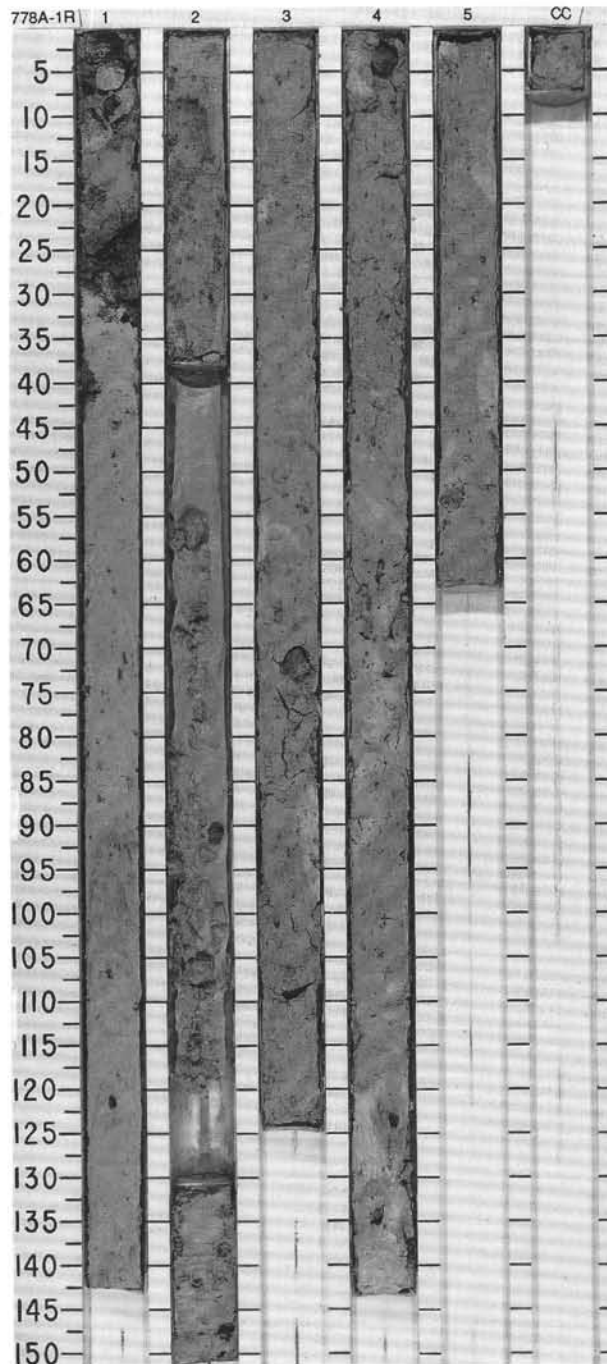


TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES CHEMISTRY	SECTION METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS							
					R	4.2	0.5		* * * XRD	CLAYEY SILT-SIZED SERPENTINE	
						0.3	1.0		* * * XRD	Major lithology: CLAYEY SILT CLAY-SIZED SERPENTINE. Soupy, fine-grained material made of serpentine grains. Gray-green (2.5Y 6/2), gray (7.5Y 5/0), and reddish (7.5YR 7/8) disturbed, with admixture of dark gray (2.5Y 4/0) and red-orange (5YR 6/8) serpentine-rich material. Contains scattered angular to rounded black (7.5Y 3/0), dark green (5Y 4/2), light olive (5Y 5/2) and light green (5Y 6/0) pebbles 1 to 4 cm across, probably serpentine. Faint layering from 33-143 cm in Section 125-778-1R.	
						1.4	2		IW	Minor lithology: CLAYEY SILT-SIZED SERPENTINE. Similar to above, but finer-grained.	
						13.6	3		*	SMEAR SLIDE SUMMARY (%):	
						15.6	4		XRD	52	
						16.0	5		XRD	1, 4 1, 19 1, 23 1, 100 3,	
									IW	TEXTURE:	
									XRD	Sand 1 — — 30 20	
									XRD	Silt 90 50 90 40 80	
									XRD	Clay 9 50 10 30 —	
									XRD	COMPOSITION:	
									OG	Aragonite 10 5 Tr — 15	
									OG	Clay 15 — 40 — —	
									OG	Epidote 5 — — 5 10	
									OG	Glass Tr — — — —	
									OG	Micrite Tr — — — —	
									OG	Nannofossils 5 — — — —	
									OG	Opaques 10 5 20 10 15	
									OG	Radiolarians Tr — — — —	
									OG	Serpentine 50 80 40 80 60	
									OG	Silicious sponge spicules Tr — — — —	
									OG	Silicoflagellates Tr — — — —	
									OG	Thulite — — — Tr —	
									OG	Zoisite 5 10 — 5 —	



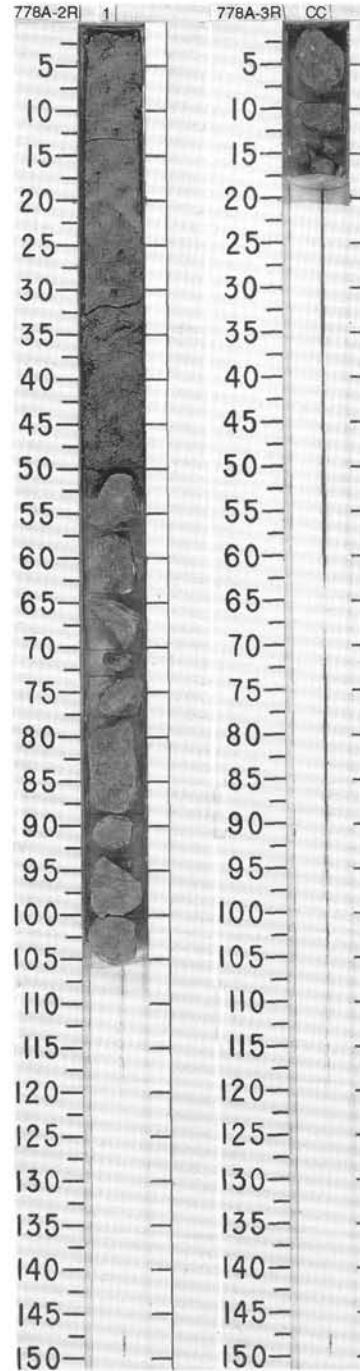
Information on Core Description Forms, for ALL sites, represents field notes taken aboard ship. Some of this information has been refined in accord with post-cruise findings, but production schedules prohibit definitive correlation of these forms with subsequent findings. Thus, the reader should be alerted to the occasional ambiguity or discrepancy.

SITE 778 HOLE A CORE 2R CORED INTERVAL 3920.4-3929.9 mbsl; 6.7-16.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER			PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS									
LOWER/MIDDLE PLEISTOCENE	N21/N22	R/P						4.2	IM		*	CLAYEY SILT-SIZED SERPENTINE Major lithology: CLAYEY SILT-SIZED SERPENTINE. Uniform, gray (2.5YR 5/0) silt consisting largely of serpentine grains, with scattered grit-to pebble-sized dark gray lithic clasts (probably serpentine). SMEAR SLIDE SUMMARY (%): 1, 24 D TEXTURE: Sand 20 Silt 70 Clay 10 COMPOSITION: Aragonite 10 Chlorite 25 Clay 5 Epidote Tr Micrite 15 Nannofossils 10 Opauques 15 Serpentine 20 Zoisite Tr

SITE 778 HOLE A CORE 3R CORED INTERVAL 3929.9-3933.9 mbsl; 16.2-20.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER			PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS									
								CC	IM		*	SERPENTINE FRAGMENTS Major lithology: Serpentine FRAGMENTS Blue-gray (7.5YR 5/10) silt and sand consisting largely of fine and very fine phacoidal (scaly-clay) serpentine grains, with serpentine pebbles to 3 cm. SMEAR SLIDE SUMMARY (%): CC, 15 D TEXTURE: Sand 40 Silt 10 Clay 50 COMPOSITION: Chlorite 5 Clay 30 Epidote 5 Micrite 25 Nannofossils 10 Opauques 10 Serpentine 5 Zoisite 10

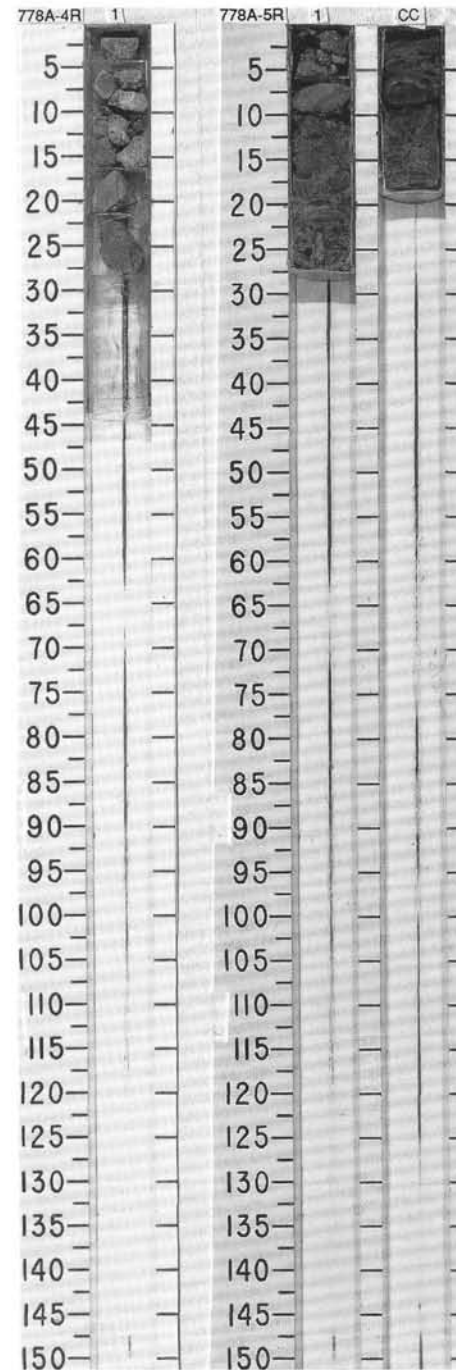


SITE 778 HOLE A CORE 4R CORED INTERVAL 3933.9-3943.4 mbsl; 20.2-29.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	MAMMOFOSILS	RADIOLARIANS	DIATOMS										
LOWER PLEISTOCENE	N22 R/M	CN143 C/G		B	?			1						<p>FORAMINIFER-BEARING SERPENTINE SANDSTONE</p> <p>Major lithology: FORAMINIFER-BEARING SERPENTINE SANDSTONE. Dark gray-green (5GY 4/1) sand consisting largely of serpentine grains, with scattered tan (10YR 8/1) to black (2.5YR 2.5/0) lithic clasts. Rock also contains at least 10% foraminifers.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <p style="text-align: right;">1, 25 D</p> <p>TEXTURE:</p> <p>Sand 90 Silt 10 Clay -</p> <p>COMPOSITION:</p> <p>Aragonite 5 Epidote 15 Foraminifers 3 Opauques 12 Serpentine 65</p>

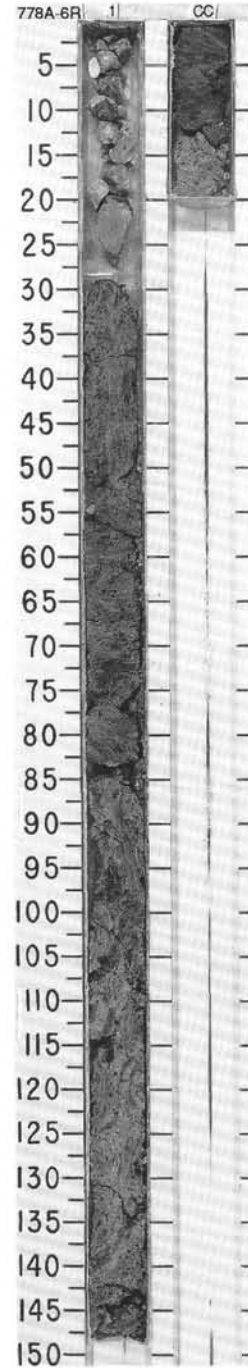
SITE 778 HOLE A CORE 5R CORED INTERVAL 3943.4-3952.9 mbsl; 29.7-39.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	MAMMOFOSILS	RADIOLARIANS	DIATOMS										
	B	B		B	?		0.9 0.19 CC	1						<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated, un lithified plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of gray-blue (5G 4/1 and 5B 4/1) and light-green (10GY 7/2 and 10GY 6/4) serpentine. This matrix encloses elongate clasts of basalt and serpentine as much as 3 cm in length and 1.5 cm in width. Matrix color variations at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. The elongate axes of the flakes, many of which are phacoidal (lens-shaped) define an anastomosing foliation that range from equant and crudely rounded to elongate and rhomboid (lozenge-shaped) to phacoidal. Rhomboid and phacoidal clasts commonly show asymmetric "tails" drawn out into the matrix that define local shear direction and sense. Some clasts appear to have been fragmented into smaller clasts. Large clast (6x4x3 cm) at top of core is basalt.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <p style="text-align: right;">1, 15 D</p> <p>TEXTURE:</p> <p>Sand 50 Silt 40 Clay 10</p> <p>COMPOSITION:</p> <p>Opauques 10 Serpentine 65 Thulite 20 Zolite 5</p>

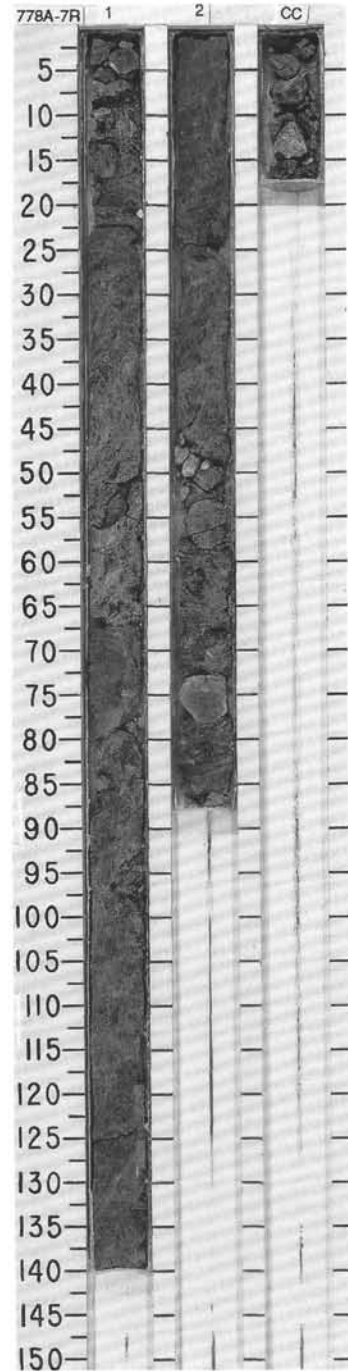


SITE 778 HOLE A CORE 6R CORED INTERVAL 3952.9-3962.4 mbsf; 39.2-48.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																														
FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS																																								
									0.5 1.0	IM			<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated un lithified, plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of gray-blue (5G 4/1 and 5B 4/1), light-green (10GY 7/2 and 10GY 6/4), and dark green serpentine. This matrix encloses elongate clasts of basalt and serpentine as much as 3 cm in length and 1.5 cm in width. Color variation at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. The elongate axes of the flakes (phacoids) form an anastomosing foliation that encloses the clasts and is commonly subparallel to layering. Discrete foliation/ layering domains are visible. Foliation/layering has a swirled or whorled appearance. Some local folding of foliation may represent drilling disturbance. Clasts range from equant and crudely rounded to elongate and rhomboid (lozenge-shaped). Rhomboid clasts commonly show asymmetric "tails" drawn out into the matrix that define local shear direction and sense.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>1, 35</td> <td>1, 124</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="0"> <tr> <td>Sand</td> <td>60</td> <td>60</td> </tr> <tr> <td>Silt</td> <td>30</td> <td>30</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> </tr> </table> <p>COMPOSITION:</p> <table border="0"> <tr> <td>Epidote</td> <td>20</td> <td>25</td> </tr> <tr> <td>Micrite</td> <td>Tr</td> <td>Tr</td> </tr> <tr> <td>Opauques</td> <td>10</td> <td>15</td> </tr> <tr> <td>Serpentine</td> <td>65</td> <td>55</td> </tr> <tr> <td>Zoisite</td> <td>5</td> <td>5</td> </tr> </table>		1, 35	1, 124	D	D	D	Sand	60	60	Silt	30	30	Clay	10	10	Epidote	20	25	Micrite	Tr	Tr	Opauques	10	15	Serpentine	65	55	Zoisite	5	5
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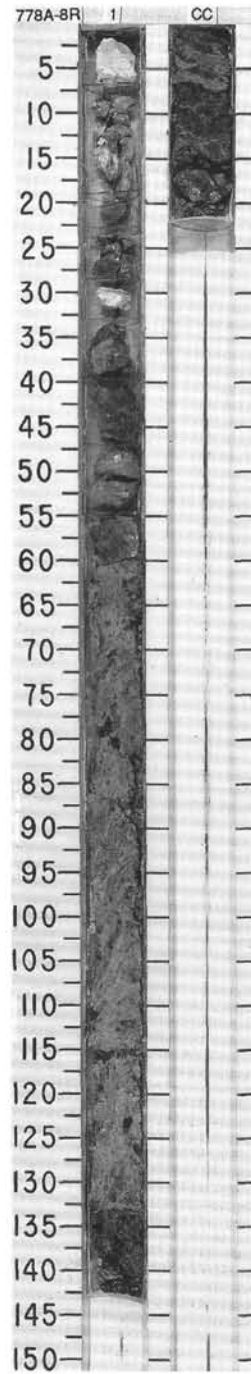


