

## 7. DATA REPORT: COMPRESSIBILITY, PERMEABILITY, AND GRAIN SIZE OF SHALLOW SEDIMENTS, SITES 1194 AND 1198<sup>1</sup>

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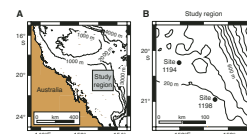
### ABSTRACT

Uniaxial strain consolidation experiments were conducted to determine elastic and plastic properties and to estimate the permeability of sediments from 0 to 200 meters below seafloor at Ocean Drilling Program Sites 1194 and 1198. Plastic deformation is described by compression indices, which range from 0.19 to 0.37. Expansion indices, the elastic deformation measured during unload/reload cycles on samples, vary from 0.02 to 0.029. Consolidation experiments provide lower bounds on permeability between  $5.4 \times 10^{-16} \text{ m}^2$  and  $1.9 \times 10^{-18} \text{ m}^2$ , depending on the consolidation state of the sample.

### INTRODUCTION

Carbonate and siliciclastic sediments of the Marion Plateau, offshore Australia, were investigated during Ocean Drilling Program (ODP) Leg 194 (Fig. F1). In this study, we focus on the physical properties of Pliocene to late Miocene sediments at Sites 1194 (0–100 meters below sea floor [mbsf]) and 1198 (100–200 mbsf) (Table T1). Site 1194 is located east of the Northern Marion Platform in 373.9 m of water (Fig. F1B). It was drilled to 427.1 mbsf and penetrated sediment Megasequences D and B (Isern, Anselmetti, Blum, et al., 2002). From 0 to 100 mbsf, Site 1194 is dominated by mudstone and wackestone. Site 1198 is

F1. Location and bathymetry of study region, p. 7.



T1. Samples used in consolidation experiments, p. 16.

<sup>1</sup>Dugan, B., Marone, C., Hong, T., and Migyanka, M., 2004. Data report: Compressibility, permeability, and grain size of shallow sediments, Sites 1194 and 1198. In Anselmetti, F.S., Isern, A.R., Blum, P., and Betzler, C. (Eds.), *Proc. ODP, Sci. Results*, 194, 1–28 [Online]. Available from World Wide Web: <[http://www-odp.tamu.edu/publications/194\\_SR/VOLUME/CHAPTERS/003.PDF](http://www-odp.tamu.edu/publications/194_SR/VOLUME/CHAPTERS/003.PDF)>. [Cited YYYY-MM-DD]

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located northwest of the Southern Marion Platform in 319.4 m of water (Fig. F1B). Drilling Site 1198 to 522 mbsf recovered sediments from Megasequences D, C, and B (Isern, Anselmetti, Blum, et al., 2002). We studied Site 1198 from 100 to 200 mbsf, where the lithology is mudstone to skeletal grainstone.

We measured the sample deformation that results from an applied vertical effective stress under uniaxial strain conditions. This provides insights into the void ratio (or porosity), density, and permeability of the sediments during burial and consolidation. These properties influence heat and chemical transport in and around the Marion Plateau and affect the strength of the sediments.

## MATERIALS AND METHODS

Whole-round core samples were sealed in the core liner during Leg 194 to preserve the natural sample saturation. For each experiment, a core was removed from its liner and a vertically oriented, cylindrical subsample was trimmed and inserted in the fixed-ring consolidation cell. Each vertically oriented subsample had a diameter of 47.9 mm and an initial height of 19 mm. The mass ( $m$ ) and volume ( $V$ ) of each subsample was measured to calculate bulk density ( $\rho_b = m/V$ ). All variables are defined in the nomenclature table (Table T2). Porous endcaps at the top and bottom of the cylindrical samples facilitated even drainage from the sample ends.

Initial sample porosity ( $\phi_o$ ) was calculated with equation 1 (Fig. F2; Table T1), assuming a water density ( $\rho_w$ ) of 1000 kg/m<sup>3</sup>, a grain density ( $\rho_s$ ) of 2600 kg/m<sup>3</sup>, and 100% water saturation:

$$\phi_o = (\rho_s - \rho_b) / (\rho_s - \rho_w). \quad (1)$$

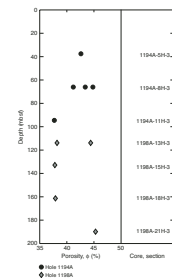
The initial porosity calculations neglect salt in the pore fluid. Calculations that account for salt mass in the system (Blum, 1997) result in less than 0.7% change in initial porosity.

### Consolidation Experiments

Ten consolidation experiments were performed; five on samples from Site 1194 and five on samples from Site 1198 (Table T1; Fig. F2). Each sample was placed in the load frame, where contact between the sample, porous disks, and ram were established manually. Vertical stress was then computer-controlled throughout the consolidation experiment. Stress was increased at 0.1-MPa increments to ~0.5 MPa and then by 0.5-MPa increments to ~4 MPa. The samples were then unloaded to 1 MPa, reloaded to 4 MPa, and then loaded by 0.5-MPa stress increments to 6 MPa. Experiments concluded with unloading at 1-MPa intervals. Each stress increment (increase or decrease) occurred at ~0.1 MPa/s and was followed by a stress hold to allow excess pressure dissipation and completion of primary consolidation. After the completion of primary consolidation and onset of secondary compression, another stress increment was applied. Stress holds for the completion of primary consolidation were <15 min for these samples. Analysis of sample height as a function of time (log-time method) (Lambe and Whitman, 1979; Craig, 1992) was used to confirm the completion of primary consolidation, dissipation of excess pore pressure, and onset of secondary com-

T2. Nomenclature, p. 17.

F2. Initial porosity and depth of experimental samples, p. 8.



pression. Sample height was measured throughout the experiments and sample diameter was constant; this allowed sample volume and porosity to be calculated throughout the entire experiment with equation 2 (nomenclature is defined in Table T2):

$$\phi_{\sigma_v' + \Delta\sigma_v'} = [V_{\sigma_v'}\phi_{\sigma_v'} + (V_{\sigma_v' + \Delta\sigma_v'} - V_{\sigma_v'})]/V_{\sigma_v' + \Delta\sigma_v'} \quad (2)$$

The sample void ratio ( $e = \phi/[1-\phi]$ ) and stress at the end of each stress hold are used to calculate the compression ( $c_c$ ) and expansion ( $c_e$ ) indices of the samples. The compression index in equation 3 characterizes plastic deformation along the linear portion of the  $e$ - $\log(\sigma_v')$  plot, which is interpreted to represent primary (virgin) consolidation (e.g., Craig, 1992):

$$c_c = (e_{\sigma_v'} - e_{\sigma_v' + \Delta\sigma_v'})/\log[(\sigma_v' + \Delta\sigma_v')/(\sigma_v')] \quad (3)$$

The expansion index in equation 4 describes the elastic portion of the  $e$ - $\log(\sigma_v')$  plot characterized by the linear unloading/reloading paths (e.g., Craig, 1992):

$$c_e = (e_{\sigma_v'} - e_{\sigma_v' + \Delta\sigma_v'})/\log[(\sigma_v' + \Delta\sigma_v')/(\sigma_v')] \quad (4)$$

Sample deformation during stress holds provided estimates of the coefficient of consolidation ( $c_v$ ) and of the permeability ( $k$ ) of the samples at multiple consolidation states during virgin deformation (Table T3). The log-time method was used to estimate  $c_v$  for primary consolidation (see Lambe and Whitman, 1979; Craig, 1992), and  $k$  was calculated using  $c_v$  with equation 5:

$$k = c_v m_v \mu \quad (5)$$

where

- $m_v$  = the coefficient of volume compressibility ( $m_v = [1/(1+e_o)][-\Delta e/\Delta\sigma_v']$ ) for a given effective vertical stress increment ( $\Delta\sigma_v'$ ),
- $\mu$  = the dynamic viscosity of water (we assume  $\mu = 0.001$  Pa-s),
- $e_o$  = the initial void ratio, and
- $\Delta e$  = the change in void ratio during the stress hold (Table T2).

### Grain Size Analysis

A Malvern Master-Sizer Dynamic Laser Light Scattering/Light Diffraction Particle Size Distribution Analyzer was used to determine grain size on seven samples from Sites 1194 and 1198. The particle size analyzer can measure particle sizes from 0.05 to 900  $\mu\text{m}$ .

We evaluated the grain size distribution for each core section in the study (Table T3).

Dry sediment samples were mixed with deionized water to make a sediment-water mixture. The mixture was placed in a sonicator and stirred to establish a uniform concentration of particles in the water. The mixture was then analyzed to evaluate the grain size distribution;  $d_{10}$ ,  $d_{50}$ , and  $d_{90}$  are reported ( $d_{10}$  = the grain size at which 10% of sample is finer,  $d_{50}$  = the grain size at which 50% of sample is finer, and  $d_{90}$  is the grain size at which 90% of sample is finer) (Tables T2, T3). Dupli-

cate and triplicate analyses were performed and standards were analyzed to demonstrate reproducibility of the distributions.

## RESULTS

Results from the experiment are included in Tables **T4**, **T5**, **T6**, **T7**, **T8**, **T9**, **T10**, **T11**, **T12**, and **T13** and Figures **F3**, **F4**, **F5**, **F6**, **F7**, **F8**, and **F9**. Compression indices ( $c_c$ ) for the samples ranged from 0.19 to 0.37, and expansion indices were approximately 10% of the compression indices ( $0.02 < c_e < 0.029$ ) (Table **T3**). Sample 194-1194A-5H-3, 135–137 cm, had the greatest decrease in void ratio during loading (Fig. **F3**). This was the shallowest sample, and its entire deformation path was plastic deformation. Samples 194-1194A-8H-3, 138–140 cm, and 194-1198A-21H-3, 140–142 cm, had the highest compression indices (Table **T3**) but experienced plastic deformation for stresses exceeding  $\sim 1$  MPa (Figs. **F4B**, **F9**); they had less total deformation than Sample 194-1194A-5H-3, 135–137 cm, which had a lower compression index.

Estimated permeability (Table **T3**) was greatest ( $5.4 \times 10^{-16} \text{ m}^2$ ) for Sample 194-1198A-15H-3, 135–137 cm, at an effective vertical stress of 0.99 MPa. The same sample had the lowest estimated permeability ( $1.9 \times 10^{-18} \text{ m}^2$ ) of all the experiments at an effective vertical stress of 5.3 MPa. The consolidation experiments were performed without sample backpressure; therefore, partial air saturation may have developed. Partial air saturation impedes water drainage; thus, the consolidation-based permeability could be lower than the absolute permeability of the sample with 100% water saturation. Moran et al. (1995) compared consolidation-estimated permeability to low-gradient permeability measurements and documented that consolidation-estimated permeability was equal to or lower than direct low-gradient measurements of permeability. With the possibility of partial air saturation and the consolidation method of estimating permeability, our estimates are considered a lower bound on permeability for these sediments.

Holes 1194A and 1198A have similar  $d_{10}$  and  $d_{50}$  that do not vary significantly with depth (Table **T3**). Exceptions to this are (1) increased  $d_{10}$  ( $1.3 \mu\text{m}$ ) of Sample 194-1194A-11H-3, 135–137 cm, and (2) increased  $d_{50}$  ( $54 \mu\text{m}$ ) of Sample 194-1198A-13H-3, 139–141 cm (Table **T3**). The major grain size variation between the sites is  $d_{90}$ ; Hole 1194A has a maximum  $d_{90} = 89 \mu\text{m}$ , and  $d_{90}$  decreases with depth. In contrast, Hole 1198A is dominated by  $d_{90} > 100 \mu\text{m}$  and shows no depth trend (Table **T3**).

## ACKNOWLEDGMENTS

This research used samples and/or data provided by the Ocean Drilling Program (ODP). ODP is sponsored by the U.S. National Science Foundation (NSF) and participating countries under management of Joint Oceanographic Institutions (JOI), Inc. This research was supported by a JOI/U.S. Science Advisory Committee grant (Dugan). Reviews and comments by P. Blum, D. Saffer, and E. Screaton strengthened the manuscript.

**T4.** Stress and porosity, Sample 194-1194A-5H-3, 135–137 cm, p. 19.

**T5.** Stress and porosity, Sample 194-1194A-8H-3, 135–137 cm, p. 20.

**T6.** Stress and porosity, Sample 194-1194A-8H-3, 138–140 cm, p. 21.

**T7.** Stress and porosity, Sample 194-1194A-8H-3, 142–144 cm, p. 22.

**T8.** Stress and porosity, Sample 194-1194A-11H-3, 135–137 cm, p. 23.

**T9.** Stress and porosity, Sample 194-1198-13H-3, 135–137 cm, p. 24.

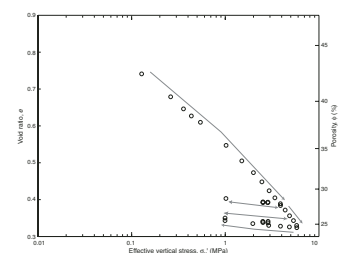
**T10.** Stress and porosity, Sample 194-1198A-13H-3, 139–141 cm, p. 25.

**T11.** Stress and porosity, Sample 194-1198A-15H-3, 135–137 cm, p. 26.

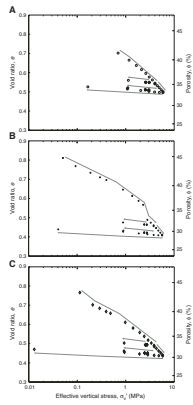
**T12.** Stress and porosity, Sample 194-1198A-18H-3, 135–137 cm, p. 27.

**T13.** Stress and porosity, Sample 194-1198A-21H-3, 140–142 cm, p. 28.

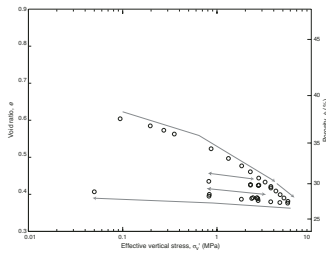
**F3.** Deformation behavior, Section 194-1194A-5H-3, p. 9.



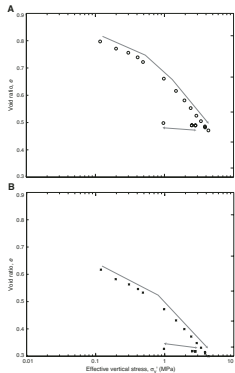
**F4.** Deformation behavior, Section 194-1194A-8H-3, p. 10.



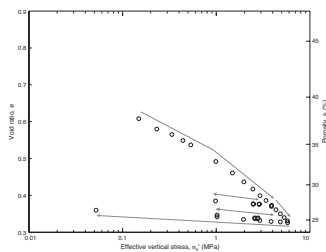
**F5.** Deformation behavior, Section 194-1194A-11H-3, p. 11.



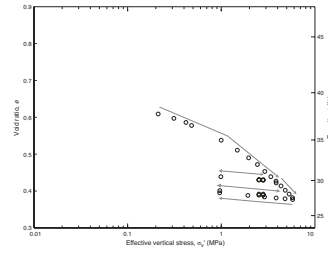
**F6.** Deformation behavior, Section 194-1198A-13H-3, p. 12.



