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Short Note

Grain Size Analysis of Samples from CRP-2/2A, Victoria Land Basin, Antarctica

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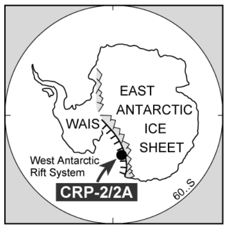
Introduction

The purpose of this note is to present results of grain size analyses from 118 samples of the CRP-2/2A core using sieve and Sedigraph techniques. The samples were selected to represent the range of facies encountered, and tend to become more widely spaced with depth. Fifteen came from the upper 27 m of Quaternary and Pliocene sediments, 62 from the early Miocene-late Oligocene strata (27 to 307 mbsf), and 41 from the early Oligocene strata beneath (307 to 624 mbsf).



The results are intended to provide reference data for lithological descriptions in the core logs (Cape Roberts Science Team, 1999), and to help with facies interpretation. The analytical technique used for determining size frequency of the sand fraction in our samples (sieving) is simple, physical and widely practised for over a century. Thus it provides a useful reference point for analyses produced by other faster and more sophisticated techniques, such as the Malvern laser particle size analysis system (Woolfe et al., this volume), and estimates derived from measurements taken with down-hole logging tools (Bücker, personal communication, 1999).

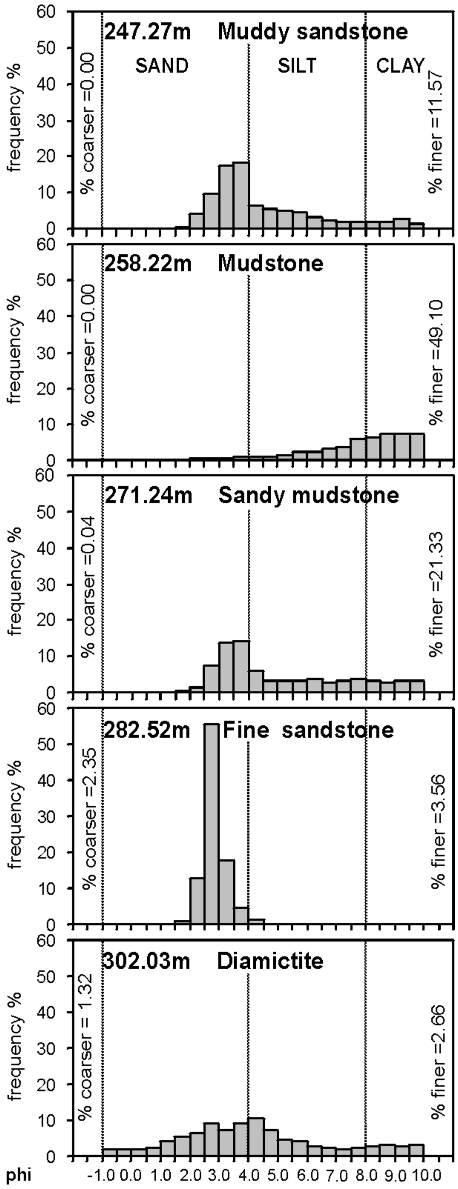


Fig. 1 – Typical histograms for samples from sequence 11 to illustrate the range of textures in CRP-2/2A. They range from diamictite at the base through well sorted fine sandstone (with a coarse tail from ice-rafting) to sandy mudstone and mudstone in the middle part, returning to muddy sandstone toward the top of the cycle.

Method

Between 10 and 25 g of sample was disaggregated by crushing gently between wooden blocks and then stirring in distilled water for 60 minutes in an ultrasonic bath. A microsample was checked for material not fully disaggregated, and if found the treatment was continued until disaggregation was complete. The sample was then wet-sieved into sand and mud fractions, and both fractions dried and weighted. The sand fraction (0.063-2 mm) was then dry-sieved and a 1 g sub-sample of the mud fraction analysed by Sedigraph 5100. Because wet sieving invariably retains some coarse silt, dry sieving was extended to catch 4.5 and 5.0 phi fractions. The weights retained were then merged with the Sedigraph results. The analyses are reported in table 1 for each sample as frequency percent at 0.5 phi intervals for the range -1 to 10 phi (2 to 1/1024 mm) and the percent finer than 10 phi.

Around 1/4 of the samples contain more than 2% gravel though only 8 samples had more than 10%. Because of the small sample size (typically between 10 and 20 g) the proportion of gravel cannot be reliably estimated, but the proportion is nevertheless recorded with the results.

Results

The results are summarised in table 1 (frequency percent) and table 2 (summary statistics). The size frequency distributions fall into 5 main types (Fig. 1, facies after Powell et al. this volume and Fielding et al., this volume); *mudstone* (facies 1) with less than 10% sand, *sandy*

Tab. 1 - Frequency percent in each size class (limits in phi units) for grain size analysis of samples from CRP-2/2A.