TIME - ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																																							
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS																																																
	B	B	B					1	0.5	IM	TS XRD	<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated, unithified plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of light-green (10GY 7/2 and 5GY 8/2) and light blue (10G 8/2 and 10G 6/2) serpentine. This matrix encloses elongate clasts of basalt and serpentine as much as 3 cm in length and 1.5 cm in width. Clasts are dark gray-green (10Y 3/1) to dark green (10Y 4/1). Matrix color variations at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. The elongate axes of the flakes, many of which are phacoidal (lens-shaped) define an anastomosing foliation that encloses the clasts and is commonly subparallel to layering. Discrete foliation/ layering domains are visible; their pattern is swirled and whorled. Clasts range from equant and crudely rounded to elongate and rhomboid (lozenge-shaped) to phacoidal. Rhomboid and phacoidal clasts commonly show asymmetric "tails" drawn out into the matrix that define local shear direction and sense. Some clasts appear to have been fragmented into smaller clasts. The matrix also contains elongate dark masses that have been sheared out into the matrix.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>1, 28</td> <td>1, 49</td> <td>1, 104</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>60</td> <td>50</td> <td>70</td> </tr> <tr> <td>Silt</td> <td>30</td> <td>40</td> <td>20</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> <td>10</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Epidote</td> <td>5</td> <td>—</td> <td>—</td> </tr> <tr> <td>Opacues</td> <td>20</td> <td>15</td> <td>15</td> </tr> <tr> <td>Serpentine</td> <td>50</td> <td>70</td> <td>70</td> </tr> <tr> <td>Thulite</td> <td>15</td> <td>5</td> <td>10</td> </tr> <tr> <td>Zoisite</td> <td>10</td> <td>10</td> <td>5</td> </tr> </table>		1, 28	1, 49	1, 104		D	D	D	Sand	60	50	70	Silt	30	40	20	Clay	10	10	10	Epidote	5	—	—	Opacues	20	15	15	Serpentine	50	70	70	Thulite	15	5	10	Zoisite	10	10	5
	1, 28	1, 49	1, 104																																																	
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Serpentine	50	70	70																																																	
Thulite	15	5	10																																																	
Zoisite	10	10	5																																																	
							2	1.0			LW																																									
							CC				TS XRF																																									



SITE 778 HOLE A CORE 8R CORED INTERVAL 3971.9-3981.9 mbsl; 58.2-68.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																																	
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS																																											
	B	B	B							IM																																					
							WT. XCRUC ₃ WT. XILOC							<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated, un lithified plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of gray (5B 1/4), green (10G 7/2), and light blue-green (5G 8/2 to 5G 3/2) serpentine. This matrix encloses angular to rounded clasts of dark to very light-green serpentine from 1mm to 3 cm across. Color variation at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. The elongate axes of the flakes (phacoids) form an anastomosing foliation that encloses the clasts and is commonly subparallel to layering. Discrete foliation/ layering domains are visible. The section retained in the core-catcher consists of a breccia zone of phacoidal islands of olive-green (5G 3/2) serpentine in a light blue-green (5G 8/2) matrix, overlying 3 fragments of very dark gray (5Y 3/1) bastite-bearing serpentinized harzburgite.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>1, 70</td> <td>1, 129</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="0"> <tr> <td>Sand</td> <td>10</td> <td>70</td> </tr> <tr> <td>Silt</td> <td>80</td> <td>20</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> </tr> </table> <p>COMPOSITION:</p> <table border="0"> <tr> <td>Chlorite</td> <td>—</td> <td>5</td> </tr> <tr> <td>Epidote</td> <td>—</td> <td>10</td> </tr> <tr> <td>Opakes</td> <td>10</td> <td>10</td> </tr> <tr> <td>Serpentine</td> <td>80</td> <td>70</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Zoisite</td> <td>10</td> <td>5</td> </tr> </table>		1, 70	1, 129		D	D	Sand	10	70	Silt	80	20	Clay	10	10	Chlorite	—	5	Epidote	—	10	Opakes	10	10	Serpentine	80	70	Thulite	—	Tr	Zoisite	10	5
	1, 70	1, 129																																													
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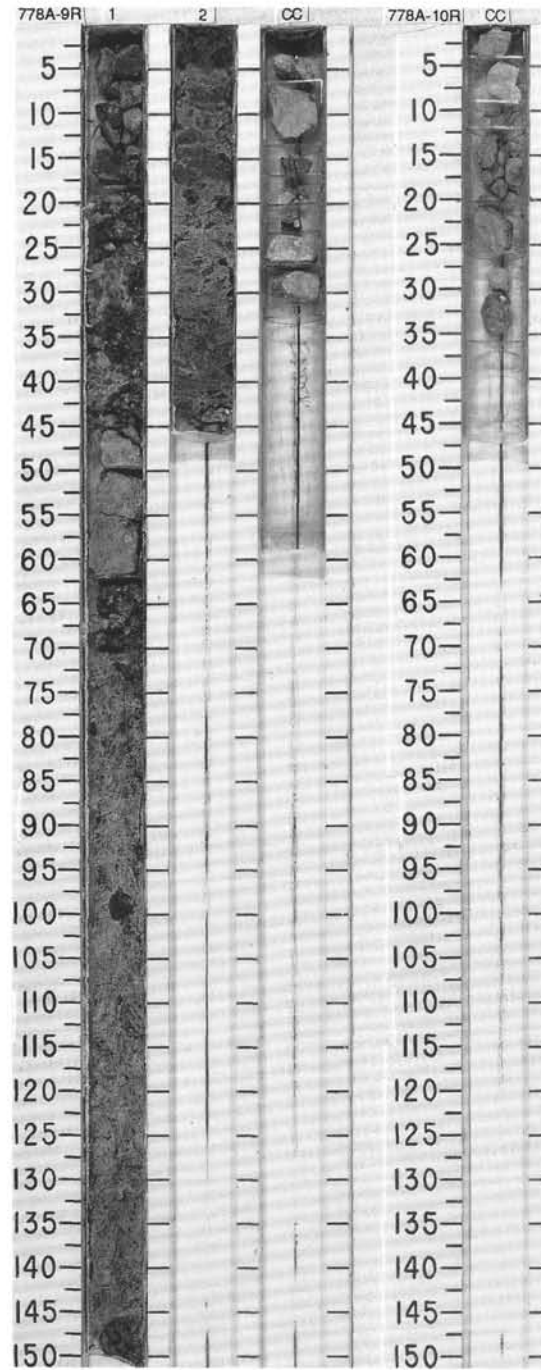


SITE 778 HOLE A CORE 9R CORED INTERVAL 3981.9-3991.5 mbsf; 68.2-77.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS										
	B	B	B		?				0.9 0.13					<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated, unithified plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of dark green (5G 3/2) to light blue-green (5G 8/2) serpentine. This matrix encloses angular clasts as much as 3 cm across, probably mostly serpentine. Matrix and clasts less than 1mm across make up as much as 85% of the rock. Color variation at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. The elongate axes of the flakes (phacoids) form an anastomosing foliation that encloses the clasts and is commonly subparallel to layering. Discrete foliation/ layering domains are visible. Some local folding of foliation may represent drilling disturbance. Clasts range from equant and crudely rounded to elongate and rhomboid (lozenge-shaped). Softer clasts are drawn out and entrained in the matrix. In the case of rhomboid clasts this commonly forms asymmetric "tails" drawn out into the matrix that define local shear direction and sense.</p> <p>Minor lithology: MATRIX-RICH, MATRIX-SUPPORTED serpentine BRECCIA, with angular serpentine clasts to 3x2 cm, but as small as 2-3 mm. Clasts are dark gray-green (10Y 3/1) to light yellow-green (5G 6/2). The matrix is light blue-green (5G 7/2). Some clasts appear to have been fragmented and sheared out into the matrix. There are also local blebs and wisps of dark gray N4) material becoming entrained in matrix. Many clasts are elongate, but foliation is weak.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <p style="text-align: right;">1.87 D</p> <p>TEXTURE:</p> <p>Sand 70 Silt 30 Clay —</p> <p>COMPOSITION:</p> <p>Epidote 3 Opaques 5 Serpentine 60 Thulite 25 Zoisite 7</p>

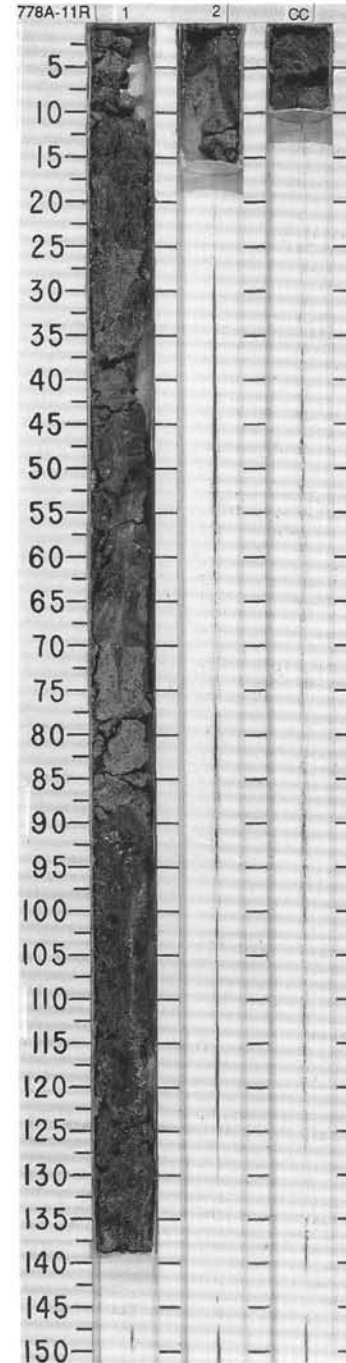
SITE 778 HOLE A CORE 10R CORED INTERVAL 3991.5-3996.0 mbsf; 77.8-82.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS										
	B	B	B		?					IM			XRD	All samples described in "igneous and metamorphic" section.

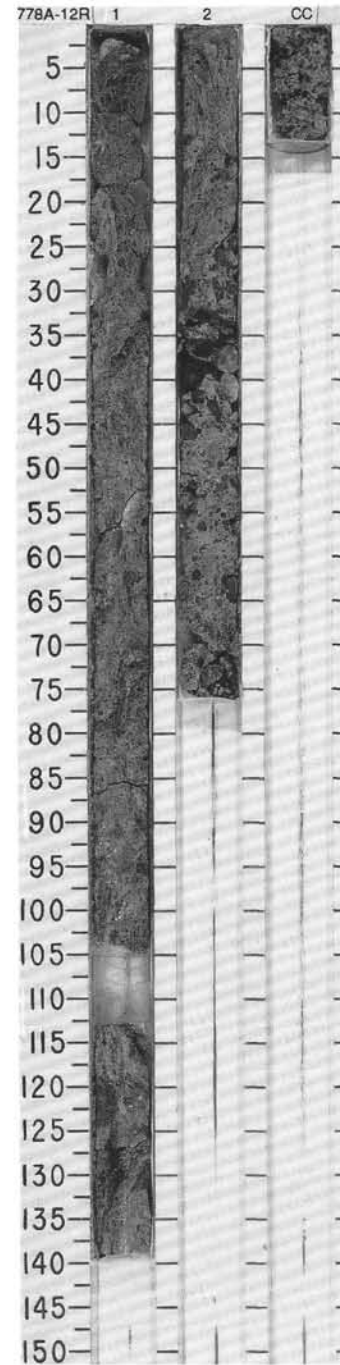


SITE 778 HOLE A CORE 11R CORED INTERVAL 3996.0-4003.5 mbsl: 82.3-89.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																	
										0.5 1.0	IM		TS IW TS	<p>SHEARED PHACOIDAL SERPENTINE</p> <p>Major lithology: SHEARED PHACOIDAL SERPENTINE. Foliated, un lithified plastic mass of sheared, phacoidal serpentine, consisting of mm-sized flakes and grains of dark green (5G 3/2) to light gray-green (5G 4/2 and 5G 5/2) to light blue-green (5G 7/2, 5G 8/2, and 10G 6/2) serpentine. This matrix encloses angular clasts as much as 3 to 5 mm across, although approximately equant smaller clasts about 2 mm across are most abundant. Most clasts are probably serpentine. Matrix and clasts less than 1 mm across make up as much as 85% of the rock. Color variation at a scale of 1 mm to 2 cm, along with variations in clast density, define a crude layering. Moreover, in this core there are zones of lighter and darker serpentine material 20-50 cm wide. The elongate axes of the serpentine flakes (phacoids) form an anastomosing foliation that encloses the clasts and is commonly subparallel to layering. Discrete foliation/layering domains are visible and foliation/layering has a swirled appearance. Some local folding of foliation may represent drilling disturbance. Clasts range from equant and crudely rounded to elongate and rhomboid (lozenge-shaped). Softer clasts are drawn out and entrained in the m commonly forms asymmetric "tails" drawn out into the matrix that define local shear direction and sense. Locally the foliation and layering exhibit a strong pinch-and-swell (layer-parallel flattening) texture.</p> <p>Red (5R 3/6) veins and blebs occur at about 88 cm, on the contact between two zones of serpentine of different colors. Drilling rubble, serpentine clasts and balls of serpentine mud, occur at the top and bottom of the core. One angular pebble at the top of the core includes red material like that described above.</p> <p>Minor lithology: CLAST-RICH SHEARED PHACOIDAL SERPENTINE. Abundant light green and light gray-green clasts parted by strands of foliated, phacoidal serpentine, consisting of pale blue-green (5G 5/2 to 10GY 7/2) mm-sized. Clasts over 1 mm make up about 40% of rock. Darker-green and more clast-rich than most of this lithology.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table> <tr><td>1, 136</td></tr> <tr><td>D</td></tr> </table> <p>TEXTURE:</p> <table> <tr><td>Sand</td><td>60</td></tr> <tr><td>Silt</td><td>30</td></tr> <tr><td>Clay</td><td>10</td></tr> </table> <p>COMPOSITION:</p> <table> <tr><td>Chlorite</td><td>15</td></tr> <tr><td>Epidote</td><td>15</td></tr> <tr><td>Opaques</td><td>15</td></tr> <tr><td>Serpentine</td><td>50</td></tr> <tr><td>Zoisite</td><td>5</td></tr> </table>	1, 136	D	Sand	60	Silt	30	Clay	10	Chlorite	15	Epidote	15	Opaques	15	Serpentine	50	Zoisite	5
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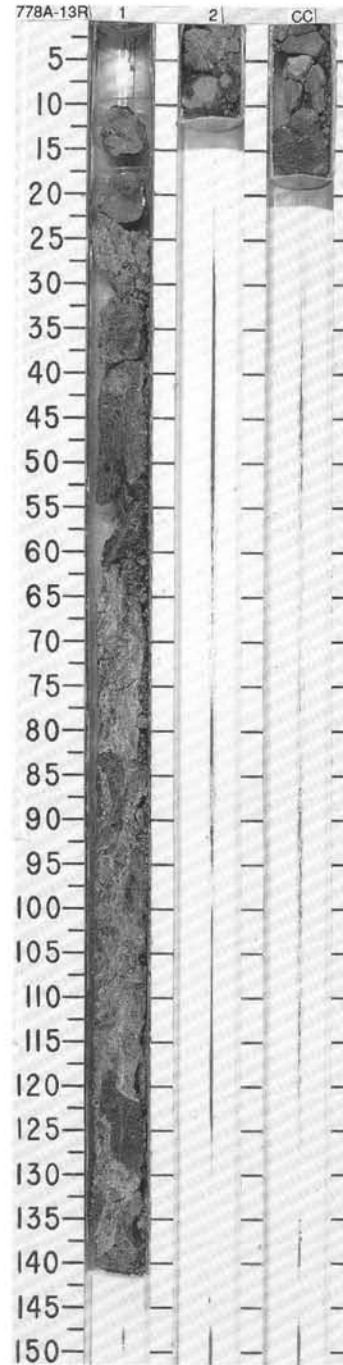


TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																						
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SITE 778 HOLE A CORE 13R CORED INTERVAL 4012.0-4021.3 mbsl; 98.3-107.6 mbsf

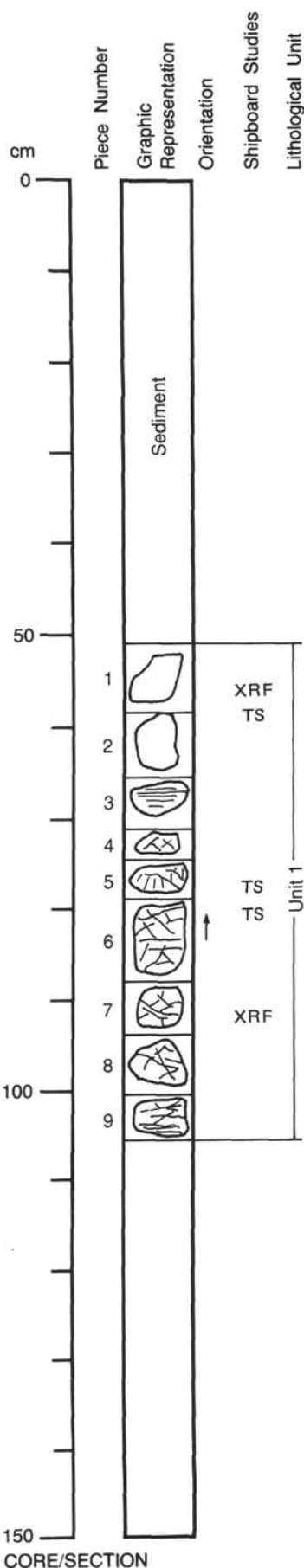
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125-778A-2R-1

UNIT 1: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 2



COLOR: Dark bluish gray (5B 4/1).
LAYERING: None visible.
DEFORMATION: Parallel shears, 1 mm wide, 1 cm apart; wavy cleavage on orthopyroxene.

PRIMARY MINERALOGY:

Olivine - Mode: 85%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 99%.

Orthopyroxene - Mode: 15%.
 Crystal size: <4 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 70%.

Spinel - Mode: <1%.
 Crystal size: <0.5 mm.
 Crystal shape: Anhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 80-95%.
 Texture: Anhedral, mesh-textured serpentine replacing olivine; bastite after orthopyroxene.
 Vein material: Chrysotile, <0.5 mm wide, up to 2 cm long, parallel to and crosscutting shears; chrysotile fibers at high angles to vein walls.

UNIT 1: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 3 to 9

COLOR: Dark gray to gray (2.5Y 7/4 to 7/6).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene.

PRIMARY MINERALOGY:

Olivine - Mode: 80%.
 Crystal size: <3 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 90%.

Orthopyroxene - Mode: 20%.
 Crystal size: <5 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 25%.

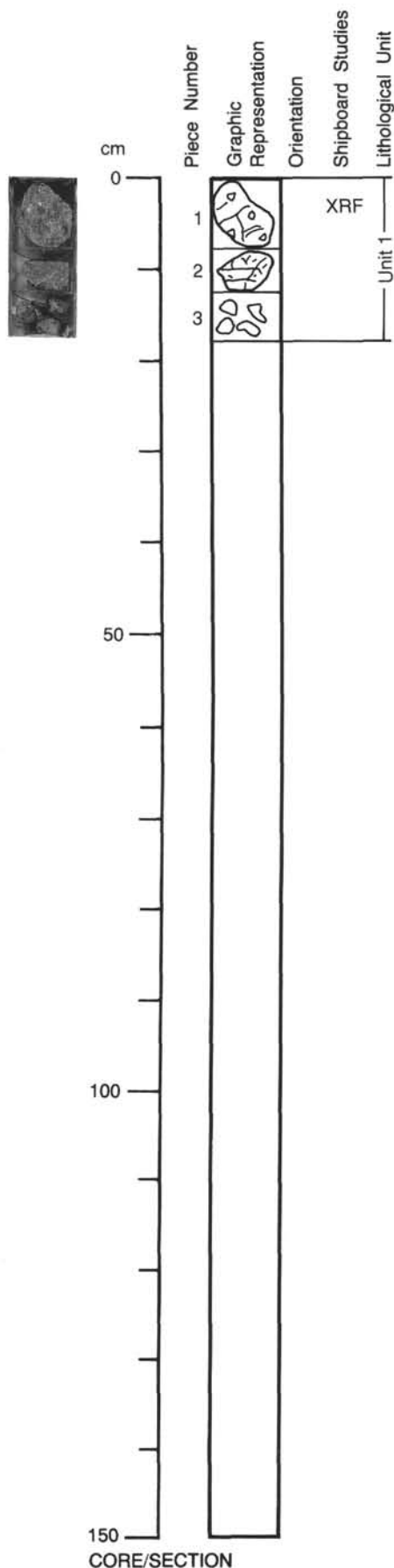
Spinel - Mode: <0.5%.
 Crystal size: <0.3 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine and dusty magnetite.
 Total percent: 80-85%.
 Texture: Mesh and bastite.
 Vein material: Serpentine veins (1 to 2 mm wide) randomly oriented; in Pieces 6 to 8 there are thin (<0.3-mm-wide) gray carbonate-filled veins.

125-778A-3R-CC

UNIT 1: SERPENTINIZED TECTONIZED HARZBURGITE



Piece 1

COLOR: Dark greenish gray to dark gray (10Y 5/1 to 2.5Y 4/0).

LAYERING: None visible.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

Orthopyroxene - Mode: 20%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

SECONDARY MINERALOGY:

Serpentine and dusty magnetite.
 Total percent: 100%.
 Texture: Bastite after orthopyroxene; mesh after olivine.
 Vein material: Greenish veins are in top corner of piece (< 0.5-mm wide); black veins with grayish margins (< 0.5 mm wide): veins are anastomosing.

UNIT 1: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 2 and 3 (multiple fragments)

COLOR: Bluish gray (2.5Y 5/0).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

Orthopyroxene - Mode: 20%.
 Crystal size: 1-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

Spinel - Mode: Trace.
 Crystal size: 0.1-0.3 mm.
 Crystal shape: Anhedral.
 Crystal orientation: Disseminated.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

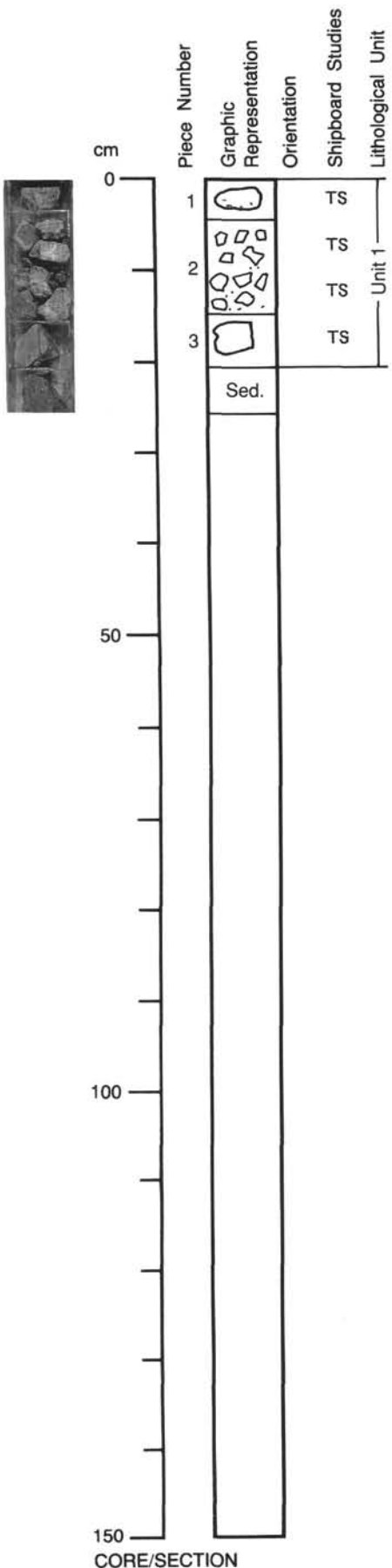
Serpentine and dusty magnetite.
 Total percent: 100%.
 Texture: Bastite and mesh.
 Vein material: White and dark gray (2.5Y 4/0) veins, 0.1 - 1 mm wide, cut by dark gray serpentine-filled veins which follow the margins and crosscut earlier generation.

ADDITIONAL COMMENTS: One fragment is a foliated and sheared clast of serpentized dunite (3 cm diameter) with an oxidation halo 1 cm wide (color deep brown red, BM HC/5).

125-778A-4R-1

UNIT 1: METABASALT

Pieces 1 to 3 (multiple fragments)



COLOR: Greenish gray (5G 5/2).
LAYERING: Not visible.
DEFORMATION: Cataclastic to mylonitic shears (2 mm wide) parallel to fractures.
PRIMARY MINERALOGY:
 Plagioclase microphyric basaltic protolith with extensive glassy groundmass; non-vesicular.
 Plagioclase - Mode: 60%.
 Crystal size: 0.1-0.5 mm.
 Crystal shape: Laths.
 Crystal orientation: Felted.
 Percent replacement: 100%.

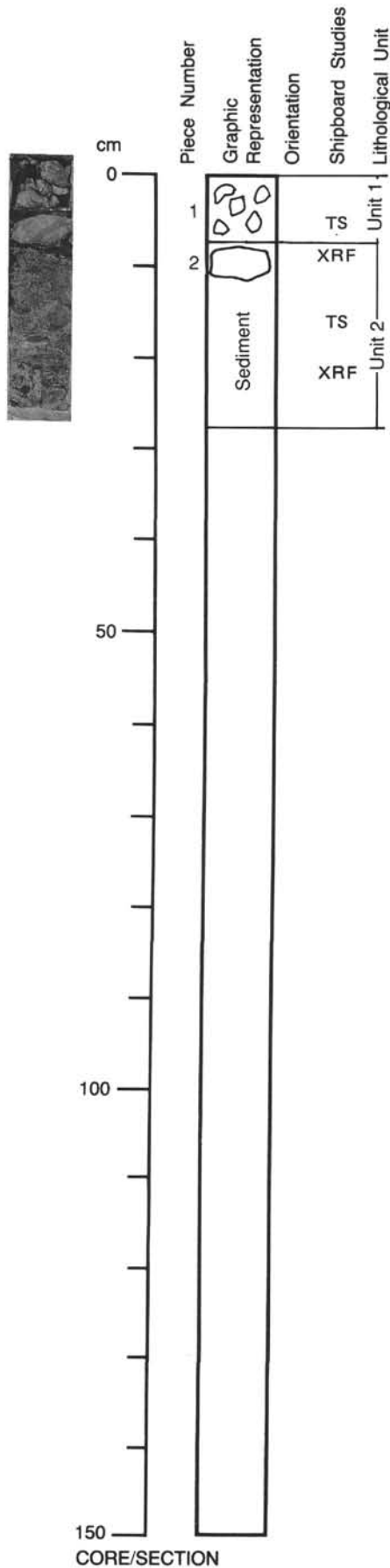
 Clinopyroxene - Mode: 3-5%.
 Crystal size: 0.05-0.1 mm.
 Crystal shape: Equant.
 Crystal orientation: Rosettes and clusters.
 Percent replacement: 0-10%.

 Glass - Mode: 25%.
 Crystal size: Not visible.
 Crystal shape: Blebs.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
SECONDARY MINERALOGY:
 Predominantly chlorite and clay (smectite?).
 Total percent: 35-40%.
 Texture: Patchy replacement especially of glass.
 Vein material: Pale-green (chlorite and clay) veins (<0.1 mm wide) are randomly oriented.

125-778A-5R-1

UNIT 2: METABASALT

Pieces 1 (multiple fragments) and 2



COLOR: Dark green (5G 3/2).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Fine-grained aphyric basaltic protolith, no vesicles seen; primary sub-ophitic texture preserved.

Plagioclase - Mode: 60%.

Crystal size: <0.1 mm.

Crystal shape: Subhedral.

Crystal orientation: Not visible.

Percent replacement: 100%.

Clinopyroxene - Mode: 40%.

Crystal size: <0.01 mm.

Crystal shape: Subhedral.

Crystal orientation: Not visible.

Percent replacement: 100%.

SECONDARY MINERALOGY:

Clay and chlorite.

Total percent: 100%.

Texture: Very fine-grained.

Vein material: Numerous quartzose veins (1-2 mm wide).