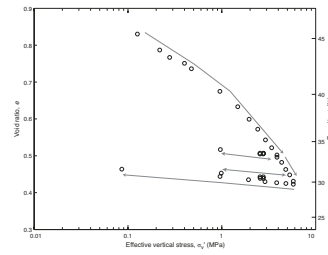
**F7.** Deformation behavior, Section 194-1198A-15H-3, p. 13.



**F8.** Deformation behavior, Section 194-1198A-18H-3, p. 14.



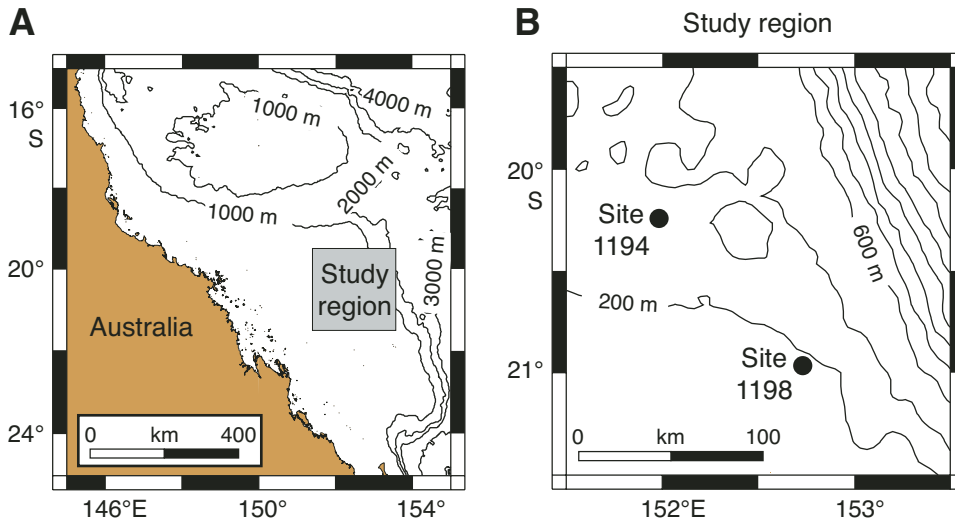
**F9.** Deformation behavior, Section 194-1198A-21H-3, p. 15.



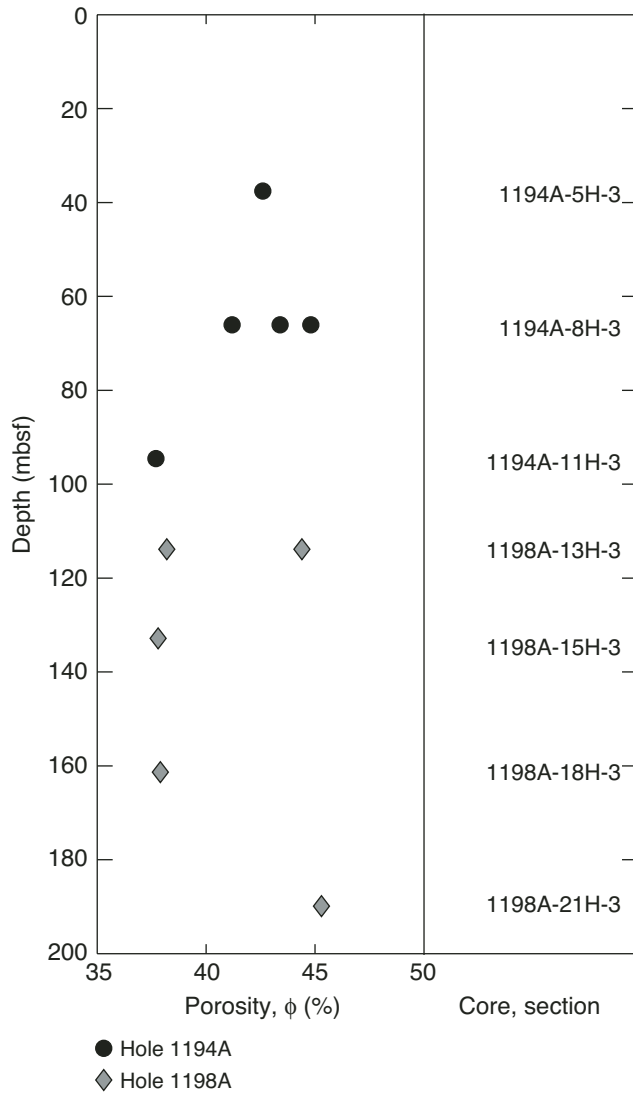
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**Figure F1.** A. Location and bathymetry of the study region (shaded box), offshore Australia. Contour interval = 1000 m. B. Bathymetry of the Marion Plateau study region documenting the location of Sites 1194 and 1198 (solid circles). Contour interval = 200 m.



**Figure F2.** Initial porosity and depth of experimental samples from Holes 1194A and 1198A. Core and section for each sample are labeled.





**Figure F3.** Deformation behavior for Sample 194-1194A-5H-3, 135–137 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Table T4, p. 19.

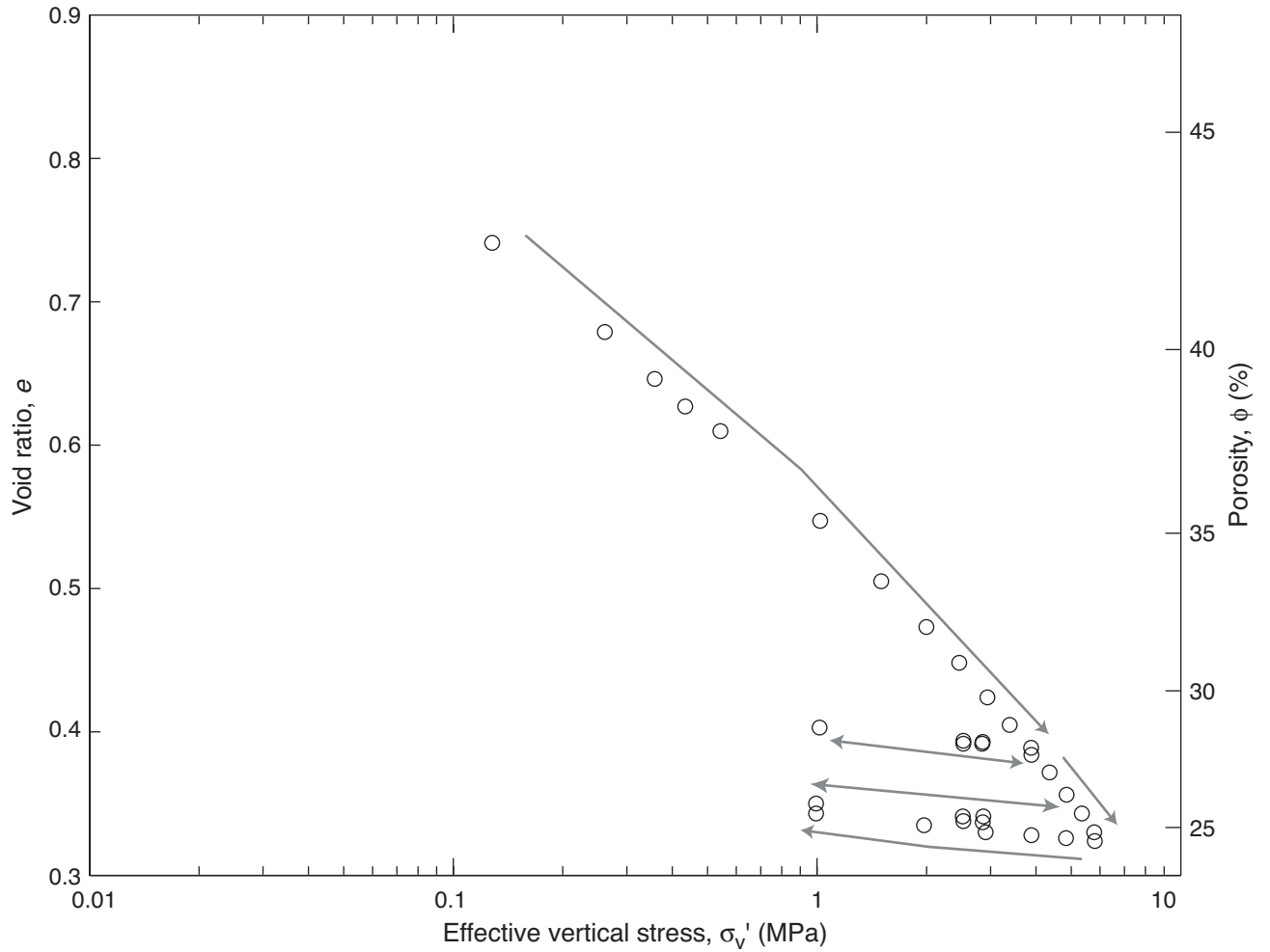


Figure F4. Deformation behavior for (A) Sample 194-1194A-8H-3, 135–137 cm, (B) Sample 194-1194A-8H-3, 138–140 cm, and (C) Sample 194-1194A-8H-3, 142–144 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Tables T5, p. 20, T6, p. 21, and T7, p. 22.

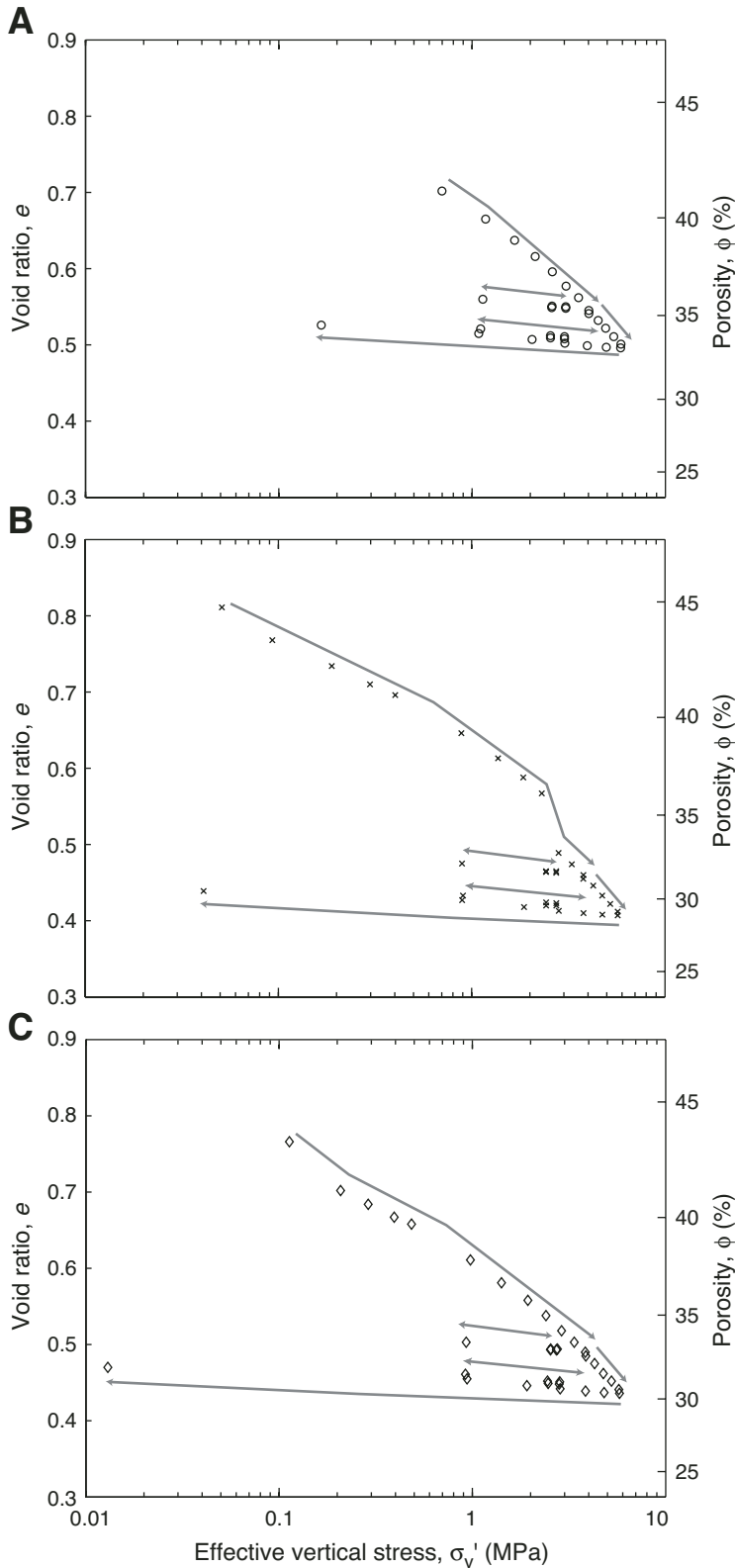
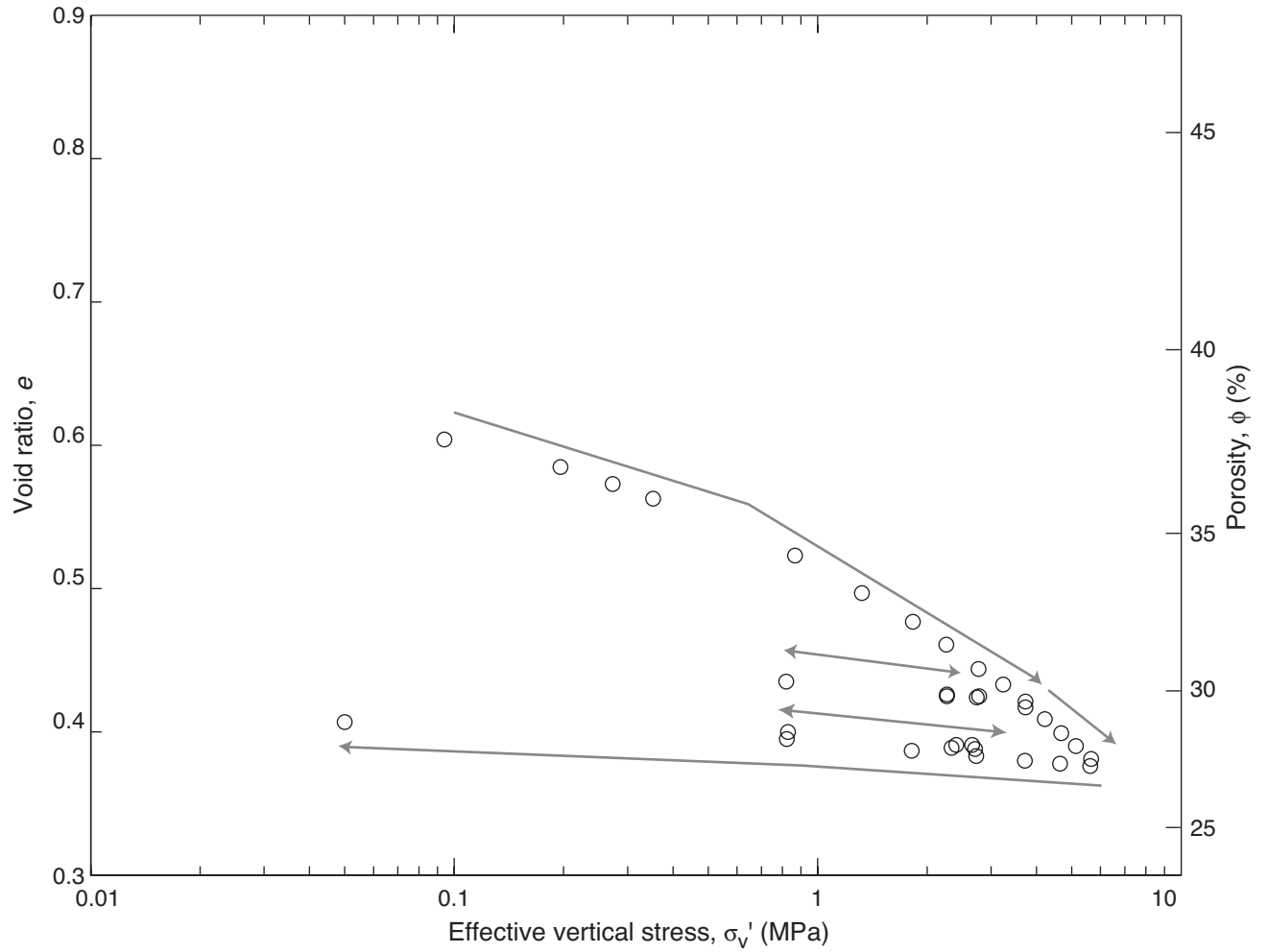
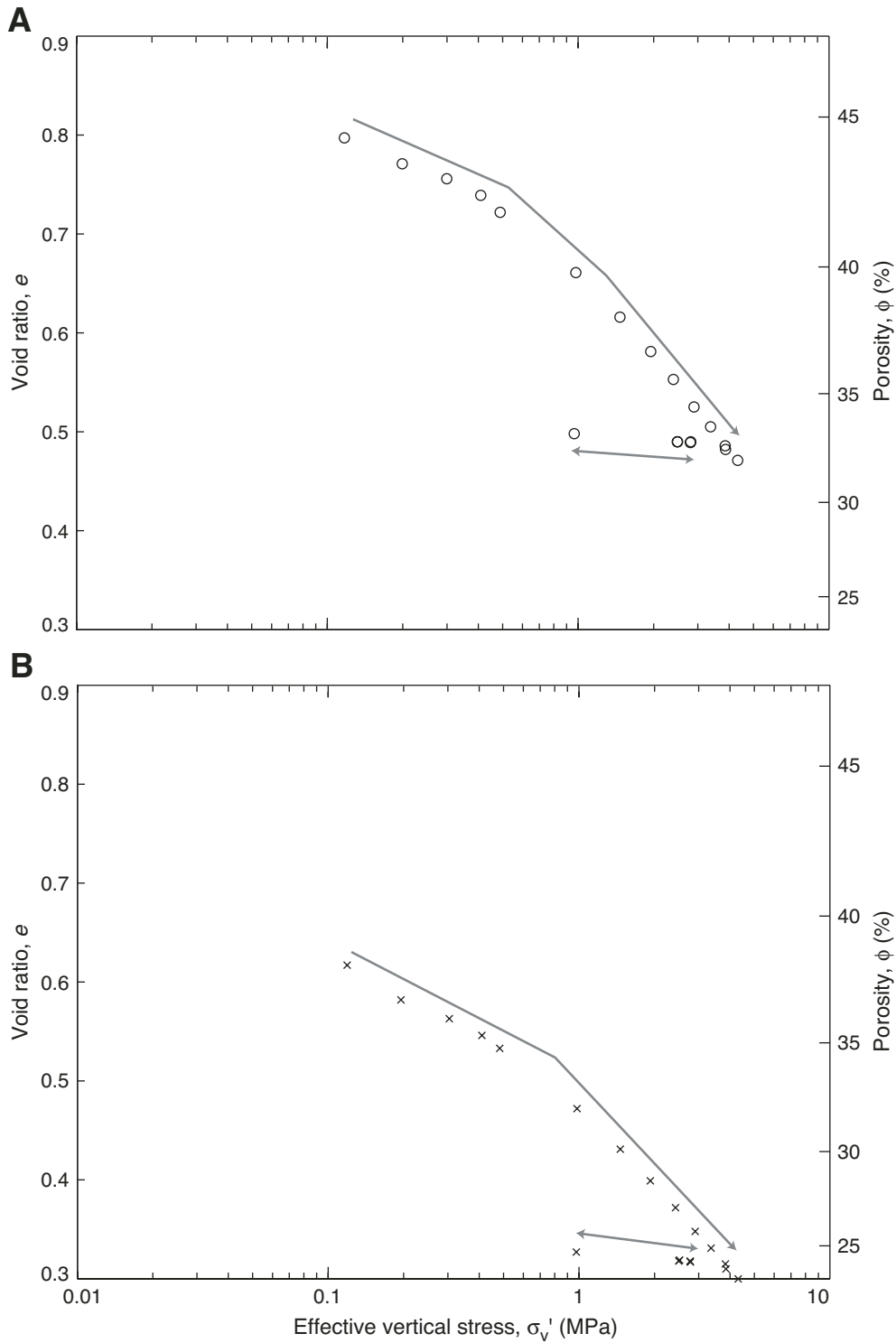