Limits	*-0.50*	*0.00*	*0.50*	*1.00*	*1.50*	*2.00*	*2.50*	*3.00*	*3.50*	*4.00*	*4.50*	*5.00*	*5.50*	*6.00*	*6.50*	*7.00*	*7.50*	*8.00*	*8.50*	*9.00*	*9.50*	*10.00*	*Rest*
Sample depth (mbsf)																							
6.02	3.4	2.8	3.6	4.6	7.0	9.7	12.2	12.8	10.1	10.2	4.5	1.3	1.1	1.0	0.8	0.6	1.0	1.5	1.0	0.8	1.1	1.3	7.8
10.86	0.3	0.4	1.2	2.5	3.8	8.3	6.4	9.0	9.6	12.1	3.8	5.7	3.1	3.7	1.8	1.4	1.4	2.5	1.8	1.8	1.6	2.1	15.7
12.92	1.0	0.6	1.2	2.0	3.4	6.5	5.6	8.9	8.4	11.1	5.9	2.3	2.8	2.3	2.1	1.9	2.5	3.6	1.9	2.3	1.9	1.7	19.8
17.82	0.2	0.4	0.5	1.2	2.4	5.0	5.4	8.1	6.8	9.0	6.4	2.8	3.4	2.8	2.5	2.3	3.0	4.4	2.3	2.8	2.3	2.1	24.0
18.89	0.5	0.8	1.4	2.7	4.5	7.9	6.8	9.4	8.7	10.7	1.6	5.0	2.3	2.0	1.9	1.5	1.7	2.5	1.5	1.7	2.0	1.7	21.4
20.04	0.8	0.8	1.3	2.7	4.1	7.4	5.6	9.2	7.4	10.2	3.8	2.5	1.6	2.0	2.1	1.7	2.4	3.4	2.0	1.9	2.1	3.4	21.4
21.02	0.1	0.4	0.7	1.4	1.9	3.2	3.3	4.7	4.8	5.8	3.5	1.4	3.0	3.8	4.5	4.3	4.5	5.3	4.1	3.5	3.2	1.8	30.7
21.32	2.7	2.3	3.0	5.0	6.6	10.1	10.3	14.4	11.9	11.1	4.7	2.3	1.5	1.1	0.9	0.9	0.8	1.0	0.8	0.8	0.9	0.7	6.2
22.31	1.2	1.5	1.6	1.8	3.1	5.9	7.6	13.6	16.3	23.1	8.8	3.0	1.6	1.0	0.7	0.6	0.5	0.7	0.7	1.0	1.0	0.5	4.3
23.58	1.3	1.6	1.6	3.6	2.7	5.6	6.2	12.0	13.3	15.2	8.5	5.4	3.8	3.0	1.9	1.5	1.1	1.2	1.0	0.9	1.0	1.3	6.4
24.52	0.7	1.3	2.1	3.0	3.7	8.4	8.7	13.0	13.3	13.4	7.5	5.1	3.6	2.4	1.9	1.3	1.1	1.3	0.7	1.0	0.6	1.2	4.6
25.51	0.7	1.1	1.3	1.5	1.9	6.0	11.8	10.6	11.2	7.6	8.8	5.7	5.5	4.2	3.4	2.6	1.9	2.1	1.4	1.4	1.1	1.6	6.8
25.72	0.4	0.3	0.9	1.8	3.8	6.5	5.3	8.5	7.4	10.9	7.8	7.0	6.2	4.5	4.5	3.6	2.8	2.5	2.3	2.0	1.9	2.0	7.1
26.30	0.4	0.1	0.2	0.3	1.1	2.9	3.6	9.0	7.1	8.4	4.8	5.5	5.8	6.3	5.2	3.9	3.4	3.3	2.1	2.0	1.6	2.0	21.1
26.59	0.2	0.6	1.1	1.8	3.3	10.1	13.4	38.2	14.7	5.3	1.4	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	8.5
26.89	0.1	0.2	0.3	0.4	0.5	1.0	1.1	3.1	3.5	5.4	5.3	6.9	8.5	9.9	9.1	7.6	5.8	4.7	3.5	2.9	2.0	0.4	17.8
27.16	0.1	0.1	0.2	0.2	0.3	1.0	2.0	8.3	10.5	11.2	8.0	5.7	5.9	5.6	5.2	5.0	3.5	3.7	3.2	2.4	2.1	1.7	14.1
28.20	0.2	0.3	0.4	0.4	0.4	0.9	1.0	3.2	7.2	13.7	9.5	5.9	7.1	7.6	6.9	5.7	4.3	4.3	3.4	2.7	2.4	1.1	11.3
29.53	0.2	0.3	0.3	0.4	0.5	0.9	1.1	3.2	5.2	9.0	7.2	6.4	7.9	8.9	8.1	6.8	5.1	4.5	3.5	2.8	2.2	0.7	14.9
29.88	0.1	0.2	0.3	0.2	0.4	0.8	1.3	3.4	2.2	2.1	2.3	0.4	2.8	5.6	6.7	8.1	8.2	8.3	6.3	4.8	5.0	4.0	26.6
31.12	0.1	0.3	0.4	0.7	2.0	4.2	7.2	9.4	6.7	3.8	1.9	1.6	4.3	4.5	6.9	6.2	5.7	5.6	4.2	3.5	3.1	0.8	16.8
32.57	0.2	0.2	0.3	0.6	1.2	2.9	5.9	17.7	8.1	4.0	4.4	4.0	6.0	6.3	5.9	5.2	4.2	3.7	2.8	1.8	2.0	0.9	11.7
33.82	1.6	2.9	3.7	4.2	5.1	7.7	10.0	21.4	10.5	4.6	2.0	2.9	1.6	2.0	1.7	2.0	1.7	1.8	1.9	1.9	1.9	1.7	5.4
34.87	0.0	0.1	0.3	0.5	1.3	4.2	10.3	25.9	17.2	12.7	5.5	3.8	3.3	2.6	2.0	1.5	1.3	1.0	0.8	0.9	0.7	0.4	3.9
35.87	0.1	0.2	0.6	1.2	3.3	11.6	21.3	32.3	9.6	3.3	1.3	0.7	1.0	1.1	1.0	1.2	1.0	1.0	1.1	1.1	1.3	1.3	3.3
36.27	5.4	5.1	7.2	9.7	14.6	19.5	11.6	8.3	3.3	1.9	1.0	0.9	1.0	1.2	1.0	1.0	0.9	0.8	0.8	0.6	0.6	0.5	2.9
36.45	2.5	3.8	4.4	5.9	7.3	14.8	14.3	16.6	6.1	3.1	1.8	1.3	1.8	1.9	1.9	1.7	1.6	1.4	1.2	1.0	1.0	0.5	4.2
37.53	0.4	0.3	0.7	0.8	1.6	3.8	6.9	11.2	9.0	11.3	7.2	5.4	6.1	5.9	4.5	3.8	3.5	2.8	2.7	2.4	2.0	0.6	7.2
39.60	0.3	0.4	0.5	0.7	1.1	3.2	6.8	14.4	12.2	11.5	6.2	4.2	4.4	4.0	3.4	2.9	2.0	2.3	2.0	1.6	2.0	2.0	11.8
43.67	0.0	0.0	0.2	0.2	0.3	1.2	19.0	37.4	12.9	7.6	3.4	1.6	1.5	1.3	1.0	0.9	0.8	0.9	0.9	0.8	0.8	0.6	6.5
51.46	0.8	0.7	1.0	1.2	1.7	3.2	4.0	8.2	8.7	11.8	7.1	6.9	7.1	5.1	4.7	3.8	2.5	2.5	2.0	2.1	1.4	2.0	11.6
55.05	0.0	0.1	0.2	0.2	0.4	1.3	2.1	2.5	9.7	16.3	14.2	10.5	9.9	8.7	6.9	4.9	3.1	2.8	2.0	1.2	1.1	0.1	1.8
59.90	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.2	0.3	3.1	2.9	5.0	7.2	9.7	10.5	10.4	8.7	7.6	6.2	4.9	3.8	3.1	15.6
63.92	0.0	0.0	0.0	0.1	0.2	0.4	0.7	0.8	0.7	2.4	2.9	5.2	9.8	9.6	10.2	10.3	7.8	7.9	6.2	5.5	1.0	1.2	17.1
76.75	0.2	0.1	0.4	0.9	2.2	5.2	7.6	22.8	17.5	9.1	6.2	5.2	3.9	3.6	3.4	3.2	2.2	1.7	1.4	0.8	1.2	0.8	0.4
86.18	0.6	0.7	1.2	2.4	3.3	5.6	6.7	14.4	15.3	13.0	8.2	4.6	4.2	3.6	3.1	2.4	2.0	1.9	1.4	1.1	1.0	1.4	1.6
92.10	0.1	0.1	0.2	0.3	1.1	2.3	4.6	15.0	22.7	16.0	9.1	5.9	4.5	3.3	3.5	3.1	2.3	1.7	1.3	0.8	1.0	1.0	0.0