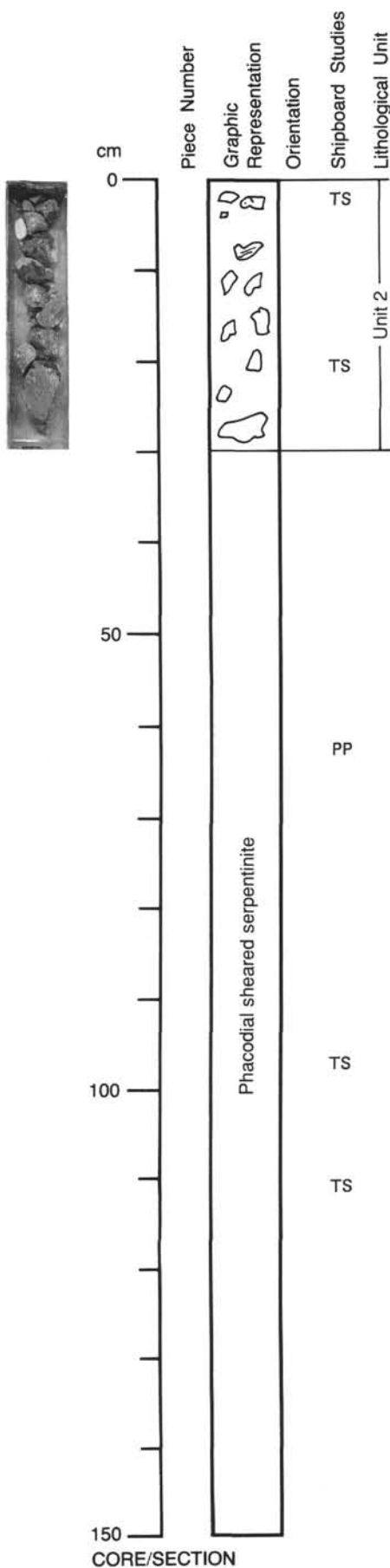
ADDITIONAL COMMENTS: One possible phosphorite clast is present, 2 cm in size, white color (10YR 8/2); Piece 2 is a phacoidal clast in sheared serpentine.

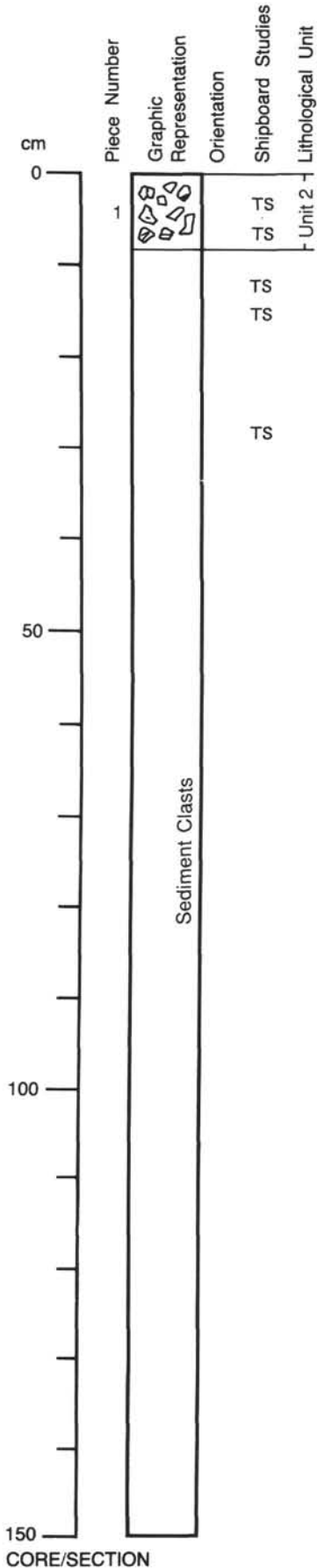
125-778A-6R-1

UNIT 2: METABASALT

Piece 1 (multiple fragments)

COLOR: Dark green (5G 3/2).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 In thin section, relict igneous groundmass textures appear to be preserved (hence "metabasalt" name for these fragments).
SECONDARY MINERALOGY:
 Predominantly amphibole, plagioclase and chlorite.
 Total percent: 100%.
 Texture: Fine- to medium-grained.
 Vein material: Thin <1-mm carbonate, chlorite and albite veins.
ADDITIONAL COMMENTS: One piece of red (10R 4/4) massive coarse-grained (<0.5 mm) siliceous rock possibly chert with white-gray veins (<1 mm wide).





125-778A-7R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1A and 1B

COLOR: Dark blue gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Weakly foliated.
PRIMARY MINERALOGY:
 Olivine - Mode: 70%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Orthopyroxene - Mode: 29%.
 Crystal size: 1-2 mm.
 Crystal shape: Anhedral-elongate.
 Crystal orientation: Weakly foliated.
 Percent replacement: 50-100%.
 Cr-spinel - Mode: 1%.
 Crystal size: 0.5-1 mm.
 Crystal shape: Ragged.
 Crystal orientation: Some stringers.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine, dusty magnetite.
 Total percent: 84-90%.
 Texture: Bastite and mesh.
 Vein material: Minor dark green and white veins throughout.
ADDITIONAL COMMENTS: Pieces are slickensided; n.b. Pieces 1C to 1I are described in record 125-778A-7R-01, top = 02.

UNIT 2: METABASALT

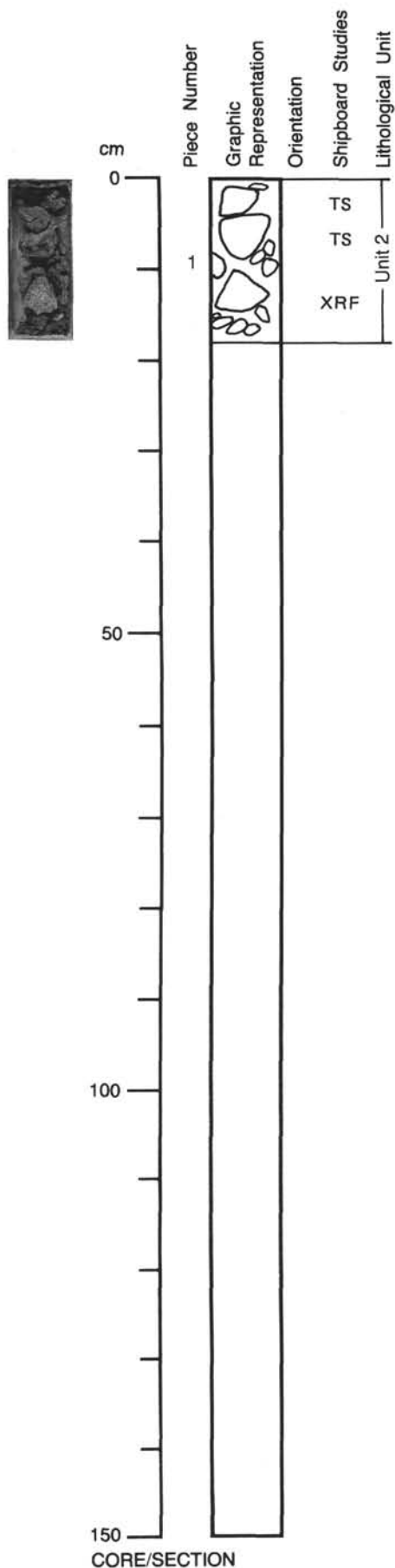
Pieces 1C to 1I

COLOR: Gray-green (5G 4/2) to 10GY 5/2.
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 Very fine-grained, plagioclase-phyric, glassy basaltic protolith.
 Plagioclase - Mode: <3%.
 Crystal size: 0.5-3 mm.
 Crystal shape: Lath.
 Crystal orientation: Not visible.
 Percent replacement: 0-100%.
 Spinel - Mode: <1%.
 Crystal size: 0.1-0.5 mm.
 Crystal shape: Equant.
 Crystal orientation: Disseminated.
 Percent replacement: 0%.
 Glass - Mode: 5-30%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 80-100%.
SECONDARY MINERALOGY:
 Chlorite, epidote and clay.
 Total percent: 80%.
 Texture: Very fine-grained.
 Vein material: Minor calcite veins <1 mm wide.

125-778A-7R-CC

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Piece 1 (multiple fragments)

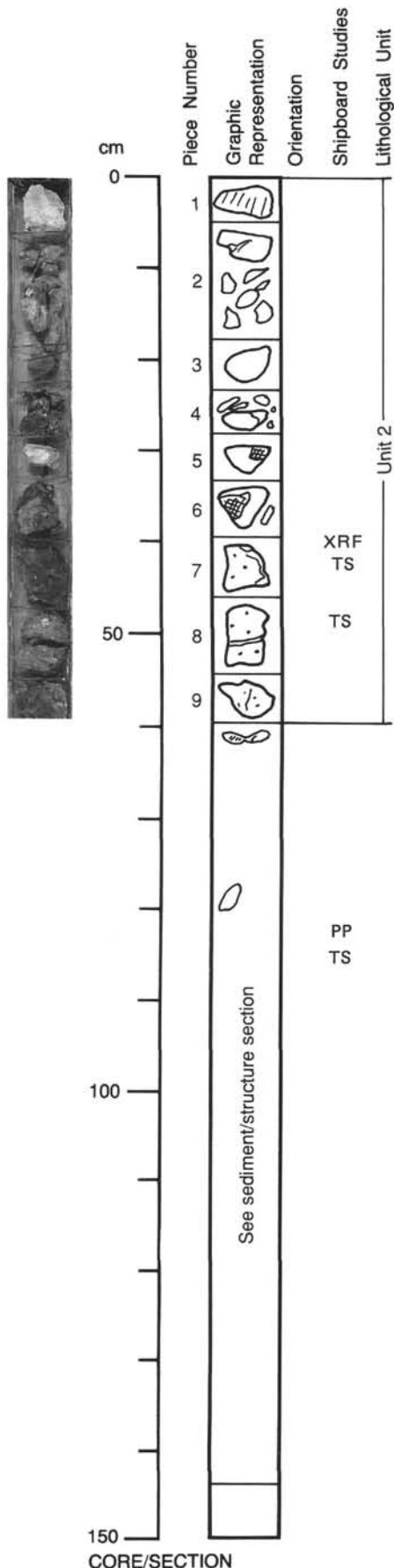


COLOR: Grayish green (5G 4/2).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage and kink-banding on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-80%.
 Crystal size: 0.7-1.5 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: 99%.

 Orthopyroxene - Mode: 20-30%.
 Crystal size: 0.3-0.5 mm.
 Crystal shape: Anhedral.
 Crystal orientation: Not visible.
 Percent replacement: 10-20%.

 Spinel - Mode: <3%.
 Crystal size: <0.5 mm.
 Crystal shape: Rounded-elongate.
 Crystal orientation: Arranged in trains.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine and dusty magnetite.
 Total percent: 80-85%.
 Texture: Mesh and bastite.
 Vein material: White vein (0.1 mm wide), bluish on fracture surfaces.

125-778A-8R-1



UNIT 2: TALC-SERPENTINE

Piece 1 and 2

COLOR: Mottled white to gray (1.5YR 8/0 to 6/0).
LAYERING: Crudely banded.
DEFORMATION: Brittle fracture sub-parallel to banding, extensive in Piece 1; slickensides parallel to long axis of Piece 2 and some brittle fracturing within 3 mm of surface of clast.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Talc, serpentine, traces of disseminated magnetite.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: N/A.

UNIT 2: SERPENTINITE

Pieces 3, 4 and 6

COLOR: Very dark greenish gray (10Y 3/1) to black (7.5YR 2/0).
LAYERING: Not visible.
DEFORMATION: Some sheared and foliated pieces.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Serpentine, talc, disseminated magnetite.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: None present.

UNIT 2: VEIN CALCITE WITH ALTERED LITHIC FRAGMENTS

Piece 5

COLOR: White to light greenish gray (2.5Y 6/2 to 2.5Y 8/0).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 Aggregates of drusy calcite with lithic fragments consisting of 80% epidote-20% serpentine-trace oxides.
 Calcite - Mode: 100%.
 Crystal size: <1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Secondary calcite, epidote and serpentine.
 Total percent: 100%.
 Texture: In lithic fragments only, fine-grained.
 Vein material: None.
ADDITIONAL COMMENTS: Irregular contact between vein calcite and lithic fragments.

125-778A-8R-1 (continued)

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 7 to 9

COLOR: Dark greenish gray (10Y 5/1).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage on orthopyroxene; elongate spinels in trains and some elongate orthopyroxene parallel to spinel trains.

PRIMARY MINERALOGY:

Olivine - Mode: 80-85%.

Crystal size: 3-5 mm.

Crystal shape: Anhedral.

Crystal orientation: Not visible.

Percent replacement: 90-100%.

Orthopyroxene - Mode: 15-20%.

Crystal size: 2-5 mm.

Crystal shape: Anhedral-elongate.

Crystal orientation: Elongate parallel to spinel trains.

Percent replacement: 80-100%.

Spinel - Mode: <2%.

Crystal size: <1 mm.

Crystal shape: Equant-elongate.

Crystal orientation: Arranged in trains.

Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine, dusty black magnetite.

Total percent: 80-99%.

Texture: Mesh and bastite.

Vein material: Some thin veins (<0.3 mm wide) filled with amorphous black serpentine; also minor (<1.0-mm-wide) chrysotile veins.

125-778A-9R-1

UNIT 2: SERPENTINIZED HARZBURGITE/DUNITE

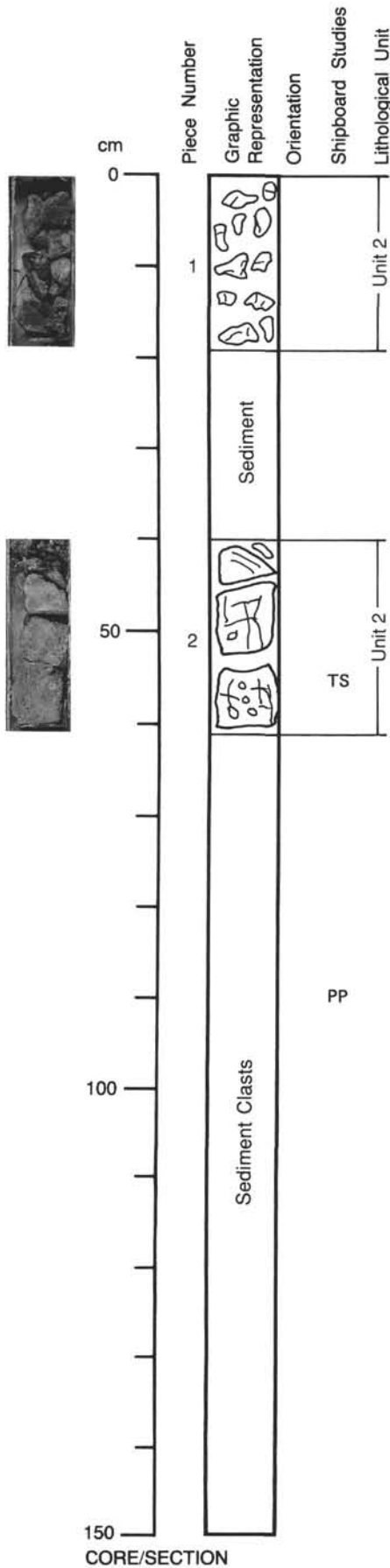
Piece 1 (multiple fragments)

COLOR: Dark green black (10GY 3/2).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Orthopyroxene - Mode: 10-20%.
 Crystal size: 2-3 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Spinel - Mode: Trace.
 Crystal size: <0.1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine and dusty magnetite.
 Total percent: 100%.
 Texture: Bastite in some patches.
 Vein material: Serpentine (+ calcite?), <1 mm wide, scattered throughout pieces.
ADDITIONAL COMMENTS: Two small fragments (1 - 1.5 cm) have small patches of unidentified dark red (2.5YR 3/4) mineral present.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 2 (multiple fragments)

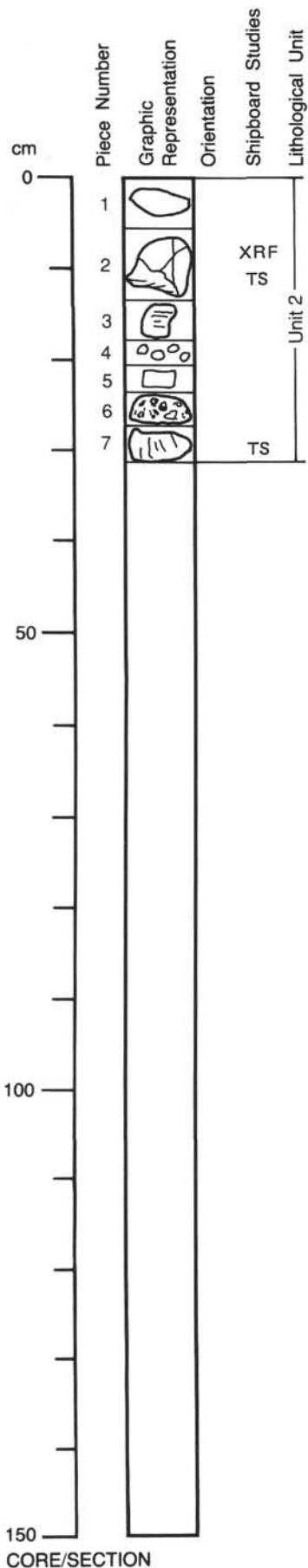
COLOR: Green gray (5G 4/2).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Orthopyroxene - Mode: 20-30%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: Bastite present in some areas.
 Vein material: None.