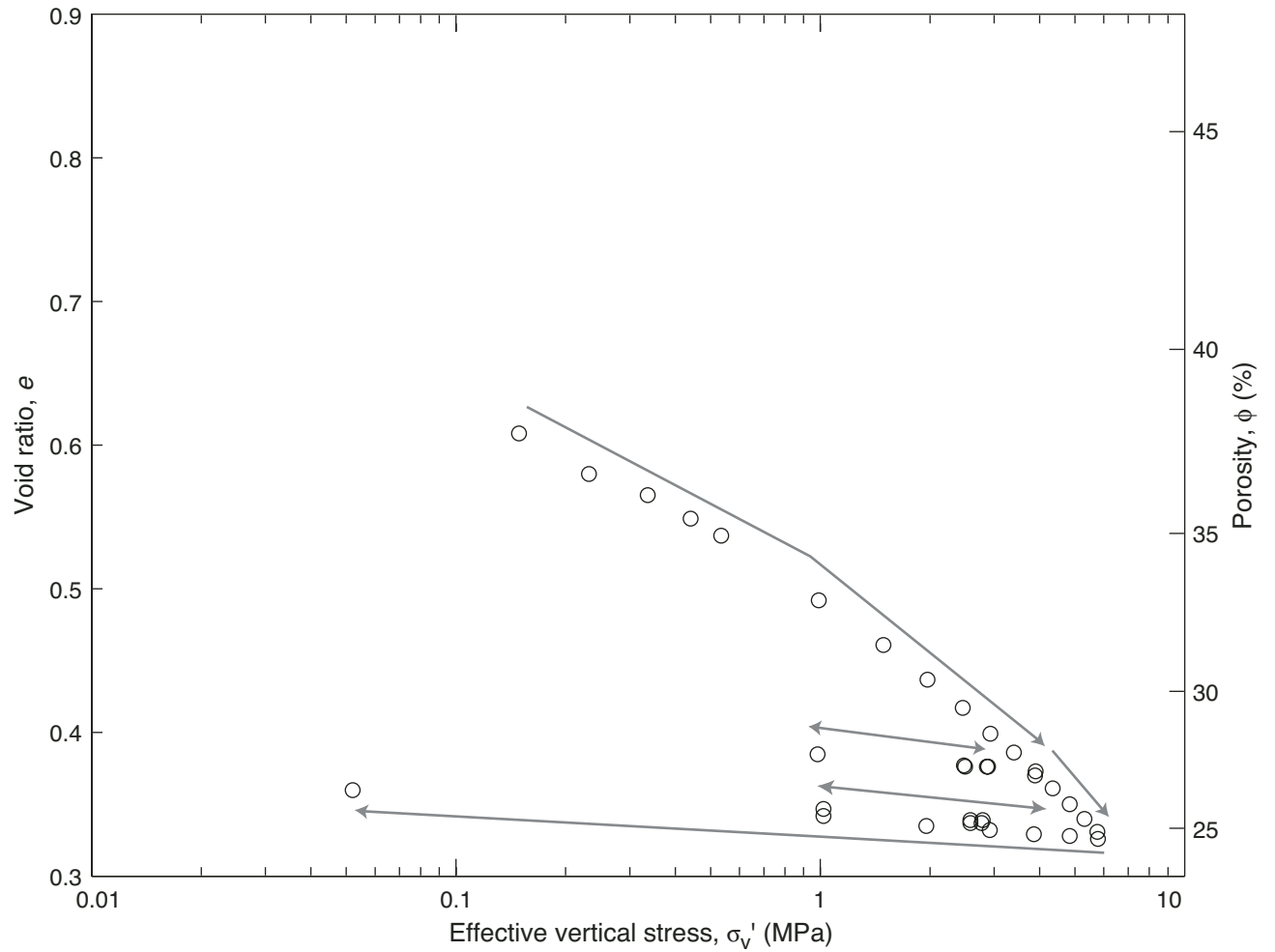
Figure F5. Deformation behavior for Sample 194-1194A-11H-3, 135–137 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Table T8, p. 23.



**Figure F6.** Deformation behavior for (A) Sample 194-1198A-13H-3, 135–137 cm, and (B) Sample 194-1198A-13H-3, 139–141 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Tables T9, p. 24, and T10, p. 25.



**Figure F7.** Deformation behavior for Sample 194-1198A-15H-3, 135–137 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Table **T11**, p. 26.



**Figure F8.** Deformation behavior for Sample 194-1198A-18H-3, 135–137 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Table T12, p. 27.

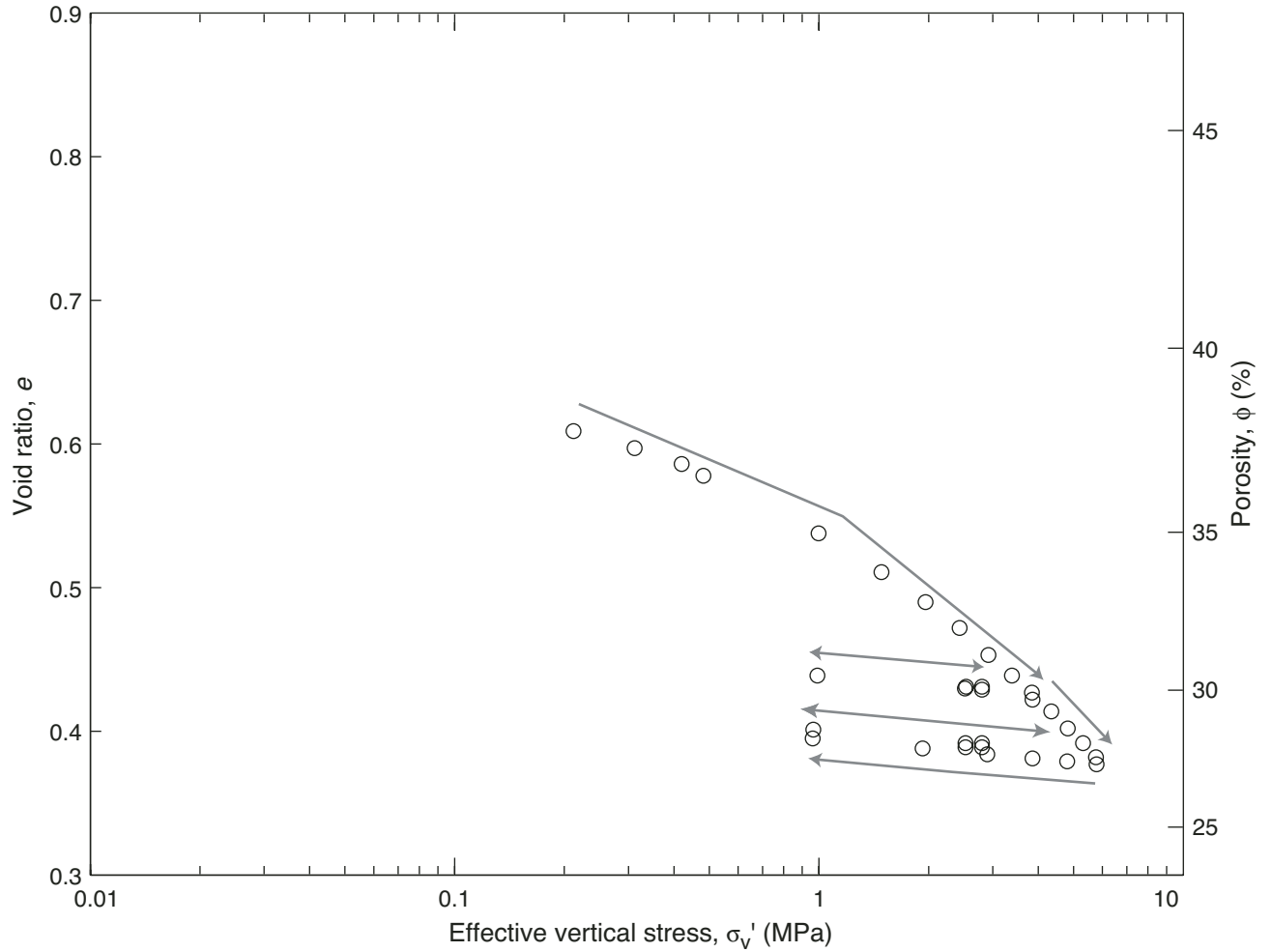
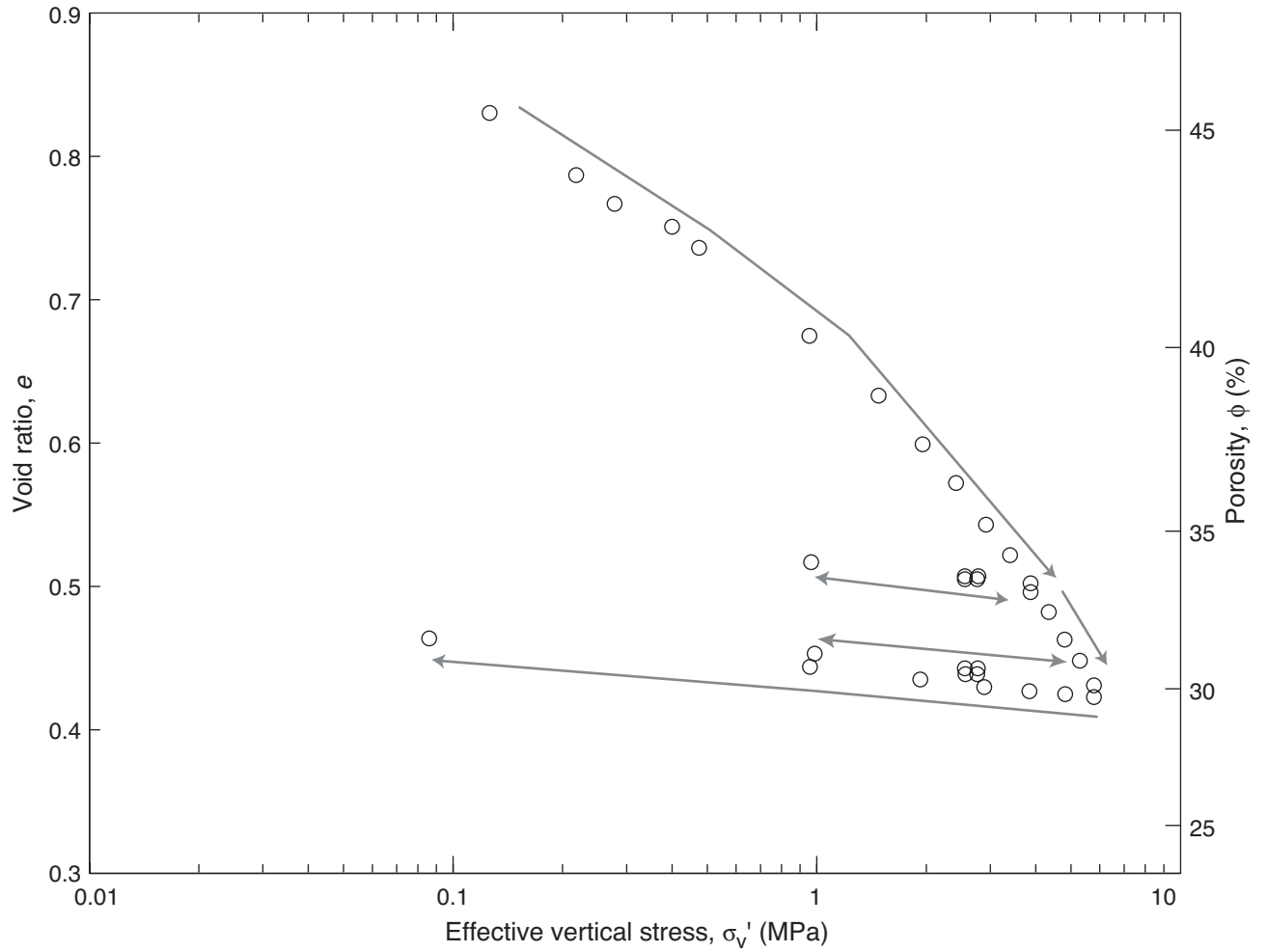


