

***Routine Core Analysis  
Well Pecten East - 1***

***Australia***

Prepared for  
**Santos Ltd.**

April 2009

File: PRP-08055

Rock Properties  
Core Laboratories  
Perth  
Australia



## CORE LABORATORIES AUSTRALIA PTY LTD

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6<sup>th</sup> April 2009

**Santos Ltd.**  
Level 3  
60 Flinders Street.  
Adelaide, SA 5000

**Attention : David Schubert**

Subject : Routine Core Analysis  
Well : Pecten East - 1  
File : PRP-08055

Dear David,

Presented herein is the final report of a routine core analysis study conducted on selected MSCT samples from the above well that arrived at our laboratory in September 2008.

We appreciate the opportunity to present this service to Santos Ltd. Please contact us should you require any further information or assistance.

Yours sincerely,  
**Core Laboratories Australia Pty Ltd**

James Brown  
Senior Core Analyst

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## **INTRODUCTION**

The MSCT samples arrived at our laboratory in September 2008.

Services performed and presented in the report include:

- Horizontal permeability, porosity, (ambient) and grain density measurements on MSCT samples
- Photography

The reported data for the above services are presented digitally on a CD-Rom, with the exception of the photography which was sent under a separate cover.

## **SUMMARY**

Porosity and permeability measurements on nine samples, were determined at a net confining stress of 800 psi (Ambient). Grain density was also measured on the samples.

	<u>Minimum</u>	<u>Maximum</u>	<u>Average</u>
<b><u>MSCT</u></b>			
<u>Net Confining Pressure of 800psig.</u>			
Porosity (%)	14.6	23.2	18.9
Permeability, Kair, (md)	0.656	160	34.7
Grain Density (g/cc)	2.623	2.667	2.647

## **LABORATORY PROCEDURES**

### **Initial Inventory:**

All sample bottles were laid out in order, and an in-house inventory was made of the nine samples. Each sample was examined for their suitability for analysis. Initially the samples were photographed under white light, then prepared for porosity, permeability and grain density measurements.

### **Sample Preparation:**

The selected samples were cleaned to remove mud solids, trimmed using a 2% potassium chloride brine, then cleaned of residual salts by using cool methanol. After cleaning, the samples were dried in a controlled humidity oven.

### **Grain Volume and Grain Density:**

The weight, diameter and length of all samples were measured before they were processed through the Ultrapore™ porosimeter to determine grain volume. As a standard quality control measure, a calibration check plug was run with the samples. Grain density data was calculated from grain volume and sample weight data.

### **Porosity and Permeability:**

The samples were run at the confining stress of 800psi (ambient) while determining porosity and permeability. A standard check plug was run with every set of samples. Klinkenberg permeability ( $K_{inf}$ ) values are obtained directly from the CMS™300, since it operates by unsteady-state principles. Porosity data was obtained by combining pore volumes from the CMS™300 data with grain volumes from the Ultrapore porosimeter.

## MSCT POROSITY, PERMEABILITY AND GRAIN DENSITY

SAMPLE NUMBER	DEPTH  (m)	CMS 300 CONFINING STRESS 800psi.			GRAIN DENSITY (g/cc)	COMMENTS
		PERMEABILITY		POROSITY		
		Kinf (md)	Kair (md)	(%)		
4	1929.50	42.4	49.5	19.0	2.635	
5	1925.25	102	160	22.2	2.623	
6	1920.50	0.763	1.07	16.0	2.633	
7	1917.50	16.4	18.8	18.7	2.649	
8	1913.00	0.862	1.20	16.9	2.655	
10	1906.50	2.19	2.78	17.5	2.642	
11	1903.00	34.1	37.4	23.2	2.654	
13	1899.00	0.456	0.656	14.6	2.667	
14	1895.50	37.3	40.7	22.0	2.665	