125-778A-9R-CC

UNIT 2: METASEDIMENT

Pieces 1 to 7

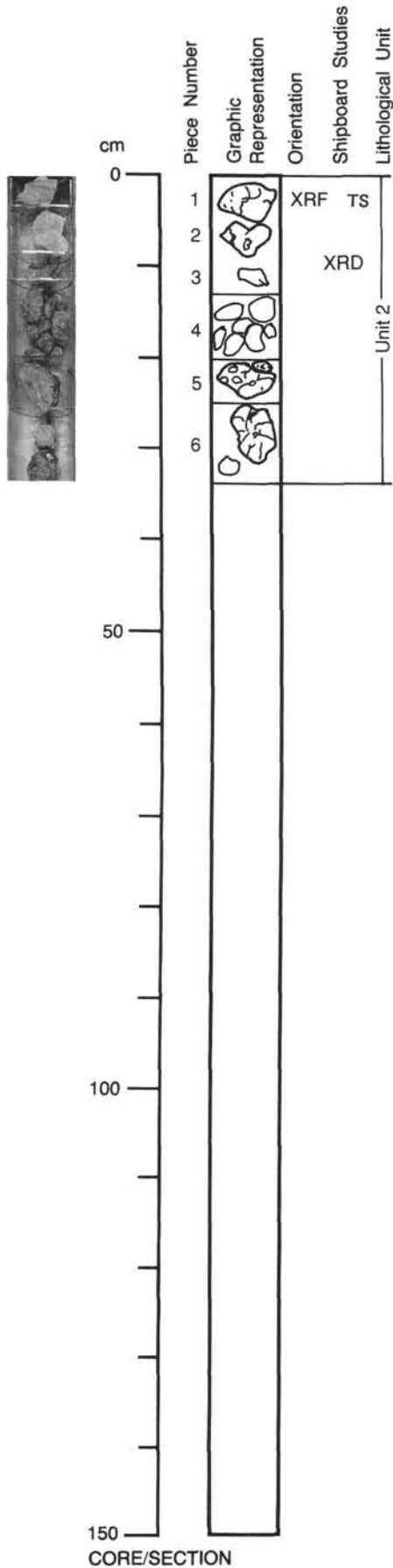


COLOR: Grayish green (5G 5/2) to dark red (10R 3/6).
LAYERING: Crude layering <2 cm wide.
DEFORMATION: Pinch-and-swell structures, brecciation and recementation.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Chlorite, calcite, clay and limonite.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: Thin veins of calcite and chlorite (<0.2 mm wide) scattered throughout pieces; possibly some thin talc veins also.

125-778A-10R-CC

UNIT 2: METABASALT

Pieces 1-6



COLOR: Light greenish gray (5G 7/2 to 6/2) to reddish brown (2.5YR 4/4).

LAYERING: Not visible.

DEFORMATION: Slight brecciation.

PRIMARY MINERALOGY:

Plagioclase - Mode: 40-55%.
 Crystal size: <0.05 mm.
 Crystal shape: Lath.
 Crystal orientation: Felted.
 Percent replacement: 100%.

Pyroxene - Mode: 45-60%.
 Crystal size: <0.05 mm.
 Crystal shape: Granular.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Clay and chlorite.
 Total percent: 85%.
 Texture: Very fine-grained, micro-felted texture.
 Vein material: Early generation of deformed, black serpentine-filled veins; second generation of fracture filling of very light greenish gray to white serpentine and coarsely crystalline drusy calcite.

125-778A-11R-1

UNIT 2: SERPENTINITE

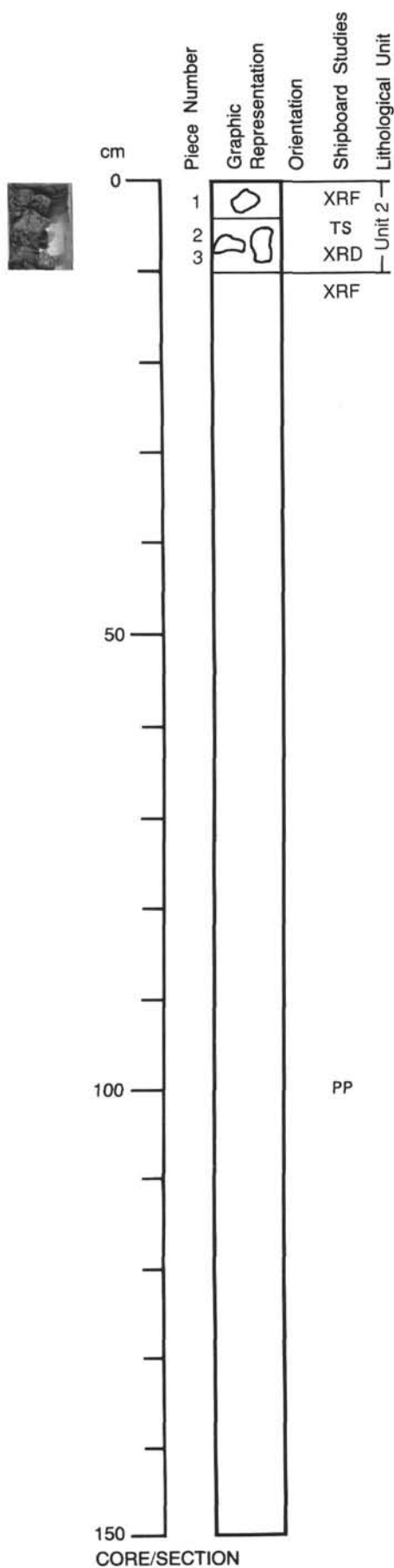
Piece 1

COLOR: Black (2.5YR 2.5/0) with alteration patches of dark green (10GY 5/2).
LAYERING: Not visible.
DEFORMATION: Sheared and folded.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: 1 - 3% of pieces are filled with veins (1 mm wide) of green serpentine (10GY 7/2), randomly oriented.
ADDITIONAL COMMENTS: Rounded clasts 2.5 cm in diameter.

UNIT 2: METABRECCIA

Piece 2 (multiple fragments)

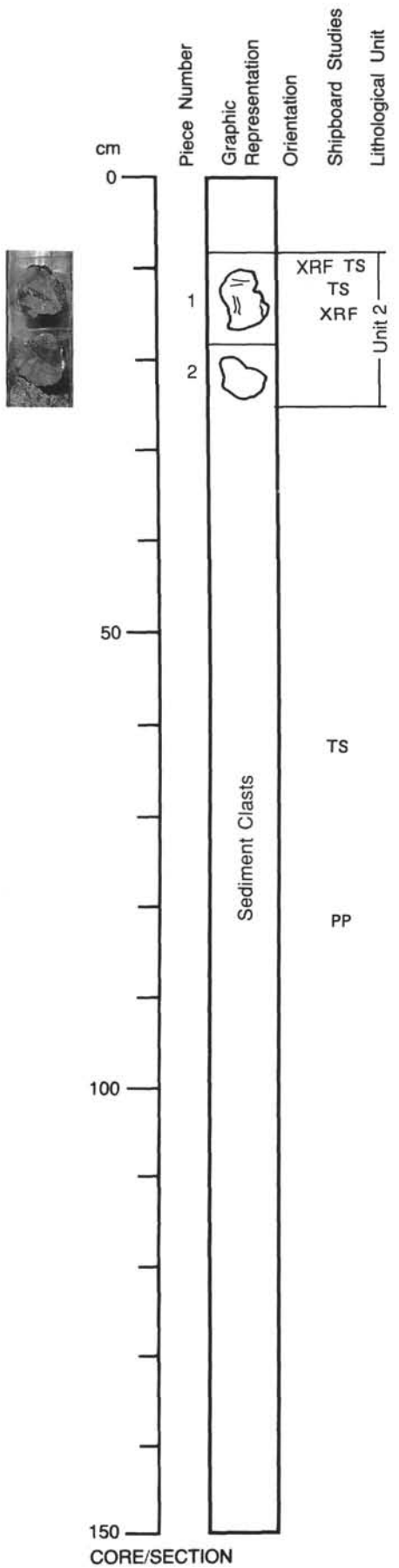
COLOR: Pale gray green (10GY 7/2 to 5G 8/2).
LAYERING: Not visible.
DEFORMATION: Brecciated and recemented.
PRIMARY MINERALOGY:
 Brecciated clasts are very fine-grained and may have been basaltic.
SECONDARY MINERALOGY:
 Clay, chlorite.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: 2 - 4 % of pieces are formed by 1 to 2-mm-wide veins, filled with green (10GY 7/2) material, possibly serpentine; veins are randomly oriented.
ADDITIONAL COMMENTS: Phacoidal clasts 3 by 1.5 cm.



125-778A-13R-1

UNIT 2: METABASALT

Pieces 1 and 2



COLOR: Gray (2.5YR 6/0).

LAYERING: Not visible.

DEFORMATION: Heavily veined to brecciated.

PRIMARY MINERALOGY:

Fine-grained to glassy groundmass, primary minerals not visible.

SECONDARY MINERALOGY:

Clay, chlorite and serpentine with subsidiary carbonate.

Total percent: 100%.

Texture: Very fine-grained.

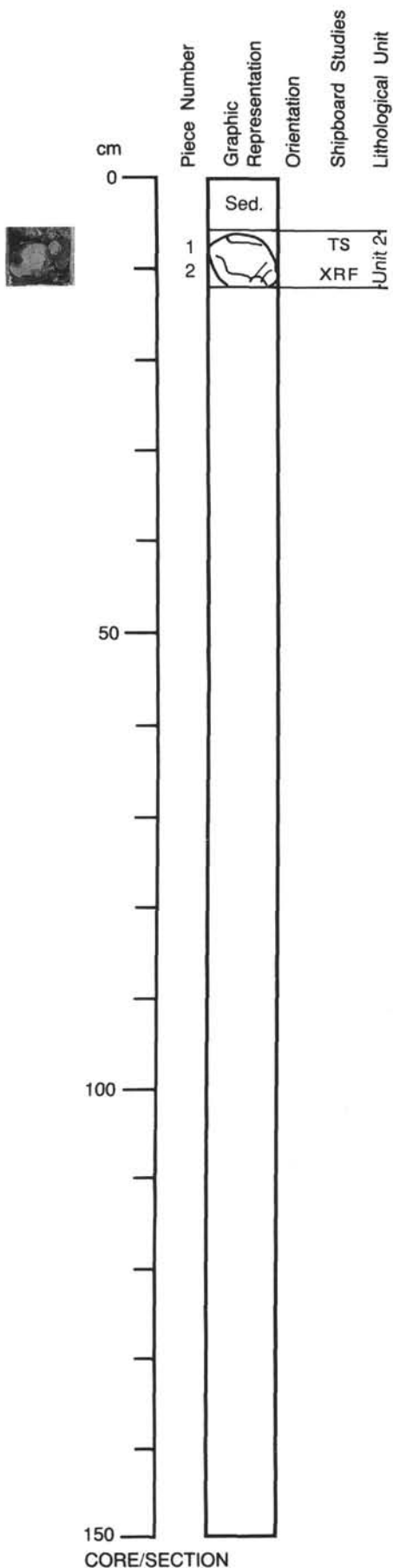
Vein material: 5-7% of the pieces are formed by two generations of veins: 1st generation 1.5-2 mm wide, filled with blue-green (5G 7/1) mineral oriented sub-perpendicular to long axis of piece; 2nd generation veins form 4-5% of the pieces, filled with white carbonate oriented subparallel to long axis of piece.

ADDITIONAL COMMENTS: Phacoidal to subangular pieces 7 by 4 cm to 6 cm wide.

125-778A-13R-2

UNIT 2: SERPENTINITE AND METAVOLCANICLASTIC

Pieces 1-2



COLOR: Light brownish gray (2.5Y 6/2) to dusky red (10R 3/3).

LAYERING: Not visible.

DEFORMATION: Some fragments are sheared.

PRIMARY MINERALOGY:

Not visible, very fine-grained matrix with minute (<0.5 mm) clasts.

SECONDARY MINERALOGY:

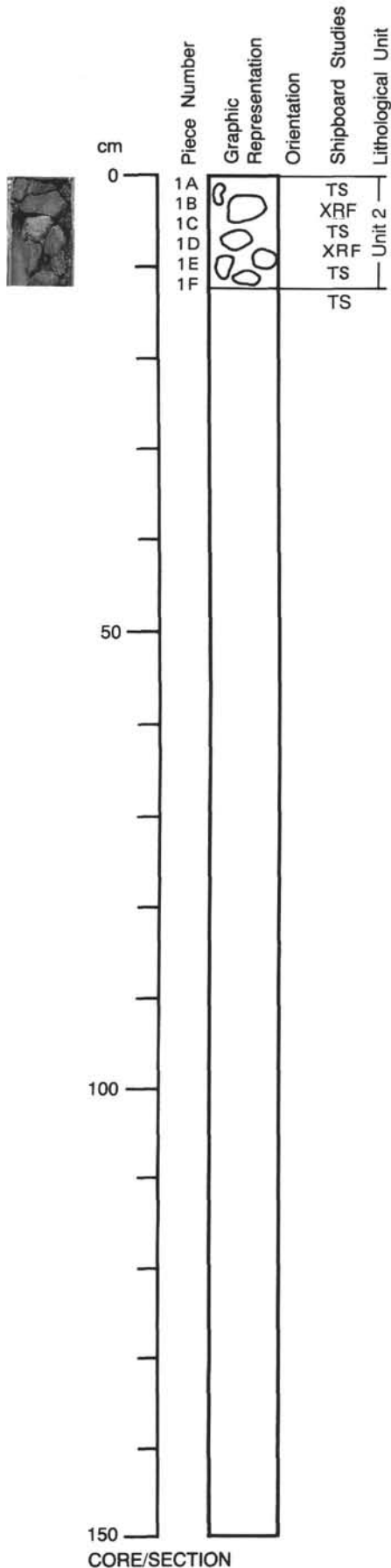
Serpentine, talc, magnetite; there is also hematite staining pervasively penetrating the pieces.

Total percent: 100%.

Texture: Some pieces have a soapy feel, possibly talcose.

Vein material: Randomly oriented (<1 mm wide) filled with serpentine or chlorite.

125-778A-13R-CC



UNIT 2: METABASALT

Pieces 1A and 1B

COLOR: Light gray to gray (10YR 6/1 to 5Y 5/1).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 Aphyric fine-grained groundmass with felted feldspar fabric.
SECONDARY MINERALOGY:
 Very fine-grained, probably saussuritized.
 Total percent: 100%.
 Texture: Very fine-grained.
 Vein material: 1% of pieces are cut by 0.1 to 0.5-mm-wide, subparallel to anastomosing veins of carbonate and serpentine or chlorite.