99.20	1.1	1.0	1.2	2.0	2.4	3.9	4.4	9.1	11.3	12.5	9.4	5.8	5.4	5.7	4.6	3.9	3.4	2.8	1.9	1.7	1.7	0.8	3.9
105.93	1.3	1.2	1.7	2.3	2.7	4.3	4.5	8.9	10.8	12.1	9.4	6.9	6.0	5.1	5.3	3.8	3.2	2.5	2.3	1.1	1.6	1.2	1.8
109.75	0.0	0.0	0.1	0.1	0.2	0.4	0.8	8.0	21.7	20.5	14.9	7.6	6.0	5.1	3.9	3.3	1.8	1.6	1.3	1.1	0.9	0.2	0.4
114.06	0.2	0.6	1.3	2.7	2.8	4.0	4.5	6.8	7.2	5.5	7.9	3.0	1.6	3.9	7.7	9.5	10.5	7.9	5.3	3.4	2.6	1.0	0.0
121.37	1.0	1.0	1.6	2.9	4.3	8.7	10.0	10.6	7.7	6.4	4.3	3.7	4.7	4.9	5.1	4.0	3.8	3.5	2.7	1.7	1.8	1.5	4.1
125.42	13.0	13.0	12.4	11.6	7.0	6.0	4.1	4.9	4.0	3.5	2.3	2.4	2.2	2.0	2.2	1.9	1.6	1.6	1.1	0.9	1.0	0.4	0.8
131.66	0.1	0.1	0.3	0.2	0.4	0.7	1.0	1.9	6.3	13.3	11.1	9.4	8.5	8.0	7.2	6.7	4.8	4.1	3.6	2.4	2.6	2.8	4.7
135.21	0.0	0.0	0.0	0.1	0.2	0.2	4.0	9.4	17.4	18.5	6.4	5.5	5.0	4.5	3.1	2.1	2.1	2.0	2.0	1.6	2.9	1.5	11.6
143.37	0.2	0.2	0.4	0.6	1.4	2.6	3.8	7.3	8.2	13.9	9.2	6.2	6.6	4.8	3.8	2.7	2.7	2.7	2.2	1.7	1.9	1.5	15.6
146.64	0.0	0.0	0.1	0.3	0.8	4.2	9.8	21.4	24.9	20.7	5.2	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	11.1
152.31	0.1	0.1	0.1	0.1	0.2	0.1	1.7	19.2	39.2	27.2	5.4	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.6
158.80	0.0	0.1	0.3	0.3	0.6	0.4	0.5	0.5	1.5	1.0	1.7	5.7	6.0	8.4	8.1	6.6	6.4	5.2	5.0	4.3	3.7	2.5	31.2
162.54	0.1	0.1	0.2	0.1	0.3	0.3	0.3	0.5	0.7	3.3	7.3	6.2	7.8	8.0	8.5	7.7	7.2	6.5	5.6	4.1	4.3	6.6	14.3
168.73	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	1.1	6.8	6.5	6.5	7.7	8.3	10.2	8.3	7.2	6.6	5.6	4.5	4.2	6.5	9.0
175.58	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.6	1.8	7.0	9.4	7.8	10.4	10.1	9.7	7.7	7.0	5.4	4.7	3.0	3.1	3.0	8.2
183.79	0.2	0.3	0.3	0.7	1.6	4.3	14.2	21.0	12.7	9.4	5.8	3.5	3.9	3.0	2.4	2.0	1.4	1.7	0.9	2.0	4.0	2.0	2.9
188.92	0.0	0.1	0.2	0.1	0.2	1.2	18.5	43.4	21.2	6.8	1.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	6.0
193.49	0.0	0.1	0.1	0.1	0.2	0.3	5.5	17.6	27.8	20.0	7.0	3.3	2.5	2.1	1.9	1.2	1.4	0.9	1.1	0.7	0.9	0.6	5.0
197.89	0.1	0.1	0.1	0.2	0.2	0.5	2.3	4.1	11.1	21.7	14.2	8.7	6.0	5.9	3.9	3.2	2.9	2.5	1.7	1.6	2.1	2.8	4.0
201.72	0.3	0.1	0.5	0.3	0.5	1.1	4.7	6.8	11.9	19.8	14.0	8.2	5.1	4.5	3.5	2.3	2.8	2.0	1.6	1.5	1.5	1.9	5.3
209.77	0.0	0.1	0.1	0.1	0.1	0.3	3.6	9.3	14.1	20.6	9.0	5.2	4.9	3.7	3.2	2.5	2.4	2.0	2.0	1.5	1.9	1.1	12.1
214.32	0.0	0.0	0.0	0.1	0.2	0.4	1.0	3.7	4.9	13.9	9.9	7.7	8.6	8.8	8.8	5.9	5.3	3.9	2.5	2.4	2.7	1.6	7.5
216.12	0.0	0.0	0.1	0.1	0.1	0.1	1.0	15.2	15.9	17.7	10.9	6.4	6.9	5.3	3.8	3.1	2.4	2.0	1.6	1.3	1.1	0.8	4.3
222.11	0.2	0.3	0.6	0.2	0.4	0.5	1.0	5.7	9.0	16.1	11.4	6.8	7.1	5.5	4.3	3.6	2.6	2.3	2.9	1.9	2.0	2.7	12.8
227.42	0.1	0.2	0.3	0.3	0.4	0.3	0.9	3.9	5.8	13.8	10.8	9.0	10.3	8.7	7.2	5.1	4.5	3.8	3.5	2.6	2.2	2.6	3.7
234.38	1.1	1.1	1.5	2.0	2.7	4.8	4.1	5.6	5.3	8.1	8.9	7.3	7.0	5.6	4.4	3.7	3.0	3.6	2.7	2.9	3.6	1.8	9.0
239.20	0.9	0.9	1.3	1.9	2.7	3.2	3.6	5.1	4.6	7.3	8.5	5.9	6.3	4.9	5.1	3.9	3.2	2.6	2.8	3.8	5.1	4.9	11.7
240.31	0.7	1.2	1.7	2.5	3.3	3.1	3.5	5.1	4.6	7.7	7.2	5.5	6.3	5.7	4.6	3.7	3.4	3.1	2.9	2.8	2.7	1.0	17.6
247.27	0.0	0.0	0.0	0.1	0.2	0.2	4.0	9.4	17.4	18.5	6.4	5.5	5.0	4.5	3.1	2.1	2.1	2.0	2.0	1.6	2.9	1.5	11.6
251.13	0.0	0.1	0.1	0.1	0.6	0.3	0.8	2.7	4.1	8.0	11.6	14.7	13.3	10.3	8.7	5.3	4.3	3.3	3.0	3.2	1.5	2.7	1.1
253.14	0.0	0.1	0.2	0.2	0.2	0.5	0.8	2.4	3.3	10.2	16.3	13.3	11.3	9.0	6.0	3.8	3.3	2.8	2.8	5.6	6.0	1.3	0.5
258.22	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.5	0.7	0.7	0.8	1.2	2.3	2.1	3.3	3.5	6.1	6.3	7.3	7.4	7.2	49.1
263.42	0.0	0.2	0.2	0.1	0.5	0.8	3.6	10.1	5.3	3.1	2.4	0.2	3.9	3.2	3.4	4.4	4.5	6.3	5.6	6.0	10.1	6.9	19.1
271.24	0.0	0.0	0.1	0.1	0.1	0.2	1.3	7.5	13.9	14.0	5.9	3.1	3.4	3.0	3.6	2.8	3.2	3.8	3.2	2.8	3.2	3.4	21.3
277.49	0.1	0.1	0.3	0.5	0.4	1.5	8.2	37.4	27.2	9.9	2.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10.8
282.52	0.1	0.1	0.1	0.1	0.1	1.0	13.0	56.9	18.0	4.5	1.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.6
286.56	0.0	0.0	0.1	0.2	0.7	3.0	34.3	46.3	10.1	2.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
294.52	0.0	0.0	0.1	0.1	0.1	0.3	2.2	36.9	37.1	11.8	2.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	8.2