Figure F9. Deformation behavior for Sample 194-1198A-21H-3, 140–142 cm. Void ratio is plotted on a linear scale on the left y-axis and equivalent porosity is plotted on the right y-axis. Gray arrows illustrate loading/unloading/reloading paths. Raw data are provided in Table T13, p. 28.



**Table T1.** Samples used in consolidation experiments.

Core, section, interval (cm)	Age	Depth (mbsf)	Initial porosity (%)
194-1194A-			
5H-3, 135-137	Pliocene	37.55	42.6
8H-3, 135-137	late Miocene	66.05	41.2
8H-3, 138-140	late Miocene	66.08	44.8
8H-3, 142-144	late Miocene	66.12	43.4
11H-3, 135-137	late Miocene	94.55	37.7
194-1198A-			
13H-3, 135-137	Pliocene	113.85	44.4
13H-3, 139-141	Pliocene	113.89	38.2
15H-3, 135-137	Pliocene	132.85	37.8
18H-3, 135-137	Pliocene	161.35	37.9
21H-3, 140-142	Pliocene	189.90	45.3



Table T2. Nomenclature.

Variable	Definition	Dimensions	SI unit
$c_c$	Compression index	Dimensionless	—
$c_e$	Expansion index	Dimensionless	—
$c_v$	Coefficient of consolidation	$L^2/T$	$m^2/s$
$d_{10}$	Grain size at which 10% of sample is finer	L	$\mu m$
$d_{50}$	Grain size at which 50% of sample is finer	L	$\mu m$
$d_{90}$	Grain size at which 90% of sample is finer	L	$\mu m$
$e$	Void ratio	Dimensionless	—
$e_0$	Initial void ratio	Dimensionless	—
$\Delta e$	Change in void ratio	Dimensionless	—
$k$	Permeability	$L^2$	$m^2$
$m$	Sample mass	M	kg
$m_v$	Coefficient of volume compressibility	$LT^2/M$	$1/Pa$
$V$	Sample volume	$L^3$	$m^3$
$\phi$	Porosity	Dimensionless	—
$\phi_0$	Initial porosity	Dimensionless	—
$\rho_b$	Bulk density	$M/L^3$	$kg/m^3$
$\rho_s$	Grain density	$M/L^3$	$kg/m^3$
$\rho_w$	Fluid density	$M/L^3$	$kg/m^3$
$\mu$	Dynamic viscosity	$M/LT$	$Pa \cdot s$
$\Delta \sigma_v'$	Effective vertical stress increment	$M/LT^2$	Pa
$\sigma_v'$	Effective vertical (axial) stress	$M/LT^2$	Pa

Note: L = length, T = time, M = mass.

Table T3. Summary of consolidation and grain size results.

Core, section, interval (cm)	Depth (mbsf)	$c_c$	$c_e$	Permeability ( $m^2$ )		Grain size ( $\mu m$ )		
				Maximum	Minimum	$d_{10}$	$d_{50}$	$d_{90}$
194-1194A-								
5H-3, 135-137	37.55	0.31	0.023	$4.2 \times 10^{-17}$	$4.2 \times 10^{-18}$	0.2	2.8	89.5
8H-3, 135-137	66.05	0.26	0.026	$1.3 \times 10^{-16}$	$2.4 \times 10^{-17}$			
8H-3, 138-140	66.08	0.32	0.025	$2.0 \times 10^{-17}$	$9.4 \times 10^{-17}$			
8H-3, 142-144	66.12	0.24	0.022	$1.6 \times 10^{-16}$	$3.8 \times 10^{-18}$	0.3	2.5	18.6
11H-3, 135-137	94.55	0.19	0.022	$1.2 \times 10^{-16}$	$2.2 \times 10^{-17}$	1.3	1.7	8.6
194-1198A-								
13H-3, 135-137	113.85	0.26	0.023	$2.2 \times 10^{-16}$	$3.7 \times 10^{-18}$			
13H-3, 139-141	113.89	0.28	0.020	$2.1 \times 10^{-16}$	$2.8 \times 10^{-18}$	0.4	54.3	216.3
15H-3, 135-137	132.85	0.22	0.022	$5.4 \times 10^{-16}$	$1.9 \times 10^{-18}$	0.3	3.0	174.4
18H-3, 135-137	161.35	0.22	0.022	$8.4 \times 10^{-17}$	$3.1 \times 10^{-18}$	0.3	2.7	68.9
21H-3, 140-142	189.90	0.37	0.029	$1.4 \times 10^{-16}$	$4.2 \times 10^{-18}$	0.3	3.7	194.1

Note:  $c_c$  = compression index,  $c_e$  = expansion index.  $d_{10}$  = grain size at which 10% of sample is finer,  $d_{50}$  = grain size at which 50% of sample is finer,  $d_{90}$  = grain size at which 90% of sample is finer.

