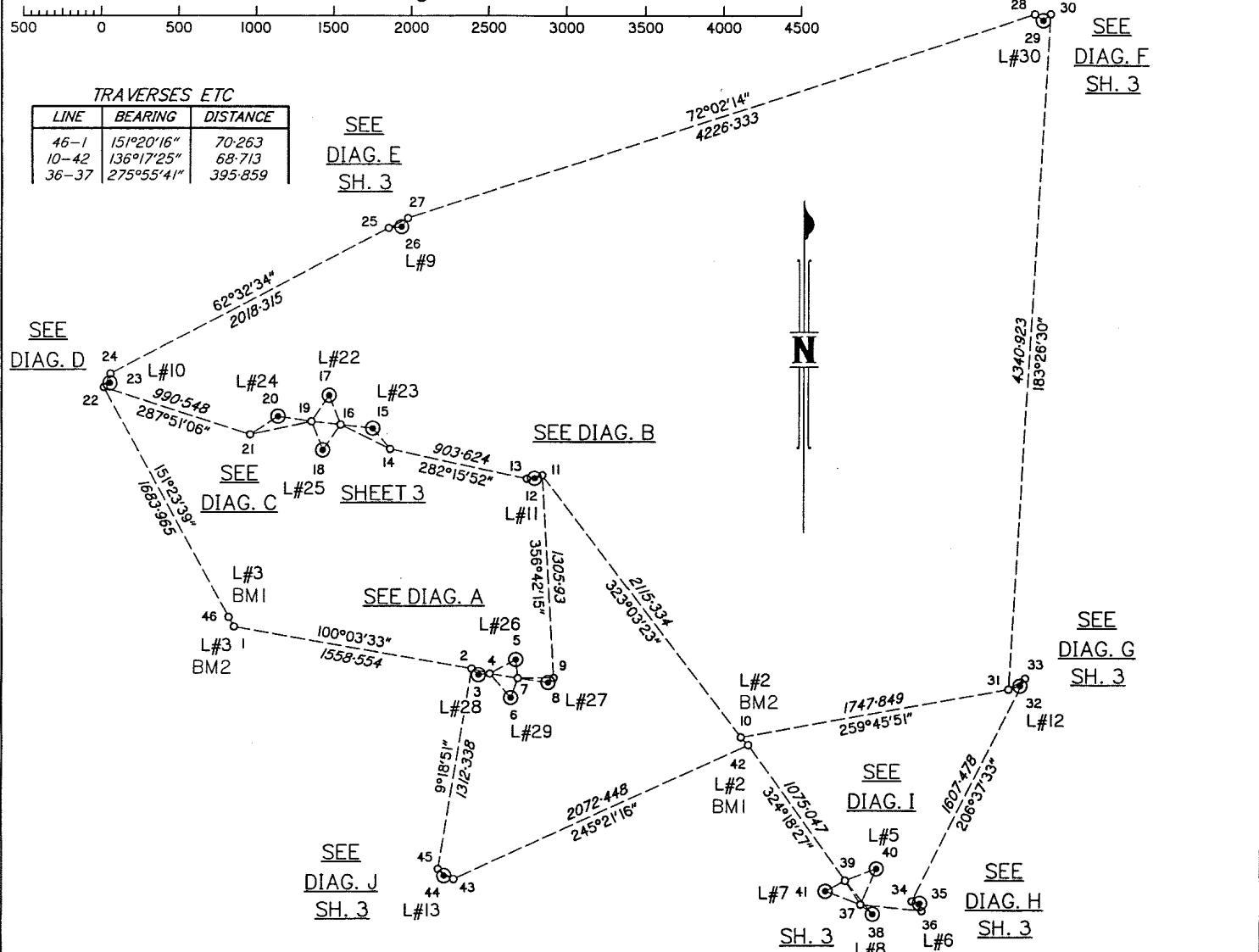
MP

DIAGRAM C  
I: 5000DIAGRAM E  
N.T.S.DIAGRAM F  
N.T.S.DIAGRAM G  
I: 2000DIAGRAM H  
I: 2000DIAGRAM I  
N.T.S.DIAGRAM J  
N.T.S.

SHEET 3 OF 3

MP

Scale 1:30000 - Lengths are in Metres.



**ENCLOSURE 1**

**COMPOSITE LOG**

# SUNSHINE GAS LTD



Lacerta 12  
Monitoring  
Australia  
Surat Basin  
ATP 795P

**Partners:**  
Sunshine Gas Ltd

**Contractors:**  
Drilling  
Core Analysis

40°S      **UTM**  
487°E      **UTM**

**Geologists:**  
Sherrin Nicholson      GeoConsult

1

	Accessories

102

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0.2 RES SHALLOW  
(ohmm)

100 200 300 400 500 600

The figure displays two seismic reflection profiles side-by-side. Both profiles feature a vertical grid system with horizontal lines spaced at 25m intervals. The left profile is color-coded with green traces, while the right profile is color-coded with red traces. In both cases, the traces are mostly horizontal, indicating reflections from geological layers. A prominent, thick black horizontal line runs across both profiles, likely representing a specific reference level or a major geological horizon. The traces show some vertical offset, particularly towards the top and bottom of the profiles, which is characteristic of seismic reflection data.

A grid consisting of a single horizontal line intersected by nine vertical lines. The vertical lines are evenly spaced and extend from the top to the bottom of the frame.

The figure displays two columns of seismic traces on a grid background. The left column shows traces from 75m to 125m depth, with a horizontal scale bar at 100m. The right column shows traces from 75m to 125m depth, with a horizontal scale bar at 100m. The traces are color-coded: green, red, blue, and black. A black arrow points to a specific feature at 102m depth in the left column, labeled "4 1/2" and "102m".