Tab. 1 - Continued.

Limits	*-0.50*	*0.00*	*0.50*	*1.00*	*1.50*	*2.00*	*2.50*	*3.00*	*3.50*	*4.00*	*4.50*	*5.00*	*5.50*	*6.00*	*6.50*	*7.00*	*7.50*	*8.00*	*8.50*	*9.00*	*9.50*	*10.00*	*Rest*
Sample depth (mbsf)																							
302.03	2.5	1.3	2.0	2.5	4.9	5.7	6.6	9.3	7.3	8.5	5.9	1.9	2.2	2.4	2.7	2.8	1.8	3.1	2.3	2.5	2.0	2.0	17.9
305.65	0.8	0.8	0.7	0.9	1.5	1.9	2.5	7.7	10.3	15.4	6.9	5.0	4.8	4.7	3.6	3.1	2.6	1.9	1.0	0.5	0.5	0.5	22.2
307.00	0.0	0.0	0.1	0.1	0.2	0.4	0.1	4.7	7.3	16.5	11.4	8.8	4.8	5.8	4.3	3.2	2.8	3.7	2.9	3.1	3.7	2.8	13.1
309.69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.1	15.5	14.7	13.8	14.7	9.1	5.2	3.9	2.9	2.8	2.5	1.2	1.3	1.5	7.3
313.79	0.0	0.0	0.2	0.5	2.7	6.0	9.3	11.4	6.9	9.6	10.1	9.1	6.9	5.5	3.9	2.5	2.1	1.9	1.7	1.7	1.4	1.6	5.0
314.77	0.0	0.0	0.1	0.1	0.2	0.4	0.8	1.8	1.8	3.9	3.9	3.1	4.2	6.6	7.4	5.5	3.3	3.8	5.0	4.7	4.1	2.4	37.0
322.84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.8	5.1	12.0	20.9	20.8	15.8	9.0	4.9	3.5	2.0	1.8	1.6
327.20	8.4	5.9	5.4	5.9	7.0	6.5	5.6	5.6	3.2	5.8	6.9	5.5	6.0	5.5	3.7	2.8	2.4	1.6	1.2	1.3	2.0	0.8	1.0
329.63	0.0	0.1	0.1	0.3	0.3	0.3	0.6	0.6	0.7	3.5	4.2	5.8	6.9	6.0	7.5	5.3	5.8	4.8	4.1	7.5	8.0	4.1	23.6
337.55	0.0	0.0	0.2	0.4	0.7	1.2	1.6	2.8	2.8	8.7	14.9	9.3	8.5	8.8	6.6	4.9	4.5	4.2	3.7	1.9	2.6	2.9	8.8
345.00	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.9	2.4	2.4	2.4	2.4	2.4	3.4	4.8	4.9	5.8	6.5	6.6	6.9	6.0	3.5	37.2
349.20	1.3	1.7	1.7	3.3	5.2	9.9	8.7	10.1	7.0	7.4	4.2	4.0	4.0	3.7	3.3	2.6	2.6	0.8	1.7	1.7	1.3	1.3	12.5
354.44	1.8	1.6	2.1	3.5	5.6	8.2	9.4	13.0	9.8	9.2	8.5	6.8	5.5	4.2	2.9	1.9	1.5	1.2	0.8	0.7	0.6	0.9	0.3
361.17	1.3	1.6	2.3	4.3	7.3	15.0	12.6	13.7	8.2	7.2	5.9	3.7	2.7	2.0	1.8	1.3	1.5	1.3	1.2	1.0	1.3	1.5	1.3
378.24	2.1	1.6	2.6	4.1	7.7	14.5	11.8	12.8	8.3	7.7	4.9	2.7	2.4	1.8	1.3	1.1	1.1	1.4	1.1	0.8	1.2	1.2	5.7
382.73	0.1	0.1	0.1	0.1	0.1	1.2	4.1	12.6	12.8	14.7	15.0	9.5	5.7	4.5	2.4	1.8	1.9	1.9	1.4	1.1	1.2	1.6	6.0
385.72	8.1	8.0	7.3	10.3	12.2	12.6	10.8	8.9	4.9	3.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	12.5
403.96	0.1	0.4	1.5	5.5	15.0	30.8	19.3	15.0	5.2	2.4	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.3
406.20	1.6	3.1	2.1	3.0	5.0	10.2	9.0	11.1	8.9	3.0	12.5	5.6	4.0	3.3	2.3	1.8	1.7	2.0	1.5	1.1	1.3	1.8	4.1
413.80	0.6	1.0	0.9	1.5	2.9	7.1	7.0	11.0	8.7	8.8	7.7	5.4	5.0	4.3	2.8	2.6	2.4	2.6	2.3	1.8	1.8	2.3	9.6
419.88	7.1	7.3	9.1	12.8	20.3	16.4	9.1	5.5	1.8	1.6	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	5.7
424.11	1.1	1.5	1.7	2.3	3.5	6.9	5.2	6.7	6.3	8.2	4.6	2.4	8.9	4.1	3.9	3.1	2.9	2.9	2.8	2.7	2.4	4.2	11.8
433.68	0.6	1.2	5.8	20.1	27.7	24.4	9.6	6.0	1.9	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.1
441.73	1.4	1.1	1.4	2.7	5.4	7.0	7.4	9.5	6.3	7.4	8.9	6.6	5.2	4.4	3.2	2.8	2.6	2.7	2.2	1.5	1.7	2.1	6.6
454.63	0.6	0.4	0.5	0.6	1.5	1.7	2.5	4.8	6.5	9.4	9.3	6.9	4.6	5.1	4.5	3.0	3.3	4.2	3.4	3.0	2.3	5.6	16.4
459.63	0.3	0.5	0.7	1.0	1.4	2.3	2.3	2.4	2.6	2.9	3.1	3.2	3.4	2.8	3.5	3.4	3.8	3.9	3.9	4.0	4.5	5.5	38.6
466.33	0.1	0.3	0.2	0.7	1.4	2.3	1.8	2.6	2.8	2.8	2.7	2.9	3.0	4.0	3.5	6.0	6.2	13.6	14.3	6.2	2.4	3.7	16.6
478.87	0.0	0.0	0.0	0.0	0.1	0.2	5.2	33.0	29.3	20.2	4.4	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	6.5
483.73	0.1	0.1	0.3	0.5	0.8	3.7	7.5	13.6	8.0	7.1	6.0	4.3	4.7	4.5	4.5	3.8	3.8	3.9	3.7	3.9	3.6	2.1	9.4
490.84	3.6	4.4	5.5	5.8	7.3	8.0	9.4	14.2	12.8	11.5	4.1	1.6	1.4	0.9	0.8	1.0	1.1	0.9	0.7	0.4	0.3	0.6	3.4
500.32	0.1	0.1	0.1	0.1	0.5	1.6	4.7	27.7	30.0	19.4	5.6	1.7	1.0	0.8	0.8	0.9	0.9	0.8	0.5	0.4	0.2	0.0	2.1
509.28	0.1	0.1	0.5	2.1	3.1	6.0	3.3	3.7	4.1	8.1	19.2	15.2	9.7	7.0	4.7	2.9	1.8	1.6	1.0	0.8	0.4	0.9	3.8
517.70	0.8	0.8	0.8	2.4	7.6	13.7	18.9	21.3	10.9	8.6	5.1	2.5	1.9	1.3	0.8	0.4	0.5	0.5	0.4	0.2	0.1	0.2	0.5
527.92	0.5	0.5	0.7	2.5	7.4	39.1	28.1	10.4	1.8	0.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	7.1
538.40	0.1	0.3	0.4	0.9	1.8	2.6	3.0	4.8	8.8	20.2	15.1	8.2	6.2	4.5	3.4	2.0	2.0	2.3	1.5	1.4	0.8	1.5	8.4
548.42	0.0	0.0	0.0	0.0	0.7	15.9	25.8	31.7	13.2	5.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7
552.13	0.1	0.1	0.1	0.4	2.4	19.6	27.9	26.8	6.0	2.2	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	12.5
558.09	0.2	0.1	0.3	0.6	1.2	1.9	1.9	3.0	8.2	24.2	15.7	11.1	7.6	5.5	3.1	1.8	1.4	1.6	1.4	0.9	0.7	0.3	7.2
571.23	0.4	0.6	1.6	5.2	18.9	52.4	10.8	2.6	4.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5
577.93	0.7	0.6	0.7	0.3	0.2	0.2	0.2	1.1	9.7	32.0	32.8	6.5	3.5	3.4	2.3	1.2	1.1	0.8	0.5	0.2	0.6	0.1	1.4
588.61	0.1	0.5	1.3	7.0	22.2	40.3	19.9	4.4	1.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3
612.08	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.1	17.1	45.6	20.4	5.9	3.3	2.7	1.0	1.0	0.7	0.0	0.1	0.3	0.2	0.0
616.28	0.3	0.3	0.8	1.8	4.6	25.7	37.9	18.1	3.0	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.1

mudstone (facies 2) – mudstones typically with 20 to 40% sand, *poorly sorted sandstone* (facies 2 and 3) - broad sand mode with considerable mud, *well sorted sandstone* (facies 4 and 5) – well-defined sand mode and little mud, and *diamicton (-ite)* (facies 6 and 7) – wide range of sizes from pebbles to clay with a broad mode in the sand. Histograms showing size frequency distributions for these facies are shown for a set of samples from sequence 11. Table 2 includes a column for the facies designation for each sample, based on the visual core description (Cape Roberts Science Team, 1999, Supplement), which is also summarised in the adjacent column.