Table T4. Stress and porosity measurements from Sample 194-1194A-5H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.128	17.11	42.6	0.741	155.404	0.190	16.56	40.7	0.686
10.000	0.227	16.96	42.1	0.726	156.404	0.202	16.56	40.7	0.686
20.000	0.229	16.88	41.8	0.718	157.404	0.212	16.56	40.7	0.686
30.000	0.230	16.82	41.6	0.712	158.404	0.218	16.56	40.7	0.686
40.000	0.230	16.77	41.4	0.707	159.404	0.223	16.56	40.7	0.686
50.000	0.200	16.73	41.3	0.703	160.404	0.225	16.56	40.7	0.686
60.000	0.219	16.70	41.2	0.700	161.404	0.226	16.56	40.7	0.685
70.000	0.225	16.67	41.1	0.697	162.404	0.228	16.55	40.7	0.685
80.000	0.213	16.65	41.0	0.695	163.404	0.228	16.55	40.7	0.685
90.000	0.209	16.64	41.0	0.694	164.404	0.228	16.55	40.7	0.685
96.400	0.212	16.63	40.9	0.693	165.404	0.228	16.55	40.7	0.685
97.400	0.213	16.63	40.9	0.693	166.404	0.228	16.55	40.6	0.685
98.400	0.213	16.62	40.9	0.692	167.404	0.229	16.55	40.6	0.685
99.400	0.214	16.62	40.9	0.692	168.404	0.229	16.55	40.6	0.685
100.400	0.214	16.62	40.9	0.692	169.404	0.230	16.55	40.6	0.685
101.400	0.221	16.62	40.9	0.692	170.405	0.229	16.55	40.6	0.685
102.400	0.213	16.62	40.9	0.692	171.405	0.229	16.55	40.6	0.684
103.400	0.194	16.62	40.9	0.692	172.405	0.229	16.55	40.6	0.684
104.401	0.186	16.62	40.9	0.692	173.405	0.229	16.54	40.6	0.684
105.401	0.194	16.62	40.9	0.692	174.405	0.230	16.54	40.6	0.684
106.401	0.200	16.62	40.9	0.692	175.405	0.225	16.54	40.6	0.684
107.401	0.205	16.62	40.9	0.691	176.405	0.185	16.55	40.6	0.685
108.401	0.207	16.61	40.9	0.691	177.405	0.221	16.54	40.6	0.684
109.401	0.211	16.61	40.9	0.691	178.405	0.227	16.54	40.6	0.684
110.401	0.212	16.61	40.9	0.691	179.405	0.214	16.54	40.6	0.684
111.401	0.214	16.61	40.9	0.691	180.405	0.205	16.54	40.6	0.684
112.401	0.214	16.61	40.9	0.691	181.405	0.199	16.54	40.6	0.684
113.401	0.214	16.61	40.8	0.691	182.405	0.195	16.54	40.6	0.684
114.401	0.215	16.61	40.8	0.690	183.405	0.191	16.54	40.6	0.684
115.401	0.216	16.60	40.8	0.690	184.405	0.191	16.55	40.6	0.684
116.401	0.217	16.60	40.8	0.690	185.405	0.190	16.55	40.6	0.684
117.401	0.217	16.60	40.8	0.690	186.406	0.191	16.54	40.6	0.684
118.401	0.217	16.60	40.8	0.690	187.406	0.190	16.54	40.6	0.684
119.401	0.219	16.60	40.8	0.690	188.406	0.191	16.54	40.6	0.684
120.401	0.218	16.60	40.8	0.690	189.406	0.190	16.54	40.6	0.684
121.402	0.219	16.60	40.8	0.689	190.406	0.192	16.54	40.6	0.684
122.402	0.219	16.59	40.8	0.689	191.406	0.190	16.54	40.6	0.684
123.402	0.221	16.59	40.8	0.689	192.406	0.192	16.54	40.6	0.684
124.402	0.221	16.59	40.8	0.689	193.406	0.190	16.54	40.6	0.684
125.402	0.221	16.59	40.8	0.689	194.406	0.192	16.54	40.6	0.684
126.402	0.221	16.59	40.8	0.689	195.406	0.190	16.54	40.6	0.684
127.402	0.221	16.59	40.8	0.689	196.406	0.191	16.54	40.6	0.684
128.402	0.221	16.59	40.8	0.689	197.406	0.190	16.54	40.6	0.684
129.402	0.221	16.59	40.8	0.688	198.406	0.192	16.54	40.6	0.684
130.402	0.221	16.58	40.8	0.688	199.406	0.191	16.54	40.6	0.684
131.402	0.221	16.58	40.8	0.688	200.406	0.191	16.54	40.6	0.684
132.402	0.221	16.58	40.8	0.688	201.406	0.192	16.54	40.6	0.684
133.402	0.222	16.58	40.8	0.688	202.406	0.191	16.54	40.6	0.684
134.402	0.221	16.58	40.8	0.688	203.407	0.191	16.54	40.6	0.684
135.402	0.223	16.58	40.8	0.688	204.407	0.191	16.54	40.6	0.684
136.402	0.223	16.58	40.7	0.688	205.407	0.191	16.54	40.6	0.684
137.403	0.224	16.58	40.7	0.688	206.407	0.192	16.54	40.6	0.684
138.403	0.223	16.58	40.7	0.687	207.407	0.191	16.54	40.6	0.684
139.403	0.224	16.57	40.7	0.687	208.407	0.192	16.54	40.6	0.684
140.403	0.223	16.57	40.7	0.687	209.407	0.191	16.54	40.6	0.684
141.403	0.224	16.57	40.7	0.687	210.407	0.192	16.54	40.6	0.684
142.403	0.224	16.57	40.7	0.687	211.407	0.191	16.54	40.6	0.684
143.403	0.224	16.57	40.7	0.687	212.407	0.193	16.54	40.6	0.684
144.403	0.224	16.57	40.7	0.687	213.407	0.192	16.54	40.6	0.684
145.403	0.224	16.57	40.7	0.687	214.407	0.193	16.54	40.6	0.684
146.403	0.224	16.57	40.7	0.687	215.407	0.194	16.54	40.6	0.684
147.403	0.225	16.57	40.7	0.686	216.407	0.194	16.54	40.6	0.684
148.403	0.223	16.57	40.7	0.686	217.407	0.194	16.54	40.6	0.684
149.403	0.223	16.56	40.7	0.686	218.407	0.194	16.54	40.6	0.684
150.403	0.222	16.56	40.7	0.686	219.408	0.194	16.54	40.6	0.684
151.403	0.223	16.56	40.7	0.686	220.408	0.194	16.54	40.6	0.684
152.403	0.221	16.56	40.7	0.686					
153.404	0.227	16.56	40.7	0.686					
154.404	0.198	16.56	40.7	0.686					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T5. Stress and porosity measurements from Sample 194-1194A-8H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.699	17.37	41.2	0.702	335.390	1.661	16.84	39.4	0.650
10.000	1.175	17.25	40.8	0.691	336.390	1.660	16.84	39.4	0.650
20.000	1.176	17.19	40.6	0.684	337.390	1.660	16.83	39.4	0.650
30.000	1.176	17.15	40.5	0.680	338.390	1.660	16.83	39.4	0.649
40.000	1.176	17.12	40.4	0.678	339.389	1.660	16.83	39.4	0.649
50.000	1.176	17.10	40.3	0.676	340.389	1.660	16.83	39.4	0.649
60.000	1.176	17.08	40.3	0.674	341.389	1.660	16.83	39.4	0.649
70.000	1.176	17.07	40.2	0.673	342.389	1.661	16.82	39.3	0.649
80.000	1.176	17.06	40.2	0.672	343.388	1.660	16.82	39.3	0.648
90.000	1.176	17.05	40.2	0.671	344.388	1.661	16.82	39.3	0.648
100.000	1.176	17.04	40.1	0.670	345.388	1.661	16.82	39.3	0.648
110.000	1.176	17.04	40.1	0.670	346.388	1.660	16.82	39.3	0.648
120.000	1.176	17.03	40.1	0.669	347.387	1.661	16.81	39.3	0.648
130.000	1.176	17.03	40.1	0.669	348.387	1.660	16.81	39.3	0.648
140.000	1.176	17.03	40.1	0.668	349.387	1.660	16.81	39.3	0.647
150.000	1.176	17.02	40.1	0.668	350.387	1.660	16.81	39.3	0.647
160.000	1.176	17.02	40.0	0.668	351.386	1.660	16.81	39.3	0.647
170.000	1.176	17.02	40.0	0.668	352.386	1.660	16.81	39.3	0.647
180.000	1.176	17.01	40.0	0.667	353.386	1.661	16.81	39.3	0.647
190.000	1.176	17.01	40.0	0.667	354.386	1.662	16.80	39.3	0.647
200.000	1.176	17.01	40.0	0.667	355.385	1.660	16.80	39.3	0.647
210.000	1.176	17.01	40.0	0.667	356.385	1.661	16.80	39.3	0.646
220.000	1.176	17.01	40.0	0.667	357.385	1.660	16.80	39.3	0.646
230.000	1.176	17.00	40.0	0.666	358.385	1.659	16.80	39.3	0.646
240.000	1.177	17.00	40.0	0.666	359.385	1.661	16.80	39.2	0.646
250.000	1.176	17.00	40.0	0.666	360.384	1.660	16.80	39.2	0.646
260.000	1.177	17.00	40.0	0.666	361.384	1.660	16.79	39.2	0.646
270.000	1.176	17.00	40.0	0.666	362.384	1.661	16.79	39.2	0.646
280.000	1.176	17.00	40.0	0.666	363.384	1.660	16.79	39.2	0.646
290.000	1.177	17.00	40.0	0.665	364.383	1.660	16.79	39.2	0.645
296.400	1.175	16.99	40.0	0.665	365.383	1.661	16.79	39.2	0.645
297.400	1.177	16.99	40.0	0.665	366.383	1.661	16.79	39.2	0.645
298.399	1.176	16.99	40.0	0.665	367.383	1.660	16.79	39.2	0.645
299.399	1.176	16.99	40.0	0.665	371.982	1.660	16.78	39.2	0.645
300.399	1.177	16.99	40.0	0.665	381.982	1.661	16.77	39.2	0.644
301.399	1.176	16.99	40.0	0.665	391.982	1.660	16.77	39.1	0.643
302.398	1.176	16.99	40.0	0.665	401.982	1.661	16.76	39.1	0.643
303.398	1.178	16.99	40.0	0.665	411.982	1.661	16.76	39.1	0.642
304.398	1.177	16.99	40.0	0.665	421.982	1.660	16.75	39.1	0.642
305.398	1.177	16.99	40.0	0.665	431.982	1.661	16.75	39.1	0.641
306.397	1.224	16.99	39.9	0.665	441.982	1.661	16.74	39.1	0.641
307.397	1.320	16.99	39.9	0.664	451.982	1.661	16.74	39.0	0.640
308.397	1.415	16.98	39.9	0.664	461.982	1.661	16.74	39.0	0.640
309.397	1.511	16.97	39.9	0.663	471.982	1.661	16.73	39.0	0.640
310.396	1.603	16.95	39.8	0.661	481.982	1.661	16.73	39.0	0.640
311.396	1.659	16.94	39.8	0.660	491.982	1.661	16.73	39.0	0.639
312.396	1.661	16.93	39.7	0.659	501.982	1.661	16.73	39.0	0.639
313.396	1.660	16.92	39.7	0.658	511.982	1.661	16.72	39.0	0.639
314.396	1.660	16.92	39.7	0.658	521.982	1.661	16.72	39.0	0.639
315.395	1.661	16.91	39.7	0.657	531.982	1.661	16.72	39.0	0.639
316.395	1.660	16.90	39.6	0.657	541.982	1.661	16.72	39.0	0.638
317.395	1.659	16.90	39.6	0.656	551.982	1.661	16.72	39.0	0.638
318.395	1.660	16.89	39.6	0.656	561.982	1.661	16.72	39.0	0.638
319.394	1.659	16.89	39.6	0.655	571.982	1.661	16.71	38.9	0.638
320.394	1.660	16.89	39.6	0.655	581.982	1.661	16.71	38.9	0.638
321.394	1.661	16.88	39.6	0.654	591.982	1.661	16.71	38.9	0.638
322.394	1.659	16.88	39.5	0.654	601.982	1.661	16.71	38.9	0.637
323.393	1.660	16.87	39.5	0.654	611.982	1.717	16.71	38.9	0.637
324.393	1.661	16.87	39.5	0.653	615.682	2.111	16.67	38.8	0.634
325.393	1.660	16.87	39.5	0.653	616.682	2.138	16.67	38.8	0.633
326.393	1.660	16.86	39.5	0.653	617.682	2.138	16.66	38.8	0.633
327.392	1.660	16.86	39.5	0.652	618.682	2.138	16.66	38.7	0.632
328.392	1.659	16.86	39.5	0.652	619.681	2.139	16.65	38.7	0.632
329.392	1.659	16.85	39.5	0.652	620.681	2.139	16.65	38.7	0.631
330.392	1.661	16.85	39.4	0.651	621.681	2.138	16.64	38.7	0.631
331.391	1.660	16.85	39.4	0.651	622.681	2.139	16.64	38.7	0.631
332.391	1.660	16.85	39.4	0.651					
333.391	1.661	16.84	39.4	0.651					
334.391	1.660	16.84	39.4	0.650					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T6. Stress and porosity measurements from Sample 194-1194A-8H-3, 138–140 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void+ ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void+ ratio
0.000	0.051	18.82	44.8	0.811	690.000	0.298	17.80	41.6	0.713
10.000	0.087	18.76	44.6	0.806	700.000	0.301	17.79	41.6	0.713
20.000	0.093	18.70	44.4	0.800	710.000	0.302	17.79	41.6	0.712
30.000	0.095	18.66	44.3	0.797	720.000	0.304	17.79	41.6	0.712
40.000	0.094	18.64	44.3	0.794	730.000	0.301	17.78	41.6	0.712
50.000	0.096	18.61	44.2	0.791	740.000	0.299	17.78	41.6	0.712
60.000	0.094	18.59	44.1	0.789	750.000	0.298	17.78	41.6	0.711
70.000	0.095	18.56	44.0	0.787	760.000	0.302	17.78	41.6	0.711
80.000	0.096	18.54	44.0	0.785	770.000	0.303	17.78	41.6	0.711
90.000	0.096	18.52	43.9	0.783	780.000	0.301	17.77	41.6	0.711
100.000	0.092	18.51	43.9	0.781	790.000	0.301	17.77	41.5	0.711
110.000	0.095	18.49	43.8	0.780	800.000	0.299	17.77	41.5	0.711
120.000	0.095	18.48	43.8	0.778	810.000	0.299	17.77	41.5	0.711
130.000	0.096	18.46	43.7	0.777	820.000	0.298	17.77	41.5	0.710
140.000	0.094	18.45	43.7	0.776	830.000	0.299	17.77	41.5	0.710
150.000	0.095	18.44	43.7	0.775	840.000	0.298	17.77	41.5	0.710
160.000	0.098	18.42	43.6	0.774	850.000	0.389	17.74	41.4	0.708
170.000	0.095	18.41	43.6	0.773	860.000	0.384	17.72	41.4	0.706
180.000	0.095	18.41	43.6	0.772	870.000	0.384	17.71	41.4	0.705
190.000	0.095	18.40	43.5	0.771	880.000	0.381	17.71	41.3	0.704
200.000	0.095	18.39	43.5	0.770	890.000	0.380	17.70	41.3	0.704
210.000	0.094	18.38	43.5	0.770	900.000	0.381	17.69	41.3	0.703
220.000	0.094	18.38	43.5	0.769	910.000	0.382	17.69	41.3	0.703
230.000	0.093	18.37	43.5	0.768	920.000	0.382	17.68	41.3	0.702
240.000	0.093	18.37	43.4	0.768	930.000	0.381	17.68	41.2	0.702
250.000	0.186	18.29	43.2	0.761	940.000	0.384	17.67	41.2	0.701
260.000	0.184	18.25	43.1	0.757	950.000	0.381	17.67	41.2	0.701
270.000	0.185	18.22	43.0	0.754	960.000	0.381	17.67	41.2	0.701
280.000	0.185	18.19	42.9	0.751	970.000	0.382	17.67	41.2	0.701
290.000	0.183	18.17	42.8	0.749	980.000	0.380	17.66	41.2	0.700
300.000	0.189	18.15	42.8	0.747	990.000	0.381	17.66	41.2	0.700
310.000	0.186	18.13	42.7	0.746	1000.000	0.383	17.66	41.2	0.700
320.000	0.186	18.12	42.7	0.744	1010.000	0.385	17.66	41.2	0.700
330.000	0.185	18.11	42.6	0.743	1020.000	0.387	17.66	41.2	0.699
340.000	0.184	18.10	42.6	0.742	1030.000	0.413	17.65	41.1	0.699
350.000	0.185	18.09	42.6	0.741	1040.000	0.411	17.64	41.1	0.698
360.000	0.186	18.08	42.5	0.740	1050.000	0.412	17.64	41.1	0.698
370.000	0.185	18.07	42.5	0.739	1060.000	0.415	17.64	41.1	0.698
380.000	0.185	18.06	42.5	0.739	1070.000	0.413	17.63	41.1	0.697
390.000	0.186	18.06	42.5	0.738	1080.000	0.415	17.63	41.1	0.697
400.000	0.185	18.05	42.5	0.738	1090.000	0.414	17.63	41.1	0.697
410.000	0.185	18.05	42.4	0.737	1100.000	0.413	17.63	41.1	0.697
420.000	0.184	18.04	42.4	0.737	1110.000	0.411	17.62	41.1	0.696
430.000	0.186	18.04	42.4	0.736	1120.000	0.409	17.62	41.1	0.696
440.000	0.185	18.04	42.4	0.736	1130.000	0.401	17.62	41.0	0.696
450.000	0.186	18.03	42.4	0.736	1140.000	0.402	17.62	41.0	0.696
460.000	0.187	18.03	42.4	0.735	1150.000	0.705	17.56	40.8	0.690
470.000	0.187	18.03	42.4	0.735	1160.000	0.880	17.40	40.3	0.675
480.000	0.187	18.02	42.4	0.735	1170.000	0.887	17.33	40.1	0.668
490.000	0.189	18.02	42.4	0.735	1180.000	0.888	17.28	39.9	0.664
500.000	0.190	18.02	42.3	0.734	1190.000	0.889	17.25	39.8	0.660
510.000	0.189	18.02	42.3	0.734	1200.000	0.891	17.22	39.7	0.658
520.000	0.190	18.01	42.3	0.734	1210.000	0.896	17.20	39.6	0.656
530.000	0.190	18.01	42.3	0.734	1220.000	0.889	17.19	39.6	0.654
540.000	0.189	18.01	42.3	0.734	1230.000	0.888	17.17	39.5	0.653
550.000	0.295	17.96	42.2	0.729	1240.000	0.887	17.16	39.5	0.652
560.000	0.299	17.92	42.0	0.725	1250.000	0.886	17.16	39.4	0.651
570.000	0.297	17.90	42.0	0.723	1260.000	0.885	17.15	39.4	0.651
580.000	0.298	17.88	41.9	0.721	1270.000	0.885	17.14	39.4	0.650
590.000	0.295	17.86	41.8	0.720	1280.000	0.886	17.14	39.4	0.650
600.000	0.293	17.85	41.8	0.719	1290.000	0.886	17.14	39.4	0.649
610.000	0.294	17.84	41.8	0.718	1300.000	0.886	17.13	39.4	0.649
620.000	0.296	17.83	41.8	0.717	1310.000	0.886	17.13	39.3	0.649
630.000	0.295	17.83	41.7	0.716	1320.000	0.884	17.13	39.3	0.649
640.000	0.301	17.82	41.7	0.715	1330.000	0.884	17.12	39.3	0.648
650.000	0.301	17.81	41.7	0.715	1340.000	0.884	17.12	39.3	0.648