UNIT 2: METASEDIMENT BRECCIA

Piece 1C

COLOR: White (2.5Y 8/0 to 5Y 5/3).
LAYERING: Not visible.
DEFORMATION: Brecciated.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Serpentine, epidote, oxides.
 Total percent: 100%.
 Texture: Coarse-grained, crystal size 1-7 mm.
 Vein material: None.

UNIT 2: AMPHIBOLITE SANDSTONE

Pieces 1D and 1E

COLOR: Gray (5Y 5/1).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY:
 Crossite reported in thin-section description.
 Hornblende - Mode: 10%.
 Crystal size: <0.5 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Chlorite.
 Total percent: 90%.
 Texture: Fine-grained.
 Vein material: None.

125-778A-1R-01 (19-22 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Altered serpentine debris flow

GRAIN SIZE: "Tectonite", but possible soft sediment

TEXTURE: "Melange"-pure shear layer, parallel extension

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	N/A	90-95	N/A		N/A	Mesh texture.
Spinel	N/A	1	N/A		N/A	
Orthopyroxene	N/A	5-10?	N/A		N/A	Bastite texture.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT		REPLACING/ FILLING			COMMENTS
Clays	20-30					
Serpentine	70-80				Chrysotile and/or lizardite.	
Magnetite	1		Spinel		In vein.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Soft "sediment"-unlithified as recovered original textures of serpentinite are preserved in clasts. No piece number given.

125-778A-2R-01 (Piece 2, 57-59 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.5-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	<0.1	85	Not visible		Anhedral	Altered to serpentine; present as grain in spinel.
Clinopyroxene	.2-.3	.2-.3	0.5		Subhedral-anhedral	Clot and patch, some are twinned.
Spinel	.5-1	.5-1	0.5		Euhedral-anhedral	
Orthopyroxene	5	15	4		Euhedral-subhedral	Altered to serpentine (bastite); has (100) clinopyroxene lamellae.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT		REPLACING/ FILLING			COMMENTS
Clays	15		Olivine, orthopyroxene, serpentine			As dusty brown clay throughout slide; anastomosed veins (<0.5 mm wide) are common.
Carbonate	<1		Vein			<1-mm-long veins of possible carbonate material.
Serpentine	83		Olivine, orthopyroxene			Lizardite and/or chrysotile after olivine, orthopyroxene.
Magnetite	1		Spinel, olivine			Fine-grained to 0.3 mm after olivine and orthopyroxene.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This is a serpentinized harzburgite which may be relatively rich in clinopyroxene and Cr-spinel. Orthopyroxene shows wavy extinction with kink-banding parallel to (100), deformed. Anhedral spinel, not aligned; contains olivine occasionally.

SITE 778

125-778A-2R-01 (Piece 5,74-75 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.3-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	8	90	4		Anhedral	Altered to mesh serpentine.
Clinopyroxene	<0.1	<0.1	0.3		Subhedral-anhedral	As a patch in an orthopyroxene and as exsolution lamellae.
Spinel	0.5	0.5	0.7	Cr-rich	Euhedral-anhedral	Reddish brown; deformed.
Orthopyroxene	8	10	2		N/A	Has (100) exsolution lamellae of clinopyroxene; wavy extinction, altered to bastite serpentine.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT	REPLACING/ FILLING				COMMENTS
	30					Dusty fine-grained brown clay throughout slide. Anastomosed veins are common (<0.5 mm wide).
Serpentine	50					Lizardite and/or chrysotile after olivine, orthopyroxene; flasers of mesh textured, partially serpentinized olivine are aligned and separated by sheared serpentinite and brucite.
Brucite	1					Associated with serpentine.
Magnetite	3					<0.03 mm; altered from spinel(?); associated with serpentine.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Fresher sample than 778A-2R-01 (57-59 cm); spinel is euhedral (some are anhedral) rather than ragged as in 2R-01 (57-59 cm). Considerably more olivine and orthopyroxene. This rock shows two deformation episodes: 1) high P+T ductile, i.e. mantle fabric deforming orthopyroxene, clinopyroxene + spinel; 2) post-serpentinization brittle shearing. Could be called tectonite.

125-778A-2R-01 (Piece 6,78-81 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harburgite (tectonite)

GRAIN SIZE: 0.05-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	10	80	2	Fo 90	Anhedral	2V=+90; mesh texture serpentine after olivine.
Clinopyroxene	<0.1	<0.1	0.05	Di	Subhedral-anhedral	Clot in shape.
Spinel	0.5	0.5	0.3	Cr	Euhedral-subhedral	Reddish brown.
Orthopyroxene	15	20	4	Er	N/A	2V=+ 85; bastite serpentine after orthopyroxene exsolution lamellae of 100 clinopyroxene.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	20					Dusty brown clay throughout slide; anastomosed veins are common.
Carbonate	<1-1	Veins				Located in interior of veins; short vein segments.
Serpentine	52	Olivine, orthopyroxene				Lizardite and/or chrysotile after orthopyroxene and olivine.
Magnetite	2					Fine-grained to 0.3 mm; located throughout slide but also concentrated in anastomosing veins.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Considerable amount of fresh silicate (olivine, orthopyroxene, clinopyroxene) preserved in this sample. Cr-spinel is beautifully euhedral (cubes and octahedra); not stretched out, but some grains are "wormy". Orthopyroxene has wavy extinction.

SITE 778

125-778A-4R-01 (Piece 1,1-2 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.02-0.5 mm

TEXTURE: Subophitic, aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
N/A	N/A	N/A	N/A		N/A	
GROUNDMASS						
Plagioclase	5-10	50-60	0.15-0.5		Laths, euhedral	Highly altered (clays, saussuritized). Laths and equant crystals intergrown with plagioclase; moderate alteration.
Clinopyroxene	10-15	15-20	0.1-0.4		Subhedral	
Magnetite/spinel	1-2	1-2	0.03-0.1		Subhedral	Individual euhedral grains to anhedral blebs.
Glass	0	15-20	N/A		N/A	Altered to clays, brown, cloudy.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Clays	40-50	Plagioclase				Dusty, brown, pseudomorphs after plagioclase.
Clays	20-25	Glass, matrix, vesicles				1) after glass-dusty brown, amorphous, 2) after matrix and vesicles patches of bright green clays, the patches are up to 10 mm across.
Chlorite	1-2	Glass, clinopyroxene				In groundmass after palagonite, original glass and margins of clinopyroxene grains.
VESICLES/CAVITIES						
Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
	<1		0.05-0.3	Clays, zeolite	Subround	One or two appear to be gas-rich late fluids.

COMMENTS: Mylonitic, cataclastic shears parallel to fractures, about 2 mm wide with fine-grained (<0.01 mm) mineralogy. Variable texture throughout 1) equigranular (0.3 mm) abundant laths of plagioclase and clinopyroxene intergrowths (clusters); hollow and swallowtail plagioclase; a few patches of microphenocrysts (0.15 mm, clinopyroxene and plagioclase); One low birefringence straight extinction grain (0.4 mm) (orthopyroxene? olivine?), high relief of plagioclase. In the more crystalline patches
plagioclase:clinopyroxene:groundmass=5:1:3.

125-778A-4R-01 (5-7 cm) OBSERVER: TER WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Tuffaceous mudstone

GRAIN SIZE: <0.4 mm

TEXTURE: Fine-grained, layered

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	N/A	N/A	N/A		N/A	
Plagioclase	5	N/A	<0.4		N/A	
Clinopyroxene	3	N/A	<0.2		N/A	
Magnetite	1	N/A	<0.1		N/A	
Devitrified glass	90	N/A	N/A		N/A	
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
VESICLES/CAVITIES						
Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	
	0					

COMMENTS: A lithic fragment of tuffaceous mudstone partly surrounded by serpentine mudstone. No piece number given.

125-778A-4R-01 (Piece 2,5-6 cm)

OBSERVER: LAG

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Water-lain tuff

GRAIN SIZE: <1 mm

TEXTURE: Fine-grained layered

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	3	N/A	0.5		Euhedral-subhedral (?)	
Plagioclase	3	N/A	0.2-0.5		Euhedral-subhedral	
Clinopyroxene	3	N/A	0.5-1		Anhedral	
Orthopyroxene	Trace	N/A	N/A		N/A	Thin rind or one clinopyroxene grain.
GROUNDMASS						
Ash	~90	N/A	N/A		N/A	Cryptocrystalline with very small plagioclase needles.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	10	Ubiquitous	0.1	None	Angular

COMMENTS: Clast is in contact with serpentine/carbonate sedimentary material. A number of the pyroxene and plagioclase grains have thin reaction zones in contact with the groundmass. One clast is rounded, pyroxene and plagioclase in glass (light brown) probably altered, but appears isotropic, some other clasts almost entirely glass with clay reactions marginally to groundmass.

125-778A-5R-01 (Piece 1,7-10 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.1 mm

TEXTURE: Aphyric, subophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
N/A	N/A	N/A	N/A		N/A	
GROUNDMASS						
Glass	0	10-15	N/A		N/A	Completely altered to clays.
Plagioclase	0	40-55	0.05-0.1		Euhedral-subhedral	Replaced by Ca-poor plagioclase and clays.
Clinopyroxene	5-10	30-35	0.05-0.1		Euhedral-subhedral	Replaced by pale green hornblende.
Spinel	1-2	1-2	<0.01-1		Subhedral	Opaque, black, disseminated.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Chlorite	5-10	Clinopyroxene?				Abnormal interference is typical, associated with clinopyroxene, hornblende.
Albite	2-3	Veins				Numerous, (<0.2 mm wide), twinning.
Sphene	<1					Fine-grained, dusty.
Hornblende	30-35	Clinopyroxene				Pale-green pseudomorphs after clinopyroxene.
Plagioclase	40-55	Plagioclase				Mostly saussuritized; pseudomorphs after plagioclase.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Primary subophitic texture is well preserved, but igneous minerals have been fully replaced by metamorphic (alteration) minerals. No foliation or lineation visible. Metamorphism under low P/T greenschist facies (inferred from mineral assemblage). Two different textures: 1) very fine-grained 2) coarse grain showing clastic texture. See inclusions of one mineral within another (igneous texture). Texture boundary may be primary or metamorphic.

SITE 778

125-778A-5R-01 (18-21 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Debris flow, serpentinous mudstone

GRAIN SIZE: Fine-grained

TEXTURE: Weakly foliate

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING		COMMENTS		
Clays	10			Dusty brownish clay.		
Clays	<2			Slender crystal in serpentinous mudstone, relatively high birefringence.		
Serpentine	80-90					
Brucite	2					
Magnetite	2					

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Foliation defined by micaceous clay minerals is visible. Fragments of brucite crystal are scattered throughout the rock. Where argillaceous materials are predominant, detrital fragments (0.1-0.3 mm) of serpentine are easily distinguished. No piece number given.

125-778A-6R-01 (Piece 1,0-1 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Chert

GRAIN SIZE: Fine-grained (<0.1 mm)

TEXTURE: Massive

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Quartz	>90	N/A	<0.1		Anhedral	Cryptocrystalline, vein has grains 0.1-2 mm.
GROUNDMASS	PERCENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING		COMMENTS		
Clays	5-7			Brownish clay throughout slide.		
Limonite	2			Distributed throughout slide, fine-grained (<0.01 mm).		

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This rock primarily consists of cryptocrystalline quartz and is fragmented into smaller pieces. Brownish clay partly fills among these fragments. Veins composed of coarse-grained quartz run throughout the rock.

125-778A-6R-01 (Piece 1,20-23 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.01 to 1.2 mm

TEXTURE: Blastic, recrystallized, slightly phyrlic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	<5	5-10	0.05-0.1		Laths	Partially (10-100%) by hornblende.
Clinopyroxene	5-10	20-25	0.5-1.2		Originally euhedral	Equant grains 50-90% replaced by hornblende and chlorite.
Spinel	1-2	1-2	0.01-0.05		Subhedral	Random, disseminated.
GROUNDMASS						
Glass and groundmass	0	60-70	N/A		N/A	Completely altered to clays.
Apatite	<<1	<<1	<0.01		Needles	Within plagioclase and clinopyroxene.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	30-50	Glass				
Carbonate	<1	Vein				
Chlorite	5-10	Clinopyroxene, vein			Vein filling.	
Albite	15-20	Plagioclase, glass			Vein filling, matrix.	
Hornblende	30-40	Clinopyroxene			Pale green-green, euhedral to anhedral elongate crystals, smaller than original pyroxene random direction of long direction (0.05-0.1 mm).	
Prehnite	<1					
Pumpellyite	2	Veins, cavities				
Hematite	<1				Along grain boundaries and as patches.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	<1	Disseminated	0.3-0.4	Chlorite, clays, hornblende	Round

COMMENTS: Metamorphosed under greenschist facies condition, abundant faults, partially fragmented. Mineral identification difficult because of alteration and thickness of section.

125-778A-6R-01 (96-99 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinous mudstone, debris flow

GRAIN SIZE: Fine-grained. See close-up photos of 58-70, 115-130.

TEXTURE: Tectonite (soft sediment), melange texture

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Spinel	<2	N/A	N/A		N/A	Brown color.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	10-15					Dusty micaceous mineral, relatively high birefringence, (0.01-0.015).
Serpentine	80-90					Chrysotile and/or lizardite.
Magnetite	<2					

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Ill-sorted. Clusters of coarse-grained (0.3-0.5 mm) serpentine crystals are scattered in the fine-grained (<0.01 mm) serpentine matrix. These clusters are elongated, and trend parallel to the foliation defined by micaceous clay minerals. Intensely deformed and distorted serpentine fragments are often visible. Brittle fracture of large aggregates with micro-normal faults Layer-II extension. No piece number given.

SITE 778

125-778A-6R-01 (110-112 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Pebbly serpentine mudstone

GRAIN SIZE: Fine to very coarse (poorly sorted)

TEXTURE: Tectonite, phacoidal

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	90-95	N/A		N/A	
Clinopyroxene	0	N/A	N/A		N/A	
Spinel	0.5	1	N/A		N/A	
Orthopyroxene	0	5-10	N/A		N/A	Bastite.

GROUNDMASS	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)
N/A	N/A	N/A	N/A

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	10-20		
Carbonate	?		
Magnetite	2		
Serpentine	80-90		Chrysotile and/or lizardite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Microfolding, phacoidal, some layers show parallel extinction. No piece number given.

125-778A-7R-01 (Piece 1,1-2 cm)

OBSERVER: ARC

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt metaboninite breccia

GRAIN SIZE: (0.05-0.2) (original up to 1-2)

TEXTURE: Breccia

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	2	2	0.3		Euhedral	Quench textured with Cr-spinel inclusion; sector zoned.
Plagioclase	<2	<5	0.05- 0.1		Subhedral	
Clinopyroxene	15-25	20-30	0.05-0.2		Subhedral	Chlorite and clay alteration.
Spinel	<<1	<<1	0.01-0.03		Euhedral	Sparse, random distribution.

GROUNDMASS	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMMENTS
Glass/matrix	0	60-70	N/A	Completely altered to clays, appears to have had original quench texture with plumose structures.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	60-70	Glass	Pervasive.
Carbonate	10-15	Rind	Occurs as coating on fragment and veins and splitting quartz veins.
Chlorite	2-5	Glass, clinopyroxene	Isolated patches slightly pleochroic.
Quartz	5-10	Veins	Equigranular (0.1-0.3 mm), some veins appear to be filled with calcite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Breccia of boninitic and basaltic clasts in silica and calcite cement. Basalt: 3-mm in diameter, microphyric with plagioclase and clinopyroxene. Clinopyroxene is distinctly sector-zoned (alkalic). Aphyric, groundmass pyroxene (3-4 mm in diameter); plagioclase in glass; olivine (0.1 mm) with picotite inclusions (may be clinopyroxene, not olivine); plagioclase is skeletal. Boninite: two (or more) 3 to 4-mm clasts; plumose pyroxene in a recrystallized, originally glassy, matrix; microphenocrysts of clinopyroxene.