For most of the samples the visual core description is confirmed by grain size analysis for discriminating the basic sediment types of mudstone, sandstone and diamictite. However, for 15 of the 117 samples important differences were found. Two of these are special cases. A sample at 20.04 mbsf with a texture identical to the diamicton close above (18.89 mbsf), was described differently (and acceptably) as muddy sand. Another sample at 612.08 mbsf was described as a fine muddy sandstone, but analysis shows it to be a moderately sorted coarse siltstone with almost no clay – a rarity in these strata. These instances point to future detailed studies of sediment texture for environmental interpretation.

All of the other differences between visual core descriptions and designations from analysis relate to 13 samples termed *sandstone* in the field but which analysis shows to be *mudstone* (so marked in the "Lithology" column in table 2). They typically have sand percentages ranging from 11 to 34%, and occur in two main intervals – eight are from 21 to 31 mbsf and five are from 130 to 240 mbsf. All have a few percent in each of the finer sand classes and a few tenths of a percent in each class in the medium through very coarse sand range. These samples illustrate the problem of consistent visual identification of texture in very poorly sorted sediment.

Although the data presented here are offered as a standard for comparison of visual core descriptions, grain size analyses from the laser particle size technique are also reported in this volume and used to establish and interpret variations in environmental parameters (Woolfe et al., this

Tab. 2 - Statistics for grain size analyses of samples from CRP-2/2A. Graphic measures are from Folk & Ward, 1957).