660.000	0.300	17.81	41.7	0.714					
670.000	0.303	17.80	41.6	0.714					
680.000	0.299	17.80	41.6	0.713					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T7. Stress and porosity measurements from Sample 194-1194A-8H-3, 142–144 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.113	18.43	43.4	0.766	76.180	0.210	17.96	41.9	0.721
8.200	0.208	18.31	43.0	0.754	77.180	0.212	17.95	41.9	0.721
9.200	0.209	18.30	43.0	0.754	78.180	0.213	17.95	41.9	0.720
10.200	0.208	18.29	42.9	0.753	79.180	0.213	17.94	41.9	0.720
11.200	0.210	18.28	42.9	0.752	80.180	0.215	17.94	41.8	0.720
12.200	0.210	18.27	42.9	0.751	81.180	0.215	17.94	41.8	0.719
13.200	0.209	18.26	42.9	0.750	82.180	0.217	17.93	41.8	0.719
14.200	0.209	18.25	42.8	0.750	83.180	0.219	17.93	41.8	0.719
15.200	0.208	18.25	42.8	0.749	84.180	0.218	17.93	41.8	0.718
16.200	0.209	18.24	42.8	0.748	85.180	0.219	17.92	41.8	0.718
17.200	0.209	18.23	42.8	0.747	86.180	0.220	17.92	41.8	0.718
18.200	0.209	18.22	42.7	0.747	87.180	0.220	17.92	41.8	0.717
19.200	0.210	18.22	42.7	0.746	88.180	0.223	17.91	41.8	0.717
20.200	0.209	18.21	42.7	0.745	89.180	0.223	17.91	41.7	0.717
21.200	0.209	18.20	42.7	0.745	90.180	0.221	17.91	41.7	0.716
22.200	0.210	18.20	42.7	0.744	91.180	0.221	17.90	41.7	0.716
23.200	0.209	18.19	42.6	0.743	92.180	0.221	17.90	41.7	0.716
24.200	0.209	18.18	42.6	0.743	93.180	0.219	17.90	41.7	0.715
25.200	0.210	18.18	42.6	0.742	94.180	0.221	17.89	41.7	0.715
26.200	0.208	18.17	42.6	0.742	95.180	0.221	17.89	41.7	0.715
27.200	0.207	18.17	42.6	0.741	96.180	0.221	17.89	41.7	0.715
28.200	0.209	18.16	42.5	0.740	97.180	0.222	17.89	41.7	0.714
29.200	0.209	18.15	42.5	0.740	98.180	0.221	17.88	41.7	0.714
30.200	0.210	18.15	42.5	0.739	99.180	0.221	17.88	41.6	0.714
31.190	0.210	18.14	42.5	0.739	100.180	0.223	17.88	41.6	0.713
32.190	0.210	18.14	42.5	0.738	101.180	0.220	17.88	41.6	0.713
33.190	0.212	18.13	42.5	0.738	102.180	0.222	17.87	41.6	0.713
34.190	0.211	18.12	42.4	0.737	103.180	0.221	17.87	41.6	0.713
35.190	0.212	18.12	42.4	0.737	104.180	0.219	17.87	41.6	0.713
36.190	0.212	18.11	42.4	0.736	105.180	0.222	17.87	41.6	0.712
37.190	0.209	18.11	42.4	0.736	106.180	0.222	17.86	41.6	0.712
38.190	0.210	18.10	42.4	0.735	107.180	0.221	17.86	41.6	0.712
39.190	0.210	18.10	42.3	0.735	108.180	0.222	17.86	41.6	0.712
40.190	0.208	18.09	42.3	0.734	109.180	0.221	17.86	41.6	0.711
41.190	0.211	18.09	42.3	0.734	110.180	0.221	17.85	41.6	0.711
42.190	0.212	18.08	42.3	0.733	111.180	0.222	17.85	41.6	0.711
43.190	0.212	18.08	42.3	0.733	112.180	0.222	17.85	41.5	0.711
44.190	0.209	18.07	42.3	0.732	113.170	0.222	17.85	41.5	0.711
45.190	0.199	18.07	42.3	0.732	114.170	0.222	17.84	41.5	0.710
46.190	0.195	18.06	42.2	0.731	115.170	0.220	17.84	41.5	0.710
47.190	0.194	18.06	42.2	0.731	116.170	0.222	17.84	41.5	0.710
48.190	0.192	18.06	42.2	0.731	117.170	0.223	17.84	41.5	0.710
49.190	0.192	18.05	42.2	0.730	118.170	0.222	17.84	41.5	0.710
50.190	0.192	18.05	42.2	0.730	119.170	0.223	17.83	41.5	0.709
51.190	0.190	18.05	42.2	0.730	120.170	0.222	17.83	41.5	0.709
52.190	0.192	18.04	42.2	0.729	121.170	0.221	17.83	41.5	0.709
53.190	0.192	18.04	42.2	0.729	122.170	0.223	17.83	41.5	0.709
54.190	0.193	18.04	42.2	0.729	123.170	0.223	17.83	41.5	0.709
55.190	0.194	18.03	42.1	0.728	124.170	0.222	17.83	41.5	0.708
56.190	0.193	18.03	42.1	0.728	125.170	0.222	17.82	41.5	0.708
57.190	0.193	18.02	42.1	0.728	126.170	0.219	17.82	41.5	0.708
58.190	0.195	18.02	42.1	0.727	127.170	0.219	17.82	41.5	0.708
59.190	0.196	18.02	42.1	0.727	128.170	0.219	17.82	41.4	0.708
60.190	0.198	18.01	42.1	0.727	129.170	0.188	17.82	41.5	0.708
61.190	0.199	18.01	42.1	0.726	130.170	0.182	17.82	41.5	0.708
62.190	0.198	18.01	42.1	0.726	131.170	0.158	17.83	41.5	0.709
63.190	0.199	18.00	42.0	0.725	132.170	0.174	17.82	41.5	0.708
64.190	0.200	18.00	42.0	0.725	133.170	0.192	17.82	41.5	0.708
65.190	0.201	18.00	42.0	0.725	134.170	0.202	17.82	41.4	0.708
66.190	0.203	17.99	42.0	0.724	135.170	0.208	17.82	41.4	0.708
67.190	0.203	17.99	42.0	0.724	136.170	0.201	17.82	41.4	0.708
68.190	0.203	17.98	42.0	0.724	137.170	0.194	17.82	41.4	0.708
69.190	0.205	17.98	42.0	0.723	138.170	0.189	17.82	41.4	0.708
70.190	0.206	17.98	42.0	0.723	139.170	0.188	17.82	41.4	0.708
71.190	0.207	17.97	41.9	0.723	140.170	0.185	17.82	41.4	0.708
72.180	0.209	17.97	41.9	0.722	141.170	0.184	17.82	41.4	0.708
73.180	0.208	17.97	41.9	0.722					
74.180	0.208	17.96	41.9	0.722					
75.180	0.210	17.96	41.9	0.721					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T8. Stress and porosity measurements from Sample 194-1194A-11H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.094	17.95	37.7	0.604	68.983	0.191	17.77	37.0	0.588
1.000	0.188	17.93	37.6	0.602	69.983	0.192	17.77	37.0	0.588
2.000	0.196	17.91	37.5	0.600	70.983	0.192	17.77	37.0	0.588
2.999	0.197	17.90	37.5	0.599	71.982	0.191	17.77	37.0	0.588
3.999	0.197	17.89	37.4	0.599	72.982	0.190	17.77	37.0	0.588
4.999	0.196	17.88	37.4	0.598	73.982	0.188	17.77	37.0	0.588
5.999	0.196	17.88	37.4	0.598	74.982	0.188	17.77	37.0	0.588
6.998	0.197	17.87	37.4	0.597	75.981	0.187	17.77	37.0	0.588
7.998	0.194	17.87	37.4	0.597	76.981	0.188	17.77	37.0	0.588
8.998	0.192	17.86	37.4	0.596	77.981	0.186	17.77	37.0	0.588
9.998	0.192	17.86	37.4	0.596	78.981	0.185	17.77	37.0	0.588
10.997	0.194	17.86	37.3	0.596	81.781	0.185	17.77	37.0	0.588
11.997	0.195	17.85	37.3	0.596	91.781	0.184	17.77	37.0	0.588
12.997	0.196	17.85	37.3	0.595	101.781	0.186	17.77	37.0	0.588
13.997	0.196	17.85	37.3	0.595	111.781	0.187	17.76	37.0	0.588
14.996	0.197	17.84	37.3	0.595	121.781	0.188	17.76	37.0	0.587
15.996	0.198	17.84	37.3	0.594	131.781	0.189	17.76	37.0	0.587
16.996	0.197	17.84	37.3	0.594	141.781	0.192	17.76	37.0	0.587
17.996	0.196	17.84	37.3	0.594	151.781	0.194	17.76	37.0	0.587
18.995	0.196	17.83	37.3	0.594	161.781	0.194	17.76	37.0	0.587
19.995	0.196	17.83	37.2	0.593	171.781	0.195	17.75	37.0	0.587
20.995	0.196	17.83	37.2	0.593	181.781	0.194	17.75	37.0	0.587
21.995	0.196	17.83	37.2	0.593	191.781	0.196	17.75	37.0	0.586
22.994	0.197	17.82	37.2	0.593	201.781	0.200	17.75	37.0	0.586
23.994	0.197	17.82	37.2	0.593	211.781	0.200	17.75	37.0	0.586
24.994	0.196	17.82	37.2	0.593	221.781	0.197	17.75	36.9	0.586
25.994	0.195	17.82	37.2	0.592	231.781	0.197	17.75	36.9	0.586
26.993	0.196	17.82	37.2	0.592	241.781	0.196	17.74	36.9	0.586
27.993	0.197	17.81	37.2	0.592	251.781	0.197	17.74	36.9	0.586
28.993	0.197	17.81	37.2	0.592	261.781	0.196	17.74	36.9	0.586
29.993	0.198	17.81	37.2	0.592	271.781	0.196	17.74	36.9	0.586
30.992	0.197	17.81	37.2	0.591	281.781	0.196	17.74	36.9	0.586
31.992	0.197	17.81	37.2	0.591	291.781	0.197	17.74	36.9	0.586
32.992	0.197	17.80	37.2	0.591	295.480	0.196	17.74	36.9	0.585
33.992	0.197	17.80	37.2	0.591	296.480	0.197	17.74	36.9	0.585
34.991	0.198	17.80	37.1	0.591	297.480	0.199	17.74	36.9	0.585
35.991	0.198	17.80	37.1	0.591	298.480	0.199	17.74	36.9	0.585
36.991	0.197	17.80	37.1	0.591	299.479	0.197	17.74	36.9	0.585
37.991	0.197	17.80	37.1	0.591	300.479	0.197	17.74	36.9	0.585
38.990	0.198	17.80	37.1	0.590	301.479	0.247	17.73	36.9	0.585
39.990	0.199	17.80	37.1	0.590	302.479	0.301	17.72	36.8	0.583
40.990	0.198	17.79	37.1	0.590	303.478	0.299	17.71	36.8	0.582
41.990	0.197	17.79	37.1	0.590	304.478	0.294	17.70	36.8	0.582
42.990	0.195	17.79	37.1	0.590	305.478	0.296	17.70	36.8	0.581
43.989	0.195	17.79	37.1	0.590	306.478	0.300	17.69	36.8	0.581
44.989	0.195	17.79	37.1	0.590	307.477	0.301	17.69	36.7	0.581
45.989	0.196	17.79	37.1	0.590	308.477	0.302	17.68	36.7	0.580
46.989	0.197	17.79	37.1	0.590	309.477	0.303	17.68	36.7	0.580
47.988	0.197	17.79	37.1	0.590	310.477	0.302	17.68	36.7	0.580
48.988	0.196	17.79	37.1	0.590	311.476	0.303	17.67	36.7	0.579
49.988	0.195	17.79	37.1	0.589	312.476	0.295	17.67	36.7	0.579
50.988	0.197	17.78	37.1	0.589	313.476	0.292	17.67	36.7	0.579
51.987	0.198	17.78	37.1	0.589	314.476	0.291	17.67	36.7	0.579
52.987	0.199	17.78	37.1	0.589	315.475	0.290	17.67	36.7	0.579
53.987	0.197	17.78	37.1	0.589	316.475	0.289	17.66	36.7	0.579
54.987	0.198	17.78	37.1	0.589	317.475	0.290	17.66	36.6	0.578
55.986	0.197	17.78	37.1	0.589	318.475	0.292	17.66	36.6	0.578
56.986	0.197	17.78	37.1	0.589	319.474	0.294	17.66	36.6	0.578
57.986	0.197	17.78	37.1	0.589	320.474	0.294	17.66	36.6	0.578
58.986	0.196	17.78	37.1	0.589	321.474	0.295	17.65	36.6	0.578
59.985	0.195	17.78	37.1	0.589	322.474	0.295	17.65	36.6	0.578
60.985	0.194	17.78	37.1	0.589	323.474	0.297	17.65	36.6	0.577
61.985	0.192	17.78	37.1	0.589	324.473	0.298	17.65	36.6	0.577
62.985	0.192	17.78	37.1	0.589	325.473	0.301	17.65	36.6	0.577
63.984	0.192	17.78	37.1	0.589	326.473	0.302	17.65	36.6	0.577
64.984	0.192	17.78	37.0	0.589	327.473	0.303	17.64	36.6	0.577
65.984	0.192	17.77	37.0	0.588					
66.984	0.191	17.77	37.0	0.588					
67.983	0.190	17.77	37.0	0.588					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T9. Stress and porosity measurements from Sample 194-1198A-13H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.117	18.07	44.4	0.797	69.004	0.210	17.86	43.7	0.776
1.000	0.194	18.05	44.3	0.795	70.004	0.209	17.86	43.7	0.776
2.000	0.206	18.03	44.2	0.793	71.004	0.211	17.86	43.7	0.776
3.000	0.207	18.02	44.2	0.792	72.004	0.210	17.86	43.7	0.776
4.000	0.207	18.01	44.2	0.791	73.004	0.210	17.86	43.7	0.776
5.000	0.208	18.00	44.1	0.790	74.005	0.211	17.85	43.7	0.776
6.000	0.208	17.99	44.1	0.789	75.005	0.212	17.85	43.7	0.776
7.000	0.207	17.98	44.1	0.788	76.005	0.211	17.85	43.7	0.776
8.000	0.208	17.98	44.1	0.788	77.005	0.210	17.85	43.7	0.775
9.001	0.209	17.97	44.0	0.787	78.005	0.211	17.85	43.7	0.775
10.001	0.208	17.96	44.0	0.787	79.005	0.211	17.85	43.7	0.775
11.001	0.209	17.96	44.0	0.786	80.005	0.210	17.85	43.7	0.775
12.001	0.208	17.95	44.0	0.786	81.005	0.210	17.85	43.7	0.775
13.001	0.209	17.95	44.0	0.785	82.005	0.210	17.85	43.7	0.775
14.001	0.209	17.94	44.0	0.785	83.005	0.210	17.85	43.7	0.775
15.001	0.210	17.94	44.0	0.784	84.005	0.210	17.85	43.7	0.775
16.001	0.210	17.94	43.9	0.784	85.005	0.211	17.85	43.7	0.775
17.001	0.209	17.93	43.9	0.783	86.005	0.211	17.85	43.7	0.775
18.001	0.209	17.93	43.9	0.783	87.005	0.211	17.85	43.7	0.775
19.001	0.210	17.93	43.9	0.783	88.005	0.210	17.85	43.7	0.775
20.001	0.211	17.92	43.9	0.782	89.005	0.211	17.85	43.7	0.775
21.001	0.211	17.92	43.9	0.782	90.005	0.210	17.85	43.7	0.775
22.001	0.211	17.92	43.9	0.782	91.006	0.210	17.85	43.7	0.775
23.001	0.210	17.91	43.9	0.782	92.006	0.210	17.85	43.7	0.775
24.001	0.210	17.91	43.9	0.781	93.006	0.210	17.85	43.7	0.775
25.002	0.210	17.91	43.9	0.781	94.006	0.210	17.84	43.7	0.775
26.002	0.210	17.91	43.8	0.781	95.006	0.210	17.84	43.6	0.775
27.002	0.210	17.91	43.8	0.781	96.006	0.211	17.84	43.6	0.775
28.002	0.210	17.90	43.8	0.781	97.006	0.210	17.84	43.6	0.775
29.002	0.210	17.90	43.8	0.780	98.006	0.210	17.84	43.6	0.774
30.002	0.211	17.90	43.8	0.780	99.006	0.210	17.84	43.6	0.774
31.002	0.211	17.90	43.8	0.780	100.006	0.210	17.84	43.6	0.774
32.002	0.210	17.90	43.8	0.780	101.006	0.210	17.84	43.6	0.774
33.002	0.210	17.89	43.8	0.780	102.006	0.209	17.84	43.6	0.774
34.002	0.210	17.89	43.8	0.779	103.006	0.210	17.84	43.6	0.774
35.002	0.210	17.89	43.8	0.779	104.006	0.210	17.84	43.6	0.774
36.002	0.210	17.89	43.8	0.779	105.006	0.210	17.84	43.6	0.774
37.002	0.210	17.89	43.8	0.779	106.006	0.211	17.84	43.6	0.774
38.002	0.210	17.89	43.8	0.779	107.007	0.210	17.84	43.6	0.774
39.002	0.210	17.89	43.8	0.779	108.007	0.210	17.84	43.6	0.774
40.002	0.210	17.88	43.8	0.779	109.007	0.211	17.84	43.6	0.774
41.003	0.211	17.88	43.8	0.778	110.007	0.212	17.84	43.6	0.774
42.003	0.210	17.88	43.8	0.778	111.007	0.211	17.84	43.6	0.774
43.003	0.211	17.88	43.8	0.778	112.007	0.211	17.84	43.6	0.774
44.003	0.211	17.88	43.8	0.778	113.007	0.212	17.84	43.6	0.774
45.003	0.211	17.88	43.8	0.778	114.007	0.212	17.84	43.6	0.774
46.003	0.211	17.88	43.8	0.778	115.007	0.211	17.84	43.6	0.774
47.003	0.212	17.88	43.7	0.778	116.007	0.211	17.84	43.6	0.774
48.003	0.211	17.87	43.7	0.778	117.007	0.210	17.84	43.6	0.774
49.003	0.210	17.87	43.7	0.777	118.007	0.210	17.84	43.6	0.774
50.003	0.211	17.87	43.7	0.777	119.007	0.210	17.84	43.6	0.774
51.003	0.211	17.87	43.7	0.777	120.007	0.210	17.84	43.6	0.774
52.003	0.211	17.87	43.7	0.777	121.007	0.208	17.84	43.6	0.774
53.003	0.210	17.87	43.7	0.777	122.007	0.208	17.84	43.6	0.774
54.003	0.211	17.87	43.7	0.777	123.008	0.208	17.84	43.6	0.774
55.003	0.211	17.87	43.7	0.777	124.008	0.208	17.83	43.6	0.774
56.003	0.211	17.87	43.7	0.777	125.008	0.208	17.83	43.6	0.774
57.003	0.211	17.87	43.7	0.777	126.008	0.207	17.83	43.6	0.774
58.004	0.211	17.87	43.7	0.777	127.008	0.208	17.83	43.6	0.774
59.004	0.211	17.86	43.7	0.777	128.008	0.208	17.83	43.6	0.774
60.004	0.211	17.86	43.7	0.777	129.008	0.208	17.83	43.6	0.774
61.004	0.211	17.86	43.7	0.776	130.008	0.209	17.83	43.6	0.773
62.004	0.210	17.86	43.7	0.776	131.008	0.209	17.83	43.6	0.773
63.004	0.210	17.86	43.7	0.776	132.008	0.209	17.83	43.6	0.773
64.004	0.210	17.86	43.7	0.776	133.008	0.209	17.83	43.6	0.773
65.004	0.211	17.86	43.7	0.776	134.008	0.210	17.83	43.6	0.773
66.004	0.209	17.86	43.7	0.776					
67.004	0.210	17.86	43.7	0.776					
68.004	0.210	17.86	43.7	0.776					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).