125-778A-7R-01 (2-3 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metandesite

GRAIN SIZE: 0.2-0.9 mm (phenocryst 2-3 mm)

TEXTURE: Intergranular, sparsely phyrlic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	0	2-3	2-3		Subhedral	Completely altered, original glass inclusions (single grain).
Spinel	<1	<1	0.01-0.1		Euhedral	Skeletal and small equant grains black, opaque.
GROUNDMASS						
Glass	0	25-35	N/A		N/A	Completely altered to clays.
Plagioclase	2-5	40-55	0.1-0.3		Euhedral-subhedral	Saussuritized, clays subophitic, intergrowth with clinopyroxene.
Clinopyroxene	10-20	15-30	0.1-0.4		Subhedral	30-60% altered to chlorite(?).
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	25-35	Plagioclase, glass				Gray-brown, throughout slide, after interstitial glass.
Carbonate	<2	Vein				
Chlorite	5-10	Clinopyroxene, plagioclase				
Albite	2	Vein				May also be after Ca-plagioclase.
Spene	5	?				?
Saussurite	40-50	Plagioclase				Dusty pseudomorphs after plagioclase may be albitic.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Minor fault is visible. Plagioclase is intensely altered and saussuritized and may be albitic. Section contains many rock fragments, for example clast with quenched crystal. No piece number given.

125-778A-7R-01 (12-16 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.4-10 mm

TEXTURE: Felted and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	70	Not visible		Not visible	Altered to serpentine.
Spinel	1	1	0.4		Anhedral	Reddish color; partly altered to magnetite.
Orthopyroxene	1	29	5-10		Subhedral	Altered to serpentine; some grains with wavy extinction.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Serpentine	96	Olivine, orthopyroxene				Mostly antigorite; might be some minor lizardite/chrysotile but difficult to determine.
Magnetite	2	Olivine, orthopyroxene, spinel				<0.05 mm, scattered throughout slide, associated with the serpentine.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Heavily serpentinized when compared with samples from higher in core. This slide shows a nice "felted texture" defined by the antigorite blades which have altered from the olivine and orthopyroxene. No piece number given.

SITE 778

125-778A-7R-01 (13-16 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-10 mm

TEXTURE: Felted (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	N/A	80	not visible		Not visible	No mesh texture visible; altered to serpentine.
Spinel	<1	1	0.1-1	Cr?	Anhedral	Red brown; partly altered to magnetite.
Orthopyroxene	<1	19	5-10		Subhedral-anhedral	Altered to serpentine (bastite).
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 2	REPLACING/FILLING				COMMENTS
Serpentine	95	Olivine, orthopyroxene				Fine grained and distributed throughout slide. Difficult to tell if it is fine-grained dark clays or fine-grained magnetite.
Magnetite	2					Mostly antigorite; might be minor lizardite and/or chrysotile, but difficult to determine. (<0.05 mm - 0.1 mm), scattered throughout slide, associated with the serpentine, partly altered from spinel.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Heavily serpentinized when compared with samples from higher in core. Shows a nice "felted texture" defined by the antigorite blades which have formed after olivine and orthopyroxene. No piece number given.

125-778A-7R-01 (25-28 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.5-2 mm

TEXTURE: Weakly sheared?

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	85-90	Not visible		Not visible	No mesh visible, altered to serpentine.
Spinel	<1	1	0.5		Anhedral	Chromian spinel.
Orthopyroxene	0	10-15	1-2		Subhedral	Minor bastite texture (altered to serpentine).
SECONDARY MINERALOGY						
Clays	PERCENT 3	REPLACING/FILLING				COMMENTS
Serpentine	95-97					Dusty and scattered throughout slide. Difficult to determine the type of serpentine minerals present; assumed to have altered from olivine + orthopyroxene.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Aggregates of dusty clay make weakly foliation. No piece number given.

125-778A-7R-02 (55-60 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-1 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	<0.01	85?	0.1		Subhedral	Only visible as small inclusion in spinel altered to serpentine.
Spinel	<1	<1	0.05-0.1		Subhedral-anhedral	Red color-chromite?; altered to magnetite?
Orthopyroxene	<1	15?	0.5-1		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	10					Located as fine-grained material in veins; rusty brown. 0.05 to 0.06 mm plus dusty grains distributed throughout slide; altered from spinel? and as serpentinization by-product.
Magnetite	2					
Serpentine	87					Mostly lizardite and/or chrysotile intermixed throughout slide; chrysotile veins (<1 mm wide) are intermixed with clays.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This rock is originally harzburgite. Orthopyroxene bastite is common. Most of spinel were altered to opaque mineral (probably magnetite). Veins of clays and chrysotile are well developed. An unknown mineral of low refractive index and high retardation occurs as a rare vein filling. Olivine is too small to identify exactly, and also resembles diaspore; poor mesh texture is visible in areas. No piece number given.

125-778A-7R-02 (74-75 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: <2 mm

TEXTURE: Bastitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	72-77	Not visible		Not visible	Altered to serpentine completely.
Spinel	<1	3	0.5		Subhedral-anhedral	Altered to magnetite.
Orthopyroxene	0	20-25	0.5-2		Subhedral-anhedral	Altered to serpentine, + or - chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	<1					Dusty brown clay distributed throughout slide and associated with the serpentine.
Chlorite	<1					Anhedral patches (<0.01 mm) and scattered throughout slide. Associated with serpentine.
Serpentine	92	Olivine, orthopyroxene				Possibly antigorite and chrysotile. No good mesh texture visible but some good bastite and "comb" texture.
Magnetite	2	Olivine, orthopyroxene, spinel				From dusty grains to 0.5-mm anhedral grains. Distributed throughout slide; partly altered from spinel.
Brucite?	5					Found in mm-sized veins and along some cleavages. Associated with serpentine.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Bastite texture helps define kinking of orthopyroxene grains, deformation of grains. Pyroxenes appear to be replaced by bladed antigorite crystals as well as fibrous chrysotile. Brucite determination needs further analysis. There are some poor mesh-looking areas that may indicate presence of lizardite(?). No piece number given.

SITE 778

125-778A-7R-CC (0-2 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.5-2 mm

TEXTURE: Felted and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	77-82	Not visible		Not visible	Completely altered to serpentine.
Spinel	2	3	0.5-2	Cr?	Subhedral-anhedral	Red, altered to magnetite, elongate and stretched.
Orthopyroxene	0	15-20	0.5-2		Anhedral	Altered to serpentine bastite texture.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	5		REPLACING/ FILLING			COMMENTS Dusty brown clay distributed throughout slide; as an alteration of serpentine?
Magnetite	3		Olivine, orthopyroxene, spinel			Dusty, 1-mm anhedral grains distributed throughout slide, but appear elongated into trains which follow serpentine fibers.
Serpentine	90		Olivine, orthopyroxene			Possibly antigorite and chrysotile; have bladed felted texture, minor bastite; minor "comb" texture.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: N.B. Two slides have been made from fragments in this interval. In this slide the spinels are not rimmed by blue-green to yellow pleochroic chlorite. The elongation of the magnetite trains may indicate late-stage serpentinization or possibly tectonism. The slide consists of 90% felted blades of serpentine. No piece number given.

125-778A-7R-CC (0-3 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.5-2 mm

TEXTURE: Felted and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	70-80	Not visible		Not visible	Completely altered to serpentine and magnetite.
Spinel	2-3	3	0.5-2	Cr?	Subhedral-anhedral	Red-brown, altered to chlorite and magnetite.
Orthopyroxene	0	20-25	0.5-2		Subhedral-anhedral	Altered to serpentine bastite texture.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	10		REPLACING/ FILLING			COMMENTS Dusty red-brown, scattered throughout slide; as an alteration product of serpentine.
Chlorite	2					Blue green-yellow pleochroic. Usually found rimming spinel and also in patches throughout slide and along serpentine fibers and blades.
Serpentine	83-84		Olivine, orthopyroxene			Possibly antigorite and/or chrysotile; good bastite texture and bladed "comb" texture; some lizardite, but identification difficult.
Magnetite	2		Olivine, orthopyroxene, spinel			From dusty grains to 0.5-mm anhedral grains. Distributed throughout slide.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Spinel are stretched/elongated and strung out in parallel strings. They are rimmed by chlorite(?). Possibly relic kink banding in bastitic orthopyroxene; possibly minor mesh texture in portions of slide. N.B: Two slides have been made from fragments in this interval. One is more orthopyroxene-rich and less serpentinized than the other. No piece number given.

125-778A-8R-01 (Piece 7,39-40 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-5 mm

TEXTURE: Moderate mesh; sheared

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	75-82	Not visible		Not visible	Completely altered to serpentine.
Clinopyroxene	Trace	1-2	<0.05		Subhedral-anhedral	As exsolution lamellae and some trace patches.
Spinel	2-3	2-3	0.1-0.7	Cr?	Subhedral-anhedral	Red, altered to magnetite and possibly some chlorite.
Orthopyroxene	1-2	15-20	2-5		N/A	Altered to serpentine bastite; exsolution lamellae of clinopyroxene beautifully deformed.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	5-10					Dusty brown clay distributed throughout the slide.
Chlorite	2-3	Orthopyroxene, serpentine				As anhedral patches mixed in with serpentine.
Sphene	Tr?					Anhedral 0.05 mm grains, high relief, sugary-brown color.
Serpentine	79-87	Olivine, orthopyroxene				Lizardite and/or chrysotile showing mesh-like texture.
Brucite	2					In veins which parallel main fabric; intergrown with serpentine; XRD determination is necessary.
Magnetite	1	Spinel, olivine, orthopyroxene				Dusty to 0.3 mm; distributed along with serpentine.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Spinels show anhedral dumbbell shape. They appear somewhat elongate in the direction of the main tectonized fabric. Some spinels show curved fractures in the direction of the fabric. A tectonized fabric runs through slide which is paralleled by brucite and serpentine veins (<0.2 mm wide), elongate trains of spinel + magnetite and elongation of mesh texture. Wavy extinction in bastites.

125-778A-8R-01 (Piece 8,47-48 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-0.7 mm

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	85	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	1	1	0.1-0.6	Cr?	Anhedral-elongate	Red-brown, arranged in stringers.
Orthopyroxene	0	14	0.5-0.7		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	5					Dusty brown clay distributed throughout slide but somewhat concentrated in veins and edges of mesh texture.
Chlorite	Trace	Orthopyroxene, serpentine				Dusty to <0.05-mm anhedral patches distributed within serpentine and also present in minor veins(?).
Serpentine	92-93					Lizardite and/or chrysotile forming mesh texture; almost completely replacing the primary mineralogy.
Magnetite	1-2	Spinel, olivine, orthopyroxene				Dusty to 0.1 mm, distributed across the slide.
Brucite	Tr?					Intergrown with serpentine in small (0.1-mm-wide) veins.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Bastite shows wavy extinction, clearly deformed; some elongate orthopyroxene is aligned parallel to spinel trains; number of crosscutting veins to this foliation. Spinels are anhedral, elongate, sometimes arranged in short stringers. Small (0.1-mm-wide) veins of serpentine w/wo chlorite, w/wo brucite(?) cutting across slide.

SITE 778

125-778A-8R-01 (85-87 cm)

OBSERVER: LAG

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Sheared serpentinite

GRAIN SIZE: <0.1 mm

TEXTURE: Foliated

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Serpentine	99	N/A	N/A		N/A	Replacing olivine primarily (one clear example). One grain of orthopyroxene still visible.
Pennine	N/A	N/A	N/A		N/A	One grain.
Hydrogrossular	N/A	N/A	0.1		N/A	Probably (2-3 grains). (1st generation).
Hydrogrossular	N/A	N/A	0.01		N/A	Numerous aggregates in the foliation (2nd generation).
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Shows well-defined C-S planes. However, there is no true organization recognizable at the scale of this thin-section. Hydrogrossular, clearly follows the foliation, trains of small grains follow folds. No piece number given.

125-778A-9R-01 (57-58 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Altered serpentized harzburgite

GRAIN SIZE: Not given

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	90	N/A		N/A	Mesh texture in serpentinite replacing the olivine.
Clinopyroxene	0	0?	N/A		N/A	
Spinel	1	1	N/A		N/A	
Orthopyroxene	0	10	N/A		N/A	Bastite texture in serpentinite replacing the pyroxene.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	

SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING	COMMENTS
Clays	10-20		
Serpentine	80-90		Chrysotile and/or lizardite.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Texture of pseudomorphs are preserved. No piece number given.

125-778A-9R-02 (11-13 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Pebbly serpentinous mudstone (debris flow)

GRAIN SIZE: Fine to coarse

TEXTURE: Tectonite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Spinel	<2	N/A	N/A		N/A	Cr-spinel, dark red.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	20-30		Colorless high birefringence (> 0.03).
Chlorite	Trace		
Serpentine	70-80		
Talc	<2		

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Slender crystals of micaceous mineral (illite?) are abundant. Ill-sorted. No piece number given.

125-778A-9R-CC (Piece 2,9-12 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.1 mm

TEXTURE: Intersertal, sparsely phyrlic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	25-35	N/A		N/A	Completely altered to brown clays.
Plagioclase	0	10-30	0.04-0.1		Subhedral, laths	Completely altered to clays.
Clinopyroxene	20-30	25-35	0.05-0.15		Subhedral, lath-equant	20-60% altered to chlorite and clays, locally recrystallized.
Spinel	<1	<1	0.01-0.1		Euhedral-subhedral	Throughout slide, black, opaque.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	55-65		Brown, throughout rock after glass and pseudomorphs after plagioclase.
Carbonate	<1	Vein	(0.05 to 0.2 mm wide), in-filled by talc.
Chlorite	<5	Glass, clinopyroxene	After glass and clinopyroxene, slightly birefringent, throughout.
Pumpellyite	<2	Vein	Pale-green, strong optical dispersion, high refractive index.
Talc	1-3	Veins	Anastomosing veins. Patches, high-birefringent, low-refractive index, throughout rock, no preferred orientation (0.05 to 0.2 mm wide).

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	<2	Throughout	0.1-0.5	Chlorite, pumpellyite	Irregular

COMMENTS: Talc veins may be associated with serpentinization of adjoining ultramafic rocks. See filling calcite vein. Veins have no preferred orientation. Large euhedral to subhedral patches may be relict phenocrysts of clinopyroxene(?).

SITE 778

125-778A-9R-CC (Piece 7,28-31 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: <0.01-0.1 mm

TEXTURE: Intersertal, aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	40-50	N/A		N/A	
Plagioclase	0	20-35	<0.04		Subhedral	Relict swallowtail, completely altered with clays pseudomorphing.
Clinopyroxene	10-20	25-30	0.04-0.1		Subhedral-anhedral	Patches and radiating splays mostly altered (clays) rarely pseudomorphed associated with limonite.
Spinels	<1	<1	0.01-0.06		Subhedral	Opaque and black to red-brown. Associated with limonite.
SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING				COMMENTS
Clays	40-60	Glass, plagioclase				Brown, clay occurs throughout slide, poorly defined pseudomorphs after plagioclase. 1-2 %. Green clay occurs as random patches.
Carbonate	<1-1	Cavity				
Zeolites	6	Vein				
Chlorite	<10	Glass, clinopyroxene				As slightly birefringent. Patches throughout slide, poorly defined pseudomorphs after clinopyroxene.
Spinel	2					Dusty.
Pumpellyite	2	Vein				0.02 mm wide.
Limonite	10-25					Along grain boundaries. Veins and patches throughout sample, probably after glass, deep red-brown.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Very fine-grained, even textured (smooth) areas intermixed with fine-grained matrix (40:60) may be alteration or brecciation. Contacts are sharp and frequently lined by limonite. Parts appear to be brecciated and exhibit possibly minor recrystallization. Alteration is quite severe and masks most of the original mineralogy and structure.