	Facies													*Graphic*						
Depth		*Lithology*	*Weight (g)*		*Percentiles*									*measures*			*%*	*% gravel-free*		
(mbsf)		*(Cape Roberts Science Team, 1999)*	*sample*	*grvl*	*1*	*5*	*16*	*25*	*50*	*75*	*84*	*95*	*MN*	*SD*	*SK*	*Grvl*	*Sand*	*Silt*	*Clay*
6.02	7	DIAMICTON, sandy, clast-rich	35.7	3.4	-0.6	-0.2	1.1	1.7	2.8	3.9	5.9	11.3	3.3	2.9	1.2	9.4	69.0	10.6	10.9
10.86	7	DIAMICTON, sandy, clast-rich	18.1	0.0	0.2	1.1	2.0	2.6	3.9	7.6	9.9	13.7	5.3	3.9	1.0	0.0	53.5	23.5	23.0
12.92	7	DIAMICTON, muddy, clast-rich	17.6	0.4	-0.5	1.0	2.1	2.8	4.1	8.7	10.8	13.0	5.7	4.0	1.0	2.3	47.7	22.9	27.1
17.82	7	DIAMICTON, muddy, clast-poor	11.0	0.0	0.4	1.5	2.6	3.1	5.3	9.8	11.4	13.2	6.4	4.0	0.9	0.2	38.8	27.5	33.5
18.89	7	DIAMICTON, sandy, clast-rich	17.7	0.8	-0.1	0.9	1.9	2.5	3.8	9.0	11.5	13.2	5.7	4.3	1.0	4.6	50.8	17.6	27.0
20.04	3	SAND, fine to medium *[DIAMICTON]*	14.3	0.0	-0.4	0.9	1.9	2.6	4.1	9.5	10.9	13.8	5.6	4.2	1.0	0.3	49.4	19.5	30.7
21.02	3	SAND, fine, muddy *[MUD]*	15.4	0.0	0.4	1.6	3.0	3.9	7.3	10.6	11.8	13.3	7.4	4.0	0.8	0.0	26.4	30.5	43.2
21.32	7	DIAMICTON, sandy, clast-rich	16.1	0.9	-0.6	0.0	1.2	1.8	2.8	3.9	4.9	10.9	3.0	2.6	1.2	5.7	73.0	12.4	8.9
22.31	5	SAND, fine to coarse, mod well sorted	14.2	1.2	-0.5	0.7	2.1	2.6	3.4	4.0	4.5	9.4	3.3	1.9	0.8	8.8	69.0	15.4	6.8
23.58	7	DIAMICTON, sandy, clast-rich	26.9	3.2	-0.5	0.6	2.0	2.6	3.6	4.8	6.1	10.6	3.9	2.5	0.9	11.8	55.6	23.3	9.3
24.52	7	DIAMICTON, sandy, clast-rich	17.7	0.3	-0.4	0.7	1.8	2.3	3.3	4.5	5.5	9.8	3.6	2.3	0.9	1.6	66.6	23.8	8.0
25.51	4	SAND, fine, well sorted	16.4	0.5	-0.3	1.1	2.2	2.5	3.8	5.7	7.0	10.7	4.3	2.7	0.9	2.9	52.2	33.1	11.8
25.72	7	DIAMICTON, sandy, clast-rich	11.2	0.3	0.2	1.2	2.2	2.9	4.3	6.4	7.9	10.7	4.8	2.8	0.8	3.0	44.5	37.7	14.8
26.30	3	SANDST, fine, mod sorted *[MUDST]*	17.9	0.1	1.0	2.0	2.9	3.5	5.6	8.9	10.8	13.1	6.4	3.7	0.8	0.8	32.8	37.8	28.6
26.59	4	SANDST, fine, mod sorted	12.5	0.0	0.1	1.2	2.0	2.3	2.8	3.2	3.5	4.0	2.8	0.8	0.6	0.0	88.8	2.4	8.8
26.89	3	SAND, fine-v coarse, muddy *[MUD]*	14.9	0.0	1.0	2.8	4.0	4.8	6.2	8.2	10.1	12.8	6.8	3.0	0.7	0.0	15.7	57.7	26.6
27.16	3	SANDST, v fine, muddy *[MUDST]*	15.1	0.0	1.6	2.6	3.2	3.6	5.2	7.8	9.5	14.0	6.0	3.3	0.8	0.0	34.0	42.6	23.4
28.20	3	SANDST, v fine, muddy *[MUDST]*	11.7	0.0	0.6	2.7	3.6	3.9	5.5	7.5	8.8	14.0	5.9	3.0	0.7	0.0	27.9	51.3	20.9
29.53	3	SANDST, medium-fine, muddy *[MUDST*	26.7	0.0	0.8	2.7	3.7	4.3	5.9	7.9	9.4	12.5	6.4	2.9	0.7	0.0	21.0	54.9	24.1
29.88	3	SANDST, medium-fine, muddy *[MUDST*	12.7	0.0	1.3	2.8	5.4	6.2	7.8	10.2	11.6	14.0	8.3	3.2	0.7	0.0	11.0	42.3	46.7
31.12	3	SANDST, medium-fine, muddy *[MUDST*	21.7	0.1	0.6	1.7	2.6	3.1	6.2	8.4	9.9	12.7	6.2	3.5	0.8	0.6	34.6	36.5	28.3
32.57	3	SANDST, medium-fine, muddy	21.9	0.2	0.8	2.0	2.7	2.9	5.0	7.2	8.6	12.2	5.4	3.0	0.8	0.9	40.7	39.4	19.0
33.82	3	SANDST, medium-fine, muddy	17.9	0.6	-0.6	0.1	1.4	2.0	2.8	4.7	7.1	10.1	3.8	3.0	1.1	3.4	69.3	15.0	12.3
34.87	3	SANDST, medium-fine, muddy	26.3	0.0	1.0	1.9	2.5	2.7	3.2	4.2	5.3	9.0	3.7	1.8	0.7	0.2	72.3	20.9	6.6
35.87	5	SAND, medium, mod sorted	21.1	0.1	0.6	1.4	2.0	2.2	2.7	3.2	4.2	9.3	2.9	1.8	0.8	0.7	82.9	8.4	8.0
36.27	3	SAND, medium-coarse, v prly sorted	17.6	1.1	-0.7	-0.5	0.4	0.9	1.7	2.6	3.4	8.3	1.8	2.1	1.8	6.2	81.2	7.4	5.1
36.45	3	SAND, medium-coarse, v prly sorted	11.5	1.1	-0.6	-0.1	1.0	1.5	2.4	3.4	5.6	9.3	3.0	2.6	1.2	9.8	71.1	12.0	7.1
37.53	3	SAND, medium, v prly sorted	13.6	0.1	0.2	1.7	2.6	3.0	4.3	6.5	7.8	12.3	4.9	2.9	0.8	0.4	45.7	39.0	14.8
39.60	3	SAND, fine-medium, v prly sorted	24.3	0.0	0.4	1.9	2.6	2.9	4.0	6.8	8.9	12.4	5.2	3.2	0.8	0.1	51.0	29.6	19.3
43.67	2	SAND, fine & v fine	22.6	0.0	1.6	2.2	2.4	2.6	2.9	3.7	5.0	11.5	3.5	2.1	0.8	0.0	78.9	11.4	9.7
51.46	7	DIAMICTON, sandy, clast-poor	38.0	1.1	-0.3	1.4	2.7	3.3	4.6	6.9	8.8	12.3	5.4	3.2	0.8	2.9	40.1	38.5	18.6
55.05	3	SANDSTONE, v fine, muddy	15.9	0.0	1.6	2.7	3.5	3.8	4.6	5.9	6.6	8.3	4.9	1.6	0.6	0.0	32.7	61.1	6.2
59.90	1	MUDSTONE	20.5	0.1	2.9	4.1	5.3	5.8	7.0	8.7	9.9	12.6	7.4	2.5	0.6	0.4	4.5	61.7	33.4
63.92	1	MUDSTONE	9.1	0.0	2.2	4.0	5.2	5.6	6.8	8.5	10.3	12.8	7.4	2.6	0.6	0.0	5.3	63.7	31.0
76.75	3	SAND, fine-medium, muddy	12.9	0.0	0.7	1.6	2.5	2.7	3.3	4.8	5.9	7.9	3.9	1.8	0.7	0.3	65.8	29.2	4.6
86.18	7	DIAMICTITE, sandy	18.5	0.8	-0.2	1.0	2.2	2.7	3.5	4.9	6.0	8.6	3.9	2.1	0.8	4.4	60.6	28.7	6.3
92.10	3	SAND, fine-medium, prly sorted	16.2	0.0	1.2	2.1	2.8	3.0	3.6	4.8	5.8	7.7	4.1	1.6	0.6	0.2	62.3	33.4	4.1
99.20	7	DIAMICTITE, sandy, clast-rich	18.4	2.1	-0.5	1.0	2.5	3.0	4.1	6.0	7.0	9.4	4.5	2.4	0.8	11.2	43.4	36.5	9.0
105.93	7	DIAMICTITE, sandy, clast-rich	22.3	5.7	-0.5	0.7	2.3	2.9	4.0	5.8	6.7	8.8	4.3	2.3	0.8	25.5	37.1	31.4	5.9
109.75	3	SANDSTONE, fine, w/pumice	13.7	0.0	2.2	2.8	3.2	3.4	4.0	5.1	5.9	7.7	4.3	1.4	0.6	0.0	51.7	44.3	3.9
114.06	12	VOLCANIC ASH	13.9	0.0	0.1	1.0	2.5	3.1	5.7	7.3	7.8	8.8	5.3	2.5	0.8	0.1	35.7	51.8	12.4
121.37	3	SANDSTONE, fine, prly sorted	16.5	0.1	-0.5	0.8	1.8	2.3	3.7	6.3	7.4	9.7	4.3	2.7	0.9	0.3	54.1	33.8	11.7
125.42	9	CONGLOMERATE, sandy	22.6	5.6	-0.7	-0.6	-0.4	0.0	1.0	3.4	4.9	7.7	1.9	2.6	2.3	24.9	59.8	12.3	3.1
131.66	3	SANDSTONE, v fine, muddy *[MUDST*	11.3	0.0	1.4	3.0	3.7	4.0	5.3	7.0	8.0	9.9	5.7	2.1	0.6	0.4	24.1	59.5	16.0
135.21	3	SANDSTONE, v fine, muddy	13.1	0.0	2.2	2.5	3.1	3.3	4.0	6.7	9.0	13.1	5.4	3.1	0.8	0.0	49.8	30.6	19.6
143.37	3	SANDSTONE, v fine, muddy *[MUDST*	22.8	0.1	0.7	1.9	3.0	3.5	4.7	7.6	9.9	13.0	5.8	3.4	0.8	0.3	38.6	38.5	22.9
146.64	5	Mixed SAND, fine and coarse	13.3	0.0	1.4	2.0	2.5	2.8	3.3	3.8	4.2	4.6	3.3	0.8	0.5	0.4	81.8	6.5	11.4
152.31	4	SAND, fine, well sorted	18.2	0.0	2.2	2.7	2.9	3.1	3.4	3.7	3.9	4.1	3.4	0.5	0.5	0.1	87.6	6.5	5.8
158.80	1	MUDSTONE, v fine, sandy	26.7	0.1	1.3	3.9	5.3	5.9	7.7	10.6	11.9	13.6	8.3	3.1	0.6	0.3	5.2	48.1	46.7
162.54	1	MUDSTONE, sandy, laminated	10.1	0.0	1.9	3.9	4.7	5.4	6.9	9.0	9.9	11.1	7.2	2.4	0.6	0.1	5.9	59.1	34.9
168.73	1	MUDSTONE, sandy, laminated	10.7	0.0	3.0	3.8	4.6	5.2	6.6	8.4	9.4	10.5	6.9	2.2	0.6	0.0	8.9	61.3	29.9
175.58	1	MUDSTONE, sandy, laminated	12.5	0.0	2.4	3.7	4.3	4.8	6.1	7.7	8.7	10.7	6.4	2.2	0.6	0.0	10.5	67.5	22.0
183.79	3	SANDSTONE, fine-medium, prly sorted	13.6	0.2	0.6	1.8	2.3	2.6	3.3	5.1	6.7	9.5	4.1	2.3	0.8	1.3	63.8	23.3	11.6
188.92	3	SANDSTONE, fine-medium, prly sorted	12.6	0.0	1.8	2.2	2.4	2.6	2.9	3.2	3.5	4.3	2.9	0.6	0.5	0.0	91.5	2.1	6.4
193.49	4	SANDSTONE, fine, mod well sorted	45.3	0.0	2.0	2.4	2.8	3.0	3.5	4.2	5.4	10.0	3.9	1.8	0.7	0.1	71.6	20.2	8.2
197.89	3	SANDSTONE, fine-medium, prly sorted	17.1	0.1	1.9	2.7	3.4	3.7	4.3	6.0	7.3	9.8	5.0	2.0	0.7	0.6	40.1	47.1	12.2
201.72	3	SANDSTONE, fine-medium, prly sorted	21.0	1.2	1.0	2.3	3.1	3.5	4.1	5.7	7.1	10.1	4.8	2.2	0.7	5.6	43.3	39.9	11.1
209.77	5	SANDSTONE, fine, mod well sorted	13.5	0.0	2.1	2.6	3.1	3.4	4.1	6.6	8.7	14.0	5.3	3.1	0.8	0.4	48.3	33.1	18.6
214.32	3	SANDSTONE, fine *[MUDST]*	8.3	0.0	2.2	3.0	3.7	4.0	5.5	7.1	8.2	11.0	5.8	2.3	0.7	0.0	24.3	58.9	16.8
216.12	3	SANDSTONE, fine, poorly sorted	8.3	0.0	2.3	2.7	3.0	3.3	4.0	5.5	6.6	9.5	4.5	1.9	0.7	0.0	50.3	40.8	9.0

Tab. 2 - Continued.