Table T10. Stress and porosity measurements from Sample 194-1198A-13H-3, 139–141 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.119	16.85	38.2	0.617	69.004	0.212	16.53	36.9	0.586
1.000	0.194	16.80	37.9	0.612	70.004	0.212	16.53	36.9	0.586
2.000	0.205	16.76	37.8	0.608	71.004	0.213	16.53	36.9	0.586
3.000	0.208	16.74	37.7	0.606	72.004	0.213	16.53	36.9	0.585
4.000	0.209	16.72	37.7	0.604	73.004	0.213	16.52	36.9	0.585
5.000	0.210	16.71	37.6	0.603	74.005	0.212	16.52	36.9	0.585
6.000	0.208	16.70	37.6	0.602	75.005	0.212	16.52	36.9	0.585
7.000	0.208	16.69	37.5	0.601	76.005	0.213	16.52	36.9	0.585
8.000	0.210	16.68	37.5	0.600	77.005	0.214	16.52	36.9	0.585
9.001	0.211	16.67	37.5	0.599	78.005	0.212	16.52	36.9	0.585
10.001	0.210	16.66	37.4	0.598	79.005	0.211	16.52	36.9	0.585
11.001	0.209	16.65	37.4	0.598	80.005	0.213	16.52	36.9	0.585
12.001	0.210	16.64	37.4	0.597	81.005	0.214	16.52	36.9	0.585
13.001	0.210	16.64	37.4	0.596	82.005	0.212	16.52	36.9	0.585
14.001	0.210	16.63	37.3	0.596	83.005	0.210	16.52	36.9	0.585
15.001	0.211	16.63	37.3	0.595	84.005	0.211	16.52	36.9	0.585
16.001	0.210	16.62	37.3	0.595	85.005	0.211	16.52	36.9	0.585
17.001	0.209	16.62	37.3	0.594	86.004	0.211	16.52	36.9	0.585
18.001	0.209	16.61	37.3	0.594	87.004	0.211	16.52	36.9	0.585
19.001	0.210	16.61	37.2	0.593	88.004	0.210	16.52	36.9	0.585
20.001	0.210	16.60	37.2	0.593	89.004	0.209	16.52	36.9	0.585
21.001	0.209	16.60	37.2	0.593	90.003	0.211	16.52	36.9	0.585
22.001	0.210	16.60	37.2	0.592	91.003	0.212	16.52	36.9	0.585
23.001	0.211	16.59	37.2	0.592	92.003	0.210	16.52	36.9	0.585
24.001	0.211	16.59	37.2	0.592	93.003	0.209	16.52	36.9	0.585
25.002	0.210	16.59	37.2	0.591	94.002	0.210	16.52	36.9	0.585
26.002	0.210	16.58	37.2	0.591	95.002	0.212	16.52	36.9	0.585
27.002	0.210	16.58	37.1	0.591	96.002	0.210	16.52	36.9	0.585
28.002	0.211	16.58	37.1	0.591	97.002	0.210	16.52	36.9	0.585
29.002	0.212	16.58	37.1	0.590	98.001	0.210	16.52	36.9	0.585
30.002	0.212	16.57	37.1	0.590	99.001	0.210	16.52	36.9	0.585
31.002	0.210	16.57	37.1	0.590	100.001	0.210	16.52	36.9	0.584
32.002	0.208	16.57	37.1	0.590	101.001	0.210	16.51	36.9	0.584
33.002	0.210	16.57	37.1	0.590	102.000	0.210	16.51	36.9	0.584
34.002	0.212	16.57	37.1	0.589	103.000	0.210	16.51	36.9	0.584
35.002	0.210	16.56	37.1	0.589	104.000	0.210	16.51	36.9	0.584
36.002	0.209	16.56	37.1	0.589	105.000	0.210	16.51	36.9	0.584
37.002	0.211	16.56	37.1	0.589	105.999	0.210	16.51	36.9	0.584
38.002	0.212	16.56	37.1	0.589	106.999	0.209	16.51	36.9	0.584
39.002	0.211	16.56	37.1	0.589	107.999	0.210	16.51	36.9	0.584
40.002	0.211	16.56	37.0	0.588	108.999	0.211	16.51	36.9	0.584
41.003	0.212	16.56	37.0	0.588	109.998	0.210	16.51	36.9	0.584
42.003	0.212	16.55	37.0	0.588	110.998	0.209	16.51	36.9	0.584
43.003	0.213	16.55	37.0	0.588	111.998	0.210	16.51	36.9	0.584
44.003	0.215	16.55	37.0	0.588	112.998	0.211	16.51	36.9	0.584
45.003	0.214	16.55	37.0	0.588	113.997	0.210	16.51	36.9	0.584
46.003	0.213	16.55	37.0	0.588	114.997	0.208	16.51	36.9	0.584
47.003	0.215	16.55	37.0	0.587	115.997	0.208	16.51	36.9	0.584
48.003	0.216	16.54	37.0	0.587	116.997	0.210	16.51	36.9	0.584
49.003	0.215	16.54	37.0	0.587	117.997	0.210	16.51	36.9	0.584
50.003	0.214	16.54	37.0	0.587	118.996	0.209	16.51	36.9	0.584
51.003	0.214	16.54	37.0	0.587	119.996	0.209	16.51	36.9	0.584
52.003	0.214	16.54	37.0	0.587	120.996	0.208	16.51	36.9	0.584
53.003	0.212	16.54	37.0	0.587	121.996	0.209	16.51	36.9	0.584
54.003	0.212	16.54	37.0	0.587	122.995	0.210	16.51	36.9	0.584
55.003	0.213	16.54	37.0	0.587	123.995	0.210	16.51	36.9	0.584
56.003	0.212	16.54	37.0	0.587	124.995	0.208	16.51	36.9	0.584
57.003	0.212	16.54	37.0	0.587	125.995	0.208	16.51	36.9	0.584
58.004	0.212	16.54	37.0	0.586	126.994	0.210	16.51	36.9	0.584
59.004	0.212	16.53	37.0	0.586	127.994	0.210	16.51	36.9	0.584
60.004	0.212	16.53	37.0	0.586	128.994	0.209	16.51	36.9	0.584
61.004	0.212	16.53	37.0	0.586	129.994	0.208	16.51	36.9	0.584
62.004	0.214	16.53	37.0	0.586	130.993	0.210	16.51	36.9	0.584
63.004	0.213	16.53	36.9	0.586	131.993	0.210	16.51	36.9	0.584
64.004	0.213	16.53	36.9	0.586	132.993	0.209	16.51	36.9	0.584
65.004	0.213	16.53	36.9	0.586	133.993	0.209	16.51	36.9	0.584
66.004	0.214	16.53	36.9	0.586					
67.004	0.213	16.53	36.9	0.586					
68.004	0.212	16.53	36.9	0.586					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T11. Stress and porosity measurements from Sample 194-1198A-15H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.149	17.56	37.8	0.608	69.002	0.247	17.28	36.8	0.582
1.000	0.228	17.52	37.7	0.604	70.002	0.245	17.28	36.8	0.582
2.000	0.239	17.48	37.5	0.601	71.002	0.246	17.28	36.8	0.582
3.000	0.243	17.46	37.5	0.599	72.002	0.244	17.28	36.8	0.582
4.000	0.244	17.45	37.4	0.598	73.002	0.247	17.28	36.8	0.582
5.000	0.244	17.44	37.4	0.597	74.002	0.245	17.28	36.8	0.582
6.000	0.243	17.43	37.3	0.596	75.003	0.245	17.28	36.8	0.582
7.000	0.243	17.42	37.3	0.595	76.003	0.246	17.28	36.8	0.582
8.000	0.244	17.42	37.3	0.594	77.003	0.245	17.28	36.8	0.582
9.000	0.246	17.41	37.3	0.594	78.003	0.246	17.28	36.8	0.582
10.000	0.245	17.40	37.2	0.593	79.003	0.245	17.28	36.8	0.582
11.000	0.246	17.40	37.2	0.593	80.003	0.246	17.28	36.8	0.582
12.000	0.246	17.39	37.2	0.592	81.003	0.245	17.28	36.8	0.582
13.000	0.245	17.39	37.2	0.592	82.003	0.245	17.28	36.8	0.582
14.000	0.247	17.38	37.2	0.591	83.003	0.246	17.28	36.8	0.582
15.000	0.245	17.38	37.1	0.591	84.003	0.246	17.28	36.8	0.582
16.000	0.243	17.37	37.1	0.591	85.003	0.247	17.28	36.8	0.582
17.000	0.243	17.37	37.1	0.590	86.003	0.246	17.28	36.8	0.582
18.000	0.242	17.37	37.1	0.590	87.003	0.247	17.28	36.8	0.582
19.000	0.244	17.36	37.1	0.590	88.003	0.247	17.28	36.8	0.582
20.000	0.243	17.36	37.1	0.589	89.003	0.246	17.28	36.8	0.582
21.000	0.245	17.36	37.1	0.589	90.003	0.247	17.28	36.8	0.582
22.000	0.243	17.35	37.1	0.589	91.004	0.247	17.27	36.8	0.582
23.000	0.244	17.35	37.0	0.588	92.004	0.247	17.27	36.8	0.582
24.000	0.246	17.35	37.0	0.588	93.004	0.247	17.27	36.8	0.581
25.000	0.247	17.34	37.0	0.588	94.004	0.248	17.27	36.8	0.581
26.000	0.247	17.34	37.0	0.588	95.004	0.247	17.27	36.8	0.581
27.000	0.245	17.34	37.0	0.587	96.004	0.246	17.27	36.8	0.581
28.000	0.245	17.34	37.0	0.587	97.004	0.247	17.27	36.8	0.581
29.000	0.245	17.33	37.0	0.587	98.004	0.246	17.27	36.8	0.581
30.000	0.245	17.33	37.0	0.587	99.004	0.245	17.27	36.8	0.581
31.000	0.246	17.33	37.0	0.587	100.004	0.245	17.27	36.8	0.581
32.000	0.246	17.33	37.0	0.586	101.004	0.245	17.27	36.8	0.581
33.000	0.246	17.33	37.0	0.586	102.004	0.246	17.27	36.8	0.581
34.000	0.246	17.32	37.0	0.586	103.004	0.243	17.27	36.8	0.581
35.000	0.247	17.32	36.9	0.586	104.004	0.245	17.27	36.8	0.581
36.000	0.247	17.32	36.9	0.586	105.004	0.244	17.27	36.8	0.581
37.000	0.247	17.32	36.9	0.586	106.004	0.245	17.27	36.8	0.581
38.000	0.248	17.32	36.9	0.585	107.004	0.245	17.27	36.8	0.581
39.000	0.245	17.32	36.9	0.585	108.005	0.245	17.27	36.8	0.581
40.000	0.247	17.31	36.9	0.585	109.005	0.246	17.27	36.8	0.581
41.000	0.245	17.31	36.9	0.585	110.005	0.244	17.27	36.7	0.581
42.001	0.247	17.31	36.9	0.585	111.005	0.246	17.27	36.7	0.581
43.001	0.246	17.31	36.9	0.585	112.005	0.245	17.27	36.7	0.581
44.001	0.245	17.31	36.9	0.585	113.005	0.245	17.27	36.7	0.581
45.001	0.247	17.31	36.9	0.585	114.005	0.246	17.27	36.7	0.581
46.001	0.246	17.31	36.9	0.584	115.005	0.245	17.27	36.7	0.581
47.001	0.247	17.30	36.9	0.584	116.005	0.246	17.27	36.7	0.581
48.001	0.247	17.30	36.9	0.584	117.005	0.245	17.27	36.7	0.581
49.001	0.247	17.30	36.9	0.584	118.005	0.246	17.27	36.7	0.581
50.001	0.247	17.30	36.9	0.584	119.005	0.246	17.27	36.7	0.581
51.001	0.246	17.30	36.9	0.584	120.005	0.245	17.27	36.7	0.581
52.001	0.249	17.30	36.9	0.584	121.005	0.246	17.27	36.7	0.581
53.001	0.247	17.30	36.9	0.584	122.005	0.245	17.27	36.7	0.581
54.001	0.248	17.30	36.8	0.584	123.005	0.246	17.27	36.7	0.581
55.001	0.249	17.29	36.8	0.583	124.006	0.245	17.27	36.7	0.581
56.001	0.249	17.29	36.8	0.583	125.006	0.245	17.27	36.7	0.581
57.001	0.249	17.29	36.8	0.583	126.006	0.245	17.27	36.7	0.581
58.002	0.248	17.29	36.8	0.583	127.006	0.244	17.27	36.7	0.581
59.002	0.250	17.29	36.8	0.583	128.006	0.245	17.26	36.7	0.581
60.002	0.248	17.29	36.8	0.583	129.006	0.244	17.26	36.7	0.581
61.002	0.248	17.29	36.8	0.583	130.006	0.245	17.26	36.7	0.581
62.002	0.248	17.29	36.8	0.583	131.006	0.244	17.26	36.7	0.581
63.002	0.248	17.29	36.8	0.583	132.006	0.243	17.26	36.7	0.581
64.002	0.248	17.29	36.8	0.583	133.006	0.244	17.26	36.7	0.581
65.002	0.247	17.29	36.8	0.583	134.006	0.242	17.26	36.7	0.581
66.002	0.249	17.29	36.8	0.583					
67.002	0.246	17.29	36.8	0.583					
68.002	0.247	17.29	36.8	0.583					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T12. Stress and porosity measurements from Sample 194-1198A-18H-3, 135–137 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.212	17.58	37.9	0.609	92.384	0.317	17.48	37.5	0.601
10.000	0.212	17.57	37.8	0.609	93.384	0.318	17.48	37.5	0.601
20.000	0.286	17.56	37.8	0.607	94.383	0.319	17.48	37.5	0.601
26.400	0.305	17.54	37.7	0.606	95.383	0.318	17.48	37.5	0.601
27.400	0.306	17.54	37.7	0.606	96.383	0.319	17.48	37.5	0.600
28.399	0.307	17.54	37.7	0.606	97.383	0.316	17.48	37.5	0.600
29.399	0.308	17.54	37.7	0.606	98.382	0.317	17.48	37.5	0.600
30.399	0.309	17.54	37.7	0.606	99.382	0.319	17.48	37.5	0.600
31.399	0.311	17.54	37.7	0.605	100.382	0.319	17.48	37.5	0.600
32.398	0.312	17.53	37.7	0.605	101.382	0.321	17.48	37.5	0.600
33.398	0.311	17.53	37.7	0.605	102.381	0.320	17.48	37.5	0.600
34.398	0.313	17.53	37.7	0.605	103.381	0.320	17.48	37.5	0.600
35.398	0.312	17.53	37.7	0.605	104.381	0.317	17.48	37.5	0.600
36.397	0.313	17.53	37.7	0.605	105.381	0.316	17.48	37.5	0.600
37.397	0.314	17.53	37.7	0.605	106.380	0.315	17.48	37.5	0.600
38.397	0.313	17.53	37.7	0.605	107.380	0.312	17.48	37.5	0.600
39.397	0.315	17.52	37.7	0.604	108.380	0.314	17.48	37.5	0.600
40.396	0.314	17.52	37.7	0.604	109.380	0.313	17.48	37.5	0.600
41.396	0.314	17.52	37.7	0.604	110.379	0.314	17.48	37.5	0.600
42.396	0.314	17.52	37.7	0.604	111.379	0.313	17.48	37.5	0.600
43.396	0.314	17.52	37.7	0.604	112.379	0.313	17.48	37.5	0.600
44.396	0.316	17.52	37.7	0.604	113.379	0.313	17.47	37.5	0.600
45.395	0.315	17.52	37.6	0.604	114.378	0.312	17.47	37.5	0.600
46.395	0.317	17.52	37.6	0.604	115.378	0.313	17.47	37.5	0.600
47.395	0.316	17.52	37.6	0.604	116.378	0.312	17.47	37.5	0.600
48.395	0.316	17.51	37.6	0.604	117.378	0.313	17.47	37.5	0.600
49.394	0.317	17.51	37.6	0.603	118.377	0.313	17.47	37.5	0.600
50.394	0.316	17.51	37.6	0.603	119.377	0.313	17.47	37.5	0.600
51.394	0.317	17.51	37.6	0.603	120.377	0.313	17.47	37.5	0.600
52.394	0.316	17.51	37.6	0.603	121.377	0.312	17.47	37.5	0.600
53.393	0.317	17.51	37.6	0.603	122.376	0.312	17.47	37.5	0.600
54.393	0.318	17.51	37.6	0.603	123.376	0.312	17.47	37.5	0.600
55.393	0.317	17.51	37.6	0.603	124.376	0.313	17.47	37.5	0.600
56.393	0.318	17.51	37.6	0.603	125.376	0.313	17.47	37.5	0.600
57.392	0.316	17.51	37.6	0.603	126.375	0.314	17.47	37.5	0.599
58.392	0.318	17.51	37.6	0.603	127.375	0.314	17.47	37.5	0.599
59.392	0.317	17.50	37.6	0.603	128.375	0.312	17.47	37.5	0.599
60.392	0.317	17.50	37.6	0.603	129.375	0.314	17.47	37.5	0.599
61.391	0.317	17.50	37.6	0.602	130.375	0.312	17.47	37.5	0.599
62.391	0.317	17.50	37.6	0.602	131.374	0.313	17.47	37.5	0.599
63.391	0.318	17.50	37.6	0.602	132.374	0.312	17.47	37.5	0.599
64.391	0.318	17.50	37.6	0.602	133.374	0.312	17.47	37.5	0.599
65.390	0.318	17.50	37.6	0.602	134.374	0.314	17.47	37.5	0.599
66.390	0.318	17.50	37.6	0.602	135.373	0.312	17.47	37.5	0.599
67.390	0.317	17.50	37.6	0.602	136.373	0.314	17.47	37.5	0.599
68.390	0.318	17.50	37.6	0.602	137.373	0.312	17.47	37.5	0.599
69.389	0.318	17.50	37.6	0.602	138.373	0.312	17.47	37.5	0.599
70.389	0.319	17.50	37.6	0.602	139.372	0.313	17.47	37.5	0.599
71.389	0.318	17.50	37.6	0.602	140.372	0.312	17.47	37.5	0.599
72.389	0.319	17.49	37.6	0.602	141.372	0.314	17.47	37.5	0.599
73.388	0.318	17.49	37.6	0.602	142.372	0.313	17.47	37.5	0.599
74.388	0.318	17.49	37.6	0.602	143.371	0.314	17.47	37.5	0.599
75.388	0.318	17.49	37.6	0.602	144.371	0.313	17.47	37.5	0.599
76.388	0.317	17.49	37.6	0.601	145.371	0.312	17.47	37.5	0.599
77.387	0.319	17.49	37.6	0.601	146.371	0.314	17.47	37.5	0.599
78.387	0.318	17.49	37.6	0.601	147.370	0.312	17.46	37.5	0.599
79.387	0.320	17.49	37.6	0.601	148.370	0.314	17.46	37.5	0.599
80.387	0.319	17.49	37.5	0.601	149.370	0.314	17.46	37.5	0.599
81.386	0.320	17.49	37.5	0.601	150.370	0.315	17.46	37.5	0.599
82.386	0.320	17.49	37.5	0.601	151.369	0.315	17.46	37.5	0.599
83.386	0.319	17.49	37.5	0.601	152.369	0.314	17.46	37.5	0.599
84.386	0.320	17.49	37.5	0.601	153.369	0.315	17.46	37.5	0.599
85.385	0.318	17.49	37.5	0.601	154.369	0.314	17.46	37.5	0.599
86.385	0.320	17.49	37.5	0.601	155.368	0.316	17.46	37.5	0.599
87.385	0.320	17.49	37.5	0.601	156.368	0.316	17.46	37.5	0.599
88.385	0.319	17.49	37.5	0.601	157.368	0.315	17.46	37.5	0.599
89.385	0.319	17.48	37.5	0.601					
90.384	0.318	17.48	37.5	0.601					
91.384	0.318	17.48	37.5	0.601					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).