125-778A-10R-CC (Piece 1,1-3 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.04-0.15 mm

TEXTURE: Intersertal, sparsely phyrlic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Clinopyroxene	<1	<1	1.2		Euhedral	Single crystal, 10-30% altered.
GROUNDMASS						
Glass	0	15-35	N/A		N/A	Completely altered to clays.
Plagioclase	0	10-40	0.06-0.15		Subhedral, lath	Completely altered to clays, poorly pseudomorphed.
Clinopyroxene	15-25	25-35	0.04-0.12		Subhedral-anhedral	Altered to clays and chlorite.
Spinel/magnetite	<1	<1	0.01-0.04		Subhedral	Black, opaque throughout rock.
SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING				COMMENTS
Clays	50-65	Glass				Brown, some pseudomorphs after plagioclase. Also (1-2%) green in vesicles and patches.
Carbonate	2-4	Veins				Calcite, 0.05 mm wide.
Chlorite	5-15	Clinopyroxene, glass?				Light green, slightly pleochroic.
Magnetite	<<1	Vesicles/cavity				Minute (<0.01-mm) grains in center of chlorite-filled cavities.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	<1	Random	0.1-0.05	Chlorite, clay	Round	Scarce.

COMMENTS: Relict swallowtail plagioclase in more crystalline portions of rock. Glassy patches form part of the rock irregularly intermixed with more crystalline patches.

125-778A-11R-01 (Piece 1,4-7 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 1-3 phenocrysts

TEXTURE: Sparsely phyrlic, glassy (original)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	<1	1-2	1-3		Lath, subhedral	Single grains, 30-90% altered to clays. Twinned and untwinned single grains 10-30% altered to clays with glass (0.1 mm) inclusions now altered.
Clinopyroxene	<1	<1	1-2		Euhedral	
GROUNDMASS						
Glass	0	50-75	N/A		N/A	Brown and 90-100% altered to clays. Swallowtail completely altered.
Plagioclase	0	20-25	0.01-0.04		Quench	
Clinopyroxene	<1	25-40	0.01-0.08		Subhedral-rounded	50-100% altered to clays.
Olivine	0	<1	0.05-0.1		Euhedral	Pseudomorphed by green clay and/or chlorite.
Spinel	<1	1-2	0.01-0.03		Subhedral	Disseminated through relict glass/matrix.
SECONDARY MINERALOGY						
Clays	PERCENT 85-95	REPLACING/FILLING Glass, plagioclase, clinopyroxene				Brown, amorphous throughout rock, 1-2% bright green often as vesicle fill. Needles and small patches (0.02-0.04 mm) in veins with chlorite.
Carbonate	1-3	Veins, cavities				
Chlorite	2-5	Veins, cavities, olivine?				As radiating clusters in cavities and vein walls often intimately associated with calcite.
Quartz	1-2	Veins				Small (0.01-0.04 mm), anhedral low birefringence crystals as veins associated with pumpellyite.
Pumpellyite	>3	Vein				Always coexists with prehnite.
Prehnite	>2	Vein				

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	<1	Random	0.1-1	Chlorite, calcite		Needles of calcite projecting into cavity sometimes intermixed with chlorite.

COMMENTS: This sample is 80-95% altered to clays, some pseudomorphing of original phases (olivine, plagioclase) is present but most of the texture and mineral associations are obscured by clay alteration. Appears to have been originally glassy.

125-778A-11R-01 (Piece 1,119-123 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Pebbly serpentine mudstone

GRAIN SIZE: Fine-coarse

TEXTURE: Tectonite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 20-30	REPLACING/FILLING				COMMENTS
Carbonate	1?					
Serpentine	70-80					Chrysotile and/or lizardite; bastite and mesh serpentine pseudomorphs forming clasts.
Magnetite	<1					

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Sedimentary rock, where original textures of serpentinite are preserved (i.e., bastite). Boudinage and brittle extension of larger grains in matrix. Conjugate fractures cut largest grains, micro-normal faulting also. Piece # not given.

SITE 778

125-778A-11R-CC (7-9 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.3 mm

TEXTURE: Intersertal, microphenocryst-phyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	20-40	N/A		N/A	Altered to clay.
Plagioclase	2-5	30-40	0.1-0.3		Euhedral, laths	Altered to clays, 50-100%.
Clinopyroxene	5-15	20-30	0.05-0.2		Euhedral, equant	Altered to chlorite and clays 20-60%.
Spinel	<1	<1	0.01-0.02		Euhedral	Sparse, black, opaques.

SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING	COMMENTS
Clays	70-80	Glass, plagioclase	Brown, ubiquitous throughout slide obscuring texture and composition of groundmass.
Chlorite	20-40	Clinopyroxene, cavities	Green, with characteristic birefringence and pleochroism.
Limonite	2-10	Glass, veins	Reddish-brown, anastomosing veins throughout slide and along some grain boundaries, pervasive.
Magnetite	<1	Glass, veins	Tiny (0.01 to 0.02 mm), subhedral disseminated crystals associated with limonite veins and patches.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Despite pervasive clay and limonite, alteration patches of fresh clinopyroxene (0.1-0.15 mm) still remain. No piece # given.

125-778A-12R-02 (43-45 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.2-2 mm

TEXTURE: Felted

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	75-80	Not visible		Not visible	Completely altered to serpentine blades.
Spinel	2	2	0.2-1	Cr?	Subhedral-anhedral	Red, somewhat elongate, altered to magnetite.
Orthopyroxene	0	18-23	0.5-2		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	

SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING	COMMENTS
Chlorite	<1		As anhedral, fine-grained patches intermixed with serpentine.
Serpentine	85-87	Olivine, orthopyroxene	Mostly antigorite felted blades and chrysotile fibers throughout slide; lizardite may be present in minor amounts.
Magnetite	1-2	Spinel, olivine, orthopyroxene	Dusty, 0.3 mm, distributed across slide; forms elongate ragged trails which parallel fibers and blades.
Thulite?	10	Orthopyroxene	Light pink-dark pink pleochroic, anomalous colors 120 degrees crystal angles, near straight extinction, thulite(?) and/or zoisite(?).

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Bastite orthopyroxene has bent cleavages and wavy extinction. The serpentine blades and fibers appear to parallel each other throughout slide (~40 degrees from long axis of slide), indicates deformation. Appearance of pale pink-dark pink mineral is throughout slide and finely intergrown with serpentine. Identification of this mineral as thulite and/or zoisite is not confirmed. No piece # given.

125-778A-12R-02 (73-75 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, south flank; clast

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-2 mm

TEXTURE: Felted

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	73-78	Not visible		Not visible	Completely altered to serpentine blades.
Spinel	1	2	0.1-0.8		Anhedra-elongate	Appears mainly black and may be all magnetite.
Orthopyroxene	<1	20-25	0.5-2		Subhedral-anhedra	Altered to serpentine bastite & chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Chlorite	2-4	Orthopyroxene, serpentine				Fine-grained anhedra patches which are intergrown with the serpentine.
Magnetite	2	Spinel				Dusty, 0.2-mm sized; disseminated throughout slide; trails of fine grains parallel blades and fiber lengths when possible.
Serpentine	93-97	Olivine, orthopyroxene				Mostly antigorite and chrysotile (bladed, felted texture and fibrous bastitic texture).
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Spinels are elongate and strung out in stringers (as are magnetite grains). Completely altered sample with no primary mineralogy left. Bastite after orthopyroxene shows wavy extinction and bent fiber lengths which indicate deformation. Entire slide consists of bladed felted texture and bastite fiber texture with no apparent orientation of the blades and fiber lengths. No piece # given.

125-778A-13R-01 (Piece 1,9-12 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: <0.01-0.1 mm (matrix)

TEXTURE: Aphyric, microphenocryst phyrlic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Matrix/glass	25-50	80-90	N/A		Spherulitic	Radiating clusters of clinopyroxene or devitrified glass.
Plagioclase	2-5	2-10	0.1-0.3		Laths, subhedral	Associated with clinopyroxene altered to clays.
Clinopyroxene	5-10	10-15	0.1-0.3		Subhedral	Dispersed and in association with plagioclase, relatively fresh.
Spinel	<1-1	<1-1	0.05-0.15		Subhedral	Black, disseminated opaques.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Clays	40-60	Glass, plagioclase, vesicles				Brown, amorphous between spherules of recrystallized glass.
Carbonate	1-3	Cavities, veins				As amorphous, high birefringence patches.
Chlorite	1-5	Veins				After glass associated with calcite.
Pumpellyite	<1-2	Veins				
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	<1	Throughout	0.05-0.1		Clays	Round Green clay.

COMMENTS: Prehnite may be present exhibiting "bow-tie" (or spherulitic) texture after plagioclase.

SITE 778

125-778A-13R-01 (Piece 2,12-14 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.15 mm

TEXTURE: Aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	20-40	N/A		N/A	Fully recrystallized, altered to brown clay.
Plagioclase	0	15-20	0.02-0.15		Subhedral	85-100% altered, pseudomorphs.
Clinopyroxene	20-30	30-40	0.05-0.15		Anhedral	20-50% altered to clays. Some intergrowths with plagioclase.
Spinel	<1	1-2	0.01-0.05		Subhedral	Altered (20-70%) to clays.
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	60-75	Glass, plagioclase veins				See veins up to 0.4 mm across, may not be clay. After glass and plagioclase - brown amorphous pervasive clay.
Zeolite	<10	Vein				Low refractive index and birefringence.
Chlorite	5-10	Veins				0.1 to 0.5 mm wide, dusty green associated with gray (low birefringence) vein material clay.
Prehnite/ pumpellyite	<3	Vein				High birefringence, bow-tie structure small (<1-mm wide) vein associated with clay.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	<1		0.02	Clay, chlorite	Round

COMMENTS: Not all material in veins attributed to clays may be clay - one type of vein, colorless in plane light, gray in crossed nicols may be some other alteration phase.

125-778A-13R-01 (63-67 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Serpentine sand

GRAIN SIZE: Sand-sized

TEXTURE: Sedimentary

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	45	Serpentine				
Carbonate	5					
Serpentine	50	Orthopyroxene, olivine				

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Please observe sedimentologists. No piece # given.

125-778A-13R-02 (7-9 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Meta-volcaniclastic rock

GRAIN SIZE: 0.3 - 1.0 mm

TEXTURE: Cataclastic texture

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Clinopyroxene	<2	<10	0.5-1		Subhedral	Partly actinolitized.
Hornblende	10	10	0.3-1		Euhedral-subhedral	Mostly actinolitized.
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	SIZE			COMMENTS
Clays	<5					Brown in color, dusty (illite?).
Chlorite	20					Brownish abnormal interference color. Occurs with actinolite.
Actinolite	70-80					Colorless, mostly acicular.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Metamorphosed under greenschist facies condition. Fragmentation occurred during or before the metamorphism. Fine-grained acicular crystals of actinolite occur as a secondary mineral throughout the rock. The protolith is mafic volcaniclastic rock containing fragments of hornblende and clinopyroxene crystal in clay matrix. No piece # given.

125-778A-13R-CC (Piece 1,4-6 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.01-0.5 mm, fine-grained

TEXTURE: Aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	45-46	N/A		N/A	Altered to amorphous clays.
Plagioclase	2-5	5-15	0.01-0.1		Laths, quenched	80-100% altered by clays. Sometimes in clusters with clinopyroxene.
Clinopyroxene	15-20	20-30	0.05-0.1		Subhedral	10-40% altered.
Spinel	<1	<1	0.01-0.03		Subhedral	Sparse, randomly distributed.
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	SIZE			COMMENTS
Clays	70-85	Glass, plagioclase				Brown, amorphous sometimes as veins (0.1 to 0.3 mm) and pseudomorphing plagioclase.
Prehnite/ pumpellyite	1-4 Veins					0.1 to 0.4 mm wide, aggregates of low birefringence. Crystals intimately intermixed throughout slide.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

SITE 778

125-778A-13R-CC (Piece 1,6-7 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Meta-volcaniclastic rock

GRAIN SIZE:

TEXTURE:

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS Clinopyroxene	5	>5	0.1-0.2		Anhedral	
GROUNDMASS N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	>70				Brown (illite?).	
Chlorite	20					
Actinolite	>2				Colorless. Occurs as aggregate of acicular crystals.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Detrital clinopyroxene grains are visible in highly deformed chaotic matrix. Colorless acicular actinolite occurs along the rim or cleavage trace of relic clinopyroxene.

125-778A-13R-CC (Piece 4,6-10 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Amphibolite sandstone

GRAIN SIZE: (0.01 - 10.0 mm)

TEXTURE: Matrix-supported sandstone

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Chlorite	45	N/A	N/A		N/A	Very fine-grained grains make up matrix. The clasts are supported by this matrix.
Clays	30	N/A	N/A		N/A	
Serpentine	1	N/A	N/A		N/A	
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Chlorite	2	Hornblende			Euhedral-anhedral. Replacing hornblende grains throughout slide.	
Sphene	Trace	Detrital			Subhedral-euhedral (0.01 to 0.1 mm), clasts.	
Hornblende	10	Detrital			0.2-2 mm, subhedral-anhedral. Pale-green to white pleochroism, partly altered to chlorite.	
Blue amphibole	Trace	Hornblende, clasts			Greenish-blue to blue in color. Partly replacing a hornblende clast.	
Opagues	1				Dusty 0.2-mm grains scattered throughout slide.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This is sedimentary rock consisting of various-shaped clasts (subrounded-angular) scattered in a matrix of chlorite and clays. Most of clasts are pale-green hornblende. Clasts vary from single crystal fragments to aggregates of multiple crystals (up to 1 cm long). Further analysis on slide is needed. Two thin sections made from this piece.

125-778A-13R-CC (Piece 4,8-10 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Amphibolite sandstone

GRAIN SIZE: 0.01 mm - 1cm

TEXTURE: Matrix-supported sandstone

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Chlorite	45	N/A	N/A		N/A	Very fine-grained grains make up matrix. The clasts are supported by this matrix.
Clays	30	N/A	N/A		N/A	
Serpentine	1	N/A	N/A		N/A	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Chlorite	2	Hornblende	Euhedral-anhedral; replacing hornblende grains throughout slide.
Sphene	Trace	Detrital	Subhedral-euhedral clasts, (0.01 to 0.1 mm).
Hornblende	10	Detrital	0.2-2 mm; subhedral-anhedral, pale-green to white pleochroic; partly altered to chlorite.
Blue amphibole	Trace	Hornblende, clasts	Greenish-blue to blue in color; partly replacing a hornblende clast.
Opaques	1		Dusty, 0.2-mm grains and scattered throughout slide.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This is a sedimentary rock! Various shaped clasts (subrounded-angular) scattered in a matrix of chlorite and clays. Most of clasts consist of pale green hornblende. Further analysis needed on this section in order to fully describe all clasts. Clasts vary from single crystals to aggregates of multiple crystals (up to 1 cm long). Two thin sections made from this piece.

125-778A-13R-CC (8-10 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, south flank

ROCK NAME: Meta-volcaniclastic rock

GRAIN SIZE: Angular fragment (50 mm)

TEXTURE: Melange (pure shear, parallel extinction)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
N/A	N/A	N/A	N/A		N/A	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Matrix is highly foliate; foliation defined by elongation and cleavage of sheet silicates (serpentine? now clays) and long axes of elongate clasts. Considerable layer-II extension in foliation direction. Ductile "pinch and swell" in some clasts (esp. serpentine-rich). More brittle fragmentation in hornblende. Pressure shadows bracketing some hornblende. Shadows appear to be largely serpentine + clays. No piece # given.