	Facies													*Graphic*					
Depth		*Lithology*	*Weight (g)*		*Percentiles*									*measures*		*%*	*% gravel-free*		
(mbsf)		*(Cape Roberts Science Team, 1999)*	*sample*	*grvl*	*1*	*5*	*16*	*25*	*50*	*75*	*84*	*95*	*MN*	*SD*	*SK*	*Grvl*	*Sand*	*Silt*	*Clay*
222.11	1	MUDSTONE	14.5	0.0	0.4	2.7	3.4	3.7	4.8	7.4	9.4	12.1	5.9	2.9	0.7	0.1	34.0	43.7	22.3
227.42	7	DIAMICTITE, muddy, clast-poor	11.7	0.0	1.3	2.9	3.7	4.0	5.2	6.8	7.8	9.7	5.6	2.1	0.6	0.0	25.9	59.4	14.7
234.38	3	SANDSTONE, fine, muddy *[MUDST]*	10.6	0.1	-0.5	0.8	2.3	3.2	4.8	7.3	8.7	11.4	5.3	3.2	0.9	1.3	36.0	43.0	19.7
239.20	1	MUDSTONE	16.4	0.2	-0.4	1.0	2.7	3.6	5.3	8.6	9.6	11.0	5.8	3.2	0.8	1.3	31.6	40.2	28.2
240.31	3	SANDSTONE, fine, muddy *[MUDST]*	20.8	3.9	-0.3	0.8	2.5	3.4	5.3	8.3	10.0	12.8	5.9	3.7	0.9	15.8	33.4	39.6	27.0
247.27	5	SANDSTONE, fine mod sorted	13.1	0.0	2.2	2.5	3.1	3.3	4.0	6.7	9.0	13.1	5.4	3.1	0.8	0.0	49.8	30.6	19.6
251.13	1	MUDSTONE	7.2	0.0	1.5	3.0	4.0	4.4	5.3	6.5	7.4	9.1	5.5	1.8	0.6	0.0	16.8	71.6	11.6
253.14	1	MUDSTONE	12.5	0.0	1.8	3.1	3.9	4.2	5.1	6.6	8.1	9.2	5.7	2.0	0.6	0.0	17.9	65.7	16.3
258.22	1	MUDSTONE	19.2	0.0	2.5	5.4	7.4	8.2	9.9	11.8	12.7	14.0	10.0	2.6	0.6	0.0	2.7	19.9	77.5
263.42	1	MUDSTONE	10.6	0.0	1.5	2.5	3.1	4.2	7.8	9.6	10.3	11.7	7.0	3.2	0.7	0.0	23.8	28.4	47.7
271.24	1	MUDSTONE, v fine, sandy	24.1	0.0	2.2	2.8	3.3	3.6	5.6	9.5	10.9	13.8	6.6	3.6	0.8	0.0	37.3	28.8	33.9
277.49	5	SANDSTONE, fine, moderately sorted	9.3	0.0	0.9	2.2	2.6	2.7	3.0	3.5	3.9	4.3	3.2	0.6	0.5	0.0	85.7	3.1	11.2
282.52	3	SAND, fine, muddy	14.1	0.3	1.7	2.2	2.5	2.6	2.8	3.1	3.3	4.3	2.9	0.5	0.5	2.3	91.9	1.9	3.8
286.56	5	SANDSTONE, fine, well sorted	21.0	0.0	1.4	2.0	2.3	2.4	2.6	2.9	3.0	3.5	2.6	0.4	0.5	0.0	97.1	0.3	2.5
294.52	5	SANDSTONE, fine well sorted	14.3	0.0	2.2	2.6	2.8	2.9	3.1	3.5	3.8	4.2	3.2	0.5	0.5	0.0	88.4	3.1	8.5
302.03	6	DIAMICTITE, sandy	14.4	0.2	-0.6	0.3	1.9	2.6	4.0	5.8	7.7	9.6	4.5	2.9	0.9	1.3	49.5	34.9	14.3
305.65	5	SANDSTONE, fine, muddy	25.3	0.0	-0.3	1.6	3.0	3.4	4.6	7.9	9.6	12.6	5.7	3.3	0.8	0.0	42.5	32.7	24.8
307.00	2	MUDSTONE	14.1	0.0	2.5	3.0	3.6	3.9	5.0	8.1	9.5	12.2	6.0	2.9	0.7	0.0	29.4	45.0	25.6
309.69	2	MUDSTONE	21.6	0.0	3.1	3.6	3.9	4.2	5.1	6.3	7.6	10.9	5.5	2.0	0.6	0.0	19.1	67.1	13.7
313.79	3	SANDSTONE, fine, muddy	10.0	0.0	1.1	1.7	2.4	2.8	4.2	5.7	6.9	10.0	4.5	2.4	0.8	0.0	46.7	41.9	11.4
314.77	1	MUDSTONE	18.6	0.0	2.2	3.5	5.0	5.9	8.3	12.7	13.4	13.9	8.9	3.7	0.7	0.0	9.0	37.8	53.2
322.84	2	SILTSTONE, lamina	10.8	0.0	4.6	5.3	5.9	6.1	6.7	7.4	7.9	9.1	6.8	1.1	0.5	0.0	1.6	86.3	12.2
327.20	7	DIAMICTITE, sandy, clast-rich	26.1	13.0	-0.7	-0.6	0.2	1.0	3.0	5.3	6.1	8.5	3.1	2.9	1.4	49.8	29.8	17.2	3.2
329.63	1	MUDSTONE, v fine, sandy	18.7	0.0	2.1	3.8	5.0	5.7	7.7	9.8	11.1	13.6	7.9	3.0	0.6	0.0	6.3	46.3	47.3
337.55	1	MUDSTONE, v fine, sandy	14.1	0.0	1.3	2.7	3.9	4.2	5.4	7.4	8.5	10.9	5.9	2.4	0.7	0.0	18.4	61.8	19.8
345.00	1	MUDSTONE, v fine, sandy	20.8	0.0	1.6	3.6	5.7	6.8	8.8	11.9	13.7	14.0	9.4	3.6	0.7	0.0	7.2	32.6	60.2
349.20	7	DIAMICTITE, sandy	17.4	x	-0.5	0.6	1.7	2.1	3.6	6.4	8.7	14.0	4.6	3.8	1.1		56.3	25.3	18.4
354.44	7	DIAMICTITE, sandy	19.8	1.9	-0.6	0.4	1.6	2.1	3.2	4.7	5.4	7.3	3.4	2.0	0.9	9.4	58.1	29.5	3.0
361.17	7	DIAMICTITE, sandy, clast-rich	14.0	0.2	-0.5	0.5	1.5	1.8	2.7	4.1	5.2	8.5	3.1	2.1	0.9	1.2	72.7	20.0	6.2
378.24	7	DIAMICTITE, sandy, clast-rich	14.2	0.5	-0.6	0.3	1.4	1.8	2.7	4.2	5.7	10.3	3.3	2.6	1.1	3.4	70.6	16.3	9.7
382.73	3	SANDSTONE, v fine, muddy	15.3	0.0	1.8	2.4	2.9	3.3	4.1	5.4	6.8	10.4	4.6	2.2	0.7	0.0	45.9	42.6	11.5
385.72	10	CONGLOMERATE, matrix-supported	23.1	12.5	-0.7	-0.6	0.0	0.6	1.7	2.8	3.6	4.4	1.8	1.7	1.5	54.1	39.7	0.3	5.9
403.96	5	SANDSTONE, fine-v coarse	14.8	0.0	0.2	0.8	1.3	1.5	2.0	2.6	2.9	3.9	2.0	0.9	0.7	0.0	95.3	1.2	3.6
406.20	7	DIAMICTITE, sandy	19.2	0.9	-0.6	0.1	1.6	2.0	3.3	5.0	6.3	9.7	3.7	2.7	1.0	4.7	54.4	31.6	9.3
413.80	7	DIAMICTITE, sandy	14.7	2.1	-0.2	1.2	2.2	2.7	4.0	6.6	8.4	11.4	4.9	3.1	0.9	14.6	42.3	27.9	15.1
419.88	9	CONGLOMERATE, clast-supported	11.3	6.9	-0.7	-0.5	0.1	0.6	1.3	2.1	2.7	3.3	1.4	1.2	1.5	61.1	35.4	0.9	2.6
424.11	2	SANDSTONE, fine, moderately sorted	25.8	x	-0.5	0.7	1.9	2.7	4.9	7.8	9.5	11.2	5.4	3.5	0.9		43.3	32.8	23.8
433.68	4	SAND, fine - medium, mod sorted	14.5	0.1	-0.3	0.3	0.8	0.9	1.4	1.9	2.2	3.0	1.5	0.8	0.8	0.5	97.7	0.7	1.1
441.73	7	DIAMICTITE, sandy & muddy, clast-poo	13.0	0.2	-0.5	0.7	1.8	2.4	4.0	6.0	7.6	10.5	4.5	2.9	0.9	1.9	48.6	35.7	13.8
454.63	7	DIAMICTITE, muddy, clast-poor	8.3	0.1	0.0	1.9	3.3	3.8	5.6	8.9	10.0	11.6	6.3	3.2	0.8	1.7	27.9	40.2	30.2
459.63	1	MUDSTONE, v fine sandy	19.0	0.0	0.2	1.8	3.9	5.3	8.8	11.4	12.5	14.0	8.4	4.0	0.8	0.0	16.5	27.0	56.5
466.33	1	MUDSTONE, fine sandy	11.7	0.1	0.9	2.0	4.2	5.7	7.8	8.8	10.1	12.4	7.4	3.0	0.7	1.1	14.7	41.4	42.8
478.87	4	SANDSTONE, fine, moderately sorted	11.3	0.0	2.2	2.5	2.7	2.9	3.2	3.6	3.9	4.2	3.3	0.5	0.5	0.0	88.0	5.1	6.8
483.73	3	SANDSTONE, fine, muddy	15.9	0.0	1.0	2.0	2.6	3.0	4.8	7.7	8.9	11.4	5.4	3.0	0.8	0.1	41.7	35.5	22.7
490.84	4	SANDSTONE, fine, mod sorted	18.8	x	-0.6	-0.3	0.7	1.4	2.7	3.7	4.2	8.3	2.5	2.2	1.3		82.6	12.0	5.5
500.32	4	SANDSTONE, v fine, laminated	18.4	0.0	1.6	2.3	2.7	2.9	3.3	3.7	4.0	7.0	3.3	1.0	0.6	0.1	84.2	12.5	3.2
509.28	2	MUDSTONE, fine sandy	14.1	0.0	0.6	1.4	2.6	3.6	4.5	5.5	6.2	9.1	4.4	2.1	0.7	0.0	31.2	61.9	6.8
517.70	3	SANDSTONE, medium	17.2	2.6	-0.3	1.0	1.7	2.0	2.6	3.4	3.9	5.4	2.7	1.2	0.7	15.0	72.9	11.0	1.1
527.92	3	SANDSTONE, fine-medium, prly sorted	15.5	0.7	0.0	1.1	1.6	1.7	2.0	2.4	2.7	3.0	2.1	0.6	0.6	4.8	87.4	0.8	7.0
538.40	1	MUDSTONE, fine sandy, massive	18.2	0.4	0.7	1.8	3.1	3.6	4.2	5.8	7.4	11.5	4.9	2.5	0.8	1.9	42.2	42.6	13.3
548.42	5	SANDSTONE, medium	23.0	x	1.5	1.8	2.0	2.2	2.6	3.0	3.3	3.9	2.7	0.7	0.5		92.8	1.3	5.9
552.13	5	SANDSTONE, fine-coarse, mod sorted	9.0	0.0	1.1	1.6	1.9	2.0	2.5	2.9	3.6	4.2	2.7	0.8	0.6	0.0	85.6	1.4	12.9
558.09	3	SANDSTONE, fine, muddy	17.0	0.0	0.9	2.2	3.4	3.7	4.3	5.4	6.4	7.4	4.7	1.5	0.6	0.2	41.6	47.7	10.5
571.23	5	SANDSTONE, medium-coarse	15.2	0.0	0.0	0.8	1.3	1.5	1.7	2.0	2.2	3.3	1.7	0.6	0.6	0.3	96.4	0.5	2.8
577.93	4	SANDSTONE, fine-v fine, mod sorted	12.3	0.0	-0.2	3.1	3.6	3.7	4.1	4.4	4.9	6.9	4.2	0.9	0.5	0.1	45.6	51.7	2.7
588.61	4	SANDSTONE, fine-medium, laminated	8.2	0.0	0.2	0.8	1.2	1.4	1.7	2.1	2.3	2.9	1.7	0.6	0.6	0.0	97.1	1.1	1.8
612.08	3	SANDSTONE, fine, muddy *[SILTSTONE*	15.6	0.0	3.3	3.7	4.0	4.1	4.4	4.7	5.0	6.2	4.4	0.6	0.5	0.0	18.7	80.6	0.7
616.28	5	SANDSTONE, coarse-fine, mod sorted	10.9	0.0	0.3	1.2	1.7	1.9	2.2	2.6	2.8	3.2	2.2	0.6	0.6	0.0	93.6	0.9	5.5