Table T13. Stress and porosity measurements from Sample 194-1198A-21H-3, 140–142 cm.

Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio	Time (s)	Effective vertical stress (MPa)	Sample height (mm)	Porosity (%)	Void ratio
0.000	0.126	17.65	45.3	0.830	69.004	0.219	17.30	44.2	0.794
1.000	0.196	17.60	45.2	0.824	70.004	0.219	17.30	44.2	0.794
2.000	0.215	17.55	45.0	0.819	71.004	0.218	17.30	44.2	0.793
3.000	0.219	17.53	45.0	0.817	72.004	0.219	17.30	44.2	0.793
4.000	0.219	17.51	44.9	0.816	73.004	0.217	17.30	44.2	0.793
5.000	0.221	17.50	44.9	0.814	74.005	0.218	17.30	44.2	0.793
6.000	0.218	17.49	44.9	0.813	75.005	0.217	17.30	44.2	0.793
7.000	0.221	17.48	44.8	0.812	76.005	0.217	17.30	44.2	0.793
8.000	0.221	17.47	44.8	0.812	77.005	0.215	17.30	44.2	0.793
9.001	0.221	17.47	44.8	0.811	78.005	0.216	17.30	44.2	0.793
10.001	0.221	17.46	44.7	0.810	79.005	0.216	17.30	44.2	0.793
11.001	0.220	17.45	44.7	0.809	80.005	0.217	17.29	44.2	0.793
12.001	0.219	17.45	44.7	0.809	81.005	0.216	17.29	44.2	0.793
13.001	0.221	17.44	44.7	0.808	82.005	0.216	17.29	44.2	0.793
14.001	0.221	17.43	44.7	0.807	83.005	0.215	17.29	44.2	0.793
15.001	0.223	17.43	44.6	0.807	84.005	0.216	17.29	44.2	0.793
16.001	0.220	17.42	44.6	0.806	85.005	0.215	17.29	44.2	0.793
17.001	0.221	17.42	44.6	0.806	86.005	0.217	17.29	44.2	0.793
18.001	0.220	17.41	44.6	0.805	87.005	0.215	17.29	44.2	0.792
19.001	0.222	17.41	44.6	0.805	88.005	0.216	17.29	44.2	0.792
20.001	0.222	17.40	44.6	0.804	89.005	0.215	17.29	44.2	0.792
21.001	0.222	17.40	44.6	0.804	90.005	0.215	17.29	44.2	0.792
22.001	0.221	17.40	44.5	0.803	91.006	0.214	17.29	44.2	0.792
23.001	0.222	17.39	44.5	0.803	92.006	0.214	17.29	44.2	0.792
24.001	0.221	17.39	44.5	0.803	93.006	0.214	17.29	44.2	0.792
25.002	0.222	17.38	44.5	0.802	94.006	0.214	17.29	44.2	0.792
26.002	0.222	17.38	44.5	0.802	95.006	0.214	17.29	44.2	0.792
27.002	0.223	17.38	44.5	0.802	96.006	0.215	17.29	44.2	0.792
28.002	0.221	17.37	44.5	0.801	97.006	0.215	17.29	44.2	0.792
29.002	0.223	17.37	44.5	0.801	98.006	0.215	17.28	44.2	0.792
30.002	0.223	17.37	44.5	0.801	99.006	0.217	17.28	44.2	0.792
31.002	0.224	17.37	44.5	0.800	100.006	0.216	17.28	44.2	0.792
32.002	0.222	17.36	44.4	0.800	101.006	0.217	17.28	44.2	0.792
33.002	0.222	17.36	44.4	0.800	102.006	0.214	17.28	44.2	0.792
34.002	0.220	17.36	44.4	0.800	103.006	0.213	17.28	44.2	0.792
35.002	0.219	17.36	44.4	0.799	104.006	0.211	17.28	44.2	0.792
36.002	0.219	17.35	44.4	0.799	105.006	0.211	17.28	44.2	0.792
37.002	0.220	17.35	44.4	0.799	106.006	0.210	17.28	44.2	0.792
38.002	0.220	17.35	44.4	0.799	107.007	0.211	17.28	44.2	0.792
39.002	0.221	17.35	44.4	0.798	108.007	0.210	17.28	44.2	0.792
40.002	0.222	17.34	44.4	0.798	109.007	0.212	17.28	44.2	0.792
41.003	0.223	17.34	44.4	0.798	110.007	0.211	17.28	44.2	0.791
42.003	0.223	17.34	44.4	0.798	111.007	0.213	17.28	44.2	0.791
43.003	0.223	17.34	44.4	0.797	112.007	0.212	17.28	44.2	0.791
44.003	0.222	17.34	44.4	0.797	113.007	0.212	17.28	44.2	0.791
45.003	0.221	17.33	44.4	0.797	114.007	0.210	17.28	44.2	0.791
46.003	0.222	17.33	44.3	0.797	115.007	0.211	17.28	44.2	0.791
47.003	0.221	17.33	44.3	0.797	116.007	0.210	17.28	44.2	0.791
48.003	0.222	17.33	44.3	0.796	117.007	0.211	17.28	44.2	0.791
49.003	0.221	17.33	44.3	0.796	118.007	0.211	17.28	44.2	0.791
50.003	0.222	17.33	44.3	0.796	119.007	0.212	17.28	44.2	0.791
51.003	0.223	17.32	44.3	0.796	120.007	0.212	17.28	44.2	0.791
52.003	0.224	17.32	44.3	0.796	121.007	0.214	17.28	44.2	0.791
53.003	0.223	17.32	44.3	0.796	122.007	0.213	17.28	44.2	0.791
54.003	0.223	17.32	44.3	0.795	123.007	0.214	17.28	44.2	0.791
55.003	0.222	17.32	44.3	0.795	124.008	0.214	17.28	44.2	0.791
56.003	0.222	17.32	44.3	0.795	125.008	0.213	17.28	44.2	0.791
57.003	0.221	17.31	44.3	0.795	126.008	0.212	17.28	44.2	0.791
58.004	0.222	17.31	44.3	0.795	127.008	0.213	17.28	44.2	0.791
59.004	0.221	17.31	44.3	0.795	128.008	0.212	17.28	44.2	0.791
60.004	0.223	17.31	44.3	0.795	129.008	0.212	17.27	44.2	0.791
61.004	0.223	17.31	44.3	0.794	130.008	0.212	17.27	44.2	0.791
62.004	0.224	17.31	44.3	0.794	131.008	0.213	17.27	44.2	0.791
63.004	0.223	17.31	44.3	0.794	132.008	0.214	17.27	44.2	0.791
64.004	0.223	17.31	44.3	0.794	133.008	0.214	17.27	44.2	0.791
65.004	0.221	17.31	44.3	0.794	134.008	0.214	17.27	44.2	0.791
66.004	0.222	17.30	44.3	0.794					
67.004	0.220	17.30	44.3	0.794					
68.004	0.220	17.30	44.3	0.794					

Note: Only a portion of this table appears here. The complete table is available in [ASCII](#).