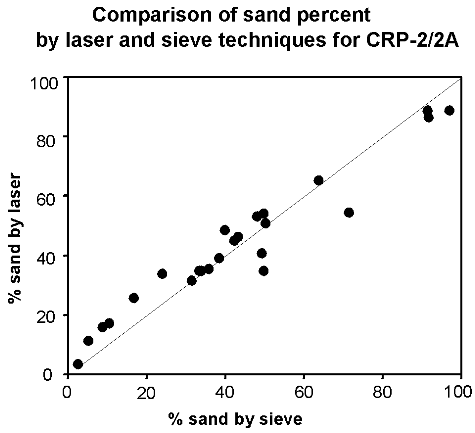


Fig. 2 - Comparison of percent sand measured by sieving (this paper) and by laser particle size analyser (Naish et al., this volume) in samples from the same 2 cm interval of core from CRP-2 and 2A.

volume). The following brief comparison is made between the two methods, with a focus on the sand range because we consider that most useful descriptive and environmental information for nearshore marine sediments is carried in the sand range. The strength of the sieve –Sedigraph method is that it is little affected by artifacts unrelated to size. It might be biased a little by shape, but it does sort grains in the sand range at least by intermediate and short grain axes. The weakness is that it is time-consuming and requires a relatively large sample – 10-20 g. The strength of the laser method is that it is relatively rapid and requires only a small sample - ~1 g. A possible weakness is that there may be artifacts relating to the material being analysed on account of the way sand grains diffract or transmit light.

Both sieve and laser methods depend crucially on sample disaggregation, that is, ensuring that the sample is treated in such a way as to separate the now lithified collection of the grains into their original separate elements. While we have made every effort to do this for the sieved samples, and believe we have achieved a high degree of disaggregation, it is unrealistic to believe that we have been completely successful. Nevertheless we can show a high degree of correlation with visual observations, at the same time noting exceptions for further consideration. Comparison between a simple measure such as percent sand for the sieve dataset presented here and the laser dataset presented in Woolfe et al. (this volume) resulted in the expected positive correlation but with a very large scatter. While we can acknowledge some scatter resulting from the different ways in which size is measured, the range seemed excessive. The analyses have now been repeated with special attention to disaggregation and with a smaller lens (range 1-600 microns), and yield a much closer relationship (sand % measured by sieve and laser mostly within 5%, Naish et al., in preparation, and Fig. 2). Further work is planned, but we consider the comparisons thus far to be encouraging for the use of the laser size technique for high resolution studies of varying textural patterns in sedimentary strata.

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